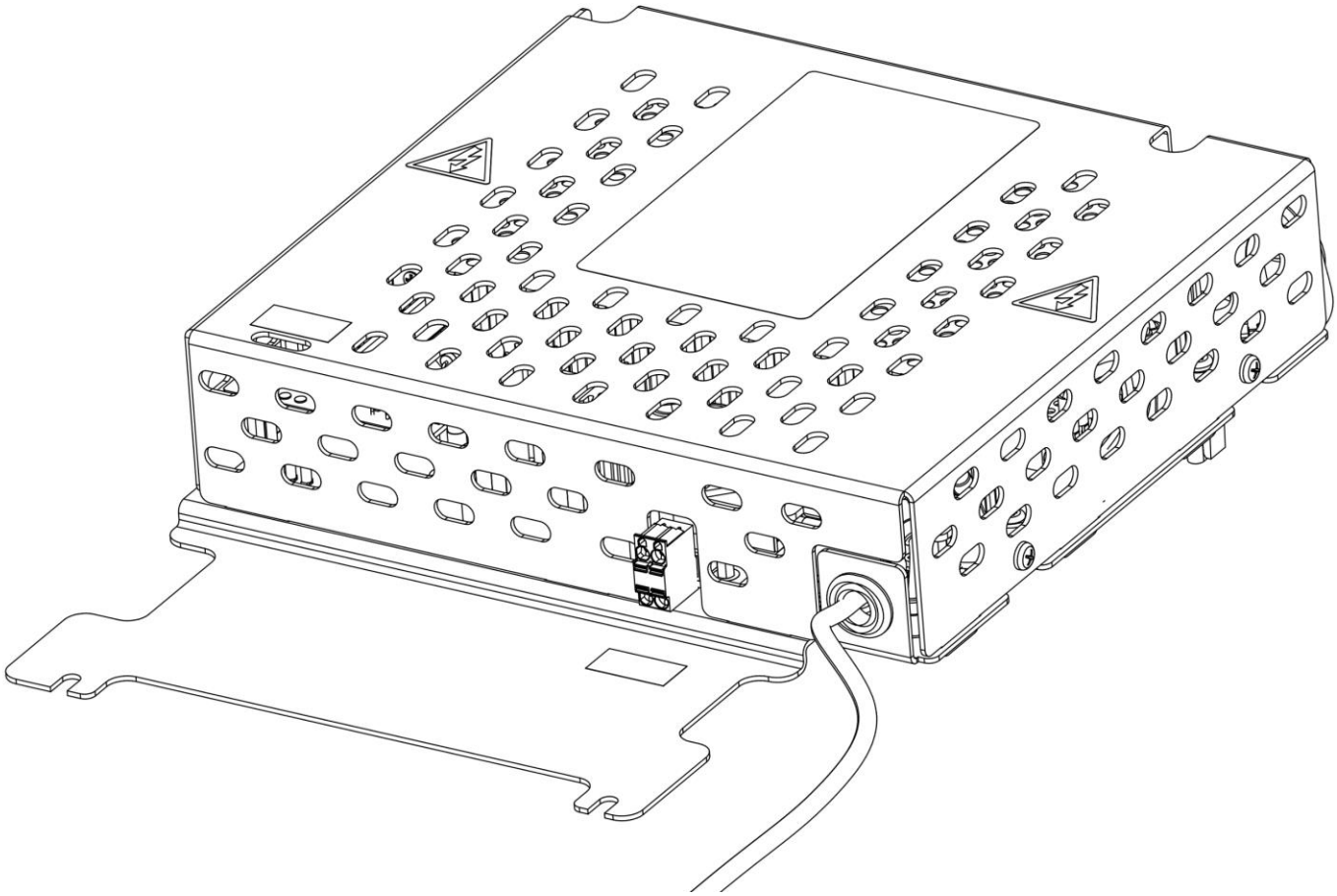

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Contents

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1. Overview

- Avid Extreme Inverter modules (***AEI's***) require a 24V auxiliary supply – the rating of which varies according to model (details are provided in the appropriate data sheets).
- Avid ***Auxiliary Power Unit – Type G (AEI-APU-G)*** provides this supply from the DC link of the AEI module.
- The Model Number for the Type G Auxiliary Power Unit is AEI-APU-G-xx, where xx is the compatibility indication. Systems must not mix APUs with different compatibilities. As of the current revision of this Data Sheet, only compatibility 00 exists. Unless specified, "AEI-APU-G" refers to all current and future compatibility.
- The following table lists the specific models of AEI Models that may be powered using the AEI-APU-G

