infi 90

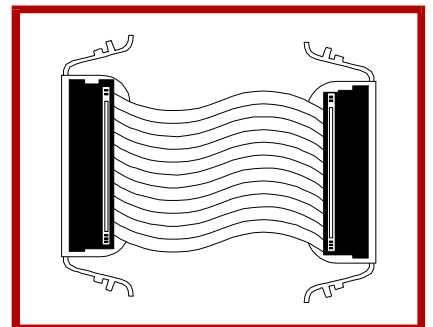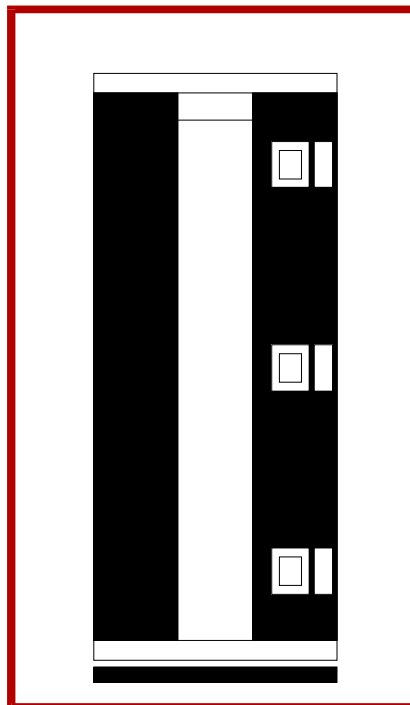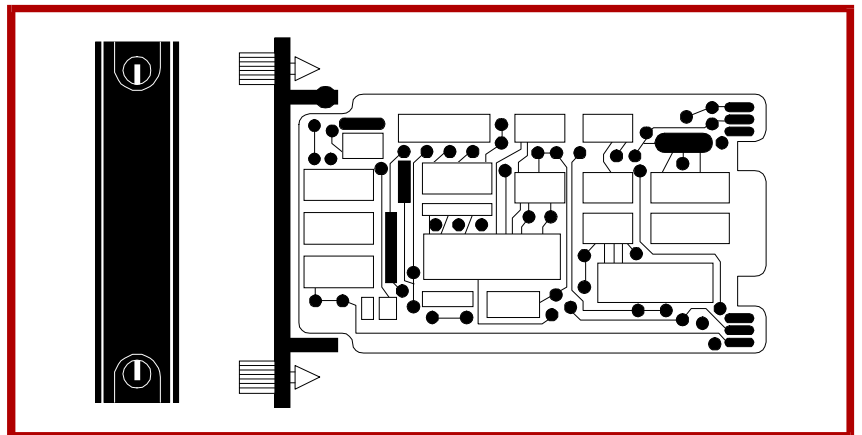**Bailey**

Instruction

Multi-Function Processor Termination Unit
(NTMP01)
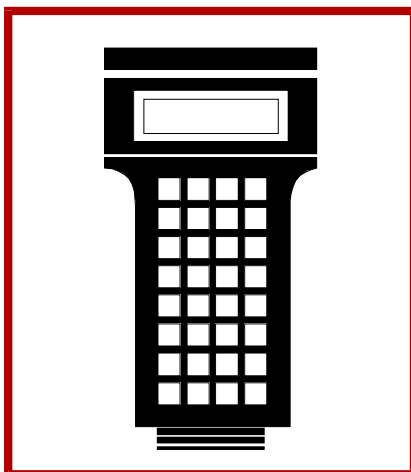
WARNING notices as used in this instruction apply to hazards or unsafe practices that could result in personal injury or death.

CAUTION notices apply to hazards or unsafe practices that could result in property damage.

NOTES highlight procedures and contain information that assists the operator in understanding the information contained in this instruction.

Preface

Termination units provide a connection from the plant equipment to the INFI 90® process modules. The NTMP01 Multi-Function Processor Termination Unit terminates a multi-function processor, INFI-NET® to computer transfer module, INFI-NET to INFI-NET transfer module or multi-function processor interface module. The NTMP01 Multi-Function Processor Termination Unit provides a termination point for two RS-232-C ports or one RS-232-C port and one RS-485 port, plus a serial link to connect an analog control station or digital control station through an NTCS04 Control I/O Termination Unit. This product instruction explains how to install and use the NTMP01 Multi-Function Processor Termination Unit.

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List of Effective Pages

Total number of pages in this manual is 48, consisting of the following:

Page No.	Change Date
Preface	Original
List of Effective Pages	Original
iii through vii	Original
1-1 through 1-5	Original
2-1 through 2-13	Original
3-1 through 3-3	Original
4-1 through 4-3	Original
5-1	Original
A-1 through A-3	Original
B-1 through B-4	Original
C-1 through C-2	Original
D-1 through D-2	Original
E-1 through E-3	Original
Index-1 through Index-2	Original

When an update is received, insert the latest changed pages and dispose of the superseded pages.

NOTE: On an update page, the changed text or table is indicated by a vertical bar in the outer margin of the page adjacent to the changed area. A changed figure is indicated by a vertical bar in the outer margin next to the figure caption. The date the update was prepared will appear beside the page number.

Safety Summary

GENERAL WARNINGS	**Equipment Environment** All components, whether in transportation, operation or storage, must be in a noncorrosive environment. **Electrical Shock Hazard During Maintenance** Disconnect power or take precautions to insure that contact with energized parts is avoided when servicing.

SPECIFIC WARNINGS	Wear eye protection whenever working with cleaning solvents. When removing solvents from printed circuit boards using compressed air, injury to the eyes could result from splashing solvent as it is blown off the printed circuit board. (p. 3-1)

SPECIFIC CAUTIONS	It is strongly recommended that all power (cabinet, I/O, etc.) be turned off before doing any wiring. Verify all connections before applying power. Failure to observe these precautions could result in equipment damage. (p. 2-12) Remove a module from its assigned slot before installing or removing a cable assigned to that slot. Failure to do so could result in damage to the module. (p. 4-1)

AVERTISSEMENTS D'ORDRE GÉNÉRAL	**Environnement de l'équipement** Ne pas soumettre les composants à une atmosphère corrosive lors du transport, de l'entreposage ou l'utilisation. **Possibilité de chocs électriques durant l'entretien** Débrancher l'alimentation ou prendre les précautions pour éviter tout contact avec des composants sous tension durant l'entretien.

AVERTISSEMENTS D'ORDRE SPÉCIFIQUE	Portez toujours des lunettes de protection lorsque vous utilisez des solvants de nettoyage. L'air comprimé servant à enlever le solvant des cartes de circuits imprimés provoque des éclaboussures qui risquent d'atteindre les yeux. (p. 3-1)

ATTENTIONS D'ORDRE SPÉCIFIQUE	Il est fortement recommandé, de débrancher toute source d'alimentation (armoire, E/S, etc.) avant d'effectuer du travail au câblage. Vérifiez toutes les connexions avant de rétablir l'alimentation. Ces précautions permettent d'éviter des dommages a l'équipement. (p. 2-12) Avant de retirer ou de brancher un câble, retirez le module logé dans la coulisse correspondante. Autrement, le module risque d'être endommagé. (p. 4-1)

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SECTION 1 - INTRODUCTION

OVERVIEW

The NTMP01 Multi-Function Processor Termination Unit provides a connection to the serial interface for IMMFP01, IMMFP02 and IMMFP03[1] Multi-Function Processors. It has two isolated RS-232-C ports (one of which can be configured as a nonisolated RS-485 port) to operate as either data communication equipment (DCE) or data terminal equipment (DTE). Multi-function processors (MFP) use these ports to communicate with field devices (e.g., computers, printers and sequential events recorders). The multi-function processor termination unit (TMP) also provides the connection for a station serial communication link. This communication link allows the MFP module to communicate with an IISAC01 Analog Control Station or NDCS03 Digital Control Station. Figure 1-1 shows a typical TMP termination unit application.

The termination unit also interfaces with the INIIT02 INFI-NET to INFI-NET Transfer Module. The INFI-NET to INFI-NET transfer module (IIT) supports bidirectional communication through two RS-232-C ports. Port one passes system data only. Port two passes system data or can be used as a diagnostic port. The central IIT module can use a variety of means to link to the satellite IIT module such as modems, microwave and transceivers.

The termination unit also interfaces with the INICT03 INFI-NET to Computer Transfer Module[2]. The INFI-NET to computer transfer module (ICT) provides the electronics needed to direct the operation of the INFI-NET to computer interface. It handles all communication with the host computer through the multi-function processor interface (MPI).

INTENDED USER

Anyone who installs, uses and maintains the NTMP01 Multi-Function Processor Termination Unit should read and understand this manual before placing the termination unit into service. Installation and troubleshooting require a technician or engineer with electrical experience and a working knowledge of the RS-232-C and RS-485 standards.

HARDWARE DESCRIPTION

The multi-function termination unit is a seven by seven inch square printed circuit board. It mounts on the NFTP01 Field

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1.When using an IMMFP03 Multi-Function Processor Module, the TMP termination unit interfaces with the auxiliary I/O card (IMMPI01 or IMMPI02 Multi-Function Processor Interface).
2.When using an INICT03 INFI-NET to Computer Transfer Module, the TMP termination unit interfaces with the auxiliary I/O card (IMMPI01 or IMMPI02 Multi-Function Processor Interface).

OVERVIEW
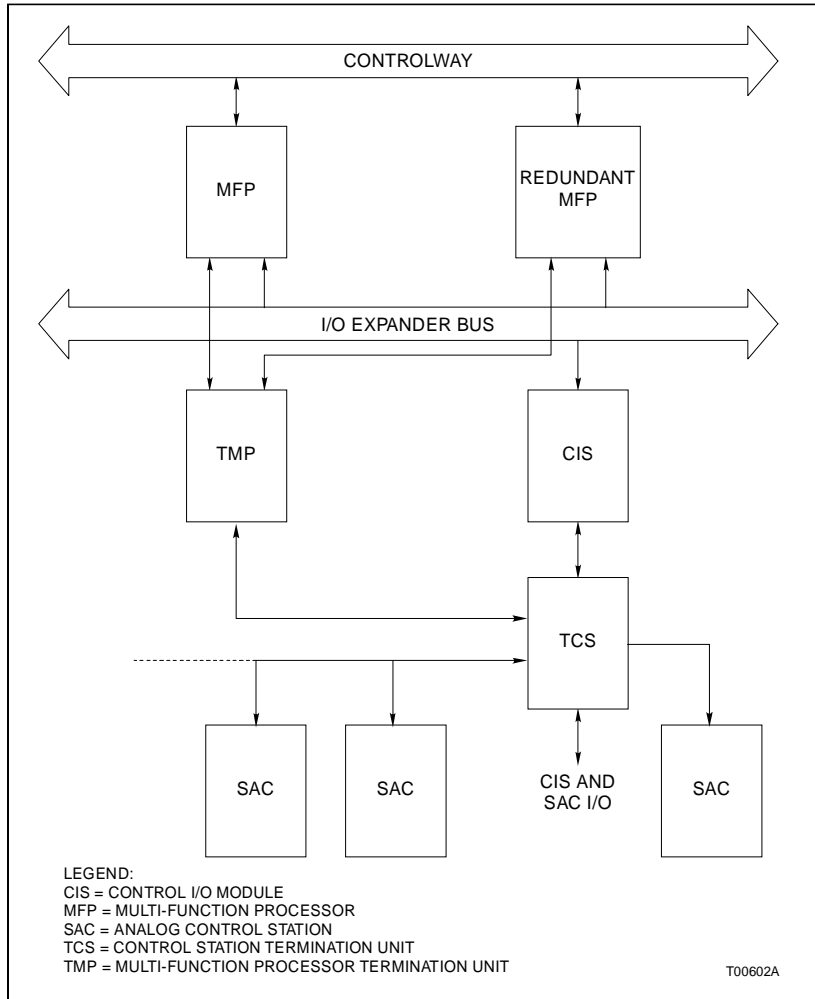
Figure 1-1. Example TMP Termination

Termination Panel inside an INFI 90 cabinet. The board contains:

- RS-232-C and RS-485 line drivers and receivers.
- Optical isolators.
- Voltage regulators/DC to DC converter.
- DB-25 and DB-9 connectors.
- Fuse.
- Light emitting diodes (LED).
- Jumpers.

