



APPROVALS
Australian Standard AS4428.5:1998 Amdt 1
New Zealand Standard NZS4512:2003
CSIRO Approval No. XF2236/R1
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NOTIFIER INERTIA NI-2012 AND NI-2017 NPS Power Supply Series OPERATORS MANUAL

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INTRODUCTION

PREFACE

Thank you for choosing the NPS series Integrated Power Supply. The power supply design utilises state of the art technology and encompasses many years of experience and the expressed requirements by both installers and end users in the fire protection industry.

To take advantage of the numerous features and benefits of this supply, we recommend that you carefully and completely read and understand this manual prior to proceeding with the installation and placing the supply into operation.

OVERVIEW

The overall intent of the power supply is to provide main power, battery charging and backup to a system in accordance with AS4428.5, NZS4512:2003 or manual control from an outside source. E.g. the fire indicator panel. The complete system in which it is installed may be part of life safety equipment, and therefore must be installed, configured and maintained in accordance with the relevant standards.

FEATURES

The NPS series power supplies have 24V (nominal) output and are available in three capacities:

NPS-3 @ 70 Watts
NPS-5 @ 150 Watts
NPS-11 @ 320 Watts.

The NI-2012/2017 Power Supply interface (PSI) is common to all 3 power supplies and was designed to provide simplicity to the end user. It uses Programmable Silicon On Chip (PSOC) microprocessor technology to make the monitoring and control tasks more reliable and accurate.

On board LED are used to indicate the status of critical system functions and changing events including Mains, Charger Condition, Battery State, Test Functions and Testing Inhibited. An operator display is available as an optional extra for front panel indication.

CAUTION

The NPS series of power supplies incorporating the NI-2012 PSI have been tested and approved to AS4428.5 and NZS4512.

However, the equipment must be correctly programmed and installed to suit the specific application. Please ensure correct wiring and operational parameters are set prior to commissioning. If further details are required, please contact Notifier technical support.

WARNING

This equipment may radiate radio frequency energy. It may also be affected by radio frequency energy and, if not installed and operated in accordance with the manufacturers instructions, may cause interference to radio communications. It has been tested and found to comply with the Class A radiated and conducted EMI requirements of AS/NZ 3548:1995 (including Amendments 1 & 2) as well as the EMI susceptibility requirements of Clause C3.5 in AS4428.0:1997.

CAUTION: Radio communication devices should not be used in the vicinity of fire panels or associated ancillary devices and systems

WARNING!!

Although reverse battery protection is provided via a bypass diode and the 30A fuse, care should be taken when connecting batteries so as not to damage system components. Warranty will be void in the event of any damage due to battery reversal.

Power must be disconnected prior to connecting the PSI to any panel or equipment. Failure to do so, may damage the PSI and void warranty.

RELATED DOCUMENTS

AS-4428.1	AUSTRALIAN STANDARD FOR Automatic Fire Detection And Alarm Systems Control And Indicating Equipment.
AS-1670	AUSTRALIAN STANDARD FOR Automatic Fire Detection And Alarm Systems. System Design Installation And Commissioning.
AS-1668.1	AUSTRALIAN STANDARD FOR SAA Mechanical Ventilation And Air Conditioning Fire Precautions In Buildings With Air-handling Systems.
NZS-4512	NEW ZEALAND STANDARD FOR Fire Detection and Alarm Systems in Buildings.

TECHNICAL SPECIFICATION

Mounting Bracket	Zinc Sealed Steel 1.6mm
Power Supply Case	Aluminium / plated Steel
Overall Dimensions	NPS-3 98mm H x 170mm W x 115mm D NPS-5 105mm H x 210mm W x 130mm D NPS-11 105mm H x 220mm W x 130mm D
AC Operational Voltage	135 to 264 VAC 47-63Hz
Rated Output @ 27V DC	NPS-3 - 2.6A NPS-5 - 5.5A NPS-11 - 11.7A
Microprocessor	PSOC CY8C27643-24PVXI
Fuses	F1, F2: Self Resetting PolyFuse 6A F3: Battery Protection ATO 30A
Inputs	Supply In 27.3V (16A Max) Battery Test (Mode 2 only)
Outputs	Battery Panel Supply Mains Fail Normally Energised Clean Contact Batter Fault Normally Energised Clean Contact Charger Fault Normally Energised Clean Contact
Connections	Panel Supply 27.3V (nom) 12A max Panel 10 Way Ribbon to Notifier Inertia FIP Display Front Panel Display LCD Future Use

