

# Production Board (ESB TARBERT) User Manual

## *Title Page*

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## Table of Contents

<b>1. INTRODUCTION</b> .....	<b>3</b>
1.1. SCOPE .....	3
1.2. PURPOSE .....	3
1.3. SYSTEM.....	3
<b>2. INSTALLATION</b> .....	<b>4</b>
2.1. UNPACKING.....	4
2.2. HARDWARE.....	4
2.3. SOFTWARE .....	5
<b>3. ESB SDS SOFTWARE</b> .....	<b>6</b>
3.1. GETTING STARTED .....	6
3.2. THE USER INTERFACE .....	7
3.3. MESSAGE EDITOR FOR DATALINE .....	8
<b>4. SYSTEM WIRING</b> .....	<b>9</b>
4.1. POWER SUPPLY .....	9
4.2. POWER SUPPLY UNITS.....	9
4.3. LOGIC BOARDS 2000 AND 2001 .....	10
4.4. SERIAL WIRING .....	11
<b>5. MAINTENANCE</b> .....	<b>12</b>
5.1. MAINTENANCE INSTRUCTIONS .....	12
5.1.1. Preventative Maintenance.....	12
5.1.2. Cleaning the Display.....	12
5.1.3. Corrective Maintenance .....	12
5.1.4. Special Measures following a Stoppage.....	13
5.2. HANDLING EQUIPMENT .....	13
5.3. SPECIAL TOOLS .....	13
5.4. SPARE PARTS .....	13
<b>6. PRODUCT SPECIFICATIONS</b> .....	<b>14</b>

## 1. Introduction

### 1.1. *Scope*

The scope of this document covers the operation and maintenance of the Production Board Display System for the ESB Power Station at Tarbert.

### 1.2. *Purpose*

The purpose of the document is to provide the relevant information to enable the user to install, operate and maintain the Production Board correctly.

### 1.3. *System*

The system consists of a single Production Board connected to a control PC via a digital multimeter that measures the mega-wattage output of the plant. All characters on the Display are 100mm high and use ultra-bright red LED technology.

The Display Board consists of two sections:

DATABOARD – this is the TARGET ACTUAL section of the Display that shows the production output . Values are shown in each of the relevant fields for the following:

- *Mega-wattage Output*
- *Safety Days*, number of days since last accident
- *Availability*
- *Operating Efficiency*
- *Starting Reliability*

DATALINE – this is the 15 character scrolling section at the bottom of the Display and is used to show general information such as company notices, safety messages etc.

The Board is operated using the network version of *ESB SDS*, a windows based software package.

## 2. 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.

### 2.2. Hardware

The Display Board should be located in a position where there is unrestricted viewing of the front face of the Board. Also locations where the Board is subject to bright lights or direct sunlight should be avoided. Mount the Board securely and connect the cables as shown in the figure below.

