ANEMOMETER

CSV – 5

USER MANUAL
IO1540

CONTENT

1   DESCRIPTION

Anemometer CSV-5 is a stationary device for measuring the air velocity and determining the direction of air flow. The measurement is based on thermal sensor. Additionally the device measures the temperature and humidity. CSV-5 is designed for use in underground coal mines. It can also be used in industrial factories, where it is necessary to control air flow.

Anemometer cooperates with telemetric central station type CST-40(A) and CST-40C directly by the supply-transmission line or through analogue signal control unit CSA-1 or CSA-2. It may also cooperate with other devices provided that the parameters of connectors are compatible. The sensor requires a constant power supply from cooperating device.

When CSV-5 is used via CSA-1 or CSA-2 control units, the measurements of air velocity, humidity and temperature are send to three analogue outputs. The outputs generates signals from 0,4-2V. In addition the analog outputs can be used in digital transmission mode. Digital mode allows transmitting measurements, diagnostic data and serial number via single analog output.

Anemometer CSV-5 has two-state (opto relay) output which act as switching off device UW. Thus it can become a protection element of energy cutoff, signal cutoff or control other electrical devices. The device can also cooperate through a connection cable with KR-2 calibrator.

2   TECHNICAL DATA

Interface type CST-40(A,C):

Power	from 27 mA to 40 mA
Transmission mode	digital, two-way
Max. length of line	10 km

Interface type CSA:

Power	8 ÷ 14,5 VDC (nominal 12 VDC)
power consumption	6 ÷ 7 mA
transmission	analog (0,4÷2V) <u>for the selected flow range</u> or digital, one-way
maximum line length	2 km
Measuring ranges	± (0,1 ÷ 10) m/s of air velocity (or other range from 0÷20m/s)
	0% RH ÷ 100% RH (relative humidity)
	-20ºC ÷ +50ºC
Measurement error	± (2 % readings + 0,1m/s) flow velocity
	± 3 % of relative humidity
	± 1ºC of temperature
Resolution	0,1 m/s, 0,1%RH , 0,1ºC
Measurement method	continuous
Switch-off circuit UW	1, type: contact with diode in series
Working position	a protective tube directed parallel to the direction of air flow, humidity sensor input and temperature directed sideways or downwards
Working temperature range	-10ºC ÷ + 40ºC
Relative humidity range	from 95% without condensation
External dimensions (without connectors)	161 x 113 x 78 mm
Weight	1,3 kg
Ingress protection	IP54
Explosion-proof mark	Ⓔx I M1 Ex ia I , II 2G Ex ia IIB T4
EC type examination certificate	KDB 11ATEX097, date 24.10.2011

Marking: CE_{1453}

3 PERMISSIBLE WORKING CONDITIONS

3.1 Use restriction for zones and / or potential explosive areas

Anemometer CSV-5 may be used in underground coal mines in:
- fields of methane belonging to the workings of "a", "b" and "c" degree of methane explosion
  hazard.
- places of class A and B coal dust explosion hazard

In the case of using the device outside mining (eg in industry) the parameters of the anemometer are in accordance with the marking: II 2G Ex ia IIB T4.

3.2 Special conditions applying to work in potentially explosive atmosphere

The CSV-5 sensor does not require any special conditions of use.

Always follow strictly instructions regarding purpose, mounting and operating included in this Manual.

4   DEVICE CONSTRUCTION

4.1   *Mechanical construction*

CSV-5 anemometer has a enclosure made of reinforced polyester. The housing consists of two parts. In the bottom part there is a protective pipe with markings showing direction of the airflow. On side walls of the housing the following are located:

