

Earth leakage relays
CHI Control

Safe and reliable earth
leakage protection for
industrial applications



Powering Business Worldwide

CHI CONTROL
An Eaton Brand

1.1

JCB earth leakage relays

1 Features

Eaton's CHI Control JCB61 earth fault sensor measures residual earth leakage current and operates an internal relay, in a trip or alarm circuit, when the measured value exceeds a settable limit for a specified period of time. Type 2 co-ordinated with an upstream tripping device (fuse or breaker) to protect any local contactor contacts in the case of solid short circuits to earth. Should the upstream device fail, automatic backup protection makes the unit trip, as a last resort, after one second.

- Nominal input voltages from 24 to 240V AC/DC
- Settings range from 30 mA to 3A in seven steps
- Trip delays from 20 ms to 3 s in four steps.
- Green LED flashing indicates correct operation
- Red LED flashing shows a tripped condition
- Type 2 Co-ordination
- Four selectable operating modes
- Tamper proof dipswitches

JCB 61-1



Ground Fault Relay

Description	Eaton Part Number
Ground Fault Relay 30mA -3Amps, 28mm dia 24 - 240V AC/DC ¹⁾	JCB 61-1

¹⁾ Expandable to accept JCB63 and/or JCB64

JCB 64



Ground Fault Relay Display

Description	Eaton Part Number
Ground Fault Relay Display, Door Mount	JCB 64

JCB 63



Aux Ground Fault Relay Unit

Description	Eaton Part Number
Aux Ground Fault Relay Unit	JCB 63

CB 500-46



Current Transformer

Description	Eaton Part Number
Current Transformer with 46mm Window	CB500-46
Current Transformer with 65mm Window	CB500-65
Current Transformer with 90mm Window	CB500-90
Current Transformer with 150mm Window	CB500-150
Current Transformer with 250mm Window	CB500-250

Technical Data**Control Power**

Voltage range	Nominal: 24-240V AC/DC, -20% to+10% Total: 19.2 - 264V AC/DC
Frequency range on AC	45 - 450 Hz
Power consumption	AC 1.2 VA max, DC 0.5 W
Isolation voltage	Not electrically isolated from electronics
Power-up time	500 ms for E/F detection ¹ 100 ms for S/C detection

System power

Voltage and current range (internal CT)	0 - 660V AC, 0 - 100A
Voltage and current range (external CT)	Any, providing the power conductors are insulated for the system voltage
Frequency range	45 - 65 Hz or 400 Hz
Isolation voltage (internal CT)	2.5 kV rms, 1 minute

Earth fault circuit

E/F Trip Level (settable)	0.06, 0.1, 0.25, 0.375, 0.5, 1, 3 A
Accuracy of trip point	-15% to+0% of Trip Level ²
E/F Trip Delay (settable)	0.02, 0.1, 0.3, 1, 3 s ³
Accuracy of trip delay	-2 to+5 ms or + 2.5% of Trip Delay, whichever is greater
S/C detection (Type 2 Co-ordination)	Selectable on or off with 0.02, 0.1 and 0.3 Trip Delay Settings
S/C detection level	60A AC, sine
Suitable external CT types	CB500-45 45 mm inner diameter CB500-65 65 mm inner diameter CB500-90 90 mm inner diameter Other sizes, including split rectangular cores, on request

Relay contacts

Configuration	Voltage free form "Z" (1 N.O. and 1 N.C. contact, 4 terminals).
EN 60947 rating	5A @ 250 V AC, utilisation category AC-12 5A @ 30 V DC, utilisation category DC-12
Maximum fuse rating	13A
Isolation voltage	2 kV rms, 50 - 60 Hz, 1 minute

Environment

Operating temperature	-35 °C to +60 °C
Storage temperature	-40 °C to +80 °C
Humidity	85% max (no condensation)
Ingress protection	IP20

Dimensions

Height	70 mm
Width	45 mm
Depth (not including terminal block)	91 mm
Depth (including terminal block)	113 mm
Internal CT opening diameter	28 mm

¹ If a fault is already present when power is applied, the system trips as soon as possible, irrespective of the E/F Trip Delay setting (rationale: the fault may be present much longer than the delay set). This works out as follows: (1) from 100 ms to 500 ms after power is applied, a current above the S/C level will cause an immediate E/F trip if Type 2 Co-ordination is selected OFF; (2) 500 ms after power is applied, a current below the S/C level, but above the E/F Trip Level setting will cause an immediate E/F trip irrespective of Type 2 Coordination setting.

² The accuracy of the trip point refers to the value of the real world leakage current (assuming a purely sinusoidal wave shape) that just causes a trip when slowly increased from zero.

³ The earth fault detection mechanism has a 'thermal' behaviour for greatly reduced noise sensitivity; the quoted delays are valid for sinusoidal currents exceeding the setpoint by >10 times; for reduced current excursions the delay increase as follows:

current = 6 x setpoint:	add 3 ms
current = 4 x setpoint:	add 8 ms
current = 2 x setpoint:	add 20 ms
current = 1,2 x setpoint:	add 50 ms

Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customised, integrated solutions to solve our customers' most critical challenges.

Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority.

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