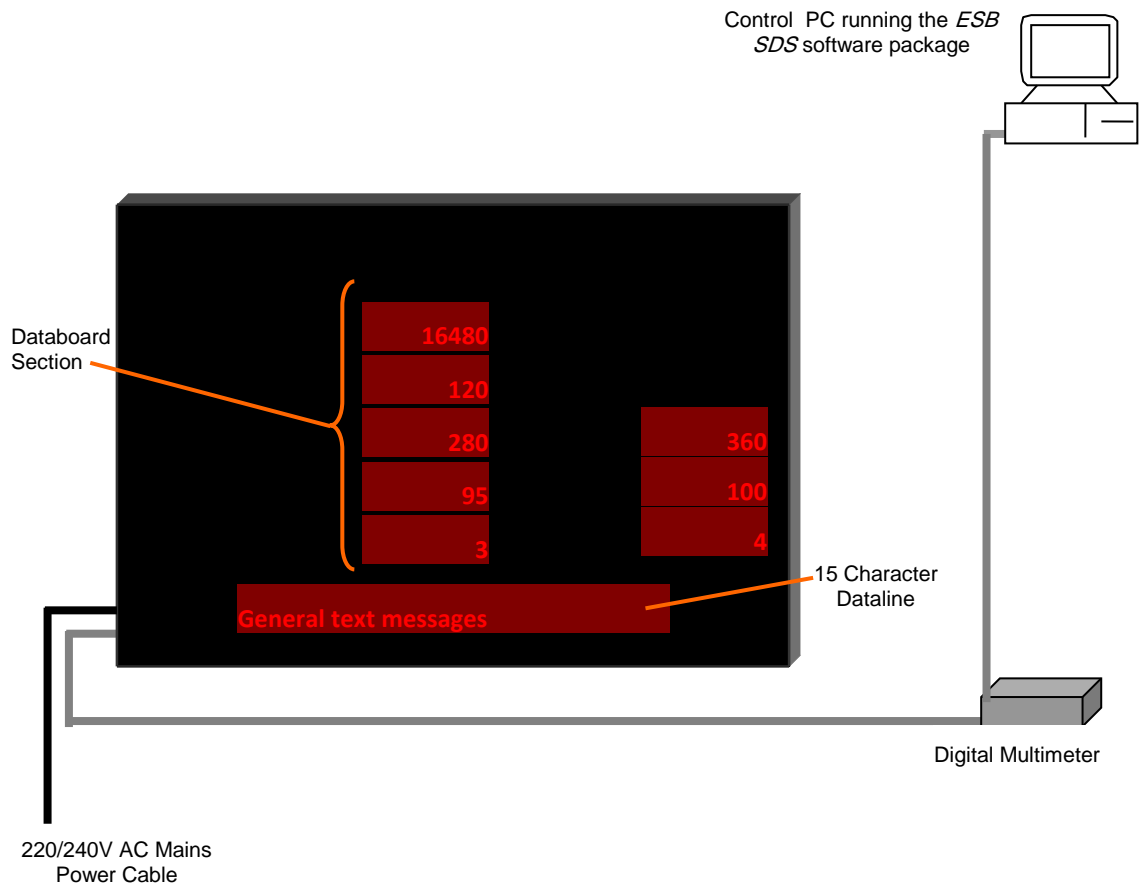


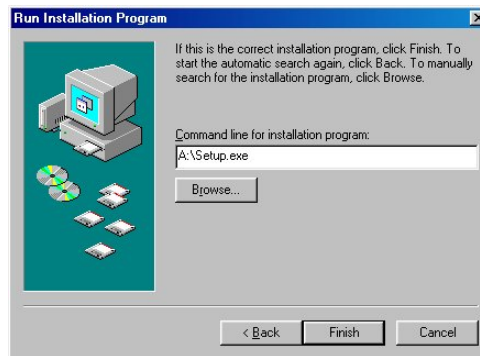
Figure 2.1 – System Configuration.

## 2.3. Software

The networked version of the *ESB SDS* software package is supplied on Floppy Disk. To install the software, do the following steps:

1. Insert the disk into your floppy disk drive.
2. Click on *My Computer* \ *3 1/2 Floppy* \ *Setup.exe* .
3. Click on the *Next >* button to begin the installation and follow the on-screen instructions.
4. When the process is complete, all files are stored in the *C:\ESB SDS* folder unless the destination folder has been changed.

You may also click the *Start* button, then select *Settings* \ *Control Panel*. Double-click the *Add/Remove Programs* icon and follow the instructions shown on the screen.



*Figure 2.2 – Installation Screen.*

A short-cut to the executable file is automatically placed on the PC desktop. The executable file to run the software package is as follows:

*C:\ESB SDS\ESB SDS.exe*

*Prodn SDS.exe* and all relevant files should now be installed in the *C:\ESB SDS* directory.

### 3. ESB SDS Software

The networked version *ESB SDS* software is a user interactive software package designed to send and receive real time production information to the Display Board. It contains features such as:

- Shows current mega-wattage output value
- Shows number of *Days since last Accident*
- Incorporates a 15 character Message Editor for Dataline

#### 3.1. Getting Started

Use the *ESB SDS* software to send the information to the Display Board. Double-click on the *ESB SDS* icon to run the program, *ESB SDS.exe*. The software is password protected. When the Password dialog box appears, do the following:

1. For the *Username*, click on *DEFAULT*
2. For the *Password*, enter *J.R.* and press the *Enter* key.



*Figure 3.1 - Password Dialog Box.*

A polling message is displayed and the version of software before opening the User Interface.

### 3.2. The User Interface

The User Interface consists of the Menu Bar, a layout of the Production Board together with the various buttons and data fields that control the Displays.

