

KME130 EMS BATTERY

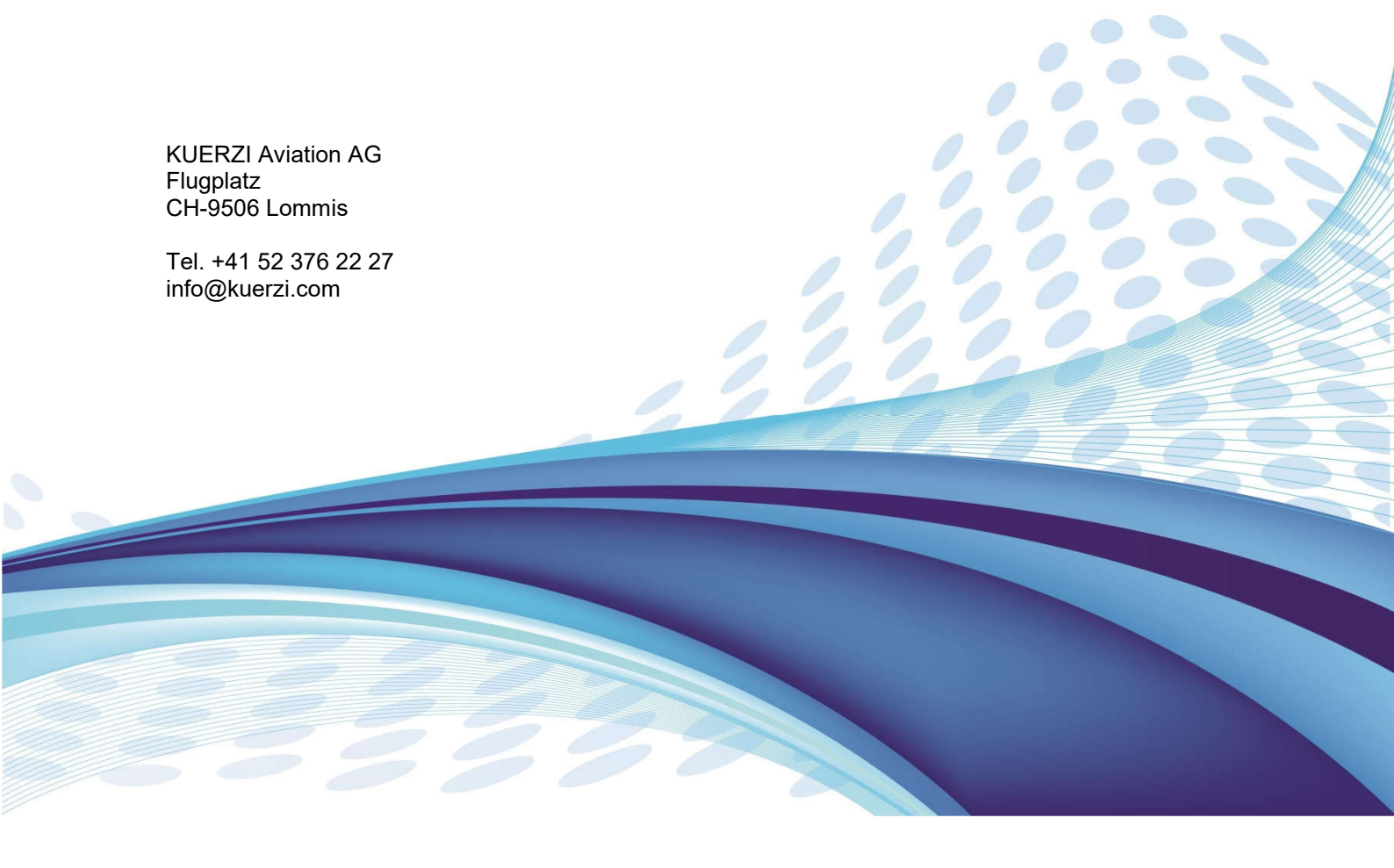
Installation Manual

IMA-201034278.6 REV NC

The technical content of this document is approved under the authority of the EASA reference: EASA.21J.365

