

	DS8141en	Data Sheet	
	COW9-Series (H&T)	Outdoor Humidity and Temperature Sensor Modbus RTU (RS-485) Communication	

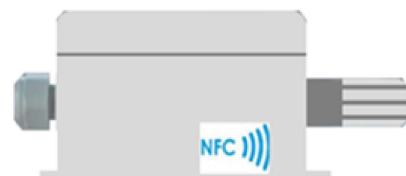
The COW9-Series (H&T) is designed to measure humidity and temperature in outdoor areas, plant rooms, factories, cold stores, greenhouses and warehouses

In accordance with RESET® and WELL Building Standard™

Reading/parameter settings via NFC technology

With operation LED, optional with ePaper display available

The sensor characteristics are active



Use	Compatible to all common HVAC DDC and Analog Controls systems, with/without Building Automation System
	Used in all common HVAC applications
	Used in Commercial and Industrial Buildings

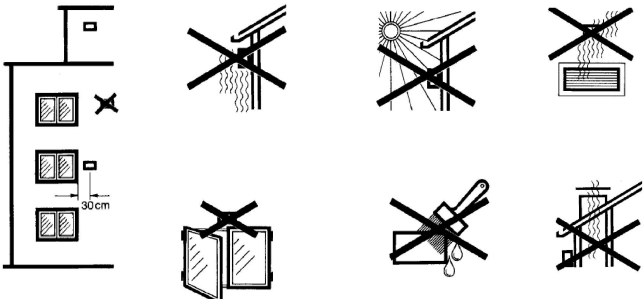
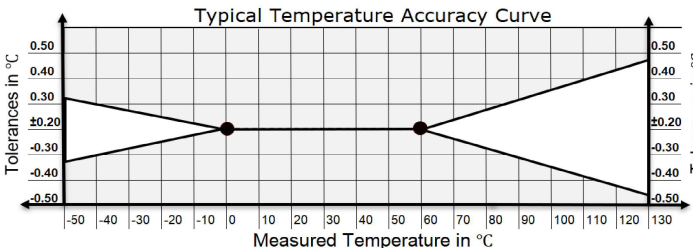
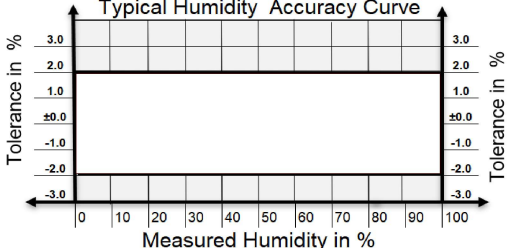
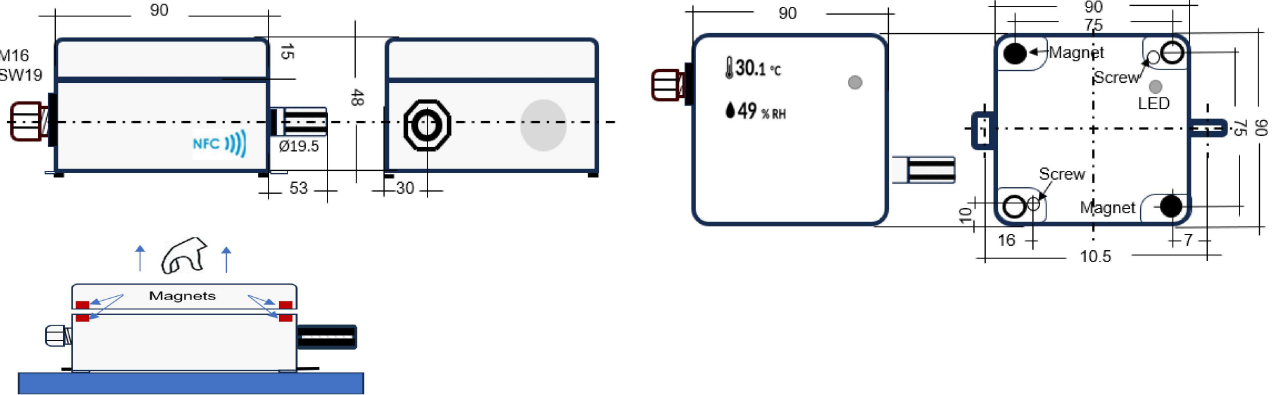
Features	Sensor output is Modbus RTU (RS-485)
	Optional with ePaper display available
	Reading/Parameter settings via NFC technology
	Selectable Humidity Units (r.h / abs. H. / Dew Point / Enthalpy)
	Cover/bottom housing connected with magnets and two screws
	Firmware updates via service connector
	Easy to use, install and maintain

Product Range	Order Code	General Parameters				Temperature Parameters		Humidity Parameters		
		Output	Pocket Length	Power Supply	Display / LED	IP Rating	Range	Accu- racy	Range / Unit	Accu- racy
	COW9G.KG	Modbus RTU (RS-485)	Ø19.5 mm x 50 mm	AC/DC 24 V (±10 %)	LED	IP 65	-40 °C to +60 °C (default) -40 °C to +135 °C via NFC adjustable	±0.2 °C between 0 °C to +50 °C	Rel. Humidity (default)	0 to 100 %
	COW9G.LG				ePaper display 31 x 60 mm				Absolute Humidity	0 to 50 g/m³
									Dew Point	-20 to +80 °C
									Enthalpy	0 to 85kJ/kg
									Selectable via NFC	
									±2 %, Full Scale	