Model Number	Description	
AEI550A-xxxxxx-xx-x	Avid Extreme Inverter Module 550A Rating	Air-Cooled All options
AEI900L-xxxxx-xx-x	Avid Extreme Inverter Module 900A Rating	Liquid-Cooled All options
AEI1000L-xxxxxx-xx-x	Avid Extreme Inverter Module 1000A Rating	Liquid-Cooled All options

- Note that this list ***DOES NOT*** include the high power AEI1250L and AEI1400L modules.
- When powered by the AEI-APU-G, typically none of the control functions of the AEI units (power to the controller, RS485 or LED diagnostics) are available until the DC link is established. ***To provide these functions without DC link power, an auxiliary 24VDC may be connected to the AEI-APU-G, see section 6 for details***.

2. Warnings

- The AEI-APU-G is used to power Avid Extreme Inverters, which may be connected to more than one live circuit.

- Wait at least ***EIGHT*** minutes after isolating all supplies and check that the voltage between DC+ and DC- has reduced to a safe level before working on the equipment. Especially ***DO NOT*** unplug TB1 from an AEI before it is safe to do so.

- Surfaces on the coolant pipes of the AEI system can reach high temperatures and remain hot for some time after power is removed.

- Ensure that all coolant has reached safe temperature and the equipment is suitably drained and isolated before the external pipework is disconnected from the equipment.

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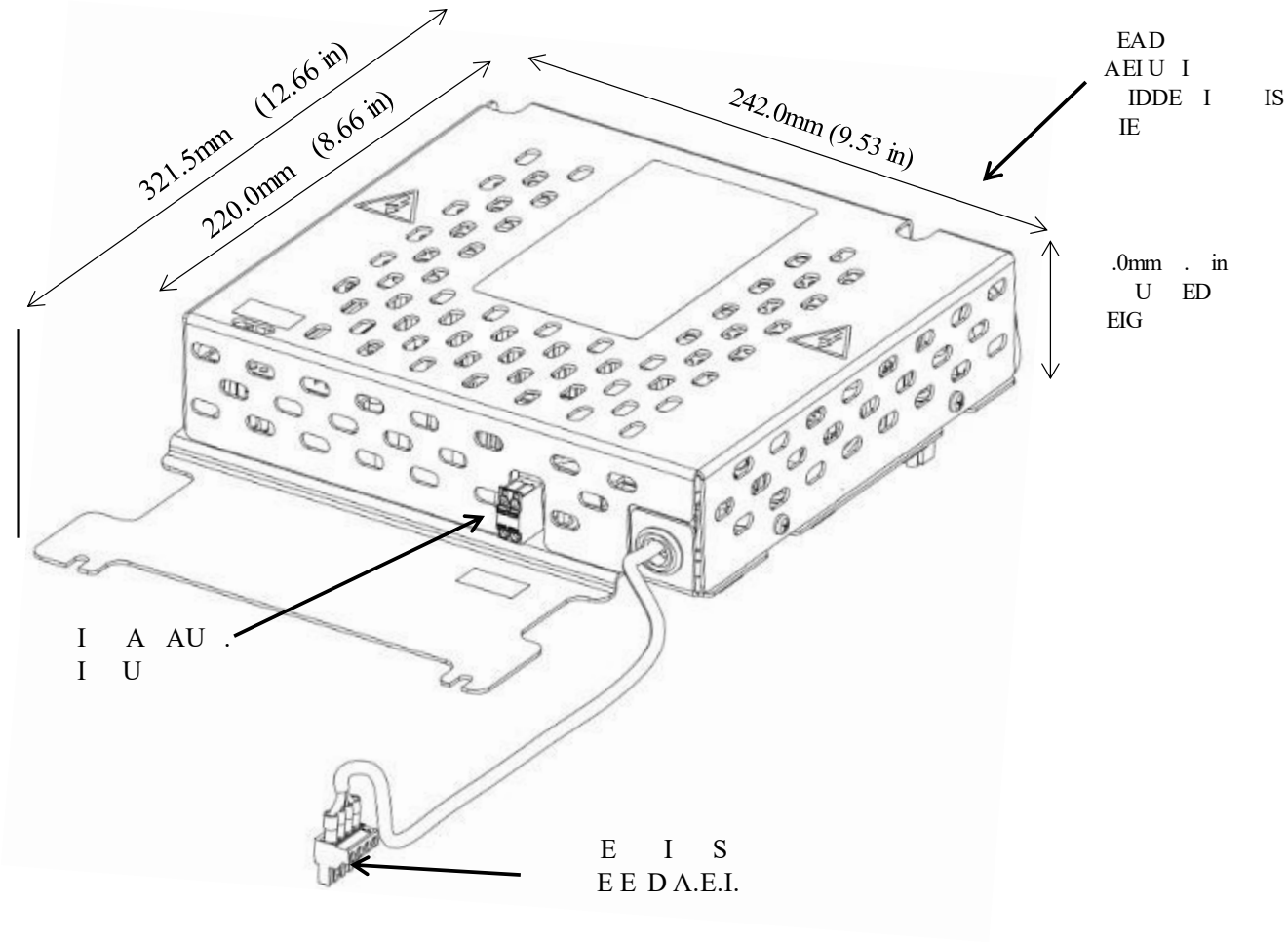
3. Mechanical

