



**NEPEAN**  
Power

# Holistic Neutral Earth Protection System



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NEPEAN Power is a proven leader in the supply and manufacture of quality engineered solutions, products and technologies. Established in 1994, through the commitment of our dedicated team we have become a supplier of choice.

### Features:

The Holistic Neutral Earth Protection system (HNER) has been designed to ensure safety and compliance. This relay system continuously monitors the resistive value of the earth fault limiting Resistor (NER), and the neutral current value. As the relay is fully programmable via the door mounted HMI each relay can monitor a Neutral resistor value of up to 650 ohms making this single relay usable at all system voltages up to 4000V AC Phase to Phase. Higher voltages are possible using an alternate barrier.

The system continuously monitors the Neutral resistor value and the Earth leakage current to ensure maximum reliability of equipment and safety of your personnel.

Each relay has dual power supply functionality allowing them to be supplied from either 110-240V AC/DC or 24-48V AC/DC at 50/60Hz. Thus, reducing site spares.

The NER integrity is confirmed via two (2) independent trip contacts (9-14) these change over contacts will activate if there is a change in the resistive value of the NER or an increase in the Neutral voltage. The earth leakage current in the neutral is continuously monitored via an independent toroid, in the event excessive leakage current is detected 2 additional change over relays (41-46) will operate.

Remote diagnostics and monitoring are provided via the Modbus and analog connections. The Modbus offers real time protection settings, measured values and relay status while the 4-20mA or 2-10V analog allows measured earth leakage levels. The serial communications has two selectable protocols available - Modbus ASCII and Modbus RTU.

The NER barrier provides isolation from potentially high Neutral voltages that are experienced during an Earth Fault. The Barrier should be mounted adjacent to the NER being monitored, leaving the HNER relay with a maximum of control voltage.

The system can be configured to be either failsafe/non-failsafe as well as either latching/non-latching depending on the application. (Changes may affect compliance with AS2081)

- The following functions are available:**
- NER Integrity - adjustable resistance range
  - Earth Leakage - with harmonic selection (5-100Hz)
  - Overvoltage - adjustable up to 4000V

- Adjustable trip times**
- 50 to 500ms for Earth Leakage and Overvoltage,
  - 2 to 10 Sec for NER Integrity

The HNER relay, Display and Barrier are housed in high impact PVC housings.

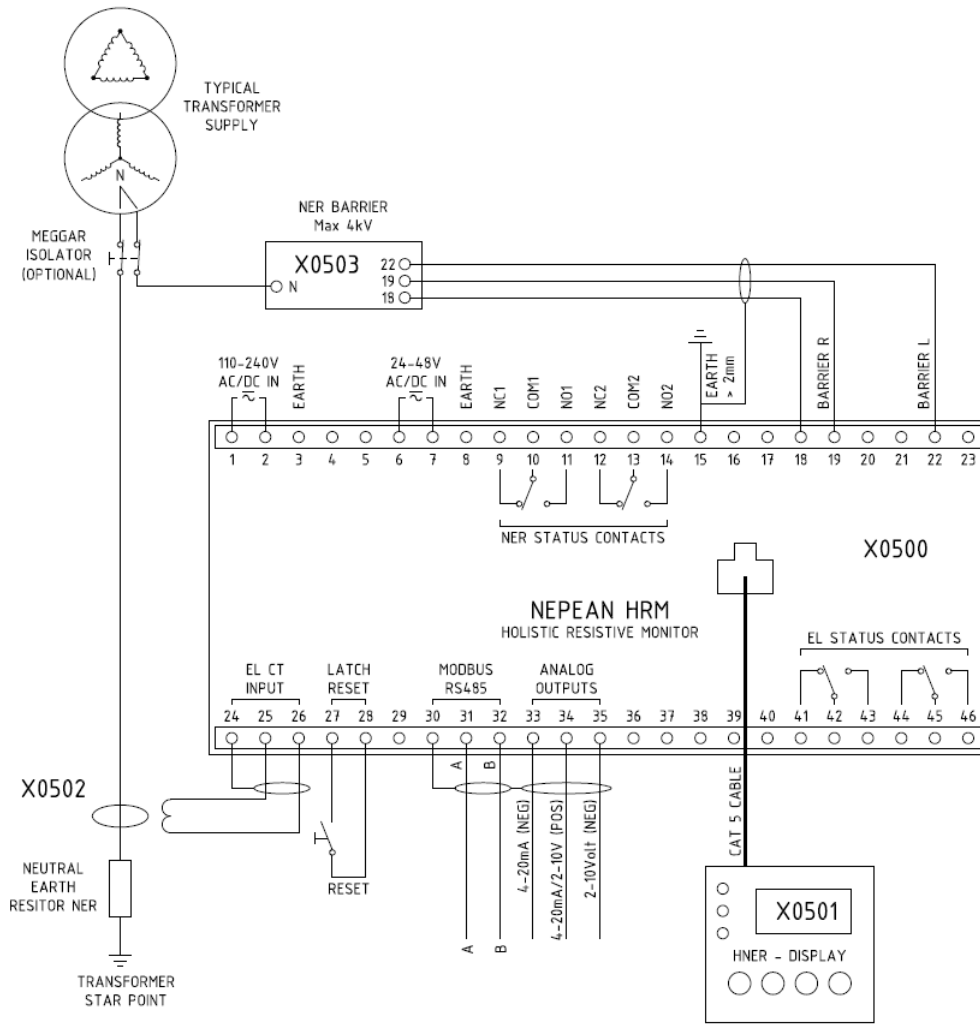
The relay and barrier are DIN rail mounted while the display enclosure is panel mounted for easy access and operation.

### Advantages:

- Proven Design
- Locally Stocked
- AS2081/AS4871 Compliant
- Multi NER Resistance - Less spares
- Multi Aux Voltage - Less spares
- Price Competitive
- Suitable for VVVF Applications

# Holistic Neutral Earth Protection System

## Connection Diagram



## Specifications

|                                  |  |
|----------------------------------|--|
| <b>Power Input</b>               | 110-240VAC or DC<br>24-48VAC or DC                       |
| <b>Voltage Tolerance</b>         | -25% to +20%   |
| <b>NER Resistance Values</b>     | NER 10 to 600 ohms                                       |
| <b>NER Trip Value Adjustment</b> | -50% to +100%<br>(as per AS/NZS 2081:2011)               |
| <b>Dimensions (H x W x D):</b>   |  |
| <b>HNER</b>                      | 96 x 178 x 110   |
| <b>Display</b>                   | 97 x 97 x 55   |
| <b>Barrier</b>                   | 97 x 37 x 110  |
| <b>Trip Tolerance</b>            | -10% to +10%   |
| <b>Trip Delay Timer</b>          | 50 to 500ms EL & OV<br>2 to 10 seconds for NER integrity |
| <b>Excess Voltage Trip</b>       | 5 - 50% Phase Voltage                                    |
| <b>Climate</b>                   | 0 - 60° C  |

## Compliance

AS/NZS 2081:2011

- Electrical Equipment for Mines
- Electrical Protection Devices

## Ordering Information

| Part Number | Description                  |
|-------------|------------------------------|
| X0500       | Holistic Neutral Earth Relay |
| X0501       | HNER Display Unit            |
| X0502       | HNER Toroid                  |
| X0503       | HNER Barrier                 |