

OWNERS MANUAL

InPower Model SSC42-275

Ambulance Module Power Disconnect Switch with One On/Off and Three Time Delayed Shutoff Modes



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1. Introduction

The InPower Ambulance Module Power Disconnect Switch is intended for use in ambulances to disconnect battery power from module loads, such as emergency lights, patient compartment lights, floodlights and loading lights. The module contains a high current solid state contactor (power switch), a current sensor and a microprocessor control and monitor circuit. Its over-current shutdown rating is 275 amps with a surge rating of 800 amps, and it provides automatic fault shutdown for over current and loss of ground. The standard model described in this manual is SSC42-275, but many custom programs are available. Please call us for more information.

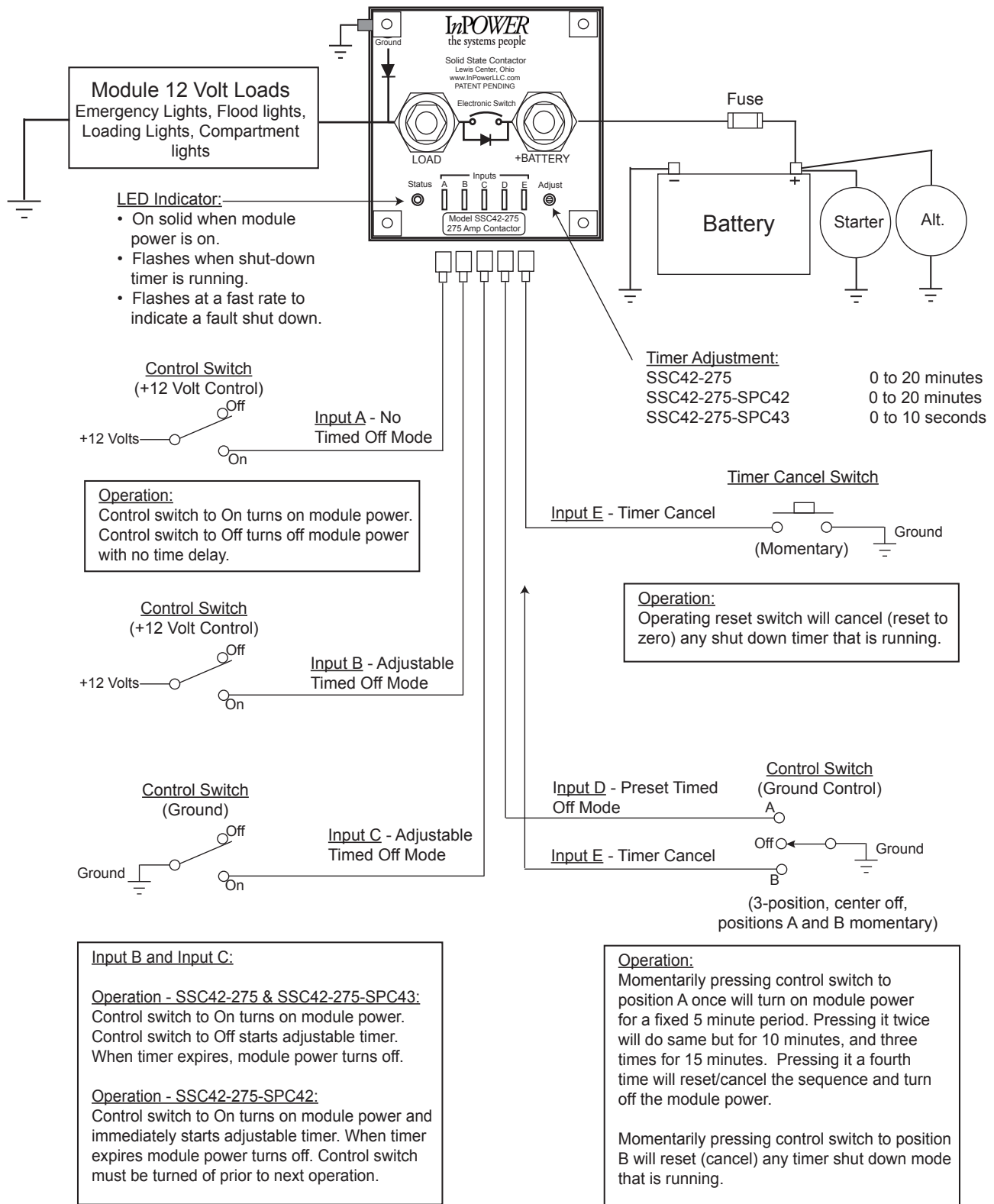
Five control inputs offer a variety of different control configurations, including up to three time delayed power shut-off modes. Input A allows instant shut-off, Inputs B, C and D offer time delayed shut-off modes, and Input E cancels all timed shut-offs.

An amber LED indicator displays the power switch status. It illuminates any time the power switch is on, and it flashes when switch is on and the timer is running in a timed shut-off mode. The LED blinks at a fast rate to indicate a fault shut down condition.