- The following figure shows the general mechanical layout and overall dimensions of the unit.



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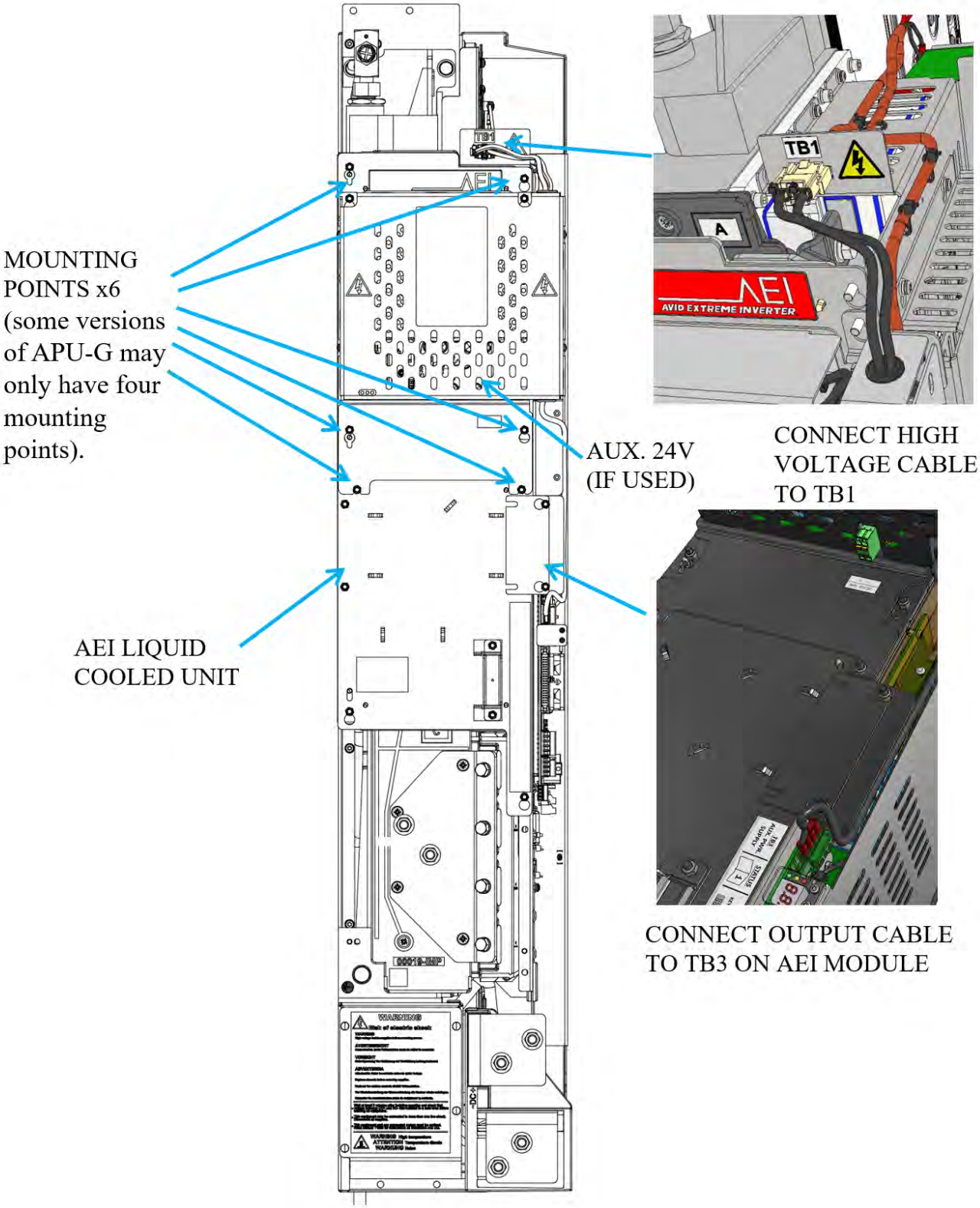
4. Installing on Inverter Unit



