
	T18140en	
Technical Information Outdoor Humidity and Temperature Sensor with BACnet / Modbus RTU communication		

The COW9- Series (H&T) is designed to measure temperature, relative humidity, absolute humidity, enthalpy or dew point in outdoor areas, plant rooms, factories, cold stores, greenhouses and warehouses

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 (RS485)



Use	<p>In Building Automation System where BACnet MSTP or MODBUS RTU communication protocols are used</p> <p>Rel. humidity, abs. humidity, enthalpy or dew point and temperature measurement in outdoor areas, plant rooms, factories, cold stores, greenhouses and warehouses.</p> <p>Used in harsh environments due to IP67 protected sensor element, without impact on the accuracy or measuring time</p> <p>Used in all common HVAC applications</p> <p>Used in Commercial and Industrial Buildings</p>
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Features	<p>Sensor output via BACnet MSTP / Modbus RTU communication</p> <p>High Humidity accuracy</p> <p>Modern and practical product design</p> <p>Easy to use, install and maintain</p>
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Product Range	<table border="1"> <thead> <tr> <th data-bbox="172 1635 344 1720">Order Codes</th> <th data-bbox="344 1635 603 1720">Power Supply</th> <th data-bbox="603 1635 858 1720">Communication system</th> <th data-bbox="858 1635 1031 1720">Humidity Measuring</th> <th data-bbox="1031 1635 1203 1720">Measuring Units</th> <th data-bbox="1203 1635 1375 1720">IP Rating</th> </tr> </thead> <tbody> <tr> <td data-bbox="172 1720 344 1890">COW9.AA</td> <td data-bbox="344 1720 603 2056" rowspan="3">AC/DC 24V (±10%)</td> <td data-bbox="603 1720 858 1890">BACnet MSTP</td> <td data-bbox="858 1720 1031 1787">rel. humidity</td> <td data-bbox="1031 1720 1203 1787">0...100%</td> <td data-bbox="1203 1720 1375 1890" rowspan="2">Housing IP65</td> </tr> <tr> <td data-bbox="172 1890 344 2056">COW9.AG</td> <td data-bbox="603 1890 858 2056" rowspan="2">Modbus RTU</td> <td data-bbox="858 1890 1031 1957">absolute humidity</td> <td data-bbox="1031 1890 1203 1957">0...50gr/m3</td> </tr> <tr> <td></td> <td data-bbox="858 1957 1031 2024">dew point</td> <td data-bbox="1031 1957 1203 2024">-40...120°C</td> <td data-bbox="1203 1890 1375 2056">Sensing Element IP67</td> </tr> <tr> <td></td> <td></td> <td></td> <td data-bbox="858 2024 1031 2056">enthalpy</td> <td data-bbox="1031 2024 1203 2056">0...85kJ/Kg</td> <td></td> </tr> </tbody> </table>						Order Codes	Power Supply	Communication system	Humidity Measuring	Measuring Units	IP Rating	COW9.AA	AC/DC 24V (±10%)	BACnet MSTP	rel. humidity	0...100%	Housing IP65	COW9.AG	Modbus RTU	absolute humidity	0...50gr/m3		dew point	-40...120°C	Sensing Element IP67				enthalpy	0...85kJ/Kg	
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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. 1.5mm ²	
		Power Consumption	≤ 1W @ AC 24V / DC 24V	
	Mechanical Information	Measuring Pocket Diameter	Ø19mm	
		Measuring Pocket Length	50mm	
		Cable Entry	M16, Ø6...Ø8mm cables	
		Sensing Element Position	external, top of the sensor pocket	
	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)	
		sensor pocket	White ABS, RAL9001 (Cream White)	
		Environmental Condition	Operation Temperature	-40°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	
		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	none	
	Shipping & Handling	Minimum Order	1 box with 2 piece	
		Package Material	Rigid Cardboards Packaging	
	Order Notes	Order Code	See Product Range, Page 1, e.g. COW9.AA	

All Information and technical data are subject to alteration

COW9-Series (H&T) V22.1

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
	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			

BACnet Parameters	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...120°C)
	AV6	Relative Humidity	actual value (0...100% rel. Humidity)
	AV7	Absolute Humidity	actual value (0...50gr/m ³)
	AV8	Dew Point	actual value (-20...80°C)
	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.



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

Advices

Mounting Advices

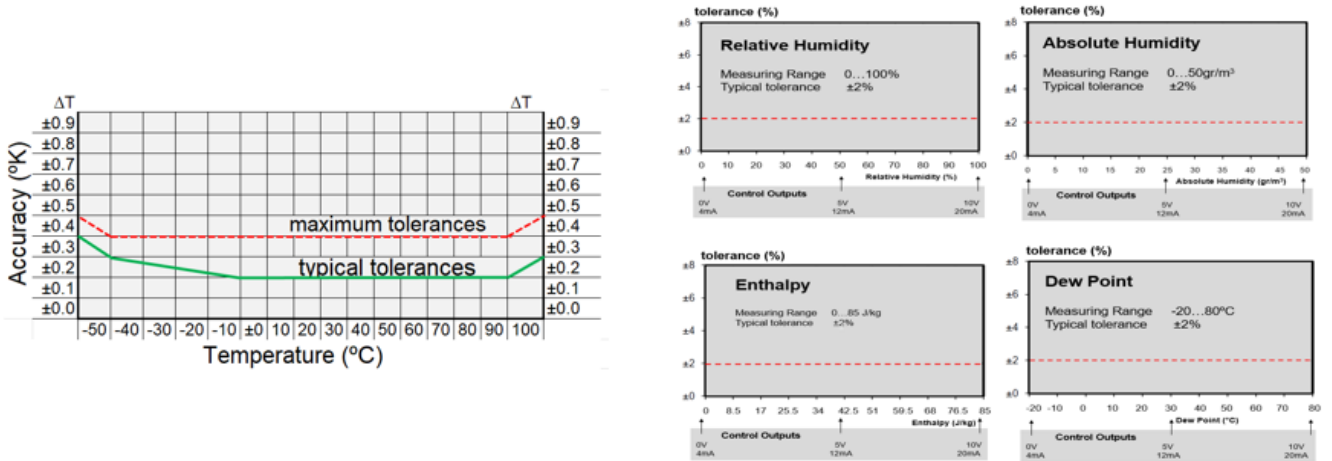


Disposal Notes



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

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