

廃棄するときは、産業廃棄物として処理してください 異臭がする、本体が非常に熱くなる、煙が出るなどの異常が起こった場合、すぐに使用を中止し、電源を切った 状態で当社支店・営業所までご相談ください 機器表面は熱くなるため、使用中は触らないでください。

次の電源は推奨電源です(別売)

推逛雷 形S8VS-06024 (オムロン製 DC24V 2.5A) 外部電源端子台ネ M4(締付けトルク1.2N·m)

使用上の注意

- 製品が動作不能、誤動作、または性能・機器への悪影響を防ぐため、以下のことを守ってください。 1.設置場所について 次のような場所には設置しないでください
- 周囲温度が定格の範囲を越える場所 ・温度変化が急激な場所(結露する場所) ・・
 温度変化が急激な場所(結素する場)
 ・・
 温度変化が急激な場所(結素する場)
 ・
 相対湿度が35~85%RHの範囲を超える場所
 ・
 腐食性ガス、可燃性ガスがある場所
 ・
 直射日光があたる場所や暖房器具のそば
 ・
 強磁界、強電界がある場所
 ・
 強い外乱光(レーザ光、アーク溶接光、紫外光など)があたる場所
 ・
 ホ・油化学薬品の飛沫やミスパ雰囲気がある場所
 2
 電源および接続 原線について
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 電源および接続 原線について

- ・水・油・化学楽品の)飛床や、A/A み囲スかめる場所 2.電源および接続、配線について ・ズイッチングレギュレータをご使用の際は、スイッチングレギュレータのFG端子を接地してください。 ・電源ラインにサージがある場合は使用環境に応じてサージアブソーパを接続してご使用ください。 ・配線後は電源を投入する前に、電源の正説、負荷短縮などの誤接続の有無、負荷電流の適否について確認を
- 行ってください。誤配線などで故障するおそれがあります。 イーサネットケーブルの両端、および入出力ケーブルのカメラ側に、フェライトコア(TDK製ZCAT2035-0930A相当 品)を装着してご使用ください。
- 3光軸、検出範囲について
- ・光軸中心はセンサごとにばらつくことがありますので、取り付けるときは必ずタッチファインダの液晶モニタ及び専用 ソフトの画像表示で画像の中心と検出範囲を確認してください。
- とど入調整ポリュームについて ・ピント調整ポリュームは0.1N・m以下で回してください。破損する恐れがあります。
- 5.保守点検について ・センサやタッチファインダの清掃には、シンナー、アルコール、ベンジン、アセトン、灯油類は使用しないでください。 ・小さなゴミやホコリは柔らかい布で丁寧にふきとってください。強くふくことは避けてください。キズがつくと、読検出の原因になります。 6.周囲温度変化による光軸変動への影響について
- 本製品は材料の性質上、周囲温度の変化により光軸中心が数画素変化することがあります。
- 7.撮像素子について
- 本製品はCMOSイメージセンサ(受光素子)の仕様上、計測条件や感度により線が入ることがありますが、製品の 欠陥や故障ではありません。また、画素欠陥が複数存在することがありますが、製品の欠陥や故障ではありません。 8.カメラ設置について
- ・高湿度で温度変化が激しい環境下において、前面プレート内部がまれに曇るおそれがあります。下図に示した点線 範囲内に物(専用取り付け金具除く)を設置しないでください。前面プレート内部が曇る恐れがあります



■LEDの安全につ

	2 Z IC J 36(C10
CAUTION	

Possibly hazardous optical radiation emitted from this product	
Risk Group 2 IEC 62471	

■各部の名称と機



No.	名称		説明
(1)	照明部		照明用のLEDがこの部分に取り付けられています。
(2)	受光部		この部分から画像を取り込みます。
(3)	入出カケーフ	^ブ ル用	入出力ケーブルを使用して、センサの電源や外部装置と接続するときに使
	コネクタ		用します。専用入出力ケーブル:形FQ-WD
(4)	イーサネットク	「ーブル用	イーサネットケーブルを使用して、センサとタッチファインダまたはパソコンと
	コネクタ		接続するときに使用します。専用イーサネットケーブル:形FQ-WN
(5)	ピント調整ボ	リューム	撮影画像のピントを調整するときに使用します。
(6)	動作表示灯	OR	総合判定出力(OR)信号のON時にオレンジ色で点灯します。
		ETN	イーサネット通信時にオレンジ色で点灯します。
		ERROR	エラー発生時に赤色で点灯します。
		BUSY	センサが処理を実行中に緑色で点灯します。
			※BUSY表示灯はRUN表示灯に割り当てを変更できます。初期値は
			BUSY表示灯に設定されています。「RUN」設定時は運転中に緑色で点灯します。
(7)	取付用金具		センサを固定するために使用します。取付用金具はセンサの前面、右側面、
			左側面、背面の4方向すべてに取り付けることができます。

■電源接続(スイッチングレギュレータ接続時)

	表示灯	接続力
し (版本シート)	定格	電源電 絶縁推 消費電
ープ2に分類されます。	耐環境性	周囲温 周囲周 馬動(衝撃(保護権
	材質	
能	質量 付属品	
	LEDの安全 *1.出力信号3 *2.入出力仕	本(OUT0~2)
	項目	
	入力仕様	ON時:0V OFF時:開
	出力仕様	NPNオー DC30V
	*3.BUSY表 *4.設定によ	り全てのシ
	● 外部機 外部接続機	
-77 同用のLEDがこの部分に取り付けられています。		
	1	