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5. Specifications

5.1 Mechanical

Specification	Value	Notes & Applicable Conditions
Dimensions	321.5mm L x 242.0mm W x 64.0 mm H (12.66-in x 9.53-in x 2.52-in)	
Weight	3.2 kg (7.1 lb.)	
Enclosure	IP00 (IEC 60529:1989; BS EN 60529:1992) NEMA 1	Must be installed within suitable enclosure with restricted access

5.2 Environmental

Specification	Value	Notes & Applicable Conditions
Ambient Temperature (Internal cabinet temperature) - Operating"	0 to 50°C	
Temperature – Storage or Transport	-13°F to 131°F (-25 to +55°C)	
Altitude – Operating	Up to 3280ft. (1000m) ASL. Between 3280ft. (1000m) and 6551ft. (2000m) apply derating of 7.5% per 3280ft. (1000m).	
Altitude – Storage	Up to 9842ft. (3000m) ASL	
Altitude - Transport	Will withstand air transport	
Vibration – Transport	IEC 60721-3-2:1997 Class 2M1, in transport packaging.	
Cabinet air – operating	Pollution Degree 2 as per IEC60664-1, UL 840 & CSA C22.2 No. 0.2-93 Maximum chemicals 15ppm H_2S, 25ppm NO_2, 25ppm SO_2	Air must be clean, free from dust, condensation and conductive or corrosive gases.
Humidity – operating, storage or transport	5% to 95% RH Non-condensing	Unit must not be operated in the presence of condensation.

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5.3 Electrical

Specification	Value	Notes & Applicable Conditions
Grounding/Earthing	This product requires grounding/earthing	Ground/earth connection is provided by correct installation on an AEI module steelwork (IEC Class 1 Protective device).
Input DC Voltage (operating and non-operating)	500Vdc to 1300Vdc	Maximum current from DC supply is less than 2A
Input Power Consumption	< 200W	
Output Voltage	24VDC	Suitable for AEI900L, AEI1000L and AEI550A modules. Not approved for other applications.
Output Current	6A	
Auxiliary 24VDC Voltage Input (Optional)	24V +10%/-5% @ 4A Maximum	• Maximum load from APU-TYPE G and connected AEI with Controller is 4A. • For AEI modules not powering the controller the maximum load is 1A. • When the main input DC voltage is above minimum, load on the Aux. 24V is zero
Auxiliary 24VDC Voltage Input Polarity	Pin 1 = Positive Pin 2 = Negative	• As labelled on unit: + - AUX. 24V DC • Older units have single screw terminals:  • Newer units have dual spring terminals to make daisy-chaining easier: 
Indication	Three Green LEDs: - Aux. 24V ✅ - Main 24V ✅ - 24V Out ✅	• As labelled on unit: – AUX. – MAIN – OUT

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5.4 Standards

- This unit is designed and manufactured to comply with the requirements of EN/UL 61800-5-1 and EN 62477-1.
- It is intended to for use only with the Avid Extreme Inverter modules specified in section 1 of this Data Sheet.
- Additionally, the internal DC/DC converter is certified to EN/UL 62109-1.

