DIGITIZE®

MUXPAD II
INSTALLATION
AND
OPERATION MANUAL

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Part Number: 700274-0001
Revision: C
Issue Date: 03/09

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NOTICE

System 3505 must have software revision 753 Standard 3 or higher to connect to this Muxpad II.

PROPRIETARY NOTICE AND DISCLAIMER

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FCC NOTICE

In compliance with Paragraph 15.105 of the FCC Rules and Regulations, the following notice is provided.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at the owner's expense.

Table of Contents

1 GENERAL INFORMATION

1.1 OVERVIEW

The Muxpad series was designed specifically to gather the serial data streams from a compatible FACP (Fire Alarm Control Panel) and interpret the serial print data to the SYSTEM 3505. The Muxpad II has a 9600 bps capable serial port as well as EOL resistor supervised zone circuitry. The eight EOL inputs provide the Muxpad II with the ALARM, TROUBLE, and SECURE, states utilizing a 4.7K EOL resistor.

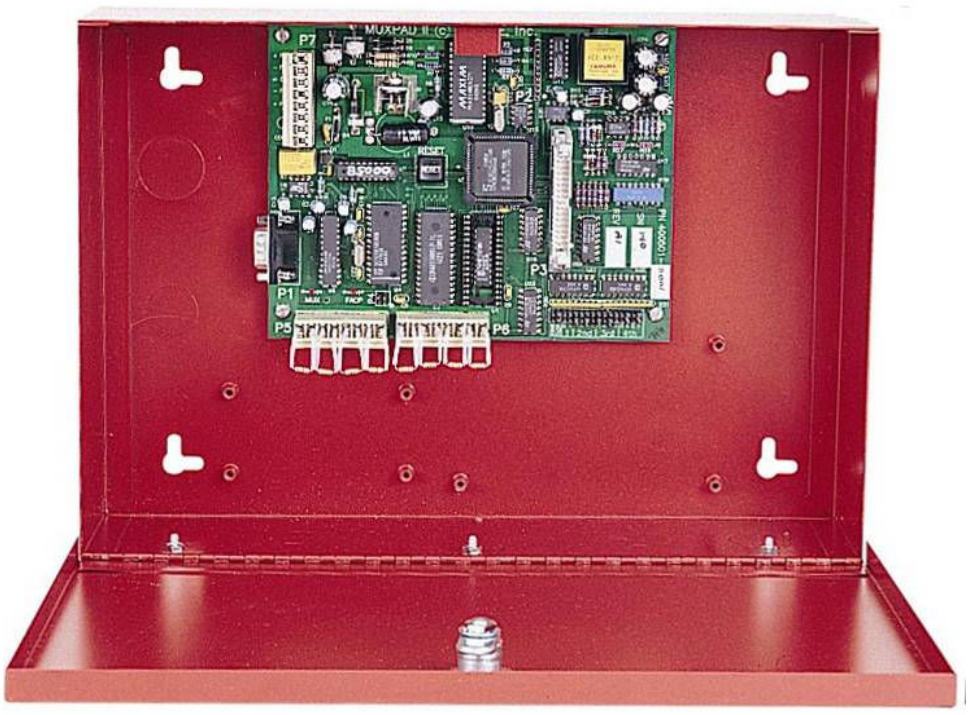


Figure 1-1 Muxpad Installed in Enclosure

Muxpad zones are powered by the micro-controller and should be connected to Dry Contact devices only (such as relay contacts). Connecting a Muxpad zone to a voltage source, such as RPI, will damage the zone measurement circuitry and possibly the micro-controller itself. The zone configuration can be either the eight on-board zones or an external 32-zone board (connected to P3). This is an either/or situation: either 8 or 32 zones. When the 32-zone board is detected by the Muxpad, the built-in eight zones are completely ignored in favor of the 32-zone board. The 8 built-in zone blocks should be removed for 32-zone operation.

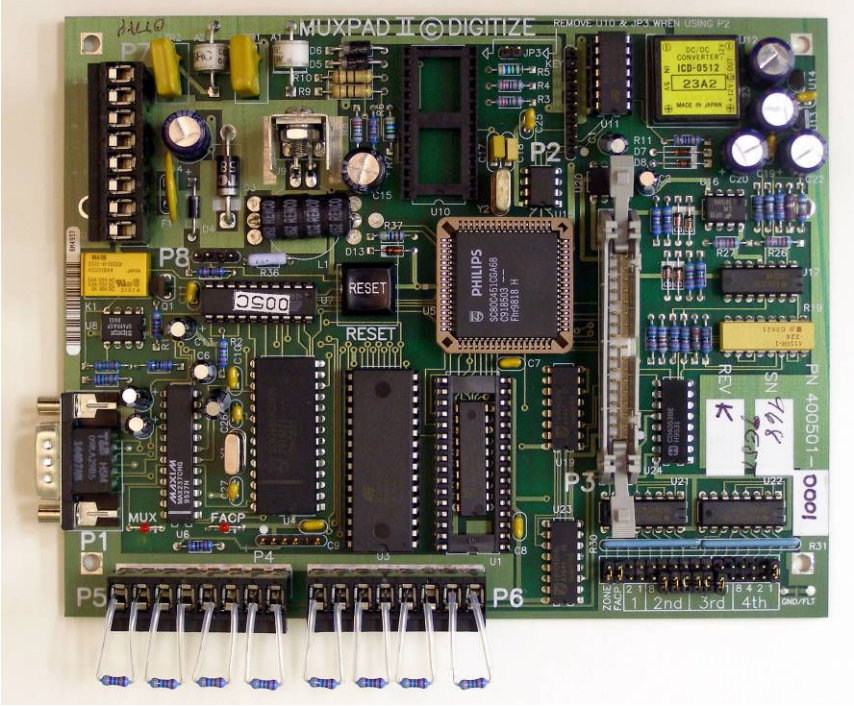


Figure 1-2 Close-up View of Muxpad II Controller

The 32-Zone Card (P/N 400421) provides built-in lightning protection on every zone input.

The MUXPAD II can be configured for zones only, FACP only, or both by setting the jumpers on the strip located in the lower right corner of the printed circuit board. Refer to Appendix A.

Part Number	Data Link	Enclosure Type*
425126-00xx	Isolated RS-485, 8 Zone	A
425126-10xx	Radio Polling, 8 Zone	B
425126-20xx	Fiber Optic, 8 Zone	A
425126-30xx	Audio Modem, 8 Zone	A
425126-40xx	Stand Alone, Spread Spectrum Radio	B
425126-50xx	Stand Alone, Ethernet	A

* Refer to Section 1.3.5 for enclosure dimensions and Section 1.3.6 for unit weights.

1.2 SYSTEM DESCRIPTION

The overall system is known as the SYSTEM 3505 Multiplex Alarm Monitoring System. The standard communication format is RS422/485. Other line drivers available include audio, fiber optic, and radio polling. The Muxpad may monitor eight resistor supervised zones or up to 32 resistor supervised zones.

The Muxpad board contains an isolated RS422/485 serial port, an RS232 serial port, a 5-volt switching regulator, a single FORM C relay, a watchdog timer, full lightning protection on the RS-

422/485 data line and various support systems (such as 128K EPROM, etc.) and zone measurement circuitry with zone ground fault detection.

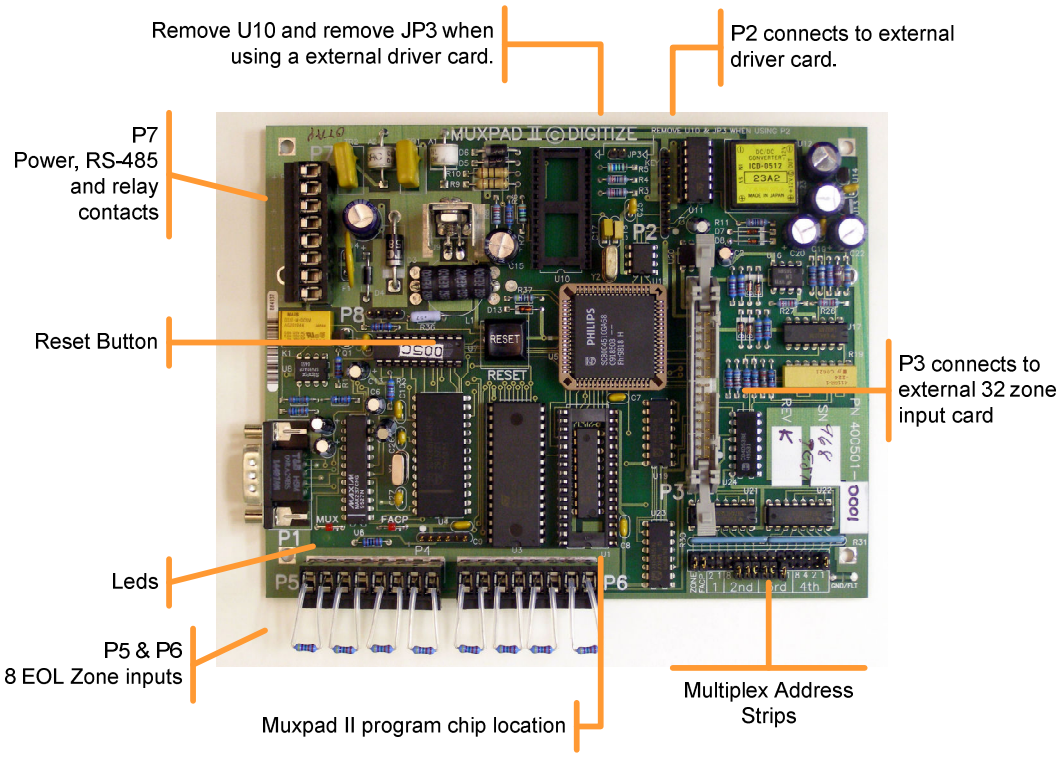


Figure 1-3 Muxpad Component Layout

1.2.1 OPTIONAL USAGE

The Muxpad may optionally be used to monitor addressable Fire Alarm Control Panels (FACP). The Muxpad collects the supervised messages from the FACP serial printer port or Comm. port. As each message is transmitted by the FACP, the Muxpad gathers the text and interprets it into a more usable format for the SYSTEM 3505. The new messages are then relayed to the SYSTEM 3505 via the supervised RS-485 serial port on the Muxpad.

The Muxpad may also be used to monitor Dry Contact points of conventional fire panels.

The Muxpad will utilize the eight local zones provided on the board (P5 and P6) or a 32-zone external plug-in (P3). Jumpers FACP and ZONE determine which systems will be enabled by the software. When the FACP jumper is installed, the Muxpad will interpret the serial port data it receives into data to be relayed to the SYSTEM 3505. The PROM in the U1 location must be programmed with the appropriate software depending on which type of FACP is connected to the MUXPAD II. Placing a jumper on the zone connector will allow the use of Dry Contact Zones. These zones will be EOL resistor supervised type and can monitor for the Alarm, Trouble, and Secure states of the zones.

The eight local zones will be used in the absence of a 32-zone board. Attachment of a 32-zone board automatically disconnects (invalidates) the presence of the eight local zones on connectors P5 and P6. P5 and P6 should be removed when 32 zones are used.

Figure 1-4 Muxpad with RF Radio

1.2.2 COMMUNICATION STYLES

The Muxpad II can communicate with the SYSTEM 3505 in several different styles. The standard format is by wire using RS-422/485. The Muxpad II can support the following additional communications protocols: Fiber, Polling Radio, Audio Modem, Spread Spectrum Radio and Ethernet.

To convert the Muxpad II from RS-422/485 to another communications protocol, install the new DGM configurator card in the Muxpad enclosure. Remove U10 and JP3 on the Muxpad PCB and plug DGM configurator card into P2. (NOTE: This applies to Muxpad II Revision C or later. Contact factory for instructions to convert older Muxpad II versions.)

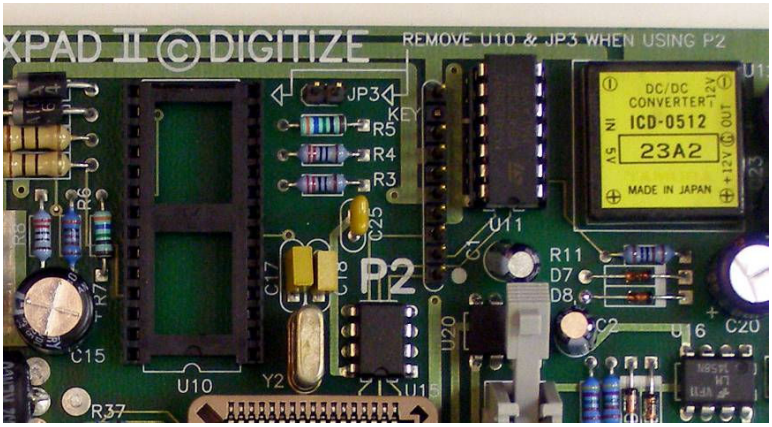


Figure 1-5 View of Muxpad Showing U10, JP3, & P2

1.2.3 LED INDICATORS

The MUX LED illuminates when the Muxpad is transmitting to the SYSTEM 3505. NOTE: The Muxpad only transmits in response to the SYSTEM 3505.

The FACP LED illuminates when the Muxpad is receiving a data character from the serial port of the FACP.

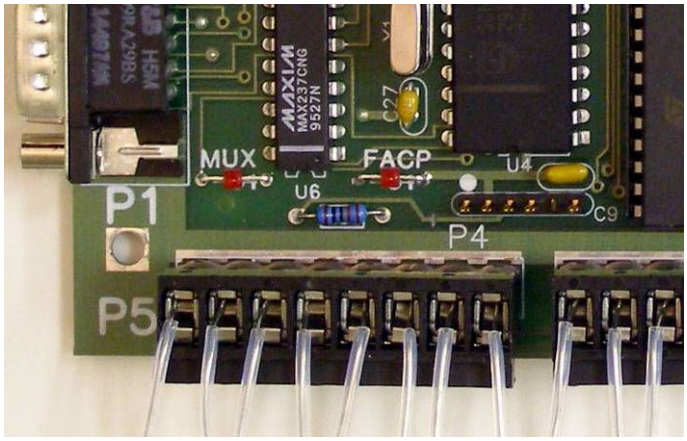


Figure 1-6 Muxpad LEDs

1.2.4 ZONE INPUTS

The eight zone inputs should be limited to 10 feet of wire between the Muxpad II and the device being monitored. The 32-zone interface extends the zone input to 1,000 feet.

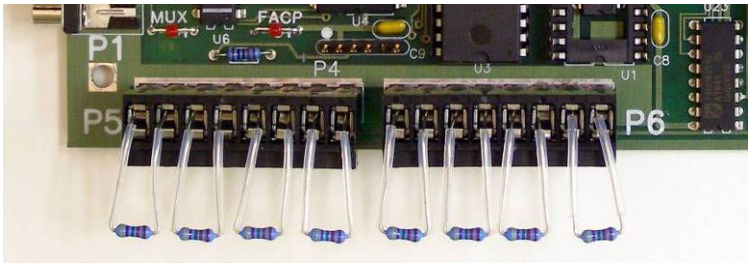


Figure 1-7 Connectors P5 & P6

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad II is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

1.3 SPECIFICATIONS

- NFPA 72 and ANSI/UL 864 compliant. IMPORTANT! To maintain the ANSI/UL 864 listing of this product, it is mandatory that one zone of the Muxpad II is connected directly to the alarm relay contacts of the fire panel being monitored.
- Muxpad II uses Coded Multiplex communications.
- Unless marked otherwise, all zone inputs and communication circuits are power limited.
- Connect the Muxpad II to either a non-resettable power supply circuit of an interconnected control unit or a power supply listed for protective signaling use.
- Install only in an indoor, dry environment.

1.3.1 ELECTRICAL

Primary power Input : 18-27 VDC @200mA max.

1.3.2 INPUTS

DC Power	(P7)
Local Zone Inputs	(P5 and P6)
32-Zone Input or Relay Board	(P3)
RS232 Communication Interface	(P1)
RS-485 Communication Interface	(P7)
Device multiplex address	
Zone Options Selection	
FACP Select	
Alternate Communications Interface	(P2)
Earth Ground	(P7)

1.3.3 FUSES

F1, PTC with Auto-Reset	1.85 Amp (A)

1.3.4 CONSTRUCTION

Circuit board is of ANSI/UL 864 approved materials.

1.3.5 DIMENSIONS (With Enclosure)

Standard Muxpad II (Case A)

Height	9.25"	(22.86 cm)
Width	13.25"	(30.60 cm)
Depth	3.5"	(8.89 cm)

Polling Radio Muxpad II (Case B)

Height	19.5"	(49.92 cm)
Width	18.5"	(47.36 cm)
Depth	6.1"	(15.61 cm)

Muxpad II with 32 Zones (Case C)

Height	24.0"	(60.96 cm)
Width	9.0"	(22.86 cm)
Depth	3.75"	(9.53 cm)

1.3.6 NET WEIGHT (With Enclosure)

Standard Muxpad II (Case A)	7 lbs.
Radio Polling Muxpad II (Case B)	41 lbs.
Muxpad II with 32 Zones (Case C)	12 lbs.

1.3.7 TEMPERATURE AND HUMIDITY

Operating Temperature Range	0 to +50 Degrees Celsius
Storage Temperature Range	0 to +50 Degrees Celsius

Operating Humidity Range	0 to 85% (non-condensing)
Storage Humidity Range	0 to 85% (non-condensing)

1.3.8 FCC REQUIREMENTS

This unit complies with J of Part 15 of The FCC Rules and Regulations, parts 15 and 90 subpart.

1.3.9 APPLICABLE PUBLICATIONS

Federal Communications Commission “Rules and Regulations”, Parts 15 and 90.

National Electric Code

National Fire Protection Association (NFPA) Standards: 72 Proprietary

2 INSTALLATION

2.1 HANDLING

2.1.1 UNPACKING AND INSPECTION

Before opening, inspect the shipping container for unusual damage. Unpack the unit and inspect it for broken component leads and bent pins. Make sure each component is tight in its socket. If your inspection reveals any physical damage, retain the packing material and contact the carrier immediately. Each unit has been thoroughly inspected prior to shipment.

2.1.2 PRECAUTIONS

CAUTION! DO NOT TOUCH the circuitry on the board during installation as static discharge may damage components.

2.1.3 MOUNTING

The Muxpad II is shipped assembled with the printed circuit board (PCB) mounted in the steel enclosure. Other configuration cards may be mounted within the enclosure. Polling Radio and 32-Zone Muxpads utilize a larger enclosure.

2.2 TERMINAL FUNCTIONS

2.2.1 CONNECTOR P7

The RS-485 communication lines are attached to the first two pins on P7. The RS-485 circuitry is polarity sensitive and should be properly connected in order for it to work. (NOTE: No damage will occur if the polarity is reversed). The RS-485 circuitry has high voltage protection from the induced voltages that occur due to local electrical storms. The terminal marked as RS-485 should be attached to the RS-485 line driver or configurator at the SYSTEM 3505.

Connection to a good EARTH GROUND should be made to Pin 3. It is necessary to ensure the protection of the RS-422/485 communications line by securely fastening an EARTH GROUND to this terminal. The EARTH GROUND connection is critical as it will be used as a discharge path for both static electricity and excessive voltage spikes caused by electrical storms. Failure to provide an adequate EARTH GROUND will cause the unit to sustain damage during electrical storms.

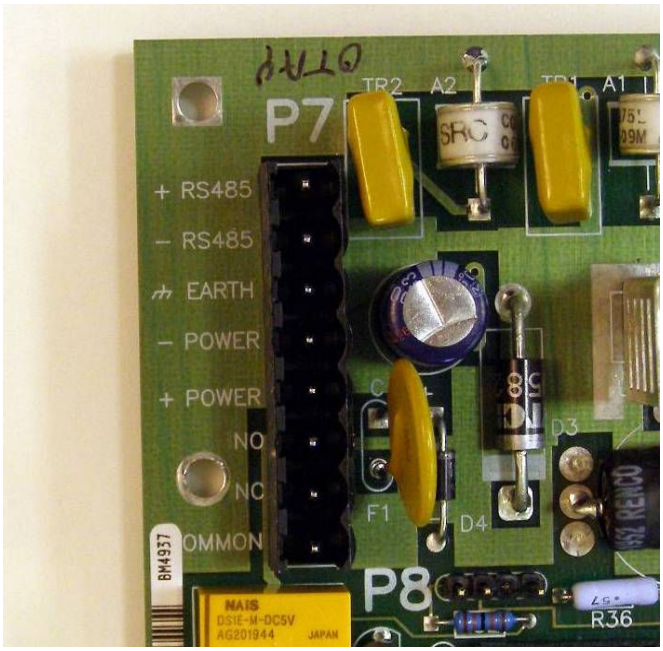


Figure 2-1 Connector P7

The next two pins (Pins 4 and 5) are marked for - / + POWER. Take care not to reverse the supply polarity when connecting the DC Power. Lines are protected and no damage will occur if polarity is reversed, but unit will not operate.

A FORM C relay is provided on the next three terminals (Pins 6, 7, 8). With the proper program option in the SYSTEM 3505, you can turn this relay ON, OFF or MOMENTARY from the SYSTEM 3505.

2.2.2 MULTIPLEX ADDRESS STRIP

This strip is located in the lower right corner of the printed circuit board. Determine the address the MUXPAD board should respond to on the multiplex system. Then refer to APPENDIX A: SETTING THE MUXPAD II ADDRESS for the pattern to install the shunt jumpers.

When the Zone jumper is closed, the Muxpad will monitor zone operation. When the FACP jumper is closed, the Muxpad will operate in the fire panel mode. When both jumpers are closed, both modes of operation (zones and FACP) will be available.

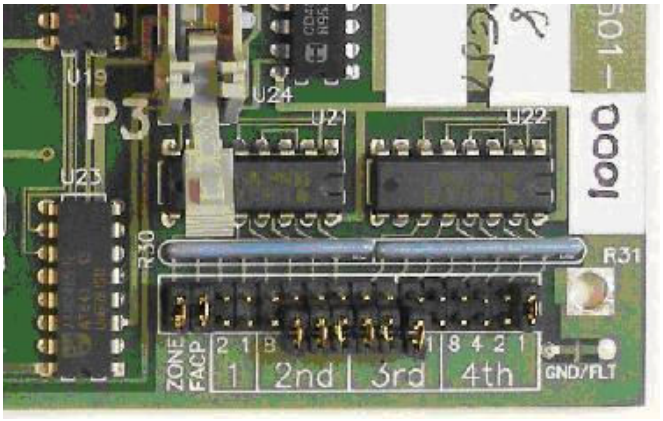


Figure 2-2 Multiplex Address Strips

Pressing the reset button after removing both the FACP & ZONE jumpers will cause the MUXPAD to re-initialize the contents of the EEPROM. Configuration options such as General Troubles and 16/24 character line format will be reset to default values (16x3 and Send All Troubles). The MUXPAD will illuminate both LEDs when the EEPROM flush has been completed. Normal operation of the MUXPAD is suspended while these two jumpers are removed.

2.2.3 LOCAL ZONE AND EXTERNAL 32-ZONE CONNECTIONS (P3, P5, P6)

If the eight zones on P5 and P6 are to be used, then no external zone board is installed on P3. If the 32-zone external board is installed, the eight local zones are ignored and only the zones on P3 are used. P5 and P6 should be removed when 32 zones are used.

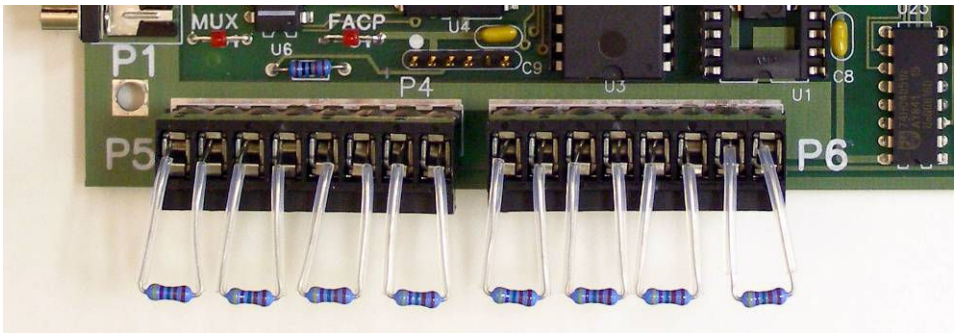


Figure 2-3 Zone Inputs

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

2.2.4 CONNECTOR P2

To convert the Muxpad II from RS-422/485 to another communications protocol, install the new configurator card in the Muxpad II enclosure. Remove U10 and JP3 on the Muxpad II PCB and plug the new configurator card into P2. (NOTE: This applies to Muxpad II Revision C or later. Contact factory for instructions to convert older Muxpad II versions.)

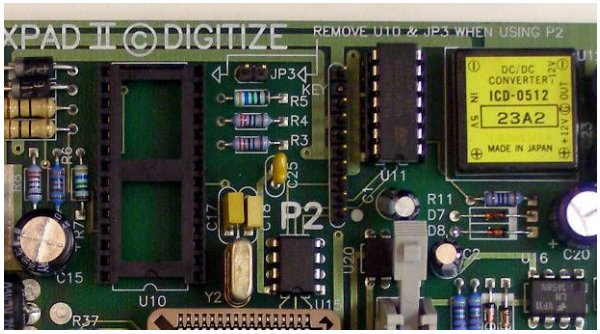


Figure 2-4 Location of Connector P2

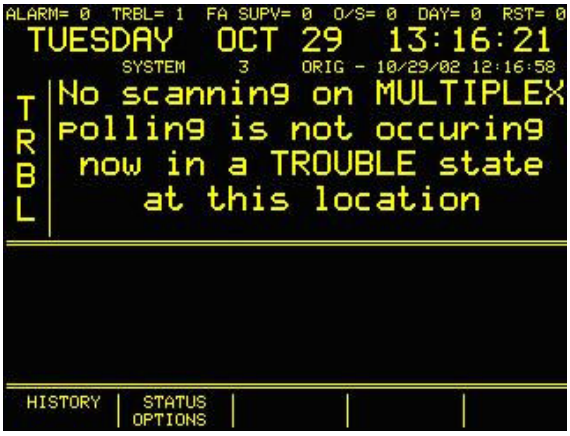
2.3 SYSTEM 3505 CONFIGURATION

Proper operation of the Muxpad requires that the SYSTEM 3505 be correctly configured. After the Muxpad II is installed, the operator must complete the Multiplex Setup procedure at the SYSTEM 3505. The Multiplex Setup procedure for the SYSTEM 3505 will need to be configured each time any of the following events occur:

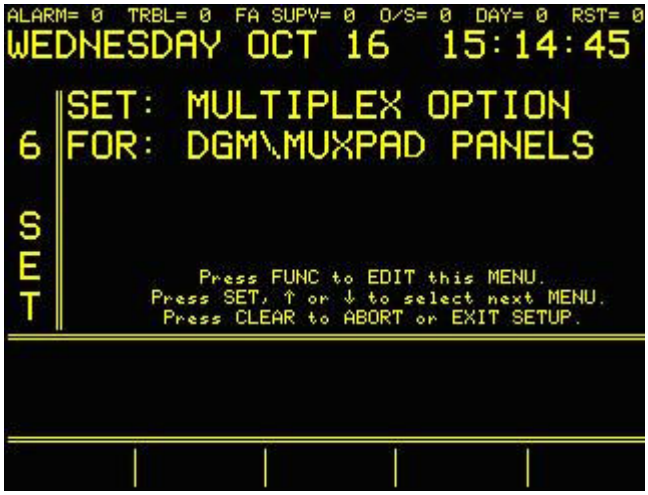
- Whenever a new MUXPAD II is installed.
- If the program chip is replaced
- The program chip is improperly placed and the MUXPAD II is powered up.
- If additional MUXPAD IIs, hardware or software are added to the system.

NOTE: The following screen shots and setup procedure are based on the SYSTEM 3505.

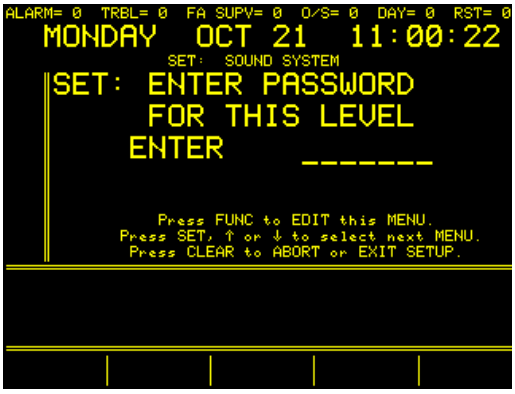
After installing the Muxpad II, SYSTEM 3505 will display a TROUBLE alarm (shown below) upon initial boot-up. This alarm will be generated, each time on start-up, until the Multiplex setup is completed. Acknowledge the alarm and proceed with setup



At the System's main screen, using the keypad, press '6' then 'SET'. The display screen will change to:



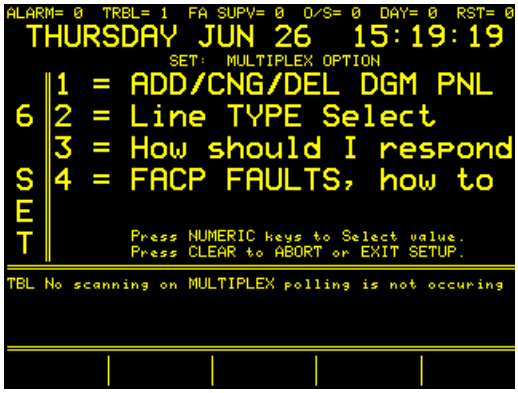
Press FUNC. The display screen will change to:



The factory default password is 2222. Password can be changed via the keyboard. Refer to Section 4.3.8 Password Menu in SYSTEM 3505 INSTALLATION AND OPERATION MANUAL (P/N 700248). If the password for this level has already been changed, enter the new password.

Once the password has been entered for this level the operator can move between screens without reentering the password.

Enter password and press SET and the display will read:



From within the menus you may use the FUNC key or Soft keys ‘Advance to Next field’ or ‘Go Back to Prev Field’ to place the cursor in the field to be changed. Use the soft keys ‘Change Up’ or ‘Change Down’ to make changes in the selected field.

Changes are accepted as you enter them.

Enter “1” to ADD or REMOVE DGM panels from the system

The display will read:

Enter DGM # (Muxpad II address).

PNL = (Select FCI-7100).

IMPORTANT! User must match the 6 SET (Multiplex Setup) panel selection to the type of Muxpad II that is being used, even if it is not actually connected to the fire panel.

The handshake is the same for all panel selections (8LS, Gamewell, Fire Control Instruments, Inc. etc). However, if the 6 SET selection does not match the program chip used in the Muxpad, the Muxpad will not work correctly when an alarm is tripped. It may appear to work properly, but it will not. The 6 SET must be programmed per panel, even when using just zones.

'User text area' - If desired, the operator may use an external keyboard to enter a 16 character user text message.

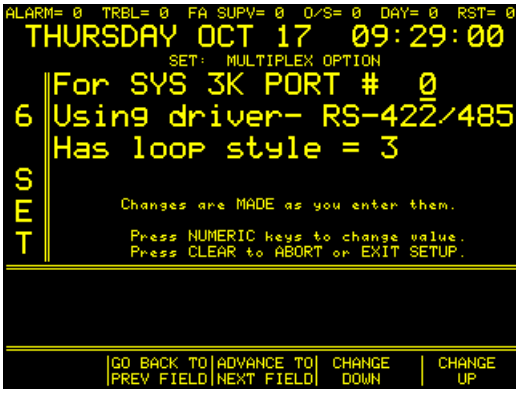
NOTE: Digitize recommends programming a user text message that identifies the actual location. Using FACP text messages may not identify the actual building location of the condition.

'Mux Port 0'. Select Port 0 if a single configurator card is used or LINE CARD # X if a 32 line driver rack is used.

Press set to add this DGM to the System 3505. (Line Type Select has to be done before adding a DGM panel.)

To continue Muxpad II setup press CLEAR button to return to the first screen, then press FUNC to return to the selection menu:

Enter "2" LINE TYPE SELECT. The display will read:



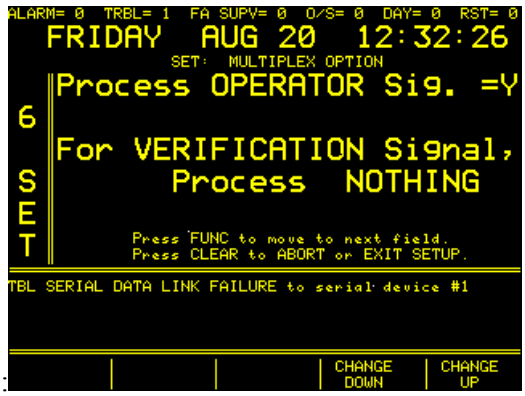
'For SYS 3K PORT #' Indicate SYSTEM 3505 Port 0 or Line driver # used for the Muxpad II interface.

'Using driver' indicates communication style used. Selections include: radio polling, FSK modem, RS-422/485 and Fiber.

'***Has loop style ='*** indicates the loop style for Port 0 or the Line driver. Loop Styles include: 3 for a single path, 6 for 2 paths, and 7 for Fiber with repeater.

To continue Muxpad II setup press CLEAR button to return to the first screen, then press FUNC to return to the selection menu:

Enter "3" How should I respond. The display will read

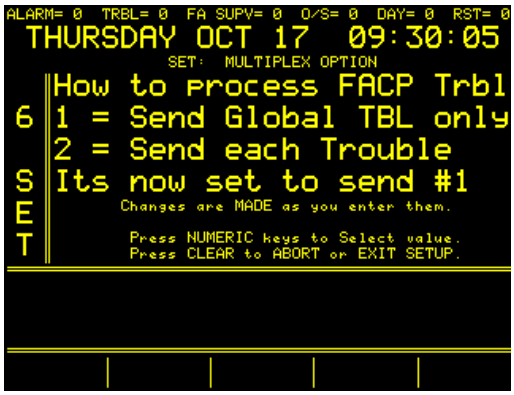


Process OPERATOR Sig sets whether to process operator signals (Y) or not to (N). Operator signals include Panel Reset, Bells ON or OFF as entered into the FACP panel.

