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Datapanel Models 40/45

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Datapanel Models 40/45

Datapanel

Operator Interface Products

Datapanel
40/45, 60/65 & 85

User's Manual

Warnings, Cautions, and Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not

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—

The supplied unit is intended to be an operator interface. It is expected to work with a controller which actually takes any control actions. It is the responsibility of the user to ensure safety of the personnel and property while configuring the system. Proper care must be taken in the controller to validate data as entered from this unit and any action should be taken only if the newly entered data is found to be within the safe limits of the system operations.

It is the responsibility of the user to ensure that the system works in a safe state should this unit or a part thereof fail in any way for any reason. Never use this unit to perform the function of an emergency stop button.

This unit is designed to be a configurable device. It is not designed for any specific application. It is the user's responsibility to ensure that the unit fits the application for which it is going to be used.

Under no circumstances any liability is assumed for consequential damages of any type including but not limited to loss of profits, loss of production, damages to property or personnel, delay in delivery, etc.

The following statements are required to appear for Class I Div 2 Hazardous Locations.

1. EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C, and D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY.

2. WARNING - EXPLOSION HAZARD –SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

3. WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

Preface

This manual describes features, installation, and operation of the following Datapanel OI products: models 40, 45, 60, 65, and 85. It is assumed that you are familiar with the PLC(s) used in your application and with Windows-based configuration.

Content of This Manual

Chapter 1. Introduction: Provides an overview of Datapanel features and capabilities.

Chapter 2. Installing the Hardware: Describes how to install the Datapanels.

Chapter 3. Operation Guide: Provides an overview of configuration procedure and describes operating modes, powerup conditions, controls and indicators, and typical operation scenarios.

Chapter 4. Host Transfer Mode: Describes the use of the Host Transfer menu.

Chapter 5. Specifications: Lists hardware, technical, electrical, and environmental specifications for the Datapanel.

Appendix A. Error Codes: Lists Communications error codes.

Related Publications

GFK-1658   *DataDesigner Software User's Guide*

Contents

Contents

Chapter 1 Introduction

Datapanel operator interface (OI) modules are self-contained, solid state industrial display systems that include their own display screens and keypads. The Datapanel OI connects to your Programmable Logic Controller (PLC) or other intelligent control device through the device's programming or standard communications port. The Datapanel can display pages based on conditions in the PLC and change data in the PLC registers/coils.

A Datapanel OI is an ideal replacement for discrete operator input and annunciation devices. Because of its many configurable options, a Datapanel can be used in applications ranging from simple pushbutton replacement to complex interfaces beyond the capabilities of most small OI products.

Datapanel OIs offer the following features:

- **Controller Communications.** Read and write data to the control equipment via an RS232 serial port.

- **Integrated Keypad.** Includes programmable function keys.

- **Broad Protocol Support.** Numerous protocols supported.

- **Analog and Digital Tag Scaling.** Convert raw data to and from engineering units and add tag name information.

- **Display Real-Time Data.** Provide information on the current state of the plant process.

- **Continuous updates**: All tags updated continuously when page is displayed.

- **Graphic Page Display.** Display static and dynamic text on up to 200 user configured pages per Datapanel. Up to 20 dynamic elements per page may be updated from the controller.

For a summary of features by model, see page 1-4.

System Components

A Datapanel system includes one each of the following:

- Datapanel unit, incorporating an LCD display screen and membrane keypad

- Power connector for Datapanel models 45, 65 and 85

- Installation kit — gasket, two mounting tabs, two M4 (4mm) screws, and four hex nuts

- Operator's Manual (this book)

Although Datapanels are self-contained units, the use of a PC is required to configure the Datapanel. (For details, see "Configuration Software" on page 1-6.)

Model Descriptions

The following table provides a summary of features and capabilities for Datapanel models 40/45 and 60/65, and 85. Chapter 2 provides information on installing the Datapanels, Chapters 3 and 4 provide operational information, and Chapter 5 provides detailed specifications.

