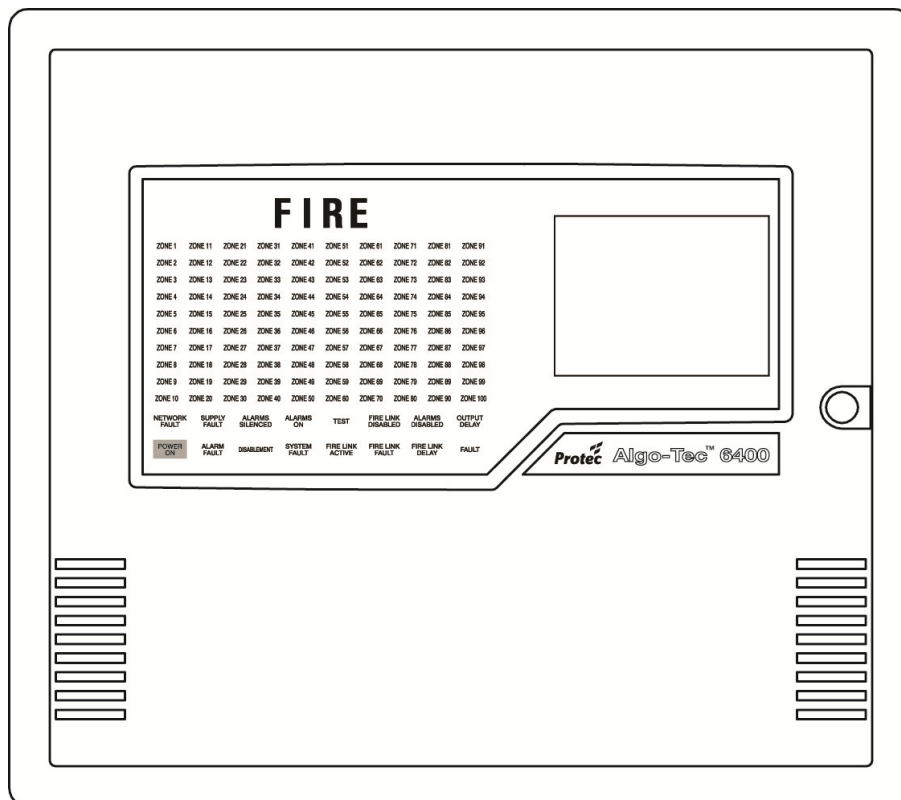


# Algo-Tec™ 6400 INTERACTIVE DIGITAL ADDRESSABLE FIRE CONTROL SYSTEM (1-4 LOOPS)

## INSTALLATION MANUAL



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# ISSUES

ISSUE	DATE	DETAILS OF CHANGE	CHANGED BY
1	16/02/00	ORIGINAL ISSUE	-
2	16/01/01	TABLES 2 & 3 UPDATED, ADDED TABLE 4	PWD
3	12/09/01	ADDITIONAL INFORMATION	PWD
4	29/11/02	TABLES 2, 3 & 4 UPDATED & PIDs ADDED	PWD
4 Rev 1	16/08/05	Updated 6400 Specification	PWD
4 Rev 2	05/04/06	Added 4000 & 5000 Device Information	PWD
4 Rev 3	26/02/07	Amended section 3.1 - cable type & earthing Split table 2 into tables 2a and 2b Added 6000/CPRO to table 2b Added 6000/DIU to table 3 Amended section 7.5 – Fault Output Amended 6400 Specification – Aux Fault Output Amended Appendix A – Total loss of PSU	PWD
4 Rev 4	14/05/10	Updated Appendix A Added info on 6000Plus devices in table 2 Removed PIDs for loop devices	PWD
4 Rev 5	04/08/11	Added CE marking information in Appendix E Added note on 4400 devices in Appendix C Amended section 7.4 – Fire Station Output	RML
4 Rev 6	08/02/12	Amended section 2.2.1 – ‘6000 Series’ Double Addressing	PWD
4 Rev 7	28/06/13	CPR Tables added, Appendix E Removed – See ECN3380	AH


## Notes


- 1) This manual covers 4400, 5400 and 6400 fire alarm systems. The differences are described in the appropriate sections.
- 2) This manual also covers General Alarm and Cell Call systems.


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 <b>0832</b>
Protec Fire Detection plc, Nelson, Lancashire, England BB9 6RT 10 PFD-CPR-0001
BS EN 54-2:1997+A1:2006 <b>6400/DCN Fire Alarm Control Panel</b> Control / Indicating equipment for fire detection and fire alarm systems for buildings Performance under fire conditions: Pass Response delay (response time to fire): Pass Operational reliability: Pass Durability of operational reliability, Temperature resistance: Pass Durability of operational reliability, Vibration resistance: Pass Durability of operational reliability, Electrical stability: Pass Durability of operational reliability, Humidity resistance: Pass

 <b>0832</b>
Protec Fire Detection plc, Nelson, Lancashire, England BB9 6RT 10 PFD-CPR-0002
BS EN 54-2:1997+A1:2006 <b>6400/2LPN Fire Alarm Control Panel</b> Control / Indicating equipment for fire detection and fire alarm systems for buildings Performance under fire conditions: Pass Response delay (response time to fire): Pass Operational reliability: Pass Durability of operational reliability, Temperature resistance: Pass Durability of operational reliability, Vibration resistance: Pass Durability of operational reliability, Electrical stability: Pass Durability of operational reliability, Humidity resistance: Pass

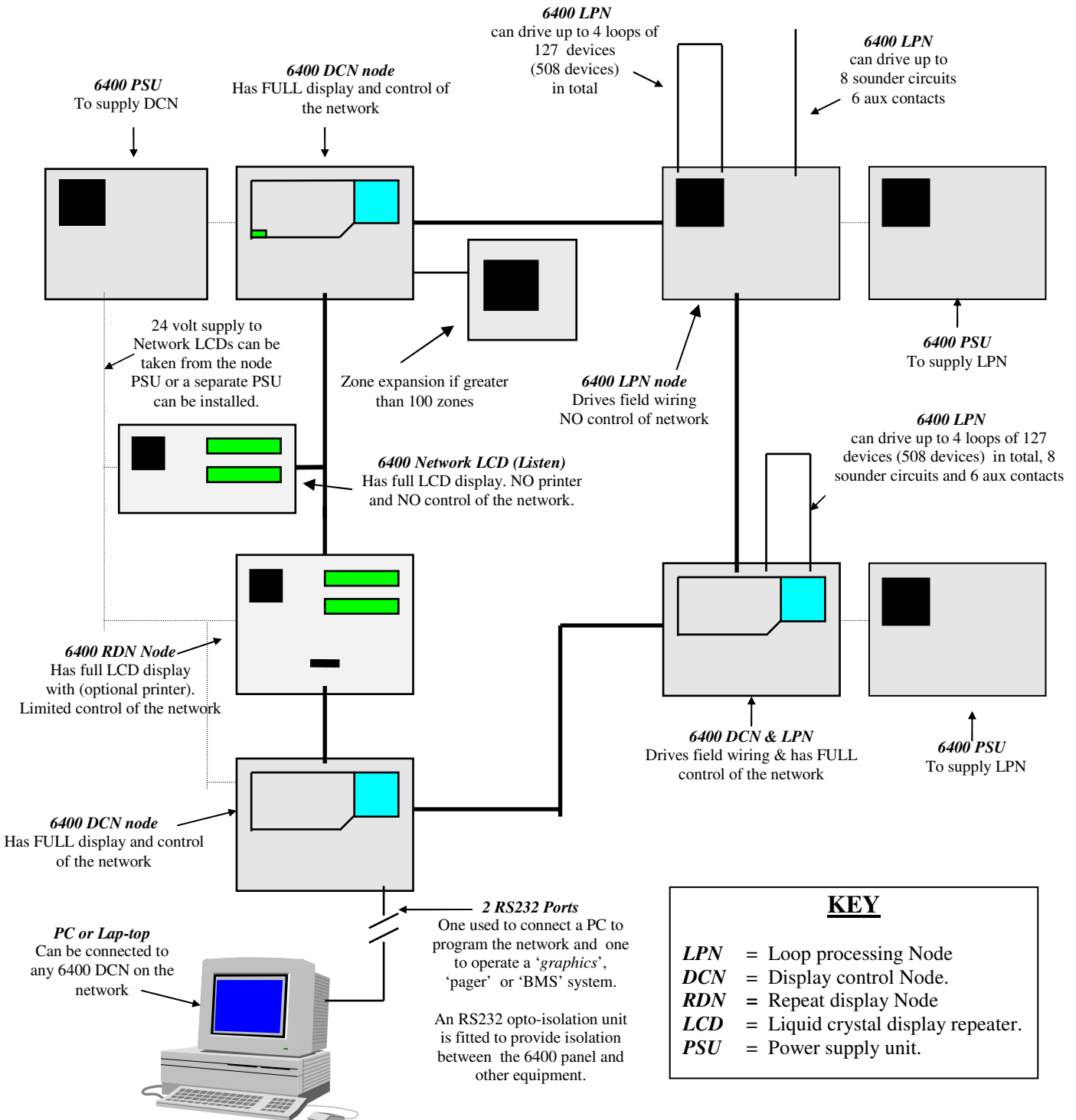
 <b>0832</b>
Protec Fire Detection plc, Nelson, Lancashire, England BB9 6RT 10 PFD-CPR-0003
BS EN 54-2:1997+A1:2006 <b>6400/4LPN Fire Alarm Control Panel</b> Control / Indicating equipment for fire detection and fire alarm systems for buildings Performance under fire conditions: Pass Response delay (response time to fire): Pass Operational reliability: Pass Durability of operational reliability, Temperature resistance: Pass Durability of operational reliability, Vibration resistance: Pass Durability of operational reliability, Electrical stability: Pass Durability of operational reliability, Humidity resistance: Pass

 <b>0832</b>
Protec Fire Detection plc, Nelson, Lancashire, England BB9 6RT 10 PFD-CPR-0004
BS EN 54-2:1997+A1:2006 <b>6400/DCN/2LPN Fire Alarm Control Panel</b> Control / Indicating equipment for fire detection and fire alarm systems for buildings Performance under fire conditions: Pass Response delay (response time to fire): Pass Operational reliability: Pass Durability of operational reliability, Temperature resistance: Pass Durability of operational reliability, Vibration resistance: Pass Durability of operational reliability, Electrical stability: Pass Durability of operational reliability, Humidity resistance: Pass

 <b>0832</b>
Protec Fire Detection plc, Nelson, Lancashire, England BB9 6RT 10 PFD-CPR-0005
BS EN 54-2:1997+A1:2006 <b>6400/DCN/4LPN Fire Alarm Control Panel</b> Control / Indicating equipment for fire detection and fire alarm systems for buildings Performance under fire conditions: Pass Response delay (response time to fire): Pass Operational reliability: Pass Durability of operational reliability, Temperature resistance: Pass Durability of operational reliability, Vibration resistance: Pass Durability of operational reliability, Electrical stability: Pass Durability of operational reliability, Humidity resistance: Pass

# OVERVIEW

## 1.1 6400 NETWORK OVERVIEW



# INTRODUCTION

This document describes the methods to be employed when installing and connecting equipment associated with the PROTEC 6400 FIRE ALARM SYSTEM.

## 2.1 RS485 NETWORK

The 6400 system is a networked fire alarm system. Each 6400 unit is connected to the RS485 serial communications network loop. A maximum of 99 nodes can be connected to the network in any combination.

With reference to the system overview in section 1 :-

6400 Unit	Number of nodes
DCN	1
LPN	1
DCN/LPN	2
RDN or Mimic	1
Network LCD	0

Notes

1. The 6400/Network/LCD is connected to the RS485 network. It can receive data but not transmit data.
2. A maximum of eight 6400/Network/LCD units can be connected between any two 6400 nodes apart from a 6400/DCN/LPN panel where it is not possible to access the internal link between the two nodes.
3. Each DCN node has all of the mandatory manual controls and indicators required by En54-2

## 2.2 '6000 SERIES' LOOP

Each 6400/LPN has the capability to communicate with Protec '6000 series' loops.

Each addressable loop device has a unique Serial Number. The 6400 panel communicates with each device by this Serial Number, and the device replies with an analogue value. This analogue value is interpreted by the panel to determine the state of the device. The panel is therefore able to track accurately any changes in device reply values and initiate any necessary actions.

Since each device is addressed using its serial number it is possible to have both a detection device and a sounder assigned to the same address. This is referred to as 'double addressing' – see section 2.2.1.

The installer must mark up on the 'as fit' drawings the address of each loop device. This information will be required in section 7.2.

