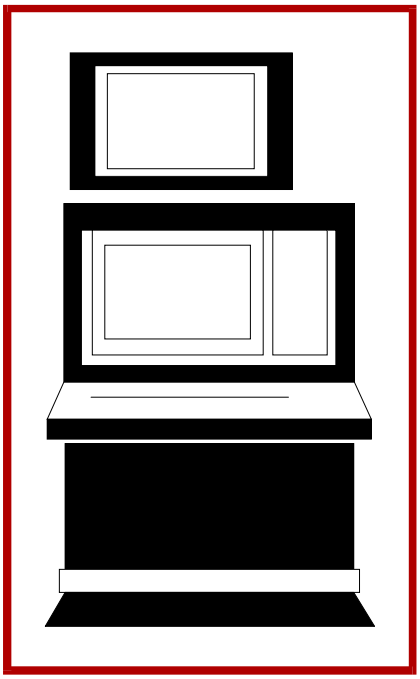
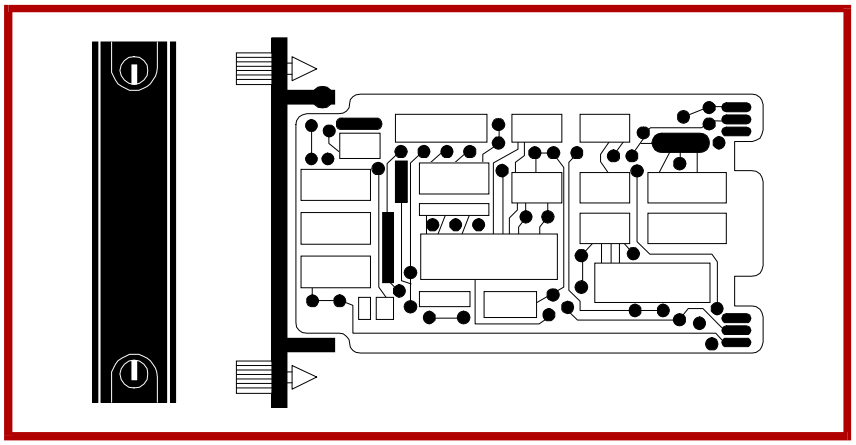
Bailey® infi 90®

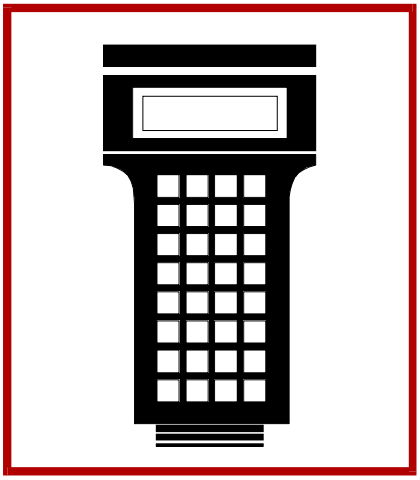
E96-415

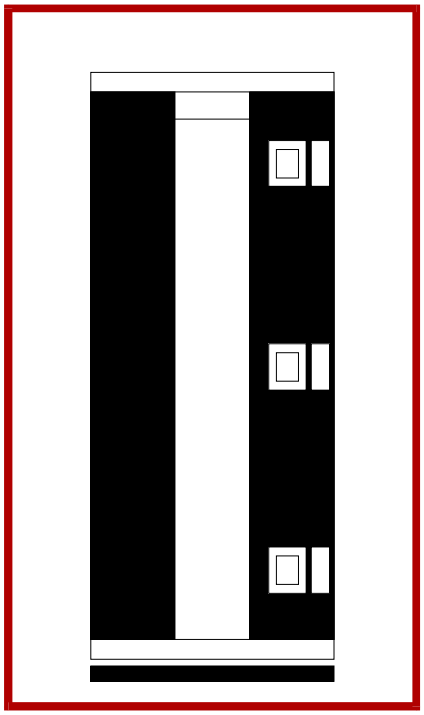
Instruction

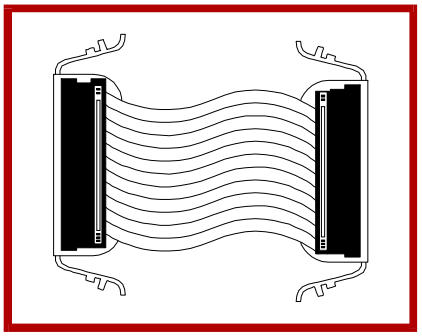
Remote Link Termination Module
(NIRL03)

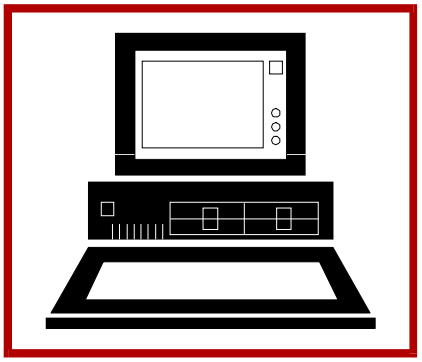












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WARNING notices as used in this instruction apply to hazards or unsafe practices that could result in personal injury or death.

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.

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 MATÉREILS.

NOTICE

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Preface

The NIRL03 Remote Link Termination Module (IRL) provides:

- Communication between IMRIO02 Remote I/O Slave Modules.
- Station link communications from an IMRIO02 module to IISAC01 Analog Control Stations, NDCS03 Digital Control Stations and NDIS01 Digital Indicator Stations.

This product instruction explains how to install and configure the IRL termination module.

List of Effective Pages

Total number of pages in this instruction is 36, consisting of the following:

Page No.	Change Date
Preface	Original
List of Effective Pages	Original
iii through vi	Original
1-1 through 1-4	Original
2-1 through 2-10	Original
3-1	Original
4-1 through 4-2	Original
5-1	Original
A-1 through A-2	Original
B-1 through B-4	Original
C-1 through C-3	Original
D-1 through D-2	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.
SPECIFIC WARNINGS	If input or output circuits are a shock hazard after disconnecting system power at the power entry panel, then the door of the cabinet containing these externally powered circuits must be marked with a warning stating that multiple power sources exist. (p. 2-9)
SPECIFIC CAUTIONS	Remove modules (slave, master or termination) from their assigned slots before installing a cable to that slot. Also, remove stations from their housing before installing a cable to that housing. Failure to do so could result in damage to the module or station. (p. 2-6) It is strongly recommended that all power (cabinet, I/O, etc.) be turned off before doing any termination module wiring. Failure to do so could result in equipment damage. Do not apply power until all connections are verified. (p. 2-9, 4-1, 4-2)

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.
AVERTISSEMENTS D'ORDRE SPÉCIFIQUE	Si des circuits d'entree ou de sortie sont alimentes a partir de sources extrenes, ils presentent un risque de choc electrique meme lorsque l'alimentation du systeme est debranchee du panneau d'entree l'alimentation. Le cas echeant, un avertissement signalant la presence de sources d'alimentation multiples doit entre appose sur la porte de l'armoire. (p. 2-9)
ATTENTIONS D'ORDRE SPÉCIFIQUE	Retirer les modules (asservi, maître ou carte de raccordement) de leur position assignée avant d'installer un câble à cette position. Egalement, retirer les postes de commande de leur boîtier avant d'installer un câble dans ce boîtier. Des dommages au module ou au poste pourraient résulter d'un manquement à cette procédure. (p. 2-6) Il est fortement recommand, que toutes les alimentations (armoire, E/S, etc.) soient coupées avant d'effectuer quelque raccord que ce soit sur un carte de raccordement. Un manquement à ces instructions pourrait causer des dommage à l'équipement. Ne pas rebrancher les alimentations avant d'avoir vérifié tous les raccordements. (p. 2-9, 4-1, 4-2)

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SECTION 1 - INTRODUCTION

OVERVIEW

The NIRL03 Remote Link Termination Module (IRL) connects remote nodes. It also provides connections for control stations, digital indicator stations and serial link connections to NICS01 termination modules. NIRL03 termination modules can be connected to the NICS01 termination module with serial link wire, allowing the connection of IMRIO02 slave modules and additional stations. Figure 1-1 shows an example NIRL03 termination module application.

