

**MC1-3
3-Channel
Module Case
W/Power Supply**

INDEX

MODEL MC1-3

MULTI-CHANNEL TRANSDUCER CONTROL AND SIGNAL-
CONDITIONING SYSTEM WITH PLUG-IN POWER SUPPLY

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MC1 System Brochure
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MULTI-CHANNEL TRANSDUCER CONTROL AND SIGNAL-
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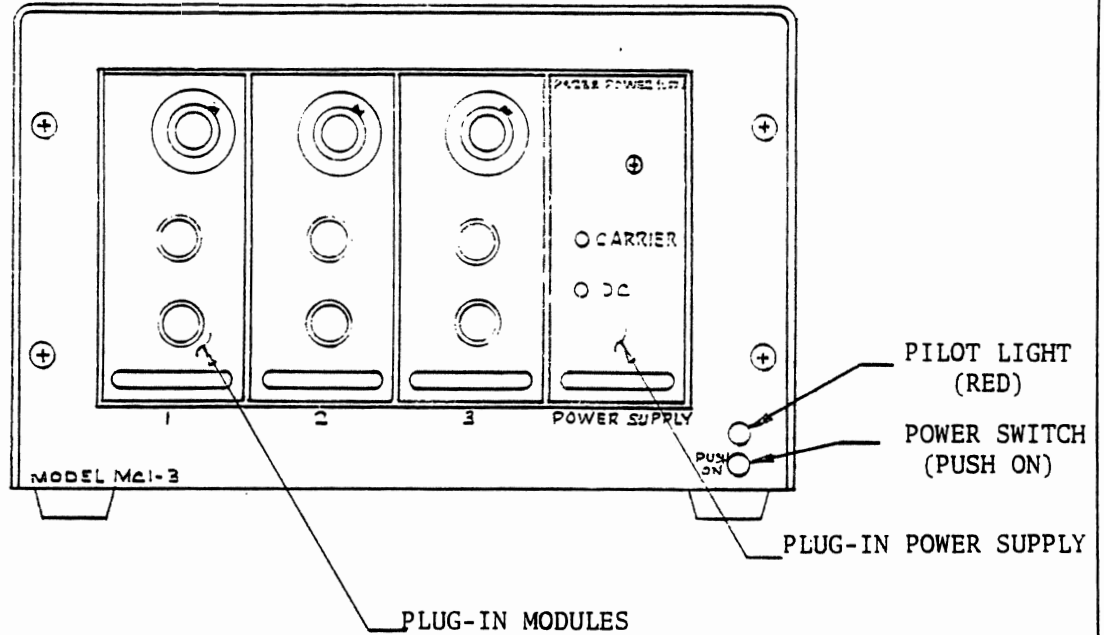
1.0 GENERAL

1.1 DESCRIPTION

The MC1-3 Module Case houses a plug-in power supply and up to 3 plug-in signal-conditioning modules. Signal-conditioning modules as described in the MC1 brochure and Applications Guide in the Appendix are available for use with variable reluctance, LVDT, strain gage, and temperature transducers, piezo-electric accelerometers, voltage and frequency input signals. The Model PS238 Plug-in Power Supply supplies the carrier and DC operating voltages for the various signal-conditioning modules.

The MC1-3 operates from 115 or 230 VAC, 50-400 Hz, and contains a fuse-protected AC-DC converter which supplies unregulated ± 24 VDC to the power supply plug-in slot, which has a connector interlock to prevent insertion of other modules. When plugged in, the power supply provides operating power to the other module positions. A line-power switch and indicator light are located on the front panel. Signal input and output connectors for each module position are located on the rear panel. Figure 1.1 shows the MC1-3 configuration.

