Sensors and regulators

with serial RS485/RS232 output

BIN | alarm | Relay | Modbus RTU

DIGITAL SENSORS

• programmable sensors of temperature, humidity, atmospheric pressure and CO_2 with two-state inputs and relay outputs • industry and interior design • high quality, accurate and stable sensors • values computed from ambient temperature and relative humidity • traceable calibration certificate with traceability with EN ISO/IEC 17025

Applications

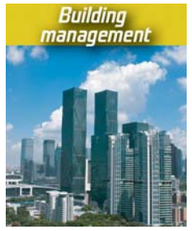
Building management needs quality and reliable components. Our instruments which measure temperature, humidity, atmospheric pressure and CO_2 are an integral part of these industry-leading solutions.

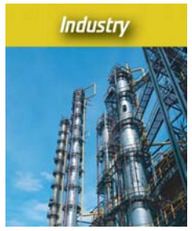
Industry is distinguished by its capital demands. The competition across the market is still growing and creates additional pressure on the prices. Our company has a good understanding of this situation and thus provides very reliable and precise products for a very competitive price.

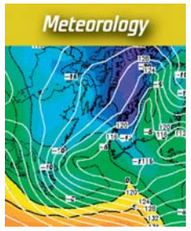
Meteorology is the science of the atmosphere, whose knowledge is essential in many fields of human activity. For example, transportation, agriculture and the military need sensitive, accurate devices with a large dynamic range, which are very stable over time. COMET sensors meet these requirements. Our sensors along with a radiation shield may form the basis for a long-term weather station for monitoring climate and air quality.

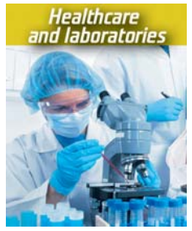
In the food industry, environments, supermarkets and wherever there is a need to monitor critical variables in relation to HACCP regulations, COMET sensors and transducers may be used. Along with other COMET products such monitoring systems MS6 and MS55D, it is possible to create a comprehensive system for collecting, recording, analyzing and alerting.

Healthcare and laboratories are characterized by sterile environments. COMET sensors can serve well even in these demanding and wide range of applications focusing on monitoring temperature, CO_2 and other critical parameters in the context of GLP and GMP regulations.









Measured values

Temperature

Temperature is measured by RTD sensor Pt1000/3850 ppm. Probes P1000 of different lengths and types can be connected to transducers. The measured temperature can be displayed in °C or °F, according to the settings of the sensor.

Relative humidity

State-of-the-art capacitive polymer sensor ensures excellent long term calibration stability and inertia against water and condensation. Transmitters are available in wall-mount, duct mount. They are also available in modification for measuring into the pressure up to 25 bars.

Computed values

Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.

Barometric pressure

Transmitter for measuring of barometric pressure is equipped with an absolute pressure sensor of high accuracy which ensures excellent long term stability. The display reading and pressure output is user selectable in these units: hPa, kPa, mbar, mmHg, inHg, inH2O, PSI, oz/in2.

Carbon dioxide level - CO_2

A multiple point CO_2 and temperature adjustment procedure leads to excellent CO_2 measurement accuracy over the entire temperature working range; this is a must for process control and outdoor applications. The dual wavelength NDIR CO_2 sensing procedure compensates automatically for ageing effects. The CO_2 module is highly resistant to pollution and offers maintenance free operation and outstanding long term stability.

Binary inputs

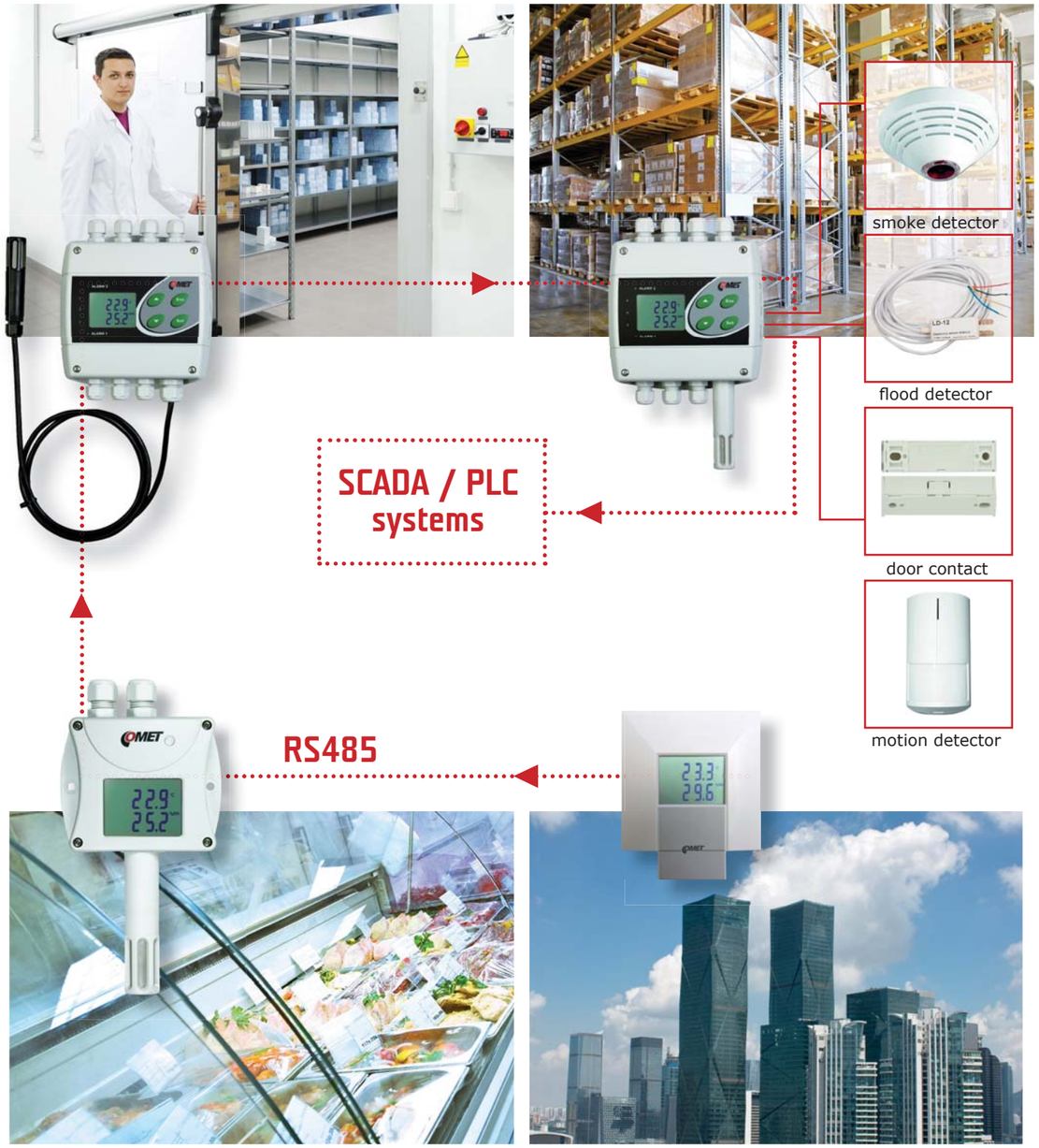
Selected devices feature up to three binary inputs for connecting smoke detectors, floodings, breaking glass, door contacts, etc. A voltage-free contact, open collector or two-state voltage signal can be connected.

