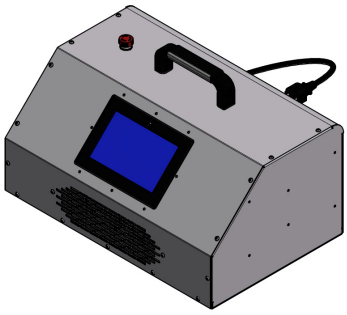
PIPISTREL

OFF-BOARD CHARGER H100

Portable charger instruction manual

Document No.: IM-167-12-00-001
Revision: A00
Date of Issue: September 14th, 2020



PIPISTREL VERTICAL SOLUTIONS d.o.o.
Vipavska cesta 2
SI-5270 Ajdovščina
Slovenia
Tel: + 386 5 36 63 873
Fax: + 386 5 36 61 263
Email: info@pipistrel-aircraft.com

This page is intentionally left blank.

INDEX OF DOCUMENT REVISIONS

The table below shows the revision history of this manual. Revised material is marked with a vertical bar that will extend the full length of new or revised content, added to new or previously existing pages. This marker will be located adjacent to the applicable text in the margin on the outer side of the page.

Document revision	Description	Reason for revision	Affected pages	Date
A00	Initial release	/	ALL	September 14th, 2020

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

Abbreviation	Description
SOC	State of Charge
HMI	Human Machine Interface

SAFETY INSTRUCTIONS

DANGER, HIGH VOLTAGE! The hazard of electrical shock, fire or death.

- Read the operating instructions carefully before using the Off-board Charger H100.
- Do not put your fingers in the Off-board Charger H100's plug-in socket holes or any other hole in the device.
- Do not use the Off-board Charger H100 if the supply cable is damaged, has damaged insulation or shows signs of improper use.
- Do not use the Off-board Charger H100 if the aircraft's charging plug-in socket is damaged in any way. Consult technical support at support@pipistrel-aircraft.com
- Do not use the Off-board Charger H100 if it is damaged in any way. Consult technical support at support@pipistrel-aircraft.com
- The Off-board Charger H100 must be used with grounded electrical networks.
- If you are not sure whether it is safe to use the Off-board Charger H100, immediately disconnect the Off-board Charger H100 from the network power supply and contact technical support at support@pipistrel-aircraft.com
  Do not use the Off-board Charger H100 until the issue is positively identified and resolved.
- The Off-board Charger H100 is only intended for use with Pipistrel electric aircraft.

CAUTION! A potentially hazardous situation which could lead to equipment damage or injury.

- Always position the supply cable so that it's not in the way of vehicles or people passing by. Avoid situations that could lead to cable damage, while the Off-board Charger H100 is in use.
- When charging is complete always remove and secure the cable to prevent injury to yourself and others.

NOTE: Operating tips additional information.

- Use a wet cloth or a cloth soaked in soap and water solution to clean the Off-board Charger H100. Do not use chemical cleaners or solutions. Do not pour water on the Off-board Charger H100.
- Off-board Charger H100 repairs and maintenance can only be carried out by Pipistrel-authorized personnel. Do not try to repair the Off-board Charger H100 by yourself. Contact technical support at support@pipistrel-aircraft.com

OFF-BOARD CHARGER H100 DESCRIPTION

Off-board Charger H100 is a battery charger approved to be used on the ground for charging Alpha Electro on-board batteries.

The unit's rack is mounted on wheels for eased mobility and manoeuvrability. A power supply cable and charging cable are supplied with the unit and stored on support brackets on both sides of the charger.

Figure 001
Off-board Charger H100 unit

The battery charger power supply is provided with connection to AC grid by means of an IEC60309 plug (one or three phase, see Technical data section for specifications of each model).

Figure 002
Power supply connection

The L1 phase of the charger is used for powering the 12V auxiliary DC power supply. The 12V DC power supply is internal to the battery charger and is used for powering of the various charger's internal components (charge controller, HMI, contactors, etc...).

