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# Datasheet VECTOPOWER VP600-28W345

Art.-No: VP600-28W345-77.1.02.21.00.0

## VP600 Series 3

The bidirectional series 3 inverters are optimized for controlling electric motors in mobile applications, whether pure electric or hybrid. These devices are an important part of the drive train and are characterized by a high efficiency. They contribute significantly to reduction in consumption of resources, emissions and noise. Particular attention is paid to providing support possibilities for our customers so that they can implement improved processes and functions in their machines.

These products from the VP600 series 3 are optimized for a maximum rotary frequency of 1999 Hz – for example for applications such as turbine compressor, turbo charger, turbine drives or high-speed generators.

**The inverters feature the following characteristics.**

- + Speed up to 150.000 rpm and higher
- + Safe Torque Off (STO) functionality according to DIN EN 61800-5-2
- + Sturdy and compact design
- + High cycle stability for heavy-duty applications
- + Efficiency with a focus on optimal utilization of the motor in the complete system
- + HV-Interlock
- + Nearly all types of motor topologies are supported
- + Application software integrated in the inverter, which can be individually modified
- + Protection of your application know-how
- + Boost functions for higher torque, especially at very low speeds and for more power at higher speeds
- + Technology modules (optional) enable functional enhancements
- + Comprehensive diagnosis tools
- + Liquid cooling
- + All connections via plugs for easy assembly

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General	
Article no.	VP600-28W345-77.1.02.21.00.0
product name	VECTOPOWER VP600-28W345
product family	VP600
Size	
Height with connectors	136 mm
Width with connectors	529 mm
Depth with connectors	470 mm
Height (basic housing)	132 mm
Width (basic housing)	529 mm
Depth (basic housing)	414 mm
Weight	40 kg
Technical data	
Min. voltage DC-link [V DC]	30 V
Max. voltage DC-link [V DC]	770 V
Recommended voltage DC-link	650 V
DC-link shutdown threshold level 1	800 V
DC-link shutdown threshold level 2	820 V
Continuous power <sup>4)</sup> (axis 1   2)	202 kVA   202 kVA
Continuous current 1 AC <sup>1)</sup> (axis 1   2)	220 A <sub>rms</sub>   220 A <sub>rms</sub>
Peak current AC, for 10s <sup>3)</sup> (axis 1   2)	450 A <sub>rms</sub>   450 A <sub>rms</sub>
Peak current AC, for 60s <sup>3)</sup> (axis 1   2)	340 A <sub>rms</sub>   340 A <sub>rms</sub>
Peak current AC, for 10min <sup>3)</sup> (axis 1   2)	300 A <sub>rms</sub>   300 A <sub>rms</sub>
Min. PWM frequency	2 kHz
Max. PWM frequency	16 kHz
Max. electrical rotary frequency	1999 Hz
Max. continuous power dissipation	6 kW
DC Controller voltage min.	8 V
DC Controller voltage max.	32 V
Integrated DC link capacity (axis 1   2)	300 µF   300 µF
Technical notes	<p><sup>1)</sup> Continuous current at 650VDC, 4kHz PWM frequency, 30l/min coolant flow rate at 35°C and 45°C ambient temperature</p> <p><sup>3)</sup> Peak current at 650VDC, 2.5kHz PWM frequency, 30l/min coolant flow rate at 35°C and 45°C ambient temperature</p> <p><sup>4)</sup> Continuous power at 750VDC, 4kHz PWM frequency, 30l/min coolant flow rate at 35°C and 45°C ambient temperature</p> <p>For PWM &gt;8kHz observe the project planning notes.</p>

Interfaces	
Communication bus	<ul style="list-style-type: none"> <li>• RS232</li> <li>• CAN</li> </ul>
Number of NTC (PTC) inputs	6
Number of PT100 inputs	4
Digital inputs	3
Digital outputs (each 0,5A)	2
Resolver inputs	2
Encoder inputs	2
Encoder inputs with digital absolute value	yes
External voltage measurement	yes

Cooling	
Liquid cooling	yes
Cooling medium	Water + glycol (50:50)
Min. coolant throughput	30 l / min
Pressure difference typical	0.5 bar
Max. coolant pressure	2 bar
Min. coolant pressure	0.5 bar
Max. coolant temperature without derating	65 °C
Max. coolant temperature with derating	75 °C

Environment	
Max. altitude of site above sea level	2000 m
Protection class according to EN 60529	IP65, IP67
Polution degree according to DIN EN 61800	2
Humidity according to IEC 60068-2-35	max. 90%, non-condensing
Overvoltage category	3
Min. ambient temperature in operation	-25 °C
Max. ambient temperature in operation	75 °C
Max. ambient temperature in operation with derating	75 °C