FRONT VIEW



REAR VIEW

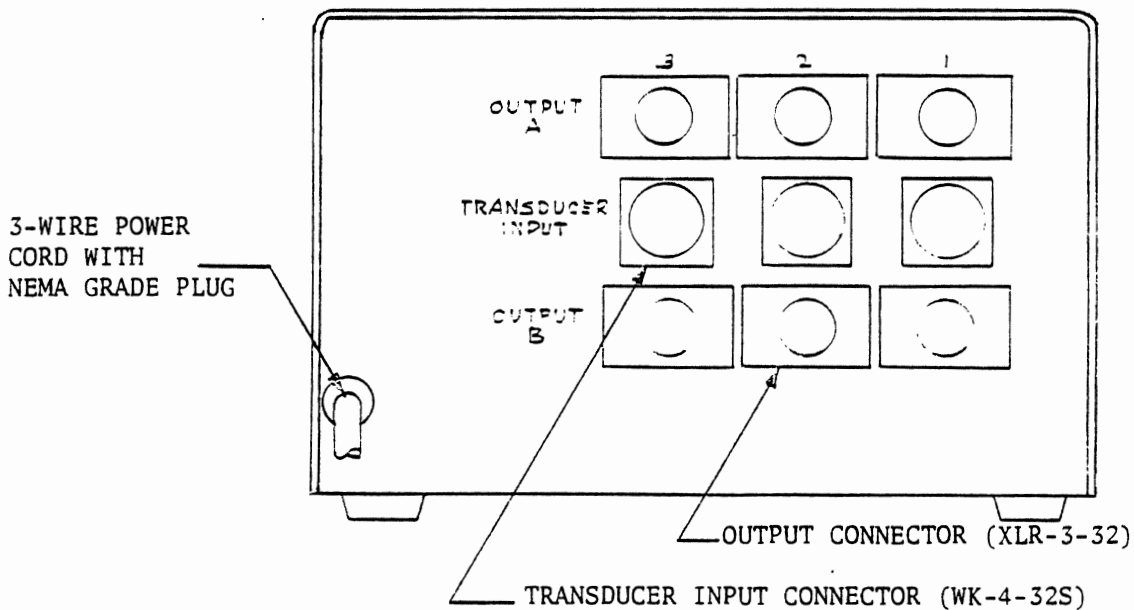


FIGURE 1.1 CONNECTOR/CONTROLS LOCATION, MC1-3

2.0 SPECIFICATIONS

2.1 ELECTRICAL

Power Input: 115/230 VAC, 50-400 Hz
(jumper change required to convert
from 115 V to 230 V power)

Power Consumption: 15VA, maximum

Fuse (cartridge): .75A for 115 VAC;
Littlefuse Type 3AG .50A for 230 VAC
Slo-Blo (Internally located on
AC-DC converter board)

Line-Power Indicator: Red LED; lit when line-power on

Temperature - Operating: 0-160°F

2.2 ELECTRICAL CONNECTIONS

Transducer Input: WK-4-32S, 1/channel,
mating connector WK4-21C

Output: XLR-3-32S, 2/channel,
mating connector XLR-3-11C

Power: 8-ft. 3-wire line cord with molded
3-pin grounding plug to meet UL
Standards

2.3 MECHANICAL

Size: 5.25" H X 8.50 W X 12.70" D
(13.3cm X 21.6cm X 32.2cm)

(Standard Rack Mount Kit for
single or double MC1-3 is
available)

Weight: 7 lbs. (3.2 kg)
(Not including Modules)

3.0 OPERATION

3.1 INSTALLATION

Carefully unpack the module case. Connect the power cord to the specified power source and move the front panel power switch to the "ON" position. The red pilot light should light to indicate that the 24 VDC supply is operating properly. If the Model PS238 Power Supply Module is installed, the DC and carrier lights on the PS238 front panel should light to indicate that the power supply is operational.

Install the selected plug-in modules in the module case. Be sure that the modules are fully seated to insure good electrical connections. All modules may be installed or removed with the power "on" without damage to the modules or power supplies and without effect on adjacent channels. Operating power to the modules will not be available unless the power supply module is in place. Transducer excitation voltage will not be available at the rear panel input connectors unless the appropriate signal-conditioning module is plugged in.

As the power dissipated in the module case, even with all modules installed, is low, no ventilation is required for specified performance.

3.2 INPUT/OUTPUT CONNECTIONS

Each of the three signal-conditioning module channels has one WK-4-32S input connector and two XLR-3-32 output connectors mounted on the rear panel of the MC1-3 case. These connectors are internally wired to the circuit-board connectors at the rear of each module slot as shown in Figure 3.2.1. All module positions are bussed to the power-supply position for AC carrier power, ± 15 VDC power, and power ground.

The individual Instruction Manuals for the various signal-conditioning modules show the input and output connections required for different types of transducers and operational functions. Figure 3.2.2 shows typical wiring for variable-reluctance and strain-gage transducer inputs.

Mating connectors are:

Input - Cannon WK-4-21C

Output - Cannon XLR-3-11C

These are not supplied unless ordered with the module case.

