| TI8020en | Technical Information | thermokon asia pacific |
|---|---|---|
| TDI9- Series (T) | Duct Temperature Sensor<br>with BACnet / Modbus RTU communication | |

The TDI9- Series (T) is designed to measure temperature in air ducts

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 air ducts

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

| Temperature Sensor | | | | | Thermowell | | |
|---|---|---|---|---|---|---|---|
| Type Code | Power Supply | Output | Measuring Ranges | Immersion Pocket Dimensions | Type Code | Immersion Pocket Dimensions | Material |
| TDI9.AA | AC/DC 24V (±10%) | BACnet MSTP* | -40...120°C | ø6x50mm | TPA0.Ga | ø9mmx50mm | V4A |
| TDI9.GA | | | | ø6x100mm | TPA0.Ma | ø9mmx100mm | V4A |
| TDI9.BA | | | | ø6x150mm | TPA0.Ha | ø9mmx150mm | V4A |
| TDI9.CA | | | | ø6x200mm | TPA0.Ia | ø9mmx200mm | V4A |
| TDI9.FA | | | | ø6x250mm | TPA0.Ka | ø9mmx250mm | V4A |
| TDI9.DA | | | | ø6x300mm | TPA0.La | ø9mmx300mm | V4A |
| TDI9.EA | | | | ø6x450mm | TPA0.Na | ø9mmx450mm | V4A |
| TDI9.AG | | MODBUS RTU* | | ø6x50mm | TPA0.Ga | ø9mmx50mm | V4A |
| TDI9.GG | | | | ø6x100mm | TPA0.Ma | ø9mmx100mm | V4A |
| TDI9.BG | | | | ø6x150mm | TPA0.Ha | ø9mmx150mm | V4A |
| TDI9.CG | | | | ø6x200mm | TPA0.Ia | ø9mmx200mm | V4A |
| TDI9.FG | | | | ø6x250mm | TPA0.Ka | ø9mmx250mm | V4A |
| TDI9.FG | | | | ø6x300mm | TPA0.La | ø9mmx300mm | V4A |
| TDI9.EG | | | | ø6x450mm | TPA0.Na | ø9mmx450mm | V4A |

*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) | -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 | 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 Condition | Operation Temperature | -25ºC...+70ºC |
| | | Operation Humidity | <85% r.h., no condensation |
| | | Transport Temperature | -35ºC...+70ºC |
| | | Transport Humidity | < 90% r.h. |
| | | Storage Temperatu | -10ºC...+70ºC |
| | | 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 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 | | TDK0.G |
| | Shipping & Handling | | Thermowell |
| | | | 1 box with 2 pieces, multiple of 2 pieces |
| | | | Rigid Cardboards Packaging |
| | Order Notes | | See Product Range, Page 1, e.g. TDI9.AE |

## 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…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 regulation

Other country specific regulations

Country-specific regulations

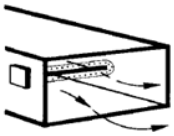
Local electrical supply authority regulation

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

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

### Mounting Advices

Caution



### Disposal Notes

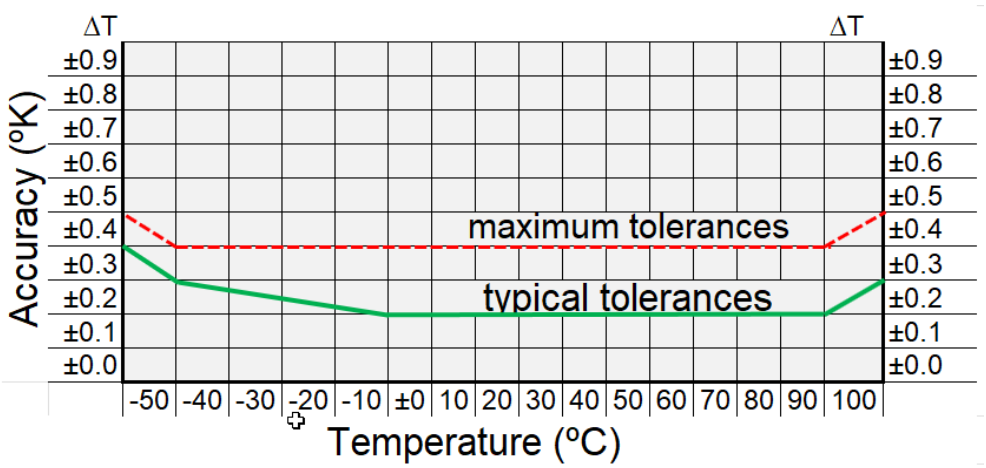
The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.

The device may not be disposed as domestic garbage.

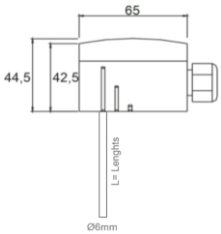
The device must be disposed through channels provided for this purpose.

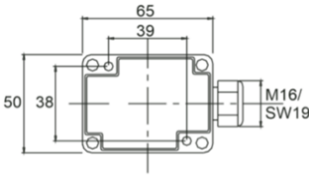
It is mandatory to comply with local currently applying laws and regulations.

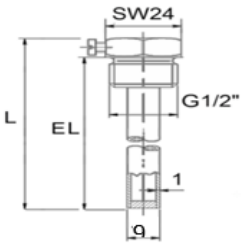
## Accuracy Curves




## Dimensional Drawing




## Connections & Settings

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