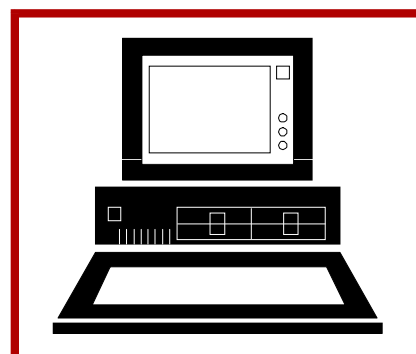
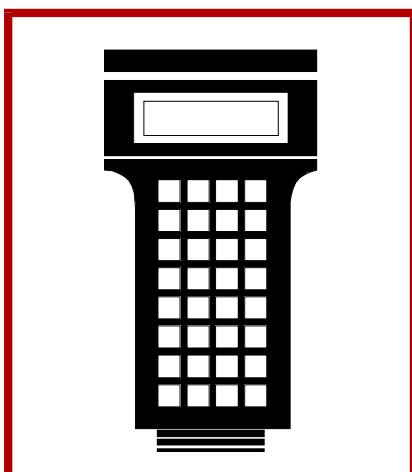
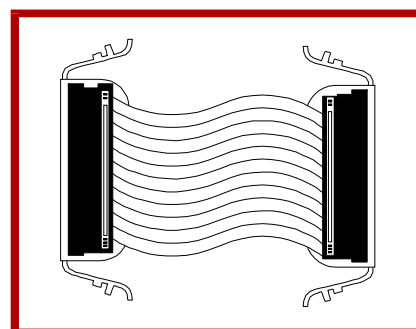
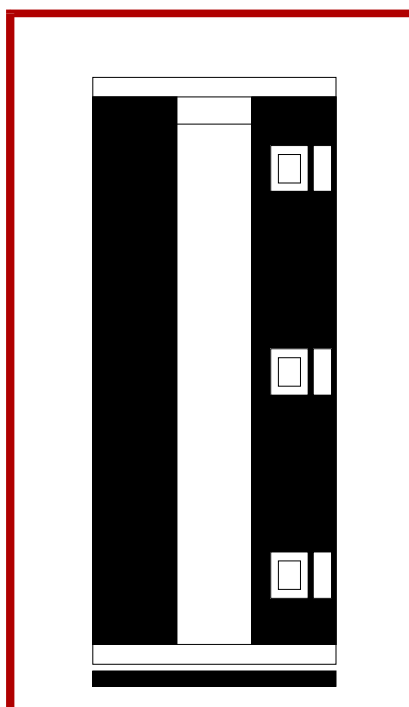
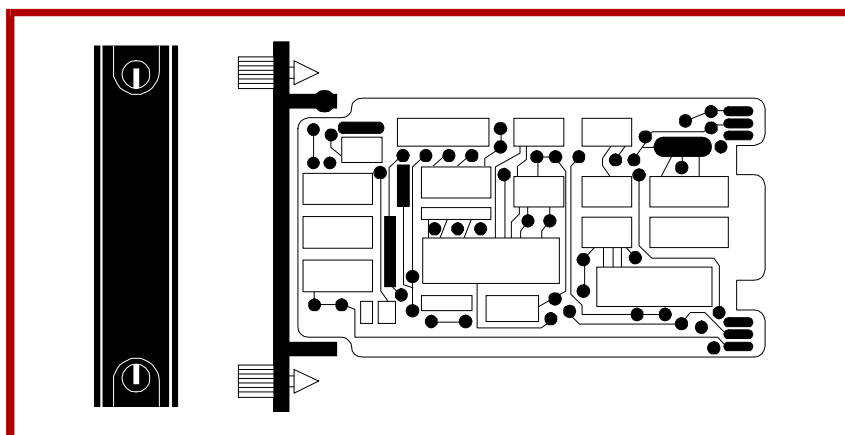
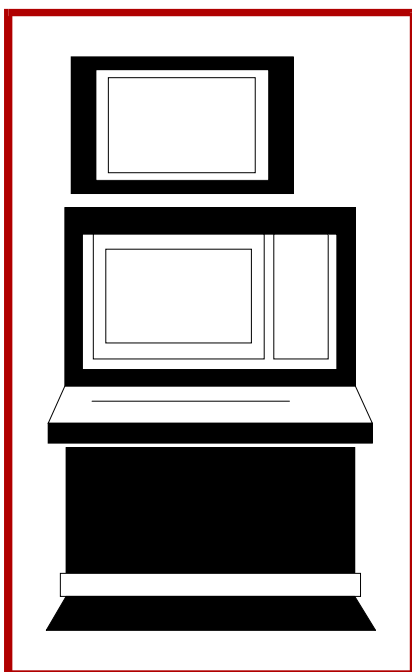


E96-418

Bailey®
infi 90

Instruction

Plant Loop Termination Unit (NTPL01)



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.