INTENDED USER

System engineers and technicians should read this manual before installing and placing the NIRL03 termination module into operation. Do ***not*** put the IRL termination module into operation until this instruction is read and understood.

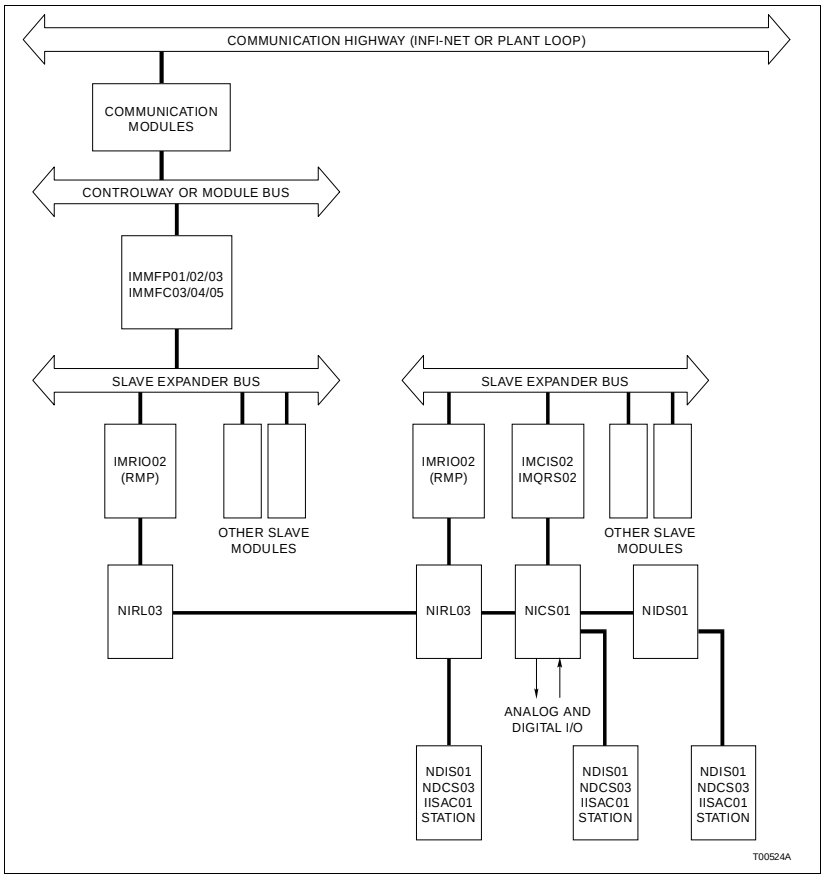

Figure 1-1. Example NIRL03 Termination Module Application

INSTRUCTION CONTENT

This manual contains five sections and four appendices.

Introduction — Contains an overview of the features, specifications and a description of the IRL module.

Installation — Describes precautions to observe when handling modules, and setup procedures required before module operation. This section also discusses jumper settings and installation procedures.

Maintenance — Provides a maintenance schedule.

Repair/Replacement Procedures — Details how to replace an IRL module.

Support Services — Describes the support services (spare parts, training, documentation, etc.) available from Bailey Controls Company.

Appendices A through D — List the quick reference information necessary to configure IMRIO02 modules and NDIS01, NDCS03 and IISAC01 stations.

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 operating the IRL module. Refer to the Table of Contents or Index to find specific information after the module is operating.

REFERENCE DOCUMENTS

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

Table 1-1. Reference Documents

Number	Document
I-E93-902-1	NDCS03 Digital Control Station
I-E96-116	NDIS01 Digital Indicator Station
I-E96-117	IISAC01 Analog Control Station
I-E96-317	IMRIO02 Remote I/O Slave Module
I-E96-409	NICS01 Controller/Station Termination Module

GLOSSARY OF TERMS AND ABBREVIATIONS

Table 1-2 lists definitions of the terms and abbreviations used in this instruction.

Table 1-2. Glossary of Terms and Abbreviations

Term	Definition
Analog	Continuously variable as opposed to discretely variable.
Bus	A channel or path for transferring data, electrical signals and power.
CIS	Control I/O slave module.
DCS	Digital control station. A panel mounted operator device that provides monitoring and allows manipulation of a single process control loop.
Digital	A discretely variable signal usually having only two states, *on* or *off.*
DIS	Digital indicator station. A panel mounted device that monitors and displays digital values.
MFC	Multi-function controller module. A multiple loop controller with data acquisition and information processing capabilities.
MFP	Multi-function processor module. A multiple loop controller with data acquisition and information processing capabilities.
MMU	Module mounting unit. A card cage that provides electrical and communication support for INFI 90®/Network 90® modules.
QRS	Quick response slave module.
RMP	Remote master processor.
RSP	Remote slave processor.
Serial Link Wire	Two insulated 22 gauge wires twisted together. Each wire of the twisted pair consists of seven strands of 30 gauge wire. This twisted pair is shielded with a 36 gauge woven shield drain wire. Bailey raw material part number R2041-0397.
SAC	Analog control station.
Termination Module (TM)	Provides input/output connection between plant equipment and INFI 90/Network 90 modules.
TMU	Termination mounting unit. A card cage that provides housing for INFI 90/Network 90 termination modules.

NOMENCLATURE

Table 1-3 is a list of related hardware.

Table 1-3. Nomenclature

Nomenclature	Hardware/Description
NIRL03	Remote link termination module.
NKCL01	INFI-NET coaxial cable (PVC).
NKCL02	INFI-NET coaxial cable (non-PVC).
NKPL03	Plant Loop twinaxial cable (PVC).
NKPL04	PLant Loop twinaxial cable (non-PVC).
NKTD02	Station termination cable (PVC).
NKTD12	Station termination cable (non-PVC).
NKTL01	INFI-NET coaxial termination cable adapter.
NKTU02	Termination module cable (PVC).
NKTU12	Termination module cable (non-PVC).

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Table 1-3. Nomenclature (continued)

Nomenclature	Hardware/Description
Bailey Raw Material Part Number R2041-0397	Serial link wire.
258436A1	Cable retaining kit used when at least one round cable is connected to the termination mounting unit.

SPECIFICATIONS

Refer to Table 1-4 for the specifications of the NIRL03 termination module.

Table 1-4. Specifications

Property	Characteristic/Value
Power Requirements	+24 VDC (200 mA maximum, 120 mA typical) from the 24 VDC bus bar of the termination mounting unit.
Inputs	Remote communication link from another IRL termination module. Serial communication link to attached stations.
Outputs	Remote communication link to another IRL termination module. Serial communication link to attached stations. 24 VDC (650 mA maximum, 460 mA typical) power to attached stations.
Mounting	Occupies one slot in a standard INFI 90 termination mounting unit.
Environmental:	
Ambient Temperature	0° to 70°C (32° to 158°F).
Relative Humidity	0% to 95% up to 55°C (131°F) (noncondensing). 0% to 45% up to 70°C (158°F) (noncondensing).
Air Quality	Noncorrosive.
Certification	CSA certified for use as process control equipment in an ordinary (nonhazardous) location.

