APPVL INST CMF SENSOR IECEx Zn 2 BVS13
EB- 20024684
Revision: AA
Number of Pages: 25
Comments:

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

Originator: RCS 5/21/13

Approved: RCS 5/21/13

Rev	ECN	Description	Approval	Date
AA	1049085	Initial Release.	RCS	5/21/13

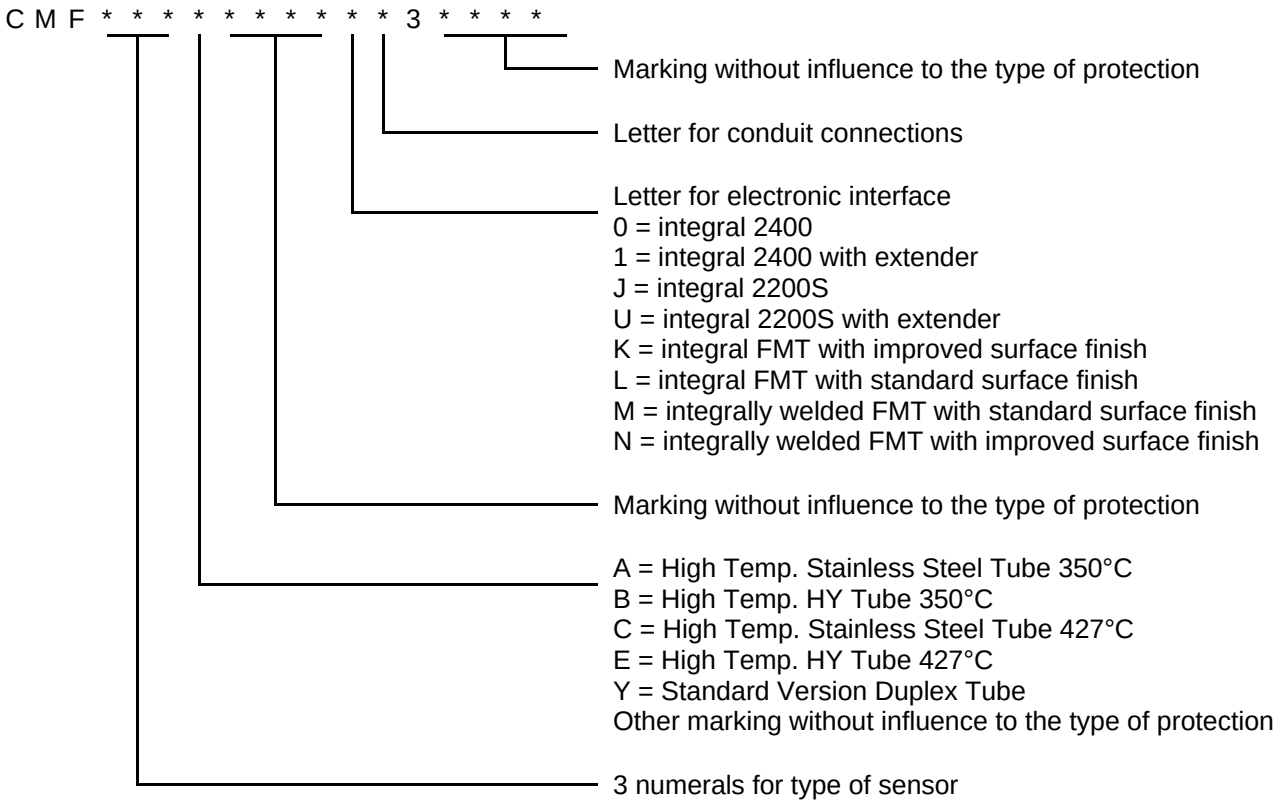
Equipment type	**sensor types** **CMF*** ***(0, 1,J, U, K, L, M or N)*3****	
Manufactured and submitted for examination	**Micro Motion, Inc.**	
Address	**Boulder, Co. 80301, USA**	
Standard basis	IEC 60079-0:2011 IEC 60079-15:2010	General requirements Non-Sparking/Limited Energy ‘n’
Code for type of protection	**Ex nA IIC T1-T4/T5 Gc**	
IECEx Certificate of Conformity	**IECEx BVS 13.0091 X**	

1. Subject and Type

Sensor types:

CMF*** *******3****

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.

The sensor is designed for use in connection with a suitable transmitter, e.g. 24********3**** in accordance with IECEx BVS 05.0014 X; only the assembly of the sensor and the transmitter guarantees the necessary degrees of protection.

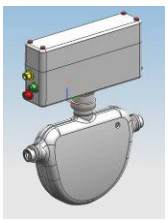
Alternatively a transmitter type 22********3**** in accordance with IECEx BVS 08.0042 X can be used; only the assembly of the sensor and the transmitter guarantees the necessary degrees of protection.
Additionally the 22********3**** may be additionally provided with the THUM Wireless HART adaptor.

Alternatively a transmitter type FMT*****3**** in accordance with IECEx BVS 10.0073 X can be used; only the assembly of the sensor and the transmitter guarantees the necessary degrees of protection.

- When used with an integral transmitter type 2400S*********, the variation gets the denomination type *** *** *****(0 or 1)******.

- When used with an integral transmitter type 2200S*********, the variation gets the denomination type *** *** *****(J or U)******.

- When used with an integral transmitter type FMT**********, the variation gets the denomination type *** *** *****(K,L,M or N)******.



3. Parameters

3.1. Drive circuit (pin connections 7-8)

Voltage	30 VDC
Current	84 mA

3.2. Pick-off circuit (pin connections 3-4 and 5-6)

Voltage	30 VDC
Current	25 mA

3.3. Temperature circuit (pin connections 1,2 and 9)

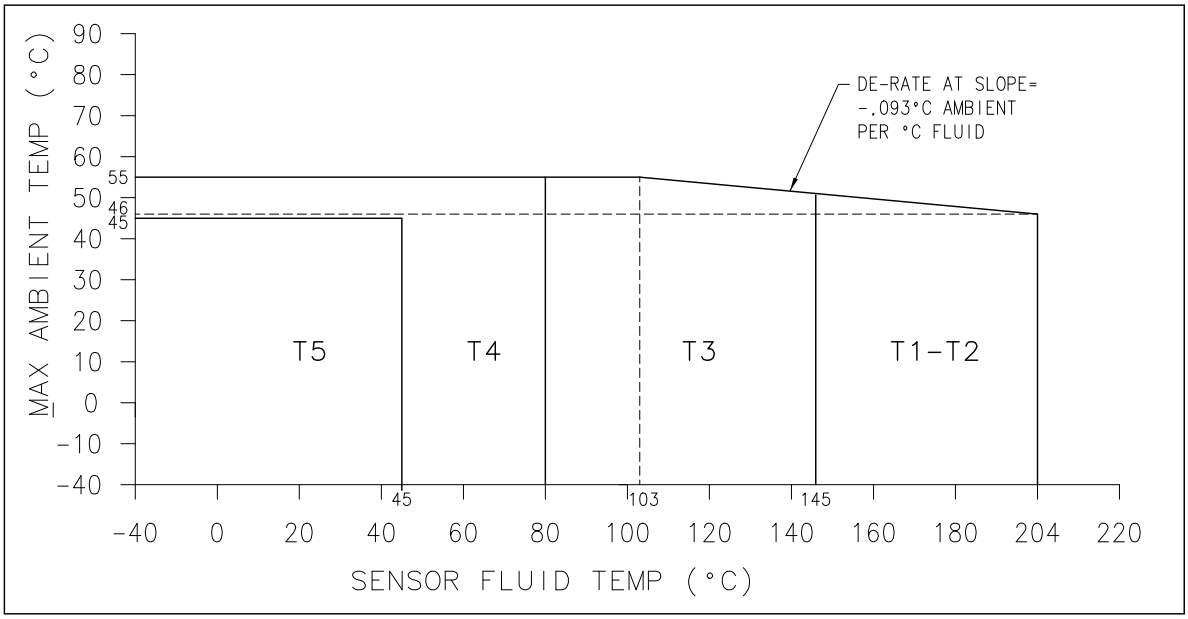
Voltage	30 VDC
Current	25 mA

3.4. Temperature class of CMF-sensors.

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:

3.4.1. Excluding CMF***(A, B, C or E)****(0,1)*3****:

Sensor type			
With 2400S	CMF010*****(0,1)*3****	CMF025*****(0,1)*3****	CMF200*****(0,1)*3****
		CMF050*****(0,1)*3****	CMF300*****(0,1)*3****
		CMF100*****(0,1)*3****	

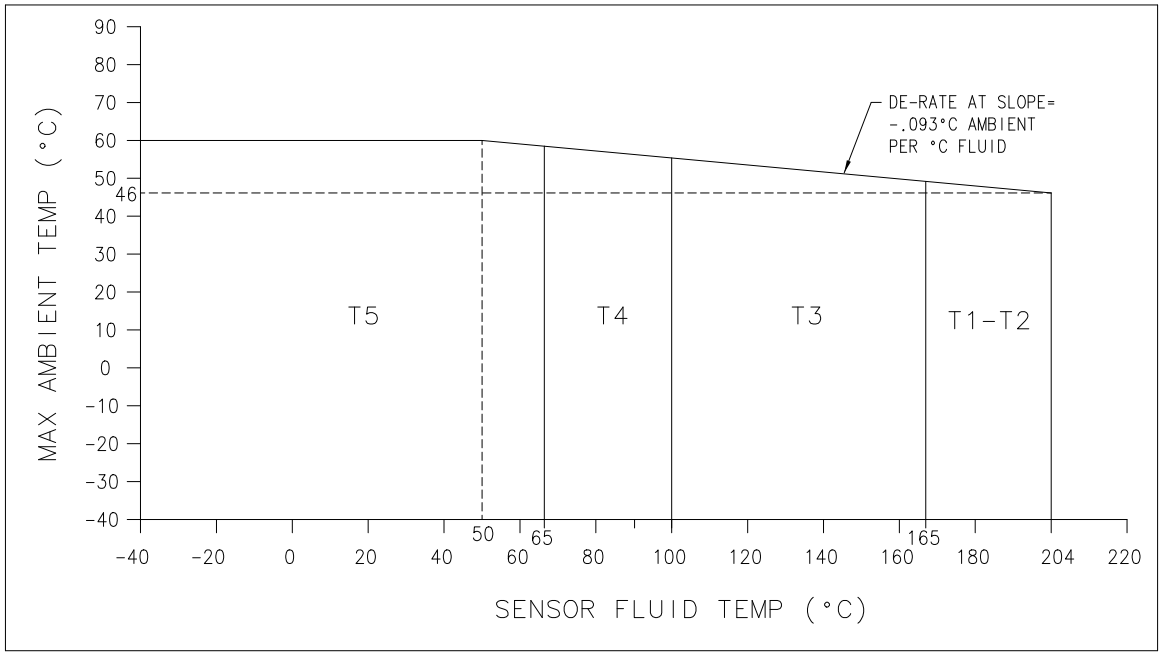


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 55°C

3.4.2. Excluding CMF***(A, B, C or E)****(0,1)*3****:

Sensor type	
with 2400S	CMF350*****(0,1)*3****
	CMF400*****(0,1)*3****

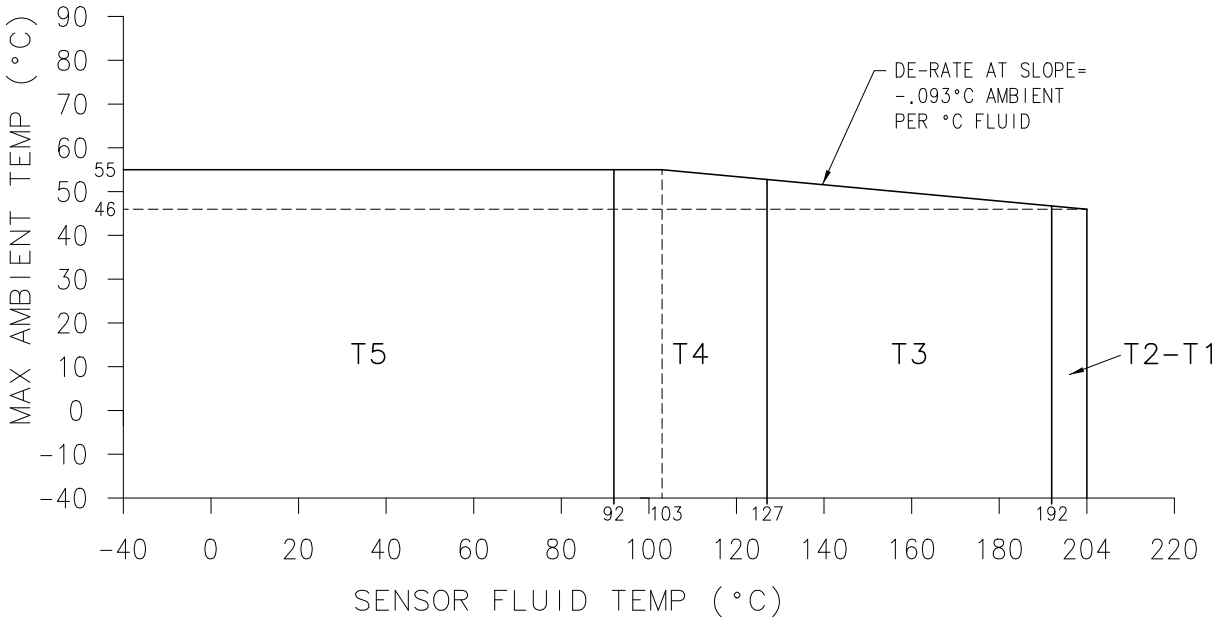


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 60°C

3.4.3. Excluding CMF***(A, B, C or E)****(0,1)*3****:

Sensor type	
With 2400S	CMFHC2*****(0,1)*3****
	CMFHC3*****(0,1)*3****
	CMFHC4*****(0,1)*3****

