



PRT-PSU-DIN-8A

Protege DIN Rail 8A Intelligent Power Supply

Installation Manual



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Introduction

The Protege DIN Rail 8A Intelligent Power Supply provides 12VDC power suited to powering security, access control or automation devices along with large numbers of Protege network powered modules, and allows for simple and powerful monitoring of supply currents and voltages.

Flexible module network architecture allows large numbers of modules to be connected to the RS-485 module network. Up to 250 modules can be connected to the Protege system in any combination to the network, over a distance of up to 900M (3000ft). Further span can be achieved with the use of a network repeater module.

The current features of the power supply include:

- Industry standard DIN rail mounting
- Online and remote upgradeable firmware
- Secure encrypted RS-485 module communications

Installation Requirements

This equipment is to be installed in accordance with:

- The product installation instructions
- AS/NZS 2201.1 Intruder Alarm Systems
- The Local Authority Having Jurisdiction (AHJ)

Grounding Requirements

An effectively grounded product is one that is intentionally connected to earth ground through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent elevated voltages that may result in undue hazard to connected equipment or to persons.

Grounding of the Protege system is done for three basic reasons:

1. Safety
2. Component protection
3. Noise reduction

Safety Grounding

The object of safety grounding is to ensure that all metalwork is at the same ground (or earth) potential. Impedance between the Protege system and the building scheme ground must conform to the requirements of national and local industrial safety regulations or electrical codes. These will vary based on country, type of distribution system and other factors. The integrity of all ground connections should be checked periodically.

General safety dictates that all metal parts are connected to earth with separate copper wire or wires of the appropriate gauge.

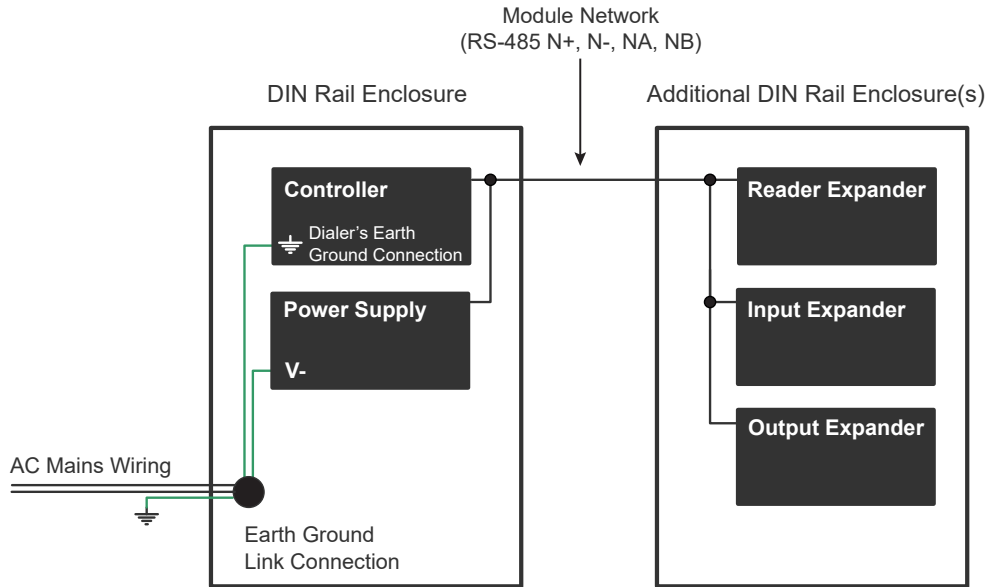
All cabinet internal covers and lids/doors must be connected to the cabinet's main ground point for electrical safety and static discharge protection.

Earth Ground Connection

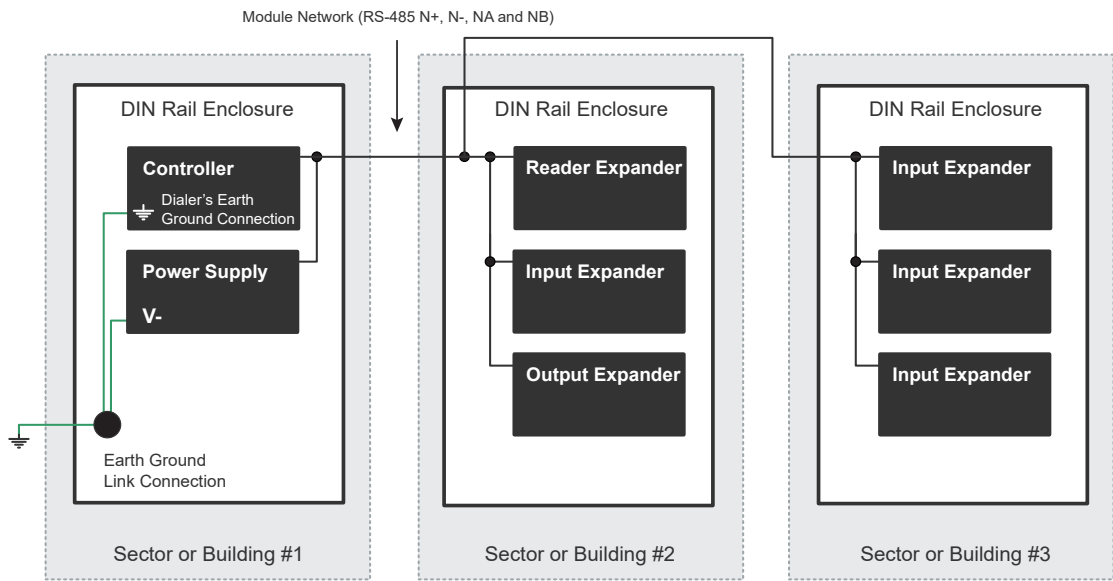
The DIN rail enclosure and the DIN rail modules must be grounded to a suitable single-point earth ground connection in the installation. A minimum 14AWG solid copper wire (or thicker, in accordance with local authorities) shall be used from the Protege system's earth connection points.

The DIN rail enclosure includes an earth ground single-point link connection via the metallic enclosure. This single-point link is the Protege system's earth ground. All modules that have earth ground connections and that are installed in the same enclosure shall be connected to this single point. A single-point earth ground connection avoids the creation of ground loops in the system and provides a single reference point to earth ground.

DIN Rail Ground Connections (one or more cabinets installed in the same room)



DIN Rail Ground Connections (multiple cabinets in different rooms, sectors, or buildings)



The Dialer's Earth Ground Connection applies to modem model controllers only.

Note that the DIN rail enclosure earth terminal is connected to the power supply V- terminal.

There must be only **one** single earth grounding point per system.

Mounting

Protege DIN rail modules are designed to mount on standard DIN rail, either in dedicated DIN cabinets or on generic DIN rail mounting strip.

Location

Protege DIN rail modules must be installed indoors, within the protected area. Modules must be protected by a secure cabinet with tamper detection.

We recommend installing the cabinet in a location that provides easy access for wiring. Suitable locations include electrical rooms, communication equipment rooms and accessible areas of the ceiling. Ensure that there is adequate clearance around each device and that air flow to the vents is not restricted.

Protege DIN rail modules must not be installed outdoors. Ensure that the room does not exceed or fall below the operating temperature or humidity ranges listed in the Technical Specifications for each module. Do not mount cabinets on the exterior of a vault, safe or stockroom.

Mounting a DIN Rail Module

To mount a module onto DIN rail:

1. Position the module with the labeling in the correct orientation.
2. Hook the mounting tabs (opposite the tab clip) under the edge of the DIN rail.
3. Push the DIN rail module against the mount until the tab clips over the rail.

Removal

To remove the DIN rail module from the DIN rail mount:

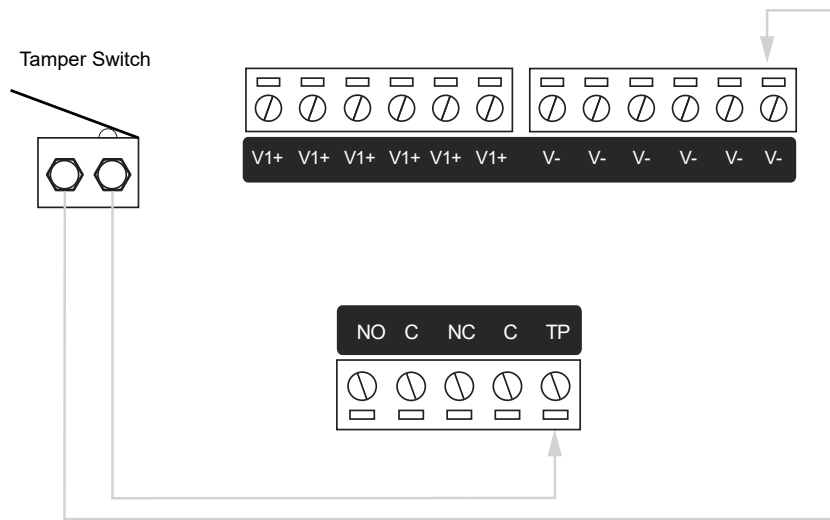
1. Insert a flat-blade screwdriver into the slot in the module tab clip.
2. Lever the tab outwards and rotate the unit off the DIN rail mount.