- a LCD display used to display the current air velocity or alternately display of the air velocity, humidity and temperature,
- a humidity and temperature sensor,
- connectors for : CSA-1 or CSA-2 analogue signal control units, CST-40(A,C)UW line and KR-2 calibrator
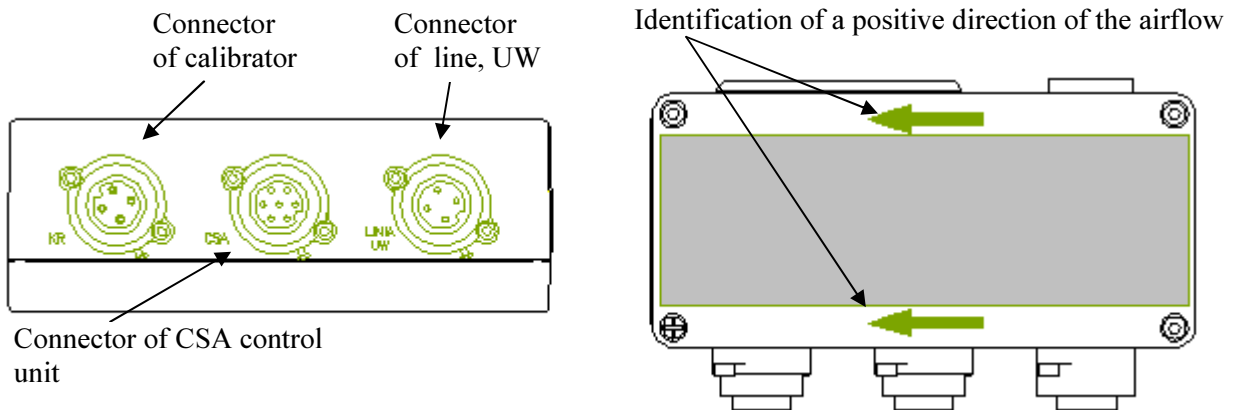- a rating plate of a device

Fig. 1 View from connectors side (left) and the protective tube side (right) of CSV-5 anemometer
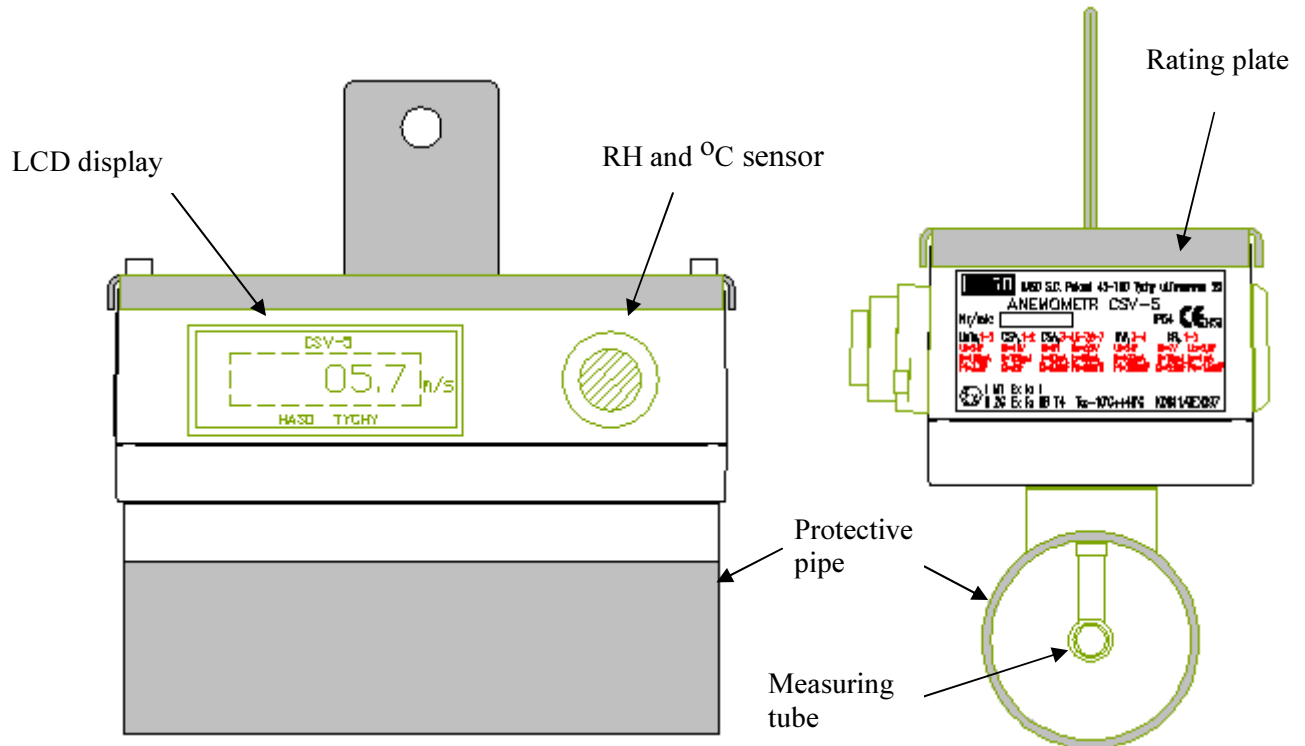