Table 1-1. Feature Summary

	Model		
Features	**40/45**	**60/65**	**85**
Maximum display capability	16 char 2 lines	16 char 4 lines	20 char 4 lines
Database size	32K		
Backlight	LED		
Serial ports	Two RS232 ports: one reserved for PC downloads, one reserved for PLC communications.		
Standard software features	Tag Scaling, Text Page display, Read/Write from/to controller, Configurable Function Keys, Downloadable Database and Protocol		

	Model		
Features	**40/45**	**60/65**	**85**
Function keys	6	8	8
Indicators (LED)	2	4	8
Analog tags	100		
Digital tags (2 bits per tag)	100		
Maximum no. of pages/Datapanel	200		
Power supply	40: 5VDC (from PLC) 45: external 24 VDC	60: 5VDC (from PLC) 65: external 24 VDC	85: external 24 VDC

Configuration Software

Configuration of a Datapanel is quick and easy. A PC-based configuration tool is used to build a project, which contains tag definitions, page layouts, messages and function key definitions. The configuration tool, DataDesigner, is used to create a project for the Datapanel. The tool compresses the project into a single database, which is transferred along with the communications protocol to the Datapanel via the reserved PC download port. The Datapanel can then be put online. A single copy of the software tool, which is sold separately, can be used to configure any of the Datapanel Range. The configuration software requires a PC-compatible computer running Windows 95®, Windows 98®, Windows 2000, or Windows NT®.

Minimum Computer Requirements

- Windows 95, Windows 98, Windows 2000, or Windows NT operating system
- 486 DX2/66
- 16 MB RAM
- VGA Color Display
- 20 MB Hard Disk Space

Installing the Hardware

Mounting Datapanels

The Datapanel can be mounted in a panel using the mounting kit provided. The mounting kit contains a gasket, two mounting tabs, two M4 screws, and four hex nuts.

1. Cut an opening in the panel where the Datapanel is to be mounted. Table 2-1 provides cutout dimensions.

Table 2-1. Physical Dimensions and Panel Cutouts

Model	40/45	60/65	85
Datapanel (Bezel Width x Height x Chassis Depth*)			
mm	108 x 60 x 45	96 x 96 x 44	182 x 101 x 37
inches	4.25 x 2.36 x 1.77	3.78 x 3.78 x 1.73	7.17 x 3.98 x 1.46
Panel Cutout (Width x Height)			
mm (±0.3)	92 x 45	92 x 92	162 x 76
inches (±0.12)	3.62 x 1.77	3.62 x 3.62	6.38 x 2.99
Panel thickness			
mm	1.5 to 13mm	1.5 to 15mm	1.5 to 13mm
inches	0.06 to 0.51	0.06 to 0.59	0.06 to 0.51

*Depth of chassis, not including bezel.

2. Place the gasket, which is provided in the mounting kit, on the Datapanel.

3. Thread a hex nut onto each screw. Insert a screw through each mounting tab. Thread a second hex nut onto each screw as shown in Figure 2-1.


Hex nut goes inside mounting tab.
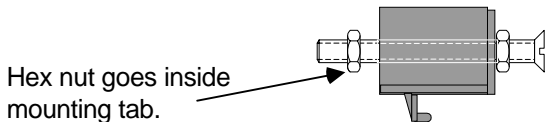
Figure 2-1. Mounting Tab Assembly

4. Insert the Datapanel from the front of the panel into the cutout, as shown in Figure 2-2.

5. Install a mounting tab on each side of the Datapanel.
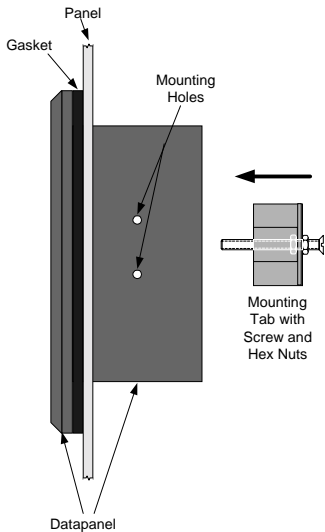
Figure 2-2. Datapanel Mounting, Side View

6. On each side of the Datapanel, use a screwdriver to tighten the screw. The nut will snug up inside the mounting tab, pushing the tab away from the panel, and holding it in place.

