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CCS/FM10
CSA/F 15.08.16

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CSA Control Drawing
960006752-F

Cerabar S PMP7x, Deltabar S PMD75, FMD7x
PA, FF
(int. safe + explosion proof)

Endress+Hauser

People for Process Automation

The Cerabar S/Deltabar S with electronic insert for PROFIBUS PA/FOUNDATION Fieldbus is suitable for the connection to a PROFIBUS PA system according to both the Entity-Concept or the FISCO-Concept (as described below).

FISCO-Concept
The FISCO Concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination.
The criteria for interconnection is that the voltage (Ui or V_{max}), the current (Ii or I_{max}) and the power (Pi or P_{max}) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo or Voc or Vt), the current (Io or Isc or It) and the power (Po or P_{max}) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Ci) and inductance (Li) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 µH respectively.

In each segment only one active device, normally the associated apparatus, is allowed to provide the necessary energy for the fieldbus system.
The voltage Uo (or Voc or Vt) of the associated apparatus has to be limited to the range of 14V to 24V d.c. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except to a leakage current of 50 µA for each connected device. Separately powered equipment needs a galvanic isolation to assure that the intrinsically safe fieldbus circuit remains passive.
The cable used to interconnect the devices needs to have the parameters in the following range:

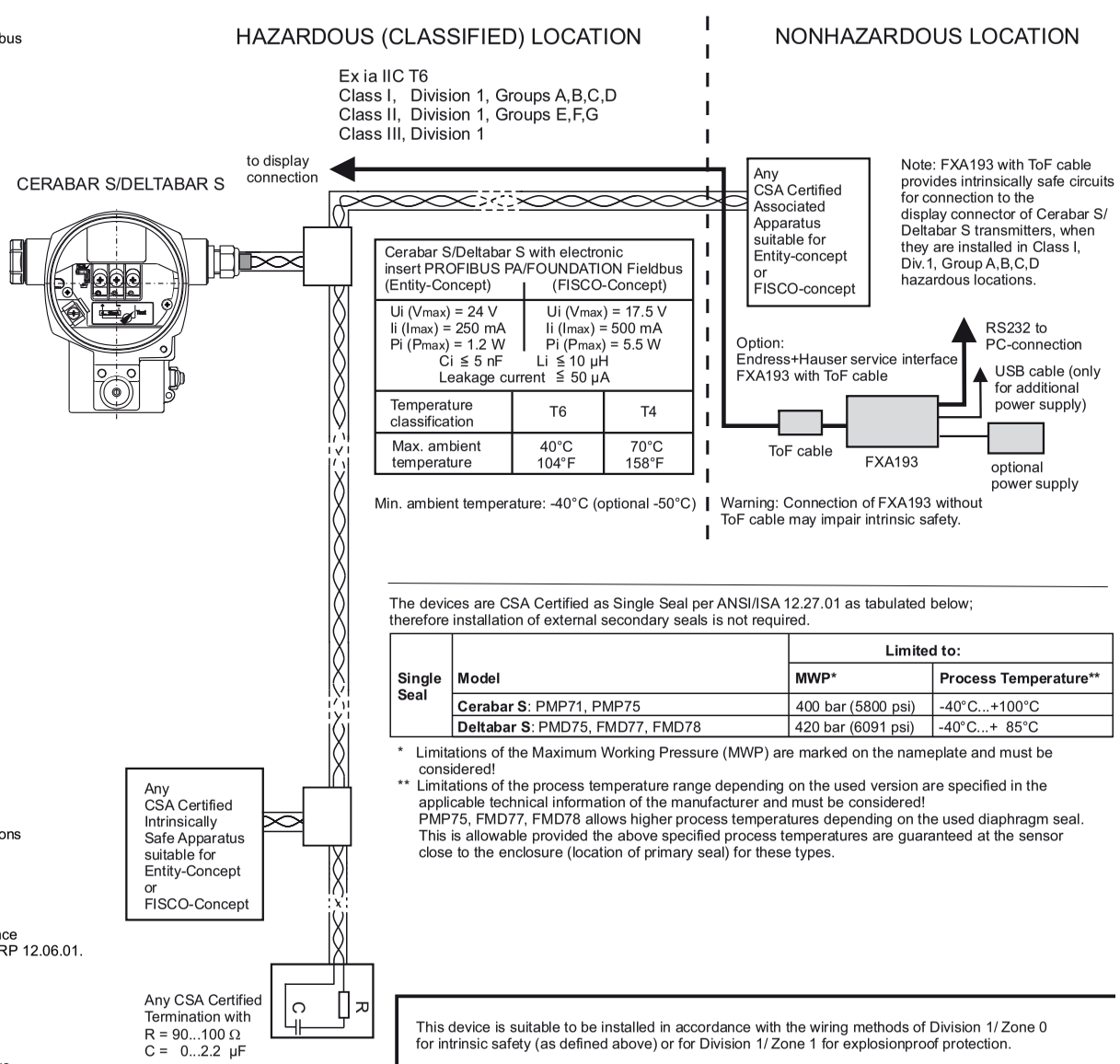
loop resistance R´:	15...150 Ω/km
inductance per unit length L´:	0.4...1 mH/km
capacitance per unit length C´:	80...200 nF/km
C´ = C´ line/line + 0,5 C´ line/screen, if both lines are floating or	
C ´= C´ line/line + C´ line/screen, if the screen is connected to one line	
length of spur cable:	≤ 30 m
length of trunk cable:	≤ 1 km
length of splice:	≤ 1 m