Fig. 2 Side view from LCD display and rating plate side

4.2 Electronic system

The electronic system of the CSV-5 meter is based on a microcontroller. It contains systems managing its operation, measurements and processing of signals from the airflow sensor, as well as the humidity and temperature sensor. It also allows to establish a bidirectional transmissions with KR-2 calibrator and the central station (directly or via CSA-1 or CSA-2 control units).

5 OPERATING DESCRIPTION

The CSV-5 anemometer is a device, which automatically measures, control systems and transmit data. The main tasks of the meter are

- the continuous measurement of air velocity, humidity and temperature,
- processing of these values to a 0.4 – 2 V analogue signal
- transmitting digital data to the central station – directly or via CSA-1 or CSA-2 analogue signal control units,
- control of UW two-state output according to the user settings.

The control of UW output may be carried only when the device is directly connected with CST-40(A,C) central station.

5.1 Internal condition check

After each start-up of the anemometer and at the beginning of each cycle, the control functions is performed to check transmission with internal systems. In addition, the device is equipped with monitoring unit which checks if the program is working correctly.

5.2 Communication

After connection to the power supply, the CSV-5 anemometer starts its operation. Data from the air velocity, temperature and humidity sensors are processed and transmitted to the central station by digital or analogue communication. Switching between operating modes (digital/analogue mode with communication via CSA-1/2) is made with KR-2 calibrator. Direct (digital) communication with CST-40(A,C) is initiated automatically.

5.3 Emergency states

Any emergency/failure states, such as e.g. errors of measurement, communication or malfunction of the anemometer are signaled in the central station, on the display or on both at the same time.

5.4   Switching off - control of UW relay output

The UW output is controlled based on exceeding of programmed alarm thresholds. The method of the output control is programmed via of CST-40(A,C) central station. Description of the interpretation of set thresholds is included in section 8.2.2. **This function is available only when device is connected directly with the central station (without CSA-1,CSA-2).**

5.5   Calibrator

Inspections/checking and calibration are performed with the KR-2 calibrator or other device approved for this purpose. The calibrator communicates with the anemometer by means of a cable connection. After connection of the calibrator to the device, start the calibrator and select the cable transmission. The calibrator will automatically start the transmission with the anemometer and download its configuration. With the calibrator, user may zero the CSV-5 (calibrate zero of air velocity) anemometer and set the operating status/mode (see section 8.1).

5.6 LCD display

The CV-5 anemometer has an integrated LCD display, 8-character type. During normal operation the display shows the information in the following form:

$$\textbf{X pp.p}$$ where:

pp.p   : air flow velocity, a measuring unit (m/s), or
pp.p °C   : ambient temperature, a measuring unit (^{o}C), or
pp.p %RH : humidity, a measuring unit (%RH)
X   : symbol of UW output:
                                 '**O**'   means 0 status (open contact of UW output)
                                 '**Z**'   means 1 status (closed contact of UW output)

In case the device is connected with CSA-1 or CSA-2 analogue signal control unit, the symbol of UW output („**X**") remains disabled. **Control of the UW output is possible only with direct communication with CST-40(A,C) central station (through the line module).**

After turning on the anemometer, the following messages will appear subsequently on the display:

HASO sc
 CSV-5
Nrxxx/rr   where: xxx/rr stands for the number and year of manufacture

The anemometer also signals the following emergency states on the display:
     PZD   - lower exceeding (measurement below the measuring range)
     PZG   - upper exceeding (measurement above the measuring range)
     Uszk   - sensor damage

5.7 Indication LED - alarm (optional equipment)

The additional accessory of the anemometer is the LED (red), which depending on the device operating mode signals with flashes every 2.5 second:
- UW contact opening in the direct operation mode
- exceeding the alarm thresholds programmed from the calibrator level in the "CSA" operating mode (e.g. with cooperation with CSA-1 or CSA-2 control units (settings are shown in section 8.1.3)

The LED installed in the plug can be connected to the anemometer through the KR-2 connector.

