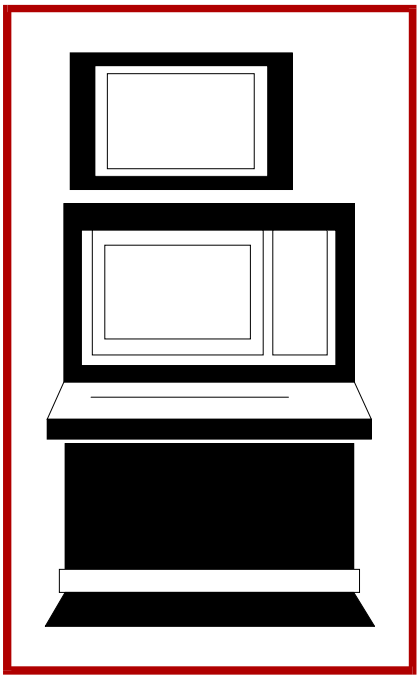
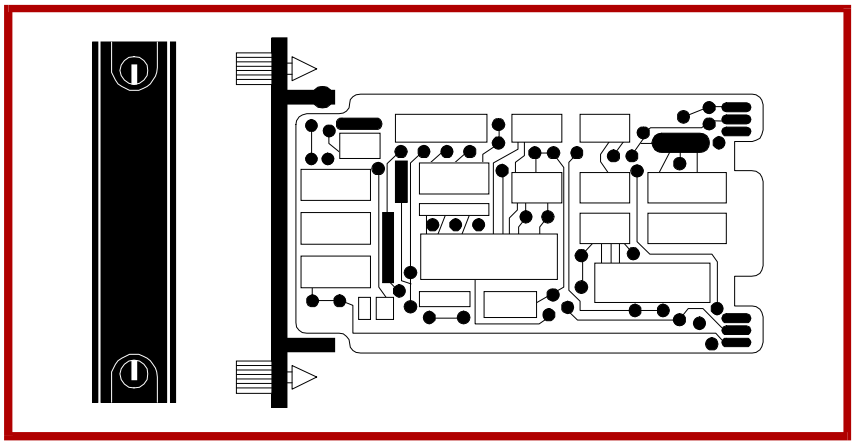
Bailey® infi 90®

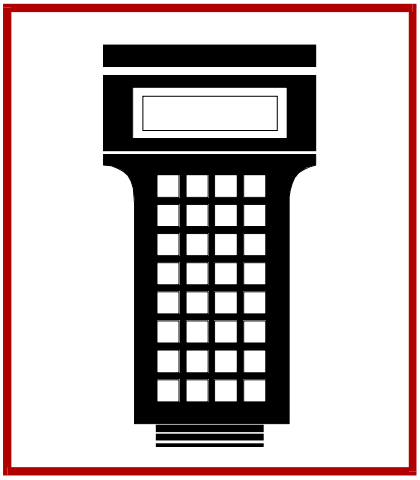
E96-417

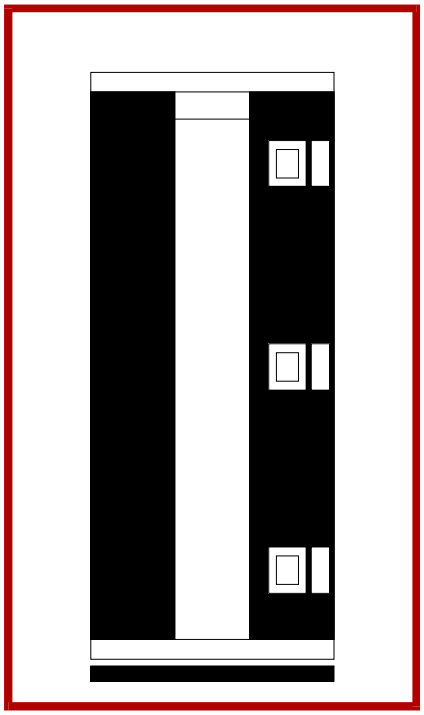
Instruction

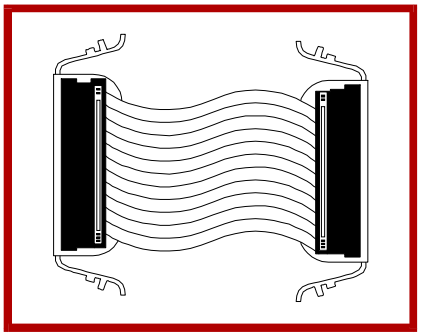
Serial Interface Termination Unit
(NTCU01)

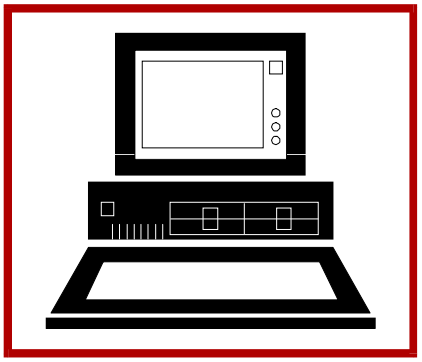












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WARNING notices as used in this instruction apply to hazards or unsafe practices that could result in personal injury or death.

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.

WARNING

INSTRUCTION MANUALS

DO NOT INSTALL, MAINTAIN, OR OPERATE THIS EQUIPMENT WITHOUT READING, UNDERSTANDING, AND FOLLOWING THE PROPER **Elsag Bailey** INSTRUCTIONS AND MANUALS; OTHERWISE, INJURY OR DAMAGE MAY RESULT.

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Preface

The NTCU01 unit terminates the connection of a computer, modem, or diagnostic terminal to a INSIM01 Serial Interface Module. It provides a place to connect an RS-232-C cable from the computer or terminal.

This manual explains how to install and use the NTCU01 unit. It explains how to install the cables and mount the termination unit.

