SPECIFICATION FOR APPROVAL

Customer : DIVA

Customer P/N:

Part No : **Rev :**

Description : AC-DC Adapter

Delta Model No : MEA-065Z12CA AT

Document Rev : 00

Sample Issue Date : Jul.19, 2023

DELTA ELECTRONICS, INC.

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TABLE OF CONTENTS

1. Revision History
2. Electrical Specification
3. Label Drawing
4. Packing
5. Safety License

Please send one copy of this specification back after you signed approval for production pre-arrangement.

Customer Sign : _____ **Date :** _____

Approved By : YANG.SUN **Date :** 2023/07/19

Engineer By: DEREK.LIN **M.Engineer By:** TONY.YU **Approved By:** YANG.SUN

1. Revision History

DELTA P/N	MEA-065Z12CA AT	SHEET 1 OF 1
CONTENT	Revision History	DATE July.19, 2023

1.Revision History

REV.	DESCRIPTION	ENGINEER	DATE
00	ISSUE	DEREK.LIN	07/19/2023

2. Electrical Specification

TECHNICAL DATASHEET

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐



MEA-065Z

Highlights & Features

- Extreme compact size
- Meet Efficiency Level VI
- Safety Approvals to IEC 60601-1 Ed. 3.1 & IEC 62368-1
- Compliant with IEC 60601-1-2 Ed. 4 Requirements
- Low touch current (<0.1 mA Normal & 0.3 mA signal fault)
- 2 × MOPP isolation

Safety Standards

CB Certified for worldwide use

Model Number: MEA-065Z☐CA ☐
Unit Weight: 250 grams (0.55 lb)
Dimensions (W × L × H): 50.0 × 115.0 × 29.0 mm
1.97 × 4.52 × 1.14 inch

General Description

The MEA-065Z series of external power supply come with universal AC input at 90 Vac to 264 Vac. Key features include 0.1 mA low earth leakage and electric shock protection complying with 2 x MOPP. The MEA-065Z is certified according to EN 55011 for industrial, scientific and medical (ISM) radio-frequency equipment and meet EN 55032 for Information Technology Equipment (ITE) radio-frequency equipment. MEA-065Z has both medical and ITE safety approvals such as IEC 62368, CB certification and CCC approval. Designs are fully compliant with RoHS for environmental protection.

Model Information

Medical AC-DC Adapter

Model Number	Input Voltage Range	Rated Output Voltage	Rated Output Current
MEA-065Z12CA	90-264 Vac	12 Vdc	5.0 A
MEA-065Z15CA	90-264 Vac	15 Vdc	4.33 A
MEA-065Z19CA	90-264 Vac	19 Vdc	3.42 A
MEA-065Z24CA	90-264 Vac	24 Vdc	2.71 A

Model Numbering

						CC Code	
MEA –	**065**	**Z**	**☐**	**C**	**A**	**A**	**T**
Delta Medical Desktop Adapter	Max wattage in the product series (60 W for 12 V output 65 W for other output)	Family Code	Output Voltage (Single Output) 12 – 12 V 15 – 15 V 19 – 19 V 24 – 24 V	Input Connector Type C – C14	Delta Standard	Customer A – DIVA	Region code A – USA C – China E – EMEA N – NEA S – SEA T – TW

All parameters are specified at 25°C ambient unless otherwise noted.

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐

Specifications

Model Number	MEA-065Z12CA	MEA-065Z15CA	MEA-065Z19CA	MEA-065Z24CA

Input Ratings / Characteristics

Nominal Input Voltage	100-240 Vac		
Input Voltage Range	90-264 Vac		
Nominal Input Frequency	50-60 Hz		
Input Frequency Range	47-63 Hz		
Input Current (max.)	1.5 A @ 115 Vac, 0.75 A @ 230 Vac		
Average Efficiency	88%	89%	
Efficiency @ 10%	79%		
Standby Power (max.)	0.15 W @ 115 Vac & 230 Vac		0.21 W @ 115 Vac & 230 Vac
Inrush Current (typ.)	50 A @ 115 Vac and 100 A @ 230 Vac		
Touch Current (max.)	0.1 mA @ 264 Vac NC[1], 0.3 mA @ 264 Vac SFC[2]		
Earth Leakage Current (max.)	0.1 mA @ 264 Vac NC[1], 0.3 mA @ 264 Vac SFC[2]		

