

Data sheet

# Thermostat

## MBC 8000 and MBC 8100



MBC 8000 and MBC 8100 thermostats designed for use in severe industrial and marine applications where space and reliability are the most important features.

MBC 8100 have all international marine approvals.

The MBC thermostats are designed according to our block design to survive in the harsh conditions known from machine rooms among others.

MBC 8000 and MBC 8100 have high vibration resistance.

### Features

- Compact design
- A high level of enclosure
- Robust and reliable construction
- Resistance to shock and vibration
- Low differential and high repeatability

### Approvals

CE marked acc. to EN 60 947-1, EN 60 947-4-1, EN 60 947-5-1

China Compulsory Certificate, CCC

### Ship approvals, type MBC 8100 only

Det Norske Veritas, DNV  
American Bureau of Shipping, ABS  
Lloyds Register of Shipping, LR  
Germanischer Lloyd, GL  
Bureau Veritas, BV

Registro Italiano Navale, RINA  
Nippon Kaiji Kyokai, NKK  
Korean Register of Shipping, KR  
Russian Maritime Register of Shipping, RMRS  
China Classification Society, CCS

**Technical data**
*Electrical specifications*

Contact load (Alternating current)	0.5 A, 250 V, AC15
	12 W, 125V, DC 13
Switch	SPDT

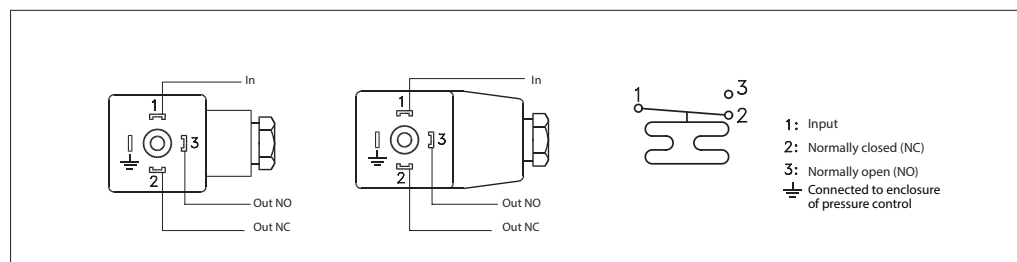
*Environmental conditions*

Ambient temperature	- 40 – 70 °C
Shock resistance	50 g/6 ms
	Acc. to EN 60068-2-27
	Free fall acc. to EN 60068-2-32
Vibration resistance	Sin 4 g, 5Hz – 200 Hz acc. to EN 60068-2-6. *)
Enclosure	IP65 to EN 60529
	Anodized AlMgSi 1, AW-6082 T6

\*) If higher vibrations are present in the system/installation, temperature controls with capillary tube or armoured capillary tube are recommended.

