Installation

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January 22, 2018

Qualified Persons

⚠ WARNING

The equipment covered by this publication must be installed, operated, and maintained by qualified persons who are knowledgeable in the installation, operation, and maintenance of overhead electric power distribution equipment along with the associated hazards. A qualified person is one who is trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from nonlive parts of electrical equipment
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed
- The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

These instructions are intended only for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

Read this Instruction Sheet

NOTICE

Read this instruction sheet thoroughly and carefully before installing or operating S&C 5800 Series Automatic Switch Controls. Familiarize yourself with the Safety Information page 3. The latest version of this publication is available online in PDF format at **sandc.com/en/support/product-literature/**.

Retain this Instruction Sheet

This instruction sheet is a permanent part of your 5800 Series Automatic Switch Control. Designate a location where you can easily retrieve and refer to this publication.

Proper Application

⚠ WARNING

The equipment in this publication must be selected for a specific application. The application must be within the ratings furnished for the selected equipment.

Special Warranty Provision

The standard warranty contained in S&C's standard conditions of sale, as set forth in Price Sheets 150 and 181, applies to the S&C 6800 Series Automatic Switch Control, except that the first paragraph of the said warranty is replaced by the following:

(1) General: The seller warrants to the immediate purchaser or end user for a period of 10 years from the date of shipment that the equipment delivered will be of the kind and quality specified in the contract description and will be free of defects of workmanship and material. Should any failure to conform to this warranty appear under proper and normal use within 10 years after the date of shipment, the seller agrees, upon prompt notification thereof and confirmation that the equipment has been stored, installed, operated, inspected, and maintained in accordance with the recommendations of the seller and standard industry practice, to correct the nonconformity either by repairing any damaged or defective parts of the equipment or (at the seller's option) by shipment of necessary replacement parts. The seller's warranty does not apply to any equipment that has been disassembled, repaired, or altered by anyone other than the seller. This limited warranty is granted only to the immediate purchaser or, if the equipment is purchased by a third party for installation in third-party equipment, the end user of the equipment. The seller's duty to perform under any warranty may be delayed, at the seller's sole option, until the seller has been paid in full for all goods purchased by the immediate purchaser. No such delay shall extend the warranty period.

Replacement parts provided by the seller or repairs performed by the seller under the warranty for the original equipment will be covered by the above special warranty provision for its duration. Replacement parts purchased separately will be covered by the above special warranty provision.

For equipment/services packages, the seller warrants for a period of one year after commissioning that the 6800 Series Automatic Switch Control will provide automatic fault isolation and system reconfiguration per agreed-upon service levels. The remedy shall be additional system analysis and reconfiguration of the IntelliTeam® SG Automatic Restoration System until the desired result is achieved.

Warranty of the S&C 6800 Series Automatic Switch Control is contingent upon the installation, configuration, and use of the control or software in accordance with S&C's applicable instruction sheets.

This warranty does not apply to major components not of S&C manufacture, such as batteries and communication devices. However, S&C will assign to the immediate purchaser or end user all manufacturer's warranties that apply to such major components.

Warranty of equipment/services packages is contingent upon receipt of adequate information on the user's distribution system, sufficiently detailed to prepare a technical analysis. The seller is not liable if an act of nature or parties beyond S&C's control negatively impact performance of equipment/services packages; for example, new construction that impedes radio communication, or changes to the distribution system that impact protection systems, available fault currents, or system-loading characteristics.

Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels attached to the 5800 Series Automatic Switch Control. Familiarize yourself with these types of messages and the importance of these various signal words:

⚠ DANGER

"DANGER" identifies the most serious and immediate hazards that *will likely* result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ WARNING

"WARNING" identifies hazards or unsafe practices that *can* result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ CAUTION

"CAUTION" identifies hazards or unsafe practices that *can* result in minor personal injury if instructions, including recommended precautions, are not followed.

NOTICE

"NOTICE" identifies important procedures or requirements that *can* result in product or property damage if instructions are not followed.

Following Safety Instructions

If you do not understand any portion of this instruction sheet and need assistance, contact your nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C's website **sandc.com**, or call S&C Headquarters at (773) 338-1000; in Canada, call S&C Electric Canada Ltd. at (416) 249-9171.

NOTICE

Read this instruction sheet thoroughly and carefully before installing or operating your S&C 5800 Series Automatic Switch Control.

Replacement Instructions and Labels

If you need additional copies of this instruction sheet, contact your nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting your nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

Applicable Software

This instruction sheet was prepared for use with the IntelliTeam® II Automatic Restoration System and 5800 Series software: SNCD2B1X Rev. 2.43, SNCD2B6D Rev. 2.43, PADD2B1X Rev. 2.43, VISD2B1X Rev. 2.43, and USBD2B1X Rev. 2.43.

The revision number is on the *Troubleshooting>Control & Switch Information* screen. For questions regarding the applicability of information in this instruction sheet to future product releases, please contact S&C Electric Company.

⚠ WARNING

These instructions do not replace the need for utility operation standards. Any conflict between the information in this document and utility practices should be reviewed by appropriate utility personnel and a decision made as to the correct procedures to follow.

Serious risk of personal injury or death may result from contact with electric distribution equipment when electrical isolation and grounding procedures are not followed. The equipment described in this document must be operated and maintained by qualified persons who are thoroughly trained and understand any hazards that may be involved. This document is written only for such qualified persons and is not a substitute for adequate training and experience in safety procedures for accessing high-voltage equipment.

S&C 5800 Series Controls are connected to switchgear operating at primary voltage levels. High voltage may be present in the wiring to the switch control or in the switch control itself during certain switchgear wiring or grounding system failures, or due to a problem with the switch control itself. For this reason, access to switch controls should be treated with the same safety precautions that would be applied when accessing other high-voltage lines and equipment. Follow all locally approved safety procedures when working on or around this control.

Before attempting to access an existing switch installation, check carefully for visible or audible signs of electrical or physical malfunction (do this before touching or operating the switch control or any other part of the installation). These warning signs include smoke, fire, open fuses, crackling noises, loud buzzing, etc. If a malfunction is suspected, treat all components of the installation, including the switch control and associated mounting hardware, as if they were elevated to primary (high) voltage.

Whenever you manually reconfigure the circuit (for example, during repairs), follow your company's operating procedures to disable automatic operation of the switch control. This will prevent any unexpected operation.

NOTICE

All switch controls in your IntelliTeam system must use the same software revision.

Revision 2.43 should be installed only in 5800 Series Switch Controls manufactured after January 1, 2005, or in older controls that have had the 4-layer processor board (006-001053-01 or 006-001053-02) retrofitted. Using Revision 2.43 with the earlier 2-layer boards may result in memory corruption. If you need assistance, or your equipment requires the upgrade, please contact S&C Electric Company.

Planning the IntelliTeam II System

The IntelliTeam II Automatic Restoration System enables teams of controls to work together to isolate faults and restore service. Whether the team consists of a few switches on a single feeder or a complex configuration with multiple alternate sources, mapping out the team(s) and gathering all necessary information before installing hardware in the field is recommended. Keep a copy of this information in the door of the switch control enclosure or low-voltage cabinet.

During planning and setup of fault detection settings, be sure to consider the fault conditions that the IntelliTeam II system may encounter from alternate sources. For more information, see the "About Fault Detection, Switch Control Setup Point 6" in Instruction Sheet 1042-531, S&C 5800 Series Automatic Switch Controls With IntelliTeam® II Automatic Restoration System: *Setup*."

When configuring a switch control and team for normal operation, the installer will carry out the series of steps, outlined in this section.

Make a copy of the flowcharts so they can be easily referred to when installing and setting up the IntelliTeam II system.

The values entered on each setup screen depend on the electrical distribution system and details specific to each individual switch.

Suggested Team Setup Procedure

Figure 1 on page 7, Figure 2 on page 8 and Figure 3 on page 9 show the normal procedure for setting up an IntelliTeam II system, and this switch control.

NOTICE

These flowcharts assume the team consists entirely of S&C 5800 Series Switch Controls. When the team includes other control types or IntelliRupter® PulseCloser® Fault Interrupters some of the steps may be slightly different.

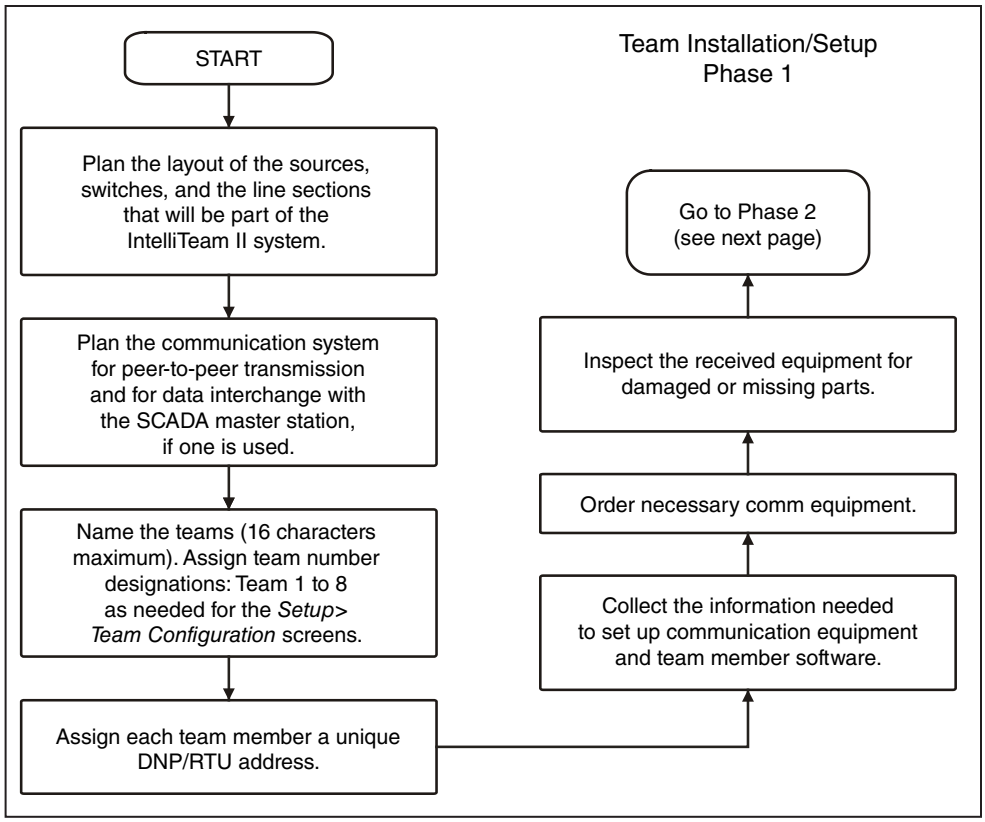


Figure 1. Suggested team installation and setup procedure, Phase 1.

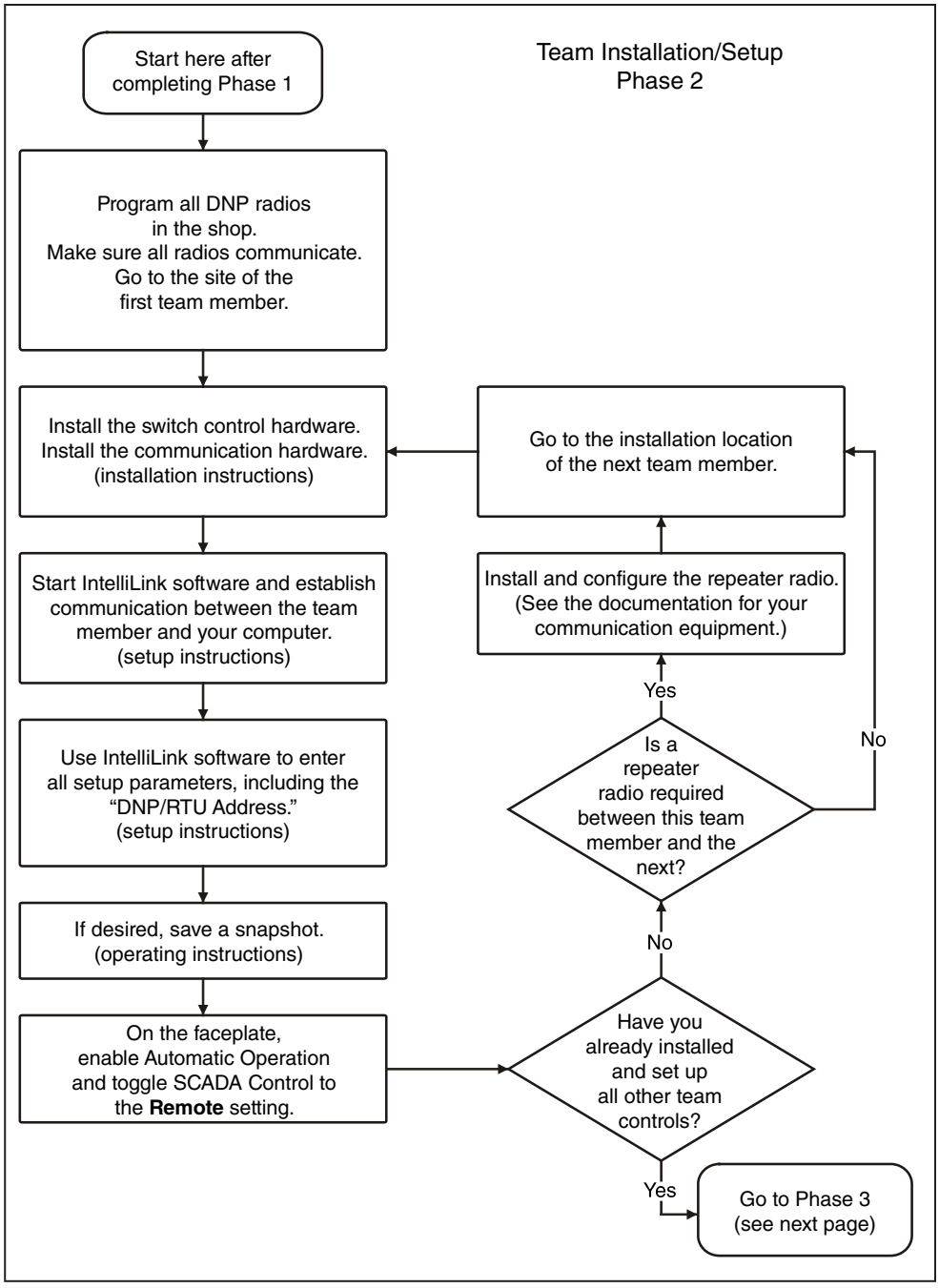


Figure 2. Suggested team installation and setup procedure, Phase 2.

