

Chameleon Process Control Module (PCM-1)

High-Performance Programmable Controllers for Extreme Environments



KEY FEATURES

- Multi-Loop High-Performance Process Control
- Can be configured for Motor Control
- Versatile I/O Suite (4-20mA, Voltage, RTD, and more)
- Fully Sealed Enclosure (NEMA 4X, 6, 13 Protection)
- -40°C to +65°C (-40°F to +149°F) Operating Range
- MIL-STD-901D for High Impact Shock
- MIL-STD-167B for Vibration
- MIL-STD-461E for Electro-Magnetic Interference (EMI)
- Powerful and easy-to-use graphical programming (*Design Pad*)
- Supports Hot Swapping
- Supports redundant input and output connections

The Chameleon Process Control Module (PCM-1) offers high-performance control for multiple process loops. With four analog inputs, four analog outputs, two digital inputs, and two digital outputs, a PCM-1 can regulate up to six independent loops (4 process loops and 2 digital/motor control loops). Powered by a 33MHz ARM processor with 1MB of onboard RAM and 1MB of flash memory, it provides sufficient computational power to handle the most demanding applications. The PCM-1 embedded firmware is stored in its flash memory and is upgradeable: you can rest assured that the hardware investment you make in Chameleon will not become obsolete.

Using Fairmount Automation's intuitive and easy-to-use graphical programming package (*Design Pad*) you can develop sophisticated control schemes for the PCM-1 in a matter of hours—even without any prior programming experience. Programming the device entails “drawing” a desired control scheme using a vast array of configurable function blocks. These function blocks are wired together to indicate the signal flows from device inputs to device outputs. Once complete, configuration programs are downloaded to the unit via a wireless IRDA interface.

The PCM provides a versatile I/O suite configurable in software. Its analog inputs can read a variety of signals, including voltage, current, resistance, and RTD. Its analog outputs can drive voltage and current loads. Its digital inputs can be used separately as switches, pulse counters, and frequency counters, or they can be used together for event timing and quadrature decoding. Its digital outputs can generate on/off, variable frequency square wave, and pulse-width modulated (PWM) signals. In addition, multiple PCM-1 units can be attached to each other and configured to provide redundant power and I/O connections (both inputs and outputs) – the redundant output capability is built-in hardware and requires no external hardware. PCM-1 units are also hot swappable: should the need arise to replace one, simply swap the front panel (with attached processing board) and the unit is back online—there is no need to shut off the power.

Each PCM-1 unit also provides a rich set of prominent displays, including four four-digit numeric displays and eight status-indication LEDs. Each display set has an associated tag holder that you can use to label signals.

As with all Chameleon modules, the PCM-1 offers unequalled ruggedness. It is specifically designed for sustained operation in severe environments, including those characterized by extreme shock, vibration, electro-magnetic interference, temperature, and/or humidity. Its fully-sealed enclosure (sealing end-caps not pictured) ensures long-lasting operation in the grimmest settings. In fact, Chameleon modules can operate fully submerged!

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Chameleon Process Control Module (PCM-1)



High-Performance Programmable Controllers for Extreme Environments

ENVIRONMENTAL CHARACTERISTICS

Operating Ambient Temperature Range	-40°C to 65°C
Storage/Transport Ambient Temperature Range	-40°C to 85°C
High Impact Shock	MIL-STD-901D
Mechanical Vibration	MIL-STD-167B
Electro-Magnetic Interference	MIL-STD-461E
Facial/Housing Protection	NEMA 1,2,4,4X,5,6,6P,12,12K,13

ANALOG INPUTS

Quantity / Resolution	4 Channels / 16 Bits Minimum
Sampling Rate	1000 Hz Maximum
Current Input Ranges Supported	0-20mA, 4-20mA
Current Input Accuracy	+/-40uA at 25°C, +/-100uA Over Temperature
Standard Voltage Input Ranges Supported	0-20V, 0-10V, 0-5V, 1-5V, 0-2.5V
Standard Voltage Input Range Accuracy	+/-36mV at 25°C, +/-86mV Over Temperature
Low Voltage Input Ranges Supported	0-1V, 0-500mV, 0-250mV, 0-100mV
Low Voltage Input Range Accuracy	+/-2mV at 25°C, +/-5mV Over Temperature
Resistance Input Range Supported	0-2400Ω
Resistance Input Range Accuracy	+/-2.4Ω or +/-0.4% of Reading (whichever is smaller) Over Temperature
RTD Support	3 Wire, 100Ω Platinum (European or American curve), 120Ω Nickel, or Custom
RTD Accuracy	+/- 1°C Over Temperature

ANALOG OUTPUTS

Quantity / Resolution	4 Channels (2 with 14 bit resolution, 2 with 10-bit resolution)
Current Output Ranges Supported	0-20mA, 4-20mA
Current Output Ranges Accuracy	+/-40uA at 25°C, +/-100uA Over Temperature
Voltage Output Ranges Supported	0-10V, 0-5V
Voltage Output Ranges Accuracy	+/-40mV at 25°C, +/-100mV Over Temperature

DIGITAL INPUTS

Quantity / Type	2 opto-isolated
Input Signal Support	5VDC, 24VDC (at approximately 7mA)
Single-Input Operating Modes	on/off (i.e. switch), pulse counter, frequency counter
Dual-Input Operating Modes	event timer, quadrature decoder
Maximum Frequency	500 kHz

DIGITAL OUTPUTS

Quantity / Type	2 opto-isolated transistor
Output Signal Support	up to 28VDC (40mA maximum)
Operating Modes	on/off, variable frequency square-wave, pulse width modulation (PWM)
Maximum Frequency	50 kHz

ELECTRICAL CHARACTERISTICS

Maximum Module Power Consumption	3.9W + 0.03 W/mA x (current draw from auxiliary output source including analog outputs)
Maximum Allowable Auxiliary Output Current	250mA
Real-Time Clock Battery Life (Minimum; No power applied, 25°C)	10 Years
Supported Cable Diameters / Supported Wire Gauges	Two glands 0.24"-0.47" and six glands 0.16"-0.31" / 16-28 AWG

OPERATOR INTERFACE

Digital Readouts	Eight user-programmable three-color (red / yellow / green) LEDs with label holders
Analog Readouts	Four user-programmable 4-digit, 7-segment numeric displays with label holders
Status Readout	One three-color (red / yellow / green) LED Indicator
IrDA Wireless Interface	115KBPS SIR

PHYSICAL CHARACTERISTICS

Weight	2.1 pounds
Dimensions	4" W x 6" L x 3" H

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