All of charger's functions are controlled and monitored by the charge controller. The charge controller communicates with the Alpha Electro's system controller and executes it's commands.

DIGITAL DISPLAY

Off-board Charger H100 has an HMI in form of a 7'' (inch), capacitive touch screen. The screen is used to inform the user of the charger's and aircraft's charging status, issue a start/stop charge command, select charging current/mode and monitor the state of the charging process.

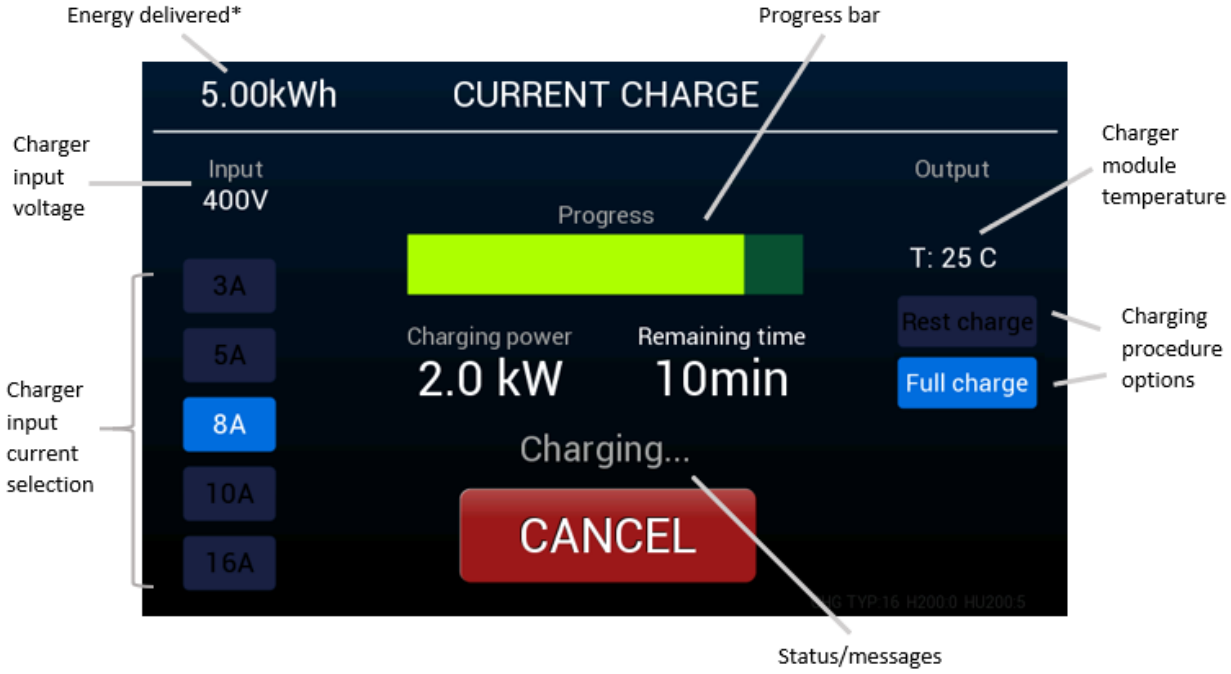


Figure 003
HMI - Digital display

*Parameter indicates the amount of energy transferred since the beginning of the current charging process. It does not represent the total amount of energy in the batteries.

Figure 004
HMI - Digital display

CHARGING INTERFACE

The airplane/charger charging interface consists of a plug-receptable combination, standardized in IEC 62196-2. The charging connector is rated for 500V maximum charging voltage and up to 64A of continuous charging current.

The charger plug is equipped with an electric locking mechanism, which locks the plug into the receptable during charging. The same mechanism is also used for locking the plug into the charger station. This safety feature prevents unintentional disconnects during charging, which could result in contact arcing and welding.

