Production Board

(National Linen Company)

User Manual

Title Page

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Figure 1.1 – Production Display.

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1.   Introduction

1.1.   *Scope*

The scope of this document covers the operation and maintenance of the Production Board Display System for the National Linen Company.

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 Production Board connected to a control PC an RS232 connection. The Board is made up of a Databoard section and a Dataline section:

DATABOARD – this is the production information section of the Display that shows the current production data. Target, Actual and Percentile values are shown in each of the relevant 5 character fields for the following:

- *Pieces last hour*
- *Average hourly pieces per day*
- *Average hourly pieces per night*
- *Rewash*

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

All characters use surface-mount red and amber LED technology.

The Board is operated using *ProdnSDS*, 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.
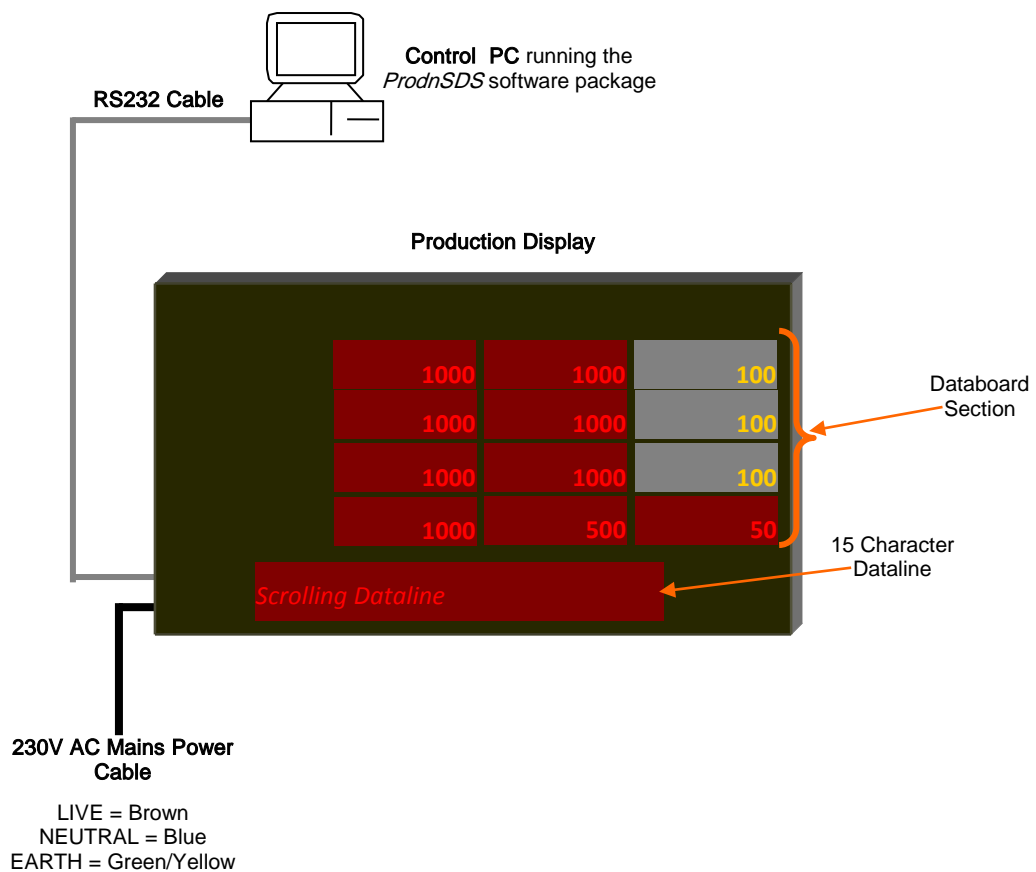
Figure 2.1 – System Configuration.

2.3. Software

The *ProdnSDS* software package is supplied on CD-ROM. To install the software, do the following steps:

1. Insert the disk into your CD tray.

2. Click on *Start|Run|Browse* and locate the file *Setup.exe* on the CD drive.

3. Double-click on the *Setup.exe* file. 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\ProdnSDS* folder unless the destination folder has been changed. Also shortcut icon to run the program is placed on the desktop.

