MANAGER'S OVERVIEW

Contrel Earth Leakage Relay Diagnostic Guide

Why This Guide Exists

Our Malaga workshop fields 3-5 calls monthly from WA mining sites diagnosing Contrel ELR faults. The most common issue isn't component failure—it's configuration errors and wiring misinterpretation. This guide addresses the four most frequent misdiagnoses we see, helping maintenance teams eliminate configuration issues before ordering replacement relays.

Cost Impact

Typical nuisance callout cost: $2,500-$4,000 (contractor travel, downtime, diagnostic time). Typical ELR replacement cost: $800-$1,500 (relay + labour). Most nuisance trips are resolved by verifying pre-alarm wiring, checking CT multiplier settings, or confirming reset mode configuration—tasks that take 15-30 minutes with the right diagnostic checklist.

How to Use This Guide

1. **Print and distribute** to site maintenance teams and shutdown planners
2. **Reference during fault diagnosis** before ordering replacement parts
3. **Laminate and post** in electrical workshops for quick reference
4. **Include in shutdown kits** for planned maintenance activities

When to Escalate

If diagnostic steps in this guide don't resolve the fault, contact Sundrive technical support. Our Malaga team can walk your maintenance crew through advanced diagnostics or arrange same-day dispatch of replacement components for Pilbara and Goldfields sites.

Sundrive Technical Support
08 9249 2757 | Malaga, WA | sundrive.com.au

QUICK DIAGNOSTIC GUIDE

Contrel Earth Leakage Relays

LED Diagnostics & Basic Checks

When an ELR trips, start with the basics—models such as the ELR-1E and ELR-7 use a green ON LED for power status and a red TRIP LED for relay operation, with front TEST and RESET buttons for functional checking. The manual also notes these units can be configured for automatic or manual reset, so checking reset mode should be part of every first-pass diagnosis.

Protection Settings Verification

Before replacing a relay, confirm the protection settings—multiple ELR models allow selectable tripping setpoints from 0.025 to 250A and configurable delay times from 0.02 to 5 seconds. On models like the ELR-3E, the manual lists stepped selections from 0.03A to 1A and from 0.02s to 5s, which makes settings verification a useful diagnostic step.

Pre-Alarm Configuration

Pre-alarm is an early warning signal, and the manual shows that two-threshold models such as ELR-2 and ELR-92 use a fixed pre-alarm at 70% of the trip level. The ELR-D2 series goes further with a configurable pre-alarm range of 50% to 90%, giving technicians a clearer way to investigate rising leakage before a full trip occurs.

CT Selection & External Multiplier

The relay is only part of the story—CT selection should always be checked during fault finding. Contrel's manual states that the external multiplier increases the setting by ×10, which means an unexpected trip threshold can sometimes come from configuration rather than component failure.

Diagnostic Flowchart

STEP	CHECK	ACTION
1	LED status	Green ON = power OK Red TRIP = relay tripped No LEDs = power supply fault
2	Reset mode	Confirm auto/manual reset configuration Manual reset requires physical button press
3	Trip settings	Verify setpoint (0.025–250A range) Verify delay time (0.02–5s range)

4	Pre-alarm wiring	Check pre-alarm is not wired as main trip output Fixed at 70% on ELR-2/ELR-92 Configurable 50–90% on ELR-D2
5	CT configuration	Check for external multiplier (×10 factor) Verify CT rating matches relay setting

Common Fault Scenarios

SYMPTOM	LIKELY CAUSE	DIAGNOSTIC APPROACH
Nuisance trips at 70% load	Pre-alarm wired as main trip Fixed 70% threshold on ELR-2/92	Check terminal wiring Verify pre-alarm routing
Trip threshold inconsistent	External CT multiplier installed ×10 factor shifts entire curve	Remove multiplier temporarily Retest at known load
No trip at expected setpoint	Wrong stepped setting selected Delay time too long	Verify ELR-3E dial positions Check 0.03–1A and 0.02–5s ranges
LED shows power but no trip	Manual reset mode enabled Reset button not pressed	Check auto/manual reset config Press RESET button physically

Need Technical Support?

Sundrive stocks the full Contrel relay range including ELR-1E, ELR-2, ELR-3E, ELR-7, ELR-92, and ELR-D2 series. Our Malaga team can assist with relay selection, CT sizing, and wiring verification for WA mining and industrial applications.

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