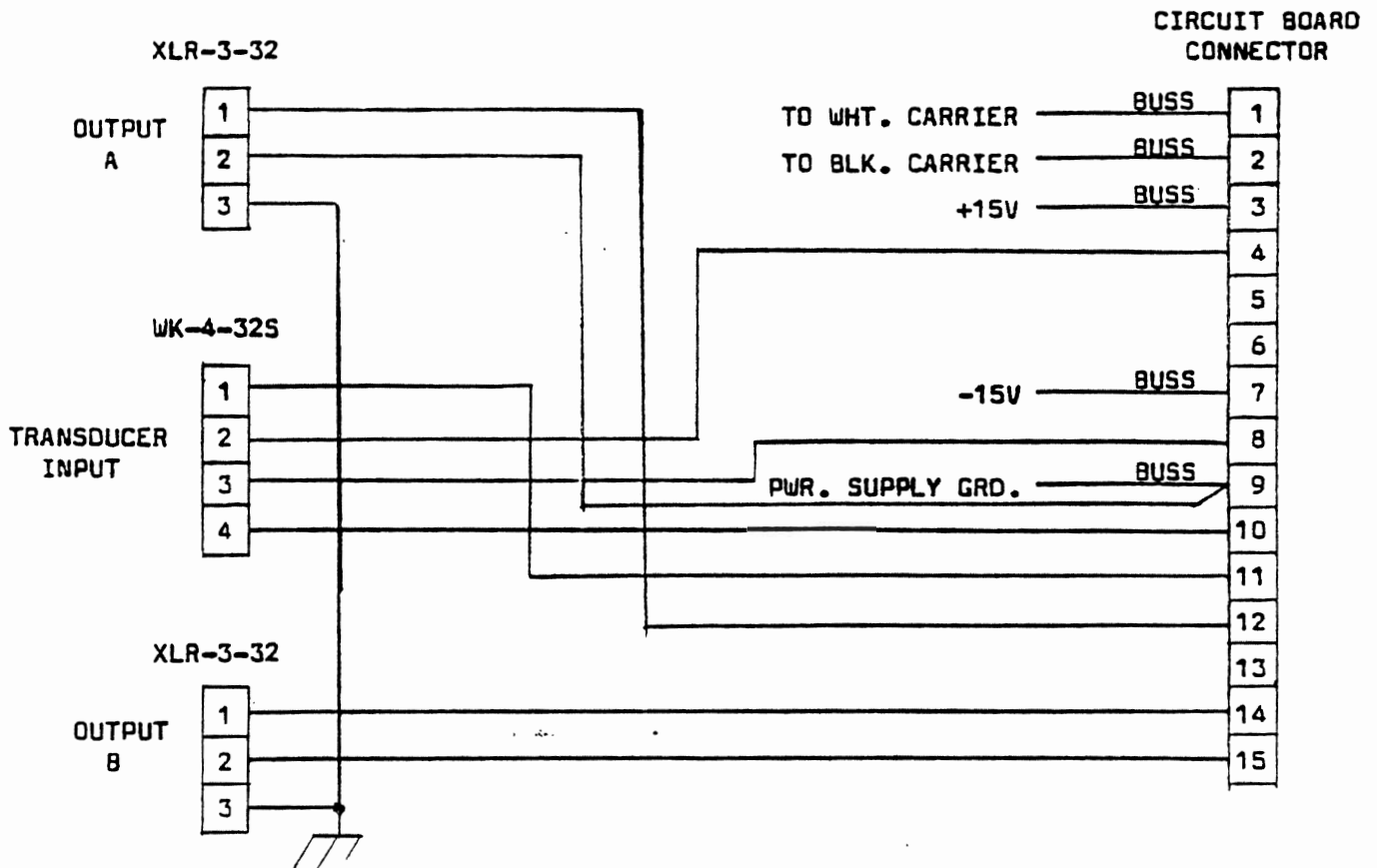


FIGURE 3.2.1: INTERNAL CONNECTOR WIRING

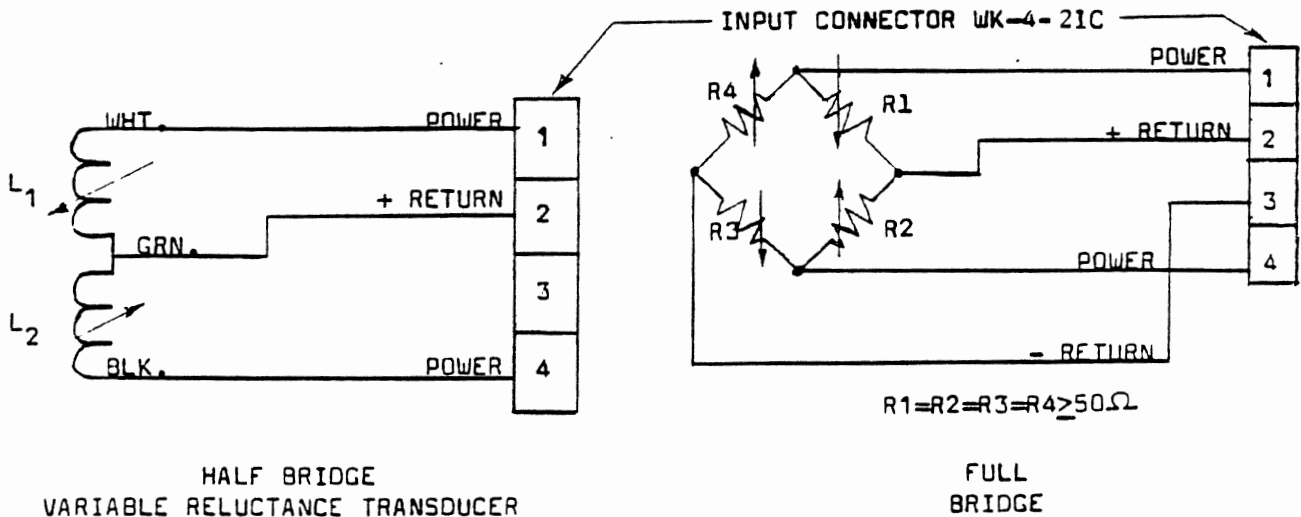


FIGURE 3.2.2: TYPICAL TRANSDUCER WIRING
(Used with Carrier Demodulator or Strain-Gage Modules)

3.3 PLUG-IN POWER SUPPLY

The Model PS238 Power Supply is required to provide AC carrier and DC operating power to the signal-conditioning modules. This power supply plugs into the right-hand module position in the MC1-3 case. If plugged into any other position, it will not be operational.

The PS238 Instruction Manual is included in the Appendix.

3.4 PLUG-IN SIGNAL-CONDITIONING MODULES

Any of the MC1 System Signal-Conditioning modules can be plugged into any channel except the power-supply channel of the MC1-3 case. If plugged into the power-supply channel, an interlock will prevent mating of the circuit-board connector. Modules may be inserted or removed with the power on with no damage or effect on operation of other modules. For input/output connections and operation, consult the Instruction Manual for the specific module.

Signal-conditioning modules for a wide variety of transducers are available for use in the MC1-3 case. These are described in the MC1 brochure and Applications Guide in the Appendix.

4.0 MAINTENANCE AND REPAIR

4.1 TROUBLE-SHOOTING