KUERZI Aviation AG
Flugplatz
CH-9506 Lommis

Tel. +41 52 376 22 27
info@kuerzi.com



Copyright 2020 KUERZI Aviation AG

All rights reserved

KUERZI Aviation AG (KUAV) permits a single copy of this manual to be printed or downloaded for the use of an installing agency. Any such electronic or printed copy of this manual must contain the complete text of this copyright notice. Any unauthorized commercial distribution of this manual is strictly prohibited. Except as described above, no part of this manual may be reproduced, copied, transmitted, disseminated, downloaded or stored in any storage medium for any purpose without the express prior written consent of KUERZI Aviation AG (KUAV).

IMPORTANT:

Information in this document is subject to change without notice.

To confirm the current revision status of this manual, visit the KUAV Website
www.kuerzi.com
 or contact us
info@kuerzi.com

This manual provides information intended for use by persons who, in accordance with current regulatory requirements are qualified to install this equipment. If further information is required, please contact:

KUERZI Aviation AG
 Flugplatz
 CH-9506 Lommis

Tel. +41 52 376 22 27
info@kuerzi.com

RECORD OF REVISIONS			
Revision	Rev. Date	Description	prepared
NC	21.09.2020	Initial Issue	R. Zingre

1	GENERAL DESCRIPTION	4
1.1	General	4
1.2	Technical Specification	4
1.3	IMPORTANT SAFETY INFORMATION	4
2	PRE-INSTALLATION CONSIDERATIONS	6
2.1	LIMITATIONS	6
2.2	COOLING	6
2.3	MOUNTING	6
2.4	PRE-INSTALLATION INSPECTION	6
2.5	PARTS	6
3	INSTALLATION OVERVIEW.....	7
3.1	HARNESSE PREPARATION	7
3.2	CONNECTOR	7
3.3	MECHANICAL DESCRIPTION	8
4	INSTALLATION PROCEDURES.....	9
4.1	SECURING THE UNIT.....	9
5	CONNECTOR PINOUT INFORMATION	10
5.1	CONNECTOR J1	10
6	OPERATION INFORMATION.....	10
6.1	DEEP DISCHARGE CUT OFF	10
6.2	CHARGING AND FEED THROUGH OPERATION.....	10
7	POST INSTALLATION CONFIGURATION AND CHECKOUT PROCEDURES.....	11
8	CONTINUED AIRWORTHINESS	11
8.1	STORAGE INFORMATION	11
8.2	ESTIMATED LIFETIME	11
9	APPENDIX A – DO-160 ENVIRONMENTAL QUALIFICATION FORM..	12
10	APPENDIX B – MECHANICAL DRAWINGS	13

1 GENERAL DESCRIPTION

1.1 General

The KME130 EMS BATTERY, part number 104278.6 provides battery power to an Aircraft system or similar if no other Aircraft power is available. Its operating range is from +18VDC to +32VDC. To reset from low voltage detection, a minimum recharging voltage of +20VDC is required. The battery cells are protected against low voltage discharge and high current discharge. The charging cycle is constantly monitored by a voltage-, current and temperature control.

This manual contains information related to the specifications, installation, operation, storage, scheduled maintenance, and other related topics associated with the proper care and use of this product.

1.2 Technical Specification

Physical Characteristics	
Weight in kg (unit only)	1.66 kg
Dimensions in mm (LxWxH)	202x133x55mm
Chemistry	Nickel-metal Hydride
Electrical Characteristics	
Input Voltage	28VDC
Input Power	40W Charging
Output Voltage	24VDC
Output Current	5A
Battery Capacity (Beginning of Life)	2.4 Ah @ 23°C
Environmental Characteristics	
Operating Temperature Range	-10°C to 50°C
Charging Temperature Range	5°C to 45°C
Qualifications	
Environmental Qualification	DO-160G
Environmental Category	Refer to Appendix A

1.3 IMPORTANT SAFETY INFORMATION

Read this safety information BEFORE maintaining or servicing the battery pack. This product is a consumer product which is used in a hermetically sealed state. So, it is not an object of the SDS system. This document is provided to customers as reference information for the safe handling of the product. The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. KUERZI Aviation AG makes no warranty expressed or implied.

