



REV: 04 July 1, 2022

Avid Controls Inc. 41261 Park 290 Drive, Waller, TX 77484, USA info@avidcontrolsinc.com (+1) (281) 640-8600

AVID Controls Inc. pursues a policy of continuous product improvement and innovation. This may not be the latest revision of this publication and may not reflect all current product changes. Contact AVID Controls Inc. for the latest revision of this data sheet and information on other product enhancements.



This page is intentionally blank



Contents

1.	Overview				
2.	Warnings				
3.	Me	chanical	5		
4.	Ins	talling on Inverter Unit	6		
5.	Spe	ecifications	7		
5	.1	Mechanical	7		
5	.2	Environmental	7		
5	.3	Electrical	7		
6.	Use	e of Auxiliary 24VDC Input	9		
6	.1	General	9		
6	.2	Start-Up	9		
6	.3	Wire Selection & Segregation	0		
6	.4	CDC Auxiliary Supply	0		
7.	Ser	vicing and Maintenance	0		
8.	3. Document Revision History				
		5			

AVID CONTROLS and the $\bigwedge_{CONTROLS}$ logo are registered trademarks of Avid Controls Inc.

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



3. Mechanical

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





4. Installing on Inverter Unit





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	0 to 50°C		
Cabinet air	Pollution Degree 2 as per IEC60664-1, UL 840 & CSA C22.2 No. 0.2-93 Maximum chemicals 15ppm H ₂ S, 25ppm NO ₂ , 25ppm SO ₂	Air must be clean, free from dust, condensation and conductive or corrosive gases.	
Humidity	5% to 95% RH Non-condensing	Unit must not be operated in the presence of condensation.	

5.3 Electrical

Specification	Value	Notes & Applicable Conditions	
Input DC Voltage (operating and non- operating)	500Vdc to 1300Vdc		
Output Voltage	Suitable for AEI900L,	Not approved for other applications	
Output Current	modules	Not approved for other applications.	

AVID controls

Specification	Value	Notes & Applicable Conditions
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 terminals: 12 Newer units have dual terminals to make daisy-chaining easier: 1 2 1 2 1 2
Indication	Three Green LEDs: - 24V Out Healthy - Main 24V Healthy - Aux. 24V Healthy	 As labelled on unit: AUX. MAIN OUT

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 **6***A* 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.



6.3 Wire Selection & Segregation

- The auxiliary 24VDC connector can accept wires up to 4mm² / 12 AWG. The minimum wire size recommended is 1.5mm² / 16AWG. A stranded twin-core cable with outer PVC jacket is recommended.
- If the auxiliary 24VDC is "daisy chained" from the PSU 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 CDC'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.
- 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).

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