	項目	カラータイプ		モノクロタイプ			
		NPNタイプ	PNPタイプ	NPNタイプ	PNPタイプ		
	形式			FQ2-S40			
視野設置距離			ズマニュアルに記載				
主な機能	検査アイテム			PM)、形状サーチ Ⅲ、形状†	サーチ II、サーチ、		
	Diale to the test			、面積、色平均・偏差、ラヘ			
	同時に計測できる数	32					
	位置ずれ修正	あり(回転位置修正	、エッジ位置修正、縞	形歪み補正)			
	シーン登録数 *4	32					
	リトライ機能	単純リトライ、明るさ	変動リトライ、シーンは]替リトライ、レベルト!	ノガリトライ		
画像撮影	画像処理方式	リアルカラー		モノクロ			
	画像フィルタ	ハイダイナミックレン	ジ機能(HDR)、前処	理、ホワイトバランス	(カラータイプのみ)、		
		カラーグレーフィルタ	(カラータイプのみ)、	偏光フィルタ(アタッ	チメント)、明るさ補正		
	撮像素子	1/3インチカラーCN		1/3インチモノクロ(
	シャッタ機能		l~1/50000(sec)	内蔵照明点灯時:1/2	250~1/50000(sec)		
	処理分解能	752(H)×480(V)					
	部分取込機能	あり(水平方向)					
	画像表示		^ッ ウト/ズームフィット、	180°回転			
照明	照明点灯方式	パルス点灯					
at at the state	照明色	白色					
補助機能				ワード機能、シミュレー	ーションソフト、		
		センサエラー履歴、					
			出関数、三角関数、	,			
データロギング	計測結果のロギング)カードの容量が許す限り			
後能	画像のロギング	センサ本体:20枚 (タッチファインダ使用時、SDカードの容量が許す限り保存可能)					
計測のトリガ		外部トリガ(単発、連続) 通信トリガ(イーサネット無手順(TCP)、イーサネット無手順(UDP)、					
入出力仕様	入力信号	イーサネット無手順(FINS/TCP)、EtherNet/IP、PLCリンク、PROFINET) 7本 単発計測入力(TRIG)、制御コマンド入力(IN0~5)					
人山力江棣							
	出力信号 イーサネット仕様	3本*1 制御出力(BUSY)、総合判定出力(OR)、エラー出力(ERROR) 100BASE-TX/10BASE-T					
	通信機能	100BASE-1X/10BASE-1 イーサネット無手順(TCP) イーサネット無手順(UDP)					
) 坦 古 武 比	1ーリネット無子順(TCP) 1ーリネット無子順(UDP) イーサネット無手順(FINS/TCP)					
		EtherNet/IP PLCUンク PROFINET					
	入力仕様	*2を参照		1			
	出力仕様						
	接続方式	専用コネクタケーブ	ll.				
	10/10/11/20						
		電源、I/O用またはデータユニット接続用:1本(形FQ-WD□□=または形FQ-WU□□□) タッチファインダまたはパソコン接続用:1本(形FQ-WN□□□)					
表示灯	1	*3					
		BUSY表示灯(BUS	Y/緑),判定結果表	示灯(OR/オレンジ)、			
			,	通信表示灯(ETN/>			
定格	電源電圧						
	単ぷ 単庄	DC21.6V~26.4V(ただし、リップル含む) リード線一括とケース間:0.5MΩ(250Vメガにて)					
	电凉电庄 絶縁抵抗 消費電流				· · ·		
针環境性	絶縁抵抗 消費電流	リード線一括とケース 2.4A以下	<間:0.5MΩ(250V)	メガにて)			
耐環境性	絶縁抵抗	リード線一括とケーン 2.4A以下 動作時:0~50℃	<間:0.5MΩ(250V)	メガにて) ℃(ただし氷結、結露			
耐環境性	絶縁抵抗 消費電流 周囲温度範囲	リード線一括とケーン 2.4A以下 動作時:0~50℃	ス間:0.5MΩ(250V 保存時:-25℃~65 ~85%RH(ただし編	メガにて) ℃(ただし氷結、結露			
耐環境性	絶縁抵抗 消費電流 周囲温度範囲 周囲湿度範囲	リード線一括とケージ 2.4A以下 動作時:0~50℃ 動作時、保存時:35 腐食性ガスのないご	ス間:0.5MΩ (250V. 保存時:-25℃~65 ~85%RH (ただし結 と	×ガにて) ℃(ただし氷結、結露 i露しないこと)	しないこと)		
耐環境性	 絶縁抵抗 消費電流 周囲温度範囲 周囲湿度範囲 周囲雰囲気 	リード線一括とケー 2.4A以下 動作時:0~50℃ 動作時、保存時:35 腐食性ガスのないご 10~150Hz 片掛	ス間:0.5MΩ (250V. 保存時:-25℃~65 ~85%RH (ただし結 と	×ガにて) で(ただし氷結、結露 i露しないこと) 両(X/Y/Z) 各8分	しないこと)		
耐環境性	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 	リード線-括とケージ 2.4A以下 動作時:0~50°C 動作時、保存時:35 腐食性ガスのないご 10~150Hz 片掛 150m/s ² 6方向	ス間:0.5MΩ(250V) 保存時:-25℃~65 ~85%RH(ただし結 と 気幅0.35mm 3方向 (上下、左右、前後)名	×ガにて) で(ただし氷結、結露 i露しないこと) 両(X/Y/Z) 各8分	しないこと) 10回		
	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	リード線-括とケージ 2.4A以下 動作時:0~50°C 動作時、保存時:35 腐食性ガスのないご 10~150Hz 片期 150m/s ² 6方向 IEC60529規格 IP67	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし結 と 疑幅0.35mm 3万府 (上下、左右、前後)名 ただし個光フィルタアタッラ	×ガにて) で(ただし氷結、結露 露しないこと) 句(X/Y/Z) 各8分 計3回	しないこと) 10回 キャップ取外し時は除く)		
耐環境性 材質	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	リード線-括とケージ 2.4A以下 動作時:0~50°C 動作時、保存時:35 腐食性ガスのないご 10~150Hz 片期 150m/s ² 6方向 IEC60529規格 IP67	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし結 と 転幅0.35mm 3方Fi 転して、左右、前後)名 ただし優光フィルタアタッラ SUS 取付用金具:F	×ガにて) ^{(C} (ただし氷結、結露 :露しないこと) ^(S) ^{(S}	しないこと) 10回 キャップ取外し時は除く)		
	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	 リード線一括とケージ 2.44以下 動作時:0~50℃ 動作時:保存時:35 腐食性ガスのないご 10~150Hz 片掛 150m/s² 6万向 IEC60529規格 IP67 センサ:PBT, PC, S 偏光フィルタアタッジ 	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし結:と 転回.35mm 3万fi 上下、左右、前後)名 ただ(備光7ィルタアタッう 5US 取付用金具:F Fメント:PBT, PC	×ガにて) ^{(C} (ただし氷結、結露 :露しないこと) ^(S) ^{(S}	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		
材質	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	 リード線一括とケージ 2.44以下 動作時:0~50℃ 動作時:保存時:35 腐食性ガスのないご 10~150Hz 片掛 150m/s² 6万向 IEC60529規格 IP67 センサ:PBT, PC, S 偏光フィルタアタッジ 	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし結:と 転回.35mm 3万fi 上下、左右、前後)名 ただ(備光7ィルタアタッう 5US 取付用金具:F Fメント:PBT, PC	メガにて) C(ただし氷結、結露 露しないこと) 句(X/Y/Z) 各8分 う(3)回 バント装着時及びコネクタ PBT, 黄銅, ゴムスポ	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		
	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	 リード線一括とケージ 2.44以下 動作時:0~50℃ 動作時:保存時:35 腐食性ガスのないご 10~150Hz 片期 150m/s² 6方向 IEC60529規格 IP67, センサ:PBT, PC, S (備光フィルタアタッジ イーサネットコネクタ 	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし緒 ~85%RH(ただし緒 と 種間.35mm 3方同 上下、左右、前後)名 ただ(備光フィルタアタッう SUS 取付用金具:1 キンメト:PBT, PC 耐油性ビニル混合者	メガにて) C(ただし氷結、結露 露しないこと) 句(X/Y/Z) 各8分 う(3)回 バント装着時及びコネクタ PBT, 黄銅, ゴムスポ	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		
材質	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	 リード線一括とケージ 2.4A以下 動作時、保存時:35 腐食性ガスのないご 10~150Hz 片損 150m/s² 6方向 IEC00529規格 IP67 センサ:PBT, PC, S: 偏光フィルタアタッジ イーサネットコネクタ 200g以下 ・取付用金具(形FC 	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし緒 ~85%RH(ただし緒 と 種間.35mm 3方同 上下、左右、前後)名 ただ(備光フィルタアタッう SUS 取付用金具:1 キンメト:PBT, PC 耐油性ビニル混合者	×ガにて) C(ただし氷結、結露 調理しないこと) 与(X/Y/Z) 各8分 43回 FX-X装着時及びコネクタ PBT、黄銅、ゴムスボ 物 I/Oコネクタ:非鉛	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		
材質	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	 リード線一括とケージ 2.4A以下 動作時、保存時:35 腐食性ガスのないご 10~150Hz 片損 150m/s² 6方向 IEC00529規格 IP67 センサ:PBT, PC, S: 偏光フィルタアタッジ イーサネットコネクタ 200g以下 ・取付用金具(形FC 	R間:0.5MΩ(250V: 保存時:-25℃~65 ~85%RH(ただし結 と に に ただし観光フィルタアタッラ US 取付用金具:F Fメント:PBT, PC 耐油性ビニル混合者 ・ トXL)×1 Fメント(形FQ-XF1]	×ガにて) C(ただし氷結、結露 調理しないこと) 与(X/Y/Z) 各8分 43回 FX-X装着時及びコネクタ PBT、黄銅、ゴムスボ 物 I/Oコネクタ:非鉛	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		
材質	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	 リード線一括とケージ 2.4A以下 動作時:0~50℃ 動作時:係存時:35 腐食性ガスのないご 10~150Hz 片期 150m/s² 6方m/s² 6方m/s² たッサ:PBT, PC, S 編光フィルタアタッジ イーサネットコネクタ 200g以下 ・取付用金具(形FC ・備光フィルタアタッ 	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし結 と 編0.35mm 3方F に上下、左右、前後3 ただし場光フィルタアタッラ US 取付用金具:F Fメント:PBT, PC 耐油性ビニル混合 -XL)×1 チメント(形FQ-XF1))	×ガにて) C(ただし氷結、結露 調理しないこと) 与(X/Y/Z) 各8分 43回 FX-X装着時及びコネクタ PBT、黄銅、ゴムスボ 物 I/Oコネクタ:非鉛	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		
材質	 絶縁抵抗 消費電流 周囲温度範囲 周囲雰囲気 振動(耐久) 衝撃(耐久) 	リード線一括とケー 2.44以下 動作時:0~50℃ 動作時:保存時:35 腐食性ガスのない2 10~150Hz 片掛 150m/s ² 6万向 EC60529規格 P67 センザ:PBT, PC, S 偏光フィルタアタッ イーサネットコネクタ 200g以下 ・取付用金具(形FC ・備光フィルタアタッ ・取扱説明書(本誌	ス間:0.5MΩ(250V. 保存時:-25℃~65 ~85%RH(ただし結 と 幅0.35mm 3方同 上下、左右、前後)者 ただし層光アルタアタラ 5US 取付用金具可 キント:PBT、PC 耐油性ビニル混合者 ローンL)×1 チント(形FQ-XF1)) 緑シート	×ガにて) C(ただし氷結、結露 調理しないこと) 与(X/Y/Z) 各8分 43回 FX-X装着時及びコネクタ PBT、黄銅、ゴムスボ 物 I/Oコネクタ:非鉛	しないこと) 10回 キャップ取外し時は除く) ンジ(EPDM系)		

2)は、各検査アイテムの個別判定、および画像入力許可出力(READY)、外部照明タイミング出力(STGOUT)に割り当てを変更できます。 とおりです。

項目	NPNタイプ	PNPタイプ		
入力仕様	ON時:0V短絡または1.5V以下	ON時:電源電圧短絡または電源電圧-1.5V以内		
入力让像	OFF時:開放(漏れ電流 0.1mA以下)	OFF時:開放(漏れ電流 0.1mA以下)		
出力仕様	NPNオープンコレクタ	PNPオープンコレクタ		
DC30V 50mA以下、残留電圧2V以下 DC30V 50mA以下、残留電圧2V以下				
*3.BUSY表示灯はRUN表示灯(表示色:緑)に割り当てを変更できます。 *4.設定により全てのシーンに登録できない場合があります。				

接続

外部接続機器は専用品以外は使用しないでください。				
	形式	名称		
	FQD_	タッチファインダ		
外部接続	FQ-SDU	センサデータユニット		
専用機器	FQ-WD	1/0ケーブル		
	FQ-WN	イーサネットケーブル		
	FQ-WU	センサデータユニットケーブル		

PNPタイプ

■入出力信号回路図



電源(DC24V) TRIG IN0 DC24V 水色 OUT2(ERROR [●]<u>橙</u> OUT1(BUS) ↓黒 OUT0(OR) OUT1 (BUSY) 青 GND(0V)] []

更要 チャタリング対策について
・センサにはチャタリング対策機能が設けられていますが、100µs以上のチャタリング発生時は、チャタリングによる誤入力を防 止できません。(100µs未満の入力信号は無視し、100µs以上で入力信号と判断します。) ・入力信号には、必ず無接点(SSR、PLCトランジスタ出力)をご使用ください。有接点(リレー)を使用されると、接点のパウンド により、計測実行中再度トリガ入力されることがあります。

■外形寸法図

*取付金具(背面取付)、偏光フィルタアタッチメントありの寸法図を示す。 形FQ2-S4_010F-_/形FQ2-S4_050F-_





ご承諾事項

締付けトルク:1.2N・

当社商品は、一般工業製品向けの汎用品として設計製造されています。従いまして、次に 掲げる用途での使用を意図しておらず、お客様が当社商品をこれらの用途に使用される際 には、当社は当社商品に対して一切保証をいたしません。ただし、次に掲げる用途であって も当社の意図した特別な商品用途の場合や特別の合意がある場合は除きます。

- (a) 高い安全性が必要とされる用途(例:原子力制御設備、燃焼設備、航空・宇宙設備、鉄 道設備、昇降設備、娯楽設備、医用機器、安全装置、その他生命・身体に危険が及び うる用途)
- (b) 高い信頼性が必要な用途(例:ガス・水道・電気等の供給システム、24時間連続運転 システム、決済システムほか権利・財産を取扱う用途など)
- (c) 厳しい条件または環境での用途(例:屋外に設置する設備、化学的汚染を被る設備、 電磁的妨害を被る設備、振動・衝撃を受ける設備など)
- (d) カタログ等に記載のない条件や環境での用途
- *(a)から(d)に記載されている他、本カタログ等記載の商品は自動車(二輪車含む。以下同 じ)向けではありません。自動車に搭載する用途には利用しないで下さい。自動車搭載用 商品については当社営業担当者にご相談ください。
- *上記は適合用途の条件の一部です。当社のベスト、総合カタログ、データシート等最新版 のカタログ、マニュアルに記載の保証・免責事項の内容をよく読んでご使用ください。



OMRON

Model FQ2-S4

Smart Camera

INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product.

Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

TRACEABILITY INFORMATION:

Importer in EU: Omron Europe B.V. Wegalaan 67-69 2132 JD Hoofddorp, The Netherlands

Manufacturer: Omron Corporation, Shiokoji Horikawa, Shimogyo-ku, Kyoto 600-8530 JAPAN

The following notice applies only to products that carry the CE mark: Notice:

This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

· Regulation of KC marking

Please see the following URL for Korean KC mark compliance information. http://www.rra.go.kr/selform/OMR-FQ2-S3 http://www.rra.go.kr/selform/OMR-FQ2-S4

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SAFETY PRECAUTIONS

Keys to Warning Symbols

Indicates a potentially hazardous situation which, if 🗥 WARNING

not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

Warning Symbols

The Sensor emits visible light which may on rare occasions have a harmful effect on the eyes. Do not look directly at the light emitted by the sensor. If the light projects onto a reflective surface, prevent the reflected light from entering a person's eyes.

Precautions for Safe Use

Always follow the rules below to ensure safety

Installation environment
 Do not use in a location where there is flammable or explosive gas.
 To ensure safe operation and maintenance, install away from high-voltage equipment and power equipment
 Tighten the mounting screws to the torque specified in these instructions.
 Power and cable connections
 Always turn off the power of the unit before connecting or disconnecting cables.

 Always turn off the power of the unit before connecting or disconnecting cables.

Always turn off the power of the unit before connecting or disconnecting cables. Do not reverse the polarity of the power connection. Do not short the load of the open collector output. Wire this product separately from the wiring of high-voltage wires and power wires. If wired together or in the same conduit, induction may occur and cause malfunctioning or damage. Use a load that is equal to or less than the rating. Use the specified jower voltage. Use the specified jower voltage. Use the specified jower of crimp terminals for wiring connections. Do not connect wires that have been simply twisted together directly to the power supply or terminal block. Supply power from a DC power supply for which measures have been applied to prevent high voltages (e.g., a safety extra low voltage circuit).

(e.g., a safety extra low voltage circuit). If UL certification is required for the overall system, use a UL Class II DC power supply. Use an independent power source for this product. Do not use a shared power source.

Do not peel off or damage the waterproof sheet attached to the side of the unit. Doing so may result in dirt, dust or water droplet entering inside the device, causing a failure of the unit. Always attach the covers of I/O cable connector and Ethernet cable connector. This prevents extraneous aterial from making a failure of the sensor. 4. Other Rules

Other Rules Do not use in safety circuits for atomic energy or that are critical for human life. Do not attempt to disassemble, deform by pressure, incinerate, repair, or modify this product. Use the dedicated touch finder ($PQ_{-}^{-}D$), cable ($PQ_{-}WN$, $PQ_{-}WD$ or $PQ_{-}WU$) and sensor data unit ($PQ_{-}SDU$). Sensor malfunction or damage may occur if any other devices or cables are used. When disposing of the product, treat as industrial waste.

If you notice an abnormal condition such as a stratege dor, extreme heating of the unit, or smoke, immediately stop using the product, turn off the power, and consult your dealer. The device surface becomes hot during use. Do not touch.

Precautions for Correct Use

- Observe the following to prevent failure, malfunctioning, and adverse effects on performance and the device.
 1. Installation site
- nstallation site Do not install in the following locations:
- Locations where the ambient temperature exceeds the rated temperature rans Locations where the relative humperture changes (where condensation range. Locations subject to sudden temperature changes (where condensation will form) Locations where the relative humidity is below or above 35 to 85% RH. Locations where there are corrosive or flammable gases.

- Locations where the relative humidity is below or above 35 to 85% RH. Locations where there are corrosive or flammable gases. Locations where there are corrosive or flammable gases. Locations where there is study, salt, or iron powder. Locations where there is strong scattered light (laser light, arc welding light, ultraviolet light, etc.) Locations where there is strong scattered light (laser light, arc welding light, ultraviolet light, etc.) Locations where there is strong scattered light (laser light, arc welding light, ultraviolet light, etc.) Locations where there is a strong electrical or magnetic field. 2. Power and cable connections When using a switching regulator, ground the FG pin of the switching regulator. If there are surges on your power line, connect a surge absorber as appropriate for your conditions of use. Before turning on the power after the wiring is completed, verify that the power is correct, that there are no incorrect connections such as a shortel load circuit, and that the load current is suitable. Incorrect wiring may cause damage and failures. Before use, mount ferrite cores (TDK's ZCAT2035-0930A or equivalent) at the both ends of the Ethernet cable and the camera side of the input/output cable. 3. Optical axis and detection range There is a certain amount of deviation among sensors in the center of the optical axis. For this reason, when installing the sensor, be sure to check the center of the image and the detection range in the LCD monitor of the Touch Finder and in the sensor, be sure to check the center of the image and the detection range in the LCD monitor of the Touch Finder and in the sensor, Namintenance and inspection Pon to use thingare clocked) here zame a core or proces to clock the cores of put sensor.

- Rotate the focus adjustment screw with the force of 0.1 N*m max. Otherwise damage may result. 5. Maintenance and inspection Do not use thinner, alcohol, benzene, acetone, or kerosene to clean the sensor or Touch Finder. If considerable foreign matter or dust collects on the image elements, use a blower brush (for camera lenses) to blow off the foreign matter. Avoid blowing it off with your breath. Use a soft cloth or cotton for small dust or dirt and carefully wipe it off. Do not wipe it strong. If scratch occurs, it may cause false detection. Influence on optical axis variation due to ambient temperature changes By the nature of the materials of this product, the number of pixels on the center of the optical axis may vary due to ambient temperature changes
- lue to ambient temperature changes.
- 7 Image elements mage elements By the nature of specifications of the CMOS image sensor (light receiving element), lines may appear due to measurement conditions or sensitivity. This is not a defect or malfunction. Also pixel defects may exist, but this s not a defect or malfunction.
- 8. Installation of camera In the environment with high humidity and intense temperature change, the inside of a front plate might

In the environment with then mentally and means compensate charges, and the second couldy. Uncommonly become cloudy. Do not install an object (except for the dedicated mounting bracket) inside the dotted areas shown on the under figures. Doing so may result in fogging inside the front plate.



Safety of LED

The product is considered to be classified as Risk Group 2 by IEC62471

CAUTION
Possibly hazardous optical radiation emitted from this product
Risk Group 2 IEC 62471

Part Names and Functions



No.	Name		Description	
(1)	Lighting		LEDs for illumination are mounted here.	
(2)	Camera lens		Lens with a focus feature.	
(3)	I/O Cable connector		An I/O Cable is used to connect the Sensor to the power supply and external devices. Dedicated I/O cable: FQ-WD	
(4)	Ethernet cable connector		An Ethernet cable is used to connect the Sensor to the Touch Finder or a computer. Dedicated Ethernet cable: FQ-WN	
(5)	Focus adjustn	nent screw	Used to adjust the focus of the image.	
(6)	Operation	OR	Lights orange when the total judgment output (OR) signal is ON.	
	indicators	ETN	Lights orange during communication by Ethernet.	
	ERROR		Lights red when an error occurs.	
		BUSY	Lights green while the sensor is operating. * The BUSY indicator can be switched to RUN indicator. The initial value is set to BUSY indicator. The indicator lights green during operation for "RUN" setting.	
(7)) Mounting Bracket		Used to secure the Sensor in place. The Mounting Bracket can be attached to the front, left side, right side, or back of the Sensor.	

Power connection(when a switching regulator is connected)

The following power supply is recommended (option)

[Item	Description
ſ	Recommended Power Supply	S8VS-06024 (OMRON 24VDC 2.5A)
ſ	External power supply terminal screws	M4 (tightening torque: 1.2 N·m)
-		

Ratings/Performance

Model NPN PNP PNP Field of view/installation distance Refer to becal degram (listed in the User Manua). F02:54:0000 F02:54:00000 F02:54:0000 F02:54:0000 <td< th=""><th colspan="2">ltom</th><th colspan="3">Color type</th></td<>	ltom		Color type				
Model F02-840	Item			1			
F02-340 F02-340 <t< td=""><td colspan="2" rowspan="2"></td><td>NPN</td><td>PNP</td><td>NPN</td><td>PNP</td></t<>			NPN	PNP	NPN	PNP	
Main functions Inspection items Charader recognion, Bar code, 2D code, 2						FQ2-S45M	
functions sensitive search, edge position, edge widh, edge court, area, color average/deviation, labe Numer of inquisered sources 32 Retry function Simple retry, brightness fluctuation retry, scenes switch retry, level trigge Image input Image processing method Real color Monochrome Image input Image processing method Real color Monochrome Monochrome Image input Image processing method Real color Monochrome Monochrome Image input Inge filter High dynamic range function (HDR), pre-processing, while balance(color type on color gray filter(color type on option, Detection filter (latathmenth, highting on: 1/250 to 1/50,000) Partial capture function Available (horizoontal) Image display Zoom-in/250 com-out/Filt, Rotating by 180° Illumination Illumination method Pulse illumination Statistical data, Test measurement, I/O monitor, Password function, Simulation software, Sensor error history, Calibration,Operations (four arithmetic operations, enumeration function, togic function) Data logging Measurement trigger Estern Higger/filter Gravinger (LBSY). Overall idgment output (OR), Enror output (ERR UO Input signals 7 signals: Single measurement input(TRIG), Control commanni input(INIO i)	Field of view/	installation distance	Refer to the optical diagram (listed in the User's Manual).				
Number of anutareous inspections 32 Position compensation Supported (Correcting rotational position and edge position,Linear correct Number of registed senses V3 Image input Image processing white Networks Monochrome Image input Image filter High dynamic range function (HDR), pre-processing, white Iselance(color type on color gray filter(color type only), Deflection filter (attachment), Brightness correction inage elements 1/3-inch.color CMOS Shutter Built-In lighting off: 1/1 to 1/50,000(sec) Built-In lighting or: 1/250 to 1/50,000 Partial capture function Available (horizontal) Image display Zoom-in/Zoom-out/Fit, Rotating by 180° Illumination orbid Titain capture function Wailable (horizontal) Image Illumination color Wolkie Statistical data, Test measurement, 100 monitor, Password function, Simulation software, Sensor error history, Calibration,Operations (four arithmetic operations, enumeration function, trigorometer function, logic function) Data logging Measurement data In Sensor: 1000 lines: (If a touch Firder is used, measure and e to the capably of at SD o imulation software, Sensor error history, Calibration,Operations (four arithmetic operations, enumeration function, trigorometer function, logic function) Indication Indigensity is a signals 3 signals 1:: Contol output (BINS), Cortrol command input(INO to the	Main	Inspection items	Character recognition, B	Bar code, 2D code, 2D cod	e(DPM), Shape search III	, Shape search II, searc	
Position compensation Supported (Correcting rotational position and edge position,Linear correct Number or ingitterd seares 4 32 Image input Image processing method Real color Monochrome Image filter High dynamic range function (HDR), pre-processing, white balance(color type on color gray filter(color type only), Deflection filter (attachment), Brightness correction (Processing resolution 173-inch monochrome CMOS Shutter Built-in lighting off: 1/1 to 1/50,000(sec) Built-in lighting off: 1/1 to 1/50,000(sec) Built-in lighting off: 1/1 to 1/50,000(sec) Processing resolution 752(H) x 480(V) Partial capture function Available (horizonta) Illumination method Pulse illumination Pulse illumination Expension (Support (Support)) Auxiliary Functions Statistical data, Test measurement, 1/0 monitor, Password function, Simulation software, Sensor error history, Calibration,Operations (four arithmetic operations, enumeration function, trigonometric function, logic function) Data logging Measurement data Is Sensor. Tolomite (fil a both Firder is used, anges can be saved up to the capacity of an Sto Guera strigger Singles 1: Control output (BSY), Overall judgment output (OR). Enor output (ERP Ethernet specifications Formunication function T signals: Single measurement input(TRIG). Control command input(NNo to Specifications Output specificacitons	functions		sensitive search, edge	position, edge width, edge	ge count, area, color ave	rage/deviation, labeling	
Number dregistered scenes *4 32 Retry function Simple retry, brightness fluctuation retry, scene switch retry, level trigge Image input IImage processing method Real color Monochrome Image filter High dynamic range function (HDR), pre-processing, while balance(color type on color gray filter(color type only), Deflection filter (attachment), Brightness correction 17.3/-inch color CMOS 17.3-inch conchrome CMOS Shutter Built-in lighting off: 11 to 1/50.000(pre- Processing resolution 752(FI) x 480(V) Processing resolution 752(FI) x 480(V) Processing resolution 752(FI) x 480(V) Partial capture function Available (horizontal) Image display Zoom-in/Zoom-ou/Fit, Rotating by 180° Illumination Illumination function, tigonometric function, logic function, Simulation software, Sensor error history, Calibration, Operations (four arithmetic operations, enumeration function, tigonometric function, logic function) Data logging Measurement data h Sensor: 1000 items (fil Touch Finder is used, result capte sead up to the capably of an SOC Images Image softiations Instastical data, Test measurement input(TRIG), Control command input(ION to perficient non-procedure(ICP). Ethernet non-procedure(ICP) Ingut signals 3 signals '1: Control output (BUSY), Overall judgment output (OP), Error output (ERP Etherent specifications Output signals 3 signals '1: Control output (BUSY), Ov		Number of simultaneous inspections					
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color gray filter(color type only). Deflection filter (attachment). Brightness correction Image elements 1.73-inch color CMOS 173-inch monochrome CMOS Shutter Bull-In lighting df: 1/1 to 1/50.000(sec). Bull-In lighting on: 1/250 to 1/50.000) Processing resolution 752(H) x 480(V) Partial capture function Available (horizontal) Image display Illumination Illumination method Pulse illumination Illumination color White Auxiliary Functions Statistical data, Test measurement, I/O monitor, Password function, Simulation software, Sensor error history, Calibration,Operations (lour arithmetic operations, enumeration function, tigonometric function, logic function) Data logging Measurement data In Sensor: 20 images (Ita Touch Finder is ad, Images can be saved up to the capacity of an SDC Measurement trigger Ethernet inco-procedure(IDP). Ethernet non-procedure(ICP). Ethernet inco-procedure(IDP). Ethernet non-procedure(ICP). Induct signals 3 signals '1: Control output (BUSY), Overall judgment output (OR). Error output (ERR Ethernet specifications Connuncication function Ethernet non-procedure(ICP) Ethernet non-procedure(ICP). Inducator Special connector cables For power supply, I/O or data unit connection: 1 (FQ-WD) Inducator Special connector cables For power supply, I/O or data unit connectio	Image input						
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For power supply, I/O or data unit connection: 1 (FQ-WD) or FQ-WU Touch Finder and computer: 1 cable (FQ-WN)) Indicator *3 BUSY indicator (BUSY/green), Judgment results indicator (OR/orange), ERROR indicator (ERROR/red), Ethernet communication indicator(ETN/oran Ratings Power supply voltage 21.6 to 26.4 VDC (including ripple) Insulation resistance Between all lead wires and case: 0.5 MΩ (at 250 V) Current consumption 2.4A MAX Environmental Ambient temperature range Operating: 0 to 50°C Storage: -25 to 65°C (no icing or condensation) Ambient temperature range Operating and storage: 35% to 85% (with no condensation) Ambient humidity range No corrosive gas Vibration resistance(destructive) 10 to 150 Hz, single amplitude: 0.35 mm in 3 directions (X, Y and Z), 10 sweeps each (8 min/sw Shock resistance (destructive) Berlee of protection IEC 6052 IP67(except when the polarizing filter attachment is mounted or connector cap is remo Materials Sensor: PBT, PC, SUS Mounting bracket: PBT, brass, sponge rubber(EPE Deflection filter attachment: PBT, PC Weight 200 g max. Accessories - Mounting bracket (FQ-XL) x1 - Deflection filter attachment (FQ-XF1) x1 - Instruction manual (This Instruction Sheet) - SYSMAC membership registration sheet			Special connector cables				
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Vibration resistance(destructive) 10 to 150 Hz, single amplitude: 0.35 mm in 3 directions (X, Y and Z), 10 sweeps each (8 min/sw Shock resistance (destructive) ISDords resistance (destructive) 150m/s ² 3 times each in 6 directions (up/down, left/right, forward/backwar Degree of protection Materials IEC 60529 IP67(except when the polaring filter attachment is mounted or connector cap is remo Deflection filter attachment: PBT, PC Ethernet connector: Oil resistant vinyl compound I/O connector: Lead free heat resistant PVC Weight Accessories · Mounting bracket (FQ-XL) x1 · Deflection filter attachment (FQ-XF1) x1 · Instruction manual (This Instruction Sheet) · SYSMAC membership registration sheet	immunity	Ambient humidity range					
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Ethemet connector: Oil resistant vinyl compound I/O connector: Lead free heat resistant PVC Weight 200 g max. Accessories - Mounting bracket (FQ-XL) x1 - Deflection filter attachment (FQ-XF1) x1 - Instruction manual (This Instruction Sheet) - SYSMAC membership registration sheet	Materials		Sensor: PBT,PC,	SUS Mounting brac	ket: PBT,brass,spo	nge rubber(EPDN	
Weight 200 g max. Accessories - Mounting bracket (FQ-XL) x1 - Deflection filter attachment (FQ-XF1) x1 - Instruction manual (This Instruction Sheet) - SYSMAC membership registration sheet			Deflection filter at	ttachment: PBT, PC			
Accessories · Mounting bracket (FQ-XL) x1 · Deflection filter attachment (FQ-XF1) x1 · Instruction manual (This Instruction Sheet) · SYSMAC membership registration sheet			Ethernet connector: Oi	resistant vinyl compound	I/O connector: Lead free	e heat resistant PVC	
Deflection filter attachment (FQ-XF1) x1 Instruction manual (This Instruction Sheet) SYSMAC membership registration sheet	Weight		200 g max.				
Instruction manual (This Instruction Sheet) SYSMAC membership registration sheet	Accessories		Mounting brack	et (FQ-XL) x1			
· SYSMAC membership registration sheet			Deflection filter	attachment (FQ-XF	1) x1		
			Instruction manual (This Instruction Sheet)				
LED Safety Risk Group 2 (IEC62471)			1 0				
	LED Safety		Risk Group 2 (IE	C62471)			
			Deflection filter Instruction man SYSMAC memb	attachment (FQ-XF ual (This Instruction pership registration	Sheet)		

