

Protection Relays & Controls

EL731 SERIES

Earth-Leakage Protection–Grounded AC or DC Systems •
AC/DC Sensitive Earth-Leakage Relay



Description

The EL731 is a microprocessor-based AC/DC Sensitive Earth-Leakage Relay that offers complete coverage for all frequencies from 0 to 6,000 Hz. Two CTs are required for the entire frequency range, or one CT can be used for only low- or high-frequency detection. An RTD/PTC sensor input allows over-temperature and under-temperature protection for a motor or drive. The EL731 offers metering, password-protected alarm and trip settings and optional network communications. It is primarily used to add low-level ground-fault protection to variable-speed drives, and to dc circuits.

Features & Benefits

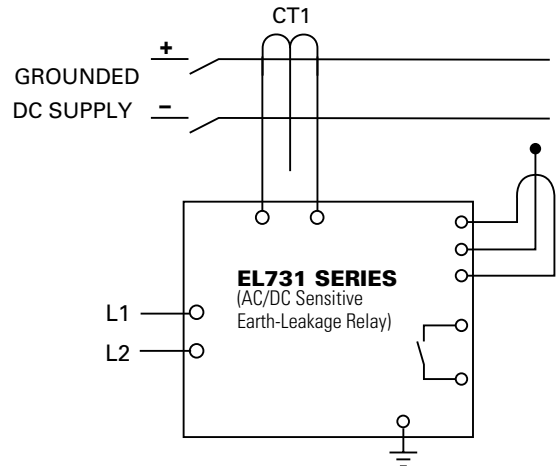
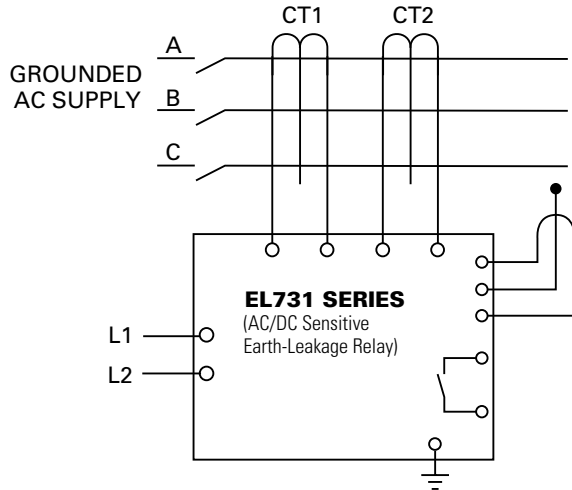
| FEATURES | BENEFITS |
|---|---|
| Adjustable pickup (30-5,000 mA) | Adjustable trip setting provides a wide range of low-level protection and system coordination |
| Frequency range (0-90 Hz, 20-6,000 Hz) | Operate in either AC or DC mode or both. Use single or combined ranges. Separate metering |
| 32-char OLED display | Earth-leakage metering, setup and programming |
| Local LED indication | Visual Trip, Alarm, CT connection indication |
| CT-Loop monitoring | Proactively monitors for open- or short-circuit CT wiring |
| Analog output (4-20 mA) | Connect to DCS. Allows connection to an optional meter (PGA-0520) or control system |
| Adjustable time delay | Adjustable trip delay for quick protection and system coordination |
| Alarm and trip settings | Detect a deteriorating condition before damage occurs |
| Temperature-sensor input | Monitor motor or drive temperature and respond to high- or low-temperature conditions |
| Output contacts | Three programmable outputs for tripping or alarming on leakage current, high, or low temperature |
| Network communication | Optional connection to plant network |
| Harmonic filtering | Eliminates nuisance tripping due to harmonic noise |
| Panel, Surface, and DIN-rail mounting | Compact enclosure and flexible mounting options allow for many installation options even in panels with limited space |
| Universal power supply | Provides flexibility for numerous applications |

