

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

FK-202F  -  -  / E   / GEO

| System cable length |    | Mounting plate |   | Terminal block |                                | Intrinsic safety (compliance with IEC standards) |   | Geothermal spec. |  |
|---------------------|----|----------------|---|----------------|--------------------------------|--|---|------------------|--|
| 1                   | 5m | 1              | DIN Rail(35mm) Mount                              | 1              | Screw type terminal block (M4) | 10   | Japan : DEKRA<br>Ex ia IIC T4 Ga  |                  |  |
| 2                   | 9m | 2              | Screw mount (50.8 × 50.8mm)                       | 2              | Spring lock terminal           | 40   | Canada / North America : CSA C/US<br>Class I, Division 1, Groups A,B,C,D T4<br>Ex ia IIC T4 Ga<br>Class I, Zone 0, AEx ia IIC T4 Ga |                  |  |
|                     |    | 3              | Screw mount (92 × 31mm: For VK replacement)       |                |                                | 50   | Europe : ATEX<br>Ex ia IIC T4 Ga  |                  |  |
|                     |    | 4              | Screw mount Multi-pitch (50.8x50.8mm and 92x31mm) |                |                                | 70   | China : Ex-CCC<br>Ex ia IIC T4 Ga   |                  |  |
|                     |    |                |   |                |                                | 80   | Korea : KCs<br>Ex ia IIC T4 Ga  |                  |  |
|                     |    |                |   |                |                                | B0   | Taiwan : TS<br>Ex ia IIC T4 Ga  |                  |  |
|                     |    |                |   |                |                                | C0   | Russia : TR-CU<br>0 Ex ia IIC T4 Ga X   |                  |  |
|                     |    |                |   |                |                                | D0   | Oceania : IECEX<br>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

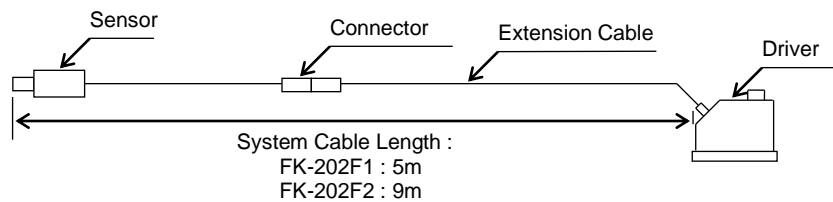
|  |  |                                 |   |
|--|--|---------------------------------|---|
| CALIBRATION MATERIAL                                       | JIS SCM440 flat surface  | TEMPERATURE CHARACTERISTIC      | Sensor : Less than ±3% of F.S.<br>Extension Cable : Less than ±4% of F.S.<br>Condition : Gap=2mm, Target : JIS SCM440<br>0 to 80°C (at 20°C standard) |
| MEASURING RANGE  | 0.25mm to 2.25mm from sensor tip   | OPERATING HUMIDITY RANGE        | 30 to 95% RH (non-condensing, non-submerged)<br>(Sensor body : 100%RH)  |
| SENSITIVITY*2  | 7.87V/mm   | POWER SUPPLY                    | -24VDC ± 10%  |
| SENSITIVITY ERROR*2  | Within ±4%   | DIELECTRIC STRENGTH OF DRIVER   | Between each terminals and mounting plate :<br>1mA or less at 500VAC for one minute   |
| SCALE FACTOR ERROR*2 (including interchangeability errors) | Within ±5% of 7.87V/mm (for 5m system)<br>Within ±6.5% of 7.87V/mm (for 9m system)<br>Step : 0.25mm, Linear range : 2mm  | INSULATION RESISTANCE OF DRIVER | Between each terminals and mounting plate :<br>100MΩ or more at 500VDC  |
| LINEARITY*2 (including interchangeability errors)          | Within ±25μm of 7.87V/mm straight line : (for 5m system)<br>Within ±38μm of 7.87V/mm straight line : (for 9m system)<br>Linear range : 2mm   | APPLICABLE WIRE SIZE            | Screw type terminal block (M4) : 0.75 to 2mm <sup>2</sup><br>Spring lock terminal : 0.2 to 1.5mm <sup>2</sup>   |
| FREQUENCY RESPONSE*2                                       | DC to 10kHz (-3dB)   | DRIVER MASS                     | Approx. 200g  |
| MAX. OUTPUT VOLTAGE*2                                      | Approx. -23VDC   | Other                           |   |
| SENSOR ABNORMAL OUTPUT VOLTAGE*2                           | Approx. -0.6VDC (Sensor OPEN/Sensor SHORT)   |                                 |   |
| OUTPUT IMPEDANCE*2   | 50Ω Current 5mA(max.)  |                                 |   |
| CURRENT CONSUMPTION (10kΩ load)                            | Max. -15mA   |                                 |   |
| OUTPUT NOISE*2   | Approx. 15mVpk-pk + power supply noise   |                                 |   |
| SENSOR TIP DIAMETER  | Approx. 5mm or 8mm dia.  |                                 |   |
| CABLE DIAMETER   | Approx. 2.7mm or 3.6mm dia.  |                                 |   |
| CONNECTOR DIAMETER   | Approx. 7.1mm dia.   |                                 |   |
| SYSTEM CABLE LENGTH  | 5m or 9m   |                                 |   |
| OPERATING TEMPERATURE RANGE (Refer to NOTICE 8)            | Sensor : -40 to +177°C<br>Extension Cable : -40 to +177°C<br>Driver : -40 to +80°C   |                                 |   |
| RANGE OF TEMPERATURE AT EXPLOSION PROOF CONSTRUCTION       | E10 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>E40 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>E50 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>E70 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>E80 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>EB0 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>EC0 : -40 to +80°C(Sensor, Extension Cable & Driver)<br>ED0 : -40 to +80°C(Sensor, Extension Cable & Driver) |                                 |   |
| RANGE OF TEMPERATURE FOR MARINE APPLICATIONS               | -25 to +70°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).

