PRODUCT DESCRIPTION

Programmable regulators with Ethernet connection are designed to measure temperature and relative humidity of air, to measure concentration of CO_2 in the air, to signal alarms and to control external devices. These regulators are to be used in a usual chemically non-aggressive environment.

The CO_2 concentration is measured using a dual wavelength NDIR sensor with a multipoint calibration. This principle compensates aging of the sensing elements and offers maintenance free operation and outstanding long term stability.

The function of two output relays can be set from device web pages and using the jumpers (see „Device connection procedure"). The device allows two alarm limits to be set for each measured value. In response to the change of the alarm state a relay may be closed, an acoustic signal may be activated or an alarm message may be sent by email or other communication protocol. The status of output relays can be controlled remotely via Ethernet, too. Values computed from humidity are supported. The currently measured values are shown on a two-line LCD display. Visual indication of the CO_2 concentration is provided by three LEDs.

Formats of the Ethernet communication that are supported: HTTP – web, Modbus TCP protocol, SNMPv1, XML and SOAP protocol. Alarm messages are sent via email, SNMPv1 Trap or Syslog. To set all device including their alarm limits embedded websites can be used. A device connected to a local network can be found by the *TSensor* software (free to download at www.cometsystem.com).

Type *	Measured values	Version	Mounting
H5521	CO_2	probe on cable	wall
H5524	CO_2	ambient air	wall
H6520	T + RH + CO_2 + CV	ambient air	wall
H6521	T + RH + CO_2 + CV	probes on cable	wall

* Models marked Hxxxx**Z** are custom - specified devices   T…temperature, RH…relative humidity, CO_2…concentration CO_2 in air, CV…computed values

INSTALLATION, OPERATION AND CONFIGURATION

The mounting holes and connection terminals are accessible after unscrewing the four screws in the corners of regulator case and removing the lid. Devices have to be mounted on a flat surface to prevent deformation. For output relays connection choose cables with an external diameter 4 to 6.5mm and a wire cross-section 0.14 to 1.5mm^2. Do not forget to insert the attached plugs into the unused cable glands. Unpack the external CO_2 probe and connect it to the regulator. Pay attention to the device and probe mounting, because incorrect choice of working position or measuring point could adversely affect the accuracy and long-term stability of measured values.

To connect the device to the network it is necessary to know a new suitable IP address. Please contact the network administrator to obtain the IP address. The device can obtain an IP address automatically from the DHCP server, or a static IP address can be set manually. The default IP address of device is preset to **192.168.1.213**. After connecting the external probe, the Ethernet cable and the power adapter, the device IP address needs to be changed in the web pages. To change the IP address, the *TSensor* software can be used alternately.

After switching on the device starts an internal test. During this time (about 20 s) the LCD shows **----** instead of CO_2 concentration value.

The devices do not require special maintenance. We recommend verifying the measurement accuracy regularly by calibration.

MONITORING AND VALUES RECORDING

For data monitoring and auditing it is recommended to use Comet Database software. A trial version of Comet Database is available at www.cometsystem.com. For monitoring, software and SCADA systems from third party vendors can be used. For data acquisition a communication protocol can be used which is supported by the device.
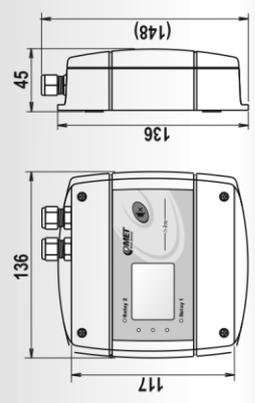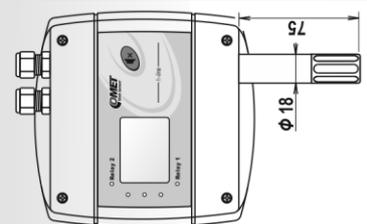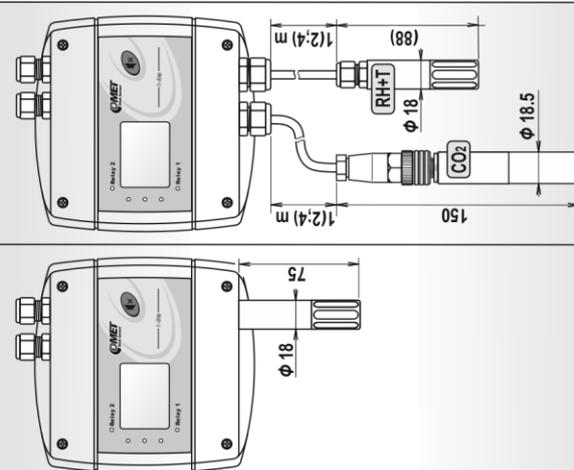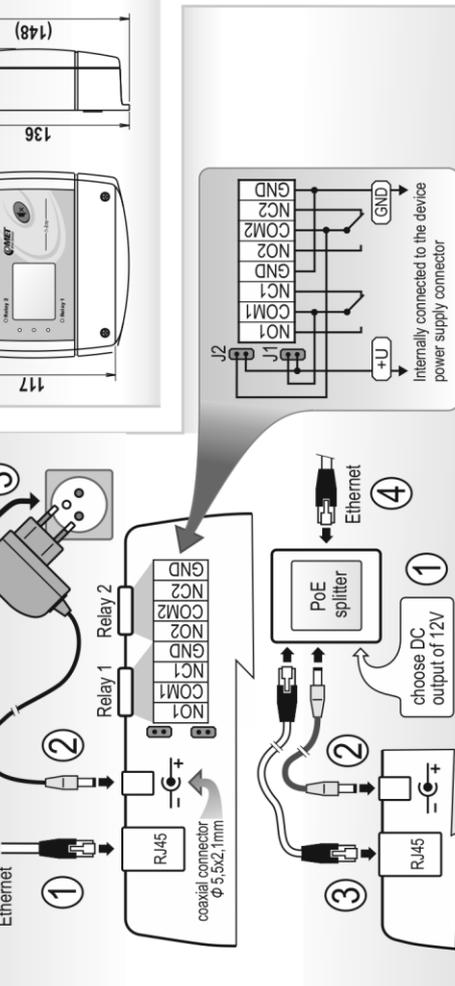
ERROR STATES