FEATURES

The TMP termination unit has two jumper configurable RS-232-C ports for DCE, DTE, nonhandshake or loopback operation. These ports allow the MFP module to communicate with computers and terminals. The termination unit also provides two serial communication links for analog control stations (SAC) and digital control stations (DCS) through the NTCS04 Control Station Termination Unit. When both ports are configured as RS-232-C ports, the TMP termination unit provides isolation between INFI 90 and the connected equipment (the RS-485 port is not isolated).

The TMP termination unit has two LEDs. The LEDs identify which MFP module (primary or redundant) is the active module. This indication is useful for troubleshooting and maintenance.

INSTRUCTION CONTENT

This manual has five sections and five appendices.

Introduction Provides an overview of the TMP termination unit.

Installation Explains the physical installation, wiring and cable requirements, dipshunt settings and handling of the termination unit.

Maintenance Contains a maintenance schedule.

Repair/Replacement Procedure Explains how to replace the fuse or the termination unit.

Support Services Explains how to order parts and other services available from Bailey Controls Company.

Appendices Briefly discuss the modules that use the termination unit and provide a cross reference of dipswitch and jumper settings for those modules.

HOW TO USE THIS MANUAL

Read this manual through in sequence. Read the installation section thoroughly. Do the steps in order. Complete all steps in the installation section before using the TMP termination unit. Refer to the Table of Contents or Index to find specific information after the unit is operating.

GLOSSARY OF TERMS AND ABBREVIATIONS

Table 1-1 lists definitions of the terms and abbreviations used in this instruction.

Table 1-1. Glossary of Terms and Abbreviations

Term	Definition
DCE	Data communication equipment or data circuit-terminating equipment. Equipment that establishes and terminates a communication link between two devices. In RS-232-C communication systems, the DCE nomenclature indicates the signals that appear at specified cable connection contacts. A modem is an example of this type of device.
Dipshunt	Dual in-line package with shorting straps.
DTE	Data terminal equipment. Equipment comprising the data source, data sink or both that provides the communication control function. In RS-232-C communication systems, the DTE nomenclature indicates the signals that appear at specified cable connection contacts. Terminals and printers are examples of this type of device.
ESD	Electrostatic sensitive devices. Electronic components subject to damage or failure when exposed to an electrostatic charge; require special handling.
FTP	Field termination panel. A panel inside the INFI 90 cabinet on which to mount termination units.
Handshaking	Procedures and protocol used by two devices to establish and maintain communication.
MFT	Machine fault timer. Reset by the processor during normal operation. If not reset regularly, the MFT times out and the module stops.
MMU	Module mounting unit. A card cage that provides electrical and communication support for INFI 90/Network 90® modules.
RS-232-C and RS-485	Two serial communication interface standards developed by the Electronics Industry Association (EIA) specifying what signals and voltages will be used to transmit data from a computer (DTE) to a modem (DCE).
SCSI	Small computer system interface. An I/O bus standard by the American National Standard Institute (ANSI) that defines the protocol and peripheral interconnection formats of a high speed parallel bus for use throughout the computer industry.
SRAM	Static random access memory. Contents are lost when power is removed.

REFERENCE DOCUMENTS

Table 1-2 lists the documents referenced in this instruction.

Table 1-2. Reference Documents

Document No.	Title
I-E93-902	Digital Control Station (NDCS03)
I-E96-117	Analog Control Station (IISAC01)
I-E96-201	Multi-Function Processor Module (IMMFP01)
I-E96-202	Multi-Function Processor Module (IMMFP02)
I-E96-203	Multi-Function Processor Module (IMMFP03)
I-E96-442	Controller/Station Termination Unit (NTCS04)
I-E96-500	Site Planning and Preparation
I-E96-601	INFI-NET Communications Modules

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NOMENCLATURE

Table 1-3 is a list of related hardware.

Table 1-3. Nomenclature

Nomenclature	Description
IISAC01	Analog control station
IMMFP01/02/03	Multi-function processor module
IMMPI01/02	Multi-function processor interface
INICT03	INFI-NET to computer transfer module
INIIT02	INFI-NET to INFI-NET transfer module
NDCS03	Digital control station
NFTP01	Field termination panel
NKSE01	Station serial extension cable (PVC)
NKSE11	Station serial extension cable (non-PVC)
NKTU01	Termination unit cable (PVC)
NKTU11	Termination unit cable (non-PVC)
NTCS04	Control/station termination unit

SPECIFICATIONS

Refer to Table 1-4 for specifications of the termination unit.

Table 1-4. NTMP01 Termination Unit Specifications

Property	Characteristic/Value
Communication	Two RS-232-C serial ports or one RS-232-C port and one RS-485 port. One control station serial link.
Cable Insulation:	
PVC (UL Rating CL2) Non PVC (UL Rating PLTC)	80°C (176°F) at 300 V 90°C (194°F) at 300 V
Mounting	Screw mounts on the field termination panel.
Environmental:	
Electromagnetic/Radio Frequency Interference	Values not available at this time. Keep cabinet doors closed. Do not use communication equipment any closer than 2 meters from cabinet.
Cooling Requirements	No cooling necessary when used in Bailey cabinets and operated within environmental limits.
Operating Temperature	0° - 70°C (32° - 158°F)
Relative Humidity	5% - 90% up to 70°C (158°F) (noncondensing)
Altitude	Sea level to 3 km (1.86 mi)
Air Quality	Bailey equipment should be operated and stored in a noncorrosive environment.
Certification	All termination units are CSA certified as process control equipment for use in an ordinary (nonhazardous) location.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

SECTION 2 - INSTALLATION

INTRODUCTION

This section lists the steps to properly install the NTMP01 Multi-Function Processor Termination Unit (TMP). The installation procedure includes physical installation, dipshunt configuration, cable connection, power wiring and handling. To properly install the TMP termination unit do the steps in this section in the order they appear.

SPECIAL HANDLING

Observe these steps when handling electronic circuitry:

> **NOTE:** Always use Bailey's field static kit (part number 1948385A1 - consisting of two wrist straps, ground cord assembly, alligator clip and static dissipative work surface) when working with the modules. The kit grounds a technician and the static dissipative work surface to the same ground point to prevent damage to the modules by electrostatic discharge.

1. *Use Static Shielding Bag.* Keep the modules in the static shielding bag until you are ready to install them in the system. Save the bag for future use.

2. *Ground Bag Before Opening.* Before opening a bag containing an assembly with semiconductors, touch it to the equipment housing or a ground to equalize charges.

3. *Avoid Touching Circuitry.* Handle assemblies by the edges; avoid touching the circuitry.

4. *Avoid Partial Connection of Semiconductor.* Verify that all devices connected to the modules are properly grounded before using them.

5. *Ground Test Equipment.*

6. *Use an Antistatic Field Service Vacuum.* Remove dust from the module if necessary.

7. *Use a Grounded Wrist Strap.* Connect the wrist strap to the appropriate grounding plug on the power entry panel. The grounding plug on the power entry panel is connected to the earth grounding electrode system through the AC safety ground.

8. *Do Not Use Lead Pencils to Set Dipswitches.* To avoid contamination of dipswitch contacts that can result in unnecessary circuit board malfunction, do not use a lead pencil to set a dipswitch.

UNPACKING AND INSPECTION

1. Examine the hardware immediately for shipping damage.

2. Notify the nearest Bailey Controls Company sales office of any such damage.

3. File a claim for any damage with the transportation company that handled the shipment.

4. Use the original packing material and container to store the hardware.

5. Store the hardware in an environment of good air quality, free from temperature and moisture extremes.

SETUP/PHYSICAL INSTALLATION

This section explains how to configure and install the TMP termination unit. You must set the jumpers before installing the termination unit. There are 12 pin jumpers that determine the operation of the RS-232-C ports. Each port can be configured as a DTE, DCE, nonhandshake or loopback device. Only port one can terminate to a diagnostic terminal. The termination unit can interface with:

- Devices:

  Printer.
  Sequence of events recorder.
  IBM® PC.
  COMPAQ® and compatible computers.

- Terminals:

  VT1XX.
  ADM3.
  VISUAL 50.
  WYSE (WY50).
  TELEVIDEO.
  FALCO.

- VAXstation™.

Fuse Installation

Fuse F1, a 1.0 amp/250 volt fuse (Bailey part number 194776A11001) is installed in each termination unit. The fuse protects the 24 VDC and the digital outputs against overcur-

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® COMPAQ is a registered trademark of COMPAQ Corporation.
™ VAXstation is a trademark of Digital Equipment Corporation.

rent. Figure 2-1 shows the termination unit layout. Verify that the fuse is installed in fuse holder F1.

Jumper Configuration

Figure 2-1 shows the jumper locations. There are 18 jumpers.
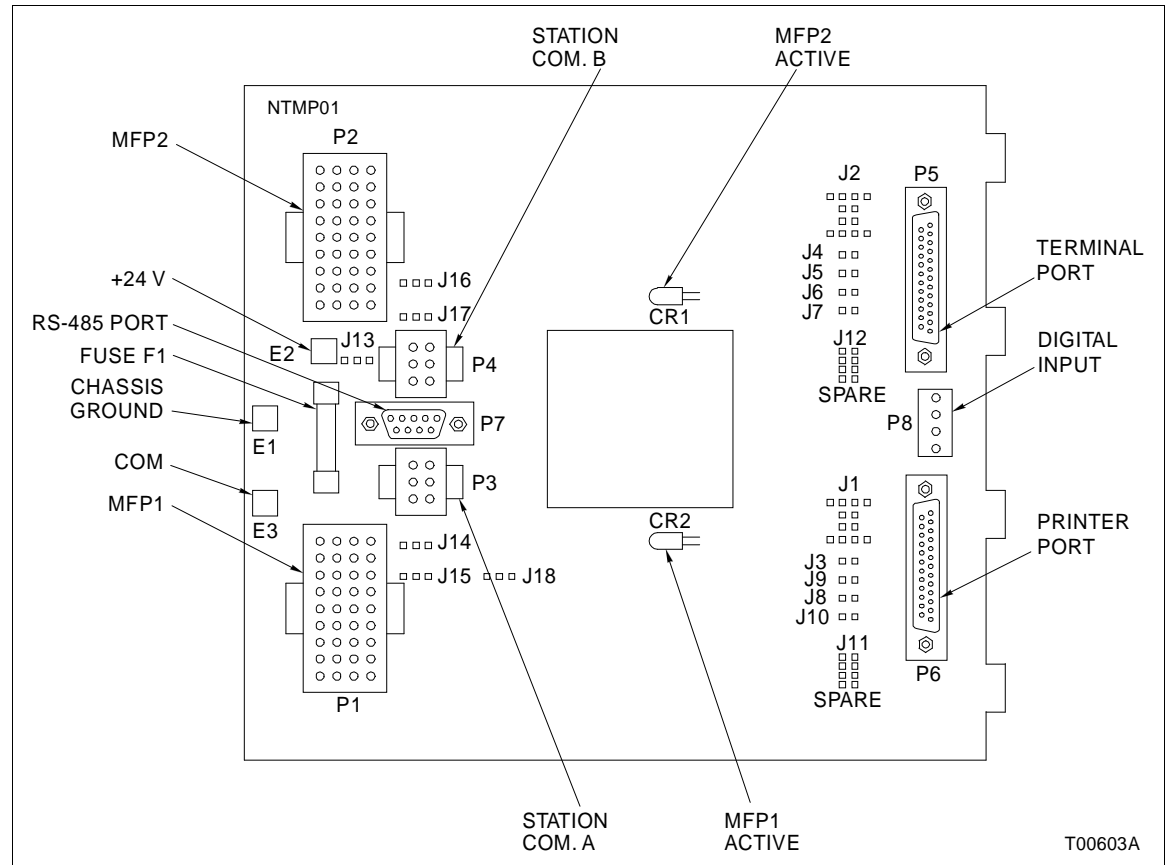
Figure 2-1.   TMP Termination Unit Layout

JUMPERS J1 AND J2

Figures 2-2 through 2-5 show the internal circuitry of jumpers J1 and J2. Jumper J1 controls the P6 connector, J2 the P5 connector. P5 and P6 represent the DB-25 connectors.

