SDN-C Performance DIN Rail Series

E61379 E137632 E234790

High performance specifications and extensive international certifications ensure that the SolaHD SDN-C is suitable for the most extreme environments, including hazardous locations and off-shore applications. Features like wide operating temperature range, power boost capability, and adjustable output voltage ensure reliable operation in the harshest industrial environments. Parallel operation, extensive LED diagnostics, and universal AC or DC input voltage simplify installation and maintenance. For added reliability, the SDN-C power supplies can be used with the SolaHD Redundancy modules to provide redundant power supply operation.

Applications

- Industrial Automation
- Process Control
- Material Handling and Conveyors
- Hazardous Locations
- Marine Applications

Features

- Extensive international hazardous location certifications, including Class I, Zone 2, ATEX, IECEx, ExEAC. Hazardous location temperature code (T-Code) rating of T4.
- International off-shore certifications, including ABS and DNV-GL
- PowerBoost™ enables short duration overload capability, to start loads with high inrush current
- Three LEDs provide extensive diagnostics
- Dual output terminals for convenience in wiring
- DC OK relay to provide diagnostic information to a PLC, controller, or monitoring system
- Universal AC and DC input voltages to accommodate global requirements
- Wide operating temperature range accommodates both extreme hot and extreme cold environments
- Active Power Factor Correction on most models
- Parallel operation capability standard
- Supports redundant power supply operation using optional SDN™ Redundancy modules
- 5-year limited warranty

* Refer to user manual for installation requirements when used in hazardous locations.

Certifications and Compliances *

All Models

- c UL us Listed, Ind. Control Equipment, E61379
  - UL 508, CSA C22.2 No. 107.1
- c TÜV us UL Recognized Component, ITE, E137632
  - UL 60950-1/CSA C22.2 No. 60950-1, 2nd Edition
- c TÜV us UL Recognized Component, Class I, Div 2; Class I Zone 2; T4 E234790
- CE - Low Voltage Directive
  - IEC/EN60950-1, 2nd Edition
- RoHS Compliant

Models SDN 5-24-100C, SDN 10-24-100C, SDN 16-12-100C, SDN 20-24-100C, SDN 40-24-100C, SDN 5-24-480C, SDN 10-24-480C, SDN 20-24-480CD

- c TÜV us UL Recognized Component, Haz. Loc., E234790
  - UL60079-0/CSA E60079-0, UL 60079-15, CSA E60079-15
  - Class I, Zone 2, AEx nA nC IIC, Ex nA nC IIC
- ATEX Directive
  - EN60079-0, EN60079-7, EN60079-15
  - II 3 G, Ex ec nC IIC Gc
- ***IECEx*** Certified
  - IEC 60079-0, IEC 60079-7, IEC 60079-15
  - Ex ec nC IIC Gc

Models SDN 5-24-100C, SDN 10-24-100C, SDN 16-12-100C, SDN 20-24-100C, SDN 40-24-100C, SDN 5-24-480C, SDN 10-24-480C

- ExEAC TR CU 012/2011 Safety of Equipment intended for Explosive Atmospheres
- ABS Type Approval