SPECIFICATION SUBJECT TO CHANGE WITHOUT NOTICE

SECTION 2 - INSTALLATION

INTRODUCTION

This section explains how to configure and install the NIRL03 Remote Link Termination Module. Read, understand and complete the steps in order before operating the IRL module.

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 dissipating work surface) when working with the modules. The kit is designed to connect the technician and the static dissipating work surface to the same ground point to prevent damage to the modules by electrostatic discharge.
>
> Use the static grounding wrist strap when installing and removing modules. Static discharge may damage CMOS devices on modules in the cabinet. Use grounded equipment and static safe practices when working with modules.

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 packaging 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 module are properly grounded before using them.

5. ***Ground Test Equipment.***

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

7. ***Use 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 cabinet chassis ground.

8. ***Do Not Use Lead Pencils to Set Dipswitches.*** Avoid contamination of switch contacts that can result in unnecessary circuit board malfunction.

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 IRL module. The required procedures are verification of proper fuse installation, installing the termination module itself, cable connections, and termination wiring.

Fuse Installation

NIRL03 termination modules with a revision level previous to R2 contain two, 0.25 inch by 1.25 inch fuses. A one amp/250 volt fuse (Bailey part number 194776A11001) should be installed in fuse clip F1. A five amp/250 volt fuse (Bailey part number 194776A15001) should be installed in fuse clip F2.

NIRL03 termination modules with a revision level of R2 or later contain two, five millimeter by 20 millimeter fuses. A one amp/250 volt fuse (Bailey part number 194818A31001) should be installed in fuse clip F1. A five amp/250 volt fuse (Bailey part number 194818A35001) should be installed in fuse clip F2.

If the fuses are not installed, insert the fuses into the proper fuse clip (See Figure 2-1 or 2-2 for fuse clip locations).

Jumper Configuration

Configure the termination module for the node type and type of communication cable used by setting jumper J3. Table 2-1 shows the possible jumper settings. Figure 2-3 illustrates the difference between middle and end node types.

Cable Connections

The NIRL03 Remote Link Termination Module enables communication between IMRIO02 modules. Table 2-2 lists each cable and its application. Figure 2-4 shows the cables to use and the cable connections for several different applications of the IRL module.

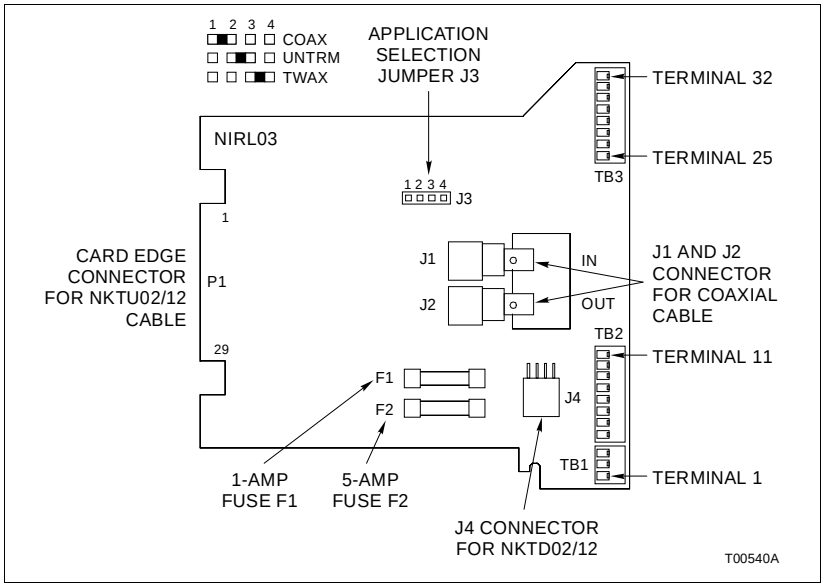

Figure 2-1. NIRL03 Termination Module Layout (Prior to R2)

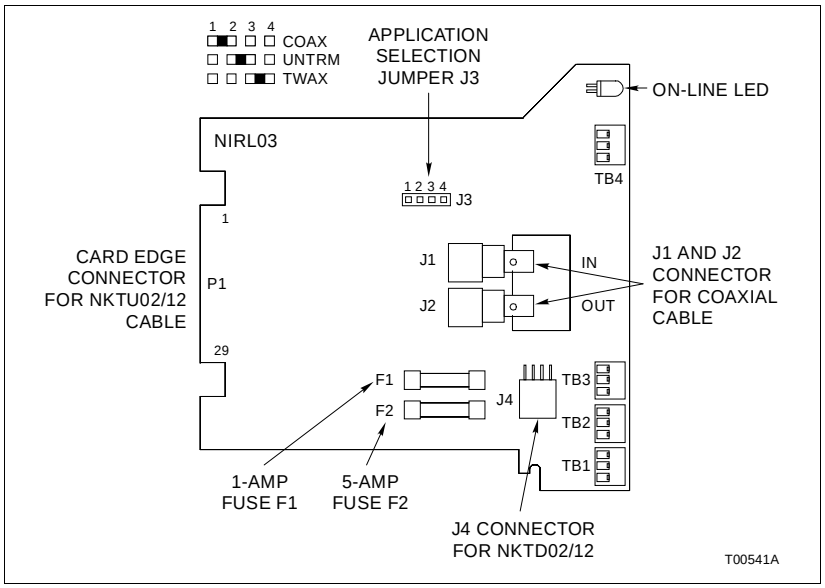

Figure 2-2. NIRL03 Termination Module Layout (R2 and Later)

Table 2-1. Jumper J3 Settings

Jumper	Position	Function
J3	1 - 2	End node type only - coaxial communication cable
	2 - 3	Middle node type only - coaxial, twinaxial or serial link wire communication cable
	3 - 4	End node type only - twinaxial or serial link wire communication cable

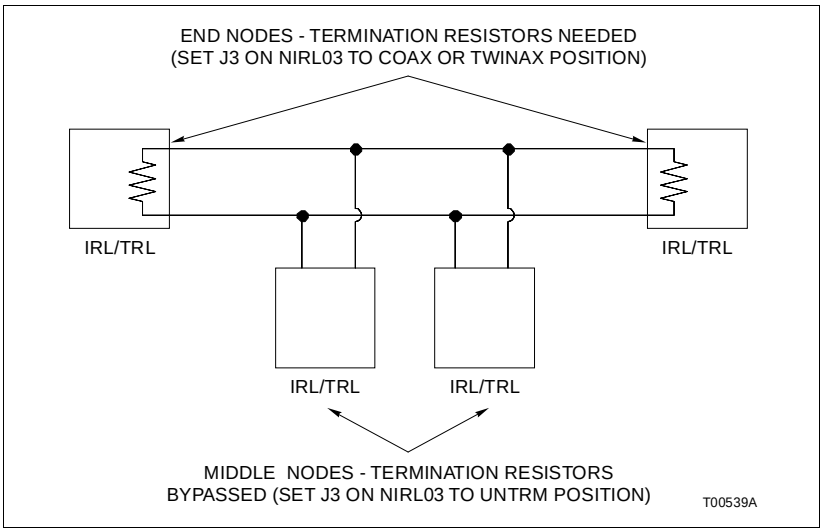

Figure 2-3. Node Positions for NIRL03 Termination Module Connections

Table 2-2. NIRL03 Cable Applications

Nomenclature/ Description	Application	Connections	Max Length m (ft.)
NKCL01 PVC communication cable	Connect an IRL module to another IRL module	The end of one NKTL01 cable to the end of another NKTYL01cable.	3,000 (10,000)
NKCL02 non-PVC communication cable			
NKPL03 PVC communication cable	Connects an IRL module to another IRL module.	Terminal strip of one IRL module to the terminal strip of another IRL module.	1,371 (4,500)
NKPL04 PVC communication cable			
NKTD02 PVC termination cable	Connects the IRL module to a station.	J4 of the IRL module to P1 of the station.	183 (600)
NKTD12 non-PVC termination cable			
NKTL01 communication cable	Connects an IRL module to an NKCL01/02 cable.	J1 or J2 of the IRL module to one end of the NKCL01/02 cable.	0.9 (3.0)
NKTU02 PVC termination cable	Connects the IRL module to the IMRIO02 slave module.	P1 of the IRL module to P3 of the IMRIO02 slave module.	6.1 (20.0)
NKTU12 non-PVC termination cable			