1) NC: Normal condition
2) SFC: Single fault condition

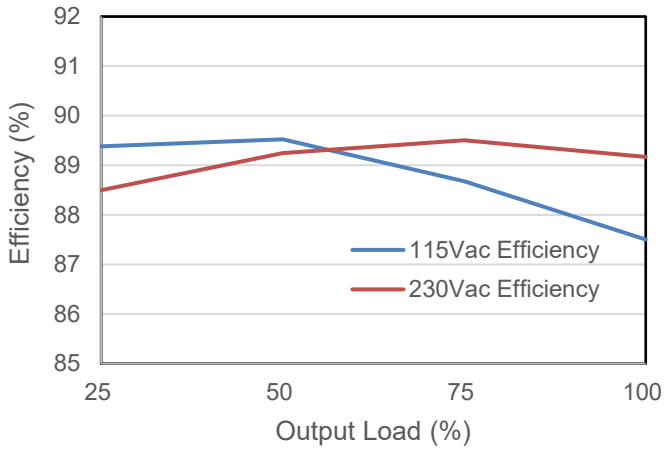


Figure 1-1 MEA-065Z12CA Efficiency versus Output Load

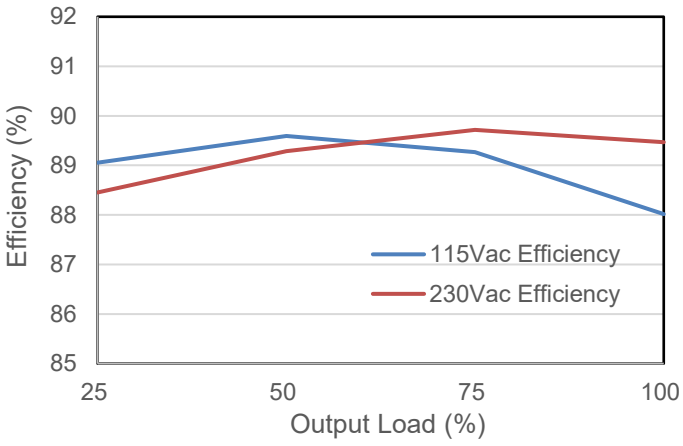


Figure 1-2 MEA-065Z15CA Efficiency versus Output Load

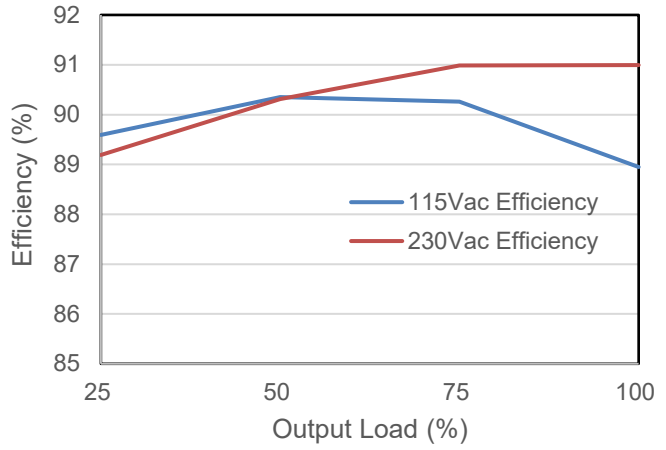


Figure 1-3 MEA-065Z19CA Efficiency versus Output Load

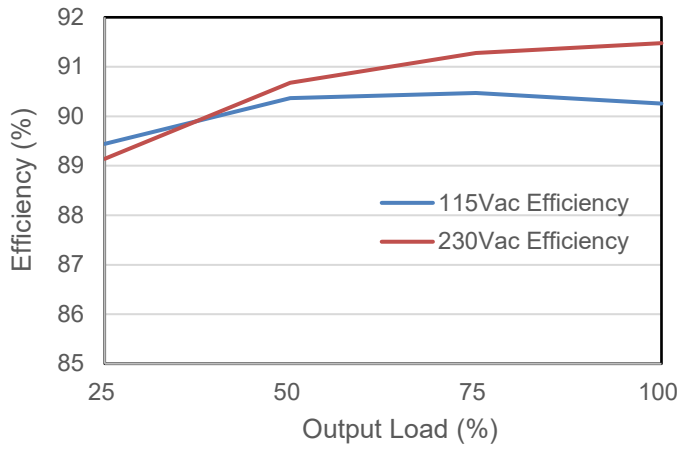


Figure 1-4 MEA-065Z24CA Efficiency versus Output Load

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z□CA □

Model Number	MEA-065Z12CA	MEA-065Z15CA	MEA-065Z19CA	MEA-065Z24CA

Output Ratings / Characteristics*

Nominal Output Voltage	12 Vdc	15 Vdc	19 Vdc	24 Vdc
Nominal Output Current	5.0 A	4.33 A	3.42 A	2.71 A
Output Power	60 W	65 W	65 W	65 W
Line Regulation	± 0.5%			
Load Regulation	± 4.5%			
PARD*** (20 MHz)	1%			
Rise Time	< 50 ms @ 115 Vac & 230 Vac			
Start-up Time	< 3000 ms @ 115 Vac & 230 Vac			
Hold-up Time	10 ms typ. @ 115 Vac			
Dynamic Response (Overshoot & Undershoot O/P Voltage)	± 10% @ 0-50% & 50-100% load; Slew rate 0.25 A/μs (@ 100 Hz, 50% Duty Cycle)			

Mechanical

Case Chassis / Cover		PC
Dimensions (W × L × H)		50.0 × 115.0 × 29.0 mm (1.97 × 4.52 × 1.14 inch)
Unit Weight		250 grams (0.55 lb)
Cable Length		1200 mm
Indicator		Green LED
Terminal	Input	IEC 60320 C14 socket
	Output	4 Pin Din

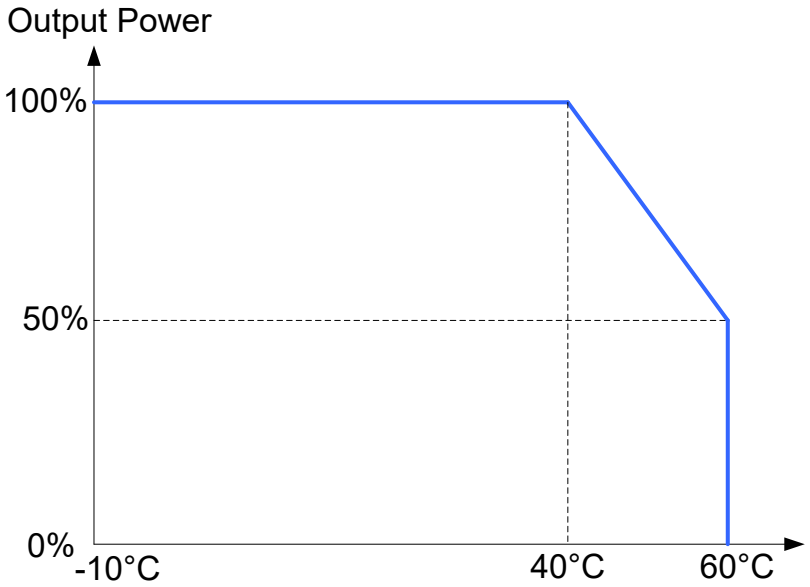
Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐

Environment

Surrounding Air Temperature	Operating	-10°C to +60°C
	Storage	-40°C to +85°C
