Installation Instructions
P/N MMI-20010163, Rev. A
June 2007

ATEX Installation Instructions for Micro Motion® ELITE® Sensors with Certificate DMT 01 ATEX E 140 X

For ATEX-approved sensor installations

Micro Motion®

EMERSON™
Process Management

Note: For hazardous installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

Information affixed to equipment that complies with the Pressure Equipment Directive can be found on the internet at www.micromotion.com/library.

ELITE Sensors (DMT 01 ATEX E 140 X)

ATEX Installation Instructions

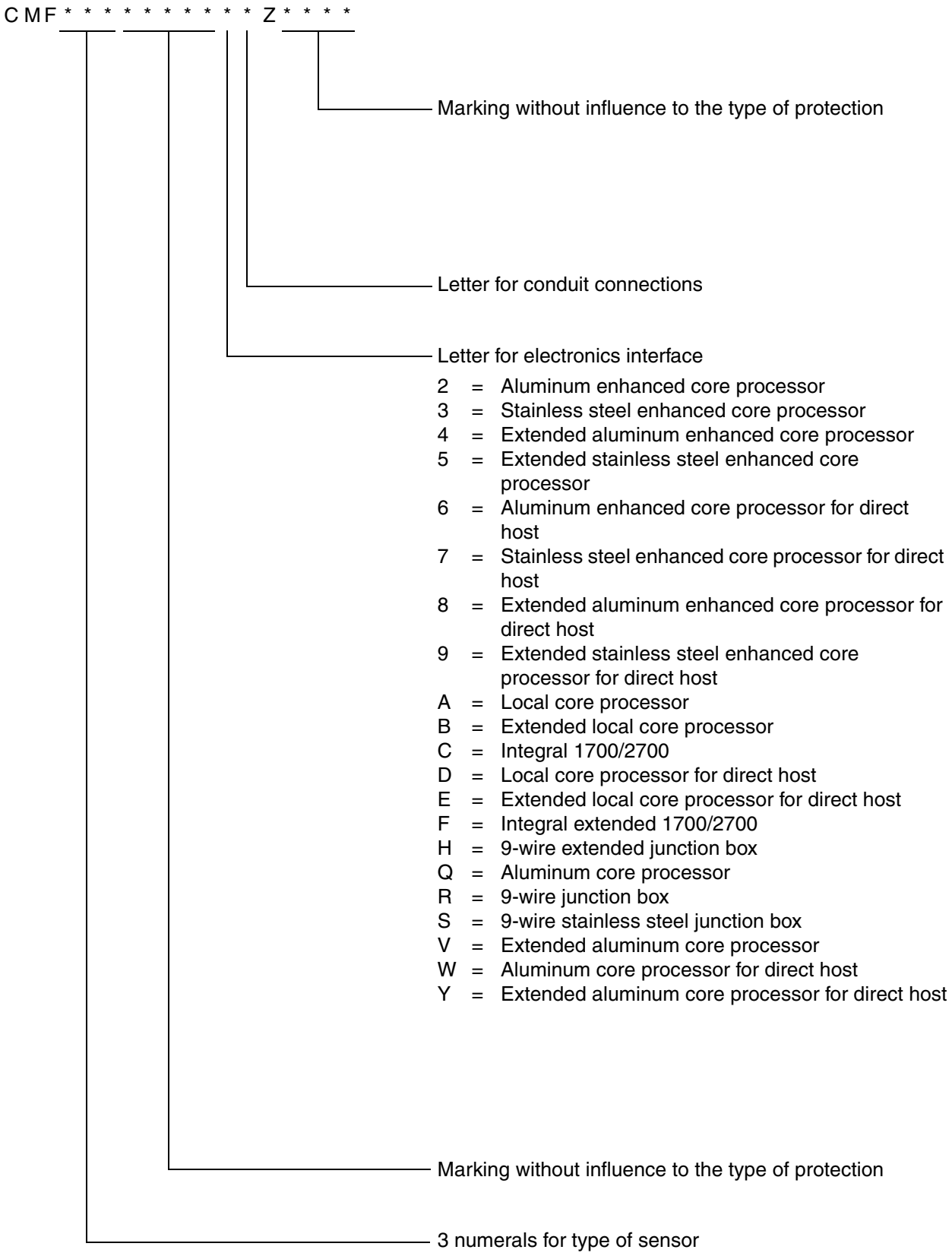
- For installing the following Micro Motion sensors with ATEX Certificate number DMT 01 ATEX E 140 X:
  - Model CMF010
  - Model CMF025
  - Model CMF050
  - Model CMF100
  - Model CMF200 (including high-temperature Model CMF200A)
  - Model CMF300 (including high-temperature Model CMF300A)

Subject:	Equipment type	**Sensor type CMF*** *******Z*******	
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		EN 50014:1997 +A1-A2	General requirements
		EN 50020:2002	Intrinsic safety ´i´
		EN 50281-1-1:1998 +A1	Dust evaluation ´D´
Code for type of protection		**EEx ib IIB/IIC T1–T6**	

1) Subject and type

Sensor type CMF*** *******Z****

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



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.

Instead of the junction box (CMF********(R, H or S)*Z****) an enclosure with an inside mounted signal processing device type 700 can be used; this variation gets the denomination type CMF*** *****(A, B, D or E)*Z****. For a SS enclosure and CMF*** ***** (Q, V, W or Y) *Z **** for an aluminum enclosure.

When used with an integral mounted enhanced signal processing device type 800; the variation gets the denomination type CMF*** *****(3, 5, 7 or 9)*Z**** for a SS enclosure and CMF*** *****(2, 4, 6 or 8)*Z**** for an aluminum enclosure.

Alternatively a transmitter type *700********** can be mounted directly to the junction box; this variation gets the denomination type CMF*** *****(C or F)*Z****.

The high temperature version CMF***A******Z**** can be executed with a junction box, transmitter, core processor, or enhanced core processor; this variation has therefore always the denomination CMF***A******Z****.

By mounting the sensor directly to the *700 transmitter the use of the unit will be modified according to the following table:

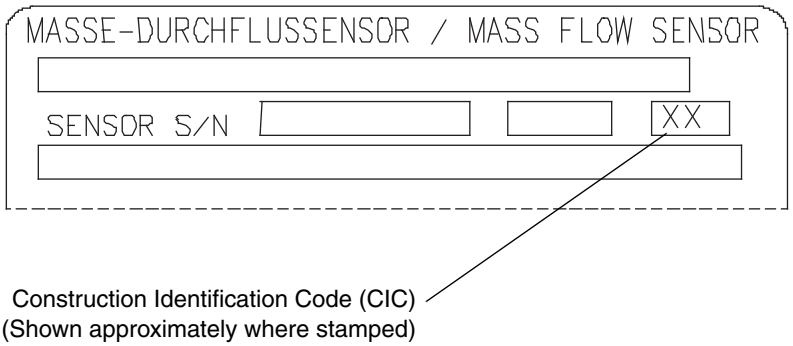
Sensor	CMF010*****(C or F)*Z**** CMF025*****(C or F)*Z**** CMF050*****(C or F)*Z**** CMF100*****(C or F)*Z**** with CIC A2 CMF200*****(C or F)*Z**** with CIC A4 CMF300*****(C or F)*Z**** with CIC A4	CMF200*****(C or F)*Z**** with CIC A2, A3 CMF300*****(C or F)*Z**** with CIC A2, A3 CMF200A*****(C or F)*Z**** with CIC no marking CMF300A*****(C or F)*Z**** with CIC A5
Transmitter type *700*1(1 or 2)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB+H_2 T1–T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T^1 °C
Transmitter type *700*1(3, 4 or 5)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T^1 °C
Transmitter type *700*1(1 or 2)D******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB+H_2 T1–T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T^1 °C
Transmitter type *700*1(3, 4, or 5)D******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIC T1–T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T^1 °C
Transmitter type 2700*1(1 or 2)(E or G)******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB+H_2 T1–T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T^1 °C
Transmitter type 2700*1(3, 4, or 5)(E or G)******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIC T1–T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T^1 °C

(1) For dust temperature ratings, see temperature graphs.

Amendment No. 3 to the ATEX Certificate DMT 01 ATEX E 140 X reflects the revised Drive Coil parameters for CMF 100, CMF 200, and CMF 300 for compatibility with other ATEX certified transmitters. Sensors constructed using these revised coil parameters will be identified with a Construction Identification Code (C.I.C.) of A2.

Amendment No. 6 to the ATEX Certificate DMT 01 ATEX E 140 X reflects the revised CMF200 and CMF300 Drive Coil and Pick-Off Coil parameters for improved performance. Sensors constructed using these revised coil parameters will be identified with a Construction Identification Code (C.I.C.) of A3.

Amendment No. 8 to the ATEX Certificate DMT 01 ATEX E 140 X reflects the addition of the Enhanced Core Processor Interface Codes (2-9) and the addition of the CMF200A model. Furthermore the addition of revised drive coil series resistance for the CMF200 and CMF300 sensors used at low temperature and IIC applications these are identified with a Construction Identification Code (C.I.C.) of A4. The revised coil parameters for the CMF300A are identified with a Construction Identification Code (C.I.C.) of A5.



3) Parameters

3.1) Type CMF********(R, H, or S)*Z**** (except CMF***A****(R, H or S)*Z****)

Construction Identification Code (C.I.C.) A2, A3, A4 (IIC) and no marking

3.1.1) Drive circuit

Power	2,54 W
Voltage	11,4 VDC
Current	2,45 A
Effective internal capacitance	Negligible

Effective internal max. L_i , min. coil & series resistor & min. ambient/fluid temp.

CMF010	2,51 mH	86,8 Ω	946,6 Ω	–20 °C
CMF025	2,51 mH	86,8 Ω	170,4 Ω	–20 °C
CMF050	2,51 mH	86,8 Ω	170,4 Ω	–20 °C
CMF100 CIC A2	6,7 mH	64,5 Ω	89 Ω	–20 °C
CMF200 CIC A2	10,4 mH	65,7 Ω	24,7 Ω	–20 °C
CMF200 CIC A3	9,5 mH	102,6 Ω	0 Ω	–20 °C
CMF200 CIC A4 (IIC)	9,5 mH	0 Ω	177 Ω	–240 °C
CMF300 CIC A2	9,0 mH	74,8 Ω	5,9 Ω	–20 °C
CMF300 CIC A3	9,5 mH	102,6 Ω	0 Ω	–20 °C
CMF300 CIC A4 (IIC)	9,5 mH	0 Ω	177 Ω	–240 °C

3.1.2) Pick-off circuit (terminals 5,9 and 6,8; green/white and blue/grey wires)

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible

Effective internal max. L_i , min. coil & series resistor & min. ambient/fluid temp.

