



## SDN-C SINGLE AND THREE PHASE POWER SUPPLIES – PRODUCT GUIDE

SOLA<sup>HD</sup>

  
**EMERSON**

# COMPACT PERFORMANCE DIN RAIL SERIES

Our next-generation SDN-C power supplies offer high efficiency in a compact size, providing up to 960 Watts of output power in both single- and three-phase models. Featuring diagnostic LEDs, sag immunity, power factor correction and universal voltage, these are the highest performing DIN rail-mounted power supplies available for industrial use.

## APPLICATIONS




- Industrial/machine control
- Process control
- Conveying equipment
- Material handling
- Vending machines
- Packaging equipment
- Amusement park equipment
- Semiconductor fabrication equipment

## FEATURES


- Compact packaging saves space on the DIN rail
- Visual diagnostic LEDs provide input and output status at a glance
- Higher efficiency saves energy and lowers amount of heat generated inside the panel
- PowerBoost™ overload capability starts high inrush loads without foldback or shutdown
- Accepts Universal voltage 85-264 Vac, 50/60 Hz input
- Single phase models meet SEMI F47 sag immunity
- Active power factor correction
- Class I Zone 2 hazardous locations rating
- ATEX approved on select models
- User adjustable output voltage accessible via front face
- Parallel capability standard
- Industrial grade design
- -25° C to 60° C operation without derating
- High MTBF means high reliability and long life
- RoHS compliant
- Highly efficient switching technology
- Five-year 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
- Sag Immunity: SEMI F47
- 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, EN60079-15  
-  II 3 G, Ex nA nC IIC Gc
- **IECEx** Certified  
- IEC 60079-0, IEC 60079-15  
- Ex nA nC IIC Gc



# VERSATILE POWER SUPPLY FOR SINGLE AND THREE PHASE INPUT POWER



## A POWERBOOST™

- Powers high inrush loads without shutdown or foldback
- Allows designers to save money by sizing for peak loads

## B INDUSTRIAL GRADE DESIGN

- Metal enclosure with small vents to keep small parts from falling in
- Patented durable mounting clip (designed to withstand 40G of shock without falling off rail)
- Wide temperature performance: guaranteed reliability at full load over a wide temperature range of -10° C to +70° C (+14° F to +158° F) with no derating until after +60° C (+140° F)

## C DC OK SIGNAL

- Allows remote notification of DC power loss to the controller

## D ADJUSTABLE VOLTAGE

- Flexibility to set DC voltage perfectly for application requirements

## E SINGLE OR PARALLEL USE SELECTABLE

- One model to stock for single or multiple applications
- Easily scalable for higher power applications
- Current sharing for maximum reliability
- External modules available for full redundancy

## F 3 LED DIAGNOSTICS

- Shows status of input power, output power and alarm condition
- Valuable troubleshooting aid to reduce system downtime

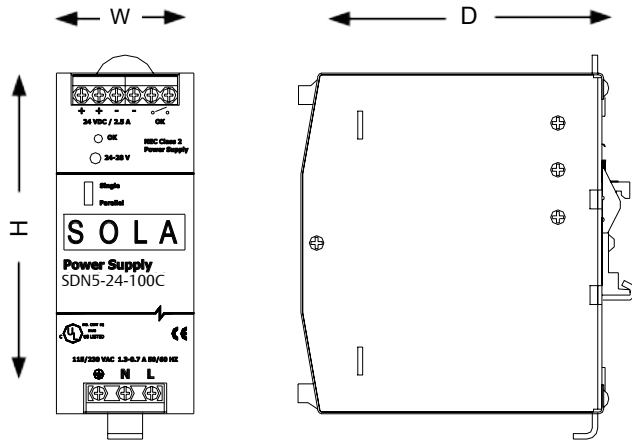
## G WIDE RANGE INPUT WITH SAG IMMUNITY

- No need to worry about different wiring or switch positions when applying different input voltages
- All single phase models can operate from 100, 110, 115, 120, 127, 200, 208, 220, 230 or 240 Vac inputs with no jumper or switch changes
- Easily handles sags down to half the line voltage with no disruption in output power, increasing equipment reliability and availability
- Models comply with SEMI F47 standards for the semiconductor machine builder industry at all input line and output load conditions