### **2.2.1 '6000 SERIES' DOUBLE ADDRESSING**

**This section applies to the original 6000 detectors and not the 6000plus detectors.**

Double addressing permits a detection device and a sounder device to be assigned to the same address. This method increases the maximum number of devices on a loop from 127. The theoretical maximum would be 254 but loop length and loop current restrict the number.

Double addressing relies upon the sounder and detector being in the same physical location and therefore there are limitations on which devices can be double addressed pairs.

The following sounder types will be accepted for double addressing

6000/ASB2, 6000/ASBEA2, 6000/ASB4, 6000/ASBEA4, 6000/ATSB2

These can be paired with one of the following detectors.

6000/HEAT, 6000/ION, 6000/OPT, 6000/OPHT, 6000/COHEAT, 6000/OPHTCO

### **2.3 '5000 SERIES' LOOP**

Each 5400/LPN has the capability to communicate with Protec '5000 series' loops.

Each addressable loop device must have a unique address. The address is assigned using the eight way dip switch on the device. The panel communicates with each device by this address, and the device replies with an analogue value. This analogue value is interpreted by the panel to determine the state of the device.

The installer must mark up on the 'as fit' drawings the address of each loop device.

### **2.4 '4000 SERIES' LOOP**

Each 4400/LPN has the capability to communicate with Protec '4000 series' loops.

Each addressable loop device must have a unique address. The address is assigned using the card inserted into the base. The panel communicates with each device by this address, and the device replies with an analogue value. This analogue value is interpreted by the panel to determine the state of the device.

The installer must mark up on the 'as fit' drawings the address of each loop device.

### **2.5 LOOP SHORT CIRCUIT OR LOOP INTERRUPTION**

It must not be possible to have a short circuit or interruption in the loop that prevents the indication of a fire alarm from more than one zone. To comply with this instruction, the installer must fit at least one isolator per zone. The 6000 series loop has been designed with this in mind and so all addressable sounder bases, 6000/MICCO and 6000/MCP devices have a built-in isolator. Check device literature for other devices with an isolator. If further isolators are required then loop isolator bases and loop isolation units are available (see table 4).



## 2.6 DELAYS TO OUTPUTS

En54-2:1997 + A1:2006 clause 7.11d states that it must be possible to override the delays and immediately action the delayed outputs at access level one. Since access level one means that the outer panel door is locked then if delays are to be used this clause can be met in several ways. If option (3) is chosen then this will affect the installation.

1. No delays are programmed for manual call points.
2. System programming permits a second activation to cancel delays and immediately activate outputs thus allowing any manual call point to be pressed upon confirmation of a fire.
3. Programming at least one manual call point to activate all delayed outputs. This should be placed adjacent to each DCN panel and its purpose clearly labelled.

## 2.7 PRISON CELL CALL SYSTEMS

The 6400 is a very flexible and modular product that can be used for applications other than fire alarm systems. One application is a prison cell call system and detailed here are additional installation requirements for such a system.

One LPN must be used to handle the cell call systems from each prison wing. The cell call system uses a Wing Office Display Unit (WODU) that is wired on the RS485 network in the same manner as a Network LCD. Each (WODU) has an accept button that is used to mute the buzzer on the landing indicator units. This button must be wired to a non-dedicated input on the LPN that is driving the wing. If the distance between the LPN and WODU is excessive then a relay will have to be used to switch the non-dedicated input.

All the cell call units and the corresponding landing indicator units for a single prison wing must be wired on loops connected to the same 6400 LPN but they can be spread across all four loops. There is no restriction on the loop address but **no more than 50 devices in total can be connected on a loop** due to the larger current drawn by these devices. Contact Protec Fire Detection if it is intended to mix cell call with another discipline eg fire or pegging on the same LPN.

# CABLING

All external wiring associated with the system must conform to the current I.E.E Regulations and cabling must conform to the relevant BS specifications. ECA recommended Cable Separation for Electromagnetic Compatibility in Buildings, must be followed.

All cabling must be fully phased (Identify and mark ends of cables).

Although no connections are to be made to the control panel until the commissioning stage it is important that cables are left long enough to connect directly to the relevant terminals. To ensure that cable tails are left with sufficient length all cable tails must be a minimum of 500mm.

## 3.1 POWER SUPPLY CABLING

A 6400 panel requires two separate +24V supplies in order to allow the panel to continue to operate upon the loss of one. These two supplies must not be wired in the same fire rated cable. In addition, there is a fault signal 'SF' from the charger to the panel. This signal can be combined with one of the +24V supplies into a 4-core fire rated cable (see PID 248).

The fire rated cable must be FP200 or an equivalent. The drain wire must be earthed and continuous over the complete cable run because this connection from the charger provides the safety earth to the 6400 nodes.

The length of cable between the charger and the 6400 panel will depend upon the volt drop along the cable. No more than 6A must be supplied to a panel and no more than two nodes must be fed from a single charger.

Note that earlier 6400 systems used a charger inhibit signal 'CI' from the panel to the charger. The latest 8A 6400 charger does not require this signal.

### 3.2 SERIAL COMMUNICATIONS CABLING (RS485)

A 6400 panel requires two separate RS485 circuits (channel 1 and channel 2). This is because :-

1. The RS485 network is wired as a loop in order to continue to indicate a fire alarm from any device on the system should a single break or short circuit occur in one of the RS485 circuits.
2. Interference between the RS485 channels within the same cable can cause spurious faults.

The maximum length of cable between any two nodes on the RS485 network is 1km (including any cabling for 6400/Network/LCD units) using a minimum standard of 1.5mm<sup>2</sup> fire rated screened cable (FP200 or equivalent). The maximum length of the RS485 loop is 5km (including all 6400/Network/LCD wiring). Should a 6400 node fail then relays bypass the problem node isolating it from the network. The system design should ensure that under this condition the maximum length of 1km between nodes is not exceeded.

Previously all nodes on the RS485 network had to have a common 0V reference cable. This is no longer a requirement with most new installations since nodes now incorporate opto-isolation but allowance must be made for LCDs that do not.

Where a 6400/Network/LCD is connected between nodes the network wiring must be taken from RS485 Channel 1 of the node previous to the LCD and then to the next node. This avoids wiring the LCD as a spur off the network. If the distance from the node to one or more LCDs is less than 50m then a single spur from RS485 channel 1 of the node is permitted. Power for the LCD can be provided locally or from the previous node but the LCD must maintain a common 0V with the previous node (see PID 148).

**TO REDUCE THE RISK OF ANY STRAY ELECTRICAL SIGNALS AND TO ENSURE CORRECT OPERATION OF THE PANEL, EACH OF THE RS485 CIRCUITS MUST BE WIRED IN A SEPARATE SCREENED PAIR. THE SCREENS MUST BE EARTHED AND CONTINUOUS OVER THE CABLE RUN.**

### 3.3 LOOP CABLING

The main consideration for the loop cable is the loop length. This length must include all sub-loops and spurs. For example, a loop of 800m with three spurs of 150m must be considered as being 1250m in length.

Notes :-

1. The loop cabling must be wired in fire rated cable. The minimum conductor size is shown in the tables of section 3.3.1. In countries where local standards permit, the loops can be wired in 'Twin Figure 8' cable but the loop length and load will have to be reduced in accordance with the lower conductor size.
2. Maximum loop resistance = 16Ω per conductor.
3. It is assumed that devices are evenly spread on the loop. If all the sounders are located at the end of the loop then the volt drop may prevent correct operation. The '6000' loop devices are rated to operate with an input voltage range of 16 – 30V (peak).

Each address point must be numbered. Sequential address allocation of devices on the loops is not necessary with a 6400 system but it may prove advantageous for fault finding.

**TO REDUCE THE RISK OF ANY STRAY ELECTRICAL SIGNALS AND TO ENSURE CORRECT OPERATION OF THE PANEL, EACH OF THE LOOPS MUST BE WIRED IN A SEPARATE SCREENED PAIR. THE SCREENS MUST BE EARTHED AND CONTINUOUS OVER THE CABLE RUN. THE EARTH CONTINUITY MUST BE MAINTAINED AT ALL LOOP DEVICES.**

### 3.3.1 GUIDE TO LOOP CABLE CONDUCTOR SIZES (mm<sup>2</sup>)

		Loop Length (metres)										
		500	550	600	650	700	750	800	850	900	950	1000
<b>Total</b>	50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
	100	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
	150	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
<b>Loop</b>	200	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
	250	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
<b>Load</b>	300	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
	350	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
<b>in</b>	400	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
	450	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5
<b>Alarm</b>	500	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	2.5
	550	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	2.5	2.5
	600	1.0	1.0	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5

		Loop Length (metres)										
		1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
<b>Total</b>	50	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
	100	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
	150	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>Loop</b>	200	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
	250	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>Load</b>	300	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
	350	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>in</b>	400	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5
	450	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>Alarm</b>	500	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	N/A
	550	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	N/A
	600	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	N/A	N/A	N/A

### 3.4 ALARM CABLING

The main consideration for the alarm cable is the length. This length must include all spurs. For example, an alarm circuit of 800m with three spurs of 150m must be considered as being 1250m in length.

Notes :-

1. The alarm cabling must be wired in a minimum standard of 2.5mm<sup>2</sup> fire rated cable.
2. If however, the total alarm cabling length is less than 1km, then the alarm circuit may be wired in a minimum standard of 1.5mm<sup>2</sup> fire rated cable. In countries where local standards permit, the alarm circuit can be wired in 'Twin Figure 8' cable but the cable length and load will have to be reduced in accordance with the lower conductor size.
3. The maximum permissible alarm circuit length is limited by volt drop.

**TO REDUCE THE RISK OF ANY STRAY ELECTRICAL SIGNALS AND TO ENSURE CORRECT OPERATION OF THE PANEL, EACH OF THE ALARM CIRCUITS MUST BE WIRED IN A SEPARATE SCREENED PAIR. THE SCREENS MUST BE EARTHED AND CONTINUOUS OVER THE CABLE RUN.**

**TABLE 1 - CABLING, NUMBER OF CORES**

CABLE	Number of Cores
1. Supply 230 volts 50Hz	3
2. 24V Supply circuit 1	2
24V Supply circuit 2	2
SF Signal	1
3. RS485 channel 1	2
RS485 channel 2	2
RS485 channel 1 to 6400/Network/LCD	4 <sup>1</sup>
4. Loop Circuit	2 (per loop)
Alarm Circuit	2 (per circuit)
5. Power Pair For: -	
Zone/Alarm Interface Units	2
I/O Interface Units	2

<sup>1</sup> A 6400/Network/LCD requires an external +24V power supply that is usually provided by a fourth RS485 core, refer to PID 153.

# CURRENT CONSUMPTION

It is necessary to calculate current consumption figures for the system in standby (mains fail) and alarm conditions in order to select the correct battery capacity.

## 4.0 PANEL CURRENT

Details of panel currents for standby and alarm are shown in the 6400 specification later in this manual.

### 4.1 LOOP CURRENT ( 6000 Series Devices )

Figures for the loop device current for battery capacity calculations are contained in tables 2, 3 and 4. These provide details of the quiescent and alarm currents of both the addressable and non-addressable loop devices.

Note: -

1. Loop isolators, devices that isolate sections of the loop if short circuit wiring faults occur, are available as separate units. Some '6000 series' devices contain an isolator. Check device literature.
2. When using Zone interfaces the current per detector / sounder must be added to the current requirement of the Interface Units (refer to note 2 of table 3).
3. The alarm loop current figures may differ from the figures quoted in other Protec literature. The figures here assume a limit on the number of devices lighting their fire led so this reduced led current is averaged across all the loop devices.

### 4.2 LOOP CURRENT ( 5000 Series Devices )

Figures for the '5000' series loop device currents are provided in Appendix B.

### 4.3 LOOP CURRENT ( 4000 Series Devices )

Figures for the '4000' series loop device currents are provided in Appendix C.

