Technical reference

Compressor Controller

update 7/2024

1. General information

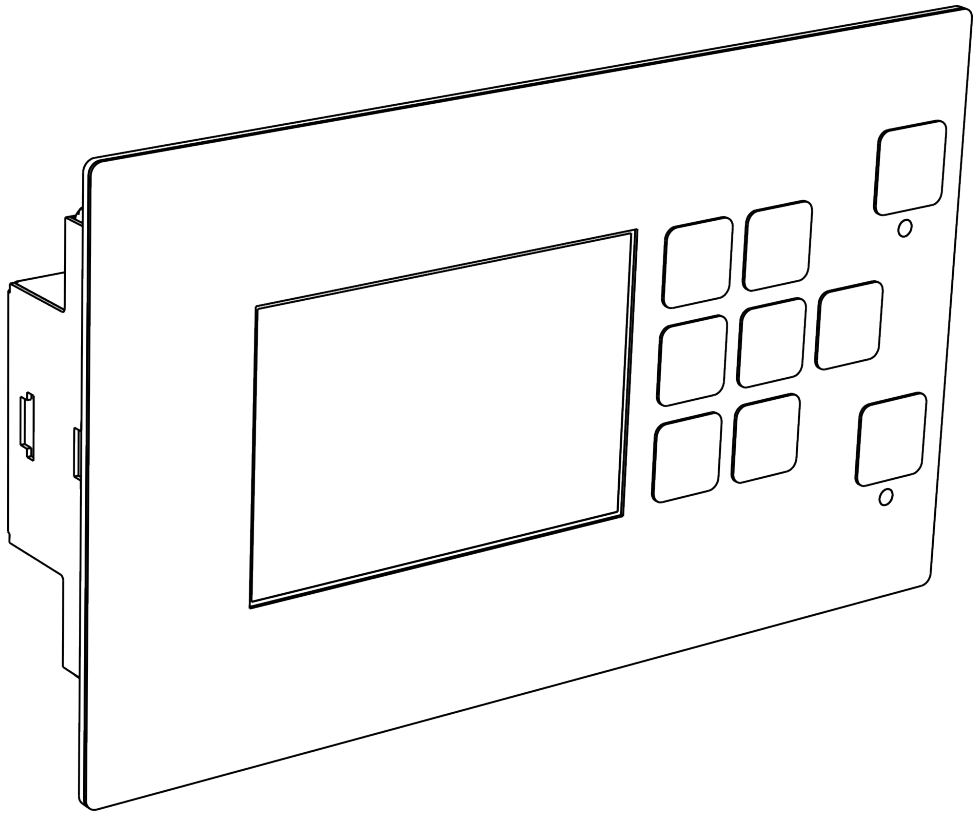

Figure 1: Controller visualisation

1.1. Controller description

Controller dedicated for compressors with a power of up to 22 kW. The controller can work with compressors operating in a star-delta configuration or equipped with an inverter.

Controller features:

- 3.5” color display
- Built-in web server
- Creating statistics
- Supervision function: network pressure, oil pressure, oil temperature, motor temperature and motor current
- Control of oil heaters, air dryer and condensate drain
- Freely configurable controller inputs and outputs
- Automatic restart function
- Inverter control using the Modbus RTU protocol (selection of standard Yaskawa, Danfoss, ABB and Delta inverter)
- Star-delta or direct start-up (for compressors without inverter)
- Service parameters and user with access control menu
- Service counters and working time counters
- Network operation mode supporting up to 4 compressors
- Remote operation mode (using digital input)
- Operation scheduling with a division into cyclical and one time events, up to 5 events in total

