TRICOR®

Control drawing for hazardous areas

Sensors:
TCMx0050, TCMx0100, TCMx0325, TCMX0450, TCMH0450, TCMx0650, TCMx1550, TCMx3100, TCMx5500, TCMx7900, TCMx028K, TCMx065K, TCMx230K, TCMx0430K

Transmitters:
TCE 8x01, TCE 8x11, TCE 8x12

TRICOR Coriolis Technology

Version

Manual-Version

TCM_E80_CLASSIC_E_EN_191030_E002

SW-Version

This manual is valid for

Main SW: Mv3.40 and higher

Display SW: Dv3.40 and higher

Hazardous Area Installation Instructions:

Instructions specific to hazardous area installations
The following instructions apply to the Transmitters and Sensors

1. The equipment may be used in a hazardous area with flammable gases and vapors, groups and temperature classes as specified in the equipment specification.
2. The equipment is certified for use in ambient temperature (Ta) as specified in the equipment specification and should not be used outside of the specified temperature range.
3. Installation shall be carried out in accordance with the applicable code of practice by suitably trained personnel.
4. The equipment is not intended to be repaired by the user. Repair of this equipment shall be carried out by the manufacturer in accordance with the applicable code of practice.
5. If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.
   - Aggressive Substances - e.g. acidic liquids or gases that may attack metals or solvents that may affect polymeric materials.
   - Suitable Precautions - e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

Special Conditions for use:

1. Connection to mains shall be made in accordance with ANSI/NFPA 70, NEC, with CSA C22.1, CEC, Part 1, or both as appropriate.
2. The temperature of the equipment can reach 82°C at the cable entry and the branching point in a 70°C ambient. This must be considered when selecting field wiring and cable entry devices.
3. Suitably equipment certified blanking elements shall be fitted to all unused conduit entries to maintain the explosionproof and environmental characteristics of the equipment.
4. The process fluid of meter mounted (compact) versions of the TCM must be within the range of -40°C ≤ +70°C.
5. The equipment contains a shunt zener diode interface, which requires connection to a suitable earth in accordance with the applicable code of practice.
6. Remote terminal boxes of the equipment may be manufactured from aluminium; in the event of rare incidents, ignition sources due to impact and friction sparks could occur. This shall be considered when the remote version of the TRICOR flow meters are being installed in locations that specifically require group II Zone 0 applications.
7. For remote versions of the TRICOR flow meters, the temperature class of the equipment is dictated by the process temperature in the end application:
   T4: -40 °C ≤ Tp ≤ +70 °C
   T3: -40 °C ≤ Tp ≤ +135 °C
   T2: -60 °C ≤ Tp ≤ +200 °C
8. DC powered units shall be supplied with a Limited Energy Circuit (LEC), Class 2 as defined in article 725.121 of NFPA70, or Limited Power Source (LPS) as defined in CAN/CSA C22.2 No. 60950-1.
9. Current Loop I1, I2 and Ctl in for all models are passive, and shall be supplied with Limited Energy Circuit (LEC), Class 2 as defined in article 725.121of NFPA70, or Limited Power Source (LPS) as defined in CAN/CSA C22.2 No. 60950-1.

The TCM transducer cable shall not exceed 30 meters when it is not provided by the manufacturer. The cable shall be either Type A or Type B cable as defined in IEC/EN 60079-14 and the conductors inside of the cable shall provide an insulation min. 0.25 mm thick.

Standards:

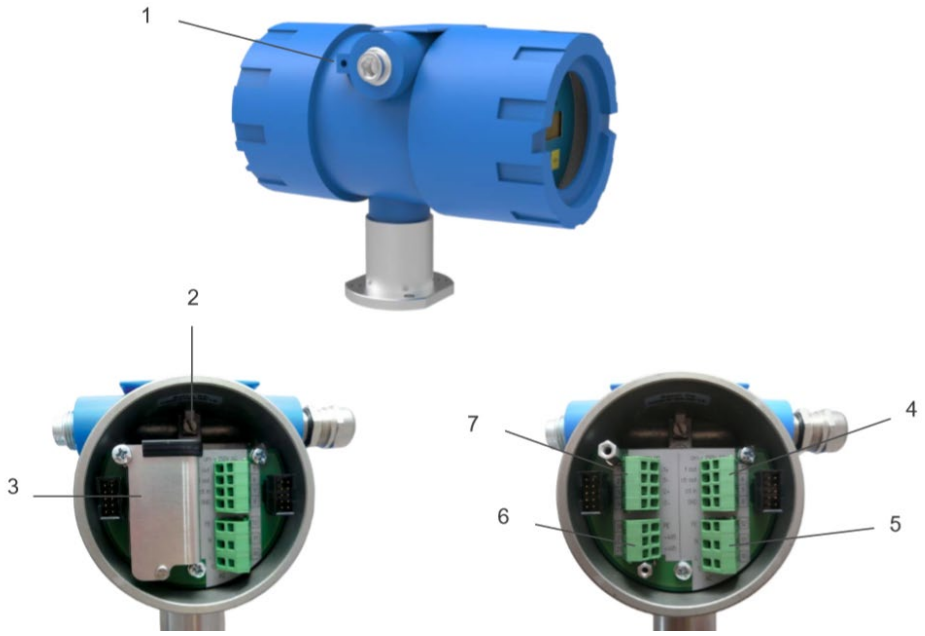
CAN/CSA C22.2 No. 61010-1-12 (R2017), C22.2 No. 0-10 (R2015), C22.2 No. 30-M1986 (R2016), CAN/CSA-C22.2 No. 60079-0:15 (R2018), CAN/CSA-C22.2 No. 60079-1:16, CAN/CSA-C22.2 No. 60079-11:14 (R2018).
ANSI/UL-61010-1 (2016), ANSI/UL-60079-0 (2013) (R2017), ANSI/UL 60079-1 (2015), ANSI/UL-60079-11-2018
FM 3600 (2018), FM 3615 (2018)

Warning:

Explosion Hazard – Can cause death or serious injury

Danger of explosion in hazardous areas.

Use only cable glands/plugs that comply with the requirements for the relevant type of protection.
Tighten the cable glands in accordance with the torques specified in Technical specifications
Close unused cable inlets for the electrical connections.
When replacing cable glands use only cable glands of the same type.
After installation check the cables are seated firmly.



Sensor TCM with wall mounted Transmitter TCE

Transmitters	Sensors
TCE 8***-W(I)-****-**-**	TCMx****-**-****-****-**-**

1. See operating Instructions to complete installation
2. DC powered unit shall be supplied with Limited Energy Circuit (LEC), Class 2 as defined in article 725.121 of NFPA70, or Limited Power Source (LPS) as defined in CAN/CSA C22.2 No. 60950-1.
3. Current Loop I1, I2 and Ctl in for all models are passive, and shall be supplied with Limited Energy Circuit (LEC), Class 2 as defined in article 725.121 of NFPA70, or Limited Power Source (LPS) as defined in CAN/CSA C22.2 No. 60950-1.
4. All Entity parameters are listed in the table below:

Non-IS circuits (Transmitter assembled into Explosionproof enclosure):

Connections	**Terminals**	**Um (Vac)**
Power supply (AC), (nominal 230 Vac)	91 (N) / 90 (L) 53 (PE)	250
Power supply (DC), (nominal +24 Vdc)	50 (Udc+), 51 (GND), 52 (PE)	
Digital input, (nominal +24 Vdc)	7 (CTRL IN), 8 (GND)	
Digital output, (nominal +24 Vdc)	5 (F-out), 6 (CTRL Out)	

IS circuits (Transmitter outputs):

Connections	**Terminals (TCM Junction box)**	**Uo (V)**	**Io (A)**	**Po (W)**	**Co (µF)**	**Lo (mH)**
Oscillator / Driver coil (low power IIC)	1 / 2	8.27	0.2	0.415	7.2	0.82
Oscillator / Driver coil (high power IIB)	1 / 2	15.34	0.37	1.42	0.531	0.21
Signal pick-up coils	3 / 4 and 5 / 6	2	0.02	0.01	100	88.84
Temperature sensor	7 / 8	5	0.045	0.413	100	17.51

