

### SDU Series, Direct Current Uninterruptible Power Supply (DC UPS) System



The SDU DIN Rail DC UPS is an advanced 24 Vdc uninterruptible power system that combines an industry leading design with a wide operational temperature range and unique installation options. The SDU DC UPS is a powerful, microprocessor controlled UPS that provides protection from power interruptions. With an input voltage range of 22.5 to 30.0 Vdc, the DC UPS is the ideal power back-up solution for your critical connected loads.

These units were designed specifically for use with SolaHD's popular SDN Series of power supplies. SolaHD's external battery module is the only one on the market that allows you to seal the electronics in the panel and maintain safety by placing the battery outside of a non-ventilated enclosure.

These units include easy to wire screw terminations for critical devices needing battery back-up. The SDU DC UPS includes an automatic self-test feature that checks the UPS and battery functions. Battery charging occurs automatically when input DC power is applied. When power fails, the DC UPS will switch to battery back-up. If the battery is no longer useful, the UPS will sound an alarm and an LED indicator will illuminate.

Back-up power protection in modern industrial applications depends mainly on AC UPS. AC is converted to DC, and converted back to AC in the AC UPS, then converted back to DC in the protected equipment power supply. By applying the new SolaHD SDU DIN Rail DC UPS, you avoid the inefficiencies of all these conversions. This design maximizes system up-time flexibility, and optimizes reliability assurance.

#### Applications

- Industrial/Machine Control
- Automation Process Control
- Computer-based Control Systems
- Conveying Equipment
- Material Handling
- Packaging Machines
- Semiconductor fabrication equipment
- DeviceNet™
- Amusement Park Equipment
- Pharmaceutical Applications
- Control Rooms



#### Features

- Modular, rugged industrial grade design
- Microprocessor based controls
- Automatic self-test feature for UPS function and battery management check
- Power module wide operation temperature range (-20 to +50°C)
- Flexible batteries back-up expansion capabilities
- Overload protection in normal and battery modes
- User replaceable batteries
- Both power and battery modules are UL508 Listed
- IP-20 rated input and output screw terminals
- No internal fan, no extra cooling required
- Sturdy, reliable all metal DIN Rail mounting connector
- LED Status Indicators
- Universal Dry Contact Relay terminals provide remote signaling
- Monitoring, diagnostics, and remote turn-on and shut-off capabilities
- Limited two-year warranty

#### Related Products

- SDN-P Series DIN Rail Power Supplies
- SDN-C Series DIN Rail Power Supplies
- STV 25K Series Surge Protective Devices

## Selection Table

Catalog Number	Description	Approx. Ship Weight lbs (kg)
SDU 10-24	240 VA, 24V/10A DIN Rail DC UPS power module, battery module is required	1.65 (0.65)
SDU 20-24	480 VA, 24V/20A DIN Rail DC UPS power module, battery module is required	1.65 (0.65)
SDU 24-BAT	24V DIN Rail/Panel Mount Battery Module (cable included)	12.0 (5.33)
SDU 24-BATEM	24V External Mount Battery Module (cable included)	16.0 (7.11)
SDU 24EXTBC6	Optional 6 ft. Battery Module cable to 24V DC UPS	0.5 (0.22)
SDU 24-DB9	Optional interface kit to convert relay contacts signals to DB9 signals	1.0 (0.45)
SDU-PMBRK	Optional chassis mount brackets to secure UPS to wall, panel, or enclosure	0.5 (0.22)

There are three individual hardware products when putting an SDU DC UPS system into operation:

1. 24 Vdc Power Supply (Recommended SolaHD SDN Series)
2. 24 Vdc SDU DC UPS Power Module
3. 24 Vdc SDU DC UPS Battery Module; or 24 Vdc SDU DC UPS External Battery Module

There are two models of the SDU DC UPS Power Module:

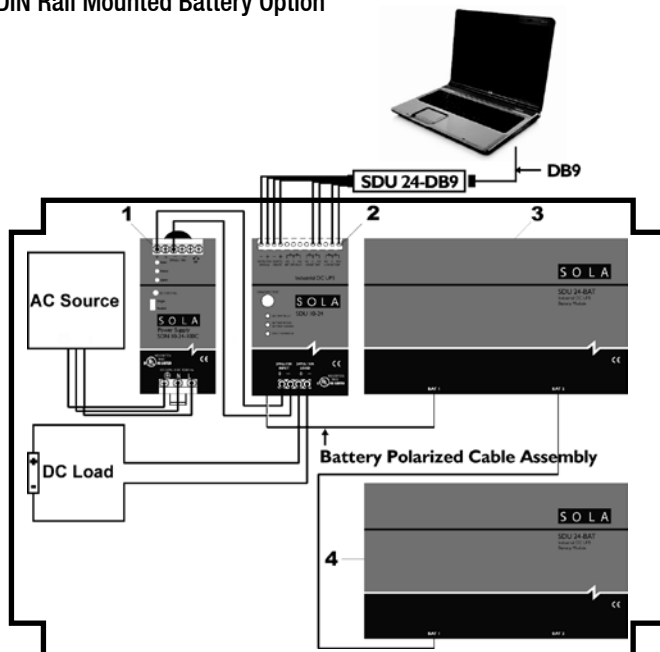
1. SDU 10-24, 24 Vdc/10amp (battery modules are required)
2. SDU 20-24, 24 Vdc/20amp (battery modules are required)

There are two models\* of the SDU DC UPS Battery Modules:

1. SDU 24-BAT, DIN Rail/Panel mount for installation in ventilated enclosure, up to 4 battery modules can be connected to the SDU DC UPS.
2. SDU 24-BATEM, Panel mount, alternate battery module for external installation of non-ventilated enclosures, only 1 battery module can be connected to the SDU DC UPS.

\*Can not use a combination of both models of the battery modules, only one model of the battery module can be connected to the SDU DC UPS.

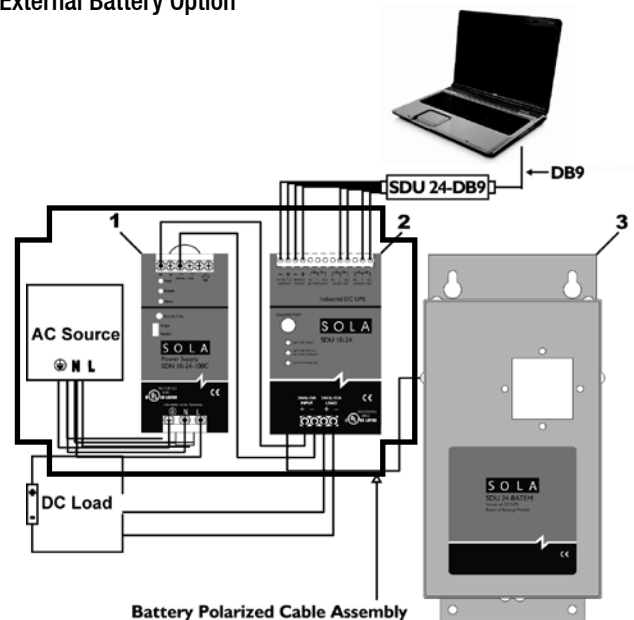
### DIN Rail Mounted Battery Option



#### Notes:

- 1) AC/DC Power Supply
- 2) Power Module: SDU 10-24 or SDU 20-24
- 3) Battery Module: SDU 24-BAT
- 4) Optional battery module for extended Back-up.

### External Battery Option



#### Notes:

- 1) AC/DC Power Supply
- 2) Power Module: SDU 10-24 or SDU 20-24
- 3) Battery Module: SDU 24-BATEM