## Pin settings

## ST1

 Plug type 

Pin no.	Description	Function	I/O
1	KL31	Logic supply voltage, DC GND, STO_Out GND	
2	KL 30B	Logic supply voltage, DC +	
3	Digi-In3	Digital Input 3	
4	Digi-Out1	Digital output 1	
5	Digi-Out2	Digital output 2	
6	NTC1	NTC temperature sensor no.1	
7	NTC2	NTC temperature sensor no.2	
8	STO_Out	Safe Torque Off, Typ OpenCollector, H-Typ	
9	CAN_L	Can Bus low	
10	CAN_H	Can Bus high	
11	COM1_TxD	RS232 Interface for firmware updates TxD	
12	COM1_RxD	RS232 Interface for firmware updates RxD	
13	EN_nCONF	Enable / Allow firmware update	
14	CAN_GND	Can Bus Ground	
15	COM_GND	RS232 Ground	
16	Digi-In1	Digital Input 1	
17	Digi-In2	Digital Input 2	
18	NTC_GND	Ground for NTC temperature	
19	Interlock-	Interlock	
20	Interlock+	Interlock	
21	STO_In_A	Save Torque Off, Input A	
22	STO_In_GND	Save Torque Off, Ground	
23	STO_In_B	Save Torque Off, Input B	

## ST2A

Properties	
Description	Resolver
Plug code	Center position
Plug type	A ST A 035
Plug design	17 pol, Typ "P"
Note	Use mating connector in orientation "E"

pin-no.	operation	type	I/O
1	Resolver P+	Female	
2	Resolver P-	Female	
3	Resolver A+	Female	
4	Resolver A-	Female	
5	Resolver B+	Female	
6	Resolver B-	Female	
7	GND	Female	
8	+5V	Female	
9	-	-	
10	-	-	
11	-	-	
12	Interlock+	Female	
13	Interlock-	Female	
14	PT100-1	Female	
15	PT100-1 GND	Female	
16	NTC-3	Female	
17	NTC-3 GND	Female	

## ST2B

Properties	
Description	Resolver
Plug code	Center position
Plug type	A ST A 035
Plug design	17 pol, Typ "P"
Note	Use mating connector in orientation "E"

pin-no.	operation	type	I/O
1	Resolver P+	Female	
2	Resolver P-	Female	
3	Resolver A+	Female	
4	Resolver A-	Female	
5	Resolver B+	Female	
6	Resolver B-	Female	
7	GND	Female	
8	+ 5V	Female	
9	-	-	
10	-	-	
11	-	-	
12	Interlock+	Female	
13	Interlock-	Female	
14	PT100-3	Female	
15	PT100-3 GND	Female	
16	NTC-4	Female	
17	NTC4 GND	Female	

## ST3A

Properties		
Description	Incremental encoder + absolute value digital or zero pulse	
Plug type	A ST A 035	
Plug design	17 poles, type "P"	

pin-no.	operation	type	I/O
1	Clock+	female	
2	Clock-	female	
3	Z+ or Data+	female	
4	Z- or Data-	female	
5	-	-	
6	-	-	
7	GND	female	
8	+5V	female	
9	-	-	
10	C	female	
11	/C	female	
12	D	female	
13	/D	female	
14	PT100-2	female	
15	PT100-2 GND	female	
16	NTC-3B	female	
17	NTC-3B GND	female	

## ST3B

Properties	
Description	Incremental encoder + absolute value digital or zero pulse
Plug type	A ST A 035
Plug design	17 poles, type "P"

pin-no.	operation	type	I/O
1	Clock+	Female	
2	Clock-	Female	
3	Z+ oder Data+	Female	
4	Z- oder Data-	Female	
5	-	-	
6	-	-	
7	GND	Female	
8	+ 5V	Female	
9	-	-	
10	C	Female	
11	/C	Female	
12	D	Female	
13	/D	Female	
14	PT100-4	Female	
15	PT100-4 GND	Female	
16	NTC-4B	Female	
17	NTC-4B GND	Female	



## ST4A

pin-no.	operation	type	I/O
1	Phase U	male	
2	Phase V	male	
3	Phase W	male	
PE	NC		
A	NC		
B	NC		
C	NC		
D	NC		

## ST4B

pin-no.	operation	type	I/O
1	Phase U	male	
2	Phase V	male	
3	Phase W	male	
PE	NC		
A	NC		
B	NC		
C	NC		
D	NC		

