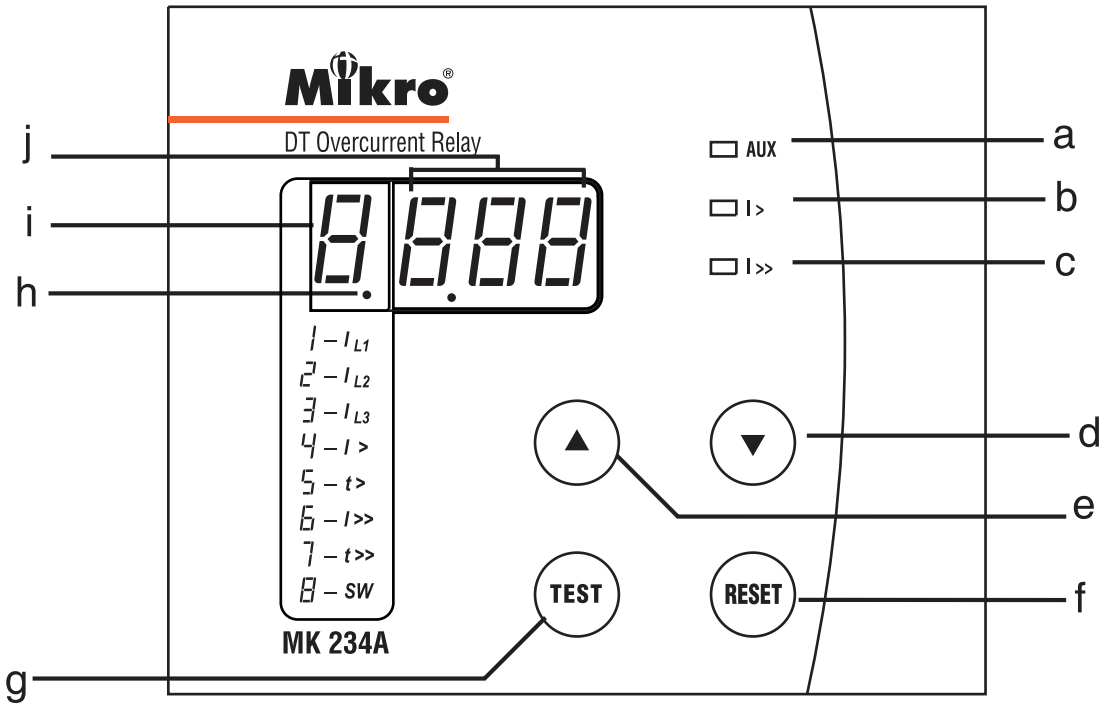
MK234A Overcurrent Relay User's Guide

A BRIEF OVERVIEW



a - Auxiliary power supply indicator

b - Low-set start/trip status indicator

c - High-set start/trip status indicator

d - Down key

e - Up key

f - Reset key

g - Test key

h - DP indicator

i - FUNCTION indicator

j - DATA indicator

Symbols

I_{L1} - L1 current

I_{L2} - L2 current

I_{L3} - L3 current

I> - Low-set

t> - Low-set delay time

I>> - High-set

t>> - High-set delay time

SW - Soft switches

1. DESCRIPTION

The MK234A is a microprocessor based numerical overcurrent relay. It uses fundamental frequency current measurement for excellent harmonic current rejection. The relay provides two element (low-set and high-set) overcurrent fault protection with definite time characteristic. The 4-digit panel display on the MK234A allows the display of present load current; recorded fault current for last tripping; and all settings of the relay.

2. LIGHT INDICATORS

The indicators display the status of the system as follow:

Indicator					Status
Aux	I>	I>>	FUNC	DT	
0	0	0	0	0	No Auxiliary power supply.
1	0	0	X	X	Normal condition, no tripping.
1	1	0	X	X	Low-set overcurrent triggered, time delay countdown started.
1	0	1	X	X	High-set overcurrent triggered, time delay countdown started.
1	B	0	B	B	Low-set tripped, FUNC LED indicates tripping source, DT LEDs show tripped value.
1	0	B	B	B	High-set tripped, FUNC LED indicates tripping source, DT LEDs show tripped value.
1	X	X	B	1	Programming mode.