For VERIFICATION Signal. Set this if a Verification signal should be processed as a TROUBLE, or not at all (NOTHING).

To continue Muxpad II setup press CLEAR button to return to the first screen, then press FUNC to return to the selection menu:

Enter 4 FACP FAULTS, how to. *The display will read:*



Select how the System 3505 will handle FACP faults. This selection is for all Muxpads in the system.

Send Global TBL only. All but a few FACP Troubles will annunciate as 'FACP has one or more faults'. The actual FACP troubles will be stored in a FACP Fault log. The FACP Fault Log is accessible from the 3505 front panel via a soft key 'FACP FAULTS'.

Send Each Trouble. Each FACP trouble will be annunciated as received from the FACP.

After Muxpad II setup is complete, press CLEAR twice to exit setup program.

2.3.1 MUXPAD II FAULT CODES

F3 Ground condition (when the ground fault jumper is not cut)
F6 DGM (Muxpad) now down
F7 DGM Out of Service (No Poll)
The fault code will appear on the display and/or the thermal paper as follows:

DGM (Muxpad) # / Fault Code.
OUT SERV=VIA PNLxxx

For example, when Muxpad # 248 is taken out of service, 258-F7 appears on the third line of the display. If Muxpad #248 is down, 248-F6 appears on the display and prints on the thermal printer.

2.3.2 SETTING THE MUXPAD II RS-485 ADDRESS

The multiplex address of the Multiplex assembly (P/N 400501) is set as a BCD number using the shunt pack. An installed shunt will be interpreted as a 'one' and no shunt installed is a 'zero'. The Muxpad II software will accept a multiplex address of one to 500 as a valid unit address. Any change to the configuration/address jumpers becomes valid only after the Muxpad is reset. Refer to Appendix A for details.

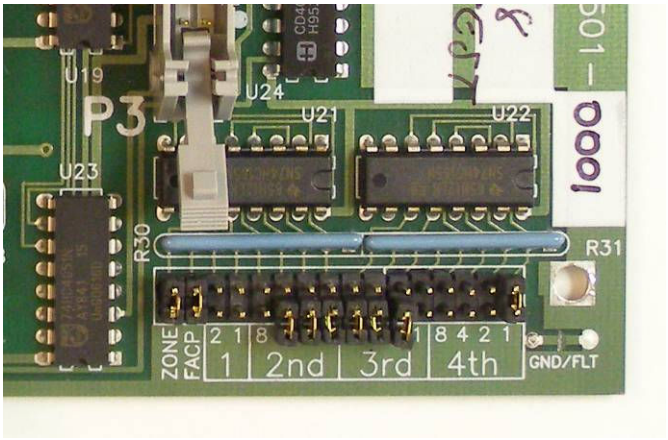


Figure 2-5 Multiplex Address Strip

2.3.3 WATCHDOG

The Muxpad is supervised by a built-in watchdog timer. Should the Muxpad fail to properly service the watchdog, the watchdog will automatically restart the Muxpad and restart the program. A Muxpad line fault may be indicated at the SYSTEM 3505 while the Muxpad resets.

3 FCI-7100 (with software rev. 6.1) OPERATION

3.1 OVERVIEW

For proper operation, the SYSTEM 3505 must use software revision 7.0.1 Standard 9 or higher and Muxpad software revision 5.x or higher. For all features to be available, the Muxpad II should be connected to a SYSTEM 3505.

Proper operation of the FCI-7100 Standalone panel requires that a FCI-PRTM module FCI P/N 100-1235 be installed at J2

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a FCI-7100 panel, the proper program must be installed in the EPROM. This section covers specific information for interfacing to the FCI-7100 panel with software revision 6.1. Refer to Installation Drawing at the end of Section 3.

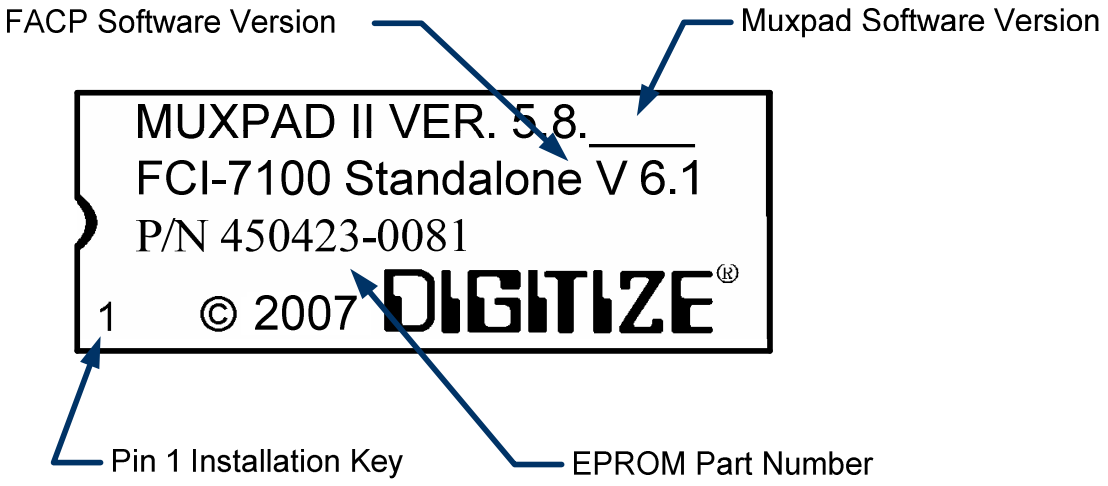


Figure 3-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 3.1). The user should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. The user must verify that all desired functions are operational with higher revision changes and notify Digitize, Inc. of any discrepancies.

IMPORTANT! The user must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. The user must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

3.2 RESET SEQUENCE

The multiplex address of the Muxpad II for communication to the 3505 is set using jumpers as outlined in APPENDIX A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e., 104) then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (10), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

There are two MUXPAD II EPROM program versions for the FCI-7100. One version is for the Stand Alone and the other is for the Networked 7100 panel. Either version requires that the FACP option jumper is installed, the FCI-7100 stand alone panel will request an update. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505. In a Networked 7100 system, there is no supervisory signal on the COMM port, thus the MUXPAD II program is set to monitor the DTR line. The RS-232 link fault will only be presented to the SYSTEM 3505 if the RS-232 link cable is removed.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e., 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

IMPORTANT! The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

3.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 FCI-7100 communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to from the SYSTEM 3505 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

Upon power-up of the DIGITIZE Muxpad II, the Muxpad II will issue a SYSTEM RESET to the FACP. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format

will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from FACP.

3.3.1 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

3.3.2 DIGITIZE - FCI-7100 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. When the GND/FLT jumper is connected, the zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as an 'FCI-7100 5.X' from the SYSTEM 3505 setup menu. This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE and RESTORE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

The SYSTEM 3505 will accept FACP text messages in lieu of entering a new message. The text message that has been programmed into the FACP will appear on the SYSTEM 3505 and print out in thermal paper. Refer to the FCI Programming Manual for details on programming the FCI-7100, or contact Fire Controls Instruments, Inc. To configure the SYSTEM 3505, it is recommended that each Muxpad have a generic text message which describes the location of the Muxpad (i.e. building name and address).

IMPORTANT! Using user text messages directly from the FACP may not provide specific device location. For instance, every building may use the FACP generic message 'SMOKE DETECTOR-LOBBY AREA'. Digitize recommends programming generic and zone specific messages into the SYSTEM 3505. Refer to Section 2.3, SYSTEM 3505 CONFIGURATION for details.

3.3.3 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 CONFIGURATION for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The FCI-7100 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

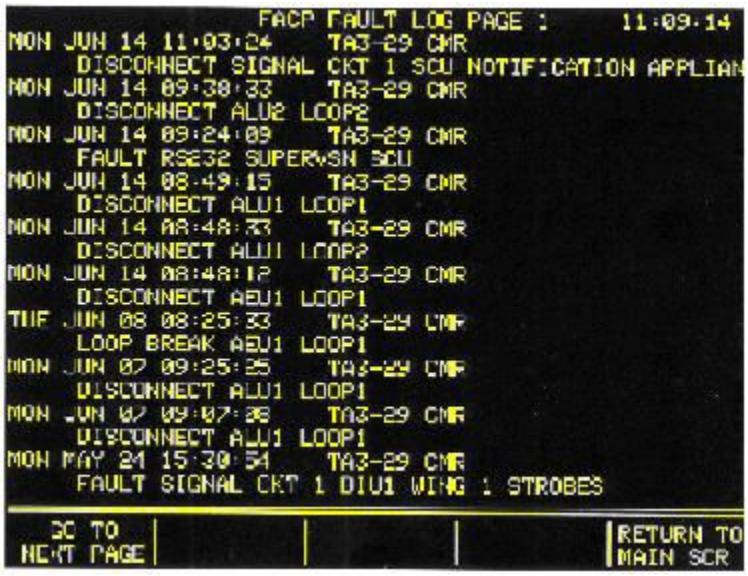


Figure 3-2 FACP Fault Code Display

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a “General Trouble” message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505 will beep once. The “STATUS PRINTOUT” soft key will be replaced with a flashing “FACP FAULTS” key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the “HISTORY” key, then the “FACP FAULTS” key that will be displayed.

When the last fault is cleared from the FACP, then the last message will secure and the Muxpad will send an ‘All Faults Corrected’ message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the “General Trouble” message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer (i.e., how long to wait before reactivating the “General Trouble” message on a subsequent trouble).

3.3.4 RESPONSE TO A SYSTEM RESET

Whenever the version message, “FCI System Version” or “SYSTEM RESET” is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

If an Automation System is connected to the SYSTEM 3505, the Alarm and Trouble condition will be set to restore as they are passed to automation. If no automation is active in the SYSTEM 3505, conditions will printed on the thermal paper and purged from the SYSTEM 3505 when the FACP issues a reset.

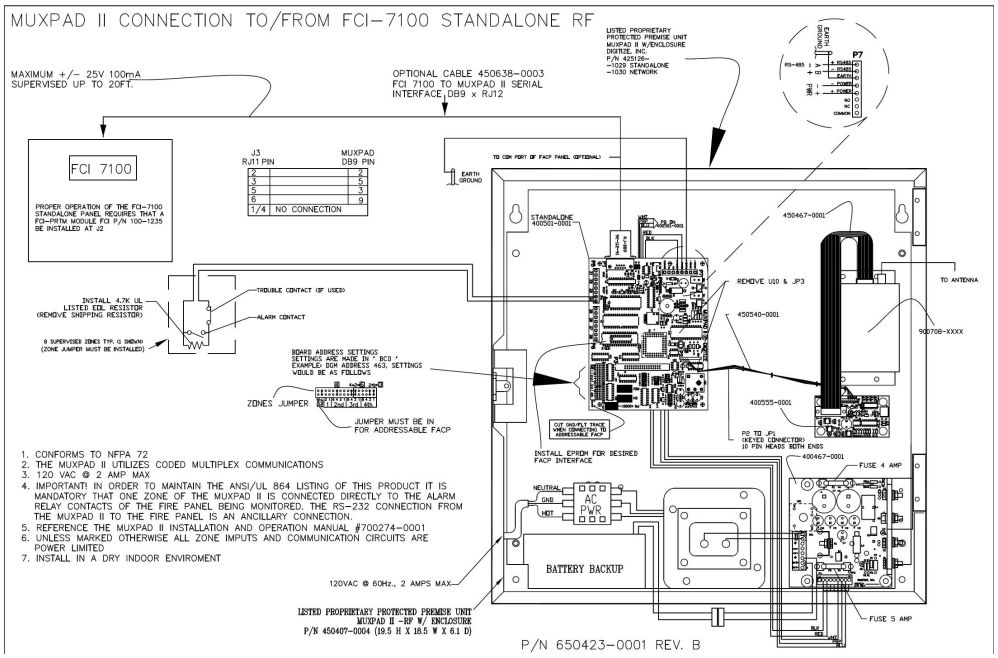


Figure 3-3 Connection to FCI-7100 Stand Alone Panel, RF Version

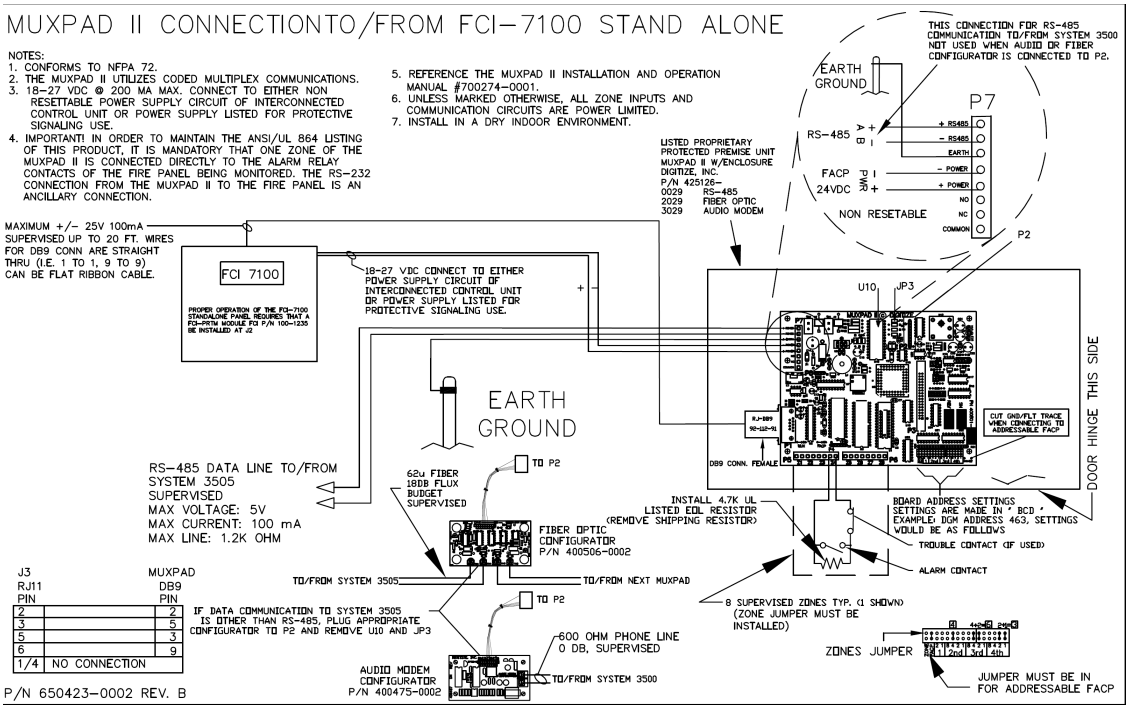


Figure 3-4 Connection to FCI-7100 Stand Alone Panel

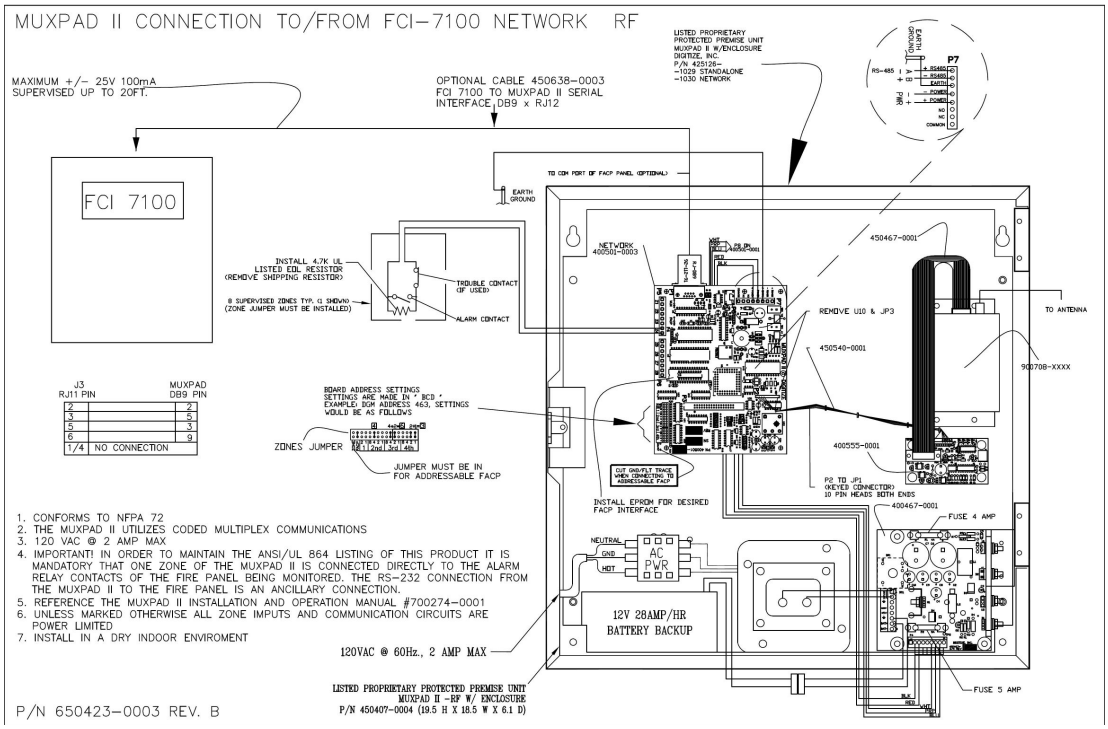


Figure 3-5 Muxpad Connection to FCI-7100 Network Panel, RF

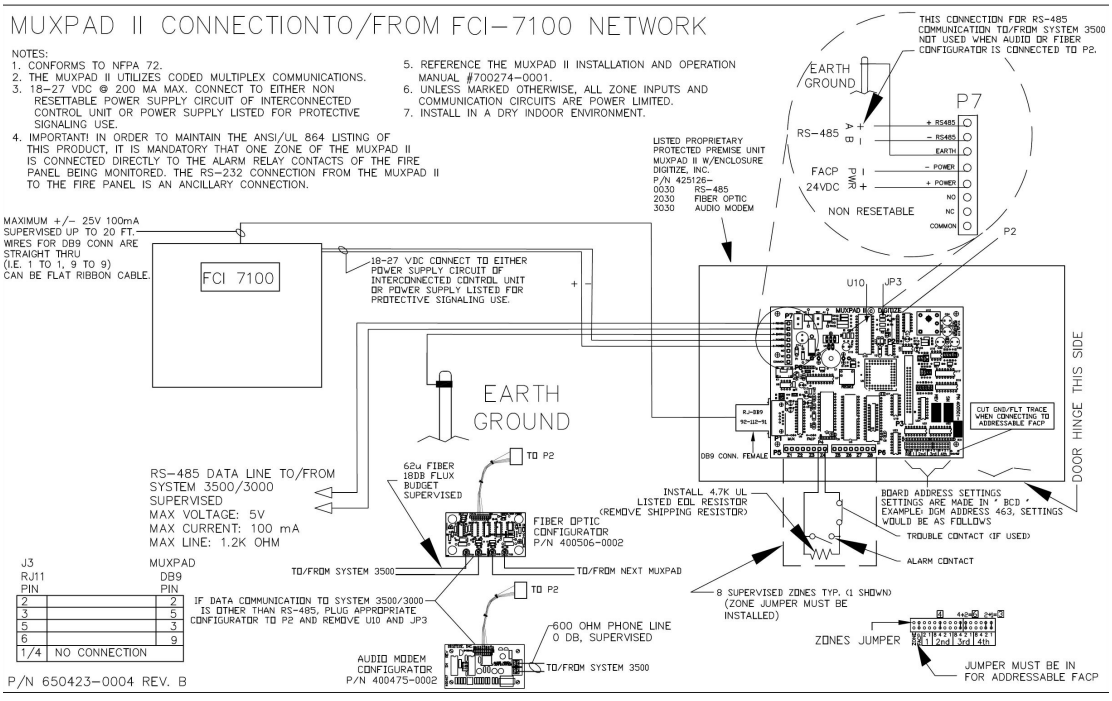


Figure 3-6 Connection to FCI-7100 Network Panel

4 FCI-7200 (with Software Rev. 5.2-6.2) OPERATION

4.1 OVERVIEW

For proper operation, the SYSTEM 3505 must use software revision 6.0.6, Standard 1 or higher and Muxpad software revision 5.x or higher. For all features to be available, the Muxpad II should be connected to a SYSTEM 3505. The Muxpad will operate with a SYSTEM 3505, but the FACP fault messages will not be displayed.

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a FCI-7200 panel, the proper program must be installed in the EPROM. This section will cover specific information for interfacing to the FCI-7200 panel with software revision 5.2-6.2. Refer to Installation Drawing at the end of Section 4 for details.

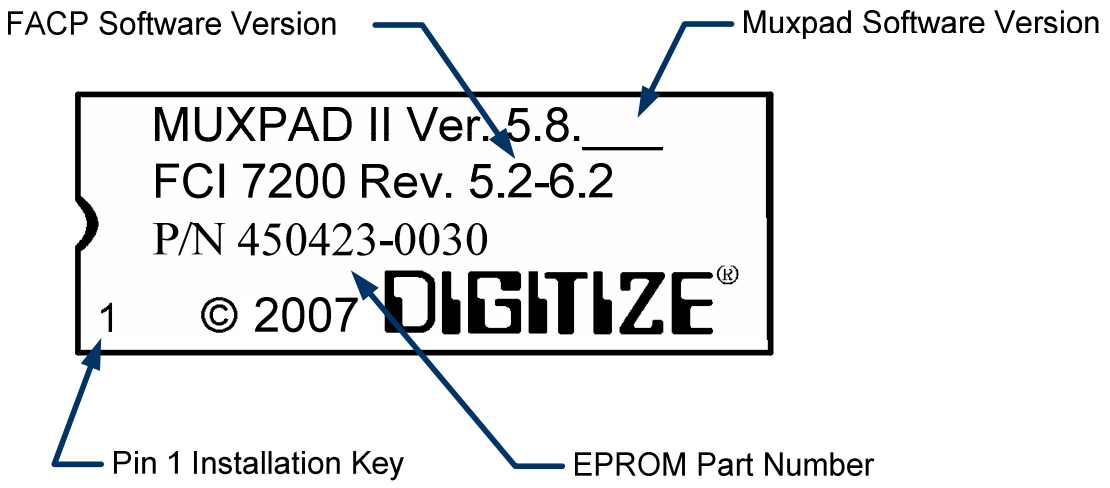


Figure 4-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 4-1). User should check with the FACP panel manufacturer to see if higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize, Inc. of any discrepancies.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II. Muxpad II may be expanded up to 32 zones with this Muxpad software revision.

4.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in APPENDIX A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e., 104) then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (10), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

If the FACP option jumper is installed, the FCI-7200 panel will request an update. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e., 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

Note: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

4.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 FCI-7200 communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

Upon power-up of the DIGITIZE Muxpad II, the Muxpad II will issue a SYSTEM RESET to the FACP. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is

not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from FACP.

4.3.1 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

4.3.2 DIGITIZE - FCI-7200 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. When the GND/FLT jumper is connected, the zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

The Muxpad II can support up to 15 Analog Loop Units (ALU) for a total of 30 analog loops. (Each ALU has two loops). The Muxpad II will support up to 15 Quad Zone Units (QZU) for a total of 60 conventional zones. (Each QZU has four conventional zones).

The Muxpad II will support 15 Eight Zone Units (EZU) for a total of 120 conventional zones. (Each EZU has eight conventional zones). Total conventional zone support with a Muxpad II FCI-7200 interface is 180 (60 via QZU and 120 via EZU).

The Muxpad II will support 15 Dual Signal Units (DSU).

Muxpad II EOL Zone status is reported in the following format: aaabbcddd. Muxpad # (aaa) Device Driver # (bb) Loop # (c) Zone # (ddd). For example, Zone Account 123152101 translates to: Muxpad 123, Device Driver 15 (ALU), Loop 2, Zone 101 (Module). Refer to Table 4.1 for details.

The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as an 'FCI-7200 5.X' from the SYSTEM 3505 setup menu. This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE and RESTORE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

The SYSTEM 3505 may be programmed to accept FACP text messages in lieu of entering a new message. The text message that has been programmed into the FACP will appear on the SYSTEM 3505 and print out in thermal paper. Refer to the FCI Programming Manual for details on programming the FCI-7200, or contact Fire Controls Instruments, Inc. To configure the SYSTEM 3505 to accept the FACP messages, refer to Section 2.3, SYSTEM 3505 CONFIGURATION.

IMPORTANT! Using user text messages directly from the FACP may not provide specific device location. For instance, every building may use the FACP generic message 'SMOKE DETECTOR-LOBBY AREA'. Digitize recommends programming generic and zone specific messages into the SYSTEM 3505. Refer to Section 2.3, SYSTEM 3505 CONFIGURATION for details.

4.3.3 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 CONFIGURATION for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The FCI-7200 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers (See Table 4.1). All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

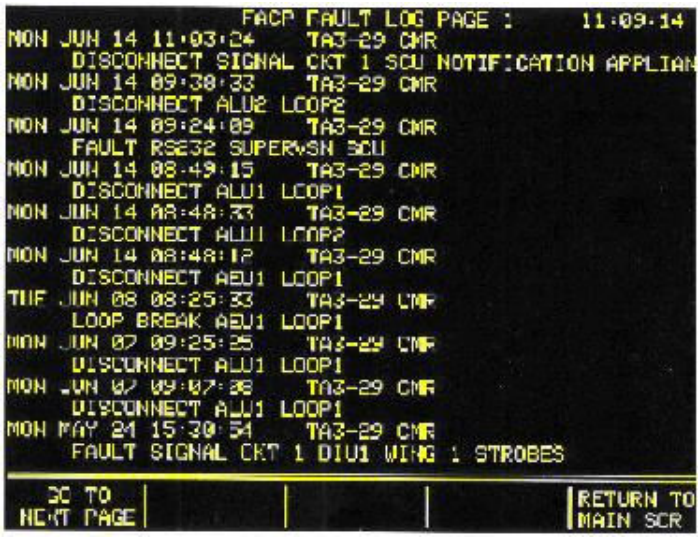


Figure 4-2 FACP Fault Code Display

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Table 4-1 Muxpad II Zone/Sensor Address Format (Account Number)

	MUXPAD ADDRESS	*DEVICE DRIVER#*	*LOOP#*	*INITIATOR*
ALU	123	01-15	1-2	001-099 Sensors
ALU	123	01-15	1-2	101-199 Monitor Modules
QZU Zone	123	16-30	1	001-060
EZU Zone	123	31-45	1	001-120
AEU	123	46-60	1-2	000-098
RDU	123	61-75		
EZU	123	76-80		
QZU	123	81-95		
MUXPAD Zones	123	00	0	001-008 On Board Zns 1-8
MUXPAD Zones	123	00	0	001-032 Expanded Zones 1 -32
SCU	FACP Faults Only			
DIU	FACP Faults Only			
KDU	FACP Faults Only			
DSU	123	9A		
DSU1-15	123	9B-A9 Hex		
HRU1-15	123	AA-B8 Hex		
IDU1-15	123	B9-C7 Hex		
QRU1-15	123	C8-D6 Hex		
RAU1-15	123	D7-E5 Hex		
SSU1-15	123	E6-F4 Hex		
ZCU1-11 only	123	F5-FF Hex		

Note: For Device Driver #9A to FF, the raw hex number sent by the MUXPAD is added to 36 hex to derive these numbers. All other Device Driver numbers are the decimal equivalent of the raw hex number sent by the MUXPAD.

IMPORTANT: For the few Troubles that the DSU module can report, the SYSTEM 3505 will process the same account number regardless of the actual Trouble description. Thus DSU1 will report 1239B0000, DSU2 will report 1239C0000, etc. for any Trouble condition reported to the MUXPAD. Thus if a DSUX reports two or more Troubles, they will be displayed as the same account number on the SYSTEM 3505. If only one Trouble restores, the SYSTEM 3505 will no longer display the remaining Troubles for that DSU.

NOTE: There are no spaces or dashes (hyphens) used in the address. For example:

Muxpad address 123152101 translates to:
Muxpad 123, Device Driver #15 (an ALU), Loop 2, Zone 101 (a module)
Addresses such as 1399A1234, where the fourth and fifth digit, 9A in this case, do not correlate to a direct one for representation.

Table 4-2 DSU ACCOUNT NUMBER FAULT ACTIVITY TABLE

DSU1	DSU2	DSU3	DSU4	DSU5	DSU6	DSU7	DSU8
00-65-00-00	00-66-00-00	00-67-00-00	00-68-00-00	00-69-00-00	00-6A-00-00	00-6B-00-00	00-6C-00-00
DSU9	**DSUA**	**DSUB**	**DSUC**	**DSUD**	**DSUE**	**DSUF**	
00-6D-00-00	00-6E-00-00	00-6F-00-00	00-70-00-00	00-71-00-00	00-72-00-00	00-73-00-00	

Table 4-3 Fault Messages

	MUXPAD ADDRESS	*DEVICE DRIVER #*	*LOOP#*	*INITIATOR*
RS-232 Link	123	99	9	001= FACP to MUXPAD fault
General Trouble	123	99	9	099 = One or More Panel Troubles
Low Battery	123	99	2	000 = SCU
	123	99	2	001 = DIU1
	123	99	2	015 = DIU15
AC Fail	123	99	7	000 = SCU
	123	99	7	001 = DIU1
	123	99	7	015 = DIU15
Unknown Message	123	99	1	X
Positive Gnd	123	99	3	X
Confg Err	123	99	4	X
Signal Ckt	123	99	5	X
Municipal Ckt	123	99	6	X
HiRate Charge	123	99	8	X
Prgrm Mode	123	99	A	X
Negative Gnd	123	99	B	X

NOTE: 'X' is a number from 0…255 of various meaning. For example:

It may hold the Ckt number, or, it may be the SCU number (in the case of a Low Battery report, etc.).

FACP Faults such as sensor removed, module failures and other Trouble messages not noted on Table 4.1 are routed to a general FACP Fault LOG. The first fault condition will generate a "General Trouble" message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505 will beep once. The "STATUS PRINTOUT" soft key will be replaced with a flashing "FACP FAULTS" key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the "HISTORY" key, then the "FACP FAULTS" key that will be displayed.

When the last fault is cleared from the FACP, then the last message will secure and the Muxpad will send an 'All Faults Corrected' message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the "General Trouble" message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer (i.e., how long to wait before reactivating the "General Trouble" message on a subsequent trouble).

When interfacing to an FCI-7200 with program revision 5.x or higher, Digitize recommends using a SYSTEM 3505. If you are using a SYSTEM 3505, you need to install the 32K RAM with Battery on the CPU6 card.

4.3.4 RESPONSE TO A SYSTEM RESET

Whenever the version message, "FCI System Version" or "SYSTEM RESET" is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

If an Automation System is connected to the SYSTEM 3505, the Alarm and Trouble condition will be set to restore as they are passed to automation. If no automation is active in the SYSTEM 3505, conditions will printed on the thermal paper and purged from the SYSTEM 3505 when the FACP issues a reset.

4.3.5 CONTROL OF THE FCI-7200 PANEL

The following control functions may be accessed from the keypad located on the DIGITIZE SYSTEM 3505:

1. SIGNAL BELLS ON
2. SIGNAL BELLS OFF
3. FACP SYSTEM RESET
4. FACP ACKNOWLEDGE

IMPORTANT! Remote operations such as SYSTEM RESET and SILENCE BELLS may not be permitted in your area. Check with your local governing authority for all rules and regulations.