Determine if the equipment requires a DCE, DTE, nonhand-shake, loopback, sequence of events recorder or VAXstation jumper setting configuration. Figures 2-2 through 2-5 show how to set jumpers J1 and J2 for DCE, DTE, nonhandshake and loopback configurations.
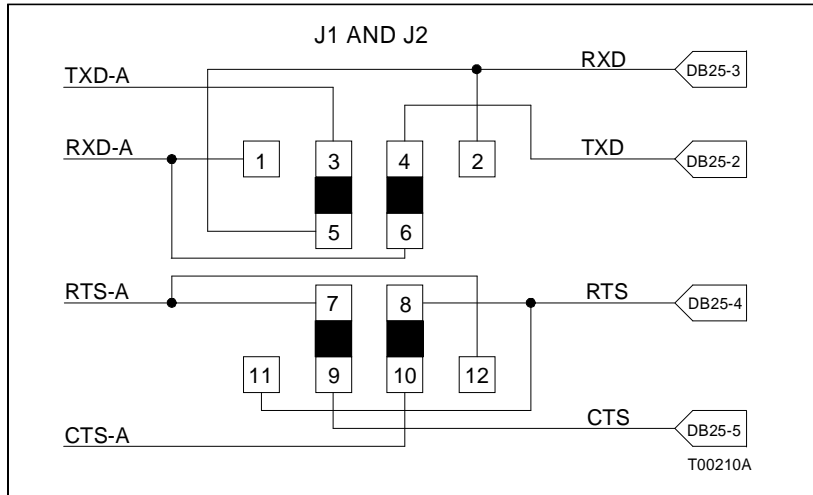
Figure 2-2.   DCE Jumper Configuration
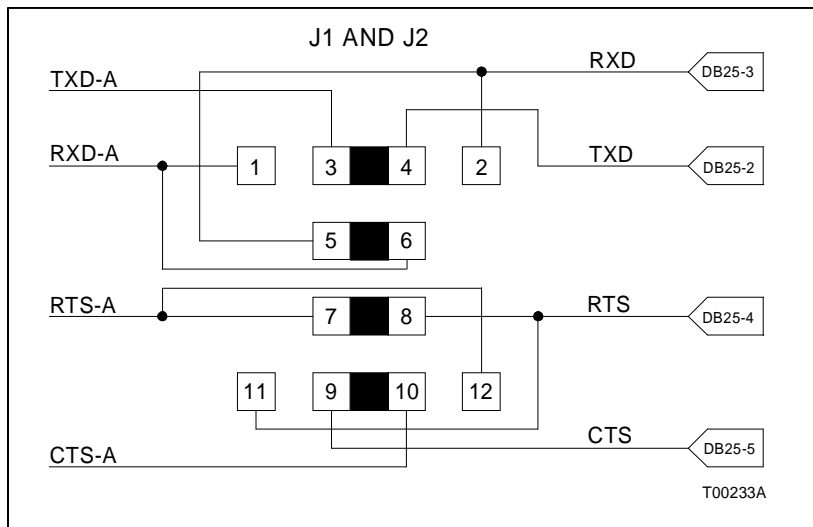
Figure 2-3.   DTE Jumper Configuration
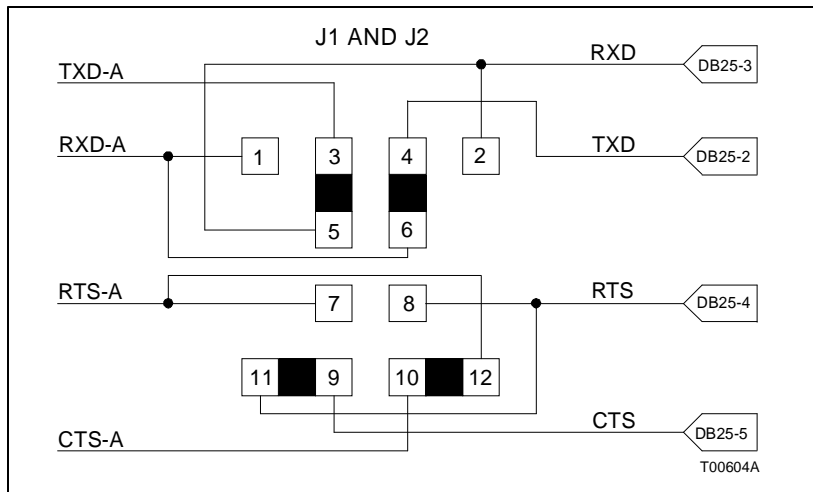
Figure 2-4.   Nonhandshake Jumper Configuration
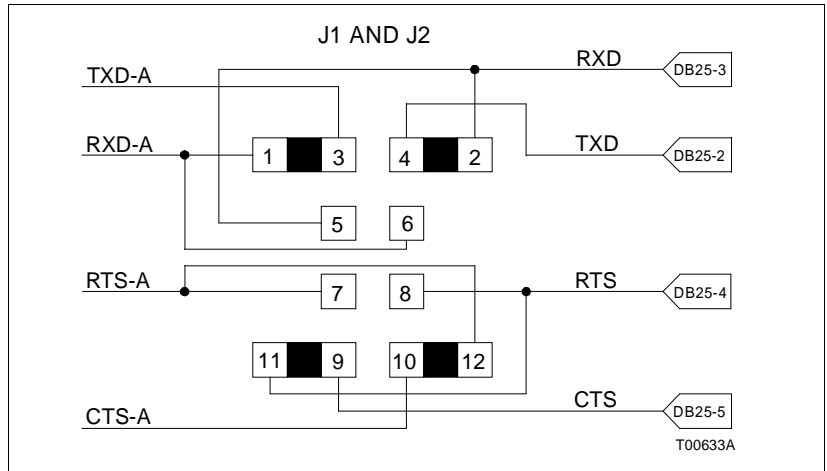
Figure 2-5. Loopback Jumper Configuration

JUMPERS J3 THROUGH J10

Jumper J3 is factory set for normal operation with pins one and two jumpered. In this configuration, the RS-232-C cable shielding (P6, pin one) is connected to chassis ground. See Figure 2-6 for a schematic of jumper J3.

Jumper J4 is factory set for normal operation with pins one and two jumpered. In this configuration, the RS-232-C cable shielding (P5, pin one) is connected to chassis ground. See Figure 2-6 for a schematic of jumper J4.

Jumpers J5 through J10 enable the handshake functions for the communication link and must be set to match the equipment being used. Normally, these jumpers are installed to the +12 VDC supply corresponding to logic zero. Jumpers J3 and J4 connect the cable shield to chassis ground. The cable shield
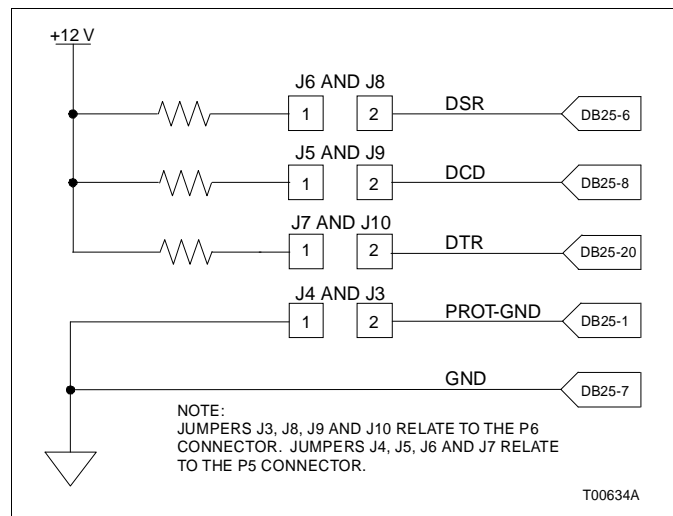
Figure 2-6. Jumpers J3 through J10 Schematic

should be grounded at either end but never both ends. Removing any of these jumpers allows the signal to float. Jumper posts labeled J11 and J12 are provided to store the jumpers when not used for J3 through J10. See Figure 2-6 for a schematic of jumper J4.

JUMPERS J11 AND J12

Jumpers J11 and J12 are storage posts for extra jumpers.

JUMPER J13

Jumper J13 with pins one and two jumpered connects RS-485 cable shielding (P7, pin one) to chassis ground.

JUMPERS J14 AND J15

The DB-25 connector (P6) provides the RS-232-C signal CTS to the MFP module when the jumper is over pins one and two. This is the normal operating position. A digital input can be connected from terminal P8 to the MFP module when the jumper is over pins two and three. Figure 2-7 shows the schematic for jumpers J14 and J15.

JUMPERS J16 AND J17

Jumpers J16 and J17 allow proper routing of the termination unit signals on the termination unit circuit board. These alternate signals are not related to data communications and are reserved for future use. For proper RS-232-C and RS-485 operation, these jumpers must remain over pins one and two. Figure 2-7 shows the schematic for jumpers J16 and J17.
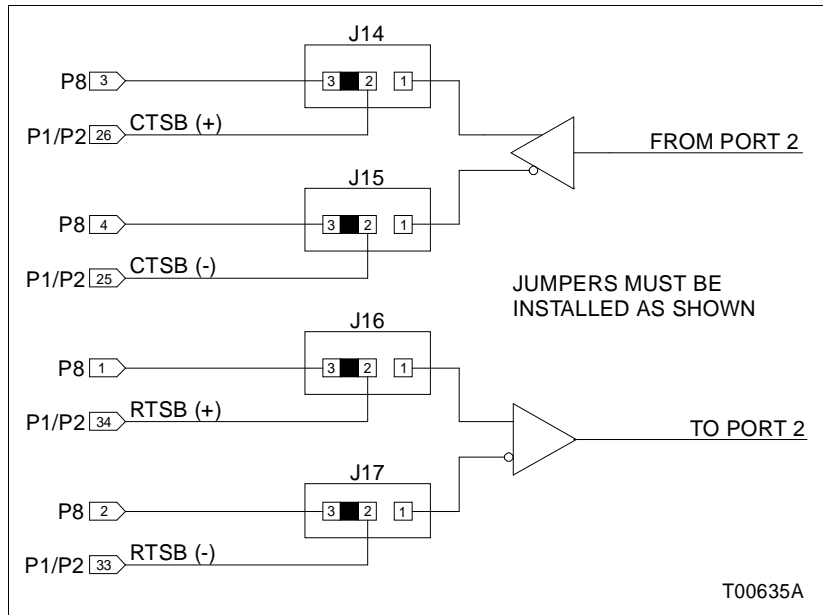
Figure 2-7. Jumpers J14, J15, J16 and J17

JUMPER J18

To configure the terminal serial port for RS-485 operation complete Steps 1 and 2. Figure 2-8 shows the schematic for jumper J18.