Attachments

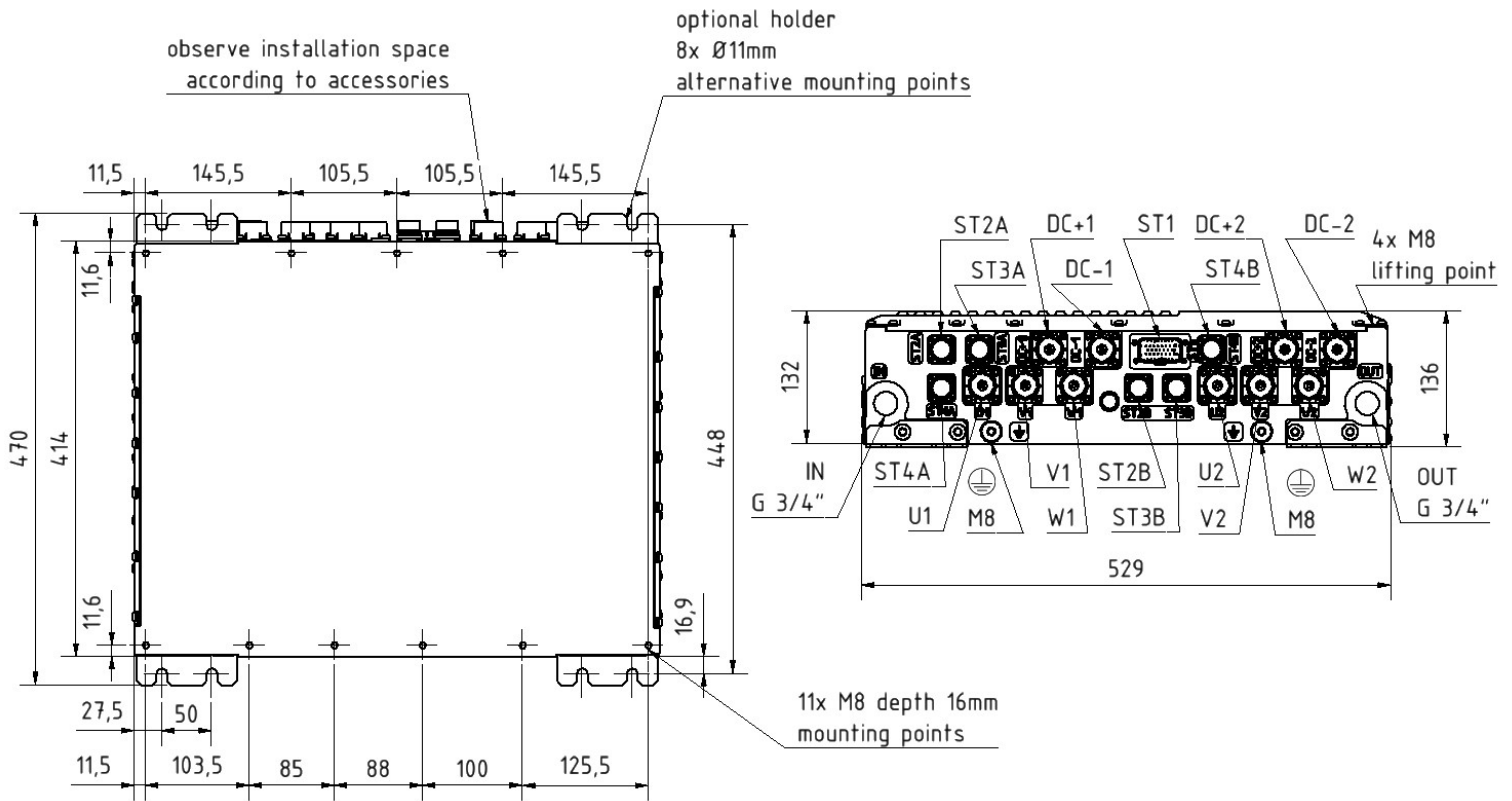


Illustration: Dimensions

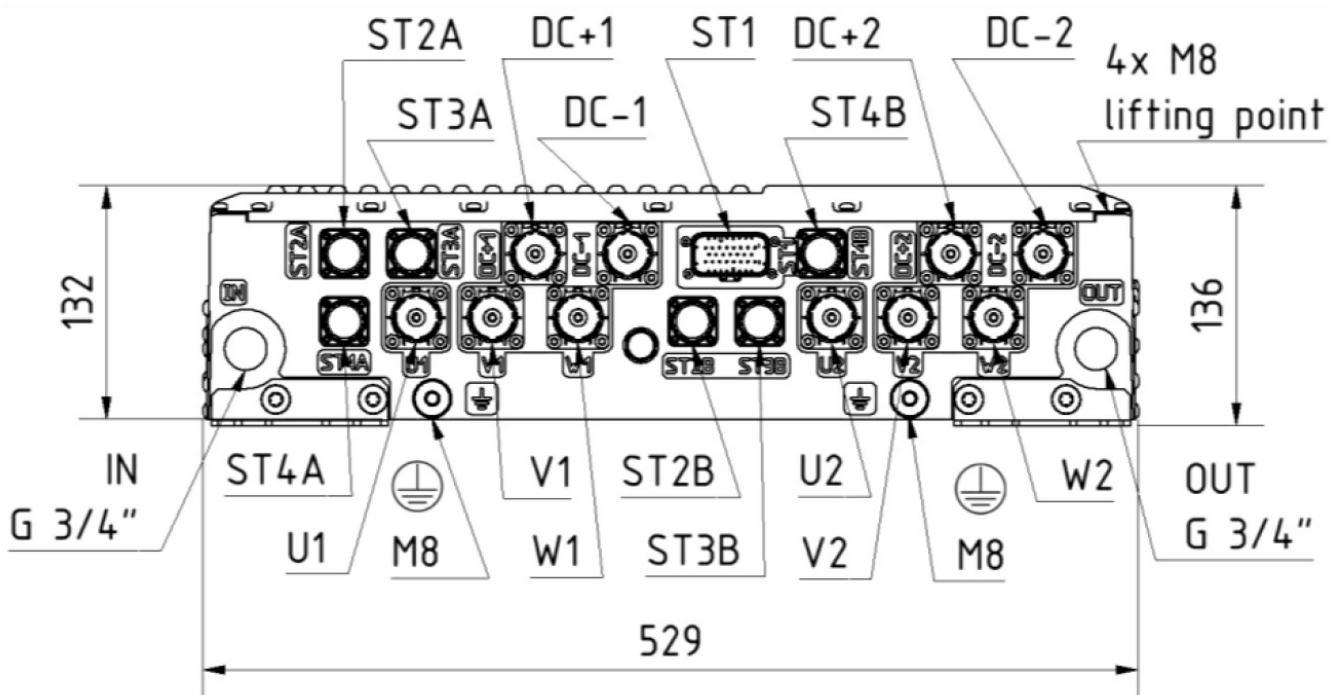


