



MS-485

Technical reference

1. Introduction

1.1. Description

MS-485 is a compressor controller dedicated to air compressors with operating power up to 22kW. It controls motors in star - delta configuration.

Controller features include:

- Automatic switching of star and delta motor configurations
- Supervision of pressure, oil temperature and motor current draw
- Support for external power line asymmetry modules
- Password protection of control parameters
- Number of counters for service time supervision
- Support for heaters, driers and condensation drain
- Networked operation mode (EIA-485)
- Remote control mode
- Multiple language versions

1.2. List of supported sensors

- Pressure sensor - 4-20mA current loop sensor
- Oil temperature sensor - PT100
- Power line asymmetry detector
- Motor current transformer
- Vacuum sensor
- Pressure switch
- Thermal switch
- Air filter, oil filter and separator sensors

1.3. Selection of language version

In the MS-485 controller, you can set one of the four available languages:

- polish
- english
- russian
- german

We are doing this at parameter **003u**.

1.4. References

In the following part of the instructions, two types of parameters will be used:

- **s** - service parameter - for example **014s**
- **u** - user parameter - for example **003u**

2. Technical data

2.1. Electrical characteristics

Table 1: Electrical characteristics

Parameter	Value
Supply voltage	24VAC 50/60Hz, 24VDC
Power consumption	6W max
Relays max switching voltage	250VAC
Relays max switching current, resistive	5A
Relays max switching current, inductive	0,5A
Current loop maximum current	28mA
Maximum current draw from internal reference voltage	250mA
Digital inputs min voltage	-0,5V DC
Digital inputs max voltage	24,7V DC
Analog inputs min voltage	-0,5V DC
Analog input max voltage	24,7V DC

2.2. Mechanical information

Table 2: Mechanical information

Parameter	Value
Enclosure dimensions	130x73x59 mm
Unit weight (without packaging)	0,6kg
Panel mounting style	Mounting tabs

2.3. Operating conditions

Table 3: Operating conditions

Parameter	Value
Operating temperature	-15 ÷ 50 °C
Storage temperature	-20 ÷ 70°C
Relative humidity	10 ÷ 90 %, without condensation

3. Electrical connections

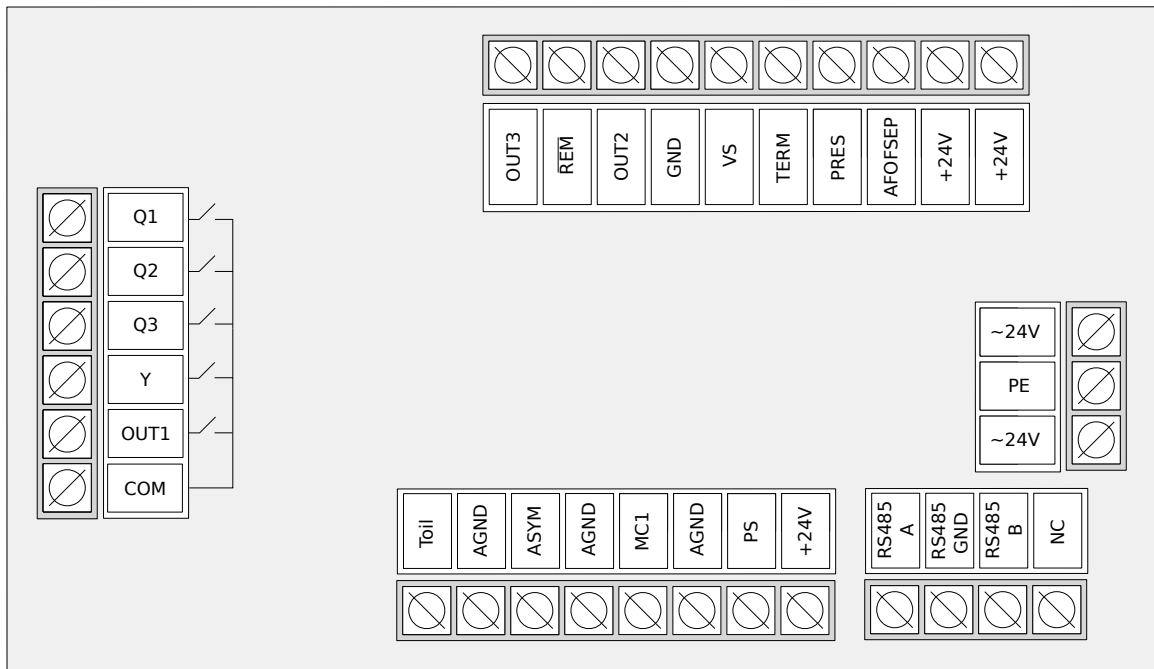


Figure 1: MS-485 electrical connections

Table 4: Pinout of connector 1

Name	Description
~24V	24V AC power supply voltage
PE	Chassis ground; connect to mains earth

Table 5: Pinout of connector 2

Name	Description
RS485 A	Network operation EIA-485 non-inverting terminal
RS485 GND	Network operation EIA-485 ground terminal
RS485 B	Network operation EIA-485 inverting terminal
NC	Not connected