**TABLE 2a – ADDRESSABLE ‘6000’ LOOP EQUIPMENT CURRENT DETAILS**

<b>ADDRESSABLE DEVICES</b>	<b>QUIESCENT LOOP CURRENT (mA)</b>	<b>ALARM LOOP CURRENT (mA)</b>
<b>OPTICAL SMOKE DETECTOR 6000/OP</b>	<b>0.35</b>	<b>0.55</b>
<b>OPTICAL HEAT SMOKE DETECTOR 6000/OPHT</b>	<b>0.35</b>	<b>0.55</b>
<b>TEMPERATURE DETECTOR 6000/TEMP</b>	<b>0.35</b>	<b>0.55</b>
<b>OPTICAL HEAT CO SMOKE DETECTOR 6000/OP/HT/CO</b>	<b>0.45</b>	<b>0.65</b>
<b>CO HEAT DETECTOR 6000/HT/CO</b>	<b>0.35</b>	<b>0.55</b>
<b>IONISATION SMOKE DETECTOR 6000/ION</b>	<b>0.52</b>	<b>0.82</b>
<b>BREAK GLASS 6000/MCP</b>	<b>0.5</b>	<b>0.85</b>
<b>SOUNDER BASE 6000/ASB2</b>	<b>0.6</b>	<b>6</b>
<b>SOUNDER BASE WITH FLASHING XENON BEACON - 6000/ASBEA2</b>	<b>0.6</b>	<b>10</b>
<b>RED SYMPHONY SOUNDER 6000/SYM2R</b>	<b>0.5</b>	<b>5</b>
<b>SOUNDER 6000/SSR2</b>	<b>0.65</b>	<b>5</b>
<b>SOUNDER 6000/SRZ2</b>	<b>0.5</b>	<b>20</b>
<b>BEACON 6000/PVR2</b>	<b>0.5</b>	<b>45 (Xenon) 5 Av / 12 pk (LED)</b>
<b>SOUNDER XENON BEACON 6000/SRZ2/PVR</b>	<b>0.5</b>	<b>75</b>
<b>MONITORED INPUT CLEAN CONTACT OUTPUT BOARD - 6000/MICCO</b>	<b>1.3</b>	<b>5</b>
<b>CLEAN CONTACT OUTPUT BOARD 6000/CCO</b>	<b>0.6</b>	<b>10</b>
<b>MONITORED INPUT BOARD 6000/MIP</b>	<b>0.65</b>	<b>4</b>
<b>MONITORED INPUT WITH CLEAN CONTACT OUTPUT - 6000/MIPCCO</b>	<b>0.7</b>	<b>15</b>

**TABLE 2b – ADDRESSABLE ‘6000’ LOOP EQUIPMENT CURRENT DETAILS continued**

<b>ADDRESSABLE DEVICES</b>	<b>QUIESCENT LOOP CURRENT (mA)</b>	<b>ALARM LOOP CURRENT (mA)</b>
<b>6000Plus Optical Detector</b>	<b>0.2</b>	<b>0.55</b>
<b>6000Plus Heat Detector</b>	<b>0.2</b>	<b>0.55</b>
<b>6000Plus Optical Heat Detector</b>	<b>0.2</b>	<b>0.55</b>
<b>6000Plus Optical Heat Detector with Isolator</b>	<b>0.4</b>	<b>2.53</b>
<b>6000Plus Optical Heat Detector with Sounder</b>	<b>0.4</b>	<b>9.23</b>
<b>6000Plus Optical Heat Detector with Sounder and LED Beacon</b>	<b>0.4</b>	<b>14.23</b>
<b>6000Plus Optical Heat Detector with Talking Sounder</b>	<b>0.4</b>	<b>12.53</b>
<b>6000Plus Optical Heat Detector with Talking Sounder and LED Beacon</b>	<b>0.4</b>	<b>17.53</b>
<b>6000Plus Optical Heat Detector with LED Beacon</b>	<b>0.4</b>	<b>7.53</b>
<b>6000Plus Optical Heat CO Detector</b>	<b>0.45</b>	<b>0.65</b>
<b>6000Plus Optical Heat CO Detector with Sounder</b>	<b>0.45</b>	<b>9.28</b>
<b>6000Plus Optical Heat CO Detector with Sounder and LED Beacon</b>	<b>0.45</b>	<b>14.28</b>
<b>6000Plus Optical Heat CO Detector with Talking Sounder and LED Beacon</b>	<b>0.45</b>	<b>17.58</b>
<b>6000Plus Optical Heat CO Detector with LED Beacon</b>	<b>0.45</b>	<b>7.6</b>
<b>6000Plus Optical Detector with Sounder</b>	<b>0.4</b>	<b>9.23</b>
<b>6000Plus Heat Detector with LED Beacon</b>	<b>0.4</b>	<b>7.53</b>
<b>6000Plus Heat Detector with Sounder</b>	<b>0.4</b>	<b>9.23</b>
<b>6000Plus Heat Detector with Sounder and LED Beacon</b>	<b>0.4</b>	<b>14.23</b>
<b>6000Plus Heat Detector with Talking Sounder and LED Beacon</b>	<b>0.4</b>	<b>17.53</b>
<b>6000Plus Talking SSR</b>	<b>0.4</b>	<b>9.4</b>
<b>6000Plus Talking SSR with LED Beacon</b>	<b>0.45</b>	<b>14.42</b>



**TABLE 2c – ADDRESSABLE ‘6000’ LOOP EQUIPMENT CURRENT DETAILS continued**

<b>ADDRESSABLE DEVICES</b>	<b>QUIESCENT LOOP CURRENT (mA)</b>	<b>ALARM LOOP CURRENT (mA)</b>
<b>LOOP BEAM DETECTOR 6000/BEAM – (MIP)</b>	<b>0.65</b>	<b>7</b>
<b>TALKING SOUNDER BASE 6000/ATSB2</b>	<b>0.7</b>	<b>17 (Bell tone)</b>
<b>6400 LOOP LCD</b>	<b>86 (No disablement)<sup>1</sup> 93 av. (+Disablement) 96 pk</b>	<b>98 (No disablement)<sup>1</sup> 101av. (+Disablement) 103pk</b>
<b>CIRRUS PRO INTERFACE 6000/CPRO</b>	<b>10</b>	<b>10</b>
<b>LOCAL CONTROL MODULE</b>	<b>0.7 + detectors + EOL</b>	<b>67mA</b>

<sup>1</sup> Figure assumes a supply fault, buzzer on and both LCD backlights on

**TABLE 3 – ADDRESSABLE ‘6000’ LOOP EQUIPMENT WITH AUXILIARY SUPPLY**

**CURRENT DETAILS**

ADDRESSABLE DEVICES	QUIESCENT (mA)		ALARM (mA)	
	LOOP	24V	LOOP	24V
SOUNDER BASE WITH AUXILIARY SUPPLY (6000/ASB4)	0.58	-	1.5	8
SOUNDER BASE WITH FLASHING XENON BEACON (AUXILIARY SUPPLY) (6000/ASBEA4)	0.58	-	1.5	25 average 80 peak <sup>1</sup>
SOUNDER WITH AUXILIARY SUPPLY 6000/SRZ4	0.5	-	2	20
XENON BEACON WITH AUXILIARY SUPPLY 6000/PVR4	0.5	-	2	45
SOUNDER XENON BEACON WITH AUXILIARY SUPPLY 6000/SRZ4/PVR	0.5	-	2	75
ZONE ALARM INTERFACE 6000/ZA	2	4 + zone load	4	35 + alarm load (1A max)
16 WAY INTERFACE 6000/16WAY <sup>2</sup>	7	18 + zone load + 16 per output relay + output board load (5A max)	7	18 + zone load + 16 per output relay + output board load (5A max)
CELL CALL RESET UNIT 6000/CCALL	10	7 min 125 max	10	7 min 125 max
LANDING INDICATOR UNIT 6000/LIU	10	5 min 125 max	10	5 min 125 max
DAMPER INTERFACE UNIT 6000/DIU	4	450 max	4	450 max

<sup>1</sup> The peak values occur when the beacon is at its ‘on’ stage during flashing.

<sup>2</sup> There are variants of this product depending upon the monitoring requirements.

**TABLE 4 – NON-ADDRESSABLE ‘6000’ LOOP EQUIPMENT CURRENT DETAILS**

NON-ADDRESSABLE DEVICE	QUIESCENT (mA)		ALARM (mA)	
	LOOP	24V	LOOP	24V
24V SOUNDER BASE (6000/SB)	-	-	-	7
24V SOUNDER BASE WITH XENON BEACON (6000/SBEA)	-	-	-	25 average 80 peak <sup>1</sup>
FLUSH ISOLATOR UNIT 6000/FIU	0.12	-	0.12	-
BOXED ISOLATOR UNIT 6000/IU	0.12	-	0.12	-
DUAL ISOLATOR BASE 6000/DIB	0.12	-	0.12	-
STANDARD BASE 6000/BASE	-	-	-	-
RELAY BASE 6000/RBNC or 6000/RBNO	0.05	-	15	-

# INSTALLATION PROCEDURE

## 5.1 6400 / 8A CHARGER

A 6400 8A charger is supplied complete and fully assembled in one box. The box also contains an installation template showing mounting hole & cable entry positions with spirit level and plumb bob references.

### 1) Unpacking

Remove the installation template from the packaging - leaving the 6400 charger in the box for protection.

### 2) Preparing the Mounting Position

Select a dry, well ventilated position for the charger that is within the 6400 environmental specification. Use the installation template together with a spirit level etc. to mark, drill and plug the three mounting holes in the desired position. The charger must be mounted in the orientation shown on the template.

### 3) Removal of the Door

Remove the charger unit from the packaging. Use the key supplied to unlock the door. Disconnect the ribbon cable and the earthing point on the door. Remove the door by extracting the two hinge pins. Place the door back in the box for protection.

### 4) Removal of the battery clamp and PSU

Remove the two screws holding the battery clamp and carefully withdraw the clamp ensuring that it cannot short out the battery terminals (if present). Disconnect the earth connections from the PSU to the enclosure. Remove the four screws fixing the PSU and place the PSU in the box for protection. **DO NOT REMOVE THE EARTH CONNECTIONS FROM THE EARTH STUD.**

### 5) Preparing and fixing the charger

Use the installation template supplied to mark out suitable positions for cable entry on the back of the enclosure **i.e. not behind the PSU or batteries**. Cut out the cable entry position and mount the enclosure at the position prepared in (2) feeding cables through into the box.

### 6) Re-fitting the PSU and battery clamp

Re-fit the PSU (re-fit is reversal of 4). **ENSURE THAT ALL THE EARTH CONNECTIONS REMOVED IN (4) ARE RE-CONNECTED.** Refit the battery clamp (re-fit is reversal of 4) ensuring that the clamp cannot touch the battery terminals. Do not connect any other wiring to the charger.

### 7) Re-fitting the Door

Re-fit the inner door (re-fit is reversal of 3) **ENSURE THAT ALL EARTHING POINTS ARE RE-CONNECTED.**

## **5.2 6400 PANEL (DCN/2LPN or DCN/4LPN)**

A 6400 panel is supplied complete and fully assembled in one box. The box also contains an installation template showing mounting hole & cable entry positions with spirit level and plumb bob references.

### **1) Unpacking**

Remove the installation template from the packaging - leaving the 6400 unit in the box for protection.

### **2) Preparing the Mounting Position**

Select a dry position for the panel that is within the 6400 environmental specification. Use the installation template together with a spirit level etc. to mark, drill and plug the three mounting holes in the desired position. The panel must be mounted in the orientation shown on the template.

### **3) Removal of the Outer Plastic Door**

Remove the 6400 unit from the packaging. Use the key supplied to unlock the outer plastic door, remove the door by extracting the hinge pins and place the door back in the box for protection.

### **4) Removal of the Inner Door**

Unscrew the three fixings on the metal inner door at the lock side of the door. Open the inner door and disconnect the earthing points on the door. Disconnect the ribbon cable that connects the main board on the door to the back of the enclosure and the power supply connectors attached to the pcbs on the door. Close the door and extract the two remaining hinge pins. Carefully remove the inner door from the unit including all circuit boards fitted to it and place it back in the box for protection.

### **5) Removal of the Gear-tray**

Remove the screw from the bottom of the gear-tray (in the back of the enclosure) and loosen the two at the top (key-hole fixings). Disconnect the earth connection from the gear-tray to the enclosure. Remove the gear-tray from the enclosure as a single item including the attached circuit boards.

### **6) Preparing and fixing The Unit**

Use the installation template to mark out a suitable position for cable entry on the back of the enclosure **i.e. not behind the gear-tray**. Cut out the cable entry position and mount the enclosure at the position prepared in (2) feeding cables through into the box.

### **7) Re-fitting the Gear-tray**

Re-fit the gear tray (re-fit is reversal of 5). **ENSURE THAT THE EARTH CONNECTIONS REMOVED IN (5) ARE RE-CONNECTED.** Do not connect any other wiring to the panel.

### **8) Re-fitting the Inner Door**

Re-fit the inner door (re-fit is reversal of 4) **ENSURE THAT ALL EARTHING POINTS ARE RE-CONNECTED.**

### **9) Re-fitting the Plastic Door**

Re-fit the outer plastic door by offering the door up to the hinges and inserting the two hinge pins.

