

2 Specifications

2.1 Electrical Specification

Parameter	VSA1-510	VSA2-1030
Bus Voltage	24VDC - 80VDC	70VDC - 340VDC
Keep Alive Voltage (optional)	24VDC	
Continuous Current	5A	15A
Peak Current	10A	30A
Power Dissipation at Continuous Current	325W	
Switching Frequency	40 KHz	
Current Loop Bandwidth	up to 4KHz	
Current Command Signal	+/-10V Differential	
Current Transconductance	1Amp/1Volt	
Operating Mode	3-phase Torque/Force 3-phase AB Current 1-phase Current	
Feedbacks	Incremental Encoder Analog Sin/Cos Encoder Absolute Biss Encoder Absolute EnDat Encoder Hall	
Motor Initialization Mode	Constant Current Phasing Pulse Current Phasing Hall	

2.2 Mechanical Specification

Parameters	VSA1-510	VSA2-1030
Length	5.5 inch (139.7 mm)	
Width	1.3 inch (33.0 mm)	
Height	3.55 inch (90.1 mm)	
Weight	0.7 lb (0.31 kg)	

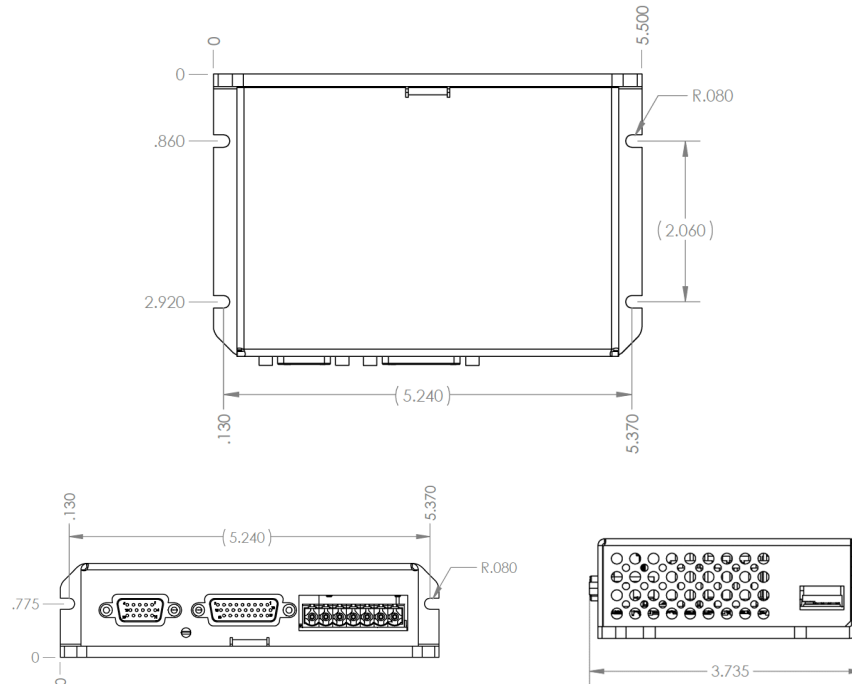
2.3 LED Display

One LED display indicates the basic status of VSA drive.

Green	Amplifier enabled, no faults
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Amber	Amplifier disabled, no faults. Motor dynamic braking.
Red	Faults. Amplifier disabled. Motor in free-wheeling mode.

2.4 Mounting Dimensions



3 Model Numbering

(TBD) Model number breakdown: **VSA1-CCCC-WWXXYY_ZZZ**

Field Number	Description	Available Options	Notes
VSA1	Varedan Digital PWM Amplifier 1	VSA1, VSA2	Product Series
CCCC	Current Level	0510 - 5A continuous, 10A peak	
WW	EMI filter board	00 – No filter board 01 – 2MHz low pass filter	Optional
YY	Expansion digital Interface board	00 – No Expansion board 01 – Customer specified interface	Optional
ZZZ	Customer configure code	Contact factory	Optional

4 Package overview

4.1 Front View



4.2 Side View



5 Interface Connecters Pinouts

5.1 P1 – IO, Aux-Encoder Interface, Current/Velocity/Position Analog Command

Mating Connector = Amphenol 17EHD-026-P-AA-0-00 or equivalent

Pin Number	Signal	Direction	Voltage Level	Description
1	IN1	Input	5-24V	Opto-Isolated Input - (Note1)
2	IN2	Input	5-24V	Opto-Isolated Input - (Note1)
3	IN3	Input	5-24V	Opto-Isolated Input - (Note1)
4	IN4	Input	5-24V	Opto-Isolated Input - (Note1)
5	IN5	Input	5-24V	Opto-Isolated Input - (Note1)
6	IN COM	–	–	Return for all Opto-Isolated Inputs - (Note1)
7	OUT1 (Fault)	Output	5-24V	Opto-Isolated Output - Fault - (Note2)
8	OUT2	Output	5-24V	Opto-Isolated Output - (Note2)
9	OUT3	Output	5-24V	Opto-Isolated Output - (Note2)
10	Analog Output	Output	0-5V	DAC generated Analog Output
11	CMD A+	Input	+/-10V	Differential Current/Velocity/Position Command
12	CMD A-	Input	+/-10V	Differential Current/Velocity/Position Command
13	CMD B+	Input	+/-10V	Differential Current/Velocity/Position