Pharmaceuticals and laboratories

Monitoring of areas and places for storage of drugs at temperatures down to - 200 °C.

Technological processes and production

Monitoring of storage conditions and production processes in the temperature range from - 200 °C to + 600 °C.



Food industry

Monitoring of critical variables in relation to HACCP regulations with the possibility of immediate alert to unforeseen events that could lead to the devaluation of goods.

Building management

Comet devices offer reliable components measuring temperature, humidity, atmospheric pressure and CO_2.

Sensors and regulators with serial output RS485/RS232 and with relay outputs

Sensors and regulators of temperature, humidity, barometric pressure and CO_2 concentration convert measured values to digital serial output the RS485 and RS232 link parameters. These devices support communication protocols Modbus RTU and protocol compatible with standard Advantech-ADAM. By means of this communictaion via serial line the measured values can be read and some settings changed. Parameters can be set from the regulator´s keypad or from a computer.

Computerized design ensures maximum long term stability, user adjustment and fail indication. This concept allows the user to choose measuring range for each output. Moreover, there is an option to set up computed values such as dew point, absolute humidity, specific humidity, mixing ratio and specific enthalpy. State-of-the-art capacitive polymer sensor ensures excellent long term calibration stability and inertia against water and condensation. Devices are designed for measurement of air without aggressive ingredients.

Basic division of devices:

H Programmable industry regulators with relay output and serial output RS485/RS232

- Regulators with relay outputs
- Regulators with power relay 230Vac/8A
- Regulators with two-state inputs, with relay output and serial output RS485/RS232

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Advantages:

- Two relay outputs
- Three two-state outputs
- Keypad for settings
- Acoustic and visual indication of alarms

T Programmable sensors with serial output without relay outputs

- Industry design with serial output RS485/RS232
- Interior design with serial output RS485/RS232

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Advantages:

- Compact size
- The stems of length up to 700 mm
- Device version with connector Lumberg for easy connection
- External probe of length up to 4 metres

H Programmable industry regulators

Regulators are designed for two-state control of e.g. heating, ventilation, humidifier, dehumidifier, etc. They are equipped with two relay outputs for alarm indication or control of external devices. Each relay can be assigned to any measured or computed value and comparing limit, delay, hysteresis and audible alarm can be set up.

Regulators are made with the power relay output 250VAC/8A, or with relay output 50V/2A. Devices with low voltage relays can be equipped with a serial output RS485 or RS232. These regulators are equipped with three binary inputs for detection of two-state events - e.g. water, smoke, glass break detection, door contact.

Regulators with relay outputs

- Mesured values - temperature, relative humidity, computed values and CO_2 concentration
- Versions with the stem, the external probe on the cable and with external probe into the pressure environments of up to 2,5 MPa

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50V Relay

Regulators with power relay outputs

- Mesured values - temperature, relative humidity, computed values
- Versions with the stem, the external probe on the cable and with external probe into the pressure environments of up to 2,5 MPa
- power relays 250Vac/8A

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250V Relay

Regulators with two-state inputs, with relay output and serial output RS485/RS232

- Mesured values - temperature, relative humidity, computed values and CO_2 concentration
- Versions with the stem, the external probe on the cable and with external probe into the pressure environments of up to 2,5 MPa
- Two-state inputs

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50V Relay BIN

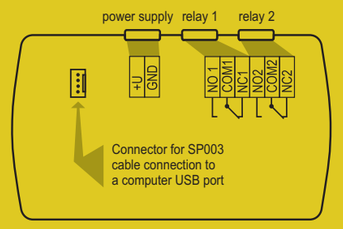
Programmable industry regulators

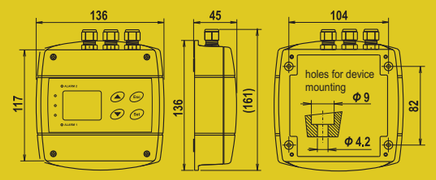
Choose the appropriate sensor model

H Regulators with relay and power relay output

Programmable regulators with relay outputs are designed to measure temperature, relative humidity and CO_2 concentration in chemical non--aggressive environment. Used for alarms signalization and control of external devices.The devices are available in wall and duct mounting models or with a cable probe. Programmable regulators with outputs to power relays are powered by AC 110V to 240V. The advantage is the possibility of direct control of external power circuits.

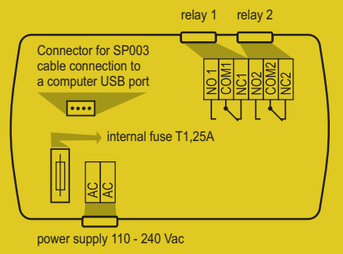
Electrical wiring of regulator with low voltage relay output.

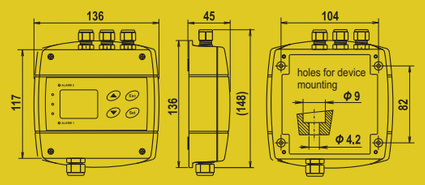




Two output relays can be set from the keypad or from a computer.
Normally open contact of relay - when alarm condition is true, contact is closed
Normally closed contact of relay - when alarm condition is true, contact is open

Electrical wiring of regulator with power relay output.