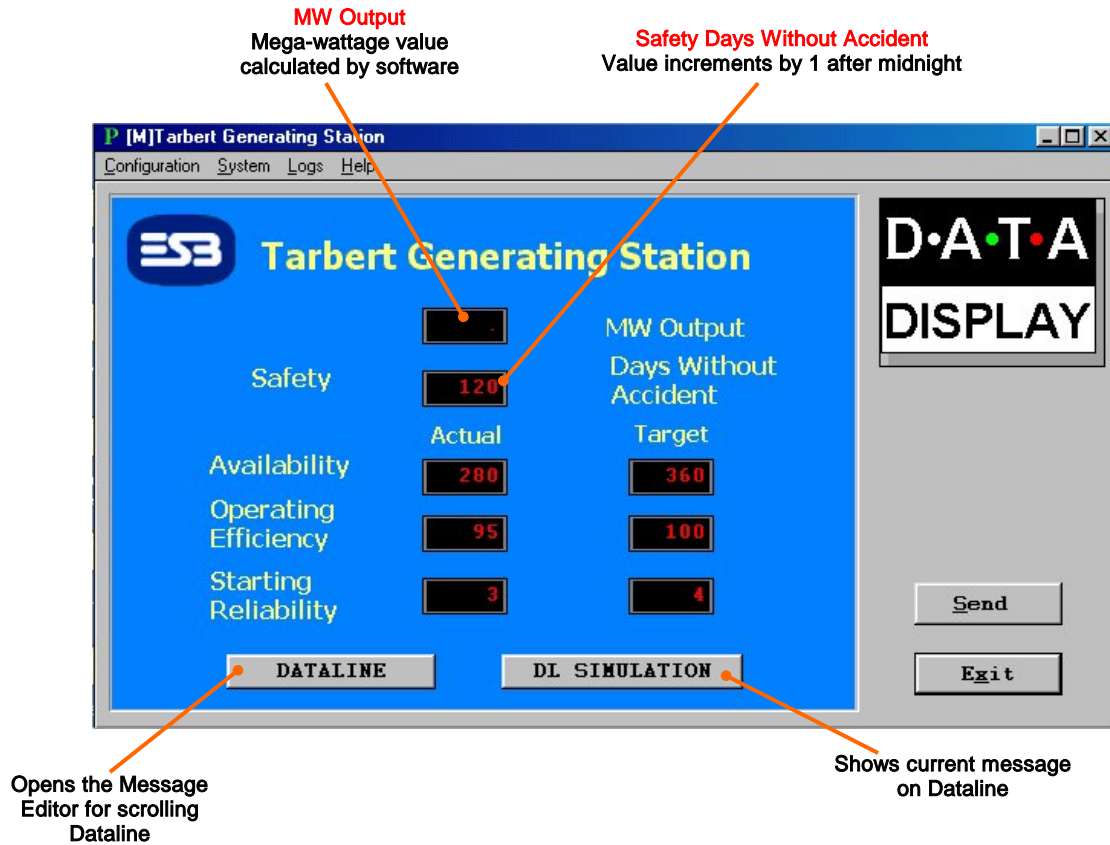


Figure 3.2 – ESB SDS User Interface.

To operate the Display manually, enter the values in the relevant fields and click on the *Send* button.

The software polls the digital multimeter every minute and receives a milli-amp value between 4 and 20. This value is then converted into a mega-wattage value of between 0 and 632 mega-watts by the software and is shown in the MW Output field.

The current number of *Days since last Accident* is initially entered by the user. After midnight the software automatically increments this value by one. In the event of an accident, the user should reset this value to 0 and click on the SEND button.

It is important to note that because the software is polling the Display every 60 seconds, the user may have to click the *Send* button again to update the Display.

### 3.3. Message Editor for Dataline

To send text to the 15 character Dataline section of the Display, click on the *DATALINE* button to open the Message Editor Interface. Enter your text message in the text box and click on the '*SELECT*' button. The message is now added to the message list at the bottom.