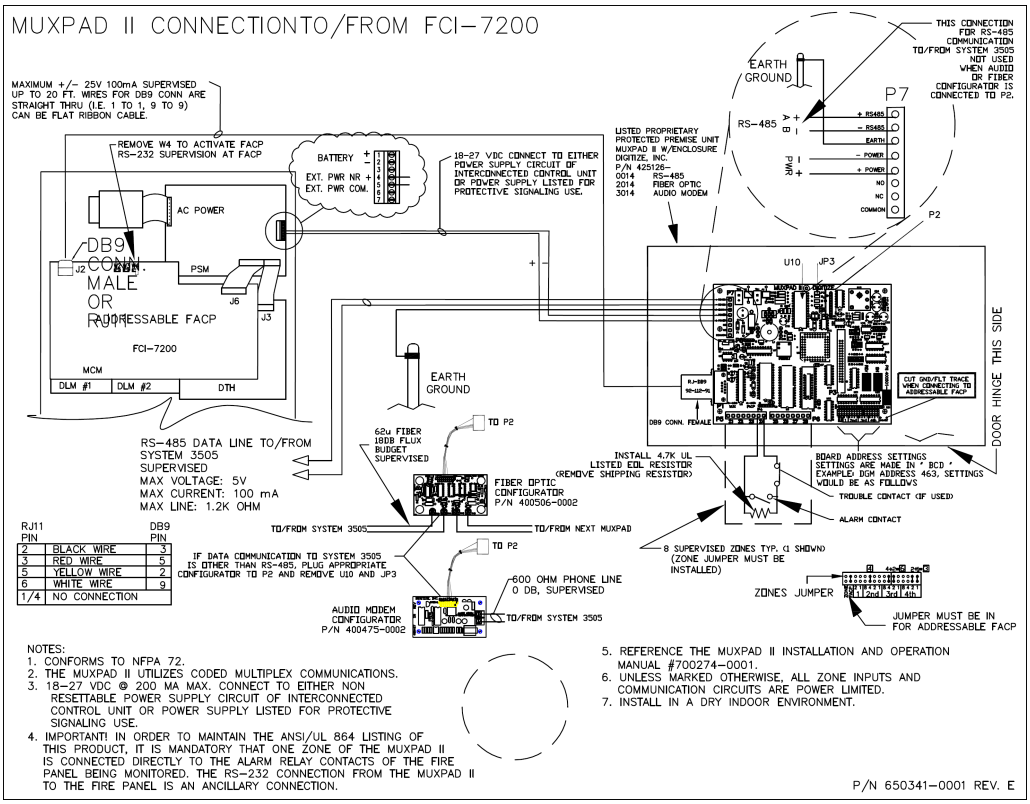


Figure 4-3 Connection to FCI-7200

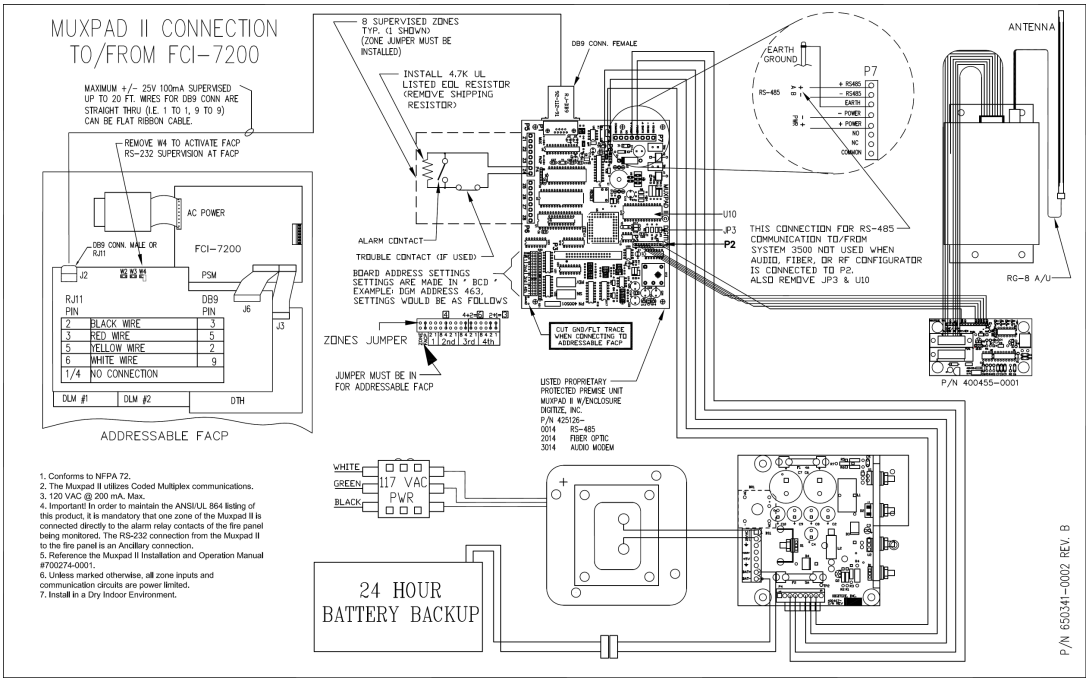


Figure 4-4 Connection to FCI-7200, RF Version

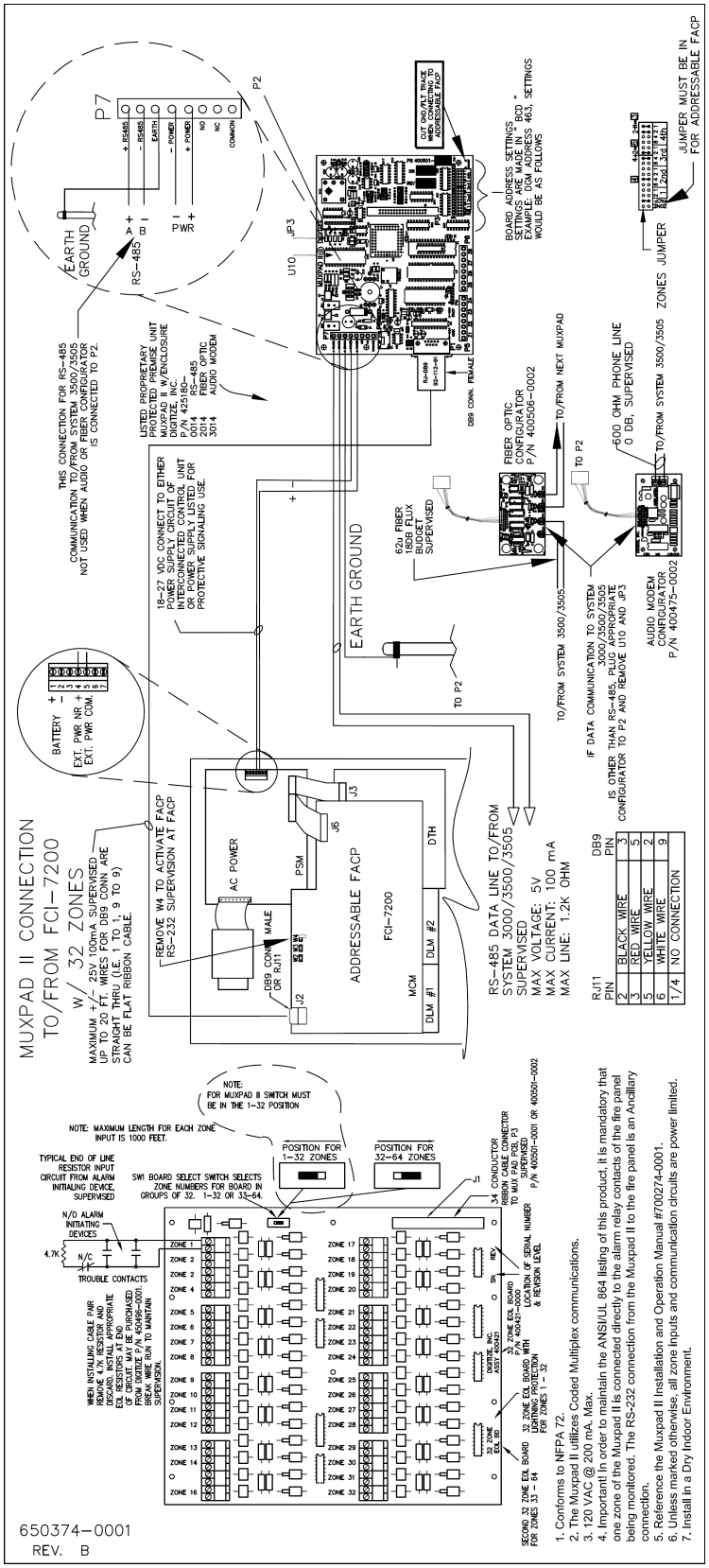


Figure 4-5 Connection to FCI-7200 with Additional 32 Zone Input Bd.

5 FC-ID, FC-IDA, FC-IDX OPERATION

5.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with an FC-ID, FC-IDA, FC-IDX panel, the proper program must be installed in the EPROM. This section covers specific information for interfacing to the FC-ID, FC-IDA, and FC-IDX panel with software revision 5.0. Refer to Installation Drawings at the end of Section 5 for details. SYSTEM 3505 must have software revision S605 Std 6 or higher.

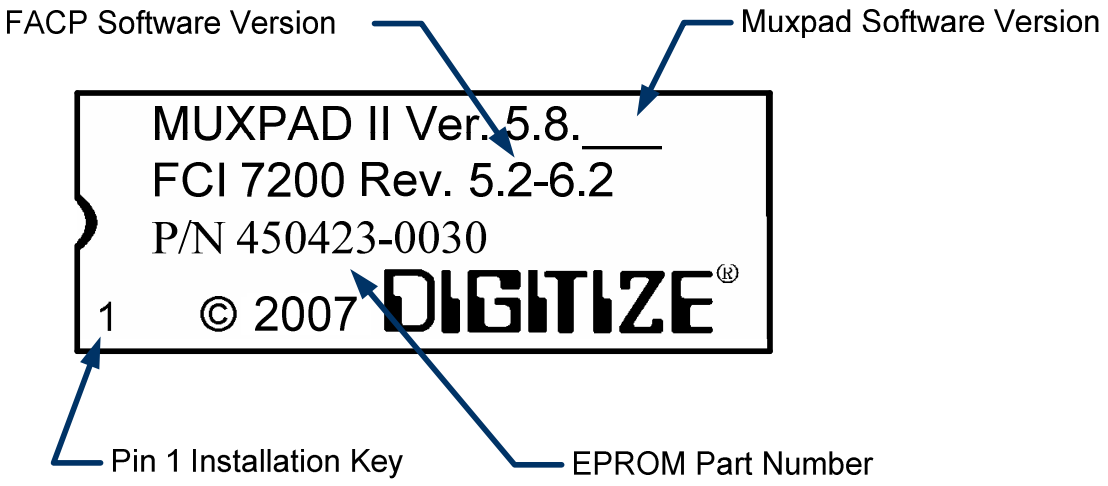


Figure 5-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 5.1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Notify Digitize, Inc. of any discrepancies found.

CAUTION! Every device connected to the FACP should be tested whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or the FACP. User must verify that the SYSTEM 3505 provides a proper display of the event. If an automation system is used, proper operation must be verified on the automation system as well.

NOTE: The eight zone or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

5.2 RESET SEQUENCE

When the Muxpad is first powered up, it will examine the configuration jumpers to determine the RS-485 address. If the FACP option jumper is installed, a reset will be issued to the FACP. The

Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

5.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

Upon power-up of the DIGITIZE Muxpad II, the Muxpad II will issue a SYSTEM RESET to the FACP. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

5.3.1 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate an active status on the communications line to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

5.3.2 DIGITIZE - FC-ID, FC-IDA, AND FC-IDX ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less)

resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Loop # - Zone # (i.e. 14-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as an FCIx from the SYSTEM 3505 setup menu (x designates FCID, FCIDA or FCIDX). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

5.3.3 RESPONSE TO A SYSTEM RESET

Whenever the version message, "FCI System Version", or "SYSTEM RESET" is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

5.3.4 CONTROL OF THE FC-ID, FC-IDA, AND FC-IDX PANEL

The following control functions may be accessed from the keypad located on the DIGITIZE SYSTEM 3505:

- RESET of the Panel
- REMOTE ACKNOWLEDGE of panel messages
- SILENCE AUDIBLE devices
- Turn Control Point Modules (CPMs) ON/OFF
- DISABLE/ENABLE detector devices on the panel.

IMPORTANT! Remote operations such as SYSTEM RESET and SILENCE AUDIBLE may not be permitted in your area. Check with your local governing authority for all rules and regulations.

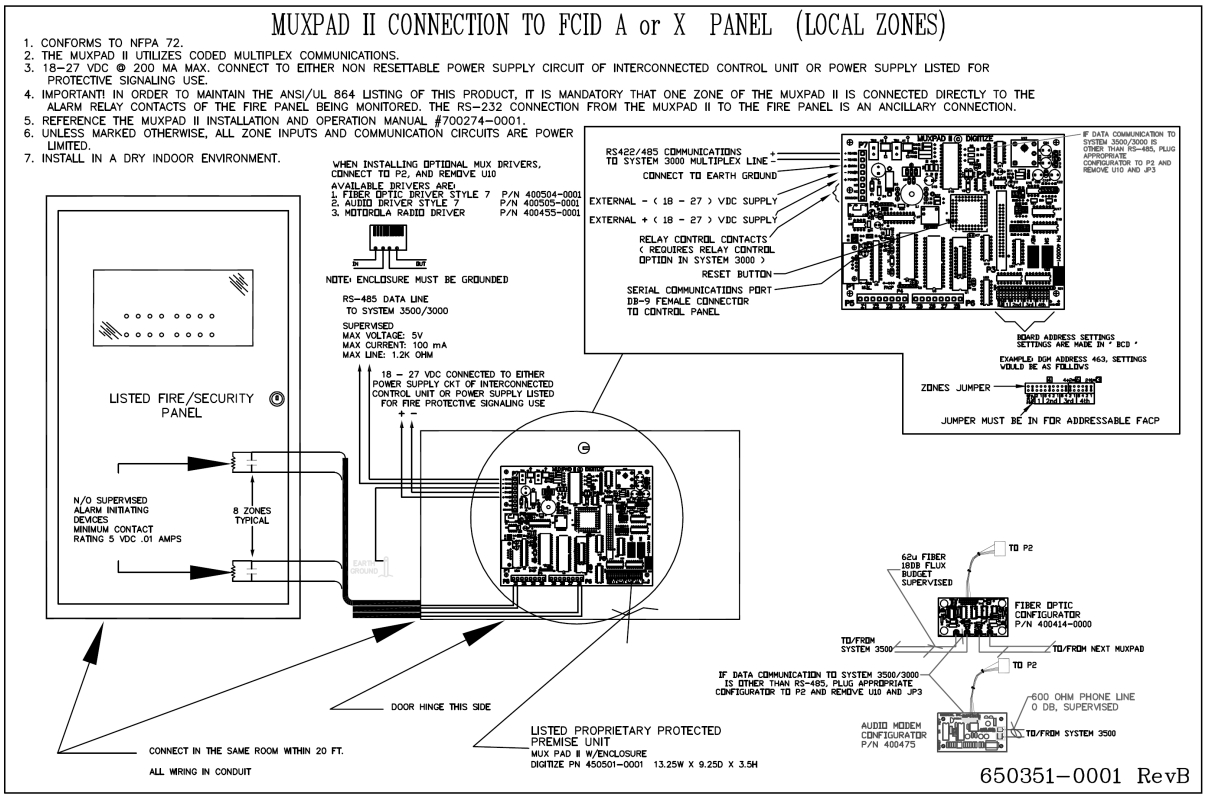


Figure 5-2 Connection to FCID Panel

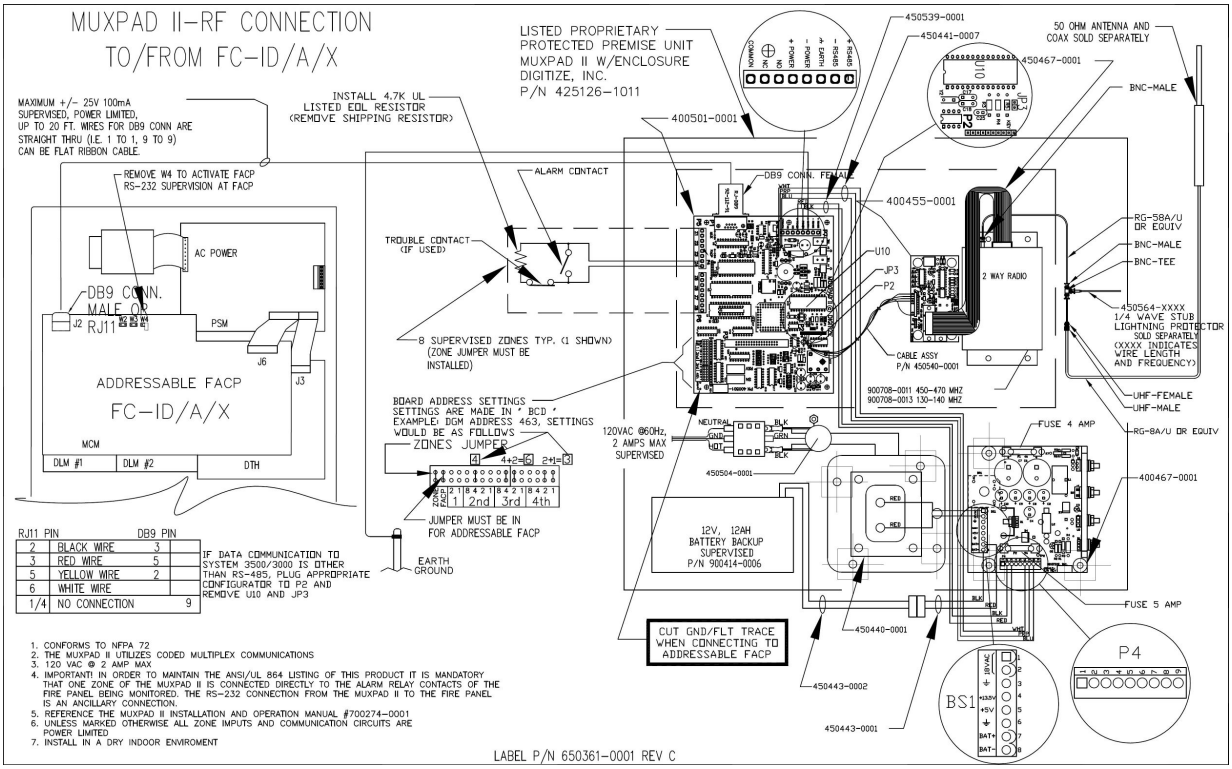


Figure 5-3 Connection to FCID, RF Version

6 NOTIFIER 3030 OPERATION

6.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a Notifier Panel, the proper program must be installed in the EPROM. This section of the manual covers specific information for interfacing to the Notifier NFS-3030 Intelligent Addressable Fire Alarm System (Panel) with software revision 6.0. Refer to Installation Drawing at the end of Section 6 for details. SYSTEM 3505 must have software revision S755STD1 with a release date of January 25, 2008 or higher.

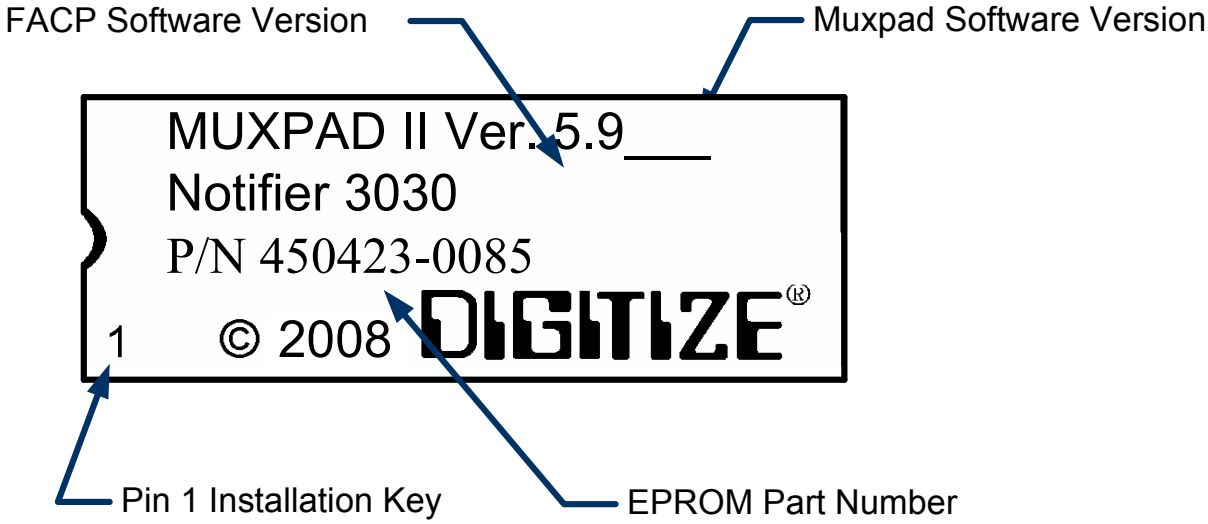


Figure 6-1 Typical EPROM label; actual label will indicate "Network" or "Stand Alone"

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 6.1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher or lower revision changes. Notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the System 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

NOTE: Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad. II. User is restricted to 96 panels. The following events are not relayed to the System 3505: ACTIVE, BLOCK ACKNOWLEDGE, CLEARED ACTIVE, DOWNLOAD TIME OUT, JUMP TO COLD START, OFF, ON, PERFORMING DOWNLOAD, SILENCE, UPDATED, and PRINTER OFF LINE.

6.2 MUXPAD II INSTALLATION

The communication parameter settings of the Notifier 3030 serial port is 9600/8-N-1. For detailed installation instructions, please see **Section 2** of this manual.

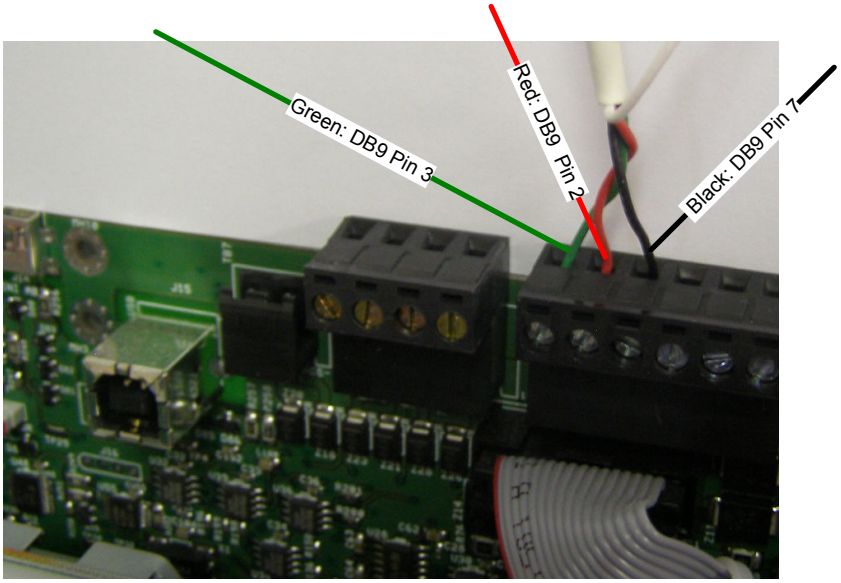


Figure 6-2 DB9 connection between DB-25.

When installing the Muxpad II, please note that on the DB9 connection, a color sequence is depicted in both the photograph and drawing. The wiring color sequence is for clarification purposes only.

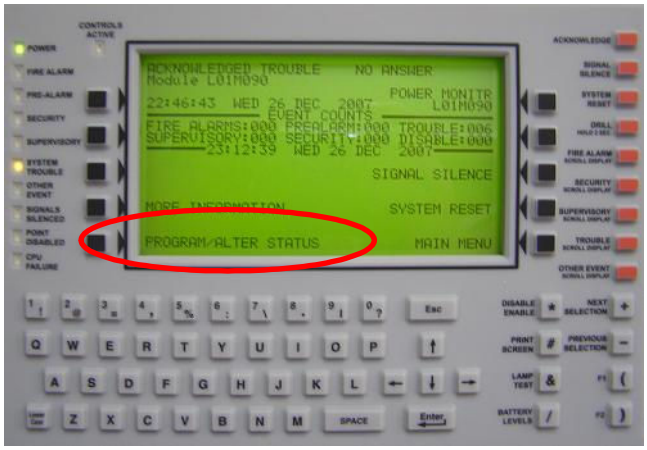
!!!IMPORTANT!!!

If the Muxpad should become disconnected, the Notifier 3030 should be power cycled.

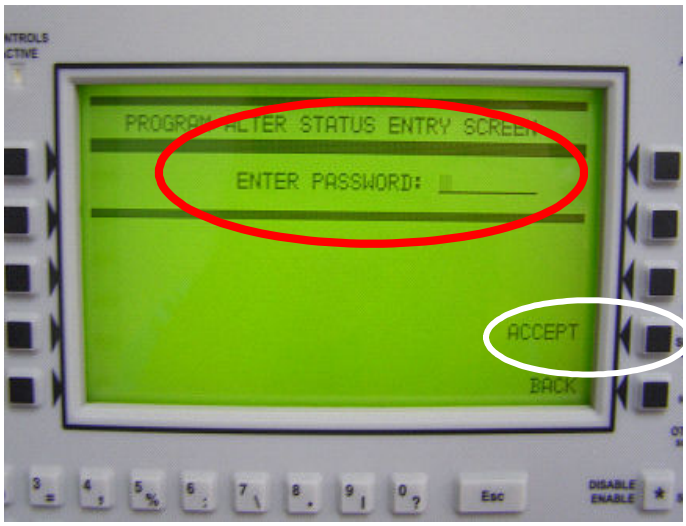
6.2.1 3030 CONFIGURATION WITH SYSTEM 3505

The following procedures outline the steps that must be taken to configure communication between the Notifier 3030 and System 3505.

1. Press the black bottom-left button on the side of display screen for **Program/Alter Status** functions. This step is Master Password protected.

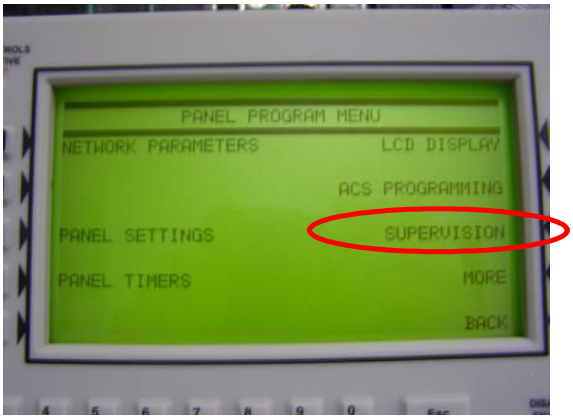


2. **Enter master password**, then press black button to the right of **"ACCEPT"**.



3. At the next screen, **PROGRAM/ALTER STATUS MENU**, press the black button to the left of **Panel Program Menu** to select.

4. At the next screen, select **Supervision** by pressing the black button to its right: Within the Supervision Menu, select **"Printer: 80-Column Supervised**". If not immediately displayed, use the "+" "-" buttons to advance or return to "Printer: 80-Column Supervised", the required printer selection (shown). **Accept** the change by pressing the black button to the right of the on-screen word



"ACCEPT".

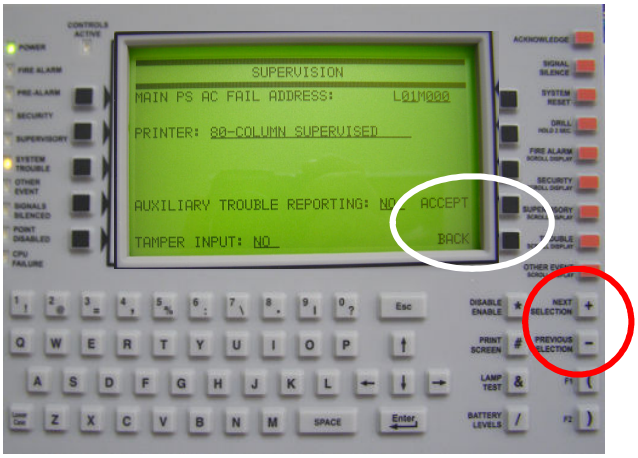


Figure 6-3 Printer Assignment

6.3 RESET SEQUENCE

When the Muxpad is first powered up, it will examine the configuration jumpers to determine the RS-485 address. The Muxpad will wait for approximately 15 seconds for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

IMPORTANT NOTES:

The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

6.4 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

IMPORTANT! During and after transmitting to the System 3505, the Notifier 3030 may beep and flash a "Printer Online/Offline trouble message for a few minutes following the transmission. These trouble messages will NOT be transmitted to the System 3505, and the condition will eventually correct itself. The Muxpad II is still operating normally and no action is needed.

6.4.1 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

6.4.2 DIGITIZE - NOTIFIER ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being

monitored, and that a second zone of the Muxpad is connected to the trouble relay of the Fire Panel. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

When connecting MUXPAD zone input to the Fire Panel Trouble relay output, how you connect it may or may not provide you with the desired result at the SYSTEM 3505. Since we presume that you would want the SYSTEM 3505 to report a Trouble, you can accomplish this in one of two ways. First, if you connect to the Trouble relay of the FACP, you can connect the zone input so that the EOL resistor is in series with the N.C. relay contact when the FACP is operating properly without any Trouble conditions. Should the FACP report a Trouble, or totally, fail, the relay should drop, opening the EOL circuit to the MUXPAD resulting in a Trouble condition being reported. If you connect the N.O. relay contact across the EOL resistor, then you will need to program a unique account specific message in the SYSTEM 3505 for the selected MUXPAD zone, including the word "Trouble" or "TRBL" in the text message, then Please see the **33 Set Menu** (Convert Alarm to Trouble) in Appendix B of *The System 3505 Installation & Operation Manual.* There, you will be asked if you want to use and Account Specific message to convert Alarm condition to Trouble; choose YES. You will also be asked if you want an FACP to convert condition; choose YES. NOTE: if you have not programmed Account Specific messages in you System 3505, you will see only the canned message. To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad # Zone # (i.e. MMM0000ZZ). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Notifier 3030 from the SYSTEM 3505 setup menu (see Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

6.4.3 NOTIFIER DETECTOR NUMBER CONVERSIONS

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

The Notifier 3030 panel reuses the point (detector) address numbering between digital sensors and analog sensors.

The Notifier panel can contain 159 device numberings per loop. This would permit 159 detectors and 159 modules, for a total of 318 actual sensors per loop circuit. The SYSTEM 3505 allocates three digits to report these devices, thus the Modules will be reported using the identical numbers used by the Notifier panel, however, the SYSTEM 3505 adds 200 to the detectors, thus reporting these devices as 201-359. The text message that has been programmed into the FACP will appear on the SYSTEM 3505 and print out on the thermal printer tape. Refer to the Notifier Programming Manual for details on programming the Notifier 3030. To configure the SYSTEM 3505 to accept the FACP messages, refer to Section 2.3 SYSTEM 3505 Configuration.

The basic Notifier account number is presented as following on the SYSTEM 3505 MMMNNLZZZ, where MMM is the Digitize MUXPAD number, NN is the Notifier Loop number (For MUXPAD programs sold as "Network") from 00 to 96, or if presented is 97, 98 or 99, this

represents an error or trouble condition pertaining to the Notifier panel or MUXPAD account is displayed on the System 3505. The first digits represent the Muxpad. The next pair of numbers represent the network version if 00-96; 97, 98, 99 are reserved for error messages. The loop is identified in the next digit, and the modules or sensors are represented in the final trio of digits. See next page.

Muxpad MMM	Network NN	Loop L	Modules/Sensors ZZZ
001-500	NetworkVersion only* = 00-96 *97, 98, 99 are reserved for error/Trouble conditions for Standalone and Networked	Loop 0-F	1-159 Modules 201-359 Sensors

IMPORTANT! Duplicate user text messages may appear when using user text messages directly from the FACP. For instance, every building may use the message 'SMOKE DETECTOR – LOBBY You can avoid this by entering a "Generic" message to the SYSTEM 3505 that will append the Building location to every account that the FACP panel sends. A generic message if entered as MMM-, where MMM is the MUXPAD number, followed by a hyphen.

6.4.4 PANEL AUTO ACKNOWLEDGEMENT

Each time a Notifier 3030 panel makes any kind of report, regardless of priority, it is sequentially reported to the video screen. The operator then presses the ACK key and the panel then shows the next item in its chronological sequence.

Because of the chronological sequencing of reports, the panel must be acknowledged each time it makes a report in order to clear the path for the next report to be made. The panel will continue to hold up a report (even if it is an Alarm) while the Trouble report awaits acknowledgement. The Notifier 3030 panel must be remotely acknowledged. **NOTE:** When all reports from the panel are remotely acknowledged, the Piezo buzzer mounted in the panel is silenced.

6.4.5 RESPONSE TO A SYSTEM RESET

Whenever the version message, "Notifier System Version", or "SYSTEM RESET" is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

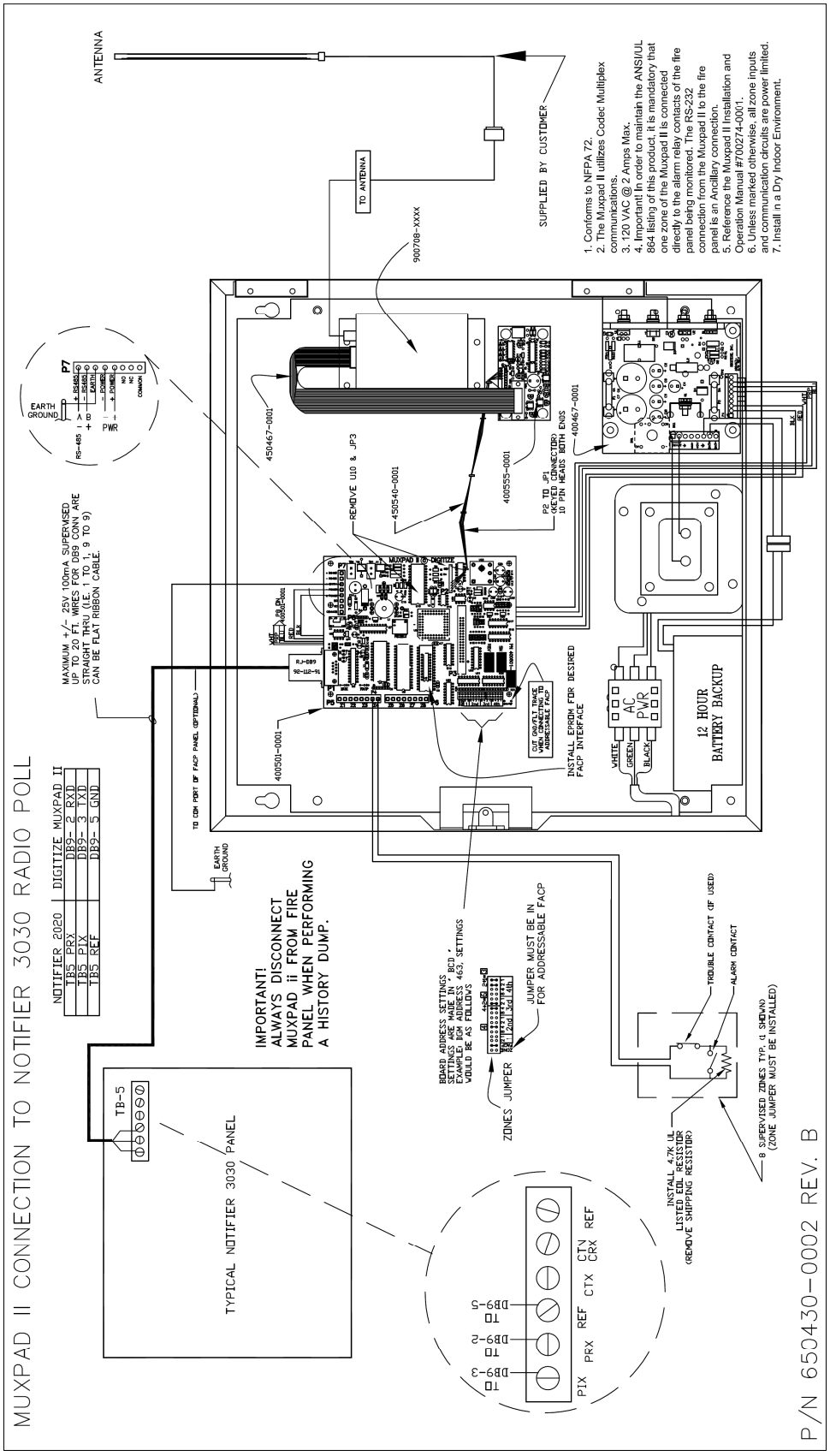


Figure 6-4 Muxpad II Connection to Notifier 3030

7 NOTIFIER AM2020 OPERATION

7.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a Notifier Panel, the proper program must be installed in the EPROM. This section of the manual covers specific information for interfacing to the Notifier Panel with software revision 6.0. Refer to Installation Drawing at the end of Section 7 for details. SYSTEM 3505 must have software revision S605 Std 6 or higher.

