

# 600~1000 Watt DC/DC Converter EVD Series Data Sheet

## Description:

The 600~1,000 Watt EVD series is a ruggedized DC-DC converter suitable for high-voltage electric vehicle, marine, industrial and other applications that draw power from a bank of batteries or other high DC voltages. It is used to supply power to accessories, lights, instruments, etc.

- Optimized for EV On-Board Systems
- High input and wide range voltage 280~420V
- Fully Isolated
- High Efficiency up to 96%
- Parallel Connection Available
- Over Voltage Protection
- Short Circuit Protection
- Over Temperature Protection
- Enable/Remote On/Off
- IP67 Enclosure, fully potted
- CAN Communications
- Built-in EMI Filter, Comply with EMC Standard CISPR25/ GB/T18655 Class 3



Model Number	Input Voltage	Output Voltage (Typ.)	Output Amps
EVD-350-600-14 (PLD600-EVDBT)	280~420	14.0	43
EVD-350-1000-14 (PLD1000-EVDBT)	280~420	14.0	72

Model #'s in parenthesis are factory numbers

## Input Specifications

INPUT PARAMETERS				
	Min	Typ	Max	Units
Input Voltage Range	280	350	420	VDC
Input Current @ 350VDC Input and Full Load				
600W			1.9	A
1000W			3.1	A
Input Current No Load				
Vin = 250V, Io = 0			80	mA
Vin = 430V, Io = 0			45	
Input Current in Shut Down Mode (Quiescent Current)			1.5	mA

INPUT UVP/OVP				
	Min	Typ	Max	Units
Input UVLO, Turn Off Io = 0A Io = Full Load	250	260	270	VDC
Input UVLO, Turn On Io = 0A Io = Full Load	260	270	280	VDC
Input OVLO, Turn Off Io = 0A Io = Full Load	420	430	440	VDC
Input OVLO, Turn On Io = 0A Io = Full Load	410	420	430	VDC

### 14V Output Specifications

OUTPUT PARAMETERS				
	Min	Typ	Max	Units
Output Voltage Vin = 350V, Io = 0-43A	9	14	16	VDC
Output Current			43	A
Load Regulation Vin = 350V, Io = 0-43A			3	%
Line Regulation Vin = 280V-430V, Io = 43A			1	%
Ripple & Noise (20MHz) (3)		100	200	mV (p-p)
Overshoot/Undershoot			5	%
Load Transient Response Load step 8.9A-35.6A, R/S: 1A/μS, load duration 10ms	13.3		14.7	V
Output Current Protection 600W 1000W		45 75	50 80	A A
Start Up Time @ 25°C, Full Load by Vin @ 25°C, Full Load by Enable			500 500	mS
Rise Time @ 25°C, Full Load			500	mS
Output Voltage Protection		17	17.5	V

### General Specifications for 600W & 1000W DC/DC Converters:

Remote On/Off				
Converter On	Enable (ON/OFF) via CAN or external power supply *Activates from 9 to 16 VDC (referenced to -Vout)			
General Specification				
	Min	Typ	Max	Units
Capacitive Load			5000	μF
Isolation Voltages (60 Seconds) Input to Output Output to Case	2000 500	2000		VDC
Isolation Resistance (500 VDC)	20			Mohms

Operating Temperature (Ambient)	-40		+85	°C
Storage Temperature	-40		+85	°C
Baseplate Temperature 600W 1000W	-40		+100 +85	°C
Humidity	0		90	%
MTBF Mil-HDBK-217F @ 25°C Ground Benign	150			kHours
Cooling	Baseplate temperature cannot exceed specified maximum, under all operating conditions in application			
Case Size (Preliminary)	6.41 x 4.25 x 1.18 inches 163 x 108 x 30.1 mm			
Case Material	Metal			
Weight	<1.5 kg			
Agency Approvals:	Designed to meet IEC, UL, CSA requirements			
EMI/EMC	EMC Emission: GB/T 18655/CISPR 25 Class 3 EMC Immunity: ISO7637-2, ISO7637-3 ESD: ISO 10605 & GB/T 19951-2005			

### **Application Notes:**

#### **Over Voltage Protection:**

The power converter includes an internal output over voltage protection (OVP) circuit, which monitors the voltage on the output terminals. If this voltage exceeds the OVP set point, the converter will shut down and then restart after a fixed delay time (hiccup mode).

