

# SmartD Clean Power VFD SDB-1-2185-A

## FEATURES

- Pure sine wave 3-phase power output
- Active Front End (AFE)
- Ultra Low Harmonics (THDi<5%), better than IEEE 519 recommendation
- Near Unity Power Factor
- Full regenerative capabilities
- Scalar V/f and Vector control for 3-phase AC induction motors
- Multifunctional, digital and analog IOs
- Built-in safe torque off (STO) inputs SIL 3 capacity level to IEC61800-5-2
- 24 VDC power supply input
- Dual Ethernet port
- Configurable Linear and S-curve ramps
- Starting torque boost
- Integrated EMC filters
- Set, monitor, control it with an app
- Natural language user interface



The SmartD Clean Power Variable Frequency Drive is a compact AC drive utilizing SmartD's patented own algorithms combined with Sic transistor technology. Producing a clean and pure sine wave to power and control 3-phase AC induction motors has never been easier. The SmartD VFD has essential features built-in for space, wiring and time savings, it eliminates the need for filters on the input and output, and guarantees low harmonic and longer motor lifetime.



**CLEAN  
SIGNAL**



**50%  
SMALLER**



**ENERGY  
SAVINGS**

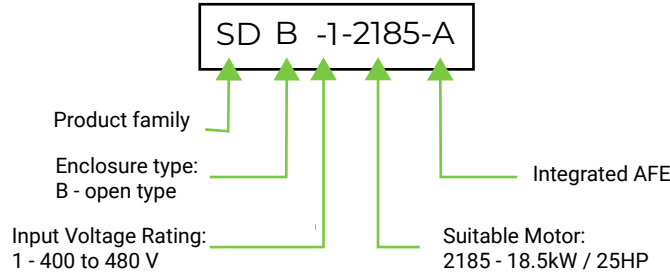
**SMART D**

Clean Power Variable Frequency Drive

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**TYPE DESIGNATION**



ITEM	SPECIFICATION	
<b>POWER INPUT</b>		
Supply type	Wye Solidly Grounded / TT and TN systems	
Voltage Rating $U_{in}$	3 x 400VAC -15% / +10%	
	3 x 480VAC -15% / +10%	
Frequency $F_n$	50 and 60Hz +/- 5%	
Current Rating $I_{in}$	36A	
Harmonics	<5%	
Power Factor Correction	Near Unity	
Apparent power @480V	34 kVA	
Prospective line Isc (SCCR)	5 kA	
<b>POWER OUTPUT</b>		
Rated Current $I_{out}$ @40 °C (104 °F)	Normal operation	34 A
	Heavy duty operation	24 A
Maximum Transient Output current	Normal operation	110% during 60s every 10 min at 40 °C (104 °F)
	Heavy duty operation	150% during 60s every 10 min at 40 °C (104 °F)
Motor Power kW normal duty (1)	3x400VAC 50/60Hz	max 15kW
	3x460VAC 50/60Hz	max 18.5kW
Motor Power kW heavy duty (1)	3x400VAC 50/60Hz	max 11kW
	3x460VAC 50/60Hz	max 15kW
Speed drive output Frequency	0.1 to 120 Hz, up to 1000 Hz dedicated firmware	
Nominal switching frequency	105 kHz	
Effective switching frequency	210 kHz	
Efficiency	97%	

- (1) Motor power values are indicative. They vary with the motor type, technology and manufacturer. The variable frequency drive must not be selected from motor power rating. The variable frequency drive must be selected by skilled and experienced personnel. The variable frequency drive must be selecting according to motor FLA, the load's driving force and the movement cycle, and the operating environment.
- (2) Continuously available without overload.

\* Specifications are subject to change without notice.