Figure 005
Charging plug

TECHNICAL DATA

CHARGER TYPE: H1003P20KW

ELECTRICAL INPUT	
Input power	23 kW max
Input voltage	110 - 450 Vac, three phase
Input current	30 A max.
Input voltage frequency range	45 - 65 Hz
Recommended fuse	32 A
ELECTRICAL OUTPUT	
Maximum output power	20 kW
Output voltage range	110 - 440 V
Output current	60 A max.
FUNCTIONAL INTERFACES	
Firmware update	via USB port
OPERATIONAL RATINGS	
Efficiency (max.)	92%
Power factor	> 95%
Ambient operating temperature	From -20°C to +40°C
Cooling	Forced air cooling
Lightning protection	No
DIMENSIONS, WEIGHT	
Dimensions	799mm * 593mm * 763mm
Weight	74 kg

CHARGER TYPE: H1003P15KW

ELECTRICAL INPUT	
Input power	19 kW max
Input voltage	90 - 265 Vac one phase
Input current	78 A max.
Input voltage frequency range	45 - 65 Hz
Recommended fuse	80 A
ELECTRICAL OUTPUT	
Maximum output power	15 kW
Output voltage range	110 - 440 V
Output current	50 A max.
FUNCTIONAL INTERFACES	
Firmware update	via USB port
OPERATIONAL RATINGS	
Efficiency (max.)	92%
Power factor	> 95%
Ambient operating temperature	From -20°C to +40°C
Cooling	Forced air cooling
Lightning protection	No
DIMENSIONS, WEIGHT	
Dimensions	799mm * 593mm * 763mm
Weight	69 kg

CHARGER TYPE: H1001P10KW

ELECTRICAL INPUT	
Input power	11 kW max
Input voltage	110 - 265 Vac one phase
Input current	48 A max.
Input voltage frequency range	45 - 65 Hz
Recommended fuse	50 A
ELECTRICAL OUTPUT	
Maximum output power	10 kW
Output voltage range	110 - 440 V
Output current	30 A max.
FUNCTIONAL INTERFACES	
Firmware update	via USB port
OPERATIONAL RATINGS	
Efficiency (max.)	92%
Power factor	> 95%
Ambient operating temperature	From -20°C to +40°C
Cooling	Forced air cooling
Lightning protection	No
DIMENSIONS, WEIGHT	
Dimensions	799mm * 593mm * 763mm
Weight	59 kg

CHARGER TYPE: H1003P10KW

ELECTRICAL INPUT	
Input power	11 kW max
Input voltage	170 - 450 Vac, three phase
Input current	15 A max.
Input voltage frequency range	45 - 65 Hz
Recommended fuse	16 A
ELECTRICAL OUTPUT	
Maximum output power	10 kW
Output voltage range	110 - 440 V
Output current	30 A max.
FUNCTIONAL INTERFACES	
Firmware update	via USB port
OPERATIONAL RATINGS	
Efficiency (max.)	92%
Power factor	> 95%
Ambient operating temperature	From -20°C to +40°C
Cooling	Forced air cooling
Lightning protection	No
DIMENSIONS, WEIGHT	
Dimensions	799mm * 593mm * 763mm
Weight	59 kg

CHARGER TYPE: H1001P3KW

ELECTRICAL INPUT	
Input power	3,5 kW max
Input voltage	90 - 265 Vac, one phase
Input current	16 A max.
Input voltage frequency range	45 - 65 Hz
Recommended fuse	16 A
ELECTRICAL OUTPUT	
Maximum output power	3 kW
Output voltage range	110 - 440 V
Output current	10 A max.
FUNCTIONAL INTERFACES	
Firmware update	via USB port
OPERATIONAL RATINGS	
Efficiency (max.)	92%
Power factor	> 95%
Ambient operating temperature	From -20°C to +40°C
Cooling	Forced air cooling
Lightning protection	No
DIMENSIONS, WEIGHT	
Dimensions	503mm * 360mm * 305mm
Weight	14,5 kg

