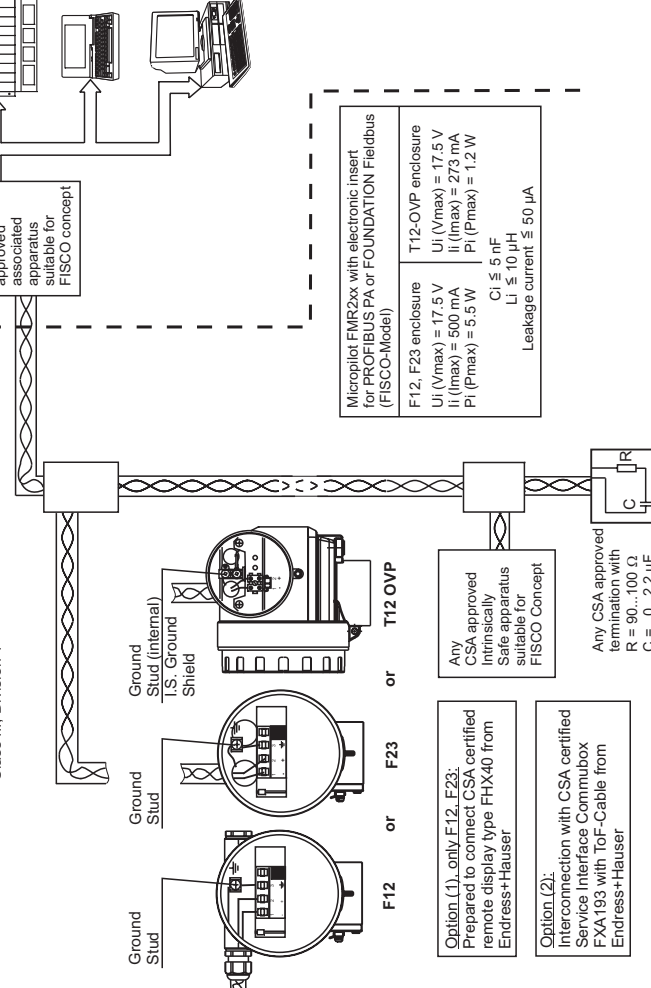


HAZARDOUS (CLASSIFIED) LOCATION

Class I, Zone 0, Ex ia IIC T6
 Class I, Division 1, Groups A, B, C, D
 Class II, Division 1, Groups E, F, G
 Class III, Division 1



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), the current (Ii) and the power (Pi) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo), the current (Io) and the power (Po) 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 of the associated apparatus has to be limited to the range of 14 V to 24 V DC.
 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:
 $R = 90 \dots 100 \Omega$
 $C = 0 \dots 2.2 \mu F$

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:**
1. CSA Certified apparatus must be installed in accordance with manufacturer instructions.
 2. CSA Certified associated apparatus must meet the following requirements: $U_o \leq U_i$ and $I_o \leq I_i$ and $P_o \leq P_i$.
 3. The maximum non-hazardous area voltage must not exceed 250 V.
 4. The installation must be in accordance with the Canadian Electrical Code.
 5. Be aware of multiple earthing of the screen. The screen must be connected in accordance with the Canadian Electrical Code.
 6. Caution: Use only supply wires suitable for 5 K above surrounding temperature.
 7. Warning: Substitution of components may impair intrinsic safety.
 8. The polarity for connecting + (2) and - (1) is of no importance due to an internal rectifier.
 9. Use of scavange junction

It is the users responsibility to use the adequate method by using the scavange device, like:
 Installation has to be IP-grade 67 resp. IP-grade 65 (IEC / EN 60529), depends on location.
 Scavange pressure > inside pressure at the container, max 10 bar resp. 150 psi.
 At non-scavange status, a barrier spigot resp. valve must be closed, if the valve / spigot is open and no scavange fluid is present the risk of flammable gas or combustible dust releases and flame entrance from outside exists.

10. FMR255: Avoid electrostatic charge at the antenna (e.g. do not rub with dry cloth; do not install within the filling curtain)
11. Apparatus with faucet: In case of disconnection of Microplot (M) from the faucet (e.g. for maintenance) we recommend to secure resp. to close the faucet e.g. with an additional blind flange. The responsibility for applicability of the arrangement behoves exclusive the operator.
12. Use specific cables, supplied with the Service Interface Commubox FXA193 or Remote Display FHX40. Refer to the applicable Control Drawing.
13. T12-OVP housing: The surge protection device (OVP) fulfills the requirements of IEC 60079-14, clause 12.3.