RADIO FREQUENCY INTERFERENCE

MOST ELECTRONIC EQUIPMENT IS INFLUENCED BY RADIO FREQUENCY INTERFERENCE (RFI). CAUTION SHOULD BE EXERCISED WITH REGARD TO THE USE OF PORTABLE COMMUNICATIONS EQUIPMENT IN THE AREA AROUND SUCH EQUIPMENT. PRUDENT PRACTICE DICTATES THAT SIGNS SHOULD BE POSTED IN THE VICINITY OF THE EQUIPMENT CAUTIONING AGAINST THE USE OF PORTABLE COMMUNICATIONS EQUIPMENT.

POSSIBLE PROCESS UPSETS

MAINTENANCE MUST BE PERFORMED ONLY BY QUALIFIED PERSONNEL AND ONLY AFTER SECURING EQUIPMENT CONTROLLED BY THIS PRODUCT. ADJUSTING OR REMOVING THIS PRODUCT WHILE IT IS IN THE SYSTEM MAY UPSET THE PROCESS BEING CONTROLLED. SOME PROCESS UPSETS MAY CAUSE INJURY OR DAMAGE.

AVERTISSEMENT

MANUELS D'OPÉRATION

NE PAS METTRE EN PLACE, RÉPARER OU FAIRE FONCTIONNER L'ÉQUIPEMENT SANS AVOIR LU, COMPRIS ET SUIVI LES INSTRUCTIONS RÉGLEMENTAIRES DE **Elsag Bailey**. TOUTE NÉGLIGENCE À CET ÉGARD POURRAIT ÊTRE UNE CAUSE D'ACCIDENT OU DE DÉFAILLANCE DU MATÉRIEL.

PERTURBATIONS PAR FRÉQUENCE RADIO

LA PLUPART DES ÉQUIPEMENTS ÉLECTRONIQUES SONT SENSIBLES AUX PERTURBATIONS PAR FRÉQUENCE RADIO. DES PRÉCAUTIONS DEVRONT ÊTRE PRISES LORS DE L'UTILISATION DU MATÉRIEL DE COMMUNICATION PORTATIF. LA PRUDENCE EXIGE QUE LES PRÉCAUTIONS À PRENDRE DANS CE CAS SOIENT SIGNALÉES AUX ENDROITS VOULUS DANS VOTRE USINE.

PERTURBATIONS DU PROCÉDÉ

L'ENTRETIEN DOIT ÊTRE ASSURÉ PAR UNE PERSONNE QUALIFIÉE EN CONSIDÉRANT L'ASPECT SÉCURITAIRE DES ÉQUIPEMENTS CONTRÔLÉS PAR CE PRODUIT. L'AJUSTEMENT ET/OU L'EXTRACTION DE CE PRODUIT PEUT OCCASIONNER DES À-COUPS AU PROCÉDÉ CONTRÔLE LORSQU'IL EST INSÉRÉ DANS UNE SYSTÈME ACTIF. CES À-COUPS PEUVENT ÉGALEMENT OCCASIONNER DES BLESSURES OU DES DOMMAGES MATÉRIELS.

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Preface

The NTPL01 terminates the connection of Plant Loop to the Loop Interface Module (INLIM03). The NTPL01 is designed to provide isolation between the INLIM03 and the Plant Loop. It has terminals for connecting twinaxial cable and a shield.

This manual explains how to install and use the NTPL01. It explains how to install the cables, mount the termination module and lists maximum cable lengths for the communication loop.

List of Effective Pages

Total number of pages in this instruction is 23, consisting of the following:

Page No.	Change Date
Preface	Original
List of Effective Pages	Original
iii through vi	Original
1-1 through 1-3	Original
2-1 through 2-5	Original
3-1	Original
4-1 through 4-2	Original
5-1	Original
A-1 through A-4	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).

SPECIFIC CAUTIONS

We strongly recommend that you turn cabinet power off before doing any termination unit wiring. Failure to do so could result in equipment damage. Do not apply power until you verify all wire connections. (p. 2-5)

When removing and replacing an NTPL01, all loop communication is lost while the termination unit is removed from the loop. (p. 4-1)

Remove modules from their module mounting unit slots before installing or removing a cable assigned to that slot. Failure to do so could result in damage to the module. (p. 4-1)

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 contient des composants sensibles aux decharges electro-statique.