1. Jumper pins 1 and 2 of J18.

2. Use P7 as the serial port instead of P5.

NOTE: Port P5 is inactive in this mode. Port P7 has a fixed pin arrangement and is not altered by any jumper. This communication link is not optically isolated. Port P6 remains an RS-232-C port.
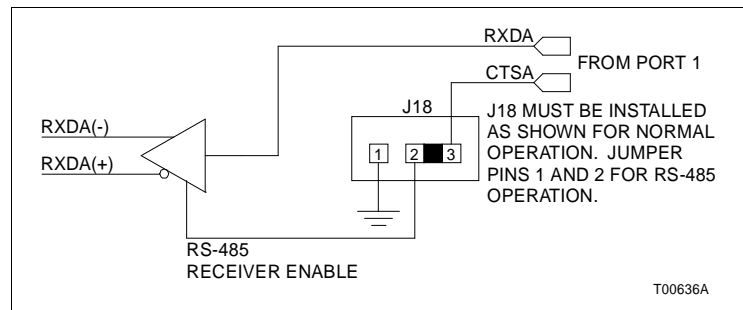
Figure 2-8. Jumper J18 Schematic

Sequence of Events Recorder Jumper Settings

Figures 2-9 through 2-11 show jumpers J1, J2, J8, J9 and J10 configuration for sequence of events recorders.

INSTALLING THE TERMINATION UNIT

The termination unit is ready to install if the jumpers are properly installed and configured, and the fuse is in place.

Mounting the Termination Unit

To mount the termination unit:

1. Insert the tabs of the circuit board into the proper slots of the termination panel standoff as shown in Figure 2-12 and slide the circuit board into position.

2. Secure the termination unit circuit board to the field termination panel with two number 10 self-tapping screws (Figure 2-12).

3. Connect the chassis ground by installing a number 10 self-tapping screw and external star washer in the location (E1) shown in Figure 2-1.

INSTALLING THE TERMINATION UNIT
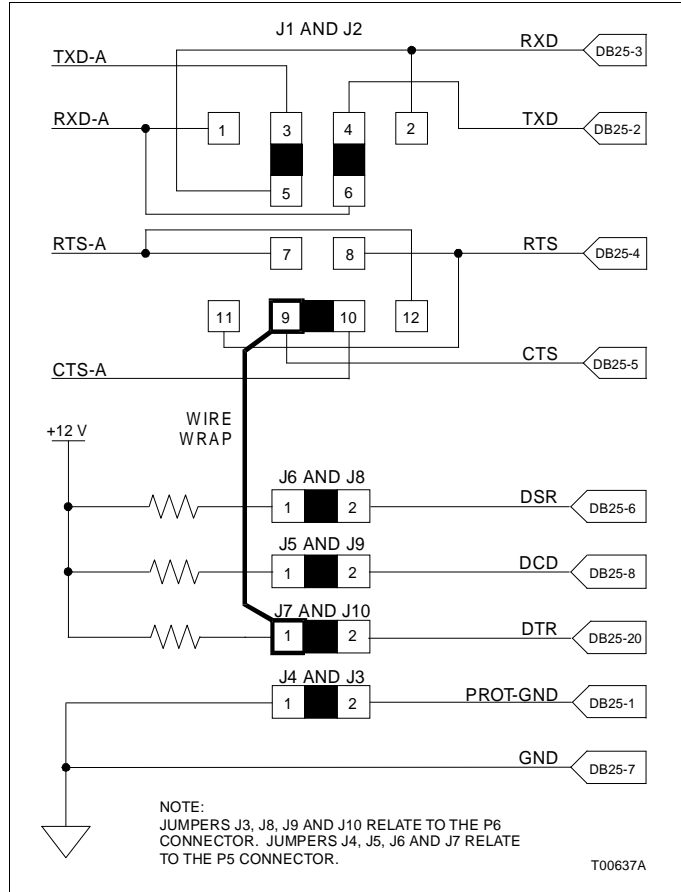
Figure 2-9. Jumper Settings for Rochester 3800

Termination Unit Cables

After mounting the termination unit to the field termination panel, install the termination cables. Table 2-1 lists the cables, their applications, connector assignments and maximum length restrictions. Figure 2-13 shows a diagram of cable connections to redundant MFP modules and a station link. To install the termination unit cable:

> **NOTE:** If the MFP, MPI or IIT module is already installed, pull the module away from the MMU backplane several inches. The card edge of the module must not come into contact with the card edge connector of the termination cable while installing the cable. After installing the cable, slide the module into the MMU unit so that the card edge seats within the card edge connector. Refer to the product instructions for the control modules for more information about the installation or removal of those modules.

1. Install one end of the appropriate cable in the module mounting unit (MMU) backplane slot assigned to the multi-function processor (MFP) module, multi-function processor (MPI) interface or INFI-NET to INFI-NET Transfer (IIT) module.
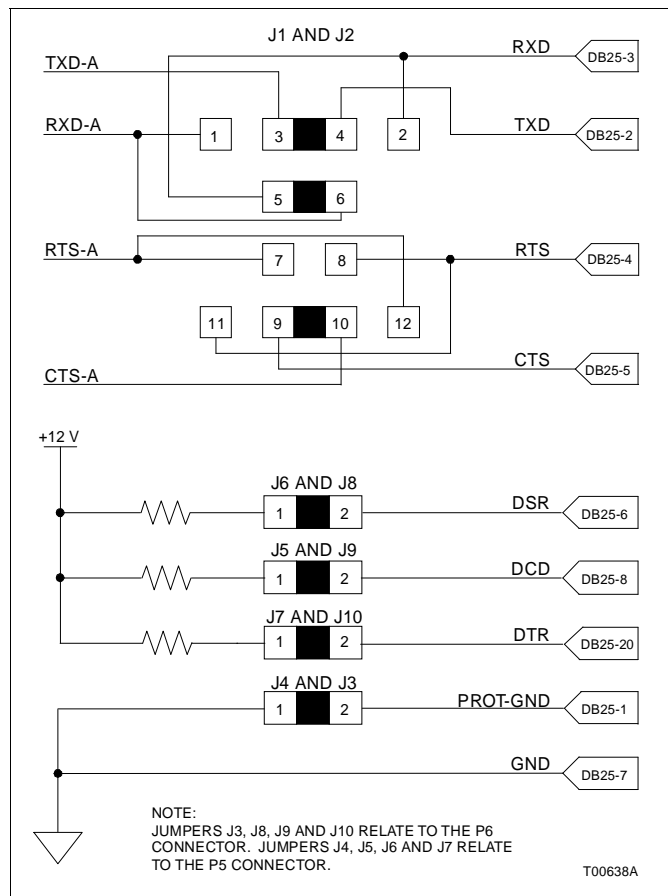
Figure 2-10. Jumper Settings for Rochester ISM

2. Insert the other end of the cable into P1 or P2 of the TMP termination unit. See Figure 2-1 for the location of P1 and P2 on the TMP circuit board.

RS-232-C Communication Cable

The RS-232-C communication cable connects the termination unit to a computer, terminal, printer or modem (Figure 2-13). Table 2-1 lists the requirements of the RS-232-C cable, its application, connector assignments and length restrictions. Figures 2-2 through 2-5 show the DB-25 connector pin assignments. To install the RS-232-C cable:

1. Turn off power to host computer or terminal.

2. Install the RS-232-C cable to the DB-25 connector on the termination unit marked P5 for port 1. Connect the other end of the RS-232-C cable to the external device.
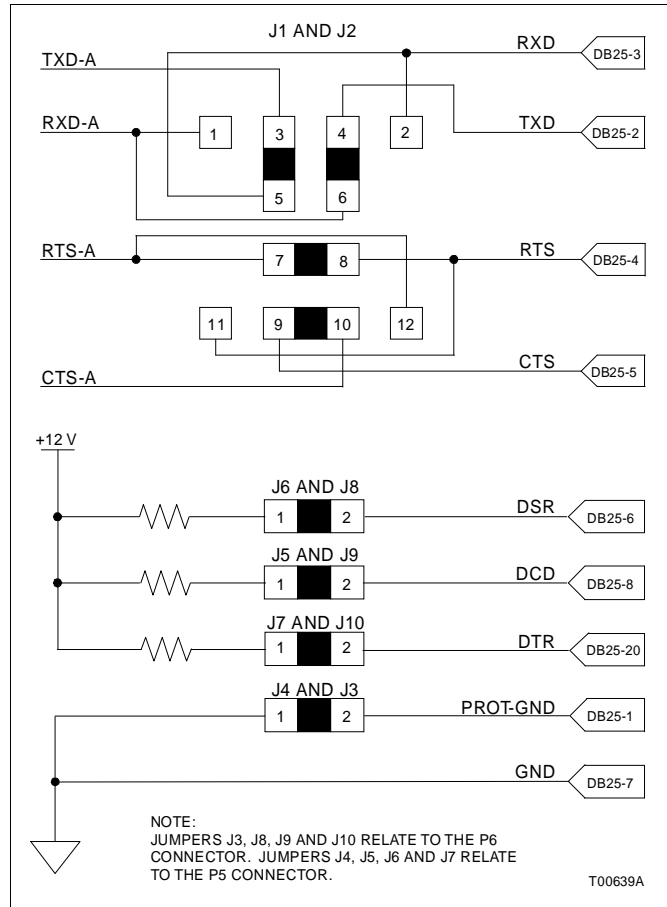
Figure 2-11. Jumper Settings for ESA Controls SER-740

3. Install the RS-232-C cable to the DB-25 connector on the termination unit marked P6 for port 2. Connect the other end of the RS-232-C cable to the external device.

Serial Extension Cable

The serial extension cable connects the TMP termination unit to the NTCS04 termination unit. Refer to Table 2-1 for specific information about the station serial extension cable (KSE). Figure 2-13 shows how the KSE cable connects the TMP termination unit to the TCS unit. To install the serial extension cable:

NOTE: The connectors on this cable are keyed and should easily snap into place when properly aligned with the connector sockets on each circuit board.

1. Connect one end of the serial extension cable to P3 on the TMP unit.

2. Connect the other end of the cable to P4 or P5 on the TCS unit.
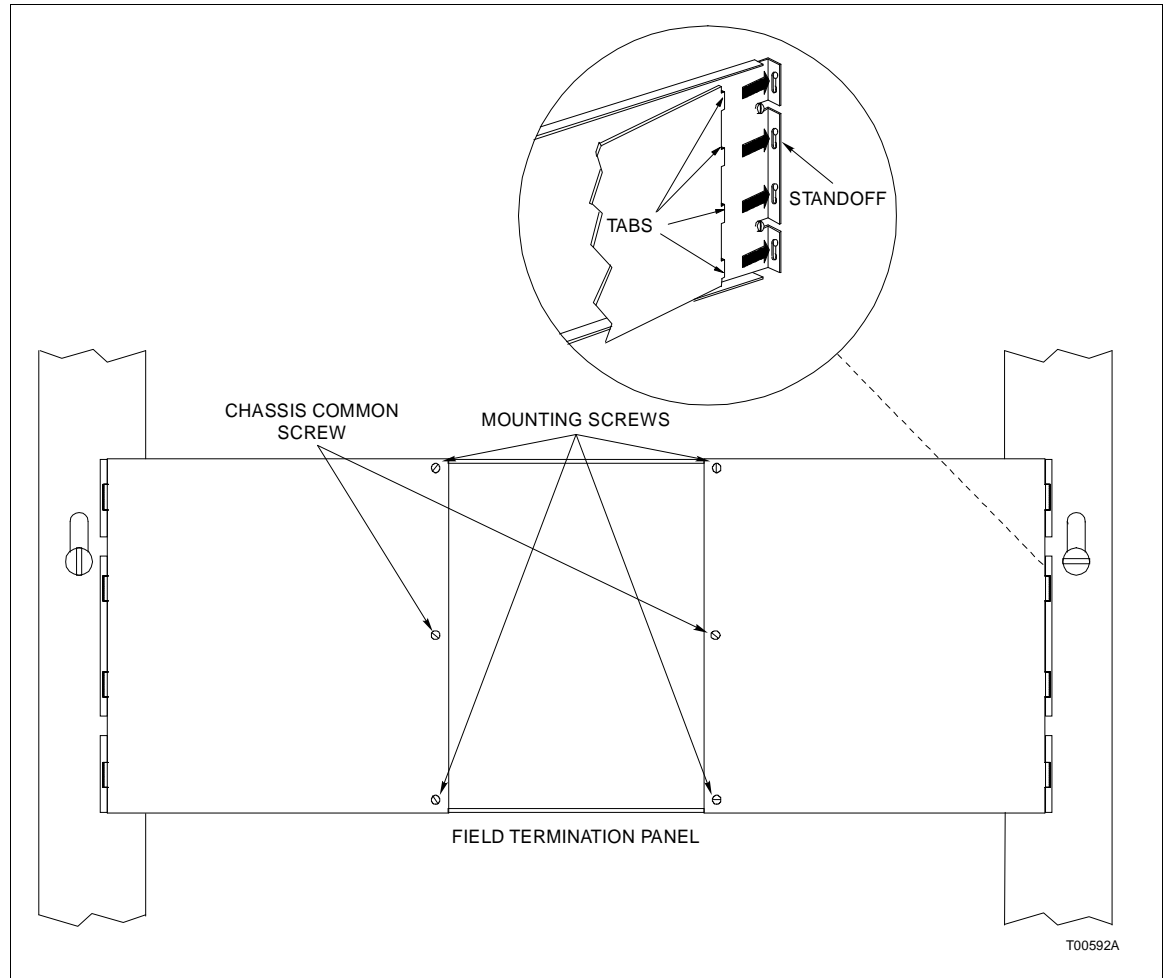
Figure 2-12. Mounting and Securing the Termination Unit on the Field Termination Panel