At each end of the trunk cable an approved infallible line termination with the following parameters is suitable:
R = 90...100 Ohm
C = 0...2.2 µF
One of the allowed terminations might already be integrated in the associated apparatus.

The number of passive devices connected to the bus segment is not limited due to I.S.reasons. If the above rules are respected, up to a total length of 1000 m (sum of the length of trunk cable and all spur cables), the inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

Notes:
INTRINSICALLY SAFE CLASS I, DIV.1, GROUP A,B,C,D; Ex ia IIC T6
1. CSA certifed apparatus must be installed in accordance with manufacturer instructions
2. CSA certified associated apparatus must meet the following requirements:
   Uo or Voc or Vt ≤ Ui (V_{max}) **and** Io or Isc or It ≤ Ii (I_{max}) **and** Po or P_{max} ≤ Pi (P_{max})
3. The maximum non-hazardous area voltage must not exceed 250 V.
4. The installation must be in accordance with the Canadian Electrical Code or National Electrical Code (ANSI/NFPA70) and ISA RP 12.06.01.
5. Be aware of multiple earthing of screen. The screen must be connected in accordance with Canadian Electrical Code or National Electrical Code (ANSI/NFPA70) and ISA RP 12.06.01.
6. Caution: Use only supply wires suitable for 5°C above surrounding temperature.
7. Warning: Substitution of components may impair intrinsic safety.
8. The polarity for connecting is of no importance due to an internal rectifier.
9. Remark: Versions with optional terminalblock with integrated overvoltage protection have an isolationvoltage greater than 420 VDC between terminal connections and potentially grounded metal parts.
10. Avoid electrostatic charge of plastic surfaces, plastic process connections or coatings.

Suitable for, CLASS I, DIV.2, GROUP A,B,C,D, CLASS II, DIV.1, GROUP E,F,G
HAZARDOUS LOCATION INSTALLATION
1. Install per Canadian Electrical Code (CEC) or National Electrical Code (ANSI/NFPA70) and ISA RP 12.06.01. Intrinsic safety barrier not required. Max.supply voltage 32 V. For T-code see table.
2. WARNING: Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be Non-Hazardous.
   AVERTISSEMENT : Risque d'explosion - Ne pas débrancher tant que le circuit est sous tension, à moins qu'il s'agisse d'un emplacement non dangereux.
   WARNING: Explosion Hazard - Substitution of components may impair suitability for CLASS I, Div.2.
   AVERTISSEMENT : Risque d'explosion - La substitution de composant peut rendre ce material inacceptable pour les emplacements de Class I, Div.2.



The devices are CSA Certified as Single Seal per ANSI/ISA 12.27.01 as tabulated below; therefore installation of external secondary seals is not required.

		Limited to:	
Single Seal	**Model**	**MWP***	**Process Temperature****
	Cerabar S: PMP71, PMP75	400 bar (5800 psi)	-40°C...+100°C
	Deltabar S: PMD75, FMD77, FMD78	420 bar (6091 psi)	-40°C...+ 85°C

* Limitations of the Maximum Working Pressure (MWP) are marked on the nameplate and must be considered!
** Limitations of the process temperature range depending on the used version are specified in the applicable technical information of the manufacturer and must be considered!
PMP75, FMD77, FMD78 allows higher process temperatures depending on the used diaphragm seal. This is allowable provided the above specified process temperatures are guaranteed at the sensor close to the enclosure (location of primary seal) for these types.

This device is suitable to be installed in accordance with the wiring methods of Division 1/ Zone 0 for intrinsic safety (as defined above) or for Division 1/ Zone 1 for explosionproof protection.

For installations in accordance with the requirements of explosionproof protection the device is suitable for:

Cerabar S: Cl.I, Div.1, Gp. BCD, Cl.II, Div.1, Gp. EFG, Cl.III, Exd IIC T6
for pressure range 700 bar/ 10500 psi: Cl.I Div.1 Gp. CD Cl.II Div.1 Gp. EFG Cl.III, Exd IIC T6

Deltabar S: Cl.I, Div.1, Gp. ABCD, Cl.II, Div.1, Gp. EFG, Cl.III, Exd IIC T6

Conduit seals must be installed within 18 inches of enclosure.
Max. supply voltage: 32 VDC.
Ambient temp. range: -40°C...75°C (optional $T_{a,min}$: -50°C)

Warning: Changing the type of protection after first installation may impair the explosion protection.