CLASS I, DIV. 2, GROUPS A, B, C, D or Ex n IIC and DIP, for CLASS II and III, DIV. 1, GROUPS E, F, G

- HAZARDOUS LOCATION INSTALLATION**
1. Install per Canadian Electrical Code (CEC) using threaded metal conduit.
 Intrinsic safety barrier not required max. supply voltage 30 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 - Avant de déconnecter l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux.
 Warning: Explosion Hazard - Substitution of components may impair suitability for Class I, Div. 2.
 Avertissement: Risque d'explosion - La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Div. 2.

For installation acc. -ENTITY- Concept see Control dwg. part 960007256
 CLASS II and III: DIV. 1
 Warning: Keep cover tight unless power has been switched off or the area is known to be non-hazardous.



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CSA Control Drawing
960007253 C

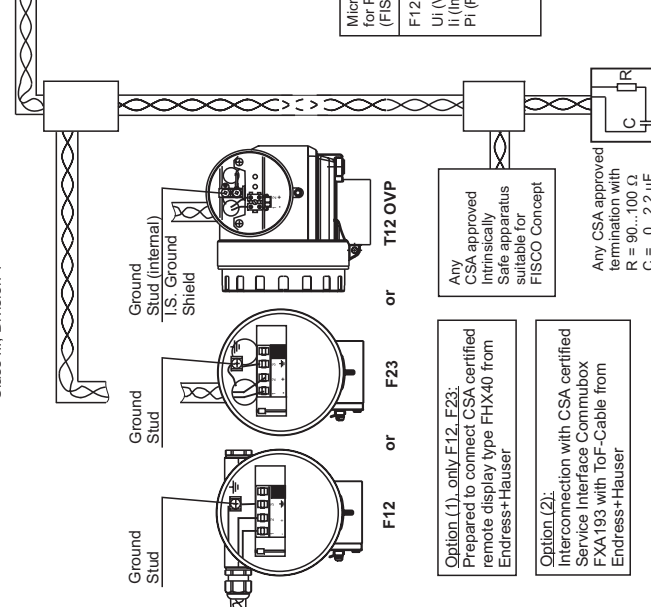
Microplot M
 FMR250/255
 FISCO-Model
 PROFIBUS PA, FOUNDATION Fieldbus



People for Process Automation

NON HAZARDOUS LOCATION

Any CSA approved apparatus suitable for FISCO concept



Area of application:

The compact instruments are suitable for use in areas subject to explosion caused by gases, vapours or mists.
 Permissible ambient temperature: Electronic: F12, F23, T12-OVP enclosure -40...+80 °C resp. -40...+176 °F

