

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.



Applications

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

Features

- Compact packaging to save space on the DIN rail
- LED diagnostics for input and output status at a glance
- High MTBF
- PowerBoost™ overload capability to start high inrush loads
- Accepts Universal voltage 85-264 Vac, 50/60 Hz input 1 Phase and 320-540Vac, 50/60Hz input 3 Phase
- Active Power Factor Correction (except SDN 5-24-480C and SDN 10-24-480C)
- Patented DIN rail mounting clip
- User Adjustable output voltage accessible via front face
- Parallel capability standard
- Large, rugged, accessible screw terminals
- Industrial grade design
 - -40°C to 60°C operation without derating (for Single phase models only)
- Fully tested and burned-in at factory
- Highly efficient switching technology
- Five year limited warranty

Certifications and Compliances *

All Models

- Listed, Ind. Control Equipment, E61379
 - UL 508, CSA C22.2 No. 107.1
- UL Recognized Component, ITE, E137632
 - UL 60950-1/CSA C22.2 No. 60950-1, 2nd Edition
- - Low Voltage Directive
 - IEC/EN60950-1, 2nd Edition

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



- Sag Immunity: SEMI F47
- ABS Type Approved
- RoHS Compliant

Models SDN 20-24-480CC, SDN 40-24-480C

- UL Recognized Component, Haz. Loc., E234790
 - ISA 12.12.01, CSA C22.2 No. 213
 - Class I, Division 2, Groups A, B, C, D

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

- UL Recognized Component, Haz. Loc., E234790
 - UL 60079-15/CSA E60079-15
 - Class I, Zone 2, AEx nC IIC, Ex 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
 - ExEAC TR CU 012/2011 Safety of Equipment intended for Explosive Atmospheres
- ABS Type Approval

