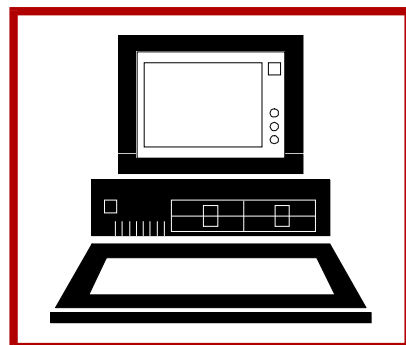
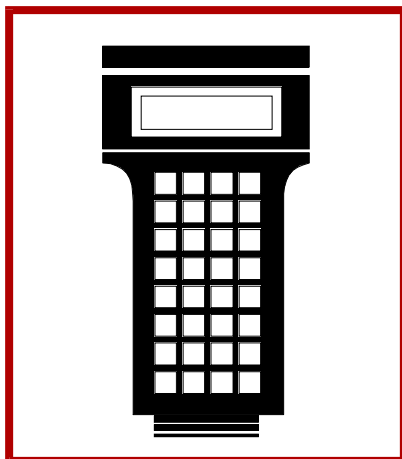
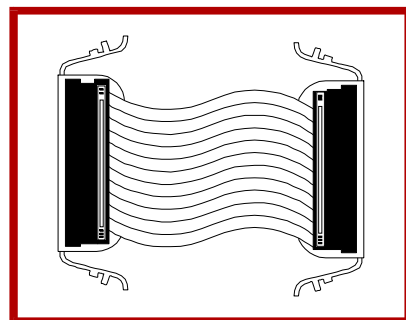
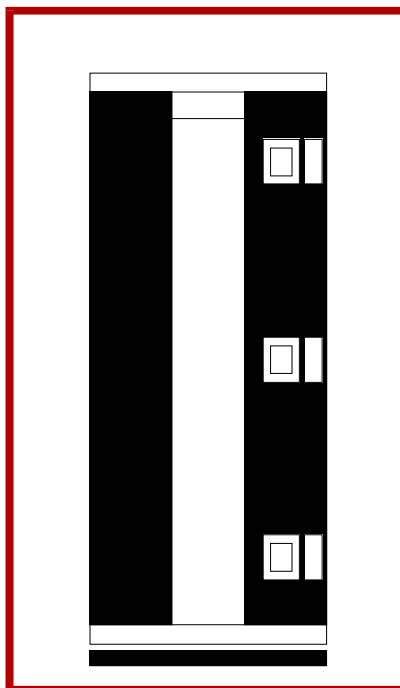
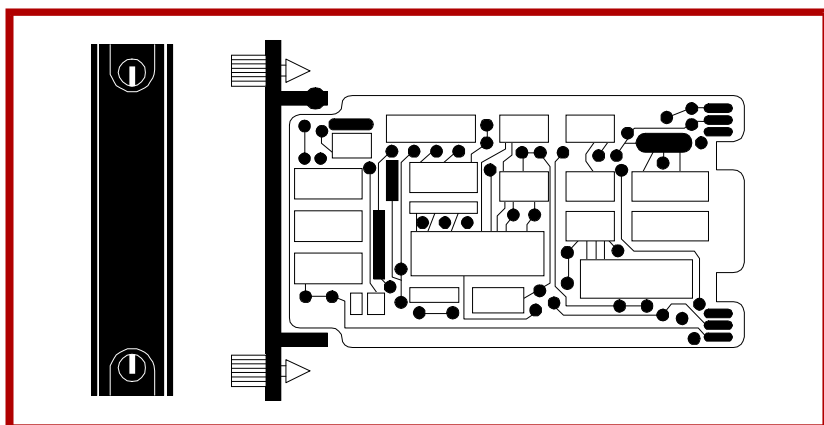
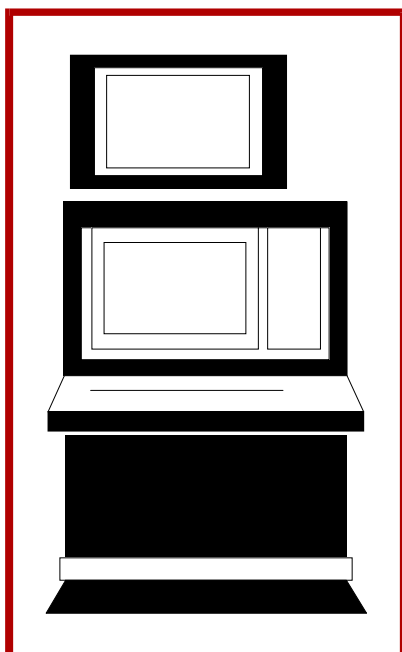