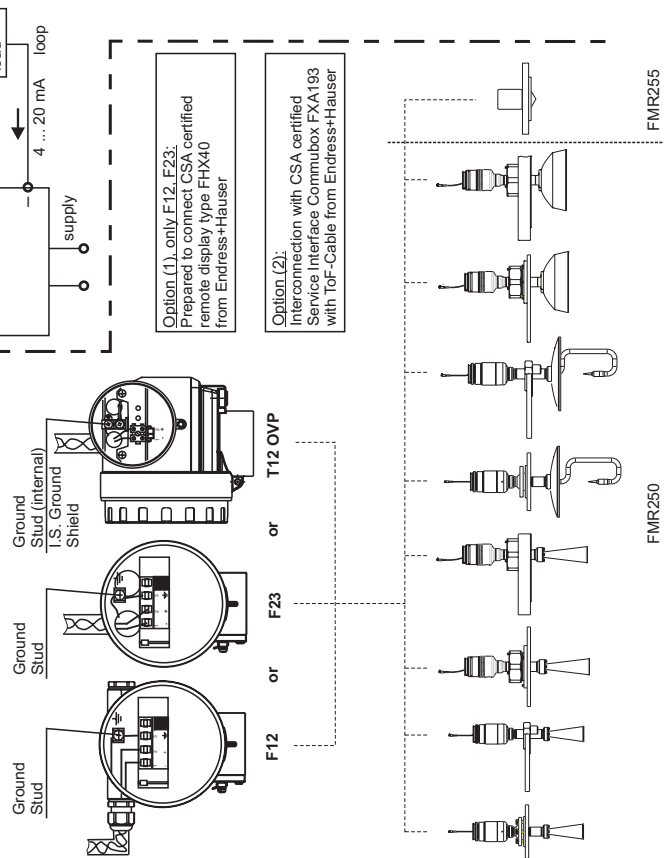
Temperature class with/without display VU331	Permissible max. medium temperature at the probe (process connection) Tmed	FMR250 (Horn or parabolic antenna)			FMR255		
		Option 20 (Antenna): 4, 5 or 6		Option 20 (Antenna): D, E, G, H or 9-1		F23 housing	
		F12 or T12-OVP housing	F23 housing	F12 or T12-OVP housing	F23 housing	F12 or T12-OVP housing	F23 housing
T6	+ 80 °C + 60 °C	+55/50 °C +60/55 °C	+55/50 °C +60/55 °C	+55/50 °C +60/55 °C	+70/65 °C +75/70 °C	+70 °C +80 °C	+65 °C +80 °C
T5	+ 95 °C + 75 °C	+70/65 °C +75/70 °C	+70/65 °C +75/70 °C	+70/65 °C +75/70 °C	+70 °C +80 °C	+70 °C +80 °C	+65 °C +80 °C
T4	+130 °C + 80 °C	+75 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+65 °C +80 °C
T3C (functional) ¹⁾	+150 °C + 80 °C	+73 °C +80 °C	+70 °C +80 °C	+68 °C +80 °C	+70 °C +80 °C	+65 °C +80 °C	+60 °C +80 °C
T3	+195 °C + 80 °C	+70 °C +80 °C	+65 °C +80 °C	+60 °C +80 °C	---	---	---
T2, T1 (functional) ¹⁾	+200 °C + 80 °C	+70 °C +80 °C	+65 °C +80 °C	+60 °C +80 °C	---	---	---

Note: The applicable temperature of probe must be within their specified limits
¹⁾ functional means max. permissible process temperature
²⁾ special version of horn or parabolic reflector dimensions

T6, T5 requires for FF-electronic enlarged derating: for ambient; ¹⁾st number = PA electronic insert; ²⁾nd number = FF electronic insert
 e.g. +60/55 °C expression means: Apparatus with PA electronic insert max. ambient at housing = +60 °C;
 Apparatus with FF electronic insert max. ambient at housing = +55 °C

HAZARDOUS LOCATION
 Class I, Div. 1, Groups A, B, C, D
 Ex ia IIC Tx
 Class II, Div. 1, Groups E, F, G
 Class III

F12 / F23 / T12-OVP-Housing:
 IS / I, II, III / I, A, B, C, D



Area of application:

The compact instruments are suitable for use in areas subject to explosion caused by gases, vapours or mists.

Permissible ambient temperature: Electronic: F12, F23, T12-OVP enclosure -40...+80 °C resp. -40...176 °F

Type	Type of antennas	Operation temperature
FMR250 -	Horn, Parabolic	-40 °C/-40 °F to +200 °C/392 °F
FMR255 -	Compact	-40 °C/-40 °F to +150 °C/302 °F

Note: Take care to specific temperature ranges of antenna versions

For installation acc. - FISCO- Concept see Control dwg. part. 960007253

Notes:

INTRINSICALLY SAFE (Ex ia): CLASS I, DIV. 1, GROUPS A, B, C, D or Ex ia IIC

HAZARDOUS LOCATION INSTALLATION, DIVISION 1 INSTALLATION

1. Control room equipment may not use or generate over 250 Vrms.

2. Install per the Canadian Electrical Code.

3. Warning: Substitution of components may impair intrinsic safety. Avertissement: La substitution de composants peut compromettre la sécurité intrinsèque.

4. Ex ia IS defined as intrinsically safe / sécurité intrinsèque.

5. For entity installation use CSA certified safety barrier or other associated equipment that satisfy the following conditions:

with $U_0/V_{oc} \leq U_0/V_{max}$, $I_{ol}/I_{sc} \leq I_{ol}/I_{max}$, $C_0/C_a \geq C_1 + C_{cable}$, $L_0/L_a \geq L_1 + L_{cable}$.

6. For system installation use CSA certified safety barriers as follows:

(a) 28 V / 300 Ω + Ground or (b) 28 V / 300 Ω + 28 V / Diode or (c) 28 V / 300 Ω + 10 V / 50 Ω.