List of Effective Pages

Total number of pages in this instruction is 28, consisting of the following:

Page No.	Change Date
Preface	Original
List of Effective Pages	Original
iii through v	Original
1-1 through 1-5	Original
2-1 through 2-6	Original
3-1	Original
4-1	Original
5-1	Original
A-1 through A-5	Original
B-1 through B-3	Original
Index-1	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. **Special Handling** This module uses Electrostatic Sensitive Devices (ESD).

Sommaire de Sécurité

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. **Precautions de manutention** Ce module des composantes sensibles aux decharges electro-statiques.

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SECTION 1 - INTRODUCTION

OVERVIEW

The NTCU01 Serial Interface Termination Unit provides a termination point for a INSIM01 Serial Interface Module or optionally to a IMSPM01 Serial Port Module. The NTCU01 termination unit has two DB-25 connectors so that a diagnostic terminal (port one) and a computer or modem (port two) can connect to it through RS-232-C cables. The serial interface termination unit (TCU) connects to the serial interface module (SIM) or serial port module (SPM) through a termination cable. Figure 1-1 shows an example of the TCU termination unit being used to connect a diagnostic terminal to the SPM module.

INTENDED USER

Technicians should read this manual before installing the TCU termination unit. Do not put the TCU termination unit into operation until you read and understand this instruction.

HARDWARE DESCRIPTION

The TCU unit mounts on a NFTP01 Field Termination Panel, inside the INFI 90® cabinet. It is a printed circuit board that consists of:

- Two DB-25 connector sockets.
- Cable connector.
- Current limiting resistors.
- Faston tabs for system common.

HARDWARE APPLICATION

The NTCU01 unit provides a place to connect two RS-232-C communication cables from a computer, modem or diagnostic terminal to the serial port module and the serial interface module. It is a passive device that channels the communication signals to each module.

The INSIM01 module is part of the INPCI01 Plant Loop to Computer Interface. It enables a host computer to communicate with any node on the plant loop. Interface software enables the computer to acquire data, do process monitoring, load control strategies and configure modules.

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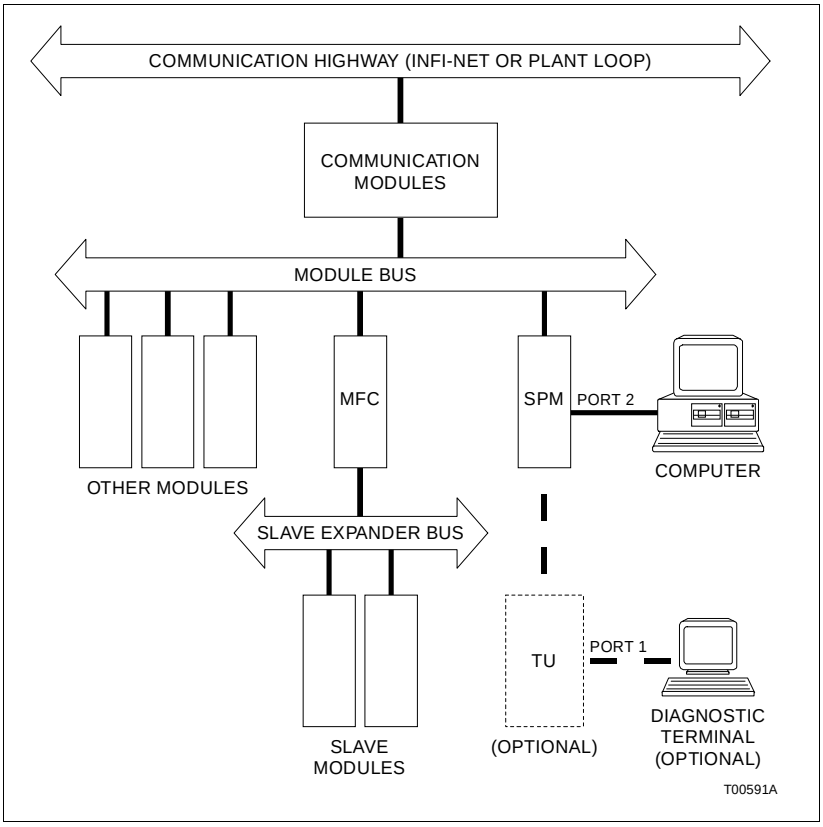

Figure 1-1. The NTCU01 Termination Unit Connecting a Diagnostic Terminal to the INSPM01 Module

The IMSPM01 module interfaces a computer to INFI 90 modules within a process control unit (PCU). The SPM module communicates with other modules over the module bus. Built-in SPM functions support Bailey Controls computer or engineering work station (EWS) software commands. These functions allow computer access to module configuration I/O and status information.

FEATURES

Current limiting resistors prevent excessive current from flowing through the RS-232-C cable if there is a significant difference of potential between the signal ground of the computer and the signal ground of the INFI 90 components.

HOW TO USE THIS MANUAL

Read this manual before installing the TCU unit. Do the installation steps in order. Do not operate the TCU unit until you complete all the steps in the next section. Refer to the appendix for a quick reference guide to SPM or SIM module dipswitch and jumper settings.

INSTRUCTION CONTENT

This manual provides introductory, installation, maintenance and repair/replacement procedures. This manual has five sections and two appendices.

Introduction — The introduction provides an overview of the TCU termination unit, a description of the hardware, a glossary of terms and abbreviations, and a table of electrical, physical and environmental specifications.

Installation — Section 2 is the installation section. It explains physical installation, wiring and cable requirements.

Maintenance — This section contains a maintenance schedule.

Repair/Replacement Procedures — Section 4 contains instructions explaining how to replace the termination unit.

Support Services — Support services cover training, documentation, and how to order parts from Bailey Controls.

Appendices — The appendices briefly discuss the IMSPM01 and INSIM01 modules and provide a cross-reference of dipswitch and jumper settings for those modules.

NOMENCLATURE

Table 1-1 lists the nomenclature of related hardware.

