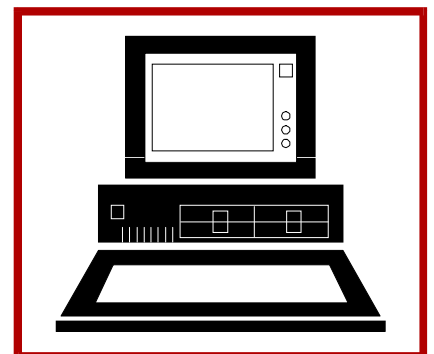
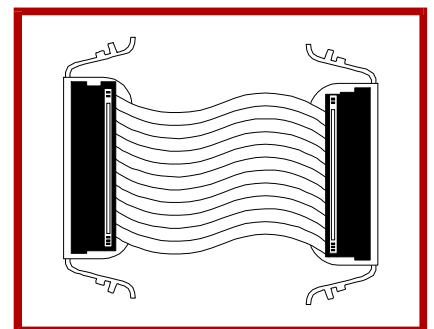
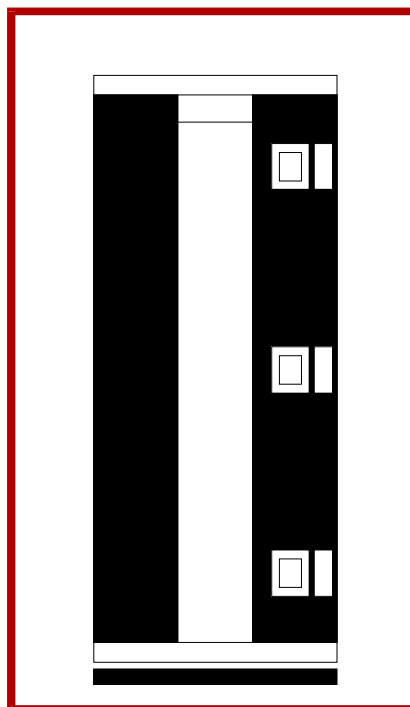
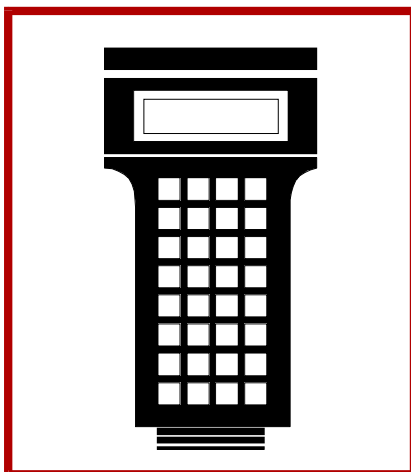
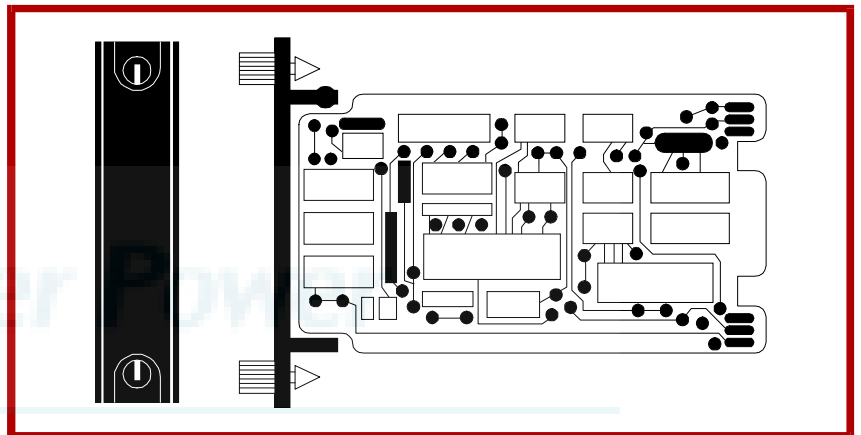
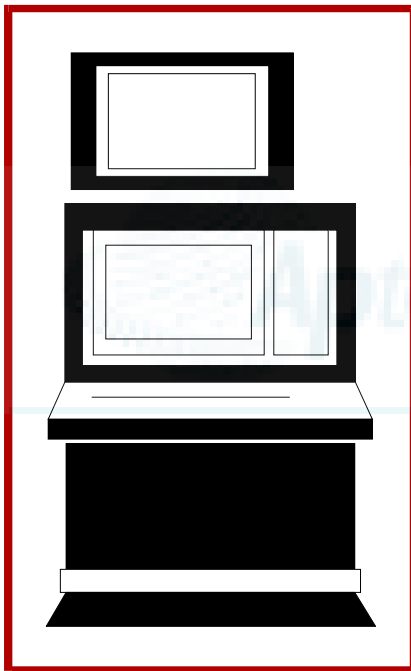