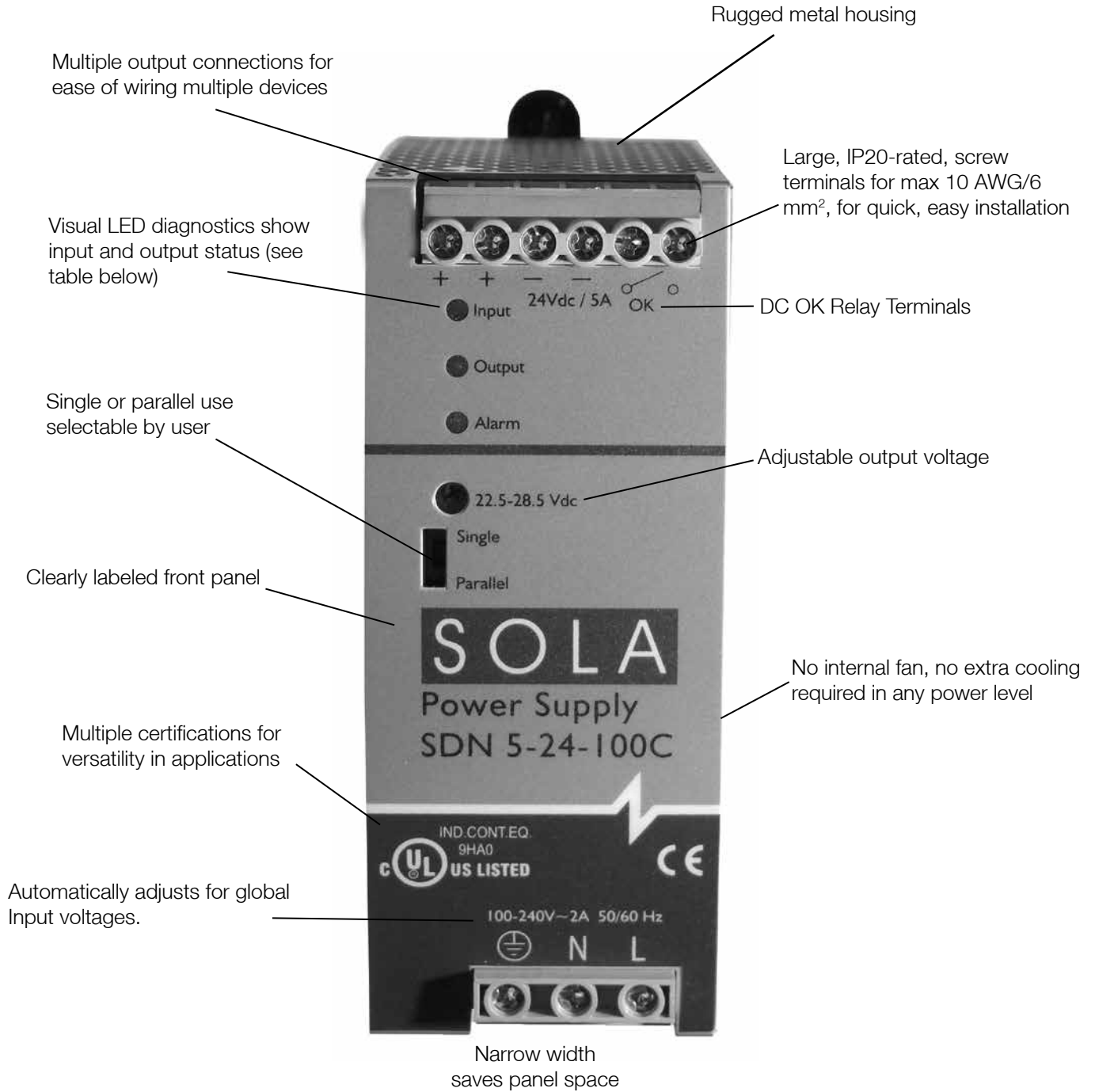
Related Products

- SDN-P Series
- SDN RED Module Series
- SDP™ Series
- SVL Series
- SCP Series
- SDU UPS

Accessories

- Chassis Mount Bracket (SDN-PMBRK3)

The SolaHD Difference



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	SDN 40-24-100C
Input				
Nominal Voltage	100 - 240 Vac			
-AC Range	85 - 264 Vac			
-DC Range	90 - 375 Vdc			
-Frequency	43 - 67 Hz			
Nominal Current ¹	1.65 - 0.55 A	3.2 - 1.0 A	6 - 3 A	12 - 4 A
-Inrush current max.	Typ. < 15 A	Typ.< 30 A	< 40 A	Typ. <60 A
Efficiency (Losses ²)	> 88% typ. (14 W)	> 90% typ. (24 W)	> 92% (38 W)	> 93 % (67 W)
Power Factor Correction	Active power factor correction typ. 0.98 @ 115Vac/ 0.92 @ 230Vac			
Output				
Nominal Voltage ³	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 ⁴	< 50 mVpp		< 100 mVpp	
PARD (Periodic and Random Deviation)	100 mVpp max			
Nominal Current (Rated Power)	5 A (120 W)	10 A (240 W)	20 A (480 W)	40 A (960 W)
Parallel Operation	Switch selectable single unit or parallel unit operation. Units will not be damaged by parallel operation (regardless of switch position setting).			
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	>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 Current	Voltage 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			
-Current Limit	PowerBoost™			
Back EMF Immunity	< 35 V No damage, Auto-recover			
Overvoltage Protection	> 30.5 but < 33 Vdc, auto recovery			
Over Temperature Protection	LED Alarm and Output shutdown , Auto-recovery			
Environmental Data				
Emissions	EN61000-6-4, EN61000-6-3,, Class B EN55011, Class B EN55022 Radiated and Conducted including Annex. A, EN61000-3-2 Class A			
Immunity	EN61000-6-1, EN61000-6-2 , EN61000-4 Series (-2, -4 INPUT, -5 INPUT , -8) Level 4, Performance Criteria A , and, (-3,- 4 OUTPUT,- 5 OUTPUT, -6) Level 3, Performance Criteria A SEMI F47 Sag Immunity and, IEC 61000-4-34 voltage dip immunity standard			
General Protection/ Safety	Protected against continuous short -circuit, continuous overload, continuous open circuit. Pollution Degree 2, Protection Class 1 (IEC536), degree of protection IP20 (IEC60529) Safe extra low voltage: SELV (IEC60950-1)			
Temperature ⁶	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, 68-2-3			
Vibration	2.5(g) 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 19,600 feet)			

1. Input current ratings are conservatively specified with low input, worst case efficiency and power factor.
 2. Losses are heat dissipation in watts at full load, nominal input line.
 3. 24-28 Vdc adjustable guaranteed at full load.

