



Certificate of Compliance

Certificate: 1715837 (LR 82598)

Master Contract: 160686

Project: 2567320

Date Issued: November 5, 2012

Issued to: Endress + Hauser Flowtec AG

Kagenstrasse 7
Reinach, Basel Land 4153
Switzerland
Attention: Utz Dette

The products listed below are eligible to bear the CSA Mark shown



Aisha Sreenath

Issued by: Aisha Sreenath

PRODUCTS

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non - Incendive Systems - For Hazardous Locations

Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; Type 4X:

• Proline T-mass 6*F** and T-mass 6*I Thermal Mass Flowmeter. Input rated 16-62Vdc, 8W, 20-55Vac, 14VA or 85-260Vac, 50/60Hz, 18.2VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Explosion-proof with Intrinsically Safe sensor and signal output circuits per Control Drawing FES0098. Temperature Code T4 - T1; T6 for Remote transmitter. MWP for T-mass*F = 40 bar; for T-mass*I = 20 bar. Dual Seal Device. Ambient Temperature -40 °C to +60 °C.

Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III; Type 4X:

• Proline T-mass 6*F** and T-mass 6*I Thermal Mass Flowmeter. Input rated 16-62Vdc, 8W, 20-55Vac, 14VA or 85-260Vac, 50/60Hz, 18.2VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Explosion-proof with Intrinsically Safe sensor and signal output circuits per Control Drawing FES0098. FACTORY SEALED. Temperature Code T4 - T1; T6 for Remote transmitter. MWP for T-mass*F = 40 bar; for T-mass*I = 20 bar. Dual Seal Device. Ambient Temperature -40 °C to +60 °C.

Class I, Division 2, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; Type 4X:



Certificate: 1715837 (LR 82598)

Master Contract: 160686

Project: 2567320

Date Issued: November 5, 2012

• Proline T-mass 6*F** and T-mass 6*I Thermal Mass Flowmeter. Input rated 16-62Vdc, 8W, 20-55Vac, 14VA or 85-260Vac, 50/60Hz, 18.2VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Non-incendive sensor and signal output circuits per Control Drawing FES0099. Temperature Code T4 – T1; T4 for Remote transmitter. Ambient Temperature -40 °C to +60 °C.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-M91 - General Requirements - Canadian Electrical Code, Part II

CSA Std C22.2 No. 25-1966 - Enclosures for Use in Class II, Groups E, F and G Hazardous Locations

CSA Std C22.2 No. 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations

CAN/CSA-C22.2 No. 94-M91 - Special Purpose Enclosures

CSA Std C22.2 No. 142-M1987 - Process Control Equipment

CAN/CSA-C22.2 No. 157-92 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations

CSA Std C22.2 No. 213-M1987 - Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

ANSI/ISA-12.27.01-2003 - Requirements for Process Sealing Between Electrical Systems And Flammable or Combustible Process Fluids.



Supplement to Certificate of Compliance

Certificate: 1715837

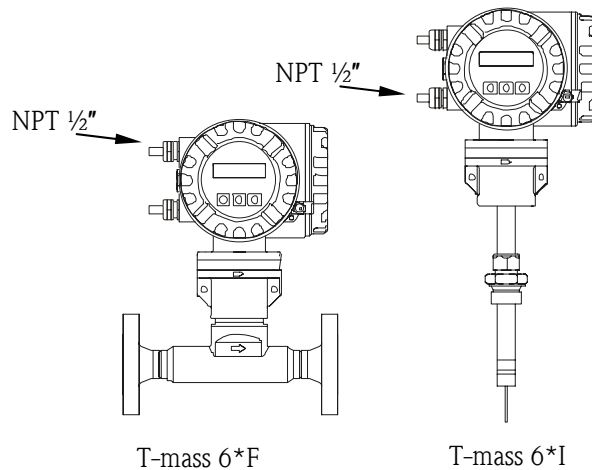
Master Contract: 160686

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
2567320	November 5, 2012	Update to cover minor revision to connector pin assignment on Control Drawing.
2245174	January 18, 2010	Update to cover minor alternative constructions.
1880962	April 4, 2007	Update to include alt. commodul C14, include Dual Seal Device marking, minor alt. and report revisions.
1849487	November 22, 2006	Update to cover alternative sensors feed-through
1739717	December 14, 2005	Correct Product Description from Magnetic Flowmeter to Thermal Mass Flowmeter
1715837	November 18, 2005	Proline Thermal Flow System for CSA Certification to I.S. Explosion-Proof & Div. 2 Installation-Similar to Promass 8x

