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Fisher Controls

PROVOX Instrumentation Planning Guide

August 1981 PN4.11:DM6001

Installing Type DM6001 and DM6003 Multiplexer Units

INTRODUCTION

This installation planning note describes the data highway, alarm wiring, and dc power connections for the Type DM6001 Multiplexer Control Unit and Type DM6003 Multiplexer Input/Output (I/O) File Unit, shown in figure 1. Other related information is found in the documents listed in table 1. Both the multiplexer control unit and I/O file unit are installed in a PROVOX front access cabinet.

A multiplexer control unit, up to 16 multiplexer I/O file units, and a series of input and output units make up the multiplexer. The multiplexer accepts analog, pulse count, or discrete signals from field devices and analog controllers and converts them to digital data that can be transmitted on the data highway. Similarly, the multiplexer can convert digital data from the data highway into analog and discrete signals that may be routed to field devices or recorders.

The Type DM6001 Multiplexer Control Unit, shown in figure 2, consists of a card file, a power converter card, a parallel I/O interface card, a microprocessor/read-only memory (MPU/ROM) card, an expansion ROM card, one to three random-access memory (RAM) cards, a communications interface assembly (CIA), and up to two additional cards, depending upon the configuration selected. Configurations that are available for a multiplexer control unit may include:

- A second CIA for redundant highway communications.
- A nonvolatile memory (NVM) card for storage of multiplexer configuration data during power outages, allowing the multiplexer to come back on line automatically.

The Type DM6003 Multiplexer I/O File Unit, shown in figure 3, consists of a card file with a parallel buffer card and accepts up to six I/O units. The I/O units provide the interface to external sensors or devices. The input units accept combinations of signals from low- and high-level analog devices, pulse count devices, thermocouples, resistance-temperature detectors, and ac instrumentation. The output units provide high-level analog and discrete signals. The parallel buffer card is the interface between the I/O units and the multiplexer control unit. Each I/O unit consists of an input or output signal circuit card and a field termination assembly. The signal wiring from the field devices or sensors connects the device input or output signals to the field termination assembly. These signals are then processed through the signal circuit cards to the parallel buffer card and the multiplexer control

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unit. Wiring for the I/O units is described in the installation planning notes for each unit.

PHYSICAL INSTALLATION PLANNING

The card file outline dimensions for both the multiplexer control unit and the multiplexer I/O file unit are identical and are shown in figure 4. These files provide the necessary mounting and electrical connections for all cards within each unit.

The minimum multiplexer configuration consists of one control unit, one I/O file unit, and one I/O unit. The multiplexer can be expanded by connecting up to 16 I/O file units to the control unit. This permits each multiplexer to contain up to 96 I/O units.

Note

Although the multiplexer is designed to process signals from up to 96 I/O units, the actual capacity may be limited to less than this number, depending upon point types, scan time, and memory required.

For more details on defining placement and power specifications and the configuration for memory sizing, refer to the multiplexer definition and configuration notes as listed in table 1.

The multiplexer control unit and the first I/O file unit are connected by a 3-foot (0.9-meter) multichannel flat ribbon interfile cable. The 3-foot (0.9-meter) cable is the only one that can be connected between the control unit and an I/O file unit. A 2-foot (0.6-meter) cable is used to connect additional I/O file units in the same cabinet, and a 6-foot (1.8-meter) cable provides connection between I/O file units in adjacent cabinets.

ELECTRICAL INSTALLATION PLANNING

All wiring to field devices is performed at the field wiring terminals of the I/O units and is explained in the installation planning note for the appropriate unit. When routing wires to the card files mounted in front-access cabinets, bring the field device wiring into the files through the right vertical cable tray, and route the data highway through the left vertical cable tray. However, in those cabinets containing many I/O units, it will probably be necessary to use both vertical cable trays for the field device wiring. In that case, separate the low-level analog signal wiring from all other signal wiring to help minimize interference between signals. Route low-level signals through the right vertical cable tray and high-level, pulse count, and discrete signals through the left vertical cable tray.

