



## Dataliner Message Displays DL50 Firmware Update

(Catalog No. 2706-NR4)

### Overview

This document provides instructions on how to update the firmware in DL50 Dataliner Displays (Catalog No. 2706-F11J, -F11JC, -F21J or -F21JC).

The firmware update is provided on disk and downloaded from a computer to the DL50 using an RS-232 or RS-485 connection.

Separate sections show:

- Cabling connections
- How to install firmware update on a personal computer
- How to download firmware from a computer to DL50 display(s)

### DL50 Firmware Update Kit

The DL50 Firmware Update Kit (Catalog No. 2706-NR4) contains:

- One 3 1/2 inch installation disk
- Release Notes

### Equipment Needed

To install and download the firmware update you need:

- IBM compatible computer with
  - DOS 5.0 or higher
  - Serial port on Com1 or Com2
  - 640K RAM
  - One 3 1/2 inch disk drive
- RS-232 communications cable if downloading firmware to a single DL50 using an RS-232 connection.
- RS-232 to RS-485 converter if downloading firmware to multiple DL50 Dataliners on an RS-485 link. Recommended converters are:
  - Model LD485A-MP from Black Box Corporation

### Related Publications

For more information on the DL50 Dataliner Displays refer to User Manual, Publication No. 2706-815.

## Cabling Connections

This section shows the cabling requirements for downloading the firmware update to DL50 displays using RS-232 or RS-485 connections.

### RS-232 Connections

Figure 1 shows the RS-232 connections between the RS-232 port of the DL50 and the serial communication port of a computer. Use this connection to download the firmware update to a single DL50 display.

Figure 1  
RS-232 Connections

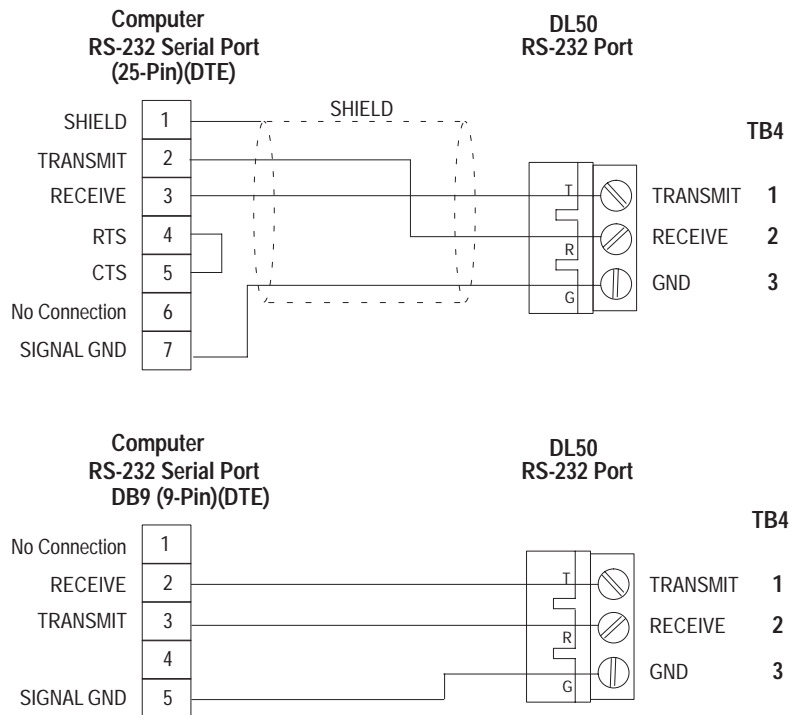
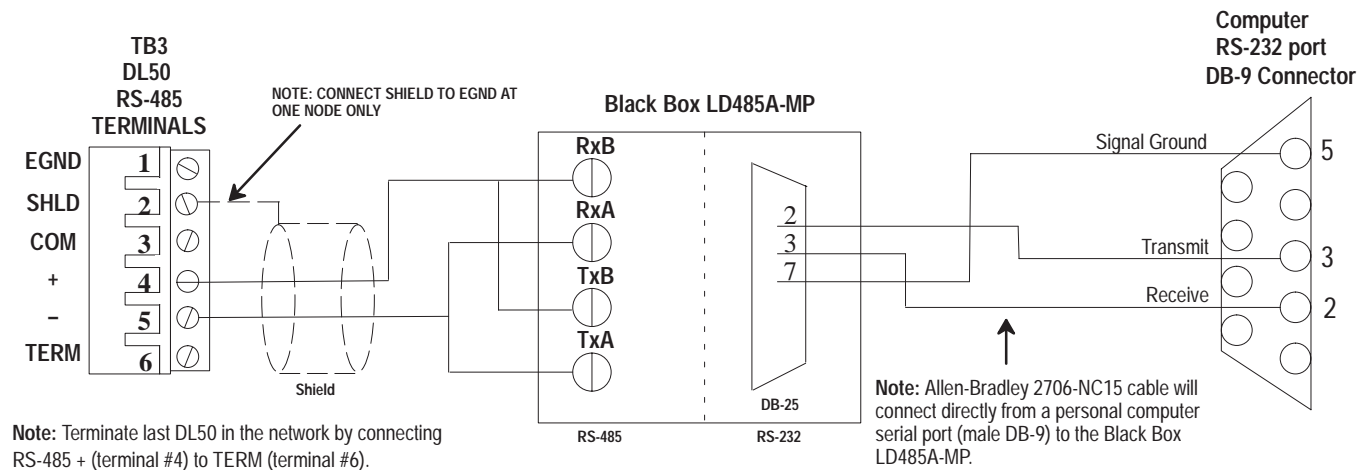


