SDN-C Compact DIN Rail Series

The SDN-C DIN rail power supplies are the next generation of the popular SDN series. These models combine high efficiency and compact size with new visual diagnostic LEDs to offer the most performance available from SolaHD. Essential industrial features such as Sag Immunity, Power Factor Correction, and universal voltage input have been retained in this series. Wide temperature operating range and parallel operation capability make the new SDN-C units suitable to a variety of industrial applications.

Features

- Compact packaging to save space on the DIN rail
- New visual diagnostic LEDs for input and output status at a glance
- High MTBF means high reliability and long life
- Higher efficiency saves energy and lowers amount of heat generated in panel
- PowerBoost™ overload capability to start high inrush loads
- Accepts Universal voltage 85-264 Vac, 50/60 Hz input
- Single phase models meet SEMI F47 Sag Immunity standard
- Power Factor Correction (meets EN61000-3-2)
- Class I, Div. 2 Hazardous Locations
  - ATEX approval (pending)
  - Single and three-phase input available
- Patented DIN rail mounting clip
- User Adjustable output voltage accessible via front face
- Parallel capability standard
- Industrial grade design
  - -25°C to 60°C operation without derating
  - Rugged metal case and DIN connector
- User-friendly
  - LEDs for status
  - Large, rugged, accessible screw terminals
  - Easy on/off DIN mounting
- Fully tested and burned-in at factory
- RoHS compliant