CMF010	2,51 mH	86,8 Ω	0 Ω	–20 °C
CMF025	2,51 mH	86,8 Ω	0 Ω	–20 °C
CMF050	2,51 mH	86,8 Ω	0 Ω	–20 °C
CMF100 CIC A2	0,441 mH	12,2 Ω	0 Ω	–20 °C
CMF200 CIC A2	0,61 mH	19,6 Ω	0 Ω	–20 °C
CMF200 CIC A3	2,0 mH	46,3 Ω	0 to 567,9 Ω	–20 °C
CMF200 CIC A4 (IIC)	2,0 mH	0 Ω	0 to 567,9 Ω	–240 °C
CMF300 CIC A2	0,61 mH	19,6 Ω	0 Ω	–20 °C
CMF300 CIC A3	2,0 mH	46,3 Ω	0 to 567,9 Ω	–20 °C
CMF300 CIC A4 (IIC)	2,0 mH	0 Ω	0 to 567,9 Ω	–240 °C

3.1.3) Temperature circuit

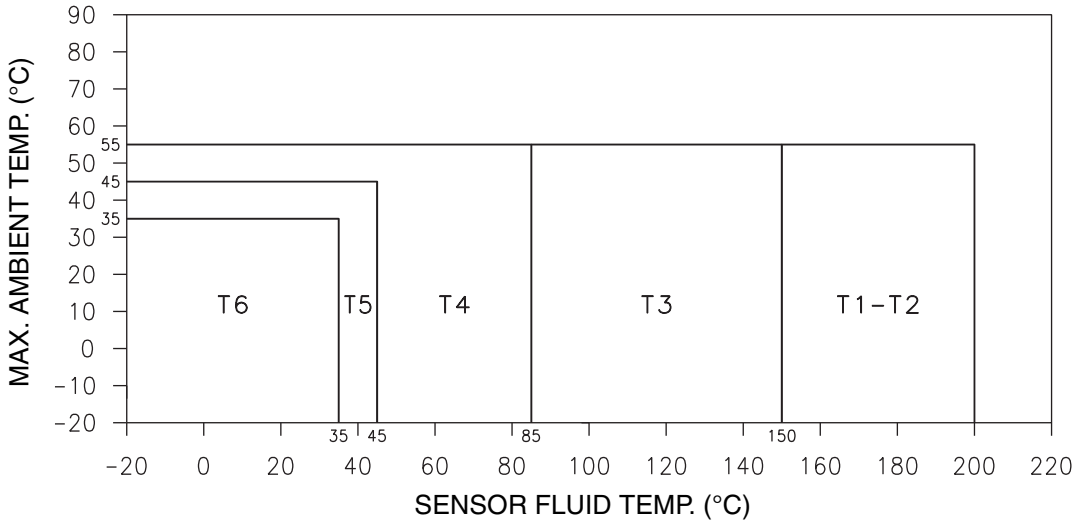
Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible
Effective internal inductance	Negligible

3.1.4) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

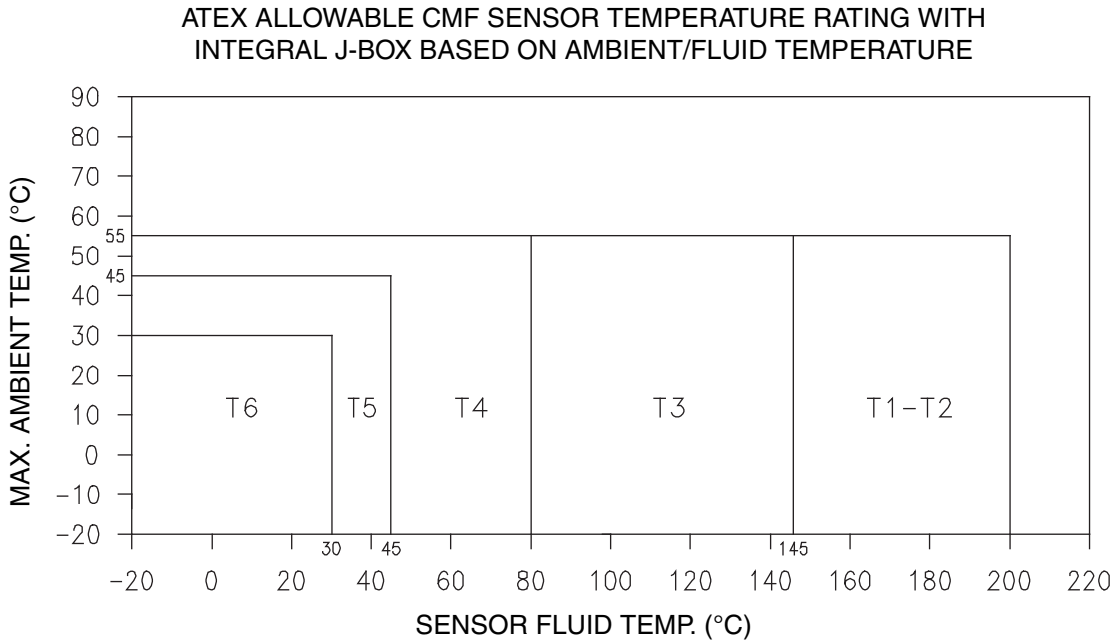
For Construction Identification Code (C.I.C.) A2 and no marking

ATEX ALLOWABLE CMF SENSOR TEMPERATURE RATING WITH INTEGRAL J-BOX BASED ON AMBIENT/FLUID TEMPERATURE



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature 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 245°C.

For Construction Identification Code (C.I.C.) A3



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature 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 250°C.

3.1.5) Ambient temperature range

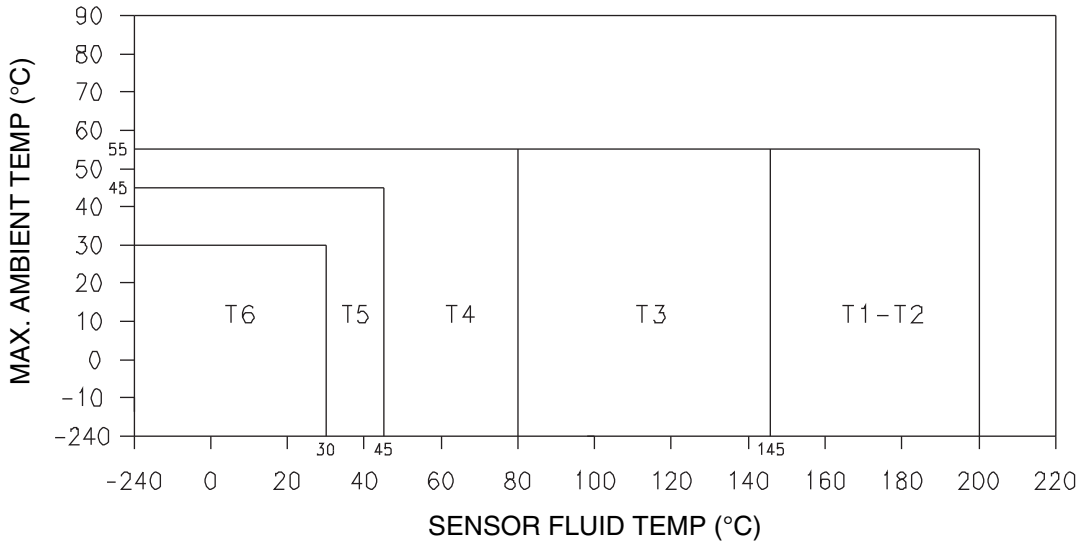
CMF********(R, H, or S)*Z**** (except CMF***A****(R, H or S)*Z****) with CIC A2, A3, and no marking	Ta	–20 °C up to +55 °C

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. Minimum medium temperature is –20 °C.

The ambient temperature of the sensor may be less than –20 °C provided the temperature of the medium is not less than 0 °C.

3.1.6) Temperature class for Construction Identification Code (C.I.C.) A4 (IIC)

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature 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 250°C. The minimum ambient and process fluid temperature allowed for dust is -40°C.

3.1.7) Ambient temperature range

CMF********(R, H, or S)*Z**** (except CMF***A****(R, H or S)*Z**** with CIC A4	Ta	–240 °C up to +55 °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.

3.2) Type CMF***A****(R, H or S)*Z****

Construction Identification Code (C.I.C.) A5 and no marking

3.2.1) Drive circuit

Power	2,54 W
Voltage	11,4 VDC
Current	2,45 A
Effective internal capacitance	Negligible

Effective internal max. L_i , min. coil & series resistor & min. ambient/fluid temp.

CMF200A	4,0 mH	34,0 Ω	19,8 Ω	–40 °C
CMF300A	8,5 mH	63,2 Ω	31,3 Ω	–20 °C
CMF300A CIC A5	4,0 mH	34,0 Ω	19,8 Ω	–40 °C

3.2.2) Pick-off circuit

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible

Effective internal max. L_i , min. coil & series resistor & min. ambient/fluid temp.

CMF200A	1,25 mH	16,2 Ω	569,3 Ω	–40 °C
CMF300A	0,393 mH	7,3 Ω	31,3 Ω	–20 °C
CMF300A CIC A5	1,25 mH	16,2 Ω	569,3 Ω	–40 °C

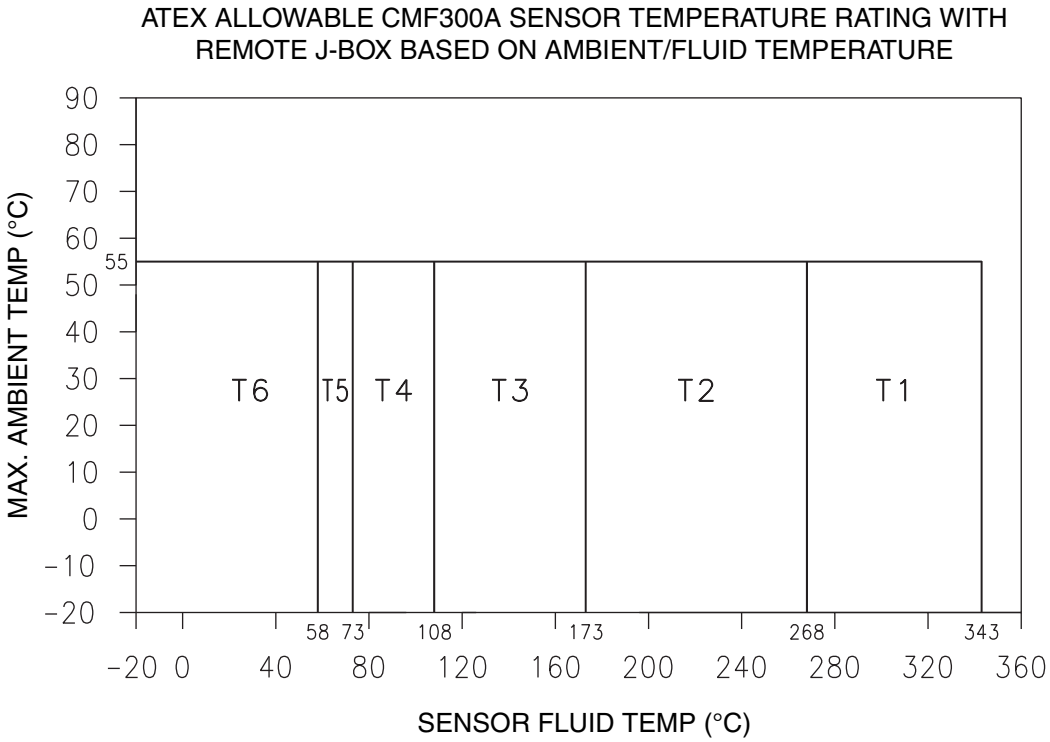
3.2.3) Temperature circuit

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible
Effective internal inductance	Negligible

3.2.4) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

For CMF300A Sensors with Construction Identification Code (C.I.C.) with no marking



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T6:T 80°C, T5:T 95°C, T4:T 130°C, T3:T 195°C, T2:T 290°C, T1:T 365°C.

