



FM Approvals
1151 Boston-Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA
T: 781 762 4300 F: 781 762 9375 www.fmglobal.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

LVL-M1(H)- ab-cde-f Vibrating Limit Switch Vibracon (compact version).

IS / I,II,III / 1 / ABCDEFG / T5 Ta = 70°C; I / 0 / AEx ia IIC T5 Ta = 70°C; Entity — 16-425FM-12; Type 4X
FEL55 Insert:

Vmax = 36 V, Imax = 100 mA, Pi = 1.0 W, Ci = 0, Li = 0.

FEL56 and FEL 58 Insert:

Vmax = 16 V, Imax = 52 mA, Pi = 169 mW, Ci = 0, Li = 0.

NI / I / 2 / ABCD / T5 Ta = 70°C; S / II,III / 2 / FG / T5 Ta = 70°C; Type 4X

- a = Process connection and material: Any combination of three numbers or letters representing industry standard (DIN, ANSI, JIS) threaded bosses and standard flanges for flange, steel, stainless steel and Hastelloy.
- b = Double letter or number representing compact version, compact version with temperature spacer, compact version with gas/pressure tight bushing and surface roughness of medium touching parts.
- c = Enclosure and cable entry: P2 (plastic, NPT 1/2), A2 (Alum, NPT 3/4) or E2 (stainless steel, NPT 1/2), C2 (slim housing NAMUR 316L NPT 1/2"-plug), C6 (slim housing NAMUR 316L PG11-plug) or C4 (slim housing NAMUR 316L M12x1-plug)
- d = Electronic inserts for Div. 1 (f = FI): SI (FEL55), N1 (FEL56) or N2 (FEL58).
- d = Electronic inserts for Div. 2 (f = FN): AC (FEL51), E5 (FEL52), WA (FEL 54), SI (FEL55), N1 (FEL56) or N2 (FEL 58).
- e = Additional Options: Z3 or NA (without additional options)
- f = FM Approval: FI (Div. 1) or FN (Div. 2).

LVL-M2(H)- ab-cde-f Vibrating Limit Switch Vibracon (extended version with lengthening tube).

IS / I,II,III / 1 / ABCDEFG / T5 Ta = 70°C; I / 0 / AEx ia IIC T5 Ta = 70°C; Entity — 16-425FM-12; Type 4X
FEL55 Insert:

Vmax = 36 V, Imax = 100 mA, Pi = 1.0 W, Ci = 0, Li = 0.

FEL56 and FEL 58 Insert:

Vmax = 16 V, Imax = 52 mA, Pi = 169 mW, Ci = 0, Li = 0.

NI / I / 2 / ABCD / T5 Ta = 70°C; S / II,III / 2 / FG / T5 Ta = 70°C; Type 4X

- a = Process connection and material: Any combination of three numbers or letters representing industry standard (DIN, ANSI, JIS) threaded bosses and standard flanges for flange, steel, stainless steel and Hastelloy.
- b = Double letter or number representing length and material of lengthening tube up to 3000mm, version with temperature spacer, version with gas/pressure tight bushing and surface roughness of medium touching parts.
- c = Enclosure and cable entry: P2 (plastic, NPT 1/2), A2 (Alum, NPT 3/4) or E2 (stainless steel, NPT 1/2), C2 (slim housing NAMUR 316L NPT 1/2"-plug), C6 (slim housing NAMUR 316L PG11-plug) or

- C4 (slim housing NAMUR 316L M12x1-plug).
- d = Electronic inserts for Div. 1 (f = FI): SI (FEL55), N1 (FEL56) or N2 (FEL58).
- d = Electronic inserts for Div. 2 (f = FN): AC (FEL51), E5 (FEL52), WA (FEL 54), SI (FEL55), N1 (FEL56) or N2 (FEL 58).
- e = Additional Options: Z3 or NA (without additional options)
- f = FM Approval: FI (Div. 1) or FN (Div. 2).

LVL-M2C- abc-def-g Vibrating Limit Switch Vibracon (coated version with lengthening tube).

