



SSM

Supply Switching Module

USER'S MANUAL

No. 221-705-00C

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48^{HR.} DELIVERY



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Introduction

Moore Industries' Supply Switching Module (SSM) ensures an uninterrupted 24 Volts is supplied to other instruments by outputting the greater of two voltage inputs.

This manual contains descriptive, bench check and installation information for the SSM. The Notes and Cautions contained in this manual are provided to avoid minor inconveniences and/or equipment damage during bench check and installation.

Description

The SSM accepts two 24-Vdc inputs, and outputs the greater of the two inputs. The SSM is not regulated or fused. It is intended for use with power supplies that are fused and feature over-voltage protection.

There are no adjustments or operator controls on the SSM. But, there are three indicators on the front panel of the DIN-style housing; two green LEDs (one for each input) and one red LED to indicate fault conditions.

The green LEDs, PS1 and PS2, illuminate when the inputs are 21 Vdc or greater. If either input drops below 21 Vdc, the corresponding LED extinguishes. The under-voltage fault limit is 21 Vdc. The over-

voltage fault limit is 27 Vdc. The SSM reacts to under- and over-voltage inputs by de-energizing the normally-energized Fault Relay and illuminating the FAULT LED. The SSM will always output the higher of the two input voltages, minus 0.6 Vdc. (The SSM has a voltage drop of 0.6 Vdc.)

The Fault Relay is a single pole, double throw (SPDT) relay that provides both normally-closed (N/C) and normally-opened (N/O) contacts. Both of the contact states are accessible at the front panel of the SSM.

Table 1 contains the equipment specifications for the SSM.

Serial Number. Moore Industries maintains a complete historical record for every product it sells and services. This historical information is keyed to the unit's serial number. If historical information is ever needed for the SSM, the serial number of the unit must be supplied to the factory for the information to be retrieved. The SSM serial number is located on a label affixed to the right-side of the unit.

Model Number. The model number of the SSM identifies the unit type and operating parameters the unit had when it originally left the factory. The model number can be used to determine product characteristics if no other documentation is available. The model number of the SSM is on the same label as the serial number, which is affixed to the right-side of the unit.

Table 1. SSM Equipment Specifications

Characteristic	Specifications
Input	24 Vdc, 2.4 A (two)
Output	24 Vdc, 2.4 A (one)
Features	Two green LEDs; one for each input One red LED; indicates fault conditions Fault Relay; SPDT, rated for 117 Vac, 5 A
Environmental Considerations	Ambient Temperature: Operating: 0 to 65 °C (32 to 150 °F) Storage: -40 to 85 °C (-40 to 185 °F)

SSM Bench Check

Before placing the SSM into service, an operational check of the unit should be performed. A bench check of the SSM will confirm the operational readiness of the unit. The bench check may be performed in a laboratory setting or at the installation site.

Two 24-Vdc power supplies and a dc voltmeter are needed to check out the basic function of the SSM. To verify a change in states of the Fault Relay, an ohmmeter is also required.

Figure 1 shows the setup required to check out the SSM. It is important to note that the SSM has a voltage drop of 0.6 Vdc. The output of the SSM will be 0.6 Vdc less than the highest dc input. To compensate for this, both inputs must be adjusted to 24.6 Vdc to provide an output of 24 Vdc.

The electrical connections to the SSM are made to removable plugs; each having three separate terminals. Individual wires are secured to the terminals with compression-screws. A slotted-head screwdriver is required to complete these connections. Wires are fed into the plugs from the top and the compression-screws are accessed on the front of each plug. It is easier to complete the electrical connections with the plugs plugged into the unit.

CAUTION

*Check the polarity of the dc inputs.
Ensure they are connected as indicated
on the front panel of the unit.*

Bench Check Prodecures

1. Connect SSM to other equipment as shown in figure 1.
2. Apply dc input of 24.6 Vdc from both power supplies to SSM.
3. Note that LEDs PS1 and PS2 are illuminated and Fault LED is extinguished.
4. Verify output reading to be 24 Vdc.
5. With an ohmmeter, verify normally-closed and normally-opened state of Fault Relay. Note findings.

