

Production Board

User Manual

Title Page

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Publication details:

Title: Production Board

Issue: 1

Issue Date: 29-Jun-17

Part Number: DD10858

Produced by:

Product Support Department

Data Display Ltd

Deerpark Industrial Estate

Ennistymon, Co. Clare

Ireland

Printed in Ireland

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1. Introduction

This document describes the installation and operation of the Production Board display system. The system is a PC based application used for monitoring energy usage.

2. Hardware Installation

2.1. Unpacking

Carefully remove the items from their package and store the packaging safely. After unpacking, inspect the contents for any damage that may have occurred during shipment. In the event of damage, refer to the Return of Equipment procedure section of this manual.

2.2. System Configuration

Mount the board and transmitter securely. Connect the cables as shown in the Figure below.

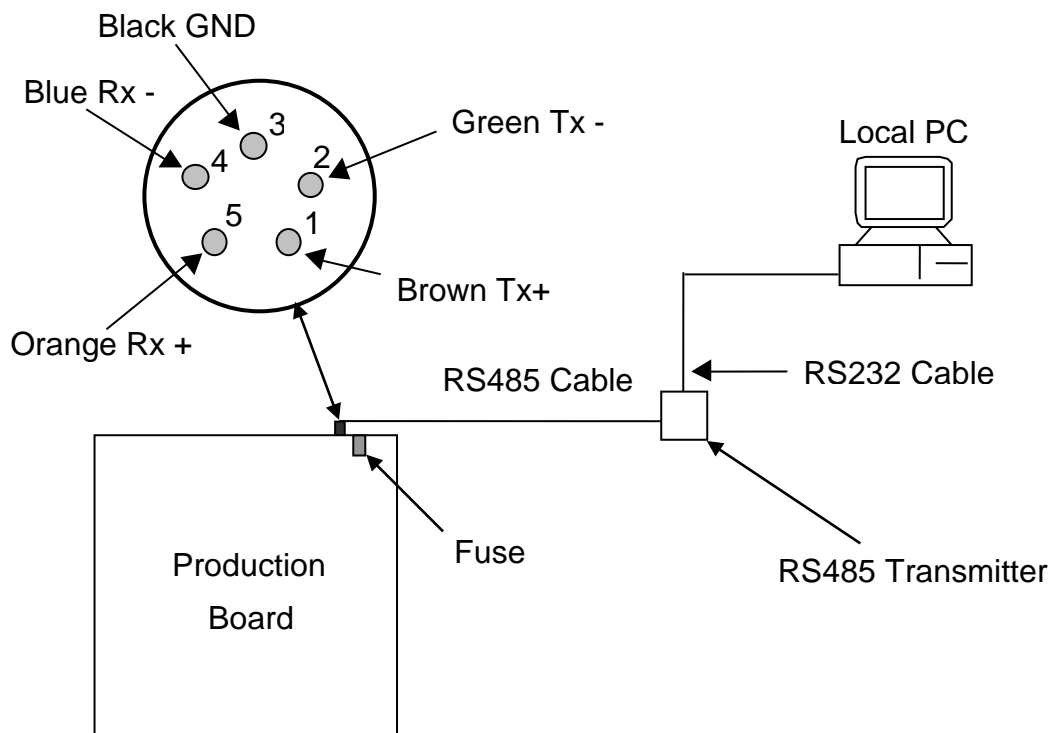


Figure 1 – System Configuration with a Typical 5 Pin Maplin Connection.

3. Operating Instructions

3.1. General

The production board has one date and four text lines. The current date is permanently displayed on the top right-hand corner of the display. Energy Usage data is displayed on Lines 1, 2 and 3 while Line 4 is a normal 20 character scrolling dataline for general messages.

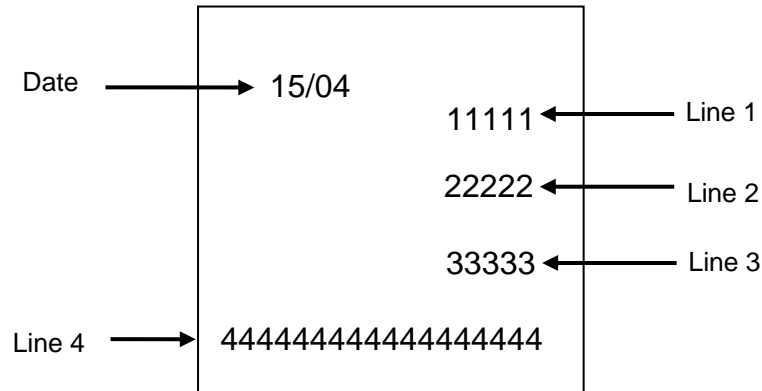


Figure 2 – Production Board.