**ATTENTIONS
D'ORDRE
SPÉCIFIQUE**

Il est fortement recommande, de debrancher l'alimentation électrique du cabinet avant d'effectuer toute connexion aux cartes de raccordement du chassis. Des dommages aux equipements pourraient survenir dans le cas contraire. Ne pas rebrancher l'alimentation avant que toutes les connexions aient ete verifiees. (p. 2-5)

Durant le demontage ou le remplacement d'une carte NTPL01, toute communication avec le reseau est interrompue et ce pendant tout le temps ou la carte est retiree de reseau. (p. 4-1)

Retirer le module de son emplacement dans le chassis de montage des modules avant d'installer ou de retirer un cable assigne a cet emplacement. Un manquement a cette procedure pourrait endommager le module. (p. 4-1)

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SECTION 1 - INTRODUCTION

INTRODUCTION

The Plant Loop Termination Unit (NTPL01) provides a termination point for a Loop Interface Module (INLIM03). The TPL terminates a twinaxial cable when connecting the LIM to Plant Loop. The NTPL01 isolates the communication signals between Plant Loop and the INLIM03. Figure 1-1 shows an example of the NTPL01 within a PCU on Plant Loop.

INTENDED USER

Technicians should read the manual before installing and operating the TPL. Do not put the TPL into operation until you read and understand this instruction.

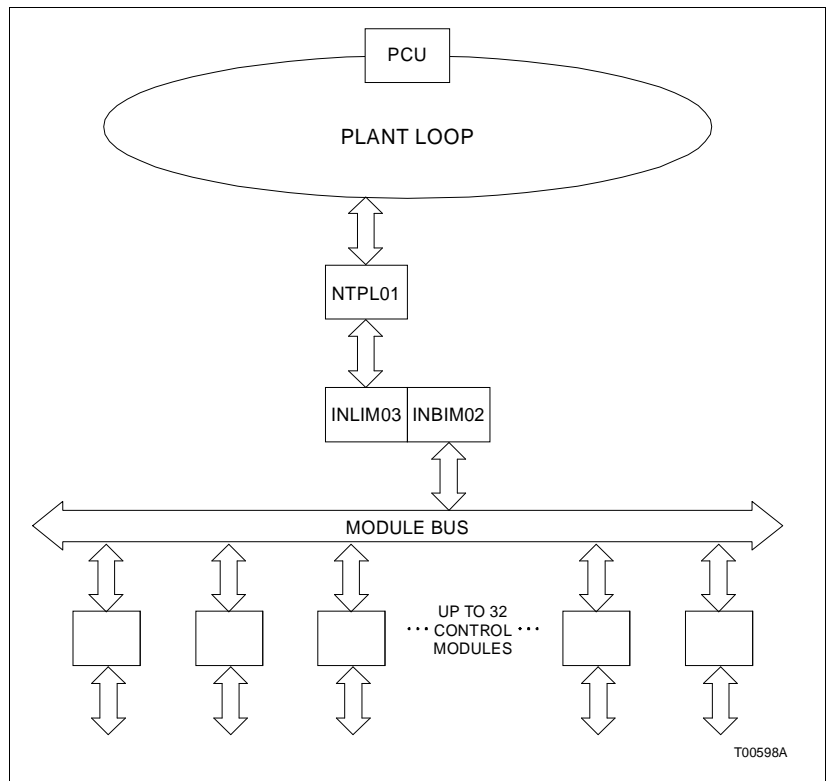


Figure 1-1. The NTPL01 within a PCU on Plant Loop

HARDWARE DESCRIPTION

The TPL mounts on a Field Termination Panel (NFTP01), inside the INFI 90[®] cabinet. It is a printed circuit board that consists of:

- Terminal strips.
- Cable connectors.
- Electronic components.

FEATURES

The NTPL01 provides connectors to terminate two Plant Loops. The +24 VDC power can be supplied through system power or an external supply. The TPL isolates the Plant Loop from the electronics within a PCU and provides a place to connect cable shielding.

INSTRUCTION CONTENT

This manual has five sections and one appendix.

Introduction	Provides an overview of the TPL.
Installation	Explains physical installation, wiring and cable requirements.
Maintenance	Contains a maintenance schedule.
Repair/Replacement Procedures	Explains how to replace the termination unit.
Support Services	Explains training, documentation and how to order parts from Bailey Controls.
Appendix A	Discusses the INLIM03 and provides a cross-reference of dipswitch and jumper settings for that unit.

