

## 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
- DeviceNet™

### Features



- Compact packaging to save space on the DIN rail
- 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
- Active Power Factor Correction
- Patented DIN rail mounting clip
- User Adjustable output voltage accessible via front face
- Parallel capability standard
- Large, rugged, accessible screw terminals
- Industrial grade design
  - -25°C to 60°C operation without derating
- Fully tested and burned-in at factory
- Highly efficient switching technology
- Five year limited warranty

### Certifications and Compliances \*


#### All Models

-  **UL** Listed, Ind. Control Equipment, E61379
  - UL 508, CSA C22.2 No. 107.1






-  **UL** UL Recognized Component, ITE, E137632
  - UL 60950-1/CSA C22.2 No. 60950-1, 2nd Edition
-  **CE** - Low Voltage Directive
  - IEC/EN60950-1, 2nd Edition
- Sag Immunity: SEMI F47
- RoHS Compliant

#### Models SDN 20-24-100C, SDN 20-24-480CC, SDN 40-24-480C

-  **UL** 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 5-24-480C, SDN 10-24-480C

-  **UL** UL Recognized Component, Haz. Loc., E234790
  - UL 60079-15/CSA E60079-15
  - Class I, Zone 2, AEx nC IIC, Ex nC IIC
-  **Ex** ATEX Directive
  - EN60079-0, EN60079-15
  -  **Ex** II 3 G, Ex nC IIC Gc

### Related Products

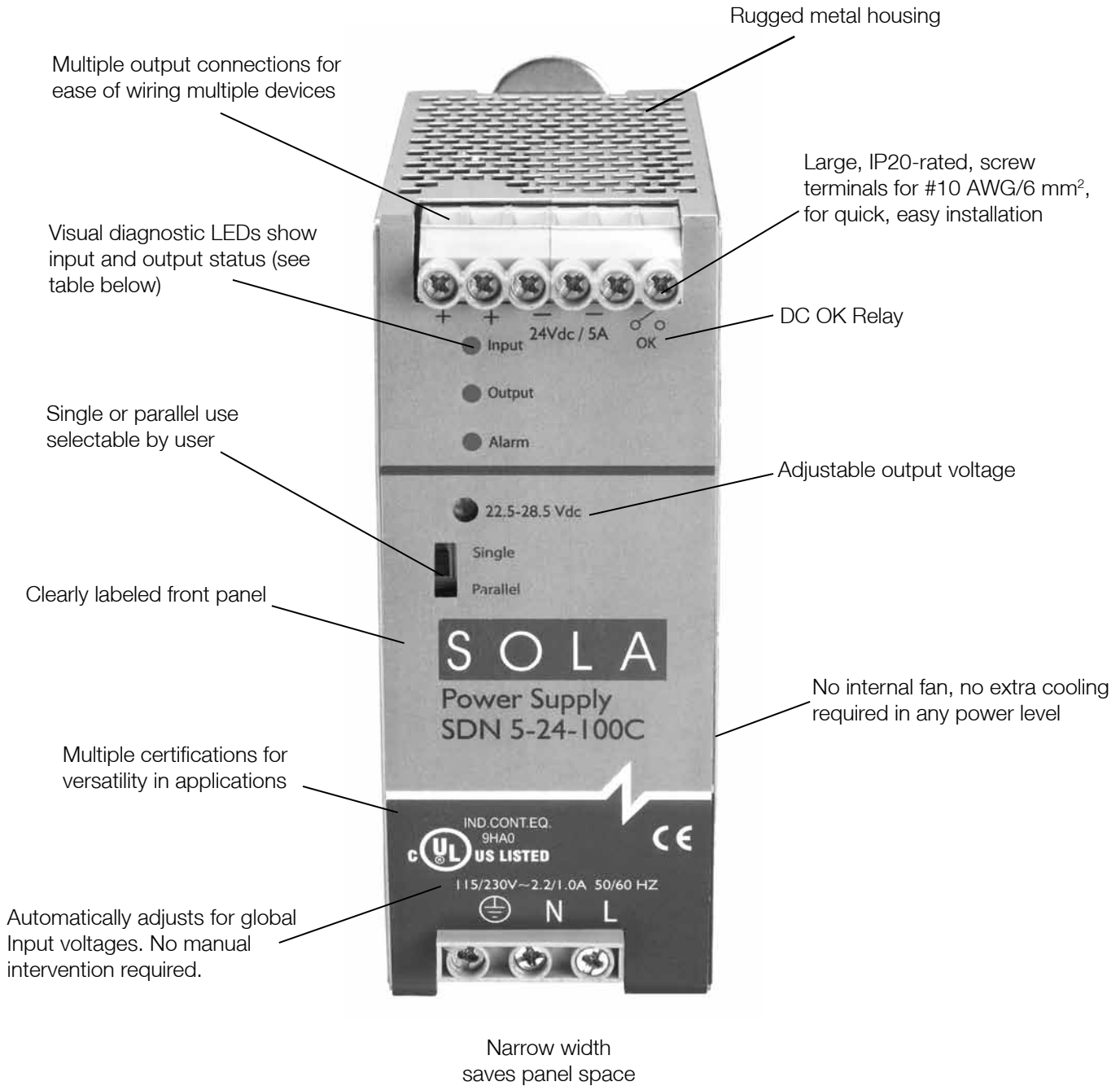
- SDN-P series
- SDP™ series
- SCP series
- SDU UPS

