



TI8033en

Technical Information**thermokon**
asia pacific

TUS9- Series (T)

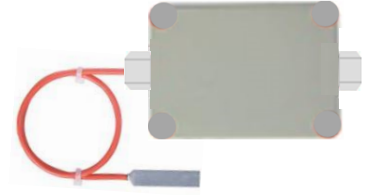
**Universal Surface Temperature Sensor
with BACnet / Modbus RTU communication**

The TUS9- Series (T) is designed to measure temperature on universal 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	Cable Length	Output	Power Supply	Temperature Ranges	Sensor Shape	Protection
TUS9.BA	2m	BACnet MSTP	AC/DC 24V ($\pm 10\%$)	-40...120°C	Aluminum Plate 10 x 35 x 6 mm	IP65 to IEC60529
TUS9.BG	2m	BACnet MSTP				

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)	-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. 1.5mm ²
		Power Consumption	≤ 1W @ AC 24V / DC 24V
	Mechanical Information	Sensor shape	Aluminum Plate, 10 x 35 x 6 mm
		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
	Operation Humidity		100% r.h., with condensation
	Transport Humidity		< 90% r.h.
	Storage Temperature		-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		
Miscellaneous	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. TUS9.BA

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-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

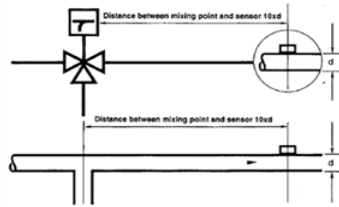
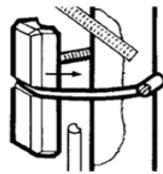
Local electrical supply authority regulation

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.

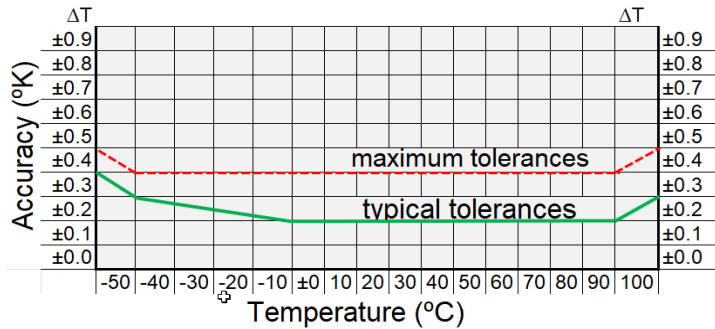
The device may not be disposed as domestic garbage.



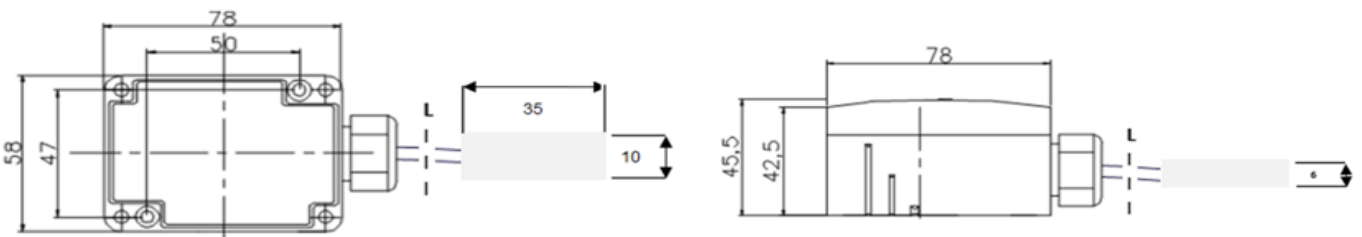
The device must be disposed through channels provided for this purpose.

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.