

Programmable Controller CS1

# Replace Guide From CS1G/H to CJ2

CJ2H-CPU6□ CJ2M-CPU1□ CS1H-CPU6□H CS1G-CPU4□H

Replace Guide

P164-E1-02

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## **Related Manuals**

Manual No.	Manual		
W339	CS-series Programmable Controllers Operation Manual		
W394	CS-series Programmable Controllers Programming Manual		
W472	CJ-series CJ2 CPU Unit Hardware User's Manual		
W473	CJ-series CJ2 CPU Software User's Manual		
W474	CS/CJ/NSJ-series Instructions Reference Manual		
W446	CX-Programmer Operation Manual		
W447	CX-Programmer Operation Manual Function Blocks / Structured Text		
W366	CS/CJ/CP/NSJ-series CX-Simulator Operation Manual		

## **Replacement Guide**

## From CS1G/H to CJ2

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Follow the below work flow to replace the Sysmac CS1 Series (CS1G/H) with the CJ2 Series.

Refer to the reference pages for details.

1.	Work	Flow
		1 10 11

1) Preliminary steps: Take the following steps before starting the replacement work.

	Description	Reference pages
Start Selecting models	Select the Units, Programming Devices, and connecting cables to replace CS1 Series (CS1G/H) with CJ2 Series. Read the recommended models and remarks in the reference pages and select the models.	3. Selecting Models
▼ Preparing Units	Prepare the Units, Programming Devices, and connecting cables.	
v Reading PLC data	Load the program, I/O Memory and other settings from CS1 Series (CS1G/H) with the necessary Programming Device and connecting cable.	4. Reading Data from CS Series
Converting and modifying data	Convert the data read from CS1 Series (CS1G/H) for CJ2 Series. Most of the data can be automatically converted. However, some instructions and some Unit data cannot be converted. Refer to the details in <i>5. Converting and Modifying the</i> <i>Program for CJ Series</i> and modify the data and program separately.	5. Converting and Modifying the Program fo CJ Series

2) Actual replacement work: Take the following steps to replace the CS1 Series (CS1G/H) with the CJ2 Series. Description Reference pages

	Description	
Replacing Units	Install the prepared Units instead of CS1-series Units. *Refer to the <i>CJ-series CJ2 CPU Unit Hardware User's</i> <i>Manual</i> (Cat. No. W472) and user's manuals for Special I/O Units and CPU Bus Units for details of installation.	→ Related manuals
Wiring Writing data to CJ2	<ul> <li>Wiring for the installed Units.</li> <li>*Refer to the <i>CJ-series CJ2 CPU Unit Hardware User's</i></li> <li><i>Manual</i> (Cat. No. W472) and user's manuals for</li> <li>Special I/O Units and CPU Bus Units for details on wiring.</li> <li>Transfer the converted data to the CJ2 Series.</li> <li>To check the wiring, operate input and output bits to see if they operate correctly.</li> </ul>	6. Writing Data to CJ Series
Checking operation	<ol> <li>Turn ON the power and check the operation.</li> <li>If the Unit is operated between uploading the progra replacement work, data handled by the program may data right before the replacement work, modify data it to the CJ2 Series.</li> <li>The cycle time of CS1 Series (CS1G/H) and CJ2 Se affect system operation. If so, it is necessary to adjust Setup.</li> </ol>	y change. If so, upload the if necessary, and download ries are different, which may

### 2. Differences in Main Specifications

The table below describes the differences in main specifications between the CS1 Series and the CJ2 Series.

For details, refer to Appendix 1. Specification Comparison between CS1 Series and CJ2 Series.

	CS1 Series	CJ2 Series		Remarks
		CJ2H	CJ2M	
Maximum number of I/O points	5,120 points	2,560 points		
Program capacity	10k to 250k steps	50k to 400k steps	5k to 60k steps 20k for FB program area	
Data memory	32k words	32k words	32k words	
EM	32k words x 13 banks max.	32k words x 25 banks max.	32k words x 4 banks max.	
Programming language				
Instructions	Same (about 400 instructions)			
I/O memory	Same			
PLC Setup	Same			
Number of tasks	Cyclic tasks: 32 Interrupt tasks: 256	Cyclic tasks: 128 Interrupt tasks: 256		
Function blocks	Maximum number of definitions: 1,024 Maximum number of instances: 2,048	Maximum number of definitions: 1,024 Maximum number of instances: 2,048		
Instruction	Basic instructions: 0.02 µs	Basic instructions: 0.016 µs	Basic instructions: 0.04 µs	
execution time	Special instructions: 0.06 µs	Special instructions: 0.048 µs	Special instructions: 0.06 µs	
Overhead	0.3 ms	0.2 ms	0.27 ms	
processing time				
File memory	Same (Memory Card, EM file r		1	
Trace memory	4,000 words	32,000 words max.	8,000 words	
Inner boards	1 Unit	Not provided		
Maximum number of mountable Units	Basic I/O Units: 80 Special I/O Units: 80 CPU Bus Units: 16	Basic I/O Units: 40 Special I/O Units: 40 CPU Bus Units: 16		
Maximum number of Expansion Racks	7 max.	3 max.		
Maximum total distance of expansion cables	Same (12 m max.)			
Long-distance Expansion Racks	50 m max.	Not provided		
Memory Cards	Same (use HMC-EF□□□)			1
Communications	Same (FINS commands and h	ost link commands)		
commands		,		
Battery	CS1W-BAT01	CJ1W-BAT01		
Peripheral port	Dedicated peripheral port	USB		
Programming	CX-One (CX-Programmer)			
Devices	Programming Console			
Unit connection	Mounting on the backplane	No backplane required (connec	ction with connectors)	1
Mounting	Mounting with screws or a DIN Track			

#### CPU Unit models and specifications

<CS1H-H/CS1G-H CPU Units>

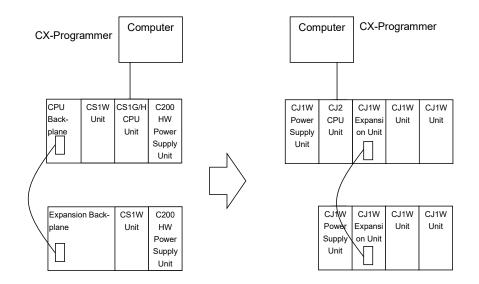
Model	Program capacity	Data memory and EM	Maximum number of mountable Units	Maximum number of I/O points	Instruction execution time LD instruction/MOV instruction	Maximum number of FB instances
CS1H-CPU67H	250k steps	DM + EM x 13 banks	80	5,120 points	20 ns/180 ns	2,048
CS1H-CPU66H	120k steps	DM + EM x 7 banks	80	5,120 points	20 ns/180 ns	2,048
CS1H-CPU65H	60k steps	DM + EM x 3 banks	80	5,120 points	20 ns/180 ns	2,048
CS1H-CPU64H	30k steps	DM + EM x 1 bank	80	5,120 points	20 ns/180 ns	2,048
CS1H-CPU63H	20k steps	DM + EM x 1 bank	80	5,120 points	20 ns/180 ns	256
CS1G-CPU45H	60k steps	DM + EM x 3 banks	80	5,120 points	40 ns/200 ns	2,048
CS1G-CPU44H	30k steps	DM + EM x 1 bank	80	1,280 points	40 ns/200 ns	2,048
CS1G-CPU43H	20k steps	DM + EM x 1 bank	80	960 points	40 ns/200 ns	256
CS1G-CPU42H	10k steps	DM + EM x 1 bank	80	960 points	40 ns/200 ns	256

#### <CJ2H/CJ2M CPU Units>

Model	Program	Data memory	Maximum	Maximum	Instruction execution	Maximum
	capacity	and EM	number of	number of	time	number
			mountable	I/O points	LD instruction/MOV	of FB
			Units		instruction	instances
CJ2H-CPU68	400k steps	DM +	40	2,560	16 ns/50 ns	2,048
		EM x 25 banks		points		
CJ2H-CPU67	250k steps	DM +	40	2,560	16 ns/50 ns	2,048
		EM x 15 banks		points		
CJ2H-CPU66	150k steps	DM +	40	2,560	16 ns/50 ns	2,048
		EM x 10 banks		points		
CJ2H-CPU65	100k steps	DM +	40	2,560	16 ns/50 ns	2,048
		EM x 4 banks		points		
CJ2H-CPU64	50k steps	DM +	40	2,560	16 ns/50 ns	256
		EM x 4 banks		points		
CJ2M-CPU15	60k steps	DM +	40	2,560	40 ns/120 ns	2,048
		EM x 4 banks		points		
CJ2M-CPU14	30k steps	DM +	40	2,560	40 ns/120 ns	2,048
		EM x 4 banks		points		
CJ2M-CPU13	20k steps	DM +	40	2,560	40 ns/120 ns	256
		EM x 1 bank		points		
CJ2M-CPU12	10k steps	DM +	40	2,560	40 ns/120 ns	256
		EM x 1 bank		points		
CJ2M-CPU11	5k steps	DM +	40	2,560	40 ns/120 ns	256
		EM x 1 bank		points		

#### 3. Selecting Models

#### Outline of the system configuration



The table below shows the corresponding models between the CS Series and the CJ Series for each Unit.

Select a CJ-series Unit with the same or similar specifications as the CS-series Unit you are using.

Refer to the following manuals for details on each model.

CJ2 Series: CJ-series CJ2 CPU Unit Hardware User's Manual (Cat. No. W472)

CS1 Series: CS-series CS1G/H-CPU Programmable Controllers Operation Manual (Cat. No. W339)

Unit name	CS1 Series	CJ2 Series	Remarks
CPU Units (*)	[CS1G] CS1G-CPU42H CS1G-CPU43H CS1G-CPU44H CS1G-CPU45H [CS1H] CS1H-CPU63H CS1H-CPU63H CS1H-CPU65H CS1H-CPU66H CS1H-CPU66H	[CJ2M] CJ2M-CPU11 CJ2M-CPU12 CJ2M-CPU13 CJ2M-CPU14 CJ2M-CPU15 [CJ2H] CJ2H-CPU64 CJ2H-CPU65 CJ2H-CPU65 CJ2H-CPU66 CJ2H-CPU67 CJ2H-CPU68	Select an appropriate replacement CPL from the list of CPU Units in Chapter 2.
Backplanes (CPU Backplanes)	CS1W-BC023/BC022 CS1W-BC033/BC032 CS1W-BC053/BC052 CS1W-BC083/BC082 CS1W-BC103/BC102	Not required.	Backplanes are not required for the CJ2 Series.
Expansion Racks (I/O Control Units)	Not required.	CJ1W-IC101	Expansion Racks are required for expansion.
Long-distance Expansion Racks (I/O Control Units)	CS1W-IC102	Not supported.	The CJ2 Series does not support long- distance Expansion Racks.
Memory Cards	HMC-EF	HMC-EF	
Battery	CS1W-BAT01	CJ1W-BAT01	

(\*) A built-in serial port has the same function. Refer to the related manuals for details on different specifications.

#### <I/O Expansion Racks>

Unit name	CS Series	CJ Series	Remarks
Backplanes (Expansion Backplanes)	CS1W-BI033/BI032 CS1W-BI053/BI052 CS1W-BI083/BI082 CS1W-BI103/BI102	Not required.	Backplanes are not required for the CJ2 Series.
Expansion Racks (I/O Interface Units)	Not required.	CJ1W-II101	Expansion Racks are required for expansion.
Expansion backplane connecting cables	CS-series Connecting Cables CS1W-CN313 (30 cm) CS1W-CN713 (70 cm) CS1W-CN223 (2 m) CS1W-CN323 (3 m) CS1W-CN523 (5 m) CS1W-CN133 (10 m) CS1W-CN133-B2-B2 (12 m) CS-series to C200H-series I/O Connecting Cables CS1W-CN311 (30 cm) CS1W-CN311 (70 cm) CS1W-CN221 (2 m) CS1W-CN321 (3 m) CS1W-CN521 (5 m) CS1W-CN131 (10 m) CS1W-CN131-B2 (12 m)	CS1W-CN313 (30 cm) CS1W-CN713 (70 cm) CS1W-CN223 (2 m) CS1W-CN323 (3 m) CS1W-CN523 (5 m) CS1W-CN133 (10 m) CS1W-CN133-B2 (12 m)	Connect the CPU Rack to an Expansion Rack or connect two Expansion Racks. The CS-series Cables are also available for the CJ2 Series.
Long-distance Expansion Racks (I/O Interface Units)	CS1W-II102	Not supported.	The CJ2 Series does not support long- distance Expansion Racks.
Long-distance expansion cables	CV500-CN□□2	Not supported.	The CJ2 Series does not support long- distance expansion cables.

#### <Power Supply Units>

Unit name	SYSMAC CS Series	CJ Series	Remarks		
Power Supply Units	C200HW-PA204	CJ1W-PA202			
(AC Power Supply Units)	C200HW-PA204R C200HW-PA209R	CJ1W-PA205R	With RUN output		
- /	C200HW-PA204C	CJ1W-PA205C	With replacement notification		
	C200HW-PA204S	Not supported.	With service power supply		
Power Supply Units (DC Power Supply Units)	C200HW-PD024 C200HW-PD025	CJ1W-PD022 CJ1W-PD025	CJ1W-PD022 is a non-isolated type.		

#### <Basic I/O Units and CPU Bus Units>

Unit name	SYSMAC CS Series	CJ Series	Remarks
Basic I/O Units	CS1W-I=== CS1W-O=== CS1W-M===	CJ1W-I CJ1W-O CJ1W-M	Refer to Appendix 5. Table of Input/Output Units.
Special I/O Units CPU Bus Units (Communications Units, Analog I/O Units, Process I/O Units and other Special I/O Units)	CS1W-000	CJ1W-000	Refer to Appendix 5. Table of Input/Output Units. Select the required models from the related manuals for various Special Units. There may be no Special Unit with the same function. In that case, consider using another Special Unit as an alternative.
Inner boards	CS1W-==B	Not supported.	The CJ2 Series does not support inner boards. Consider replacing with a Special I/O Unit or a CPU Bus Unit.

#### <Support Software and peripheral devices>

Name	SYSMAC CS Series	CJ Series	Remarks
Support Software	CX-One	CX-One	
Programming Device	CS1W-CN226/626 (2 m/6 m)	Commercially available	USB 2.0 (or 1.1) cable
Connecting Cable for peripheral (USB) port	CS1W-CIF31 (required for USB connection)	USB cable	(A connector - B connector), 5.0 m max.
Programming Console	C200H-PRO27 (+C200H-CN□□2) CQM1-PRO01	Not supported.	A Programming Console cannot be used with the CJ2 Series. Use the CX- Programmer instead.

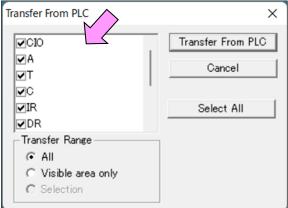
#### 4. Reading Data from CS Series

Use the CX-Programmer to load the ladder program, PLC settings, and PLC memory data from the CS Series.

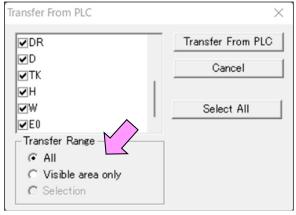
- (1) Select Work Online from the PLC Menu to go online.
- (2) Transfer the ladder program, PLC settings and I/O table. (Select Transfer From PLC from the PLC Menu.) Click the OK button to start transfer.

Upload Options	×
PLC: NewPLC1 Include: Program(s) Settings Settings Special Unit Setup Symbols Comments	OK Cancel Scan Programs
Symbols, Comments, Program index Transfer To/From: Comment memory  Transfer files of all tasks Transfer files by the task Use comments (rung comments, annotations) of the transferred. Please transfer PLC Memory areas from window.	nemory, etc) is not

(3) Transfer the PLC memory data. (Select Edit - Memory from the PLC Menu.)



Scroll and select all areas. Click the Transfer from PLC button to start transfer.



- (4) Select Work Online from the PLC Menu to go offline.
- (5) Save the file with a file name. (Select Save As from the File Menu.)

### 5. Converting and Modifying the Program for CJ Series

Convert and modify the program for the CJ Series on the CX-Programmer.

- Start the CX-Programmer and open the saved program file for the CJ Series. (Select **Open** from the File Menu.)
- (2) Change the Device Type from CS Series to CJ2H or CJ2M. (Select Change Model from the PLC Menu to

ange PLC	)
Device Name	
NewPLC1	
Device Type	
CJ2M	<u>S</u> ettings
Network Type	
USB	<ul> <li>Settings</li> </ul>
Show all	
Comment	
	^
	~
OK Cancel	Help

(3) The instructions are automatically converted. The conversion results are displayed in the Output window. Double-click an error displayed in the Output window to jump to the corresponding section of the ladder program.

program.	
<ul> <li>NewPLC1' (PLC Model '03)</li> <li>Conversion issues</li> <li>[PLC/Program Name : Programs/NewProgram1]</li> <li>[Ladder Section Name : Section1]</li> <li>[Ladder Section Name : END]</li> <li>NewPLC1 - 0 errors, 0 warnings.</li> </ul>	Errors and warnings at conversion are displayed. Double-click an error or a warning to jump to the corresponding section.
IIII III Compile A Compile Error A Find Rep	port \ Transfer /
For Help, press F1	NewPLC1 - Offline

The following gives the program checks that are performed in the **Compile** tab page.

- ·Data undefined check (Is it established as a normal circuit?)
- Instruction existence check (Is it an instruction or operand that exists in the PLC?)
- ·Operand check (Is the operand within the operable range?)
- Program capacity check (Is it within the UM capacity of the target PLC model?)
- ·Syntax check (Is the ladder syntax correct?)
- Circuit shape check (Is the circuit shape appropriate?)
- · Duplicated use check (A duplicated use check for an output.)
- ·Task-related check (A check related to the task.)

Some instructions cannot be converted. Refer to *Appendix 2. Differences in Instructions* and the *CS/CJ/NSJ Series Programmable Controllers Instructions Reference Manual* (Cat. No. W474) and modify the ladder program. You can check the program by selecting **Compile** from the Program Menu. Check results are displayed in the Output window.

- (4) The I/O allocation of CS Series (CS1G/H) is partly different from that of CJ Series. Refer to *Appendix 3*. *Differences in I/O Memory* and modify the ladder program.
- (5) The PLC settings of CS Series (CS1G/H) are partly different from those of CJ Series. Also, the PLC settings are initialized when the PLC model is changed. Refer to Appendix 4. Comparison of PLC Settings and change the PLC settings.
- (6) I/O tables are initialized when the PLC model is changed. The CJ-series I/O tables can be automatically generated and operated based on the mounted Units. I/O tables can also be edited and set when I/O allocation needs to be changed in consideration of its effect on the ladder program.
- (7) When replacing a CS-series Unit with a CJ-series Unit, the same unit number can be set to assign the same CIO Area and DM Area for the same Special I/O Unit or CPU Bus Unit. Some data used by Special I/O Units and CPU Bus Units are set with the Support Software and stored in each Unit. In that case, it is necessary to use the Support Software to read data from the CS-series Unit and transfer it to the CJ-series Unit.

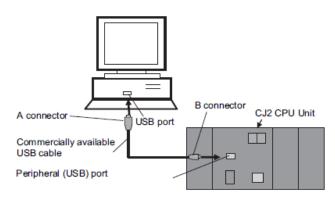
Refer to the manual for the specific Unit for details.

- (8) Select Compile from the Program Menu to check the program. If an error is detected, correct it.
- (9) Save the program with a new project name. (Select Save As from the File Menu.)

#### 6. Writing Data to CJ Series

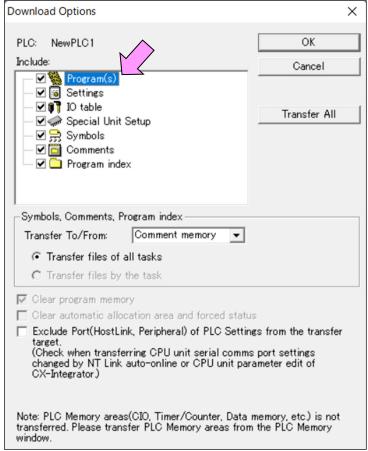
#### Transfer the converted and modified program, PLC settings, and data memory to the CJ Series.

Required items	Support Software (computer)	CX-One CXONE-ALooC-Vo/ALooD-Vo
	Connecting cable	(CX-Programmer) Commercially available USB cable
		USB 2.0 (or 1.1) cable (A connector - B connector), 5.0 m max.



- (1) Connect CJ2H/CJ2M with a computer.
- (2) Start the CX-Programmer and open the converted and modified program file for the CJ Series.
- (3) Connect online with CJ2H/CJ2M.
- (4) Transfer the ladder program and PLC settings to CJ2H/CJ2M. (Select Transfer To PLC from the PLC Menu.)

Select the Program(s) and Settings check boxes. Click the OK button to start transfer.



(5) Select Edit - Memory from the PLC Menu to display the below dialog box.

Select the PLC memory (Data Memory Area: D, Holding Area: HR, and EM Area) where initial values and setting data required for CJ2 system operation are stored and click the **Transfer to PLC** button to start transfer.

D	Transfer To PLC
ZH	Cancel
<b>∠</b> E0	
✓A	Select All
CIO	
Transfer Range	
( All	
C Selection	
C Range (eg. 10-90,93,95-100)	

(6) Select Work Online from the PLC Menu to go offline.

#### (7) Test Run

Turn ON the power, perform a Test Run, and check the operation.

#### Precautions for Correct Use

After the replacement, be sure to check the operational safety by performing a Test Run or other operations before you start the system operation. Incorrect wiring or settings may cause the system to malfunction. Cycle time may be shortened by changing to the CJ2 Series. When you create a program that depends on the cycle time, check the operation after conversion. Use **Constant Cycle Time** in the PLC settings to make it the

cycle time, check the operation after conversion. Use **Constant Cycle Time** in the PLC same as the CS Series.

#### Appendix

#### Appendix 1. Specification Comparison between CS1 Series and CJ2 Series

The table below describes the differences in common specifications between the CS1 Series and the CJ2 Series.

Refer to the related manuals for details.

Items in bold are features that are deprecated from the CS1 Series.

	CS1H-H/CS1G-H CPU Units	CJ2H/CJ2M CPU Units	Remarks
Control method	Stored program	•	
I/O control method	Cyclic scan and immediate processing are	both possible.	
Programming languages	Ladder Logic (LD)/Mnemonic SFC		
	Structured Text (ST)		
	Instruction List (IL)		
CPU processing mode	Normal Mode	Normal Mode only	The CJ2
	<ul> <li>Parallel Processing Mode with</li> </ul>		Series does
	Asynchronous Memory Access		not support
	<ul> <li>Parallel Processing Mode with</li> </ul>		Parallel
	Synchronous Memory Access		Processing Mode.
	Peripheral Servicing Priority Mode		wode.
Instruction length	1 to 7 steps per instruction		
Ladder instructions	Approx. 400		
Instruction execution time	CS1H-H CPU Units	CJ2H CPU Units	
(LD instruction)	LD: 0.02 µs, MOV: 0.18 µs	LD: 0.016 µs, MOV: 0.05 µs	
	CS1G-H CPU Units	CJ2M CPU Units	
Overhead processing	LD: 0.04 µs, MOV: 0.2 µs 300 µs	LD: 0.04 µs, MOV: 0.12 µs CJ2H-CPU6□: 100 µs	
time	500 µs	CJ2H-CPU6□-EIP: 200 µs	
unic		CJ2M-CPU3⊡: 270 µs	
		CJ2M-CPU1 : 160 µs	
Maximum number of	7 max. (C200H Expansion I/O Racks: 3	3 max.	The maximum
Expansion Racks	max.)	Maximum number of mountable Units:	number of
	Maximum number of mountable Units: 80	40 max.	mountable
	max.		Units and
			Expansion
			Racks is reduced for
			CJ2.
Number of tasks	288	384	002.
	Cyclic tasks: 32	Cyclic tasks: 128	
	Interrupt tasks: 256	Interrupt tasks: 256	
Interrupt types		OFF Interrupts, and External I/O Interrupts	
Calling subroutines from more than one task	Applicable (by global subroutines)		
Languages in function	Ladder programming and structured text		
block definitions			
Constant cycle time	1 to 32,000 ms in 1-ms increments	0.2 to 32,000 ms in 0.1-ms increments	
Cycle time monitoring	10 to 40,000 ms in 10-ms increments	10 to 40,000 ms in 0.01-ms increments	
I/O refreshing	Cyclic refreshing		
	Immediate refreshing		
	Refreshing by IORF (097)		
I/O memory holding when	Applicable		
changing operating modes	(depends on the ON/OFF status of the IOM	Hold Bit in the Auxiliary Area)	
Load OFF	All outputs on Output Units can be turned 0	OFF when the CPU Unit is operating in	
	RUN mode or MONITOR mode.		
Input response time	Time constants can be set for inputs from E	Basic I/O Units.	
setting			
Startup mode setting	RUN mode, MONITOR mode,	RUN mode, MONITOR mode, or	
	PROGRAM mode, or Use Programming	PROGRAM mode	
Flash memory	Console mode	La (a.g. PLC Satur) are always backed up	
Flash memory	The user program and parameter area data (e.g., PLC Setup) are always backed up automatically in flash memory.		
Memory Card functions			
Automatically reading	Applicable		
programs from the			
Memory Card when			
the power is turned			

	CS1H-H/CS1G-H CPU Units	CJ2H/CJ2M CPU Units	Remarks	
ON. Dragram rankagement	Applicable			
Program replacement	Applicable			
during PLC operation Format in which data	User program: Program file format			
is stored in Memory	PLC Setup and other parameters: Data file format			
Card	I/O memory: Data file format (binary format), text format, or CSV format			
Functions for which	User program instructions, Programming Devices (including Programming Consoles),			
Memory Card	host link computers, AR Area control bits, easy backup operation			
read/write is				
supported				
Filing	Memory Card data and the EM (Extended	Data Memory) Area can be handled as		
	files.			
Debugging	Forced set/reset			
	Differential monitoring			
	Data tracing (scheduled, each cycle, or who			
Opline editing	Storing location generating error when a pr	ogram error occurs		
Online editing Program protection	Applicable Overwrite protection: Set using the DIP swi	itab		
Program protection	Read protection: Password set using a Pro			
Error check	User-defined errors (i.e., user can define fa			
		check the execution time and logic of each		
	programming block.			
Error log		. Information includes the error code, error		
<u> </u>	details, and the time the error occurred.	·····, ····		
Serial communications	·Built-in peripheral port:	Built-in USB port:	A	
(CPU Unit built-in serial	Programming Device (including	Programming Device connections	Programming	
port)	Programming Console)		Console	
	connections,	Built-in RS-232C port:	cannot be	
	host links, NT links	Programming Device connections,	used with the	
	Built-in RS-232C port:	host links, NT link (1:N),	CJ2 Series.	
	Programming Device connections,	non-protocol communications,		
	host links, non-protocol	Serial Gateway		
	communications, NT links, Serial Gateway			
Clock	Provided.			
Power OFF detection	AC power supply: 10 to 25 ms	AC power supply: 10 to 25 ms		
time	DC power supply: 2 to 5 ms	DC power supply:		
		2 to 5 ms (CJ1W-PD025)		
		2 to 10 ms (CJ1W-PD022)		
Power OFF detection	0 to 10 ms	0 to 10 ms		
delay time		(Cannot be used with the CJ1W-PD022)		
Memory protection				
memory protoculori	Held Areas: Holding Area data, DM Area da	ata, EM Area data, Counter Completion		
	Held Areas: Holding Area data, DM Area da Flags, and counter present values.	- -		
Sending commands to a	Held Areas: Holding Area data, DM Area data, DM Area da Flags, and counter present values. FINS commands can be sent to a compute	r connected via the host link system by		
Sending commands to a host link computer	Held Areas: Holding Area data, DM Area data, DM Area data, and counter present values. FINS commands can be sent to a compute executing network communications instruct	er connected via the host link system by tions from the PLC.		
Sending commands to a host link computer Remote programming	Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, Sanata counter present values. FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for the set of the s	r connected via the host link system by tions from the PLC. remote programming and remote		
Sending commands to a host link computer Remote programming	Held Areas: Holding Area data, DM Area data, and counter present values. FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern	r connected via the host link system by tions from the PLC. remote programming and remote		
Sending commands to a host link computer Remote programming and monitoring	Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, DM Area data, Second	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK		
Sending commands to a host link computer Remote programming and monitoring Communicating across	Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, Stages, and counter present values.FINS commands can be sent to a computeexecuting network communications instructHost link communications can be used for a monitoring through a Controller Link, Ether network.FINS message communications can be controller can be controller	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK		
Sending commands to a host link computer Remote programming and monitoring Communicating across	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, DM Area data, Stages, and counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, Sanata counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for a monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers.		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, DM Area data, and counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for a monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers.		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, DM Area data, Sanata counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for a monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in <u>CPU Unit</u> Program check	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs.		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit Program check	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs.		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit Program check Control output signals	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn operating.</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>TM</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs. ON (close) while the CPU Unit is		
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit Program check Control output signals	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs.	Maintenance	
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in <u>CPU Unit</u> Program check Control output signals Battery	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn operating.</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>TM</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs. ON (close) while the CPU Unit is	battery model	
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit Program check Control output signals	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn operating.</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>TM</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs. ON (close) while the CPU Unit is	battery model difference	
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit Program check Control output signals Battery	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn operating.</li> <li>Battery Set: CS1W-BAT01</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs. ON (close) while the CPU Unit is Battery Set: CJ1W-BAT01	battery model	
Sending commands to a host link computer Remote programming and monitoring Communicating across network layers Storing comments in CPU Unit Program check Control output signals	<ul> <li>Held Areas: Holding Area data, DM Area data, DM Area data, Sana counter present values.</li> <li>FINS commands can be sent to a compute executing network communications instruct Host link communications can be used for monitoring through a Controller Link, Ethern network.</li> <li>FINS message communications can be con Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers</li> <li>I/O comments can be stored as variable tal memory, or comment memory.</li> <li>Program checks are performed at the start instruction and instruction errors.</li> <li>CX-Programmer can also be used to check RUN output: The internal contacts will turn operating.</li> </ul>	er connected via the host link system by tions from the PLC. remote programming and remote net, DeviceNet <sup>™</sup> , or SYSMAC LINK nducted across network layers. ble files in the Memory Card, EM file of operation for items such as no END k programs. ON (close) while the CPU Unit is Battery Set: CJ1W-BAT01	battery model difference	

## Appendix 2. Differences in Instructions

The table below describes the differences in instructions between the CS1 Series and the CJ2 Series. Refer to the related manuals for details.

Instruction	Difference	CS1G/H	CJ2H	CJ2M
TST/TSTN	Operation of P_ER	OFF	No change	No change
	Operation of P_EQ	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
IL/ILC	Operation of P_ER	OFF	No change	No change
	Operation of P_EQ	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
Timer/ Counter	PV refresh mode setting	BCD/BIN select one of above	BCD/BIN combined possibly	BCD/BIN combined possibly
TIM/TIMX	Operation of P_EQ	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
TMHH/TMHHX	Timer accuracy	-0.01 to 0 seconds	When using the synchronous Unit control function, maximum 1 cycle time error	When the internal pulse control period is 1 ms, maximum 1 cycle time error
	When the cycle time is 100 ms	TIM0 to 2047: Normal operation TIM2048 to 4095: Not operating properly	When using the synchronous Unit control function, does not operate properly.	When the internal pulse control period is 1 ms, does not operate properly.
	If the instruction was specified in a task that was stopped, or jumped between JMP, CJMP, and CJPN-JME instructions and was not executed	TIM0 to 2047: Normal operation TIM2048 to 4095: Not operating properly	When using the synchronous Unit control function, does not operate properly.	When the internal pulse control period is 1 ms, does not operate properly.
CNT/CNTX	Operation of P_EQ	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
=/<>/	Operation of P_ER	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
CMP/CMPL	Operation of P_ER	OFF	No change	No change
CPS/CPSL	Operation of P_N	OFF	No change	No change
ZCP/ZCPL	Operation of ≥ (P_GE)	No change	Compare data ≥ Lower limit of range: ON, Others: OFF	Compare data ≥ Lower limit of range: ON, Others: OFF
	Operation of ≠ (P_NE)	No change	Compare data < Lower limit of range or Compare data > Upper limit of range: ON, Others: OFF	Compare data < Lower limit of range or Compare data > Upper limit of rang: ON, Others: OFF
	Operation of ≤ (P_LE)	No change	Compare data ≤ Upper limit of range: ON, Others: OFF	Compare data ≤ Upper limit of range: ON, Others: OFF
XCHG/XCGL	Operation of P_ER	OFF	No change	No change
	Operation of P_EQ	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
MOVR/MOVRW	Operation of P_ER	OFF	No change	No change
	Operation of P_EQ	OFF	No change	No change
	Operation of P_N	OFF	No change	No change
STC/CLC	Operation of P_ER	OFF	No change	No change
	Operation of P_EQ	OFF	No change	No change
	Operation of P N	OFF	No change	No change

Instruction	Difference	CS1G/H	CJ2H	CJ2M
MSKS/CLI	I/O Interrupts Operand (N)	CS1W-INT01: 0 or 1 C200HS-INT01: 0 to 3	CJ1W-INT01: 0 or 1 *Review required when using multiple C200HS.	CJ1W-INT01: 0 or 1 CJ2M built-in input: 100 to 107 *Review required when using multiple C200HS. *Review required when using CJ2M pulse I/O.
	I/O Interrupts Operand (C)	CS1W-INT01: #0000 to FFFF C200HS-INT01: #0000 to 00FF	CJ1W-INT01: #0000 to FFFF *Review required when using multiple C200HS.	CJ1W-INT01: #0000 to FFFF CJ2M built-in input: Refer to the manual. *Review required when using multiple C200HS. *Review required when using CJ2M pulse I/O.
	Scheduled Interrupts	Applicable	When using the synchronous Unit control function Not applicable	Applicable
MSKR	I/O Interrupts Operand (N)	CS1W-INT01: 0 or 1 C200HS-INT01: 0 to 3	CJ1W-INT01: 0 or 1 *Review required when using multiple C200HS.	CJ1W-INT01: 0 or 1 CJ2M built-in input: 100 to 107 *Review required when using multiple C200HS. *Review required when using CJ2M pulse I/O.
	I/O Interrupts Operand (C)	CS1W-INT01: #0000 to FFFF C200HS-INT01: #0000 to 00FF	CJ1W-INT01: #0000 to FFFF *Review required when using multiple C200HS.	CJ1W-INT01: #0000 to FFFF CJ2M built-in input: Refer to the manual. *Review required when using multiple C200HS. *Review required when using CJ2M pulse I/O.
PMCR/STUP SEND/SEND2 RECV/RECV2 CMND/CMND2	Operand	Inner boards can be specified.	Inner boards cannot be specified.	Inner boards cannot be specified.
FAL/FALS	Errors related to inner boards.	Displayed in Error Log.	Displayed as undefined errors.	Displayed as undefined errors.

## Appendix 3. Differences in I/O Memory

The table below describes the differences in unit area allocation between the CS1 Series and the CJ2 Series. Refer to the related manuals for details.

			CS1 Series	CJ2 Series	Remarks
С	I/O Area		CIO 0 to CIO 319	CIO 0000 to CIO 0159	
I					
O Area	C200H Area	DeviceNet	OUT Area: CIO 50 to CIO 99 IN Area: CIO 350 to CIO 399	Not supported.	The CJ2 Series does not support C200H DeviceNet Area.
	PLC Li	nk Area	CIO 247 to CIO 250 A442	Not supported.	
	CLK Data I	_ink Area	CIO 1000 to CIO 1199		
	Synchrono Refresh Ar		Not supported.	CIO 1200 to CIO 1295	For synchronous control between CJ2H Units
	CPU Bus L	Jnit Area	CIO 1500 to CIO 1899 (25 words ×	16 unit numbers)	
	Inner Board	d Area	CIO 1900 to CIO 1999	Not supported.	The CJ2 Series does not support Inner Board Area.
	Special I/O	Unit Area	CIO 2000 to CIO 2959 (10 words × 9	96 unit numbers)	
	SYSMAC BUS Area SYSMAC BUS I/O Terminal Area		CIO 3000 to CIO 3079	Not supported.	The CJ2 Series does not support SYSMAC BUS Area.
			CIO 3100 to CIO 3131	Not supported.	The CJ2 Series does not support SYSMAC BUS Area.
	Serial PLC Link Area		Not supported.	CIO 3100 to CIO 3189	For CJ2M serial PLC link
	CS/CJ-series DeviceNet Area		CIO 3200 to CIO 3799		
	Internal I/O	Area	Among CIO 0 to CIO 6143, unused area above		
Work			W000 to W511		
	g Area		H000 to H511		
Auxilia	ary Area	Read-only Area	A000 to A447	A000 to A447 A10000 to A11535	
		Read/Write Area	A448 to A959	A448 to A959 A960 to A1471	
TR Ar			TR0 to TR15		
DM Ai		0	D00000 to D32767		
	DM Area for Special I/O Unit DM Area for CPU Bus Unit EM Area		D20000 to D29599 (100 words x 96 unit numbers)		
			D30000 to D31599 (100 words x 16	,	
			E0_0 to EC_32767	(E00_0 to E18_32767)	
Timer	Area		T0 to T4095		
-	er Area		C0 to C4095		
	Task Flags		TK0 to TK31	TK0 to TK127	
	Index Registers		IR0 to IR15		
Data F	Data Registers		DR0 to DR15		

#### Auxiliary Area

The table below describes the differences in Auxiliary Area between the CS1 Series and the CJ2 Series. However, the differences in Auxiliary Area due to the changes in the specifications below are not described. Refer to the related manuals for details.

•Functions that are added in CJ2

- •Functions related to inner boards, peripheral ports, SYSMAC BUS, and PLC Link Units that are not supported by CJ2
- Differences in the number of Expansion Racks and the number of mounted Units

Read-only Area:			
Name	CS1 Series	CJ2 Series	Remarks
Timer/Counter PV Refresh Mode Flag	A099 A09915		The CJ2 Series does not support this function. Only one of BIN/BCD can be used for CS1 Series. Make the setting in the PLC Properties.
Peripheral Servicing Cycle Time	A268		The CJ2 Series does not support this function. The CJ2 Series does not have the Parallel Processing Mode.
Production Lot Number Information	A310 to 311 (binary digits) Example: Lot No.150701 A310 = 0701 A311 = 0015	A10000 to A10003 (BCD) Example: Lot No.150701 A10000 = 0000 A10001 = 0100 A10002 = 1507 A10003 = 0000	Differences exist. Words changing Different display method
Simple Backup Write Capacity	A397		The CJ2 Series does not support this function.
I/O Verification Error Flag (Non-fatal error)	A402 A40209		The CJ2 Series does not support this function. Because there are no base or no open slots.
Memory Card Startup Transfer Error Flag	A403 A40309	A401 A401.03 (Card Transfer Error Flag)	Specification changed.
Flash Memory Error Flag	A403 A40310	A315 A315.15 (Backup Memory Error Flag)	Specification changed.
Peripheral Servicing Too Long Flag	A405 A40515		The CJ2 Series does not support this function. Only CS1 Series has the Parallel Processing Mode.
PLC Setup Error Location	A406		The CJ2 Series does not support this function. Occurs only when using a Programming Console.
Interrupt Task Error, Task Number	A426 A42600 to A42611	A426 A426.00 to A426.11 (Duplicate Refresh Error Unit Number)	Name changed.
Interrupt Task Error Cause Flag	A426 A42615	A426 A426.15 (Duplicate Refresh Error Cause Flag)	Name changed.

#### ■Read-only Area: A000 to A447

■Read/Write Area: A448 to A959

No change.

CJ2 Series	Remarks
E00_0 to E18_32767	12 banks added for the
32,768 words per bank	CJ2 Series.
25 banks max. (0 to 18 hex)	The current bank is available.
<ul> <li>Banks D to 18 of the EM Area (E0D_0 to E18_32767) were added to EM Area in CJ2 CPU Units. These banks cannot be accessed by CPU Bus Units, Special I/O Units, HMIs, and Support Software that do not specifically support the CJ2 CPU Units.</li> <li>Only the following CPU Bus Units and Special I/O Units specifically support the CJ2 CPU Units.</li> <li>EtherNet/IP<sup>TM</sup> Units</li> <li>CJ1W-EIP21 and CJ1W-EIP21S</li> <li>Position Control Units</li> <li>CJ1W-NC214, CJ1W-NC234, CJ1W-NC281, CJ1W-NC414, CJ1W-NC434, CJ1W-NC481, and CJ1W-NC881</li> <li>Analog Input Unit</li> <li>CJ1W-AD042</li> <li>Analog Output Unit</li> <li>CJ1W-DA042V</li> <li>Serial Communications Units</li> <li>C 11W SCU22, C11W SCU22, and C 11W SCU22</li> </ul>	There is a restriction on Units for which additional banks can be used.
	<ul> <li>E00_0 to E18_32767</li> <li>32,768 words per bank</li> <li>25 banks max. (0 to 18 hex)</li> <li>Banks D to 18 of the EM Area (E0D_0 to E18_32767)</li> <li>were added to EM Area in CJ2 CPU Units. These</li> <li>banks cannot be accessed by CPU Bus Units, Special</li> <li>I/O Units, HMIs, and Support Software that do not</li> <li>specifically support the CJ2 CPU Units.</li> <li>Only the following CPU Bus Units and Special I/O Units</li> <li>specifically support the CJ2 CPU Units.</li> <li>• EtherNet/IP<sup>TM</sup> Units</li> <li>CJ1W-EIP21 and CJ1W-EIP21S</li> <li>• Position Control Units</li> <li>CJ1W-NC214, CJ1W-NC234, CJ1W-NC281,</li> <li>CJ1W-NC881</li> <li>• Analog Input Unit</li> <li>CJ1W-AD042</li> <li>• Analog Output Unit</li> <li>CJ1W-DA042V</li> </ul>

## Appendix 4. Comparison of PLC Setup Settings

The table below describes the differences in PLC settings between the CS1 Series and the CJ2 Series. Refer to the related manuals for details.

The following table gives the default settings in the PLC Setup. To change the settings, edit the PLC Setup with the CX-Programmer and then transfer the PLC Setup to the CPU Unit.

PLC Setup tab page	Setting items		А	pplicable mo	dels	Default	Remarks
1 10		C C	CS1	CJ2H	CJ2M		
	Startup Hold Settings	Forced Status Hold Bit	Yes	Yes	Yes	Not retained when power is turned ON.	
		IOM Hold Bit	Yes	Yes	Yes	Not retained when power is turned ON.	
Startup	Operating Mode	•	Yes	Yes	Yes	CS1: Programming Console CJ2: RUN mode	
	Execution Setting	Start running program before initializing Unit/Inner board recognition	Yes	Yes	Yes	Do not start.	
	Execute Process	Do not detect Low Battery	Yes	Yes	Yes	Detect. (A402.04)	
	Settings	CS1: Detect Interrupt Task Error CJ2: Detect Duplicated Refreshing Error	Yes	Yes	Yes	Detect. (A402.13)	
		Stop CPU on Instruction Error	Yes	Yes	Yes	Do not stop. (A295.08)	
CPU Unit Settings		FAL Error Log Registration	Yes	Yes	Yes	Register to error log.	
	Background Exe	Yes	Yes	Yes	Not executed in background.		
	Memory Allocati	Yes	Refer to <i>Default</i> and <i>Remarks</i> .	Refer to <i>Default</i> and <i>Remarks</i> .	PLC - Memory Allocation - EM Memory Settings	The setting method is different. Refer to <i>Appendix 4-1</i> for details.	
	Comms Instructions	Retry Counts	Yes	Yes	Yes	0 times (A58000 to A58003)	
	Settings in FB	Response Monitoring Time	Yes	Yes	Yes	2 s (A581)	
	Watch Cycle Tir		Yes	Yes	Yes	1,000 ms (1 s)	
	Constant Cycle Cycle Time)	e Time (Minimum	Yes	Yes	Yes	Not Constant.	
Timing/Queshases	Scheduled Inter	rupt Interval	Yes	Yes	Yes	10 ms	
Timing/Synchronous	Power Off Detect		Yes	Yes	Yes	0 ms	
Settings	Power Off Interr		Yes	Yes	Yes	Do not use.	
	Enable High Function	-speed Interrupt	No	Yes	No	Do not enable.	
	Use Synchronous Operation		No	Yes	No	Do not use.	
Special I/O Unit Cyclic Refreshing	Disable SIOU Cycle Refresh		Yes	Yes	Yes	Not disabled.	
Unit Settings	Input response Units	times for Basic I/O	Yes	Yes	Yes	8 ms	
Serial Port	Mode (Pin 5 on the DI CPU Unit must set the mode.)	P switch on the be OFF (default) to	Yes	Yes	Yes	Host Link (default)	

PLC Setup tab page	Setting items	A	pplicable mo	odels	Default	Remarks
		CS1	CJ2H	CJ2M		
Peripheral Port	Mode (When pin 4 on the DIP switch on the CS-series CPU Unit is ON.)	Yes	No	No	Host Link (default)	When communications functions are needed. Add a Serial Communications Unit.
	Execution Mode	Yes	Refer to Default and Remarks.	Refer to <i>Default</i> and <i>Remarks</i> .	CJ2 supports only Normal Mode.	Parallel Processing Mode cannot be set. Since the operating status will be changed, confirm that there are no problems with the system after replacement.
Peripheral Service	Set Time to All Events	Yes	Yes	Yes	4% of cycle time for CS and 10% of cycle time for CJ2.	
	Peripheral Servicing Priority Mode	Yes	No	No	Do not use.	CJ2 does not support Peripheral Servicing Priority Mode. Since the operating status will be changed, confirm that there are no problems with the system after replacement.
FINS Protection	Settings for FINS write protection via network	Yes	Yes	Yes	FINS write protection disabled.	
I/O Module	Function allocations and detailed settings for Pulse I/O Modules.	No	No	Yes		

#### **CPU Unit Settings**

#### CS1 Series

The CS1 Series supports the Memory Allocation Settings.

The EM File Memory Enabled can be selected.

If the EM File Memory Enabled is selected, the specified EM bank and all subsequent banks will be used as file

#### memory.

PLC Settings - NewPLC2				$\times$
File Options Help				
Startup CPU Settings   Timings   SIOU Refresh   Uni	t Settings Host Link Port Peripheral Port P	eripheral	Service	••
Execute Process Do not detect Low Battery Control Detect Duplicated Refreshing Error Stop CPU on Instruction Error Don't register FAL to error log	- Memory Allocation - EM File Setting enabled  . EM Start File No			
Background Execution Table data process instructions String data process instructions Data shift process instructions Com Port number	Comms Instructions Settings in FB Retry Counts Response Timeout (default 2s) Comms Instructions in FB DeviceNet Comms Instructions in FB	0	+ + + + + 0.1s + + 0.1s	

#### CJ2 Series

le Options Help Startup Settings Timings SIOU Refresh Unit	Settings   Serial Port   Peripheral Service   FINS P	Protection   I/O Module
Execute Process Do not detect Low Battery Detect Duplicated Refreshing Error Stop CPU on Instruction Error Don't register FAL to error log		
Background Execution Table data process instructions String data process instructions Data shift process instructions Com Port number	Comms Instructions Settings in FB Retry Counts Response Timeout (default 2s) Comms Instructions in FB DeviceNet Comms Instructions in FB	0 + + +0.1s 0 + +0.1s 0 + +0.1s

The EM file memory setting of the CJ Series has a separate setting menu from the PLC Setup.

1. Select PLC - Memory Allocate - EM Memory Settings from the CX-Programmer.

The EM Memory Settings dialog box is displayed.

2. Select the File memory check box and set EM Start File No.

EM memory settings		$\times$
EM Memory allocation		
🔽 Use EM banks as tra	ce/file memory	area
○ Trace memory	M Start File No.	E2_ 💌
EM Force On/Off		
Enables the Force Or	/Off setting of	EM banks
When this setting is ena cannot be used.	abled, the current	t EM bank
EI	M Start File No.	<b>Y</b>
	OK	Cancel

#### Appendix 5. Table of Input/Output Units

#### Input Units

- (1) Since the terminal block and connector change, it is necessary to change the wiring. Rewire the Units or use a terminal block conversion adapter to connect them to the CJ Input Unit by referring to how to replace the series.
- (2) If a different type of connector is used, change the wiring.
- (3) If the input section specifications differ, make sure that the system operates correctly.
- (4) If the number of circuits increases, rewire the terminals to each common terminal.
- (5) If internal current consumption is different, make sure the power supply capacity is large enough.
- (6) Some specifications may differ even the basic functions are compatible. Refer to the related manuals for details.
- (7) Refer to the Replacement Guide From C200HX/HG/HE to CJ2 (Cat. No. P075) for details on C200H-series Input Units.