#### **Over Temperature Protection:**

The over-temperature protection consists of circuitry that provides protection from thermal damage. If the temperature exceeds the preset temperature threshold, the converter will shut down, and all components will not exceed their absolute maximum temperature ratings. The converter will restart after the baseplate temperature is below 85°C.

#### **Output Over-Current Limit and Short Circuit Protection:**

The converters include internal over-current protection (OCP) and short circuit protection (SCP) circuits. The response of the SCP circuit is much faster than that of the OCP circuit. Slow increase of the output current will let the converter enter OCP protection when the current exceeds the OCP set point, while the fast increase of the output current will let the converter enter SCP when the currents exceeds the SCP set point.

Both OCP and SCP protection can be auto-recovered when the protection is removed.

#### **Battery Charging:**

The module can charge batteries attached on the output with a constant current controlled by a command signal through CAN bus, from 9V to 13.8V.

#### **Remote On/Off:**

The converter has Enable control function through CAN communications.

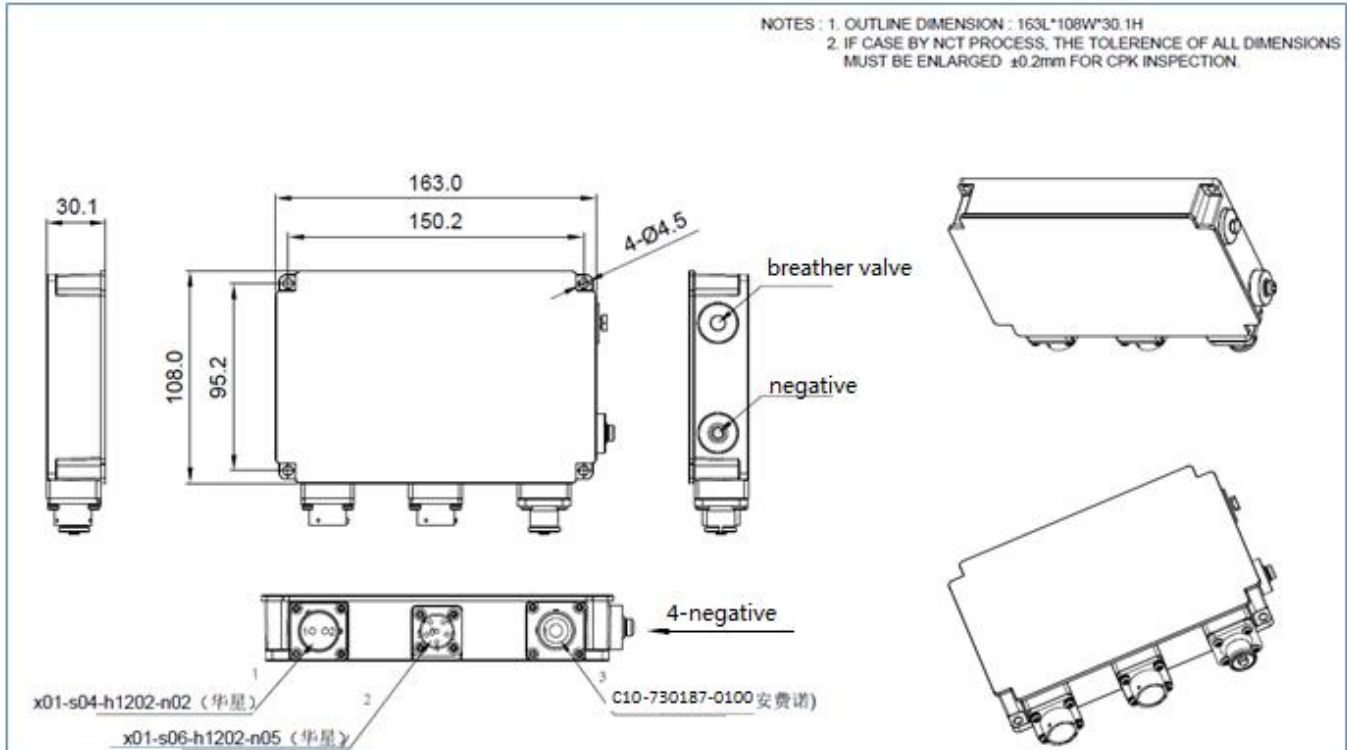
#### **Thermal Condition:**

The converter should be mounted on a base plate with thermal grease, and the maximum base plate temperature is must be controlled to within 85°C.

### Parallel Connections:

The module can support parallel operations (consult factory).

