EARTH CONTINUITY PROTECTION

EC1

EARTH CONTINUITY AND PILOT PROTECTION RELAY

RELIABLE PILOT-CORE EARTH CONTINUITY MONITORING FOR MINING AND INDUSTRIAL SUPPLY CABLES

The EC1 Earth Continuity Relay is engineered to provide reliable monitoring of supply-cable earth continuity, using a pilot-core termination via a diode to earth.

Designed for robust mining and industrial environments, the EC1 supports both local and remote start operation, and maintains high immunity to pilot cable capacitance and inductance.

The EC1 is compliant with AS2081:2011 — Electrical equipment for mines and quarries.



FIG. 1 — EC1 RELAY, FRONT VIEW

LOOP RESISTANCE **45 Ω fixed**	PILOT TERMINATION **1 A diode**
OUTPUT CONTACTS **2 × C/O, 5 A**	SUPPLY OPTIONS **24 / 110 / 240 V**

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

KEY FEATURES

01 Operational up to 45 Ω maximum loop resistance

02 High tolerance to pilot cable capacitance and inductance, supporting long cable runs

03 Pilot-to-earth termination via 1 A diode, or compatible with the Flyshtec Smart Pilot Node

04 Relay remains closed while the pilot circuit is healthy

05 Local and remote start operation, switch selectable

06 Remote start/stop operation using a 100 Ω resistor

07 LED status indication for power, pilot open, pilot closed, pilot short and ready

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

KEY BENEFITS

HIGH TOLERANCE

Handles long cable runs with high capacitance and inductance without nuisance tripping.

PILOT-TO-EARTH FLEXIBILITY

Terminate via a 1 A diode or via the Flyshtec Smart Pilot Node.

SIMPLE & SECURE

Local/remote start selection and remote start/stop from a single relay.

BUILT TOUGH

Engineered for harsh industrial and mining environments.

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

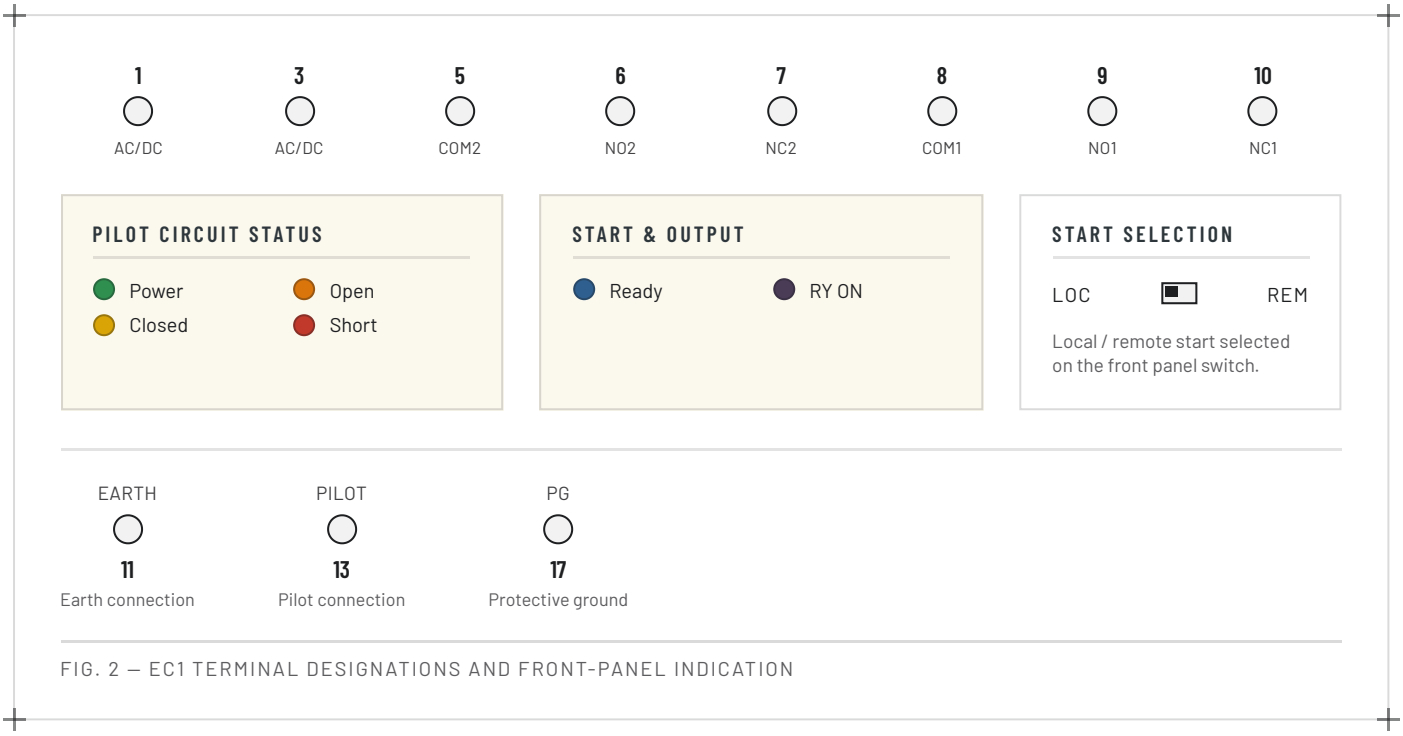

FIG. 2 — EC1 TERMINAL DESIGNATIONS AND FRONT-PANEL INDICATION

INDICATION

Power	Supply present
Open	Pilot circuit open
Closed	Pilot circuit healthy and closed
Short	Pilot circuit shorted
Ready	Remote start ready
RY ON	Output relay energised

CONTROL SETTINGS

Loop resistance	Fixed at 45 Ω maximum — not adjustable
Trip time	Fixed — not adjustable
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

DIMENSIONS & ENCLOSURE

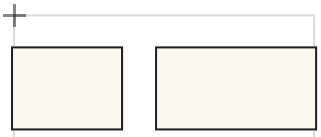

FIG. 3 — ENCLOSURE, FRONT & SIDE ELEVATION (55 MM HIGH)

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

SPECIFICATIONS

SUPPLY

MODEL	MIN	TYP	MAX	UNIT
A01047	90	110	120	V AC
A01048	20	24	50	V AC/DC
A01049	200	240	250	V AC

Power consumption	3 VA ± 20%
Operating temperature	0 – 60 °C
Pilot-to-earth resistance	EC mode: 45 Ω (max), fixed
Remote start mode	145 Ω (max)
Start resistance	1000 Ω
Shunt resistance for trip	Less than 1 kΩ
Relay contacts	2 × changeover, 5 A at 240 V AC

ORDERING INFORMATION

PART NO.	DESCRIPTION
A01047	EC1 relay — 110 V AC
A01048	EC1 relay — 24 V AC/DC
A01049	EC1 relay — 240 V AC

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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+61 435 939 513
info@flyshtec.com.au
www.flyshtec.com.au

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0468 344 220
richard@dejongindustrialsystems.com.au
www.dejongindustrialsystems.com.au