Cabinet Tamper Switch

The enclosure tamper input notifies the monitoring station or remote computer that the enclosure has been opened. If the tamper switch is already mounted in your ICT enclosure, simply cut the cable tie once the enclosure is in place to allow the switch to actuate. Otherwise, mount the tamper switch to the enclosure with the bracket provided.

When the tamper input switch terminals are connected in series with the dedicated tamper input (TP) and V-terminal of the power supply, it will open the trouble input AExxx:01 on the power supply. Alternatively, connect the tamper switch to any other system input designated and programmed as a 24HR tamper alarm input.

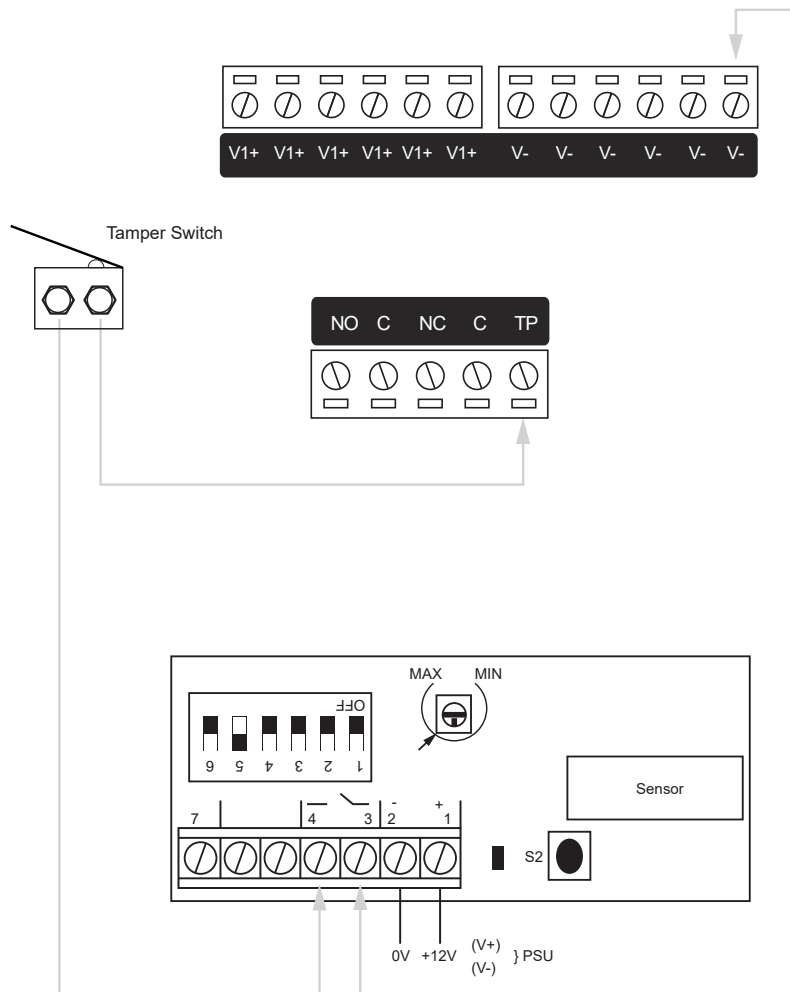
Tamper Input Connection:



Vibration Sensor

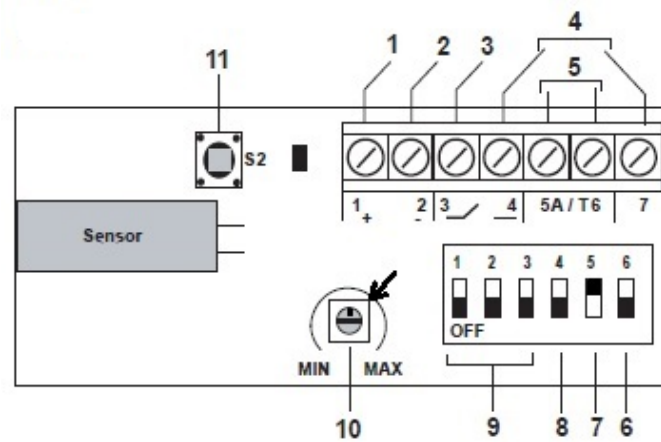
A DSC SS-102 Shockgard Seismic vibration sensor can be used to provide pre-tamper detection for the cabinet. This is required for AS/NZS 2201.1 Class 4 and 5, EN 50131-1 and EN 60839-11 Security Grade 4 installations.

The vibration sensor is mounted within the system enclosure, in series with the standard tamper switch.



Connection

- Terminals **1(V+)** and **2(V-)**. 12V power connection, reverse polarity protected.
- Terminals **3 and 4**. N.C. alarm output contacts, with a built-in 10Ω resistor in series.



1. 12V (Screw terminal 1).
2. 0V (Screw terminal 2).
3. Alarm circuit. N/C contact. (Screw terminals 3&4).
4. Latch terminal (12V SET + SW +). Not used.
5. Anti-tamper. Terminals not used.
6. Not used. Off.
7. Sensitivity selection level (Low/High). Switch 5 set to on. High selected.
8. Latch reset switch. Not used. Off.
9. Pulse count selection switches. Not used. Off.
10. Sensitivity adjustment potentiometer.
Set pointer marker to point at the corner opposite the MIN marker.
11. Case anti-tamper switch. Not used.

Modes of Operation

When using the sensor in momentary mode it will be necessary to connect using a 4 core cable.

- The N.C. alarm contacts are non-latching.
- Upon alarm activation, the alarm contacts will open circuit momentarily for a minimum time of 1 second before automatically resetting.
- The LED will illuminate when the alarm contacts are open circuit in response to an input signal.
- LED indication: During the sensitivity test procedure indication of the **green** LED denotes alarm and relay operation. Indication of the **red** LED denotes vibration detected (pulse) but insufficient to create alarm conditions.
- Dual stage linear sensitivity: The detector permits the installer a greater threshold of sensitivity adjustment by adjustment of the potentiometer through either a low level or high level adjustment.
- When DIP Switch 5 is in the ON position the sensitivity potentiometer allows adjustment in the high sensitivity area and when in the OFF position allows adjustment in the low sensitivity area.

Installation Procedure

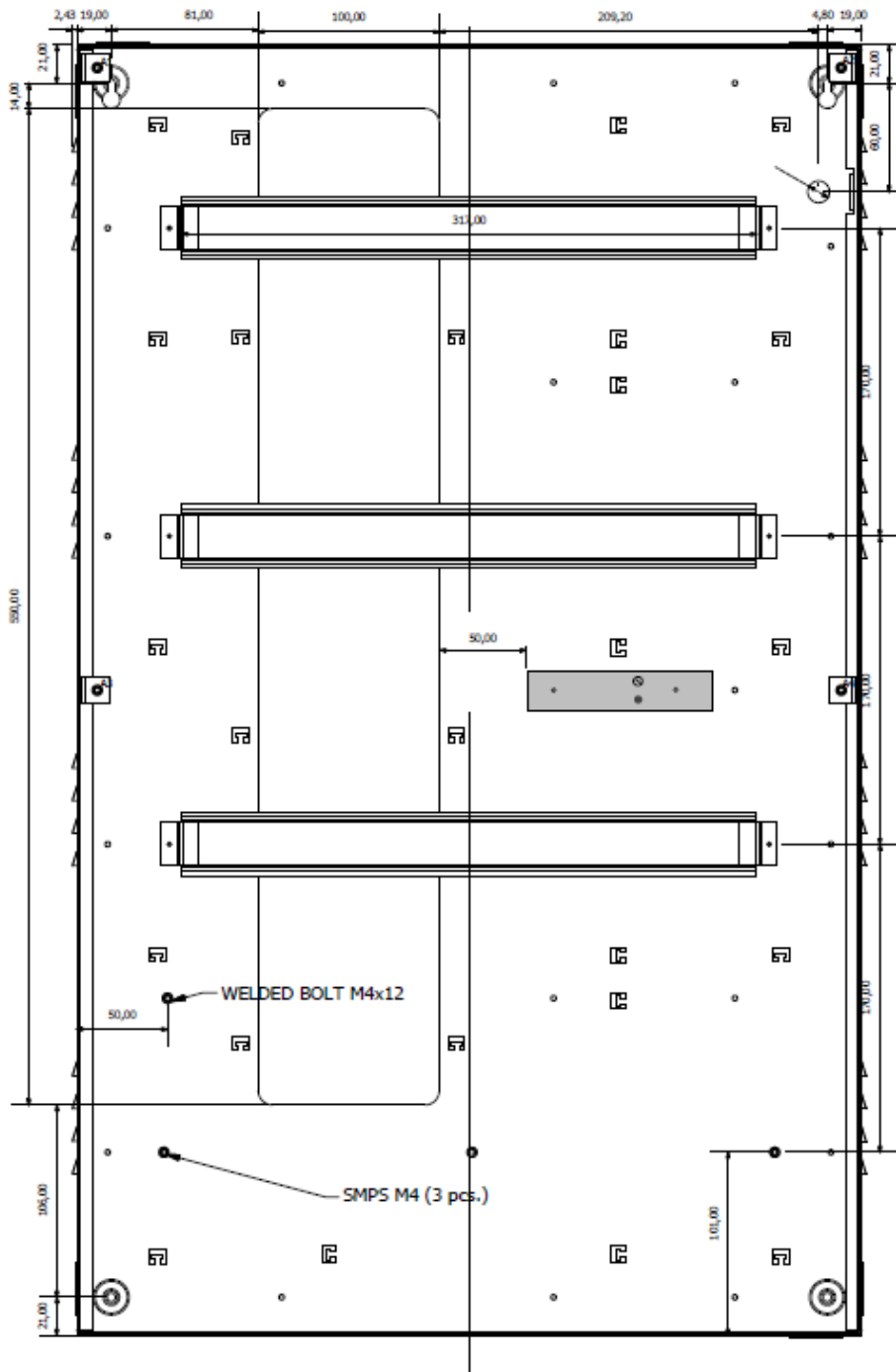
1. Select the intended position for installation, ideally positioned horizontally in the vertical center of the enclosure, 50mm to the right of the large opening.