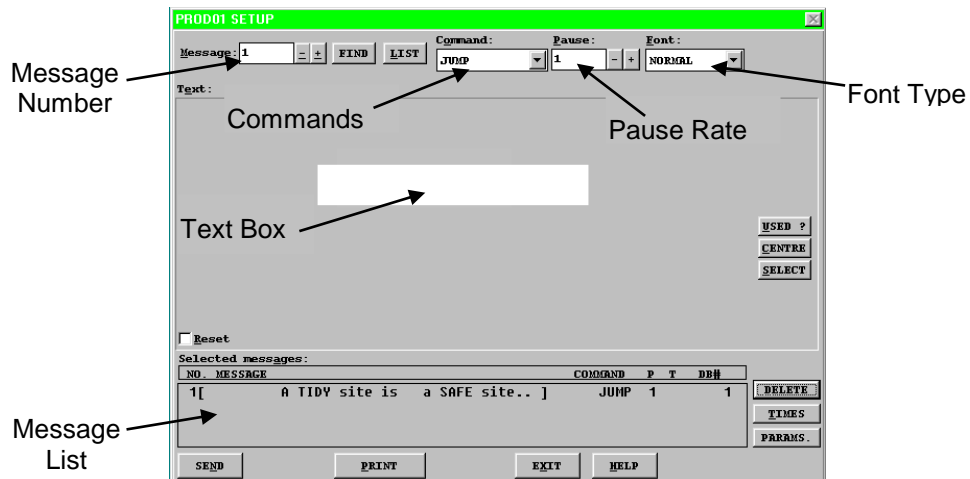


Figure 3.3 – Message Editor

Click on the '*SEND*' button twice to send the new text message to the Display

To edit a text message, click the message number (+/-) to show the message in the text box. Make the changes to the text message and click on the '*SEND*' button. The changes to the message are shown in the message list. Click on the '*SEND*' button again to send the new changes to the Display.

Various Commands, Pause Rates and Font Types can be selected from the drop down lists to give your message more effect.

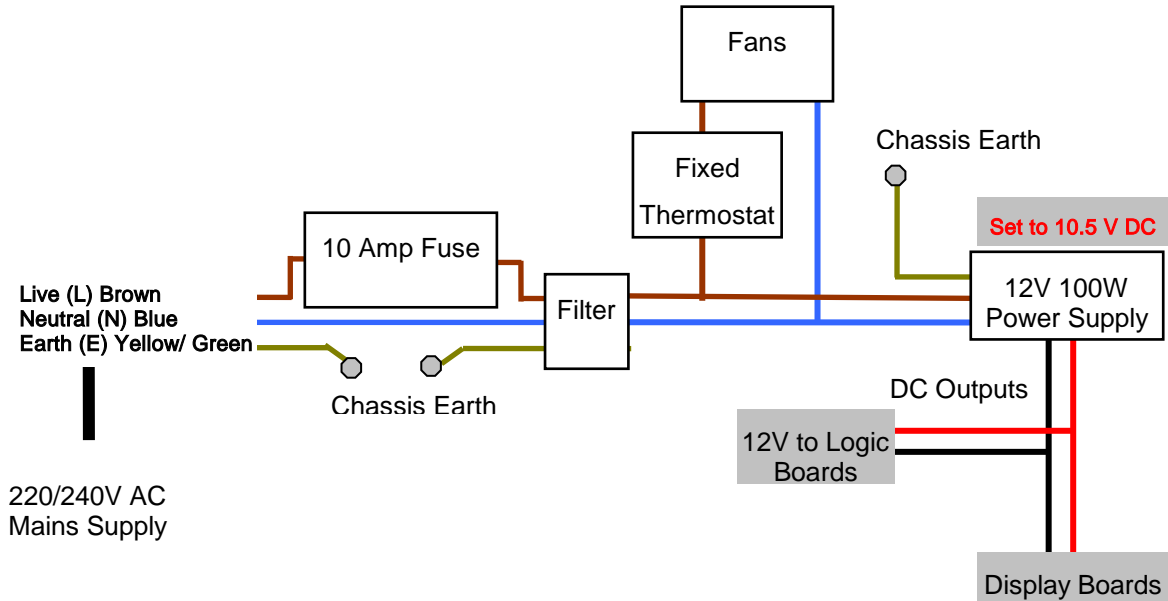
When messages are sent to the Display, click on the '*SIMULATION*' button to view the text message currently being shown on the Display.



## 4. System Wiring

### 4.1. Power Supply

The Display operates from an incoming mains supply of 220/240 Volts AC. The Live (Brown) and Neutral (Blue) wires are terminated at the PSU via a 10 Amp Fuse and Filter. The Earth (Yellow/Green) is terminated using an M5 ring crimp and is securely fixed to the main Earth point on the chassis of the Display.



