

Instruction for speed control 404 786-81

Rotary heat exchanger, Swegon AT4 sizes 12x6 - 24x16

General

The speed controller is mounted in a plastic enclosure with factory-fitted grommets for the various cables and a transparent cover.

The controller is designed for installation inside the rotary heat exchanger casing and for operating a heat exchanger motor of Japan Servo manufacture, with tachogenerator.

Output range: 25 – 70W.

The controller variably regulates the speed of the heat exchanger motor between 70 and 1400 rpm. The standard transmission ratio will enable a rotor speed range from approx. 0.75 rpm to 11.5 – 14.5 rpm depending on the size of heat exchanger.

Performance is controlled by switching in and out of the "stand-by mode" and a control signal.

The controller regulates the motor rpm in a "capacity-linear" manner in proportion to the input signal. Thus the speed change, per volt of signal change, will be slight for input signals less than 50% and great for those more than 50%.

A rotation monitor and a purging operation function are incorporated into the controller.

Alarms are indicated by a red LED and group alarms are initiated by means of alternating potential-free contact.

Technical data

| | |
|-------------------------------|--------------------------------|
| Mains power supply..... | 230 V +/- 10%, 50/60 Hz |
| Power supply fuse | Min. 2AT, max. 10 AT |
| Ambient temperature | -10 °C through +50 °C |
| Enclosure dimensions | W x H x D = 230 x 80 x 65 mm |
| Degree of protection | IP 54 |
| Alarm relay | Max. 250 V AC, 2 AT |
| Fuse at motor output | Fine wire fuse 20 x 5 mm, 2 AT |
| Rotation monitor sensor | Part. no. 017012 |



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Electrical installation

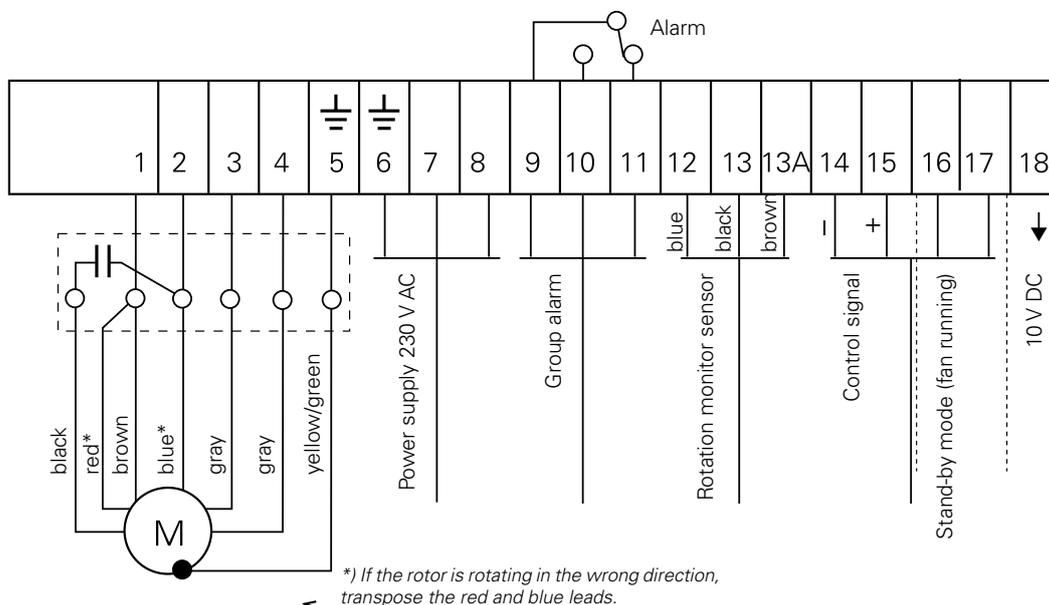
Power supply cable: 3 x 1.5, voltage: 230 V +/-10%, 50/60Hz.

