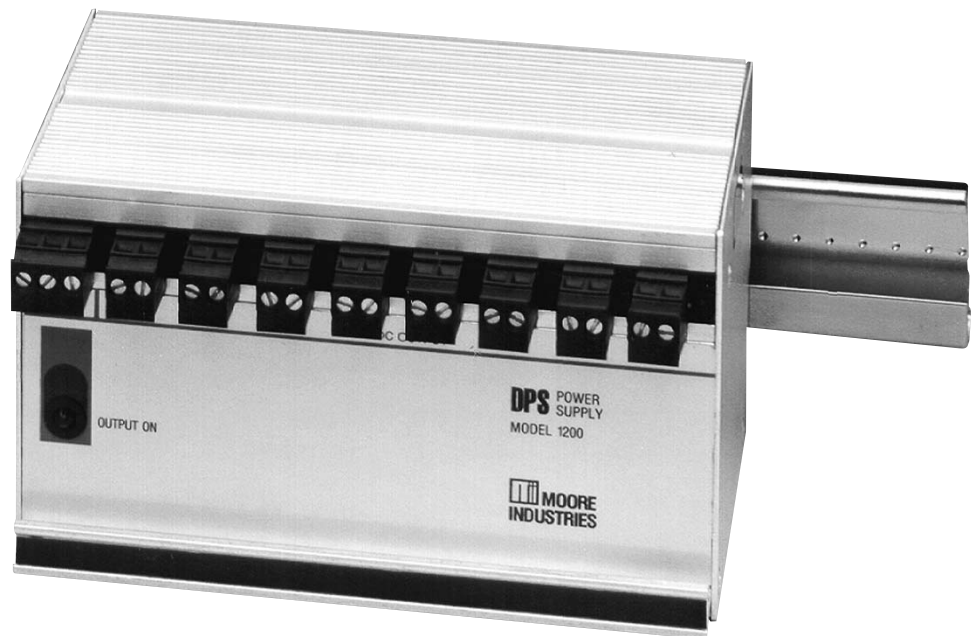


DPS

1200mA DIN
Power Supply



The DPS

The Moore Industries' 1200-milliamp (mA) DIN Power Supply (DPS 1200) is a stand alone, switching power supply that produces 24Vdc at a maximum rated output of 1200mA. The output has a minimum adjustability of 24Vdc, $\pm 10\%$.

The DPS 1200 has continuous protection against output overvoltage and output short circuits. When either of these conditions is detected, the DPS shuts down. The unit attempts to recover by raising the output voltage. When the overvoltage or short circuit condition is removed, full recovery occurs.

The DPS 1200 has input/output isolation, is convection cooled, and features a de-rated circuit design for added dependability.

The DPS 1200 comes with nine removable terminal blocks: a three-position terminal block for input power and eight 2-position blocks for 24Vdc output. The removable terminal blocks allow the user to isolate individual loops for troubleshooting or general maintenance and calibration without disturbing field wiring.

The DPS 1200 is enclosed in a DIN rail-style housing. The rail can be mounted in most locations: on a wall, in a rack, or in a NEMA enclosure.

Specifications

Performance	Efficiency: 70%, typical Hi-Pot Isolation: 1100/Vac between case, input and output Switching Frequency: Greater than 20KHz Input Frequency: 47 to 450Hz Input Regulation: 1% maximum low line to high line	Performance (continued)	Load Regulation: 1% maximum ($\pm 40\%$ change from 60% of rated load) Hold-up Time: 20ms, minimum Ripple: 100mV maximum (100KHz); 200mV, maximum (10MHz)	Operating Temperature	Ambient: 0°C to +50°C (+32°F to +122°F) Effect: $\pm 0.05\%$ maximum per °C
				Weight	1.14 kilograms (2.5 lbs)
				Feature	Indicator: Constant red LED indicates normal operation with power to the output terminals resistance

Specifications subject to change without notice

Ordering Information

Unit	Voltage Output	Current Output	Power	Options	Housing
DPS 1200mA DIN Power Supply	24DC (Adjustable $\pm 10\%$, internal to unit)	1200MA 1200 mA maximum at 50°C	90-260AC	none	DIN DIN-style rail-mount housing

To order, specify: Unit / Voltage Output / Voltage Input / Power [Housing]

Model Number Example: DPS / 24DC / 1200MA / 90-260AC [DIN]

DPS

Calibration

After the unit is unpacked, general operating level checks are recommended. The DPS has only one internal control. The single-turn potentiometer (VR1, see Figure 1) can be adjusted with a phillips or slotted screwdriver. Turning the control clockwise (CW) increases the output voltage, and turning the control counterclockwise (CCW) reduces the output voltage.