Ensure the surface is clean and clear of any irregularities.

2. Remove the sensor cover by unscrewing the single captive screw until the cover can easily be removed from the base.
3. Carefully lift the printed circuit board from the base.
4. Position the base in the mounting position and mark the desired fixing holes (3.1mm drill).
5. If rear cable entry is required, cables should be threaded through the rear of the base.
6. Fix the base in position using M3 pan head machine screws to the captive nuts provided in the enclosure, or with nuts and washers if located in an alternative position.

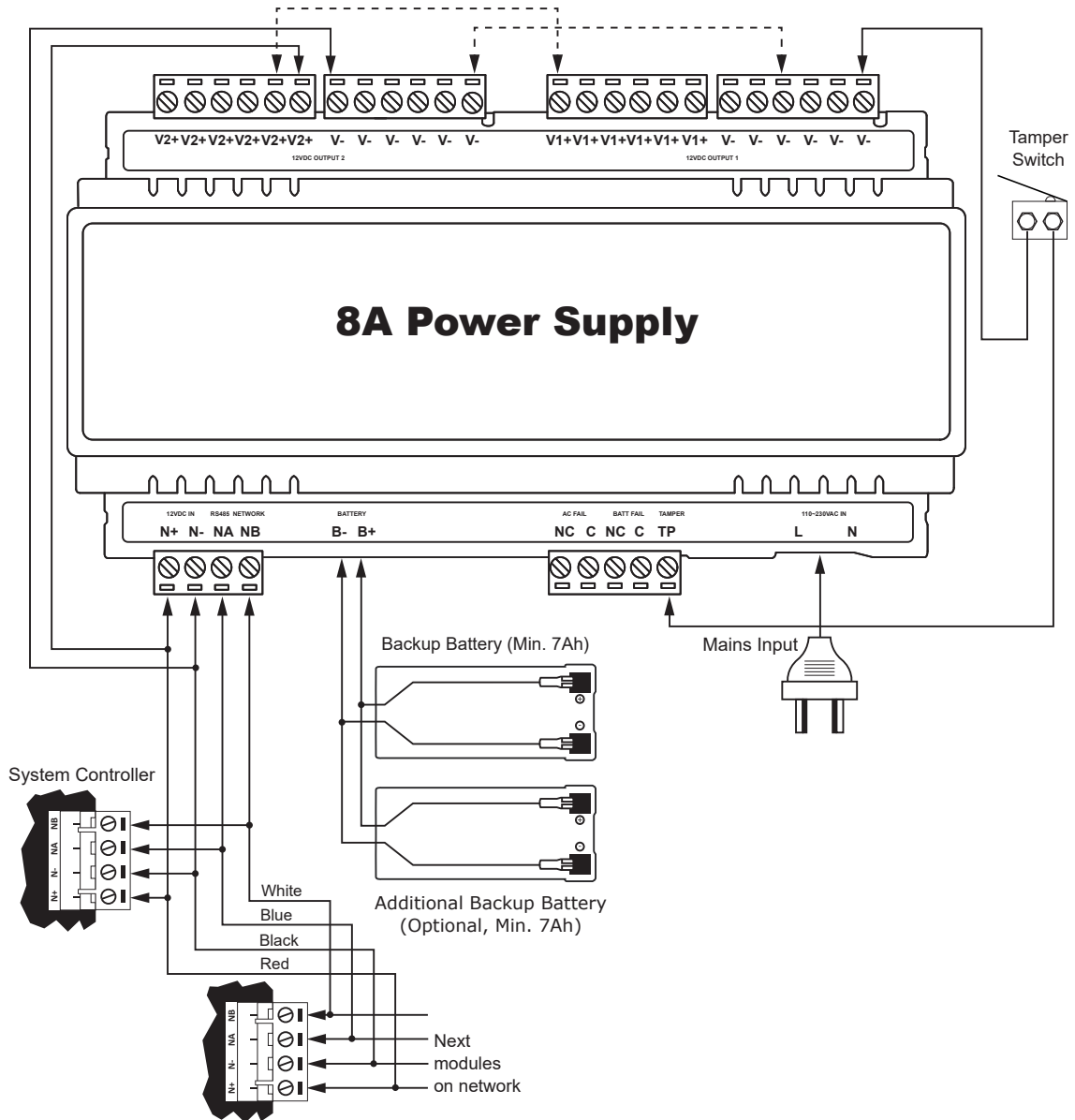
Take care not to let the screw protrude further than the nut height on the rear of the enclosure.

7. Carefully push the printed circuit board onto the base.
8. Make the electrical connections to the Shockgard SS-102, wired in series with the cabinet tamper switch.
9. If side cable entry is being used, remove the appropriate knockout from the cover and insert a grommet.
10. Setting up and adjustment:
 - With the unit in momentary operation (See Modes of Operation: Dual stage linear sensitivity above), use a terminal screwdriver to turn the sensitivity control fully clockwise to maximum (Position 6).
 - Using a suitable implement, bang or tap the protected area, observing the LED response.
 - Reduce the sensitivity by a small amount (turn sensitivity control anti-clockwise) and bang or tap the protected area.
 - Repeat this process until the unit only just responds to the desired impact.
11. Replace the sensor cover, tighten the fixing screw and check its response to the desired impact.



Wiring Diagram

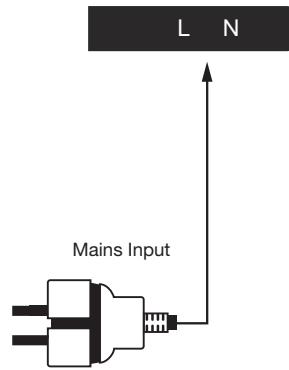
Notice: Incorrect wiring may result in damage to the unit.



Mains Power

The power supply should be supplied by a dedicated electrical power source rated for a minimum 5 amp load and have a dedicated circuit breaker.

Connect the power supply module to the mains output via an appropriate IEC-C7 90 degree cable. The cable must be at least 1.85m (6ft) and the wire gauge must be appropriate to provide AC power.



The earth wire shall be routed to the V- terminal on the power supply.

⚠ CAUTION / ATTENTION

ELECTRIC SHOCK

- This installation should be made by qualified service personnel and should conform to all local codes.
- Power the unit only after all wiring is completed.
- Do not terminate wiring to the power supply while power is supplied or the battery is connected.

Failure to follow these instructions can result in injury.

CHOC ÉLECTRIQUE

- Cette installation doit être effectuée par du personnel qualifié et doit être conforme à tous les codes locaux en vigueur.
- Mettre l'appareil sous tension uniquement après avoir terminé tout le câblage.
- Ne pas raccorder le câblage au bloc d'alimentation lorsque l'alimentation est sous tension ou que la batterie est branchée.

Le non-respect de ces instructions peut entraîner des blessures.

NOTICE

EQUIPMENT DAMAGE

Ensure correct wiring of AC inputs and use only the appropriate AC cable for this unit.

Failure to follow these instructions can result in equipment damage.

