

## SDN Redundant Series

The SDN Redundant series is an enhanced version of the reliable and rugged SDN series. Additional features make redundant system design easy for critical “can’t afford to fail” applications such as plant, energy, or safety system control systems. Redundant system design can be accomplished with minimal effort. Start up and operation is also reliable and smooth. Additional monitoring provides quick feedback of DC power status. Internal diodes provide isolation against DC Bus problems corrupting working supplies. Pluggable screw terminals for both AC and DC terminals allow for ultra-quick replacement or pre-wiring of units.

### Features

- Smart power “DC OK Relay Contact”.
- Internal isolation diodes for extra protection.
- Pluggable, quick disconnect screw terminal connectors for low MTTR.
- Reliable, paralleling method.
- SDN features and quality.

### Applications

- Applications which require redundancy or smart power.
- Process Control.
- Remote Location.
- Critical production and manufacturing machinery.

### Connectors

Description					
Signals	DC OK Monitoring via Relay Contact on screw terminal.				
Connectors	One set of pluggable connectors included with each unit.				
	<table border="1"> <tr> <td>SDN 2.5 and SDN 5</td> <td>SDN 10</td> </tr> </table>	SDN 2.5 and SDN 5	SDN 10		
SDN 2.5 and SDN 5	SDN 10				
Input	GMSTB 2, 5/3-ST* 20-12 AWG (0.5-2.5 mm <sup>2</sup> )				
Output	<table border="1"> <tr> <td>MSTB 2,5/4-ST* 20-12 AWG (0.5-2.5 mm<sup>2</sup>)</td> <td>PC4/2-ST, 7, 62* 24-10 AWG (0.2-4 mm<sup>2</sup>)</td> </tr> <tr> <td>Signal</td> <td>MSTB 2, 5/2-ST* 20-12 AWG (0.5-2.5 mm<sup>2</sup>)</td> </tr> </table>	MSTB 2,5/4-ST* 20-12 AWG (0.5-2.5 mm <sup>2</sup> )	PC4/2-ST, 7, 62* 24-10 AWG (0.2-4 mm <sup>2</sup> )	Signal	MSTB 2, 5/2-ST* 20-12 AWG (0.5-2.5 mm <sup>2</sup> )
MSTB 2,5/4-ST* 20-12 AWG (0.5-2.5 mm <sup>2</sup> )	PC4/2-ST, 7, 62* 24-10 AWG (0.2-4 mm <sup>2</sup> )				
Signal	MSTB 2, 5/2-ST* 20-12 AWG (0.5-2.5 mm <sup>2</sup> )				
Diode Isolation	Isolation Diodes included within enclosure.				

\* Phoenix Combicon or compatible plug.