HOW TO USE THIS MANUAL

Read this manual before installing the TPL. Do the installation steps in order. Do not operate the TPL until you complete all the steps in Section 2. Refer to the appendix for a quick reference guide to INLIM03 module dipswitch and jumper settings.

REFERENCE DOCUMENTS

Document No.	Document
I-E96-500	Site Planning and Preparation
I-E96-506	Modular Power System
I-E96-508	DC Modular Power System
I-E96-605	Bus Interface Module/Loop Interface Module (INBIM02/INLIM03)

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GLOSSARY OF TERMS AND ABBREVIATIONS

Term	Definition
FTP	Field Termination Panel. A panel inside the INFI 90 cabinet on which to mount termination units.
Plant Loop	Network 90 [®] data communication highway.
TU	Termination Unit. Provides input/output connection between plant equipment and the INFI 90/Network 90 process modules.
Twinaxial cable	A cable composed of two insulated conductors that are twisted together and are attached or bound together with a common covering.

NOMENCLATURE

Hardware	Nomenclature
Cables	
TPL to Plant Loop Cable (PVC, lugs at both ends)	NKPL01
TPL to Plant Loop Cable (non-PVC, lugs at both ends)	NKPL02
TPL to LIM Cable (PVC)	NKLM01
TPL to LIM Cable (non-PVC)	NKLM02
Loop Interface Module	INLIM03
Field Termination Panel	NFTP01

SPECIFICATIONS

Power Requirements	Voltage	24 VDC
	Current	120 mA typical
Mounting	Screw mounts to the field termination panel (NFTP01).	
Cooling Requirements	No cooling necessary when used in Bailey cabinets and operated within stated environmental limits.	
Operating Temperature	0° to 70°C (32° 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.	

Specifications are subject to change without notice.

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SECTION 2 - INSTALLATION

INTRODUCTION

This section explains how to install the Plant Loop Termination Unit (NTPLO1). 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 wrist straps, ground cord assembly, and alligator clip) 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 an Antistatic Bag.** Keep the modules in the antistatic bag until you are ready to install them in the system. Save the bag for future use.
2. **Ground Bags 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.

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 NTPL01 termination unit is ready to install. There are no jumpers to set on the TPL.

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 ten machine screws (see Figure 2-1).

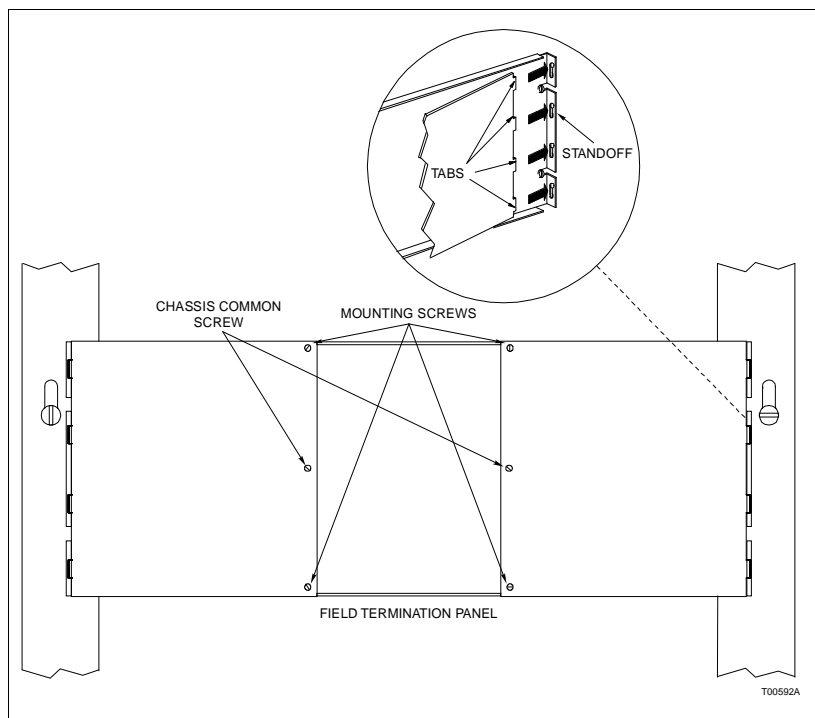


Figure 2-1. Mounting and Securing the TPL to the NFTP01

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

CABLE INSTALLATION

Termination Unit Cables

After mounting the termination unit to the FTP, install the termination cables. Table 2-1 lists the termination cables, their application, connector assignments and length restrictions. Figure 2-2 shows a diagram of cable connections to the LIM and TPL. To install the termination unit cable:

1. Install the hooded end of the appropriate cable in the Module Mounting Unit (MMU) backplane slot assigned to the LIM.

NOTE: If the LIM 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 both ends of the cable, slide the module into the MMU so that the card edge sits within the card edge connector. Refer to the product instruction for the INLIM03 for more information about the installation or removal of that module.