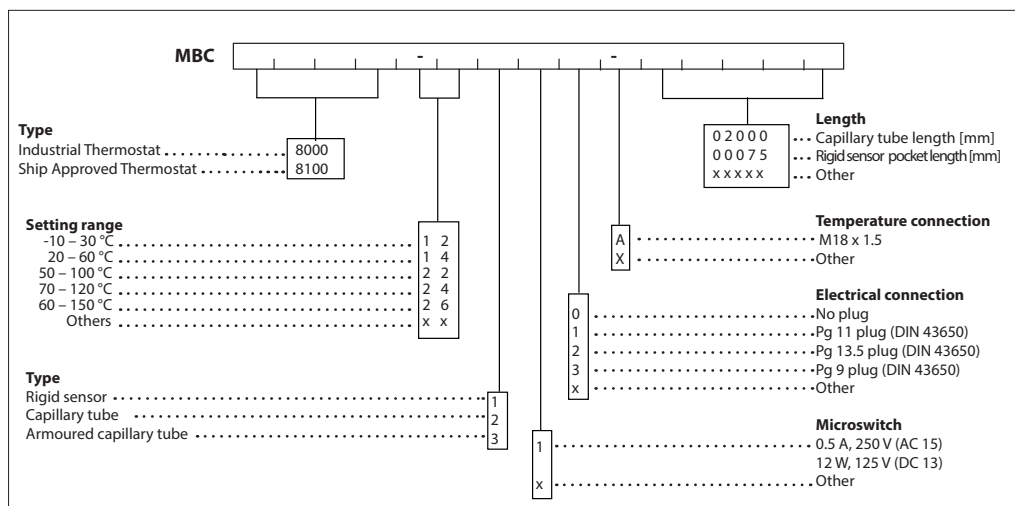
*Mechanical characteristics*

Electrical connection	DIN 43650 plug, Pg 9, Pg 11, Pg 13.5
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**Standard types**

Setting range	Fixed diff.	Max. sensor temp.	Cap. tube length	Capillary tube		Armoured capillary tube		Sensor pocket	Rigid sensor	
				Code no.	Type MBC 8100	Code no.	Type MBC 8100		Code no.	Type MBC 8100
-10 – 30	3	80	2	<b>061B820166</b>	1221-1A02000	<b>061B810166</b>	1231-1A02000	–	–	–
20 – 60	3	130	2	–	–	<b>061B810266</b>	1431-1A02000	–	–	–
20 – 60	3	130		–	–	–	–	75	<b>061B800266</b>	1411-1A00075
50 – 100	4	200	2	<b>061B820366</b>	2221-1A02000	<b>061B810366</b>	2231-1A02000	–	–	–
50 – 100	4	200		–	–	–	–	75	<b>061B800366</b>	2211-1A00075
70 – 120	5	220	2	–	–	<b>061B810466</b>	2431-1A02000	–	–	–
70 – 120	5	220	–	–	–	–	–	75	<b>061B800466</b>	2411-1A00075
60 – 150	6	250	2	<b>061B820566</b>	2621-1A02000	<b>061B810566</b>	2631-1A02000	–	–	–
60 – 150	6	250	–	–	–	–	–	75	<b>061B800566</b>	2611-1A00075

Ordering of customized types



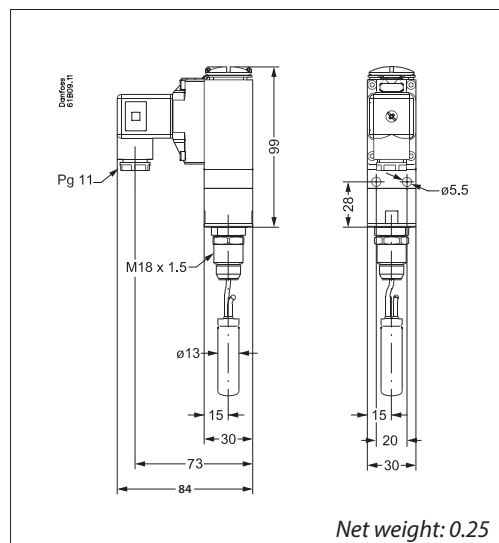
Accessories

Part	Sensor pocket	A [mm]	Thread B	Code no.
	Brass	75	½ NPT	<b>060L326466</b>
		75	G ½ A	<b>060L326266</b>
		75	G ¾ A	<b>060L326666</b>
		75	G ½ A (ISO 228-1)	<b>060L328166</b>
	Brass	110	½ NPT	<b>060L328066</b>
		110	G ½ A	<b>060L327166</b>
		110	G ¾ A (ISO 228-1)	<b>060L340366</b>
	Brass	160	G ½ A	<b>060L326366</b>
	Steel 18/8	75	G ½ A	<b>060L326766</b>
	Steel 18/8	110	G ½ A	<b>060L326866</b>
		110	½ NPT	<b>060L327066</b>
	Steel 18/8	160	G ½ A	<b>060L326966</b>