E96-412



# Instruction

## Digital Station Termination Module (NIDS01)



**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

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Termination modules provide an input connection from the plant equipment to the INFI 90<sup>®</sup> process modules. The NIDS01 Digital Station Termination (IDS) Module terminates IISAC01 Analog Control Stations, NDCS03 Digital Control Stations and NDIS01 Digital Indicator Stations. This product instruction explains how to install and use the IDS module.

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<sup>®</sup> Registered trademark of Elsag Bailey Process Automation.

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## List of Effective Pages

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Total number of pages in this manual is 34, consisting of the following:

<b>Page No.</b>	<b>Change Date</b>
Preface	Original
List of Effective Pages	Original
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1-1 through 1-4	Original
2-1 through 2-9	Original
3-1	Original
4-1 through 4-2	Original
5-1	Original
A-1 through A-5	Original
B-1 through B-3	Original
C-1 through C-2	Original
Index-1	

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.

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## Safety Summary

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**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. 2-8)

**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. 2-4)

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. 2-8, 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'entrée ou de sortie sont alimentés à partir de sources externes, ils présentent un risque de choc électrique même lorsque l'alimentation du système est débranchée du panneau d'entrée l'alimentation. Le cas échéant, un avertissement signalant la présence de sources d'alimentation multiples doit être apposé sur la porte de l'armoire. (p. 2-8)

**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. Également, 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. 2-4)

Il est fortement recommandé 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 dommages à l'équipement. Ne pas rebrancher les alimentations avant d'avoir vérifié tous les raccords. (p. 2-6, 4-1, 4-2)

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# SECTION 1 - INTRODUCTION

---

## OVERVIEW

The NIDS01 Digital Station Termination Module (IDS) used in conjunction with the NICS01 Controller/Station Termination Module provides bypass capability and an electric drive termination for IISAC01 Analog Control Stations and NDCS03 Digital Control Stations. NDIS01 Digital Indicator Stations can also be connected to the termination module. An NIDS01 termination module connects to the NICS01 termination module with a ribbon cable. Figure 1-1 shows an example NIDS01 application.

---

## INTENDED USER

System engineers and technicians should read this manual before installing and placing the NIDS01 termination module into operation. Do **not** put the IDS termination module into operation until this instruction is read and understood.

---

## INSTRUCTION CONTENT

This manual contains five sections and three appendices.

<b>Introduction</b>	Contains an overview of the features, specifications and a description of the IDS module.
<b>Installation</b>	Describes precautions to observe when handling modules and setup procedures required before module operation. This section discusses dipswitch settings and installation procedures.
<b>Maintenance</b>	Provides a maintenance schedule.
<b>Repair/Replacement Procedures</b>	Details how to replace an IDS module.
<b>Support Services</b>	Describes the support services (spare parts, training, documentation, etc.) available from Bailey Controls Company.
<b>Appendices A, B and C</b>	List the information necessary to configure the IISAC01, NDCS03 and NDIS01 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 IDS module. Refer to the Table of Contents or Index to find specific information after the module is operating.