Panel

Gasket

Mounting Tab

Using a screwdriver,
tighten the screw to
secure Datapanel to
mounting panel.
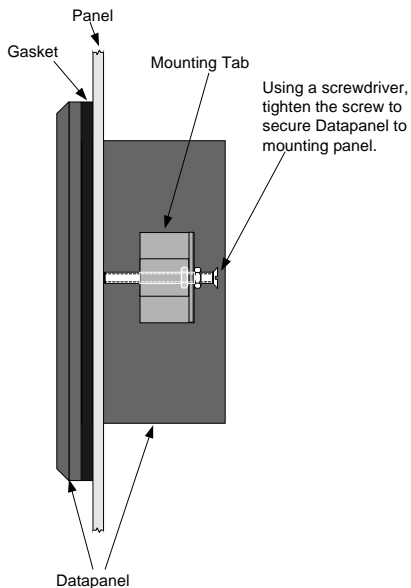
Datapanel

Figure 2-3. Securing Datapanel, Side View

Connectors

Connectors are located on the back of DP40/45 and DP60/65 units. Connectors are located on the bottom of DP85 units.

Power Supply Connections

Models 40 and 60

These models use the 5VDC external power supply provided by the PLC. For PLC power supply specifications, refer to the installation manual for your PLC.

Models 45, 65, and 85

These models use an external 24V power supply. The power supply must provide between 10VDC and 30VDC, and must be capable of sustaining at least 2.5W. A standard three-pin 24VDC input power connector is provided on the Datapanel.

```
┌─────────────────┐
│     Caution     │
└─────────────────┘
```

**Do NOT connect the chassis ground of the
power supply or the OI to the power return
(negative terminal) of the power supply. In
some cases, power supplies have shunts to do
this, if your power supply has the shunt
installed, you MUST remove it.**

Serial Port Connections

The Datapanel supports RS232 operation.

The Datapanel has two serial ports. The port labeled "Serial Port" is
used to transfer data from the configuration software down to the
unit. The port labeled "PLC Port" is used to communicate to the PLC
and to supply power to the unit, in the case of the DP40/60.

Cables

Two cables are required when using the Datapanels.

- The download cable is used when transferring databases or protocols from the configuration software to the Datapanel (see Figure 2-4). The cable enables connection to a standard PC and is supplied with the configuration software. For nonstandard PCs, consult the PC manual to check the pin configuration at the PC end of the cable.

- The controller cable used to connect Datapanels to the controller. As a general guide, the only pin connections required at the Datapanel end are Tx, Rx, Signal, and Ground. Refer to your controller documentation for details of connections at the controller end. (Wiring diagrams are also available in the Protocol help that is part of the configuration software.) This cable is not supplied with the Datapanel.
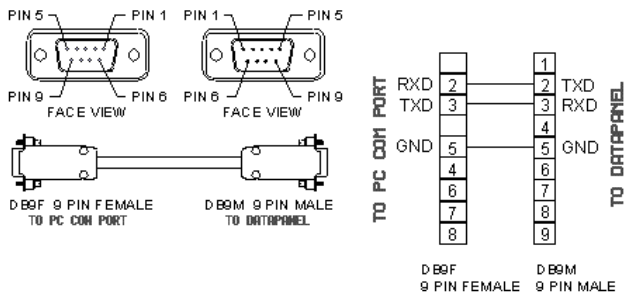
Figure 2-4. Datapanel-PC (Download) Cable

Chapter 3 | *Operation Guide*

This chapter provides the following information:

- Configuring the Datapanel — Overview

- Operating Modes

- Powerup Conditions

- Controls and Indicators

- Typical Operation Scenarios

Configuring the Datapanel — Overview

Each Datapanel unit must be configured using the Windows-based configuration software. The software is easy to use and contains comprehensive online help. (For help, refer to Help menu or press F1.) Each Tool icon in the software has a ToolTip that describes its function.

The following steps briefly describe how to create a project and download the resulting database to the Datapanel.

1. Start the configuration software tool.

2. Start a new project. Select the Datapanel model (DP40/45, DP60/65, or DP85). Select the protocol used to communicate with the PLC in your application.

3. Create the Tags.

   A Tag is a register or coil that is used in your application. A tag name is assigned to each tag and the tag can be referred to by its name subsequently, making it very convenient to use. It

is advised to assign all the registers and coils you will be using in your project ahead of time.

