APPVL INST F100 CRYO ETO 19712 ATEX ENGLISH
EB-20020484
Revision: AA
Number of Pages: 7
Comments:

THIS COMPONENT MUST COMPLY WITH REGULATORY AGENCY REQUIREMENTS. NO CHANGES ARE ALLOWED WITHOUT PRIOR AUTHORIZATION FROM APPROVALS ENGINEERING.

Originator: RCS 10/13/11

Approved: RCS 10/13/11

Rev	ECN	Description	Approval	Date
AA	1043391	Release to Approvals	RCS	10/13/11

Equipment type	**sensor type F100 *******Z***** and ETO 19712**	
Manufactured and submitted for examination	**Micro Motion, Inc.**	
Address	**Boulder, Co. 80301, USA**	
Basis for examination	**Annex II of Directive 94/9/EC**	
Standard basis	IEC 60079-0:2011 IEC 60079-11:2011	General requirements Intrinsic safety ´i´
Code for type of protection	**II 2G Ex ib IIC T1 –T6 Gb** **II 2D Ex ib IIIC T*°C Db IP66**	
EC Type Examination Certificate	**BVS 11 ATEX E 167 X**	

1) Subject and Type

Sensor type F*** *******Z*****

Instead of the *** letters and numerals will be inserted which characterize the following modifications:

type F * * * * * * * * * * Z * * * * *

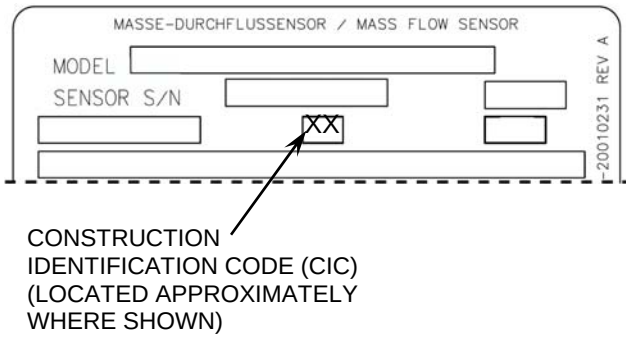
- Marking without influence to the type of protection
- Letter for conduit connections
- Letter for electronic interface
  - R = with junction box for 9-wire
  - H = 9 wire junction box with extender
  - S = 9-wire stainless junction box
  - T = 9-wire Stainless junction box with extender
- Marking without influence to the type of protection
- Marking without influence to the type of protection
- 3 numerals for type of sensor

2) Description

The flow sensor in combination with a transmitter is used for flow measurement.
The flow sensor, which consists of magnetically excited oscillating tubes, contains as electrical components coils, resistors, temperature sensors and terminals and connectors.

- When used with an integral mounted junction box, the variation gets the denomination F*** *****(S or T)******* for a SS enclosure and F*** *****(R or H)******* for an aluminum enclosure.

Modifications to the design which have impact on the electrical parameters are indicated by a Construction Identification Code (CIC). This code consists out of two digits, starting with an A and followed by a sequence number; for example A4. The CIC can be found on the approval label, see picture below:



3) Parameters

3.1. Type F********(R, H, S or T)******* with J-box and ETO 19712

3.1.1. Drive circuit (connections 1 - 2 or wires red and brown)

Voltage	Ui	DC	11,4	V
Current	Ii		2,45	A
Power	Pi		2,54	W
Effective internal capacitance	Ci		Negligible	

Sensor type			Inductance (mH)	Coil Resistance (Ω)	Series Resistor (Ω)	Minimum Ambient/Fluid Temp (°C)
F100*****(R,H,S,T)*Z***** and ETO 19712		(IIC)	7,5	0	177,2	-40°C/-240°C

3.1.2. Pick-off circuit coil (Terminals 5/9 and 6/8 or wires green/white and blue/grey)

Voltage	Ui	DC	21,13	V
Current	Ii		18,05	mA
Power	Pi		45	mW
Effective internal capacitance	Ci		Negligible	

Sensor type			Inductance (mH)	Coil Resistance (Ω)	Series Resistor (Ω)	Minimum Ambient/Fluid Temp (°C)
F100*****(R,H,S,T)*Z***** and ETO 19712		(IIC)	7,5	0	0-567	-40°C/-240°C