[DC Input Units]	Alternative C   Sarias	Description	Difference	Llow to replace
CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-ID211 24 VDC, 7 mA, 16 inputs, terminal block	CJ1W-ID211 24 VDC, 7 mA, 16 inputs, terminal block	DC Input Unit with terminal block for 16 inputs.	<ol> <li>Terminal block</li> <li>Number of circuits (8 points/common, 2 circuits → 16 points/common, 1 circuit)</li> <li>Internal current consumption (5 VDC: 100 mA → 80 mA)</li> </ol>	<ol> <li>Rewire to the terminal block.</li> <li>Use a conversion adapter (CJ1W-3)</li> </ol>
CS1W-ID231 24 VDC, 6 mA, 32 inputs, Fujitsu connector	CJ1W-ID231 24 VDC, 4.7 mA, 32 inputs, Fujitsu connector	DC Input Unit with connector for 32 inputs.	<ol> <li>Input section specification         <ul> <li>Input impedance (3.9 kΩ → 5.6 kΩ)</li> <li>ON voltage (15.4 VDC → 19.0 VDC)</li> </ul> </li> <li>Internal current consumption (5 VDC: 150 mA → 90 mA)</li> </ol>	Use the connector wiring as is.
	CJ1W-ID232 24 VDC, 4.7 mA, 32 inputs, MIL connector		1) Connector (Fujitsu connector $\rightarrow$ MIL connector) 2) Input section specification • Input impedance (3.9 k $\Omega \rightarrow 5.6 k\Omega$ ) • ON voltage (15.4 VDC $\rightarrow$ 19.0 VDC) 3) Internal current consumption (5 VDC: 150 mA $\rightarrow$ 90 mA)	Change the connector. Rewire.
CS1W-ID261 24 VDC, 6 mA, 64 inputs, Fujitsu connector	CJ1W-ID261 24 VDC, 4.7 mA, 64 inputs, Fujitsu connector	DC Input Unit with connector for 64 inputs.	<ol> <li>Input section specification         <ul> <li>Input impedance (3.9 kΩ → 5.6 kΩ)</li> <li>ON voltage (15.4 VDC → 19.0 VDC)</li> </ul> </li> <li>Internal current consumption (5 VDC: 150 mA → 90 mA)</li> </ol>	Use the connector wiring as is.
	CJ1W-ID262 24 VDC, 4.7 mA, 64 inputs, MIL connector		1) Connector (Fujitsu connector $\rightarrow$ MIL connector) 2) Input section specification • Input impedance (3.9 k $\Omega \rightarrow 5.6 k\Omega$ ) • ON voltage (15.4 VDC $\rightarrow$ 19.0 VDC) 3) Internal current consumption (5 VDC: 150 mA $\rightarrow$ 90 mA)	Change the connector. Rewire.
CS1W-ID291 24 VDC, 5 mA, 96 inputs, Fujitsu connector	CJ1W-ID261 × 1 Unit + CJ1W-ID231 × 1 Unit 24 VDC, 4.7 mA, 64 inputs, Fujitsu connector	DC Input Unit with connector for 96 inputs.	1) Number of Units: 1 Unit $\rightarrow$ 2 Units 2) Connector (Fujitsu connector 56 pins × 2 $\rightarrow$ 40 pins × 3) 3) Number of circuits (16 points/common, 6 circuits $\rightarrow$ 16 points/common, 4 circuits + 16 points/common, 2 circuits) 4) Input section specification $\cdot$ Input impedance (4.7 k $\Omega \rightarrow$ 5.6 k $\Omega$ ) $\cdot$ ON voltage (17 VDC $\rightarrow$ 19.0 VDC) 5) Internal current consumption (5 VDC: 200 mA $\rightarrow$ 90 mA $\times$ 2)	Change the connector. Rewire.
	CJ1W-ID262 × 1 Unit + CJ1W-ID232 × 1 Unit 24 VDC, 4.7 mA, 64 inputs, MIL connector		1) Number of Units: 1 Unit $\rightarrow$ 2 Units 2) Connector (Fujitsu connector 56 pins × 2 $\rightarrow$ MIL connector 40 pins × 3) 3) Number of circuits (16 points/common, 6 circuits $\rightarrow$ 16 points/common, 4 circuits + 16 points/common, 2 circuits) 4) Input section specification · Input impedance (4.7 k $\Omega \rightarrow$ 5.6 k $\Omega$ ) · ON voltage (17 VDC $\rightarrow$ 19.0 VDC) 5) Internal current consumption (5 VDC: 200 mA $\rightarrow$ 90 mA × 2)	Change the connector. Rewire.

[DC Input Units]

CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-IA111 100 to 120 VAC/VDC, 16 inputs, terminal block	CJ1W-IA111 100 to 120 VAC, 16 inputs, terminal block	100 VAC Input Unit with terminal block for 16 inputs.	1) Terminal block 2) DC input voltage (100 to 120 VDC $\rightarrow$ DC input not possible) 3) Number of circuits (8 points/common, 2 circuits $\rightarrow$ 16 points/common, 1 circuit) 4) Input section specification • Input impedance (10 k $\Omega$ /50 Hz $\rightarrow$ 14.5 k $\Omega$ /50 Hz) • ON voltage (65 V $\rightarrow$ 70 V) • OFF voltage (20 V $\rightarrow$ 20 V) 4) Internal current consumption (5 VDC, 110 mA $\rightarrow$ 90 mA)	1) Rewire to the terminal block. 2) Use a conversion adapter (CJ1W- AT611).
CS1W-IA211	CJ1W-IA201 × 2 Units	200 VAC Input	1) Number of Units: 1 Unit $\rightarrow$ 2 Units	Rewire to the
200 to 240 VAC,	200 to 240 VAC,	Unit with	2) Terminal block	terminal block.
16 inputs,	8 inputs × 2,	terminal block for	3) Input points (16 points $\rightarrow$ 8 points × 2 Units)	
terminal block	terminal block	16 inputs.	4) Internal current consumption (5 VDC, 110 $mA \rightarrow 80 mA \times 2$ Units)	

[Interrupt Input Units]				
CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-INT01	CJ1W-INT01	Interrupt Input Unit	1) Terminal block	1) Rewire to the
16 inputs, 24 VDC, 7 mA, ON response time: 0.1 ms, OFF response time: 0.5 m, terminal block	16 inputs, 24 VDC, 7 mA, ON response time: 0.05 ms, OFF response time: 0.5 m, terminal block	with terminal block for 16 inputs.	<ul> <li>2) Number of circuits</li> <li>Input circuit (8 points/common, 2 circuits → 16 points/common, 1 circuit)</li> <li>3) Input section specification</li> <li>ON response time (0.1 ms → 0.05 ms)</li> </ul>	terminal block. 2) Use a conversion adapter (CJ1W- AT611).

[Quick-response Input L CS Series	Inits] Alternative CJ Series	Description	Difference	How to replace
CS1W-IDP01	CJ1W-IDP01	Quick-response	1) Terminal block	1) Rewire to the
16 inputs, 24 VDC, 7 mA, ON response time: 0.1 ms, OFF response time: 0.5 m, terminal block	16 inputs, 24 VDC, 7 mA, ON response time: 0.05 ms, OFF response time: 0.5 m, terminal block	Input Unit with terminal block for 16 inputs.	<ul> <li>2) Number of circuits</li> <li>Input circuit (8 points/common, 2 circuits → 16 points/common, 1 circuit)</li> <li>3) Input section specification</li> <li>ON response time (0.1 ms → 0.05 ms)</li> </ul>	terminal block. 2) Use a conversion adapter (CJ1W- AT611).

#### Output Units

- (1) Since the terminal block and connector change, it is necessary to change the wiring for some models. Rewire the Units or use a terminal block conversion adapter to connect them to the CJ Input Unit by referring to how to replace the series.
- (2) If a different type of connector is used, change the wiring.
- (3) If the number of circuits increases, rewire the terminals to each common terminal.
- (4) If the output section specifications differ, make sure that the system operates correctly.
- (5) The relay lifetime may vary depending on usage when a different relay is used. Refer to A-1-3 Precautions on Contact Output Unit in the CJ-series CJ2 CPU Unit Hardware User's Manual (Cat. No. W472) for details.
- (6) If internal current consumption is different, make sure the power supply capacity is large enough.
- (7) If the voltage and current consumption of the external power supply differ, make sure the power supply capacity is large enough.
- (8) Some specifications may differ even the basic functions are compatible. Refer to the related manuals for details.
- (9) Refer to the Replacement Guide From C200HX/HG/HE to CJ2 (Cat. No. P075) for details on C200H-series Output Units.

#### [Relay Output Units]

rtelay o'atput o'ritoj				
CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-OC201	CJ1W-OC201	Relay Output Unit	1) Terminal block	1) Rewire to the
8 outputs (independent contacts), 250 VAC/24 VDC: 2 A, 120 VDC/0.1 A, terminal block	8 outputs (independent contacts), 250 VAC/24 VDC: 2 A, terminal block	with terminal block for 8 outputs.	<ul> <li>2) 120 VDC input (Possible → Not possible)</li> <li>3) Output section specification</li> <li>4) Internal current consumption (5 VDC: 100 mA → 90 mA)</li> </ul>	terminal block. 2) Use a conversion adapter (CJ1W- AT601).
CS1W-OC211	CJ1W-OC211	Relay Output Unit	1) Terminal block	1) Rewire to the
16 outputs, 250 VAC/24 VDC: 2 A, 120 VDC/0.1 A	16 outputs, 250 VAC/24 VDC: 2 A,	with terminal block for 16 outputs.	<ul> <li>2) 120 VDC input (Possible → Not possible)</li> <li>3) Number of circuits (8 points/common, 2 circuits → 16 points/common, 1 circuit)</li> <li>4) Internal current consumption (5 VDC: 130 mA → 110 mA)</li> </ul>	terminal block. 2) Use a conversion adapter (CJ1W- AT611).

#### [Transistor Output Units]

[ I ransistor Output Units				
CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-OD211 12 to 24 VDC, 0.5 A, terminal block, 16 sinking outputs	CJ1W-OD211 12 to 24 VDC, 0.5 A, terminal block, 16 sinking outputs, HAT	Transistor Output Unit with terminal block for 16 sinking outputs.	<ol> <li>Terminal block</li> <li>Number of circuits (8 points/common, 2 circuits →16 points/common, 1 circuit)</li> <li>Output section specification</li> <li>Output capacity (0.5 A/point, 8 A/Unit → 0.5 A/point, 5 A/Unit)</li> <li>ON response time (0.5 ms → 0.1 ms)</li> <li>OFF response time (1 ms → 0.8 ms)</li> <li>Internal current consumption (5 VDC: 170 mA → 100 mA)</li> </ol>	1) Rewire to the terminal block. 2) Use a conversion adapter (CJ1W- AT612).
CS1W-OD212 24 VDC, 0.5 A, terminal block, load short circuit protection (with alarm output), 16 sourcing outputs	CJ1W-OD212 12 to 24 VDC, 0.5 A, terminal block, load short circuit protection, 16 sourcing outputs	Transistor Output Unit with terminal block for 16 sourcing outputs.	1) Terminal block 2) Output section specification $\cdot$ ON response time (0.5 ms $\rightarrow$ 0.1 ms) $\cdot$ OFF response time (1 ms $\rightarrow$ 0.8 ms) 3) Internal current consumption (5 VDC: 170 mA $\rightarrow$ 100 mA)	1) Rewire to the terminal block. 2) Use a conversion adapter (CJ1W- AT612).
CS1W-OD231 12 to 24 VDC, 0.5 A, 32 sinking outputs, Fujitsu connector	CJ1W-OD231 12 to 24 VDC, 0.5 A, 32 sinking outputs, Fujitsu connector, SH8K	Transistor Output Unit with connector for 32 sinking outputs.	<ul> <li>1) Output section specification         <ul> <li>Output capacity (0.5 A/point, 5 A/Unit → 0.5 A/point, 4 A/Unit)</li> <li>ON response time (0.5 ms → 0.1 ms)</li> <li>OFF response time (1 ms → 0.8 ms)</li> <li>2) Internal current consumption (5 VDC: 270 mA → 140 mA)</li> </ul> </li> </ul>	Use the connector wiring as is.
	CJ1W-OD233		<ol> <li>Connector (Fujitsu connector → MIL connector)</li> <li>Output section specification</li> </ol>	Change the connector. Rewire.

CS Series	Alternative CJ Series	Description	Difference	How to replace
	12 to 24 VDC, 0.5 A, 32 sinking outputs, MIL connector		•Output capacity (0.5 A/point, 5 A/Unit $\rightarrow$ 0.5 A/point, 4 A/Unit) •ON response time (0.5 ms $\rightarrow$ 0.1 ms) •OFF response time (1 ms $\rightarrow$ 0.8 ms) 3) Internal current consumption (5 VDC: 270 mA $\rightarrow$ 140 mA)	
CS1W-OD232 24 VDC, 0.5 A, load short circuit protection, 32 sourcing outputs, Fujitsu connector	CJ1W-OD232 24 VDC, 0.5 A, load short circuit protection, 32 sourcing outputs, MIL connector	Transistor Output Unit with connector for 32 sourcing outputs.	1) Connector (Fujitsu connector → MIL connector) 2) Output section specification •Output capacity (0.5 A/point, 5 A/Unit → 0.5 A/point, 4 A/Unit) •ON response time (0.5 ms → 0.1 ms) •OFF response time (1 ms → 0.8 ms) 3) Internal current consumption (5 VDC: 270 mA → 140 mA)	Change the connector. Rewire.

Transistor Output Uni CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-OD261 12 to 24 VDC, 0.3 A, 64 sinking outputs, Fujitsu connector	CJ1W-OD261 12 to 24 VDC, 0.3 A, 64 sinking outputs, Fujitsu connector CJ1W-OD263 12 to 24 VDC, 0.3 A, 64 sinking outputs, MIL connector	Transistor Output Unit with connector for 64 sinking outputs.	1) Output section specification •Residual voltage (1.5 V → 1.5 V) •ON response time (0.5 ms → 0.1 ms) •OFF response time (1 ms → 0.8 ms) 2) Internal current consumption (5 VDC: 390 mA → 170 mA) 1) Connector (Fujitsu connector → MIL connector) 2) Output section specification •ON response time (0.5 ms → 0.1 ms) •OFF response time (1 ms → 0.8 ms)	Use the connector wiring as is. Change the connector. Rewire.
CS1W-OD262 24 VDC, 0.3 A, 64 sourcing outputs, Fujitsu connector	CJ1W-OD262 24 VDC, 0.3 A, 64 sourcing outputs, MIL connector	Transistor Output Unit with connector for 64 sourcing outputs.	<ul> <li>3) Internal current consumption (5 VDC: 390 mA → 170 mA)</li> <li>1) Connector (Fujitsu connector → MIL connector)</li> <li>2) Output section specification</li> <li>•ON response time (0.5 ms → 0.1 ms)</li> <li>•OFF response time (1 ms → 0.8 ms)</li> <li>3) Internal current consumption (5 VDC:</li> </ul>	Change the connector. Rewire.
CS1W-OD291	CJ1W-OD261 + CJ1W-OD231	Transistor Output Unit	$390 \text{ mA} \rightarrow 170 \text{ mA}$ ) 1) Number of Units: 1 Unit → 2 Units 2) Connector (Fujitsu connector 56 pins x	Change the connector. Rewire.
12 to 24 VDC, 0.3 A, 96 sinking outputs, Fujitsu connector	12 to 24 VDC, 0.3 A, 64 sinking outputs + 32 sinking outputs, Fujitsu connector CJ1W-OD263 + CJ1W-OD233 12 to 24 VDC, 0.3 A, 64 sinking outputs + 32 sinking outputs, MIL connector	with connector for 96 sinking outputs.	2 → 40 pins × 3) 3) Number of circuits (16 points/common, 6 circuits → 16 points/common, 4 circuits + 2 circuits) 4) Output section specification · Output capacity (0.1 A/point, 7.2 A/Unit → 0.3 A/point, 6.4 A/Unit) · ON response time (0.5 ms → 0.1 ms) · OFF response time (1 ms → 0.8 ms) 5) Internal current consumption (5 VDC: 480 mA → 170 mA) 1) Number of Units: 1 Unit → 2 Units 2) Connector (Fujitsu connector → MIL connector) 3) Number of circuits (16 points/common, 6 circuits → 16 points/common, 4 circuits + 2 circuits) 4) Output section specification · Output capacity (0.1 A/point, 7.2 A/Unit → 0.3 A/point, 6.4 A/Unit) · ON response time (0.5 ms → 0.1 ms) · OFF response time (1 ms → 0.8 ms) 5) Internal current consumption (5 VDC: 480 mA → 170 mA)	Change the connector. Rewire.
CS1W-OD292 12 to 24 VDC, 0.1 A, 96 sourcing outputs, Fujitsu connector	CJ1W-OD232 24 VDC, 0.5 A, 32 sourcing outputs, with fuse, MIL connector	Transistor Output Unit with connector for 96 sourcing outputs.	1) Number of Units: 1 Unit $\rightarrow$ 3 Units 2) Connector (Fujitsu connector $\rightarrow$ MIL connector) 3) Number of circuits • Output circuit (16 points/common, 3 circuits × 2CN $\rightarrow$ 16 points/common, 2 circuits × 3) 4) Output section specification • Output capacity (0.1 A/point, 7.2 A/Unit $\rightarrow$ 0.5 A/point, 4 A/Unit × 3) 5) Internal current consumption (10.2 to 26.4 VDC: 100 mA $\rightarrow$ 70 mA x 3)	Change the connector. Rewire.

CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-OA201	CJ1W-OA201	Triac Output Unit	1) Terminal block	1) Rewire to the
250 VAC, 1.2 A, terminal block, 8 outputs,	250 VAC, 0.6 A, terminal block, 8 outputs,	with terminal block for 8 outputs.	2) Input section specification • Maximum current (1.2 A, 4.8 A/Unit $\rightarrow$ 0.6 A, 2.4 A/Unit) • Maximum inrush current (10 A: 100 ms, 20 A: 10 ms $\rightarrow$ 10 A: 15 ms) • Minimum switching capacity (10 VAC: 100 mA, 24 VAC: 50 mA, 100 VAC: 10 mA $\rightarrow$ 75 VAC: 50 mA) 3) Internal current consumption (5 VDC: 230 mA $\rightarrow$ 220 mA) 4) Fuse detection (Supported $\rightarrow$ Not supported)	términal block. 2) Use a conversion adapter (CJ1W- AT602).
CS1W-OA211	CJ1W-OA201 × 2 Units	Triac Output Unit with terminal block	<ol> <li>Number of Units (1 Unit → 2 Units)</li> <li>Terminal block</li> </ol>	Rewire to the terminal block.
250 VAC, 0.5 A, 16 outputs, terminal block	250 VAC, 0.6 A, terminal block, 8 analog outputs × 2,	for 16 outputs.	<ul> <li>3) Number of circuits (8 points/common, 1 circuit → 8 points/common, 1 circuit × 2 Units)</li> <li>4) Input section specification</li> <li>Maximum current (0.5 A, 4 A/Unit → 0.6 A, 2.4 A/Unit)</li> <li>Maximum inrush current (15 A: 10 ms → 10 A: 15 ms)</li> <li>5) Internal current consumption (5 VDC: 406 mA → 220 mA × 2 Units)</li> </ul>	

#### Input/Output Units

- (1) The CJ Series has following I/O Units: CJ1W-MD23 , CJ1W-MD26 , and CJ1W-MD563.
- (2) Some specifications may differ even the basic functions are compatible. Refer to the related manuals for details.
- (3) Refer to the *Replacement Guide From C200HX/HG/HE to CJ2* (Cat. No. P075) for details on C200H-series Input/Output Units.

DC Input/Transistor O				
CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-MD261 24 VDC/32 inputs	CJ1W-MD261 24 VDC/32 inputs	DC Input/Transistor	1) Input section specification • Input impedance (3.9 k $\Omega \rightarrow 5.6$ k $\Omega$ )	Use the connector wiring as is.
(6 mA), 12 to 24 VDC/32 outputs (0.3 A, sinking), Fujitsu connector	(4.6 mA), 12 to 24 VDC/32 outputs (0.3 A, sinking), Fujitsu connector	Output Unit with connector for 32 inputs and 32 outputs.	<ul> <li>ON voltage (15.4 V → 19 V)</li> <li>2) Internal current consumption (5 VDC: 270 mA → 140 mA)</li> </ul>	
	CJ1W-MD263 24 VDC/32 inputs (4.6 mA), 12 to 24 VDC/32 outputs (0.3 A, sinking), MIL connector	-	1) Connector (Fujitsu connector $\rightarrow$ MIL connector) 2) Input section specification $\cdot$ Input impedance (3.9 k $\Omega \rightarrow$ 5.6 k $\Omega$ ) $\cdot$ ON voltage (15.4 V $\rightarrow$ 19 V) 3) Internal current consumption (5 VDC: 270 mA $\rightarrow$ 140 mA)	Change the connector. Rewire.
CS1W-MD262 24 VDC/32 inputs (6 mA), 12 to 24 VDC/32 outputs (0.3 A, sourcing), Fujitsu connector	CJ1W-MD232 × 2 Units 24 VDC/16 inputs x 2 (7 mA), 12 to 24 VDC/16 outputs x 2 (0.3 A, sourcing), MIL connector	DC Input/Transistor Output Unit with connector for 32 inputs and 32 outputs.	1) Number of Units (1 Unit $\rightarrow$ 2 Units) 2) Connector (Fujitsu connector $\rightarrow$ MIL connector) 3) Number of circuits $\cdot$ Output circuit (16 points/common, 2 circuits $\rightarrow$ 16 points/common, 1 circuit × 2) $\cdot$ Input circuit (16 points/common, 2 circuits $\rightarrow$ 16 points/common, 1 circuit × 2) 4) Output section specification $\cdot$ Output capacity (0.3 A/point, 3.2 A/Unit $\rightarrow$ 0.5 A/point, 2A/Unit) 5) Input section specification $\cdot$ Input impedance (3.9 k $\Omega \rightarrow$ 3.3 k $\Omega$ ) $\cdot$ ON voltage (15.4 V $\rightarrow$ 14.4 V) 6) Internal current consumption (5 VDC: 270 mA $\rightarrow$ 130mA x 2)	Change the connector. Rewire.
CS1W-MD291 24 VDC/48 inputs (5 mA), 12 to 24 VDC/48 outputs (0.1 A, sinking), Fujitsu connector, with fuse	CJ1W-MD261 + CJ1W-MD231 24 VDC/32 inputs (6 mA) + 24 VDC/16 inputs (7 mA), 12 to 24 VDC/32 outputs + 16 outputs (0.5 A, sinking), Fujitsu connector	DC Input/Transistor Output Unit with connector for 48 inputs and 48 outputs.	1) Number of Units (1 Unit $\rightarrow$ 2 Units) 2) Connector (Fujitsu connector 56 pins × 2 $\rightarrow$ 40 pins × 3) 3) Number of circuits · Output circuit (16 points/common, 3 circuits) $\rightarrow$ 16 points/common, 2 circuits + 1 circuit) · Input circuit (16 points/common, 3 circuits $\rightarrow$ 16 points/common, 2 circuits + 1 circuit) 4) Output section specification · Output capacity (0.1 A/point, 3.6 A/Unit $\rightarrow$ 0.3 A/point, 3.2 A/Unit + 0.5 A/point, 2 A/Unit) 5) Input section specification · Input impedance (4.7 k $\Omega \rightarrow$ 5.6 k $\Omega$ , 3.3 k $\Omega$ ) · ON voltage (17 V $\rightarrow$ 19V, 14.4 V) 6) Internal current consumption (5 VDC: 350 mA $\rightarrow$ 140 mA, 130 mA)	Change the connector. Rewire.
	CJ1W-MD263 + CJ1W-MD233		1) Number of Units (1 Unit $\rightarrow$ 2 Units) 2) Connector (Fujitsu connector $\rightarrow$ MIL	Change the connector.

[DC Input/Transistor Output Units]

CS Series	Alternative CJ Series	Description	Difference	How to replace
	24 VDC/32 inputs (6 mA) + 24 VDC/16 inputs (7 mA), 12 to 24 VDC/32 outputs (0.5 A) + 12 to 24 VDC/16 outputs (0.5 A, sinking), MIL connector		connector) 3) Number of circuits • Output circuit (16 points/common, 3 circuits) $\rightarrow$ 16 points/common, 2 circuits + 1 circuit) • Input circuit (16 points/common, 3 circuits $\rightarrow$ 16 points/common, 2 circuits + 1 circuit) 4) Output section specification • Output capacity (0.1 A/point, 3.6 A/Unit $\rightarrow$ 0.3 A/point, 3.2 A/Unit + 0.5 A/point, 2 A/Unit) 5) Input section specification • Input impedance (4.7 k $\Omega \rightarrow$ 5.6 k $\Omega$ , 3.3 k $\Omega$ ) • ON voltage (17 V $\rightarrow$ 19V, 14.4 V) 6) Internal current consumption (5 VDC: 350 mA $\rightarrow$ 140 mA, 130 mA)	Rewire.
CS1W-MD292 24 VDC/48 inputs (5 mA), 12 to 24 VDC/48 outputs (0.1 A, sourcing), Fujitsu connector	CJ1W-MD232 x 3 Units 24 VDC/16 inputs x 3 (7 mA), 12 to 24 VDC/16 outputs x 3 (0.3 A, sourcing), MIL connector	DC Input/Transistor Output Unit with connector for 48 inputs and 48 outputs.	1) Number of Units (1 Unit $\rightarrow$ 3 Units) 2) Connector (Fujitsu connector $\rightarrow$ MIL connector) 3) Number of circuits • Output circuit (16 points/common, 3 circuits) $\rightarrow$ 16 points/common, 2 circuits x 3) • Input circuit (16 points/common, 3 circuits $\rightarrow$ 16 points/common, 2 circuits x 3) 4) Output section specification • Output capacity (0.1 A/point, 3.6 A/Unit $\rightarrow$ 0.5 A/point, 2 A/Unit x 3) 5) Input section specification • Input specification • Input section specification • Input	Change the connector. Rewire.

CS Series	Alternative CJ Series	Description	Difference	How to replace
CS1W-MD561	CJ1W-MD563	MIL connector for	<ol> <li>Connector (Fujitsu connector → MIL</li> </ol>	Change the connector.
32 inputs 5 VDC, 3.5 mA 32 outputs, 5 VDC, 35 mA Fujitsu connector	32 inputs 5 VDC, 3.5 mA 32 outputs, 5 VDC, 35 mA sinking MIL connector	32 inputs and 32 outputs.	connector) 2) Internal current consumption (5 VDC: 270 mA → 190 mA)	Rewire.

CS Series	Alternative CJ Series	Remarks
CS1W-B7A12 32 inputs CS1W-B7A02 32 outputs	CJ1W-B7A14 64 inputs CJ1W-B7A04 64 outputs	CJ-series B7A Interface Units are discontinued. Different in the number of I/O points and the terminal block. The transmission delay time of 19.2 ms typical for standard and 3 ms typical for high- speed remains the same.
CS1W-B7A21 16 inputs, 16 outputs	CJ1W-B7A22 32 inputs, 32 outputs	
CS1W-B7A22 32 inputs, 32 outputs		

- Special I/O Units and CPU Bus Units
  - (1) Since the terminal block is different, it is necessary to change the wiring. Some Analog I/O Units can be used with a terminal block conversion adapter. Rewire the Units or use a terminal block conversion adapter to connect them to the CJ Input Unit by referring to how to replace the series.
  - (2) If a different type of connector is used, change the wiring.
  - (3) If the output section specifications differ, make sure that the system operates correctly.
  - (4) If internal current consumption is different, make sure the power supply capacity is large enough.
  - (5) Some specifications may differ even the basic functions are compatible. Refer to the related manuals for details.
  - (6) Refer to the Replacement Guide From C200HX/HG/HE to CJ2 (Cat. No. P075) for details on C200H-series Special I/O Units.

Communications Units] CS Series	CJ Series	Remarks
[Serial Communications Unit]	[Serial Communications	Inner boards cannot be connected to the CJ-series CPU Units.
CS1W-SCU21-V1	Unit]	Use Serial Communications Units instead.
CS1W-SCU31-V1	CJ1W-SCU22	The same RS-232C cable can be used. For RS-422A/485, rewiring
	CJ1W-SCU32	from the connector to the terminal block is necessary.
[Serial Communications Board]	CJ1W-SCU42	
CS1W-SCB21-V1		Refer to Appendix 6. Comparison of Special I/O Units in the
CS1W-SCB41-V1	The following models are	CS/CJ-series Serial Communications Units Operation Manual
	discontinued.	(Cat. No. W336) for details.
	CJ1W-SCU21-V1	
	CJ1W-SCU31-V1	
	CJ1W-SCU41-V1	
[Ethernet]	[EtherNet/IP]	The same Ethernet cable can be used.
CS1W-ETN21	CJ1W-EIP21S	
		Refer to the CS/CJ-series EtherNet/IP Units Operation Manual
[EtherNet/IP]	The following models are	(Cat. No. W465) for details.
CS1W-EIP21	discontinued.	Refer to the CS/CJ-series Replacement Guide From EtherNet/IP
	[Ethernet]	and Ethernet Units to Enhanced Security Units (Cat. No. P152) for
	CJ1W-ETN21	replacement of CS1W-EIP21/ETN21 with EIP21S.
	[EtherNet/IP]	
	CJ1W-EIP21	
[Controller Link Unit]	[Controller Link Unit]	Since the CJ Series does not support the optical ring method, use
Wired: CS1W-CLK23	Wired: CJ1W-CLK23	the wired method instead. The same cable for the wired type can
Optical ring: CS1W-CLK13	Optical ring: No replacement	be used.
Optical ring: CS1W-CLK53	model	
		Refer to the Controller Link Units Operation Manual (Cat. No.
		W309) for details.
[SYSMAC LINK Unit]	[SYSMAC LINK Unit]	The CJ Series does not provide a SYSMAC LINK Unit. Use a
Coaxial: CS1W-SLK21	No replacement model	Controller Link Unit or EtherNet/IP Unit instead.
Optical: CS1W-SLK11	No replacement model	Controller Link Onit of Ethernet/F Onit Instead.
[FL-net]	[FL-net]	The same Ethernet cable can be used.
CS1W-FLN22	CJ1W-FLN22	The same Ethemer cable can be used.
		Refer to the CS/CJ-series FL-net Units Operation Manual (Cat. No.
		W440) for details.
[DeviceNet <sup>™</sup> ]	[DeviceNet <sup>™</sup> ]	The same DeviceNet cable can be used.
CS1W-DRM21(-V1)	CJ1W-DRM21	The same Devicemet capie can be used.
OO I VV - DRIVIZ I (-VI)		Refer to the CS/CJ-series DeviceNet Units Operation Manual (Cat.
[CompoNet <sup>TM</sup> ]	[CompoNet <sup>TM</sup> ]	No. W380) for details. The same CompoNet cable can be used.
[CompoNet <sup>™</sup> ]	[CompoNet <sup>™</sup> ]	The same Componet caple can be used.
CS1W-CRM21	CJ1W-CRM21	Defende the OO/O Leader Opener Met Meeter Unit. Open
		Refer to the CS/CJ-series CompoNet Master Units Operation
		Manual (Cat. No. W456) for details.

[Process	I/O	Units]

CS Series	CJ Series	Remarks
[Isolated Thermocouple Input	[Isolated Thermocouple	When you replace with CJ1W-PTS, check the input points,
Unit]	Input Unit]	corresponding thermocouple, and signal range.
CS1W-PTS11	CJ1W-PH41U	
CS1W-PTS51	CJ1W-PTS51	Refer to Appendix 6. Comparison of Special I/O Units in the
CS1W-PTS55	CJ1W-PTS51 × 2	CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)
CS1W-PTS01-V1	CJ1W-PTS15	for details.
[Isolated Resistance	[Isolated Resistance	When you replace with CJ1W-PTS, check the input points,
Thermometer Input Unit]	Thermometer Input Unit]	corresponding thermocouple, and signal range.
CS1W-PTS12	CJ1W-PH41U	
CS1W-PTS52	CJ1W-PTS52	Refer to Appendix 6. Comparison of Special I/O Units in the
CS1W-PTS56	CJ1W-PTS52 × 2	CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)
CS1W-PTS02	CJ1W-PH41U	for details.
CS1W-PTS03	CJ1W-PH41U	

CS Series	CJ Series	Remarks
[Isolated DC Input Unit]		Different in some specifications and area allocations.
CS1W-PDC01	CJ1W-PH41U	Refer to Appendix 6. Comparison of Special I/O Units in the
CS1W-PDC11 CS1W-PDC55	CJ1W-PH41U CJ1W-AD04U × 2	CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368) for details.
[Isolated 2-wire Transmission Device Input Unit] CS1W-PTW01	[Isolated-type Universal Input Unit] CJ1W-PH41U	Different in some specifications and area allocations. A 2-wire Transmission Device Input Unit requires an external 24 V power supply. Refer to Appendix 6. Comparison of Special I/O Units in the CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368) for details.
[Power Transducer Input Unit] CS1W-PTR01	[Isolated-type Universal Input Unit] CJ1W-AD04U × 2	The CJ Series does not provide a Power Transducer Input Unit. Change the power transducer output range from 0 to 1 mA/±1 mA to, for example, 4 to 20 mA/0 to 5 V/±10 V before inputting it to CJ1W-AD04U. Two CJ1W-AD04U Units are necessary since CS1W-PTR01 has 8 inputs. Refer to the CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368) for details.
[DC Input Unit (100 mV)] CS1W-PTR02	[Isolated-type Universal Input Unit] CJ1W-PH41U × 2	Use CJ1W-PH41U in the ±100 mV range for replacement. Two CJ1W-PH41U Units are necessary since CS1W-PTR02 has 8 inputs. Different in some functions, capabilities, and area allocations. Refer to the CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368) for details.
[Isolated Control Output Unit]		The CJ Series does not provide a channel-isolated control output
CS1W-PMV01	[Isolated Control Output Unit] No replacement model [Analog Output Unit] CJ1W-DA041	unit. Replace it with a non-channel-isolated control output unit. Different in some functions, capabilities, and area allocations. Refer to Appendix 6. Comparison of Special I/O Units in the CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)
CS1W-PMV02	[Isolated Control Output Unit] No replacement model [Analog Output Unit] CJ1W-DA041	for details.

#### [Analog I/O Units]

[Analog I/O Units]			
CS Series	CJ Series	Remarks	How to replace
[Analog Input Unit]		Equivalent in functions and capabilities.	1) Rewire.
CS1W-AD041-V1	CJ1W-AD041-V1	Check their input specifications including resolutions, conversion periods, and I/O points before replacement. 2) Use a conversion adapter (CJ1W- AT681).	2) Use a conversion
CS1W-AD081-V1	CJ1W-AD081-V1		
CS1W-AD161	CJ1W-AD081-V1 × 2	Refer to Appendix 6. Comparison of Special I/O Units in the CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345) for details.	Rewire to the terminal block instead of to the connector.
[Analog Output Unit]		Equivalent in functions and capabilities.	1) Rewire.
CS1W-DA041	CJ1W-DA041	Refer to Appendix 6. Comparison of Special I/O Units in the CS/CJ-series Analog I/O	2) Use a conversion adapter (CJ1W- AT641).
CS1W-DA08V	CJ1W-DA08V		1) Rewire.
CS1W-DA08C	CJ1W-DA08C		2) Use a conversion adapter (CJ1W- AT682).
[Analog I/O Unit]		Equivalent in functions and capabilities.	Rewire to the
CS1W-MAD44	CJ1W-MAD42		terminal block.
	CJ1W-AD041-V1	CJ1W-MAD42 has 2 output points while CS	
	+ CJ1W-DA041	has 4 output points.	
		Refer to Appendix 6. Comparison of Special I/O Units in the CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345) for details.	

CS Series	CJ Series	Remarks
[MECHATROLINK-II] CS1W-NC271	[MECHATROLINK-II] CJ1W-NC271	The same MECHATROLINK-II cable can be used.
CS1W-NC471 CS1W-NC471	CJ1W-NC471 CJ1W-NC471	Refer to the <i>CS/CJ-series Position Control Units Operation Manual</i> (Cat. No. W426) for details.
[Isolated Pulse Input Unit] CS1W-PPS01	[Isolated Pulse Input Unit] No replacement model	The CJ Series does not provide an Isolated Pulse Input Unit.
[Loop Control Board] CS1W-LCB01 CS1W-LCB05	[Loop Control Board] No replacement model	The CJ Series does not provide a Loop Control Board.

CS Series	CJ Series	Remarks
[High-speed Counter Unit] CS1W-CT021 CS1W-CT041	[High-speed Counter Unit] CJ1W-CT021 [CPU Unit + Pulse I/O Module] CJ2M-CPU1 + CJ2M-MD21	Refer to Appendix 6. Comparison of Special I/O Units in the CJ- series High-speed Counter Units Operation Manual for details. The following conversion cables can be used for replacement with CJ1W-CT021. CS1W-CT021 → CJ1W-CT021: CJ1W-CM211-CT conversion cable CS1W-CT041 → CJ1W-CT021 x 2: CJ1W-CM212-CT conversion cable For details on the conversion cables, refer to the CS I/O Terminal Block Conversion Adapters •Conversion Cables Datasheet (Cat. No. P169). CJ2M-CPU1□ and CJ2M-MD21□ are required. CJ2M CPU Unit Pulse I/O Module User's Manual (Cat. No. W486)
[Customizable Counter Unit] CS1W-HCP22-V1 CS1W-HCA12-V1 CS1W-HCA22-V1 CS1W-HCA22-V1 CS1W-HIO01-V1	[Customizable Counter Unit] No replacement model	The CJ Series does not provide a Customizable Counter Unit. Use a combination of I/O Unit, Analog I/O Unit and Pulse Input Unit for CJ Series instead.
[Position Control Unit] CS1W-NC113 CS1W-NC213 CS1W-NC413 CS1W-NC133 CS1W-NC233 CS1W-NC433	[Position Control Unit] CJ1W-NC113 CJ1W-NC213 CJ1W-NC413 CJ1W-NC133 CJ1W-NC233 CJ1W-NC433 [CPU Unit + Pulse I/O	Refer to Appendix 6. Comparison of Special I/O Units in the CJ-series Position Control Units Operation Manual (Cat. No. W477) for details.         The following conversion cables can be used for replacement with CJ1W-NC□□3.         Conversion cable: CJ1W-CM213-NC         For details on the conversion cables, refer to the CS I/O Terminal Block Conversion Adapters •Conversion Cables Datasheet (Cat. No. P169).         CJ2M-CPU1□ and CJ2M-MD21□ are required.
[Motion Control Unit]	Module] CJ2M-CPU1□ + CJ2M-MD21□ [Motion Control Unit]	Refer to the <i>CJ2M CPU Unit Pulse I/O Module User's Manual</i> (Cat. No. W486) for details. The CJ Series does not provide a Motion Control Unit.
CS1W-MC421-V1 CS1W-MC221-V1	No replacement model	Use a Position Control Unit instead.
[ID Sensor Unit] CS1W-V680C11 CS1W-V680C12 CS1W-V600C11 CS1W-V600C12	[ID Sensor Unit] CJ1W-V680C11 CJ1W-V680C12	Refer to the <i>CS/CJ-series ID Sensor Units Operation Manual</i> (Cat. No. Z174) for details.
[GP-IB Interface Unit] CS1W-GPI01	[GP-IB Interface Unit] No replacement model	The CJ Series does not provide a GP-IB Interface Unit. Use another Interface Unit such as RS232 instead.
[High-speed Storage and Processing Unit] CS1W-SPU01-V2 CS1W-SPU02-V2	[High-speed Storage and Processing Unit] CJ1W-SPU01-V2	The same Ethernet cable can be used. Refer to the CS/CJ-series SYSMAC SPU Units Operation Manual (Cat. No. V229) for details.
[Motion Control Unit] CS1W-MCH71	[Position Control Unit] CJ1W-NC□71	The CJ Series does not provide a Motion Control Unit. Use a CJ1W-NC□71 Position Control Unit instead.
	CJ1W-MCH71 is discontinued.	Refer to the CS/CJ-series Position Control Units Operation Manual (Cat. No. W426) for details.

# ■ How to Use a Terminal Block Conversion Adapter

To replace CS1 with CJ2, rewiring or inserting a Terminal Block Conversion Adapter is necessary to connect to the CJ1W Unit since the CJ1W Unit does not support the CS1W Unit's I/O terminal block as is.

Rewiring would require a lot of time and effort to conduct and confirm the result, so we provide a Terminal

Block Conversion Adapter to allow using the wired terminal block of the CS1 Unit.

Adopting a Terminal Block Conversion Adapter will make the replacement more efficient.

For details on the Terminal Block Conversion Adapter, refer to the CS I/O Terminal Block Conversion Adapters · Conversion Cables Datasheet (Cat. No. P169).

How to replace	Description	Illustration
Rewire.	<ul> <li>[Procedure]</li> <li>Disconnect the wires from the CS1 Unit's terminal block.</li> <li>Replace the CS1 Unit with the CJ1 Unit.</li> <li>Connect the disconnected wires to the CJ1 Unit's terminal block.</li> <li>[Advantage]</li> <li>The wiring can be tidy.</li> <li>No additional part (Terminal Block Conversion Adapter) is necessary.</li> <li>[Drawback]</li> <li>Conducting the work and confirming the result will take a long time.</li> </ul>	CS1W 2) Replace. 1) Disconnect. 2) Rewire.
Use a terminal block conversion adapter.	<ul> <li>[Procedure]</li> <li>Disconnect the terminal block from the CS1 Unit.</li> <li>Replace the CS1 Unit with the CJ1 Unit.</li> <li>Connect the Terminal Block Conversion Adapter to the CJ1 Unit.</li> <li>Connect the CS1 terminal block to the Terminal Block Conversion Adapter.</li> <li>[Advantage]</li> <li>Reduced time and effort to wire</li> <li>Reduced time to confirm the wiring result</li> <li>Less risk of wrong wiring</li> <li>[Drawback]</li> <li>Increased depth</li> <li>If using a Terminal Block Conversion Adapter causes interference with an I/O connection cable, etc. of an adjacent unit, create a space by attaching a Space Unit (CJ1W-SP001).</li> <li>Use a reinforcing bracket (optional) if necessary in an environment with vibrations and impacts.</li> <li>For details on the CS1 Terminal Block Conversion Adapter, refer to the CS I/O Terminal Block Conversion Adapters - Conversion Cables Datasheet (Cat. No. P169).</li> </ul>	<ul> <li>CJ1W-AT601/602/AT611/AT612</li> <li>CJ1W-AT601/602/AT611/AT612</li> <li>CJ1W Unit Terminal Block Conversion Adapter CS1W Terminal Block</li> <li>CJ1W-AT641/AT681/AT682</li> <li>CJ1W Unit CJ1W Unit Terminal Block Conversion Adapter CJ1W Unit Terminal Block Conversion Adapter CS1W Terminal Block Conversion Adapter CS1W Terminal Block</li> </ul>

# Appendix 6. Comparison of Special I/O Units

# Appendix 6.1. CS1W-AD041-V1

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-AD041-V1	<ul> <li>Equivalent in the functions and capabilities.</li> <li>The CIO areas and DM areas remain the same.</li> <li>Different in the conversion data during restarting.</li> </ul>

# (2) Differences in functions and capabilities

Item	CS1W-AD041-V1		CJ1W-AD041-V1		
	Specifications	Difference	Specifications		
Number of inputs	4	0	4		
Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually		
Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA		
Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA		
Input impedance	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (fixed)	0	Voltage input: 1 MΩ min. Current input: 250 Ω (fixed)		
Resolution	4,000/8,000	0	4,000/8,000		
A/D conversion output data	16-bit binary data	0	16-bit binary data		
Overall accuracy	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.	0	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.		
A/D conversion period	1 ms/250 μs (per input point)	0	1 ms/250 μs (per input point)		
Mean value processing	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64	0	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64		
Peak hold	Stores the maximum conversion value while the peak value hold bit is ON.	0	Stores the maximum conversion value while the peak value hold bit is ON.		
Disconnection detection	Detects the disconnection and turns ON the disconnection detection flag.	0	Detects the disconnection and turns ON the disconnection detection flag.		
Scaling	Not provided	0	Not provided		
Offset and gain adjustment	Provided	0	Provided		
Direct conversion	Not provided	0	Not provided		
Isolation	Photocoupler isolation between input and PLC signals (No insulation between inputs)	0	Photocoupler isolation between input and PLC signals (No insulation between inputs)		

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

The memory area allocations remain the same.

CS1W-AD041-V1				CJ1W-A	D041	-V1	
Input 2 (+)	B1	A1	Input 1 (+)	Input 2 (+)	B1	1	
Input 2 (+)	B2	A2	Input 1 (–)	Input 2 (–)	B2	A1	Input 1 (+)
AG	B3	A3	AG	Input 4 (+)	B3	A2	Input 1 (–)
Input 4 (+)	B4	A4	Input 3 (+)	Input 4 (–)	B4	A3	Input 3 (+)
Input 4 (-)	B5	A5 A6	Input 3 (–) N.C.	AG	B5	A4	Input 3 (–)
N.C.	B6	A7	N.C.	N.C.	B6	A5	AG
N.C.	B7	A8	N.C.	N.C.	B7	A6	N.C.
N.C.	B8	A9	N.C.	N.C.	B8	A7	N.C.
N.C.	B9	A10	N.C.	N.C.	B9	A8	N.C.
N.C.	B10	A11	N.C.	11.0.	50	A9	N.C.

# (5) Differences in behavior in case of an error or alarm

# · When restarting the Unit

Different in the conversion data during restarting.

CS1W-AD041-V1	CJ1W-AD041-V1			
The conversion data during restarting will become <b>"0000"</b> .	The conversion data <b>immediately before</b> restarting will be retained.			

#### Reference manuals

CS1W-AD041-V1: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

CJ1W-AD041-V1: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.2. CS1W-AD081-V1

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-AD081-V1	<ul> <li>Equivalent in the functions and capabilities.</li> <li>The CIO areas and DM areas remain the same.</li> <li>Different in the conversion data during restarting.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-AD081-V1		CJ1W-AD081-V1		
	Specifications	Difference	Specifications		
Number of inputs	8	0	8		
Input signal range selection	Selectable for 8 points individually	0	Selectable for 8 points individually		
Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA		
Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA		
Input impedance	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (fixed)	0	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (fixed)		
Resolution	4,000/8,000	0	4,000/8,000		
A/D conversion output data	16-bit binary data	0	16-bit binary data		
Overall accuracy	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.	0	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.		
A/D conversion period (per input point)	1 ms/250 μs	0	1 ms/250 μs		
Mean value processing	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64	0	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64		
Peak hold	Stores the maximum conversion value while the peak value hold bit is ON.	0	Stores the maximum conversion value while the peak value hold bit is ON.		
Disconnection detection	Detects the disconnection and turns ON the disconnection detection flag.	0	Detects the disconnection and turns ON the disconnection detection flag.		
Scaling	Not provided	0	Not provided		
Offset and gain adjustment	Provided	0	Provided		
Isolation	Photocoupler isolation between input and PLC signals (No insulation between inputs)	0	Photocoupler isolation between input and PLC signals (No insulation between inputs)		

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# (3) Differences in memory area allocations

The memory area allocations remain the same.

C	CS1W-AD081-V1					CJ1W-A	D081	I-V1
		A1	Input 1 (+)				1	
Input 2 (+)	B1		,		Input 2 (+)	B1	A1	Input 1 (+)
Input 2 (–)	B2	A2	Input 1 (–)		Input 2 (–)	B2		,
AG	B3	A3	AG		Input 4 (+)	B3	A2	Input 1 (–)
Input 4 (+)	B4	A4	Input 3 (+)		Input 4 (–)	B4	A3	Input 3 (+)
	B5	A5	Input 3 (-)		input 4 (–)		A4	Input 3 (–)
Input 4 (-)		A6	Input 5 (+)		AG	B5	A5	AG
Input 6 (+)	B6	A7	Input 5 (–)		Input 6 (+)	B6		
Input 6 (-)	B7	A8	AG		Input 6 (–)	B7	A6	Input 5 (+)
AG	B8	A9	Input 7 (+)				A7	Input 5 (–)
Input 8 (+)	B9		,		Input 8 (+)	B8	A8	Input 7 (+)
Input 8 (-)	B10	A10	Input 7 (–)		Input 8 (-)	B9	A9	
		A11	N.C.		L			Input 7 (–)

# (5) Differences in behavior in case of an error or alarm

#### · When restarting the Unit

Different in the conversion data during restarting.

CS1W-AD081-V1	CJ1W-AD081-V1
The conversion data during restarting will become <b>"0000"</b> .	The conversion data <b>immediately before</b> restarting will be retained.

#### Reference manuals

CS1W-AD081-V1: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

CJ1W-AD081-V1: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.3. CS1W-AD161

### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-AD081-V1	<ul> <li>Different in the number of input points. For 16 input points, two CJ1W-AD081-V1 Units are necessary.</li> <li>Some degradation in capabilities <ul> <li>Overall accuracy (23±2°C): Current input ±0.2% of F.S. ⇒ ±0.4% of F.S.</li> <li>(0 to 55°C): Current input ±0.4% of F.S. ⇒ ±0.6% of F.S.</li> </ul> </li> <li>Some degradation in capability <ul> <li>Scaling is not provided.</li> </ul> </li> <li>Different in the CIO areas and DM areas.</li> <li>Different in the conversion data during restarting.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-AD161		CJ1W-AD081-V1		
	Specifications	Difference	Specifications		
Number of inputs	16	×	8		
Input signal range selection	Selectable for 16 points individually	0	Selectable for 8 points individually		
Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA		
Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA		
Input impedance	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (fixed)	0	Voltage input: $1 \text{ M}\Omega$ min. Current input: $250 \Omega$ (fixed)		
Resolution	4,000/8,000	0	4,000/8,000		
A/D conversion output data	16-bit binary data	0	16-bit binary data		
Overall accuracy	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.2% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.4% of F.S.		23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.		
A/D conversion period (per input point)	1 ms/250 μs	0	1 ms/250 μs		
Mean value processing	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64	0	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64		
Peak hold	Stores the maximum conversion value while the peak value hold bit is ON.	0	Stores the maximum conversion value while the peak value hold bit is ON.		
Disconnection detection	Detects the disconnection and turns ON the disconnection detection flag.	0	Detects the disconnection and turns ON the disconnection detection flag.		
Scaling	Provided Enabled only for conversion time of 1 ms and resolution of 4,000. Setting any values within a range of ±32,000 as the upper and lower limits allows the A/D conversion result to be output with these values as full scale.	×	Not provided		
Offset and gain adjustment	Provided	0	Provided		
Isolation	Photocoupler isolation between input and PLC signals (No insulation between inputs)	0	Photocoupler isolation between input and PLC signals (No insulation between inputs)		

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

#### CIO Areas

# Differences in CIO areas

The first word of the first CJ1W-AD081-V1 Unit and the first word of CS1W-AD161: n = 2000 + Unit No. x 10The first word of the second CJ1W-AD081-V1 Unit: n2 = 2000 + the second Unit's Unit No. x 10

Name		CS1W-AD161		CJ1W-/	AD081-V1	Remarks	
		Word	Bit	Word	Bit	-	
Peak hold	Input 1	n	00	n	00	The allocation of the first	
	Input 2	]	01		01	CJ1W-AD081-V1 Unit	
	Input 3	]	02		02	remains the same.	
	Input 4		03		03		
	Input 5		04		04		
	Input 6	ļ	05		05		
	Input 7	ļ	06		06		
	Input 8	1	07		07		
	Input 9	1	08	n2	00	The area allocations of the	
	Input 10	_	09	(Second	01	second CJ1W-AD081-V1	
	Input 11	4	10	Unit)	02	Unit changes since it has a different Unit No.	
	Input 12	]	11		03		
	Input 13	1	12		04	_	
	Input 14	4	13		05	-	
	Input 15	4	14 15	_	06 07	-	
A/D converted	Input 16	n+1	15	n+1	07	The allocation of the first	
value	Input 1 Input 2	n+1 n+2		n+1 n+2		CJ1W-AD081-V1 Unit	
Taluc	Input 3	n+3		n+3		remains the same.	
	Input 4	n+4		n+4			
	Input 5	n+4 n+5		n+5		1	
	Input 6	n+6		n+6		-	
	Input 7	n+7		n+7		-	
	Input 8	n+8		n+8		-	
	Input 9	n+9		n2+1		The area allocations of the	
	Input 10	n+10		n2+2		second CJ1W-AD081-V1 Unit changes since it has a different Unit No.	
	Input 11	n+11		n2+3			
	Input 12	n+12		n2+4			
	Input 13	n+13		n2+5			
	Input 14	n+14		n2+6		-	
	Input 15	n+15		n2+7			
	Input 16	n+16		n2+8			
Disconnection	Input 1	n+18	00	n+9	00	The area allocations of the	
detection	Input 2	4	01		01	first CJ1W-AD081-V1 Unit	
	Input 3	4	02		02	changes.	
	Input 4	1	03		03	_	
	Input 5	-	04		04	_	
	Input 6	4	05		05	-	
	Input 7	4	06 07		06 07	-	
	Input 8 Input 9	4	07	n2+9	07	The area allocations of the	
	Input 10	4	08	112+9	00	second CJ1W-AD081-V1	
	Input 11	4	10		02	Unit changes since it has a	
	Input 12	-	10		02	different Unit No.	
	Input 13	-	12		03		
	Input 14	4	13		05	-	
	Input 15	1	14		06	1	
	Input 16	1	15	-1	07	1	
Alarm flag	Scaling setting error	n+19		n+9		CJ1W-AD081-V1 does not	
Ŭ		J	08	(n2+9)	Not used	provide scaling.	
	Mean value			-			
	processing setting		11		11		
	error	-		_			
	Conversion period					CJ1W-AD081-V1 does not	
	and operation mode setting error		12		Not used	provide a conversion period and operation mode	
	Setting entri					setting error flag.	
	Operating in	1					
	adjustment mode		15		15		
		1	1	1	1	1	

# DM Areas

•

The area allocations change. Replace them by referring to the manual.

