

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

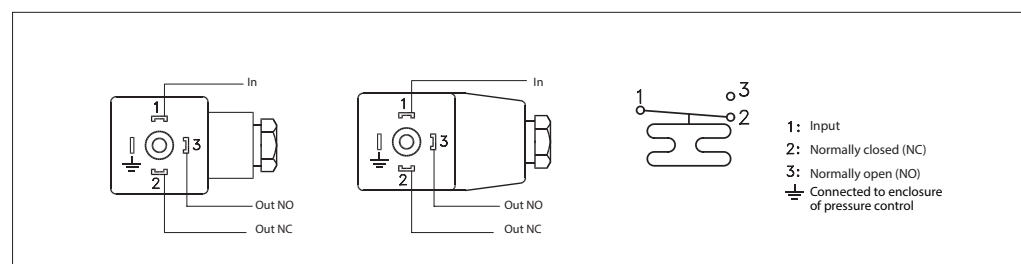
Environmental conditions

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

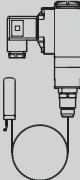
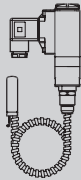
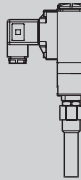
*) If higher vibrations are present in the system/installation, temperature controls with capillary tube or armoured capillary tube are recommended.

Mechanical characteristics

Electrical connection	DIN 43650 plug, Pg 9, Pg 11, Pg 13.5
-----------------------	--------------------------------------



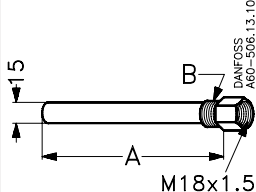
Standard types

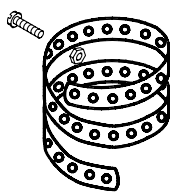
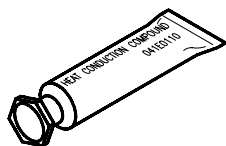
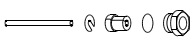
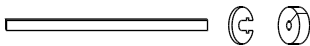
Setting range	Fixed diff.	Max. sensor temp.	Cap. tube length	Capillary tube		Armoured capillary tube		Sensor pocket	Rigid sensor	
										
[°C]	[°C]	[°C]	[m]	Code no.	Type MBC 8100	Code no.	Type MBC 8100	[mm]	Code no.	Type MBC 8100
-10 – 30	3	80	2	061B820166	1221-1A02000	061B810166	1231-1A02000	–	–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

Ordering of customized types

MBC			
Type		Length	
Industrial Thermostat	8000	0 2 0 0 0 ... Capillary tube length [mm]	
Ship Approved Thermostat	8100	0 0 0 7 5 ... Rigid sensor pocket length [mm]	
		x x x x x ... Other	
Setting range		Temperature connection	
-10 – 30 °C	1 2	A M18 x 1.5	
20 – 60 °C	1 4	X Other	
50 – 100 °C	2 2		
70 – 120 °C	2 4	Electrical connection	
60 – 150 °C	2 6	0 No plug	
Others	x x	1 Pg 11 plug (DIN 43650)	
Type		2 Pg 13.5 plug (DIN 43650)	
Rigid sensor	1	3 Pg 9 plug (DIN 43650)	
Capillary tube	2	x Other	
Armoured capillary tube	3	Microswitch	
		1 0.5 A, 250 V (AC 15)	
		x 12 W, 125 V (DC 13)	
			Other

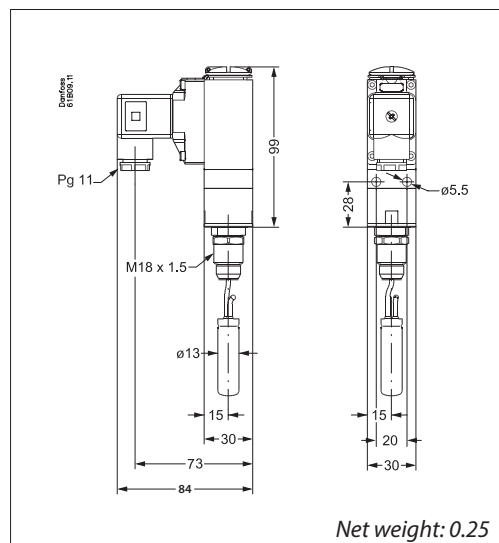
Accessories

Part	Sensor pocket	A [mm]	Thread B	Code no.
Sensor pockets for MBC thermostat  <i>Supplied without gland nut, gaskets and washer</i>	Brass	75	½ NPT	060L326466
		75	G ½ A	060L326266
		75	G ¾ A	060L326666
		75	G ½ A (ISO 228-1)	060L328166
	Brass	110	½ NPT	060L328066
		110	G ½ A	060L327166
		110	G ¾ A (ISO 228-1)	060L340366
	Brass	160	G ½ A	060L326366
	Steel 18/8	75	G ½ A	060L326766
	Steel 18/8	110	G ½ A	060L326866
		110	½ NPT	060L327066
	Steel 18/8	160	G ½ A	060L326966

