

S300

Series

S300-DIN-S

Hardware Installation Manual

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Federal Communications Commissions Notice

This equipment, S300-DIN-S, has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

Canadian Notice

This Class B digital apparatus, S300-DIN-S, complies with Canadian ICES-003.

Cet appareil numérique de la classe B, S300-DIN-S, est conforme à la norme NMB-003 du Canada.

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Declaration of Conformity

This product complies with the requirements of the European Council Electromagnetic Compatibility directive 89/336/EEC and amending Directive 92/31/EEC, the CE Marking Directive 93/68/EEC and the Low Voltage Directive 73/23/EEC.

This equipment must not be modified for any reason and it must be installed as stated in the Manufacturer's instruction.

If this shipment (or any part thereof) is supplied as second-hand equipment, equipment for sale outside the European Economic Area or as spare parts for either a single unit or system, it is not covered by the Directives.

UNDERWRITERS LABORATORIES COMPLIANCE VERIFICATION SHEET

The following model number is listed under Underwriters Laboratories UL 1076 for Proprietary Burglar Alarm Units and Systems and UL 294 for Access Control Systems Units.

S300-DIN-S

When installed at the site the following requirements must be met to comply with these standards.

1. The S300-DIN-S is intended to be used with listed sub-assemblies found in file BP4166, Vol. 2, Sec. 7.
2. The S300-DIN-S in combination with the listed sub-assembly must be connected to a UL Listed Uninterruptible Power Supply that provides a minimum of 24 hours of AC emergency power.
3. The tamper switch must be connected to a listed sub-assembly and enabled at all times.
4. Transient protection devices that are installed must not be removed or defeated.
5. Do not connect equipment to an AC power source that is controlled by a switch.
6. Model S300-DIN-S must use Basler direct plugin transformer part numbers BE116450CAA or BE116450AAA.
7. Model S300-DIN-S power supply must have the voltage selection jumper set to 24VDC.

HARDWARE INSTALLATION

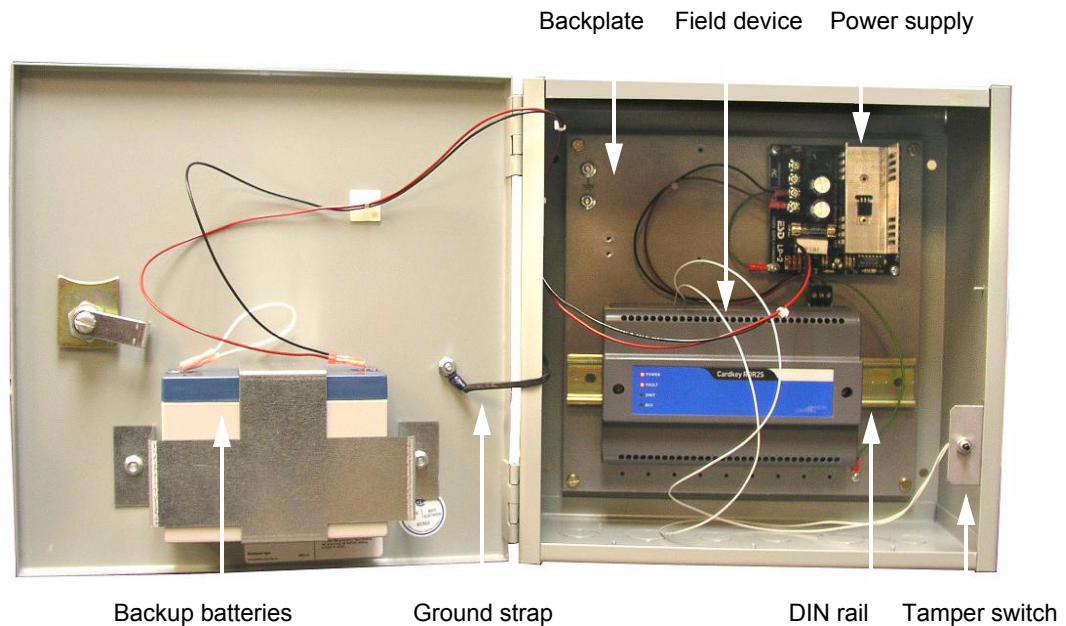
INTRODUCTION

This document provides information necessary for the installation of the S300-DIN-S enclosure and related equipment, including field devices.