DESCRIPTION OF INTERCONNECTIONS

Supply In	This is the main input from the Power Supply Unit to the PSI2012 Monitoring Card, and is via terminal block. For the 3A power supply two 1.5mm cables are required. For the 5A and 11A power supplies four 1.5mm cables are required.
Battery	This is the main connection to the battery. It is rated at a maximum of 16A MAX ONLY. For the 3A power supply two 1.5mm cables are required. For the 5A and 11A power supplies four 1.5mm cables are required. Although reverse battery protection is provided via a bypass diode and 30A fuse, care should be taken when connecting batteries so as not to damage system components.
Panel	This is the main output to the equipment. It is rated at 14A MAX ONLY. For the 3A power supply two 1.5mm cables are required. For the 5A and 11A power supplies four 1.5mm cables are required. Although over-current protection is provided by the poly-fuses, care should be taken when connecting the equipment so as not to damage system components. Connection is also possible via the 4 Way Connector J5.
Mains Fail	Normally energised relay: Will de-energise if the charger output falls below 24V. i.e. if the mains supply fails
Charger Fault	Normally energised relay: Will de-energise if the charger output falls outside the prescribed limits of 26.6 to 28.0V \pm 0.2V. This output will restore to normal when the charger once again is operating in the range 26.8 to 27.8 \pm 0.2V
Battery Fault	Normally energised relay: Will de-energise if the battery voltage falls below 24.5V
Battery Test	Terminal input: This input will perform a battery test whenever the input is active low. This input should only be used in Mode 2 (Manual Control)
Panel (DIL Ribbon Connector) J2	<p>Mains On – Open collector, Active Low Output – Active when mains power is present.</p> <p>Battery Fault – Open collector, Active Low Output– Active when battery voltage is below 24.5V \pm 0.2V</p> <p>Charger Fault – Open collector, Active Low Output– Active when charger output is outside the range of 26.6 to 28.0V \pm 0.2V. This output will restore to normal when the charger once again is operating in the range 26.8 to 27.8 \pm 0.2V</p> <p>Battery under Test – Open collector, Active Low Output– Active when the battery is under test.</p> <p>Battery Test Request – Active Low Input, 10K Pull up to 5V – Activating this input will initiate a battery test.</p> <p>Battery Test Inhibit – Active Low Input, 10K Pull up to 5V – Activating this input will cancel a battery test.</p> <p>0V – 0V reference to panel.</p> <p>CAUTION!! This ribbon is not to be used for power transfer and damage may occur to the board if the ribbon cable is connected to the panel while the power supply is on.</p>

<p>Display (DIL Ribbon Connector) J3</p>	<p>Mains On – Open collector, Active Low Output – Active when mains power is present. Battery Fault – Open collector, Active Low Output– Active when battery voltage is below $24.5V \pm 0.2V$. Charger Fault – Open collector, Active Low Output– Active when charger output is outside the range of 26.6 to $28.0V \pm 0.2V$. This output will restore to normal when the charger once again is operating in the range 26.8 to $27.8 \pm 0.2V$. Battery under Test – Open collector, Active Low Output– Active when the battery is under test. Battery Test Inhibit – Open collector, Active Low Output– Active when the battery test is inhibited. Battery Test Request/Reset – Active Low Input, 10K Pull up to 5V – Activating this input will initiate/suspend a battery test. Panel+ – Supply reference to display 0V – 0V reference to display</p> <p>CAUTION!! This ribbon is not to be connected only to the NIFS Display board.</p>
<p>LCD (DIL Ribbon Connector) J4</p>	<p>NOTE: THIS CONNECTOR IS RESERVED FOR FUTURE USE. UTILISATION OF THIS CONNECTOR FOR ANY OTHER PURPOSE MAY RESULT IN PERMANENT DAMAGE TO THE NI-2012/2017.</p> <p>5V – LCD 5V supply. 0V – LCD 0V supply. RS – Row strobe. RW – Read write. EN – Enable D4 – Data bit 4/0 D5 – Data bit 5/1 D6 – Data bit 6/2 D7 – Data bit 7/3</p> <p>CAUTION!! This ribbon is not to be connected to the NI-2012-02 Display board.</p>

MODES OF OPERATION

GENERAL OPERATION

MAINS AND CHARGER MONITORING

Mains power is monitored every 20 seconds for integrity.