6. Use of Auxiliary 24VDC Input

6.1 General

- The auxiliary 24VDC input powers the connected AEI unit when the DC link is absent and the main DC/DC converter in the AEI-APU-G is not powered. When the main DC/DC is powered, the supply to the AEI units switches automatically to this.
- If the connected AEI unit is connected to PL2 of the MV3000 controller (CDC), then the CDC will also be powered by the auxiliary 24VDC input.
- The following table gives the approximate worst-case steady-state current consumption for the auxiliary 24VDC input:

Powered CDC Type	Approximate maximum steady-State load current
Not Powering CDC – connected to PL3 to PL7 of CDC	1A
Powering non-renewable or generator side CDC via PL2	3A
Powering renewable grid side CDC (equipped with DSP) via PL2	4A

6.2 Start-Up

- Each AEI unit contains a large internal capacitance on its 24VDC input – this provides supply stability and prevents issues of capacitor aging. This capacitance causes a significant in-rush current at start-up.
- The AEI-APU-G contains a current limit that restricts the in-rush current to approximately six amps.
- Therefore, the power supply used to provide the auxiliary 24VDC input must be capable of sourcing a ***6A*** surge for ***each*** AEI-APU-G it is powering. The voltage must remain above the specified -5% tolerance.
- The surge duration is between 40ms and 100ms, depending on the CDC type being powered via the AEI unit.
- Avid recommends a 24VDC power supply with a minimum of 600W rating to provide auxiliary power for six AEIs in a 2.3MW turbine. The power supply used in the AEI-APU-D & AEI-APU-E modules works well in this application (MEAN WELL HRP-600-24CC).
- If there are problems at start-up due to the power supply going out of tolerance during this in-rush, it may be helpful to increase the 24VDC supply by 1 to 2 volts – staying within the +10% tolerance.

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6.3 Wire Selection & Segregation

- The auxiliary 24VDC connector can accept wires up to 4mm^2 / 12 AWG. The minimum wire size recommended is 1.5mm^2 / 16AWG. A stranded twin-core cable with outer PVC jacket is recommended.

- If the auxiliary D is "daisy chained" from the SU to multiple AEI-APU-G modules, it is recommended to use the thickest possible wire to minimize the voltage drop during the start-up transient.

- The auxiliary 24VDC wire should be segregated from the AC and DC power conductors of the AEI system. It is recommended to run alongside the 40-way ribbon cables or the AEIs and be tie-wrapped to these at regular intervals.

6.4 CDC Auxiliary Supply

- If the auxiliary 24VDC input of the AEI-APU-Gs is used, it is recommended ***not*** to also use the D 's auxiliary 24V supply option.

- If system operations require a reboot of the CDC for any reason, it will be necessary to remove the auxiliary 24VDC input from the AEI-APU-Gs to power-cycle the CDC unit.

7. Servicing and Maintenance

- The AEI-APU-G contains no user-serviceable parts.

- Do not remove the main cover of the unit: this can expose potentially lethal voltages.

- Periodically remove any dust build-up from the ventilation slots using clean, dry compressed air.

- For support, please contact your Avid Controls Authorized Distributor, or Avid Controls directly (contact details are on the front page of this Data Sheet).

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8. Document Revision History

Rev.	Date	Author	Changes
00	SEPT 4 2020	G. Pace	Document created
01	JULY 14 2021	G. Pace	Weight specified. Aux. 24V & indication more completely specified. Minor format changes.
02	JULY 21 2021	G. Pace	Warning section added.
03	SEPT 21 2021	G. Pace	Application section for auxiliary 24VDC added.
04	JULY 1 2022	Z. Gordon	Updated section notes & Illustrations for 24V Connector.
05	FEB 6 2024	G. Pace	Additional specification information included. Standards compliance detailed.

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