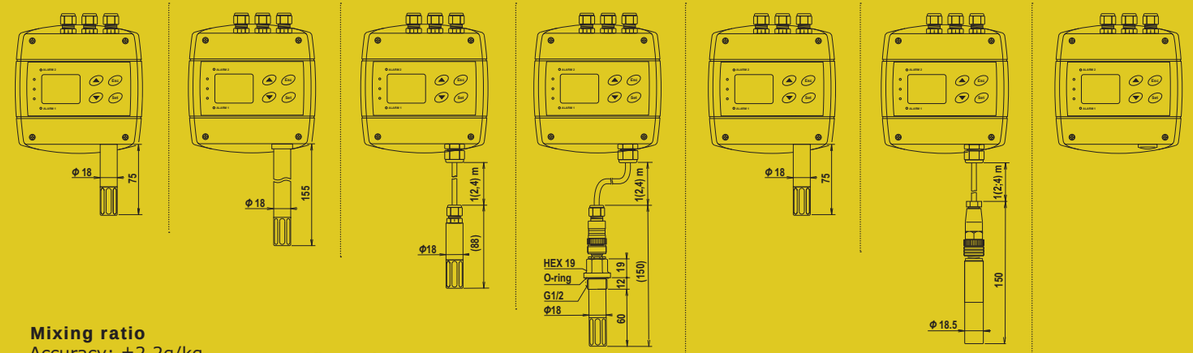




MEASURED VALUES			temperature + relative humidity				Temperature + relative humidity + CO_2	CO_2	
SENSOR MODEL WITH		2 x Relay	H3020	H3023	H3021	H3021P	H6020	H5021	H5024
		2 x Relay 250Vac/8A	H3060	-	H3061	H3061P	-	-	-
temperature	range		-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C	-30 to +80°C	-	-
	accuracy		±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	-	-
relative humidity	range (without condensation)		0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	-	-
	accuracy in range of 5 to 95% at 23°C		±2,5 %RH	±2,5 %RH	±2,5 %RH	±2,5 %RH	±2,5 %RH	-	-
CO_2	range		-	-	-	-	0 to 2000 ppm*	0 to 10000 ppm	0 to 2000 ppm*
	accuracy at 25°C and pressure of 1013 hPa		-	-	-	-	± (50ppm+2% of measured value)	± (100ppm+5% of measured value)	±± (50ppm+2% of measured value)
two-state inputs			NO	NO	NO	NO	NO	NO	NO
computed humidity values			YES	YES	YES	YES	YES	NO	NO
supply voltage for device with 50 V relay			9-30 Vdc						
supply voltage for regulators with power relay 250Vac / 8A			110 - 240 Vac, 50 - 60 Hz	-	110 - 240 Vac, 50 - 60 Hz	110 - 240 Vac, 50 - 60 Hz	-	-	-
relay outputs - max. switching voltage 50 V / max. current 2A / max. power 60VA			H3020	H3023	H3021	H3021P	H6020	H5021	H5024
relay outputs 230Vac / 8A - max. switching voltage 250V / max. current 8A / max. power 2000 VA/AC, 192 W/DC			H3060	-	H3061	H3061P	-	-	-
recommended calibration interval			1 year	1 year	1 year	1 year	5 years CO_2/ 1 year RH / 2 years temperature	5 years	5 years
protection class of the case with electronics			IP 65	IP 65	IP 65	IP 65	IP 30	IP 65	IP 30
protection of the RH /CO_2 sensors			IP 40 / -	IP 40 / -	IP 40 / -	IP 40 / -	IP 40 / IP30	- / IP 65	- / IP 30
temperature operating range of the case with electronics			-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +60°C	-30 to +80°C	-30 to +60°C
temperature operating range of the measuring element			-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C	-30 to +80°C	-	-
humidity operating range (without condensation)			0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	5 to 95 %RH	0 to 100 %RH	5 to 95 %RH
barometric pressure operating range			-	-	-	up to 2,5 MPa	850 to 1100hPa	850 to 1100hPa	850 to 1100hPa
mounting position			cable gland upwards	cable gland upwards	any position	any position	cable gland upwards	any position	cable gland upwards
storage temperature range			-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +60°C	-30 to +60°C	-30 to +60°C
electromagnetic compatibility			EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1
weight device with 2 x relay / 2 x relay 250Vac/8A			350 g / 420 g	420 g	400 (440,520) g	450 (490, 570) g	350 g	420 (450,510) g	330 g

* Custom range 10 000 ppm for extra fee. Accuracy ± (100ppm+5% of measured value).

« H306x devices have three glands on the top and one of them is sealed, then one gland for power supply on the bottom



Computed humidity values

Specific humidity
Accuracy: ±2,1g/kg at ambient temperature T < 35°C
Range: 0 to 550 g/kg

Dew point temperature
Accuracy: ±1,5°C at ambient temperature T<25°C and relative humidity RH>30%, for more details see manual.
Range: -60 to +80 °C
(-76 to 176 °F)

Absolute humidity
Accuracy: ±1,5g/m³ at ambient temperature T < 25°C for more details see manual.
Range: 0 to 400 g/m³

Mixing ratio
Accuracy: ±2,2g/kg at ambient temperature T < 35°C
Range: 0 to 995 g/kg

Specific enthalpy
Accuracy: ± 3kJ/kg at ambient temperature T < 25°C
Range: 0 to 995 kJ/kg

Programmable industry regulators

H Regulators with two-state inputs, with relay output and serial output RS485/RS232

The regulators are designed for online monitoring of temperature in °C or °F, relative humidity of air without aggressive substances, atmospheric pressure, CO_2 and three binary inputs for detection of two values.

Measured temperature and relative humidity can be recalculated to other humidity interpretation like dew point, absolute humidity, specific humidity, mixing ratio and specific enthalpy. You can set the altitude correction (offset) and choose the pressure unit: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in2.

The regulators is in a durable plastic case with connection terminals and sensors of temperature and humidity in the cover with a stainless steel mesh filter. The CO_2 sensor can be installed inside the device or in the cable probe.

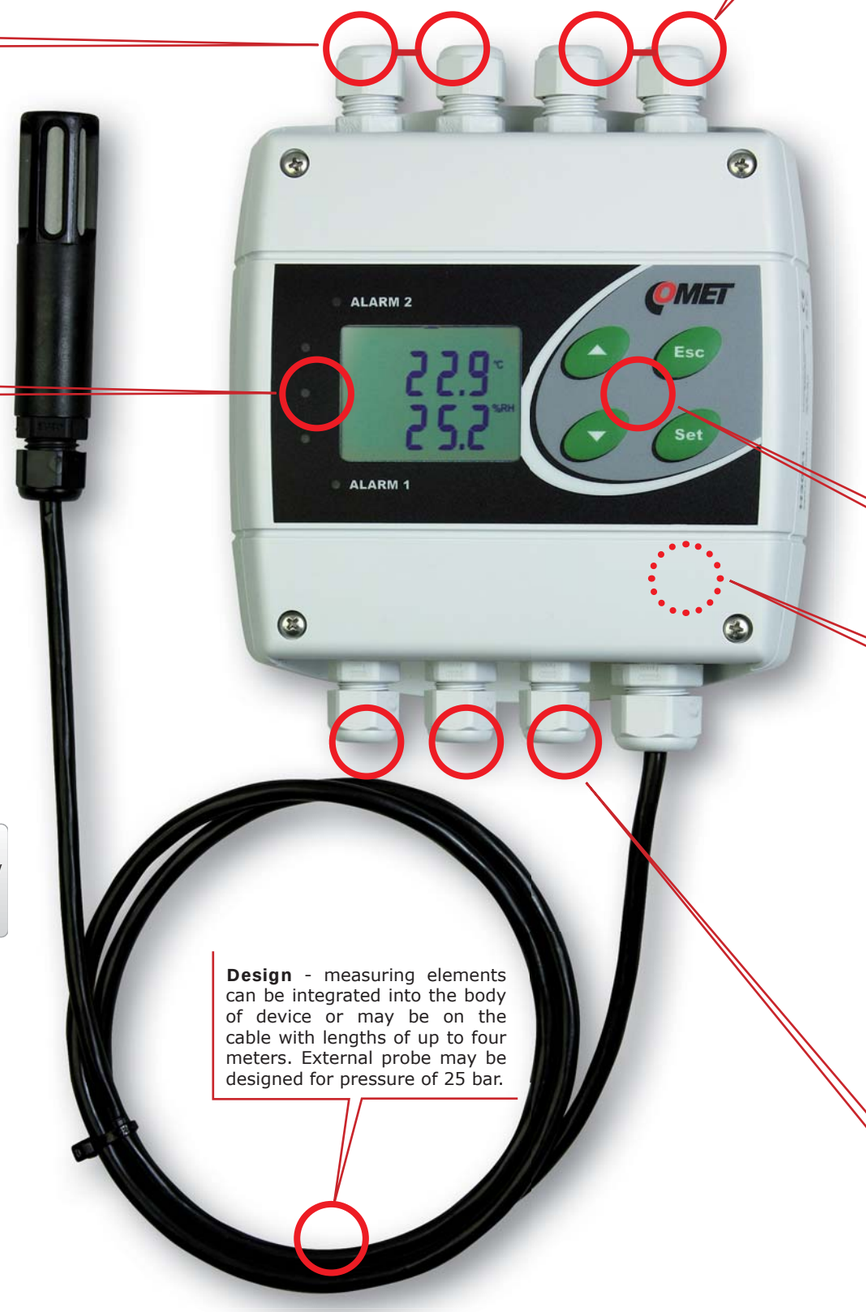
Transmitter circuitry is galvanically isolated from power circuitry to prevent collision in RS485 network.