Failure to follow the instructions above will **void all warranties or guarantees.**

Backup Battery

A battery backup must be connected to the module network to provide a monitored supply. The battery plays an important role in power conditioning and provides a continuous source of power in the event of a power outage.

The battery type must be a valve regulated sealed lead acid (VRLA) rechargeable battery that can supply at least 12V DC. It is recommended that the main backup battery has a minimum capacity of 7Ah.

EN 50131-1

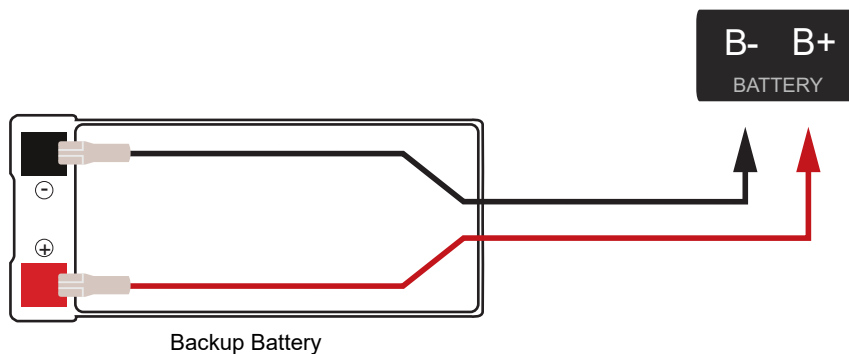
To comply with EN 50131-1, only one battery can be connected and monitored per system. If more capacity is required, a single larger battery must be used.

Connecting the Battery

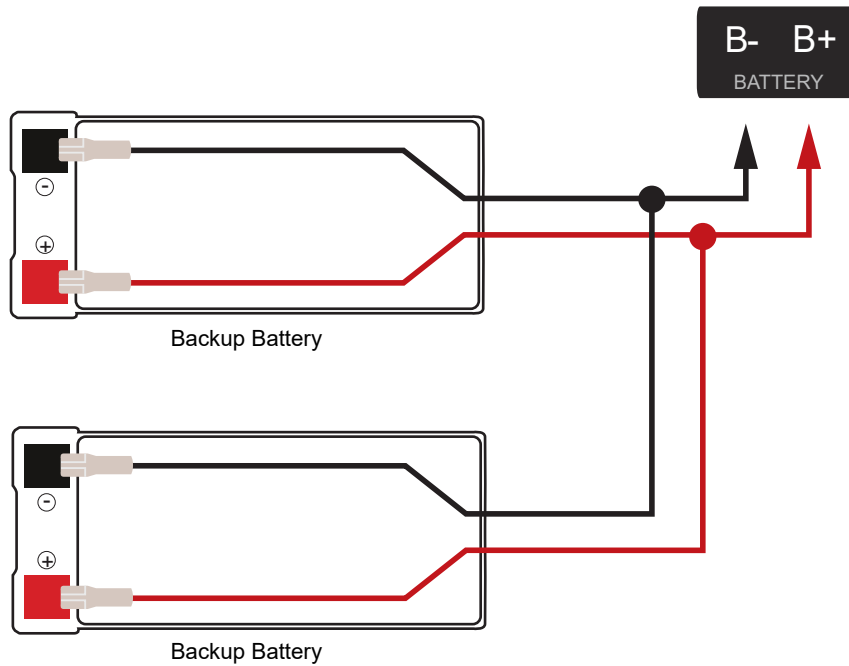
To connect the battery to the power supply:

1. If the battery has nut and bolt connectors, you must first attach the NB to F2 terminal adapters. Line up the hole of the adapter with the terminal, then secure the adapter with the nut and bolt.
2. Connect the **red** and **black** battery termination wires to the B+ and B- plugs on the power supply.
3. Connect the spade terminals to the battery or adapters, as shown below.

Connection of the battery in reverse will not damage the power supply, but will cause the battery circuit to disconnect until the correct connection is made.



If required and permitted by regulations, two batteries may be connected in parallel to provide more capacity. We recommend that you use two identical batteries of the same age to prevent continuous discharge from the newer battery to the older battery.



⚠ DANGER

ELECTRIC SHOCK, FIRE OR EXPLOSION

- Only attach standard lead-acid batteries.
- Do not connect the battery wires or B+ and B- plugs of the module to any other ancillary device (siren, lock, mag clamp, etc.).
- Always use the cables and connectors provided by ICT.
- Use appropriate terminal adapters where the battery terminals do not match the terminals of the provided cables.
- Do not short-circuit the battery.
- Ensure all connections are performed correctly.

Failure to follow these instructions will result in death or serious injury.

CHOC ÉLECTRIQUE, INCENDIE, EXPLOSION OU ARC ÉLECTRIQUE

- Brancher uniquement des batteries au plomb-acide standard.
- Ne pas brancher les fils de la batterie ou les fiches B+ et B- du module à tout autre dispositif auxiliaire (sirène, serrure, ventouse magnétique, etc.).
- Toujours utiliser les câbles et connecteurs fournis par ICT.
- Utiliser les adaptateurs de bornes appropriés lorsque les bornes de la batterie ne correspondent pas aux bornes des câbles fournis.
- Ne pas court-circuiter la batterie.
- S'assurer que tous les branchements sont effectués correctement.

Le non-respect de ces instructions entraînera la mort ou des blessures graves.

An incorrect connection may cause erroneous faults or serious damage to the module and will **void all warranties or guarantees**.

Backup Battery Test

The battery test procedure uses a special algorithm to prevent deep discharge and increase battery endurance. A dynamic battery test is performed every ten minutes when mains power is present, and a battery condition alarm will be generated if the battery is either disconnected or shows poor capacity. Battery fault conditions will activate the battery trouble input associated with the address assigned to the power supply.

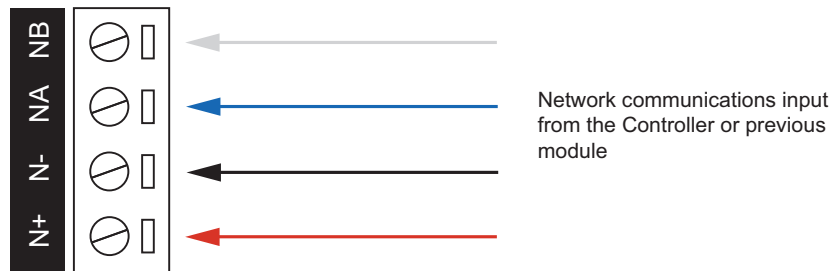
In addition to the dynamic battery test procedure, the power supply performs a battery presence test every 60 seconds, which determines whether the presence of a backup battery is detected. Similarly, if no backup battery is detected a battery condition alarm will be generated and the battery trouble input associated with the address assigned to the power supply will also be activated.

Backup Battery Thresholds

The battery disconnection threshold is 8V. Upon reconnection of mains power the power supply automatically detects the backup battery and begins controlled charging at 500mA (typical).

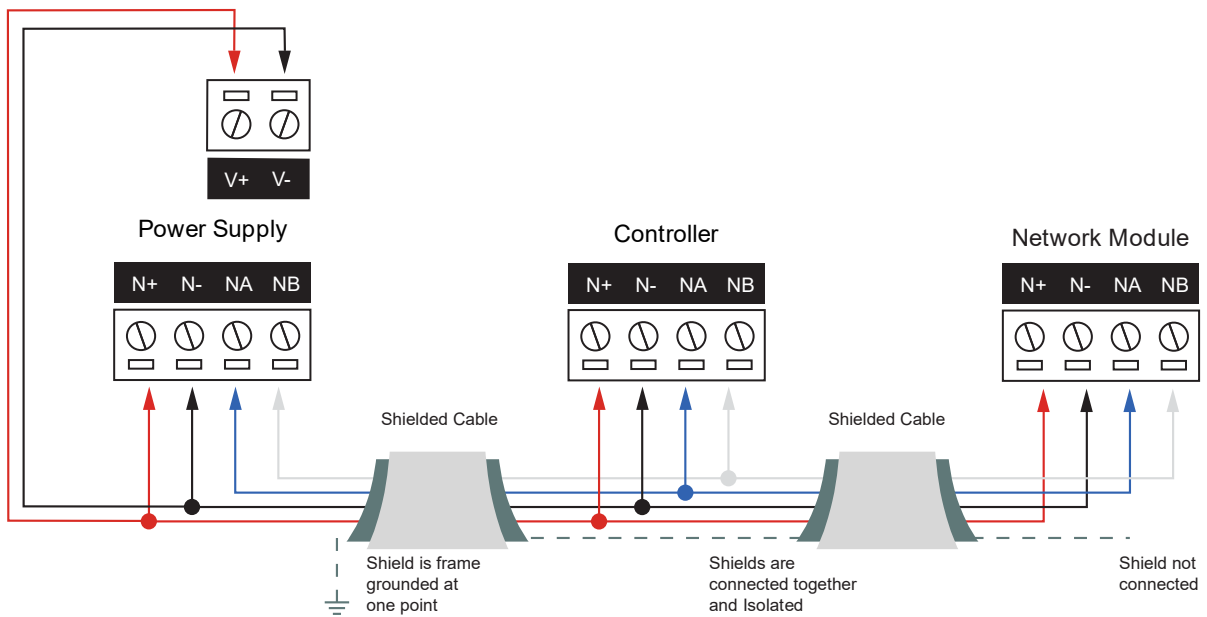
Encrypted Module Network

The power supply is designed to supply power to the encrypted RS-485 module network. Network power is supplied by the N+ and N- terminals and communications by the NA and NB terminals.

