Chameleon Alarm Switchboard Module (ASM-1)

High-Performance Programmable Controllers for Extreme Environments

KEY FEATURES

- Ten Supervised Circuits for Alarm Monitoring
- Detects Open, Short, and +/- Chassis Faults on Every Channel
- Two Solid-State Relay Outputs to Trigger External Notification Alarms
- Ideal Replacement for Navy Legacy IC/SM Panels
- Accepts Wide Range of Resistor Values to Support Legacy Alarms
- 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 (Pending)
- MIL-STD-167B for Vibration (Pending)
- MIL-STD-461E for Electro-Magnetic Interference (Pending)
- Powerful and easy-to-use graphical programming (*Design Pad*)
- Supports Hot Swapping

The Chameleon Alarm Switchboard Module (ASM-1) monitors remote alarm contacts for closure to indicate an alarm condition. The cable from the module to each alarm contact is also monitored for fault conditions such as a wire short, a wire open, and positive and/or negative terminal to chassis ground short. The ASM-1 provides ten (10) such supervisory circuits—faults are detectable independently on each circuit. The ASM-1 also provide two programmable solid-state relay outputs to activate external notification alarms (i.e., to provide plant operators additional audio or visual cues that an alarm condition has occurred).

With its on-board I/O suite, the ASM-1 can be combined with a power supply module (ACP-1 or DCP-1) and audio visual notification (AVN-1) module to replicate the functionality of a standard Navy IC/SM panel. In contrast to competing solutions that require specific alarm circuit resistor values, the ASM-1 supports a range of values. This flexibility enables the module's use with a wide variety of legacy installations without the need to change the alarm circuit wiring.

Powered by a 33MHz ARM processor with 1MB of onboard RAM and 1MB of flash memory, the ASM-1 provides sufficient computational power to handle the most demanding applications. The embedded firmware stored in its flash memory 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 monitoring schemes for the ASM-1 in a matter of hours—even without any prior programming experience. Programming the device entails "drawing" a desired monitoring application using a vast array of configurable function blocks. Once complete, configuration programs are downloaded to the unit via a wireless IRDA interface.

The ASM-1 provides an integral user-interface for local indication. The ASM-1 front panel provides a suite of LEDs that indicate the status of the supervised circuits. These include three green LEDs per channel to indicate specific alarm states (normal, cutout, or standby), one red LED indicating positive chassis ground fault condition, and one red LED indicating negative chassis ground fault condition. The local panel also includes eight user-programmable three-color LEDs with an associated tag holder for signal labeling, as well as buttons to acknowledge and clear alarm conditions and to test that an alarm and its corresponding indicators are operational.

As with all Chameleon modules, the ASM-1 offers unequaled 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 grimiest settings. In fact, Chameleon modules can operate fully submerged.

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FAIRMOUNT AUTOMATION

Chameleon Alarm Switchboard Module (ASM-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 (Grade A - Pending)
Mechanical Vibration	MIL-STD-167B (Pending)
Electro-Magnetic Interference	MIL-STD-461E (Pending)
Facial/Housing Protection	NEMA 1,2,4,4X,5,6,12,12K,13

SUPERVISED INPUTS

Quantity	10 Channels
Sampling Rate	10 Hz Typical (Varies on Mode and number of channels used)
Input Range Accuracy	+/-10% of point (+/-150Ω minimum) over temperature
Electrical isolation: any input to control circuitry or chassis ground	400V
Maximum expected wire resistance	52.4Ω per leg (104.8Ω per cable)

DIGITAL OUTPUTS

Quantity / Type	2 Solid State Relays
Voltage Rating	115VAC Inductive or Resistive
Maximum Allowed Continuous Current (Any Single Relay)	1A

APPLICATION NOTES

Expected alarm circuit	Resistor R1 in series with parallel circuit consisting of Resistor R2 and Contact Closure K1
Allowable range for R1	0-11.5KΩ range; must exceed Max Cable Resistance + 500Ω to enable cable short detection
Typical value for R1	1.5KΩ
Allowable values for R2	0-12.0KΩ range; can be omitted but disables cable open detection
Typical value for R2	6.8KΩ
Other requirements on R1 / R2 selection	500Ω < R1 + R2 < 12KΩ; R2 > 1.1 x R1 + Max Cable Resistance + 500Ω

ELECTRICAL CHARACTERISTICS

Maximum Module Power Consumption	1.5W
Real-Time Clock Battery Life (Minimum; No power applied, 25°C)	10 Years
Supported Cable Diameters	Two glands 0.24”-0.47” and six glands 0.16”-0.31”
Supported Wire Gauges	16-28 AWG

OPERATOR INTERFACE

Digital Readouts	Eight user-programmable three-color (red/yellow/green) LEDs with label holders
Channel Select Readouts	One green LED per supervised circuit
Alarm Status Readouts	Three green LEDs per supervised circuit; two red LEDs for all supervised circuits
Pushbuttons	Channel Select (Next / Previous), Alarm Mode, Alarm Acknowledge, and Test buttons
Status Readout	One three-color (red/yellow/green) LED indicator
IrDA Wireless Interface	115KPBS SIR

PHYSICAL CHARACTERISTICS

Weight	2.2 pounds
Front Panel Dimensions	4” W x 6” L
Enclosure Height	3” H

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