4.1 - Mains Power Supply Distribution.

### 4.2. Power Supply Units

Power Supply Units provide the DC power for the various electronic components in the Display Board. The 12V 100W PSUs provide DC power to the Display Boards and 12V power for the Logic Board. **NOTE:** When replacing a 12V PSU, set the output voltage to 10.5V.

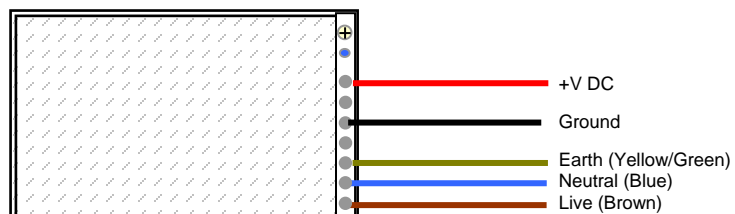


Figure 4.2 – Typical Wiring of a Power Supply Unit.

### 4.3. Logic Boards 2000 and 2001

The Logic Board is the principal circuit board in the Display. The Board contains the CPU, memory and interface circuitry for the Display system. There are two Logic Boards used in this application, Logic 2001 which controls the Databoard section and the Logic 2000 that controls the 15 character scrolling Dataline section.

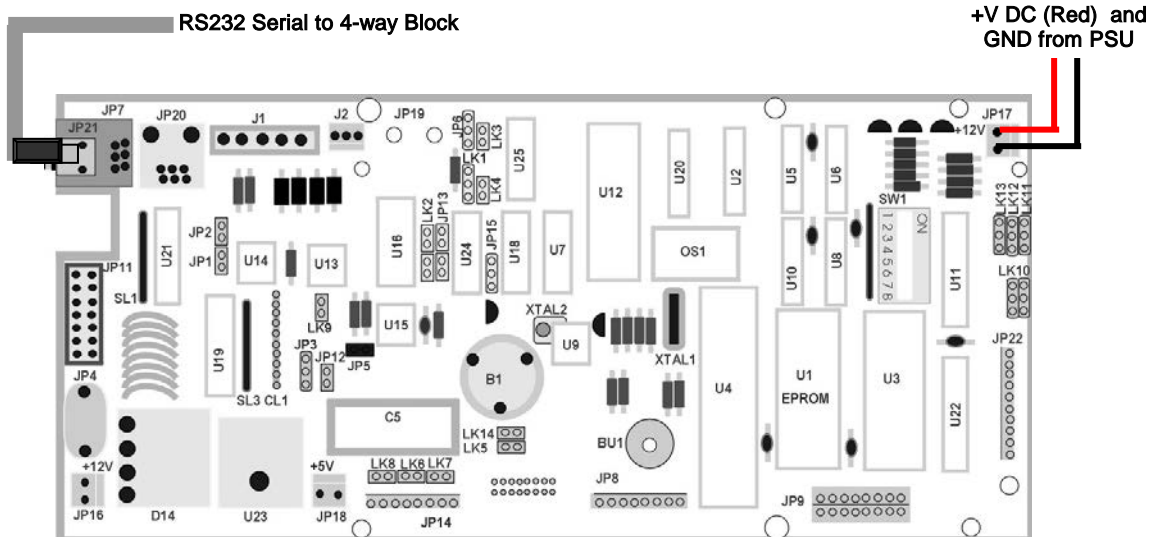


Figure 4.3 – Typical Wiring for Logic 2000.

Connected to the 2001 Board is the 12V DC Power, the 14-way Display Cable and the RS232 serial connection.