Bailey®
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Instruction

Controller/Station Termination Unit (NTCS04)



Preface

The NTCS04 Termination Unit provides an interface for:

- Field wiring when IMCIS02 and IMQRS01/02 Slave Modules are used to supply analog and digital field I/O.
- Digital control stations and digital indicator stations.
- Controller Modules (IMCOM03/04). Quick Response Controllers (IMQRC01), multi-function controllers and Bailey Control PC-90[®] Processors.
- Remote I/O slave modules via their respective termination units/modules.

This product instruction explains the installation and various setups for configuring the TCS.



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SECTION 1 - INTRODUCTION

OVERVIEW

The Controller/Station Termination Unit (NTCS04) provides connections for control stations, digital indicator stations, and serial link connections for daisy-chaining additional NTCS02/04 or NTRL01/02/03 Termination Units. Also provided are connections for IMQRS02 and IMCIS02 Slave Modules, IMRIO02 Remote I/O Slave Modules, Controller Modules (IMCOM03/04), Quick Response Controllers (IMQRC01), Multi-Function Controllers (IMMFC03/04/05), Multi-Function Processors (IMMFP01/02), and Bailey Controls PC-90 Processors.

INTENDED USER

System engineers and technicians should read this manual before installing and operating the NTCS04 Termination Unit. DO NOT put a unit into operation until this instruction is read and understood. Refer to the table of contents or index to find specific information after the unit is operating.

INSTRUCTION CONTENT

This manual has five sections:

Introduction	Is an overview of the features, specifications and a description of the TCS.
Installation	Describes precautions to observe when handling modules, and setup procedures required before module operation. This section discusses dipshunt settings and installation procedures.
Maintenance	Provides a maintenance schedule.
Repair/Replacement Procedures	Details how to replace a TCS.
Support Services	Describes the support services (spare parts, training, documentation, etc.) available from Bailey Controls Company.

HOW TO USE THIS MANUAL

Read this manual through in sequence. Read the **Section 2** thoroughly. Do the steps in order. Complete all steps in the **Section 2** before operating the TCS. Refer to the appendices for specific module and cable questions.

NOMENCLATURE

Table 1-2 is a list of related hardware.

Table 1-2. Nomenclature

Nomenclature	Hardware
IEFAS01	Cabinet Mounting Hardware Kit
NTCS04	Controller/Station Termination Unit
NKTU01	Cable from NTCS04 to IMCIS02 module Cable from NTCS04 to IMCOM03/04 module Cable from NTCS04 to IMQRC01 module Cable from NTCS04 to IMQRS01/02 module
NKDS01	Cable from NTCS04 to NDCS03, NDIS01 and IISAC01 stations
NKDS02	Cable from NTCS04 to the first of multiple NDCS03, NDIS01 and IISAC01 stations
NKDS03	Interconnecting cable between multiple NDCS03, NDIS01 and IISAC01 stations
NKSL01	Cable from NTCS04 to IMMFC03/04/05 modules
NKSE01	Cable from NTCS04 to NTMF01 TU Cable from NTCS04 to another NTCS02/04 TU Cable from NTCS04 to NTMP01 TU Cable from NTCS04 to NTRL03 TU
NKCS01	Cable from NTCS04 to IISAC01, NDCS03 and NDIS01 stations
NKCS02	Cable from NTCS04 to the first of multiple IISAC01, NDCS03 and NDIS01 stations

REFERENCE DOCUMENTS

Table 1-3 lists the documents referenced in this instruction.