NOTE

*The Fault Relay is normally energized.
When a fault is detected, the relay de-energizes.*

6. Remove input from PS1. Verify that PS1 LED extinguishes and FAULT LED illuminates.
7. Check state of Fault Relay. Condition should be opposite of that found in step 5.
8. Reconnect input to PS1. Verify that PS1 LED illuminates and FAULT LED extinguishes. Fault Relay state should be as found in step 5.
9. Repeat steps 6 through 8 with PS2 input. Verify similar results with PS2.
10. Disconnect equipment; bench check is complete.

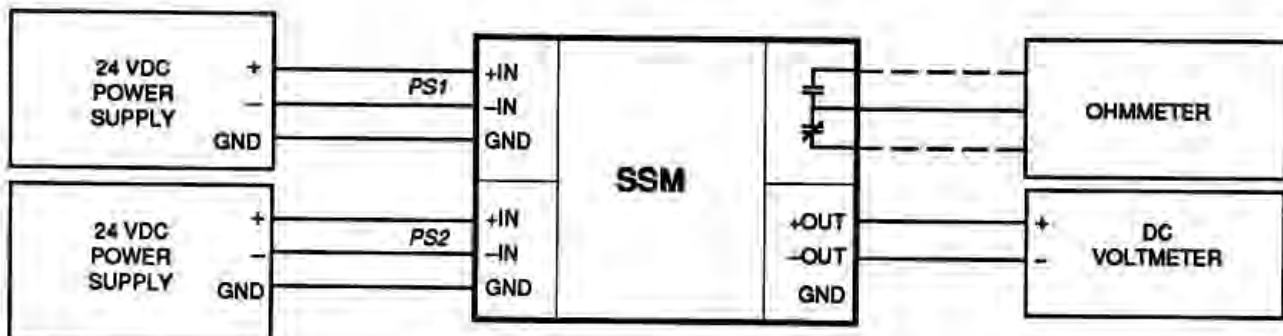


Figure 1. SSM Bench Check Setup

Installation

Installing the SSM consists of physically mounting the unit and completing the electrical connections. Each of these tasks are discussed separately in the following subsections. Installation is completed more efficiently when the unit is mounted before making the final electrical connections.

Mounting the SSM

The SSM is packaged in an all-aluminum DIN-style housing that is ideal for high-density installations. The SSM mounts directly on standard G-type DIN rails. Figure 2 contains the outline dimensions of the SSM.

The SSM will operate reliably in environments with high ambient temperatures (see table 1 for specifications). However, the SSM should be installed in an area free of excessive moisture and corrosive elements.

Making the Electrical Connections

All electrical connections to the SSM are made to removable plugs that mate with pins on the front panel of the unit. There are four plugs; each having three terminals. The terminal designations are clearly marked on the front panel and the plugs are designed to mate with the connector pins in only one orientation. However, the four plugs themselves are interchangeable. The user must ensure that all connections are made to the appropriate terminals as marked on the front panel.

Wires are secured to the removable plugs with compression-screws. Wires are fed into holes in the top of the plugs, and the compression-screws are accessed at the front of the plugs. A small slotted-head screwdriver is required to complete the electrical connections.

Two plugs are used to connect the 24-Vdc inputs to the SSM. One plug is for the Fault Relay output and one for the 24-Vdc output. Figure 3 is a typical hookup diagram for the SSM.

