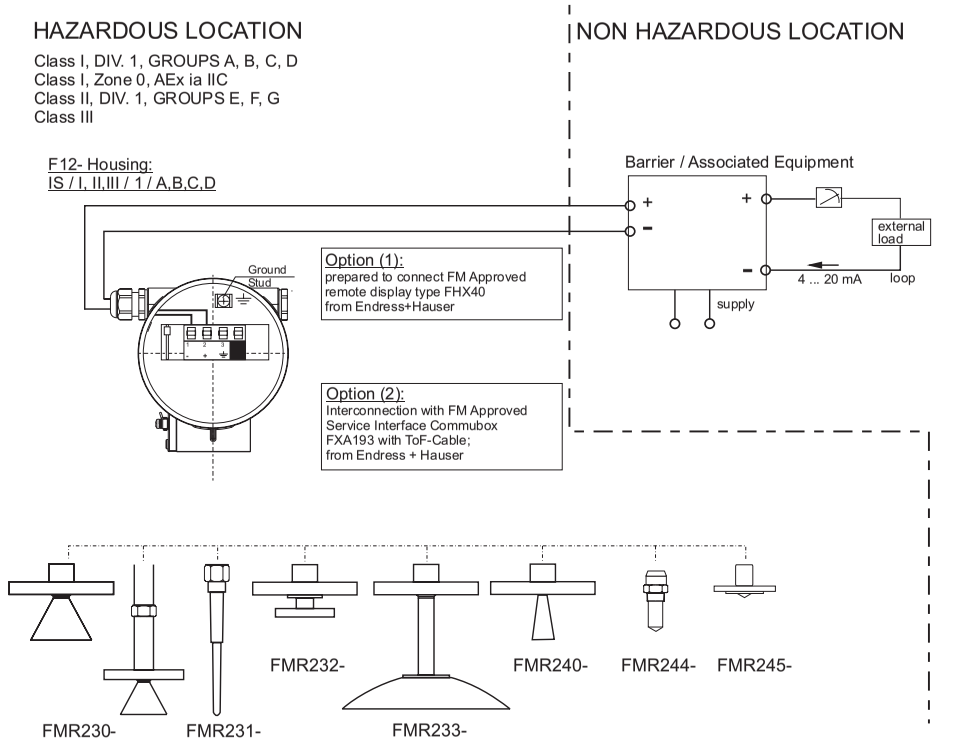
ZD 057F/00/en/03.04/CCS
FM / D

52022263

Control drawing
960402-1087 D

Micropilot M FMR 2xx
F12 ENTITY
PROFIBUS PA or Foundation Fieldbus

Endress + Hauser
The Power of Know How



For Installation acc. -FISCO- Concept see Control dwg. part 960402-1066

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 enclosure -40.... +80°C resp. -40...176°F

Type	Type of antennas	[1] Operation temperature [°C / °F]
FMR230-	Horn antenna with PTFE-Korund feeder	-40 / -40 to +200 / 392
-..F	HT antenna (Tantal gasket)	-40 / -40 to +350 / 662
-..G	HT antenna (Graphite gasket)	-60 / -76 to +400 / 752
	horn antenna with scavenge connection	depends on type
-..L	XT (extended temperature)	-60 / -76 to +280 / 536
-..M	HT (high temperature)	-60 / -76 to +400 / 752
FMR231-	Rod antenna PPS	-20 / -4 to +120 / 250
	Rod antenna PTFE	-40 / -40 to +150 / 300
	Rod antenna PTFE cladded	-40 / -40 to +150 / 300
	Sanitary (process connection)	-40 / -40 to +150 / 300
	PVDF (process connection)	-20 / -4 to +80 / 176
FMR232-	Planar antenna	-40 / -40 to +150 / 300
FMR233-	Parabolic antenna	-40 / -40 to +200 / 392
FMR240-	> 20 GHz horn antenna	-40 / -40 to +150 / 300
	Wave Guide antenna	-40 / -40 to +200 / 392
FMR244-	compact antenna	-40 / -40 to +130 / 266
FMR245-	compact antenna	-40 / -40 to +150 / 302

[1] note: take care to specific temperature ranges of antenna versions

Notes.