WARNING:

The screwdriver blade should be insulated to prevent injury to the technician or damage to the unit.

Providing the test equipment is the responsibility of the user. A voltmeter, ammeter, and load resistor are required for the calibration setup shown in Figure 2.

During normal operation the OUTPUT ON indicator light remains illuminated. If a short circuit or overvoltage condition occurs, the unit shuts down and the OUTPUT ON indicator extinguishes.

Calibration Procedure

Calibration of the output voltage consists of applying ac power to the DPS input power terminals, monitoring the output with the appropriate meter, and moving the internal VOLTAGE ADJUST control (VR1, see Figure 1) to obtain the desired output voltage. Access to the control is achieved by removing the top screws on the side panel of the unit and removing the top panel. Proceed as follows:

1. Connect the DPS as shown in Figure 2.

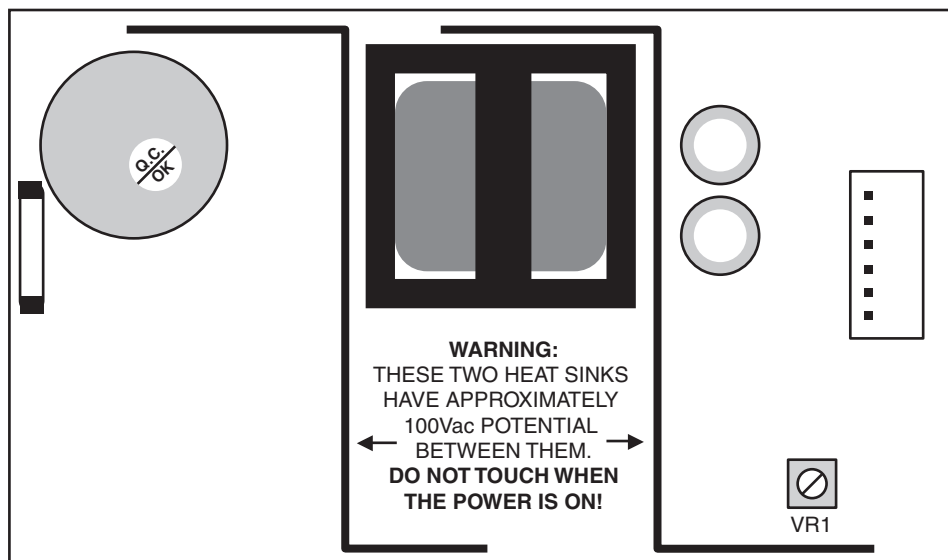
WARNING:

The two heat sinks have approximately 100Vac potential between them. Do not touch them when power has been applied to the unit.

2. Apply power to the unit.
3. With a 20-ohm, 30-watt load resistor across the output, turn the VOLTAGE ADJUST control until the voltmeter reads 24Vdc.
4. Turn off power to the unit and disconnect the test equipment.
5. Replace the top panel and the retaining screws.

The unit is now ready for service.

Figure 1. DPS 1200 Internal Diagram Showing VR1



Installation

This section contains installation information for the DPS 1200 Power Supply. Guidelines for installing the DPS 1200 in a CE environment are in the supplement on pages S-1 and S-2.

Although each unit is designed for convection cooling, it is a good practice to mount the unit on a surface made of material that can serve as a heat sink. The unit should be located in an area that is protected from dust, moisture, and corrosive atmospheres.

To install the DPS 1200 on a DIN rail, insert the spring clip on the back of the unit, under the short flange of the rail and while pushing in, rotate it down until it snaps into position (see Figure 4 for mounting dimensions). To remove the unit from the rail, pull out and up until it is clear of the rail.

