A·B QUALITY **Allen-Bradley**

DTAM Micro Operator Interface Module

Catalog Numbers 2707-M232P3, 2707-M485P3

User Manual

Rockwell Automation

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss

Attention statements help you to:

- identify a hazard
- avoid a hazard
- recognize the consequences

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

Using this Manual

Chapter 1

DTAM Micro Overview

Chapter 2

Initial Setup and Mode Menu

Chapter 3

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Chapter 4

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DTAM Micro Cable Diagrams

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Using this Manual

Objectives

Read this chapter to familiarize yourself with the rest of the manual. You will learn about:

- Contents of this manual
- Intended audience
- Conventions
- Related publications

Contents of this Manual

The following table lists the contents of each chapter:

Chapter	Title	Purpose
1	Using this Manual	Provides an overview of the manual.
2	Overview of DTAM Micro	Contains a description of the DTAM Micro and accessory devices.
3	Initial Setup and Main Menu	Describes initial desktop setup of the DTAM Micro using main menu functions.
4	Transferring Application Files	Describes how to upload and download application files between the DTAM Micro and a personal computer.
5	Running Applications	Describes the basic screen types. Also describes the different function key operations.
6	Installation	Provides procedures for mounting the DTAM Micro. Also provided are wiring instructions and recommendations.
7	Communication Connections and Setup	Describes RS-232 and RS-485 connections. Setup guidelines are provided for SLC and PLC controllers.
8	Troubleshooting and Maintenance	Provides assistance in identifying and correcting common operating problems. Cleaning recommendations are also provided.
Appendix A	Specifications	Provides the specifications, agency ratings, and European Union Directive Compliance.
Appendix B	Cable Diagrams	Provides the DTAM Micro cable diagrams.
Appendix C	DTAM Micro Special Controller Functions	Provides the special control functions.

Intended Audience

No special knowledge is required to operate the DTAM Micro. If you are installing the DTAM Micro, you must be familiar with the standard panel cutout and installation techniques. If you are wiring the DTAM Micro, you must be familiar with the electrical codes in your area (see inside front cover).

You should be familiar with the DTAM Programming Software (see related publications below).

Conventions

This manual uses the following conventions:

- Keys that you press on the DTAM Micro are enclosed in brackets [ ]. For example: [NEXT] refers to the NEXT key on the DTAM Micro.

- References to menus are initial cap followed by the word Menu. For example: Special Menu, Main Menu, Other Menu

- All DTAM Micro displays are shown inside a rectangular box.

```
1 Reset      3 Special
2 Com-Port   4 Other
```

Related Publications

The following publications may be helpful for additional reference.

DTAM Micro Publications

Publication Number	Title
2707-801	DTAM Programming Software Programming Manual (Series J or later Software)

Wiring Publications

1770-6.2.2	Data Highway / Data Highway Plus / Data Highway-485 Cable Installation Manual

SLC Publications

Publication Number	Title
1747-6.21	SLC 500 Fixed Hardware Style Installation and Operation Manual
1747-UM011	SLC 500 Modular Hardware Style Installation and Operation Manual
1747-RM001	SLC 500 Reference Manual

PLC-5 Publications

Publication Number	Title
1785-6.1	PLC-5 Instruction Set Reference
1785-6.2.1	1785 PLC-5 Programmable Controllers Design Manual
1785-6.6.1	PLC-5 Family Programmable Controllers Hardware Installation Manual
1785-7.1	PLC-5 Programmable Controllers Quick Reference

MicroLogix Publications

Publication Number	Title
1747-6.3	MicroLogix 1000 User Manual
1747-6.2.1	MicroLogix 1000 Quick Reference Guide

DTAM Micro Overview

Objectives

This chapter describes the DTAM Micro and accessories.
It contains these sections:

General Information

The DTAM Micro interfaces with the PLC-5® and SLC 500™ family of processors. The DTAM Micro allows operators to monitor and manipulate process data on the plant floor.

RS-232 or RS-485 Port. The DTAM Micro has either an RS-232 port (Catalog No. 2707-M232P3) or an RS-485 port (Catalog No. 2707-M485P3). The RS-232 port allows point-to-point connections with a PLC-5 or SLC 5/03, 5/04, 5/05. The RS-485 port provides network or point-to-point capability with a PLC-5 (over RS-422), SLC or other DH485 device.

Memory Capability. Storage of the PLC-5 DF1 or SLC DH-485 driver (communications protocol), configuration information, and user-programmed screens are maintained in nonvolatile memory providing storage for approximately 244 screens.

Recipe Operations. Recipe type functions allow operators to quickly modify blocks of data. Download data to a maximum of 10 non-sequential register addresses per screen. Link multiple recipe screens to download data to more than 10 addresses.

Flexible Function Key Operations. Eight function keys provide a convenient way to trigger screen displays and change display screens.

Point-Access/Display Function. Allows you to monitor or modify data files in SLC or PLC controllers. Use this function to setup and debug application programs.

Package Contents

The DTAM Micro shipping box contains the following:

DTAM Micro

User Manual
(Catalog No. 2707–UM002)

DIP Switch Cover

Mounting Nuts (8)
(2 Spare)
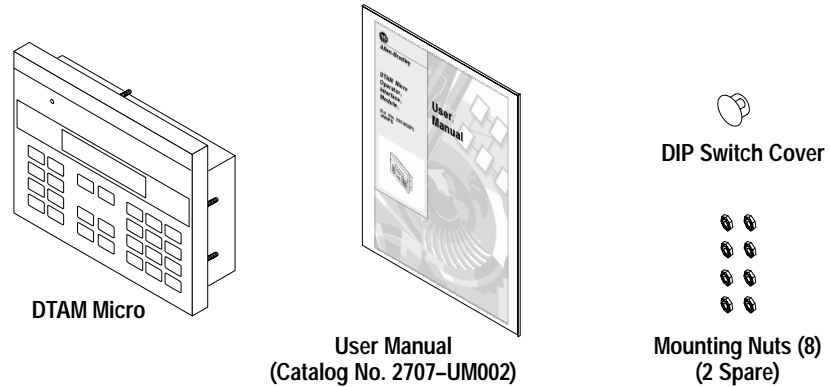
Description

The front panel of the DTAM Micro terminal is shown below.

Figure 2.1
DTAM Micro (front view)

LED Indicator

Power Connector   Communications Port
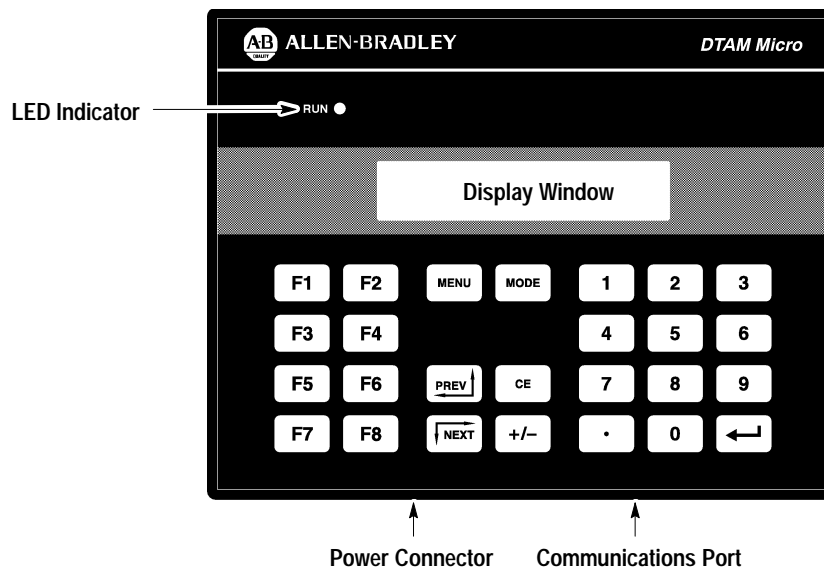
Display

The 2 line by 20 character display uses high contrast LCD technology with
LED backlighting.

Keypad

The keypad is separated by color into easily identified groups or functions. In
addition, each key has a raised dome in the center to provide tactile feedback.

The keypad is designed for hand operation. Using any other object or tool
may damage the overlay or key.

LED Indicator

A RUN LED in the upper left corner of the terminal indicates proper
operation of the DTAM Micro. This LED illuminates after the DTAM Micro
passes the self diagnostic tests.

Figure 2.2
DTAM Micro (back & bottom view)

Back View (RS-232 version shown)

Communications Port

**DIP Switch
(Behind Removable Cover)**

Power Connector

Bottom View
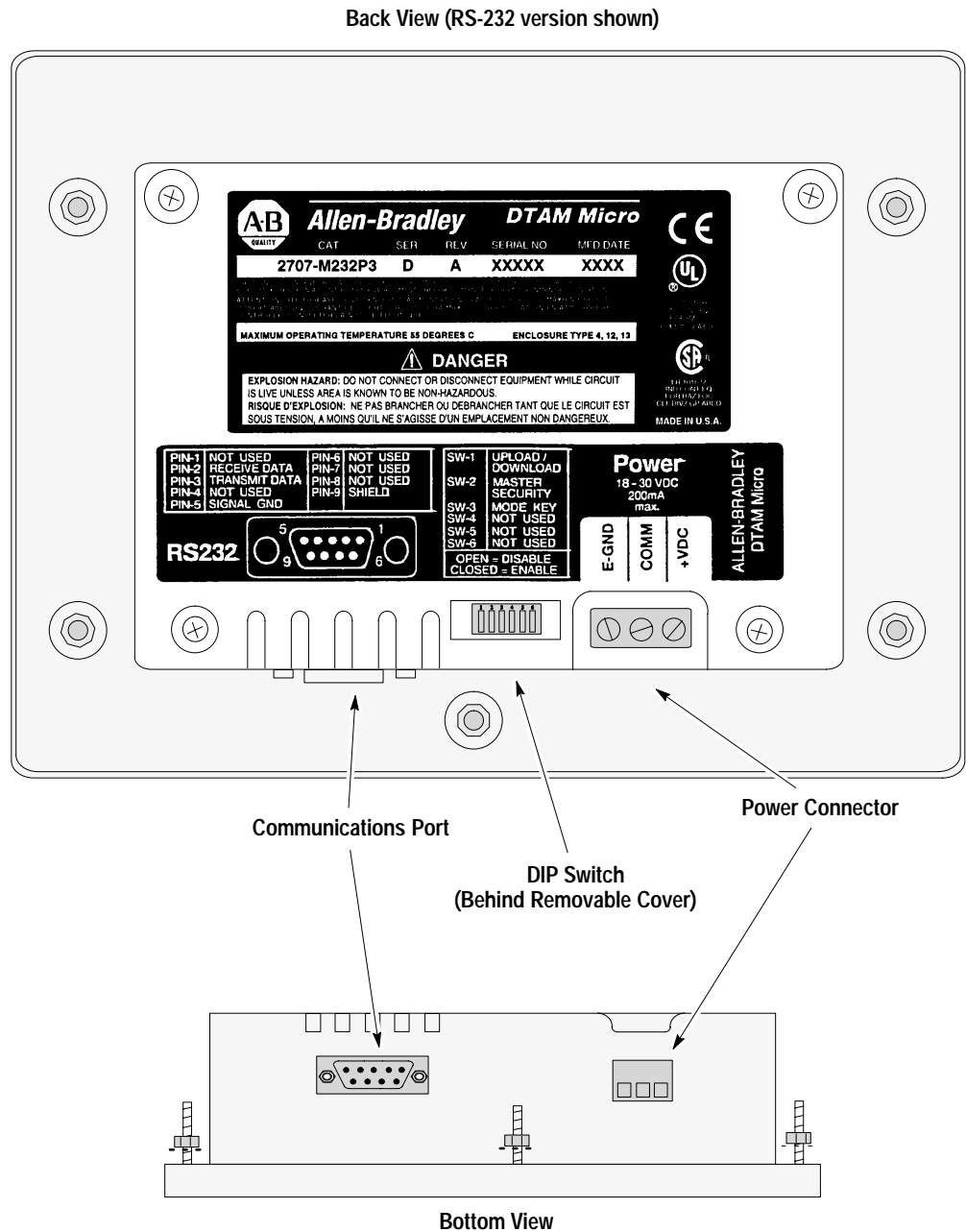
Communications Port

The DTAM Micro has either an RS-232 or RS-485 port.

- Catalog No. 2707-M232P3 has RS-232 port
- Catalog No. 2707-M485P3 has RS-485 port

DIP Switch

A six position DIP switch selects various operating settings. This switch is located under a removable cover on the back. To remove cover, align cover tabs with notches in hole.

Power Connector

The power connector is a non-removable, screw terminal block located on the bottom of the unit. Connect 24 VDC to these terminals or use the optional AC to DC Adapter.

Keypad

Figure 2.3
Keypad
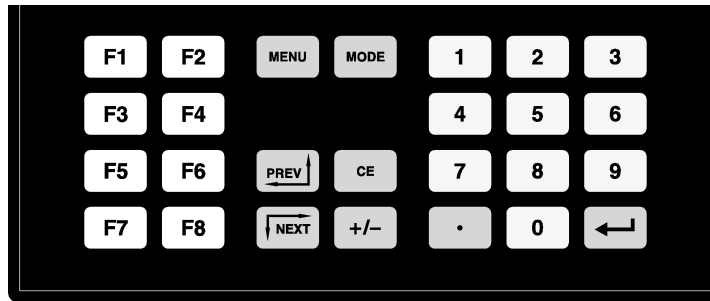
The DTAM Micro uses a sealed membrane, tactile feedback keypad. The keys are color coded to easily identify key functions.

Key Color	Function
Blue	Movement/Operator Response
Dark Grey	Display/Format Control
Light Grey	Numeric Entry

The following table defines the function of each keypad key.

Key	Function
MENU	Returns to the main menu of an application. If an alarm screen is triggered, the MENU key is not functional until the alarm is acknowledged.
MODE	Accesses special features and configuration operating parameters. DIP switch SW-3 enables or disables the MODE key.
PREV	Steps back through a sequence of linked screens.
NEXT	Steps forward through a sequence of linked screens.
CE	Clears an entire value during data entry.
+\-	Toggles a data entry value between positive or negative.
•	Enters a decimal point.
↵	Sends data to the controller. Data includes default values or data entered at the keyboard. Also used to acknowledge alarm screens.
0 → 9	Enters numbers 0 to 9 during data entry or selects a numbered item shown on the display.
F1 → F8	Displays any application screen assigned to the key. These keys can also set or clear bits at eight consecutive registers in the controller data table.

Function Key Operations | F1 | → | F8 |

Function keys can be linked to application screens allowing quick access to critical data display or data entry screens. For example, the F1 function key is linked to Recipe Screen 10. The operator can press F1 at any point in the application to download recipe registers on screen 10 to the processor.

A control mode can be assigned to each function key linked to a screen.

Control Mode	Function
Auto Return	Returns to the screen displayed before the function key was pressed.
Continue	Continues to the next screen in the link regardless of the screen displayed before the function key was pressed.
Bit Write Mode	Allows the function key when pressed to set or clear a bit in the controller. Bit Write Mode operates with either Auto Return or Continue mode. The function keys access 8 contiguous word data elements defined by the user. For example, assign function keys F1 to F8 to N7:20 → N7:27.

MODE Key Operations | MODE |

The MODE key accesses a menu of options allowing you to set features and operating parameters of the DTAM Micro.

```
                    1 Reset      3 Special
                    2 Com-Port   4 Other

   1 Baud Rate   3 Parity    1 Master   3 Simulate    1 P-A/D     3 Mem Xfr
   2 Data Bits   4 Exit      2 Scale    4 Test   5 Ex  2 Mode      4 Clr Flt
```
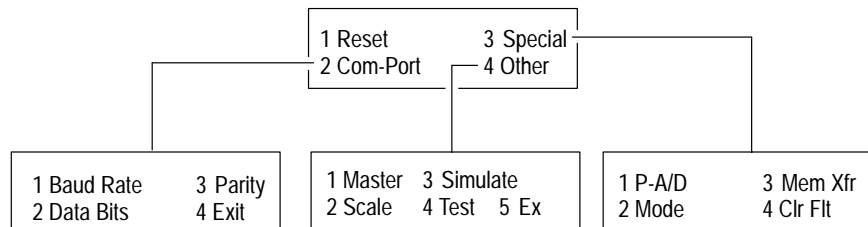
Mode Menu	Select this option:	To perform this function:
1 Reset		Performs a system reset.
2 Com-Port	1 Baud Rate 2 Data Bits 3 Parity	Specifies 300, 1200, 2400, 4800, 9600, 19200, 38400 Specifies 7 or 8 data bits. Specifies even, odd or none parity.
3 Special	1 P-A/D	Displays and/or modifies data files in the processor.
	2 Mode	Places processor in RUN mode or PROGRAM mode.
	3 Memory Xfr	Transfers memory between a memory module and an SLC or PLC5. The processor must be in PROGRAM mode.
	4 Clr Flt	Clears all processor faults in the PLC-5 or SLC 500.
4 Other	1 Master	Modifies the master security code of the DTAM Micro.
	2 Scale	Converts controller values to engineering units.
	3 Simulate	Verifies an application without controller connected.
	4 Test	Tests memory, communications, keyboard and display.

DIP Switches

The 6 position DIP switch allows you to enable or disable certain functions. The DIP switch is accessed by removing the access cover on the back (access cover is shipped in the hardware bag on new units).

Figure 2.4
DIP Switch

Side View

ON =

Upload / Download Enable
Master Security Enable
Mode Key Enable
Unused
Unused
Unused

| 1 | 2 | 3 | 4 | 5 | 6 |

OPEN

Back of DTAM Micro
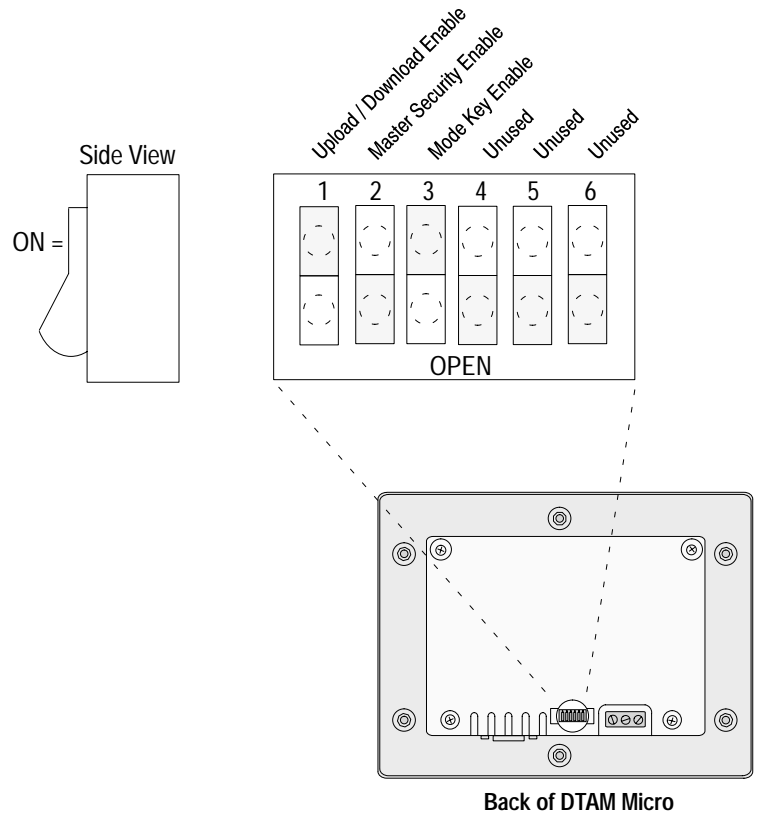
Switch Position	Setting	Function
1①	ON	ON position allows the transfer of application files between the DTAM Micro and personal computer running DPS. All communication between the DTAM Micro and controller are disabled. Keypad entry is also disabled.
	OFF	OFF enables communication between the DTAM Micro and controller.
2	ON	ON enables the master code. Enabling the master code allows any security code to be accessed or modified.
	OFF	OFF disables the master code. Disabling the master code still allows access to a security screen or special functions but does not allow security codes to be modified.
3	ON	ON enables the Mode key on the front panel.
	OFF	OFF disables the Mode key on the front panel.
4, 5, 6	ON or OFF	Reserved for future use.

① DTAM Micro is reset each time this switch position is changed.

Communications Port

All communications are through a 9 pin connector on the bottom of the DTAM Micro. The connector is either an RS-232 port or RS-485 port depending upon the version catalog number.