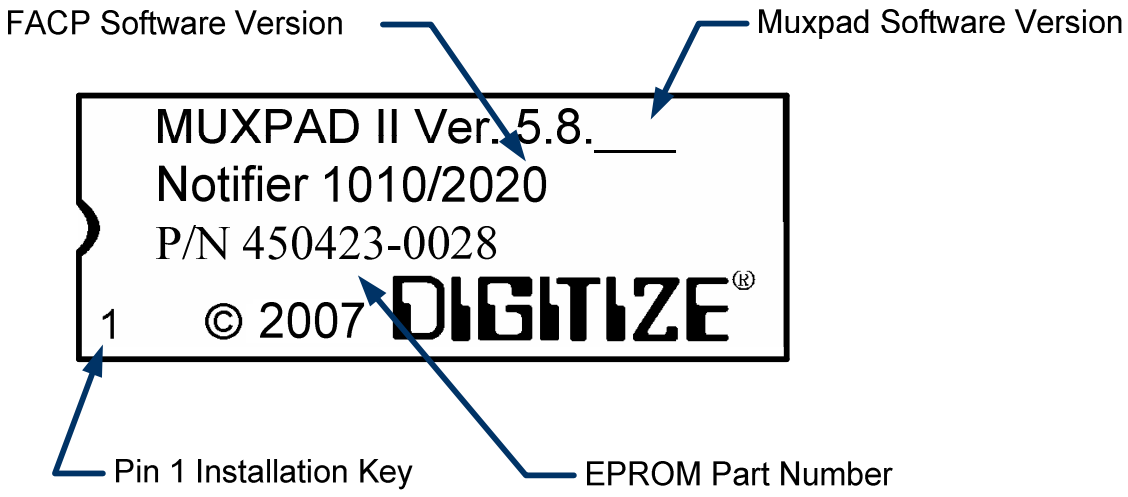


Figure 7-1 Typical EPROM Label (Actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 7.1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

7.2 RESET SEQUENCE

When the Muxpad is first powered up, it will examine the configuration jumpers to determine the RS-485 address. If the FACP option jumper is installed, a reset will be issued to the FACP. The

Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

Upon power-up of the DIGITIZE Muxpad II, the Muxpad II will issue a SYSTEM RESET to the FACP. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line

DIGITIZE - NOTIFIER ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Loop # - Zone # (i.e. 14-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Flex 500/630 from the SYSTEM 3505 setup menu (see Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

NOTIFIER DETECTOR NUMBER CONVERSIONS

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

The Notifier AM2020 panel reuses the point (detector) address numbering between digital sensors and analog sensors. For example, Pull Station Loop #1, Point #3 versus Ion Smoke Loop #1, Point #3. To differentiate between the two types of sensors, the Muxpad II will add a 50 to the loop number on the following sensors:

Smoke (Photo)
Smoke (Ion)
Heat (Analog)
Fixed Heat D
Fixed Phot D
Ion Duct Det

Therefore, Ion Duct Det on Loop 4, Device 3 will report in as Ion Duct Det. Loop 54, Device 3.

The Notifier panel can contain 99 device numberings per loop. This would permit 99 analog and 99 digital, for a total of 198 actual sensors per loop circuit. Point information is reported in the following format: MM-SS-PP (Master - Slave - Point). Where MM is always 00, SS is always the loop number (1 - 9 or 51 - 59) and PP is the numeric detector address. Example: Heat (Analog) device on Loop 3, Device 54 would be reported by the Muxpad II as Heat Analog device on Loop 53, Device 54 (00-53-54).

The SYSTEM 3505 may be programmed to accept FACP text messages in lieu of entering a new message. The text message that has been programmed into the FACP will appear on the SYSTEM

3505 and print out on the thermal printer tape. Refer to the Notifier Programming Manual for details on programming the Notifier AM2020. To configure the SYSTEM 3505 to accept the FACP messages, refer to Section 2.3 SYSTEM 3505 Configuration.

IMPORTANT! Duplicate user text messages may appear when using user text messages directly from the FACP. For instance, every building may use the message 'SMOKE DETECTOR - LOBBY AREA'.

7.2.1 PANEL AUTO ACKNOWLEDGEMENT

Each time a Notifier AM2020 panel makes any kind of report, regardless of priority, it is sequentially reported to the video screen. The operator then presses the ACK key and the panel then shows the next item in its chronological sequence.

Because of the chronological sequencing of reports, the panel must be acknowledged each time it makes a report in order to clear the path for the next report to be made. The panel will continue to hold up a report (even if it is an Alarm) while the Trouble report awaits acknowledgement. The AM2020 panel must be remotely acknowledged.

NOTE: When all reports from the panel are remotely acknowledged, the Piezo buzzer mounted in the panel is silenced.

7.2.2 RESPONSE TO A SYSTEM RESET

Whenever the version message, "Notifier System Version", or "SYSTEM RESET" is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

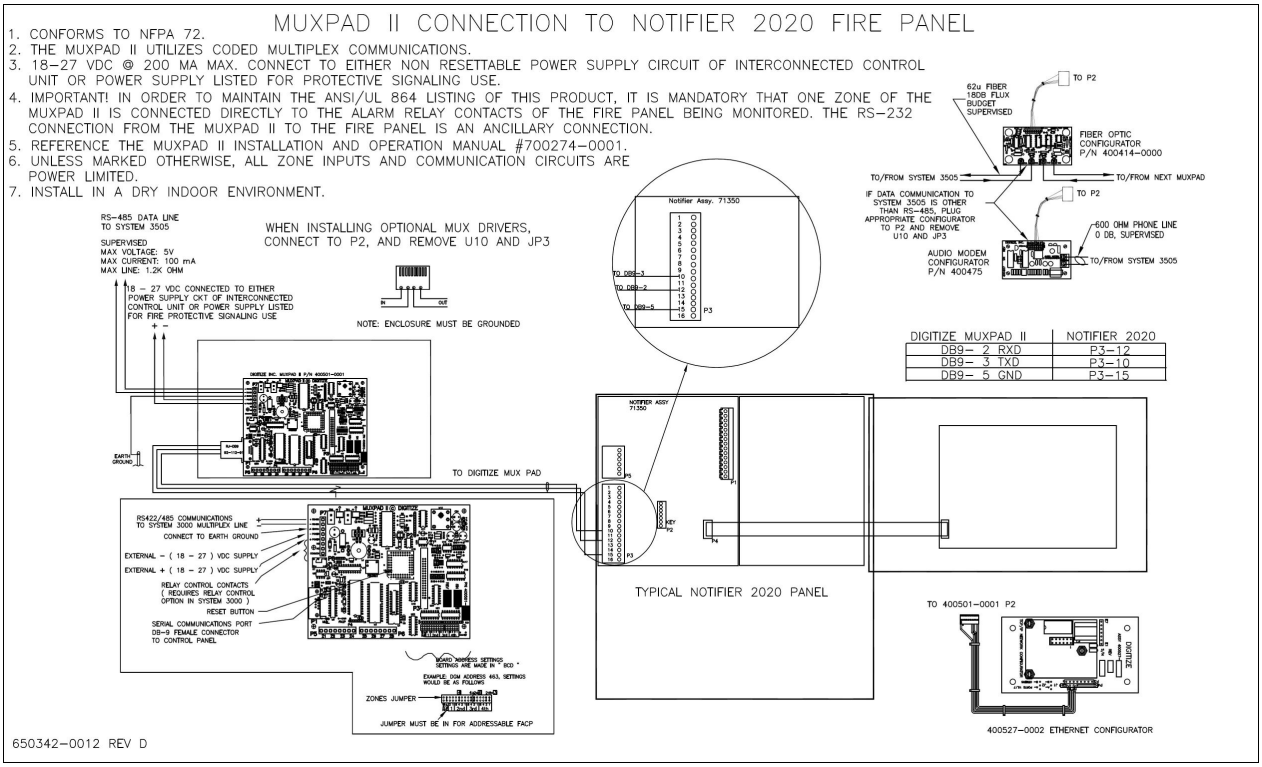


Figure 7-2 Connection to a Notifier 2020 Panel

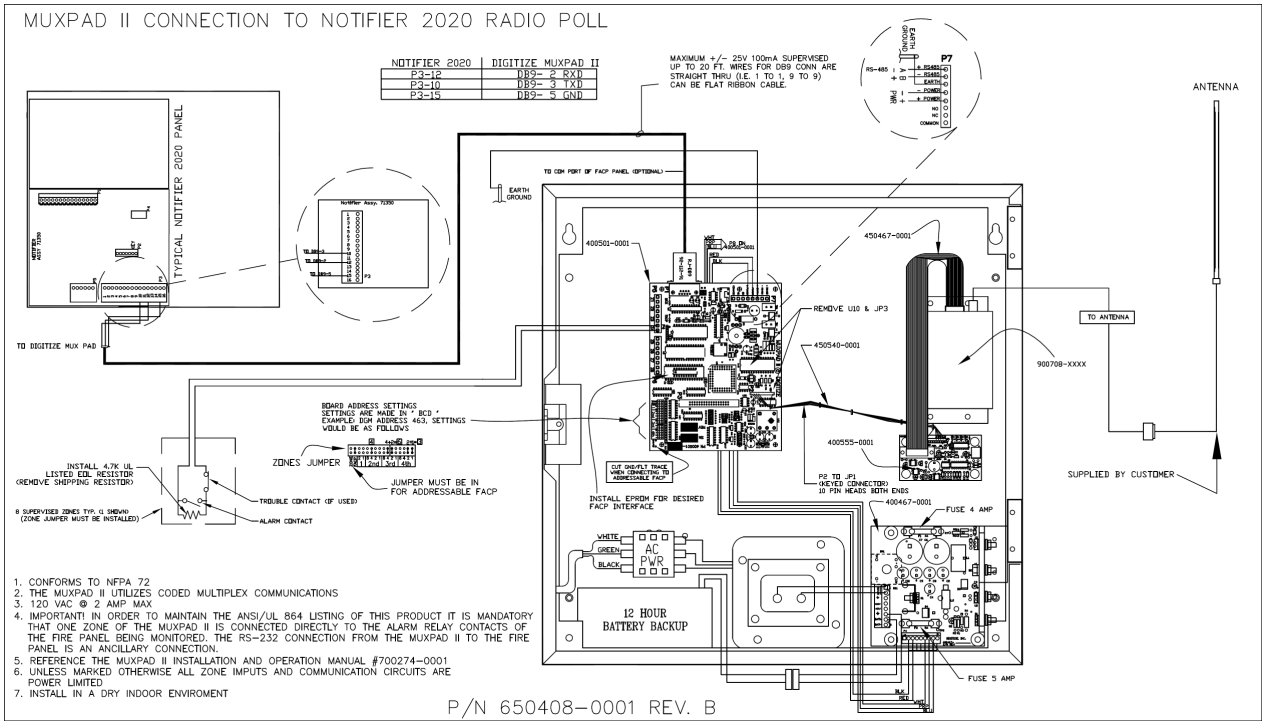


Figure 7-3 Connection to Notifier 2020 Panel, RF Version

8 SPECTRONICS MX OPERATION

8.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with the Spectronics panel, the Spectronics program must be installed in the EPROM. This section covers specific information for interfacing to the Spectronics panel. Refer to Installation Drawing at the end of Section 8 for details.

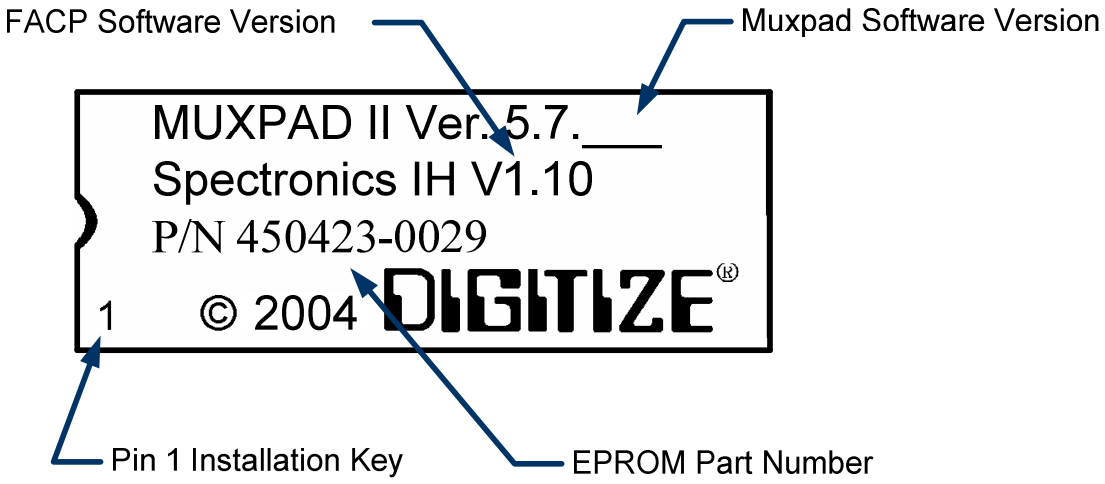


Figure 8-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 8.1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

8.2 RESET SEQUENCE

When the Muxpad first powers-up and the FACP jumper has been installed, it assumes that a FACP is connected. The Muxpad will wait for approximately one minute for the supervisory

characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

8.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filter/processing controller. The subsystem contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 communications, RS232 level translator, FORM C relay, up to 128K of EPROM and 32 K of data. The controller responds to commands given to it via RS-485 and monitors the state of the zone inputs. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognized event as a fire alarm. For serial connection between Spectronics and Muxpad II refer to drawing 650329-0013.

8.3.1 NORMAL QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate an active status on the communications line and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

8.3.2 DIGITIZE - SPECTRONICS ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Loop # - Zone # (i.e. 14-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Flex 500/630 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

8.3.3 DIGITIZE SPECTRONICS MX FACP REPORTING

The DIGITIZE multiplex system will consist of the head-end SYSTEM 3505 and the MUXPAD II connected to the terminal 2 port of the SPECTRONICS MX panel. The FACP SYSTEM (SYSTEM 3505 and Muxpad II) will respond to the messages outlined below.

Messages with a string of six ASCII numeric characters located before the fortieth column will be processed by the FACP SYSTEM only if they are printed in the following EPSON color codes.

RED (1) will be processed as an ALARM.
ORANGE (5) will be processed as a TROUBLE.
GREEN (6) will be processed as a SECURE.
BLACK (0) will be processed as CIRCUIT RESET, SYSTEM RESET, and VERSION messages as discussed in the sections below.

All other messages and colors will be ignored and will not be processed.

IMPORTANT! The FACP SYSTEM must individually identify the initiating point on the MX Panel in order to base a response. The MX Panel does not include the MSP (Master/Slave Point) in the messages to the terminal port 2. In order for the FACP SYSTEM to function correctly, the MSP must be placed into the user text message field for each point on the SPECTRONICS MX Panel.

Enter the MSP into the text field in this format: "MMSSPP", where an MSP of '01-02-03' would be entered as '010203'. Be sure to place a leading space before the six digit numeric MSP in the user text field of the MX point to avoid its being overwritten by a restore.

The text message that should appear on the plasma display of the SYSTEM 3505 must be entered AFTER the MMSSPP numeric string. The 32 characters following the MMSSPP will be displayed on the screen of the SYSTEM 3505. Any characters beyond the 32 limit will be lost.

8.3.4 GENERAL TROUBLE PROCESSING (POINT 4 MESSAGE)

The SPECTRONICS FACP general trouble point will be responsible to if it is sent as a priority eight (color BLACK). The MSP for the point-4 message should have the Slave and Point addresses set to zero. For example, enter the first characters of the text as 'TROUBLE 010000'. The next 32 characters following the MSP will be sent to the DIGITIZE SYSTEM 3505 as the user text field that will appear on the display during a global system trouble report. Be sure to place a space before the word 'TROUBLE' in the user text message.

8.3.5 RESPONSE TO A SPECTRONICS SYSTEM RESET

Whenever the version message, "Spectronics MX System Version", or "SYSTEM RESET" is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured.

8.3.6 RESPONSE TO AN UNPROGRAMMED ITEM

An unprogrammed ALARM or TROUBLE will be responded to as a special case if it is sent as a priority 1 (RED) or priority 5 (ORANGE) with the word UNPROGRAMMED and the SPECTRONICS 'MM-SS-PP' included in the message text.

For example: A message such as "r5 COMM FLT..Unprogrammed Module 01-02-34 09:46:12 08/01/94" will be responded to as a TROUBLE of 010234 and will be displayed on the plasma display of the DIGITIZE SYSTEM 3505.

8.3.7 SOFTWARE VERSION LEVELS

This manual assumes the following or higher software versions exist in the following products:

Spectronics – IH V1.10
Muxpad II – 5.7.0 – 05
System 3505 - S701STD9 Release Date January 1, 2004

8.3.8 OPERATION OF THE FACP SYSTEM

Upon power-up of the DIGITIZE MUXPAD II, the FACP SYSTEM can optionally issue a SYSTEM RESET to the SPECTRONICS MX Panel and will SECURE any non-sense items it has

been displaying. The system will begin to collect all valid messages sent to it. Messages received as ALARMS or TROUBLES from detectors identifying themselves in the MMSSPP format will be placed into the SYSTEM 3505 queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated. Unprogrammed points will be responded to provided that they meet the criteria outlined in the Section 8.3.6 RESPONSE TO AN UNPROGRAMMED ITEM.

Messages not meeting the Priority Color, MMSSPP format, Unprogrammed Module, or Point 4 Trouble will not be responded to and will be ignored

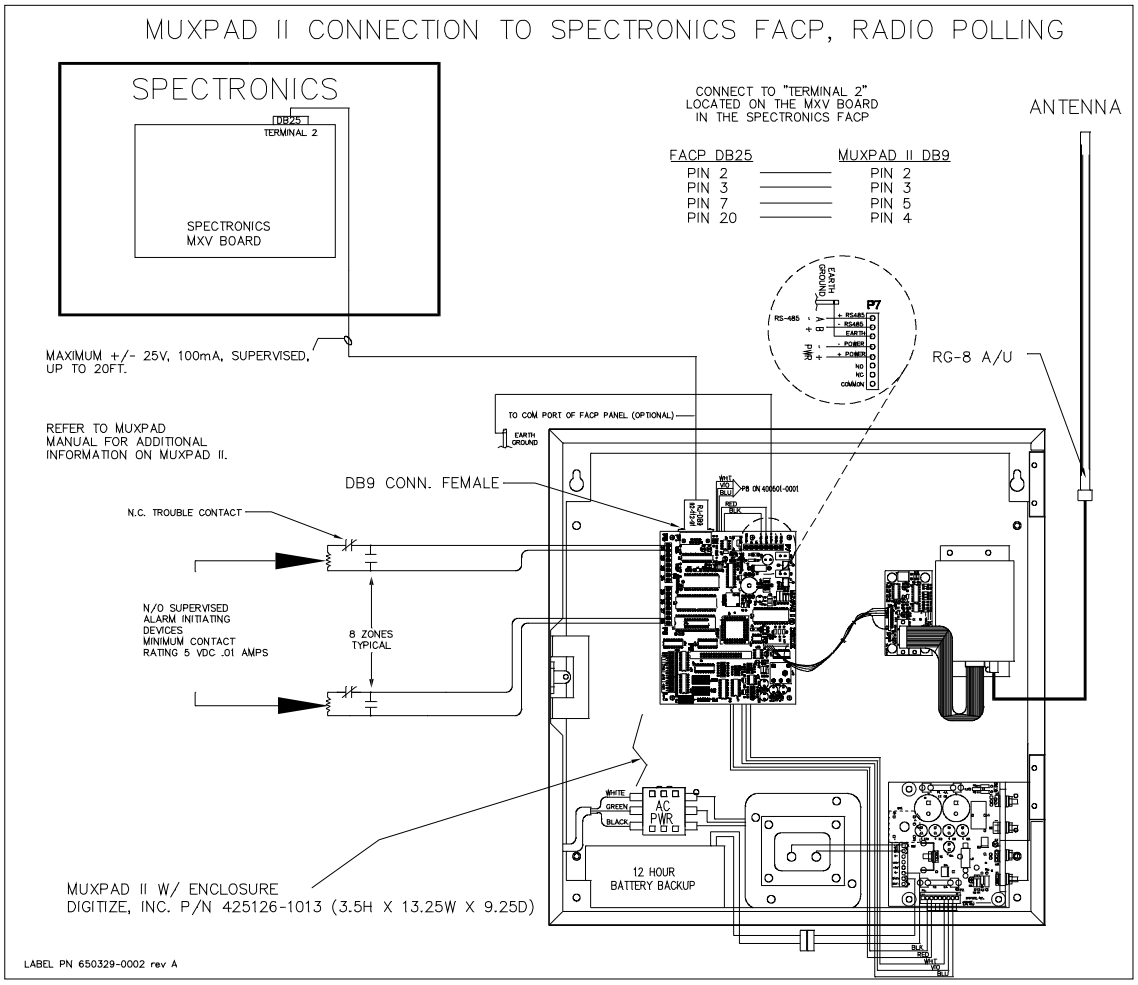


Figure 8-2 Connection to Spectronics Panel, RF Version

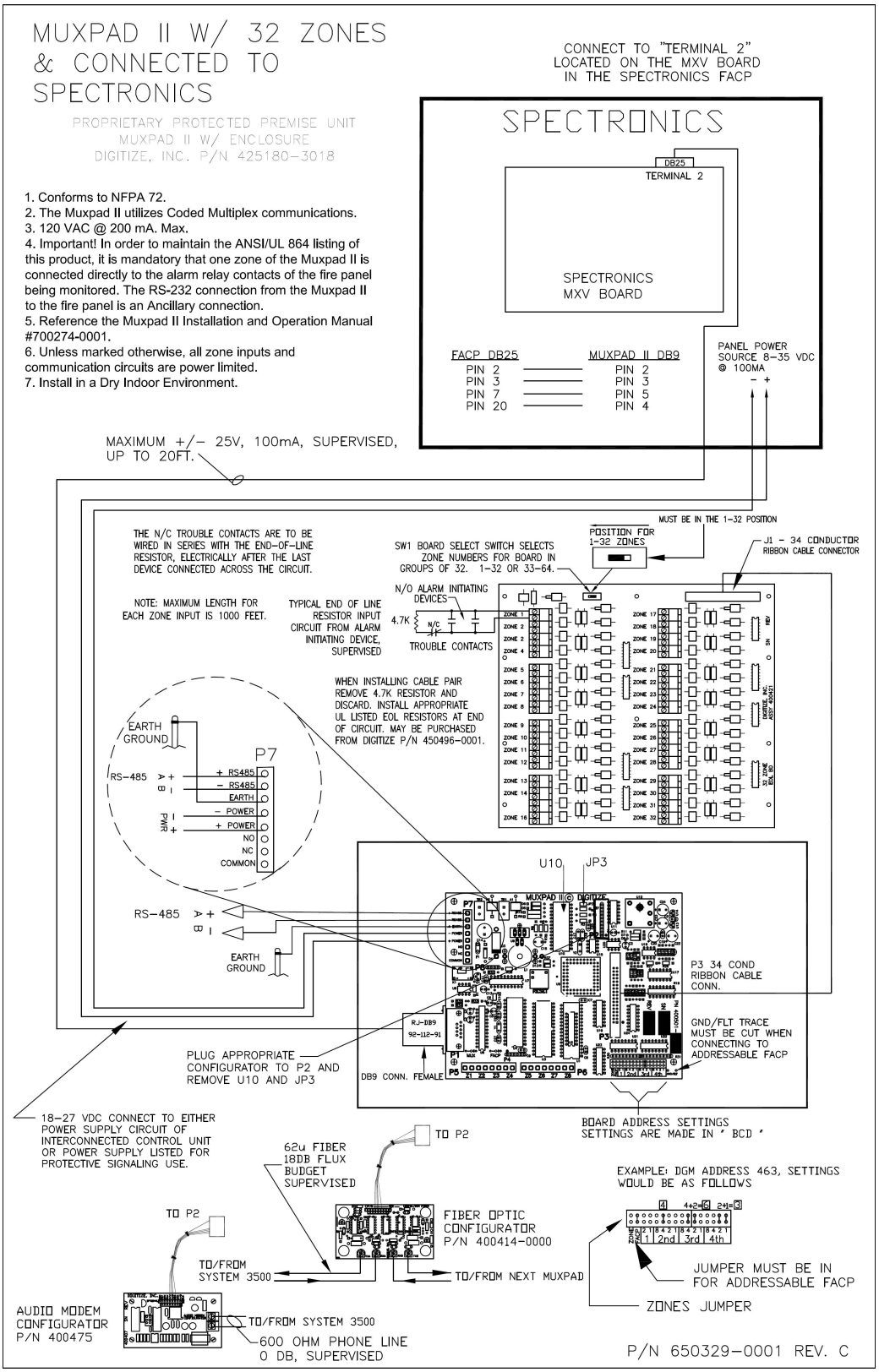


Figure 8-3 Connection to Spectronics Panel with External 32 Zones

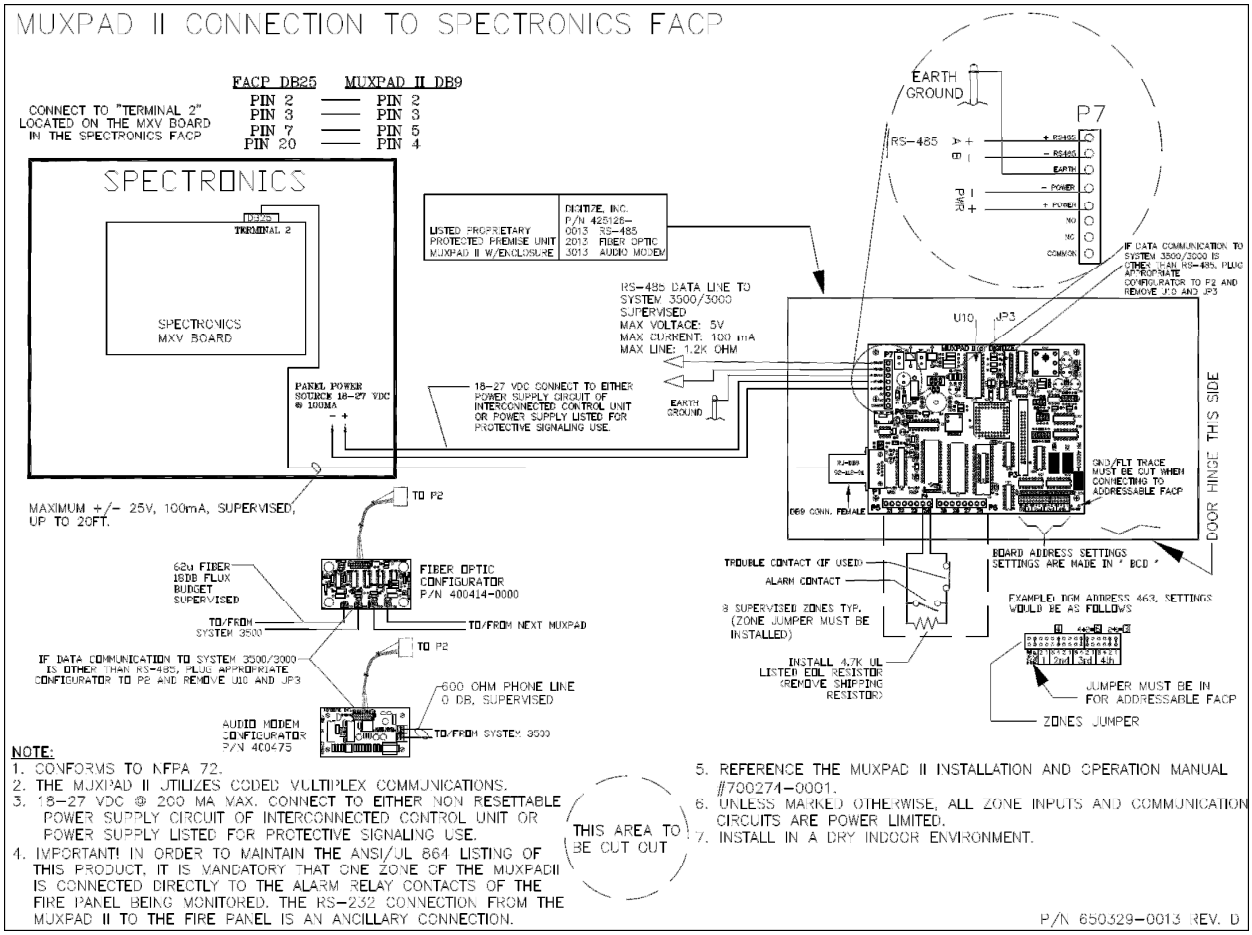


Figure 8-4 Connection to Spectronics Panel

9 GAMEWELL FLEX 500/FLEX 630 OPERATION

9.1 OVERVIEW

For proper operation, the SYSTEM 3505 must use software revision 6.0.6, Standard 1 or higher and Muxpad software revision 2.2.3 or higher for the Gamewell Flex 630. For all features to be available, the Muxpad II should be connected to a SYSTEM 3505. The Muxpad will operate with a SYSTEM 3505, but the FACP fault messages will not be displayed.

To ensure proper operation with a Gamewell Flex 500 or Flex 630 panel, the appropriate Flex 500 or Flex 630 program must be installed in the EPROM. This section covers specific information for interfacing to the Gamewell Flex 500 and Flex 630 panels. Refer to Installation Drawing at the end of Section 9 for details. Up to 32 zones may be installed on a Muxpad II system with software revision 4.1 or greater.

The Muxpad II is connected to the Flex 500 via the serial line normally used for the Annunciator. On the Flex 630 panel the Muxpad II connects to Port 2. Both the Flex 500 and the Flex 630 report information in a multiple line format rather than a single line.

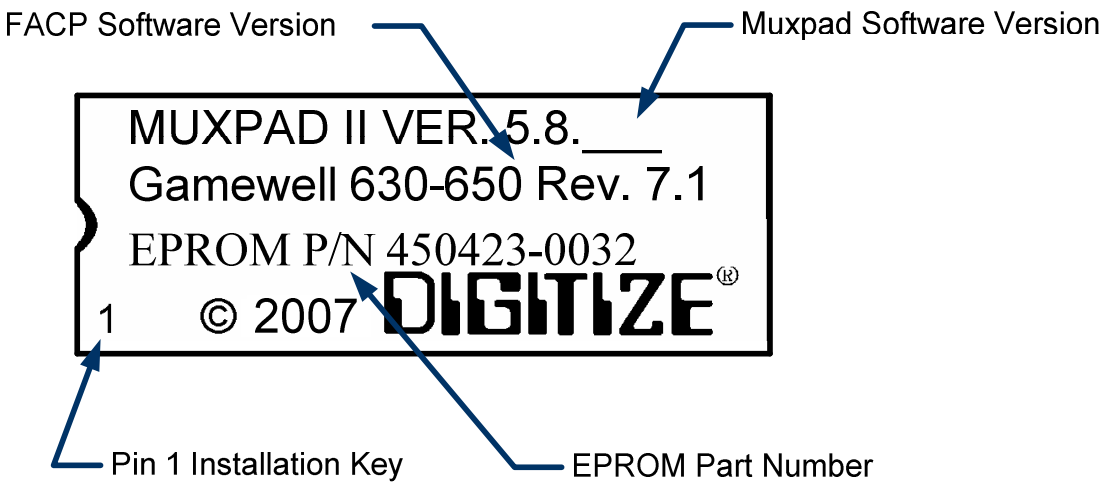


Figure 9-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 9.1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

9.2 RESET SEQUENCE

Upon initial power up, the Muxpad will examine the configuration jumpers to determine the RS-485 address. If the FACP option jumper is installed, a reset will be issued to the FACP. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

9.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data stream of the FACP.

Upon power-up of the DIGITIZE MUXPAD II, the FACP will issue a SYSTEM RESET. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it by the FACP. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated (depending on the setting of the General Trouble).

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

9.3.1 SETUP OF THE FLEX 500 FOR USE WITH A MUXPAD

The FLEX 500 offers three styles of printout formats. The format that the Muxpad will be looking for is the three line format. The first line contains status, date and time information. The second and third lines contain sensor specific information. To receive the three line format from the panel, you

must set programming Stage 14 to 00. Serial Handshaking with the panel occurs as follows: The panel sends an ENQ (5) character and the Muxpad responds with an XON (17) character.

9.3.2 FLEX 630 WITH A MUXPAD AND POSSIBLE ANNUNCIATORS

The default format of the Flex 630 panel is a three line format, so no format setup is required. The serial handshaking supervision must be turned on by the following programming sequence:

1) Enter password '4444'.
2) Select SYSTEM (3).
3) Select CHANGE (2).
4) Select MISC. (4).
5) Select MENU 2
6) Enable the ANN option.

IMPORTANT! Whenever a Muxpad II is installed, the Annunciator Option must be enabled. The Annunciator Option must always be turned ON, regardless of the presence or absence of Gamewell Annunciators.