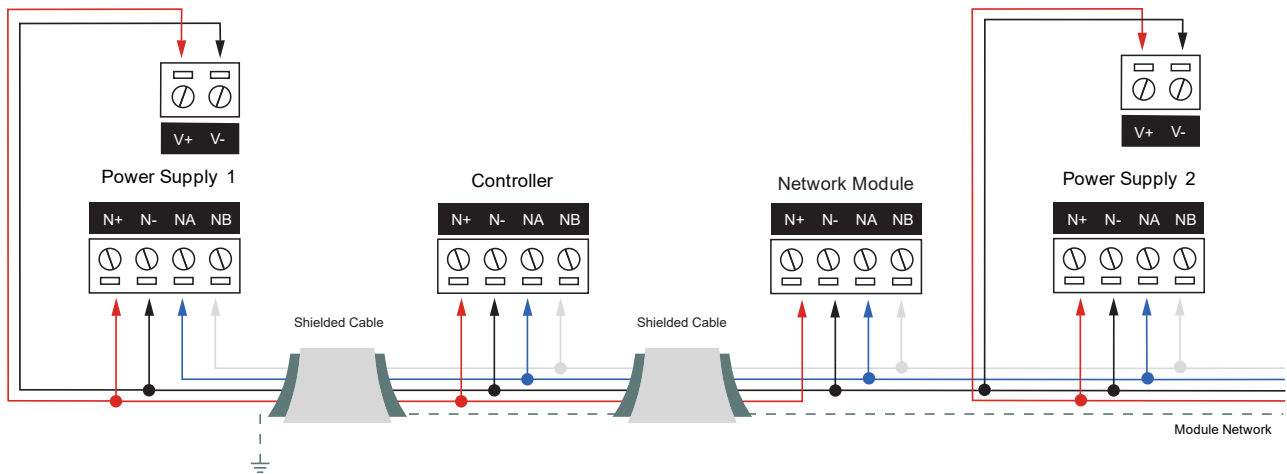


The diagram below shows how a single power supply can be connected to supply the module network. Power is provided by connecting the V+ and V- output terminals of the power supply to the N+ and N- terminals of the module network.

A single power supply is suitable for smaller systems, provided that the combined current required by all modules, card readers, bells and auxiliary devices is less than or equal to the total DC output current of the power supply.



If the current requirements exceed what a single power supply can provide, a separate power supply must be used as shown below. Ensure that you **disconnect the N+ connection** between the two power supplies. Connections from more than one 12V supply may cause damage to the power supplies and other modules on the network.



NOTICE

EQUIPMENT DAMAGE

The 12V N+ and N- input must be supplied from only **one** point.

Failure to follow these instructions can result in equipment damage.

Module Wiring

The recommended module network wiring specifications are:

- Minimum 24AWG (0.51mm) shielded twisted pair with characteristic impedance of 120Ω
- Maximum total length of cable is 900m (3000ft)
- CAT5e / CAT6 are also supported for data transmission when using ground in the same cable (to a maximum length of 100m (328ft))

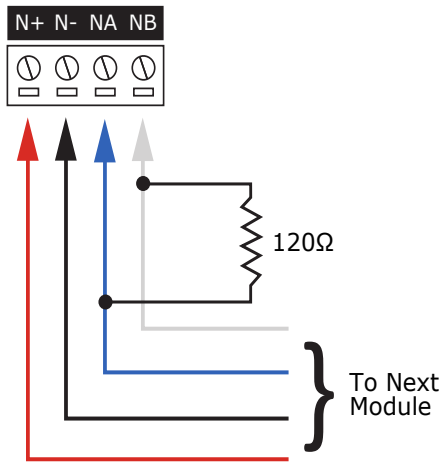
Unused wires in the cable must not be used to carry power to other devices.

End-of-Line (EOL) Resistors

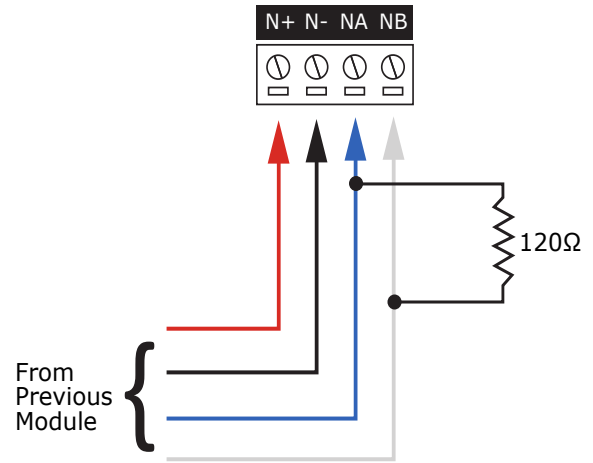
End-of-line resistors prevent signal reflections at the ends of the RS-485 network bus, improving signal strength and reducing data corruption.

You must insert a **120Ω resistor** between the NA and NB terminals of the **first** and **last** modules on the RS-485 network. These are the modules physically located at the ends of the RS-485 network cabling.

First Module on RS-485 Network



Last Module on RS-485 Network



Output Load Connection

The power supply provides two sets of 12VDC output terminals, V1+ and V2+.

Both V1+ and V2+ outputs are individually fused, with 6 terminals associated to each output and its individual fuse.

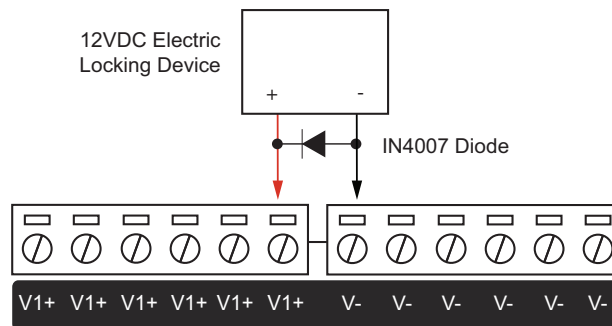
A maximum current output of 6.0 amps at 12VDC can be provided across each output at any time. However, if a single current output of 8.0 amps is required, both outputs need to be connected together in parallel.

When the power supply first boots up, it may take up to 5 seconds to start supplying power to the output terminals. During this time, the power or battery indicator will be on, but the V1 and V2 output indicators will remain off.

For loads connected directly to the power supply outputs (except for devices on the RS-485 module network), appropriate in-line fuses should be installed as close to the power supply output as practical.

Inductive Loads

When any inductive load, including electric locking devices, is powered (directly or indirectly) by the power supply, a reverse EMF protection diode must be placed across the positive (V1+ or V2+) and negative (V-) terminals at the device.



Note: The 1N4007 diode shown **must** be installed across the + and - terminals of any inductive load, such as electric locks, magnetic or motorized devices.

Output Current Influence on Output Load Operation

The table below helps illustrate how the total output current drawn from the power supply module influences the operation of V1 and V2 outputs.

Output Load Operation Status	Output Load Current		
	0 - 8.0A	8.0-8.2A	8.2A - Short Circuit
Outputs Enabled (Mains Power)	✓	✓	
Outputs Supplied by Battery	✓	✓	
Output Over-Current Failure Trouble Input Activated		✓	✓
Over-Current Output Shutdown Activated			✓

Core Temperature on Output Load Operation

The table below helps illustrate how the core temperature of the power supply module influences the operation of the V1 and V2 outputs.

Output Load Operation Status	Core Temperature		
	<70°C	70-80°C	>80°C
Outputs Enabled (Mains Power)	✓	✓	
Outputs Supplied by Battery	✓	✓	✓
Output Over-Current Failure Trouble Input Activated		✓	✓
Over-Current Output Shutdown Activated			✓

Inputs

The power supply has no physical input connections.

Trouble Inputs

Each power supply can monitor up to 8 trouble inputs.

Trouble inputs are used to monitor the module status and in most cases are not physically connected to an external input.

The following table details the trouble inputs that are configured in the system and the trouble groups that they are associated with.

