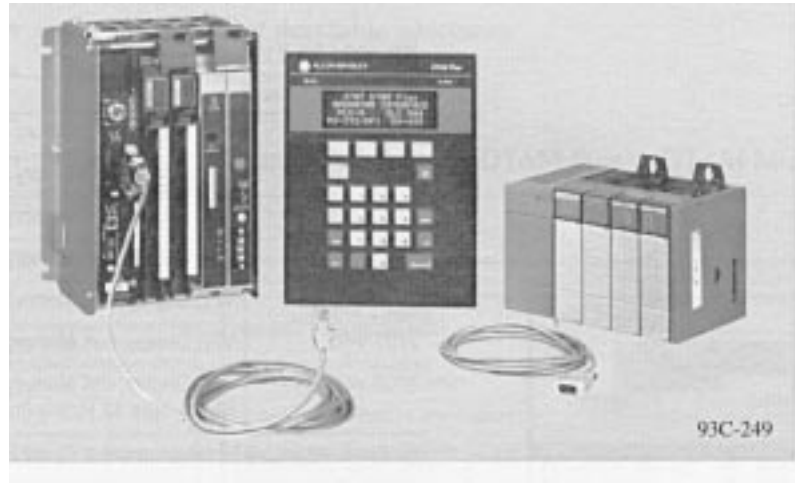




## Bulletin 2707 DTAM Plus Operator Interface

### Product Data



### Overview

The DTAM Plus devices offer a highly functional operator interface to both Allen-Bradley PLC® and SLC™ processors. This proven interface provides operators with the convenience and flexibility needed to monitor and manipulate process data from the plant floor. Connect the DTAM Plus to the SLC family of processors via DH485 network or point-to-point modes. You can also communicate remote I/O via a 1747-SN subscanner. The PLC-5 family of processors can communicate via remote I/O or DF1 through Channel 0 RS-232/RS-422. Just a few features and benefits:

#### **8K or 40K Memory Option**

Supports approximately 50 or 244 screens of data. Screens display data table information, show alarm conditions and prompt an operator through a series of tasks.

#### **Monitors Continuous Changes in Process Data**

Alarm screens allow the operator to monitor critical areas of the data table, comparing actual data to preset limits. When an alarm condition occurs the operator is prompted to take immediate action.

#### **Recipe Function**

Allows an operator to modify blocks of data quickly. Data can be downloaded to a maximum of 10 non-sequential register addresses per screen. Multiple screens can be linked as part of one recipe.

#### **Available with an LCD or VFD Display**

Both display types feature a 4 line x 20 character display window providing high reliability and superior readability in all light conditions.

#### **ASCII Input Capability**

Allows ASCII data input, such as bar code data, through the optional RS-232 printer port.

#### **Ability to Write the Screen Number back to the PLC**

Allows the PLC to know at all times where the user is in the menu structure.

## DTAM Plus Options

Various options are available when ordering the DTAM Plus. For example, the DTAM Plus is available with 8K or 40K memory, with backlit LCD (Liquid Crystal Display) or VFD (Vacuum Fluorescent Display) window, two power supply options, and a standard printer port and real time clock on 40K memory units. The table below lists the different variations of the DTAM Plus, as well as accessory items:

### RS-485 / RS-232 Versions

Catalog Number	Description ①
2707-L8P1	LCD Display, 8K Memory, P1 Power Supply
2707-L8P2	LCD Display, 8K Memory, P2 Power Supply
2707-L40P1	LCD Display, 40K Memory, Printer Port, Real Time Clock, P1 Power Supply
2707-L40P2	LCD Display, 40K Memory, Printer Port, Real Time Clock, P2 Power Supply
2707-V40P1	VFD Display, 40K Memory, Printer Port, Real Time Clock, P1 Power Supply
2707-V40P2	VFD Display, 40K Memory, Printer Port, Real Time Clock, P2 Power Supply
2707-V40P2N	VFD Display, 40K Memory, Printer Port, Real Time Clock, P2 Power Supply NEMA Type 4X Rating (Indoor Use Only)

① See Specifications for voltage ranges of P1 and P2 Power Supplies.

### Remote I/O Versions

Catalog Number	Description ①
2707-L8P1R	LCD Display, 8K Memory, P1 Power Supply ②
2707-L8P2R	LCD Display, 8K Memory, P2 Power Supply ②
2707-L40P1R	LCD Display, 40K Memory, Printer Port, Real Time Clock, P1 Power Supply ③
2707-L40P2R	LCD Display, 40K Memory, Printer Port, Real Time Clock, P2 Power Supply ③
2707-V40P1R	VFD Display, 40K Memory, Printer Port, Real Time Clock, P1 Power Supply ③
2707-V40P2R	VFD Display, 40K Memory, Printer Port, Real Time Clock, P2 Power Supply ③
2707-V40P2NR	VFD Display, 40K Memory, Printer Port, Real Time Clock, P2 Power Supply NEMA Type 4X Rating (Indoor Use Only) ③

① See Specifications for voltage ranges of P1 and P2 Power Supplies.

② Has selectable RS-485 / RS-232 port for uploading and downloading application files or firmware upgrades.

③ Printer port is also used for uploading and downloading application files or firmware upgrades.