Electrical Connections

The electrical connections are made to the removable terminal blocks on the front of the unit (see Figure 3 for terminal designations). To connect wiring to the removable terminal block, use 14-22 AWG insulated copper hook-up wire. Strip 5/16" to 3/8" of the insulation from the end of the wire and tin with 60/40 rosin core solder. Loosen the clamping screw in the terminal block and insert the tinned end of the wire into the socket while tightening the screw. To remove the wire, loosen the clamping screw and pull the wire straight out. Tag all wires for proper identification before removing them.

The removable terminal blocks allow individual circuits to be disconnected by pulling the selected terminal block out of the socket, alleviating the need to remove individual wires.

Figure 2. DPS 1200 Calibration Setup

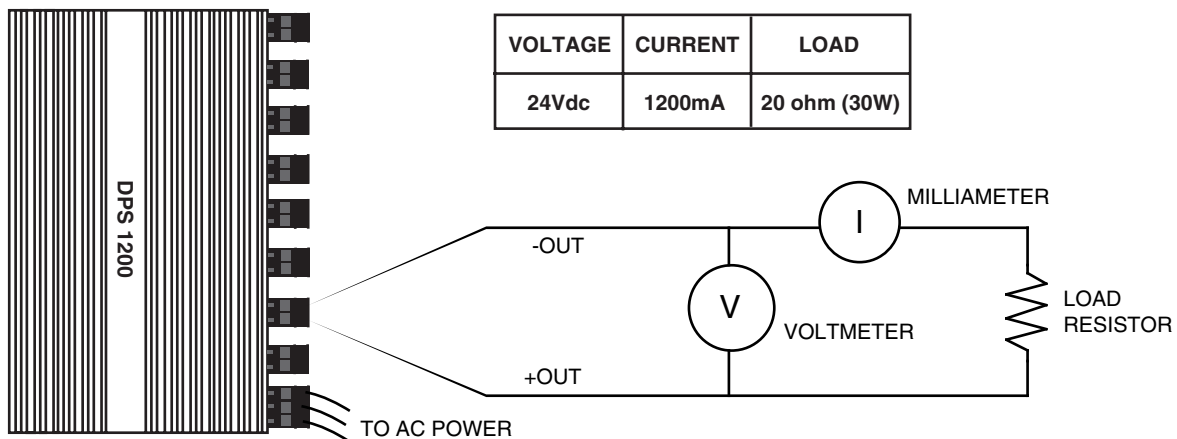
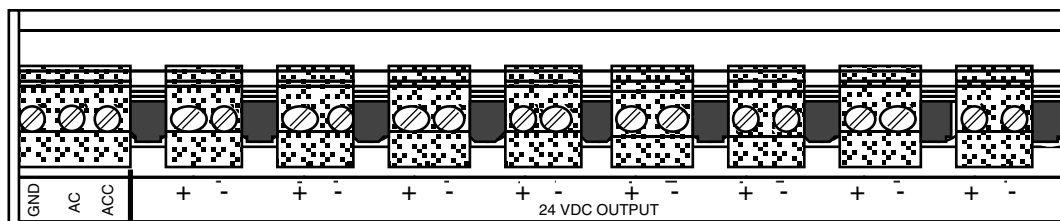


Figure 3. DPS 1200 Terminal Designations



KEY: GND = Chassis Ground + = 24Vdc Output
 AC = AC Input - = 24Vdc Return
 ACC = AC Return

DPS

Maintenance

The design of the DPS 1200 limits maintenance primarily to ensuring that the input and output terminals and conductors are clean and tight. It is recommended that the user check the terminations every six months of service to verify that they are secure and free of oxidation and/or corrosion.

