CS120
Power Supply
Enclosure

Installation Guide

Issued: 8.3.12

CSL 949

Guarantee

This equipment is guaranteed against defects in materials and workmanship. This guarantee applies for twelve months from date of delivery. We will repair or replace products which prove to be defective during the guarantee period provided they are returned to us prepaid. The guarantee will not apply to:

- Equipment which has been modified or altered in any way without the written permission of Campbell Scientific
- Batteries
- Any product which has been subjected to misuse, neglect, acts of God or damage in transit.

Campbell Scientific will return guaranteed equipment by surface carrier prepaid. Campbell Scientific will not reimburse the claimant for costs incurred in removing and/or reinstalling equipment. This guarantee and the Company's obligation thereunder is in lieu of all other guarantees, expressed or implied, including those of suitability and fitness for a particular purpose. Campbell Scientific is not liable for consequential damage.

Please inform us before returning equipment and obtain a Repair Reference Number whether the repair is under guarantee or not. Please state the faults as clearly as possible, and if the product is out of the guarantee period it should be accompanied by a purchase order. Quotations for repairs can be given on request. It is the policy of Campbell Scientific to protect the health of its employees and provide a safe working environment, in support of this policy a "Declaration of Hazardous Material and Decontamination" form will be issued for completion.

When returning equipment, the Repair Reference Number must be clearly marked on the outside of the package. Complete the "Declaration of Hazardous Material and Decontamination" form and ensure a completed copy is returned with your goods. Please note your Repair may not be processed if you do not include a copy of this form and Campbell Scientific Ltd reserves the right to return goods at the customers' expense.

Note that goods sent air freight are subject to Customs clearance fees which Campbell Scientific will charge to customers. In many cases, these charges are greater than the cost of the repair.

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PLEASE READ FIRST

About this manual

Please note that this manual was originally produced by Campbell Scientific Inc. primarily for the North American market. Some spellings, weights and measures may reflect this origin.

Some useful conversion factors:

Area: 1 in^2 (square inch) = 645 mm^2

Length: 1 in. (inch) = 25.4 mm
1 ft (foot) = 304.8 mm
1 yard = 0.914 m
1 mile = 1.609 km

Mass: 1 oz. (ounce) = 28.35 g
1 lb (pound weight) = 0.454 kg

Pressure: 1 psi (lb/in^2) = 68.95 mb

Volume: 1 UK pint = 568.3 ml
1 UK gallon = 4.546 litres
1 US gallon = 3.785 litres

In addition, while most of the information in the manual is correct for all countries, certain information is specific to the North American market and so may not be applicable to European users.

Differences include the U.S standard external power supply details where some information (for example the AC transformer input voltage) will not be applicable for British/European use. *Please note, however, that when a power supply adapter is ordered it will be suitable for use in your country.*

Reference to some radio transmitters, digital cell phones and aerials may also not be applicable according to your locality.

Some brackets, shields and enclosure options, including wiring, are not sold as standard items in the European market; in some cases alternatives are offered. Details of the alternatives will be covered in separate manuals.

Part numbers prefixed with a "#" symbol are special order parts for use with non-EU variants or for special installations. Please quote the full part number with the # when ordering.

Recycling information

At the end of this product's life it should not be put in commercial or domestic refuse but sent for recycling. Any batteries contained within the product or used during the products life should be removed from the product and also be sent to an appropriate recycling facility.

Campbell Scientific Ltd can advise on the recycling of the equipment and in some cases arrange collection and the correct disposal of it, although charges may apply for some items or territories.

For further advice or support, please contact Campbell Scientific Ltd, or your local agent.

CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

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CS120 Power Supply Enclosure

Important Safety Instructions – please request a translation or further advice if you cannot understand this document.

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1. Installation instructions for an enclosure that includes a mains powered CS120 Power Supply

This document is supplied with an enclosure that includes a CS120 power supply enclosure as it requires direct wiring of an AC, mains power source to terminals inside this enclosure. The instructions below describe how to do this and precautions for the use of the system after installation.