You must use a bit-addressable register as the LED register (DP60/65/85 only).

4. Create graphic pages, including text, tag displays, and function key definitions.

5. If required by your application, use the configuration software to select PLC registers for LED Control (DP60/65/85 only) and Page Change. You can also change COM1 port settings if needed.

6. To assign a function key definition, double click the key you wish to configure. Select the tag on which the key operates and the action.

```
+-------------------+
|     Warning       |
+-------------------+
```

Do not use the function keys for emergency stop applications. For reliable emergency stops, separate switches outside the PLC should be used.

7. Save your project to disk.

8. Transfer (download) the database to the Datapanel.

    To transfer your database, the PC running the configuration software must be connected to the Datapanel using the download cable, and the Datapanel must be in Host Transfer mode. Refer to Chapter 4 for details on using Host Transfer mode.

Operating Modes

Datapanels operate in one of four modes:

- Run — The unit continuously communicates with the PLC to detect conditions for displaying tags, changing graphic pages, and controlling the LEDs on units with configurable LEDs (DP60/65/85 only). When a function key is pressed, the configured action is executed. This is the default mode if system software and a database are present on the Datapanel.

- Edit — Allows in-place editing of tag values that have been configured with an editable attribute. To enter Edit mode, press the Enter key.

- Transfer — Enables transferring databases and protocols from the configuration software. For details about this mode, see Chapter 4. This is the default mode if either database or software are not present. To enter this mode, press F5 to access the Mode menu, then press F6. You can also enter Transfer mode, by starting the Transfer command in the Transfer utility included with the configuration software, then

power cycling the panel. The panel will come up in Host Transfer.

- PLC Status — *Available only for SNP protocol.* Provides access to a System menu, which can be used to view PLC operating information, such as program name, PLC ID, Run/Stop mode, battery status, etc. The operator can clear PLC faults and change PLC time. To enter this mode, press F5 to access the Mode menu, then press F5.

Mode Menu

Pressing F5 accesses a Mode menu with the following selections:

Datapanel Models 40/45

F5	PLC Status (SNP protocol only)
F6	Transfer

Datapanel Models 60/65/85

F1	Exit
F5	PLC Status (SNP protocol only)
F6	Transfer

Page Change communications are disabled when this screen is displayed.

Powerup Conditions

On powerup, if system software and a database are present, the Datapanel enters Run mode and begins normal operation. (The first configured page will be displayed.) If either the system software or database is not loaded on the Datapanel, the unit will default to Transfer mode.

Controls and Indicators

Key Functions

Datapanels incorporate built-in membrane keypads with tactile feedback.

The default key functions are listed in Tables 3-1 through 3-3. Any of the function keys can be assigned other functions during configuration with the configuration software. Function keys can have different functions on different display pages.

The following actions can be assigned to a function key: Write, Jog, Toggle, Ramp, Goto, and Macro. For details, see page 3-21

Note

Reprogramming a function key that has a default operation overrides and replaces the default operation. For example, if Return is reprogrammed for a page, on-screen editing is lost on that page.

LEDs

DP40/45 models have two non-configurable LEDs: Run and Status (Figure 3-1).

On DP60/65 models, function keys F5—F8 have LEDs (Figure 3-2). On DP85 models, all eight function keys have LEDs (Figure 3-3). By default, these LEDs light when the operator presses the function key. They can be configured from the configuration software to be controlled by a controller address instead of the function key.

Table 3-1. Default Key Functions for DP40/45

| Key	Run Mode	Edit Mode
⟵⏎ F6/Enter	Begins edit mode. (The first editable value will be highlighted on screen.)	Starts editing a value. After a value is edited, accepts the new value. Returns to Run mode.
F5	Opens the Mode menu from which you can select PLC Status (for SNP protocol only) or Transfer.	None
▲ F4/Up arrow	Goes to previous page.	Moves between editable values on display. When a value is being edited, increments the value. The longer the key is held the faster the value increments. Value wraps when maximum is reached.

