



ABB Power T&D Company Inc.  
Relay Division  
Coral Springs, FL  
Allentown, PA

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## Type MCO Microprocessor Time Overcurrent Relay



### Features

- Front panel switch selection of seven different characteristic curve shapes
- Wide range of pickup setting allows single style relay for both phase and ground protection in many applications
- Optional instantaneous delay for coordination with fuses.
- Fast reset feature prevents "ratcheting effect" under repeated faults in reclosing schemes
- Very low ct burden
- FT-11 Flexitest™ case construction provides in-service test and isolation capability
- Trip indication (with memory) is based on actual trip current flow
- Trip Test pushbutton
- Reliable dc-to-dc power supply
- Monitoring circuit with contact output for automatic self-check of hardware and software, and for loss of dc battery voltage

### Application

The MCO is a microprocessor-based single-phase non-directional time and instantaneous overcurrent relay. The MCO is used to sense power system phase or ground current levels above specific settings and is normally used to trip a circuit breaker or other fault interrupting device.

A primary feature of the MCO is the front panel switch selection of seven separate tripping characteristic curve shapes corresponding to the following:

- Short Time (CO-2 characteristic)
- Long Time (CO-5 Characteristic)
- Definite Time (CO-6 Characteristic)
- Moderately Inverse (CO-7 Characteristic)
- Inverse (CO-8 Characteristic)
- Very Inverse (CO-9 Characteristic)
- Extremely Inverse (CO-11 Characteristic)

The MCO is available with time-overcurrent pickup ranges of 0.1 to 2.4 amps or 0.5 to 12.0 amps. An instantaneous trip unit provides high speed tripping for high current faults and is set as a multiple of the time overcurrent setting, with a range of 1 to 20 in 0.5 steps. If instantaneous tripping is not desired, this feature can be disabled by simple front panel switch selection.

An optional instantaneous delay characteristic provides coordination time to allow downstream fuse clearing.

Independent contact trip outputs and separate LED indications are provided for the instantaneous and time delay trip outputs. The indication is sealed in by detection of current flow in the tripping circuit. Indicator reset is accomplished manually.

Non-volatile memory provides retention of the trip indications.

The microprocessor design provides automatic self-checking of the software and hardware as well as indication of loss of dc battery voltage.

## Specifications

### Dimensions

Standard FT-11 Flexitest™ case (Refer to DB41-076 for details)

### Shipping Weight

9.0 lbs. (4.1 Kg)

### Power Supply

48 or 125 Vdc selectable; 250 Vdc

### Frequency

50 or 60 Hertz selectable

### Indications

- Time delay trip (light emitting diode) flashes when input current is above pickup setting
- Time overcurrent trip
- Instantaneous trip
- Monitor provided for power-on and self-check indication

### Timing Characteristics

- Provides seven separate time overcurrent curves as outlined in I.L. 41-120
- Reset time—2 cycles
- Optional delayed instantaneous feature (“-FUS” catalog suffix)
  - Fixed Delays: 0, 0.05, 0.10 sec.
  - Adjustable Delay: 0.2-0.83 sec.

### Input Ratings

- 5A input: 16A continuous; 200A one second; burden 0.3 VA @ 5A
- 1A input: 5A continuous, 100A one second; burden 0.45VA @ 1A

### Output Contact Ratings

	@125Vdc	@250Vdc
Closing	30A	30A
Continuous	5A	5A
Break	0.5A	0.25A

### Standards

- ANSI C37.90
- IEC 255 series

### Temperature Range

- Operate: -20° to +55°C
- Storage: -40° to +70°C

### Style Number Selections

Time Unit Range	DC Control Voltage	Style Number
0.5 – 12A	48/125	1354D01A01
0.1 – 2.4A	48/125	1354D01A02
0.5 – 12A	250	1354D01A03
0.1 – 2.4A	250	1354D01A04

For Delayed Instantaneous option, add suffix“-FUS” to style number.

**Additional Information:** Instruction Book IL 41-120, Transparent Time-current Curves.

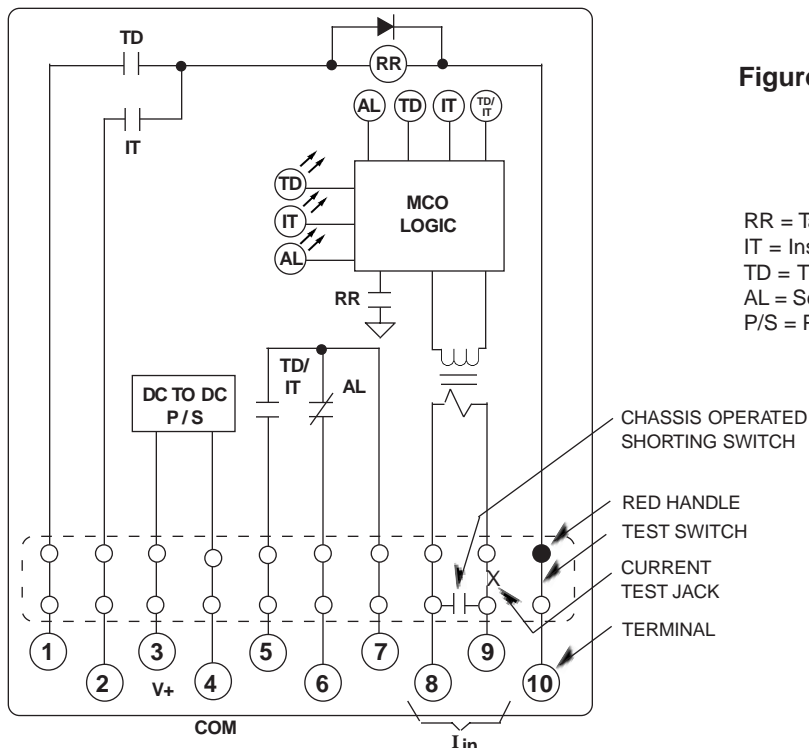


Figure 1: MCO Internal Connections

FRONT VIEW FT-11 CASE

- RR = Target Seal-In Reed Relay (Low Impedance)
- IT = Instantaneous Trip
- TD = Time-Overcurrent Trip
- AL = Self-Check Alarm
- P/S = Power Supply

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