The CS120 power supply is sold as a kit that is normally fitted inside a standard Campbell Scientific environmental enclosure often with other components such as a datalogger or communications interfaces. The layout of each enclosure can therefore vary, but the wiring details for the AC supply are standard. The power supply is sized to have the capacity to power the CS120 with its hoods heaters on and to charge one of Campbell Scientifics standard rechargeable power supplies, e.g. the PS100 or PS200 supplies.

1.1 Required knowledge

The wiring of the enclosure should only be carried out by personnel qualified to install electrical equipment relevant to the installation. For permanent installations outside this usually requires a certified electrician who is also familiar with local electrical and safety legislation. Some general guidance is given below, but the responsibility for the installation lies with that installer.

1.2 Preparation and initial checks

- Choice of site: unless otherwise stated, the enclosure supplied is designed to be mounted in an area with restricted access, i.e. not accessible to general public where it might be vandalised. If access is not restricted please contact Campbell Scientific for further advice.

- The enclosure should be mounted to a fixed structure in accordance to the general instructions for the enclosure or system supplied.

- A mains power source needs to be identified and the type of termination, cable type and cable run matched to comply with local regulations and the type of installation.
- The power source needs to be able to provide the correct voltage and frequency and current in excess of the power requirement of the system. See below.

  Voltage requirements: 90-132 or180-264 V AC

  Current requirements: 2.20 A at 115 V AC, 0.83 A at 230 V AC.

  Input frequency: 47-63 Hz.

- The power source needs to be fused. The fuse rating should be 3.15 A or larger and an "anti-surge" design. The cable used should be capable of carrying current in excess of that fuse rating.

- The power source should be fitted with a two-pole isolator and should be fitted as near to the enclosure as is possible.

- The power cable needs to have three conductors, live, neutral and a protective earth, normally with IEC wiring colours to match those used in the enclosure.

- This equipment requires a protective earth. THIS MUST BE CONNECTED FOR SAFETY REASONS. Please ensure the earth connection at the power source is suitable for this purpose.

- This equipment also requires correct connection of the Live and Neutral conductors – make sure these are identified and wired correctly at the power source.

- For outside installations the power source should be fitted with its own or system wide earth leakage breaker (also known as an RCD).

1.3 Wiring into the enclosure

Fig. 1 shows a typical enclosure fitted with a similar power supply to that used for the CS120. The supply shown is a larger, higher output unit than normally supplied, but the wiring arrangements are typical of the CS120 power supply. In the picture there is a PS200, which is being charged by the main AC supply too.

The enclosure is fitted with a cable gland specifically for the mains cable entry. This gland can be removed and replaced with an alternative which may be better suited to the cable, e.g. if armoured cable and matching fittings are to be used. The gland should be tightened on the cable and the cable fixed outside of the enclosure to prevent accidental removal of the cable.

Inside the enclosure there is a DIN rail fitted with a clearly identified, separate terminal block labelled L, N, E (the E may also have a protective earth symbol). See Fig. 2. Existing wires from the internal power supply will already be connected to one side of the terminal block and should not be disturbed. The installer should prepare the cable, route and wire to the spare terminals on the other side of the terminal block, matching the connections to the L, N and E terminals.

A clip is fitted to the chassis plate below the terminal block to allow the mains cable to be fixed with a cable tie to give some strain relief.