3.2.5) Ambient temperature range

CMF300A****(R, H or S)*Z**** with CIC no marking	Ta	–20 °C up to +55 °C

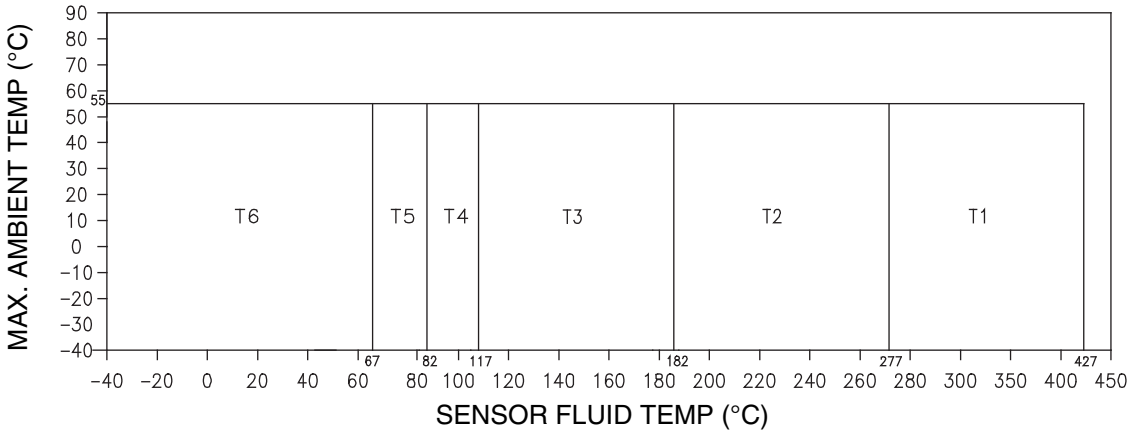
The use of the sensor at an ambient temperature higher than +55 °C is possible, provided that the ambient temperature does not exceed the maximum temperature of the medium taking into account the temperature classification and the maximum operating temperature of the sensor. Minimum medium temperature is –20 °C.

The ambient temperature of the sensor may be less than –20 °C provided the temperature of the medium is not less than 0 °C.

3.2.6) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

For CMF200A and CMF300A (C.I.C. A5) Sensors with Integral J-Box



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T6:T 80°C, T5:T 95°C, T4:T 130°C, T3:T 195°C, T2:T 290°C, T1:T 440°C.

3.2.7) Ambient temperature range

CMF200A****(R, H or S)*Z**** or CMF300A****(R, H, or S)*Z**** with CIC A5	Ta	–40 °C up to +55 °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. Minimum medium temperature is –40 °C.

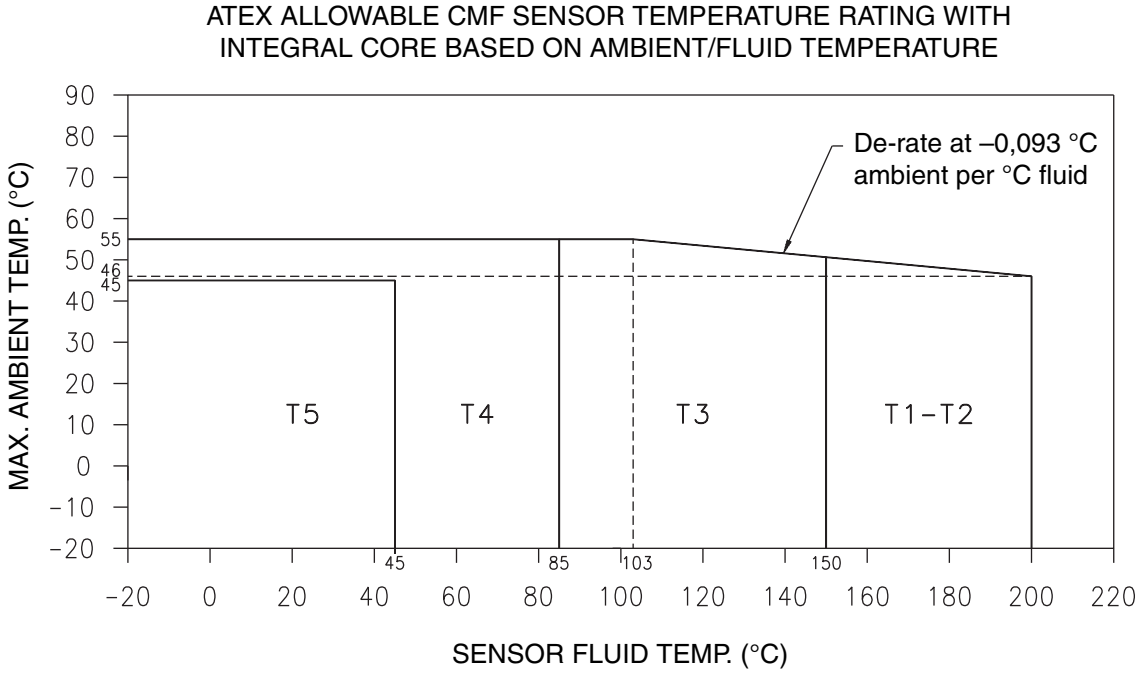
3.3) Type CMF********(2–9, A, B, D, E, Q, V, W or Y) *Z****
(except CMF***A****(2 – 9, A, B, D, E, Q, V, W or Y)*Z****)
Construction Identification Code (C.I.C.) A2, A3, A4 (IIC) and no marking

3.3.1) Input circuits (terminals 1–4)

Voltage	Up to	17,3 VDC
Current	Up to	484 mA
Power	Up to	2,1 W
Effective internal capacitance		2200 pF
Effective internal inductance		30 μH

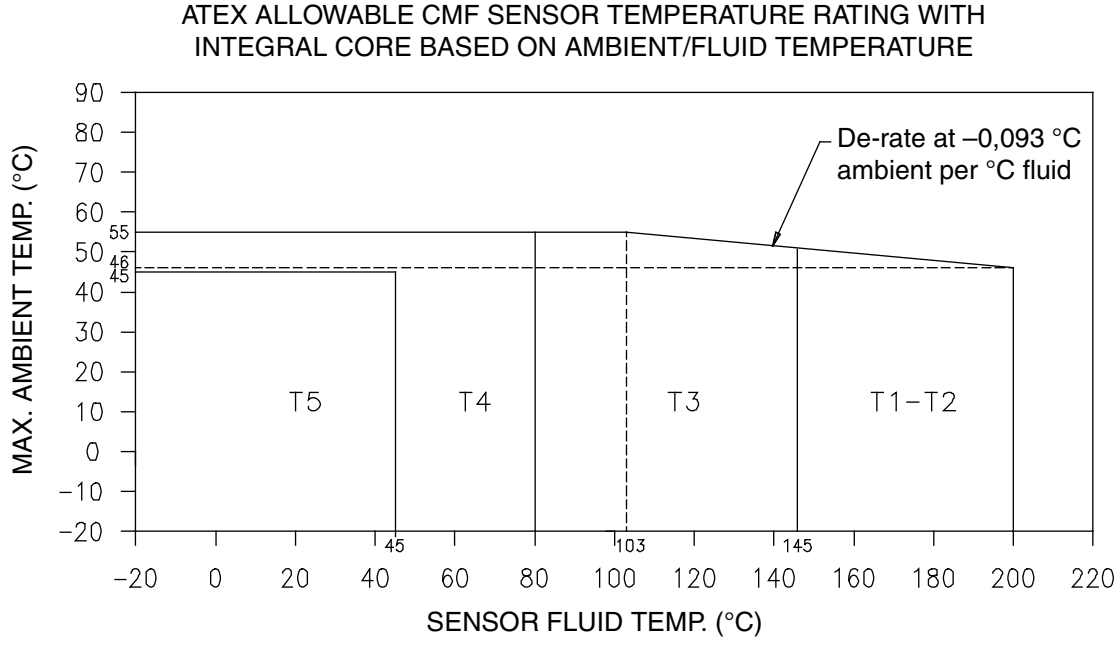
3.3.2) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:
For Construction Identification Code (C.I.C.) A2 and no marking



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 245°C.

For Construction Identification Code (C.I.C.) A3



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 250°C.

3.3.3) Ambient temperature range

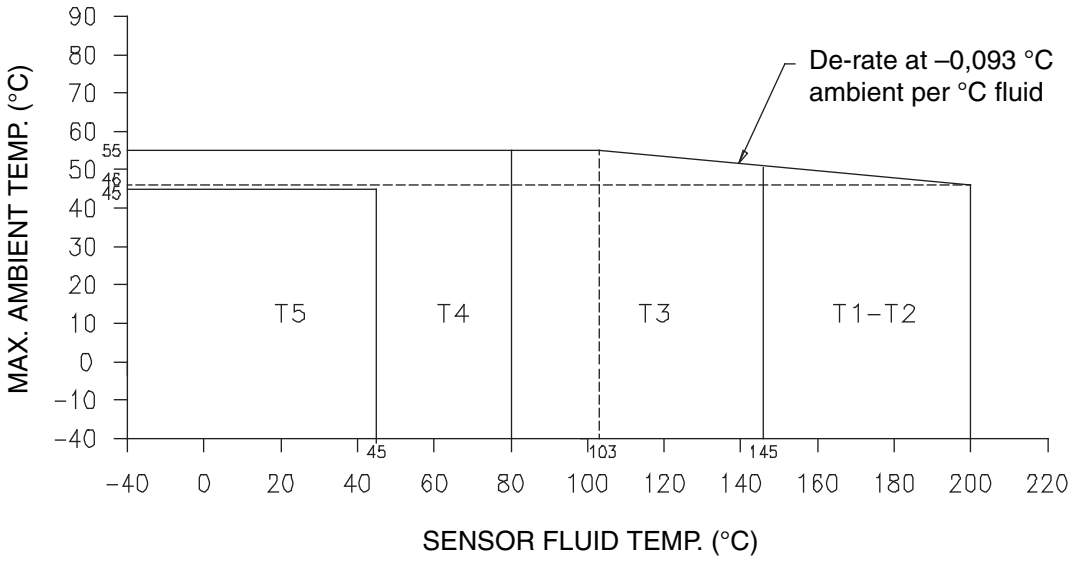
CMF********(2–9, A, B, D, E, Q, V, W or Y) *Z**** Ta –20 °C up to +55 °C
(except CMF***A****(2 – 9, A, B, D, E, Q, V, W or Y)*Z****)
with CIC A2 and A3

The ambient temperature of the sensor may be –40 °C provided the temperature of the medium is not less than 0 °C.