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. All models are capable of paralleling . Only the 40A uses Active paralleling scheme. Please refer to user manual for details.

SDN-C Specifications (Single Phase) continued

Description		Catalog Number			
		SDN 5-24-100C	SDN 10-24-100C	SDN 20-24-100C	SDN 40-24-100C
Reliability					
MTBF ⁸	Telcordia SR-332 Issue 2 Method 1 Case 3 @ 25 °C	>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	>1,000,000 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		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 ⁹ (Screw Type)	Input	Connector size range: 16-10 AWG (1.5-6 mm ²) for solid/stranded conductors. Screw Torque: 4.4 lb-in (~ 50 N-cm). Connector size range: 16-10 AWG (1.5-6 mm ²) for solid/stranded conductors.			Connector size range: 13-10 AWG (3-6 mm ²) solid/stranded conductors. Screw Torque: 4.4 lb-inch (~ 50 N-cm).
	Output	Connector size range: Two terminals per output, 16-10 AWG (1.5-6 mm ²) solid/stranded conductors. Screw Torque: 7 lb-inch (~ 80 N-cm)			Connector size range: 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 in. (15 mm)			
H x W x D inches in (mm)		4.85 x 1.97 x 4.36 (123.0 x 50.0 x 110.0)	4.85 x 2.36 x 4.36 (123.0 x 60.0 x 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)		1.3 (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. IP 20 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			

8. Contact tech support for operation at -40°C.

9. SDN 40-24-100C only = Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND). Please refer to user signals manual for details.

SDN-C Specifications (Three Phase)

Description	Catalog Number			
	SDN 5-24-480C	SDN 10-24-480C	SDN 20-24-480CC	SDN 40-24-480C
Input				
Nominal Voltage	380 - 480 Vac			
Two – phase input	Yes ¹			
–AC Range ²	320 - 540 Vac			
–DC Range	600 Vdc + or - 50 Vdc			
–Frequency	50/60 Hz			
Nominal Current ³	3 x 0.5 or 2 x 0.7 A	3 x 0.8 or 2 x 1.2 A	3 x 0.9 or 2 x 1.3 A	3 x 1.6 A
–Inrush current max.	Typ. < 25 A		Negligible	
Efficiency (Losses ⁴)	> 85% (18 W)	91.2% (23.6 W)	93% (42 W)	94% (78 W)
Power Factor Correction	Meet EN61000-3-2 Class A		Active Power Factor Correction > 0.92	
Output				
Nominal Voltage ⁵	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 ⁶	< 50 mVpp		< 100 mVpp	
PAR (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 ⁷	Single or Parallel operation selectable via front switch. For redundant operation, use of external diodeSDN RED module preferred			Active Paralleling. Use SDN RED module preferred
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 ⁸	1.5 × Nominal Current for > 4 seconds minimum while holding voltage > 20 Vdc			
–Current Limit	PowerBoost™			
Back EMF Immunity	< 35 V No damage, Auto-recover			
Overvoltage Protection	> 30.5 but < 33 Vdc, auto recovery			
Over Temperature Protection	LED Alarm and Output shutdown , Auto-recovery			
Environmental Data				
Emissions	EN61000-6-4, EN61000-6-3, Class B EN55011, Class B EN55022; Radiated and Conducted, EN61000-3-2 Class A			
Immunity	EN61000-6-1, EN61000-6-2 , EN61000-4 Series (-2, -4 INPUT, -5 INPUT , -8) Level 4, Performance Criteria A and (-3,- 4 OUTPUT, - 5 OUTPUT, -6) Level 3, Performance Criteria A SEMI F47 Sag Immunity and IEC 61000-4-34 voltage dip immunity standard			
General Protection/ Safety	Protected against continuous short -circuit, continuous overload, continuous open circuit. Pollution Degree 2, Protection Class 1 (IEC536), degree of protection IP20 (IEC60529) Safe low voltage: SELV (acc. IEC60950-1)			
Temperature ⁷	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, 68-2-3			
Vibration	2.5(g) 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 3000 meters (0 to 10,000 feet)			

