

AM2020/AFP1010 with SIB-NET

Document 15094 11/20/95	Rev: C
P/N 15094: C ECN 95 -210	

Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - Several different sources of power can be connected to this fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until this manual is read and understood.

CAUTION - *System Reacceptance Test after Software Changes:* To ensure proper system operation, this product must be tested in accordance with NFPA 72-1993 Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C and at a relative humidity of 85% RH (non-condensing) @ 30°C. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a nominal room temperature of 60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Fire Alarm System Limitations

While installing a fire alarm system may make lower insurance rates possible, it is not a substitute for fire insurance!

An automatic fire alarm system - typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control with remote notification capability can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

Any fire alarm system may fail for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in walls, or roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second floor detector, for example, may not sense a first floor or basement fire. Furthermore, all types of smoke detectors - both ionization and photoelectric types, have sensing limitations. No type of smoke detector can sense every kind of fire caused by carelessness and safety hazards like smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

FCC Warning

WARNING: 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. It has been tested and found to comply with the limits for class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. 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 his own expense.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. *Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.* Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time.

Rate-of-Rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist.

Equipment used in the system may not be technically compatible with the control. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled.

The most common cause of fire alarm malfunctions, however, is inadequate maintenance. All devices and system wiring should be tested and maintained by professional fire alarm installers following written procedures supplied with each device. System inspection and testing should be scheduled monthly or as required by National and/or local fire codes. Adequate written records of all inspections should be kept.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Table of Contents

Section 1	Installing the Serial Interface Board for the AM2020/AFP1010	4
Section 1.1	Introduction	4
Table 1-1	SIB-NET Related Documentation	5
Figure 1-1	NROM-2.0/2.5 with 1 SIB-NET Chip	6
Section 1.2	Mounting the Interconnect Chassis Assemblies	6
Figure 1-2	Mounting the ICA-4L and System Boards	7
Figure 1-3	Connecting Two ICA-4Ls using Expansion Power Cable 75142	8
Section 1.3	Mounting the Serial Interface Board	9
Figure 1-4	SIB-NET Terminal Designations	10
Section 1.4	The CRT Terminal	11
Figure 1-5	CRT to SIB Connections	12
Section 1.5	Remote Printers	13
Figure 1-6	Remote Printer to SIB Connections	13
Figure 1-7	Keltron Printer Connections	14
Figure 1-8	EIA-485 to SIB-NET Connections	15
Appendix A	Circuit/Devices Ratings	16

Section One:

Installing the Serial Interface Board for the AM2020/AFP1010 and **NOTI•FIRE•NET™**

Section 1.1: Introduction

The SIB-NET is an intelligent Serial Interface Board (SIB) installed in the AM2020/AFP1010. When used with a Media Interface Board (MIB), the SIB can communicate with **NOTI•FIRE•NET™**. This allows the AM2020/AFP1010 to transmit alarm and trouble events through the network to other network nodes for display and recording. Also, the network allows the NRT/INA to perform reset, acknowledge, and signal silence functions at the AM2020/AFP1010. The SIB-NET replaces the SIB-2048 in existing systems which connect to **NOTI•FIRE•NET™**. The SIB-NET supports all features of the SIB-2048, including ACS annunciators, printers, and CRTs.

Programming the AM2020/AFP1010 with SIB-NET

For information regarding programming the AM2020/AFP1010 for use with the SIB-NET, refer to the AM2020/AFP1010 manual, Document 50119.

Related Documentation

To obtain a complete understanding of specific features of the SIB-NET, or to become familiar with functions in general, make use of the documentation noted in Table 1-1.

Title	Number
AM2020/AFP1010 Fire Alarm Control Panel	50119/15088
The LCD-80 Liquid Crystal Display	15037
The Network Reporting Terminal (NRT)	15090
The Intelligent Network Annunciator (INA)	15092
Network Serial Interface Board (SIB-NET)	15094
The UZC-256 Universal Zone Coder Installation	15216
CCM-1 Product Installation Document	15328
MPS-TR Product Installation Document	15331
AM2020/AFP1010 Operator Instructions	15337
The Notifier Device Compatibility Document	15378
Analog Fire Panel (AFP-200)	15511
Canadian Requirements for the AM2020/AFP1010	15631
The NIB-96 Network Interface Board	15666
The NR45-24 Charger	15760
The Annunciator Control System	15842
The LDM Lamp Driver Modules	15885
The Voice Alarm Multiplex	15889
The XP Series Transponder Systems	15888
Network Adapter Module (NAM-232)	50038
UDACT	50050
The FSK-2400 Modem	50115
OLP-1	50128
VGAS Installation	50251
The Media Interface Board (MIB)	50255
Repeater (RPT)	50256
NOTI•FIRE•NET™	50257
MMX-2 Installation Instructions	M500-03-00

Table 1-1: SIB-NET Related Documentation

WARNING: You must have either a NROM-2.0/2.5 (AM2020) or N1ROM-2.0/2.5 (AFP1010) software kit installed in the system. The NROM-2.0/2.5 software kit contains: 1 SIB-NET chip (see **Figure 1-1**), 10 LIB chips, 1 CPU-2020 chip and 1 DIA-2020 chip. The N1ROM-2.0/2.5 software kit contains: 1 SIB-NET chip, 2 LIB-200 chips, 1 CPU-2 chip and 1 DIA-1010 chip. The entire network must contain the same version of **NOTI•FIRE•NET™** software, either Version 2.0 or 2.5. Improper system operation will result if the versions are not the same.

Software Combination Compatibility Warning: All software part numbers are not compatible with each other. Improper mixing of software part numbers can compromise Life Safety functions. If unsure about the compatibility of a particular software combination, consult the factory.

This software is not compatible with earlier versions of CGAS, AMNET, AUTOPLEXOR and VGAS/UNINET systems. Software in these items must be upgraded for compatibility.

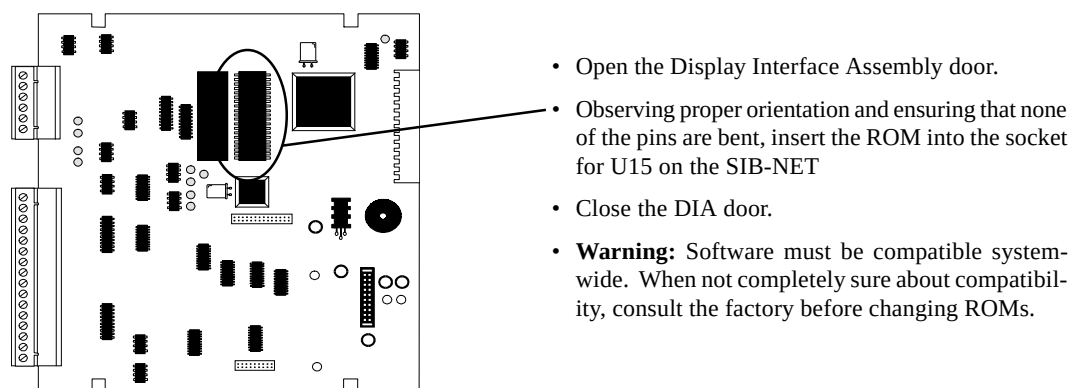


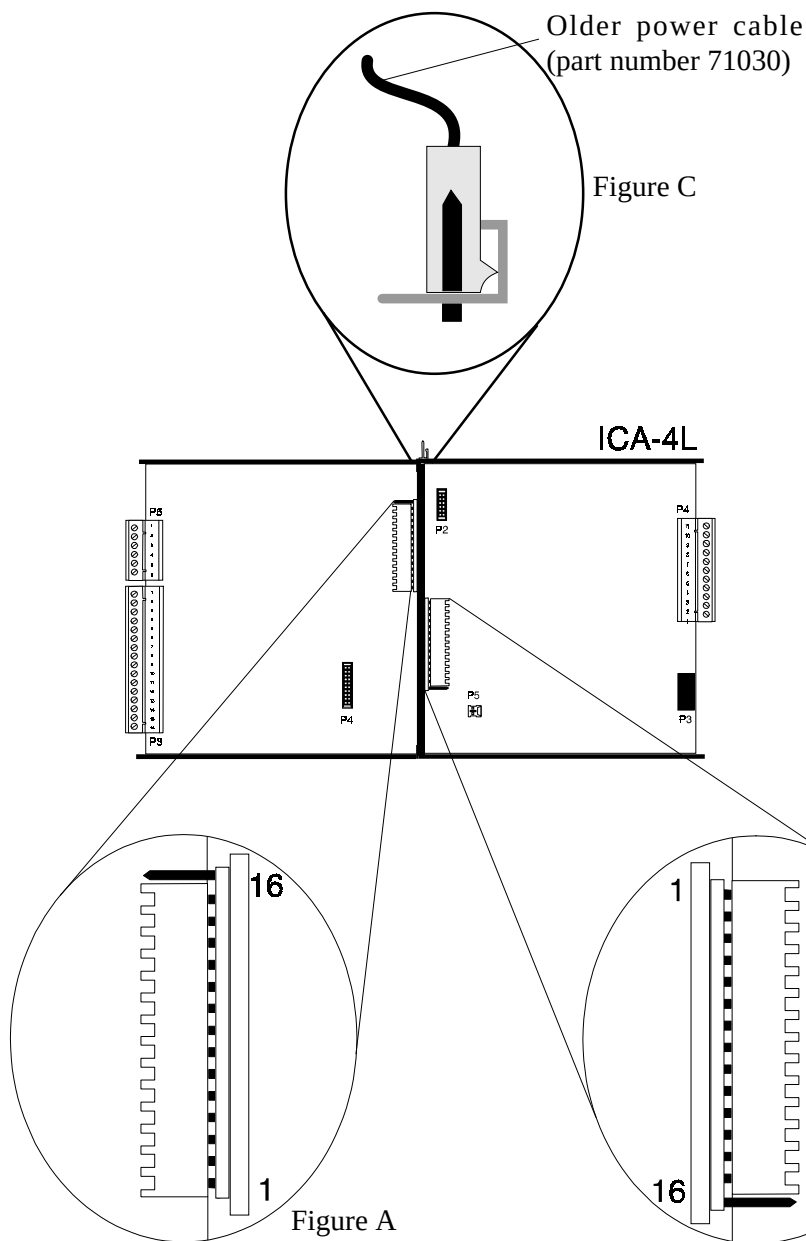
Figure 1-1: NROM-2.0/2.5 with 1 SIB-NET Chip