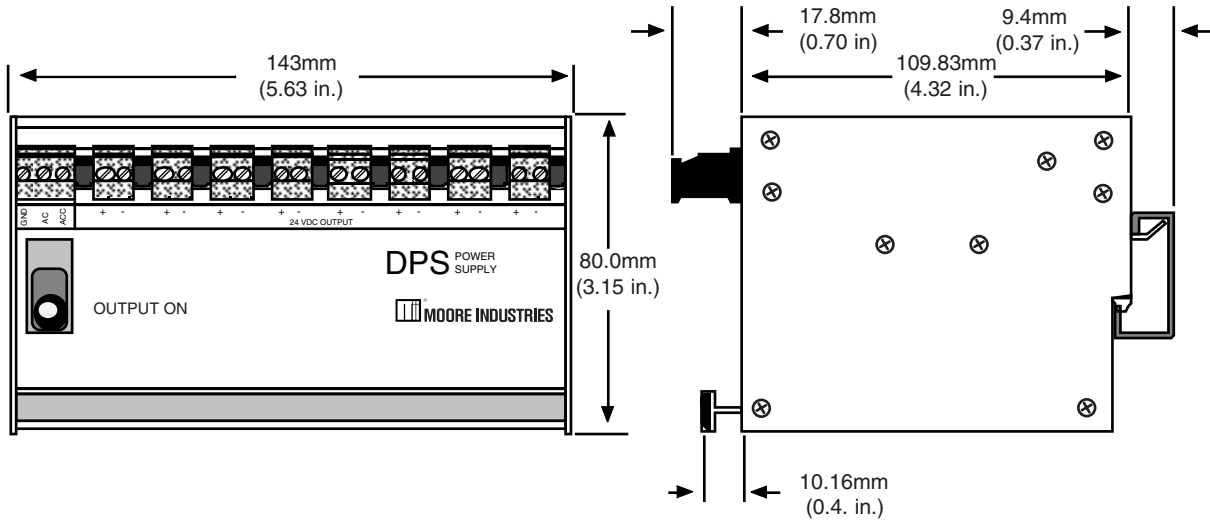
A power supply may become warmer during operation, especially if the unit is operated near maximum load. This is acceptable and should not be cause for alarm unless a malfunction is also observed.

Troubleshooting

1. Verify that all electrical connections are clean and tight.
2. Verify that the measuring instruments used for checking the output voltage is of the proper range and accuracy.
3. Disconnect the output load connections (remove the plugs) and measure the output of the power supply. If the output is within specifications, check the load for shorts.

If a problem still exists, the unit should be returned to the factory. Return procedures can be found on the back page of this manual.

Figure 4. DPS 1200 Mounting Dimensions



Supplement

Low Voltage Directive

The following guidelines must be followed in order to comply with EN 61010-1 (Low Voltage Directive). These items affect the AC versions of the following products: DCA, DPS-240, DPS1200, ECA, ECS, ECT, FCA, FDT, IST, PIT-4W, PWT, RBA, SCT, SMP, SPA-CE. If these products are to be used in a non-CE environment, this supplement may be disregarded.

WARNING:

If this unit is used in a manner not specified by Moore Industries, the protection provided by the equipment may be impaired.

Switches and Circuit Breakers

A switch or circuit breaker must be wired in series with the AC power conductors. This switch or circuit breaker must be located within three meters of the unit.

WARNING:

Terminals on this unit may be connected to hazardous voltages. Before making ANY connections to this unit, ALL hazardous voltages must be de-energized.

The circuit breaker or switch will only remove power to the unit, hazardous voltages may still be connected to other terminals on the unit.

Installation Category

All terminals are rated CAT II, except for terminals with the -RF option. These terminals are rated CAT I.

Equipment Ratings

Moore Industries transmitters do not generate hazardous voltages. They measure voltage or current inputs, and generate low voltages and currents (<42Vdc and <50mAdc). Products connected to Moore Industries transmitters should be designed to receive these inputs.

Moore Industries alarms do not generate any hazardous voltages. Alarm contacts are wired in series with power sources and their intended loads. The correct load should be selected for the power source.

Supply Wiring

All power connections shall be made with 14 or 16 AWG (.083mm or .064mm) wire.

The end of each conductor should be stripped no more than 8mm. The end of the stripped wire should be tinned with solder or inserted into a ferrule and crimped before being placed into a terminal block.

Conductors connected to screw type connections must have a ring or spade lug crimped on the end of the wire.

Protective Earth Conductor

The Protective Earth Conductor shall be of equal or larger size wire than the other two power conductors.

The Protective Earth Conductor shall be the first conductor connected to the unit when the unit is being wired. It shall be the last conductor removed when the unit is being un-wired.

Supplement

Maximum Working Voltage

Table 1-s shows the maximum working voltage for Moore Industries' low voltage products.

