

Control and Monitoring Modules ConTrace MS

Purpose

The main purpose of the ConTrace MS1 and MS3 modules is to control the electrical heating system. It is used for protection against freezing or maintaining the temperature of industrial pipelines and tanks.

Description

Control and monitoring modules ConTrace MS1 and MS3 are full-fledged single-channel controllers capable of operating with maximum efficiency as a part of the multichannel specialized control system ConTrace. The control module is designed to control a three-phase or single-phase load using one of the options: an electromagnetic contactor, a solid-state relay or a continuously adjustable device controlled by a voltage of 0 ... 10 V.

Setting and Control

Control and monitoring modules ConTrace MS have a two-color OLED-display and navigation buttons. Thanks to the intuitive interface and a sufficient number of indicators and controls on the device itself, each module can be configured from the front panel. The ConTrace MS module can also be configured by connecting a PC or laptop to the USB Type C connector on the front panel of the module. Remote configuration and management of the device is performed via the RS-485 interface.

Monitoring of Electric Heating System

The control module continuously measures the operation current, as well as the leakage current in a non-contact manner. In the event that the leakage

current exceeds the value set by the operator or the load current exceeds the specified range, an alarm message is output and the load is disconnected. In this case, for the leakage current, a warning value can be set, after which the device will signal an event, but the heating will not be stopped.

Modules ConTrace MS are able to notify the expiration of the resource of individual nodes of the system, according to such parameters as the number of cycles of on-off contactor and the time of operating the heating cable. These values are available for user customization. In addition, the user is provided with information on the total running time of system and operating time of the ConTrace MS module after the last reboot.

The MS module has four digital inputs to monitor the operation of the actuators and receive remote control commands. The module also has a configurable discrete output, triggered by a user-defined scenario.

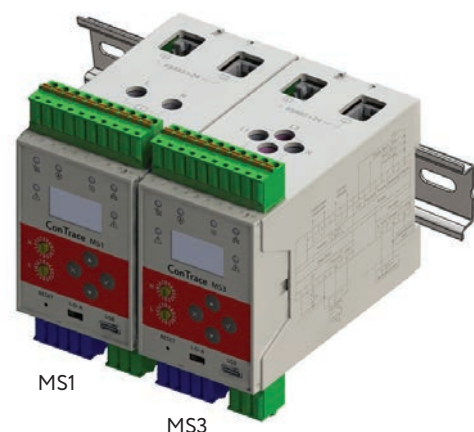
Emergency Interception of Control

The function of emergency redundancy of MS modules is realized by the 1+1 principle, i.e. the same MS module is connected to the main MS module via a special connector. The backup module monitors the operation of the main control module and in the event of a failure of the main control module, the standby module intercepts control by itself. Also, a temperature sensor can be connected to the backup module, in which case it will act as a temperature limiter. This significantly increases the reliability of the control system and is applicable for particularly important loads.

Features and Application Areas

- Each MS module is a full-fledged controller
- Ability to build a multi-channel control system
- System status monitoring during idle time
- Measurement of leakage currents
- Measurement of operation currents
- Ability to configure parameters from the module itself, via a connected PC or via RS-485
- Backup function with interception control
- Monitoring of external RCD
- Monitoring the status of the contactor
- Contactor life meter
- Running time counter
- Smooth or discrete load control
- Universal measuring channel for various types of temperature sensors
- Intrinsically safe circuits

Construction



Electric Heating Control System ConTrace

Technical Data

| | |
|---|----------------------------------|
| Ex marking | Ex ia IIC |
| Supply voltage | 24 V === |
| Maximum measurable load current | 60 A |
| Power consumption, max | 2 W |
| Interface | RS-485 |
| Communication protocol | Modbus / RTU |
| RS-485 interface connection | A, B, com |
| Connectors power supply / interface RS-485 and backup module | 8P8C |
| Cable for power supply / RS-485 interface and a backup module | UTP/FTP cat.5 |
| Type of terminal clamps | detachable |
| Clamping mechanism type of terminal clamps | spring |
| Cross-section / number of simultaneously connected wires to terminals | up to 2.5 mm ² / 1 |
| Diameter of through-holes for load conductors | 8 mm |
| Discrete output of load control | 250 V, 5 A |
| Analog output of load control | 0...10 V |
| Impulse output for solid state load control relay | 24 V |
| Discrete alarm output | 250 V, 5 A |
| Number of discrete inputs | 4 |
| Number of measuring temperature channels | 1 |
| Type of sensors | see the table "Types of sensors" |
| Temperature measurement range | -100 ... +500 °C |
| Accuracy of measurements | 0.5 °C |
| Operating temperature range | -40...+50 °C |
| Mounting type | DIN-rail 35 mm |
| Degree of protection | IP20 |
| Dimensions (W×H×D), mm | 55×109×110 |
| Weight, g | 500 |
| Service life | not less than 10 years |

