HAZARDOUS LOCATION

ROSEMOUNT 2240S Multi Input Temperature Transmitter

FISCO Field Device (Note 8) for use in IS Class I,II,II Division 1, Groups ABC/DEFG FISCO
Temperature Class T4, -50°C-T<+70°C
Class I Zone 0 AEx is IIC FISCO

Fieldbus terminals (4+2p)

Test terminals (Note 2)

Cable shield terminal

Optional daisy chain connection to other FISCO Field Devices.

Fieldbus terminals (4+2p) FISCO Input Parameters:

Uo = 17.5 V; Io = 380 mA
Ps < 5.32 W
Cf = 2.2 nF; Lf = 2 μH

NOTES:
1. Control equipment connected to the Associated Apparatus must not use or generate more than 250 Vdc or Vdc.
2. Test terminals for temporary connection of Intrinsically Safe Rosemount 375 or 475 Field Communicator.
3. Earth connection cable area: min. 4 mm²
4. Installation in the USA should be in accordance with ANSI/ISA-RP12.6 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electrical Code (ANSI/NFPA 70).
5. Dust tight conduit seals must be used when installed in Class II and Class III environments.
6. It is possible to disconnect the integrated termination by removing the jumper wire in X3:2-X4:2.
7. Alternative entity parameters applicable to the RTD terminals (X11) when nothing is connected to the Sensorbus terminal (X5): Uo = 5.9 V; Io = 100 mA; Po = 150 mW; Cf = 43 pF; Lf = 3.0 mH (Group A, B, IIC)
8. When supplied from a certified AEx is IIC FISCO Power Supply with triplicated output voltage limitation meeting the requirements for two faults (“ia” voltage limitation):

Class I Zone 1 AEx is IIC (Associated Apparatus, Note 1.)

FISCO power supply

(Associated Apparatus, Note 1.)
FISCO Parameters:

Uo < 17.5 V; Io < 380 mA
Ps < 5.32 W
Cf, Lf: Unspecified
Cf < 5 nF; Lf < 10 μH

WARNING:
To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer’s live maintenance procedures.

WARNING: Substitution of components may impair Intrinsic Safety.

FIELDBUS INTRINSICALLY SAFE CONCEPT (FISCO) APPROVAL

FISCO allows interconnection of intrinsically safe apparatus not specifically examined in such combination. The criteria for interconnection of FISCO apparatus devices, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Cf) and the inductance (Lf) of each apparatus (other than the termination) connected to the Fieldbus must not impair the intrinsic safety of the installation.

In each I.S. Fieldbus segment only one active device, normally the Associated Apparatus, is allowed to provide the necessary energy for the Fieldbus. The voltage (Uo, Vdc, or Vdc) of the Associated Apparatus is limited to a range of 14 V to 17.5 V. All other equipment connected to the bus cable must be passive, meaning that they are not allowed to provide energy to the system, except a leakage current of 50 μA for each connected device. Separately powered equipment needs galvanic isolation to ensure that the intrinsically safe Fieldbus circuit remains passive.

The cables used to interconnect devices need to have characteristics such as:

- Loop Resistance R<sub>0</sub>: 15...150 ohm/km
- Loop Inductance L<sub>c</sub>: 0.4...11 mH/km
- Capacitance per unit length C<sub>f</sub>: 45...500 nF/km

C<sub>f</sub> = C<sub>FW</sub> + 0.5*C<sub>SW</sub>, if both lines are floating or C<sub>f</sub> = C<sub>FW</sub> + C<sub>SW</sub>/2, if screen is connected to one line
- Length of trunk cable: Less than or equal to 1 km
- Length of spur cable: Less than or equal to 60 m

At each end of the trunk cable an approved infallible line terminator with the following parameters should be installed:

R < 90 ohm, C < 2 μF (recommended parameters are: R = 100 ± 2 ohm, C = 1.0 ± 0.2 μF)

One of the allowed terminations may be integrated in the Associated Apparatus. This Field Device is equipped with an integrated terminator, see note 5.

FISCO limits the number of passive devices connected to a single segment to 32 devices. If the above rules are respected, a total length of up to 1 km of cable is permitted (sum of trunk and spur cables). The inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

Notes:
- Substitution of components may impair Intrinsic Safety.
- WARNING: To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.
- WARNING: Substitution of components may impair Intrinsic Safety.

FM APPROVED PRODUCT

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SYSTEM CONTROL DWG

FM, FM-C
Rosemount 2240S

9240040-910

TOS Soft Angle SCALE

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Rosemount Tank Radar AB, Sweden
The Entity concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in combination as a system. The approved values of max. open circuit voltage (Uo), short circuit current (Io), max. power (Pd), and max. power (Vdc or Vdc/4 or Vdc/4), for the associated apparatus must be less than or equal to the maximum safe input voltage (Ui or Umax) and maximum safe input current (Idc or Idc) of the intrinsically safe apparatus. In addition, the approved max. allowable connected capacitance (Co or Ci) of the associated apparatus must be greater than the sum of the interconnecting cable capacitance and the unprotected internal capacitance (Ci) of the intrinsically safe apparatus, and the approved max. allowable connected inductance (Li or Lmax) of the associated apparatus must be greater than the sum of the interconnecting cable inductance and the unprotected internal inductance (Li) of the intrinsically safe apparatus.

Notes:
1. Control equipment connected to the associated apparatus must not use or generate more than 250 VDC or 25 VAC.
2. Test terminals for temporary connection of Intrinsically Safe Rosemount 375 or 475 Field Communicator.
3. Earth connection cable area: min. 4 mm².
4. Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).
5. Dust tight conduit seals must be used when installed in Class II and Class III environments.
6. It is possible to disconnect the integrated terminal by removing the jumper wire in X3.2-X4.2.
7. The Sensorbus terminal is a separate IS circuit and connection of external sensors must be made through a separate shielded cable with the shield connected to one of the internal ground terminals.
8. Alternative entity parameters applicable to the RTD terminals (X11) when nothing is connected to the Sensorbus terminal (X5): Uo = 5.9 V; Io = 100 mA; Po = 150 mW; Co = 43 nF; L0 = 3.0 mH

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