### **5.3 6400 LPN PANEL**

A 6400 LPN is supplied complete and fully assembled in one box. The box also contains an installation template showing mounting hole & cable entry positions with spirit level and plumb bob references.

#### **1) Unpacking**

Remove the installation template from the packaging - leaving the 6400 unit in the box for protection.

#### **2) Preparing the Mounting Position**

Select a dry position for the panel that is within the 6400 environmental specification. Use the installation template together with a spirit level etc. to mark, drill and plug the three mounting holes in the desired position. The panel must be mounted in the orientation shown on the template.

#### **3) Removal of the door**

Remove the 6400/LPN unit from the packaging. Use the key supplied to unlock the door. Disconnect the ribbon cable and the power supply cable from the door. Disconnect the earthing point on the door and remove the door by extracting the two hinge pins. Place the door back in the box for protection.

#### **4) Removal of the Gear-tray**

Remove the screw from the bottom of the gear-tray (in the back of the enclosure) and loosen the two at the top (key-hole fixings). Disconnect the earth connection from the gear-tray to the enclosure. Remove the gear-tray from the enclosure as a single item including the attached circuit boards.

#### **5) Preparing and fixing the Unit**

Use the installation template to mark out a suitable position for cable entry on the back of the enclosure **i.e. not behind the gear-tray**. Cut out the cable entry position and mount the enclosure at the position prepared in (2) feeding cables through into the box.

#### **6) Re-fitting the Gear-tray**

Re-fit the gear tray (re-fit is reversal of 5). **ENSURE THAT THE EARTH CONNECTIONS REMOVED IN (4) ARE RE-CONNECTED.** Do not connect any other wiring to the panel.

#### **7) Re-fitting the Door**

Re-fit the inner door (re-fit is reversal of 3). **ENSURE THAT ALL EARTHING POINTS ARE RE-CONNECTED.**

## **5.4 6400 DCN PANEL**

A 6400 DCN is supplied complete and fully assembled in one box. The box also contains an installation template showing mounting hole & cable entry positions with spirit level and plumb bob references.

### **1) Unpacking**

Remove the installation template from the packaging - leaving the 6400 unit in the box for protection.

### **2) Preparing the Mounting Position**

Select a dry position for the panel that is within the 6400 environmental specification. Use the installation template together with a spirit level etc. to mark, drill and plug the three mounting holes in the desired position. The panel must be mounted in the orientation shown on the template.

### **3) Removal of the Outer Plastic Door**

Remove the 6400/DCN unit from the packaging. Use the key supplied to unlock the outer plastic door, remove the door by extracting the hinge pins and place the door back in the box for protection.

### **4) Removal of the Inner Door**

Unscrew the three fixings on the metal inner door at the lock side of the door. Open the inner door and disconnect the earthing points on the door. Disconnect the ribbon cable that connects the main board on the door to the back of the enclosure and the power supply connectors attached to the pcbs on the door. Close the door and extract the two remaining hinge pins. Carefully remove the inner door from the unit including all circuit boards fitted to it and place it back in the box for protection.

### **5) Removal of the terminal board**

Remove the screws holding the terminal board to the enclosure. Remove the terminal board and place it back in the box for protection.

### **6) Preparing and fixing the DCN**

Use the installation template to mark out a suitable position for cable entry on the back of the enclosure **i.e. not behind the terminal board**. Cut out the cable entry position and mount the enclosure at the position prepared in (2) feeding cables through into the box.

### **7) Re-fitting the terminal board**

Re-fit the terminal board (re-fit is reversal of 5). Ensure that all the screws removed in (5) are re-connected. Do not connect any other wiring to the terminal board.

### **8) Re-fitting the Inner Door**

Re-fit the inner door (re-fit is reversal of 4) **ENSURE THAT ALL EARTHING POINTS ARE RE-CONNECTED.**

### **9) Re-fitting the Plastic Door**

Re-fit the outer plastic door by offering the door up to the hinges and inserting the two hinge pins.

## **5.5 6400 RDN PANEL**

A 6400 RDN is supplied complete and fully assembled in one box. The box also contains an installation template showing mounting hole & cable entry positions with spirit level and plumb bob references.

### **1) Unpacking**

Remove the installation template from the packaging - leaving the 6400 unit in the box for protection.

### **2) Preparing the Mounting Position**

Select a dry position for the panel that is within the 6400 environmental specification. Use the installation template together with a spirit level etc. to mark, drill and plug the three mounting holes in the desired position. The panel must be mounted in the orientation shown on the template.

### **3) Removal of the Outer Plastic Door**

Remove the 6400/RDN unit from the packaging. Use the key supplied to unlock the outer plastic door, remove the door by extracting the hinge pins and place the door back in the box for protection.

### **4) Removal of the Inner Door**

Unscrew the three fixings on the metal inner door at the lock side of the door. Open the inner door and disconnect the earthing points on the door. Disconnect the power supply cables from the terminal board in the box. Close the door and extract the two remaining hinge pins. Carefully remove the inner door from the unit including the circuit board fitted to it and place it back in the box for protection.

### **5) Removal of the terminal board**

Remove the screws holding the terminal board to the enclosure. Remove the terminal board and place it back in the box for protection.

### **6) Preparing and fixing the RDN**

Use the installation template to mark out cable entry positions on the back of the enclosure. **i.e. not behind the terminal board.** Cut out the cable entry positions and mount the enclosure at the position prepared in (2) feeding cables through into the box.

### **7) Re-fitting the terminal board**

Re-fit the terminal board (re-fit is reversal of 5). Ensure that all the screws removed in (5) are re-connected.

### **8) Re-fitting the Inner Door**

Re-fit the inner door (re-fit is reversal of 4) **ENSURE THAT ALL EARTHING POINTS ARE RE-CONNECTED.** Reconnect the power supply cables from the inner door to the terminal board that were removed in (4) but do not connect any other cables to the terminal board.

### **9) Re-fitting the Plastic Door**

Re-fit the outer plastic door by offering the door up to the hinges and inserting the two hinge pins.



## **5.6 6400 NETWORK LCD**

A 6400 Network LCD is supplied complete and fully assembled in one box.

### **1) Removal of the front plate**

Remove the 6400/Network/LCD unit from the packaging. Use the Allen key supplied to unlock the front plate. Remove the front plate by disconnecting the wires and extracting the hinge pins. Place the front plate with the pcb attached back in the box for protection.

### **2) Preparing the Mounting Position**

Select a dry position for the panel that is within the 6400 environmental specification. Use the back-box together with a spirit level etc. to mark, drill and plug the three mounting holes in the desired position. The panel must be mounted with the lock at the top.

### **3) Preparing and fixing the LCD**

Remove knock-outs as required in the rear of the back-box for cable entry. Mount the back-box at the position prepared in (2) feeding cables through into the box.

### **4) Re-fitting the front plate**

Re-fit the front plate (re-fit is reversal of 1). Ensure that all the wires removed in (1) are re-connected. **ENSURE THAT ALL EARTHING POINTS ARE RE-CONNECTED.** Do not connect any other cables to the panel.

## **5.7 FIELD EQUIPMENT**

All metal termination boxes and detector bases should be securely fastened to the mounting surface and earth bonded.

**FIELD EQUIPMENT MUST NOT BE CONNECTED AT THIS STAGE.**

# CABLE TEST

Before connecting external cables to any field device, tests must be carried out using a 500V DC insulation tester (megger). The readings between each cable core, and each core and earth must be greater than 10M ohms (record the readings). Equipment connected to the cabling during insulation tests could be damaged with the high voltages produced. Great care must be taken during insulation tests to discharge the cables, since charged cable may damage the control equipment upon connection.

# CONNECTION

For general wiring details see the Product Information Drawings in appendix D.

## 7.1 CONTROL EQUIPMENT

Wiring details are supplied for reference only.

**Do not make any connections to the control panel**

## 7.2 FIELD EQUIPMENT

In order to perform the commissioning of devices correctly, the following procedure needs to be carried out upon installation of each '6000 Series' addressable loop device: -

- Remove one of the unique Serial Number bar code labels.
- Place this label at the chosen Loop and Address position in the '6400 Commissioning Booklet' supplied. Note that each node has a separate booklet therefore use the booklet for the node to which this device is connected. (The address position was defined in section 2.2). Failure to place the labels at the correct position or in the correct booklet will increase the commissioning time and thus incur additional cost.

With reference to the relevant connection diagrams, connect the remaining field equipment. Note: Insulation tests MUST NOT be carried out after this point and the mains or standby supply MUST NOT be connected.

## 7.3 ALARM CIRCUITS

Each of the eight monitored alarm circuits requires a 47K 0.5W end-of-line resistor for monitoring purposes. Only polarised and suppressed sounders must be used on the alarm circuits.

## 7.4 FIRE STATION OUTPUT

The fire output is designed to drive 24V into an 1100Ω load. This output is open and short circuit monitored so the panel is supplied with a 1K 0.5W end-of-line resistor. The fire station output must be driven from a DCN or a DCN/LPN and not from a standalone LPN to satisfy the requirements of EN54-2.

The aux. fire output provides volt free contacts for a general purpose fire signal.

## 7.5 FAULT OUTPUT

The fault output is designed to drive 24V into an 1100Ω load. This output is open and short circuit monitored so the panel is supplied with a 1K 0.5W end-of-line resistor.

The LPN has an aux. fault output that provides volt free contacts for a general purpose fault signal. This is not available on a DCN or RDN.

The 6400/8A charger has volt free fault contacts intended for a general purpose fault signal but to maintain EN54-4 compliance these terminals must not be used.

# COMMISSIONING REQUIREMENTS

Refer to the supplied copy of COMMISSIONING STANDARD TERMS for details of requirements before commissioning can take place.

Note: The Fire Alarm Commissioning Application form must be completed and returned 14 days before a commissioning engineer can attend.

# 6400 SPECIFICATION

Temperature range 0-40°C  
 Maximum humidity 85% Non-condensing  
 Environment The 6400 meets IP30. It must be mounted in a dry position that does not exceed the temperature or humidity limits specified above.

6400 Charger power supply 230V AC nominal  $\pm$  10%  
 6400 Charger 8A Switch mode  
 6400 Charger batteries 2 x 12V 18, 26 or 40Ah 'Online' sealed lead acid  
 6400 Panel working voltage 21.5 - 30V DC

Current consumption  
 (This is measured at 24V DC with no loop load, no alarm load, mains failed and not printing)

	<b>Standby</b>	<b>Alarm</b>
6400/DCN	250mA	360mA
6400/2LPN	246mA (2 loop)	476mA
6400/4LPN	306mA (4 loop)	536mA
6400/DCN/2LPN	390mA (2 loop)	760mA
6400/DCN/4LPN	430mA (4 loop)	800mA
Addition per 5000 Dual loop card	+ 30mA	+ 30mA
Addition per 4000 Dual loop card	+ 80mA	+ 90mA
6400/RDN	150mA	220mA
6400/LCD	100mA	170mA
Maximum loop current	600mA per 6000 Series loop 600mA per 5000 Series loop 250mA per 4000 Series loop	
Maximum analogue addresses	4 Loops of 127 addresses per 6400/4LPN	
Maximum devices per loop	127 (To increase this, refer to 'double addressing' in section 2.2.1)	
Maximum loop length	Refer to section 3.3	
Monitored Alarm outputs	8 per 6400/LPN (1A Rated @ 24V DC)	
Non-monitored changeover outputs	6 per 6400/LPN (1A Rated @ 24V DC)	
Maximum load per 6400 panel	6A (Includes loops, alarm circuits, aux. 24V supply, panel printer (where fitted) and panel alarm current defined above)	
Monitored fire station output	24V (20mA rated)	
Aux. fire output	Single pole changeover contacts (1A Rated @ 24V DC)	
Monitored fault output	24V (20mA rated)	
Aux. fault output	Single pole changeover contacts on LPN only (1A Rated @ 24V DC)	
Auxiliary 24V output	24V DC Fused @ 1A	
Zones	100 Zones per standard 6400 system (Expandable)	
Key-switches	Maximum of 4 per 6400 system (Only available on a LPN)	
24hr timers	Maximum of 2 per 6400 system (Only available on a DCN)	

Appendix A details optional functions of En54-2 that are available on a 6400 system.

# APPENDIX A

En54-2:1997 + A1:2006 permits optional functions with requirements. The table below defines the options available on a 6400 system.

