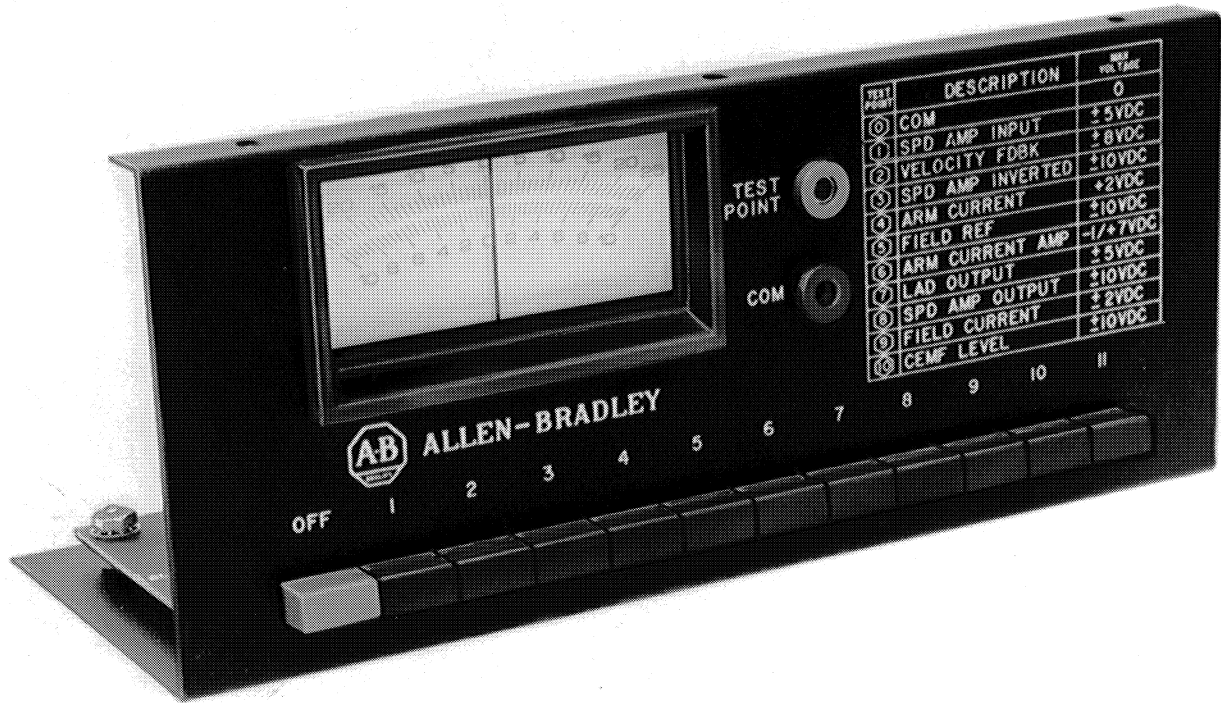




ALLEN-BRADLEY METER MODULE



1370 - MM

Because of the variety of uses for this equipment and because of the differences between this solid state equipment and electromechanical equipment, the user of and those responsible for applying this equipment must satisfy themselves as to the acceptability of each application and use of the equipment. ***In no event*** will Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The illustrations, charts and layout examples shown in this manual are intended solely to illustrate the text of this manual. Because of the many variables and requirements associated with any particular installation, the Allen-Bradley Company ***cannot*** assume responsibility or liability for actual use based upon the illustrative uses and applications.

No patent liability is assumed by Allen-Bradley Company with respect to use of information, circuits, equipment or software described in this text.

Reproduction of the content of this manual, in whole or in part, without written permission of the Allen-Bradley Company is prohibited.