The S300-DIN-S is a small enclosure used to house a DIN-mountable electronic device and, optionally, a backup battery unit.

The S300-DIN-S comes with a backplate, a tamper switch, a lock, and a ground strap kit. The backplate contains a power supply and a DIN rail for device mounting.

The figure below gives you an overview of the small enclosure with all components installed. The device shown here is the S300-DIN-RDR2S.



APPLICATION

One device can be mounted on the DIN rail (for example, a S300-DIN-RDR2S module, a CK722 controller, or a CK721 controller).

You can also mount a backup battery unit. The unit is composed of two 12V lead-acid batteries in one battery bracket.

INSTALLATION

This section describes the hardware installation of the S300-DIN-S enclosure and its components.

Unpacking the Equipment

Carefully inspect the shipping containers as soon as you receive them (with the delivery agent present). Some shipping companies want to have an agent present when a damaged container is opened. If a container is damaged, open it immediately, inspect the contents, and have the agent make note on the shipping document. Check the purchase order against the packing slips to ensure the order is complete. If the contents of a container are damaged in any way, notify the carrier and your Johnson Controls representative immediately. Report any discrepancies to your Johnson Controls representative. Save the packing materials for possible return shipments.

Package Contents

- Backplate
- Tamper switch
- Lock
- Ground strap kit
- This document

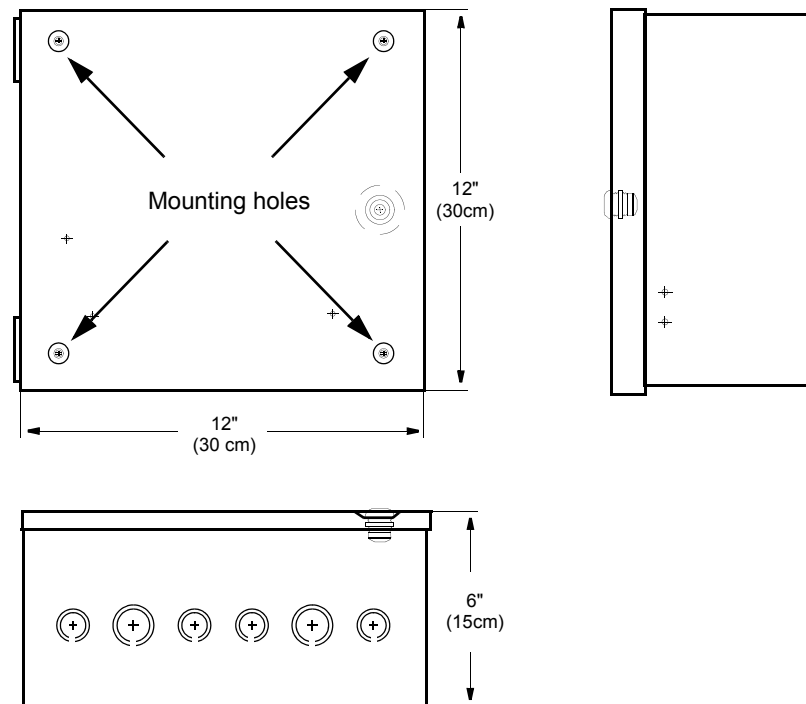
Tools Needed

- Mounting tools, such as a drill and anchors (depending on where you mount the enclosure)
- Phillips screwdriver
- Small common screwdriver
- Standard wiring tools
- Hammer and punch

MOUNTING

Small Enclosure (S300-DIN-S)

Four mounting holes are provided. The top and left side panel of the enclosure have knockouts that can be used for the AC power input. Bottom panels are equipped with knockouts for other cables.



Ground Strap

The ground strap is used to provide ground to the enclosure door.

► To install the ground strap:

1. Put one ring terminal over the screw in the side panel and secure with a nut.
2. Put the other ring terminal over the screw in the enclosure door and secure with a nut.