1.3.1 Identification

Special adjuncts to the text are expressed by the following headings:

WARNING: CALL ATTENTION FOR THE USE OF MATERIALS, PROCESSES, METHODS, PROCEDURES OR TOLERANCES WHICH MUST BE ADHERED TO CAREFULLY IN ORDER TO AVOID ANY INJURY.

CAUTION: CALL ATTENTION TO METHODS AND PROCEDURES, WHICH MUST BE ADHERED TO IN ORDER TO AVOID DAMAGE TO EQUIPMENT.

NOTE: Call attention to methods, which make the procedures easier.

1.3.2 Handling Precautions

- Always use appropriate Electrostatic Discharge (ESD) protection while working with the EMS battery pack.
- Specialized breathing filters are not required under normal use.
- Always use electrically insulated tools.

1.3.3 Shipping Information

- A For air shipment, based on “IATA Dangerous Goods Regulations 55th Edition (2014)” and “ICAO Technical Instructions for the safe transport of dangerous goods by air” the product shall be handled as Non-Dangerous Goods by based on IATA (A123) for air shipment.
- B Based on UN3496 (SP963) for sea shipment, the product is handled as following:
- (i) Nickel-metal hydride button cell or nickel-metal hydride cells or batteries packed with or contained in equipment are considered Non-Dangerous Goods.
 - (ii) All other nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are considered Non-Dangerous Goods provided they are loaded in a cargo transport unit in a total quantity of less than 100Kg gross mass.
 - (iii) When loaded in cargo transport unit in a total quantity of 100kg gross mass or more, they are considered Dangerous Goods (Class 9).

1.3.4 Hazardous and Toxicity Class

GHS Classification : Not applicable

Hazard : There is the risk of abnormal heat generation and explosion if the battery is crushed or heated above 100 degree C and disposed to fire.

Toxicity : When the leaked liquid adheres to the skin, it may cause the damage of the skin. When it is gotten in eye, it may cause the damage of eye such as losing sight.

Skin contact:

Wash the contact skin area off immediately with plenty of clean water such as tap water using a mild soap, otherwise it might cause sore on the skin. Get medical attention if irritation develops or persists.

Eye contact:

Flush the eyes with plenty of clean water such as tap water for more than 15 minutes without rubbing and immediately take a medical treatment.

Inhalation:

Move the exposed person to fresh air area immediately. And take a medical treatment immediately.

1.3.5 Disposal Considerations

When the battery is worn out, dispose of it under the regulations of each local government or the law issued by relating government.

2 PRE-INSTALLATION CONSIDERATIONS

2.1 LIMITATIONS

The KME130 EMS BATTERY must receive additional installation approval prior to being operated on each aircraft.

The KME130 EMS BATTERY is designed to be installed in the cabin, fuselage, avionics compartments or any place, where standard aviation electronic equipment can be installed. Although not required, optimum performance and life can be achieved by mounting the battery in a temperature-controlled section of the aircraft.

In addition to altitude and temperature tolerance, the unit is designed to withstand high levels of condensing humidity. However, installation locations where the unit could be subject to standing or direct water exposure should be avoided.

2.2 COOLING

No external cooling of the unit is required. The unit is designed to operate over a wide temperature range. Charging is limited from 5 °C up to 45°C and includes internal thermal monitoring and protection circuits.

2.3 MOUNTING

Install the battery in the aircraft in accordance with the aircraft manufacturer's instructions and the following sections.

The KME130 EMS BATTERY can be installed in any orientation. However, considering FAA advisory AC.43-13-1B, the unit should not be mounted with the connector facing upwards.

The KME130 EMS BATTERY needs to be mounted with for M4 bolt and washers on a bracket or supporting structure which will sustain the maximum stress load from the battery.

2.4 PRE-INSTALLATION INSPECTION

Inspect for Damage:

Inspect the shipping container and unit for any signs of damage sustained in transit. If necessary, return the unit to KUERZI Aviation using the original shipping container and packing materials. File any claim for damages with the carrier.