### Accessories

- Chassis Mount Bracket (SDN-PMBRK2)

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

### 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                            |
| <b>Input</b>                      |  |   |   |
| Nominal Voltage                   | 115/230 Vac  |   |   |
| –AC Range                         | 85 - 264 Vac   |   |   |
| –DC Range <sup>1</sup>            | 90 - 375 Vdc   |   |   |
| –Frequency                        | 43 - 67 Hz   |   |   |
| Nominal Current <sup>2</sup>      | 1.65 - 0.55 A  | 3.2 - 1.0 A                               | 6 A / 3 A                                 |
| –Inrush current max.              | Typ. < 15 A  | Typ.< 30 A                                | < 40 A                                    |
| Efficiency (Losses <sup>3</sup> ) | > 90% typ. (12 W)  | > 90% typ. (24 W)                         | > 92% (38 W)                              |
| Power Factor Correction           | Active power factor correction to better than 0.92   |   |   |
| <b>Output</b>                     |  |   |   |
| Nominal Voltage                   | 24 V (23.5~28.5 Vdc Adj.)  |   |   |
| –Tolerance                        | < ±2 % overall (combination Line, load, time and temperature related changes)  |   |   |
| Initial Voltage Setting           | 24.5 V ± 1%  |   |   |
| –Ripple <sup>4</sup>              | < 50 mVpp  |   | <100 mVpp                                 |
| PARD                              | PARD (Periodic and Random Deviation) = 100 mV peak-peak max  |   |   |
| Overvoltage Protection            | > 30.5 but < 33 Vdc, auto recovery   |   |   |
| Power Back Immunity               | < 35 V   |   |   |
| Nominal Current                   | 5 A (120 W)  | 10 A (240 W)                              | 20 A (480 W)                              |
| –Peak Current <sup>5</sup>        | 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 <sub>amb</sub> =+25°C) to 95% output voltage  |   |   |
| Voltage Fall Time                 | <150 ms from 95% to 10% rated voltage @ full load (T <sub>amb</sub> =+25°C)  |   |   |
| Line and Load Regulation          | < 0.5%   |   |   |
| <b>General</b>                    |  |   |   |
| EMC:<br>–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                                   |   |   |
| Temperature <sup>6</sup>          | 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 <sup>7</sup>                 | > 550,000 hrs  |   | > 450,000 hrs                             |
| Warranty                          | 5 Year Limited Warranty  |   |   |
| General Protection/Safety         | Protected against continuous short -circuit, continuous overload, continuous open circuit.<br>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)<br>Relay: N.O. contact rated 200ma/50 Vdc   |   |   |
| <b>Installation</b>               |  |   |   |
| 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 <sup>2</sup> ) for solid conductors.<br>Output: Two terminals per output, connector size range: 16-10 AWG (1.5-6 mm <sup>2</sup> ) 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)             | 4.85 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) |
| Weight lbs (kg)                   | 1.1 (0.50)   | 1.7 (0.80)                                | 2.6 (1.20)                                |