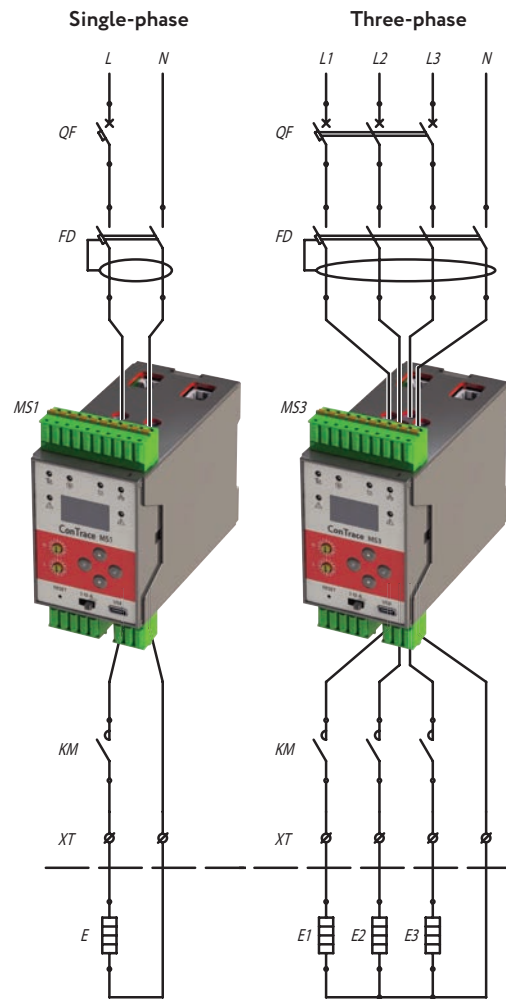
Sensors Types

| Material | Type of RTD | Measuring range, °C | Order code |
|------------------------|-------------|---------------------|------------|
| Platinum | PT50 | -100 ... +500 | 3220900000 |
| | PT100 | | 3220900001 |
| | Cu50 | | 3220900010 |
| Copper | Cu100 | -100 ... +200 | 3220900011 |
| | 50M | | 3220900020 |
| | 100M | | 3220900021 |
| Current loop 4...20 mA | | | |

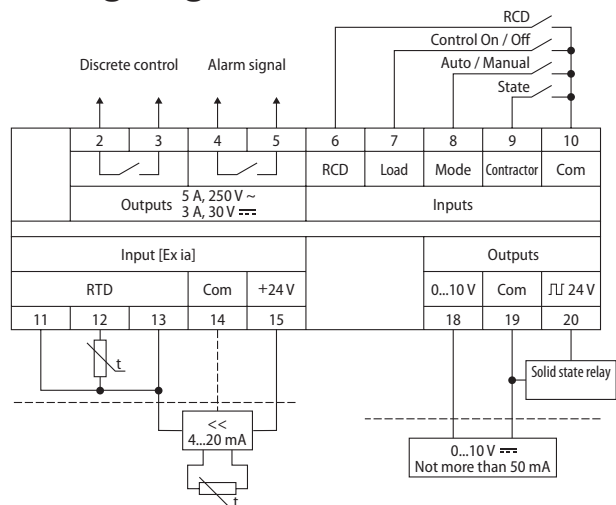
Types

| Name | Order code |
|--|------------|
| Control and monitoring module ConTrace MS1 | 3220002000 |
| Control and monitoring module ConTrace MS3 | 3220002001 |

Installing MS modules in load circuits



Wiring Diagram



Approvals

