



## nlm5 Neutral Earth Relay

### PRODUCT OVERVIEW

The NLM5 Neutral Link Monitor provides next-generation Neutral-to-Earth protection for mining and industrial applications. Designed and engineered in Australia, the NLM5 complies with the latest statutory and industry standards and delivers continuous monitoring of Neutral Earthing Resistor (NER) integrity, phase-voltage rise, and neutral earth-leakage current.

The NLM5 is compliant to AS2081:2011.

### APPLICATION

Leaders in Innovative Protection Systems, the Bramco m-tronix NLM5 is compliant with the latest statutory and industry standards.

The m-tronix Neutral Link Monitor Relay (NLM5) is a NER integrity protection device designed to continuously monitor the current-limitation system on the secondary star-point-to-earth connection of a supply transformer.

The NLM5 can also be used to monitor a direct connection from the star point to earth. It provides continuous monitoring of:

- NER resistance integrity
- Excess phase-voltage rise
- Neutral earth-leakage current
- Protection-coordination trip timing

### FEATURES

#### General Features

- Connects directly to AC supply systems up to **1100 V** (no barrier required)
- Usable on systems up to **4160 V** with barrier assembly
- Earth-leakage current monitored via external EL toroid (**toroid not included**)

- LED indication of: **Power On, NER Integrity, Excess Voltage, Earth Leakage**
- Configured as **fail-safe** and **latch-on-fault**
- Backup protection by detecting voltage rise across the NER

#### Adjustable Trip Delay Times:

- Earth leakage
- NER integrity
- Over-voltage

#### Adjustable Protection Settings:

- Adjustable earth-leakage trip level
- Adjustable excess-voltage trip
- Adjustable NER resistance limits
- Earth-leakage frequency response selectable: **50–60 Hz** or **5–100 Hz**

#### Additional Functional Features:

- Open-circuit toroid protection
- Reset push-button input
- Time-stamped event/trip log
- Password-protected parameter settings
- **Touch-screen display**
- Direct connection to AC supply systems up to **1100 V** (no barrier required)
- Operation up to **4160 V** with barrier assembly
- Neutral-earth leakage measured via external EL toroid (not included)
- LED indication: **Power, NER integrity, Excess Voltage, Earth Leakage**
- Configured as **fail-safe** and **latch on fault**
- Back-up protection via detection of voltage rise across NER

#### Adjustable Trip Parameters:

- Earth leakage
- NER integrity
- Over-voltage
- Adjustable EL trip current
- Adjustable excess-voltage trip
- Adjustable NER resistance limits
- EL frequency response range selectable: **50–60 Hz** or **5–100 Hz**

#### ORDERING INFORMATION

| Part Number | Description  |
|-------------|--|
| A01605      | NLM5 – Neutral Link Monitor                                |
| A01334      | Toroid (1000T) – 40 mm (see factory for alternative sizes) |

## SPECIFICATIONS

### Supply

| Model  | Min | Typ | Max | Unit    |
|--------|-----|-----|-----|---------|
| A01605 | 20  | 24  | 50  | V AC/DC |

**Power:** 4 VA ±20%

**Operating Temperature:** 0–60°C

### Communications

- RS-485 serial port, Modbus ASCII / RTU  
(Hardware present — RS-485 NOT implemented in firmware)

### Instrumentation Output

- 4–20 mA or 2–10 V

### NER Resistance Values

- NER 10 to 650 Ω depending on system voltage and required limiting current
- Consult m-tronix for system-specific values

### Earth Leakage (EL) System Voltages

- 415 / 1100 V
- 240 / 635 V phase

### NER Trip Value Adjustment

- 50% to +100% (compliant with AS/NZS 2081:2011)

### Trip Tolerance

- +10% / 0%

### Earth Leakage Current Range

- 30–500 mA

### Trip Delay Timer

- **50–500 ms** for:
  - Over-voltage
  - Earth leakage
- **2–10 s** for NER integrity

