Control & Monitoring Relays
Digital Control Relay   MCU-10...J/K/S/R

DESCRIPTION

Digital control relay with 3½-digit LCD display.
The control relay is used for control and measurement of temperature with thermocouples.
The actual input signal type must be specified when the control relay is ordered.
3½ digit LCD display with selectable read-out of actual input and setpoint.
Output relay with LED indication of energized output relay.
Built-in power supply for direct mains supply. Galvanic isolation between input and supply.
Standardized housing for 11-pole plug-in or DIN rail mounting.
Bases for DIN rail,surface and chassis mounting are listed under Accessories for MCP-10, see page 128.
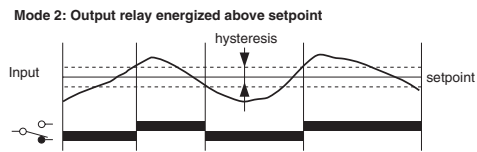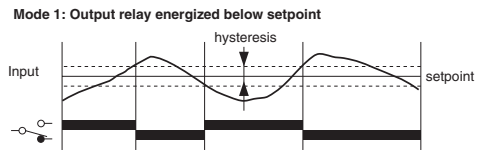
OPERATION

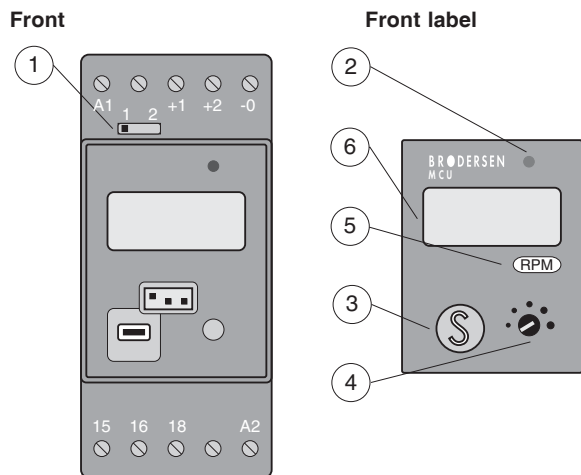The display shows the actual input signal when the supply voltage is connected.

The setpoint is displayed by pressing the **S** button and the setpoint is adjusted on the front mounted potentiometer.

The output mode switch for selecting whether the output relay should be energized above or below the adjusted setpoint, see the diagrams below.
The red LED indicator will light up when the output relay is energized.

Mode 1: Output relay energized below setpoint

Mode 2: Output relay energized above setpoint

VERSION/ORDERING CODES

Type:
Digital control relay.   MCU-10

MCU-10   S   1   230   J1

Mounting:

11-pole plug-in.	S
DIN rail.	D

Output relay:

SPDT	1

Supply voltage:

12-48V DC/10-30V AC	G24
12V AC/DC	912 [1]
24V AC/DC	924 [1]
24V AC	024
110/120V AC	115
220/240V AC	230
380/415V AC	400

Input:

Fe-CuN -50-1200°C.	J1 [2]
NiCr-Ni: -50-1350°C.	K1 [2]
PtRh-Pt 10%: -50-1750°C.	S1 [2]
PtRh-Pt 13%: -50-1750°C.	R1 [2]

FRONT

Front

Front label

1. Output mode selector 2. LED indication of energized output relay 3. Button for setpoint read-out 4. Setpoint adjustment 5. Unit label position 6. Display field.

TECHNICAL DATA

Measuring ranges:

Thermocouples			
Fe-CuNi	NiCr-Ni	PtRh-Pt 10%	PtRh-Pt 13%
-50 -1200°C	-50 -1350°C	-50 -1750°C	-50 -1750°C

Measuring accuracy: 1% of full scale ± 1 digit [2].

Hysteresis: 1% of full range.

Temperature drift:
  Voltage, current and
  temperature: Max. 0.01% per °C.
  Standard process: Max. 0.02% per °C.

Display: 3½-digit LCD-type (-1999 to 1999).
  Digit height: 6.5 mm.
  Display update time: Typically 0.4 sec.

Output relay: SPDT (single changeover contact).
  Load (cosφ=1):   D1/S1: Max. 8A/240V AC
                  Min. 10mA/24VDC
  Frequency: Max. 1000 operations per hour at max.load.
  Mechanical life time: Min. 10×10^6 operations.
  Electrical life time: Min. 100.000 operations at max. load.
  Time delay: Typically 1s.

Mounting: S1: 11-pole plug-in.
                  D1: Directly on 35 mm DIN-rail (EN50022).

Terminals: Max. conductor size 4 mm².
  Screw type terminals with self-lifting clamps shrouded in accord-
  ance with VDE0106 (finger and back of hand protection).

Supply voltage: 12-48V DC (10.5-60V)/12-30V AC(10.5-35V).
                  12V AC/DC (10-18V) [1].
                  24V AC/DC (18-35V) [1].
                  24V AC (22-26V).
                  110/120V AC (95-135V).
                  220/240V AC (195-265V).
                  380/415V AC (342-418V).

Mains frequency: 45-66Hz.

Consumption: 1-3VA.

Protection: S1: IP40.
                  D1: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Ambient temperature:-25-55°C.

Isolation:
  AC versions: 4kV AC according to EN 60950 class II.
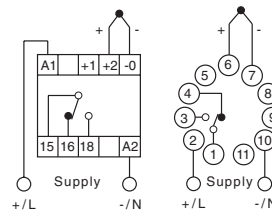 G24 version: 1kV AC

Dimensions: Identical to MCP-10, see page 38.

Housing: Black Noryl SE-1.

Weight: Typically 170 g.

WIRING DIAGRAMS

Thermocouple

The MCU-10 temperature controller is supported by a wide range of temperature sensors, see the temperature sensor data sheet for detailed technical information and ordering codes.

NOTES/REMARKS

1) There is no galvanic isolation between input and supply. External isolation should be provided to prevent damage to the controller when measuring voltage/current or a G- or other version with internal isolation should be used.
2) The specified accuracy is valid within the subranges:
J1: 0 -1100 °C.   S1: 150 -1550 °C.
K1: 0 -1150 °C.   R1: 150 -1550 °C.

BRODERSEN