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

Table 2-1. TPL Cable Applications

Nomenclature/Description	Application	Connector	Max Length Meters (Feet)
NKLM01 (PVC), NKLM02 (non-PVC) Termination cable	Connects the TPL to the INLIM03	P1	61 (200)
NKPL01 (PVC), NKPL02 (non-PVC) Twinaxial communication cable, Plant Loop	Connect individual drops on the communication loop	TB1 and TB2	2000 (6562)

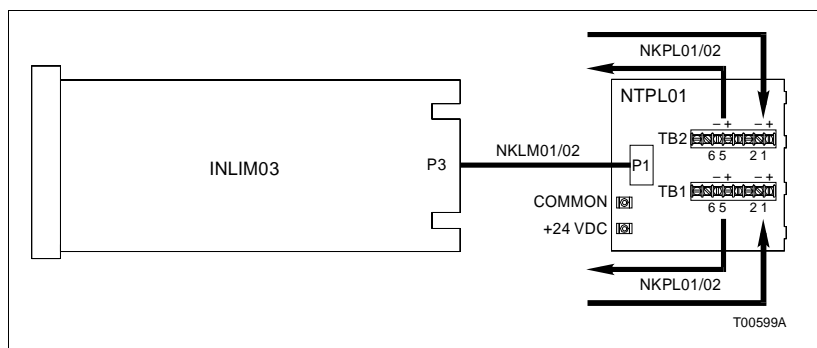


Figure 2-2. TPL Cable Connection to the INLIM03

Communication Cable

The communication cable connects the TPL to Plant Loop. Table 2-1 contains information about the connector assignments and length restrictions of the communication cable. To install the communication cable, connect the cable to the termination unit at the terminal blocks, TB1 or TB2. Figure 2-3 shows the TPL terminal assignments. Figure 2-4 shows how the leads of the NKPL01/02 cable must be connected to the TPL terminals.

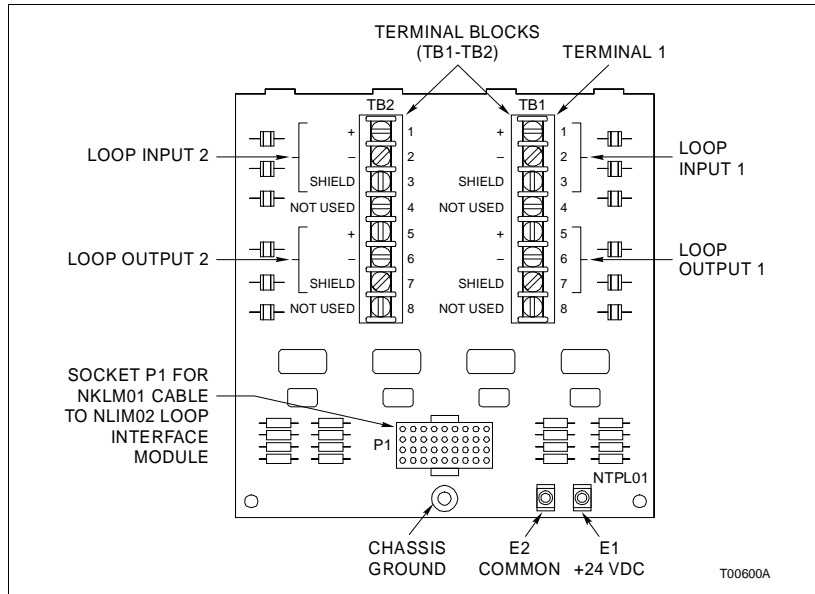
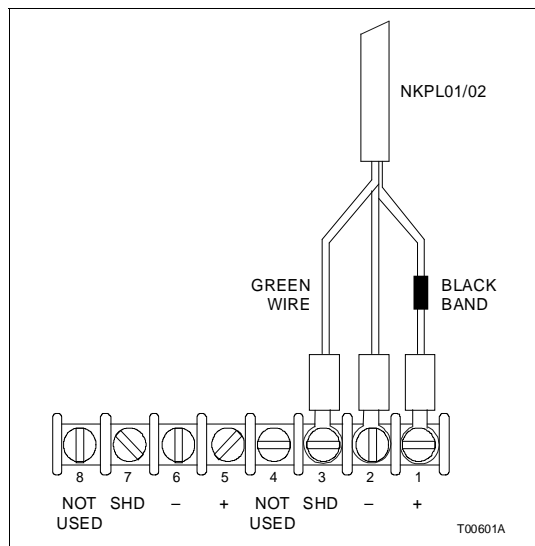