The MC1-3 contains only a 115/230 VAC to ± 24 VDC converter which powers the PS238 plug-in power supply. Figure 4.1 presents the converter schematic. If the red LED line-power indicator on the front panel does not light when the line power is switched on, turn power off and perform the following checks with the PS238 power supply removed.

- 4.1.1 Disconnect power cord plus from power source.
- 4.1.2 Remove the cover by removing the five attachment screws on each side.
- 4.1.3 Remove the cartridge fuse from the fuse clip on the converter circuit board and check the fuse; if open, replace with new fuse (see Specifications).
- 4.1.4 With an ohmmeter, measure the resistance between the two line-power contacts on the power-cord plug. This should be approximately 35 ohms. If open, the primary of Transformer T101 is open and T101 must be replaced. Place the power switch in the ON position for this check.

- 4.1.5 With an ohmmeter, make the measurements listed in the following table. Terminal numbers are for the converter circuit-board connector. Polarities shown are the ohmmeter test lead polarities. Normal readings are not shown as they may vary due to the type of ohmmeter and resistance range used.

Terminals	Resistance Reading	Symptom
6(+) to 15(-)	<100 Ω	C103 shorted
6(-) to 15(+)	Open	CR102 or T101 open
4(+) to 15(-)	Open	CR102 or T101 open
4(-) to 15(+)	<100 Ω	C104 shorted

This procedure will serve to check the condition of the major converter components. If filter capacitors C103 or C104 are internally shorted, replace them before turning on the power for further testing.

