TI8100en	Technical Information	thermokon asia pacific
CRW9-Series (H&T)	Room Humidity and Temperature Sensor with BACnet or Modbus RTU communication	

The CRW9- Series (H&T) is designed to measure temperature, relative humidity, absolute humidity, enthalpy or dew point in rooms or areas

The sensor operates with low power supply

BACnet MSTP and Modbus RTU on Board

The sensor output is BACnet MSTP / Modbus RTU communication (RS485)

USE

In Building Automation System where BACnet MSTP or MODBUS RTU communication protocols are used

Compatible to all common HVAC DDC and Analog Controls systems, with Building Automation System

Relative humidity, absolute humidity, enthalpy or dew point and temperature measurement in rooms and areas

Used in all common HVAC applications

Used in Commercial and Industrial Buildings

Features

BACnet / MODBUS address setting over BUS protocol

High Humidity accuracy

Modern and practical product design

Easy to use, install and maintain

Product Range

Order Codes	Power Supply	Communication system	Humidity Measuring	Measuring Units	IP Rating
CRW9.AA	AC/DC 24V (±10%)	BACnet MSTP (RS485)	rel. humidity	0…100%	Housing IP20
			absolute humidity	0…50gr/m3	
CRW9.AG		Modbus RTU (RS485)	dew point	-20….80°C	Sensing Element IP67
			enthalpy	0…85kJ/Kg	

Sensor Specification	Sensor Specification	Measured		Temperature & Humidity
		Outputs		BACnet MSTP or Modbus RTU communication, RS485
		Accuracy	relative humidity	± 2% over measuring range
			absolute humidity	± 2% over measuring range
			enthalpy	± 2% over measuring range
			dew point	± 2% over measuring range
			Temperature	see chart, page 4
		IP- Rating sensor element		IP67 to IEC60529
		Repeatability (H)		±0.1°C ; ±0.1% r.h.
		Long Term Drift (H)		< 0.04°C / year ; < 0.5% r.h. / year
		Measuring Range (H)		see charts 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	Cable Entry		30x15mm, on the backside of the housing
		Sensing Element Position		Inside the housing, bottom of the housing
	Color and Materials	Housing Cover		PC-V0, RAL 9010 (Pure White)
		Housing Bottom		PC-V0, RAL 9010 (Pure White)
	Environmental Conditions	Operation Temperature		-25ºC...+70ºC
		Operation Humidity		<85% r.h., no 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		IP20 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	Accessory not included in delivery		TRA0.A (106mmx106mm backplate)
	Shipping & Handling	Minimum Order		1 box with 1 piece
		Package Material		Rigid Cardboards Packaging
	Order Notes	Order Code		see product range page 1, e.g. CRW9.AA

Modbus Parameters

Address Number	Register Description	
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
35	Rel. Humidity	actual value
41	Dew Point Value, actual	actual value
42	Enthalpy Value, actual	actual value
44	Absolute Humidity, actual	actual value
45	Temperature, passive	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
AV2	Humidity Mode	0= Dew Point ; 1= Enthalpy ; 2= Absolute Humidity ; 3= relative humidity
AV3	Protocol	0= Modbus ; 1= BACnet
AV4	Temperature	actual value (-40…120ºC)
AV6	Relative Humidity	actual value (0…100% rel. Humidity)
AV7	Absolute Humidity	actual value (0…50gr/m^3)
AV8	Dew Point	actual value (-20…80ºC)
AV9	Enthalpy	actual value (0…85kJ/kg)

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:

Other country specific regulations

Country-specific regulations

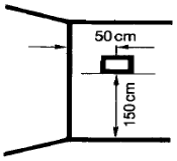
Local electrical supply authority regulation

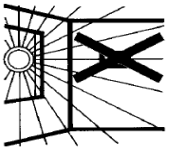
Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge

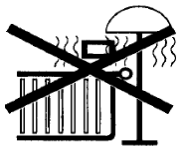
Third party specifications, e.g. general contractors or constructors

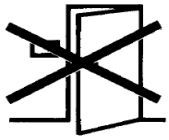
Mounting Advices

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.

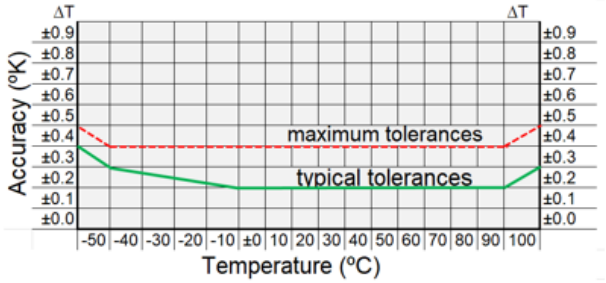
It is mandatory to comply with local currently applying laws and regulations.

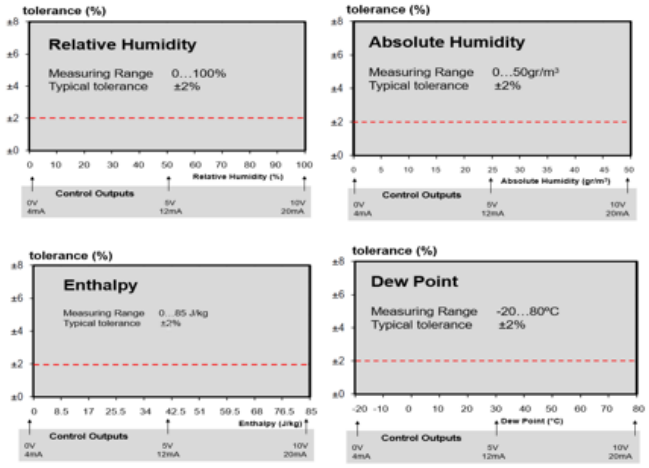
Setup

When the sensor is connected to the network and power supply, the sensor will detect the connected communication system.

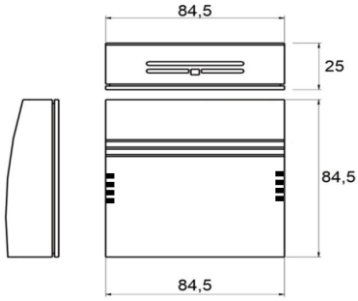
The sensor will than synchronize with the connected building automation system (BAS).

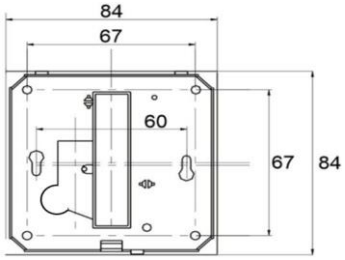
Accuracy Curves





Dimensional Drawing





Connections & Settings

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