Key	Run Mode	Edit Mode
▽ F3/Down arrow	Goes to next page.	Moves between editable values on display. When a value is being edited, decrements the value. The longer the key is held the faster the value decrements, Value wraps when minimum is reached.
🚫 F1/Escape	None	Escapes from edit mode without modifying the value.
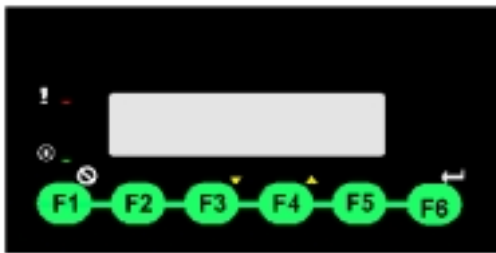
- Six programmable function keys

- Status LED (red): On when a communications failure is detected.

- Power LED (green): On when power is applied.

- Display: 2 lines by 16 characters

Figure 3-1. Datapanel 40/45 Controls and Indicators

Table 3-2. Default Key Functions for DP60/65

Key	Run Mode	Edit Mode
⬅⊐ F4/Enter	Begins Edit mode. (The first editable value will be highlighted on screen.)	Starts editing a value. After a value is edited, accepts the new value. Returns to Run mode.
△ F3/Up arrow	Goes to previous page.	Moves between editable values on display. When a value is being edited, increments the value. The longer the key is held the faster the value increments. Value wraps when maximum is reached.

| Key	Run Mode	Edit Mode
▽ F2/Down arrow	Goes to next page.	Moves between editable values on display. When a value is being edited, decrements the value. The longer the key is held the faster the value decrements, Value wraps when minimum is reached.
F5	Opens the Mode menu from which you can select Exit, PLC Status (for SNP protocol only) or Transfer.	None
🚫 F1/Escape	None	Escapes from edit mode without modifying the value.
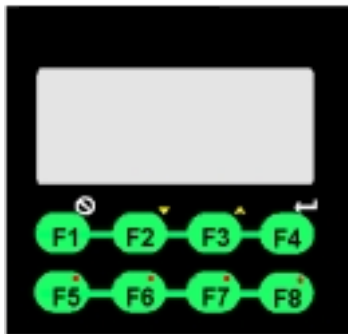
- Eight programmable function keys

- One programmable LED per function key F5 through F8

- Display: 4 lines by 16 characters

Figure 3-2. Datapanel 60/65 Controls and Indicators

Table 3-3. Default Key Functions for DP85

Key	Run Mode	Edit Mode
⬅ Enter	Begins Edit mode. (The first editable value will be highlighted on screen.)	Starts editing a value. After a value is edited, accepts the new value. Cancels Edit mode and returns to Run mode.
F5	Opens the Mode menu from which you can select Exit, PLC Status (for SNP protocol only) or Transfer.	None
▬ F4/ -	None	- (negative)
• F8/ .	None	. (decimal point for floating point entry)
▲ 3/Up arrow	Goes to next page.	Enters value of 3.

Key	Run Mode	Edit Mode
▽ 6/Down arrow	Goes to previous page.	Enters value of 6.
⊠ Delete	None	Deletes a value being edited one character at a time.
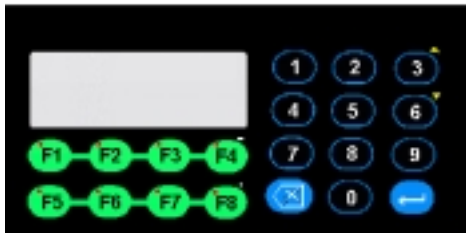
- Eight programmable function keys

- 12 key numeric and navigational keypad

- One programmable LED per function key F1 through F8

- Display: 4 lines by 20 characters

Figure 3-3. Datapanel 85 Controls and Indicators

Typical Operation Scenarios

Routine Processing

For a process that is running routinely, you would likely display a page which provides a summary of process conditions. The page might include constantly updating values of parameters indicating process efficiency (e.g., cans filled per hour, gallons of fruit juice per minute, kW of electricity consumed). Message capability is provided by the ability to configure a page change based on the value read from an address in the controller.