2.5 PARTS

KME130 EMS BATTERY	P/N 1034278.6
KME130 INSATLLATION KIT	P/N 1034278-6-85
KME130 EMS BATTERY CHARGING CABLE	P/N 1034278.6.90
KME130 EMS BATTERY Installation Manual	IMA-201034278.6

3 INSTALLATION OVERVIEW

This section contains mounting, electrical connections and other relevant information required for installing the KME130 EMS BATTERY. These instructions represent a typical installation and are not specific to any aircraft.

3.1 HARNESS PREPARATION

Prepare the aircraft wiring, considering FAA advisory AC.43-13-1B, with mating connector PT06SE10-6P(SR) part of Installation Kit or equivalent in accordance with the proper Wire Size and Type. To protect the wiring use a circuit breaker size 7.5A part of Installation Kit.

Table 1

Wire Size and Type					
Wire Gauge	Wire Type	Connector	Function	Pin	
20 AWG	Stranded Coper	J1	+28VDC PWR IN CHARGE	A	
20 AWG	Stranded Coper	J1	PWR IN RETURN	B	
20 AWG	Stranded Coper	J1	+24VDC PWR OUT	C	
20 AWG	Stranded Coper	J1	PWR OUT RETURN	D	

3.2 CONNECTOR

The KME130 EMS BATTERY is fitted with a connector PT02A10-6S.

Mating connector type PT06SE10-6P(SR) part of Installation Kit or equivalent is required for the installation.

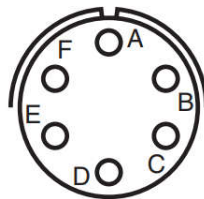


Figure 1: J1 (PT02A10-6S) sockets location.

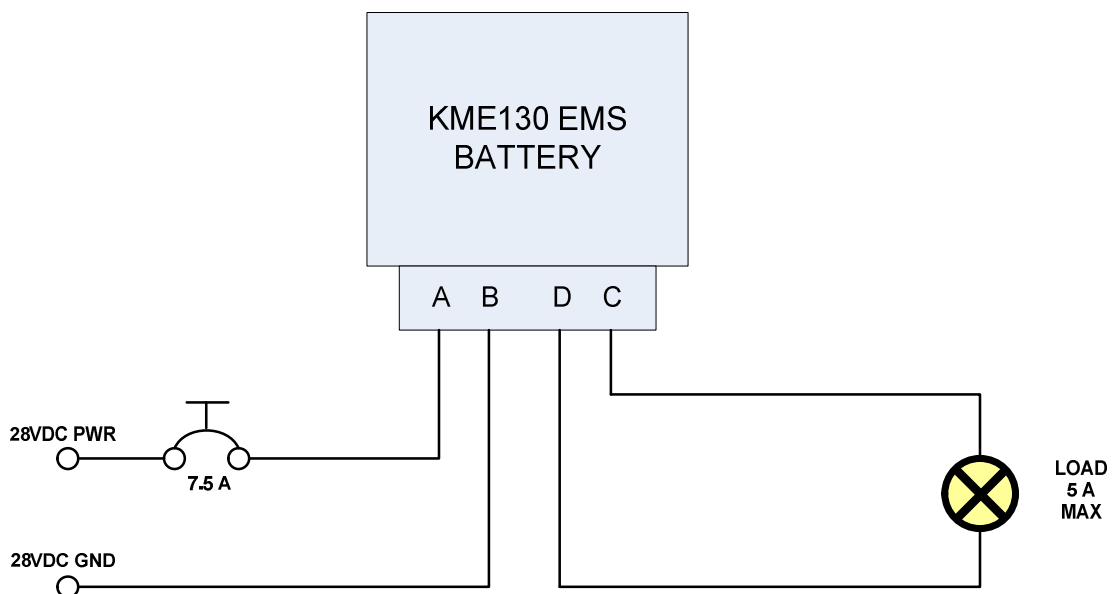


Figure 2: Connection Schematic

3.3 MECHANICAL DESCRIPTION

The KME130 EMS BATTERY can be installed in any orientation. However, considering FAA advisory AC.43-13-1B, the unit should not be mounted with the connector facing upwards.