Should the charger voltage fall below 26.5V it is considered a Mains Fail as total charger integrity has been lost. Mains is considered to have been restored when the charger voltage rises above 25V.

Should the charger voltage be outside the range of 26.6 to 28.0V \pm 0.2V a Charger Fault is signalled. Once signalled, the charger must return to within the range of 26.8 to 27.8 \pm 0.2V for the fault to reset.

BATTERY PRESENCE MONITORING

The presence and float charge on the battery is monitored every 20 seconds.

Should the battery voltage fall below 24.5V \pm 0.2V, a Battery Fault will be generated. This fault will self reset when the battery float voltage rises above the 24.7V \pm 0.2V level. This type of fault is separate to the fault generated during a battery load test as explained in the following section.

BATTERY CHARGE MONITORING (Battery Test)

Provided that mains power is available, load testing of the battery will be carried out at regular intervals as determined by the settings on the DIP switches as follows.

Standard	SW4	SW3	SW2	SW1	Period between tests	Duration of Test	Fault is latched until
AS4428.5	0	0	0	0	6.65 Days \pm 4hrs	1 hour	Successful completion of test
NZS4512	0	0	0	1	45.6 hours \pm 1.2hrs	1 hour	Test duration period has expired
Manual Control	0	0	1	0	Under Panel Control	Under Panel Control	Battery Test Input Remains Active

During a battery test, the supply current from the power supply is blocked to allow the fire indicator panel to run off the batteries only. This bleeds off any float charge from the batteries and gives a realistic indication of the battery charge condition. The test is immediately terminated should the battery test inhibit input become active, the battery voltage fall below the fault level, or a mains fail occurs.

SYSTEM INTEGRITY CHECK

Should the output voltage of power supply fall below 20.6 Volts, both the output and batteries will be disconnected to prevent permanent damage to the batteries. Power is restored once mains power is restored, or good batteries are installed on the system.

ADDITIONAL OPERATIONS

AS4428.5 (Mode 0) and NZS4512 (Mode 1)

In addition to the general operation above the following features are available.

A manual operation of the battery test may be made in three ways:

1. Momentarily pressing the BTST/RST button (SW2) on the NI-2012/2017 PCB board. Activation of this push button a second time will cancel a battery test.
2. A momentary activation of the input on the panel ribbon cable connector. The test may be prematurely deactivated by the activation of this input a second time.
3. A momentary activation of the battery test button on the optional display card. The test may be prematurely deactivated by the activation of this switch a second time.

An active input on the battery test inhibit input will prevent a battery test from being performed and terminate an active battery test.

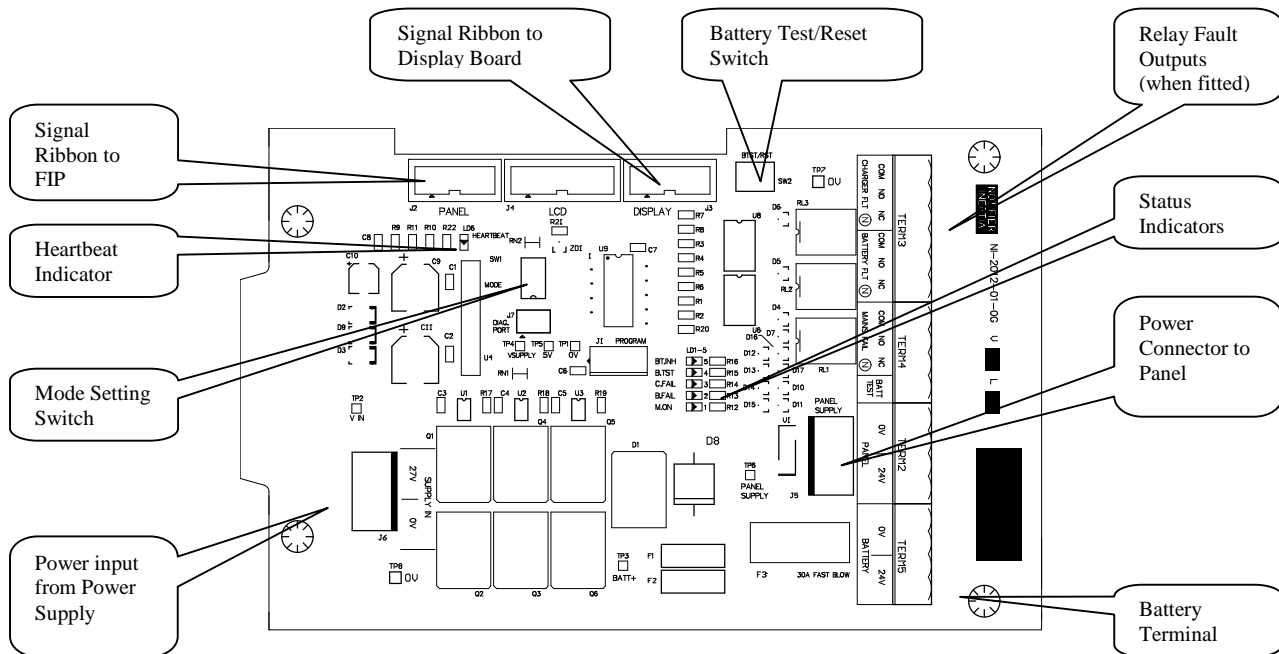
MANUAL OPERATION (Mode 2)

