

SmartD Clean Power VFD SDB-2-2220-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 harmonics and longer motor lifetime.



**CLEAN
SIGNAL**



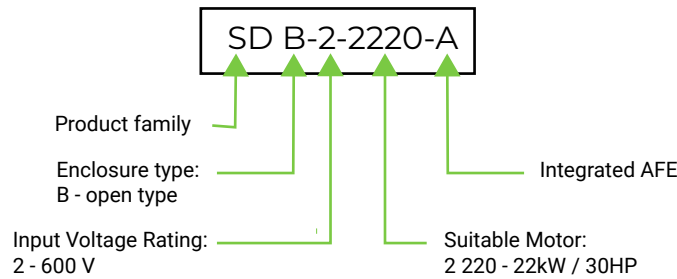
**50%
SMALLER**



**ENERGY
SAVINGS**



TYPE DESIGNATION



| ITEM | SPECIFICATION | |
|--|--|--|
| POWER INPUT | | |
| Supply type | Wye Solidly Grounded / TT and TN systems | |
| Voltage Rating U_{in} | 3 x 600VAC -15% / +10% | |
| Frequency F_n | 50 and 60Hz +/- 5% | |
| Current Rating I_{in} | 36A | |
| Harmonics | <5% | |
| Power Factor Correction | Near Unity | |
| Apparent power @600V | 38 kVA | |
| Prospective line Isc (SCCR) | 5 kA | |
| POWER OUTPUT | | |
| Rated Current I_{out} @40 °C (104 °F) | Normal operation | 34A |
| | Heavy duty operation | 24A |
| 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) | 3x560VAC 50/60Hz | max 22kW 30HP |
| Motor Power kW heavy duty (1) | 3x560VAC 50/60Hz | max 18.5kW 25HP |
| Speed drive output Frequency | 0.1 to 120 Hz, up to 1000Hz w/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.

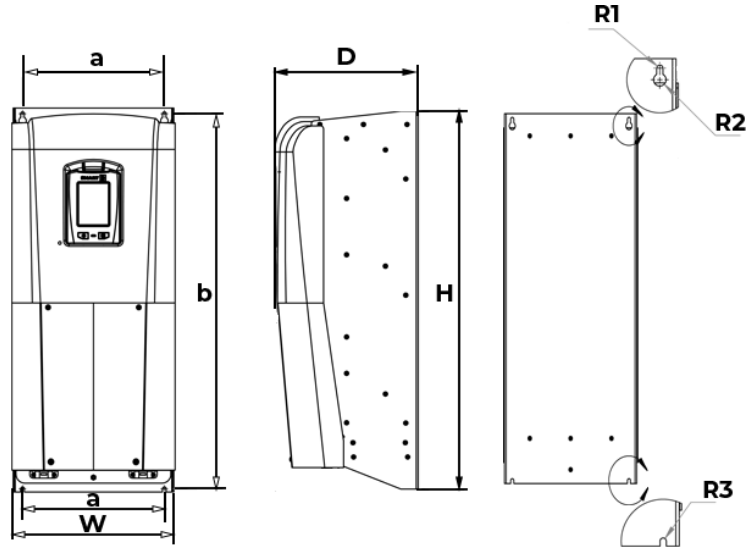
DIMENSIONS

Overall dimensions

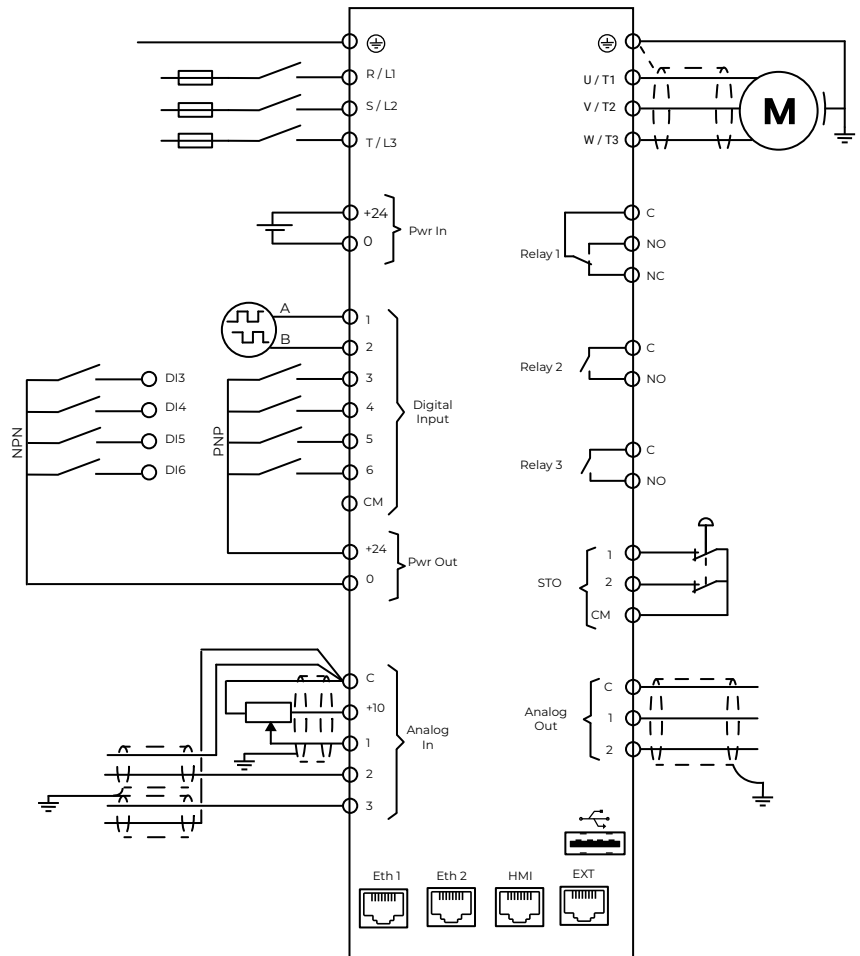
W: 301 mm / 11.85 in
H: 650 mm / 25.59 in
D: 251 mm / 9.88 in

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 | | |
|--|--|------------|---|
| DIGITAL I/O's | | | |
| 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 |
| ANALOG I/O's | | | |
| 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: | TBD |
| Cooling | Forced air flow (power): | 6.02 m³/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 de-rating if not specified otherwise |
| for storage | | -40...70 °C |
| Cooling | | Integrated, replaceable fans |
| Operating altitude | | <= 2000 m (6600 ft) without de-rating |
| 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 (NEMA) |

| 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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