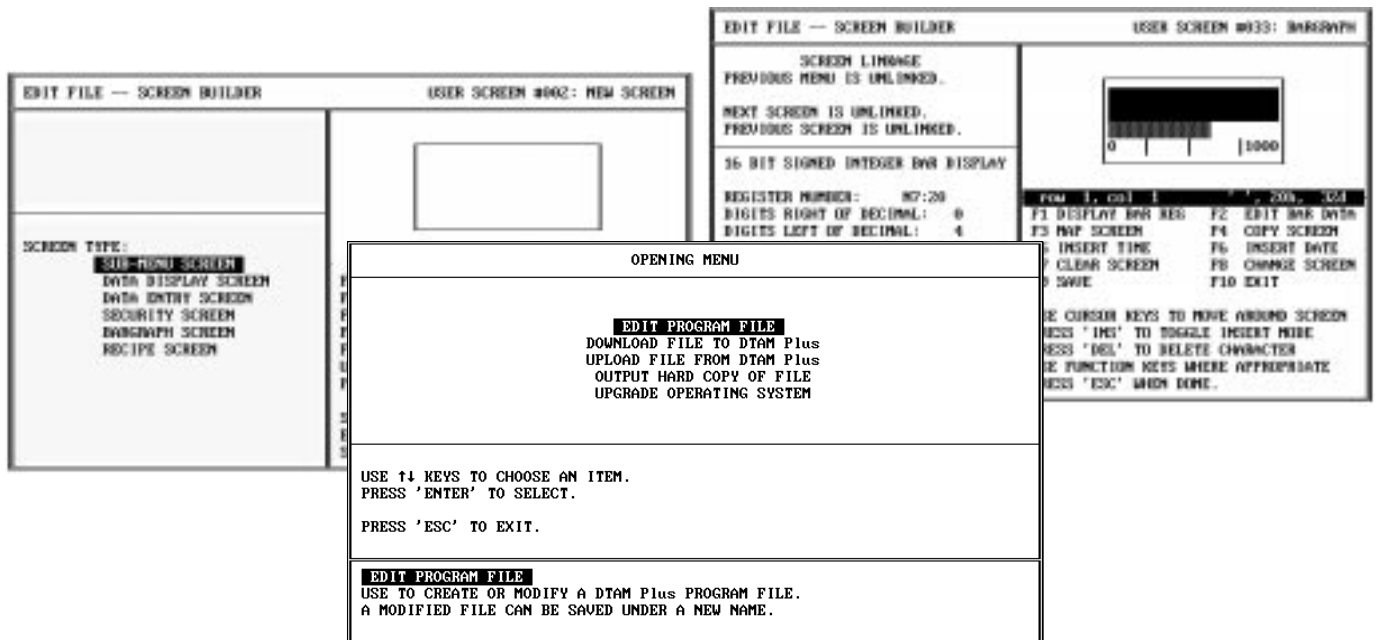
### Accessories

Catalog Number	Description
2707-NC1	Cable, DH485 Network Interface
2707-NC2	Cable, RS-232C Program Upload/Download
2707-NC3	Cable, DF1 RS-232C Interface
2707-NC4	Cable, DF1 RS-422 Interface
2707-NC5	Cable, RS-485 Upload/Download
2707-NC6	Cable, Bar Code Interface, connects to Allen-Bradley bar code scanners (Catalog No. 2755-G3-D, -G6-D)
2707-NP	Offline Software Development Package

**Offline Software Development Package**  
 (Catalog No. 2707-NP)

Use the Offline Software Development Package (Catalog No. 2707-NP) to create application screens for the DTAM Plus or DTAM Micro. Use this software to:

- create data display, bar graph, data entry and alarm screens
- create menu and submenu screens
- setup monitoring of data table addresses
- define printer forms
- upgrade operating systems (firmware)
- set configuration parameters for both DTAM Plus or DTAM Micro operator interfaces



This software package is available on a 3 1/2 inch (720K) disk and runs on IBM AT or a compatible system with a minimum of 640K RAM.

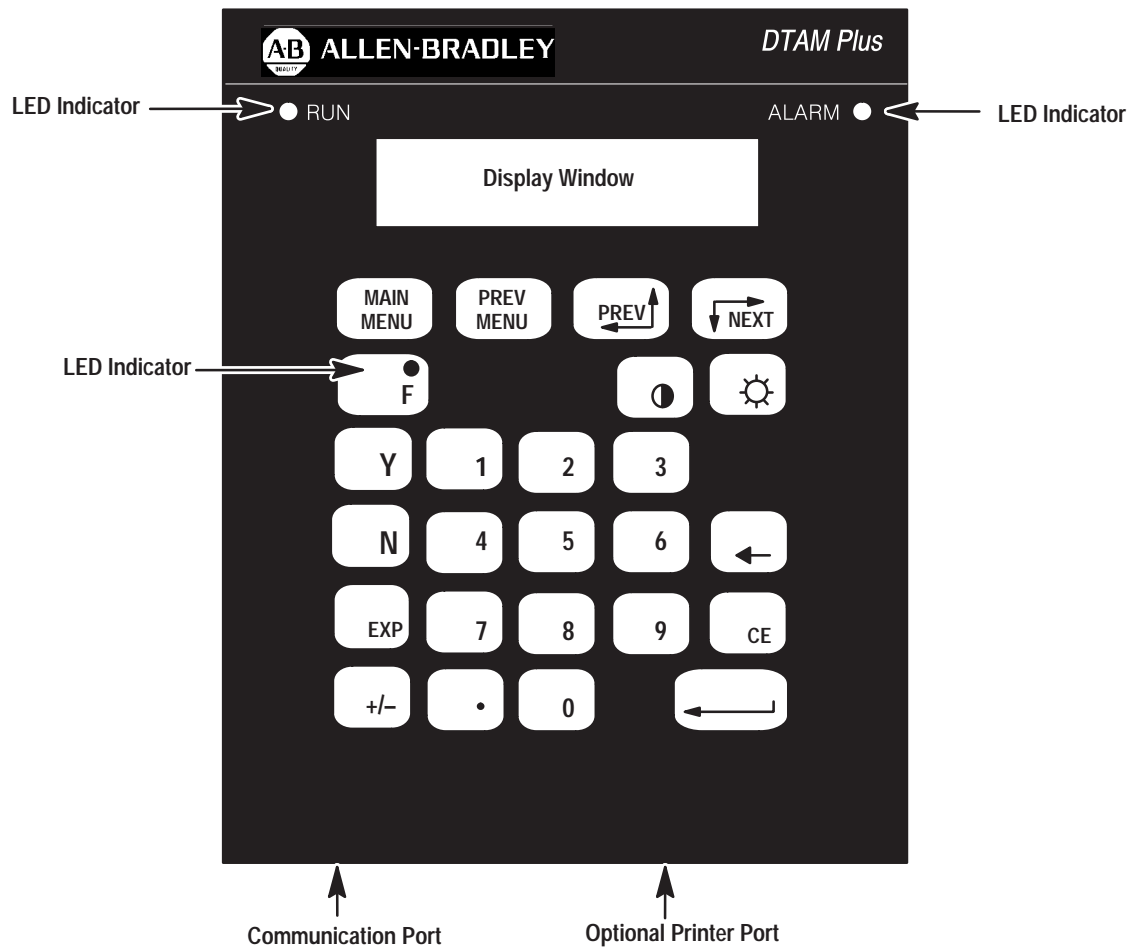
Application screens are developed in a flow chart manner and then linked by the user to facilitate a logical flow of data displays or operator prompts. Easy to understand menu prompts guide the user through the programming steps. For more details on the Offline Programming Software, refer to Publication 2707-801.

User-created application programs are easily downloaded to the communications port of the DTAM Plus using RS-485 or RS-232. Programs can also be downloaded via the printer port on 40K memory units. Programs are downloaded with the applicable operating system for proper operation with the SLC processor (AB DH485), the 1746-BAS module (AB BASIC), 1747-SN Subscanner (Remote I/O) or a PLC (PLC-5 DF1) or (Remote I/O).

## Hardware Features

The DTAM Plus is housed in an aluminum case designed for flush mounting in harsh industrial environments. Gasketing is provided to meet NEMA Type 4 requirements (indoor use only). The NEMA Type 4X version has a type 316 stainless steel front plate.

The front panel of the DTAM Plus is a sealed unit with a 4 line x 20 character display window, 3 LED indicators, and 25 tactile feedback keys. (The VFD version has 24 keys).