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.

The executable file to run the software package is as follows:

ProdnSDS = C:\ProdnSDS\ ProdnSDS.exe

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

3.   ProdnSDS Software

The *ProdnSDS* 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 safety information

- Incorporates a 15 character Message Editor for Dataline

3.1.   The User Interface

Double-click on the *ProdnSDS* icon to run the program, *ProdnSDS.exe*. 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.

DATALINE Box

Shows current message on Dataline
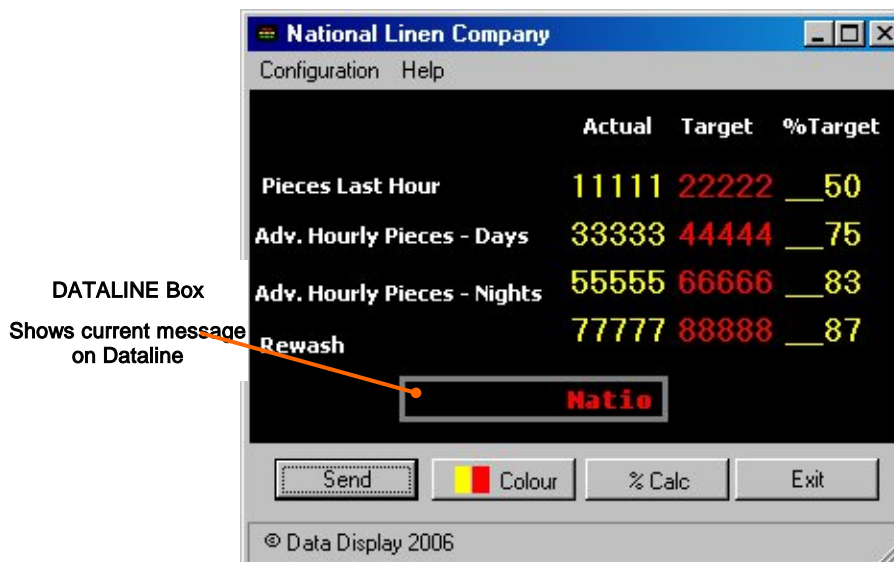
Figure 3.1 - ProdnSDS User Interface.

To operate the Display manually, enter the values in the fields and click on the *Send* button. Refer to 3.2 for bottom message field.

Click on the *Colour* button to change the text colour in a field (click in the field first). When all values are entered, click on the *%Calc* button to show relevant percentage values.

3.2.   Message Editor for Dataline

To send text to the 15 character Dataline section of the Display, double- click on the *DATALINE* box 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.
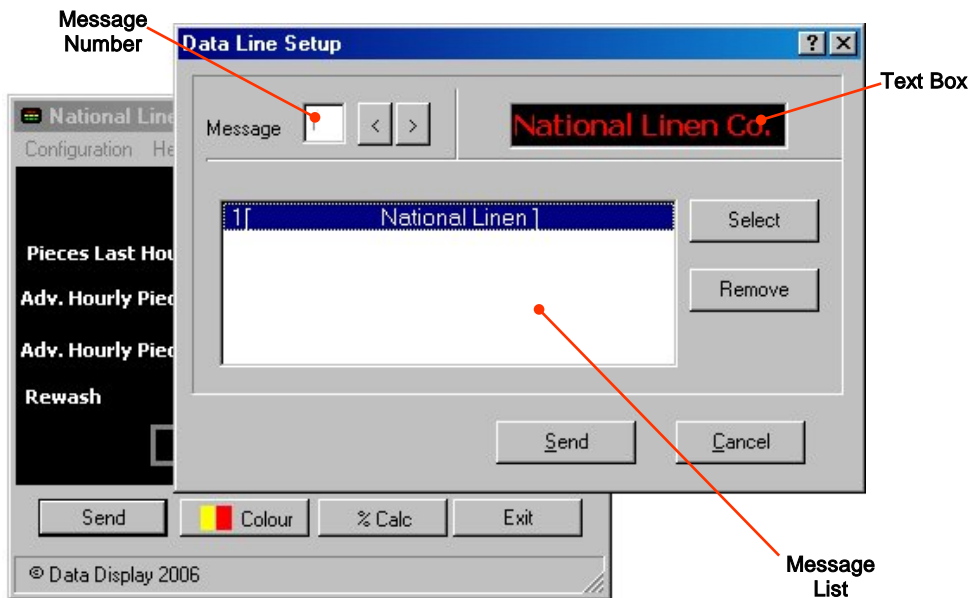
Figure 3.2 – Message Editor

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.

