

Crestron **CNPWS-75**
System Power Supply

Operations Guide

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System Power Supply: CNPWS-75

Description

Functional Description

The CNPWS-75 is the system power supply device for the Cresnet remote control system (herein referred to as the Cresnet system). The CNPWS-75 operates with an input of 100 to 250 VAC, 2.3A (maximum) and a noise rating less than 300mV. The CNPWS-75 provides 24 VDC, 75W to Cresnet system components. The CNPWS-75 has a fuse that protects the +24 VDC output. If the network power lines are shorted, the fuse is blown. As a result, the NET POWER LED extinguishes.

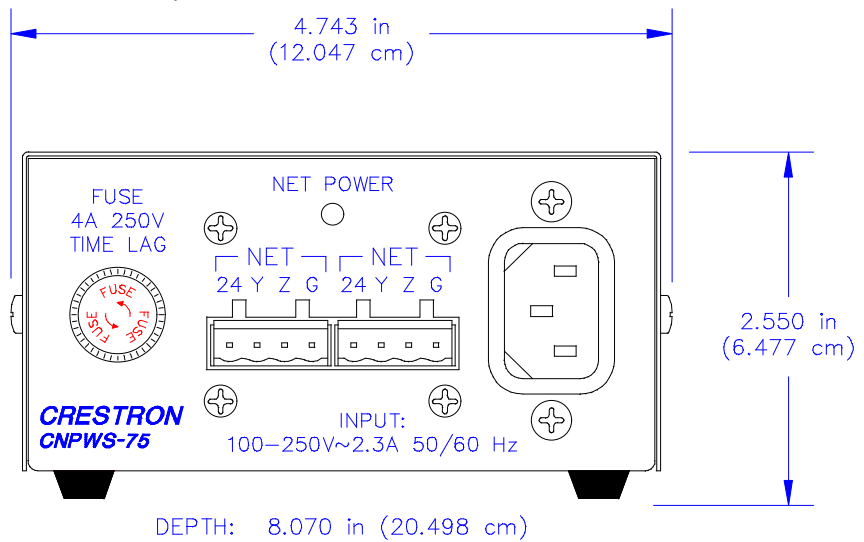
Physical Description

The CNPWS-75 is housed in a black cold-rolled painted steel box, shown on the next page. Silk screening is applied on the front panel of the steel case. The front panel has two four-pin network connectors for integration of the unit into the Cresnet system. Also located on the front panel is the fuse cover (output fuse rating, 4A) and IEC320 connector. There is only one LED (NET POWER) located on the CNPWS-75. It illuminates when 24 volts are output from the unit to the network.

There are four rubber feet on the base of the unit for stability and to prevent slippage when freestanding. Otherwise, the unit can be rack mounted using a CNXRMAK, rack mount kit (sold separately).

Model Differences

There are two system power supply models available and selection depends whether the unit is to be used in a domestic or international application. Due to the input requirements, the supplied line cord differs for each model. The domestic unit is known as the CNPWS-75 and the international unit is referred to as the CNPWSI-75. For purposes of this Operations Guide, the term CNPWS-75 is used for either configuration, except where noted.

CNPWS-75 Physical Views

Leading Specifications

The table below provides a summary of leading specifications for the CNPWS-75. Dimensions and weight are rounded to the nearest hundredth unit.

Leading Specifications for the CNPWS-75

SPECIFICATION	DETAILS
Input Power	100 VAC to 250 VAC, 2.3A (max)
Output Voltage	24 VDC
Output Fuse Rating	4A
Time Lag	125V (min)
Ripple/Noise	less than 300 mV
Maximum Operating Temperature	104 degrees Fahrenheit (40 degrees Celsius)
Dimensions & Weight	Height: 2.55 in (6.48 cm) Width: 4.74 in (12.05 cm) Depth: 8.07 in (20.50 cm) Weight: 2.30 lb (1.10 kg)

As of the date of manufacture, the CNPWS-75 has been tested and found to comply with specifications for CE marking.



NOTE: These devices comply with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

Setup

System Requirements

A CNPWS-75 is necessary to supply power to modular "card cage" control systems (i.e., CNRACKX and CNRACKX-DP) via the central processing unit. An additional CNPWS-75 may also be required in a Cresnet system managed by an integrated control system (i.e., CNMSX) if the power requirements of the system components are greater than the internal 75-watt power supply of the control system.