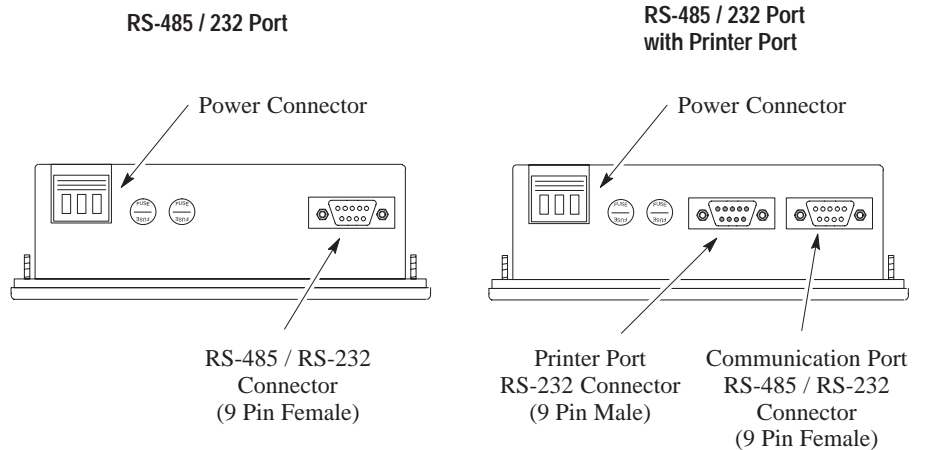
### LCD or VFD Display

The 4 line x 20 character display of the DTAM Plus uses either a high contrast Liquid Crystal Display (LCD) with LED backlighting or a Vacuum Fluorescent Display (VFD) to provide high reliability and superior readability in all light conditions.

On LCD displays both the contrast and backlight levels are keypad adjustable. Only the brightness is adjustable on the VFD displays.

**Dimensions** - See Page 16.

## Communications - RS-485 / RS-232 Versions



The configurable communications port of the DTAM Plus supports RS-485 or RS-232C. RS-485 communications permit the DTAM Plus to communicate with SLC processors over the Allen-Bradley DH485 network, existing as one of the available 32 nodes. RS-485 also supports point-to-point DH485 communication to either an SLC 500 processor, or to the 1746-BAS Module. Communication via the 1746-BAS module provides direct backplane communication and faster data throughput.

RS-232C communications are used to communicate point-to-point DF1 to Channel 0 of the PLC-5 processors. RS-232C communications can also be used to download/upload DTAM Plus application programs, or for using the DTAM Plus in TERMINAL mode.

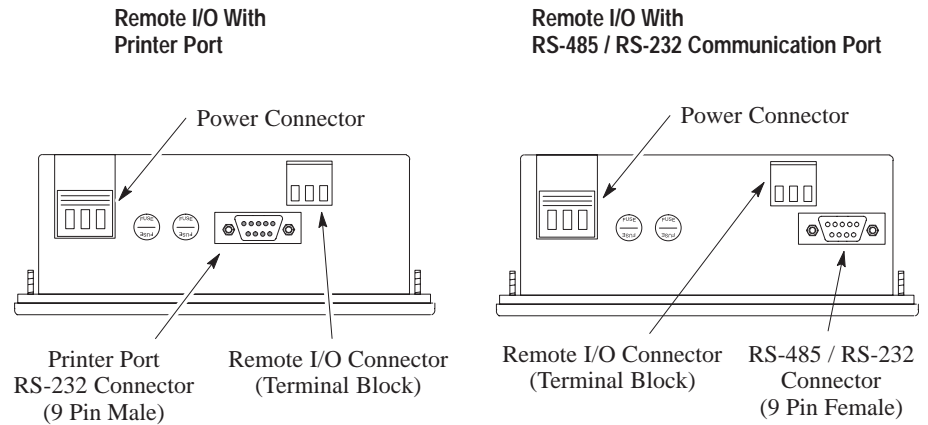
The DTAM Plus supports the following parameters for RS-485 and RS-232C communications:

RS-485 and RS-232C Communications Parameters	Options
Baud Rate	300, 1200, 2400, 4800, 9600, 19200, 38400
Data Bits	7 or 8
Parity	Odd, Even, None

The DTAM Plus supports RS-422 with a PLC-5 (DF1 protocol) when the communications port is set to RS-485.

DF1 Communications Parameters	Options
Protocol	DF1 Full-Duplex
Error Detect	CRC
Baud Rate	300, 1200, 2400, 4800, 9600, 19200 (Default-9600)
Parity	None or Even (Default = Even)
Control Line Operation	No Handshaking
Stop Bits	1

## Communications - Remote I/O Versions



Remote I/O versions of the DTAM Plus support direct links to a PLC scanner or subscanner module. The DTAM Plus appears to the PLC as a standard 1771 I/O rack.

Remote I/O Communications Parameters	Options
Baud Rate	57.6K, 115.2K, 230.4K
Rack Size	$\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$ , Full

### Remote I/O with Printer Port (40K Units only)

On Remote I/O versions with a printer port, application files are downloaded and uploaded through the RS-232 printer port. Upgrades to the operating system are also made through the printer port.

### Remote I/O with Communications Port (8K Units only)

Remote I/O versions without a printer port have a selectable RS-485 / RS-232 communications port. This communications port is only for the transfer of application files and upgrading the operating system. You cannot use this port to connect to a host controller.

## 8K or 40K Memory

The DTAM Plus can be ordered with 8K or 40K memory. The 8K version stores up to approximately 50 screens. The 40K version stores up to approximately 244 screens.

## Printer Port

An RS-232C printer port is standard on 40K memory units. This port is used to output data to a printer.

## Real Time Clock

A real time clock is also standard on 40K memory units. The real time clock allows for time stamping of data on production reports, alarm print-outs, and operator screens. In addition, the real time clock can be synchronized with clocks in the SLC 5/03 or PLC-5 processors, or can be used create a phantom clock in the SLC 5/01 and 5/02 processors.

## LED Indicators

The front panel of the DTAM Plus has 3 LED indicators. Table 1 defines the name, color and function of each LED.

**Table 1**  
**LED Indicators**

Indicator	Color	Function
Run	Green	Lights during operation of the DTAM Plus. This indicator should always be on during DTAM Plus operation.
Alarm	Red	Blinks when an alarm message is triggered and continues to blink until the alarm is acknowledged.
Function	Yellow	Lights when a Function key operation is in progress.

## DIP Switches

The DTAM Plus uses DIP switches to select various settings. The DIP switches are located under a removable plastic cover on the back of the unit. Table 2 lists the default DIP switch settings.