Once the annunciator supervision is turned on, the panel will broadcast a QUERY from serial port #2 and expect a REPLY in return. If the panel does not receive the REPLY, it will fault the link itself. If the Muxpad does not hear a QUERY within 15-second intervals, it will fault the link.

If annunciators are to be used with the FACP, they must be attached to the second RS232 serial port of the Muxpad. The primary RS232 port of the Muxpad will be connected to the Port 2 of the FACP. The Muxpad will not interfere with the communications between the FACP and its annunciators. All data received by the Muxpad will be passed to the annunciators, all data sent from the annunciators will be sent to the FACP; the Muxpad II acts as a data repeater.

If there are no annunciators to be connected, simply connect the primary RS232 port of the Muxpad to the Port 2 of the FACP.

9.3.3 FLEX 630 MUXPAD WITH AND WITHOUT ANNUNCIATORS

Users must order Muxpad II based on whether or not they will use annunciators. If the configuration of the FACP is changed, the EPROM will need to be changed.

9.3.4 CONNECTING MUXPAD TO THE FLEX SERIES OF FACP

The Muxpad software is designed to process a specific format of information that is sent from the FLEX FACP on its serial COM port. When attaching annunciators to the FACP and Muxpad, care should be taken that the use of the annunciator does not alter the format of the information that goes to the Muxpad. For example, the FLEX 500 has an annunciator option that will translate the information sent from the FACP to the printer so the text printed is more specific to the particular site. The text that will be printed is specified by the customer and cannot be used by the Muxpad.

IMPORTANT! The annunciator is an unsupported device and may cause interference with the operation of the Muxpad. An annunciator installation should be carefully planned.

9.3.5 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

9.3.6 DIGITIZE - FLEX 500/FLEX 630 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Loop # - Zone # (i.e. 14-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Flex 500/630 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

9.3.7 RESPONSE TO A FLEX 500/FLEX 630 SYSTEM RESET

Whenever the version message, “Flex 500/630 System Version”, or “SYSTEM RESET” is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

9.3.8 CONTROL OF THE FLEX 500/FLEX 630 PANEL

The following control functions may be accessed from the keypad located on the DIGITIZE SYSTEM 3505:

- RESET of the Panel
- REMOTE ACKNOWLEDGE of panel messages
- SILENCE AUDIBLE devices

IMPORTANT! Remote operations such as SYSTEM RESET and SILENCE AUDIBLE may not be permitted in your area. Check with your local governing authority for all rules and regulations.

9.3.9 GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Flex 600 programs of Version 2.0, or higher. General Troubles are not implemented in the Flex 500 program. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

9.3.10 FLEX 630 FAULT CODES

Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault

Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The GAMEWELL FLEX 630 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a "General Trouble" message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505will beep once. The "STATUS PRINTOUT" soft key will be replaced with a flashing "FACP FAULTS" key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the "HISTORY" key, then the "FACP FAULTS" key that will be displayed.

When the last fault is cleared from the FACP, then the last message will secure and the Muxpad will send an "All Faults Corrected" message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the "General Trouble" message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the "General Trouble" message on a subsequent trouble).

When interfacing to a GAMEWELL FLEX 630 with program revision 5.x or higher, Digitize recommends using a SYSTEM 3500. If you are using a SYSTEM 3505, you need to install the 32K RAM with Battery on the CPU6 card.

9.3.11 FLEX 630 ACCOUNT NUMBERING

There are various combinations of Device / Circuit / Panel Fault message formats. All formats follow the same format of MMMCCCDDD, where:

MMM is the Muxpad address (jumper pack number)

CCC is a three digit, leading zero padded, Circuit number.

DDD is a three digit, leading zero padded, Device number.

For example:

An addressable detector on Muxpad 5, Circuit 3, and Device 4 is '005003004'.

A Conventional Zone on Circuit 130 of Muxpad 5 is '005130999'. In this example, the conventional zone does not have a device number included in the report from the FACP, so it is assigned a device number of '999'.

A panel fault of AC FAILURE on Muxpad 5 is '005997001'. Normally all addressable and conventional circuits have a regular format; ALARM, and RESTORE messages are identical. The Panel Faults (AC FAIL, BATTERY, PROGRAM MODE, and RS 232 LINK) are NOT associated with a detector. For example: when the AC line fails the FACP says "AC INPUT BAD" and when it restores it reports "AC INPUT OK". In order to resolve this problem, the Muxpad contains a list of all known Panel Faults the FACP can give. This list is numbered within the Muxpad and is used to generate a "Device" number for each of the Panel Faults. The format of the Panel Fault is: MMM996FFF (where FFF is the fault number).

Table 9-1 MUXPAD FLEX 630 PANEL FAULT NUMBERING

0	FIRE ALARM IN	29	DEV. DIRTY IN
1	SUPV. ALARM IN	30	NO RESPONSE FROM ANALO
2	SECURITY ALARM IN	31	OPEN/SHORT IN CKT:
3	VER. SEQ. IN	32	I/O NOT DETECTED @:
4	POS. AI. SEQ. IN	33	PASSWORD ACCEPTED
5	PRE-ALARM IN	34	+5V OK ON
6	ALARM TESTED IN	35	+5V BAD ON
7	ATOD MALFUNCTION	36	AUX. SUPPLY OK FOR
8	LCD MALFUNCTION	37	AUX. AC BAD FOR
9	SYSTEM IN WALK TEST	38	AUX. BATT. BAD FOR
10	SYSTEM OUT OF WALK TES	39	AUX. BAD FOR
11	SYSTEM I/OS BY PASSED	40	UNKNOWN EVENT
12	ALL BY PASSED I/OS CLE	41	COMMENCING SYSTEM RESET
13	I/O BYPASSED	42	SYSTEM IDLE
14	REMOTE ANNUNCIATORS	43	SYSTEM ACKNOWLEDGED
15	REMOTE ANNUNCIATORS	44	SIGNALS DEACTIVATED
16	C_KEY STUCK IN	45	SIGNALS ACTIVATED
17	DISPLAY MISSING FOR	46	AUTOM SIGNALS SILENCED
18	BAD CARD @	47	SKIP SYSTEM I/O ASSIGN
19	CARD MISSING @	48	BEGIN SYSTEM I/O ASSIG
20	NEW CARD DETECTED @	49	PROGRAMMING MODE ENTER
21	OUT OF MEMORY ASSIGNIN	50	EXIT PROGRAM MODE
22	I/O RESTORED	51	BATTERY VOLTAGE
23	TROUBLE TESTED IN	52	BATT. CHARGING
24	TROUBLE IN	53	AC INPUT
25	OUTPUT SHORTED IN	54	CITY TIE
26	DUP. DEV. IN	55	PROGRAM MODE EN
27	DEV. MISSING IN	56	GROUND
28	TYPE MISMATCH	57	

NOTE: Only the amount of text necessary to make a unique match is used. Example "Ground" covers the "Ground Fault" and "Ground OK" conditions.

9.3.12 OTHER PANEL FAULTS

Battery	MMM998001
RS 232 LINK	MMM999001
AC POWER FAIL	MMM997001
PROGRAMMING MODE	MMM998002

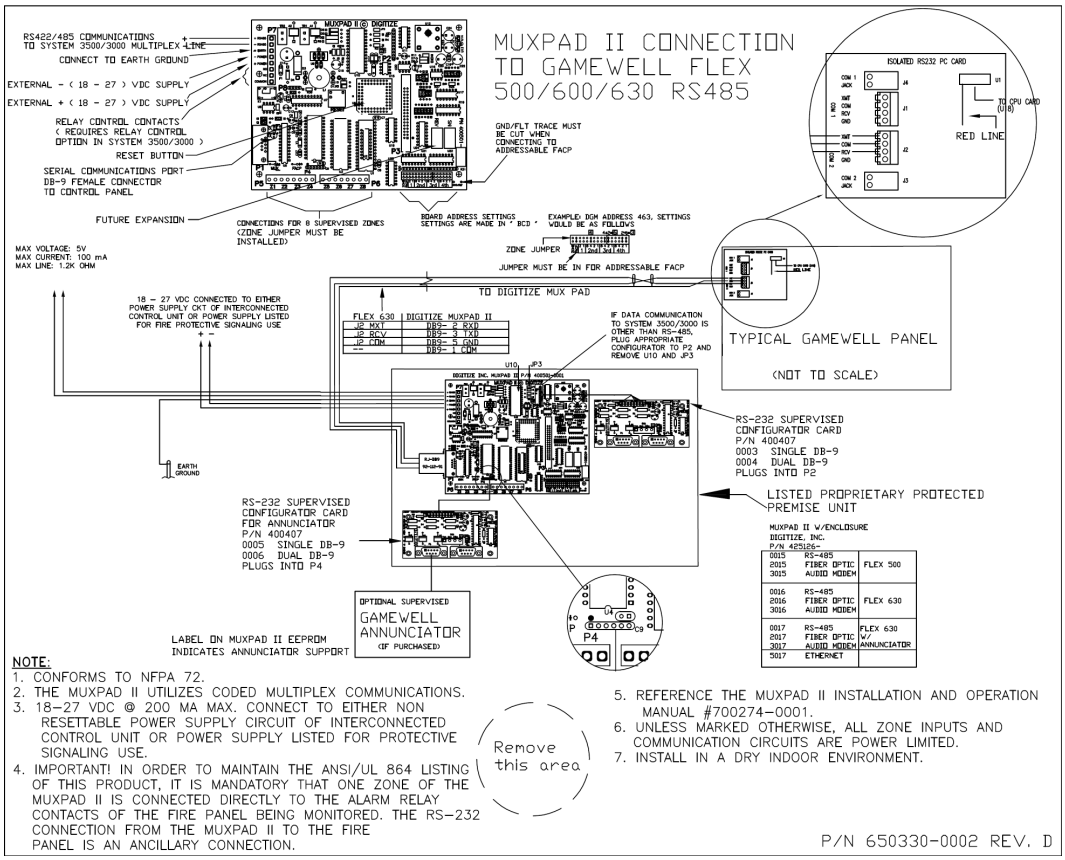


Figure 9-2 Connection to Gamewell Flex Panel

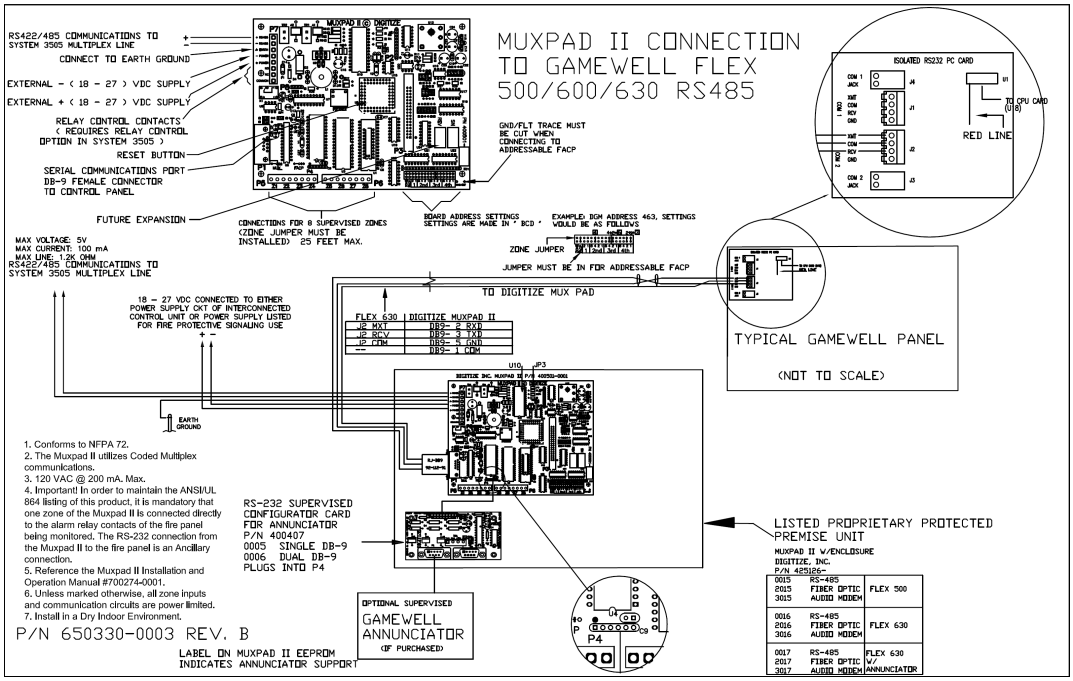


Figure 9-3 Connection to Gamewell Flex Panel

10 GAMEWELL FLEX 600 SERIES

10.1 OVERVIEW

For proper operation, the SYSTEM 3505 must use software revision 6.0.6, Standard 1 or higher and Muxpad software revision 2.2.3 or higher for the Gamewell Flex 630. For all features to be available, the Muxpad II should be connected to a SYSTEM 3500. The Muxpad will operate with a SYSTEM 3505, but the FACP fault messages will not be displayed.

To ensure proper operation with a Gamewell Flex 600 Series panel, the appropriate Flex 600 Series program must be installed in the EPROM. This section covers specific information for interfacing to the Gamewell Flex 600 series panels. Refer to Installation Drawing at the end of Section 10 for details. Up to 32 zones may be installed on a Muxpad II system with software revision 4.1 or greater.

The Muxpad II is connected to the Flex 500 via the serial line normally used for the Annunciator. On the Flex 630 panel the Muxpad II connects to Port 2. The Flex 600 Series reports information in a multiple line format rather than a single line.

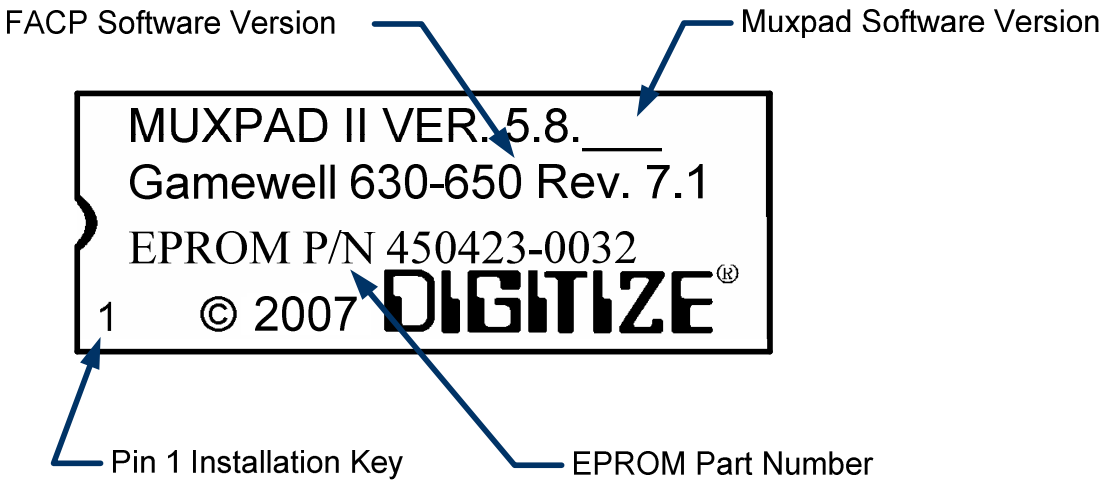


Figure 10-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 10-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

10.2 RESET SEQUENCE

Upon initial power up, the Muxpad will examine the configuration jumpers to determine the RS-485 address. If the FACP option jumper is installed, a reset will be issued to the FACP. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

10.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data stream of the FACP.

Upon power-up of the DIGITIZE MUXPAD II, the FACP will issue a SYSTEM RESET. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it by the FACP. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated (depending on the setting of the General Trouble).

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

10.3.1 SETUP OF THE FLEX 500 FOR USE WITH A MUXPAD

The FLEX 600 Series offers three styles of printout formats. The format that the Muxpad will be looking for is the three line format. The first line contains status, date and time information. The second and third lines contain sensor specific information. To receive the three line format from the panel, you must set programming Stage 14 to 00. Serial Handshaking with the panel occurs as follows: The panel sends an ENQ (5) character and the Muxpad responds with an XON (17) character.

10.3.2 FLEX 600 SERIES WITH A MUXPAD AND POSSIBLE ANNUNCIATORS

The default format of the Flex 600 Series panel is a three line format, so no format setup is required. The serial handshaking supervision must be turned on by the following programming sequence:

1) Enter password '4444'.
2) Select SYSTEM (3).
3) Select CHANGE (2).
4) Select MISC. (4).
5) Select MENU 2
6) Enable the ANN option.

IMPORTANT! Whenever a Muxpad II is installed, the Annunciator Option must be enabled. The Annunciator Option must always be turned ON, regardless of the presence or absence of Gamewell Annunciators.

Once the annunciator supervision is turned on, the panel will broadcast a QUERY from serial port #2 and expect a REPLY in return. If the panel does not receive the REPLY, it will fault the link itself. If the Muxpad does not hear a QUERY within 15-second intervals, it will fault the link.

If annunciators are to be used with the FACP, they must be attached to the second RS232 serial port of the Muxpad. The primary RS232 port of the Muxpad will be connected to the Port 2 of the FACP. The Muxpad will not interfere with the communications between the FACP and its annunciators. All data received by the Muxpad will be passed to the annunciators, all data sent from the annunciators will be sent to the FACP; the Muxpad II acts as a data repeater.

If there are no annunciators to be connected, simply connect the primary RS232 port of the Muxpad to the Port 2 of the FACP.

10.3.3 FLEX 600 SERIES MUXPAD WITH AND WITHOUT ANNUNCIATORS

Users must order Muxpad II based on whether or not they will use annunciators. If the configuration of the FACP is changed, the EPROM will need to be changed.

10.3.4 CONNECTING MUXPAD TO THE FLEX SERIES OF FACP

The Muxpad software is designed to process a specific format of information that is sent from the FLEX FACP on its serial COM port. When attaching annunciators to the FACP and Muxpad, care should be taken that the use of the annunciator does not alter the format of the information that goes to the Muxpad. For example, the FLEX 500 has an annunciator option that will translate the information sent from the FACP to the printer so the text printed is more specific to the particular site. The text that will be printed is specified by the customer and cannot be used by the Muxpad.

IMPORTANT! The annunciator is an unsupported device and may cause interference with the operation of the Muxpad. An annunciator installation should be carefully planned.

10.3.5 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

10.3.6 DIGITIZE - FLEX 600 SERIES ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Loop # - Zone # (i.e. 14-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Flex 500/630 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

10.3.7 RESPONSE TO A FLEX 600 SERIES SYSTEM RESET

Whenever the version message, “Flex 600 SERIES System Version”, or “SYSTEM RESET” is received by the DIGITIZE FACP SYSTEM, all ALARM or TROUBLE events displayed will be secured by the SYSTEM 3505. The FACP reset will also be processed by the SYSTEM 3505 and logged on the thermal printer tape.

10.3.8 CONTROL OF THE FLEX 600 SERIES PANEL

The following control functions may be accessed from the keypad located on the DIGITIZE SYSTEM 3505:

- RESET of the Panel
- REMOTE ACKNOWLEDGE of panel messages
- SILENCE AUDIBLE devices

IMPORTANT! Remote operations such as SYSTEM RESET and SILENCE AUDIBLE may not be permitted in your area. Check with your local governing authority for all rules and regulations.

10.3.9 GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Flex 600 programs of Version 2.0, or higher. General Troubles are not implemented in the Flex 500 program. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3500. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

10.3.10 FLEX 600 FAULT CODES

Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3500. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The GAMEWELL FLEX 600 series error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a "General Trouble" message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505will beep once. The "STATUS PRINTOUT" soft key will be replaced with a flashing "FACP FAULTS" key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the "HISTORY" key, then the "FACP FAULTS" key that will be displayed.

When the last fault is cleared from the FACP, then the last message will secure and the Muxpad will send an "All Faults Corrected" message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the "General Trouble" message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the "General Trouble" message on a subsequent trouble).

10.3.11 FLEX 600 SERIES ACCOUNT NUMBERING

There are various combinations of Device / Circuit / Panel Fault message formats. All formats follow the same format of MMMCCCDDD, where:

MMM is the Muxpad address (jumper pack number)

CCC is a three digit, leading zero padded, Circuit number.

DDD is a three digit, leading zero padded, Device number.

For example:

An addressable detector on Muxpad 5, Circuit 3, and Device 4 is '005003004'.

A Conventional Zone on Circuit 130 of Muxpad 5 is '005130999'. In this example, the conventional zone does not have a device number included in the report from the FACP, so it is assigned a device number of '999'.

A panel fault of AC FAILURE on Muxpad 5 is '005997001'. Normally all addressable and conventional circuits have a regular format; ALARM, and RESTORE messages are identical. The Panel Faults (AC FAIL, BATTERY, PROGRAM MODE, and RS 232 LINK) are NOT associated with a detector. For example: when the AC line fails the FACP says "AC INPUT BAD" and when it restores it reports "AC INPUT OK". In order to resolve this problem, the Muxpad contains a list of all known Panel Faults the FACP can give. This list is numbered within the Muxpad and is used to generate a "Device" number for each of the Panel Faults. The format of the Panel Fault is: MMM996FFF (where FFF is the fault number).

Table 10-1 MUXPAD FLEX 600 PANEL FAULT NUMBERING

0	FIRE ALARM IN	29	DEV. DIRTY IN
1	SUPV. ALARM IN	30	NO RESPONSE FROM ANALO
2	SECURITY ALARM IN	31	OPEN/SHORT IN CKT:
3	VER. SEQ. IN	32	I/O NOT DETECTED @:
4	POS. AI. SEQ. IN	33	PASSWORD ACCEPTED
5	PRE-ALARM IN	34	+5V OK ON
6	ALARM TESTED IN	35	+5V BAD ON
7	ATOD MALFUNCTION	36	AUX. SUPPLY OK FOR
8	LCD MALFUNCTION	37	AUX. AC BAD FOR
9	SYSTEM IN WALK TEST	38	AUX. BATT. BAD FOR
10	SYSTEM OUT OF WALK TES	39	AUX. BAD FOR
11	SYSTEM I/OS BY PASSED	40	UNKNOWN EVENT
12	ALL BY PASSED I/OS CLE	41	COMMENCING SYSTEM RESET
13	I/O BYPASSED	42	SYSTEM IDLE
14	REMOTE ANNUNCIATORS	43	SYSTEM ACKNOWLEDGED
15	REMOTE ANNUNCIATORS	44	SIGNALS DEACTIVATED
16	C_KEY STUCK IN	45	SIGNALS ACTIVATED
17	DISPLAY MISSING FOR	46	AUTOM SIGNALS SILENCED
18	BAD CARD @	47	SKIP SYSTEM I/O ASSIGN
19	CARD MISSING @	48	BEGIN SYSTEM I/O ASSIG
20	NEW CARD DETECTED @	49	PROGRAMMING MODE ENTER
21	OUT OF MEMORY ASSIGNIN	50	EXIT PROGRAM MODE
22	I/O RESTORED	51	BATTERY VOLTAGE
23	TROUBLE TESTED IN	52	BATT. CHARGING
24	TROUBLE IN	53	AC INPUT
25	OUTPUT SHORTED IN	54	CITY TIE
26	DUP. DEV. IN	55	PROGRAM MODE EN
27	DEV. MISSING IN	56	GROUND
28	TYPE MISMATCH	57	

NOTE: Only the amount of text necessary to make a unique match is used. Example "Ground" covers the "Ground Fault" and "Ground OK" conditions.

10.3.12 OTHER PANEL FAULTS

Battery	MMM998001
RS 232 LINK	MMM999001
AC POWER FAIL	MMM997001
PROGRAMMING MODE	MMM998002

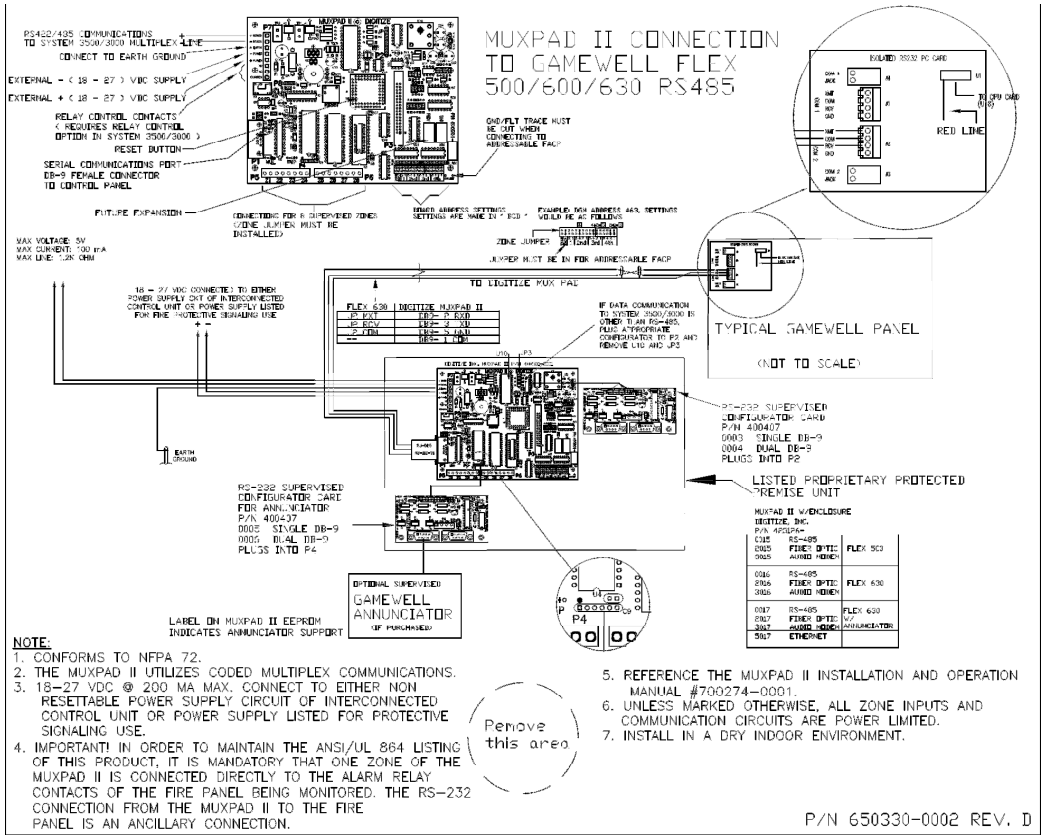


Figure 10-2 Connection to Gamewell Flex Panel

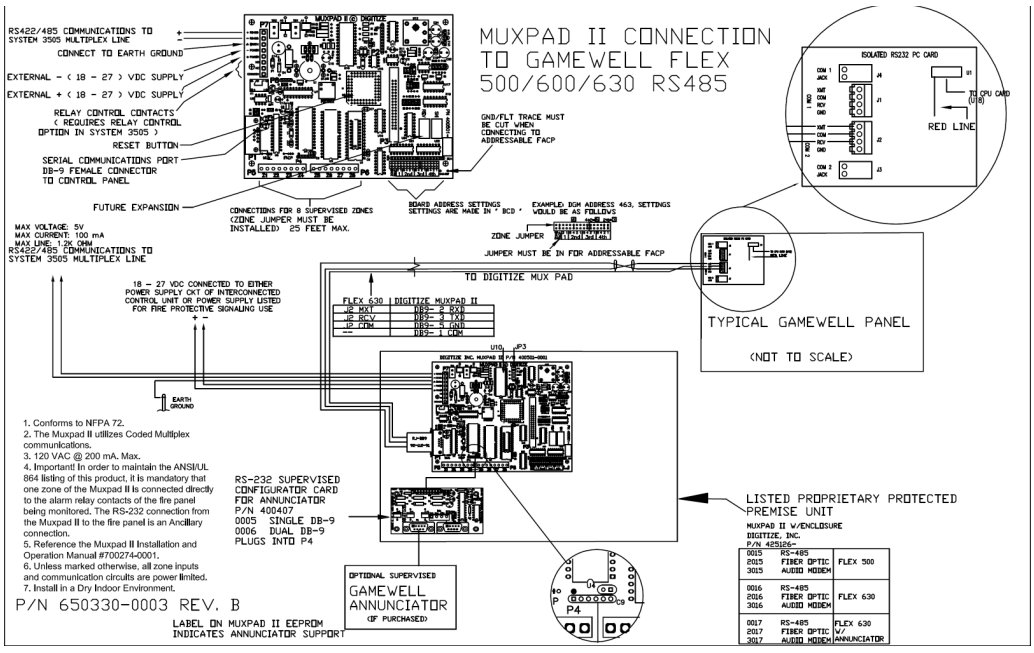


Figure 10-3 Connection to Gamewell Flex Panel

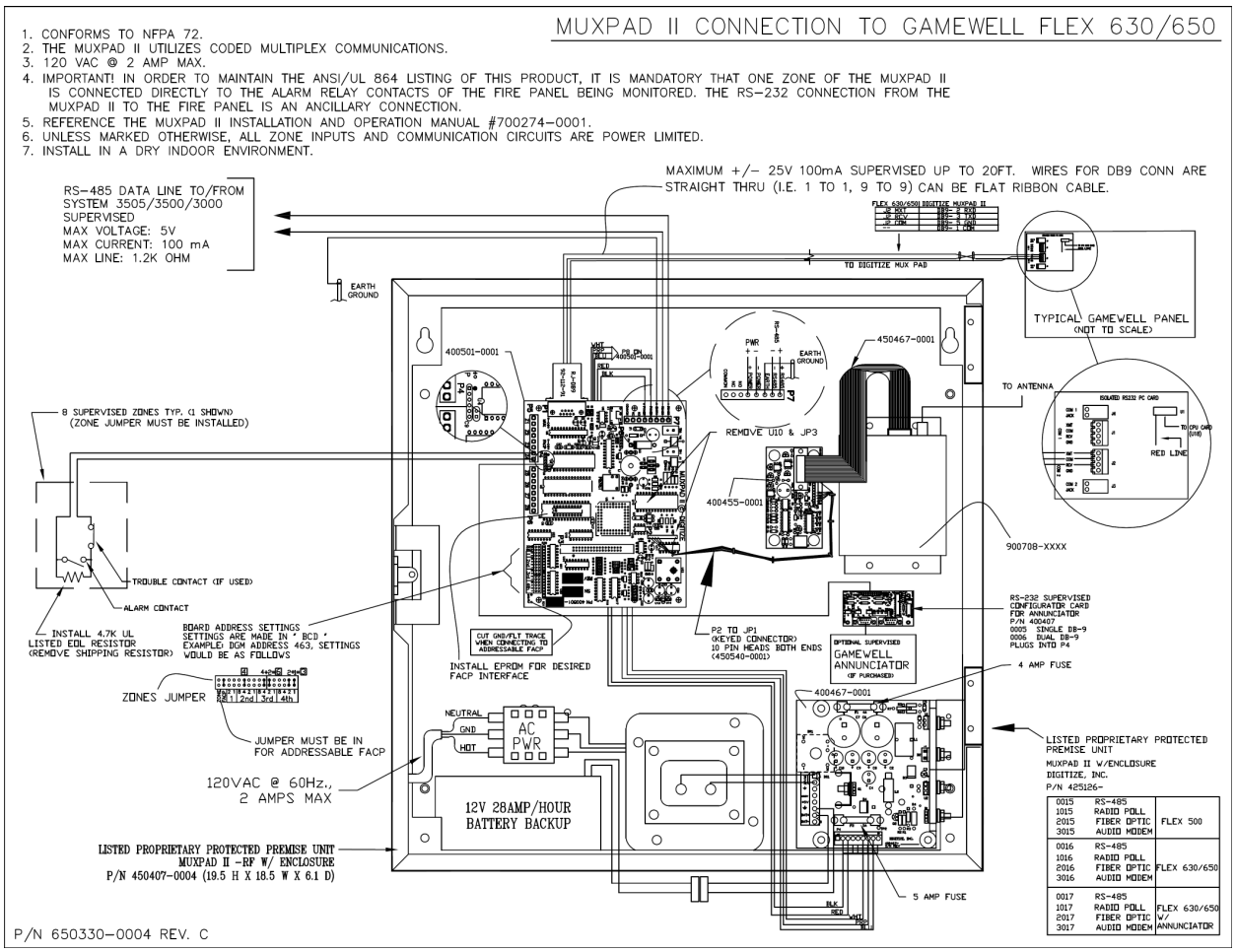


Figure 10-4 Connection to Gamewell Flex Panel, RF Version

11 SIMPLEX 4100/4020/4120 INTERFACE

11.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a Simplex 4100, 4120 or 4020 panel, the appropriate Simplex 4100/4020/4120 program must be installed in the EPROM of the Muxpad II. This section of the manual covers specific information for interfacing to the Simplex 4100 or 4020 panels. Refer to Installation Drawing at the end of Section 11 for details. SYSTEM 3505 must have software revision S606 Std 4 or higher.

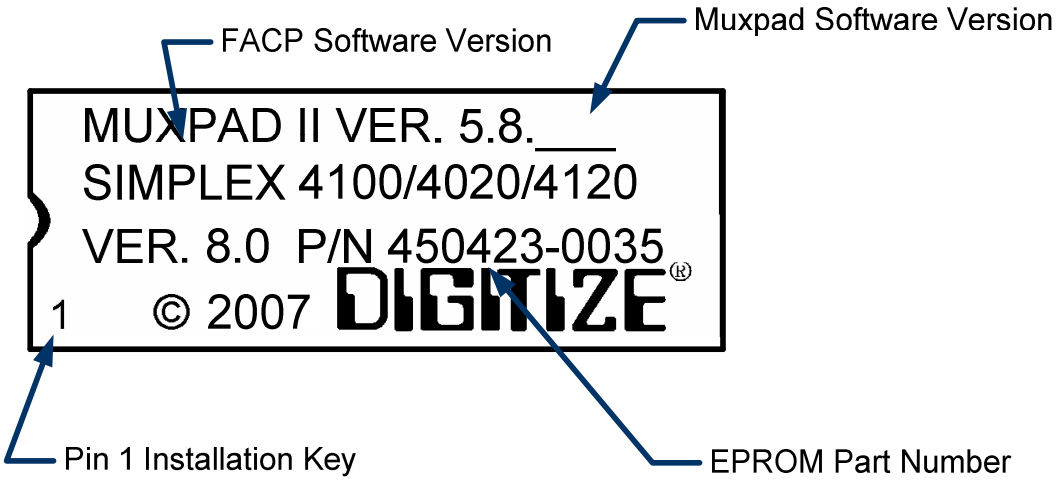


Figure 11-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 11.1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II. The Muxpad II is connected to the Simplex 4100/4020/4120 via Port 1 or 2 on the Simplex panel.