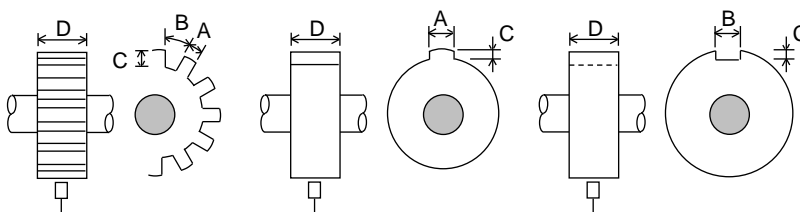
NOTICE

- |  |   |
|--|---|
| <p>1. CALIBRATION MATERIAL<br/>MODEL FK-202F Transducers are calibrated for JIS SCM440 flat surface (more than 15mm dia.).<br/>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.</p> <p>2. SHIELD WIRE CONNECTION<br/>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.<br/>If this is not adhered to, noise may be caused.</p> <p>3. CONNECTOR ISOLATION, etc.<br/>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.<br/>The vinyl-insulating tape shall not be used, which may cause the wiring trouble in the case of temperature more than 80°C.<br/>The connector shall not be located in the oil environment.<br/>The oil penetration to cable through the connector may cause the sensitivity change, due to the change of the cable capacitance.</p> <p>4. MEGGER TEST OF SIGNAL CABLE<br/>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.</p> <p>5. SENSOR INSTALLATION<br/>Not available for rain water at out door use.<br/>It may cause the sensitivity change and insulation down.</p> | <p>6. SCALE FACTOR ERROR and LINEARITY<br/>The scale factor error margin and linearity margin provides for examination result in our factory.<br/>This regulated value is not applied to the examination result in the site.</p> <p>7. SAFETY BARRIER<br/>In case of the intrinsically safe specification, the approved following safety barrier is recommended.<br/>• MTL 7796-<br/>Please use in combination with the barrier which has explosion-proof certification in the country of use.<br/>Linear range reduces when intrinsic safety system with barrier.(to approx. 95%)</p> <p>8. OPERATING TEMPERATURE RANGE OF CONNECTOR<br/>The operating temperature (upper limit) for connectors of the sensors and the extension cables shipped on July 31, 2011 or earlier is 125 °C.<br/>If you are unsure of the operating temperature of your connector please contact us.</p> <p>9. The instructions manual contains important information such as conditions necessary for safe handling of the system.<br/>Such information and conditions are important and indispensable for ensuring safety. Therefore, be sure to read the instructions manual thoroughly before handling the system.</p> <p>10. Cable length 5.0m sensor is designed for 5m system only.<br/>Can not use for 9m system.</p> <p>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□".</p> <p>12. INSTALLATION CONDITIONS of SENSORS for MARINE APPLICATIONS<br/>When using a long case length sensor, fix it so that the protruding dimension of the sensor (dimension from the tip of the sensor to the fixed position) is as follows.<br/>• FL-202F05□ : 135mm or less<br/>• FL-202F08□ : 160mm or less</p> |
|--|---|

CONFIGURATION



- Dimension of target [recommended for rotational speed measurement]



|  |            |
|--|------------|
| Dimension of Target [recommended] (mm) | A ≥ 6      |
|  | B ≥ 7      |
|  | C ≥ 2.5    |
|  | D ≥ 16     |
| Set gap [recommended] (mm)             | 1.0 to 1.5 |