Power De-rating		> 40°C de-rate power by 2.5% / °C
Operating Humidity		10-95% RH (Non-Condensing)
Operating Altitude		Up to 5,000 meters (up to 16,400 feet or 106-54 kPa)
Shock Test	Non-Operating	50 G, 11 ms, 3 shocks for each direction
Vibration	Non-Operating	5-500 Hz, 2.09 Grms, 20 minute for each three axis

Power De-rating Curve



Protections

Overvoltage (max.)	150% max, Latch Mode
Overload / Overcurrent (max.)	180% max of rated load current, Hiccup Mode, (Non-Latching, Auto-Recovery)
Over Temperature	Latch Mode
Short Circuit	Hiccup Mode, (Non-Latching, Auto-Recovery)
Degree of Protection	IP22
Protection Against Shock	Class I

Reliability Data

MTBF (typ.)	1 million Hours based on Telecordia SR-332 (at 115 Vac, Max. load and 25°C Ambient)
Expected Cap Life Time	1.5 years (100 Vac, 100% load @ 25°C)

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐

Safety Standards / Directives

Medical Safety		IEC 60601-1 3.2edition CB report EN 60601-1 CAN/CSA-C22.2 NO. 60601-1:14, ANSI/AAMI ES60601-1 UL60601-1 (File No. E356265)
ITE Safety		IEC 62368-1 IEC 60950-1 PSE J 62368-1 GB4943.1-2011, GB9254-2008, GB17625.1-2012
CE		In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN 60601-1: 2006 + A11: 2011 + A1: 2013 + A12: 2014 & EN 60601-1-2: 2015
UKCA		In conformance with Electrical Equipment (Safety) Regulations 2016 and Electromagnetic Compatibility Regulations 2016, Medical Devices Regulations 2002(UK MDR 2002)
Galvanic Isolation	Input to Output	4000 Vac
	Input to PE	1500 Vac
	Output to PE	500 Vac