Hazardous Locations
Class I Division 1 Groups ABCD or Class I Zone 1 Groups IIC
and Class II and III Division 1 Groups EFG



WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

Notes:

- Control room equipment shall not use or generate more than 250 V rms.
- Caution: Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C / 176°F.
- Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F.
- Transmitter enclosure PROline G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II, Div. 1 Groups E, F, G, Class III.
- Transmitter enclosure PROline G02 is factory sealed for use in Cl. I Div. 1 Groups B, C, D only. A conduit seal is not required.
- Sensor circuits intrinsically safe for Cl. I, II, III Div.1 Gps. A, B, C, D, E, F, G
- Install per Canadian Electrical Code.
- Sensors T-mass 6* F and T-mass 6* I for Class I / Zone 1 are Dual Seal devices in accordance with ANSI/ISA-12.27.01-2003.
- The service interface FXA 193 can be connected to the service port of T-mass 6* F/I if the area is known to be non-hazardous. A hazardous atmosphere may be present only inside the measuring tube.

Temperature table	max. medium temperature [°C]					
	T6	T5	T4	T3	T2	T1
Ta = 55 °C						
T-mass F	—	—	80	80	100	100
Ta = 60 °C:						
T-mass F	—	—	80	80	80	80
T-mass I	—	—	80	80	130	130

The ambient temperature range depends the version . It is either from -20°C ... +60°C or from -40°C ... +60°C (see your nameplate).

The medium temperature range depends the process gaskets:

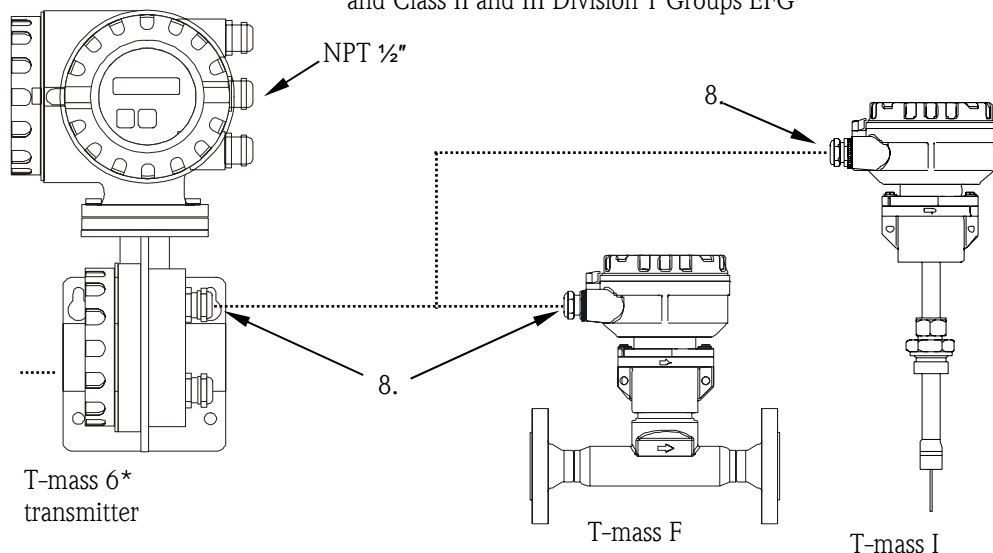
Device	Gasket material	Medium temperature range
T-mass F	Viton	-20 °C ... +100 °C
	Kalrez	-20 °C ... +100 °C
	EPDM	-40 °C ... +100 °C
T-mass I	None	-40 °C ... +130 °C
	Nitril	-35 °C ... +130 °C
	Kalrez	-20 °C ... +130 °C
	EPDM	-40 °C ... +130 °C