Modifying the Process

An operator can modify the ongoing process in the controller by two methods:

- Using the Datapanel's edit function to directly change a value on a display page

- Using function key operations that are predefined using the configuration software

Selecting a Tag and Entering a Value

The Datapanel's on-screen edit function enables fresh values to be transmitted to any tag displayed that has been configured with the editable attribute set.

To edit a value:

1. Press Enter ⏎, to enter edit mode. The first editable value will be highlighted on the screen.

2. Use the arrow keys to select a different editable value tag. Press Enter ⏎ to begin edit. .

3. To change the value on the DP40/45/60/65, use the UP/DOWN arrow keys. On the DP85, use the numeric keys. (If an invalid value is entered, the number is cleared and the highlighting is positioned to enter another value.)

4. To accept the new value, press the Enter ⏎ key.

   or,

   To escape from edit mode on a DP40/45/60/65 without accepting the new value, press Escape 🚫. On a DP85, press the backspace (delete) key ⌫.

5. To edit another tag, press Enter ⏎.

Function Key Operations

Six operations are available for function keys: Jog, Toggle, Ramp, Write, Macro, and GoTo.

Toggle: (For digital tags only) Pressing the Function key defined for this operation causes digital tag value to toggle between two values. For example, this could be used to switch a valve from on to off.

Ramp: Pressing the Function key defined for the ramp operation will display the current value and allow this value to be modified in increments by pressing the up △ or down ▽ arrow keys. The new value is confirmed by pressing ⏎.

Jog: (For digital tags only) Pressing and holding the Function key defined for the jog operation causes a digital tag value to assume a new state as long as the key is pressed. When the operator releases the F-key, the opposite value will be sent.

Write: Pressing the Function key defined for the write operation will either:

- Write a preconfigured value to the controller.

  or

- Request operator input of a value to write to the controller.

GoTo: Pressing the Function key defined for the GoTo operation will implement a page change. (GoTo is disabled when the Mode menu, PLC Status (SNP only), or Host Transfer screen is displayed.)

Macro: causes a custom-configured operation to be performed. For example, a page change macro would consist of the page number, followed by CR (carriage return), Next Page, or Previous Page.

Viewing and Editing PLC Status

Note

The system menu is available only when the SNP protocol is being used.

In PLC Status mode, a system menu is displayed. You can use the arrow keys to view the screens in sequence. Some screens are informational only. Others provide instructions for performing actions, such as clearing PLC faults.

1. To enter PLC Status mode, press the F5 key to access the Mode menu, then press F5. The System menu will appear.

2. To view the next screen, press the Down ▽ key.

3. To view the previous screen, press the Up △ key.

4. For desired actions, follow instructions presented on screens.

The following information and actions can be accessed via the system menu screens:

Technical Support contact information
Program name
PLC ID
CPU Switch (Run/Stop status)
I/O Overrides status
Battery status
PLC Faults status
Clear Faults
Display Time (time as read from PLC)
Display Date
Change Time
Change Date

Chapter	*Transferring Data*
4	

Host Transfer

To enter this mode, press F5 to access the Mode menu, then press F6. You can also enter Transfer mode, by starting the GoToTransfer command (from Special Menu) in the Transfer utility included with the configuration software, then power cycling the panel. The panel will come up in Host Transfer.

Refer to the configuration software user's manual for instructions on using the Transfer utility.

When the transfer is complete, press a key to exit from the Host Transfer mode.

Note

If either the system software or database is not
loaded on the Datapanel, the unit will default to
Transfer mode on powerup.
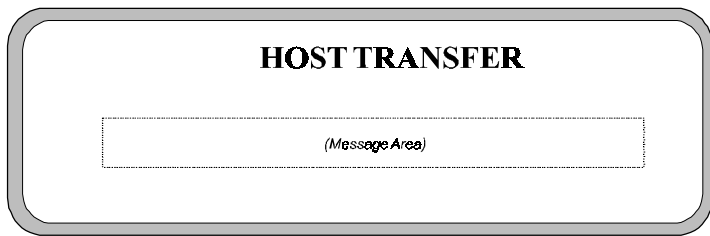
Display for Host Transfer

Figure 4-1. Host Transfer Display

Transfer Messages

The actual transfer of the data is under the control of the PC. The following messages will be displayed in the message area of the display:

When downloading a Protocol:

Loading Communications Protocol ...
and on the same line when complete, **Protocol installed**.