11.1.1 SIMPLEX FACP INTERFACE REQUIREMENTS

The Simplex 4100/4020/4120 panel must be programmed by the Simplex factory authorized representative for use with the Digitize Muxpad II. The Simplex representative must use the following information to properly set up the panel:

Device Type:	Computer
Header Label:	(as needed by Simplex)
Port ID:	Port 1 (or 2) Muxpad II
Set to:	2400 baud, 8 bits, no parity, one stop.

Option	Status
Shell	OFF
Protocol	ON
Echo	OFF
Logging	OFF
Status	ON
Address	ON
B Prefix	OFF
A Prefix	ON
Supv	ON
Bells	OFF
Hshake	ON
Poll	ON
Attrib	OFF
LF	ON
Line Width	80

NOTE: Do not assign Card # 153, 240 or zero within the Simplex FACP. Card numbers 153, 240 and zero will conflict with Digitize fault messages for the Simplex interface.

IMPORTANT! The Simplex representative must activate all of the conditions that the user would like reported via the Muxpad II to the System 3505, (i.e. fire alarms, supervisories, trouble conditions, etc.).

11.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in Appendix A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e. 104), then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (10), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

If the FACP option jumper is installed, the Simplex panel will request an update. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

11.3 GENERAL OPERATION WITH SIMPLEX FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data. The unrecognizable event will be reported as an Alarm.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

11.3.1 REPORTING TO SYSTEM 3505

The Muxpad II system operates on tri-state recognition of point status: Alarm, Trouble and Secure. Since the FACP uses more than three states to identify the existing condition on a detector, these additional FACP states are collapsed into the tri-state conditions. Only the Fire, Priority 2 detector points, and FA SUPR conditions are reported as Alarms. All other 'off normal' conditions are reported as Troubles. When any point reports as Normal, it is Secure at the SYSTEM 3505.

The detector address is reported to the SYSTEM 3505 as a hexadecimal. A detector mapped out as 129-1-6 would be reported as 81-01-06.

The user text messages obtained from the FACP will contain the point information at the end of text message, if there is room on the System 3505 display screen. The user text message will attempt to remain unbroken (non-hyphenated) to allow easier reading. If there is sufficient room, the MAPNET # (1-2-3) will display as the last characters on the third line. If there is no room for the report, it is discarded. If it is not possible to properly word break the lines due to excessively long words in the user message, then the message is simply displayed, with the report (if room) on the end of the message.

For example:

'SECOND FLOOR LANDING ION SMOKE DETECTOR 1-2-3 '

This depicts the user text gathered from the FACP.

The Simplex panel does not send alarm verification to the serial port; therefore alarm verification is not processed by the SYSTEM 3505. Even though utility (i.e. type of board installed, etc.) and contact functions are sent to the Muxpad II, they are not processed by the SYSTEM 3505. The FACP will always send proper information that is processed by the SYSTEM 3505, in addition to the contact function that describes the event.

11.3.2 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory or alarm characters from the FACP RS232 line.

11.3.3 DIGITIZE - 4100/4020/4120 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Master # -Slave#- Zone # (i.e. 14-00-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Simplex 4100/4020 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

11.3.4 REMOTE CONTROL OF THE 4100/4020/4120 PANEL

The following control functions are available as special order only:

- Apply detector RESET command to FACP

- ACKNOWLEDGE of panel messages
- Toggle SILENCE signal circuits

IMPORTANT! Remote operations such as Apply RESET command to FACP, Acknowledge FACP and Silence signal circuits are not in compliance with ANSI/UL 864 Standards and may not be permitted in your area. Check with your local governing authority for all rules and regulations.

11.3.5 RS232 CABLE CONNECTIONS

A five-wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP CRT Port #2. The pinouts terminate in a female DB9 connector.

FACP	DIRECTION	MUXPAD II
RX	←	P1.PIN 2
TX	→	P1.PIN 3
RTS	←	P1.PIN 7
CTS	→	P1.PIN 8
GND	↔	P1.PIN 5

11.3.6 GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Simplex 4100/4010/4120 programs. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3500. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

Simplex 4100/4020 panels will have the General Trouble option enabled at all times (it cannot be turned off). Simplex 4120 panels will have the option to turn General Troubles ON or OFF.

11.3.7 PANEL FAULTS

General Trouble	MMM999099	Panel has more then one faults.
RS 232 link	MMM999001	
Eight Zone	MMM970001 to MMM970008	
32-Zone	MMM970001 to MMM970032	

See Section 2.3.1 for more details

11.3.8 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The SIMPLEX 4100/4020/4120 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505:

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a "General Trouble" message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505will beep once. The "STATUS PRINTOUT" soft key will be replaced with a flashing "FACP FAULTS" key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the "HISTORY" key, then the "FACP FAULTS" key that will be displayed.

When the last fault is cleared from the FACP, the last message will secure and the Muxpad will send an "All Faults Corrected' message."

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the "General Trouble" message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the "General Trouble" message on a subsequent trouble).

When interfacing to a SIMPLEX 4100/4020/4120 with program revision 5.x or higher, Digitize recommends using a SYSTEM 3500. If you are using a SYSTEM 3505, you need to install the 32K RAM with Battery on the CPU6 card.

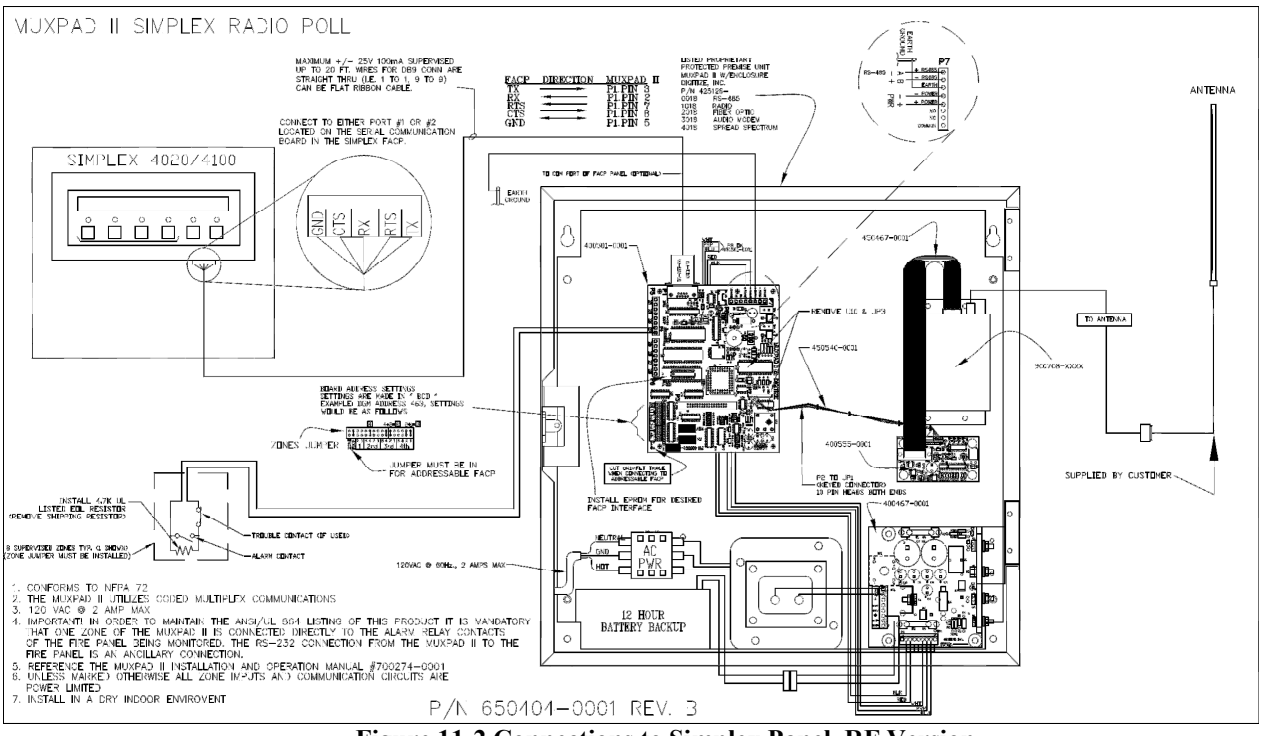


Figure 11-2 Connections to Simplex Panel, RF Version

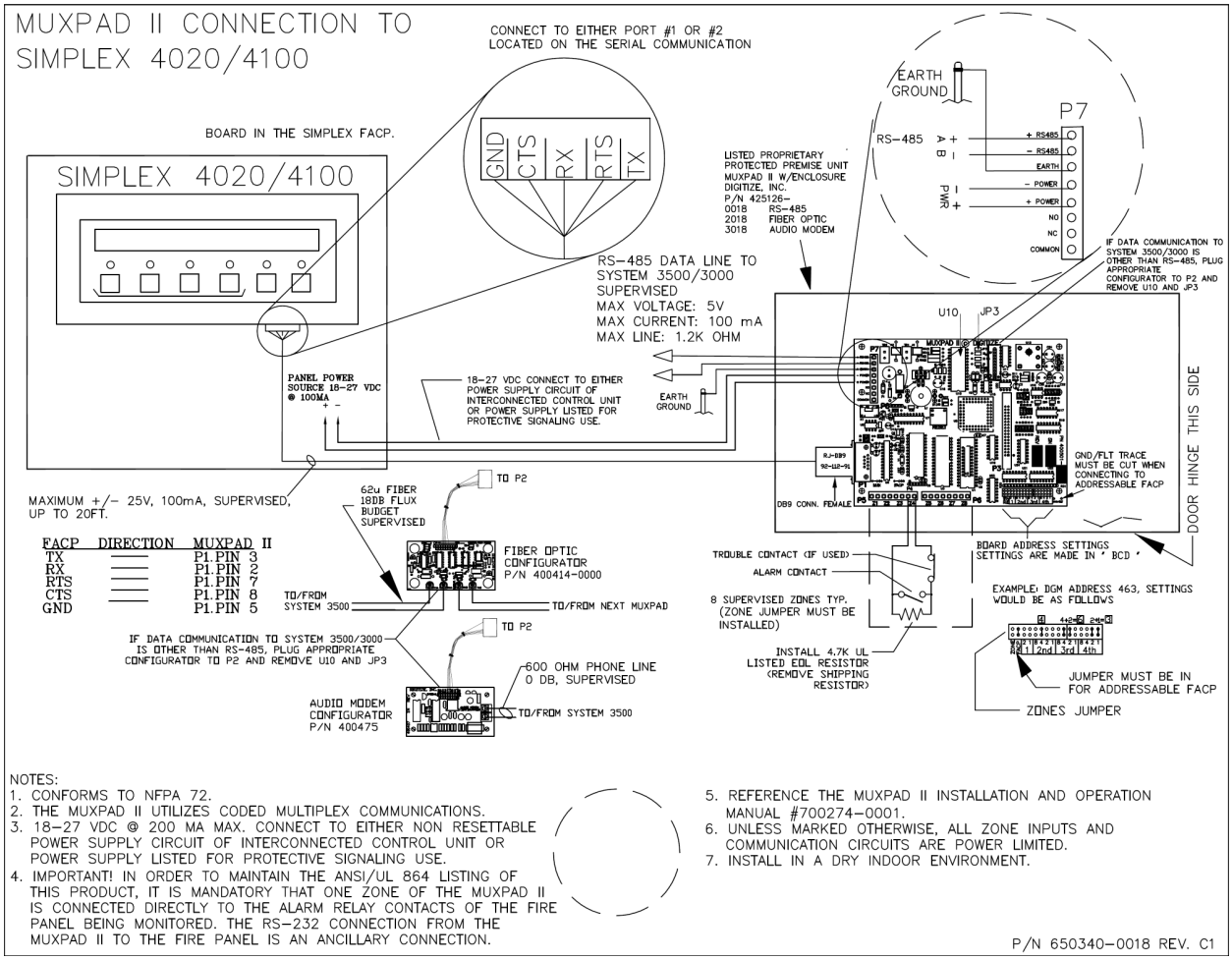


Figure 11-3 Connections to Simplex Panel

12 SIMPLEX 4010 INTERFACE

12.1 OVERVIEW

The Muxpad series was designed specifically to gather the serial data streams from a compatible FACP (Fire Alarm Control Panel) and interpret the serial print data to the SYSTEM 3505.

The Digitize Muxpad II panel is connected to a **Simplex 4010 Fire Panel** to interpret output data from its printer port and then send that data to Digitize System 3505 to annunciate Fires, Troubles, etc.

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a Simplex 4010 Fire Panel, the appropriate Simplex 4010 program must be installed in the EPROM of the Muxpad II. . SYSTEM 3505 must have software revision S755STD1 with a release date of January 25, 2008 or higher.

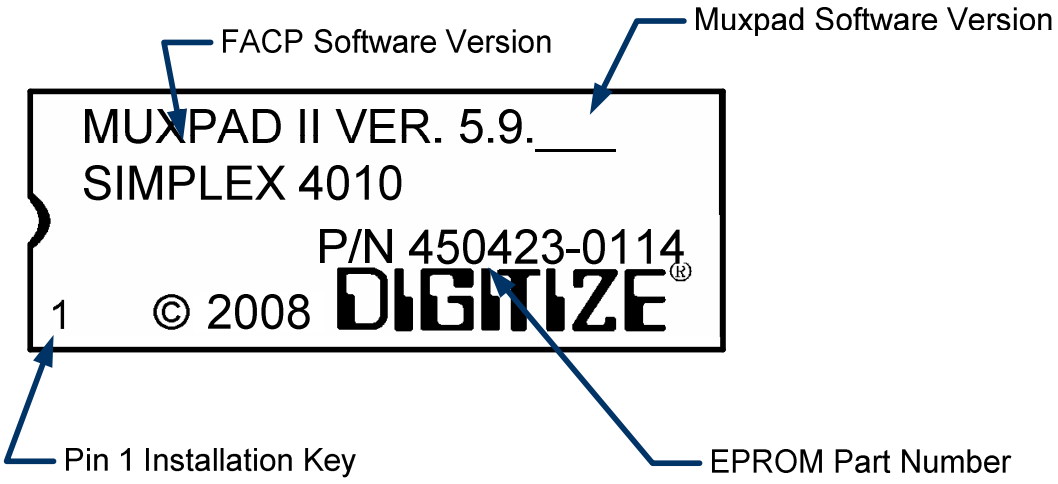


Figure 12-1 Typical EPROM Label NEEDED (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (12-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II. The Muxpad II is connected to the Simplex 4010 via Port 1 or 2 on the Simplex panel.

12.1.1 SIMPLEX FACP INTERFACE REQUIREMENTS

The Simplex 4010 panel must be programmed by the Simplex factory authorized representative for use with the Digitize Muxpad II. The Simplex representative must use the following information to properly set up the panel:

Device Type:	Computer
Header Label:	(as needed by Simplex)
Port ID:	Port 1 (or 2) Muxpad II
Set to:	9600-N-8-1 baud: Supervision should be turned off

Option	Status
Shell	OFF
Protocol	ON
Echo	OFF
Logging	OFF
Status	ON
Address	ON
B Prefix	OFF
A Prefix	ON
Supv	ON
Bells	OFF
Hshake	ON
Poll	ON
Attrib	OFF
LF	ON
Line Width	80

NOTE: Do not assign Card # 153, 240 or zero within the Simplex FACP. Card numbers 153, 240 and zero will conflict with Digitize fault messages for the Simplex interface.

IMPORTANT! The Simplex representative must activate all of the conditions that the user would like reported via the Muxpad II to the System 3505, (i.e. fire alarms, supervisories, trouble conditions, etc.).

12.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in Appendix A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e. 104), then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (10), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

If the FACP option jumper is installed, the Simplex panel will request an update. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

12.3 GENERAL OPERATION WITH SIMPLEX FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS-232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data. The unrecognizable event will be reported as an Alarm.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

12.3.1 REPORTING TO SYSTEM 3505

The Muxpad II system operates on tri-state recognition of point status: Alarm, Trouble and Secure. Since the FACP uses more than three states to identify the existing condition on a detector, these additional FACP states are collapsed into the tri-state conditions. Only the Fire, Priority 2 detector points, and FA SUPR conditions are reported as Alarms. All other 'off normal' conditions are reported as Troubles. When any point reports as Normal, it is Secure at the SYSTEM 3505.

The detector address is reported to the SYSTEM 3505 as a hexadecimal. A detector mapped out as 129-1-6 would be reported as 81-01-06.

The user text messages obtained from the FACP will contain the point information at the end of text message, if there is room on the System 3505 display screen. The user text message will attempt to remain unbroken (non-hyphenated) to allow easier reading. If there is sufficient room, the MAPNET # (1-2-3) will display as the last characters on the third line. If there is no room for the report, it is discarded. If it is not possible to properly word break the lines due to excessively long words in the user message, then the message is simply displayed, with the report (if room) on the end of the message.

For example:

'SECOND FLOOR LANDING ION SMOKE DETECTOR 1-2-3 '

This depicts the user text gathered from the FACP.

The Simplex panel does not send alarm verification to the serial port; therefore alarm verification is not processed by the SYSTEM 3505. Even though utility (i.e. type of board installed, etc.) and contact functions are sent to the Muxpad II, they are not processed by the SYSTEM 3505. The FACP will always send proper information that is processed by the SYSTEM 3505, in addition to the contact function that describes the event.

Within custom user text, "MX-XXX" or NX-XXX" must be included in the user text field to uniquely identify the module. For example a pull station could show up as:

BOILER PLANT 1FL NE EXIT M1-01

Valid point values are M0-000 to M9-255. (0 is zero.) Use of an address prevents confusion. Mapnet Points should use NX-XXX.

12.3.2 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory or alarm characters from the FACP RS-232 line.

12.3.3 DIGITIZE - 4010 ZONE OPERATION

IMPORTANT! In order to maintain the UL rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Master # -Slave#- Zone # (i.e. 14-00-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Simplex 4100/4020 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

12.3.4 REMOTE CONTROL OF THE 4010 PANEL

The following control functions are available as special order only:

- Apply detector RESET command to FACP
- ACKNOWLEDGE of panel messages
- Toggle SILENCE signal circuits

IMPORTANT! Remote operations such as Apply RESET command to FACP, Acknowledge FACP and Silence signal circuits are not in compliance with UL Standards and may not be permitted in your area. Check with your local governing authority for all rules and regulations.

12.3.5 RS232 CABLE CONNECTIONS

A five-wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP CRT Port #2. The pinouts terminate in a female DB9 connector.

Port A Pin Number	RS-232 Connector
1	**3**
2	**2**
3	**5**
4 Not Connected	**--**
5	**8**
6 Not Connected	**--**

12.3.6 GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Simplex 4010 programs. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

Simplex 4010 panels will have the General Trouble option enabled at all times (it cannot be turned off). Simplex 4010 panels will have the option to turn General Troubles ON or OFF.

12.3.7 PANEL FAULTS

General Trouble	MMM999099	Panel has more then one fault.
RS 232 link	MMM999001	
Eight Zone	MMM970001 to MMM970008	
32-Zone	MMM970001 to MMM970032	

See Section 2.3 of the Muxpad II Installation and User Manual (700274-0001 Rev. C) for more details.

12.3.8 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The SIMPLEX 4010 error messages appear on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505:

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a “General Trouble” message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505will beep once. The “STATUS PRINTOUT” soft key will be replaced with a flashing “FACP FAULTS” key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the “HISTORY” key, then the “FACP FAULTS” key that will be displayed.

When the last fault is cleared from the FACP, the last message will secure and the Muxpad will send an “All Faults Corrected’ message.”

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the “General Trouble” message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the “General Trouble” message on a subsequent trouble).

13 AUTOCALL TFX-800

13.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a **Autocall TFX-800** panel, the appropriate program must be installed in the EPROM of the Muxpad II. This section of the manual covers specific information for interfacing to the Autocall TFX-800 panel. SYSTEM 3505 must have software revision S755STD1 with a release date of January 25, 2008 or higher.

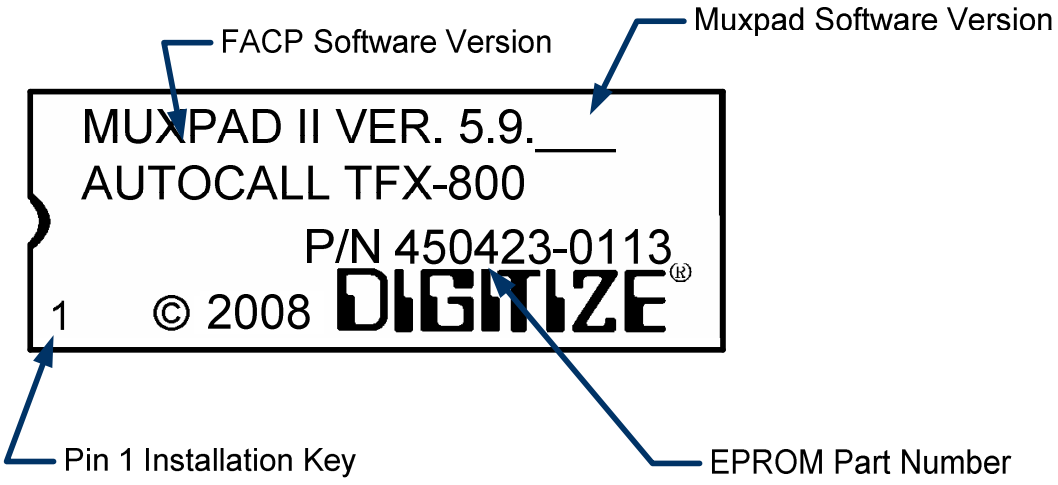


Figure 13-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 13-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II. The Muxpad II is to connect the Autocall TFX-800 via serial port PL3 (on the Autocall unit) using connector cable (Simplex P/N 125.121.181).

13.1.1 FACP INTERFACE REQUIREMENTS

The Autocall TFX-800 panel must be programmed by the Simplex factory authorized representative for use with the Digitize Muxpad II. The Simplex representative must use the following information to properly set up the panel:

Device Type: Computer

Header Label: (by Simplex)

Port ID: Port 1 (or 2) Muxpad II

RS-232 Baud Rate: 4800/-2

Option	Status
Shell	OFF
Protocol	ON
Echo	OFF
Logging	OFF
Status	ON
Address	ON
B Prefix	OFF
A Prefix	ON
Supv	ON
Bells	OFF
Hshake	ON
Poll	ON
Attrib	OFF
LF	ON
Line Width	80

NOTE: Do not assign Card # 153, 240 or zero within the Simplex FACP. Card numbers 153, 240 and zero will conflict with Digitize fault messages for the Simplex interface.

IMPORTANT! The Simplex representative must activate all of the conditions that the user would like reported via the Muxpad II to the System 3505, (i.e. fire alarms, supervisories, trouble conditions, etc.).

13.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in Appendix A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e. 104), then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (10), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

If the FACP option jumper is installed, the Autocall TFX-800 panel will request an update. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

13.3 GENERAL OPERATION WITH AUTOCALL TFX-800 PANEL

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS-232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS-232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data. The unrecognizable event will be reported as an Alarm**.**

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

13.3.1 REPORTING TO SYSTEM 3505

The Muxpad II system operates on tri-state recognition of point status: Alarm, Trouble and Secure. Since the FACP uses more than three states to identify the existing condition on a detector, these additional FACP states are collapsed into the tri-state conditions. Only the Fire, Priority 2 detector points, and FA SUPR conditions are reported as Alarms. All other 'off normal' conditions are reported as Troubles. When any point reports as Normal, it is Secure at the SYSTEM 3505.

The detector address is reported to the SYSTEM 3505 in hexadecimal. A detector mapped out as 129-1-6 would be reported as 81-01-06.

The user text messages obtained from the FACP will contain the point information at the end of text message, if there is room on the System 3505 display screen. The user text message will attempt to remain unbroken (non-hyphenated) to allow easier reading. If there is sufficient room, the MAPNET # (1-2-3) will display as the last characters on the third line. If there is no room for the report, it is discarded. If it is not possible to properly word break the lines due to excessively long words in the user message, then the message is simply displayed, with the report (if room) on the end of the message. For example:

'SECOND FLOOR LANDING ION SMOKE DETECTOR 1-2-3 '

This depicts the user text gathered from the FACP.

The Autocall TFX-800 panel does not send alarm verification to the serial port; therefore alarm verification is not processed by the SYSTEM 3505. Even though utility (i.e. type of board installed, etc.) and contact functions are sent to the Muxpad II, they are relayed to the SYSTEM 3505. The Muxpad II attempts to relay all relevant information to the SYSTEM 3505, in addition to the contact function that describes the event.

13.3.2 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives supervisory or alarm characters from the FACP RS232 line.

13.3.3 DIGITIZE – AUTOCALL FTX-800 ZONE OPERATION

IMPORTANT! In order to maintain the UL rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format: Muxpad #- Master # -Slave#- Zone # (i.e. 14-00-00-19). The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as an Autocall FTX-800 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

13.3.4 RS232 CABLE CONNECTIONS

A five-wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP serial port PL3. The pinouts terminate in a female DB9 connector.

Table 13-1 RS232 PIN CONNECTIONS

FACP	MUXPAD II
PL3.PIN1	P1.PIN 5
PL3.PIN2	P1.PIN 8
PL3.PIN3	P1.PIN 3
PL3.PIN4	P1.PIN 7
PL3.PIN5	P1.PIN 4
PL3.PIN6	P1.PIN1

13.3.5 GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Autocall FTX-800. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

Autocall FTX-800 panels will have the General Trouble option enabled at all times (it cannot be turned off). OR Autocall FTX-800 panels will have the option to turn General Troubles ON or OFF.

13.3.6 PANEL FAULTS

General Trouble	MMM999099	Panel has more then one faults.
RS 232 link	MMM999001	
Eight Zone	MMM970001 to MMM970008	
32-Zone	MMM970001 to MMM970032	

See Section 2.3.1 for more details

13.3.7 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

Autocall FTX-800 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505:

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a “General Trouble” message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505will beep once. The “STATUS PRINTOUT” soft key will be replaced with a flashing “FACP FAULTS” key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the “HISTORY” key, then the “FACP FAULTS” key that will be displayed.

When the last fault is cleared from the FACP, the last message will secure and the Muxpad will send an “All Faults Corrected’ message.”

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the “General Trouble” message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the “General Trouble” message on a subsequent trouble).

13.4 SOFTWARE VERSION LEVELS

This manual assumes the following or higher software versions exist in the following products:

- Autocall FTX-800: Unknown
- System 3505: Software Revision S755STD1 with a release date of January 25, 2008 or higher.

14 EST-2 INTERFACE

14.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with an Edwards System Technology, Inc. panel, the appropriate EST-2 program must be installed in the EPROM of the Muxpad II. This section of the manual covers specific information for interfacing to the Edwards System Technology, Inc. panels. Refer to Installation Drawing at the end of section 14 for details. SYSTEM 3505 must have software revision S701 Std 1 or higher.

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (14-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Notify Digitize of any discrepancies noted.

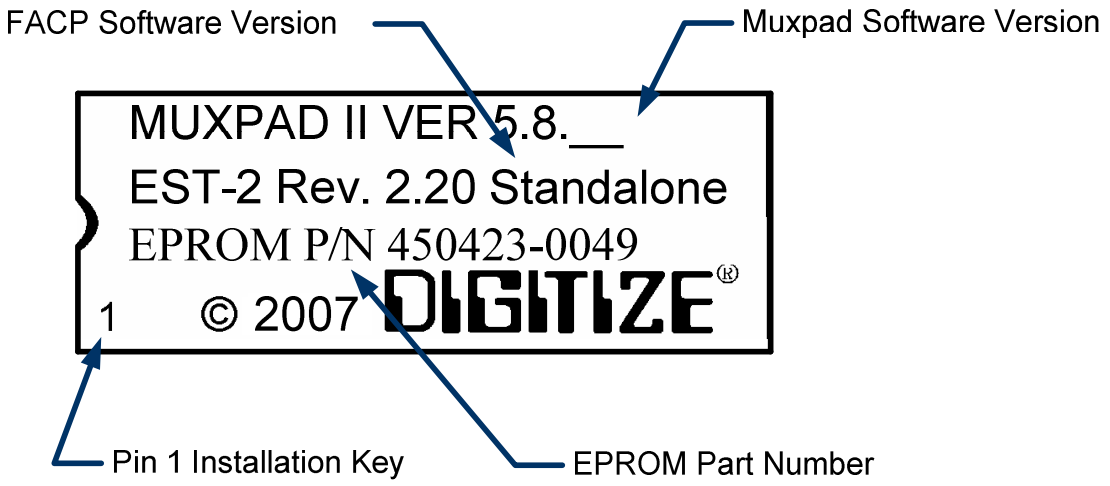


Figure 14-1 Typical EPROM label (Actual label may differ slightly)

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

The input device being monitored should be in the same room or within 10 feet of an 8-zone Muxpad II or up to 1000 feet away for a 32-zone Muxpad II. The Muxpad II is connected to the EST-2 via Port 1 or 2 on the Edwards System Technology, Inc. panel.

14.1.1 EST-2 FACP INTERFACE REQUIREMENTS

The EST-2 panel must be programmed by the Edwards factory authorized representative for use with the Digitize Muxpad II. The Edwards System Technology, Inc. representative must use the following information to properly set up the panel:

Device Type:	Coder
Header Label:	(as needed by Edwards System Technology, Inc.)
Port ID:	Port 1 (or 2) Muxpad II
Set to:	4800 baud, 8 bits, even parity, one stop.

NOTE: The CDR3 hardware module is not needed to establish a handshake between the EST-2 and the Muxpad. Merely turn on the CDR3 option on the FACP. Do not bother with hooking up the CDR3 decoder, unless you plan on using it for some other purpose; the Muxpad doesn't need the decoder present, only have it enabled at the panel.

IMPORTANT! The Edwards System Technology, Inc. representative must activate all of the conditions that the user would like reported via the Muxpad II to the SYSTEM 3505, (i.e. fire alarms, supervisory, trouble conditions, etc.).

14.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in Appendix A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e. 104), then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (0), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 if it dose not get a heart beat form the EST2 panel.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the 8 on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

14.3 GENERAL OPERATION WITH EST FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485, Edwards System Technology, Inc. communications via RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the

state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data. The unrecognizable event will be reported as an Alarm.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

14.3.1 REPORTING TO SYSTEM 3505

The Muxpad II system operates on tri-state recognition of point status: Alarm, Trouble and Secure. Since the FACP uses more than three states to identify the existing condition on a detector, these additional FACP states are collapsed into the tri-state conditions. Only the Fire, Priority 2 detector points, and FA SUPR conditions are reported as Alarms. All other 'off normal' conditions are reported as Troubles. When any point reports as Normal, it is Secure at the SYSTEM 3505.

The user text messages obtained from the FACP will contain the point information at the end of text message, if there is room on the SYSTEM 3505 display screen. The user text message will attempt to remain unbroken (non-hyphenated) to allow easier reading. If there is sufficient room, the MAPNET # (1-2-3) will display as the last characters on the third line. If there is no room for the report, it is discarded. If it is not possible to properly word break the lines due to excessively long words in the user message, then the message is simply displayed, with the report (if room) on the end of the message.

For example:

'SECOND FLOOR LANDING ION SMOKE DETECTOR 1-2-3 '

This depicts the user text gathered from the FACP.

The Edwards System Technology, Inc. panel does not send alarm verification to the serial port; therefore alarm verification is not processed by the SYSTEM 3505. Even though utility (i.e. type of board installed, etc.) and contact functions are sent to the Muxpad II, they are not processed by the SYSTEM 3505. The FACP will always send proper information that is processed by the SYSTEM 3505, in addition to the contact function that describes the event.

14.3.2 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives ALARM, TROUBLE, RESTORE, or SUPERVISION characters from the FACP RS232 line.

14.3.3 DIGITIZE - EST-2 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control. The zone circuitry is capable of detecting a ground fault if a 100K (or less) resistor is connected between EARTH and either side of the EOL resistor. The ground fault will be

debounced and will respond within one minute of a continuous condition (sooner if less than 32 zones are installed).

Zone status is reported in the following format shown below. The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as an Edwards System Technology, Inc. EST-2 from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

14.3.4 RS-232 CABLE CONNECTIONS

A three wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP PRINTER Port #2. The pin outs terminate in a male DB9 connector.

FACP	DIRECTION	MUXPAD II
TX	→	P1.PIN 3
RX	←	P1.PIN 2
GND	↔	P1.PIN 5

14.3.5 GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Edwards System Technology, Inc. programs. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must press the 'Activate Selection Now' button, or restart the SYSTEM 3505 to activate the selection.

NOTE: The SYSTEM 3505 will not process any operator actions at the FACP with "REMOTE ACTION TAKEN" troubles, or the "DAILY SYSTEM CHECK" sent at midnight (i.e. 00:00:00 hours), by the EST II panel. Unless SYSTEM 3505 SET 6 menu, option #3 "HOW SHOULD I RESPOND?", sub-option "PROCESS OPERATOR SIG.=" is set to Yes.

14.3.6 PANEL FAULTS

General Trouble	MMM999099	Panel has more then one faults.
RS 232 link	MMM999001	
Eight Zone	MMM970001 to MMM970008	
32-Zone	MMM970001 to MMM970032	

See Section 2.3 for more details

14.3.7 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. Should the selection be changed, it is necessary to restart the SYSTEM

3505 to activate the selection. The activation of these changes is done via of the Soft Keys on the SYSTEM 3505.

