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HARDWARE REFERENCE MANUAL

Accessory E1



UMAC POWER SUPPLY

3-3269A-00-□000-□000

January 31, 2022

Document # MN-000212

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All Delta Tau Data Systems, Inc. motion controller products, accessories, and amplifiers contain static sensitive components that can be damaged by incorrect handling. When installing or handling Delta Tau Data Systems, Inc. products, avoid contact with highly insulated materials. Only qualified personnel should be allowed to handle this equipment. Before powering, please ensure there is no visible damage to the product.

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EN Dispose in accordance with applicable regulations.

Safety Instructions

Qualified personnel must transport, assemble, install, and maintain this equipment. Properly qualified personnel are persons who are familiar with the transport, assembly, installation, and operation of equipment. The qualified personnel must know and observe the following standards and regulations:

IEC364resp.CENELEC HD 384 or DIN VDE 0100
IEC report 664 or DIN VDE 0110
National regulations for safety and accident prevention or VBG 4

Incorrect handling of products can result in injury and damage to persons and machinery. Strictly adhere to the installation instructions. Electrical safety is provided through a low-resistance earth connection. It is vital to ensure that all system components are connected to earth ground.

This product contains components that are sensitive to static electricity and can be damaged by incorrect handling. Avoid contact with high insulating materials (artificial fabrics, plastic film, etc.). Place the product on a conductive surface. Discharge any possible static electricity build-up by touching an unpainted, metal, grounded surface before touching the equipment.

Keep all covers and cabinet doors shut during operation. Be aware that during operation, the product has electrically charged components and hot surfaces. Control and power cables can carry a high voltage, even when the motor is not rotating. Never disconnect or connect the product while the power source is energized to avoid electric arcing.



Warning

A Warning identifies hazards that could result in personal injury or death. It precedes the discussion of interest.



Caution

A Caution identifies hazards that could result in equipment damage. It precedes the discussion of interest.



Note

A Note identifies information critical to the understanding or use of the equipment. It follows the discussion of interest.

REVISION HISTORY				
REV.	**DESCRIPTION**	**DATE**	**CHG**	**APPVD**
1	Added CE Declaration	06/08/06	CP	SF
2	Marked For Full Release	07/07/06	CP	SF
3	Added UL Seal To Manual Cover Updated Agency of Approval section	10/01/09	CP	SF
4	Added KC Conformity	10/17/18	SM	RN
5	Corrected Specifications P.9 - 11 Added New Model Information P.4 - 7	05/02/19	SM, AO	RN
6	Added Inrush Current Time To Specifications, P.10	05/16/19	SM, AO	RN
7	Added Mounting And Installation Section	12/17/20	SM	RN
A	Added UKCA Marking to front cover and added description in Agency of Approval section	08/11/21	AE	SM
B	Updated UKCA standard	01/31/22	AE	SF

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Table of Contents

INTRODUCTION 8
PRODUCT OPTIONS 8
PRODUCT Part Number 9

SAFETY INSTRUCTIONS 10
Power Disconnect 11

SPECIFICATIONS 12
Environmental Specifications 12
Physical Specifications 12
Power Supply Input Specifications 12
Power Supply Output Specifications 13
Agency Approval and Safety 14
Mechanical Specifications 15
ACC-E1 Layout 15
ACC-E1 Top View 15
Voltage Adjustment 16
AC Input Connector 17
POWER SUPPLY COOLING 17

MOUNTING AND INSTALLATION 18

ACC-E1 PINOUTS 19
TB1 / TB101 – Power Supply Output Tap 19
P1 / TB102 – UBUS Backplane Connector 19
P2 / CN101 – AC Input Connector 19
D1,D2,D3 / D102,D103,D104 – Power Indicators 20

SPECIFICATIONS FOR REV106 AND BELOW 21
Environmental Specifications 21
Physical Specifications 21
Power Supply Input Specifications 21
Power Supply Output Specifications 21
Agency Approval and Safety for Rev106 and below 22
Mechanical Specifications for Rev106 and below 23
ACC-E1 Layout 23
ACC-E1 Top View 23

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INTRODUCTION

The ACC-E1 power supply module is an accessory card that provides the UMAC backplane with power.