Table 2-2. NIRL03 Cable Applications (continued)

Nomenclature/ Description	Application	Connections	Max Length m (ft.)
Serial link wire	Enables serial link from IRL module to NICS01 module.	Terminal strip of the IRL module to other termination module strip.	N/A
Standard 14 to 22 AWG wire	Connects field and power (18 AWG) wiring to the IRL module.	Field or power source to the IRL terminal strip.	N/A

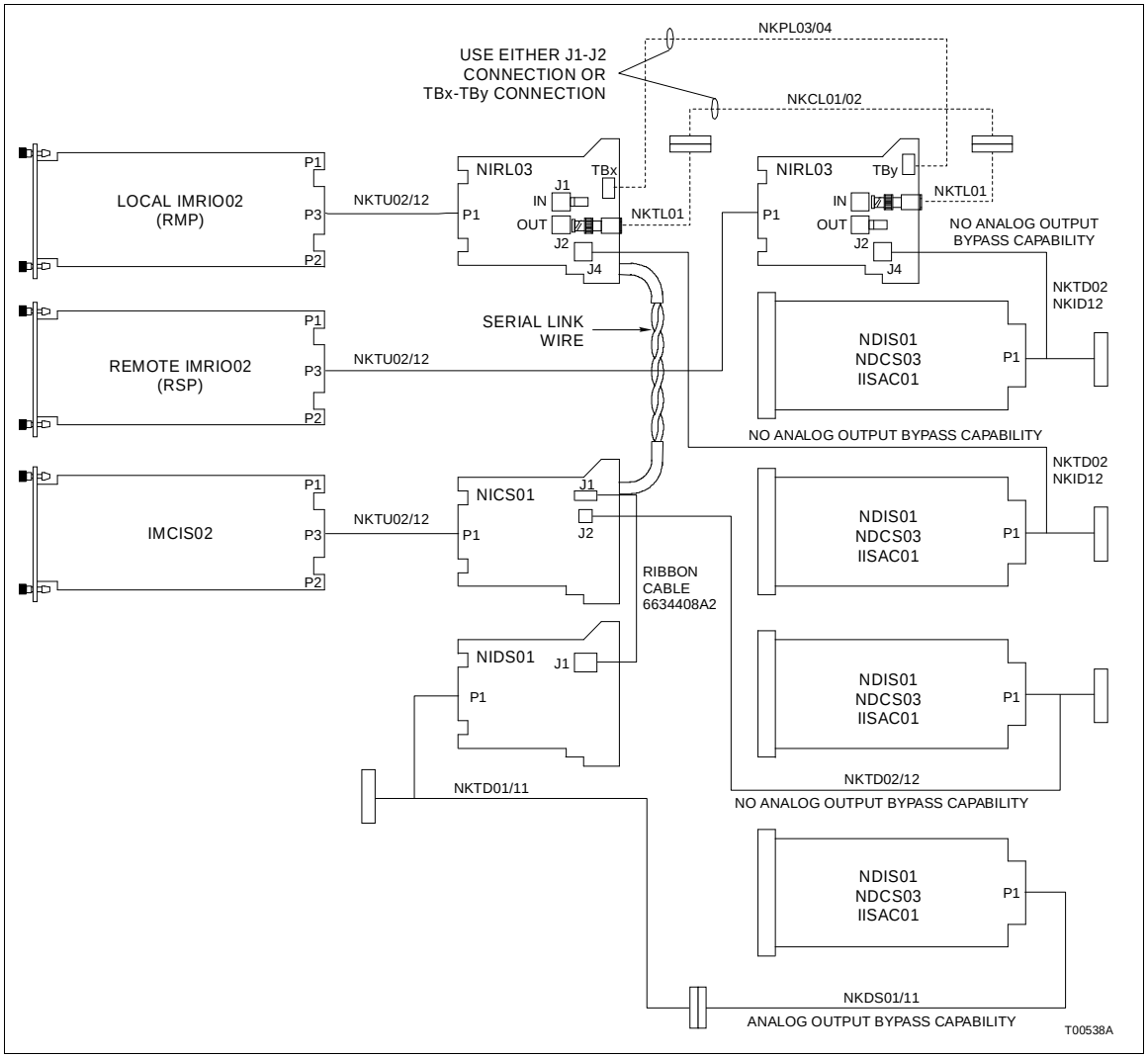

Figure 2-4. NIRL03 Cable Connections

Cable Installation

Remove (pull off) the front cover of the termination module before trying to install cables. Use the following procedures when installing cables.

CAUTION

Remove modules (slave, master or termination) from their assigned slots before installing a cable to that slot. Also, remove stations from their housing before installing a cable to that housing. Failure to do so could result in damage to the module or station.

ATTENTION

Retirer les modules (asservi, maître ou carte de raccordement) de leur position assignée avant d'installer un câble à cette position. Egalement, retirer les postes de commande de leur boîtier avant d'installer un câble dans ce boîtier. Des dommages au module ou au poste pourraient résulter d'un manquement à cette procédure.

NKCL01 AND NKCL02 CABLES

This cable connects, using NKTL01 adapter cables, one IRL module to another IRL module. To install the cable:

1. Connect one end of the cable to the NKTL01 cable connected to one of the IRL modules.

2. Connect the other end of the cable to the NKTL01 cable connected to the other IRL module.

NKPL03 AND NKPL04 CABLES

This cable directly connects one IRL module to another IRL module (see Figure 2-5 for an example cable connection). To install the cable:

1. Connect one conductor from terminal 9 or TB3-3 (depending on firmware revision of IRL module) of the remote master processor (RMP) IRL module to terminal 26 or TB4-1 (depending on firmware revision of IRL module) of the remote slave processor (RSP) IRL module.

2. Connect the other conductor from terminal 8 or TB3-2 (depending on firmware revision of IRL module) of the local (RMP) IRL module to terminal 25 or TB4-2 (depending on firmware revision of IRL module) of the remote (RSP) IRL module.

3. Connect the shield conductor from terminal 10 or TB3-1 (depending on firmware revision of IRL module) of the local (RMP) IRL module to terminal 27 or TB4-3 (depending on firmware revision of IRL module) of the remote (RSP) IRL module.