Table 1-1. Nomenclature

Hardware	Nomenclature
Field termination panel	NFTP01
Serial interface module	INSIM01
Serial port module	IMSPM01
Termination cable, TCU unit to SIM/SPM (PVC jacket) TCU unit to SIM/SPM (non-PVC jacket)	 NKTU01 NKTU11
RS-232-C cable	HCBL01

GLOSSARY OF TERMS AND ABBREVIATIONS

Table 1-2 contains a glossary of terms and abbreviations.

Table 1-2. Glossary of Terms and Abbreviations

Term	Definition
ACIA	Asynchronous communication interface adapter. A device that interfaces RS-232-C serial computer, peripheral or modem data. Provides serial/parallel data conversion, handshaking control, and data receive and transmission.
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.
Dipswitch	A dual in-line package that contains switches.
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.
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.
Module Bus	Peer to peer communication link used to transfer information between intelligent modules within a process control unit.
PCU	Process control unit. A node on the plant-wide communication network containing master and slave modules.
RS-232-C	A serial communication interface standard developed by the Electronics Industry Association (EIA) specifying what signals and voltages will be used to transmit data from computer (DTE) to a modem (DCE).
Serial Data	Data transmitted sequentially on one signal line.
Termination Unit	Provides input/output connection between plant equipment and the INFI 90/Network 90® process modules.

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REFERENCE DOCUMENTS

Table 1-3 lists reference documents.

Table 1-3. Reference Documents

Number	Document
I-E96-217	Serial Port Module IMSPM01
I-E96-620	Plant Loop to Computer Interface INPCI01

SPECIFICATIONS

Table 1-4 contains TCU termination unit specifications.

Table 1-4. Specifications

Property	Characteristic/Value
Mounting	Screw mounts to the field termination panel.
Cooling Requirements	No cooling necessary when used in Bailey cabinets and operated within stated environmental limits.
Operating Temperature	0°C to 70°C (32°F to 158°F)
Relative Humidity	5% to 90% (±5%) up to 55°C (131°F) noncondensing 5% to 40% (± 5%) up to 70°C (158°F) noncondensing
Air Quality	Bailey equipment should be operated and stored in a noncorrosive environment.
Certification	CSA certified as process control equipment for use in an ordinary (nonhazardous) location.

SPECIFICATION SUBJECT TO CHANGE WITHOUT NOTICE

SECTION 2 - INSTALLATION

INTRODUCTION

This section explains how to install the NTCU01 Serial Interface Termination Unit. The installation procedure covers handling, cable connection and physical installation.

SPECIAL HANDLING

Observe these steps when handling electronic circuitry:

> **NOTE:** Always use Bailey's Field Static Kit (P/N 1948385A1 - consisting of two wrist straps, ground cord assembly, alligator clip, and static dissipative work surface) when working with the modules. The kit connects 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 CMOS devices, 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 CMOS device***. 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 must be effectively connected to the earth grounding electrode system through the DC common bus.

8. ***Do Not Use Lead Pencils to Set Dipswitches***. To avoid contamination of switch 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 termination module immediately for any shipping damage.

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

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

4. Use the original packing material or container to store the termination module.

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

INSTALLING THE TERMINATION UNIT

The serial interface termination unit (TCU) is ready to install. There are no jumpers to set on the TCU circuit board.

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 (see Figure 2-1) and slide the circuit board into position.

2. Secure the termination unit circuit board to the field termination panel with two number 10 screws (see Figure 2-1).

3. Connect the chassis ground to the field termination panel by installing a number 10 self-tapping sheet metal screw and star washer through E2 on the TCU circuit board. See Figures 2-1 and 2-2.

CABLE INSTALLATION

Termination Unit Cables

After mounting the termination unit to the field termination panel, install the termination cable. Table 2-1 lists the termination cable, its application, connector assignment and length restrictions. Figure 2-3 shows a diagram of cable connections to the TCU termination unit. To install the termination unit cable:

1. Insert the socket connector end of the cable into P1 on the TCU circuit board. See Figure 2-2 for the location of P1 on the TCU circuit board.