				Command
14	CMD B-	Input	+/-10V	Differential Current/Velocity/Position Command
15	Common	---	---	System Common
16	Common	---	---	System Common
17	OUT COM	—	—	Return for all Opto-Isolated Outputs - (Note2)
18	+5V Out	Supply	+5VDC	Encoder/IO power - (Note3)
19	+5V Out	Supply	+5VDC	Encoder/IO power - (Note3)
20	Common	---	---	System Common
21	Aux Encoder I-	In/Out	+/-5V	Auxiliary Encoder Interface - Index
22	Aux Encoder I+	In/Out	+/-5V	Auxiliary Encoder Interface - Index
23	Aux Encoder B-	In/Out	+/-5V	Auxiliary Encoder Interface – B Channel
24	Aux Encoder B+	In/Out	+/-5V	Auxiliary Encoder Interface – B Channel
25	Aux Encoder A-	In/Out	+/-5V	Auxiliary Encoder Interface – A Channel
26	Aux Encoder A+	In/Out	+/-5V	Auxiliary Encoder Interface – A Channel

5.2 P2 – Main Feedback Interface

Mating Connector = Amphenol 17EHD-015-P-AA-0-00 or equivalent.

Pin Number	Signal	Direction	Voltage Level	Description
1	Hall U	Input	0-5V	Hall Position Sensor Input
2	Hall V	Input	0-5V	Hall Position Sensor Input
3	Hall W	Input	0-5V	Hall Position Sensor Input
4	BiSS/Endat Data -	In/Out	+/-5V	Digital Encoder Data-
5	BiSS/Endat Data +	In/Out	+/-5V	Digital Encoder Data+
6	Main Encoder I +, BiSS/Endat Clock +	In/Out	+/-5V	Quadrature/Sine-Cosine Index +, Digital Encoder Clock +
7	Main Encoder I -, BiSS/Endat Clock -	In/Out	+/-5V	Quadrature/Sine-Cosine Index -, Digital Encoder Clock -
8	Motor Temp +	Input	---	NTC/PTC Motor Temp Sensor
9	Motor Temp -	Input	---	NTC/PTC Motor Temp Sensor
10	+5V Output	Output	+5VDC	Maximum current 1A
11	Common	---	---	System Common
12	Main Encoder A+	Input	+/-5V	Quadrature/Sine-Cosine A+
13	Main Encoder A-	Input	+/-5V	Quadrature/Sine-Cosine A-
14	Main Encoder B+	Input	+/-5V	Quadrature/Sine-Cosine B+
15	Main Encoder B-	Input	+/-5V	Quadrature/Sine-Cosine B-

5.3 P3 – Power and Motor

Mating Connector = On-Shore EDZ950/7 or equivalent

Pin Number	Signal	Direction	Voltage Level	Description
1	Bus Common	---	---	Bus Common / Return
2	Keep Alive	In	+24V	Keep Alive Voltage Input, Shares return with Bus Input Pin1
3	Bus Input	In	+24-100 VDC	Bus Input Terminal
4	Motor Phase A	In/Out	---	Motor Lead A
5	Motor Phase B	In/Out	---	Motor Lead B
6	Motor Phase C	In/Out	---	Motor Lead C
7	Chassis Ground	---	---	Connection to Backplate

5.4 P4 – RS232 Serial Communication

RS232 communication is provided through the expansion board option.

Mating Connector = Standard RJ11

Pin Number	Signal	Direction	Voltage Level	Description
1	No Connect	---	---	---
2	TXD	Input	+/-15V	Host TX. Data input to Amplifier
3	RXD	Output	+/-15V	Host RX. Data output from Amplifier
4	GND	---	---	System Common
5	DSP program	---	---	Short to GND for DSP programming. Leave open for normal operation.
6	GND	---	---	System Common

5.5 J2 – STO (Safe Torque Off) interface

Pin Number	Signal	Direction	Voltage Level	Description
1	+5V	---	---	+5V internal power
2	STO+	AC		Opto-isolated, AC input
3	STO-	AC		Opto-isolated, AC input
4	GND	---	---	GND