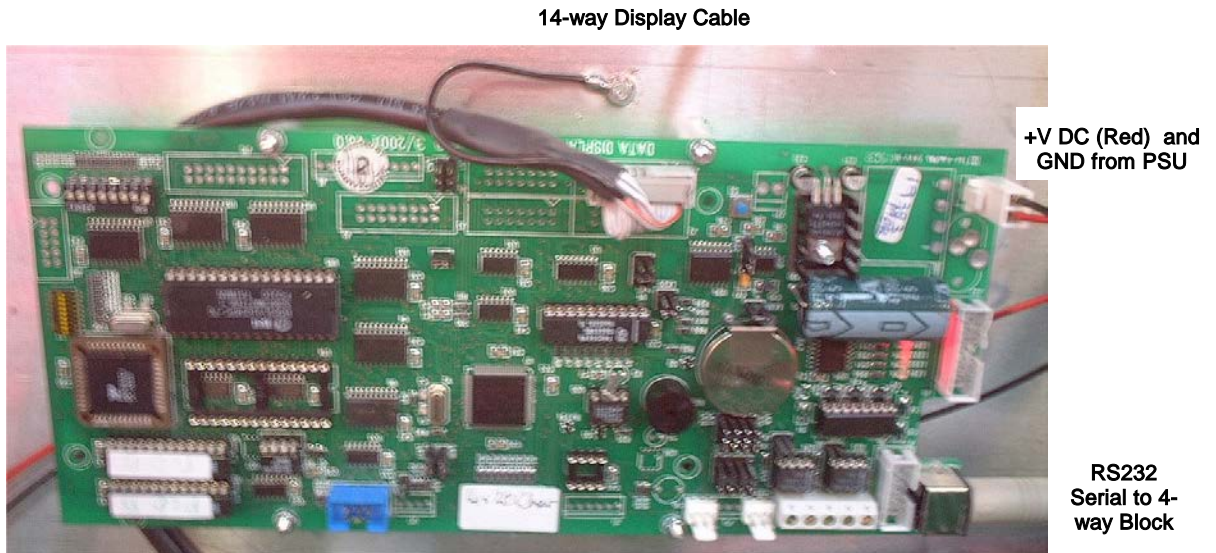


Figure 4.4 – Typical Wiring for Logic 2001.

#### 4.4. Serial Wiring

An external cable with 2 off 9-way D Type connectors and a 5 Pin Maplin will be required to connect the host PC to the Display via the Multimeter. This cable should be a 3 core cable enclosed within a suitable flexible conduit. Refer to the Figure below for wiring details.

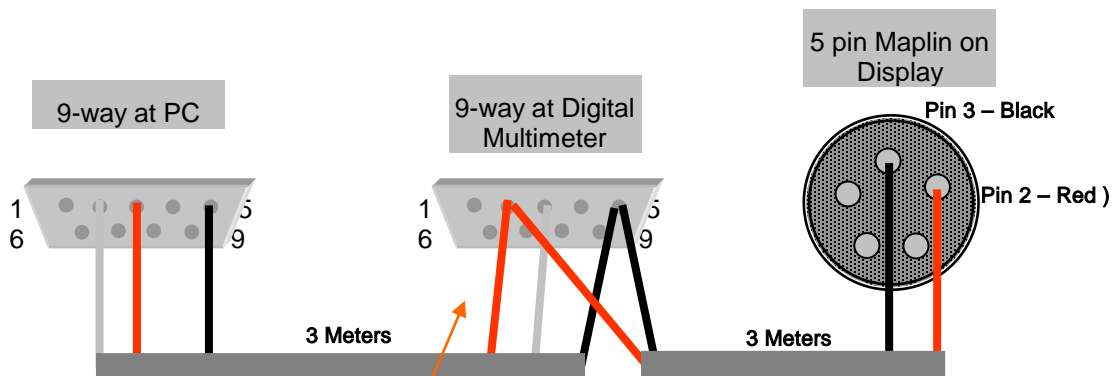


Figure 4.5 – 9-way Wiring.

## 5. 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.*

### 5.1. Maintenance Instructions

#### 5.1.1. Preventative Maintenance

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

- Damaged or dirty Lens
- Loose Cables
- Defective LEDs

#### 5.1.2. Cleaning the Display

Routine cleaning of the Display Board is at the discretion of the operator and subject to local conditions. Use damp non-abrasive materials such as a sponge, or lint-free cloth and a soft detergent (washing-up liquid) to clean the Display. Remove difficult stains or marks with a suitable solvent. **DO NOT USE** sharp or metal objects.

#### 5.1.3. Corrective Maintenance

To do maintenance tasks, unscrew the screws at the side of the Display and remove the Side Profile. Remove the Lens carefully and put in a safe place.

Replacing a defective Display Panel:

1. Unscrew the attaching screws and disconnect all relevant wiring
2. Replace the Display Panel and connect all wiring.

Replacing a defective Logic Board:

1. Unscrew the attaching nuts and disconnect all relevant wiring
2. Replace the Logic Board and connect all wiring.

Carefully slide the Lens back on the Display and attach the Side Profile. Clean the Display with a damp cloth and make sure the unit is watertight after all maintenance.

