SMART D

Clean Power VFD

SDB-1-2185-A

FEATURES

- Pure sine wave 3-phase power output
- Active Front End (AFE)
- Ultra Low Harmonics (THDi<5%)
- 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 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 ***Clean Power*** **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

EMBEDDED FILTERS

OPTIMAL SYSTEM COST

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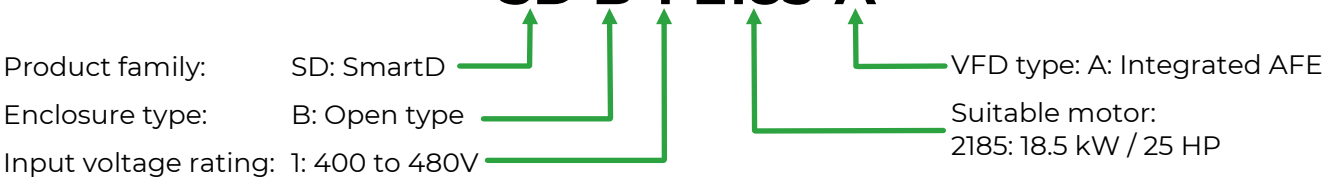

ITEM	SPECIFICATION	
POWER INPUT		
Supply Type	WYE solidly grounded / TT and TN systems	
Voltage Rating U_{in}	3 x 400 VAC –15% / +10%	
	3 x 480 VAC –15% / +10%	
Frequency F_n	50 and 60 Hz +/- 5%	
Current Rating I_{in}	36 A	
Harmonics	THDi < 5%	
Power Factor Correction	Near unity PF	
Apparent Power @480V	34 kVA	
Prospective Line Isc (SCCR)	5 kVA	
POWER OUTPUT		
Rated current I_{out} @50°C (122°F)	Normal operation Heavy duty operation	34 A 25 A
Maximum Transient Output Current	Normal operation Heavy duty operation	110% during 60 seconds every 10 minutes at 50°C (122°F) 150% during 60 seconds every 10 minutes at 50°C (122°F)
Motor Power kW Normal Duty (1)	3 x 400VAC 50/60Hz 3 x 460VAC 50/60Hz	max 15 kW / 20 HP max 18.5 kW / 25 HP
Motor Power kW Heavy Duty (1)	3 x 400VAC 50/60Hz 3 x 460VAC 50/60Hz	max 11 kW / 15 HP max 15 kW / 20 HP
Speed Drive Output Frequency	0.1 to 120 Hz	
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.

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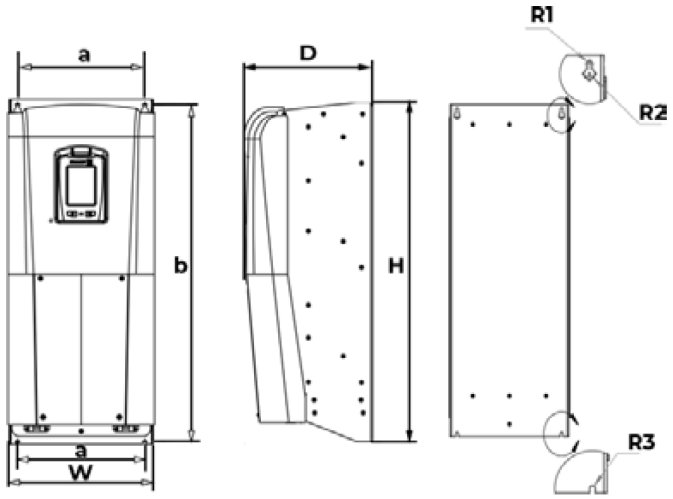
DIMENSIONS