Figure 2.5
Communications Port

DTAM Micro
(Bottom View)

9 Pin Female

PIN #	Signal Name
1	Data Out –
2	Data Out +
3	Data In -
4	Data In +
5	Signal Ground
6	Transmit Enable
7	Not Used
8	Signal Ground
9	Shield

RS-485 Version
(Catalog No. 2707-M485P3)

DTAM Micro
(Bottom View)

9 Pin Female

PIN #	Signal Name
1	Not Used
2	Receive Data (RD)
3	Transmit Data (TD)
4	Not Used
5	Signal Ground
6	Not Used
7	Not Used
8	Not Used
9	Shield

RS-232 Version
(Catalog No. 2707-M232P3)

RS-232 Communications

RS-232 Version (Catalog No. 2707-M232P3)

The RS-232 port allows point-to-point communications with:

- PLC-5 Channel 0 (configured as RS-232 port, DF1 protocol)
- SLC 5/03, 5/04, 5/05 RS-232 port (DH485 protocol)
- MicroLogix 1000

Figure 2.6
Typical RS-232 Communications

DTAM Micro to PLC-5 Channel 0

DTAM Micro to SLC 5/03, 5/04, 5/05
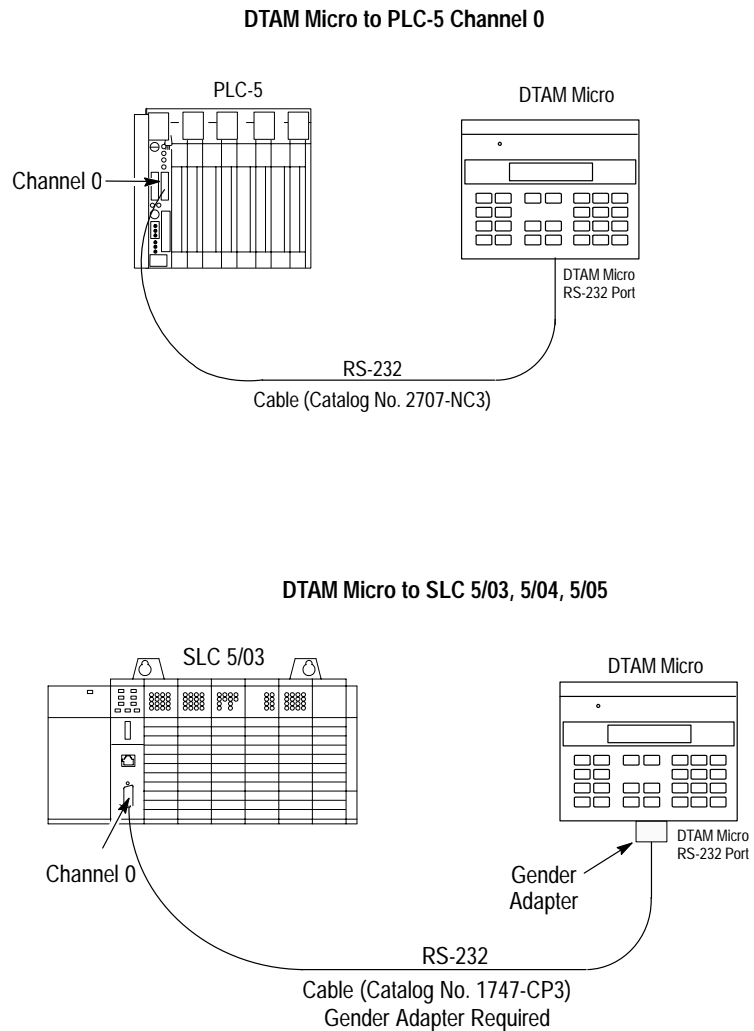
RS-485 Communications

RS-485 Version (Catalog No. 2707-M485P3)

The RS-485 port allows point-to-point and multi-drop communications with:

- PLC-5 Channel 0 (configured as RS-422 port, DF1 protocol)
- SLC 500 DH-485 port
- MicroLogix 1000 using the AIC+ Interface

Figure 2.7
Typical RS-485 Communications

DTAM Micro to Single SLC

DTAM Micro to PLC-5 Channel 0

DTAM Micro to DH-485 Network
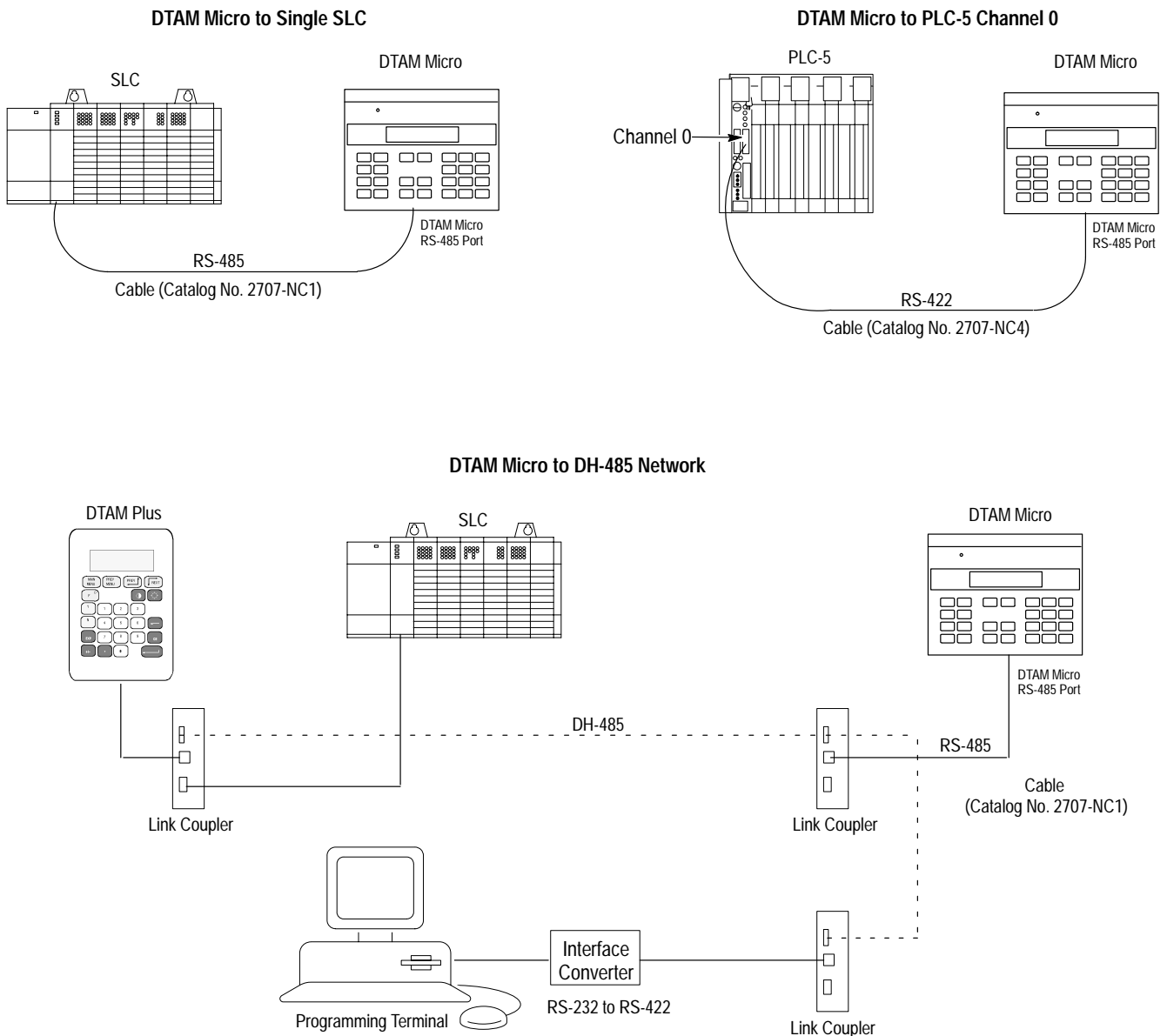
Programming
the DTAM Micro

The DTAM Micro is programmed off-line using a personal computer running DTAM Plus Programming Software (DPS). Operating system upgrades are also transferred using a personal computer.

DTAM Programming Software (DPS)

Use DPS software (Catalog No. 2707-NP, Series H or later) to create application screens for both the DTAM Micro and DTAM Plus Operator Terminals. For a description of DPS, refer to the Programming Manual (Publication No. 2707-801).

Upload/Download Connections

For programming and configuration, the DTAM Micro is connected to your computer's RS-232 port. If you have a DTAM Micro RS-485 version, an RS-232 to RS-422 converter cable (Catalog No. 2707-NC5) is required. The RS-485 version of the DTAM Micro is compatible with the converter cable's RS-422 output.

Upload/Download Connection to RS-232 DTAM Micro

DTAM Micro

Programming Terminal

RS-232 Port

Cable
(Catalog No. 2707-NC2)
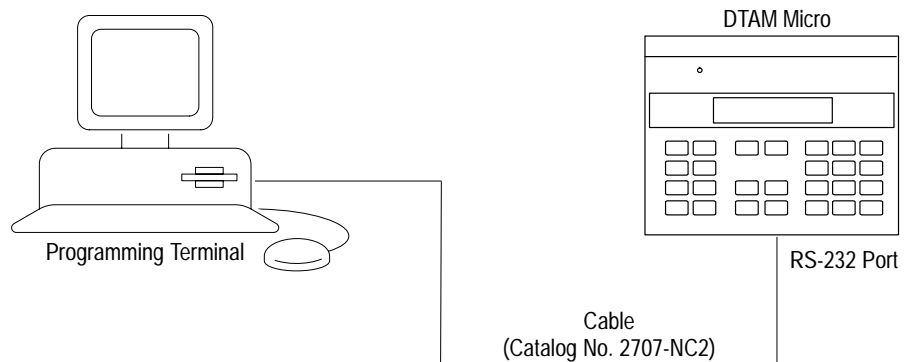
Upload/Download Connection to RS-485 DTAM Micro

DTAM Micro

RS-232 to RS-422
Interface
Converter
Built Into Cable

Programming Terminal

RS-485 Port

Cable
(Catalog No. 2707-NC5)
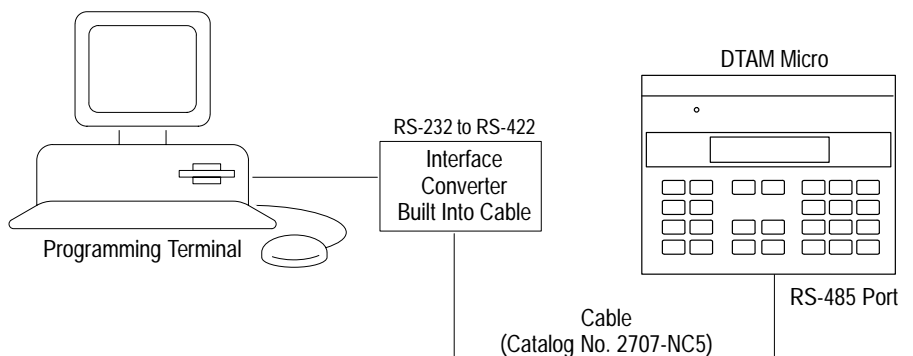
Default Settings

The DTAM Micro is preset at the factory with the following defaults:

Operating System

The DTAM Micro is provided with a default application file:

- RS-485 version has DH-485 operating system file
- RS-232 version has PLC-5 DF1 operating system file

The application file displays a screen with the message:

> **Bul 2707 DTAM Micro**
> **No Program loaded**

DIP Switch Settings

The DTAM Micro is shipped with the following DIP Switch settings:

DIP Switch Position	Default Setting	Function
1	ON	Upload/Download Enabled
2	OFF	Master Security Disabled
3	ON	Mode Key enabled
4	OFF	Not Used
5	OFF	Not Used
6	OFF	Not Used

Operating Parameters

The following operating functions can be set using the DTAM Micro menu functions. Refer to Chapter 3.

Function	Parameter	Default Value	
		RS-485 Version	RS-232 Version
C-Port	Baud	19200	2400
	Data Bits	8	8
	Parity	Even	None
Special	DTAM Micro Node	00	N/A
	Max. Node	02	N/A
	Controller Node	01	N/A
Other	Simulate	Off	Off
	Master Code	00000000	00000000
	Scale	On	On

Product Options

The table below lists the options available for the DTAM Micro.

Table 2.A
DTAM Micro Base Items

Item	Catalog No.	Description
DTAM Micro	2707-M485P3	DTAM Micro with RS-485 Communications Port
DTAM Micro	2707-M232P3	DTAM Micro with RS-232 Communications Port
Programming Software	2707-NP (Series H or later)	Use to create application screens for the DTAM Micro on a personal computer. Software allows completed applications to be transferred between the DTAM Micro and a personal computer.

Product Accessories

The following accessories are available for the DTAM Micro.

Table 2.B
Accessories

Item	Catalog No.	Description
DH-485 Network Interface Cable	2707-NC1	RS-485 communication cable connects DTAM Micro to an SLC network. Cable has 9-pin male connector for the communication port on the DTAM Micro and an 8-pin RJ connector for the communication port on the SLC or Link Coupler (Catalog No. 1747-AIC).
RS-232 Upload/Download Cable	2707-NC2	RS-232 cable connects DTAM Micro (RS-232 version) and a personal computer. Use to upload or download applications with a personal computer running DPS software (Catalog No. 2707-NP, Series H or later).
RS-232 Communications Cable	2707-NC3	RS-232 cable connects DTAM Micro to Channel 0 Port of a PLC-5.
RS-232 Communications Cable	1747-CP3①	RS-232 cable connects DTAM Micro to Channel 0 Port (configured for RS-232) of an SLC 5/03, 5/04, 5/05.
RS-422 Communications Cable	2707-NC4	RS-422 cable connects DTAM Micro to Channel 0 Port (configured for RS-422) of a PLC-5.
RS-485 Upload/Download Cable	2707-NC5	For use with RS-485 version of the DTAM Micro. Transfers files between RS-485 port of the DTAM Micro and the personal computer's RS-232 port. Cable converts RS-232 signals to RS-422 signals for the DTAM Micro. Cable has a 25-pin male connector for the computer port and a 9 pin male connector for the port on the DTAM Micro.
RS-232 Communications Cable	2707-NC10	RS-232 cable connects DTAM Micro to a MicroLogix 1000
120V AC to DC Adapter	1747-NP1	Provides 18 to 30 VDC output for the DTAM Micro. Operates on 120 VAC input line voltage.
240V AC to DC Adapter	1747-NP2	Provides 18 to 30 VDC output for the DTAM Micro. Operates on 240 VAC input line voltage.

① A 9-pin male to female gender adapter is required.

Chapter 3

Initial Setup and Mode Menu

Objectives

This chapter describes how to apply power to and then configure the DTAM Micro using the menu keys. Instructions on how to use the Simulate mode to run an application are provided. This chapter contains the following sections:

Apply Power

This section describes power connections for initial desktop setup and programming. Refer to Chapter 6 for installation wiring instructions.

The DTAM Micro is intended for 24 VDC systems. If 24 VDC is not directly available, you can use the AC to DC Adapters: Catalog No. 1747-NP1 for 120 VAC or Catalog No. 1747-NP2 for 240 VAC power.

> ⚠ **ATTENTION:** Verify that the power is disconnected from the power source before wiring. Failure to disconnect power may result in electrical shock.
>
> Make sure that the supply voltage to the DTAM Micro is 18 to 30 volts DC. The incorrect voltage may damage the DTAM Micro.
>
> Do not overtighten the power connector screw terminals. Overtightening the terminals may damage the DTAM Micro.

1. Connect the DC positive, DC common, and ground lines as shown below. Verify the connections by checking the DC power supply labels on the AC to DC Adapter (if used) and DTAM Micro.

DTAM Micro

Earth Ground
DC Common
DC Positive

Optional AC to DC Adapter
Catalog No. 1747-NP1, -NP2

To 120VAC (Catalog No. 1747-NP1)
To 240VAC (Catalog No. 1747-NP2)

To DTAM Micro. Check DC power labels before making connections.
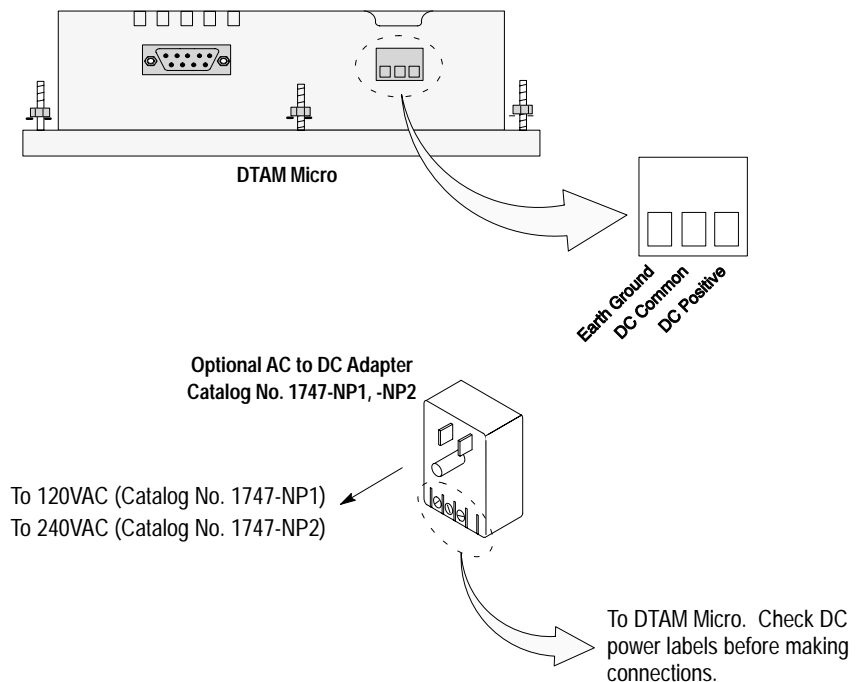
2. Apply power to the DTAM Micro by plugging the AC to DC Adapter into the proper power source (check Adapter label to verify voltage).

The DTAM Micro performs a powerup sequence.

Powerup Sequence

The powerup sequence is automatic, you do not have to respond to the screens. The sequence depends upon DIP switch position #1 (upload / download enable). The DTAM Micro is shipped with this switch On.

Powerup Sequence (DIP Switch #1 On)

1. The DTAM Micro verifies the system memory checksum, program checksum, and system RAM. After the test is completed, the result is displayed with the current DIP switch settings.

> **Memory Check: pass**
> **DIP Switch: 101000**

2. The display is tested, every pixel of the display is turned on.

> ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
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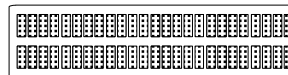
If all of the pixels do not turn on, the display may be defective.

3. DTAM Micro information appears indicating the microprocessor core firmware version and communication port (RS-232 or RS-485).

> **Operator Interface**
> **Core: 3.00 RS-232**

4. The DTAM Micro waits for an application download.

> **Programming Mode**
> **Waiting Up/Download**

Powerup Sequence (DIP Switch #1 Off)

1. The DTAM Micro verifies the system memory checksum, program checksum, and system RAM. After the test is completed, the result is displayed with the current DIP switch settings.

> **Memory Check: pass**
> **DIP Switch: 101000**

2. The display is tested, every pixel of the display is turned on.

> ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
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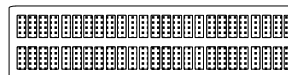
If all of the pixels do not turn on, the display may be defective.

3. Operating system information appears indicating the firmware release number and protocol being used (PLC5-DF1 or AB DH-485).

> **DTAM Micro (c) 1994**
> **FRN 2.20 PLC5-DF1**

4. The first application screen displays. If the DTAM Micro is being powered up the first time you will see:

> **Bul. 2707 DTAM Micro**
> **No Program Loaded**

Mode Menu

Access the Mode Menu by pressing the [MODE] key. All other functions are halted when the menu is displayed.

Note: DIP switch SW-3 must be in the On position or the [MODE] key will not function.

The Mode Menu provides access to four functions:

```
1 Reset          3 Special
2 Com-Port       4 Other
```

Select a menu item by pressing the corresponding numeric key [1] → [4]. The menu structure is shown below:

```
                              1 Reset          3 Special
                              2 Com-Port       4 Other


        Resets the DTAM Micro                        SLC or 50X Address
                                                     1 = Edit Addr      0 = Bypass

                                                     (Only with DH485
                                                      Operating System)


        1 Baud Rate      3 Parity                    1 P-A/D          3 Mem Xfer
        2 Data Bits      4 Exit                       2 Mode           4 Clr Fault

         Configures DTAM Micro                            Special
         Communications Port                        Controller Operations


                              1 Master     3 Simulate
                              2 Scale      4 Test      5 Ex


    Sets Master        Enables / Disables      Performs        Exits to       Simulates Controller
  Security Code ①          Scaling         Functional Tests   Mode Menu        Communications
```

① DIP switch position 2 must be On (master code enable).

Resetting the DTAM Micro

Use the reset function to reset the DTAM Micro after DIP switch changes or a configuration change using the Mode Menu.

To reset the DTAM Micro:

1. From the Mode Menu select 1 Reset.

> **1 Reset**   **3 Special**
> **2 Com-Port**   **4 Other**

You are prompted:

> **1 = Reset DTAM Micro**
> **0 = Abort**

2. Press [1] on the keypad to initiate the reset.

The DTAM Micro resets. This has the same effect as turning the power off and on. The DTAM Micro performs the self diagnostic tests and powerup displays as described in the previous section.

Setting Communication Parameters Manually

The Com-Port option on the Mode Menu lets you to manually adjust the communication port parameters. Normally these parameters are set automatically from the programming software when an application is downloaded.

Select Com-Port from the Mode Menu.

```
1 Reset        3 Special
2 Com-Port     4 Other
```

This menu displays:

```
1 Baud Rate     3 Parity
2 Data Bits     4 Exit
```

Select an item by pressing the corresponding numeric key [1] → [4].

Baud Rate
Selecting Baud Rate displays the current baud rate.

```
Baud Rate       19200
"Next"  to change
```

Press [Next] to select a new rate: 300, 1200, 2400, 4800, 9600, 19200, 38400. DH-485 communications with an SLC or network cannot be set at 300 Baud.

Data Bits
Selecting Data Bits displays the current setting.

```
Data Bits        7
"Next"  to change
```

Press [Next] to select either 7 or 8 bits.

Parity
Selecting Parity displays the current setting.

```
Parity          Even
"Next"  to change
```

Press [Next] to select Even, Odd, or No parity.

Special Functions for Controller Operations

The Special Menu item provides access to special features for the controller operations. A security access code may be assigned in the application restricting access to the Special Menu.

Select Special from the Mode Menu.

```
1 Reset        3 Special
2 Com-Port     4 Other
```

This menu displays:

```
1 P-A/D        3 Mem Xfr
2 Mode         4 Clr Fault
```

Note: Below are brief descriptions of each menu item.
Refer to Appendix C for instructions on using the Special Menu items.

P-A/D
Use the Point Access / Display function to display, and modify controller data files. The P-A/D function does not allow you to write controller Input and Output files. Appendix C provides a listing of the applicable file types for SLC and PLC-5 controllers along with step-by-step instructions.

Mode
Select mode to place the controller in either the run or program modes. This may be useful if you need to halt the controller for memory transfers.

Mem Xfer
Use the memory transfer function to initiate a transfer of data between a memory module and an SLC or PLC controller. Memory transfers with a PLC-5 are only to a memory module, you cannot transfer data from a memory module to a PLC-5. Appendix C describes how to use the Mem Xfer function.

Clr Fault
Use the Clear Fault function to clear all major and minor faults in the controller.

Entering a New Master Security Code

The master security code provides access to all security codes and allows them to be modified. Two master security codes perform special functions:

00000000 allows the operator to modify the existing master code without entering the current code.

99999999 does not allow operator to modify security codes. Changing of the master security code is through DPS software.

To enter a new Master Security code:

1. From the Mode Menu, select item 4.

> ```
> 1 Reset          3 Special
> 2 Com-Port       4 Other
> ```

The Other Menu appears:

> ```
> 1 Master    3 Simulate
> 2 Scale     4 Test      5 Ex
> ```

2. Press [1] to select the Master security code function.

The master code entry screen displays:

> ```
> Enter Current Master
> Code:_
> ```

3. Enter the current code and press [◄⏎].

You are prompted to enter the new code.

> ```
> Enter New Master
> Code:_
> ```

4. Enter a new code. The code must be 8 digits in length. If you enter less than 8 digits the entry is padded with zeroes. For example, an entry of 1234 is entered as 12340000.

Note: Security codes can contain the wildcard character **?** Any entered value will be seen as a match to the wildcard. You must make sure that the master security code is different from security codes using wildcard entries. Otherwise the master security code may be seen as a security code. For example, if the:

> Security Code = 12??????
> Master Code = 12368794

When the master security code above is entered, the DTAM Micro interprets it as a security code.

Enabling / Disabling Scaling

Use scaling to convert data from a controller to engineering units such as gallons or psi. When scaling is disabled, the values are not converted. Refer to the DTAM Programming Software Manual for a description of how values are scaled. The scaling factor is determined by the application designer, it cannot be changed by the operator.