Models SDN 5-24-100C, SDN 10-24-100C, SDN 16-12-100C, SDN 20-24-100C, SDN 40-24-100C

- DNV-GL Type Approved

Models SDN 5-24-100C, SDN 10-24-100C, SDN 20-24-100C, SDN 40-24-100C

- KC Certified

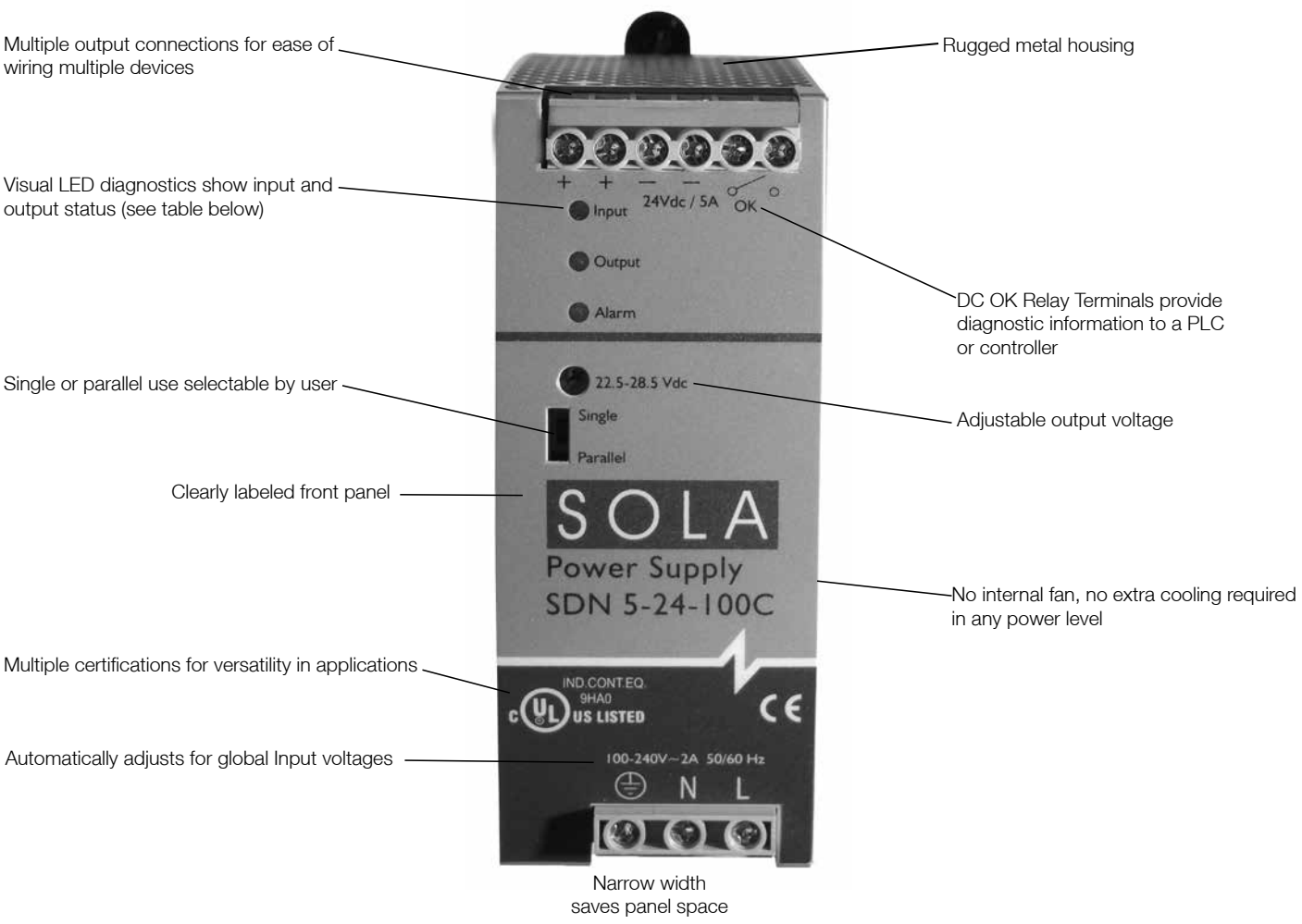
Related Products

- SDN-C Redundancy Modules
- IP67 SCP-X Extreme Environment Series
- SDU UPS

Accessories

- Chassis Mount Brackets

The SolaHD Difference



LED Light Status Conditions

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

SDN-C Specifications (Single Phase)