UL 508 Listed
IND. CONT. EQ.
E61379

UL 60950
E137632
CUL/CSA-C22.2
No. 234-M90

EMC and
Low Volt.
Directive

Related Products

- SDN-P series
- SDP™ series
- SFL series
- SCP series
- SDU UPS

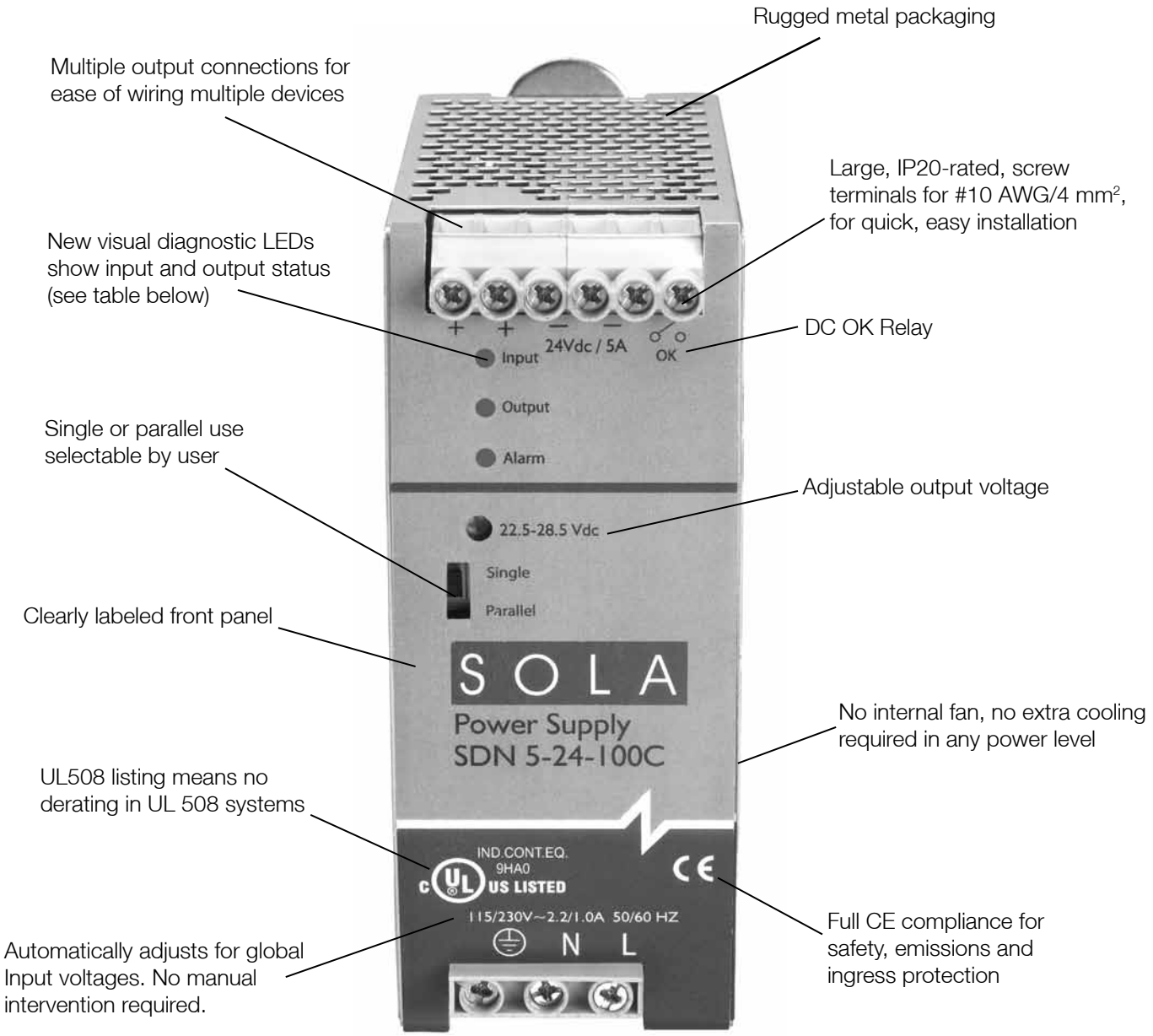
Applications

- Industrial Machine Control
- Process Control
- Conveying Equipment
- Material Handling
- Vending Machines
- Packaging Equipment
- Amusement Park Equipment
- Semiconductor Fabrication Equipment
- DeviceNet™

Accessories

- Chassis Mount Bracket (SDN-PMBRK2)

The SolaHD Difference



New narrow width saves panel space

LED Light Status Conditions

	Normal	AC Power Loss	AC Input Low	No DC	High Load	Overload	Hot	Too Hot
Input	Green	-	Yellow	Green	Green	Green	Green	Green
Output	Green	-	Green	-	Yellow	Yellow	Green	-
Alarm	-	-	-	Red	Yellow	Red	Yellow	Yellow

SDN-C Specifications (Single Phase)