Figure 2-3. TPL Twinaxial Cable Terminal Assignments



NOTE: If the black band that identifies the (+) lead of the cable is removed, you can identify that lead by looking for one tined strand of wire within the stranded conductors of that lead.

Figure 2-4. NKPL01/02 Lead Assignments

POWER WIRING**CAUTION**

We strongly recommend that you turn cabinet power off before doing any termination unit wiring. Failure to do so could result in equipment damage. Do not apply power until you verify all wire connections.

ATTENTION

Il est fortement recommande, de debrancher l'alimentation electrique du cabinet avant d'effectuer toute connexion aux cartes de raccordement du chassis. Des dommages aux equipements pourraient survenir dans le cas contraire. Ne pas rebrancher l'alimentation avant que toutes les connexions aient ete verifiees.

There are two terminals (E1 and E2) that connect the TPL to +24 VDC and system common. Figure 2-3 shows their position on the TPL 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 power within the cabinet (i.e., daisy chain from another TU) to the E1 terminal on the TPL.
2. Attach a 14 AWG wire from the DC common bus bar in the bottom of the cabinet to the E2 terminal of the TPL.

The NTPL01 is ready for operation if:

1. The circuit board is mounted in the termination mounting unit.
2. All required cables are connected to the termination unit.
3. Power is connected and is applied to the termination unit.

SECTION 3 - MAINTENANCE

INTRODUCTION

The plant loop 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 (TU) replacement. If the TPL fails, remove it and replace it with another one.

TERMINATION UNIT REPLACEMENT

If you determine that the TPL is faulty, replace it with a new one. **Do not** try to repair the module; replacing components may affect the module performance and certification.

CAUTION	When removing and replacing an NTPL01, all loop communication is lost while the termination unit is removed from the loop.
ATTENTION	Durant le demontage ou le remplacement d'une carte NTPL01, toute communication avec le reseau est interrompue et ce pendant tout le temps ou la carte est retiree de reseau.

CAUTION	Remove modules from their module mounting unit slots before installing or removing a cable assigned to that slot. Failure to do so could result in damage to the module.
ATTENTION	Retirer le module de son emplacement dans le chassis de montage des modules avant d'installer ou de retirer un cable assigne a cet emplacement. Un manquement a cette procedure pourrait endommager le module.

NOTE: Turn off power to the cabinet before removing the +24 VDC and ground connection to the TPL.

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

1. Verify that the cabinet power is off, then disconnect the +24 VDC and ground wiring from E1 and E2 on the termination unit.
2. Mark and disconnect the twinaxial cable from the termination unit.
3. Mark and disconnect the termination unit cable from the P1 socket on the termination unit.
4. Remove and save the screws that secure that termination unit to the field termination panel, and the chassis ground screw with star washer.

5. Remove the faulty termination unit.
6. Insert the tabs of the replacement TU into the same slots of the termination panel standoff as shown in Figure 2-1 and slide the circuit board into position.
7. Secure the termination unit circuit board to the field termination panel and replace the chassis ground with the screws saved from step 4.
8. Replace the +24 VDC power and DC common wiring. Reconnect the termination unit cable to P1 by following the cable installation procedure, and reconnect the twinaxial cable to the termination unit.
9. Check the cable connections before restoring power.
10. Monitor the next downstream node for error counters to see that the replacement TPL is operating properly.

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 sales office. Provide this 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.

When you order standard parts from Bailey Controls, use part numbers and descriptions from the Recommended Spare Parts Lists. You must order parts without commercial descriptions from the nearest Bailey Controls sales office.

TRAINING

Bailey Controls has a modern training facility that provides service and repair instruction. This facility is available for training your personnel. Contact a Bailey Controls sales office for specific information and scheduling.

TECHNICAL DOCUMENTATION

You can obtain additional copies of this manual from the nearest Bailey sales office at a reasonable charge.

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