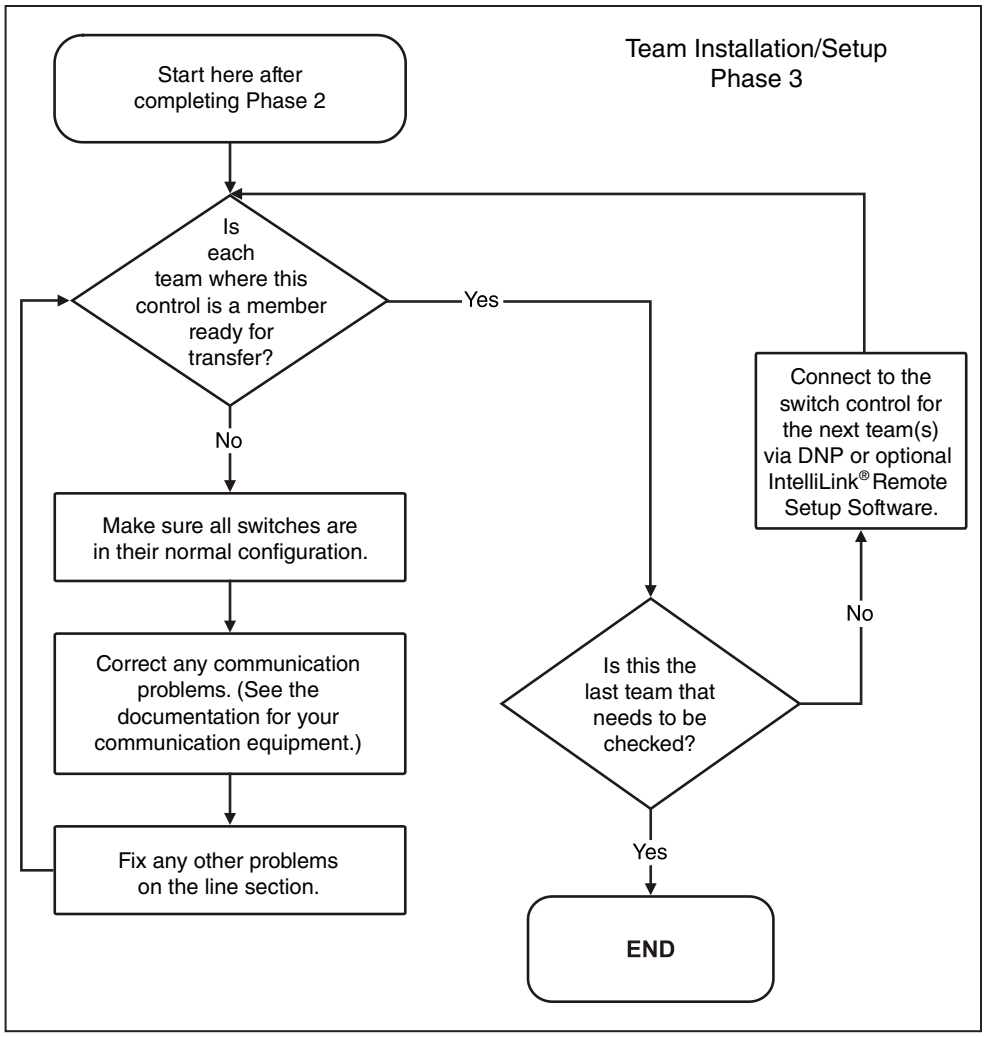


Figure 3. Suggested team installation and setup procedure, Phase 3.

IntelliTeam II System Setup

Follow these steps to create an IntelliTeam II Automatic Restoration System:

STEP 1. Create a layout of the source(s), switches, and line segments that will include teams. Use a system map or similar diagram showing source and switch locations.

STEP 2. Plan the communication system. For more information, see the manufacturer documentation for the communication system.

STEP 3. Identify and name the team(s). Form teams by including all automated switches that border each line segment. Assign each team a name, up to 16 characters long. Also, assign team designations for "Team 1" to "Team 8," as needed on the *Setup>Team X* screens. Teams that share a team member must have different designations.

STEP 4. Assign a DNP/RTU address for each team member. Each team member requires a unique DNP/RTU address. Enter this information on the *Setup>Team* screen.

STEP 5. Determine the switch/position number for each team member. Each team member is associated with a switch/position number, for example, "Sw1" for a single overhead switch. Pad-mounted switchgear may have more than two switches, and two switches can constitute a team. For example, Team 1 could include switches 1 and 2, and Team 2 could include switches 2 and 3 in the same pad-mounted gear. Enter this information on the *Setup>Team* screen.

STEP 6. Note the normally **Open/Closed** state for each team member. Enter this information on the *Setup>Team* screen.

STEP 7. Create a layout of the source(s), switches, and line segments that includes the teams.

Every switch should have its sensors facing the normal source of the team.

There are six types of functionality for team members. See Table 1.

Table 1. Functionality Types for Team Members

Functionality	Description
Closed Switches	
Source/Sub	Use this value when the normally closed source switch is the first team member after the source/substation or is an S&C IntelliTeam™ Interface Module on the source breaker relay.
Source	Use this value for one closed switch in the team through which the line segment receives power, when the circuit is in its normal configuration.
Load/Tie	A team may have zero, one, or multiple closed switches through which loads on other line segments receive power. Use this value when the switch, when closed, could be used to restore power to the line segment indirectly from an alternate source.
Load	A team may have zero, one, or multiple closed switches through which loads on other line segments receive power. Use this value when the switch would not be involved when restoring power to the line segment because the other line segments have no alternate sources.
Open Switches	
Tie/Sub	Use this value when the tie switch is the first team member after the substation/source.
Tie	Use this value for zero, one, or multiple open switches in the team that restore power to the line segment directly from an alternate source when closed.

STEP 8. Enter the information from Step 7 on the *Setup>Team* screens.

STEP 9. Determine the **Return to Normal** mode for each team and enter this information on the *Setup>Team* screen.

When the **Return to Normal** mode is enabled, team members can return the circuit to its normal configuration either automatically once a stable three-phase voltage has been restored to the faulted line segment, or by command. For teams with one or more tie switches, the **Open Transition** mode can be selected (the tie switch(es) open before the other team members return the circuit to its normal configuration) or the **Closed Transition** mode can be selected (the team members close all of the switches and then the tie switch(es) open). The **Return to Normal** process starts at the line segments closest to the normal source and works outward.

STEP 10. Configure the **RTN Time** setpoint.

Power must be restored to the faulted line segment for this amount of time (in minutes) before the **Return to Normal** process will start. Enter this information on the *Setup>Team* screen.

STEP 11. Configure the **Maximum Capacity** setpoint for each team member on the *Setup> Team Configuration* screen.

The maximum capacity is the amount of load on the most limited line section (because of conductor size, switch rating, etc.) served through a team member's location from either direction. Each member continuously subtracts its present load from its **Maximum Capacity** setpoint to determine its **Local Capacity for Transfer** value. The smallest **Local Capacity for Transfer** value encountered in a particular restoration path determines the maximum load that the involved teams can transfer, the **Available Capacity to Transfer** value.

STEP 12. Configure the **Alternate Source Sequence** setpoint on the *Setup>Team* screen.

Using the normal switch functionality determined in Step 7, set the sequence team members will use to restore the line segment. This is an optional step used to guide the restoration process. Regardless of the alternate-source sequence configuration, restoration progresses in the following order: When the fault is downstream of the team, the coach will: 1) try the normal source switch, 2) use the **Alternate Source Sequence setting** (if applicable), 3) try any tie switch(es), and 4) try any load-tie switch(es). When the fault is upstream of the team the coach will: 1) use the **Alternate Source Sequence** setting (if applicable), 2) try any tie switch(es), 3) try any load-tie switch(es), and 4) try the normal source switch.

STEP 13. Determine whether any contracts are required to avoid overloading a line segment.

A bifurcated circuit acting as an alternate source for teams on both legs of the bifurcation may become overloaded if those teams must act to restore load at close to, or exactly, the same time. This overload may occur because those teams are not directly related and do not coordinate their reconfiguration activities.

To force coordination between these unrelated teams, set the **Contract Required** setpoint to the **Yes** state on the *Setup>Team* screen for teams that may add load to the alternate circuit during a reconfiguration event. The contract will prevent both teams from simultaneously closing to use the alternate source. When team members encounter a line segment in a restoration path that requires a contract, they will communicate with all subsequent line segments in the direction of the alternate source to make sure the source and line segments will not be overloaded. The first team contract to arrive at the source will be approved if the team load would not overload the circuit. The second arriving contract will be approved only if it would also not cause an overload.

The extra communication required to transmit the contracts slows down the reconfiguration process. Contracts are described in Instruction Sheet 1042-541, "S&C 5800 Series Automatic Switch Controls With IntelliTeam® II Automatic Restoration System: *Operation*."

STEP 14. Determine whether the number of line segments restored by a team should be limited.

Configure the **Line Segment Limit** setpoint on the *Setup>Team* screen to limit the number of line segments a team picks up. For example, "Add 1" inhibits any other line segments from being restored through a member after it restores its first line segment. Set this value to "N/A" to allow the team to pick up as many line segments as capacity allows.

Pre-Installation Checklist

Before installing the switch control package in the field, carry out the following steps. This is best done in the shop before the installer leaves for the installation site.

STEP 1. Inspect the switch control for visible damage.

On receipt of the control, make sure there is no obvious damage to the switch control enclosure or any of the internal components. Also, check any switch interface connectors that are included with the control. If the battery will not be used immediately, store it in a cool, dry place, and recharge it every six months or less.

STEP 2. Put a copy of the source and line segment information/drawing in the door pocket of the control or low-voltage cabinet.

The team information sheet includes a single-line diagram of the team and the information you need to correctly install and configure this control.

STEP 3. Locate the items needed to install and set up the 5800 Series Switch Control.

The following items are required to install the software, set up the control, set up the communications equipment (radio, modem, etc.), and enable operation. These items also can be used to diagnose certain hardware problems that can occur during installation:

Personal Computer— Requires Microsoft Windows® 7 operating system, Internet Explorer 5.0 or higher, 32 MB of RAM, and a USB or serial port

Serial Communication Cable—Connects the computer to the LOCAL COMM port on the control (Use a straight-through cable, not a null-modem cable. The cable must be long enough to connect to an installed switch control.)

The serial connection is RS232 with a DB9-pin connector.

If the computer only has USB ports, use a serial to USB cable adapter.

NOTICE

S&C ships several types of software-controlled products. Make sure to use the correct software for this switch control. The latest software revisions are posted at the S&C website **sandc.com/en/support/sc-customer-portal/**.

STEP 4. Make sure all required communications equipment (radios, antennas, modems, etc.) is available.

Each team member must communicate with other team members, either by radio, modem, or cable. Depending on the location of the other team members, one or more repeater radios may be required. For more information, see the manufacturer's documentation for the communication system.

STEP 5. Check the sensor conditioning module jumper(s) using the following procedure:

The switch control sensor conditioning module is configured with a delta/wye jumper. If there are three voltage sensors, the sensor conditioning module uses one jumper. If there are six voltage sensors, such as line-side sensors on two switches in pad-mounted gear or Vista® Underground Distribution Switchgear, the sensor conditioning module requires two jumpers.

(a) Locate the installed sensor conditioning module jumper(s) and the alternate jumper(s). See Figure 4 on page 13.

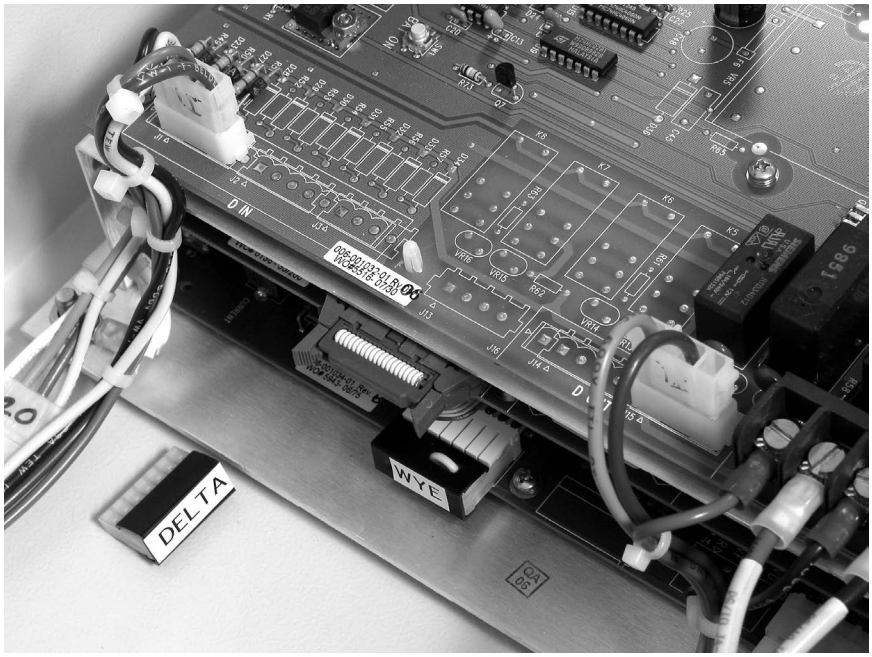
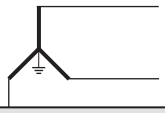
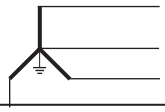
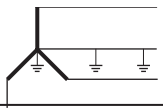
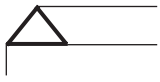


Figure 4. This is inside the switch control enclosure, showing the jumper location (5801 control shown). The "wye" jumper is installed and "delta" is the alternate jumper.

(b) Use Table 2 to determine which jumper is correct for the distribution system.

Table 2. Distribution System Jumper Selection

3-Wires & Grounding Type	Use
Uni-grounded wye system 	Delta jumper(s)
4-Wires & Grounding Type	**Use**
Uni-grounded wye system (primary neutral) 	Delta jumper(s)
Multi-grounded wye system 	Wye jumper(s)
Delta system 	Phase-to-ground connected sensors are not normally used on ungrounded delta systems. Contact S&C for special applications.

⚠ WARNING

For more information regarding safety issues for sensors connected phase to ground, contact the sensor manufacturer.

(c) Check that the correct jumper (see Figure 5) is in place for the type of distribution system. Controls are shipped with the wye jumper installed. Make sure the side of the jumper with more wire loops (two loops for wye, three loops for delta) is facing toward the back of the enclosure.

Figure 5. The delta jumper and wye jumper.

(d) When changing jumpers, check the orientation of the installed jumper. Then, carefully pull it away from the pins. Replace that jumper with the alternate jumper. Put the removed jumper in the spare parts bag on the left side of the enclosure interior.

STEP 6. Check the battery using the following procedure:

The 5800 Series Switch Control is shipped with a Hawker/Gates Monoblock 24-Vdc or 36-Vdc battery. The battery is terminated with a connector that can be connected only black to black and red to red.

(a) Make sure the battery is not cracked or leaking and the connectors are not damaged.

(b) Use a voltmeter to check that the voltage is at least 20 volts for a 24-Vdc battery or 35 volts for a 36-Vdc battery. Replace the battery if measured voltage is lower.

STEP 7. For controls connected to a Scada-Mate® Switching System or an automated Omni-Rupter® Switch, check the field interface connector (FIC) cable-locking collars.

Check that the collar (see Figure 6) is present and connected to the enclosure. This collar will later be locked in place around the FIC cable connection to provide tamper resistance.

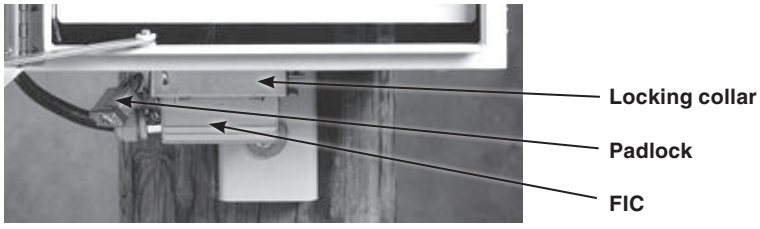


Figure 6. Bottom of switch control enclosure with the FIC connector.

STEP 8. For controls connected to a Scada-Mate Switching System, check whether a 16-pin/24-pin cable adapter is necessary.

S&C provides a cable for connecting the switch to the FIC on the switch control. Early Scada-Mate switch cables used a 16-pin connector. If retrofitting a switch control to an older Scada-Mate switch, the 16-pin/24-pin cable adapter, available from S&C, is required. The adapter is only necessary for early Scada-Mate switches.

STEP 9. Install the switch control at the site, and configure the equipment.

Optional In-Shop Setup

The following steps can be completed in the shop or later at the installation site. The steps are summarized here and described in detail in the IntelliTeam® II Automatic Restoration System instruction sheets.

STEP 1. Install the IntelliLink Setup Software on your computer.

For details, see the "To Install the IntelliLink Software" section in Instruction Sheet 1042-530, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Setup*."

STEP 2. If the switch control uses a modem for communication, configure the modem.

For modem configuration instructions, see the manufacturer's documentation or contact S&C.

STEP 3. If the switch control uses a radio, configure the radio.

For radio configuration instructions, see the manufacturer's documentation or contact S&C.

STEP 4. If a repeater radio is needed to link this switch control to the other team members, configure the repeater radio.

For radio configuration instructions, see the manufacturer's documentation or contact S&C.

STEP 5. Set up the control software in this switch control.

Most of the software setup and configuration can be completed in the shop. For an explanation of how to set up the software, see the "To Install the IntelliLink Software" section in Instruction Sheet 1042-530, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Setup*."

CAUTION

DO NOT simulate the output of an S&C voltage sensor by applying voltage to the phase voltage inputs (J7) of the 5800 Series Switch Control.

Applying voltage will result in severe damage to the control.

