

In spite of its small size, the SDN-D high performance DIN rail power supply boasts one of the highest efficiencies available in the market today. Higher efficiency means less heat is generated, potentially extending the life of all components in the enclosure. Extensive diagnostic monitoring capabilities are possible with the optional SCM network communication module, which utilizes popular industrial network protocols to provide critical power supply data to computers, PLCs, DCSs HMIs, and other devices. For applications requiring even higher reliability, combine the SDN-D with SDN redundancy modules. With its extensive capabilities, compact design, and notable global certifications, the SDN-D is the ideal solution for use in harsh environments, extreme temperatures (-40 °C to +70 °C), and hazardous locations worldwide.

Applications

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

Features

- High performance unit in a compact package
- Optional network communications modules provides important diagnostic information to controllers, HMI, and computers
- Continuous Power Boost: Up to 120% continuous, for temperatures up to 50 °C
- Multi-turn potentiometer simplifies accurate setting of output voltage
- Extensive international hazardous location certifications, including Class I Zone 2, ATEX, and IECEx. Hazardous location temperature code (T-Code) rating of T4
- Inductive Load Power Boost additional short term power, to assist in starting loads with high inrush current
- Dual output terminals for convenience in wiring
- DC OK relay to provide diagnostic information to a PLC, controller, or monitoring system
- Circuit Interruption Power Boost provides short duration peak current sufficient to trip properly-sized load side fuse or circuit breaker in the event of a load fault
- Universal AC and DC input voltages to accommodate global requirements
- Wide operating temperature range accommodates both extreme hot and extreme cold environments
- Active Power Factor Correction greater than 0.98
- Parallel operation capability standard
- Supports redundant power supply operation using optional SDN™ Redundancy modules
- 5-year limited warranty



Certifications and Compliances *

- **UL** LISTED, Electrical Equipment for Measurement, Control and Laboratory Use; Control Equipment, E61379 – UL/CSA 61010-1, UL/CSA 61010-2-201
- **UL** US UL Recognized Component, Audio/Video, Information and Communication Technology Equipment, E137632 – UL/CSA 62368-1
- **UL** US UL Recognized Component, Haz Loc, E234790; Class I Div 2, Groups A, B, C, D T4; Class I, Zone 2 IIC – UL 121201/CSA 213

Model SDN 10-24-100D

- UL/CSA 60079-0, UL/CSA 60079-7

Model SDN 20-24-100D, SDN 40-24-100D

- UL/CSA 60079-0, UL/CSA 60079-7, UL/CSA 60079-15

- **CE** Low Voltage Directive; **UK CA** Electrical Eqmt (Safety) Regulations
- IEC/EN 62368-1, IEC/EN 61010-1, IEC/EN 61010-2-201

- **CB** Certified: IEC/EN 62368-1, IEC/EN 61010-1, IEC/EN 61010-2-201

- **Ex** ATEX Directive

Model SDN 10-24-100D

- EN IEC 60079-0, EN IEC 60079-7
- **Ex** II 3 G, Ex ec IIC T4 Gc

Model SDN 20-24-100D, SDN 40-24-100D

- EN IEC 60079-0, EN IEC 60079-7, EN IEC 60079-15
- **Ex** II 3 G, Ex ec nC IIC T4 Gc

- IECEx Certified

Model SDN 10-24-100D

- IEC 60079-0, IEC 60079-7; Ex ec IIC T4 Gc

Model SDN 20-24-100D, SDN 40-24-100D

- IEC 60079-0, IEC 60079-7, IEC 60079-15; Ex ec nC IIC T4 Gc

- RoHS (Europe, China)