The first word of the first CJ1W-AD081-V1 Unit and the first word of CS1W-AD161: m = D20000 + Unit No. x 100

The first word of the second CJ1W-AD081-V1 Unit: m2 = D20000 + the second Unit's number x 100

	Name	CS1V	V-AD161	CJ1W-	AD081-V1	Remarks	
		Word Bit		Word	Bit		
Use setting	Input 1	m	00	m	00	The allocation of the first	
	Input 2		01		01	CJ1W-AD081-V1 Unit	
	Input 3		02		02	remains the same.	
	Input 4		03		03		
	Input 5		04		04		
	Input 6		05		05		
	Input 7		06		06	7	
	Input 8		07		07		
	Input 9		08	m2	00	The area allocations of the	
	Input 10		09	(Second	01	second CJ1W-AD081-V1	
	Input 11		10	Ùnit)	02	Unit changes since it has	
	Input 12		11		03	different Unit No.	
	Input 13		12		04	7	
	Input 14		13		05	7	
	Input 15		14		06	7	
	Input 16		15	_	07	7	
Input range	Input 1 to 8	m+1	-	m+1	_		
setting	Input 9 to 16	m+2		m2+1		Set the allocation on the	
0	•					second CJ1W-AD081-V1	
						Unit.	
Mean Value	Input 1	m+3		m+2		The area allocations of the	
Processing	Input 2	m+4		m+3		first CJ1W-AD081-V1 Unit	
Setting	Input 3	m+5		m+4		changes.	
C C	Input 4	m+6		m+5			
	Input 5	m+7		m+6			
	Input 6	m+8		m+7			
	Input 7	m+9		m+8			
	Input 8	m+10		m+9			
	Input 9	m+11		m2+2		The area allocations of the	
	Input 10	m+12		m2+3		second CJ1W-AD081-V1	
	Input 11	m+13 m+14 m+15		m2+4		Unit changes since it has	
	Input 12			m2+5		different Unit No.	
	Input 13			m2+6		-	
	Input 14			m2+7		-	
Input 15		m+16 m+17		m2+8		-	
	Input 16	m+18		m2+9			
Operation mode				1112.0		Set the allocation on the	
oporation mod	ooung	m+19	00 to 07	m+18 m2+18	00 to 07	first and second CJ1W- AD081-V1 Units respectively.	
Conversion period/resolution setting		m+19	08 to 15	m+18 m2+18	08 to 15	Set the allocation on the first and second CJ1W- AD081-V1 Units respectively.	
Scaling		m+20 to n	n+51	Not provid	led	CJ1W-AD081-V1 does no provide scaling.	
Voltage/current	range setting	m+52		Not provic	led	For CJ1W-AD081-V1, use the voltage/current input setting switch in the back of the terminal block to switch between the 1 to 5 V voltage input and the 4 to 20 mA current input.	

CS1W-AD161									CJ1W-AD081-V1				
CN2 Input 9+ Current mode 9	1 3	s 9 to1 2 4	6 Input 10+ Current mode 10	Ct Input 1+ Current mode 1	V1 Inp 1 3	outs 1 2 4	to 8 Input 2+ Current mode 2		Input 2 (+)	B1	A1	Input 1 (+)	
Input 9–	5	6	Input 10-	Input 1–	5	6	Input 2–		Input 2 (–)	B2	A2	1	
AG	7	8	AG	AG	7	8	AG		Input 4 (+)	B3	AZ	Input 1 (–)	
Input 11+	9 11	10	Input 12+	Input 3+	9 11	10	Input 4+				A3	Input 3 (+)	
Current mode 11 Input 11–	11	12	Current mode 12 Input 12–	Current mode 3 Input 3–	11	12	Current mode 4 Input 4–		Input 4 (–)	B4		1	
AG	15	16	AG	AG	15	16	AG		AG	B5	A4	Input 3 (–)	
Input 13+	17	18	Input 14+	Input 15+	17	18	Input 6+				A5	AG	
Current mode 13	19	20	Current mode 14	Current mode 5	19	20	Current mode 6		Input 6 (+)	B6	A6	Input E (1)	
Input 13-	21	22	Input 14-	Input 5–	21	22	Input 6-		Input 6 (–)	B7	Ab	Input 5 (+)	
AG	23	24	AG	AG	23	24	AG		,		A7	Input 5 (–)	
Input 15+	25	26	Input 16+	Input 7+	25	26	Input 8+		Input 8 (+)	B8	-	1 17(1)	
Current mode 15	27	28	Current mode 16	Current mode 7	27	28	Current mode 8		In mut 9 ( )	B9	A8	Input 7 (+)	
Input 15-	29	30	Input 16-	Input 7–	29	30	Input 8–		Input 8 (–)	69	A9	Input 7 (–)	
AG	31	32	AG	AG	31	32	AG				<u> </u>		
NC	33	34	NC	NC	33	34	NC						

# (5) Differences in behavior in case of an error or alarm

#### • When restarting the Unit

# Different in the conversion data during restarting.

CS1W-AD161	CJ1W-AD081-V1
The conversion data during restarting will become <b>"0000"</b> .	The conversion data <b>immediately before</b> restarting will be retained.

#### Reference manuals

CS1W-AD161: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

CJ1W-AD081-V1: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.4. CS1W-DA041

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions						
CJ1W-DA041	<ul> <li>Equivalent in the functions and capabilities.</li> <li>The CIO areas and DM areas remain the same.</li> </ul>						

#### (2) Differences in functions and capabilities

Item	CS1W-DA041		CJ1W-DA041
	Specifications	Difference	Specifications
Number of outputs	4	0	4
Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually
Signal range	1 to 5 V/4 to 20 mA, 0 to 5 V, 0 to 10 V, - 10 to 10 V	0	1 to 5 V/4 to 20 mA, 0 to 5 V, 0 to 10 V, - 10 to 10 V
External output impedance	Voltage output: 0.5 Ω max. Current output: -	0	Voltage output: 0.5 Ω max. Current output: -
Maximum external output current (per point)	Voltage output: 12 mA Current output: -	0	Voltage output: 12 mA Current output: -
Maximum allowable load resistance	600 Ω (current output)	0	600 Ω (current output)
Resolution	4,000	0	4,000
Set data	16-bit binary data	0	16-bit binary data
Overall accuracy	23±2°C Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S. 0 to 55°C Voltage output: ±0.5% of F.S. Current output: ±0.8% of F.S.		Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S. 0 to 55°C Voltage output: ±0.5% of F.S. Current output: ±0.8% of F.S.
D/A conversion period	1.0 ms max./point	0	1.0 ms max./point
Output hold	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>	0	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>
Isolation	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)	0	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

(3) Differences in memory area allocations

The memory area allocations remain the same.

CS1W-DA041				CJ1W-DA041					
N.C. Output voltage 2 (+) Output 2 (-) Output current 2 (+) N.C. N.C. Output voltage 4 (-) Output 4 (-) Output current 4 (+) N.C.	B1         A1           B2         A3           B3         A4           B5         A6           B6         A7           B7         A8           B9         A10	N.C.           Output voltage 1 (+)           Output 1 (-)           Output current 1 (+)           N.C.           N.C.           Output voltage 3 (+)           Output 3 (-)           Output current 3 (+)		Voltage output 2 (+) Output 2 (-) Current output 2 (+) Voltage output 4 (+) Output 4 (-) Current output 4 (+) N.C. N.C. 0 V	B1 B2 B3 B4 B5 B6 B7 B8 B9	A1 A2 A3 A4 A5 A6 A7 A8 A9	Voltage output 1 (+) Output 1 (-) Current output 1 (+) Voltage output 3 (+) Output 3 (-) Current output 3 (+) N.C. N.C. 24 V		
	A11	N.C.							

#### Reference manuals

CS1W-DA08C: *CS/CJ-series Analog I/O Units Operation Manual* (Cat. No. W345) CJ1W-DA08C: *CS/CJ-series Analog I/O Units Operation Manual* (Cat. No. W345)

# Appendix 6.5. CS1W-DA08V

### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-DA08V	<ul> <li>Different in some capabilities. Maximum external output current (per point): 12 mA ⇒ 2.4 mA</li> <li>The CIO areas and DM areas remain the same. Additional setting work is necessary for functions (such as scaling) provided by CJ1W-DA08V only.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-DA08V		CJ1W-DA08V			
	Specifications	Difference	Specifications			
Number of outputs	8	0	8			
Input signal range selection	Selectable for 8 points individually	0	Selectable for 8 points individually			
Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V			
External output impedance	0.5 Ω max.	0	0.5 Ω max.			
Maximum external output current (per point)	12 mA		2.4 mA			
Resolution	4,000	Ø	4,000/8,000			
Set data	16-bit binary data	0	16-bit binary data			
Overall accuracy	23±2°C Voltage output: ±0.3% of F.S. 0 to 55°C Voltage output: ±0.5% of F.S.	0	25℃ Voltage output: ±0.3% of F.S. 0 to 55℃ Voltage output: ±0.5% of F.S.			
D/A conversion period	1.0 ms max./point	Ø	1.0 ms/250 μs max./point			
Output hold	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>	0	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>			
Scaling	Not provided	0	Provided Enabled only for conversion time of 1 ms and resolution of 4,000. Setting any values in a specific engineering unit within a range of ±32,000 as the upper and lower limits allows the D/A conversion result to be output as an analog signal with these values as full scale.			
Isolation	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)	0	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)			

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

#### CIO Areas

### · CJ1W-DA08V newly supports the following areas.

	CJ1W-	DA08V	Remarks	
		Word	Bit	
Alarm flag	Scaling setting error Conversion period and operation mode setting error	n+9	08 12	

# DM Areas

· CJ1W-DA08V newly supports the following areas.

	Name	CJ1W-	-DA08V	Remarks
			Bit	
Operation mode setting		m+18	00 to 07	CS1W-DA08V does not provide an operation mode setting switch. Use D (m+18) DM area to switch operation modes.
Conversion period/resolution setting		m+18	08 to 15	Select from the following: 1 ms/4,000 250 μs/8,000
Scaling	Output 1 lower limit	m+19		
-	Output 1 upper limit	m+20		
	Output 2 lower limit	m+21		
	Output 2 upper limit	m+22		
	Output 3 lower limit	m+23		
	Output 3 upper limit	m+24		
	Output 4 lower limit	m+25		
	Output 4 upper limit	m+26		
	Output 5 lower limit	m+27		
	Output 5 upper limit	m+28		
	Output 6 lower limit	m+29		
	Output 6 upper limit	m+30		
	Output 7 lower limit	m+31		
	Output 7 upper limit	m+32		
	Output 8 lower limit	m+33		
	Output 8 upper limit	m+34		

# (4) Differences in wiring and terminal arrangement

N.C.         B1         A1         N.C.           Output 2 (+)         B2         A2         Output 1 (+)           Output 2 (-)         B3         A3         Output 1 (-)           Output 4 (+)         B4         A4         Output 3 (+)           Output 4 (-)         B5         A6         Output 3 (-)           Output 6 (-)         B6         A6         Output 5 (-)           Output 6 (-)         B7         A8         Output 7 (+)           Output 8 (+)         B8         A9         Output 7 (-)           N.C.         B10         N.C.         A10         N.C.	CS1W-DA08V					CJ1W-	DA0	8V
Output 2 (+)         B2         A3         Output 1 (-)         B2         A2         Output 1 (-)           Output 2 (-)         B3         A4         Output 3 (+)         Output 4 (+)         B3         A2         Output 3 (+)           Output 4 (-)         B5         A6         Output 5 (+)         Output 5 (+)         Output 6 (-)         B6         A7         Output 5 (-)         Output 8 (+)         B6         A6         Output 7 (-)         Output 8 (+)         B7         A6         Output 7 (-)         Output 8 (-)         B8         A7         Output 7 (-)         Output 8 (-)         B8         A7         Output 7 (-)         Output 8 (-)         B8         A8         Output 7 (-)         Output 8 (-)         B8         A8         Output 7 (-)         OV         B9         A8         Output 7 (-)           N.C.         B10         NC.         B10         NC         B10         NC         B10         NC         B10         A9         24 V						 _	A1	Output 1 (+)
Output 4 (+)         B4         A         Output 5 (+)           Output 4 (-)         B5         A5         Output 3 (-)           Output 6 (+)         B6         A7         Output 5 (+)           Output 6 (-)         B7         A8         Output 7 (+)           Output 8 (+)         B8         A9         Output 7 (-)           Output 8 (-)         B10         N.C.         B10						_	A2	
Action         Action         Output 5 (+)         Bc         Action         Output 5 (+)         Bc         Action         Act						 _		
Output 6 (-)         B7         A6         Output 3 (-)           Output 8 (+)         B8         A9         Output 7 (-)           Output 8 (-)         B9         A10         N.C.						_		
Output 8 (-)         B9         A10         N.C.         B10         N.C.         B10         N.C.         B10         A10         N.C.			A8			 _		
N.C. B10 A9 24 V	Output 8 (-)	B9						
	N.C.	B10	A11		-	0.5	A9	24 V

#### Reference manuals

CS1W-DA08V: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

CJ1W-DA08V: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.6. CS1W-DA08C

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-DA08C	<ul> <li>Different in some capabilities. Maximum allowable load resistance: 600 Ω ⇒ 350 Ω</li> <li>The CIO areas and DM areas remain the same. Additional setting work is necessary for functions (such as scaling) provided by CJ1W-DA08C only.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-DA08C		CJ1W-DA08C
	Specifications	Difference	Specifications
Number of outputs	8	0	8
Input signal range Selectable for 8 points individually selection		0	Selectable for 8 points individually
Signal range	4 to 20 mA	0	4 to 20 mA
Maximum allowable load resistance	600 Ω		350 Ω
Resolution	4,000	O	4,000/8,000
Set data	16-bit binary data	0	16-bit binary data
Overall accuracy	23±2°C Current output: ±0.5% of F.S. 0 to 55°C Current output: ±0.8% of F.S.	Ø	25℃ Current output: ±0.3% of F.S. 0 to 55℃ Current output: ±0.6% of F.S.
D/A conversion period	1.0 ms max./point	Ø	1.0 ms/250 μs max./point
Output hold	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>	0	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>
Scaling	Not provided	0	Provided Enabled only for conversion time of 1 ms and resolution of 4,000. Setting any values in a specific engineering unit within a range of $\pm 32,000$ as the upper and lower limits allows the D/A conversion result to be output as an analog signal with these values as full scale.
Isolation	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)	0	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

#### CIO Areas

· CJ1W-DA08C newly supports the following areas.

Name		DA08C	Remarks
	Word	Bit	
Scaling setting error	n+9	08	
Conversion period and operation mode		12	
	Scaling setting error Conversion period	Word           Scaling setting error         n+9           Conversion period         and operation mode	Word         Bit           Scaling setting error         n+9         08           Conversion period and operation mode         12

# DM Areas

· CJ1W-DA08C newly supports the following areas.

	Name	CJ1W	-DA08C	Remarks
			Bit	
Operation mode setting		m+18	00 to 07	CS1W-DA08C does not provide an operation mode setting switch. Use D (m+18) DM area to switch operation modes.
Conversion peri	Conversion period/resolution setting		08 to 15	Select from the following: 1 ms/4,000 250 μs/8,000
Scaling	Output 1 lower limit	m+19	•	
-	Output 1 upper limit	m+20		
	Output 2 lower limit	m+21 m+22 m+23		
	Output 2 upper limit			
	Output 3 lower limit			
	Output 3 upper limit	m+24		
	Output 4 lower limit	m+25		
	Output 4 upper limit	m+26		
	Output 5 lower limit	m+27		
	Output 5 upper limit	m+28		
	Output 6 lower limit	m+29		
	Output 6 upper limit	m+30 m+31		
	Output 7 lower limit			
	Output 7 upper limit	m+32		
	Output 8 lower limit	m+33		
	Output 8 upper limit	m+34		

# (4) Differences in wiring and terminal arrangement

	CS1W-DA08C				CJ1W-		
N.C.	B1	A1	N.C.	Output 2 (+)	B1	ļ	
Output 2 (+)	B2	A2	Output 1 (+)	Output 2 (-)	B2	A1	Output 1 (+)
Output 2 (-)	B3	A3	Output 1 (-)	Output 4 (+)	B3	A2	Output 1 (-)
Output 4 (+)	B4	A4 A5	Output 3 (+)	Output 4 (-)	B4	A3	Output 3 (+)
Output 4 (-)	B5	AG	Output 3 (–) Output 5 (+)	Output 6 (+)	B5	A4	Output 3 (-)
Output 6 (+)	B6	A7	Output 5 (-)	Output 6 (-)	B6	A5	Output 5 (+)
Output 6 (-)	B7	A8	Output 7 (+)	Output 8 (+)	B7	A6	Output 5 (-)
Output 8 (+)	B8	A9	Output 7 (–)	Output 8 (-)	B8	A7	Output 7 (+)
Output 8 (-)	B9 B10	A10	N.C.	0 V	B9	A8	Output 7 (-)
N.C.		A11	N.C.	L		A9	24 V
		L	I				

#### Reference manuals

CS1W-DA08C: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

CJ1W-DA08C: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.7. CS1W-MAD44

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-MAD42	<ul> <li>Different in the number of output points.</li> <li>Different in some capabilities. Maximum external output current (per point): 12 mA ⇒ 2.4 mA</li> <li>Different in the CIO areas and DM areas.</li> </ul>
CJ1W-AD041-V1 + CJ1W-DA041	<ul> <li>Different in some functions. Ratio conversion is not provided.</li> <li>Different in the CIO areas and DM areas.</li> </ul>

# (2) Differences in functions and capabilities

# ■ Replacing with CJ1W-MAD42

	Item	CS1W-MAD44		CJ1W-MAD42
		Specifications	Difference	Specifications
In	Number of	4	0	4
Input section	inputs Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually
ction	Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA
	Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA
	Input impedance	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (rated)	0	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (rated)
	Resolution	4,000	0	4,000/8,000
	A/D conversion output data	16-bit binary data	0	16-bit binary data
	Overall accuracy	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.	Ø	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S.
	A/D conversion period (per input point)	1 ms	Ø	1 ms/500 μs
	Mean value processing			Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64
	Peak hold	Stores the maximum conversion value while the peak value hold bit is ON.	0	Stores the maximum conversion value while the peak value hold bit is ON.
	Scaling	Not provided	0	Provided Enabled only for conversion time of 1 ms and resolution of 4,000. Setting any values within a range of ±32,000 as the upper and lower limits allows the A/D conversion result to be output with these values as full scale.
Output	Number of outputs	4	Δ	2
S	Input signal range selection	Selectable for 4 points individually	0	Selectable for 2 points individually
ection	Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA
	External output impedance	Voltage output: 0.5 Ω max.	0	Voltage output: 0.5 Ω max. Current output: -
	Maximum external output current (per point)	12 mA		2.4 mA
	Maximum allowable load resistance	- (There are no external output signals.)	0	600 Ω (current output)
	Resolution	4,000	Ø	4,000/8,000
	Set data	16-bit binary data	0	16-bit binary data

Item	CS1W-MAD44		CJ1W-MAD42
	Specifications	Difference	Specifications
Overall accurac	<ul> <li>/ 23±2°C</li> <li>Voltage output: 0.3% of F.S.</li> <li>Current output: -</li> <li>0 to 55°C</li> <li>Voltage output: 0.5% of F.S.</li> <li>Current output: -</li> </ul>	0	25°C Voltage output: 0.3% of F.S. Current output: 0.3% of F.S. 0 to 55°C Voltage output: 0.5% of F.S. Current output: 0.6% of F.S.
D/A conversion period	1 ms	Ø	1 ms/500 μs
Output hold	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>	0	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>
Scaling	Not provided	0	Provided Enabled only for conversion time of 1 ms and resolution of 4,000. Setting any values within a range of ±32,000 as the upper and lower limits allows the D/A conversion result to be output as an analog signal with these values as full scale.
Ratio conversion	Provided	0	Provided
Isolation	Photocoupler isolation between I/Os and PLC signals (No insulation between I/Os)	0	Photocoupler isolation between I/Os and PLC signals (No insulation between I/Os)

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# ■ Replacing with CJ1W-AD041-V1 + CJ1W-DA041

	Item	CS1W-MAD44	CJ1W-/	AD041-V1 (input section) + CJ1W-DA041 (output section)
		Specifications	Difference	Specifications
Inpu	Number of inputs	4	0	4
Input sectior	Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually
tion	Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	0	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA
	Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA
	Input impedance	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (rated)	0	Voltage input: 1 M $\Omega$ min. Current input: 250 $\Omega$ (fixed)
	Resolution	4,000	O	4,000/8,000
	A/D conversion output data	16-bit binary data	0	16-bit binary data
	Overall accuracy	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.	0	23±2°C Voltage input: ±0.2% of F.S. Current input: ±0.4% of F.S. 0 to 55°C Voltage input: ±0.4% of F.S. Current input: ±0.6% of F.S.
	A/D conversion period (per input point)	1 ms	Ø	1 ms/250 μs (per input point)
	Mean value processing	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64	0	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Number of mean value buffers: n = 2, 4, 8, 16, 32, 64
	Peak hold	Stores the maximum conversion value while the peak value hold bit is ON.	0	Stores the maximum conversion value while the peak value hold bit is ON.
	Scaling	Not provided	0	Not provided

	Item	CS1W-MAD44	CJ1W-/	AD041-V1 (input section) + CJ1W-DA041
		Specifications	Difference	(output section) Specifications
	11-4			
	Isolation	Photocoupler isolation between I/Os and	0	Photocoupler isolation between input and
		PLC signals		PLC signals
		(No insulation between I/Os)	$\frown$	(No insulation between inputs)
Out	Number of outputs	4	0	4
out s	Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually
Output section	Signal range	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V	0	1 to 5 V/4 to 20 mA, 0 to 5 V, 0 to 10 V, - 10 to 10 V
-	External output	Voltage output: 0.5 Ω max.	0	Voltage output: 0.5 Ω max.
	impedance			Current output: -
	Maximum	12 mA	0	Voltage output: 12 mA
	external output current (per point)			Current output: -
	Maximum allowable load resistance	- (There are no external output signals.)	0	600 Ω (current output)
	Resolution	4,000	0	4,000
	Set data	16-bit binary data	0	16-bit binary data
	Overall accuracy	23±2°C Voltage output: 0.3% of F.S. Current output: - 0 to 55°C Voltage output: 0.5% of F.S. Current output: -	0	25°C Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S. 0 to 55°C Voltage output: ±0.5% of F.S. Current output: ±0.8% of F.S.
	D/A conversion period	1 ms	0	1.0 ms max./point
	Output hold	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>	0	<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>
	Scaling	Not provided	0	Not provided
	Isolation	Photocoupler isolation between I/Os and PLC signals	0	Photocoupler isolation between outputs and PLC signals
		(No insulation between I/Os)		(No insulation between outputs)
Ra	tio conversion	Provided	×	Not provided

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# (3) Differences in memory area allocations

# ■ Replacing with CJ1W-MAD42

# CIO Areas

Differences in CIO areas

Name		CS1W	CS1W-MAD44		MAD42	Remarks
		Word	Bit	Word	Bit	
Conversion	Output 3	n	02	Not used		Not used by CJ1W-MAD42
enable	Output 4		03	Not used		
Output set value	Output 3	n+3	•	Not used		Not used by CJ1W-MAD42
	Output 4	n+4		Not used		
Output set value	Output 3	n+9	02	Not used		Not used by CJ1W-MAD42
error	Output 4		03	Not used		

#### · CJ1W-MAD42 newly supports the following areas.

Name		CJ1W-MAD42		Remarks
		Word	Bit	
Alarm flag	Scaling setting error Conversion period and resolution/operation mode setting error	n+9	08 12	

#### DM Areas

#### Differences in DM areas

Ν	lame	CS1W-	MAD44	CJ1W-MAD42		Remarks
		Word	Bit	Word	Bit	
Output use	Output 3	m	02	Not used		Not used by CJ1W-MAD42
setting	Output 4		03	Not used		
Ratio conversion	Loop 3	m	12 to 13	Not used		Not used by CJ1W-MAD42
use setting	Loop 4		14 to 15	Not used		
Output signal	Output 3	m+1	04 to 05	Not used		Not used by CJ1W-MAD42
range setting	Output 4		06 to 07	Not used		
Output status	Output 3	m+4	00 to 07	Not used		Not used by CJ1W-MAD42
when conversion	Output 4	m+5	00 to 07	Not used		
stops						
Ratio set value	Loop 3, A constant	m+14		Not used		Not used by CJ1W-MAD42
and bias value	Loop 3, B constant	m+15		Not used		
setting	Loop 4, A constant	m+16		Not used		
	Loop 4, B constant	m+17		Not used		

#### CJ1W-MAD42 newly supports the following areas.

Name		CJ1W-	MAD42	Remarks
		Word	Bit	
Operation mode s	etting	m+18	00 to 07	
Conversion period	l/resolution setting	m+18	08 to 15	Select from the following:
				1 ms/4,000
				250 µs/8,000
Scaling	Output 1 lower limit	m+19		
	Output 1 upper limit	m+20		
	Output 2 lower limit	m+21		
	Output 2 upper limit	m+22		
	Input 1 lower limit	m+27		
	Input 1 upper limit	m+28		]
	Input 2 lower limit	m+29		]
	Input 2 upper limit	m+30		]
	Input 3 lower limit	m+31		
	Input 3 upper limit	m+32		
	Input 4 lower limit	m+33		
	Input 4 upper limit	m+34		
Voltage/current	Output 1	m+35	00	This area is used to set voltage output or current
range setting	Output 2	J	01	output.
(Enabled with 1	Input 1	J	04	The voltage/current input setting switch is used to
to 5 V/4 to 20	Input 2	J	05	set voltage input or current input.
mA)	Input 3		06	
	Input 4		07	

# ■ Replacing with CJ1W-AD041-V1 + CJ1W-DA041

# CIO Areas

Differences in CIO areas

The first word of CJ1W-AD041-V1 and the first word of CS1W-MAD44: n = 2000 + Unit No. × 10

# The first word of CJ1W-DA041: n2 = 2000 + the second Unit's number × 10

Name		CS1W-AD161		CJ1W-AD041-V1 + CJ1W-DA041		Remarks
		Word	Bit	Word	Bit	
Conversion	Output 1	n	00	n2	00	The area allocations
enable	Output 2	1	01		01	change since the Unit No.
	Output 3	1	02		02	is different.
	Output 4		03		03	

Name		CS1V	CS1W-AD161		D041-V1 + '-DA041	Remarks
		Word	Bit	Word	Bit	
Peak hold	Input 1	n	04	n	00	The area allocations
	Input 2		05		01	change.
	Input 3		06		02	
	Input 4		07		03	
Output set value	Output 1	n+1	•	n2+1		The area allocations
	Output 2	n+2		n2+2		change since the Unit No.
	Output 3	n+3		n2+3		is different.
	Output 4	n+4		n2+4		
Input conversion	Input 1	n+5		n+1		The area allocations change.
value	Input 2	n+6		n+2		
	Input 3	n+7		n+3		
	Input 4	n+8		n+4		
Output set value	Output 1	n+9	00	n2+9	00	The area allocations
error	Output 2		01		01	change since the Unit No.
	Output 3		02		02	is different.
	Output 4		03		03	
Disconnection	Input 1	n+9	n+9 04		00	The area allocations
detection	Input 2		05		01	change.
	Input 3		06		02	]
	Input 4		07		03	

# DM Areas

Differences in DM areas

Below are the cases for the first word.

The first word of CJ1W-AD041-V1 and the first word of CS1W-MAD44: m = D20000 + Unit No. × 100

The first word of CJ1W-DA041: m2 = D20000 + Unit No. × 100

Name		CS1W	CS1W-AD161		D041-V1 + -DA041	Remarks
		Word	Bit	Word	Bit	
Output use	Output 1	m	00	m2	00	The area allocations
setting	Output 2		01		01	change since the Unit No.
	Output 3		02		02	is different.
	Output 4		03		03	
Input use setting	Input 1	m	04	m	00	The area allocations
	Input 2		05		01	change.
	Input 3		06		02	
	Input 4	1	07		03	
Ratio conversion	Loop 1	m	08 to 09	No corresp	onding	
use setting	Loop 2		10 to 11	area	0	
	Loop 3		12 to 13			
	Loop 4		14 to 15			
Output signal	Output 1	m+1	00 to 01	m2+1	00 to 01	The area allocations
range setting	Output 2		02 to 03		02 to 03	change since the Unit No
	Output 3		04 to 05	04 to 05		is different.
	Output 4		06 to 07		06 to 07	
Input signal	Input 1	m+1	08 to 09	m+1	00 to 01	The area allocations
range settings	Input 2		10 to 11		02 to 03	change.
	Input 3		12 to 13		04 to 05	
	Input 4		14 to 15		06 to 07	7
Output status	Output 1	m+2	00 to 07	m2+2	00 to 07	The area allocations
when conversion	Output 2	m+3	00 to 07	m2+3	00 to 07	change since the Unit No.
stops	Output 3	m+4	00 to 07	m2+4	00 to 07	is different.
	Output 4	m+5	00 to 07	m2+5	00 to 07	
Mean value	Input 1	m+6		m+2	-	The area allocations
processing	Input 2	m+7		m+3		change.
setting	Input 3	m+8		m+4		
	Input 4	m+9		m+5		
Ratio set value	Loop 1, A constant	m+10		No corresp	onding	
and bias value	Loop 1, B constant	m+11		area	0	
setting	Loop 2, A constant	m+12				
	Loop 2, B constant	m+13				
	Loop 3, A constant	m+14				
	Loop 3, B constant	m+15				
	Loop 4, A constant	m+16				
	Loop 4, B constant	m+17				

# ■ Replacing with CJ1W-MAD42

CS1W	CJ1W-MAD42				
Output 2 (+)       B1         Output 2 (-)       B2         Output 4 (+)       B3         Output 4 (-)       B4         N.C.       B5         Input 2 (+)       B6         Input 2 (-)       B7         AG       B8         Input 4 (+)       B9         Input 4 (-)       B10	A1       Output 1 (+)         A2       Output 1 (-)         A3       Output 3 (+)         A4       Output 3 (-)         A5       N.C.         A6       Input 1 (+)         A7       Input 1 (-)         A8       AG         A9       Input 3 (+)         A10       Input 3 (-)         A11       N.C.	Voltage output 2 (+) Output 2 (-) Current output 2 (+) N.C. Input 2 (+) Input 2 (-) AG Input 4 (+) Input 4 (-)	B2         #           B3         #           B4         #           B5         #           B6         #           B7         #           B8         #           B9         #	A1       Voltage output 1 (+)         A2       Output 1 (-)         A3       Current output 1 (+)         A4       N.C.         A5       Input 1 (+)         A6       Input 1 (-)         A7       AG         A8       Input 3 (+)         A9       Input 3 (-)	

# ■ Replacing with CJ1W-AD041-V1 + CJ1W-DA041

CS1W	-MAE	)44		CJ1W-AD0	41-V	1 + C.	J1W-DA041
				CJ	1W-A	D041	-V1
			Γ	Input 2 (+)	B1	A1	Input 1 (+)
				Input 2 (–)	B2		input 1 (+)
				Input 4 (+)	B3	A2	Input 1 (–)
				Input 4 (–)	B4	A3	Input 3 (+)
				,		A4	Input 3 (–)
				AG	B5	A5	AG
	A1	Output 1 (+)		N.C.	B6	A6	N.C.
Output 2 (+) B1	A1 A2	Output 1 (-)		N.C.	B7	A7	N.C.
Output 2 (–) B2	A3	Output 3 (+)		N.C.	B8		N.C.
Output 4 (+)         B3           Output 4 (-)         B4	A4	Output 3 (-)		N.C.	B9	A8	= -
N.C. B5	A5	N.C.	L			A9	N.C.
Input 2 (+) B6	A6	Input 1 (+)		C	J1W	-DA04	41
Input 2 (–) B7	A7	Input 1 (–)		Voltage output 2 (+)	B1		
AG B8	A8 A9	AG		Output 2 (-)	B2	A1	Voltage output 1 (+)
Input 4 (+) B9	A9 A10	Input 3 (+) Input 3 (–)		Current output 2 (+)	B3	A2	Output 1 (–)
Input 4 (–) B10	A11	N.C.		Voltage output 4 (+)	B4	A3	Current output 1 (+)
				Output 4 (-)	B5	A4	Voltage output 3 (+)
				,		A5	Output 3 (-)
				Current output 4 (+)	B6	A6	Current output 3 (+)
				N.C.	B7	A7	N.C.
				N.C.	B8	A8	N.C.
				0 V	B9	A9	24 V
						149	24 ¥

#### Reference manuals

CS1W-MAD44: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345) CJ1W-AD041-V1/DA041: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.8. CS1W-PMV01

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-DA041	<ul> <li>Channels are isolated from each other.</li> <li>Different in some capabilities.         <ul> <li>Overall accuracy (25°C): Voltage output ±0.2% of F.S. ⇒ ±0.3% of F.S. Current output ±0.1% of F.S ⇒ ±0.5% of F.S.</li> </ul> </li> <li>Different in functions.         <ul> <li>Answer input, current output disconnection detection, rate-of-change limit, and output high/low limits are not provided.</li> <li>Output hold cannot hold a specified preset value.</li> </ul> </li> <li>Different in the CIO areas and DM areas.</li> </ul>

# (2) Differences in functions and capabilities

Item	CS1W-PMV01		CJ1W-DA041		
	Specifications	Difference	opeenieatierie		
Number of outputs	4	0	4		
Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually		
Signal range	1 to 5 V/4 to 20 mA	0	1 to 5 V/4 to 20 mA, 0 to 5 V, 0 to 10 V, - 10 to 10 V		
Scaling	Not provided	0	Not provided		
Accuracy	25°C Voltage output: ±0.2% of F.S. Current output: ±0.1% of F.S.	Δ	25°C Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S.		
Temperature coefficient	±0.015% of F.S.		0 to 55°C Voltage output: ±0.5% of F.S. Current output: ±0.8% of F.S.		
Resolution	4,000	0	4,000		
Warm-up period	10 minutes	0	Not specified		
D/A conversion period	100 ms/4 points	٥	1.0 ms max./point		
Maximum time to store data in CPU Unit	Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit cycle		
Allowable load resistance	When 4 to 20 mA: 404 $\Omega$ max. (when output range is -20 to 115%) or 458 $\Omega$ max. (when output range is -20 to 100%) When 1 to 5 V: 250 k $\Omega$ min. (4 to 20 uA)	Ø	600 Ω max. (current output) 12 mA (voltage output)		
Output impedance	1 to 5 V output: 250 $\Omega$ (typical)	Ø	Voltage output: 0.5 Ω max. Current output: -		
Answer input	The actual analog output values (4 to 20 mA or 1 to 5 V) from the unit's output terminals can be read. Data stored to allocated words of CIO area: 0 to 4000 (0000 to 0FA0 hex) fixed. (When 4 mA or 1 V: 0; when 20 mA or 5 V: 4,000) Accuracy: ±0.2% of F.S. Resolution: 1/2000 Temperature coefficient: ±0.015%/°C	×	Not provided		
Current output disconnection detection	When the actual output of 4 to 20 mA from the Analog Output Unit's output terminals is 0.5 mA or less, it is regarded as an external output circuit current loop disconnection, and the output disconnection flag turns ON.	×	Not provided		
Rate-of-change limit	This function can be used to control the speed of up and down changes in analog output values.	×	Not provided		
Output high/low limits	This function can be used to place high and low limits on analog output values.	×	Not provided		

Item	CS1W-PMV01		CJ1W-DA041
	Specifications	Difference	Specifications
Output hold	<ul> <li>This function holds the analog output value to the previous value or to a specified preset value when any of the following CPU Unit errors occurs, and outputs the analog output value in the CIO Area when the error is cleared.</li> <li>CPU Unit fatal error (including FALS execution)</li> <li>CPU error in CPU Unit</li> <li>CPU Unit's load interrupted</li> </ul>		<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>
Isolation	Transformer and photocoupler isolation between channels and between input terminals and PLC signals	×	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)
Insulation resistance	Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)	×	No isolation between channels
Dielectric strength	Between all channels: 1,000 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.	×	No isolation between channels

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# (3) Differences in memory area allocations

# CIO Areas

# Differences in CIO areas

	Name		-PMV01	CJ1W-DA041		Remarks
		Word	Bit	Word	Bit	
Not used		n	00 to 15	n	04 to 15	CJ1W-DA041 uses 00 to 03 for conversion enable.
Analog output	No. 1	n+1	00 to 15	n+1	00 to 15	
value	No. 2	n+2	00 to 15	n+2	00 to 15	
	No. 3	n+3	00 to 15	n+3	00 to 15	
	No. 4	n+4	00 to 15	n+4	00 to 15	
Answer input	No. 1	n+5	00 to 15	Not provide	d	CJ1W-DA041 does not
value	No. 2	n+6	00 to 15			provide answer input.
	No. 3	n+7	00 to 15			
	No. 4	n+8	00 to 15			
Output	No. 1	n+9	00			CJ1W-DA041 does not
disconnection	No. 2	]	01			provide disconnection
	No. 3	]	02			detection.
	No. 4		03			

## DM Areas

• The area allocations change. If they are programmed, replace them by referring to the manual.

# Below are differences in the allocation of similar settings.

Name		CS1W-PMV01		CJ1W-DA041		Remarks
		Word	Bit	Word	Bit	
Output hold	Output No. 1	m+18		m+2	00 to 07	Only when holding an
value	Output No. 2	m+25		m+3	00 to 07	immediately preceding
	Output No. 3	m+32		m+4	00 to 07	value. CJ1W-DA041 does
	Output No. 4	m+39		m+5	00 to 07	not support holding a specified preset output value.

CS1W	PMV01	CJ1W-DA041	
Voltage Output         CS1W-PMV01 Isolated-type Analog Output Unit         No.2         Load         No.1         Load         V1-       B1       A1       P1+         V1-       B1       A1       P1+         V1-       B1       A2       N.C.         V2-       B3       A4       N.C.         V3-       B5       A6       N.C.         V4-       B7       A8       N.C.         N.C.       B9       A10       N.C.         N.C.       B0       A10 <th colsp<="" th=""><th>Current Output CS1W-PMV01 Isolated-type Analog Output Unit No.2 No.1 Cod resistance V1-B1A2N.C. V2-B3A4N.C. V2-B3A4N.C. V3-B5A6N.C. V3-B5A6N.C. COM3B6A7P4+ V4-B7A8N.C. N.C.B9A10N.C. N.C.B9</th><th>Output 2 (+)         B1           Output 2 (-)         B2           Output 4 (+)         B3           Output 4 (-)         B4           Output 6 (+)         B5           Output 6 (-)         B6           Output 8 (+)         B7           Output 8 (-)         B8           O V         B9           O V         B9</th></th>	<th>Current Output CS1W-PMV01 Isolated-type Analog Output Unit No.2 No.1 Cod resistance V1-B1A2N.C. V2-B3A4N.C. V2-B3A4N.C. V3-B5A6N.C. V3-B5A6N.C. COM3B6A7P4+ V4-B7A8N.C. N.C.B9A10N.C. N.C.B9</th> <th>Output 2 (+)         B1           Output 2 (-)         B2           Output 4 (+)         B3           Output 4 (-)         B4           Output 6 (+)         B5           Output 6 (-)         B6           Output 8 (+)         B7           Output 8 (-)         B8           O V         B9           O V         B9</th>	Current Output CS1W-PMV01 Isolated-type Analog Output Unit No.2 No.1 Cod resistance V1-B1A2N.C. V2-B3A4N.C. V2-B3A4N.C. V3-B5A6N.C. V3-B5A6N.C. COM3B6A7P4+ V4-B7A8N.C. N.C.B9A10N.C. N.C.B9	Output 2 (+)         B1           Output 2 (-)         B2           Output 4 (+)         B3           Output 4 (-)         B4           Output 6 (+)         B5           Output 6 (-)         B6           Output 8 (+)         B7           Output 8 (-)         B8           O V         B9           O V         B9

#### Reference manuals

CS1W-PMV01: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-DA041: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.9. CS1W-PMV02

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-DA041	<ul> <li>Channels are isolated from each other.</li> <li>Different in some capabilities. <ul> <li>Overall accuracy (25°C): ±0.1% of F.S. ⇒ ±0.3% of F.S.</li> </ul> </li> <li>Different in functions. <ul> <li>Rate-of-change limit and output high/low limits are not provided.</li> <li>Output hold cannot hold a specified preset value.</li> </ul> </li> <li>Different in the CIO areas and DM areas.</li> </ul>

# (2) Differences in functions and capabilities

Item	CS1W-PMV02		CJ1W-DA041
	Specifications	Difference	Specifications
Number of outputs	4	0	4
Input signal range selection	Selectable for 4 points individually	0	Selectable for 4 points individually
Signal range	0 to 10 V, 0 to 5 V, 0 to 1 V, -10 to 10 V, - 5 to 5 V, -1 to 1 V		1 to 5 V/4 to 20 mA, 0 to 5 V, 0 to 10 V, - 10 to 10 V
Scaling	Provided	×	Not provided
Accuracy	±0.1% of F.S.	$\bigtriangleup$	25°C
Temperature coefficient	±0.015%/°C of F.S.		Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S. 0 to 55°C Voltage output: ±0.5% of F.S. Current output: ±0.8% of F.S.
Resolution	<ul> <li>-10 to 10 V, -1 to 1 V: 1/16,000 of F.S.</li> <li>0 to 10 V, 0 to 1 V, -5 to 5 V: 1/8,000 of F.S.</li> <li>0 to 5 V: 1/4,000 of F.S.</li> </ul>	0	4,000
Warm-up period	10 minutes	0	Not specified
D/A conversion period	40 ms/4 points	Ø	1.0 ms max./point
Maximum output delay time	Output response time (50 ms max.) + conversion period + one CPU Unit cycle	Ø	Conversion period + one CPU Unit cycle
Allowable load resistance	10 kΩ min.	Ø	12 mA (voltage output)
Output impedance	0.5 Ω max.	0	Voltage output: 0.5 Ω max. Current output: -
Rate-of-change limit	This function can be used to control the speed of up and down changes in analog output values.	×	Not provided
Output high/low limits	This function can be used to place high and low limits on analog output values.	×	Not provided
Output hold	<ul> <li>This function holds the analog output value to the previous value or to a specified preset value when any of the following CPU Unit errors occurs.</li> <li>Normal operation is restored when the CPU Unit error is cleared.</li> <li>CPU Unit fatal error (including FALS execution)</li> <li>CPU error in CPU Unit</li> <li>Load on CPU Unit is interrupted</li> </ul>		<ul> <li>Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.</li> <li>When the output conversion enable bit is OFF.</li> <li>In adjustment mode, when a value other than the output number is output during adjustment.</li> <li>When there is an output setting error or a fatal error occurs at the PLC.</li> <li>When the load is OFF.</li> </ul>
Isolation	Transformer and photocoupler isolation between outputs and between output terminals and PLC signals	×	Photocoupler isolation between outputs and PLC signals (No insulation between outputs)
Insulation resistance	Between all outputs: 20 M $\Omega$ (500 VDC with an insulation resistance tester)	×	No isolation between channels
Dielectric strength	Between all outputs: 1,000 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.	×	No isolation between channels

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# (3) Differences in memory area allocations

# CIO Areas

#### Differences in CIO areas

	CS1W-PMV02		CJ1W-	-DA041	Remarks	
		Word	Bit	Word	Bit	
Not used		n	00 to 15	n	04 to 15	CJ1W-DA041 uses 00 to
						03 for conversion enable.
Analog output	No. 1	n+1	00 to 15	n+1	00 to 15	
value	No. 2	n+2	00 to 15	n+2	00 to 15	
	No. 3	n+3	00 to 15	n+3	00 to 15	
	No. 4	n+4	00 to 15	n+4	00 to 15	

# DM Areas

• The area allocations change. If they are programmed, replace them by referring to the manual.

Below are differences in the allocation of similar settings.

	CS1W-	PMV02	CJ1W	/-DA041	Remarks	
		Word	Bit	Word	Bit	
Output hold	Output No. 1	m+18		m+2	00 to 07	Only when holding an
value	Output No. 2	m+25		m+3	00 to 07	immediately preceding
	Output No. 3	m+32		m+4	00 to 07	value.
	Output No. 4	m+39		m+5	00 to 07	CJ1W-DA041 does not support holding a specified preset output value.
Output type	Output No. 1	m+50		m+1	00 to 01	-10 to 10 V, 0 to 10 V, and
	Output No. 2	m+53			02 to 03	0 to 5 V are compatible.
	Output No. 3	m+56			04 to 05	CJ1W-DA041 does not
	Output No. 4	m+59			06 to 07	support 0 to 1 V, -5 to 5 V, and -1 to 1 V.

# (4) Differences in wiring and terminal arrangement

	CS1W-PMV02							CJ1W	-DA04	1		
ls	C؟ olated-typ				Unit	+			Voltage output 2 (+)	B1		
	V1L	B1	A1 A2	V1H COM1			Load		Output 2 (-)	B2	A1 A2	Voltage output 1 (+) Output 1 (-)
+	COM1 V2L	B2 B3	A3	V2H	1				Current output 2 (+)	B3	A3	Current output 1 (+)
Load	COM2	B4	A4 A5	COM2	-				Voltage output 4 (+)	B4	A4	Voltage output 3 (+)
	V3L	B5	A5 A6	V3H COM3	-				Output 4 (–)	B5	A5	Output 3 (–)
	COM3	B6	A7	V4H	1				Current output 4 (+)	B6	A6	Current output 3 (+)
	V4L COM4	B7 B8	A8	COM4	]				N.C.	B7	A7	N.C.
	N.C.	B9	A9	N.C.	-				N.C.	B8	A8	N.C.
	N.C.	B10	A10	N.C. N.C.	-				0 V	B9	A9	24 V
B terminals: 0 to 1	V, ±1 V; A	termi	inals:	0 to 10 \	」 /, 0 to 5	5 V, ±10	V, ±5 V					J

#### Reference manuals

CS1W-PMV02: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-DA041: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W345)

# Appendix 6.10. CS1W-PTS51

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PTS51	<ul> <li>The temperature sensor type setting changes from selectable per point to common for all points.</li> <li>Different in the DM areas.</li> <li>The CIO areas remain the same.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>

# (2) Differences in functions and capabilities

Ite	m	CS1W-PTS51		CJ1W-PTS51
		Specifications	Difference	Specifications
Number of		4	0	4
Temperatu type	re sensor	Selectable per point from K, J, L, R, S, T, and B		Selectable from K, J, L, R, S, T, and B (common for all points)
Data storage in the CIO area		The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.	0	The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.
Accuracy (25ºC)		<ul> <li>With Celsius selected: ±0.3% of PV or ±1°C, whichever is greater, ±1 digit max.</li> <li>With Fahrenheit selected: ±0.3% of PV or ±2°F, whichever is greater, ±1 digit max.</li> <li>However, the accuracy of K and T at -100°C or lower and L is ±2°C ±1 digit max.</li> <li>The accuracy of R and S at 200°C or lower is ±3°C ±1 digit max.</li> <li>The accuracy of B at 400°C or lower is not specified.</li> <li>PV: Process value data</li> </ul>	0	<ul> <li>With Celsius selected: ±0.3% of PV or ±1°C, whichever is greater, ±1 digit max.</li> <li>With fahrenheit selected: ±0.3% of PV or ±2°F, whichever is greater, ±1 digit max.</li> <li>However, the accuracy of K and T at -100°C or lower and L is ±2°C ±1 digit max.</li> <li>The accuracy of R and S at 200°C or lower is ±3°C ±1 digit max.</li> <li>The accuracy of B at 400°C or lower is not specified.</li> <li>PV: Process value data</li> </ul>
Temperature characteristics		Refer to (2)-2 Temperature characteristics according to thermocouple type.	0	Refer to (2)-2 Temperature characteristics according to thermocouple type.
Warm-up p	eriod	30 minutes	0	30 minutes
Conversion		250 ms/4 points	0	250 ms/4 points
Maximum time to store data in CPU Unit		Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit cycle
Sensor error detection		<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>The process value overrange direction for when a sensor error occurs can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>	0	<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>The process value overrange direction for when a sensor error occurs can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>
Functions	Process value alarm	Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available. External alarm outputs: One per input (H or L).	0	Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available. External alarm outputs: One per input (H or L).
	External alarm output	<ul> <li>NPN output (with short-circuit protection)</li> <li>External power supply voltage: 20.4 to 26.4 VDC</li> <li>Max. switching capacity: 100 mA (for one output)</li> <li>Leakage current: 0.3 mA max.</li> <li>Residual voltage: 3 V max.</li> </ul>	0	<ul> <li>NPN output (with short-circuit protection)</li> <li>External power supply voltage: 20.4 to 26.4 VDC</li> <li>Max. switching capacity: 100 mA (for one output)</li> <li>Leakage current: 0.3 mA max.</li> <li>Residual voltage: 3 V max.</li> </ul>
Isolation		<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>	0	<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>

Item	CS1W-PTS51		CJ1W-PTS51
	Specifications	Difference	Specifications
Insulation resistance	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>Between all input and output terminals and all NC terminals</li> </ul>	0	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>Between all input and output terminals and all NC terminals</li> </ul>
Dielectric strength	<ul> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate 1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>	0	<ul> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# (2)-1 Sensor types and input ranges No difference

# (2)-2 Temperature characteristics according to thermocouple type

Thermocouple type	Temperature range	Set value error when ambient temperature changes by 1ºC
R	0 to 200°C	±0.43°C
	200 to 1,000°C	±0.29°C
	1000 to 1,700°C	±285 ppm of PV
S	0 to 200°C	±0.43°C
	200 to 1,000°C	±0.29°C
	1000 to 1,700°C	285 ppm of PV
В	400°C max.	Not guaranteed
	400 to 800°C	±0.43°C
	800 to 1,000°C	±0.29°C
	1000 to 1,800°C	285 ppm of PV
K	-200 to -100°C	±0.29°C
	-100 to 400°C	±0.11°C
	400 to 1,300°C	±285 ppm of PV
J	-100 to 400°C	±0.11°C
	400 to 850°C	±285 ppm of PV
Т	-200 to -100°C	±0.29°C
	-100 to 400°C	±0.11°C
L	-100 to 400°C	±0.11°C
	400 to 850°C	±285 ppm of PV

# (3) Differences in memory area allocations

## DM Areas

 $\cdot$  The area allocations change. If they are programmed, replace them by referring to the manual. Below are the major differences.