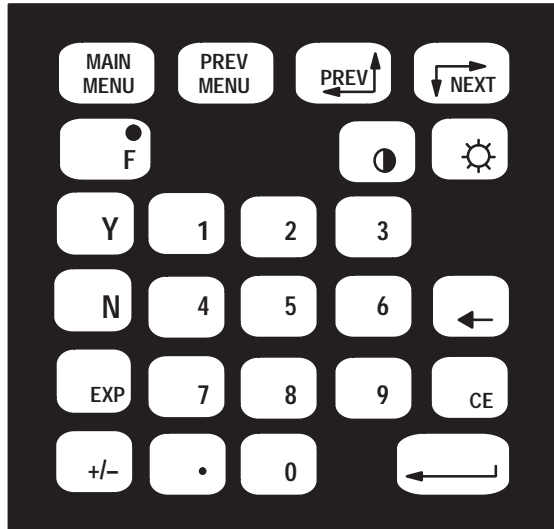
**Table 2**  
**Default DIP Switch Settings**

DIP Switch	Function	Setting
SW1-1	Upload/Download Enable	On
SW1-2	Communications Port Selection	On
SW1-3	Master Security Enable	Off
SW1-4	Function Key Enable	On
SW1-5	Terminal Mode Enable	Off
SW1-6	COMM Upload/Download Enable	Off

## Membrane Keypad

The DTAM Plus uses a sealed membrane, tactile feedback keypad. Figure 1 shows the keypad layout.

Figure 1  
 Keypad Layout (LCD Version)



The keys on the DTAM Plus keypad are color coded. Each color grouping of keys denotes a common type of operation that you can perform with these keys.

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

## Function Key

The Function key (F) accesses a menu of options allowing you to set features and operating parameters of the DTAM Plus.

### Function Key Menu

- 1 C-Port (Communications Port)
- 2 P-Port (Printer Port)
- 3 CLK/CAL (Clock/Calendar)
- 4 Reset
- 5 Special
- 6 Term (Terminal)
- 7 Test
- 8 Other

The User Manual for the DTAM Plus Operator Interface provides complete details on the Function Key Menu.



## Special Function Features

The following modes are accessed using the Special option from the Function Key Menu.

- **Mode**  
Places the processor in either RUN mode or PROGRAM mode.
- **Clear Fault**  
Clears all processor faults in the PLC or SLC.
- **Memory Transfer**  
Enables the Memory Transfer feature. To use this function, the processor must be in PROGRAM mode, and the applicable memory module must be installed.
- **Point/Access Display (P/AD)**  
Allows user to display and/or modify data files in processors. The file type determines whether the data is Read Only or Read/Write. The tables below list access for each file type in SLC and PLC platforms:

SLC File Types

File Type	Data Access
Output	Read Only
Input	Read Only
Status	Read/Write
Binary	Read/Write
Timer	Read/Write
Counter	Read/Write
Control	Read/Write
Integer	Read/Write
ASCII ①	Read
ASCII String ①	Read
Floating Point ①	Read/Write

① Not used by SLC 500/501/502 processors

PLC File Types

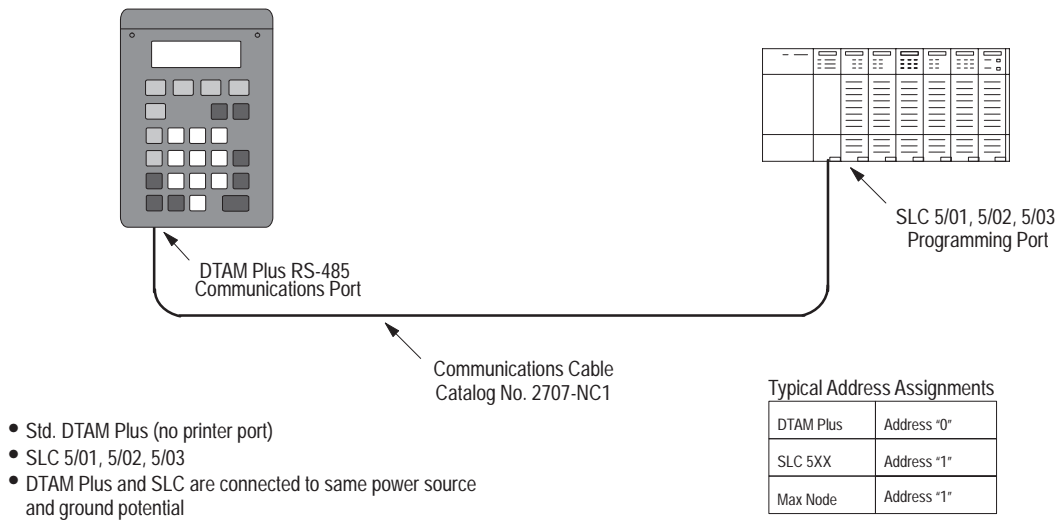
File Type	Identifier	Default File Number
Output	O	0 (fixed)
Input	I	1 (fixed)
Status	S	2 (fixed)
Binary	B	3
Timer	T	4
Counter	C	5
Control	R	6
Integer	N	7
Floating Point	F	8
ASCII	A	9
BCD	D	10
Block Transfer	BT	11
Message	MG	12
PID	PD	13
SFC	SC	14
ASCII String	ST	15

Refer to the DTAM Plus User Manual, publication 2707-800 for additional information on the P/AD functions.

## DTAM Plus to PLC/SLC Connections

The following figures show the flexible connection options between either the DTAM Plus and the SLC 500 or PLC-5 using various cabling.