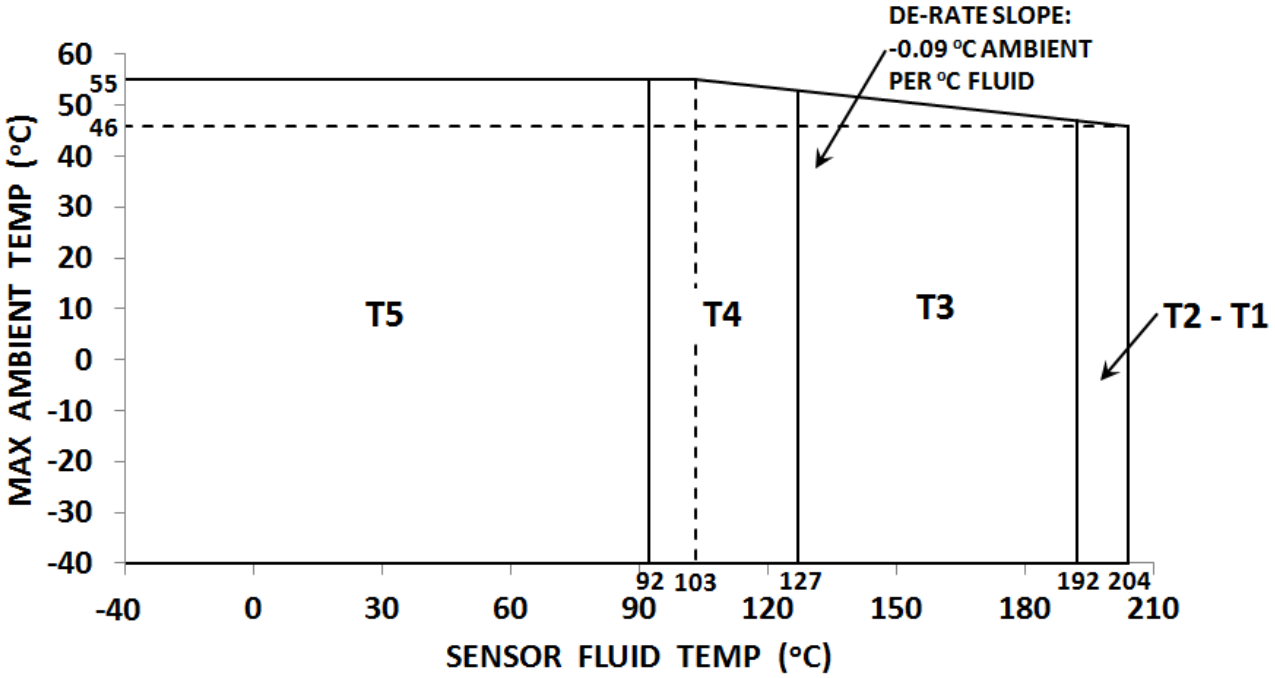


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 55°C

3.4.4. Excluding CMF***(A, B, C or E)****(0,1)*3****:

Sensor type	
With 2400S	CMFHC*Y****(0,1)*3****

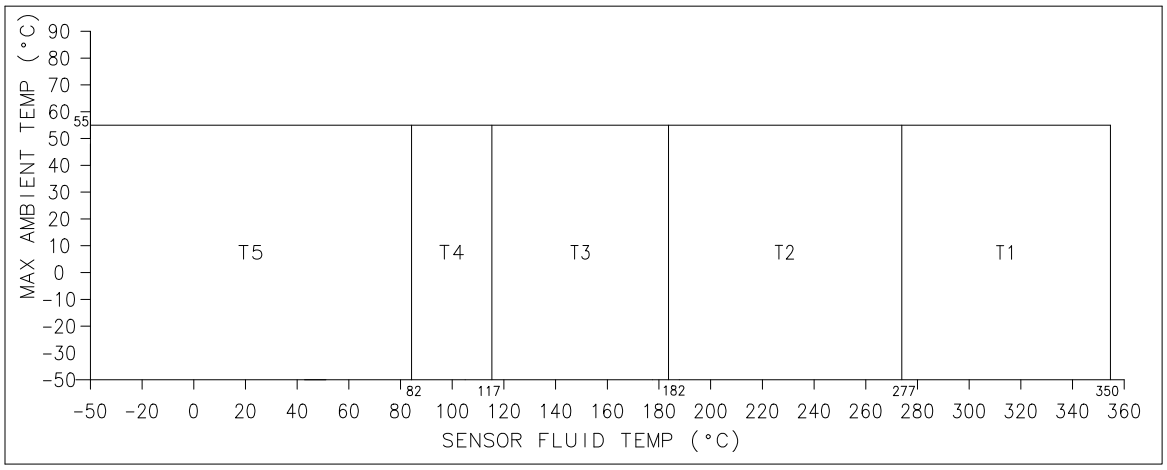


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 55°C

3.4.5.

Sensor type	
With 2400S	CMF200(A,B)****(0,1)*3****
	CMF300(A,B)****(0,1)*3****
	CMF350(A,B)****(0,1)*3****
	CMF400(A,B)****(0,1)*3****
	CMFHC2(A,B)****(0,1)*3****
	CMFHC3(A,B)****(0,1)*3****
	CMFHC4(A,B)****(0,1)*3****



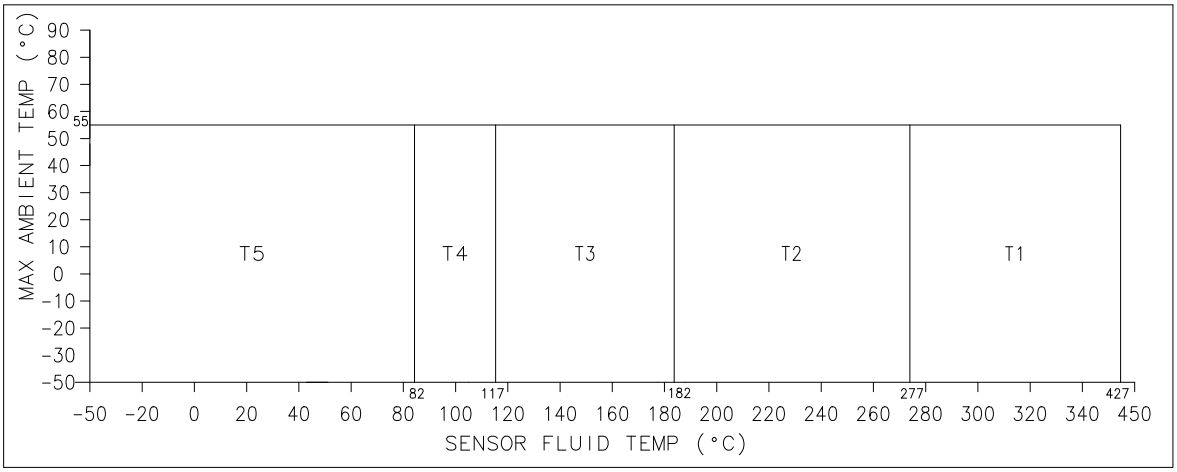
Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –50°C 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.

3.4.6.