Table 6: Pinout of connector 3

Name	Description
Toil	Oil temperature sensor input; PT100
AGND	Analog ground
ASYM	Asymmetry detection module input
AGND	Analog ground
MC1	Analog motor current sensor input
AGND	Analog ground

Table 6: Pinout of connector 3

Name	Description
PS	4-20mA current loop pressure sensor input
+24V	24V internal voltage reference output

Table 7: Pinout of connector 4

Name	Description
Q1	Motor power supply relay output
Q2	Motor star configuration relay output
Q3	Motor triangle configuration relay output
Y	Y Valve control line output
OUT1	General configurable relay output (default: Heater 1)
COM	Q1, Q2, Q3, Y AND OUT1 relays common terminal

Table 8: Pinout of connector 5

Name	Description
+24V	24V internal voltage reference output
AFOFSEP	Air filter / oil filter separator error input
PRES	Pressure switch digital input
TERM	Thermal switch digital input
VS	Vacuum sensor digital input
GND	Digital signal ground
OUT2	General configurable relay output (default: Acknowledgement output)
REM	Remote control mode input
OUT3	General configurable relay output (default: Error output)

3.1. Output function configuration

The general outputs can be configured *OUT1*, *OUT2*, *OUT3* by the service department to one of the defined functions in **3.1.1.**

The configuration is carried out by setting the desired values in service parameter **009s**. The list of possible assignments is included in section **3.1.1.**

3.1.1. List of possible output configurations

The list of functions that the outputs can be set to is as follows:

1. H1 - Heater control 1
2. H2 - Heater control 2
3. ACK - Acknowledgement output
4. DRAIN - Condensate drain (Default OUT1)

5. VE - Cooling fan control
6. ERROR - Error output (Default OUT3)
7. DRYER - Dryer control (Default OUT2)

4. Mechanical drawing

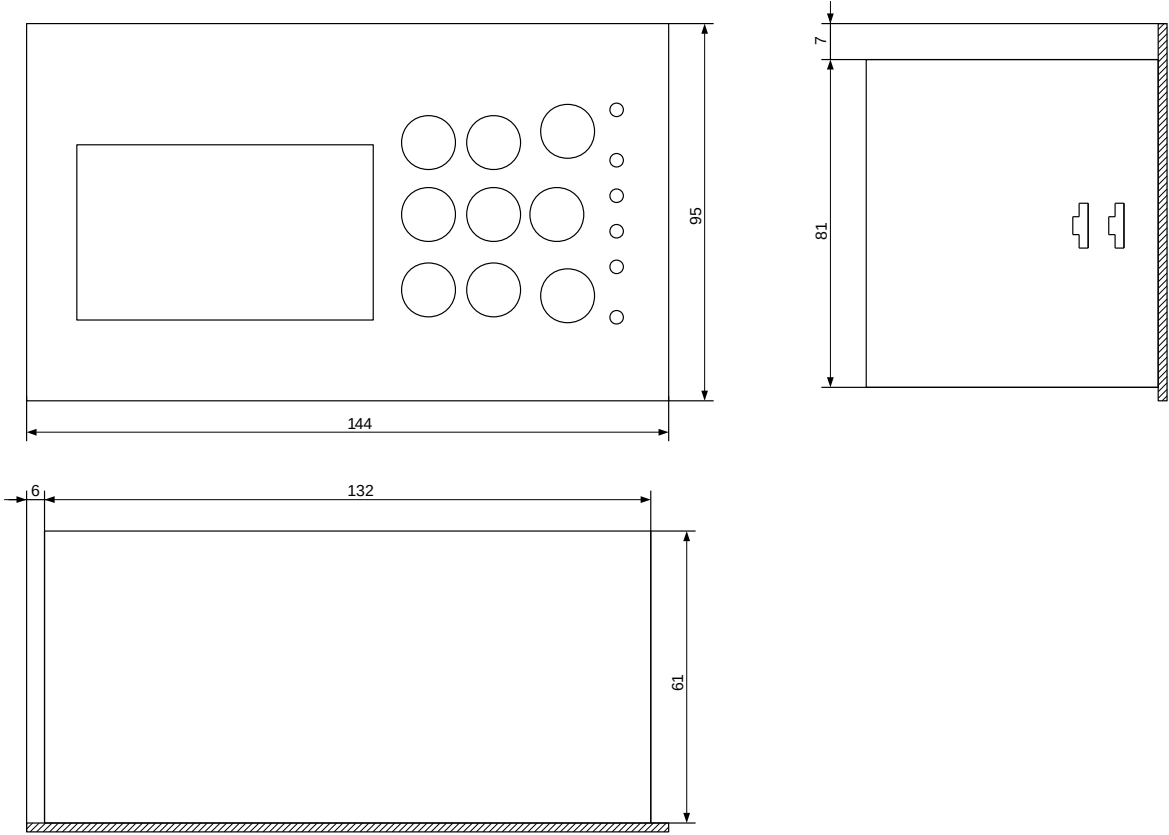


Figure 2: MS-485 mechanical drawing