Related Products

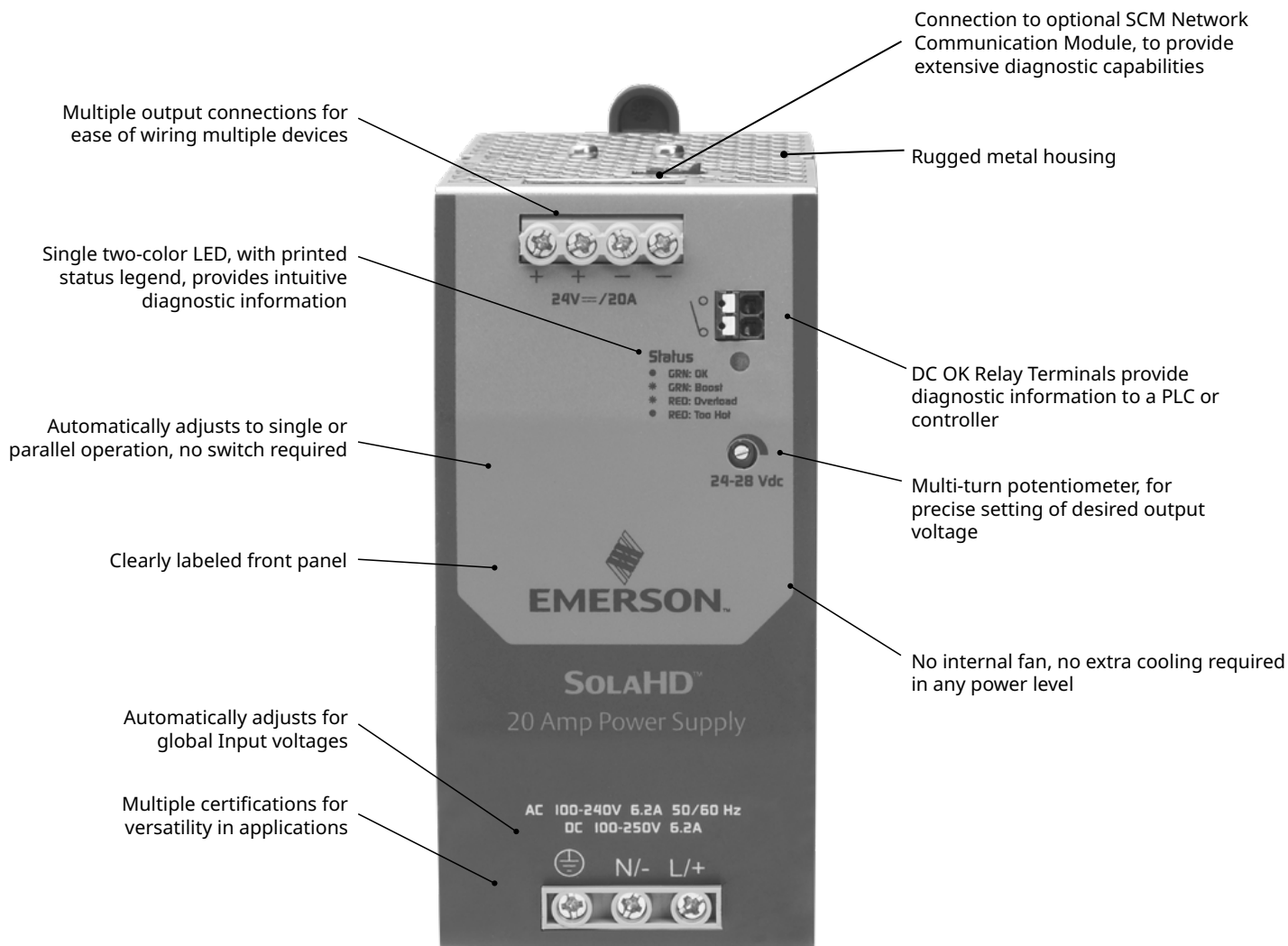
- IP67 SCP-X Standalone Power Supplies
- SDU UPS

Accessories

- SCM Network Communication Modules for Power Supplies
- SDN Redundancy Modules
- Chassis Mount Brackets

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

The SolaHD Difference



Up to 31% narrower than SDN-C models

LED Light Status Conditions

Bi-color LED: Green indicates output power is present. Red indicates no output power due to power supply protection circuitry.

