

DATA SHEET

VELRON VCD100

Frequency Inverter 0.75 kW – 2.2 kW · Mains supply 1PH 230 VAC



Features

- V/F control, sensorless vector control (SVC) and closed loop vector control with pulse generator (CLV)
- Output frequency up to 599 Hz
- Safety function STO (Safe Torque Off), dual-channel
- Built-in EMC filter
- Overload capacity 150 % for 60 s (G type)
- Onboard PID controller, simple PLC, up to 16 preset speeds
- RS-485 interface
- Motor temperature monitoring (PT100, PT1000, KTY84, PTC)
- Enclosure rating IP20, 35 mm DIN rail mounting supported

Application

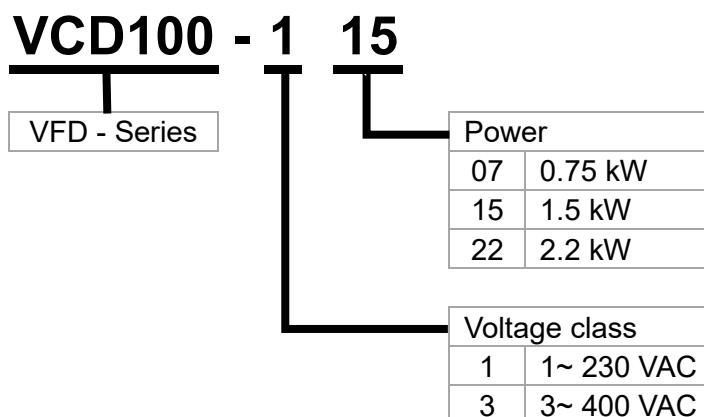
The Velron VCD100 frequency inverter is intended for speed control of three-phase asynchronous motors. It is designed for installation in a control cabinet or in a machine (degree of protection IP20) and may only be operated indoors.

It is connected to a single-phase 230 V AC, 50/60 Hz supply. A three-phase 230 V AC motor of suitable power is connected to the output.

Model Overview

Model	VCD100 - 107	VCD100 - 115	VCD100 - 122
Rated Input Voltage	1PH 230 VAC, 50/60 Hz	1PH 230 VAC, 50/60 Hz	1PH 230 VAC, 50/60 Hz
Rated Input Current	7.2 A	10.0 A	16.0 A
Rated Output Voltage	3PH 230 VAC	3PH 230 VAC	3PH 230 VAC
Rated Output Current	3.8 A	7.2 A	9.0 A
Rated Output Power	0.75 kW	1.5 kW	2.2 kW
Recommended Motor Power	0.75 kW	1.5 kW	2.2 kW
EMC Filter	Yes - Built in	Yes - Built in	Yes - Built in

