

# Temperature transmitter type MBT 9110

## Features and application



- 2-wire universal transmitter for industrial and maritime applications
- Pt100, Pt1000 or thermocouple input
- 4 - 20 mA standard output
  - with or without galvanic isolation
- For mounting in DIN B connection head or in a separate enclosure
- CE-marked: EMC protected in accordance with EU EMC directive
- Advanced sensor fault indication
- Temperature linearized
- Approvals
  - Lloyds Register of Shipping, LR
  - Germanischer Lloyd, GL
  - Bureau Veritas, BV
  - Det Norske Veritas, DNV
  - Nippon Kaiji Kyokai, ClassNK

## Ordering - Standard program

Type	Temperature range	Sensor element	Connection	MBT 9110-	Code no.
Standard in separated enclosure	-50 → +50°C	Pt100	3-wire	000B-D405	<b>084Z8115</b>
	-10 → +40°C	Pt100	3-wire	000B-D204	<b>084Z8116</b>
	0 → +100°C	Pt100	3-wire	000B-D110	<b>084Z8117</b>
	0 → +150°C	Pt100	3-wire	000B-D115	<b>084Z8121</b>
	-10 → +150°C	Pt100	3-wire	000B-D215	<b>084Z8118</b>
	0 → +250°C	Pt100	3-wire	000B-D125	<b>084Z8119</b>
	0 → +400°C	Pt100	3-wire	000B-D140	<b>084Z8120</b>
	0 → +600°C	Pt100	3-wire	000B-D160	<b>084Z6135</b>
Galv. iso. in separated enclosure	0 → +600°C	Thermocouple type K	2-wire	005A-E160	<b>084Z8129</b>
	0 → +800°C	Thermocouple type K	2-wire	005A-E180	<b>084Z8130</b>

*Other specifications on request*

**Technical data**
*Performance*

Primary accuracy	Pt100 <math><\pm 0.3^{\circ}\text{C}</math> Type E,J,K,L,N,T,U <math><\pm 1.0^{\circ}\text{C}</math> Type B,R,S <math><\pm 2.0^{\circ}\text{C}</math>
Linearity error	<math><0.1\% \text{ FS}</math>
Temp. coefficient	<math><\pm 0.01\% \text{ FS}/^{\circ}\text{K}_{\text{amb}}</math>
Response time	Programmable 1 - 60 sec. 1 sec. standard
Cold solder point compensation (CJC)	<math><\pm 1.0^{\circ}\text{C}</math>
Warm-up time	5 min.
Update time	440 ms
Effect of sensor cable resistance (3/4 wires)	<math><0.002\Omega/\Omega</math>

 $K_{\text{amb}}$  = Ambient temperature change

*Electrical specifications*

Supply voltage	8 - 35 V d.c.
Effect of supply voltage variation	<math><0.005\% \text{ FS}/\text{V d.c.}</math>
Output	4 - 20mA current loop
Sensor fault indication	Namur NE43 upscale 23mA
Input	Standard Pt100 (EN 60751) 2, 3 - wire $-200 \rightarrow 800^{\circ}\text{C}$ Pt1000 (EN 60751) 2, 3 - wire
	Galvanic isolation Pt100 (EN 60751) 2, 3, 4 - wire $-200 \rightarrow 800^{\circ}\text{C}$ Pt1000 (EN 60751) 2, 3 - wire Thermocouple (EN 60584)
Signal/noise ratio	Min. 60 dB
Max. lead cross-section	$1 \times 1.5 \text{ mm}^2$
Max. cable resistance	5 $\Omega$ /core

*Environmental conditions*

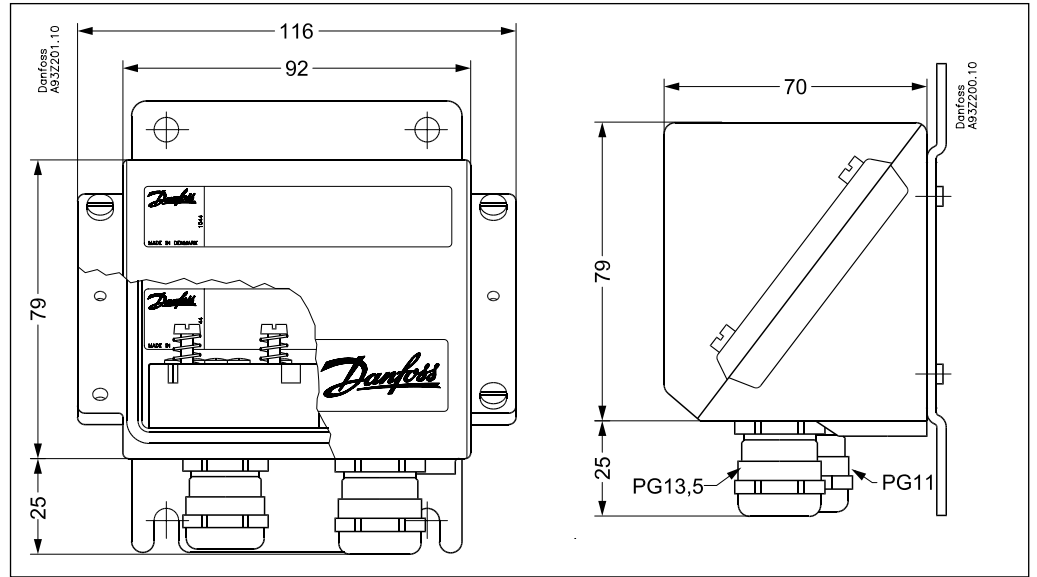
Insulation voltage	1500 VAC
EMC-data	Emission: EN 50 081 Immunity: EN 50 082
Vibration/shock	IEC 68-2-6/IEC 68-2-84
Vibration	4g/2 - 100 Hz
Humidity	0 - 98% RH, according to IEC 68-1, IEC 68-2-2
Ambient temperature	-40 to +85 $^{\circ}\text{C}$
Protection (housing/terminals)	IP 68/IP 00
In separate enclosure	IP 54

*Mechanical characteristics*

Max. offset	50% of max. input value (Pt100: 400 $^{\circ}\text{C}$ ) (Thermocouple, type R: 650 $^{\circ}\text{C}$ )
Weight	In heightened lid for B-head: 0.080 kg In a separate enclosure: 0.360 kg

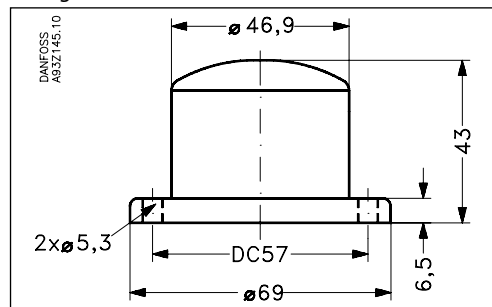
Dimensions

*In separate enclosure*



All dimensions in millimeters

*In heightened lid*



All dimensions in millimeters

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