Flow Rate Transducer

Flow = 16
Gallons Per Minute

DTAM Micro displays **scaled** value of **16** Gallons Per Minute

PLC-5

Flow Rate Transducer Value = **510**

Value From Controller = **510**
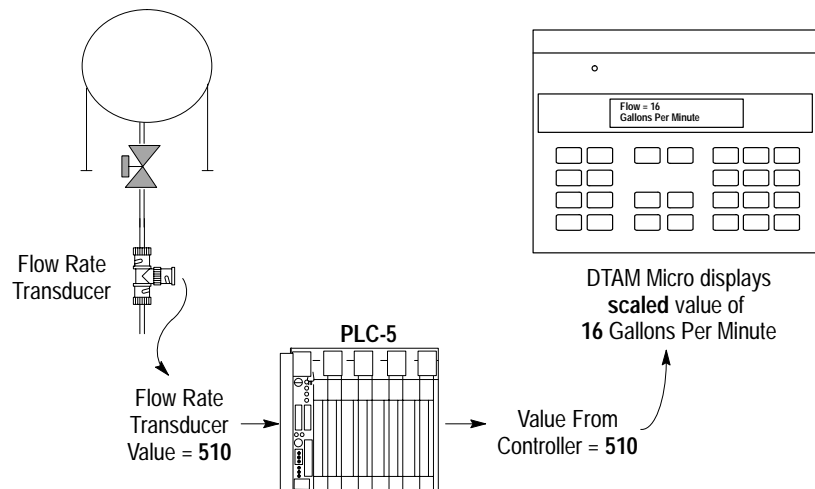
To enable or disable scaling:

1. From the Mode Menu, select item 4.

1 Reset	3 Special
2 Com-Port	4 Other

   The Other Menu appears:

1 Master	3 Simulate	
2 Scale	4 Test	5 Ex

2. Select item 2.

   The scale enable screen displays:

Scale Enable	OFF (0)	◄── Current Setting
0=Off	1=On	

3. Press [1] on the keypad to enable scaling and [0] to disable scaling.

   You are returned to the Other Menu.

4. Select item 5 to exit to the Mode Menu.

Using the Simulate Mode

The Simulate mode checks an application without having a controller connected. All data that normally would be sent by the controller, such as data for a display, is set to 0. Any ASCII data is set to ? (PLC5-DF1 operating system only). Selecting Simulate from the Mode Menu will:

- Halt communication between the DTAM Micro and the controller.
- Simulate communication with a controller.

Disabling the Simulate mode resumes normal operation.

To simulate an application:

1. Download the application from the DPS software.

2. Enable the Simulate mode.

3. From the Mode Menu, select item 4.

```
1 Reset        3 Special
2 Com-Port     4 Other
```

The Other Menu appears:

```
1 Master    3 Simulate
2 Scale     4 Test      5 Ex
```

4. Select item 3.

The simulate enable screen displays:

```
Simul Enable     OFF (0)◄──────  Current Setting
0=Off      1=On
```

5. Press [1] to enable the Simulate mode.

6. Press [5] to exit the Other Menu and display the Mode Menu.

7. From the Mode Menu, reset the DTAM Micro. Refer to page 3–5.

   The DTAM Micro displays a series of diagnostic tests, enters run mode, loads the application and then displays the Mode Menu of the application.

8. Run the program as you normally would. Notice that all display registers show data as a set of zeroes.

```
Pressure = 0000  PSI
```

Data Display

9. After verifying the operation of the program, press the [MODE] key. All other functions are halted and the Mode Menu is displayed.

10. Disable the Simulate mode.

Test Functions

Selecting Test from the Other Menu displays the test screen:

```
DTAM Micro Diag Test
< Test Selection >
```
Current Test Selection

Use the Test menu to perform the following:

- Reset DUT (DTAM Under Test)
- DIP switch positions
- Display
- Keyboard
- Communications port
- Random Access Memory (RAM)
- System memory
- Program memory
- Transmit enable

Refer to Chapter 8 Troubleshooting and Maintenance for instructions on how to perform these tests.

Transferring Applications

Objectives

This chapter describes how to transfer applications between the offline programing software (DPS) and the DTAM Micro. It contains the following sections:

Upload / Download DIP Switch Settings

Before you can upload or download an application, you must verify that DIP switch position #1 is On as shown. To access the DIP switch, remove the cover from the access hole on the back of the DTAM Micro (align cover tabs with notches in hole to remove). The DTAM Micro is shipped without the cover installed, you can find it in the hardware bag.

Back of DTAM Micro
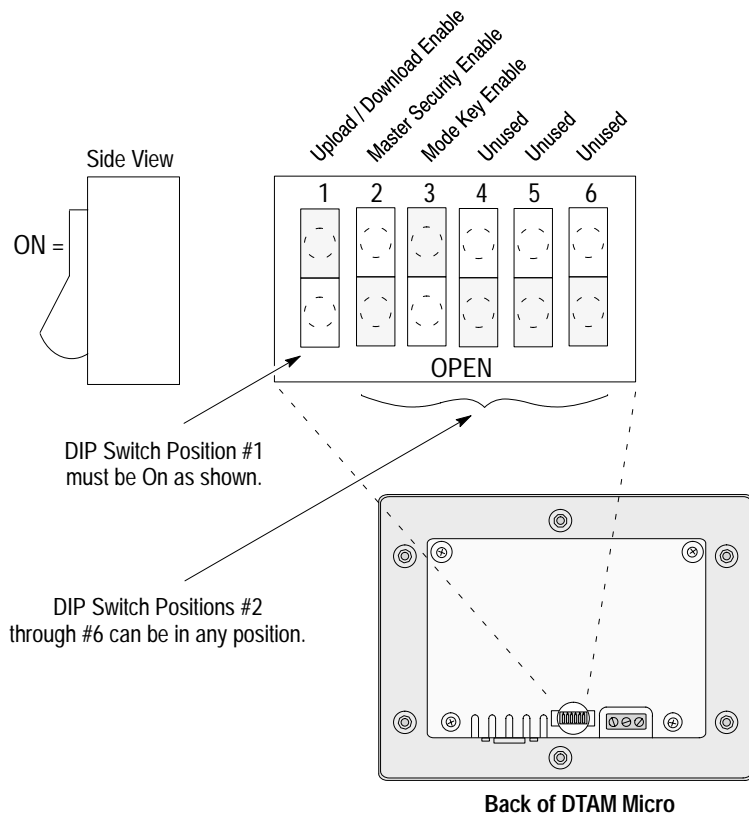
Upload / Download Connections

To download an application to the DTAM Plus, you must:

- connect a power supply (refer to Chapter 3)
- connect the (Catalog No. 2707-NC2) upload/download cable if you have the RS-232 version
- connect the (Catalog No. 2707-NC5) upload/download cable if you have the RS-485 version. This cable converts the computer's RS-232 output to RS-422 which is compatible with the DTAM Micro RS-485 port.
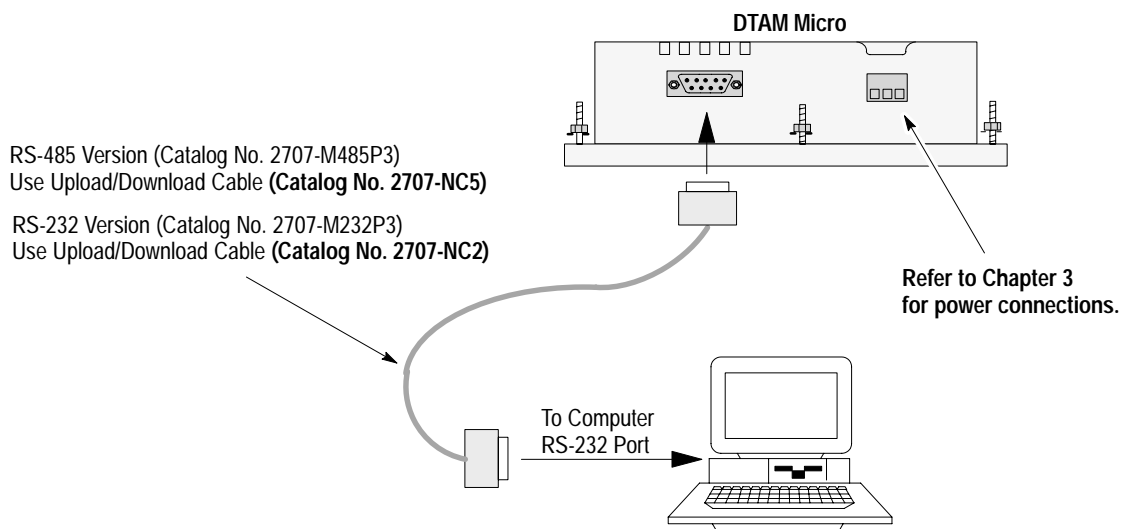
DTAM Micro

RS-485 Version (Catalog No. 2707-M485P3)
Use Upload/Download Cable **(Catalog No. 2707-NC5)**

RS-232 Version (Catalog No. 2707-M232P3)
Use Upload/Download Cable **(Catalog No. 2707-NC2)**

Refer to Chapter 3 for power connections.

To Computer RS-232 Port

Computer Setup

Upload and download functions are initiated from a personal computer running the programming software DPS (Catalog No. 2707-NP, series H or later). Transfer functions automatically occur at 9600 Baud.

After the transfer is complete, the DTAM Micro Baud rate is set to the parameters defined by the application program residing in the DTAM Micro.

Downloading an Application

This section shows how to download an application from a computer running DPS software (Catalog No. 2707-NP, series H or later) to the DTAM Micro. Refer to the DPS Programming Manual (Publication No. 2707-801) for additional information.

1. Apply power to the DTAM Micro.

   The following message appears in the window of the DTAM Micro.

   > **Programming Mode**
   > **Waiting For Program**

   If you do not see this message, check the DIP switch settings.
   DIP Switch position #1 must be in the Closed (ON) position.

2. On your computer, move to the /DPS subdirectory where the software resides.

   > C:\DPS>

3. Type **dps** and press [Return] to start the program.

   C:\DPS>**dps** [Return]

☞ *You will not see this prompt if a monitor was specified during installation.*

4. Specify whether you are using a color monitor. Enter **Y** or **N**.

5. The startup screen displays:

```
                  PROGRAMMING SOFTWARE
          for Bul. 2707 DTAM Plus, DTAM Micro,
              and MicroView.  Version 9.00


                Allen-Bradley Company, Inc.
                    Catalog #2707-NP

                This software is licensed to:
                      John D. Smythe
                        ABC Company
                    Ser # Z-0000000000001

   Technical Support   Voice: 440–646–6800
                       FAX: 440–646–6850 or 6890
                       E–mail: RACLEASKTHEEXPERT@RA.ROCKWELL.COM
                      Press any key to continue
```
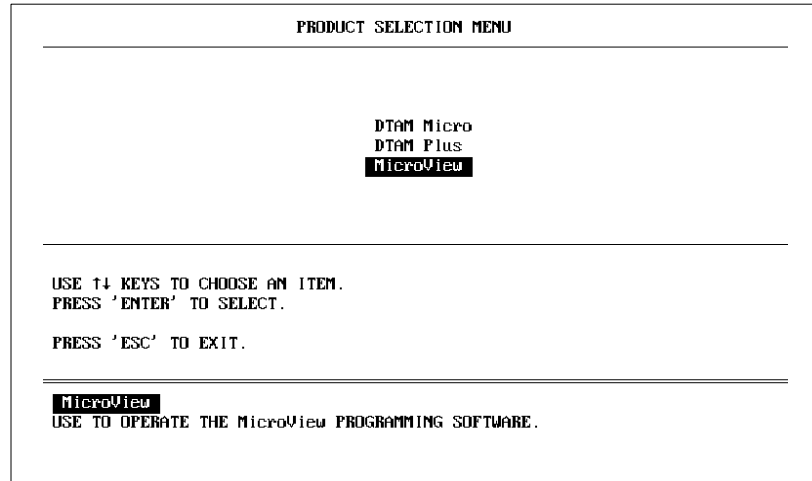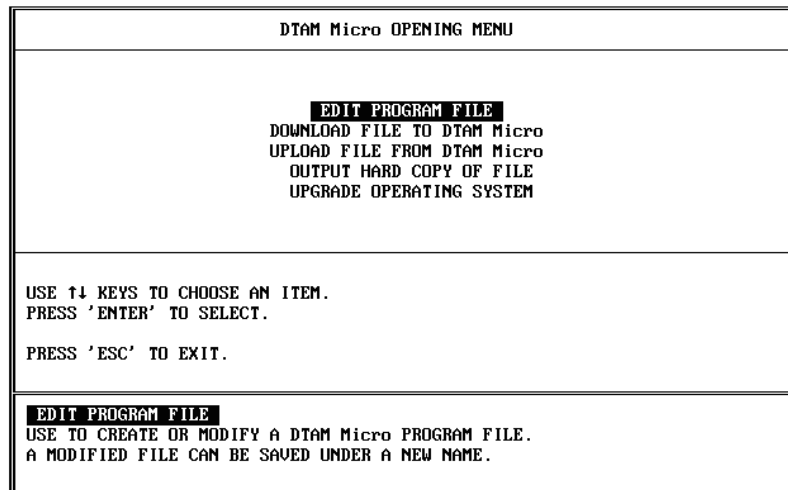
6. Press any key (other than [Esc]) to continue.

The Product Selection Menu appears.

☞ *You will not see this prompt if a product type was specified during installation.*

```
                        PRODUCT SELECTION MENU
  ───────────────────────────────────────────────────────────

                              DTAM Micro
                              DTAM Plus
                             │MicroView│

  ───────────────────────────────────────────────────────────
   USE ↑↓ KEYS TO CHOOSE AN ITEM.
   PRESS 'ENTER' TO SELECT.

   PRESS 'ESC' TO EXIT.
  ───────────────────────────────────────────────────────────
   │MicroView│
   USE TO OPERATE THE MicroView PROGRAMMING SOFTWARE.
```

7. Press [Return] to select the DTAM Micro product.

The Opening Menu appears.

```
                   DTAM Micro OPENING MENU
  ───────────────────────────────────────────────────────────


                         │EDIT PROGRAM FILE│
                      DOWNLOAD FILE TO DTAM Micro
                      UPLOAD FILE FROM DTAM Micro
                        OUTPUT HARD COPY OF FILE
                        UPGRADE OPERATING SYSTEM

  ───────────────────────────────────────────────────────────
   USE ↑↓ KEYS TO CHOOSE AN ITEM.
   PRESS 'ENTER' TO SELECT.

   PRESS 'ESC' TO EXIT.
  ───────────────────────────────────────────────────────────
   │EDIT PROGRAM FILE│
   USE TO CREATE OR MODIFY A DTAM Micro PROGRAM FILE.
   A MODIFIED FILE CAN BE SAVED UNDER A NEW NAME.
```

8. Highlight Download File to DTAM Micro and press [Return].

The Communication Port Selection screen appears.

☞ *You will not see this screen if a communication port was specified during installation.*

```
COMMUNICATION PORT SELECTION



                        COMM 1
                        COMM 2




USE ↑↓ KEYS TO CHOOSE AN ITEM.
PRESS 'ENTER' TO SELECT.



 COMM 1
THIS WILL BE THE HARDWARE PORT THAT WILL BE USED
TO COMMUNICATE WITH THE DTAM Micro
```

9. Highlight the serial port on your computer that is connected to the DTAM Micro (COMM 1 or COMM 2) and press [Return].

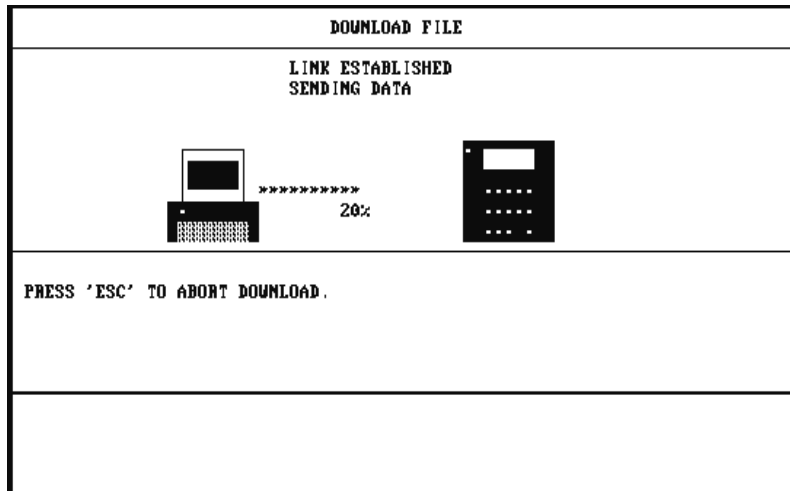☞ *If a communication link does not occur in 10 seconds, you get an error message. Check DIP switch settings and cable connections.*

10. When communication is established, the following screen appears:

```
FILE NAME? DEMO

FILES IN PATH -- C:\DPS
DEMO      - AB DH485




ENTER FILE NAME               F1              F2
OR USE ↑↓ KEYS TO CHOOSE AN ITEM.  F3         F4
PRESS 'ENTER' TO SELECT.      F5              F6
                              F7              F8
                              F9              F10 EXIT
```

11. Enter or select the file name that you want to download. If the application file type (DH-485 or PLC5 DF1) is different from the existing operating system, you are prompted to download the new operating system.

12. Press [Return] to load the application file.

    The download begins and the following screen shows the progress of the download operation.
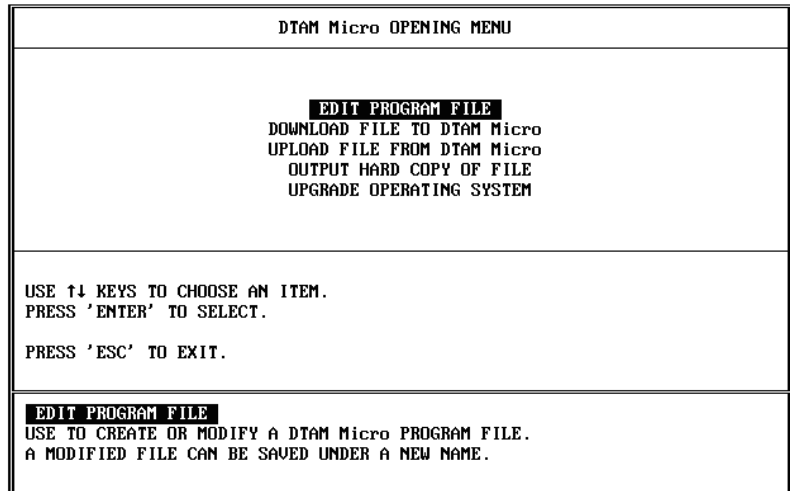
```
┌──────────────────────────────────────────────────┐
│              DOWNLOAD FILE                        │
├──────────────────────────────────────────────────┤
│                LINK ESTABLISHED                   │
│                 SENDING DATA                      │
│                                                    │
│                                                    │
│          ▄▄▄▄                    ▄▄▄▄▄             │
│          █▄▄█     »»»»»»»»»»      █  █             │
│          ▐██▌        20%                           │
│         ▟████▙                                     │
├──────────────────────────────────────────────────┤
│  PRESS 'ESC' TO ABORT DOWNLOAD.                   │
│                                                    │
│                                                    │
├──────────────────────────────────────────────────┤
│                                                    │
│                                                    │
└──────────────────────────────────────────────────┘
```

13. During the download, the DTAM Micro alternately displays:

┌─────────────────────────┐
│   **Programming Mode**   │
│   **Transfer in Progress** │
└─────────────────────────┘

┌─────────────────────────┐
│   **Programming Mode**   │
│   **Copying to Memory** │
└─────────────────────────┘

14. When the download is complete, you are returned to the Opening Menu.

```
                          DTAM Micro OPENING MENU



                            EDIT PROGRAM FILE
                          DOWNLOAD FILE TO DTAM Micro
                          UPLOAD FILE FROM DTAM Micro
                           OUTPUT HARD COPY OF FILE
                           UPGRADE OPERATING SYSTEM



USE ↑↓ KEYS TO CHOOSE AN ITEM.
PRESS 'ENTER' TO SELECT.

PRESS 'ESC' TO EXIT.


 EDIT PROGRAM FILE
USE TO CREATE OR MODIFY A DTAM Micro PROGRAM FILE.
A MODIFIED FILE CAN BE SAVED UNDER A NEW NAME.
```

and the DTAM Micro displays:

```
Programming Mode
Waiting Up/Download
```

15. Press [Esc] to exit the software.

16. Press [Y] to return to DOS.

   The application is now loaded into the DTAM Micro. You can test the application using the simulate function described in Chapter 3 or you can run the application as described in Chapter 5.

   Important: If you are running the application, make sure that you set the DIP switch position #1 to the OFF position.

Uploading an Application

This section shows how to upload an application from the DTAM Micro to a computer running DPS software (Catalog No. 2707-NP, series C or later). Refer to the DPS User manual (Publication No. 2707-801) for additional instructions.

1. Apply power to the DTAM Micro.

    The following message appears in the window of the DTAM Micro.

    > **Programming Mode**
    > **Waiting For Program**

    If you do not see this message, check the DIP switch settings.
    DIP Switch position #1 must be in the Closed (ON) position.

2. On your computer, move to the /DPS subdirectory.

    > C:\DPS>

3. Type **dps** and press [Return] to start the program.

    C:\DPS>**dps** [Return]

☞ *You will not see this prompt if a monitor was specified during installation.*

4. Specify whether you are using a color monitor. Enter **Y** or **N**.

5. The startup screen displays.

```
            PROGRAMMING SOFTWARE
   for Bul. 2707 DTAM Plus, DTAM Micro,
      and MicroView.  Version 9.00


        Allen-Bradley Company, Inc.
             Catalog #2707-NP

       This software is licensed to:
              John D. Smythe
               ABC Company
           Ser # Z-0000000000001

 Technical Support   Voice: 440–646–6800
                     FAX: 440–646–6850 or 6890
                     E–mail: RACLEASKTHEEXPERT@RA.ROCKWELL.COM
                Press any key to continue
```
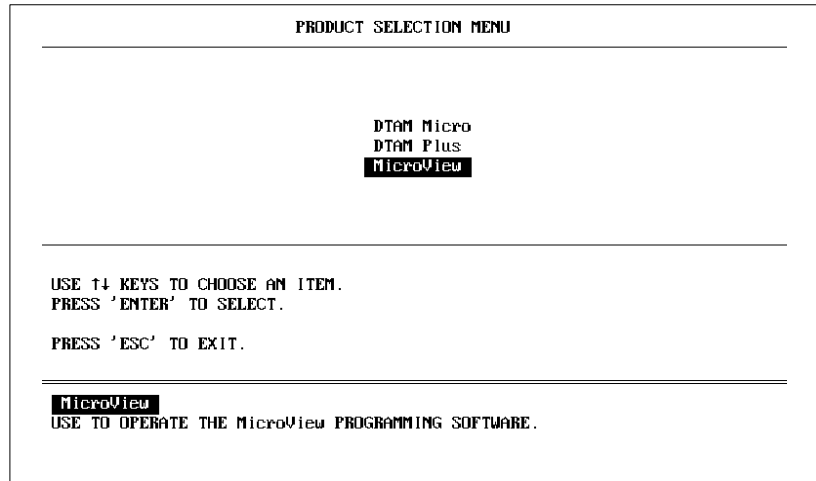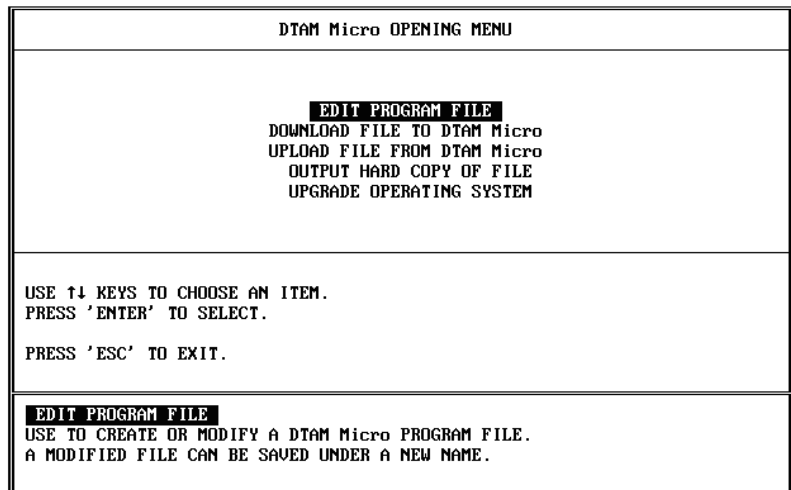
6. Press any key (other than [Esc]) to continue.

