



SSD3-LT System Status/Control Panel - Remote and Local Monitor

19" (48 cm) or 23" (58 cm) wide, $\pm 24V$ DC or $-48V$ DC



The *SSD3-LT* System Status and Control Panel offers remote and local monitoring of the DC power system (rectifiers, battery, and power distribution board) and provides local and remote status and alarm conditions as well as some control functions. Control actions are limited to setting alarm levels, activating single or dual low voltage disconnects, and automatic temperature compensation battery charging. The *SSD3-LT* is compatible with *TwinPack Plus*® and *PS-23* DC power systems containing up to **100** rectifiers for all signals except temperature compensated battery charging and remote shutdown (max. of 25 rectifiers for these two functions). The 1.75" (4 cm) high (1 RU) panel weighs 3.1 lbs. (1.4 kg) and includes: a key pad, a digital meter, LEDs for local status monitoring and alarm indications, and Normally Closed/Normally Open contacts with a trio of 9, 12 and 15-pin connectors. **The *SSD3-LT* can be remotely accessed when used with the TPC/IP Gate Internet Gateway Panel (see Bulletin 451).** Panels are available for 19" (48 cm) or 23" (58 cm) rack mounting. The *SSD3-LT* panel will be submitted for seismic testing (zone 4) in accordance with Telcordia Technologies GR-63-CORE. The *SSD3-LT* meets the requirements of UL 1950 and CE.

Key Pad. The key pad on the front panel is used to select various functions to be indicated by the meter, and to select the five user-adjustable settings.

User-Adjustable Settings

1. System High DC Voltage Alarm
2. System Low DC Voltage Alarm
3. System Extra Low Voltage Alarm
4. System Low Voltage Disconnect Pickup
5. System Low Voltage Disconnect Dropout

The **Digital Meter** selectively monitors the following:

1. System DC Volts
2. System DC Amps
3. Converter Output Volts
4. Converter Output Amps (Total)
5. High DC Voltage Alarm Set Point
6. Low DC Voltage Alarm Set Point
7. System Extra Low DC Voltage Alarm Set Point
8. System LVD Pickup Set Point
9. System LVD Dropout Set Point
10. Battery Temperature (°C)
11. *SSD3-LT* Internal Temperature (°C)
12. Equalize Timer Hours
13. Auxiliary 1 Amps
14. Auxiliary 2 Amps

Ambient Temperature. The *SSD3-LT* will perform all functions in an ambient of -40°C (-40°F) to $+65^{\circ}\text{C}$ (149°F) at 5,000 ft. altitude. Derate the operating temperature range by 2°C for 1,000 ft. of increased elevation above 5,000 feet.



Audible Alarms. An audible alarm with local cutoff acknowledge key operates in the event of *any* alarm. The audible alarm can be disabled in the field by removing a jumper on the rear panel.

Thirty-Two (32) LED (Visual) Indicators

Front panel mounted LEDs provide local (visual) indication of an alarm condition of the following:

- A. Rectifier and DC to DC Converter Failure (Major and Minor)
- B. High DC Voltage Alarm
- C. Low DC Voltage Alarm
- D. Extra Low DC Voltage Alarm
- E. Load Connect/Disconnect
- F. Distribution Fuse/Circuit Breaker Disconnect
- G. AC Fail (Major or Minor)
- H. Float/Equalize Mode
- I. Temperature Compensated Battery Charging Active
- J. Battery Disconnect Open
- K. Open Remote Sense Fuse
- L. Open Power Fuse

The rectifier and converter MINOR FAIL LEDs illuminate when one rectifier or converter has failed. The rectifier and converter MAJOR FAIL LEDs illuminate when two or more rectifiers or converters have failed. The AC Minor Fail LED illuminates when one AC feed fails. The AC Major Fail LED illuminates when two or more AC feeds fail. A major alarm will not be activated with only one rectifier in a system. The FUSE ALARM LED illuminates when a distribution fuse opens or a distribution circuit breaker trips. In systems with +24 VDC and -48 VDC distribution breaker panels, the *SSD3-LT* panel provides one breaker trip alarm for any (+24 VDC or -48 VDC) breaker trip under load. Additional LEDs indicate digital meter selection and other monitoring and control functions.

Remote Alarm Indication

One pair of Normally Closed/Normally Open (NC/NO) contacts for connection to remote customer alarm circuits are provided for each of the following:

- 1. Rectifier Failure, Minor
- 2. Rectifier Failure, Major
- 3. High DC Voltage Alarm
- 4. Low DC Voltage Alarm
- 5. Extra Low DC Voltage Alarm
- 6. Distribution Fuse/Breaker Trip
- 7. Converter Failure, Minor
- 8. Converter Failure, Major
- 9. AC Failure, Minor
- 10. AC Failure, Major
- 11. Summation Alarm
- 12. Low Voltage Disconnect Operate

General Purpose Digital Inputs

Eight inputs are provided for user-defined alarms. These inputs are intended to be remotely monitored via software (no front-panel indicators are provided for these inputs). The inputs are optically isolated, polarity-insensitive, and operate over an input range of 18 to 65 volts AC/DC. Examples of user-defined alarms are (1) door opening or closing, (2) engine generator startup, or (3) HVAC operation.

High/Low/Extra Low DC Voltage Alarm

The High/Low/Extra Low DC Voltage Alarm monitors the DC output voltage of the system and provides local and remote alarm indications if the system voltage drops below or exceeds the preset low or high voltage levels. The exact alarm settings can be read locally on the digital meters or remotely via computer through the TCP/IP Gate. Adjustments can be performed on-line without interrupting or varying the system voltage. Local alarm indication is provided by the front panel LOW, HIGH, and EXTRA LOW alarm LEDs, and remote alarm indication is accomplished by three sets of NC/NO contacts.

Two Low Voltage Disconnect Controls

The *SSD3-LT* panel incorporates a sensor and controls for optional redundant external low voltage disconnect contactors. The LVD pickup and dropout set points are read on the digital meter. Two LEDs on the panel indicate the status of the sensor (connect or disconnect). The external contactors can be supplied in ratings up through 1200 amps in either a redundant or nonredundant configuration. The two LVD controls can be adjusted independently if the TCP/IP Gate Panel is also furnished.

Equalize Control

The *SSD3-LT* panel allows all of the rectifiers in the system to be switched from FLOAT mode to EQUALIZE mode of operation either manually or automatically. Manually, this is accomplished locally via a switch on the front panel of the *SSD3-LT*, or remotely via computer if the power system is equipped with the TCP/IP Gate. Automatically, EQUALIZE mode can be initiated after an AC power failure once the AC power failure has lasted longer than the computer programmed 10-60 minute adjustable “hold-off” time period. The EQUALIZE mode reverts to FLOAT mode when a preset internal timer expires. The internal timer is adjustable remotely and locally in one hour increments up to 120 hours. The Equalize function can be disabled by setting the timer to zero hours.

Auxiliary (Shunt) Inputs. Two uncommitted inputs are provided for 0-50 millivolt DC signals. These inputs can be used to monitor individual battery string or load branch currents. The current shunts must be inserted into the system ground leg. These shunt input measurements are presented on the front panel as the “AUX AMPS” meter modes.

Thermal Management Control

Included are controls for automatic temperature compensation charging of batteries. Via temperature sensors (P/N 0000916783 - extra cost option, 6 max. per system) on the battery posts, this circuit controls the output of the rectifier(s) to prevent thermal runaway of the batteries. Beginning at 30°C (86°F), the circuit reduces the output of the rectifier(s) by 100 mV per °C (48 VDC models); 50 mV per °C (24 VDC models) with maximum output reduction attained at 57°C (135°F) (2.7 V for 48 VDC models; 1.35 VDC for 24 VDC models). (Limited to systems with 25 rectifiers or less.) Start and stop temperatures and slopes are adjustable if the power system is equipped with the TCP/IP Gate.

Internal Fuses

GMT fuses are provided for:

- Hot Remote Sense Lead
- Incoming Power to the *SSD3-LT* Panel

Shunt or SWS3 Panels

The *SSD3-LT* requires an external shunt panel or shunt/low voltage disconnect contactor/shunt panel (SWS3 - see Bulletin 450).

SSD3-LT Ordering Information

<i>Model Number</i>	<i>Part Number</i>	<i>Description</i>
<i>SSD3-LT</i>	7302000000	System monitor (explained in this bulletin). Can be used in lieu of <i>SSD2</i> Panel.
TCP/IP Gate	7305000000	PCP’s Internet Gateway Panel. Allows the customer to access the <i>SSD3-LT</i> via a standard Internet browser such as Internet Explorer® or Netscape Navigator®. See Bulletin 451. The TCP/IP Gate monitor connects to the <i>SSD3-LT</i> via the FTT-10 network port on the rear of the <i>SSD3-LT</i> panel.

Note: If panel is not purchased as part of a system, order Signal Cable Assembly - P/N 0000881614 - for customer installation.

Monitor Setup (Voltage, Current, Polarity). The *SSD3-LT* has only one part number. When the *SSD3-LT* is furnished as part of a complete DC power system, it will be configured for the correct voltage (e.g. 24 VDC or 48 VDC), current (e.g. 200 amps or 1200 amps) and polarity (e.g. positive ground or negative ground) at the factory. Configurations can be easily changed in the field. The voltage and current settings are made from the front panel using the arrow keys and the digital meter. The polarity change is made on the rear of the panel.

Shunt Panel Ordering Information.

<i>Model Number</i>	<i>Part Number</i>	<i>DC Amps</i>	<i>Mounting</i>
SP600-19	8800026014	600	19" (48 cm)
SP600-23	8800026021	600	23" (58 cm)
SP800-23	8800028025	800	23" (58 cm)
SP1200-23	8800031222	1200	23" (58 cm)

SWS3 (Shunt and Low Voltage Disconnect Contactor) Panel Ordering Information.

<i>SWS3 Model Number</i>	<i>SWS3 Part Number</i>	<i>DC Amps</i>	<i>Mounting</i>
SWS3-24/48-200-19FA	8800022040	200	19" (48 cm)
SWS3-24/48-200-23FA	8800022041	200	23" (58 cm)
SWS3-24/48-400-19FA	8800024040	400	19" (48 cm)
SWS3-24/48-400-23FA	8800024041	400	23" (58 cm)
SWS3-24/48-600-19FA*	8800026013	600	19" (48 cm)
SWS3-24/48-600-23FA*	8800026020	600	23" (58 cm)
SWS3-24/48-800-23FA*	8800028027	800	23" (58 cm)
SWS3-24/48-1200-23FA*	8800031020	1200	23" (58 cm)

Note: The SWS3 requires a PSM (SSD3.2 or SSD3-LT)

***Does not include shunt. 1200 Amp Shunt (P/N 0000900521) must be ordered separately.**

Miscellaneous Part Numbers

<i>Cables</i>	<i>Part Number</i>
• SSD3-LT - TWP-CE shelf cable	0000926868
• TWPP-CE shelf-to-shelf cable	0000926868
• TWPP-CE rack-to-rack cable	0000926869
• SSD3 LT to TCP/IP Gate	0000926892
• Alarm cable, 36 conductor	2765999511

Sold by the foot.

Application Notes

1. The SSD3-LT is designed for use with the "CE" TWPP rectifier shelf and the SWS3 LVD panel.
2. All SSD3-LT panels can be configured for flush or offset (NEBS) mounting.
3. SWS3 panels in excess of 1200 amperes are not available. SWS3 panels are only specified when the customer requires the LVD feature. If this feature is not required, use the standard shunt panel. It is also possible that the meter shunt will be incorporated into the bus detail for the system. SSD3-LT panels to monitor currents greater than 1200 amps are designed for systems with shunt panels or with the shunt integrated into the power bus detail. If an LVD is required with systems this large, the loads must be split into 1200 amp segments. Also note that the SSD3-LT can operate two LVD contactors. An additional drive relay is required if more than two contactors are needed.