This ACC-E1 has an AC input connector to the switching power supply and provides DC outputs to the UMAC control system via the UBUS backplane. The ACC-E1 also has a terminal block connector that provides the regulated +5Vdc and ±15Vdc that can be used for general purpose DC power to other components in the system

The ACC-E1 power supply also comes pre-configured for remote voltage sense on the 5Vdc bus: A function that has been installed on the UMAC backplanes since their inception. LED's on the front panel indicate the presence of +5Vdc, +15Vdc, and –15Vdc.

PRODUCT OPTIONS

Latest model of ACC-E1 is released in the middle of 2019. It is designed as one-piece board and there is a black cover sheet installed at the bottom side of the PCB.

3-3269A-00-C000-F000



PRODUCT Part Number

Part Number	Description	Note
3-3269A-00-C000-B000	ACC-E1 power supply with: - black face plate - black top plate - black bottom plate with cooling fan - four screws of top/bottom plates - two card guides	Individually packaged item
3-3269A-00-C000-F000	ACC-E1 power supply with: - black face plate	Individually packaged item *2
3-3269A-00-C000-R000	ACC-E1 power supply with: - silver face plate - silver top plate - silver bottom plate with cooling fan - four screws of top/bottom plates - two card guides	Individually packaged item *1
3-3269A-00-C000-A000	ACC-E1 power supply with: - silver face plate	Individually packaged item *1, *2
3-3269A-00-CA00-B000	ACC-E1 power supply in UMAC assembly: - black face plate - black top plate - black bottom plate with cooling fan - four screws of top/bottom plates - two card guides	To be ordered as a part of UMAC Assembly
3-3269A-00-CA00-R000	ACC-E1 power supply in UMAC assembly: - silver face plate - silver top plate - silver bottom plate with cooling fan - four screws of top/bottom plates - two card guides	To be ordered as a part of UMAC Assembly



Note

- Silver plates (face/top/bottom) will be obsoleted on 2020. Last time buy schedule is on Sep 2019
- Cooling fan is highly recommend to use with power supply. It affects reducing efficiency and operating temperature
- Previous rev106 part number is 3-3269A-00-0xxx-xxxx. Last seven digits define option which is same as above

SAFETY INSTRUCTIONS

Qualified personnel must transport, assemble, install, and maintain this equipment. Properly qualified personnel are persons who are familiar with the transport, assembly, installation, and operation of equipment. The qualified personnel must know and observe the following standards and regulations:
IEC 364 resp. CENELEC HD 384 or DIN VDE 0100
IEC report 664 or DIN VDE 0110
National regulations for safety and accident prevention or VBG 4
Incorrect handling of products can result in injury and damage to persons and machinery. Strictly adhere to the installation instructions. Electrical safety is provided through a low-resistance earth connection. It is vital to ensure that all system components are connected to earth ground.
This product contains components that are sensitive to static electricity and can be damaged by incorrect handling. Avoid contact with high insulating materials (artificial fabrics, plastic film, etc.). Place the product on a conductive surface. Discharge any possible static electricity build-up by touching an unpainted, metal, grounded surface before touching the equipment.

Keep all covers and cabinet doors shut during operation. Be aware that during operation, the product has electrically charged components and hot surfaces. Control and power cables can carry a high voltage, even when the motor is not rotating. Never disconnect or connect the product while the power source is energized to avoid electric arcing.
After removing the power source from the equipment, wait at least 10 minutes before touching or disconnecting sections of the equipment that normally carry electrical charges (e.g., capacitors, contacts, screw connections). To be safe, measure the electrical contact points with a meter before touching the equipment.
The following text formats are used in this manual to indicate a potential for personal injury or equipment damage. Read the safety notices in this manual before attempting installation, operation, or maintenance to avoid serious bodily injury, damage to the equipment, or operational difficulty.



