EARTH CONTINUITY PROTECTION

EC3

EARTH CONTINUITY AND PILOT CONTROL RELAY

NEXT-GENERATION EARTH CONTINUITY PROTECTION FOR MINING AND INDUSTRIAL APPLICATIONS

The EC3 Earth Continuity Relay delivers next-generation protection for mining and industrial supply cables.

Designed in Australia and compliant with the latest statutory and industry standards, the EC3 provides highly stable earth-continuity monitoring using advanced microprocessor-based filtering and continuous self-diagnostics.

Its enhanced stability over long pilot cables makes it ideal for VSD systems, trailing cables and electrically noisy environments. The EC3 is compliant with AS2081:2011.



FIG. 1 — EC3 RELAY, FRONT VIEW

TRIP RESISTANCE	TRIP TIME
5 – 45 Ω	100 – 500 ms
OUTPUT CONTACTS	SUPPLY OPTIONS
2 × C/O, 5 A	24 – 48 / 240 V

AS2081:2011 COMPLIANT | EX IB IIC CERTIFIED | AUSTRALIAN DESIGNED & SUPPORTED

KEY FEATURES

01 Microprocessor-based filtering for high immunity to electrical noise

02 Improved noise immunity over long cable runs, including trailing cables and VSD systems

03 Faster and more accurate pilot-integrity detection

04 Adjustable trip resistance and trip delay for site-specific tuning

05 Continuous self-diagnostics with failsafe operation

06 Safe operation in hazardous areas — Ex ib compliant

07 Local and remote start operation, switch selectable

08 Two sets of changeover (C/O) contacts provided

KEY BENEFITS

HIGH NOISE IMMUNITY

Stable monitoring on long pilot cables, trailing cables and VSD-fed circuits.

FAILSAFE OPERATION

Continuous self-diagnostics trip the relay on internal as well as pilot faults.

MICROPROCESSOR CONTROLLED

Advanced digital filtering for faster, more accurate pilot-integrity detection.

CERTIFIED FOR HAZARDOUS AREAS

Ex ib IIC certified and compliant with AS2081:2011.

APPLICATIONS

MMS	EC	P&F	S/P	S&R	C/F
Mining motor starters	Electrical cabinets	Pumps & fans	Surface & process equipment	Stacker & reclaimer	Conveyor & feeder systems