Communication Options	Control Drawing
I/O option = F, H	see FES 0098 - 0001
I/O option = G, K	see FES 0098 - 0002
I/O option = S, T	see FES 0098 - 0004
I/O option = R, U	see FES 0098 - 0005

Änderungen:	A	23.03.07/BDA	F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr.: 71040758 Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc			
	B		G						
	C		H						
	D		J						
	E		K						
CSA Control Drawing Div. 1 / Zone 1						Masstab	Gezeichnet	05.08.2005	UD
Class I Zone 1							Geprüft		
Compact Version							Ex-geprüft	23.03.2007	BDA
T-mass 6* F / I							Gesehen		
 Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach						FES0098 A 1/2			

Hazardous Locations

Class I Division 1 Groups ABCD or Class I Zone 1 Groups IIC
and Class II and III Division 1 Groups EFG



Notes:

- Control room equipment shall not use or generate more than 250 V rms.
- Caution: Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C / 176°F.
- Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F.
- Transmitter enclosure PROline G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II, III Div. 1 Groups E, F, G
- Transmitter enclosure PROline G02 is factory sealed for use in Cl. I Div. 1 Groups B, C, D only. A conduit seal is not required.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Gps A, B, C, D, E, F, G
- Intrinsically safe field wiring when installed with a cable not exceeding the following cable parameters: $L_C = 900 \mu\text{H}$ per km and $C_C = 1000 \text{ nF}$ per km. The maximum allowed cable length is 100 m.
- Allowed cable glands: NPT 1/2", G 1/2", M20x1.5 or PG13.5
- Install per Canadian Electrical Code . For all intrinsically safe sensor circuits respect Canadian Electrical Code Part I Section 18 and Appendix F.
- Sensors T-mass 6* F and T-mass 6* I for Class I / Zone 1 are Dual Seal devices in accordance with ANSI/ISA-12.27.01-2003.
- The service interface FXA 193 can be connected to the service port of T-mass 6* F/I if the area is known to be non-hazardous. A hazardous atmosphere may be present only inside the measuring tube.

Temperature Class for sensors

Temperature table	max. medium temperature [°C]					
	T6	T5	T4	T3	T2	T1
Ta = 55 °C						
T-mass F	—	—	80	80	100	100
Ta = 60 °C:						
T-mass F	—	—	80	80	80	80
T-mass I	—	—	80	80	130	130

The remote transmitter has the Temperature Class T6. The ambient temperature range depends the version . It is either from -20°C ... +60°C or from -40°C ... +60°C (see your nameplate).

The medium temperature range depends the process gaskets:

Device	Gasket material	Medium temperature range
T-mass F	Viton	-20 °C ... +100 °C
	Kalrez	-20 °C ... +100 °C
	EPDM	-40 °C ... +100 °C
T-mass I	None	-40 °C ... +130 °C
	Nitril	-35 °C ... +130 °C
	Kalrez	-20 °C ... +130 °C
	EPDM	-40 °C ... +130 °C

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

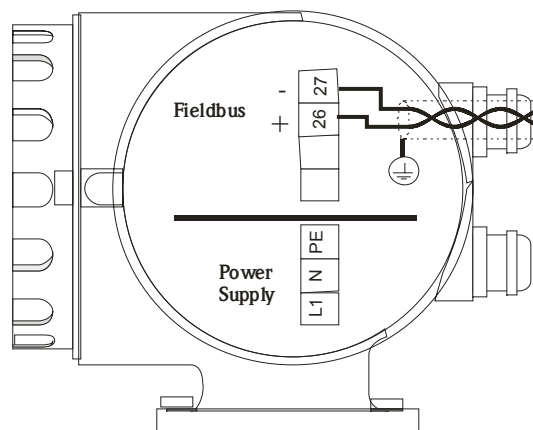
Aenderungen:	A	23.03.07/BDA	F	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr.: 71040758 Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc
	B		G		
	C		H		
	D		J		
	E		K		

CSA Control Drawing Div. 1 / Zone 1 Class I Zone 1 Remote Version T-mass 6* F / I	Masstab	Gezeichnet	05.08.05	UD
		Geprüft		
		Ex-geprüft	23.03.2007	BDA
		Gesehen		

	Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach	FES0098 A	2/2
--	---	-----------	-----

HAZARDOUS LOCATIONS

Cl. I Div. 1 Groups A,B,C,D
Cl. I Zone 1 Group IIC
Cl. I Div. 2 Group A,B,C,D
Cl. I Zone 2 Group IIC
Cl. II, III Div. 1 Group E,F,G



NON HAZARDOUS LOCATIONS

CSA Entity Approved
bus supply

Notes:

Intrinsically safe signal output:

- 1) Install all intrinsically safe circuits per Canadian Electrical Code Part I Section 18 and Appendix F respecting the Explosionproof Integrity of the transmitter enclosure.
- 2) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 3) Control room equipment may not use or generate more than 250 V rms.

Type: T-mass 6*F **_*****F

T-mass 6*I -*****F

Terminals: 26 (+), 27 (-) (Profibus PA):

Passive intrinsically safe PROFIBUS PA circuit:

For connecting the intrinsically safe circuit (PROFIBUS PA) according to the FISCO-CONCEPT see FES 0098-0003

Non intrinsically safe signal output:

- 4) Install all non intrinsically safe cricuits per Canadian Electrical Code.
- 5) **WARNING:** EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1.
- 6) Control room equipment may not use or generate over 250 Vrms.

Type: T-mass 6*F **_*****H

T-mass 6*I - *****H

Terminals 26 (+),27 (-) (PROFIBUS PA)

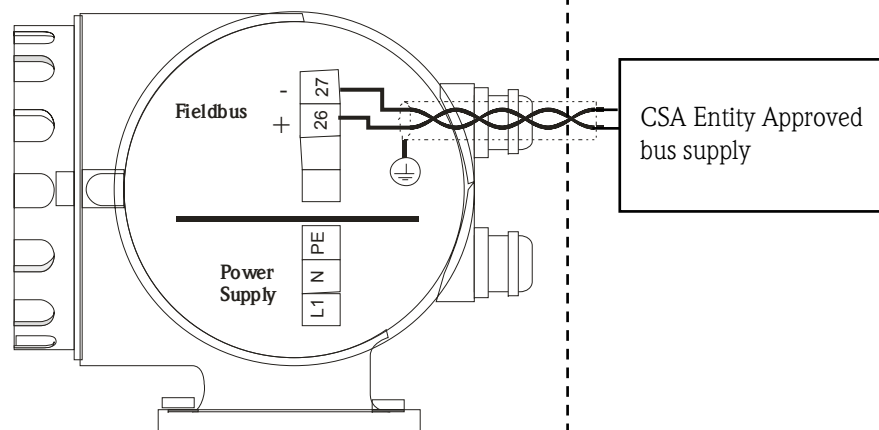
V 9...32V; I = 12mA

Aenderungen:	A	23.03.07/BDA	F		Alle gesetzlichen Urheberrechte. vorbehalten.	Mat. Nr.: 71040758 Ersatz für: Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc		
	B		G		Diese Zeichnung darf ohne unsere			
	C		H		Genehmigung weder vervielfältigt werden noch			
	D		J		dritten Personen und Konkurrenzfirmen			
	E		K		zugängig gemacht werden.			
CSA Control Drawing Div. 1 / Zone 1						Massstab		
T-mass 6* F / I								
PROFIBUS PA / IS installation								
PROFIBUS PA / DP or MODBUS RS non-IS installation								
 Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach						Gezeichnet	05.08.2005	UD
						Geprüft		
						Ex-geprüft	23.03.2007	BDA
						Gesehen		
						FES0098-0001 A		

HAZARDOUS LOCATIONS

Cl. I Div. 1 Groups A,B,C,D
Cl. I Zone 1 Group IIC
Cl. I Div. 2 Group A,B,C,D
Cl. I Zone 2 Group IIC
Cl. II, III Div. 1 Group E,F,G

NON HAZARDOUS LOCATIONS



Notes:

Intrinsically safe signal output:

- 1) Install all intrinsically safe circuits per Canadian Electrical Code Part I Section 18 and Appendix F respecting the Explosionproof Integrity of the transmitter enclosure.
- 2) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 3) Control room equipment may not use or generate more than 250 Vrms.