6 DESIGN VERSIONS

The basic version of CSV-5 meter is made for the flow velocity ±10m/s. Other versions are also available, on special purchase order, for measuring ranges within 0 - 20m/s.

7 INSTALLATION

7.1 Place and method of installation

The place, where air velocity, humidity and temperature meters are installed is specified by separate regulations. In the place of installation, the CV-5 anemometer should be installed in accordance with regulations. The inlet to the humidity/temperature sensor should be is directed to the side or down, in addition the entire meter must be protected against penetration of water and mechanical vibration.

Firm mechanical fixing of the device must be assured. The air flow direction in the place where the device is installed should be parallel to the axis of the protective pipe of the meter. Once the meter is installed and connected to the power supply, wait for about. 5 minutes and then zero the anemometer as described in section 8.1.1. Not used connectors of the anemometer during transport and after installation should be protected with provided caps. Also outlets of the prtective pipe should be plugged (for the time of transport) with caps (plugs of the protective pipe, which are also used to zero the anemometer).

7.2 Connection

The anemometer may be connected to CST-40(A,C) central station directly via the line module, or in the "CSA" mode via CSA-1 or CSA-2 analogue signal control units. It may also cooperate with other devices provided that the parameters of connectors are compatible.

7.2.1 Connection with the central station via CSA-1 or CSA-2 control unit

The sensor is connected to the control unit through the connector on the enclosure described as "CSA". The connection must be made with a cable terminated with a 7-pin female connector. The connector is delivered together with the sensor.

In the analogue operating mode of the sensor, three input signals of CSA-1 (or CSA-2) control unit are used. The first analog input of the CSA control unit is used for flow velocity, the second –humidity, and the third – the temperature from the CSV-5 sensor. In this mode for connection with CSA-1 (or CSA-2) control unit, the 8-wire cable (four pairs) must be used.

In the digital operating mode, measurements (flow velocity, humidity and temperature), additional diagnostic information and a serial number, are digitally transmitted using only one signal input of CSA-1 (or CSA-2) control unit. In this mode, the 4-wire cable (two pairs) is used.
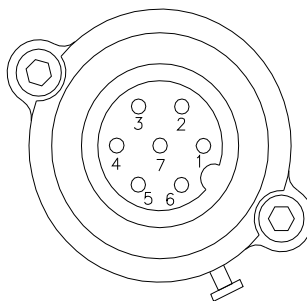

Fig.3 Layout of contacts of "CSA" connector.

Example of connection of CSV-5 with CSA-1 (or CSA-2) for operation in the analogue mode:

CSV-5 "CSA" connector		Cable wires	CSA-1 (or CSA-2)
1	+V (+12V)	1	LINE 1* **+V**
2	0V	2	LINE 1 **0V**
3	S1 (flow velocity - signal)	3	LINE 1 **S**
4	SG1 (flow velocity – mass)	4	LINE 1 **SG**
5	S2 (humidity – signal)	5	LINE 2 **S**
7	SG2 (humidity – mass)	6	LINE 2 **SG**
6	S3 (temperature – signal)	7	LINE 3 **S**
7	SG3 (temperature – mass)	8	LINE 3 **SG**

*there is the following indication in CSA-2 control unit: "WEJ.ANALOG.1-4" *(ANAL. INPUT 1-4)*

Example of connection of CSV-5 with CSA-1 (or CSA-2) for operation only in the digital mode:

CSV-5 "CSA" connector		Cable wires	CSA-1 (or CSA-2)
1	+V (+12V)	1	LINE 1* **+V**
2	0V	2	LINE 1 **0V**
3	S1 (signal)	3	LINE 1 **S**
4	SG1 (mass)	4	LINE 1 **SG**

*there is the following indication in CSA-2 control unit: "WEJ.ANALOG.1-4" *(ANAL. INPUT 1-4)*

For connecting the KR-2 calibrator, the "KR" connector is used. Connection of the sensor with the calibrator is made with a cable delivered together with the calibrator. Not used connectors of the sensor and cables should be protected with provided caps.