EMC (Compliant with IEC 60601-1-2 4th Ed. Requirements)

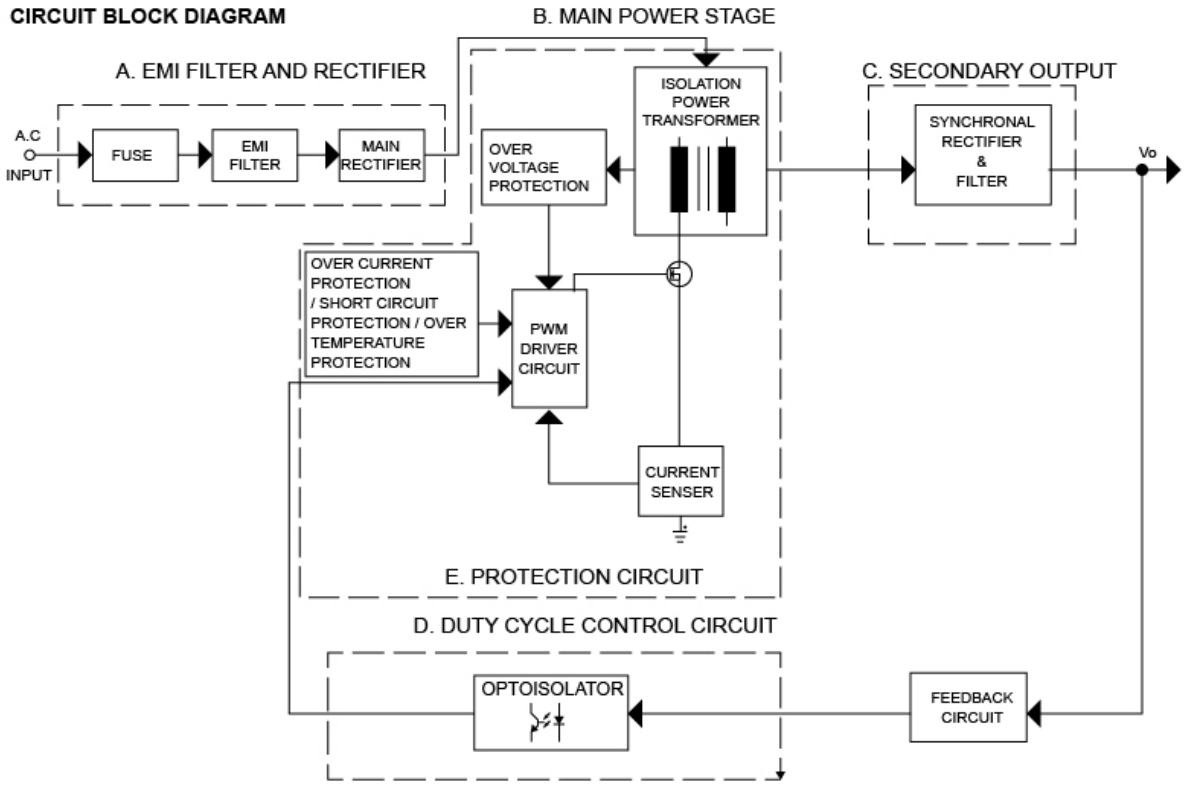
EMC / Emissions		EN/BS EN 55011 Class B Compliance to EN/BS EN 55032, FCC Title 47: Class B
Harmonic Current Emissions	IEC 61000-3-2	Meet Class A
Immunity to		
Voltage Flicker	IEC 61000-3-3	
Electrostatic Discharge	IEC 61000-4-2	Level 4 Criteria A[5] Air Discharge: 15 kV Contact Discharge: 8 kV
Radiated Field	IEC 61000-4-3	Criteria A[5] 80 MHz-2700 MHz, 10 V/m AM modulation 385 MHz-5785 MHz, 28 V/m Pulse mode and other modulation
Electrical Fast Transient / Burst	IEC 61000-4-4	Level 3 Criteria A[5]: 2 kV
Surge	IEC 61000-4-5	Level 3 Criteria A[5] Common Mode[7]: 2 kV Differential Mode[8]: 1 kV
Conducted	IEC 61000-4-6	Level 2 Criteria A[5] 150 kHz-80 MHz, 3 Vrms, 6 Vrms at ISM bands and Amateur radio bands
Power Frequency Magnetic Fields	IEC 61000-4-8	Criteria A[5] Magnetic field strength 30 A/m
Voltage Dips	IEC 61000-4-11	Criteria A[5] 0% U_T, 0.5 cycle (10 ms) @ 56 W output 0°/45°/90°/135°/180°/225°/270°/315°/360° Criteria B[6] 0% U_T, 1 cycle (20 ms), 0° Criteria A[5] 70% U_T, 25 cycle (500 ms), 0° @ 56 W (for MEA-065Z24CA) 70% U_T, 25 cycle (500 ms), 0° @ full load (for other models) Criteria B[6]

