

Notes:

DUST IGNITION PROOF
Enclosure zone A21
Ex ia IIB
HAZARDOUS LOCATION INSTALLATION

1. Install per National Electrical Regulations
2. Control room equipment may not use or generate over 250 Vrms.
3. Warning: Keep cover tight when circuit is alive unless the area is known to be non-hazardous.
4. For electronic: maximum ambient temperature = 80°C (functional)
5. Use supply wires suitable for 5 K above surrounding ambient.
6. Use shielded cables for signal and power.
7. Use Entity-Approved intrinsic safety barrier.
8. with V_{oc} or $V_L \leq V_{max}$, I_{sc} or $I_L \leq I_{max}$, $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$
9. Transmitter entity parameters are shown in table below:
10. Probes made out of special materials like Alloy C22 marked as FMP40-1..... or FMP40-2..... should be used only in liquids or lightweight solids (e.g. plastic granulate, fly-ash, ...)
11. Maximum permissible tensile force at the rope or rod 2000 N.
12. Maximum temperature for Zone A21 = 80°C.
13. max probe length and non-hazardous condition refer Technical Information
14. max. Enclosure temperature for T6: $T_{amb} = 70 \text{ grd C}$

Transmitter entity parameters are as follows:
2 wire (4...20 mA HART): $V_{max} = 30V$; $I_{max} = 300mA$; $C_i \leq 13nF$; $L_i = 0 \mu H$; $P_{max} = 1Watt$
2 wire (Profibus PA or Foundation Fieldbus):
 $V_{max} = 17.5V$ or $24V$
 $I_{max} = 500mA$
 $C_i \leq 5nF$
 $L_i \leq 10\mu H$
 $P_{max} = 5.5W$ or $1.2W$

4 wire

Electrical data		
Supply circuit	AC	DC
voltage version	90...253 VAC 50/60 Hz	10.5...32 VDC
supply voltage	3.5 VA	1 W
max. power	250 VAC	250 VAC
$U_{int} =$		
Signal circuit intrinsically safe: AEx ia IIB resp. AEx ia IIB		
for active associated apparatus		
for passive associated apparatus		

FMP40... as version:	active	passive
$V_{oc} = 21.4 V$	$V_{oc} = 21.4 V$	$V_{oc} = 30 V$
$I_{sc} = 237.48 mA$	$I_{sc} = 237.48 mA$	$I_{sc} = 300 mA$
$R_i = 17.1 \Omega$	$R_i = 17.1 \Omega$	$R_i = 17.1 \Omega$
$R_L \geq 8.7 \Omega$	$R_L \geq 8.7 \Omega$	$R_L \geq 8.7 \Omega$
"internal inductance"	$L_i = 0 \mu H$	$L_i = 2 mH$
"internal capacitance"	$C_i = 10 nF$	$C_i = 10 nF$
"permissible external capacitance @ for circuitry of category „Ia“"	$L_a = 0.15 mH$ $C_a \leq 570 nF$ $L_a = 1 mH$ $C_a \leq 840 nF$	$C_a \leq 1 \mu F$ $C_a \leq 810 nF$
"permissible external capacitance @ for circuitry of category „Ib“"	$L_a = 3 mH$ $C_a = 122 \mu F$	n.a.
Note to "a"		
if the signal circuitry (active or passive) is installed in Zone 21 or Zone 22 and if the electrical conditions are not hazardous, the capacitors and inductances for internal and permissible external inductances and capacitances need not to be considered. The measures for energy limitation via intrinsic safety (Ia or Ib, in respect of usage) are unaffected.		