The DC power terminations are two 3/8 – 16 threaded studs with brass contact pads. The five control inputs are 0.25 inch male faston blade terminals. The four mounting holes provide the required connection to ground.

Load Considerations: Relays/Solenoids on the output must incorporate Fly Back Suppression Diodes/Circuitry. These Relays/Solenoids (without suppression) can create large voltage and current spikes which damage electronics. Having inductive loads without suppression violates your unit's warranty and may damage your vehicles electronics!

2. System Diagram



3. System Operation

3.1 Electronic Power Switch

The SSC42-275 module power disconnect switch is 100% electronic. When activated, it connects the LOAD terminal to the +BATTERY terminal, delivering power to the module's 12 Vdc loads. The highly efficient power switch has a very low on-resistance, resulting in a very low voltage drop and low internal heat dissipation. As many DC loads are inductive, the power switch contains an internal clamping diode between its LOAD terminal and ground. This suppresses negative inductive voltage spikes when the power is switched off. Note that it is very important that the unit is properly grounded to allow this clamping diode to work effectively.

The power switch monitors the amount of current passing through it, and if this current exceeds specifications, the power switch turns off and stays latched until reset. The current trip point activates if the 275 amp limit is exceeded for 750 milliseconds. To recover from the latched shutdown condition, the overload condition must be cleared. Then, either remove battery power from +BATTERY terminal or cycle Input A, B or C to On then Off.

3.2 Control Inputs

The module has five inputs that perform various functions.

Input A: Activates with +12 volts. Activating this input turns the power switch on. Removing the input turns the power switch off with no time delay.

Input B: Activates with +12 volts. Activating this input turns the power switch on. Removing this input, a timer starts. When the timer expires, the power switch shuts off. The timer is adjustable by a single turn potentiometer located on top of the module. This timer ranges from 0 to 20 minutes on the standard model.

Input C: Activates with ground. Function is otherwise identical to Input B.

Input D: Activated by momentary ground. When activated, the power switch turns on for a fixed period of time in multiples of five minutes. The interval is determined by how many input pulses are received (one, two or three). If one pulse is received, the power switch turns on for five minutes. If two, ten minutes. If three, fifteen minutes. When the period is up or if a fourth pulse is received, the switch turns off.

Input E: Activates by momentary ground. When activated, any timer running is immediately cancelled and reset, and the power switch turns off.

LED Status Indicator: the amber LED indicator is located on top of the module. Steady on indicates the power switch is on with no timer running. The LED flashes slowly when a timer is running. It blinks rapidly when a fault has occurred.

Fault Shutdowns: the following conditions will cause the power switch to shut off and stay latched in the shut off state until it is reset:

1. over current
2. loss of ground

Resetting Fault Shutdowns: To reset after a fault shutdown, first remove the source of the fault. Then, do one of the following:

Disconnect and reconnect the battery cable from the +BATTERY terminal
Or cycle Input A, B or C to on then off.

4. Installation Procedures

This section provides instructions for installing the InPower Model SSC42-275 Ambulance Module Power Disconnect Switch. It is important that you follow these instructions carefully and contact InPower if you need assistance or more information.

4.1 Safety Precautions



WARNING

This power switch product has been designed and manufactured to meet the intended application requirements and specifications. Any modifications to the product or to the installation procedure can be dangerous and will void InPower's warranty.

- Read and understand the instructions in this manual and other manuals before starting the installation.
- Make sure that the vehicle battery power is disconnected during installation of the Interlock and lift systems.
- Reconnect the battery when the system installation is complete.
- Locate a dry location free of water or chemical spraying as this may damage the Contactor.
- Wear appropriate safety equipment, such as protective eyeglasses, face shield and clothing when installing equipment and handling the battery.
- Be careful when working near a battery. Make sure that the area is well ventilated and that there are no flames near the battery. Never lay objects on the battery that can short the terminals together. If battery acid gets in your eyes, immediately seek first aid. If acid gets on your skin, immediately wash it off with soap and water.

4.2 Mounting

Determine where the disconnect switch will be mounted. Take into consideration the large power cables that must connect the switch to the battery positive, as well as the power cables from the disconnect switch to the 12 volt loads. Note that a fuse is necessary at the battery end of the cable running between the battery and the battery terminal on the disconnect switch.

The module must be mounted on a flat metal surface to absorb the heat produced by the switch. We recommend an aluminum plate 1/8" x 16" x 16" or larger. If this size and type of mounting surface is unavailable, it is necessary to derate the maximum current rating of the power switch. To facilitate heat transfer, a square piece of thermal transfer material is supplied on the mounting surface of each disconnect switch. Remove the clear plastic protective backing before mounting.

Secure the disconnect switch to the mounting surface using four screws. If the mounting surface is a good quality ground, the mounting screws will provide a good ground connection. However, if the mounting surface is not a good ground or you are unsure, you must install a ground wire with a ring terminal under one of the mounting screws. This ground wire must be a low resistance to battery negative.