For S&C Scada-Mate and automated Omni-Rupter Switches and Remote Supervisory PMH/PME Pad-Mounted Gear equipped with an S&C voltage sensor, the voltage input for the 5800 Series Switch Control is a **Current Source**. The S&C voltage sensor provides up to 200+ mA of current. If current levels **exceeding 0.5 amperes or a voltage source** are applied to Input J7, the control voltage sensing and sensor power circuitry will be severely damaged. We recommend not trying to simulate the output of the S&C voltage sensor.

For S&C Vista Underground Distribution Switchgear, the voltage signal amplifier input for the 5800 Series Switch Control is nominally 5.5 Vac with 10 mA current and a range of 0-8 Vac. Applying voltage above this level can severely damage the control voltage sensing circuitry.

S&C can supply specific sensor input information for other switch systems.

If test runs are necessary, please contact S&C for guidance.

Installing the Control

Switch control installation requires several steps. Step details and the order in which they must be carried out depend on the type of switch control and enclosure. The following information is specific to the 5800 Series Switch Control with IntelliTeam functionality. Complete these steps at each switch control installation site.

STEP 1. Do one of the following:

- If this is a 5802/5803 control that is integrated in pad-mounted equipment and the switch control is only powered from the sensors, skip the remainder of this instruction sheet and go directly to Instruction Sheet 1042-530, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Setup*."
- For all other switch control installations, continue with the following steps.

STEP 2. Read the following warnings before beginning installation or operation of this equipment.

⚠ WARNING

These instructions do not replace utility operating standards. Any conflict between the information in this document and utility practices should be reviewed by appropriate utility personnel and a decision made as to the correct procedure to use.

Serious personal injury or death may result from contact with electric distribution equipment when electrical isolation and grounding procedures are not followed. The equipment described in this document must be operated and maintained by qualified persons who are thoroughly trained and understand any hazards that may be involved. This document is written only for such qualified persons and is not a substitute for adequate training and experience in safety procedures for accessing high-voltage equipment.

This switch control is connected to switchgear operating at primary voltage levels. High voltage may be present in the wiring to the switch control or the switch control itself during certain failures of the switchgear wiring or grounding system, or due to a failure of the switch itself. For this reason, access to the switch control should be treated with the same safety precautions that would be applied when accessing other high-voltage lines and equipment. Follow all locally approved safety procedures when working on or around this switch control.

⚠ WARNING

Do not plug the switch control cable into the switch control until instructed to do so.

Do not energize the 120-Vac power source entering the switch control enclosure until instructed to do so.

Before attempting to access an existing installation, check carefully for visible or audible signs of electrical or physical malfunction (do this before touching or operating the switch control or any other part of the installation). These warning signs include such things as smoke, fire, open fuses, crackling noises, loud buzzing, etc. If a malfunction is suspected, treat all components of the installation, including the switch control and associated mounting hardware, as if they were elevated to primary (high) voltage.

Installers must follow the sequence of installation steps outlined in this chapter to ensure a safe and successful switch control installation.

STEP 3. Configure the circuit or bypass the switch to avoid service interruption during the following steps.

This allows testing the line switch during installation.

STEP 4. Mount the switch control enclosure using the following procedure:

(a) Pole-mounted controls:

Attach the switch control (see Figure 7 and Figure 8 on page 18) to the pole with two 5/8-inch through-bolts and flat washers as follows:

1. Install the top bolt.
2. Use the lifting hole on the mounting channel and appropriate lifting gear to hoist the switch control into position on the pole.
3. Hang the switch control on the top bolt.
4. Vertically align the switch control on the pole and install the bottom bolt.
5. Tighten the two bolts.

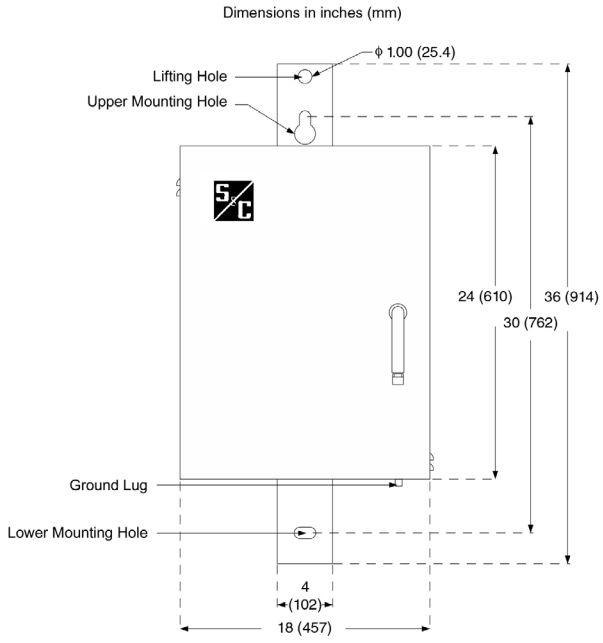


Figure 7. Front view of the switch control enclosure.

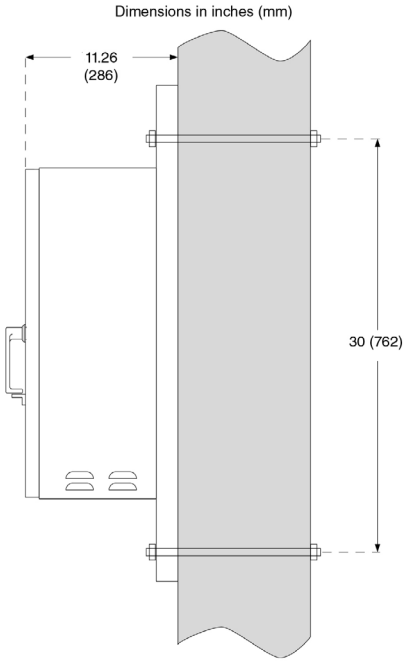


Figure 8. Side view of the switch control enclosure on the pole.

(b) Pad-mounted controls:

Mount the switch control chassis in the low-voltage compartment as follows:

1. Find the four studs on the wall of the low-voltage compartment.
2. Position the switch control so the four studs align with the four holes in the mounting flanges. See Figure 9.
3. Hang the switch control on the studs.
4. Secure the switch control with lock washers and nuts.

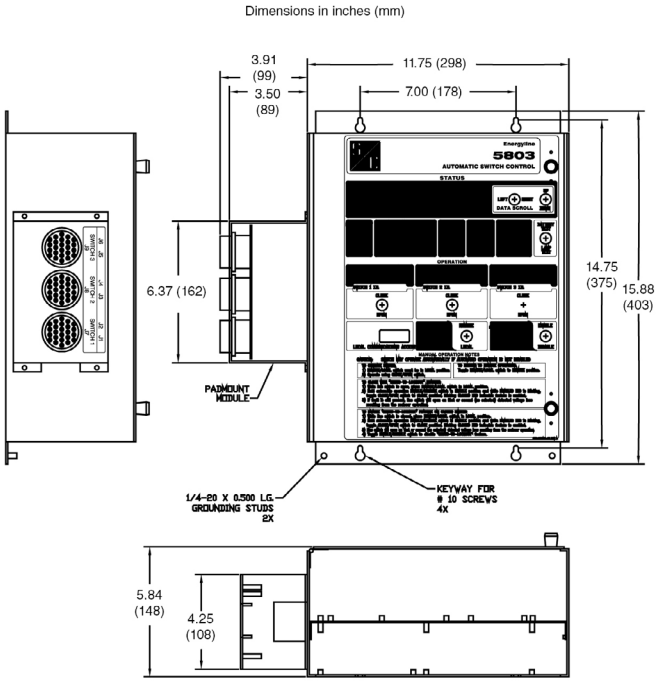


Figure 9. Switch control chassis mounted in pad-mounted gear.

STEP 5. Ground the enclosure.

Use the ground lug located on the bottom of the enclosure to ground the switch control. The ground lug will accommodate up to #2 wire, copper or aluminum, solid or stranded.

⚠ WARNING

The switch control ground wire (#6 copper minimum) must be connected to the same pole ground that is attached to the switch frame. In addition to the standard reasons for grounding, the switch control surge suppression and power supply systems provide 20 Vac transient filtering that discharges to ground.

Ground impedance must be 25 ohms or less to properly protect the equipment.

Installers must read and understand all applicable grounding codes and requirements for your service area before installing this device.

STEP 6. Toggle the faceplate REMOTE/LOCAL switch to the **Local** position.

The switch control includes equipment for IntelliTeam communication and may optionally communicate with SCADA. Installers must toggle the faceplate REMOTE/LOCAL switch to the **Local** position to ensure the switch control does not perform remote switching commands until after the control software has been configured.

STEP 7. Remove the ac line fuse, install the ac cable, and connect the ac control power wires to the switch control terminal block. Skip this step if the control is powered only by sensors.

(a) Inside the switch control, remove the 10-ampere ac line fuse, near the bottom right corner of the enclosure. See Figure 10.

(b) Locate the conduit hole, which accepts a 1-inch conduit adapter, on the right side of the switch control enclosure floor. See Figure 10. Remove the shipping plug from the hole.

(c) Install conduit with a de-energized 120-volt ac line to the switch control enclosure.

(d) Verify neutral and connect it to the Ac Neutral terminal. Then, connect the line to the Ac Line terminal. See Figure 11 on page 20.

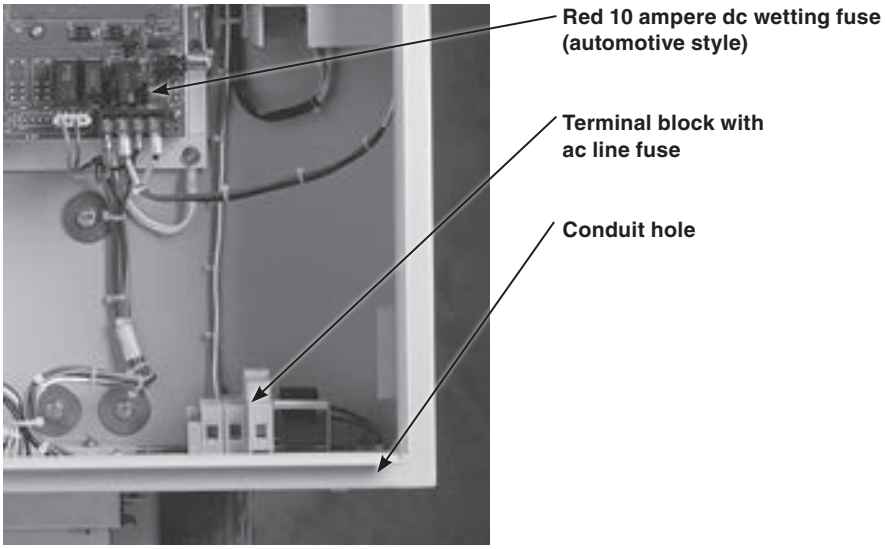


Figure 10. Fuses, conduit hole, and terminal block.

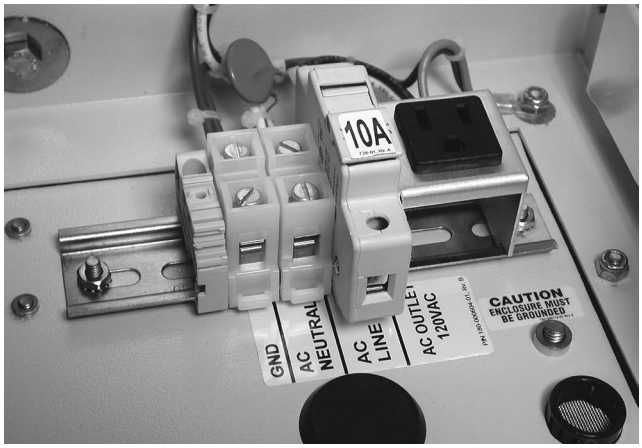


Figure 11. Connection terminal for ac control power.

⚠ WARNING

Leave the 10-ampere ac line fuse out until instructed to replace it later in the installation process. Leave the ac control power de-energized until instructed to turn it on.

Connecting the Battery

STEP 1. If necessary, install the battery by using the following procedure.

The switch control is normally shipped with a factory-installed battery. If the control needs a new battery, or the battery was shipped separately, install it now.

⚠ WARNING

If the enclosure heater was recently on, the battery bracket may be hot. Be careful not to touch a hot bracket.

The battery bracket is near the high-voltage section of the PS/IO circuit board. When installing the battery, make sure the 10-ampere ac line fuse is removed and the ac control power is de-energized. If the control is powered from the sensors, disconnect the switch interface cable(s).

(a) The battery bracket is located on the right inside the enclosure. See Figure 12.

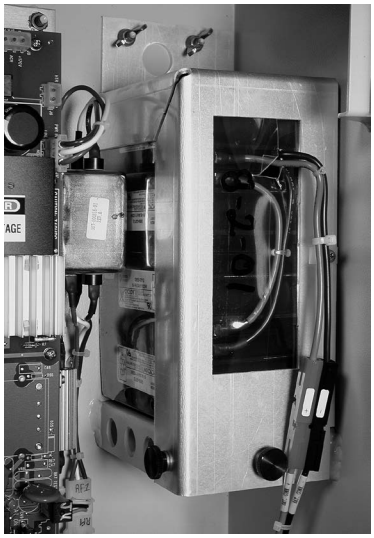


Figure 12. Battery and bracket are on the right, inside the switch control enclosure.

(b) Unscrew the black knobs and wing nuts that attach the battery bracket and remove the bracket. If replacing the battery, unclip the battery connector wires from the bracket and remove the old battery.

(c) Slide the new battery onto the battery shelf, with the connector facing out and the bottom of the battery toward the left.

(d) Reinstall the bracket, and secure it with the black knobs and wing nuts. Attach the battery cable to the clip on the battery bracket.

STEP 2. Connect the battery by following this process:

With the ac line fuse still removed, connect the red and black battery leads to the corresponding leads from the switch control. This will supply dc voltage to the switch control.

For Scada-Mate Switching Systems, the switch operator may begin winding the spring when the battery is connected.

STEP 3. Check the ANALOG PWR and BAT ON LEDs (on the power supply/control I/O module).

After a 5-10 second delay, the red ANALOG PWR LED and the yellow BAT ON LED should be lit. See Figure 13. If they are not lit, see Instruction Sheet 1042-550, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Troubleshooting*."

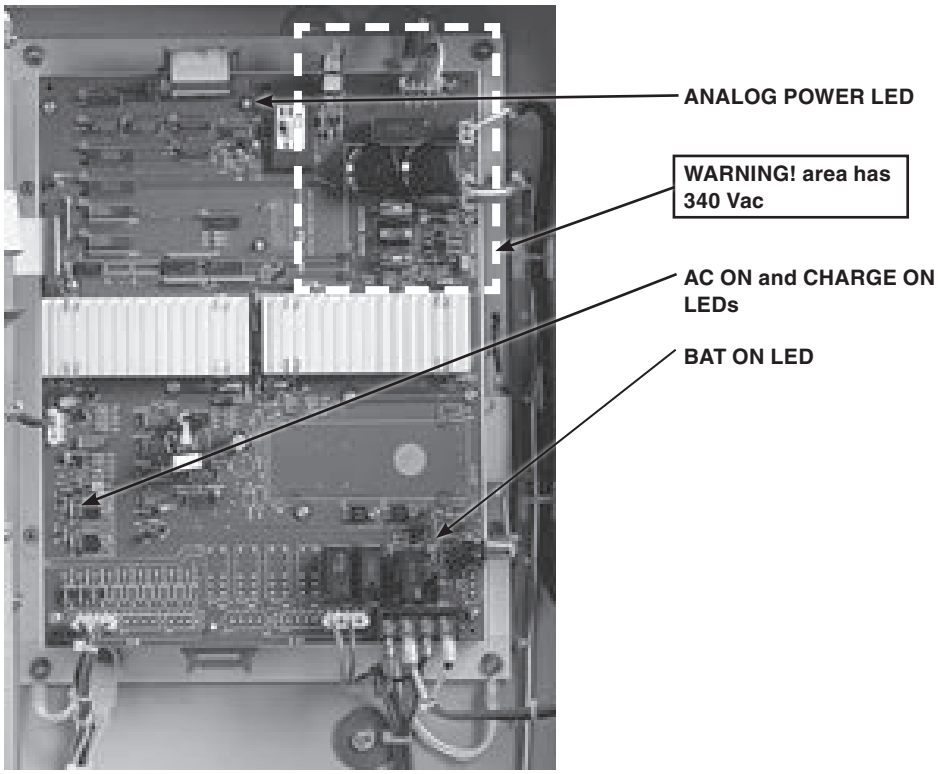


Figure 13. Power supply and control LEDs.

