

9. RECORDS

- a. Record the 3 latest tripped faults current or "tSt" for manual trip test.
- b. The records are stored in non-volatile memory.
- c. To clear the entire record database:
 - Step 1: When the relay is healthy, press [RESET] button to step to most recent trip fault record or [FUNC] digit shown "A".
 - Step 2: Press [▲] and [▼] buttons simultaneously and hold for 3.5s or the [DATA] show "0". It will clear the entire fault records database.

10. TECHNICAL DATA

AUXILIARY SUPPLY

DIN330-230A(6).....184~276 VAC
Rated frequency.....50Hz or 60Hz
VA Rating.....3 VA typical

SETTING RANGES

Sensitivity adjustment.....30mA, 50mA,
0.10~1.00A (step=50mA),
1.00~10.0A (step=1.00A)
Delay time adjustment.....Instantaneous,
0.1~3.0s (step=0.1s)
Number of shots.....0~30 (step=1)
0=Disable reclose function
Dead time.....1~500sec (step=1sec)
Persistent fault time.....0~500sec (step=1sec)
0=Disable
Reclaim time.....0~500min (step=1min)
0=Disable
Lockout self reset time.....0~200hrs (step=1hour)
0=Disable
Programmable contact.....0~6 (step=1)

INDICATORS

Pre-fault alarm.....Red indicator
Leakage trip delay time.....Red indicator
Leakage trip.....7-segment display and red indicators
Manual test trip.....7-segment display and red indicators
ZCT connection fault.....7-segment display and red indicators
Trip records.....7-segment display
Real-time leakage current.....7-segment display

RECORDS

Fault record.....3 latest trip fault current or "tSt"
for manual trip test
Storage.....Non-volatile memory

DIGITAL INPUT PORT

Remote reset.....N.O. Dry contact

OUTPUT CONTACTS

Contact rating.....5A (NO) / 3A (NC) / AC1
Contact arrangement.....Change over
Expected electrical life.....10,000 at rated current
Expected mechanical life...5,000,000 operations

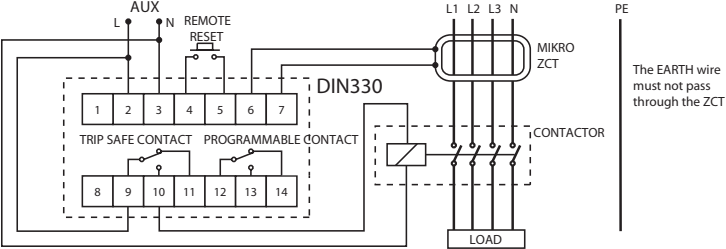
ZERO-PHASE CURRENT TRANSFORMERS

To operate with Mikro's ZCT series of current transformers

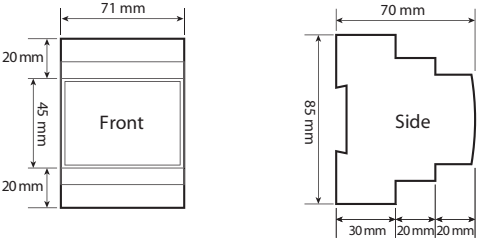
MECHANICAL

Mounting.....Standard 35mm DIN rail
mounting
Approximate weight.....0.38kg (excluding ZCT)

11. CONNECTION DIAGRAM

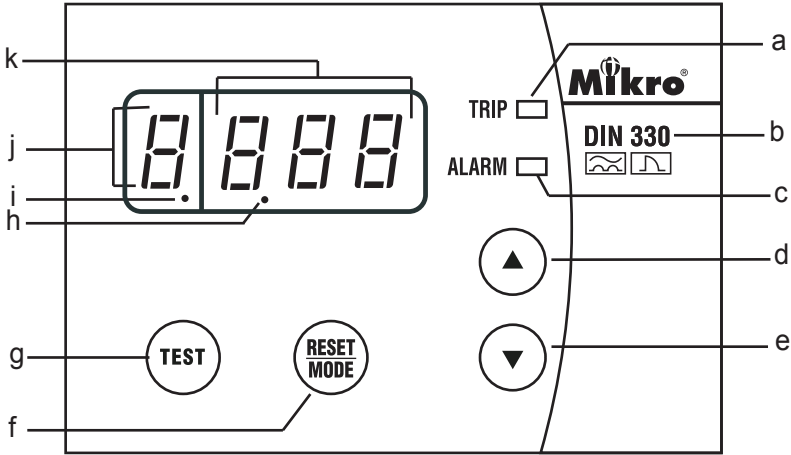


12. CASE DIMENSION



DIN330 Self-Reclosing Earth Leakage Relay User's Manual

A BRIEF OVERVIEW



- a - Trip status indicator
- b - Model
- c - Alarm status indicator
- d - Increment button
- e - Decrement button
- f - Reset button
- g - Integral test button
- h - DP2 indicator
- i - DP1 indicator
- j - FUNC display
- k - DATA display

1. DESCRIPTION

The DIN330 is microprocessors based earth leakage relay with built in self-reclosing function.

The earth leakage protection module is designed for measure the low-level current flowing from the live part of the installation to the earth in the absent of the insulation fault. A zero phase current transformer is connected to the relay and function as the sensor for sensing the leakage current. All conductors of the circuit to be protected shall go through the ZCT.

While the self reclosing module provide multiple numbers of shots operation. It also incorporates intelligent to differentiate the transient fault or persistent fault.