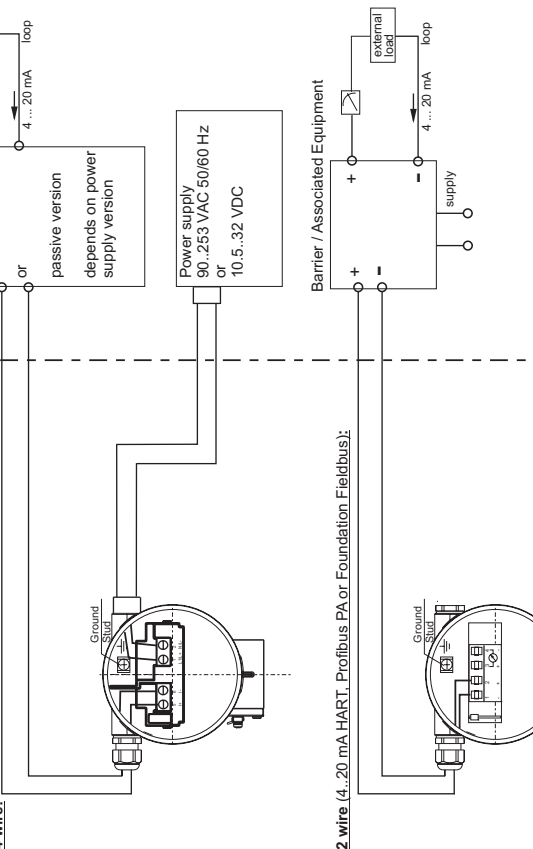
Thermal Data:
maximum surface temperature of electronic housing (F12) $\leq 115 \text{ } ^\circ C$ (thermal fused inside)

HAZARDOUS LOCATION

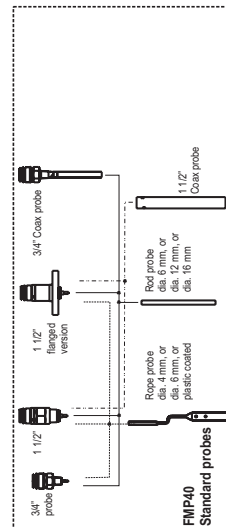
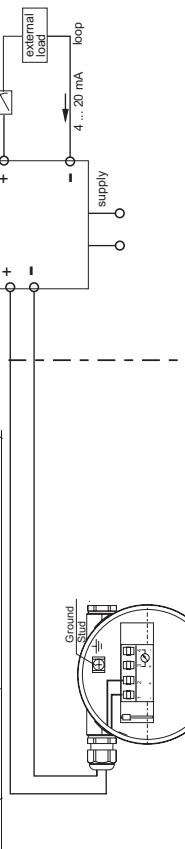
Enclosure: DIP A21 T6 ($T_{amb} = 70 \text{ grd C}$) IP66
Probe: DIP A20 T6 ($T_{amb} = 80 \text{ grd C}$)

F12-Housing:
Output intrinsically safe suitable for: Zone 0, Ex ia IIB

4 wire:



2 wire (4...20 mA HART, Profibus PA or Foundation Fieldbus):



Area of application for non-hazardous locations

Electronic: F12 enclosure
Probes: FMP40
-40...+80°C resp. -40...176°F
refer Technical Information

FMP40		permissible maximum ambient of electronic compartment (T _a)	
temperature with / head Display VU 331	process connection T _{med}	with FMP40 with 3/4" probe, compact with distance tube	with FMP40 with 1 1/2" probe, compact with distance tube
+80 °C	+80 °C	80 °C	80 °C
+75 °C	+75 °C	75 °C	75 °C
+70 °C	+70 °C	70 °C	70 °C
+65 °C	+65 °C	65 °C	65 °C

note: the applicable temperature of probe must be within their specified limits



Certification of
EXPLOSION PROTECTED ELECTRICAL EQUIPMENT
AUSEx Scheme

Certificate of Conformity

Certificate No: AUS Ex 03.3916X **Issue 0:** 28/07/2003
Issue 2: 1/12/2004

Date of Expiry: 31/12/2006

Certificate Holder: Endress & Hauser Australia Pty Ltd
Unit 12, 277 Lane Cove Road
NORTH RYDE NSW 2113

Electrical Equipment: Levelflex M FMP40

Type of Protection: DIP

Marking Code: Enclosure: DIP A21 T_A T6 (T_{amb}=70 °C) IP66
Probe: DIP A20 T_A T6 (T_{amb}=80 °C)
AUS Ex 03.3916X

Manufactured By: Endress & Hauser GmbH+Co.KG
1 Hauptstrasse, Maulburg
D-79689
Germany

Issued by:



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Certification of EXPLOSION PROTECTED ELECTRICAL EQUIPMENT AUSEx Scheme

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP69 and the Procedure (Doc Q7134) of the scheme.