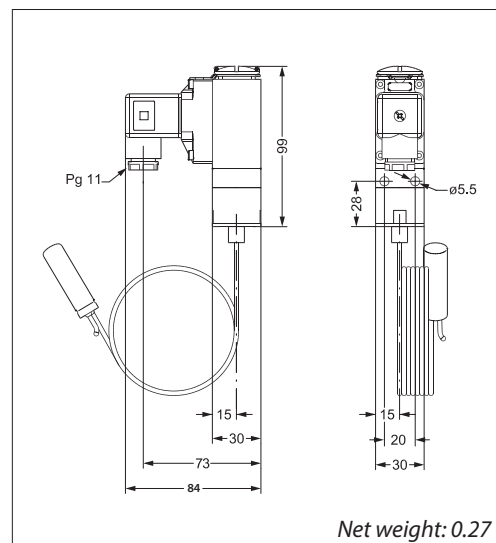
Part	Description	Code no.
Clamping band 	For MBC thermostats with remote sensor (L = 392 mm)	017-420466
Heat-conductive compound (5 g tube) 	For MBC thermostats with sensor fitted in a sensor pocket. Compound for filling sensor pocket to improve heat transfer between pocket and sensor. Application range for compound: -20 – 150 °C, momentarily up to 220 °C.	041E0114
Gasket set 	For MBC thermostats without armoured capillary tubes	060L327366
Gasket set 	For MBC thermostats with armoured capillary tubes	060L036666

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

Rigid sensor



Cap. tube version



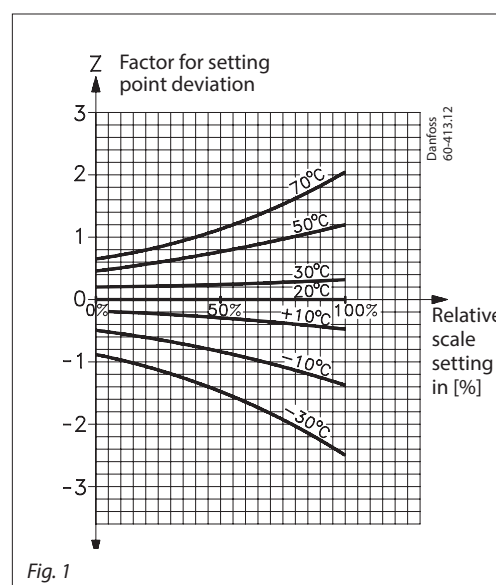
Setting point correction

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:

$$\text{Setting point correction} = Z \times a$$

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

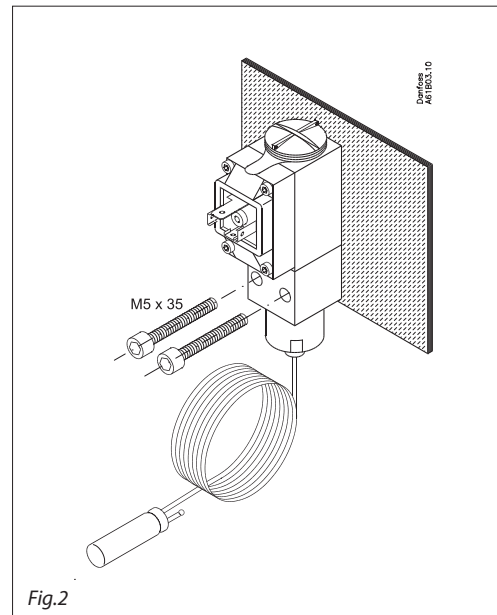
Setting point correction Z x a = 1.2. x 2.2 = 2.6 °C

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.



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.

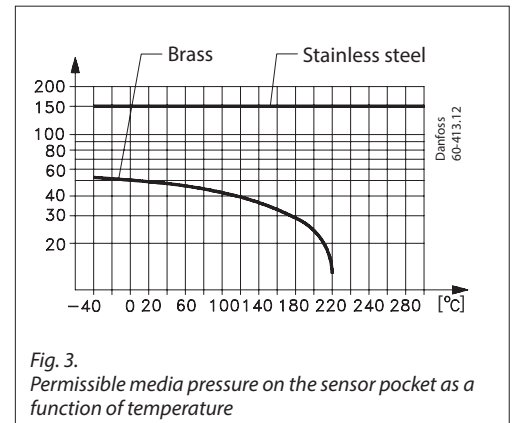


Fig. 3.
Permissible media pressure on the sensor pocket as a function of temperature

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.

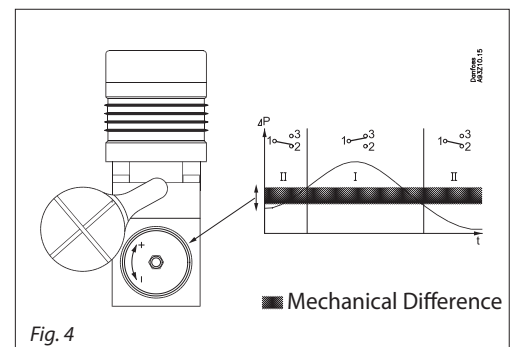


Fig. 4