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. Contact tech support for operation at -25°C.

7. Demonstrated through extended life test.

## SDN-C Specifications (Three Phase)

| Description                       | Catalog Number   |  |   |  |
|-----------------------------------|--|--|---|--|
|                                   | SDN 5-24-480C  | SDN 10-24-480C                               | SDN 20-24-480CC   | SDN 40-24-480C   |
| <b>Input</b>                      |  |  |   |  |
| Nominal Voltage                   | 380 - 480 Vac  |  |   |  |
| Two - phase input                 | Yes <sup>1</sup>   |  |   |  |
| -AC Range <sup>2</sup>            | 320 - 540 Vac  |  |   |  |
| -DC Range                         | 450 - 760 Vdc  | 450 - 760 Vdc                                | 450 - 760 Vdc <sup>9</sup>  | N/A  |
| -Frequency                        | 50/60 Hz   |  |   |  |
| Nominal Current <sup>3</sup>      | 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  | Negligible   |
| Efficiency (Losses <sup>4</sup> ) | > 85% (18 W)   | 91.2% (23.6 W)                               | 93% (42 W)  | 94% (78 W)   |
| Power Factor Correction           | Power factor correction to meet EN61000-3-2 Class A  |  | Active Power Factor Correction  |  |
| <b>Output</b>                     |  |  |   |  |
| Turn on time                      | Typ. 1s  |  |   |  |
| Voltage Rise Time                 | ca. 5-20 ms  |  | <100 ms full resistive load (T <sub>amb</sub> = +25°C)                      |  |
| Power Back Immunity               | <35 V  |  |   |  |
| Overvoltage Protection            | >30.5 but <33 Vdc auto recovery  |  |   |  |
| Nominal Voltage                   | 24 V (24 - 28 Vdc Adjustable)  |  |   |  |
| Voltage Regulation                | < ±2 % overall   |  |   |  |
| Initial Voltage Setting           | 24.5 V ± 1%  |  |   |  |
| -Ripple <sup>5</sup>              | <100 mVpp  |  |   |  |
| PAR                               | PAR = 100 mV peak-peak max   |  | PAR = 200 mV peak-peak max  |  |
| Nominal Current                   | 5 A (120 W)  | 10 A (240 W)                                 | 20 A (480 W) (constant power, not constant current)                         | 40 A (960 W)   |
| -Peak Current <sup>6</sup>        | 6A, 2xNominal Current <2sec  | 12A, 2xNominal Current <2sec                 | 1.5xNominal Current for 4 sec minimum while holding voltage > 20Vdc         |  |
| -Current Limit                    | PowerBoost™  |  |   |  |
| Derating                          | typ. 6 W/°C  | typ. 12 W/°C                                 | typ. 24 W/°C  | typ. 48 W/°C   |
| Holdup Time                       | >20 ms   |  | >15 ms  |  |
| Voltage Fall Time                 | <150 ms from 95% to 10% rated voltage @ full load (T <sub>amb</sub> = +25°C)   |  | <50 ms from 95% to 10% rated voltage @ full load (T <sub>amb</sub> = +25°C) |  |
| Parallel Operation <sup>7</sup>   | Single or Parallel operation selectable via front switch. For redundant operation, use of external diode module is preferred   |  |   | SDN 40 uses active paralleling                         |
| <b>General</b>                    |  |  |   |  |
| Case                              | Fully enclosed metal housing with fine ventilation grid to keep out small parts.   |  |   |  |
| Min. Required                     | 25mm above and below or 15mm in front  | 25mm above and below or 10mm in front        | 70mm above and below or 25mm in front and 25mm left & right                 | 70mm above and below, 15mm in front, 25mm left & right |
| Free Space                        |  |  |   |  |
| HxWxD inches (mm)                 | 4.85 x 1.97 x 4.36<br>(123.0 x 50.0 x 111.0)   | 4.85 x 2.36 x 4.36<br>(123.0 x 60.0 x 111.0) | 4.85 x 3.35 x 4.68<br>(123.0 x 85.0 x 119.0)                                | 4.85 x 7.09 x 4.66<br>(123.0 x 180.0 x 119.0)          |
| Weight lbs (kg)                   | 1.2 (.52)  | 1.5 (0.70)                                   | 2.9 (1.30)  | 5.3 (2.40)   |
| 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   |  |   |  |
| Temperature                       | Storage : -40 to + 85°C, Operation -25 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.   |  |   |  |
| 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 Year Limited Warranty  |  |   |  |
| MTBF                              | >500,000 hrs MTBF (Nominal voltage, full load, T <sub>amb</sub> = 25°C)  |  |   |  |
| General Protection/Safety         | Protected against short -circuit, overload, open circuit. Protection class 1 (IEC536), degree of protection IP20 (IEC 529)<br>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 V <sub>out</sub> = 18.5 Vdc = +/-5%   |  |   |  |
| <b>Installation</b>               |  |  |   |  |
| 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.<br>Unit should handle normal shock and vibration of industrial use and transportation without falling off the rail.   |  |   |  |
| Connections <sup>8</sup>          | 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 (1.5-6mm <sup>2</sup> ) for solid conductors. Output: connector size range, wire gauge 6-7 AWG for SDN40; all other models: 16-10AWG (1.5-6mm <sup>2</sup> ) for solid conductors. |  |   |  |

