



Thermostat

MBC 8000 / MBC 8100

For heavy-duty marine applications

Description

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 & benefits

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

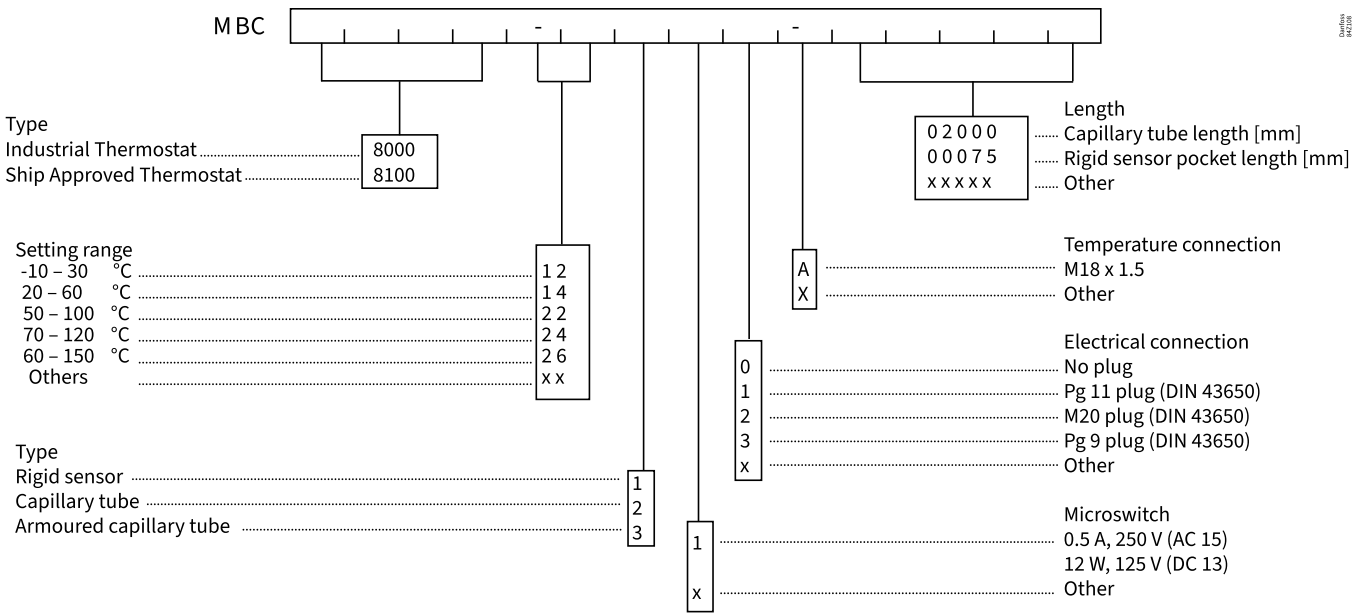
Ordering

Product code numbers

Table: Standard specification and code numbers

Setting range	Fixed diff.	Max. sensor temp.	Cap. tube length	Capillary tube		Armored capillary tube		Sensor pocket	Rigid sensor	
				Code no.	Type MBC 8100	Code no.	Type MBC 8100		[mm]	Code no.
-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

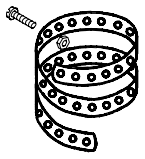
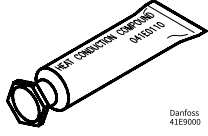
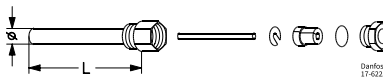
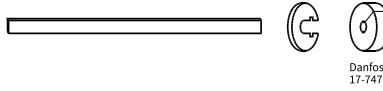
Figure: Ordering of customized types



Accessories code numbers

Part	Sensor pocket	A [mm]	Thread B	Code no.
Sensor pockets for MBC thermostat Supplied without gland nut, gaskets and washer	Brass	75	1/2 NPT	060L326466
		75	G 1/2 A	060L326266
		75	G 3/4 A	060L326666
		75	G 1/2 A (ISO 228-1)	060L328166
	Brass	110	1/2 NPT	060L328066
		110	G 1/2 A	060L327166
		110	G 3/4 A (ISO 228-1)	060L340366
	Brass	160	G 1/2 A	060L326366
	Steel 18/8	75	G 1/2 A	060L326766
	Steel 18/8	110	G 1/2 A	060L326866
			1/2 NPT	060L327066
		160	G 1/2 A	060L326966

