thermokon CRP9 Series Pendulum Humidity and Temperature Sensor Instruction Manual

Contents

thermokon CRP9 Series Pendulum Humidity and Temperature Sensor

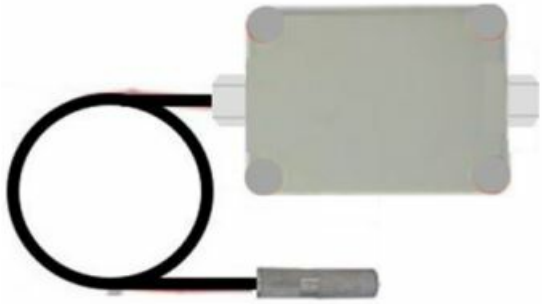
Product Information

- **Product Name:** CRP9- Series (H&T) Pendulum Humidity and Temperature Sensor
- **Communication:** BACnet / Modbus RTU
- **Measuring Variables:** Temperature, Relative Humidity, Absolute Humidity, Enthalpy, Dew Point
- **Suitability:** Designed for use in rooms or areas, suitable for plant or utility rooms
- Field Replaceable Sensor
- Comes with a 1m connection cable (other lengths available)
- Operates with low power supply
- Protected sensor element for harsh environmental conditions
- BACnet MSTP and Modbus RTU communication protocols
- Output via BACnet MSTP / Modbus RTU communication
- Suitable for use in Building Automation Systems
- Used in air ducts for humidity and temperature measurement
- High Humidity accuracy
- Modern and practical product design
- Easy to use, install and maintain
- IP65 Protection

Product Usage Instructions

- The CRP9- Series (H&T) Pendulum Humidity and Temperature Sensor is designed for use in rooms or areas.
- It is suitable for plant or utility rooms in commercial and industrial buildings.
- The sensor is field replaceable, allowing for easy maintenance.
- It comes with a 1m connection cable, but other lengths are available.
- The sensor operates with a low power supply.
- It can withstand harsh environmental conditions due to its high protected sensor element.
- The sensor communicates via BACnet MSTP or Modbus RTU protocols.
- It is suitable for use in Building Automation Systems that utilize these communication protocols.
- The sensor is used for measuring temperature, relative humidity, absolute humidity, enthalpy, and dew point in air ducts.
- It provides accurate measurements even in harsh environments without impacting accuracy or measuring time.
- The sensor is easy to install and maintain.

Technical Information



- The CRP9- Series (H&T) is designed to measure temperature, relative humidity,
- absolute humidity, enthalpy or dew point in rooms or areas

- Professional design suitable for plant or utility rooms
- The Sensor is field replaceable
- The sensor comes with a 1m connection cable, other lengths available
- 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	Connection Cable	Protection
CRP9.BA	2m	BACnet MSTP	AC/DC 24V (±10%)	rel. humidity absolute humidity absolute humidity enthalpy	0…100% 0…50gr/m 3 -20….80°C 0…85kJ/K g	± 2%, Full Scale	black color	IP65
CRP9.BG	2m	Modbus RTU						

Sensor Specification

Sensor Specification	Measured		Temperature & Humidity
	Sensor Characteristics H/T		Active
	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) (default)		-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. 1.5mm²
	Power Consumption	≤ 1W @ AC 24V / DC 24V
Mechanical Information	Cable Length	2m
	Cable Lead Diameter	Ø0.25mm
	Cable Diameter	4.6mm
	Sensor Pocket Lengths	100mm
	Sensor Pocket Diameter	Ø15mm
	Sensing Element Position	external, top of the sensor pocket
	Sensor / Housing connection	M12 crew-on connection
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	WhiteABS, RAL2002 (Vermilion)
	sensor pocket	US:AISI 304; EU: EN X 6 CrNi 18 10; GER: W.N. 1.301
	Cable	Black PVC
Environmental Conditions	Operation Temperature	-25°C...+70°C
	Operation Humidity	<85% r.h., no condensation
	Transport Temperature	-35°C...+70°C
	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

Miscellanies

	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

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
	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 H umidity ; 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.