The Product Selection Menu appears.

☞ *You will not see this prompt if a product type was specified during installation.*

```
                    PRODUCT SELECTION MENU
    _____


                          DTAM Micro
                          DTAM Plus
                         MicroView
    _____
    USE ↑↓ KEYS TO CHOOSE AN ITEM.
    PRESS 'ENTER' TO SELECT.

    PRESS 'ESC' TO EXIT.
    _____
    MicroView
    USE TO OPERATE THE MicroView PROGRAMMING SOFTWARE.
```
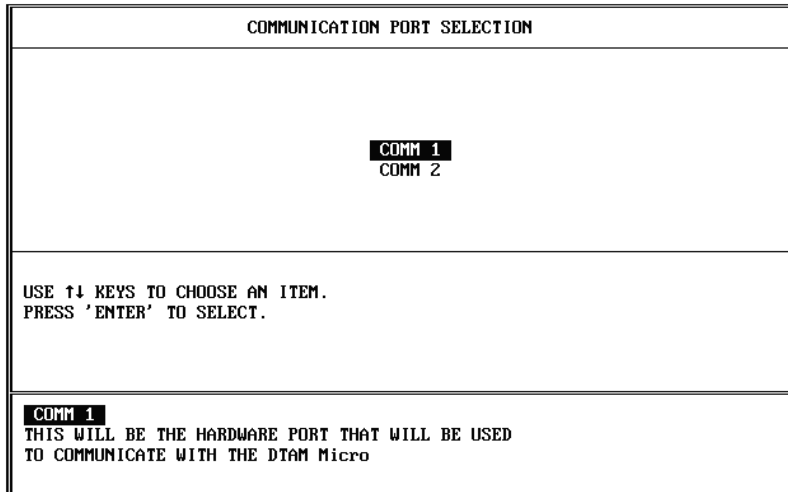
7. Press [Return] to select the DTAM Micro product.

The Opening Menu appears.

```
                DTAM Micro OPENING MENU

                      EDIT PROGRAM FILE
                  DOWNLOAD FILE TO DTAM Micro
                  UPLOAD FILE FROM DTAM Micro
                   OUTPUT HARD COPY OF FILE
                   UPGRADE OPERATING SYSTEM


    USE ↑↓ KEYS TO CHOOSE AN ITEM.
    PRESS 'ENTER' TO SELECT.

    PRESS 'ESC' TO EXIT.

    EDIT PROGRAM FILE
    USE TO CREATE OR MODIFY A DTAM Micro PROGRAM FILE.
    A MODIFIED FILE CAN BE SAVED UNDER A NEW NAME.
```

8. Highlight Upload File from DTAM Micro and press [Return].

   The Communication Port Selection screen appears.

☞ *You will not see this screen if a communication port was specified during installation.*

```
        COMMUNICATION PORT SELECTION



                    COMM 1
                    COMM 2




    USE ↑↓ KEYS TO CHOOSE AN ITEM.
    PRESS 'ENTER' TO SELECT.



    COMM 1
    THIS WILL BE THE HARDWARE PORT THAT WILL BE USED
    TO COMMUNICATE WITH THE DTAM Micro
```

9. Highlight the serial port on your computer that is connected to the DTAM Micro (COMM 1 or COMM 2) and press [Return].

10. The upload begins and the following screen shows the progress of the upload operation.

```
                    UPLOAD FILE
                  LINK ESTABLISHED
                  GETTING DATA




                        ‹‹‹‹‹‹‹‹
                          30%


    PRESS 'ESC' TO ABORT UPLOAD.
```
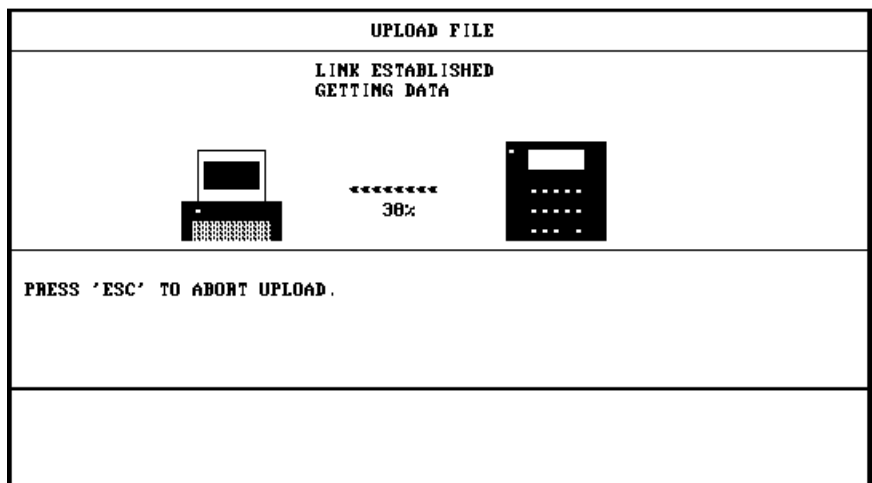
11. When the upload is complete, you are returned to the Opening Menu.

```
                    DTAM Micro OPENING MENU

                        EDIT PROGRAM FILE
                    DOWNLOAD FILE TO DTAM Micro
                    UPLOAD FILE FROM DTAM Micro
                     OUTPUT HARD COPY OF FILE
                     UPGRADE OPERATING SYSTEM



    USE ↑↓ KEYS TO CHOOSE AN ITEM.
    PRESS 'ENTER' TO SELECT.

    PRESS 'ESC' TO EXIT.

     EDIT PROGRAM FILE
    USE TO CREATE OR MODIFY A DTAM Micro PROGRAM FILE.
    A MODIFIED FILE CAN BE SAVED UNDER A NEW NAME.
```
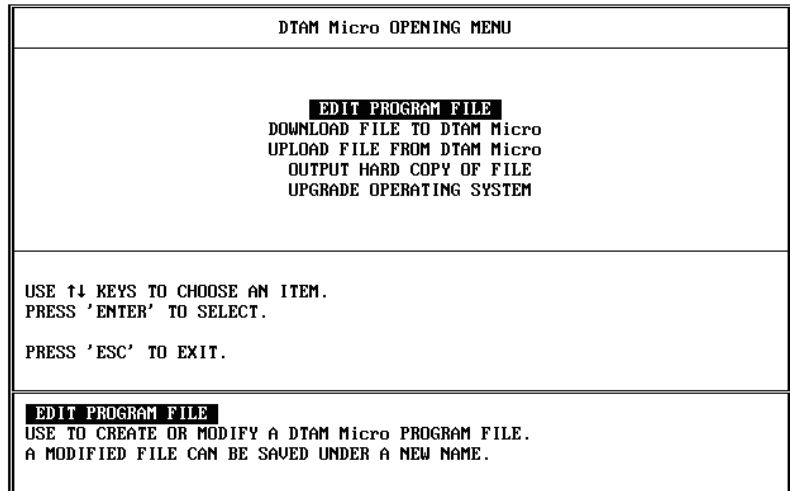
12. Press [Esc] to exit the software.

13. Press [Y] to return to DOS.

   The application is now loaded into the DPS software. You can edit the
   application as described in the DPS Programming Manual (Publication
   No. 2707-801).

Running Applications

Chapter Objectives

This chapter describes screen types and operating procedures that are common to most applications. It contains the following sections:

DIP Switch Setting

Before running an application, verify that the DIP switch position #1 is in the OFF position. This enables communication with the controller. Refer to DIP switch description on page 2–7.

Application Documentation

It is the responsibility of the application designer to document the operation of an application program. This chapter only provides basic guidelines. Before running an application, you should understand what processes are being controlled and monitored.

> ⚠ **ATTENTION:** The function keys of the DTAM Micro can be assigned different functions depending upon the application. The application designer must document these functions. Make sure you understand any function key operations prior to operating the DTAM Micro. Failure to do so may result in unintended operation.

Bit Write Mode

The application designer can assign the function keys [F1] to [F8] to set or clear a bit at a controller address. This bit may control a variety of processes. It is the responsibility of the application designer to document the use of the bit write mode function keys.

Screen Types

Application screens can have a variety of appearances. The DTAM Micro can display six types of screens.

- Menu and Sub-Menu Screens
- Security Screens
- Data Display Screens
- Data Entry Screens
- Recipe Screens
- Alarm Screens

Screen Navigation

The DTAM Micro provides several options for changing the screen displays:

- Screen links
- Advisor option
- Function keys

Screen Links

Use the [NEXT] and [PREV] keys to step backward and forward through this sequence.

Main Menu and Sub-Menu screens list screens that can be accessed by pressing the assigned numeric key [0] through [9]. A typical Main Menu screen provides links to individual screens or sub-menus:

```
1  Pump        2  Tank Status
3  Mixer Status   4  Recipe
```

In the example above, pressing [2] at the Main Menu displays the status of a holding tank. Pressing [4] displays a Sub-Menu of the recipe screen options.

Advisor Option

Applications can allow screen changes that are controlled by an SLC or PLC logic controller. When the logic controller writes a valid screen number to a specified Advisor register, the corresponding screen is displayed. The controller can initiate a screen change based upon a variety of inputs to the controller. For example, a pressure limit switch can be used to initiate the display of a pressure control screen. It is the responsibility of the application designer to document when and what screen changes may occur.

Function Keys

An application designer can link function keys [F1] through [F8] to individual screens (except alarm screens). Pressing an assigned function key displays the function key number for approximately 0.5 seconds and then the assigned screen. It is the responsibility of the application designer to document the operations assigned to function keys. There are two function key modes:

- Auto Return
- Continue

Auto Return

Auto return function keys return to the initial display after the linked screen is executed. For example, assume that an application is displaying screen #6 and an auto return function key [F3] is linked to a recipe screen #10. When [F3] is pressed, the recipe screen #10 is displayed. After the operator downloads a new recipe on screen #10, the initial screen #6 is displayed.

The following table describes when the return to the initial screen occurs.

Function Key Linked To:	Returns to Initial Screen After:
Data Display Screen	[◄─┘] , [PREV], or [NEXT] keys are pressed
Data Entry Screen	A value is entered or [PREV], or [NEXT] keys are pressed ①
Recipe Screen	Recipe data is downloaded or [PREV], or [NEXT] keys are pressed ①

① [NEXT] or [PREV] keys abort the operation.

Continue

Continue function keys do not return to the initial display but remain at the linked screen. For example, assume that an application is displaying screen #3 and a "continue" function key [F2] is linked to a data entry screen #5. When [F2] is pressed, the data entry screen #5 is displayed. The application continues from screen #5.

Menu and Sub-Menu Screens

Menus and Sub-Menus provide a convenient method of accessing a large number of display screens.

Main Menu

Every application has a Main Menu screen. The Main Menu is the first application screen displayed after an initial power-up or reset.

```
1  Pump        2  Tank Stat
3  Mixer Stat  4  Recipe
```

The Main Menu provides access to the next level of screens and Sub-Menus.

To access the Main Menu, press the [MENU] key. Pressing this key at any time displays the Main Menu. The only time the Main Menu will not be displayed is when an alarm screen has been triggered but not acknowledged. You must acknowledge alarm screens, by pressing [◄─┘], before another screen can be displayed.

Sub-Menus

Sub-Menu screens function like the Main Menu. The only difference is that you must navigate through the other screens or use assigned function keys to access the Sub-Menus. Refer to the previous section for more information.

Security Screens

Security screens limit access to parts of an application. Although the text on a security screen may be changed by the application designer, many applications will use the default text:

```
*RESTRICTED ACCESS*
ENTER CODE:
```

A security code is a series of 1 to 8 digits. Each security screen can have up to 3 code entries. Entering any one of the codes provides access.

To enter a security code, use the numeric keypad. An asterisk (∗) is displayed for each number entered. Press [◄─┘] after the entire code is entered.

If a valid security code has been entered, the next linked screen is displayed. If an invalid security code is entered, an error message appears. Once the error condition is acknowledged by pressing [◄─┘], you can re-enter the code or return to the Main Menu.

Data Display Screens

Data display screens show either the actual or scaled value of a logic controller.

Data Display Field

```
Pump 1 Pressure = 150 PSI
Counter = 5
```
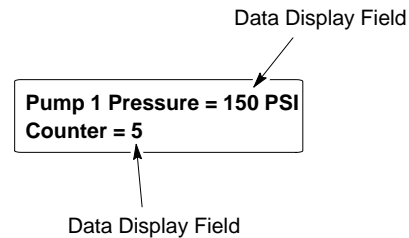
Data Display Field

Data displays are updated at different intervals depending upon the application and the size of the network.

Data Entry Screens

Data entry screens contain an entry field. The length and format of the data entry field depends upon the application designer. In addition, the application designer can place a data display field on the same screen:

Data Display Field

```
Temp = 120 Deg F
Enter New Temp:
```
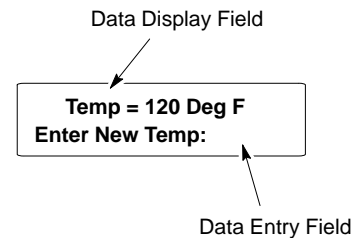
Data Entry Field

The data entry field must always appear last on the screen. The application designer cannot place text after a data entry field.

To enter data, use the numeric keypad. To modify an entry, press the clear entry key [CE] and re-enter the value. Press the [$^+/_-$] key to toggle between positive and negative values. Press [◄─┘] after the entire value is entered.

Data entry screens can have a default value appear in the data entry field. A flashing cursor identifies the first digit of the default value. Pressing [◄─┘] writes the default to the controller or you can enter a different value by pressing the [CE] key.

If a data display is included on a data entry screen, the data display is only updated when the screen is entered. Data does not update continuously.

Recipe Screens

Recipe screens allow the DTAM Micro to write multiple controller addresses at the same time. Recipe screens can also be linked so that more than one recipe is downloaded.

T4:14.2 (Timer Value)
N7:30 = 0 (Integer Value)
N7:31 = 100 (Integer Value)
T4:15.1 (Timer Value)
N7:200 = 500 (Integer Value)
B3:10 = 10 (Binary Value)

**DTAM Micro Downloads
Data to Multiple Controller Addresses**

**Operator Inititates
Recipe Download**

**Controller Modifies Process
Using New Recipe Data**
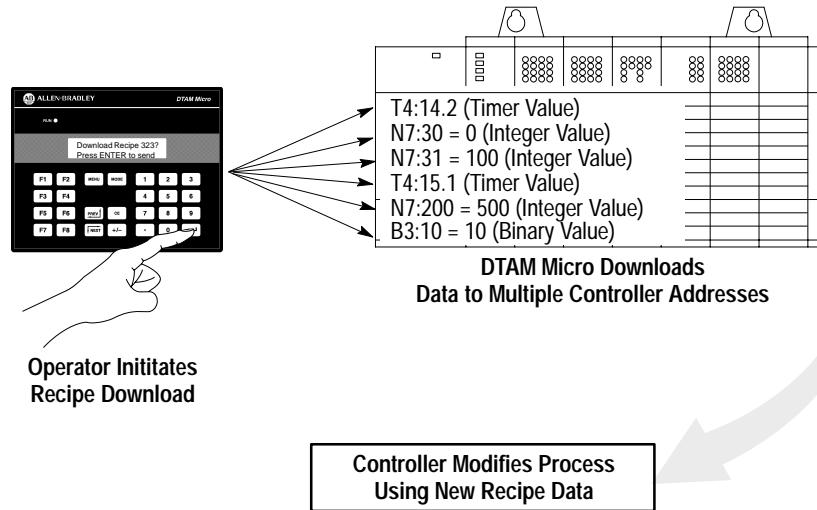
Depending upon the application designer, recipe screens will either automatically download data or display a prompt allowing the download to be initiated when [◄—] is pressed.

**Download Recipe 323?
Press ENTER to send**

Once the download is initiated, the DTAM Micro writes the recipe data to the various controller addresses. You cannot modify the recipe data that is sent, recipe data is specified by the application designer.

Alarm Screens

Alarm screens indicate conditions that are not expected during normal operation. Alarm screens are triggered when the controller writes the alarm screen number to the Advisor register. Refer to page 5–2 for additional information on the Advisor register.

You must respond to an alarm screen before any other screens can be displayed. The [MENU] key will not function while an alarm screen is displayed. Press [◄—] to acknowledge the alarm.

**Conveyor Overload
PRESS ENTER TO CLEAR**

Installation

Objectives

This chapter contains the following sections:

Section	Page
Safety Guidelines	6–1
Operating Environment	6–1
Enclosures	6–2
Equipment Required	6–3
Clearances	6–3
Mounting Dimensions	6–4
Cutout Template	6–5
Installation	6–6
Connecting AC Power	6–7

Safety Guidelines

Install the DTAM Micro terminal using publication NFPA 70E, Electrical Safety Requirements for Employee Workplaces as a guide.

In addition, grounding is an important safety measure in electrical installations. A source for grounding recommendations is the National Electrical Code published by the National Fire protection Association of Boston Massachusetts.

Be certain to follow all directions for installing and connecting DC power to the DTAM Micro.

When used in a hazardous environment, the ultimate enclosure must be in accordance with Class 1, Division 2 wiring methods as described in the National Electrical Code (ANSI/NFPA 70) and the Canadian Electrical Code.

All peripheral equipment must be suitable for the location in which it is used.

Use only a Class 2 power source as described in the National Electrical Code (ANSI/NFPA 70) and Canadian Electrical Code. The recommended AC to DC adapters (Catalog No. 1747-NP1 and Catalog No. 1747-NP2) meet this requirement.

The DTAM Micro contains no user serviceable parts.

! **ATTENTION:**
EXPLOSION HAZARD: SUBSTITUTION OF
COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS
1, DIVISION 2.

RISQUE D'EXPLOSION: LA SUBSTITUTION DE
COMPOSANTS PEUT RENDRE CE MATÉRIEL
INACCEPTABLE POUR LES EMPLACEMENTS DE
CLASSE 1, DIVISION 2.

! **ATTENTION**
CAUTION: USE ONLY WITH CLASS 2 POWER SOURCE
LIMITED TO 30 VDC OPEN CIRCUIT AND 8A SHORT
CIRCUIT.
ATTENTION: UTILISER AVEC UNE TENSION
D'ALIMENTATION CLASSE 2 DE 30 VCC MAXI EN
CIRCUIT OUVERT AVEC UN COURANT DE
COURT-CIRCUIT DE 8A MAXI.

! **DANGER**
EXPLOSION HAZARD: DO NOT CONNECT OR
DISCONNECT EQUIPMENT WHILE CIRCUIT IS LIVE
UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS
RISQUE D'EXPLOSION: NE PAS BRANCHER OU
DEBRANCHER TANT QUE LE CIRCUIT EST SOUS
TENSION, A MOINS QU'IL NE S'AGISSE D'UN
EMPLACEMENT NON DANGEREUX.

Refer to the inside front cover of this manual for additional guidelines.

Operating Environment

The DTAM Micro is rated for an operating temperature range of 32 to 131°F
(0 to 55°C). The storage temperature range is -4 to 158°F (-20 to 70°C).
The humidity rating is 5 to 95% relative humidity (noncondensing).

If you are using a DC power supply, check the environmental ratings of the
supply. The AC to DC Adapters (Catalog No. 1747-NP1 and -NP2) are rated
at 32-104°F (0-40°C).

Enclosures

The terminal must be mounted in a panel or enclosure to protect the internal
circuitry. The terminal meets NEMA Type 4, 12, 13 (indoor use only)
ratings only when mounted in a panel or enclosure with the equivalent rating.

Allow enough spacing within an enclosure for adequate ventilation. For
some applications, you may have to consider heat produced by other devices
within a panel. The ambient temperature around the terminal must be
maintained between 32° and 131° F (0° and 55° C).

Make sure that provisions are made for accessing the back panel of the
terminal for wiring, routine maintenance, and troubleshooting.

Equipment Required

Other than the tools required to make the panel cutout, the tools required for installation are:

- 7mm (M4) deep well socket wrench or nut driver
- small slotted screwdriver
- torque wrench (in. / lbs).

The terminal is tightened against the panel with six self-locking nuts.

Clearances

Make sure that you leave adequate room, as shown in Figure 6.1, for mounting, air flow, cabling, and access to DIP switches.

Figure 6.1
Recommended Clearances

Leave 3 inches (76.2 mm)
for Mounting, Air Flow, and
access to DIP Switches.

Leave 3 inches (76.2 mm) for
communications port connector.
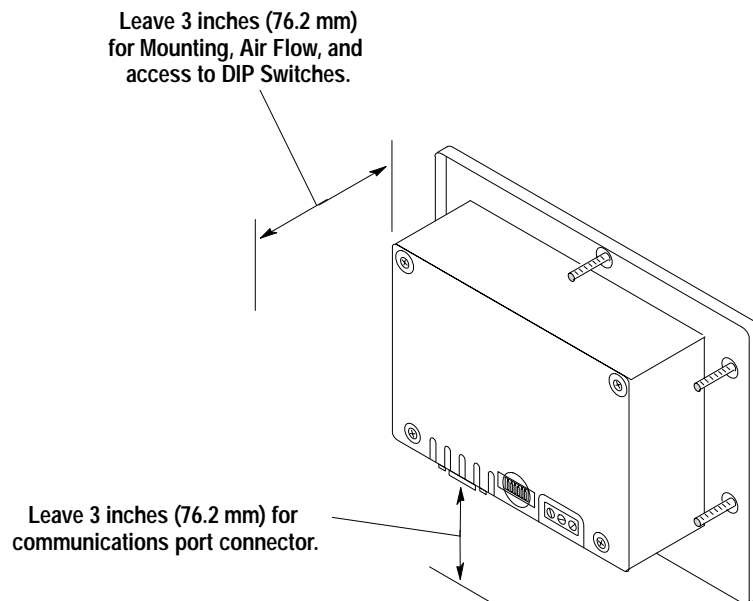
Mounting Dimensions

Figure 6.2 shows the mounting dimensions of the terminal.