3.2. Displaying Text

The address of each line is set for the Date and Lines 1, 2 and 3 at **21** and the address for Line 4 is **01**. To display text on individual lines, enter the protocol syntax as shown in Table 1. To send text to Line 4, refer to the Serial Protocols For Data Line And Biline Displays Ver D2.0 section. The character '0' in the syntax is the numeric zero.

To add text to	Enter the syntax
Line 1	<0F><21><0E><02><20><11111><03><09>
Line 2	<0F><21><0E><02><25><22222><03><09>
Line 3	<0F><21><0E><02><2A><33333><03><09>

Table 1 – To add text to a line on the board.

The protocol syntax to send a page of text to Lines 1, 2 and 3 is shown in Table 2.

To add text to	Enter the Syntax
Lines 1, 2 and 3	<0F><21><0E><02><20>111112222233333> <03><09>

Table 2 – To add text to Lines 1, 2 and 3.

3.3. Date

The current date is permanently displayed on the board. An example of the protocol syntax to set the date on the board is shown in the table below.

To	Enter the Syntax
Set the current date (Example 15/04)	<0F><21><04>9,9,0,4,1,5,4,<35><03><09>

Table 3 – To set the current date.

Day of the week
e.g. 1 = Monday
2 = Tuesday etc

3.4. Fault Detection

Fault	Probable Cause	Action
Message is not displayed	The display is not switched on	Check that power leads are connected
Part of Message is not displayed	LEDs are defective	Replace defective LEDs

Table 4 – Fault Detection.

4. Maintenance

Warning: Disconnect the power supply before you remove any display panels. Make sure work area is clean and clear of tools and miscellaneous items of equipment after maintenance.

4.1. Maintenance Instructions

4.1.1. Preventative Maintenance

Inspect the display for defects before each operation. Do a visual check for the following:

- Damaged or dirty Lens
- Defective LEDs

4.1.2. Corrective Maintenance

Replacing a defective LED:

1. Remove the side bracket and lens of the display unit
2. Loosen the attaching screws on the display panel
3. Disconnect wiring and remove the display panel
4. Remove solder from the rear of the defective LED
5. Replace the LED
6. Apply solder and wait to dry
7. Connect the wiring and attach the display panel
8. Slide in the lens and attach the side bracket.

Replacing a defective Logic Board:

1. Remove the side bracket and lens of the display unit
2. Loosen the attaching screws on the display panel
3. Disconnect wiring and remove the display panel
4. Remove the logic board by unscrewing the attaching nuts
5. Replace the logic board and connect all wiring
6. Slide in the lens and attach the side bracket.

Replacing a defective Fuse:

1. Open the Fuse holder at the side of the display
2. Replace the Fuse
3. Close the Fuse Holder.

Clean the display with a damp cloth and make sure the unit is watertight after all maintenance.

4.1.3. Special Measures following a Stoppage

If the display is out of service for a long period of time, carefully remove the display and store it in a cool dry place.

4.2. Handling Equipment

- One working platform
- Standard tool kit

4.3. Special Tools

There are no special tools required.

4.4. Spare Parts

For spare parts, contact your nearest Data Display Customer Service Department. Make sure to quote the Data Display No. in the Product Specifications section of this Manual and the Serial No of the display.

4.5. Return of Equipment

Follow the procedures listed below when returning a display:

1. Disconnect all cables and carefully remove the display from the mounting
2. Pack the display in the original packing.
3. If the original container is not available, pack the display in a wooden carton. Use cardboard and polystyrene wedges to protect and cushion the display.
4. Mark carton(s) "THIS SIDE UP" , "THIS SIDE DOWN" and "FRAGILE" where appropriate.
5. Make sure to include with the display the following information:

NAME

ADDRESS

TELEPHONE NUMBER

SERIAL NUMBER OF DISPLAY

DESCRIPTION OF THE PROBLEM

(A short description is sufficient)

Contact your nearest Data Display Customer Service Department and a suitable collection date and time will be arranged.

5. Serial Protocols For Dataline And Biline Displays

5.1. General Protocols

The following protocols detail how to avail of the multiple features for multiple pages in either system displays or a network of units.

To	Syntax	Comments
Reset a display	\sqy	This command clears all the memory in the display selected. Wait for two seconds after each command.
Address one display	\ann\\	Where nn = address of the display, e.g. 01.
Address all displays	\a\\	This command sets the address of all the displays.
Back up all the text	\sb	This command backs-up the text from the limit to the PC.

Table 5 – To reset and address the display.