4. System Wiring

4.1. Power Supply

The Display operates from an incoming mains supply of 230 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.
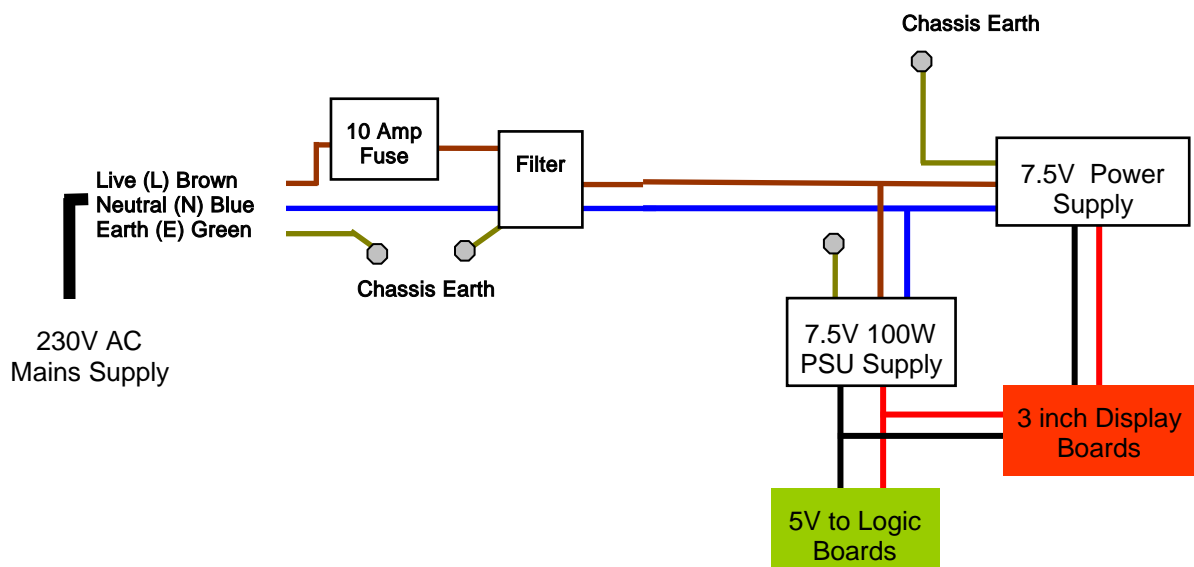
4.1 - Mains Power Supply Distribution.

4.2. Power Supply Units

Power Supply Units provide the DC power for the various electronic components in the Display Board. The 7.5V PSU provides DC power to the Display Boards and the Logic Board.
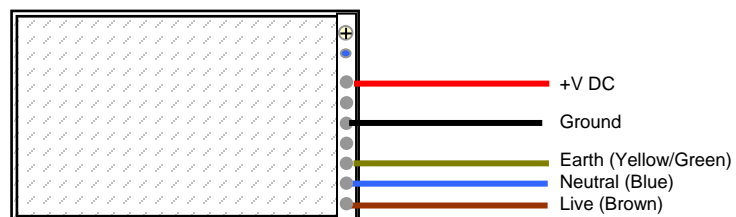
Figure 4.2 – Typical Wiring of a Power Supply Unit.

