

JP Avionics

MOD 133

“Installation of *Charge*² or *Charge*⁴ USB Charger on CS-23 aircraft”

MASTER DOCUMENTS LIST

This Master Documents List (MDL) defines the revision status of the documents applicable to JP Avionics MOD 133 “Installation of *Charge*² or *Charge*⁴ USB Charger on CS-23 aircraft”.

The current version of the MDL is indicated in the bottom section of this page. At any change of documents in the MDL, the MDL is also revised.

Documents issued to installer and owner / operator:

Item	Reference	Description	Issue
1	MDL-133	Master Documents List	1
2	CS-133	Change Statement	1
3	ES-133	Equipment Schedule	1
4	IPI-133	Installation and Post-Installation	1
5	ELA-GENERIC	Electrical Load Analysis	2
6	CS-SC102a	Installation of PSS for PED	a
7	AC-43.13-1B	Acceptable Methods, Techniques and practices	1B
8	C20A-M	<i>Charge</i> ² User Manual	1.0
		OR	
9	C40B-M	<i>Charge</i> ⁴ User Manual	1.0

Documents issued by:

Name	Function
J. L. Kluijfhout	Engineer at JP Avionics

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CHANGE STATEMENT

Design:	JP Avionics BV Molenstraat 7 4433 AB Hoedekenskerke The Netherlands																
Contact:	J. L. Kluijfhout																
Change number:	133																
Title:	“Installation of <i>Charge</i> ² or <i>Charge</i> ⁴ USB Charger on CS-23 aircraft”																
Classification:	Minor, covered under CS-SC102a, part of CS-STAN Issue 2																
Aircraft type:	Aeroplanes not being complex motor-powered aircraft and any ELA2 aircraft.																
TCDS:	various																
Original certification basis:	various																
Change certification basis:	CS-STAN, Issue 2, dated 30 March 2017 CS-23, Amendment 5, dated 29 March 2017																
Documents affected:	<table><tr><td>Weight and balance</td><td>NO, negligible</td></tr><tr><td>Electrical Load Analysis</td><td>YES</td></tr><tr><td>Compass Swing</td><td>NO</td></tr><tr><td>Maintenance Manual</td><td>NO</td></tr><tr><td>Wiring Diagram</td><td>YES</td></tr><tr><td>Flight Manual</td><td>YES</td></tr><tr><td>Logbook</td><td>YES</td></tr><tr><td>Radio license</td><td>NO</td></tr></table>	Weight and balance	NO, negligible	Electrical Load Analysis	YES	Compass Swing	NO	Maintenance Manual	NO	Wiring Diagram	YES	Flight Manual	YES	Logbook	YES	Radio license	NO
Weight and balance	NO, negligible																
Electrical Load Analysis	YES																
Compass Swing	NO																
Maintenance Manual	NO																
Wiring Diagram	YES																
Flight Manual	YES																
Logbook	YES																
Radio license	NO																

Limitations, conditions and exemptions:

This modification is limited to aircraft under EASA control and as listed above.

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CHANGE STATEMENT

Reason for change:

Installation of a safe and low RF signature USB charger, for powering portable electronic devices.

Description of change:

Installation of *Charge*² or *Charge*⁴ as PSS for PED.

Scope of the change:

The change generally consist of:

- Mechanical installation.
- Electrical installation.

The installation will re-use existing wiring provisions wherever possible, a new circuit breaker will be installed, as well as an ON/OFF switch, when necessary.

This design change does not include structural changes.

Drawings and reports:

All required drawings and reports needed to successfully install this design change are listed in the Master Document List.

Effects on other systems:

None

Environment:

The equipment has been designed to be installed in a cockpit of a general aviation aircraft, where it is protected from ingress.

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CHANGE STATEMENT

Aircraft power supplies:

The equipment can be connected to 14 Volt DC or 28 Volt DC.

Circuit protection:

A dedicated circuit protection device shall be used. This can either be a pull-able style circuit breaker, or a switch type circuit breaker. The circuit protection device is to be identified according to the system being protected.

Electrical Load Analysis:

The Electrical Load Analysis should be updated. For aircraft which don't have an Electrical Load Analysis, a complete analysis shall be made.

Installation is only allowed when the electrical system load analysis shows that the aircraft electrical system has sufficient energy for this system. Upgrades of the electrical power system are not part of this modification, and would require further approval.

Cooling requirements:

None required.

Lighting requirements:

Not applicable for this modification.

Weight and balance requirements:

Not applicable for this modification, change in weight is negligible.

Interior / trim:

Not applicable for this modification.

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CHANGE STATEMENT

Placards:

Circuit breaker and switches shall be identified.

Applicability:

This design change is designed for Aeroplanes not being complex motor-powered aircraft and any ELA2 aircraft.

Note, only for aircraft under EASA control.

It is the installer's responsibility to ensure that the change does not have any adverse interaction with previous changes to the aircraft.

Installers:

This design change is to be installed by appropriately rated EASA engineers. This installation is NOT suitable for pilot-owner release, as per SC-102A, item 6.

Installers shall return the a signed copy of the IPI document called out in the Master Documents List, in order to support continuing airworthiness of the aircraft/product as installed in accordance with the design change, the document shall be returned by E-mail to charge4@harkwood.co.uk

Continued Airworthiness:

There are no mandatory Continued Airworthiness instructions applicable to this design change. We recommend inspecting the wiring, using the same interval as recommended by the aircraft manufacturer.

Installation / Post Installation Instructions:

Installation and Post installation instructions are laid down in the Installation and Post-Installation Instructions as called out in the Master Documents List.

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Flight evaluation requirements:

Not required.

Post-flight evaluation:

Not applicable.