Sensor type	
with 2400S	CMF200(C,E)****(0,1)*3****
	CMF300(C,E)****(0,1)*3****
	CMF350(C,E)****(0,1)*3****
	CMF400(C,E)****(0,1)*3****
	CMFHC2(C,E)****(0,1)*3****
	CMFHC3(C,E)****(0,1)*3****
	CMFHC4(C,E)****(0,1)*3****



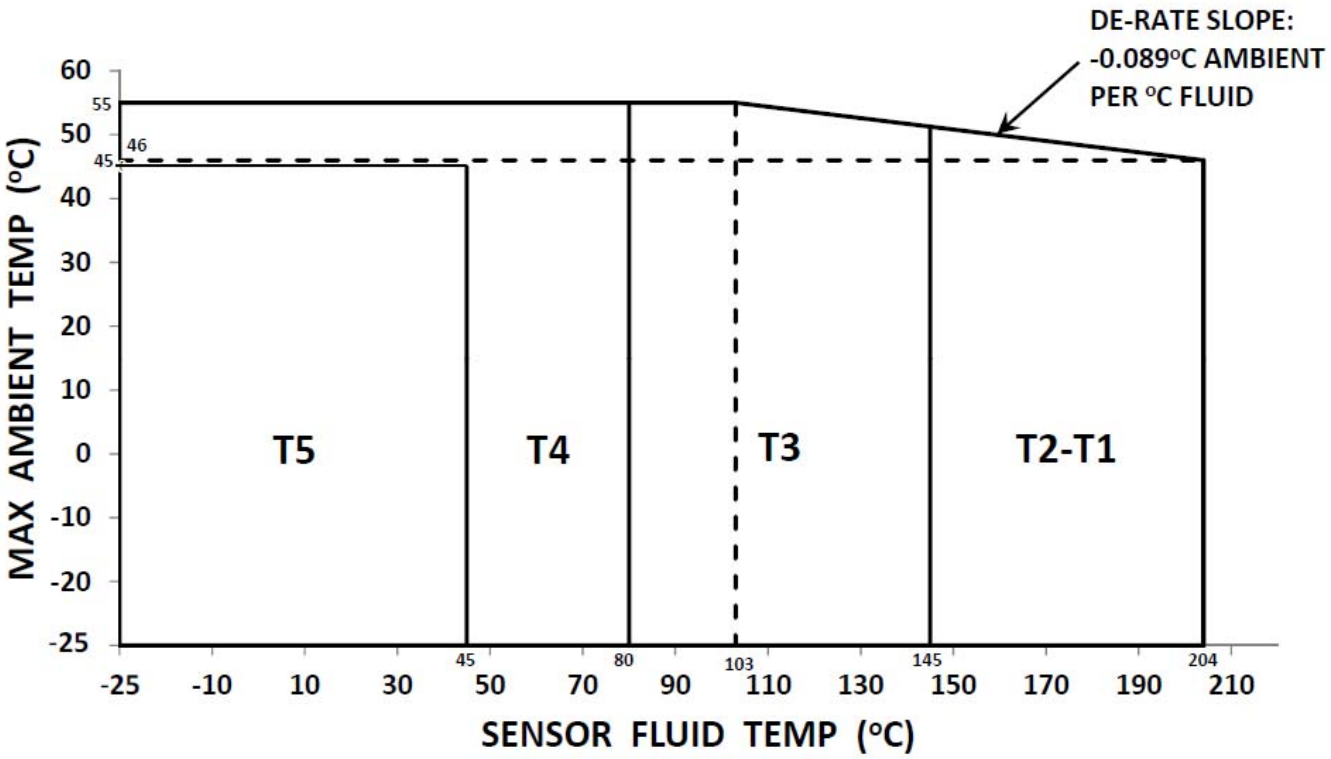
Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –50°C 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.

3.4.7 Excluding CMF***(A, B, C or E)****(K,L,M or N)*3****:

Sensor type			
With FMT	CMF010*****(K,L,M,N)*3****	CMF025*****(K,L,M,N)*3**** CMF050*****(K,L,M,N)*3**** CMF100*****(K,L,M,N)*3****	CMF200*****(K,L,M,N)*3**** CMF300*****(K,L,M,N)*3****