OK	Loss of AC	Continuous Power Boost	Inductive Load Power Boost	Overload	Too Hot
Green (steady)	—	Green (blinking)	Power alternatives On/Off: Green (4s blinking): Output ON Red (4s blinking): Output OFF	Red (blinking)	Red (steady)

SDN-D Specifications (Single Phase)

Description	Catalog Number		
	SDN 10-24-100D	SDN 20-24-100D	SDN 40-24-100D
Input			
Nominal Input Voltage, AC (Range)	100 - 240 Vac (90-264 Vac)		
Nominal Input Voltage, DC (Range)	100-300 Vdc (90-375 Vdc)	100-250 Vdc (90-275 Vdc)	100-300 Vdc (90-375Vdc)
Frequency, AC Input	50/60 Hz (43 – 67 Hz)		
Input Current, AC (typical value at 24.5 Vdc, 10A/20A output)	3.0A at 100 Vac, 1.11A at 240 Vac	6.2A at 100 Vac, 2.19A at 240 Vac	10.6A at 100 Vac, 4.4A at 240 Vac
Input Current, DC (typical value at 24.5 Vdc, 10A/20A output)	3.0A at 100 Vdc, 0.85A at 300 Vdc	6.2A at 100 Vdc, 2.04A at 250 Vdc	10.6A at 100 Vdc, 3.5A at 300 Vdc
Typical Input Inrush current, AC 120 Vac, 25 °C, 100% full load current	7A	10A	8A
Worst case Input Inrush current, AC 240 Vac, 60 °C, 100% full load current	<10A	<13A	<14A
Efficiency (Losses) typical at 25C, full load, and 120Vac/240Vac. Losses are heat dissipation in watts	92.8% at 120Vac, 95% at 240Vac (Losses: 18.6W at 120Vac, 12.6W at 240Vac)	92.2% at 120Vac, 94.5% at 240Vac (Losses: 40.6W at 120Vac, 27.9W at 240Vac)	93.4% at 120Vac, 94.9% at 240Vac (Losses: 67.8W at 120Vac, 51.6W at 240Vac)
Power Factor (PF) at 25°C, Full load, and 120Vac/240Vac	PF >0.98 at 120Vac, and >0.94 at 240Vac		
Current THD (THDi) at 25C, full load, 120Vac/240Vac	THDi < 10% at 120Vac, and < 15% at 240Vac		
Output			
Output Voltage, Nominal	24 Vdc		
Output Voltage, Adjustable Range	Multi-turn potentiometer: 3-turn (approximate) 24-29 Vdc		
Output Voltage, Initial Factory Setting	24.5 V ± 1% at full load		
Output Voltage Tolerance, -25°C to 60°C ambient, Full load, and 100Vac/240Vac	< ±2 % overall		
Output Voltage Ripple, typical (measured with a 20 MHz bandwidth scope and 50 Ohm resistor) at no load to full load and 100-240Vac	<50 mV p-p		
Periodic and Random Deviation (PARD) at at no load to full load and 100-240Vac	<100 mV p-p		
Nominal Output Current (Power)	10A (240W) at +60 °C, continuous	20A (480W) at +60 °C, continuous	40A (960W) at +60 °C, continuous
Continuous Power Boost	12A (288W) from -40 °C to +50 °C, continuous	22A (528W) from -40 °C to +50 °C, continuous	44A (1056W) from -40 °C to +50 °C
High Temperature Output Power De- rating	Linear derating from 240W to 216W power from +60 °C to +70 °C	Linear derating from 480W to 360W power from +60 °C to +70 °C	Linear derating from 960W to 720W power from +60 °C to +70 °C
Parallel Output Operation for Redundancy	Yes*		
Turn On Time (Max) after AC is applied to input, 25 °C, full load 100Vac-240Vac	Resistive load: < 1.0 sec Capacitive load (7000µF): < 1.5 sec		
Minimum Holdup Time at 25 °C, full load, and 100Vac	20 msec		
Output Voltage Fall Time (from 95% to 10% rated output voltage, 25 °C, full load, and 100Vac-240Vac)	< 150 msec		

NOTE:

Unless otherwise noted, all specifications apply to the full range of rated line, load, and temperature parameters, after 5 minutes run time. Convection cooled; no fans required.

* For parallel output operation for increased power, please consult with technical support.