Section 1.2: Mounting the Interconnect Chassis Assemblies

The AM2020/AFP1010 system can use one to three Interconnect Chassis Assemblies (ICA-4/ICA-4L), depending on the specific installation requirements (the AFP1010 requires only one). If using more than one ICA-4/ICA-4L, interconnect each ICA-4/ICA-4L before connection to the backbox by mating the plug connector on one chassis to the socket connector on the other (no cable required). Align the entire ICA-4/ICA-4L assemblies over the studs in the backbox. Connect a chassis grounding cable (71073) for each board installed on the ICA-4/ICA-4L to an ICA-4/ICA-4L stud. Secure the assemblies and cables with the provided nuts and washers. Each ICA-4/ICA-4L is marked with “TOP” for proper orientation. NOTE: The ICA-4L with the SIB-NET interface card must be in the top position in the backbox!

WARNING: When connecting an ICA-4 to an ICA-4L, there is an extra pin which must go in front of the connector (see **Figure 1-2**).

The ICA-4L is a low-profile mounting chassis that replaces the ICA-4 in all BE-1010N and BE-2020N basic equipment kits. The ICA-4L is fully compatible with both CAB-2 and CAB-3 series cabinets and the ICA-4 chassis.



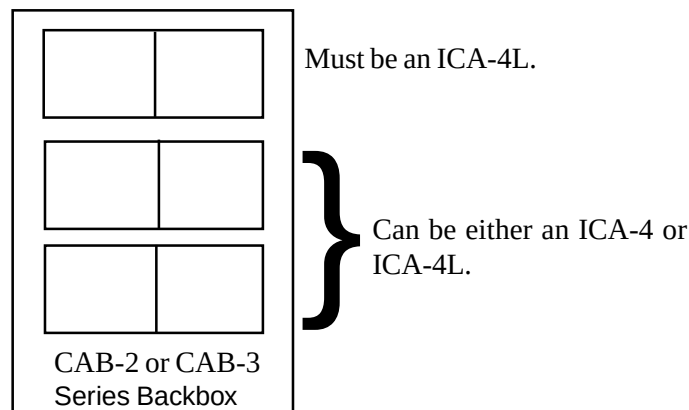
Warning!

The ICA-4L chassis includes a 16th pin (see Figures A and B) for connection to the system boards (CPU, SIB, LIB, and so on) which is not used at this time. NOTE: There is no extra pin when using a SIB-NET. When connecting system boards, make sure that the socket header on the board engages only pins 1–5 on the ICA-4L as indicated.

The ICA-4L chassis includes an extra pin when connected to an older power cable (71030). The extra pin is in front, facing the door of the cabinet (Figure C). The power cable part number 75378 has 16 positions which will connect properly with the ICA-4L. If the newer cable 75378 is used with the older ICA-4 chassis, there will be an extra 16th socket position on the cable. This empty cable socket should be located to the front of the ICA-4 pin header.

There is an extra receptacle when connecting an ICA-4 to the bottom of an ICA-4L. This receptacle should also be in the front. Connecting two ICA-4Ls does not require extra pins or receptacles. For connection of two ICA-4L chassis with expansion power cable (part number 75142) see **Figure 1-3**.

Figure 1-2: Mounting the ICA-4L and System Boards



When connecting two ICA-4L chassis using an expansion power cable (part number 75142), there will be an extra pin on one chassis and an extra receptacle on the other. Both the extra pin and the receptacle should be in the front, facing the cabinet door (see **Figure 1-3**).

- 15 positions for old cable (part number 71030) to the ICA-4
- 15 positions for old cable (part number 71020) to the ICA-4L with extra pin (see **Figure 1-2**).
- 16 positions for new cable (part number 75378) to the ICA-4 with extra receptacle
- 16 positions for new cable (part number 75378) to the ICA-4L
- Expansion power cable (part number 75142) remains at 15 positions

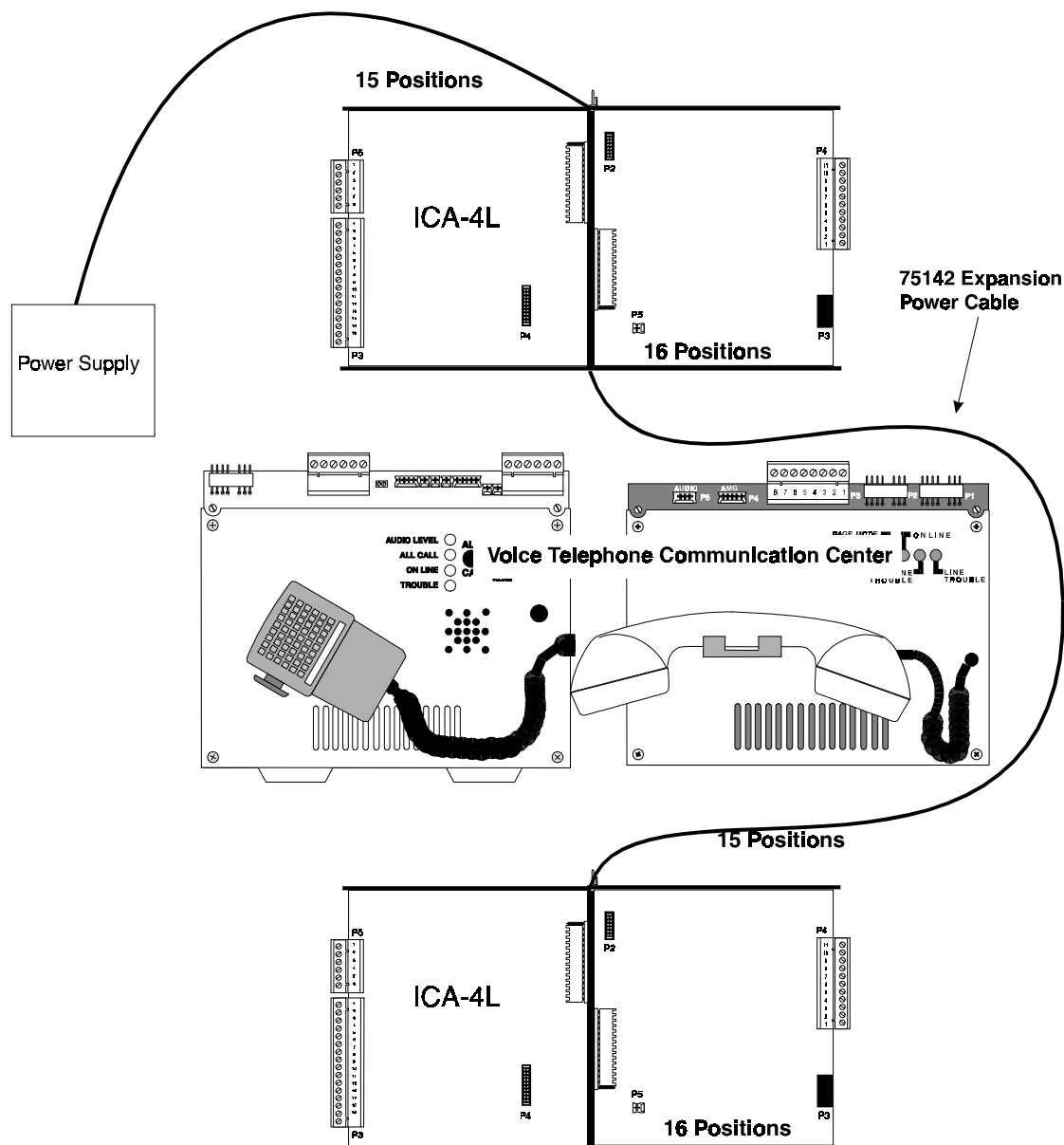
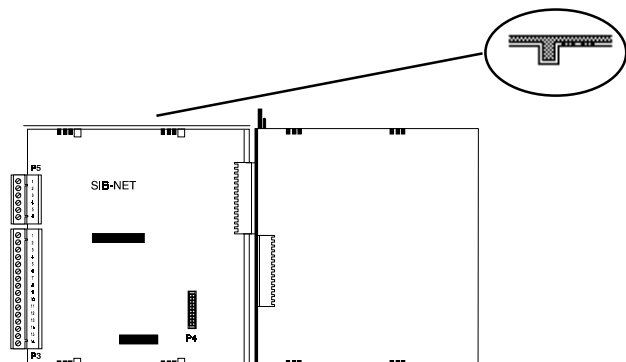