Table 1: System Status

1 = ON 0 = OFF X= don't care, not blinking
B = blinking DT = DATA FUNC = FUNCTION

Indicator		
FUNCTION	DP	DATA
1	off	L1 load current.
2	off	L2 load current.
3	off	L3 load current.
1	blink	L1 previous tripped current.
2	blink	L2 previous tripped current.
3	blink	L3 previous tripped current.
4	off	Low-set current setting.
5	off	Low-set delay time setting.
6	off	High-set current setting.
7	off	High-set delay time setting.
8	off	Soft switch setting.

Table 2: FUNCTION Code

Note: Under normal operating condition, The 4-digit display is off. When the RESET key is pressed, the 4-digit display will light up. The display will switch off automatically after 6 minutes if no further key is pressed.

3. PUSH-BUTTONS OPERATION

a) Trip test

Press the "TEST" button to simulate a trip condition.

b) Trip reset

Press the "RESET" button to reset the relay when tripped.

c) View setting

When the relay is not under tripped condition, pressing the "RESET" button will scroll through the various functions.

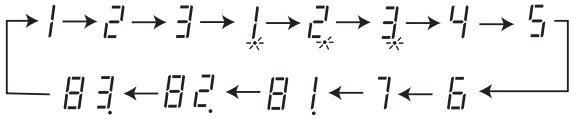


Figure 1: Scroll sequence

d) Program setting

Only function codes from 4 to 8 can be programmed.

Step 1: Press RESET key until the function digit shows required function.

Step 2: Press the UP and DOWN key simultaneously to enter programming mode. The function digit will blinks to indicates the relay is in programming

Step 3: Use the UP or DOWN key to select the desired value.

Step 4: To save the selected value, press the UP and DOWN key simultaneously again. It will exit the programming mode with the data digits displaying new setting.

To exit programming mode without saving the selected setting, press the RESET key once.

4. OUTPUT CONTACTS

The MK234A has two set of output contact:

(i) CONTACT R1 - linked to trip signal.
(i) CONTACT R2 - linked to trip or start signal.

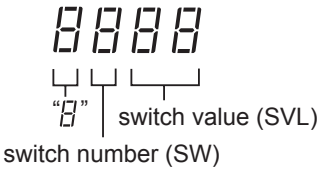
The output contact can be programmed to be either auto reset type or manual reset type.

For auto reset type, the contact remain activated until the fault current is removed.

For manual reset type, the contact remain activated even with the removal of fault current.

5. SOFT SWITCHES

The MK234A incorporates 3 soft switches for system configuration. When the function digit shows "8", the relay is in soft switch setting mode.



SW	SVL	System configuration
1	00	Contact R1 linked to trip signal auto reset type.
	01	Contact R1 linked to trip signal manual reset type.
2	00	Contact R2 linked to trip signal auto reset type.
	01	Contact R2 linked to trip signal manual reset type.
	10	Contact R2 linked to signal auto reset type.
	11	Contact R2 linked to signal manual reset type.
3	00	High-set disabled.
	01	High-set enabled.

Table 3: Soft switch setting

6. TECHNICAL DATA

Ratings
Rated current I_n .....5 A
Frequency .....50 Hz or 60 Hz
Burden .....< 0.3 VA at I_n

Auxiliary Supply
MK234A-240A(6).....198~265 VAC
MK234A-110A(6).....94~127 VAC
Supply frequency .....50 Hz or 60 Hz
VA rating .....3 VA typical

Setting Ranges
Low-set setting I>.....0.5 - 6.00 A (10%-120%)
Low-set definite time t> .....0.05- 99 sec
High-set setting I>> .....0.50 - 99.9 A (10%-1998%)
High-set definite time t>>.....0.05 - 2.5sec

Outputs
Trip Contact:
Rated voltage .....250 VAC
Continuous carry .....5A (cos φ = 1.0)
Make and carry for 0.2 s 30A