- 4.1.6 Turn the power on and measure the DC voltages as follows at the terminals of the converter circuit-board connector:

+24 VDC: Terminal 6(+) to 15
 -24 VDC: Terminal 4(-) to 15

If these voltages are within $\pm 10\%$ of the nominal value, the converter is functional, and either the LED Indicator Light (CR101) is faulty or Resistor R107 is open.

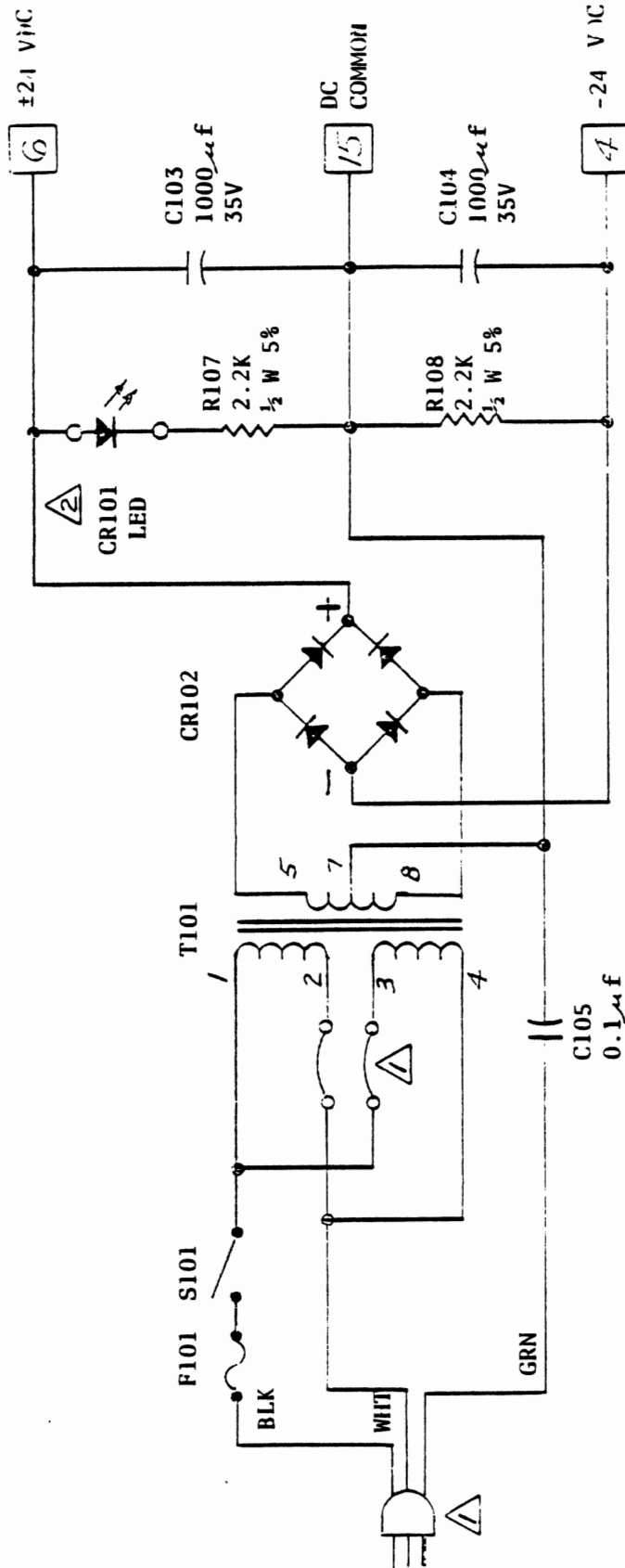
- 4.1.7 If either the +24 VDC or -24 VDC measurement points read zero, rectifier CR102 is defective and should be replaced.

4.2 CONVERTER REPLACEMENT

In case of converter malfunction, Validyne recommends that the converter circuit-board assembly be replaced with a new assembly, which is available from stock for immediate delivery. Order:

Validyne P/N 9205 - Converter Circuit-Board Assy

If desired, the converter assembly or the MC1-3 Case may be returned for repair subject to the Validyne Warranty and Repair Policy.



△ JUMPERS INSTALLED FOR 115 VAC OPERATION. FOR 230 VAC, REMOVE JUMPERS AND CONNECT 2 TO 3. PLUG NOT SUPPLIED FOR 230 VAC.

△ LINE-POWER INDICATOR: ON FRONT PANEL

FIGURE 4.1 SCHEMATIC - MCI-3 MODULE CASE