Table 1-3. Reference Documents

Document Number	Document
I-E93-902-1	Digital Control Station (NDCS03)
I-E93-909-3A0	I/O Power Panel (NIOP02/04)
I-E96-117	Analog Control Station (IISAC01)
I-E96-116	Digital Indicator Station (NDIS01)
I-E96-207A	Controller Modules (IMCOM03/04)
I-E96-215A	Quick Response Controller (IMQRC01)
I-E96-427A	Multi-Function Processor Termination Unit (NTMP01)
I-E96-428A	Multi-Fuction Controller Termination Unit (NTMF01)
I-E96-429A	Remote Limit Termination Unit (NTRL02/03)
I-E96-506A	Modular Power System

SPECIFICATIONS

Refer to Table 1-4 the specifications of the NTCS04 Termination Unit.

Table 1-4. Specifications

Physical Attribute/Function	Capabilities
Inputs	
4 Analog	4 to 20 mADC
3 Digital	24 VDC or 125 VDC
Outputs	
2 Analog	1 to 5 VDC or 4 to 20 mADC
4 Digital	24 VDC @ mADC (isolated, open-collector type)
Surge Protection	Meets IEEE-472-1974 Surge Withstand Capability Test
Certification	CSA certified for use as process control equipment in an ordinary (nonhazardous) location.
Environmental	
Ambient Temperature	0° to 70° C (32° to 158° F)
Relative Humidity	0% to 95% up to 70° C (158° F) (noncondensing)
Altitude	Sea Level to 3 km (1.86 miles)
Air Quality	Noncorrosive
Mounting	Occupies one slot in a standard INFI 90 field termination panel.

SECTION 2 - INSTALLATION

INTRODUCTION

This section explains how to configure and install the Controller/Station Termination Unit NTCS04. Read, understand and complete the steps in the order they appear before operating the TCS. Please note that parts from the IEFAS01 Cabinet Mounting Hardware Kit are required during TCS installation.

UNPACKING AND INSPECTION

1. Examine the hardware immediately for shipping damage.
2. Notify the nearest Bailey Controls 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 TCS. The required procedures are fuse installation, dipswitch configuration and installation, installing the termination unit itself, cable connections and termination wiring.

Installing Fuses

Bailey Controls Company ships a 0.25 amp/250 volt fuse (Bailey P/N 1948182A32500), a 2.0 amp/250 volt fuse (Bailey P/N 1948182A32001) and two 4.0 amp/125 volt fuses (Bailey P/N 1948182A34001) with every TCS. Install the fuses as follows:

1. Install a 4.0 A fuse into fuse clip F1 and F3 (See Figure 2-1 for fuse clip locations).
2. Install the 2.0 A fuse into fuse clip F2.
3. Install the 0.25 A fuse into fuse clip F4.

