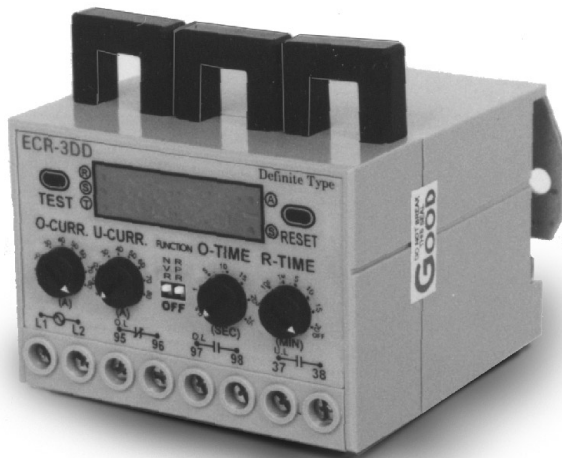


ECR-3DD-MK2 Overload and Underload Relay

Samwha



Application

- Overload and underload protection of pumps and fans
- Detects broken drive belts or coupling failure

Features

- Microprocessor based
- Over current, under current, phase loss, phase unbalance protection
- Locked rotor, phase reversal (selectable) protection
- Fail safe operation (selectable)
- Calibrated adjustment
- Remote electrical reset, remote test
- Digital display of motor currents, settings and faults

Benefits

- Proven technology
- Multifunction motor protection
- Relay can be adjusted with no power applied
- Safe remote reset
- Ammeter function assists in fault finding

The Samwha ECR-3DD-MK2 overload / underload relay has been designed to suit motor protection applications in mining and general industry. It incorporates motor protection and load protection in one compact, low cost package. Selectable phase reversal protection prevents possible damage to pumps from running in the wrong direction. A smart start delay function allows time for tight loads or high inertia loads to reach rated speed without tripping the motor. Locked rotor protection allows a maximum of 10 seconds before tripping the relay assuming locked rotor current is 600% of rated load. All protection functions trip the output contacts of the relay. An additional output contact closes only when an undercurrent occurs allowing discrimination between over and under load. External electrical reset and adjustable auto reset makes integration in automatic or remote monitoring systems very simple. Current ranges from 0.5 amps to 300 amps are available in a number of control voltages.

Ordering information

EOCR-3DD- - - - -MK2

Control voltage 024,220,440

Current range 05,60,

300 (3CT block fitted)

For further details please contact your Samwha distributor.

Specifications

TRIP TIMES

Overload	0.5-25 seconds (adjustable)
Phase loss	4 seconds (over 20A)
Phase reversal	0.1 seconds
Phase unbalance	8 seconds (UB>50%)
Locked rotor	10 seconds (I>600%)

CURRENT SETTING RANGE

05 type	0.5-5 amps
60 type	5-60 amps
300 type	30-300 amps (3CT block fitted)

CONTROL VOLTAGES

024 (24 Vac/dc +/- 15%)
220 (85-240 Vac/dc +/- 10%)
440 (320-480 Vac/dc)

OUTPUT RELAY

All functions	1N/O,1N/C 3A/250Vac (including UL) Resistive
UL indication	1N/O 3A/250Vac Resistive

TRIP INDICATION 4 digit display

FAULT INDICATION 4 digit display

TOLERANCE

Current +/- 5%, Time +/- 5%
(add 0.5 seconds for overload trip delay)

AMBIENT TEMPERATURE

Storage	-30 - 80 °C
Operation	-20 - 70 °C
Humidity	45 - 85% (without condensation)

INSULATION

Between casing and circuits
Over 10MΩ @ 500 Vdc

DIELECTRIC STRENGTH

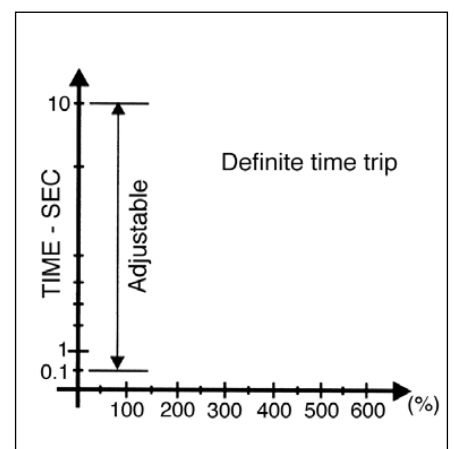
Casing & circuit	2kV 60Hz,1 minute
Between contacts	1kV 60Hz,1 minute
Between circuits	2kV 60Hz,1 minute

POWER CONSUMPTION

Less than 3VA

MOUNTING

35mm DIN rail/surface

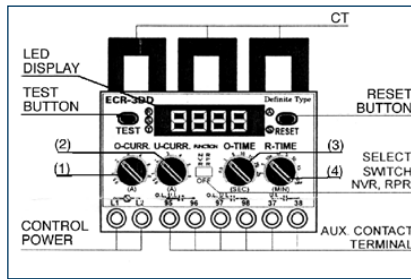


Time current characteristics

Adjustments

The relay fascia has two adjustments:

- 1) Overcurrent adjustment
- 2) Undercurrent adjustment
- 3) Trip time adjustment
- 4) Auto reset time adjustment



Each adjustment potentiometer is calibrated so the relay can be accurately set with no control power applied.