The data highway cable is connected to the BNC connector on the CIA (figure 1) and can be routed through either the left or right vertical cable tray; however, if a redundant highway is used, the two highways should not be routed through the same cable tray.

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Errata Sheet
for

Installation Planning Note PN4.11:DM6001
Installing Type DM6001 and DM6003
Multiplexer Units (August 1981)

1. Add the following sentence to the end of the fourth paragraph in the Physical Installation Planning section, page 2:

   "The sum of all cable lengths from the control unit to the last I/O file unit cannot be more than 50 feet (15.2 m)."

2. Insert this errata sheet between pages 2 and 3 of Installation Planning Note PN4.11:DM6001.

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Alarm wiring is connected to either the power distribution panel or the alarm and power terminal block on the left side of the control unit card file, shown in figure 5. Any external alarm wiring should be routed through the left vertical cable tray. The basic connections for the data highway cables, alarm wiring, and dc power are explained below.

Data Highway Connections

Data highway cable connections between cabinet groupings are made at the installation site. Open tee connectors are left on CIAs to indicate a data highway cable connection is necessary. For the multiplexer control unit, the primary data highway cable is connected to the CIA in slot 17, and the redundant data highway cable is connected to the CIA in slot 19 is shown in figure 2. For more information about data highway cable routing and connector installation, see the related documents listed in table 1.

Alarm Connections

Two normally open alarm relay contact terminals are available at the alarm and power terminal block on the left side of the multiplexer control unit card file. These contacts may be connected to an external annunciator or similar device to indicate the loss of output from the power converter card of the multiplexer control unit. The contacts are rated 0.8 amps at 29 volts dc. The relay contacts remain closed during normal operation and open upon loss of output (i.e., zero volts, a low voltage, or in general, detection of a failed condition) from the power converter card.

Referring to figure 5, connect the alarm screw terminals on the alarm and power terminal block (top two screw terminals) to the appropriate terminals of the annunciator or alarm device. For more information and wiring diagrams for power distribution panel alarm wiring, see the related documents listed in table 1.