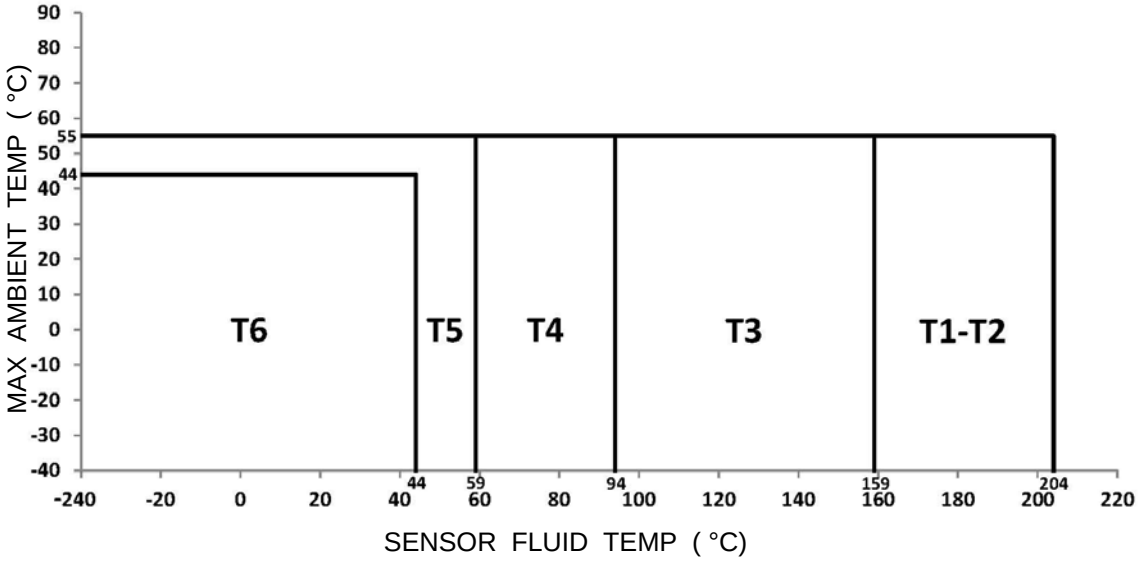
3.1.3. Temperature circuit (terminals 3, 4 and 7 or wires orange, yellow and violet)

Voltage	Ui	DC	21,13	V
Current	Ii		26	mA
Power	Pi		112	mW
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	

3.1.4 Temperature class/ maximum surface temperature T.
The classification into a temperature class/determination of the maximum surface temperature T depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

3.1.4.1.

Sensor type		
F100*****(R,H,S,T)*Z***** and ETO 19712	(IIC)	Connected to MVD transmitters, e.g. 1000/2000/3000MVD series



Note 1: Use the above graph to determine the temperature class for a given fluid and ambient temperature.
Note 2: The maximum surface temperature T for dust is as follows: T6:T 80°C, T5:T 95°C, T4:T 130°C, T3:T 195°C, T2: to T1:T 240°C.
Note 3: The minimum ambient and process fluid temperature allowed for dust is -40°C.

Ambient temperature range:	Ta	–40°C to +55°C
Fluid temperature range:	Tm	–240°C to +204°C

The use of the sensor at an ambient temperature higher than +55°C is possible, provided that the ambient temperature does not exceed the maximum temperature of the medium taking into account the temperature classification and the maximum operating temperature of the sensor.

4) Marking

The marking of the equipment shall include the following:

II 2G
II 2D with additional marking required by the standards mentioned in the following table:

Type	Type of protection gas	Min. ambient/fluid temp. gas	Type of protection dust
F100*****[1)]*Z***** and ETO 19712	Ex ib IIC T1-T6 Gb	-40°C/-240 °C	Ex ib IIIC T[2)]°C Db IP66

[1)] At this place the letter R, H, S or T will be inserted.

[2)] Maximum surface temperature T for dust, see temperature graphs and the manufacturer's instructions. Minimum ambient and process temperature for dust is -40 °C.