When downloading a Database:

Loading Database ...
and on the same line when complete, **Database installed**.

When uploading a Database:

Uploading Database ...
and on the same line when complete, **Database transferred**.

When a communications error occurs:

Transfer Failed

Specifications

Physical Specifications

Table 5-1. Weight and Dimensions

Model	40/45	60/65	85
Datapanel (Bezel Width x Height x Chassis Depth*)			
mm	108 x 60 x 44	96 x 96 x 40	182 x 101 x 37
inches	4.25 x 2.36 x 1.73	3.78 x 3.78 x 1.57	7.17 x 3.98 x 1.46
Panel Cutout (Width x Height)			
mm (±0.3)	92 x 45	92 x 92	162 x 76
inches (±0.12)	3.62 x 1.77	3.62 x 3.62	6.38 x 2.99
Weight			
Kg	0.68	0.68	0.68
lb.	1.5	1.5	1.5

*Depth of chassis, not including bezel.

Table 5-2. Technical Specifications

Features	40/45/60/65/85
Processor	80c32
Memory, Flash	128KB Flash
Memory, SRAM or DRAM	2K SRAM
Database Size	32K
Serial Ports	Two RS232 ports

Power Requirements

The 40 and 60 models use the 5VDC external power supply provided by the PLC. For PLC power supply specifications, refer to the installation manual for your PLC. The 45, 65, and 85 models require an external 24V power supply

The steady state current consumption of the Datapanel is dependent on the supply voltage. At power-up, the Datapanel briefly requires a larger current to operate correctly. To ensure correct power-up, the external power supply must be able to provide power as listed in table 5-3.

Table 5-3. Power Requirements

Model	Input Power Requirement
40	5.0V at 95mA
60	5.0V at 150mA
45, 65, and 85	10-30 VDC, 3.0W

Pinouts

Pinouts for the Connect PLC port, located on the back of the
DP40/45/60/65 units and the bottom of the DP85, are listed in Table
5-4.

DB9 Male
Connector

DB9 Female
Connector
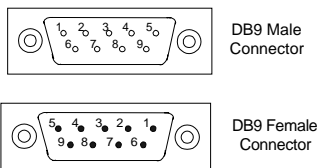
Figure 5-1. DB9 Connectors

Table 5-4. Connect PLC Port Pinouts

Models 40/60 Pinouts (9-pin male)		Models 45/65/85 Pinouts (9-pin female)	
Pin	**Function**	**Pin**	**Function**
1	-	1	-
2	-	2	TX (out)
3	TX (out)	3	RX (in)
4	-	4	-
5	GND	5	GND
6	VCC (in)*	6	-
7	-	7	-
8	RX (in)	8	-
9	-	9	-

---

* See Table 5-3, Power Requirements

The pinout for the PC port is the same for models 40/45, 60/65, and 85.

Table 5-5. PC Port Pinouts

(9-pin female)	
Pin	**Function**
1	-
2	TX (out)
3	RX (in)
4	-
5	GND
6	-
7	-
8	-
9	-

Environmental Conformity

IP 6X & IP X5 as per IEC 529 Category I, when properly installed in an enclosure.

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Table 5-6. Test Specifications

Operating Temperature	0 to +50°C
Storage Temperature	-25 to +80°C
Humidity	10 to 90% non-condensing
Immunity to ESD	Level 3 as per IEC1000-4-2
Immunity to transients	Level 3 as per IEC1000-4-4
Radiated susceptibility	Level 3 as per IEC1000-4-3
Emissions	EN55011 CISPR A

Error Codes

Standard Comms Error Codes

The databases for these Datapanel models always contain a preconfigured analog tag, COMMS_ERR, which can be put on a page to display the error codes.

101	Timeout
102	Checksum Received Error
103	Bad Character Received Format Error
104	Bad Message Framing Error
105	Bad Message Format Received
106	NAK Response Received
107	Comms Block Format Error
108	Invalid Command

Controller Errors

If any errors are displayed which are not listed in the above tables, please refer to the configuration software Help system or to the PLC documentation.

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