SDN-D Specifications (Single Phase)

Description	Catalog Number		
	SDN 10-24-100D	SDN 20-24-100D	SDN 40-24-100D
Protection			
Short Term Load Power Boost	Short duration: 1.5X for 4 sec		
Circuit Interruption Power Boost	Peak Current: 6X for 15 msec at >19 V		
Short Circuit Protection	Output automatically goes to near zero and output is protected from continuous short circuit. Auto-recovery.		
Back EMF Immunity	< 35 V No damage, Auto-recovery		
Overvoltage Protection	32.0 V maximum. Auto-recovery		
Overtemperature Protection	Output shutdown, LED Alarm. Auto-recovery.		
Environmental Data			
Surge Ratings	2kV L-N, 4kV L-PE, 4kV N-PE (EN 61000-4-11, Criterion A)		
Emissions	EN61000-6-3, EN61000-6-4, EN 61326-1, EN55011, EN55032 Class B. EN61000-3-2, EN 61000-3-3		
Immunity	EN61000-6-1, EN61000-6-2, EN 61326-1, EN 55035, IEC 61000-4 Series (Level 4, Class A). SEMI F47 Sag Immunity		
General Protection / Safety	Protected against continuous short circuit, continuous overload, continuous open circuit. UL/CSA 62368-1 - Overvoltage Category II, Pollution Degree II, SELV UL/CSA 61010-1, UL/CSA 61010-2-201 - Overvoltage Category II, Pollution Degree II IEC/EN 62368-1, IEC/EN 61010-1, IEC/EN 61010-2-201 - Overvoltage Category II, Pollution Degree II, SELV, up to 3000m		
Environmental Rating	Pollution Degree II up to 3000m		
Ingress Protection (IP) Rating	IP20		
Operating Temperature	-40 °C to +70 °C (Output power derating 60 °C to +70 °C, see Output section)		
Storage Temperature	-40 °C to +85 °C		
Humidity (storage and operating)	5 to 95 % RH Non-Condensing; IEC 60068-2-2, IEC 60068-2-3		
Vibration	2.5(g) RMS, 10-2000 Hz (random); three axes for 20 minutes each - IEC 60068-2-6		
Shock	30g 6 msec, 20g 11 msec, 3-axis, 3 bumps/direction (18 bumps in total) - IEC 60068-2-27		
Altitude	0-3000 meters full power		
Restriction on Hazardous Substances (RoHS)	Directive 2011/65/EU amended with Directive EU 2015/863, China RoHS		

NOTE:

Unless otherwise noted, all specifications apply to the full range of rated line, load, and temperature parameters, after 5 minutes run time. Convection cooled; no fans required.

SDN-D Specifications (Single Phase)