3) Criteria A: Normal performance within the specification limits
4) Criteria B: Output out of regulation, or shuts down during test. Automatically restore to normal operation after test.
5) Asymmetrical: Common mode (Line to earth)
6) Symmetrical: Differential mode (Line to line)

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐

Block Diagram

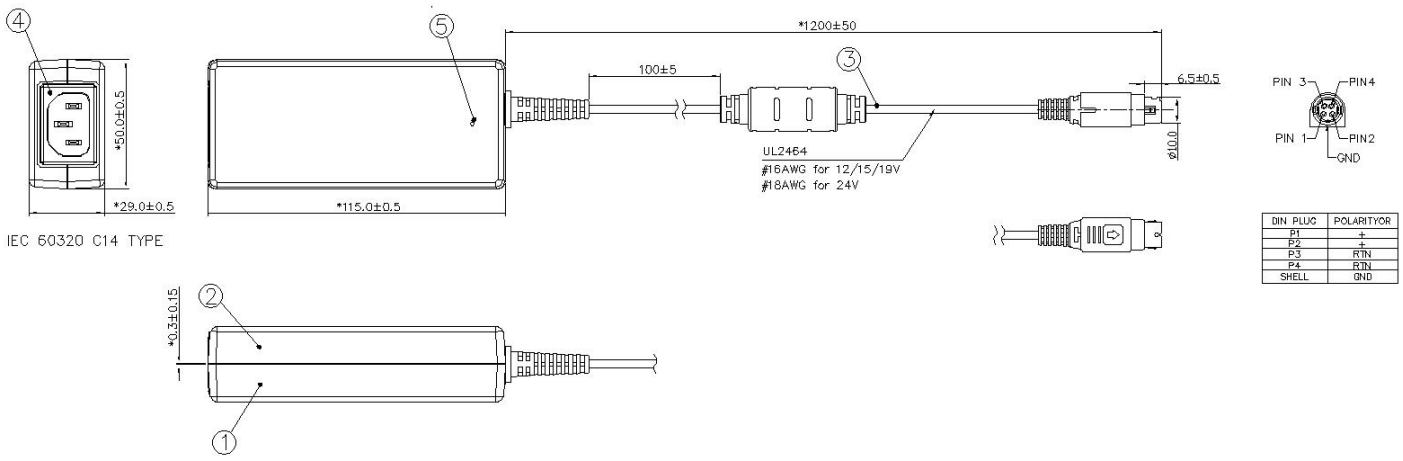


All parameters are specified at 25°C ambient unless otherwise noted.

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐

Dimension (MEA-065Z12CA AT) : L x W x D：115.0 x 50.0 × 29.0 mm (4.52 x 1.97× 1.14 inch)



Item	Device Description
1	Cover
2	Chassis
3	Power Cord 12/15/19V UL 2464, #16 AWG 24V UL 2464, #18 AWG
4	Socket (IEC60320, C14)
5	Lens

Functions

Start-up Time

The time required for the output voltage (Vo) to reach 90% of its set value, after the input AC voltage is applied.

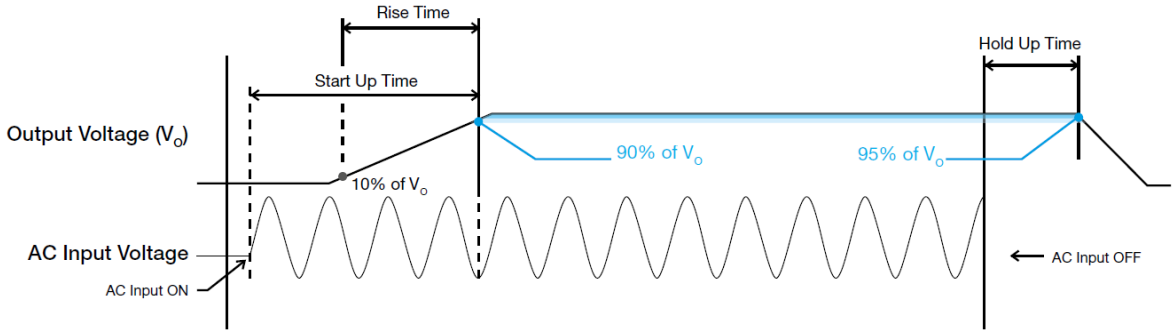
Rise Time

The time required for the output voltage (Vo) to change from 10% to 90% of its steady state value.