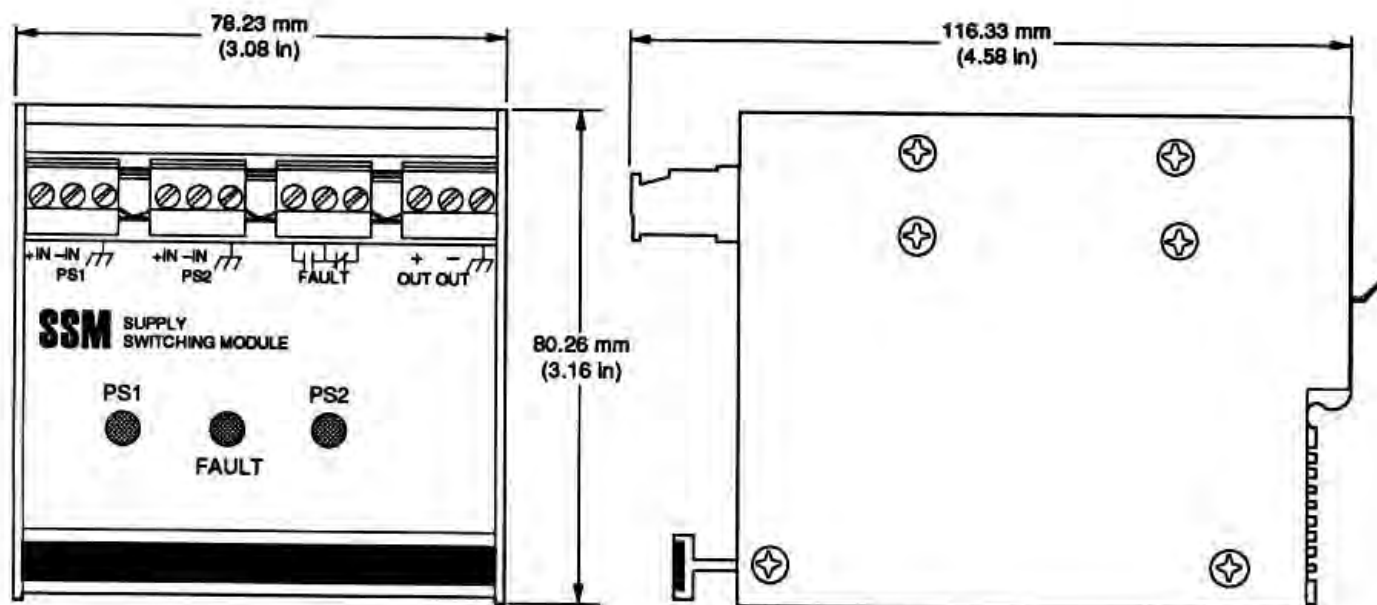
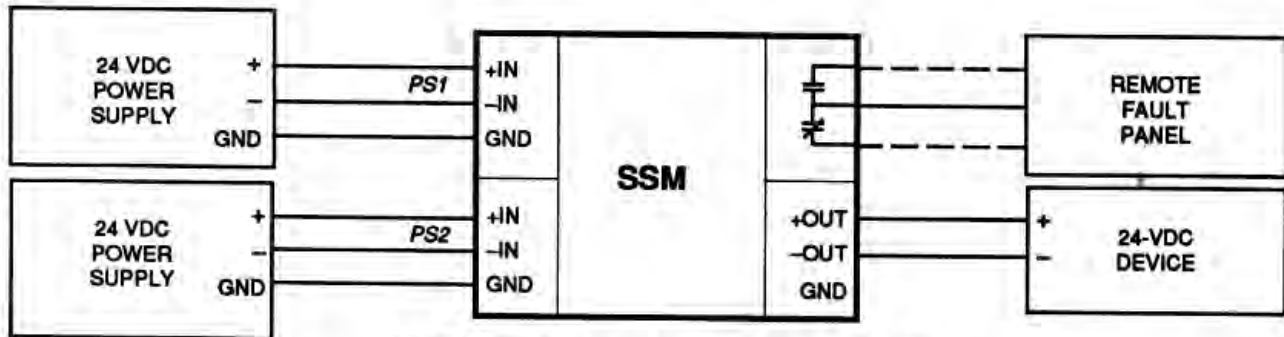


Figure 2. SSM Outline Dimensions

SSM



NOTE: The SSM has a voltage drop of 0.6 volts. Ensure inputs are adjusted to compensate for this drop.

Figure 1. SSM Bench Check Setup

Maintenance

Once installed, the SSM requires limited field maintenance. Unless a malfunction is detected, the only user intervention required is periodic inspections to ensure the connections are secure, clean and unfrayed.

Should the SSM exhibit some type of problem, a bench check should be performed to determine if the unit is actually defective. If a problem is isolated to the SSM, Moore Industries' Customer Service Department can be contacted at 1-800-999-2900 for technical assistance.

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.

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