Frame size: S3

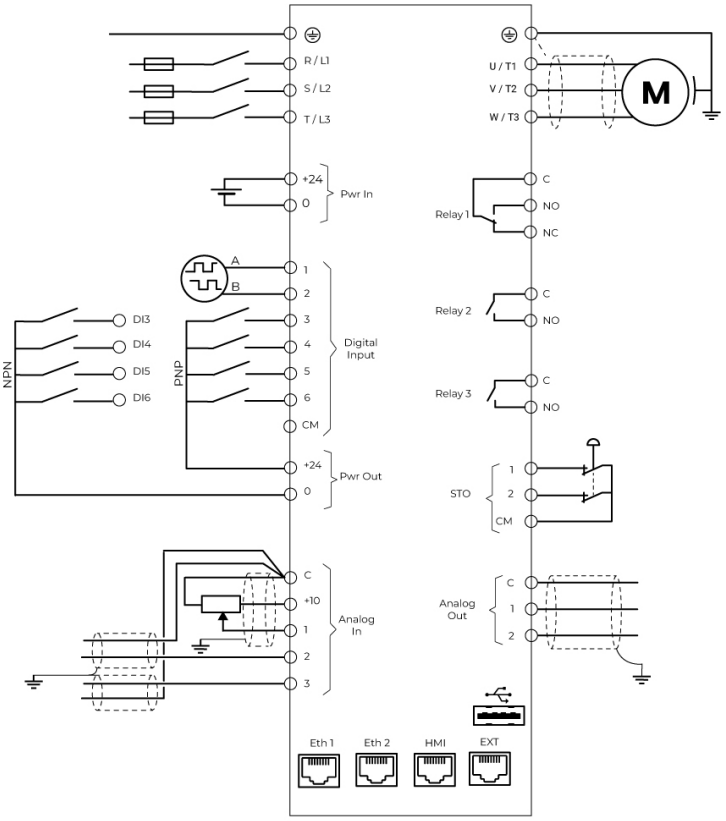
Overall dimensions
W: 301 mm / 11.85 in
H: 650 mm / 25.59 in
D: 251 mm / 9.88 in

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
DIGITAL i/O's	
Digital input numbers	6
Digital input common terminal	1
Input 1 and 2 (DI1, Di2)	Settable by user 0..50 kHz, 24 VDC Usable with incremental encoder A/B phase for speed and direction
Input 3 to 6 (DI3, DI4, DI5, DI6)	Settable by user Default setting: DI3 = Run forward DI4 = Run reverse Di5 = Stop DI6 = Preset speed / speed from Analog Input 1
Input logic	Wirable as sink / source, configured by software (default source)
Output power for digital inputs	+24 VDC (-20% .. +20%) / 100 mA
STO (safe torque off) inputs (STO1, STO2)	SIL 3 capacity level, Stop category 0 Conformed to IEC 61800-5-2
Digital output numbers	3
Relay 1	Relay output SPDT (form C), NO contact: Resistive load, AC: 5 A @ 250 V / DC 5A @ 30 V NC contact: Resistive load, AC: 3 A @ 250 V / DC 3 A @ 30 V
Relay 2 and 3	Relay output SPST (form A) NO contact: Resistive load, AC: 3 A @ 250 V / DC 3 A @ 30 V
ANALOG I/O's	
Analog input numbers	3
Analog input type	Settable by user, 0..10 VDC, 0..20 mA / 4..20 mA, 0..24 VDC, Impedance to read PTC temperature sensor
Resolution	12 bits
Accuracy	±1% at 25°C (77°F) / ±2% for temperature variation of 60°C (108°F)
Reference power supply for potentiometer	+10 VDC / tolerance ±2% for temperature range of 20°C to 30°C Maximum current: 20 mA
Analog output numbers	2
Analog input type	Settable by user, 0..10 VDC (15 mA max), 0..20 mA / 4..20 mA
Resolution	12 bits
Accuracy	±1% at 25°C (77°F) / ±2% for temperature variation of 60°C (108°F)

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ITEM	SPECIFICATION
COMMUNICATIONS	2 Ethernet ports (RJ45)
ENVIRONMENT	
Insulation resistance	> 1 MOhm 500 VDC for 1 minute 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	Integrated, replaceable fans Forced air flow (power): 6.02 M^3/min, 212.6 CFM
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 derating (if not specified otherwise)
Ambient air temperature for storage	-40..-70°C
Operating altitude	Lower than 2000 m/ 6600 ft
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 60529 standard
Protection degree	UL type 1

ITEM	SPECIFICATION
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 part 2 IEC 62061 : 2021
Cybersecurity	IEC 62443
Environmental	IEC 60068-2 WEEE directive RoHS