Figure 2  
Personal Computer to DL50 RS-485 Port(s)



### Black Box LD485A-MP Configuration

Configure the Black Box (LD485A-MP) converter as follows:

1. Remove cover and set the converter as a DCE device using the XW1A jumper. This is a 16-pin DIP jumper.
2. Short TxA and RxA on TB1 of the converter.
3. Short TxB and RxB on TB1 of the converter.
4. Set jumper W8 to half-duplex operation.
5. Set jumper W9 for a 50 millisecond RTS/CTS delay time.
6. Set jumper W15 to B-C for data enabled operation.
7. Set jumper W16 to A-B for 5 millisecond turnaround delay.
8. Set jumper W17 to A for 1 millisecond driver delay.
9. Set jumper W18 to A-B for DTR enabled driver.
10. Set switch S2 to the unterminated position.
11. Replace cover.
12. Set Normal/Loopback switch on front panel to Normal.



**ATTENTION:** The two jumpers to short TxA to RxA and TxB to RxB are **essential** for converter function. See steps 2 and 3 above, and Figure 2.

## Installing Firmware on Personal Computer

This section shows how to install the update program on a computer with 1 hard drive and 1 floppy drive. The firmware is supplied on a 3 1/2 inch disk.

The installation copies the following three files to disk:

DL50.EXE	Firmware update program
DL50.HEX	Data file for update
READ.ME	Text file detailing instructions for the update

The following files are created during a firmware update:

DL50ADDR.LST	Contains addresses of DL50 displays to receive update
ERR.LOG	Logs errors that occur during the firmware update

The prompts and responses below will be identical or similar to what you see on your computer display. The installation creates a DL50 subdirectory into which files are copied and where the update program is run.

### To install the firmware:

1. Create a DL50 subdirectory on the hard drive.

```
C:\> MD DL50 [Enter]
C:\>
```

2. Move to the new DL50 subdirectory.

```
C:\> CD DL50 [Enter]
C:\DL50>
```

3. Insert the DL50 installation disk into the floppy drive (A or B).

4. Copy files from the installation disk into the DL50 subdirectory.

```
C:\DL50> COPY A:.* [Enter]
A:DL50.EXE
A:DL50.HEX
A:READ.ME
          3 File(s) copied
```

```
C:\DL50>
```

5. Remove the installation disk from the drive and store in a safe place.

## Downloading Firmware to DL50 Display(s)

This section shows how to run the update program on your computer. During the update you will configure the serial port of your computer, identify the DL50 displays to receive the update, and download the firmware.

To run the update program, follow the steps below.

1. Make sure you are in the DL50 subdirectory.

```
C:\DL50>
```

2. Type **DL50** and press [Enter] to run the firmware update program.

```
C:\DL50> DL50 [Enter]
```

The startup screen appears showing the version number and release date of the firmware.



