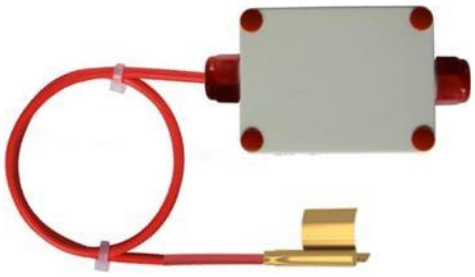
TI8036en	Technical Information	thermokon asia pacific
TPS9- Series (T)	Pipe Surface Temperature Sensor with BACnet / Modbus RTU communication	

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



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 Code	Power Supply	Output	Temperature Ranges	Sensor Shape	Cable Length	Protection
TPS9.AA	AC/DC 24V (±10%)	BACnet MSTP	-50...50ºC	Copper plate (30x34mm,R=23mm)	1m	IP65 to IEC60529
TPS9.BA			0...50ºC		2m	
TPS9.AG		BACnet MSTP	-20…80ºC*		1m	
TPS9.BG			0…100ºC		2m	

Sensor Specification	Sensor Specification	Measured	Temperature
		Sensor Characteristics	Active
		Sensor Output (s)	BACnet MSTP or Modbus RTU communication, RS485
		Accuracy	see page 4
		Measuring Range (s)	-40ºC…+120ºC
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	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	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
		Cable	Silicon, (red)
	Environmental Conditions	Operation Temperature	-25ºC...+70ºC
		Operation Humidity	100% r.h., with condensation
		Transport Temperature	-35ºC...+70ºC
		Transport Humidity	< 90% r.h.
		Storage Temperature	-10ºC...+70ºC
		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 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	UUK0.A
	Shipping & Handling	Minimum Order	1 box with 2 pieces, multiple of 2 pieces
		Package Material	Rigid Cardboards
		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
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-staTPS, 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…120ºC)

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.

Advices

Installation Notes

Caution

Observe the following general regulation for engineering and implementation:

All relevant national and heavy power regulations

Other country specific regulations

Country-specific regulations

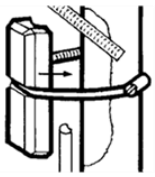
Local electrical supply authority regulation

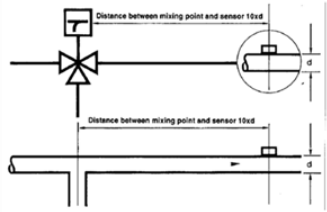
Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge

Third party specifications, e.g. general contractors or constructors

Mounting Advices

Caution





Disposal Notes

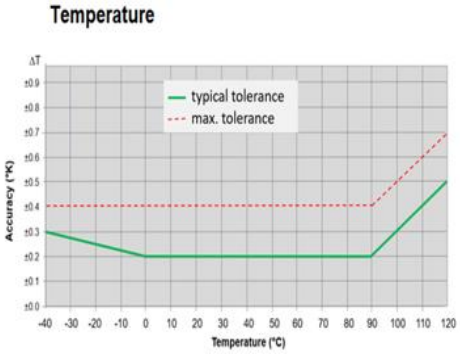
The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.

The device may not be disposed as domestic garbage.

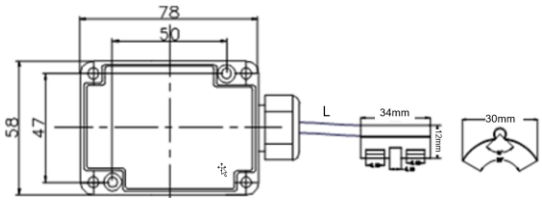
The device must be disposed through channels provided for this purpose.

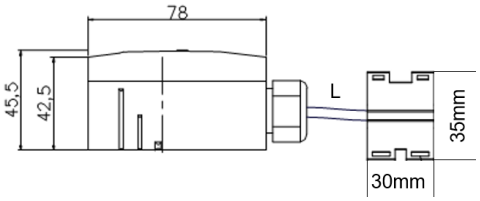
It is mandatory to comply with local currently applying laws and regulations.

Accuracy Curves



Dimensional Drawing





Fastener
Strap
L=240mm

Connections & Settings

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