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**Revolution regulator of fan asynchronous
motors**

User's Manual



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Application

The device is designed to provide a smooth regulation of the capacity with single or three phase active- inductive consumers (privately – asynchronous motors) within fixed levels. The device can be controlled manually or automatically by means of an analogue signal of 0-10 V.

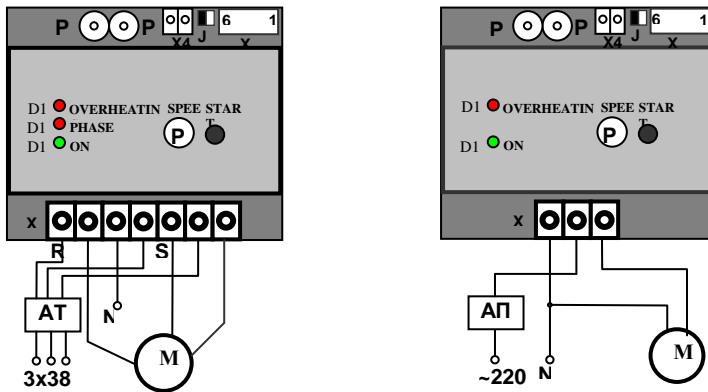
It provides a smooth start-up of the fan and an absence of a start-up current.

Technical data

1. Number of phases 1 or 3
2. Nominal power of the consumer: up to 3.5 kW
3. Connection to three phase supply voltage: a star with an insulated centre
4. Supply voltage: ~220/380
5. Protection against wrong phase sequence with an indication.
6. Input for a thermo-contact with indication (built-in the fan)
7. Control by means of outer signal 0-10V or manually:
8. Setting a lower and upper level of regulation range.
9. Smooth start-up of the motor.

Connections, start-up and settings

The connection scheme is shown at Figure 1 below:



a) three phase consumer

b) single phase consumer

X4 – protection thermo-contact of the motor;

P2 – setting max. revolutions

P3 – setting min. revolutions;

P1 – manual regulation;

D17 – indication “START/STOP”

D11 – indication “OVERHEATING”;

D16 – indication “PHASE SEQUENCE”

J2 – jumper for automatic / manual regulation

1. Connections

The power supply of the module is provided by means of terminal S (terminal board X3).

Terminal board X4 provides a protection thermo-contact of the motor fan, which is normal closed (NC) and which is being opened in case of motor overheating. The motor fan is to be equipped with such a thermo-contact against overheating in order to use this product feature.

In case of overheating a red light indication D11 on the front panel occurs and the power supply of the motor fan is being stopped. In case the motor fan is not equipped with such a thermo-contact, an electrical bridge is to be placed to terminals X4.

The input power supply is to be connected to terminal board X3 as at Figure 1 is shown the correct phase sequence.

To terminal board X2 are fed regulation signals and a power supply, as follows:

1 – common (GND);

2 – analogue regulation signal 0-10V, in inverse ratio to the fan revolutions;

3 – outside stabilized power of +12V, when the module do not have such an own power supply;

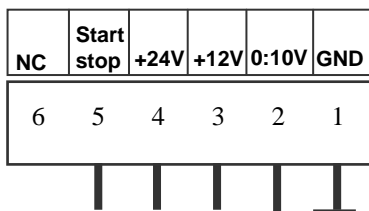
4 – outside non-stabilized power supply, when the module is without such an own

power supply. **The voltage to X2.3 and X2.4 are not to be connected in the same time.**

5 – digital signal Start/Stop: 0 or 10V. 0V – Stop, 10V – Start.

6 – is not in use.

When the module is in a manual mode of regulation by means of potential meter P1, jumper J2 is in position . When the module is in automatic mode by means of a signal 0-10V (X2.2) jumper J2 is in position , as in this case the potential meter P1 is not necessary or it is turned clockwise until the end.



2. Start-up and settings of three phase fan motors

Start-up

- Motor protection AT (power supply) – switched off.
- Button “START/STOP” is to be places in released position – stop.
- Potential meters P1 и P3 are to be turned clockwise until the end, and P2 are to be turned counterclockwise until the end.

- A motor protection is being switched on. In case of wrong phase sequence of supply phases a light indication D16 appears. In this case the motor protection is to be switched off, two of input phases are to be replaced and the power supply restored.

The light indication D16 does not appears in case it is provided a correct phase sequence of the power supply.

- Button “**START/STOP**” is to be placed in pressed position – start. A light indication D17 “**ON**” is activated. A smooth start-up of the ventilator is to be waited for and the direction of fan operation is to be checked up. In case this direction is not correct AT is to be switched off and two of output phases are to be replaced.

Settings

- **Maximum revolutions.**

The voltage between two of input phases is to be measured by means of voltmeter (linear power supply) and it is to be kept in mind. Afterwards, the voltage between two of consumer (fan motor) terminals is to be measured too. After pressing START/STOP button it is to be waited for until the voltage is being smoothly increased from 40-60V up to a fixed level. After reaching a certain value P2 is to be turned clockwise with short steps, which continues increasing the voltage between the fan motor terminals.

It is necessary to wait for the proceeding of each new turning of P2 concerning the motor fan until a new, higher level of voltage is being fixed.

By means of P2 a fixed voltage measured between terminals of the consumer is being increased, only until it become lower than the linear supply voltage with about 20V, and afterwards it is left in this position.

- **Minimal revolutions.**

Potential meter P1 is to be turned counterclockwise to the end, and by means of P3 minimal revolutions are being fixed, in relation to the premises requirements.

Counterclockwise turning of P3 is leading to decreasing of the minimal revolutions level.

The revolution regulation in manual mode within its minimal and maximal levels is provided by means of potential meter P1.

3. Start-up and settings with single phase motors.

It can be done in the same way like this one described at above mentioned point 2 as the relevant voltages are being measured between the relevant phases (input and output) and the neutral. The module for single phase motors is not equipped with a light indication D16, concerning the order of the input phases.

Storage

The Controller has to be kept in the provided by the manufacturer packages, at an ambient temperature of (+50 C) up to (+35 C) and a maximal relative humidity 65%.

Warranty

The warranty period is 24 months following the purchase date of the unit or its installation by a qualified staff, but not exceeding 28 months after the production date. The warranty is extended to the malfunctions that occur during the warranty period and are result of the production reasons or defective used parts.

The warranty does not relate to malfunctions corresponding to not-qualified installation, activities directed to the product body interference, not regular storage or transport.

The repairs during the warranty period can be done after correct filling of the manufacturer warranty card