Type: T-mass 6*F **_*****G

T-mass 6*I -*****G

Terminals: 26, 27 (Foundation Fieldbus):

Intrinsically safe circuit:

$V_{\max} / U_i$	$I_{\max} / I_i$	$P_{\max} / P_i$	C_i	L_i
30 V	600 mA	8.5 W	$\leq 5 \text{ nF}$	$\leq 10 \text{ }\mu\text{H}$

Connect to entity approved associated apparatus with

I_{SC}, I_t or $I_O \leq I_{\max}$ or I_i and

V_{OC}, V_t or $U_O \leq V_{\max}$ or U_i

($P_O \leq P_{\max}$ or P_i)

Cable parameters for Intrinsic Safety:

$C_{\text{cable}} \leq C_a / C_O - \Sigma C_i$

$L_{\text{cable}} \leq L_a / L_O - \Sigma L_i$ or

$L/R_{\text{cable}} \leq L/R_{\text{Associated Apparatus}}$ and L_i of each I.S. apparatus $\leq 10 \text{ }\mu\text{H}$

Alternatively the intrinsically safe circuit (Fieldbus Foundation) can be connected according to the FISCO – Concept (see FES 0098–0003).

Non intrinsically safe signal output:

- 4) Install all non intrinsically safe circuits per Canadian Electrical Code
- 5) **WARNING:** EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1.
- 6) Control room equipment may not use or generate over 250 Vrms.

Type: T-mass 6*F **_*****K

T-mass 6*I -*****K

Terminals 26,27 (FIELD BUS FOUNDATION NON I.S.)

V 9...32V ; I = 12mA

Änderungen:	A	23.03.07/BDA	F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr.: 71040758 Ersatz für: Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc		
	B		G					
	C		H					
	D		J					
	E		K					
CSA Control Drawing Div. 1 / Zone 1						Massstab		
T-mass 6* F / I								
Fieldbus Foundation IS installation								
Fieldbus Foundation non-IS installation								
 Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach						Gezeichnet	05.08.2005	UD
						Geprüft		
						Ex-geprüft	23.03.2007	BDA
						Gesehen		
						FES0098-0002 A		

The FISCO Concept allows interconnection of intrinsically safe apparatus to associated apparatus not specially examined in such combination. The criteria for interconnection is that the voltage (U_i or V_{max}), the current (I_i or I_{max}), and the power (P_i or P_{max}) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U_o , V_o or V_t), the current (I_o , I_{sc} or I_t) and the power (P_o or P_{max}) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (C_i) and inductance (L_i) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 μ H 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 U_0 (or V_{oc} or V_t) of the associated apparatus is limited to a range of 14V to 24Vd.c. 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 a leakage current of 50 μ A for each connected device. Separately powered equipment needs a galvanic isolation to assure that the intrinsically safe fieldbus circuit remains passive.

Loop Resistance R' :	15...150 Ohm/km
Inductance per unit length L' :	0.4...1 mH/km
Capacitance per unit length C' :	45...200 nF

$C' = C' \text{ line/line} + 0.5 C' \text{ line/screen}$, if both lines are floating, or
 $C' = C' \text{ line/line} + C' \text{ line/screen}$, if the screen is connected to one line

Length of trunk cable: ≤ 1000 m

Length of spur cable: ≤ 60 m

Length of splice: $\leq 1 \text{ m}$

At each end of the trunk cable an approved infallible line termination with following parameters is suitable:

$R = 90 \dots 102 \text{ Ohm}$ $C = 0 \dots 2.2 \text{ }\mu\text{F}$

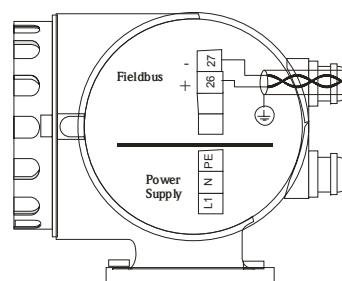
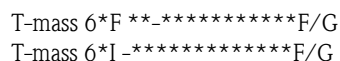
One of the allowed terminations might already be integrated in the associated apparatus. The number of passive apparatus connected to the bus segment is not limited due to I. S. reasons. If the above rules are respected, up to a total length of 1000 m (sum of trunk and all spur cables), the inductance and the capacitance of the cable will not impair the intrinsic safety of the installation.