4.3. Logic Board 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 three Logic Boards used in this application. Their locations and functions are shown in the Figure below.
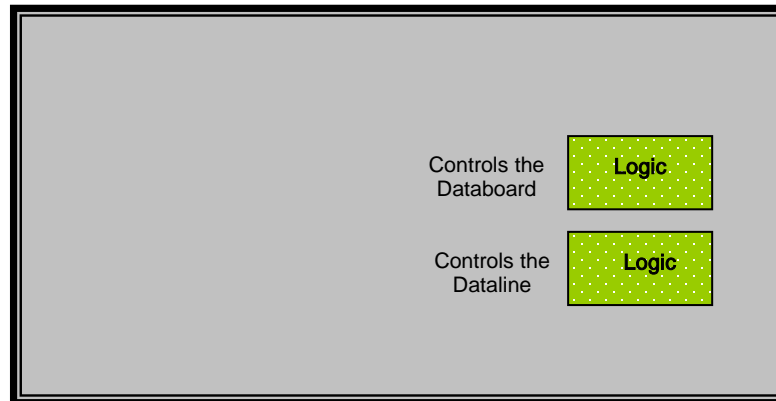
Connected to the each Board is the 5V DC Power, the 14-way Display Cable and the RS232 serial connection. The outputs from the Parallel Interface are connected to the Logic 2001 Board.

5.   Installation

WARNINGS

1. Displays are powered from a Mains Supply of 230V AC.
2. All installation personnel must be familiar with good manual lifting practice.

5.1.   Precautions

Regulations

All personnel involved in carrying out the work must be aware of any site working regulations for the contract and must have certification for any formal training required.

Safety measures

WARNINGS

Before carrying out any installation work involving 230V AC mains, make sure that all connection points are dead, i.e. isolated from the source of the Mains Power supply. Verify the points to be worked on are dead by using appropriate test equipment.

Appropriate safety measures shall be enforced while work is carried out and in particular special precautions taken when working off ladders and/or scaffold platforms.

If required, lifting equipment must be used to position the Display just prior to fixing into position at the site or if the Displays are to be moved over long distances.

5.2.   Fixing Points

Type 3 brackets are supplied to mount the Display together with M8 bolts.

During installation, make sure that there is adequate space for the routing and bending of cables at the rear. Care should also be taken so as not to damage the electronic assemblies inside the Display.

5.3. Power Requirements

Display Power: 230V AC

5.4. Mains Cable Connections

An external 230V AC supply is required to power the Display. The customer supplies the mains socket.

A suitable tester should be used to verify that the mains cabling is connected correctly between local 220/240V AC mains power outlet and the Display.

6.   Fault Finding and Diagnostics

6.1.   Description

Faults may be broken down into 3 categories, Hardware, Communication and Power. Possible faults include:

- Flickering LED or blank Display Boards, (Hardware, Comms or Power)
- Spurious Information, (Comms)
- Power Supply Failure, (Power)
- Defective PCBs, (Hardware, Comms or Power)
- Defective Cables, (Hardware)

The following test and repair equipment is recommended: Basic Toolkit, Digital Multimeter and Soldering Iron.

NOTE: For any reported fault, check that all data cables are routed correctly and all connectors are attached securely on Display Boards and PCBs.

Reported Fault	Action
LED Fault	Check if all or part of the Display Board is faulty. If only part of the Display Board is faulty, the Display Board can be replaced. Before replacing the Board, check that DC Power to the Display Board is +V and that Data Cables are not faulty. If Power and Data Cables are not faulty, power down the Display and replace the defective Board. Power up the Display and check that the fault has been rectified. If the entire Display Board is blank, check the power supply.
Power Supply Failure	Firstly, check that the external power supply has not been disconnected or switched OFF. Power down the Display and check that the fuse at the rear of the Display has not blown. If not check the PSUs. PSUs convert the AC power (Inputs) to DC power (Outputs) within the Displays. Check for mains power (230V AC) at the Live and Neutral inputs on the PSUs. If the mains input is correct, check the PSU DC outputs. If there is no +V DC output, power down the Display and replace the defective PSU. Power up the Display and check that the fault has been rectified. If not, check for mains power (230V AC) at the Live and Neutral inputs and outputs on the Filter. If defective, replace the Filter.
Total Display Failure	1. Check that the there is no Power Supply Fault as above. 2. If all PSU inputs and outputs are correct, check that all serial cables are connected correctly. 3. If the Display is receiving messages and responding but incorrect messages or garbled information is appearing on the Display, change the Logic Board to rectify the fault. 4. If the problem has still not been rectified, please contact the Technical Support Dept. Details in next section.