Hold-up Time

Hold up time is the time when the AC input collapses and output voltage retains regulation for a certain period of time. The time required for the output to reach 95% of its set value, after the input voltage is removed.

■ **Graph illustrating the Start-up Time, Rise Time, and Hold-up Time**



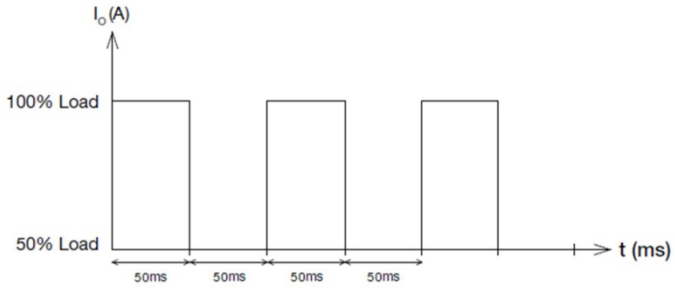
All parameters are specified at 25°C ambient unless otherwise noted.

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z☐CA ☐

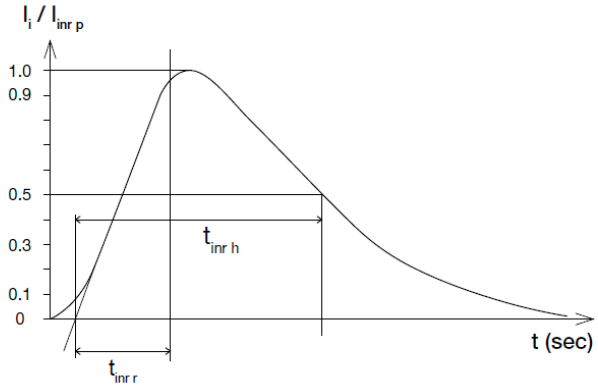
Dynamic Response

The power supply output voltage will remain within ±10% of its steady state value, when subjected to a dynamic load change from 0 to 50% & 50 to 100% of its rated current.



Inrush Current

Inrush current is the input current that occurs when the input voltage is first applied. For AC input voltages, the maximum peak value of inrush current will occur during the first half cycle of the applied AC voltage. This peak value decreases exponentially during subsequent cycles of AC voltage.



Overvoltage Protection

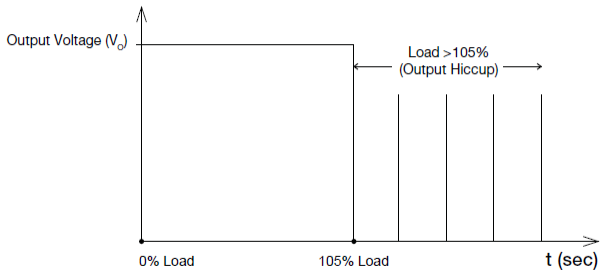
The power supply's overvoltage circuit will be activated when its internal feedback circuit fails. The output voltage shall not exceed its specifications defined on Page 4 under "Protections". Power supply will latch off, and require removal/re-application of input AC voltage in order to restart.

Short Circuit Protection

The power supply's output OLP/OCP function also provides protection against short circuits. When a short circuit is applied, the output current will operate in "Hiccup mode", as shown in the illustration in the OLP/OCP section on this page. The power supply will return to normal operation after the short circuit is removed.

Overload & Over current Protections

The power supply's Overload (OLP) and Over current (OCP) Protections will be activated when output current is between 105% and 180% of I_O (Max load). Upon such an occurrence, V_O will start to drop. Once the power supply has reached its maximum power limit, the protection will be activated. and the power supply will go into "Hiccup mode" (Auto-Recovery). The power supply will recover once the fault condition causing the OLP and OCP is removed and I_O is back within the specified limit.



Over Temperature Protection

As mentioned above, the power supply also has Over Temperature Protection (OTP). This is activated when the overload condition persists for an extended duration and the output current is below the overload trigger point but >100% load. In the event of a higher operating condition at 100% load, the power supply will run into OTP when the surrounding air temperature is higher than the operating temperature. When activated, the output voltage will latch off and require removal/re-application of input AC voltage in order to restart.