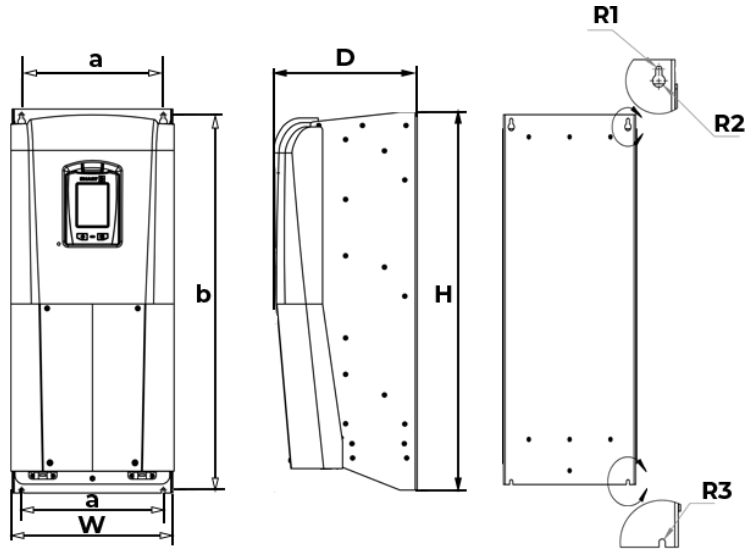
**DIMENSIONS**

Overall dimensions

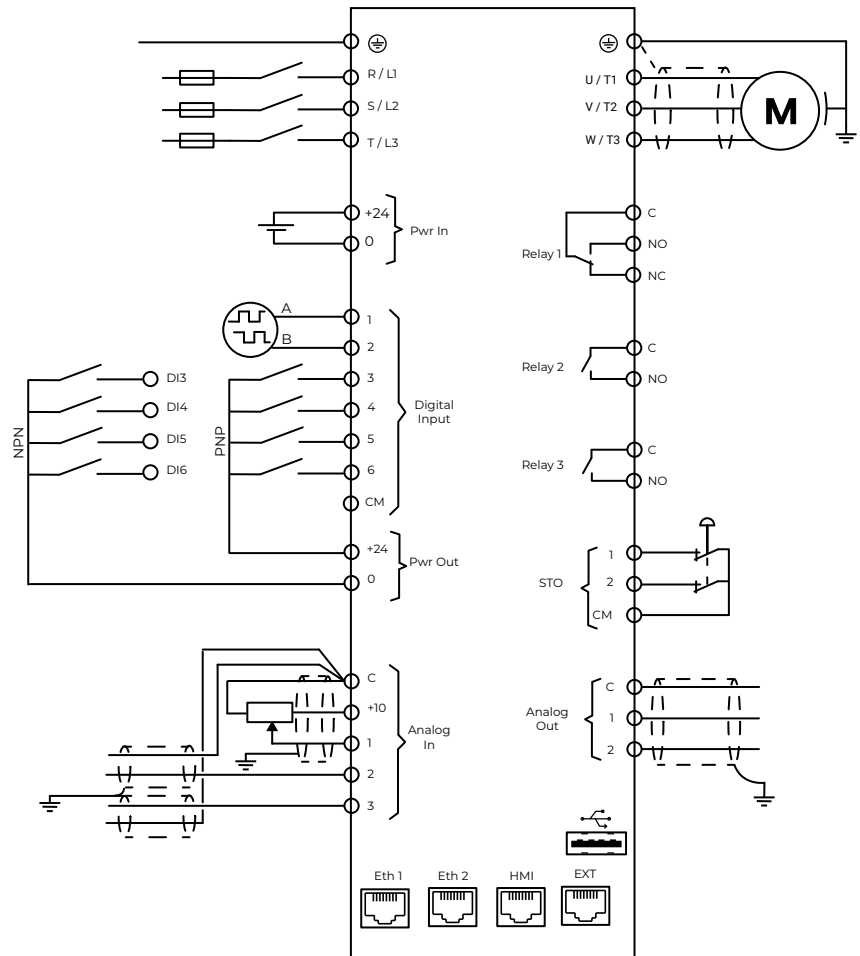
W: 301 mm / 11.85 in  
H: 650 mm / 25.59 in  
D: 251 mm / 9.88 in

