10.2—Two Channel Actuator Controller

10.2.1—Module Description

Figure 10-3 is a block diagram of the two-channel actuator controller module. Each channel controls an integrating or proportional, hydromechanical or pneumatic actuator. Each actuator may have up to two position feedback devices. There are several versions available, and the module part number indicates the module's maximum output current capability. A MicroNet low-density discrete (gray) cable must be used with this module. Do not use an analog (black) cable.

Figure 10-1—Two Channel Actuator Controller Module

10.2.2—Module Specification

General:

Number of Channels	2
Actuator Type	Proportional or integrating, hydro-mechanical or pneumatic actuators
Power requirements	+5 V @ 0.5 A, +24 V @ 1 A

Driver:

Current range	(range is determined by part number)
10 mA Version	$\pm$12.25 mA max
25 mA Version	$\pm$30 mA max
50 mA Version	$\pm$60 mA max
100 mA Version	$\pm$120 mA max
200 mA Version	$\pm$245 mA max
Dither Current	25 Hz, 25% duty cycle, tunable amplitude
Max Load Resistance	10/(maximum current required, in amps)

Position Feedback:

Feedback Devices	1 or 2 per channel
Device Types	LVDT, RVDT
Excitation	3 kHz sine wave, amplitude programmable from 2 to 8 Vrms, 120 mA maximum, 1% THD maximum.
Input Impedance of Feedback Circuit	200 kΩ

Fault Detection:

Driver	Alarm if current error > 10% Alarm if open Alarm if shorted
Excitation	Alarm if voltage error > 10% or if in current limit
Feedback	Alarms for: open-wire, voltage-out-of-range, computed position out-of-range; ranges are programmable
Position Error	Programmable threshold and delay
Microcontroller	Software watchdog is monitored by the CPU module. Hardware watchdog monitors logic power, microcontroller activity.
System	Outputs turn off if communications with the CPU module are lost

Performance:

Position Accuracy	0.25% of full-scale @ 25 °C, does not include transducer error
Position Drift	150 ppm/°C, does not include transducer drift
Output Current Tolerance	±1% of full scale
Current Read back Tolerance	±5% of full scale

10.2.3—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.

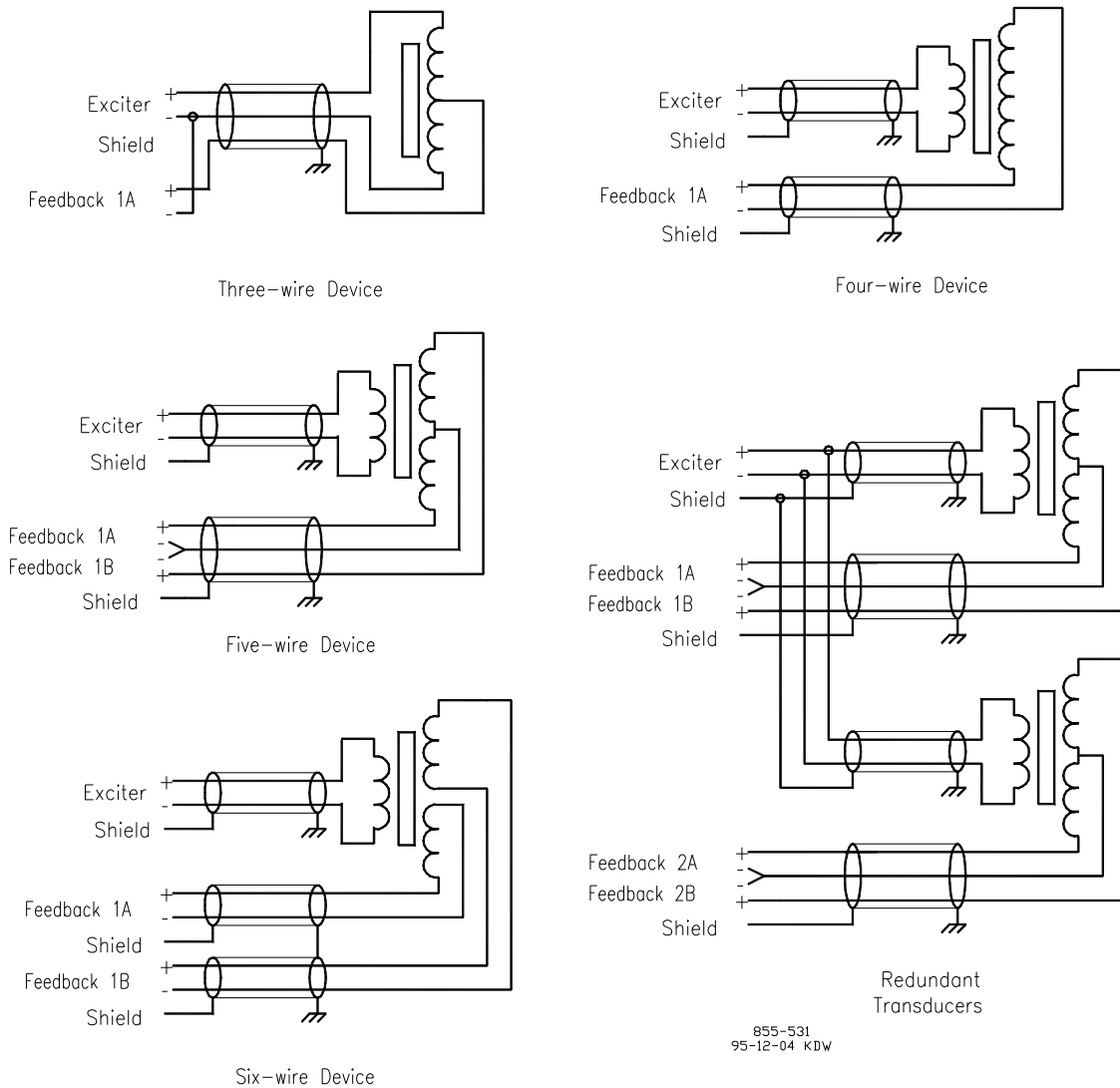Figure 10-2 shows examples of the field wiring for various transducer types.