The disconnect switch should not be located in the engine compartment or any location near the engine's heat. Although the module is sealed, we do not recommend installing it in a location that is exposed to the outside environment where the unit may be exposed to water or chemical spray.

4.3 Connecting the power cables

First, make sure the battery is disconnected!

Use a suitable size cable for the current required and install a crimped terminal lug on the end. Be sure you have installed a protection device, such as a fuse, fuse link or circuit breaker, at the battery end of the cable. Torque the nut to between 10 and 15 Ft pounds. Prepare the cable for the loads and install this as you did with the battery cable.

Stacking multiple cable terminal lugs on the studs is not recommended.

4.4 Control Circuit

The control circuit wiring consists of one or more remote switches wired to the five disconnect switch control inputs labeled Input A through Input E.

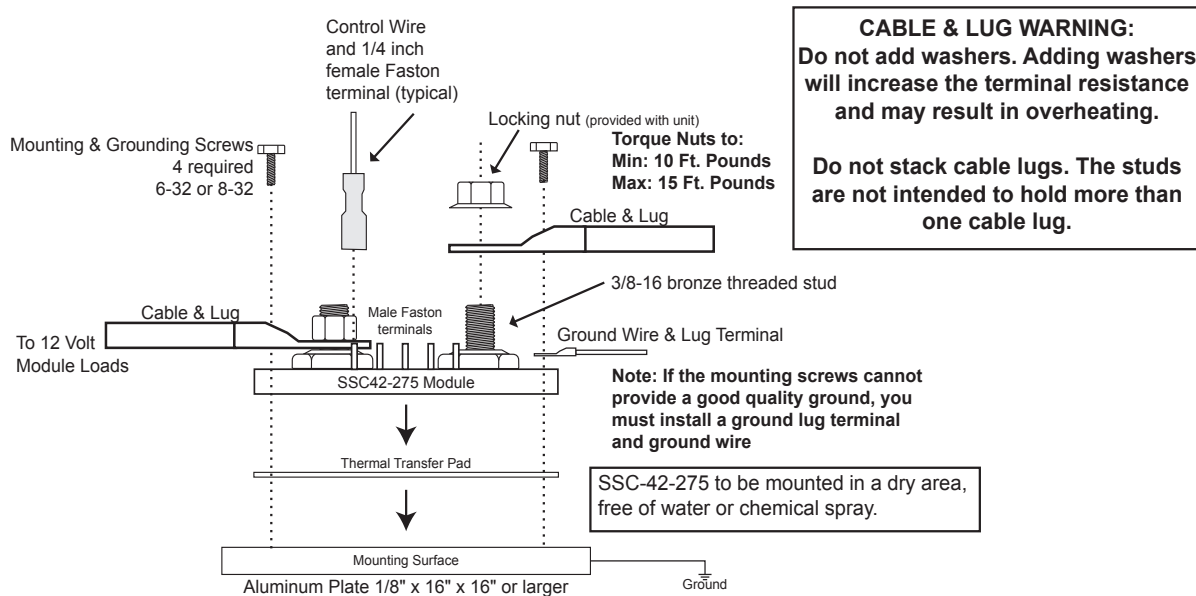
Inputs A and B must be activated by a positive DC voltage greater than 2.6 V. We recommended that the remote switches be connected to a +12 V source.

Inputs C, D and E must be activated by a ground signal, so their remote switches must be wired to a good ground – i.e. low resistance to battery negative.

To attach the control wires, use female 0.25 inch faston blade terminals. Be sure to install a strain relief on the control wires near the disconnect switch.

Please refer to the diagram on page 2 for further detail.

4.5 Installation Diagram



Note: The Mounting Surface provides a means to remove heat generated by the SSC42-275. If this surface is a poor conductor of heat, the disconnect switch will have a lower current rating than if the surface is a good conductor

5. Specifications

Under Voltage Rating:	+7.5Vdc
Current Rating:	
Current Trip Rating:	275 amps for 750 milliseconds
Surge Current Rating:	800 amps
On-resistance at maximum current:	660 microohms
Turn-On Delay:	10 milliseconds
Turn-Off Delay:	10 milliseconds plus off-delay timer
Control Input:	
Connector Type:	0.25 inch male faston blade terminal x 5
Control Voltage	
Input A:	>2.6 Vdc to activate
Input B:	>2.6 Vdc to activate
Input C:	ground to activate
Input D:	ground to activate
Input E:	ground to activate
Weight:	0.30 lbs (0.136 kg)
Dimensions:	4.15 x 4.15 x 1.50 inches
Power Terminals:	Two 3/8 - 16 bronze threaded studs with zinc plated locking nuts
Mounting Surface:	For optimal performance, a flat metal mounting surface, such as a 1/8 x 16 x 16 inch aluminum plate In a dry environment free of water or chemical spray

6. Mechanical Drawing