Fig. 1. General View

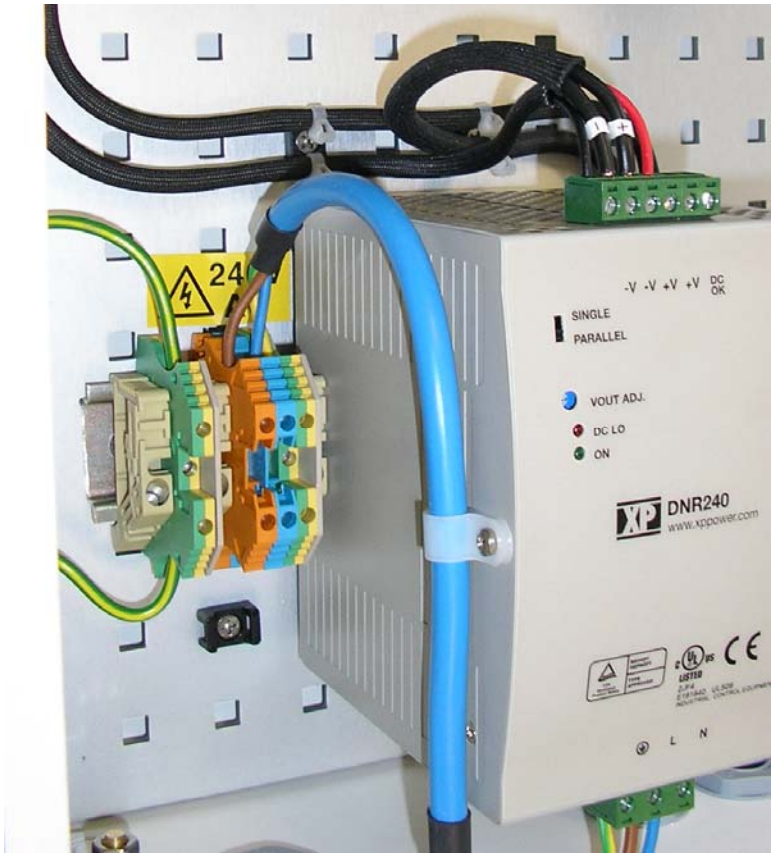

Fig. 2. Mains Connections

The earth terminal acts as the main protective earth input for the enclosure. This will be connected to the chassis plate and also to an earth boss on the base of the enclosure which is identified as a protective earth.

If local regulations allow and/or require, the earth boss can be connected to an earth external to the enclosure either to provide a better external earth for transient protection or to ensure all local earths are bonded together, e.g. the earthing point of a tower.

The enclosure will often be fitted with a secondary block of terminals labelled 24V DC and 12 V DC (Fig. 3). The 24V DC from the AC fed power supply is the output used to power the hood heaters of the CS120. The 24V supply is often also used to provide charging power to a backup power supply for the microprocessor (DSP) of the CS120, such as a PS100 or PS200 which may be installed in the enclosure. That supply may also be used to power a datalogger or other peripherals.

Where a backup supply has not been ordered a 12 V output will not be present and both the heaters and DSP should be fed from the 24 V DC outputs.

Where a PS100 or PS200 is used as battery backup for the DSP electronics it will be able to run the sensor for over 30 hours in the event of mains power failure. The hood heaters will not be powered though.

WARNING

Where PS100/200 is used for backup, do not leave the CS120 connected to the 12V feed for extended periods without the main supply connected otherwise the CS120 may shutdown and/or the battery in the PS100/PS200 may be damaged.

Please refer to the CS120 manual for more details of the low battery shutdown settings.