Figure 1-3: Connecting Two ICA-4Ls using Expansion Power Cable 75142

Section 1.3: Mounting the Serial Interface Board (SIB-NET)

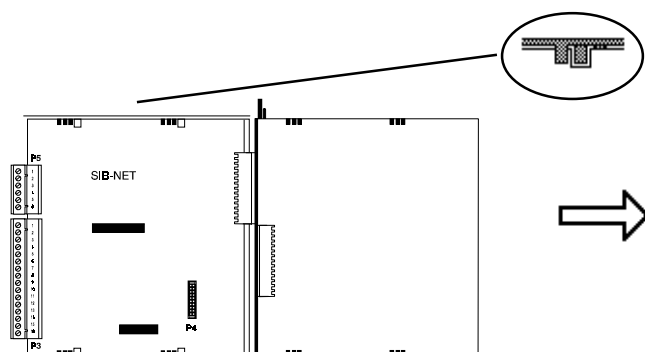
The SIB-NET mounts on the ICA-4L chassis. The AM2020/AFP1010 system connects to and interfaces to the network through the MIB and the SIB-NET. The MIB mounts onto the SIB-NET. The chassis is compatible with the ICA-4. For more information on the ICA-4L, refer to the installation section in the AM2020/AFP1010 Manual.

The following example illustrates installation of a SIB-NET in the front left-hand position of an Interconnect Chassis Assembly. Installation of boards in remaining ICA-4L positions involves a similar procedure.



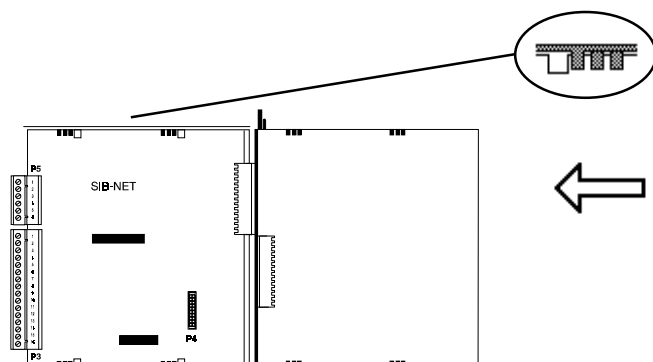
Step 1

Place the SIB in front of the Interconnect Chassis Assembly (ICA-4L) in the installation position. Tilt the SIB into the ICA-4L and align the square slots on the board with the first set of four tabs on the ICA-4L as illustrated.



Step 2

Carefully push the SIB-NET back to the first level. Slide the SIB-NET away from the ICA-4L until it is directly over the second set of four tabs, now located immediately behind the printed circuit board.



Step 3

Push the SIB-NET back so that it rests on the four tabs behind the board. Slide the board in toward the center of the ICA-4L and carefully engage the socket connector on the SIB-NET with the plug connector on the ICA-4L. When correctly seated, a mechanical tab will stop the SIB-NET. Seating the connector and plug requires applying some force. Before applying force, carefully check alignment of all pins. When installed, the SIB-NET seats in a channel consisting of four retaining tabs in front of the printed circuit board and four retaining tabs in back of the printed circuit board.

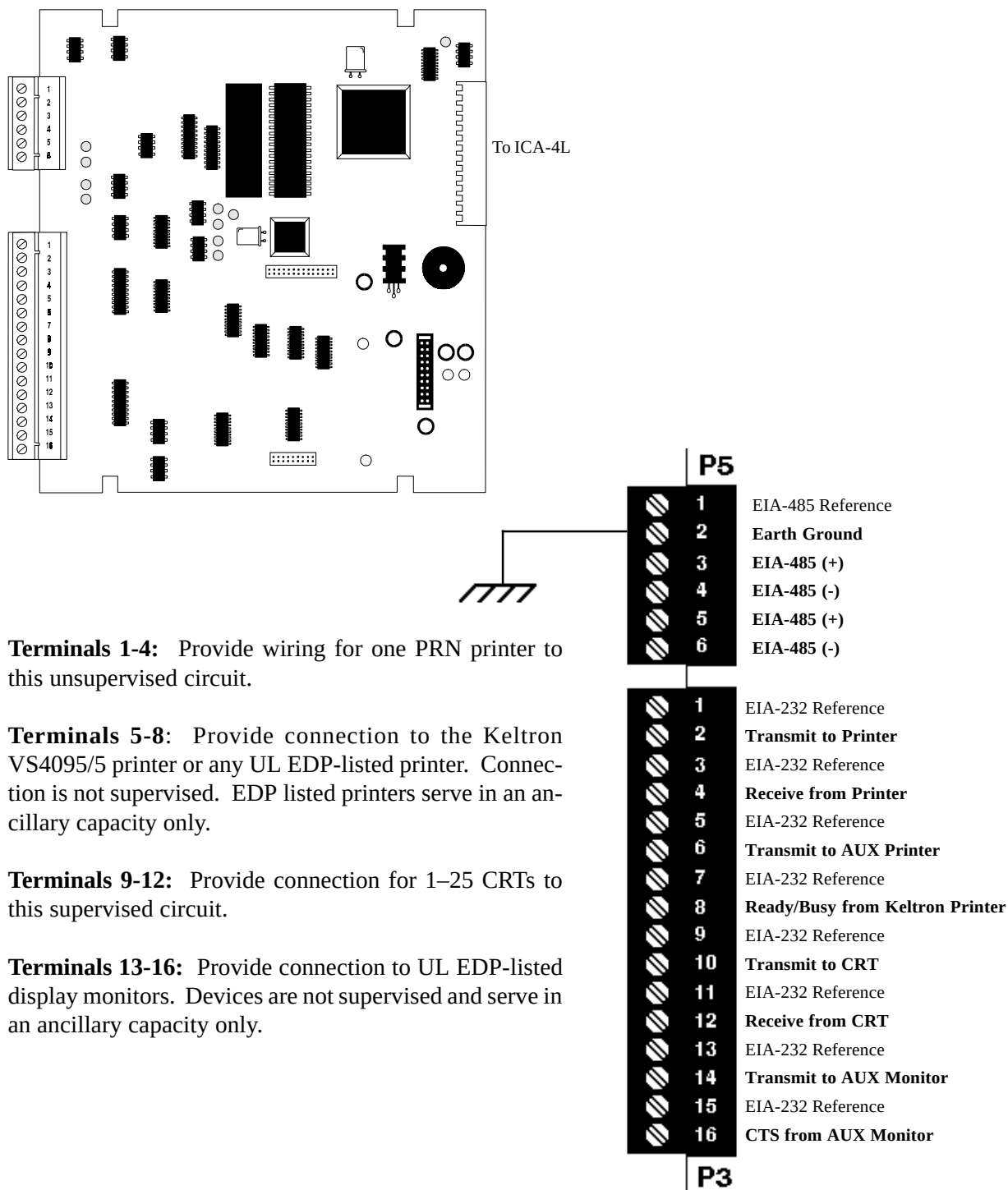


Figure 1-4: SIB-NET Terminal Designations

Section 1.4: The CRT Terminal

The CRT Terminal with keyboard features an 80 column, 25 line display. Function keys allow you to execute FACP commands from the keyboard.

Primary and Secondary Power

The CRT requires 120 VAC, 50/60Hz primary power. A secondary power source (battery backup) is not provided; the use of a separate Uninterruptable Power Supply (UPS), UL listed for Fire Protective Signaling is recommended.

Electrical Specification

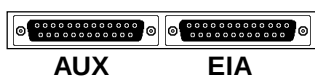
	CRT-1	CRT-2
Voltage:	120 VAC	90 – 264 VAC
Frequency:	60 Hz	47 – 63 Hz
Current	0.6 A	0.5 – 0.2 A

Installation

Connection between the AM2020/AFP1010 and the CRT is provided through an EIA-232 interface on the Serial Interface Board (SIB). Assemble a custom cable for connection to the EIA port on the CRT. Connect additional CRTs with installer-provided cables (AUX on first CRT to EIA port on second CRT, and so on).