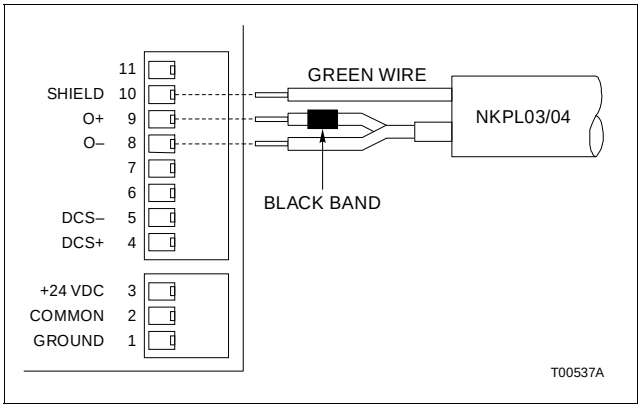

Figure 2-5. Example NKPL03 or NKPL04 Cable Connection

NKTD02 AND NKTD12 CABLES

This cable connects the IRL module to a first NDIS01, NDCS03 or IISAC01 station. To install the cable:

1. Remove the NDIS01, NDCS03 or IISAC01 station from the station housing.

2. Insert the J2 end of the cable into the station housing backplane. Viewing the station from the back, the cable inserts into the right slot (use the left slot for an NDCS03 station without analog output bypass capability). The cable should latch securely into place. Card edge connector P1 of the station circuit board connects to this end of the cable.

3. Insert the J1 end of the cable into the J4 connector of the IRL module. The cable should latch securely into place.

4. Install the NDIS01, NDCS03 or IISAC01 station into the station housing.

NKTL01 CABLE

This adapter cable connects an NKCL01 or NKCL02 cable to an IRL module. To install the cable:

1. Connect the BNC type plug end of the cable to the J1 (of the local or RMP node) or J2 (of the remote or RSP node) connector of the IRL module.

2. Connect the N type plug end of the cable to the NKCL01 or NKCL02 cable.

NKTU02 AND NKTU12 CABLES

This cable connects the IRL module to an IMRIO02 slave module. To install the cable:

1. Pull the IMRIO02 slave module out several inches from the MMU backplane.

2. If round type cables are already installed in the termination mounting unit, remove the cable retaining bracket.

3. Insert the J2 end of the NKTU02 or NKTU12 cable into the MMU backplane slot assigned to the IMRIO02 slave module. The cable should latch securely into place. Card edge connector P3 of the slave module connects to this end of the cable.

4. Connect the shield wire extending from the J2 end of the cable to the shield bus bar.

5. Insert the J1 end of the NKTU01 or NKTU12 cable into the termination mounting unit backplane slot assigned to the IRL module. The cable should latch securely into place. Card edge connector P1 of the IRL module connects to this end of the cable.

6. Insert the IMRIO02 slave module into the MMU until it locks into place.

7. Replace or add the cable retaining bracket if round type cables are installed in the termination mounting unit.

Installing the Termination Module

The IRL module inserts into a standard INFI 90 termination mounting unit and occupies one slot. To install:

NOTE: Insure all jumpers are configured prior to installation.

1. Verify the slot assignment of the IRL module.

2. Align the IRL module with the guide rails in the termination mounting unit and partially insert the module.

Terminal Wiring

Station wiring must be connected to the terminal strip. See Figure 2-6 or 2-7 (depending on firmware revision of IRL module) for IRL termination module terminal strip assignments. The station link provides a communication path between an IMRIO02 slave module and stations. Station link wiring should be Bailey serial link wire.

WARNING	**If input or output circuits are a shock hazard after disconnecting system power at the power entry panel, then the door of the cabinet containing these externally powered circuits must be marked with a warning stating that multiple power sources exist.**
AVERTISSEMENT	**Si des circuits d'entree ou de sortie sont alimentes a partir de sources extrenes, ils presentent un risque de choc electrique meme lorsque l'alimentation du systeme est debranchee du panneau d'entree l'alimentation. Le cas echeant, un avertissement signalant la presence de sources d'alimentation multiples doit entre appose sur la porte de l'armoire.**

CAUTION	**It is strongly recommended that all power (cabinet, I/O, etc.) be turned off before doing any termination module wiring. Failure to do so could result in equipment damage. Do not apply power until all connections are verified.**
ATTENTION	**Il est fortement recommand, que toutes les alimentations (armoire, E/S, etc.) soient coupées avant d'effectuer quelque raccord que ce soit sur un carte de raccordement. Un manquement à ces instructions pourrait causer des dommage à l'équipement. Ne pas rebrancher les alimentations avant d'avoir vérifié tous les raccordements.**

NOTE: Proper polarity of all signals must be maintained.

To connect field and power wiring:

1. Insure the IRL module is pulled out far enough to gain access to the terminal strip.

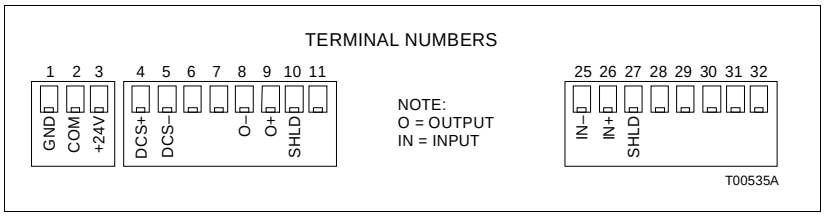

Figure 2-6. NIRL03 Terminal Strip Assignments (Prior to R2)

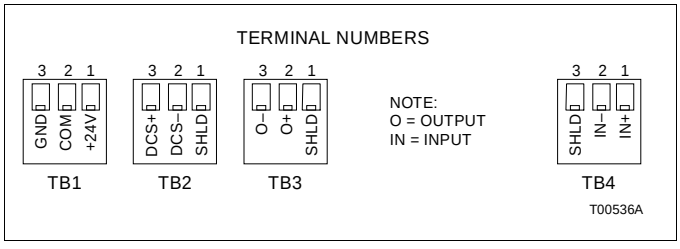

Figure 2-7. NIRL03 Terminal Strip Assignments (R2 and Later)

2. Feed the station wiring into the terminal strip area and connect them to the appropriate terminals.

3. Connect an 18 AWG wire from the +24 VDC bus of the termination mounting unit to the +24 VDC terminal of the IRL module.

4. Connect an 18 AWG wire from the common bus of the termination mounting unit to the common terminal of the IRL module.

5. Insert the IRL module until it locks securely into place.

6. Replace (snap on) the front cover.

The NIRL03 module is ready for operation if:

1. The fuses are installed.

2. The jumpers are configured for the node type and type of communication cable used.

3. All required cables are installed and verified.

4. Power is connected and applied to the IRL module.

SECTION 3 - MAINTENANCE

INTRODUCTION

The remote link termination module requires limited maintenance. This section contains a maintenance schedule.

MAINTENANCE SCHEDULE

Execute the tasks in Table 3-1 at the specified intervals.

Table 3-1. Maintenance Schedule

Task	Interval
Clean and tighten all power and field wiring connections.	Every 6 months or during plant shutdown, whichever occurs first.
Use a static safe vacuum cleaner to remove dust from: Modules. Module mounting unit. Termination modules. Termination mounting unit.	

SECTION 4 - REPAIR/REPLACEMENT PROCEDURES

INTRODUCTION

This section explains how to replace a failed NIRL03 Remote Link Termination Module.