1. SDN 20 and SDN 40 will operate at 50% load under loss of 1phase on nominal line input ; SDN 5 and SDN 10 will operate with single phase input power at 100% of load. Unit will shut down if thermal threshold is exceeded under this condition.
 2. Unit passed input voltage overstress test at 700 Vac without failure.
 3. 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 typically be half these values.
 4. Losses are heat dissipation in watts at full load, nominal line.
 5. 24-28 Vdc adjustable guaranteed at full load.

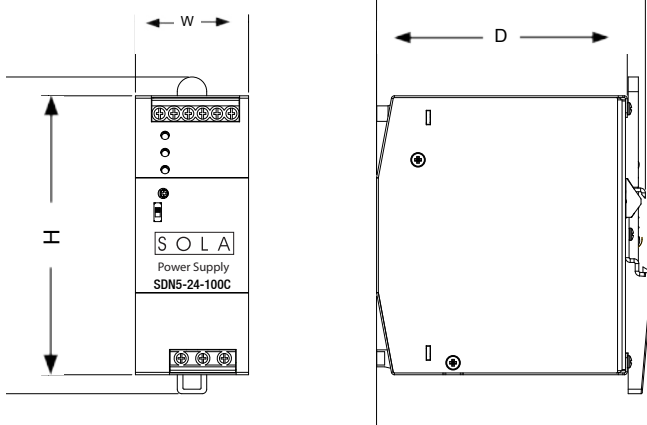
6. Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor
 7. All models are capable of paralleling. Only the 40A uses Active paralleling scheme. Please refer to user manual for details.
 8. SDN 20 and SDN 40 are capable of delivering 150% load for approximately 4s before the unit will go to HICCUP mode. SDN 5 and 10 will maintain minimum 4 s to deliver 150% load then drops to almost zero Vout. The output voltage will immediately drop to almost zero when load rises above 150%.

SDN-C Specifications (Three Phase)

Description		Catalog Number			
		SDN 5–24–480C	SDN 10–24–480C	SDN 20–24–480CC	SDN 40–24–480C
Reliability					
MTBF ⁸	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		Externally 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 ⁹ (Screw Type)	Input	Connector size range: 16-10 AWG (1.5-6 mm ²) for solid conductors. Screw Torque: 4.4 lb-in (~ 50 N-cm).			
	Output	Connector size range: Two terminals per output, 16-10 AWG (1.5-6 mm ²) for solid conductors. Screw Torque: 7 lb-inch (~ 80 N-cm)			Connector size range: 7–6 AWG (10.6–13 mm ²) solid conductors or stranded. 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)			
H x W x D inches in (mm)		4.85 x 1.97 x 4.36 (123.0 x 50.0 x 110.0)	4.85 x 2.36 x 4.36 (123.0 x 60.0 x 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. IP 20 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			

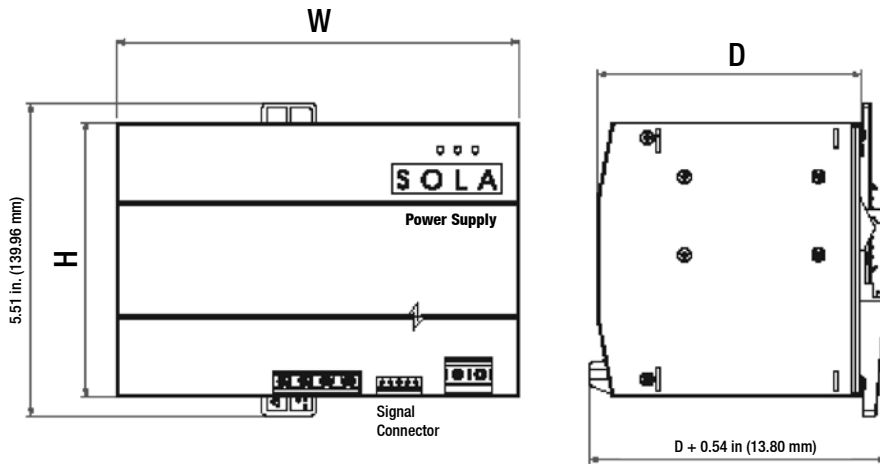
9. SDN 40-24-480C only = Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND). Please refer to user signals manual for details.