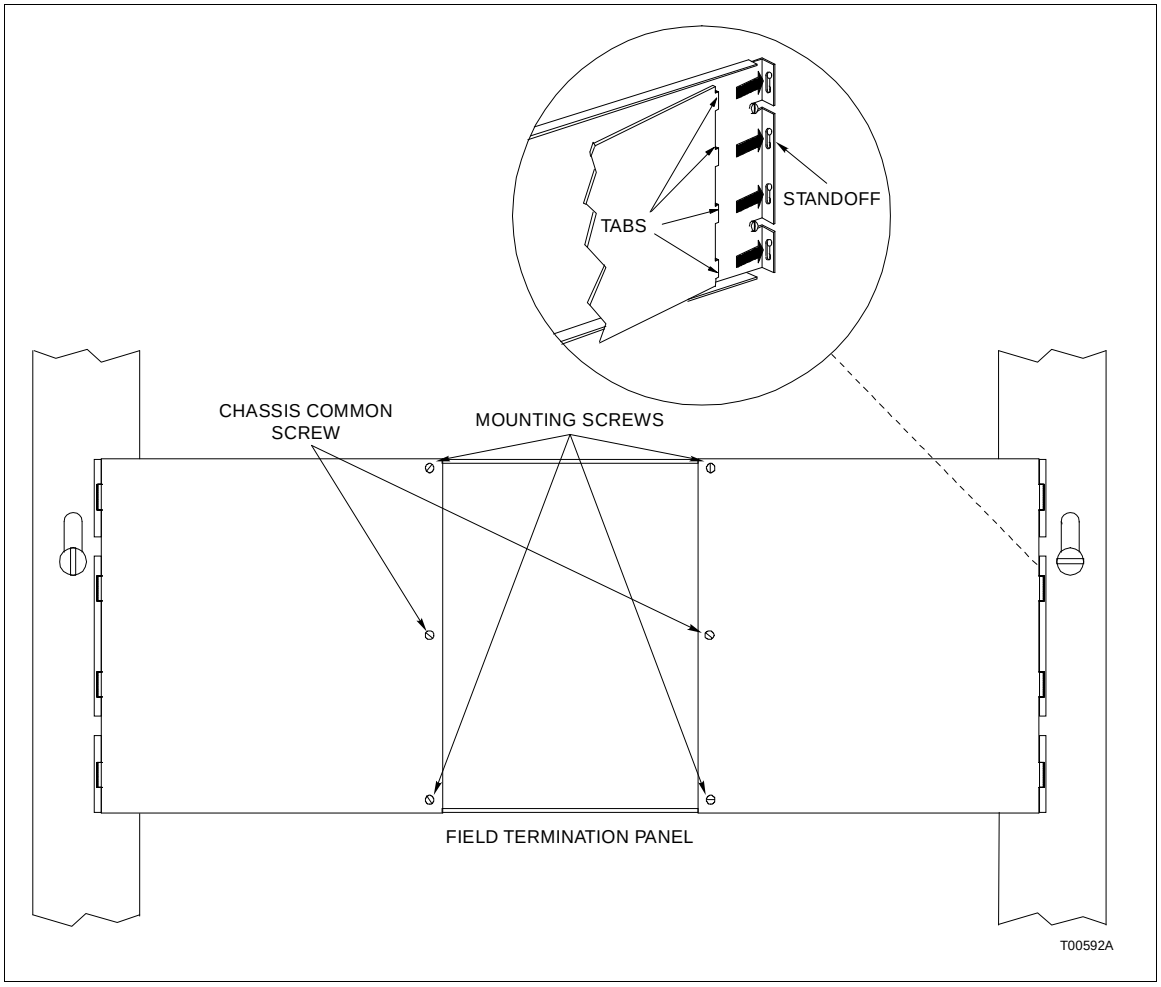

Figure 2-1. Mounting and Securing the TCU Unit on the Field Termination Panel

2. Install the hooded end of the appropriate cable in the module mounting unit (MMU) backplane slot assigned to the INSIM01 Serial Interface Module.

NOTES:

1. Installation procedures for the INSIM01 module apply to the optional IMSPM01 Serial Port Module also.

2. If the serial interface module (SIM) module is installed in its slot, 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 slot so that the card edge sits within the card edge connector. Refer to the product instructions for the INSIM01 or IMSPM01 for more information about the installation or removal of those modules.

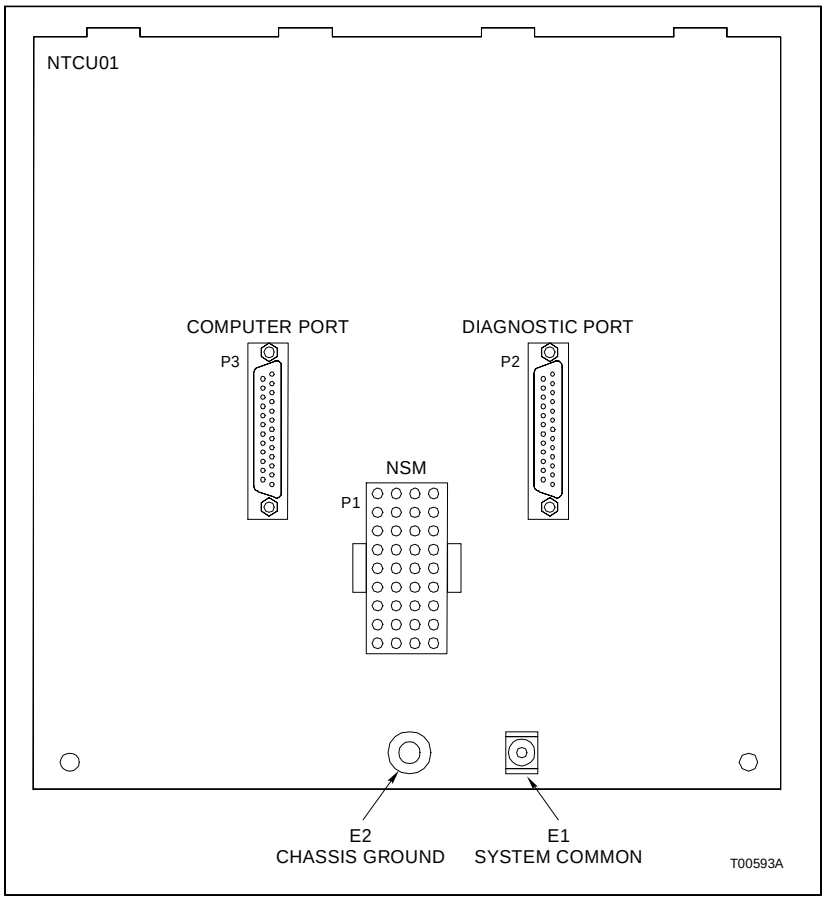

Figure 2-2. TCU Circuit Board Layout

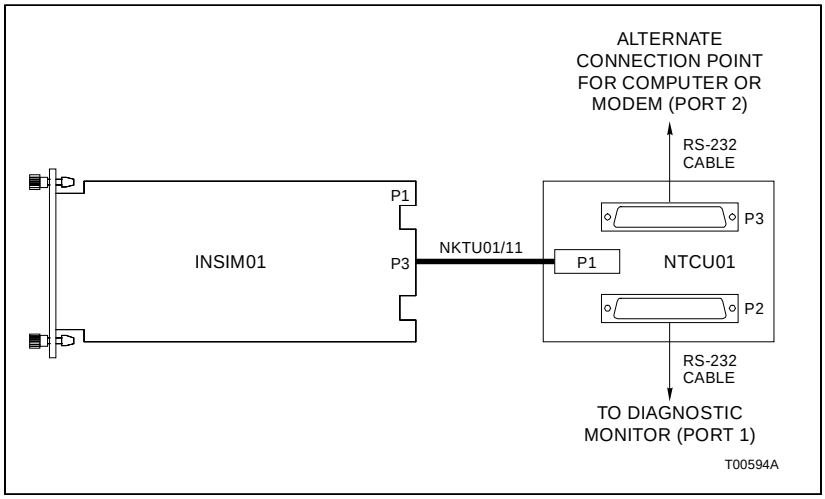

Figure 2-3. TCU Cable Connection to the SIM Module

Communication Cable

The RS-232-C cable connects the serial interface termination unit to the computer, modem or diagnostic terminal. Table 2-1 contains information about the connector assignments and length restrictions of the RS-232-C cable. The RS-232-C cable routes the handshaking signals and data being transferred between data terminal equipment (DTE) or data communication equipment (DCE) and the SIM module. Figure 2-4 shows the RS-232-C cable wiring requirements for use with DTE and DCE devices. When using a null modem to set up the serial module to interface to a DCE device, refer to the appendices for the proper handshaking signal jumper settings of each module. Refer to the product instruction of a particular module for detailed installation information. To install the RS-232-C cable:

> **NOTE:** Make sure power to the device being connected to the serial interface termination unit is OFF before installing the RS-232-C cable.

1. Connect the RS-232-C cable to the termination unit at P2 (port one) or P3 (port two).

2. The other end of the cable connected to P3 (port two) connects to a computer or modem.

3. The other end of the cable connected to P2 (port one) connects to a diagnostic terminal.

4. Attach a 14 AWG wire from the DC common bus bar at the bottom of the cabinet to the E1 terminal of the TCU termination unit.

Table 2-1. TCU Cable Applications

Nomenclature/ Description	Application	NTCU01 Connector	Maximum Length Meters (Feet)
NKTU01 (PVC jacket) NKTU11 (non-PVC jacket) termination cable	Connects the TCU termination unit to the SIM or SPM module	P1	30 (100)
HCBL01/RS-232-C cable	Connects DCE and DTE devices to the termination unit	P2 and P3	15.2 (50)[1]

NOTE: 1. The specified maximum length only applies to the HCBL01 cable in particular. The performance of the serial modules do 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.

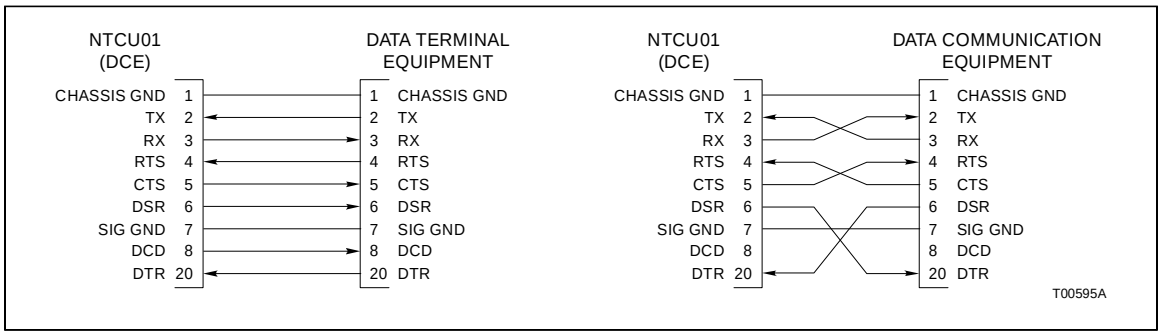

Figure 2-4. RS-232-C Compatible Cable Wiring Requirements

The NTCU01 unit is ready for operation if:

1. The termination unit is mounted in the field termination panel.

2. All required cables are properly connected to the termination unit.

SECTION 3 - MAINTENANCE

INTRODUCTION

The NTCU01 Serial Interface Termination Unit requires minimal maintenance. Doing the tasks in Table 3-1 will provide long, trouble free service. Please note that only qualified personnel should perform maintenance.

MAINTENANCE SCHEDULE

Table 3-1 is the maintenance schedule. These tasks are to be performed at the specified intervals.

Table 3-1. Maintenance Schedule

Task	Interval
Clean and tighten all cable and power connections.	Every 6 months or during plant shutdown, whichever occurs first.
Use a static safe vacuum cleaner to remove dust from: Termination units Field termination panel	

SECTION 4 - REPAIR/REPLACEMENT PROCEDURES

INTRODUCTION

Repair procedures are limited to termination unit replacement. If the NTCU01 Serial Interface Termination Unit fails, remove it and replace it with another one.

TERMINATION UNIT REPLACEMENT

If you determine that the serial interface termination unit (TCU) is faulty, replace it with a new one. ***Do not*** try to repair the module; replacing components may affect the module performance and certification.

Follow Steps 1 through 8 to replace the TCU termination unit.

> **NOTE:** Power to the computer, modem or diagnostic terminal should be OFF before removing the RS-232-C cable.

1. Disconnect the RS-232-C cable from the termination unit.

2. Disconnect the termination unit cable from the P1 socket on the termination unit.

3. Remove and save the chassis ground screw (with star washer) and the two mounting screws that secure the termination unit to the field termination panel.

4. Remove the faulty termination unit.

5. Insert the tabs of the replacement termination unit into the same slots of the termination panel standoff as shown in Figure 2-1 and slide the circuit board into position.

6. Secure the termination unit circuit board to the field termination panel with the two mounting screws and chassis ground screw (with star washer) saved from Step 3.

7. Connect the termination unit cable and the RS-232-C cable to the TCU circuit board.

8. Turn on power to the computer, modem or diagnostic terminal.

SECTION 5 - SUPPORT SERVICES

INTRODUCTION

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

REPLACEMENT PARTS AND ORDERING INFORMATION

When making repairs at your facility, order replacement parts from a Bailey Controls sales office. Provide this information:

1. Part description, part number and quantity.

2. Model and serial numbers (if applicable).

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

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

TRAINING

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

TECHNICAL DOCUMENTATION

Obtain additional copies of this manual from the nearest Bailey Controls sales office at a reasonable charge.