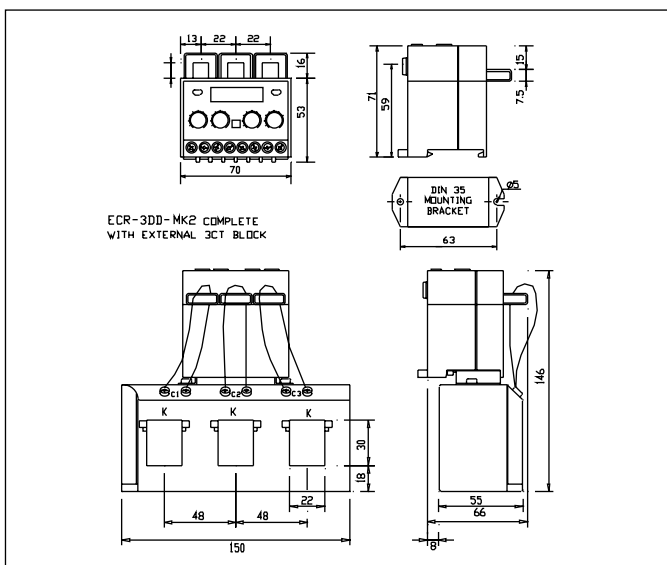
Indication

The EOCR-3DD-MK2 gives full indication of motor status via a 4 digit display on the relay fascia. Motor trip status is displayed making fault finding very simple. In normal operation, the motor current in each phase is displayed in turn every 3 seconds. If an overload occurs, information such as "O" for overload, phase reversal "RP", phase unbalance "U", phase loss "PL" which phase is effected and the intensity of the overload in amps is displayed.

Setting Instructions

Once all connections to the EOCR-3DD-MK2 have been made in accordance with the typical wiring diagram, and the relay is in position:

- Set the overcurrent adjustment (1) to approximately 110-115% above the motor full load current rating. Each relay is individually calibrated with a black dot near the corresponding current value. If control power is available to terminals L1 and L2, the 4 digit LED display will indicate actual trip current value in amps.
- Set the undercurrent adjustment (2) to the required value.
- Set the trip time adjustment (2) according to the required trip time characteristics shown on page 1. If 5 is selected, the relay will trip in 5 seconds if the current setting is exceeded. This time is common to both over and undercurrent functions. During motor starting, an inbuilt auto delay time allows the motor to start without tripping. If the motor is stalled during starting, the maximum trip time is 10 seconds regardless of the overload setting.



Dimensions

- Set the auto reset time as required between 1 second and 20 minutes. If auto reset is not required, the adjustment should be turned fully clockwise into the "OFF" position.

DIP Switch Selection

- NVR: When switched to the "on" position, **Fail Safe** operation of the relay output trip contacts is selected. With control power applied to terminals L1 and L2, contacts 95-96 open and contacts 97-98 close. Contacts 37-38 remain open regardless of the NVR function selection.
- PRP: When switched to the "on" position, phase reversal protection is selected. If this function is not required, PRP switch should be in the "off" position.

Test and Reset

A local TEST push buttons is located on the relay fascia. Each time the test button is depressed the 3DID-MK2 digit LED will display the following:

- 1) Overcurrent adjustment
- 2) Undercurrent adjustment
- 3) Trip time adjustment
- 4) Auto reset (R-Time)
- 5) TEST

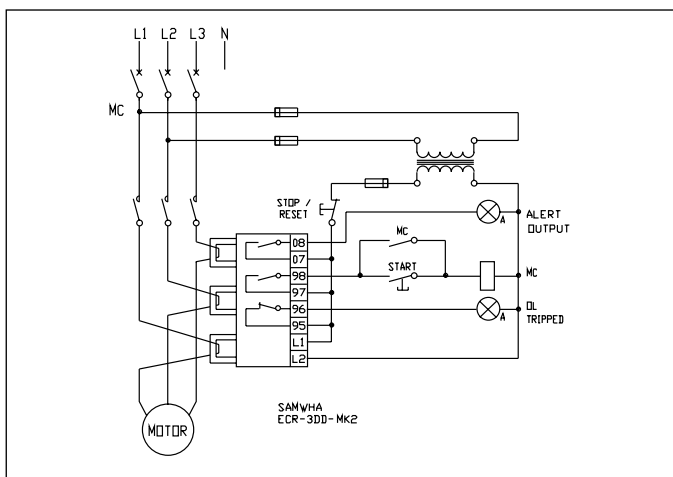
The relay will count down until the trip time has elapsed, the output contacts change state and END is displayed. If the relay is in use and current is drawn by the load, the adjustment settings will be displayed without tripping the relay. The ECR-3DD-MK2 can now be reset ready for use.

Reset

A local RESET push button is located on the relay fascia. Remote electrical reset is carried out by interrupting the control power supplied to terminals L1 and L2. The ECR-3DD-MK2 also has an auto reset function adjustable from 1 second to 20 minutes. If auto reset is not required, the adjustment should be set fully clockwise and "r----" is displayed.

Mounting

The EOCR-3DD-MK2 is 35mm DIN rail mounting and is supplied with a bracket for direct mounting to the 3CT block. It can be mounted remotely in any orientation without effecting performance.



Typical wiring diagram

Details may be subject to change without notice.

Doc ECR-3DD-MK2-Rev1, Feb 2000. © R&D Technology PTY LTD

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