1. SDN 20 will operate at 75% load; SDN 40 will operate at 50% load under loss of 1 phase; 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 600 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. Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor.

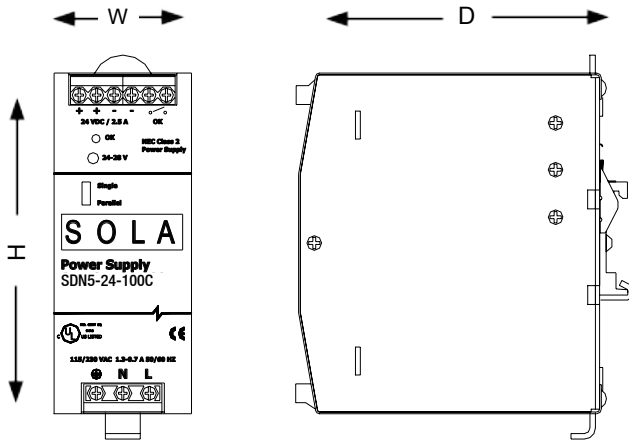
6. SDN 20 and 40 unit will go to HICCUP mode. SDN 5 and 10 will maintain min 4 secs to deliver 150% load then drops to almost zero V<sub>out</sub>. The output voltage will immediately drop to almost zero when load rises above 150%.

7. All models except the 40amp unit are capable of parallel operation by use of a jumper pin, accessible by the end user. 40 amp unit will have active current sharing signal.