Serial output RS232 is not galvanically isolated.

The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol. Protocol is user selectable. Serial link enables to read actual readings and modify transmitter configuration. Instrument works always in slave mode, i.e. responds only to master device query.

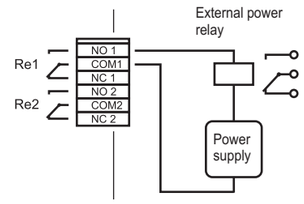
Terminal for power and signal RS485/RS232 – for more details please see electrical wiring below on the page.

LED signalization - visualization of binary inputs is done by three LED diodes. Other two diodes signed as ALARM 1 and 2 show alarm state and relay status.



Relay - the device is equipped with two relay outputs for alarming or controlling of external devices. It is possible to assign any input value to each relay, to set comparing limit, delay, hysteresis, acoustic alarm or change its status by means of Modbus communication protocol.

Connection of external power relay



Coil data chart of external power relay:
nominal voltage : max. 50V
nominal power: max. 60VA
current: max. 2A

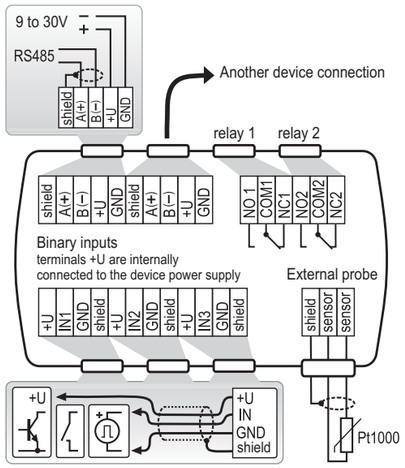
Keypad - two output relays can be configurated by means of keypad. Then any input value can be assigned, set comparing limits, hysteresis, delay or audible alarm.

Acoustic alarm – triggered alarm can be deactivated by pressing "ESC". This possibility can be disabled and the acoustic alarm is active for the duration alarm condition.

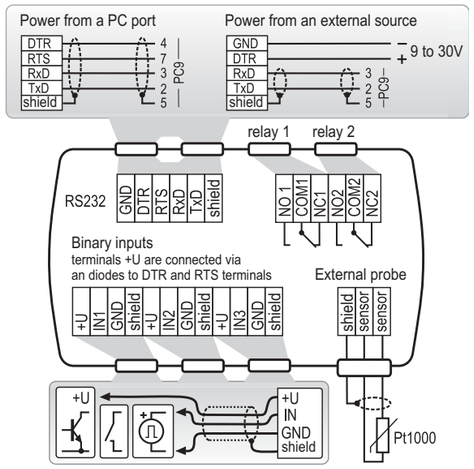
Design - measuring elements can be integrated into the body of device or may be on the cable with lengths of up to four meters. External probe may be designed for pressure of 25 bar.

Three binary inputs – these inputs are not galvanic isolated, connection terminals +U are internally connected to the device power supply i.e. the +U terminals provide the same voltage level as power supply.

Electrical wiring of regulator with serial output RS485



Electrical wiring of regulator with serial output RS232



Note: Sensors of concentration CO_2 is not possible to power from communication port.

Programmable industry regulators

Choose the appropriate sensor model

H Regulators with relay and serial output RS485/RS232

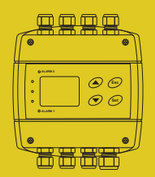
MEASURED VALUES		temperature		temperature + relative humidity		temperature + relative humidity		temperature + relative humidity + atm. pressure		temperature + relative humidity + CO_2	CO_2	
SENSOR MODEL WITH	2 x Relay + RS485	H4431	H0430	H3430	H3433	H3431	H3431P	H7430	H7431	H6420	H5421	H5424
	2 x Relay + RS232	H4331	-	-	-	H3331	H3331P	-	H7331	H6320	H5321	H5324
temperature	range	-200 to +600°C	-30 to +80°C	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C	-30 to +80°C	-30 to +105°C	-30 to +80°C	-	-
	accuracy	±0,2°C (without probe)	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	-	-
relative humidity	range (without condensation)	-	-	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	-	-
	accuracy in range of 5 to 95% at 23°C	-	-	±2,5 %RH	±2,5 %RH	±2,5 %RH	±2,5 %RRH	±2,5 %RH	±2,5 %RH	±2,5 %RH	-	-
atm. pressure	range	-	-	-	-	-	-	600 to 1100hPa	600 to 1100hPa	-	-	-
	accuracy	-	-	-	-	-	-	±1,3 hPa	±1,3 hPa	-	-	-
CO_2	range	-	-	-	-	-	-	-	-	0 to 2000 ppm*	0 to 10000 ppm	0 to 2000 ppm*
	accuracy at 25°C and pressure of 1013 hPa	-	-	-	-	-	-	-	-	± (50ppm+2% of measured value)	± (100ppm+5% of measured value)	± (50ppm+2% of measured value)
two-state inputs		YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO
computed humidity values		NO	NO	YES	YES	YES	YES	YES	YES	YES	NO	NO
supply voltage for device with relay		9-30 V				9-30 V						
relay outputs		max. switching voltage 50 V / max. current 2A / max. power 60VA				max. switching voltage 50 V / max. current 2A / max. power 60VA						
recommended calibration interval		2 years	2 years	1 year	1 year	1 year	1 year	1 year	1 year	5 years CO_2/ 1 year RH / 2 years temperature	5 years	5 years
protection class of the case with electronics		IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	IP 54	IP 54	IP 30	IP 65	IP 30
protection of the RH and atm. pressure /CO_2 sensors		-	-	IP 40 / -	IP40/ -	IP 40 / -	IP 40 / -	IP 40 / -	IP 40 / -	IP 40 / IP30	- / IP 65	- / IP 30
temperature operating range of the case with electronics		-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +60°C	-30 to +80°C	-30 to +60°C
temperature operating range of the measuring element		-	-30to +80°C	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C	-30 to +80°C	-30 to +105°C	-30 to +80°C	-40 to +60°C	-
humidity operating range without condensation		0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RRH	0 to 100 %RH	5 to 95 %RH	0 to 100 %RH	5 to 95 %RH
barometric pressure operating range		-	-		-	-	up to 2,5 MPa	600 to 1100hPa	600 to 1100hPa	850 to 1100hPa	850 to 1100hPa	850 to 1100hPa
mounting position		any position	stem downward	stem downward	stem downward	any position	any position	stem downward	any position	stem downward	any position	cable gland upwards
storage temperature		-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +60°C	-30 to +60°C	-30 to +60°C
electromagnetic compatibility		EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1
weight		350 g	350 g	360 g	430 g	420 (460,540) g	470 (510, 590) g	360 g	420 (460,540) g	360 g	440 (470, 530) g	340 g