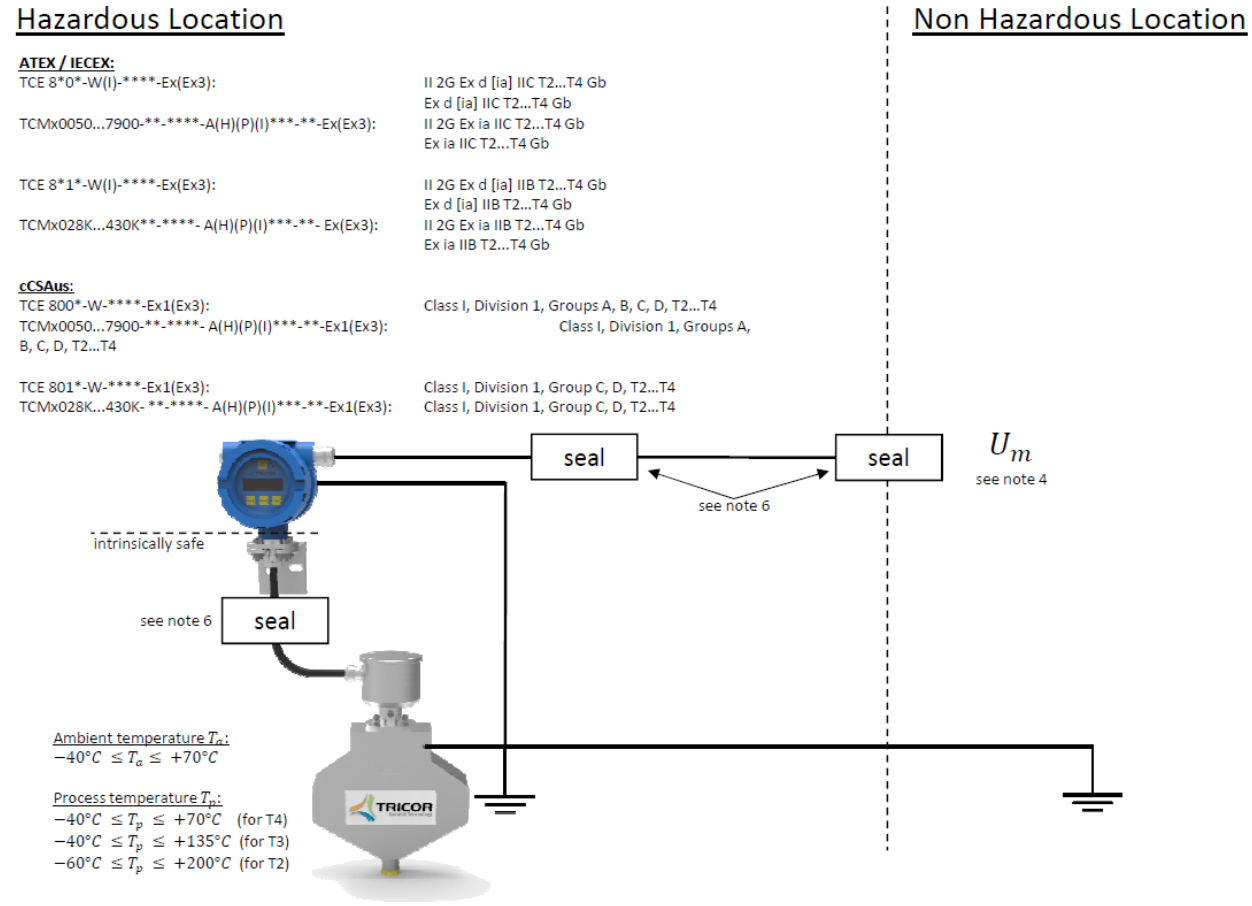
IS circuits (Transducer Inputs):

Type	**Circuit (terminals)**	**Ui (V)**	**Ii (A)**	**Pi (W)**	**Ci (µF)**	**Li (mH)**
TCM*0050, TCM*0100	Oscillator/Driver coil (1 / 2)	8.27	0.2	0.415	0	5.25
	Signal pick-up coil (3 / 4, 5 / 6)	2	0.02	0.01		5.25
TCM*0325, TCM*0450, TCM*650, TCM*1550, TCM*3100, TCM*5500, TCM*7900	Oscillator/Driver coil (1 / 2)	8.27	0.2	0.415		1.94
	Signal pick-up coil (3 / 4, 5 / 6)	2	0.02	0.01		1.94
TCM*028K, TCM*065K	Oscillator/Driver coil (1 / 2)	15.34	0.37	1.42		7.875
	Signal pick-up coil (3 / 4, 5 / 6)	2	0.02	0.01		1.94
TCM*230K, TCM*430K	Oscillator/Driver coil (1 / 2)	15.34	0.37	1.42		13.65
	Signal pick-up coil (3 / 4, 5 / 6)	2	0.02	0.01		1.94
All transducers	Temperature sensor (7 / 8)	5	0.045	0.413		0

Alternative naming convention:

IEC entity parameter	Equivalent division parameter
Ui	Vmax
Ii	Imax
Pi	Pi or Pmax
Ci	Ci
Li	Li
Uo	Voc
Io	Isc
Po	Po or Pout
Lo	La
Co	Ca

