Statement of Change

Design	Harkwood Services Ltd.
Contact	J Curtis
Title	Installation of USB chargers under CS-STAN Issue 4, SC-102b
Classification	Minor, covered under CS-STAN Issue 4, SC-102b Installation of DC power supply systems (DC-PSSs) which connect aircraft electrical power to portable electronic devices (PEDs).
Aircraft Type	This design change is designed for; • Aeroplanes that are not complex motor-powered aircraft. • Rotorcraft that are not complex motor-powered aircraft. • Any ELA2 aircraft.
Change certification Basis	CS-STAN, Issue 4

Document Affected

Weight and Balance	No, negligible
Electrical Load Analysis	Yes
Compass Swing	No
Maintenance Manual	No
Wiring Diagram	Yes
Flight Manual	Yes
Logbook	Yes
Radio Licence	No

Limitations, conditions, and exemptions	Installation limited to aircraft under EASA or UK CAA control as listed above.
Reason for Change	Installation of safe and low RF signature USB charger for powering portable electronic devices.
Description of Change	Installation of USB Charger as PSS for PED.
Scope of the change	The change consists of a mechanical and 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.
Environment	The equipment has been designed to be installed in the cockpit of a general aviation aircraft, where it is protected from direct sustained fluid ingress.
Aircraft power supplies:	Equipment may 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 that 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
Weight and balance requirements	Not applicable. Change in weight is negligible.
Placards	Circuit breaker and switches shall be identified.
Applicability	This design change is designed for; • Aeroplanes that are not complex motor-powered aircraft. • Rotorcraft that are not complex motor-powered aircraft. • and any ELA2 aircraft.
Installers	This design change is to be installed by appropriately rated engineers. This installation is NOT suitable for pilot-owner release, as per SC-102b, item 6.
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

✓ There are no mandatory Continued Airworthiness instructions applicable.

✓ Make sure the aircraft is under EASA control, and falls within the following aircraft:

- Aeroplanes that are not complex motor-powered aircraft.
- Rotorcraft that are not complex motor-powered aircraft.
- any ELA2 aircraft.

✓ Perform ELA update, to ensure the electrical system is sufficiently rated for this installation. Upgrades of the electrical system require separate approval.

✓ Determine if a switch, or circuit breaker switch is required per CS-STAN CS-102b item 3.

✓ Locate a 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.

✓ 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.

Install new wiring. Use either the Harkwood Services Ltd supplied wiring, or use self-supplied MIL-W-22759/16-20 or equivalent 20 AWG wiring.

Connect positive wire to new 5 Amp circuit breaker. This circuit breaker shall be connected to an avionics bus. 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:

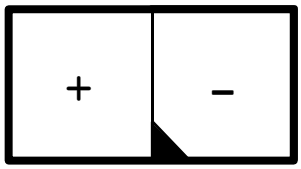
- Tyco W31X2M1G5

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

When own supplied wiring is used the following connector is required, but not supplied unless a bare connector set is ordered with the unit:

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.

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 FAA AC 43.13-1B, Chapter 11.

- ✓ Fill out EASA Form 123 for this modification. Record ELA results on Form 123.