# <C<u>S1W-PTS51></u>

	DM area address			Data	range	Default	Data content
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimal	Hexadecimal		
m+19	m+23	m+27	m+31	0 to 9	0000 to 0009 hex	0	<ul> <li>Input type setting</li> <li>0: K, 1: K (with decimal point), 2: J, 3: J (with decimal point), 4: T, 5: L, 6: L (with decimal point), 7: R, 8: S, 9: B</li> </ul>

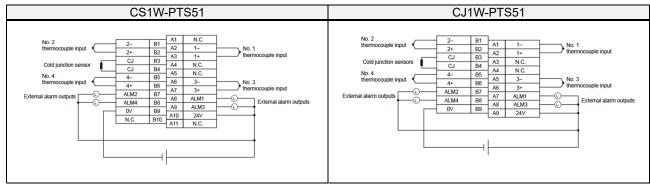
# <CJ1W-PTS51>

DM area address Data range Default	Data content
	Bata contone
Input Input Input Input Decimal Hexadecimal	
No. 1 No. 2 No. 3 No. 4	
m+19 0 to 9 0000 to 0 0009 hex	<ul> <li>Input type setting</li> <li>K, 1: K (with decimal point), 2: J, 3:</li> <li>J (with decimal point), 4: T, 5: L, 6: L</li> <li>(with decimal point), 7: R, 8: S, 9: B</li> </ul>

# CIO Areas

The CIO areas remain the same.

# (4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PTS51: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-PTS51: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

# Appendix 6.11. CS1W-PTS55

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PTS51	<ul> <li>The number of input points changes from 8 to 4.</li> <li>Accordingly, the number of Units changes from 1 to 2.</li> <li>A Unit number will be allocated to the increased Unit, which will have a memory area address corresponding to the allocated Unit number.</li> <li>The temperature sensor type setting changes from selectable per point to common for all points.</li> <li>External alarm output will be provided.</li> <li>Different in the DM areas.</li> <li>Expansion setting area allocations for process value alarms are not supported.</li> <li>Different in the CIO areas.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>

# (2) Differences in functions and capabilities

l	tem	CS1W-PTS55		CJ1W-PTS51			
		Specifications	Difference	Specifications			
Number of		8	×	4			
type	ture sensor	Selectable per point from K, J, L, R, S, T, and B (can be set to Not used)	$\triangle$	Selectable from K, J, L, R, S, T, and B (common for all points)			
Data stor CIO area	age in the	The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.	0	The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.			
Accuracy		<ul> <li>With Celsius selected: ±0.3% of PV or ±1°C, whichever is greater, ±1 digit max.</li> <li>With fahrenheit selected: ±0.3% of PV or ±2°F, whichever is greater, ±1 digit max.</li> <li>However, the accuracy of K and T at - 100°C or lower and L is ±2°C ±1 digit max.</li> <li>The accuracy of R and S at 200°C or lower is ±3°C ±1 digit max.</li> <li>The accuracy of B at 400°C or lower is not specified.</li> <li>PV: Process value data</li> </ul>	0	<ul> <li>With Celsius selected: ±0.3% of PV or ±1°C, whichever is greater, ±1 digit max.</li> <li>With Fahrenheit selected: ±0.3% of PV or ±2°F, whichever is greater, ±1 digit max.</li> <li>However, the accuracy of K and T at - 100°C or lower and L is ±2°C ±1 digit max.</li> <li>The accuracy of R and S at 200°C or lower is ±3°C ±1 digit max.</li> <li>The accuracy of B at 400°C or lower is not specified.</li> <li>PV: Process value data</li> </ul>			
Temperat character	ristics	Refer to (2)-2 Temperature characteristics according to thermocouple type.	0	Refer to (2)-2 Temperature characteristics according to thermocouple type.			
Warm-up	period	30 minutes	0	30 minutes			
Conversi	on period	250 ms/8 points	$\bigtriangleup$	250 ms/4 points			
Maximun store data Unit		Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit cycle			
Sensor error detection		<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>The process value overrange direction for when a sensor error occurs can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>	0	<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>The process value overrange direction for when a sensor error occurs can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>			
Functio ns	Process value alarm	Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available. Two alarms per input (L, H) can be output to addresses in the CIO Area specified in the expansion setting area.		Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available. External alarm outputs: One per input (H or L).			
	External alarm output	-	Ø	<ul> <li>NPN output (with short-circuit protection)</li> <li>External power supply voltage: 20.4 to 26.4 VDC</li> <li>Max. switching capacity: 100 mA (for one output)</li> <li>Leakage current: 0.3 mA max.</li> <li>Residual voltage: 3 V max.</li> </ul>			

Item	CS1W-PTS55	CJ1W-PTS51			
	Specifications	Difference	Specifications		
Isolation	<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>	0	<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>		
Insulation resistance	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all external DC terminals (input and NC terminals) and FG plate</li> <li>Between all input terminals and all NC terminals</li> </ul>	0	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>Between all input and output terminals and all NC terminals</li> </ul>		
Dielectric strength	<ul> <li>Between all NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all external DC terminals (input and NC terminals) and FG plate</li> <li>1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>		<ul> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>		

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# (2)-2 Temperature characteristics according to thermocouple type

Thermocouple type	Temperature range	Set value error when ambient temperature changes by 1°C			
R	0 to 200°C	±0.43°C			
	200 to 1,000°C	±0.29°C			
	1,000 to 1,700°C	±285 ppm of PV			
S	0 to 200°C	±0.43°C			
	200 to 1,000°C	±0.29°C			
	1,000 to 1,700°C	285 ppm of PV			
В	400°C max.	Not guaranteed			
	400 to 800°C	±0.43°C			
	800 to 1,000°C	±0.29°C			
	1,000 to 1,800°C	285 ppm of PV			
K	-200 to -100°C	±0.29°C			
	-100 to 400°C	±0.11°C			
	400 to 1,300°C	±285 ppm of PV			
J	-100 to 400°C	±0.11°C			
	400 to 850°C	±285 ppm of PV			
Т	-200 to -100°C	±0.29°C			
	-100 to 400°C	±0.11°C			
L	-100 to 400°C	±0.11°C			
	400 to 850°C	±285 ppm of PV			

# (2)-1 Sensor types and input ranges

No difference

(3) Differences in memory area allocations

DM Areas

The area allocations change. If they are programmed, replace them by referring to the manual.
 Below are the major differences.
 <CS1W-PTS55>

DM area address Default Data content Data range Input Input Hexadeci Input Input Input Input Input Input Decimal No. 1 No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 mal 0000 to m+1 0 to 59 0 Display parameter (0000 hex) 003B hex Data range error address m+4 m+8 m+20 0 to 32000 m+12 m+16 m+24 m+28 m+32 0000 to 10000 • Span adjustment value 7D00 hex (2710 hex) Set value x 0.0001 Operation settings Section m+34 Section 0 (0000 hex) 00: Temperature unit (3)-1 (3)-1 setting (°C or °F) 01: Data unit setting 04: Data format (BIN or BCD) 08: Minus sign display format for BCD display 12: Data direction at sensor error m+35 0000 to m+44 m+47 m+50 m+53 m+56 0 to 9, 15 0 Input type setting m+38 m+41 0009 0: K, 1: K (with decimal point), 2: J, 3: J (with hex 000F hex decimal point), 4: T, 5: L, 6: L (with decimal point), 7: R, 8: S, 9: B, F: Not used --• External alarm output -\_ \_ -\_ \_ \_ -mode • Span adjustment mode -\_ ---\_ \_ \_ m+59 0, 1 0000, 0 • Expansion setting area 0001 (0000 hex) enable 0: Disabled hex 1: Enabled 0 to 6143 0000 to • Expansion setting area m+60 0 17FF hex (0000 hex) address CIO area (fixed). Number of words

#### <CJ1W-PTS51>

DM area address				Data	range	Default	Data content
Input	Input	Input	Input	Decimal	Hexadecimal		
No. 1	No. 2	No. 3	No. 4				
	m	+1		0 to 34	0000 to	0	<ul> <li>Display parameter</li> </ul>
					0022 hex	(0000 hex)	Data range error address
m+4	m+8	m+12	m+16	0 to 9999	0000 to	1000	<ul> <li>Span adjustment value</li> </ul>
					270F hex	(03EB hex)	m+32 contains 0: Set value x 0.001
				0 to 32000	0000 to	10000	
					7D00 hex	(2710 hex)	m+32 contains 1: Set value x 0.0001
m+18				Section (3)-1	Section (3)-1	0 (0000 hex)	<ul> <li>Operation settings</li> <li>00 to 03: Temperature unit setting (°C or °F)</li> <li>04 to 07: Data format (BIN or BCD)</li> <li>08 to 11: Minus sign display format for BCD display</li> <li>12 to 15: Data direction at sensor error</li> </ul>
m+19				0 to 9	0000 to 0009 hex	0	• Input type setting 0: K, 1: K (with decimal point), 2: J, 3: J (with decimal point), 4: T, 5: L, 6: L (with decimal point), 7: R, 8: S, 9: B
m+20	m+23	m+26	m+29	0, 1	0000, 0001 hex	0 (0000 hex)	• External alarm output mode Select either high limit or low limit alarm output. 0: High limit alarm; 1: Low limit alarm
m+32			0, 1	1	• Span adjustment mode 0: 1/1000 1: 1/10000		
		-		-	-	-	<ul> <li>Expansion setting area enable</li> </ul>
		-		-	-	-	<ul> <li>Expansion setting area address</li> </ul>

# (3)-1 Operation settings

		CS1W-PTS5	5	CJ1W-PTS51					
Word	Bit	Description	Setting	Difference	Word	Bit	Description	Setting	
m+34	00	Temperature unit setting	0: ℃ 1: ℉	0	m+18	00	Temperature unit setting	0: ℃ 1: ℉	
	01	Data unit setting	0: Follow the input type setting 1: Use units of 0.1°C or 0.1°F as the temperature data format. (Only binary is supported.)	×		-	-	-	
	04	Data format	0: BIN (Negative values are given as 2's complements). 1: BCD	0		04	Data format	0: BIN (Negative values are given as 2's complements). 1: BCD	
	08	Minus sign display format for BCD display	0: "F" is used to indicate the minus sign. 1: The leftmost bit is used to indicate the minus sign. The setting is disabled if bits 04 to 07 are set to 0.	0		08	Minus sign display format for BCD display	0: "F" is used to indicate the minus sign. 1: The leftmost bit is used to indicate the minus sign. The setting is disabled if bits 04 to 07 are set to 0.	
	12	Data direction at sensor error	0: Goes to upper limit at sensor error. 1: Goes to lower limit at sensor error.	0		12	Data direction at sensor error	0: Goes to upper limit at sensor error. 1: Goes to lower limit at sensor error.	

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

# Expansion Setting Areas

<CS1W-PTS55 only>

\* CJ1W-PTS51 does not support specifying an expansion setting area. First word: word o. (o = address specified in word m+60 in the DM area) Direction: This Unit  $\rightarrow$  CPU Unit

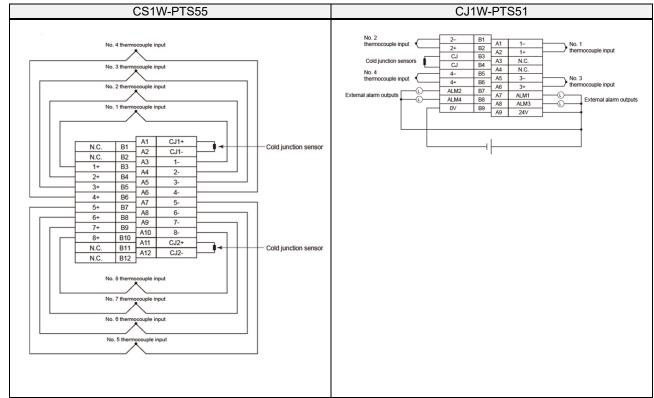
Word	Bit		CS1W-PTS55						
			Name	Data range	Description				
0	00	Input No. 1	Process value L (low limit) alarm	0, 1	0: Process value > Set value 1: Process value ≤ Set value				
	01		Process value H (high limit) alarm	0, 1	0: Process value < Set value 1: Process value ≥ Set value				
	02	Input No. 2	Process value L (low limit) alarm	0, 1	Same as for input No. 1.				
	03		Process value H (high limit) alarm						
	04	Input No. 3	Process value L (low limit) alarm						
	05		Process value H (high limit) alarm						
	06	Input No. 4	Process value L (low limit) alarm						
	07		Process value H (high limit) alarm						
	08	Input No. 5	Process value L (low limit) alarm						
	09		Process value H (high limit) alarm						
	10	Input No. 6	Process value L (low limit) alarm						
	11		Process value H (high limit) alarm						
	12	Input No. 7	Process value L (low limit) alarm						
	13		Process value H (high limit) alarm						
	14	Input No. 8	Process value L (low limit) alarm						
	15		Process value H (high limit) alarm						

# CIO Areas Direction: This Unit $\rightarrow$ CPU Unit

Word	Bit	Jiiii → (	CS1W-PTS55			CJ1W-PTS51				
			ame	Data range	Description	Difference		lame	Data range	Description
n	00	Input No. 1	Process value L (low limit) alarm Process value H (high limit)	0, 1	0: Process value > Set value 1: Process value < Set value 0: Process value < Set value 1: Process	0	Input No. 1	Process value L (low limit) alarm Process value H (high limit)	0, 1	0: Process value > Set value 1: Process value ≤ Set value 0: Process value < Set value 1: Process
	02	Input	alarm	0, 1	value ≥ Set value Same as for	0	Input	alarm	0, 1	value ≥ Set value Same as for
	02	No. 2	value L (low limit) alarm	0, 1	input No. 1.		No. 2	value L (low limit) alarm	0, 1	input No. 1.
	03		Process value H (high limit) alarm					Process value H (high limit) alarm		
	04	Input No. 3	Process value L (low limit) alarm Process			0	Input No. 3	Process value L (low limit) alarm Process		
			value H (high limit) alarm					value H (high limit) alarm		
	06	Input No. 4	Process value L (low limit) alarm Process			0	Input No. 4	Process value L (low limit) alarm Process		
	07		value H (high limit) alarm					value H (high limit) alarm		
	08	Input No. 5	Process value L (low limit) alarm			×	Not used		0	
	09		Process value H (high limit) alarm							
	10	Input No. 6	Process value L (low limit) alarm							
	11		Process value H (high limit) alarm							
	12	Input No. 7	Process value L (low limit) alarm							
	13		Process value H (high limit) alarm							
	14	Input No. 8	Process value L (low limit) alarm							
	15		Process value H (high limit) alarm							

Word	Bit		CS	1W-PTS55		CJ1W-PTS51					
		N	ame	Data	Description	Difference	١	lame	Data	Description	
				range					range		
n+1	00 to	Input	Process	Depends	Stores data in	0	Input	Process	Depends	Stores data in	
	15	No. 1	value	on type	the data range		No. 1	value	on type	the data range	
n+2	00 to	Input		of input.	specified for	0	Input		of input.	specified for	
	15	No. 2			the input type		No. 2			the input type	
n+3	00 to	Input			±20 digits.	0	Input			±20 digits.	
	15	No. 3					No. 3				
n+4	00 to	Input				0	Input				
	15	No. 4					No. 4				
n+5	00 to	Input				×	Not used	ł	0000		
	15	No. 5	-								
n+6	00 to	Input									
	15	No. 6	-								
n+7	00 to	Input									
	15	No. 7	-								
n+8	00 to 15	Input									
n+9	00	No. 8	Innut	0, 1	0: Normal	0	loout	Sensor	0, 1	0: Normal	
11+9	00	Input No. 1	Input error	0, 1	1: Error	U	Input No. 1	error	0, 1	1: Error	
	01	Input	enor		I. EIIUI	0	Input	Sensor	0, 1		
	01	No. 2				Ŭ	No. 2	error	0, 1		
	02	Input	-			0	Input	Sensor	0, 1		
	02	No. 3				Ū	No. 3	error	0, 1		
	03	Input	1			0	Input	Sensor	0, 1		
	00	No. 4				_	No. 4	error	0, 1		
	04	Input	1			×	Not used		0		
		No. 5							-		
	05	Input	1								
		No. 6									
	06	Input									
		No. 7									
	07	Input									
		No. 8									
	08	Cold jun		0, 1	0: Normal	0		ction sensor	0, 1	0: Normal	
		sensor 1			1: Error		error		-	1: Error	
	09	Cold jun		0, 1		×	Not used		0		
		sensor 2									
	10 to 14	Not used	d .	0		0	Not used	t i	0		
1	15	Convers	ion data	0, 1	0: Data		Convers	ion data	0, 1	0: Data	
	-	enabled		-,	disabled		enabled		- ,	disabled	
			2		1: Data			2		1: Data	
					enabled					enabled	

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)



#### Reference manuals

CS1W-PTS55: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-PTS51: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

# Appendix 6.12. CS1W-PTS01-V1

## (1) Selection of a replacement model and notes for replacement

Replacement model         Notes and restrictions           CJ1W-PTS15              • The number of input points changes from 4 to 2.            • Accordingly, the number of Units changes from 1 to 2.               • A Unit number will be allocated to the increased Unit, which will have a memory area address corresponding to the allocated Unit number.		
<ul> <li>Accordingly, the number of Units changes from 1 to 2.</li> <li>A Unit number will be allocated to the increased Unit, which will have a memory area address corresponding to the allocated Unit number.</li> </ul>	Replacement model	Notes and restrictions
<ul> <li>An external power supply (24 VDC) is necessary.</li> <li>The input range cannot be specified by setting an internal range (within a measurable input range).</li> <li>Different in the DM areas.</li> <li>Additional expansion setting areas will be provided.</li> <li>Different in the CIO areas.</li> <li>Additional expansion control/monitor areas will be provided.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>	CJ1W-PTS15	<ul> <li>Accordingly, the number of Units changes from 1 to 2.</li> <li>A Unit number will be allocated to the increased Unit, which will have a memory area address corresponding to the allocated Unit number.</li> <li>An external power supply (24 VDC) is necessary.</li> <li>The input range cannot be specified by setting an internal range (within a measurable input range).</li> <li>Different in the DM areas.</li> <li>Additional expansion setting areas will be provided.</li> <li>Different in the CIO areas.</li> <li>Additional expansion control/monitor areas will be provided.</li> </ul>

# (2) Differences in functions and capabilities

Item	CS1W-PTS01-V1	CJ1W-PTS15			
	Specifications	Difference	Specifications		
Number of inputs	4	×	2		
Temperature sensor type	<ul> <li>Thermocouple B, E, J, K, N, R, S, T or -80 to 80 mV. (Set separately for each of four inputs.)</li> <li>Sensor type, input range, and scaling to industrial units are separate for each of the 4 inputs.</li> <li>Note: Sensor type, input range, and scaling to industrial units are set in the DM Area.</li> </ul>	Ø	<ul> <li>Selectable from B, E, J, K, L, N, R, S, T, U, WRe5-26, PL II, and mV.</li> <li>The sensor type, input range, and scaling can be set individually for each of 2 inputs.</li> </ul>		
Input range	<ul> <li>The input range can be set within any of the measurable input ranges shown in (2)-1-1 (variable input range).</li> <li>Note: Internally, inputs are processed in five ranges (refer to (2)-1-2), so accuracy and resolution accord with these internal ranges.</li> </ul>	×	-		
Scaling	<ul> <li>Data to be stored in the allocated words in the CIO area must be scaled (with the minimum and maximum values set by user) (4 inputs set separately).</li> <li>For example, data can be stored at 0% to 100%.</li> </ul>	0	<ul> <li>Data to be stored in the allocated words in the CIO area must be scaled (with the minimum and maximum values set by user) (2 inputs set separately).</li> <li>For example, data can be converted at 0% to 100%.</li> </ul>		
Data storage in the CIO area	<ul> <li>The value derived from carrying out the following processing in order on the actual process data in the input range is stored in four digits hexadecimal (binary values) in the allocated words in the CIO Area.</li> <li>1) Mean value processing → 2) Scaling → 3) Zero/span adjustment → 4) Output limits</li> </ul>	0	<ul> <li>The value derived from carrying out the following processing in order on the actual process data in the input range is stored in four digits hexadecimal (binary values) in the allocated words.</li> <li>1) Mean value processing →</li> <li>2) Scaling → 3) Zero/span adjustment → 4) Output limits</li> </ul>		
Accuracy (25°C)	<ul> <li>±0.1% (of internal range full span)</li> <li>As shown in the following equation, the accuracy depends on the ratio of the selected internal range (0 to 4) span to the set input range span.</li> <li>Accuracy = ±0.1% x Internal range span (electromotive force conversion) / Set input range span (electromotive force conversion)</li> </ul>	Ø	±0.05% (Depends on the sensor used and the measured temperature. Refer to Accuracy by Sensor Type and Measured Temperature Range on page 3-16 for details.)		
Temperature	±0.015%/°C, for any of internal range	Ø	±0.01%/°C (for full scale of		
coefficient Resolution	<ul> <li>numbers 0 to 4.</li> <li>1/4096 (of internal range full span) As shown in the following equation, the accuracy depends on the ratio of the selected internal range (0 to 4) span to the set input range span.</li> <li>Resolution = [1/4096] x [Internal range span (electromotive force conversion)] / [Set input range span (electromotive force conversion)]</li> </ul>	Ø	electromotive force) 1/64000		

Item Cold junction		CS1W-PTS01-V1		CJ1W-PTS15
		Specifications	Difference	Specifications
	ction sation error	±1ºC, at 20±10ºC	0	±1ºC, at 20±10ºC
		45 minutes	0	45 minutes
Warm-up period Maximum signal		-80 to 80 mV	0	±120 mV
input				
Input impedance		20 kΩ min.	0	20 kΩ min.
	connection	0.1µA (typical)	0	0.1µA (typical)
detectior	n current			
Respons	e time	1 s (travel time from input 0% to 90%, for step input)	Ø	100 ms (travel time from input 0% to 90%, for ±100 mV step input and with moving average for 4 samples)
Conversi	ion period	150 ms/4 inputs	Ø	10 ms/2 inputs
	n time to	Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit
	a in CPU			cycle
Disconnection detection		<ul> <li>Detects disconnections at each input and turns ON the disconnection detection flag.</li> <li>Burnout detection time: Approx. 5 s max.</li> <li>The process value overrange direction for when a disconnection occurs can be specified. (High: +115% of set input range; low: -15% of set input range)</li> </ul>	0	<ul> <li>Detects disconnections at each input and turns ON the disconnection detection flag.</li> <li>Burnout detection time: Approx. 0.5 s max.</li> <li>The process value overrange direction for when a disconnection occurs can be specified. (High: 115% of set input range; low: -15% of set input range)</li> </ul>
Functions	Mean value processing (input filter)	Calculates the moving average for the specified number of process values (1 to 16), and stores that value in the CIO Area as the process value.	0	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.
	Process value alarm	Process value 4-point alarm (HH, H, L, LL), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.	0	Process value 4-point alarm (LL, L, H, HH), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.
	Rate-of- change calculation	Calculates the amount of change per comparison time interval (1 to 16 s).	0	Calculates the amount of change per comparison time interval (1 to 16 s).
	Rate-of- change alarm	Rate-of-change 2-point alarm (H, L), alarm hysteresis (shared with process value alarm), and ON-delay timer (0 to 60 s, shared with process value alarm) are available.	0	<ul> <li>Rate-of-change 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available. (Shared with process value alarm)</li> </ul>
	Adjustment period control	-	0	When zero/span adjustment is executed, the date is internally recorded at the Unit. When the preset zero/span adjustment period and number of days notice have elapsed (allocated in expansion setting area), this function turns ON a warning flag to give notice that it is time for readjustment.
	Peak and bottom detection	-	0	This function detects the maximum (peak) and minimum (bottom) analog input values, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.
	Top and valley detection	valley		This function detects the top and valley values for analog inputs, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.

Item	CS1W-PTS01-V1		CJ1W-PTS15
	Specifications	Difference	Specifications
Isolation	Transformer isolation between channels and between input terminals and PLC signals		<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> <li>Cold junction compensation circuit: No isolation from input 2</li> </ul>
Insulation resistance	Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)	0	Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)
Dielectric strength	Between all channels: 1,000 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.	0	Between all channels: 1,000 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.
External power supply	-	×	24 VDC +10%/-15% 60 mA max., inrush current: 20 A for 1 ms max. (The external 24-VDC power supply must be isolated.)

# (2)-1 Sensor types and input ranges

(2)-1-1 Measurable input ranges

Sensor type	CS	1W-PTS01-V1		CJ1W-P	TS15
	DM area	Measurable input range	Difference	DM area	Measurable input range
	setting			setting	
В	0	0 to 1,820°C	0	0	0 to 1,820°C
E	1	-270 to 1,000°C	0	1	-270 to 1,000°C
J	2	-210 to 1,200°C	0	2	-210 to 1,200°C
K	3 -270 to 1,372°C		0	3	-270 to 1,372°C
N	4	-270 to 1,300°C	0	4	-270 to 1,300°C
R	5	-50 to 1,768°C	0	5	-50 to 1,768°C
S	6	-50 to 1,768°C	0	6	-50 to 1,768°C
Т	7	-270 to 400°C	0	7	-270 to 400°C
mV	8	-80 to 80 mV	$\bigtriangleup$	8	-100 to 100 mV
L	-	-	Ø	9	-200 to 900°C
U	-	-	Ø	10	-200 to 600°C
WRe5-26	-	-	O	11	0 to 2,300°C
PL II	-	-	Ø	12	0 to 1,300°C

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (2)-1-2 Internal ranges

<CS1W-PTS01-V1 only>

\* CJ1W-PTS15 does not support specifying an internal range.

-	/ 3	
Internal range	Thermocouple	Internal range
number	electromotive force	span
0	-80 to 80 mV	160 mV
1	-40 to 40 mV	80 mV
2	-20 to 20 mV	40 mV
3	-10 to 10 mV	20 mV
4	-5 to 5 mV	10 mV

(2)-1-3 Set input ranges corresponding to internal ranges <CS1W-PTS01-V1 only>

\* CJ1W-PTS15 does not support specifying an internal range.

Sensor	Measurable	Internal range	Internal range	Internal range	Internal range	Internal range
type	input range	No. 0	No. 1	No. 2	No. 3	No. 4
		-80 to 80 mV	-40 to 40 mV	-20 to 20 mV	-10 to 10 mV	-5 to 5 mV
В	0 to 1,820°C	Not used	Not used	0 to 1,820°C	0 to 1,496°C	0 to 1,030°C
E	-270 to 1,000°C	-270 to 1,000°C	-270 to 537°C	-270 to 286°C	-270 to 153°C	-94 to 80°C
J	-210 to 1,200°C	-210 to 1,200°C	-210 to 713°C	-210 to 366°C	-210 to 186°C	-100 to 95°C
K	-270 to 1,372°C	-270 to 1,372°C	-270 to 967°C	-270 to 484°C	-270 to 246°C	-153 to 121°C
N	-270 to 1,300°C	-270 to 1,300°C	-270 to 1,097°C	-270 to 584°C	-270 to 318°C	-270 to 171°C
R	-50 to 1,768°C	Not used	-50 to 1,769°C	-50 to 1,684°C	-50 to 961°C	-50 to 548°C
S	-50 to 1,768°C	Not used	Not used	-50 to 1,769°C	-50 to 1,035°C	-50 to 576°C
Т	-270 to 400°C	Not used	-270 to 400°C	-270 to 385°C	-270 to 213°C	-166 to 115°C
mV	-80 to 80 mV	-80 to 80 mV	-40 to 40 mV	-20 to 20 mV	-10 to 10 mV	-5 to 5 mV

(2)-1-4 Accuracy by sensor type and measured temperature range <CJ1W-PTS15 only>

For CS1W-PTS01-V1, the accuracy depends on the ratio of the set input range span (electromotive force conversion) to the selected internal range (0 to 4) span.

Temperature sensor type	Temperature range (ºC)	Standard accuracy	Details
В	0 to 1,820	±1.8°C (±0.1%)	400 to 800°C: ±3°C
		· · · · · ·	Less than 400°C: Accuracy is not specified.
E	-270 to 1,000	±0.6°C (±0.05%)	-250 to -200°C: ±1.2°C
		· · ·	Less than -250°C: Accuracy is not specified.
J	-210 to 1,200	±0.7°C (±0.05%)	
K	-270 to 1,372	±0.8°C (±0.05%)	-250 to -200°C: ±2°C
			Less than -250°C: Accuracy is not specified.
N	-270 to 1,300	±0.8°C (±0.05%)	-200 to -150°C: ±1.6°C
			Less than -200°C: Accuracy is not specified.
R	-50 to 1,769	±1.8°C (±0.1%)	0 to 100°C: ±2.5°C
			Less than 0°C: 3.2°C
S	-50 to 1,769	±1.8°C (±0.1%)	0 to 100°C: ±2.5°C
			Less than 0°C: ±3.2°C
Т	-270 to 400	±0.35°C (±0.05%)	-180 to 0°C: ±0.7°C
			-200 to -180°C: ±1.3°C
			Less than -200°C: Accuracy is not specified.
L	-200 to 900	±0.5°C (±0.05%)	
U	-200 to 600	±0.4°C (±0.05%)	-100 to 0°C: ±0.5°C
			Less than -100°C: ±0.7°C
WRe5-26	0 to 2,315	±1.2°C (±0.05%)	More than 2,200°C: ±1.4°C
PL II	0 to 1,395	±0.7°C (±0.05%)	

(3) Differences in memory area allocations

#### DM Areas

 $\cdot$  The area allocations change. If they are programmed, replace them by referring to the manual. Below are the major differences.

## <CS1W-PTS01-V1>

Ξ.											
		DM area	address		Data	range	Default	Data content			
	Input	Input	Input	Input	Decimal	Hexadecimal					
	No. 1	No. 2	No. 3	No. 4							
	m+34	m+49	m+64	m+79	0 to 8	0000 to	3	Sensor type			
						0008 hex	(0003 hex)	0: B, 1: E, 2: J, 3: K, 4: N, 5: R, 6: S, 7:			
								T, 8: mV			
	m+48	m+63	m+78	m+93	1 to 16	0001 to 0010 hex	4 (0004 hex)	<ul> <li>Mean value processing function Number of process values for</li> </ul>			
							()	calculating moving average for mean value processing			
	m+94	m+95	m+96	m+97	0 to 93	0000 to	0	Display parameter			
						005D hex	(0000 hex)	Data range error address			
	-	-	-	-	-	-	-	Expansion setting area allocations			

### <CJ1W-PTS15>

DM area	address	Data	range	Default	Data content
Input No. 1	Input No. 2	Decimal	Hexadecimal		
m+34	m+49	0 to 12	0000 to 000C hex	3 (0003 hex)	• Sensor type 0: B, 1: E, 2: J, 3: K, 4: N, 5: R, 6: S, 7: T, 8: mV, 9: L, 10: U, 11: Wre5-26, 12: PL II
m+48	m+63	1 to 128	0001 to 0080 hex	25 (0019 hex)	<ul> <li>Mean value processing function Number of process values for calculating moving average for mean value processing</li> </ul>
m+94	m+95	0 to 99, 100 to 1XX	0000 to 0063 hex 0064 to 0XXX hex	0 (0000 hex)	• Display parameter Data range error address
m+	m+98		0000 to 0005 hex	-	• Expansion setting area allocations Expansion setting area allocations 0: Not used, 1: DM, 2: CIO, 3: W, 4: H, 5: EM
m+	-99	0 to 32767	0000 to 7FFF hex	-	First word of expansion setting area

## Expansion Setting Areas

## <CJ1W-PTS15 only>

\* CS1W-PTS01-V1 does not support specifying an expansion setting area. First word: word o. (o = address specified in word m+99 in the area specified in word m+98 in the DM area)

Memory area address Input No. 1 Input No. 2		Data	range	Default	Data content
		Decimal	Hexadecimal		
	0	0 to 5	0000 to 0005 hex	-	• Expansion control/monitor area settings Expansion control/monitor area allocation 0: Not used, 1: DM, 2: CIO, 3: W, 4: H, 5: EM
0-	+1	0 to 32767	0000 to 7FFF hex	-	First word of expansion control/monitor area
o+2	o+13	0 to 32000	0000 to 7D00 hex	10000 (2710 hex)	<ul> <li>Zero/span adjustment supplementary function</li> <li>Span adjustment position</li> <li>(Input span percentage)</li> </ul>
o+3	o+14	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	0 (0000 hex)	Zero adjustment position (Input span percentage)
o+4	o+15	0 to 9999	0000 to 270F hex	365 (016D hex)	Zero/span adjustment period (unit: days)
o+5	o+16	0 to 9999	0000 to 270F hex	30 (001E hex)	Notice of days remaining (unit: days)
o+6 to o+8	o+17 to o+19	-	-	0 (0000 hex)	Not used
o+9	o+20	0 to 32000	0000 to 7D00 hex	40 (0028 hex)	<ul> <li>Top and valley hold</li> <li>Hysteresis</li> </ul>
0+10 0+11 0+12	o+21 o+22 o+23	-	-	0 (0000 hex)	Not used
0+12	0+23				<u> </u>

#### CIO Areas

Direction: This Unit  $\rightarrow$  CPU Unit

Word	Bit		CS1W-	PTS01-V	1			CJ1W-PTS	15		
		١	Name	Data range	Description	Difference	١	lame	Data range	Description	
n	00	Input No. 1	Process value LL (low low limit) alarm	0, 1	0: Process value > Set value 1: Process	0	Input No. 1	Process value LL (low low limit) alarm	0, 1	0: Process value > Set value 1: Process	
	01		Process value L (low limit) alarm	0, 1	value ≤ Set value			Process value L (low limit) alarm	0, 1	value ≤ Set value	
	02		Process value H (high limit) alarm	0, 1	0: Process value < Set value 1: Process			Process value H (high limit) alarm	0, 1	0: Process value < Set value 1: Process	
		03 Pr va (h	Process value HH (high high limit) alarm	0, 1	value ≥ Set value			Process value HH (high high limit) alarm	0, 1	value ≥ Set value	
	04	Input No. 2	Process value LL (low low limit) alarm	0, 1	Same as for input No. 1.	0	Input No. 2	Process value LL (low low limit) alarm	0, 1	Same as for input No. 1.	
	05		Process value L (low limit) alarm Process value H (high limit) alarm	value L (low limit)	value L (low limit)				Process value L (low limit) alarm	0, 1	
	06							Process value H (high limit) alarm	0, 1		
	07		Process value HH (high high limit) alarm					Process value HH (high high limit) alarm	0, 1		
	08	Input No. 3	Process value LL (low low limit) alarm			×	Not used		0		

Word	Bit		CS1W-	-PTS01-V1 CJ1W-PTS15						
		I	Name	Data range	Description	Difference	1	Name	Data range	Description
	09		Process value L (low limit) alarm Process value H (high limit)							
	11		alarm Process value HH (high high limit) alarm							
	12	Input No. 4	Process value LL (low low limit) alarm							
	13		Process value L (low limit) alarm							
	14		Process value H (high limit) alarm							
	15		Process value HH (high high limit) alarm		-					-
n+1	00 to 15	Input No. 1	Process value	- 32768	The present process value	0	Input No. 1	Process value	-32768 to	The present process value
n+2	00 to 15	Input No. 2		to 32767 (8000 to FFFF hex, 0000 to 7FFF	is stored according to the scaling set in the allocated words of the DM area.	0	Input No. 2		32767 (8000 to FFFF hex, 0000 to 7FFF box)	is stored according to the scaling set in the allocated words of the DM area.
n+3	00 to	Input	_	hex)		×	Not used	ł	hex) 0000	
n+4	15 00 to 15	No. 3 Input No. 4	-							
n+5	00 to 15	Input No. 1	Rate-of- change	- 32768	The process value rate of	0	Input No. 1	Rate-of- change	-32768 to	The present rate of change
n+6	00 to 15	Input No. 2	value	to 32767 (8000 to FFFF hex, 0000 to 7FFF	change is stored according to the scaling set in the allocated words of the DM area.	0	Input No. 2	value	32767 (8000 to FFFF hex, 0000 to 7FFF hex)	is stored according to the scaling set in the allocated words of the DM area.
n+7	00 to 15	Input No. 3		hex)		×	Not used	ł	0000	
n+8	00 to 15	Input No. 4	1							
n+9	00	Input No. 1	Rate-of- change value L (low limit) alarm	0, 1	0: Rate-of- change value > Set value 1: Rate-of- change value ≤ Set value	0	Input No. 1	Rate-of- change value L (low limit) alarm	0, 1	0: Rate-of- change value > Set value 1: Rate-of- change value ≤ Set value
	01		Rate-of- change value H (high limit) alarm	0, 1	0: Rate-of- change value < Set value 1: Rate-of- change value ≥ Set value			Rate-of- change value H (high limit) alarm	0, 1	0: Rate-of- change value < Set value 1: Rate-of- change value ≥ Set value
	02	Input No. 2	Rate-of- change value L (low limit) alarm	0, 1	Same as for input No. 1.	0	Input No. 2	Rate-of- change value L (low limit) alarm	0, 1	Same as for input No. 1.
	03		Rate-of- change value H (high limit) alarm					Rate-of- change value H (high limit) alarm		

Word	Bit		CS1W-P	TS01-V1		CJ1W-PTS15					
			Name	Data range	Description	Difference		Name	Data range	Description	
	04	Input No. 3	Rate-of- change value L (low limit) alarm			×	Not use	Not used			
	05		Rate-of- change value H (high limit) alarm								
	06	Input No. 4	Rate-of- change value L (low limit) alarm								
	07		Rate-of- change value H (high limit) alarm								
	08	Input No. 1	Input disconnection	0, 1	0: Normal 1:	0	Input No. 1	Input disconnection	0, 1	0: Normal 1:	
	09	Input No. 2			Disconnection	0	Input No. 2			Disconnection	
	10	Input No. 3				×	Not use	ed	0		
	11	Input No. 4									
	12	Cold jun error	ction sensor	0, 1	0: Normal 1: Error	×	Cold ju error	nction sensor	0, 1	0: Normal 1: Error	
	13	Not use	d	0		Ø	period	Zero/span adjustment period end		0: Adjustment enabled 1: Adjustment ended	
	14					Ø	Zero/sp period i	oan adjustment notice	0, 1	0: Adjustment enabled 1: Notice period	
	15	-				Ø	Externa	al power supply	0, 1	0: External power supply not used 1: External power supply used	

#### Expansion Control/Monitor Areas

<CJ1W-PTS15 only>

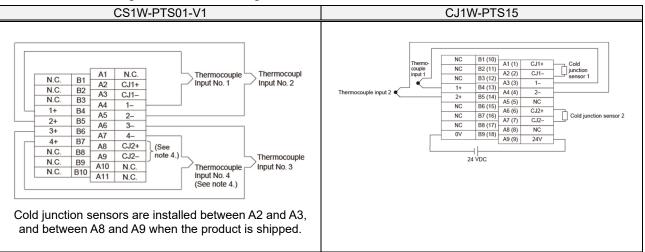
\* CS1W-PTS01-V1 does not support specifying an expansion control/monitor area. First word: word p. (p = address specified in word o+1 in the area specified in word o in the expansion setting area)

Direction: CPU Unit  $\rightarrow$  This Unit

Word	Bit			CJ1W-PTS15	5
			Name	Data range	Description
р	00 to 15	Not used		0000	
p+1	00	Input No. 1	Input No. 1 Hold function selection		0: Peak and bottom
	01	Input No. 2			1: Top and valley
	02 to 07	02 to 07 Not used		0	
	08	Input No. 1	Hold start	0, 1	0: Do not hold
	09	Input No. 2			1: Hold
	10, 11	Not used		0	
	12	Input No. 1	Hold value reset	0, 1	0: Normal operation
	13	Input No. 2			1: Reset hold value
	14, 15	Not used		0	
p+2	00	Input No. 1	Zero/span adjustment	0, 1	0: Normal operation
	01	Input No.	update bit		1: Update adjustment date (Remains ON
					while writing in external FROM.)
	02 to 15	Not used		0	

Word	Bit	CS1W-PTS01-V1								
			Name	Data range	Description					
p+3	00	Input No. 1	Zero/span adjustment period end	0, 1	0: Adjustment enabled 1: Adjustment ended					
	01		Zero/span adjustment period notice	0, 1	0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.					
	02	Input No. 2	Zero/span adjustment period end	0, 1	Same as for input No. 1.					
	03		Zero/span adjustment period notice	0, 1						
	04 to 07	Not used		0						
	08	External FR	OM error flag	0, 1	0: Normal operation 1: External FROM error					
	09 to 15	Not used		0						
p+4	00 to 15	Input No. 1	Day of final adjustment date	0100 to 3100 (BCD)	<ul> <li>Stores the date when the update bit turned ON last.</li> </ul>					
p+5	00 to 15		Year and month of final adjustment date	0001 to 9912 (BCD)	•Remains set to FFFF if the zero/span					
p+6	00 to 15	Input No. 2	Day of final adjustment date	0100 to 3100 (BCD)	adjustment bit has never been ON.					
p+7	00 to 15		Year and month of final adjustment date	0001 to 9912 (BCD)						
p+8 to p+15		Not used		0000						
p+16	00 to 15	Input No. 1	Peak/top value	-32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)	The peak or top value is stored according to the scaling set in the DM area.					
p+17	00 to 15		Bottom/valley value	-32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)	The bottom or valley value is stored according to the scaling set in the DM area.					
p+18	00 to 15	Input No. 2	Peak/top value	-32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)	Same as for input No. 1.					
p+19	00 to 15		Bottom/valley value	-32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)						
p+20 to p+34		Not used		0000						

(4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PTS01-V1: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-PTS15: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

# Appendix 6.13. CS1W-PTS12

## (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PH41U	<ul> <li>Pt50 and Ni508.4 temperature sensors will not be supported.</li> <li>Different in the DM areas.</li> <li>Different in the expansion setting areas.</li> <li>Different in the CIO areas.</li> <li>Additional expansion control/monitor areas will be provided.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>

# (2) Differences in functions and capabilities

Item	CS1W-PTS12		CJ1W-PH41U
	Specifications	Difference	Specifications
Number of temperature sensor inputs	4	0	4
Temperature sensor type	<ul> <li>Pt100 (JIS, IEC), JPt100, Pt50, Ni508.4</li> <li>The sensor type, input range, and scaling can be set individually for each of 4 inputs.</li> </ul>		<ul> <li>Pt100 (JIS, IEC 3-wire), JPt100 (3-wire), Pt1000 (3-wire), Pt100 (JIS, IEC 4-wire)</li> <li>* Pt1000 (3-wire) is supported for 1/256,000 resolution only.</li> <li>The input type, input range, and scaling can be set for individual inputs.</li> </ul>
Scaling	<ul> <li>Data to be stored in the allocated words in the CIO area must be scaled (with the minimum and maximum values set by user) (4 inputs set separately).</li> <li>For example, data can be converted at 0% to 100%.</li> </ul>		<ul> <li>Data to be stored in the allocated words in the CIO area must be scaled (with user-set minimum and maximum values for data and offsets). The inputs are set individually.</li> <li>For example, data can be converted at 0% to 100%.</li> </ul>
Data storage in the CIO area	<ul> <li>The value derived from carrying out the following processing in order on the actual process data in the input range is stored in four digits hexadecimal (binary values) in the allocated words.</li> <li>1) Mean value processing → 2) Scaling → 3) Zero/span adjustment → 4) Output limits</li> </ul>		<ul> <li>The value derived from carrying out the following processing in order on the actual process data in the input range is stored in four digits hexadecimal (binary values) in the allocated words.</li> <li>1) Mean value processing → 2) Scaling → 3) Zero/span adjustment → 4) Output limits → 5) Offset compensation → 6) Output limits</li> </ul>
Accuracy (25°C)	±0.05% or ±0.1°C, whichever is greater	Δ	±0.05% (The accuracy depends on the input type and the measured temperature. For details, refer to (2)-1-2 Accuracy by resistance thermometer input type and measured temperature.)
Temperature coefficient	Pt100: ±0.009%/°C JPt100: ±0.01%/°C Pt50: ±0.02%/°C Ni508.4: ±0.012%/°C		The temperature coefficient depends on the input type and the measured temperature. For details, refer to (2)-1-2 Accuracy by resistance thermometer input type and measured temperature.
Resolution	1/64,000	Ø	1/256,000, 1/64,000
Sensing method Allowable lead wire resistance	3-wire 20 Ω max. per wire	×	3-wire, 4-wire -
Influence of lead wire resistance	-	Ø	0.06°C/Ω (20 Ω max.) (3-wire) 0.006°C/Ω (20 Ω max.) (4-wire)
Input detection current	0.5 mA	Δ	Approx. 0.21 mA (3-wire), approx. 0.42 mA (4-wire)
Warm-up period	10 minutes	$\bigtriangleup$	30 minutes
Response time	100 ms (travel time from input 0% to 90%, for step input and with moving average for 4 samples)	Ø	<ul> <li>1/256,000 resolution: 180 ms max. (travel time from input 0% to 90%, for step input and with moving average for 1 sample)</li> <li>1/64,000 resolution: 100 ms max. (travel time from input 0% to 90%, for step input and with moving average for 4 samples)</li> </ul>

	Item	CS1W-PTS12		CJ1W-PH41U	
		Specifications	Difference	Specifications	
Convers	sion period	20 ms/4 points or 10 ms/2 points, selectable in DM area words allocated to Unit as a Special I/O Unit.	Ø	60 ms/4 points (1/256,000 resolution) 10 ms/4 points (1/64,000 resolution)	
Maximum time to store data in CPU Unit		Conversion period + one CPU Unit cycle		Conversion period + one CPU Unit cycle	
Disconnection detection		<ul> <li>Detects disconnections at each input and turns ON the disconnection detection flag.</li> <li>Burnout detection time: Approx. 0.5 s max.</li> <li>The process value overrange direction for when a disconnection occurs can be specified. (High: 115% of set input range; low: -15% of set input range)</li> </ul>		<ul> <li>Input error flag turns ON when a disconnection occurs or when 115% or -15% of the measurable input range is exceeded.</li> <li>The process value overrange direction for when a disconnection occurs can be specified. (High: 115% of set input range; low: -15% of set input range)</li> <li>Disconnection detection time: Approx. 5 s max. (4-wire Pt100) Approx. 0.5 s max. (except for 4-wire Pt100)</li> </ul>	
Functi ons	Mean value processing (input filter)	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.	0	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.	
	Process value alarm	Process value 4-point alarm (LL, L, H, HH), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.	0	Process value 4-point alarm (LL, L, H, HH), alarm hysteresis, and ON/OFF- delay timer (0 to 60 s) are available.	
	Rate-of- change calculation	Calculates the amount of change per comparison time interval (1 to 16 s).		Calculates the amount of change per process value comparison time interval (Either 1 to 16 s or the conversion period can be set.)	
	Rate-of- change alarm	Rate-of-change 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s, shared with process value alarm) are available.	0	Rate-of-change 2-point alarm (L, H), alarm hysteresis, and ON/OFF-delay timer (0 to 60 s, shared with process value alarm) are available.	
	Adjustmen t period control	When zero/span adjustment is executed, the date is internally recorded at the Unit. When the preset zero/span adjustment period and number of days notice have elapsed (allocated in expansion setting area), this function turns ON a warning flag to give notice that it is time for readjustment.	0	When zero/span adjustment is executed, the date is internally recorded at the Unit. When the preset zero/span adjustment period and number of days notice have elapsed (allocated in expansion setting area), this function turns ON a warning flag to give notice that it is time for readjustment.	
	Peak and bottom detection	This function detects the maximum (peak) and minimum (bottom) analog input values, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.	0	This function detects the maximum (peak) and minimum (bottom) process values, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.	
	Top and valley detection	This function detects the top and valley values for analog inputs, from when the hold start bit (output) allocated to the Expansion Control/Monitor Area turns ON until it turns OFF, and stores them in the expansion control/monitor area.	0	This function detects the top and valley values for process values, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.	
	Integral value calculation	-	0	<ul> <li>This function calculates the process value's time integral.</li> <li>The integral value is calculated and the result is output to the expansion control/monitor area when the integral value calculation start bit in the expansion control/monitor area is turned ON.</li> </ul>	

	Item	CS1W-PTS12		CJ1W-PH41U
		Specifications	Difference	Specifications
Resistance thermomet er input compensat ion		- · Between inputs and PLC signals:	©	<ul> <li>Compensation is enabled for a connected resistance thermometer by setting the resistance for 23°C.</li> <li>Note: This function is supported only for resistance thermometer inputs.</li> <li>Between inputs and PLC signals:</li> </ul>
		<ul> <li>Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>		<ul> <li>Transformer for power supply and digital isolator for signals</li> <li>Between inputs: Transformer for power supply and digital isolator for signals</li> </ul>
Insulation resistance		Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)	0	Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)
Dielectri	c strength	Between all channels: 1,000 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.	$\bigtriangleup$	Between all channels: 500 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.

