

ELD V2 EARTH LEAKAGE RELAY

Designed and tested to AS/NZS 2081:2011, Section 6

APPLICATIONS

The Ampcontrol ELD Earth Leakage Relay has been designed and approved for use on earth fault-limited systems, namely coal mining applications. The relay is also suitable for other industry where equipment or system earth leakage protection is required. To ensure maximum protection, the earth leakage system should be used in conjunction with other AS/NZS2081 protection systems.



FEATURES

- Adjustable trip level and time delay settings.
- Fail safe operation
- Bar graph to monitor leakage; 4-20mA output for remote indication.
- Maximum leakage since last power up/reset stored in memory
- Continual monitoring of the toroid
- AC or DC supply operation.
- Functions normally for two (2) seconds during extreme power dip or power loss
- Designed and tested to AS/NZS 2081:2011

PRODUCT DESCRIPTION

The ELD V2 is electronic in design, based on microprocessor technology. The relay uses a toroid to measure earth fault current. A definite time operating characteristic is provided with adjustable trip sensitivity and time delay.

The relay is housed in a stainless steel case and can be either 'DIN Rail', or 'Panel' mounted. When panel mounted, the front of the relay is designed for IP56 ingress protection. Prevention of unauthorised adjustment of the trip settings is provided.

A 'Healthy' LED indicates correct operation of the microprocessor. The 'Relay' LED indicates the relay is energised. When the trip level and time delay are exceeded the trip function is activated, operating the trip contacts, and illuminating the 'Trip' LED. The trip condition is latched, requiring operation of the reset input.

A ten-segment LED bar graph indicates the % of leakage level being detected. This reading can also be remotely monitored/displayed using the 4-20mA output of the relay. When the relay measures currents with frequencies much greater than 50Hz the bar graph LED fast flashes (5Hz) instead of being steady. Should the high frequency persist the relay will trip, illuminating the 'Har.Trip' (Harmonic Trip) LED.