Description	Catalog Number				
	SDN 16–12–100C	SDN 5–24–100C	SDN 10–24–100C	SDN 20–24–100C	SDN 40–24–100C
Input					
Nominal AC Voltage (Range)	100 - 240 Vac (85-264 Vac)				
Nominal DC Voltage (range)	100-340 Vdc (90-375 Vdc)			100-250 Vdc (90-275 Vdc)	120-340 Vdc (108-375 Vdc)
Frequency	43 - 67 Hz				
Nominal Current [1]	1.77 – 0.9 A	1.65 - 0.55 A	3.2 - 1.0 A	6 - 3 A	12 - 4 A
–Inrush current	Typ. <5.8A at 120 Vac, <12.7A at 230 Vac, measured at 25°C	Typ. <3.7A at 120 Vac, <7.4A at 230 Vac, measured at 25°C	Typ. <12.7A at 120 Vac, <24.8A at 230 Vac, measured at 25°C	Typ. <5.8A at 120 Vac, <11.5A at 230 Vac, measured at 25°C	Typ. <5.8A at 120 Vac, <11.5A at 230 Vac, measured at 25°C
Efficiency (Losses [2])	> 86.5% typ. (24 W)	> 88% typ. (14 W)	> 90% typ. (24 W)	> 92% (38 W)	> 93 % (67 W)
Power Factor Correction	Active power factor correction typ. 0.98 @ 115 Vac/ 0.92 @ 230 Vac				
Output					
Nominal Voltage	12 V (12-15 Vdc Adj.)	24 V (23.5-28.5 Vdc Adj.)			
Initial Voltage Setting	12.5 V ± 1%	24.5 V ± 1%			
–Tolerance	< ±2 % overall (combination Line, load, time and temperature related changes)				
–Ripple [3]	< 100 mVpp	< 50 mVpp		< 100 mVpp	
PARD (Periodic and Random Deviation)	100 mVpp max				
Nominal Current (Rated Power at +60°C)	16 A (192 W)	5 A (120 W)	10 A (240 W)	20 A (480 W)	40 A (960 W)
Parallel Operation [4]	Single or Parallel operation selectable via front switch.				Active Paralleling.
Turn On Time	< 1 s after AC is applied to input at full resistive load (Tamb=+25°C). <1.5 ms with capacitive load 7000µF				
Holdup Time	>40ms (Full load, 100 Vac Input @ T_{amb}=+25°C) to 95% output voltage	>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)				
Protection					
–Short Circuit	Output automatically goes to near zero and output is protected from continuous short circuit. Auto-recovery.				
–Peak Current [5]	1.5 × Nominal Current for > 4 seconds minimum while holding voltage > 20 Vdc (> 10 Vdc for SDN 16-12-100C)				
–Overcurrent Protection	PowerBoost™				
Back EMF Immunity	< 18 V No damage, auto-recovery	< 35 V No damage, auto-recovery			
Overvoltage Protection	> 18 but < 20 Vdc, auto-recovery	> 30.5 but < 33 Vdc, auto-recovery			
Overtemperature Protection	LED Alarm and Output shutdown , auto-recovery				
Environmental Data					
Emissions	EN61000-6-3, EN61000-6-4, Class B EN55011, EN61000-3-2 Class A, Class B EN 55032, EN 61326-1 Class B, EN 61000-3-3				
Immunity	EN 55024, EN 61000-6-1, EN 61000-6-2, EN 61326-1, SEMI F47				
General Protection/ Safety	Protected against continuous short circuit, continuous overload, continuous open circuit. IEC 60950-1: Class I Earthed, Output is SELV (Safety Extra Low Voltage), Environmental Rating: Pollution Degree 2 IEC 60529 Ingress Protection Rating: IP20				
Temperature [6]	Storage: -40°C to +85°C, Operation -40°C to +60°C full power, with linear derating to 75% power from +60°C to 70°C (Convection cooling). Operation up to 50% load with sideways or front-side-up mounting orientation.				
Humidity	5 to 95 % RH Non-condensing; IEC 60068-2-2, IEC 60068-2-3				
Vibration	2.5g RMS, 10-2000 Hz (random); three axes for 20 minutes each - IEC 60068-2-6				
Shock	10(g) RMS, three axes, 11mseconds for each axis - IEC 60068-2-27				
Altitude	0 to 6000 meters (0 to 20,000 feet) per MIL-STD-810F				

1. Input current ratings are conservatively specified with low AC input, worst case efficiency and power factor.
2. Losses are heat dissipation in watts at full load, nominal AC input line.
3. Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor.
4. All models are capable of paralleling. For redundant operation, please use external Redundancy module. Only the 40A uses Active paralleling scheme. Please refer to user manual for details.
5. Peak current is calculated at nominal voltage levels.
6. Contact tech support for operation at -40°C.