## (2)-1-1 Measurable input ranges

Sensor type	CS	1W-PTS12	CJ1W-PH41U			
	DM area setting	Measurable input	Difference	DM area setting	Measurable input	
		range			range	
Pt100 (3-wire)	100 (3-wire) 0 -200 to 850°C			0	-200 to 850°C	
JPt100 (3-wire)	1	1 -200 to 500°C		3	-200 to 500°C	
Pt1000 (3-wire)	-	-	O	7 *1	-200 to 850°C	
JPt100 (4-wire)	-	-	O	9	-200 to 850°C	
				10 *1	0 to 50°C	
Pt50	Pt50 2 -200 to 649°C		×	-	-	
Ni508.4 3 -50 to 150°C		×	-	-		

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

\*1. Only for 1/256,000 resolution

## (2)-1-2 Accuracy by resistance thermometer input type and measured temperature

Input clas	ssification	Measured	Standard accuracy	Temperature coefficient
Temperature sensor type			°C (%)	°C/°C (ppm/°C)
Pt100 (3-wire)	-200.00 to 850.00	-200.00 to -50.00 -50.00 to 150.00 150.00 to 850.00	±0.5°C (±0.05%) ±0.21°C (±0.02%) ±0.5°C (±0.05%)	±0.08°C/°C (±78 ppm/°C) ±0.03°C/°C (±29 ppm/°C) ±0.08°C/°C (±78 ppm/°C)
JPt100 (3-wire)	-200.00 to 500.00	Same as on the left	±0.4°C (±0.05%)	±0.07°C/°C (±96 ppm/°C)
Pt1000 (3-wire)	-200.00 to 850.00	Same as on the left	±0.5°C (±0.05%)	±0.09°C/°C (±85 ppm/°C)
Pt100 (4-wire)	-200.00 to 850.00	Same as on the left	±0.5°C (±0.05%)	±0.02°C/°C (±17 ppm/°C)
	0.000 to 50.000	Same as on the left	±0.025°C (±0.05%)	±0.005°C/°C (±90 ppm/°C)

# (3) Differences in memory area allocations

## DM Areas

 $\cdot$  The area allocations change. If they are programmed, replace them by referring to the manual. Below are the major differences.

<CS1W-PTS12>

51VV-F		address		Data	range	Default	Data content
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimal	Hexadecimal	_ ordan	
	m	+1		0, 1	0000 hex 0001 hex	0 (0000 hex)	<ul> <li>Number of inputs setting</li> <li>0: 4 inputs, 1: 2 inputs</li> </ul>
m+2	m+10	m+18	m+26	-32768 to 32767	8000 to FFFF hex 0000 to 7FFF hex	4200 (1068 hex)	<ul> <li>Process value alarm settings</li> <li>Process value HH (high high limit) alarm setting</li> <li>(Set as a process value scaling value.)</li> </ul>
m+3	m+11	m+19	m+27	-32768 to 32767	8000 to FFFF hex 0000 to 7FFF hex	4000 (0FA0 hex)	Process value H (high limit) alarm setting (Set as a process value scaling value.)
m+4	m+12	m+20	m+28	-32768 to 32767	8000 to FFFF hex 0000 to 7FFF hex	0 (0000 hex)	Process value L (low limit) alarm setting (Set as a process value scaling value.)
m+5	m+13	m+21	m+29	-32768 to 32767	8000 to FFFF hex 0000 to 7FFF hex	-200 (FF38 hex)	Process value LL (low low limit) alarm setting (Set as a process value scaling value.)
m+6	m+14	m+22	m+30	-32768 to 32767	8000 to FFFF hex 0000 to 7FFF hex	4000 (0FA0 hex)	• Rate-of-change value alarm settings Rate-of-change value H (high limit) alarm setting (Set as a rate-of-change scaling value.)
m+7	m+15	m+23	m+31	-32768 to 32767	8000 to FFFF hex、 0000 to 7FFF hex	0 (0000 hex)	Rate-of-change value L (low limit) alarm setting (Set as a rate-of-change scaling value.)
m+8	m+16	m+24	m+32	0 to 32000	0000 to 7D00 hex	10000 (2710 hex)	<ul> <li>Zero/span adjustment</li> <li>Gain for span adjustment</li> <li>(set value x 0.0001%)</li> </ul>
m+9	m+17	m+25	m+33	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	0 (0000 hex)	Zero adjustment value (Set as a process value scaling value.)
m+34	m+49	m+64	m+79	0 to 3	0000 to 0003 hex	0 (0000 hex)	• Sensor type 0: Pt100, 1: JPt100, 2: Pt50, 3: Ni508.4
m+35	m+50	m+65	m+80	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	4000 (0FA0 hex)	• Process value input range settings Maximum input signal value (set value x 0.1°C/°F)
m+36	m+51	m+66	m+81	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	0 (0000 hex)	Minimum input signal value (set value x 0.1°C/°F)
m+39	m+54	m+69	m+84	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	4000 (0FA0 hex)	<ul> <li>Process value scaling</li> <li>Value stored for maximum value in range (span)</li> </ul>
m+40	m+55	m+70	m+85	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	0 (0000 hex)	Value stored for minimum value in range (zero)
m+41	m+56	m+71	m+86	0 to 32000	0000 to 7D00 hex	40 (0028 hex)	Alarm supplementary functions     Alarm hysteresis     (Set as a process value scaling value.)     (Shared with process value alarm and     rate-of-change alarm.)
m+42	m+57	m+72	m+87	0 to 60	0000 to 003C hex	0 (0000 hex)	Alarm ON-delay time (unit: s) (Shared with process value alarm and rate-of-change alarm.)

	DM area	address		Data	range	Default		Data content
Input	Input	Input	Input	Decimal	Hexadecimal			
No. 1	No. 2	No. 3	No. 4					
m+43	m+58	m+73	m+88	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	4000 (0FA0 hex)	Rate-of- change range setting	<ul> <li>Rate-of-change function Maximum rate-of-change value</li> <li>(Set value industrial unit, comparison time interval)</li> </ul>
m+44	m+59	m+74	m+89	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	-4000 (F060 hex)		Minimum rate-of-change value (Set value industrial unit, comparison time interval)
m+45	m+60	m+75	m+90	1 to 16	0001 to 0010 hex	1 (0001 hex)	Rate-of-ch interval (ur	ange comparison time nit: s)
m+46	m+61	m+76	m+91	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	4000 (0FA0 hex)	Rate-of- change value scaling	Value stored for maximum value in range
m+47	m+62	m+77	m+92	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	-4000 (F060 hex)		Value stored for minimum value in range
m+48	m+63	m+78	m+93	1 to 128	0001 to 0080 hex	25 (0019 hex)	Number of	lue processing function process values for moving average for mean essing

## <CJ1W-PH41U>

J1W-PH41U>											
	DM area	address		Data	range	Default		Data content			
Input	Input	Input	Input	Decimal	Hexadecimal						
No. 1	No. 2	No. 3	No. 4								
	m	+1		(*1)	(*1)	0 (0000 hex)		ion settings o 03: Resolution switch			
						(0000 nex)		o 07: Process value data			
m+2	m+10	m+18	m+26	-	80000000 to	40000	Lower	<ul> <li>Process value alarm</li> </ul>			
m+3	m+11	m+19	m+27	2147483648	FFFFFFF	(00009C40	Upper	settings			
				to	hex,	hex)		Process value H (high limit)			
				2147483647	00000000 to	,		alarm setting (Set as a			
					7FFFFFF			process value scaling			
					hex			value.)			
m+4	m+12	m+20	m+28	-	80000000 to	0	Lower	Process value L (low limit)			
m+5	m+13	m+21	m+29	2147483648	FFFFFFF	(00000000	Upper	alarm setting (Set as a			
				to	hex,	hex)		process value scaling			
				2147483647	00000000 to			value.)			
					7FFFFFF						
					hex			_ /			
m+6	m+14	m+22	m+30	1 to	0000001 to	1000000	Lower	Zero/span adjustment			
m+7	m+15	m+23	m+31	10000000	05F5E100	(00989680	Upper	Gain for span adjustment			
					hex	hex)		(set value x 0.0000001(10- 7))			
m+8	m+16	m+24	m+32	-	80000000 to	0	Lower	Zero adjustment value			
m+9	m+17	m+25	m+33	2147483648	FFFFFFF	(0000000	Upper	(Set as a process value			
				to	hex,	hex)		scaling value.)			
				2147483647	00000000 to						
					7FFFFFF						
	40		70	0 1 50	hex						
m+34	m+49	m+64	m+79	0 to 50	0 to 32 hex	36		signal type			
						(0024	<ul> <li>When t</li> </ul>	he resolution switch is set to 0			
						hex)	(1/256,0				
							0: Pt100	(3-wire)			
								0 (3-wire)			
								0 (3-wire)			
							9: Pt100 (4-wire) (1)				
							10: Pt10	0 (4-wire) (2)			
								he resolution switch is set to 1			
							(1/64,000)				
								(3-wire)			
								0 (3-wire)			
							9: Pt100	(4-wire) (1)			

	DM area	address		Data	range	Default		Data content		
Input	Input	Input	Input	Decimal	Hexadecimal					
No. 1	No. 2	No. 3	No. 4							
m+35	m+50	m+65	m+80	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	10000 (2710 hex)	• Process value input range settings Maximum input signal value (Set value x 0.1°C for °C, set value x 0.1°F for °F)			
m+36	m+51	m+66	m+81	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	0 (0000 hex	(Set val	Minimum input signal value (Set value x 0.1°C for °C, set value x 0.1°F for °F)		
m+39	m+54	m+69	m+84	-	8000000 to	10000	Lower	<ul> <li>Process value scaling</li> </ul>		
m+40	m+55	m+70	m+85	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(00002710 hex)	Upper	Maximum scaling value (value stored for maximum value in range (span))		
m+41	m+56	m+71	m+86	-	80000000 to	0	Lower	Minimum scaling value		
m+42	m+57	m+72	m+87	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(00000000 hex)	Upper	(value stored for minimum value in range (zero))		
m+43	m+58	m+73	m+88	-	80000000 to	0	Lower	Scaling offset		
m+44	m+59	m+74	m+89	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(0000000 hex)	Upper			
m+45	m+60	m+75	m+90	0 to 32767	0000 to 7FFF hex	40 (0028 hex)	Alarm hy (Set as a value.) ( alarm ar	supplementary functions ysteresis a process value scaling Shared with process value nd rate-of-change alarm.)		
m+46	m+61	m+76	m+91	0 to 60	0000 to 003C hex	0 (0000 hex)	(Shared and rate	N-delay time (unit: s) with process value alarm -of-change alarm.)		
m+47	m+62	m+77	m+92	0 to 60	0000 to 003C hex	0 (0000 hex)	(Shared	FF-delay time (unit: s) with process value alarm -of-change alarm.)		
m+48	m+63	m+78	m+93	0 to 128	0000 to 0080 hex	0 (0000 hex)	<ul> <li>(Shared with process value alarm and rate-of-change alarm.)</li> <li>Mean value processing function Number of process values for calculating moving average for mean value processing</li> <li>0: 4 values for a resolution of 1/256,000, 25 values for a resolution of 1/64,000 or 1/16,000</li> <li>1 to 128: Number of process values</li> </ul>			

## \*1. The operation settings are as follows:

Addresses	Bit	Description	Setting
m+1	00 to 03	Resolution switch	0: 1/256,000 (conversion period: 60 ms) 1: 1/64,000 (conversion period: 10 ms) 2: 1/16,000 (conversion period: 5 ms)
	04 to 07	Process value data length (Sets the data length for the process value, rate of change, peak value, top value, bottom value, and valley value.)	0: 2 words (signed double word binary data) 1: 1 word (restricted to the following range: - 32768 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex).)

#### Expansion Setting Areas

• The area allocations change. If they are programmed, replace them by referring to the manual.

Below are the major differences.

# <CS1W-PTS12>

First word: word o.	o = address specified in word m+99 in the area specified in word m+98 in the DM area)
---------------------	---

	Memory area address			ess	Data	range	Default	Data content
	Input	Input	Input	Input	nput Decimal Hexadecimal			
	No. 1	No. 2	No. 3	No. 4				
Ī	o+9	o+20	o+31	o+42	0 to 32000	0000 to	40	<ul> <li>Top and valley hold</li> </ul>
						7D00 hex	(0028 hex)	Hysteresis

#### <CJ1W-PH41U>

First word: word o. (o = address specified in word m+99 in the area specified in word m+98 in the DM area)

Me	mory ar	ea addr		Data	range	Default	Data content			
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimal	Hexadecimal					
	0+8	0+16	0+24		8000000 to	42000	Lower	- Drococo voluo olorm oottingo		
0 0+1	0+8	0+16 0+17	0+24 0+25	2147483648 to 2147483647	80000000 to FFFFFFF hex, 00000000 to 7FFFFFF hex	(0000A410 hex)	Lower Upper	• Process value alarm settings Process value HH (high high limit) alarm setting (Set as a process value scaling value.)		
o+2	o+10	o+18	o+26	-	80000000 to	-2000	Lower	Process value LL (low low limit)		
o+3	o+11	o+19	o+27	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(FFFFF830 hex)	Upper	alarm setting (Set as a process value scaling value.)		
o+4	o+12	o+20	o+28	-	80000000 to	40000	Lower	<ul> <li>Rate-of-change value alarm</li> </ul>		
o+5	o+13	o+21	o+29	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(00009C40 hex)	Upper	settings Rate-of-change value H (high limit) alarm setting (Set as a rate-of-change scaling value.)		
o+6	o+14	o+22	o+30	-	8000000 to	0	Lower	Rate-of-change value L (low		
0+7	o+15	o+23	o+31	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(00000000 hex)	Upper	limit) alarm setting (Set as a rate-of-change scaling value.)		
o+34	o+48	o+62	o+76	0, 1	0000, 0001 hex	0 (0000 hex)	Square (Valid w minimu	Square root calculations Square root extraction (Valid when max. scaling value ≥ minimum scaling value.) 0: Disable, 1: Enable		
o+35	o+49	0+63	o+77	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	10000 (2710 hex)	Rate-of Maximu	of-change function -change range setting um rate-of-change value lue industrial unit, comparison erval)		
o+36	o+50	o+64	o+78	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	-10000 (D810 hex)	Minimu	m rate-of-change value lue industrial unit, comparison		
o+37	o+51	0+65	o+79	1 to 16	0001 to 0010 hex	1 (0001 hex)	interval Bits 00	-change comparison time * to 07: Comparison time to 15: Unit		
o+38	o+52	o+66	o+80	-	8000000 to	10000	Lower	Rate-of-change value scaling		
0+39	0+53	o+67	o+81	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(00002710 hex)	Upper	Maximum rate-of-change scaling value (value stored for maximum value in range)		
o+40	o+54	o+68	o+82	-	8000000 to	-10000	Lower	Minimum rate-of-change		
o+41	o+55	0+69	0+83	2147483648 to 2147483647	FFFFFFF hex, 00000000 to 7FFFFFF hex	(FFFFD810 hex)	Upper	scaling value (value stored for minimum value in range)		
o+46	o+60	o+74	o+88	0 to 32767	0000 to	40		nd valley hold		
	l				7FFF hex	(0028 hex)	Hystere	esis		

Me	emory ar	ea addr	ess	Data	range	Default		Data content		
Input	Input	Input	Input	Decimal	Hexadecimal					
No. 1	No. 2	No. 3	No. 4							
o+47	o+61	o+75	o+89	*	*	0	<ul> <li>Integra</li> </ul>	<ul> <li>Integral value calculation*</li> </ul>		
						(0000 hex)	Bits 00 to	o 07: Integer unit		
							Bits 08 to	o 15: Integer coefficient		
	0+	90		*	*	0	Resistance thermometer input			
						(0000 hex)	compensation			
							Resistan	nce thermometer input		
	-	-					compensation enable*			
o+91	o+93	o+95	o+97	-	80000000 to	1089585403	Lower	Reference resistance		
o+92	o+94	o+96	o+98	2147483648	FFFFFFF	(40F1C0FB	Upper	(resistance at 23°C)		
				to	hex,	hex)		(Set value x 0.0000001(10-7)		
				2147483647	00000000 to			Ω for Pt100 or JPt100,		
					7FFFFFF			or set value x 0.000001(10-6)		
					hex			Ω for Pt1000)		
	0+	99		*	*	0	<ul> <li>Cold ju</li> </ul>	unction compensation method		
						(0000 hex)	settings			
						· · · · · ·	Cold jun	ction compensation method*		

\* The settings for the rate-of-change comparison time interval, integral value calculation, resistance thermometer compensation, and cold junction compensation method are as follows:

Addresses	Bit	Description	S	etting
o+37	00 to 07	Comparison time	Decimal	Hexadecimal
o+51			1 to 16	0001 to 0010
o+65				hex
o+79	08 to 15	Unit	0: s	
			1: Conversion	period
o+47	00 to 07	Integer unit	0: Minutes	
o+61			1: Hours	
o+75	08 to 15	Integer coefficient	0: 1	
o+89			1: 1/10	
			2: 1/100	
			3: 1/1,000	
			4: 1/10,000	
o+90	00	Input No. 1 resistance thermometer	0: Disabled	
		input compensation	1: Enabled	
	01	Input No. 2 resistance thermometer		
		input compensation	_	
	02	Input No. 3 resistance thermometer		
		input compensation	-	
	03	Input No. 4 resistance thermometer		
	04 += 45	input compensation		
a 1 0 0	04 to 15	Not used	Or lintering of /11-	a tha wait's sale
o+99	00	Input No. 1 cold junction		e the unit's cold
	01	compensation method	junction senso	
	01	Input No. 2 cold junction	cold junction s	o not use the unit's
	02	compensation method		choul.)
	02	Input No. 3 cold junction		
	03	compensation method	4	
	03	Input No. 4 cold junction		
	04 to 15	compensation method Not used		
	04 to 15	INUL USED		

## ■ CIO Areas <CS1W-PTS12> First word: n = 2000 + Unit No. x 10 (Unit number: 0 to 95)

31					mber: 0 to 95)	1	
	Direction	Word	Bit		Name	Data range	Description
	This Unit $\rightarrow CPU$	n	00	Input No. 1	Process value LL (low low limit) alarm	0, 1	0: Process value > Set value
	Unit		01		Process value L (low limit) alarm	0, 1	1: Process value ≤ Set value
			02		Process value H (high limit) alarm	0, 1	0: Process value < Set value
			03	-	Process value HH (high high limit) alarm	0, 1	1: Process value ≥ Set value
			04	Input No. 2	Process value LL (low low limit) alarm	0, 1	Same as for input No. 1.
			05	-	Process value L (low limit) alarm	-	
			06	-	Process value H (high limit) alarm		
			07		Process value HH (high high limit) alarm	•	
			08	Input No. 3	Process value LL (low low limit) alarm		
			09	-	Process value L (low limit) alarm	-	
			10	-	Process value H (high limit) alarm	-	
			11		Process value HH (high high limit) alarm		
			12	Input No. 4	Process value LL (low low limit) alarm		
			13		Process value L (low limit) alarm		
			14		Process value H (high limit) alarm		
			15		Process value HH (high high limit) alarm		
		n+1 00 to 15	Input No. 1	Process value	-32768 to 32767 (8000 to FFFF	The present process value is stored	
		n+2	00 to 15	Input No. 2		hex, 0000 to 7FFF	according to the scaling set in the
		n+3	00 to 15	Input No. 3		hex)	allocated words of the DM area.
		n+4	00 to 15	Input No. 4			
		n+5	00 to 15		Rate-of-change value	(8000 to FFFF	The present rate of change is stored
		n+6	00 to 15	Input No. 2		hex, 0000 to 7FFF	according to the scaling set in the
		n+7	00 to 15	Input No. 3		hex)	allocated words of the DM area.
		n+8	00 to 15	Input No. 4			
		n+9	00	Input No. 1	Rate-of-change value L (low limit) alarm	0, 1	0: Rate-of-change value > Set value 1: Rate-of-change value ≤ Set value
			01		Rate-of-change value H (high limit) alarm	0, 1	0: Rate-of-change value < Set value 1: Rate-of-change value ≥ Set value
			02	Input No. 2	Rate-of-change value L (low limit) alarm	0, 1	Same as for input No. 1.
			03		Rate-of-change value H (high limit) alarm		
			04	Input No. 3	Rate-of-change value L (low limit) alarm		
			05		Rate-of-change value H (high limit) alarm		
			06	Input No. 4	Rate-of-change value L (low limit) alarm		

Direction	Word	Bit		Name	Data range	Description
		07		Rate-of-change value H (high limit) alarm		
		08	Input No. 1	Input disconnection	0, 1	0: Normal 1: Disconnection
		09	Input No. 2			
		10	Input No. 3			
		11	Input No. 4			
		12	Not used		0	-
		13	Zero/span a	adjustment period end	0, 1	0: Adjustment enabled 1: Adjustment ended
		14	Zero/span a	adjustment period notice	0, 1	0: Adjustment enabled 1: Notice period
		15	Not used		0	-

### <CJ1W-PH41U>

First word: n = 2000 + Unit No. x 10 (Unit number: 0 to 95)

Direction	2000 + 0 Word	Bit		Nan	/	Data range	Description
			line ut Nin 1				
This Unit $\rightarrow CPU$	n n		Input No. 1		Process value	-2147483648 to 2147483647	The present process value is stored
	n+1	00 to 15	In mut No. 0	Upper			
Unit	n+2		Input No. 2	Lower		(80000000 to	according to the
	n+3	00 to 15		Upper		FFFFFFFF hex, 00000000 to	scaling set in the allocated words of
	n+4		Input No. 3	Lower		7FFFFFFF hex)	the DM area.
	n+5	00 to 15		Upper		/ FFFFFFF Hex)	the Divi area.
	n+6		Input No. 4				
	n+7	00 to 15		Upper			
	n+8	00	Input No. 1		s value LL (low	0, 1	0: Process value >
					t) alarm		Set value
		01			s value L (low	0, 1	1: Process value ≤
				limit) ala			Set value
		02			s value H (high	0, 1	0: Process value <
				limit) ala			Set value
		03			s value HH (high	0, 1	1: Process value ≥
					iit) alarm		Set value
		04	Input No. 2		s value LL (low	0, 1	Same as for input
				low limi			No. 1.
		05			s value L (low		
			{ }	limit) ala			
		06			s value H (high		
		07		limit) ala			
		07			s value HH (high		
		00	la suit Nia - O		iit) alarm		
		08	Input No. 3		s value LL (low		
		00	-		t) alarm		
		09			s value L (low		
		10	4 -	limit) ala			
		10		limit) ala	s value H (high		
		11	-		s value HH (high		
		11			it) alarm		
		12	Input No. 4		s value LL (low		
		12	input 110. 4		t) alarm		
		13	1 F		s value L (low		
		10		limit) ala	``		
		14	1 }		s value H (high		
		, <sup>, ,</sup>		limit) ala			
		15	1 }		s value HH (high		
					iit) alarm		
	n+9	00	Input No. 1		-change value L	0, 1	0: Rate-of-change
					it) alarm	-, .	value > Set value
					,		1: Rate-of-change
							value ≤ Set value
		01	1 1	Rate-of	-change value H	0, 1	0: Rate-of-change
				(high lin	nit) alarm	,	value < Set value
				. 0	•		1: Rate-of-change
							value ≥ Set value
·		1	1 1			•	

Direction	Word	Bit		Name	Data range	Description
		02	Input No. 2	Rate-of-change value L (low limit) alarm	0, 1	Same as for input No. 1.
		03		Rate-of-change value H (high limit) alarm		
		04	Input No. 3	Rate-of-change value L (low limit) alarm		
		05		Rate-of-change value H (high limit) alarm		
		06	Input No. 4	Rate-of-change value L (low limit) alarm		
		07		Rate-of-change value H (high limit) alarm		
		08	Input No. 1		0, 1	0: Normal
		09	Input No. 2	-		1: Disconnection
		10	Input No. 3			
		11	Input No. 4			
		12	Cold juncti	on sensor error	0, 1	0: Normal 1: Error
		13	Zero/span	adjustment period end	0, 1	0: Adjustment enabled 1: Adjustment ended Remains set to 1 if the zero/span adjustment bit has never been ON.
		14	Zero/span	adjustment period notice	0, 1	0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		15	A/D conve	rsion error	0, 1	0: Normal 1: Error

### Expansion Control/Monitor Areas

First word: word p. (p = address specified in word o+1 in the area specified in word o in the expansion setting area)

Direction: CPU Unit  $\rightarrow$  This Unit

Word	Bit	CS1W-PTS12 CJ1W-F					CJ1W-PH41	PH41U		
		١	lame	Data range	Description	Difference	Name	Data range	Description	
р	00 to 15	Not used		0000		0	Not used	0000		
p+1	00	Input No. 1	Hold function	0, 1	0: Peak and bottom	0	Input Hold No. 1 function	0, 1	0: Peak and bottom	
	01	Input No. 2 Input	selection		1: Top and valley		Input selection No. 2 Input		1: Top and valley	
	03	No. 3 Input					No. 3 Input			
	04 to	No. 4 Not used		0		0	No. 4 Not used	0		
	07 08	Input No. 1	Hold start	0, 1	0: Do not hold 1: Hold	0	Input Hold start No. 1	0, 1	0: Do not hold 1: Hold	
	09	Input No. 2			1.11014		Input No. 2		1. 11010	
	10	Input No. 3					Input No. 3			
	11	Input No. 4					Input No. 4			
	12 13	Input No. 1 Input	Hold value reset	0, 1	0: Normal operation 1: Reset hold	0	Input Hold value No. 1 reset Input	0, 1	0: Normal operation 1: Reset hold	
	13	No. 2 Input			value		No. 2 Input		value	
	15	No. 3 Input					No. 3 Input			
p+2	00	No. 4 Input	Zero/span	0, 1	0: Normal	×	No. 4 Input Integral	0, 1	0: Do not start calculation	
	01	No. 1 Input No. 2	adjustment update bit		operation 1: Update adjustment		No. 1valueInputcalculationNo. 2start		1: Start calculation	
	02	Input No. 3			date (Remains ON		Input No. 3			
	03	Input No. 4			while writing in external FROM.)		Input No. 4			
	04	Not used		0		×	InputIntegralNo. 1value reset	0, 1	0: Normal operation	
	05 06						Input No. 2 Input		1: Reset integral value	
	00						No. 3 Input			
	08 to					0	No. 4 Not used	0		
p+2	15 00	-		-	-	×	Input Zero/span	0, 1	0: Normal	
	01						No. 1 adjustment Input update bit	-, .	operation 1: Update adjustment	
	02						No. 2 Input No. 3		date (Remains ON	
	03						Input No. 4		while writing in external EEPROM.)	
	04 to 07						Not used		,	

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### Direction: This Unit $\rightarrow$ CPU Unit

Word	Bit	////: → CI	CS1W-	PTS12			CJ1W-PH41	U	
		١	Name	Data range	Description	Difference	Name	Data range	Description
p+3	00	Input No. 1	Zero/span adjustment period end	0, 1	0: Adjustment enabled 1: Adjustment ended	×	-	-	-
	01		Zero/span adjustment period notice	0, 1	0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.				
	02	Input No. 2	Zero/span adjustment period end	0, 1	Same as for input No. 1.				
	03	Z a p	Zero/span adjustment period notice						
	04	Input No. 3	Zero/span adjustment period end						
	05		Zero/span adjustment period notice						
	06	Input No. 4	Zero/span adjustment period end						
	07		Zero/span adjustment period notice						
	08	External F flag	External FROM error		0: Normal operation 1: External FROM error				
	09 to 15	Not used		0					

Word	Bit		CS1W-	PTS12				С	J1W-PH41	IU	
			Name	Data range	Description	Difference		Name		Data range	Description
p+4	00 to 15	Input No. 1	Day of final adjustment date	0100 to 3100 (BCD)	•Stores the date when the	×	Input No. 1	Lower	Rate- of- change value	- 2147483648 to 2147483647	The present rate-of- change value is stored
p+5	00 to 15		Year and month of final adjustment date	0001 to 9912 (BCD)	update bit turned ON last. •Remains set to			Upper		(80000000 to FFFFFFF hex, 00000000 to	according to the scaling set in the expansion setting area.
p+6	00 to 15	Input No. 2	Day of final adjustment date	0100 to 3100 (BCD)	FFFF if the zero/span adjustment bit has		Input No. 2	Lower		7FFFFFF hex)	
p+7	00 to 15		Year and month of final adjustment date	0001 to 9912 (BCD)	never been ON.			Upper			
p+8	00 to 15	Input No. 3	Day of final adjustment date	0100 to 3100 (BCD)			Input No. 3	Lower			
p+9	00 to 15		Year and month of final adjustment date	0001 to 9912 (BCD)				Upper			
p+10	00 to 15	Input No. 4	Day of final adjustment date	0100 to 3100 (BCD)			Input No. 4	Lower			
p+11	00 to 15		Year and month of final adjustment date	0001 to 9912 (BCD)				Upper			
p+12	00	Not use	d	0000		×	Input No. 1	Zero/sp adjustm period e	nent	0, 1	0: Adjustment enabled 1: Adjustment ended Remains set to 1 if the zero/span adjustment bit has never been ON.
	01							Zero/sp adjustm period r	nent	0, 1	0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
	02						Input No. 2	Zero/sp adjustm period e Zero/sp adjustm period r	nent end an nent	0, 1	Same as for input No. 1.
	04						Input No. 3	Zero/sp adjustm period e Zero/sp adjustm period r	an ent end an ent		
	06						Input No. 4	Zero/sp adjustm period e Zero/sp adjustm period r	an ient end an ient		
	08						EEPRC	M error	IULICE	0, 1	0: Normal
	09 to 15					0	Not use	ed		0	1: Error -

Word	Bit		CS1W-P	TS12				CJ1W-PH41U		
			Name	Data range	Description	Difference		Name	Data range	Description
p+13	00 to 15	Not used		0000		×	Input No. 1	Day of final adjustment date	0100 to 3100 (BCD)	•Stores the date when the update
p+14	00 to 15							Year and month of final adjustment date	0001 to 9912 (BCD)	bit turned ON last. ∙Remains
p+15	00 to 15						Input No. 2	Day of final adjustment date	0100 to 3100 (BCD)	set to FFFF if the zero/span
p+16	00 to 15	Input No. 1	Peak/top value	32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)	The peak or top value is stored according to the scaling set in the DM area.	×		Year and month of final adjustment date	0001 to 9912 (BCD)	adjustment bit has never been ON.
p+17	00 to 15		Bottom/valley value	32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)	The bottom or value is stored according to the scaling set in the DM area.		Input No. 3	Day of final adjustment date	0100 to 3100 (BCD)	
p+18	00 to 15	Input No. 2	Peak/top value	- 32728 to 32767	Same as for input No. 1.			Year and month of final adjustment date	0001 to 9912 (BCD)	
p+19	00 to 15		Bottom/valley value	(8000 to FFFF			Input No. 4	Day of final adjustment date	0100 to 3100 (BCD)	
p+20	00 to 15	Input No. 3	Peak/top value	hex, 0000 to 7FFF				Year and month of final adjustment date	0001 to 9912 (BCD)	
p+21	00		Bottom/valley value	hex)			Input No. 1	Valley detection timing flag	0, 1	Turns ON when a valley is detected by the valley hold function and turns OFF after a cycle.
	01							Top detection timing flag	0, 1	Turns ON when a top is detected by the top hold function and turns OFF after a cycle.
	02 03						Input No. 2	Valley detection timing flag Top detection timing flag	0, 1	Same as for input No. 1.
	04						Input No. 3	Valley detection timing flag Top detection timing flag		
	06 07						Input No. 4	Valley detection timing flag Top detection timing flag		
	08 to 15						Not used		0	-

Word	Bit		CS1W	-PTS12					CJ1W-PH41U		
			Name	Data range	Description	Difference		Nai		Data range	Description
p+22 p+23	00 to 15 00 to 15	Input No. 4	Peak/top value Bottom/val ley value	- 32728 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex)	Same as for input No. 1.	×	Input No. 1	Lower Upper	Peak/top value	2147483648 to 2147483647 (80000000 to FFFFFFF hex, 00000000 to 7FFFFFF hex)	
p+24	00 to 15	Not us	ed	0000		×		Lower	Bottom/valley value	- 2147483648	
p+25	00 to 15							Upper		to 2147483647 (80000000 to FFFFFFF hex, 00000000 to 7FFFFFF hex)	
p+26	00 to 15						Input No. 2	Lower	Peak/top value	- 2147483648	Same as for input
p+27	00 to 15	1						Upper		to 2147483647	No. 1.
p+28	00 to 15							Lower	Bottom/valley value	(80000000 to	
p+29	00 to 15							Upper	Value	FFFFFFF hex,	
p+30	00 to 15						Input	Lower	Peak/top	00000000 to 7FFFFFF	
p+31	00 to						No. 3	Upper	value	hex)	
p+32	15 00 to							Lower	Bottom/valley		
p+33	15 00 to							Upper	value		
p+34	15 00 to						Input	Lower	Peak/top		
p+35	15 00 to	-		-	-	×	No. 4	Upper	value		
p+36	15 00 to							Lower	Bottom/valley		
р+37	15 00 to							Upper	value		
p+38	15 00 to						Input	Lower	Integral value	-	The
p+39	15 00 to						No. 1	Upper		2147483648 to	integral value for
р+40	15 00 to						Input	Lower	Integral value	2147483647 (80000000	the process
p+41	15 00 to						No. 2	Upper	J	`to FFFFFFF	value is stored
p+42	15 00 to						Input	Lower	Integral value	hex, 00000000 to	according to the
р+43	15 00 to						No. 3	Upper		7FFFFFF hex)	scaling set in the DM
p+44	15 00 to						Input	Lower	Integral value		area.
p+45	15 00 to						No. 4	Upper			
μ+40	15							opper			

## (4) Differences in wiring and terminal arrangement

C	CS1W-PTS12	CJ1W-PH41U
No. 2 Resistance thermometer input	C.         B2         A2         1A         No. 1 Resistance           I.C.         B3         A3         1B         Itermometer input           A.         B4         A4         1b         Itermometer input           B         B5         A6         3B         Itermometer input           I.C.         B7         A8         N.C.           I.C.         B8         A9         4A           I.C.         B9         A10         4B	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

#### Reference manuals

CS1W-PTS12: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-PH41U: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

# Appendix 6.14. CS1W-PTS52

## (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PTS52	<ul> <li>The temperature sensor type setting changes from selectable per point to common for all points.</li> <li>Different in the DM areas.</li> <li>The CIO areas remain the same.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>

## (2) Differences in functions and capabilities

It	tem	CS1W-PTS52		CJ1W-PTS52
		Specifications	Difference	Specifications
Number of	of inputs	4	0	4
Temperat type	ture sensor	Pt100 (JIS, IEC), JPt100 The sensor type can be set for each input.		Pt100 (JIS, IEC), JPt100 The sensor type is common for all inputs.
Data storage in the CIO area		The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.	0	The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.
Accuracy	(25°C)	<ul> <li>±0.3% of PV or ±0.8°C, whichever is greater, ±1 digit max. (±0.3% of PV or ±1.6°F, whichever is greater, ±1 digit max.)</li> <li>PV: Process value data</li> </ul>	0	<ul> <li>±0.3% of PV or ±0.8°C, whichever is greater, ±1 digit max. (±0.3% of PV or ±1.6°F, whichever is greater, ±1 digit max.)</li> <li>PV: Process value data</li> </ul>
Temperat	ture	Refer to Temperature characteristics	0	Refer to Temperature characteristics
character	istics	according to resistance thermometer type, (2)-2.		according to resistance thermometer type, (2)-2.
Sensing I		3-wire	0	3-wire
Influence wire resis		0.4°C/Ω max.	0	0.4ºC/Ω max.
Conversi		250 ms/4 points	0	250 ms/4 points
Warm-up period		10 minutes	0	10 minutes
Maximum time to store data in CPU Unit		Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit cycle
Sensor e detection		<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>Burnout detection time: Approx. 0.5 s max.</li> <li>The process value overrange direction for when a sensor error is detected can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>	0	<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>Burnout detection time: Approx. 0.5 s max.</li> <li>The process value overrange direction for when a sensor error is detected can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>
Functio Process ns value alarm		<ul> <li>Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.</li> <li>External alarm output: One per input (H or L).</li> </ul>	0	<ul> <li>Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.</li> <li>External alarm output: One per input (H or L).</li> </ul>
	External alarm output	<ul> <li>NPN output (with short-circuit protection)</li> <li>External power supply voltage: 20.4 to 26.4 VDC</li> <li>Max. switching capacity: 100 mA (for one output)</li> <li>Leakage current: 0.3 mA max.</li> <li>Residual voltage: 3 V max.</li> </ul>	0	<ul> <li>NPN output (with short-circuit protection)</li> <li>External power supply voltage: 20.4 to 26.4 VDC</li> <li>Max. switching capacity: 100 mA (for one output)</li> <li>Leakage current: 0.3 mA max.</li> <li>Residual voltage: 3 V max.</li> </ul>
Isolation		<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>	0	<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>

Item	CS1W-PTS52		CJ1W-PTS52
	Specifications	Difference	Specifications
Insulation resistance	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>Between all input and output terminals and all NC terminals</li> </ul>	0	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>Between all input and output terminals and all NC terminals</li> </ul>
Dielectric strength	<ul> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate 1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>	0	<ul> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>

## (2)-1 Sensor types and input ranges

## No difference

## (2)-2 Temperature characteristics according to resistance thermometer type

Resistance thermometer	Temperature range	Set value error when ambient temperature changes by 1°C
Pt100	-200 to 200°C	±0.06°C
	200 to 650°C	285 ppm of PV
JPt100	-200 to 200°C	±0.06°C
	200 to 650°C	285 ppm of PV

(3) Differences in memory area allocations

## DM Areas

• The area allocations change. If they are programmed, replace them by referring to the manual.

## Below are the major differences.

<C<u>S1W-PTS52></u>

	DM area address			Data	range	Default	Data content
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimal	Hexadecimal		
m+19	m+23	m+27	m+31	0, 1	0000, 0001 hex	0	<ul><li>Input type setting</li><li>Pt100, 1: JPt100</li></ul>

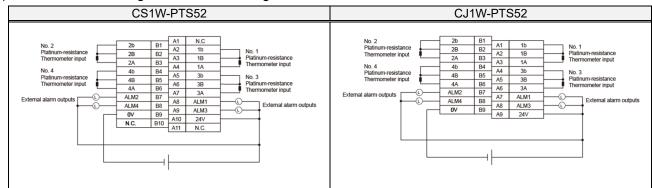
## <CJ1W-PTS52>

DM area address			Data	range	Default	Data content	
Input	Input	Input	Input	Decimal	Hexadecimal		
No. 1	No. 2	No. 3	No. 4				
m+19			0, 1	0000, 0001	0	<ul> <li>Input type setting</li> </ul>	
					hex		0: Pt100, 1: JPt100

## CIO Areas

The CIO areas remain the same.

(4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PTS52: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-PTS52: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

# Appendix 6.15. CS1W-PTS56

# (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PTS52	<ul> <li>The number of input points changes from 8 to 4.</li> <li>Accordingly, the number of units changes from 1 to 2.</li> <li>A Unit number will be allocated to the increased Unit, which will have a memory area address corresponding to the allocated Unit number.</li> <li>The temperature sensor type setting changes from selectable per point to common for all points.</li> <li>External alarm output will be provided.</li> <li>Different in the DM areas.</li> <li>Expansion setting area allocations for process value alarms are not supported.</li> <li>Different in the CIO areas.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>

## (2) Differences in functions and capabilities

ľ	tem	CS1W-PTS56		CJ1W-PTS52
		Specifications	Difference	Specifications
Number		8	×	4
Tempera type	ture sensor	Pt100 (JIS, IEC), JPt100 The sensor type can be set for each input.	$\bigtriangleup$	Pt100 (JIS, IEC), JPt100 The sensor type is common for all inputs.
Data storage in the CIO area		The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.	0	The actual process data in the input range is stored in four digits hexadecimal (binary or BCD values) in the allocated words in the CIO area.
Accuracy	(25°C)	<ul> <li>±0.3% of PV or ±0.8°C, whichever is greater, ±1 digit max. (±0.3% of PV or ±1.6°F, whichever is greater, ±1 digit max.)</li> <li>PV: Process value data</li> </ul>	0	<ul> <li>±0.3% of PV or ±0.8°C, whichever is greater, ±1 digit max. (±0.3% of PV o ±1.6°F, whichever is greater, ±1 digit max.)</li> <li>PV: Process value data</li> </ul>
Tempera character		Refer to <i>Temperature characteristics</i> according to resistance thermometer type, (2)-2.	0	Refer to <i>Temperature characteristics</i> according to resistance thermometer type, (2)-2.
Sensing	method	3-wire	0	3-wire
Influence		0.4°C/Ω max.	0	0.4°C/Ω max.
wire resis	stance			
Warm-up	period	10 minutes	0	10 minutes
Conversi	on period	250 ms/8 points	$\bigtriangleup$	250 ms/4 points
Maximum time to store data in CPU		Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit cycle
Unit Input error detection		<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>Burnout detection time: Approx. 0.5 s max.</li> <li>The process value overrange direction for when a sensor error is detected can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>	0	<ul> <li>Detects sensor error at each input and turns ON the sensor error flag.</li> <li>Burnout detection time: Approx. 0.5 s max.</li> <li>The process value overrange direction for when a sensor error is detected can be specified. (High: Set input range + 20 digits; Low: Set input range - 20 digits)</li> </ul>
Functio ns	Process value alarm	<ul> <li>Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.</li> <li>Two alarms per input (L, H) can be output to addresses in the CIO Area specified in the expansion setting area.</li> </ul>	Δ	<ul> <li>Process value 2-point alarm (L, H), alarm hysteresis, and ON-delay time (0 to 60 s) are available.</li> <li>External alarm output: One per input (H or L).</li> </ul>
	External alarm output	-	Ø	<ul> <li>NPN output (with short-circuit protection)</li> <li>External power supply voltage: 20.4 to 26.4 VDC</li> <li>Max. switching capacity: 100 mA (for one output)</li> <li>Leakage current: 0.3 mA max.</li> <li>Residual voltage: 3 V max.</li> </ul>

Item	CS1W-PTS56		CJ1W-PTS52
	Specifications	Difference	Specifications
Isolation	<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>	0	<ul> <li>Between inputs and PLC signals: Transformer for power supply and photocoupler for signals</li> <li>Between inputs: Transformer for power supply and photocoupler for signals</li> </ul>
Insulation resistance	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and FG plate</li> </ul>	0	<ul> <li>20 MΩ min. (500 VDC with an insulation resistance tester)</li> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>Between all input and output terminals and all NC terminals</li> </ul>
Dielectric strength	<ul> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and FG plate 1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels 500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>	Ø	<ul> <li>Between all output and NC terminals and external AC terminals (Power Supply Unit)</li> <li>2,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all input terminals and external AC terminals (Power Supply Unit)</li> <li>Between all input terminals and all output terminals</li> <li>Between all external DC terminals (input, output, and NC terminals) and FG plate</li> <li>1,000 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> <li>Between all channels</li> <li>500 VAC, 50/60 Hz 1 min., detection current: 1 mA</li> </ul>

# (2)-1 Sensor types and input ranges

## No difference

(2)-2 Temperature characteristics according to resistance thermometer type

Resistance thermometer	Temperature range	Set value error when ambient temperature changes by 1°C
Pt100	-200 to 200°C	±0.06°C
	200 to 650°C	285 ppm of PV
JPt100	-200 to 200°C	±0.06°C
	200 to 650°C	285 ppm of PV

# (3) Differences in memory area allocations

## DM Areas

The area allocations change. If they are programmed, replace them by referring to the manual. • Below are the major differences. <CS1W-PTS56>

			DM area	address	S			Data	range	Default	Data content
Input	Input	Input	Input	Input	Input	Input	Input	Decimal	Hexadeci		
No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8		mal		
			m	+1				0 to 59	0000 to	0	<ul> <li>Display parameter</li> </ul>
									003B hex	(0000 hex)	Data range error address
m+4	m+8	m+12	m+16	m+20	m+24	m+28	m+32	0 to 32000	0000 to	10000	<ul> <li>Span adjustment value</li> </ul>
									7D00 hex	(2710 hex)	Set value x 0.0001
m+35	m+38	m+41	m+44	m+47	m+50	m+53	m+56	0, 1, 15	0000, 0001, 000F	0	<ul> <li>Input type setting</li> <li>Pt100, 1: JPt100, F: Not used</li> </ul>
									hex		
-	-	-	-	-	-	-	-	-	-	-	<ul> <li>External alarm output mode</li> </ul>
-	-	-	-	-	-	-	-	-	-	-	<ul> <li>Span adjustment mode</li> </ul>
m+59						m+59				0 (0000 hex)	• Expansion setting area enable 0: Disabled, 1: Enabled
m+60						0 to 6143	0000 to 17FF hex	0 (0000 hex)	• Expansion setting area address CIO area (fixed) Number of words		

#### <CJ1W-PTS52>

	DM area	address		Data	range	Default	Data content
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimal	Hexadecimal		
	m	+1		0 to 31	0000 to 001F hex	0 (0000 hex)	Display parameter     Data range error address
m+4	m+8	m+12	m+16	0 to 9999	0000 to 270F hex	1000 (03EB hex)	• Span adjustment value m+32 contains 0: Set value x 0.001
				0 to 32000	0000 to 7D00 hex	10000 (2710 hex)	m+32 contains 1: Set value x 0.0001
	m+	·19		0, 1	0000, 0001 hex	0	Input type setting     O: Pt100, 1: JPt100
m+20	m+23	m+26	m+29	0, 1	0000, 0001 hex	0 (0000 hex)	• External alarm output mode Select either high limit or low limit alarm output. 0: High limit alarm; 1: Low limit alarm
m+32			0, 1	0000, 0001 hex	1	• Span adjustment mode 0: 1/1000, 1: 1/10000	
-				-	-	-	<ul> <li>Expansion setting area enable</li> </ul>
				-	-	-	<ul> <li>Expansion setting area address</li> </ul>

#### Expansion Setting Areas

CS1W-PTS56 only>
 \* CJ1W-PTS52 does not support specifying an expansion setting area.
 First word: word o. (o = address specified in word m+60 in the DM area)
 Direction: This Unit → CPU Unit

Word	Bit		CS	1W-PTS56	
			Name	Data range	Description
0	00	Input No. 1	Process value L (low limit) alarm	0, 1	0: Process value > Set value 1: Process value ≤ Set value
	01		Process value H (high limit) alarm	0, 1	0: Process value < Set value 1: Process value ≥ Set value
	02	Input No. 2	Process value L (low limit) alarm	0, 1	Same as for input No. 1.
	03		Process value H (high limit) alarm		
Γ	04	Input No. 3	Process value L (low limit) alarm		
Γ	05		Process value H (high limit) alarm		
	06	Input No. 4	Process value L (low limit) alarm		
	07		Process value H (high limit) alarm		
	08	Input No. 5	Process value L (low limit) alarm		
	09		Process value H (high limit) alarm		
	10	Input No. 6	Process value L (low limit) alarm		
	11		Process value H (high limit) alarm		
	12	Input No. 7	Process value L (low limit) alarm		
	13		Process value H (high limit) alarm		
	14	Input No. 8	Process value L (low limit) alarm		
	15		Process value H (high limit) alarm		

### CIO Areas

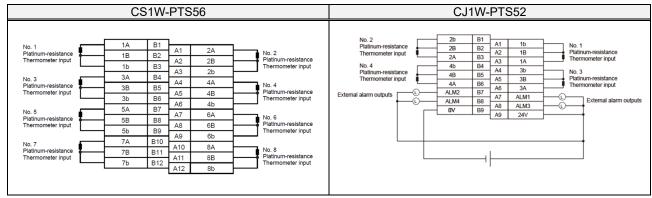
Direction: This Unit  $\rightarrow$  CPUU Init

Jire	ection:	Inst	Unit $\rightarrow$ 0	CPU Unit							
	Word	Bit		CS	1W-PTS56				CJ1W-PTS	652	
			N	lame	Data range	Description	Difference	Ν	lame	Data range	Description
	n	00	Input No. 1	Process value L (low limit) alarm	0, 1	0: Process value > Set value 1: Process value ≤ Set value	0	Input No. 1	Process value L (low limit) alarm	0, 1	0: Process value > Set value 1: Process value ≤ Set value
		01		Process value H (high limit) alarm	0, 1	0: Process value < Set value 1: Process value ≥ Set value			Process value H (high limit) alarm	0, 1	0: Process value < Set value 1: Process value ≥ Set value
		02	Input No. 2	Process value L (low limit) alarm	0, 1	Same as for input No. 1.	0	Input No. 2	Process value L (low limit) alarm	0, 1	Same as for input No. 1.
		03		Process value H (high limit) alarm					Process value H (high limit) alarm		
		04	Input No. 3	Process value L (low limit) alarm			0	Input No. 3	Process value L (low limit) alarm		
		05		Process value H (high limit) alarm					Process value H (high limit) alarm		