Figure 6.2
Mounting Dimensions in Inches (Millimeters)

Back View

3.9
(99.1)

5.4
(137.2)

6.9
(175.3)

Bottom View

5.4
(137.2)

1.8
(45.7)
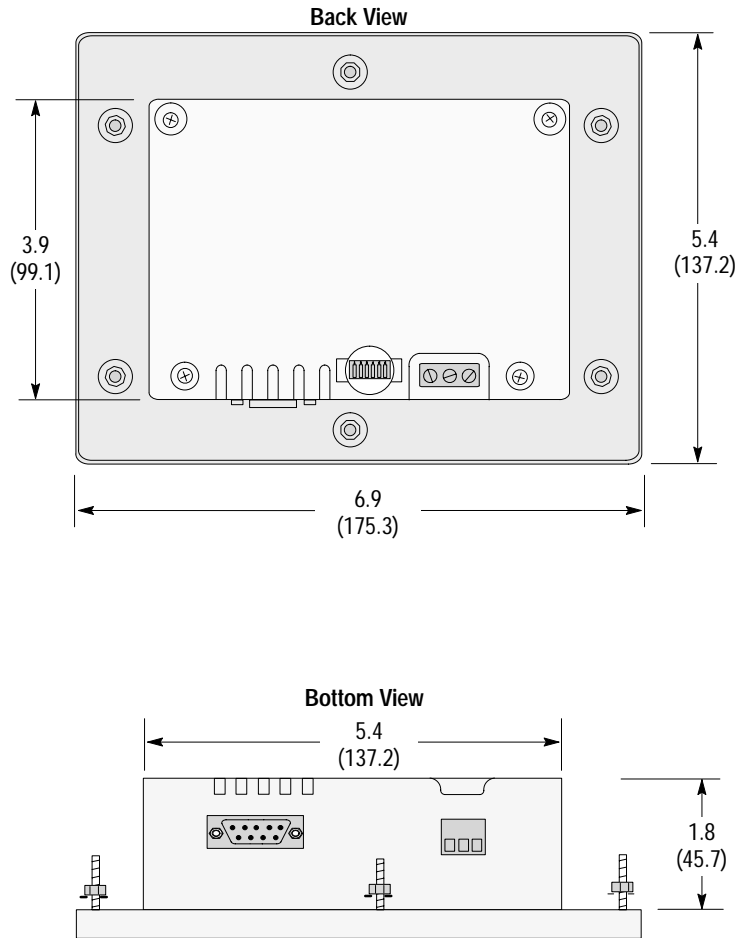
Cutout Template

A cutout template is provided on the inside back cover of this manual to mark the cutout dimensions. Figure 6.3 provides a reference copy, don't remove this page from the manual.

Figure 6.3
Panel Cutout Dimensions in Inches (Millimeters)

3.04 inch	=	77.22 mm
6.08 inch	=	154.43 mm
3.97 inch	=	100.84 mm
3.86 inch	=	98.04 mm
4.55 inch	=	115.57
5.50 inch	=	139.70 mm
0.69 inch	=	17.53 mm
0.29 inch	=	7.37 mm

6–5
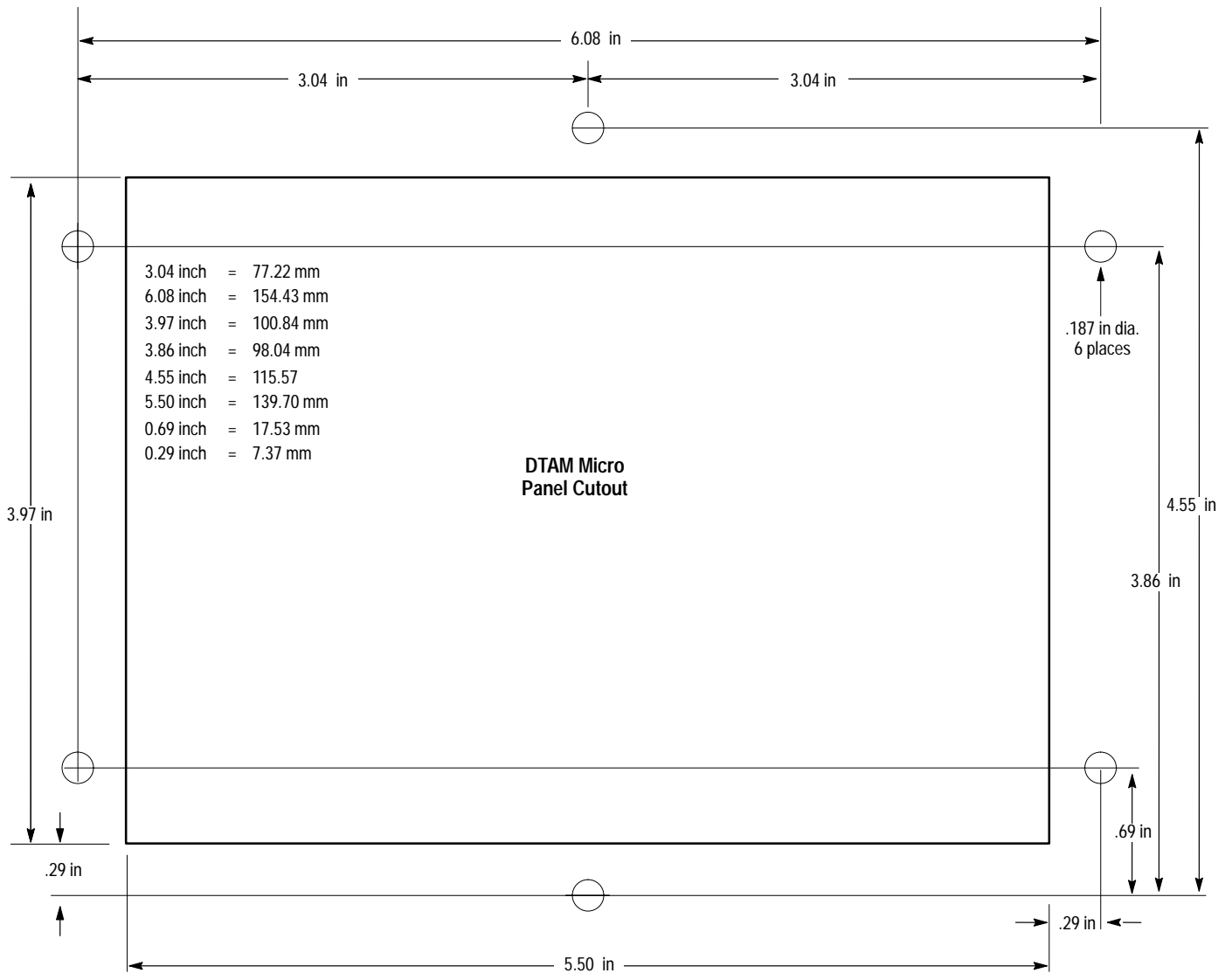
Installation

To install the DTAM Micro Operator Module:

⚠ **ATTENTION:**
Disconnect all electrical power from the panel before making cutout.

Make sure that area around panel cutout is clear.

Take precautions so that metal filings or other debris does not fall into the DTAM Micro ventilation slots or enter any components that may already be installed in panel.

Make sure that no objects are inserted or fall into the terminal through the ventilation slots or DIP switch access hole.

Failure to follow these warnings may result in personal injury or damage to the panel components.

1. Cut an opening in the panel as shown in Figure 6.3. Use the cutout template located inside the back cover of this manual. Remove any sharp edges or burrs.

2. Make sure the sealing gasket is properly positioned on the DTAM Micro This gasket forms a compression type seal. Do not use sealing compounds.

3. Place the DTAM Micro in the panel cutout.

⚠ **ATTENTION:**
Mounting nuts must be tightened to a torque of 8 to 10 inch pounds to provide a proper seal and to prevent potential damage to the terminal. Allen-Bradley assumes no responsibility for water or chemical damage to the terminal or other equipment within the enclosure because of improper installation.

4. Install the six self locking mounting nuts hand tight.

5. Alternately tighten the mounting nuts until the DTAM Micro is held firmly against the panel. Tighten mounting nuts to a torque of 8 to 10 inch-pounds. Do not over-tighten nuts.

Wire and Cable Length Restrictions

The following wire and cable length restrictions apply to DTAM products that are CE marked when used in installations that require compliance to European EMC Directive 89/336:

DC Power Wiring	10 meters
Ground Terminal Wire	3 meters
Communication Cables	30 meters

These restrictions apply to the following Catalog Numbers:

- 2707–M232P3 Series E
- 2707–M485P3 Series E

Connecting DC Power

The DTAM Micro accepts power supply voltages from 18 to 30 VDC (use isolated DC power supply capable of providing at least 200 mA). Connect the DTAM Micro directly to the power source or use either of two AC to DC Adapters depending upon the source voltage.

- 120 VAC Input, use AC to DC Adapter (Catalog No. 1747-NP1)
- 240 VAC Input, use AC to DC Adapter (Catalog No. 1747-NP2)

To connect the DTAM Micro to a power source:

> ⚠ **ATTENTION:** Verify that the power is disconnected from the power source before wiring. Failure to disconnect power may result in electrical shock.
> Make sure that the supply voltage to the DTAM Micro is 18 to 30 volts DC. The incorrect voltage may damage the DTAM Micro.
> Do not overtighten the power connector screw terminals. Overtightening the terminals may damage the DTAM Micro.

1. Make sure that the voltage source is not turned on.

2. Use AWG#16 or #14 stranded wire to connect the DTAM Micro screw terminals to the DC power source (see below).

   Note: The terminal block on the DTAM Micro is not removeable.

Figure 6.4
DC Power Connections
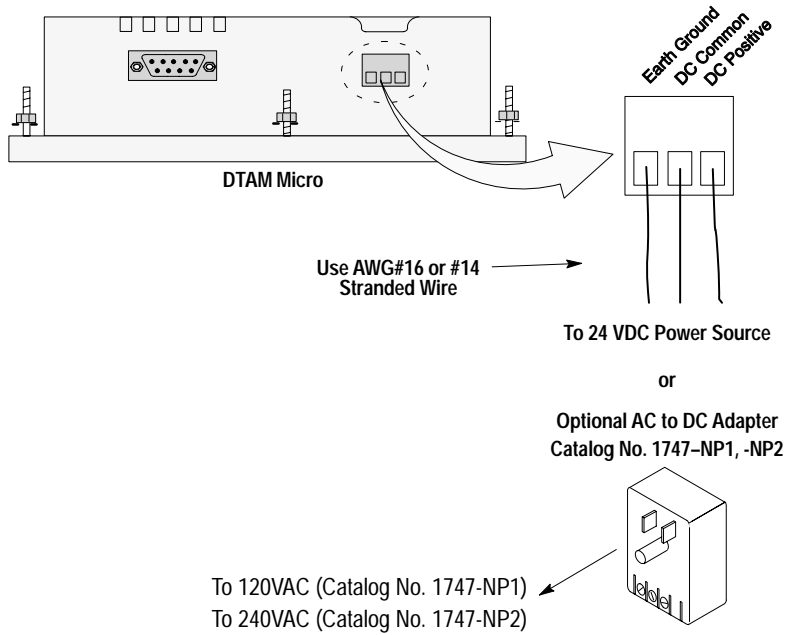
3. Connect communications cabling, refer to Chapter 7.

4. Apply voltage and verify the DTAM Micro powerup sequence.

Communication Connections and Setup

Chapter Objectives

This chapter describes how to connect the DTAM Micro terminal to and communicate with peripheral devices. It contains the following sections:

Wiring Guidelines

Here are some recommendations on how to reduce noise on the communications connections:

• Careful wire routing helps reduce or minimize electrical noise. Route incoming power to the terminal by a separate path from the communications cables.

• Do not run communications wiring and power wiring in the same conduit.

• Where communications and power wiring must cross, make their intersection perpendicular.

• Proper grounding helps to limit the effects of noise due to Electromagnetic Interference (EMI). To avoid problems caused by EMI, all cables must be shielded and grounded at one end. Grounding is also an important safety measure in electrical installations.

Connecting RS-232 Devices

The RS-232 port of the DTAM Micro terminal (Catalog No. 2707-M232P3) allows point-to-point communications with:

- PLC-5 Channel 0 (configured as RS-232 port)
- SLC 5/03, 5/04, 5/05 RS-232 port
- MicroLogix 1000

The figure below shows typical RS-232 connections.

DTAM Micro to PLC-5 Channel 0

DTAM Micro to SLC 5/03
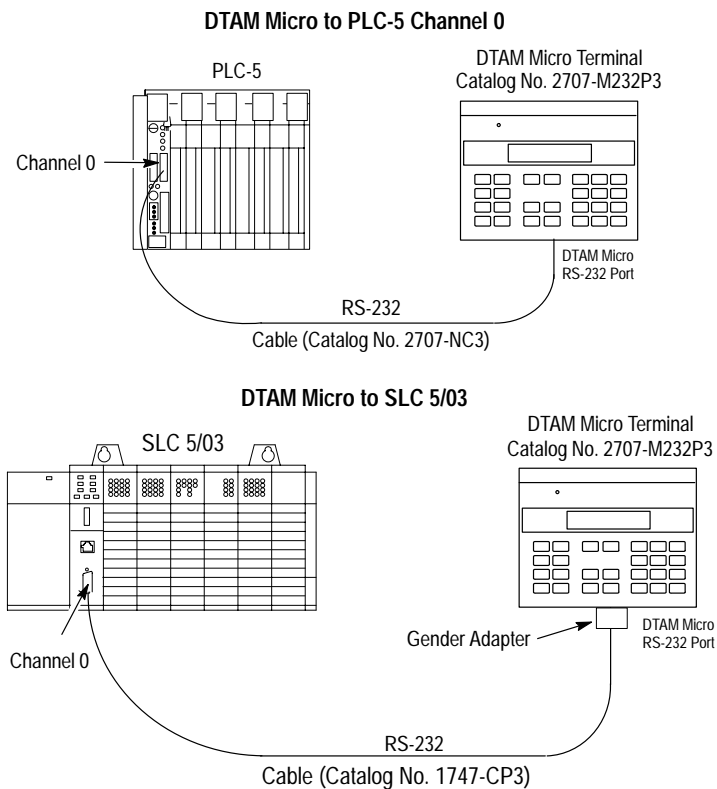
To connect the DTAM Micro to an RS-232 device:

1. Make sure that the DTAM Micro is not connected to a voltage source.

2. Use the proper cabling to connect the DTAM Micro communications port to the port of the controller (PLC-5 channel 0 or SLC 5/03, SLC 5/04 RS-232 port).

   - Use cable, Catalog No 2707-NC3 for PLC-5 channel 0 connection.
   - Use cable, Catalog No. 1747-CP3 for SLC 5/03, SLC 5/04 or 5/05 port connection.
     This cable requires a 9-pin female to male gender adapter.

   If you need to make your own cable, refer to the cable diagrams in Appendix B. The maximum recommended cable length is 50 feet (15.2 meters).

3. Make sure that the communication parameters of the DTAM Micro terminal match the host device.

4. Apply power and verify that communications are established.

Connecting RS-485 Devices

The RS-485 port of the DTAM Micro terminal (Catalog No. 2707-M485P3) allows point-to-point and multi-drop communications with:

- PLC-5 Channel 0
- SLC Controller DH485 port
- MicroLogix 1000 using the AIC+ Interface

The figure below shows typical RS-485 connections.

DTAM Micro to Single SLC
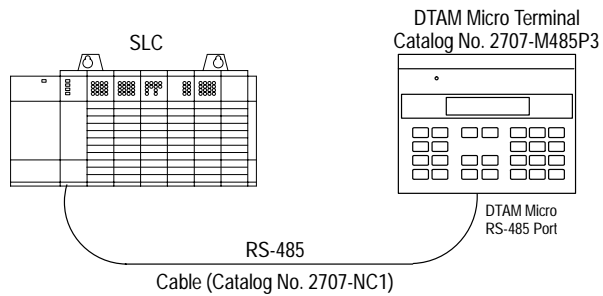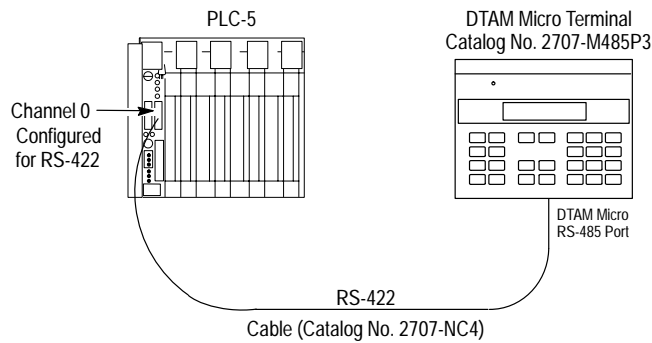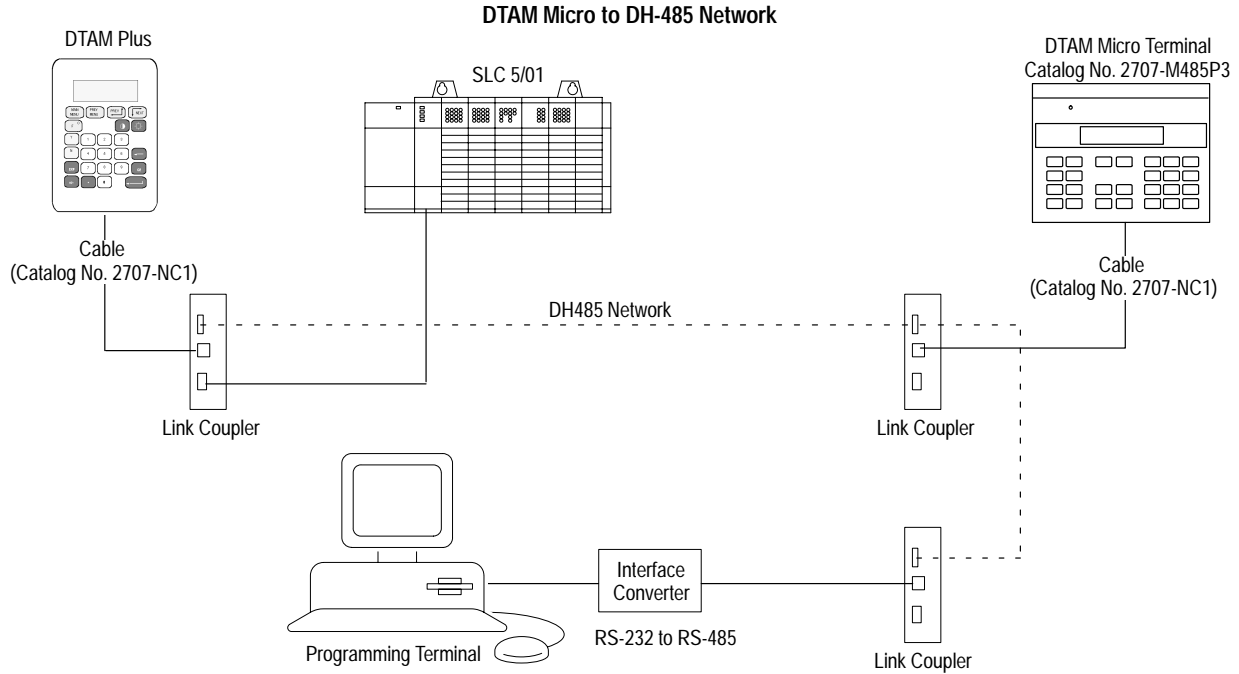

DTAM Micro to PLC-5 Channel 0

DTAM Micro to PLC-5 Channel 0

DTAM Micro to DH-485 Network

DTAM Plus

SLC 5/01

DTAM Micro Terminal
Catalog No. 2707-M485P3

Cable
(Catalog No. 2707-NC1)

DH485 Network

Cable
(Catalog No. 2707-NC1)

Link Coupler

Link Coupler

Interface
Converter

Programming Terminal

RS-232 to RS-485

Link Coupler
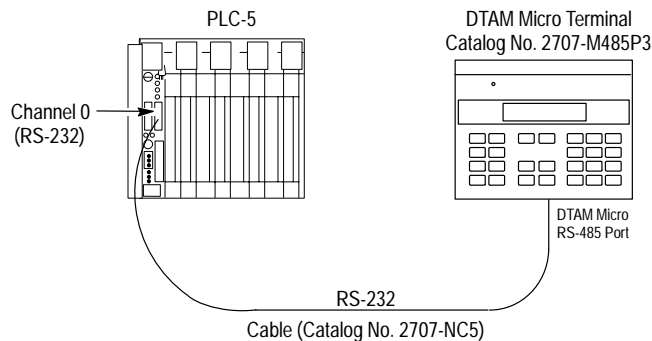
To connect the DTAM Micro terminal to an RS-485 device:

1. Make sure that the power to the DTAM Micro is off.

2. Use the proper cabling to connect the DTAM Micro communications port to the port of the controller (PLC-5 channel 0 or SLC 5/03 RS-232 port).

   • Use cable, Catalog No 2707-NC4 for PLC-5 channel 0 RS-422 connection

   • Use cable, Catalog No. 2707-NC5 for PLC 5 channel 0 RS-232 connection. The 2707-NC5 cable converts the signals from the RS-485 port to RS-232 levels.

   • Use cable, Catalog No. 2707-NC1 for SLC 5/03, 5/04 or 5/05 port and DH-485 network connections

   If you need to make your own cable, refer to the connection diagrams in Appendix B. The maximum recommended cable length is 200 feet (60.8 meters).

   Important: The DH-485 network cable requires proper shielding, grounding, and termination. Refer to Data Highway / Data Highway Plus / Data Highway-485 Cable Installation Manual (Publication No. 1770-6.2.2).

3. The DH-485 connectors are not electrically isolated. If electrical isolation is required, use Link Couplers (Catalog No. 1747-AIC) shown on the previous page.

> ⚠ **ATTENTION:** Electrical isolation using Link Couplers (Catalog No. 1747-AIC) is required in applications where the distance between the DTAM Micro terminal and the SLC is greater than 6.5 feet (2 meters).

4. Make sure that the communication parameters of the DTAM Micro terminal match the host device.

5. Apply power and verify that communications are established.

Communicating with a Logic Controller

The DTAM Micro supports two operating systems.

- Communication with a PLC-5 requires PLC5-DF1 protocol
- Communication with an SLC requires AB DH-485 protocol
- Communication with a MicroLogix 1000 requires PLC5-DF1 protocol

The RS-485 and RS-232 versions of the DTAM Micro support both systems:

DTAM Micro Version	Operating System	Controller Type
RS-485 (Catalog No. 2707-M485P3)	PLC5 DF1	PLC-5 Family channel 0 port (RS-422) ①
RS-232 (Catalog No. 2707-M232P3)	PLC5 DF1	PLC-5 Family channel 0 port (RS-232)
RS-485 (Catalog No. 2707-M485P3)	AB DH-485	SLC Family DH-485 port MicroLogix 1000 (using AIC+ Interface)
RS-485 (Catalog No. 2707-M485P3)	AB DH-485	DH-485 network MicroLogix 1000 (using AIC+ Interface)
RS-232 (Catalog No. 2707-M232P3)	AB DH-485	SLC 5/03, 5/04, 5/05 serial port, MicroLogix 1000

① The DTAM Micro RS-485 port supports RS-422 communication with the PLC-5. RS-422 communication is limited by the PLC to 19.2K baud and a distance of 200 feet (61 meters).

The operating system is selected when an application is created. Applications are downloaded with the applicable operating system. If you download an application that has a different operating system than the current operating system in the DTAM Micro, you are prompted to download the new operating system. Refer to Chapter 4 for additional information.

Communications Parameters

The communication settings of the DTAM Micro must be set to match the SLC, PLC, or DH-485 network. The following parameters can be set for both the RS-232 and DH-485 communications port.

