

8.CASE DIMENSIONS

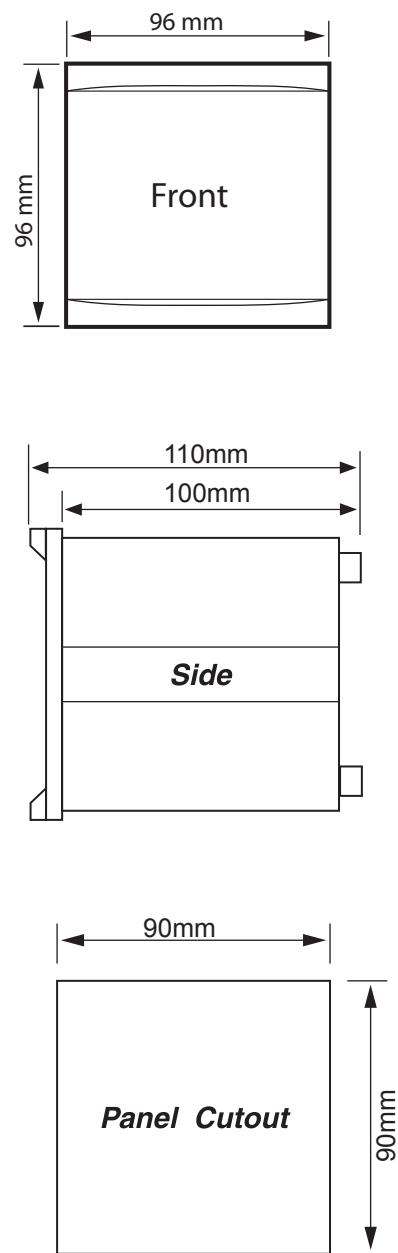
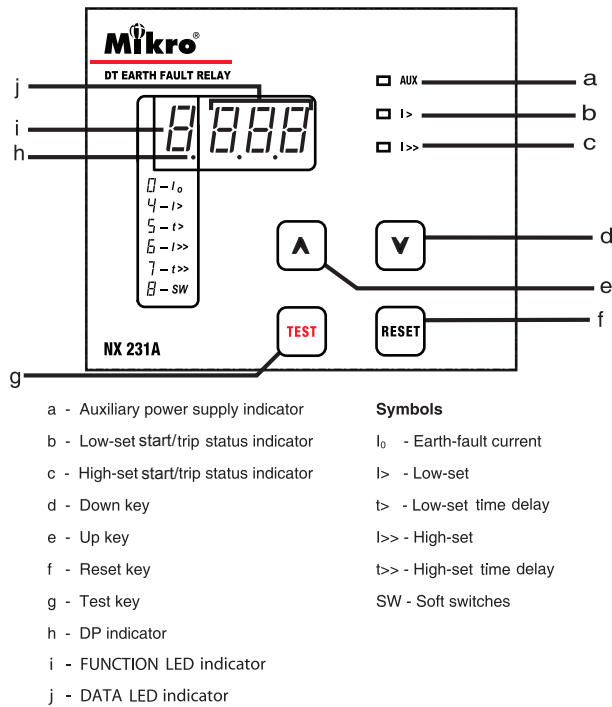


Figure 2: Case Dimensions

NX231A Earth-fault Relay User's Guide

Rev M0 (04/19)

A BRIEF OVERVIEW



1. DESCRIPTION

The NX321A is a microprocessor based numerical earth-fault relay. It uses fundamental frequency current measurement for excellent harmonic current rejection. The relay provides two-element (low-set and high-set) earth-fault protection with definite time characteristic. The 4-digit LED indicator on the NX231A allows the display of present load current; recorded fault current for last tripping; and all setting 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, DT digit shows tripped value.
1	0	B	B	B	High-set tripped, DT digit shows 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
0	off	Earth-fault current
t	blink	Last trip elapsed time
0	blink	Previous tripped current
4	off	Low-set current setting
5	off	Low-set time delay setting
6	off	High-set current setting
7	off	High-set time delay setting
8	off	Soft switch setting

Table 2: FUNCTION Codes

### 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.

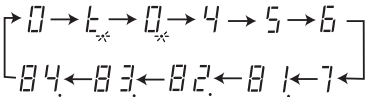


Figure 1: Scroll sequence

### 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 function digit will blink to indicate 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 NX231A has two sets of output contact:

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

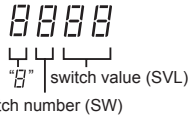
The output contact can be programmed to be either auto reset type or manual reset type.

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

For manual reset type, the contact remain activated.

## 5. SOFT SWITCHES

The NX231A 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 frequency 50 Hz
	60	Network frequency 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

NX231A-240A.....198 ~ 265 VAC  
NX231A-110A.....94 ~ 127 VAC  
Supply frequency .....50 Hz or 60 Hz  
VA rating .....3 VA typical

### Setting Ranges

Low-set setting I>.....0.10 - 5.00 A (2%-100%)  
Low-set definite time t > .....0.00 - 100 s  
High-set setting I>> .....0.10 - 50.0 A (2%-1000%)  
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  
minimum of 50ms

### Outputs

Rated voltage .....250 VAC  
Continuous carry .....5A (cosφ = 1.0)  
Expected electrical life .....10<sup>5</sup> operations  
Expected mechanical life .....5 x 10<sup>6</sup> operations

### Indicators

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

### Environmental conditions

Temperature ..... -10°C to 55°C  
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..... 0.7 kg

## 7. CONNECTION DIAGRAMS

Earth Fault Relay