- Software update via USB port

1.2. Input and output list

1. The controller is equipped with 2 RTD inputs to support resistive temperature sensors and has the possibility of independent configuration of each input to a selected sensor (PT100, PT1000, KTY84, PTC). Thanks to the RTD temperature inputs, the controller can control the following parameters:
    - Oil temperature
    - Motor temperature
2. The controller is equipped with 2 analog inputs to support 4-20 mA sensors. The measuring range can be configured from the controller. Supported parameters:
    - Network pressure
    - Oil pressure
3. The controller is equipped with 1 analog input to operate a 5 A standard current transformer. The primary winding current can be freely configured from the controller level.
4. The controller is equipped with 6 digital inputs to support sensors or binary signals with the possibility of configuring the default logic (normally open/normally closed) for each input independently. Supported sensors or signals:
    - Suction sensor
    - Dryer ready
    - Remote start-stop
    - Remote load-unload signal
    - Emergency stop
    - Power supply asymmetry
    - Phase sequence error signal
    - Overload relay error signal
    - Air filter error signal
    - Oil filter error signal
    - Separator error signal
    - AFOFSEP error signal (common error for air filter, oil filter and separator)
    - Fan error signal
5. The controller is equipped with 7 configurable digital (relay) outputs, including:
    - 3 outputs with common potential
    - 3 outputs with independent potential
    - 1 NO/NC output with independent potential

    Functions that can be configured on each of the outputs:
    - Main power supply
    - Star
    - Delta
    - Y valve
    - Condensate drain
    - Fan
    - Dryer
    - Heater 1
    - Heater 2
    - Warning
    - Error
    - Warning/error status
    - Ready
    - Running
    - Compressing
    - Service
6. The controller is equipped with 1 USB sockets and 1 Ethernet socket

1.3. Language versions

Controller has 4 language versions:

- Polish
- English
- German
- Russian

It is possible to develop other language versions in consultation with the controller manufacturer.

2. Description of connectors

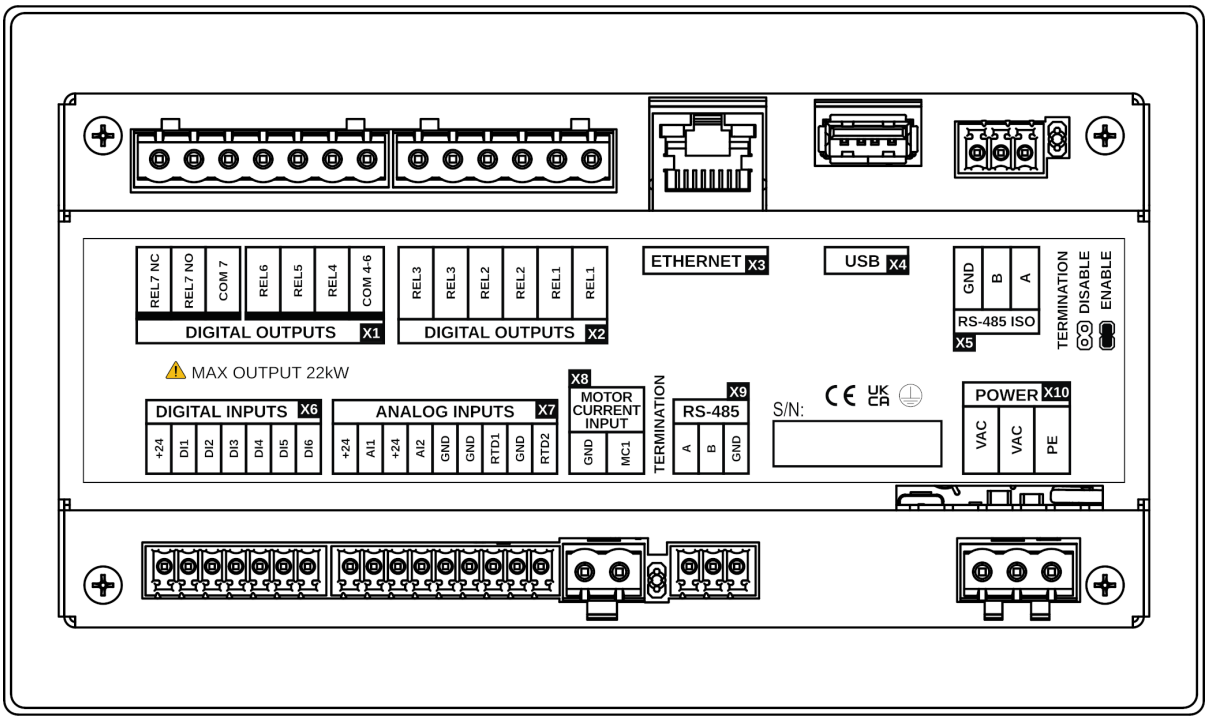

Figure 2: Electrical terminals of the controller

Table 1: Description of digital outputs (X1, X2 DIGITAL OUTPUTS)