Table 2-1.   TMP Cable Applications, Connections and Length Requirements

Cable	Connections				Maximum Length Meters (Feet)
	From		**To**		
	Device	**Connector**	**Device**	**Connector**	
HCBL01	DCE or DTE device	DB-25	NTMP01	P5 or P6	15 (50)[1]
NKSE01 or NKSE11	NTMP01 (first station)	P3	NTCS04	P4 or P5	61 (200)
	NTMP01 (second station)	P4			
NKTU01 or NKTU11	NTMP01	P1	Primary module	P3	61 (200)
	NTMP01	P2	Redundant module		

NOTE:
1.The specified maximum length only applies to the HCBL01 cable. The performance of INFI 90 modules does not place a restriction on the maximum length of the RS-232-C cable. Follow industry-wide accepted RS-232-C practices and rules when selecting a suitable RS-232-C cable for your system.
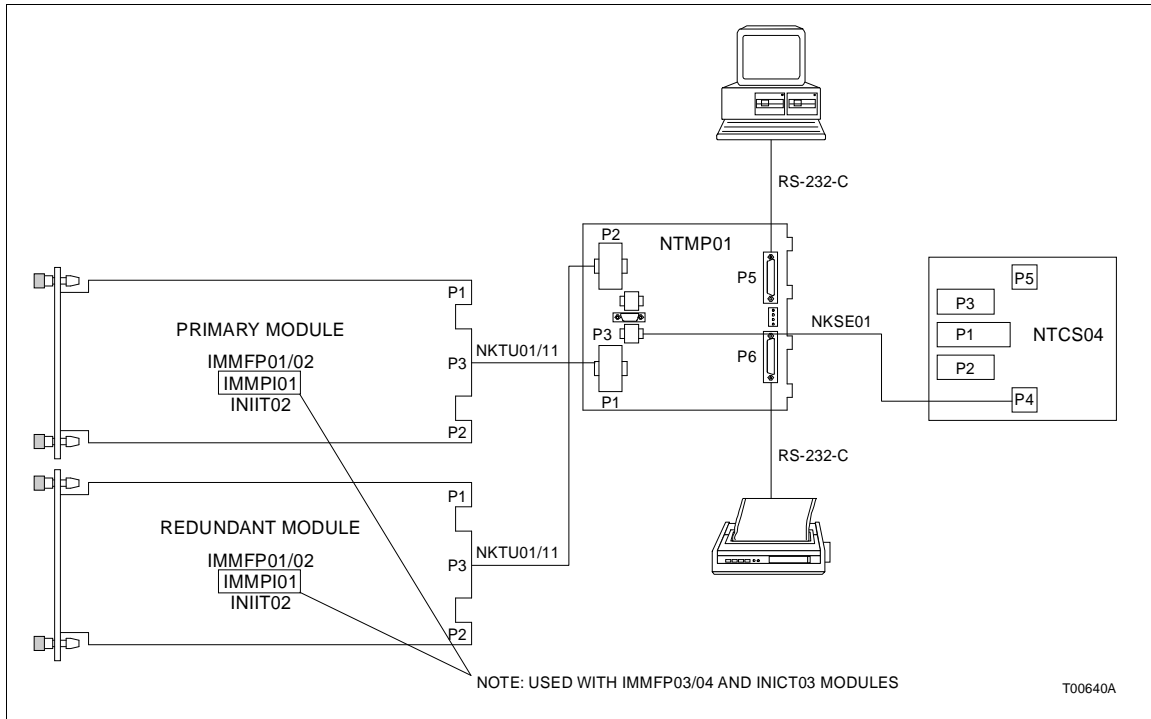
Figure 2-13. Cable Connections for the NTMP01 Termination Unit

POWER WIRING

CAUTION	**It is strongly recommended that all power (cabinet, I/O, etc.) be turned off before doing any wiring. Verify all connections before applying power. Failure to observe these precautions could result in equipment damage.**
ATTENTION	**Il est fortement recommandé, de débrancher toute source d'alimentation (armoire, E/S, etc.) avant d'effectuer du travail au câblage. Vérifiez toutes les connexions avant de rétablir l'alimentation. Ces précautions permettent d'éviter des dommages a l'équipement.**

There is one faston (E2) that connects to +24 VDC and one faston (E3) that connects to I/O common. Figure 2-1 shows their location on the TMP circuit board.

To connect power to the termination unit in a system using modular power supplies:

1. Attach a 14 AWG wire from a source of +24 VDC within the cabinet to the E2 faston on the TMP termination unit.

2. Attach a 14 AWG wire from the I/O common bus bar at the bottom of the cabinet to the E3 faston of the TMP termination unit.

The NTMP01 termination unit is ready for operation if:

1. The fuse is installed.

2. The jumpers are installed for the correct communication application.

3. The circuit board is mounted on the field termination panel.

4. All required cables are connected to the termination unit.

5. Power is connected and applied to the termination unit.

SECTION 3 - MAINTENANCE

INTRODUCTION

WARNING	Wear eye protection whenever working with cleaning solvents. When removing solvents from printed circuit boards using compressed air, injury to the eyes could result from splashing solvent as it is blown off the printed circuit board.\
AVERTISSEMENT	Portez toujours des lunettes de protection lorsque vous utilisez des solvants de nettoyage. L'air comprimé servant à enlever le solvant des cartes de circuits imprimés provoque des éclaboussures qui risquent d'atteindre les yeux.

The reliability of any stand-alone product or control system is affected by the maintenance of the equipment. Bailey Controls Company strongly recommends that all equipment users practice a preventive maintenance program that will keep the equipment operating at an optimum level.

This section presents procedures that the customer should be able to perform on-site. These preventive maintenance procedures should be used as guidelines to assist you in establishing good preventive maintenance practices. Select the minimum steps required to meet the cleaning needs of your system.

Personnel performing preventive maintenance should meet the following qualifications.

Should be qualified electrical technicians or engineers that know the proper use of test equipment.

Should be familiar with the NTMP01 Multi-Function Processor Termination Unit (TMP), have experience working with process control systems, and know what precautions to take when working on live AC systems.

PREVENTIVE MAINTENANCE SCHEDULE

Table 3-1 is the preventive maintenance schedule for the TMP termination unit. The table lists the preventive maintenance tasks in groups according to their specified maintenance interval. Some tasks in Table 3-1 are self explanatory. Instructions for tasks that require further explanation are covered under *PREVENTIVE MAINTENANCE PROCEDURES*. *Do not* attempt to replace discrete components on the termination unit.

> **NOTE:** The preventive maintenance schedule is for general purposes only. Your application may require special attention.

Table 3-1. *Preventive Maintenance Schedule*

Task	Frequency
Check the cabinet air filters. Clean or replace them as necessary. Check the air filter more frequently in excessively dirty environments.	3 months
Check cabinet and termination unit for dust. Clean as necessary using an antistatic vacuum.	
Check all signal, power and ground connections within the cabinet and verify that they are secure. See procedure.	
Check circuit board and cable connections, giving particular attention to power contacts. Clean as necessary. See procedure.	12 months
Complete all tasks in this table.	Shutdown

EQUIPMENT/TOOLS REQUIRED

Following are the tools and equipment required for maintenance procedures.

- Antistatic vacuum.
- Clean, lint free cloth.
- Compressed air.
- Bladed screwdriver suitable for terminal blocks.
- Foam tipped swab.
- Isopropyl alcohol (99.5% electronic grade).
- Natural bristle brush.
- Small needle nose pliers.

PREVENTIVE MAINTENANCE PROCEDURES

This section covers tasks from Table 3-1 that require specific instruction or further explanation. The tasks and instructions covered are:

- Printed circuit board cleaning.
- How to check signal, power and ground connections.

Printed Circuit Board Cleaning

There are several circuit board cleaning procedures in this section. These procedures cover circuit board cleaning and washing and cleaning connectors. Use the procedures that meet the needs of each circuit board. Remove all dust, dirt, oil, corrosion or any other contaminant from the circuit board.

Do all cleaning and handling of the printed circuit boards at static safe work stations. Always observe the steps under **SPECIAL HANDLING** in Section 2 when handling printed circuit boards.

General Cleaning and Washing

If the printed circuit board needs minor cleaning remove dust and residue from the printed circuit board surface using clean, dry, filtered compressed air or an antistatic vacuum cleaner.

Another method of washing the printed circuit board is:

1. Clean the printed circuit board by spraying or wiping the board with a foam tipped swab wetted in isopropyl alcohol (99.5% electronic grade).

2. When the circuit board is clean, remove excess solvent by using compressed air to blow it free of the circuit board.

Checking Connections

Check all signal wiring, power and ground connections within the cabinet to verify their integrity. When checking connections, always turn a screw, nut or other fastening device in the direction to tighten only. If the connection is loose, it will be tightened. If the connection is tight, the tightening action will verify that it is secure. There must not be any motion done to loosen the connection.

> **NOTE:** Bailey recommends this preventive maintenance task be performed during power supply preventive maintenance while the power to the cabinet is off.

1. Verify that all field wiring connections are secure.

2. Check all cable connections.

3. Check power faston connections. If loose, slightly squeeze with small needle nose pliers to provide a snug fit.

SECTION 4 - REPAIR/REPLACEMENT PROCEDURES

INTRODUCTION

Repair procedures are limited to fuse and termination unit replacement. If the multi-function processor termination unit (TMP) fails, remove it and replace it with another one. Table 4-1 lists the recommended spare parts.

FUSE REPLACEMENT

If the fuse (F1) opens, replace it with a fuse having an equivalent rating. Table 4-1 describes the fuse and lists its Bailey part number. To replace a fuse:

1. Turn off power to the cabinet.
2. Remove the blown fuse from its holder (F1).
3. Replace the blown fuse with a 1.0 A/250 VDC fuse.
4. Turn on power to the cabinet.

Table 4-1. Recommended Spare Parts List

Description	Part Number
Fuse, 1.0 A, 250 V	194776A11001
Jumper	1946984A1

TERMINATION UNIT REPLACEMENT

If you determine that the TMP termination unit is faulty, replace it with a new one. ***Do not*** try to repair the unit; replacing components may affect the unit performance and certification. When replacing a termination unit, observe the special handling guidelines listed in Section 2.