7. Use supply wires suitable for 5 K above surrounding ambient.

Utiliser des fils d'alimentation qui conviennent à une température de 5 K au-dessus de la température ambiante.

8. Install barrier / associated equipment in accordance with manufacturer's instruction.

9. Use of scavenging junction:

It is the users responsibility to use the adequate method by using the scavenging device, like:

Installation has to be IP-grade 67 resp. IP-grade 65 (IEC / EN 60529), depends on location.

Scavenging pressure > inside pressure at the container, max 10 bar resp. 150 psi. At non-scavenging status, a barrier spigot resp. valve must be closed. If the valve / spigot is open and no scavenging fluid is present the risk of flammable gas or combustible dust releases and flame entrance from outside exists.

10. FMR255: Avoid electrostatic charge at the antenna (e.g. do not rub with dry cloth; do not install within the filling curtain).

11. Apparatus with faucet: In case of disconnection of Micropilot M from the faucet (e.g. for maintenance) we recommend to secure resp. to close the faucet e.g. with an additional blind flange. The responsibility for applicability of the arrangement behooves exclusive the operator.

12. Use specific cables, supplied with the Service Interface Commubox FXA193 or Remote Display FXH40.

13. Refer to the applicable Control Drawing.

14. T12-OVP housing: The surge protection device (OVP) fulfills the requirements of IEC 60079-14, clause 12.3.

CLASS I, DIV. 2, GROUPS A, B, C, D or Ex, IIC and DIP, for CLASS II and III, DIV. 1, GROUPS E, F, G

HAZARDOUS LOCATION INSTALLATION

1. Install per Canadian Electrical Code (CEC) using threaded metal conduit.

Intrinsic safety barrier not required max. supply voltage 30 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 - Avant de déconnecter l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux.

Warning: Explosion Hazard - Substitution of components may impair suitability for Class I, Div. 2.

Avertissement: Risque d'explosion - La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Div. 2.

CLASS II and III, DIV. 1

Warning: Keep cover tight unless power has been switched off or the area is known to be non-hazardous.

F12, F23 enclosure Vmax = 17.5 V or 24 V; Imax = 500 mA or 250 mA; Ci ≤ 5 nF; Li ≤ 10 µH; Pmax = 5.5 W or 1.2 W
T12-OVP enclosure Vmax = 17.5 V or 24 V; Imax = 273 mA or 250 mA; Ci ≤ 5 nF; Li ≤ 10 µH; Pmax = 1.2 W

Temperature class with/without display VU331	Permissible max. medium temperature at the probe (process connection) Tmed	Permissible max. ambient temperature of the electronic compartment (Ta)					
		FMR250 (Horn or parabolic antenna) Option 20 (Antenna): 4, 5 or 6			FMR255		
		F12 or T12-OVP housing	F23 housing	F12 or T12-OVP housing	F23 housing	F12 or T12-OVP housing	F23 housing
T6	+ 80 °C + 60 °C	+55/50 °C +60/55 °C	+55/50 °C +60/55 °C	+55/50 °C +60/55 °C	+55/50 °C +60/55 °C	+55/50 °C +60/55 °C	
T5	+ 95 °C + 75 °C	+70/65 °C +75/70 °C	+70/65 °C +75/70 °C	+70/65 °C +75/70 °C	+70/65 °C +75/70 °C	+70/65 °C +75/70 °C	
T4	+130 °C + 80 °C	+75 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+65 °C +80 °C	
T3C (functional) ¹⁾	+150 °C + 80 °C	+73 °C +80 °C	+68 °C +80 °C	+70 °C +80 °C	+68 °C +80 °C	+60 °C +80 °C	
T3	+195 °C + 80 °C	+70 °C +80 °C	+65 °C +80 °C	+65 °C +80 °C	+60 °C +80 °C	---	
T2, T1 (functional) ¹⁾	+200 °C + 80 °C	+70 °C +80 °C	+65 °C +80 °C	+60 °C +80 °C	---	---	

Note: The applicable temperature of probe must be within their specified limits

¹⁾ functional means max. permissible process temperature

²⁾ special version of horn or parabolic reflector dimensions

T6, T5 requires for FF-electronic emerging derating: for ambient; 1st number = PA electronic insert; 2nd number = FF electronic insert e.g. +60/55 °C expression means: Apparatus with PA electronic insert max. ambient at housing = +60 °C; Apparatus with FF electronic insert max. ambient at housing = +55 °C