Name	Description
REL1	Two outputs of the configurable relay output 1
REL2	Two outputs of the configurable relay output 2
REL3	Two outputs of the configurable relay output 3
COM 4-6	Common output of relay outputs from 4 to 6
REL4	Configurable relay output 4
REL5	Configurable relay output 5
REL6	Configurable relay output 6
REL7 COM	Common terminal of the relay output 7
REL7 NC	N/C contact (normally closed) of relay 7
REL7 NO	N/O contact (normally open) of relay 7

Table 2: Description of communication outputs (X3,X4)

Name	Description
ETHERNET	Ethernet port (RJ45)
USB	USB port

Table 3: Description of RS-485 ISO connector (X5)

Name	Description
GND	Isolated RS-485 interface ground
B	Isolated RS-485 interface reversing line
A	Isolated RS-485 interface non-reversing line

Table 4: Description of digital inputs (X6 DIGITAL INPUTS)

Name	Description
+24V	Internal reference voltage output
DI1	Configurable digital input 1
DI2	Configurable digital input 2
DI3	Configurable digital input 3
DI4	Configurable digital input 4
DI5	Configurable digital input 5
DI6	Configurable digital input 6

Table 5: Description of analog inputs (X7 ANALOG INPUTS)

Name	Description
+24V	Analog input 1 power supply
AI1	Analog input 1
+24V	Analog input 2 power supply
AI2	Analog input 2
GND	Ground terminal
GND	Resistive temperature sensor 1 ground
RTD1	Resistive temperature sensor input 1
GND	Resistive temperature sensor 2 ground
RTD2	Resistive temperature sensor input 2

Table 6: Description of 5A current transformer input (X8 MOTOR CURRENT INPUT)

Name	Opis
GND	Ground terminal of MC1 input
MC1	Motor current measure input MC1

Table 7: Description of RS-485 connector (X9)

Name	Description
A	RS-485 interface non-reversing line
B	RS-485 interface reversing line
GND	RS-485 interface ground

Table 8: Description of power outlets (X10 POWER)

Name	Description
PE	PE Connector
VAC	Controller supply voltage (24 VAC)
VAC	Controller supply voltage (24 VAC)

The controller is equipped with a housing ground terminal, which is located next to X10 connector.

3. Technical specification

3.1. Electrical parameters

Table 9: List of electrical parameters

Parameter	Value
Supply voltage	24 VAC 50/60 Hz +/- 10%
Power consumption	Up to 10 W
Relays - maximum switching voltage	250 VAC
Maximum load sum of REL4, 5, 6 relay group (resistive)	4 A
Maximum load of each of the REL1, 2, 3 relays (resistive)	3 A
REL7 relay maximum load (resistive)	3 A
Maximum relays load (inductive)	0,5 A
Maximum current in the current loop	28 mA
Maximum power consumption from internal reference voltage	250 mA
Digital inputs - minimum voltage	-0,5 VDC
Digital inputs - maximum voltage	24,7 VDC
Analog inputs - minimum voltage	-0,5 VDC
Analog inputs - maximum voltage	24,7 VDC

3.2. Mechanical parameters

Table 10: Mechanical parameters

Parameter	Value
Housing dimensions	176 x 106 x 38 mm
Weight (without packaging)	465 g
Assembly	Clips

3.3. Operating conditions

Table 11: Permissible operating conditions

Parameter	Value
Operating temperature	-15 ÷ 50°C
Storage temperature	-20 ÷ 70°C
Relative humidity	10 ÷ 90%, no condensation