7.2.2 Direct connection with CST-40(A,C) control station

Direct connection of the anemometer to the control station is made through the connector on the casing described as "UW Line". The connection must be made with a cable terminated with a 4-pin female connector. The connector is delivered together with the sensor.
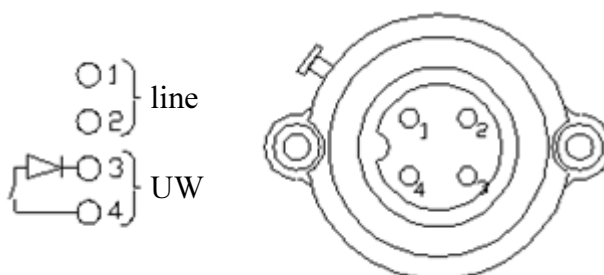

Fig. 4 Layout of contacts of "UW Line" connector.

8   OPERATION

The power supply and communication of the sensor with CST-40(A,C) central station is possible both through CSA-1 or CSA-2 control unit, as well as directly via the line module of the CST-40(A,C) central station. The sensor automatically detects the type of communication, but **it is not allowed to connect both types of power supply at the same time**. All operating functions of CSV-5 sensor are available:

- from the software level of KR-2 calibrator in case of communication via CSA-1 or CSA2 control unit
- from the level of CST-40(A,C) central station and KR-2 calibrator in case of the direct communication with CST-40(A,C)

In the operating mode where the analogue output is used for operation in the digital transmission mode to CST-40(A,C) (via CSA-1 or CSA-2), as well as in the direct communication mode, apart from measuring data, the following data are transmitted: a type of the device, factory number or scaling mode.

Employees appointed for operation, inspection and maintenance of the CSV-5 sensor should be trained in that scope.

8.1   Operation of CSV-5 anemometer from KR-2 calibrator level

8.1.1   Scaling (zeroing) of anemometer

- Full scaling of the anemometer (for the full measuring range) is performed periodically at manufacturer's, whereas its zeroing takes place at the device installation place. Before the zeroing is started, both openings of the protective pipe must be covered (by means of attached caps of the protective pipe for zeroing the anemometer), so that the measurement from the air flow transmitter is stabilized at the zero flow velocity, and to prevent the flow during scaling/calibration that might false the zeroing procedure. After the caps are placed, wait for about 30 seconds – until the measurement is stable.

- Using the transmission cable, connect the **KR-2** calibrator to **CSV-5** anemometer.

- Press (ENTER) many times until the following menu appears on the calibrator's display:

$$\text{SKAL NS}\leftarrow$$
$$\text{SKAL WS}\rightarrow$$

- Press (←) to enter the zeroing mode of **CSV-5**

- After pressing the key, the updated configuration of **CSV-5** will be downloaded for the previously selected option, and user will enter the calibration menu

$$\text{ST} \quad 0.00$$
$$\text{S=} \quad 0.00$$

- Press (ENTER) to lock the value 00.0 m/s of air flow velocity.

- At this moment the new zero point is saved, which is informed by a letter '**Z**' showed at the

$$\text{ST} \quad 0.00$$
$$\text{Z=} \quad 0.00$$

beginning of the second line on the display.

- Wait until the letter '**Z**' disappears.

