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
NX233A-240A..........................198~265 VAC
NX233A-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%)
Time multiplier kt> ....0.01 - 1.00
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 (cos φ = 1.0)
Expected electrical life ....10^5 operations
Expected mechanical life ....5×10^6 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

a) Overcurrent Relay
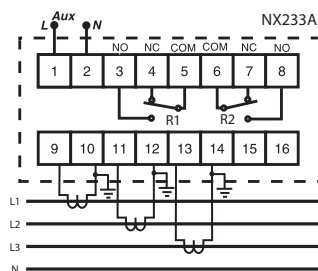
b) Overcurrent Relay and Earth fault relay (3 phase 4 wire system)
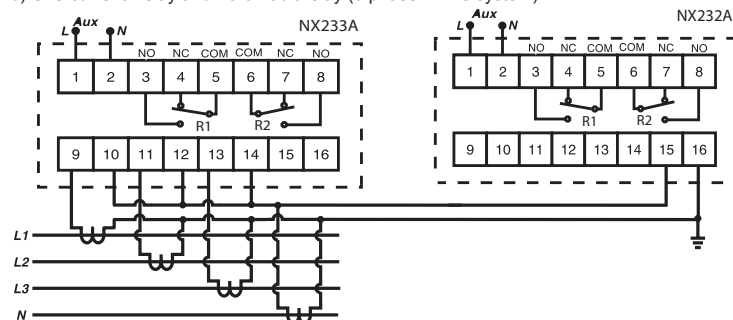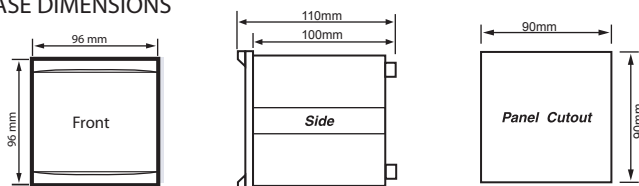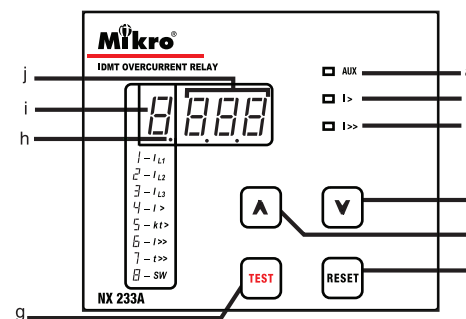

8. CASE DIMENSIONS

Figure 7: Case Dimensions

NX233A Overcurrent Relay User's Guide

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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
kt> - Low-set time multiplier / time delay
I>> - High-set
t>> - High-set time delay
SW - Soft switches

1. DESCRIPTION

The NX233A is a microprocessor based numerical overcurrent relay. It uses fundamental frequency current measurement for excellent harmonic current rejection. The relay consists of independent low-set and high-set elements. The high-set element can be disabled by the user. The time current characteristics of the low-set elements are definite time or five selectable IDMT curves. The high-set element is a definite time or instantaneous relay. The 4-digit panel display on the NX233A 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

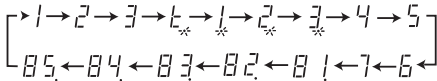When the relay is not under tripped condition, pressing the "RESET" key will scroll through the various functions.

Figure 1: Scroll sequence

d) Last Trip Elapased 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 NX232A has two sets of output contact:

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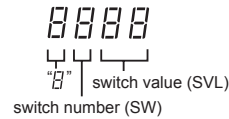(i) CONTACT R2 - linked to trip or start signal.

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 NX233A incorporates 5 soft switches for system configuration. When the function digit shows "8", the relay is in soft switch setting mode.

"8" switch value (SVL)

switch number (SW)

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	Low-set normal inverse curve 3/10.
	01	Low-set normal inverse curve 1.3/10.
	02	Low-set long time inverse curve.
	03	Low-set very inverse curve.
	04	Low-set extremely inverse curve.
	05	Low-set definite time.
4	00	High-set disabled.
	01	High-set enabled.
5	50	Network frequecy 50 Hz
	60	Network frequecy 60 Hz

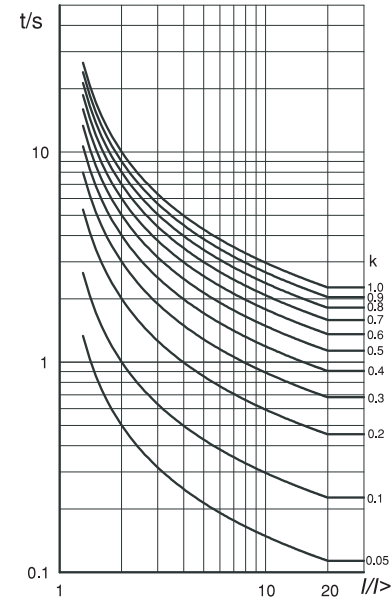Table 3: Soft switch setting

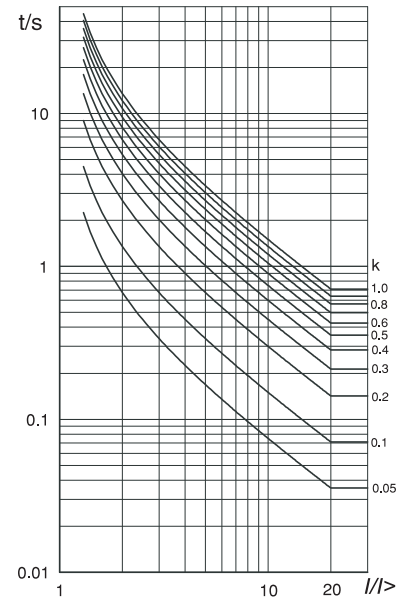Figure 2: IDMT Normal Inverse Curve 3/10
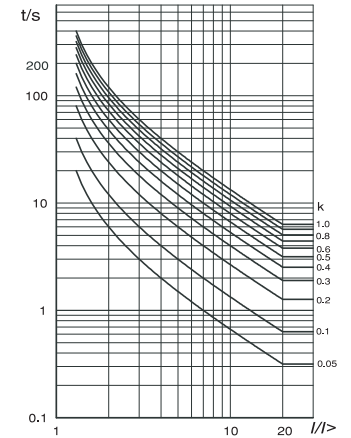

Figure 3: IDMT Very Inverse Curve

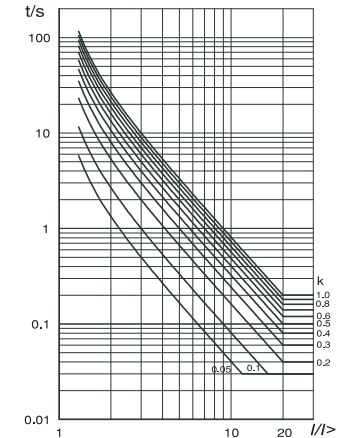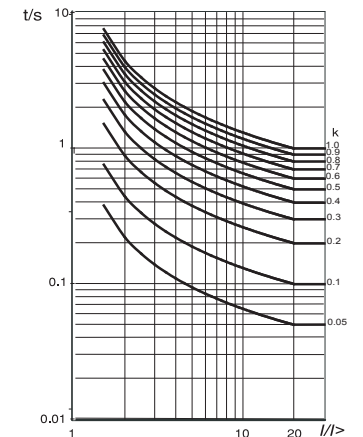Figure 4: IDMT Long time Inverse Curve

Figure 6: IDMT Extremely Inverse Curve

Figure 5: IDMT Normal Inverse Curve 1.3/10