UL 508 Listed  
IND. CONT. EQ.  
18 WM, E61379

UL 1950  
E137632

CUL/CSA-C22.2  
No. 234-M90

EMC and  
Low Volt.  
Directive

### Selection Table

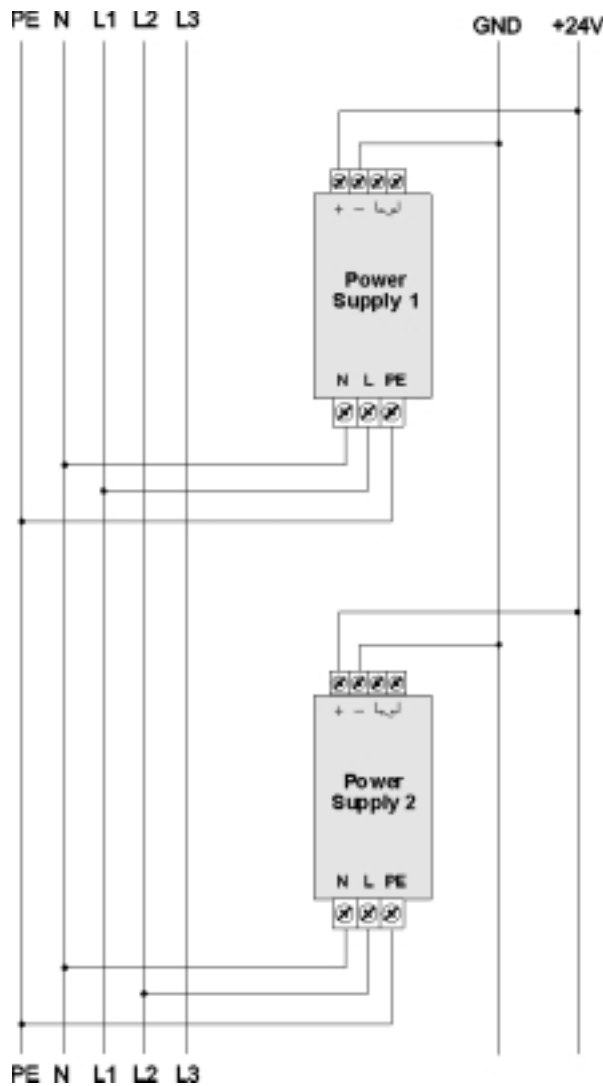
Catalog Number	Description	Connections
SDN2.5-24100RED <sup>1</sup>	SDN2.5-24-100 with Internal Isolation Diodes and DC OK Contact	Pluggable
SDN5-24-100RED <sup>1</sup>	SDN5-24-100 with Internal Isolation Diodes and DC OK Contact	Pluggable
SDN10-24-100RED <sup>1</sup>	SDN10-24-100 with Internal Isolation Diodes and DC OK Contact	Pluggable
SDN20/30RED <sup>2</sup>	External Module with Diodes and DC OK Monitoring. Contact for up to 2 SDN20 or SDN30 power supplies.	Screw Terminals 16-12 AWG (0.5-4 mm <sup>2</sup> )
SDN40RED <sup>2</sup>	External Module with Diodes and DC OK Monitoring. Contact for up to 1 SDN40 power supply.	Screw Terminals 16-12 AWG (0.5-4 mm <sup>2</sup> )

#### Notes:

1. Multiple units required for Redundancy. See diagram on the next page.
2. External module for connecting multiple power supplies sold separately. See diagram on the next page.