Table 6.1 – Fault Finding.

6.2.   Technical Support

For technical support and spare parts, contact your nearest Data Display Customer Service Department.

Data Display Ireland

Tel #:   (065) 7072600

Fax #: (631) 7071311

E-mail: sales@data-display.com

Make sure to quote the Data Display Reference No. in the Product Specifications section of this Manual and the Serial No. of the Display.

7.   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.

7.1.   Maintenance Instructions

7.1.1. 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

7.1.2. 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.

7.1.3. 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.

7.2. Handling Equipment

- One working platform
- Standard tool kit

7.3. Special Tools

There are no special tools required.

7.4. 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.
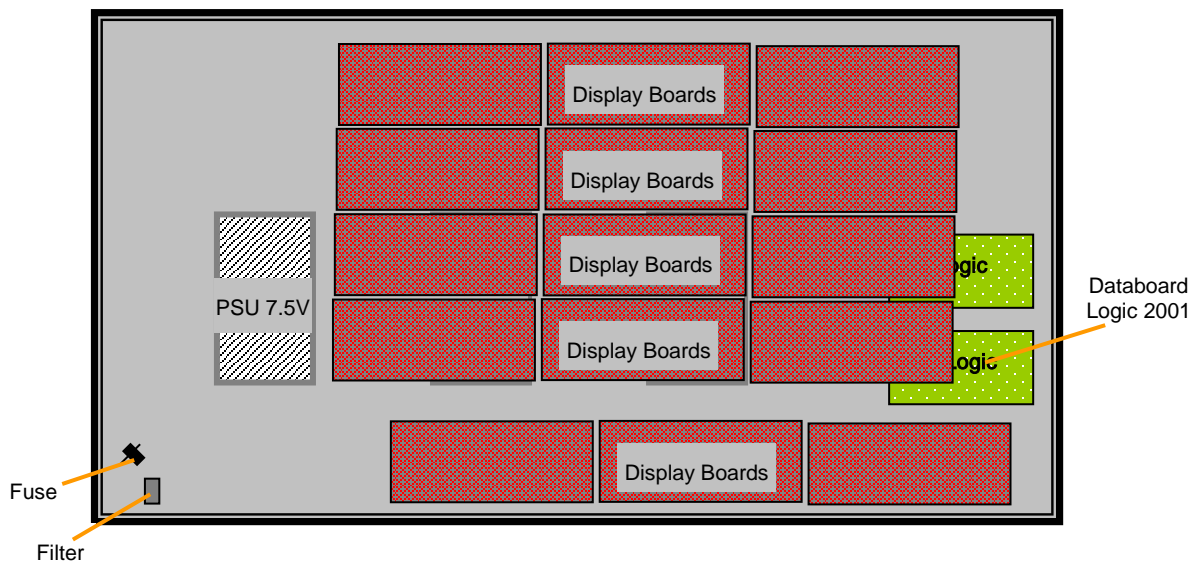
Part Number	Description
DL305-SM-R&A	LED Display Board, Red and Amber
DL305-SM-R	LED Display Board, Scrolling Line
AUTOLOGIC2001	Logic Board, 2001
D00-TBA	PSU, 7.5 Volt
D00-1670	Filter
D00-3324	Fuse, 10 Amp

Table 7.1 - Replaceable Parts for Display Board.

7.5.   Removal and Replaceable Instructions

When removing and replacing any items, do the following steps:

1. **Disconnect the Mains Power Supply to the Display.**
2. **Unscrew the screws at the side of the Display and remove the Side/Front Profile.**
3. **Remove the Lens carefully and put in a safe place.**
4. **All hardware removed from the Display should be stored in a safe place.**

7.5.1. Removing a PSU

a) Refer to **8.5**. and do steps 1 to 4.

b) Make sure that there is no Mains Power at the LIVE terminal on the Filter using a DMM.

c) Locate the defective PSU and remove the clear plastic cover from the terminals, if necessary.

d) Disconnect the crimp terminals and make note of wires and their locations.

e) Unscrew the screws holding the PSU to the Display chassis and remove the PSU. Retain all screws, washers, spacers, nuts etc for further use.