Medical AC-DC Adapter

MEA-65 W Series / MEA-065Z□CA □

Certificate

Delta has been certified as meeting the requirement of ISO 13485: 2003 and EN ISO 13485:2012 for the design and manufacture of switching power supply and adaptor for medical device.

E356265

Delta is approved for the UL Total Certification Program (TCP) approved client laboratory for IEC 62368-1. Delta also has participated UL Client Test Data Program (CTDP) for IEC 60601.

Meet DOE Level VI Efficiency Requirement

Manufacturer and Authorized Representatives Information

Manufacturer

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Delta Electronics (Thailand) PCL.
909 Pattana 1 Rd., Muang, Samutprakarn, 10280 Thailand

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Authorized Representatives

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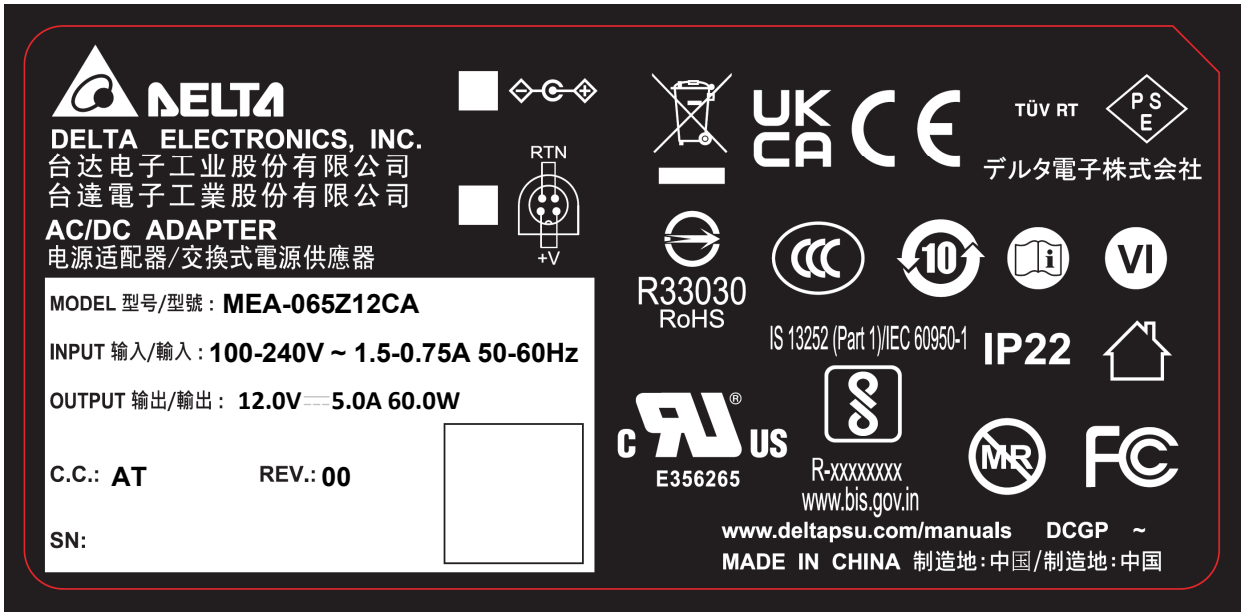
Delta Greentech (Netherlands) B.V.
Zandsteen 15, 2132 MZ Hoofddorp, The Netherlands

United Kingdom
Delta Electronics Europe Limited
1 Redwood Court, Peel Park Campus,
East Kilbride, Glasgow, G74 5PF, United Kingdom