2. LIGHT INDICATORS

[Trip] LED	[Alarm] LED	[FUNC] display	[DP1] indicator	[DATA] display	Status
0	0	0	0	0	No auxiliary supply
0	0	X	X	1	Normal condition, no tripping
0	B	X	X	X	Leakage current > 50% of the I _{Δn}
0	FB	X	X	X	Leakage current > 85% of the I _{Δn} . Trip delay time running.
1	1	0	0	B	Relay tripped
0	0	1	0	1	Scroll through setting
0	0	1	1	1	Scroll through records
0	0	B	0	1	[DATA] programming mode
1	1	X	X	"Ci"	ZCT connection fault
X	X	X	X	"tSt"	Manual trip test
X	X	X	X	"Loc"	Transient fault lockout by recloser
X	X	X	X	"PLo"	Persistent fault lockout by recloser

Table 1: Relay status displayed

1 = ON

B = Normal blink

0 = OFF

FB = Fast blink

X = Don't care

3. PUSH BUTTONS OPERATION

a. Integral Trip Test:

- Press the [TEST] button and hold for 3.5s to perform an integral test on the relay ranging from the analog sensing circuitry to output contacts of the relay as well as the relay indicators and display.
- During the testing process, the first 2s is to simulate the pre-fault alarm condition then follow by 1.5s testing on the trip time delay. End of time delay, relay trip.

b. Trip Reset; Lockout Reset and ZCT Connection Fault Reset:

- Press the [RESET] button once or through digital input port.
- ZCT connection fault reset is inhibited if the fault is not rectify

c. Parameters Viewing:

- When the relay is operate normal and no tripping, press [RESET] button to step through the various parameters.
- When step through the parameters, press [RESET] button and hold for 1.5 second to jump direct to the default [FUNC].

[FUNC]	[DP1]	[DP2]	Symbols	Description
Blank	Off	Note 1		Real-time leakage current display (Default)
1	Off	On	I _{Δn}	Sensitivity setting (A)
2	Off	On	Δt	Trip time delay setting (second)
3	Off	Off	SHOTS	Number of shots / reclose operations
4	Off	Off	tDEAD	Dead time (sec)
5	Off	Off	tPF	Persistent fault monitoring time (sec)
6	Off	Off	tREC	Reclaim time (min)
7	Off	Off	tLAR	Lockout automatic reset time (hours)
8	Off	Off	RLY2	Programmable contact
A	On	Note 1	Flt 1	Fault record #1 (Most recent)
b	On	Note 1	Flt 2	Fault record #2
c	On	Note 1	Flt 3	Fault record #3 (Oldest)

Table 2: List of [FUNC] code displayed

Note 1: If DP2 is OFF. The unit for the [DATA] displayed is in mA.

If DP2 is ON. The unit for the [DATA] displayed is in ampere (A).

d. Parameters Setting

- Step 1: Press [RESET] button to step to desired parameter.

- Step 2: Press [▲] and [▼] buttons simultaneously and hold for 1.5s to enter programming mode. The [FUNC] digit blink to indicate the relay has enter into the programming mode.
- Step 3: Press [▲] or [▼] button to increase or decrease the parameter value.
- Step 4: To save the selected value, press [▲] and [▼] buttons simultaneously and hold for 1.5s. It will exit the programming mode with [DATA] displaying the new setting.
- To exit programming mode without saving the selected setting, press the [RESET] button once.

4. DIGITAL INPUT PORT

- The digital port is for remotely reset the relay when tripped, lockout or ZCT connection fault.
- To reset the relay, make a connection between terminals 5 and 6 of the relay.

5. OUTPUT CONTACTS

a. Trip Safe Contact:

- Activated and latch when the relay is in normal power-up condition with the measured leakage current less than 0.85 I_{Δn}. De-activated during leakage trip, manual test trip or ZCT connection fault.

b. Programmable Contact:

[DATA]	Pre-fault Alarm	Leakage Trip	Manual Test Trip	Re-close Lockout	ZCT Connection Fault
0	X	X	X	X	X
1	√	√	√	√	√
2	X	X	X	X	√
3	X	√	√	√	X
4	X	X	X	√	X
5	√	√	√	√	X
6	X	X	X	√	√

Table 3: Programmable contact selection table

X = Disable

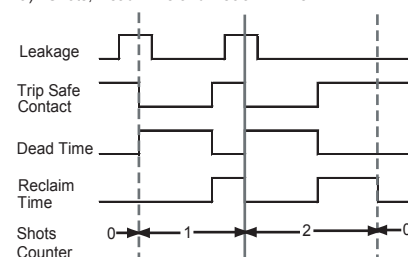
√ = Enable

6. SELF-RECLOSE

Terms	Description
Shots	Number of self-reclosing operation before lockout.
Dead time	Time when the trip safe contact de-activated due to leakage fault or manual test trip to the time when the trip safe contact is activated by the recloser.
Persistent fault monitoring time	Fault detected immediately after the trip safe contact is activated by the recloser is called persistent fault. The time frame for monitor the persistent fault is called persistent fault time.
Reclaim time	Time required by the recloser to reset back to initial state since the last reclose operation
Lockout automatic reset time	Time required for unlock and reset the recloser during lockout state. The unlock operation is carry out when no operators have attended the relay during lockout state.
Transient fault lockout	When the numbers of self-reclosing operation match the numbers of shots setting, further fault trip will perform the lockout. Except that when the I _{Δn} is set to 30mA, any fault trip will bypass the self-reclosing operation and perform the lockout
Persistent fault lockout	Relay lockout when the tripping is initiated by the persistent fault

Table 4: Self reclose function explanation

a) Shots, Dead Time and Reclaim Time



b) Persistent Fault Monitoring Time