Figure 10-2—Two Channel Actuator Controller Module, Wiring Example

10.2.4—FTM Reference

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

Part No	Status	Description	Extended Description	CSA	UL	ATEX	CE (LVD)	CE (EMC)	ABS	DNV	LRS
5501-367	A	BOARD	MICRONET SIMPLEX LV DISCRETE FTM	x		x	n/a	x	x	x	x
5501-370	A	BOARD	5009/MICRONET TMR POWER SUPPLY (24V DC)	x			n/a	x	x	x	x
5501-371	A	BOARD	MICRONET SIMPLEX MPU & AIO FTM	x			n/a	x	x	x	x
5501-372	A	BOARD	HIGH DENSITY ANALOG I/O TRIPLEX FTM	x					x	x	x
5501-373	A	BOARD	F/T RELAY - UL APPROVED								
5501-376	A	BOARD	ANALOG HIGH DENSITY MODULE SIMPLEX FTM	x		x	n/a	x	x	x	x
5501-380	A	BOARD	5009/MICRONET TMR POWER SUPPLY (120V AC/DC)	x			x	x	x	x	x
5501-381	A	BOARD	5009/MICRONET TMR POWER SUPPLY (220V AC)	x			x	x	x	x	x
5501-409	A	Board	MicroNet Motherboard (6 Slot)	x					x		x
5501-410	INA	Board	MicroNet Power Supply (24V DC)	x					x		x
5501-411	INA	Board	MicroNet Power Supply (120V AC/DC)	x					x		x
5501-412	INA	Board	MicroNet Power Supply (220V AC)	x					x		x
5501-423	A	Board	MicroNet Motherboard (12 Slot)	x					x		x
5501-428	A	BOARD	NETCON 2CH ACTUATOR CONTROLLER (10MA)	x			n/a	x	x	x	x
5501-429	A	BOARD	NETCON 2CH ACTUATOR CONTROLLER (25MA)	x		x	n/a	x	x	x	x
5501-430	A	BOARD	NETCON 2CH ACTUATOR CONTROLLER (50MA)	x		x	n/a	x	x	x	x
5501-431	A	BOARD	NETCON 2CH ACTUATOR CONTROLLER (100MA)	x		x	n/a	x	x	x	x
5501-432	A	BOARD	NETCON 2CH ACTUATOR CONTROLLER (200MA)	x		x	n/a	x	x	x	x
5501-461	ANP	MODULE	POSITION CONTROLLER TM DFB	x					x	x	x	x
5501-462	ANP	MODULE	POSITION CONTROLLER TM SFB	x					x	x	x	x
5501-465	A	BOARD	MICRONET SIMPLEX POWER SUPPLY (24V DC)	x			x	x	x	x	x
5501-466	A	BOARD	MICRONET SIMPLEX POWER SUPPLY (120V AC/DC)	x			x	x	x	x	x
5501-467	A	BOARD	MICRONET SIMPLEX POWER SUPPLY (220V AC/DC)	x			x	x	x	x	x
5501-468	ANP	MODULE	NETCON CPU_040 W/O LL MEMORY				n/a	x			
5501-469	A	MODULE	NETCON CPU_040 WITH LL MEMORY (EMI FILTER)	x			n/a	x			
5501-470	A	MODULE	NETCON CPU_040 W/O LL MEMORY (EMI FILTER)	x			n/a	x			
5501-471	A	MODULE	NETCON 5000B SIO W/SCREW POSTS	x		x	n/a	x	x	x	x
5501-473	ANP	MODULE	NETCON DUAL OVERSPEED								