Multiple Terminals

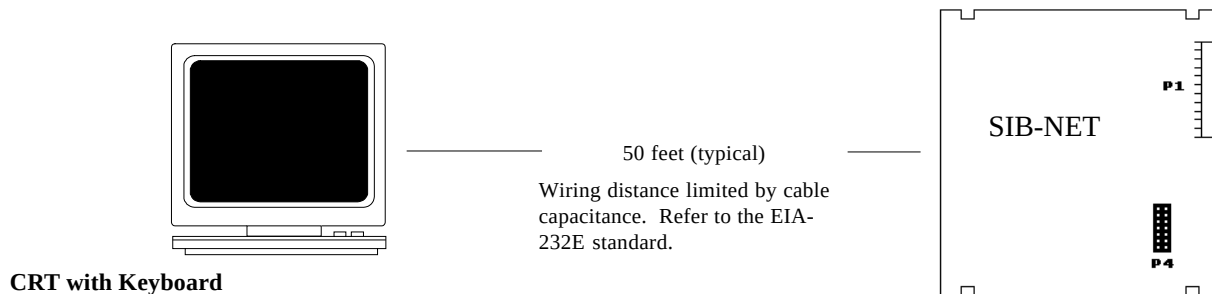
The AM2020/AFP1010 supports up to 25 terminals installed on the EIA-232 circuit of the Serial Interface Board. Each CRT is shipped from the factory with a keyboard, used for programming the FACP. The keyboard can only be used on the first CRT installed in the chain. Only the first CRT is supervised on the EIA-232 circuit. When finished programming, remove the keyboard.



The AUX and EIA ports are located on the back of the CRT-1 Monitor.



The PAR (Parallel), AUX and EIA ports are located on the back of the CRT-2 Monitor.



CRT with Keyboard

One maximum – the CRT-1 must be the first in a chain and must be in the same room as the AM2020/AFP1010. The CRT-2 can be located remotely.

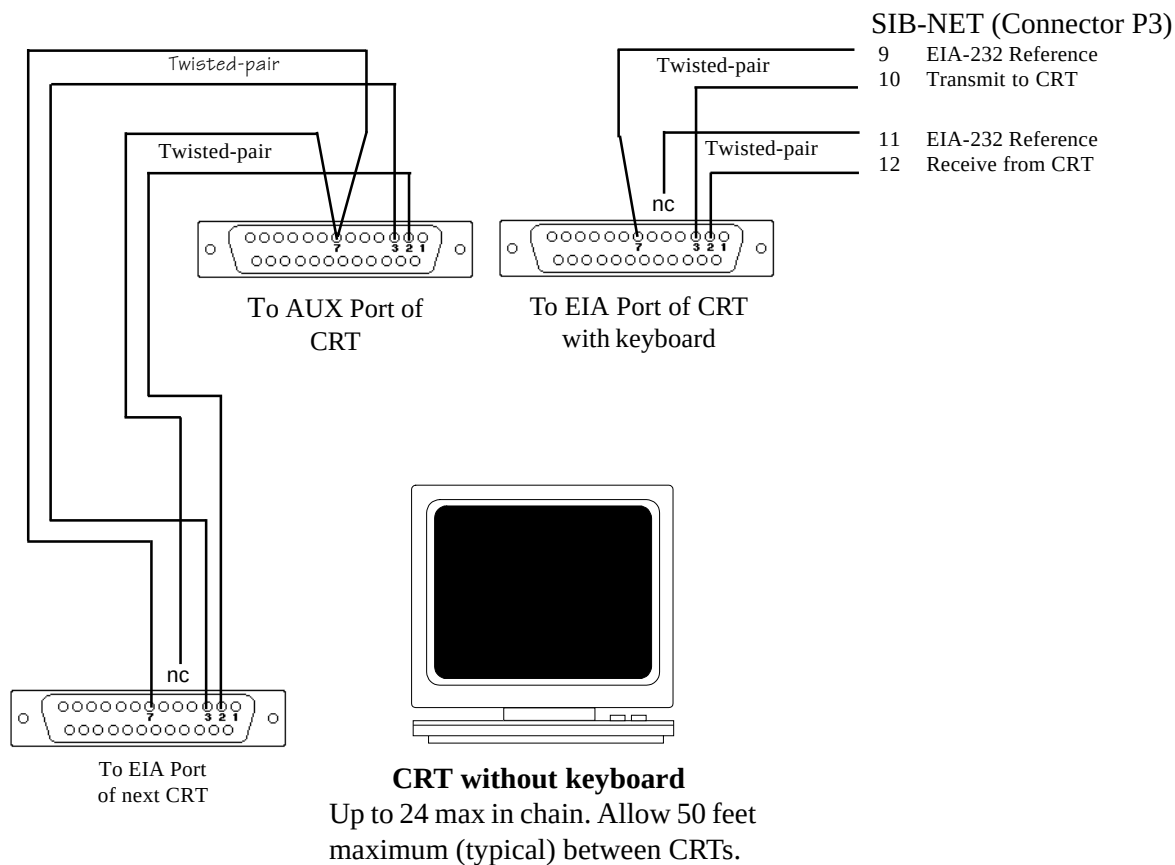


Figure 1-5: CRT to SIB Connections

NOTES:

- 1) Outputs are power limited (for device/circuit ratings, refer to Appendix A).
- 2) Make connections with overall foil/braided-shield twisted-pair cable.
- 3) Apply power to the CRTs before start-up of the system beginning with the last CRT in the chain.
- 4) A total of 25 CRTs can be installed. Only one keyboard (shipped with each CRT) can be used in the entire system and installed on the first CRT in a chain. For all applications, use the keyboard to program the FACP. When finished programming the system, remove the keyboard or keep the keyboard in a locked enclosure.

Section 1.5: Remote Printers

The AM2020/AFP1010 can employ PRN-4 remote printers. PRN-4 remote printers provide hard-copy printout of all status changes within the system, and time-stamps the printout with the current time-of-day and date. The PRN-4 provides 80 columns of data on standard 9" by 11" tractor-feed paper.

Installation

Remote printers require 120 VAC, 50/60Hz primary power. A secondary power source (battery backup) is not provided. Recommendation: Use a separate Uninterruptable Power Supply (UPS) 50 W minimum, UL listed for Fire Protective Signaling.

An EIA-232 interface on the SIB provides connection between the FACP and the PRN-4. An installer provided cable must be assembled for connection to the printer's EIA-232 port. See Figure 2-4 for wiring instructions.

A special print feature allows the PRN-4 to print all information programmed into the FACP (including system configuration and addressable device parameters).

Printer Configuration

Refer to the documentation supplied with the PRN-4 for instructions on the printer's menu controls. Set the printer's options as follows:

L/R ADJUST:	0
FONT:	HS DRAFT
LPI:	6CPI
ESC CHARACTER:	ESC
BIDIRECTIONAL COPY:	ON
CG-TAB:	GRAPHIC
COUNTRY:	E-USA ASCII
AUTO CR:	OFF
LANGUAGE:	ENGLISH
AUTO TEAR:	1S
COLOR OPTION:	NOT INSTALLED
FORMLEN:	
LINES:	6 LPI=60
STANDARD:	EXECUTIVE 10.5"
CPI:	10 CPI
SKIP:	0.5"
EMULATE:	EPSON
I/O:	
BUFFER:	36K
SERIAL:	
BAUD:	2400
FORMAT:	7 BIT, EVEN, 1 STOP
PROTOCOL:	XON/XOFF
CHARACTER SET:	STANDARD
S1.ZERO:	ON
AUTO LF:	OFF
MENLOCK:	ALL
PAPER:	
BIN 1:	12/72"
BIN 2:	12/72"
SINGLE:	12/72"
PUSH TRA:	12/72"
PULL TRA:	12/72"
PAP ROLL:	12/72"
PAPOPT:	NO

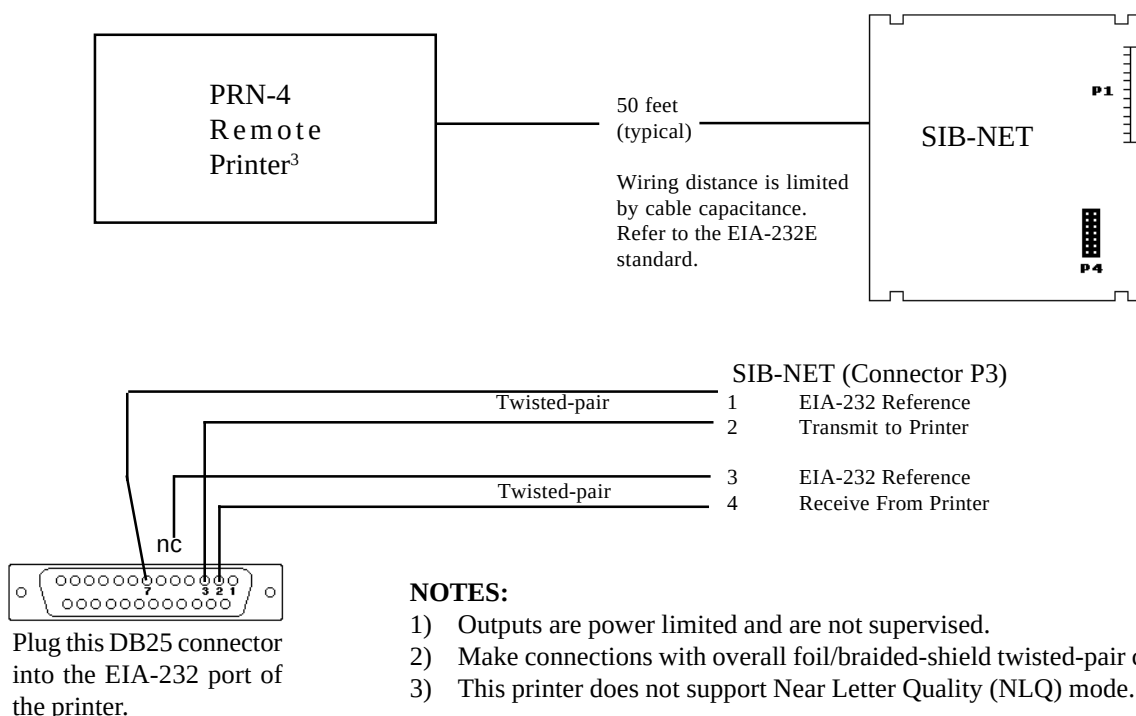
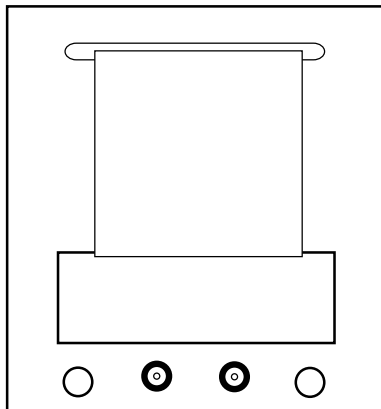