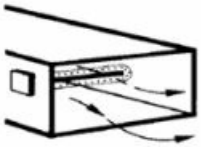
Advices

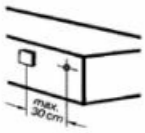
Installation Notes

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 Advice

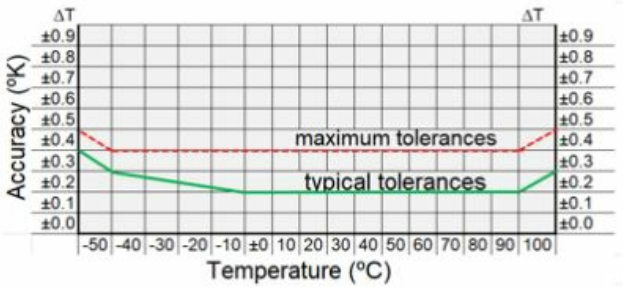


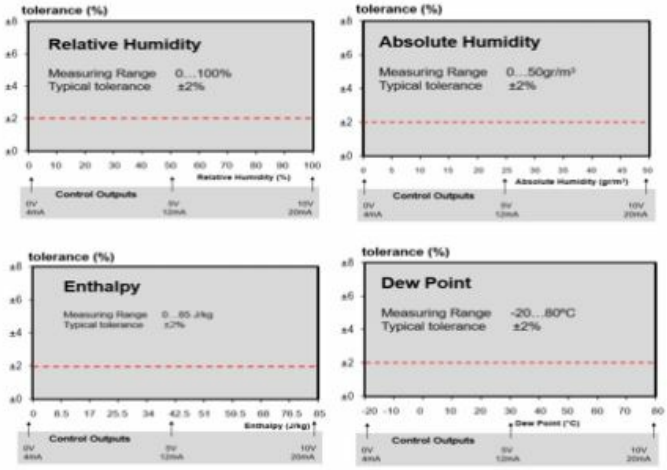


Disposal Notes

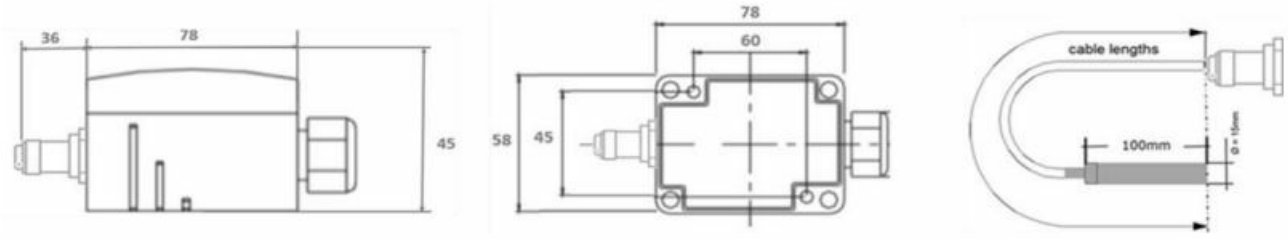
- The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.
- The device may not be disposed as domestic garbage.
- The device must be disposed through channels provided for this purpose.
- It is mandatory to comply with local currently applying laws and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

Accuracy Curves





Dimensional Drawing

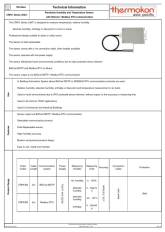


Connections & Settings

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

All Information and technical data are subject to alteration CRP9- Series (H&T) V23.1

Documents / Resources

	thermokon CRP9 Series Pendulum Humidity and Temperature Sensor [pdf] Instruction Manual CRP9 Series Pendulum Humidity and Temperature Sensor, CRP9 Series, Pendulum Humidity and Temperature Sensor, Humidity and Temperature Sensor, Temperature Sensor, Sensor