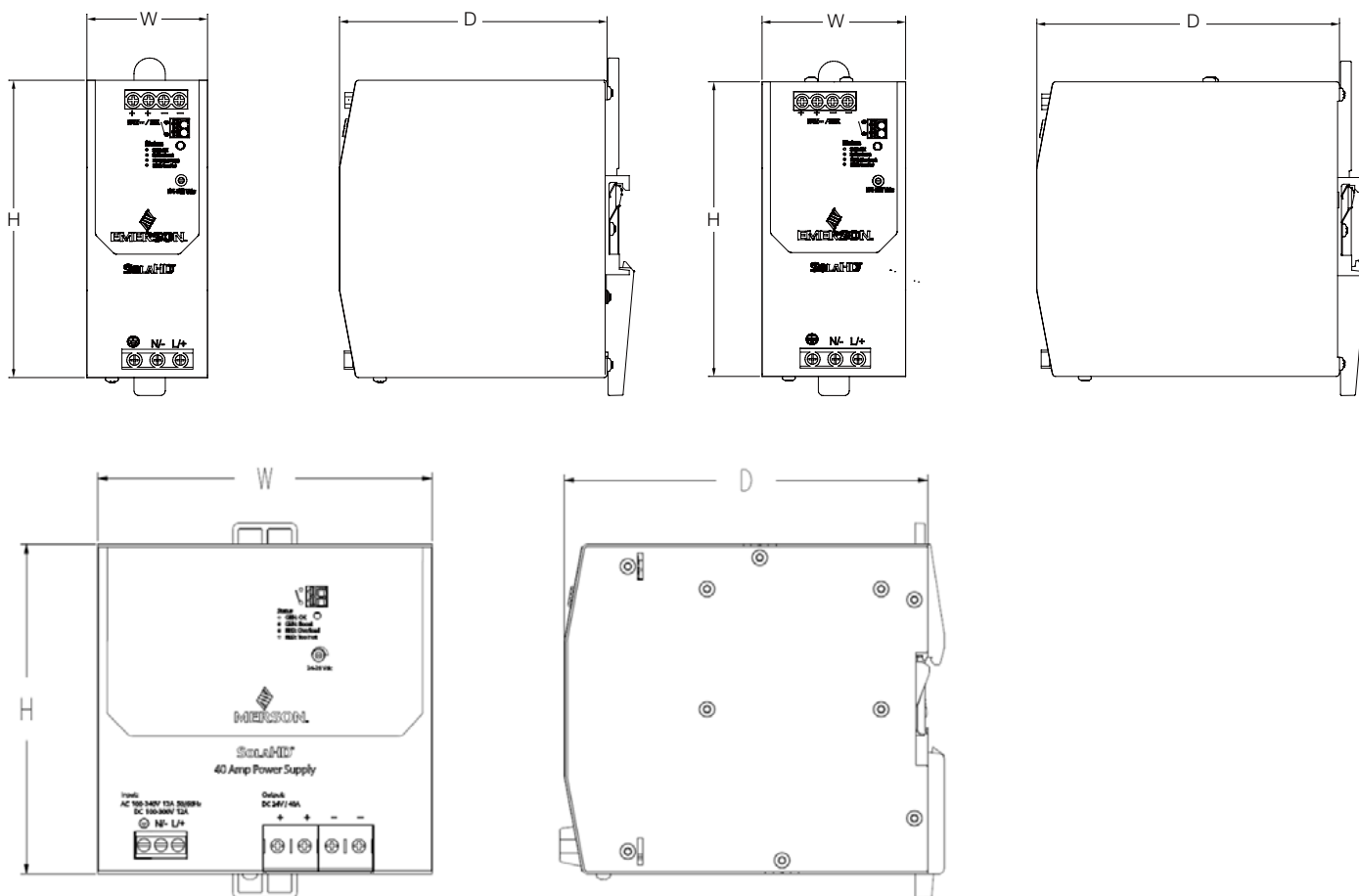
Description	Catalog Number		
	SDN 10-24-100D	SDN 20-24-100D	SDN 40-24-100D
Reliability			
MTBF: Telcordia SR-332 Issue 2 Method 1 Case 3	>773,575 hours @ 115 Vac, 25 °C, 24 Vdc @ 10A output >869,055 hours @ 230 Vac, 25 °C, 24 Vdc @ 10A output >527,547 hours @ 115 Vac, 40 °C, 24 Vdc @ 10A output >584,514 hours @ 230 Vac, 40 °C, 24 Vdc @ 10A output	>944,000 hours @ 115 Vac, 25 °C, 24 Vdc @ 20A output >1,048,000 hours @ 230 Vac, 25 °C, 24 Vdc @ 20A output >609,000 hours @ 115 Vac, 40 °C, 24 Vdc @ 20A output >837,000 hours @ 230 Vac, 40 °C, 24 Vdc @ 20A output	>393,000 hours @ 115 Vac, 25 °C, 24 Vdc @ 40A output >419,000 hours @ 230 Vac, 25 °C, 24 Vdc @ 40A output >296,000 hours @ 115 Vac, 40 °C, 24 Vdc @ 40A output >314,000 hours @ 230 Vac, 40 °C, 24 Vdc @ 40A output
Operating Service Life ⁽¹⁾	>304,000 hours @ 100 Vac input, 25 °C, 24 Vdc @ 10A output >453,100 hours @ 230 Vac input, 25 °C, 24 Vdc @ 10A output >198,600 hours @ 100 Vac input, 40 °C, 24 Vdc @ 10A output >260,300 hours @ 230 Vac input, 40 °C, 24 Vdc @ 10A output	>114,600 hours @ 100 Vac input, 25 °C, 24 Vdc @ 20A output >322,100 hours @ 230 Vac input, 25 °C, 24 Vdc @ 20A output >56,000 hours @ 100 Vac input, 40 °C, 24 Vdc @ 20A output >154,200 hours @ 230 Vac input, 40 °C, 24 Vdc @ 20A output	>199,800 hours @ 115 Vac input, 25 °C, 24 Vdc @ 40A output >255,900 hours @ 230 Vac input, 25 °C, 24 Vdc @ 40A output >107,600 hours @ 115 Vac input, 40 °C, 24 Vdc @ 40A output >125,300 hours @ 230 Vac input, 40 °C, 24 Vdc @ 40A output
Installation			
Fusing - Input	Yes, non-replaceable.		
Fusing - Output	No		
Mounting	Simple snap-on to DIN TS35/7.5 or TS35/15 rail system.		
Input Terminal Connections	Screw terminals. Connector size range: 16–10 AWG (1.5–6 mm2) for solid or stranded conductors. Screw torque: 4.4-6.5 lb-inch (50-73 N-cm). Use only one copper wire per terminal.		
Output Terminal Connections	Two terminals per output. Conductor size range for SDN10/SDN20: 16–10 AWG (1.5–6 mm2) for solid or stranded conductors. Conductor size range for SDN40: 7-6 AWG (10.6-13 mm2) for solid or stranded conductors. Conductor cross section (max), with ferrule (stranded only): 2.5 mm2 for SDN 10/20 and 10 mm2 for SDN 40 Screw torque for SDN 10/20 : 4.4-6.5 lb-inch (50-73 N-cm). Use only one copper wire per terminal. Screw torque for SDN 40 : 15.6 lb-inch (176 N-cm). Use only one copper wire per terminal.		
DC OK Terminal Connections	Conductor size range: 16-24 AWG (1.5-0.2 mm2) solid or stranded conductors. Use only one copper wire per terminal. Conductor cross section (max) with ferrule (stranded only): 0.75 mm2 Stripping Length: 8 mm Slotted screwdriver size for releasing of wire conductors (Blade thickness x Width) 0.4 x2.5 mm		
Free Space - Above and Below	0.98 in (25 mm)		
Free Space - Left and Right	0.39 in (10 mm)		
Free Space - Front	0.59 in (15 mm)		
Dimensions - WxDxH in (mm)	4.8 x 2.0 x 4.4 (123 x 50 x 111)	4.8 x 2.4 x 5.0 (123 x 60 x 127)	4.8 x 4.9 x 5.3 (123 x 125 x 135)
Weight (typ) - lbs (kg)	1.54 lbs (0.7 kg)	2.2 lbs (1.0 kg)	5.95 lbs (2.7 kg)
General			
Case	Fully enclosed metal housing with fine ventilation grid to keep out small parts.		
Diagnostic Status Indicators	Single 2-color LED “DC OK” Relay: N.O. contact rated 50 Vdc, 1A. Signal Active when Vout> 18.5 Vdc +/-5%.		
Warranty	5 Year Limited Warranty		