Word	Bit			1W-PTS56			-	CJ1W-PT		
		N	lame	Data range	Description	Difference	N	lame	Data range	Description
	06	Input No. 4	Process value L (low limit) alarm			0	Input No. 4	Process value L (low limit) alarm		
	07		Process value H (high limit) alarm					Process value H (high limit) alarm		
	08	Input No. 5	Process value L (low limit) alarm			×	Not used		0	
	09		Process value H (high limit) alarm							
	10	Input No. 6	Process value L (low limit) alarm							
	11		Process value H (high limit) alarm							
	12	Input No. 7	Process value L (low limit) alarm							
	13		Process value H (high limit) alarm							
	14	Input No. 8	Process value L (low limit) alarm							
	15		Process value H (high limit) alarm							
n+1	00 to 15	Input No. 1	Process value	Depends on type of input.	Stores data in the data range specified for	0	Input No. 1	Process value	Depends on type of input.	Stores data in the data range specified for
n+2	00 to 15	Input No. 2			the input type ±20 digits.	0	Input No. 2			the input type ±20 digits.
n+3	00 to 15	Input No. 3				0	Input No. 3			
n+4	00 to 15	Input No. 4				0	Input No. 4			
n+5	00 to 15	Input No. 5				×	Not used	İ	0000	
n+6	00 to 15	Input No. 6								
n+7	00 to 15	Input No. 7								
n+8	00 to 15	Input No. 8								
n+9	00	Input No. 1	Input error	0, 1	0: Normal 1: Error	0	Input No. 1	Sensor error	0, 1	0: Normal 1: Error
	01 02	Input No. 2 Input				0	Input No. 2 Input	Sensor error Sensor	0, 1 0, 1	
	03	No. 3 Input No. 4				0	No. 3 Input No. 4	error Sensor error	0, 1	

Word	Bit		CS	1W-PTS56			CJ1W-PT	S52	
		N	ame	Data Description		Difference	Name	Data	Description
				range				range	
	04	Input				×	Not used	0	
		No. 5							
	05	Input							
		No. 6							
	06	Input							
		No. 7							
	07	Input							
		No. 8							
	8 to	Not used	1	0		0	Not used	0	
	14								
	15	Convers	ion data	0, 1	0: Data		Conversion data	0, 1	0: Data
		enabled	flag		disabled		enabled flag		disabled
					1: Data				1: Data
					enabled				enabled

## (4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PTS56: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-PTS52: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

# Appendix 6.16. CS1W-PTS02

## (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PH41U	<ul> <li>Different in the DM areas.</li> <li>Additional expansion setting areas will be provided.</li> <li>Different in the CIO areas.</li> <li>Additional expansion control/monitor areas will be provided.</li> <li>Different in the terminal block, terminal arrangement, and wiring.</li> </ul>

## (2) Differences in functions and capabilities

Item	CS1W-PTS02	CJ1W-PH41U				
	Specifications	Difference	Specifications			
Number of temperature sensor inputs	4	0	4			
Temperature sensor type	Pt100 (JIS, IEC) or JPt100 Sensor type, input range, and scaling to industrial units are separate for each of the 4 inputs.	0	<ul> <li>Pt100 (JIS, IEC 3-wire), JPt100 (3-wire), Pt1000 (3-wire), Pt100 (JIS, IEC 4-wire)</li> <li>Pt1000 (3-wire) is supported for 1/256,000 resolution only.</li> <li>The input type, input range, and scaling can be set for individual inputs.</li> </ul>			
Input range	The input range can be set within any of the measurable input ranges shown in (2)-1-1 (variable input range).	0	- (Refer to (2)-1-1 Measurable input ranges)			
Scaling	<ul> <li>Data to be stored in the allocated words in the CIO area must be scaled (with the minimum and maximum values set by user) (4 inputs set separately).</li> <li>For example, data can be stored at 0% to 100%.</li> </ul>		<ul> <li>Data to be stored in the allocated words in the CIO area must be scaled (with user-set minimum and maximum values for data and offsets). The inputs are set individually.</li> <li>For example, data can be converted at 0% to 100%.</li> </ul>			
Data storage in the CIO area	<ul> <li>The value derived from carrying out the following processing in order on the actual process data in the input range is stored in four digits hexadecimal (binary values) in the allocated words in the CIO Area.</li> <li>1) Mean value processing → 2) Scaling → 3) Zero/span adjustment → 4) Output limits</li> </ul>		<ul> <li>The value derived from carrying out the following processing in order on the actual process data in the input range is stored in four digits hexadecimal (binary values) in the allocated words.</li> <li>1) Mean value processing → 2) Scaling → 3) Zero/span adjustment → 4) Output limits → 5) Offset compensation → 6) Output limits</li> </ul>			
Accuracy (25°C)	<ul> <li>±0.1% (of internal range full span) or ±0.1°C, whichever is greater</li> <li>As shown in the following equation, the accuracy depends on the ratio of the selected internal range (0 to 4) span to the set input range span.</li> <li>Accuracy = ±0.1% x Internal range span (electromotive force conversion) / Set input range span (electromotive force conversion) or ±0.1°C, whichever is greater</li> </ul>		±0.05% (The accuracy depends on the input type and the measured temperature. For details, refer to (2)-1- 2 Accuracy by resistance thermometer input type and measured temperature.)			
Temperature coefficient	±0.015%/°C, for any of internal range numbers 0 to 4.		The temperature coefficient depends on the input type and the measured temperature. For details, refer to (2)-1- 2 Accuracy by resistance thermometer input type and measured temperature.			
Resolution	<ul> <li>1/4,096 (of internal range full span) As shown in the following equation, the accuracy depends on the ratio of the selected internal range (0 to 4) span to the set input range span.</li> <li>Resolution = [1/4096] x [Internal range span (electromotive force conversion)] / [Set input range span (electromotive force conversion)]</li> </ul>	0	1/256,000, 1/64,000			
Sensing method	3-wire	Ô	3-wire, 4-wire			

	ltem	CS1W-PTS02		CJ1W-PH41U
		Specifications	Difference	Specifications
Allowable lead wire resistance		20 Ω max. per wire	×	-
Influence of lead wire resistance		-	Ø	0.06°C/Ω (20 Ω max.) (3-wire) 0.006°C/Ω (20 Ω max.) (4-wire)
Input detection current		0.25 mA	Δ	Approx. 0.21 mA (3-wire), approx. 0.42 mA (4-wire)
Warm-up period		10 minutes	Δ	30 minutes
Response time		0.5 s (travel time from input 0% to 90%, for step input)	0	<ul> <li>1/256,000 resolution: 180 ms max. (travel time from input 0% to 90%, for step input and with moving average for 1 sample)</li> <li>1/64,000 resolution: 100 ms max. (travel time from input 0% to 90%, for step input and with moving average for 4 samples)</li> </ul>
Conversion period		100 ms/4 points	Ø	60 ms/4 points (1/256,000 resolution) 10 ms/4 points (1/64,000 resolution)
Maximum time to store data in CPU Unit		Conversion period + one CPU Unit cycle	0	Conversion period + one CPU Unit cycle
Disconnection detection		<ul> <li>Detects disconnections at each input and turns ON the disconnection detection flag.</li> <li>Burnout detection time: Approx. 1 s max.</li> <li>The process value overrange direction for when a disconnection occurs can be specified. (High: +115% of set input range; low: -15% of set input range)</li> </ul>		<ul> <li>Input error flag turns ON when a disconnection occurs or when 115% or -15% of the measurable input range is exceeded.</li> <li>The process value overrange direction for when a disconnection occurs can be specified. (High: 115% of set input range; low: -15% of set input range)</li> <li>Disconnection detection time: Approx. 5 s max. (4-wire Pt100) Approx. 0.5 s max. (except for 4-wire Pt100)</li> </ul>
Functions	Mean value processing (input filter)	Calculates the moving average for the specified number of process values (1 to 16), and stores that value in the CIO Area as the process value.	۵	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.
	Process value alarm	Process value 4-point alarm (HH, H, L, LL), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.	0	Process value 4-point alarm (LL, L, H, HH), alarm hysteresis, and ON/OFF- delay timer (0 to 60 s) are available.
	Rate-of- change calculation	Calculates the amount of change per comparison time interval (1 to 16 s).	Δ	Calculates the amount of change per process value comparison time interval (Either 1 to 16 s or the conversion period can be set.)
	Rate-of- change alarm	Rate-of-change 2-point alarm (H, L), alarm hysteresis (shared with process value alarm), and ON-delay timer (0 to 60 s, shared with process value alarm) are available.	0	Rate-of-change 2-point alarm (L, H), alarm hysteresis, and ON/OFF-delay timer (0 to 60 s, shared with process value alarm) are available.
	Adjustment period control	-	Ø	When zero/span adjustment is executed, the date is internally recorded at the Unit. When the preset zero/span adjustment period and number of days notice have elapsed (allocated in expansion setting area), this function turns ON a warning flag to give notice that it is time for readjustment.
	Peak and bottom detection	-	Ø	This function detects the maximum (peak) and minimum (bottom) process values, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.

	Item	CS1W-PTS02		CJ1W-PH41U
		Specifications	Difference	Specifications
	Top and valley detection	-	Ø	This function detects the top and valley values for process values, from when the hold start bit (output) allocated to the expansion control/monitor area turns ON until it turns OFF, and stores them in the expansion control/monitor area.
	Integral value calculation	-	Ø	<ul> <li>This function calculates the process value's time integral.</li> <li>The integral value is calculated and the result is output to the expansion control/monitor area when the integral value calculation start bit in the expansion control/monitor area is turned ON.</li> </ul>
	Resistance thermometer input compensation	-	Ø	<ul> <li>Compensation is enabled for a connected resistance thermometer by setting the resistance for 23°C.</li> <li>Note: This function is supported only for resistance thermometer inputs.</li> </ul>
Isolation		Transformer isolation between channels and between input terminals and PLC signals		<ul> <li>Between inputs and PLC signals: Transformer for power supply and digital isolator for signals</li> <li>Between inputs: Transformer for power supply and digital isolator for signals</li> </ul>
Insulatio	n resistance	Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)	0	Between all channels: 20 M $\Omega$ (500 VDC with an insulation resistance tester)
Dielectric	c strength	Between all channels: 1,000 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.	Δ	Between all channels: 500 VAC, 50/60 Hz, 1 min, leakage current 10 mA max.

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

## (2)-1 Sensor types and input ranges (2)-1-1 Measurable input ranges

•/		ipariangee									
	Sensor type	C	S1W-PTS02	CJ1W-PH41U							
		DM area	Measurable input range	Difference	DM area	Measurable input range					
		setting			setting						
Ī	Pt100 (3-wire)	0	-200 to 850°C	0	0	-200 to 850°C					
	JPt100 (3-wire)	1	-200 to 500°C	0	3	-200 to 500°C					
	Pt1000 (3-wire)	-	-	Ø	7	-200 to 850°C					
	Pt100 (4-wire)	-	-	O	9	-200 to 850°C					
					10	0 to 50°C					

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

### (2)-1-2 Accuracy by resistance thermometer input type and measured temperature

Input clas	ssification	Measured temperature	Standard accuracy	Temperature coefficient
Temperature	Temperature	(°C)	°C (%)	°C/°C (ppm/°C)
sensor type	range (°C)			
Pt100 (3-wire)	-200.00 to	-200.00 to -50.00	±0.5°C (±0.05%)	±0.08°C/°C (±78 ppm/°C)
	850.00	-50.00 to 150.00	±0.21°C (±0.02%)	±0.03°C/°C (±29 ppm/°C)
		150.00 to 850.00	±0.5°C (±0.05%)	±0.08°C/°C (±78 ppm/°C)
JPt100 (3-wire)	-200.00 to	Same as on the left	±0.4°C (±0.05%)	±0.07°C/°C (±96 ppm/°C)
	500.00			
Pt1000 (3-wire)	-200.00 to	Same as on the left	±0.5°C (±0.05%)	±0.09°C/°C (±85 ppm/°C)
	850.00			
Pt100 (4-wire)	-200.00 to	Same as on the left	±0.5°C (±0.05%)	±0.02°C/°C (±17 ppm/°C)
	850.00			
	0.000 to 50.000	Same as on the left	±0.025°C (±0.05%)	±0.005°C/°C (±90 ppm/°C)

#### (2)-1-3 Internal ranges

#### <CS1W-PTS02 only>

\* CJ1W-PH41U does not support specifying an internal range.

Internal range	Temperature range	Internal range		
number		span		
0	-200 to 850°C	1,050°C		
1	-200 to 438°C	638°C		
2	-200 to 211°C	411°C		
3	-100 to 104°C	204°C		
4	-51 to 52°C	103ºC		

(3) Differences in memory area allocations

#### DM Areas

 $\cdot$  The area allocations change. If they are programmed, replace them by referring to the manual. Below are the major differences.

<CS1W-PTS02>

-	S1W-PTS02>										
	DM area	address		Data	range	Default	Data content				
Input	Input	Input	Input	Decimal	Hexadecimal						
No. 1	No. 2	No. 3	No. 4								
m+2	m+10	m+18	m+26	-32768 to	8000 to	4200	<ul> <li>Process value alarm settings</li> </ul>				
				32767	FFFF hex	(1068 hex)	Process value HH (high high limit)				
					0000 to	· · ·	alarm setting				
					7FFF hex		(Set as a process value scaling				
							value.)				
m+3	m+11	m+19	m+27	-32768 to	8000 to	4000	Process value H (high limit) alarm				
		-		32767	FFFF hex	(0FA0 hex)	setting				
					0000 to		(Set as a process value scaling				
					7FFF hex		value.)				
m+4	m+12	m+20	m+28	-32768 to	8000 to	0	Process value L (low limit) alarm				
		-	_	32767	FFFF hex	(0000 hex)	setting				
					0000 to	( )	(Set as a process value scaling				
					7FFF hex		value.)				
m+5	m+13	m+21	m+29	-32768 to	8000 to	-200	Process value LL (low low limit) alarm				
				32767	FFFF hex	(FF38 hex)	setting				
					0000 to	( ,	(Set as a process value scaling				
					7FFF hex		value.)				
m+6	m+14	m+22	m+30	-32768 to	8000 to	4000	Rate-of-change value alarm				
				32767	FFFF hex	(0FA0 hex)	settings				
					0000 to	( , , , , , , , , , , , , , , , , , , ,	Rate-of-change value H (high limit)				
					7FFF hex		alarm setting				
							(Set as a rate-of-change scaling				
							value.)				
m+7	m+15	m+23	m+31	-32768 to	8000 to	0	Rate-of-change value L (low limit)				
				32767	FFFF	(0000 hex)	alarm setting				
					hex,		(Set as a rate-of-change scaling				
					0000 to		value.)				
					7FFF hex		· · · · · · · · · · · · · · · · · · ·				
m+8	m+16	m+24	m+32	0 to 32000	0000 to	10000	<ul> <li>Zero/span adjustment</li> </ul>				
					7D00 hex	(2710 hex)	Gain for span adjustment				
							(set value x 0.0001%)				
m+9	m+17	m+25	m+33	-32000 to	8300 to	0	Zero adjustment value				
				32000	FFFF hex	(0000 hex)	(Set as a process value scaling				
					0000 to		value.)				
					7D00 hex						
m+34	m+49	m+64	m+79	0 to 3	0000 to	0	<ul> <li>Sensor type</li> </ul>				
					0003 hex	(0000 hex)	0: Pt100, 1: JPt100, 2: Pt50, 3:				
							Ni508.4				
m+35	m+50	m+65	m+80	-32000 to	8300 to	4000	<ul> <li>Process value input range settings</li> </ul>				
				32000	FFFF hex	(0FA0 hex)	Maximum input signal value (set				
					0000 to		value x 0.1°C/°F)				
					7D00 hex						
m+36	m+51	m+66	m+81	-32000 to	8300 to	0	Minimum input signal value (set value				
				32000	FFFF hex	(0000 hex)	x 0.1°C/°F)				
					0000 to						
					7D00 hex						
m+39	m+54	m+69	m+84	-32000 to	8300 to	4000	<ul> <li>Process value scaling</li> </ul>				
				32000	FFFF hex	(0FA0 hex)	Value stored for maximum value in				
					0000 to		range (span)				
					7D00 hex						

	DM area	address		Data	range	Default	Data content		
Input	Input	Input	Input	Decimal	Hexadecimal				
No. 1	No. 2	No. 3	No. 4						
m+40	m+55	m+70	m+85	-32000 to	8300 to	0		ored for minimum value in	
				32000	FFFF hex	(0000 hex)	range (ze	ero)	
					0000 to 7D00 hex				
m+41	m+56	m+71	m+86	0 to 32000	0000 to	40		supplementary functions	
111141	111.30	111 7 1	111.00	0 10 32000	7D00 hex	(0028 hex)	Alarm hy		
					12001100	(0020 1107)		process value scaling	
							value.)	. p	
							(Shared	with process value alarm and	
								hange alarm.)	
m+42	m+57	m+72	m+87	0 to 60	0000 to	0		N-delay time (unit: s)	
					003C hex	(0000 hex)		with process value alarm and	
10	50	70		000001	00001	4000		hange alarm.)	
m+43	m+58	m+73	m+88	-32000 to 32000	8300 to FFFF hex	4000 (0FA0 hex)	Rate-of-	<ul> <li>Rate-of-change function Maximum rate-of-change</li> </ul>	
				32000	0000 to	(UFAU Nex)	change range	value	
					7D00 hex		setting	(Set value industrial unit,	
					1200 Hox		ootang	comparison time interval)	
m+44	m+59	m+74	m+89	-32000 to	8300 to	-4000		Minimum rate-of-change	
				32000	FFFF hex	(F060 hex)		value	
					0000 to	. ,		(Set value industrial unit,	
					7D00 hex			comparison time interval)	
m+45	m+60	m+75	m+90	1 to 16	0001 to	1		change comparison time	
				00000 to	0010 hex	(0001 hex)	interval (		
m+46	m+61	m+76	m+91	-32000 to 32000	8300 to FFFF hex	4000 (0540 box)	Rate- of-	Value stored for maximum	
				32000	0000 to	(0FA0 hex)	change	value in range	
					7D00 hex		value		
m+47	m+62	m+77	m+92	-32000 to	8300 to	-4000	scaling	Value stored for minimum	
				32000	FFFF hex	(F060 hex)	J	value in range	
					0000 to	. ,		ž	
					7D00 hex				
m+48	m+63	m+78	m+93	1 to 128	0001 to	25		value processing function	
					0080 hex	(0019 hex)		of process values for	
								ng moving average for mean	
m / 0.4	m105	m100	m107	0 ta 00	0000 to	0.0000	value pro		
m+94	m+95	m+96	m+97	0 to 93	0000 to 005D hex	0 (0000 hex)	• Data ra	ange error address	
L		1	1		000D Hex	nex)			

#### <CJ1W-PH41U>

	DM area	address		Data	range	Default	Data content	
Input	Input	Input	Input	Decimal	Hexadecimal			
No. 1	No. 2	No. 3	No. 4			-		
	m	+1		(*1)	(*1)	0		tion settings
						(0000 hex)		to 03: Resolution switch
							length	o 07: Process value data
m+2	m+10	m+18	m+26	-	80000000 to	40000	Lower	<ul> <li>Process value alarm</li> </ul>
m+3	m+11	m+19	m+27	2147483648	FFFFFFF	(00009C40	Upper	settings
				to	hex,	hex)		Process value H (high limit)
				2147483647	00000000 to			alarm setting (Set as a
					7FFFFFF			process value scaling
	10				hex			value.)
m+4	m+12	m+20	m+28	-	80000000 to	0	Lower	Process value L (low limit)
m+5	m+13	m+21	m+29	2147483648	FFFFFFF	(0000000	Upper	alarm setting (Set as a
				to 2147483647	hex, 00000000 to	hex)		process value scaling
				2147483047	7FFFFFF			value.)
					hex			
m+6	m+14	m+22	m+30	1 to	00000001 to	10000000	Lower	<ul> <li>Zero/span adjustment</li> </ul>
m+7	m+15	m+23	m+31	100000000	05F5E100	(00989680	Upper	Gain for span adjustment
		111.20	111.01	100000000	hex	hex)	opper	(set value x 0.0000001(10-
						,		7))
m+8	m+16	m+24	m+32	-	8000000 to	0	Lower	Zero adjustment value
m+9	m+17	m+25	m+33	2147483648	FFFFFFF	(00000000	Upper	(Set as a process value
				to	hex,	hex)		scaling value.)
				2147483647	00000000 to			
					7FFFFFF			
					hex			

	DM area	address		Data	range	Default	Data content		
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimal	Hexadecimal				
m+34	m+49	m+64	m+79	0 to 50	0 to 32 hex	36 (0024 hex)	•When 1 0 (1/256 0: Pt100 3: JPt100 9: Pt100 10: Pt100 •When 1 1 (1/64,1 0: Pt100 3: JPt100	0 (3-wire) 10 (3-wire) 10 (3-wire) 10 (4-wire) (1) 10 (4-wire) (2) 14 resolution switch is set to	
m+35	m+50	m+65	m+80	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	10000 (2710 hex)	<ul> <li>Proce Maximu Set valu</li> </ul>	ss value input range settings m input signal value e x 0.1°C for °C e x 0.1°F for °F	
m+36	m+51	m+66	m+81	-32000 to 32000	8300 to FFFF hex 0000 to 7D00 hex	0 (0000 hex	Set valu	n input signal value e x 0.1ºC for ºC e x 0.1ºF for ºF	
m+39 m+40	m+54 m+55	m+69 m+70	m+84 m+85	- 2147483648 to 2147483647	80000000 to FFFFFFF hex, 00000000 to 7FFFFFF hex	10000 (00002710 hex)	Lower Upper	• Process value scaling Maximum scaling value (value stored for maximum value in range (span))	
m+41 m+42	m+56 m+57	m+71 m+72	<u>m+86</u> m+87	- 2147483648 to 2147483647	80000000 to FFFFFFF hex, 00000000 to 7FFFFFF hex	0 (00000000 hex)	Lower Upper	Minimum scaling value (value stored for minimum value in range (zero))	
m+43 m+44	m+58 m+59	m+73 m+74	m+88 m+89	- 2147483648 to 2147483647	80000000 to FFFFFFF hex, 00000000 to 7FFFFFF hex	0 (0000000 hex)	Lower Upper	Scaling offset	
m+45	m+60	m+75	m+90	0 to 32767	0000 to 7FFF hex	40 (0028 hex)	Alarm h (Set as value.) (	supplementary functions ysteresis a process value scaling Shared with process value nd rate-of-change alarm.)	
m+46	m+61	m+76	m+91	0 to 60	0000 to 003C hex	0 (0000 hex)	(Shared	N-delay time (unit: s) with process value alarm e-of-change alarm.)	
m+47	m+62	m+77	m+92	0 to 60	0000 to 003C hex	0 (0000 hex)	Alarm O (Shared	FF-delay time (unit: s) with process value alarm -of-change alarm.)	
m+48	m+63	m+78	m+93	0 to 128	0000 to 0080 hex	0 (0000 hex)	Mean Number calculati value pr 0: 4 valu 1/256,00 of 1/64,0 1 to 128	value processing function of process values for ng moving average for mean ocessing ues for a resolution of 00, 25 values for a resolution 000 or 1/16,000 : Number of process values	
m+94	m+95	m+96	m+97	0 to 99 100 to 1XX	0000 to 0063 hex, 0064 to 0XXX hex	0 (0000 hex)	Data rar	nge error address	

#### \*1. The operation settings are as follows:

Addresses	Bit	Description	Setting		
m+1	00 to 03	Resolution switch	0: 1/256,000 (conversion period: 60 ms) 1: 1/64,000 (conversion period: 10 ms) 2: 1/16,000 (conversion period: 5 ms)		
	04 to 07	Process value data length (Sets the data length for the process value, rate of change, peak value, top value, bottom value, and valley value.)	0: 2 words (signed double word binary data) 1: 1 word (restricted to the following range: - 32768 to 32767 (8000 to FFFF hex, 0000 to 7FFF hex).)		

#### Expansion Setting Areas

<CJ1W-PH41U only>

\* CS1W-PTS02 does not support specifying an expansion setting area. First word: word o. (o = address specified in word m+99 in the area specified in word m+98 in the DM area)

		ea addr			range	Default		Data content	
				Decimal	Hexadecimal	Delault		Data content	
Input No. 1	Input No. 2	Input No. 3	Input No. 4	Decimai	nexadecimai				
	0+8	0+16			8000000 to	42000	Lower	- Dragogo value elerm	
0 0+1	0+8	0+16 0+17	o+24 o+25	- 2147483648	80000000 to FFFFFFF	42000 (0000A410	Lower	<ul> <li>Process value alarm settings</li> </ul>	
0+1	0+9	0+17	0+25	2147403040 to	hex,	(0000A410 hex)	Upper	Process value HH (high high	
				2147483647	00000000 to	nex)		limit) alarm setting	
				2147403047	7FFFFFF			(Set as a process value	
					hex			scaling value.)	
o+2	o+10	o+18	o+26	_	80000000 to	-2000	Lower	Process value LL (low low	
0+2	0+10 0+11	0+10 0+19	0+20 0+27	2147483648	FFFFFFF	(FFFFF830	Upper	limit) alarm setting	
013	0111	0113	0121	to	hex,	hex)	Obbei	(Set as a process value	
				2147483647	00000000 to	nox)		scaling value.)	
				2111100011	7FFFFFFF				
					hex				
o+4	o+12	o+20	o+28	-	80000000 to	40000	Lower	Rate-of-change value alarm	
0+5	o+12	o+21	o+29	2147483648	FFFFFFF	(00009C40	Upper	settings	
	5.15	5.21	5.20	to	hex,	hex)	54401	Rate-of-change value H (high	
				2147483647	00000000 to	,		limit) alarm setting	
					7FFFFFFF			(Set as a rate-of-change	
					hex			scaling value.)	
o+6	o+14	o+22	o+30	-	80000000 to	0	Lower	Rate-of-change value L (low	
o+7	o+15	o+23	o+31	2147483648	FFFFFFF	(00000000	Upper	limit) alarm setting	
				to	hex,	hex)		(Set as a rate-of-change	
				2147483647	00000000 to	,		scaling value.)	
					7FFFFFF				
					hex				
	0+	32		0 to 5	0000 to	-	<ul> <li>Expan</li> </ul>	ision control/monitor area	
					0005 hex		settings		
								on control/monitor area	
							allocatio		
								sed, 1: DM, 2: CIO, 3: W, 4: H,	
-							5: EM		
	0+	33		0 to 32767	0000 to	-		rd of expansion control/monitor	
					7FFFF hex		area		
o+34	o+48	o+62	o+76	0, 1	0000, 0001	0		root calculations	
					hex	(0000 hex)		root extraction	
								hen max. scaling value ≥	
								n scaling value.)	
01.05	0.40	0160	0.77	22000 +-	0200 +-	10000		le, 1: Enable	
o+35	o+49	o+63	o+77	-32000 to	8300 to	10000		of-change function	
				32000	FFFF hex	(2710 hex)		change range setting	
					0000 to 7D00 hex			m rate-of-change value	
					1 DOU HEX		time inte	ue industrial unit, comparison	
o+36	o+50	o+64	o+78	-32000 to	8300 to	-10000			
0-30	0730	0704	07/0	32000 10	FFFF hex	(D810 hex)	Minimum rate-of-change value (Set value industrial unit, comparison		
				52000	0000 to		(Set value industrial unit, comparison time interval)		
					7D00 hex			, vaij	
o+37	o+51	o+65	o+79	1 to 16	0001 to	1	Rate of	change comparison time	
0-31	0701	0+05	0719		0001 to 0010 hex	(0001 hex)	Rate-of-change comparison time		
					UUTU HEX		interval* Bits 00 to 07: Comparison time		
								o 15: Unit	
L	I	I	l	L			DIG 00 L	0 10. Unit	

Ме	mory ar	ea addr	ess	Data	range	Default	Data content		
Input	Input	Input	Input	Decimal	Hexadecimal				
No. 1	No. 2	No. 3	No. 4						
o+38	o+52	o+66	o+80	-	80000000 to	10000	Lower	Rate-of-change value scaling	
o+39	o+53	o+67	o+81	2147483648	FFFFFFF	(00002710	Upper	Maximum rate-of-change	
				to	hex,	hex)		scaling value (value stored for	
				2147483647	00000000 to			maximum value in range)	
					7FFFFFF				
					hex				
o+40	o+54	o+68	o+82	-	80000000 to	-10000	Lower	Minimum rate-of-change	
o+41	o+55	o+69	o+83	2147483648	FFFFFFF	(FFFFD810	Upper	scaling value (value stored for	
				to	hex,	hex)		minimum value in range)	
				2147483647	00000000 to				
					7FFFFFF				
0140	o+56	o+70	o+84	0 to 32000	hex 0000 to	10000	. Zarala	span adjustment supplementary	
o+42	0750	0+70	0+84	0 10 32000	7D00 hex	(2710 hex)	• Zero/s		
					7 DOUTIEX	(27101167)		djustment position	
								ue x 0.01%, percentage of input	
							span)	de x 0.0170, percentage of input	
o+43	o+57	o+71	o+85	-32000 to	8300 to	0		justment position	
				32000	FFFF hex	(0000 hex)		ue x 0.01%, percentage of input	
					0000 to	()	span)		
					7D00 hex		. ,		
o+44	o+58	o+72	o+86	0 to 9999	0000 to	365	Zero/sp	an adjustment period (unit:	
					270F hex	(016D hex)	days)		
o+45	o+59	o+73	o+87	0 to 9999	0000 to	30	Notice of	of days remaining (unit: days)	
					270F hex	(001E hex)			
o+46	o+60	o+74	o+88	0 to 32767	0000 to	40		nd valley hold	
- 1 47			00	*	7FFF hex	(0028 hex)	Hystere		
o+47	o+61	o+75	o+89			0 (0000 hex)		al value calculation* to 07: Integer unit	
						(0000 nex)		to 15: Integer coefficient	
-		·90		*	*	0		tance thermometer input	
	0+	90				(0000 hex)	compen		
						(0000 1107)			
							Resistance thermometer input compensation enable*		
o+91	o+93	o+95	o+97	-	80000000 to	1089585403	Lower	Reference resistance	
o+92	o+94	0+96	o+98	2147483648	FFFFFFF	(40F1C0FB	Upper	(resistance at 23°C)	
	- • •			to	hex,	hex)		(Set value x 0.0000001(10-7)	
				2147483647	00000000 to	,		$\Omega$ for Pt100 or JPt100,	
					7FFFFFFF			or set value x 0.000001(10-6)	
					hex			Ω for Pt1000)	
	0+	·99		*	*	0		unction compensation method	
						(0000 hex)	settings		
							Cold jur	nction compensation method*	

\* The settings for the rate-of-change comparison time interval, integral value calculation, resistance thermometer compensation, and cold junction compensation method are as follows:

Addresses	Bit	Description	S	etting	
o+37	00 to 07	Comparison time	Decimal	Hexadecimal	
o+51			1 to 16	0001 to 0010	
o+65				hex	
o+79	08 to 15	Unit	0: s		
			1: Conversion	period	
o+47	00 to 07	Integer unit	0: Minutes		
o+61			1: Hours		
o+75	08 to 15	Integer coefficient	0: 1		
o+89			1: 1/10		
			2: 1/100		
			3: 1/1,000		
			4: 1/10,000		
o+90	00	Input No. 1 resistance thermometer	0: Disabled		
		input compensation	1: Enabled		
	01	Input No. 2 resistance thermometer			
	00	input compensation			
	02	Input No. 3 resistance thermometer			
	00	input compensation			
	03	Input No. 4 resistance thermometer			
	04 to 15	input compensation Not used			
o+99	04 10 15		0: Internal /Lia	a tha unit's cold	
0799	00	Input No. 1 cold junction compensation method	junction senso	e the unit's cold	
	01	Input No. 2 cold junction		o not use the unit's	
	01	compensation method			
	02	Input No. 3 cold junction	cold junction sensor.)		
	02	compensation method			
	03	Input No. 4 cold junction			
	00	compensation method			
	04 to 15	Not used			
L	0-10-10	Not used	1		

# ■ CIO Areas <CS1W-PTS02> First word: n = 2000 + Unit No. x 10 (Unit number: 0 to 95)

st <u>word:</u>	: n = ∠	2000 + 0	nit No. X '	10 (Unit nui	mber: 0 to 95)		
Direc	ction	Word	Bit		Name	Data range	Description
This I		n	00	Input No. 1	Process value LL (low	0, 1	0: Process value >
→ CF Unit	PU		01		low limit) alarm Process value L (low	0, 1	Set value 1: Process value ≤
					limit) alarm		Set value
			02		Process value H (high limit) alarm	0, 1	0: Process value < Set value
			03		Process value HH (high high limit) alarm	0, 1	1: Process value ≥ Set value
			04	Input No. 2	Process value LL (low	0, 1	Same as for input No.
			05		low limit) alarm Process value L (low		1.
			06		limit) alarm Process value H (high		
			07		limit) alarm Process value HH (high		
			08	Input No. 3	high limit) alarm Process value LL (low		
			09		low limit) alarm Process value L (low		
			10		limit) alarm Process value H (high		
			11		limit) alarm Process value HH (high		
			12	Input No. 4	high limit) alarm Process value LL (low		
				mput NO. 4	low limit) alarm		
			13		Process value L (low limit) alarm		
			14		Process value H (high limit) alarm		
			15		Process value HH (high high limit) alarm		
	ļ	n+1		Input No. 1	Process value	-32768 to 32767	The present process
	F	<u>n+2</u> n+3		Input No. 2 Input No. 3		(8000 to FFFF hex,	value is stored according to the
	-	n+4		Input No. 3		0000 to 7FFF hex)	scaling set in the allocated words of the DM area.
	Ę	n+5		Input No. 1	Rate-of-change value	-32768 to 32767	The present rate of
	ŀ	n+6 n+7		Input No. 2 Input No. 3		(8000 to FFFF hex,	change is stored according to the
		n+8		Input No. 4		0000 to 7FFF hex)	scaling set in the allocated words of the DM area.
		n+9	00	Input No. 1	Rate-of-change value L (low limit) alarm	0, 1	0: Rate-of-change value > Set value 1: Rate-of-change value ≤ Set value
			01		Rate-of-change value H (high limit) alarm	0, 1	0: Rate-of-change value < Set value 1: Rate-of-change value ≥ Set value
			02	Input No. 2	Rate-of-change value L (low limit) alarm	0, 1	Same as for input No. 1.
			03		Rate-of-change value H (high limit) alarm		
			04	Input No. 3	Rate-of-change value L (low limit) alarm		
			05		Rate-of-change value H (high limit) alarm		
			06	Input No. 4	Rate-of-change value L (low limit) alarm		
			07		Rate-of-change value H (high limit) alarm		
			08	Input No. 1	Input disconnection	0, 1	0: Normal
			09	Input No. 2			1: Disconnection
			10 11	Input No. 3 Input No. 4			
			12 to 15	Not used		0	-

#### <CJ1W-PH41U> First word: n = 2000 + Unit No. x 10 (Unit number: 0 to 95)

Direction         Number         Number         Number         Description           → CPU         n         0.0         Input No. 1         Lower         Process value         2/17/430407         Thesener process value is stored           0.11         0.0         0         Input No. 2         Lower         Process value         2/17/430407         Thesener process value is stored           1         1         0.10         Input No. 1         Lower         Process value         2/17/430407         Thesener process value is stored           1         1         1         Upper         Process value         1         Process value <th>St WOrd: II =</th> <th></th> <th></th> <th></th> <th></th> <th>595)</th> <th>Dete venere</th> <th>Description</th>	St WOrd: II =					595)	Dete venere	Description
→ CPU Unit         15 n+1         100 to 15 m+2         15 mult No. 2         Lower Lower         2147438347 Lower         value is stored or scording to the scaling set in the acaling set in the acali	Direction	Word	Bit	lument Nie - 4	Name		Data range	Description
15         10           n=2         00 to mput No. 2         Lower           n=3         00 to mput No. 3         Lower           n=4         00 to mput No. 3         Lower           n=5         00 to 15         Upper           n=6         00 to 15         Upper           n=7         00 to 15         Upper           n=8         00         input No. 4         Lower           01         Process value L (low Low 0, 1         0.1 Process value > Set value           02         Process value L (low 0, 1         1. Process value > Set value           03         Process value L (low 111) alarm         0, 1         1. Process value > Set value           04         nput No. 1         Process value L (low 111) alarm         0, 1         1. Process value > Set value           04         nput No. 1         Process value L (low 111) alarm         0, 1         1. Process value > Set value           06         Process value L (low 111) alarm         Process value L (low 1111) alarm         1. Process value L (low 1111) alar	$\rightarrow \text{CPU}$		15	input No. 1		rocess value	2147483647	value is stored
15         m+3         00 to         TFFFFFFF hex         the DM area.           n+4         00 to         Iupper         Upper         Upper         0           n+5         00 to         15         Upper         0         0           n+6         00 to         Iupper         0         0         0           n+7         00 to         15         Upper         0         0         0           n+8         00         nput No. 4         Lower         0         0         0         1         Process value L (low         0         1         Process value S set value         Set value         3         Set value         3         Set value         0         1         Process value S set value         3         3         3         <	Unit		15				FFFFFFFF hex,	scaling set in the
15         00 to 15         n+4         00 to 15         n+6         00 to 15         n+7           n+6         00 to 15         nput No. 4         Lower         0         <			15	Input No. 2				
15         00 to 15         Upper 15           n+6         00 to 15         input No. 4         Lower           n+7         00 to 15         upper         0           n+8         00         input No. 1         Process value L (low low limit) alarm         0. 1         St value > Set value > Process value L (low limit) alarm         0. 1         St value > Set value > Set value > Set value + Process value L (low limit) alarm         0. 1         St value > Set value > Set value + Set value + Set value + Process value L (low low limit) alarm         0. 1         St value > Set value > Set value + Set value + Set value + Set value + Set value + Set value + No. 1           04         input No. 2         Process value + (high limit) alarm         0. 1         Same as for input No. 1           05         input No. 3         Process value + (high limit) alarm         No. 1           06         input No. 3         Process value + H (high limit) alarm         No. 1           07         hoput No. 3         Process value + H (high limit) alarm         No. 1           10         input No. 4         Process value + H (high limit) alarm         No. 1           11         hoput No. 4         Process value + H (high limit) alarm         No. 1           12         input No. 4         Process value + H (high limit) alarm         No. 1           13 <td< td=""><td></td><td>n+3</td><td></td><td></td><td>Upper</td><td></td><td></td><td></td></td<>		n+3			Upper			
15         n+6         00 to 15         Input No. 4         Lower Upper           n+8         00         input No. 1         Process value L (low low limit) alarm         0, 1         5: Process value > Set value           01         inmit) alarm         0, 1         5: Process value L (low limit) alarm         0, 1         5: Process value > Set value           02         inmit) alarm         0, 1         5: Process value > Set value         5: Value           03         nput No. 2         Process value H (high limit) alarm         0, 1         5: Process value > Set value           04         input No. 2         Process value L (low low limit) alarm         0, 1         Same as for input No. 1.           05         il/mit) alarm         Process value H (high limit) alarm         No. 1.         Same as for input No. 1.           08         input No. 3         Process value H (high limit) alarm         No. 1.         Same as for input No. 1.           10         Input No. 4         Process value H (high limit) alarm         No. 1.         Same as for input No. 1.           13         Input No. 4         Process value H (high limit) alarm         No. 1         Sc Rate-of-change value S st value           14         Process value L (low limit) alarm         No. 1         Sc Rate-of-change value S st value         No. 1     <		n+4		Input No. 3	Lower			
15         Upper           n+7         00 to           01         Input No. 1           Process value L (low imit) alarm         0.1           02         Imput No. 1           03         Process value L (low imit) alarm         0.1           04         nput No. 2           05         Imit) alarm         0.1           06         Imput No. 2           07         Process value H (high imit) alarm           06         nput No. 2           07         Process value L (low imit) alarm           06         Input No. 3           07         Process value H (high imit) alarm           07         Process value H (high imit) alarm           08         Input No. 3           09         Imput No. 4           11         Process value H (high imit) alarm           12         Input No. 4           13         Process value H (high imit) alarm           14         Process value H (high imit) alarm           15         Process value L (low imit) alarm           16         Process value L (low imit) alarm           17         Process value L (low imit) alarm           18         Process value L (low imit) alarm           19		n+5			Upper			
15         17         18          18         18         18<		n+6		Input No. 4	Lower			
n+8         00         Input No. 1         Process value L (low limit) alarm         0, 1         0: Process value 5 Set value           01         02         Imput No. 1         Process value 4 (low limit) alarm         0, 1         0: Process value 5 Set value           03         Process value 4 (high Process value 4 (high Initit) alarm         0, 1         0: Process value 2 Set value           04         Input No. 2         Process value 4 (low limit) alarm         0, 1         Set value 2 Set value           05         Process value 4 (low limit) alarm         0, 1         Set value         Set value           06         Process value 4 (low limit) alarm         Process value 4 (low limit) alarm         No. 1.         Set value           07         Process value 4 (low limit) alarm         Process value 4 (low limit) alarm         No. 1.           10         Input No. 3         Process value 4 (low limit) alarm         No. 1.           11         Process value 4 (low limit) alarm         Process value 4 (low limit) alarm         No. 1.           13         Input No. 4         Process value 4 (low limit) alarm         No. 1.         Set value 2 (low limit) alarm           14         Input No. 1         Rate-of-change value 4 (low limit) alarm         0. 1         O: Rate-of-change value 2 Set value 1: Rate-of-change value 2 Set value		n+7	00 to		Upper			
01     Process value ( low limit) alarm     0, 1     1: Process value 5 Set value       02     Process value H (high limit) alarm     0, 1     5: Process value 5 Set value       03     Process value H (high limit) alarm     0, 1     5: Process value 2 Set value       04     Input No. 2     Process value L (low limit) alarm     0, 1     Same as for input No. 1.       05     Process value H (high limit) alarm     0, 1     Same as for input No. 1.       06     Process value H (high limit) alarm     0, 1     Same as for input No. 1.       07     Process value H (high limit) alarm     0, 1     Same as for input No. 1.       08     Input No. 3     Process value H (high limit) alarm     Process value H (high limit) alarm       10     Process value H (high limit) alarm     Process value H (high limit) alarm     Process value H (high limit) alarm       11     Process value H (high limit) alarm     Process value H (high limit) alarm     0, 1     0: Rate-of-change value S est value       13     Process value H (high limit) alarm     0, 1     0: Rate-of-change value S est value     0, 1       14     Process value H (high limit) alarm     0, 1     0: Rate-of-change value S est value     0, 1       04     Input No. 1     Rate-of-change value L (low limit) alarm     0, 1     0: Rate-of-change value S est value       02     Input No		n+8		Input No. 1			0, 1	
02     Process value H (high limit) alarm     0, 1     0. Process value < Set value       03     Process value HH (high limit) alarm     0, 1     0. Process value < Set value       04     Input No. 2     Process value (L(ow limit) alarm     0, 1     Same as for input No. 1.       05     Process value HH (high limit) alarm     0, 1     Same as for input No. 1.       06     Process value H (high limit) alarm     0, 1     Same as for input No. 1.       07     Process value H (high limit) alarm     0, 1     Same as for input No. 1.       08     Input No. 3     Process value H (high limit) alarm     Process value H (high limit) alarm       09     Input No. 4     Process value H (high limit) alarm     Process value H (high limit) alarm       11     Process value HH (high limit) alarm     Process value H (high limit) alarm     Process value H (high limit) alarm       13     Input No. 4     Rate-of-change value L (low limit) alarm     0, 1     0: Rate-of-change value > Set value       01     Rate-of-change value H (high limit) alarm     0, 1     0: Rate-of-change value > Set value     0, 1       02     Input No. 1     Rate-of-change value H (high limit) alarm     0, 1     0: Rate-of-change value > Set value       04     Input No. 4     Rate-of-change value H (high limit) alarm     0, 1     Same as for input No. 1.       06			01		Process va	alue L (low	0, 1	1: Process value ≤
03     Process value HH (high high limit) alarm     0, 1     1: Process value 2 Set value       04     Input No. 2     Process value L(low low limit) alarm     0, 1     Same as for input No. 1.       05     Process value H(high limit) alarm     0, 1     Same as for input No. 1.       06     Process value H(high limit) alarm     No. 1.       07     Process value H(high limit) alarm     No. 1.       08     Input No. 3     Process value L(low low limit) alarm       10     Process value H(high high limit) alarm     Process value H(high high limit) alarm       11     Process value L(low low limit) alarm     Process value H(high high limit) alarm       12     Input No. 4     Process value L(low low limit) alarm       13     Process value L(low low limit) alarm       14     Process value H(high high limit) alarm       15     Process value H(high limit) alarm       16     Rate-of-change value L (low limit) alarm       01     Rate-of-change value L (low limit) alarm       02     Input No. 2     Rate-of-change value L (low limit) alarm       03     Input No. 3     Rate-of-change value L (low limit) alarm       04     Input No. 4     Rate-of-change value L (low limit) alarm       05     Rate-of-change value H (high limit) alarm     0, 1       06     Input No. 4     Rate-of-change value H (h			02	-	Process va	alue H (high	0, 1	
04     Input No. 2     Process value LL (low low limit) alarm     0, 1     Same as for input No. 1.       05     Process value L (low limit) alarm     Process value H (high limit) alarm     No. 1.       06     Process value H (high high limit) alarm     Process value L (low low limit) alarm     No. 1.       07     Process value L (low low limit) alarm     Process value L (low limit) alarm     Process value L (low limit) alarm       10     Process value H (high limit) alarm     Process value L (low limit) alarm     Process value H (high limit) alarm       11     Process value L (low limit) alarm     Process value H (high limit) alarm     Process value H (high limit) alarm       13     Input No. 4     Process value L (low limit) alarm     Process value H (high limit) alarm       14     Process value H (high limit) alarm     1     Process value H (high limit) alarm       15     Input No. 1     Rate-of-change value L (low limit) alarm     0, 1     O: Rate-of-change value 2 Set value       01     Rate-of-change value H (high limit) alarm     0, 1     Same as for input No. 1.       02     Input No. 2     Rate-of-change value L (low limit) alarm     0, 1     Same as for input No. 1.       03     Input No. 3     Rate-of-change value L (low limit) alarm     0, 1     Same as for input No. 1.       04     Input No. 4     Rate-of-change value L (low limit) alarm     0			03	1	Process va	alue HH (high	0, 1	1: Process value ≥
05     Process value L (low limit) alarm       06     Process value H (high limit) alarm       07     Process value H (high high limit) alarm       08     Input No. 3       09     Process value L (low low limit) alarm       09     Process value L (low limit) alarm       10     Process value H (high limit) alarm       11     Process value L (low limit) alarm       12     Input No. 4       13     Process value H (high high limit) alarm       14     Process value H (high limit) alarm       15     Process value H (high high limit) alarm       16     Process value H (high limit) alarm       17     Rate-of-change value L (low limit) alarm       00     Input No. 1       Rate-of-change value H (ligh limit) alarm       01     Rate-of-change value H (ligh limit) alarm       01     Rate-of-change value H (high limit) alarm       02     Input No. 2       03     Rate-of-change value H (ligh limit) alarm       04     Input No. 3       05     Rate-of-change value H (high limit) alarm       04     Input No. 4       05     Rate-of-change value H (high limit) alarm       06     Input No. 4       07     Rate-of-change value H (high limit) alarm			04	Input No. 2	Process va	alue LL (low	0, 1	Same as for input
$ \begin{array}{ c c c c c } \hline 06 & \hline Process value H (high limit) alarm \\ \hline Process value L (high limit) alarm \\ \hline Process value L (low limit) alarm \\ \hline Process value L (low limit) alarm \\ \hline Process value L (low limit) alarm \\ \hline Process value H (high limit) alarm \\ \hline Process value H (high limit) alarm \\ \hline Process value H (high limit) alarm \\ \hline Process value L (low limit) alarm \\ \hline Process value H (high limit) alarm \\ \hline $			05	-	Process va	alue L (low		
07     Process value HH (high high limit) alarm       08     Input No. 3       09     Process value L (low low limit) alarm       09     Process value L (low limit) alarm       10     Process value H (high limit) alarm       11     Process value H (high limit) alarm       12     Input No. 4       13     Process value L (low low limit) alarm       13     Process value L (low limit) alarm       14     Process value H (high high limit) alarm       15     Process value L (low limit) alarm       16     N+9       00     Input No. 1       Rate-of-change value L (low limit) alarm       01     Rate-of-change value H (high limit) alarm       02     Input No. 2       03     Rate-of-change value L (low limit) alarm       04     Input No. 3       05     Rate-of-change value L (low limit) alarm       04     Input No. 3       05     Rate-of-change value L (low limit) alarm       04     Input No. 4       05     Rate-of-change value L (low limit) alarm       06     Input No. 4       07     Rate-of-change value L (low limit) alarm			06	-	Process va	alue H (high		
08     input No. 3     Process value LL (low low limit) alarm       09     Process value L (low limit) alarm       10     Process value L (low limit) alarm       11     Process value H (high high limit) alarm       12     Input No. 4       13     Process value L (low low limit) alarm       14     Process value L (low low limit) alarm       15     Process value H (high high limit) alarm       16     Process value H (high limit) alarm       17     Process value H (high limit) alarm       18     Process value H (high limit) alarm       19     00       01     Rate-of-change value L (low limit) alarm       01     Rate-of-change value H (high limit) alarm       02     Input No. 2       03     Rate-of-change value L (low limit) alarm       04     Input No. 3       05     Rate-of-change value H (high limit) alarm       06     Input No. 4       06     Input No. 4       06     Input No. 4       07     Rate-of-change value H (high limit) alarm			07	1	Process va	alue HH (high		
09     Process value L (low limit) alarm       10     Process value H (high limit) alarm       11     Process value H (high limit) alarm       12     Input No. 4       13     Process value L (low limit) alarm       14     Process value L (low limit) alarm       15     Process value L (low limit) alarm       16     Process value L (low limit) alarm       17     Rate-of-change value L (low limit) alarm       18     Process value H (high limit) alarm       19     00       01     Rate-of-change value L (low limit) alarm       01     Rate-of-change value H (high limit) alarm       02     Input No. 2       03     Rate-of-change value L (low limit) alarm       04     Input No. 3       05     Rate-of-change value L (low limit) alarm       06     Input No. 4       07     Input No. 4			08	Input No. 3	Process va	alue LL (low		
10       Process value H (high limit) alarm         11       Process value HI (high high limit) alarm         12       Input No. 4         13       Process value LL (low low limit) alarm         14       Process value L (low limit) alarm         15       Process value H (high high limit) alarm         15       Process value H (high high limit) alarm         16       Input No. 1         Rate-of-change value L (low limit) alarm       0, 1         01       Rate-of-change value L (low limit) alarm         01       Rate-of-change value H (high limit) alarm         02       Input No. 2         Rate-of-change value L (low limit) alarm       0, 1         03       Input No. 3         04       Input No. 3         05       Rate-of-change value L (low limit) alarm         04       Input No. 4         05       Rate-of-change value L (low limit) alarm         06       Input No. 4         07       Rate-of-change value L (low limit) alarm			09	-	Process va	alue L (low		
11       Process value HH (high high limit) alarm         12       Input No. 4       Process value LL (low low limit) alarm         13       Process value L (low limit) alarm         14       Process value H (high limit) alarm         15       Process value H (high limit) alarm         16       Process value H (high limit) alarm         17       Rate-of-change value L (low limit) alarm         00       Input No. 1         Rate-of-change value L (low limit) alarm       0, 1         01       Rate-of-change value H (high limit) alarm         01       Rate-of-change value H (high limit) alarm         02       Input No. 2         03       Rate-of-change value L (low limit) alarm         04       Input No. 3         05       Rate-of-change value L (low limit) alarm         06       Input No. 4         07       Rate-of-change value L (low limit) alarm			10	1	Process va	alue H (high		
12       Input No. 4       Process value LL (low low limit) alarm         13       Process value L (low limit) alarm         14       Process value H (high limit) alarm         15       Process value HI (high limit) alarm         n+9       00       Input No. 1         Rate-of-change value L (low limit) alarm       0, 1       0: Rate-of-change value > Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value > Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value < Set value			11	1	Process va	alue HH (high		
13       Process value L (low limit) alarm         14       Process value H (high limit) alarm         15       Process value HH (high high limit) alarm         15       Process value HH (high high limit) alarm         16       N+9       00         01       Rate-of-change value L (low limit) alarm       0, 1       0: Rate-of-change value > Set value 1: Rate-of-change value ≤ Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value ≤ Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value ≤ Set value         02       Input No. 2       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1.         03       Rate-of-change value H (high limit) alarm       0, 1       Same as for input No. 1.       No. 1.         04       Input No. 3       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1.         05       Rate-of-change value L (low limit) alarm       0       No. 1.         06       Input No. 4       Rate-of-change value L (low limit) alarm       Input No. 4         07       Rate-of-change value H (high limit) alarm       Input No. 3       Rate-of-change value H (high limit) alarm			12	Input No. 4	Process va	alue LL (low		
14       Process value H (high limit) alarm         15       Process value HH (high limit) alarm         n+9       00       Input No. 1       Rate-of-change value L (low limit) alarm       0, 1       0: Rate-of-change value 2 value > Set value 1: Rate-of-change value ≤ Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value 2 Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value ≤ Set value         02       Input No. 2       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1: Rate-of-change value ≥ Set value         03       Rate-of-change value H (high limit) alarm       0, 1       Same as for input No. 1: No. 1.         04       Input No. 3       Rate-of-change value L (low limit) alarm       No. 1.         05       Rate-of-change value H (high limit) alarm       06       Input No. 4         06       Input No. 4       Rate-of-change value L (low limit) alarm       07         07       Rate-of-change value H (high limit) alarm       07			13	1	Process va	alue L (low		
15       Process value HH (high high limit) alarm         n+9       00       Input No. 1       Rate-of-change value L (low limit) alarm       0, 1       0: Rate-of-change value > Set value 1: Rate-of-change value > Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value < Set value			14	-	Process va	alue H (high		
n+9       00       Input No. 1       Rate-of-change value L (low limit) alarm       0, 1       0: Rate-of-change value > Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value > Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value > Set value         02       Input No. 2       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1.         03       Rate-of-change value H (high limit) alarm       0, 1       Same as for input No. 1.         04       Input No. 3       Rate-of-change value L (low limit) alarm       0, 1         05       Rate-of-change value H (high limit) alarm       Input No. 4       Rate-of-change value L (low limit) alarm         06       Input No. 4       Rate-of-change value L (low limit) alarm       Input No. 4       Rate-of-change value L (low limit) alarm         07       07       Rate-of-change value H (high limit) alarm       Rate-of-change value H (high limit) alarm       Input No. 4			15	-	Process va	alue HH (high		
01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value ≤ Set value         01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value < Set value		n+9	00	Input No. 1	Rate-of-ch	ange value L	0, 1	0
01       Rate-of-change value H (high limit) alarm       0, 1       0: Rate-of-change value < Set value 1: Rate-of-change value ≥ Set value         02       Input No. 2       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1.         03       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1.         04       Input No. 3       Rate-of-change value L (low limit) alarm       0, 1         05       Rate-of-change value L (low limit) alarm       No. 1.         06       Input No. 4       Rate-of-change value L (low limit) alarm       No. 4         07       Rate-of-change value H (high limit) alarm       No. 4       Rate-of-change value H (high limit) alarm					(low limit) a	alarm		1: Rate-of-change
02       Input No. 2       Rate-of-change value L (low limit) alarm       0, 1       Same as for input No. 1.         03       03       Rate-of-change value H (high limit) alarm       0, 1       Same as for input No. 1.         04       Input No. 3       Rate-of-change value L (low limit) alarm       0       Rate-of-change value L (low limit) alarm         05       Rate-of-change value H (high limit) alarm       0       Input No. 4         06       Input No. 4       Rate-of-change value L (low limit) alarm       1         07       Rate-of-change value H (high limit) alarm       1			01				0, 1	0: Rate-of-change value < Set value 1: Rate-of-change
03       Rate-of-change value H (high limit) alarm         04       Input No. 3       Rate-of-change value L (low limit) alarm         05       Rate-of-change value H (high limit) alarm         06       Input No. 4       Rate-of-change value L (low limit) alarm         07       Rate-of-change value H (high limit) alarm			02	Input No. 2		•	0, 1	Same as for input
04       Input No. 3       Rate-of-change value L (low limit) alarm         05       Rate-of-change value H (high limit) alarm         06       Input No. 4       Rate-of-change value L (low limit) alarm         07       Rate-of-change value H (high limit) alarm			03		Rate-of-ch	ange value H		
05     Rate-of-change value H (high limit) alarm       06     Input No. 4     Rate-of-change value L (low limit) alarm       07     Rate-of-change value H (high limit) alarm			04	Input No. 3	Rate-of-ch	ange value L		
06     Input No. 4     Rate-of-change value L (low limit) alarm       07     Rate-of-change value H (high limit) alarm			05	1	Rate-of-ch	ange value H		
07 Rate-of-change value H (high limit) alarm			06	Input No. 4	Rate-of-ch	ange value L		
			07		Rate-of-ch	ange value H		
			08	Input No. 1			0, 1	0: Normal