Mounting dimensions

a: 165.1 mm / 6.50 in  
b: 575.55 mm / 22.659 in  
R1: 3.47 mm / 0.137 in  
R2: 6.72 mm / 0.265 in  
R3: 3.47 mm / 0.137 in  
Screw : M5 or size 10 (imperial)



**WIRING**



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ITEM	SPECIFICATION	
<b>DIGITAL I/O's</b>		
Digital input numbers		6
Digital inputs common terminal		1
Inputs 1 and 2	Reserved for encoder	0...50 kHz, 24 VDC, A/B phase for speed and direction
Inputs 3 to 6	Settable by user	default setting as DI3 = Run forward, DI4 =Run Reverse, DI5=Stop , DI6=preset speed/speed from Analog input 1
Input logic	Wire-able as sink/source, configured by software	default : source
Output power for digital inputs		+24VDC (20% .. +20%) / 100 mA
STO (safe torque off) inputs	2 inputs	SIL 3 capacity level - conformed to IEC61800-5-2
	stop category	0
Digital output numbers		3
relay 1	Relay output SPDT (form C)	NO contact Resistive load, AC: 5 A @ 250 V / DC 5 A @ 30 V
		NC contact Resistive load, AC: 3 A @ 250 V / DC 3 A @ 30 V
relay 2 and 3	Relay output NO (form A)	Resistive load, AC: 3 A @ 250 V / DC 3 A @ 30 V
<b>ANALOG I/O's</b>		
Analog input numbers		3
Analog input types	Settable by user	0..10VDC 0..20mA / 4..20mA 0..24VDC Impedance to read PTC temperature sensor
Resolution		12 bits
Accuracy		± 1% at 25 °C (77 °F) / ± 2% for a temperature variation of 60 °C (108 °F)
Reference power supply for potentiometer		+10 VDC / tolerance ± 2% for the temperature range of 20 °C to 30 °C / Current: maximum 20 mA.
Analog output numbers		2
Analog output types	Settable by user	0..10VDC (15 mA max) 0..20mA / 4..20mA
Resolution		12 bits
Accuracy		± 1% at 25 °C (77 °F) / ± 2% for a temperature variation of 60 °C (108 °F)

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ITEM		SPECIFICATION
COMMUNICATIONS		2 Ethernet Ports
ENVIRONMENT		
Insulation resistance		> 1 MOhm 500 V DC for 1 min to earth
Noise Level		63.5 dB conforming to 86/188/EEC
Heat dissipation	At rated current output:	387 W at 430 V, switching frequency 105 kHz
Cooling	Forced air flow (power):	<b>6.02 m<sup>3</sup>/min , 212.6 CFM</b>
Surrounding environment pollution degree		2 conforming to EN/IEC 61800-5-1
Vibration resistance		1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6
Relative humidity		5...95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation		-15...50 °C without de-rating <b>if not specified otherwise</b>
for storage		-40...70 °C
Cooling		Integrated, replaceable fans
Operating altitude		<b>Lower than 2000 m/6600 ft</b>
Environmental characteristic		Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to EN/IEC 60721-3-3
Ingress Protection IP	IP20	According to the IEC standard 60529
Protection Degree		UL type 1

APPLICABLE STANDARDS	
Functional Safety	UL /IEC 61800-5-1 :2007+AMD:2016CSV C22.2 No. 274
EMC	IEC 61800-3: 2017 emissions IEC 61000-4 immunity
Harmonics	IEC 61000-3-12 IEEE 519
Generic	IEC 61800-2 : 2021
EcoDesign / Energy Efficiency	IEC 61800-9
Safety Standard (STO)	IEC 61508 part 1 and part2 IEC 62061 :2021
Cybersecurity	IEC62443
Environmental	IEC 60068-2 WEEE directive RoHS

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