The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:

AS/NZS 61241.1.1:1999 Electrical apparatus for use in the presence of combustible dust – Part 1.1: Electrical apparatus protected by enclosures and surface temperature limitation – Specification for apparatus
AS 1939-1990 Degrees of protection provided by enclosures of electrical equipment (IP Code)

This certificate does not ensure compliance with electrical safety requirements and performance other than those included in the Standards listed above.

The equipment listed successfully met the examination and test requirements as recorded in

Test Report No: TestSafe 25881

File Reference: TestSafe 2004/025561

Ajay maia
Signed for and on behalf of issuing authority
A / Quality & Certification Manager
Position
1/12/2004
Date of Issue

Ex 03.3916X-2

This certificate and schedule may not be reproduced except in full.

This certificate is not transferable and remains the property of the issuing body to whom it must be returned in the event of it being revoked or not renewed.

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Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

AUSEx Scheme

Schedule

Certificate No: AUS Ex 03.3916X

Issue: 2

Date of Issue: 1/12/2004

Certified Equipment:

The Levelflex M FMP40 is a level meter used for solids and liquids. It is mounted on top of the vessel and uses a HF impulse that is guided down the vessel by its probe (or rod). The dielectric change through the medium results in partial reflection of the wave that determines the level of the measured quantity.

The captured signal representing the measured level is converted to a representative current loop signal.

The DIP protected Levelflex M FMP40 may be a two wire or a four wire fitted in an F12 enclosure.

The Levelflex M FMP40 enclosure is made out of aluminium containing by weight less than 6 % in total of magnesium and titanium.

The enclosure is fitted with two cable entries, a screw on cover and a probe. The cover is fitted with an o-ring and may be also be fitted with a cemented glass window. One of the cable entries is provided with a plug fitted with an o-ring in case a second cable entry is not used. The probe is mounted to the enclosure by means of a spigot joint fitted with an 'o'-ring and locked in place by means of two Allen screws one internal to the enclosure and one external. The probe assembly may be a 1-½ inch or a ¾ inch connected to 6 mm or 4 mm diameter rope respectively. The length of the probe assembly varies and may be up to 70 m. The rope is terminated in a weight to help its suspension.

All O-rings have a temperature rating exceeding the apparatus maximum operating temperature by more than 20 °C.

Conditions of Certification:

1. It is a condition of manufacture that the routine verification and tests necessary to ensure that the electrical apparatus produced complies with the specification submitted to the testing station together with the prototype or sample.
2. It is a condition of safe use that only suitable Standards Australia certified cable glands and blanking plugs are to be used.

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EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

AUSEx Scheme

Addendum to Certificate No. Ex 03.3916X-2

Conditions of Certification (continued):

- 3 It is a condition of safe use that only the probe may be used in zone A20 in ambient temperatures of up to 80 °C.
- 4 It is a condition of safe use that the apparatus cover must not be opened in the presence of dust unless de-energised.
- 5 It is a condition of safe use that the apparatus maximum power input is limited to 5.5 W.

Drawing Schedule			
Drawing No	Drawing Title	Issue	Date
943965-0000-B	Schauglass 100x4	B	26/10/2001
960409-0003-A	Enclosure F12	A	20/06/2001
960409-0030-A	Probe Levelflex M 3/4" (liquid)	A	22/06/2001
960409-0031-A	Gehäuse Adapter 3/4" Levelflex M (liquid)	A	22/06/2001
960409-0032-A	Insulation Sleeve (liquid)	A	22/08/2001
960409-0033-A	Disc 3/4" (liquid + coax)	A	22/08/2001
960409-0036-A	Gasket 3/4" (liquid)	A	22/08/2001
960409-0037-A	Probe Levelflex 3/4" Coax	A	17/08/2001
960409-0038-A	Enclosure Adaptor 3/4" Coax	A	17/08/2001
960409-0039-A	Sondenaufnahme 3/4" Seil 4mm	A	22/08/2001
960409-0041-A	Insulation sleeve 3/4" Koax	A	17/08/2001
960409-0042-A	Probe assy 3/4" coax	A	22/08/2001
960409-0043-A	Nut (Coax) 3/4"	A	17/08/2001
960409-0044-A	Distance holder (coax) 3/4"	A	17/08/2001
960409-0045-A	Rod, probe 6mm	A	22/08/2001
960409-0046-A	Probe Levelflex M 1 1/2"	A	23/06/2001
960409-0047-A	Adapter, Process 1 1/2"	A	23/06/2001
960409-0048-A	Adaptor enclosure 1 1/2"	A	23/06/2001
960409-0049-A	Insulation Sleeve 1 1/2"	A	23/08/2001
960409-0050-A	Disc, Cone 1 1/2"	A	23/08/2001
960409-0051-A	Probe Assembly 1 1/2"	A	23/08/2001
960409-0052-A	Distance Holder 1 1/2"	A	19/10/2001
960409-0053-A	Sondenaufnahme, Seil 1 1/2" D=6	A	23/08/2001
960409-0054-A	Sondenaufnahme, Seil 1 1/2" D=4	A	23/08/2001
960409-0055-A	Rod, Probe	A	23/08/2001
960409-0056-A	Plug, (puls) HF	A	23/08/2001
960409-0057-A	Gasket, Cone 1 1/2"	A	23/08/2001