3. Label Drawing



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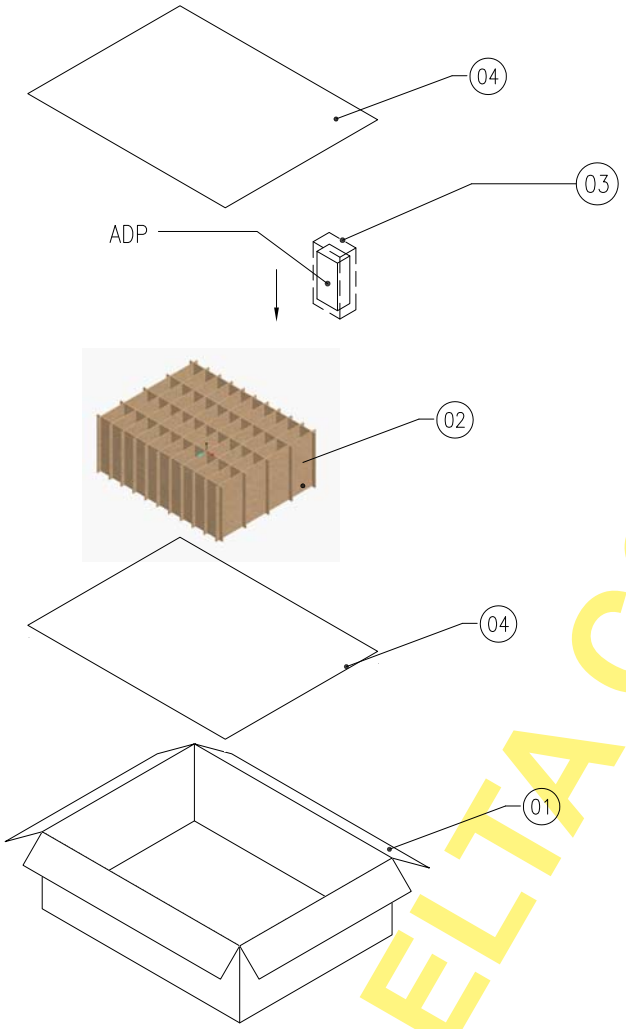
TITLE	REV:	USE ON :	DATE	
Label drawing		MEA-065Z12CA AT	07/19'23	

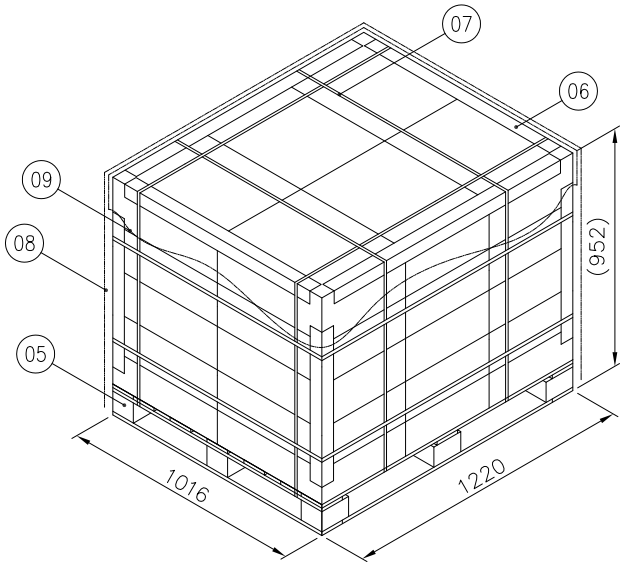
4. Packing

NOTES:

1. 40PCS/CARTON*2*3CARTONS/LAYER*4LAYERS=960PCS/PALLET
2. ALL THE PACKING MATERIAL SHOULD MEET DELTA GENERAL SPEC:10000-0162.

ITEM	PART NO.	NAME	OUTSIDE DIM.(mm)	Q'TY	REMARK	
01	35138362XX	CARTON	506X406X215	1/40	25.000	TP
02	35143258XX	PARTITION	488X388X182	1/40	25.000	TP
03	35020292XX	PE BAG	500X80X0.05	1/1	1.000	PCE
04	35108969XX	PAD PAPER	480X380X3	2/40	50.000	TP
05	3524029200	PALLET	1220X1016X120	1/960	1.042	TP
06	35101844XX	ANGLE PAPER	900X55X55	8/960	8.334	TP
07	35201427XX	PLASTIC STRIP	W=12 t=0.5	27/960	28.125	MMT
08	35200824XX	PE FILM	T=0.02mm	150g/960	0.157	GRM
09	35200899XX	PE SHEET	1500X1300	1/960	1.042	TP





DELTA CONFIDENTIAL

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

Drawn: 07/10'19 Randy

Design: 07/10'19 Randy

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THIRD ANGLE PROJECTION

Description: PML

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

( )		(V)		( )		( )	
<30	: ±0.25	DECIMALS		UP~100	: ±0.2	250~300	: ±0.4	UP~600	: ±1.5
>30~100	: ±0.35	X	: ±0.3	100~150	: ±0.25	300~350	: ±0.45	600~900	: ±2.4
>100~300	: ±0.5	X.X	: ±0.2	150~200	: ±0.3	350~400	: ±0.5	900~OVER	: ±3.1
ABOVE 300	: ±0.6	X.XX	: ±0.1	200~250	: ±0.35				

A3 SIZE

Part No. 3526657800

REV. 00

SCALE	--	UNIT	mm	USED ON	MEA-065A12C A-A	SHEET 2 OF 2	ISSUE DATE:07/10'19

FRAME NAME: DF-MEA3H-1R01.DWG