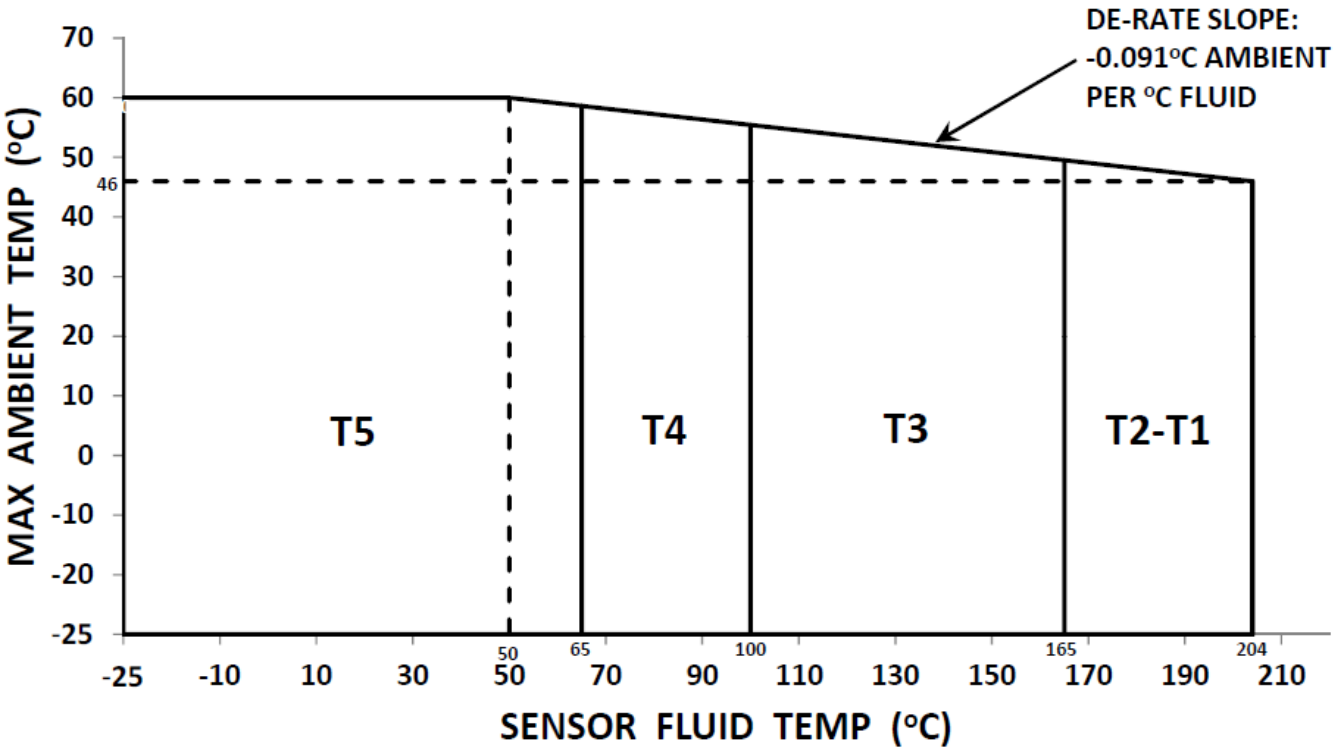


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta – 25°C to + 55°C

3.4.8 Excluding CMF***(A, B, C or E)****(K,L,M or N)*3****:

Sensor type	
with FMT	CMF350*****(K,L,M,N)*3****
	CMF400*****(K,L,M,N)*3****

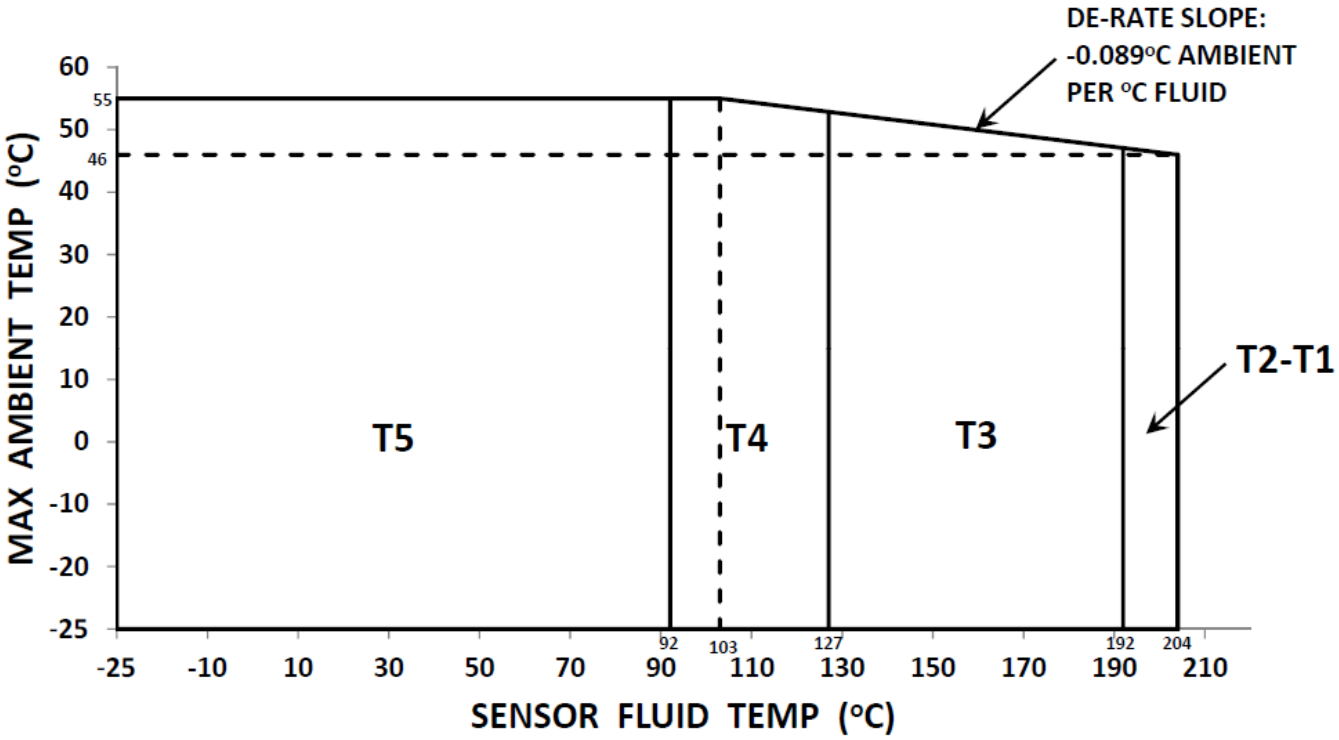


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta – 25°C to + 60°C

3.4.9 Excluding CMF***(A, B, C or E)****(K,L,M or N)*3****:

Sensor type	
With FMT	CMFHC2*****(K,L,M,N)*3****
	CMFHC3*****(K,L,M,N)*3****
	CMFHC4*****(K,L,M,N)*3****