Parameter	Selections
Baud Rate	300, 1200, 2400, 4800, 9600, 19200, 38400
Data Bits	7 or 8
Parity	None, Odd, and Even

RS-232 Communications with a PLC-5

The DTAM Micro and PLC-5 must be set as follows for communications to occur:

Cable (Catalog No. 2707-NC3)
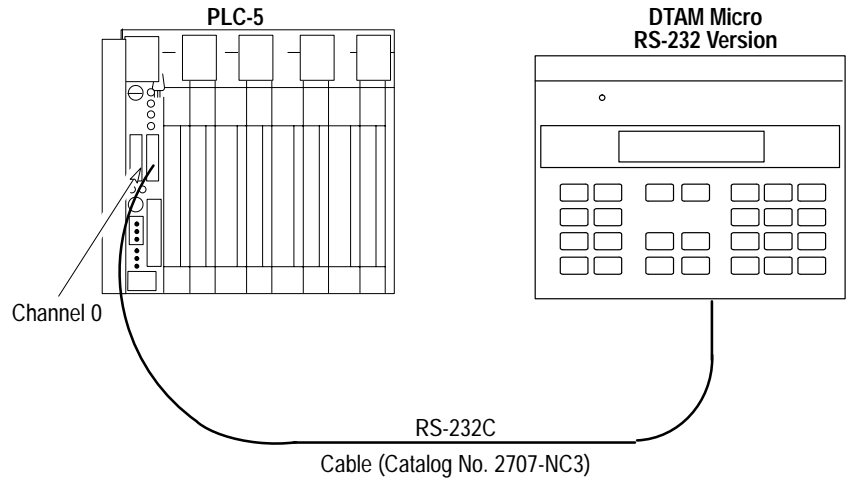
DTAM Micro

The DTAM Micro must have an application with a PLC5-DF1 operating system installed. The Baud Rate and Parity of the DTAM Micro and PLC-5 must be set the same.
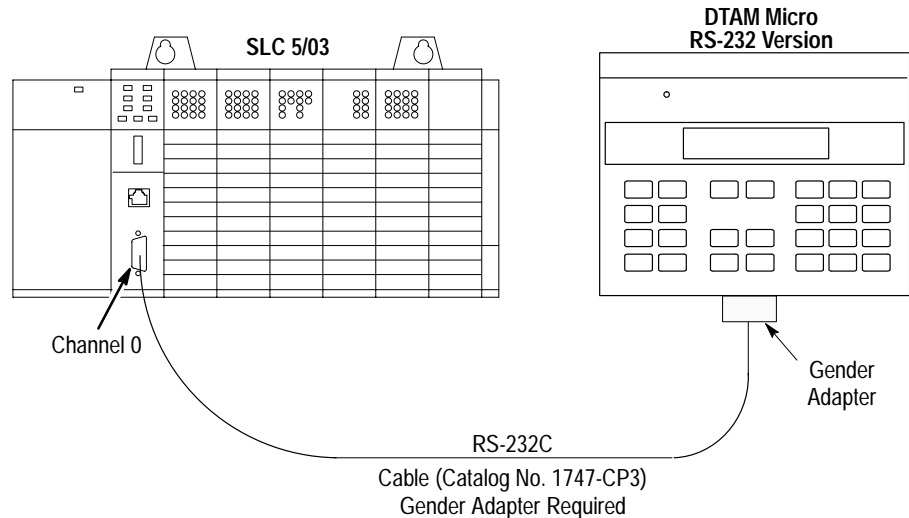
PLC-5

Channel 0 must be set as follows (NA = Not Applicable):

Parameter	Setting	Comments
Channel Configuration Option	System DF1 Pt-Pt	Required for proper operation.
Diagnostic File	3-999	Must be a unique integer file number.
Remote Mode change	Disabled	Required for proper operation.
Mode Atten. Character	NA	Not used with Remote Mode disabled.
System Mode Character	NA	Not used with Remote Mode disabled.
User Mode Character	NA	Not used with Remote Mode disabled.
Baud Rate	See Comments	DTAM Micro must be set the same.
Stop Bits	1	Required for proper operation.
Parity	See Comments	DTAM Micro must be set the same.
Control Line	No Handshaking	Required unless communication cable loops back control signals.
Duplicate Detect	NA	User definable per system requirements.
ACK Timeout	NA	User definable per system requirements.
Message Timeout	NA	User definable per system requirements.
Error Detect	CRC	Required for proper operation.
NAK Receive	NA	User definable per system requirements.
DF1 ENQs	NA	User definable per system requirements.

RS-232 Communications with an SLC 5/03, 5/04, 5/05

The DTAM Micro and RS-232 port of the SLC 5/03, 5/04, 5/05 must be set as follows for communications to occur:

DTAM Micro RS-232 Version

SLC 5/03

Channel 0

RS-232C
Cable (Catalog No. 1747-CP3)
Gender Adapter Required

Gender Adapter

DTAM Micro

The DTAM Micro must have an application with AB DH485 operating system installed. The Baud Rate and Parity of the DTAM Micro and the SLC 5/03, 5/04, 5/05 must be set the same. **We recommend you use 19200 baud, even parity, and 8 data bits to match the default settings of an SLC controller.**

SLC 5/03, 5/04, 5/05

Make sure that channel 0 is set up for DH-485 MASTER and the following parameters match the DTAM Micro.

Parameter	Selections	Recommended
Baud Rate	1200, 2400, 9600, 19.2K	19.2K
Node Address	1 to 31	1[1]
Maximum Node Address	1 to 31	1[1]
Token Hold Factor	1 to 4	1
Diagnostic File Number	0 to 255	Any
Parity	None, Odd, or Even	Even
Data Bits	7 or 8	8

[1] To provide maximum response times, we recommend that the DTAM Micro be set as node 0 and the SLC channel 0 as node 1. Maximum node address should be 1. The connections are a completely separate DH-485 network, you do not need to be concerned about duplicate node addresses from another network.

RS-485 Communications with an SLC or DH-485 Network

The DTAM Micro and SLC DH-485 port must be set as follows for communications to occur. If you are using an SLC 5/03, 5/04, 5/05 RS-232 port, refer to the previous section.
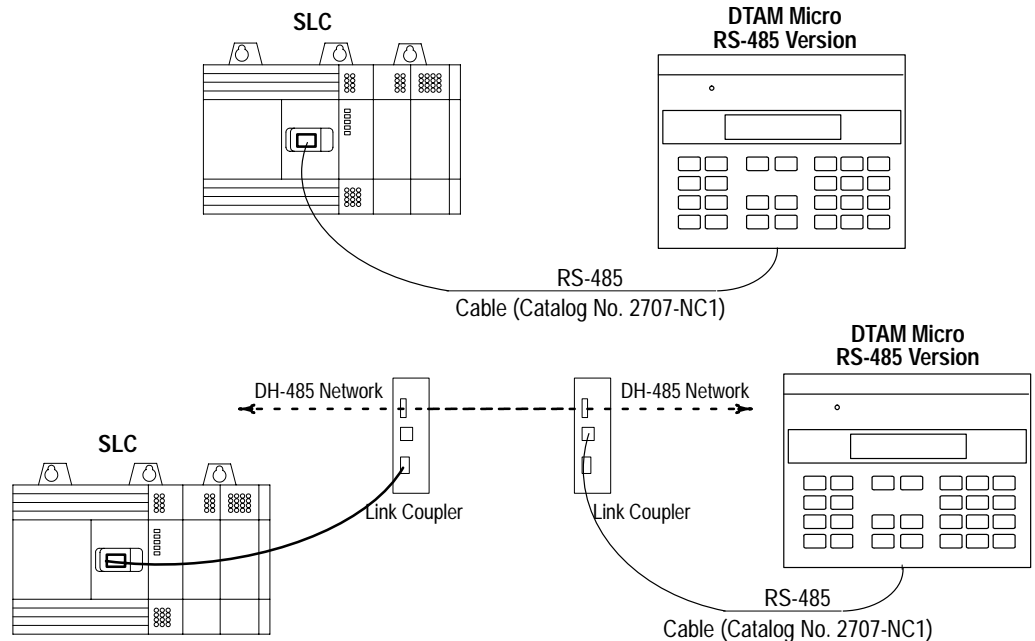
DTAM Micro

The DTAM Micro must have an application with a AB DH485 operating system installed. The baud rate, parity, and data bits of the DTAM Micro and DH-485 network (or SLC) must be set the same. **We recommend you use 19200 baud, even parity, and 8 data bits to match the default settings of an SLC controller.**

If the DTAM Micro module is installed on a DH-485 network that has a large number of nodes connected and there is heavy network traffic, the network may produce NAK NOMEM commands. Three consecutive NAK NOMEM commands will produce a 10H error on the DTAM Micro module. Pressing the enter key or resetting the module is required to resume operation.

SLC 5/03, 5/04, 5/05

Make sure that the DH-485 network and DTAM Micro parameters match.

Parameter	Selections	Recommended
Baud Rate	1200, 2400, 9600, 19.2K	19.2K
Node Address	1 to 31	Next lowest address on the network. Set to 1 for point-to point communications ①.
Maximum Node Address	1 to 31	Set to maximum node on network. Set to 1 for point-to point communications ①.
Token Hold Factor	1 to 4	1
Diagnostic File Number	0 to 255	Any
Parity	None, Odd, or Even	Even②
Data Bits	7 or 8	8

① To provide maximum response times on point-to-point networks, we recommend that the DTAM Micro be set as node 0 and the SLC as node 1. Maximum node address should be 1.

② SLC 5/03, 5/04, 5/05 (channel 0) only supports EVEN parity.

RS-232 Communications with a MicroLogix 1000

The DTAM Micro RS-232 version has an RS-232 port and uses DH-485 protocol. The DTAM Micro RS-232 version can connect directly to the MicroLogix 1000 using the 2707-NC10 cable. It can also connect to the AIC+ module using the 2707-NC2 cable.
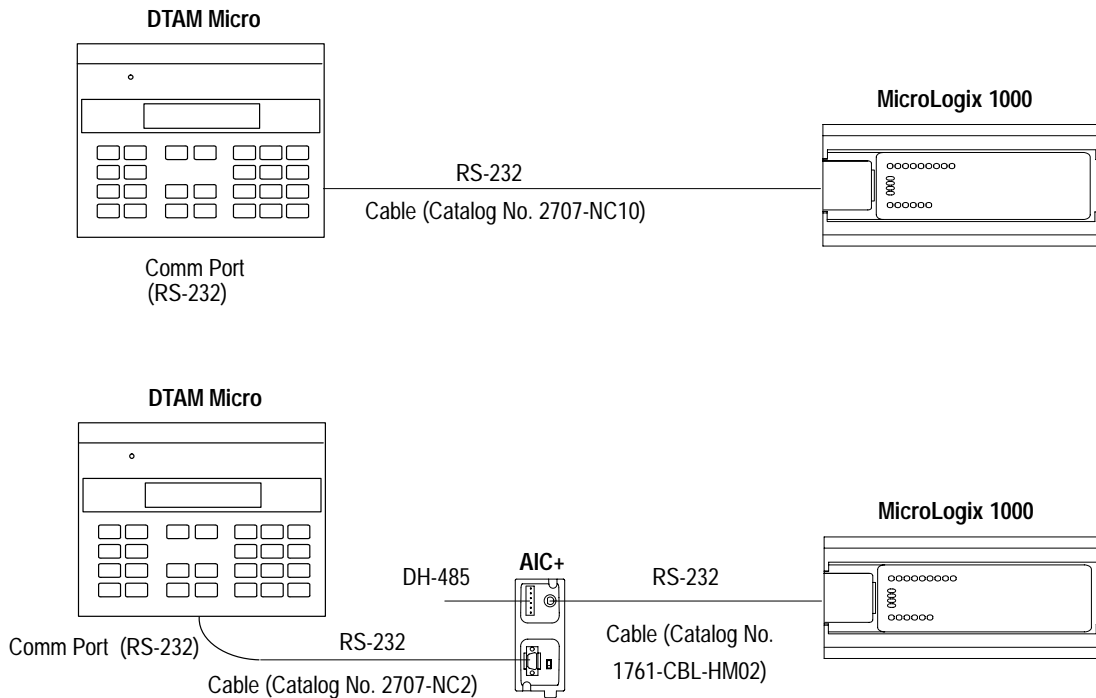
**RS–485/DH–485
Communications with a
MicroLogix 1000**

The DTAM Micro 485 version has an RS-485 port and uses DH485 protocol.
It can communicate to the MicroLogix 1000 via DH485 with the AIC+
Interface Converter Module. This is a 3-node network and is not expandable.

DTAM Micro

MicroLogix 1000

AIC+

Comm Port (RS485)   DH485   RS232

Cable (Catalog No.
1761-CBL-HM02)

RS232

Com 1

Personal Computer
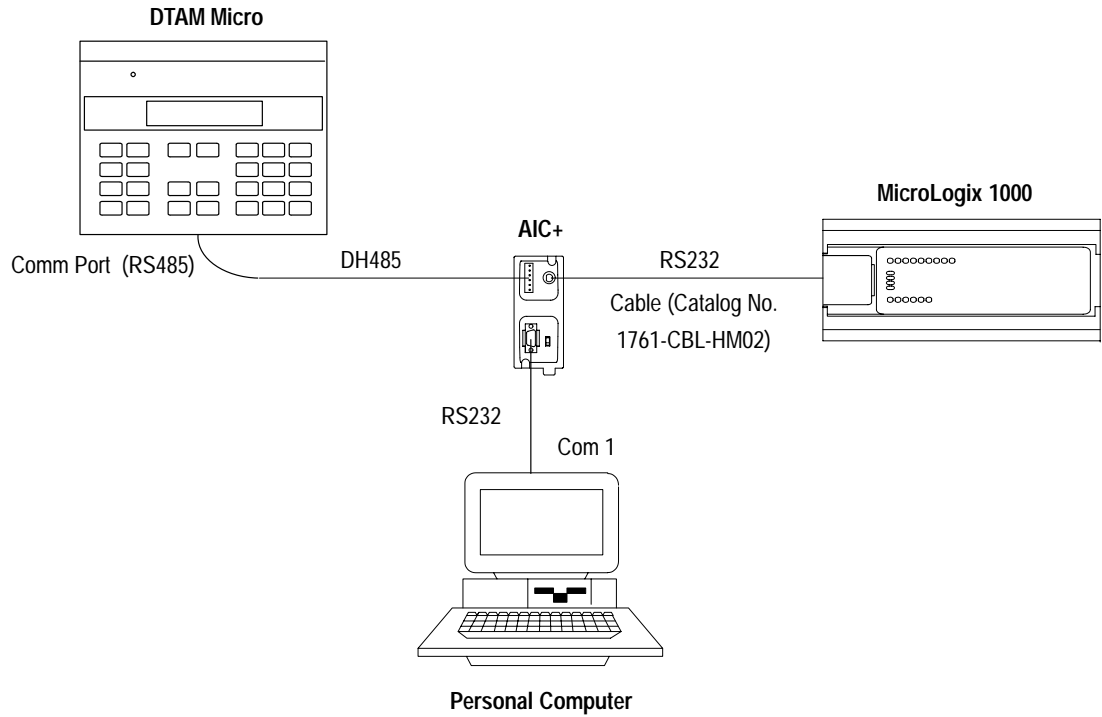
You will need to construct a cable that connects to the AIC+ and the DTAM
Micro. Refer to the following illustration.

**DTAM Plus/Micro
Communications Port**

**AIC+
Port 3**

1		6	Termination
2		5	A
3		4	B
4		3	Common
8		2	Shield
9		1	Chassis Ground

9-Pin Male D Connector

6-Pin Connector
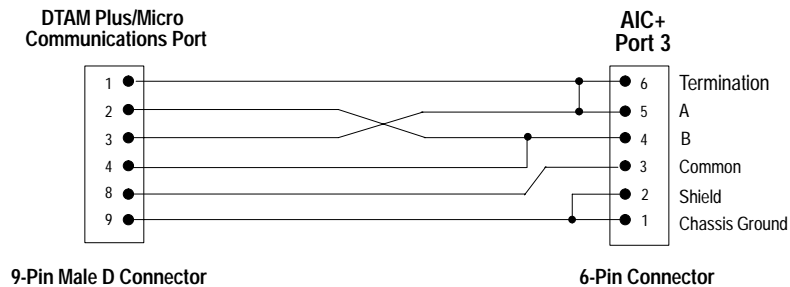
Troubleshooting and Maintenance

Chapter Objectives

This chapter describes how to isolate and correct the most common operating problems and routine maintenance tasks. It contains these sections:

Troubleshooting Recommendations

Most errors are accompanied by an error message. Find the error message in the error message listing and perform the recommended corrective action.

If you encounter a problem that is not listed in the table, contact your local Allen-Bradley distributor for assistance.

> ⚠ **ATTENTION:** Make sure that no objects are inserted or fall into the terminal through the ventilation slots or DIP switch access hole. Always disconnect power when checking wiring connections. Failure to take adequate precautions may result in severe electrical shock or equipment damage.

Equipment Required

Other than verifying that the correct power source is connected to the terminal (use a voltmeter), no electronic diagnostic equipment is required for troubleshooting.

Common Operating Problems

If there is no display on the DTAM Micro, verify that 18 to 30 VDC is present at the terminal connectors. If not, check the power to/from the DC power source.

The most common problems are related to cabling configurations and the communication parameters (baud rate, data bits, parity). These parameters must be identical for both the DTAM Micro and the controller. Cabling and the communications parameters are always the first things to check.

If the communications cabling and communications parameters are correct, perform the diagnostic tests (described in this chapter) to rule out any non-functioning features of the DTAM Micro.

Error Messages

Refer to the following when the DTAM Micro displays an error message.

Message	Probable Cause(s)	Corrective Action(s)
ROM fail	Read Only Memory (ROM) is incorrect.	Possible defective ROM. Reset the DTAM Micro and re-check. If problem still exists, re-download the operating system through the programming software. If problem still exists, send DTAM Micro for repair.
RAM fail	RAM memory failed write or read test.	Reset the DTAM Micro and re-check. If problem still exists, send DTAM Micro for repair.
*.CFG File Invalid	Application file checksum is incorrect.	Possible bad application file. Download the program (.CFG) file and re-check.
Watch Dog Fault Push key to continue	Watch dog timer not within specs.	If problem persists, send DTAM Micro for repair.
Watch Dog Fault Push Key to Reset	Watch dog timer timed out or pass bits not set.	If problem persists, send unit for repair.
Allen-Bradley SLC 50X Establishing Comm	Attempting to communicate with an SLC.	Normal display when initiating communications with an SLC.
Allen-Bradley PLC-5 Establishing Comm	Attempting to communicate with a PLC.	Normal display when initiating communications with a PLC.
SLC not found	This display is displayed after a 2 second interval of attempting to establish communications with the SLC.	Communications not established with the SLC. Check cabling and communications parameters to verify that the SLC matches those of the DTAM Micro.
PLC not found	This display is displayed after a 2 second interval of attempting to establish communications with the PLC.	Communications not established with the PLC. Check cabling and communications parameters to verify that the PLC matches those of the DTAM Micro.
Communication Loss Press ENTER to Reset	Communication with the SLC was lost after 16 attempts.	Check DTAM Micro to controller cabling. Check SLC operating conditions.
Com Error Code: nnH Press ENTER to Reset	Communication error code (nn)	Received a controller error code. Refer to next section for error codes.
Attempted Invalid Screen Access	Illegal or unprogrammed screen type detected (.CFG file error).	Check the program (.CFG) file and download. Check linking and so on.

Message	Probable Cause(s)	Corrective Action(s)
Not Programmable	Master code is 99999999 and is not user-programmable.	A master code number of 99999999 may not be programmed. Download a new, valid master code number (using DTAM Micro Programming Software).
Incorrect Master Code	Master code entry did not match.	The master code entered did not match the master code of the program file.
Invalid Security Code Access Denied	Master code or 3 screen codes did not match.	Either an incorrect master security code or a code that did not match the programmed 3 codes was entered - try again.
Loop Error XX	In the Self Test Mode the transmitted character did not match the received character. The transmitted character is displayed.	Verify that the loopback connector is connected to the Communication and/or Printer Ports. If the loopback connectors are in place, possible damage to the port drivers has occurred, send unit for repair.
** Input Error ** Press a Key to Cont. The low and high data values are then displayed in one of two formats: Low Lim High Lim XXXXXX XXXXXX Low XXXXXXX High XXXXXXX	The data entered is not within the programmed limits. The Low and High limits, as programmed, are displayed.	Verify that the displayed limits are as programmed for the entry field. Re-enter data within the entry limits.
READ ONLY	The controller location is not configured for a Write function (P-A/D function).	Verify that the controller location being accessed by the P-A/D is acceptable for Write functions.
Prog SW/OI Version Mismatch -OI Locked	An incorrect unlock code sent by DTAM Micro Programming Software. Wrong version of DTAM Micro Programming Software	Verify that the version of DTAM Micro Programming Software is compatible for the controller type supported by the DTAM Micro.
Operator Quit Ack	Comm port conflict on cable.	Verify no other drivers are enabled. Check cable connections.

Communication Error Codes

Communication Error Codes appear on the DTAM Micro display as follows:

```
                                              ┌── Error Code
        ┌─────────────────────────┐          │
        │ Com Error Code: nnH ◄────┘
        │ Press ENTER to Reset    │
        └─────────────────────────┘
```
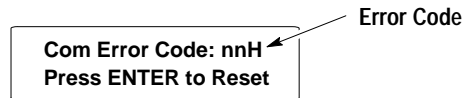
The error code is in the form:

- nnH for SLC controllers that do not show extended error codes.
- X nnH for PLC controllers. The X indicates an extended error code.

The communication error codes provide valuable information when other symptoms either have not been discovered or have not been understood.

Note: For a complete list of error codes, consult the user manuals for your Allen-Bradley controller.

The communication error codes specific to the communication protocols are described below.

Code (Hex)	Meaning
10	Illegal Format. No File, unknown command, address out of range or memory not allocated.
50	Address Problem. SLC 500/501 out of physical memory. SLC 502 out of executable memory.
60	Disallowed due to command protection. Not program owner, file not open for Read/Write directory, target file open.
07	Illegal size. Source program is larger than destination.
0E	Failed Longitudinal Redundancy Check (LRC).
0B	Access Denied. Not in program mode.
0C	Resource not available. No MemMod, in faulted mode, no forces installed.

Using the Test Functions

Use the test selection screen to test or check the following:

- Reset DUT (resets terminal, terminates test function)
- DIP switch positions (page 8–6)
- Display (page 8–7)
- Keyboard (page 8–8)
- Communications port (page 8–9)
- Random Access Memory (page 8–10)
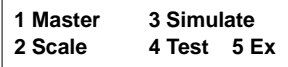- System memory (page 8–10)
- Transmit enable (page 8–12)

To access the test functions:

1. Access the test functions from the Mode Menu.

> **1 Reset   3 Special**
> **2 Com-Port 4 Other**

2. From the Mode Menu, select item 4 to display the Other Menu:

> **1 Master   3 Simulate**
> **2 Scale   4 Test   5 Ex**

3. Select item 4 from the Other Menu to display the test selection screen:

> **DTAM Micro Diag Test**
> **< Test Selection>**

Current Test Selection

4. Use the [NEXT] and [PREV] keys to scroll through the test options. Display the test you want to perform.

5. Press [◄┘] to initiate the test.

6. To terminate the test, press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄┘] to reset the terminal.

DIP Switch Test

Use the DIP switch test to verify the DIP switch positions.