* Custom range 10 000 ppm for extra fee. Accuracy ± (100ppm+5% of measured value).

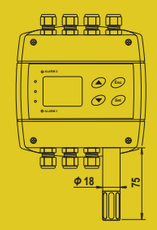
Computed humidity values

Specific humidity
Accuracy: ±2,1g/kg at ambient temperature T < 35°C
Range: 0 to 550 g/kg

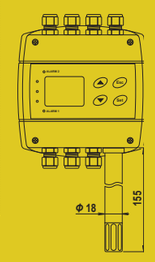
Dew point temperature
Accuracy: ±1,5°C at ambient temperature T<25°C and relative humidity RH>30%, for more details see manual.
Range: -60 to +80 °C
(-76 to 176 °F)

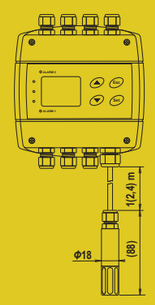


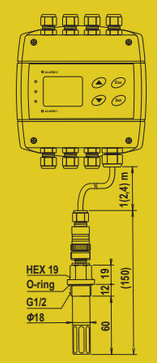
Absolute humidity
Accuracy: ±1,5g/m³ at ambient temperature T < 25°C for more details see manual.
Range: 0 to 400 g/m³

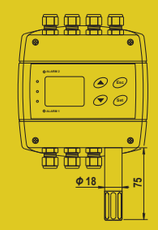


Mixing ratio
Accuracy: ±2,2g/kg at ambient temperature T < 35°C
Range: 0 to 995 g/kg

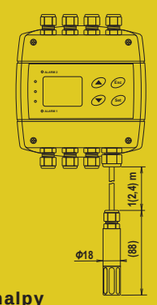


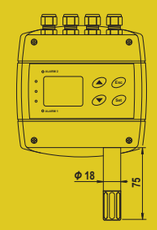


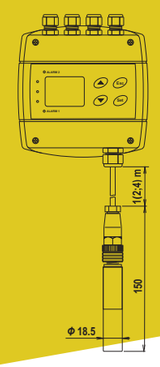


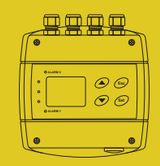


Specific enthalpy
Accuracy: ± 3kJ/kg at ambient temperature T < 25°C
Range: 0 to 995 kJ/kg







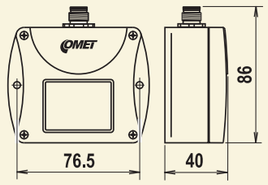


Programmable sensors with serial output RS485/RS232

Programmable sensors and transmitters with RS232 and RS485 outputs are designed to measure temperature, relative humidity, barometric pressure and the concentration of CO_2 in non-aggressive environment. The devices are available in wall and duct mounting models or with a cable probe.

Terminal for power and signal RS485/RS232 – for more details please see electrical wiring of sensors page 13.

Sensor version with watertight male connector TxxxxL
For easy connection/disconnection of the output cable is used TxxxxL version with Lumberg connector (IP67) instead of a cable gland.



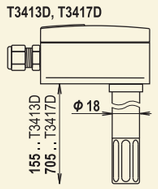
Female Lumberg connection for sensor with RS232 output