5.2. Time and Date Protocols

To	Enter the syntax
Set the hour	\st109 (9.00 am)
Set the minute	\st235 (9.35 am)
Set the second	\st345 (9.35.45 am)
Set the day of the week	\sd0n (where n = the weekday number 1 to 7, Monday = 1)
Set the date	\sd128 (28 th)
Set the month	\sd201 (January)
Set the year	\sd399 (1999)

Table 6 – To set the time and date.

To	Enter the syntax	Example
Display the time in HH:MM:SS format	\t109:15:37	9:15:37
Display the time in HH:MM format	\t209:15	9:15
Display the time in 00.0° C format	\t3	Time and temperature alternates
Display the time in 00° C format	\t4	Time and temperature alternates
Display the date in DD/MM/YY format	\d128/01/99	28/01/99
Display the date in DD/Month/YY format	\d128/01/99	28/January/99
Display the day	\d3	Thursday
Display the Week No.	\d4	5

Table 7 – To display the time and date.

5.3. Edit Commands

A display can contain a maximum of 99 text pages with up to 500 characters on some pages.

To	Enter the syntax
Select a page number	\vnn (where nn = page number 01 to 99)
Clear the text and start the edit session	\q
End the edit session	\e
Send the page to the display	\r

Table 8 – To select and clear a page.

Note: You must clear a page before you begin to edit.

5.4. Fonts

There is a selection of font types, colours and styles available for each display. The Multi-Colour Display and Biline Display have nine settings and the Single Colour Display has four settings. Refer to the tables below for details of the font type and style for each display.

Single Colour	Multi Colour	Biline	Syntax
Normal Font	Normal Amber	12 x 16 Font	\z1
Wide Font	Normal Green	6 x 7 Top Line Font	\z2
Compressed	Normal Red	6 x 14 Font	\z3
Bold	Wide Amber	6 x 7 Bottom line	\z4
Not Applicable	Wide Green	6 x 14 Narrow Font	\z5
Not Applicable	Wide Red	12 x 7 Top Line	\z6
Not Applicable	Compressed Amber	12 x 14 Font	\z7
Not Applicable	Compressed Green	12 x 7 Bottom Line	\z8
Not Applicable	Compressed Red	12 x 14 Narrow Flint	\z9

Table 9 – To change the font type, style and colour.

5.5. Graphics

The use of graphics will add animation to the display.

Graphic	Syntax to display
User graphic	\g1
Horse	\g2
Pacman	\g3
Car	\g4
Train	\g5
Boat	\g6
Plane	\g7
Phone	\g8
+ (plus sign)	\g9

Table 10 – To add graphics to the display.

5.6. Special Effects

The scrolling up and down and the flashing effects will not operate on displays that are more than 20 characters wide. It is not necessary to enter the 'end the effect' syntax after you have entered the 'start the effect' syntax. Use the variable effect to get the full selection of effects to operate randomly.

Effect	Start the effect	End the effect
Scrolling to the left	\rl	
Scrolling to the right	\rr	
Flashing	\fy	\fn
Scrolling up	\xu	\cu
Scrolling down	\xd	\cd
Lamp	\xl	\cl
Dim	\xm	\cm
Variable	\xv	\cv
Background	\xb	\cb
Wipe	\xw	\cw
Jump	\xj	
Shoot	\xs	
Pause	\cp	
Freeze	\cf	

Table 11 – To add special effects to the display.

5.7. Time Text

This facility displays a page at a specific time or many pages at different time intervals. The main elements of this facility are:

- start date and time
- stop date and time
- day number to start (1-7)
- day number to stop
- Goto function (the next page to be displayed)

Table 12 shows three examples of Time Text and the corresponding syntax. The syntax is entered after the edit session is finished. As each Time Text syntax must contain 20 bytes, insert an asterisk (*) in place of all null and void bytes.

To	Enter the syntax
Display text from 1 May to 30 June	leap0105****3006*****\r
Display text from 6.00pm, 1 May to 00.30am, 2 May and then display page 56	leap0105180002050030**56\r
Display text Monday to Friday between 9.00am and 17.00pm	leap****0900****170015**\r

Table 12 – To add Time Text to the display.

6. Product Specifications

DATA DISPLAY No. - DD10858

EPROM - NORTEL.OBJ

PROTOCOL - DUMB MODE, Ver 1.0
- D2.0

BAUD RATE - 9600

DATA FORMAT - 8 bit, 1 stop bit, no parity

ADDRESSING -

P103	DIP	P101
Yes	No	No

CHARACTER SET - Extended ASCII set

FUSE VALUE - 10 Amp

DIMENSIONS (LxHxD) - 1000mm x 1000mm x 75mm