Table: Other parts

Part	Description	Code no.
<p>Clamping band</p> 	For MBC thermostats with remote sensor (L = 392 mm)	017-420466
<p>Heat-conductive compound (6 g tube)</p> 	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.	041E0115
<p>Gasket set</p> 	For MBC thermostats without armored capillary tubes	060L327366
<p>Gasket set</p> 	For MBC thermostats with armored capillary tubes	060L036666

Functions

Settings

Point correction

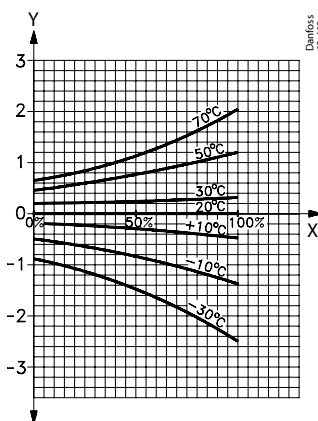
The sensor on MBC 8100 thermostat contains an adsorption charge. Therefore, its function is not affected whether the sensor is placed warmer or colder than the remaining part of the thermostatic element (bellows and capillary tube). However, such a charge is to some extent sensitive to changes in the 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 Figure: Setting point correction, while **a** is the correction factor from the table below.

Figure: Setting point correction



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X	Relative scale setting in [%]
Y	Factor for setting point deviation

Table: Correction factor

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:

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

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

Relative setting:

Factor for setting point deviation **Z**, see Figure: Setting point correction.

$$Z = 1.2$$

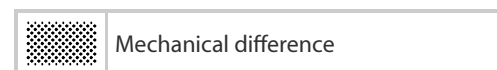
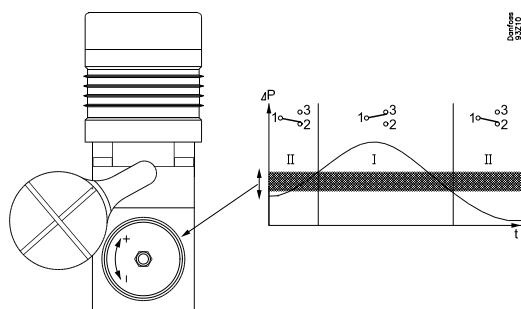
Correction factor **a** (Table: Correction factor) = 2.2

$$\text{Setting point correction } Z \times a = 1.2 \times 2.2 = 2.6 \text{ °C}$$

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.

Setting Adjustment

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

Figure: Adjustment

Product details

General data

Table: Electrical specifications

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

Table: Mechanical characteristics

Electrical connection	DIN 43650 plug, M20
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Performance and environmental conditions

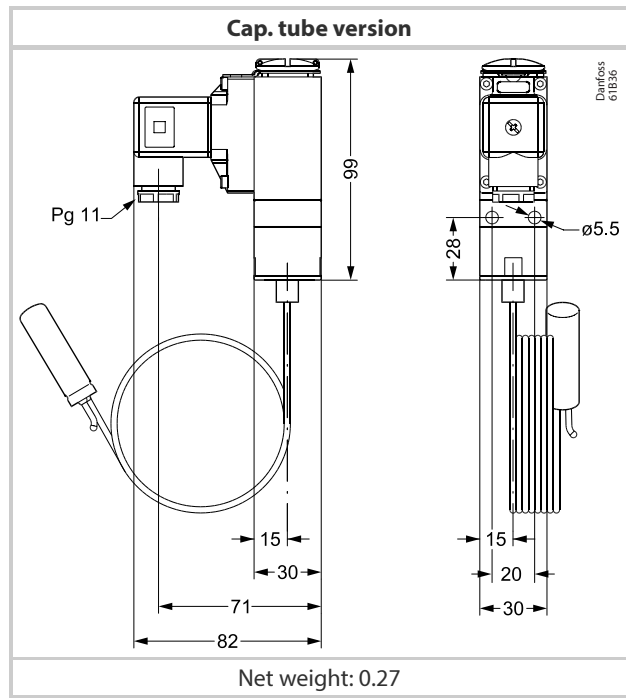
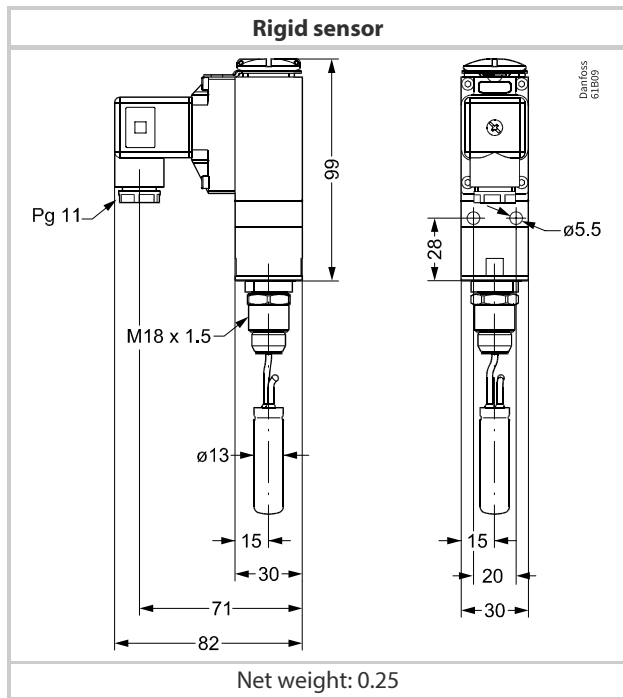
Table: Environmental conditions