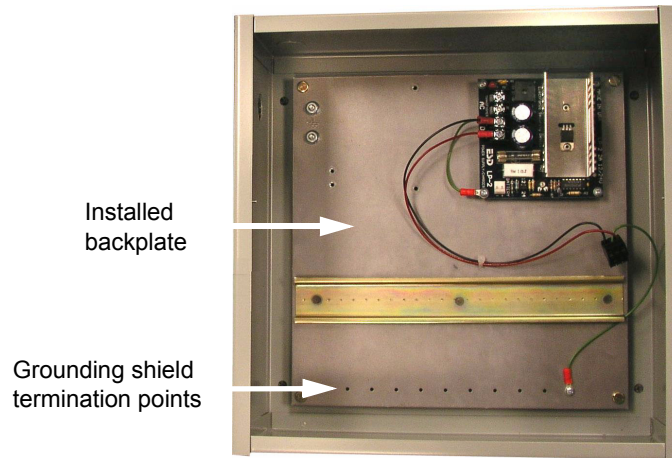


Mounted ground strap

Backplate

► To mount the backplate:

1. Place the backplate inside the enclosure and align the backplate's four mounting holes with posts in the enclosure.
2. Secure the plate with nuts provided.



Transformer (S300-XFMR)

The power supply in the small enclosure should be powered from the S300-XFMR plug-in wall transformer. This transformer converts the 120 VAC line power to 24 VAC for the power supply. The transformer is rated at 24 VAC, 50 VA. A transformer is required for each panel or enclosure to connect the power supply to local power.

Cable for the transformer must be constructed using listed 18 AWG wire.

NOTE

For Canadian installations use a Basler transformer. The part number is BE116450AAA, and it is rated at 24 VAC, 50 VA, 120 Volt input.

Constructing the Transformer Cable

Use a 2-conductor listed 18 AWG cable between the connector and the transformer. Connect the transformer to the nearest source of clean, unswitched AC power, and ensure you use the correct voltage for your S300-DIN-S model. The transformer output is 24 VAC, 50 VA. The input is 120 VAC. At the S300-DIN-S, connect AC power as follows.

► To connect AC power:

1. Put the cable from the S300-XFMR transformer through the knock out in the left or top panel of the enclosure.

2. Connect the cable to the power supply.
3. A separate wire, 18AWG minimum, must be run from the dedicated ground stud inside the S300-DIN-S enclosure to the building's electrical ground. The dedicated ground is marked with the symbol \perp .

► **To verify DC ground:**

1. Verify the wire connection between the power supply and COM on the DIN-mounted device.
2. Verify the wire connection between the power supply and its standoff.

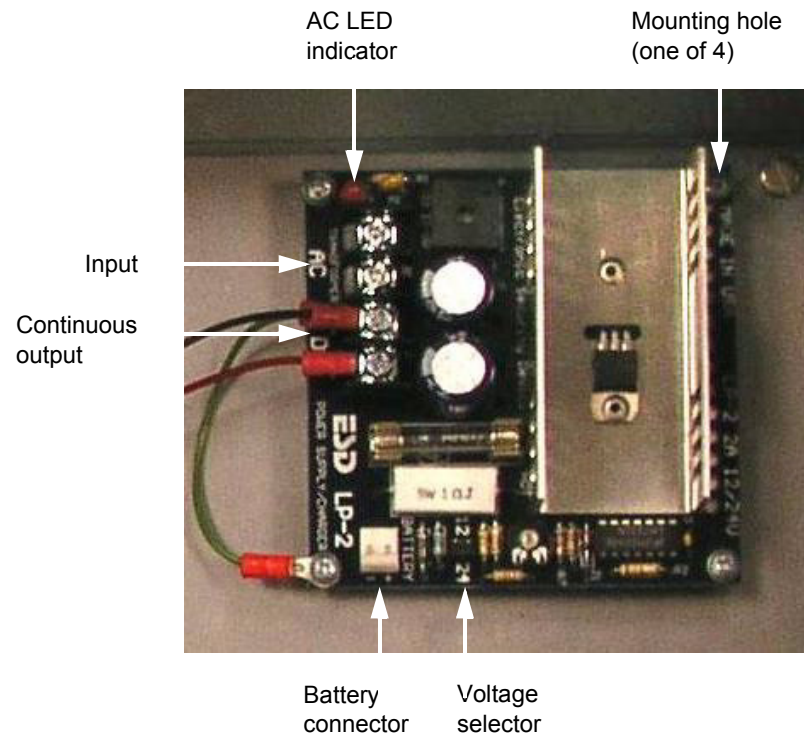
► **To verify chassis ground:**

1. Verify the wire connection between the DIN-mounted device earth and the backplate.
2. Verify the wire connection between the AC power source and the backplate.
3. Verify the wire connection between the DC and one of the power supply's mounting holes.