- Press ⟹ to exit the zero calibration procedure and return to the main menu

```
POMIAR ←
WYLACZ→🔒
```

8.1.2 Setting the configuration word (KR-2 calibrator)

The calibration word, set and transmitted through KR-2 calibrator, is used to change settings and operating modes of CSV-5 anemometer (details of settings are included in sections 8.1.5 – 8.1.8). To change the configuration word, the following procedure shall be followed - **activation of additional functions of KR-2 calibrator:**

- Press and hold down (ENTER) key for approx. 5 seconds until the following menu appears on the display:

  Default code is: `1234`

  ```
  Wpis Kod
  0000
  ```

- With keys ⟸ and ⟹ set the first digit of the code and then press (ENTER)

- With keys ⟸ and ⟹ set the second digit of the code and then press (ENTER)

- With keys ⟸ and ⟹ set the third digit of the code and then press (ENTER)

- With keys ⟸ and ⟹ set the fourth digit of the code and then press (ENTER)

  Calibrator will return to the menu:

  ```
  POMIAR ←
  WYLACZ→🔒
  ```

- Press (ENTER) many times until the following menu appears on calibrator's display:

  ```
  KONFIG ←
  Kal.Wy3 →
  ```

- Press ⟸ to enter the configuration mode of **CSV-5**

- After pressing the key, the current value of the configuration word will be downloaded for **CSV5,** e.g.:

  ```
  Konfig:=
  00000001
  ```

- With keys ⟸ and ⟹ set the desired value of the configuration word, the meaning of which is presented in sections 8.1.5 – 8.1.8, and then press the key (ENTER)

  Calibrator will return to the menu:

```
KONFIG ←
Kal.Wy3 →
```

8.1.3 Setting the alarm threshold values with communication via CSA-1 or CSA-2

With communication with CST-40(A,C) central station through CSA-1 or CSA-2 control unit it is possible to set alarm thresholds for optic signalling with the red LED (optional). **Values of these thresholds are independent of settings in the CST-40(A,C) sensor register and are used only to signal exceeding of set values (with LED) – they do not work with the UW output.** To get the access to these settings, additional functions of the calibrator must be activated according to section 8.1.2. After activation:

- press ⏎ many times until the following menu appears on the calibrator's display:

```
Ust.PA1 ←
Ust.PA2 →
```

- press ⬅ to set the alarm threshold 1 or ➡ to set the alarm threshold 2.

- After pressing of one of keys, the current configuration will be downloaded for the selected alarm threshold of **CSV-5** anemometer, next the user may change the settings of this threshold value:

```
Ust.aw: ←→
     2.00=
```

- by pressing ⬅ and ➡ set the desired value of the alarm threshold, and then press ⏎

- The display will show the next menu:

```
Waru.PA=
A >= W1.
```

- The following settings are possible:

  - first column:

    A   alarm threshold active (threshold exceeding is signalled)

    ▪   alarm threshold not active (disabled)

  - second column (condition to make the alarm threshold active):

    <= LED signal, when the measured value is lower or equal to the alarm threshold value

    >= LED signal, when the measured value is higher or equal to the alarm threshold value

  - third column – **not applicable to CSV-5 anemometer**

- with keys (⇐) and (⇒) set suitable combination and then press

  (ENTER) button

- The calibrator will return to the alarm threshold setting menu:

$$\text{Ust.PA1} \leftarrow$$
$$\text{Ust.PA2} \rightarrow$$

8.1.4 Calibration of voltage values of analogue outputs

This function is used for calibration of 0.4 and 2V values on the input of the cooperating device, which reads values from the sensor output in an analogue form, e.g. CSA-1 or CSA-2 control units. Calibration of analogue outputs allows to compensate voltage drops on very long cable connections from the control unit to the sensor. To get the access to these settings, additional functions of the calibrator shall be activated according to section 8.1.2. After activation:

- Press key (ENTER) many times until the following menu appears on calibrator's the display:

$$\text{Kal.Wy1} \leftarrow$$
$$\text{Kal.Wy2} \rightarrow$$

- press (⇐) to calibrate the analogue output 1, the following will appear on the screen:

$$\text{KalWyj:}$$
$$\leftarrow 0.4V \rightarrow \ =$$

  with keys (⇐) and (⇒) user can increase or reduce value of the output voltage, to obtain 0.4 V value at the input to the analogue control unit (the voltage is measured with a voltmeter connected to input terminals)

- when the proper voltage value is set, press (ENTER) to confirm the setting, and to go to calibration of the upper end of the measuring range (2V), the following will appear on the display:

$$\text{KalWyj:}$$
$$\leftarrow 2.0V \rightarrow \ =$$

- The same activities as in case of 0.4V shall be performed; after confirmation of setting by pressing (ENTER) the calibrator will return to analogue outputs calibration menu:

$$\text{Kal.Wy1} \leftarrow$$
$$\text{Kal.Wy2} \rightarrow$$

- Calibration procedure of two remaining analogue outputs of the anemometer is performed in the same manner as in case of output 1 described above.