All Information and technical data are subject to alteration

Sensor Specification	Sensor Specification	Measured	Humidity and Temperature
		Sensor Characteristics	Active
Sensor Specification	Temperature	Sensor Output	Modbus RTU (RS-485)
		Accuracy	±0.2 °C between 0 °C to +50 °C
		Response Time	t ₆₃ = 2 s
		Long Term Drift	<0.03 °C per year
		Default Measuring Range	–40 °C to +60 °C
		Optional Measuring Range	Free selectable via NFC –40 °C to +135 °C
	Humidity	Accuracy	Typically ±2 % RH
		Repeatability	Average 0.15 % RH
		Long Term Drift	<0.25 % RH per year
		Measuring Value (default)	Relative Humidity, 0 % to 100%
		Optional Measuring Value	Absolute Humidity, 0 g/m³ to 50 g/m³
			Dew Point, –20 °C to +80 °C
			Enthalpy, 0 kJ/kg to 85 kJ/kg
Technical Information	Electrical Information	Power Supply	AC/DC 24 V (±10 %)
		Frequency	50/60 Hz at AC 24 V
		Terminal Clamp	Screw terminal, max. 1.5 mm²
		Power Consumption	≤1 W @ 24 V AC/DC
	Mechanical Information	Cable Entry	M16 / SW19
		Bootloader for software updates	C+ Connector
		Display	ePaper 31 mm × 60 mm
		Pocket	Ø19.5 mm × 50 mm
	Materials and Colours	Housing Cover	ABS, white / transparent (display)
		Housing Bottom	ABS, white
		Sensor Pipe	ABS, white with SS304 cover
		Flammability Standard	UL 94 class HB; IEC 60707; ISO 9770
	Environmental Conditions	Operation Temperature	–25 °C to +70 °C
		Operation Humidity	100 % RH, with condensation
		Transport Temperature	–35 °C to +70 °C
		Transport Humidity	<90 % RH, no condensation
		Storage Temperature	–10 °C to +70 °C
		Storage Humidity	<85 % RH, no condensation
	Norms and Directives	IP-Rating	IP65 to IEC60529
		Product Safety	Safety class III, in accordance with EN IEC 60730-1
		Product Standard	Automatic electrical controls for household and similar use in accordance with EN IEC 60730-1:2022
		CE marking in accordance with Directive	2014/30/EU Electromagnetic Compatibility (EMC)
		EMC Emissions, in accordance with	EN IEC 60730-1:2022
		EMC Immunity, in accordance with	EN IEC 60730-1:2022
		RoHS Compliance, in accordance with	Directive 2011/65/EU, as amended by (EU) 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	N/A	
	Shipping & Handling	Minimum Order	1 box with 1 piece
		Packaging	Rigid cardboard packaging
	Order Notes	Order Code	See product range, page 1, e.g. COW9G.DA

