CERTIFICATE OF COMPLIANCE

Certificate Number	20141028-E466388
Report Reference	E466388-20100730
Issue Date	2014-OCTOBER-28
Issued to:	ENDRESS+HAUSER FLOWTEC AG KAEGENSTR 7 CH-4153 REINACH BL1 SWITZERLAND
This is to certify that representative samples of	TELEMETERING EQUIPMENT FOR USE IN HAZARDOUS LOCATIONS TELEMETERING EQUIPMENT FOR USE IN ZONE CLASSIFIED HAZARDOUS LOCATIONS Refer to addendum page for Models/Product Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	Refer to addendum page for Standard(s) for Safety
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services

UL LLC

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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Models/Product

USL, CNL – Class I, Groups A, B, C, and D Hazardous Locations.
USL - Class I, Zone 0, AEx ia IIC Hazardous Locations,
CNL - Class I, Zone 0, Ex ia IIC Hazardous Locations.

Nanomass Density Meter, models DCDB or DCEB, followed by 2 alphanumerical characters, followed by FA, or 8A, followed by 1 alphanumeric character, followed by A, B, C, or D, followed by alphanumeric characters. Intrinsically safe when installed per Control Drawing No. FES0237A (for RS232 option), FES0238A (for USB option), as applicable.

Standard(s) for Safety

Standard No. UL 913 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations
Standard No. UL 60079-0 - Electrical Apparatus for Explosive Gas Atmospheres – Part 0: General Requirements
Standard No. UL 60079-11 - Electrical Apparatus for Explosive Gas Atmospheres – Part 11: Intrinsic Safety “i”
Standard No. CAN/CSA C22.2 No. 157-92 - Intrinsically Safe and Non-incendive Equipment for Use in Hazardous Locations
Standard No. CAN/CSA-C22.2 NO. 60079-0:11 - Electrical apparatus for explosive gas atmospheres – Part 0: General requirements
Standard No. CAN/CSA-C22.2 NO. 60079-11:11 - Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety "i"

Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services

UL LLC

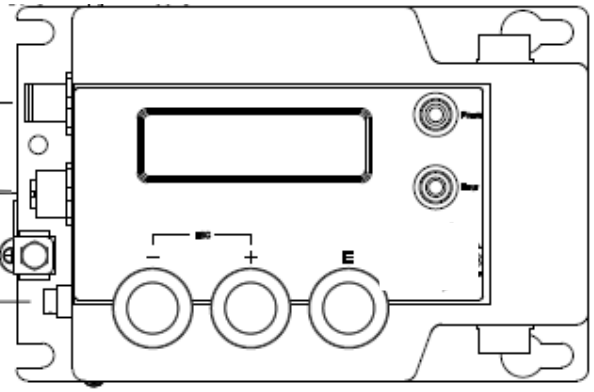
Non Hazardous Location

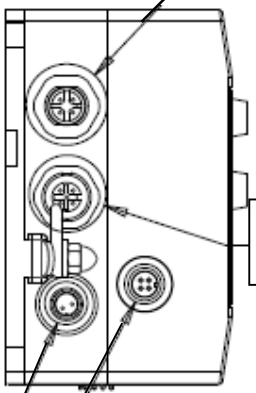
Hazardous (Classified) Location
Class I, Division 1, Groups A,B,C,D
Class I, Zone 0, Goup IIC T4
-20 °C ≤ Ta ≤ +60 °C

Any Third Party Listed Barrier or Associated Apparatus

Any Third Party Listed Barrier or Associated Apparatus

Any Third Party Listed Barrier or Associated Apparatus



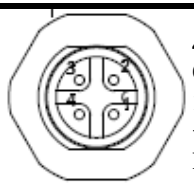


4-20 mA connector

RS232 connector

Power connector

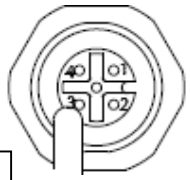
External sensor connector



4-20 mA connector

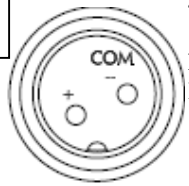
Channel 1	Channel 2
1, 2	3.4

+ - or - +, polarity insensitive
Passive

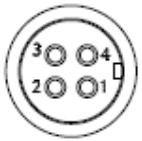


RS232 connector

		For reference DB9 connector pins
1	Common	5
2	Txout	2
3	Rxin	3
4	Shield	Shield



Power connector
DC 8 – 30 V



External sensor connector

Pins	Pressure	Temperature
1	+ 5VDCout power	Iout
2	V+ (0-4.5 VDC) signal in	V+
3	V- (0 VDC) signal in	V-
4	Ground	Ireturn

Connect simple apparatus
- Or Endress+Hauser PN UC2 – T3C sensor - cable length max. 100 ft
- Or Entity parameters: Uo=5.88 V, Io=400 mA, Po=0.6 W, Co=41000 nF, Lo=20 µH

Po = (Io * Uo) / 4

Notes: Intrinsically safe installation Class I, Division 1, Gps ABCD

1. Associated apparatus must be installed in accordance with its manufacturer's control drawings and
   - the National Electrical Code (ANSI/NFPA 70) for installations in the United States
   - the Canadian Electrical Code for installations in Canada
2. Use entity approved safety barrier or other associated equipment that satisfies the following conditions:
   V_{oc}, V_t or $U_o \le V_{max}$ or U_i and I_{sc}, I_t or $I_o \le I_{max}$ or I_i and P_o or $P_{max} \le P_i$ and $C_o \ge C_i + C_{cable}$ and $L_o \ge L_i + L_{cable}$
   Where C_{cable} and L_{cable} are not know the following parameters shall be used: C_{cable}=60 pF/foot, L_{cable}=200 nH/foot
3. 4-20 mA circuits should be separated by individually grounded shields.
4. No user replacable parts inside
5. Associated apparatus output current must be limited by a resistor such that the output voltage-current plot has a linear characteristic.
6. Warning: Disconnect power before servicing.
   Warning: The apparatus enclosure contains aluminium. Care must be taken to avoid ignition hazards due to impact or friction.

Entity Parameters

	V_{max}, U_i	I_{max}, I_i	P_i	C_i	L_i
Power	30 V	300 mA	1.1 W	55 nF	0.22 mH
RS 232	15 V	90 mA	1.1 W	700 nF	1 mH
4–20 mA	30 V	320 mA	1.1 W	48 nF	0.15 mH

Aenderungen:					Mat. No. 71300736
	A	04.07.2014 / utz	F		
	B		G		Ersteller: FES / utz
	C		H		
	D		J		FILE: M:\ZEICHNG\FES0237\A\FES0237A.doc
	E		K		

UL Control Drawing
Entity Concept Class I Division 1

Nanomass, RS232 version

Gezeichnet	04.07.2014	utz
Geprüft		
Ex-geprüft	04.07.2014	utz
Gesehen		

Endress+Hauser

Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0237 A 1/1