The air flow value for the upper (0.4V) and lower (2V) range of the each analogue output is set independently, from the KR-2 calibrator level.

8.1.5 Setting the operating modes with communication via CSA-1 or CSA-2

In case of communication with CST-40(A,C) central station via CSA-1 or CSA-2, two operating modes are possible: digital and analogue modes. Setting the configuration word bit which is responsible for above functions have the following form:

`xxxxxxx0`   - analogue communication via CSA-1 or CSA-2,
`xxxxxxx1`   - digital communication via CSA-1 or CSA-2,

8.1.6 Setting the air flow velocity on LCD display

It is possible to set the set display precision of the air flow measurement on the LCD display with accuracy to 2 decimal places. Setting the configuration word bit which is responsible for above functions have the following form:

`xxxxxx1x`   - display of air velocity measurement with accuracy to 2 decimal places on the LCD display
`xxxxxx0x`   - display of velocity measurement with accuracy to 1 decimal place on the LCD display

8.1.7 Setting the display and transmission for RH and ^{o}C measurements

To display/transmit alternately the measurement of temperature and humidity, the configuration word in the KR-2 calibrator must be set accordingly, and then sent to CSV-5 anemometer. Setting the configuration word bit which is responsible for above functions have the following form:

`xxxxx1xx`   - ON - data transmission to the control unit - m/s, T, RH alternately
`xxxxx0xx`   - OFF - data transmission to the control unit - m/s, T, RH alternately

`xxxxx1xx`   - ON - data display on LCD screen - m/s, T, RH alternately
`xxxxx0xx`   - OFF - data display on LCD screen - m/s, T, RH alternately

8.1.8 Setting the air flow velocity measurements averaging

The anemometer allows for averaging of the air flow velocity measurement results in three modes. This function allows to stabilize the measurement recorded in case exceptionally turbulent air flows occur. Setting the configuration word bits which are responsible for above functions have the following form:

`x01xxxxx` - ON - averaging of measurement results (average measurement from a period of about 6 seconds)
`x10xxxxx` - ON - averaging of measurement results (average measurement from a period of about 12 seconds)
`x11xxxxx` - ON - averaging of measurement results (average measurement from a period of about 48 seconds)
`x00xxxxx` - OFF - averaging of measurement results

When changing the setting the averaging, it should be considered that each next stage of averaging (averaging larger and larger portions of data) will cause smoothing away of measurements of turbulent flows with simultaneous impact on inertia of the measurement (response time).

8.2 Operation of anemometer from CST-40(A,C) level

8.2.1 Starting up the anemometer

The CSV-5 anemometer is started automatically in the moment when the active and properly configured supply-transmission line is connected.

8.2.2 Setting the alarm threshold values

Alarm threshold values are set in the central station. Threshold values and the condition of their reaching or exceeding ('≥' or '≤') are transmitted to the sensor and simultaneously recorded in the central station. There are 4 interpretations of set alarm thresholds available – the figure below shows possible configurations with description:
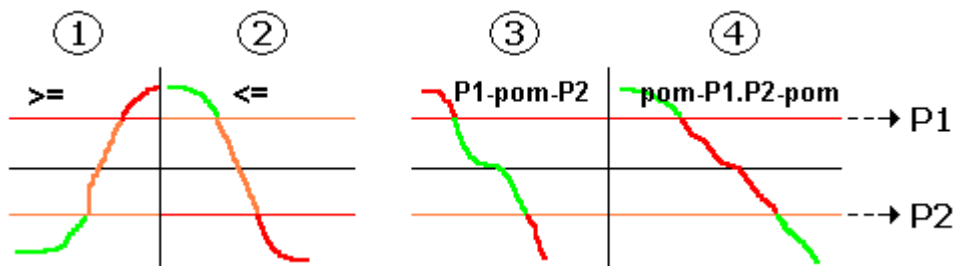