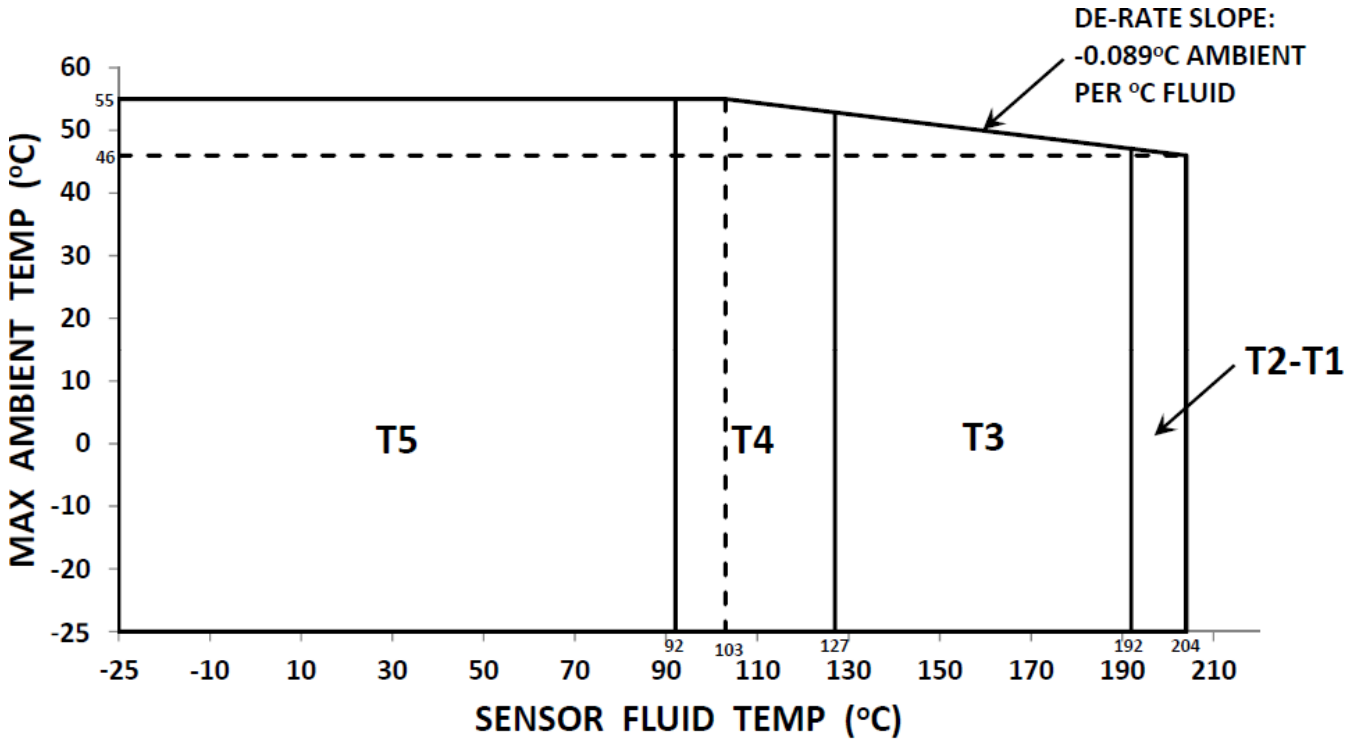


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta – 25°C to + 55°C

3.4.10 Excluding CMF***(A, B, C or E)****(K,L,M or N)*3****:

Sensor type	
With FMT	CMFHC*Y****(K,L,M,N)*3****

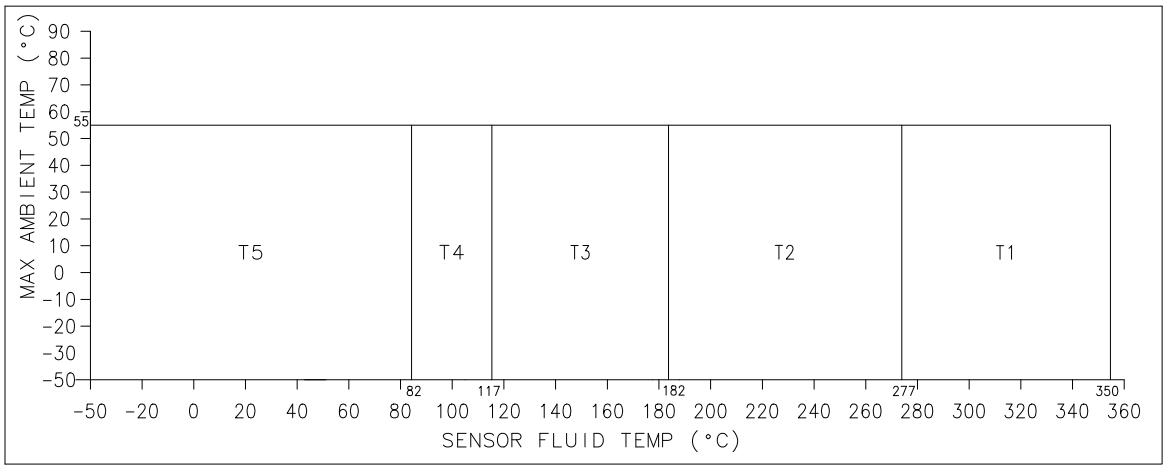


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta – 25°C to + 55°C

3.4.11

Sensor type	
With FMT	CMF200(A,B)****(K,L,M,N)*3****
	CMF300(A,B)****(K,L,M,N)*3****
	CMF350(A,B)****(K,L,M,N)*3****
	CMF400(A,B)****(K,L,M,N)*3****
	CMFHC2(A,B)****(K,L,M,N)*3****
	CMFHC3(A,B)****(K,L,M,N)*3****
	CMFHC4(A,B)****(K,L,M,N)*3****



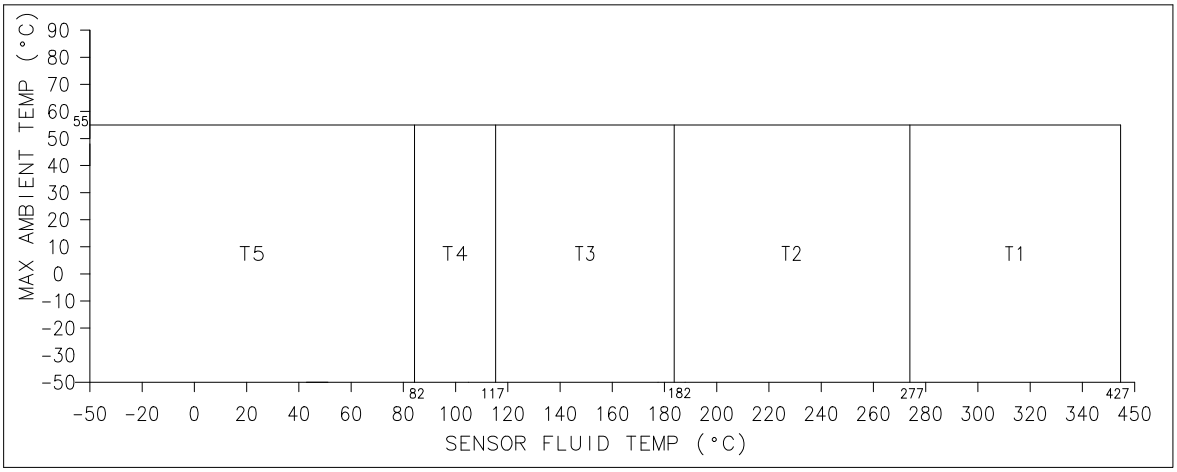
Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –50°C 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.

3.4.12

Sensor type	
with FMT	CMF200(C,E)****(K,L,M,N)*3****
	CMF300(C,E)****(K,L,M,N)*3****
	CMF350(C,E)****(K,L,M,N)*3****
	CMF400(C,E)****(K,L,M,N)*3****
	CMFHC2(C,E)****(K,L,M,N)*3****
	CMFHC3(C,E)****(K,L,M,N)*3****
	CMFHC4(C,E)****(K,L,M,N)*3****



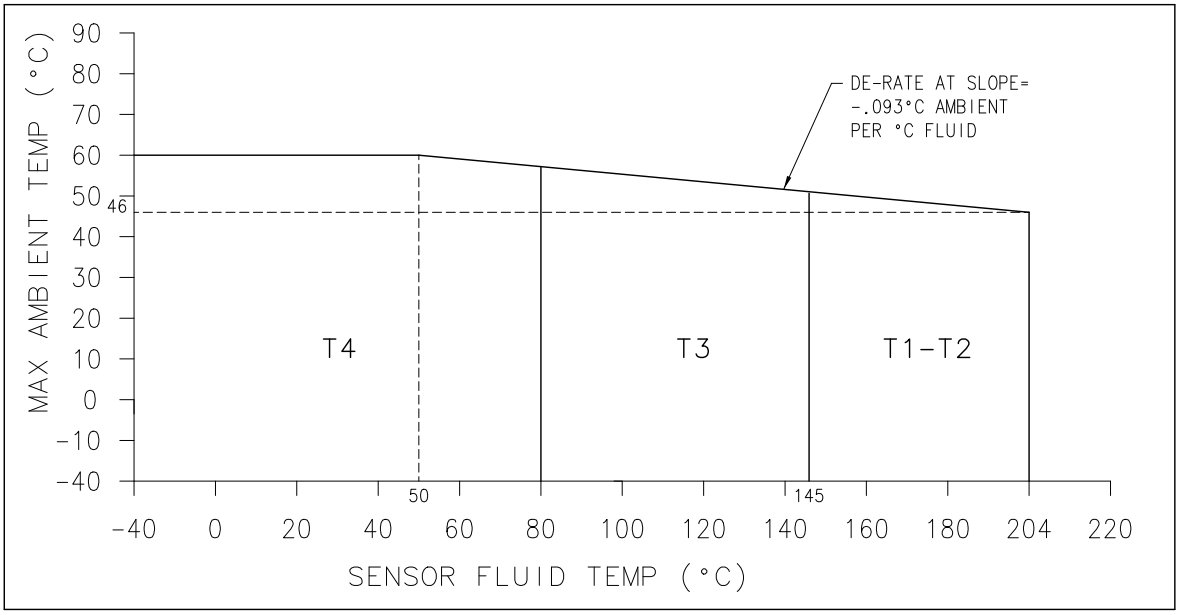
Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –50°C 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.

3.4.13 Excluding CMF***(A, B, C or E)****(J or U)*3****:

Sensor type			
With 2200S	CMF010*****(J,U)*3****	CMF025*****(J,U)*3****	CMF200*****(J,U)*3****
		CMF050*****(J,U)*3****	CMF300*****(J,U)*3****
		CMF100*****(J,U)*3****	