APPENDIX A - IMSPM01 SERIAL PORT MODULE CONFIGURATION

INTRODUCTION

The IMSPM01 Serial Port Module uses the NTCU01 Serial Interface Termination Unit to terminate its connection to a computer, modem or diagnostic terminal. A NKTU01 or NKTU11 termination cable connects the serial port module (SPM) to the serial interface termination unit (TCU). The TCU termination unit provides a place to connect an RS-232-C cable from the computer. This appendix contains figures and tables that show the dipswitch locations on the SPM module and their settings and is provided as a quick reference for personnel installing the SPM module. Figure A-1 shows the dipswitch locations on the SPM circuit board. Table A-1 lists the SPM address switch settings (S2). Table A-2 lists the port option switch settings (S3). Table A-3 contains the port operational switch (S4) settings. Jumper settings that set up to module handshaking and baud rate are covered in the text. These jumpers should be set to match the RS-232-C cable requirements explained in Section 2. See Figure 2-4 for the RS-232-C cable wiring requirements. Refer to the IMSPM01 instruction for more detailed installation and configuration information.

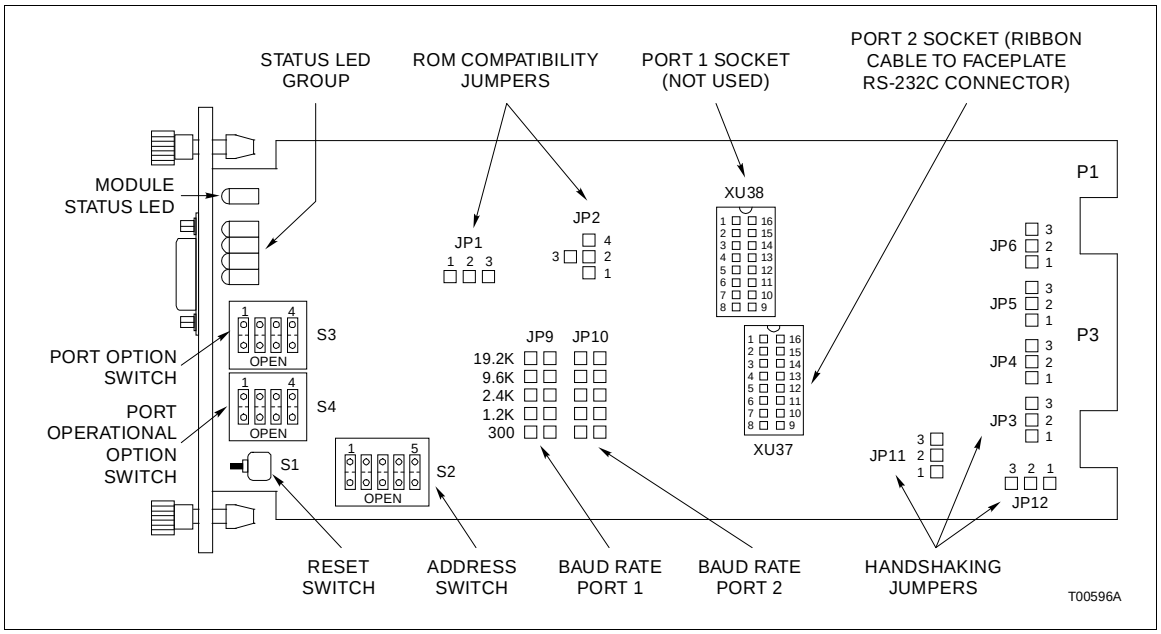

Figure A-1. SPM Circuit Board Component Locations

Table A-1. Address Switch Settings (S2)

Address	MSB LSB	Address	MSB LSB
	1 2 3 4 5		1 2 3 4 5
0	0 0 0 0 0	16	1 0 0 0 0
1	0 0 0 0 1	17	1 0 0 0 1
2	0 0 0 1 0	18	1 0 0 1 0
3	0 0 0 1 1	19	1 0 0 1 1
4	0 0 1 0 0	20	1 0 1 0 0
5	0 0 1 0 1	21	1 0 1 0 1
6	0 0 1 1 0	22	1 0 1 1 0
7	0 0 1 1 1	23	1 0 1 1 1
8	0 1 0 0 0	24	1 1 0 0 0
9	0 1 0 0 1	25	1 1 0 0 1
10	0 1 0 1 0	26	1 1 0 1 0
11	0 1 0 1 1	27	1 1 0 1 1
12	0 1 1 0 0	28	1 1 1 0 0
13	0 1 1 0 1	29	1 1 1 0 1
14	0 1 1 1 0	30	1 1 1 1 0
15	0 1 1 1 1	31	1 1 1 1 1

NOTE: 1 = Open (Off); 0 = Closed (On).

Table A-2. Port Option Switch (S3) Settings

Dipswitch Position	Data Bits	Stop Bits	Type Parity
2 3 4			
0 0 0	7	2	Even
0 0 1	7	2	Odd
0 1 0	7	1	Even
0 1 1	7	1	Odd
1 0 0	8	2	None
1 0 1	8	1	None
1 1 0	8	1	Even
1 1 1	8	1	Odd

NOTE: 1 = Open (Off); 0 = Closed (On).

Table A-3. Port Operational Option Switch (S4) Settings

Dispwitch Position	Closed (on)	Open (off)
1	Binary code	ASCII code
2	ROM self test during normal operation	Not allowed
3	Normal operation	Echo check
4	Command and reply checksums used	Command and reply checksums not used

NOTE: All dipswitch positions are normally Closed (On) when the SPM module is operating with Bailey Controls equipment.

JUMPER CONFIGURATION

Jumpers on board the SPM module set up the module handshaking signals and baud rate. The SPM module is designed to conform to the Electronics Industries Association (EIA) RS-232C standard. This standard identifies various interchange signals, signal levels and pin connections that are available for serial data transmission. The SPM module can monitor or output the signals required for data exchange between it and data communication equipment (DCE) (e.g., modem) and data terminal equipment (DTE) (e.g., computer). The SPM module functions with a DCE device through a type Z interchange.