The EST-2 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a "General Trouble" message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505 will beep once. The "STATUS PRINTOUT" soft key will be replaced with a flashing "FACP FAULTS" key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the "HISTORY" key, then the "FACP FAULTS" key that will be displayed.

When the last fault is cleared from the FACP, then the last message will secure and the Muxpad will send an 'All Faults Corrected' message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the "General Trouble" message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the "General Trouble" message on a subsequent trouble).

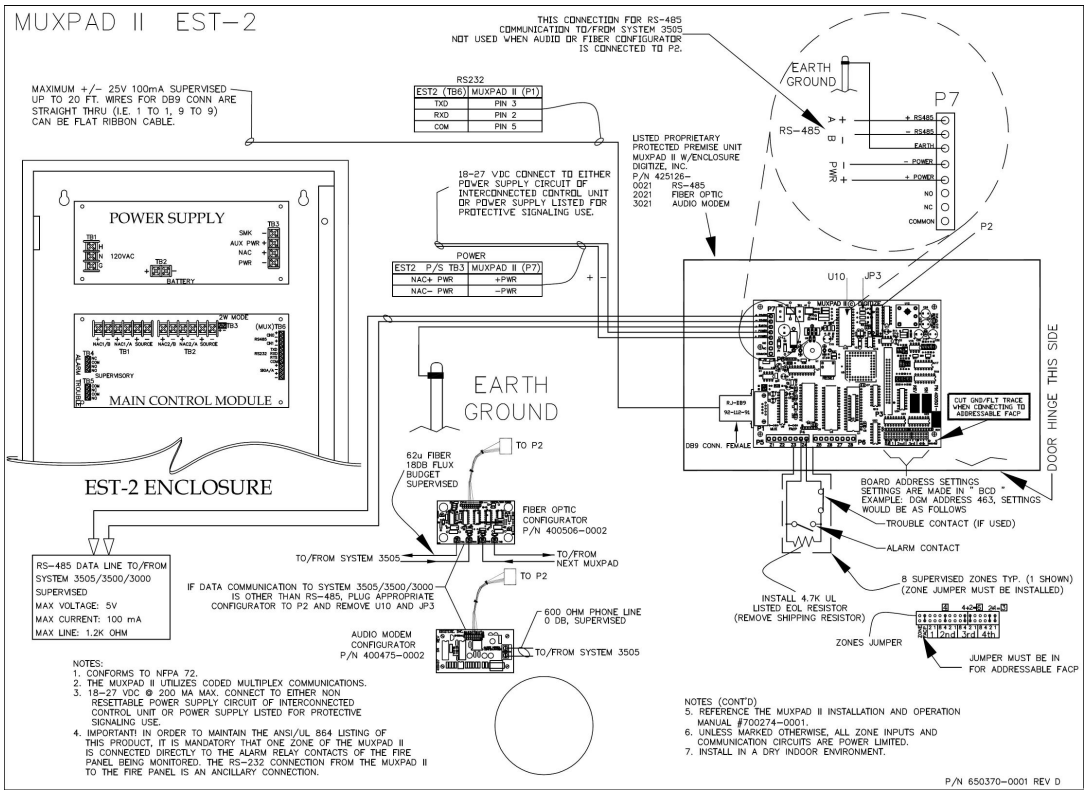


Figure 14-2 Connections to EST-2 Networked Panel, RF Version

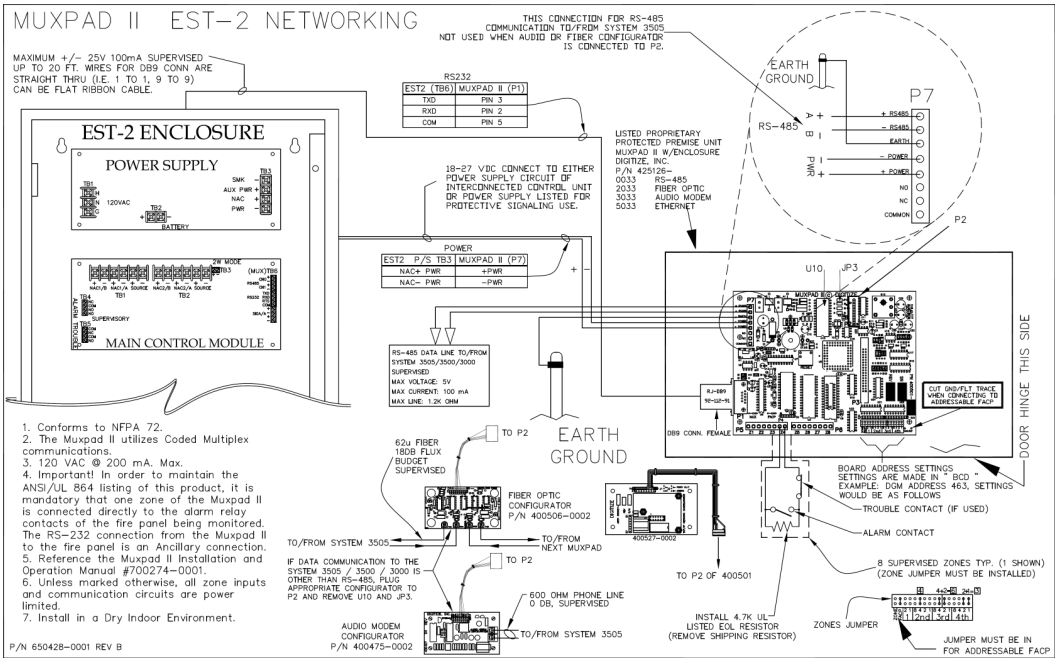


Figure 14-3 EST-2, Networking

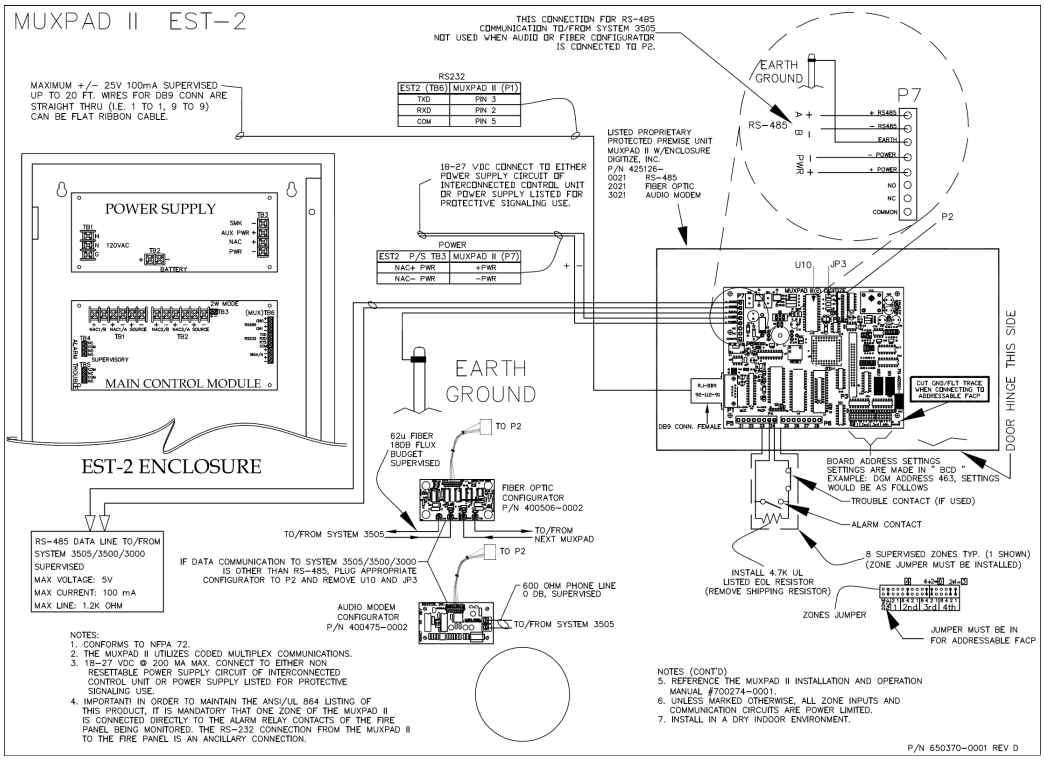


Figure 14-4 Connections to EST-2 Panel

15 EST-3 INTERFACE

15.1 OVERVIEW

This section of the manual covers specific information for interfacing to the Edwards System Technology, Inc. panels. To ensure proper operation with an Edwards System Technology, Inc. panel, the appropriate EST-3 program must be installed in the EPROM of the Muxpad II. Refer to Installation Drawing at the end of section 15 for details. The SYSTEM 3505 must have software revision S701 Std 4 or higher.

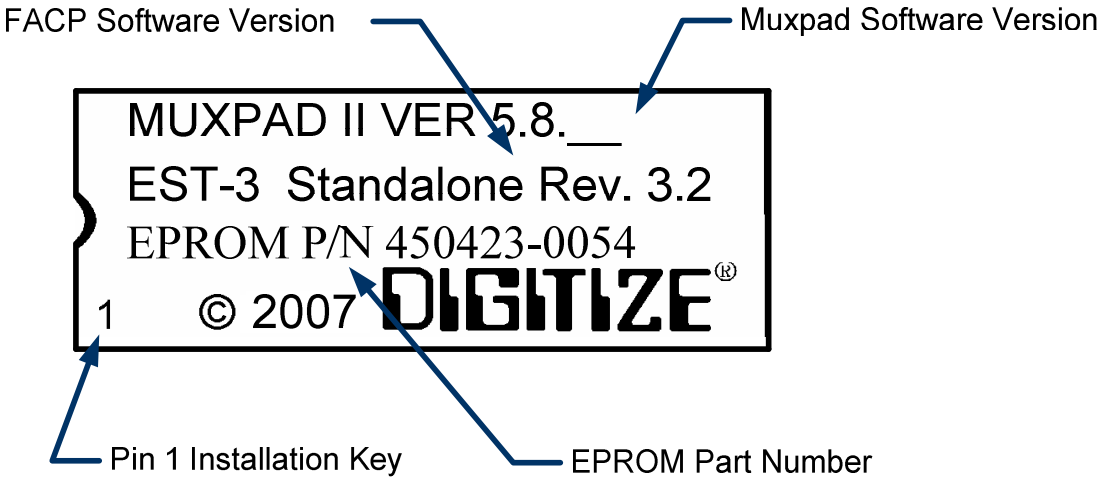


Figure 15-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 15-1). The user should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Two EST-3 programs exist for the MUXPAD II, a stand alone and a networked version. Notify Digitize of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

The input device being monitored should be in the same room or within 10 feet of an 8-zone Muxpad II or up to 1000 feet away for a 32-zone Muxpad II. The Muxpad II is connected to the EST-3 via Port 1 or 2 on TB2 of the Edwards System Technology, Inc. panel. All further references use Port 1.

15.1.1 EST-3 FACP INTERFACE REQUIREMENTS

The EST-3 panel must be configured with a CDR-3 / Printer Port for proper operation with the Digitize MUXPAD II interfaces. The port settings are as follows: 4800, n, 8, 1.

15.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in Appendix A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps. After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e. 104), then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (10), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

The RS232 connection is supervised; the Muxpad will report an "RS232 Link Failure" to the SYSTEM 3505 any time a loss of communications is detected. The Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505 when communications has been restored.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the 6 on-board zones). Six of the eight zones are available on a non external Muxpad, zones 3 to 8. Zones 1 and 2 are used by the Muxpad to monitor the panel alarms and trouble relays. **NOTE:** The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

15.2.1 GENERAL OPERATION WITH EST, INC. FACP

The Muxpad II is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485, Edwards System Technology, Inc. communications via RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data. The unrecognizable event will be reported as an Alarm.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone inputs. Since the annunciating zone is only a few feet away, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

15.3 REPORTING TO SYSTEM 3505

The Muxpad II system operates on tri-state recognition of point status: Alarm, Trouble and Secure. Since the FACP uses more than three states to identify the existing condition on a detector, these

additional FACP states are collapsed into the tri-state conditions. Only the Fire, Priority 2 detector points, and FA SUPR conditions are reported as Alarms. All other 'off normal' conditions are reported as Troubles. When any point reports as Normal, it is Secure at the SYSTEM 3505.

The user text messages obtained from the FACP will contain the point information at the end of text message, if there is room on the SYSTEM 3505 display screen. The user text message will attempt to remain unbroken (non-hyphenated) to allow easier reading. If there is no room for the report, it is discarded. If it is not possible to properly word break the lines due to excessively long words in the user message, then the message is simply displayed, with the report (if room) on the end of the message.

For example:

'SECOND FLOOR LANDING ION SMOKE DETECTOR 1-2-3 '

This depicts the user text gathered from the FACP.

The Edwards System Technology, Inc. panel does not send alarm verification to the serial port; therefore alarm verification is not processed by the SYSTEM 3505. Even though utility (i.e. type of board installed, etc.) and contact functions are sent to the Muxpad II, they are not processed by the SYSTEM 3505. The FACP will always send proper information that is processed by the SYSTEM 3505, in addition to the contact function that describes the event.

15.3.1 NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives SUPERVISION, ALARM, TROUBLE or RESTORE characters from the FACP RS232 line.

15.3.2 DIGITIZE - EST-3 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

Zone status is reported in the following format shown below. The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may ***not*** be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as an Edwards System Technology, Inc. EST-3 from the SYSTEM 3505 setup menu (see Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block. The zones used with the EST3 are numbered from 970001 to 970008 for a standard unit and 970001 to 970032 for an expanded unit. All zones are available for general use.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

15.3.3 REPORTING PRIORITES

The Muxpad supports a multilevel prioritization of events, essentially an ALARM, 3 types of Troubles and a Secure.

Condition	*Priority*	*Type*
ALARM	1	alarm
TROUBLE	6	trouble
VERIFYING	7	trouble
SECURE	8	restore

On the EST3 implementation, any FACP condition that contains the text "SUP" is assigned to SUPERVISORY; any condition that contains "VRF" is assigned to VERIFYING. All other text is treated normally as expected.

15.3.4 NETWORK ADDRESS SETTINGS

When using a networked version of the EST-3 program, follow the rules indicated above. But you now need to reserve the root address PLUS as many address as are EST-3 panels networked, i.e. If you have 20 EST-3 panels networked, you will need to reserve 21 MUXPAD addresses. The maximum number of networked EST-3 panels that can be monitored are 31, i.e. EST-3 panel #1 to #31.

NOTE: During power-up, the MUXPAD will "blink" out the address that has been encoded by the shunt pack. The XMIT & FACP LEDs will alternately blink out each digit of the address (for example: if the address is 423 then on reset, the MUX LED would flash 4 times, next the FACP LED will flash 2 times, and finally the MUX LED will flash 3 times). When the entire address has been reported, the MUXPAD will illuminate both LEDs for approximately one second, the extinguish them, and return to normal operations.

RS232 CABLE CONNECTIONS

A three wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP Port #1. The pinouts terminate in a female DB9 connector.

EST3 (TB2)	DIRECTION	MUXPAD II (P1)
TX1	→	P1.PIN 3
RX1	←	P1.PIN 2
COM1	↔	P1.PIN 5

FACP PRINTER SETUP

The EST3 panel must have the "CDR-3" option enabled. The FACP printer port must also be set to 4800 baud, no parity, 8 bits.

FACP CARD NUMBERS

Numbers 97, 98, or 99 cannot be installing on the EST-3 system card. The MUXPAD uses these card numbers to report faults / events peculiar to the MUXPAD itself.

GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Edwards System Technology, Inc. programs. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

PANEL FAULTS

General Trouble	MMM999099	Panel has more then one faults.
RS 232 link	MMM999001	
Eight Zone	MMM970001 to MMM970008	
32-Zone	MMM970001 to MMM970032	

See Section 2.3.1 for more details

15.3.5 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 Configuration, for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection.

The EST-3 error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a “General Trouble” message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505 will beep once. The “STATUS PRINTOUT” soft key will be replaced with a flashing “FACP FAULTS” key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the “HISTORY” key, then the “FACP FAULTS” key that will be displayed.

When the last fault is cleared from the FACP, the last message will secure and the Muxpad will send an ‘All Faults Corrected’ message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the "General Trouble" message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the "General Trouble" message on a subsequent trouble).Only a SYSTEM 3505 is capable of interfacing to an EST-3 FACP. The SYSTEM 3505 does not contain the proper drives for monitoring the EST-3 panels.

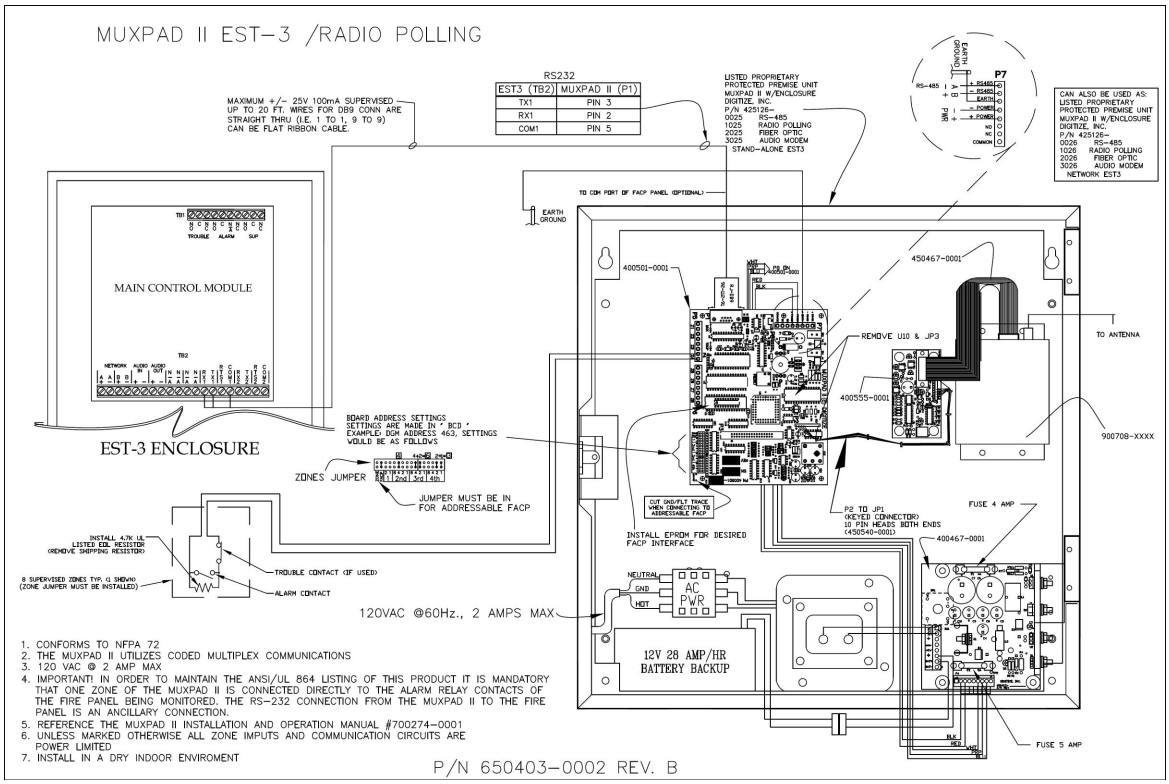


Figure 15-2 Connection to EST-3 Panel, RF Version

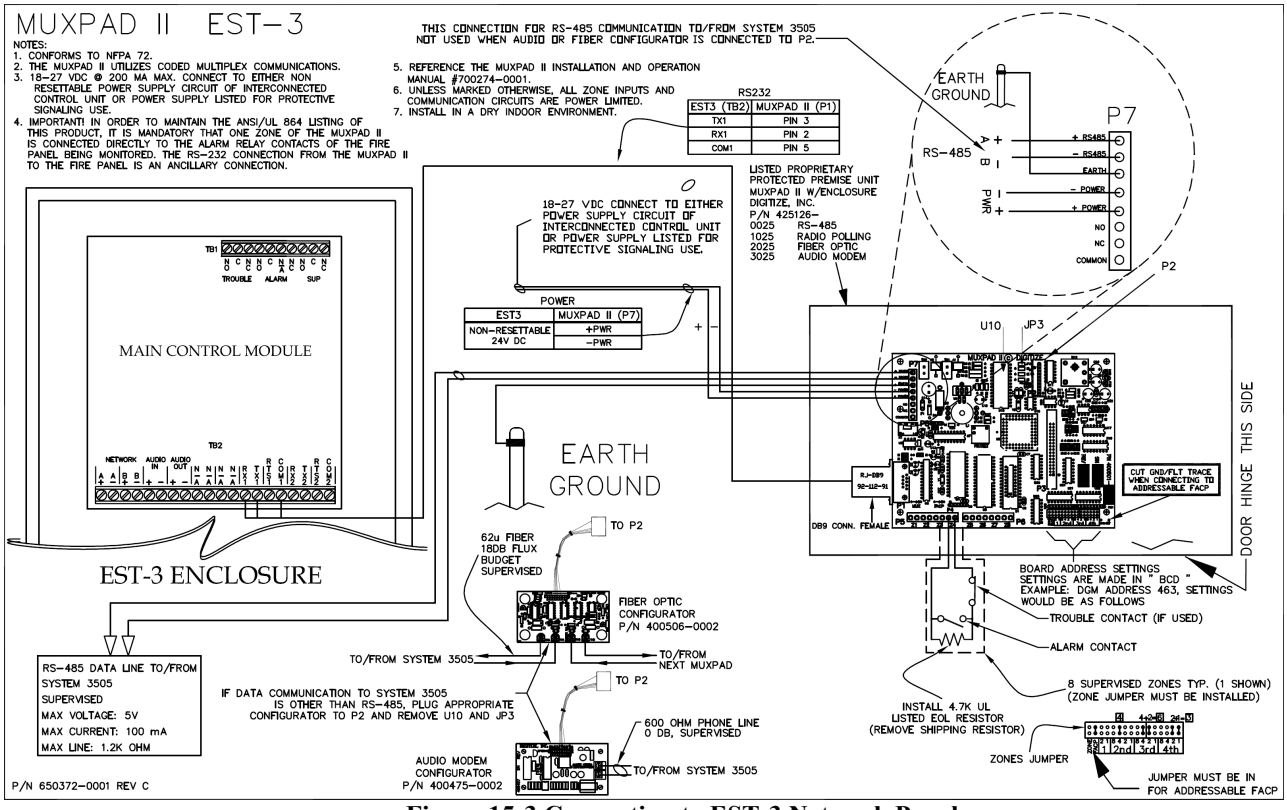


Figure 15-3 Connection to EST-3 Network Panel

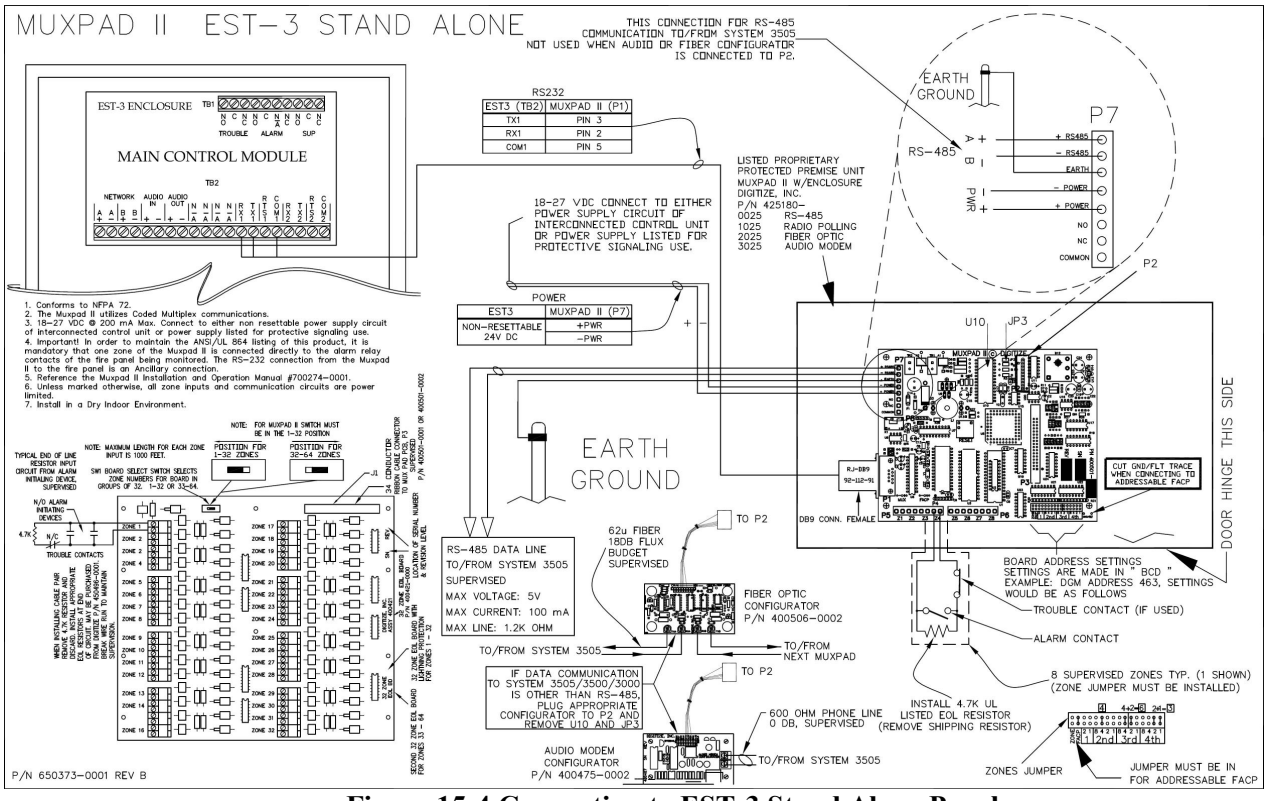


Figure 15-4 Connection to EST-3 Stand Alone Panel

16 MIRCOM INTERFACE

16.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a Mircom panel, the appropriate Mircom program must be installed in the EPROM of the Muxpad II. This section of the manual covers specific information for interfacing to the Mircom panels. Refer to Installation Drawing at the end of Section 16 for details. SYSTEM 3505 must have software revision S701 Std 9 or higher.

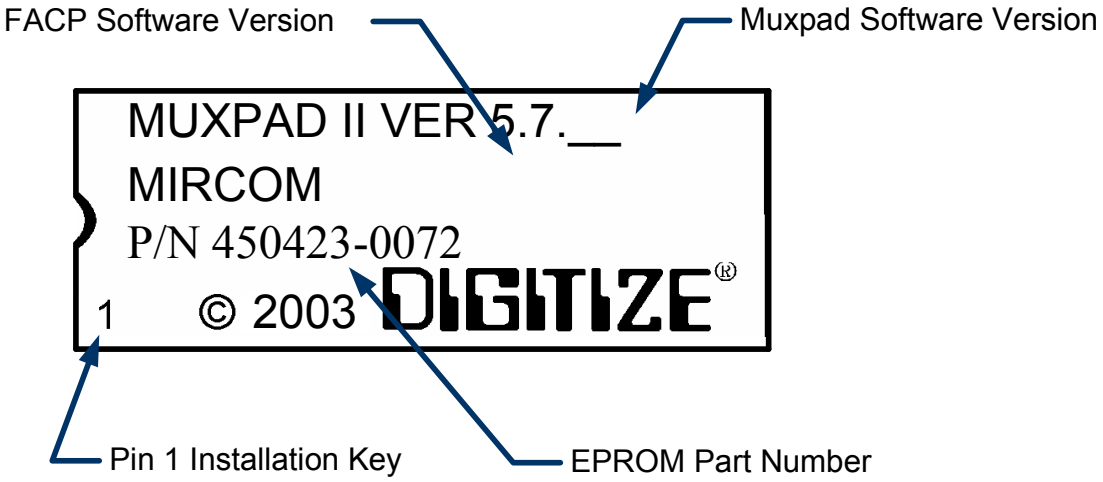


Figure 16-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 16-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes. Notify Digitize of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

DO NOT USE Indicating circuit 0. There will be software/addressing conflicts. You may use circuits 1, 2 and 3.

The input device being monitored should be in the same room or within 10 feet of an 8-zone Muxpad II or up to 1000 feet away for a 32-zone Muxpad II.

16.2 RESET SEQUENCE

The multiplex address of the Muxpad II on the RS-485 bus is set using jumpers as outlined in Appendix A. To verify the correct setting for this address, the Muxpad II will 'count' out each digit of the address using the two onboard LED lamps.

After a reset or power up, the 'MUX' LED will pulse out the highest non-zero digit of the address. If a multi-digit address is set (i.e. 104), then the 'FACP' LED will begin pulsing the next digit. This process will continue until both LEDs remain lit for one second. This signifies that the address is complete. The LEDs will then begin their normal operation depicting serial port activities.

For example, the address set at the jumpers is 104. The following sequence will occur: MUX LED will pulse once (1), FACP LED will pulse ten times (0), and the MUX LED will pulse four times (4). Then, both LEDs will remain lit for one second, signifying the end of the sequence. Note: an embedded zero is pulsed out as ten, a leading zero is ignored.

The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 if it does not get a heart beat from the Mircom panel.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the 8 on-board zones or an external 32 zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the Muxpad will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

16.3 GENERAL OPERATION WITH MIRCOM FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485, Mircom communications via RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data. The unrecognizable event will be reported as an Alarm.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

16.3.1 REPORTING TO SYSTEM 3505

The Mircom panel does not send alarm verification to the serial port; therefore alarm verification is not processed by the SYSTEM 3505. Even though utility (i.e. type of board installed, etc.) and contact functions are sent to the Muxpad II, they are not processed by the SYSTEM 3505. The FACP will always send proper information that is processed by the SYSTEM 3505, in addition to the contact function that describes the event.

NORMAL FACP QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate transmission to the SYSTEM 3505 and the FACP RECV LED blinks as it receives ALARM, TROUBLE, RESTORE, or SUPERVISION characters from the FACP RS232 line.

DIGITIZE - MIRCOM ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control.

Zone status is reported in the following format shown below. The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a Mircom from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

RS232 CABLE CONNECTIONS

A three wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP PRINTER Port #2. The pin outs terminate in a male DB9 connector.

MIRCOM FACP (P9)	DIRECTION	MUXPAD II
PIN 2	TX	P1.PIN 3
PIN 3	RX	P1.PIN 2
PIN 5	GND	P1.PIN 5

GENERAL TROUBLE OPTION

General Trouble capabilities have been added to the Muxpad Mircom programs. Refer to Section 2.4, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must press the 'Activate Selection Now' button, or restart the SYSTEM 3505 to activate the selection.

NOTE: The SYSTEM 3505 will not process any operator actions at the FACP with "REMOTE ACTION TAKEN" troubles, from the Mircom panel. Unless SYSTEM 3505 SET 6 menu, option #3 "HOW SHOULD I RESPOND?" sub-option "PROCESS OPERATOR SIG.=" is set to Yes.

PANEL FAULTS

General Trouble	MMM999099	Panel has more then one faults.
RS 232 link	MMM999001	
Eight Zone	MMM970001 to MMM970008	
32-Zone	MMM970001 to MMM970032	

See Section 2.3.1 for more details

16.3.2 FAULT CODES

Refer to Section 2.3, SYSTEM 3505 Configuration for details on setting up what the Muxpad II sends for trouble conditions. The user can select to send every trouble or simply report that the FACP has one or more troubles. Selecting the latter will deposit the actual fault message in the FACP Fault Log of the SYSTEM 3505. If you change your selection, you must restart the SYSTEM 3505 to activate the selection. The activation of these changes is done via the Soft Keys on the SYSTEM 3505.

The Mircom error message appears on the left side of the display on the FACP. The SYSTEM 3505 fault code appears on both the SYSTEM 3505 display and on the thermal paper printout.

RS-232, Battery, AC Power, and any addressable module faults are reported as account numbers. All other panel faults are reported as general faults with a generic message at the SYSTEM 3505.

FACP Faults such as sensor removed, module failures and other Trouble messages are routed to a general FACP Fault LOG. The first fault condition will generate a “General Trouble” message on the SYSTEM 3505. The operator will have to acknowledge this condition. Additional faults will be routed to the FACP Faults LOG. Each time a Fault is deposited into the LOG, the SYSTEM 3505 will beep once. The “STATUS PRINTOUT” soft key will be replaced with a flashing “FACP FAULTS” key. Pressing this key will bring up the FACP Faults log. An alternate way to bring up the FACP Faults log is to press the “HISTORY” key, then the “FACP FAULTS” key that will be displayed.

When the last fault is cleared from the FACP, then the last message will secure and the Muxpad will send an ‘All Faults Corrected’ message.

If your SYSTEM 3505 is equipped with a Remote Line Printer (RLP-1), the FACP Faults can be printed on the printer.

A 15-minute global timeout setting will reactivate the “General Trouble” message on the SYSTEM 3505 on the next FACP Fault for the given FACP. Each FACP DGM address will track its own timer, (i.e. how long to wait before reactivating the “General Trouble” message on a subsequent trouble).