Table of Contents

Section	Title	Page
1.0	INTRODUCTION	4
	1.1 General	4
	1.2 Operation	4
2.0	UNPACKING AND INSPECTION	5
	2.1 Unpacking	5
	2.2 Inspection	5
3.0	INSTALLATION	5
	3.1 General	5
	3.2 Wiring	5

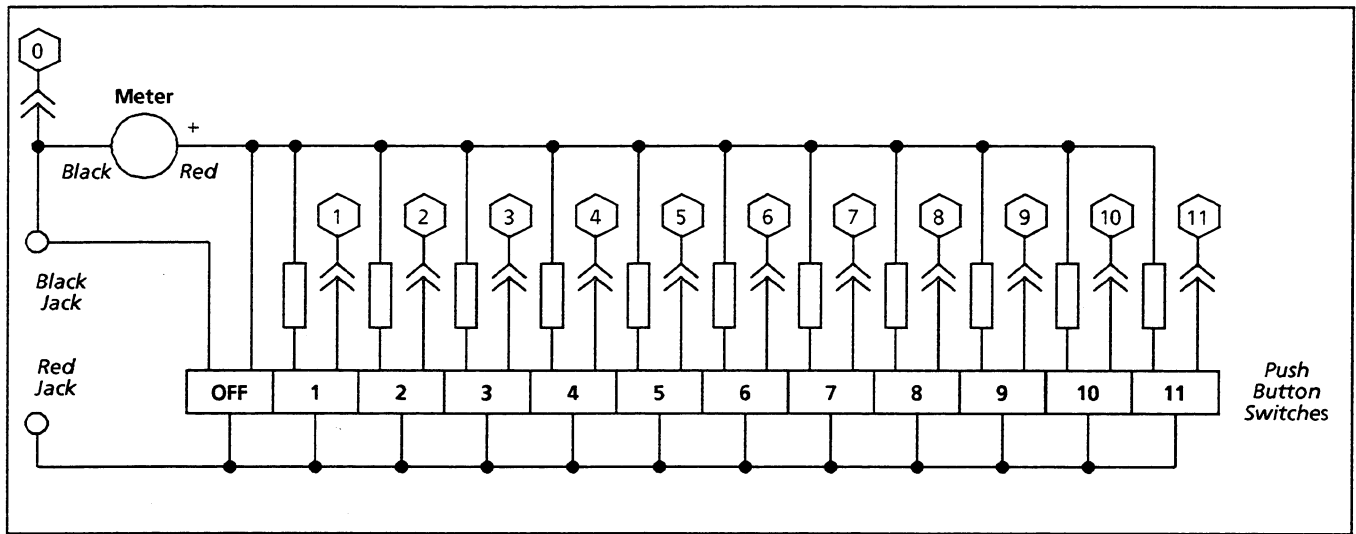


Figure 1. Bulletin 1370 - MM Block Diagram

1.0 INTRODUCTION

1.1 General

The Bulletin 1370 Meter Module provides a means of selectively monitoring critical reference and feedback signal levels present in the DC Drive Module. The Meter Module provides selectable test points that may be monitored by the integral meter or an oscilloscope.

Use of the Meter Module in troubleshooting enables rapid detection of malfunctions. The multi-range, zero center integral meter is connected to the appropriate scaling network and test points in the Drive Module via a twelve conductor ribbon cable.

The two test jacks located on the front of the Meter Module are used for connecting an oscilloscope or other piece of ungrounded test equipment.

CAUTION:

Damage to equipment may result if metal chassis of test equipment is grounded.

A grounded chassis can place the "common" test probe at ground potential.

Drive "common" circuits may be floating above ground potential during operation and test.

Connection of grounded probes to drive common circuits can cause damage to drive and test equipment.

An ungrounded metal test equipment chassis must be insulated from grounded metal surfaces.

WARNING:

Do Not touch metal test equipment chassis. A shock hazard exists if contact is made with the ungrounded chassis and any grounded metal object when test leads are connected to drive circuitry.

1.2 Operation

Depressing any one of the eleven black push buttons connects the meter to the corresponding test point in the DC Drive Module. When changing from one test point to another, the currently selected test point push button must first be depressed and released. Depressing the red push button locks out all of the buttons and disconnects the meter from the test points. The test points are indicated on the DC Drive Module schematic diagram as small hexagons with the test point number within the hexagon. The schematic diagram will also have a Meter Module Table showing the test point number, full scale voltage, and maximum voltage to be expected at that test point.