DIMENSIONS

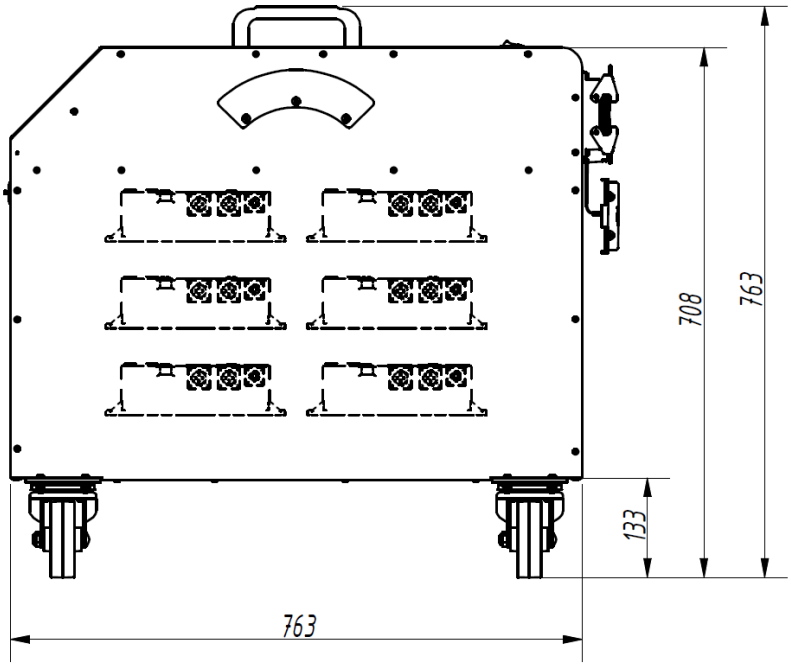


Figure 006
Side view

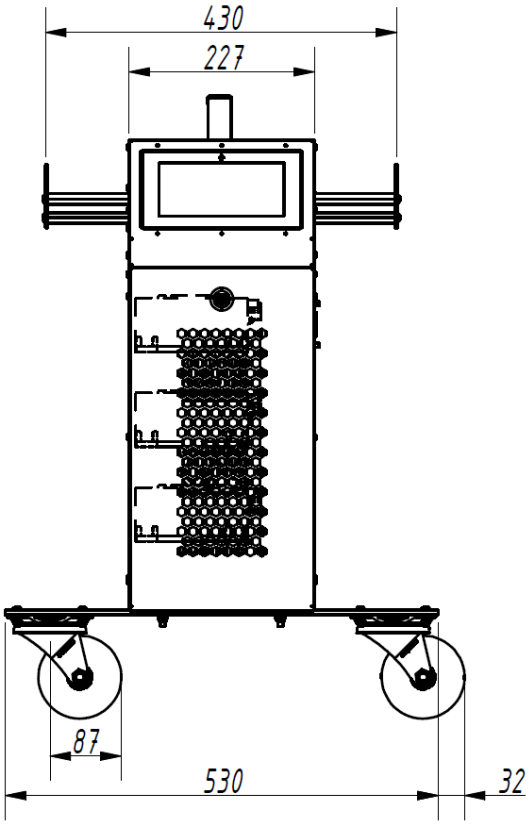


Figure 007
Front view

