
	TI8030en	Technical Information	
TPI9- Series (T)	Pipe Temperature Sensor with BACnet / Modbus RTU communication		

The TPI9- Series (T) is designed to measure temperature directly, without thermowell,

in water pipes

The sensor operates with low power supply

BACnet MSTP and MODBUS RTU on board

The sensor output is via BACnet MSTP / Modbus RTU communication



Use	Compatible to all common HVAC DDC and Analog Controls systems, with Building Automation System Temperature measurement in water pipes Used in all common HVAC applications Used in Commercial and Industrial Buildings
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Features	Sensor output via BACnet MSTP / Modbus RTU communication Selectable communication protocol Modern and practical product design Easy to use, install and maintain
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Product Range	Type Code	Power Supply	Output	Measuring Ranges	Max. Waterflow	Max. Pressure Rating	Immersion Pocket Dimensions	Sensor Tip Dimension
	TPI9.AA	AC/DC 24V (±10%)	BACnet MSTP	-50...50°C	28m/s	PN40	ø4x50mm	ø4x42mm
	TPI9.GA				11m/s		ø6x100mm	ø4x20mm
	TPI9.BA				7m/s		ø6x150mm	
	TPI9.CA				6m/s		ø6x200mm	
	TPI9.AG		Modbus RTU	20...80°C	28m/s		ø4x50mm	ø4x42mm
	TPI9.GG				11m/s		ø6x100mm	ø4x20mm
	TPI9.BG				7m/s		ø6x150mm	
	TPI9.CG				6m/s		ø6x200mm	
				0...50°C				
				0...100°C*				

*default setting

Sensor Specification	Sensor Specification	Measured	Temperature
		Sensor Characteristics H/T	Active
		Outputs	BACnet MSTP or Modbus RTU communication, RS485
		Accuracy	see Page 4
		Measuring Range (T)	-40°C...120°C
Technical Information	Electrical Information	Power Supply	AC/DC 24V (±10%)
		Frequency	50 / 60 Hz at AC 24V
		Terminal Clamp	Screw terminal, max. 1.5mm²
		Power Consumption	≤ 1W @ AC 24V / DC 24V
	Mechanical Information	Immersion Rod Diameter	Ø6mm
		Immersion Rod Length	see page 1
		Cable Entry	M16, Ø6...Ø8mm cables
		Sensing Element Position	external, top of the immersion rod
	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	Red ABS, RAL2002 (Vermilion)
		Gland Rubber Seal	White TBS, RAL9010 (Pure White)
		Protection Caps	Red ABS, RAL2002 (Vermilion)
		Immersion Rod	US:AISI 304; EU: EN X 6 CrNi 18 10; GER: W.N. 1.301
	Environmental Conditions	Operation Temperature	-25°C...+70°C
		Operation Humidity	<85% r.h., no condensation
		Transport Temperature	-35°C...+70°C
		Transport Humidity	< 90% r.h.
		Storage Temperature	-10°C...+70°C
		TDI9-Series (T)	< 85% r.h., no condensation
	Norms and Directives	IP- Rating	IP65 to IEC60529
		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 2011/65/EC
		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
Miscellanies	Accessories	Mounting Kit, Included in delivery	n.a.
	Shipping & Handling	Minimum Order	1 box with 2 pieces, multiple of 2 pieces
		Package Material	Rigid Cardboards
	Order Notes	Order Code	See Product Range, Page 1, e.g. TPI9.AA

All Information and technical data are subject to alteration

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	
	10	Protocol	0= MODBUS RTU ; 1= BACnet MSTP	
	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-status, confirmed-service, unconfirmed-services			
	MSTP Objects			
	analog-value			
		BACnet Address	Default 127, selectable 0...127	
	AV0	Baud rate autodetection	default 0, 0= OFF ; 1= ON	
	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.				
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Advices

Installation Notes

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Caution

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

Mounting Advices

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Caution

Disposal Notes

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Caution

Waste disposal symbol: a crossed-out wheeled bin.

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

Temperature

Dimensional Drawing

Connections & Settings

Terminals

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