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EQUIPMENT SCHEDULE

Equipment approvals and test specifications:

Both *Charge*² and *Charge*⁴ Are in compliance with:

- EU Electromagnetic Compatibility Directive 2004/108/EC
- EU RoHS 2 Directive 2011/65/EU

Weight details:

The weight of *Charge*² is 0,096 Kg.

The weight of *Charge*⁴ is 0,220 Kg.

Electrical load details:

The absolute maximum current draw *Charge*² is 2,35 Amp at 12 Volt.

The absolute maximum current draw *Charge*² is 1,18 Amp at 24 Volt.

The absolute maximum current draw *Charge*⁴ is 3,97 Amp at 12 Volt.

The absolute maximum current draw *Charge*⁴ is 1,99 Amp at 24 Volt.

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INSTALLATION AND POST INSTALLATION

Reference:

Refer to JP-Avionics minor MOD 133 “Installation of *Charge*² or *Charge*⁴ USB charger” Master Documents List for required documentation.

Installation:

- ✓ Make sure the aircraft is under EASA control, and falls within the following aircraft: Aeroplanes not being complex motor-powered aircraft and any ELA2 aircraft.
- ✓ Perform ELA update, to ensure the electrical system is sufficiently rated for this modification. Upgrades of the electrical system require separate approval.
- ✓ Determine if a switch, or circuit breaker switch is required per CS-STAN CS-102A item 3.
- ✓ Locate an suitable mounting location. Keep at least 15 cm as compass safe distance. Make sure the mounting location doesn't interfere with aircraft primary structure. The mounting location should be sure that ingress of fluid is prevented, and also to minimize the possibility that (conductive) objects could be inserted into the USB sockets.
- ✓ Make the aircraft safe for maintenance according standard practices.
- ✓ Observe health and safety instructions where applicable.
- ✓ Determine if a switch, or circuit breaker switch is required per CS-STAN CS-102A item 3.
- ✓ Carry out any modifications needed to the instrument panel, avionics rack or pedestal to facilitate installation. Use FAA AC-43.13-1B and aircraft maintenance manual for standard practices.

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- ✓ Install new wiring. Use either the Harkwood Services Ltd supplied wiring, or use self supplied MIL-W-22759/16-20 wiring. Connect positive wire to new 5 Amp circuit breaker. This circuit breaker shall be connected to an avionics buss. When multiple busses are available, connect to non essential buss. An on-off switch can be installed in series between the circuit breaker and the device if needed. As alternative a circuit breaker / switch can be used.

Recommended circuit breakers:

- Klixon 7277-1-5
- Klixon 7277-2-5
- Tyco W23X1A1G5

Recommended circuit breaker / switch:

- Tyco W31X2M1G5

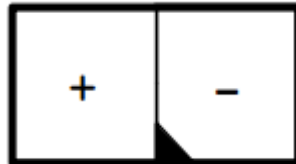
Install the wiring using standard practices as described in the aircraft maintenance manual, or FAAAC-43.13B.

When own supplied wiring is used the following connector is required, but not supplied:

Molex bare connector P/N 43645-0200 (QTY 1)

Molex crimp pin P/N 43030-0002 (QTY 2)

These pins should be crimped with Molex crimp tool P/N 63819-0000. Pin should be inserted, per illustration below.



- ✓ Test wiring for continuity and isolation
- ✓ Apply USB Charger or PSS PED decal near circuit breaker, and near switch, if applicable.

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Post Installation:

- ✓ Power up the aircraft, switch on charger. Check that the self-test is being performed, on which the ports lights will pulse in sequence.
- ✓ Connect an device to be charged. Ensure the green LED at that port lights up. Check all ports for proper operation.
- ✓ While charging a device, perform a full aircraft EMI test in accordance with FAAAC 43.13-1B, Chapter 11. Testing should be done satisfactorily. If not, contact either Harkwood Services Ltd, or JP Avionics BV.
- ✓ Fill out EASA Form 123 for this modification. Record ELA results on Form 123.
- ✓ Update documentation listed in CS-133.

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INSTALLATION AND POST INSTALLATION

Declaration:

JP Avionics MOD 133 “Installation of *Charge*² or *Charge*⁴ USB charger on CS-23 aircraft” has been carried out on the following aircraft:

Registration marking:

Aircraft type:

Aircraft S/N:

Charger Type:

Charger S/N:

Describe installation and configuration details:

Installation has been carried out in accordance with Installation and Post Installation procedures IPI-133 as called out in Master Document List MDL-133.

Installer:

Date:

In order to support continuing airworthiness of the aircraft/product as installed in accordance with this design change. The document shall be returned by E-mail to charge4@harkwood.co.uk

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ELA – GENERIC

Description:

An electrical load analysis (ELA) must be completed on the aircraft prior to the execution of this minor mod. The purpose of the ELA is to show compliance with EASA CS 23.1351 and 23.1353(h).

If it is determined that the modification results in a lower current consumption, a statement that the ELA is found to be in compliance shall be included in the certificate release to service (CRS). In this case no further action is required.

If it is determined that the modification results in a higher current consumption a full ELA shall be made.

For aircraft with an existing ELA this ELA should be updated to reflect the changes introduced by this modification. It must be further verified that the aircraft electrical system remains in compliance which includes verification of electrical generation capacity and verification that the reserve battery capacity remains adequate to support loads essential to continued safe flight and landing. The updated ELA shall provide proof of this verification.

For aircraft without an existing ELA an ELA shall be created if electrical load is increased. This can be done by measuring the total cruise current consumption. It is recommended to use a clamp current meter in order not to disconnect wiring.

The total maximum power consumption measured shall be less than 80% of the alternator rating.