To determine the number of CNPWS-75s necessary to power all Cresnet components in a particular Cresnet system, the total system power requirement must be calculated. This is accomplished by adding the power requirements of all system components. Refer to the leading specifications of each component for individual power requirements. The total system power requirements should include the control system, all cards in the control system, any expansion racks and associated cards, and any network units. Once the total system power requirement is calculated, the number of CNPWS-75s used should be selected such that their combined output wattage meets or exceeds the total system power requirement.

Another important system factor to consider is the fact that a single network unit cannot be powered by two different CNPWS-75s. In other words, one CNPWS-75, which is not being used to its full capacity, cannot contribute its unused power to 'help' another CNPWS-75 power the network units connected to it. For example, suppose a system consists of a CNRACKX (cards included) with a power requirement of 20 watts and three wired panels, each with a power requirement of 20 watts. The total system power requirement is 80 watts. The first CNPWS-75 could power the CNRACKX and two wired panels for a total of 60 watts. A second CNPWS-75 could power the remaining wired panel for a total of 20 watts.

Network Wiring

NOTE: When making wire connections, refer to the latest revision of the Cresnet Network Interconnect Drawing (Doc. 5411). The document can be obtained from the Downloads page (CABLES and MANUAL Libraries) of the Crestron website (www.crestron.com). Search for the CRESNET.PDF files.

When calculating the wire gauge for a particular network run, the length of the run and the power requirement of each network unit to be connected must be taken into consideration. If network units are to be daisy chained on the run, the load factor of each network unit to be daisy chained must be added together to determine the load factor of the entire chain. The length of the run in feet and the load factor of the run should be used in the following resistance equation to calculate the value on the right side of the equation.

Resistance Equation

$$R < \frac{40,000}{L \times LF}$$

Where: R = Resistance (refer to table below). L = Length of run (or chain) in feet. LF = Load factor of entire run (or chain).
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The required wire gauge should be chosen such that the resistance value is less than the value calculated in the resistance equation. Refer to the table after this paragraph.

Wire Gauge Values

RESISTANCE (R)	WIRE GAUGE
4	16
6	18
10	20
15	22
13	24 (Doubled-CAT 5)

NOTE: All network wiring must consist of two twisted-pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

NOTE: When daisy chaining network units, always twist the ends of the incoming wire and outgoing wire which share a pin on the network connector. After twisting the ends, tin the twisted connection with solder. Apply solder only to the ends of the twisted wires. Avoid tinning too far up or the tinned end becomes brittle and breaks. After tinning the twisted ends, insert the tinned connection into the network connector and tighten the retaining screw. Repeat the procedure for the other three network conductors.

Hardware Hookup

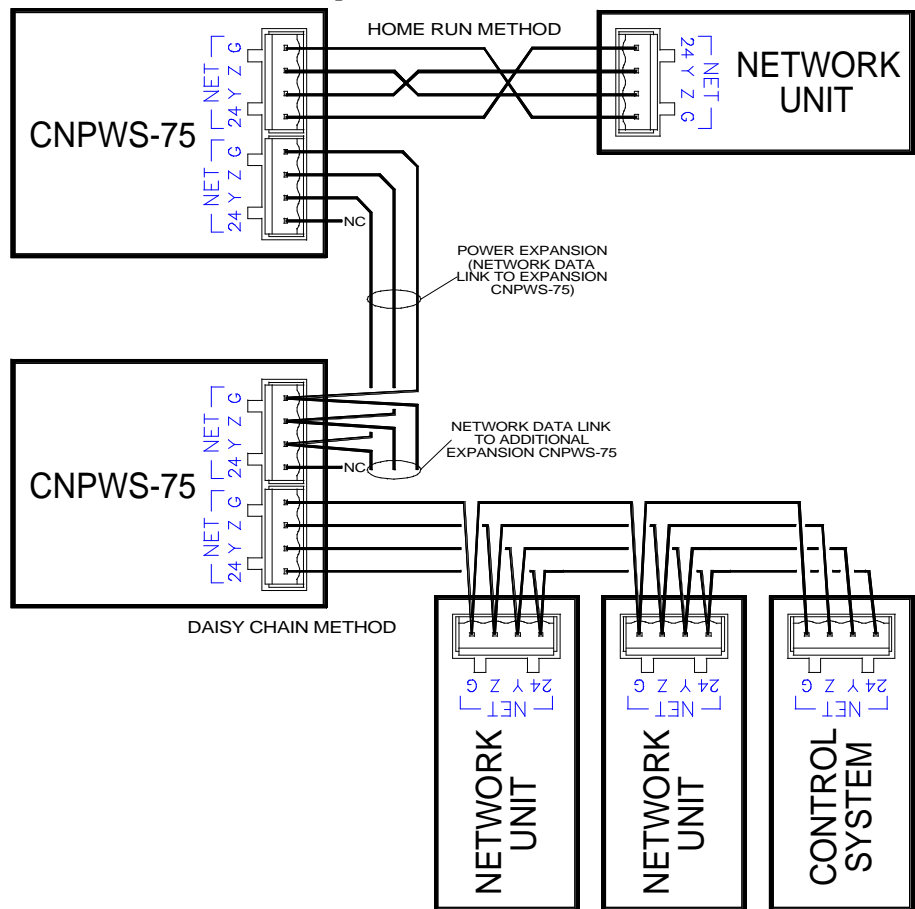
The CNPWS-75 should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances. If the power supply is hot to the touch, consider using forced air ventilation or implementing additional supplies to distribute the load.