In the manual mode a battery test is only performed while the battery test input is active. A battery fault is latched while this input remains active.

An active input on the battery test inhibit input will prevent a battery test from being performed and terminate an active battery test.

CONNECTION DIAGRAMS

GENERAL BOARD LAYOUT

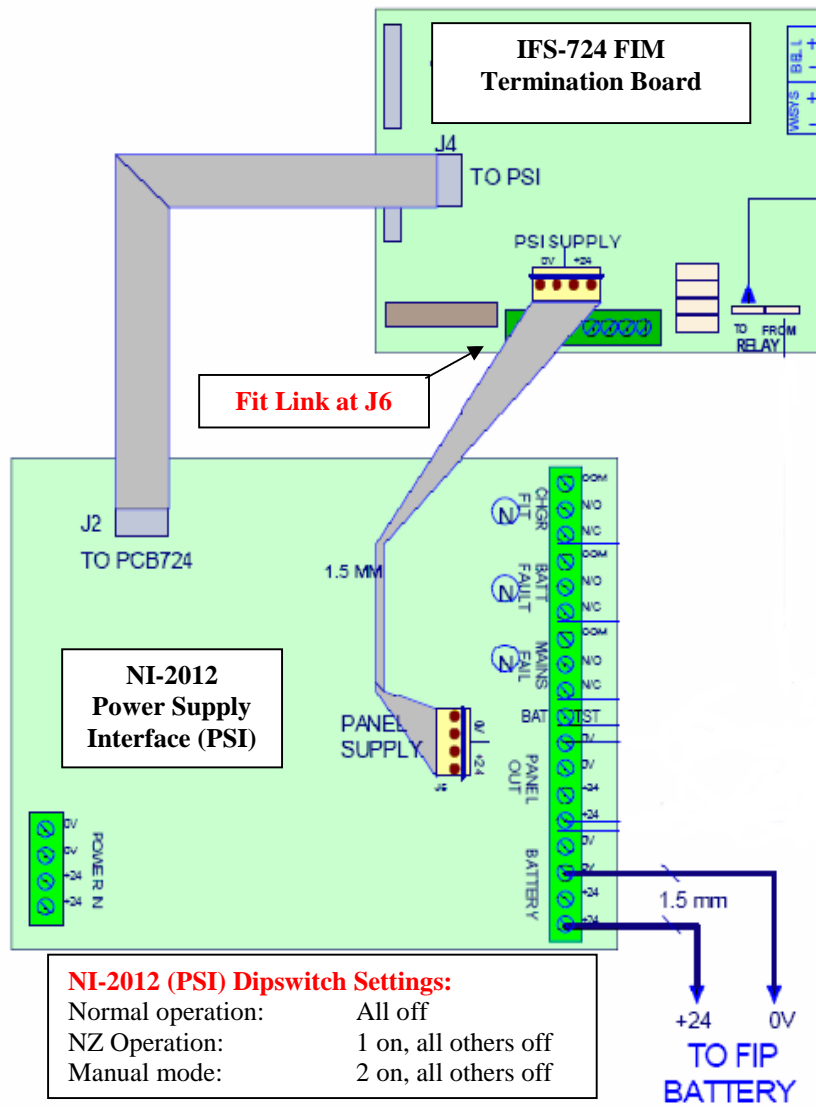


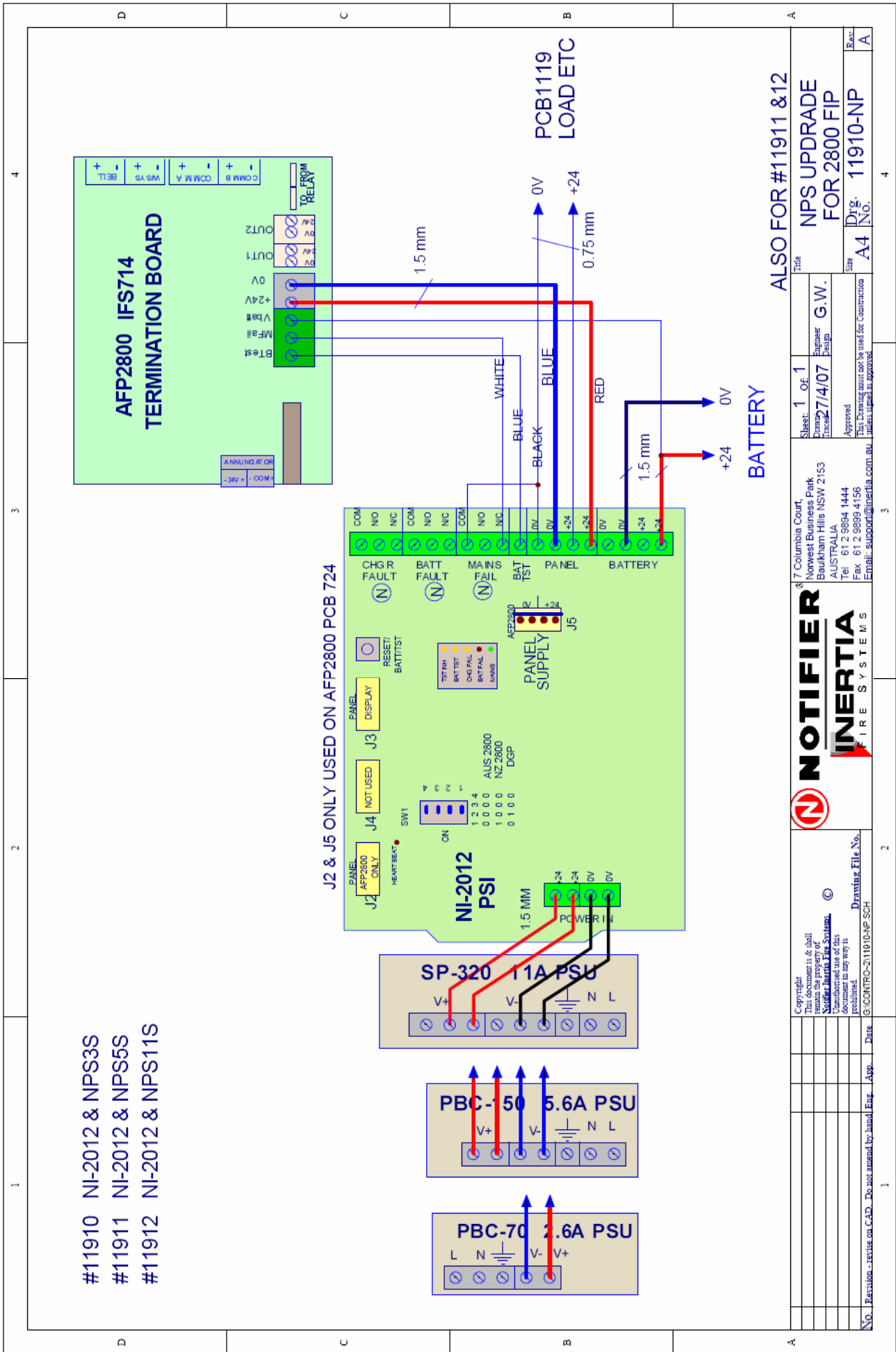
CONNECTION TO AFP-2800

NI-2012 PSI is designed for use with AFP-2800 or standalone applications.

