



## SSD2 System Status/Control Panel (Digital)

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



The SSD2 System Status/Control Panel monitors the operation of the DC Power System's Rectifiers, Battery, and Power Distribution Board and provides local and remote alarm indications when a failure occurs. It can be used with PS-23, TwinPack®2 and TwinPack Plus® DC Systems. The 1.75" (4.5 cm) high (1 RU) panel includes: digital meter for system monitoring, front panel LEDs for local alarm indication, Form "C" contacts for remote alarm indication and control functions for low voltage disconnect, remote equalize, and thermal management of batteries. Panels are available for 19" (48 cm) or 23" (58 cm) rack mounting. The SSD2 panel meets seismic requirements (zone 4) in accordance with Telcordia Technologies GR-63-CORE.

### Front Panel Adjustments

1. System Verify
2. System High DC Voltage Alarm
3. System Low DC 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 LVD Pickup Set Point
8. System LVD Dropout Set Point

**Ambient Temperature.**  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+65^{\circ}\text{C}$  ( $149^{\circ}\text{F}$ ).  
Note: The digital meters may not work properly below  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) but will return to normal operation above  $-20^{\circ}\text{C}$ .

**Audible Alarms.** An audible alarm with local cutoff switch operates in the event of *any* alarm. A jumper is available to manually disconnect the audible alarm in the field.

### Twenty-Two (22) 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. Load Connect/Disconnect
- E. Distribution Fuse/Circuit Breaker Disconnect
- F. AC Fail (Major or Minor)

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 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 SSD2 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.



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### Remote Alarm Indication

One set of Form "C" contacts for connection to remote customer alarm circuits are provided for each of the following:

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

### High/Low DC Voltage Alarm

The High/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 on the digital meters. Field adjustments and circuit verification can be performed on-line without interrupting or varying the system voltage which minimizes the downtime of the system. Local alarm indication is provided by the front panel LOW and HIGH alarm LEDs, and remote alarm indication is accomplished by one set of Form "C" contacts.

### Low Voltage Disconnect Control

The *SSD2* panel incorporates a sensor and controls for an optional external low voltage disconnect contactor. The sensor permits calibration and testing of the connect and disconnect points without varying the system voltage or causing the external contactor to release and disconnect

the load. 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 contactor can be supplied in ratings up through 1200 amps in either a redundant or nonredundant configuration.

### Remote Equalize Control

The *SSD2* panel is equipped with a switch to select float or equalize voltage for all the rectifiers in the plant. LED indicators are provided to indicate float and equalize operation. Provisions are included to connect the control to an external signal, such as a PCP digital equalize timer (see Bulletin 420).

### Thermal Management Control

Included are controls for automatic temperature compensation charging of batteries. Thermal sensors (P/N 0000926862 for a 1/4" terminal; P/N 0000916783 for a 3/8" terminal) are an extra cost option, 6 max. per system) on the battery posts. Part Number 8850000012 expansion panel adds 24 thermal sensor positions. 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).

### Alarm Fuses

GMT fuses are provided for:

- S – Hot Remote Sense Lead
- P – Incoming Power to the *SSD2* Panel
- A – Auxiliary System Battery DC Out

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**Ordering Information.**

The SSD2 Panel does not contain the system shunt; thus, when ordering the SSD2 Panel, a shunt panel or low voltage disconnect contactor/shunt panel (SWS2 or SWS3) **must** also be ordered. Ordering information for all panels follows:

**SSD2 Panel**

<b>Model Number</b>	<b>Part Number</b>	<b>DC Volts</b>	<b>Ground</b>	<b>Maximum DC Amps</b>	<b>Rack Width</b>
SSD2-12N-500-19	8801225000	+12	Negative	500	19" (48 cm)
SSD2-24-500-19	8802425000	-24	Positive	500	19" (48 cm)
SSD2-24-500-23	8802425001	-24	Positive	500	23" (58 cm)
SSD2-24N-500-19	8802425005	+24	Negative	500	19" (48 cm)
SSD2-24N-500-23	8802425006	+24	Negative	500	23" (58 cm)
SSD2-24-1200-19	8802431210	-24	Positive	1200	19" (48 cm)
SSD2-24-1200-23	8802431211	-24	Positive	1200	23" (58 cm)
SSD2-24N-1200-19	8802431215	+24	Negative	1200	19" (48 cm)
SSD2-24N-1200-23	8802431216	+24	Negative	1200	23" (58 cm)
SSD2-24N-2000-23	8802432020	+24	Negative	2000	23" (58 cm)
SSD2-48-500-19	8804825000	-48	Positive	500	19" (48 cm)
SSD2-48-500-23	8804825001	-48	Positive	500	23" (58 cm)
SSD2-48-1200-19	8804831210	-48	Positive	1200	19" (48 cm)
SSD2-48-1200-23	8804831211	-48	Positive	1200	23" (58 cm)
SSD2-48-2000-23	8804832020	-48	Positive	2000	23" (58 cm)
SSD2-48-5000-23	8804835001	-48	Positive	5000	23" (58 cm)

NOTE: If panel is not purchased as part of a system, order Signal Cable Assembly - P/N 0000881520 - customer installed.

SWS2 Panel						SWS3 Panel			
Model Number	Part Number	DC Amps	Access	Rack Width	Rack Units	Model Number	SWS3 Part No.	Contactor Shunt Rating	Mounting
SWS2-24/48-200F	8800022036	200	Front	19"/48 cm	2	SWS3-24/48-200-19FA	8800022042	200	19"/48 cm
SWS2-24/48-200F	8800022035	200	Front	23"/58 cm	2	SWS3-24/48-200-23FA	8800022043	200	23"/58 cm
SWS2-24/48-400F	8800024033	400	Front	19"/48 cm	2	SWS3-24/48-400-19FA	8800024044	400	19"/48 cm
SWS2-24/48-400F	8800024032	400	Front	23"/58 cm	2	SWS3-24/48-400-23FA	8800024045	400	23"/58 cm
SWS2-24/48-600F	8804826010*	600	Front	19"/48 cm	3	SWS3-24/48-600-19FA*	8800026013	600	19"/48 cm
SWS2-24/48-800F	8804831203*	800	Front	23"/58 cm	6	SWS3-24/48-600-23FA*	8800026022	600	23"/58 cm
SWS2-24/48-1200R	8804831205*	1200	Rear	23"/58 cm	6	SWS3-24/48-800-23FA*	8800028029	800	23"/58 cm
SWS2-24/48-400	8800024034	400	Front	23"/58 cm	2	SWS3-24/48-1200-23FA*	8800031021	1200	23"/58 cm
LVBD Man. Disc. Switch	8800000053	N/A	N/A	23"/58 cm	1				
SWS2-12-400F	8800024037	400	Front	19"/48 cm	2				

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

**Shunt Panel**

Part Number	DC Amps	Access	Rack Width	Rack Units
8800022026 (for output of DC/DC Converter)	200	Rear	23"/58 cm	2
8800024036	400	Front	23"/58 cm	2
8800024021	400	Front	19"/48 cm	2
8800025010	500	Rear	19"/48 cm	3
8800025023	500	Rear	23"/58 cm	3
8800028025	800	Rear	23"/58 cm	3
8800031221	1200	Rear	23"/58 cm	3