**Figure 2**  
**DTAM Plus SLC 500 Direct Connections**



**Figure 3**  
**DTAM Plus SLC 500 Network Connections (Greater than 2 Meters)**

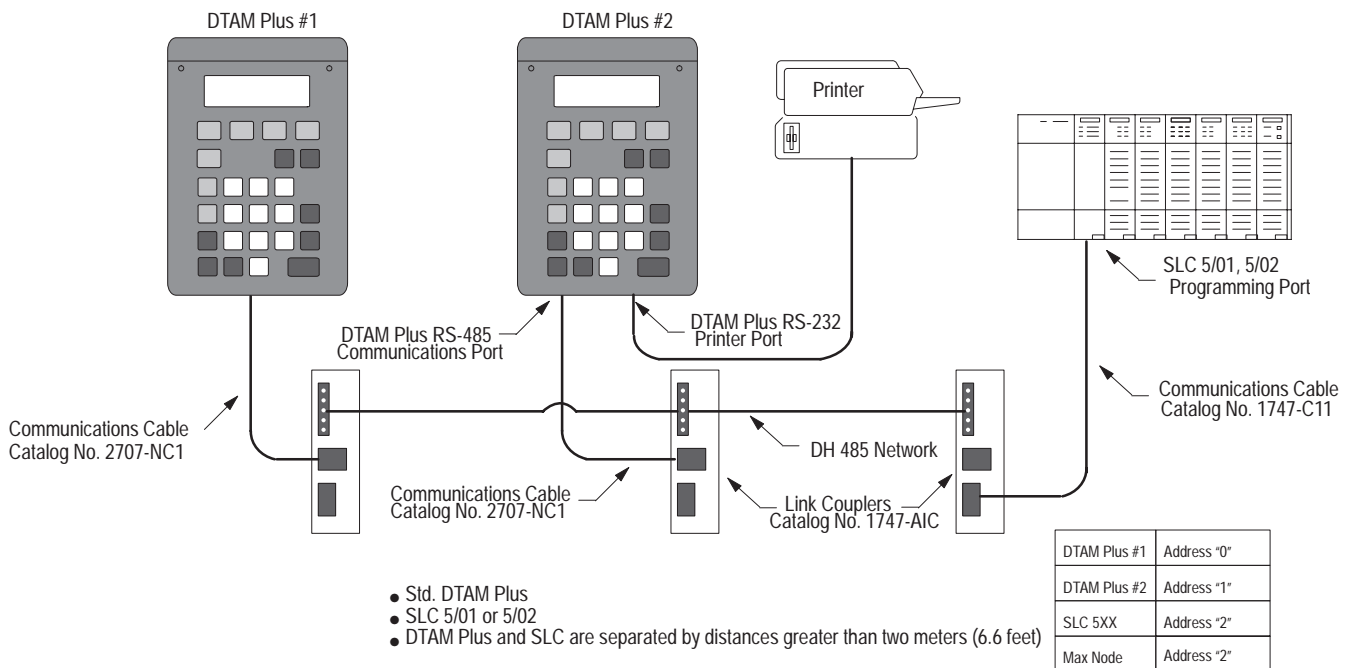


Figure 4  
DTAM Plus to PLC-5 using RS-232C/422 Communication (Point-to-Point only)

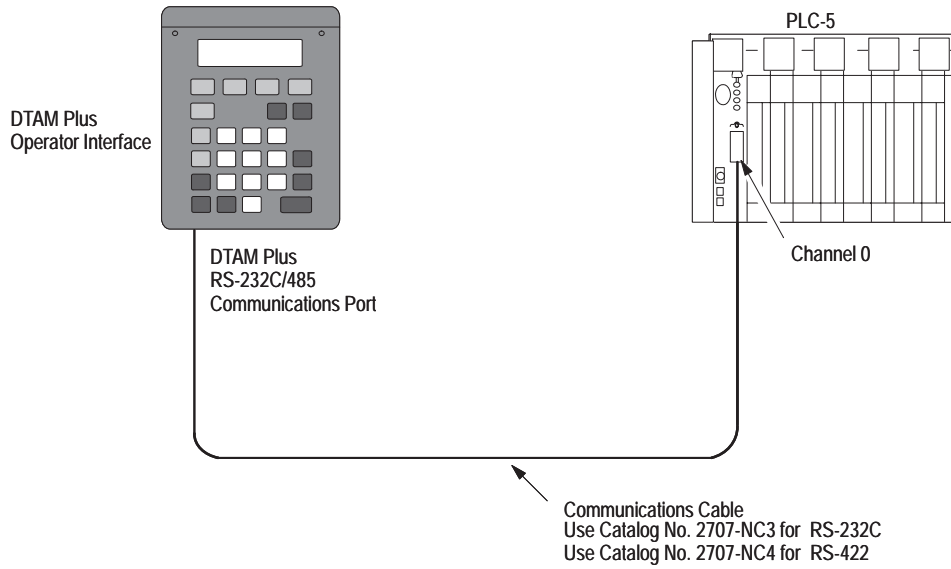
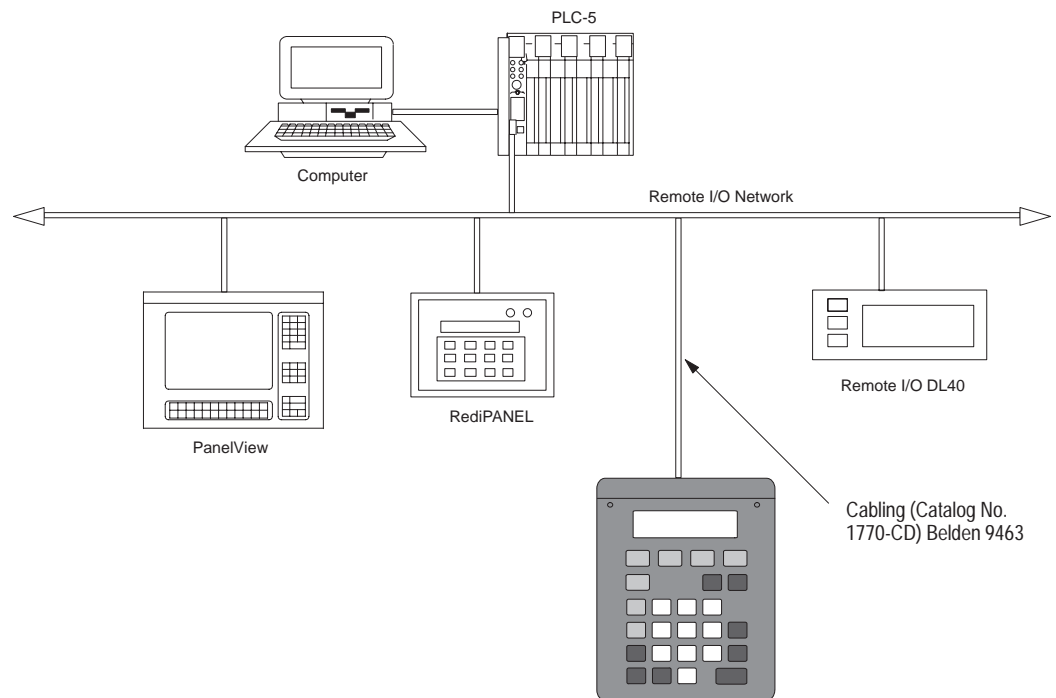
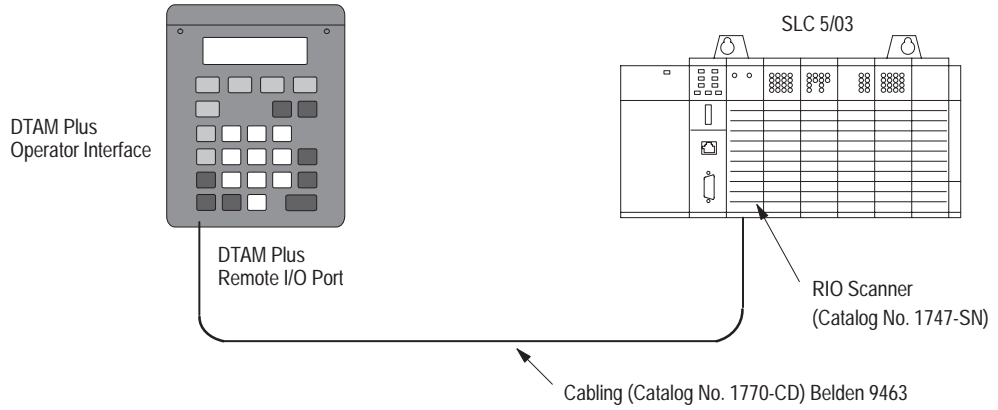