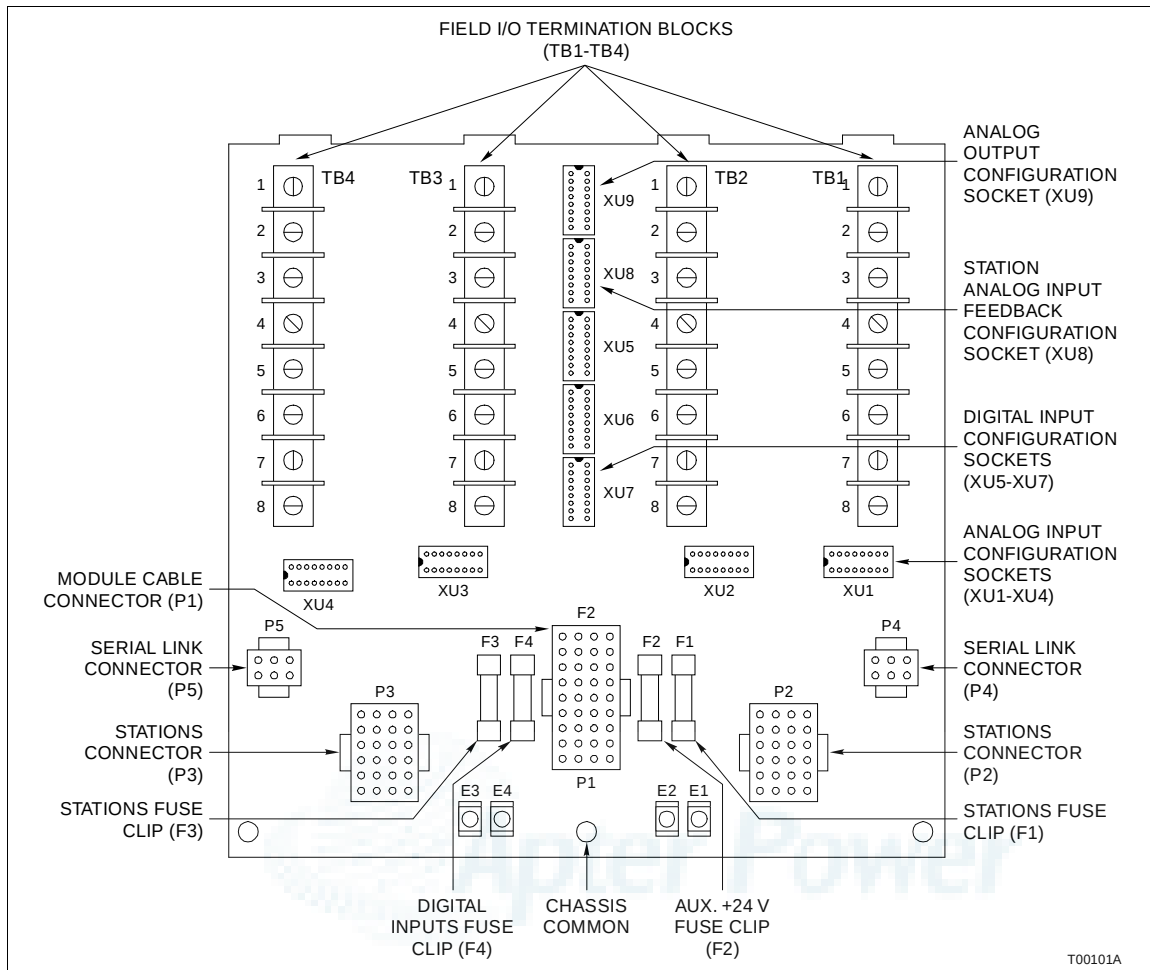


Figure 2-1. NTCS04 Termination Unit Layout

Configuring and Installing Dipshunts

Configure a dipshunt by either cutting straps or leaving straps uncut in certain sequences. Cut the dipshunt straps using a standard shunt cutting tool (Amp Inc. #435862-1). Always cut straps completely and ensure they do not touch adjacent straps. Install the configured dipshunt into the desired socket (XU1 through XU9) on the TCS circuit board. Please note that in some instances (XU9) not installing a dipshunt establishes a configuration. To install a dipshunt, align the end of the dipshunt identified with the silver dot to the end of the socket having an identification mark and push the dipshunt into the socket. Be careful not to bend any pins during insertion. Tables 2-1, 2-2, 2-3, and 2-4 show the dipshunt configuration sequences and corresponding application for each socket location.

