Instructions for the Motor Control System VVRZ-6-66-1

Rotary heat exchanger, Swegon AT4, sizes 32x16 and 41x20

General

The Motor control system consists of a frequency inverter, logic module and transformer built into the equipment cubicle. The frequency inverter and other components are pre-programmed for all functions.
The motor control system is designed for variably controlling the speed of the heat exchanger rotor. The speed of the heat exchanger rotor can be controlled between 0.6-12.0 rpm.

Electrical installation

(see drawing below)
Power supply cable: 3 x 1.5 mm²
Motor cable: 4 x 1.5 mm²
Thermostatic contacts: 2 x 1.5 mm²
Rotation guard sensor: 3 x 0.5 mm²

Control cable(s) from the microprocessor cubicle for:
- Control signal: 0 – 10 V DC.
- Stand-by mode from potential-free normally-open contacts.
- Max speed mode from potential-free normally-open contacts.
- Alarm reset from potential-free normally-open contacts, if any.
- Group alarm output, if any.
- In-operation indication output, if any.

VVRZ-6-66-1

Technical data

Mains power supply ………...230 V AC +/-10% 50/60 Hz
Rec. fuse …………………….........................C10 A
Ambient temperature ……………................-20..+40°C
Dimensions ………………….....WxHxD = 300x300x210
Enclosure Class ……………………….................IP 54
Drive motor……………………………........0.55 kW, 2.9A
Rotation monitor…………………….........part no. 017012
Metal clamp…………………………...........part no. 017560

*Connect shield in cable, if necessary

Functions

Max speed mode: Closure between terminals 101 and 102 causes the heat exchanger to operate at maximum speed. The function can be used to counteract a chocking chill when the ventilation unit is first started up on a cold day. The heat exchanger will then run at max speed regardless of strength of the control signal at that time.

Stand-by mode: Closure between terminals 103 –104 means that the heat exchanger is operational. The rotor speed is contingent on the strength of the control signal.

Control signal: The control signal is connected to terminals 110 (+), 111 (-) and 112 (shielded if necessary). The heat exchanger rotor is controlled between min. and max speed linearly with the energy recovery capacity required. The speed is regulated between 0.6 – 3 rpm. On a higher control signal (9.5 V), the rotor will rotate at a max speed of 12 rpm.

Purging Operation: If the control system has been in the stand-by mode for 4 hours but the control signal or the max. speed mode haven't been active, the heat exchanger will start at max speed and run for one minute to purge the rotor surfaces to remove any dust.

In-operation indication: Whenever the heat exchanger is operating, there is closure between terminals 113 and 114. This contact function is obtained via a potential-free relay rated the following max permissible loads: 5 A resistive or 1 A inductive.

Group alarm indication: If an alarm from the rotation detector, thermal overload protection or some other alarm from the inverter is initiated, closure will occur between terminals 115 and 116. This contact function is obtained via a potential-free relay rated the following max permissible loads: 5 A resistive or 1 A inductive.

Alarm reset: Closure between terminals 117 and 118 resets any possible tripped alarm.

Rotation monitor: The rotation detector transmits a pulse to the control system every time the metal clamp passes it. If no pulse is received within 2 minutes while the unit is operating, this will stop the heat exchanger and initiate a group alarm.

Thermal overload monitor: The motor is equipped with thermostatic contacts in its motor windings that, on an absence of signal between terminal 108 and 109, stops the heat exchanger and initiates a group alarm. Message E12 is then displayed on the frequency inverter screen.

All frequency inverter and control system settings have been programmed and tested at the factory to ensure optimal performance. Therefore, no new settings are necessary when the air handling unit is installed.

NOTE! The control system (frequency inverter) of the heat exchanger is preset for use together with a 4-pole motor. This combination is necessary for obtaining the correct speed of rotation. If a different motor is to be used, the frequency inverter's max frequency setting will have to be changed (PNU A04, A11, A12 and A21). For details, see the separate manual (CD) supplied inside the equipment cubicle.