Illustration: Connectivity

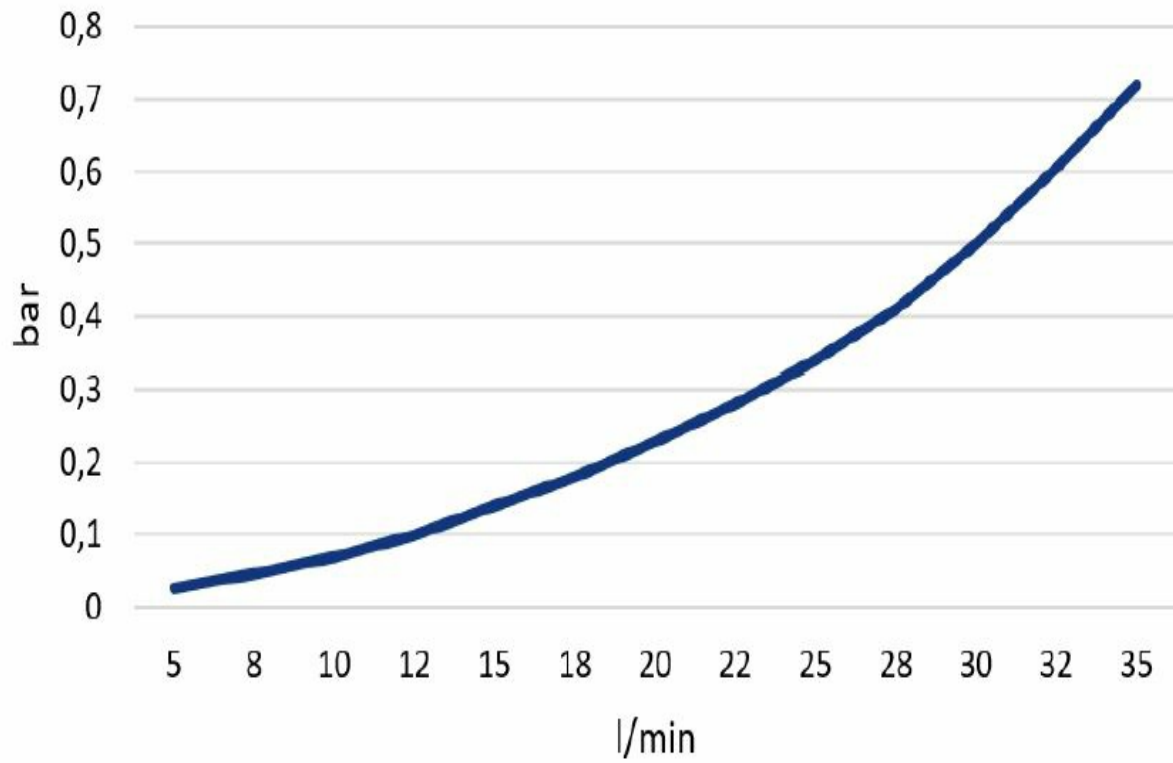


Illustration: pressure loss vs coolant flow