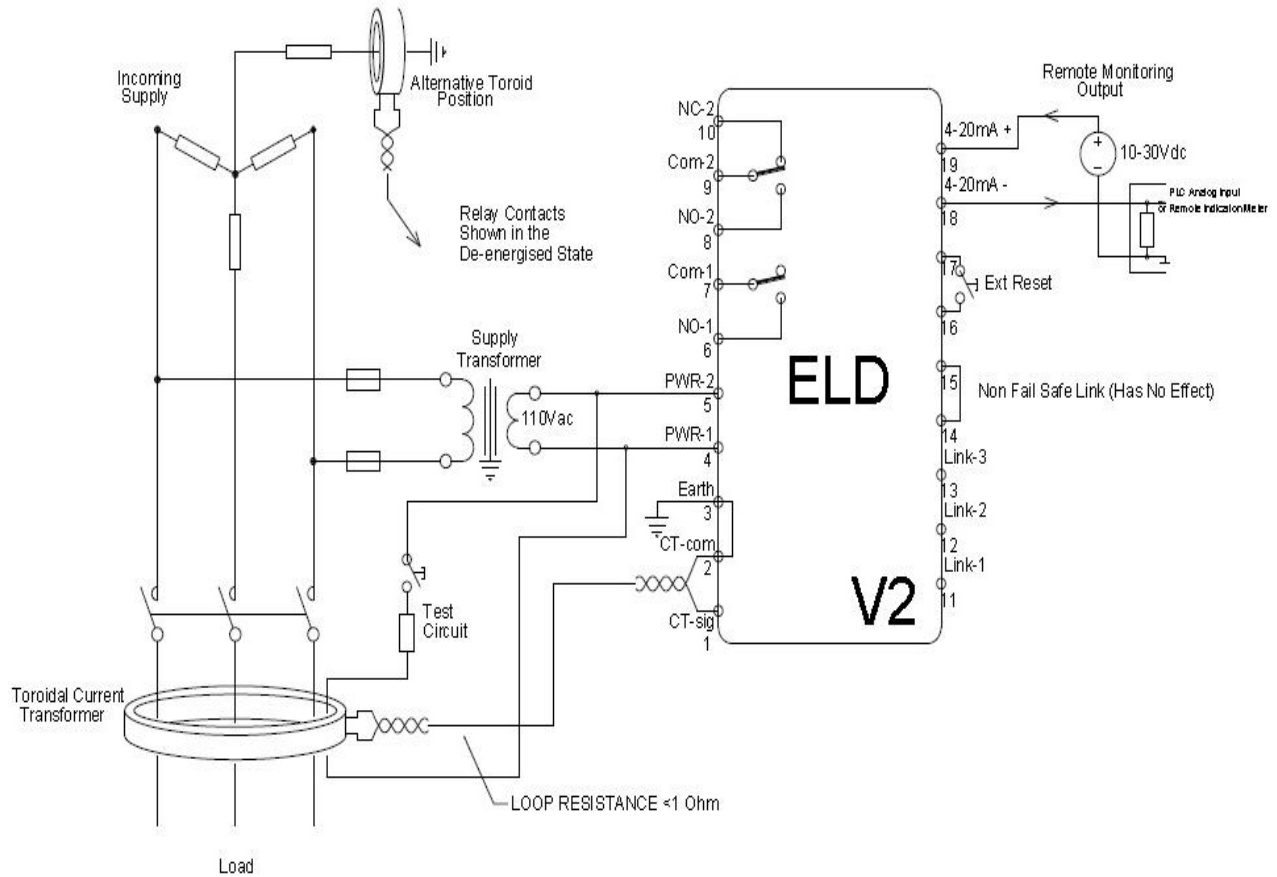
RELAY OPERATION

- **Relay Reset** - The relay can be reset via a button on the fascia of the relay, or using an external N/O contact (it is recommended that a twisted pair cable be used between the N/O contact and the reset input). This button is also used to view the maximum leakage level since the previous trip.
- **Toroids** - The ELD is designed for use with Ampcontrol EL500S series toroids. The relay continually monitors the toroid and if connection is lost the relay will trip illuminating the 'CT Fault' LED. A test current can also be injected through the window of the toroid to test relay operation.
- **Mode of Operation** - The relay can only be operated in the fail-safe mode of operation, where the relay drops out on fault or loss of power. Power to the relay is from the line side of the isolating device or from an independent supply. There are two methods of protection which can be used:
 - **Core Balance:** The three phases are passed symmetrically through the toroid. If there is no earth fault, the vector sum of the currents in a three-phase supply is zero. If current from any phase flows to earth the system becomes unbalanced, producing an output to trip the relay.
 - **Series Neutral:** The neutral connection of the supply transformer passes through the toroid. An earth fault on any of the phase conductors causes an earth current which trips the relay.



The relay is not suitable for personal protection, i.e. users of portable drills, grinders etc, which require trip levels of 20-30mA, with instantaneous operation. (Refer AS/NZS 3190).

ELECTRICAL CONNECTION



SPECIFICATIONS

Power Supply

Voltage 32-110VAC +/- 20%, 50Hz
20-185VDC

Power Consumption <3W

Outputs

Relay Contacts 1 x NO / 1 x CO

Limits 1.6A, 400VA

Relay to Toroid <math>< 1 \Omega</math>

4-20mA Output The 'Loop Powered' current output represents the leakage current as a percentage of the trip level.
4mA => 0% leakage, 20mA => 120% leakage (100% = 17.33mA)

Max. Loop Resistance $[V_s - 10] \times 50$, where V_s must be greater than 10VDC and less than 30VDC

Accuracy +/- 2% of full scale

Mechanical

Dimensions (HxWxD) 77x47x116mm

Ingress Protection IP56 (when Panel mounted)

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APPROVED

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Author / SME
Prepared by:

Tech.Documentation
Officer

Approved by
Process Owner:

Product Manager

Refer to Amcontrol Intranet for latest version

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The above table relates to the latest version of the ELDV2 relay, designed and tested to AS/NZS 2081:2011, Section 6. While the relay itself has not changed, the relay output limits are different to previous versions of the relay to ensure compliance with the 2011 version of the standard.

Trip and Time Delay Settings		
<i>Switch Position</i>	<i>Trip Level mA</i>	<i>Time Delay mS</i>
0	100	<50
1	150	100
2	200	150
3	250	200
4	300	250
5	350	300
6	400	350
7	450	400
8	500	450
9	750	500
A	1000	500
B	1250	500
C	1500	500
D	1750	500
E	2000	500
F	2500	500



The above table relates to Version 2 of the ELD relay, designed and tested to AS/NZS 2081:2011, Section 6. Positions 9 to F differ to previous relay versions to ensure compliance with the 2011 version of the standard. Verify you have the correct relay by checking that 'V2' is printed on the fascia before selecting positions 9-F from this table.

ORDERING INFORMATION

Part Number	Description
115161	ELD V2 Earth Leakage Relay
101399	ELD DIN Rail Mounting Kit
120255	ELD-ELC/F Adapter Kit
115437	Toroid - 25mm ID
101658	Toroid – 60mm ID
101656	Toroid – 112mm ID