Intrinsically safe Class I, Div.1, Groups A, B, C, D

1. Approved associated apparatus must be installed in accordance with manufacturers instructions.
2. CSA approved associated apparatus must meet the following parameters:
 U_o or V_o or $V_t \leq U_i$ (V_{max}) and I_o or I_{sc} or $I_t \leq I_i$ (I_{max}) and P_o or $P_{max} \leq P_i$ (P_{max})
3. The maximum non-hazardous area voltage must not exceed 250V
4. Install all intrinsically safe circuits per Canadian Electrical Code Part I Section 18 and Appendix F respecting the Explosionproof Integrity of the transmitter enclosure.
5. Multiple earthing of screen is allowed only, if high integrity equipotential system is realized between the points of bonding (see drawing No. FES 0014).
6. Caution: Use only supply wires suitable for 5°C above surrounding temperature.
7. Warning : Substitution of components may impair intrinsic safety.
8. The polarity for connection PA+ (26) and PA- (27) is of no importance due to an internal rectifier.

Class I, Division 1, Groups A,B,C,D
Class II, Division 1, Groups E,F,G
Class III, Division 1

Any CSA Approved Associated Apparatus Suitable for Fisco concept	
---	--



Any CSA Approved Intrinsically Safe Apparatus suitable for FISCO Concept	
---	--

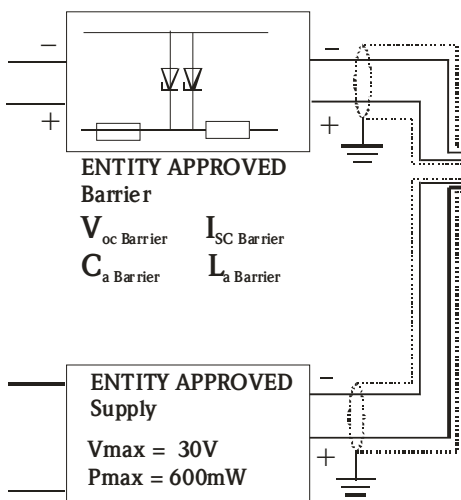
Keine Änderungen
ohne vorherige
Factory Mutual
Genehmigung

T-mass 6*F **.....F/G	
T-mass 6*I _.....F/G	
Terminal 26 (+) Terminal 27 (-)	
(FISCO-Model)	
Ui (V _{max}) = 30 V	Ci ≤ 5 nF
Ii (I _{max}) = 600 mA	Li ≤ 10 μH
Pi (P _{max}) = 8.5 W	
Leakage current: ≤ 50μA	
Apparatus provides galvanic isolation up to 250V rms between fieldbus circuit and any other circuit	
Temperature Classification: T4	
Max. ambient Temperature: 60°C / 140°F	

Any CSA Approved
Termination with
 $R = 90 \dots 102 \Omega$
 $C = 0 \dots 2.2 \mu F$

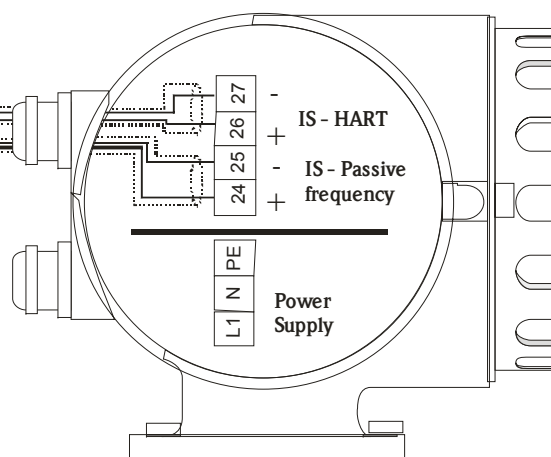
Aenderungen:	A	23.03.2007/BDA	F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr.: 71040758 Ersatz für: Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc		
	B		G					
	C		H					
	D		J					
	E		K					
CSA Control Drawing Div. 1 / Zone 1					Massstab	Gezeichnet	05.08.2005	UD
T-mass 6* F / I Intrinsically safe PROFIBUS PA Foundation Fieldbus FISCO-Concept						Geprüft		
						Ex-geprüft	23.03.2007	BDA
						Gesehen		
 Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0098-0003 A			

