



T18040en

### Technical Information



TOW9- Series (T)

### Outdoor Temperature Sensor with BACnet / Modbus RTU communication

The TOW9- Series (T) is designed to measure temperature in outdoor areas,

plant rooms, factories, cold stores, greenhouses and warehouses

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

Used in all common HVAC applications

Used in Commercial and Industrial Buildings

#### Features

Sensor output via BACnet MSTP / Modbus RTU communication

Selectable communication protocol

Modern and practical product design

Easy to use, install and maintain

#### Product Range

Order Codes	Power Supply	Communication system	Temperature Measuring Range	IP Rating
TOW9.BA	AC/DC 24V (±10%)	BACnet MSTP	-40 ... 120°C	IP65 to IEC60529
TOW9.BG		Modbus RTU		

<b>Sensor Specification</b>	Sensor Specification	Measured	Temperature
		Sensor Characteristics T	Active
		Outputs	BACnet MSTP or Modbus RTU communication, RS485
		Accuracy (T)	see chart, page 4
		Measuring Range (T)	-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	Measuring Pocket Diameter	6mm
		Measuring Pocket Length	35mm
		Cable Entry	M16, Ø6...Ø8mm cables
		Sensing Element Posit	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	White ABS, RAL2002 (Vermilion)
		Gland Rubber Seal	White TBS, RAL9010 (Pure White)
		Protection Caps	White ABS, RAL2002 (Vermilion)
		Measuring 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 Temperat	-10°C...+70°C
		Storage Humidity	< 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 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		n.a.
	Shipping & Handling	Minimum Order	1 box with 2 pieces, multiple of 2 pieces
		Package Material	195mm x 95mm x 65mm / 200gr.
	Order Notes	Order Code	See Product Range, Page 1, TOW9.BA

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-status, confirmed-service, unconfirmed-services

BACnet Parameters	MSTP Objects		
	<b>analog-value</b>		
		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)
	<b>Device</b>		
		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 regulation

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.

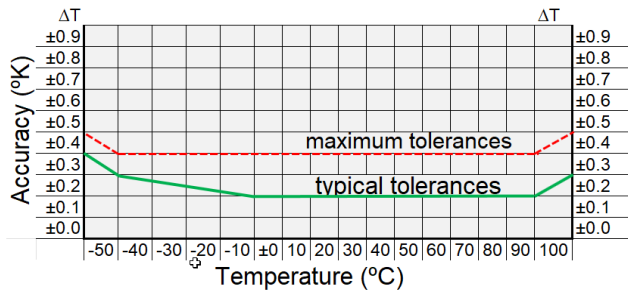


The device may not be disposed as domestic garbage.

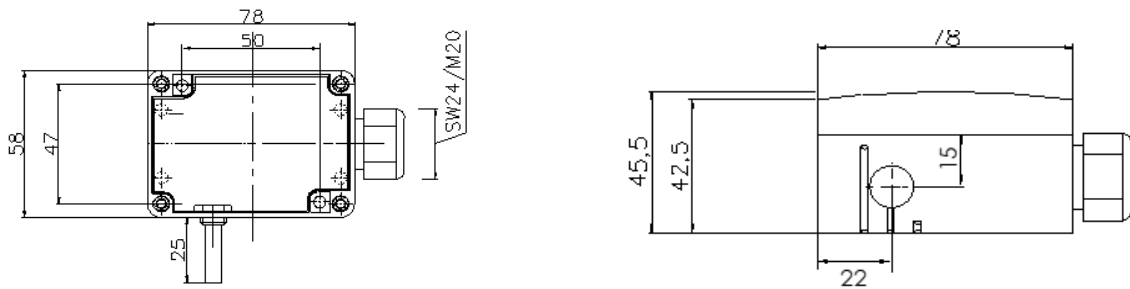
The device must be disposed through channels provided for this purpose.

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+	GND	RS485 - C-	RS485 - C+	n.A.	n.A.
24V AC/DC					