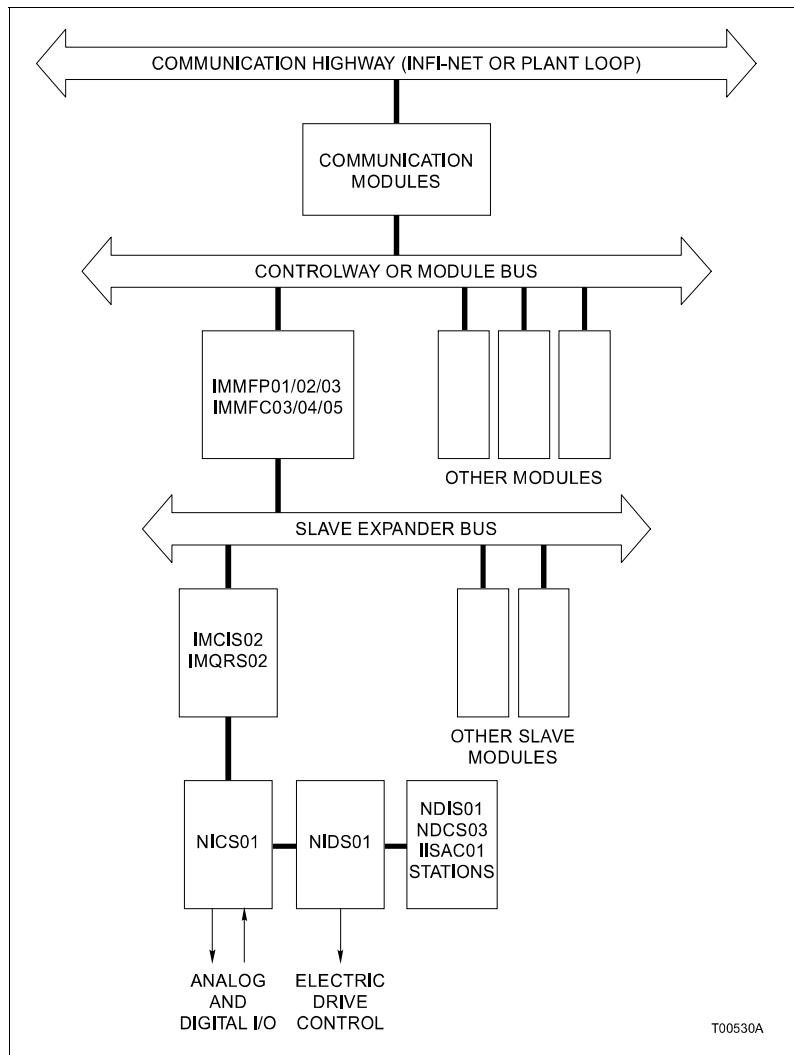


Figure 1-1. Example NIDS01 Termination Module Application

REFERENCE DOCUMENTS

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

Table 1-1. Reference Documents

Number	Document
I-E93-902-1	NDCCS03 Digital Control Station.
I-E96-116	NDIS01 Digital Indicator Station.
I-E96-117	IISAC01 Analog Control Station.
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*

<b>Term</b>	<b>Definition</b>
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, <i>on</i> or <i>off</i> .
DIS	Digital indicator station. A panel mounted device that monitors and displays digital values.
ICS	Controller/station termination module.
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.
QRS	Quick response slave module.
SAC	Acronym for analog control station.
Termination Module (TM)	Provides input/output connection between plant equipment and INFI 90/Network 90 <sup>®</sup> 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*

<b>Nomenclature</b>	<b>Hardware/Description</b>
NIDS01	Digital station termination module.
NKDS01	Station cable (PVC).
NKDS11	Station cable (non-PVC).
NKDS02	Station cable with series connector (PVC).
NKDS12	Station cable with series connector (non-PVC).
NKDS03	Station cable with series connector (PVC).
NKDS13	Station cable with series connector (non-PVC).
NKTD01	Station termination cable (PVC).

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Table 1-3. Nomenclature (continued)

Nomenclature	Hardware/Description
NKTD11	Station termination cable (non-PVC).
NTMU01	Termination mounting unit, rear mounting.
NTMU02	Termination mounting unit, front mounting.
258436A1	Cable retaining kit used when at least one round cable is connected to the termination mounting unit.
6634408A2 (supplied with NIDS01 termi- nation module)	Ribbon cable from J1 connector of NIDS01 module to J1 connector of NICS01 module.

**SPECIFICATIONS**

Refer to Table 1-4 for the specifications of the NIDS01 termination module.

Table 1-4. Specifications

Property	Characteristic/Value
Power Requirements	+24 VDC from the 24 VDC bus bar of the termination mounting unit.
Outputs	The outputs of this termination unit are used by stations to control electric drive devices.  Raise and lower signals manually raise and lower the electric drive.  Power and common signals come from the electric drive and provide power for an external relay or device. The outputs of these terminals are 0 VDC (manual mode) and 24 VDC (automatic mode).
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).
Air Quality	0% to 45% up to 70°C (158°F) (noncondensing).  Noncorrosive.
Certification	CSA certified for use as process control equipment in an ordinary (nonhazardous) location.

Specifications subject to change without notice.

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## SECTION 2 - INSTALLATION

---

### INTRODUCTION

This section explains how to configure and install the NIDS01 Digital Station Termination Module. Read, understand and complete the steps in order before operating the IDS 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 IDS termination module. The required procedures are fuse installation, installation of the termination module itself, cable connections and termination wiring.