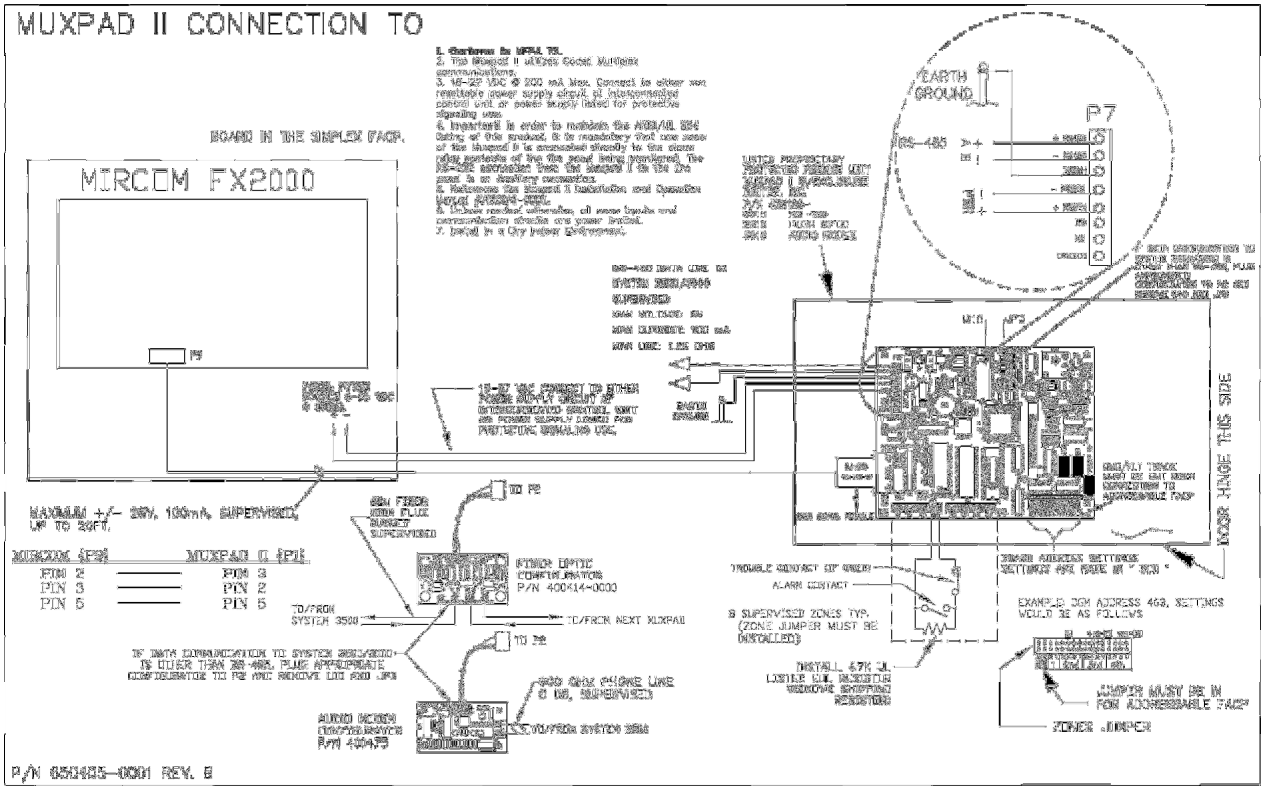


Figure 16-2 Connection to a Mircom Panel

17 FCI E3 INTERFACE

17.1 OVERVIEW

This section of the manual covers specific information for interfacing to the FCI E3 panels. To ensure proper operation with a FCI E3 panel, the appropriate FCI E3 program must be installed in the EPROM of the Muxpad II. Refer to Installation Drawing at the end of Section 17 for details. SYSTEM 3505 must have software revision S701 Std 9 or higher.

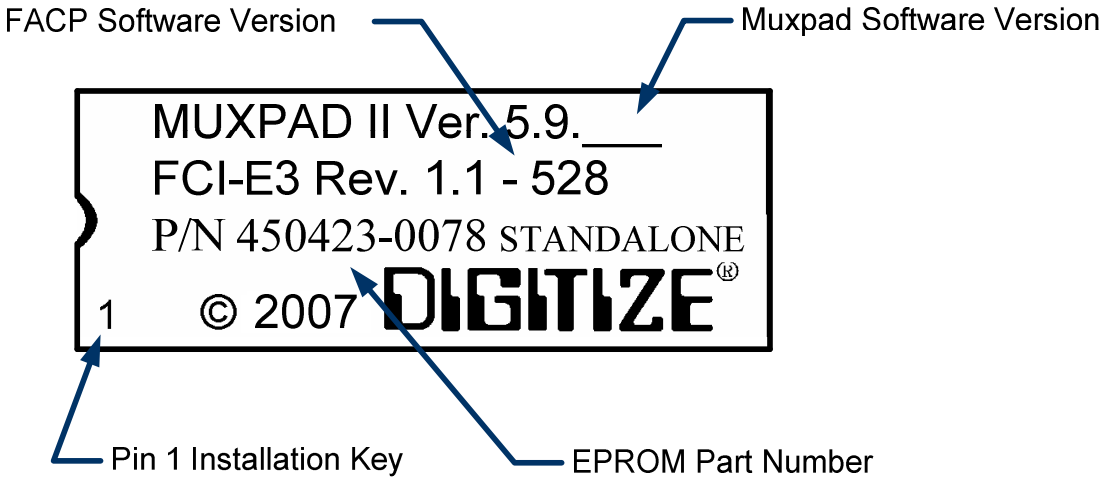


Figure 17-1 T ypical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 17-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COMM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

17.2 RESET SEQUENCE

When the Muxpad is first powered up, it will examine the configuration jumpers to determine the RS-485 address. If the FACP option jumper is installed, a reset will be issued to the FACP. The Muxpad will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters.

When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

17.3 GENERAL OPERATION WITH FCI E3 FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

Upon power-up of the DIGITIZE Muxpad II, the Muxpad II will issue a SYSTEM RESET to the FACP. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

17.3.1 NORMAL QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate an active status on the communications line and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

17.3.2 DIGITIZE - FCI E3 ZONE OPERATION

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control.

Zone status is reported in the following format shown below. The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up

as a FCI E3 panel from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

17.3.3 SOFTWARE VERSION LEVELS

This manual assumes the following or higher software versions exist in the following products:

FCI E3 – Ver. 1.1 - 528
Muxpad II – Ver. 5.9.0 – 09
System 3505 - S753STD3

17.3.4 RS-232 CABLE CONNECTIONS

A four wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP PRINTER Port. The pin outs terminate in a male DB9 connector at the Muxpad II.

FACP TB6	DIRECTION	MUXPAD II
PIN 2	→	P1.PIN 3
PIN 4	←	P1.PIN 2
PIN 1	↔	P1.PIN 5
PIN 3	Supervision	P1.PIN 6

17.3.5 OPERATION OF THE FACP SYSTEM

Upon power-up of the DIGITIZE MUXPAD II, the FACP SYSTEM can optionally issue a SYSTEM RESET to the FCI E3 Panel and will SECURE any non-sense items it has been displaying. The system will begin to collect all valid messages sent to it. Messages received as ALARMS or TROUBLES from detectors identifying themselves in the MMSSPP format will be placed into the SYSTEM 3505 queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated. Unprogrammed points will be responded to provided that they meet the criteria outlined in the Section 8.3.6 RESPONSE TO AN UNPROGRAMMED ITEM.

Messages not meeting the Priority Color, MMSSPP format, Unprogrammed Module, or Point 4 Trouble will not be responded to and will be ignored

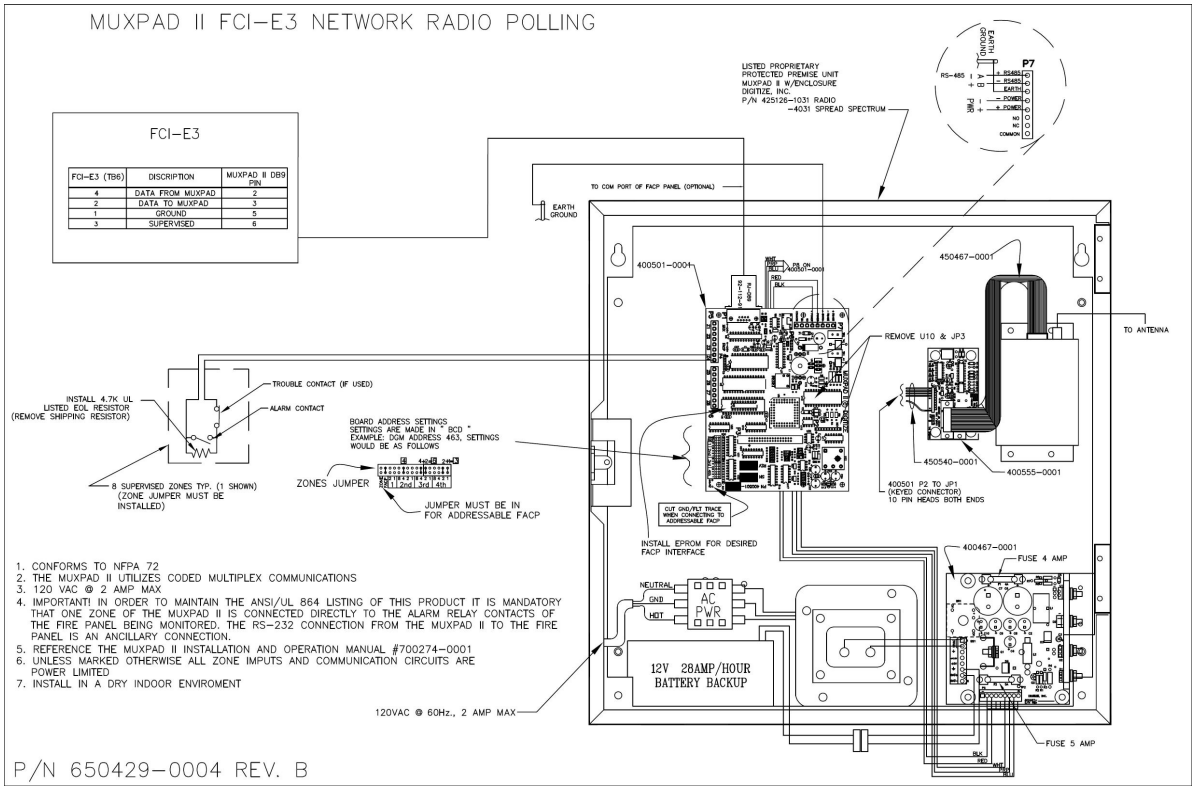


Figure 17-2 Connection to a E3 Network Panel, RF Version

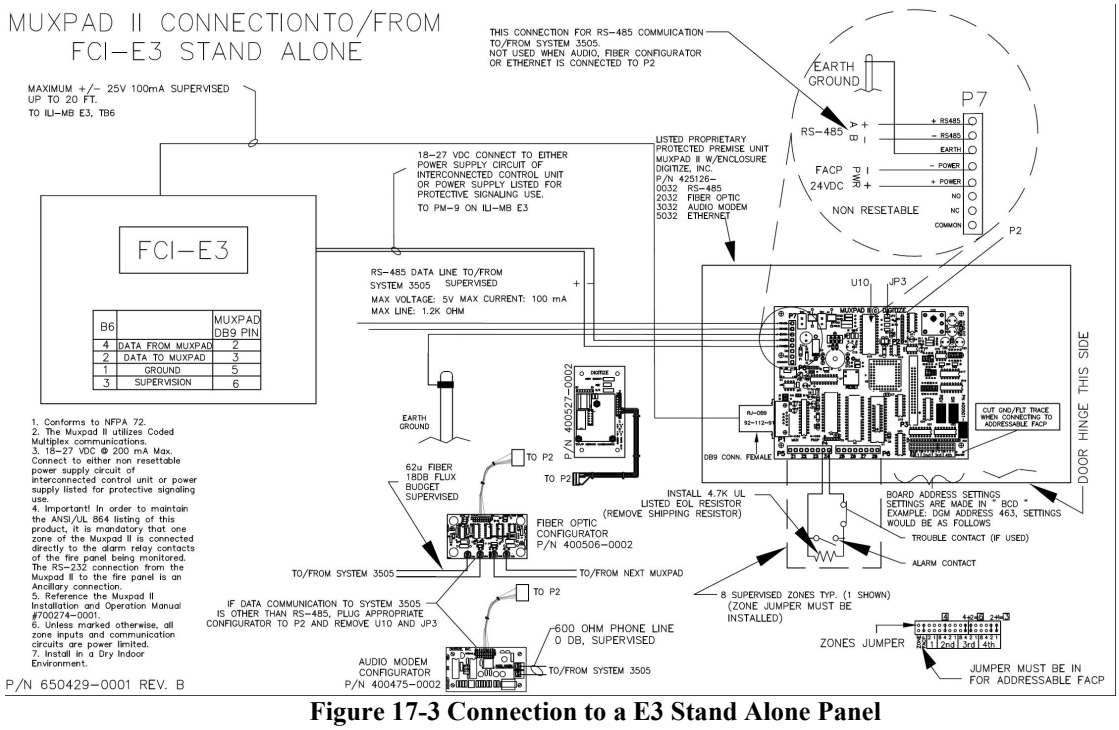


Figure 17-3 Connection to a E3 Stand Alone Panel

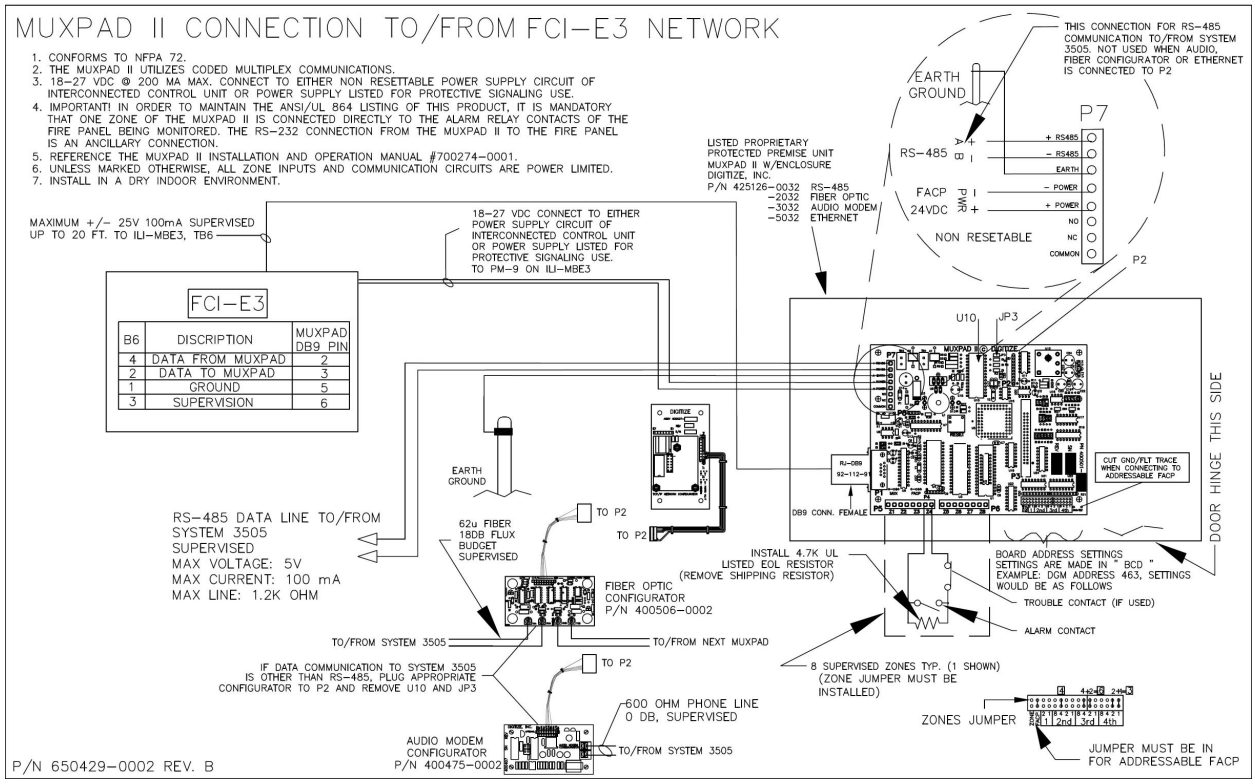


Figure 17-4 Connection to a E3 Network Panel

18 NOTIFIER 640 INTERFACE

18.1 OVERVIEW

The Muxpad II operates with several brands of FACPs. To ensure proper operation with a Notifier 640 panel, the appropriate Notifier 640 program must be installed in the EPROM of the Muxpad II. This section of the manual covers specific information for interfacing to the Notifier 640 panels. Refer to Installation Drawing at the end of Section 18 for details. SYSTEM 3505 must have software (revision S701 Std 9 or higher.)

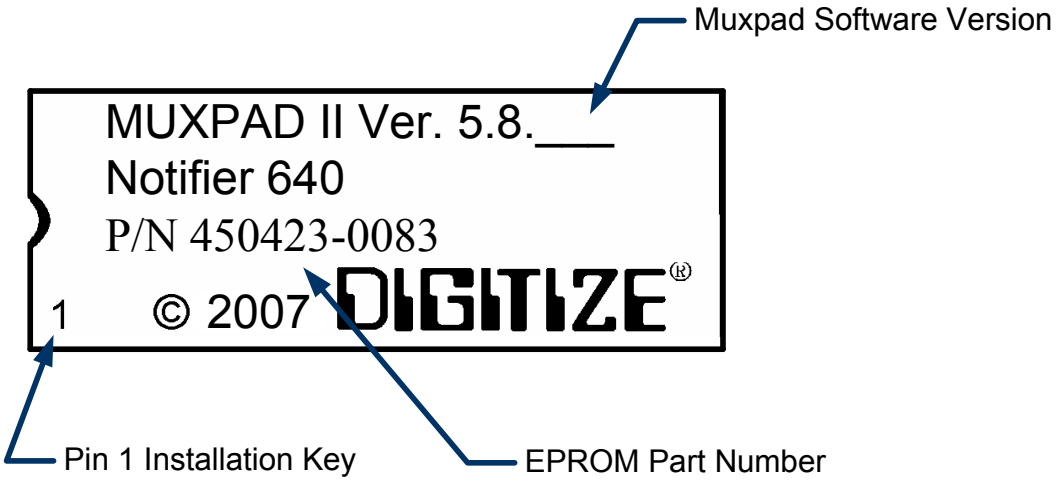


Figure 18-1 Typical EPROM Label (actual label may differ slightly)

Digitize, Inc. has tested the Muxpad II with the FACP panel revision referenced on the EPROM label (Figure 18-1). User should check with the FACP panel manufacturer to see if a higher revision FACP program has in any way changed the serial COM port or the Printer port data connected to the Muxpad II. User must verify that all desired functions are operational with higher revision changes and notify Digitize, Inc. of any discrepancies noted.

IMPORTANT! User must test every device connected to the FACP whenever the Muxpad II is installed or a program revision is changed on the Muxpad II, SYSTEM 3505 or FACP. User must verify that the SYSTEM 3505 provides the proper display of the event. If an automation system is used, proper operation should be verified at the automation system as well.

Eight or 32-zone input device being monitored should be in the same room or within 30 feet of the Muxpad II.

18.2 RESET SEQUENCE

When the Muxpad first powers up it will examine the configuration jumpers to determine the RS-485 address. If the FACP option jumper is installed, a reset will be issued to the FACP. The Muxpad

will wait for approximately one minute for the supervisory characters to begin to be sent to it before it decides that there is no FACP connected to it. The Muxpad will then report an "RS232 Link Failure" to the SYSTEM 3505 and continue to monitor the RS232 line for the supervisory characters. When the supervisory character stream eventually begins, the Muxpad will report an "RS232 Link Secured" to the SYSTEM 3505.

The Muxpad zones option may be used with or without the FACP option installed. The Muxpad will test to see if a jumper is installed for the zones. If no zone jumper is present, no further action is taken. The presence of the zone jumper indicates that the Muxpad utilizes zones, (either the eight on-board zones or an external 32-zone card). The connection of an external board will override the operation of the eight built-in zones. The Muxpad will use external zones in increments of eight zones up to the maximum limit of 32 zones (i.e. 8, 16, 24 or 32). When no external zone card is attached, the unit will default to the eight on-board zones.

NOTE: The Reset Button must be pressed whenever a change is made to jumper settings after the unit is powered up.

18.3 GENERAL OPERATION WITH FACP

The Muxpad is a specialized data filtering/processing controller. The subsystems contained on the printed circuit card are: 5-volt switching power supply, fully protected RS-485 simplex communications, RS232 level translator, FORM C relay, up to 128K of EPROM, and 128K of RAM. The controller responds to commands given to it via RS-485 and monitors the state of the FACP. When a stream of characters is received on the RS232 line, the Muxpad attempts to interpret the condition being reported by the fire panel into a more useful data format for the SYSTEM 3505. When data is successfully interpreted, it is sent to the SYSTEM 3505 via RS-485 lines. If the data is somehow corrupted, the SYSTEM 3505 is simply told of the receipt of an unrecognizable event and an attempt is made by the Muxpad to extract any usable information from the serial data.

Upon power-up of the DIGITIZE Muxpad II, the Muxpad II will issue a SYSTEM RESET to the FACP. Upon receipt of a reset report from the FACP, the Muxpad will SECURE any non-secure items it has been holding. The system will begin to collect all valid messages sent to it. Messages received as ALARMs or TROUBLEs from detectors identifying themselves in the Loop-Alarm format will be placed into the SYSTEM 3505's queue and held until a RESTORE of the condition has been received or a SYSTEM RESET has been initiated.

The Muxpad II is shipped with the ground fault jumper removed. The FACP panel will report any ground faults detected to the Muxpad II. The Muxpad II ground detection circuit will only detect grounds on the eight-zone input. Since the annunciating zone is only a few feet, ground detection is not essential. Installing the ground detect jumper may cause overly sensitive FACP panels to report a ground fault since the Muxpad II draws power from the FACP.

18.3.1 NORMAL QUIESCENT OPERATION

In the normal quiescent condition, the MUX XMIT LED flashes to indicate an active status on the communications line and the FACP RECV LED blinks as it receives supervisory characters from the FACP RS232 line.

18.3.2 DIGITIZE - NOTIFIER 640 ZONE REPORTING

IMPORTANT! In order to maintain the ANSI/UL 864 rating of this product, it is mandatory that one zone of the Muxpad is connected directly to the Alarm Relay Contacts of the Fire Panel being monitored. The RS-232 connection from the Muxpad II to the Fire Panel is an Ancillary Connection.

To ensure predictable timing responses from the zones, they are scanned on a continual basis while under interrupt control.

Zone status is reported in the following format shown below. The reporting format is similar to how the Muxpad would have reported if an FACP device became active. A Muxpad II with zones may not be set up as a DGM on the SYSTEM 3505. A Muxpad II equipped with zones must be set up as a FCI E3 panel from the SYSTEM 3505 setup menu (See Section 2 for details). This setting on the SYSTEM 3505 must be made regardless of any FACP connected to the Muxpad serial port (P1). If no FACP is connected to the Muxpad II with zones, the FACP jumper must be removed from the Muxpad II configuration block.

The zones will process ALARM, TROUBLE, and SECURE conditions. The Muxpad will recognize a new condition within 800 milliseconds of its initiation.

18.3.3 RS-232 CABLE CONNECTIONS

A three wire connection to the male DB9 connector on the Muxpad II is required between the Muxpad II and the FACP PRINTER Port. The pin outs terminate in a male DB9 connector at the Muxpad II.

FACP Printer Port	DIRECTION	MUXPAD II
Tx	→	P1.PIN 3
Rx	←	P1.PIN 2
Ref	↔	P1.PIN 5

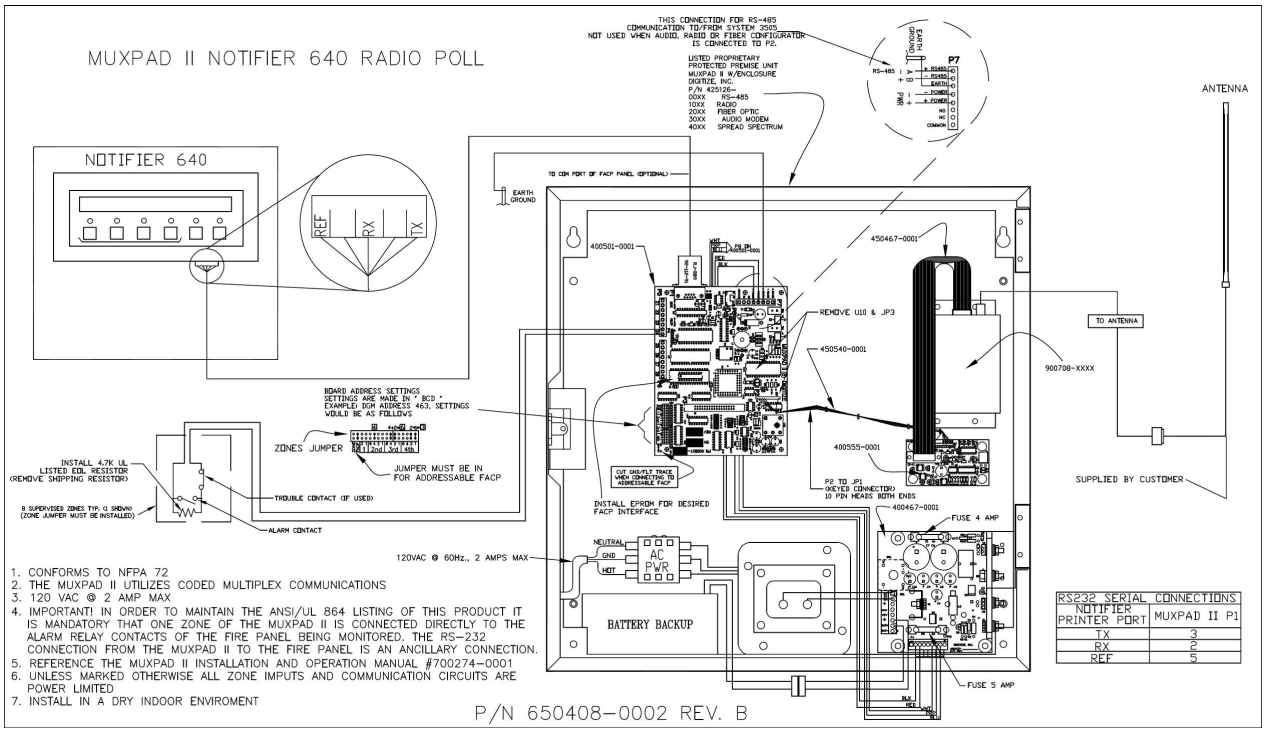


Figure 18-2 Connection to a Notifier 640 Panel, RF Version

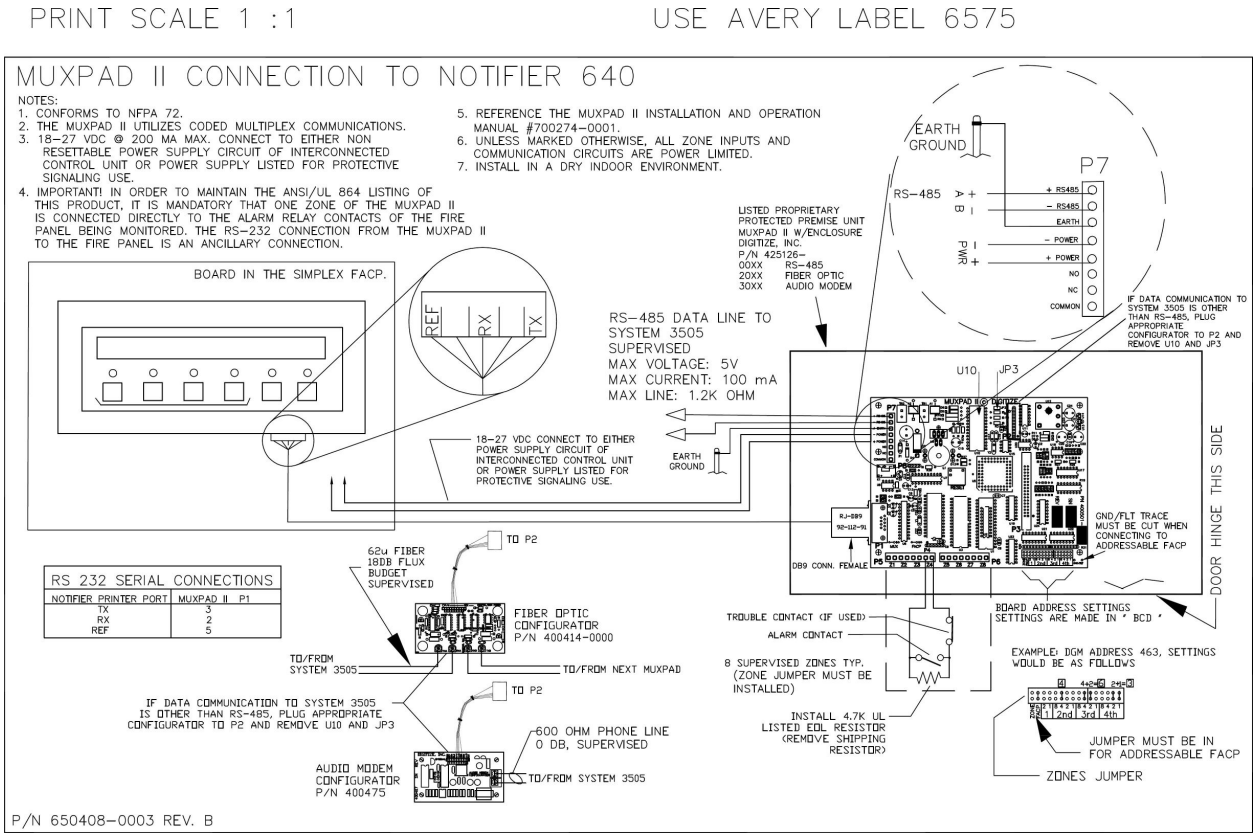


Figure 18-3 Connection to a Notifier 640 Panel

APPENDIX A
SETTING THE MUXPAD II RS-485 ADDRESS

The multiplex address of the Muxpad assembly (P/N 400501) is set as a BCD number using the shunt pack. An installed shunt will be interpreted as a 'one' and no shunt installed is a 'zero'. The Muxpad II software will accept a multiplex address of one to 500 as a valid unit address. Any change to the configuration/address jumpers becomes valid only after the Muxpad is reset. Refer to Table A.1 and the BCD Address Shunt Installation figure below.

PLEASE NOTE: Observe the digit positions marked on the silk screen of the PCB (1, 2nd, 3rd, 4th refer to numerical positions. 1 = thousandths place, 2nd = hundredths, etc.). For example, see Figure A-2, the jumper positions for address of 261.

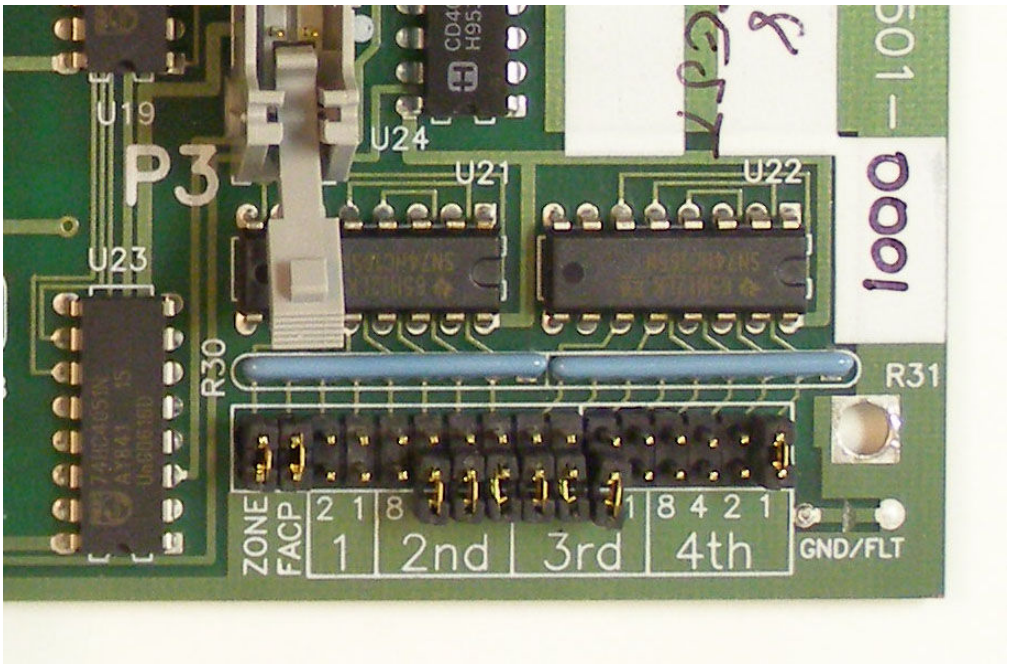


Figure A-1 BCD Address Shunt Location

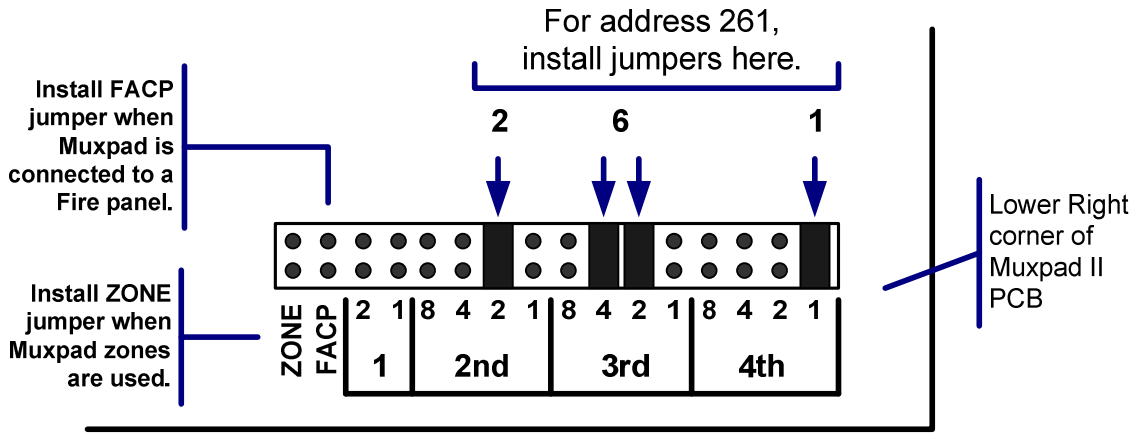


Figure A-2 BCD Address Shunt Location

Table A-1 BCD Address Settings

		BCD Number			
		8	4	2	1
Decimal Number	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
	8	1	0	0	0
	9	1	0	0	1

Note: "1" Denotes a Shunt is Installed
"0" Denotes no Shunt Installed

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