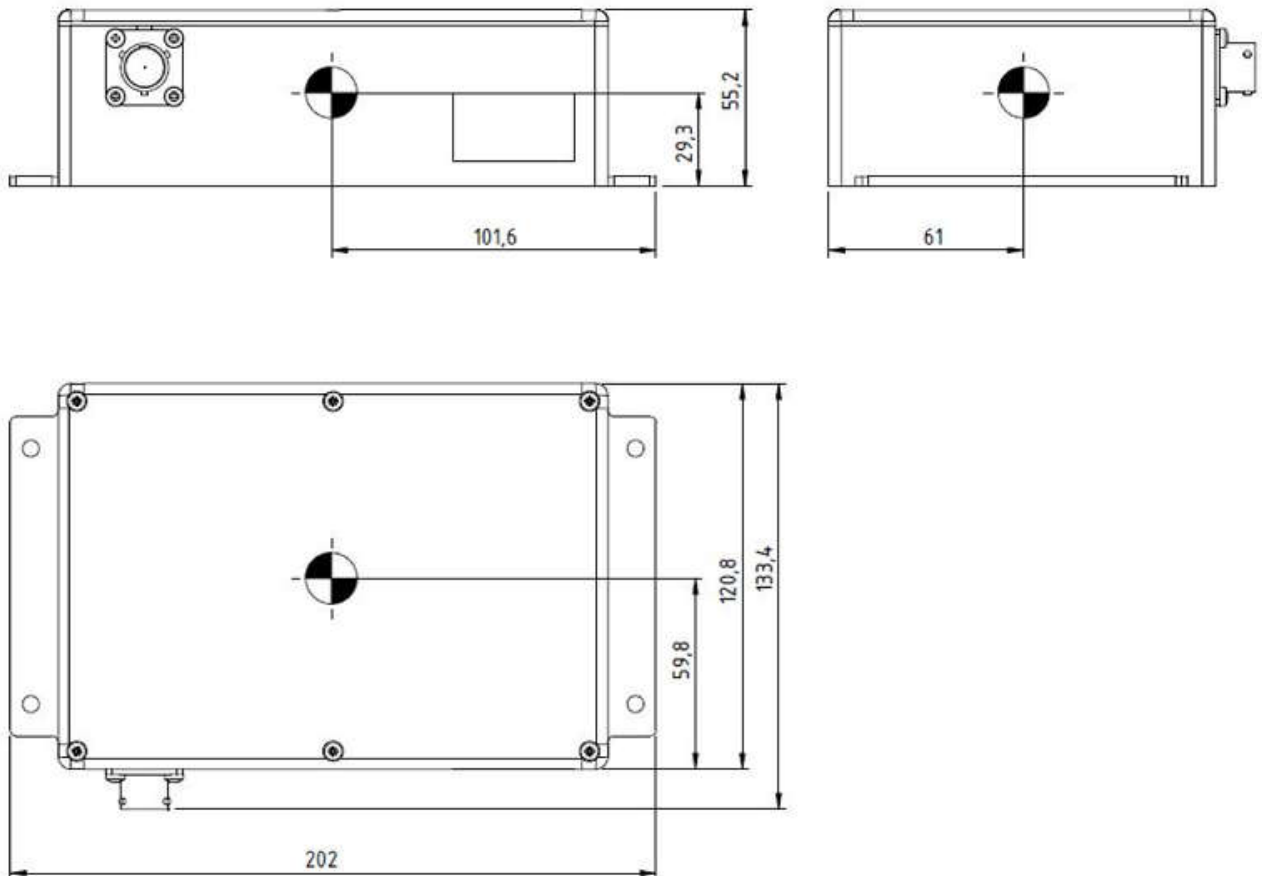


Figure 3: Mechanical Characteristics.

4 INSTALLATION PROCEDURES

WARNING: DO NOT SHORT TERMINALS AT ANY TIME!

This section contains information required for installing the KME130 EMS BATTERY. These instructions represent a typical installation and are not specific to any aircraft type.