8. SDN 40-24-480C only = Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND).

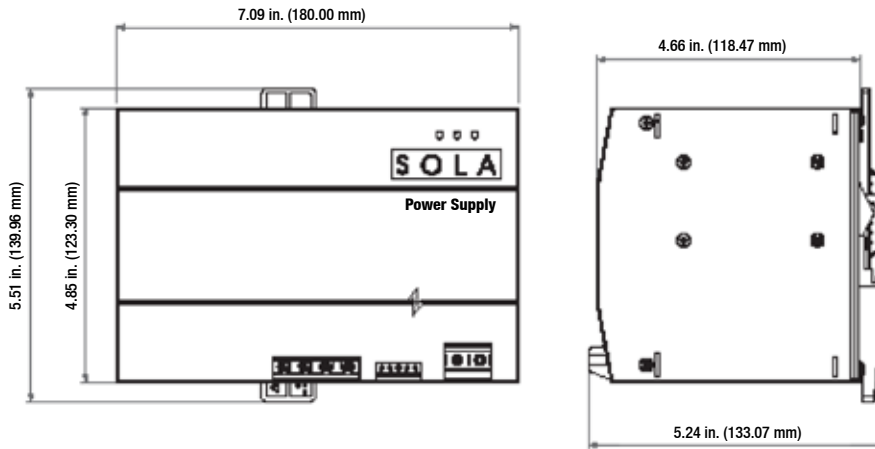
9. 70% maximum rated load.

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)             | 3.35 (85.0) | 4.68 (119.0) |

SDN 40-24-480C Dimensions

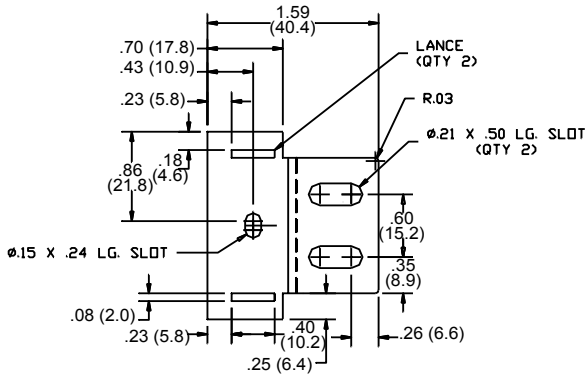


### SDN-C Series Mounting (cont.)

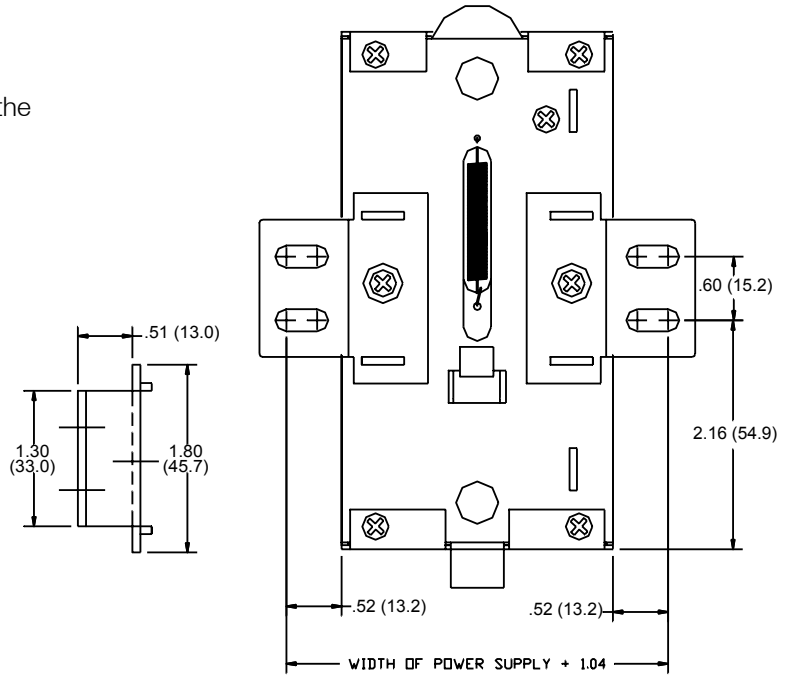
#### Chassis Mounting

Instead of snapping a SolaHD 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.



#### Dimensional Diagram - in (mm)



### 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:

