

GIEBEL SENSE Modbus RTU (prototype)



Ventilation dryers are indispensable to prevent the occurrence of condensation water damage. However, the effective and predictive maintenance of these filters is only possible if the monitoring of the filter loading is signaled in such a way that the filter change does not cause any unplanned downtime.

The GS24-RTU monitors the loading status of the filter. The saturation levels are output via the Modbus RTU protocol.

Continuous saturation monitoring of the adsorber
4 fixed switching outputs for 0% / 50% / 75% / 100% Loading
Modbus RTU protocol (RS485 Half-Duplex serial connection)
Error corrections for unusual deployment changes
Easy to mount, to any adsorber

Function of GIEBEL Sense

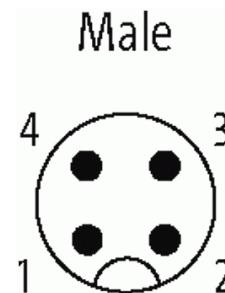
The desiccant reduces the relative humidity in its ambient air and does so independently of the temperature. The more the gel is loaded, the less water it can remove from the air. The air surrounding the desiccant has a certain amount of %RH that correlates with the saturation state of the desiccant. This is how the sensor can measure the level of saturation of the Adsorber.

Technical data

<i>Temperature</i>	-40°C to +70°C
<i>Housing</i>	PA
<i>Size</i>	60 x 74 x 33 mm
<i>Weight</i>	200 g
<i>Input variable</i>	Humidity 0-100% rF
<i>Operating voltage</i>	24V DC
<i>Protection class</i>	IP 67
<i>Output</i>	RS485 A/B

Module plug pinout

<i>Model</i>	GS A
<i>Plug</i>	M12 a-coding, 4-pin
<i>Pin 1</i>	+24 V DC (brown)
<i>Pin 2</i>	RS485 A (white)
<i>Pin 3</i>	GND (blue)
<i>Pin 4</i>	RS485 B (black)



Supported Modbus function codes

<i>Function code</i>	<i>Description</i>
03 (0x03)	Read Holding Register
04 (0x04)	Read Input Register
06 (0x06)	Write Single Holding Register
16 (0x10)	Write Multiple Holding Registers

The device has no bus termination.

It's recommended to have bus termination resistors at the beginning and end of the serial bus, especially with longer cable lengths and/or higher baudrates.

There should also be pullup and pulldown resistors at each bus line, to keep the bus in a known state, if no device is active (bias resistors).

Please refer to Modbus and RS485 docs for further infos.

Twisted pair cables are recommended to use for the RS485 A/B lines.

Holding Registers (read/write)

<i>Register (length 1)</i>	<i>Communication address (dec)</i>	<i>Description</i>	<i>Values (dec) (defaults are bold)</i>
40000	1	Slave ID	1 ... 247 123
40001	2	Baudrate	1 (= 9600) 2 (= 19200) 3 (= 38400) 4 (= 57600) 5 (= 76800) 6 (= 115200)

40002	3	Serial mode	1 (= 8E1) 2 (= 8O1) 3 (= 8N1) 4 (= 8N2)
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The Modbus slave ID has to be unique in the bus line.

The Baudrate and Serial mode have to be the same throughout the whole bus (matching the Modbus master).

Writing settings will trigger an immediate reset of the serial connection of the device, so there might be no response (timeout) or a CRC error as an answer after setting new values.

New values will still apply immediately – the master settings have to match all values to re-establish connection.

Input Registers (read only)

After restarting the device, the output remains in OK status (0) for approx. 6-7 min, after which the real load status is output (calibration process).

Register (length 1)	Communication address (dec)	Description	Values (dec)
30010	11	Sensor output Adsorber saturation	0 (= OK, 0-49%) 1 (= MEDIUM, 50-74%) 2 (= WARNING, 75-99%) 3 (= FULL, 100%)

Sensor readings every minute