Replacing a defective Fuse:

1. Use a flat-head screwdriver to open the Fuse holder on the Display
2. Replace the Fuse
3. Close the Fuse Holder.

**NOTE:** When replacing a 12V PSU, set the output voltage to 10.5V.

### 5.1.4. 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.

### 5.2. Handling Equipment

- One working platform
- Standard tool kit

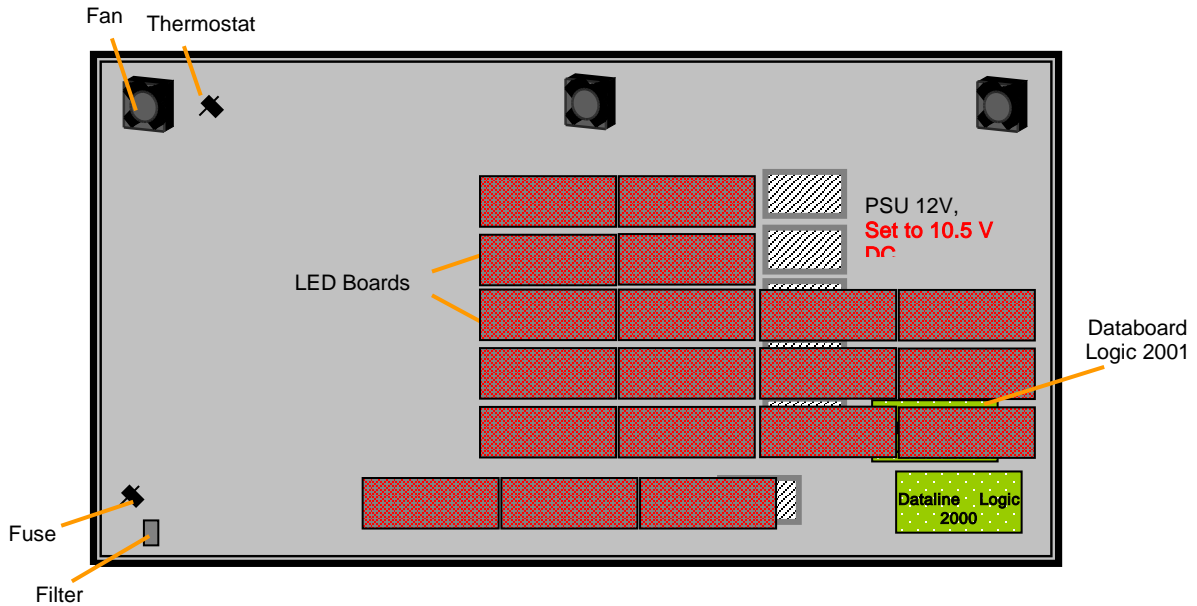
### 5.3. Special Tools

There are no special tools required.

### 5.4. 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.



Part Number	Description
DL405-UBR	LED Display Board
AUTOLOGIC2000	Logic Board, 2000
AUTOLOGIC2001	Logic Board, 2001
D00-2217	PSU, 12 Volt, 100W, 6 off
D00-453202	Fan, 3 off
D00-1670	Filter
D00-3324	Fuse, 10 Amp

**Table 5.1 - Replaceable Parts for Display Board.**

## 6. Product Specifications

CHARACTERISTIC	VALUE
<b><i>Display Features</i></b>	
Display Type	Production Display Board
Data Display No.	J07263001
Model	DB-069510-UBR
No. of Lines per Board	6
No. of Characters per Line	10 (Databoard) , 15 (Dataline)
Character Height	100mm (4 inch)
LED Colour	Ultra-bright Red
<b><i>Communication</i></b>	
EPROM	
Protocol	DB Win
Baud Rate	9600
Data Format	8 bit, 1 stop bit, no parity
<b><i>Electrical</i></b>	
Power	220/240V AC
Fuse Value	10 Amp
<b><i>Housing</i></b>	
Dimensions (LxHxD)	2900mm x 2010mm x 120mm
Housing	Welded Aluminium, Black
Front Screen	5mm Red, Polycarbonate
<b><i>Environmental Conditions</i></b>	
Temperature Range	-5°C to 65°C
Humidity Range	5% to 80% without condensation

***Table 6.1 - Product Specifications.***