4.1 SECURING THE UNIT

The battery is designed to be secured in the aircraft using four M4 bolt and washers. Four mounting holes are integrated into the flange of the battery.

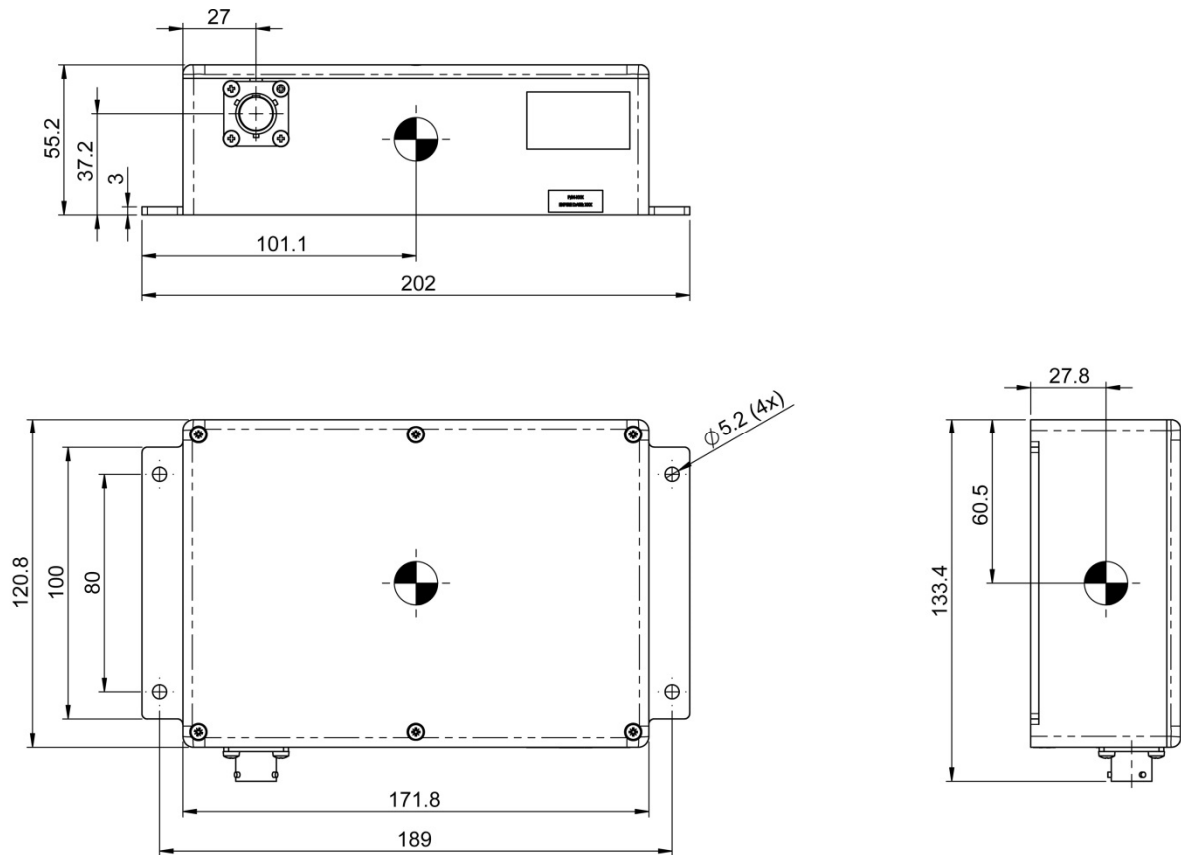


Figure 4 Mounting Features

5 CONNECTOR PINOUT INFORMATION

This section contains information required for connecting the KME130 EMS BATTERY. These instructions represent a typical installation and are not specific to any aircraft type.

5.1 CONNECTOR J1

Type: Amphenol PT02A10-6S

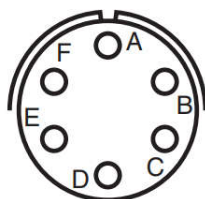


Figure 5: J1 (PT02A10-6S) sockets location.

