thermokon CRC9 Series Ceiling Humidity and Temperature Sensor Instruction Manual

Contents

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Product Information

The CRC9- Series (H&T) is a ceiling humidity and temperature sensor designed for measuring temperature, relative humidity, absolute humidity, enthalpy, or dew point in rooms or areas. It features BACnet / Modbus RTU communication protocols and is suitable for use in building automation systems. The sensor is field replaceable and operates with low power supply. It can withstand harsh environmental conditions due to its high protected sensor element.

Product Usage Instructions

To use the CRC9- Series (H&T) sensor, follow these steps:

1. Select the appropriate communication protocol (BACnet MSTP or Modbus RTU) based on your building automation system requirements.
2. Install the sensor in the desired location, ensuring it is securely mounted and positioned correctly.
3. Connect the sensor to the power supply using the provided terminal clamp.
4. Configure the sensor to measure the desired variable (temperature, relative humidity, absolute humidity, enthalpy, or dew point).
5. Monitor the sensor output via BACnet MSTP / Modbus RTU communication.
6. If needed, replace the sensor in the field using a compatible replacement.

Note: The CRC9- Series (H&T) sensor is suitable for use in all common HVAC applications and can be used in commercial and industrial buildings. It offers high humidity accuracy and features a modern and practical product design. It is easy to use, install, and maintain.

Technical Information

Ceiling Humidity and Temperature Sensor with BACnet / Modbus RTU communication

- The CRC9- Series (H&T) is designed to measure temperature, relative humidity, absolute humidity, enthalpy or dew point in rooms or areas
- The Sensor is field replaceable
- The sensor operates with low power supply
- The sensor withstands harsh environmental conditions due to high protected sensor element
- BACnet MSTP and Modbus RTU on Board
- The sensor output is via BACnet MSTP / Modbus RTU communication

Use
In Building Automation System where BACnet MSTP or MODBUS RTU communication protocols are used
Relative humidity, absolute humidity, enthalpy or dew point and temperature measurement in air ducts

- Used in harsh environments due to IP67 protected sensor element, without impact on the accuracy or measuring time Used in all common HVAC applications
- Used in Commercial and Industrial Buildings

Features

- Sensor output via BACnet MSTP / Modbus RTU communication
- Selectable communication protocol
- Field Replaceable sensor
- High Humidity accuracy
- Modern and practical product design
- Easy to use, install and maintain

Product Range

Order Codes	Cable Length	Communication system	Power Supply	Measuring Variable	Measuring Units	Accuracy	Protection
			AC/DC 24V (±10%)	rel. humidity	0…100%	± 2%, Full Scale	IP20
CRC9.BA	2m	BACnet MS TP					
				absolute humidity	0…50gr/m3		
				absolute humidity	-20….80°C		
CRC9.BG	2m	Modbus RTU					
				enthalpy	0…85kJ/Kg		

Sensor Specification

Sensor Specification	Sensor Specification		Temperature & Humidity Active BACnet MSTP or Modbus RTU communication, RS485	
		Measured	± 2% over measuring range	
		Sensor Characteristics H/T Outputs	± 2% over measuring range	
		Accuracy relative humidity absolute humidity enthalpy	± 2% over measuring range	
		dew point Temperature		
		IP- Rating sensor element Repeatability (H)	± 2% over measuring range see chart, page 4	
		Long Term Drift (H) Measuring Range (H)	IP67 to IEC60529	
		Measuring Range (T) (default)	±0.1℃ ; ±0.1% r.h.	
			< 0.04℃ / year ; < 0.5% r.h. / year see charts page 4	
			-40°C…120°C	
	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 Length	2m	
		Cable Lead Diameter	Ø0.25mm	
		Cable Diameter	4.6mm	
		Sensing Element Position	external, top of the sensor pocket	
		Sensor Housing	Ø30mmx37mm	
		Sensor / Housing connection	M12 screw-on connection	