Installing the Termination Unit

1. Insert the tabs of the circuit board into the proper slots of the field termination panel standoff (See Figure 2-3) and slide the circuit board into position.

Cable Connections

The Controller/Station Termination Unit (NTCS04) can be set up for several different applications. These include applications with or without control and indicator stations. The TCS terminates analog and digital I/O signals and interfaces them directly to a master/slave module. Figures 2-4 through 2-9 show the cables to use and the cable connections for several different applications of the TCS. See Figure 2-1 for the location of cable connectors P1 through P5.

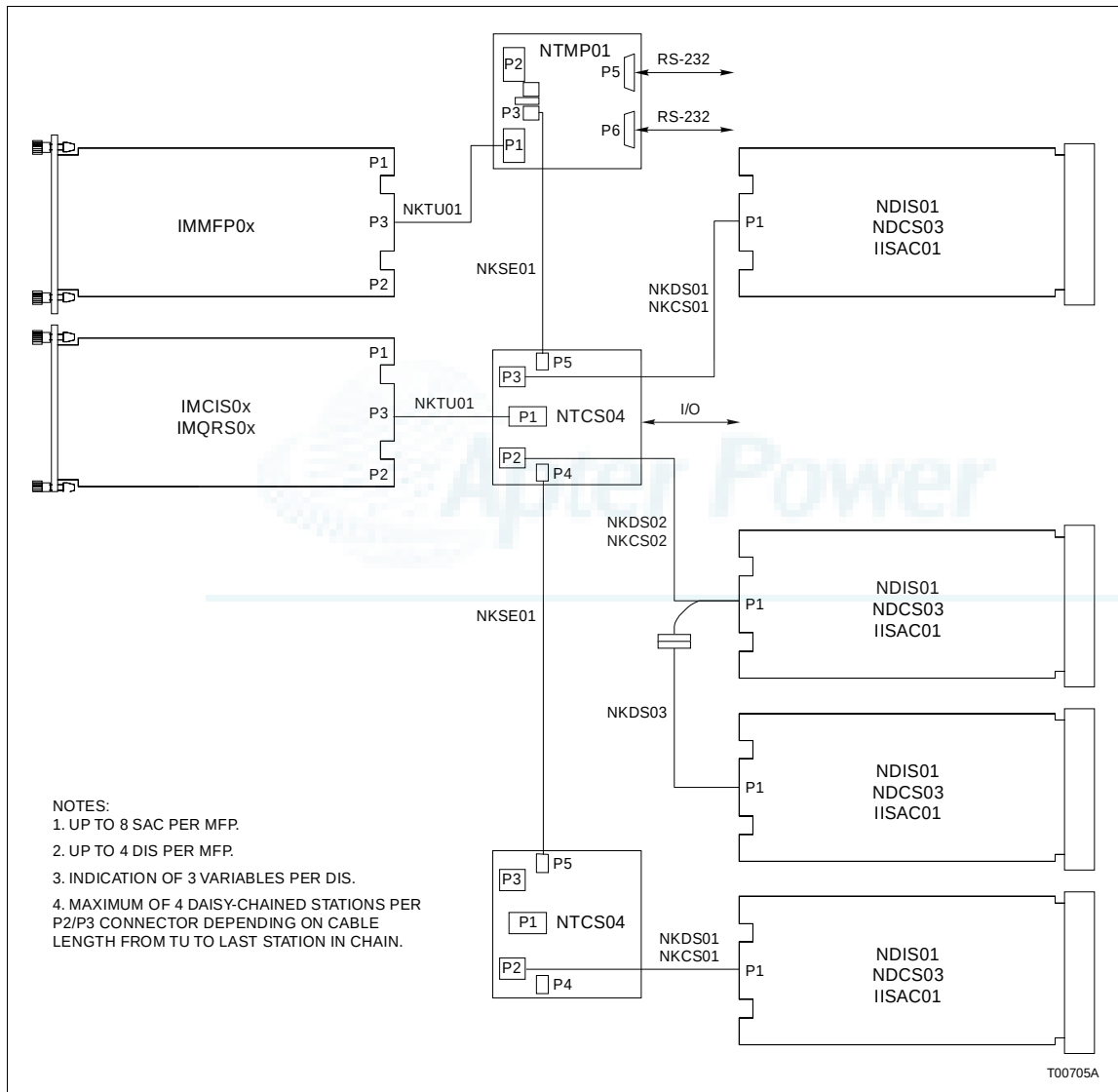


Figure 2-4. Multi-Function Processor Without Termination Unit and Station Cable Connections

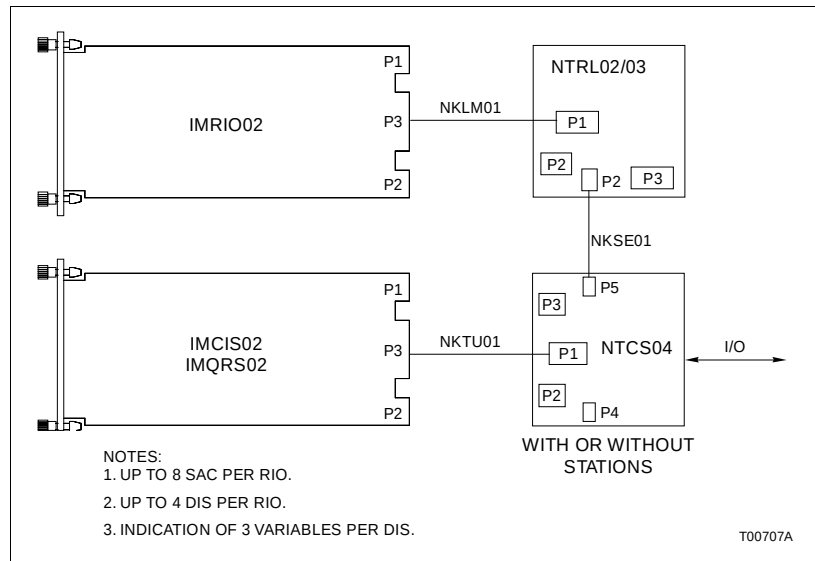


Figure 2-6. Remote I/O Slave Module With Termination Unit (NTRL02/03) Cable Connections

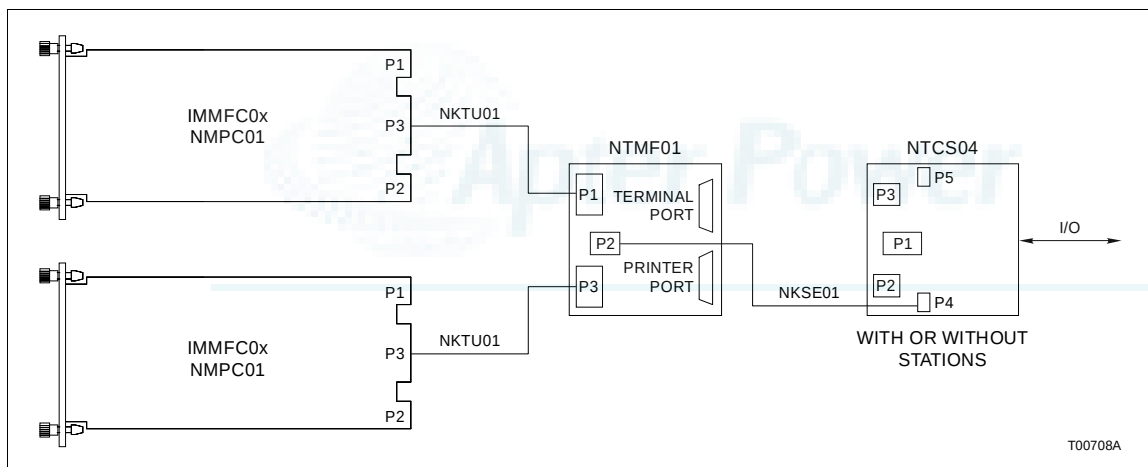


Figure 2-7. Multi-Function Controller With Termination Unit (NTMF01) Cable Connections