Figure 1-6: Remote Printer to SIB Connections

Keltron Printer
Model No. VS4095/5
 (Refer to note 4 below.)



50 feet max
 (typical)

Wiring distance limited by
 cable capacitance. Refer to
 the EIA-232E standard.

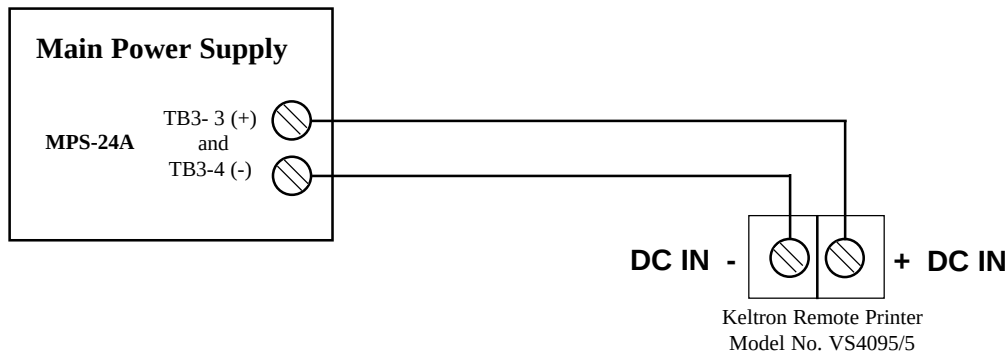
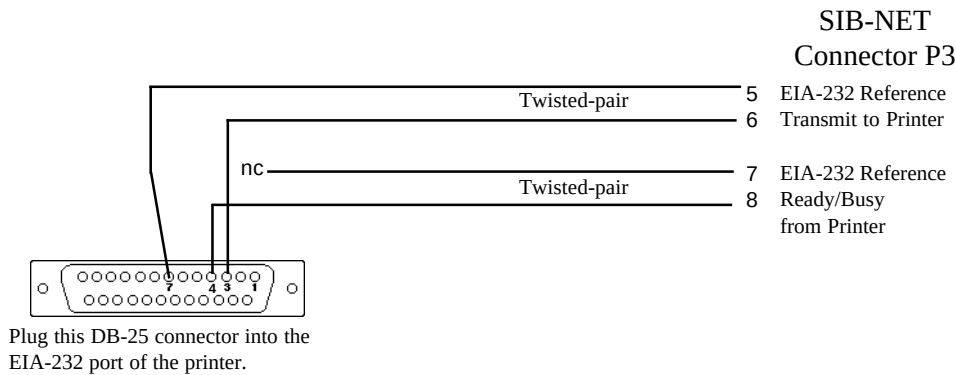
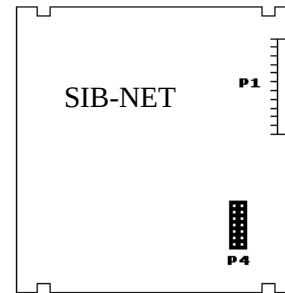


Figure 1-7: Keltron Printer Connections

NOTES:

- 1) Outputs are power limited and are not supervised.
- 2) Make connections with an overall foil/braided-shield twisted-paired cable suitable for EIA-232E applications.
- 3) The SIB-NET can employ two printers.
- 4) Set the Keltron printer DIP switches as follows:

SP1-1	OFF	SP2-1	OFF
SP1-2	ON	SP2-2	OFF
SP1-3	OFF	SP2-3	OFF
SP1-4	ON	SP2-4	OFF
SP1-5	OFF	SP2-5	OFF
SP1-6	ON	SP2-6	OFF
SP1-7	OFF	SP2-7	ON
SP1-8	ON	SP2-8	OFF

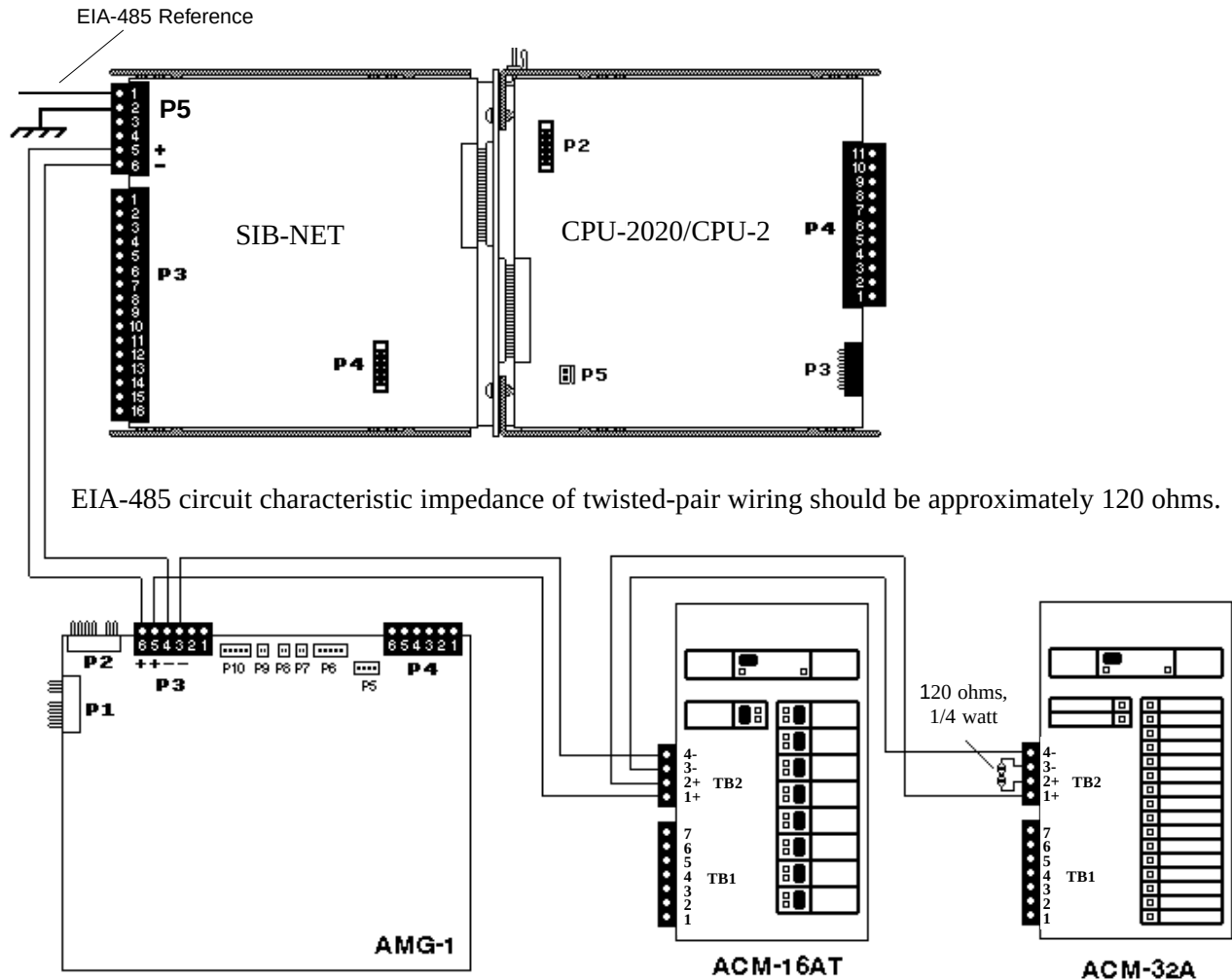


Figure 1-8: EIA-485 to SIB-NET Connections

Refer to Appendix A for EIA-485 circuit ratings and limitations.

NOTE: If the SIB-NET is not the first device on the EIA-485 circuit, set SW1 on the SIB-NET to the "out" position.