Technical Information	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
		Sensor / Housing connection	Zink alloy – Nickel plated
		Cable Gland	White ABS, RAL2002 (Vermilion)
		Gland Rubber Seal	White TBS, RAL9010 (Pure White)
		Protection Caps	White ABS, RAL2002 (Vermilion)
	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 Shipping & Handling	n/a	n/a	
		Minimum Order	1 box with 1 piece Rigid Cardboards	
	Order Notes	Packaging Order Code	See Product Range, Page 1, e.g. CRC9.BA	
Thermokon Asia Pacific		*All Information and technical data are subject to alteration* *CRC9- Series (H&T) V23.1*		*Page 2/4*

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

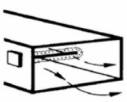
Modbus Parameters	11	Baud Rate autodetection		0= OFF ; 1= On
	15	Baud Rate, (if autodetection is OFF)		0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
	34	Temperature, digital		actual value
	35	Rel. Humidity		actual value
	41	Dew Point Value, actual		actual value
	42	Enthalpy Value, actual		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 i s working with the BAS, the “Baud Rate autodetection” has to be set to 0= OFF and the actual Baud Rate has t o be set.				
All Information and technical data are subject to alteration				
Thermokon Asia Pacific	*CDI9- Series (H&T)*	*V2 3. 1*	*Page 3/4*	

Installation Notes
Observe the following general regulation for engineering and implementation:

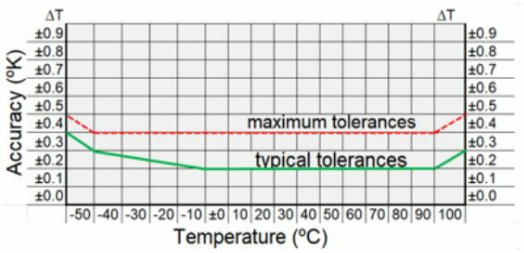
- All relevant national and heavy power regulation
- Other country specific regulations
- Country-specific regulations
- Local electrical supply authority regulation
- Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge
- Third party specifications, e.g. general contractors or constructors

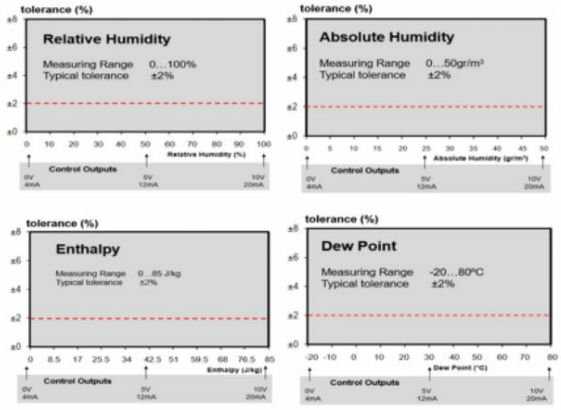
Mounting Advices



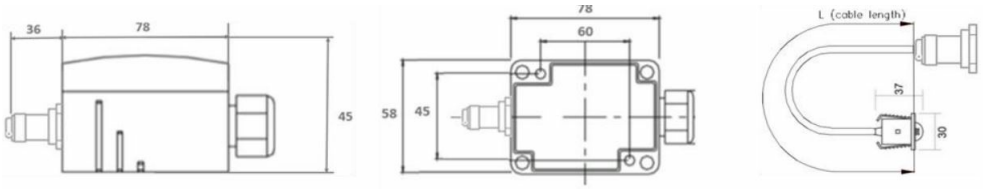
Disposal Notes
The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU. The device may not be disposed as domestic garbage. The device must be disposed through channels provided for this purpose. It is mandatory to comply with local currently applying laws and regulations.

Accuracy Curves





Dimensional Drawing



Connections & Settings

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

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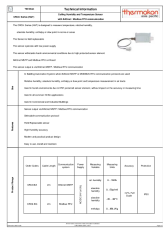
Documents / Resources

	thermokon CRC9 Series Ceiling Humidity and Temperature Sensor [pdf] Instruction Manual CRC9 Series Ceiling Humidity and Temperature Sensor, CRC9 Series, Ceiling Humidity and Temperature Sensor, Humidity and Temperature Sensor, Temperature Sensor, Sensor