### Excess Voltage Trip

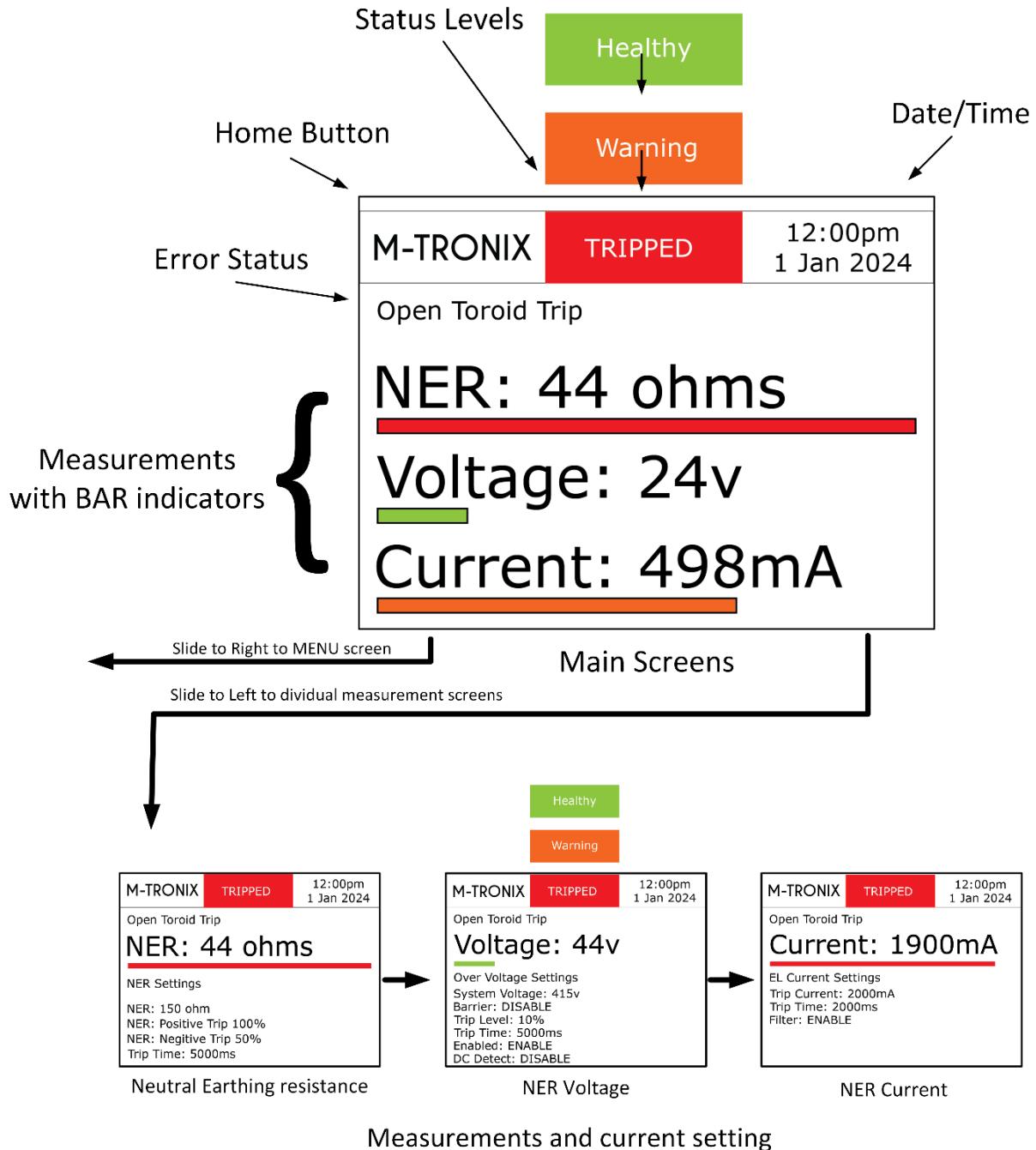
- 5–50% of phase voltage

## Relay Contacts

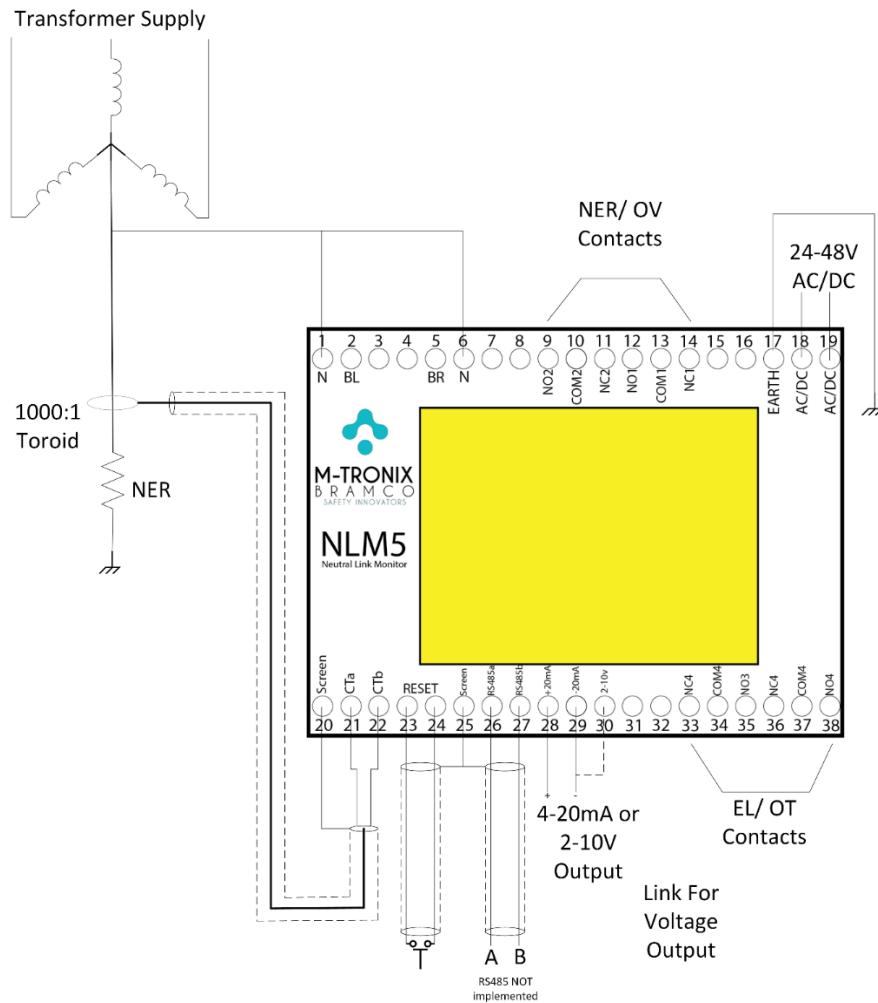
- 2-pole changeover, 5 A @ 250 V AC (100 VA max) — earth leakage
- 2-pole changeover, 5 A @ 250 V AC (100 VA max) — over-voltage & NER integrity

# NLM5 screen layout

2.8" Touch Colour Display Panel



## Typical Wiring Diagram



## ENCLOSURE DIMENSIONS

### Enclosure

Dimensions: 75mmW x 100mmH x 109.5mmD

Material:

- High impact resistant polycarbonate construction
- IP20 Rating

Mounting: DIN rail

Terminals: Cage screw terminals

Weight: 333gms

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