Power Supply (S300-DIN-S-PS)

S300-DIN-S-PS is a power supply to be used with S300-DIN-S. It is shipped already mounted on the backplate. S300-DIN-S-PS is equipped with an AC power indicator. A battery charger is included with the power supply package.

This power supply has a Listed 4A, 3AGC standard fuse.



► **To replace the S300-DIN-S-PS power supply:**

1. Disconnect the AC input wires from the terminal block on the power supply.
2. Disconnect the battery cable.
3. Disconnect the two DC power wires.
4. Unscrew the power supply unit.
5. Mount the new power supply unit.
6. Ensure the voltage selector switch is set to 24.
7. Re-connect the cables in the reverse order.



Connect the AC power source last.

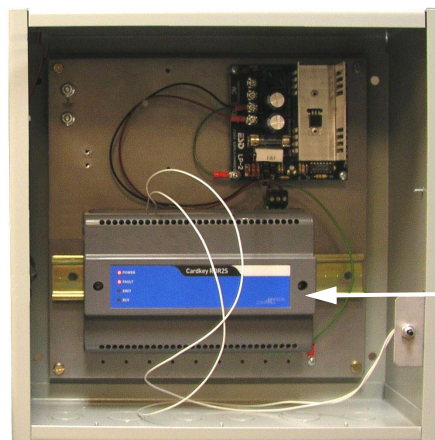
DIN-Mountable Devices

The DIN-mountable device (for example: a S300-DIN-RDR2S module, a CK722 controller, or a CK721 controller) is mounted on the backplate's DIN rail.

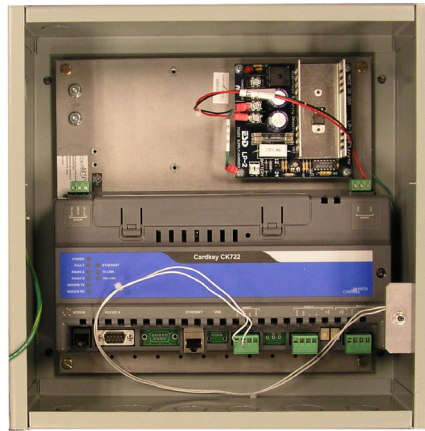
To mount a device, align it with the rail and snap it on (on some devices, you may need to extend the white clips located on the bottom of the device prior to snapping it on). To remove a device, pull down the bottom clips, then pull the bottom of the device out and lift it up.



Do not connect the DC power cable to a DIN-mounted device until all wiring is complete.



An S300-DIN-RDR2S module mounted in the S300-DIN-S



CK722 module mounted in the S300-DIN-S

WIRING

This section describes how to wire the DIN-mounted devices. For cable requirements, refer to the user documentation for the particular device.



Do not connect the DC power cable to a DIN-mounted device until all wiring is complete.

Cable Requirements

Use the DC power harness for power and ground wiring. This cable assembly contains the +24 VDC connector.

Connects to the DIN-mounted device

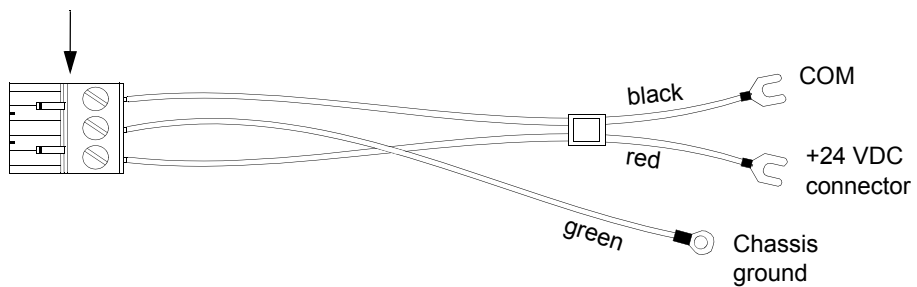


Figure 1: DC Power Harness

Power Wiring

To construct the power wiring, use listed 18 AWG wires.

Ground Wiring

The ground wire should be connected to the backplate by fastening the ring terminal to any one of the 0.11" holes located at the bottom of the plate with a #6 self-tapping screw.