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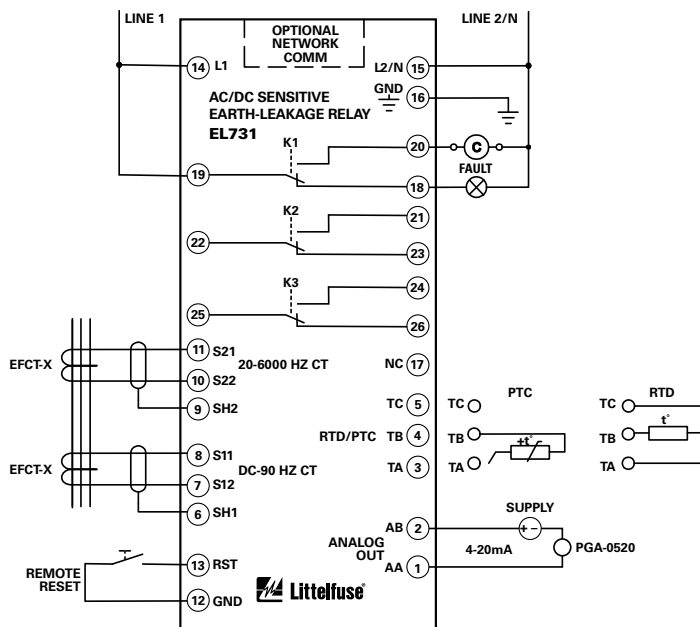
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Simplified Circuit Diagram



Wiring Diagram



Specifications

IEEE Device Numbers

AC ground fault (50G/N, 51G/N),
DC ground fault (79G),
PTC overtemperature (49),
RTD temperature (38, 49)

Supply Voltage

120/240 Vac/Vdc, 24 Vdc,
48 Vdc/24 Vac

Trip Level Settings

30-5,000 mA AC and DC

Alarm Level Settings

30-5,000 mA AC and DC

Trip Delay

0.05-2 s

Output Contacts

3 Form C (programmable)

Contact Operating Mode

Fail-safe & non-fail-safe

Reset

Front panel and remote

Freq. Response, CT1

0-90 Hz

Freq. Response, CT2

20-6,000, 190-6,000, 20-90,
20-3,000 Hz; selectable

Current Transformer

EFCT-x series

CT Detection

Open & short detection

Terminals

Plug-in, wire clamping,
24 to 12 AWG (0.2-2.5 mm²)

Communications

EtherNet/IP™, DeviceNet™,
Profibus®, Modbus® TCP (optional)

Analog Output

4-20 mA (selectable 0-5 A or
0-100% trip-level setting)

Conformal Coating

Standard feature

Dimensions

H 48 mm (1.9");

W 96 mm (3.8");

D 129 mm (5.0")

Approvals

UL Listed (E340889), CSA,

RCM (Australia), CE

Warranty

5 years

Mounting

Panel; Surface and DIN (with optional
AC700-SMK)

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Accessories



EFCT Series Earth-Fault Current Transformer

Required zero-sequence current transformer specifically designed for low level detection.



AC700-CUA Series Communication Adapter

Optional network-interface and firmware-upgrade communications adapters field-install in EL731.



AC700-SMK DIN-rail & Surface-mount Adapter

EL731 plugs into adapter for back-plane mounting.

| ACCESSORIES | REQUIREMENT |
|---|--------------|
| EFCT Series CT | One Required |
| AC700-CUA Series Com. Unit | Optional |
| AC700-SMK Surface-Mount Kit | Optional |
| AC700-CVR-00 Watertight Cover (IP66) for Panel-Mount Applications | Optional |
| PGA-0520 Analog Meter | Optional |

Ordering Information

| ORDERING NUMBER | CONTROL POWER | COMMUNICATIONS |
|-----------------|-----------------|----------------|
| EL731-00-X0 | 120/240 Vac/Vdc | None |
| EL731-01-X0 | 120/240 Vac/Vdc | DeviceNet™ |
| EL731-02-X0 | 120/240 Vac/Vdc | Profibus® |
| EL731-03-X0 | 120/240 Vac/Vdc | EtherNet/IP™ |
| EL731-04-X0 | 120/240 Vac/Vdc | Modbus® TCP |
| EL731-10-X0 | 48 Vdc & 24 Vac | None |
| EL731-11-X0 | 48 Vdc & 24 Vac | DeviceNet™ |
| EL731-12-X0 | 48 Vdc & 24 Vac | Profibus® |
| EL731-13-X0 | 48 Vdc & 24 Vac | EtherNet/IP™ |
| EL731-14-X0 | 48 Vdc & 24 Vac | Modbus® TCP |
| EL731-20-X0 | 24 Vdc | None |
| EL731-21-X0 | 24 Vdc | DeviceNet™ |
| EL731-22-X0 | 24 Vdc | Profibus® |
| EL731-23-X0 | 24 Vdc | EtherNet/IP™ |
| EL731-24-X0 | 24 Vdc | Modbus® TCP |

Note: When building a part number, replace the "X" with "1" for AS/NZS 2081:2011 Compliant product, "0" otherwise.

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