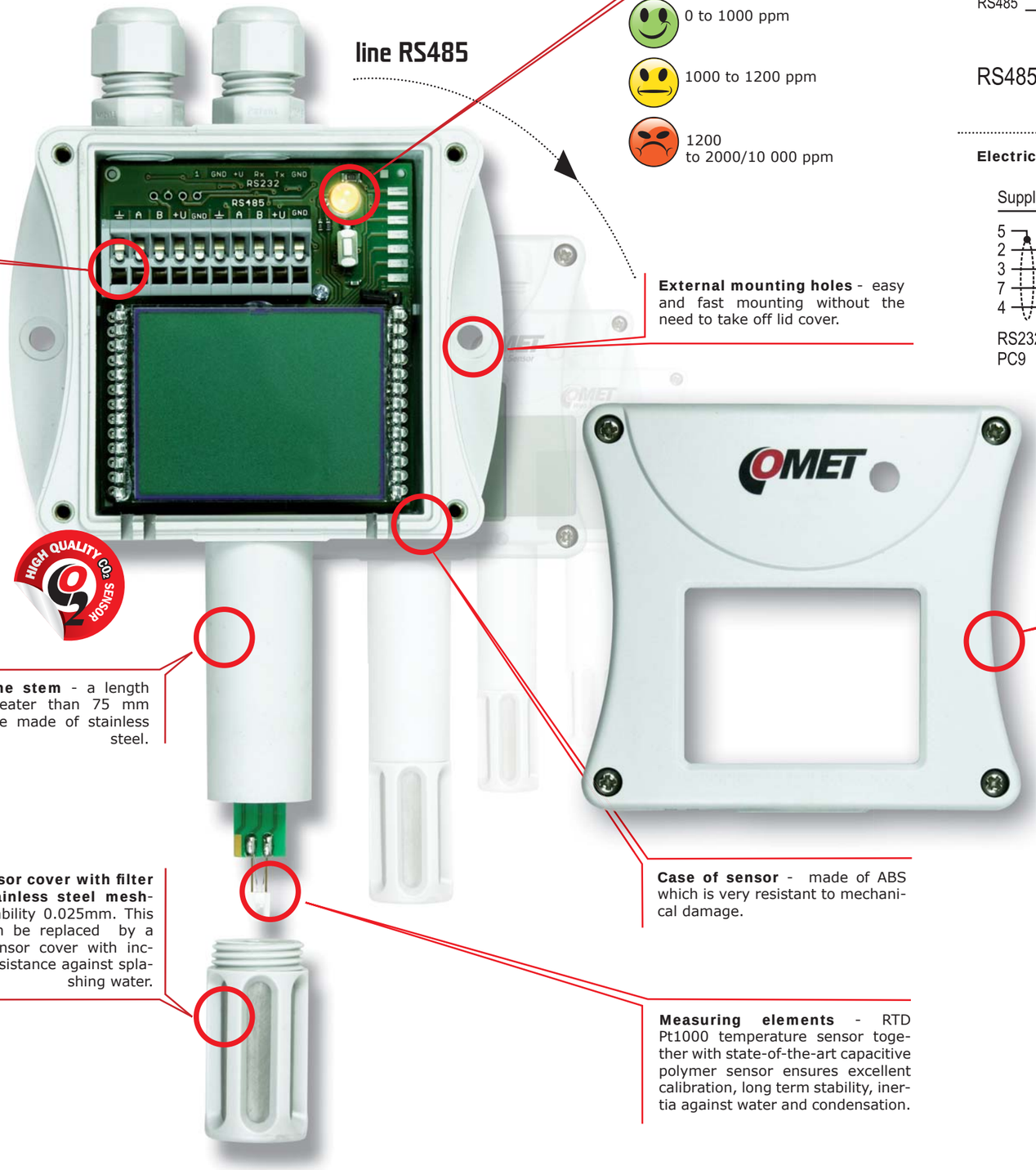
pin	RS232
1	RTS
2	RxD
3	TxD
4	GND

Female Lumberg connection for sensor with RS485 output

pin	RS485
1	+U
2	A
3	B
4	GND

Sensor version TxxxxD
LCD display is perpendicular to measuring stem.





LED indication - limits may be changed by user.

External mounting holes - easy and fast mounting without the need to take off lid cover.

Sealing lid - protection from dust and splashing water.

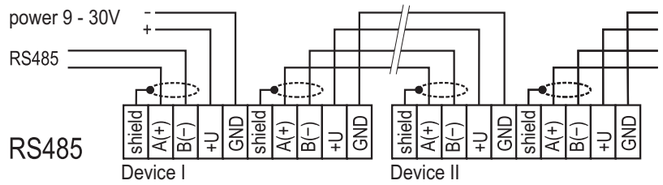
The stem - a length greater than 75 mm are made of stainless steel.

Case of sensor - made of ABS which is very resistant to mechanical damage.

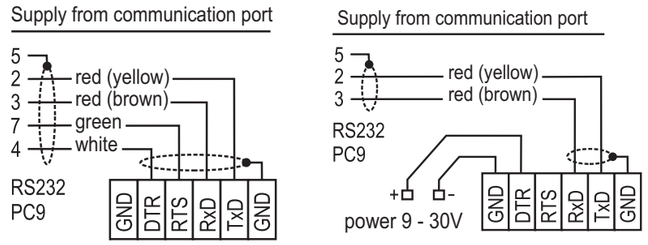
Sensor cover with filter from stainless steel mesh- filtering ability 0.025mm. This cover can be replaced by a Teflon sensor cover with increased resistance against splashing water.

Measuring elements - RTD Pt1000 temperature sensor together with state-of-the-art capacitive polymer sensor ensures excellent calibration, long term stability, inertia against water and condensation.

Electrical wiring of sensor with serial output RS485



Electrical wiring of sensor with serial output RS232



Note: Sensors of concentration CO_2 is not possible to power from communication port.

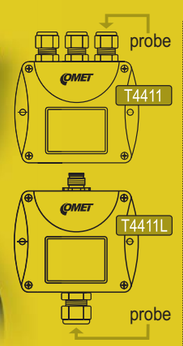
Transmitter circuitry is galvanically isolated from power circuitry to prevent collision in RS485 network.

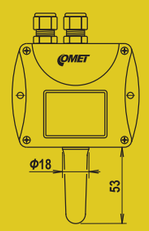
Serial output RS232 is not galvanically isolated.

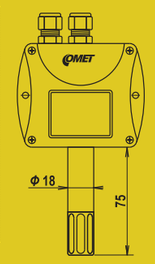
The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol. Protocol is user selectable. Serial link enables to read actual readings and modify transmitter configuration. Instrument works always in slave mode, i.e. responds only to master device query.

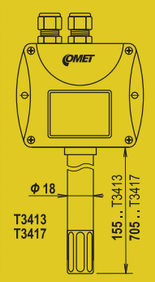
Programmable sensors with serial output RS485/RS232

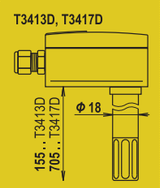
MEASURED VALUES		temperature		temperature + relative humidity			temperature + relative humidity	temperature + relative humidity + atm. pressure		atm. pressure	temperature + relative humidity + CO_2	CO_2	
SENSOR MODEL WITH	RS485	T4411	T0410	T3411	T3413(D), T3417(D)	T3419	T3419P	T7410	T7411	T2414	T6440	T5441	T5440
	RS232	T4311	T0310	T3311	T3313	T3319	T3319P	T7310	T7311	T2314	T6340	T5341	T5340
temperature	range	-200 to +600°C	-30 to +80°C	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C	-30 to +80°C	-30 to +105°C	-	-30 to +80°C	-	-
	accuracy	±0,2°C (vstup bez sondy)	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	±0,4°C	-	±0,4°C	-	-
relative humidity	range (without condensation)	-	-	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	-	0 to 100 %RH	-	-
	accuracy in range of 5 to 95% at 23°C	-	-	±2,5 %RH	±2,5 %RH	±2,5 %RH	±2,5 %RH	±2,5 %RH	±2,5 %RH	-	±2,5 %RH	-	-
atm. pressure	range	-	-	-	-	-	-	600 to 1100hPa	600 to 1100 hPa	600 to 1100 hPa	-	-	-
	accuracy	-	-	-	-	-	-	±1,3 hPa	±1,3 hPa	-	-	-	-
CO_2	range	-	-	-	-	-	-	-	-	-	0 to 2000 ppm*	0 to 10000 ppm	0 to 2000 ppm*
	accuracy at 25°C and pressure of 1013 hPa	-	-	-	-	-	-	-	-	-	± (50ppm+2% of measured value)	± (100ppm+5% of measured value)	± (50ppm+2% of measured value)
computed humidity values		NO	NO	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO
supply voltage		9-30 Vdc					9-30 Vdc						
recommended calibration interval		2 years	2 years	1 year	1 year	1 year	1 year	1 year	1 year	1 year	5 years CO_2/ 1 year RH / 2 years temp.	5 years	5 years
protection class of the case with electr.		IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	IP 54	IP 54	IP 54	IP 30	IP 65	IP 30
protection of the RH and atm. pressure /CO_2 sensors		-	-	IP 40 / -	IP40/ -	IP 40 / -	IP 40 / -	IP 40 / -	IP 40 / -	- / -	IP 40 / IP30	- / IP 65	- / IP 30
temperature operating range of the case		-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +60°C	-30 to +80°C	-30 to +60°C
temperature operating range of the measuring element		-	-30 to +80°C	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C	-30 to +80°C	-30 to +105°C	-	-30 to +80°C	-40 to +60°C	-
humidity operating range (w/o condensation)		0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	5 to 95 %RH	0 to 100 %RH	5 to 95 %RH
barometric pressure operating range		-	-		-	-	up to 2,5 MPa	600 to 1100hPa	600 to 1100hPa	600 to 1100hPa	850 to 1100hPa	850 to 1100hPa	850 to 1100hPa
mounting position		any position	cable gland upwards	cable gland upwards	cable gland upwards	any position	any position	cable gland upwards	any position	cable gland upwards	cable gland upwards	any position	cable gland upwards
storage temperature		-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +60°C	-30 to +60°C	-30 to +60°C
electromagnetic compatibility		EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1
weight		150 g	150 g	160 g	230 g / 580 g	220 (260, 340) g	260 (300, 380) g	160 g	210 (250, 330) g	140 g	160 g	250 (280, 340) g	150 g