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**Certification of
Explosion Protected Electrical
Equipment
Australia (Test Safe)**
Levelflex M FMP40

Endress+Hauser 
People for Process Automation

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

AUSEx Scheme

Addendum to Certificate No. Ex 03.3916X-2

Drawing Schedule (continued)

Drawing No	Drawing Title	Issue	Date
960409-0058-A	Tightening piece 1 1/2"	A	19/10/2001
960409-0059-A	Sonde Levelflex M Flanschversion	A	22/08/2001
960409-0060-A	Adapter Flansch Levelflex M	A	22/08/2001
960409-0071-A	Probe assy 3/4" rod	A	23/08/2001
960409-0072-A	Probe assy. 3/4"	A	19/10/2001
960409-0073-A	Counter nut 3/4" probe	A	19/10/2001
960409-0074-A	Kontermutter 1 1/2" Counter nut	A	19/10/2001
960409-0075-A	Weight FMP 40	A	19/10/2001
960409-0081-A	Levelflex M gasket materials	A	28/03/2002
960409-8076 A	Nameplate FMP 40 SAA	A	01/07/2003

Schedule of Variations

Variations Permitted by Issue 1:

- The length of the probe assembly given in the "Certified Equipment" description of the original certificate was changed from up to 20 m to up to 35 m. This change does not adversely affect the assessment or testing of the apparatus.
- Rewriting of the second condition of safe use to bring it in line with clause 3.1.10 "Cable and Conduit Entries" of TestSafe test reports 24112 and 24112A.

Conditions of Certification Permitted by Issue 1:

- The Conditions of Certification remain the same as Issue 0 of this Certificate except condition 2.
- It is a condition of safe use that only Endress & Hauser provided blanking plugs or suitable Standards Australia certified blanking plugs and cable glands are to be used.

Variations Permitted by Issue 2:

- The length of the probe assembly given in the "Certified Equipment" description of the original certificate was changed from up to 35 m to up to 70 m.
- Addition of an alternative, new terminal module for a supply voltage of 10.5 V to 32 V DC.
- The use an alternative insulation sleeve used in the probe assembly.

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AUSEx Scheme

Addendum to Certificate No. Ex 03.3916X-2

Variations Permitted by Issue 2 (continued):

4. Addition of a new gasket material to the range of gasket materials that may be used.
5. Minor modification to the internal construction of the HF plug connecting to the probe assembly.
6. Modification to the marking layout of the marking label.

Conditions of Certification Permitted by Issue 2:

The Conditions of Certification remain the same as those of issue 0 and 1 of this Certificate.

Drawing Schedule Relating to Issue 2

Drawing No	Drawing Title	Issue	Date
960005744-C	Plug, (puls) HF	C	29/07/2004
960005739-B	Probe Levelflex M 1 1/2"	B	23/11/2004
960409-0049-B	Insulation Sleeve 1 1/2"	B	19/11/2003
960409-0081 B	Levelflex M gasket materials	B	24/04/2003
960409-8076 C	Nameplate FMP 40 SAA	C	04/10/2004

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