
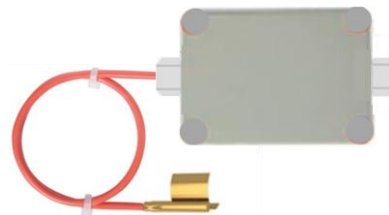
 <b>TI8036en</b>	<b>Technical Information</b>	
<b>TPS9- Series (T)</b>	<b>Pipe Surface Temperature Sensor with BACnet / Modbus RTU communication</b>	

The TPS9- Series (T) is designed to measure temperature on pipes surfaces

The sensor operates with low power supply

BACnet MSTP and Modbus RTU on Board

The sensor output is via BACnet MSTP / Modbus RTU communication



<b>Use</b>	<p>Compatible to all common HVAC DDC and Analog Controls systems, with Building Automation System</p> <p>Used in all common HVAC applications</p> <p>Used in Commercial and Industrial Buildings</p>
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<b>Features</b>	<p>Sensor output via BACnet MSTP / Modbus RTU communication</p> <p>Selectable communication protocol</p> <p>Modern and practical product design</p> <p>Easy to use, install and maintain</p>
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<b>Product Range</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th data-bbox="193 1391 360 1659">Order Code</th> <th data-bbox="360 1391 528 1659">Cable Length</th> <th data-bbox="528 1391 695 1659">Output</th> <th data-bbox="695 1391 900 1659">Power Supply</th> <th data-bbox="900 1391 1067 1659">Temperature Ranges</th> <th data-bbox="1067 1391 1235 1659">Sensor Shape</th> <th data-bbox="1235 1391 1402 1659">Protection</th> </tr> </thead> <tbody> <tr> <td data-bbox="193 1659 360 1854">TPS9.BA</td> <td data-bbox="360 1659 528 1854" rowspan="2">2m</td> <td data-bbox="528 1659 695 1854">BACnet MSTP</td> <td data-bbox="695 1659 900 1854" rowspan="2">AC/DC 24V (±10%)</td> <td data-bbox="900 1659 1067 1854" rowspan="2">-40...120°C</td> <td data-bbox="1067 1659 1235 1854" rowspan="2">Copper plate (30x34mm, R=23mm)</td> <td data-bbox="1235 1659 1402 1854" rowspan="2">IP65 to IEC60529</td> </tr> <tr> <td data-bbox="193 1854 360 2049">TPS9.BG</td> <td data-bbox="528 1854 695 2049">Modbus RTU</td> </tr> </tbody> </table>							Order Code	Cable Length	Output	Power Supply	Temperature Ranges	Sensor Shape	Protection	TPS9.BA	2m	BACnet MSTP	AC/DC 24V (±10%)	-40...120°C	Copper plate (30x34mm, R=23mm)	IP65 to IEC60529	TPS9.BG	Modbus RTU
Order Code	Cable Length	Output	Power Supply	Temperature Ranges	Sensor Shape	Protection																	
TPS9.BA	2m	BACnet MSTP	AC/DC 24V (±10%)	-40...120°C	Copper plate (30x34mm, R=23mm)	IP65 to IEC60529																	
TPS9.BG		Modbus RTU																					

<b>Sensor Specification</b>	Sensor Specification	Measured	Temperature
		Sensor Characteristics	Active
		Sensor Output (s)	BACnet MSTP or Modbus RTU communication, RS485
		Accuracy	see page 4
		Measuring Range (s)	-40°C...+120°C
<b>Technical Information</b>	Electrical Information	Power Supply	AC/DC 24V (±10%)
		Frequency	50 / 60 Hz at AC 24V
		Terminal Clamp	Screw terminal, max. 1.5mm <sup>2</sup>
		Power Consumption	≤ 1W @ AC 24V / DC 24V
	Mechanical Information	Sensor shape	Copper plate (30x34mm,R=23mm)
		Cable length	See Product Range, Page 1
		Cable Entry	M16, Ø6...Ø8mm cables
		Sensing Element Position	external, top of the aluminum plate
	Color and Materials	Housing Cover	White ABS, RAL9001 (Cream White)
		Housing Bottom	White ABS, RAL9001 (Cream White)
		Lock Screws	US:AISI 304; EU: EN X 6 CrNi 18 10; GER: W.N. 1.301
		Lock Nuts	Brass
		Cable Gland	White ABS, RAL2002 (Vermilion)
		Gland Rubber Seal	White TBS, RAL9010 (Pure White)
		Protection Caps	White ABS, RAL2002 (Vermilion)
		Immersion Rod	US:AISI 304; EU: EN X 6 CrNi 18 10; GER: W.N. 1.301
		Cable	Silicon, (red)
		Environmental Conditions	Operation Temperature
	Operation Humidity		100% r.h., with condensation
	Transport Temperature		-35°C...+70°C
	Transport Humidity		< 90% r.h.
	Storage Temperature		-10°C...+70°C
	Storage Humidity		< 85% r.h., no condensation
	Norms and Directives		IP- Rating
		Safety Class	III to EN 60 730
		Product Standard 1	Automatic Electric. Controls for household and similar use
		Product Standard 2	2009/EN 60 730-1
		CE Conformities to	2004/108/EG Electromagnetic Compatibility EMV
		CE Electromagnetic Compatibility Emitted Interference	2000/EN60730-1 Emitted Interference
		CE Electromagnetic Compatibility Interference resistance	2000/EN60730-1 Interference Resistance
		RoHS Compatibility	RoHS 3, Directive 2015/863
		Operation Climatic Condition	IEC 60 721-3-3
		Operation Mechanical Condition	IEC 60 721-3-2 to class2M2
Transport to Climatic Condition		IEC 60 721-3-2	
Transport Mechanical Condition		IEC 60 721-3-2 to class2M2	
Storage Climatic Condition		IEC 60 721-3-1	
Storage Mechanical Condition	IEC 60 721-3-1 to class2M2		
<b>Miscellaneous</b>	Accessories	Mounting Kit, Included in delivery	UUK0.A
	Shipping & Handling	Minimum Order	1 box with 2 pieces, multiple of 2 pieces
		Package Material	Rigid Cardboards Packaging
		Order Code	See Product Range, Page 1, e.g. TPS9.AA