IS / I,II,III / 1 / ABCDEFG / T5 Ta = 70°C; I / 0 / AEx ia IIC T5 Ta = 70°C; Entity —16-425FM-12; Type 4X FEL55 Insert:

Vmax = 36 V, Imax = 100 mA, Pi = 1.0 W, Ci = 0, Li = 0.

FEL56 and FEL 58 Insert:

Vmax = 16 V, Imax = 52 mA, Pi = 169 mW, Ci = 0, Li = 0.

NI / I / 2 / ABCD / T5 Ta = 70°C; S / II,III / 2 / FG / T5 Ta = 70°C; Type 4X

- a = Process connection and material: Any combination of three numbers or letters representing industry standard (DIN, ANSI, JIS) threaded bosses and standard flanges for flange, steel, stainless steel and Hastelloy.
- b = Double letter or number representing length and material of lengthening tube up to 3000mm, version with temperature spacer, version with gas/pressure tight bushing (Second Line of Defense).
- c = Pressure tight bushing: B, C, Y or A(without a pressure tight bushing)
- d = Enclosure and cable entry: P2 (plastic, NPT 1/2), A2 (Alum, NPT 3/4) or E2 (stainless steel, NPT 1/2), C2 (slim housing NAMUR 316L NPT 1/2"-plug), C6 (slim housing NAMUR 316L PG11-plug) or C4 (slim housing NAMUR 316L M12x1-plug)
- e = Electronic inserts for Div. 1 (g = FI): SI (FEL55), N1 (FEL56) or N2 (FEL58).
- e = Electronic inserts for Div. 2 (g = FN): AC (FEL51), E5 (FEL52), WA (FEL 54), SI (FEL55), N1 (FEL56) or N2 (FEL 58).
- f = Additional Options: ZD or NA (without additional options)
- g = FM Approval: FI (Div. 1) or FN (Div. 2)

Equipment Ratings:

Intrinsically safe for Class I, II and III, Division 1, Group A, B, C, D, E, F and G, T5 Ta = 70°C; alternatively intrinsically safe for Class I, Zone 0, Group IIC T5 Ta = 70°C in accordance with entity requirements when installed per Installation Drawing 16-425FM-12; nonincendive for Class I, Division 2, Group A, B, C, D, T5 Ta = 70°C; Suitable for Class II, III, Division 2, Group F and G, T5 Ta = 70°C hazardous outdoor (Type 4X) locations.

Approved for:

Pepperl+Fuchs GmbH
 Königsberger Allee 87
 D-68307 Mannheim
 Germany



This certifies that the equipment described has been found to comply with the following FM Approval Standards and other documents:

Class 3600	1998
Class 3610	1999
Class 3611	1999
Class 3810	1989
Class 3810 Supplement #1	1995

Original Project ID: 3013193

FM Approval Granted: June 10, 2002

Subsequent Revision Reports / Date FM Approval Amended

Report Number	Date	Report Number	Date
040604	July 14, 2004		

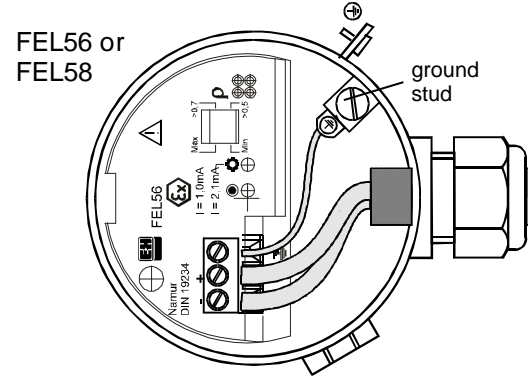
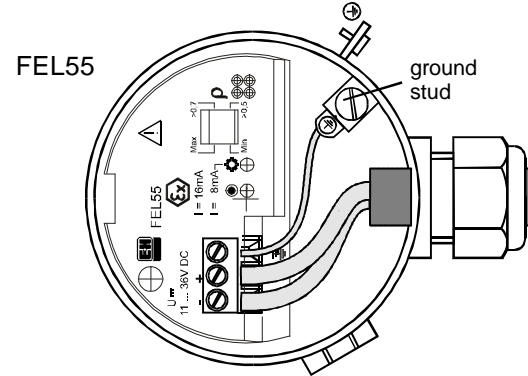
FM Global Technologies LLC