TERMINAL LAYOUT & FRONT PANEL

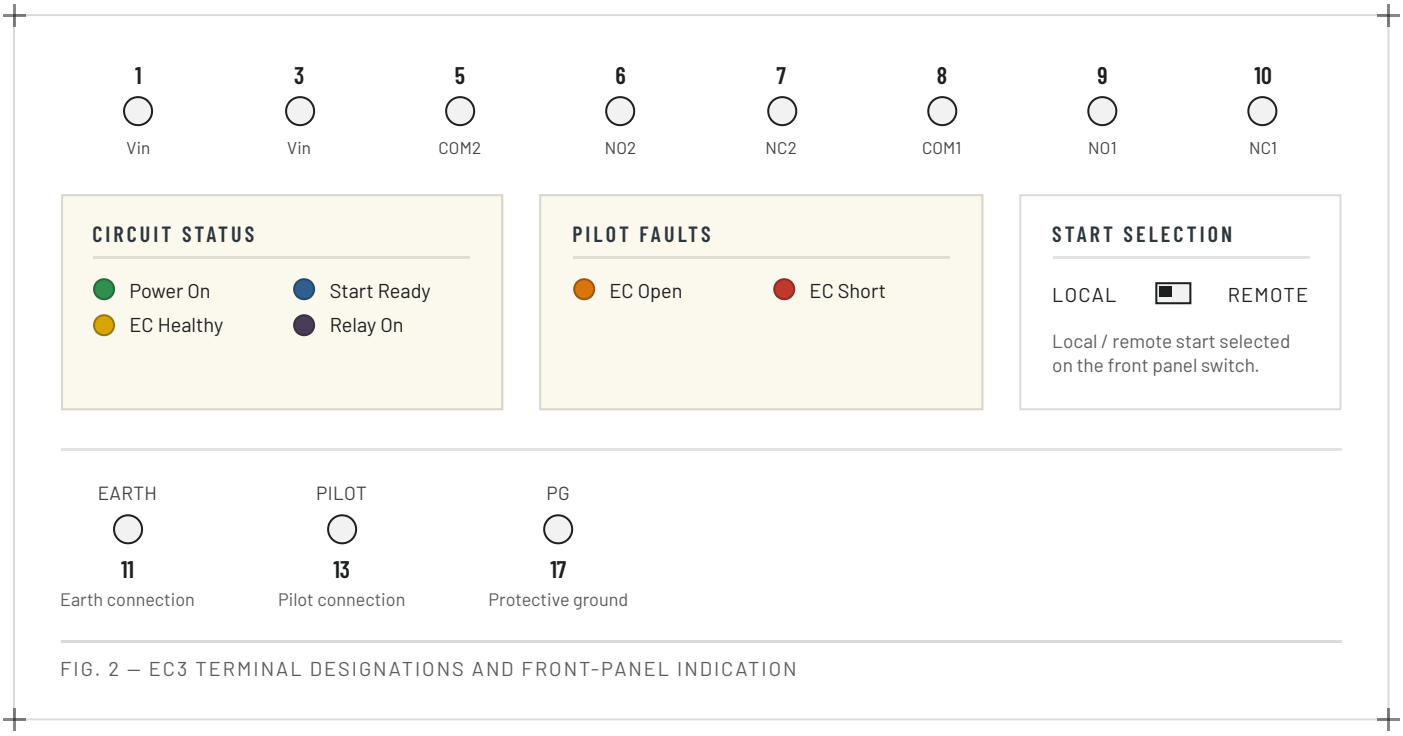


FIG. 2 — EC3 TERMINAL DESIGNATIONS AND FRONT-PANEL INDICATION

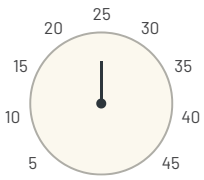
INDICATION

Power On	Supply present
EC Healthy	Earth continuity circuit healthy
EC Open	Pilot circuit open
EC Short	Pilot circuit shorted
Start Ready	Remote start ready
Relay On	Output relay energised

CONTROL SETTINGS

TRIP RESISTANCE

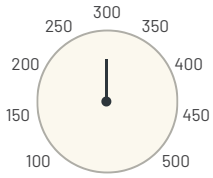
5 – 45 Ω selectable



Ohms, EC mode

TRIP TIME

100 – 500 ms selectable



Milliseconds

Mode selection	EC mode / remote start mode, via internal or external control
Local / remote	Selected on the front panel switch
Remote start/stop	Via 100 Ω resistor across the pilot circuit

INSTALLATION NOTES

01 Pilot-to-earth diode to be 1 A minimum.

02 Pilot cable screen to be earthed at one end only.

03 All connections must comply with the requirements of AS2081.

04 All contacts are shown in the de-energised (relay healthy) condition.

05 Remote start/stop is achieved with a 100 Ω resistor switched across terminal 13 (PILOT) and earth.

TERMINAL FUNCTIONS

NO.	TERMINAL	FUNCTION
1	**Vin**	AC/DC supply
3	**Vin**	AC/DC supply
5	**COM2**	Common, relay 2
6	**NO2**	Normally open, relay 2
7	**NC2**	Normally closed, relay 2
8	**COM1**	Common, relay 1
9	**NO1**	Normally open, relay 1
10	**NC1**	Normally closed, relay 1
11	**Earth**	Earth connection
13	**PILOT**	Pilot connection
17	**PG**	Protective ground

SPECIFICATIONS

SUPPLY

MODEL	MIN	TYP	MAX	UNIT
A01328	200	240	250	V AC, 50/60 Hz
A01329	20	24	50	V AC/DC

Power consumption	2 VA ± 20%
Operating temperature	0 – 60 °C
Pilot-to-earth resistance	EC mode, selectable: 5, 10, 15, 20, 25, 30, 35, 40, 45 Ω (max)
Remote start mode	100, 110, 115, 120, 125, 130, 135, 140, 145 Ω (max)
Start resistance	1000 Ω
Shunt resistance for trip	Less than 1 kΩ
Trip delay	100 – 500 ms, selectable
Relay contacts	2 × changeover, 5 A at 240 V AC

DIMENSIONS & ENCLOSURE



FIG. 3 — ENCLOSURE, FRONT & SIDE ELEVATION (55 MM HIGH)

Dimensions	75 mm (W) × 55 mm (H) × 110 mm (D)
Material	High-impact resistant polycarbonate
Protection	IP20
Mounting	DIN rail
Terminals	Cage screw terminals
Weight	216 g

ORDERING INFORMATION

PART NO.	DESCRIPTION
A01328	EC3 relay — 240 V AC
A01329	EC3 relay — 24 – 48 V AC/DC

Supplied with: Relay unit, instruction sheet and wiring diagram.

STANDARDS & COMPLIANCE

AS2081:2011 — Electrical equipment for mines and quarries

IECEx & ATEX — Ex ib IIC certified

RoHS — Compliant

EX IECEX RCM E200379

FLYSHTEC

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