CAUTION	**Remove a module from its assigned slot before installing or removing a cable assigned to that slot. Failure to do so could result in damage to the module.**
ATTENTION	**Avant de retirer ou de brancher un câble, retirez le module logé dans la coulisse correspondante. Autrement, le module risque d'être endommagé.**

NOTE: Turn off power to the field devices before removing the RS-232-C cables from the TMP unit.

Follow Steps 1 through 17 to replace the termination unit.

1. If possible, turn off power to the cabinet, then disconnect the +24 VDC and I/O common wiring from the E2 and E3 fas-

ton connectors of the termination unit. Mark the cables according to their terminal assignment as you remove them.

2. If there is a serial extension cable (station link) connected, disconnect it from the P3 connector on the termination unit.

3. Remove the RS-232-C or RS-485 cables from the DB connectors on the termination unit. Mark the cables according to their connector assignment as you remove them.

4. Verify that any control module connected to the termination unit has been pulled out of its cable connection on the MMU backplane.

5. Remove the termination unit cables from the P1 and P2 connectors on the termination unit. Mark the cables according to their connector assignment as you remove them.

6. When all the cables are removed from the termination unit, remove the 2 mounting screws and the chassis ground screw with star washer at E1 and remove the termination unit from the field termination panel.

7. Verify that the jumper settings on the replacement termination unit are the same as the dipshunt settings on the faulty termination unit.

8. Verify that the fuse is installed on the replacement termination unit.

9. Insert the tabs of the replacement termination unit into its slot on the field termination panel and as shown in Figure 2-12 and slide the circuit board into position.

10. Secure the termination unit circuit board to the field termination panel with the 2 mounting screws and chassis grounding screw (E1). Be sure to use the star washer with the grounding screw.

11. Connect the termination unit cables to their assigned connector on the termination unit.

12. Connect the RS-232-C and RS-485 cables to their assigned DB connectors on the termination unit.

13. Connect the serial extension cable to P3 on the termination unit.

14. Connect the +24 VDC and common wiring to the E2 and E3 faston connectors of the termination unit.

15. Push on the faceplate of the control module to fully insert it into its module mounting unit slot. The module should be seated in the termination unit cable at the rear of the MMU card cage when fully inserted.

16. After all the cables have been replaced, return power to the computer, modem or diagnostic terminal.

17. Return power to the cabinet if it was off during the replacement procedure.

SECTION 5 - SUPPORT SERVICES

INTRODUCTION

Bailey Controls Company is ready to help in the use, application and repair of its products. Contact the nearest sales office to make requests for sales, applications, installation, repair, overhaul and maintenance contract services.

REPLACEMENT PARTS AND ORDERING INFORMATION

When making repairs, order replacement parts from a Bailey sales office. Provide the following information:

1. Part description, part number and quantity.

2. Model and serial numbers (if applicable).

3. Bailey instruction manual number, page number and reference figure that identifies the part.

Order parts without commercial descriptions from the nearest Bailey Controls Company sales office.

TRAINING

Bailey Controls Company has a modern training facility available for training your personnel. On-site training is also available. Contact a Bailey Controls Company sales office for specific information and scheduling.

TECHNICAL DOCUMENTATION

Additional copies of this manual, or other Bailey Controls Company manuals, can be obtained from the nearest Bailey Controls Company sales office at a reasonable charge.

APPENDIX A - IMMFP01 AND IMMFP02 MULTI-FUNCTION PROCESSOR

INTRODUCTION

The IMMFP01 and IMMFP02 Multi-Function Processor Modules have two configurable dipswitches and five jumpers. Figure A-1 shows the dipswitch and jumper locations. The dipswitches have eight positions. Dipswitch SW3 sets the module address. Dipswitch SW4 sets the module options and special operations. Tables A-1, A-2, and A-3 list the dipswitch settings.

Jumpers J1 through J4 are factory set with pin one and pin two jumpered. Do not change J1 through J4 jumper settings. Jumper J5 disconnects the -30 VDC supplied in earlier Network 90 systems from the MFP module. Jumper J5 is factory set with pin one and pin two jumpered. This setting allows the module to function in systems with Network 90 power (-30 VDC supplied to modules). Connect pin two and pin three together for proper Controlway operation. The two unlabeled jumper pins located at the front of the board are for Bailey Controls Company development personnel usage only. Do not jumper these pins.
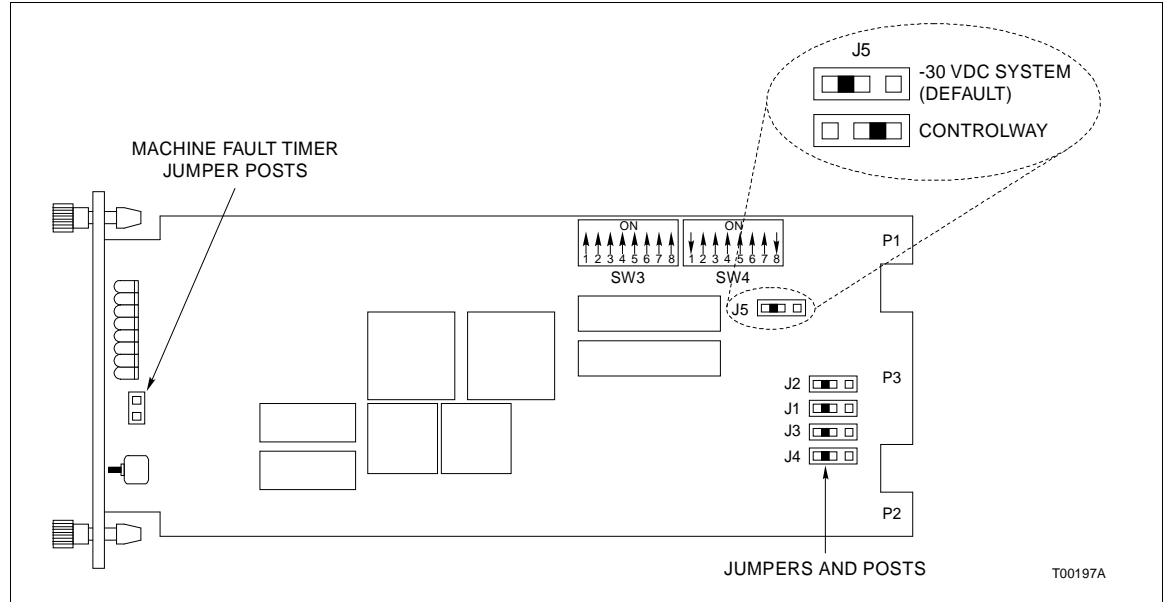

Figure A-1. IMMFP01/02 Module Layout

Table A-1. IMMFP01/02 Dipswitch SW3
Module Address Settings

Address Example	Dipswitch Position (Binary Value)							
	1 (128)	2 (64)	3 (32)	4 (16)	5 (8)	6 (4)	7 (2)	8 (1)
7	Y	0	X	0	0	1	1	1
15	Y	0	X	0	1	1	1	1
31	Y	0	X	1	1	1	1	1

NOTES: 0 = CLOSED or ON, 1 = OPEN or OFF.
1 Y = 0 for normal operation, 1 for special operations (Table A-3).
2. X = 0 for Controlway (1 Mbaud), 1 for module bus (83.3 kbaud).
3. Position 2 is reserved. Do not change the setting.

Table A-2. IMMFP01/02 Dipswitch SW4 Option Settings

Position	Setting	Function
1	0	Perform special operations.
	1	Inhibit special operations. Refer to Table A-3.
2	0	Inhibit on-line configuration.
	1	Perform on-line configuration.
3	0	Perform NVRAM checksum routine.
	1	Inhibit NVRAM checksum routine. This setting is used by development personnel and should never be used for normal operation. The checksum provides additional module integrity and should be used whenever the module is controlling a process.
4	0	Perform ROM checksum routine.
	1	Inhibit ROM checksum routine. This setting is used by development personnel and should never be used for normal operation. The checksum provides additional module integrity and should be used whenever the module is controlling a process.
5	0	Reserved for future use.
6	0	Normal.
	1	Compact configuration. Moves configured blocks to the top of NVRAM which moves free space to the bottom (this is known as compacting). Leave switch OPEN and insert module into MMU. When front panel LEDs 1, 2 and 4 are ON, remove the module, put the switch in the CLOSED position and insert the module. The MFP goes into the con-figure mode and compacts the configuration.
		Leaving this option enabled causes the configuration to be compacted every time the module is reset, thereby increasing the start-up time. This increase can be substantial if the configuration is large. Therefore, do not leave this option enabled longer than necessary.
7	0	Normal.
	1	Initialize NVRAM (erase configuration) - leave switch OPEN and insert the module into the MMU. When front panel LEDs 1, 2 and 4 are ON, remove the module, put the switch in the CLOSED position and insert the module. The module is now ready to be configured. This switch must be CLOSED for normal operation.
8	0	Primary MFP module.
	1	Redundant MFP module. When redundancy is used, positions 1 through 7 on the redundant MFP module are set the same as the primary MFP module. Position 8 is set to 0 for the primary MFP module and to 1 for the secondary MFP module.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

INTRODUCTION

Table A-3. IMMFP01/02 Dipswitch SW4 Special Operation Settings

Special Operation	Dipswitch Position (Binary Value)								Description
	1 (128)	2 (64)	3 (32)	4 (16)	5 (8)	6 (4)	7 (2)	8 (1)	
0	1	0	0	0	0	0	0	0	Reserved. Do not use. If you use this setting, your module may not operate properly.
1	1	0	0	0	0	0	0	1	Reserved for future option.
2	1	0	0	0	0	0	1	0	Initialize NVRAM configuration space.
3	1	0	0	0	0	0	1	1	Reserved. Do not use. If you use this setting, your module may not operate properly.
4	1	0	0	0	0	1	0	0	INFI-NET protocol enable. This allows the MFP module to take advantage of INFI-NET/Superloop capabilities.
5	1	0	0	0	0	1	0	1	Permit segment modification. Allows change to segment scheme configured with function code 82, specification S1.
6	1	0	0	0	0	1	1	0	Enable time stamping. This operation instructs the MFP module to generate time information with point data. It is applicable only to INFI-NET/Superloop systems.
7	1	0	0	0	0	1	1	1	MPI recognition flag.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

APPENDIX B - IMMFP03 MULTI-FUNCTION PROCESSOR

INTRODUCTION

The IMMFP03 Multi-Function Processor Module has four configurable dipswitches, one socket and five jumpers. Each dipswitch has eight positions. Figure B-1 shows the location of dipswitches and jumpers on the multi-function processor (MFP) circuit board. Dipswitch UUB0 sets the module address, bus speed and operation mode (normal/diagnostic). Dipswitch UMB1 sets module options and enables special operations. Tables B-1 through B-6 list the dipswitch setting descriptions.

The HW SETUP socket defines the number of SRAM banks installed and selects wait states for ROM, NVRAM and SRAM. Table B-7 shows the jumper settings for the HW SETUP socket.

Table B-8 shows the jumper settings. Jumpers J1, J2, J4 and J5 define module functions and operation. Their settings:

- Determine if the diagnostic RS-232-C ports operate as DCE or DTE.

- Define the density of the SRAM device installed on the module.

- Enable the machine fault timer (MFT).