Input Number	Description	Default Trouble Group	Default Trouble Group Option
AExxx:01	Module Tamper	System	System Tamper
AExxx:02	Mains Failure	General	Power Fault
AExxx:03	Low Battery/Battery Failure	General	Power Fault
AExxx:04	Output Voltage Low	General	Power Fault
AExxx:05	Output Over-Current Failure	General	Power Fault
AExxx:06	Core Temperature Over-Temp Failure	General	Power Fault
AExxx:07	Reserved	None	None
AExxx:08	Module Offline	System	Module Offline

Replace 'xxx' with the address of the module that you are programming.

The power supply is an analog expander module on the Protege module network. This means that all programming, trouble input and output information is stored in and reported by the analog expander records when programming via the Protege software.

Outputs

The power supply has two 50mA outputs that can operate as either programmable outputs or as predefined status outputs, depending on the network status of the module on the Protege system.

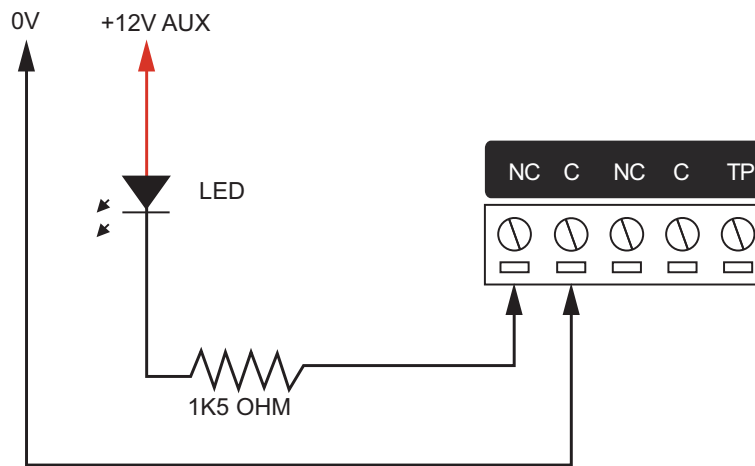
Online Mode

Upon successfully completing the initial registration with any Protege system controller, the outputs of the power supply operate in **online mode**. While in online mode, the two outputs function as **programmable outputs** and can be used to activate bell sirens, lighting circuits, door locks, relay accessory products and other automation points.

Programmable Outputs

The 2 programmable outputs each have a 50mA solid-state relay.

The connection example below shows the control of an external LED indicator.



NOTICE

EQUIPMENT DAMAGE

- Use these outputs for low power applications only (50mA, 12V maximum).
- Switching inductive loads can produce high back EMF voltages or large voltage spikes that can cause the module to behave unexpectedly. Do not connect inductive loads directly to the module's relay contacts. Instead, install a suitable isolation circuit between the relay contacts of the module and the inductive load.

Failure to follow these instructions can result in equipment damage.

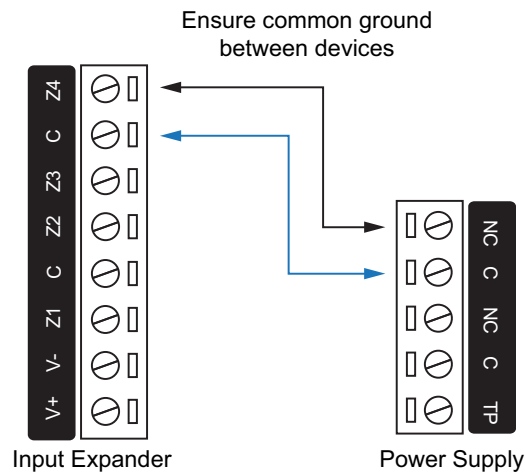
Incorrect use of the outputs can cause permanent damage to the power supply and will **void all warranties or guarantees**.

Offline Mode

If the power supply has not been connected to a Protege system controller, it operates in **offline mode**. While in offline mode, the two outputs function as **status outputs**. In addition to the comprehensive front panel diagnostic indicators, these status outputs offer additional information that can aid the installer in diagnosing faults and conditions.

AC Fail Status Output

The AC fail status output has a solid-state relay. The output relay contacts disconnect (normally open) when AC power is removed and the unit remains running on backup battery power. Upon restoring AC power, the output relay will revert to its default state (normally closed).

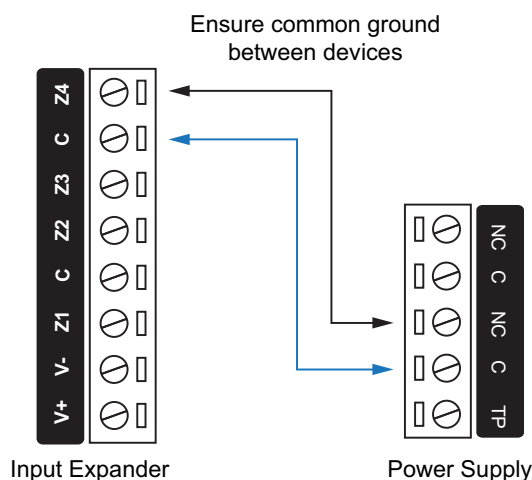


This output is suitable for connection to an input on a Protege module with spare inputs available so that the power supply AC status can be externally monitored. The connection example above shows monitoring of the AC status set up in conjunction with a Protege input expander.

Battery Fail Status Output

The battery fail status output has a solid-state relay. The output relay contacts disconnect (normally open) when either the backup battery has been disconnected or the power supply is running on backup battery power without AC power and the backup battery voltage drops below 11.75V.

Upon reconnecting a backup battery with a voltage greater than 12.5V the output relay will revert back to its default state (normally closed).



This output is suited for connection to an input on the Protege system for early detection of complete power failure. The connection example above shows monitoring of the battery status set up in conjunction with an input expander.

These outputs are rated for low power use only (50mA, 12V Max). Incorrect use may cause erroneous faults or serious damage to the power supply and will **VOID ALL WARRANTIES OR GUARANTEES**.

Intelligent Monitoring

The power supply is able to relay information about critical system voltages, currents and temperature to the Protege GX controller by registering as an analog expander module on the Protege network. The controller can then store these values in variables that can be viewed live from the Protege GX interface.

This feature is not available in Protege WX or Protege X.

Monitoring Setup

The power supply will register with the Protege GX controller as an analog expander module, AExxx.

The analog expander has four channels for monitoring input data. The channels monitor the following data:

- Channel 1: Voltage at V2+ output
- Channel 2: Voltage at V1+ output
- Channel 3: Power supply module core voltage
- Channel 4: Total current output

To monitor a channel, assign a data value to that channel. Assign a variable to the data value and display the variable on a status page or floor plan.

The **Log channel data** option may also be selected to view the raw data as it is received in the event log. However, this will create a large number of events and should only be used for verifying the reception of data.

For more information on programming this feature, see the Protege GX Setup Guide.

Address Configuration

Protege modules are set to address 254 at the factory. This is above the address range that the controller supports, so the module will not come online immediately when you connect it to the module network.

To bring the module online, you must set the module address to a valid unused address. See the Protege system controller configuration guide for instructions on how to program the address.

You will need the module's serial number to set the address. You can find the serial number on the identification sticker on the product.

LED Indicators

Protege DIN rail modules feature comprehensive diagnostic indicators that can aid the installer in diagnosing faults and conditions. In some cases an indicator may have multiple meanings depending on the status indicator display at the time.

Status Indicator

The status indicator displays the module status.

State	Description
Fast flash (green)	Module attempting registration with controller
Slow flash (green)	Module successfully registered with controller
Flashing (red)	Module communications activity

When the fault and status indicators are flashing alternately, the module is in identification mode, enabling the installer to easily identify the module in question. Upon either a module update or the identification time period expiring, the module will return to normal operation.

Fault Indicator

The fault indicator is lit any time the module is operating in non-standard mode. If the fault indicator is flashing, the module requires a firmware update or is in firmware update mode. When the fault indicator is on, the status indicator will flash an error code.

State	Description
Continuous slow flash (red)	Module is in boot mode awaiting firmware update
Constantly on (red)	Module is in error state and will flash an error code with the status indicator

Power Indicator

The power indicator is lit whenever the correct module input voltage is applied across the mains input terminals.

State	Description
Constantly on	Correct module input voltage applied
Constantly off	Incorrect module input voltage applied

V1 Output/V2 Output Indicators

The V1 and V2 output indicators show the status of the 12VDC output.

State	Description
On (green)	12VDC output operating OK
Flashing (red)	12VDC output failure

Battery Indicator

The battery indicator shows the status of the backup battery.

State		Description (with mains power connected - power indicator on)
Flashing (red)		Backup battery is disconnected
On (red)		Backup battery failed its dynamic battery test
On (green)		Last backup battery dynamic test successful
State		Description (with mains power disconnected - power indicator off)
Flashing (red)		Mains has failed and the PSU is drawing power from the battery. State is Battery Low
Flashing (green)		Mains has failed and the PSU is drawing power from the battery. State is Battery Restore

Temp Indicator

The temp indicator shows the status of the unit's core temperature.