To perform the DIP switch test:
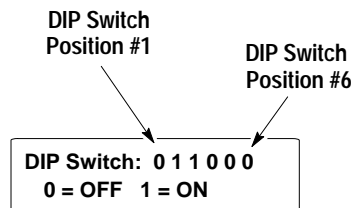
1. Use the [NEXT] and [PREV] keys to display DIP Switch on the test selection screen.

```
DTAM Micro Diag Test
  Dipswitch
```

2. Press [◄─┘] to initiate the test.

   The DTAM Micro displays the current DIP switch settings.

DIP Switch
Position #1

DIP Switch
Position #6

```
DIP Switch: 0 1 1 0 0 0
  0 = OFF   1 = ON
```

The 6 positions of the DIP switch are shown in binary format (0 = Off, 1 = On). The leftmost value represents DIP switch position #1.

Note: Position #6 is always shown as 0 regardless of the setting. This switch position is not used

3. Press any key to terminate the DIP switch test and display the next test selection screen:

```
DTAM Micro Diag Test
Display Test
```

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄─┘] to reset the terminal.

Display Test

Use the display test to verify that each screen pixel is operating properly.

To perform the display test:

1. Use the [NEXT] and [PREV] keys to show Display on the test selection screen.

> **DTAM Micro Diag Test**
> **Display Test**
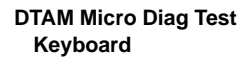
2. Press [◄─┘] to initiate the test.

   The DTAM Micro turns all pixels on and then off. Then an alternate checkerboard pattern is displayed:

3. Press any key to terminate the test.
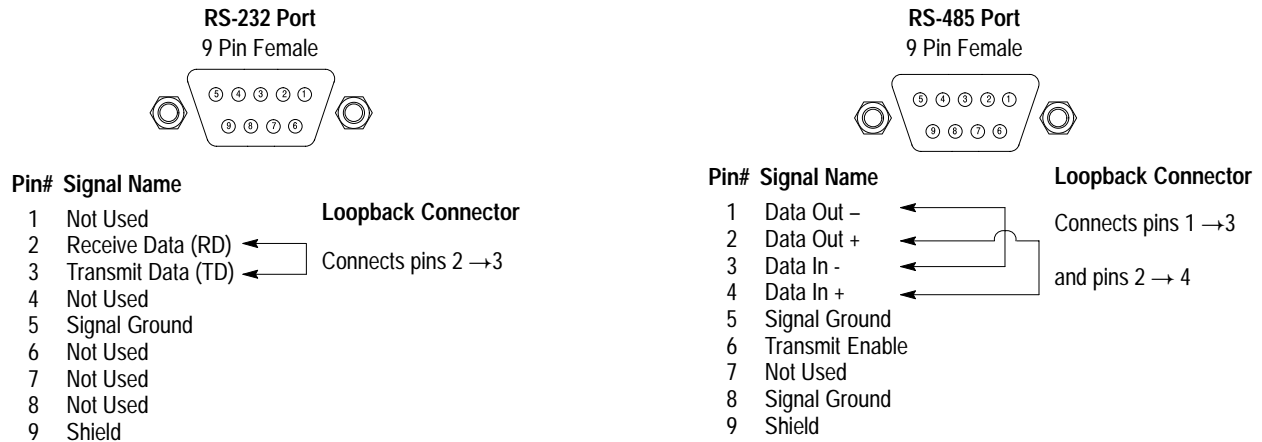
   The next test selection screen is displayed.

> **DTAM Micro Diag Test**
> **Keyboard**

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄─┘] to reset the terminal.

Keyboard Test

Use the keyboard test to verify that the keyboard is functioning properly.

To perform the keyboard test:

1. Use the [NEXT] and [PREV] keys to display Keyboard on the test selection screen.

> **DTAM Micro Diag Test**
> **Keyboard**

2. Press [◄──┘] to initiate the test.

    The DTAM Micro prompts you to press each key in a sequential order.

> **Press "F1"**

3. Press the keys as prompted form left to right beginning at the top.
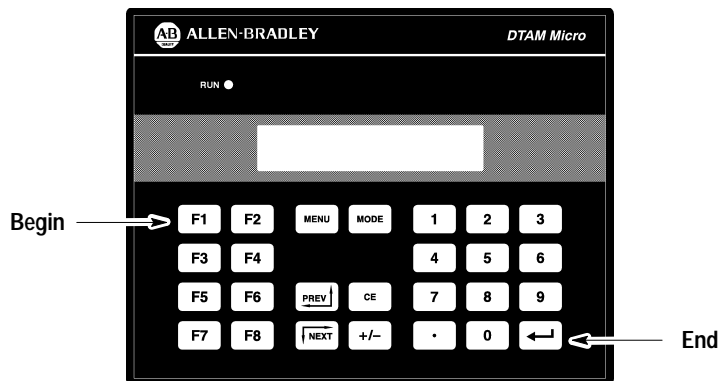
    You must press all of the keys in the order prompted. If you press the wrong key, you must start over with the first key.

4. Pressing the last key in the sequence terminates the keyboard test.

    The next test selection screen is displayed.

> **DTAM Micro Diag Test**
> **Comm Port**

5. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄──┘] to reset the terminal.

Communication Port Test

Use the communications test to verify the operation of the RS-232 or RS-485 port.

The communications test requires a loopback connector. You can construct a simple loopback connector as follows:

RS-232 Port
9 Pin Female

RS-485 Port
9 Pin Female

Pin#	Signal Name
1	Not Used
2	Receive Data (RD)
3	Transmit Data (TD)
4	Not Used
5	Signal Ground
6	Not Used
7	Not Used
8	Not Used
9	Shield

Loopback Connector

Connects pins 2 →3

Pin#	Signal Name
1	Data Out –
2	Data Out +
3	Data In -
4	Data In +
5	Signal Ground
6	Transmit Enable
7	Not Used
8	Signal Ground
9	Shield

Loopback Connector

Connects pins 1 →3

and pins 2 → 4

To test the communications port:

1. Use the [NEXT] and [PREV] keys to display Comm on the test selection screen.

> **DTAM Micro Diag Test**
> **Comm Test**

2. Press [◄──┘] to initiate the test.

   The DTAM Micro will continuously send out and receive a message at the same port. The message is **DTAM Micro self looping serial test ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789**.

> **DTAM Micro self loop**
> **ing serial test ABCD**

3. Press any key to terminate the communications test.
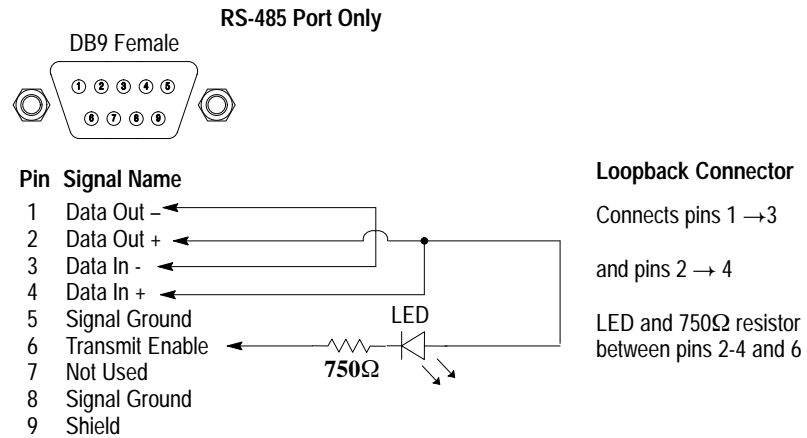
   The next test selection screen is displayed.

> **DTAM Micro Diag Test**
> **RAM Test**

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄──┘] to reset the terminal.

RAM Test

Use the RAM test to verify the DTAM Micro Random Access Memory.

1. Use the [NEXT] and [PREV] keys to display RAM on the test selection screen.

> **DTAM Micro Diag Test**
> **RAM Test**

2. Press [◄┘] to initiate the test.

   The DTAM Micro displays either a Pass or Fail message.

> **RAM: pass**
> **Press ENTER**

3. Pressing [◄┘] terminates the RAM test.

   The next test selection screen is displayed.

> **DTAM Micro Diag Test**
> **System Memory**

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄┘] to reset the terminal.

System Memory Test

Use the System Memory test to verify the checksum of the operating system.

1. Use the [NEXT] and [PREV] keys to display System Memory test on the test selection screen.

> **DTAM Micro Diag Test**
> **System Memory**

2. Press [◄┘] to initiate the test.

   The DTAM Micro displays either a Pass or Fail message.

> **System Memory: pass**
> **Press ENTER**

3. Pressing [◄┘] terminates the System Memory test.

   The next test selection screen is displayed.

> **DTAM Micro Diag Test**
> **Program Memory**

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄┘] to reset the terminal.

Program Memory Test

Use the Program Memory test to verify the checksum of the current application file.

1. Use the [NEXT] and [PREV] keys to display System Memory test on the test selection screen.

> **DTAM Micro Diag Test**
> **Program Memory**

2. Press [◄─┘] to initiate the test.

The DTAM Micro displays either a Pass or Fail message.

> **System Mem: pass**
> **Press ENTER**

3. Pressing [◄─┘] terminates the Program Memory test.

The next test selection screen is displayed.

> **DTAM Micro Diag Test**
> **Toggle Cntrl Signal**

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄─┘] to reset the terminal.

TXEN Test

Only available on the RS-485 version. Use the TXEN test to verify the transmit enable line at the RS-485 communications port.

The TXEN test requires a loopback connector with an LED. You can construct a simple loopback connector as shown below:

RS-485 Port Only

DB9 Female

Pin	Signal Name
1	Data Out –
2	Data Out +
3	Data In -
4	Data In +
5	Signal Ground
6	Transmit Enable
7	Not Used
8	Signal Ground
9	Shield

LED

750Ω

Loopback Connector

Connects pins 1 →3

and pins 2 → 4

LED and 750Ω resistor between pins 2-4 and 6

To test the transmit enable line:

1. Use the [NEXT] and [PREV] keys to display TXEN Test on the test selection screen.

```
DTAM Micro Diag Test
     TXEN Test
```

2. Press [◄—˩] to initiate the test.

    The LED should flash at approximately 1 second intervals indicating that the transmit enable line is functioning properly.

3. Pressing [◄—˩] terminates the TXEN test.

    The next test selection screen is displayed.

```
DTAM Micro Diag Test
     Reset DUT
```

4. To terminate the test function , press the [NEXT] and [PREV] keys to display **Reset DUT** in the test selection area. Press [◄—˩] to reset the terminal.

Cleaning the Display Window

To clean the display window:

> ⚠ **ATTENTION:** Use of abrasive cleansers or solvents may damage the window. Do not scrub or use brushes. Some types of paper towels may scratch the window, only use a soft sponge or cloth.

1. Disconnect power from the terminal at the power source.
2. Using a clean sponge or a soft cloth, clean the display with a mild soap or detergent.
3. Dry the display with a chamois or moist cellulose sponge to avoid water spots.

Removing Paint and Grease

Remove fresh paint splashes and grease before drying by rubbing lightly with isopropyl alcohol. Afterward, provide a final wash using a mild soap or detergent solution. Rinse with clean water.

Specifications

DTAM Micro Specifications

LCD Display

Character Size (H x W)	0.19 x 0.12 in (4.75 x 2.95 mm)
Character Format	5 mm x 8 mm dot matrix
Column and Character	2 lines x 20 characters
Backlight	Yellow-green LED, fixed intensity
Contrast	Fixed
Display Viewing Area (H x W)	1.0 x 3.0 in (15 mm x 76 mm)
Viewing Angle	Horizontal $\pm$ 30°, Vertical -20° to +30°

Keypad

Keypad Type	Tactile embossed, domed keys, sealed membrane
Operation Force	16 oz (453 grams)
Operational Life	1 million operations

Electrical

Communications Port

Catalog No. 2707-M232P3	RS-232
Catalog No. 2707-M485P3	RS-485 (Allen-Bradley DH-485 protocol)

Communication Distances

RS-232	50 ft (15 meters) maximum
RS-485	4,000 ft (1219 meters) maximum with the Link Coupler (Catalog No. 1747-AIC)
RS-422	200 feet (61 meters) maximum with PLC-5
Input Voltage Range	18-30V DC
Input Current	200mA maximum

Environmental

Operating Temperature	0 to 55°C (32 to 131° F) Series C or later
Storage Temperature	-20 to 70° C (-4 to 158° F)
Relative Humidity	5 to 95%, noncondensing
Shock	30G operating
Vibration	50G non-operating

Mechanical

Dimensions (Approximate)

Height:	3.9 inch (99.1 mm)
Width:	5.4 inch (137.2 mm)
Depth:	1.8 inch (45.7 mm)

Front Panel Size

Height:	5.4 inch (137.2 mm)
Width:	6.9 inch (175.3 mm)
Weight	1.0 lbs (0.45 kg) max
LED Indicator	RUN LED (Green)

Agency Ratings

NEMA Type 4, 12, 13 (indoor use only)

(UL) Class 1 Division 2 Groups A, B, C, D, hazardous locations
(Series B or higher)

(CSA) Class 1 Division 2 Groups A, B, C, D, hazardous locations
(Series D or higher)

CE [1](Series C or higher)

1 Series E Only – Cat. Nos. 2707–M232P3, 2707–M485P3

European Union Directive Compliance

If this product is installed within the European Union or EFTA regions, the following regulations apply.

> ⚠ **ATTENTION:** To maintain compliance with European Union Directives there must exist at least 2.5 cm (1 in.) free air space around the sides and back of this unit when installed in an enclosure.

This apparatus is tested to meet Council Directive 89/336 electromagnetic Compatibility (EMC) Standards:

- EN50081-2   Class A (Industrial) Emissions
- EN50082-2   Class A (Industrial) Immunity

- EN61000–6-2   Class A (Industrial) Immunity (Series E Only)

According to these Standards, the factor which determines, for EMC purposes, whether an apparatus is deemed to be "Industrial" or "Residential, commercial and light industrial", is given in Clause 1 of EN50081–2 as follows:

Apparatus covered by this standard is not intended for connection to a public mains network, but is intended to be connected to a power network supplied from a high- or medium-voltage transformer dedicated for the supply of an installation feeding a manufacturing or similar plant.

The product described in this document is intended solely for use in an industrial environment as defined above. When installed in Europe, any other application is in contravention of the European Union Directives, and a breach of those laws.

DTAM Micro Cable Diagrams

DTAM Micro Cables

Catalog No. 2707-NC1

Use the RS-485 Network Interface Cable to connect the RS-485 version of the DTAM Micro (Catalog No. 2707-M485P3) to an SLC network.

DTAM Micro RS-485 Communication Port

Data Out –	1	
Data Out +	2	
Data In –	3	
Data In +	4	
	5	
Transmit Enable	6	
	7	
Ground	8	
Shield	9	

9-Pin Male D Connector

SLC 500 Programming Port or Isolated Link Coupler Peripheral Port

1	Data (CH A)	
2	Data (CH B)	
3	24 VDC	
4	Gnd RS-485	
5	Transmit Enable TX–EN	
6	Shield	
7	Gnd RS-485	
8	24 VDC	

8-Pin Male RJ Connector
AMP#5-55179-X
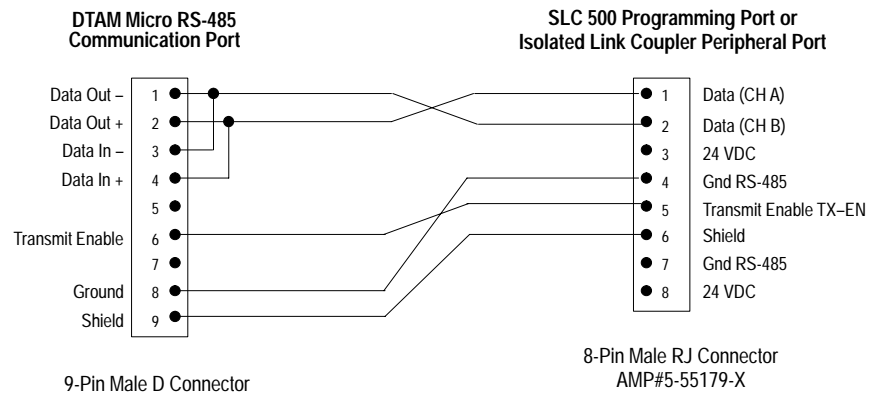
Catalog No. 2707-NC2

Use the Upload/Download Cable to connect the RS-232 version of the DTAM Micro (Catalog No. 2707-M232P3) to a personal computer for transferring applications. A 25– to 9–pin adapter may be required if your computer has a 25–pin communication port.

DTAM Micro RS-232 Communications Port

	1	
Data In	2	
Data Out	3	
	4	
Signal Ground	5	

9-Pin Male D Connector

Computer 9 Pin Serial Port (COM1, COM2)

|		
1		
2	Data In	
3	Data Out	
4		
5	Signal Ground	

9-Pin Male D Connector
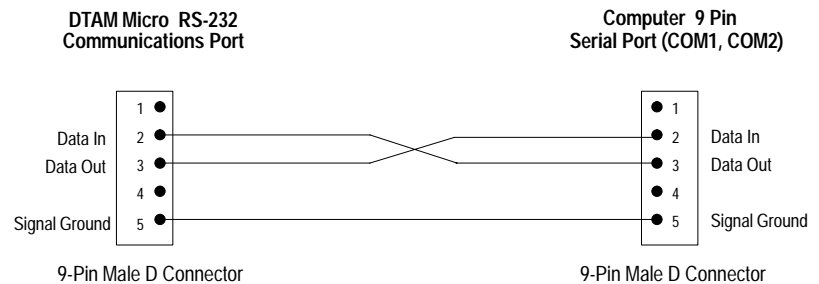
Catalog No. 2707-NC3

Use the RS-232 Communications Cable to connect the RS-232 version of the DTAM Micro (Catalog No. 2707-M232P3) to Channel 0 (configured as RS-232) of a PLC-5.

DTAM Micro RS-232
Communications Port

PLC-5 Channel 0 Port
RS-232

Data In	2		2	Data Out
Data Out	3		3	Data In
Signal Ground	5		7	Signal Ground
			4	RTS
			5	CTS
			6	DSR
			8	DCD
			20	DTR

9-Pin Male D Connector

Handshake lines only required if Handshake is enabled in PLC.

25-Pin Male D Connector
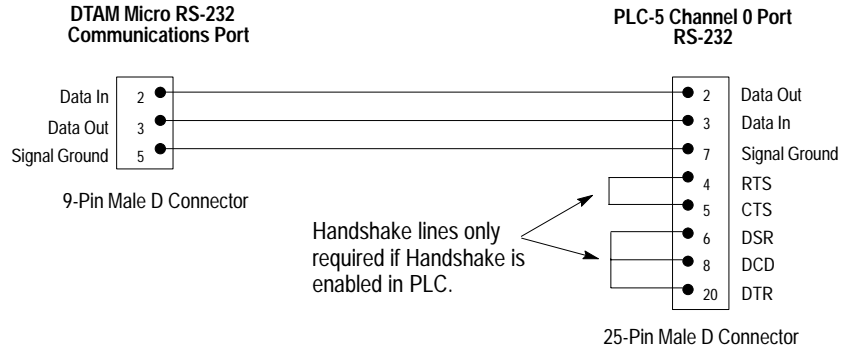
Catalog No. 2707-NC4

Use the RS-422 Communications Cable to connect the RS-485 port of the DTAM Micro (Catalog No. 2707-M485P3) to Channel 0 (configured as RS-422) of a PLC-5. The DTAM Micro RS-485 port is compatible with the PLC-5 RS-422 standard.

DTAM Micro RS-485
Communication Port

PLC-5 Channel 0 Port
RS-422

Data Out –	1		2	Data Out –
Data Out +	2		14	Data Out +
Data In –	3		3	Data In –
Data In +	4		16	Data In +
Signal Ground	5		7	Signal Ground
			6	DSR
			8	DCD
			20	DTR
			4	RTS +
			5	CTS +
			13	CTS –
			19	RTS –

9-Pin Male D Connector

Handshake lines only required if Handshake is enabled in PLC.

25-Pin Male D Connector
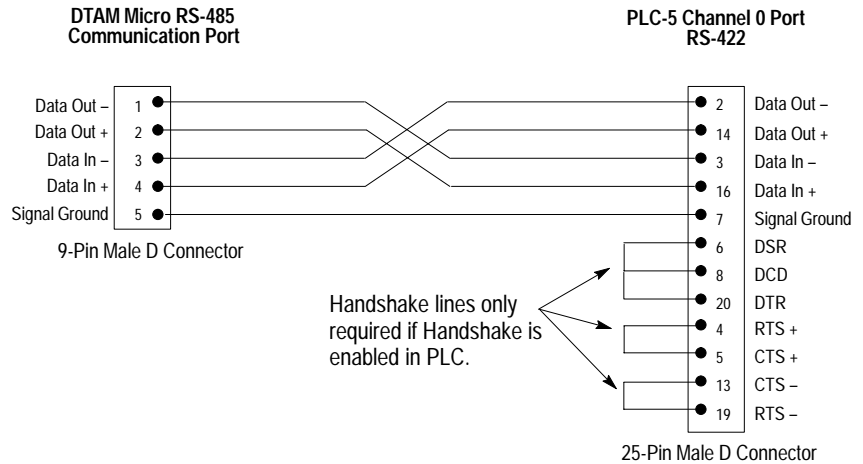
Catalog No. 2707-NC5

Use the RS-485 Upload/Download Cable to connect the RS-485 port of the
DTAM Micro (Catalog No. 2707-M485P3) to a personal computer for
transferring applications. The cable contains the circuitry to convert RS-422
signals to RS-232 signals. The DTAM Micro RS-485 port is compatible with
the RS-422 output of the converter cable.

DTAM Micro RS-485
Communications Port

TXD -	1	●
TXD+	2	●
RXD -	3	●
RXD+	4	●
Signal Ground	5	●
Signal Ground	8	●
Shield	9	●

RS-422 ⇆ RS-232

Personal Computer

●	2	TXD
●	3	RXD
●	7	Signal Ground
●	20	DTR

25-Pin Female Connector

9-Pin Male D Connector
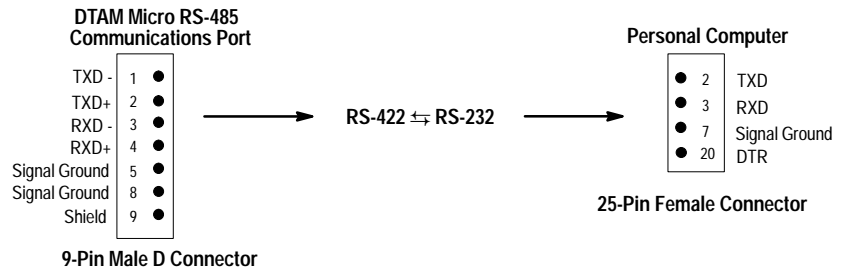
A 25- to 9-pin adapter is provided with the cable.