## H COMPLIANCES

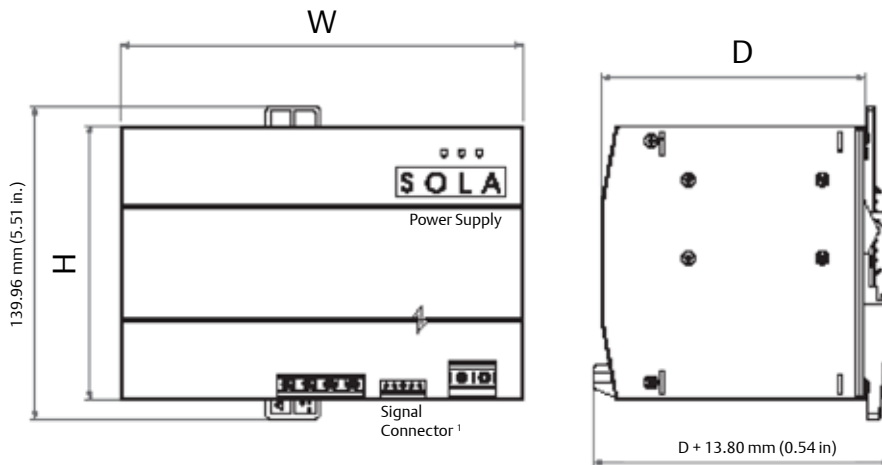
- Listed, Industrial Control Equipment, E61379
- ITE, E137632
- Haz. Loc., E234790
  - Class 1, Div 2/Zone 2
    - Non-Incendary
    - Temperature class T3 or T4, groups IIC
- ATEX Approved on select models for Low Voltage and EMC Directives
  - Power factor correction (low frequency emissions)

# SDN-C SERIES DIMENSIONS



| Catalog Number  | Dimensions - mm (in) |             |              |
|-----------------|----------------------|-------------|--------------|
|                 | H                    | W           | D            |
| SDN 5-24-100C   | 123.0 (4.85)         | 50.0 (1.97) | 111.0 (4.36) |
| SDN 10-24-100C  | 123.0 (4.85)         | 60.0 (2.36) | 111.0 (4.36) |
| SDN 20-24-100C  | 123.0 (4.85)         | 87.0 (3.42) | 127.0 (4.98) |
| SDN 5-24-480C   | 123.0 (4.85)         | 50.0 (1.97) | 111.0 (4.36) |
| SDN 10-24-480C  | 123.0 (4.85)         | 60.0 (2.36) | 111.0 (4.36) |
| SDN 20-24-480CC | 123.0 (4.85)         | 85.0 (3.35) | 119.0 (4.68) |

## SDN 40-24-100C AND SDN 40-24-480C DIMENSIONS



| Catalog Number | Dimensions - mm (in) |              |              |
|----------------|----------------------|--------------|--------------|
|                | H                    | W            | D            |
| SDN 40-24-100C | 123.0 (4.85)         | 180.0 (7.09) | 118.0 (4.66) |
| SDN 40-24-480C | 123.0 (4.85)         | 180.0 (7.09) | 122.0 (4.81) |

1. 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 L\_SHARE connectors (See Signals Manual for connection information).

# SDN-C SPECIFICATIONS (SINGLE PHASE)

| Description                       | Catalog Number                                                                                                                                                                                                                                                                                                                  |                                           |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|                                   | SDN 5-24-100C                                                                                                                                                                                                                                                                                                                   | SDN 10-24-100C                            |
|                                   | <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                               |
| -Inrush current max.              | Typ. < 15 A                                                                                                                                                                                                                                                                                                                     | Typ. < 30 A                               |
| Efficiency (Losses <sup>3</sup> ) | > 88% typ. (14 W)                                                                                                                                                                                                                                                                                                               | > 90% typ. (24 W)                         |
| Power Factor Correction           | Active power factor correction to better than 0.92                                                                                                                                                                                                                                                                              |                                           |
|                                   | <b>OUTPUT</b>                                                                                                                                                                                                                                                                                                                   |                                           |
| Nominal Voltage <sup>4</sup>      | 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>5</sup>              | < 50 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)                              |
| -Peak Current <sup>6</sup>        | 1.5 x Nominal Current for 4 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 (+77 °F) to 95% output voltage                                                                                                                                                                                                                                                |                                           |
| Voltage Fall Time                 | <150 mS from 95% to 10% rated voltage @ full load (T amb = +25 °C (+77 °F)                                                                                                                                                                                                                                                      |                                           |
| 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>7</sup>          | Storage: -40 °C to + 85 °C (-40 °F to +185 °F), Operation -25 °C to +60 °C (-13 °F +140 °F) to full power, with linear derating to half power from +60 °C to +70 °C (+140 °F to +158 °F)(Convection cooling, no forced air required). Operation up to 50% load permissible with sideways or front side up mounting orientation. |                                           |
| MTBF <sup>8</sup>                 | > 550,000 hrs                                                                                                                                                                                                                                                                                                                   |                                           |
| Warranty                          | 5 Year Limited Warranty                                                                                                                                                                                                                                                                                                         |                                           |
| General Protection/<br>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.<br>Fusing may be required for wire/loads if 2x Nominal O/P current rating cannot be tolerated.<br>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. Screw torque: 4.4 lb-inch (~ 50 N-cm).<br>Output: Two terminals per output, connector size range: 16-10 AWG (1.5-6 mm <sup>2</sup> ) for solid conductors.<br>Screw torque: 7 lb-inch (~ 80 N-cm).                       |                                           |
| Case                              | Fully enclosed metal housing with fine ventilation grid to keep out small parts.                                                                                                                                                                                                                                                |                                           |
| -Free Space                       | 25 mm above and below, 10 mm left and right, 15 mm in front                                                                                                                                                                                                                                                                     |                                           |
| H x W x D inches mm (in)          | 123.0 x 50.0 x 110.0 (4.85 x 1.97 x 4.36)                                                                                                                                                                                                                                                                                       | 123.0 x 60.0 x 110.0 (4.85 x 2.36 x 4.36) |
| Weight kg (lbs)                   | 0.50 (1.1)                                                                                                                                                                                                                                                                                                                      | 0.80 (1.7)                                |