Table 1-s. Maximum Working Voltage

Input Type	Maximum Working Voltage
Millivolt, Thermocouple, and RTD	48Vdc
DC Voltage Inputs	48Vdc
AC Voltage Inputs	264Vac
Analog Outputs	48Vdc
Relay Contacts	264Vac
117Vac Power Terminals	129Vac
240Vac Power Terminals	264Vac
Contact Closure Outputs	30Vdc

Accessories

Contact Moore Industries for information on suitable accessories for our products.

Mounting

When mounting the unit or installing it into an application, ensure that the unit can be easily removed for maintenance or repairs.

Cleaning and Maintenance

Maintenance on Moore Industries' products is limited to keeping the unit clean and the wire terminals free of oxidation. This is best accomplished by installing the unit in an area protected from dust, heat, moisture, and corrosive atmospheres. Yearly visual inspections should be performed to ensure that the unit is clean and the electrical connections are in good repair.

Replacement of Consumable Materials

No consumable materials are used in the Moore Industries products covered by EN 61010-1.

Symbols

Table 2-s shows the symbols used on Moore Industries' products, the corresponding IEC/ISO symbol, and its definition.

Table 2-s. Symbols on Moore Industries' Products

IEC/ISO Symbol	Symbol on Moore Industries Product	Definition
	+PS -PS DCC	Direct Current
	AC ACC	Alternating Current
	AC or DC	Direct and Alternating Current
	GND 	Protected Earth Terminal
		Protective Conductor Terminal
		Equipment protected throughout by double insulation or reinforced insulation (equivalent to Class II of IEC 536)
		Caution (See manual for information)
Not Specified	+IN -IN	Positive Input Negative Input
Not Specified	+OUT -OUT	Positive Output Negative Output
Not Specified	NO NC CM	Normally Open Normally Closed Common
Not Specified	UNO UNC	Upper Normally Open Upper Normally Closed
Not Specified	LNO LNC	Lower Normally Open Lower Normally Closed
Not Specified	TX	Transmitter Excitation

RETURN PROCEDURES

To return equipment to Moore Industries for repair, follow these four steps:

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

Warranty Repair –

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

Non-Warranty Repair –

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
 - a) A note listing the symptoms that indicate the unit needs repair
 - b) Complete shipping information for return of the equipment after repair
 - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

WARRANTY DISCLAIMER

THE COMPANY MAKES NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY GOODS OR SERVICES SOLD BY THE COMPANY. THE COMPANY DISCLAIMS ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR TRADE USAGE, AND ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY ACKNOWLEDGES THAT THERE ARE NO WARRANTIES IMPLIED BY CUSTOM OR USAGE IN THE TRADE OF THE BUYER AND OF THE COMPANY, AND THAT ANY PRIOR DEALINGS OF THE BUYER WITH THE COMPANY DO NOT IMPLY THAT THE COMPANY WARRANTS THE GOODS OR SERVICES IN ANY WAY.

ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY AGREES WITH THE COMPANY THAT THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY WARRANTY CONCERNING THE GOODS OR SERVICES SHALL BE FOR THE COMPANY, AT ITS OPTION, TO REPAIR OR REPLACE THE GOODS OR SERVICES OR REFUND THE PURCHASE PRICE. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES EVEN IF THE COMPANY FAILS IN ANY ATTEMPT TO REMEDY DEFECTS IN THE GOODS OR SERVICES. BUT IN SUCH CASE THE BUYER SHALL BE ENTITLED TO NO MORE THAN A REFUND OF ALL MONIES PAID TO THE COMPANY BY THE BUYER FOR PURCHASE OF THE GOODS OR SERVICES.

ANY CAUSE OF ACTION FOR BREACH OF ANY WARRANTY BY THE COMPANY SHALL BE BARRED UNLESS THE COMPANY RECEIVES FROM THE BUYER A WRITTEN NOTICE OF THE ALLEGED DEFECT OR BREACH WITHIN TEN DAYS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH, AND NO ACTION FOR THE BREACH OF ANY WARRANTY SHALL BE COMMENCED BY THE BUYER ANY LATER THAN TWELVE MONTHS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH.

RETURN POLICY

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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