**Fuse Installation**

Two 4.0 amp/250 volt fuses (Bailey P/N 194776A14001) should be installed in every IDS module. If the fuses are not installed, insert the fuses into fuse clips F1 and F2 (see Figure 2-1 for fuse clip locations).

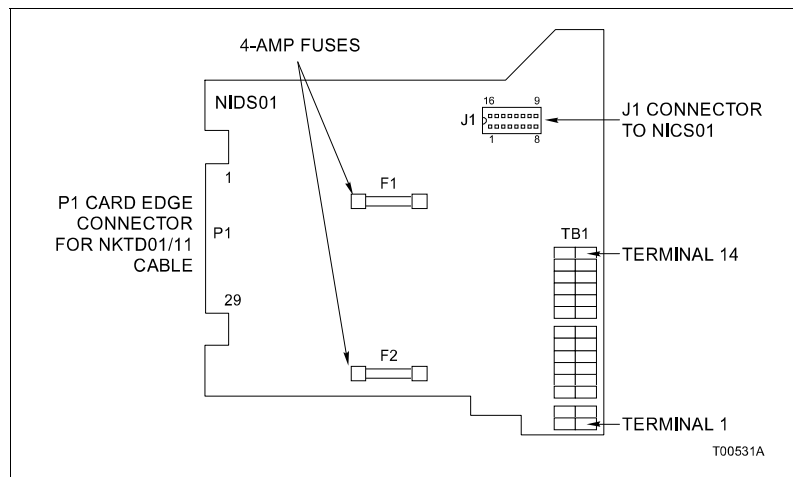


Figure 2-1. NIDS01 Termination Module Layout

**Cable Connections**

The IDS termination module supports several configurations of stations. The module interfaces signals to the control stations. Figures 2-2 and 2-3 show the cable connections from the termination module to several different station configurations. Table 2-1 lists each cable and its application.