MODULE REPLACEMENT PROCEDURES

If an IRL termination module is faulty, replace it with a new one. To replace an IRL module:

CAUTION	**It is strongly recommended that all power (cabinet, I/O, etc.) be turned off before doing any termination module wiring. Failure to do so could result in equipment damage. Do not apply power until all connections are verified.**
ATTENTION	**Il est fortement recommand, que toutes les alimentations (armoire, E/S, etc.) soient coupées avant d'effectuer quelque raccord que ce soit sur un carte de raccordement. Un manquement à ces instructions pourrait causer des dommage à l'équipement. Ne pas rebrancher les alimentations avant d'avoir vérifié, tous les raccordements.**

1. Turn off power to the cabinet containing the defective IRL module.

2. Remove (pull off) the front cover from the defective IRL module.

3. Label and remove all wiring and cables from the defective IRL module.

4. Remove the defective IRL module from the termination mounting unit.

5. Verify a 1.0 amp/250 volt fuse is installed in fuse clip F1 and the 5.0 amp/250 volt fuse is installed in fuse clip F2 of the replacement IRL module. If not already installed, insert the appropriate fuses into fuse clips F1 and F2.

6. Set the jumpers on the replacement IRL module to match the jumper settings of the defective IRL module.

7. Connect all wiring removed in Step 3 to the replacement IRL module.

8. Verify proper wiring connections to the replacement IRL module.

9. Insert the replacement IRL module until it locks securely into place.

10. Install (snap on) the front cover on the replacement IRL module.

11. Apply power to the cabinet containing the replacement IRL module.

FUSE REPLACEMENT PROCEDURES

If the fuse is faulty, replace it with a new one. To replace a fuse:

CAUTION	**It is strongly recommended that all power (cabinet, I/O, etc.) be turned off before doing any termination module wiring. Failure to do so could result in equipment damage. Do not apply power until all connections are verified.**
ATTENTION	**Il est fortement recommand, que toutes les alimentations (armoire, E/S, etc.) soient coupées avant d'effectuer quelque raccord que ce soit sur un carte de raccordement. Un manquement à ces instructions pourrait causer des dommage à l'équipement. Ne pas rebrancher les alimentations avant d'avoir vérifié, tous les raccordements.**

1. Turn off power to the cabinet containing the IRL module.

2. Remove (pull off) the front cover of the IRL module.

3. Pull the IRL module out far enough to gain access to the fuse clips (F1 or F2).

4. Remove the faulty fuse.

5. Install the replacement fuse into the appropriate fuse clip.

6. Insert the IRL module until it locks securely into place.

7. Install (snap on) the front cover of the IRL module.

8. Apply power to the cabinet containing the IRL module.

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 Controls Company 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.

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

Table 5-1. Spare Parts List

Description	Component	Part Number
Fuse 1.0 A/250 V, 0.25 in. x 1.25 in.	F1	194776A11001
Fuse 5.0 A/250 V, 0.25 in. x 1.25 in.	F2	194776A15001
Jumper	J3	1946984A1
Fuse 1.0 A/250 V, 5 mm x 20 mm	F1	194818A31001
Fuse 5.0 A/250 V, 5 mm x 20 mm	F2	194818A35001

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 - IMRIO02 REMOTE I/O SLAVE MODULE CONFIGURATION

IINTRODUCTION

Figure A-1 shows the location of the dipswitches used to configure the IMRIO02 module. Tables A-1 through A-4 give the dipswitch settings to configure the module. This information is provided as a quick reference guide for personnel installing the NIRL03 termination module. Configuration consists of setting the node or slave address (dipswitch S1), diagnostic mode (dipswitch S2), and type of communication cables used (dipswitches S3 and S4). Refer to the ***IMRIO02 Remote I/O Slave Module*** instruction manual for detailed instructions.

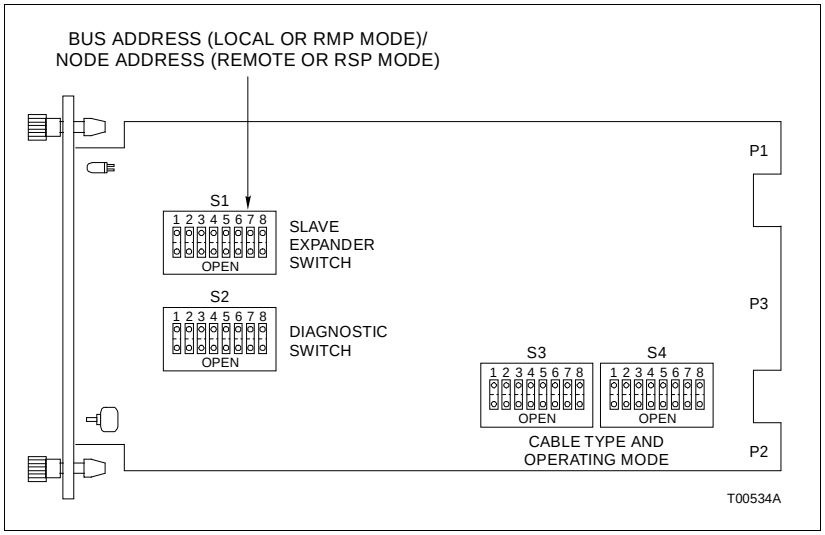

Figure A-1. Remote I/O Slave Module

Table A-1. IMRIO02 Dipswitch S1 (Address Examples)[1]

Address Example	Dipswitch Position (Binary Value)							
	1^2 (128)	2^2 (64)	3 (32)	4 (16)	5 (8)	6 (4)	7 (2)	8 (8)
0	0	0	0	0	0	0	0	0
16	0	0	0	1	0	0	0	0
32	0	0	1	0	0	0	0	0
48	0	0	1	1	0	0	0	0
63	0	0	1	1	1	1	1	1

NOTES: 0 = CLOSED or ON, 1 = OPEN or OFF.
1. In remote mode, this dipswitch selects the node address. In local mode, this dipswitch selects the expander bus address.
2. Dipswitch positions 1 and 2 must remain closed.

Table A-2. IMRIO02 Dipswitch S2 (Diagnostic Mode)

Dipswitch Position								Function
1	2	3	4	5	6	7	8	
0	0	0	0	0	0	0	0	Remote (RSP) mode
0	1	0	0	0	0	0	0	Local (RMP) mode

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

Table A-3. IMRIO02 Dipswitch S3 (Communication Cables)

Dipswitch Position								Function
1	2	3	4	5	6	7	8	
X	X	X	2	1	0	0	0	Remote (RSP) mode
X	X	X	2	0	1	1	1	Local (RMP) mode

NOTE: 0 = CLOSED or ON
1 = OPEN or OFF.
X = any dipswitch position.
2 = 0 (for electrical cables) or 1 (for fiber optic cables).

Table A-4. IMRIO02 Dipswitch S4 (Communication Cables)

Dipswitch Position								Function
1	2	3	4	5	6	7	8	
0	0	0	0	0	0	0	0	Remote (RSP) mode
1	1	1	1	1	1	1	1	Local (RMP) mode

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

APPENDIX B - IISAC01 ANALOG CONTROL STATION CONFIGURATION

INTRODUCTION

Figure B-1 shows the location of the dipswitches and jumpers used to configure the IISAC01 Analog Control Station. Tables B-1 through B-6 give the dipswitch and jumper settings to configure the station. This information is provided as a quick reference guide for personnel installing the NIRL03 termination module. Configuration consists of setting the operating mode, communications rate and station address (dipswitch S1). The auto bypass, output and electric drive options (dipswitch S2), along with the bar graph display option (dipswitches S3 and S4), must be set. Jumpers JP1 through JP3 set the manual override, electric drive type and normal operation options. Refer to the ***IISAC01 Analog Control Station*** instruction manual for detailed instructions.