SDN-C Specifications (Single Phase) continued

Description		Catalog Number				
		SDN 16–12–100C	SDN 5–24–100C	SDN 10–24–100C	SDN 20–24–100C	SDN 40–24–100C
Reliability						
MTBF	**Telcordia SR–332 Issue 2 Method 1 Case 3 @ 25°C**	>2,088,000 hours @ 115 Vac >2,133,000 hours @ 230 Vac	>1,800,000 hours @ 115 Vac >2,100,000 hours @ 230 Vac	> 550,000 hours @ 115 Vac >650,000 hours @ 230 Vac	>800,000 hours @ 115 Vac >850,000 hours @ 230 Vac	>550,000 hours @ 115 Vac >570,000 hours @ 230 Vac
	Telcordia SR–332 Issue 2 Method 1 Case 3 @ 40°C	>1,112,000 hours @ 115 Vac >1,170,000 hours @ 230 Vac	>1,000,000 hours @ 115 Vac >1,100,000 hours @ 230 Vac	>300,000 hours @ 115 Vac >400,000 hours @ 230 Vac	>500,000 hours @ 115 Vac >570,000 hours @ 230 Vac	>360,000 hours @ 115 Vac >370,000 hours @ 230 Vac
Installation						
Fusing –Input		Input Branch fuse or circuit breaker should be provided by customer. See manual for details.				
–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 [7,8] (Screw Type)	**Input**	16–10 AWG (1.5–6 mm^2) solid or stranded conductors. Screw torque: 4.4-6.5 lb-inch (50-73 N-cm).				13-10 AWG (3-6 mm^2) solid/stranded conductors. Screw Torque: 4.4 lb-inch (50 N-cm).
	Output (dual output terminals)	16–10 AWG (1.5–6 mm^2) for solid or stranded conductors. Screw torque: 4.4-6.5 lb-inch (50-73 N-cm).				7–6 AWG (10.6–13 mm^2) solid/stranded conductors. Screw Torque: 15.6 lb-inch (176 N-cm)
–Free Space	**Above & Below**	0.98 in (25 mm)			1.6 in (40 mm)	0.98in (25mm)
	Left & Right	0.39 in (10mm)				0.59in (15mm)
	Front	0.59 (15)				
Dimensions – WxDxH in (mm)		4.85 × 2.36 × 4.36 (123.0 × 60.0 × 110.0)	4.85 × 1.97 × 4.36 (123.0 × 50.0 × 110.0)	4.85 × 2.36 × 4.36 (123.0 × 60.0 × 110.0)	4.85 x 3.42 x 4.98 (123.0 x 87.0 x 127.0)	4.85 x 7.09 x 4.81 (123.0 x 180.0 x 122.0)
Weight – lbs (kg)		1.76 (0.80)	1.3 (0.6)	1.7 (0.8)	3.0 (1.4)	6.0 (2.8)
General						
Case		Fully enclosed metal housing with fine ventilation grid to keep out small parts. IP20 touch proof				
Status Indicators		Visual: 3 status LEDs (Input, Output, Alarm) Relay: N.O. contact rated 200mA/50 Vdc Signal Active when Vout > 18.5 Vdc +/-5% (Vout > 10.8 Vdc for SDN 16-12-100C)				
Warranty		5 Year Limited Warranty				

7. Screw terminals. Use only one copper wire per terminal. Non-ratcheting torque driver recommended.
8. SDN 40-24-100C only — Provided with Signal Mode terminal block which includes the following features: DC OK, Ground signal, PS ON, I_share connection. Refer to Signals Manual for terminal connection details..

SDN-C Specifications (Three Phase)