INTRINSICALLY SAFE (ENTITY) CLASS I, DIV. 1, GROUP A, B, C, D
HAZARDOUS LOCATION INSTALLATION

1. Control room equipment may not use or generate over 250 Vrms.
2. Use Factory Mutual Entity-Approved intrinsic safety barrier
   with Voc or Vt ≤ Vmax, Isc or It ≤ Imax, Ca ≥ Ci + C cable, La ≥ Li + Lcable
   barrier must be incapable of delivering more than defined value (Pmax.) to a matched load.
   Transmitter entity parameters are as follows:

Vmax.=	17.5V	or 24V
Imax. =	500mA	250mA
Ci ≤	5nF	5nF
Li ≤	10µH	10µH
Pmax. =	5.5W	1.2W

3. Installation should be in accordance with ANSI / ISA RP12.06.01
   Installation of intrinsically safe systems for Hazardous (Classified) locations and the National Electrical code (ANSI / NFPA 70)
4. Warning: Substitution of components may impair intrinsic safety.
5. Intrinsic safty barrier manufacturer´s installation drawing must be followed when installing this equipment.
   The configuration of the intrinsic safety barrier(s) must be FM Approved.
6. Use supply wires suitable for 5 K above surrounding ambient.
7. In case of use of PTFE rod antenna (white), planar, parabolic, enamelled horn, type 244 or type 245 avoid electrostatic charge at the antenna; (e.g. do not rub with dry cloth; do not install within the filling curtain).
8. 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.

NONINCENDIVE, CLASS I, DIV. 2, GROUP A, B, C, D AND DIP. FOR CLASS II AND III, DIV.1, GROUP E, F, G
HAZARDOUS LOCATION INSTALLATION.

1. Install per National Electrical Code (NEC) using threaded metal conduit.
   Intrinsic safety barrier not required.
   Max. supply voltage 30V. For T-code see table.
2. A dust tight seal must be used at the conduit entry when the transmitter is used in a class II & III Location.
3. Warning: Explosion Hazard - do not disconnect equipment unless power has been switched off or the area is known to be Non-Hazardous.
   Warning: Substitution of components may impair suitability for Class I, Division 2.

Temperature class with / without Display VU 331	permissible maximum medium temperature at the antenna		permissible maximum ambient of electronic compartment (Ta) (enclosure F12)									
	process connection (Tmed)	FMR230- ..E/V/K/D/H	FMR230- ..L.....	FMR230- ..M.....	FMR230- ..F/G.....	FMR231	FMR232	FMR233	FMR240	FMR240 Wave Guide Antenna	FMR244	FMR245
T6	+80 °C +60 °C	+55 °C +60 °C	+60 °C +60 °C	+60 °C +60 °C	+60 °C +60 °C	+55 °C +60 °C	+55 °C +60 °C	+55 °C +60 °C	+60 °C +60 °C	+60 °C +60 °C	+60 °C +60 °C	+60 °C +60 °C
T5	+95 °C +75 °C	+70°C +75 °C	+75 °C +75 °C	+75 °C +75 °C	+75 °C +75 °C	+70 °C +75 °C	+70 °C +75 °C	+70 °C +75 °C	+75 °C +75 °C	+75 °C +75 °C	+75 °C +75 °C	+75 °C +75 °C
T4	+130 °C +80 °C	+70 °C +80 °C	+75 °C +80 °C	+75 °C +80 °C	+75 °C +80 °C	+65 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+75 °C +80 °C	+75 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C
T3C (functional)	+150 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+75 °C +80 °C	+70 °C +80 °C	+55 °C +80 °C	+65 °C +80 °C	+60 °C +80 °C	+65 °C +80 °C	+75 °C +80 °C	not allowed	+65 °C +80 °C
T3	+195 °C +80 °C	+60 °C +80 °C	+70 °C +80 °C	+75 °C +80 °C	+70 °C +80 °C	not allowed	not allowed	+60 °C +80 °C	not allowed	+75 °C +80 °C	not allowed	not allowed
T2B (functional)	+250 °C +80 °C	+55 °C +80 °C	+70 °C +80 °C	+70 °C +80 °C	+65 °C +80 °C	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed
T2 (functional)	+280 °C +80 °C	not allowed	+65 °C +80 °C	+70 °C +80 °C	+65 °C +80 °C	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed
T2	+290 °C +80 °C	not allowed	not allowed	+70 °C +80 °C	+65 °C +80 °C	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed
T1 (functional)	+350 °C +80 °C	not allowed	not allowed	+70 °C +80 °C	+60 °C +80 °C	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed
T1 (functional)	+400 °C +80 °C	not allowed	not allowed	+65 °C +80 °C	+55 °C +80 °C	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed	not allowed

note: the applicable temperature of antenna must be within their specified limits
Tx (functional) means limited through type of antenna