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Chapter 8.
Actuator Modules

8.1. Four Channel Actuator Module

8.1.1—Module Description

This Actuator Driver module receives digital information from the CPU and generates four proportional actuator-driver signals. These signals are proportional and their maximum range is 0 to 25 mAdc or 0 to 200 mAdc.

Figure 10-5 is a block diagram of the four-channel Actuator Driver module. The system writes output values to dual-port memory through the VME-bus interface. The microcontroller scales the values using calibration constants stored in EEPROM, and schedules outputs to occur at the proper time.

The microcontroller monitors the output voltage and current of each channel and alerts the system of any channel and load faults. The system can individually disable the current drivers. If a fault is detected which prevents the module from operating, by either the microcontroller or the system, the FAULT LED will illuminate.
This module requires no calibration; an actuator may be replaced with a like actuator without any module or software adjustment.



Figure 8-1. Four Channel Actuator Driver Module

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8.1.2—Module Specification

Output Current Ranges:	0–25 mA, 0–200 mA
Resolution:	12 bits
Accuracy @ 25 °C:	0.1% of full scale
Drift:	150 ppm/°C
Maximum Actuator Resistance:	45 Ω @ 200 mA, 360 Ω @ 25 mA
Maximum Actuator Inductance:	1 H
Dither:	Tunable amplitude, 25 Hz square wave
Analog Driver Bandwidth:	50 Hz minimum
Fault Detection:	
Load Faults:	Module monitors actuator impedance
Driver Faults:	Actuator current is interrupted if fault is detected
Microcontroller Faults:	System monitors a software watchdog
System Faults:	Actuator current is interrupted if communications with CPU are lost
Shutdowns:	Current in each channel may be individually interrupted

8.1.3—Installation

The modules slide into card guides in the control's chassis and plug into the motherboard. The modules are held in place by two screws, one at the top and one at the bottom of the front panel. Also at the top and bottom of the module are two handles which, when toggled (pushed outward), move the modules out just far enough for the boards to disengage the motherboard connectors.

8.1.4—FTM Reference

See Chapter 13 for complete field wiring information for the Four Channel Actuator Module FTM. See Appendix A for part number cross reference for modules, FTMs, and cables.

8.1.5—Troubleshooting

Each I/O module has a red fault LED, which indicates the status of the module. This LED will help with troubleshooting if the module should have a problem. A solid red LED indicates that the actuator controller is not communicating with the CPU module. Flashing red LEDs indicate an internal problem with the module, and module replacement is recommended.

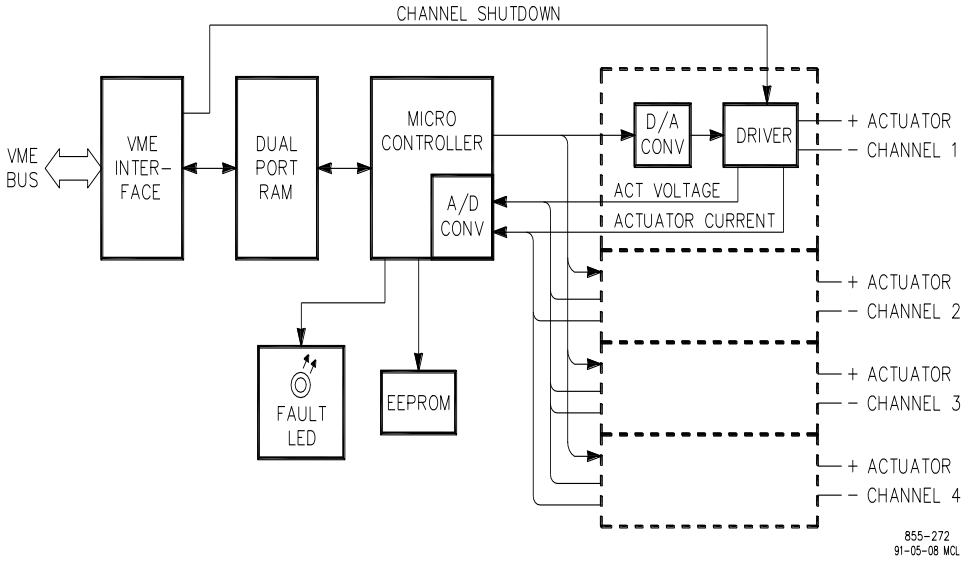


Figure 8-2. Four Channel Actuator Driver Module Block Diagram