## SDU DC UPS Power Modules Specifications

Specification	SDU 10-24	SDU 20-24
<b>Input</b>		
Nominal Input Voltage	24 Vdc	
Input Voltage Range	22.5 - 30 Vdc	
Input Fuse	DC Fuse 30A	
<b>Output</b>		
Nominal Output Voltage	24 Vdc	
Output Voltage Range	22.5 - 30 Vdc	
Output Current	10A	20A
Current Limit	12A	22A
<b>Protection</b>		
Input Protection	Fuse for overload & short circuit protection	
Overload Protection	Electrical Circuit Protection	
Short Circuit	UPS output cut off immediately	
<b>Battery Module</b>		
Type	Sealed, maintenance-free lead acid batteries.	
Charging Current	0.5 A	
Typical Recharge Time (to 90% of full capacity)	8 Hours for 1 Battery Module 24 Hours for 2 Battery Module 12 Hours for each additional Battery Module	
Back-up Time (full load) <sup>1</sup>	14 minutes	4 minutes
Protection	UPS Shutdown when battery voltage drops below 22V, to prevent the complete depletion of the battery, short circuit protection by a 30A fuse.	
<b>Physical</b>		
Net Weight – lbs (kg)	1.65 (0.75)	
Dimensions H x W x D – in. (mm)	4.88 x 3.02 x 4.55 (124 x 77 x 116)	
<b>Alarm</b>		
Battery Low	Rapid Audible Indicator every 1 second	
Overload	Continuous Audible Indicator	
<b>Environment</b>		
Audible Noise	<40 dBA (1 meter from surface)	
Power Module Operating Temperature	-20°C to +50°C	
Storage Temperature	-20°C to +70°C	
Humidity	0-95%	
Max Elevation	3500 meters (11,483 feet)	
Shock & Vibration	According to ISTA 2A	
<b>DC UPS System<sup>2</sup> Safety</b>		
US Standard	UL 60950-1, UL508, FCC Part 15, Subpart B, Class A	
Canadian Standard	CAN/CSA C22.2 No 107.1-01, CAN/CSA C22.2 No. 60950-1	
CE	Low Voltage Directive IEC 60950-1 (CB Scheme) Directive 2004/108/EC: EN 62040-2 Category C2 EN 55022 Class A + A1 + A2, CISPR 22 Class A (2005), IEC 61000-3-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6 + A1, IEC 61000-4-8, IEC 61000-2-2	
<b>General</b>		
MTBF	> 200,000 Hours, MIL-STD 217F	
<b>Installation</b>		
Output	Outputs are capable of providing high currents for short periods of time for inductive load startup or switching. Fusing may be required for wire/loads if 2x Nominal O/P current rating cannot be tolerated. Continuous current overload allows for reliable fuse tripping	
Mounting	Simple snap-on system for DIN Rail TS35/7.5 or TS35/15 or chassis-mounted, optional screw mounting set SDU-PMBRK.	
Connections	Input & Output: IP20-rated screw terminals, connector size range: 16-12 AWG (0.5-4 mm <sup>2</sup> ) for copper conductors rated 90°.	
Relay Contact Terminal Connections	IP20 screw terminals; connector size range: 24-16 AWG (0.34-4mm <sup>2</sup> )	
Case	Fully enclosed metal housing with ventilation grid to keep out small particles.	
Free Space	20 mm above and 35 mm below, 20 mm left and right, 10 mm in front	

## Notes:

1. See Battery Back-up Times on next page.
2. DC UPS System includes one power module (SDU 10-24 or SDU 20-24) and one or more battery modules (SDU 24-BAT or SDU 24BATEM)

**SDN DC UPS Battery Module Specifications**

Parameter	SDU 24-BAT	SDU 24-BATEM
<b>Nominal Voltage</b>	24 Vdc	
<b>Protection</b>	Fuse: 30A	Circuit Breaker: 24V, 25A
<b>Charging Current</b>	0.5A	0.8A
<b>Enclosure Dimension in. (mm)</b>	4.88 x 8.27 x 4.55 (124 x 210 x 116)	11.5 x 5.57 x 4.57 (292 x 142 x 116)
<b>Enclosure Type</b>	IP20	NEMA 1
<b>Terminal Connector Type</b>	Polarized Powerpole Connectors	
<b>Batteries</b>	Replaceable Batteries	
<b>Accessories</b>	1 ft. polarized battery cable	6 ft. polarized battery cable
<b>Operating Temperature</b>	-20° to +50°C	
<b>Storage Temperature</b>	-20° to +40°C	
<b>Humidity</b>	95% no condensation	
<b>Safety Standard For DC UPS System*</b>	UL60950-1, IEC 60950-1, UL508, CE CAN/CSA C22.2 No 107.1-01 CAN/CSA C22.2 No 60950-1	
<b>Weight – lbs (kg)</b>	12 (5.33)	16 (7.11)
<b>Mounting</b>	Simple snap-on system for DIN Rail TS35/7.5 or TS35/15 or chassis-mounted, optional screw mounting set <b>SDU-PMBRK.</b>	Wall/Chassis Mounting

**SDU DC UPS Back-Up Times (Typical)**

SDU 10–24 with SDU 24–BAT					
Load	20% (2A)	40% (4A)	60% (6A)	80% (8A)	100% (10A)
1 unit	113	45	30	21	14
2 units	247	114	74	48	38
3 units	396	178	117	80	58
4 units	531	233	148	111	81
SDU 10–24 with SDU 24–BATEM					
1 EBP	135	52	28	19	14
SDU 20–24 with SDU 24–BAT					
Load	20% (4A)	40% (8A)	60% (12A)	80% (16A)	100% (20A)
1 unit	46	21	10	06	04
2 units	116	50	28	17	10
3 units	178	80	46	31	20
4 units	237	113	65	43	31
SDU 20–24 with SDU 24–BATEM					
1 EBP	48	17	9	6	4

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