Checking Input Connections

STEP 1. For pad-mounted controls, check that the voltage and current inputs on the switch interface module are configured correctly. Skip this step if the switch control was factory-installed.

Locate the switch interface module on the left side of the chassis. Older pad-mounted controls have the interface module on the bottom of the control chassis.

For installations using six voltage sensors and six current sensors—the voltage inputs should be connected at J1 and J3 and the current inputs at J2 and J4. See Figure 14.

For installations using three voltage sensors and nine current sensors—the voltage input should be connected at J3 and the current inputs at J2, J4, and J6. See Figure 14.

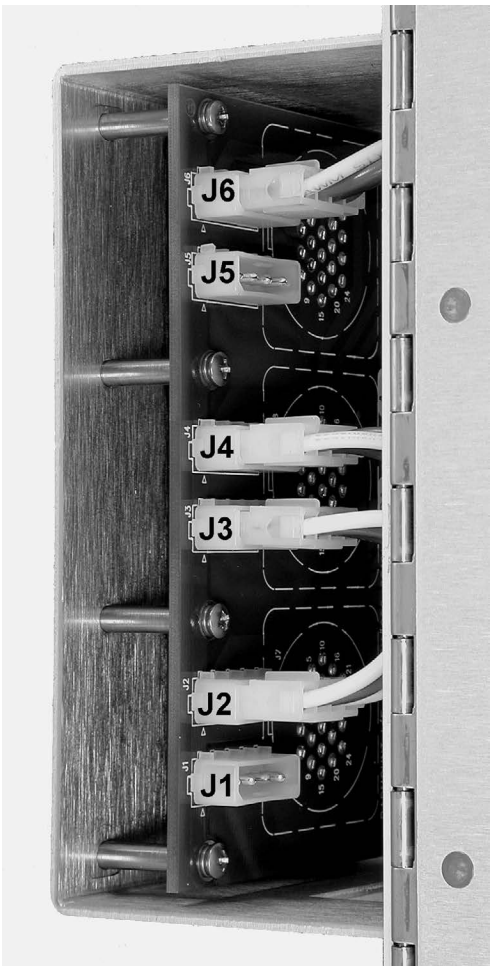


Figure 14. Voltage and current inputs on the switch interface module.

STEP 2. Connect the switch cable(s) to the switch interface connector(s).

For OEM pad-mounted controls, the connectors are labeled. See Figure 15 on page 23.

For controls connected to Scada-Mate Switching Systems, close the locking collar over the FIC and lock it in place. See Figure 6 on page 14.

⚠ WARNING

If the control is sensor-powered and there is voltage at the line switch sensors, the control will have ac power as soon as you connect the FIC.

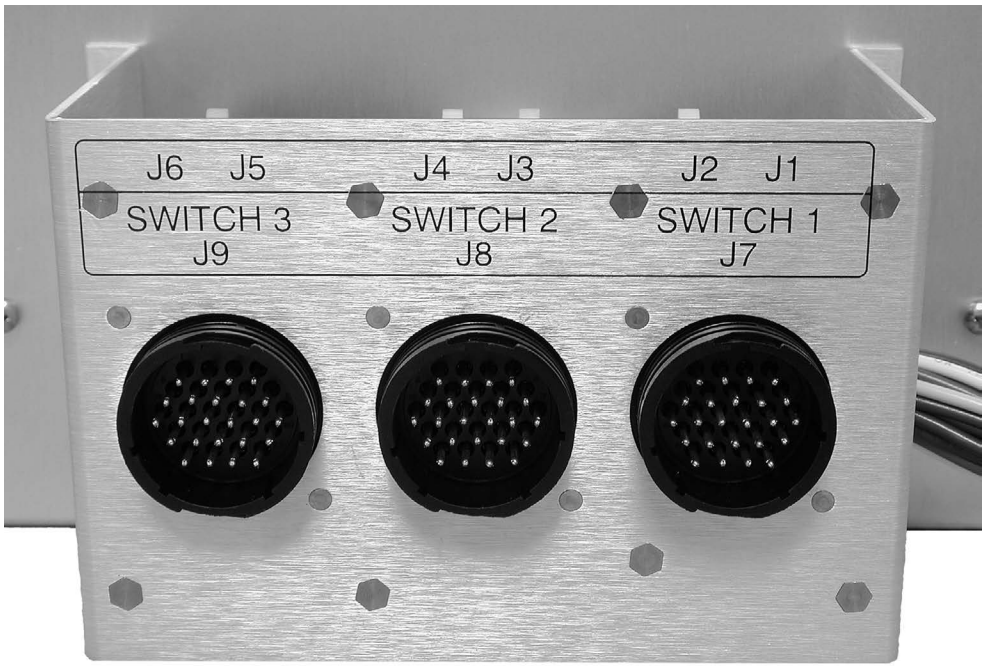


Figure 15. Switch interface connectors on pad-mounted switch controls.

Adding Ac Power and Testing

STEP 1. For switch controls that use ac control power, install the 10-ampere ac line fuse and energize the ac power.

STEP 2. Check the AC ON and CHG ON LEDs.

When the 10-ampere ac line fuse is inserted, the red AC ON and CHG ON LEDs should illuminate. See Figure 13 on page 21.

If the AC ON and CHG ON LEDs do not illuminate, check the external ac voltage source (if applicable). The ac test points are located on the terminal strip at the ac fuse housing. See Figure 11 on page 20. If ac control power is present, see Instruction Sheet 1042-550, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Troubleshooting*."

STEP 3. Test the faceplate functions by using the following procedure.

At this point, installers can test most of the faceplate LEDs and switches. See Figure 16.

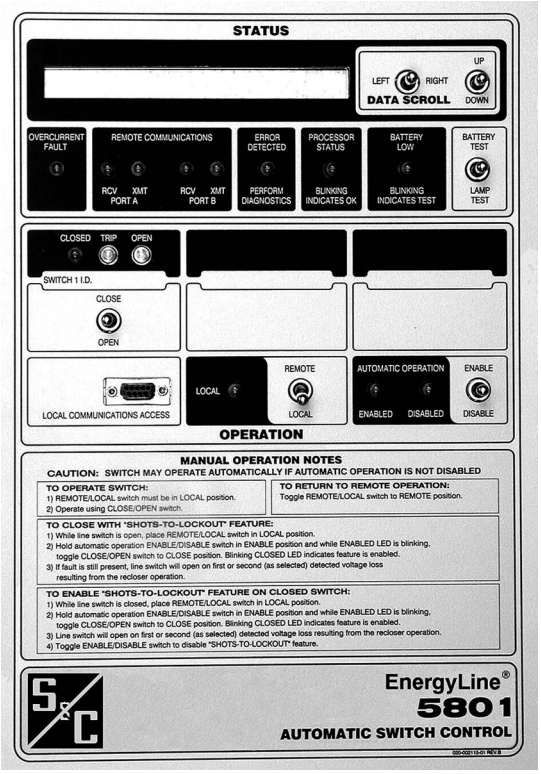


Figure 16. S&C 5801 control faceplate.

To test the LEDs and switches:

(a) Check whether the PROCESSOR STATUS LED on the faceplate is blinking. If it is not blinking, see Instruction Sheet 1042-550, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Troubleshooting*."

(b) Hold the BATTERY TEST/LAMP TEST switch in the **Lamp Test** position and check that all the faceplate LEDs blink.

(c) Toggle the BATTERY TEST/LAMP TEST switch to the **Battery Test** position. The BATTERY LOW LED will begin blinking when the switch is released. It will blink for approximately 1 minute. When the LED stops blinking, the LED goes off if the battery system is good. If it stays lit, see Instruction Sheet 1042-550, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Troubleshooting*."

(d) Check that the LCD screen is backlit and that data are displayed. Then, toggle both DATA SCROLL switches to make sure the display will scroll in all four directions.

(e) Check that the REMOTE/LOCAL switch on the faceplate is set to **Local** mode. The LOCAL LED should be lit.

(f) Toggle the Automatic Operation ENABLE/DISABLE switch and check that the correct ENABLED or DISABLED LED is lit when the switch is in each position.

If the **Features Enabled** setpoint on the *Setup>Automatic Operation* screen is set to the **None** selection (for either Switch 1 or Switch 2, if applicable), the DISABLED LED remains lit and the ENABLED LED remains off when toggling the switch. See Instruction Sheet 1042-530, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Setup*."

(g) After checking faceplate operation, leave the REMOTE/LOCAL switch in the **Local** position, and leave the Automatic Operation **ENABLE/DISABLE** switch in the **Disable** position.

⚠ WARNING

These switches must be set to the Automatic Operation **Disable** and **Local** positions to avoid unexpected operation of the switch(es) during installation and setup of the switch control.

STEP 4. Check the connection to the switch(es) by following these procedures:

(a) Check that the faceplate OPEN and CLOSED LEDs correctly indicate the actual position of the line switch(es).

(b) Check that the faceplate ERROR DETECTED LED is not lit. This indicates, among other things, that the switch(es) and switch control are connected and that the open/close auxiliary contacts for each line switch are consistent (that is, one contact set is open while the other set is closed).

If the ERROR DETECTED LED is not lit, continue with Step 6.

If the ERROR DETECTED LED is lit:

1. Connect the portable computer to the switch control and start the IntelliLink software. See Instruction Sheet 1042-530, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Setup*."
2. Read the message(s) on the *Troubleshooting>Event Status* screen, and take appropriate action to correct the problem. See Instruction Sheet 1042-550, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Troubleshooting*."
3. After correcting the error condition, continue with Step 6.

STEP 5. For S&C switches, remove the yellow Sensor Calibration sheet that came with the switch. There will be a sheet for each set of sensors. Put a copy in the door pocket of the control or low-voltage cabinet.

The Sensor Calibration sheet contains the serial number and magnitude/phase correction factors for the sensors. Installers must enter this information during switch control setup. We recommend leaving a copy of this instruction sheet in the door pocket of the control or low-voltage cabinet.

STEP 6. Verify line-switch operation by following this procedure:

(a) Make sure the REMOTE/LOCAL switch is in the **Local** position and the Automatic Operation ENABLE/DISABLE switch is in the **Disable** position.

NOTICE

Be sure a normally closed line switch is bypassed, so customer outages will not occur during switch operation testing.

Be sure momentarily closing a normally open switch is allowed, which will tie two circuits together.

(b) Follow company operating procedures, and use the CLOSE/OPEN switch on the switch control faceplate to manually operate the line switch. Verify visually that the switch can be both open and closed. Check that the switch control faceplate LEDs correctly indicate when the switch is open and closed. When testing is completed, leave the switch in its normal position (closed or open) for team operation.

(c) If this switch control operates multiple line switches, carry out Step 6(b) for each switch.

STEP 7. For pad-mounted controls, connect and test the door switch by following this procedure:

(a) Connect the switch control 3-pin connector to the harness from the door switch of the low-voltage cabinet. Skip this step for factory-installed controls.

(b) Press the door switch lever, and make sure this turns off the faceplate LEDs and LCD screen. When the lever is released, the LEDs and LCD screen should be lit. If they are not lit, see Instruction Sheet 1042-550, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Troubleshooting*."

The switch control uses the door switch status to know when to provide power to the faceplate LEDs and LCD screen. If the low-voltage cabinet does not have a door switch, contact the manufacturer.

Checking Communication Equipment

If necessary, make sure the communications equipment has power. For overhead switch controls, the communication equipment is on the back of the faceplate. For 5800 Series Switch Controls installed in pad-mounted gear, the communication equipment is not mounted inside the 5800 Series Control chassis.

Local/Non-Automatic Service

Remove any temporarily installed bypass that was applied at Step 3 on page 10.

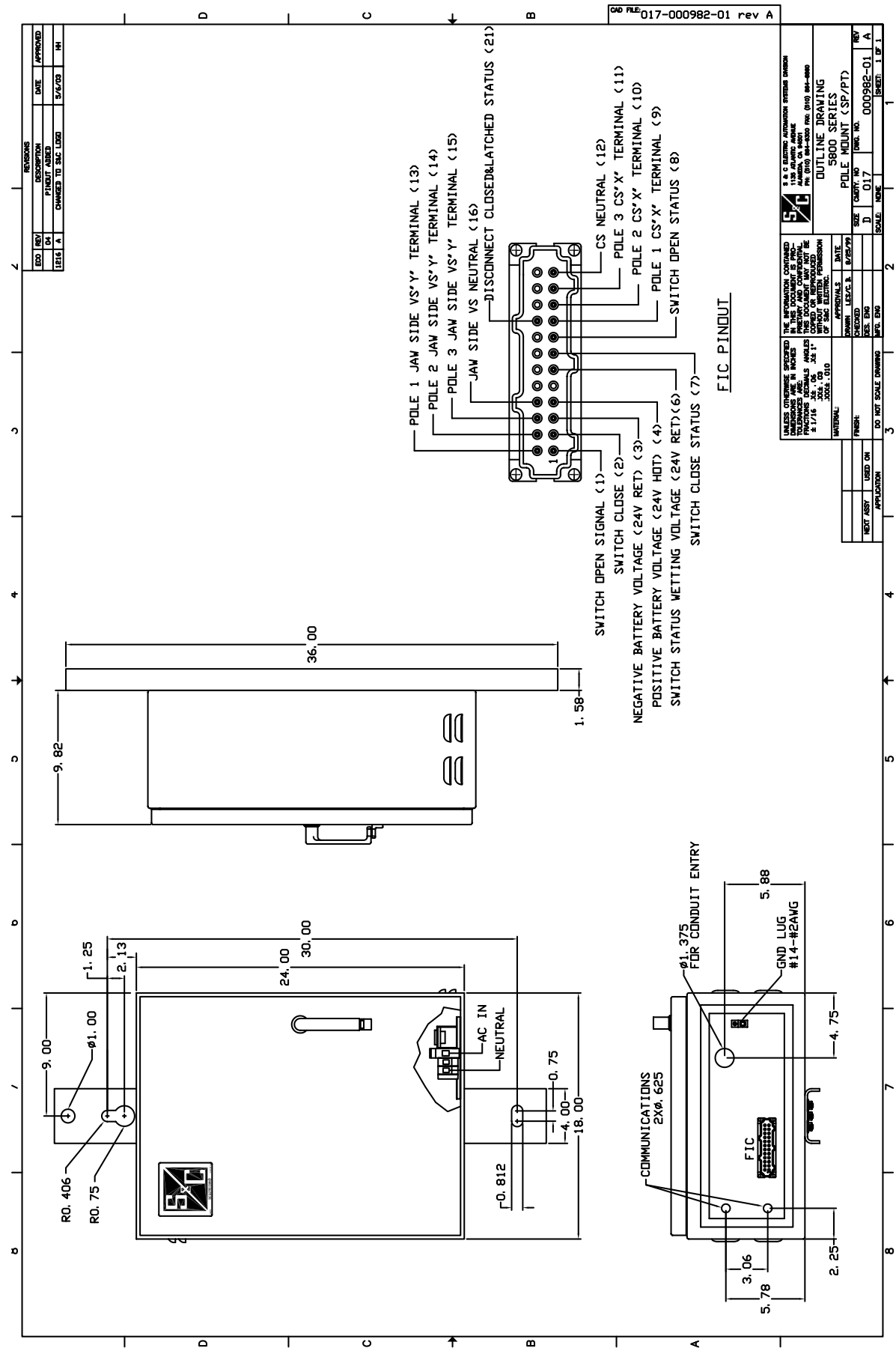
This makes the switch control available for local, non-automatic operation from the faceplate.

⚠ WARNING

Be sure to leave the switch control in **Local** (not **Remote**) mode and Automatic Operation in **Disable** (not **Enable**) mode until configuration of the software in the switch control has been completed.

This completes hardware installation and testing. The following pages of this instruction sheet show the installation and wiring diagrams.

Go to Instruction Sheet 1042-530, "S&C 5800 Series Automatic Switch Control with IntelliTeam® Automatic Restoration System: *Setup*," to configure the control.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5800 SERIES
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SIZE D
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DWG. NO. 000982-01
REV A
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POLE 1 JAW SIDE VS"Y" TERMINAL (13)
POLE 2 JAW SIDE VS"Y" TERMINAL (14)
POLE 3 JAW SIDE VS"Y" TERMINAL (15)
JAW SIDE VS NEUTRAL (16)
DISCONNECT CLOSED&LATCHED STATUS (21)
CS NEUTRAL (12)
POLE 3 CS"X" TERMINAL (11)
POLE 2 CS"X" TERMINAL (10)
POLE 1 CS"X" TERMINAL (9)
SWITCH OPEN STATUS (8)
SWITCH CLOSE STATUS (7)
SWITCH STATUS WETTING VOLTAGE (24V RET)(6)
POSITIVE BATTERY VOLTAGE (24V HOT) (4)
NEGATIVE BATTERY VOLTAGE (24V RET) (3)
SWITCH CLOSE (2)
SWITCH OPEN SIGNAL (1)
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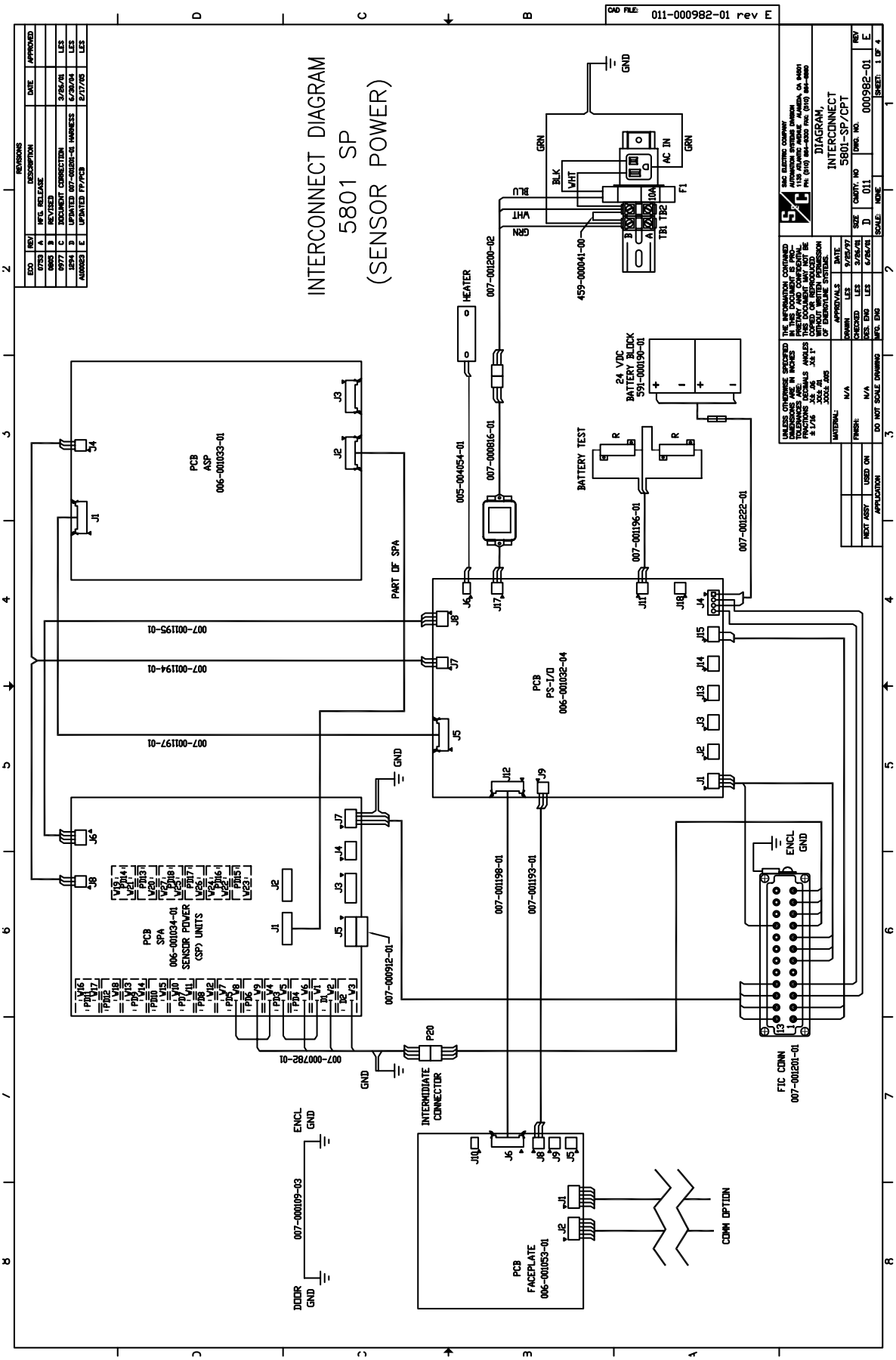
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0805 B REVISED
0977 C DOCUMENT CORRECTION 3/26/01 LES
1294 D UPDATED 007-001201-01 HARNESS 6/20/04 LES
A000823 E UPDATED FP/PCB 2/17/05 LES
S&C ELECTRIC COMPANY
AUTOMATION SYSTEMS DIVISION
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PH: (510) 864-4200 FAX: (510) 864-4880
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INTERCONNECT
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SIZE D
CAD/DY. NO 011
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REV E
SCALE: NONE
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PCB PS-I/O 006-001032-04
PCB FACEPLATE 006-001053-01
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WHT
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GND
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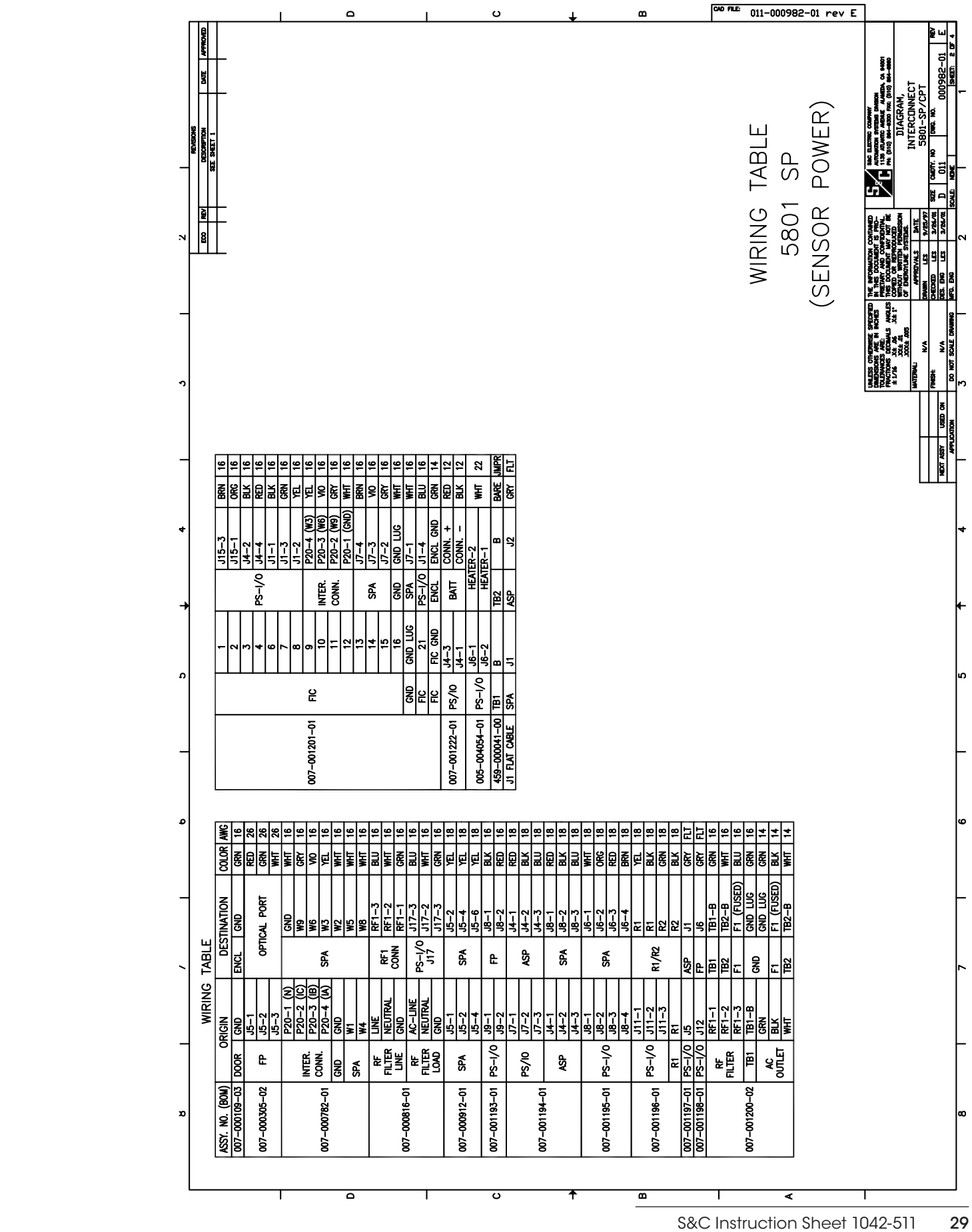
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(SENSOR POWER)
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J5-2 | GRN | 26
J5-3 | WHT | 26
007-000782-01 | INTER. CONN. | P20-1 (N) | GND | WHT | 16
P20-2 (IC) | W9 | GRY | 16
P20-3 (IB) | SPA | W6 | VIO | 16
P20-4 (IA) | W3 | YEL | 16
SPA | GND | W1 | W2 | WHT | 16
W4 | W5 | WHT | 16
W8 | WHT | 16
007-000816-01 | RF FILTER LINE | LINE | RF1-3 | BLU | 16
NEUTRAL | RF1 CONN | RF1-2 | WHT | 16
GND | RF1-1 | GRN | 16
RF FILTER LOAD | AC-LINE | PS-I/O J17 | J17-3 | BLU | 16
NEUTRAL | J17-2 | WHT | 16
GND | J17-3 | GRN | 16
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J5-2 | J5-4 | YEL | 18
J5-4 | J5-6 | YEL | 18
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J7-2 | J4-2 | BLK | 18
J7-3 | J4-3 | BLU | 18
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J4-2 | J8-2 | BLK | 18
J4-3 | J8-3 | BLU | 18
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J8-3 | J6-3 | RED | 18
J8-4 | J6-4 | BRN | 18
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J11-2 | R1 | BLK | 18
J11-3 | R2 | GRN | 18
R1 | R2 | BLK | 18
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RF1-3 | F1 | F1 (FUSED) | BLU | 16
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AC OUTLET | GRN | GND LUG | GRN | 14
BLK | F1 | F1 (FUSED) | BLK | 14
WHT | TB2 | TB2-B | WHT | 14
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4 | J4-4 | RED | 16
6 | J1-1 | BLK | 16
7 | J1-3 | GRN | 16
8 | J1-2 | YEL | 16
9 | P20-4 (W3) | YEL | 16
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11 | CONN. | P20-2 (W9) | GRY | 16
12 | P20-1 (GND) | WHT | 16
13 | J7-4 | BRN | 16
14 | SPA | J7-3 | VIO | 16
15 | J7-2 | GRY | 16
16 | GND | GND LUG | WHT | 16
GND | GND LUG | SPA | J7-1 | WHT | 16
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005-004054-01 | PS-I/O | J6-1 | HEATER-2 | WHT | 22
J6-2 | HEATER-1
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REVISIONS
ECO | REV | DESCRIPTION | DATE | APPROVED
SEE SHEET 1
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MFG. ENG | LES | 9/26/01
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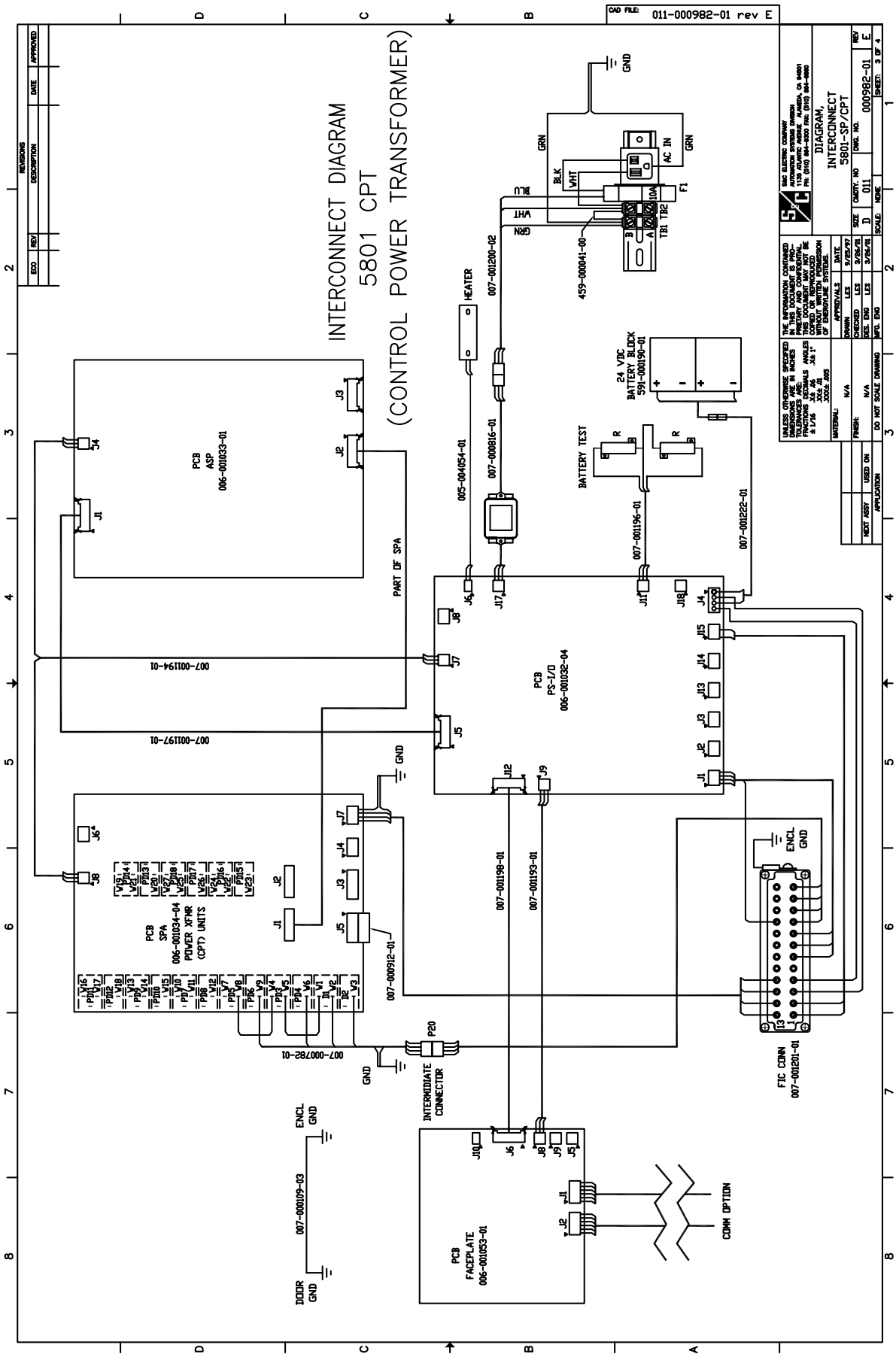
SIZE D | CAGE/TY. NO 011 | DWG. NO. 000982-01 | REV E
SCALE: NONE | SHEET 2 OF 4


INTERCONNECT DIAGRAM
5801 CPT
(CONTROL POWER TRANSFORMER)
CAD FILE: 011-000982-01 rev E
DIAGRAM, INTERCONNECT 5801-SP/CPT
011-000982-01
PCB ASP 006-001033-01
PCB SPA 006-001034-04 POWER XFMR (CPT) UNITS
PCB PS-I/O 006-001032-04
PCB FACEPLATE 006-001053-01
PART OF SPA
HEATER
24 VDC BATTERY BLOCK 591-000190-01
BATTERY TEST
TB1 TB2
AC IN
F1
10A
GND
ENCL GND
DOOR GND
INTERMEDIATE CONNECTOR
FIC CONN 007-001201-01
COMM OPTION
007-001200-02
459-000041-00
005-004054-01
007-000816-01
007-001196-01
007-001222-01
007-001194-01
007-001197-01
007-000912-01
007-001198-01
007-001193-01
007-000782-01
007-001109-03

WIRING TABLE

ASSY. NO. (BOM)	ORIGIN		DESTINATION		COLOR	AWG
007-000109-03	DOOR	GND	ENCL	GND	GRN	16
007-000305-02	FP	J5-1	OPTICAL PORT		RED	26
		J5-2			GRN	26
		J5-3			WHT	26
007-000782-01	INTER. CONN.	P20-1 (N)	SPA	GND	WHT	16
		P20-2 (IC)		W9	GRY	16
		P20-3 (IB)		W6	VIO	16
		P20-4 (IA)		W3	YEL	16
	GND	GND		W2	WHT	16
	SPA	W1		W5	WHT	16
		W4		W8	WHT	16
007-000816-01	RF FILTER LINE	LINE	RF1 CONN	RF1-3	BLU	16
		NEUTRAL		RF1-2	WHT	16
		GND		RF1-1	GRN	16
	RF FILTER LOAD	AC-LINE	PS-I/O J17	J17-3	BLU	16
		NEUTRAL		J17-2	WHT	16
		GND		J17-3	GRN	16
007-000912-01	SPA	J5-1	SPA	J5-2	YEL	18
		J5-2		J5-4	YEL	18
		J5-4		J5-6	YEL	18
007-001193-01	PS-I/O	J9-1	FP	J8-1	BLK	16
		J9-2		J8-2	RED	16
007-001194-01	PS/IO	J7-1	ASP	J4-1	RED	18
		J7-2		J4-2	BLK	18
		J7-3		J4-3	BLU	18
	ASP	J4-1	SPA	J8-1	RED	18
		J4-2		J8-2	BLK	18
		J4-3		J8-3	BLU	18
007-001196-01	PS-I/O	J11-1	R1/R2	R1	YEL	18
		J11-2		R1	BLK	18
		J11-3		R2	GRN	18
	R1	R1		R2	BLK	18
007-001197-01	PS-I/O	J5	ASP	J1	GRY	FLT
007-001198-01	PS-I/O	J12	FP	J6	GRY	FLT
007-001200-02	RF FILTER	RF1-1	TB1	TB1-B	GRN	16
		RF1-2	TB2	TB2-B	WHT	16
		RF1-3	F1	F1 (FUSED)	BLU	16
	TB1	TB1-B	GND	GND LUG	GRN	16
	AC OUTLET	GRN		GND LUG	GRN	14
		BLK	F1	F1 (FUSED)	BLK	14
		WHT	TB2	TB2-B	WHT	14

ASSY. NO. (BOM)	ORIGIN		DESTINATION		COLOR	AWG
007-001201-01	FIC	1	PS-I/O	J15-3	BRN	16
		2		J15-1	ORG	16
		3		J4-2	BLK	16
		4		J4-4	RED	16
		6		J1-1	BLK	16
		7		J1-3	GRN	16
		8		J1-2	YEL	16
		9	INTER. CONN.	P20-4 (W3)	YEL	16
		10		P20-3 (W6)	VIO	16
		11		P20-2 (W9)	GRY	16
		12		P20-1 (GND)	WHT	16
		13	SPA	J7-4	BRN	16
		14		J7-3	VIO	16
		15		J7-2	GRY	16
		16	GND	GND LUG	WHT	16
	GND	GND LUG	SPA	J7-1	WHT	16
	FIC	21	PS-I/O	J1-4	BLU	16
	FIC	FIC GND	ENCL	ENCL GND	GRN	14
007-001222-01	PS/IO	J4-3	BATT	CONN. +	RED	12
		J4-1		CONN. -	BLK	12
005-004054-01	PS-I/O	J6-1	HEATER-2		WHT	22
		J6-2	HEATER-1			
459-000041-00	TB1	B	TB2	B	BARE	JMPR
J1 FLAT CABLE	SPA	J1	ASP	J2	GRY	FLT

REVISIONS				
ECO	REV	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

WIRING TABLE
5801 CPT
(CONTROL POWER TRANSFORMER)

CAD FILE: 011-000982-01 rev E

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± 1/16 DECIMALS .XX± .06 .XX± .01 .XXX± .005 ANGLES .X± 1°

MATERIAL: N/A

FINISH: N/A

DO NOT SCALE DRAWING

NEXT ASSY | USED ON

APPLICATION

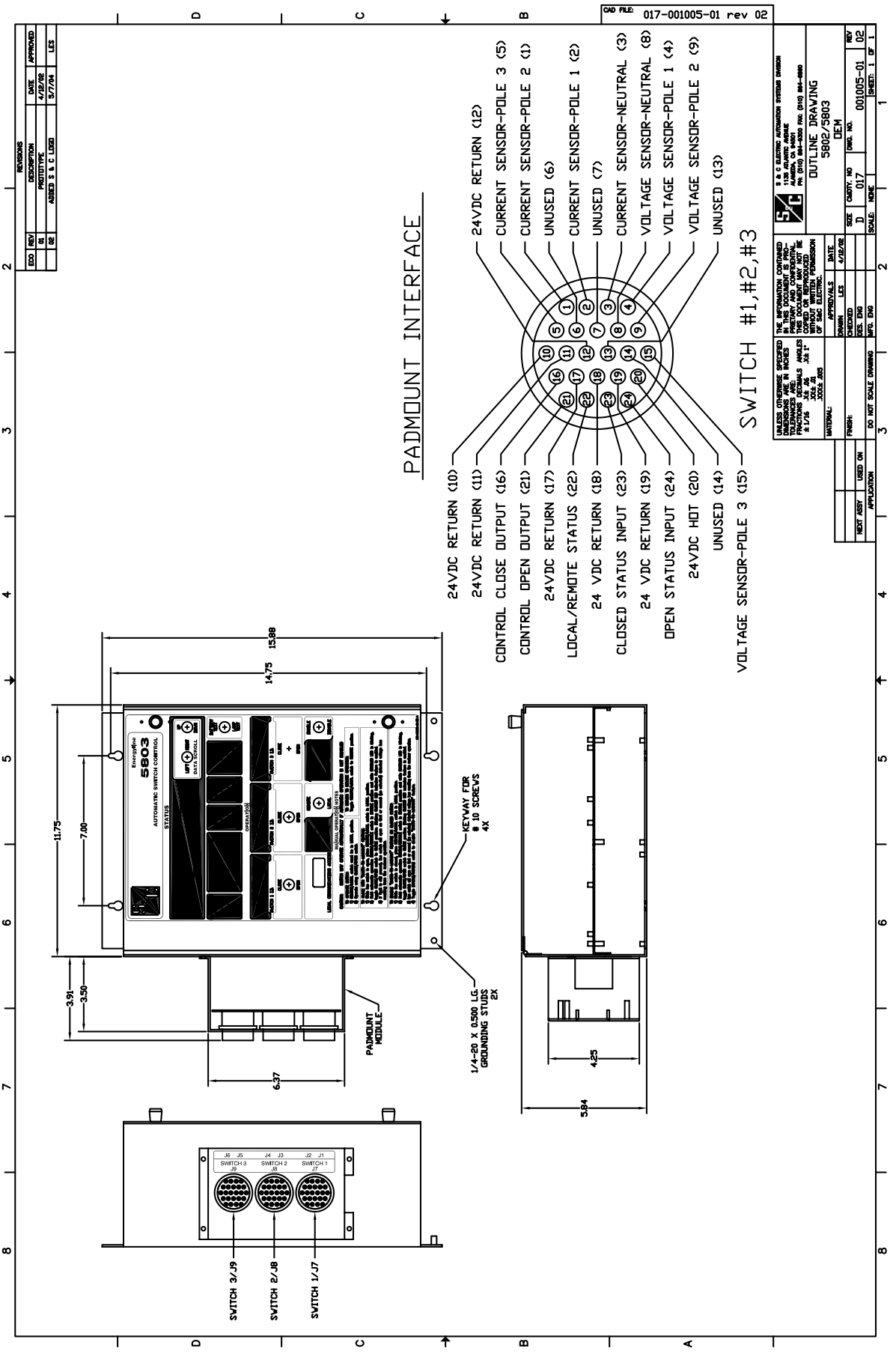
APPROVALS		DATE
DRAWN	LES	9/25/97
CHECKED	LES	3/26/01
DES. ENG	LES	3/26/01
MFG. ENG		

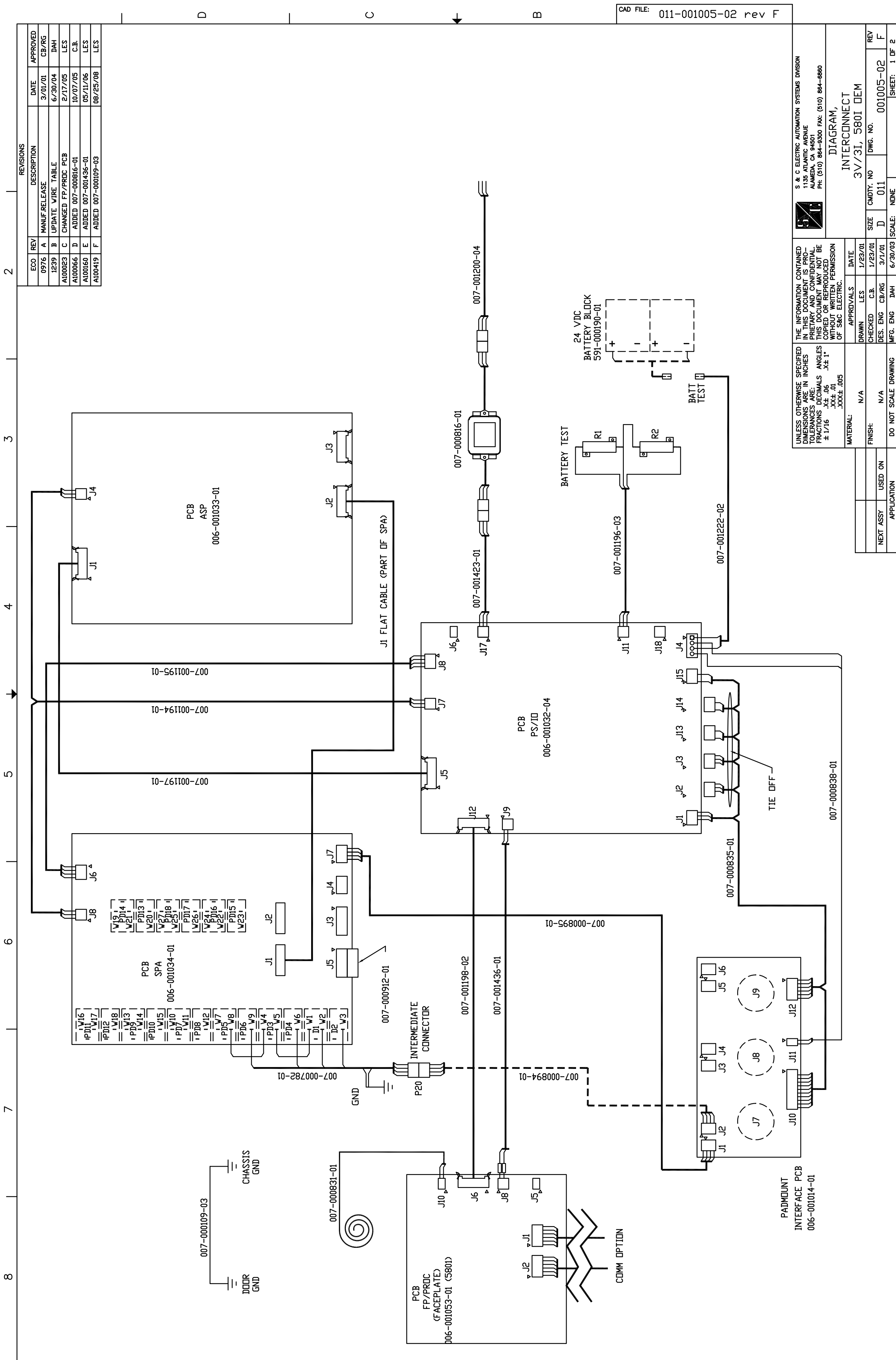
S&C ELECTRIC COMPANY
AUTOMATION SYSTEMS DIVISION
1135 ATLANTIC AVENUE ALAMEDA, CA 94501
PH: (510) 864-6300 FAX: (510) 864-6660

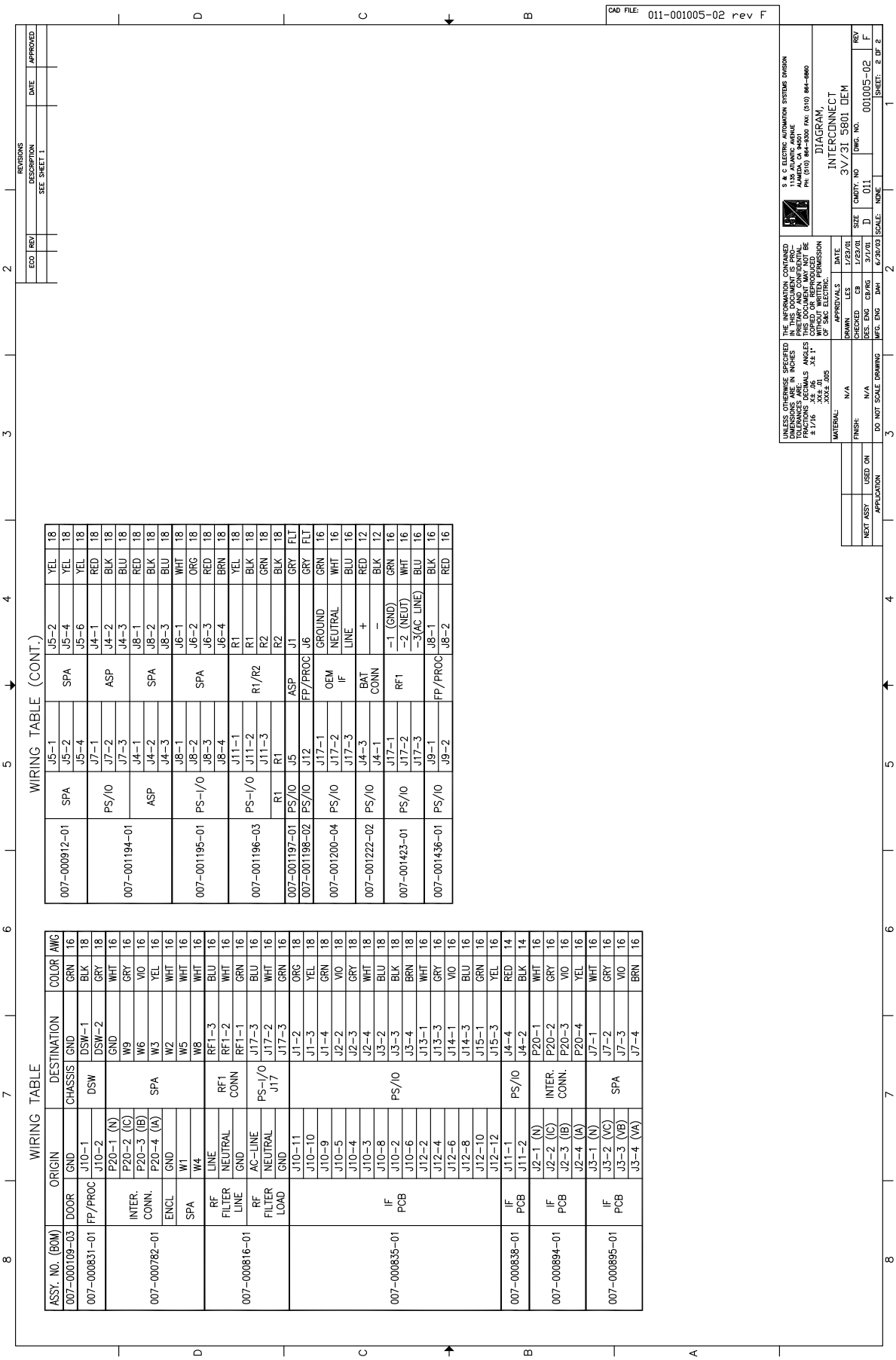
DIAGRAM, INTERCONNECT 5801-SP/CPT

SIZE	CMDTY. NO	DWG. NO.	REV
D	011	000982-01	E

SCALE: NONE SHEET: 4 OF 4


CAD FILE: 017-001005-01 rev 02
PADMOUNT INTERFACE
SWITCH #1,#2,#3
24VDC RETURN (12)
CURRENT SENSOR-POLE 3 (5)
CURRENT SENSOR-POLE 2 (1)
UNUSED (6)
CURRENT SENSOR-POLE 1 (2)
UNUSED (7)
CURRENT SENSOR-NEUTRAL (3)
VOLTAGE SENSOR-NEUTRAL (8)
VOLTAGE SENSOR-POLE 1 (4)
VOLTAGE SENSOR-POLE 2 (9)
UNUSED (13)
VOLTAGE SENSOR-POLE 3 (15)
24VDC RETURN (10)
24VDC RETURN (11)
CONTROL CLOSE OUTPUT (16)
CONTROL OPEN OUTPUT (21)
24VDC RETURN (17)
LOCAL/REMOTE STATUS (22)
24 VDC RETURN (18)
CLOSED STATUS INPUT (23)
24 VDC RETURN (19)
OPEN STATUS INPUT (24)
24VDC HOT (20)
UNUSED (14)
KEYWAY FOR # 10 SCREWS 4X
1/4-20 X 0.500 LG. GROUNDING STUDS 2X
PADMOUNT MODULE
SWITCH 3/J9
SWITCH 2/J8
SWITCH 1/J7
DUTLINE DRAWING
5802/5803
OEM
001005-01
SCALE: NONE
SHEET: 1 OF 1


CAD FILE: 011-001005-02 rev F
PCB ASP 006-001033-01
PCB PS/IO 006-001032-04
PCB SPA 006-001034-01
PCB FP/PROC (FACEPLATE) 006-001053-01 (5801)
PADMOUNT INTERFACE PCB 006-001014-01
24 VDC BATTERY BLOCK 591-000190-01
BATTERY TEST
BATT TEST
J1 FLAT CABLE (PART OF SPA)
INTERMEDIATE CONNECTOR
TIE OFF
COMM OPTION
CHASSIS GND
DOOR GND
GND
DIAGRAM, INTERCONNECT 3V/3I, 5801 OEM
001005-02



WIRING TABLE

ASSY. NO. (BOM)	ORIGIN		DESTINATION		COLOR	AWG
007-000109-03	DOOR	GND	CHASSIS	GND	GRN	16
007-000831-01	FP/PROC	J10-1	DSW	DSW-1	BLK	18
		J10-2		DSW-2	GRY	18
007-000782-01	INTER. CONN.	P20-1 (N)	SPA	GND	WHT	16
		P20-2 (IC)		W9	GRY	16
		P20-3 (IB)		W6	VIO	16
		P20-4 (IA)		W3	YEL	16
	ENCL.	GND		W2	WHT	16
	SPA	W1		W5	WHT	16
		W4		W8	WHT	16
007-000816-01	RF FILTER LINE	LINE	RF1 CONN	RF1-3	BLU	16
		NEUTRAL		RF1-2	WHT	16
		GND		RF1-1	GRN	16
	RF FILTER LOAD	AC-LINE	PS-I/O J17	J17-3	BLU	16
		NEUTRAL		J17-2	WHT	16
		GND		J17-3	GRN	16
007-000835-01	IF PCB	J10-11	PS/IO	J1-2	ORG	18
		J10-10		J1-3	YEL	18
		J10-9		J1-4	GRN	18
		J10-5		J2-2	VIO	18
		J10-4		J2-3	GRY	18
		J10-3		J2-4	WHT	18
		J10-8		J3-2	BLU	18
		J10-2		J3-3	BLK	18
		J10-6		J3-4	BRN	18
		J12-2		J13-1	WHT	16
		J12-4		J13-3	GRY	16
		J12-6		J14-1	VIO	16
		J12-8		J14-3	BLU	16
		J12-10		J15-1	GRN	16
		J12-12		J15-3	YEL	16
007-000838-01	IF PCB	J11-1	PS/IO	J4-4	RED	14
		J11-2		J4-2	BLK	14
007-000894-01	IF PCB	J2-1 (N)	INTER. CONN.	P20-1	WHT	16
		J2-2 (IC)		P20-2	GRY	16
		J2-3 (IB)		P20-3	VIO	16
		J2-4 (IA)		P20-4	YEL	16
007-000895-01	IF PCB	J3-1 (N)	SPA	J7-1	WHT	16
		J3-2 (VC)		J7-2	GRY	16
		J3-3 (VB)		J7-3	VIO	16
		J3-4 (VA)		J7-4	BRN	16

WIRING TABLE (CONT.)

007-000912-01	SPA	J5-1	SPA	J5-2	YEL	18
		J5-2		J5-4	YEL	18
		J5-4		J5-6	YEL	18
007-001194-01	PS/IO	J7-1	ASP	J4-1	RED	18
		J7-2		J4-2	BLK	18
		J7-3		J4-3	BLU	18
	ASP	J4-1	SPA	J8-1	RED	18
		J4-2		J8-2	BLK	18
		J4-3		J8-3	BLU	18
007-001195-01	PS-I/O	J8-1	SPA	J6-1	WHT	18
		J8-2		J6-2	ORG	18
		J8-3		J6-3	RED	18
		J8-4		J6-4	BRN	18
007-001196-03	PS-I/O	J11-1	R1/R2	R1	YEL	18
		J11-2		R1	BLK	18
		J11-3		R2	GRN	18
	R1	R1		R2	BLK	18
007-001197-01	PS/IO	J5	ASP	J1	GRY	FLT
007-001198-02	PS/IO	J12	FP/PROC	J6	GRY	FLT
007-001200-04	PS/IO	J17-1	OEM	GROUND	GRN	16
		J17-2	IF	NEUTRAL	WHT	16
		J17-3		LINE	BLU	16
007-001222-02	PS/IO	J4-3	BAT CONN	+	RED	12
		J4-1		–	BLK	12
007-001423-01	PS/IO	J17-1	RF1	–1 (GND)	GRN	16
		J17-2		–2 (NEUT)	WHT	16
		J17-3		–3(AC LINE)	BLU	16
007-001436-01	PS/IO	J9-1	FP/PROC	J8-1	BLK	16
		J9-2		J8-2	RED	16

CAD FILE: 011-001005-02 rev F

REVISIONS				
ECO	REV	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

S & C ELECTRIC AUTOMATION SYSTEMS DIVISION
1135 ATLANTIC AVENUE
ALAMEDA, CA 94501
PH: (510) 864-4300 FAX: (510) 864-8860

DIAGRAM,
INTERCONNECT
3V/3I 5801 DEM

SIZE	CMDTY. NO	DWG. NO.	REV
D	011	001005-02	F
SCALE:	NONE	SHEET: 2 OF 2	

	APPROVALS	DATE
DRAWN	LES	1/23/01
CHECKED	LES	1/23/01
DES. ENG	CB/RG	3/1/01
MFG. ENG	DAH	6/26/03

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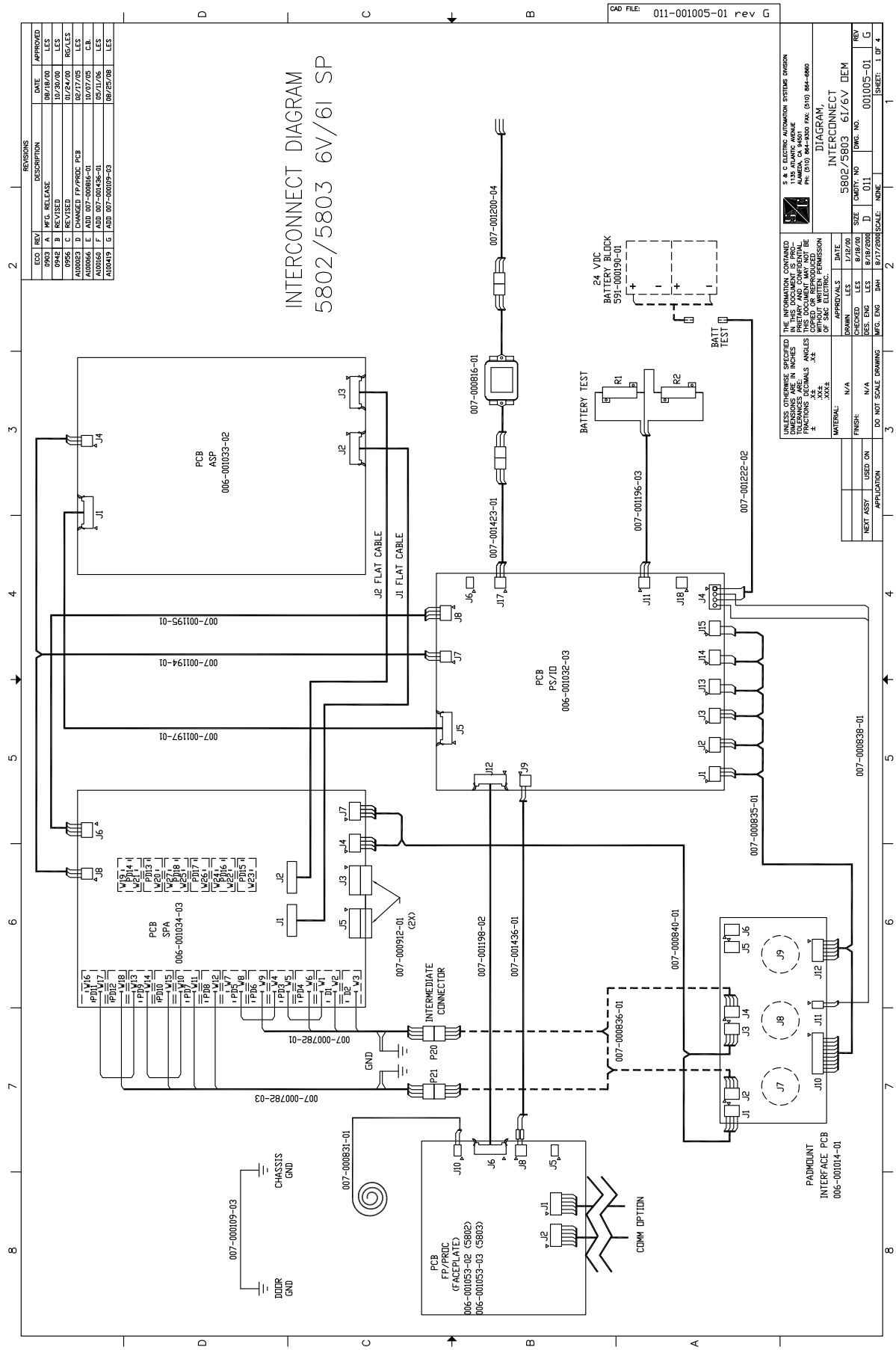
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/16 DECIMALS .XX± .06 ANGLES ±1°
.XX± .01
.XXX± .005

MATERIAL: N/A
FINISH: N/A

NEXT ASSY	USED ON
APPLICATION	DO NOT SCALE DRAWING


INTERCONNECT DIAGRAM
5802/5803 6V/6I SP
CAD FILE: 011-001005-01 rev G
REVISIONS
ECO REV DESCRIPTION DATE APPROVED
0903 A MFG. RELEASE 08/18/00 LES
0942 B REVISED 10/30/00 LES
0956 C REVISED 01/24/00 RG/LES
A100823 D CHANGED FP/PROC PCB 02/17/05 LES
A100866 E ADD 007-000816-01 10/07/05 C.B.
A100160 F ADD 007-001436-01 05/11/06 LES
A100419 G ADD 007-000109-03 08/25/08 LES
S & C ELECTRIC AUTOMATION SYSTEMS DIVISION
1135 ATLANTIC AVENUE
ALAMEDA, CA 94501
PH: (510) 864-8300 FAX: (510) 864-8860
DIAGRAM,
INTERCONNECT
5802/5803 6I/6V OEM
SIZE D CAGE NO. 011 DWG. NO. 001005-01 REV G
SCALE: NONE SHEET: 1 OF 4
THE INFORMATION CONTAINED IN THIS DRAWING IS S&C PROPRIETARY AND CONFIDENTIAL. THIS DOCUMENT MAY NOT BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF S&C ELECTRIC.
APPROVALS DATE
DRAWN LES 1/12/00
CHECKED LES 8/18/00
DES. ENG LES 8/18/2000
MFG. ENG DAH 8/17/2000
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ±1/64 DECIMALS .XX± .XXX± ANGLES ±2°
MATERIAL: N/A
FINISH: N/A
DO NOT SCALE DRAWING
NEXT ASSY USED ON
APPLICATION
24 VDC BATTERY BLOCK 591-000190-01
BATTERY TEST
BATT TEST
R1
R2
PCB ASP 006-001033-02
PCB PS/ID 006-001032-03
PCB SPA 006-001034-03
PCB FP/PROC (FACEPLATE) 006-001053-02 (5802) 006-001053-03 (5803)
PADMOUNT INTERFACE PCB 006-001014-01
INTERMEDIATE CONNECTOR
COMM OPTION
CHASSIS GND
DOOR GND
GND
J2 FLAT CABLE
J1 FLAT CABLE
007-000816-01
007-001200-04
007-001423-01
007-001196-03
007-001222-02
007-000838-01
007-000835-01
007-000840-01
007-000836-01
007-001198-02
007-001436-01
007-000912-01 (2X)
007-000782-01
007-000782-03
007-000831-01
007-000109-03
007-001195-01
007-001194-01
007-001197-01

WIRING TABLE

ASSY. NO. (BOM)	ORIGIN		DESTINATION		COLOR	AWG
007-000109-03	DOOR	GND	CHASSIS	GND	GRN	16
007-000831-01	FP/PROC	J10-1	DSW	DSW-1	BLK	18
		J10-2		DSW-2	GRY	18
007-000782-01	INTER. CONN.	P20-1 (N)	SPA	GND	WHT	16
		P20-2 (IC)		W9	GRY	16
		P20-3 (IB)		W6	VIO	16
		P20-4 (IA)		W3	YEL	16
	ENCL	GND		W2	WHT	16
	SPA	W1		W5	WHT	16
		W4		W8	WHT	16
007-000782-03	INTER. CONN.	P21-1 (N)	SPA	GND	WHT	16
		P21-2 (IC)		W18	GRY	16
		P21-3 (IB)		W15	VIO	16
		P21-4 (IA)		W12	GRN	16
	ENCL	GND		W11	WHT	16
	SPA	W10		W14	WHT	16
		W13		W17	WHT	16
007-000816-01	RF FILTER LINE	LINE	RF1 CONN	RF1-3	BLU	16
		NEUTRAL		RF1-2	WHT	16
		GND		RF1-1	GRN	16
	RF FILTER LOAD	AC-LINE	PS-I/O J17	J17-3	BLU	16
		NEUTRAL		J17-2	WHT	16
		GND		J17-3	GRN	16
007-000835-01	IF PCB	J10-11	PS/IO	J1-2	ORG	18
		J10-10		J1-3	YEL	18
		J10-9		J1-4	GRN	18
		J10-5		J2-2	VIO	18
		J10-4		J2-3	GRY	18
		J10-3		J2-4	WHT	18
		J10-8		J3-2	BLU	18
		J10-2		J3-3	BLK	18
		J10-6		J3-4	BRN	18
		J12-2		J13-1	WHT	16
		J12-4		J13-3	GRY	16
		J12-6		J14-1	VIO	16
		J12-8		J14-3	BLU	16
		J12-10		J15-1	GRN	16
		J12-12		J15-3	YEL	16
007-000836-01	IF PCB	J2-1	INTER. CONN.	P20-1	WHT	16
		J2-2		P20-2	GRY	16
		J2-3		P20-3	VIO	16
		J2-4		P20-4	YEL	16
		J4-1		P21-1	WHT	16
		J4-2		P21-2	GRY	16
		J4-3		P21-3	VIO	16
		J4-4		P21-4	GRN	16
007-000838-01	IF PCB	J11-1	PS/IO	J4-4	RED	14
		J11-2		J4-2	BLK	14
007-000840-01	IF PCB	J3-1	SPA	J4-1	WHT	16
		J3-2		J4-2	GRY	16
		J3-3		J4-3	VIO	16
		J3-4		J4-4	RED	16
		J1-1		J7-1	WHT	16
		J1-2		J7-2	GRY	16
		J1-3		J7-3	VIO	16
		J1-4		J7-4	BRN	16

WIRING TABLE (CONT.)

007-000912-01	SPA	J3-1	SPA	J3-2	YEL	18
		J3-2		J3-4	YEL	18
		J3-4		J3-6	YEL	18
	SPA	J5-1	SPA	J5-2	YEL	18
		J5-2		J5-4	YEL	18
		J5-4		J5-6	YEL	18
007-001194-01	PS/IO	J7-1	ASP	J4-1	RED	18
		J7-2		J4-2	BLK	18
		J7-3		J4-3	BLU	18
	ASP	J4-1	SPA	J8-1	RED	18
		J4-2		J8-2	BLK	18
		J4-3		J8-3	BLU	18
007-001196-02	PS-I/O	J11-1	R1/R2	R1	YEL	18
		J11-2		R1	BLK	18
		J11-3		R2	GRN	18
	R1	R1		R2	BLK	18
007-001195-01	PS-I/O	J8-1	SPA	J6-1	WHT	18
		J8-2		J6-2	ORG	18
		J8-3		J6-3	RED	18
		J8-4		J6-4	BRN	18
007-001197-01	PS/IO	J5	ASP	J1	GRY	FLT
007-001198-02	PS/IO	J12	FP/PROC	J6	GRY	FLT
007-001200-04	PS/IO	J17-1	OEM IF	GROUND	GRN	16
		J17-2		NEUTRAL	WHT	16
		J17-3		LINE	BLU	16
007-001222-02	PS/IO	J4-3	BAT CONN	+	RED	12
		J4-1		−	BLK	12
007-001423-01	PS/IO	J17-1	RF1	−1 (GND)	GRN	16
		J17-2		−2 (NEUT)	WHT	16
		J17-3		−3(AC LINE)	BLU	16
007-001436-01	PS/IO	J9-1	FP/PROC	J8-1	BLK	16
		J9-2		J8-2	RED	16

REVISIONS				
ECO	REV	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

CAD FILE: 011-001005-01 rev G

WIRING TABLE
5802/5803 6I/6V SP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .X± .XX± .XXX± ANGLES .X±

MATERIAL: N/A

FINISH: N/A

NEXT ASSY | USED ON

APPLICATION

DO NOT SCALE DRAWING

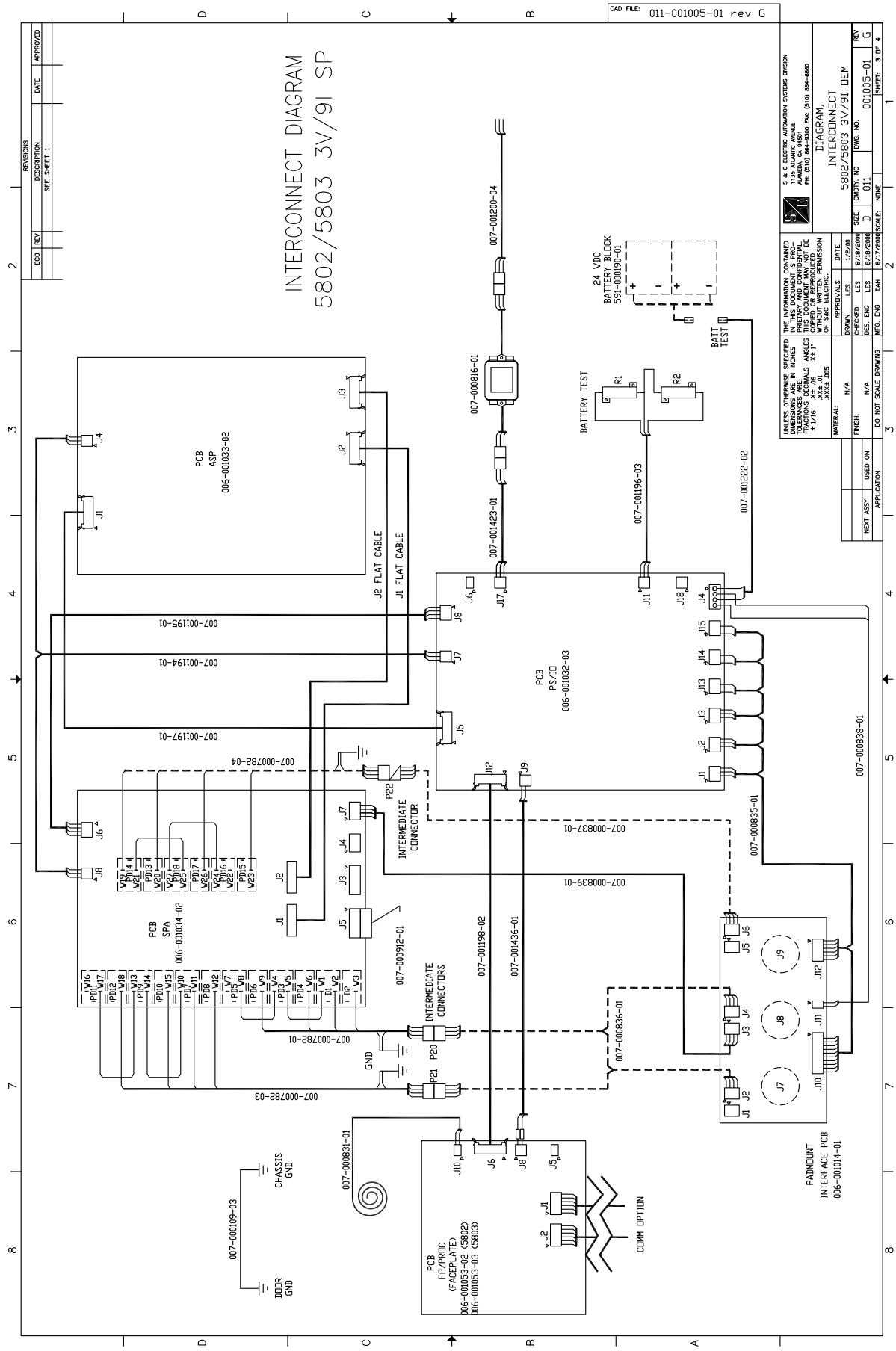
APPROVALS		DATE
DRAWN	LES	1/12/00
CHECKED	LES	8/18/2000
DES. ENG	LES	8/18/2000
MFG. ENG	DAH	8/17/2000

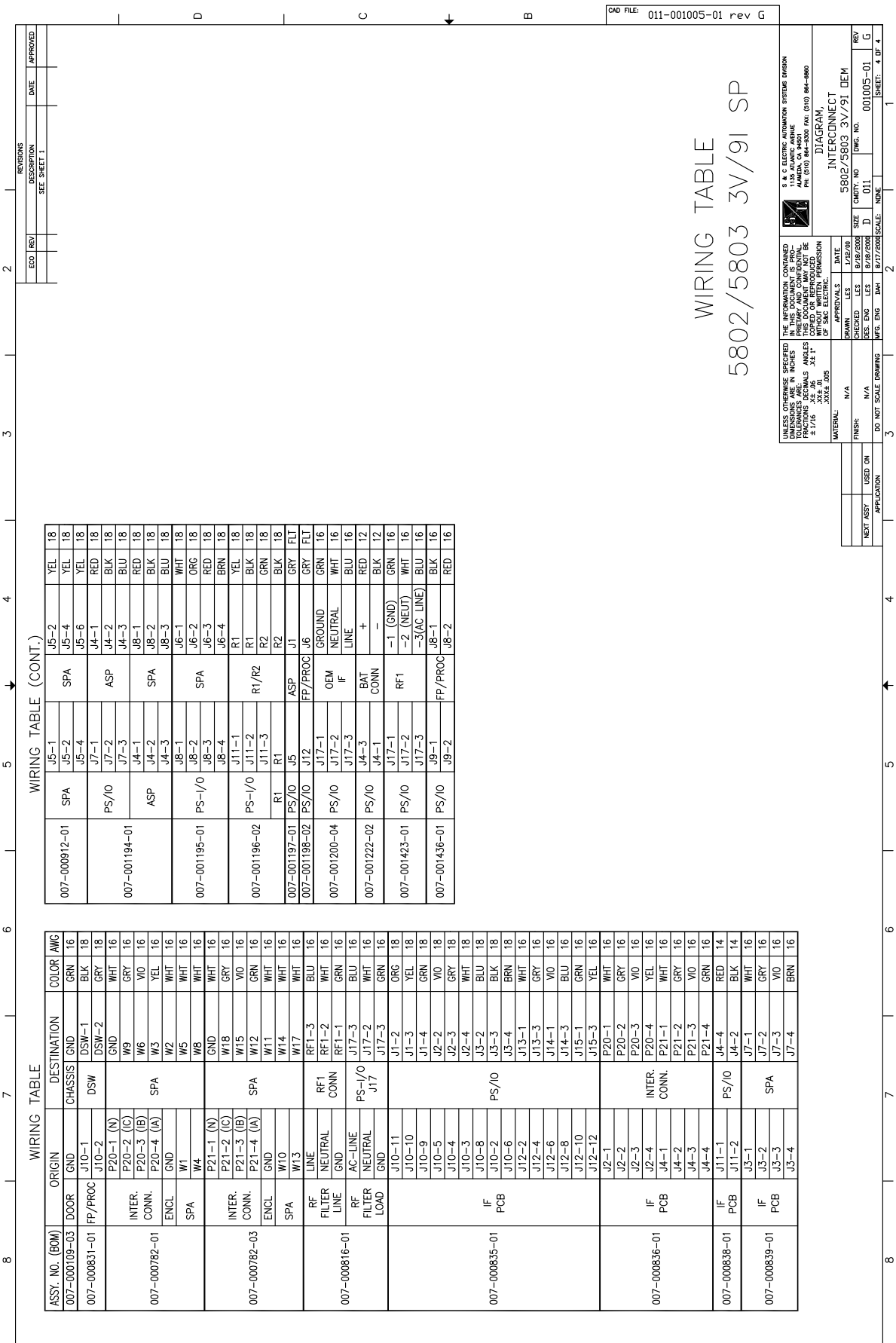
S & C ELECTRIC AUTOMATION SYSTEMS DIVISION
1135 ATLANTIC AVENUE
ALAMEDA, CA 94501
PH: (510) 864-9300 FAX: (510) 864-6860

DIAGRAM, INTERCONNECT
5802/5803 6I/6V OEM

SIZE	CMDTY. NO	DWG. NO.	REV
D	011	001005-01	G

SCALE: NONE SHEET: 2 OF 4


INTERCONNECT DIAGRAM
5802/5803 3V/91 SP
CAD FILE: 011-001005-01 rev G
S & C ELECTRIC AUTOMATION SYSTEMS DIVISION
INTERCONNECT DIAGRAM, INTERCONNECT 5802/5803 3V/91 OEM
DWG. NO. 001005-01 REV G
SHEET: 3 OF 4
24 VDC BATTERY BLOCK 591-000190-01
BATTERY TEST
PCB ASP 006-001033-02
PCB PS/ID 006-001032-03
PCB SPA 006-001034-02
PCB FP/PROC (FACEPLATE) 006-001053-02 (5802) 006-001053-03 (5803)
PADMOUNT INTERFACE PCB 006-001014-01
J2 FLAT CABLE
J1 FLAT CABLE
INTERMEDIATE CONNECTOR
INTERMEDIATE CONNECTORS
COMM OPTION
CHASSIS GND
DOOR GND
GND
007-000816-01
007-001200-04
007-001423-01
007-001196-03
007-001222-02
007-001195-01
007-001194-01
007-001197-01
007-000782-04
007-000837-01
007-000835-01
007-000838-01
007-000839-01
007-000912-01
007-001198-02
007-001436-01
007-000836-01
007-000782-01
007-000782-03
007-000831-01
007-000109-03



ASSY. NO. (BOM)	ORIGIN		DESTINATION		COLOR	AWG
007-000109-03	DOOR	GND	CHASSIS	GND	GRN	16
007-000831-01	FP/PROC	J10-1	DSW	DSW-1	BLK	18
		J10-2		DSW-2	GRY	18
007-000782-01	INTER. CONN.	P20-1 (N)	SPA	GND	WHT	16
		P20-2 (IC)		W9	GRY	16
		P20-3 (IB)		W6	VIO	16
		P20-4 (IA)		W3	YEL	16
	ENCL.	GND		W2	WHT	16
	SPA	W1		W5	WHT	16
		W4		W8	WHT	16
007-000782-03	INTER. CONN.	P21-1 (N)	SPA	GND	WHT	16
		P21-2 (IC)		W18	GRY	16
		P21-3 (IB)		W15	VIO	16
		P21-4 (IA)		W12	GRN	16
	ENCL	GND		W11	WHT	16
	SPA	W10		W14	WHT	16
		W13		W17	WHT	16
007-000816-01	RF FILTER LINE	LINE	RF1 CONN	RF1-3	BLU	16
		NEUTRAL		RF1-2	WHT	16
		GND		RF1-1	GRN	16
	RF FILTER LOAD	AC-LINE	PS-I/O J17	J17-3	BLU	16
		NEUTRAL		J17-2	WHT	16
		GND		J17-3	GRN	16
007-000835-01	IF PCB	J10-11	PS/IO	J1-2	ORG	18
		J10-10		J1-3	YEL	18
		J10-9		J1-4	GRN	18
		J10-5		J2-2	VIO	18
		J10-4		J2-3	GRY	18
		J10-3		J2-4	WHT	18
		J10-8		J3-2	BLU	18
		J10-2		J3-3	BLK	18
		J10-6		J3-4	BRN	18
		J12-2		J13-1	WHT	16
		J12-4		J13-3	GRY	16
		J12-6		J14-1	VIO	16
		J12-8		J14-3	BLU	16
		J12-10		J15-1	GRN	16
		J12-12		J15-3	YEL	16
007-000836-01	IF PCB	J2-1	INTER. CONN.	P20-1	WHT	16
		J2-2		P20-2	GRY	16
		J2-3		P20-3	VIO	16
		J2-4		P20-4	YEL	16
		J4-1		P21-1	WHT	16
		J4-2		P21-2	GRY	16
		J4-3		P21-3	VIO	16
		J4-4		P21-4	GRN	16
007-000838-01	IF PCB	J11-1	PS/IO	J4-4	RED	14
		J11-2		J4-2	BLK	14
007-000839-01	IF PCB	J3-1	SPA	J7-1	WHT	16
		J3-2		J7-2	GRY	16
		J3-3		J7-3	VIO	16
		J3-4		J7-4	BRN	16

007-000912-01	SPA	J5-1	SPA	J5-2	YEL	18
		J5-2		J5-4	YEL	18
		J5-4		J5-6	YEL	18
007-001194-01	PS/IO	J7-1	ASP	J4-1	RED	18
		J7-2		J4-2	BLK	18
		J7-3		J4-3	BLU	18
	ASP	J4-1	SPA	J8-1	RED	18
		J4-2		J8-2	BLK	18
		J4-3		J8-3	BLU	18
007-001195-01	PS-I/O	J8-1	SPA	J6-1	WHT	18
		J8-2		J6-2	ORG	18
		J8-3		J6-3	RED	18
		J8-4		J6-4	BRN	18
007-001196-02	PS-I/O	J11-1	R1/R2	R1	YEL	18
		J11-2		R1	BLK	18
		J11-3		R2	GRN	18
	R1	R1		R2	BLK	18
007-001197-01	PS/IO	J5	ASP	J1	GRY	FLT
007-001198-02	PS/IO	J12	FP/PROC	J6	GRY	FLT
007-001200-04	PS/IO	J17-1	OEM IF	GROUND	GRN	16
		J17-2		NEUTRAL	WHT	16
		J17-3		LINE	BLU	16
007-001222-02	PS/IO	J4-3	BAT CONN	+	RED	12
		J4-1		–	BLK	12
007-001423-01	PS/IO	J17-1	RF1	-1 (GND)	GRN	16
		J17-2		-2 (NEUT)	WHT	16
		J17-3		-3(AC LINE)	BLU	16
007-001436-01	PS/IO	J9-1	FP/PROC	J8-1	BLK	16
		J9-2		J8-2	RED	16