<b>Option</b>	<b>6400</b>
<b>Indications :</b>	
Fault signals from points	Yes
Total loss of power supply	No
Recording of the number of entries into fire alarm condition	Yes
<b>Controls :</b>	
Dependency on more than one alarm signal	Type C
Delays to outputs	Yes
Disablement of each address point	Yes
Test Condition	Yes
<b>Outputs :</b>	
Fire alarm devices	Yes
Fire alarm routing equipment	Yes
Automatic fire protection equipment	No
Fault warning routing equipment	Yes
Standardized I/O interface	No

# APPENDIX B

## '5000' SERIES LOOP EQUIPMENT CURRENT DETAILS

The following table provides details of the quiescent and alarm currents of the '5000' loop devices.

LOOP DEVICE	QUIESCENT CURRENT	ALARM CURRENT
	LOOP	LOOP
Analogue Manual Call Point	0.25mA	0.35mA
Analogue Optical Sensor	0.2mA	0.35mA
Analogue Ionisation Sensor	0.2mA	0.35mA
Analogue Temp Sensor	0.2mA	0.35mA
Dual Isolator Base	0.5mA	0.5mA
Analogue Sounder Base 80dBA	0.2mA	8mA
Analogue Sounder Base 90dBA	0.2mA	30mA
Loop Powered Sounder	0.2mA	20mA
Loop Powered Xenon Beacon	0.2mA	35mA
Loop Powered Xenon / Sounder	0.2mA	75mA
Loop Short Circuit Isolator	0.2mA	0.2mA
Zone / C.O. Contact Interface	0.2mA	4mA
Sprinkler Delay Interface	0.2mA	4mA
Zone / C.O. 240V Rated Interface	0.2mA	28mA

NOTE:- When using Zone Interfaces the current per detector must be added to the current requirement of the Interface Units.

# APPENDIX C

## '4000' SERIES LOOP EQUIPMENT CURRENT DETAILS

The following table provides details of the quiescent and alarm currents of the '4000' series loop devices.

<b>LOOP DEVICE ( Apollo XP95 )</b>	<b>QUIESCENT CURRENT</b>	<b>ALARM CURRENT</b>
Manual Call Point	0.23mA	2.23mA
Optical Smoke Detector	0.34mA	4.34mA
Ionisation Smoke Detector	0.28mA	2.28mA
Heat Detector	0.25mA	2.25mA
Heat Detector – High Temperature	0.25mA	2.25mA
Multi-Sensor Detector	0.47mA	3.47mA
Sounder 100dB (Stand-alone)	1.1mA	4.5mA
Intelligent Sounder 85dB (Master)	0.3mA	3.5mA
Intelligent Sounder 85dB (Master)	0.3mA	8.25mA
Sounder Control Unit	1.9mA	1.7mA
Loop Powered Beacon	0.15mA	3mA
Switch Monitor	0.73mA	3.4mA
Switch Monitor Plus	1.2mA	3.5mA
Mini Switch Monitor	1mA	3.5mA
Zone Monitor	6mA	19mA
Output Unit	0.72mA	3.3mA
Input / Output Unit	1.2mA	4.5mA

NOTE:- Only addresses 1 to 126 are valid on '4000' series loop devices.



# APPENDIX D

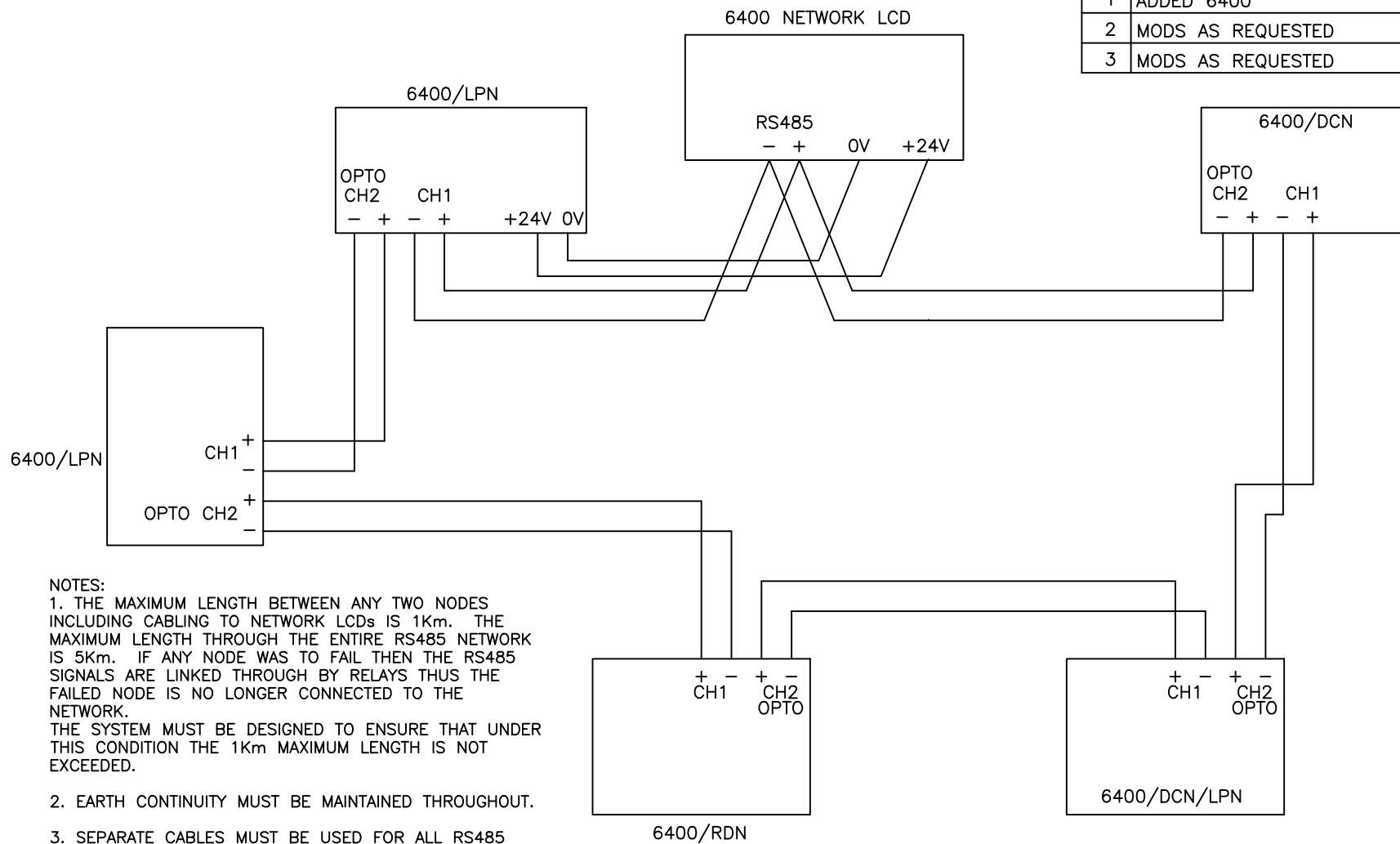
## Product Information Documents supplied for use with this manual

PID 148	-	Example RS485 Connections
PID 151	-	External connections for 6400/RDN
PID 153	-	External connections for 6400/LCD
PID 175	-	External connections for 6400/RDN/LPN
PID 179	-	External connections for 6400 Mimic
PID 227	-	External connections for 6400/DCN
PID 229	-	External wiring connections for 6400/DCN/LPN & 6400/LPN
PID 236	-	Series 9000/8 power supply
PID 237	-	9800 PSU connection wiring diagram
PID 248	-	Connections for 9800 Charger to 6400/DCN/LPN or 6400/LPN
PID 249	-	Connections for 9800 Charger to 6400/DCN

PIDs for loop devices are supplied with the individual products and also available from the website [www.protec.co.uk](http://www.protec.co.uk)


If in doubt contact Protec Fire Detection plc.

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE
1	ADDED 6400	DRR	PD	A4761	16.2.00
2	MODS AS REQUESTED	L.H.	PD	A7307	21.11.02
3	MODS AS REQUESTED	DRR	PD	B0765 ECN2340	7.4.06

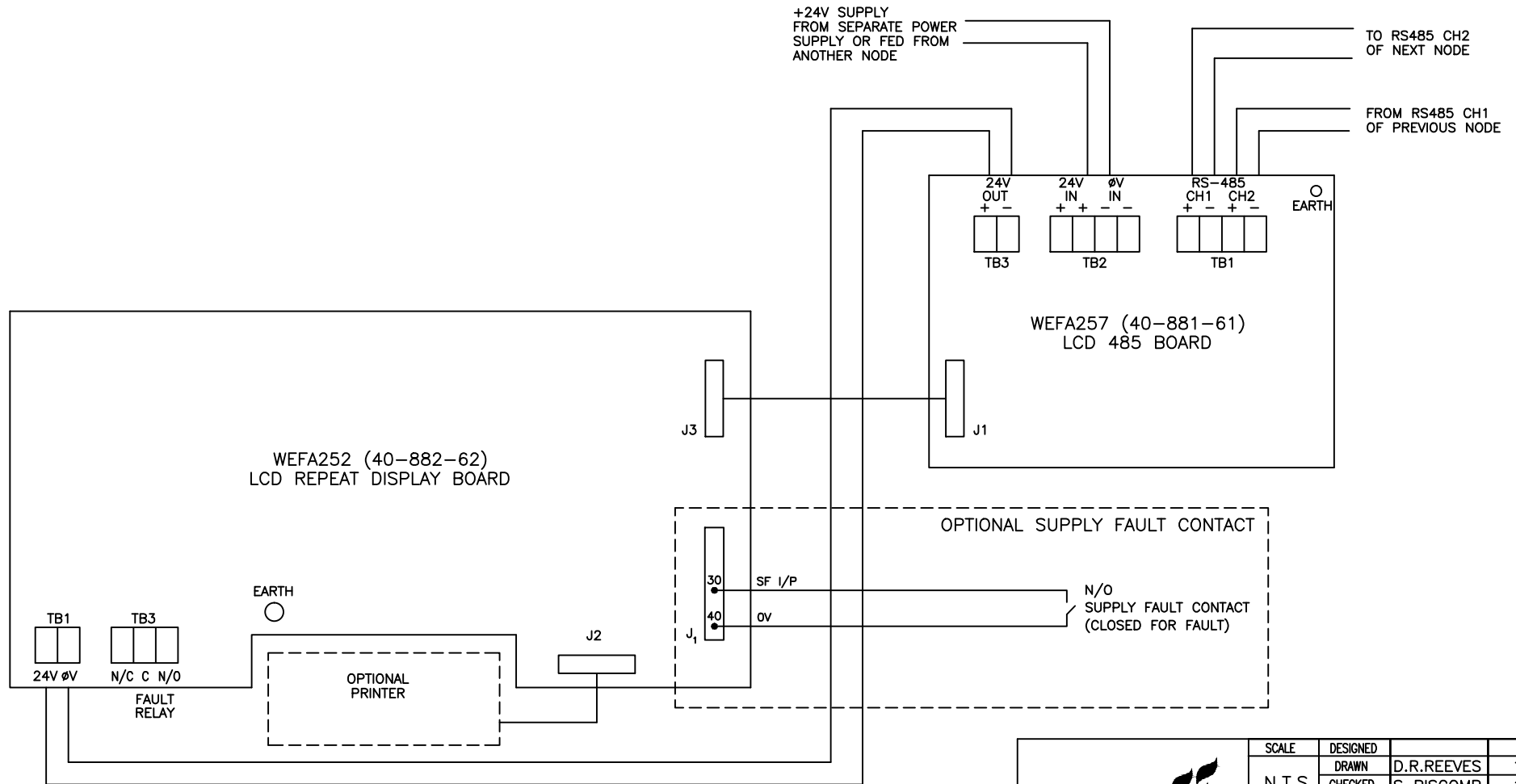



**NOTES:**

1. THE MAXIMUM LENGTH BETWEEN ANY TWO NODES INCLUDING CABLING TO NETWORK LCDs IS 1Km. THE MAXIMUM LENGTH THROUGH THE ENTIRE RS485 NETWORK IS 5Km. IF ANY NODE WAS TO FAIL THEN THE RS485 SIGNALS ARE LINKED THROUGH BY RELAYS THUS THE FAILED NODE IS NO LONGER CONNECTED TO THE NETWORK. THE SYSTEM MUST BE DESIGNED TO ENSURE THAT UNDER THIS CONDITION THE 1Km MAXIMUM LENGTH IS NOT EXCEEDED.
2. EARTH CONTINUITY MUST BE MAINTAINED THROUGHOUT.
3. SEPARATE CABLES MUST BE USED FOR ALL RS485 CONNECTIONS IE. IT IS NOT PERMITTED TO RUN RS485 SIGNALS TO AND FROM A NODE IN THE SAME CABLE.
4. RS485 CABLING TO NETWORK LCDs SHOULD BE WIRED AS SHOWN AND NOT AS A SPUR. ALWAYS POWER THE NETWORK LCD FROM PRECEDING NODE.
5. IF INTENDING TO REPLACE EXISTING WIRING ENSURE THAT ALL THE NODES HAVE OPTO-ISOLATION FITTED BEFORE REMOVING THE COMMON 0V REFERENCE. IF IN DOUBT CONTACT PROTEC.