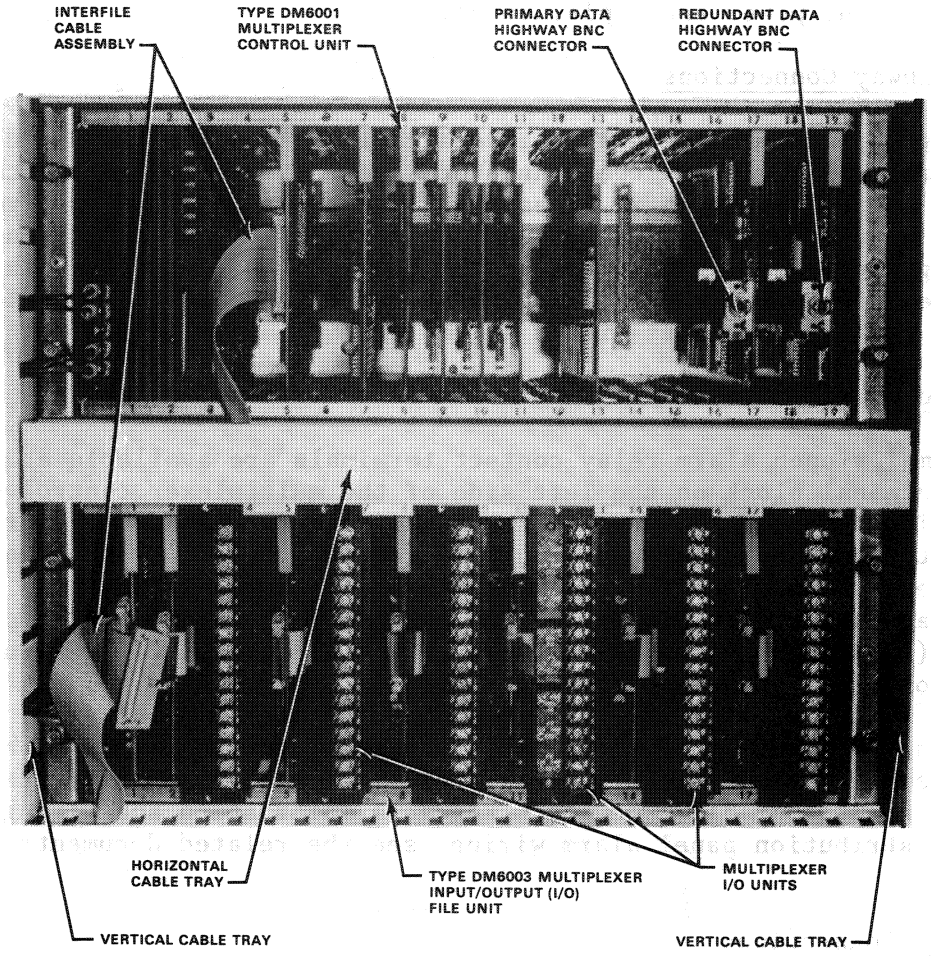
DC Power Connections

Figure 5 shows the dc power connections on the alarm and power terminal block. For typical cabinet dc power wiring information, see the related documents listed in table 1.

Table 1. Related Documents

Defining DM6000 Series Multiplexer Products Definition Note
Configuring DM6000 Series Multiplexer Products Configuration Note
AC and DC Power and Grounding Installation Planning Note