Robert L. Martell, Jr.
Assistant Vice President
FM Approvals

9-20-04
Date

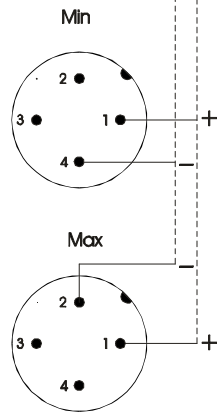
Hazardous location

Class I, Div.1, Groups A, B, C, D
 Class I, Zone 0, A Ex ia IIC T5
 Class II, Div.1, Groups E, F, G
 Class III

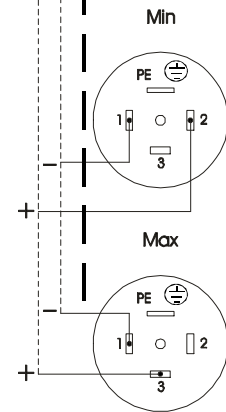


NAMUR slim housing

Namur M12

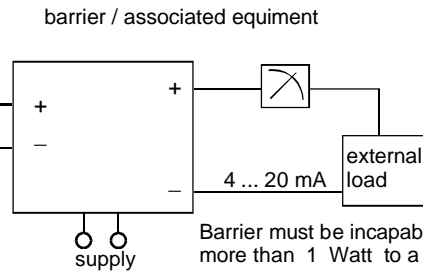


Namur Ventil

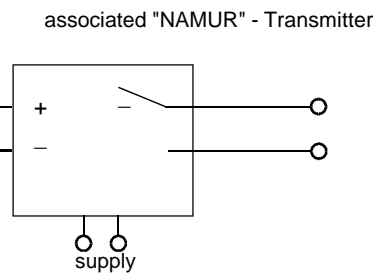


note: the applicable temperature of probe must be within their specified limits

Non hazardous location



FEL55 electronic module:
 Entity Parameters:
 $V_{max} \leq 36V$
 $I_{max} \leq 100mA$
 $P_i \leq 1W$
 $C_i \approx 0$
 $L_i \approx 0$



FEL56/FEL58 electronic module+
 NAMUR slim housing
 Entity Parameter:
 $V_{max} \leq 16V$
 $I_{max} \leq 52mA$
 $P_i \leq 169mW$
 $C_i \approx 0$
 $L_i \approx 0$

Intrinsically safe (entity), Class I, Div.1, Group A,B,C,D Hazardous Location Installations

1. Control room equipment may not use or generate over 250 V
2. Use FM Approvals Entity-approved intrinsic safety barrier with V_{oc} or $V_t \leq V_{max}$, I_{sc} or $I_t \leq I_{max}$, $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$
3. Installation should be in accordance with ANSI/ ISA RP 12.06.01 „ 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 safety 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°C above surrounding ambient.

Nonincendive Class I, Div.2, group A,B,C,D and suitable for Class II and III, Div.2 Group F,G Hazardous Location Installation

1. Install per National Electrical Code (NEC) using threaded metal conduit.
 Intrinsic safety barrier not required
 max. supply voltage 45 VDC
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, Div.2

Stempel der Zertifizierungsstelle

Firmenstempel

Seal of the notified body

company seal

Dieses Dokument enthält sicherheitstechnische Angaben. Es darf nicht ohne Absprache mit dem Normenfachmann geändert werden!

This document contains safety-relevant information. It must not be altered without the authorization of the norm expert!

CONFIDENTIAL acc. to ISO 16016		scale:	date: 2004-May-26
Mannheim	Control drawing	respons.	16-425FM-12 a
	Vibracon LVL-M* (H)	approved	
		norm	

CONFIDENTIAL