To construct the ground wiring, use listed 18AWG wires.

Cable Routing

All low-level input cables, such as system data and reader cables, must be shielded types. The cables should run in grounded conduit or at least two feet from AC power, fluorescent lights, or other high energy sources.



All data cables should be physically separated from power lines. If conduit is used, do not run data cables in the same conduit as power cables or certain door strike cables, e.g. strike voltage greater than 42V or Magnetic door locks without EMI suppression.

All cables must conform with the following regulations:

- National Electrical Code
- NFPA 70
- Local electrical codes
- Canadian Electric Code C22.1 (installations in Canada)

Cabling should be made using good wiring practices and should be long enough to allow service loops at their terminations in the enclosure.

Grounding Cable Shields

The grounding screws used are #6 x 1/4" self-tapping, and are provided in the hardware installation kit.

Chassis Grounding

Proper grounding of the S300-DIN-S enclosure is essential for the protection of electronic components against electrostatic discharge. A ground wire, 18 AWG minimum, must be run from the dedicated ground stud inside the enclosure to the building's electrical ground.

The dedicated ground stud is marked with the following symbol: .



Conduit ground, cold water pipes, unbrazed joints or dissimilar metals are unacceptable in the path of either building or supplemental ground. Where grounding is required, connect only to the proven building electrical system ground (earth).

BACKUP BATTERIES

Battery Bracket Kit (S300-DIN-BRK)

The S300-DIN-BRK battery bracket kit is used to mount the batteries in the enclosure. The same kit is used for small and large enclosures, and, depending on your installation, you will need only some of the parts that are included.

The batteries and bracket kit are sold separately and the batteries can be replaced without ordering an additional kit.

Each kit contains the following:

- Two brackets
- Mounting hardware
- Short battery wiring (used with small enclosures only)
- Long battery wiring (used with large enclosures only)
- S300-DIN battery wiring
- Two adhesive cable tie mounting pads
- Two cable ties

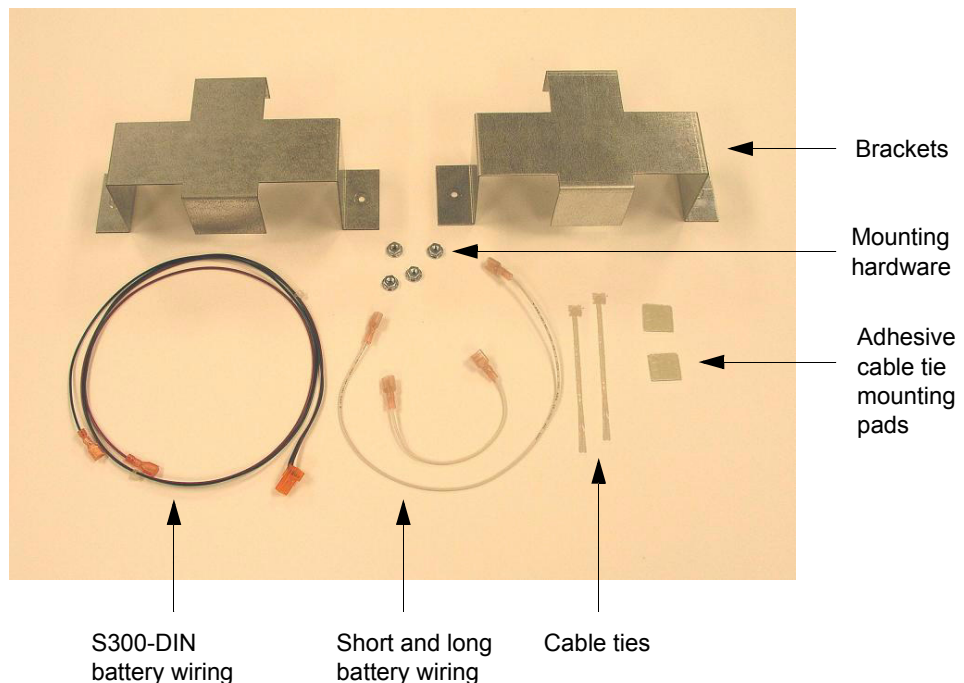


Figure 2: Battery Bracket Kit

S300-BAT-2.8AH

Two optional S300-BAT-2.8AH backup batteries are used with S300-DIN-S. Their addition to the enclosure provides an Uninterruptible Power Supply (UPS).