3. Press any key to continue and open the Main Menu.



- [↓] [↑] Moves highlight bar down or up.
- [Enter] Selects highlighted option.
- [Esc] Moves highlight to *Exit to DOS*.

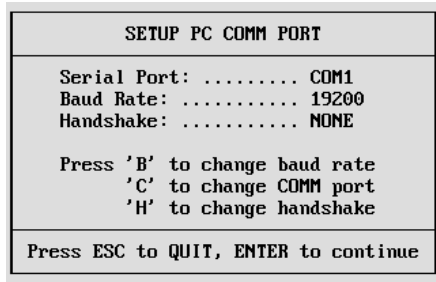
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The *Port/Programmer Setup* option is highlighted.

### Configuring Serial Port of Computer

- Press [Enter] to select *Port/Programmer Setup* from the Main Menu.

The *Setup PC COMM Port* window appears.



This window sets communication parameters used to download the firmware to DL50 displays. The parameters are:

Parameter	Valid Settings
Serial Port	COM1 or COM2
Baud Rate	300, 1200, 9600, 19200
Handshake	None or Hardware

- Press [B] until the correct Baud Rate displays. The baud rate must match the baud rate of the DL50 displays.

The table below shows how long it takes to upgrade one DL50 display at selected baud rates.

**Note:** If updating via RS-485 link and your Black Box LD485A-MP converter is data enabled, your DL50 and program baud rates must be set to 9600 or 19200.

Baud Rate	Update Time
300	1 hour 20 minutes
1200	18 minutes
9600	6 minutes
19200	4 minutes

- Press [C] to toggle the Serial Port between *COM1* and *COM2*.
- Press [H] to toggle the Handshake setting between *None* and *Hardware*.

Select *None* if using an RS-232 connection or if the RS-232 to RS-485 converter box does not require hardware handshake. The Converter Box II from Adaptive Micro Systems does not require any handshake.

Select *Hardware* if the RS-232 to RS-485 converter box requires hardware handshake. The LD485A-MP converter from Black Box Corporation does require hardware handshake.

**Note:** Black Box LD485A-MP converter set up as listed does not require hardware handshake.

8. Press [Enter] to accept settings.

### Identifying DL50 Displays to Receive Firmware Update

*The file DL50ADDR.LST is created when you run the DL50 program.*

The *Setup DL50 File Paths* window opens. This window displays the directory path for the files DL50.HEX and DL50ADDR.LST. Normally, these files are stored in the same directory as DL50.EXE.

SETUP DL50 FILE PATHS
1. DL50.HEX Directory: C:\DL50\
2. DL50ADDR.LST Directory: C:\DL50\
1=Change DATA dir, 2=Change LIST dir, ESC=Abort, ENTER=Continue

9. Press [Enter] to accept the file paths shown.

To change the directory path for either file, type 1 or 2, enter the correct path, and press [Enter].

The program initializes all DL50 displays on the link. Each display then shows its slave address and sub-address on the link

```
Slave Addr:    0001
Sub-Addr:     10102
```

followed by the message:

```
PROGRAMMING MODE
Waiting for host . . .
```

The *Initializing DL50 Displays* window shows the following message:

INITIALIZING DL50 DISPLAYS
At this point, all DL50s on the link should be displaying their addresses. Record the slave and sub-address of each display; these will be used in the 'Setup DL50 Addresses' screen. Retry if necessary so that ALL DL50s show their addresses.
R=Retry, ESC=ABORT, ENTER=continue

*If a DL50 does not display address information, press [R] to retry. If that doesn't work, remove power from the display. The baud rate of each display must match that of your computer's serial port.*

10. Record the address and sub-address of each DL50 on the link to update the file DL50ADDR.LST in the next step.

**Note:** Only one DL50 address appears on an RS-232 link.

**Release Notes**

Dataliner Message Displays  
DL50 Firmware Update

11. Press [Enter] to open the *Address List* window. The fields in the first line are highlighted.

Index	Addr	Sub-Addr	Update?
1	■	XXXXX	NO
2		XXXXX	NO
3		XXXXX	NO
4		XXXXX	NO
5		XXXXX	NO
6		XXXXX	NO
7		XXXXX	NO
8		XXXXX	NO
9		XXXXX	NO
10		XXXXX	NO
11		XXXXX	NO
12		XXXXX	NO
13		XXXXX	NO
14		XXXXX	NO
15		XXXXX	NO

E=Edit, F1=Help, ESC=Abort, ENTER=Done

Press [F1] for help on how to enter and edit data in this window.