3.3.4) For Construction Identification Code (C.I.C.) A4 (IIC)

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

ATEX ALLOWABLE CMF SENSOR TEMPERATURE RATING WITH
INTEGRAL CORE BASED ON AMBIENT/FLUID TEMPERATURE



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 250°C

3.3.5) Ambient temperature range

CMF********(2–9, A, B, D, E, Q, V, W or Y) *Z**** Ta –40 °C up to +55 °C
(except CMF***A****(2 – 9, A, B, D, E, Q, V, W or Y)*Z****)
with CIC A4 (IIC)

3.4) Type CMF***A****(2–9, A, B, D, E, Q, V, W or Y)*Z****

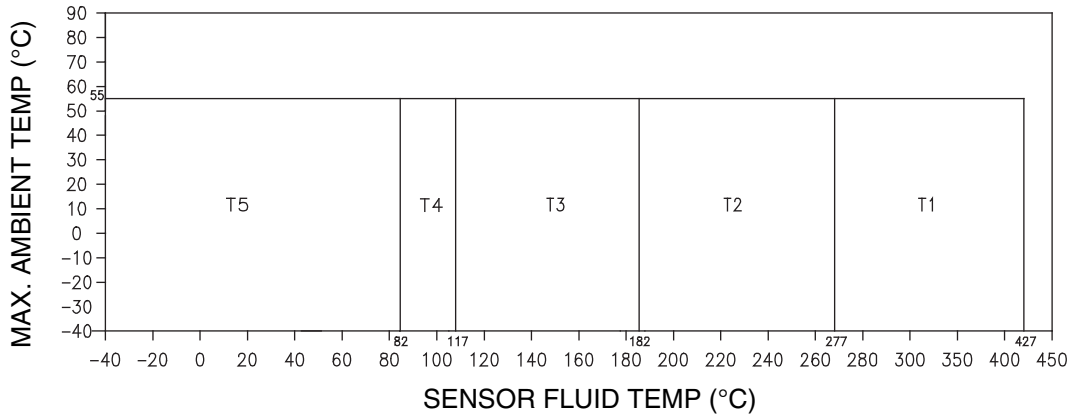
CMF300A with Construction Identification Code (C.I.C.) A5
CMF200A with Construction Identification Code (C.I.C.) no marking

3.4.1) Input circuits (terminals 1–4)

Voltage	Up to	17,3 VDC
Current	Up to	484 mA
Power	Up to	2,1 W
Effective internal capacitance		2200 pF
Effective internal inductance		30 μH

3.4.2) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2: T 290°C, T1:T 440°C.

3.4.3) Ambient temperature range

CMF300A****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A5	Ta	–40 °C up to +55 °C
CMF200A****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC no marking		

Since the electronics are mounted approx. 1 meter away from the sensor by means of a flexible stainless steel hose, 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. Minimum medium temperature is –40 °C.

3.5) Type CMF********(C or F)*Z**** (except CMF***A****(C or F)*Z****)

Construction Identification Code (C.I.C.) A2, A3, A4 and no marking

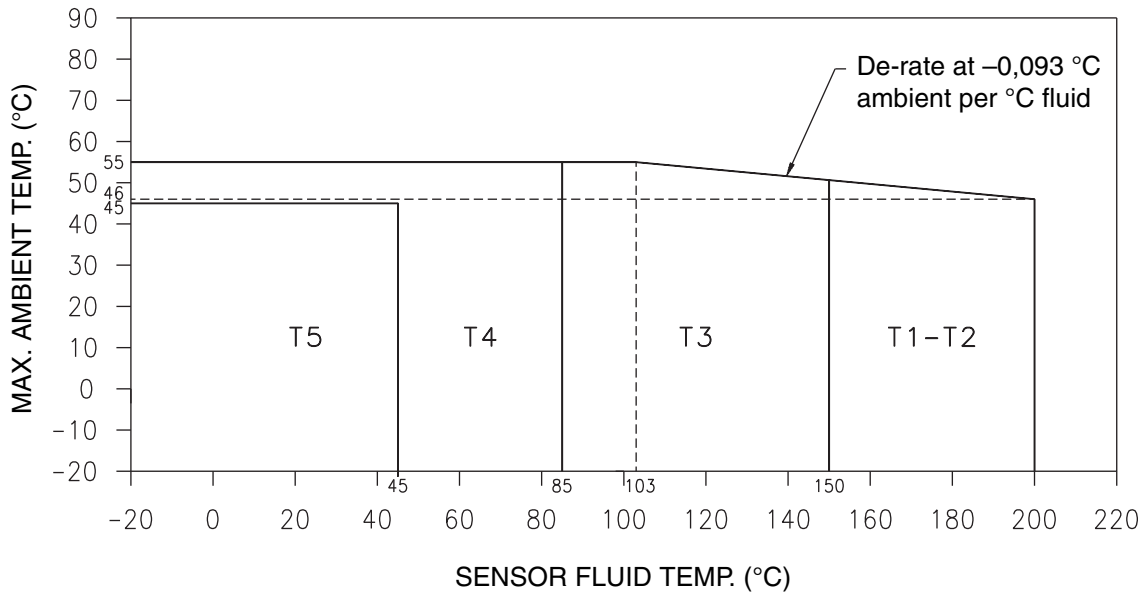
3.5.1) Electrical parameters see EB-3600636 for the transmitter type*700*********

3.5.2) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown on the following graph:

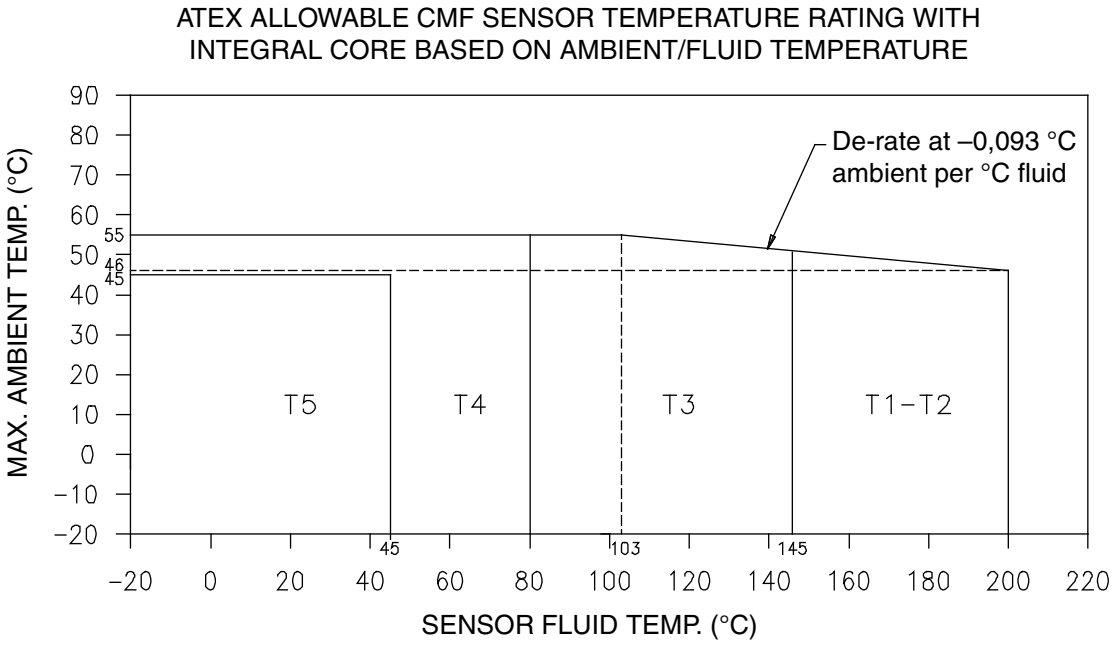
Construction Identification Code (C.I.C.) A2 and no marking

ATEX ALLOWABLE CMF SENSOR TEMPERATURE RATING WITH INTEGRAL CORE BASED ON AMBIENT/FLUID TEMPERATURE



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 245°C

For Construction Identification Code (C.I.C.) A3



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 250°C

3.5.3) Ambient temperature range

CMF********(C or F)*Z**** (except CMF***A****(C or F)*Z****) with CIC A2, A3, and no marking	Ta	–20 °C up to +55 °C

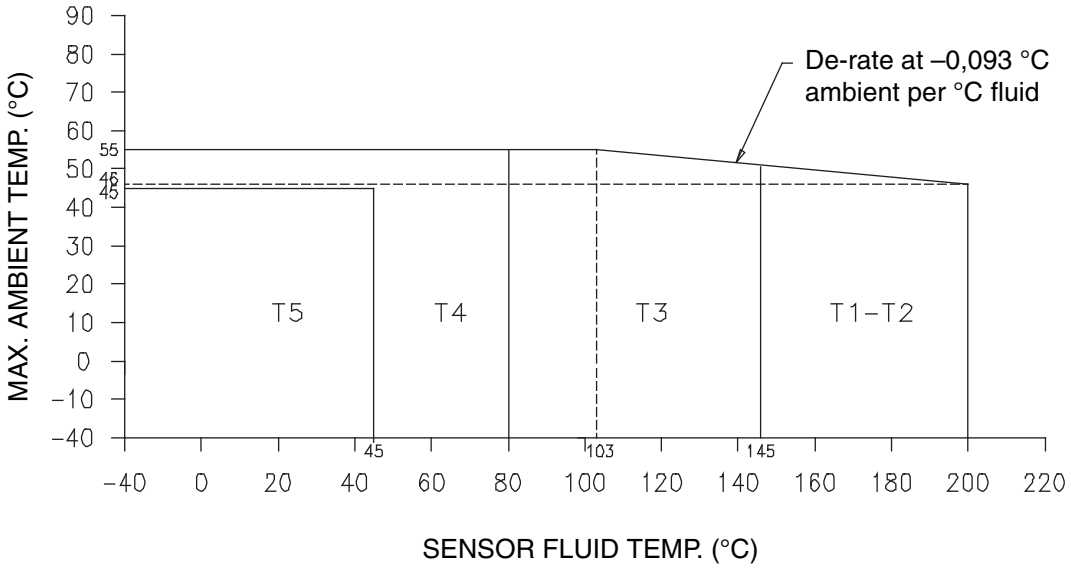
The ambient temperature of the sensor may be –40 °C provided the temperature of the medium is not less than 0 °C.