The EIA-485 Reference (P5-1) for the SIB-NET must be connected to any ACS device which is not within the same cabinet or is not powered by the SIB-NET AM2020/AFP1010 power supply. Connect P5-1 of the SIB-NET to:

- ACM-16AT at TB1-4
- LDM-32 at TB1-4
- NIB-96/AMG-1 power supply (MPS-24A) at TB2-2
- SCS-8/L at TB1-4
- LCD-80 at P1-4
- RPT-485W Ref. A at TB1-5
- RPT-485W Ref.B at TB2-5
- RPT-485WF Ref. A at TB1-5

Appendix A: Circuit/Device Ratings

Circuit Type	Circuit Functions	Wire Requirements	Distance (feet)	Typical Wire Type
LIB-200 SLC Loop	Connects to Intelligent and Addressable Modules, and to XP Transponders	Twisted-shielded pair, 12 to 18 AWG, 40 ohms max per length of Style 6 and 7 loops. 40 ohms per branch max for Style 4 loops	10,000 8,000 4,875 3,225	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
EIA-485	Connects to AMG-1 and to Annunciator Control System Modules	Twisted-shielded pair with a characteristic impedance of approximately 120 ohms. 18 AWG minimum.	6,000 6,000 6,000 4,000	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
EIA-232	Connects to CRTs and remote printers	Twisted-shielded pair. 18AWG minimum.	see EIA-232D	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
MMX XPM-8/L	Initiating Device Circuit	12-18 AWG. Maximum loop wire resistance is 20 ohms (MMX-1, MMX-101) or 100 ohms (XPM-8)	5,000 4,000 2,438 1,613	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
CMX XPC-8	Notification Appliance Circuit	12-18 AWG. MPS-24A: At alarm current level, no more than a 1.2 volts drop at the end of the circuit.	Installer Calculation Required	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
Power Runs	To CMXs; to XPC-8s	12-18 AWG. Size wire so that no more than 1.2 volts drop across wire run from supply source to end of any branch.	Installer Calculation Required	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
Power Runs	To annunciators	12-18 AWG. Size wire so that no more than 2.4 volts drop across wire run from supply source to end of any branch.	Installer Calculation Required	Belden 9586 (12 AWG) West Penn 999 Belden 9581 (14 AWG) West Penn 995 Belden 9575 (16 AWG) West Penn 991 Belden 9574 (18 AWG) West Penn 975
NR45-24	Remote Secondary Power Source	Twisted-shielded pair, 12 AWG in conduit	20 (max)	Belden 9583 (12 AWG) West Penn 999

Type of Circuit	Devices/Ratings	Circuit Ratings	Connections
Main Supply Circuit A dedicated branch of the AC service that supplies primary AC power to the Fire Alarm Control Panel.	MPS-24A Main Power Supply	120 VAC, 50/60 Hz, 1.8 amps	TB1: Term. 2 + 3 (Ground) Term 4 + 5 (Neutral) Term 6 + 7 (Hot)
	MPS-24B Main Power Supply	120 VAC, 50/60 Hz, 1.8 amps	TB1: Term. 2 (Ground) Term 3 (Neutral) Term 4 (Hot)
	AVPS-24 Audio/Visual Power Supply	120 VAC, 50/60 Hz, 1.0 amps	TB1: Term. 1 + 6 (Ground) Term 4 (Neutral) Term 5 (Hot)
	AA-30 Audio Amplifier	120 VAC, 50/60 Hz, 1.0 amps	Plug P2: Term. 1 + 8 (Ground) Term 3 + 4 (Neutral) Term 5 + 6 (Hot)
	AA-120 Audio Amplifier	120 VAC, 50/60 Hz, 1.85 amps	Plug P2: Term. 1 + 8 (Ground) Term 5 + 6 (Neutral) Term 3 + 4 (Hot)
Battery Charger Circuit Charges and maintains the secondary supply during non-fire alarm conditions.	MPS-24A Main Power Supply and two PS-12250 (12 volt, 25 AH) batteries.	27.6 VDC. Float type battery charger 2.0A Max. Supervised and power-limited.	TB2: Term. 1 (+), Term 2 (-)
	MPS-24B Main Power Supply	27.6 VDC. Float type battery charger (750 mA max). Supervised and power-limited.	TB2: Term. 5 (+), Term 6 (-)
	NR45-24 Remote battery charger with two LA-55 (12 volt, 55 AH) batteries.	120 VAC, 50/60 Hz, 1.0 amps	Term. 1 (Hot), Term 2 (Neutral), Chassis ground.
		27.6 VDC. Float type battery charger (2.0 amps max). Supervised and power-limited.	Term. 3 (+), Term 4 (-)
Battery Discharge Circuit or Secondary Power Input Supplies power to the Fire Alarm Control Panel during loss of primary AC power.	AA-30 Audio Amplifier	3.0 amps max. draw in alarm. 25.0 amp max. screw terminal contact rating. Supervised. Battery leads are not power-limited.	Plug P1: Term. 1 (+), Term 4 (-)
	AA-120 Audio Amplifier	7.3 amps max. draw in alarm. 25.0 amp max. screw terminal contact rating. Supervised. Battery leads are not power-limited.	Plug P1: Term. 3 + 4 (+), Term 1 + 2 (-)
	AVPS-24 Audio Visual Power Supply	3.0 amps max. draw in alarm. 25.0 amp max. screw terminal contact rating. Supervised. Battery leads are not power-limited.	TB1: Term. 2 (+), Term 3 (-)
	MPS-24A Main Power Supply	6.0 amps max. draw in alarm. 25.0 amp max. screw terminal contact rating. Supervised. Battery leads are not power-limited.	TB2: Term. 1 (+), Term 2 (-)
	MPS-24B Main Power Supply	2.9 amps max. draw in alarm. 25.0 amp max. screw terminal contact rating. Supervised. Battery leads are not power-limited.	TB2: Term. 5 (+), Term 6 (-)
Notification Appliance Power Provides power for Notification Appliance Circuits and remote signaling devices.	MPS-24A Main Power Supply: use with any UL listed 24 VDC fire alarm Notification Appliance.	20.4 - 26.4 VDC (3.0 amps max.) Power-limited and supervised.	TB3: Term. 3 (+), Term 4 (-)
	MPS-24B Main Power Supply: use with any UL listed 24 VDC fire alarm Notification Appliances.	20.4 - 26.4 VDC (2.0 amps max. of regulated current available in alarm only) Power-limited and supervised with a UL listed relay.	TB2: Term. 3 (+), Term 4 (-)
	AVPS-24 Audio/Visual Power Supply: WARNING see list of compatible devices in the Device Compatibility Document.	20.4 - 32.0 VRMS (3.0 amps max.) Full-wave, unfiltered. Power-limited and supervised with an A77-716 relay.	TB2: Term. 1 (+), Term 2 (-)
External Resettable Power	MPS-24A Main Power Supply	20.4 - 26.4 VDC (200 mV ripple), 1.0 amps max. (draws from the total of 3.0 amps of MPS-24A regulated current available in standby or 6.0 amps available in alarm). Power-limited and supervised with an A77-716 relay.	TB3: Term. 1 (+), Term 2 (-)
		20.4 - 26.4 VDC (200 mV ripple), 2.0 amps max. (draws from the total of 3.0 amps of MPS-24A regulated current available in standby or 6.0 amps available in alarm). Power-limited and supervised with an A77-716 relay. Note: Optional jumper selectable.	TB3: Term. 3 (+), Term 4 (-)
	MPS-24B Main Power Supply	20.4 - 26.4 VDC (200 mV ripple), 200 mA max. (draws from the total of 750 mA of regulated current available in standby and alarm. Power-limited and supervised with a UL listed relay.	TB2: Term. 1 (+), Term 2 (-)
Municipal Box Circuit	CMX Control Module with an MBT-1 Municipal Box Trip device and an A77-716 power supervision relay.	Local Energy Municipal Box connection. Supervised and power-limited. (3.65 VDC nominal). (10 ohms max. loop resistance. Trip current = 250 mA.	Refer to Supervising an Uninterruptable Power Supply in the AM2020/AFP1010 Manual.
	XP Transponder XPC-8 module with an MBT-1 Municipal Box Trip device.	Local Energy Municipal Box connection. Supervised and power-limited. (3.65 VDC nominal). (10 ohms max. loop resistance. Trip current = 250 mA.	Refer to Appendix A of the XP Series Transponder Manual.

