96 mm

96 mm

Front

110mm

100mm
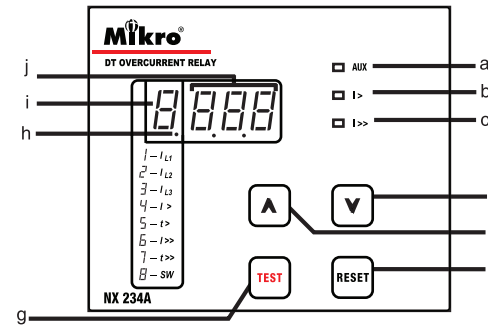
Side

90mm

90mm

Panel Cutout

Figure 2: Case Dimensions

NX234A Overcurrent Relay User's Guide

Rev M0 (04/19)

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 LED indicator
j - DATA LED indicator

Symbols
I_{L1} - L1 current
I_{L2} - L2 current
I_{L3} - L3 current
I> - Low-set
t> - Low-set time delay
I>> - High-set
t>> - High-set time delay
SW - Soft switches

1. DESCRIPTION

The NX234A 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 high-set element can be disabled by the user. The 4-digit panel display on the NX234A allows the display of the 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	1	B	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
t	blink	Last trip elapsed time
1	blink	Previous L1 tripped current
2	blink	Previous L2 tripped current
3	blink	Previous L3 tripped current
4	off	Low-set current setting
5	off	Low-set time multiplier/ delay setting
6	off	High-set current setting
7	off	High-set time delay setting
8	off	Soft switch setting

Table 2: FUNCTION Code

Auto Scroll

Under normal operating condition, the 4-digit LED will auto scroll through function 1 to 3 to show current readings. To toggle auto scroll mode, press "UP"+"DOWN" simultaneously for 2 seconds.

Display off Mode

To toggle display off mode, press "RESET" for 10 seconds. When display off mode enabled, the display will switch off after 6 minutes if no key is pressed.

3. PUSH-BUTTONS OPERATION

a) Trip test

Press and hold the "TEST" key for 3.5 seconds to stimulate a trip.
Display blinks "T.E.S.T.", indicators I> and I>> after test tripped.

b) Trip reset

Press the "RESET" key to reset the relay when tripped

c) View setting

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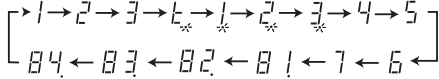

Figure 1: Scroll sequence

d) Last Trip Elapsed Time

The function LED shows "t." and time elapsed after last trip in day ("d"), hour ("h") and minute ("n"). If more than 99 days, the display shows "99d" and "oUr"

e) Trip Current Record

By default the most recent ("1") trip current is shown. Press "UP" or "DOWN" key to show the previous ("2") and oldest ("3") trip current.

f) 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 Data digit blinks to indicate the relay is in programming mode.

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 NX234A has two sets of output contact:

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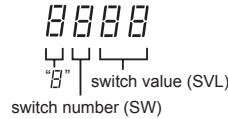(i) CONTACT R2 - linked to trip or start signal.

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 NX234A incorporates 4 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 start signal auto reset type.
	11	Contact R2 linked to start signal manual reset type.
3	00	High-set disabled.
	01	High-set enabled.
4	50	Network frequecy 50 Hz
	60	Network frequecy 60 Hz

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
Thermal withstand....................4 x I_n continuous

Auxiliary Supply

NX234A-240A.........................198~265 VAC
NX234A-110A.........................94~127 VAC
Supply frequency ....50 Hz or 60 Hz
VA rating ....3 VA typical

Setting Ranges

Low-set setting I>....................0.10 - 10.00 A (2% - 200%)
Low-set definite time t> ....0.00 - 100 s
High-set setting I>> ....0.50 - 100 A (10% - 2000%)
High-set definite time t>>.........0.00 - 100 s
(0.00 - 1.00, step 0.01; 1.00-10.0, step 0.10; 10.0-100, step 0.5)

Accuracy

Protection thresholds ....± 5%
Time delay................................± 5% with a
                                        mimimum of 50ms

Outputs

Rated voltage ....250 VAC
Continuous carry ....5A (cosφ = 1.0)
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

Environmental conditions

Temperature .... -10ºC to 55ºC
Humidity .... 5% to 95% non-condensing

Mechanical

Mounting.............................. Panel mounting
Dimension (mm) .... 96(w) x 96(h) x 110(d)
Enclosure protection............ IP54 at the panel
Approximate weight............. 0.8 kg

7. CONNECTION DIAGRAMS

Overcurrent Relay