3.5.4) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown on the following graph:

Construction Identification Code (C.I.C.) A4 (IIC)

ATEX ALLOWABLE CMF SENSOR TEMPERATURE RATING WITH INTEGRAL 1700/2700 TRANSMITTER BASED ON AMBIENT/FLUID TEMPERATURE



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 250°C

3.5.5) Ambient temperature range

CMF********(C or F)*Z**** (except CMF***A****(C or F)*Z**** with CIC A4 (IIC)	Ta	–40 °C up to +55 °C

3.6) Type CMF***A****(C or F)*Z****

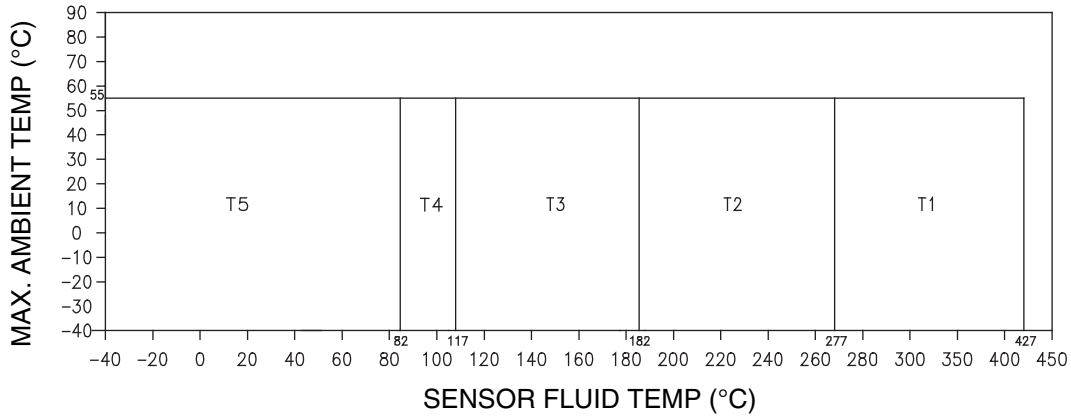
Construction Identification Code (C.I.C.) A5 and no marking

3.6.1) Electrical parameters see EB-3600636 for the transmitter type*700**********

3.6.2) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown on the following graph:

For CMF300A Sensor with 1700/2700 with Integral Core and Construction Identification Code (C.I.C.) A5, and CMF200A Sensor with 1700/2700 with Integral Core and Construction Identification Code (C.I.C.) no marking



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2: T 290°C, T1:T 440°C.

3.6.3) Ambient temperature range

CMF***A****(2–9, A, B, D, E, Q, V, W or Y)*Z**** Ta –40 °C up to +55 °C
with CIC A5 and no marking

Since the electronics are mounted approx. 1 meter away from the sensor by means of a flexible stainless steel hose, 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

–20 °C ≤ Ta ≤ +55 °C

- type	**- type of protection**
CMF010*****(R, H, or S)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T^1 °C
CMF025*****(R, H, or S)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T^1 °C
CMF050*****(R, H, or S)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T^1 °C
CMF100*****(R, H, or S)*Z**** with CIC A2	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T^1 °C

- type	**- type of protection**
CMF200*****(R, H, or S)*Z**** with CIC A2 or A3	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T6 II 2 D IP65 T[1] °C
CMF300*****(R, H, or S)*Z**** with CIC A2 or A3	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T6 II 2 D IP65 T[1] °C
CMF010*****(2–9, A, B, D, E, Q, V, W or Y)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C
CMF025*****(2–9, A, B, D, E, Q, V, W or Y)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C
CMF050*****(2–9, A, B, D, E, Q, V, W or Y)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C
CMF100*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A2	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C
CMF200*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A2 or A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
CMF300*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A2 or A3	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C

(1) For dust temp ratings see temperature graphs.

–40 °C ≤ Ta ≤ +55 °C

CMF200A****(R, H, or S)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T6 II 2 D IP65 T[1] °C
CMF200A****(2–9, A, B, D, E, Q, V, W or Y)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
CMF300A****(R, H, or S)*Z**** with CIC A5	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T6 II 2 D IP65 T[1] °C
CMF300A****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A5	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C

(1) For dust temp ratings see temperature graphs.

–240 °C ≤ Ta ≤ +55 °C (For Dust min. is –40 °C)

CMF200*****(R, H, or S)*Z**** with CIC A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T[1] °C
CMF300A****(R, H, or S)*Z**** with CIC A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T[1] °C

(1) For dust temp ratings see temperature graphs.

–40 °C ≤ Ta ≤ +55 °C

CMF200*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C
CMF300*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C

(1) For dust temp ratings see temperature graphs.

5) Special conditions for safe use / Installation instructions

5.1) By mounting the sensor CMF********C*Z**** or CMF********F*Z**** to the transmitter *700********* the use of the unit will be modified according to the following table:

Sensor	CMF010*****(C or F)*Z**** CMF025*****(C or F)*Z**** CMF050*****(C or F)*Z**** CMF100*****(C or F)*Z**** with CIC A2 CMF200*****(C or F)*Z**** with CIC A4 CMF300*****(C or F)*Z**** with CIC A4	CMF200*****(C or F)*Z**** with CIC A2, A3 CMF300*****(C or F)*Z**** with CIC A2, A3 CMF200A*****(C or F)*Z**** with CIC no marking CMF300A*****(C or F)*Z**** with CIC A5
Transmitter type *700*1(1 or 2)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB+H_2 T1–T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
Transmitter type *700*1(3, 4 or 5)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
Transmitter type *700*1(1 or 2)D******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB+H_2 T1–T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
Transmitter type *700*1(3, 4, or 5)D******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
Transmitter type 2700*1(1 or 2)(E or G)******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB+H_2 T1–T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C
Transmitter type 2700*1(3, 4, or 5)(E or G)******	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 (1) G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C

(1) For dust temperature ratings, see temperature graphs.

5.2) When the application requires that IIB certified sensors are to be used in IIC hazardous area's, these sensors can be modified by adding an infallible series resistor in the drive coil circuitry done by the manufacturer or his representative. In this case, the modified sensor can be marked with IIC and must be marked with an identification code (so-called CEQ number). Furthermore the manufacturer or his representative must issue a Manufacturing Declaration which shows how the calculations have been done, what resistor value is to be added and what the identification code is.

5.3) The above is also applicable when IIB or IIC certified sensors are going to be used at lower fluid temperatures than indicated in the EC Type Examination Certificate.

5.4) A combination of points 5.2 and 5.3 is also allowed.

Model CMF400 I.S. Sensors

ATEX Installation Instructions

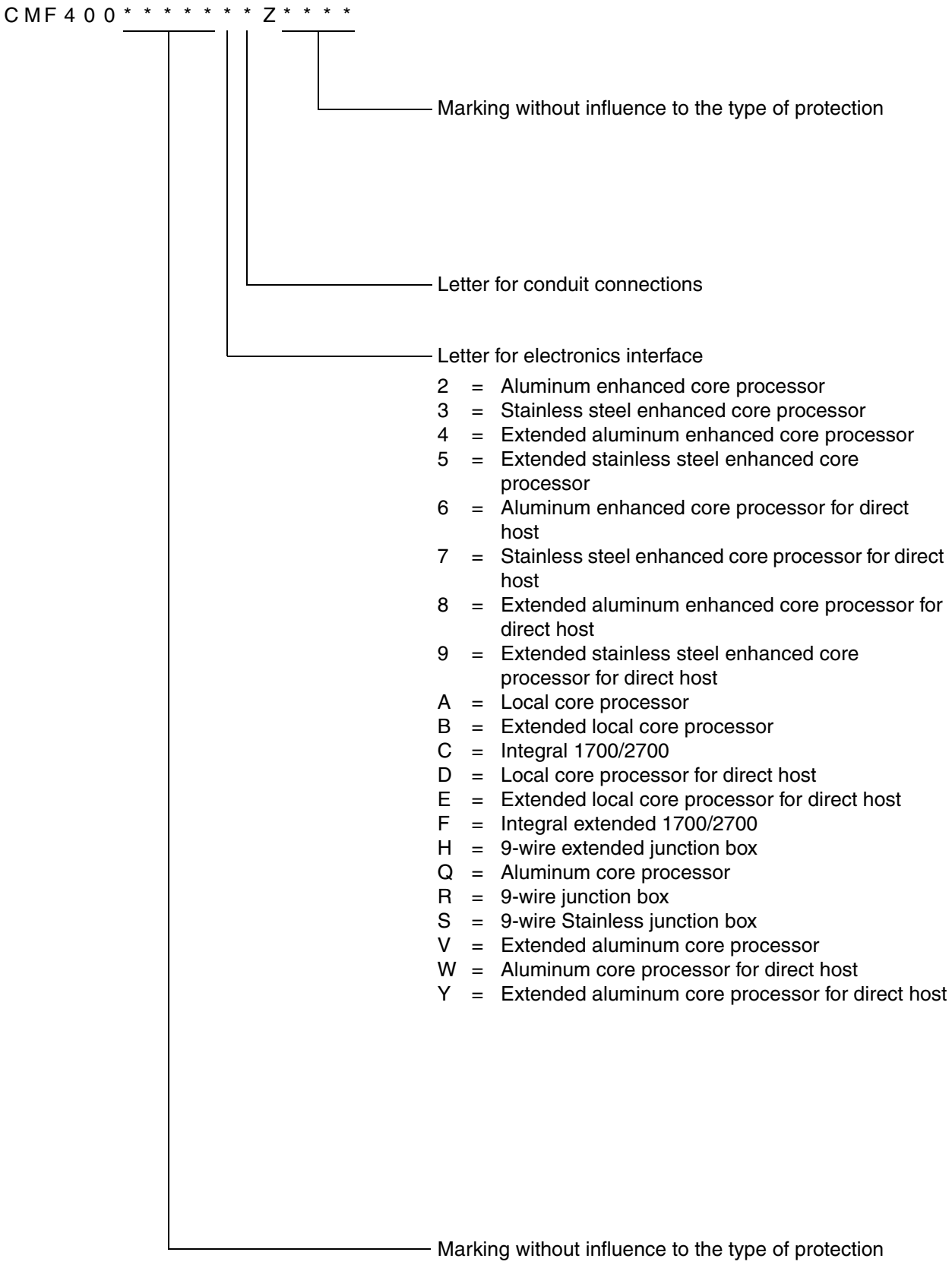
- For installing the following Micro Motion sensors with ATEX certificate number DMT 01 ATEX E 140 X:
  - Model CMF400 I.S. including high-temperature Model CMF400A

Subject:	Equipment type	**Sensor type CMF400* ******Z******	
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		EN 50014:1997 +A1-A2	General requirements
		EN 50020:2002	Intrinsic safety ´i´
		EN 50281-1-1:1998 +A1	Dust evaluation ´D´
Code for type of protection		**EEx ib IIB/IIC T1-T5/T6**	

1) Subject and type

Sensor type CMF400 *******Z****

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



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.

Instead of the junction box (CMF400 *****(R, H or S)*Z****), an enclosure with an integral mounted signal processing device type 700 can be used; this variation gets the denomination type CMF400 *****(A, B, D or E)*Z**** for a SS enclosure and CMF400 *****(Q, V, W or Y)*Z**** for an aluminum enclosure.

Alternatively a transmitter type *700********** can be mounted directly to the sensor; this variation gets the denomination type CMF400 *****(C or F)*Z****.

The high temperature version CMF400A******Z**** can be executed with a junction box, or transmitter, or core processor, or enhanced core processor; this variation has therefore always the denomination CMF400A******Z****.

By mounting the sensor directly to the transmitter the use of the unit will be modified according to the following table:

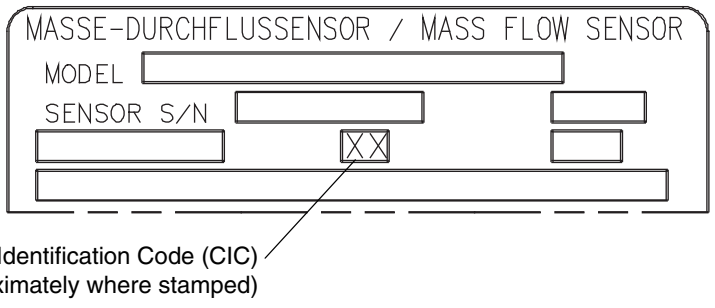
Sensor	CMF400*****(C or F)*Z**** Construction Identification Code :A1 and A3 CMF400A****(C or F)*Z**** Construction Identification Code :No Marking	CMF400*****(C or F)*Z**** Construction Identification Code :A4
Transmitter type *700*1(1 or 2)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1-T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB+H2 T1-T5 II 2 D IP65 T[1] °C
Transmitter type *700*1(3, 4 or 5)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1-T5 II 2 D IP65 T[1] °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1-T5 II 2 D IP65 T[1] °C

(1) For dust temp ratings see temperature graphs.