 <b>Protec</b> Protec Fire Detection plc Protec House, Churchill Way, Lomeshaye Ind. Est Nelson, Lancashire, U.K. BB9 6RT Tel (01282) 717171 Fax (01282) 717273	SCALE	DESIGNED	
	N.T.S.	DRAWN	D.R.REEVES 11.5.98
		CHECKED	S BISCOB 11.5.98
	APPROVED	P DEW 11.5.98	
TITLE		EXAMPLE 5400/6400/4400 RS485 CONNECTIONS	
DRAWING No. PID148			JOB No.
ISSUE 0 1 2 3			

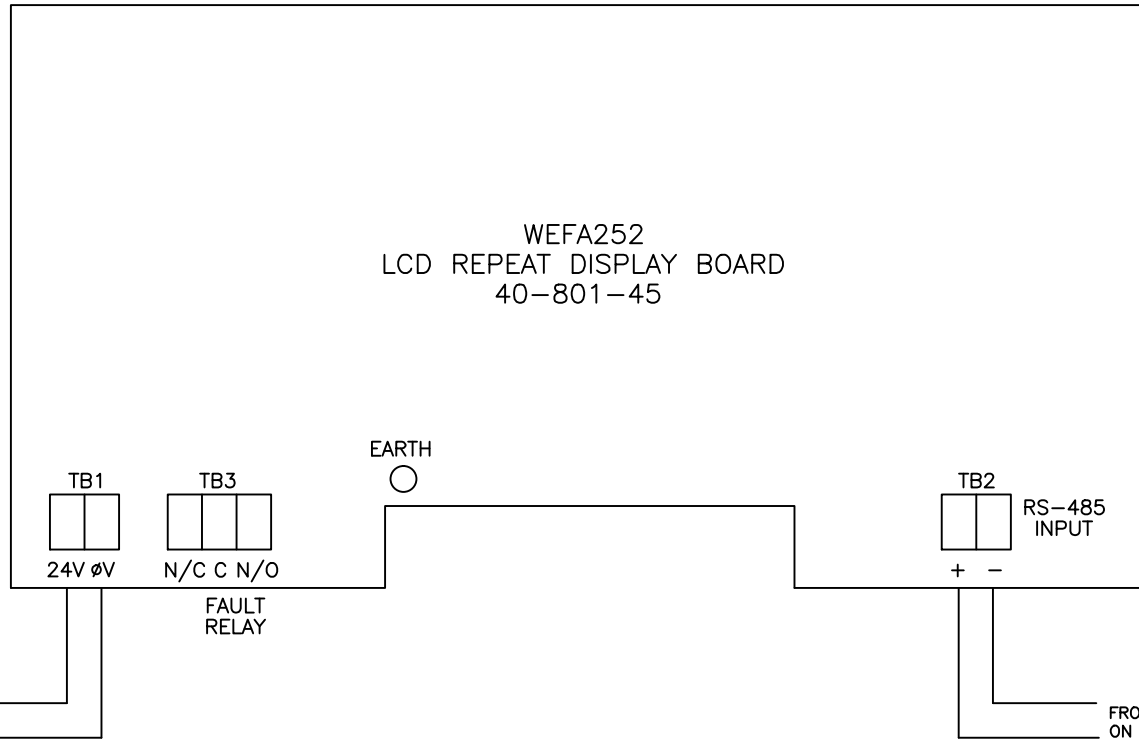
ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE
1	ADDED 6400	DRR	PD	A4761	16.2.00
2	SUPPLY FAULT CONTACT ADDED, UNDER ECN NO. 2255	IS	RPO	B0414	25.10.5



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	N.T.S.	DRAWN	D.R.REEVES 10.7.98
	CHECKED	S BISCOB	10.7.98
	APPROVED	P DEW	10.7.98
TITLE		CONNECTIONS FOR 5400/6400 RDN	
DRAWING No.		PID151	
ISSUE		JOB No.	


A4

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE
1	ADDED 6400	DRR	PD	A4761	16.2.00
2	NOTES ADDED/ ECN2351 ENGINEERS No.	BJR	RPO	BO881	14.06.06

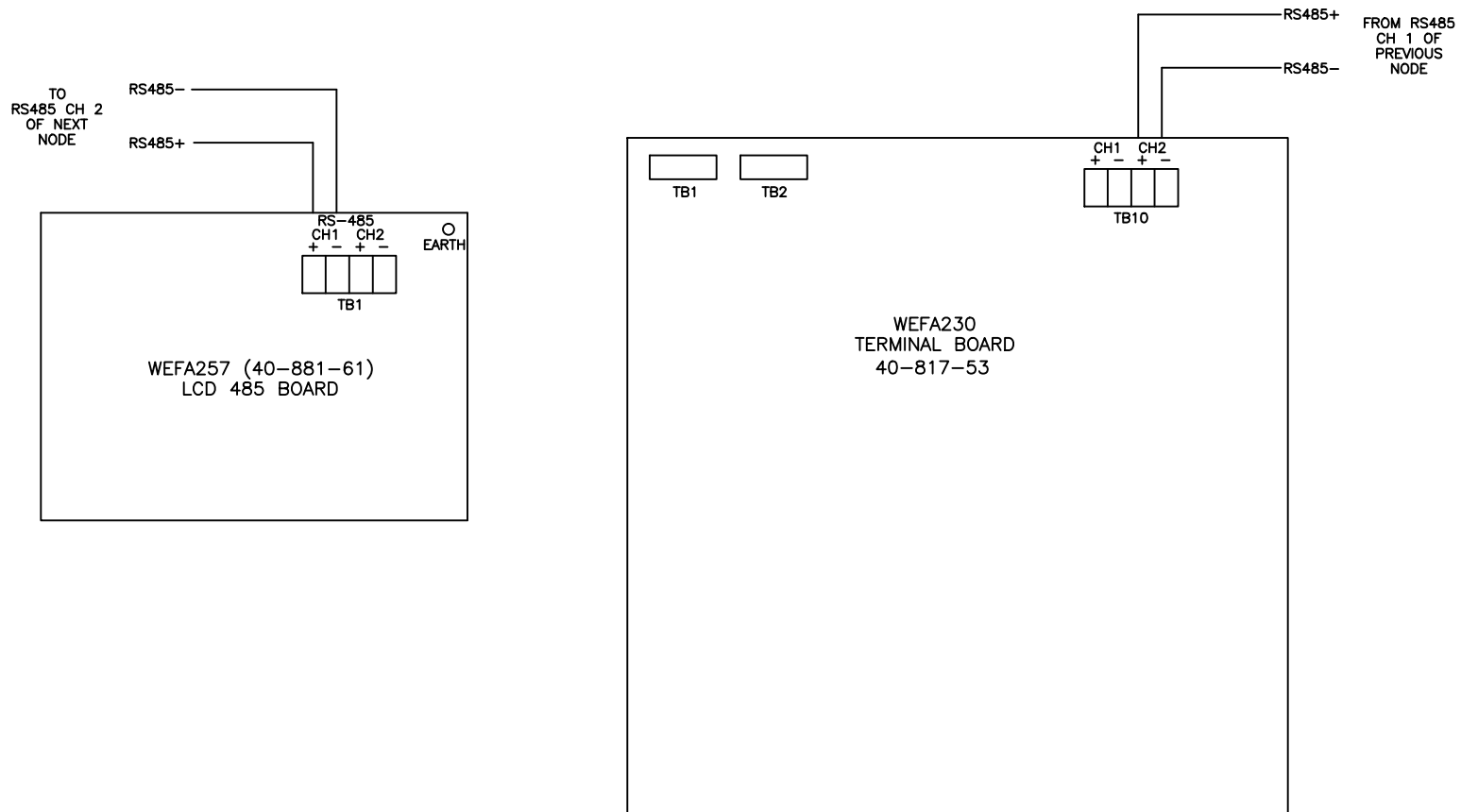


FROM SEPARATE POWER SUPPLY OR FED FROM THE SAME NOTE AS THE RS485 SIGNAL, IF USING A SEPARATE POWER SUPPLY THEN THE 0V MUST BE COMMON WITH THE 0V OF THE NODE SUPPLYING THE RS485 SIGNAL.


FROM RS485 CH1 OF NODE ON THE RS485 NETWORK.

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	N.T.S.	DRAWN	D.R.REEVES 10.7.98
	CHECKED	P DEW	14.7.98
	APPROVED	S BISCOMB	14.7.98
TITLE		CONNECTIONS FOR 6400 NETWORK LCD	
DRAWING No.		PID153	
ISSUE		JOB No.	

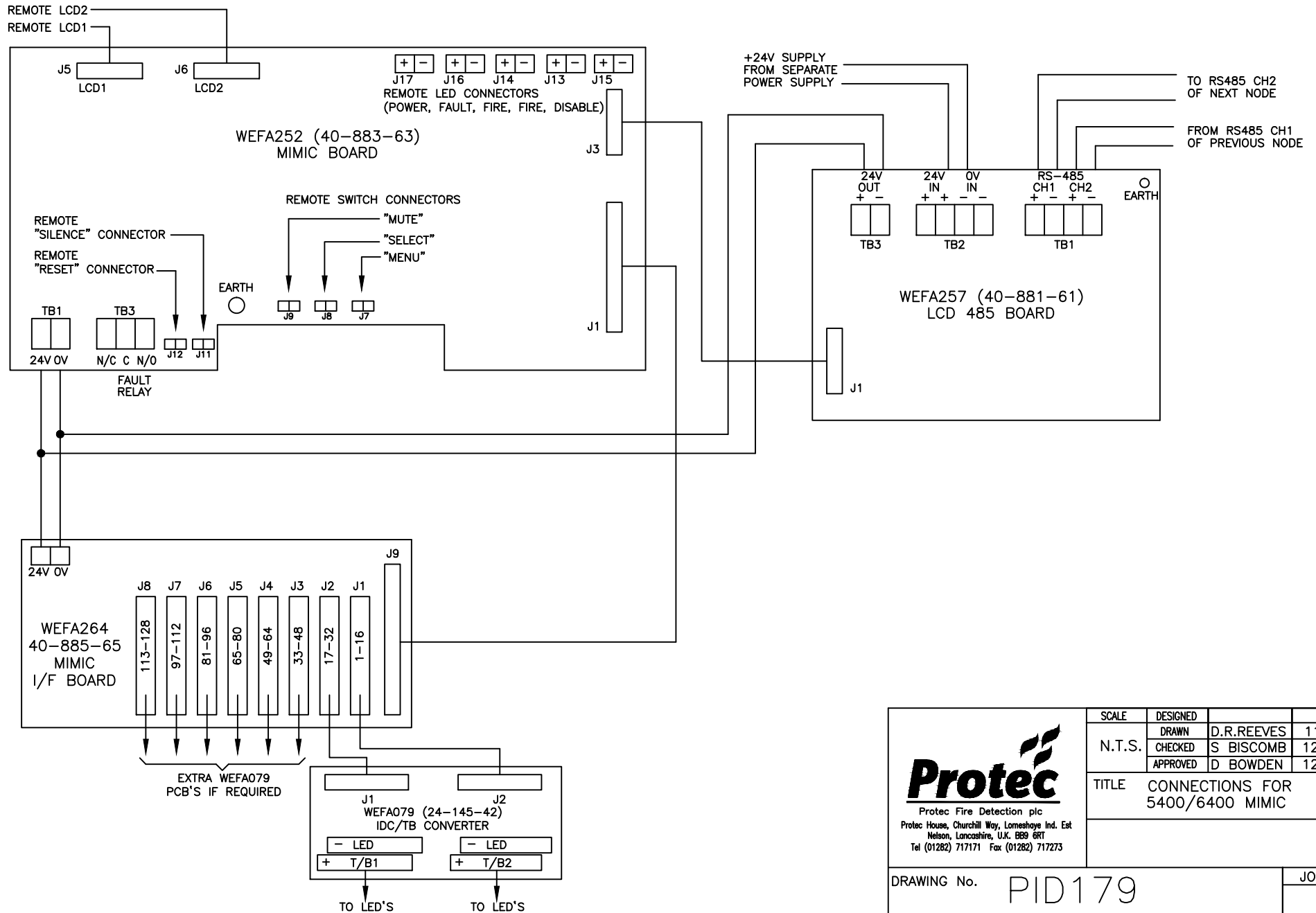
ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE
1	ADDED 6400	DRR	PG	A4761	16.2.00




- NOTES:  
 1. REFER TO PID146 FOR POWER SUPPLY CONNECTION INFORMATION.

