

FEATURES

- Rugged extended temperature fan controller family supports both PWM fans and voltage regulated fans (-40° C to 85° C) in both air-cooled and conduction-cooled applications
- Supports 12 VDC, 24 VDC, 28 VDC and (special order) 48 VDC fans
- Voltage regulated version can control 12 VDC or 24 VDC fans directly with MIL-STD-704F 28 VDC input power, eliminating the need for a power supply to regulate the fan voltage
 - Supports PMBus commands for fan control including:
 - Controls fan speed of up to 4 fans
 - Monitors up to 4 temperatures
 - Monitors up to 4 fan tach outputs
 - Programmable thresholds for fan control, warnings and faults
 - Fan warning and fan fault
 - Temperature warning and temperature fault
 - Battleshort mode
 - Capable of operating in standalone mode or with up to 4 controllers, 16 fans
 - Firmware upgradable via RS-232 port

Designed to meet rugged standards including: MIL-STD-461F, MIL-STD-810G and MIL-STD-704F

RUGGED FAN CONTROLLER

OVERVIEW

The rugged fan controllers are intelligent nodes in a PMBus chassis management system; they can be used to monitor and control system fans and report fault conditions in rugged air-cooled or conduction-cooled applications. We offer two rugged fan controller versions: one provides fan PWM control and the other provides fan voltage regulated control.



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DATASHEET

The rugged fan controllers can be used as part of a PMBus chassis management system to monitor and control various chassis

level elements, such as power supplies, fans, displays, front panel controls and indicators. The chassis management system is modular and extensible, allowing it to adapt to the requirements of the specific system application.

TECHNOLOGY OVERVIEW

PHYSICAL DIMENSIONS		
WIDTH	2.5" (63.5MM)	
DEPTH	5.0" (127.0 MM)	
HEIGHT	1.5" (38.1MM) (INCLUDES HEIGHT OF MATING CONNECTORS)	
POWER		
INPUT VOLTAGE	11-32 VDC (NOTE 1)	
FAN CURRENT - PWM VERSION	SUPPORTS 18 A FOR 12, 24 AND 28 VDC FANS (NOTE 1)	
FAN CURRENT - VOLTAGE REGULATED VERSION	SUPPORTS 10 A FOR 12, 24 AND 28 VDC FANS; FAN VOLTAGE <= INPUT (NOTE 1)	
AUXILIARY VOLTAGE SOURCES	5 VDC FOR POWERING DEVICES ON SMBUS	
CONTROLLER DETAILS		
MAX NUMBER OF FANS	(4) 12, 24 OR 28 VDC (NOTE 1)	
MAX FANS SUPPORTED IN A SYSTEM	(4) CONTROLLERS, FOR CONTROL OF UP TO 16 FANS	
HOST INTERFACES	I ² C AND RS-232	
PROTOCOL COMPLIANCE	OPEN STANDARD PMBUS VERSION 1.1	
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RUGGED FAN CONTROLLER

DATASHEET

TECHNOLOGY OVERVIEW (continued from previous page)

SERIAL INTERFACE	3 WIRE SMBUS	
MICRO-CONTROLLER	PIC18F25K20	
INTERNAL MEMORY	32 KB	
CPU SPEED	(MIPS) 16	
OPERATIONAL MODES	PWM OR VOLTAGE MODES	
PMBUS	STANDALONE NODE OR SLAVE NODE	
TEMPERATURE SENSORS	MONITORS 3 EXTERNAL AND 1 INTERNAL	
CONTOLS OUTPUT	IN VOLTAGE MODE, OUTPUT CAN BE CONTROLLED IN A RANGE OF APPROXIMATELY 25 TO 97 PERCENT OF INPUT	
SOFT-START	SUPPORTS SOFT START TO ELIMINATE TURN ON SURGES	
HOTSWAP	SUPPORTS HOTSWAP TO ALLOW USE IN HOTSWAPPABLE FAN ASSEMBLIES	
SYSTEM NOISE CONTROL	POWER AND CONTROL INTERFACES ARE OPTICALLY ISOLATED TO TSOLATE FAN NOISE AND ELIMINATE GROUND LOOPS	
PROTECTION	REVERSE POLARITY, OVER-VOLTAGE, OVER-CURRENT, SHORT-CIRCUIT AND TRANSIENT PROTECTION	
FIRMWARE UPDATES	IN-SYSTEM PROGRAMMABLE VIA RS-232	
ENVIRONMENTAL		
TEMPERATURE	 OPERATING: -40° C TO 85° C STORAGE: -55° C TO 85° C 	
HUMIDITY	MIL-STD-810G, METHOD 507.5. PROCEDURE II, AGGRAVATED RH 85% +60° C (NOTE 2)	
SHOCK / VIBRATION	MIL-STD-810G, method 514.6, vibration and MIL-STD-810G method 516.6, shock	
FUNGAS / SALT FOG	MIL-STD-810G, METHOD 508.5, PROCEDURE I, FUNGUS AND MIL-STD-810G, METHOD 509.5, PROCEDURE I, SALT FOG	
EXPLOSIVE ATMOSPHERE	MIL-STD-810G, METHOD 511.5, PROCEDURE I	
ALTITUDE	MIL-STD-810G, METHOD 500.5, PROCEDURE II, OPERATION/AIR CARRIAGE	
SAFETY	UL1950 (SELV) CSA22.2, EN60950	
EMMISSIONS	MIL-STD-461F, method CE102 (Note 3)	

1. 48 VDC available with special order; contact factory.

2. Conformal coating board will allow it to meet RH of 95%.

3. Assumes that the fan controller is included within the confines of a chassis enclosure to meet a Faraday cage environment so all other emission requirements are met.

PMBUS/I²C DEFINITION:

Low speed serial interconnection between elements in the proprietary chassis management system

- PMBus: An open standard protocol layer for communication between PMBus compliant devices attached to the PMBus. PMBus devices must be compliant with the SMBus specification.
- SMBus: A widely adopted 2 wire serial interface standard which defines the electrical and data link protocol layer to I²C.
- I²C: The original 2 wire serial interface defined by and owned by NXP. I²C devices which do not conform to SMBus or PMBus requirements can co-exist with compliant devices on the PMBus.





RUGGED FAN CONTROLLER

DATASHEET

TABLE 2: ORDERING INFORMATION

PART NUMBER	DESCRIPTION
024-905	PWM VERSION FOR CONTROLLING 4 WIRE FANS WITH PWM INPUT OUT AND TACH OUTPUT
024-904	VOLTAGE CONTROL VERSION FOR CONTROLLING 3 WIRE FANS WITH TACH OUTPUT

1. These products are available for integration into Atrenne Computing Solutions chassis level products and solutions. Contact factory for separate purchase of fan controller modules; availability for separate purchase (not integrated into a chassis) is subject to minimum quantity orders and annual support contracts.

2. Contact factory for conformal coated versions.

3. Contact factory for conduction-cooled versions.

4. Consult factory for 48 VDC versions.

CONTACT INFORMATION

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