The device continuously checks its state during operation. If an error appears, the relevant code is displayed: **Err 1** – measured value (except of CO_2 concentration) or calculated value is above the upper limit, **Err 2 –** the measured or calculated value is below the lower limit, or a CO_2 concentration measurement error has occurred, **Err 0, Err 3** and **Err 4** – a serious error has occurred, please contact distributor of the device.

SAFETY INSTRUCTIONS

- Do not use or store the devices without the cover of the temperature and humidity sensors.
- Temperature and humidity sensors should not to be exposed to direct contact with water and other liquids.
- It is not recommended to use the humidity regulators for long time under condensation conditions.
- Take care when unscrewing the filter cap as the sensor element could be damaged.
- Use only a power adapter which is approved according to technical specifications and relevant standards.
- Do not connect or disconnect devices while power supply voltage is on.
- Installation, electrical connection and commissioning should be performed by qualified personnel only.
- The devices contain electronic components. Dispose of them in accordance with legal requirements.
- **To complement the information in this data sheet** read the manuals and other documentation, which are available in the Download section for a particular device at www.cometsystem.com.

Technical specifications

Device type	H5521	H5524	H6520	H6521
Supply voltage	9 - 30Vdc	9 - 30Vdc	9 to 30Vdc	9 to 30Vdc
Power consumption of the device during normal operation / max. power consumption of the device (for 50 ms with 15 s period)	1W / 4W	1W / 4W	1W / 4W	1W / 4W
Relay outputs - max. switching voltage / max. switching current / max switching power	50V / 2A / 60VA	50V / 2A / 60VA	50V / 2A / 60VA	50V / 2A / 60VA
Temperature measuring range / accuracy of temperature measurement	—	—	-30 to +80 °C / ± 0.4°C	-30 to +105 °C / ± 0.4°C
Relative humidity (RH) measuring range *	—	—	0 to 100 %RH	0 to 100 %RH
Accuracy of humidity measurement from 5 to 95 %RH at 23°C	—	—	± 2.5 %RH	± 2.5 %RH
CO_2 concentration measuring range **	0 to 10 000 ppm	0 to 2000 ppm	0 to 2000 ppm	0 to 10 000 ppm
Accuracy of CO_2 concentration measurement at 25°C and 1013 hPa	± (100ppm+5% of measured value)	± (50ppm+2% of measuring value)	± (50ppm+2% of measuring value)	± (100ppm+5% of measured value)
Other calculated humidity variables - dew point temperature, absolute humidity, specific humidity, humidex	—	—	yes	yes
Recomended calibration interval ***	— / — / 5 years	5 years	1 year	1 year
Protection class - case with elektronics / measuring end of stem / CO_2 probe / RH+T probe	IP30 / — / IP65 / —	IP30 / — / — / —	IP30 / IP40 / — / —	IP30 / — / IP65 / IP40
Temperature operating range of the case with electronics ****	-30 to +80°C	-30 to +60°C	-30 to +60°C	-30 to +80°C
Temperature operating range of the measuring end of stem	—	—	-30 to +80°C	—
Temperature operating range of the CO_2 external probe	-40 to +60°C	—	—	-40 to +60°C
Temperature operating range of the RH+T external probe	—	—	—	-30 to +105°C
Humidity operating range (no condensation)	0 to 100%RH	5 to 95%RH	5 to 95%RH	0 to 100%RH
Atmospheric pressure operating range	850 to 1100 hPa	850 to 1100 hPa	850 to 1100 hPa	850 to 1100 hPa
Mounting position	any position	cable glands upwards	sensor cover downwards	any position
Storage temperature range (5 to 95%RH, no condensation, atmospheric pressure 700 to 1100 hPa)	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C
Electromagnetic compatibility according to	EN 61326-1 EN 55011	EN 61326-1 EN 55011	EN 61326-1 EN 55011	EN 61326-1 EN 55011
Weight of the device without RS232 communication cable (weight of the cable is 70g)	420 (450, 510) g	330 g	350 g	500 (570, 710) g
Dimensions [mm]				

*   The relative humidity measuring range is limited at temperatures above 85°C, see manuals for devices.
**   LED indication (preset by manufacturer): green (0 to 1000 ppm), yellow (1000 to 1200 ppm), red (1200 to 2000/10000 ppm).
*** Recomended calibration intervals: concentration CO_2 - 5 years, relative humidity - 1 year, temperature - 2 years.
**** It is recomended to switch off the LCD display at ambient temperature above 70°C

Device connection procedure