For the serial port module, the required handshaking signals can be continuously enabled or disabled with on board jumpers. This allows setting the serial port module to match the DTE device requirements. The jumper settings depend on the equipment being used with the SPM module. For an explanation of the handshaking signals, or further explanation about the serial port configuration, refer to the ***IMSPM01 Serial Port Module*** instruction manual.

> **NOTE:** This appendix identifies ***all*** RS-232C handshaking signals with respect to the DTE device.

Jumpers JP1 and JP2 are factory installed ROM compatibility jumpers; ***do not*** change or remove them. Removing or changing the jumpers will cause the module to operate incorrectly. A jumper should be installed across pins 2 and 3 of JP1 and pins 2 and 4 of JP2. Newer serial port module circuit boards with the adapter boards do not require JP1 or JP2.

Jumpers JP3/JP5

Jumpers JP3 and JP5 are for the request to send (RTS) handshaking lines of the RS-232C serial ports: JP3 for port 1 and JP5 for port 2. These are input lines to the SPM module that signal a request from a DTE device to transfer data. When the serial port module is connected to equipment that does not support the RTS lines, place a jumper across pins 2 and 3 of JP3 and JP5. This causes each serial port interface circuit (i.e., asynchronous communication interface adapter) to be continuously enabled. For applications requiring the serial port module to monitor the RTS signal, these lines can be enabled by placing jumpers across pins 1 and 2 of JP3 and JP5. Figure A-1 shows the location of JP3 and JP5.

> **NOTE:** When JP3 and JP5 are configured to provide a continuous enable signal to their respective asynchronous communication interface adapter (ACIA) (i.e., jumpers across pins 2 and 3), +15 volts is tied through a resistor to provide the proper logic state to enable the ACIA circuit. With the jumpers in this position, the RTS input lines are physically disconnected from P3. They are ***not***, however, disconnected from the faceplate connector. When connecting equipment to the faceplate connector, these lines must ***not*** be grounded or forced to other voltage levels that would change the logic state and disable the ACIA circuit.

Jumpers JP4/JP6

Jumpers JP4 and JP6 are for the data terminal ready (DTR) handshaking lines of the RS-232C serial ports: JP4 for port 1 and JP6 for port 2. These are inputs to the serial port module. It uses this signal to verify that a DTE device is connected and that a communication link is to be maintained. The jumper connections depend on whether the equipment being connected to a port provides the DTR handshaking signal or not.

When the SPM module is connected to equipment that does not support the DTR lines, place a jumper across pins 2 and 3 of JP4 and JP6. This causes each ACIA circuit to be continuously enabled. For special applications, these lines can be enabled by placing jumpers across pins 1 and 2 of JP4 and JP6. If port 1 (diagnostic port) is not used, a jumper is not required for JP4. Figure A-1 shows the location of JP4 and JP6.

> **NOTE:** When JP4 and JP6 are configured to provide a continuous enable signal to their respective ACIA circuit (i.e., jumpers across pins 2 and 3), +15 volts is tied through a resistor to provide the proper logic state to enable the ACIA circuit. With the jumpers in this position, the DTR input lines are physically disconnected from P3. They are ***not***, however, disconnected from the faceplate connector. When connecting equipment to the faceplate connector, these lines must ***not*** be grounded or forced to other voltage levels that would change the logic state and disable the ACIA circuit.

Jumper JP11/JP12

Jumpers JP11 and JP12 are for the clear to send (CTS), Data set ready (DSR) and data carrier detect (DCD) handshaking lines of the RS-232C serial ports: JP11 for port 1 and JP12 for port 2. These are outputs from the SPM module to the DTE device.

Normally, the CTS signal is output in response to receiving a RTS signal. Since the SPM module assumes a true RTS signal at all times, the CTS signal is active when the machine fault timer (MFT) is normal and the software initializes the ACIA circuit. For the serial port module, the DSR and DCD signals are synonymous with the CTS signal because of an overlap in SPM signal definition. All three signals are generated at a common point.

Bailey Controls software does ***not*** provide these signals. When the SPM module is connected to Bailey Controls equipment, place a jumper across pins 1 and 2 of JP11 and JP12. This sets the output lines at +12 VDC.

For applications requiring this output, place the jumpers across pins 2 and 3 of JP11 or JP12. This causes the SPM module to output a logic 1 when the MFT circuit is normal and the ACIA circuit is initialized.

Jumpers JP9/JP10

Jumpers JP9 and JP10 set the RS-232-C serial port output baud rate: JP9 for port 1 and JP10 for port 2. To select a baud rate, place a jumper across the pins next to the desired rate for each port. Figure A-1 shows the location of jumpers JP9 and JP10, and provides a cross reference for jumper to baud rate selection. When the SPM module is used with a Bailey Controls work station, set the baud rate at 9.6 kilobaud. Refer to the product instruction for the computer system you are using for the required baud rate setting.

APPENDIX B - INSIM01 SERIAL INTERFACE MODULE CONFIGURATION

INTRODUCTION

The INSIM01 Loop Interface Module uses the NTCU01 Serial Interface Termination Unit to terminate its connection to a computer, modem or diagnostic terminal. A NKTU01 or NKU11 termination cable connects the serial interface module (SIM) to the serial interface termination unit (TCU). The TCU termination unit provides a place to connect RS-232-C cable from the computer. This appendix contains figures and tables that show the dipswitch locations on the SIM module and their settings and is provided as a quick reference for personnel installing the TCU termination unit. Figure B-1 shows the dipswitch locations on the SIM circuit board. Dipswitch SW4 determines the module operating options. Table B-1 one lists the operations option switch settings for SW4. These operations option switch apply to circuit boards that have firmware revision F or higher.

Dipswitches SW2 and SW4 (pole 4 only) determine the SIM module computer port address. Table B-2 shows how the 6-bit binary address is defined. Table B-3 lists the computer/diagnostic port data characteristics (SW3).