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 ⁽¹⁾
Enclosure	IP65 to EN 60529
	Anodized AlMgSi 1, AW-6082 T6

⁽¹⁾ If higher vibrations are present in the system/installation, temperature controls with capillary tube or armoured capillary tube are recommended.

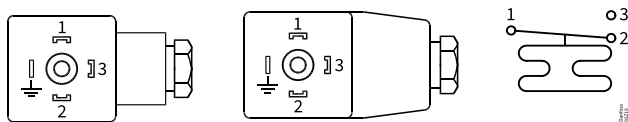
Dimensions

Table: Dimensions [mm] and weights [kg]



Connections

Figure: Electrical connection



1	Input
2	Output: Normally closed (NC)
3	Output: Normally open (NO)
	Connected to enclosure of pressure control

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 figure **Mounting example**. MBC thermostats with rigid sensor are self-supporting from the sensor pocket. For permissible media pressure, see figure **Permissible media pressure on the sensor pocket as a function of temperature**.

Figure: Mounting example

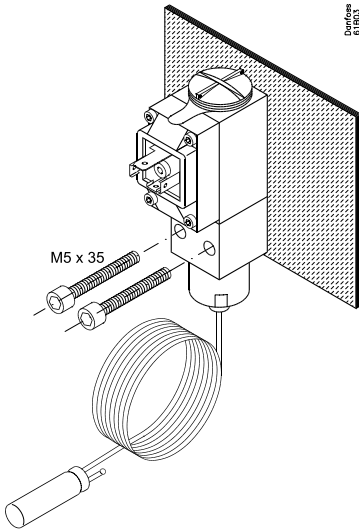
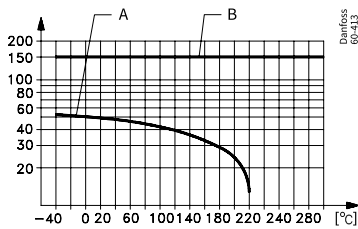


Figure: Permissible media pressure on the sensor pocket as a function of temperature



A	Brass
B	Stainless steel

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.

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.

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
Marine Certificate	NKK TA25601M	ClassNK - The Japanese Marine Association	
CCC Declaration	Danfoss CCC 2020970305003454	Danfoss	

CCC Declaration	Danfoss CCC 2020970305003455	Danfoss	
Marine Certificate	BV 11676-E0 BV	BV - Bureau Veritas	
Marine Certificate	RINA ELE014023XP	RINA - Registro Italiano Navale	Marine
Marine Certificate	CCS GB23PTB00006_05	CCS - China Classification Society	Marine
Marine Certificate	LR 24114895TA	LR - Lloyd's Register	
EU Declaration	Danfoss EU 060-9680.AC	Danfoss	LVD
Marine Certificate	KR HMB 17529-AE001	KR - Korean Register of Shipping	Marine
Manufacturer's Declaration	Danfoss MD 060-9639.AB	Danfoss	China RoHS
Marine Certificate	ABS 21-2180573-PDA	ABS - American Bureau of Shipping	Marine
Marine Certificate	DNV GL TAA00002BB Rev. 1	DNV GL	
CCC Declaration	Danfoss CCC 2024010305641307	CCC - China Compulsory Certification	CCC
Electrical Safety Certificate	EAC KZ 7100841.01.01.01391	EAC - Eurasian Customs Union	EMC
Export Control Declaration	Pressure switches & Thermostats	Danfoss	
UA Declaration	Danfoss UA 2024-07-25 cooling sensors	Danfoss	EMC, LVD
UA Declaration	Danfoss UA 2023-01-10 Regulators PL01 PL04	Danfoss	PED, Pressure
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.05-22	LLC CDC EURO TYSK - Ukraine	Pressure

Contact details

Online support

Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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