Description	Catalog Number		
	SDN 5–24–100C	SDN 10–24–100C	SDN 20–24–100C
Input			
Nominal Voltage	115/230 Vac		
–AC Range	85 - 264 Vac		
–DC Range[1]	90 - 375 Vdc		
–Frequency	43-67 Hz		
Nominal Current[2]	1.65 - 0.55 A	3.2 - 1.0 A	6A / 3A
–Inrush current max.	Typ. < 15 A	Typ.< 30 A	< 40 A
Efficiency (Losses[3])	> 90% typ. (12 W)	> 90% typ. (24 W)	> 92% (38 W)
Power Factor Correction	Active power factor correction to better than 0.92		
Output			
Nominal Voltage	24 V (23.5~28.5 Vdc Adj.)		
–Tolerance	< ±2 % overall (combination Line, load, time and temperature related changes)		
Initial Voltage Setting	24.5V ± 1%		
–Ripple[4]	< 50 mVpp		<100mVpp
PARD	PARD (Periodic and Random Deviation) = 100 mV peak-peak max		
Overvoltage Protection	> 30.5 but < 33 Vdc, auto recovery		
Power Back Immunity	< 35V		
Nominal Current	5 A (120 W)	10 A (240 W)	20 A (480W)
–Peak Current[5]	1.5 x Nominal Current for 2 seconds minimum while holding voltage > 20 Vdc		
–Short Circuit Current	1.5 x Nominal Current at near zero volts at short circuit condition		
–Current Limit	PowerBoost™		
Parallel Operation	Switch selectable single unit or parallel unit operation. Units will not be damaged by parallel operation (regardless of switch position setting).		
Holdup Time	>20 ms (Full load, 100 Vac Input @ T_{amb}=+25°C) to 95% output voltage		
Voltage Fall Time	<150 mS from 95% to 10% rated voltage @ full load (T_{amb}=+25°C)		
Line and Load Regulation	< 0.5%		
General			
EMC: –Emissions	EN61000-6-2:2001, EN61000-6-3:2001, Class B EN55011, EN55022 Radiated and Conducted including Annex. A, EN61000-3-2		
–Immunity	EN61000-6-1:2001, EN61000-6-2:2001, EN61000-4-2 Level 4, EN61000-4-3 Level 3, EN61000-4-6 Level 3, EN61000-4-4 Level 4 input and level 3 output. EN61000-4-5 Isolation class 4, EN61000-4-11, IEC 61000-4-34 voltage dip immunity standard		
Approvals	UL508 Listed, cULus; UL 60950-1, cURus; IEC60950-1; Class I, Div. 2, Hazadous location approval; CE (LVD 73/23 & 2004/108/EC), (EMC 89/336 & 93/68/EEC); EN61000-3-2		
Temperature[7]	Storage: -40°C to + 85°C, Operation -25°C to +60°C full power, with linear derating to half power from 60 to 70°C (Convection cooling, no forced air required). Operation up to 50% load permissible with sideways or front side up mounting orientation.		
MTBF[6]	> 550,000 hrs		> 450,000 hrs
Warranty	5 Years		
General Protection/Safety	Protected against continuous short -circuit, continuous overload, continuous open circuit. Protection Class 1 (IEC536), degree of protection IP20 (IEC60529) Safe low voltage: SELV (acc. IEC60950-1)		
Status Indicators	**Visual:** 3 status LEDs (Input, Output, Alarm) **Relay:** N.O. contact rated 200ma/50 Vdc		
Installation			
Fusing –Input	Internally fused		
–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 to DIN TS35/7.5 or TS35/15 rail system.		
Connections	**Input:** Screw terminals, connector size range: 16-10 AWG (1.5-6 mm^2) for solid conductors. **Output:** Two terminals per output, connector size range: 16-10 AWG (1.5-6 mm^2) for solid conductors.		
Case	Fully enclosed metal housing with fine ventilation grid to keep out small parts.		
–Free Space	15 mm in front, 25 ~ 40 mm above and below, 10 mm left and right.		
H x W x D (inches/mm)	4.88 × 1.97 × 4.55 (124 × 50 × 116)	4.88 × 2.36 × 4.55 (124 × 60 × 116)	4.88 x 3.42 x 4.98 (124 x 87 x 126.6)
Weight (lbs/kg)	1.65 (0.75)	1.98 (0.9)	2.6 (1.2)

1. Not UL listed for DC input.
2. Input current ratings are conservatively specified with low input, worst case efficiency and power factor.
3. Losses are heat dissipation in watts at full load, nominal input line.
4. Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor.
5. Peak current is calculated at 24 Volt levels.
6. Demonstrated through extended life test.
7. Contact tech support for operation at -25°C.

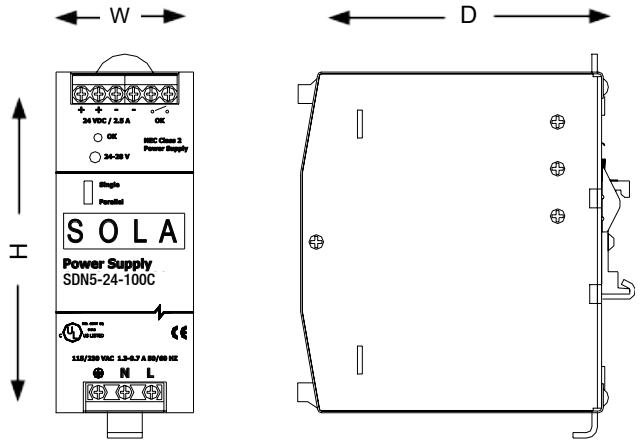
Visit our website at www.solahd.com or
contact Technical Services at (800) 377-4384 with any questions.