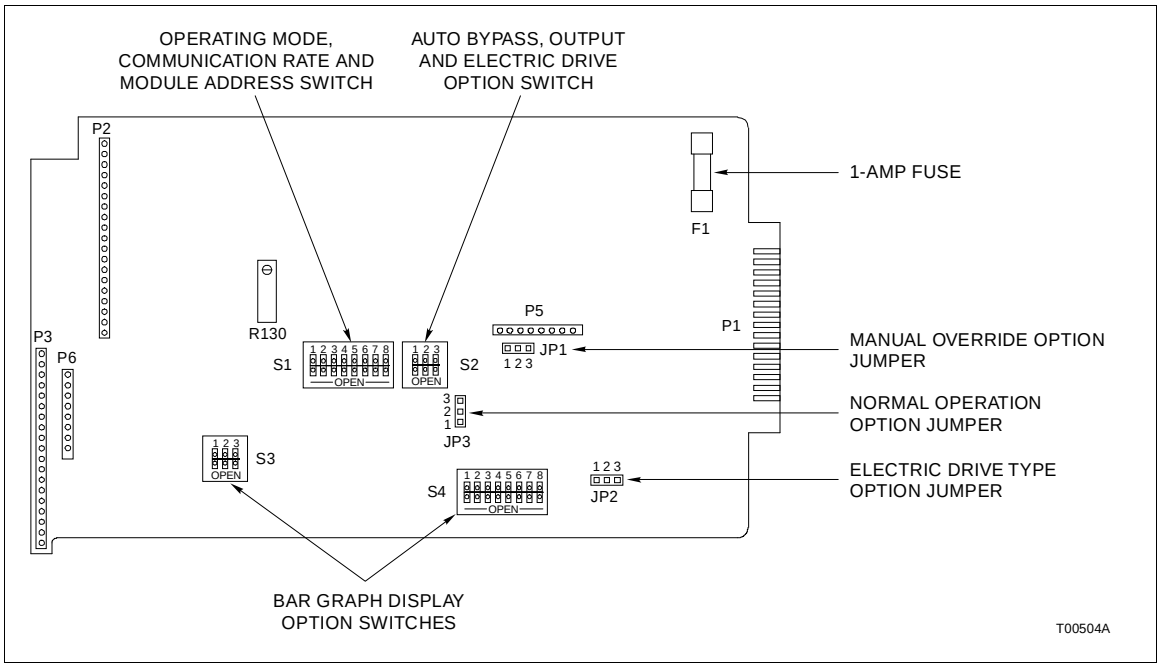

Figure B-1. Analog Control Station

Table B-1. IISAC01 Dipswitch S1 Settings

Option	Switch Position								Option Status
	1	2	3	4	5	6	7	8	
Diagnostics	1								Enable diagnostics (reserved for factory used only)
	0								Normal operation
Communication Rate		1							Enable 40 kbaud (> 8 stations)
		0							Enable 5 kbaud (≤ 8 stations)
Station Address			0	0	0	0	0	0	Represents address 0
			1	1	1	1	1	1	Represents address 63

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

Table B-2. IISAC01 Dipswitch S2 Settings

Option	Switch Position			Option Status
	1	2	3	
Auto Bypass	1			Enable auto bypass
	0			Disable auto bypass
Demand Output		1		Reverse DO output
		0		Normal DO output
Electric Drive			1	Enable electric drive
			0	Disable electric drive

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

Table B-3. IISAC01 Dipswitch S3 Settings

Display Options	Switch Position			VAR	SET	OUT	ALPHA
	1	2	3				
Stand Alone Mode	0	0	0	Blank	Blank	Blank	DO
	0	0	1[1]	Blank	Blank	AI1	DO[3]
	0	1	0	Blank	Blank	AI1 & DO[2]	Blank & DO
	0	1	1	AI1	Blank	Blank	DO
	1	0	0	Blank	Blank	DO	DO
	1	0	1	AI1	Blank	DO	DO
	1	1	0[1]	AI2	Blank	AI1	DO[3]
	1	1	1[1]	AI2	Blank	DO[3]	DO[3]

NOTES: 0 = CLOSED or ON, 1 = OPEN or OFF.
1. The only display options available when the electric drive option is enabled.
2. The VAR switch toggles the display from AI1 to DO.
3. The display is blanked when the electric drive option is enabled.

Table B-4. IISAC01 Dipswitch S4 Settings

Option	Switch Position								Option Status
	1	2	3	4	5	6	7	8	
Square Root (AI2 only)	1								Enable square root
	0								Disable square root

Display Options	Switch Positions								VAR	SET	OUT	ALPHA
	1	2	3	4	5	6	7	8				
Normal Mode		0	0	0					PV	SP	CO	PV,SP,CO
		0	0	1					PV	SP	AI1	PV,SP,CO
		0	1	0					PV	SP	Blank	PV,SP,CO
		0	1	1					PV	SP	All On	PV,SP,CO
		1	0	0					AI2	SP	CO	PV,SP,CO[3]
		1	0	1					AI2	SP	AI1	PV,SP,CO[3]
		1	1	0					AI2	SP	Blank	PV,SP,CO[3]
		1	1	1					AI2	SP	All On	PV,SP,CO[3]
Bypass Mode					0	0	0	0[1]	Blank	Blank	AI1	DO[2]
					0	0	0	1	Blank	Blank	DO	DO
					0	0	1	0	AI1	Blank	DO	DO
					0	0	1	1	DO	Blank	DO	DO
					0	1	0	0	DO	Blank	AI1	DO
					0	1	0	1[1]	AI2	Blank	AI1	DO[2]
					0	1	1	0	AI2	Blank	DO	DO
					0	1	1	1	PV (MFP)	Blank	AI1	DO
					1	0	0	0	PV (MFP)	Blank	DO	DO
					1	0	0	1[1]	AI2	Blank	Blank	DO

NOTES: 0 = CLOSED or ON, 1 = OPEN or OFF.
1. The only display options available when the electric drive option is enabled.
2. The display is blanked when the electric drive option is enabled.
3. The PV displayed is the S1 input to function code 80.

Table B-5. IISAC01 Jumper JP1, JP2, and JP3 Settings

Jumper	Jumper Position	Function
JP1	1 - 2	Enable manual override switch
	2 - 3	Disable manual override switch
JP2[1]	1 - 2	RW type electric drive
	2 - 3	Universal type electric drive
JP3	1 - 2	Normal operation
	2 - 3	Reserved for factory use only

NOTE:
1. This jumper is labeled JP4 on stations that are revision 6638095A1.

Table B-6. Electric Drive Mode Display Options

Stand-Alone Display Mode (Dipswitch S3 Positions)[1]			Bypass Display Mode (Dipswitch S4 Positions)				VAR Bar Graph	OUT Bar Graph	Action on Control Output
1	2	3	5	6	7	8			
0	0	1	0	0	0	0	Blank	AI1	AI1 to CO[1]
1	1	0	0	1	0	1	AI2	AI1	AI1 to CO[1]
1	1	1	1	0	0	1	AI2	Blank	AI2 to CO[1]

NOTES: 0 = CLOSED or ON, 1 = OPEN or OFF, AI = analog input, CO = control output.
1. Defines the value that will be used as the target CO when the station exits bypass mode and enters normal mode.

APPENDIX C - NDCS03 DIGITAL CONTROL STATION CONFIGURATION

INTRODUCTION

Figures C-1 and C-2 show the location of the dipshunts, dipswitches and jumpers used to configure the NDCS03 station. Tables C-1 through C-4 give the dipswitch, dipshunt and jumper settings to configure the station. This information is provided as a quick reference guide for personnel installing the NIRL03 termination module. Configuration consists of setting the analog input type (dipshunt XU16) and control output type (jumpers J1 and J2) on the bypass board. Setting the station address (dipswitch S1) and options (jumpers JP1 through JP5) on the station board is also required. Refer to the ***NDCS03 Digital Control Station*** instruction manual for detailed instructions.