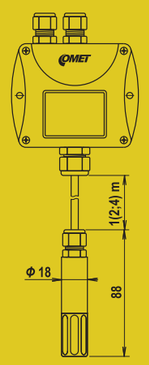


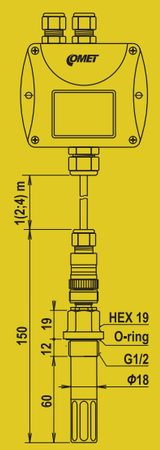


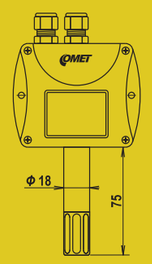


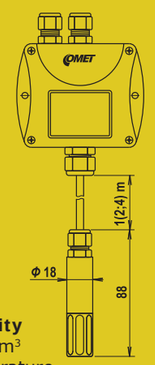


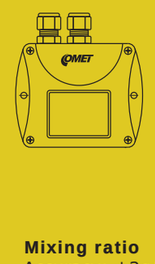


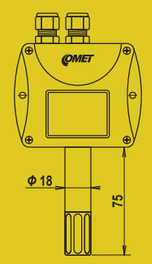


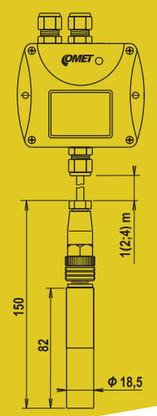


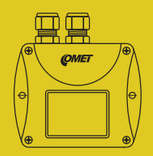












Computed humidity values

Specific humidity
Accuracy: ±2g/kg at ambient temperature T < 35°C
Range: 0 to 550 g/kg

Dew point temperature
Accuracy: ±1,5°C at ambient temperature T<25°C and relative humidity RH>30%, for more details see manual.
Range: -60 to +80 °C
(-76 to 176 °F)

Absolute humidity
Accuracy: ±1,5g/m³ at ambient temperature T < 25°C for more details see manual.
Range: 0 to 400 g/m³

Mixing ratio
Accuracy: ±2g/kg at ambient temperature T < 35°C
Range: 0 to 995 g/kg

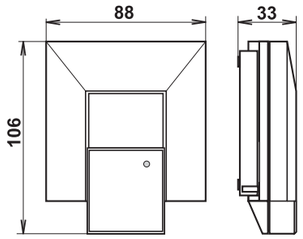
Specific enthalpy
Accuracy: ± 3kJ/kg at ambient temperature T < 25°C
Range: 0 to 995 kJ/kg

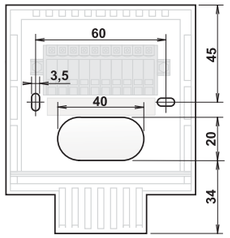
* Custom range 10 000 ppm for extra fee. Accuracy ± (100ppm+5% of measured value).

Interior design

Programmable sensors with serial output RS485 and RS232

Programmable transmitters with RS232 or RS485 serial interface are designed to measure temperature, relative humidity, barometric pressure and concentration CO^2 in especially in interiors, in building energy management and HVAC systems. They are made for easy installation in a standard way into a flush-mounted wiring box. These devices support communication protocols Modbus RTU and protocols compatible with standard Advantech-ADAM.





MEASURED VALUES		temperature	temperature + relative humidity	temperature + relative humidity + atm. pressure	temperature + CO_2
SENSOR MODEL WITH OUTPUT	RS485	T0418	T3418	T7418	T8448
	RS232	T0318	T3318	T7318	-
Temperature	range	-10 to +50°C	-10 to +50°C	-10 to +50°C	-10 to +50°C
	accuracy	±0,5°C	±0,5°C	±0,5°C	±0,5°C
relative humidity	range	-	5 to 95 %RH	5 to 95 %RH	-
	accuracy in range of 5 to 60% at 23°C	-	±2,5 %RH	±2,5 %RH	-
	accuracy in range of 60 to 95% at 23°C	-	±3 %RH	±3 %RH	-
atm. pressure	range	-	-	600 to 1100 hPa	-
	accuracy	-	-	±1,3 hPa	-
CO_2	range	-	-	-	0 to 2000 ppm*
	accuracy	-	-	-	± (50ppm+2% of measured value)
computed humidity values		NO	YES	YES	NO
recommended calibration interval		2 years	1 year	1 year	2 years temperature / 5 years CO_2
protection class of the case with electr.		IP20			
temperature operating range		-10 to +50°C	-10 to +50°C	-10 to +50°C	-10 to +50°C
humidity operating range without condensation		0 to 100 %RH	0 to 100 %RH	0 to 100 %RH	5 to 95 %RH
barometric pressure operating range		-	-	600 to 1100hPa	850 to 1100hPa
storage temperature		-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C
electromagnetic compatibility		EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1
weight		150 g	150 g	150 g	150 g

* Custom range
10 000 ppm for extra fee.
Accuracy ± (100ppm+5% of measured value)

Computed humidity values

Dew point temperature
Accuracy: ±1,5°C at ambient temperature T<25°C and relative humidity RH>30%, for more details see manual.
Range: -60 to +80 °C (-76 to 176 °F)

Absolute humidity
Accuracy: ±1,5g/m³ at ambient temperature T < 25°C for more details see manual.
Range: 0 to 400 g/m³

Specific enthalpy
Accuracy: ± 3kJ/kg at ambient temperature T < 25°C
Range: 0 to 995 kJ/kg

Specific humidity
Accuracy: ±2g/kg at ambient temperature T < 35°C
Range: 0 to 550 g/kg

Mixing ratio
Accuracy: ±2g/kg at ambient temperature T < 35°C
Range: 0 to 995 g/kg

Optional accessories for sensors and regulators

Mounting accessories

PP90 – right-angled stainless steel flange.

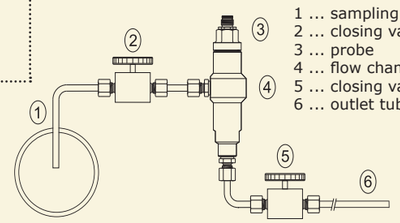
PP4 – plastic flat circular flange.

K1427 – female connector ELKA for TxxxxL transmitters with male connector Lumberg for easy connection/disconnection of the output. IP67 protection.

SP004 – plastic gland for direct mounting of the humidity probe to a 29 mm diameter hole.

SP009 – external probes holder for wall mounting.