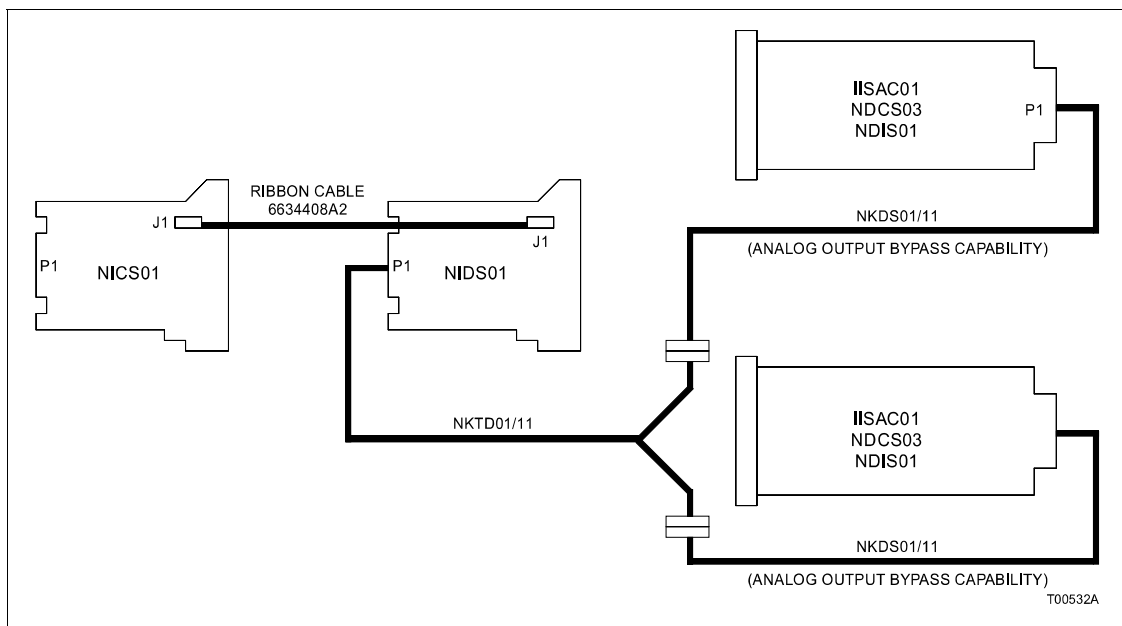


Figure 2-2. NIDS01 Cable Connections to Two Stations

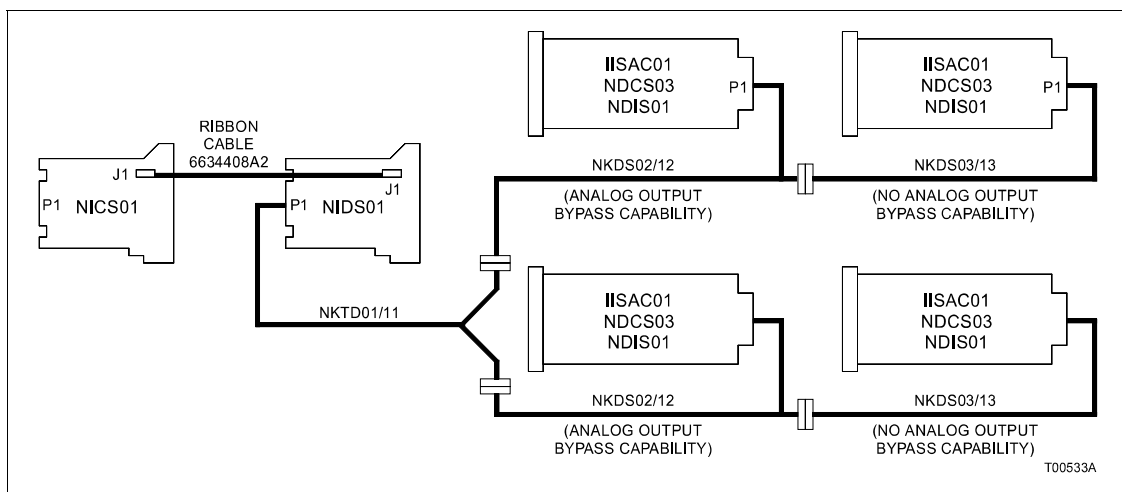


Figure 2-3. NIDS01 Cable Connection to Four Stations

Table 2-1. NIDS01 Cable Applications

Nomenclature/Description	Application	Connections	Maximum Length
NKTD01 PVC Termination Cable	Connects the IDS module to stations.	P1 of the IDS module to the NKDS01/11 or NKDS02/12 cable.	0.6 m (2.0 ft)
NKTD11 non-PVC Termination Cable			
NKDS01 PVC Station Cable	Connects NKTD01/11 cable to a single station.	NKTD01/11 cable to P1 of a station.	122.0 m (400.0 ft)
NKDS11 non-PVC Station Cable			
NKDS02 PVC Station Cable	Connects NKTD01/11 to multiple stations.	NKTD01/11 cable to P1 of multiple stations.	Station Configuration Dependent
NKDS12 non-PVC Station Cable			
NKDS03 PVC Station Cable	Connects NKDS02/12 cable to a station	NKDS02/12 cable to P1 of a station.	3.0 m (10.0 ft)
NKDS13 non-PVC Station Cable			
6634408A2 Ribbon Cable	Connects the IDS module to the NICS01 module.	J1 of the IDS module to J1 of the NICS01 module.	N/A
Standard 14 to 22 AWG Wire	Connects field and power (18 AWG) wiring to the IDS module.	Field or power source to the IDS terminal strip.	N/A

**Cable Installation**

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

<b>CAUTION</b>	<p><b>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.</b></p>
<b>ATTENTION</b>	<p><b>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.</b></p>

**NKTD01/11 CABLE**

This cable connects the IDS module to the NKDS01, NKDS11, NKDS02 or NKDS12 cable. To install the cable:

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

2. Insert the J1 end of the cable into the termination mounting unit backplane slot assigned to the IDS module. The cable should latch securely in place. Card edge connector P1 of the IDS module connects to this end of the cable.
3. Connect the J2 (analog output 1, analog input 3, etc.) or J3 (analog output 2, analog input 4, etc.) ends of the cable to the NKDS01, NKDS11, NKDS02 or NKDS12 cables. The cables should latch together securely.
4. Replace or add the cable retaining bracket if round type cables are installed in the termination mounting unit.

---

***NKDS01/11 CABLE***

This cable connects the NKTD01 or NKTD11 cable to a single 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. Connect the J1 end of the cable to the J2 (analog output 1, analog input 3, etc.) or J3 (analog output 2, analog input 4, etc.) end of the NKTD01 or NKTD11 cable. The cables should latch together securely.
4. Install the NDIS01, NDCS03 or IISAC01 station into the station housing.