NOTE:

Unless otherwise noted, all specifications apply to the nominal range of rated line, load, and -25 °C to 60 °C ambient temperature, after 5 minutes run time. Convection cooled; no fans required.

(1) Based on the lifetime expectancy of the built-in electrolytic capacitors, as reported by the capacitor manufacturer's specification. Values exceeding 131,400 hours are theoretical calculations, provided for comparison purposes only.

SDN-D Series Dimensions



Catalog Number	Dimensions - inches (mm)		
	H	W	D
SDN-10-24-100D	4.8 (123)	2.0 (50)	4.4 (111)
SDN-20-24-100D	4.8 (123)	2.4 (60)	5.0 (127)
SDN 40-24-100D	4.8 (123)	4.9 (125)	5.3 (135)

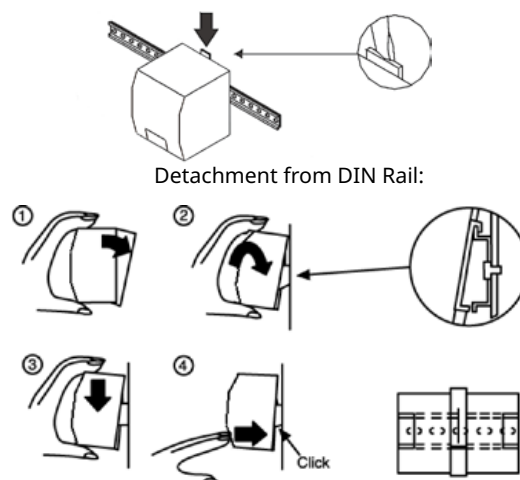
SDN-D Series Mounting

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

DIN Rail Mounting

Snap on the DIN rail:

1. Tilt unit slightly backwards. Put it onto the DIN rail
3. Push downwards until stopped
4. Push at the lower front edge to lock
5. Shake the unit slightly to ensure that the retainer has locked