Amendment No. 2 to the ATEX Certificate DMT 01 ATEX E 140 X reflects the revised Drive Coil and Pick-Off Coil parameters optimized for both fluid and Gas Measurements.
These revised coil parameters will be identified with a Construction Identification Code (CIC) of A1.

Amendment No. 6 to the ATEX Certificate DMT 01 ATEX E 140 X reflects the revised Drive Coil and Pick-Off Coil parameters for improved performance. Sensors constructed using these revised coil parameters will be identified with a Construction Identification Code (CIC) of A3.

Amendment No. 8 to the ATEX Certificate DMT 01 ATEX E 140 X reflects the addition of the Enhanced Core Processor Interface Codes (2-9) and the addition of the CMF400A model . Furthermore the addition of revised drive coil series resistance for the CMF400 sensors used at low temperature & IIC applications,. these are identified with Construction Identification Code (CIC) of A4.



Construction Identification Code (CIC)
(Shown approximately where stamped)

3) Parameters

3.1) Type CMF400*****(R, H or S)*Z**** (Except CMF400A****(R, H or S)*Z****)

Construction Identification Code (CIC) A1, A3, and A4 (IIC)

3.1.1) Drive circuit

Power	2,54 W
Voltage	11,4 VDC
Current	2,45 A
Effective internal capacitance	Negligible

Effective internal max. L_i , min. coil & series resistor & min ambient/fluid temp.

CMF400 CIC A1	4,4 mH	15,72 Ω	38,56 Ω	–50 °C
CMF400 CIC A4 (IIC)	11,75 mH	0 Ω	187 Ω	–240 °C
CM400 CIC A3	11,75 mH	79,2 Ω	19,8 Ω	–50 °C

3.1.2) Pick-off circuit

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible

Effective internal max. L_i , min. coil & series resistor & min ambient/fluid temp.

CMF400 CIC A1	6,9 mH	99,52 Ω	569,2 Ω	–50 °C
CMF400 CIC A4 (IIC)	12,4 mH	0 Ω	206,8 to 566,4 Ω	–240 °C
CMF400 CIC A3	12,4 mH	121,8 Ω	0 to 566,4 Ω	–50 °C

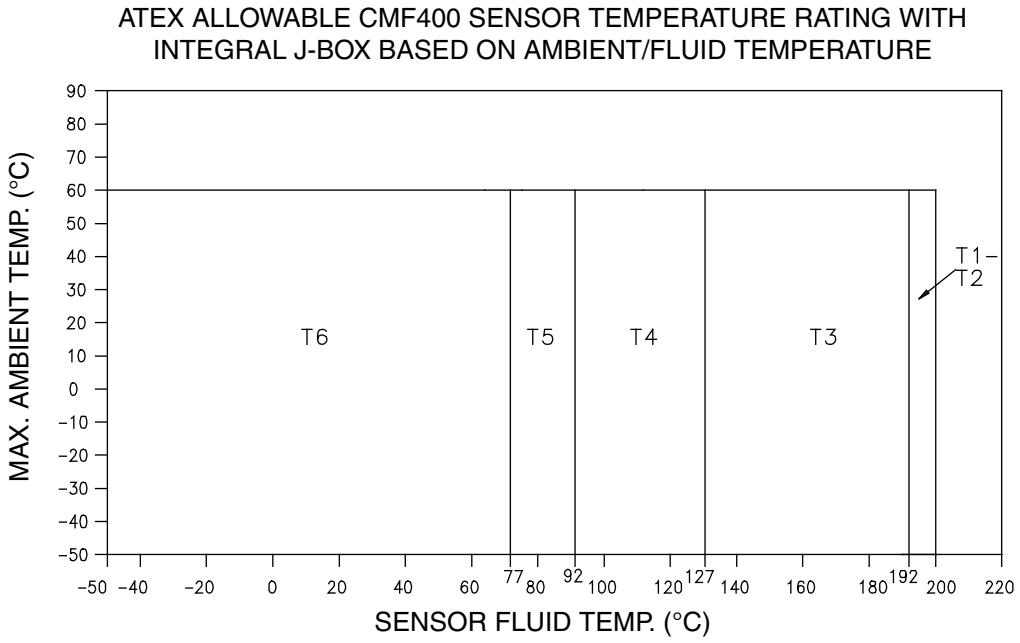
3.1.3) Temperature circuit

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible
Effective internal inductance	Negligible

3.1.4) Temperature class

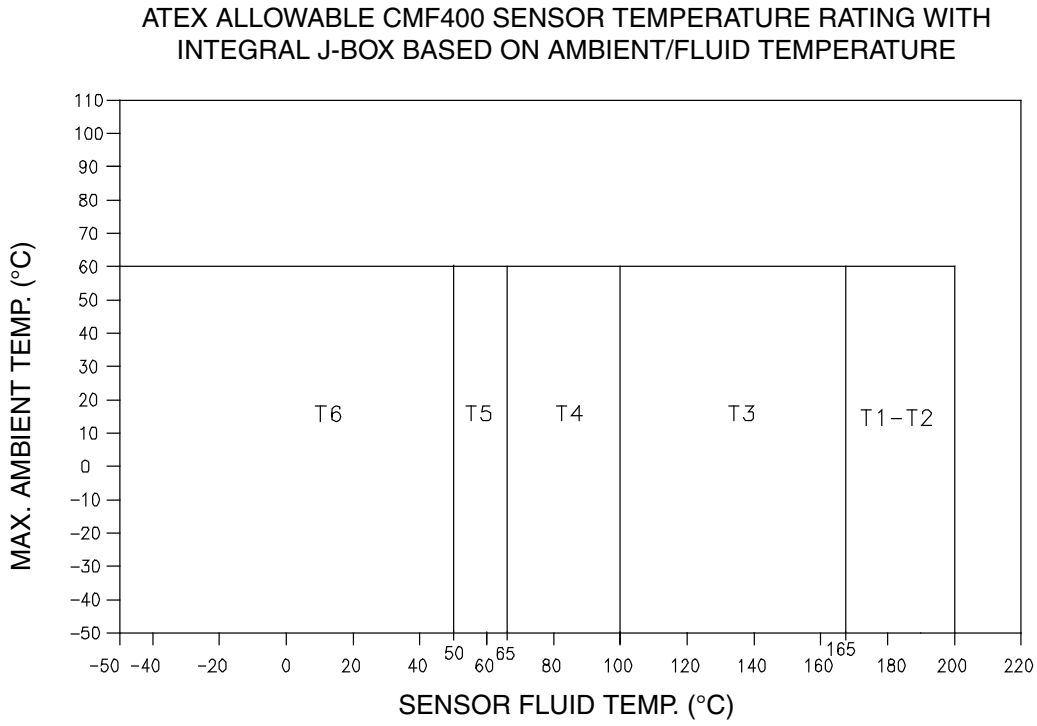
The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graphs:

For Construction Identification Code (CIC) A1



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature 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 203°C. The minimum ambient and process fluid temperature allowed for dust is –40°C.

For Construction Identification Code (CIC) A3



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature 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 203°C. The minimum ambient and process fluid temperature allowed for dust is –40°C.

3.1.5) Ambient temperature range

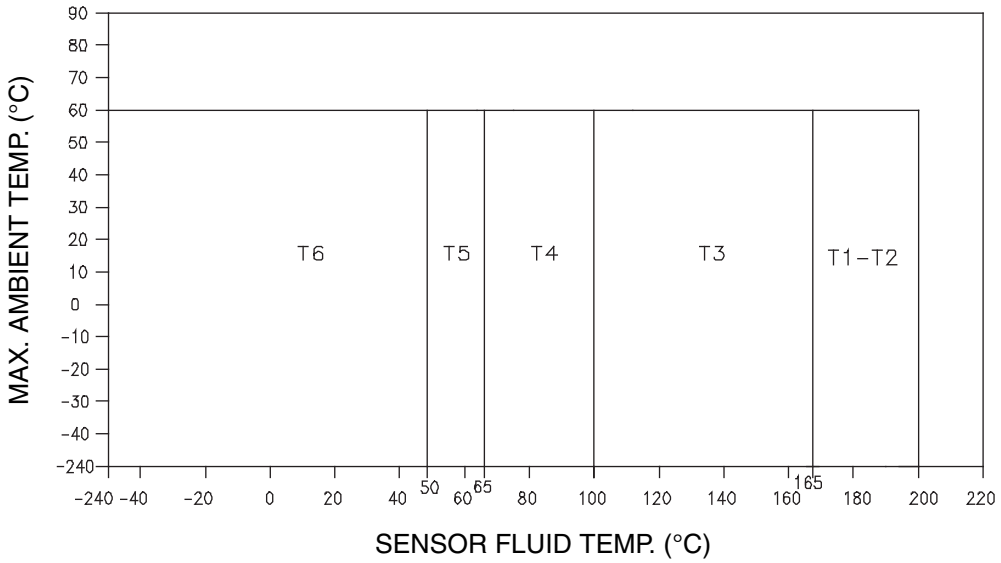
Type CMF400*****(R, H or S)*Z**** (Except CMF400A****(R, H or S)*Z****)	Ta	–50 °C up to +60 °C

The use of the sensor at an ambient temperature higher than +60 °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. Minimum medium temperature is –50 °C.

The ambient temperature of the sensor may be less than –50 °C provided the temperature of the medium is not less than 0 °C.

3.1.6) Temperature class for Construction Identification Code (CIC) A4 (IIC)

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature 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 230°C. The minimum ambient and process fluid temperature allowed for dust is -40°C.

3.1.7) Ambient temperature range

Type CMF400*****(R, H or S)*Z**** (except CMF400A****(R, H or S)*Z****) CIC A4 (IIC)	Ta	–240 °C up to +60 °C

The use of the sensor at an ambient temperature higher than +60 °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.