NON HAZARDOUS LOCATION



HAZARDOUS LOCATION

Cl. I, Zone 1 IIC
Cl. I, II, III Div. 1 Group A,B,C,D,E,F,G or
Cl. I Div. 2 Group A,B,C,D, and Cl.II,III Div. 1 Group E,F,G



Type: T-mass 6*F **-*
T-mass 6*I -*

T-mass 6*I -*

Terminals: 26, 27 (HART current output):

Passive intrinsically safe circuit:

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	100 mA	1.25 W	6 nF	negligible

Connect to entity approved Barrier with

V_{OC}, V_t or $U_O \leq V_{max} / U_i$

I_{SC}, I_t or $I_O \leq I_{max} / I_i$

Cable parameters for Intrinsic Safety:

$C_{cable} \leq C_a$ Barrier or C_o Barrier - 6 nF

$L_{cable} \leq L_a$ Barrier or L_o Barrier

Terminals 24, 25 (Passive intrinsically safe circuit):

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	300 mA	600mW	6 nF	0

Entity approved apparatus must meet the following requirements:

V_{OC}, V_t or $U_O \leq V_{max}$

P_{max} or $P_O \leq P_{max} / P_i$

Cable parameters for Intrinsic Safety:

$C_{cable} \leq C_a (C_O) - 6$ nF

$L_{cable} \leq L_a (L_O)$

Notes:

1) Use supply wires suitable for 5 °C above surrounding ambient, but at least for 80°C / 176°F

Intrinsically safe signal output:

2) Install all intrinsically safe circuits per Canadian Electrical Code Part I Section 18 and Appendix F respecting the Explosionproof Integrity of the transmitter enclosure.

3) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

4) Control room equipment may not use or generate more than 250 Vrms.

Type: T-mass 6*F **-*
T-mass 6*I -*

T-mass 6*I -*

Terminals: 26, 27 (HART current output):

Active intrinsically safe circuit:

V_{oc} / U_o	I_{sc} / I_o	P_{max} / P_o	C_a / C_o	L_a / L_o
21.8 V	90 mA	490 mW	0.15 μ F	4.1 mH
V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	10 mA	300 mW	6 nF	0

Cable parameters for Intrinsic Safety:

$C_{cable} \leq 0.15 \mu F$ if V_{oc} (of Barrier) ≤ 21.8 V

$C_{cable} \leq C_a$ Barrier - 6 nF if V_{oc} (of Barrier) ≥ 21.8 V

$L_{cable} \leq 4.1$ mH

Terminals 24, 25 (Passive intrinsically safe circuit):

Passive intrinsically safe circuit:

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	300 mA	600mW	6 nF	0

Entity approved supply must meet the following requirements:

V_{OC}, V_t or $U_O \leq V_{max}$

P_{max} or $P_O \leq P_{max} / P_i$

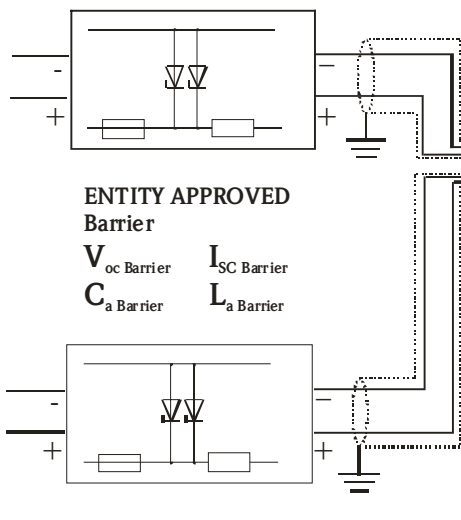
Cable parameters for Intrinsic Safety:

$C_{cable} \leq C_a (C_O) - 6$ nF

$L_{cable} \leq L_a (L_O)$

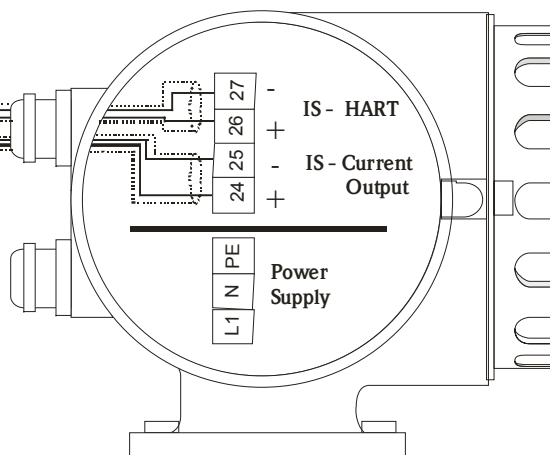
Aenderungen:	A	23.03.07/BDA	F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr.: 71040758 Ersatz für: Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc		
	B		G					
	C		H					
	D		J					
	E		K					
CSA CONTROL DRAWING Cl.1, Div. 1						Masstab		
T-mass 6* F / I								
Entity concept Commodul HART IS (Option S/T)								
 Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach						Gezeichnet	05.08.2005	UD
						Geprüft		
						Ex-geprüft	23.03.2007	BDA
						Gesehen		
						FES0098-0004 A		

NON HAZARDOUS LOCATION



HAZARDOUS LOCATION

Cl. I, Zone 1 IIC
Cl. I, II, III Div. 1 Group A,B,C,D,E,F,G or
Cl. I Div. 2 Group A,B,C,D, and Cl.II,III Div.1 Group E,F,G



Notes:

- 1) Use supply wires suitable for 5 °C above surrounding ambient, but at least for 80°C / 176°F
- 2) Install all intrinsically safe circuits per Canadian Electrical Code Part I Section 18 and Appendix F respecting the Explosionproof Integrity of the transmitter enclosure.
- 3) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 4) Control room equipment may not use or generate more than 250 Vrms.

Type: T-mass 6*F **_*****R

T-mass 6*I _*****R

Terminals: 26, 27 (HART current output):

Terminals: 24, 25 (current output):

Active:

V_{oc} / U_o	I_{sc} / I_o	P_{max} / P_o	C_a / C_o	L_a / L_o
21.8 V	90 mA	490 mW	0.15 μ F	4.1 mH

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	10 mA	300 mW	6 nF	0

Cable parameters for Intrinsic Safety:

$$C_{cable} \leq 0.15 \mu F \quad \text{if } V_{oc} \text{ (of Barrier)} \leq 21.8 V$$

$$C_{cable} \leq C_a \text{ Barrier} - 6 nF \quad \text{if } V_{oc} \text{ (of Barrier)} \geq 21.8 V$$

$$L_{cable} \leq 4.1 mH$$

Type: T-mass 6*F **_*****U

T-mass 6*I _*****U

Terminals: 26, 27 (HART current output)

Terminals: 24, 25 (current output)

Passive:

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	100 mA	1.25 W	6 nF	negligible

Connect to entity approved Barrier with

$$V_{OC}, V_t \text{ or } U_o \leq V_{max} / U_i$$

$$I_{SC}, I_t \text{ or } I_o \leq I_{max} / I_i$$

Cable parameters for Intrinsic Safety:

$$C_{cable} \leq C_a \text{ Barrier or } C_o \text{ Barrier} - 6 nF$$

$$L_{cable} \leq L_a \text{ Barrier or } L_o \text{ Barrier}$$

Änderungen:	A	23.03.07/BDA	F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr.: 71040758 Ersatz für: Ersteller: FES / ID 1168 FILE: M:\Zeichng\FES0098\A\FES0098_070323.doc		
	B		G					
	C		H					
	D		J					
	E		K					
CSA CONTROL DRAWING Cl.1, Div. 1						Massstab		
T-mass 6* F / I								
Entity concept Commodul HART IS (Option R/U)								
 Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach						Gezeichnet	05.08.2005	UD
						Geprüft		
						Ex-geprüft	23.03.2007	BDA
						Gesehen		
						FES0098-0005 A		