Signal Wiring and Data Highway Guidelines Installation Planning Note
Installing DH7000 Series Data Highway Products Installation Planning Note

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Figure 1. Typical Multiplexer Control Unit and Multiplexer I/O File Unit Mounted in Front-Access Cabinet

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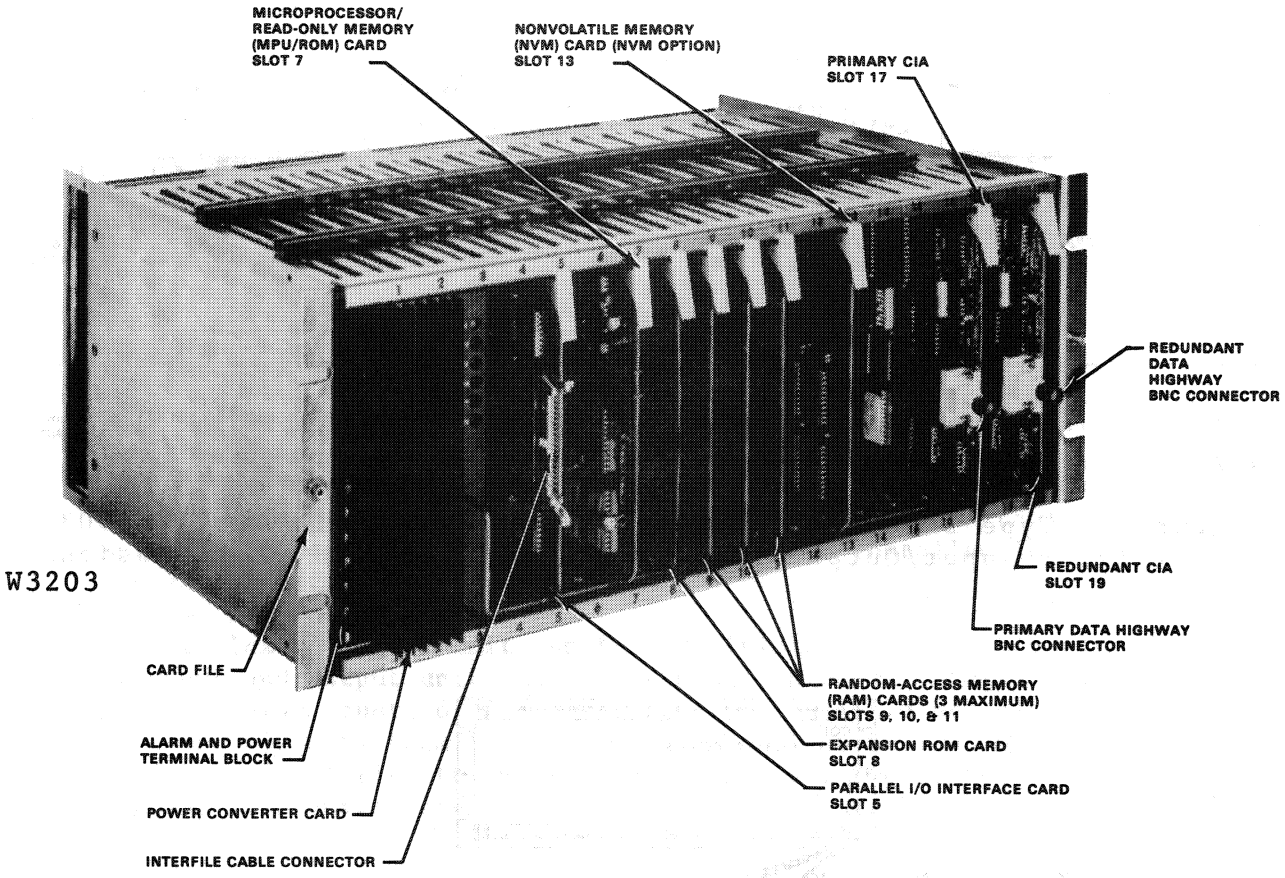