Direction	Word	Bit	Name	Data range	Description
		09	Input No. 2		1: Disconnection
		10	Input No. 3		
		11	Input No. 4		
		12	Cold junction sensor error	0, 1	0: Normal
					1: Error
		13	Zero/span adjustment period end	0, 1	0: Adjustment enabled 1: Adjustment ended Remains set to 1 if the zero/span adjustment bit has never been ON.
		14	Zero/span adjustment period notice	0, 1	0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		15	A/D conversion error	0, 1	0: Normal 1: Error

#### Expansion Control/Monitor Areas

#### <CJ1W-PH41U only>

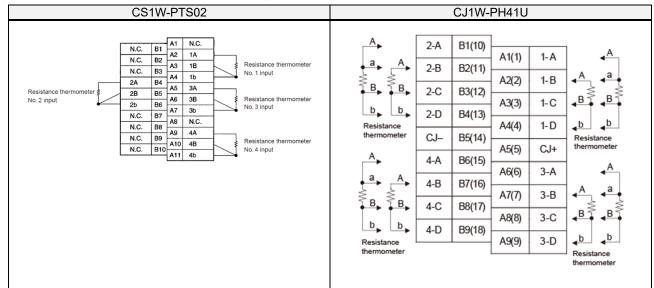
\* CS1W-PTS02 does not support specifying an expansion control/monitor area. First word: word p. (p = address specified in word o+1 in the area specified in word o in the expansion setting area)

Direction: CPU Unit  $\rightarrow$  This Unit

	Word	Bit			1W-PH41U	
				Name	Data range	Description
CPU Unit	р	00 to 15	Not used		0000	
$\rightarrow$ This	p+1	00	Input No. 1	Hold function selection	0, 1	0: Peak and bottom
Unit		01	Input No. 2			1: Top and valley
		02	Input No. 3			
		03	Input No. 4			
		04 to 07	Not used		0	
		08	Input No. 1	Hold start	0, 1	0: Do not hold
		09	Input No. 2			1: Hold
		10	Input No. 3			
		11	Input No. 4			
		12	Input No. 1	Hold value reset	0, 1	0: Normal operation
		13	Input No. 2			1: Reset hold value
		14	Input No. 3			
		15	Input No. 4			
	p+2	00	Input No. 1	Integral value calculation	0, 1	0: Do not start calculation
		01	Input No. 2	start		1: Start calculation
		02	Input No. 3			
		03	Input No. 4			
		04	Input No. 1	Integral value reset	0, 1	0: Normal operation
		05	Input No. 2			1: Reset integral value
		06	Input No. 3			
		07	Input No. 4			
		08 to 15	Not used		0	
	p+3	00	Input No. 1	Zero/span adjustment update	0, 1	0: Normal operation
		01	Input No. 2	bit		1: Update adjustment date
		02	Input No. 3			(Remains ON while writing i
		03	Input No. 4			external EEPROM.)
		04 to 15	Not used		0	
his Unit	p+4	00 to 15	Input No. 1	Lower Rate-of-change	-2147483648 to	The present rate-of-change
→ CPU	p+5	00 to 15		Upper value	2147483647	value is stored according to
Unit	p+6	00 to 15	Input No. 2	Lower	(8000000 to	the scaling set in the
	p+7	00 to 15		Upper	FFFFFFFF hex,	expansion setting area.
	p+8	00 to 15	Input No. 3	Lower	00000000 to	
	p+9	00 to 15		Upper	7FFFFFFF hex)	
	p+10 p+11	00 to 15	Input No. 4	Lower		
		00 to 15		Upper		
	p+12	00	Input No. 1	Zero/span adjustment period	0, 1	0: Adjustment enabled
				end		1: Adjustment ended
						Remains set to 1 if the
i i i						
						zero/span adjustment bit has
						zero/span adjustment bit has never been ON.
		01		Zero/span adjustment period	0, 1	zero/span adjustment bit has never been ON. 0: Adjustment enabled
		01		Zero/span adjustment period notice	0, 1	zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period
		01			0, 1	zero/span adjustment bit ha never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the
		01			0, 1	zero/span adjustment bit ha never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit ha
			logit N = 0	notice		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		01	Input No. 2	notice Zero/span adjustment period	0, 1	zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has
		02	Input No. 2	notice Zero/span adjustment period end		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
			Input No. 2	notice Zero/span adjustment period end Zero/span adjustment period		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		02		notice Zero/span adjustment period end Zero/span adjustment period notice		zero/span adjustment bit ha never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit ha never been ON.
		02	Input No. 2 Input No. 3	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		02 03 04		notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		02		notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		02 03 04 05	Input No. 3	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		02 03 04		notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period		zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON.
		02 03 04 05 06	Input No. 3	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period notice Zero/span adjustment period end		zero/span adjustment bit ha never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit ha never been ON.
		02 03 04 05	Input No. 3	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end		zero/span adjustment bit ha never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit ha never been ON.
		02 03 04 05 06 07	Input No. 3 Input No. 4	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end	0, 1	zero/span adjustment bit ha never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit ha never been ON. Same as for input No. 1.
		02 03 04 05 06	Input No. 3	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end		zero/span adjustment bit have never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit have never been ON. Same as for input No. 1.
		02 03 04 05 06 07 08	Input No. 3 Input No. 4 EEPROM e	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end	0, 1	zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON. Same as for input No. 1. 0: Normal 1: Error
		02 03 04 05 06 07 08 09 to 15	Input No. 3 Input No. 4 EEPROM e Not used	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period notice	0, 1 0, 1 0, 1 0	zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON. Same as for input No. 1. Same as for input No. 1.
	p+13	02 03 04 05 06 07 08	Input No. 3 Input No. 4 EEPROM e	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end	0, 1 0, 1 0, 1 0 0100 to 3100	<ul> <li>zero/span adjustment bit has never been ON.</li> <li>0: Adjustment enabled</li> <li>1: Notice period</li> <li>Remains set to 1 if the zero/span adjustment bit has never been ON.</li> <li>Same as for input No. 1.</li> <li>0: Normal</li> <li>1: Error</li> <li></li> <li>• Stores the date when the</li> </ul>
→ CPU		02 03 04 05 06 07 08 09 to 15 00 to 15	Input No. 3 Input No. 4 EEPROM e Not used	notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Teo/span adjustment period end Zero/span adjustment period notice	0, 1 0, 1 0, 1 0100 to 3100 (BCD)	zero/span adjustment bit has never been ON. 0: Adjustment enabled 1: Notice period Remains set to 1 if the zero/span adjustment bit has never been ON. Same as for input No. 1. Same as for input No. 1.
	p+13 p+14	02 03 04 05 06 07 08 09 to 15	Input No. 3 Input No. 4 EEPROM e Not used	notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Tero/span adjustment period end Zero/span adjustment period notice	0, 1 0, 1 0, 1 0 0100 to 3100 (BCD) 0001 to 9912	<ul> <li>zero/span adjustment bit has never been ON.</li> <li>0: Adjustment enabled</li> <li>1: Notice period</li> <li>Remains set to 1 if the zero/span adjustment bit has never been ON.</li> <li>Same as for input No. 1.</li> <li>O: Normal</li> <li>1: Error</li> <li></li> <li>Stores the date when the update bit turned ON last.</li> </ul>
→ CPU	p+14	02 03 04 05 06 07 08 09 to 15 00 to 15 00 to 15	Input No. 3 Input No. 4 EEPROM e Not used Input No. 1	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Tror Day of final adjustment date Year and month of final adjustment date	0, 1 0, 1 0, 1 0 0100 to 3100 (BCD) 0001 to 9912 (BCD)	<ul> <li>zero/span adjustment bit has never been ON.</li> <li>0: Adjustment enabled</li> <li>1: Notice period</li> <li>Remains set to 1 if the zero/span adjustment bit has never been ON.</li> <li>Same as for input No. 1.</li> <li>Same as for input No. 1.</li> <li>0: Normal</li> <li>1: Error</li> <li></li> <li>• Stores the date when the update bit turned ON last.</li> <li>• Remains set to FFFF if the</li> </ul>
$\rightarrow CPU$		02 03 04 05 06 07 08 09 to 15 00 to 15	Input No. 3 Input No. 4 EEPROM e Not used	notice Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Tero/span adjustment period end Zero/span adjustment period notice	0, 1 0, 1 0, 1 0 0100 to 3100 (BCD) 0001 to 9912 (BCD) 0100 to 3100	<ul> <li>zero/span adjustment bit has never been ON.</li> <li>0: Adjustment enabled</li> <li>1: Notice period</li> <li>Remains set to 1 if the zero/span adjustment bit has never been ON.</li> <li>Same as for input No. 1.</li> <li>Same as for input No. 1.</li> <li>0: Normal</li> <li>1: Error</li> <li></li> <li>• Stores the date when the update bit turned ON last.</li> <li>• Remains set to FFFF if the zero/span adjustment bit has</li> </ul>
<sup>ſ</sup> his Unit → CPU Unit	p+14	02 03 04 05 06 07 08 09 to 15 00 to 15 00 to 15	Input No. 3 Input No. 4 EEPROM e Not used Input No. 1	notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Zero/span adjustment period end Zero/span adjustment period notice Tror Day of final adjustment date Year and month of final adjustment date	0, 1 0, 1 0, 1 0 0100 to 3100 (BCD) 0001 to 9912 (BCD)	<ul> <li>zero/span adjustment bit has never been ON.</li> <li>0: Adjustment enabled</li> <li>1: Notice period</li> <li>Remains set to 1 if the zero/span adjustment bit has never been ON.</li> <li>Same as for input No. 1.</li> <li>Same as for input No. 1.</li> <li>0: Normal</li> <li>1: Error</li> <li></li> <li>• Stores the date when the update bit turned ON last.</li> <li>• Remains set to FFFF if the</li> </ul>

Direction	Word	Bit			CJ	1W-PH41U	
				Na	ame	Data range	Description
	p+17	00 to 15	Input No. 3	Day of t	final adjustment date	0100 to 3100 (BCD)	
	p+18	00 to 15			d month of final nent date	0001 to 9912 (BCD)	
	p+19	00 to 15	Input No. 4		final adjustment date	0100 to 3100	-
	F			,	······	(BCD)	
	p+20	00 to 15			d month of final nent date	0001 to 9912 (BCD)	
	p+21	00	Input No. 1	Valley c	letection timing flag	0, 1	Turns ON when a valley is detected by the valley hold function and turns OFF after a cycle.
		01		Top det	ection timing flag	0, 1	Turns ON when a top is detected by the top hold function and turns OFF after a cycle.
		02	Input No. 2		letection timing flag	0, 1	Same as for input No. 1.
		03			ection timing flag	-	
		04	Input No. 3		letection timing flag	-	
		05 06	Input No. 4		ection timing flag letection timing flag	-	
		00	input No. 4		ection timing flag		
		08 to 15	Not used	Top det		0	
	p+22		Input No. 1	Lower	Peak/top value	-2147483648 to	The peak or top value is
	p+23	00 to 15		Upper		2147483647 (80000000 to FFFFFFF hex, 00000000 to 7FFFFFFF hex)	stored according to the scaling set in the DM area.
	p+24	00 to 15		Lower	Bottom/valley value	-2147483648 to	The bottom or valley value is
	p+25	00 to 15	-	Upper		2147483647 (80000000 to FFFFFFF hex, 00000000 to 7FFFFFFF hex)	stored according to the scaling set in the DM area.
	p+26	00 to 15	Input No. 2	Lower	Peak/top value	-2147483648 to	Same as for input No. 1.
	p+27	00 to 15		Upper		2147483647	
	p+28	00 to 15		Lower	Bottom/valley value	(80000000 to FFFFFFF hex,	
	p+29	00 to 15		Upper		00000000 to	
	p+30		Input No. 3	Lower	Peak/top value	7FFFFFFF hex)	
	p+31	00 to 15 00 to 15	4	Upper	Dettem/vollessurelss	, í	
	p+32	00 to 15 00 to 15	4	Lower Upper	Bottom/valley value		
	<u>p+33</u> p+34		Input No. 4	Lower	Peak/top value	1	
	p+34 p+35	00 to 15		Upper			
	p+35 p+36	00 to 15	1	Lower	Bottom/valley value	1	
	p+30 p+37	00 to 15	1	Upper			
	p+38		Input No. 1	Lower	Integral value	-2147483648 to	The integral value for the
	p+39	00 to 15	1	Upper		2147483647	process value is stored
	p+40	00 to 15	Input No. 2	Lower	Integral value	(8000000 to	according to the scaling set in
	p+41	00 to 15	1	Upper		FFFFFFF hex,	the DM area.
[	p+42		Input No. 3	Lower	Integral value	00000000 to 7FFFFFF hex)	
[	p+43	00 to 15		Upper			
	p+44		Input No. 4	Lower	Integral value		
	p+45	00 to 15		Upper			

#### (4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PTS02: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-AD04U: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

#### Appendix 6.17. CS1W-PDC01

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PH41U	<ul> <li>Equivalent in the functions and capabilities.</li> <li>Different in the CIO areas and DM areas.</li> <li>Additional areas for expansion control/monitor areas (46 channels) and expansion setting areas (100 words) are necessary.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-PDC01		CJ1W-PH41U
	Specifications	Difference	Specifications
			(focusing on voltage and current)
Number of inputs	4	0	4
Input signal type	4 to 20 mA, 0 to 20 mA, -10 to 10 V, 0 to 10	0	4 to 20 mA, 0 to 20 mA, 1 to 5 V,
	V, -5 to 5 V, 1 to 5 V, 0 to 5 V, or ±10-V		0 to 1.25 V, 0 to 5 V, 0 to 10 V, -1.25 to
	user-set range		1.25 V, -5 to 5 V, -10 to 10 V, or ±10-V
Lloor dofined cooling	Cooling is required (with the minimum and	0	user-set range Scaling is required (with the minimum
User-defined scaling in industrial units	Scaling is required (with the minimum and maximum values set by user) (4 inputs set	U	and maximum values set by user) (4
	separately).		inputs set separately).
Accuracy (25°C)	±0.1%	0	±0.05%
Temperature	±0.015%/°C	0	±0.008%/°C
coefficient			
Resolution	1/4,096	Ø	1/64,000 (conversion period: 10 ms)
Input signal range	• 4 to 20 mA, 0 to 20 mA, 0 to 10 V, 1 to 5	O	• 4 to 20 mA, 1 to 5 V, 0 to 1.25 V, 0 to
1 0 0	V, 0 to 5 V: -15 to 115%	_	5 V, 0 to 10 V: -15 to 115%
	• -10 to 10 V, -5 to 5 V: -7.5 to 107.5%		• 0 to 20 mA: 0 to 115%
	<ul> <li>±10-V user-set range: -7.5 to 107.5% of</li> </ul>		· −1.25 to 1.25 V, −5 to 5 V, −10 to 10 V,
	internal range		±10-V user-set range: -7.5 to 107.5%
Maximum rated	Voltage input: ±15 V	0	Voltage input: ±15 V
input	Current input: ±30 mA		Current input: ±30 mA
Input impedance	Current input: 250 Ω	$\bigtriangleup$	Current input: 150 Ω
	Voltage input: 1 MΩ min.		Voltage input: 1 MΩ min.
Warm-up period	10 minutes	$\triangle$	30 minutes
Response time	0.5 s (travel time from input 0% to 90%)	O	0.1 s (travel time from input 0% to 90%)
Conversion period	100 ms/4 points	0	10 ms/4 points (1/64,000 resolution)
Input error detection	Monitors with 4 to 20 mA or 1 to 5 V only	0	Detects an error if the input exceeds
	and detects an error if the input falls below		115% or falls below -15% of the
0 11 11 1	-17.2% or exceeds 112.5%.	0	measurable input range.
Operation at input disconnection	4 to 20 mA, 1 to 5 V: Stores a process	0	4 to 20 mA, 1 to 5 V: Stores a process
disconnection	value corresponding to -15%. Other ranges: Stores a process value at 0		value corresponding to -15%. Other ranges: Stores a process value at
	V or 0 mA.		0 V or 0 mA.
Mean value	Calculates the moving average for the	0	Calculates the moving average for the
processing	specified number of process values (1 to		specified number of process values (1
proceeding	16), and stores that value in the CIO Area		to 128), and stores that value in the
	as the process value.		CIO Area as the process value.
Process value alarm	Process value 4-point alarm (HH, H, L, LL),	0	Process value 4-point alarm (LL, L, H,
	alarm hysteresis, and ON-delay timer (0 to		HH), alarm hysteresis, and ON/OFF-
	60 s) are available.		delay timer (0 to 60 s) are available.
Rate-of-change	Calculates the amount of change per	0	Calculates the amount of change per
calculation	comparison time interval (1 to 16 s).		comparison time interval (1 to 16 s).
Rate-of-change	Rate-of-change 2-point alarm (H, L), alarm	0	Rate-of-change 2-point alarm (L, H),
alarm	hysteresis, and ON-delay timer (0 to 60 s,		alarm hysteresis, and ON-delay timer (0
	shared with process value alarm) are		to 60 s, shared with process value
0	available.	0	alarm) are available.
Square root	When the maximum value for process value scaling is A and the minimum value	0	When the maximum value for process
calculation	is B,		value scaling is A and the minimum value is B,
	Output = $\sqrt{(A-B)(Input-B)} + B$		Output =√ (A–B) (Input–B) +B
	Drop-out: output up to approx. 7%, which has a linear characteristic (output = input)		Drop-out: output up to approx. 7%,
	$\Box$ has a linear characteristic (output = INDUT)	1	which has a linear characteristic (output
Isolation	Between channels and between input	0	= input) Between channels and between input

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

- (3) Differences in memory area allocations
- For process value alarm and rate-of-change alarm of CS1W-PDC01, use expansion control/monitor areas (46

channels) and expansion setting areas (100 words) on CJ1W-PH41U. Allocate them to empty areas.

Size	Addresses	Name
Expansion setting	m+98	Expansion setting area allocations
areas	m: First word of DM area	0: Not used, 1: DM, 2: CIO, 3: W, 4: H, 5: EM
100 words	m+99	First word of expansion setting area
Expansion	o+32	Expansion control/monitor area allocations
control/monitor	o: First word of expansion	0: Not used, 1: DM, 2: CIO, 3: W, 4: H, 5: EM
areas	control/monitor area	
46 channels	o+33	First word of expansion control/monitor area

#### CIO Areas

#### Differences in CIO areas

Input	Name	CS1W-PDC01		CJ1W-PH41U		Remarks
•		Word	Bit	Word	Bit	
Input	Process value LL alarm	n	00	n+8	00	· CJ1W-PH41U
No. 1	Process value L alarm	1	01		01	Different in the channel
	Process value H alarm	-	02		02	allocations.
	Process value HH alarm		03	-	03	-
Input	Process value LL alarm		04	-	04	-
No. 2	Process value L alarm		05	-	05	-
110.2	Process value H alarm		06	-	06	-
	Process value HH alarm	-	07	-	07	-
Input	Process value LL alarm		08	-	08	-
No. 3	Process value L alarm		09	-	09	-
110.5		-	10	-	10	
	Process value H alarm	-		-	10	
luc un cot	Process value HH alarm		11	_	11	-
Input	Process value LL alarm	-	12	-		_
No. 4	Process value L alarm	-	13	4	13	_
	Process value H alarm	-	14	_	14	
	Process value HH alarm		15		15	
Input	Process value	n+1		n/n+1		(*1)
No. 1						
Input		n+2		n+2/n+3		
No. 2						
Input		n+3		n+3/n+4		
No. 3						
Input		n+4		n+5/n+6		
No. 4						
Input	Rate-of-change value	n+5		p+4/p+5		Allocated to expansion
No. 1						control/monitor areas.
Input		n+6		p+6/p+7		p: First word of
No. 2						expansion
Input		n+7		p+8/p+9		control/monitor area
No. 3						(*1)
Input		n+8		p+10/p+11		
No. 4						
Input	Rate-of-change L alarm	n+9	00	n+9	00	
No. 1	Rate-of-change H alarm		01	]	01	
Input	Rate-of-change L alarm		02	]	02	
No. 2	Rate-of-change H alarm		03	1	03	7
Input	Rate-of-change L alarm		04		04	7
No. 3	Rate-of-change H alarm		05	1	05	
Input	Rate-of-change L alarm	1	06	1	06	7
No. 4	Rate-of-change H alarm		07	1	07	7
Input	Input error	1	08	1	08	1
No. 1	·		_	1		
Input	1		09	1	09	1
No. 2			-	1		
Input	1		10	1	10	-
No. 3				1		
Input	1		11	1	11	1
No. 4						
	1	I	L	1	I	1

\*1: CJ1W-PH41U takes up 2 words.

Use a lower channel while setting the process value data length of CJ1W-PH41U to 1 word.

#### DM Areas

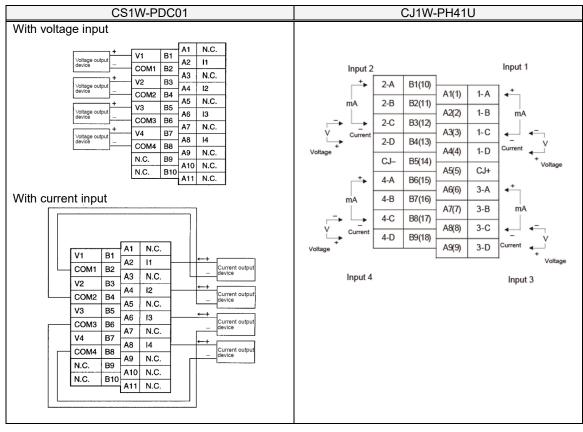
•

Different in the area allocations and default values. Replace them by referring to the manual.

CJ1W-PH41U takes up 2 words for the process value data length. When replacing CS1W-PDC11, set the resolution switch to 1/64,000 and the process value data length to 1 word.

Addresses	Bit	settings	Description
m+1	00 to 03	Resolution switch	0: 1/256,000 (conversion period: 60 ms) This should not be set since a process value takes up 2 words. 1: 1/64,000 (conversion period: 10 ms) 2: 1/16,000 (conversion period: 5 ms)
	04 to 07	Process value data length	0: 2 words (signed double word binary data) 1: 1 word (restricted to the -32768 to 32767 range)

#### (4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PDC01: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-AD04U: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

### Appendix 6.18. CS1W-PDC11

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PH41U	<ul> <li>Equivalent in the functions and capabilities.</li> <li>Different in the CIO area, expansion control/monitor area, DM area, and expansion setting area allocations.</li> <li>Different in the expansion control/monitor area size (CS1W-PDC11: 35 channels and CJ1W-PH41U: 46 channels) and the expansion setting area size (CS1W-PDC11: 46 words and CJ1W-PH41U: 100 words).</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-PDC11		CJ1W-PH41U
	Specifications	Difference	Specifications (focusing on voltage and current)
Number of inputs	4	0	4
Input signal type	4 to 20 mA, 0 to 20 mA, -10 to 10 V, 0 to 10 V, -5 to 5 V, 1 to 5 V, 0 to 5 V, -1.25 to 1.25 V, 0 to 1.25 V, or ±10-V user-set range	0	4 to 20 mA, 0 to 20 mA, -10 to 10 V, 0 to 10 V, -5 to 5 V, 1 to 5 V, 0 to 5 V, - 1.25 to 1.25 V, 0 to 1.25 V, or ±10-V user-set range
User-defined scaling in industrial units	Scaling is required (with the minimum and maximum values set by user) (4 inputs set separately).	0	Scaling is required (with the minimum and maximum values set by user) (4 inputs set separately).
Accuracy (25°C)	±0.05%	0	±0.05%
Temperature coefficient	±0.008%/°C	0	±0.008%/°C
Resolution	1/64,000	0	1/64,000 (conversion period: 10 ms)
Input signal range	<ul> <li>4 to 20 mA, 0 to 10 V, 1 to 5 V, 0 to 5 V, 0 to 1.25 V: -15 to 115%</li> <li>0 to 20 mA: 0 to 115%</li> <li>-1.25 to 1.25 V, -5 to 5 V, -10 to 10 V, ±10-V user-set range: -7.5 to 107.5%</li> </ul>	0	<ul> <li>4 to 20 mA, 0 to 10 V, 1 to 5 V, 0 to 5 V, 0 to 1.25 V: -15 to 115%</li> <li>0 to 20 mA: 0 to 115%</li> <li>-1.25 to 1.25 V, -5 to 5 V, -10 to 10 V, ±10-V user-set range: -7.5 to 107.5%</li> </ul>
Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA
Input impedance	Current input: 250 $\Omega$ Voltage input: 1 M $\Omega$ min.		Current input: 150 $\Omega$ Voltage input: 1 M $\Omega$ min.
Warm-up period	10 minutes	$\triangle$	30 minutes
Response time	0.1 s (travel time from input 0% to 90%)	0	0.1 s (travel time from input 0% to 90%)
Conversion period	20 ms/4 points or 10 ms/2 points	Ø	10 ms/4 points (1/64,000 resolution)
Input error detection	Monitors with 4 to 20 mA or 1 to 5 V only and detects an error if the input falls below -17.2% or exceeds 112.5%.	0	Detects an error if the input exceeds 115% or falls below -15% of the measurable input range.
Operation at input disconnection	4 to 20 mA, 1 to 5 V: Stores a process value corresponding to -15%. Other ranges: Stores a process value at 0 V or 0 mA.	0	4 to 20 mA, 1 to 5 V: Stores a process value corresponding to -15%. Other ranges: Stores a process value at 0 V or 0 mA.
Mean value processing	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.	0	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.
Process value alarm	Process value 4-point alarm (HH, H, L, LL), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.	0	Process value 4-point alarm (LL, L, H, HH), alarm hysteresis, and ON/OFF- delay timer (0 to 60 s) are available.
Rate-of-change calculation	Calculates the amount of change per comparison time interval (1 to 16 s).	0	Calculates the amount of change per comparison time interval (1 to 16 s).
Rate-of-change alarm	Rate-of-change 2-point alarm (H, L), alarm hysteresis, and ON-delay timer (0 to 60 s, shared with process value alarm) are available.	0	Rate-of-change 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s, shared with process value alarm) are available.
Square root calculation	When the maximum value for process value scaling is A and the minimum value is B, Output = (A-B) (Input-B) +B Drop-out: output up to approx. 7%, which	0	When the maximum value for process value scaling is A and the minimum value is B, Output = (A-B) (Input-B) +B Drop-out: output up to approx. 7%,
	has a linear characteristic (output = input)		which has a linear characteristic (output = input)

Item	CS1W-PDC11		CJ1W-PH41U
	Specifications	Difference	Specifications
			(focusing on voltage and current)
Adjustment period	When zero/span adjustment is executed,	0	When zero/span adjustment is
control	the date is internally recorded at the Unit.		executed, the date is internally
	When the preset zero/span adjustment		recorded at the Unit. When the preset
	period and number of days notice have		zero/span adjustment period and
	elapsed (allocated in expansion setting		number of days notice have elapsed
	area), this function turns ON a warning flag		(allocated in expansion setting area),
	to give notice that it is time for		this function turns ON a warning flag to
	readjustment.		give notice that it is time for
			readjustment.
Peak and bottom	This function detects the maximum (peak)	0	This function detects the maximum
detection	and minimum (bottom) analog input values,		(peak) and minimum (bottom) analog
	from when the hold start bit (output)		input values, from when the hold start
	allocated to the expansion control/monitor		bit (output) allocated to the expansion
	area turns ON until it turns OFF, and stores		control/monitor area turns ON until it
	them in the expansion control/monitor area.		turns OFF, and stores them in the
Ton and collect	This founding data static term and collect	0	expansion control/monitor area.
Top and valley detection	This function detects the top and valley	0	This function detects the top and valley
detection	analog input values, from when the hold		analog input values, from when the hold
	start bit (output) allocated to the expansion control/monitor area turns ON until it turns		start bit (output) allocated to the
	OFF, and stores them in the expansion		expansion control/monitor area turns ON until it turns OFF, and stores them
	control/monitor area.		in the expansion control/monitor area.
Differential value	This function calculates the analog input	0	This function calculates the analog
calculation	value's time integral.	Ŭ	input value's time integral.
calculation	The integral value is calculated and the		The integral value is calculated and the
	result is output to the expansion		result is output to the expansion
	control/monitor area when the integral		control/monitor area when the integral
	value calculation start bit in the expansion		value calculation start bit in the
	control/monitor area is turned ON.		expansion control/monitor area is
			turned ON.
Isolation	Between channels and between input	0	Between channels and between input
	terminals and PLC signals		terminals and PLC signals

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

#### CIO Areas

#### Differences in CIO areas

Name		CS1W-PDC11		CJ1W-PH41U			Remarks
		Word	Bit	Difference	Word	Bit	
Input No. 1	Process value LL alarm	n	00	×	n+8	00	Different in the
	Process value L alarm		01			01	channel allocations.
	Process value H alarm		02			02	
	Process value HH alarm		03			03	
Input No. 2	Process value LL alarm		04			04	
	Process value L alarm		05			05	
	Process value H alarm		06			06	
	Process value HH alarm		07			07	
Input No. 3	Process value LL alarm		08			08	
	Process value L alarm		09			09	
	Process value H alarm		10			10	
	Process value HH alarm		11			11	
Input No. 4	Process value LL alarm		12			12	
	Process value L alarm		13			13	
	Process value H alarm		14			14	
	Process value HH alarm		15			15	
Input No. 1	Process value	n+1		×	n/n+1		2 channels/inputs
Input No. 2		n+2			n+2/n+3		and so different in
Input No. 3		n+3			n+3/n+4		the channel
Input No. 4		n+4			n+5/n+6		allocations.
Input No. 1	Rate-of-change value	n+5		×	p+4/p+5		Allocated to
Input No. 2		n+6			p+6/p+7		expansion
Input No. 3		n+7			p+8/p+9		control/monitor
Input No. 4		n+8			p+10/p+1	1	areas.
							p: First word of
							expansion
	<u> </u>	<u> </u>					control/monitor area

	Name		/-PDC11	CJ1W-PH41U			Remarks
		Word	Bit	Difference	Word	Bit	
Input No. 1	Rate-of-change L alarm	n+9	00	0	n+9	00	
	Rate-of-change H alarm		01			01	
Input No. 2	Rate-of-change L alarm		02			02	
	Rate-of-change H alarm		03			03	
Input No. 3	Rate-of-change L alarm		04			04	
	Rate-of-change H alarm		05			05	
Input No. 4	Rate-of-change L alarm		06			06	
	Rate-of-change H alarm		07			07	
Input No. 1	Input error		08	0		08	
Input No. 2			09			09	
Input No. 3			10			10	
Input No. 4			11			11	
Cold junction	sensor error		- (Not	×		12	
-			used)				
Zero/span adjustment period end		]	13	0		13	
Zero/span adjustment period notice		]	14			14	
A/D conversi	on error	]	- (Not	×		15	
			used)				

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### Differences in expansion control/monitor areas

	Name		/-PDC11	(	CJ1W-PH41	J	Remarks
		Word	Bit	Difference	Word	Bit	
Input No. 1 to 4	Hold function selection	p+1	00 to 03	0	p+1	00 to 03	
Input No. 1 to 4	Hold start		08 to 11			08 to 11	
Input No. 1 to 4	Hold value reset		12 to 15			12 to 15	
Input No. 1 to 4	Differential value calculation start	p+2	00 to 03	0	p+2	00 to 03	
Input No. 1 to 4	Integral value reset		04 to 07			04 to 07	
Input No. 1 to 4	Zero/span adjustment update bit	p+3	00 to 03	0	p+3	00 to 03	
Rate-of-change value		n+5, n+6	, n+7, n+8	×	p+4 to 5, p p+8 to 9, p		CS1W-PDC01 allocates this to a DM area. (*1)
Input No. 1 to 4	Zero/span adjustment period end	p+4	00, 02, 04, 06	×	p+12	00, 02, 04, 06	
Input No. 1 to 4	Zero/span adjustment period notice		01, 03, 05, 07			01, 03, 05, 07	
EEPROM error			08			08	
Input No. 1 to 4	Final adjustment date	p+5 to 6, p+9 to 10 12		×		p+15 to 16, p+19 to 20	
Input No. 1 to 4	Valley detection timing flag	p+21	00, 02, 04, 06	×	Not provided		CS1W-PDC11 does not provide this function.
Input No. 1 to 4	Top detection timing flag		01, 03, 05, 07		Not provided		CS1W-PDC11 does not provide this function.
Input No. 1 to 4	Peak/top value	p+23	19, p+21,	×		p+26 to 27 p+34 to 35	(*1)
Input No. 1 to 4	Peak/valley value	p+18, p+2 p+24	-	×	p+24 to 25 p+32 to 33	p+28 to 29 p+36 to 37	(*1)
Input No. 1 to 4	Integral value	28	26, p+27 to 30, p+31 to	×	p+38 to 39	, p+40 to 41 , p+44 to 45	

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

\*1: CJ1W-PH41U takes up 2 words.

Use a lower channel while setting the process value data length of CJ1W-PH41U to 1 word.

#### DM Areas

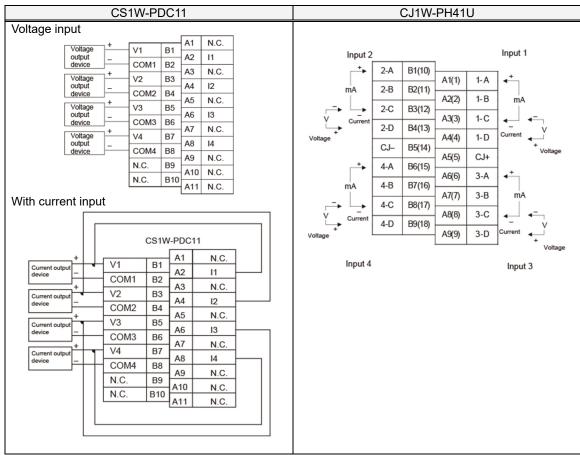
Different in the area allocations and default values. Replace them by referring to the manual.

CJ1W-PH41U takes up 2 words for the process value data length. When replacing CS1W-PDC11, set the

resolution switch to 1/64,000 and the process value data length to 1 word.

Addresses	Bit	settings	Description
m+1	00 to 03	Resolution	0: 1/256,000 (conversion period: 60 ms) This should not be set since a process
		switch	value takes up 2 words.
			1: 1/64,000 (conversion period: 10 ms)
			2: 1/16,000 (conversion period: 5 ms)
	04 to 07	Process value	0: 2 words (signed double word binary data)
		data length	1: 1 word (restricted to the -32768 to 32767 range)

#### (4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PDC11: *CS/CJ-series Analog I/O Units Operation Manual* (Cat. No. W368) CJ1W-AD04U: *CS/CJ-series Analog I/O Units Operation Manual* (Cat. No. W368)

#### Appendix 6.19. CS1W-PDC55

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-AD04U	<ul> <li>Differences in functions and capabilities Some functions (including square root calculation) are not provided. For the resolution, 1/16,000 is replaced with 1/12,000. Use CJ1W-PH41U if square root calculation and high resolution are necessary.</li> <li>Memory allocations will largely change due to the replacement of a Unit of CS1W-PDC55 having 8 points (Unit No. 1 allocated) with two Units of CJ1W-AD04U having 4 points (Unit No. 1 allocated x 2).</li> </ul>

#### (2) Differences in functions and capabilities

Item CS1W-PDC55		CJ1W-AD04U			
	Specifications	Difference	Specifications		
	-		(focusing on voltage and current)		
Number of inputs	8	$\bigtriangleup$	4		
Input signal type	0 to 10 V, 0 to 5 V, 1 to 5 V, 4 to 20 mA	Ø	0 to 10 V, 0 to 5 V, 1 to 5 V, 4 to 20 mA, or 0 to 20 mA.		
User-defined scaling in industrial units	Scaling is required (with the minimum and maximum values set by user) (8 inputs set separately).	0	Scaling is required (with the minimum and maximum values set by user) (4 inputs set separately).		
Accuracy (25°C)	±0.3%	0	±0.3%		
Temperature coefficient	Voltage: ±100%/°C, current: ±120 ppm/°C	0	±100 ppm/ºC		
Resolution	1/16,000	$\bigtriangleup$	1/12,000		
Input signal range	-5 to 105% for each range	0	-5 to 105% for each range		
Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA		
Input impedance	Current input: 250 $\Omega$ Voltage input: 1 M $\Omega$ min.	0	Current input: 250 $\Omega$ Voltage input: 1 M $\Omega$ min.		
Warm-up period	10 minutes	$\triangle$	30 minutes		
Conversion period	250 ms/8 points	0	250 ms/4 points		
Input error detection	<ul> <li>Detects sensor error and turns ON the sensor error flag if the input falls below - 5% or exceeds 105% of the input range for each point.</li> <li>The process value overrange direction for when a sensor error is detected can be specified. (High: 105% of input range; low: -5% of input range)</li> </ul>		<ul> <li>Detects input error with 1 to 5 V and 4 to 20 mA only.</li> <li>1 to 5 V: Input signal &lt; 0.3 V 4 to 20 mA: Input signal &lt; 1.2 mA</li> <li>Input error flag turns ON when a disconnection occurs or when the input range is exceeded.</li> <li>The process value overrange direction for when a sensor error is detected can be specified. (High: 105% of input range; low: -5% of input range)</li> </ul>		
Process value alarm	Rate-of-change 2-point alarm (H, L), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.	0	Rate-of-change 2-point alarm (H, L), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.		
Square root calculation	1 to 5 V and 4 to 20 mA only When the maximum value for process value scaling is A and the minimum value is B, Output =√ (A–B) (Input–B) +B Drop-out: output up to approx. 7%, which has a linear characteristic (output = input)	×	Not provided		
Isolation	Between channels and between input terminals and PLC signals	0	Between channels and between input terminals and PLC signals		

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

#### CIO Areas

Differences in CIO areas

The first word of the first CJ1W-AD04U Unit and the first word of CS1W-PDC55: n = 2000 + Unit No. x 10

The first word of the second CJ1W-AD04U Unit: n2 = 2000 + the second Unit's Unit No. x 10

	Name	CS1W-	-PDC55	CJ1W-AD04U			Remarks
		Word	Bit	Difference	Word	Bit	
Input No. 1	Process value L alarm	n	00	0	n	00	The allocation of the
	Process value H alarm		01		(First	01	first CJ1W-AD04U
Input No. 2	Process value L alarm		02		Unit)	02	Unit remains the
	Process value H alarm		03			03	same.
Input No. 3	Process value L alarm		04			04	
	Process value H alarm		05			05	
Input No. 4	Process value L alarm		06			06	
	Process value H alarm		07			07	
Input No. 5	Process value L alarm	n	08	×	n2	00	The area allocations
	Process value H alarm		09		(Second	01	of the second CJ1W-
Input No. 6	Process value L alarm		10		Únit)	02	AD04U Unit changes
	Process value H alarm		11			03	since it has a different
Input No. 7	Process value L alarm		12			04	Unit No.
	Process value H alarm		13			05	
Input No. 8	Process value L alarm		14			06	
-	Process value H alarm		15			07	
Input No. 1	Process value	n+1		0	n+1		The allocation of the
Input No. 2		n+2			n+2		first CJ1W-AD04U
Input No. 3		n+3			n+3		Unit remains the
Input No. 4		n+4			n+4		same.
Input No. 5		n+5		×	n2+1		The area allocations
Input No. 6		n+6			n2+2		of the second CJ1W-
Input No. 7		n+7			n2+3		AD04U Unit changes
Input No. 8		n+8			n2+4		since it has a different Unit No.
Input No. 1	Input error	n+9	00	0	n+9	00	The allocation of the
Input No. 2			01			01	first CJ1W-AD04U
Input No. 3			02			02	Unit remains the
Input No. 4			03			03	same.
Input No. 5			04	×	n2+9	00	The area allocations
Input No. 6			05			01	of the second CJ1W-
Input No. 7			06			02	AD04U Unit changes
Input No. 8			07			03	since it has a different Unit No.
Conversion d	ata enabled flag		15	0	n+9	15	First CJ1W-AD04U Unit
				×	n2+9	15	Second CJ1W-AD04U Unit

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### DM Areas

Different in the area allocations and default values. Replace them by referring to the manual.

Name		CS1W-PDC55	CJ1W-PH41U		Remarks
		First word	Difference	First word	
Input No. 1 to 4	DM area	m D20000 + Unit No. x 100	0	m D20000 + Unit No. x 100	The allocation of the first CJ1W-AD04U Unit remains the same.
Input No. 5 to 8	DM area			m2 D20000 + the second Unit's Unit No. x 100	The area allocations of the second CJ1W-AD04U Unit changes since it has a different Unit No.

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (4) Differences in wiring and terminal arrangement

CS1W-PDC55	CJ1W-AD04U
Voltage input $voltageoutput device+V1+B111+A1V2+A2+Voltageoutput devicevoltageoutput device+V3+B4A3A3COM2++Voltageoutput devicevoltageoutput device-COM3B6A6A6COM4Voltageoutput devicevoltageoutput device-COM3B6A6A6COM4-+Voltageoutput devicevoltageoutput device-COM5B9A9A9COM6-+Voltageoutput deviceVoltageoutput device-COM7B12A10X1118+A12-Voltageoutput deviceVoltageoutput device-COM7B12A12A1V2+A2With current inputdevice+V1+B1A1A1V2+A2Current outputdevice+V3+B4A3A3COM2COM2+-Current outputdevice+V3+B4A3A3COM2COM4+-Current outputdevice+V7+B10A10A10V8+A10Current outputdevice+V7+B10A10A10V8+A12Current outputdeviceCurrent outputdeviceCurre$	Voltage Current input input $\downarrow \downarrow $

Reference manuals

CS1W-PDC55: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

CJ1W-AD04U: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

#### Appendix 6.20. CS1W-PTW01

#### (1) Selection of a replacement model and notes for replacement

Replacement model	Notes and restrictions
CJ1W-PH41U	<ul> <li>Equivalent in the functions and capabilities.</li> <li>Different in the CIO areas and DM areas.</li> <li>Additional areas for expansion control/monitor areas (46 channels) and expansion setting areas (100 words) are necessary.</li> <li>A 2-wire Transmission Device Input Unit requires rewiring to an external 24 V power supply.</li> </ul>

#### (2) Differences in functions and capabilities

Item	Item CS1W-PTW01		CJ1W-PH41U
	Specifications	Difference	Specifications
			(focusing on voltage and current)
Number of inputs	4	0	4
Input signal type	Unified signals from the 2-wire Transmission Device Input Unit (4 to 20 mA) 4 to 20 mA, 1 to 5 V	0	4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 1.25 V, 0 to 5 V, 0 to 10 V, -1.25 to 1.25 V, -5 to 5 V, -10 to 10 V, or ±10-V user-set range
User-defined scaling in industrial units	Scaling is required (with the minimum and maximum values set by user) (4 inputs set separately).	0	Scaling is required (with the minimum and maximum values set by user) (4 inputs set separately).
Accuracy (25°C)	±0.2%	Ø	±0.05%
Temperature coefficient	±0.015%/°C	Ø	±0.008%/°C
Resolution	1/4,096	O	1/64,000 (conversion period: 10 ms)
Input signal range	-15 to 115%	Ø	4 to 20 mA, 1 to 5 V input: -15 to 115%
Maximum rated input	Voltage input: ±15 V Current input: ±30 mA	0	Voltage input: ±15 V Current input: ±30 mA
Input impedance	4 to 20 mA current input: 250 Ω, 1 to 5 V voltage input: 1 MΩ min.		Current input: 150 $\Omega$ Voltage input: 1 M $\Omega$ min.
Warm-up period	10 minutes	$\triangle$	30 minutes
Response time	0.5 s (travel time from input 0% to 90%)	O	0.1 s (travel time from input 0% to 90%)
Conversion period	100 ms/4 points	0	10 ms/4 points (1/64,000 resolution)
Input error detection	Detects an error if the input falls below - 17.2% or exceeds 112.5%.	0	Detects an error if the input exceeds 115% or falls below -15% of the measurable input range.
Operation at input disconnection	Stores a process value corresponding to - 15%.	0	4 to 20 mA, 1 to 5 V: Stores a process value corresponding to -15%. Other ranges: Stores a process value at 0 V or 0 mA.
Mean value processing	Calculates the moving average for the specified number of process values (1 to 16), and stores that value in the CIO Area as the process value.	0	Calculates the moving average for the specified number of process values (1 to 128), and stores that value in the CIO Area as the process value.
Process value alarm	Process value 4-point alarm (HH, H, L, LL), alarm hysteresis, and ON-delay timer (0 to 60 s) are available.	0	Process value 4-point alarm (LL, L, H, HH), alarm hysteresis, and ON/OFF- delay timer (0 to 60 s) are available.
Rate-of-change calculation	Calculates the amount of change per comparison time interval (1 to 16 s).	0	Calculates the amount of change per comparison time interval (1 to 16 s).
Rate-of-change alarm	Rate-of-change 2-point alarm (H, L), alarm hysteresis, and ON-delay timer (0 to 60 s, shared with process value alarm) are available.	0	Rate-of-change 2-point alarm (L, H), alarm hysteresis, and ON-delay timer (0 to 60 s, shared with process value alarm) are available.
Square root calculation	When the maximum value for process value scaling is A and the minimum value is B, Output = (A-B) (Input-B) +B Drop-out: output up to approx. 7%, which has a linear characteristic (output = input)	0	When the maximum value for process value scaling is A and the minimum value is B, Output = (A-B) (Input-B) +B Drop-out: output up to approx. 7%, which has a linear characteristic (output = input)
Isolation	Between channels and between input terminals and PLC signals	0	Between channels and between input terminals and PLC signals

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

- (3) Differences in memory area allocations
- · For process value alarm and rate-of-change alarm of CS1W-PTW01, use expansion control/monitor areas (46

channels) and expansion setting areas (100 words) on CJ1W-PH41U. Allocate them to empty areas.