3.2) Type CMF400A****(R, H or S)*Z****

Construction Identification Code (CIC) no marking

3.2.1) Drive circuit

Power	2,54 W
Voltage	11,4 VDC
Current	2,45 A
Effective internal capacitance	Negligible

Effective internal max. L_I , min. coil & series resistor (–40°C)

CMF400A	7,75 mH	57,1 Ω	19,8 Ω

3.2.2) Pick-off circuit

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible

Effective internal max. L_I , min. coil & series resistor (–40°C)

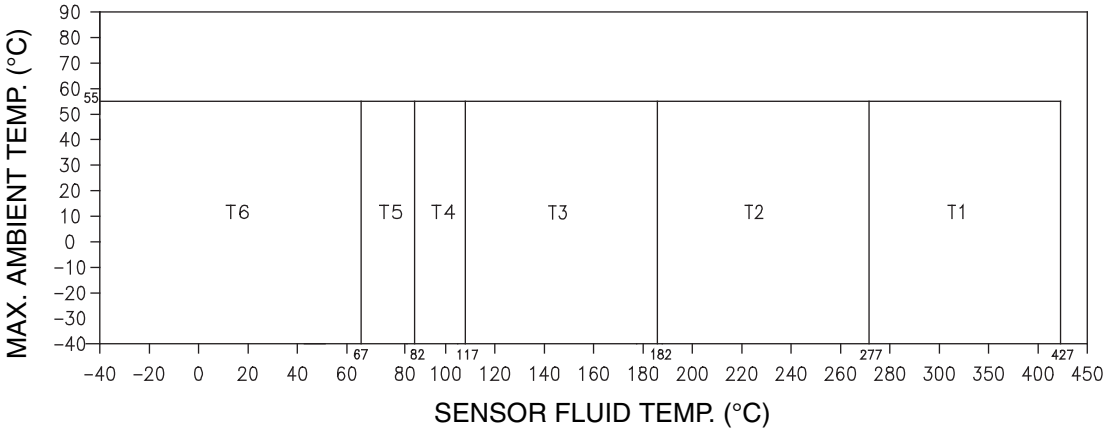
CMF400A	6,50 mH	43,2 Ω	569,3 Ω

3.2.3) Temperature circuit

Voltage	Up to 30 VDC
Current	Up to 101 mA
Power	Up to 750 mW
Effective internal capacitance	Negligible
Effective internal inductance	Negligible

3.2.4) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T6:T 80°C, T5:T 95°C, T4:T 130°C, T3:T 195°C, T2:T 290°C, T1:T 440°C.

3.2.5) Ambient temperature range

Type CMF400A****(R, H or S)*Z**** CIC no marking	Ta	–40 °C up to +55 °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. Minimum medium temperature is –40 °C.

3.3) Type CMF400*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** (except CMF400A****(0–9, A, B, D, E, Q, V, W or Y)*Z****)

Construction Identification Code (CIC) A1, A3, and A4 (IIC)

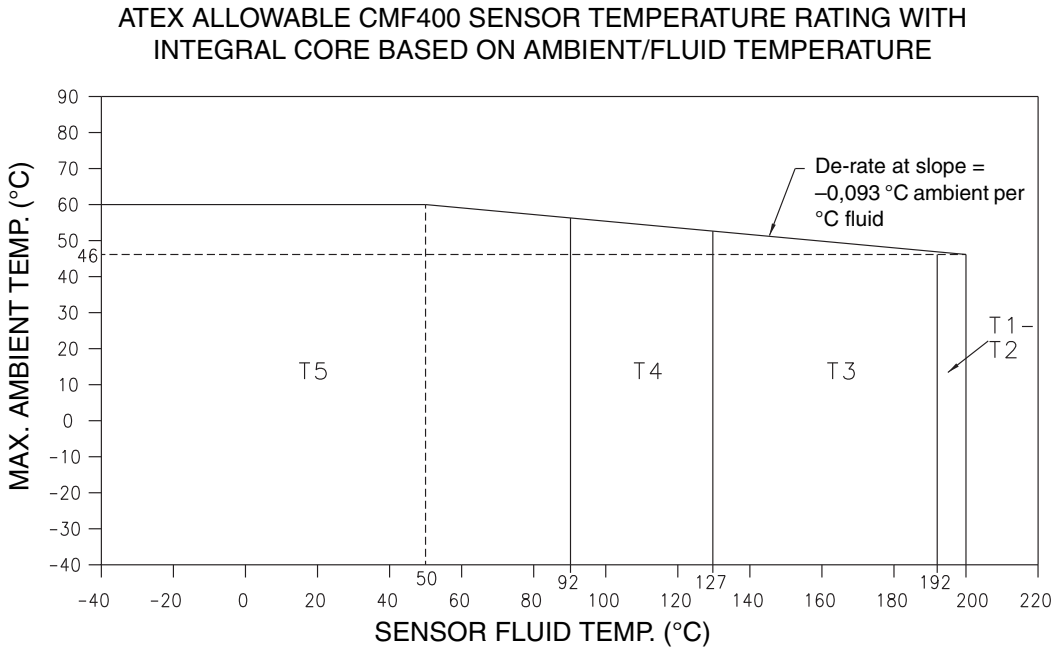
3.3.1) Input circuits (terminals 1–4)

Voltage	Up to	17,3 VDC
Current	Up to	484 mA
Power	Up to	2,1 W
Effective internal capacitance		2200 pF
Effective internal inductance		30 μH

3.3.2) Temperature class

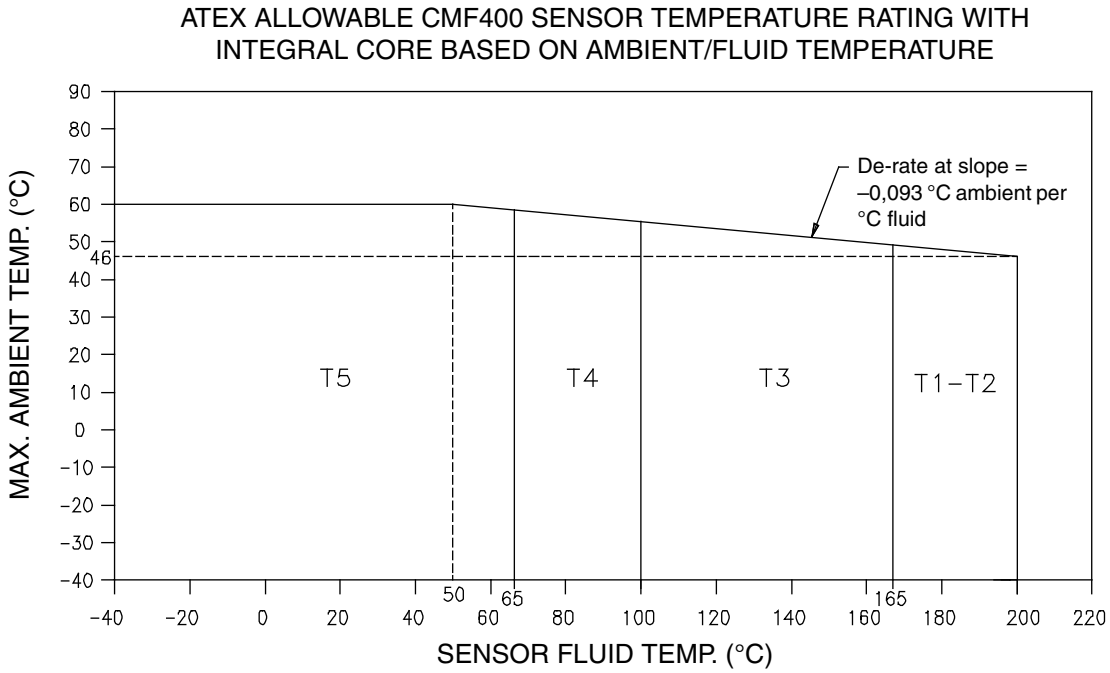
The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

For Construction Identification Code (CIC) A1



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 203°C.

For Construction Identification Code (CIC) A3



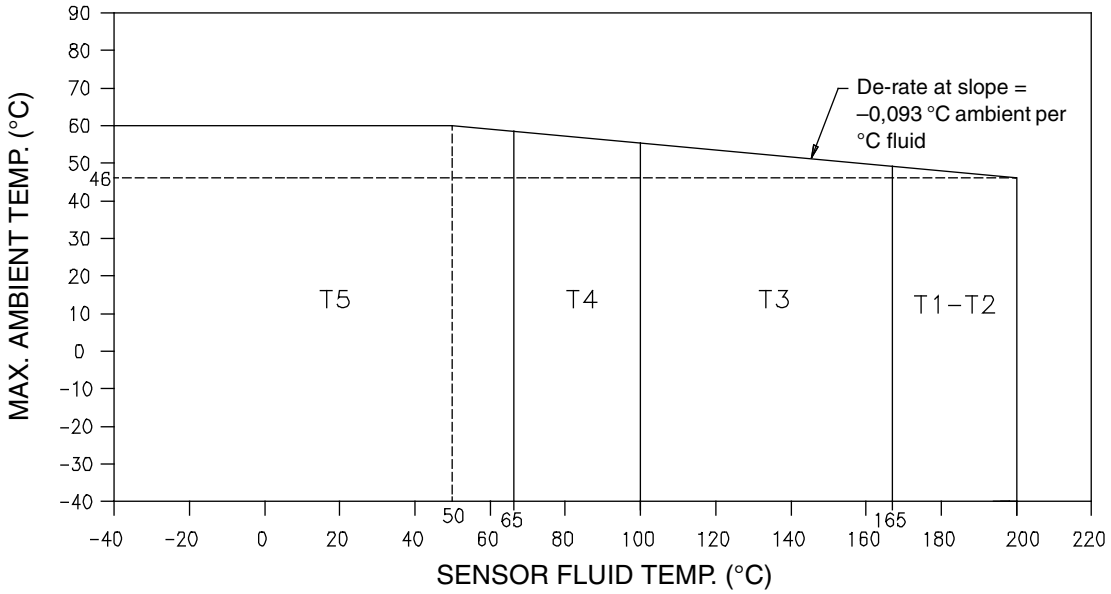
Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 203°C.

3.3.3) Ambient temperature range

CMF400*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** (except CMF400A****(0–9, A, B, D, E, Q, V, W or Y)*Z****) CIC A1 and A3	Ta	–40 °C up to +60 °C

3.3.4) For Construction Identification Code (CIC) A4 (IIC)

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2: to T1:T 230°C. The minimum ambient and process fluid temperature allowed for dust is -40°C.

3.3.5) Ambient temperature range

CMF400*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** (except CMF400A****(0–9, A, B, D, E, Q, V, W or Y)*Z****) CIC A4 (IIC)	Ta	–40 °C up to +60 °C

3.4) Type CMF400A****(2–9, A, B, D, E, Q, V, W or Y)*Z****

Construction Identification Code (CIC) no marking

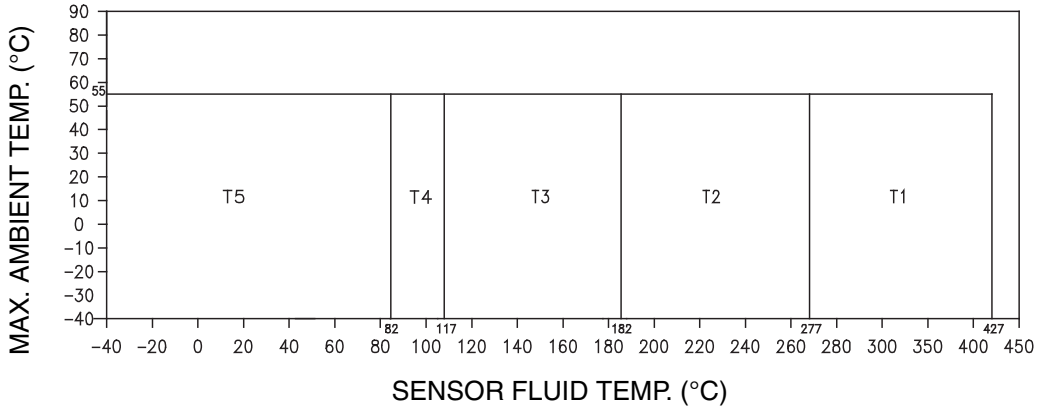
3.4.1) Input circuits (terminals 1–4)

Voltage	Up to	17,3 VDC
Current	Up to	484 mA
Power	Up to	2,1 W
Effective internal capacitance		2200 pF
Effective internal inductance		30 μH

3.4.2) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

For CMF400A sensor



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2:T 290°C, T1:T 440°C.