Description	Catalog Number			
	SDN 5–24–480C	SDN 10–24–480C	SDN 20–24–480CD	SDN 40–24–480C
Input				
Nominal AC Voltage (Range)	380 - 480 Vac (320 - 540 Vac), 3-phase			
Two–phase input [1]	Yes			
Nominal DC Voltage (Range)	600 Vdc (+/- 50 Vdc)			
Frequency	50/60 Hz			
Nominal Current [2]	3 x 0.5 A	3 x 0.8 A	3 x 0.9A	3 x 1.6A
–Inrush current max.	Typ. < 25 A		Negligible	
Efficiency (Losses [3])	> 85% (18 W)	91% (24W)	93% (42 W)	94% (78 W)
Power Factor Correction	Meets EN61000-3-2 Class A		Active Power Factor Correction > 0.92	
Output				
Nominal Voltage [4]	24 V (23.5 – 28.5 Vdc Adj.)			
Initial Voltage Setting	24.5 V ± 1%			
–Tolerance	< ±2 % overall (combination Line, load, time and temperature related changes)			
–Ripple [5]	< 50 mVpp		< 100 mVpp	
PARD (Periodic and Random Deviation)	100 mVpp max		200 mVpp max	
Nominal Current (Rated Power)	5 A (120 W)	10 A (240 W)	20 A (480 W)	40 A (960 W)
Parallel Operation [6]	Single or Parallel operation selectable via front switch.			Active Paralleling.
Turn On Time	< 1 s after AC is applied to input at full resistive load (Tamb=+25°C). <1.5 s With capacitive load 7000µF			
Holdup Time (Full load, 100 Vac Input @ T = +25°C)	20 ms			15 ms
Voltage Fall Time	<150 mS from 95% to 10% rated voltage @ full load (T =+25°C)			
Protection				
–Short Circuit Current	Voltage output automatically goes to near zero and output is protected from continuous short circuit. Auto-recovery.			
–Peak Current [7]	1.5 × Nominal Current for > 4 seconds minimum while holding voltage > 20 Vdc			
–Current Limit	PowerBoost™			
Back EMF Immunity	< 35 V No damage, auto-recovery			
Overvoltage Protection	> 30.5 but < 33 Vdc, auto-recovery			
Over Temperature Protection	LED Alarm and Output shutdown , auto-recovery			
Environmental Data				
Emissions	EN 61000-6-3, EN 55011 Class B, EN 55022 Class B, EN 61326-1, EN 61000-3-2, EN 61000-3-3		EN 61000-6-3, EN 55011 Class B, EN 55032 Class B, EN 61326-1, EN 61000-3-2, EN 61000-3-3	EN 55011 Class B, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3
Immunity	EN 55024, EN 61326-1, EN 61000-6-1, EN 61000-6-2, SEMI F47		EN 55024, EN 61326-1, EN 61000-6-1, EN 61000-6-2, SEMI F47	EN 61000-4-2, EN 61000-4-4, EN 61000-4-5, SEMI F47
General Protection/ Safety	Protected against continuous short circuit, continuous overload, continuous open circuit. IEC 60950-1: Class I Earthed, Output is SELV (Safety Extra Low Voltage), Environmental Rating: Pollution Degree 2 IEC 60529 Ingress Protection Rating: IP20			
Temperature [8]	Storage: -40°C to + 85°C, Operation -40°C to +60°C full power, with linear derating to 75% 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.			
Humidity	5 to 95 % RH Non-condensing, IEC 60068-2-2, IEC 60068-2-3			
Vibration	2.5g RMS, 10-2000 Hz (random); three axes for 20 minutes each - IEC 60068-2-6			
Shock	10g RMS, three axes, 11mseconds for each axis - IEC 60068-2-27			
Altitude	0 to 3000 meters (0 to 10,000 feet)			

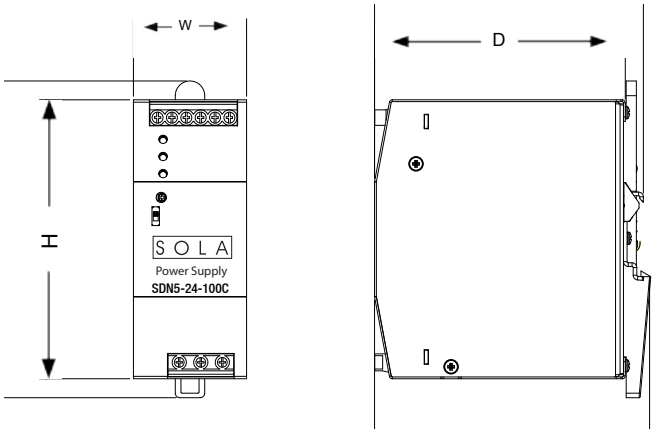
1. In the event of a phase loss, the power supply will continue to operate normally. However, the resulting lower rectified RMS voltage can cause excessive heat build up, which may eventually cause the unit to shut down if maximum operating temperature is exceeded.
2. Input current ratings are specified with low AC 3-phase input, line conditions, worst case efficiency values and power factor spikes. Input current at nominal AC 3-phase input will typically be half these values.
3. Losses are heat dissipation in watts at full load, nominal line.
4. 24-28 Vdc adjustable guaranteed at full load.
5. Ripple/noise is stated as typical values when measured with a 20 MHZ, bandwidth scope and 50 Ohm resistor
6. All models are capable of paralleling. For redundant operation, please use external Redundancy module. Only the 40A uses active paralleling scheme. Please refer to user manual for details.
7. SDN 20 and SDN 40 are capable of delivering 150% load for approximately 4s before the unit will go to HICCUP mode. SDN 5 and 10 will maintain minimum 4s to deliver 150% load then drops to almost zero Vout. The output voltage will immediately drop to almost zero when load rises above 150%.
8. Contact Tech Support for operation -40°C.