Pin	Function	Current [A]	Notes
A	+28VDC PWR IN CHARGE	2.4 (7.5)	Max charging current (Charging & Feed through)
B	+28VDC PWR IN RETURN	-2.4 (-7.5)	-
C	+24VDC PWR OUT	5 (5) +24VDC	Internally limited by PTC (28VDC Feedthrough)
D	+24VDC PWR OUT RETURN	-5 (-5)	-
E	N/C	-	-
F	N/C	-	-

6 OPERATION INFORMATION

This section contains information required for the operation of the KME130 EMS BATTERY. These instructions represent a typical installation and are not specific to any aircraft.

If there is no other AC or RC power available, the KME130 EMS BATTERY will supply 24VDC / 5A power to the connected load.

6.1 DEEP DISCHARGE CUT OFF

If the voltage of the KME130 EMS BATTERY drops below 17VDC the battery will automatically shut down to protect the battery cells from deep cycling.

6.2 CHARGING AND FEED THROUGH OPERATION

To start the charging cycle after the KME130 EMS BATTERY entered into the deep discharge cut off state the input voltage on pin A (+28VDC PWR IN CHARGE) must be at least 20VDC to reset from deep discharge cut off state and start the charging cycle. The internal charging unit is constantly monitoring the status of the battery cell's to protect them from overcharging and will not start a charging cycle if the battery temperature is outside the temperature range of +5°C to +45°C to safely charge the battery.

If the KME130 EMS BATTERY is powered on pin A (+28VDC PWR IN CHARGE), the battery will be automatically charged, and in parallel the input power will be feed to the battery output (+24VDC PWR OUT) to directly power the connected load.

7 POST INSTALLATION CONFIGURATION AND CHECKOUT PROCEDURES

After installation apply power to the battery for at least 2 hours. Switch of the input power and make sure the battery will power up the connected load.

8 CONTINUED AIRWORTHINESS

8.1 STORAGE INFORMATION

In normal use, the KME130 EMS BATTERY utilizes the aircraft power to maintain the proper charge voltage and sustain the battery cells at peak capacity.

If not in normal use, it is recommended to charge the battery every three months to avoid deep cycle discharge. Exposed to temperatures above 30°C for sustained period of time are possible but may increase the self-discharge rate. Storage temperatures above 50°C are to be avoided.

To charge the KME130 EMS BATTERY use a power supply capable to provide +28VDC 3A and the KME130 EMS BATTERY CHARGING CABLE P/N 1034278.6.90.

8.2 ESTIMATED LIFETIME

Estimated live for the EMS Battery is expected three (3) years. It is recommended that the battery is overhauled or replaced after three years.

End of life is represented by the inability of the unit to meet the minimum capacity requirement of the battery powered system.

9 APPENDIX A – DO-160 ENVIRONMENTAL QUALIFICATION FORM

CONDITION	SECTION	DESCRIPTION OF TEST
Temperature and Altitude	4 4.5.1 4.5.2 4.5.3 4.5.4 4.6.1	Equipment tested to Category B1
Temperature Variation	5	Equipment tested to Category B
Humidity	6	Category X
Operational Shock and Crash Safety	7	Equipment tested to Category E
Vibration	8	Equipment tested to Category U2
Explosion	9	Category X
Waterproofness	10	Category X (Sealed aluminum case)
Fluids	11	Category X
Sand and Dust	12	Category X (Sealed aluminum case)
Fungus	13	Category X
Salt Fog	14	Category X
Magnetic Effect	15	Equipment tested to Category Z
Power Input	16	Equipment tested to Category Z
Voltage Spike	17	Category X
Audio Frequency Conducted Susceptibility	18	Category X
Induced Signal Susceptibility	19	Category X
Radio Frequency Susceptibility	20	Category X
Emission of Radio Freq. Energy	21	Equipment tested to Category M
Lightning Induced Transient Susceptibility	22	Category X
Lightning Direct Effects	23	Category X
Icing	24	Category X
ESD	25	Category X
Fire, Flammability	26	Category C (Sealed aluminum case)

10 APPENDIX B – MECHANICAL DRAWINGS