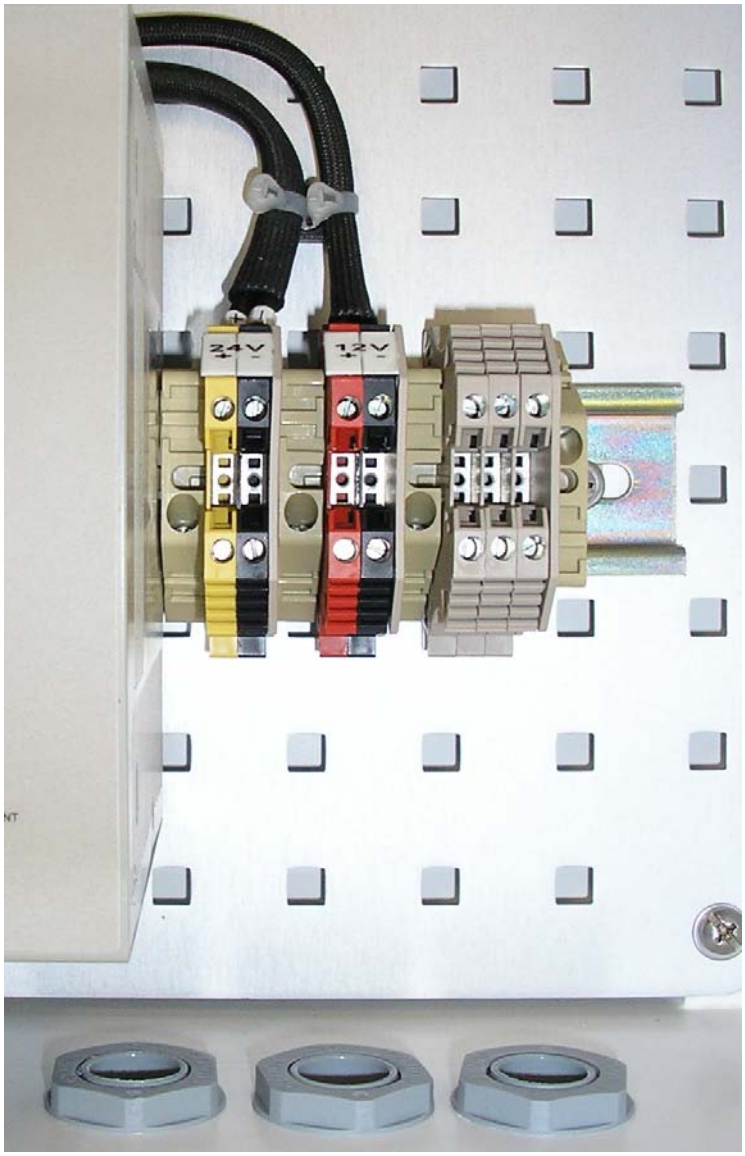

Fig. 3. DC Connections

NOTE A spare set of terminals are sometimes fitted for wiring communications cable in and out of the enclosure. Where a logger and external connectors are fitted the cables from the external sensor may be wired directly to the logger terminals. If a single CS120 is in use the 12 and 24V power feeds may be wired directly to the connectors in the enclosure wall.

After wiring, carry out any statutory tests on the earth bonding, before applying AC power. When power is applied, if you have the equipment and qualifications to do so, check the AC voltage at the DIN rail terminal block is within the range specified on the equipment ratings label. Check the grey power supply has powered on correctly by obvious status indicators on the front of the supply.

If a PS100/200 is fitted, connect the battery connector and turn on the power switch on that supply.

On completion, shut the door and fit the padlock supplied. Please prepare and leave any statutory documentation with the normal user of the system, including details of how to isolate power to the enclosure.

1.4 General use and access to the enclosure

The enclosure is supplied with and should always be fitted with a padlock to stop unqualified personnel opening the enclosure. The enclosure should be left locked at all times.

If acceptable for the system operation, it is best practice to isolate the mains power supply to the enclosure before opening the enclosure.

If this is not possible, only allow personnel with adequate training to open the enclosure when it is powered on. Although the mains terminals provided are “finger safe”, users should not attempt to adjust or amend any wiring in the enclosure when it is powered on.

If the enclosure is supplied with desiccant this should be changed at the intervals stated in the general manual for the enclosures, although if there are sources of heat inside the enclosure the frequency they are changed can be reduced. The power supplies inside this enclosure will generate some heat. Desiccant should still be used though, especially if the external humidity is high.

If the enclosure, cables or ancillary equipment is damaged or has signs of moisture ingress then the equipment should not be used and isolated from the mains supply.

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