The batteries to be used are Power Sonic, Model PS-1228. These are rechargeable lead-acid batteries, 12VDC, 2.8Ah. For maintenance guidelines see page 13.

The backup batteries are rated for a minimum of 1 1/2 hours on a fully loaded system.

► To install S300-BAT-2.8AH batteries:

1. Place the batteries inside the bracket and position over the mounting screws.
2. Secure the bracket with the nuts.
3. Wire the batteries in series using the short battery wiring.
4. Using the S300-DIN battery wiring, connect the batteries to the power supply.
5. Secure the wires to the enclosure using mounting pads and cable ties.

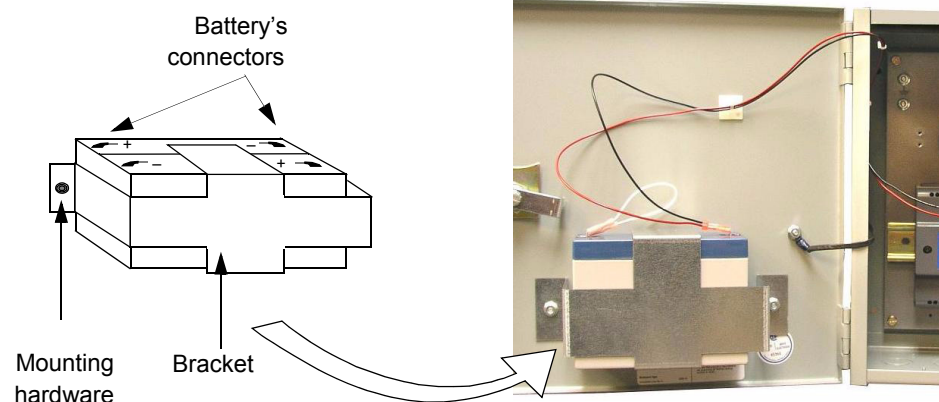
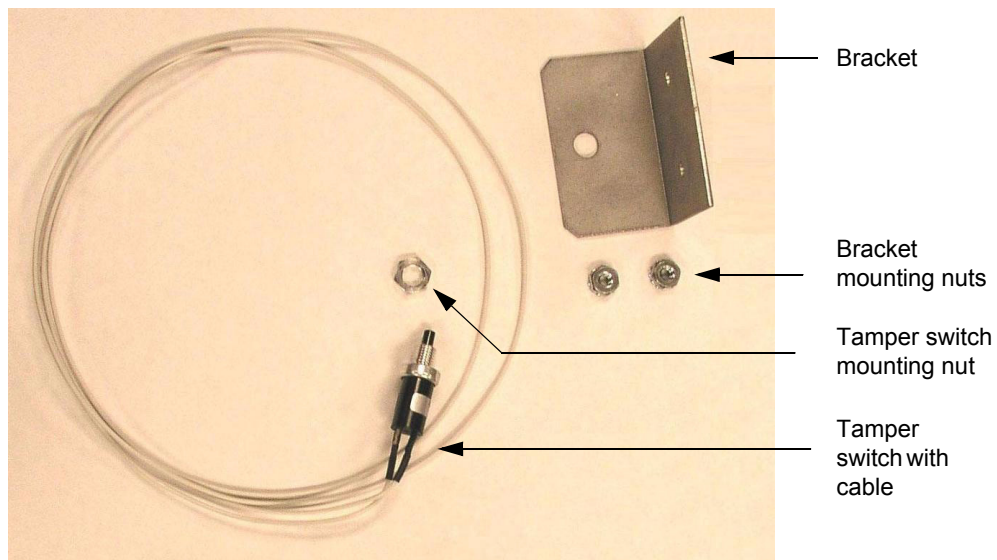


Figure 3: Properly Installed S300-BAT-2.8AH Batteries

TAMPER SWITCH KIT

The Tamper Switch Kit is supplied with the enclosure.



► **To install the tamper switch:**

1. Position the bracket on the inside of the right side panel so that the two screws go through the bracket holes.
2. Secure the bracket with nuts.
3. Put the tamper switch through the single bracket hole and secure with a nut.
4. Wire the tamper switch. The switch must be wired to an input point on a DIN-mounted device.