Hookup Preparation

Prior to making hardware connections, it is assumed that all wiring is run. This includes the connection of network connectors. However, the network connectors should not yet be plugged into the network units. Use an ohmmeter to verify that none of the four network conductors are shorted or crossed. Furthermore, each network unit has its unique ID code set. If necessary, refer to the product documentation for the appropriate ID code assignment procedure of each device.

Hookup Methods

The hookup diagram, below, illustrates the home run and daisy chain methods of connecting the CNPWS-75. It also illustrates multiple CNPWS-75s within a single Cresnet system. Only use the methods shown; do not connect multiple power supplies together in parallel. If only one power supply is necessary, use either method connected to a control system.

CNPWS-75 Hardware Hookup

NOTE: Never connect multiple CNPWS-75s in parallel.

NOTE: Always disconnect AC power to the CNPWS-75 supplying power to a Cresnet system before connecting a network unit to that system or installing a card in the control system.

Hookup Procedure

1. Connect each network unit to the appropriate network connector.
2. Connect AC power to the CNPWS-75.
3. If a PC (running SIMPL Windows) is available, connect the PC to the Cresnet system via the computer port on the control system.
4. From SIMPL Windows, select **Tools | Viewport** to open the Viewport.
5. Select **Diagnostics | Report Network Devices** (alternatively **F4**) to verify that all network units are properly connected to the Cresnet system.

Special Consideration for the CNPWSI-75

The CNPWSI-75 is shipped with an AC line cord, but no connector. When installing a connector or connecting to AC power, connect the brown lead to live 220 VAC. Connect the blue lead to AC neutral. Connect the green/yellow lead to AC ground.

Problem Solving**Troubleshooting**

The table below provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron technical support representative.

CNPWS-75 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
NET POWER LED is not illuminated.	CNPWS-75 is not receiving power. Fuse is blown.	Verify that AC outlet is active and supplying power. Refer to setup procedures in this Operations Guide and test the network for shorts. Replace fuse.
NET POWER LED flashes.	Cresnet power requirements for supply is exceeded.	Confirm load on supply. Add more power supplies to the network, if necessary.
Network units are not receiving power.	Varied.	From SIMPL Windows, select Tools Network Analyzer and perform voltage level tests on the troubled network unit. Refer to the SIMPL Windows help file for details.

Further Inquiries

If after reviewing this Operations Guide, you cannot locate specific information or have questions, please take advantage of Crestron's award winning technical support team by calling:

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876] or 1-201-767-3400.
- In Europe, call Crestron International at +32-15-50-99-50.
- In Asia, call Crestron Asia at +852-2341-2016.
- In Latin America, call Crestron Latin America at +525-260-4336.

For local support from exclusive Crestron factory-trained personnel call:

- In Australia, call Soundcorp at +613-9488-1555.
- In New Zealand, call Amber Technologies at +649-410-8382.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.
2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, Cresskill, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its Cresnet products, denoted by a "CN" prefix model number, to be free from manufacturing defects in materials and workmanship for a period of three (3) years from the date of shipment to purchaser. Disk drives and any other moving or rotating mechanical parts are covered for a period of one (1) year. CRESTRON warrants all its other products for a period of one year from the defects mentioned above, excluding touchscreen display components which are covered for 90 days. Incandescent lamps are completely excluded from Crestron's Limited Warranty. CRESTRON shall, at its option, repair or replace any product found defective without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

CRESTRON shall not be liable to honor warranty terms if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON makes no other warranties nor authorizes any other party to offer any warranty, expressed or implied, including warranties of merchantability for this product. This warranty statement supersedes all previous warranties.

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