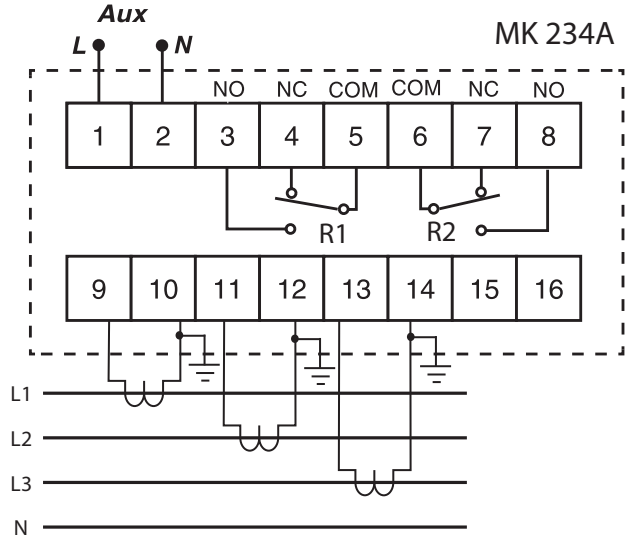
Contact specification
Expected electrical life .....10^5 operations
Expected mechanical life .....5 x10^6 operations

Indicators
Auxiliary supply .....Green LED indicator
Pick up .....Red LED indicator
Trip .....7 segment LED and red LED indicators

Mechanical
Mounting .....Panel mounting
Front panel .....Standard DIN 96x96 mm
Approximate weight .....0.7 kg

7. CONNECTION DIAGRAMS

Overcurrent Relay



8. CASE DIMENSION

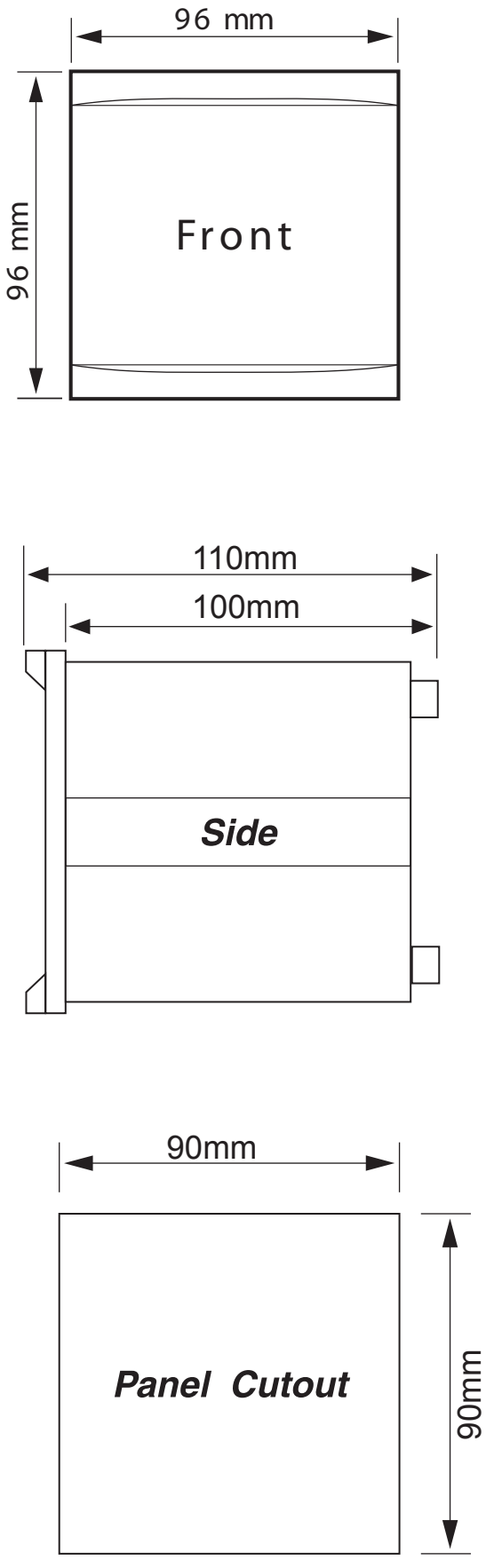


Figure 2: Case Dimension