Meter Scales

The Bulletin 1370 Meter Module utilizes a zero center meter. The needle deflects to the left for negative polarity signals and to the right for positive polarity signals. The bottom scale of the meter is read for signals up to 10 volts while the top scale indicates signals up to 2.5 volts. Table 1 gives the full scale and nominal maximum voltages of each test point.

Table 1. Meter Module Test Point Table

Test Point	Description	Full Scale Voltage	Nominal Max. Voltage
OFF	Off	0	0
1	Speed Amp Input	0 - $\pm 10V$	± 5 VDC
2	Velocity Feedback	0 - $\pm 10V$	± 8 VDC
3	Speed Amp Inverted	0 - $\pm 10V$	± 10 VDC
4	Armature Current	0 - $\pm 2.5V$	+2 VDC
5	Field Reference	0 - $\pm 10V$	± 10 VDC
6	Arm. Current Amp	0 - $\pm 10V$	-1/+7 VDC
7	LAD Output	0 - $\pm 10V$	± 5 VDC
8	Speed Amp Output	0 - $\pm 10V$	± 10 VDC
9	Field Current	0 - $\pm 2.5V$	± 2 VDC
10	CEMF Level	0 - $\pm 10V$	± 10 VDC
11	Not Used	—	—

2.0 UNPACKING AND INSPECTION

2.1 Unpacking

Remove all packing material from within the Meter Module. If any part of the equipment will not be installed when it is unpacked, it should be stored in a clean, dry place. The storage temperature must be between 0°C and 65°C with a humidity range of 5% to 95%, non-condensing, to guard against damage to components.

2.2 Inspection

After unpacking, check the material received against the Bill of Lading to assure that the nameplate description of each item agrees with the material ordered. Inspect the Module for physical damage such as dents or broken wires. If any damage is found, a claim should be filed immediately with the carrier.

NOTE:

Before installation, a general inspection of mechanical integrity should be conducted on all components (check for: loose or broken parts, loose wires or connections and packing materials).

3.0 INSTALLATION

3.1 General

WARNING:

Before installing this option, disconnect and lock out control equipment from power sources to avoid hazards of electrical shock or unintended actuation of controlled equipment.

The Meter Module is designed to mount on the Bulletin 1370 DC Drive Module enclosure door. The three holes on the top of the Meter Module will line up with the three holes in the flange located on the bottom of the enclosure door.

To mount the Meter Module, use three (3); #8-32 X 3/8" P.H.M. screws, flat and star washers, and #8-32 hex nuts (refer to Figure 3). The front of the Meter Module should be mounted flush with the Drive Module enclosure door.

3.2 Wiring

1. Connect one end of the ribbon cable (supplied) to the Meter Module board connector **1CON** in a fashion indicated by Figure 2. Verify that the locking tabs are in place.

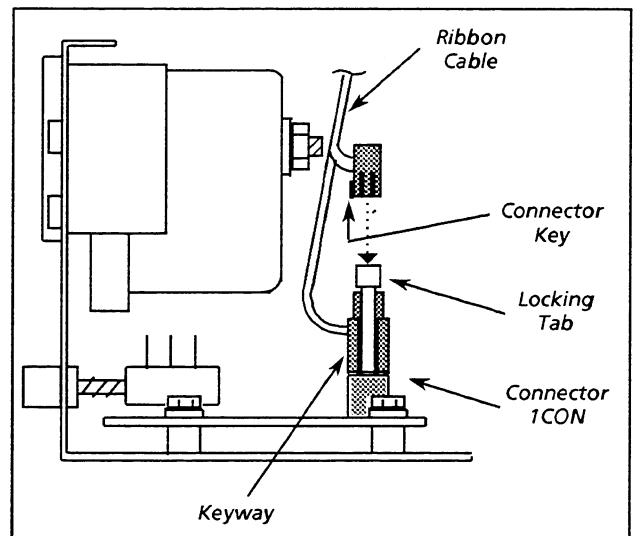


Figure 2. Ribbon Cable Orientation on 1CON

NOTE:

The ribbon cable has two (2) female connectors. One connector has the key facing the ribbon cable, the other connector has the key on the side opposite the ribbon cable.

The keyway and arrow, on connector **1CON** and the ribbon cable connector, *must* be aligned as shown in Figure 2.