5. Equipment has only been tested for safety. No evaluation of functional safety and performance characteristics has been conducted.
6. A seal shall be installed within 18" of conduit entry and when transitioning between hazardous locations. A seal is not required for use in ATEX/IECEx installation.
7. TCE81**-*-****-**-** are not allowed for CSA installations (stainless steel enclosure version)
8. TCE8***-I-****-**-** are not allowed for CSA installations (enclosure the M20x1.5 cable gland threading)



Housing of Transmitter and Sensor shall always be connected as illustrated

WARNING – The equipment shall not be opened when energized.
WARNING – Substitution of components may impair Intrinsic Safety.
WARNING – To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing

Sensor TCM with meter mounted Transmitter TCE

Transmitters:	Sensors:
TCE 8***-C(K)(M)(O)-****-**-**	TCM ****-**-****-C(K)(M)(O)***-**-**

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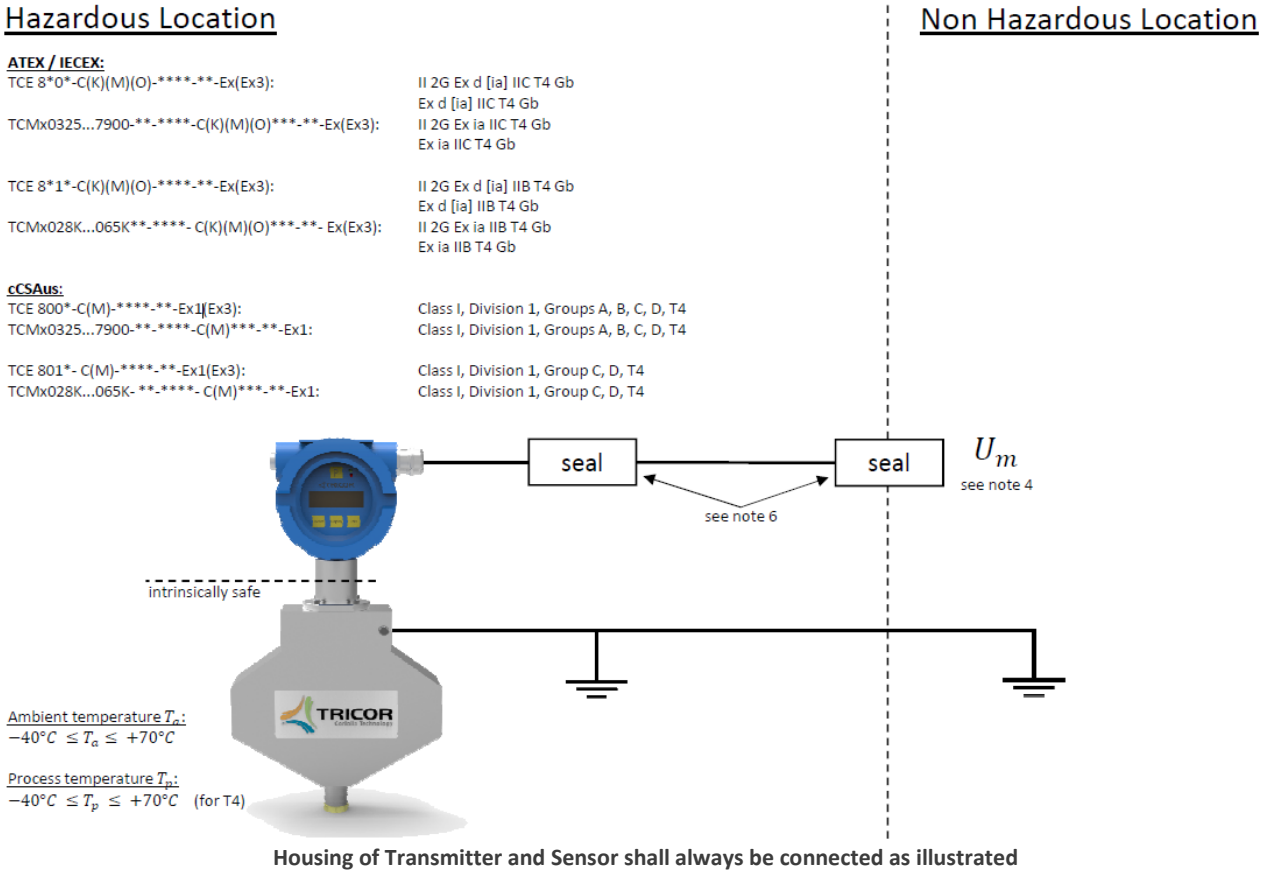

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