12. Using the information recorded in step 10, enter the following data for each DL50 on the link starting with Index 1:
  - Slave address (1 - 255) in the *Addr* field and press [Enter]
  - Sub-address in the *Sub-Addr* field and press [Enter]
  - Toggle *Update?* field to *Yes* if the DL50 is to receive the firmware update. Press [SpaceBar] to toggle setting from *No* to *Yes* and press [Enter].

Use the [↓] arrow key to move to the next line.

13. Press [Ctrl][S] to save changes to address list. This prompt appears:

Save to DL50ADDR.LST? (Y/N)

Enter [Y] to save addresses to the file DL50ADDR.LST. This file identifies which DL50 displays are to receive the firmware update. As the addresses are saved this message appears:

Saving DL50 addresses to DL50ADDR.LST. . .

14. Press [Enter] to return to the Main Menu.

If the addresses weren't saved, you will be prompted to do so before returning to the Main Menu.



## Downloading Firmware to DL50 Displays

15. Select *Update DL50 Firmware* from the Main Menu and press [Enter].

- [↓] [↑] Moves highlight bar down or up.
- [Enter] Selects highlighted option.
- [Esc] Moves highlight to *Exit to DOS*.



The firmware update begins. The *Programming DL50 Status* window opens showing the following details as each DL50 is updated.

```

Updating firmware of DL50 at address: . . . . . 1
Sub-address of DL50: . . . . . 10102
No. of Successful Updates: . . . . . 0
No. of Failures: . . . . . 0
Serial Port on PC: . . . . . COM1
Serial Port Baud Rate: . . . . . 9600
    
```

The bottom of the screen displays the progress of the download.

**Note:** If errors occur, the *Error Status* window opens. Errors are also written to the file ERR.LOG. Press any key to return to the Main Menu.

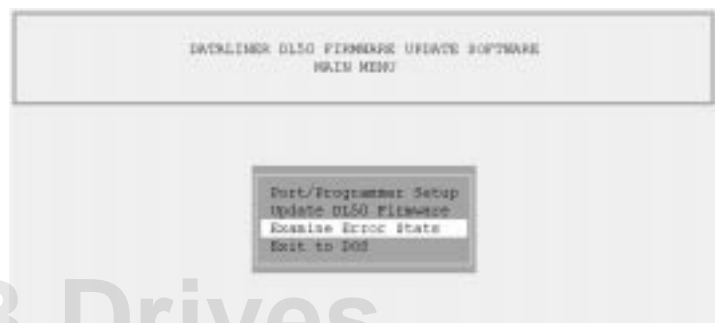
When the download is complete, the *Reset DL50 Displays* window opens showing the status of each DL50 as it is reset.

16. Verify that each DL50 was reset. Each display should be blank except for the status LEDs.

If necessary, press [R] to retry or press [Enter] to return to the *Programming DL50 Status* screen.

17. Select *Examine Error Stats* from Main Menu to view the ERR.LOG file.

- [↓] [↑] Moves highlight bar down or up.
- [Enter] Selects highlighted option.
- [Esc] Moves highlight to *Exit to DOS*.



18. Select *Exit to DOS* to exit the Main Menu and return to DOS.

## Troubleshooting Tips

This section lists common problems and causes that may occur during a firmware update.

**Problem:** DL50 display does not respond on RS-232 link.

**Cause:** Incorrect cable or incorrect baud rate.

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**Problem:** DL50 display does not show slave address and/or sub-address in *Initializing DL50 Displays* window (step 9).

**Cause:** Incorrect baud rate. Incorrect address.

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**Problem:** The firmware was not successfully downloaded to one or more of the DL50 displays on the link.

**Cause:** Faulty Boards. Try downloading the firmware again. If problem continues, follow the diagnostic instructions in the DL50 User Manual, Publication No. 2706-815.

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**Notes:**

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