3.4.3) Ambient temperature range

CMF400A****(2–9, A, B, D, E, Q, V, W or Y)*Z**** Ta –40 °C up to +55 °C

Since the electronics are mounted approx. 1 meter away from the sensor by means of a flexible stainless steel hose 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. Minimum medium temperature is –40 °C.

3.5) Type CMF400*****(C or F)*Z**** (except for CMF400A****(C or F)*Z****)

Construction Identification Code (CIC) A1, A3 and A4 (IIC)

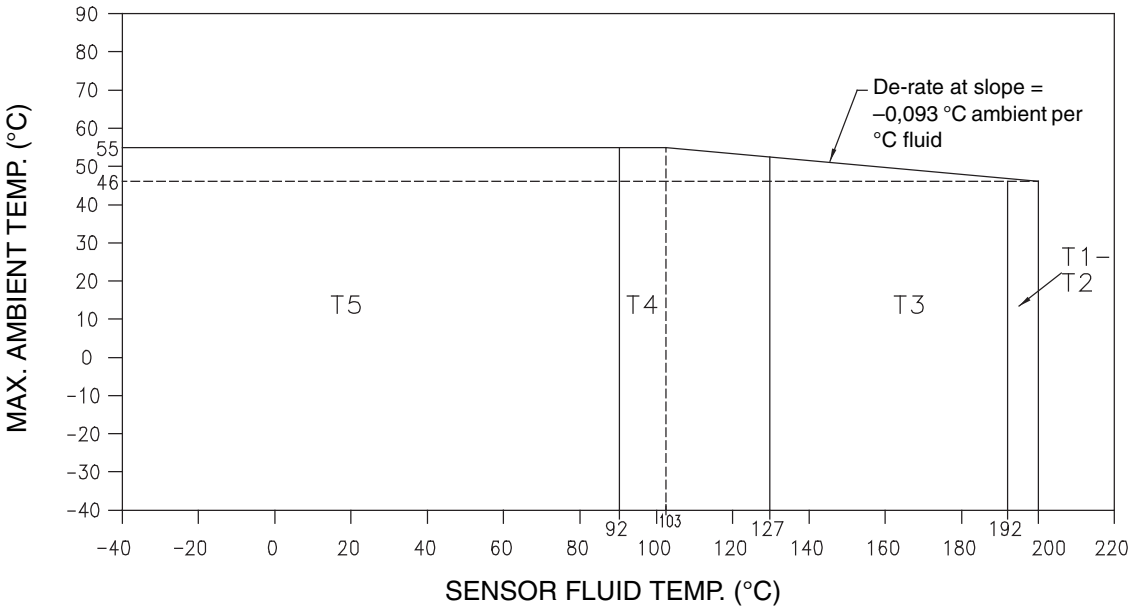
3.5.1) Electrical parameters see EB-3600636 for the transmitter type*700**********.

3.5.2) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown on the following graphs:

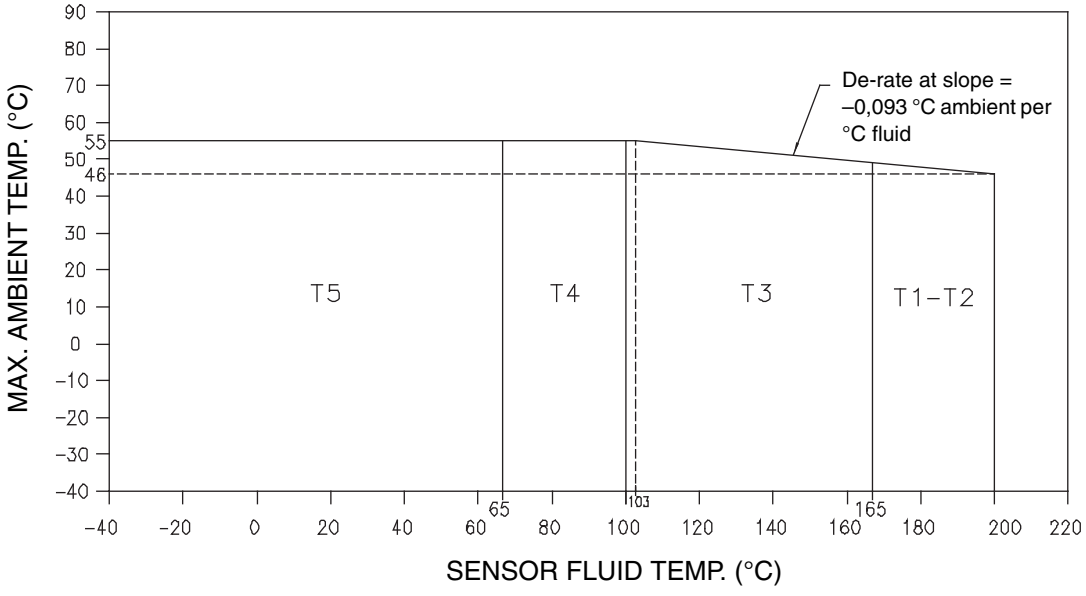
For Construction Identification Code (CIC) A1

ATEX ALLOWABLE CMF400 SENSOR TEMPERATURE RATING
1700/2700 WITH INTEGRAL CORE BASED ON AMBIENT/FLUID TEMPERATURE



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 203°C.

For Construction Identification Code (C.I.C.) A3 or A4



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2 to T1:T 230°C.

3.5.3) Ambient temperature range

CMF400*****(C or F)*Z**** (except for CMF400A****(C or F)*Z****)	Ta	–40 °C up to +55 °C

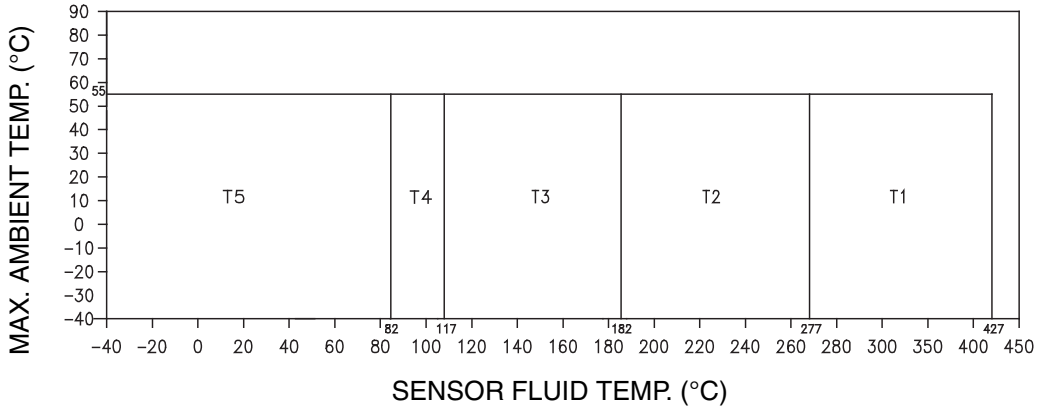
3.6) Type CMF400A****(C or F)*Z****

Construction Identification Code (CIC) no marking

3.6.1) Temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown on the following graph:

For CMF400A Sensor with 1700/2700 with Integral Core and Construction Identification Code (CIC) no marking



Note 1. Use the above graph to determine the temperature class for a given fluid and ambient temperature. The maximum surface temperature for dust is as follows: T5:T 95°C, T4:T 130°C, T3:T 195°C, T2:T 290°C, T1:T 440°C.

3.6.2) Ambient temperature range

CMF400A****(C or F)*Z****	Ta	–40 °C up to +55 °C

Since the electronics are mounted approx. 1 meter away from the sensor by means of a flexible stainless steel hose 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. Minimum medium temperature is –40 °C.

4) Marking

- type	- type of protection	- ambient
CMF400*****(R or H or S)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T6 II 2 D IP65 T[1] °C	–50°C ≤ Ta ≤ +60 °C –40°C ≤ Ta ≤ +60 °C
CMF400*****(2–9, A, B, D, E, Q, V, W, or Y)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C	–40°C ≤ Ta ≤ +60 °C
CMF400*****(C or F)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C	–40°C ≤ Ta ≤ +55 °C
CMF400A****(R or H or S)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T6 II 2 D IP65 T[1] °C	–40°C ≤ Ta ≤ +55 °C
CMF400A****(2 – 9, A, B, D, E, Q, V, W or Y)*Z****	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1–T5 II 2 D IP65 T[1] °C	–40°C ≤ Ta ≤ +55 °C
CMF400*****(R or H or S)*Z**** with CIC A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T6 II 2 D IP65 T[1] °C	–240°C ≤ Ta ≤ +55 °C –40°C ≤ Ta ≤ +55 °C
CMF400*****(2–9, A, B, D, E, Q, V, W or Y)*Z**** with CIC A4	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1–T5 II 2 D IP65 T[1] °C	–40°C ≤ Ta ≤ +55 °C

(1) For dust temperature ratings see temperature graphs.

Construction Identification Code (CIC): A1, A3, and A4 (IIC)

5) Special conditions for safe use / Installation instructions

5.1) By mounting the sensor directly to the transmitter *700********** the use of the unit will be modified accoprding to the following table:

Sensor	CMF400*****(C or F)*Z**** Construction Identification Code :A1 and A3 CMF400A****(C or F)*Z**** Construction Identification Code :No Marking	CMF400*****(C or F)*Z**** Construction Identification Code :A4
Transmitter type *700*1(1 or 2)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1-T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB+H_2 T1-T5 II 2 D IP65 T^1 °C
Transmitter type *700*1(3, 4 or 5)*******	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIB T1-T5 II 2 D IP65 T^1 °C	CE 0575 ⟨Ex⟩ II 2 G EEx ib IIC T1-T5 II 2 D IP65 T^1 °C

(1) For dust temp ratings see temperature graphs.

5.2) When the application requires that IIB certified sensors are to be used in IIC hazardous areas, these sensors can be modified by adding an infallible series resistor in the drive coil circuitry done by the manufacturer or his representative. In this case, the modified sensor can be marked with IIC and must be marked with an identification code (so-called CEQ number). Furthermore, the manufacturer or his representative must issue a Manufacturing Declaration which shows how the calculations have been done, what the resistor value is to be added, and what the identification code is.

5.3) The above is also applicable when IIB or IIC certified sensors are going to be used at lower fluid temperatures than indicated in the EC-Type Examination Certificate.

5.4) A combination of points 5.2 and 5.3 is also allowed.

Cable glands and adapters

ATEX Installation Instructions

1) ATEX certification requirement

All sensor and transmitter cable glands and adapters are required to be ATEX certified. Refer to the specific manufacturer's website for installation instructions.

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