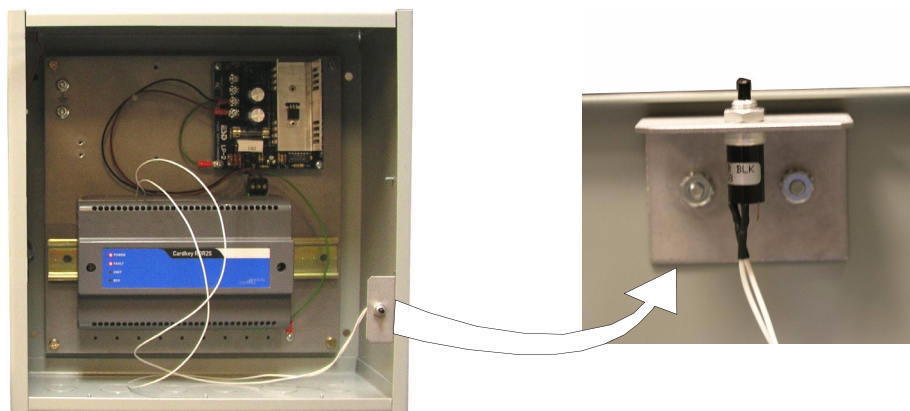


Figure 4: Tamper Switch Properly Installed

HARDWARE KIT

The S300-DIN Hardware Kit consists of:

- Ground strap - The ground strap, used to provide ground to the enclosure door, contains a ground strap with two ring terminals and two nuts. For an installation procedure see page 3.
- Self-tapping screws - On the backplate, there are two rows of holes along the long edges of the plate. These are to be used with self-tapping screws. Use the self-tapping screws to connect the aluminum shield of a shielded cable to the backplate.
- Snap-spade terminals - These terminals are used with S300-DIN-S enclosures only. The snap-spade terminals are to be crimped to the cable coming from the S300-XFMR transformer and terminating at the power supply in the S300-DIN-S.

NOTE

For terminating the snap-spade terminal lugs found in the hardware kit use Molex crimp tool P/N 64001-0100, 64001-0300 or 64001-1200.

TECHNICAL SPECIFICATIONS

Model Number	Description	Specification
S300-DIN-S	Small enclosure	Made of 16 gauge steel with gray polyester powder coating. Dimensions: 12x12x6 in (30x30x15 cm) Approximate weight fully loaded: 24lb (11 kg)
S300-XFMR	Plug-in transformer	120 VAC to 24 VAC
S300-DIN-S-PS	Power supply	24VDC out, 24VAC in. Input AC nominal: 24-28VAC Power rating: 50VA Output Output voltage (switch selectable, must be selected): 24VDC Output voltage (typical): 27.5VDC Output current (continuous): 1.6A Load regulation (no load to max): 0.05% typical Other Battery charge current: 150mA Battery cutoff voltage: None Battery fuse: Listed 4A, 3AGC standard fuse.
S300-DIN-BRK	Battery bracket kit	N/A

Model Number	Description	Specification
S300-BAT-2.8AH	Optional backup battery	12V, 2.8Ah battery. Two backup batteries are used per enclosure to provide 24 VDC. Minimum 1 1/2 hours sustained operation in S300-DIN-S at full load. Dimensions: 5.24x3.82x1.3 in (13.3x9.7x3.3 cm)
S300-DIN-PA1	Parts accessory kit	Contains a DC power harness, a lock, a tamper switch, and two spare connectors (3-position and 4-position).

ENVIRONMENTAL SPECIFICATIONS

The following general specifications apply to the system components:

Item	Specification
Ambient temp.	32 to 122 °F (0 to 50° C)
Humidity	20% to 80% non-condensing
Ventilation	Cabinets require free movement of air over all exposed surfaces.

MAINTENANCE

This section describes maintenance and troubleshooting procedures.

► To properly maintain the equipment:

- Periodically: check the continuity of the grounding unit.
- Monthly: Test the operation of the power supply unit.
- Every 3 years: replace the lead-acid backup batteries, if installed.

► To check the backup battery operation (if installed):

1. Disable primary AC input voltage to the enclosure.
2. Verify that the DIN-mounted device installed in the enclosure continues to operate.
3. Reapply primary AC voltage to the enclosure.