Control cable from the logic equipment cubicle for:

- Stand-by mode from potential-free contacts.
- Control signal: 0 – 10 V DC, 2 – 10 V DC, 0 – 20 mA or 4 – 20 mA for speed control.
- Group alarm function output, if specified.

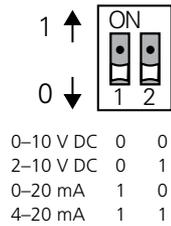
Separate alarm cable, if specified.

The motor cable and rotation monitor sensor cable are factory-connected if the controller is supplied with the heat exchanger.



Settings

The only setting that need be made is selecting the type of control signal. This can be set by means of the dip switch (see figure to the right) on the circuit board.



Functions

Stand-by mode: Closure between terminals 16 and 17 puts the controller on stand-by.

The motor will start when the control signal exceeds 10%.

Beyond that point, the speed will variably follow the control signal in a capacity-linear manner up to max. motor rpm.

Start function: On closure of the stand-by mode contacts, the heat exchanger will operate at max. rpm for one minute and then adjust itself to the speed called for by the control signal. The start function will switch in regardless of whether or not a control signal is present. The purpose of this function is to counteract any "shocking chill" when the air handling unit is started up.

Control signal: The speed of the heat exchanger motor is controlled in a capacity-linear manner between min. and max speeds (70 – 1400 rpm). If the control signal is less than 10% of the max. input signal, the exchanger motor will not start. If the signal is at 10%, the motor will run at min. rpm. On a control signal of 100%, the motor will run at max. rpm.

Purging operation: If the controller has been in the stand-by mode for 4 hours and during that time the control signal has not exceeded the 10% limit, the heat exchanger will start up and run at max. rpm for 1 minute to purge the rotor and rid its passages of contaminants.

Rotation monitor: The rotation monitor sensor transmits an impulse to the controller every time the magnet on the heat exchanger rotor passes it. If the sensor has not sensed any impulse within 4 minutes while the control signal is above 10%, the heat exchanger motor will stop and the rotation monitor alarm will trip.

Tacho-monitor: The controller senses the rpm of the heat exchanger rotor across the input from the tacho-generator mounted on the motor. If no impulses are obtained 10 seconds after the output voltage has reached max., the heat exchanger motor will stop and the tacho-monitor alarm will trip.

To check the purging operation function: The purging operation function is similar to the start function; only the conditions required for start differ. The four-hour period cannot be overridden. Test the function by first switching of the stand-by mode and then switching it back on.

Alarms

Rotation monitor: The alarm will trip after 4 minutes if no pulse has been received from the rotation monitor sensor during this period even though the control signal exceeds 10%. The red LED (LD3) steadily shines and the yellow LED (LD4) flashes. The alarm relay is closed between terminals 9 and 11.

Tacho-monitor: The alarm will trip if no pulse has been obtained from the tacho-generator 10 seconds after the output voltage has reached max. The red LED (LD3) steadily shines and the yellow LED (LD4) is off. The alarm relay is closed between terminals 9 and 11.

Power failure: None of the LEDs are lit. The alarm relay is closed between terminals 9 and 11.

To reset the alarms

The alarms can be reset by switching off the stand-by mode or power supply and then switching it back on. If the LON is connected, resetting can be done across the LON network.

The LEDs

Yellow LED: LD1. No used.

Green LED: LD2. Steadily shines while the controller is on stand-by. Closure between terminals 16 and 17.

Red LED: LD3. Steadily shines if any alarm has tripped. Red LED in combination with yellow LED (LD4) indicates which alarm has tripped.

- Rotation monitor alarm: Red LED steadily shines, yellow LED flashes.
- Tacho-monitor alarm: Red LED steadily shines, yellow LED is off.

Yellow LED: LD4. Steadily shines if the input signal is greater than 10% and the heat exchanger motor is to rotate. The LED will blink off 1 second and on, every time the magnet on the rotor passes the rotation monitor sensor. A yellow LED in combination with a red LED (LD3) indicates which alarm has tripped.