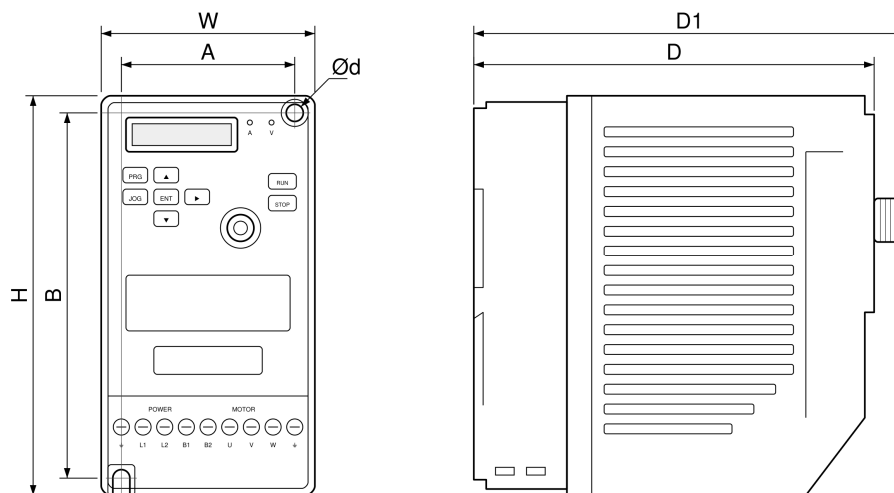
Type Code



Technical Data

Area	Item	Technical specification VCD100
Control	Control mode	Voltage/frequency control (V/F) Sensorless vector control (SVC – no pulse generator) Closed loop vector control (CLV – with pulse generator)
	Maximum output frequency	Vector control: 0 - 599 Hz; V/F control: 0 - 599 Hz
	Carrier frequency	0.5 kHz - 16 kHz, can be adjusted automatically to the load
	Input frequency resolution	Digital: 0.01 Hz; analog: maximum output frequency x 0.025 %
	Startup torque	G type: 0.5 Hz / 150 % (no PG); 0 Hz / 180 % (with PG) P type: 0.5 Hz / 100 %
	Speed range	1:100 (no PG); 1:1000 (with PG)
	Speed control accuracy	± 0.5 % (no PG); ± 0.02 % (with PG)
	Speed fluctuation	± 0.2 % (no PG); ± 0.06 % (with PG)
	Overload capacity	G type: 60 s at 150 %, 3 s at 180 % of the rated current P type: 60 s at 120 %, 3 s at 150 % of the rated current
	Torque boost	Fixed boost; customized boost 0.1 % - 30.0 %
	V/F curve	Straight-line, multi-point, N-th power (1.2; 1.4; 1.6; 1.8; square)
	V/F separation	Complete separation, half separation
Functions	Ramp mode	Straight-line ramp, S-curve ramp; four groups of acceleration/deceleration time, 0.0 - 6500.0 s
	DC braking	Frequency 0.00 Hz to maximum frequency; braking time 0.0 - 100.0 s; braking current 0.0 % - 100.0 %
	JOG control	JOG frequency 0.00 Hz - 50.00 Hz; ramp time 0.0 s - 6500.0 s
	Preset speeds	Up to 16 preset speeds via simple PLC or digital inputs
	Onboard PID	For process-controlled closed-loop systems
	Auto voltage regulation (AVR)	Compensates for mains voltage fluctuations
	Over-voltage/over-current stall protection	Automatic current and voltage limitation during operation
	Fast current limiting (FCL)	Prevents frequent overcurrent faults
	Torque limiting and torque control	Limits the torque automatically
	Ride-through at power failure	Regenerative energy of the load bridges short voltage dips
	Timing control	0.0 min - 6500.0 min
Protection	Protection functions	Motor short-circuit detection at power-on, input/output phase loss protection, overcurrent, overvoltage, undervoltage, overheat and overload protection
	Safe Torque Off (STO)	Dual-channel via STO1 and STO2 according to IEC 61800-5-2, stop category 0 according to IEC 60204-1; does not disconnect the mains voltage
	Motor temperature	Sensor selectable: PT100, PT1000, KTY84, PTC (1.5 K), PTC (4 K)
Inputs/outputs	Input terminals	5 digital inputs (including 1 high-speed pulse input up to 100 kHz) 1 analog input (0–10 V or 0–20 mA)
	Output terminals	1 digital output, 1 relay output 1 analog output (0–10 V or 0–20 mA)
	Run command	Keypad, control terminals or serial communication port
	Frequency reference	10 frequency sources (digital, analog voltage, analog current, pulse train, serial communication) and 10 auxiliary frequency sources
Communication	Communication methods	Integrated RS-485 (Modbus RTU); CAN (CANopen), Profibus DP, EtherCAT and Modbus TCP via optional expansion cards
Operation	Display	LED/LCD display for parameters and operating status
	Key lock	Partial or complete locking, key functions can be customized
Environment	Installation location	Indoors only; protected from sunlight, dust, corrosive or combustible gases, oil mist, steam, dripping water and salt spray
	Altitude	Below 1000 m (derating above 1000 m)
	Ambient temperature	-10 °C to 40 °C (40 °C to 50 °C with derating)
	Humidity	Below 95 % RH, non-condensing
	Vibration	Below 5.9 m/s ² (0.6 g)
	Storage temperature	-20 °C to +60 °C
	Enclosure rating	IP20

Dimensions



Model	Dimensions (mm)				Installation dimensions (mm)		
	W	H	D	D1	A	B	Ø d
VCD100 - 107	69	129	129	139	56	118	5.5
VCD100 - 115	69	129	129	139	56	118	5.5
VCD100 - 122	109	129	133	143	96	118	5.5

Standard 35 mm DIN rail mounting is supported.

Recommended Peripheral Devices and Braking Resistors

Model	Motor power	Main circuit cable cross-section	Circuit breaker	Magnetic contactor	Braking resistor
	(kW)	(mm ²)	(A)	(A)	
VCD100 - 107	0.75	0.75	16	12	150 Ω / ≥ 80 W
VCD100 - 115	1.5	1.5	25	18	100 Ω / ≥ 100 W
VCD100 - 122	2.2	2.5	32	25	70 Ω / ≥ 100 W

Note: If a braking resistor is used, P9.03 (overvoltage stall gain) and P2.08 (vector control over-excitation gain) must be set to 0.

Terminals

Terminal	Function
L1, L2, L3	Main power supply input
U, V, W	Output to the three-phase motor
+B1, B2	Connection for an external braking resistor
X1, X2, X5	Multi-function digital inputs (X5 also high-speed pulse input); common terminal COM, NPN/PNP logic via jumper JP1
FIC, GND, 10V	Analog input 0–10 V / 0–20 mA (jumper JP3), analog ground, +10 V reference for external potentiometer
STO1, STO2, 24V	Dual-channel safety input (Safe Torque Off), +24 V auxiliary supply for the STO inputs
PTC	Motor temperature monitoring via a PTC thermistor
Y0, CME	Multi-function optocoupler output and common terminal
YA, YB, YC	Relay output: normally open, normally closed, common
RS+ / RS-	RS485 interface

Subject to technical changes. For further information, refer to the Velron VCD100 operating manual.
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