Type of Circuit	Devices/Ratings	Circuit Ratings	Connections
Notification Appliance Circuit A circuit or path directly connected to a notification appliance.	CMX Control Module fed from an MPS-24A, MPS-24B, AVPS-24, or other 24 VDC power supplies listed for Fire Protective Signaling. WARNING: See list of AVPS-24 compatible devices in the Device Compatibility Document, 15378.	Operating voltage supplied dependent on the signal power source employed. ELR=47K, 1/2 watt, Part #47K (N-ELR) in Canada. NFPA Style Y or Style Z field wiring. Max Load is 2 amps Resistive @ 24 VDC. Most Notification Appliances are resistive. Certain electromechanical devices exhibit inductive loading characteristics. For these types of devices, derate the outputs to 1 amp @ 30 VDC (0.6pf). Size wiring for no more than 1.2 volt drop at last device on circuit. Supervised. Power limiting is a function of the power source.	NFPA Style Y Activated Polarity CMX Terminal 6 (+), 7 (-) NFPA Style Z Activated Polarity CMX Terminals 6, 9 (+); 7, 8 (-)
	XP Transponder XPC-8 module fed from an MPS-24A, MPS-24B, AVPS-24, or other 24VDC listed power supply. WARNING: See list of AVPS-24 compatible devices.	Operating voltage supplied dependent on the power source employed. ELR = 47K, 1/2 watt, Part # R-47K (N-ELR in Canada). NFPA Style Y or Style Z field wiring. Max Load is 2 amps Resistive @ 24 VDC. Most Notification Appliances are resistive. Certain electromechanical devices exhibit inductive loading characteristics. For these types of devices, derate the outputs to 1 amp @ 30 VDC (0.6pf). Size wiring for no more than a 1.2-volt drop at last device on circuit. Supervised. Power limiting is a function of the signaling power source.	NFPA Style Y Activated Polarity (8 zones on XPC-8 P2): Term.1 (+), 2 (-); 3 (+), 4 (-); 5 (+), 6 (-); 7 (+), 8 (-); 9 (+), 10 (-); 11 (+), 12 (-); 13 (+), 14 (-); 15 (+), 16 (-). NFPA Style Z Activated Polarity (4 zones on XPC-8 P2): Term. 1,3 (+), 2,4 (-); 5,7 (+), 6,8 (-); 9,11 (+), 10,12 (-); 13,15 (+), 14,16 (-).
Speaker Circuits	CMX-1 Control Module fed from an AA-30 or AA-120.	Operating voltage dependent on amplifier employed. Max of 40 mA total speaker leakage current due to coupling capacitors. 48 watts max @ 25 VRMS max. ELR= 47K, 1/2 watt, Part # A2143-20 (N-ELR in Canada). Max line resistance dependent upon wattage required at each speaker. NFPA Style Y field wiring. Supervised. Power-limiting is a function of the signaling power source.	NFPA Style Y supervised polarity: CMX Terminals 7 (+), 6 (-)
	CMX-2 Control Module fed from an AA-30 or AA-120. Model A2143-20 coupling capacitor (10uA leakage max.) is required for NFPA Style Z connection. Refer to the CMX-2 Installation Instructions for more details.	Operating voltage dependent on amplifier employed. 43.75 watts max., up to 70.7 VRMS. Max of 40 uA total speaker leakage current due to coupling capacitors. ELR=47K, 1/2 watt, Part # A2143-00 (N-ELR in Canada). Max. line resistance dependent upon wattage required at each speaker. NFPA Style Y or Z field wiring. Supervised. Power-limiting is a function of the signaling power source.	NFPA Style Y supervised polarity: CMX Terminals 7 (+), 6 (-). NFPA Style Z supervised polarity: CMX Terminals 7,8 (+); 6,9 (-).
	XP Transponder XPC-8 module fed from an AA-30 or AA-120.	Operating voltage dependent on amplifier employed. 48 watts max @ 70.7 Vrms max. ELR=47K, 1/2 watt, Part # R-47K (N-ELR in Canada). Max line resistance dependent upon wattage required at each speaker. NFPA Style Y or Style Z field wiring. Supervised. Power-limiting is a function of the signal source.	NFPA Style Y supervised polarity (8 zones on XPC-8 P2):Term.1 (-), 2 (+); 3 (-), 4 (+); 5 (-), 6 (+); 7 (-), 8 (+); 9 (-), 10 (+); 11 (-), 12 (+); 13 (-), 14 (+); 15 (-), 16 (+). NFPA Style Z supervised polarity (4 zones on XPC-8 P2):Term. 1,3 (-), 2,4 (+); 5,7 (-), 6,8 (+); 9,11 (-), 10,12 (+);13,15 (-), 14,16 (+).
Speaker Power (High-level Audio)	AA-30 or AA-120 Audio Amplifier feeding signal to a CMX Control Module or an XP Transponder XPC-8 Module. Use only UL-listed speakers rated for a minimum 25 VRMS (30 watts max with AA-30, 120 watts max with AA-120) or 70.7 VRMS min when using the AA-120 with T-70 option. (100 watts max)	25 Vrms audio amplifier output (70.7 Vrms for AA-120 with T-70 option). AA-30: 30 watts max. AA-120: 120 watts max. AA-120 with T-70 option: 100 watts max. Frequency response: 800 Hz to 2800 Hz. Two wire high level audio circuit is not supervised. Four-wire high level audio circuit is supervised (except when T-70 is used). AA-30, AA-120 and T-70 are power-limited. Maximum wiring distance limited by wattage required at each speaker.	AA-30 and AA-120 Connector P6 to XPC-8 Connector P3. AA-30 Connector P6 {or P8.5 (-) and P8.6 (+)} to CMX Term. 3 (-) and 4 (+). Wire optional supervisory return loop from CMX Term 3 (-) and 4 (+) to AA-30 Connector P7 or P8.2(-), P8.3 (+) or AA-120 P8.2 (-), P8.3 (+). AA-120 with T-70 option: connect 25 VRMS output P7.3 and P7.4 to transformer input P7.1 and P7.2 to obtain 70.7 VRMS output at P8.7 and P8.8. Connection not supervised.

Type of Circuit	Devices/Ratings	Circuit Ratings	Connections
Common Telephone Riser (FFT to XPC)	FFT-7/FFT-7S Fire Fighter's Telephone to an XP Transponder XPC-8 Module.	24 VDC (nominal), 1-Vrms max. 800 Hz to 2800 Hz. Seven (7) telephone handsets active at one time max including Master Telephone. Supervised/power-limited. Two-wire circuit supervised via 27K ELR, Part # R-27K (N-ELR for Canada). Optional return loop for 4-wire circuit. Max wiring resistance (including individual telephone zone to last handset.) permitted is 40 ohms. 10,000 ft. max wiring distance at 12 AWG to last handset.	FFT-7/FFT-7S Connector P3 Term. 3 (+) and 2 (-) to XPC-8 Connector P3.2 (+), P3.1 (-), and/or P4.2 (+) P4.1 (-), P5.2 (+) P5.1 (-), P6.2 (+) P6.1(-), P7.2 (+) P7.1 (-), P8.2(+) P8.1 (-), P9.2(+) P9.1 (-), P10.2 (+) P10.1 (-). Optional four-wire redundant return to FFT-7FFT-7S Connector P3 Term. 6 (+) and 5 (-) to XPC-8 Connector P10.
Individual Telephone Zones (XPC to Telephone Jacks)	XP Transponder XPC-8 Module fed from an FFT-7/FFT-7S: Employs phone jacks APJ-1 and FPJ; Fireman's Handset FHS-1; Fireman's Handset Enclosures FHE-F and FHE-S.	No telephone jack maximum per circuit. Two-wire circuit supervised via a 47K ELR, Part # R-47K (N-ELR in Canada). No outboard ELR for four-wire supervised circuit. Max resistance due to wiring is 40 ohms from FFT-7 to termination of the telephone circuit. Power limitation is a function of the signal source employed.	Two-wire circuits (8 telephone circuits on XPC-8 P2): Term.1 (-), 2 (+); 3 (-), 4 (+); 5 (-), 6 (+); 7 (-), 8 (+); 9 (-), 10 (+); 11 (-), 12 (+); 13 (-), 14 (+); 15 (-), 16 (+). Four-wire circuits (4 telephone circuits on XPC-8 P2): Term. 1, 3 (-), 2, 4 (+); 5, 7 (-), 6, 8 (+); 9, 11 (-), 10, 12 (+); 13, 15 (-), 14, 16 (+).
Low Level Audio Riser (AMG-1, AMG-E or ATG-2 to AA-30, AA-100 or AA-120)	AA-30/AA-100/AA-120/ ATG-2/ACT-1 fed from an AMG-1, AMG-E, ATG-2 Audio Message/Tone Generator	Power-limited/supervised. 10,000 feet maximum distance at 12 AWG gauge wire.	Internal Two-wire: AMG-1 P5 to AA-30 P2. External Two-wire: AMG-1 P4, Terminals 4 (-) and 5 (+) to AA-30 P3, Terminals 4 (-) and 5 (+). External Four-wire: Include return from AA-30 P8, Terminals 5 (-) and 6 (+) to AMG-1 P4, Terminals 1 (-) and 2 (+).
Form-C Dry Contacts	XP Transponder XPP-1: Dual Form-C Alarm and Trouble Relays	2 amps resistive @ 30 VDC. One amp inductive (0.6 pf) @ 24 VDC. Not supervised. Power limitation is a function of the signal source applied.	Refer to the XPP-1 in the XP Series Transponder System Manual
	XP Transponder XPR-8 : Eight Form-C relays or four Dual Form-C relays	2 amps resistive @ 30 VDC. One amp inductive (0.6 pf) @ 24 VDC. Not supervised. Power limitation is a function of the signal source applied.	Refer to the XPR-8 in the XP Series Transponder System Manual
	CMX-1: One Form-C relay	2 amps resistive @ 30 VDC. One amp inductive (0.6 pf) @ 30 VDC.	Power: Term 2 (+), Term 1 (-) Normally Open contacts use Term 4; normally closed contact use Term 5; common use Term 6 Break tabs for Form C relay
	CMX-2: One Form-C relay	2 amps resistive @ 30VDC. One amp inductive (0.6 pf) @ 30 VDC. Pilot Duty: 0.6 amps @ 30 VDC (0.35pf); 0.3 amps @ 110 VDC (0.35 pf); 0.3 amps @ 120 VAC (0.365 pf)	Power: Term 2 (+), Term 1 (-) Normally Open contacts use Term 4; normally closed contact use Term 5; common use Term 6 Break tabs for Form C relay

