

IPE PROTECTION RELAY

Integrated Protection Range

Description

The IPE Integrated Protection Relay provides the complete protection solution for electrical outlets in underground coal mines.

The integrated relay provides the necessary functions required for protecting electrical outlets supplying underground mining machinery, with compliance to AS/NZS 2081.2011 and is certified for use on outlets supplying loads in hazardous areas.

All of the protection functions are combined into a compact, plug-in unit, which can be easily changed out to minimise down time

The IPE System consists of the IPE Relay, IPE Base, Remote Termination Unit (RTX), an interface platform (PIP), three 1000:1 Current Transformers, and an Earth Leakage Toroid.

The IPE Relay has three output relays, 2x MCR contacts for the main contactor control and 1x CBR relay used for circuit breaker control. The IPE relay incorporates Ampcontrol's latest machine recognition technology through the proven Remote Termination Unit (RTX). The RTX pilot communications has improved noise tolerance, resulting in a more robust installation.

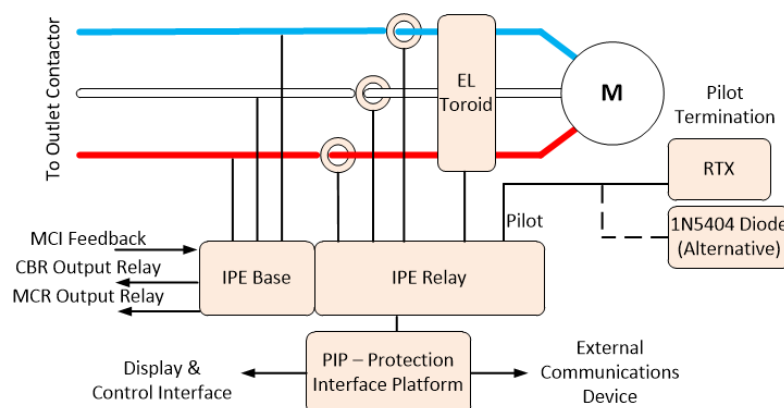


Features

- AS/NZS 2081: 2011 Compliance
- IEC 60079-0:2011 & 60079-11:2011 Certification
- Earth leakage protection
- Earth fault lockout protection
- Earth continuity protection
- Over-current /overload protection
- Short circuit protection
- Frozen/failed contactor protection
- Machine Communications
- Automatic and Manual HV Insulation Test
- Fail safe operation
- Settings stored on removable Dongle
- Diode or Remote Termination Unit operation (RTX)
- Standardised interface platform – PIP
- User friendly HMI through dedicated screen or over Ethernet communications
- 50 Event Log
- 140 Event log Descriptions to indicate what is required to energise the outlet.
- Local or remote operation
- Sequencing and remote communication via Ethernet
- Plug-in for quick change out
- Thermal modelling
- Fully functional for a period of two (2) seconds during extreme control power dip or power loss.
- Relay & Digital Input Status to aid fault finding
- Continuous monitoring of the Earth Leakage toroid

Application

The IPE Integrated Protection Relay is approved for use in mining operations. For the protection of mining equipment in hazardous areas the relay is to be installed within a flameproof enclosure. Control and interfacing with the relay is performed through a locally mounted PIP, visual interface can be through a panel mounted screen (PIPS) or installed within a flameproof enclosure where needed. Alternatively interfacing with the PIP can be achieved remotely over Ethernet communications.