NKSL01

This cable extends the MFC serial link to a TCS. It provides a communication path between the MFC and stations connected to the TCS. It connects directly to the TCS and is used only

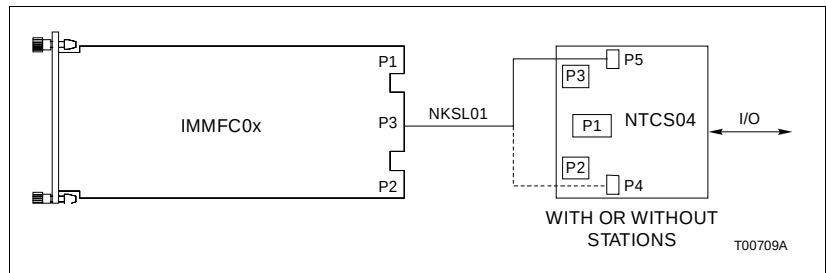


Figure 2-8. Multi-Function Controller without Termination Unit (NTMF01) Cable Connections

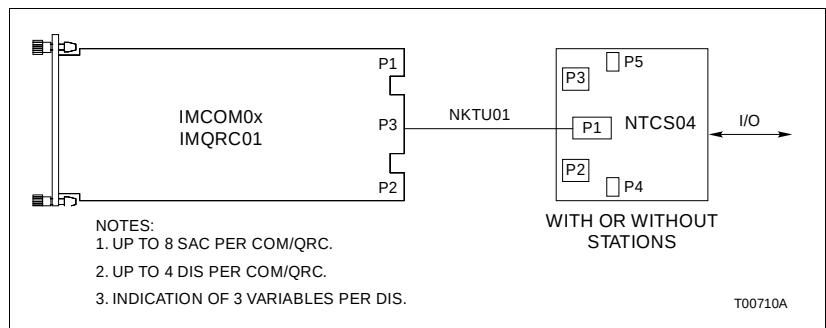


Figure 2-9. Controller Module Cable Connections

when a MFC Termination Unit (NTMF01) is not used. To install the serial link cable:

1. Insert the hooded end of the cable into the module mounting unit backplane slot assigned to the MFC module. The cable should latch securely in place. Card edge connector P3 of the MFC module connects to this end of the cable.
2. Insert the male six pin connector end of the cable into the P4/P5 connector of the TCS. The cable should latch securely in place.

NKSE01

This cable extends the MFP/MFC serial link from NTMP01, NTMF01 or NTRL02/03 termination units to a TCS. It also extends the serial link from one TCS (with or without stations) to another. To install the serial extension cable:

1. Insert one end of the cable into the P2 connector of the NTMF01/NTRL02/03 TU, the P3/P4 connector of the NTMP01 TU or the P4/P5 connector of the TCS (TCS to TCS application). The cable should latch securely in place.

chassis ground point is on the edge of the circuit board next to the P1 plug. Install a screw into the chassis common point. This will connect the NTCS04 termination unit to the chassis ground point of the NFTP01 Field Termination Panel. Refer to the following steps when installing the TCS into a modular power supply system.

1. Attach a 14 AWG wire from the +24 VDC power distribution source to the E1 terminal on the TCS.
2. Attach one 14 AWG wire from the I/O common to the E2 terminal of the TCS.
3. Attach a 14 AWG wire from the I/O common to the E4 terminal of the TCS.
4. Attach a 14 AWG wire from the +24 VDC power distribution source or the +125 VDC auxiliary power distribution source to the E3 terminal of the TCS.