Warning

A Warning identifies hazards that could result in personal injury or death. It precedes the discussion of interest.



Caution

A Caution identifies hazards that could result in equipment damage. It precedes the discussion of interest.



Note

A Note identifies information critical to the user's understanding or use of the equipment. It follows the discussion of interest.

Power Disconnect

A power disconnect should be installed by the user between the input power service and the ACC-E1 power supply for a fail–safe method to disconnect power.

SPECIFICATIONS

Please note that these are design specifications. Performance may differ slightly from these design specifications. These specifications are with cooling fan. Installing Cooling fan is highly recommend for ACC-E1. It affects reducing efficiency and operating temperature.

Environmental Specifications

Description	Unit	Specification
Operating Temperature	ºC	0°C to 55°C
Storage Temperature	ºC	-25°C to 70°C
Humidity	%	10% to 95 % non-condensing

Physical Specifications

Item	Specification
Dimensions	Length: 16.256 cm (6.4 in.) Height: 10 cm (3.94 in.) Width: 6.1 cm (2.4 in.)
Weight	390g
Terminal Block	MSTBW 1.5/6-G-5.08 from Phoenix Contact UL 94V-0 rating
The width is the width of the front plate. The length and height are the dimensions of the PCB.	

Power Supply Input Specifications

Description	Unit	Specification
AC Input	V	100 to 240V
Power Supply Efficiency	%	72% min
Input Frequency	Hz	50Hz to 60Hz
Input Current Max	Arms	2.0Arms
Inrush Current	A	40A
Inrush Current Time	ms	2 ms minimum – 5 ms maximum

Power Supply Output Specifications

Description	Unit	Specification
Power Output	W	115W
DC Output	A	+5V @ 14A +15V @ 1.5A -15V @ 1.5A
Overload Protection	W	120.75W min
Short Circuit Protection	-	Short term (+5V only)

The power supply has a ceramic tube fuse with lead wire rated at 250V @ 5A. If this fuse fails, please send unit back to Delta Tau.

Agency Approval and Safety

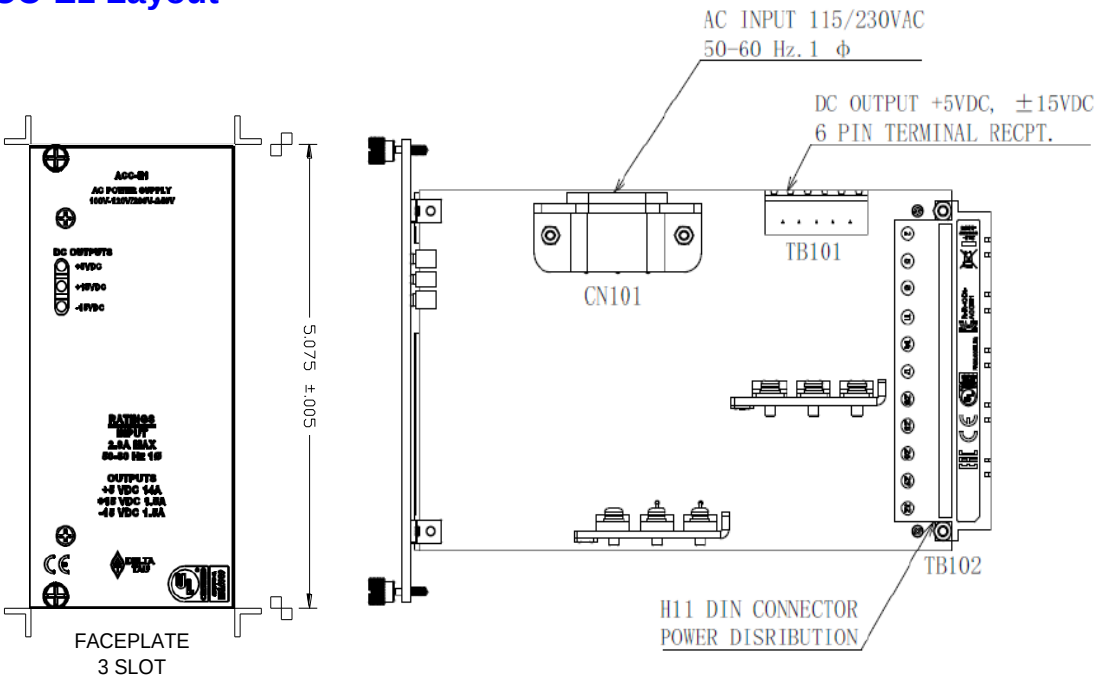
Item	Description
CE Mark	EN61326-1
EMC	EN55011 Class A Group 1 EN61000-3-2 Class A EN61000-3-3 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11
UL	UL 61010-1 File E316989
cUL	CAN/CSA C22.2 No. 1010.1-92 File E316989
Flammability Class	UL 94V-0
KC	EMI: KN 11 EMS: KN 61000-6-2
UKCA	2016 No. 1091