The following settings are used when connecting a NPS power supply to an IFS-724 FIM using the ribbon cable:

1. The CPU must have V5.01 and above installed
2. The bottom dipswitch on the back of the CPU must be set to on position (mode dipswitch U25).
3. J6 on IFS-724 FIM board must be fitted.

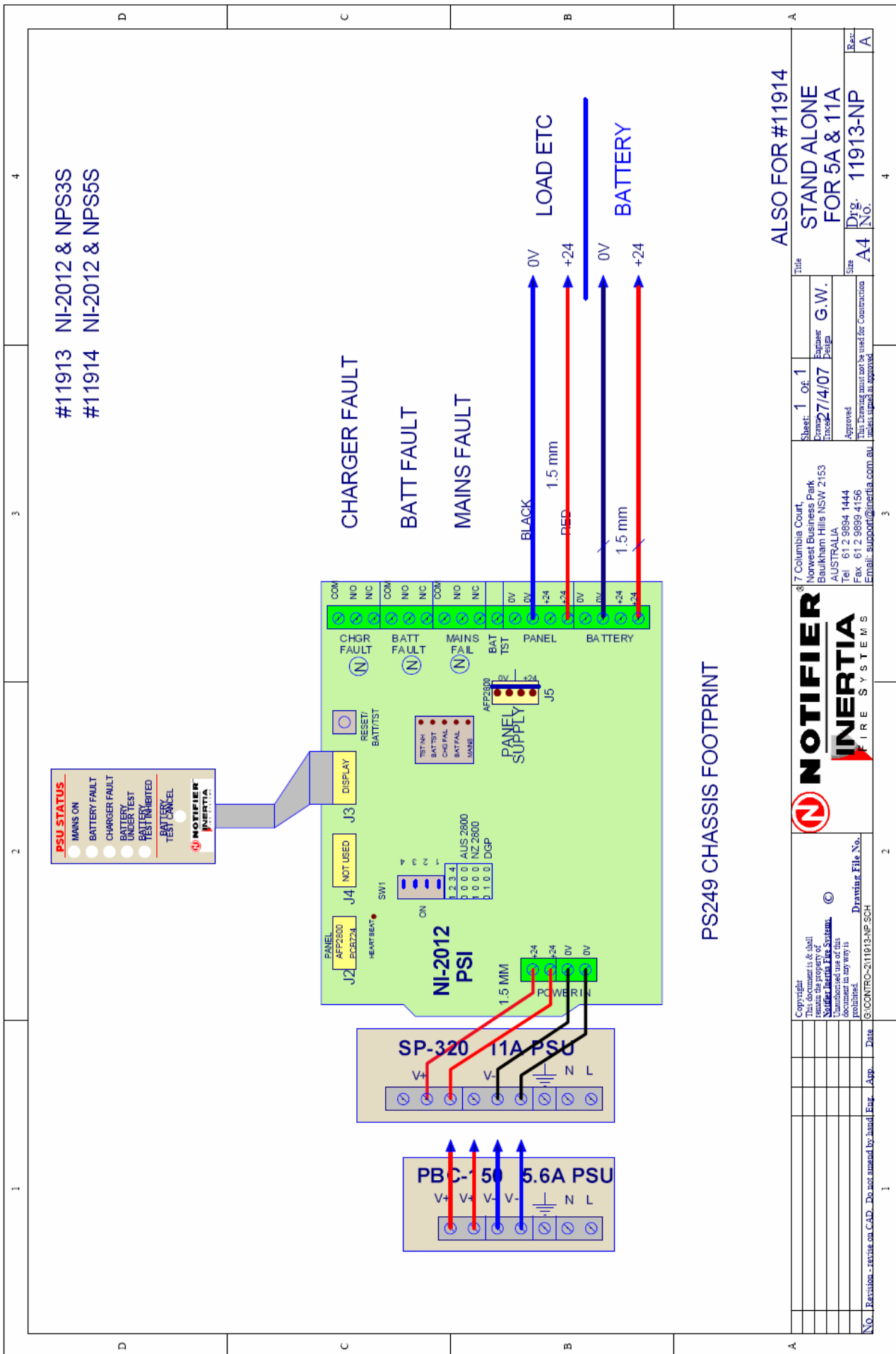




#11910 NI-2012 & NPS3S
 #11911 NI-2012 & NPS5S
 #11912 NI-2012 & NPS11S

ALSO FOR #11911 & 12

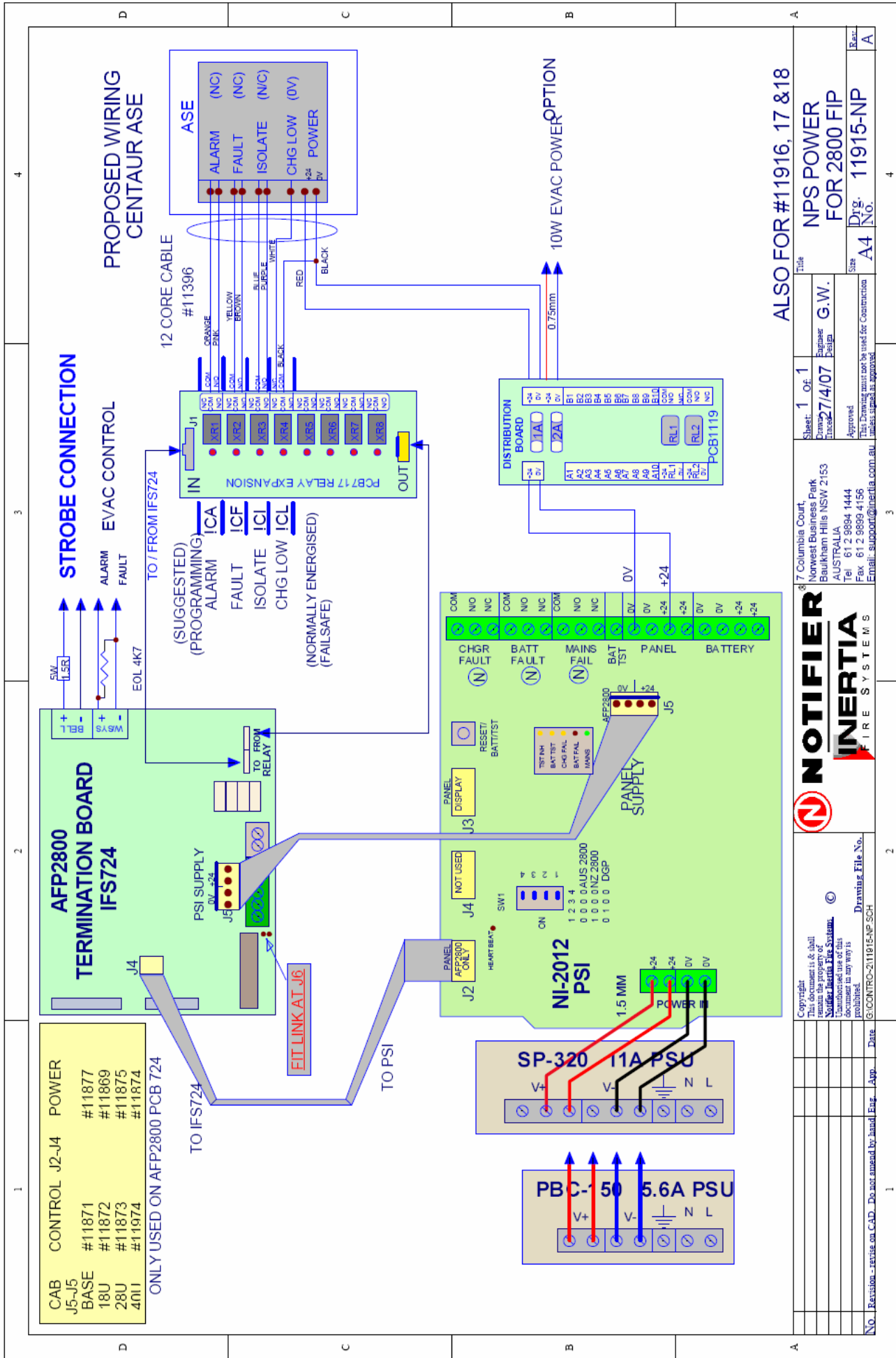
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#11913 NI-2012 & NPS3S
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