cpm-plus-2 — Control & Protection Module

PRODUCT OVERVIEW

Introduced in 1984 and continuously developed for almost forty years, the CPM platform has become one of the most trusted control and protection systems in mining and heavy industry. The new **cpm-plus-2** represents the latest generation of this proven technology—an advanced microprocessor-based control and protection module designed for monitoring and protecting outlets supplying power to mining machinery and electrical installations.

Engineered and manufactured in Australia, the cpm-plus-2 complies with the latest statutory and industry standards, including **AS2081:2011**, delivering intelligent protection, high-speed fault response, enhanced communications, and extended compatibility with existing CPM installations.

The cpm-plus-2 is the most advanced product in the CPM range, incorporating modern connectivity, refined protection algorithms, enhanced data-management capabilities, and an expanded feature set for demanding mining applications.

APPLICATION

The cpm-plus-2 provides comprehensive electrical protection and outlet control for mining machinery, conveyors, longwalls, pumps, and fixed plant supplied through protected outlets. It offers:

- Advanced overload, short-circuit, earth leakage, earth continuity and undercurrent protection
- Integrated diagnostics and high-resolution event logging
- Compatibility with historical CPM1 installations
- Improved protection for VSD-driven machinery
- Optional NER monitoring via the **nlm3 Neutral Link Monitor**

Designed for compliance with the latest mining electrical protection requirements, the cpm-plus-2 ensures safe operation, rapid fault isolation, and reliable control across diverse mining environments.

FEATURES

General Features

- Intelligent microprocessor-based protection module
- Continuously developed CPM architecture (est. 1984)
- Designed for mining electrical distribution systems
- Drop-in compatible with most existing CPM installations
- Compliant to **AS2081:2011**
- Suitable for use in Queensland Coal Mines

COMMUNICATIONS & DATA MANAGEMENT (Enhanced Next-Generation Capability)

The **cpm-plus-2** incorporates a modern, high-bandwidth communications architecture that far exceeds the capabilities of legacy pilot-cable–based relays such as the Ampcontrol IPD. Designed for contemporary mining SCADA, maintenance, and performance-monitoring environments, the cpm-plus-2 provides comprehensive connectivity, data access, diagnostics, and remote configuration options.

Integrated Multi-Protocol Communications

- **Ethernet (Modbus/TCP)** for high-speed communications to PLCs, SCADA, historian systems, and mine-network infrastructure
- **RS-485 (Modbus/ASCII or RTU)** for legacy compatibility
- **Bluetooth interface** for rapid local commissioning and diagnostics
- **USB device interface** for configuration, downloads, uploads, and maintenance reporting
- Optional **Ethernet gateway module** for secure wide-area remote access

Advanced Data Logging & Operational Analytics

- **Extended, timestamped event log** beyond legacy 120-event limits
- Continuous operational data capture:
    - Running currents
    - Starting currents
    - Peak currents
    - Undercurrent events
    - Earth continuity values
    - Earth leakage measurements
    - Short-circuit events
    - Overload curve behaviour
- Exportable logs (USB / Ethernet)
- Predictive-maintenance analytics for leakage trends, cable deterioration, load-pattern anomalies
- Compatible with third-party trending systems

Remote Control & Configuration

- Remote start/stop control
- Remote setting and tuning of all protection parameters
- Remote diagnostics and status review
- Password-protected secure configuration

- Optional remote firmware update capability

Integration with Mine Digital Ecosystems

- Interfaces with mine control rooms, PLCs, historians, and maintenance systems
- Supports data export for analytics engines and cloud/on-premise monitoring
- Provides real-time outlet health status
- Straightforward upgrade path from earlier CPM units

Cyber-Security & Network Safety

- Role-based access control
- Password-protected parameter sets
- Network segmentation support
- Optional encrypted gateway modules
- Firmware integrity validation

PROTECTION FEATURES

Overload Protection

- Range: **1–1000 A**
- IEC255-based curves:
    - Standard Inverse
    - Very Inverse
    - Extremely Inverse
    - Multi-adjustable inverse
- 30 time setting points
- Curve timing adjustable **10–250 s**
- Hot/Cold curve selection
- Thermal protection included
- Overvoltage protection integrated
- Timed overload reset inhibit

Short-Circuit Protection

- Range: **4–5000 A**
- Instantaneous trip with industry-leading speed
- Motor start protection (inrush accommodation)

Earth Leakage Protection

- Range: **50–500 mA**
- Time delay: **50–500 ms**
- Compatible with m-tronix 100:1 toroids

Earth Continuity Monitoring

- Range: **5–45 Ω**
- Time delay: **100–500 ms**
- Local or remote mode
- Isolated EC circuit for improved range and reliability

Undercurrent Protection

- Programmable **20–90%** of overload current
- Delay: **1–25 s**

Frozen Contact Detection

- Trips if phase voltage remains present up to **20 s** after opening

Fan Interlock / DCB Interlock

- Single-wire scheme
- Prevents starting until linked fan outlet operates
- Supports interlocking with DCB

Event Logging & Diagnostics

- 120 event/trip entries (expanded via enhanced logging engine)
- Timestamped logs
- Peak, running and start currents
- Comprehensive internal diagnostics
- Password-protected settings

Direct Module Control

- Local or remote setup, monitoring, and operation
- Integration with mine operating software platforms

ORDERING INFORMATION

Part Number	Description
A01240	cpm-plus-2 – Control & Protection Module
A00487	mri3 – Remote Display Interface
A01237	mri3 – Module Remote Interface

A01307   ADAM 4572 Ethernet Interface

Minimum 3-year warranty.

ENCLOSURE DIMENSIONS

Enclosure

- Powder-coated steel housing
- Module size: **240 mm × 115 mm × 160 mm (D)**
- Base size: **300 mm × 165 mm × 160 mm (D)**

Remote LCD (mri3)

- IP65 rated
- Dimensions: **96 × 96 × 100 mm**, 70 mm behind panel
- Cut-out: **92 × 92 mm** fascia mount

Compatibility Notes

- Supports existing barriers (1100 V A00000, 3.3 kV A00014)
- Supports first-generation 500 mA toroids
- Compatible with dual-CT installations (1000:1 A)

COMPLIANCE

- **AS2081:2011** – Electrical Protection Devices
- **AS/NZS 60079-11** – Intrinsic Safety (Ex ib)
- Suitable for Queensland Coal Mines
- Complies with relevant Coal Mines Regulations and WHS legislation

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