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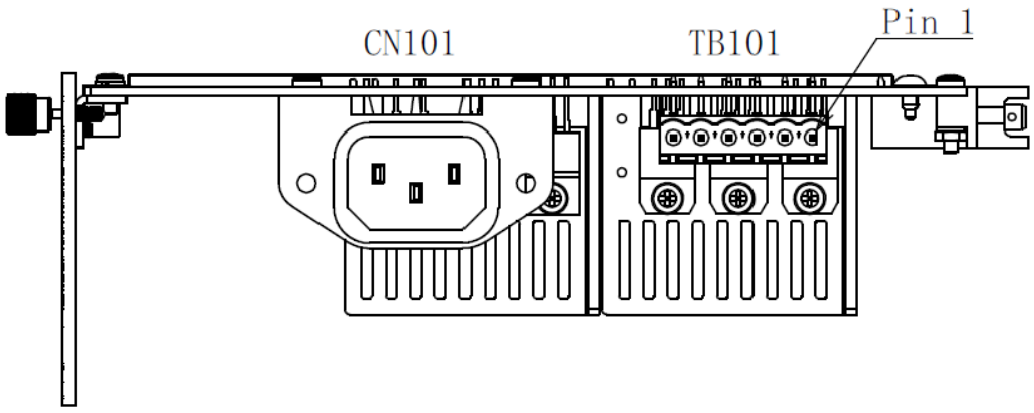
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Mechanical Specifications

ACC-E1 Layout



ACC-E1 Top View



Voltage Adjustment

Factory sets VR101 to adjust +5V.

AC Input Connector

The AC input plug on the power supply unit is an IEC male type meant to meet the globally accepted IEC publication 320, Class 1 industry standard AC input.

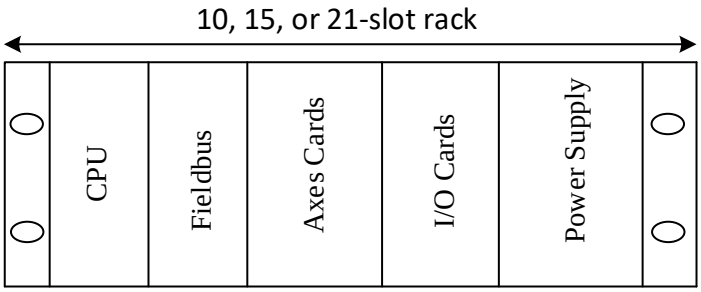
Item	Specification
Connector Rated Voltage	250 VAC
Connector Rated Current (UL/CSA)	15A
Dielectric Strength (one minute)	2000V between pins
Flammability Class	UL 94V-0

POWER SUPPLY COOLING

A small 12V fan has been mounted to the side of the UMAC rack to provide cooling for the AC supply. The fan provides 14.0 CFM at 12V. The fan is needed to supply cooling the power supply to operate at its rated specifications.