Fig. 5 Principle of threshold exceeding

1. **>=**   exceeding is recognized for the measured value higher or equal to the set threshold
(orange – warning threshold, red – alarm threshold)

2. **<=**   exceeding is recognized for the measured value lower or equal to the set threshold

3. **P1-pom-P2**   exceeding is recognized for the measured value higher or equal to the alarm threshold value or for the measured value lower or equal to the warning threshold

4. **pom-P1.P2-pom**   exceeding is recognized for the measured value lower or equal to the set alarm threshold value or higher or equal to the set warning threshold

8.2.3 Control of UW output (opto-mos)

The control of the contact that cuts off the power supply is performed from the central station on command or automatically in the sensor (contact opening) when the set alarm threshold values are reached or exceeded (see section 8.2.2.). After connection of the sensor the contact is open and it may be closed with command from the operator. When the exceeding of threshold is continuous , the contact cannot be closed from the central station. When the exceeding ends, the contact will not started automatically. This operation must be carried by the central station operator. **Contact control is available only at the direct communication (via a module of CST-40(A,C) central station line)**. When the device is connected via CSA-1 or CSA-2 this option in the sensor register remains inactive.

9   MAINTENANCE AND PERIODICAL INSPECTION

The CSV-5 anemometer should be subject to regular periodical inspection. Periodical inspections should be performed by suitable personnel that meets formal requirements of mining regulations currently in force. The manufacturer recommends monthly and annual inspections. Monthly inspections may be performed in the place where the sensor is installed.

9.1   Maintenance

During each periodical inspection, apart from metrological checks described below, the following basic maintenance activities should be carried out earlier:
- remove dirt from the air flow measuring element
    – pay particular attention to cleanliness inside of the protective pipe and measuring tube, dirt should be carefully removed and blowed gentle with air;
    – the sensor cannot be flooded with water;
- check if the enclosure is in good condition:
    – the enclosure has all screws (Allen screws);
    – the enclosure and elements installed on it do not have visible mechanical damages;
    – the rating plate is readable and not damaged;
    – unused connectors have caps screwed on;
- check the condition of the display;
- if necessary (much dirt) replace a filter of the humidity and temperature sensor.

9.2   Metrological check - periodical

Once a month the zero of the sensor should be checked by covering both inlet openings of the protective pipe (with provided caps for zeroing of the anemometer). If after period of one minute the indication of the anemometer is lower than -0.1m/s or higher than +0.1m/s, the sensor should be zeroed according to section 8.1.1. Then check the indicated value by comparing with indication of an officially calibrated handheld anemometer with parameters not worse than the anemometer being checked. If the difference of indication is higher than ±0.2m/s the CSV-5 anemometer should be unmounted and send to the manufacturer for inspection and calibration.

10   EQUIPMENT

W The CSV-5 sensor equipment includes:
    – CSV-5 sensor
    – factory certificate
    – user manual
    – declaration of conformity
    – cable connector with cover caps for connecting the sensor
    – protective pipe plugs for zeroing the anemometer

The KR-2 calibrator or other approved device is required to perform the check.

11   ORDER METHOD

In the standard measuring range of ± 10 m/s , the sensor is offered under the name:
Anemometer CSV-5
For other measuring ranges, please contact manufacturer.

12 REPAIRS

Repairs may only be carried out by the manufacturer's service point or an authorized unit.

13 SPARE PARTS

The manufacturer provides the supply of the following spare parts:
- cable connectors with a covers for connecting the anemometer
- protective pipe plugs for zeroing the anemometer.

14 STORAGE AND TRANSPORT

Anemometer CSV-5 should be packed in a container that protects it from mechanical damage and dirt.

The sensor can be stored indoors at a temperature +5°C to + 40°C and relative humidity not exceeding 85%. The atmosphere must be free from aggressive substances.

Transport should be carried out using enclosed means of transport. The Package must be labeled as 'fragile content'. The permissible range of transport temperatures is -20°C do +50°C.

WARNING!

In the case of worn the product must be disposed off in accordance with the Waste Electrical and Electronic Equipment Regulation in force in the country concerned.