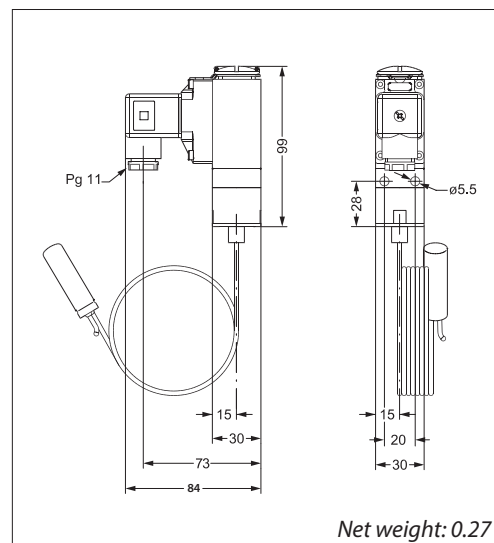
Part	Description	Code no.
	For MBC thermostats with remote sensor (L = 392 mm)	<b>017-420466</b>
	For MBC thermostats with sensor fitted in a sensor pocket. Compound for filling sensor pocket to improve heat transfer between pocket and sensor. Application range for compound: -20 – 150 °C, momentarily up to 220 °C.	<b>041E0114</b>
	For MBC thermostats without armoured capillary tubes	<b>060L327366</b>
	For MBC thermostats with armoured capillary tubes	<b>060L036666</b>

**Dimensions [mm] and weights [kg]**

*Rigid sensor*



*Cap. tube version*



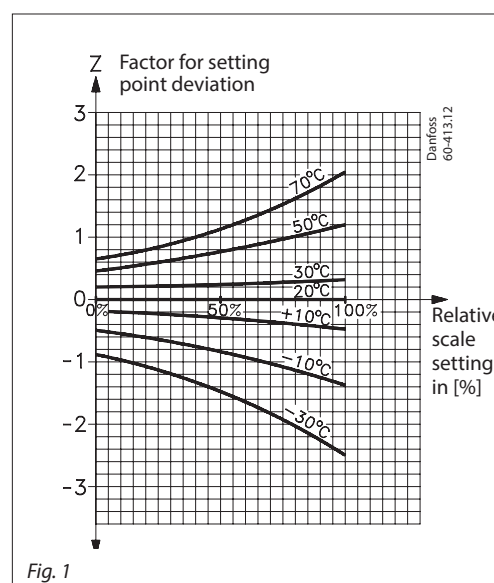
**Setting point correction**

The sensor on MBC 8100 thermostat contains an adsorption charge. Therefore its function is not affected whether the sensor is placed warmer or colder than the remaining part of the thermostatic element (bellows and capillary tube). However, such a charge is to some extent sensitive to changes in the temperature of the bellows and capillary tube. Under normal conditions this is of no importance, but if the thermostat is to be used in extreme ambient temperatures the setting point might change.

The deviation can be compensated for as follows:

Setting point correction =  $Z \times a$

Z can be found from fig. 1, while **a** is the correction factor from the table below.



Regulation range [°C]	Correction factor a for thermostats	
	with rigid sensor	with 2 and 5 m capillary tube
-10 – 30	–	1.1
20 – 50	1.0	1.4
50 – 100	1.5	2.2
70 – 120	1.7	2.4
60 – 150	–	3.7

**Example**

A MBC 8100 with capillary tube length 2 m and range 50 – 100 °C must cut out at 75 °C in 70 °C ambient temperature. At which cut out temperature should this temperature control be set at in 20 °C ambient temperature?