---

***NKDS02/12 CABLE***

This cable connects the NKTD01 or NKTD11 cable to multiple NDIS01, NDCS03 or IISAC01 stations. 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. Connect the J1 end of the cable to the J2 (analog output 1, analog input 3, etc.) or J3 (analog output 2, analog input 4, etc.) end of the NKTD01 or NKTD11 cable. The cables should latch together securely.

4. Connect the J3 end of the cable to the J1 end of any required NKDS03 or NKDS13 cable. The cables should latch together securely.
5. Install the NDIS01, NDCS03 or IISAC01 station into the station housing.

---

***NKDS03/13 CABLE***

This cable connects the NKDS02, NKDS03, NKDS12 or NKDS13 cable to interconnected NDIS01, NDCS03 or IISAC01 stations. 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. Connect the J1 end of the cable to the J3 end of the NKDS02 or NKDS12 cable. The cables should latch together securely.
4. Connect the J3 end of the cable to the J1 end of any additional NKDS03 or NKDS13 cable. The cables should latch together securely.
5. Install the NDIS01, NDCS03 or IISAC01 station into the station housing.

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***6634408A2 RIBBON CABLE***

This cable connects the IDS termination module to an ICS termination module. Due to the length of this cable, both termination modules should be mounted in adjacent slots of the termination mounting unit. Both termination modules should be partially inserted before installing this cable. To install the cable:

1. Insert one end of the cable into the J1 connector of the IDS module.
2. Insert the other end of the cable into the J1 connector of the ICS or IDS module.

**Installing the Termination Module**

The IDS inserts into the termination mounting unit and occupies one slot. To install:

1. Verify the slot assignment of the IDS module.
2. Align the IDS module with the guide rails in the termination mounting unit and partially insert the module.

**Terminal Wiring**

Field and power wiring must be connected to the terminal strip. See Figure 2-4 for IDS termination module terminal strip assignments. A brief explanation of the terminals on the terminal strip follows. Refer to the **IISAC01 Analog Control Station** and **NDCS03 Digital Control Station** instruction manuals for more details.

<b>MA1 SEL, MA2 SEL</b>	These terminals relay a digital signal from two stations to corresponding electric drives. These signals tell the electric drives to either track a supplied four to 20 milliamp signal (automatic mode) or to respond to manual raise and lower inputs (manual mode).
<b>1 LWR, 1 RAS, RL1 COM, 2 LWR, 2 RAS, RL2 COM</b>	These terminals enable manual raise and lower signals to be sent to the electric drives. These signals only control an electric drive when it is in manual mode.
<b>MA1 PWR, MA2 PWR, MA1 COM, MA2 COM</b>	These terminals provide power to external relays or similar devices. The output of these terminals is zero volts when an electric drive is in manual mode, or 24 VDC when an electric drive is in automatic mode.

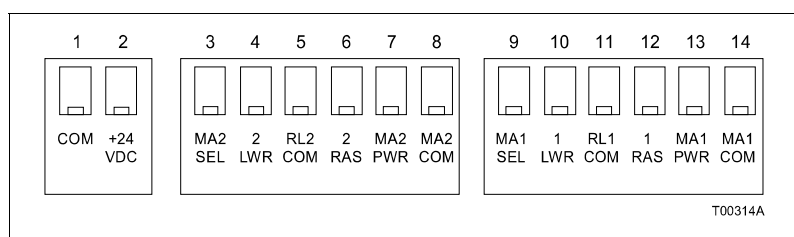


Figure 2-4. NIDS01 Terminal Strip Assignments

<b>WARNING</b>	<b>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.</b>
<b>AVERTISSEMENT</b>	<b>Si des circuits d'entree ou de sortie sont alimentes a partir de sources extremes, 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.</b>

<b>CAUTION</b>	<b>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.</b>
<b>ATTENTION</b>	<b>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 dommages à l'équipement. Ne pas rebrancher les alimentations avant d'avoir vérifié tous les raccordements.</b>

**NOTE:** Proper polarity of all signals must be maintained.

To connect field and power wiring:

1. Insure the IDS module is pulled out far enough to gain access to the terminal strip.
2. Feed the field 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 IDS module.
4. Connect an 18 AWG wire from the common bus of the termination mounting unit to the common terminal of the IDS module.
5. Insert the module until it locks securely into place.
6. Replace (snap on) the front cover.

The NIDS01 module is ready for operation if:

1. The fuses are installed.
2. All required cables are installed and verified.
3. Power is connected and applied to the IDS module.