Modbus Parameters	Address Number	Register Description	
	0...3	Serial Number	actual version
	4	Software Version	actual version
	6	Modbus Address	Default 254, selectable 1...254
	8	Hardware Version	actual version
	11	Baud Rate autodetection	0= OFF ; 1= On
	15	Baud Rate, (if autodetection is OFF)	0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
	34	Temperature, digital	actual value

BACnet Parameters	Supported BACnet Objects Types	
	analog-value	
	device	
	Supported BACnet Services	
who-is		
i-am		
object-identifier, object-name, object-type, present-value, units, object-list, vendor-id, vendor-name, system-staTPS, confirmed-service, unconfirmed-services		
MSTP Objects		
analog-value		127, selectable
	BACnet Address	
AV0	Baud rate autodetection	
AV1	Baud Rate, (if autodetection is OFF)	0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
AV3	Protocol	0= Modbus ; 1= BACnet
AV4	Temperature	actual value (-40...120°C)
Device		
	device-identifier	
	device-name	

**The function "Baud Rate autodetection" can only be used during the product is been setup. When the product is working with the BAS, the "Baud Rate autodetection" has to be set to 0= OFF and the actual Baud Rate has to be set.**

**Installation Notes**

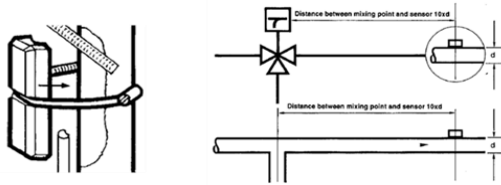
Observe the following general regulation for engineering and implementation:



- All relevant national and heavy power regulations
- Other country specific regulations
- Country-specific regulations
- Local electrical supply authority regulation
- Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge
- Third party specifications, e.g. general contractors or constructors

**Advices**

**Mounting Advices**



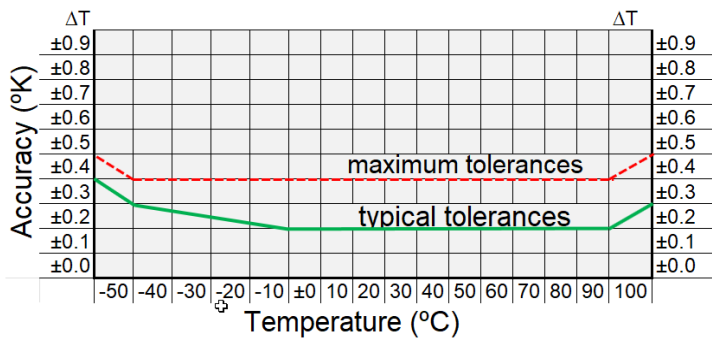
**Disposal Notes**

The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.

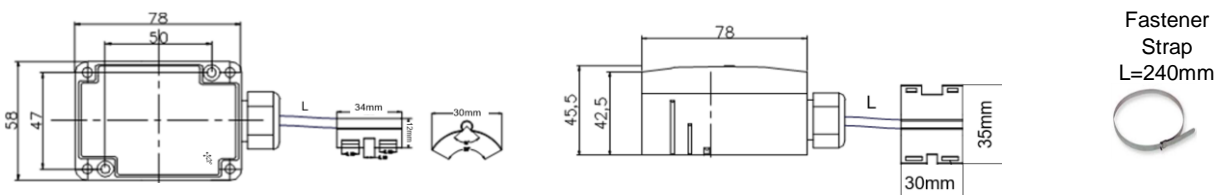


- The device may not be disposed as domestic garbage.
- The device must be disposed through channels provided for this purpose.
- It is mandatory to comply with local currently applying laws and regulations.

**Accuracy Curves**



**Dimensional Drawing**



**Connections & Settings**

Terminals					
T1	T2	T3	T4	T5	T6
UB+	24V AC/DC	GND	RS485 - C-	RS485 - C+	n.A.
				n.A.	n.A.