SH-PP – flow chamber for compressed air measurement up to 25 bar - stainless steel DIN 1.4301 inlet and outlet connection - G1/8 thread humidity probe connection - G1/2 thread screw-coupling not included.



Calibration

MD046 – vessel for adjustment and calibration of humidity.

HM023 – set of humidity standards 10% RH with 5 application pads.

HM024 – set of humidity standards 80% RH with 5 application pads.

Protection of sensors

F8000 - solar radiation shield for transmitters with T+RH probe on the cable.

Detectors

SD-280 – optical smoke detector.

SP008 – AC voltage presence sensor.

F5200 – grey sensor cover with filter from stainless steel mesh, filtering ability 0.025mm.

F5200B – black sensor cover with filter from stainless steel mesh, filtering ability 0.025mm.

F0000 - sintered bronze sensor cover. Filtering ability 0.025mm.

F5300 - teflon (PTFE) sensor cover (white colour), with increased resistance against splashing water, non-absorbent surface, does not rust.
Porous size 25µm. Temperature range -40°C to +125°C.

LD-12 – water leakage

SA200A – magnetic door contact.

JS-20 – P.I.R. motion detector is for interior protection. It detects object movement having human body temperature. The signal from the sensor is electronically analyzed. This ensures that the detector provides excellent sensitivity and false alarms are basically eliminated.

Power supply

A1510 – Ac/dc adapter 12V/ 450mA stabilized.

Communication

MP022 – converter USB/RS485 for USB port at the PC side which is powered from computer USB interface.

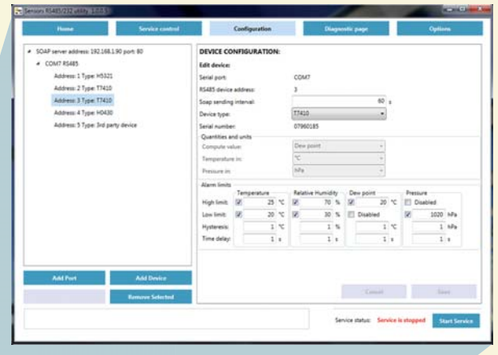
MP006 – RS232/USB converter for communication with the PC via USB port.

Comet Database - Monitoring of temperature, relative humidity, atmospheric pressure and CO_2

Comprehensive system

Sensors RS485 utility supports

» COMET sensors with serial output RS485/RS232
» 3rd party devices communicating via Modbus RTU protocol
» multiple networks (can connect multiple serial communication ports)
» sending data to a remote server (Comet Database can be installed on another PC)
» alarm setting



multiple networks RS485

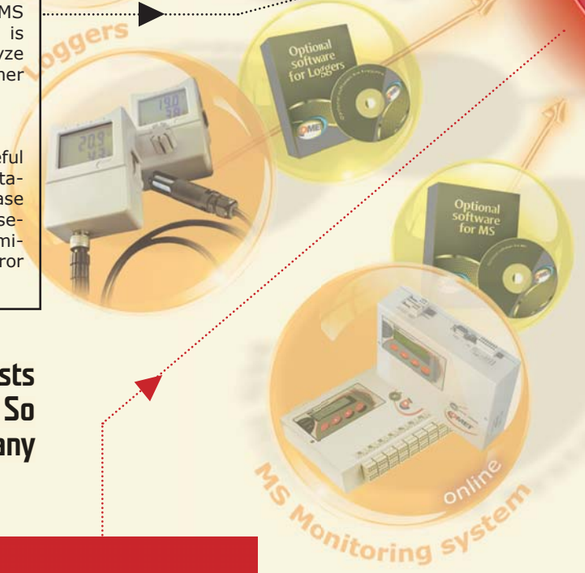
Sensor RS485/232 utility

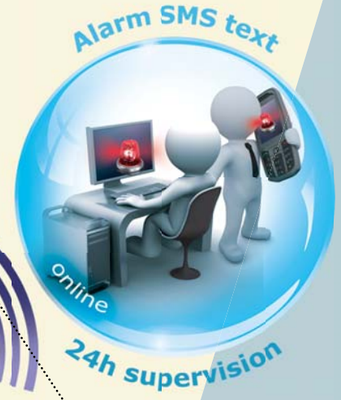
This utility provides communication between sensors with RS485/232 output and software system Comet Database. By means of this utility an unlimited number of sensors can be connected. This utility also supports multiple networks.

Comet Database

For users of Web Sensors a solution for data collection to one central database is available. It is based on MS SQL or MySQL. Software system is suitable for users who want to analyze data from multiple loggers MS or other products of Comet System.

Comet Database contains many useful tools for data analysis - graphs, tables, statistics, etc. Comet database also offers advanced features - secured access to data, accounts administration, remote monitoring, error diagnostic, database backup, etc.





Comet Database also exists in 30 days trial version. So you can test it without any worries.

What does Comet Database offer?

» 24 hours supervision
» storage place for your data
» simple and clear access to your measured values
» storage place for all Comet System devices
» alarm SMS texts and e-mails

Comet Database Viewer

Each purchased Comet Database already contains one licence of Database Viewer. This low cost browser enables several clients to view database from different places on internal network or internet. Other viewer licences can be purchased separately for other users of Comet Database.

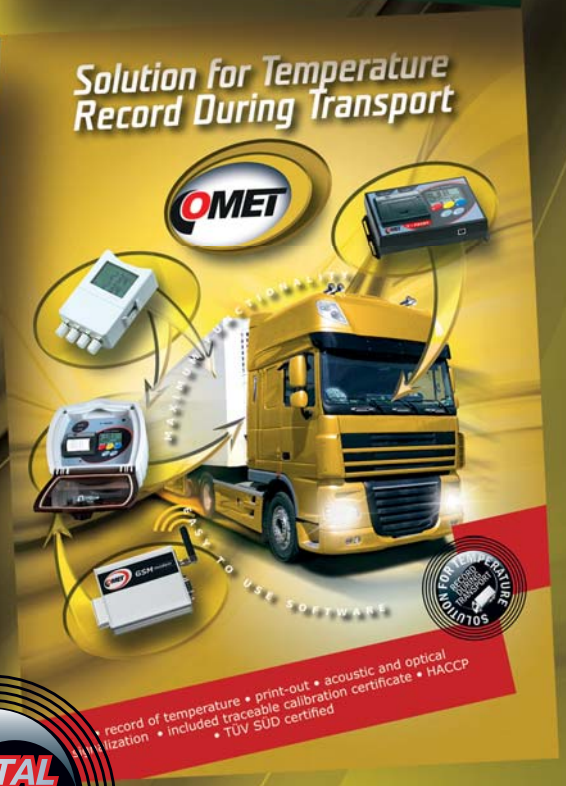
Basic solution

TSensor

Program Tsensor for sensor setting is available to download for free.

SensorReader

Freeware software for displaying and logging data from one COMET sensor. The software stores measured values to a CSV file which can be processed in MS Excel. The software allows acoustic signalization of exceeded limits or sensor failure.



DIGITAL SENSORS

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