SDN-C Specifications (Three Phase)

Description		Catalog Number			
		SDN 5–24–480C	SDN 10–24–480C	SDN 20–24–480CD	SDN 40–24–480C
Reliability					
MTBF	**Telcordia SR–332 Issue 2 Method 1 Case 3 @ 25°C**	>1,100,000 hours @ 380 Vac >900,000 hours @ 480 Vac	>1,400,000 hours @ 380 Vac >900,000 hours @ 480 Vac	>630,000 hours @ 380 Vac >630,000 hours @ 480 Vac	>600,000 hours @ 380 Vac >550,000 hours @ 480 Vac
	Telcordia SR–332 Issue 2 Method 1 Case 3 @ 40°C	>600,000 hours @ 380 Vac >500,000 hours @ 480 Vac	>910,000 hours @ 380 Vac >600,000 hours @ 480 Vac	>460,000 hours @ 380 Vac >450,000 hours @ 480 Vac SDN 20-24-480CR	>380,000 hours @ 380 Vac >360,000 hours @ 480 Vac
Status Indicators		Visual: 3 status LEDs (Input, Output, Alarm) Relay: N.O. contact rated 200mA/50 Vdc, Signal Active when Vout> 18.5 Vdc +/-5%			
Installation					
Fusing –Input		Input Branch fuse or circuit breaker should be provided by customer. See manual for details.			
–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 [9,10] (Screw Type)	**Input**	16-10 AWG (1.5-6 mm^2) for solid conductors. Screw Torque: 4.4 lb-in (~ 50 N-cm).			
	Output	16-10 AWG (1.5-6 mm^2) for solid conductors. Screw Torque: 7 lb-inch (~ 80 N-cm)			7–6 AWG (10.6–13 mm^2) solid or stranded conductors. Screw Torque: 15.6 lb-inch (176 N-cm)
–Free Space	**Above & Below**	0.98 in (25 mm)		1.6 in (40 mm)	2.80 in (70mm)
	Left & Right	0.98in (25mm)			
	Front	0.59 in. (15 mm)			
Dimensions – WxDxH in (mm)		4.85 × 1.97 × 4.36 (123.0 × 50.0 × 110.0)	4.85 × 2.36 × 4.36 (123.0 × 60.0 × 110.0)	4.85 x 3.42 x 4.98 (123.0 x 87.0 x 127.0)	4.85 x 7.09 x 4.66 (123.0 x 180.0 x 119.0)
Weight – lbs (kg)		1.2 (0.5)	1.5 (0.7)	2.7 (1.2)	5.3 (2.4)
General					
Case		Fully enclosed metal housing with fine ventilation grid to keep out small parts. IP20 touch proof			
Status Indicators		Visual: 3 status LEDs (Input, Output, Alarm) Relay: N.O. contact rated 200mA/50 Vdc, Signal Active when Vout> 18.5 Vdc +/-5%			
Warranty		5 Year Limited Warranty			

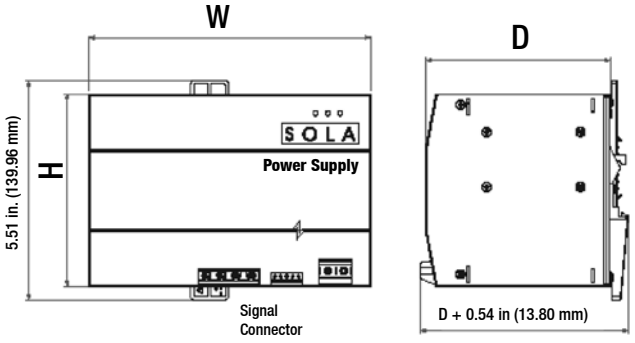
9. Screw terminals. Use only one copper wire per terminal. Non-ratcheting torque driver recommended.
10. SDN 40-24-480C only: Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND). Please refer to Signals Manual for details.