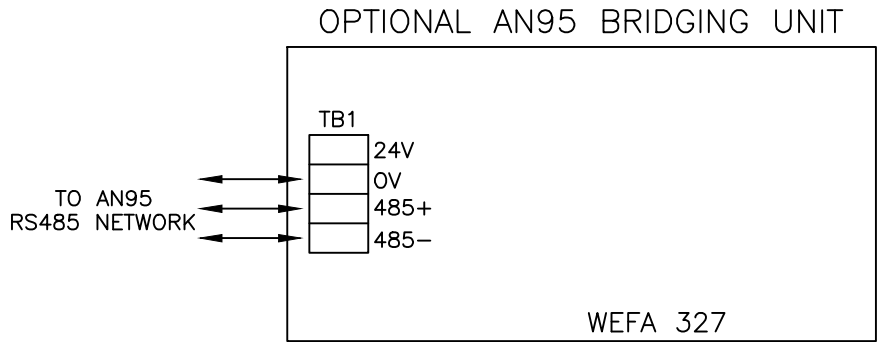
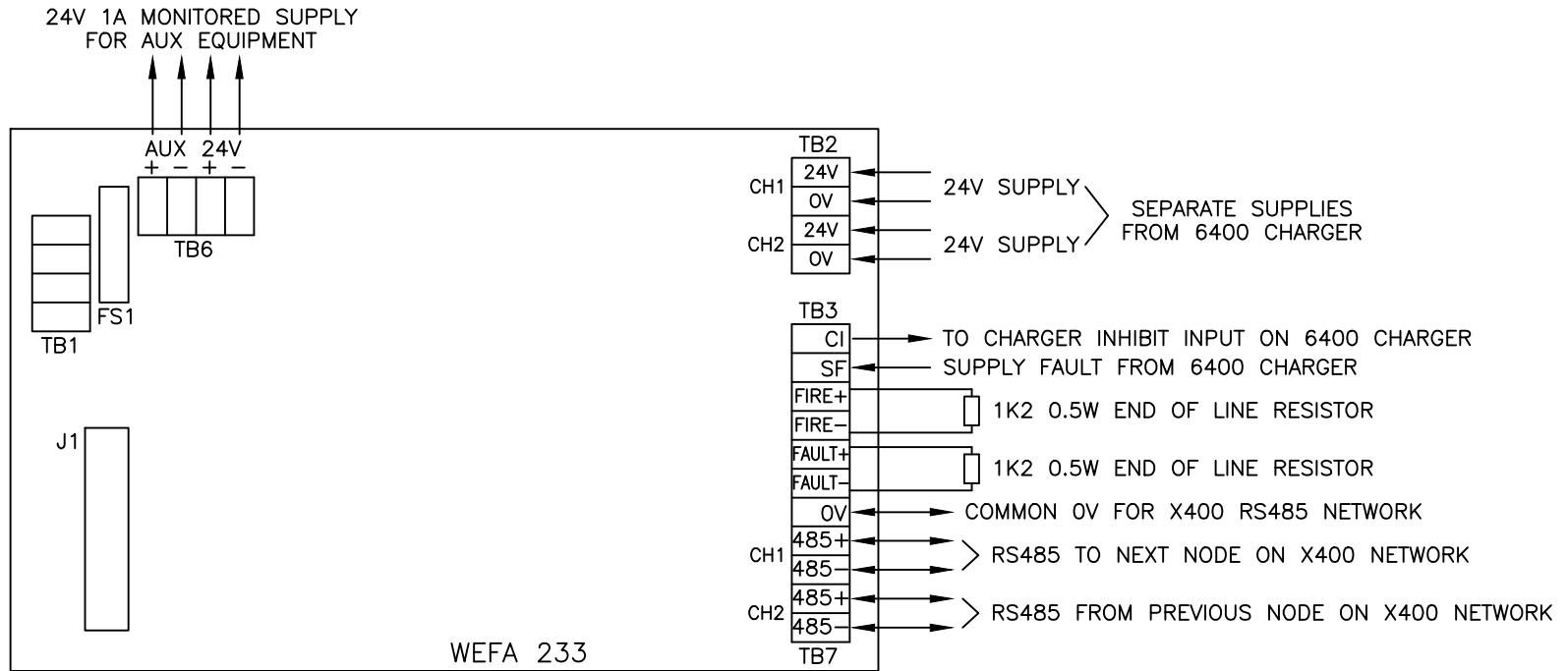
 <b>Protec</b> Protec Fire Detection plc Protec House, Churchill Way, Lameshaye Ind. Est Nelson, Lancashire, U.K. BB9 6RT Tel (01282) 717171 Fax (01282) 717273	SCALE	DESIGNED	
	N.T.S.	DRAWN	P.STRICKLAND 26.4.99
		CHECKED	S BISCOB 26.4.99
		APPROVED	P DEW 26.4.99
TITLE EXTERNAL CONNECTIONS FOR 5400/6400 RDN/LPN COMBINED UNIT.			
DRAWING No. PID175			JOB No.
ISSUE	1		

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE
1	ADDED 6400	DRR	PD	A4761	16.2.00




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	N.T.S.	DRAWN	D.R.REEVES 11.8.99
		CHECKED	S BISCOMB 12.8.99
	APPROVED	D BOWDEN 12.8.99	
TITLE		CONNECTIONS FOR 5400/6400 MIMIC	
DRAWING No.		PID179	
ISSUE		JOB No.	
1			

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE



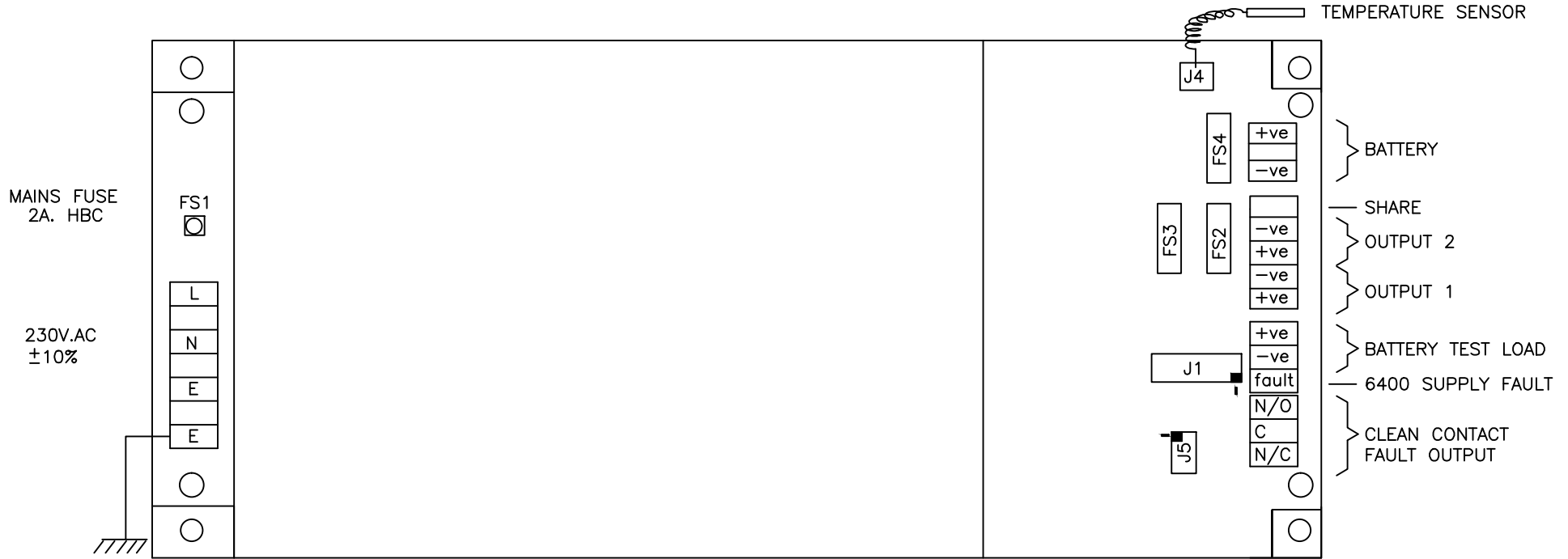
**WARNING: - THIS PANEL MUST BE EARTHED IN ACCORDANCE WITH CURRENT IEE REGULATIONS**

 Protec Fire Detection plc Protec House, Churchill Way, Lomeshaye Ind. Est Nelson, Lancashire, U.K. BB9 6RT Tel (01282) 717171 Fax (01282) 717273	SCALE	DESIGNED	
	N.T.S.	DRAWN	C.WHITAKER
		CHECKED	J.WEARDEN
	APPROVED	P.DEW	30.05.03
TITLE		EXTERNAL CONNECTIONS FOR 6400 DCN	
DRAWING No.		PID227	
ISSUE		JOB No.	
0			





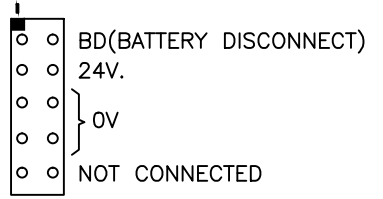
ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE



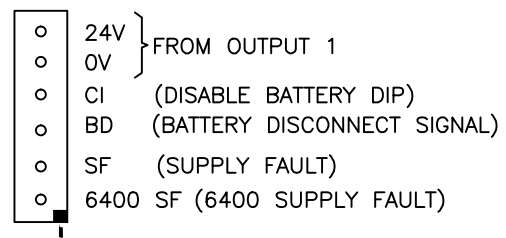
- FS2 - OUTPUT 1 FUSE 10A.QB
- FS3 - OUTPUT 2 FUSE 10A.QB
- FS4 - BATTERY FUSE 13A

J5 CONNECTIONS

POWER ON  
OVER VOLTAGE ( > 28.5V)  
UNDER VOLTAGE (< 22.0V)  
TEMP. SENSOR FAULT  
CURRENT OUTPUT



J1 CONNECTIONS



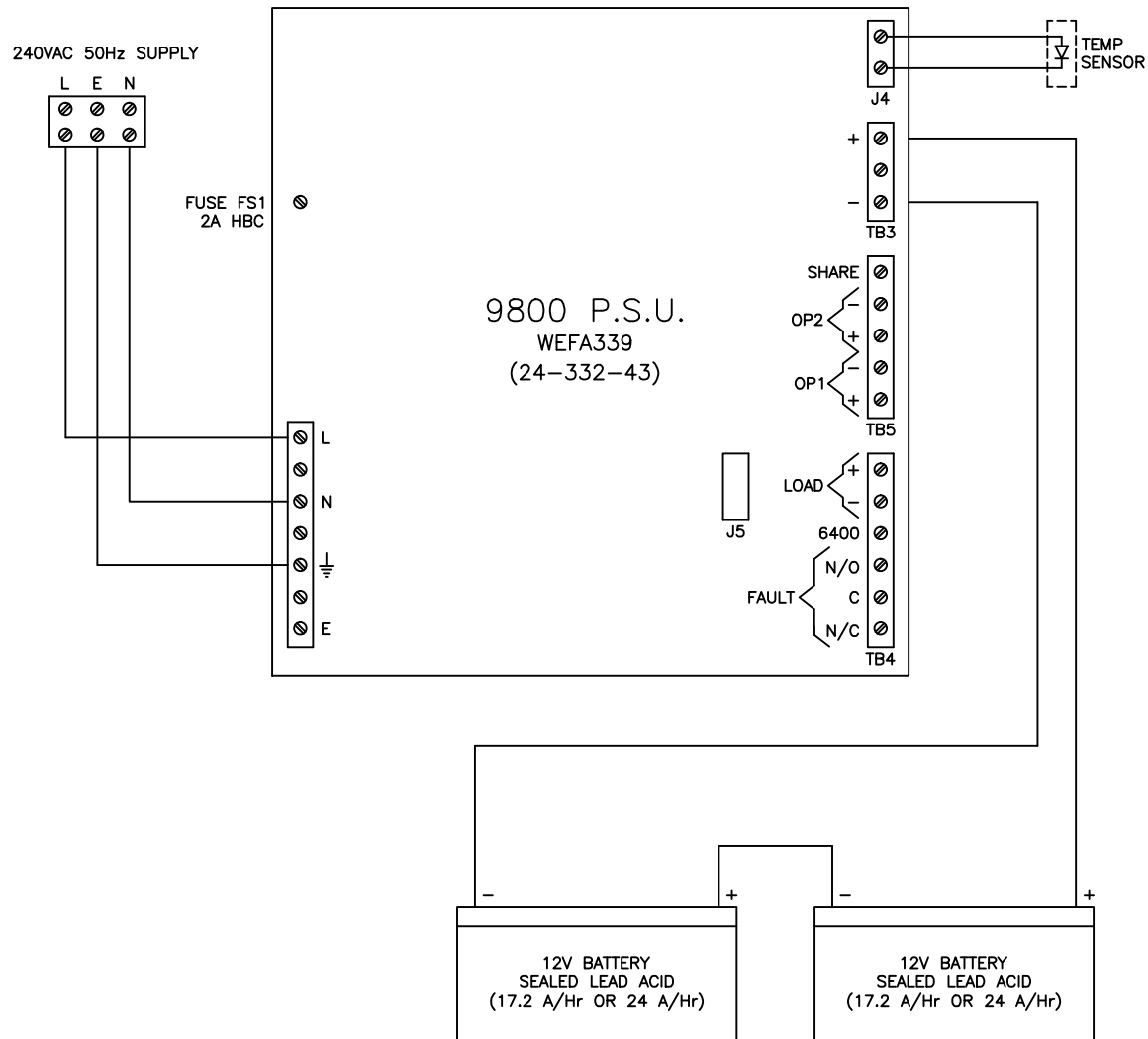
The six outputs are currently limited by 4K7 resistors for direct connection of LEDs to the 24V. output