Register	Register_Name	Register_Description_1	Register_Description_2	Attributes	Range	Default
0	MODBUS_SERIALNUMBER_0	Serial number 0	Actual version	R	N/A	N/A
1	MODBUS_SERIALNUMBER_1	Serial number 1	Actual version	R	N/A	N/A
2	MODBUS_SERIALNUMBER_2	Serial number 2	Actual version	R	N/A	N/A
3	MODBUS_SERIALNUMBER_3	Serial number 3	Actual version	R	N/A	N/A
4	MODBUS_VERSION_SOFTWARE	Software version	Actual version	R	N/A	N/A
5	MODBUS_VERSION_HARDWARE	Hardware version	Actual version	R	N/A	N/A
6	MODBUS_ADDRESS	Modbus address	Default 120, selectable 1–254	R/W	1 to 254	120
7	MODBUS_PORTOCOL_SELECTION	Protocol	0 = MODBUS RTU	R/W	0	0
9	MODBUS_BAUD_MANUAL	Baud rate	0 = 9600; 1 = 19200; 2 = 38400; 3 = 57600; 4 = 115200	R/W	0 to 4	1
10	MODBUS_STOP_BITS	Modbus stop bits	0 = 1bit; 1 = 2bits	R/W	0 or 1	0
11	MODBUS_PARITY_BITS	Parity bits	0 = none; 1 = even; 2 = odd	R/W	0 to 2	1
12	MODBUS_DEFAULT_RESET	Factory reset	0 = updated values, 1 = update to default values	R/W	0 or 1	0
Temperature (50–99)	Register_Name	Register_Description_1	Register_Description_2	Attributes	Range	Default
50	MODBUS_TEMPERATURE_CALIBRATION	Temperature sensor calibration ±10 K)	Calibration factor (10 = 1 K)	R/W	–100 to +100	0
51	MODBUS_TEMPERATURE_UNIT	°C (Celsius) = 0 °F (Fahrenheit) = 1	Temperature unit	R/W	0 or 1	0
52	MODBUS_TEMPERATURE_MIN_RANGE	Temperature minimum range	Microchip temperature range	R/W	–40 °C to +135 °C	N/A
53	MODBUS_TEMPERATURE_MAX_RANGE	Temperature maximum range	Microchip temperature range	R/W	–40 °C to +135 °C	N/A
55	MODBUS_TEMPERATURE_VALUE	Temperature actual value	Temperature value including calibration value	R	N/A	N/A
Humidity (100–149)	Register_Name	Register_Description_1	Register_Description_2	Attributes	Range	Default
100	MODBUS_REL_HUMIDITY	Rel. humidity actual value	Rel. Humidity actual value including calibration value	R	0 to 100 %	N/A
101	MODBUS_DEW_POINT_VALUE	Dew point actual value	Dew Point actual value including calibration value	R	–20 °C to +80 °C	N/A
102	MODBUS_ENTHALPY_VALUE	Enthalpy actual value	Enthalpy actual value including calibration value	R	0 to 85 kJ/kg	N/A
103	MODBUS_ABSOLUTE_HUMIDITY	Absolute Humidity actual value	Absolute Humidity value including calibration value	R	0 to 50 g/m³	N/A
104	MODBUS_HUMIDITY_CALIBRATION	Humidity sensor calibration (±10 %)	Calibration factor (10 = 1 %)	R/W	0 to 1000	0
Air Quality CO ₂ (150–199)	Register_Name	Register_Description_1	Register_Description_2	Attributes	Range	Default
150	MODBUS_CO ₂ _VALUE	CO ₂ value	CO ₂ value including calibration value	R	0 to 5000	N/A
151	MODBUS_CO ₂ _CALIBRATION	CO ₂ calibration (±500 ppm)	Calibration factor (1 = 10 ppm)	R/W	–500 to +500	0
152	MODBUS_CO ₂ _MIN_RANGE	CO ₂ minimum range	Microchip CO ₂ range	R/W	0 to 5000	N/A
153	MODBUS_CO ₂ _MAX_RANGE	CO ₂ maximum range	Microchip CO ₂ range	R/W	0 to 5000	N/A
170	MODBUS_CO ₂ _LED/DIS_RELEASE	0 = enables; 1 = disabled	LED control	R/W	0 or 1	0
171	MODBUS_CO ₂ _LED/DIS_STATUS	0 = good; 1 = fair; 2 = bad	LED status	R/W	0 to 2	N/A
172	MODBUS_CO ₂ _LED/DIS_GREEN_SETPOINT	Max value for good	CO ₂ Level "Fair" On Yellow Colour On / EMOJI fair	R/W	0 to 40000	800
173	MODBUS_CO ₂ _LED/DIS_Yellow_SETPOINT	Max value for fair	CO ₂ Level "Bad" On Red Colour On / EMOJI bad	R/W	0 to 40000	1400
Air Quality VOC (200–249)	Register_Name	Register_Description_1	Register_Description_2	Attributes	Range	Default
200	MODBUS_VOC_VALUE	VOC value	VOC value including calibration value	R	N/A	N/A
201	MODBUS_VOC_CALIBRATION	VOC sensor calibration	Calibration factor (1 = 1 VOC Index Point (IP)	R/W	100	0
202	MODBUS_VOC_MIN_OUTPUT	VOC range	Microchip VOC Range (VOC Index Points IP)	R/W	0 to 500	N/A
203	MODBUS_VOC_MAX_OUTPUT	VOC range	Microchip VOC Range (VOC Index Points IP)	R/W	0 to 500	N/A
220	MODBUS_VOC_LED/DIS_RELEASE	0 = enables; 1 = disabled	LED control	R/W	0 or 1	0
221	MODBUS_VOC_LED/DIS_STATUS	0 = good; 1 = fair; 2 = bad	LED status	R/W	0 to 2	N/A
222	MODBUS_VOC_LED/DIS_GREEN_SETPOINT	Max value for good	VOC Level "Fair" On Yellow Colour On / EMOJI fair	R/W	0 to 500	200
223	MODBUS_VOC_LED/DIS_YELLOW_SETPOINT	Max value for fair	VOC Level "Bad" On Red Colour On / EMOJI bad	R/W	0 to 500	350

	Installation Notes  Observe the following general regulation for engineering and installation: All relevant national and local electrical installation codes Other country-specific regulations Comply with all local safety regulations, schematics, cable listings, dispositions, specifications, and arrangements from the engineering office in charge Third-party specifications, e.g., general contractors' or constructors' notes
Advises 	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
	NFC Setting  All devices marked with the NFC Logo can be parameterized via the Gruner AP NFC APP The NFC APP is available on the Gruner AP Website, https://www.grunerapiapacific.com/ Hold your NFC-capable Android phone to the NFC Logo, the installed APP will start automatically Commissioning Note: The sensor will reach its specified accuracy after 1 hour of being powered up
Accuracy Curves  	
Dimensional Drawing / Mounting 	
Connections & Settings 