SDN-C Series Dimensions

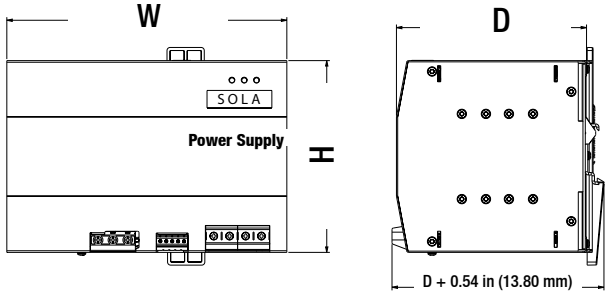


Catalog Number	Dimensions – inches (mm)		
	H	W	D
SDN 5–24–100C	4.85 (123.0)	1.97 (50.0)	4.36 (111.0)
SDN 10–24–100C	4.85 (123.0)	2.36 (60.0)	4.36 (111.0)
SDN 16–12–100C	4.85 (123.0)	2.36 (60.0)	4.36 (111.0)
SDN 20–24–100C	4.85 (123.0)	3.42 (87.0)	4.98 (127.0)
SDN 5–24–480C	4.85 (123.0)	1.97 (50.0)	4.36 (111.0)
SDN 10–24–480C	4.85 (123.0)	2.36 (60.0)	4.36 (111.0)
SDN 20–24–480CD	4.85 (123.0)	3.42 (87.0)	4.98 (127.0)

SDN 40-24-480C Dimensions



SDN 40-24-100C Dimensions



Voltage adjustment potentiometer located on top of power supply

Catalog Number	Dimensions – inches (mm)		
	H	W	D
SDN 40–24–100C	4.85 (123.0)	7.09 (180.0)	4.81 (122.0)
SDN 40–24–480C	4.85 (123.0)	7.09 (180.0)	4.66 (119.0)

SDN 40-24-100C and SDN 40-24-480C output signaling terminal block features: Shut Down, Power Good, Current Monitor, Current Balance, GND, and active current sharing through I_SHARE connectors (See Signals Manual for connection information).

SDN-C Series Mounting

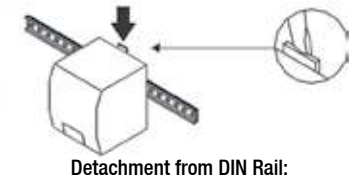
SolaHD SDN-C power supplies are designed to be easily and reliably mounted to DIN rail. For applications requiring mounting the power supply directly to the panel, optional Panel Mount Adapter Brackets are available.

DIN Rail Mounting

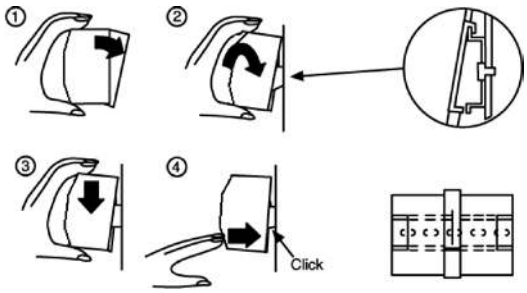
Snap on the DIN rail:

1. Tilt unit slightly backwards. 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-PMBRK3 accessory, the unit can be screw mounted to a panel.



Detachment from DIN Rail:

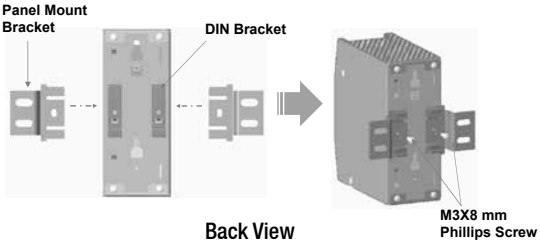


Panel Mounting

Panel mounting of SDN-C power supplies is simplified by using an optional Panel Mounting Bracket kit. Each kit comes with two brackets for modifying one power supply. Choose the appropriate bracket kit based on the power supply model in the tables below. Note that the Panel Mount bracket will add approximately 2-4mm in depth, compared to DIN rail mounting. Refer to the manual that comes with the bracket kit for detailed instructions on assembly and mounting.

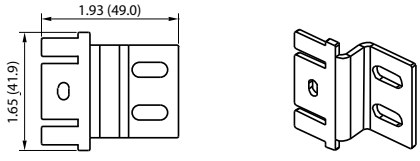
SDN-PMBRK3

Power Supply
SDN 16-12-100C
SDN 5-24-100C
SDN 10-24-100C
SDN 20-24-100C
SDN 40-24-100C
SDN 10-24-480C
SDN 20-24-480CD



Back View

Dimensions - in. (mm)



Top View

3D View

SDN-PMBRK2

Power Supply
SDN 5-24-480C
SDN 40-24-480C

Dimensions - in. (mm)