**Protec**  
Protec Fire Detection plc  
Protec House, Churchill Way, Lameshaye Ind. Est  
Nelson, Lancashire, U.K. BB9 6RT  
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DRAWING STATUS		DATE
ORIGINAL		06.05.05
SCALE	DESIGNED	
	DRAWN	I.BULCOCK 06.05.05
	CHECKED	R.LEWIS 06.05.05
	APPROVED	R.LEWIS 06.05.05
TITLE		
S9000/8		POWER SUPPLY
CLIENT		

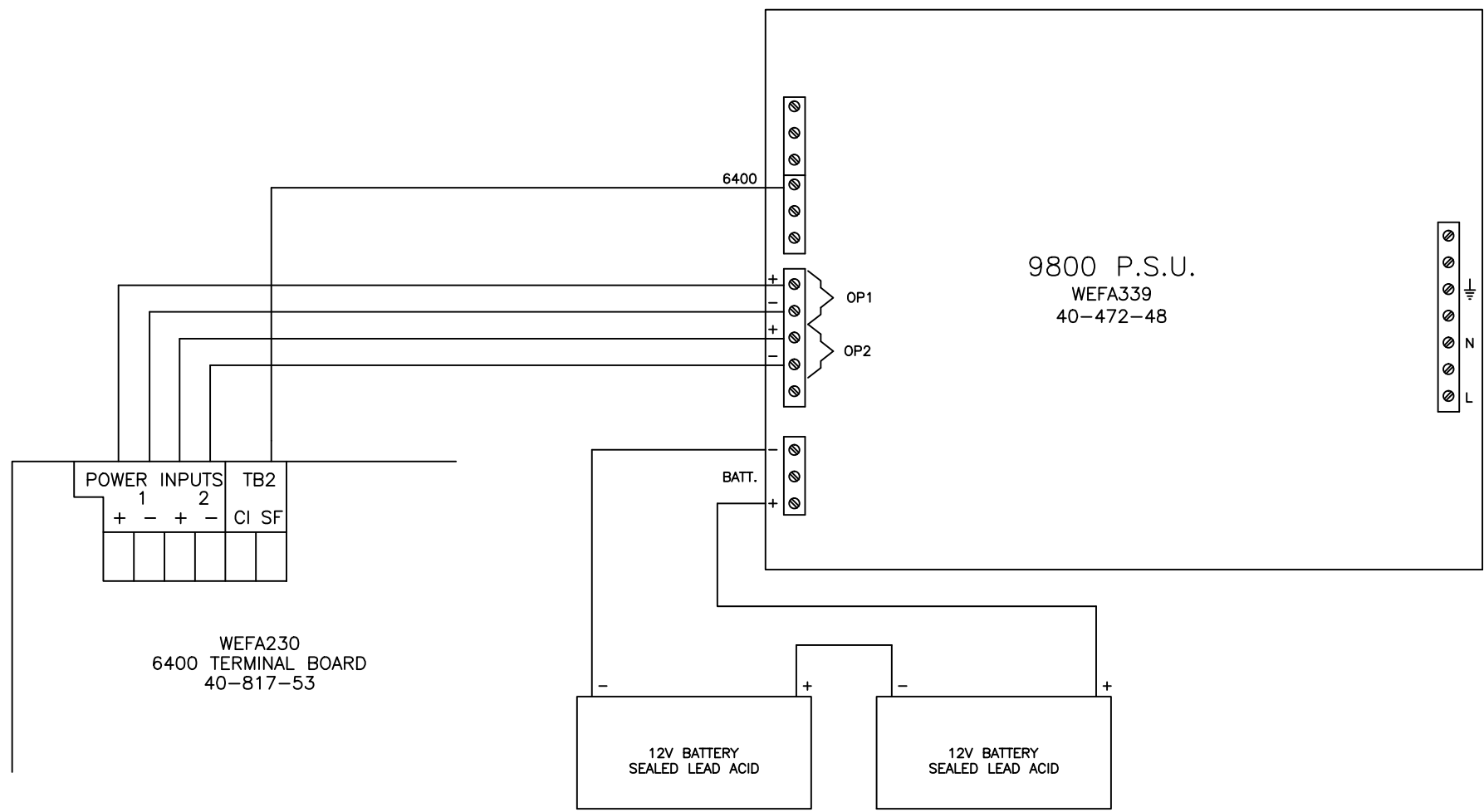
DRAWING No.	PID236	JOB No.	
ISSUE	0		

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE




 <b>Protec</b> Protec Fire Detection plc Protec House, Churchill Way, Lameshaye Ind. Est Nelson, Lancashire, U.K. BB9 6RT Tel (01282) 717171 Fax (01282) 717273	SCALE	DESIGNED		
	N.T.S	DRAWN	J.WEARDEN	11.05.05
		CHECKED		
TITLE 9800 P.S.U. CONNECTION WIRING DIAGRAM		APPROVED		
CLIENT				
DRAWING No. PID 237				JOB No.
ISSUE	0			

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE

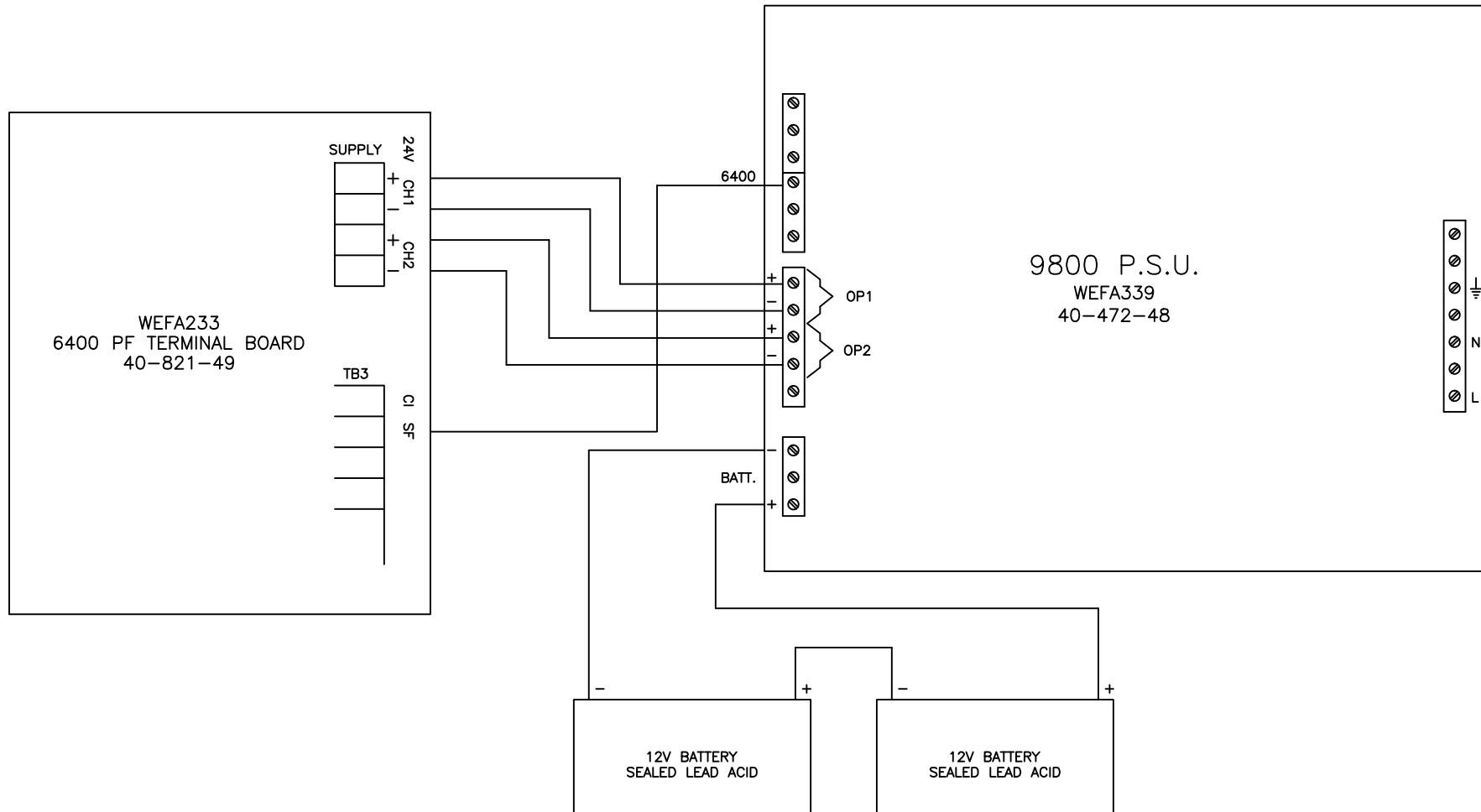


NOTES :

1. THE SEPARATE 28V SUPPLIES OP1 AND OP2 MUST USE SEPARATE CABLES AND NOT BE CARRIED IN A SINGLE 4 CORE CABLE. HOWEVER ONE PAIR MAY BE COMBINED WITH THE 6400 (SF) SIGNAL INTO A 3 CORE CABLE.
2. MAXIMUM CURRENT AVAILABLE FROM 9800 CHARGER = 8A BUT MAXIMUM OF 6A TO TERMINAL BOARD.
3. MAXIMUM DISTANCE BETWEEN CHARGER AND PANEL LIMITED BY VOLT DROP.


 <b>Protec</b> Protec Fire Detection plc Protec House, Churchill Way, Lameshaye Ind. Est Nelson, Lancashire, U.K. BB9 6RT Tel (01282) 717171 Fax (01282) 717273	SCALE	DESIGNED	
	N.T.S.	DRAWN	D.R.REEVES 11.4.06
	CHECKED	P.GARNETT	11.4.06
	APPROVED	P.DEW	11.4.06
TITLE CONNECTIONS FOR 9800 CHARGER TO 6400 DCN/LPN OR 6400 LPN			
DRAWING No. PID248			JOB No.
ISSUE 0			

ISSUE	ALTERATIONS	DRAWN	APP'D	MOD No.	DATE



NOTES :

1. THE SEPARATE 28V SUPPLIES OP1 AND OP2 MUST USE SEPARATE CABLES AND NOT BE CARRIED IN A SINGLE 4 CORE CABLE. HOWEVER ONE PAIR MAY BE COMBINED WITH THE 6400 (SF) SIGNAL INTO A 3 CORE CABLE.
2. MAXIMUM CURRENT AVAILABLE FROM 9800 CHARGER = 8A BUT MAXIMUM OF 6A TO TERMINAL BOARD.
3. MAXIMUM DISTANCE BETWEEN CHARGER AND PANEL LIMITED BY VOLT DROP.

 <b>Protec</b> Protec Fire Detection plc Protec House, Churchill Way, Lomeshaye Ind. Est Nelson, Lancashire, U.K. BB9 6RT Tel (01282) 717171 Fax (01282) 717273	SCALE	DESIGNED		
	N.T.S.	DRAWN	D.R.REEVES	13.4.06
		CHECKED	P.GARNETT	13.4.06
		APPROVED	P.DEW	13.4.06
TITLE CONNECTIONS FOR 9800 CHARGER TO 6400 DCN				
DRAWING No. PID249				JOB No.
ISSUE	0			