### Case Outline



All dimensions are mm

Connector	Pin	Name	Function
Input	1-1	Vin(-)	Negative input voltage
Input	1-2	Vin(+)	Positive input voltage
Signal	2-1	12Vin(+)	Positive 12V input voltage
Signal	2-2	12Vin(-)	Negative 12V input voltage
Signal	2-3	ON/OFF	On/off control - power on: 9-16Vdc input reference to 12Vin- - power off: open or >1Megohm to 12Vin-
Signal	2-4	CANL	CAN Low
Signal	2-5	CANH	CAN High
Output	3	Vout(+)	Positive output voltage
Output	4	Vout(-)	Negative output voltage

**Connector Information:**

Connector	Female Socket (Connects to case)	Male Plug (Connects to cable, customer needs to order)	Manufacturer
Input Connector	x01-s04-h1202-n02	x01-p04-h1202-n02	Jiangsu Huaxing Power Co., Ltd.
Signal/Communication Connector	x01-s06-h1202-n05	x01-p06-h1202-n05	Jiangsu Huaxing Power Co., Ltd.
Output Connector	C10-730187-0100	C10-752785-0000	Amphenol

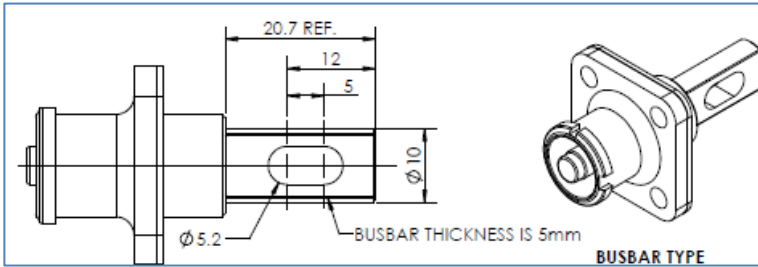


Figure 1: Amphenol C10-730187-0100

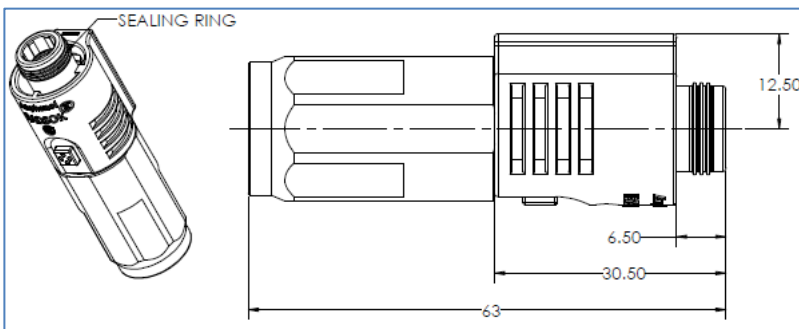