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. 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. Peak current is calculated at 24 Volt levels.

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

8. Demonstrated through extended life test.

# SDN-C SPECIFICATIONS (SINGLE PHASE)

| Description                       | Catalog Number                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                      |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | SDN 20-24-100C                                                                                                                                                                                                                                                                                                                     | SDN 40-24-100C                                                                                                                                                                                                                                                                                       |
|                                   | <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>      | 6 - 3 A                                                                                                                                                                                                                                                                                                                            | 12 - 4 A                                                                                                                                                                                                                                                                                             |
| -Inrush current max.              | < 40 A                                                                                                                                                                                                                                                                                                                             | Typ. <60 A                                                                                                                                                                                                                                                                                           |
| Efficiency (Losses <sup>3</sup> ) | > 92% (38 W)                                                                                                                                                                                                                                                                                                                       | > 93 % (67 W)                                                                                                                                                                                                                                                                                        |
| Power Factor Correction           | Active power factor correction to better than 0.92                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                      |
|                                   | <b>OUTPUT</b>                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                      |
| Nominal Voltage <sup>4</sup>      | 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>5</sup>              | <100 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                   | 20 A (480 W)                                                                                                                                                                                                                                                                                                                       | 40 A (960 W)                                                                                                                                                                                                                                                                                         |
| -Peak Current <sup>6</sup>        | 1.5 × Nominal Current for 4 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 <sup>7</sup>   | 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 (+77 °F) to 95% output voltage                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                      |
| Voltage Fall Time                 | <150 mS from 95% to 10% rated voltage @ full load (T amb= +25°C (+77 °F)                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                      |
| 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                                                                                                                                                                                                                 | EN61000-6-3, EN61000-6-4, Class B EN55011, EN55022 Radiated and Conducted including Annex A, EN61000-3-2, EN61000-3-3                                                                                                                                                                                |
| -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                                                                                         | EN61000-6-1, EN61000-6-2, EN61000-4-2 Level 4, EN61000-4-3 Level 3, EN61000-4-4 Level 4 input and Level 3 output, EN61000-4-5 Installation Class 4, EN61000-4-6 Level 3, EN61000-4-8, EN61000-4-11, SEMI F47 Sag Immunity, Transient protection according to VDE 0160/W2 over entire load range.     |
| Temperature <sup>8</sup>          | Storage: -40 °C to +85 °C (-40 °F to +185 °F), Operation -25 °C to +60 °C (-13 °F to +140 °F) full power, with linear derating to half power from +60 °C to +70 °C (+140 °F to +158 °F) (Convection cooling, no forced air required).<br>Operation up to 50% load permissible with sideways or front side up mounting orientation. |                                                                                                                                                                                                                                                                                                      |
| MTBF <sup>9</sup>                 | > 450,000 hrs                                                                                                                                                                                                                                                                                                                      | > 500,000 hours demonstrated                                                                                                                                                                                                                                                                         |
| Warranty                          | 5 Year Limited Warranty                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                      |
| General Protection/<br>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)<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 <sup>10</sup>         | Input: Screw terminals, connector size range: 16-10 AWG (1.5-6 mm <sup>2</sup> ) for solid conductors. Screw Torque: 4.4 lb-in (~ 50 N-cm).<br>Output: Two terminals per output, connector size range: 16-10 AWG (1.5-6 mm <sup>2</sup> ) for solid conductors. Screw Torque: 7 lb-inch (~ 80 N-cm)                                | Input: Screw terminals, connector size range: 16-10 AWG (1.5-6 mm <sup>2</sup> ) for solid conductors. Screw Torque: 4.4 lb-inch (~ 50 N-cm). Output: Two terminals per output, connector size range: 10-6 AWG (6-14 mm <sup>2</sup> ) for solid conductors. Screw Torque: 15.6 lb-inch (~ 176 N-cm) |
| Case                              | Fully enclosed metal housing with fine ventilation grid to keep out small parts.                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| -Free Space                       | 25 - 40 mm above and below, 10 mm left and right, 15 mm in front                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                      |
| Dimensions mm (in)<br>H x W x D   | 123.0 x 87.0 x 127.0 (4.85 x 3.42 x 4.98)                                                                                                                                                                                                                                                                                          | 123.0 x 180.0 x 122.0 (4.85 x 7.09 x 4.81)                                                                                                                                                                                                                                                           |
| Weight kg (lbs)                   | 1.20 (2.6)                                                                                                                                                                                                                                                                                                                         | 2.75 (6.0)                                                                                                                                                                                                                                                                                           |