SDN-C Specifications (Three Phase)

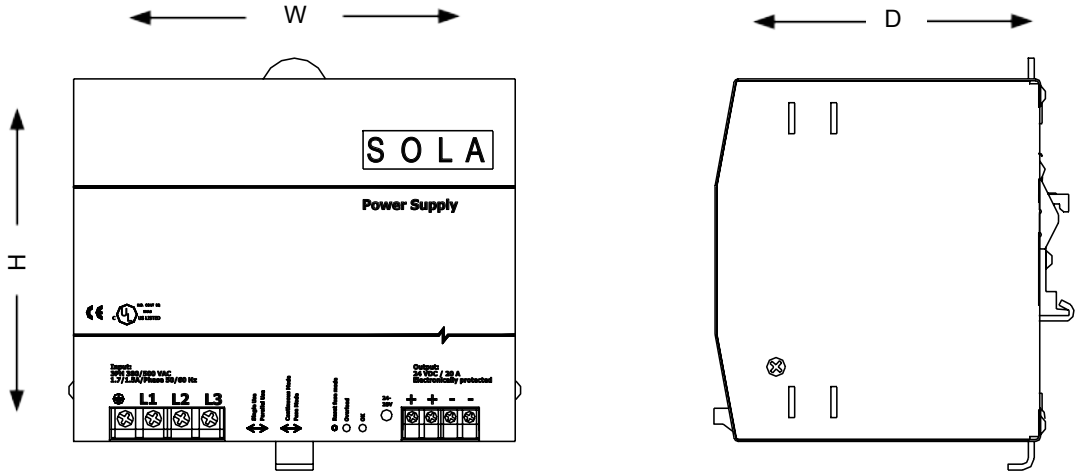
Description	Catalog Number	
	SDN 20–24–480CC	SDN 40–24–480C
Input		
Nominal Voltage	380 - 480 Vac	
Two–phase input	Yes [1]	
–AC Range Continuous [2]	320 - 540 Vac	
–DC Range Continuous	450 - 760 Vdc	TBD
–DC Range Short Term [3]	420 - 780 Vdc	TBD
–Frequency	50 - 60 Hz	
Nominal Current [4]	3 x 0.9 A or 2 x 1.3 A	3 x 1.6 A
–Inrush Current Max.	Negligible	Negligible
Efficiency (Losses [5])	93% (42 W)	94% (78 W)
Power Factor Correction	Active Power Factor Correction	
Output		
Turn on Time	Typ. 1s	
Voltage Rise Time	< 100mS full resistance load (T_{amb}=+25°C)	
Power Back Immunity	< 35V	
Overvoltage Protection	> 30.5 but < 33 Vdc, auto recovery	
Nominal Voltage	24V (24-28Vdc Adjustable)	
Voltage Regulation	< ± 2% overall	
Initial Voltage Setting	24.5V ± 1%	
–Ripple [6]	< 100mVpp	
PARD	PARD (Periodic and Random Deviation) = 200mV peak-peak max	
Nominal Current	20 A (480 W) (constant power, not constant)	40 A (960 W)
–Peak Current [7]	1.5 × Nominal Current for 4 seconds minimum while holding voltage > 20 Vdc	
–Current Limit	PowerBoost™	
Derating (T amb=60–70 °C)	typ. 24W/°C	typ. 48 W/°C
Holdup Time	>20 ms	>15 ms
Voltage Fall Time	<50 mS from 95% to 10% rated voltage @ full load (T_{amb}=+25°C)	
Parallel Operation [8]	Single or parallel operation selectable via front switch. For redundant operation, use of external diode module is preferred	SDN 40 uses active paralleling
General		
Case	Fully enclosed metal housing with fine ventilation grid to keep out small parts.	
Min. Required Free Space	70mm above and below, 10mm left and right (same as manual)	70mm above and below, 15mm in front, 25mm left & right
Max. Dimensions HxWxD (in/mm)	4.85 x 2.56 x 4.68 (123.3 x 85 x 118.8)	4.85 x 7.09 x 4.85 (123.3 x 180 x 123.17)
Weight (lbs/g)	2.8 lb (1300 g)	5.3 lb (2400 g)
EMC: –Emissions	EN61000-6-3:2001, Class B EN55011, EN55022 Radiated and Conducted including Annex. A, EN61000-3-2	
–Immunity	EN61000-6-1:2001, EN61000-6-2:2001, EN61000-4-2 Level 4, EN61000-4-3 Level 3, EN61000-4-6 Level 3, EN61000-4-4 Level 4 input and level 3 output. EN61000-4-5 Isolation class 4, EN61000-4-11, Semi F47 sag immunity	
Approvals	UL508 Listed, cULus; UL60950-1, cURus; IEC60950-1; ISA 12.12.01 Class 1 Div 2, CE (LVD 73/23 & 2004/108/EC), (EMC 89/336 & 93/68/EEC); EN61000-3-2,EN 60079-15 (Class 1, Zone 2)	
Temperature	Storage: -40°C to + 85°C, Operation -25°C to +60°C full power, with linear derating to half power from 60°C to 70°C (Convection cooling, no forced air required). Operation up to 50% load permissible with sideways or front side up mounting orientation.	
Humidity	< 90% RH, noncondensing; IEC 60068-2-2, 68-2-3	
Altitude	0 to 3000 meters (0 to 10,000 feet)	
Vibration	2.5(g) RMS, 10-2000 Hz (random); three axes for 20 minutes each - IEC 60068-2-6	
Shock	3(g) peak, three axes, 11mseconds for each axis - IEC 60068-2-27	
Warranty	5 Years	
MTBF	> 550,000 hrs MTBF (Nominal voltage, full load, T ambient = 25°C	
General Protection/Safety	Protected against short -circuit, overload, open circuit. Protection class 1 (IEC536), degree of protection IP20 (IEC 529), Safe low voltage: SELV (acc. EN60950)	
Over–Temperature Protection	LED Alarm, Output shutdown with automatic restart	
Status Indicators	**Visual:** 3 status LEDs (Input, Output, Alarm); **Relay:** SSR or dry relay contact, signal active when Vout = 18.5Vdc = +/-5%	
Installation		
Fusing: –Input	Externally fused	
–Output	Not fused. Output is capable of providing high currents (PowerBoost) for motor load startup.	
Mounting	Simple snap-on to DIN TS35/7.5 or TS35/15 rail system. Unit should handle normal shock and vibration of industrial use and transportation without falling off the rail.	
Connections [9]	**Input:** screw terminals, Wiring for the connector will be ground on the left (when looking at the front of the unit), connector size range: 16-10AWG (1.5-6mm²) for solid conductors. **Output:** connector size range, wire gauge 6-7 AWG for SDN40; all other models: 16-10AWG (1.5-6mm²) for solid conductors. The connector color will be gray or off-white.	