Figure 2: Amphenol C10-752785-0000

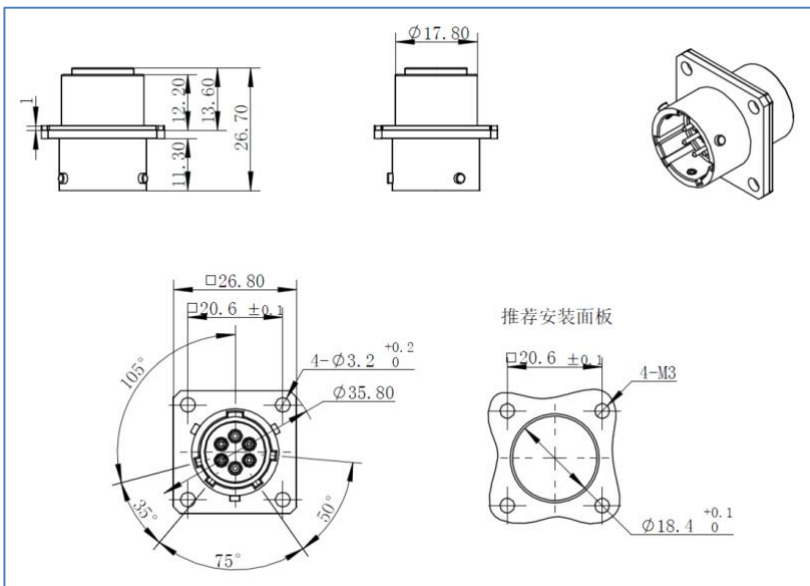


Figure 3: Jiangsu Huaxing Power Co., x01-s06-h1202-n05

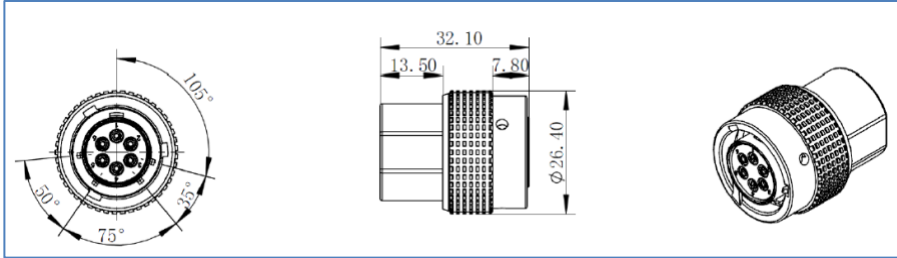


Figure 4: Jiangsu Huaxing Power Co., x01-p06-h1202-n05

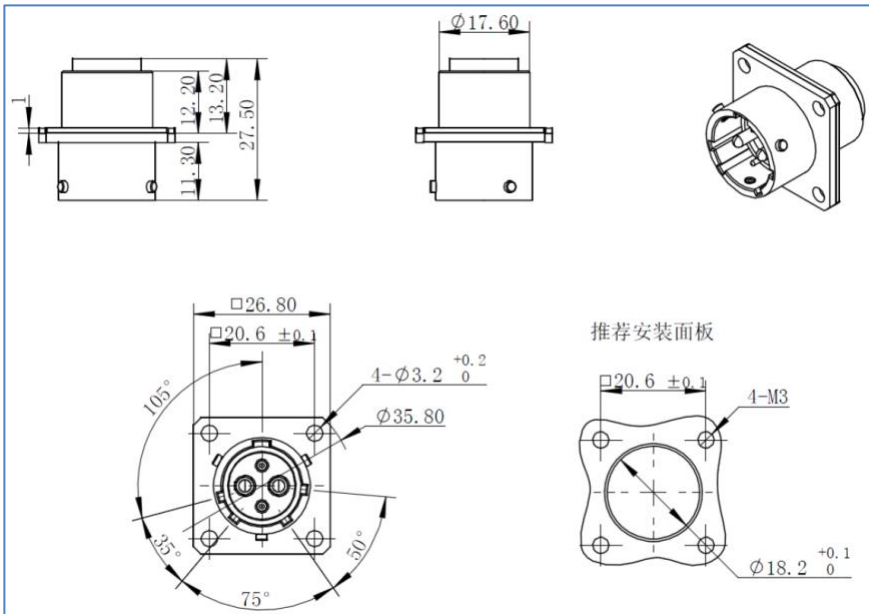


Figure 5: Jiangsu Huaxing Power Co., x01-s04-h1202-n02

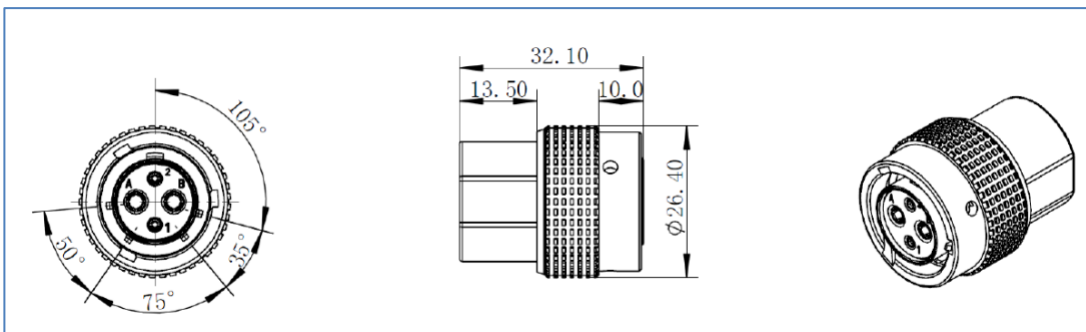


Figure 6: Jiangsu Huaxing Power Co., x01-p04-h1202-n02

**Specification Notes:**

- (1) All specifications are stated at 25°C ambient and typical input line.
- (2) Ingress protection to IP66, excluding connectors.
- (3) Output terminated with 10µF aluminum capacitor and 0.1µF MLCC.
- (4) Factory Set-point is Typical Voltage on table ±1.5% @ half load.
- (5) Vibration to withstand 6G in x, y, and z axis from 0 to 200 Hz for 1 minute.
- (6) Units are not designed to be hot-swapped. Hot swapping units while energized will cause damage.
- (7) Specification is subject to change without notice.