Type of Circuit	Devices/Ratings	Circuit Ratings	Connections
SLC Loop A circuit or path directly over which multiple signals are transmitted and received.	LIB-200 Board: Employs intelligent detectors and addressable modules - SDX-551, SDX-551TH, FDX-551, CPX-551, MMX-1, MMX-2, MMX-101, CMX-1, BGX-10L, XPP-1, ISO-X. Ten SLC Loops max per AM2020 system, two per AFP1010.	24 Volts DC nominal, 27.6 volts DC max. Maximum length is 10,000 ft. per channel (NFPA Style 4) or 10,000 ft. total twisted pair length (NFPA Style 6 and 7). Maximum loop current is 200mA (short circuit) or 100 mA (normal). Maximum loop resistance is 40 ohms. Supervised and power-limited.	NFPA Style 4: LIB-200 Channel A - Term. 1 (+) 3 (-); Channel B - Term. 5 (+), 7 (-). NFPA Style 6, 7: LIB-200 Terminals 1, 5 (+); 3, 7 (-).
EIA-485 Interface and EIA-232 Interface	SIB-2048/NET Serial Interface Board: Employs AMG-1 Audio Message Generator and annunciator modules - ACM-16AT (AEM-16AT), ACM-32A (AEM-32A).	+/- 5 volts peak-to-peak. Supervised and power-limited. 6000 ft. max distance. Terminating resistor = 120 ohms, 1/4-watt (Part # 71244). Characteristic impedance of the wiring is 120 ohms. Transmission rate = 20.833 Kbps	SIB-2048/NET P5, Terminal 5 (+) and 6 (-) to AMG-1 Connector P3, Terminal 6 (+) and 4 (-). SIB-2048 P5, Terminal 5 (+) and 6 (-) to ACM-16AT or ACM-32A Connector TB2, Terminal 3, 4 (-) and 1, 2 (+).
	SIB-2048/NET and SIB-232 Serial Interface Boards: Employs CRT-1 with Keyboard and CRT-1 without keyboard.	+/- 12 volts peak-to-peak. Supervised and power-limited. Max distance limited by capacitance of wire (refer to EIA-232E Standard). Transmission rate of 2400 bps.	For SIB-2048 and SIB-232, see Chapter One, Figures 5-2 and 5-3 of the AM2020/AFP1010 Manual. For SIB-NET see Section 1.5 of this manual.
	SIB-2048/NET and SIB-232 Serial Interface Boards: Employs PRN-3 and Keltron P-40 printers.	+/- 12 volts peak-to-peak. Power-limited but not supervised. Max distance limited by capacitance of wire (refer to EIA-232E Standard). Transmission rate of 2400 bps.	For SIB-2048 and SIB-232, see Chapter One, Figures 5-2 and 5-3 of the AM2020/AFP1010 Manual. For SIB-NET see Section 1.5 of this manual.
	SIB-2048/NET and SIB-232 Serial Interface Boards: Employs UL EDP listed equipment (display monitors and printers).	+/- 12 volts peak-to-peak. Power-limited but not supervised. Max distance limited by capacitance of wire (refer to EIA-232E Standard). Transmission rate of 2400 bps	For SIB-2048 and SIB-232, see Chapter One, Figure 5-2 and 5-3 of the AM2020/AFP1010 Manual. For SIB-NET see Section 1.5 of this manual.
Initiating Device Circuit A circuit to which automatic or manual signal-initiating devices are connected where the signal received does not identify the individual device being operated.	MMX-1 Monitor Module: Employs contact-type devices only - manual pull stations, heat detectors, supervisory or waterflow switches, and 4-wire smoke detectors.	ELR = 47K, 1/2, Part # A2143-20 (N-ELR in Canada). NFPA Style B or Style D field wiring. 20 ohms max loop resistance. Supervised and power-limited (210 uA).	NFPA Style B: MMX-1 Terminals 7 (+), 6 (-) NFPA Style D: MMX-1 Terminals 7, 8 (+), 6, 9 (-)
	MMX-101 Monitor Module: Employs contact-type devices only - manual pull stations, heat detectors, supervisory or waterflow switches, and 4-wire smoke detectors.	ELR = 47K, 1/2, Part # A2143-20 (N-ELR in Canada). NFPA Style B or Style D field wiring. 20 ohms max loop resistance. Supervised and power-limited (210 uA).	NFPA Style B: MMX-101 Red Wire (+), White Wire (-)
	XP Transponder XPM-8 module: Employs 2-wire smoke detectors and contact-type devices - manual pull stations, heat detectors, supervisory or waterflow switches, and 4-wire smoke detectors.	24 VDC (nominal), 200mV ripple. ELR = 2.2K, 1/2 watt, Part #R-2.2K (N-ELR in Canada). NFPA Style B or Style D field wiring. 100 ohms max loop resistance. Supervised and power-limited (50 uA). See Notifier Device Compatibility Document, 15378, for a list of compatible 2-wire detectors.	NFPA Style B (8 zones on XPM-8 P2): NFPA Style D (4 zones on XPM-8 P2):.
	XP Transponder XPM-8L module: Employs dry-contact type devices only - manual pull stations, heat detectors, supervisory or waterflow switches, and 4-wire smoke detectors.	24 VDC. ELR=10K, 1/2 watt, Part # R-10K (N-ELR in Canada). NFPA Style B field wiring. 1000 ohms max loop resistance. Supervised and power-limited.	NFPA Style B (8 zones on XPM-8L P2)
	MMX-2 Monitor Module: Maximum of 40 MMX-2 modules per LIB-200. Employs dry-contact type devices only - manual pull stations, heat detectors, supervisory or waterflow switches, and 4-wire smoke detectors.	24VDC Input 12-18 AWG. See Document M500-03-00 for limits. Supervised. Power limiting is a function of the 24 VDC source.	MMX-2 Terminal 3(-) and 4(+)
		NFPA Style B or D Initiating Device Circuit 12-18 AWG 25 ohms max (including 24VDC input wiring above). Supervised and power limited (90mA). 3.9K, 1/2 W end-of-line resistor required at terminals 8 and 9 for NFPA Style D operation. See Document M500-03-00 for additional limits. See Notifier Device Compatibility Document for a list of compatible 2-wire detectors.	NFPA Style B MMX-2 Terminal 6(-) and 7(+) NFPA Style D MMX-2 Terminals 6, 9(-) and 7, 8(+)

Limited Warranty

NOTIFIER® warrants its products to be free from defects in materials and workmanship for eighteen (18) months from the date of manufacture, under normal use and service. Products are date stamped at time of manufacture. The sole and exclusive obligation of **NOTIFIER®** is to repair or replace, at its option, free of charge for parts and labor, any part which is defective in materials or workmanship under normal use and service. For products not under **NOTIFIER®** manufacturing date-stamp control, the warranty is eighteen (18) months from date of original purchase by **NOTIFIER®**'s distributor unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. This warranty is void if the product is altered, repaired or serviced by anyone other than **NOTIFIER®** or its authorized distributors or if there is a failure to maintain the products and systems in which they operate in a proper and workable manner. In case of defect, secure a Return Material Authorization form from our customer service department. Return product, transportation prepaid, to **NOTIFIER®**, 12 Clintonville Road, Northford, Connecticut 06472-1653.

This writing constitutes the only warranty made by **NOTIFIER®** with respect to its products. **NOTIFIER®** does not represent that its products will prevent any loss by fire or otherwise, or that its products will in all cases provide the protection for which they are installed or intended. Buyer acknowledges that **NOTIFIER®** is not an insurer and assumes no risk for loss or damages or the cost of any inconvenience, transportation, damage, misuse, abuse, accident or similar incident.

NOTIFIER® GIVES NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR OTHERWISE WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. UNDER NO CIRCUMSTANCES SHALL **NOTIFIER®** BE LIABLE FOR ANY LOSS OF OR DAMAGE TO PROPERTY, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE **NOTIFIER®** PRODUCTS. FURTHERMORE, **NOTIFIER®** SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY OR DEATH WHICH MAY ARISE IN THE COURSE OF, OR AS A RESULT OF, PERSONAL, COMMERCIAL OR INDUSTRIAL USE OF ITS PRODUCTS.

This warranty replaces all previous warranties and is the only warranty made by **NOTIFIER®**. No increase or alteration, written or verbal, of the obligation of this warranty is authorized.

"**NOTIFIER**" is a registered trademark.



NOTIFIER®

12 Clintonville Road, Northford, CT 06472
Phone: (203) 484-7161
FAX: (203) 484-7118