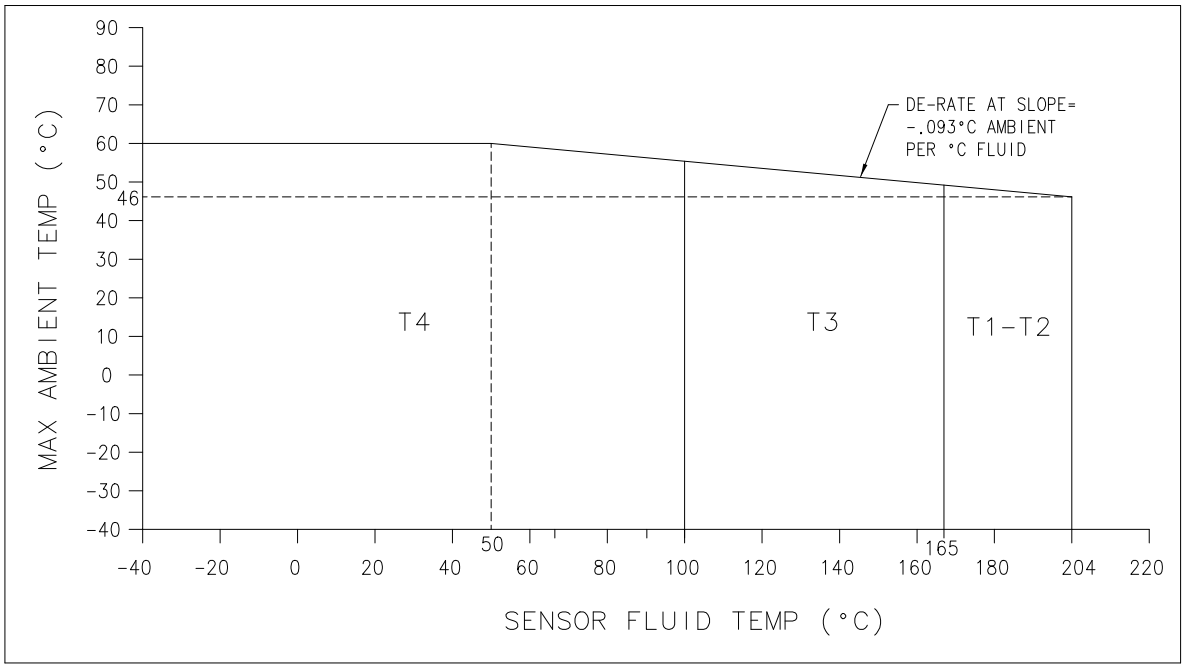


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 60°C

3.4.14 Excluding CMF***(A, B, C or E)****(J or U)*3****:

Sensor type	
with 2200S	CMF350*****(J,U)*3****
	CMF400*****(J,U)*3****

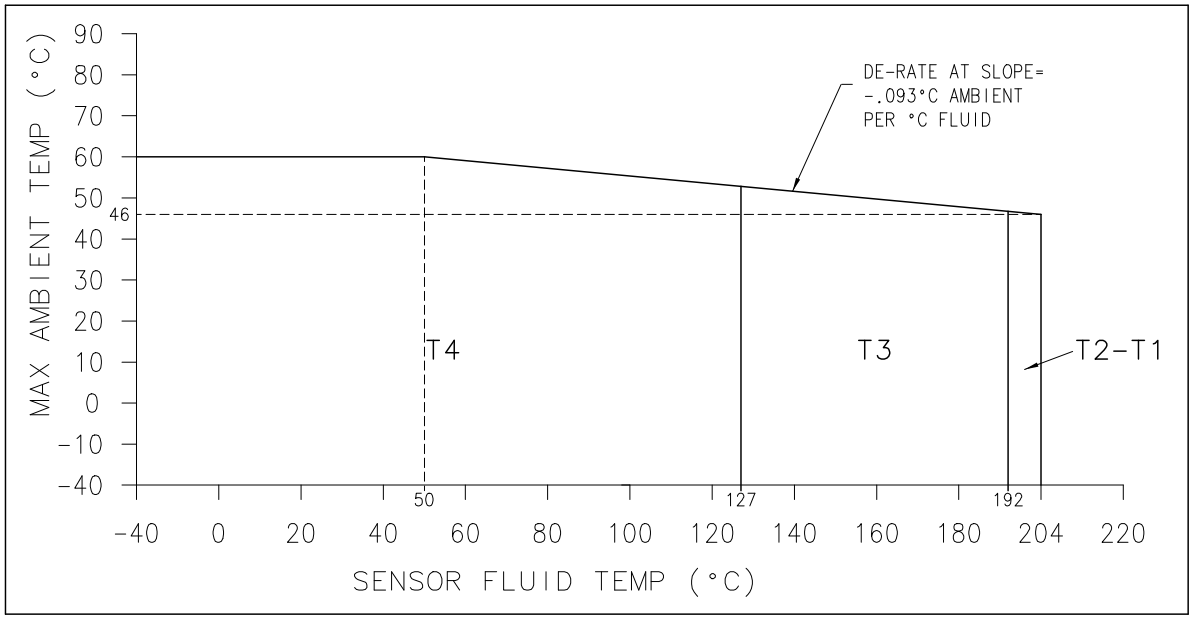


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 60°C

3.4.15 Excluding CMF***(A, B, C or E)****(J or U)*3****:

Sensor type	
with 2200S	CMFHC2*****(J,U)*3****
	CMFHC3*****(J,U)*3****
	CMFHC4*****(J,U)*3****