State		Description
On (red)		Core temperature exceeded. Over Temp Shutdown Activated
Flashing (red)		Core temperature within 10°C of Over Temp Shutdown
On (green)		Core temperature OK

Output Current Indicator

The output current indicator shows the status of the output current for both V1+ and V2+.

State		Description
First five indicators flashing green Last indicator flashing red		Output current exceeded. Over-current shutdown activated
All indicators flashing green		Output current exceeded maximum, approaching over-current shutdown
All indicators constantly on		Maximum output current level reached
Some indicators constantly on		Indicated output current level reached

Error Code Indication

When the module attempts to register or communicate with the system controller a registration error can be generated indicating that it was not successful.

Error Code Display

The following table is only valid if the **fault** indicator is constantly on and the **status** indicator is flashing red.

If the fault indicator is flashing the module requires a firmware update or is currently in firmware update mode.

The status indicator will flash red with the error code number. The error code number is shown with a 250ms on and off period (duty cycle) with a delay of 1.5 seconds between each display cycle.

Flash	Error Description
1	Unknown Error Code The error code returned by the system controller could not be understood by the module.
2	Firmware Version The firmware version on the module is not compatible with the system controller. To clear this error, update the module using the module update feature in the controller's web interface.
3	Address Too High The module address is above the maximum number available on the system controller. To clear this error change the address to one within the range set on the system controller, restart the module by disconnecting the power.
4	Address In Use The address is already in use by another module. To clear this error set the address to one that is not currently occupied. Use the view network status command to list the attached devices, or the network update command to refresh the registered device list.
5	Controller Secured Registration Not Allowed The controller is not accepting any module registrations. To allow module registrations use the network secure command to change the setting to not secured.
6	Serial Number Fault The serial number in the device is not valid. Return the unit to the distributor for replacement.
7	Locked Device The module or system controller is a locked device and cannot communicate on the network. Return the unit to the distributor for replacement.

Firmware Upgrade Failure

When the power supply is online with the Protege system, you can upgrade its firmware from the **Application Software** page in the controller's web interface. Always supervise the power supply during the firmware upgrade process and ensure that it does not lose power.

During the firmware upgrade, all LEDs will be deactivated except for the Fault LED flashing red. When the upgrade is complete, the power supply will reboot. The Power LED will turn on, and the Status LED will flash rapidly for a few seconds, then return to flashing normally.

If the power supply loses power during the upgrade or does not reboot successfully afterwards, you must attempt to recover it using a force update. To perform a force update:

1. In the controller's web interface, navigate to the **Application Software** page.
2. Click **Module** to expand the hidden **Force Update** section.
3. Set the **Force Update - Module** to the power supply model.
4. Set the **Force Update - Address** to the **Physical Address** of the module. You can view this in **Expanders | Analog Expanders**.
5. Click **Upload Firmware**. Browse to the firmware file (.bin format) supplied by ICT and click **Open**.
6. Wait for the power supply to upgrade and reboot.

DANGER

FIRE

If the power supply does not reboot successfully after a firmware upgrade, attempt a force update. If the force update fails, remove the power supply from the system.

Failure to follow these instructions will result in death or serious injury.

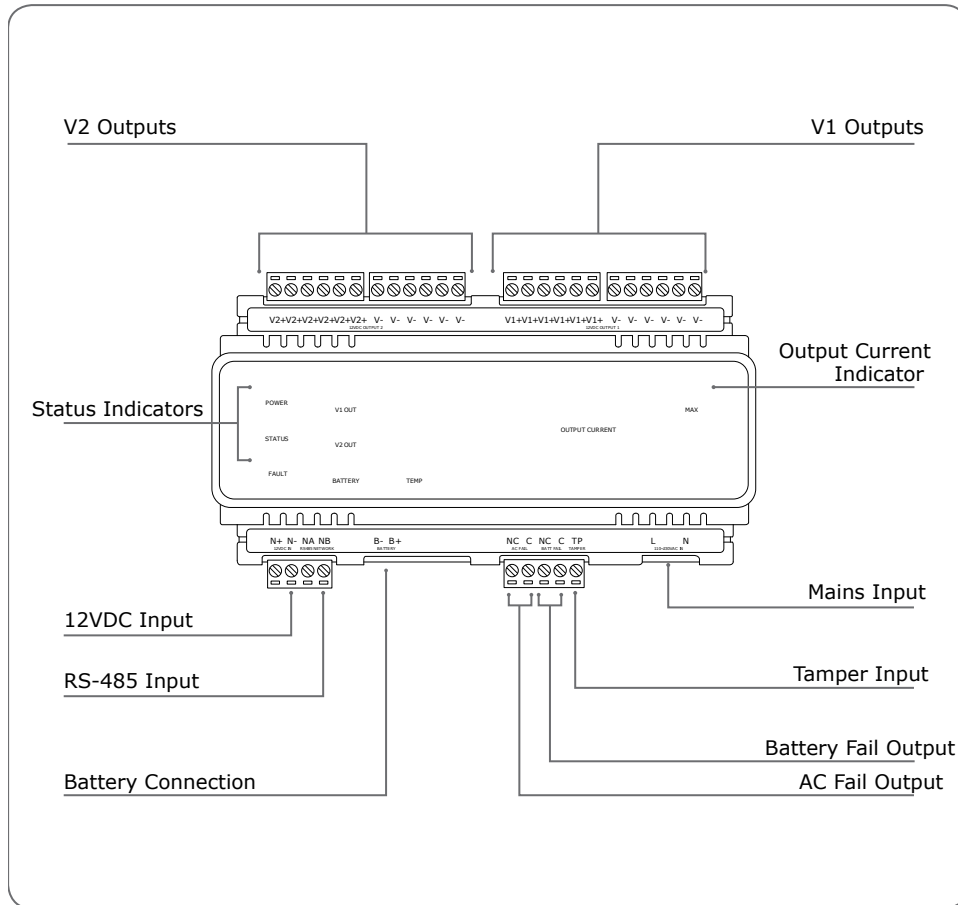
INCENDIE

Si le bloc d'alimentation ne redémarre pas correctement après une mise à jour du micrologiciel, tenter une mise à jour forcée. Si la mise à jour forcée échoue, retirer le bloc d'alimentation du système.

Le non-respect de ces instructions entraînera la mort ou des blessures graves.