Figure 5  
DTAM Plus Remote I/O Link Connection

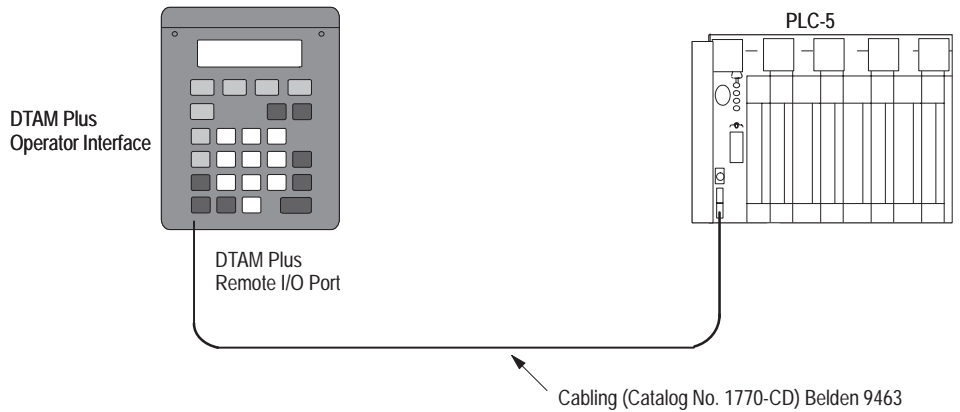


Allen-Bradley 2707L40P1

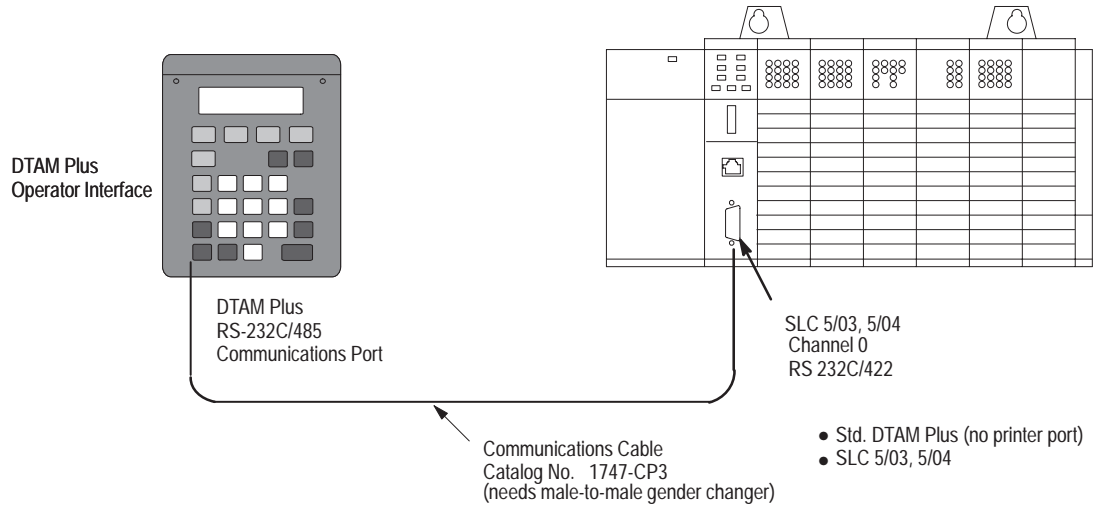
**Figure 6**  
 DTAM Plus Remote I/O SLC Connection



**Figure 7**  
 DTAM Plus Remote I/O Direct PLC Connection



**Figure 8**  
 DTAM Plus to SLC 5/03 and 5/04 using RS232C/422 Communication



## Cabling Diagrams

The following figures show the cabling requirements for the different DTAM Plus configurations.

Figure 9 shows the cabling between the DTAM Plus and the SLC 500. This cable can be purchased as Catalog No. 2707-NC1.

**Figure 9**  
 DTAM Plus to SLC 500 RS-485 Cable

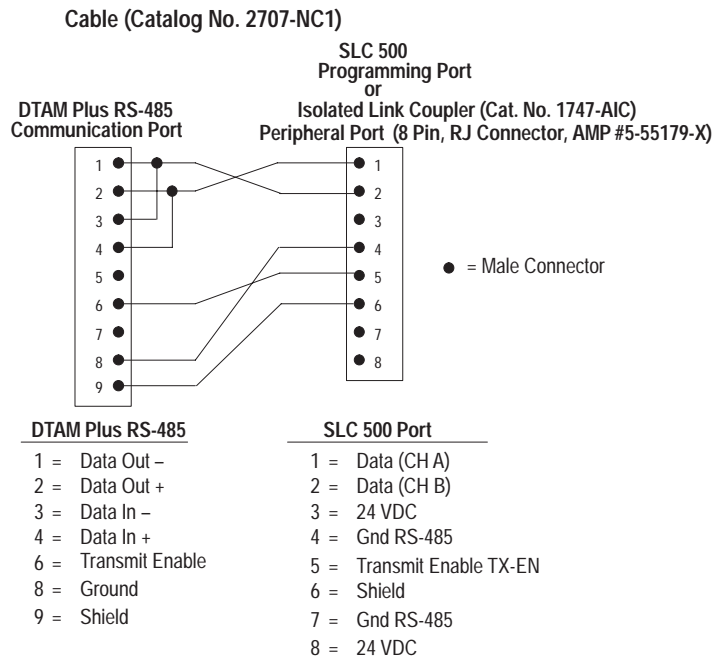
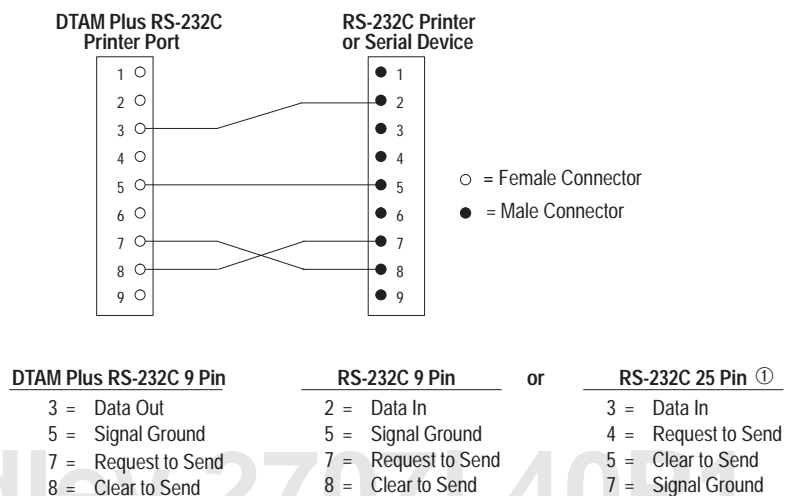


Figure 10 shows the cabling for the optional printer port of the DTAM Plus. Use this port to send data to a printer or serial device such as a large display.