Refer to the **Modular Power System Product Instruction Manual** for further details.

Terminal Block Wiring

Refer to Figure 2-10 for TCS terminal block assignments and wiring polarity. Field wiring should be 12 to 22 AWG wire. Digital I/O lines should be twisted pairs of multi-stranded wire with low leakage insulation. The input lines should be shielded, although it is generally not necessary for each pair of wires to be separately shielded. The shields should be grounded to the chassis common. The twisted pairs of input lines must not be in the same conduit with lines carrying either

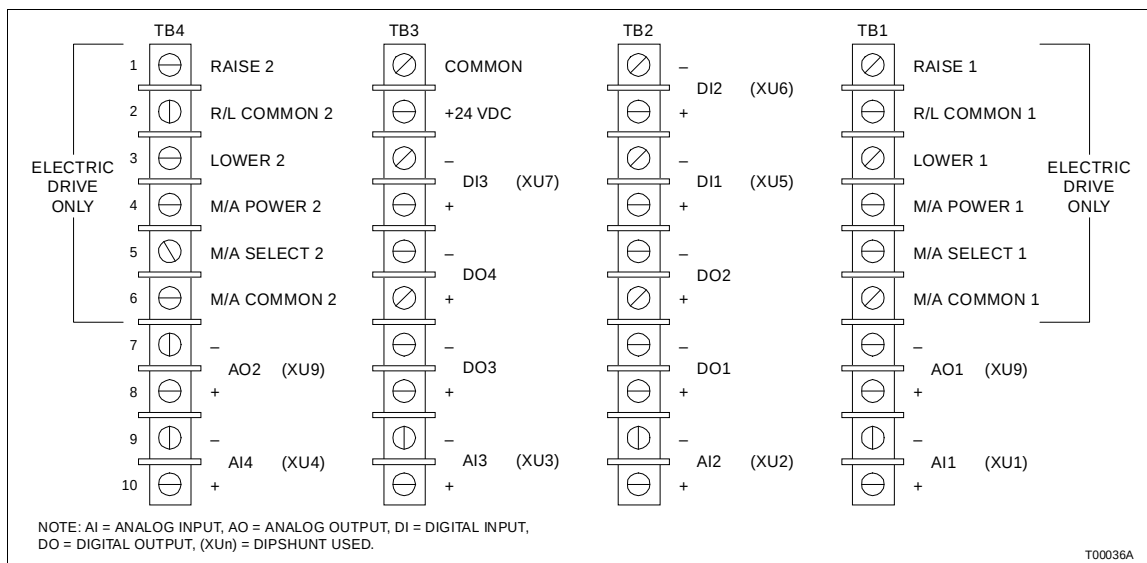


Figure 2-10. Terminal Assignments

Table 2-7. P4/P5 Pinout Connections

Pin	Signal	Pin	Signal
1	Serial Link (-)	4	NC
2	Serial Link (+)	5	NC
3	NC	6	Chassis Common

NOTE: NC = Not Connected

I/O SIGNAL CONNECTIONS

Table 2-8 shows the cable pin connections from the P3 connection of a master/slave to the P1 connection of the TCS.

Table 2-8. I/O Signal Connections

NKTU01		NKTU01	
1 3 P P12		1 3 P P12	
1	-----1	J	-----22
A	-----2	9	-----23
2	-----3	K	-----24
B	-----4	10	-----25
3	-----5	L	-----26
C	-----6	11	-----27
4	-----7	M	-----28
D	-----8	12	-----29
5	-----13	N	-----30
E	-----16	13	-----31
6	-----17	P	-----32
F	-----18	14	-----33
7	-----19	R	-----34
H	-----20	15	-----35
8	-----21	S	-----36

NOTES:

1. P3 on slave or controller module (letters on component side of circuit board, numbers on solder side of circuit board).
2. P1 on NTCS04.