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. 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. Peak current is calculated at 24 Volt levels.

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

9. Demonstrated through extended life test.

10. SDN 40-24-100C only = Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND).

# SDN-C SPECIFICATIONS (THREE PHASE)

| Description                       | Catalog Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                              |                                                                             |                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------|
|                                   | SDN 5-24-480C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SDN 10-24-480C                               | SDN 20-24-480CC                                                             | SDN 40-24-480C                                         |
| 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>10</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           | Active Power Factor Correction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                              |                                                                             |                                                        |
| <b>OUTPUT</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                                                                             |                                                        |
| Turn on time                      | Typ. 1s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                                                                             |                                                        |
| Voltage Rise Time                 | ca. 5-20 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |                                                                             |                                                        |
| Power Back Immunity               | <35 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                                                                             |                                                        |
| Overvoltage Protection            | >30.5 but <33 Vdc auto recovery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                                                                             |                                                        |
| Nominal Voltage <sup>5</sup>      | 24 V (23.5 ~ 28.5 Vdc Adj.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |                                                                             |                                                        |
| Voltage Regulation                | < ±2% overall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                                                                             |                                                        |
| Initial Voltage Setting           | 24.5 V ± 1%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |                                                                             |                                                        |
| -Ripple <sup>6</sup>              | <100 mVpp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                                                             |                                                        |
| PARD                              | PARD = 100 mV peak-peak max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              | PARD = 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>7</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 amb = +25 °C (+ 77 °F))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              | <50 ms from 95% to 10% rated voltage @ full load (T amb = +25 °C (+ 77 °F)) |                                                        |
| Parallel Operation <sup>8</sup>   | Single or Parallel operation selectable via front switch. For redundant operation, use of external diode module is preferred                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                                                                             | 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                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                                                                             |                                                        |
| Dimensions mm (in)                | 123.0 x 50.0 x 111.0<br>(4.85 x 1.97 x 4.36)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 123.0 x 60.0 x 111.0<br>(4.85 x 2.36 x 4.36) | 123.0 x 85.0 x 119.0<br>(4.85 x 3.35 x 4.68)                                | 123.0 x 180.0 x 119.0<br>(4.85 x 7.09 x 4.66)          |
| Weight kg (lbs)                   | .52 (1.2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.70 (1.5)                                   | 1.30 (2.9)                                                                  | 2.40 (5.3)                                             |
| 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 °C to +85 °C (-40 °F to +185 °F), Operation -25 °C to +60 °C (-13 °F to +140 °F) full power, with linear derating to half power from +60 °C to +70 °C (140 °F to 158 °F) (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 amb = +25 °C (+77 °F))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                                                                             |                                                        |
| 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 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                                                                             |                                                        |
| Connections <sup>9</sup>          | Unit should handle normal shock and vibration of industrial use and transportation without falling off the rail.<br>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. Screw Torque: 4.4 lb-in (~ 50 N-cm). Output: connector size range, wire gauge 7-6 AWG (10.6-13 mm <sup>2</sup> ) for solid conductors. Screw Torque: 15.6 lb-inch (~ 176 N-cm) for SDN40; all other models: 16-10AWG (1.5-6mm <sup>2</sup> ) for solid conductors. Screw Torque: 7 lb-inch (~ 80 N-cm) |                                              |                                                                             |                                                        |

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. 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. 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%.

8. 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.

9. SDN 40-24-100C only = Output signaling terminal block features (Shut down, Power Good, Current Monitor, Current Balance, signal GND).

10. 70% maximum rated load.

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