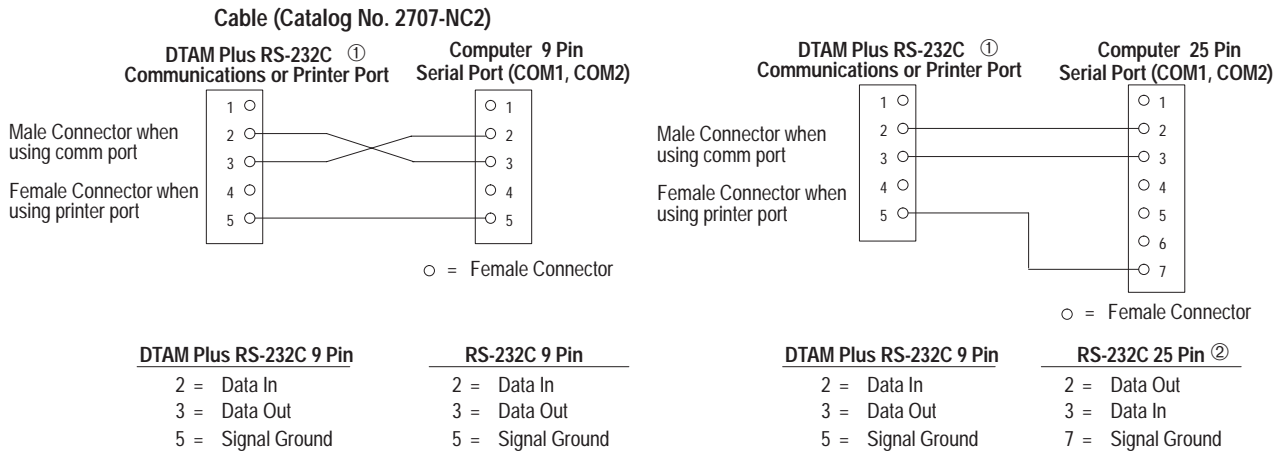
**Figure 10**  
 DTAM Plus RS-232C Printer Port Cable



① Use this pinout if printer or serial device has a 25 pin connector.

Figure 11 shows the cabling requirements for uploading/downloading data between the serial port of a computer and the RS-232C communications or printer port of the DTAM Plus. This cable can be purchased as Catalog No. 2707-NC2.

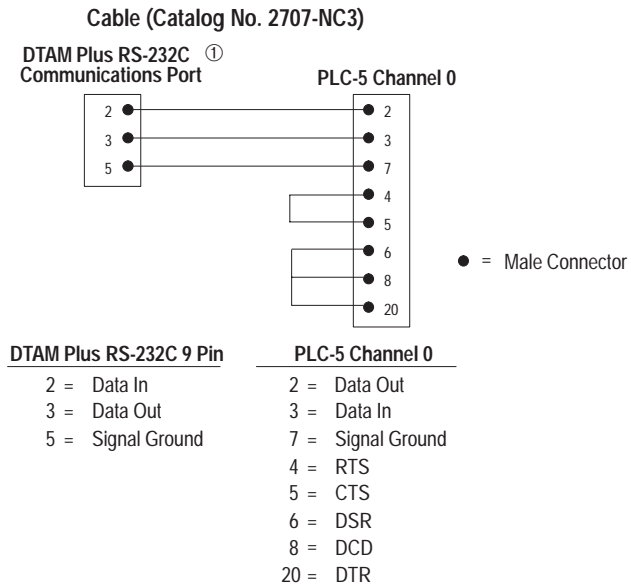
**Figure 11**  
**DTAM Plus RS-232C Communications or Printer Port**  
**Upload/Download Cable**



<sup>①</sup> The communications port of the DTAM Plus must be set to RS 232.  
<sup>②</sup> Use this pinout if computer has a 25 pin connector.

Figure 12 shows the cabling requirements between a PLC-5 and the DTAM Plus when channel 0 of the PLC-5 is configured for RS-232. This cable can be purchased as Catalog No. 2707-NC3.

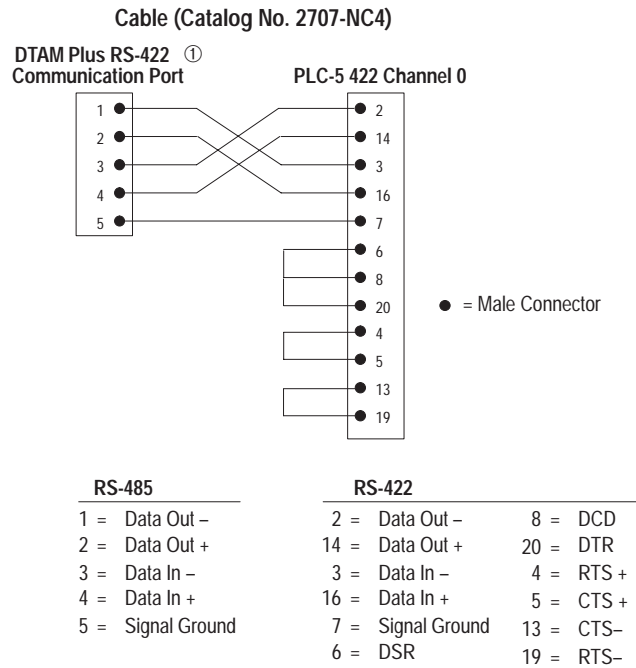
**Figure 12**  
**DTAM Plus to PLC-5 RS-232C DF1 Communications Cable**



<sup>①</sup> The communications port of the DTAM Plus must be set to RS-232.

Figure 13 shows the cabling requirements between a PLC-5 and the DTAM Plus when channel 0 of the PLC-5 is configured for RS-422. This cable can be purchased as Catalog No. 2707-NC4.

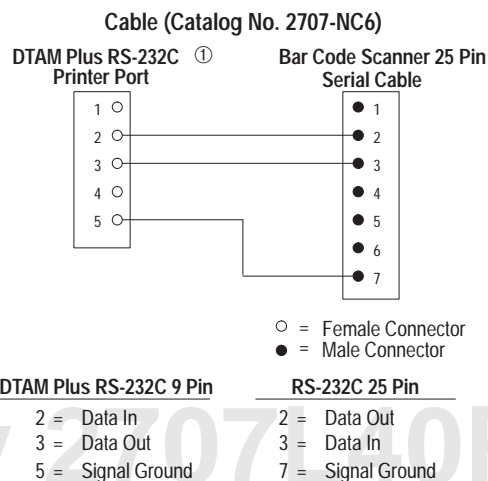
**Figure 13**  
 DTAM Plus to PLC-5 RS-422 DF1 Communications Cable



① The communications port of the DTAM Plus must be set to RS-485.

Figure 14 shows the cable required to connect an ASCII device to the DTAM Plus printer port. Use this cable with Allen-Bradley decoded bar code scanners (Catalog No. 2755-G3-D, -G6-D).

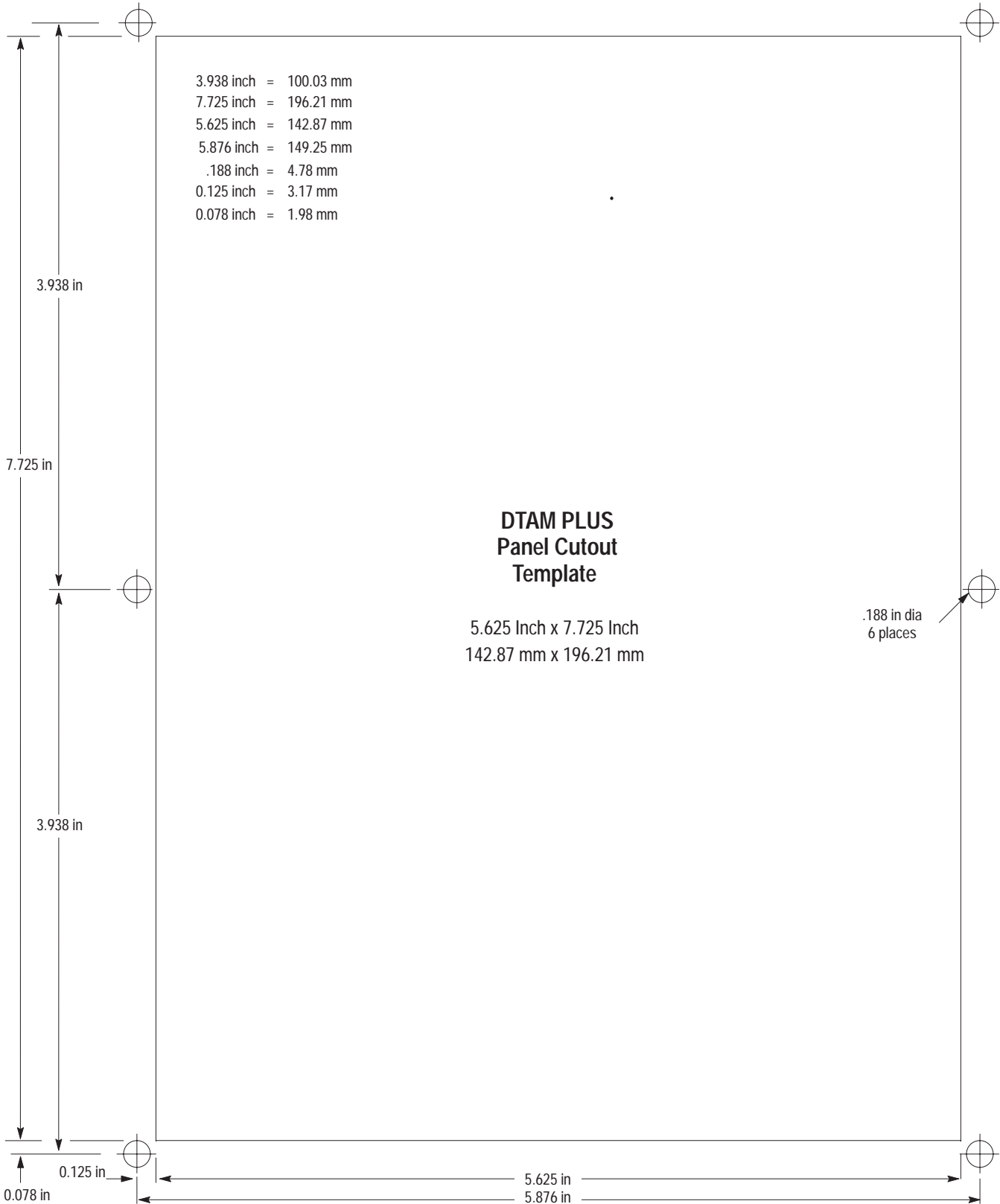
**Figure 14**  
 ASCII Input Cable



① The communications port of the DTAM Plus must be set to RS-232.

## Cutout Template

Below is the panel cutout template for the DTAM Plus.





## DTAM Plus Specifications

### Display

Column and Character	4 lines x 20 characters
Display Technology	
LCD (2707-L versions)	Twisted-nematic type with adjustable LED (yellow) backlighting
VFD (2707-V versions)	Vacuum Fluorescent Display with viewing distance that exceeds 25 feet (7.6 meters)
Backlight Settings for LCD Version (via Keypad)	Four (0,33,66 and 100%)
Contrast Ratio	10:1
Contrast/Brightness Settings (Keypad)	
LCD (2707-L versions)	4 settings
VFD (2707-V versions)	2 settings
Display Size (H x W)	
LCD (2707-L versions)	1.0 x 3.0 in (25.2 x 76.0 mm)
VFD (2707-V versions)	1.3 x 3.9 in (33.0 x 99.0 mm)
Character Size (H x W)	0.19 x 0.12 in (4.75 x 2.95 mm)

### Keypad

Keypad Type	Embossed, sealed membrane
Tactile Feedback	Stainless steel dome
Operation Force	12 oz. ± 3 oz. (340 grams ± 85 grams)
Operational Life	1 million cycles

### Electrical

Communications Port	RS-485 or RS-232C (configurable)
Printer Port (40K memory units)	RS-232C
Serial Communication Distances	
RS-485	4,000 ft (1219 meters) maximum with the Link Coupler (Catalog No. 1747-AIC)
RS-232C	50 ft (15 meters) maximum
RS-422	200 ft (61 meters) maximum to a PLC-5
Remote I/O Communication Distances	
57.6K	10,000 ft (3000 meters) maximum
115.2K	5,000 ft (1500 meters) maximum
230.4K	2,500 ft (750 meters) maximum

### Voltage, Current, Fusing Requirements

Power Supply	Voltage	Current	Fuse
P1	15 - 23V AC, 47 - 440 Hz or 20 - 30V DC	700 mA max.	1 amp
P2	85 - 265V AC, 47 - 440 Hz or 110 - 340V DC	150 mA max.	1/2 amp

### Port Isolation

Communication Port	500V isolation
Printer Port	500V isolation

# Allen-Bradley 2707L40P1

**Product Data**

Bulletin 2707

DTAM Plus Operator Interface

**Environmental**

## Ambient Temperature Rating

## Operating

LCD Display

0 to +45° C (32 to 113° F)

VFD Display

0 to +60° C (32 to 140° F)

## Storage

-20 to +85° C (-4 to 185° F)

## Relative Humidity

5 to 95%, noncondensing

## Agency Rating

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

NEMA Type 4X (2707-V40P2N version only)

UL Listed (File #E140954)

Factory Mutual Class 1 Division 2 listed

Groups A, B, C, D Hazardous Locations

UL tested to meet CSA requirements

**Mechanical**

## Dimensions (Approximate)

## Height

7.6 inch (193.0 mm)

## Width

5.5 inch (139.7 mm)

## Depth

RS-232 / RS 485 Versions

1.8 inch (45.7 mm)

Remote I/O Versions

2.0 inch (50.8 mm)

## Front Panel Size

## Height

8.5 inch (215.9 mm)

## Width

6.5 inch (165.1 mm)

## Weight

All except 2707-V40P2N

2.1 lbs (0.95 kg)

2707-V40P2N

4.6 lbs (2.09 kg)

## LED Indicators

RUN LED

Green

Alarm LED

Red

Function LED

Yellow

# Allen-Bradley 2707L40P1

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