Specifications

General	
Auxiliary Supply Voltage	24 V D.C. ± 20%, 30W*
Dimensions	See IPE User Manual
Ambient Temperature	0°C to 60°C
Relay Contact Ratings	1.6A@250VAC VA / 1.6A@30VDC maximum (MCR1, MCR2, CBR)
Certification	
IECEX Certification	IECEX ITA 12.0032X (refer to the IECEX website for the latest certificate)
I.S. Parameters	
Combined Phase & Pilot Port	RTX
C: 3.72 µF	Ui: 28.0 V
L/R: 4.5 mH	Ci: 18.8 nF
L/R: 207 µH/Ohm	Li: nil
Touch Potential Protection Functions	
Earth Leakage	
Frequency Response	Narrowband, Designed for 50Hz
Trip Times (mSec) + 0%, -20%	Instant, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500
Trip Levels (mA) ± 10%	100, 150, 200, 250, 300, 350, 400, 450, 500
CT Failure (mSec)	500
Earth Continuity	
Trip Times (mSec)	100, 150, 200, 300, 400, 500
Trip Levels – Series (Ω)	10, 15, 20, 25, 30, 35, 40, 45
Trip Levels – Shunt (Ω)	1500
Latching Trip	ON / OFF
Remote Start at Machine	ON / OFF
Pilot Termination	Diode (1N5404), RTX
Earth Fault Lockout	
EFLO – Low Voltage Test	3PH Load Disconnected – Trip by 3MΩ 3PH Load Connected – Trip by 1MΩ
HV Insulation Test Voltage	900VDC (1.1kV System or 3.3kV System) or 2700VDC (3.3kV System)
HV Insulation Test Level	OFF, 1MΩ, 2.5MΩ, 5MΩ, 10MΩ , 20MΩ, 50MΩ
Frozen Contactor/Loss of Vacuum	
Back EMF Timer (Sec)	2, 5, 10, 15, 20
Loss of Vacuum Level (VAC)	OFF, 25 , 50, 100, 150
Loss of Coil Voltage	< 100ms
Loss of Vacuum	< 1s
Frozen Contactor	< 100ms
Contactor Logic Trip	< 1s
Load Related Protection Functions	
Over Load Protection	
OL Model	Very Inverse , Extreme Inverse, Motor Overload
Very Inverse	IEC 60255-151 B Curve, or
Extremely Inverse	IEC 60255-151 C Curve
Thermal Model as per	IEC 60255-8
Time Multiplier (TMS) (x FLC)	0.05-30 (See user manual for more detail)
FLC (A)	5.125-640 [10] (See user manual for more detail)
Cooling Multiplier	1.0x, 1.5x, 2.0x, 2.5x, 3.0x, 4.0x, 5.0x
Thermal Accumulator Start Block (%)	20, 30, 40, 50, 60, 70, 80, 90
Short Circuit Protection	
SC Trip Current Multiplier (trip level) (xFLC)	1.5 to 12.5 in 0.25 increments in OC mode 3.0x to 25x when in MOL mode with additional slower trip element at 1.5x to 12.5x (Multiples of Full Load Current)
Time (mSec) ± 15ms	40 , 60, 80, 100, 120, 140, 160, 180, 200
SC Detect Level	6016A

Touch Potential Protection Functions	
Under Voltage Protection	
Trip Level (%)	OFF, 40, 50, 60, 70, 75, 80, 85, 90, 95
Trip Time (mSec)	850
Current Imbalance Protection	
Trip Level (% FLC)	OFF, 5, 10, 20, 50
Trip Time (Sec)	2
Under Current Protection	
Trip Level (% FLC)	OFF, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95
Trip Time (Sec)	4

IPE Outlet Kit (198557)	
Part Number	Description
197358	IPE Relay
180902	IPE Base 5m Tails
Earth Leakage Toroid	
Part Number	Description
101654	EL Toroid 112mm EL500
101649	EL Toroid 60mmEL500
101658	EL Toroid EL500S 60mm
101656	EL Toroid EL500S 112mm
Phase CT	
Part Number	Description
101272	45mm CT 1000:1
101703	88mm CT 1000:1
Dongle Part Numbers	
Part Number	Description
172093	IPE Dongle (Custom IP Address)
199230	IPE Dongle Outlet 1 - PIP
199231	IPE Dongle Outlet 2 - PIP
199232	IPE Dongle Outlet 3 - PIP
199233	IPE Dongle Outlet 4 - PIP
199234	IPE Dongle Outlet 5 - PIP
199235	IPE Dongle Outlet 6 - PIP
199236	IPE Dongle Outlet 7 - PIP
199237	IPE Dongle Outlet 8 - PIP
199238	IPE Dongle Outlet 9 - PIP
199239	IPE Dongle Outlet 10 - PIP
199240	IPE Dongle Outlet 11 - PIP
199241	IPE Dongle Outlet 12 - PIP
199242	IPE Dongle Outlet 13 - PIP
199243	IPE Dongle Outlet 14 - PIP
199244	IPE Dongle Outlet 15 - PIP
199245	IPE Dongle Outlet 16 - PIP
Accessories	
Part Number	Description
160292	RTX
172094	RTX Dongle
196912	RTX Complete With Dongle
115119	MODULE PTB PILOT TERMINATION FOR ECB/D/M
169732	RES 100R 5W 1%
117023	1N5404 Diode

Find Out More
For more information on this product, contact Ampcontrol Customer Service on +61 1300 267 373 or customerservice@ampcontrolgroup.com or visit the Ampcontrol website: www.ampcontrolgroup.com

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