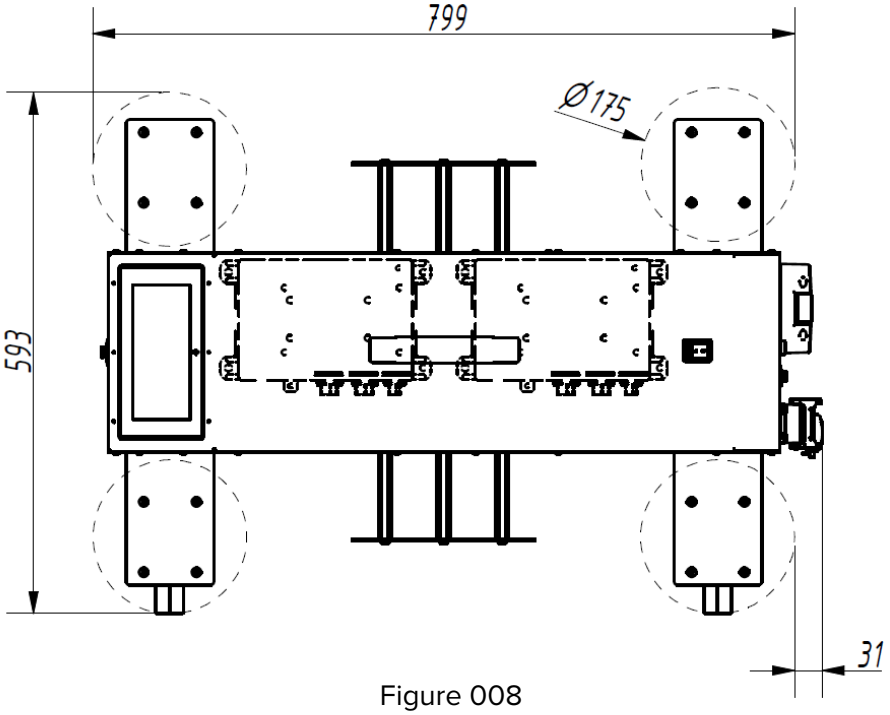


Figure 008
Top view

DIMENSIONS FOR 3KW VERSION

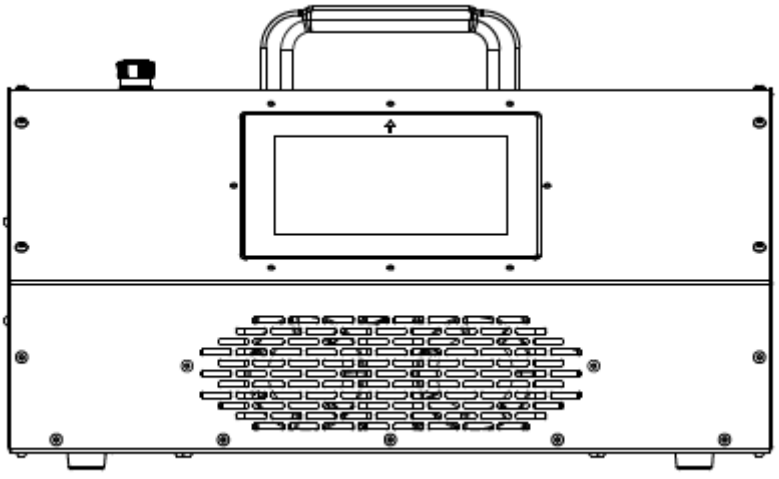


Figure 009
Front view (3 kW version)