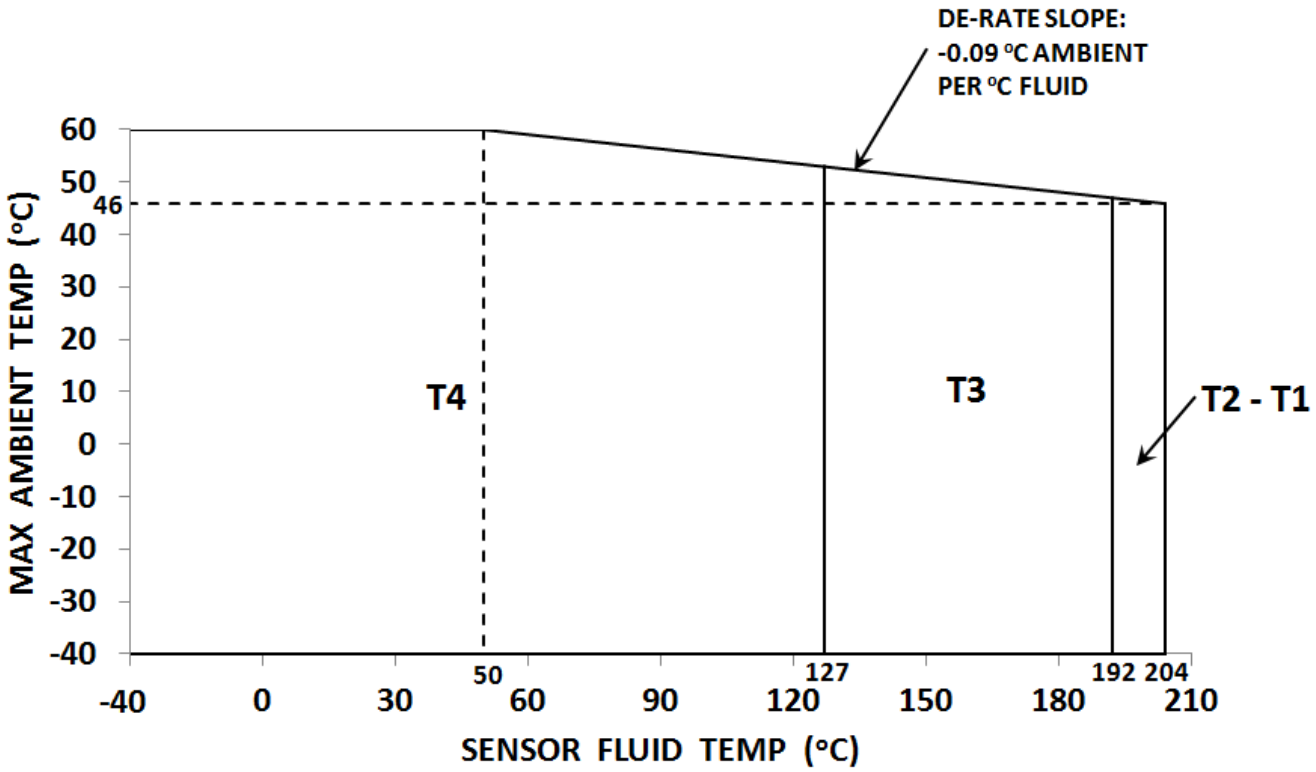


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 60°C

3.4.16 Excluding CMF***(A, B, C or E)****(J or U)*3****:

Sensor type	
with 2200S	CMFHC*Y****(J,U)*3****

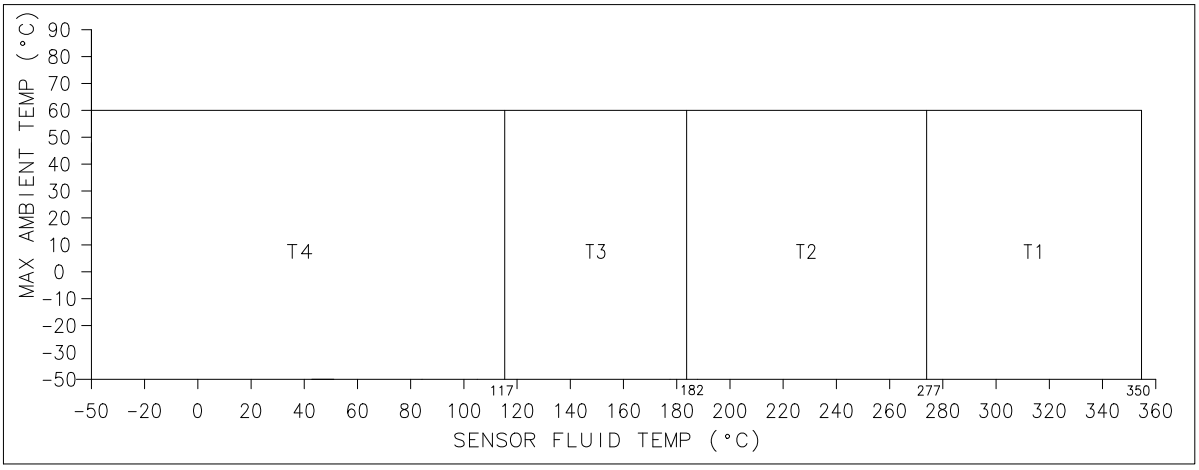


Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –40°C to + 60°C

3.4.17

Sensor type	
with 2200S	CMF200(A,B)****(J,U)*3****
	CMF300(A,B)****(J,U)*3****
	CMF350(A,B)****(J,U)*3****
	CMF400(A,B)****(J,U)*3****
	CMFHC2(A,B)****(J,U)*3****
	CMFHC3(A,B)****(J,U)*3****
	CMFHC4(A,B)****(J,U)*3****



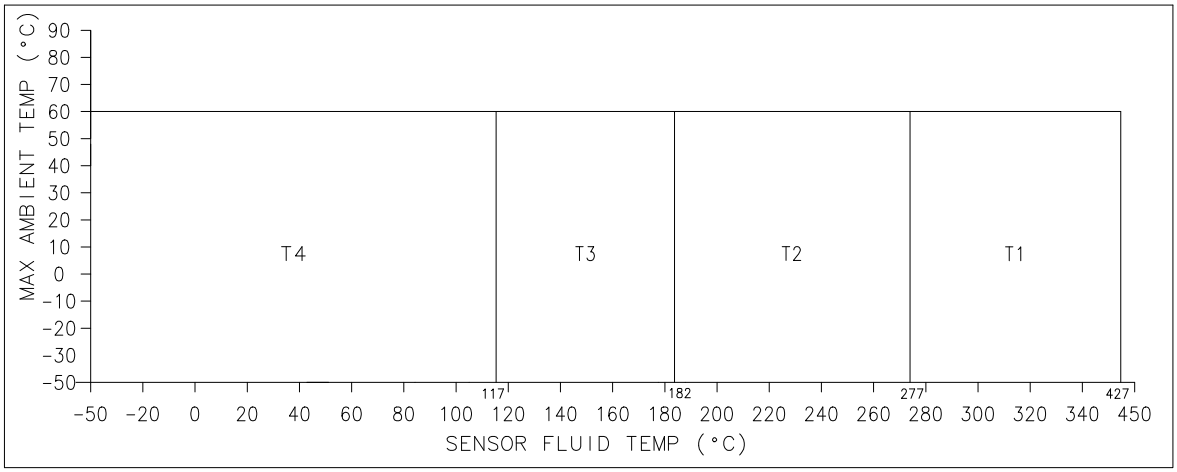
Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –50°C to + 60°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 +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.

3.4.18

Sensor type	
with 2200S	CMF200(C,E)****(J,U)*3****
	CMF300(C,E)****(J,U)*3****
	CMF350(C,E)****(J,U)*3****
	CMF400(C,E)****(J,U)*3****
	CMFHC2(C,E)****(J,U)*3****
	CMFHC3(C,E)****(J,U)*3****
	CMFHC4(C,E)****(J,U)*3****



Note: Use the above graph to determine the temperature class for a given fluid and ambient temperature.

Ambient temperature range: Ta –50°C to + 60°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 +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.

4. Marking; the marking shall include following:

Type	Type of protection	Ambient temperature range
CMF010*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF025*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF050*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF100*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF200*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF300*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF350*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF400*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +60 °C
CMFHC2*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMFHC3*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMFHC4*****(0,1)*3****	Ex nA IIC T1-T5 Gc	- 40°C ≤ Ta ≤ +55 °C
CMF010*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF025*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF050*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF100*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF200*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF300*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60°C
CMF350*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60°C
CMF400*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60°C
CMFHC2*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMFHC3*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMFHC4*****(J or U)*3****	Ex nA IIC T1-T4 Gc	- 40°C ≤ Ta ≤ +60 °C
CMF200(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMF300(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMF350(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMF400(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMFHC2(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMFHC3(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMFHC4(A, B, C or E)****(0,K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 50°C ≤ Ta ≤ +55 °C
CMF200(A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMF300(A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMF350(A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMF400(A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMFHC2 (A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMFHC3(A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMFHC4(A, B, C or E)****J*3****	Ex nA IIC T1-T4 Gc	- 50°C ≤ Ta ≤ +60 °C
CMF010*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMF025*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMF050*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMF100*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMF200*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMF300*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMF350*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +60 °C
CMF400*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +60 °C
CMFHC2*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMFHC3*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C
CMFHC4*****(K,L,M or N)*3****	Ex nA IIC T1-T5 Gc	- 25°C ≤ Ta ≤ +55 °C

[1] Minimum fluid temperature -29°C.

5. Special conditions for safe use / Installation instructions

5.1 The sensor is designed for use in connection with a suitable transmitter, e.g. 24********3**** in accordance with IECEx BVS 05.0014 X; only the assembly of the sensor and the transmitter guarantees the necessary degrees of protection.

5.2 The sensor is designed for use in connection with a suitable transmitter, e.g. 22********3**** in accordance with IECEx BVS 08.0042 X; only the assembly of the sensor and the transmitter guarantees the necessary degrees of protection.

5.3 The sensor is designed for use in connection with a suitable transmitter, e.g. FMT*****3**** in accordance with IECEx BVS 10.0073X, only the assembly of the sensor and the transmitter guarantees the necessary degrees of protection.