7.5.2. Installing a PSU

a) Spread a layer of Heat Sink Compound over the rear of the PSU.

b) Attach the PSU to the Display chassis using the washers and nuts removed previously.

c) Connect the crimp terminals.

d) Replace the clear cover over the terminals, if necessary.

e) Connect the mains power to the Display at the external isolator.

f) Check the DC output of the PSU.

g) Slide in the Lens and attach the Side Profile.

h) Test the Display.

i) Clean the Display and fill in the maintenance report.

7.5.3. Removing a Logic Board

    a)   Refer to 8.5. and do steps 1 to 4.

    b)   Make sure that there is no mains power at the LIVE terminal on the Filter using a DMM.

    c)   Locate the Logic Board and disconnect all plugs/sockets and screw terminals. Carefully note their locations for reconnection.

    d)   Unscrew the nuts, washers etc that secure the Logic Board to the Display chassis.

    e)   Remove the Board.

        NOTE: Take care not to move the Dip Switch settings accidentally.

7.5.4. Installing a Logic Board

    a)   Attach the new Logic Board to the Display chassis with the nuts and washers retained during removal

    b)   Check that all switches and links on the new Board are set to the same as the defective Board.

    c)   Connect the Mains Power to the Display at the external isolator.

    d)   Slide in the Lens and attach the Side Profile.

    e)   Test the Display.

    f)   Clean the Display and fill in the maintenance report, if necessary.

7.5.5. Removing a Display Board

    a)   Refer to 8.5. and do steps 1 to 4.

    b)   Make sure that there is no mains power at the LIVE terminal on the Filter using a DMM.

    c)   Locate the faulty Display Board.

    d)   Remove the screws that attach the Display Board. **NOTE:** Place the screws in a safe place for installation of new Board.

    e)   Disconnect the Data and Power connectors from the Board. Note the locations of each connector and how it is connected for the installation of the new Board.

    f)   Remove the Display Board.

7.5.6. Installing a Display Board

    a)   Replace the Data and Power connectors in their correct locations. NOTE: Power and Data cables are keyed. Installing them incorrectly will damage the connectors.

    b)   Attach the Display Board with the screws retained during removal.

    c)   Restore power at the external isolator.

    d)   Slide in the Lens and attach the Side Profile.

    e)   Test the Display.

    f)   Clean the Display and fill in the maintenance report, if necessary.

7.5.7. Removing a Mains Filter

a) Refer to 8.5. and do steps 1 to 4

b) Make sure that there is no mains power at the LIVE terminal on the Filter using a DMM.

c) Disconnect the crimp terminals and note the locations. Leave the earth terminal until last.

d) Unscrew the securing nuts holding the Mains Filter to the chassis and remove the Filter. Retain all nuts and washers for further use.

7.5.8. Installing a Mains Filter

a) Attach the new Mains Filter to the chassis using the nuts and washers removed previously.

b) Reconnect the earth connection and crimp terminals.

c) Slide in the Lens and attach the Side Profile.

d) Test the Display.

e) Clean the Display and fill in the maintenance report, if necessary.

8.   Product Specifications

CHARACTERISTIC	VALUE
Display Features	
Display Type	Production Display Board
Data Display No.	J11532001
No. of Lines per Board	4 on Databoard, Single line Dataline
No. of Characters per Line	15
Character Height	80mm
LED Colour	Ultra-bright Red and Amber
Communication	
Software	ProdnSDS
Protocol	DDX Modal for scrolling line
Baud Rate	9600
Data Format	8 bit, 1 stop bit, no parity
Electrical	
Power	230V AC
Fuse Value	10 Amp
Housing	
Dimensions (LxHxD)	1400mm x 700mm x 75mm
Housing	Welded Aluminium, Black
Front Screen	3mm Red, Polycarbonate
Environmental Conditions	
Temperature Range	-5°C to 65°C
Humidity Range	5% to 80% without condensation

Table 8.1 - Product Specifications.