MOUNTING AND INSTALLATION

To connect a UMAC accessory, simply slide the board into any open slot of the UMAC rack. Customarily, accessories are installed from left to right as follows:



Prior to installation, make sure that you have set the jumpers and address settings to your desired requirements. Use the guide tracks that have been installed in the empty slots of your UMAC system when installing a board.

As you slide the board into the rack, use caution to ensure none of the components on the board make contact with the front plates of the boards on either side. Getting the front plate flush with the front of the rack and turning the front screws firmly will ensure a good connection with the backplane.

When removing a board from the system, the user must first pull out any wired connections from the top, bottom, and front panels then loosen the pem-nuts on the front of the rack. Next, the user can gently pull the board from the rack and use caution to ensure that none of the components on the board make contact with the boards on either side.

ACC-E1 PINOUTS

TB1 / TB101 – Power Supply Output Tap

This is a 6 pin Phoenix Combicon connector. This is a supply output connector which has 10A rated Contacts and has a UL 94V0 flammability rating.

PIN#	Name	Description
1	+15V dc	+15V DC Power
2	+5V dc	+5V DC Power
3	+5V dc	+5V DC Power
4	AGND	0V Reference for ± 15V
5	GND	0V Reference for +5V
6	-15V dc	-15V DC Power

P1 / TB102 – UBUS Backplane Connector

This is an 11-pin connector that plugs into the UBUS backplane.

PIN#	Name	Description
2	FG	Chassis GND
5	Sense-	5V DC Sense- input
8	Sense+	5V DC Sense+ input
11	NC	-
14	GND	0V reference for 5V
17	+5V	+5V DC Power
20	-15V	-15V DC Power
23	+15V	+15V DC Power
26	AGND	0V Reference for ± 15V
29	+5V	+5V DC Power
32	GND	0V reference for 5V

P2 / CN101 – AC Input Connector

This is an IEC 3-pin AC connector providing power to the power supply.

PIN#	Name	Description
1	Line	AC Line
2	Chassis Ground	Ground
3	Neutral	AC Neutral

D1,D2,D3 / D102,D103,D104 – Power Indicators

The ACC-E1 has three red LED indicators to inform the user that the 5V, +15V, and –15V supplies are operational.

LED	Description
D1	+5V power indicator
D2	+15V power indicator
D3	-15V power indicator

SPECIFICATIONS FOR REV106 AND BELOW

Please note that these are design specifications. Performance may differ slightly from these design specifications. These specifications are with cooling fan. Installing Cooling fan is highly recommend for ACC-E1. It affects reducing efficiency and operating temperature.

Environmental Specifications

Description	Unit	Specification
Operating Temperature	ºC	0°C to 45°C, 41°C to 70°C derate to 50%
Storage Temperature	ºC	-25°C to 70°C
Humidity	%	10% to 95 % non-condensing

Physical Specifications

Item	Specification
Dimensions	Length: 16.256 cm (6.4 in.) Height: 10 cm (3.94 in.) Width: 6.1 cm (2.4 in.)
Weight	480g
Terminal Block	MSTBW 1.5/6-G-5.08 from Phoenix Contact UL 94V-0 rating
The width is the width of the front plate. The length and height are the dimensions of the PCB.	

Power Supply Input Specifications

Description	Unit	Specification
AC Input	V	100V to 120V and 200V to 240V (auto-ranging)
Power Supply Efficiency	%	82%
Input Frequency	Hz	50Hz to 60Hz
Input Current Max	Arms	2.9Arms
Inrush Current	A	40A
Inrush Current Time	ms	2 ms minimum – 5 ms maximum

Power Supply Output Specifications

Description	Unit	Specification
Power Output	W	80W without fan 130W with fan
DC Output	A	+5V @ 14A with fan +16.3V @ 1.5A with fan -16.3V @ 1.5A with fan
Overload Protection	W	195W, +35W

The power supply has an in line slow-blow fuse rated at 250V @ 3.5A. If this fuse fails, please send unit back to Delta Tau.