2. Connect the remaining end of the ribbon cable to connector **J12** on the Drive Module's Power Supply Board (see Figure 3). Verify that the locking tabs are in place.

3. Orient the ribbon cable as shown in Figure 3. Note relative position of the red tracer wire.

NOTE:

The keyway and arrow, on connector **J12** (Power Supply Board) and the ribbon cable connector, *must* be properly aligned.

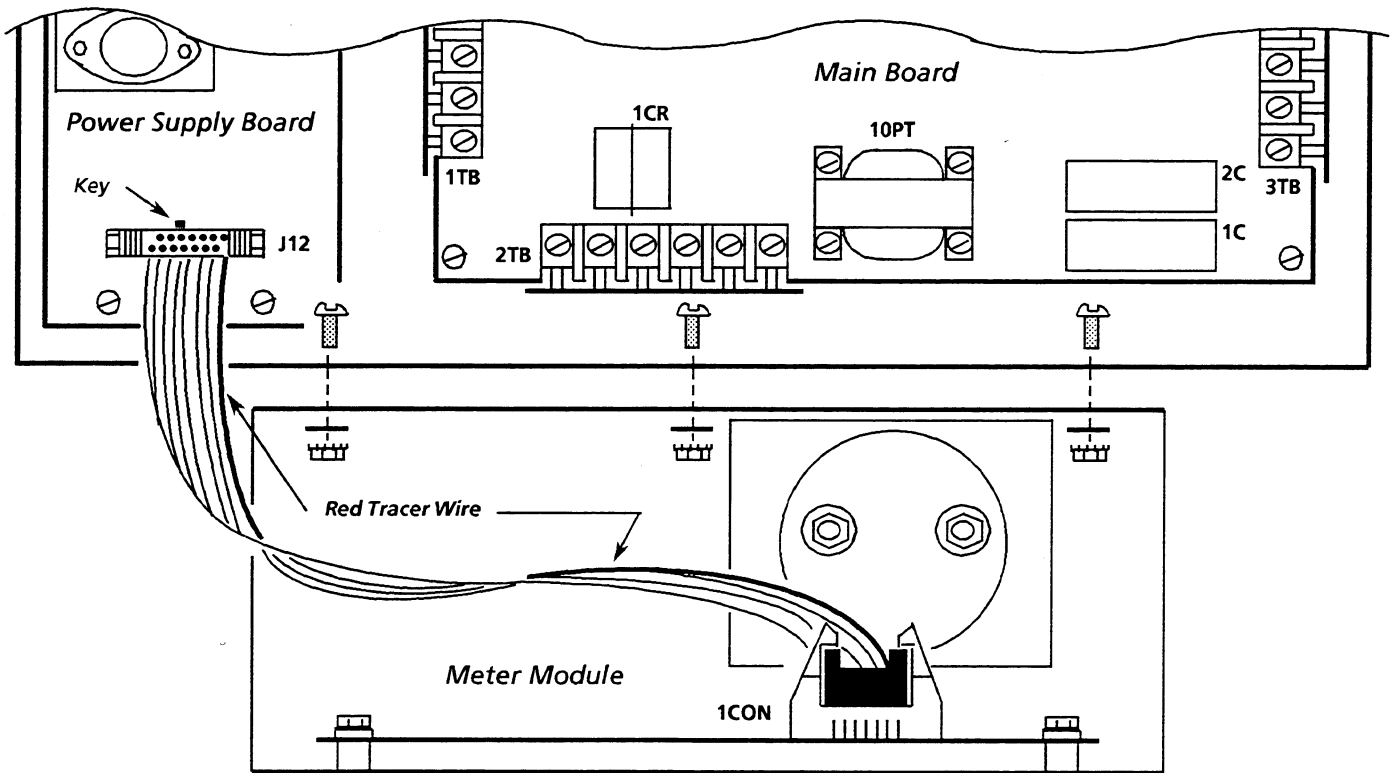


Figure 3. Ribbon Cable Interconnection (Rear View of Module Door)



ALLEN-BRADLEY

Drives Division
Cedarburg, Wisconsin 53012-0005

Allen-Bradley

P/N 112065 REV. 2

Printed in U.S.A.