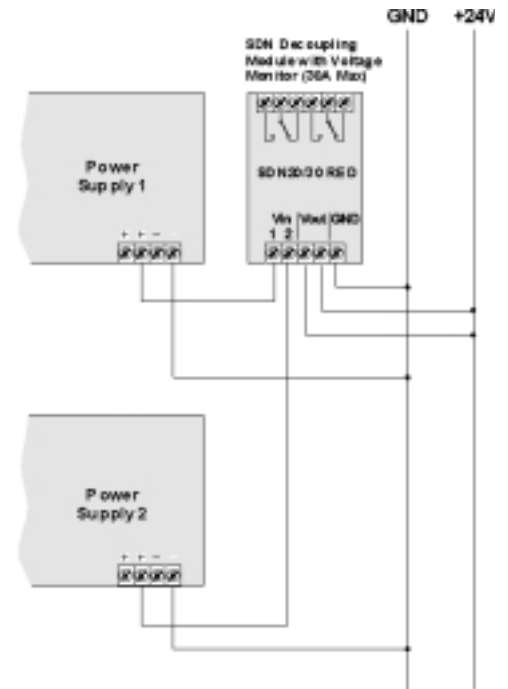
## Connectors and Wiring Diagrams

Power Wiring for SDN2.5-24-100, SDN5-24-100 and SDN10-24-100 RED\*

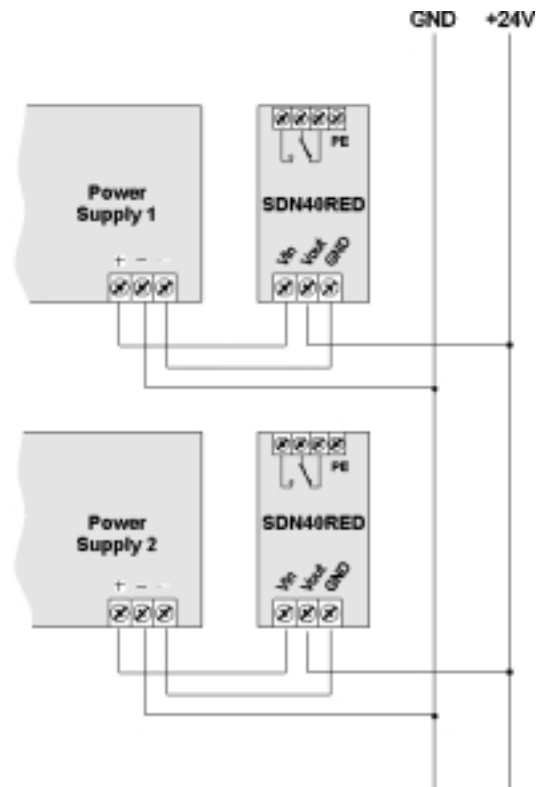


\* Diagram shows optional use of separate phases on input to increase reliability in case of loss of phase.

Power Wiring for SDN20/30 RED



Power Wiring for SDN40 RED



## SDN Redundant Series Specifications for SDN2.5, 5 and 10 RED

Catalog Number			
Description	SDN2.5-24-100RED	SDN5-24-100RED	SDN10-24-100RED
<b>Input</b>			
Input Voltage	115/230 VAC, 47-63 Hz		
	160-375 VDC	210-375 VDC	240-375 VDC
	<b>Note:</b> At DC Input, always leave the switch in the 230V position.		
Input Current	< 1.3 / 0.7 A	< 2.6 / 1.4 A	< 6 / 2.8 A
Inrush Current	< 25 A	< 15 A	< 30 A
	Unit is internally fused (fuse not accessible).		
Transient Handling	Transient resistance acc. To VDE 0160 / W2 (750 V/1.3 ms), for all load conditions.		
Hold-Up Time	> 20 ms at 196 VAC, 24 V / 2.5 A	> 37 ms at 196 VAC, 24 V / 5 A	> 25 ms at 196 VAC, 24 V / 10 A
<b>Output</b>			
Rated Output Voltage	24 VDC		
	For balanced current sharing during parallel operation: 24 VDC +/-0.5% at nominal soft characteristic at no-load, 25.2 V DC +/-2% . This is to ensure more balanced current sharing during parallel operation.		
Output Noise Suppression	Radiated EMI values below EN50081-1, even when using long, unshielded output cables.		
Ambient Temperature	Operation: -10°C...+70°C (>60°C; Derating) Storage: -25°C...+85°C The relative humidity is 95% maximum non condensing.		
Output Current	2.5 A	5 A, 6 A peak for 1 min. @ 45°C	12 A @ 45°C continuous, 10 A @ 60°C continuous, 12 A @ 60°C peak for one minute
Derating	Typ. 1.5 W/K (at T <sub>amb</sub> =+60°C...+70°C)	Typ. 3 W/K (at T <sub>amb</sub> =+60°C...+70°C)	Typ. 12 W/K (at T <sub>amb</sub> =+60°C...+70°C)
Voltage Regulation	< 2% V <sub>out</sub>		
Ripple/Noise <sup>1</sup>	< 30 mVpp		
Overvoltage Protection	Typ. 29 VDC	Typ. 32 VDC	Typ. 35 VDC
Parallel Operation	Yes; current sharing via soft characteristic		
Front Panel Indicator	DC OK Green LED		
Signalling	DC OK Relay Contact		
	*Type Normally open contact		
	*Closes When output voltage > 22.1V +/-4%		
	*Opens When output voltage <19.8V +/-4%		
Contact Rating	1 A at 28 VDC		
<b>Dimensions</b>			
(H x W x D) (in/mm)	4.88 x 1.97 x 4.04 (124 x 50 x 103)	4.88 x 2.56 x 4.04 (124 x 65 x 103)	4.88 x 4.80 x 4.04 (124 x 122 x 103)
Free Space for Ventilation	<b>Above/below:</b> 0.98 in (25 mm) recommended <b>Left/right:</b> 0.39 in (10 mm) recommended (front view)	<b>Above/below:</b> 0.98 in (25 mm) recommended <b>Left/Right:</b> 0.39 in (15 mm) recommended (front view)	
Weight (lbs/g)	1 lb (470 g)	1.5 lbs (620 g)	2.4 lbs (1110 g)
<b>General</b>			
Efficiency	>86.5% (230 VAC, 24 V / 2.5A)	Typ. 89% (230 VAC 24 V / 2.5A)	Typ. 89% (230 VAC 24 V / 10A)
MTBF	390.000 h Acc. To Siemensnorm SN 295000 (24 V/2.5 A, 230 VAC, T <sub>amb</sub> = +40°C)		

<sup>1</sup> Ripple/noise is stated as typical values when measured with a 20 MHz, bandwidth scope and 50 Ohm resistor.