Earlier versions of the INSIM01 module have ROM jumpers that enable it to use ROM chips from different manufacturers. These jumpers must remain in their factory set position (not shown in Figure B-1). Later versions of the SIM module have ROM adapter boards in place of JP1 and JP2.

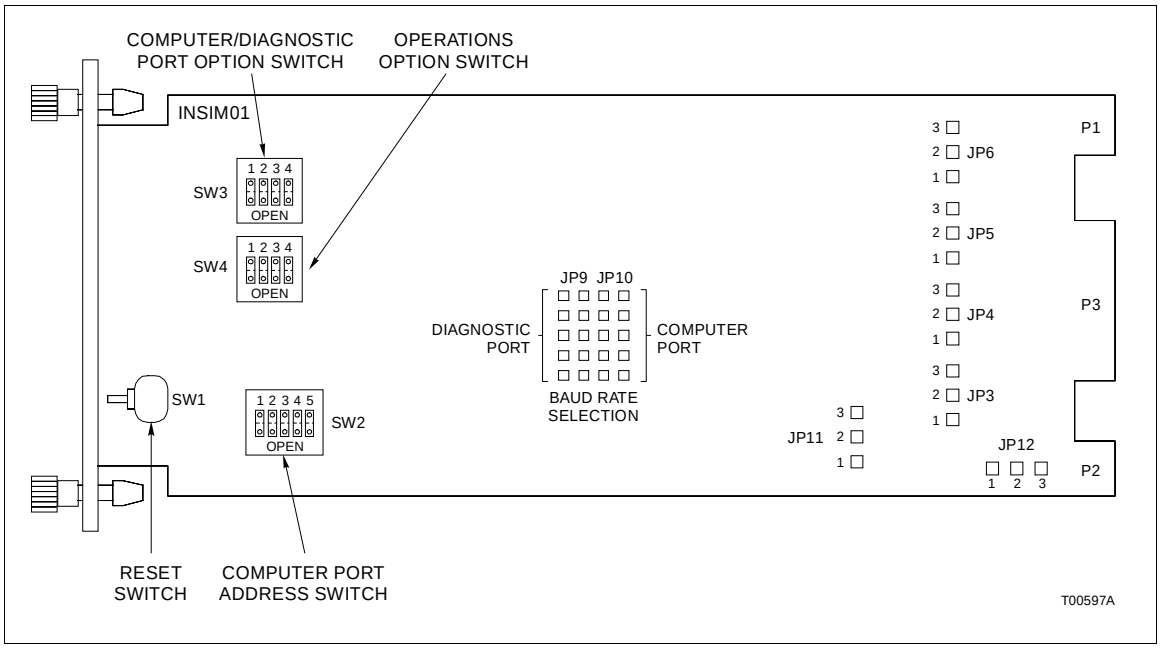

Figure B-1. Serial Interface Module Component Locations

Table B-1. Operations Option Switch (SW4) Settings (Firmware Revision F and above)

Pole	Setting	Function
1	0 1	Normal mode. Echo check mode.
2	0 1	Command and reply checksums. No command and reply checksums.
3	0 1	SIM computer port address select protocol disabled. SIM computer port address select protocol enabled.
4		Most significant bit of SIM computer port address (refer to Table B-2).

NOTE: 1 = Open (Off); 0 = Closed (On).

Table B-2. SW2 Computer Port Address

Computer Port Address Definition[1]	SW4 Pole	SW2 Pole Number
	MSB	LSB
	4	1 2 3 4 5
Address = (SW4 pole 4) + (SW2 poles 1 through 5)	X	X X X X X

NOTE: 1. Only valid when SW4 pole 3 = 1 (SIM computer port address select protocol enabled).

Table B-3. Computer/Diagnostic Port Options (SW3)

Data Characteristics							
Option	SW3 Position				Number of Data Bits	Number of Stop Bits	Type of Parity
	1	2	3	4			
Binary	0						
ASCII Text	1						
		0	0	0	7	2	Even
		0	0	1	7	2	Odd
		0	1	0	7	1	Even
		0	1	1	7	1	Odd
		1	0	0	8	2	None
		1	0	1	8	1	None
		1	1	0	8	1	Even
		1	1	1	8	1	Odd

NOTE: 1 = Open (Off); 0 = Closed (On).

Jumpers JP3 through JP6 set the RS-232-C handshaking signals for the diagnostic terminal and computer. Table B-5 contains the settings for jumpers JP3 through JP6. Refer to the ***INPCI01 Plant Loop to Computer Interface*** instruction manual for details on required handshaking signals. Figure B-2 shows the jumper settings for the available communication baud rates of the RS-232-C ports on the SIM module. Short the appropriate set of pins by placing a jumper over them to select a particular baud rate.

Jumpers JP11 and JP12 set the clear to send (CTS), data set ready (DSR), and data carrier detect (DCD) handshaking lines. These lines are not required by the SIM module. Shorting pins 2 and 3 by placing a jumper across them ties these signals to +12 VDC.

Table B-4. Handshaking Signal Options

Bypass Options	Jumper Settings			
	JP3	JP4	JP5	JP6
Not allowed	1 to 2			
Diagnostic terminal not required to provide RTS	2 to 3			
Enable DTR from diagnostic terminal to SIM module		1 to 2		
Disable DTR from diagnostic terminal to SIM module		1 to 2		
Not allowed			1 to 2	
Computer not required to provide RTS			2 to 3	
Enable DTR from computer to SIM module				1 to 2
Disable DTR from computer to SIM module				2 to 3

NOTE: Short pins by inserting a jumper over them to enable option.

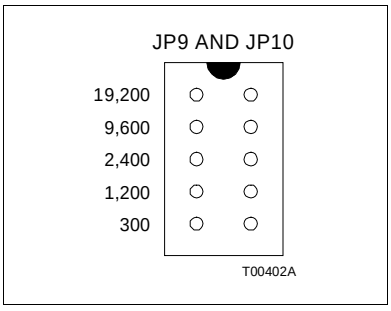

Figure B-2. Jumper Settings for Communication Baud Rates

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