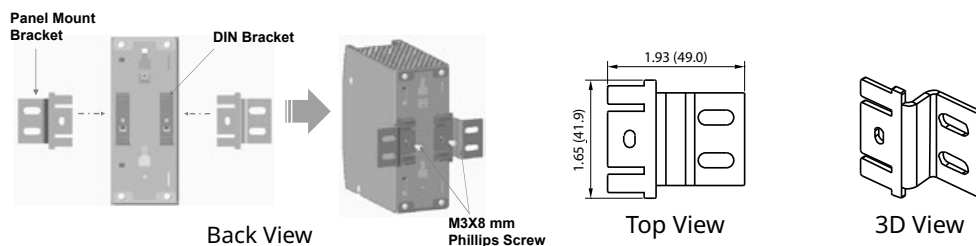
Panel Mounting

Panel mounting of SDN-D power supplies is simplified by using an optional SDN-PMBRK3 Panel Mounting Bracket kit. Each kit comes with two brackets for screw mounting one power supply to a panel. Note that the Panel Mount bracket will add approximately 2-4mm in depth, compared to DIN rail mounting. Refer to the manual that comes with the bracket kit for detailed instructions on assembly and mounting.

SDN-PMBRK3

Power Supply
SDN 10-24-100D
SDN 20-24-100D
SDN 40-24-100D

Dimensions - in. (mm)



Accessories: Communication Modules

Accelerate your digital transformation journey with control power monitoring that improves operational effectiveness and accelerates resolution of adverse conditions. Each SolaHD Communications Module (SCM) provides data access to single and paired SDN-D Series high-performance power supplies over web server and popular fieldbus networks. This solution enables real-time input and output power monitoring, captures adverse power events, and annunciates user defined alarm conditions. It enhances efforts to monitor the health and performance of control devices towards ensuring greater system reliability and eliminating unscheduled downtime.

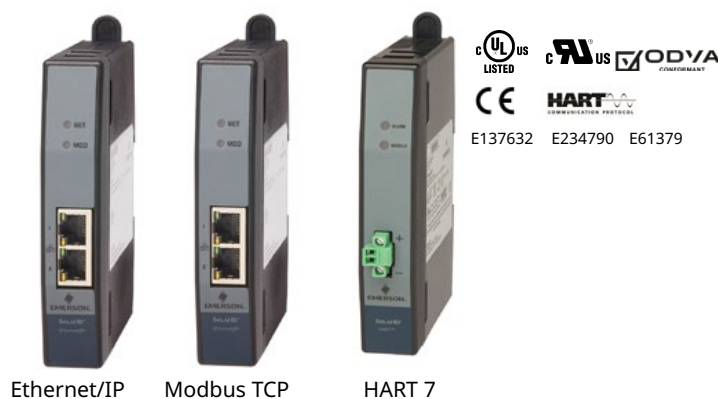
Features

- Monitors power supply operation and annunciate abnormal conditions.
- Report alarms for user-set levels of current loading, temperature, voltage, and others
- Track and alarm on control enclosure temperature changes
- Monitor power supply events, event counts, and the event logs (SCM-E-EIP & SCM-E-MBUS)
- Visually monitor operating status by onboard LED indicators
- Each SCM supports (2) SDN-D series power supplies
- Each SCM ships with 2 power supply connection cables (no other wiring required)

Certifications and Compliances

All Models

- **CE**
 - LV- IEC/EN 62368-1; IEC/EN 61010-1; IEC/EN 61010-2-201
- **CB**
 - IEC/EN 62368-1; IEC/EN 61010-1; IEC/EN 61010-2-201; IEC/EN 60950-1
- **UL** Listed, Ind. Control Equip., E61379
 - UL/CSA 61010-1; UL/CSA 61010-2-201
- **UL** Recognized Component, ITE, E137632; Haz Loc E234790
 - UL/CSA 60950-1; UL/CSA 62368-1; UL 121201/CSA C22.2 No. 213
 - Class I Division 2, Groups A, B, C, D, T4; UL/CSA 60079-0; UL/CSA 60079-7 Class I, Zone 2, IIC, T4
- ATEX Directive
 - II3G Ex ec IIC Gc
 - IEC/EN 60079-0; IEC/EN 60079-7
- IECEx Certified
 - Ex ec IIC Gc
 - IEC/EN 60079-0; IEC/EN 60079-7
- RoHS Compliant
 - EU RoHS
 - China RoHS