Size	Addresses	Name
Expansion setting	m+98	Expansion setting area allocations
areas	m: First word of DM area	0: Not used, 1: DM, 2: CIO, 3: W, 4: H, 5: EM
100 words	m+99	First word of expansion setting area
Expansion	o+32	Expansion control/monitor area allocations
control/monitor	o: First word of expansion	0: Not used, 1: DM, 2: CIO, 3: W, 4: H, 5: EM
areas	control/monitor area	
46 channels	0+33	First word of expansion control/monitor area

#### CIO Areas

Differences in CIO areas

Input	Name	CS1W-	PTW01	CJ1W-I	PH41U	Remarks
-		Word	Bit	Word	Bit	
Input No. 1	Process value LL alarm	n	00	n+8	00	· CJ1W-PH41U
	Process value L alarm		01		01	Different in the channel
	Process value H alarm		02		02	allocations.
	Process value HH alarm		03		03	]
Input No. 2	Process value LL alarm		04		04	
	Process value L alarm		05		05	
	Process value H alarm		06		06	
	Process value HH alarm		07		07	]
Input No. 3	Process value LL alarm		08		08	]
	Process value L alarm		09		09	
	Process value H alarm		10		10	]
	Process value HH alarm		11		11	
Input No. 4	Process value LL alarm		12		12	
	Process value L alarm		13		13	
	Process value H alarm		14		14	
	Process value HH alarm		15		15	
Input No. 1	Process value	n+1		n/n+1		(*1)
Input No. 2		n+2		n+2/n+3		
Input No. 3		n+3		n+3/n+4		
Input No. 4		n+4		n+5/n+6		
Input No. 1	Rate-of-change value	n+5		p+4/p+5		Allocated to expansion
Input No. 2		n+6		p+6/p+7		control/monitor areas.
Input No. 3		n+7		p+8/p+9		p: First word of
Input No. 4		n+8		p+10/p+11		expansion
						control/monitor area
						(*1)
Input No. 1	Rate-of-change L alarm	n+9	00	n+9	00	
	Rate-of-change H alarm		01		01	
Input No. 2	Rate-of-change L alarm		02		02	
	Rate-of-change H alarm		03		03	
Input No. 3	Rate-of-change L alarm		04		04	
	Rate-of-change H alarm		05		05	
Input No. 4	Rate-of-change L alarm		06		06	ļ
	Rate-of-change H alarm		07		07	ļ
Input No. 1	Input error		08		08	J
Input No. 2			09		09	J
Input No. 3			10	]	10	]
Input No. 4			11		11	

\*1: CJ1W-PH41U takes up 2 words.

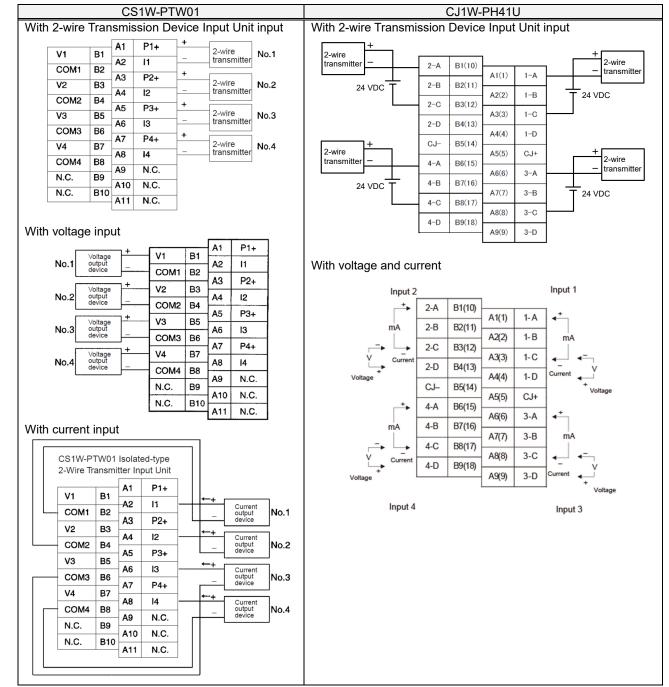
Use a lower channel while setting the process value data length of CJ1W-PH41U to 1 word.

#### DM Areas

Different in the area allocations and default values. Replace them by referring to the manual. CJ1W-PH41U takes up 2 words for the process value data length. When replacing CS1W-PTW01, set the resolution switch to 1/64.000 and the process value data length to 1 word.

esolution sw		,000 and the p	
Addresses	Bit	settings	Description
m+1	00 to 03	Resolution	0: 1/256,000 (conversion period: 60 ms) This should not be set since a
		switch	process value takes up 2 words.
			1: 1/64,000 (conversion period: 10 ms)
			2: 1/16,000 (conversion period: 5 ms)
	04 to 07	Process value	0: 2 words (signed double word binary data)
		data length	1: 1 word (restricted to the -32768 to 32767 range)

#### (4) Differences in wiring and terminal arrangement



#### Reference manuals

CS1W-PTW01: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368) CJ1W-PH41U: CS/CJ-series Analog I/O Units Operation Manual (Cat. No. W368)

#### Appendix 6.21. CS1W-SCU□1-V1/CS1W-SCB□1-V1

#### (1) Selection of a replacement model and notes for replacement

Replacement model, notes, and restrictions							
Replacement model							
Existing model Replacement model							
Port 1: RS-232C Port 2: RS-232C	CS1W-SCB21-V1	CS1W-SCU21-V1	CJ1W-SCU22				
Port 1: RS-422A/485 Port 2: RS-422A/485		CS1W-SCU31-V1	CJ1W-SCU22				
Port 1: RS-232C Port 2: RS-422A/485	CS1W-SCB41-V1		CJ1W-SCU42				

#### Notes and restrictions

#### Replacing CS1W-SCU $\Box$ 1-V1 with CJ1W-SCU $\Box$ 2

- The specifications, functions, and memory allocations remain the same.
- The RS-422A/485 interface changes from the D-sub connector to the terminal block.

Replacing CS1W SCB□1-V1 with CJ1W-SCU□2

- The specifications and functions remain the same.
- Allocating Unit numbers is necessary since the inner board is replaced with the CPU Bus Unit. Memory area allocations will change according to the set Unit numbers
- The RS-422A/485 interface changes from the D-sub connector to the terminal block.
- In the no-protocol mode, TXD/RXD instructions must be replaced with TXDU/RXDU instructions.
- For protocol macro (PMCR) instructions, the control data must be changed.
- For change serial port setup (STUP) instructions, the control data must be changed.

#### (2) Differences in functions and capabilities

#### Differences in Specifications

Item	CS1W-SCB□1-V1	CS1W-SCU□1-V1		CJ1W-SCU□2	
	Specifications	Specifications	Difference	Specifications	
Unit type	Inner board	CPU Bus Unit	$\triangle$	CPU Bus Unit	
Number of mountable boards/Units	One board per inner board slot	16 Units max.	0	16 Units max.	
Data exchange with the CPU Unit	Inner board area	CPU Bus Unit area	$\bigtriangleup$	CPU Bus Unit area	
Simple backup function	Simple backup can backup/r data to/from the memory car		0	Simple backup can backup/restore the protocol macro data to/from the memory card.	
Communications distance	RS-232C port: 15 m max. RS-422A/485 port: 500 m ma	ax.	Ø	RS-232C port: 15 m max. RS-422A/485 port: 1,200 m max.	
Protocol			-		
Host link	Half-duplex Baud rate: 115.2 kbps max. Maximum number of connec Frame structure: C-mode col	Ø	Baud rate: 230.4 kbps max. The same except for the baud rate		
Protocol macro	Number of protocols: 20 max Number of sequences: 1,000 Sequence execution condition instruction	Half-duplex or full-duplex Baud rate: 57.6 kbps max. Maximum number of connected Units: 32 Number of protocols: 20 max. Number of sequences: 1,000 max. Sequence execution condition: Using the PLC's PMCR			
NT Link (1:N)	Baud rate: 115.2 kbps max. Maximum number of Units ca	0	Baud rate: 115.2 kbps max. The same in the specifications		

Item	CS1W-SCB□1-V1	CS1W-SCU□1-V1		CJ1W-SCU□2	
	Specifications	Specifications	Difference	Specifications	
No-protocol	Full-duplex		O	Baud rate: 230.4 kbps	
	Baud rate: 57.6 kbps max.			max.	
	Sending messages: TXD instru	· · · · · · · · · · · · · · · · · · ·		Sending messages	
		ction (CS1W-SCU⊡1-V1)		TXD/DTXDU	
	Receiving messages: RXD instru	uction (CS1W-SCB⊟1-V1)		instruction	
		iction (CS1W-SCU⊡1-V1)			
	Maximum message length: 2	Maximum message length: 256 bytes			
				instruction	
				The same in the other	
				specifications	
Serial gateway	Baud rate: 115.2 kbps max.		O	Baud rate: 230.4 kbps	
	Conversion source: FINS cor	mmand		max.	
	After conversion: CompoWay			The same except for	
	Modbus-RTL	J and Modbus-ASCII		the baud rate	
	commands				
	Host Link FINS commands				
Modbus-RTU slave	Mode: Modbus-RTU slave m	ode	Ø	Baud rate: 230.4 kbps	
	Baud rate: 115.2 kbps max.			max.	
	Address setting range: 1 to 2	47 (broadcasting: 0)		The same except for	
				the baud rate	

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in memory area allocations

#### CIO Areas

• Differences in CIO areas: Only CS1W-SCB□1-V1 is different in the area allocation words.

Name	CS1W-SCB□1-V1	CS1W-SCU□1-V1		CJ1W-SCU□2
	Word	Word	Difference Word	
		n = 1500 + 25 x Unit No.		n = 1500 + 25 x Unit No.
Software switch	1900	n	$\triangle$	n
Status (board/Unit)	1901 to 1904	n+1 to n+4	$\triangle$	n+1 to n+4
Status (port 1)	1905 to 1914 (*1)	n+5 to n+14	$\triangle$	n+5 to n+14
Status (port 2)	1915 to 1924 (*1)	n+15 to n+24	$\triangle$	n+15 to n+24

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

\*1: CS1W-SCB□1-V1 will be allocated to AR areas if in the no-protocol mode. (Refer to Relevant Auxiliary areas)

CS1W-SCU $\Box$ 1-V1 and CJ1W-SCU $\Box$ 2 will be allocated to CIO areas above.

#### DM Areas

• Differences in DM areas: Only CS1W-SCB□1-V1 is different in the area allocation words.

Name	CS1W-SCB□1-V1	CS1W-SCU□1-V1		CJ1W-SCU□2
	Word	Word	Difference	Word
		m = D30000 + 100 x Unit No.		m = D30000 + 100 x Unit No.
Port 1 setup area	D32000 to D32009	m to m+9	$\triangle$	m to m+9
Port 2 setup area	D32010 to D32019	m+10 to m+19	$\triangle$	m+10 to m+19
Port 1 setup area	D32020 to D32029	m+20 to m+29	$\bigtriangleup$	m+20 to m+29
(Modbus-RTU slave)				
Port 2 setup area	D32030 to D32039	m+30 to m+39	$\triangle$	m+30 to m+39
(Modbus-RTU slave)				

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### Relevant Auxiliary Areas

•

Differences in DM areas: CS1W-SCB□1-V1 is different in the area allocation words/bits.

Name	CS1W-	SCBD1-V1	CS1W-S	<u>CU∐1-V1</u>		CJ1W-SCU	2	
	Word	Bit	Word	Bit	Difference	Word		
Serial communications	A636	02: Port 1	A620 + Unit	02: Port 1	$\bigtriangleup$	A620 + Unit	02: Port 1	
board port 1/2 setup		01: Port 2	number	01: Port 2		number	01: Port 2	
change flag								
Unit/board restart flag	A608	00	A501	Unit number	$\triangle$	A501	Unit number	
No-protocol mode bits								
Port 1 reception	A356	07	1509 + 25 x	07	$\bigtriangleup$	1509 + 25 x	07	
overflow flag			Unit number			Unit number		
Port 1 reception		06		06	$\triangle$		06	
completed flag								
Port 1 send ready flag		05		05	$\triangle$		05	
Port 1 receive counter	A357		1510 + 25 x l	Jnit number	$\bigtriangleup$	1510 + 25 x l	Jnit number	
Port 1 reception	A356	15	1519 + 25 x	07	$\bigtriangleup$	1519 + 25 x	07	
overflow flag			Unit number			Unit number		
Port 1 reception		14		06	$\bigtriangleup$		06	
completed flag								
Port 1 send ready flag		13 (TXD)		05 (TXDU)	$\triangle$		05 (TXDU)	
		-		-			04	
							(DTXDU)	
Port 1 receive counter	A358		1520 + 25 x l	Jnit number	$\triangle$	1520 + 25 x l	Jnit number	

Difference: Enhanced (©), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (4) Changes in programming

Changing instruction operands is necessary to replace CS1W-SCB□1-V1 with CJ1W-SCU□2.

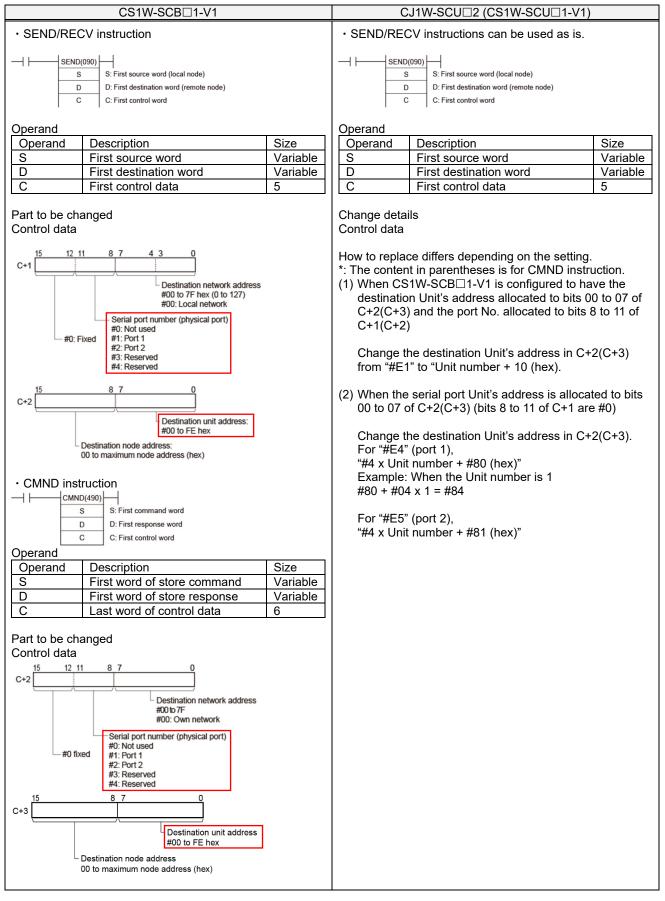
No-protocol Mode

CS1W-SCB□1-V1	CJ1W-SCU□2 (CS1W-SCU□1-V1)			
TXD/RXD instruction	Replaced with TXDU/RXDU instruction			
TXD(236)         S         S: First source word         C         C: Control word         N         N: Number of bytes         0000 to 0100 hex (0 to 256)	TXDU(256)       S       S: First source word       C       C: First control word       N       Number of bytes       0000 to 0100 hex (0 to 256)			
Operand Description Size	Operand Description Size			
S First word of send/receive data Variable	S First word of send/receive data Variable			
C Control data 1	C Control data 2			
N Number of bytes 1	N Number of bytes 1			
Part to be changed (for both TXD and RXD instructions) Control data	<ul> <li>Change details (for both TXD and RXD instructions)</li> <li>The control data takes up 2 words.</li> <li>Set the Unit No. and serial port No. in the control data (C+1).</li> <li>Allocating internal logical ports is necessary.</li> </ul>			
Byte order 0: Most significant bytes first 1: Least significant bytes first	Always 00 Byte order 0: Most significant bytes first 1: Least significant bytes first			
Always 0 Always	RS and ER signal control 0: No RS and ER signal control 1: RS signal control 2: ER signal control 3: RS and ER signal control Note: If set to 1, 2 or 3, data will not be sent.			
Serial port specifier 0: CPU Unit's RS-232C port 1: Serial Communications Board port 1 2: Serial Communications Board port 2	C+1 C+1 Destination unit address Serial Communications Unit's unit address (unit number + 10 hex) Serial port number 0: Specify directly. 1: Port 1 Port number specifier (Internal logical port) Specify 0 to 7 or F. (F: Automatic allocation)			

#### Protocol Macro Mode

	CS1W-SCB□1-V1		CJ1W-SCU□2 (CS1W-SCU□1-V1)			
PMCR instru	ction		PMCR instruction can be used as is.			
PMCR(260) C1 C1: Control word 1 C2 C2: Control word 2 S: First send word R: First receive word				MCR(260)       C1         C1       C1: Control word 1         C2       C2: Control word 2         S       S: First send word         R       R: First receive word		
Operand	Description	Size	Operand	Description	Size	
C1	Control word 1	1	C1	Control word 1	1	
C2	Control word 2	1	C2	Control word 2	1	
S	First send word of send data	Variable	S	First send word	Variable	
D	First receive word	Variable	D	First receive word	Variable	
Part to be changed Control data 1 C1 Unit address of communications partner CS1 CPU Bus Unit 1 umber + 10 hex					s partner	
CS1 CPU Bus Unit: Unit number + 10 hex Inner Board: E1 hex (CS Series only) Serial port number (physical port) 1 to 2 hex (1 hex: Port 1, 2 hex: Port 2) Communications port number (logical port) 0 to 7 hex (F hex: Automatic allocation)				Vhen the Unit number is 10 Jnit number +#10 (hex) = #1A		

Host Link Mode



#### (5) Differences in connector pin layout

#### The RS-422A/485 port connector changes to the terminal block.

		nector changes to tr						
	CS1W-SCB□1	-V1/CS1W-SCUD1-V	1	CJ1W-SCU□2				
RS-232C	port: D-sub 9 pi	n		RS-232C	port: D-sub 9 pi			
Pin No.	Abbreviation	Signal name	I/O	Pin No.	Abbreviation	Signal name	I/O	
1	FG	Shield	-	1	FG	Shield	-	
2	SD	Send data	Output	2	SD	Send data	Output	
3	RD	Receive data	Input	3	RD	Receive data	Input	
4	RS	Request to send	Output	4	RS	Request to send	Output	
5	CS	Clear to send	Input	5	CS	Clear to send	Input	
6	5 V	Power supply	-	6	5 V	Power supply	-	
7	DR	Data set ready	Input	7	DR	Data set ready	Input	
8	ER	Data terminal	Output	8	ER	Data terminal	Output	
		ready				ready		
9	SG	Signal ground	-	9	SG	Signal ground	-	
Hood	FG	Shield	-	Hood	FG	Shield	-	
RS-4224	6	9 nin		RS-4224/	6 —	1		
Pin No.	Abbreviation	Signal name	I/O	Pin	Abbreviation	Signal name	I/O	
1	SDA	Transmission data -	Output	No.	/ lobioviation	olgharnanio	170	
2	SDB	Transmission data	Output	1	RDA	Reception data -	Input	
11 -	000	+	output	2	RDB	Reception data +	Input	
3	NC	Not used	_	3	SDA	Transmission data -	Output	
4	NC	Not used	-	4	SDB	Transmission data +	Output	
5	NC	Not used	_	5	FG	Shield	-	
6	RDA	Reception data -	Input					
7	NC	Not used	-		1	$\bigcirc$		
8	RDB	Reception data +	Input					
9	NC	Not used	-					
Hood	FG	Shield	-					
						3 4 5		

Reference manuals

For both CS1W-SCU□1/SCB□1-V1 and CJ1W-SCU□2:

CS/CJ-series Serial Communications Boards/Units Operation Manual (Cat. No. W336)

#### Appendix 6.22. CS1W-CT021/041

#### (1) Selection of a replacement model and notes for replacement

Selection of a replacement model: Take into account whether to use CS1W-CT021/CT041 functions and

#### performance requirements.

Replacement model	Notes and restrictions
CJ1W-CT021	<ul> <li>Equivalent in the functions and capabilities.</li> <li>Equivalent in the I/O specifications.</li> <li>Different in the CIO areas and DM areas.</li> <li>Two CJ1W-CT021 Units are necessary to replace a CS1W-CT041 Unit.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-CT021	CS1W-CT041		CJ1W-CT021			
	Specifications	Specifications	Difference	Specifications			
Number of counters	2	4	$\bigtriangleup$	2			
Counter type	<ul> <li>Simple counter</li> <li>Circular counter</li> <li>Linear counter</li> <li>The counter type can be at the front of the Unit.</li> <li>By default the counters a counter.</li> </ul>	·	0	<ul> <li>Simple counter</li> <li>Circular counter</li> <li>Linear counter</li> <li>The counter type can be chosen by DIP switch at the front of the Unit.</li> <li>By default the counters are set to simple counter.</li> </ul>			
Maximum input frequency	500 kHz		0	500 kHz			
Maximum response time Signals per counter	0.5 ms (the time from cou output) Phase A, B and Z	unter input to external	0	0.5 ms (the time from counter input to external output) Phase A, B and Z			
Digital I/O	<ul> <li>4 digital inputs (I0, I1, I Each digital input can be In this way one counter of maximum of 4 digital input</li> <li>4 digital outputs (O0, O The Unit uses the unit ou to control the outputs. The represents the 4 digital of outputs.</li> </ul>	assigned to a counter. an be controlled by a uts. 01, O2, O3) tput pattern internally e unit output pattern	Δ	<ul> <li>2 digital inputs (10, 11)</li> <li>Each digital input can be assigned to a counter. In this way one counter can be controlled by a maximum of 2 digital inputs.</li> <li>2 digital outputs (O0, O1)</li> <li>The Unit uses the unit output pattern internally to control the outputs. The unit output pattern represents the 2 digital outputs and 30 soft outputs.</li> </ul>			
Input signal types	<ul> <li>Phase differential (mul (multiplication x2), and</li> <li>Up/down</li> <li>Pulse &amp; direction</li> </ul>		0	<ul> <li>Phase differential (multiplication x1), (multiplication x2), and (multiplication x4)</li> <li>Up/down</li> <li>Pulse &amp; direction</li> </ul>			
Counter control using CIO software bits	<ul> <li>Open Gate / Start Cou enabled to count puls</li> <li>Close Gate / Stop Co disabled to count puls</li> <li>Preset Counter: Prese CIO.</li> <li>Reset Counter to zero</li> <li>Capture Counter Valu Value can be read usin</li> </ul>	es. unter: Counter is .es. et Value can be set in o. e: Captured Counter	0	<ul> <li>Open Gate / Start Counter: Counter is enabled to count pulses.</li> <li>Close Gate / Stop Counter: Counter is disabled to count pulses.</li> <li>Preset Counter: Preset Value can be set in CIO.</li> <li>Reset Counter to zero.</li> <li>Capture Counter Value: Captured Counter Value can be read using IORD instruction.</li> </ul>			
Digital input functionality	<ul> <li>Gate</li> <li>Reset</li> <li>Preset</li> <li>Capture</li> <li>Stop/Capture-Continution</li> <li>Stop/Capture-Reset/Continution</li> <li>Capture/Reset</li> <li>Enable Reset</li> <li>Disable Reset</li> <li>For each function, the can be triggered on a reset</li> </ul>	Continue corresponding action	0	<ul> <li>Gate</li> <li>Reset</li> <li>Preset</li> <li>Capture</li> <li>Stop/Capture-Continue</li> <li>Stop/Capture-Reset/Continue</li> <li>Capture/Reset</li> <li>Enable Reset</li> <li>Disable Reset</li> <li>For each function, the corresponding action can be triggered on a rising or falling edge.</li> </ul>			
Output control mode	<ul> <li>Automatic output cont Range mode Comparison mode</li> <li>Rate range</li> <li>Manual output control</li> </ul>	rol in:	0	<ul> <li>Automatic output control in: Range mode Comparison mode</li> <li>Rate range</li> <li>Manual output control</li> </ul>			

Item	CS1W-CT021	CS1W-CT041	5.4	CJ1W-CT021
<u></u>	Specifications	Specifications	Difference	Specifications
Output state control	The output state control of set as below for when the the CPU Unit changes fro PROGRAM, when an I/O when an overflow/underfl · Continue automatic upo · Freeze output states *1 · Predefine output states	e operating mode of om RUN/MONITOR to bus error occurs, or ow error occurs. dating of output states	0	<ul> <li>The output state control of 32 outputs can be set as below for when the operating mode of the CPU Unit changes from RUN/MONITOR to PROGRAM, when an I/O bus error occurs, or when an overflow/underflow error occurs.</li> <li>Continue automatic updating of output states</li> <li>Freeze output states*1</li> <li>Predefine output states</li> </ul>
Output driver configuration	The output driver of each configured as: • NPN • PNP	digital output can be	0	The output driver of each digital output can be configured as: • NPN • PNP
Reset signals	Each counter can be rese combination of) the follow · Software counter rese · Digital input · Z-input	ving sources: t bit	0	<ul> <li>Each counter can be reset to zero by (a combination of) the following sources:</li> <li>Software counter reset bit</li> <li>Digital input</li> <li>Z-input</li> </ul>
Other functions	<ul> <li>Programmable output To each digital output, an ms] and/or a pulse durati- be applied.</li> <li>Rate measurement For each counter, the pul measured by defining a ti- ms]. Up to 64 pulse rate of the rate history log file. P be read using an IORD in counter, two pulse rate ra- with upper and lower limit outputs according to the value.</li> <li>Hysteresis In the range mode, a hys can be set to prevent unv fluctuations around the up from switching output on</li> </ul>	ON-delay [1 to 9999 on [1 to 9999 ms] can se rate can be me window [1 to 9999 values are stored in ulse rate values can istruction. For each inges can be defined is to control the measured pulse rate teresis value (1 to 255) vanted encoder value oper and lower limits	0	<ul> <li>Programmable output pulse</li> <li>To each digital output, an ON-delay [1 to 9999 ms] and/or a pulse duration [1 to 9999 ms] can be applied.</li> <li>Rate measurement</li> <li>For each counter, the pulse rate can be measured by defining a time window [1 to 9999 ms]. Up to 64 pulse rate values are stored in the rate history log file.</li> <li>Pulse rate values can be read using an IORD instruction. For each counter, two pulse rate ranges can be defined with upper and lower limits to control the outputs according to the measured pulse rate value.</li> <li>Hysteresis</li> <li>In the range mode, a hysteresis value (1 to 255) can be set to prevent unwanted encoder value fluctuations around the upper and lower limits from switching output on or off.</li> </ul>
Noise filtering	To suppress noise on the each counter, noise filteri The cut-off frequencies f and B can be set to: • 10 kHz • 50 kHz (default) • 500 kHz For digital inputs, 10 kHz noise filtering can be use 1 kHz noise filtering is alw	ng can be used. or the signal lines A and 50 kHz (default) d. For Z-input signals,	0	To suppress noise on the signal lines A and B of each counter, noise filtering can be used. The cut-off frequencies for the signal lines A and B can be set to: • 10 kHz • 50 kHz (default) • 500 kHz For digital inputs, 10 kHz and 50 kHz (default) noise filtering can be used. For Z-input signals, 1 kHz noise filtering is always used.
Initial counter value	The initial counter value     Unit when the Unit is po		0	<ul> <li>The initial counter value is transferred to the Unit when the Unit is powered up or restarted.</li> </ul>
IORD- and IOWR- instructions	Run-time configuration ar High-speed Counter Unit IORD- and IOWR-instruc data can be read or writte DM-configuration data Range and compariso Captured counter valu Rate history log file da Counter value (Re)configure High-sp Error clear	is possible by using tions. The following en: n Data le ta	0	Run-time configuration and operation of the High-speed Counter Unit is possible by using IORD- and IOWR-instructions. The following data can be read or written: • DM-configuration data • Range and comparison Data • Captured counter value • Rate history log file data • Counter value • (Re)configure High-speed Counter Unit • Error clear
Interrupts of outputs	The unit output pattern of soft outputs can be config interrupts in the CS1 CPU	gured to generate	0	The unit output pattern of digital outputs and soft outputs can be configured to generate interrupts in the CJ1-H/CJ1M CPU Unit.

Item	CS1W-CT021	CS1W-CT041		CJ1W-CT021
	Specifications	Specifications	Difference	Specifications
Interrupts of digital inputs	Digital inputs can be con interrupts in the CS1 CPI		0	Digital inputs can be configured to generate interrupts in the CJ1-H/CJ1M CPU Unit.
Error history log function	Stores up to 30 error log	records.	0	Stores up to 30 error log records.

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

(3) Differences in I/O specifications

No differences in I/O specifications.

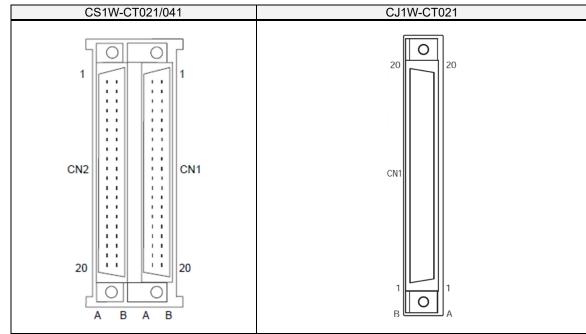
(4) Differences in memory area allocations

The areas for counters 3 and 4 in CS1W-CT041 will not be used in CJ1W-CT021.

To replace CS1W-CT041, allocate counters 3 and 4 to areas in another CJ1W-CT021.

If they are programmed, replace them by referring to the manual.

#### (5) Differences in wiring and terminal arrangement



		CS1W-C		CJ1W-	CT	021					
	C	N No.2			С	N No.1			CN	No.1	
Pin No.	Designation	Pin No.	Designation	Pin No.	Designation	Pin No.	Designation	Pin No.	Designation	Pin No.	Designation
A1	External Output COM: 0V	B1	External output power supply : 12 to 24 V DC	A1	External Output COM: 0V	B1	External output power supply : 12 to 24 V DC		Counter 2 Input Z : 24 V DC	A20	Counter 2 Input Z : 12 V DC
A2	External Output 2 (NPN)	B2	External Output 2 (PNP)	A2	External Output 0 (NPN)	B2	External Output 0 (PNP)	B19	Counter 2 Input Z :	A19	Counter 2 Input Z :
A3	External Output 3 (NPN)	B3	External Output 3 (PNP)	A3	External Output 1 (NPN)	B3	External Output 1 (PNP)		Line Driver +		Line Driver -/0 V
A4	Not used	B4	Not used	A4	Not used	B4	Not used	B18	Counter 2 Input B :	A18	Counter 2 Input B :
A5	External Control Input 2 :	B5	External Control Input 2 :	A5	External Control Input 0 :	B5	External Control Input 0 :		24 V DC		12 V DC
	СОМ		24 V DC		COM		24 V DC	B17	Counter 2 Input B :	A17	Counter 2 Input B :
A6	External Control Input 3 :	B6	External Control Input 3 :	A6	External Control Input 1 :	B6	External Control Input 1 :		Line Driver +		Line Driver -/0 V
	сом		24 V DC		СОМ		24 V DC	B16	Counter 2 Input A :	A16	Counter 2 Input A :
A7	Not used	B7	Not used	A7	Not used	B7	Not used		24 V DC		12 V DC
A8	Counter 2 Input A :	B8	Counter 2 Input A :	A8	Counter 1 Input A :	B8	Counter 1 Input A :	B15	Counter 2 Input A :	A15	Counter 2 Input A :
	Line Driver -/0 V		Line Driver +		Line Driver -/0 V		Line Driver +		Line Driver +		Line Driver -/0 V
A9	Counter 2 Input A :	B9	Counter 2 Input A : 24 V DC	A9	Counter 1 Input A :	B9	Counter 1 Input A :	B14	Not used	A14	Not used
	12 V DC				5 V DC		24 V DC	B13	Counter 1 Input Z :	A13	Counter 1 Input Z :
A10	Counter 2 Input B :	B10	Counter 2 Input B :	A10	Counter 1 Input B :	B10	Counter 1 Input B :		24 V DC		5 V DC
	Line Driver -/0 V		Line Driver +		Line Driver -/0 V		Line Driver +	B12	Counter 1 Input Z :	A12	Counter 1 Input Z :
A11	Counter 2 Input B :	B11	Counter 2 Input B :	A11	Counter 1 Input B :	B11	Counter 1 Input B :		Line Driver +		Line Driver -/0 V
	12 V DC		24 V DC		5 V DC		24 V DC	B11	Counter 1 Input B :	A11	Counter 1 Input B :
A12	Counter 2 Input Z :	B12	Counter 2 Input Z :	A12	Counter 1 Input Z :	B12	Counter 1 Input Z :		24 V DC		5 V DC
	Line Driver -/0 V		Line Driver +		Line Driver -/0 V		Line Driver +	B10	Counter 1 Input B :	A10	Counter 1 Input B :
A13	Counter 2 Input Z :	B13	Counter 2 Input Z :	A13	Counter 1 Input Z :	B13	Counter 1 Input Z :		Line Driver +		Line Driver -/0 V
	12 V DC		24 V DC		5 V DC		24 V DC	B9	Counter 1 Input A :	A9	Counter 1 Input A :
A14	Not used	B14	Not used	A14	Not used	B14	Not used		24 V DC		5 V DC
A15	Counter 4 Input A :	B15	Counter 4 Input A :	A15	Counter 3 Input A :	B16	Counter 3 Input A :	B8	Counter 1 Input A :	A8	Counter 1 Input A :
	Line Driver -/0 V		Line Driver +		Line Driver -/0 V		Line Driver +		Line Driver +		Line Driver -/0 V
A16	Counter 4 Input A :	B16	Counter 4 Input A :	A16	Counter 3 Input A :	B15	Counter 3 Input A :	B7	Not used	A7	Not used
	12 V DC		24 V DC		5 V DC		24 V DC	B6	External Control Input 1 :	A6	External Control Input 1 :
A17	Counter 4 Input B :	B17	Counter 4 Input B :	A17	Counter 3 Input B :	B17	Counter 3 Input B :		24 V DC	1	СОМ
	Line Driver -/0 V		Line Driver +		Line Driver -/0 V		Line Driver +	B5	External Control Input 0 :	A5	External Control Input 0 :
A18	Counter 4 Input B :	B18	Counter 4 Input B :	A18	Counter 3 Input B :	B18	Counter 3 Input B :		24 V DC	1	СОМ
	12 V DC		24 V DC		5 V DC		24 V DC	B4	Not used	A4	Not used
A19	Counter 4 Input Z :	B19	Counter 4 Input Z :	A19	Counter 3 Input Z :	B19	Counter 3 Input Z :	B3	External Output 1 (PNP)	A3	External Output 1 (NPN)
	Line Driver -/0 V		Line Driver +		Line Driver -/0 V		Line Driver +	B2		A2	
A20	Counter 4 Input Z :	B20	Counter 4 Input Z :	A20	Counter 3 Input Z :	B20	Counter 3 Input Z :		External Output 0 (PNP)		External Output 0 (NPN)
	12 V DC		24 V DC		5 V DC		24 V DC	B1	External output power supply :	A1	External Output COM:
									12 to 24 V DC	1	0V

#### Reference manuals

CS1W-CT0□1: CS-series High-speed Counter Units Operation Manual (Cat. No. W902)

CJ1W-CT021: CJ-series High-speed Counter Units Operation Manual (Cat. No. W401)

#### Appendix 6.23. CS1W-NC4 3/2 3/1 3

#### (1) Selection of a replacement model and notes for replacement

Selection of a replacement model: Take into account whether to use CS1W-NC4 3/2 3/1 3 functions and

#### performance requirements.

Replacement model	Notes and restrictions
CJ1W- NC4□3/2□3/1□3	<ul> <li>Equivalent in the functions and capabilities.</li> <li>The CIO areas and DM areas remain the same.</li> <li>Only NC4□3 is different in the output specifications.</li> </ul>

#### (2) Differences in functions and capabilities

Item	CS1W-NC4□3/2□3/1□3		CJ1W-NC4□3/2□3/1□3
	Specifications	Difference	Specifications
Unit number allocation	Allocate Unit numbers in the range 0 to 95. • 1-axis and 2-axis PCUs: Unit 1 allocated • 4-axis PCUs: Unit 2 allocated	0	Allocate Unit numbers in the range 0 to 95. • 1-axis and 2-axis PCUs: Unit 1 allocated • 4-axis PCUs: Unit 2 allocated
Pulse output type	2 types: open collector output and line driver output	0	2 types: open collector output and line driver output
Format of data exchanged between PLC and PCU	Binary format (hexadecimal) Example: Present position is output to the PLC in 32-bit signed binary format.	0	Binary format (hexadecimal) Example: Present position is output to the PLC in 32-bit signed binary format.
Position designation range	-1,073,741,823 to 1,073,741,823 pulses	0	-1,073,741,823 to 1,073,741,823 pulses
Present position range	-2,147,483,647 to 2,147,483,647 pulses	0	-2,147,483,647 to 2,147,483,647 pulses
Zone range	-1,073,741,823 to 1,073,741,823 pulses	0	-1,073,741,823 to 1,073,741,823 pulses
Speed designation range	1 to 500,000 pps, set in pps units	0	1 to 500,000 pps, set in pps units
PLC scan timeover for END refresh	0.5 ms max. per unit	0	0.5 ms max. per unit
PLC scan timeover due to IOWR/IORD instruction	1 ms max. per instruction	0	1 ms max. per instruction
Time between startup instruction from the ladder program and pulse output	2 ms max.	0	2 ms max.
Operating data area	The following 3 areas can be specified: Area words allocated to Special I/O Units, user-specified DM area words, and user-specified EM area words.	0	The following 3 areas can be specified: Area words allocated to Special I/O Units, user-specified DM area words, and user-specified EM area words.
Corresponding EM banks	Banks 0 to C	0	Banks 0 to C
Clearing error codes	Possible	0	Possible
Parameter setting	Settings only required for the axes being used.	0	Settings only required for the axes being used.
External I/O connector	48 pins	×	40 pins
Support software	CX-Position	0	CX-Position

Difference: Enhanced ( $\odot$ ), Equivalent ( $\bigcirc$ ), Degraded ( $\triangle$ ), or Incompatible feature (×)

#### (3) Differences in output specifications

CS1W-NC4□3 and CJ1W-NC4□3 are different in the output specifications.

CS1W-NC2□3/1□3 and CJ1W-CS1W-NC2□3/1□3 are the same in the output specifications.

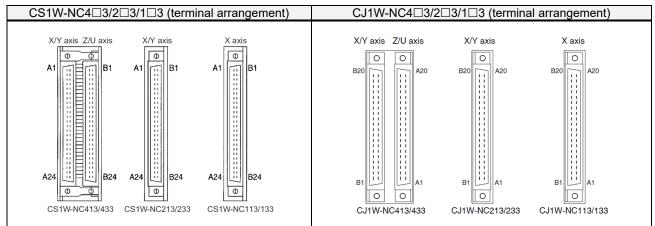
#### CS1W-NC4□3

	Item	CS1W-NC4□3		CJ1W-NC4□3		
		Specifications	Difference	Specifications		
Open	Maximum	NPN open collector	$\triangle$	NPN open collector		
collector	switching	30 mA at 4.75 to 26.4 VDC		30 mA at 4.75 to 25.2 VDC		
output	capacity	(16 mA: Terminals with 1.6-kΩ limit resistance)		(16 mA: Terminals with 1.6-kΩ limit resistance)		
	Minimum switching capacity	NPN open collector 7 mA at 4.75 to 26.4 VDC		NPN open collector 7 mA at 4.75 to 25.2 VDC		
	Leakage current	0.1 mA max.	0	0.1 mA max.		
	Residual voltage	0.6 V max. (pulse output) 1.0 V max. (error counter reset output)	0	0.6 V max. (pulse output) 1.0 V max. (error counter reset output)		
Line driver o	utput	Corresponds to Am26LS31. Maximum output current: 20 mA	0	Corresponds to Am26LS31. Maximum output current: 20 mA		
External power supply		24 VDC ±10% NC413: 90 mA max. NC433: 30 mA max. 5 VDC±5% NC433: 220 mA max.	Δ	24 VDC ±10% NC413: 100 mA max. NC433: 30 mA max. 5 VDC±5% NC433: 230 mA max.		

#### (4) Differences in memory area allocations

The memory area allocations remain the same.

#### (5) Differences in wiring and terminal arrangement



	Conne	ctor pin arrangement for X and Z axes	Connector pin arrangement for Y and U axes						
Pin No.	I/O	Designation	Pin No.	1/0	Designation				
A1	IN	Output power supply, 24 VDC	B1	IN	Output power supply, 24 VDC				
A2	IN	Output GND, 24 VDC	B2	IN	Output GND, 24 VDC				
A3		Not used	B3		Not used				
A4		Not used	B4		Not used				
A5	OUT	CW pulse output	B5	OUT	CW pulse output				
A6	OUT	CW pulse output with 1.6-kΩ resistance	B6	OUT	CW pulse output with 1.6-kΩ resistance				
A7	OUT	CCW pulse/direction output	B7	OUT	CCW pulse/direction output				
A8	OUT	CCW pulse/direction output with 1.6-kΩ resistance	B8	OUT	CCW pulse/direction output with 1.6-kΩ resistance				
A9		Not used	B9		Not used				
A10	OUT	Error counter reset output/origin-adjustment command output	B10	OUT	Error counter reset output/origin-adjustment command output				
A11	OUT	Error counter reset output with $1.6$ - $k\Omega$ resistance Origin-adjustment command output with $1.6$ - $k\Omega$ resistance	B11	OUT	Error counter reset output with $1.6$ - $k\Omega$ resistance Origin-adjustment command output with $1.6$ - $k\Omega$ resistance				
A12	IN	Positioning completed input signal	B12	IN	Positioning completed input signal				
A13		Not used	B13		Not used				
A14	IN	Origin common	B14	IN	Origin common				
A15	IN	Origin input signal (24 V)	B15	IN	Origin input signal (24 V)				
A16	IN	Origin input signal (5 V)	B16	IN	Origin input signal (5 V)				
A17		Not used	B17		Not used				
A18		Not used	B18		Not used				
A19	IN	Interrupt input signal	B19	IN	Interrupt input signal				
A20	IN	Emergency stop input signal	B20	IN	Emergency stop input signal				
A21	IN	Origin proximity input signal	B21	IN	Origin proximity input signal				
A22	IN	CW limit input signal	B22	IN	CW limit input signal				
A23	IN	CCW limit input signal	B23	IN	CCW limit input signal				
A24	IN	Input common	B24	IN	Input common				

CJ1W-NC413/213/113 (pulse/open collector output)
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	Conne	ctor pin arrangement for X and Z axes	Connector pin arrangement for Y and U axes					
Pin No.	1/0	Designation	Pin No.	1/0	Designation			
A1	IN	Power supply, 24 V DC (for output signals)	B1	IN	Power supply, 24 V DC (for output signals)			
A2	IN	GND, 24 V DC (for output signals)	B2	IN	GND, 24 V DC (for output signals)			
A3		Not used	B3		Not used			
A4		Not used	B4		Not used			
A5	OUT	CW pulse output	B5	OUT	CW pulse output			
A6	OUT	CW pulse output with 1.6-kΩ resistance	B6	OUT	CW pulse output with 1.6-k  resistance			
A7	OUT	CCW pulse/direction output	B7	OUT	CCW pulse/direction output			
A8	OUT	CCW pulse/direction output with 1.6-kΩ resistance	B8	OUT	CCW pulse/direction output with 1.6-kΩ resistance			
A9	OUT	Error counter reset output/origin-adjustment command output	B9	OUT	Error counter reset output/origin-adjustmen command output			
A10	OUT	Error counter reset output with $1.6$ -k $\Omega$ resistance Origin-adjustment command output with $1.6$ -k $\Omega$ resistance	B10	OUT	Error counter reset output with 1.6-kΩ resis tance Origin-adjustment command output with 1.6-kΩ resistance			
A11	IN	Positioning completed input signal	B11	IN	Positioning completed input signal			
A12	IN	Origin common	B12	IN	Origin common			
A13	IN	Origin input signal (24 V)	B13	IN	Origin input signal (24 V)			
A14	IN	Origin input signal (5 V)	B14	IN	Origin input signal (5 V)			
A15	IN	Interrupt input signal	B15	IN	Interrupt input signal			
A16	IN	Emergency stop input signal	B16	IN	Emergency stop input signal			
A17	IN	Origin proximity input signal	B17	IN	Origin proximity input signal			
A18	IN	CW limit input signal	B18	IN	CW limit input signal			
A19	IN	CCW limit input signal	B19	IN	CCW limit input signal			
A20	IN	Input common	B20	IN	Input common			

CS1W-NC433/233/133 (Line driver output)					CJ1W-NC433/233/133 (Line driver output)						
Connector pin arrangement for X and Z axes Connector pin arrangement for Y and U axes							Con	ector pin arrangement for X and Z axes	_	Conne	ctor pin arrangement for Y and U axes
Pin No.	1/0	Designation	Pin No.	1/0	Designation				Pin No.	1/0	Designation
A1	IN	Output power supply, 24 VDC	B1	IN	Output power supply, 24 VDC	A1	IN	Power supply, 24 V DC (for output signals)	B1	IN	Power supply, 24 V DC (for output signals)
A2	IN	Output GND, 24 VDC	B2	IN	Output GND, 24 VDC	A2	IN	GND, 24 V DC (for output signals)	B2	IN	GND, 24 V DC (for output signals)
A3	IN	Pulse output GND, 5 VDC*	B3	IN	Pulse output GND, 5 VDC*	A3	IN	GND, 5 V DC (for pulse output)*	B3	IN	GND, 5 V DC (for pulse output)*
A4	IN	Pulse output power supply, 5 VDC*	B4	IN	Pulse output power supply, 5 VDC*	A4	IN	Power supply, 5 V DC (for pulse output)*	B4	IN	Power supply, 5 V DC (for pulse output)*
A5	OUT	CW pulse output (+)	B5	OUT	CW pulse output (+)	A5	OU	CW pulse output (+)	B5	OUT	CW pulse output (+)
A6	OUT	CW pulse output (-)	B6	OUT	CW pulse output (-)	A6	OU	CW pulse output (-)	B6		CW pulse output (-)
A7	OUT	CCW pulse/direction output (+)	B7	OUT	CCW pulse/direction output (+)	A7	OU	CCW pulse/direction output (+)	B7	OUT	CCW pulse/direction output (+)
A8	OUT	CCW pulse/direction output (-)	B8	OUT	CCW pulse/direction output (-)	A8	OU	CCW pulse/direction output (-)	B8	OUT	CCW pulse/direction output (-)
A9		Not used	B9		Not used	A9	OU	Error counter reset output/origin-adjustment	B9	OUT	Error counter reset output/origin-adjustment
A10	OUT	Error counter reset output/origin-adjustment command output	B10	OUT	Error counter reset output/origin-adjustment command output	A10	OU		B10	OUT	command output Error counter reset output with 1.6-kΩ resis-
A11	OUT	Error counter reset output with 1.6-kΩ resis- tance Origin-adjustment command output with	B11	OUT	Error counter reset output with 1.6-kΩ resis- tance Origin-adjustment command output with 1.6-			tance Origin-adjustment command output with 1.6-kΩ resistance			tance Origin-adjustment command output with 1.6-kΩ resistance
		1.6-kΩ resistance			kΩ resistance	A11		Positioning completed input signal		IN	Positioning completed input signal
A12	IN	Positioning completed input signal	B12	IN	Positioning completed input signal	A12	_	Origin common		IN	Origin common
A13		Not used	B13		Not used	A13		Origin input signal (24 V)		IN	Origin input signal (24 V)
A14	IN	Origin common	B14	IN	Origin common	A14		Origin input signal (5 V)	B14	IN	Origin input signal (5 V)
A15	IN	Origin input signal (24 V)	B15	IN	Origin input signal (24 V)	A15	IN	Interrupt input signal	B15	IN	Interrupt input signal
A16	IN	Origin input signal (5 V)	B16	IN	Origin input signal (5 V)	A16		Emergency stop input signal	B16	IN	Emergency stop input signal
A17		Not used	B17		Not used	A17		Origin proximity input signal	B17	IN	Origin proximity input signal
A18		Not used	B18		Not used	A18		CW limit input signal	B18	IN	CW limit input signal
A19	IN	Interrupt input signal	B19	IN	Interrupt input signal	A19		CCW limit input signal		IN	CCW limit input signal
A20	IN	Emergency stop input signal	B20	IN	Emergency stop input signal	A20	IN	Input common	B20	IN	Input common
A21	IN	Origin proximity input signal	B21	IN	Origin proximity input signal						
A22	IN	CW limit input signal	B22	IN	CW limit input signal						
A23	IN	CCW limit input signal	B23	IN	CCW limit input signal						
A24	IN	Input common	B24	IN	Input common						

#### Reference manuals

CS1W-NC□□3: CS-series Position Control Units Operation Manual (Cat. No. W376)

CJ1W-NC□□3: CJ-series Position Control Units Operation Manual (Cat. No. W397)

Note: Do not use this document to operate the Unit.

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