PRODUCT DESCRIPTION

Programmable regulators with RS485 galvanic isolated serial interface are designed to measure temperature, relative humidity and barometric pressure of air in non-aggressive environment, to alarm indication and to control of external devices. Three galvanic no isolated binary inputs are intended for detection of binary signals. Regulators are available in wall-mount, duct-mount versions or with probe on a cable. Type H3431P is designed for measurement the temperature and relative humidity of compressed air.

The function of two output relays can be set from regulator keyboard (or from computer) and using the jumpers (see „Electrical wiring"). You can assign one of measured or computed value (dew point temperature, absolute humidity, specific humidity mixing ratio and specific enthalpy) to each relay. The setting of delay, hysteresis and audible alarm is enabled for each relay. The status of output relays can be controlled remotely via RS485 link too. Devices are equipped with four button keyboard and two-line LCD display.

Regulators support Modbus RTU protocol and protocol compatible with standard Advantech-ADAM. For setting of all parameters you can use *TSensor* configuration software (it is free to download at www.cometsystem.com).

type *	measured values	version	mounting
H0430	T	ambient air	wall
H4431	T	external probe Pt1000/3850 ppm	wall
H3430	T + RH + CV	ambient air	wall
H3431	T + RH + CV	ambient air	wall
H3431P	T + RH + CV	probe on a cable – pressure up to 25 bars	wall
H3433	T + RH + CV	duct mount	wall
H7430	T + RH + P + CV	ambient air	wall
H7431	T + RH + P + CV	probe on a cable	wall

* models marked Hxxxx**Z** are custom - specified devices   T…temperature, RH…relative humidity, P…barometric pressure, CV…computed values

INSTALLATION AND OPERATION

The mounting holes and connection terminals are accessible after unscrewing the four screws in the corners of case and removing the lid. Place the device on a flat surface, pass the cables through released glands and connect wires according to the diagram. For device connection choose cables with external diameter 4 to 6.5 mm and wire cross-section 0.14 to 1.5 mm^2. Shielded cables have to be used for two-state sensors, RS485 and external probe connection. The shield of the cable for two-state sensor connection and external probe connection (maximum length of 10 m) connect only to proper terminal of the device, do not connect it to other circuitry and do not ground it. Tighten glands and screw the lid. Insert attached plug into unused cable glands too. The all cables should be located as far as possible from potential interference sources. Pay attention to device mounting, because incorrect choice of working position or place of measuring could adversely affect accuracy and long-term stability of measured values.

Actual parameters settings of each relay can be displayed by pressing of „ ▲ " key. To change any parameter press the „**Set**" key, enter password (default 0000) and set required value. Then click on „Set" and by pressing of "ESC" key leave the setup mode. Extended setting mode (see manual for devices at www.cometsystem.com) you can use to setting new password and to modifying of all other parameters (acoustic alarm, response to the error status, choice of communication protocol, computed value selection etc.)

Devices don´t require special maintenance. We recommend you periodic calibration for measurement accuracy validation.

COMMUNICATION PROTOCOLS AND ERROR STATES

Description of communication protocols you can download from www.cometsystem.com. Device setting from the manufacturer is **ModBus RTU**, address **1**, communication speed **9600 Bd** (no parity, **2** stop bits).

Device continuously checks its state during operation and if an error appears, it is displayed relevant code: **Err 1** – measured or calculated value is over the upper limit, **Err 2 –** measured or calculated value is below the lower limit or pressure measurement error occurred, **Err 0, Err 3** a **Err 4** – it is a serious error, please contact distributor of the device, **Err5, Err6** - there is problem with assigned value to output relay, **Err9** – inserted password is not valid.

SAFETY INSTRUCTIONS

- Humidity and temperature sensors of the regulator can not be operate and store without a filter cap.
- Temperature and humidity sensors have 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.
- Do not connect or disconnect devices while power supply voltage is on.
- Do not install or remove the probe of H3431P regulator under pressure.
- Installation, electrical connection and commissioning should be performed by qualified personnel only.
- Devices contain electronic components, it needs to liquidate them according to currently valid conditions.
- To complement the information in this data sheet read the manuals and other documentations that are available in the Download section for a particular device at www.cometsystem.com.

Technical specifications

Common parameters: Supply voltage: 9 to 30Vdc   Power consumption of the device: ~ 1W   Relay outputs: max. switching voltage ...50V, max. switching current ...2A, max. switching power ...60VA
Binary inputs: low level input voltage ... 0 to 0.5V, high level input voltage ... 3 to 30V, auxiliary power supply +U ... 9 to 30 Vdc / overall current max. 500 mA

Device type	H4431	H0430	H3430, H7430	H3433	H3431, H7431	H3431P
Temperature measuring 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
Accuracy of temperature measurement	±0.2°C (without probe)	± 0.4°C	± 0.4°C	± 0.4°C	± 0.4°C	± 0.4°C
Relative humidity (RH) measuring range	—	—	0 to 100 %RH	0 to 100 %RH	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 %RV	± 2.5 %RH	± 2.5 %RH
Barometric pressure measuring range	—	—	600 to 1100 hPa (H7430)	—	600 to 1100 hPa (H7431)	—
Accuracy of barometric pressure measurement at 23°C	—	—	±1.3hPa (H7430)	—	±1.3hPa (T7431)	—
Other calculated humidity variables (dew point temperature, ...)	—	—	yes	yes	yes	yes
Recomended calibration interval of the device *	2 years	2 years	1 year	1 year	1 year	1 year
Protection class of the case with elektronics	IP65	IP65	IP65 (H3430) IP54 (H7430)	IP65	IP65 (H3431) IP54 (H7431)	IP65
Protection class of the sensors cover	—	IP65	IP40	IP40	IP40	IP40
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
Temperature operating range of the sensing element (sensors)	—	-30 to +80°C	-30 to +80°C	-30 to +125°C	-30 to +105°C	-30 to +105°C
Humidity operating range	0 to 100%RH	0 to 100%RH	0 to 100%RH	0 to 100%RH	0 to 100%RH	0 to 100%RH
Mounting position	any position	sensor cover downwards	sensor cover downwards	sensor cover downwards ***	any position ****	any position ****
Storage temperature range (0 to 100%RH, no condensation)	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C
Electromagnetic compatibility according to	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
Dimensions [mm]						

Electrical wiring

* Recomended calibration intervals: relative humidity - 1 year, temperature - 2 years, pressure - 1 year
** It is recomended to switch off the LCD display at ambient temperature above 70°C.
*** mounting position "sensor cover downwards" is recomended for free space, in the air-conditioning duct you can place the device in any position
**** if it can lead to long term condensation of water, it is necessary to use the probe at position with sensor cover downwards