## SDN Redundant Series Specifications for SDN20/30 and 40RED

Catalog Number		
Description	SDN2030RED	SDN40RED
<b>Concept</b>		
By means of a separate redundancy module such as SDN20/30 RED or the SDN40RED, you can interconnect several identical SDN power supply units in a N+1 redundant mode. These external modules decouple the power supply outputs from each other so that, in case of failure, one power supply unit cannot overload the other units. The modules incorporate one DC OK relay contact. The SDN20/30RED modules can be used with up to two SDN20 or SDN30 units. The SDN40RED module can be used for only one SDN40-24-100 power supply. Each 40 A unit in redundancy requires a separate SDN40RED module. Refer to the wiring diagrams.		
<b>Electrical Characteristics</b>		
<b>Voltage</b>		
-Nominal Value	24 VDC	
-Max. Rated	35 V, short-term 45 V	
<b>Voltage Drop</b>		
$-V_{in} \rightarrow V_{out}$	Typ. 0.5 V	Typ. 0.6 V
<b>Current Handling Capacity</b>		
-Nominal Value	20-30A	40 A
-Max. Rated	35 A	50 A
Parallel operation for increasing the power is only permissible if the total output current cannot exceed the maximum rated value (danger of overloading).		
<b>Inverse Battery Protection</b>	Yes	
<b>Connection</b>	Via captive screw terminals	
-Connector size range	<b>Solid:</b> 20-10 AWG (0.5 - 6 mm <sup>2</sup> ) <b>Stranded:</b> 20-12 AWG (0.5 - 4 mm <sup>2</sup> )	<b>Solid:</b> 20-5 AWG (0.5 - 16 mm <sup>2</sup> ) <b>Stranded:</b> 20-8 AWG (0.5 - 10 mm <sup>2</sup> )
<b>Note:</b> GND must be connected to module for voltage monitor to operate properly. See Connectors and Wiring diagrams.		
<b>Relay Contacts</b>		
<b>Relay type</b> relay picks up ("OK") relay drops out	Single Pole Double Throw (SPDT), energized during normal operation When $V_{in}$ between $V_{low}$ and $V_{high}$ When $V_{in} < V_{low}$ or $V_{in} > V_{high}$	
<b>Upper Limit <math>V_{high}</math></b>	30 V +/- 5% fix	<p style="text-align: center;">Hysteresis</p>
-hysteresis	Appr. 0.7 V	
<b>Lower Limit <math>V_{low}</math></b>	Adjustable	
-guaranteed range	16-27 V	
-preset	22 V +/- 1%	
-hysteresis	Appr. 0.7 V	
-Relay Delay	Typ. 50 ms at undervoltage	
<b>Contact Load</b>	22 V DC/ 1 A or 120 V AC/ 0.5 A	48 V DC/ 1 A or 230 V AC/ 0.5 A
<b>Note:</b> All relay contacts are potential-free. The SDN 20/30 RED includes two of these relay contacts, each per input. The SDN40RED contains one contact.		
<b>Dimensions</b>		
<b>(H x W x D) (in/mm)</b>	4.88 x 1.88 x 4.04 (124 x 48 x 103)	4.88 x 1.88 x 4.65 (124 x 48 x 118)
<b>Free Space for Ventilation inches (mm)</b>	<b>Above/below:</b> 0.39 in. (10 mm) recommended <b>Left/Right:</b> 0.39 in. (10 mm) recommended	
<b>Weight (lbs/g)</b>	1.5 lbs (625 g)	1.75 lb (646 g)
<b>General</b>		
<b>Ambient Temperature</b>	Operation: -10°C...+70°C; Storage: -25°C...+85°C The relative humidity is 95% maximum non condensing.	
<b>Efficiency</b>	> 97%	