Figure 2. Type DM6001 Multiplexer Control Unit

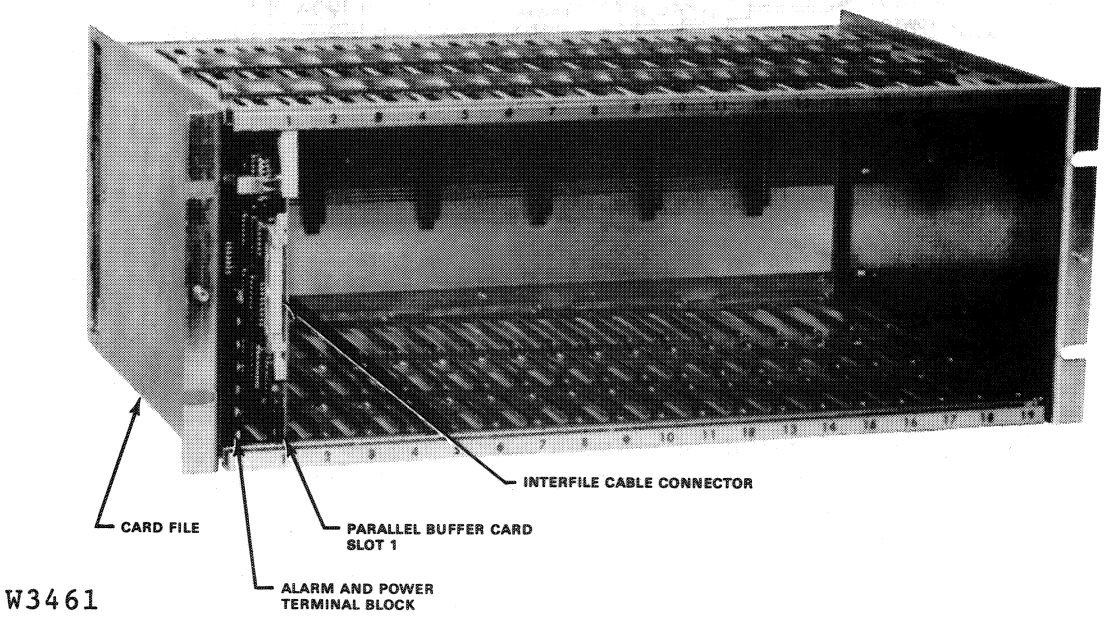


Figure 3. Type DM6003 Multiplexer Input/Output (I/O) File Unit

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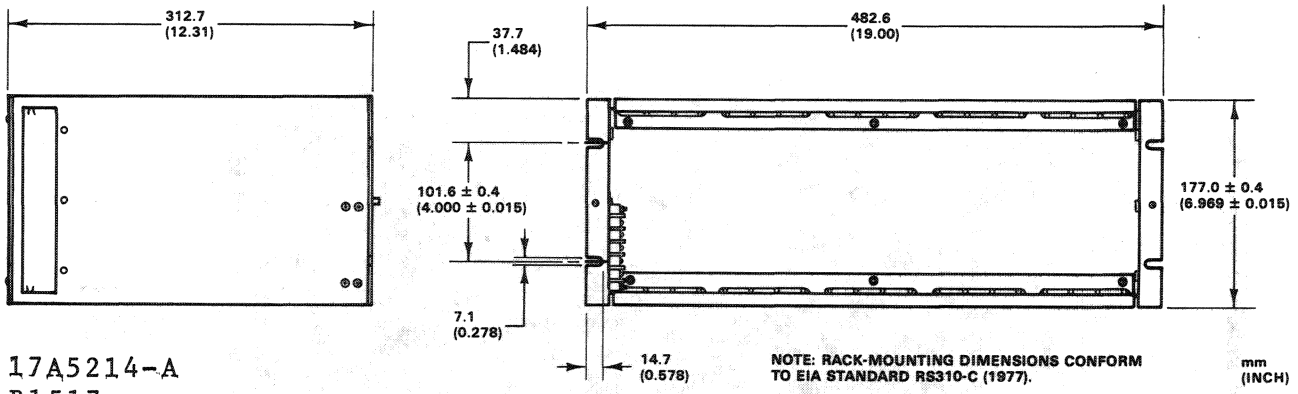


Figure 4. Type DM6001 Multiplexer Control Unit and Type DM6003 Multiplexer Input/Output File Unit Card File Outline Dimensions

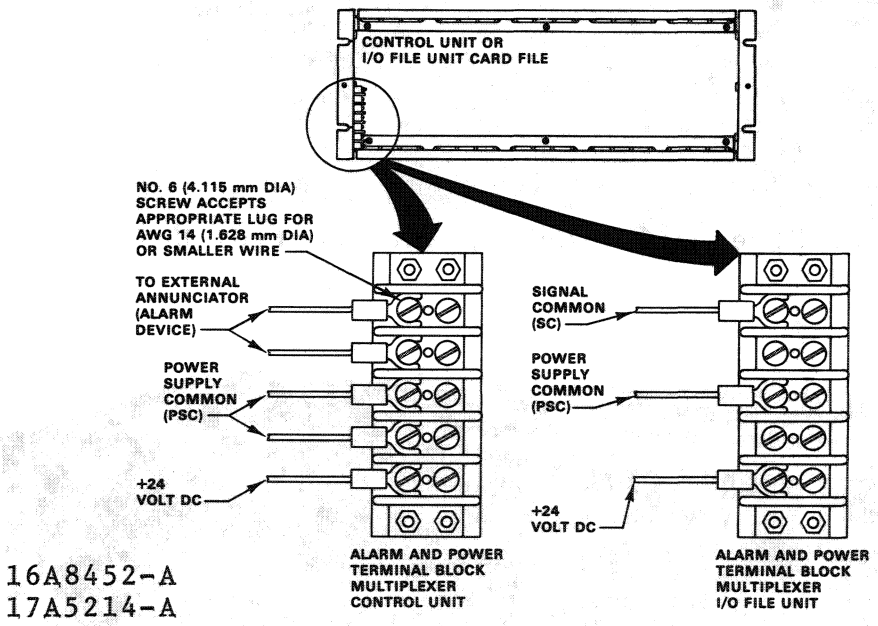


Figure 5. Alarm and Power Terminal Blocks and Screw Terminal Identification

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