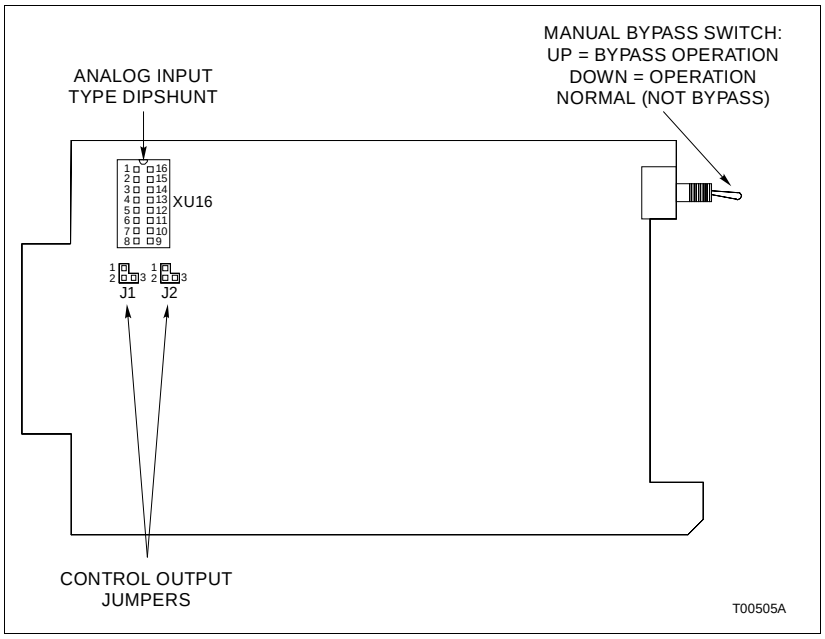

Figure C-1. Bypass Board

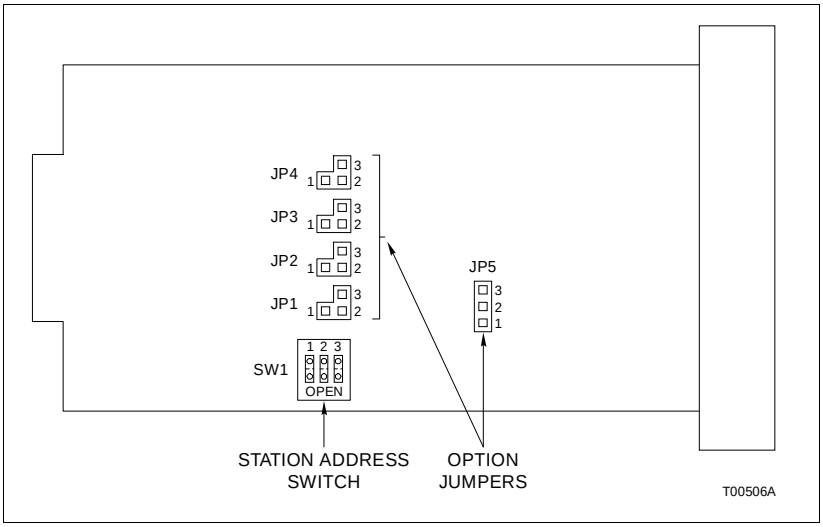

Figure C-2. Digital Control Station Board

Table C-1. Dipshunt XU16 Settings

Strap Numbers								Function
1	2	3	4	5	6	7	8	
0	0	1	1	0	0	1	1	4 to 20 mA analog input[1]
1	1	0	0	1	1	0	0	Universal actuator analog input
0	0	0	0	1	1	0	0	RW electric drive analog input[1]
1	1	0	0	0	0	1	1	4 to 20 mA analog input

NOTES: 0 = open or cut strap, 1 = intact or shorted strap
1. Connected to the 4 to mA output locally.

Table C-2. NDCS03 Jumper J1 and J2 (Control Output Type)

Jumper	Jumper Position	Function
J1	1 - 2	RW electric drive operation
J2		
J1	2 - 3	Universal electric drive operation
J2		

NOTE: Jumper settings do not affect 4 to 20 mA outputs.

Table C-3. NDCS03 Dipswitch S1 (Station Address)

Station Address	Dipswitch Position		
	1	2	3
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

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

Table C-4. NDCS03 Jumper JP1 through JP5 (Options)

Jumper	Jumper Position	Function
JP1	1 - 2	Enable auto bypass.
	2 - 3	Disable auto bypass.
JP2	1 - 2	Enable reverse acting output when in bypass.
	2 - 3	Disable reverse acting output when in bypass.
JP3	1 - 2	No external analog input displayed on OUT bar graph when in normal mode of operation.
	2 - 3	External analog input displayed on OUT bar graph when in normal mode of operation.
JP4	1 - 2	External analog input displayed on OUT bar graph when in bypass mode of operation.
	2 - 3	External analog input displayed on VAR bar graph when in bypass mode of operation.
JP5	1 - 2	Select bright intensity.
	2 - 3	Select dim intensity.

APPENDIX D - NDIS01 DIGITAL INDICATOR STATION CONFIGURATION

INTRODUCTION

Figure D-1 shows the location of the dipswitches and jumpers used to configure the NDIS01 station. Tables D-1 and D-2 give the dipswitch and jumper settings to configure the station. This information is provided as a quick reference guide for personnel installing the NIRL03 termination module. Configuration consists of setting the station address (dipswitch S1) and display brightness (jumper JP1). Refer to the ***NDIS01 Digital Indicator Station*** instruction manual for detailed instructions.

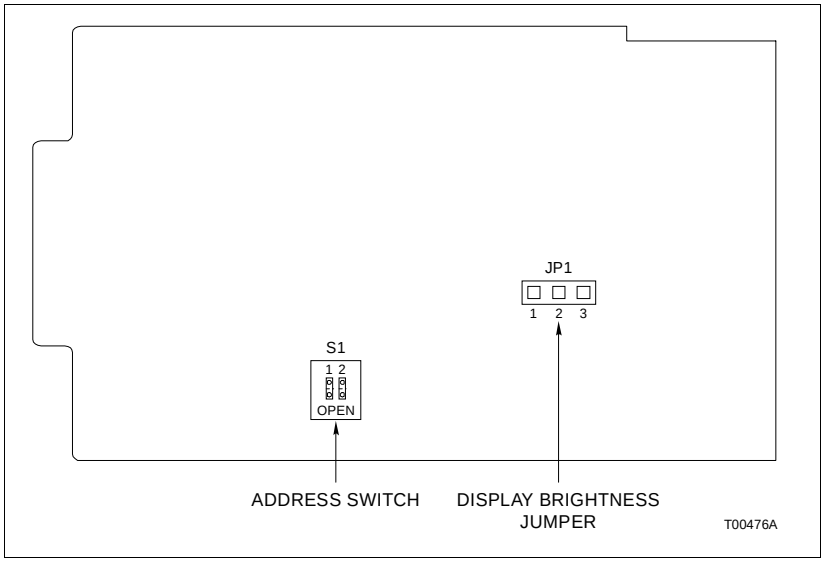

Figure D-1. Digital Indicator Station

Table D-1. NDIS01 Dipswitch S1 (Station Address)

Station Address	Dipswitch Position	
	1	2
8	0	0
9	0	1
10	1	0
11	1	1

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

Table D-2. NDIS01 Jumper JP1 (Display Brightness)

Jumper	Jumper Position	Function
JP1	1 - 2	Select bright intensity
	2 - 3	Select dim intensity

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