

Programmable Load Control Module (8-Channel)

FEATURES

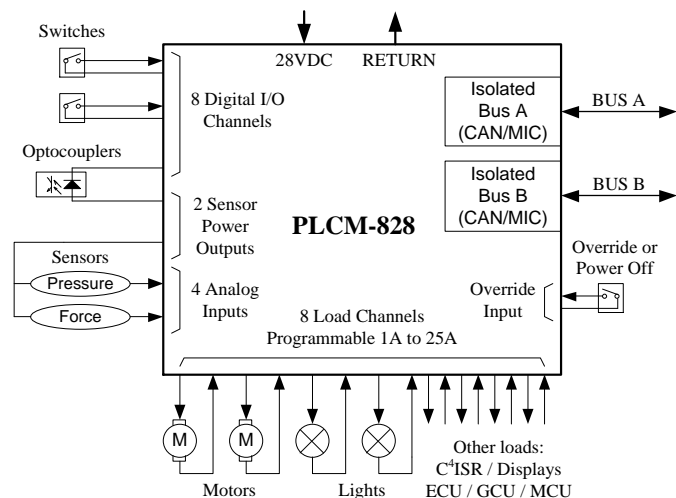
- 8 programmable and protected load channels
- 135A total continuous load current
- Programmable I²t trip point, 1A to 25A
- Programmable instant trip, 5X to 20X
- Programmable I²t time constant, 5 to 25 sec.
- Programmable and storable start-up configuration
- Input voltage and module temperature reporting
- Load voltage and current reporting
- Overload thermal memory
- Over-temperature protection
- Dual isolated CAN Bus/MIC Bus (RS485)
- 4 single or 2 differential analog inputs
- 2 sensor power/analog outputs
- 8 digital I/O
- Programmable enable/disable/override switch input
- Internal logic power supply
- Load return connections at module
- Standard low cost connectors
- Low power dissipation



TYPICAL APPLICATIONS

The PLCM-828 is a completely self-contained 8-channel solid state power controller used in 28VDC power distribution systems to control electronic loads and to provide remote data acquisition and control. The PLCM-828 is ideally suited for use in rugged applications as a highly reliable and low cost alternative to mechanical relays, circuit breakers, and fuses. Load outputs and signal I/O can be controlled and monitored via standard CAN Bus or RS485 MIC Bus serial communications or a user may define a combination of switch inputs and logic functions for standalone control.

- Military and Commercial Vehicles
- Military and Commercial Ships
- Unmanned Aerial and Ground Vehicles
- Industrial Controls and Automation
- 24VDC/28VDC Power Distribution Systems
- Load Control and Protection



GENERAL DESCRIPTION

The Programmable Load Control Module (PLCM-828) operates in 24VDC/28VDC powered systems, typically per MIL-STD-1275 or MIL-STD-704, and provides load switching, load protection, and discrete digital input/output and analog input control and acquisition functions. The PLCM-828 can be remotely controlled and monitored by a vehicle or platform’s control and acquisition application software via a redundant, electrically isolated, serial Controller Area Network (CAN) or MIC Bus communications link. The PLCM-828 provides the general interfaces and functions as shown in Figure 1 and Table 1.

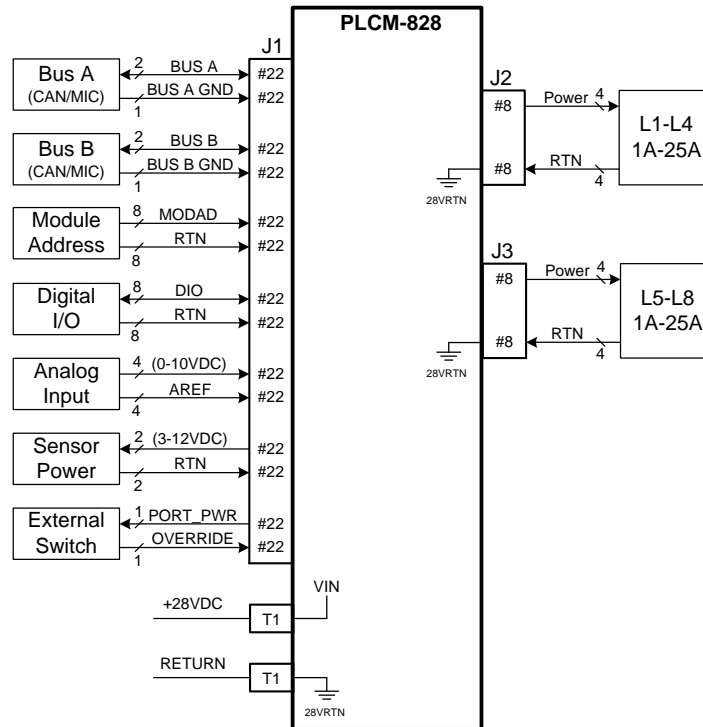


Figure 1. PLCM-828 General Interface

Table 1. PLCM-828 Basic Functional Characteristics

Input voltage (V_{IN})	12V to 40V steady state, 6V to 65V surge
Load output channels	8 (L1-L8)
I^2t trip point (programmable each load output)	1A to 25A (1A increments)
Instant trip point (programmable each load output)	5X to 20X (250A maximum)
Total module output current (continuous)	135A
Load output paralleling	2 (50A), 4 (100A)
Voltage monitors (input and load output voltages)	12V to 50V ($\pm 5\%$)
Current monitors (each load output)	0.2A to 250A ($\pm 5\%$ or 0.2A)
Temperature monitor (internal module temperature)	-40°C to +125°C ($\pm 5^\circ\text{C}$)
Digital I/O	8 selectable (5mA sink, 10K to V_{IN})
Analog inputs	4 single or 2 differential (0V to +10V, 12-bit)
Sensor power outputs	2 programmable (+3V to +12V, 20mA)
CAN Bus/MIC Bus (individually electrically isolated)	2/2 (CAN 250Kbps – default / MIC 1.33Mbps)
External Switch Input	1 programmable (enable/disable/override)

Serial Bus Interface

The CAN Bus physical interface is governed by SAE J1939 and the MIC Bus physical interface is governed by Electronic Industries Association (EIA) RS-485A. Detailed communications protocol is defined in Interface Control Documents (ICDs), ICD110412-828 for the CAN Bus and ICD110413-828 for the MIC Bus. The MIC Bus is used in critical industrial and military applications that require highly deterministic control. The PLCM-828 standard CAN Bus ICD can be updated with application-specific or user defined CAN Bus operational protocols as may be required for a specific platform or application. The PLCM-828 firmware can be modified to allow a unit to operate without a bus or with a combination of bus commands along with user defined switch inputs and logic functions for control. Any required PLCM-828 protocol firmware modifications can be made by Vetronix or a user, if preferred, using baseline source code and software development tools provided by Vetronix. PLCM-828 firmware can be updated and reprogrammed through the CAN/MIC bus while installed in the fielded application.

A control and acquisition application may consist of multiple PLCM-828s, as well as other CAN Bus or MIC Bus compatible hardware. PLCM-828s can be used as-is in applications that do not require liquid ingress protection. PLCM-828s are frequently incorporated into enclosures or line replaceable units (LRUs) when liquid ingress or submergence protection is required. Each PLCM-828 is directly addressable by the CAN or MIC bus regardless of how many modules are packaged in an assembly or entire application. This allows a power management and data acquisition system to be developed with an architecture that will minimize application software development requirements, maximize software reuse, and accommodate future growth.