9-Pin Female Connector   **25-Pin Male Connector**

TXD	2	●	───────	●	3	TXD
RXD	3	●	───────	●	2	RXD
Signal Ground	7	●	───────	●	5	Signal Ground
DTR	20	●	───────	●	4	DTR
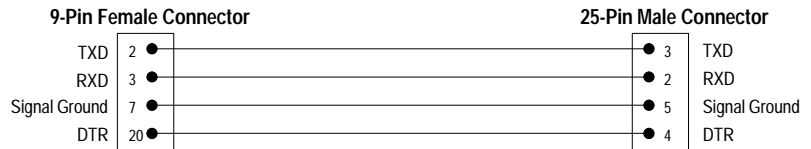
Catalog No. 2707-NC10

Use the RS-232 Communications cable (Catalog No. 2707-NC10) to connect the DTAM Micro to the MicroLogix 1000 for run-time operation. The length of this cable is 2 meters.
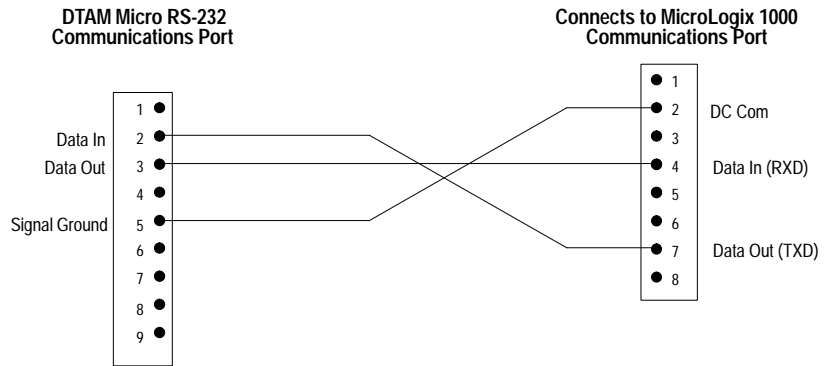
9-Pin Male D Connector
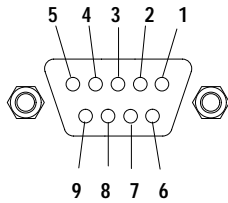
8-Pin Male C DIN Right Angle Connector
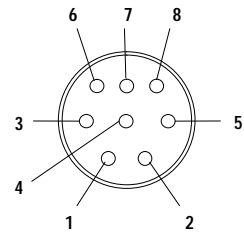
Catalog No. 1747-CP3

Use this RS-232 Communications Cable to connect the RS-232 port of the DTAM Micro (Catalog No. 2707-M232P3) to Channel 0 of an SLC 5/03. A 9 pin female to male gender adapter is required when using this cable. If you are making your own cable, use a 9 pin male connector on the DTAM Micro end instead of the 9 pin female connector shown below. In addition, the control lines are not needed.
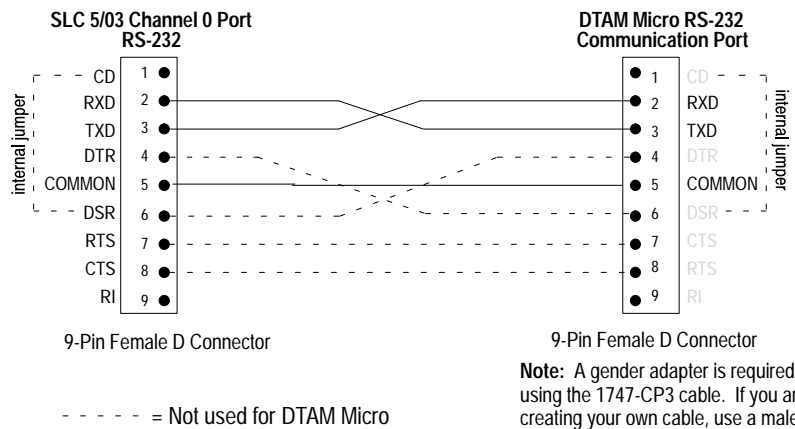
The control lines (pins #1, #4, #6, #7, and #8) are not used by the DTAM Micro. The connections to these pins can be deleted for this application.

DTAM Micro Special Controller Functions

Objectives

This appendix describes the Special Menu used to access to special features for controller operations.

Accessing Special Functions

To access the Special Menu:

1. Select item 3 from the Mode Menu to access the Special Menu:

```
1 Reset      3 Special
2 Com-Port  4 Other
```

You are prompted for the controller address you want to access.

Or PLC depending on operating system ➤
```
SLC 50X Address
1= Edit   Addr 0=Bypass
```

2. Select the current node address [0] or press [1] and enter a different node number. The new SLC node address only applies to P-A/D function, not the resident application.

The Special Menu is displayed

```
1 P-A/D      3 Mem Xfer
2 Mode       4 Clr Fault
```

Note: A security access code may be assigned in the application restricting access to the Special Menu.

The Special Menu provides access to these functions:

1 P-A/D refer to page C–2 for more information.

2 Mode refer to page C–18 for more information.

3 Mem Xfer refer to page C–19 for more information.

4 Clr Fault refer to page C–20 for more information.

Using the P-A/D Function

Use the P-A/D function to display and change values in controller files. The only exceptions are Input and Output files, you cannot write to these file types. The P-A/D function is often useful when starting up or debugging applications.

The following tables list the controller file types that can be accessed using the P-A/D function:

SLC File Types

File Type	Identifier	Default File Number	Read	Write
Output	O	0 (fixed)	Yes	No
Input	I	1 (fixed)	Yes	No
Status	S	2 (fixed)	Yes	Yes
Binary	B	3	Yes	Yes
Timer	T	4	Yes	Yes
Counter	C	5	Yes	Yes
Control	R	6	Yes	Yes
Integer	N	7	Yes	Yes

PLC-5 File Types

File Type	Identifier	Default File Number	Read	Write
Output	O	0 (fixed)	Yes	No
Input	I	1 (fixed)	Yes	No
Status	S	2 (fixed)	Yes	Yes
Binary	B	3	Yes	Yes
Timer	T	4	Yes	Yes
Counter	C	5	Yes	Yes
Control	R	6	Yes	Yes
Integer	N	7	Yes	Yes
ASCII	A	None	Yes	Yes
BCD	D	None	Yes	Yes
Message	MG	None	Yes	Yes
ASCII String	ST	None	Yes	No

Reading Controller Input and Output Files

To read the contents of controller Input and Output files:

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types.
   Select either Input or Output and press [◄─┘].

   You are shown the data at an Input or Output file element number:

   > **File=I001   DEC**
   > **Elem=003   19774**

3. You can enter a new element number. If you are accessing PLC-5 data,
   you must enter an octal value.

   You are shown the decimal value at that address element:

   Data Format

   > **File=I001   DEC**
   > **Elem=004   19774**

   Data

   Initially, you are shown the decimal value at that address element. If you
   press [NEXT], the hexadecimal format is displayed:

   > **File=I001   HEX**
   > **Elem=003   4D3E**

   Pressing [NEXT] again displays the binary value:

   > **File=I001   Elem=003**
   > **0011111001001101**

4. Use the [+/-] key to increment or decrement the current element address.

5. To exit, press the [MODE] key to return to the initial P-A/D screen.
   You can press the [MODE] key at any time during the P-A/D function.

   > **Select File Type:**
   > **(O) Output**

6. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function
   and displays the Main Menu.

Reading / Writing Controller Status Files

To read/write the contents of controller Status files:

> ⚠️ **ATTENTION:** Changing control status bits may cause a processor fault or have other possible effects on the controller operation. Make sure you understand the function of status data.

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   ```
   Select File Type:
   (O) Output
   ```

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select Status and press [◄─┘].

   You are shown the data at a Status file element:

   ```
   File=S002    DEC
   Elem=003     5632
   ```

3. You can enter a new element number.

   You are shown the decimal value at that address element:

   Data Format

   ```
   File=S002    DEC
   Elem=004     19774
   ```

   Data

   Initially, you are shown the decimal value at that address element. If you press [NEXT], the hexadecimal format is displayed:

   ```
   File=S002    HEX
   Elem=003     4D3E
   ```

   Pressing [NEXT] again displays the binary value:

   ```
   File=S002      Elem=003
   0011111001001101
   ```

4. To change a value, move the cursor into the data field using the [NEXT] or [PREV] keys. Enter the new data. If you are editing binary data, use the [+/-] key to toggle the data between 1 and 0. See **Attention** above.

5. Press [◄─┘] to to load the new data into the file element.

6. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

7. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading / Writing Controller Bit and Integer Files

To read/write the contents of controller Bit and Integer files:

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select either Binary or Integer and press [◄─┘].

   You are prompted for a file number:

   > **Select File Num=_____**

3. Enter the file number (3-999 for PLCs or 3-7, 9-255 for SLCs) and press [◄─┘].

   You are prompted for an element number:

   > **Select File Num=103**
   > **Elem= _____**

4. Enter the element number. If you are accessing PLC-5 data, you must enter an octal value.

   You are shown the decimal value of the data:

   Data Format

   > **File=N103   DEC**
   > **Elem=10   19774**

   Data

   Initially, you are shown a decimal value for the status. If you press [NEXT], the hexadecimal format is displayed:

   > **File=N103   HEX**
   > **Elem=10   4D3E**

   Pressing [NEXT] again displays the binary value:

   > **File=N103   Elem=10**
   > **0011111001001101**

5. To change a value, move the cursor into the data field using the [NEXT] or [PREV] keys. Enter the new data. If you are editing binary data, use the [+/-] key to toggle the data between 1 and 0.

6. Press [◄─┘] to to load the new data into the file element.

7. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

8. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading / Writing Controller Timer Files

To read/write the contents of controller Timer files:

1. Select item 1 from the Special Menu to access the P–A/D function.

    You are prompted for a file type:

    > **Select File Type:**
    > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select Timer and press [◄──┘].

    You are prompted for a file number:

    > **Select File Num=_____**

3. Enter a file number (3-999 for PLCs or 3-7, 9-255 for SLCs) and press [◄──┘].

    You are prompted for an element number:

    > **Select File Num=102**
    > **Elem= _____**

4. Enter the element number. If you are accessing PLC-5 data, you must enter an octal value.

    You are shown the timer accumulator value

    Accumulator

    > **File=T102   Acc**
    > **Elem= 008   120**

    Accumulated Value

5. Press [NEXT] to display the timer preset value:

    Preset

    > **File=T102   Pre**
    > **Elem= 008   200**
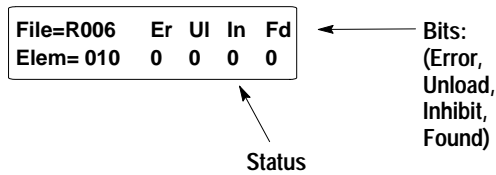
    Preset Value

6. You can change the Acc and Pre values by pressing the [PREV] or [NEXT] keys to move the cursor to the field to change, and then entering a new value.

> ⚠ **ATTENTION:** Do not send negative timer values to the SLC. Negative timer values cause a fault in the SLC.

7. Press the [◄─┘] key to enter new accumulator or preset values to the displayed timer address.
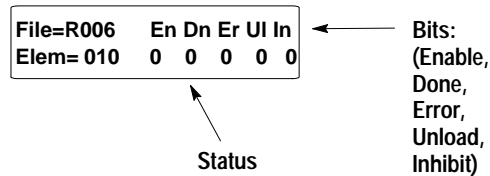
8. Press [NEXT] again to display the status bits:

```
File=T102   EN   TT   DN  ◄──────  Bits
Elem= 008    0    0    0           (Enable,
                                    Timer Timing,
                                    Done)
        Status
```

9. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

10. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading / Writing Controller Counter Files

To read/write the contents of controller Counter files:

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select Counter and press [◄─┘].

   You are prompted for a file number:

   > **Select File Num=_____**

3. Enter a file number (3-999 for PLCs or 3-7, 9-255 for SLCs) and press [◄─┘].

   You are prompted for an element number:

   > **Select File Num=121**
   > **Elem= _____**

4. Enter the element number. If you are accessing PLC-5 data, you must enter an octal value.

   You are shown the counter accumulator value

   Accumulator

   > **File=C121   Acc**
   > **Elem= 010   2000**

   Accumulated Value

5. Press [NEXT] to display the counter preset value:

   Preset

   > **File=C121   Pre**
   > **Elem= 010   2500**

   Preset Value

6. You can change the Acc and Pre values by pressing the [PREV] or [NEXT] keys to move the cursor to the field to change, and then entering a new value.

7. Press the [◄—] key to enter new accumulator or preset values to the displayed counter address.

8. Press [NEXT] again to display the status bits:

```
File=C121 CU Cd  Dn  Ov  Un   ◄————  Bits:
Elem= 0100   0   0   0   0           Count Up Enable,
                                     Count Down Enable,
                                     Done,
                                     Overflow,
                     Status          Underflow
```

9. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

10. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading / Writing Controller Control Files

To read/write the contents of controller Control files:

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types.
   Select Control and press [◄—⌐].

   You are prompted for a file number:

   > **Select File Num=_____**

3. Enter a file number (3-999 for PLCs or 3-7, 9-255 for SLCs) and press
   [◄—⌐].

   You are prompted for an element number:

   > **Select File Num=006**
   > **Elem= _____**

4. Enter the element number. If you are accessing PLC-5 data, you must
   enter an octal value.

   You are shown the length value

   Length

   > **File=R006   Len**
   > **Elem=002   100**

   Value

5. Press [NEXT] to display the position value:

   Position

   > **File=R006   Pos**
   > **Elem=002   25**

   Value

6. You can change the Len and Pos values by pressing the [PREV] or [NEXT] keys to move the cursor to the field to change, and then entering a new value.

7. Press the [◄─┘] key to enter new length or position values to the displayed control address.

8. Press [NEXT] again to display the status bits.

   The status bits for a PLC are displayed on two screens:

   ```
   File=R006    En Eu Dn Em  ◄───── Bits:
   Elem= 010    0   0  0  0         (Enable,
                                    Enable Unload,
                                    Done,
                  ↗                 Empty)
              Status
   ```
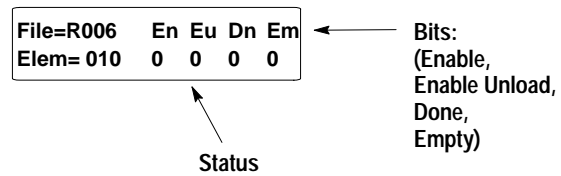
   Press [NEXT] again to display the remaining PLC status bits:

   ```
   File=R006    Er  UI  In  Fd  ◄───── Bits:
   Elem= 010    0   0   0   0          (Error,
                                       Unload,
                                       Inhibit,
                    ↗                  Found)
                Status
   ```

   The status bits for an SLC are shown on one screen:

   ```
   File=R006    En Dn Er UI In  ◄───── Bits:
   Elem= 010    0  0  0  0  0          (Enable,
                                       Done,
                                       Error,
                  ↗                    Unload,
             Status                    Inhibit)
   ```

9. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

10. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading / Writing Controller ASCII Files

To read the contents of ASCII files:

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select ASCII and press [←⟶].

   You are prompted for a file number:

   > **Select File Num=_____**

3. Enter a file number (3-999 for PLCs or 3-7, 9-255 for SLCs) and press [←⟶].

   You are prompted for an element number:

   > **Select File Num=012**
   > **Elem= _____**

4. Enter the element number. If you are accessing PLC-5 data, you must enter an octal value.

   You are shown the hexadecimal value of the element.

   Data Format

   > **File=A012   ASCII**
   > **Elem=002   9Q**

   Data

   Both invalid and valid ASCII values are displayed. Refer to the DPS programming manual for a listing of the valid ASCII characters. Invalid values are indicated by a slash (\) preceding the hexadecimal value. For example:

   > 12 = valid ASCII value
   >
   > \CF 2 = partially valid ASCII
   >
   > \CF\A0 = invalid ASCII

5. Press [NEXT] to display the binary value of bits 0→15.
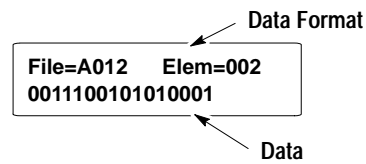
Data Format

```
File=A012     Elem=002
0011100101010001
```

Data

6. To change a value, move the cursor into the data field using the [PREV]
   and [NEXT] keys. Enter the new data. If you are editing binary data, use
   the [+/-] key to toggle the data between 1 and 0.

7. Press [◄┘] to to load the new data into the file element.

8. To exit, press the [MODE] key to return to the initial P-A/D screen.
   You can press the [MODE] key at any time during the P-A/D function.

9. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function
   and displays the Main Menu.

Reading / Writing Controller BCD Files

To read/write the contents of controller BCD files:

1. Select item 1 from the Special Menu to access the P–A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select BCD and press [◄—⌐].

   You are prompted for a file number:

   > **Select File Num=_____**

3. Enter a file number (3-999 for PLCs or 3-7, 9-255 for SLCs) and press [◄—⌐].

   You are prompted for an element number:

   > **Select File Num=72**
   > **Elem= _____**

4. Enter the element number. If you are accessing PLC-5 data, you must enter an octal value.

   You are shown the hexadecimal value of the element:

   Data Format

   > **File=D072   BCD**
   > **Elem=002   CF27**

   Data

5. Press [NEXT] to display the value in a binary format:

   > **File=D072   Elem=002**
   > **1100111100100111**

6. To change a value, move the cursor into the data field using the [PREV] and [NEXT] keys. Enter the new data. If you are editing binary data, use the [+/-] key to toggle the data between 1 and 0.

7. Press [◄—⌐] to to load the new data into the file element.

8. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

9. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading / Writing Controller Message Files

To read the contents of PLC-5 DF1 message files:

Note: This file type only applies to PLC-5 DF1 operating system.

1. Select item 1 from the Special Menu to access the P–A/D function.

    You are prompted for a file type:

    > **Select File Type:**
    > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types. Select Message and press [◄─┘].

    You are prompted for a file number:

    > **Select File Num=_____**

3. Enter a file number (3-999) and press [◄─┘].

    You are prompted for an element number:

    > **Select File Num=12**
    > **Elem= _____**

4. Enter the element number as an octal value.

    You are prompted for a sub-element number:

    > **Select File Num=12**
    > **Elem= 03   SubElem=____**

5. Enter the sub-element number as an octal value.

    You are shown the value of the sub-element:

    Data Format

    > **File=MG011   DEC**
    > **Elem=003.01   128**

    Data

6. Press [NEXT] to display the value in a hexadecimal format:

    > **File=MG011   HEX**
    > **Elem=003.01   80**

7. Press [NEXT] to display the value in a binary format:

> **F=MG011   Elem=003.01**
> **0011111000111110**

8. To change a value, move the cursor into the data field using the [PREV] and [NEXT] keys. Enter the new data. If you are editing binary data, use the [+/-] key to toggle the data between 1 and 0.

9. Press [◄—⌐] to to load the new data into the file element.

10. To exit, press the [MODE] key to return to the initial P-A/D screen. You can press the [MODE] key at any time during the P-A/D function.

11. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function and displays the Main Menu.

Reading Controller ASCII String Files

To read the contents of PLC-5 DF1 ASCII string files:

Note: This file type only applies to PLC-5 DF1 operating system.

1. Select item 1 from the Special Menu to access the P-A/D function.

   You are prompted for a file type:

   > **Select File Type:**
   > **(O) Output**

2. Press [NEXT] and [PREV] keys to scroll through the file types.
   Select Control and press [◄─┘].

   You are prompted for a file number:

   > **Select File Num=_____**

3. Enter a file number (3-999) and press [◄─┘].

   You are prompted for an element number:

   > **Select File Num=17**
   > **Elem= _____**

4. Enter the element number as an octal value.

   You are shown the string length:

   > Length
   >
   > **File=ST017   Len**
   > **Elem=077.01   38**
   >
   > Value

5. Press [NEXT] to display characters 1 → 16.

   > **File=St017   A Sample**
   > **Elem=077.01   String**

6. Press [NEXT] again to advance through the strings, 17 → 32, 33 → 48,
   49 → 64, 65 → 80, and the remaining two characters 81 and 82.

7. To exit, press the [MODE] key to return to the initial P-A/D screen.
   You can press the [MODE] key at any time during the P-A/D function.

8. Pressing the [MENU] key at the P-A/D screen exits the P-A/D function
   and displays the Main Menu.

Using the Mode Function

Use the Mode function to change the controller operating mode (Run or Program) from the DTAM Micro. The mode function displays for an SLC and PLC-5 controller are different. Both are shown below:

SLC Controllers

1. Select item 2 from the Special Menu to access the Mode function.

    You are prompted for an operating mode:

    ```
    SLC Mode
    1=Run        0=Program
    ```

2. Press [1] to place the controller in Run mode or [0] to enter the Program mode.

    You are returned to the Main Menu.

PLC-5 Controllers

1. Select item 2 from the Special Menu to access the Mode function.

    The PLC-5 must be in Remote Program mode or you will be prompted:

    ```
    Not in Remote mode
    Press ENTER to cont.
    ```

2. Depending upon the current mode, you are prompted to change the controller mode:

    If the controller is in Run mode:

    ```
    PLC is in Run Mode
    1=Prog   0=Abort
    ```

    If the controller is in Program mode;

    ```
    PLC is in PROG Mode
    1=RUN   0=Abort
    ```

3. Press [1] or [0] to enter your selection.

    You are returned to the Main Menu.

Using the Memory Transfer Function

The Memory Transfer function allows the DTAM Micro to initiate a memory transfer between a controller memory module and the controller.

• Memory transfers with an SLC are bidirectional. Data can be transferred to and from the memory module.
• The PLC-5 only supports transfers from the PLC-5 to the memory module.

SLC Controllers

1. Select item 3 from the Special Menu to access the Mem Xfer function.

   You are prompted for a transfer direction:

   ```
   1=SLC  -> Mem Module
   0 = Mem Module  <- SLC
   ```

2. Place the memory module into the SLC.

3. Press [1] to transfer data from the SLC to the memory module.
   Press [0] to transfer data from the memory module to the SLC.

   You are returned to the Main Menu.

PLC-5 Controllers

1. Select item 2 from the Special Menu to access the Mem Xfer function.

   The PLC-5 must be in Program or Remote Program mode or you will be prompted:

   ```
   Not in Program Mode
   Press ENTER to exit
   ```

   You are prompted to continue or abort the operation:

   ```
   1=PLC  -> Mem Module
   0 = Abort
   ```

2. Place the memory module into the PLC.

3. Press [1] to transfer data from the PLC to the memory module.
   Press [0] to abort the operation.

   You are returned to the Main Menu.

Using the Clear Fault Function

Use the Clear Fault function to clear all major and minor faults in the logic controller.

To clear controller faults:

1. If you are clearing a PLC-5, the controller must be in Program or Remote Program mode.

2. Select item 4 from the Special Menu to access the Clear Fault function.

   You are prompted to clear faults:

   ```
   1 = Clear Faults
   0 =Abort
   ```

3. Press [1] to clear the faults or [0] to abort the function.

   The faults are cleared and you are returned to the special functions menu:

   ```
   1 P-A/D      3 Mem Xfer
   2 Mode       4 Clr Fault
   ```

6.08 in

3.04 in

3.04 in

3.04 inch = 77.22 mm
6.08 inch = 154.43 mm
3.97 inch = 100.84 mm
3.86 inch = 98.04 mm
4.55 inch = 115.57
5.50 inch = 139.70 mm
0.69 inch = 17.53 mm
0.29 inch = 7.37 mm

**DTAM Micro
Panel Cutout**

.187 in dia.
6 places

3.97 in

4.55 in

3.86 in

.29 in

.69 in

.29 in

5.50 in

Cut here to remove.

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