► To replace the backup battery:

1. Ensure that AC power is supplied to the cabinet.
2. Disconnect battery cable leads from battery terminals; note the polarity connections. Do not allow the leads to short or touch the case ground.

3. Remove and retain nuts securing the battery bracket to the door.
4. Remove the old batteries, position the new ones within the bracket and secure the bracket to the enclosure door with the nuts.
5. Connect the battery cable leads to the battery terminals, observing proper polarity connections.
6. Allow the batteries to charge for 12 hours.
7. Verify proper battery operation as described on page 13.

Impaired Performance Conditions

The following conditions may cause impaired performance:

Condition	Information
Unit environment not as specified.	See page 13.
Unit power and grounding not as specified.	See page 3, page 8, and page 12.
Cable length or type not as specified.	See page 7.
Backup battery not replaced correctly.	See page 13.

Field Servicing

Troubleshoot the enclosure by substituting the suspected component with a replacement part.

Replacement Parts

All replaceable parts are available from Johnson Controls, Inc. For instructions on how to obtain order replacement parts, consult your Customer Success Center representative at (800) 482-2778.

Table 4-1: Replacement Parts

Model No.	Description
S300-DIN-S	Large enclosure, DIN rails, 5A power supply. See page 1.
S300-XFMR	Transformer. See page 4.
S300-DIN-S-PS	Power supply, 24VDC out, 24VAC in. See page 5.
S300-DIN-BRK	Battery bracket kit. See page 9.
S300-BAT-2.8AH	12V, 2.8AH battery for S300-DIN-S. See page 10.
S300-DIN-PA1	Accessory kit. See page 15.

S300-DIN Parts Accessory Kit

This kit (S300-DIN-PA1), which must be ordered separately, contains the following items:

- A DC power harness
- A lock
- A tamper switch
- Spare connectors: 3-position and 4-position

The DC Power Harness

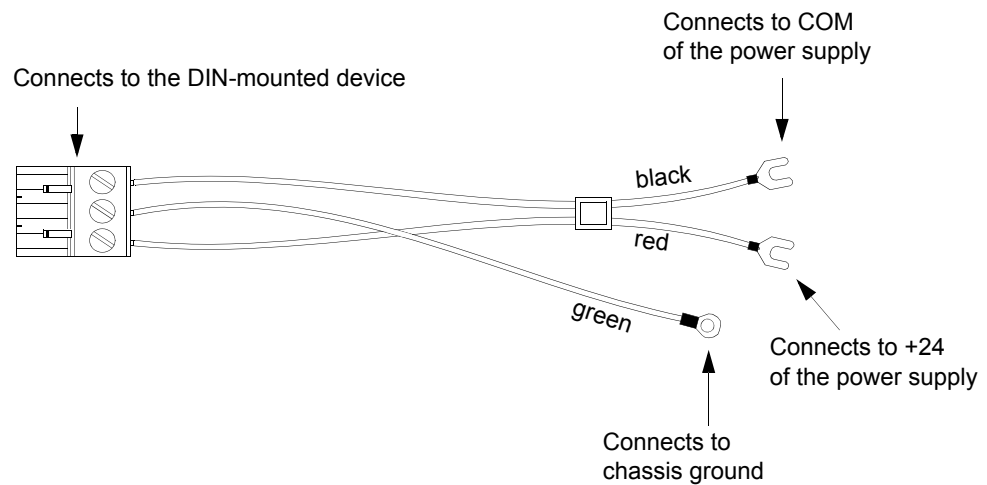


Figure 4-1: DC Power Harness

► To replace the DC power harness:

1. Switch the power off.
2. Disconnect the DC power harness cables.
3. Replace the harness and reconnect the cables.
4. Switch the power on.

The Lock

To replace the lock, follow the instructions included with the hardware.

The Tamper Switch

► To replace the tamper switch:

1. Disconnect the tamper switch wires from the input point of the DIN-mounted device.
2. Remove the nut securing the switch to the bracket.
3. Replace the switch and secure it with the nut.
4. Wire the tamper switch to an input point of the DIN-mounted device.

The Spare Connectors

Two spare connectors are provided:

- 4-position terminal block, 12-24 AWG, to be used to connect the RS485 to the DIN-mounted device.
- 3-position terminal block, 12-24 AWG, to be used to connect the power supply to the DIN-mounted device.