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 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 20–24–480CC	4.85 (123.0)	3.42 (87.0)	4.98 (127.0)

SDN 40-24-100C and SDN 40-24-480C Dimensions



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)

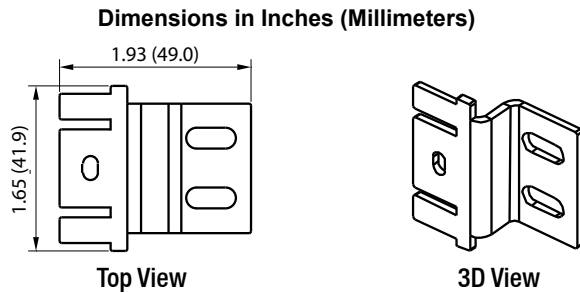
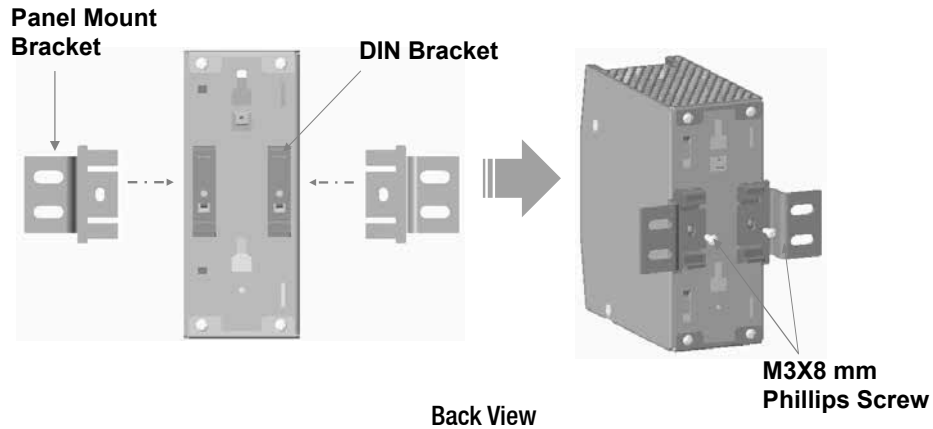
SDN 40-24-100C and SDN 40-24-480C output signaling terminal block features: Shut Down, Power Good, Current Monitor, Current Balance, GND, and active current sharing through I_SHARE connectors (See Signals Manual for connection information).

SDN-C Series Mounting

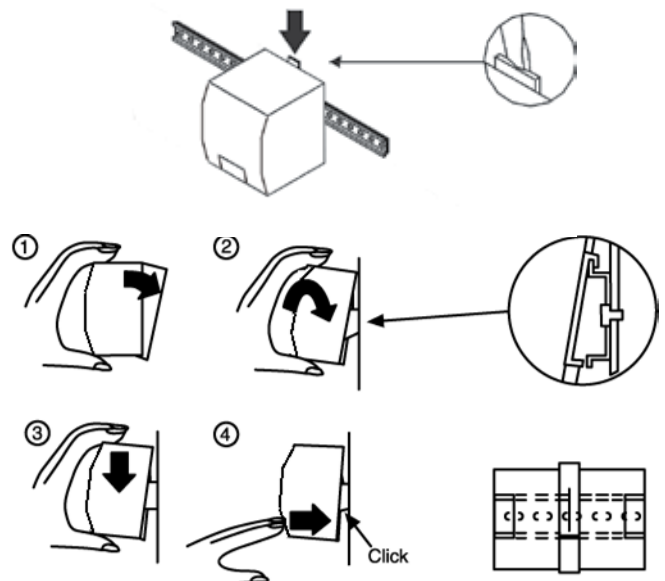
Chassis Mounting

Instead of snapping a SolaHD SDN™ unit on the DIN Rail, you can also attach it using the screw mounting set SDN-PMBRK3.

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



Detachment from DIN Rail:



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.