1. SDN20 will operate at 75% load and SDN40 will operate at 50% load under loss of 1 phase. Units will shut down if thermal threshold is exceeded under this condition.
2. Unit passed input voltage overstress test at 600 Vac maximum without failure.
3. DC operation will require the user to provide the proper input circuit protection.
4. Input current ratings are specified with low input, line conditions, worst case efficiency values and power factor spikes. Input current at nominal input settings will be typically half these values.
5. Losses are heat dissipation in watts at full load, nominal line.
6. Ripple/noise is stated as typical values when measured with a 20 MHZ, bandwidth scope and 50 Ohm resister.
7. SDN 20 and SDN 40 unit will go to HICCUP mode. SDN 5 and SDN 10 will maintain min 4 secs to deliver 150% load then drops to almost zero V out. The output voltage will immediately drop to almost zero when load rises above 150%.
8. All models except the 40amp unit are capable of parallel operation by use of a jumper pin, accessible by the end user. 40amp has current sharing signal.
9. SDN40-24-480 only = Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND).

SDN-C Series Dimensions



Catalog Number	Dimensions – inches (mm)		
	H	W	D
SDN 5–24–100C	4.88 (124)	1.97 (50)	4.55 (116)
SDN 10–24–100C	4.88 (124)	2.36 (60)	4.55 (116)
SDN 20–24–100C	4.88 (124)	3.42 (87)	4.98 (126.6)
SDN 20–24–480CC	4.85 (123)	2.56 (85)	4.68 (118.8)



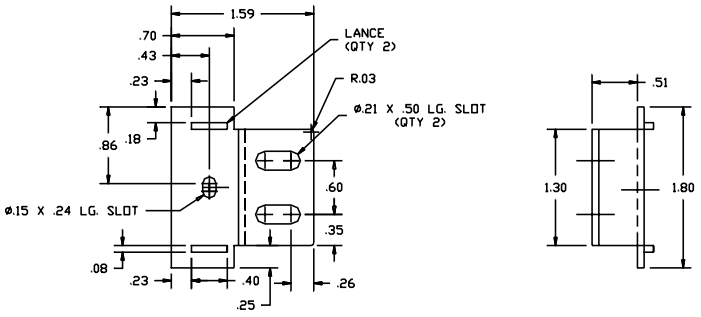
Catalog Number	Dimensions – inches (mm)		
	H	W	D
SDN 40–24–480C	4.85 (123)	7.09 (180)	4.85 (123)

SDN-C Series Mounting (cont.)

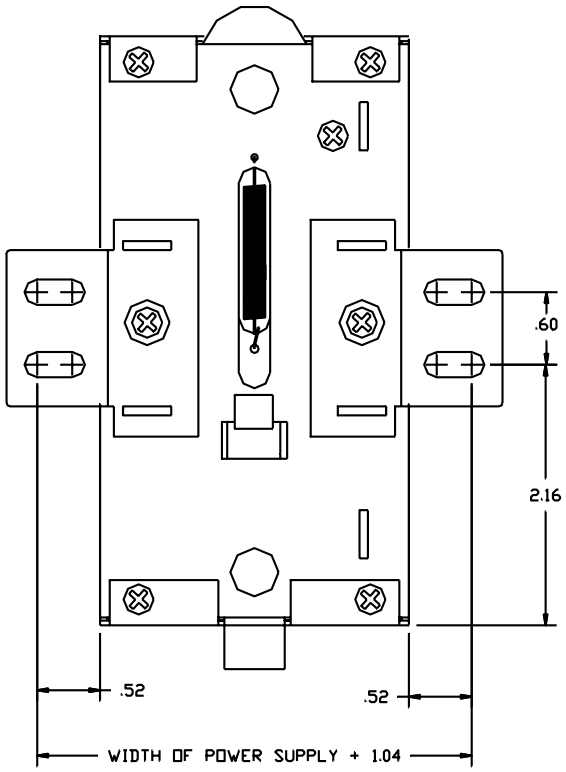
Chassis Mounting

Instead of snapping a Sola SDN™ unit on the DIN Rail, you can also attach it using the screw mounting set SDN-PMBRK2.

This set consists of two metal brackets, which replace the existing two aluminum profiles.



Dimensions



SDN-C Series Mounting

DIN Rail Mounting

Snap on the DIN Rail:

1. Tilt unit slightly backwards
2. Put it onto the DIN Rail
3. Push downwards until stopped
4. Push at the lower front edge to lock
5. Shake the unit slightly to ensure that the retainer has locked

Alternative Panel Mount: Using the optional SDN–PMBRK2 accessory, the unit can be screw mounted to a panel.

Detachment from DIN Rail: