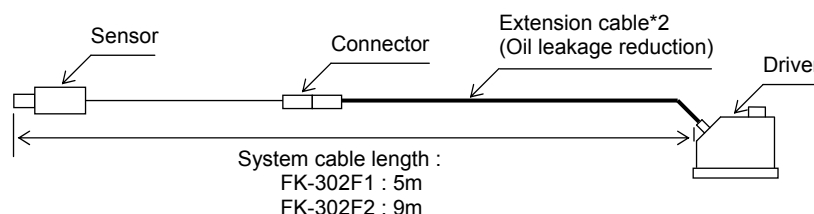


Specifications		Notice
Calibration material	JIS SCM440 flat surface	<ol style="list-style-type: none"> Calibration material MODEL FK-302F Transducers are calibrated for JIS SCM440 flat surface (more than 30 mm dia.). If the measured target is other than JIS SCM440 flat surface, it will present a different characteristics. In such a case, calibration by the connected equipment (e.g. monitor) side should be required for system operation. Shield wire connection Connect shield wire of signal cable (3-wire shielded cable between driver and monitor) to driver's "COM" terminal (Spring lock terminal: "Shield" terminal) and monitor's "COM" terminal. If this is not adhered to, noise may be caused. Connector isolation, etc. The connector connecting the sensor cable and the extension cable shall be insulated with the attached insulation sleeve (transparent shrink tube) or fluoro resin insulation tape. The vinyl-insulating tape shall not be used. Megger test of signal cable If megger test is made on the signal cable (3-wire shielded cable), be sure to discharge the charged electric load before connecting the cable to driver. If this caution is not adhered the driver could be damaged. Sensor installation Not available for rain water at out door use. It may cause the sensitivity change and insulation down. Calibrated as a system The sensor, extension cable and driver, which are calibrated as a system, shall be connected with each serial No. as specified in the inspection test report. If this is not adhered the output characteristics may be out of specification. Scale factor error and linearity The scale factor error margin and linearity margin provides for examination result in our factory. This regulated value is not applied to the examination result in the site. The instructions manual contains important information such as conditions necessary for safe handling of the system. Such information and conditions are important and indispensable for ensuring safety. Therefore, be sure to read the instructions manual thoroughly before handling the system. Cable length 5.0m sensor is designed for 5m system only. Can not use for 9m system.
Measuring range	0.25 mm to 3.25 mm from sensor tip	
Sensitivity*1	5.0 V/mm	
Sensitivity error*1	Within ± 4 %	
Scale factor error*1	Within ± 4 % of 5.0 V/mm (if calibrated as a system) Within ± 10 % of 5.0 V/mm (including interchangeability errors) Step : 0.25 mm, Linear range : 3 mm	
Linearity*1	Within ± 30 μ m of 5.0 V/mm straight line : (if calibrated as a system) Within ± 45 μ m of 5.0 V/mm straight line : (including interchangeability errors) Linear range : 3 mm	
Frequency response*1	DC to 10 kHz or more (-3 dB)	
Max. output voltage*1	Approx. -23 VDC	
Sensor abnormal output voltage*1	Approx. -0.6 VDC (Sensor OPEN/Sensor SHORT)	
Output impedance*1	50 Ω current 5 mA (max.)	
Current consumption (10 k Ω load)	Max. -15 mA	
Output noise*1	Approx. 20 mVpk-pk + power supply noise	
Sensor tip diameter	Approx. 10 mm dia.	
Cable diameter	Approx. 3.6 mm dia.	
Connector diameter	Approx. 7.1 mm dia.	
System cable length	5 m or 9 m	
Sensor cable color	Blue	
Extension cable color	Black	
Operating temperature range	Sensor : -40 to +177 $^{\circ}$ C Extension cable : -40 to +177 $^{\circ}$ C Driver : -40 to +80 $^{\circ}$ C	
Temperature characteristic (Temperature drift)	Sensor : Less than ± 3 % of F.S. Extension cable : Less than ± 4.5 % of F.S. Condition : Gap=3 mm, Target : JIS SCM440 0 to 80 $^{\circ}$ C (at 20 $^{\circ}$ C standard) Driver : Less than ± 3 % of F.S. Loop : Less than ± 5 % of F.S. Condition : Gap=3 mm, Target : JIS SCM440 0 to 60 $^{\circ}$ C (at 20 $^{\circ}$ C standard)	
Operating humidity range	30 to 95 % RH (non-condensing, non-submerged) (Sensor body : 100 % RH)	
Power supply	-24 VDC ± 10 %	
Dielectric strength of driver	Between each terminal and mounting plate : 1 mA or less at 500 VAC for one minute	
Insulation resistance of driver	Between each terminal and mounting plate : 100 M Ω or more at 500 VDC	
Applicable wire Size	Screw type terminal block (M4) : 0.75 to 2mm ² Spring lock terminal : 0.2 to 1.5mm ²	
Driver mass	Approx. 200 g	
Oil leakage reduction performance*2	Even if oil is poured in to the cable with the pressure of 0.05MPa. Oil does not leak from opposite the cable for 7 days. (cable length : 4m, at 25 $^{\circ}$ C)	
*1 The above specification apply at 25 $^{\circ}$ C with -24 VDC power supply and load resistance 10 k Ω and JIS SCM440 target (thickness \geq 5 mm).		
*2 Oil leakage reduction performance is applied to the extension cable part.		

Configuration





Model code / Additional spec. code (No entry if additional spec. code is not specified.)

■ Sensor

FL-302F10 * - ** - ** - ** - **

Armored		Thread size		Unthreaded length (L1)	Case length (L2)	Cable length (L3)	
L	Without armor	M1	M12 × 1.25	10 mm STEP, 0 – 100 mm L1 ≤ L2 – 20 mm e.g.) 02 = 20 mm	10 mm STEP, 20 – 120 mm e.g.) 10 = 100 mm	05	0.5 m
A	With armor (Without fluoro resin coating)					10	1.0 m
T	With armor (With fluoro resin coating)	U1	1/2-20UNF	0.1 inch STEP, 0 - 4.0 inches L1 ≤ L2 - 0.7 inches e.g.) 04 = 0.4 inches	0.1 inch STEP, 0.8 - 4.7 inches e.g.) 35 = 3.5 inches		
				Specified in mm for M threaded sensor. Specified in inch for UNF threaded sensor.			

FL-302F10R - ** - ** - ** - **

Thread size		Unthreaded length (L1)	Case length (L2)	Cable length (L3)	
M1	M12 × 1.25	R2 = 2 mm	03 = 25 mm	05	0.5m
U1	1/2-20UNF	01 = 0.1 inches	10 = 1.0 inches	10	1.0m
				Specified in mm for M threaded sensor. Specified in inch for UNF threaded sensor.	

■ Extension cable

FW-302F * - ** / FP0

Armor		Cable length (L)		Oil leakage reduction
L	Without armor	40	4.0m	
A	With armor (Without fluoro resin coating)	45	4.5m	
T	With armor (With fluoro resin coating)	80	8.0m	
		85	8.5m	

■ Driver

FK-302F * - * - * / SYS

System cable length		Mounting plate		Terminal block	System calibration
1	5 m	1	DIN rail (35mm) mount	1	Screw type terminal block (M4)
2	9 m	2	Screw mount (50.8 × 50.8mm)	2	Spring lock terminal
		3	Screw mount (92 × 31mm : For VK replacement)		
		4	Screw mount multi-pitch (50.8×50.8mm and 92×31mm)		