4. Controller dimensions

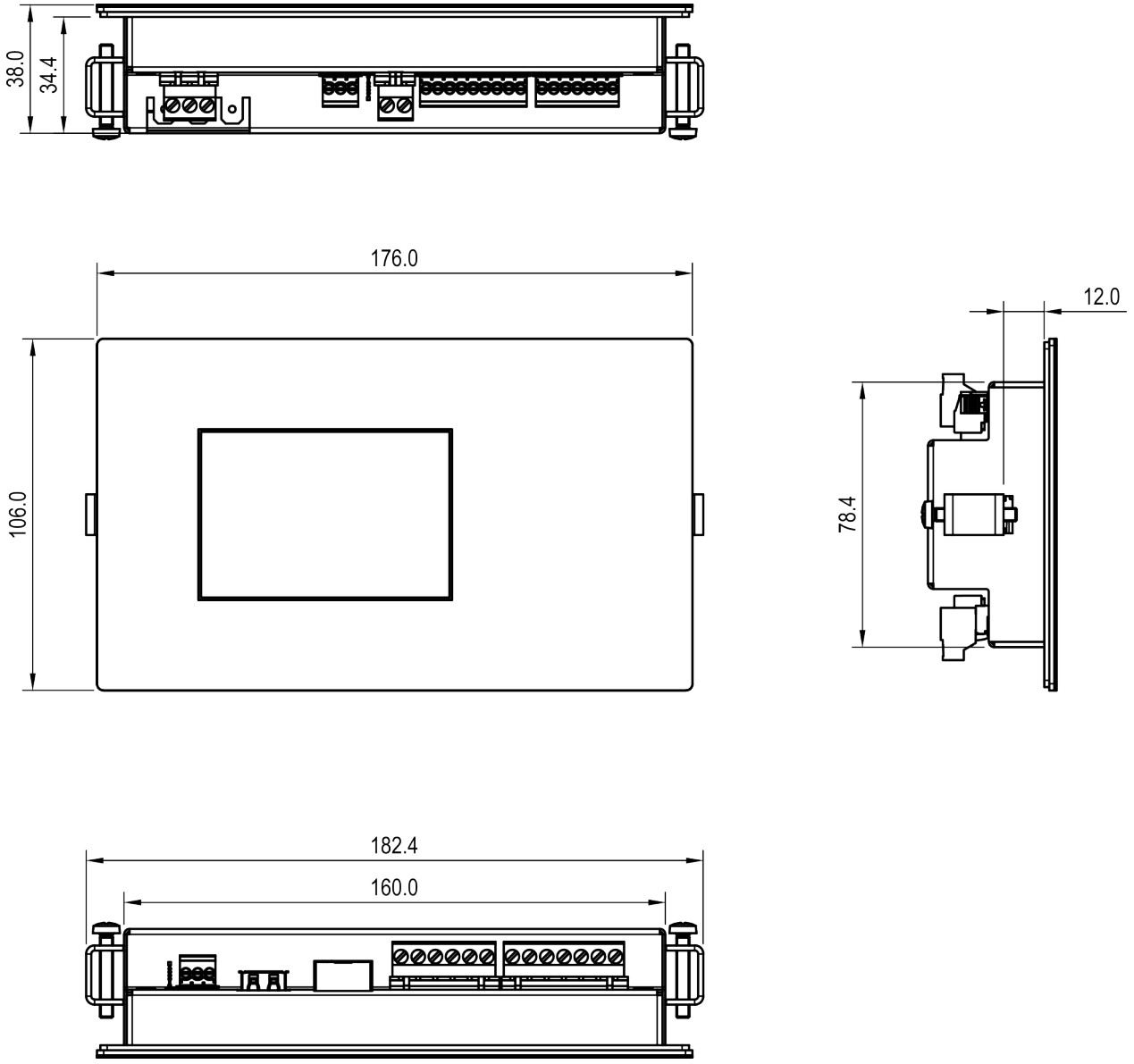

Figure 3: Controller housing drawing