Ethernet/IP

Modbus TCP

HART 7



Typical Connection: SDN-D to SCM

Models SCM-E-EIP & SCM-E-MBUS

- **CE**
 - EMC- EN 55032 Class B; EN 61000-3-2; EN 61000 3-3; EN 61326-1; EN 55011 Group 1 Class B; EN 55035; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4

- **ODVA** CONFORMANT

Model SCM-W-HRT7

- **CE**
 - EMC- EN 55032 Class B; EN 61000-3-2; EN 61000 3-3; EN 55011 Group 1 Class B; EN 61000-6-3; EN 61000-6-4; EN 55035

- **HART** COMMUNICATIONS

Related Products

- Power Supply Redundancy (RED) Modules

Specifications

Catalog Number	SCM-E-EIP		SCM-W-HRT7	SCM-E-MBUS
Protocol	Ethernet/IP (ODVA Conformant)		HART 7 (Fieldcomm Group Registered) ⁽²⁾	Modbus TCP
Physical				
Power Supply Connection	Either 1 or 2 SDN-D Power Supplies can be supported by a single SCM module. Power and communication are provided with included 8 inch cables.			
Network Connection and Topologies Supported	Dual RJ-45. Pass-through. Star, Linear, or Device Level Ring.	2-wire terminal connection. Point-to-Point or Multidrop.	Dual RJ45. Pass through, Star, Linear, or Device Level Ring	
Transmission Speed	10 Mbps, 100 Mbps		FSK HART – 1200 baud	10 Mbps, 100 Mbps
Transmission Medium	Shielded CAT6 Twisted-pair cable	Individual shielded twisted-pair cable	Shielded CAT6 Twisted-pair cable	
Data				
Power Supply Parameters	Output Voltage, Output Current, Input Voltage, Power Supply Temperature, Max Output Voltage, Max Output Current, Max Input Voltage, Max Power Supply Temperature			
Power Supply Alarms and Warnings	Output Short Circuit, Over Voltage, Over Temperature, Power Boost			
User Configurable Warnings	Output Current, Power Supply Temperature			
Power Supply Timers	Lifetime, Time since last DC power up			
Power Supply Counters	Output Short Circuit, Over Voltage, Over Temperature, Power Boost			
Other Data	Part number, Serial number, Revision number, Power Supply Status, SCM Status, SCM Temperature			
Weight and Dimensions				
H x W x D - in (mm)	5.51 x 1.00 x 4.27 (139.94 x 25.46 x 108.41) with sliding arm 4.85 x 1.00 x 4.27 (123.28 x 25.46 x 108.41) without sliding arm			
Weight - oz (g)	5.7 (161)		4.8 (137)	5.7 (161)
Environmental				
Temperature °C (°F)	Storage: -40 to +85 (-40 to +185) Operating: -40 to +70 (-40 to +158)			
Humidity	5% to 95% RH, noncondensing			

Network and Module Status Indicators

SCM-W-HRT7 LED Indicator	Status	Meaning
Module Status	Green, steady	Normal operation, no errors
	Red, blinking	Incompatible supply connected
Alarm Status	Green, steady	No alarm/alerts active
	Green, blinking	Device Alert active - Maintenance
	Red, blinking	Device Alert active - Failure
	Amber, blinking	Process Alarm active
SCM-E-EIP & SCM-E-MBUS LED Indicator	Status	Meaning
Module Status	Off, steady	No power
	Green, steady	Device operational
	Green, blinking	Standby
	Red, blinking	Major Recoverable Fault
	Green/Red, blinking	Self-test
	Off, steady	Not powered, no IP address
Network Status	Green, steady	Connected
	Green, blinking	No connections
	Red, blinking	Connection timeout
	Red, steady	Duplicate IP
	Green/Red, blinking	Self-test

(2) Registration pending.

SolaHD™ SDN-D High Performance DIN Rail Series

Series
SCM

Accessories - Power Supply Communication Modules

Selection Table

Catalog Number	Description
SCM-E-EIP	2-Port EtherNet/IP Network Communications Module
SCM-W-HRT7	HART 7 Network Communications Module
SCM-E-MBUS	2-Port Modbus TCP Network Communications Module

Dimensions - in. (mm)

