FK SERIES
TRANSDUCER

SPECIFICATIONS

FK-302F TRANSDUCER

CE

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

FK-302F □ - □ - □ / E □□ / SYS / GEO

System cable length		Mounting plate		Terminal block	
1	5m	1	DIN Rail(35mm) Mount	1	Screw type terminal block (M4)
2	9m	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)		

Intrinsically safe		System calibration	Geothermal spec.
10	Japan : DEKRA Ex ia IIC T4 Ga		
40	Canada / North America : CSA C/US Class I, Division 1, Groups A,B,C,D T4 Ex ia IIC T4 Ga Class I, Zone 0, AEx ia IIC T4 Ga		
50	Europe : ATEX Ex ia IIC T4 Ga		
70	China : Ex-CCC Ex ia IIC T4 Ga		
80	Korea : KCs Ex ia IIC T4 Ga		
B0	Taiwan : TS Ex ia IIC T4 Ga		
C0	Russia : TR-CU 0 Ex ia IIC T4 Ga X		
D0	Oceania : IECEx Ex ia IIC T4 Ga		

*1 Above code shows model number of driver only. Refer to outline drawings for model number of sensor and extension cable.

SPECIFICATIONS

CALIBRATION MATERIAL	JIS SCM440 flat surface	TEMPERATURE CHARACTERISTIC	Sensor : Less than ±3% of F.S. Extension Cable : Less than ±3% of F.S. Condition : Gap=3mm, Target : JIS SCM440 0 to 80°C (at 20°C standard) Driver : Less than ±3% of F.S. Loop : Less than ±4% of F.S. Condition : Gap=3mm, Target : JIS SCM440 0 to 60°C (at 20°C standard)
MEASURING RANGE	0.25 mm to 3.25 mm from sensor tip		
SENSITIVITY*2	5.0 V/mm		
SENSITIVITY ERROR*2	Within ±4%		
SCALE FACTOR ERROR*2	Within ±4% of 5.0V/mm (if calibrated as a system) Within ±10% of 5.0V/mm (including interchangeability errors) Step : 0.25mm, Linear range : 3mm		
LINEARITY*2	Within ±30 μm of 5.0V/mm straight line : (if calibrated as a system) Within ±45 μm of 5.0V/mm straight line : (including interchangeability errors) Linear range : 3 mm	OPERATING HUMIDITY RANGE	30 to 95% RH (non-condensing, non-submerged) (Sensor body : 100%RH)
		POWER SUPPLY	-24VDC ± 10%
		DIELECTRIC STRENGTH OF DRIVER	Between each terminals and mounting plate : 1mA or less at 500VAC for one minute
FREQUENCE RESPONCE*2	DC to 10 kHz or more(-3 dB)	INSULATION RESISTANCE OF DRIVER	Between each terminals and mounting plate : 100MΩ or more at 500VDC
MAX. OUTPUT VOLTAGE*2	Approx. -23VDC		
SENSOR ABNORMAL OUTPUT VOLTAGE*2	Approx. -0.6VDC (Sensor OPEN/Sensor SHORT)	APPLICABLE WIRE SIZE	Screw type terminal block (M4) : 0.75 to 2mm^2 Spring lock terminal : 0.2 to 1.5mm^2
OUTPUT IMPEDANCE*2	50Ω Current 5mA(max.)	DRIVER MASS	Approx. 200g
CURRENT CONSUMPTION (10kΩ load)	Max. -15mA	Other	
OUTPUT NOISE*2	Approx. 20mVpk-pk + power supply noise		
SENSOR TIP DIAMETER	Approx. 10mm dia.		
CABLE DIAMETER	Approx. 3.6mm dia.		
CONNECTOR DIAMETER	Approx. 7.1mm dia.		
SYSTEM CABLE LENGTH	5m or 9m		
OPERATING TEMPERATURE RANGE	Sensor : -40 to +177°C Extension Cable : -40 to +177°C Driver : -40 to +80°C		
RANGE OF TEMPERATURE AT EXPLOSION PROOF CONSTRUCTION	E10 : -40 to +80°C(Sensor, Extension Cable & Driver) E40 : -40 to +80°C(Sensor, Extension Cable & Driver) E50 : -40 to +80°C(Sensor, Extension Cable & Driver) E70 : -40 to +80°C(Sensor, Extension Cable & Driver) E80 : -40 to +80°C(Sensor, Extension Cable & Driver) EB0 : -40 to +80°C(Sensor, Extension Cable & Driver) EC0 : -40 to +80°C(Sensor, Extension Cable & Driver) ED0 : -40 to +80°C(Sensor, Extension Cable & Driver)		

*2 The above specification apply at 25°C with -24VDC power supply and load resistance 10kΩ and JIS SCM440 target (thickness≥5mm).

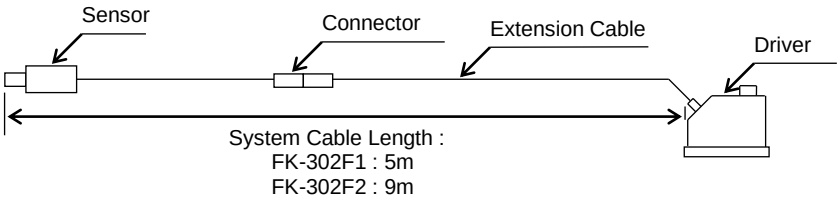
FK-302F TRANSDUCER

NOTICE

1. CALIBRATION MATERIAL
   MODEL FK-302F Transducers are calibrated for JIS SCM440 flat surface (more than 30mm 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.
2. 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.
3. 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, which may cause the wiring trouble in the case of temperature more than 80°C.
   The connector shall not be located in the oil environment.
   The oil penetration to cable through the connector may cause the sensitivity change, due to the change of the cable capacitance.
4. 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 dameged.
5. SENSOR INSTALLATION
   Not available for rain water at out door use.
   It may cause the sensitivity change and insulation down.
6. 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.
7. 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.
8. SAFETY BARRIER
   In case of the intrinsically safe specification, the approved following safety barrier is recommended.
   - MTL 7796-

   Please use in combination with the barrier which has explosion-proof certification in the country of use.
   Linear range reduces when intrinsic safety system with barrier.
   (to approx. 95%)
9. 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.
10. Cable length 5.0m sensor is designed for 5m system only.
    Can not use for 9m system.
11. In the intrinsically safe system, the product cannot be used in combination with a sensor/extension cable/driver with the intrinsically safe code "/EX□".

CONFIGURATION



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