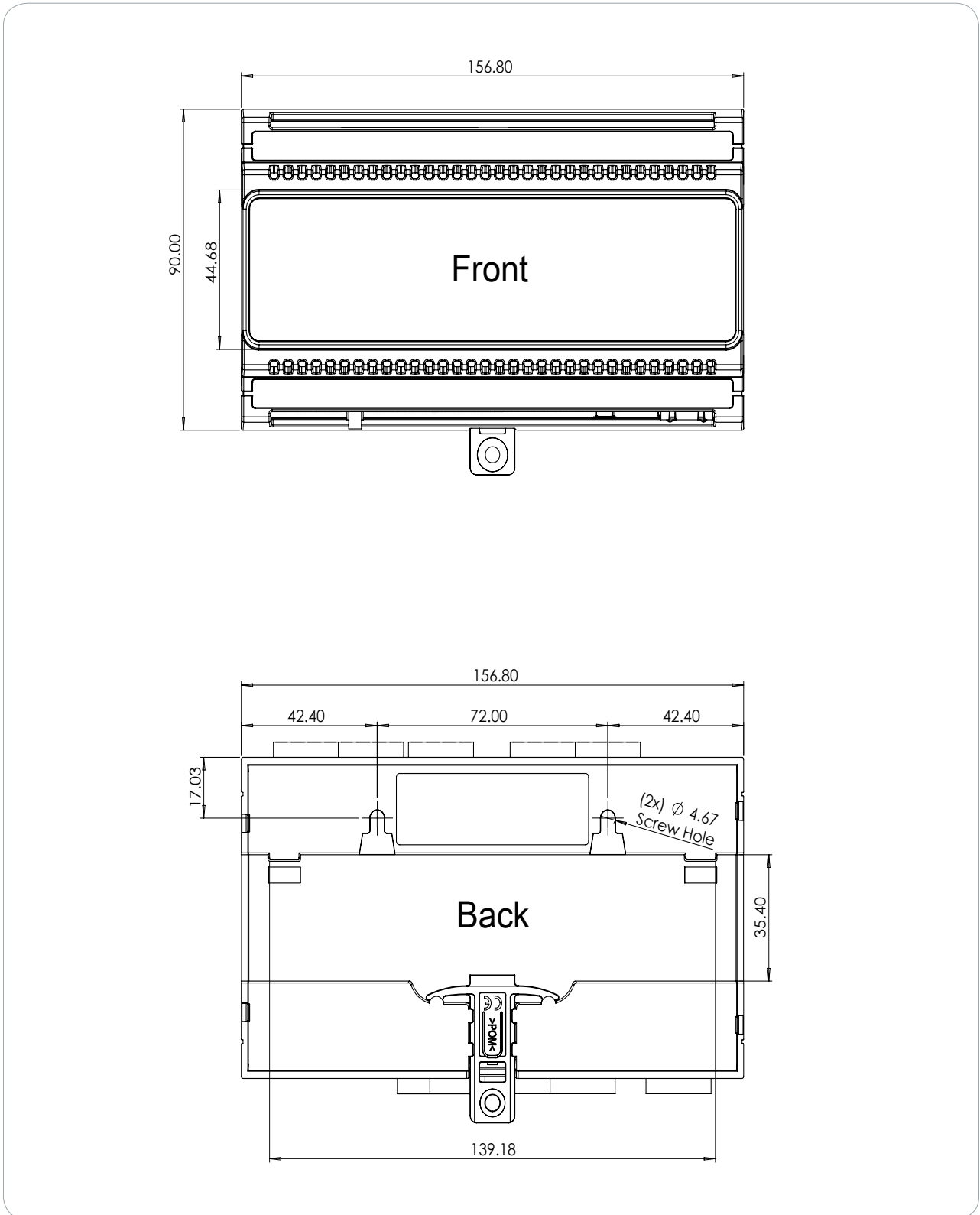
Mechanical Diagram

The mechanical diagram shown below outlines the essential details needed to help ensure the correct installation of the power supply.



Mechanical Layout

The mechanical layout below outlines the essential details needed to help ensure correct installation and mounting. All measurements are shown in millimeters.



Technical Specifications

The following specifications are important and vital to the correct operation of this product. Failure to adhere to the specifications will result in any warranty or guarantee that was provided becoming null and void.

Ordering Information	
PRT-PSU-DIN-8A	Protege DIN Rail 8A Intelligent Power Supply
Power Supply	
Mains Input Voltage	120VAC (90-264VAC, 47-63Hz)
Mains Input Operating Current	120VAC 2.5A (Full Load)
DC Output (Combined)	12.64VDC 7.5A Max (V1 Out + V2 Out Total)
DC Output (Single)	12.2VDC 6.0A Max
Battery Charging	500mA (Typical) *Additional to the 7.5A Combined DC Output
Battery Low	11.75VDC
Battery Restore	12.5VDC
Communication	
RS-485	Isolated Module Network
Outputs	
Outputs	2 Solid-State Relay Outputs, 50mA 12V Max each
Inputs	
Tamper	Dedicated Hardware Tamper Input
Trouble Inputs	8 (internal)
Dimensions	
Dimensions (L x W x H)	157 x 90 x 60mm (6.2 x 3.5 x 2.4")
Net Weight	460g (16.2oz)
Gross Weight	570g (20.1oz)
Operating Conditions	
Operating Temperature	-10° to 55°C (14° to 131°F)
Storage Temperature	-10° to 85° C (14° to 185° F)
Humidity	0%-93% non-condensing, indoor use only (relative humidity)
Mean Time Between Failures (MTBF)	217,030 hours (calculated using RDF 2000 (UTE C 80-810) Standard)

It is important that the unit is installed in a dry cool location that is not affected by humidity. Do not locate the unit in air conditioning or a boiler room that can exceed the temperature or humidity specifications.

Integrated Control Technology continually strives to increase the performance of its products. As a result these specifications may change without notice. We recommend consulting our website (www.ict.co) for the latest documentation and product information.

New Zealand and Australia

General Product Statement

The RCM compliance label indicates that the supplier of the device asserts that it complies with all applicable standards.



ASIAL Class 5

This product is certified for AS/NZS 2201:2007 Class 5 installations as part of a compliant Protege GX or Protege WX system.

For more information, see the Protege GX / Protege WX AS/NZS 2201.1:2007 Class 5 Compliance Installer Guide, available from ICT.

European Standards

CE Statement

Conforms where applicable to European Union (EU) Low Voltage Directive (LVD) 2014/35/EU, Electromagnetic Compatibility (EMC) Directive 2014/30/EU, Radio Equipment Directive (RED) 2014/53/EU and RoHS Recast (RoHS2) Directive: 2011/65/EU + Amendment Directive (EU) 2015/863.

This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union as specified in the above directive(s).



Information on Disposal for Users of Waste Electrical & Electronic Equipment

This symbol on the product(s) and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.

Alternatively, in some countries you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union. If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

EN50131 Standards

This component meets the requirements and conditions for full compliance with EN50131 series of standards for equipment classification.

EN 50131-1:2006+A2:2017, EN 50131-3:2009, EN 50131-6:2008+A1:2014, EN 50131-10:2014, EN 50136-1:2012, EN 50136-2:2013, EN 60839-11-1:2013

Security Grade 4

Environmental Class II

Equipment Class: Fixed

Readers Environmental Class: IVA, IK07

SP1 (PSTN – voice protocol)

SP2 (PSTN – digital protocol)

SP6 (LAN – Ethernet) and DP1 (LAN – Ethernet + PSTN)

SP6 (LAN – Ethernet) and DP1 (LAN – Ethernet + USB-4G modem)

Tests EMC (operational) according to EN 55032:2015

Radiated disturbance EN 55032:2015

Power frequency magnetic field immunity tests (EN 61000-4-8)

Power Supply Type A (EN 50130-4 ed. 2)

Mains supply voltage variations (EN 50130-4 ed. 2)

Mains supply voltage dips and short interruption (EN 50130-4 ed. 2, EN 61000-4-2 ed. 2)

Electrostatic discharge (EN 50130-4 ed. 2, EN 61000-4-2 ed. 2)

Contact discharges ± 6 kV, Air discharges to ± 8 kV

Radiated electromagnetic fields (EN 50130-4 ed. 2, EN 61000-4-3 ed.3)

Conducted disturbances induced by electromagnetic fields (EN 50130-4 ed. 2, EN 61000-4-6)

Fast Transient bursts (EN 50130-4 ed. 2, EN 61000-4-4 ed.2)

To the AC mains supply lines applied disturbance signal voltage level 2 kV both polarities for 1 minute. To other supply / signal lines applied by the capacitive clamp injection method disturbance signal voltage level 1 kV for both polarities for 1 minute.

Slow high energy voltage surge (EN 50130-4 ed. 2, EN 61000-4-5 ed.2)

To comply with EN 50131-1, EN 60839-11 Security Grade 4 and AS/NZS2201.1 class 4&5 Vibration Detection for PreTamper Alarm, protection is provided by a DSC SS-102 Shockgard Seismic vibration sensor mounted within the system enclosure. Alarm output is provided by a pair of non-latching, N.C. (normally closed) relay contacts, opening for a minimum of 1 second on detection of an alarm connected in series with the 24Hr tamper input (TP) on the PSU (or any other system input designated/programmed as a 24Hr Tamper Alarm).

This relay is normally energized to give fail-safe operation in the event of a power loss. Indication of detection is provided by a LED situated on the front cover. The vibration sensor is fully protected from tampering by a N.C. micro switch operated by removal of the cover.

Enclosure EN-DIN-24 has been tested and certified to EN50131.

By design, the enclosures for all Integrated Control Technology products, EN-DIN-11, EN-DIN-12 and , comply with the EN 50131 standards. Tamper protection against removal of the cover as well as removal from mounting is provided by tamper switch.

Warning: Enclosures supplied by 3rd parties may not be EN50131-compliant, and should not be claimed as such.

To comply with EN 50131-1, only one battery can be connected and monitored per system. If more capacity is required, a single larger battery must be used.

UK Conformity Assessment Mark

General Product Statement

The UKCA Compliance Label indicates that the supplier of the device asserts that it complies with all applicable standards.



FCC Compliance Statements

FCC Rules and Regulations CFR 47, Part 15, Subpart B

This equipment complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules.

Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Industry Canada Statement

ICES-003

This class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CAN ICES-3 (A)/NMB-3(A)

Disclaimer and Warranty

Disclaimer: Whilst every effort has been made to ensure accuracy in the representation of this product, neither Integrated Control Technology Ltd nor its employees shall be liable under any circumstances to any party in respect of decisions or actions they may make as a result of using this information. In accordance with the ICT policy of enhanced development, design and specifications are subject to change without notice.

For warranty information, see our [Standard Product Warranty](#).

Designers & manufacturers of integrated electronic access control, security and automation products.
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Disclaimer: Whilst every effort has been made to ensure accuracy in the representation of this product, neither Integrated Control Technology Ltd nor its employees shall be liable under any circumstances to any party in respect of decisions or actions they may make as a result of using this information. In accordance with the ICT policy of enhanced development, design and specifications are subject to change without notice.