Agency Approval and Safety for Rev106 and below

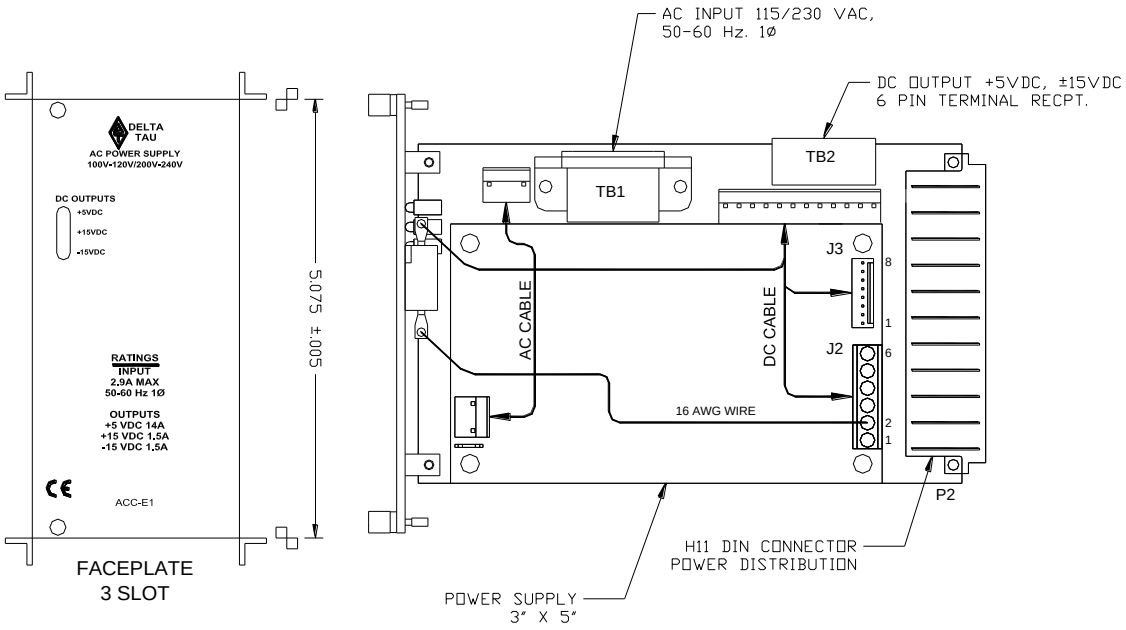
Item	Description
CE Mark	EN61326-1
EMC	EN55011 Class A Group 1 EN61000-3-2 Class A EN61000-3-3 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11
UL	UL 61010-1 File E314517
cUL	CAN/CSA C22.2 No. 1010.1-92 File E314517
Flammability Class	UL 94V-0
KC	EMI: KN 11 EMS: KN 61000-6-2

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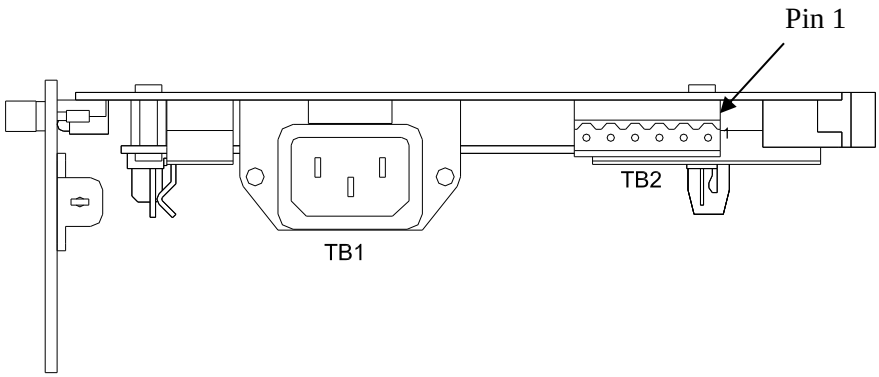
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Mechanical Specifications for Rev106 and below

ACC-E1 Layout



ACC-E1 Top View



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