The relative setting **Z** can be calculated from the following formula:

$$\frac{\text{Setting value min. range}}{\text{max. range - min. range}} \times 100\%$$

$$\text{Relative setting: } \frac{75 - 50}{100 - 50} \times 100 = 50\%$$

**Relative setting:**

Factor for setting point deviation **Z** (fig. 1). Z - 1.2  
Correction factor **a** (table under fig. 1) a = 2.2  
Setting point correction  $Z \times a = 1.2 \times 2.2 = 2.6$  °C

**The MBC must be set at 75 + 2.6 = 77.6 °C in 20 °C ambient temperature in order to cut out at 75 °C ambient temperature.**

## Installation

### Installation

MBC thermostats are designed to withstand the shocks that occur, e.g. in ships, on compressors and in large machine installations. MBC thermostats with remote sensor are fitted with 5 mm screws to bulkheads or similar. See fig. 2. MBC thermostats with rigid sensor are self-supporting from the sensor pocket. For permissible media pressure see fig. 3.

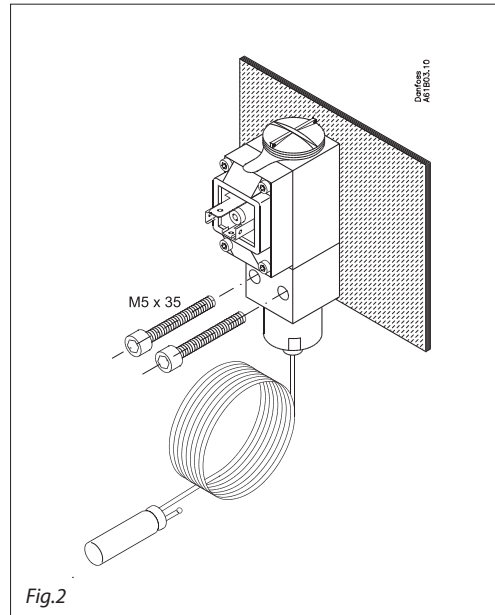


Fig. 2

### Sensor position

As far as possible the sensor should be positioned so that its longitudinal axis is at right angles to the direction of flow. The active part of the sensor is  $\varnothing 13$  mm x 50 mm long on thermostat with rigid sensors and 2 m capillary tube.

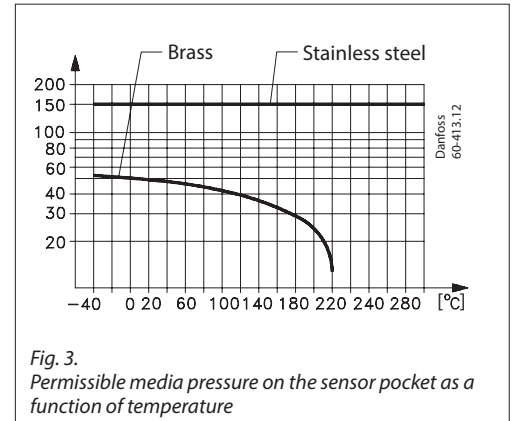


Fig. 3.  
Permissible media pressure on the sensor pocket as a function of temperature

### Setting

When the top cover screw at the thermostat is removed, the range can be set with the setting screw. The differential is non-adjustable.

### Resistance to media

Material specifications for sensor pockets:

#### Sensor pocket, brass

The tube is made of CuZn30, CW 505L acc. to EN 12449, the threaded portion of CuZn39 Pb3, CW 614N acc. to EN 12164.

#### Sensor pocket, stainless steel 18/8

Material designation X5CrNi18-10, 1.4301 acc. to EN 10088.

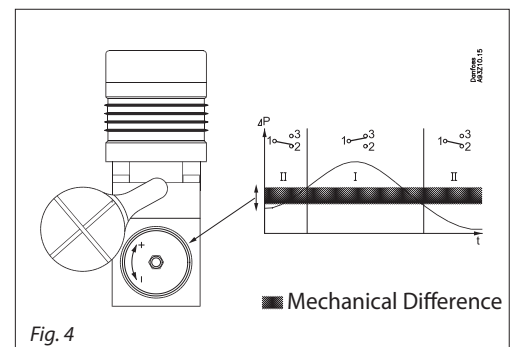


Fig. 4