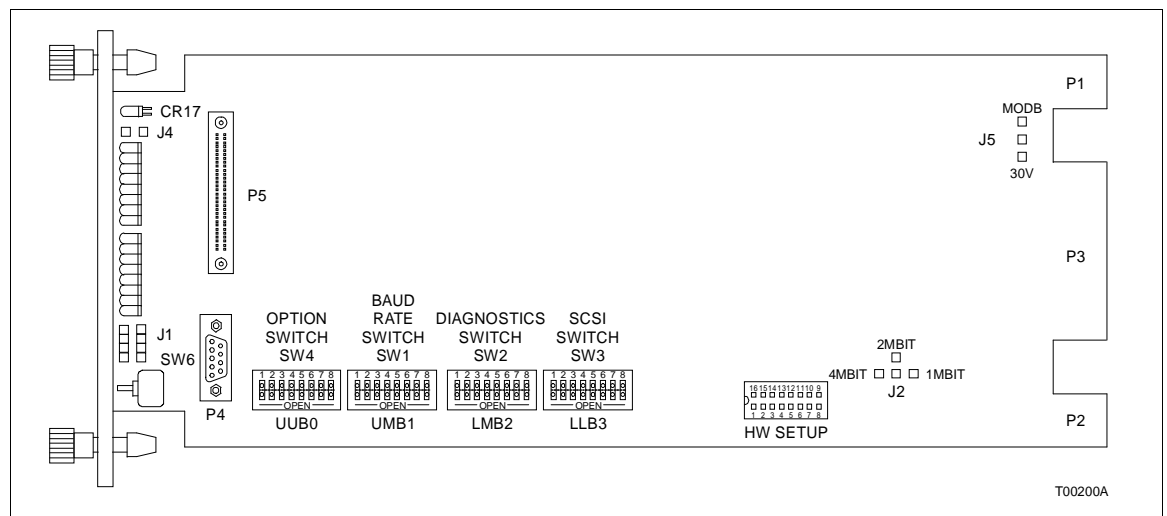- Disengage -30 VDC from the module when installing it in a module mounting unit (MMU) that uses -30 VDC.

Figure B-1. IMMFP03 Module Layout

Table B-1. MMFP03 Dipswitch UUB0 Module Address Settings

Address Example	Dipswitch Position (Binary Value)							
	1 (128)	2 (64)	3 (32)	4 (16)	5 (8)	6 (4)	7 (2)	8 (1)
7	Y	0	X	0	0	1	1	1
15	Y	0	X	0	1	1	1	1
31	Y	0	X	1	1	1	1	1

NOTES: 0 = CLOSED or ON, 1 = OPEN or OFF.
1 Y = 0 for normal operation, 1 for special operations (Table A-3).
2.X = 0 for Controlway (1 Mbaud), 1 for module bus (83.3 kbaud).
3.Position 2 is reserved. Do not change the setting.

Table B-2. IMMFP03 Dipswitch UMB1 Options Settings

Position	Setting	Function
1	0	Disable special operations.
	1	Enable special operations. Refer to Table B-3.
2	0	Disable on-line configuration.
	1	Enable on-line configuration.
3	0	Enable NVRAM checksum routine.
	1	Disable NVRAM checksum routine. This setting is used by development personnel and should never be used for normal operation. The checksum provides additional module integrity and should be used whenever the module is controlling a process.
4	0	Enable ROM checksum routine.
	1	Disable ROM checksum routine. This setting is used by development personnel and should never be used for normal operation. The checksum provides additional module integrity and should be used whenever the module is controlling a process.
5	0	Enable file system check.
	1	Disable file system check.
6	0	Normal.
	1	Compact configuration. Moves configured blocks to the top of NVRAM which moves free space to the bottom (this is known as compacting). Leave switch OPEN and insert module into MMU. When front panel LEDs 1, 2 and 4 are ON, remove the module, put the switch in the CLOSED position and insert the module. The MFP goes into the configure mode and compacts the configuration.
		Leaving this option enabled causes the configuration to be compacted every time the module is reset, thereby increasing the start-up time. This increase can be substantial if the configuration is large. Therefore, do not leave this option enabled longer than necessary.
7	0	Normal.
	1	Initialize NVRAM (erase configuration) - leave switch OPEN and insert the module into the MMU. When front panel LEDs 1, 2 and 4 are ON, remove the module, put the switch in the CLOSED position and insert the module. The module is now ready to be configured. This switch must be CLOSED for normal operation.
8	0	Primary MFP module.
	1	Redundant MFP module. When redundancy is used, positions 1 through 7 on the redundant MFP module are set the same as the primary MFP module. Position 8 is set to 0 for the primary MFP module and to 1 for the secondary MFP module.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.+

INTRODUCTION

Table B-3. IMMFP03 Dipswitch UMB1 Special Operation Settings

Special Operation	Dipswitch Position (Binary Value)								Description
	1 (128)	2 (64)	3 (32)	4 (16)	5 (8)	6 (4)	7 (2)	8 (1)	
0	1	0	0	0	0	0	0	0	Force module to configure mode.
1	1	0	0	0	0	0	0	1	Reserved for future option.
2	1	0	0	0	0	0-	1	0	Initialize NVRAM configuration space.
3	1	0	0	0	0	0	1	1	Reserved. Do not use. If you use this setting, your module may not operate properly.
4	1	0	0	0	0	1	0	0	INFI-NET protocol enable. This allows the MFP module to take advantage of INFI-NET/Superloop capabilities.
5	1	0	0	0	0	1	0	1	Permit segment modification. Allows change to segment scheme configured with function code 82, specification S1.
6	1	0	0	0	0	1	1	0	Enable time stamping. This operation instructs the MFP module to generate time information with point data. It is applicable only to INFI-NET/Superloop systems.

NOTE:0 = CLOSED or ON, 1 = OPEN or OFF.

Table B-4. IMMFP03 Dipswitch LMB2 Option Settings

Position	Setting	Function
1	0	Enable SCSI halt on failure (default setting).
	1	Disable SCSI halt on failure.
2	0	Not used. Do not change setting.

NOTE:0 = CLOSED or ON, 1 = OPEN or OFF.

Table B-5. IMMFP03 Dipswitch LMB2 SCSI Bus Address Settings

Address	Dipswitch Position (Binary Value)					
	3 (32)	4 (16)	5 (8)	6 (4)	7 92)	8 (1)
7	0	0	0	1	1	1

NOTE:0 = CLOSED or ON, 1 = OPEN or OFF.

Table B-6. IMMFP03 Dipswitch LLB3 Option Settings

Position	Setting	Function	Default Setting
1	—	Not used.	1
2			
3			
4			
5	0	Disable module mounting unit.	1
	1	Enable module mounting unit.	
6	—	Not used.	0
7	0	Disable data cache.	1
	1	Enable data cache.	
8	0	Disable instruction cache.	1
	1	Enable instruction cache.	

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

Table B-7. HW SETUP Socket Settings

Socket Setting	Description
Socket 1 - 16	Insert jumper for IMMFP03 firmware revision E.0. Do not jumper for all other revisions.
Socket 2 - 15	Insert jumper for IMMFP03 firmware revision E.1 and later. Do not jumper for all other revisions.
Socket 3 - 14	Reserved for future use. Do not jumper sockets.
Socket 4 - 13	
Socket 5 - 12	
Socket 6 - 11	
Socket 7 - 10	
Socket 8 - 9	

Table B-8. IMMFP03 Jumper Settings for J1, J2, J4 and J5

Jumper	Setting	Function
J1[1]	Vertical	Sets the RS-232-C diagnostic port to operate as DCE.
	Horizontal	Sets the RS-232-C diagnostic port to operate as DTE.
J2	4-3	1 Mbit SRAM device (128k x 8).
	4-2	2 Mbits SRAM device (256k x 8).
	4-1	4 Mbits SRAM device (512k x 8).
J4	Open	MFT disable jumper. This jumper must remain open for normal operation.
J5	30 VDC	Disconnects Controlway channel B for operation in MMUs that have -30 VDC (early Network 90).
	MODB	Connects Controlway channel B for operation in MMUs that have Controlway capabilities.

NOTE:
1. This feature is used by Bailey service personnel. The J1 setting does not affect the module during normal operation.+

APPENDIX C - IMMPI01 AND IMMPI02 MULTI-FUNCTION PROCESSOR INTERFACE

The multi-function processor interface (MPI) module has two sets of jumpers that select RS-485 handshake signals (RTS/CTS). Figure C-1 shows the jumper locations on the MPI circuit board. Jumpers J1 and J2 must be set as shown in Figures C-2 and C-3.

NOTE: Figure C-1 shows the IMMPI02 auxiliary I/O card. The IMMPI01 auxiliary I/O card does not have a hard disk drive.
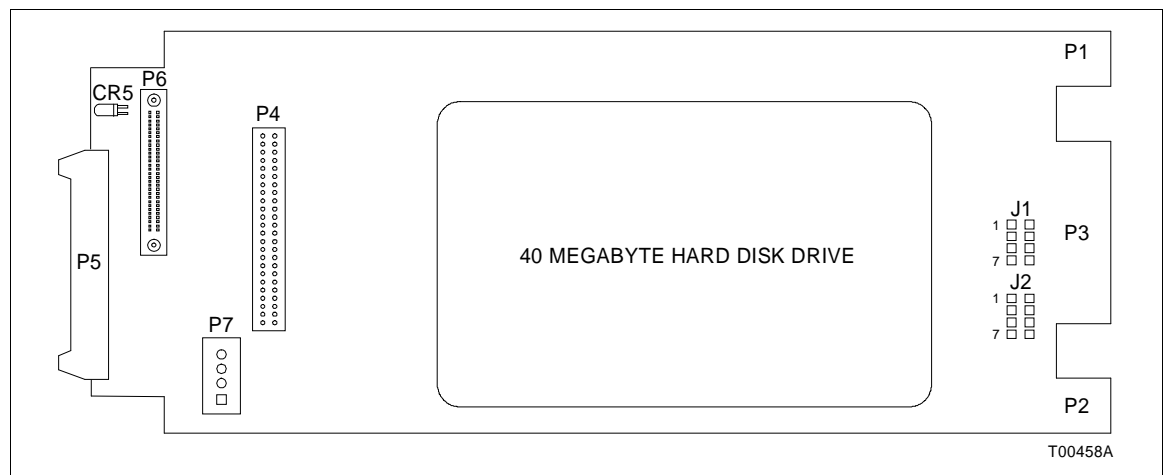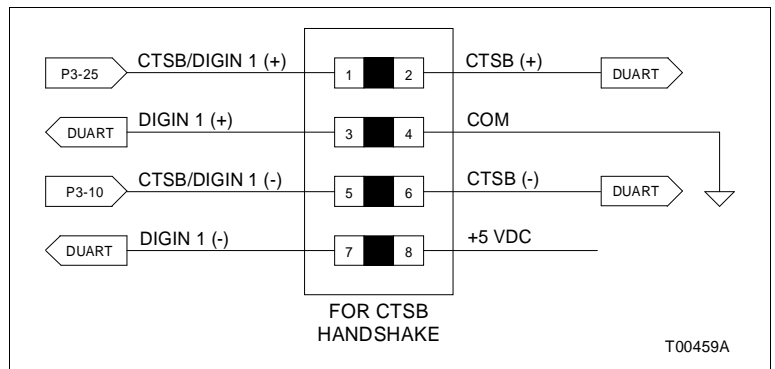