*1. Allocations of the three output signals (OUT0 to 2) can be changed to individual judgment of each inspection item, image input enable output (READY), or external illumination timing output (STGOUT).
 *2. The following table gives the I/O specifications.

Item	NPN PNP			
Input	ON: Shorted to 0 V, or 1.5 V max. ON: Shorted to power supply voltage, or power supply voltage -1.5 V max.			
specifications	cations OFF: Open (leakage current: 0.1 mA max.) OFF: Open (leakage current: 0.1 mA max.)			
Output NPN open collector PNP open collector				
specifications 30 VDC, 50 mA max., residual voltage: 2 V max. 30 VDC, 50 mA max., residual voltage: 2 V max.				

*4. All scene may not be possible to be registered according to some settings.

Connection with external devices

Use only the dedicated	external connecting devices.	
	Model	Name
	FQD_	Touch finder
Dedicated external	FQ-SDU	Sensor data unit
connecting device	FQ-WD	I/O cable
	FQ-WN	Ethernet cable
	FQ-WU	Sensor data unit cable

Input signal circuit diagram



Important Measures to prevent chattering

Although the sensor has a chatter prevention function, an incorrect input by chattering cannot be prevented when chattering of 100 µs or more occurs. (An input signal of less than 100 µs is ignored, and 100 µs or more is judged as an input signal.) Be sure to use a non-contact relay (SSR, PLC transistor output) for input signals. Using a relay with contacts may allow for additional trigger inputs during measurement due to a bound of the contacts. Dimensions

* Dimension diagram with mounting bracket (rear-side attachment) and polarizing filter attachment is shown. (Unit: mm)

FQ2-S4_010F-_/FQ2-S4_050F-_



Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS. AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

OMRON Corporation Industrial Automation Company Kyoto, JAPAN Contact: www.ia.omron.com		
Regional Headquarters		
OMRON EUROPE B.V. Wegalaan 67-69, 2132 JD Hoofddorp The Netherlands Tel: (31)2356-81-300/Fax: (31)2356-81-388		
OMRON ELECTRONICS LLC 2895 Greenspoint Parkway, Suite 200 Hoffman Estates, IL 60169 U.S.A. Tel: (1) 847-843-7900/Fax: (1) 847-843-7787		
OMRON ASIA PACIFIC PTE. LTD. 438B Alexandra Road, #08-01/02 Alexandra Technopark,Singapore 119968 Tel: (65) 6835-3011 / Fax: (65) 6835-3011		
OMRON (CHINA) CO., LTD. Room 2211, Bank of China Tower, 200 Yin Cheng Zhong Road, PuDong New Area, Shanghai, 200120, China Tel: (86) 21-6023-0333 / Fax: (86) 21-5037-2388		
D(U) Dec, 2024		