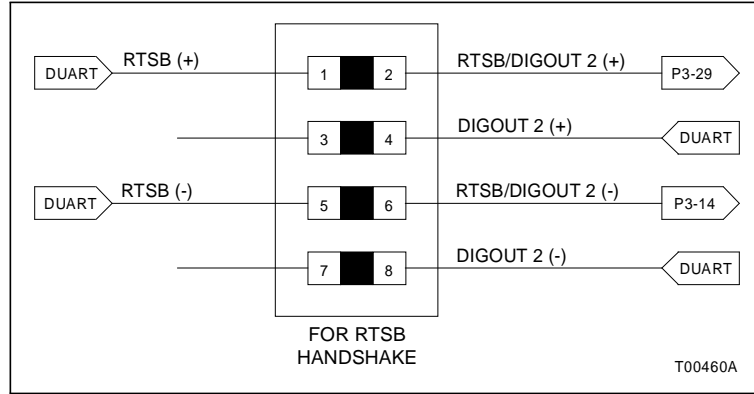*Figure C-1. MPI Module Layout*

Figure C-2. MPI J1 Jumper Setting

Figure C-3. MPI J2 Jumper Setting

APPENDIX D - INIIT02 INFI-NET TO INFI-NET TRANSFER MODULE

INTRODUCTION

Two dipswitches must be set for the INIIT02 INFI-NET to INFI-NET Transfer Module. The dipswitches set the module operating characteristics. Figure D-1 shows the board layout. Tables D-1 and D-2 explain the dipswitch settings. Jumpers J1 through J4 are factory set. Do not change the jumper settings.
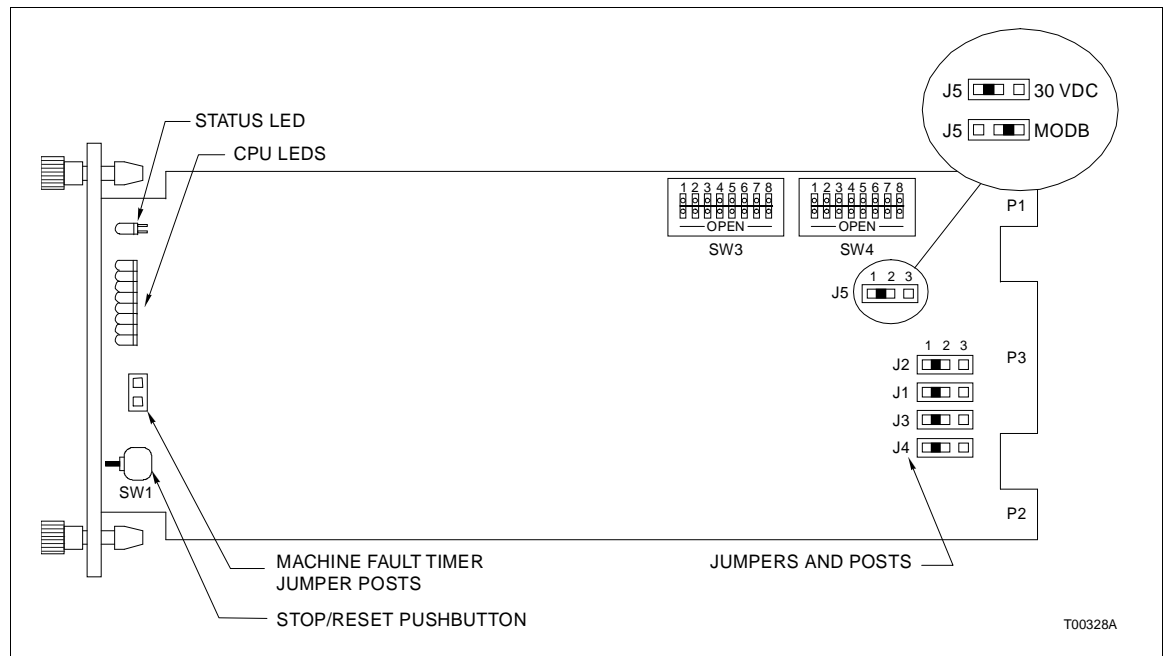

Figure D-1. INIIT02 Module Layout

Table D-1. INIIT02 Dipswitch SW4 Options Settings

Position	Setting	Function
1	0	ROM checksumming enabled.
	1	ROM checksumming disabled.
2	0	RS-232-C port in DCE mode.
	1	RS-232-C port in DTE mode.
3	0	Equipment select output not energized.
	1	Equipment select output energized.

Table D-1. INIIT02 Dipswitch SW4 Options Settings (continued)

Position	Setting	Function
4	0	Port 2 is a data port.
	1	Port 2 is a diagnostic port. If port 2 is connected to a remote INIIT02 (port) module, disconnect it before enabling it as a diagnostic port. Failure of all serial link communication may result if this precaution is not observed.
5/6	0/0	Diagnostic port baud rate is 1.2 kbaud.
	0/1	Diagnostic port baud rate is 2.4 kbaud.
	1/0	Diagnostic port baud rate is 9.6 kbaud.
	1/1	Diagnostic port baud rate is 19.2 kbaud.
7	0	Do not initialize NVRAM.
	1	Initialize NVRAM.
8	0	Not used.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

Table D-2. INIIT02 Dipswitch SW3 Settings

Position	Setting	Function
1	0	Normal operation.
	1	Test/diagnostic mode.
2	0	Not used.
3	0	Controlway speed is 1 Mbaud.
	1	Module bus speed is 83.3 kbaud.
4	0	Not used.
5	0	NVRAM dump on crash disabled (no dump).
	1	NVRAM dump on crash enabled (dump on crash).
6	0	Both rings on same time base.
	1	Separate time bases on rings.
7	0	No redundant module.
	1	Redundant module configured.
8	0	Controlway address 0.
	1	Controlway address 1.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

APPENDIX E - INICT03 INFI-NET TO COMPUTER TRANSFER MODULE

INTRODUCTION

The INICT03 INFI-NET to Computer Transfer Module consists of one circuit board. The board has four dipswitches and four jumpers. The dipswitches select module operation options, serial port communication characteristics and the baud rate. Figure E-1 shows the dipswitch locations. Tables E-1 through E-5 describe the various dipswitches and jumpers.
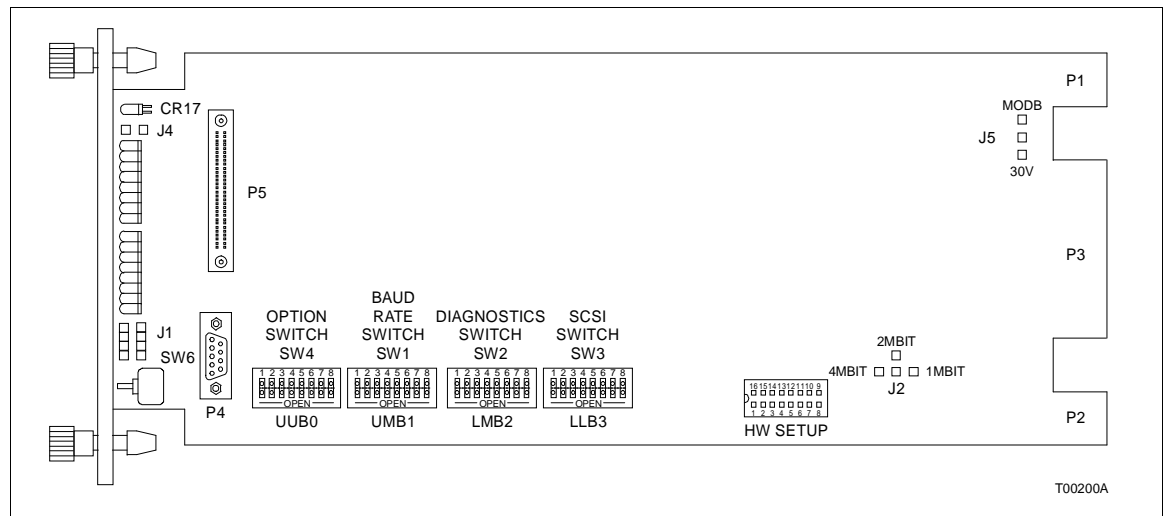

Figure E-1. INICT03 Module CPU Board Layout

Table E-1. INICT03 Dipswitch UUB0 Options Settings

Position	Setting	Function
1	0	ROM checksumming enabled.
	1	ROM checksumming disabled.
2/3	0/0	8 data bits, 1 stop bit, no parity.
	0/1	8 data bits, 1 stop bit, even parity.
	1/0	8 data bits, 1 stop bit, odd parity.
	1/1	8 data bits, 2 stop bits, no parity.
4	0	Port 1 option serial port to host.
	1	Port 1 utility option. If this option is selected, port 1 data characteristics are automatically set to 8 data bits, 1 stop bit, no parity. Otherwise, port 1 data characteristics are set by dipswitch positions 2 and 3.
5	0	Modem password protection disabled.
	1	Modem password protection enabled.

Table E-1. INICT03 Dipswitch UUB0 Options Settings (continued)

Position	Setting	Function
6	0	Port addressing mode disabled.
	1	Port addressing mode enabled. When this option is enabled, the ICT module will expect all commands from the host to send the port address configured through the UTILITIES as the first character of each command.
7	0	Checksumming option disabled.
	1	Checksumming option enabled. When this option is enabled, the ICT module will expect all commands from the host to include a checksum byte as the last character before the carriage return. The ICT module includes a checksum in each reply.
8	0	Not used.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

Table E-2. INICT03 Dipswitch UMB1 Baud Rate Settings

Baud Rate	Terminal Port 1 Position				Printer Port 2 Position				Baud Rate	Terminal Port 1 Position				Printer Port 2 Position			
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
50.0	0	0	0	0	0	0	0	0	1800.0	0	0	0	1	0	0	0	1
75.0	1	0	0	0	1	0	0	0	2000.0	1	0	0	1	1	0	0	1
110.0	0	1	0	0	0	1	0	0	2400.0	0	1	0	1	0	1	0	1
134.5	1	1	0	0	1	1	0	0	3600.0	1	1	0	1	1	1	0	1
150.0	0	0	1	0	0	0	1	0	4800.0	0	0	1	1	0	0	1	1
300.0	1	0	1	0	1	0	1	0	7200.0	1	0	1	1	1	0	1	1
600.0	0	1	1	0	0	1	1	0	9600.0	0	1	1	1	0	1	1	1
1200.0	1	1	1	0	1	1	1	0	19200.0	1	1	1	1	1	1	1	1

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

Table E-3. INICT03 Dipswitch LMB2 Diagnostics Settings

Position	Setting	Function
1	0	NIS handshake time-out enabled.
	1	NIS handshake time-out disabled.
2	0	NIS diagnostic disabled.
	1	NIS diagnostic enabled.
3	0	INFI-NET diagnostic utilities disabled.
	1	INFI-NET diagnostic utilities enabled.
4	0	Hardware diagnostics disabled.
	1	Hardware diagnostics enabled.
5	0	Not used.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.

Table E-4. INICT03 Dipswitch LLB3 SCSI Port Settings

Position	Setting	Function
1	0	SCSI port disabled.
	1	SCSI port enabled.
2/3/4	0/0/0	Address = 0.
	0/0/1	Address = 1.
	0/1/0	Address = 2.
	0/1/1	Address = 3.
	1/0/0	Address = 4.
	1/0/1	Address = 5.
	1/1/0	Address = 6.
	1/1/1	Address = 7.
5	0	SCSI parity checking disabled.
	1	SCSI parity checking enabled.
6/7/8	1	Not used.

NOTE: 0 = CLOSED or ON, 1 = OPEN or OFF.+

Table E-5. INICT03 Jumpers J1, J2, J4 and J5 Settings

Jumper	Setting	Function
J1[1]	Vertical	Sets the RS-232-C diagnostic port to operate as DCE.
	Horizontal	Sets the RS-232-C diagnostic port to operate as DTE.
J2	4-3	1 Mbit SRAM device (128k x 8).
	4-2	2 Mbits SRAM device (256k x 8).
	4-1	4 Mbits SRAM device (512k x 8).
J4	Open	MFT disable jumper. This jumper must remain open for normal operation.
J5	30 V	Disconnects Controlway for operation in MMUs that have -30 VDC (early Network 90).
	MODB	Connects Controlway channel B for operation in MMUs that have Controlway (INFI 90).

NOTE:
1. This feature is used by Bailey service personnel. The J1 setting does not affect the module during normal operation.+

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