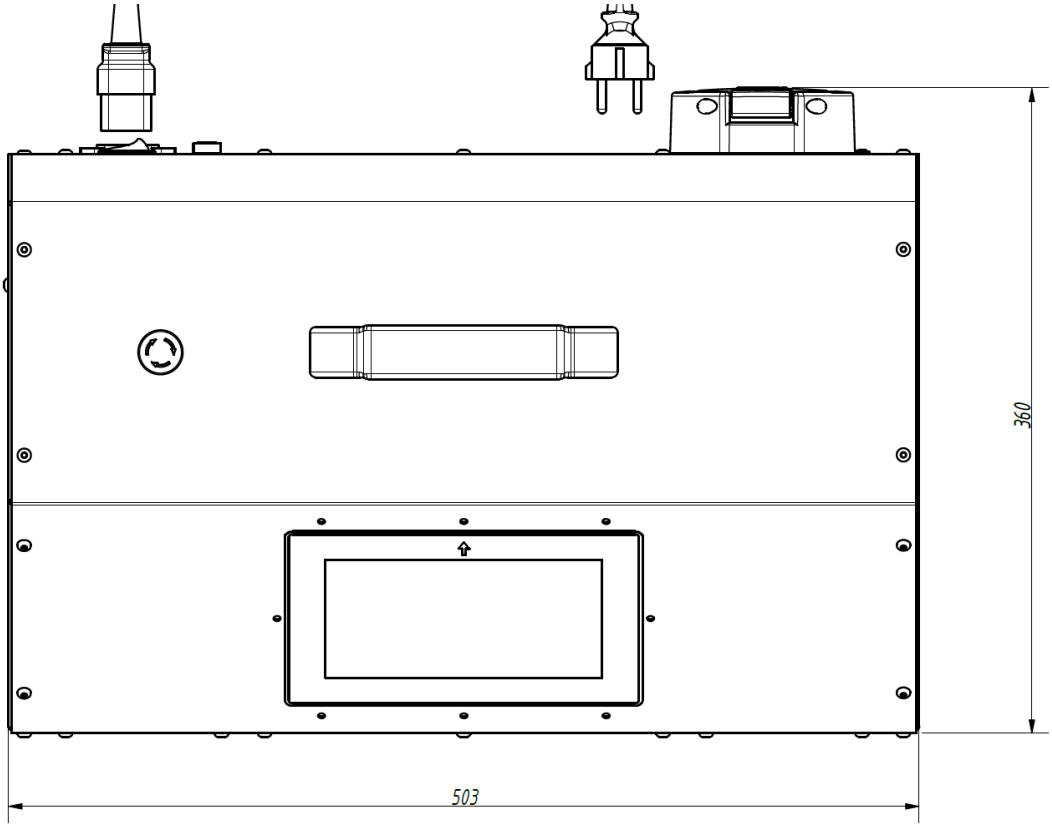


Figure 010
Top view (3 kW version)

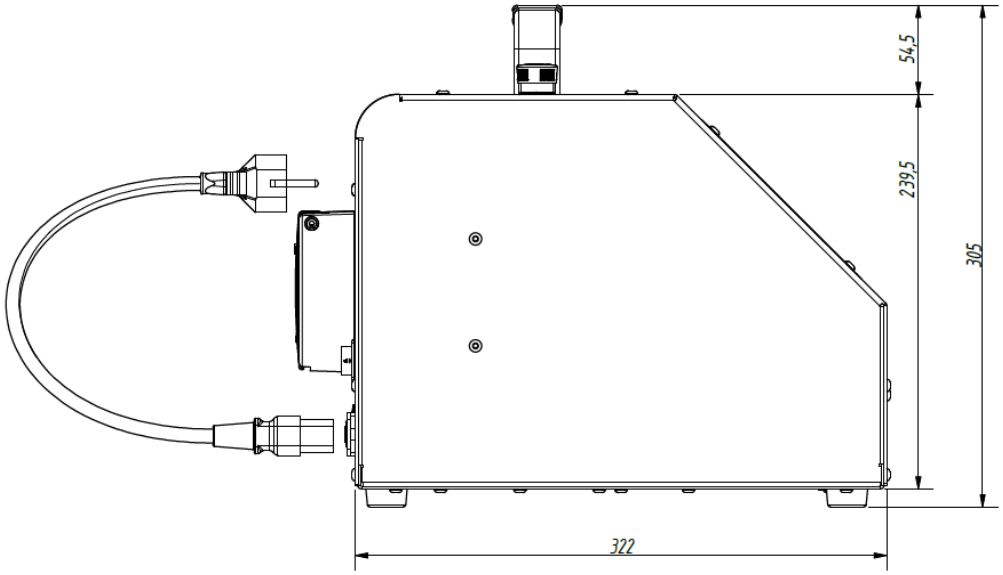


Figure 011
Side view (3 kW version)

PLACARDS

The following placards can be found on SkyCharge Off-board Charger H100:

Around the main rocker switch

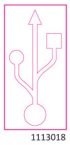
On top of charger

Next to power supply inlet

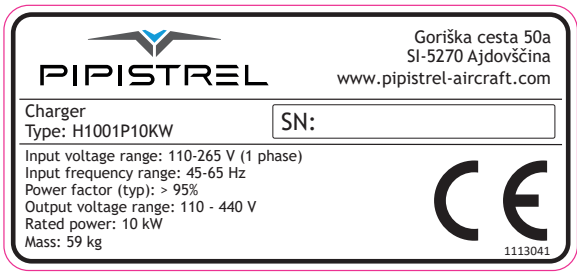
Next to air vent inlet and outlet

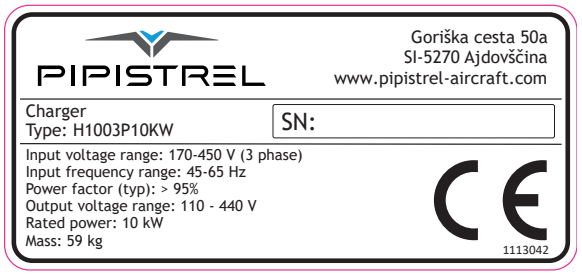
Next to diagnostics port

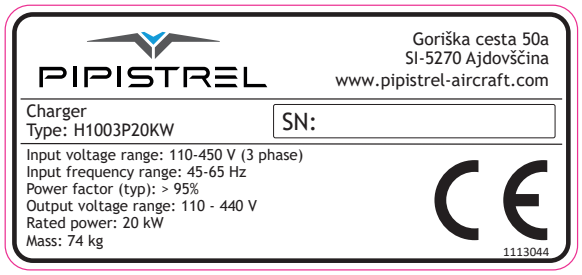
Around the fuse

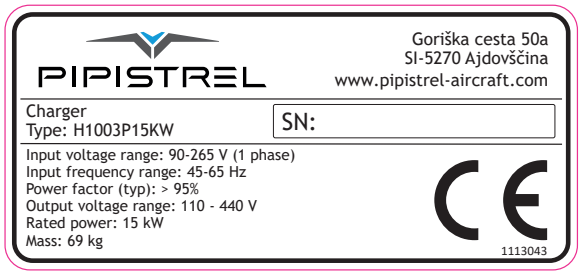


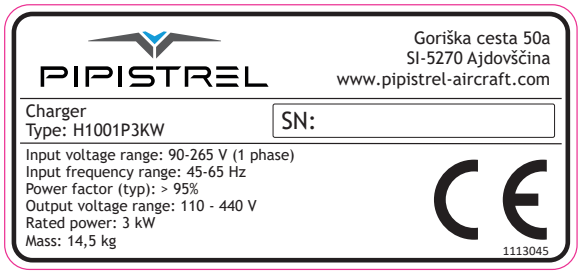
Next to firmware update port (USB)


PIPISTREL
Goriška cesta 50a
SI-5270 Ajdovščina
www.pipistrel-aircraft.com
Charger
Type: H1001P10KW
SN:
Input voltage range: 110-265 V (1 phase)
Input frequency range: 45-65 Hz
Power factor (typ): > 95%
Output voltage range: 110 - 440 V
Rated power: 10 kW
Mass: 59 kg
CE
1113041


PIPISTREL
Goriška cesta 50a
SI-5270 Ajdovščina
www.pipistrel-aircraft.com
Charger
Type: H1003P10KW
SN:
Input voltage range: 170-450 V (3 phase)
Input frequency range: 45-65 Hz
Power factor (typ): > 95%
Output voltage range: 110 - 440 V
Rated power: 10 kW
Mass: 59 kg
CE
1113042


PIPISTREL
Goriška cesta 50a
SI-5270 Ajdovščina
www.pipistrel-aircraft.com
Charger
Type: H1003P20KW
SN:
Input voltage range: 110-450 V (3 phase)
Input frequency range: 45-65 Hz
Power factor (typ): > 95%
Output voltage range: 110 - 440 V
Rated power: 20 kW
Mass: 74 kg
CE
1113044


PIPISTREL
Goriška cesta 50a
SI-5270 Ajdovščina
www.pipistrel-aircraft.com
Charger
Type: H1003P15KW
SN:
Input voltage range: 90-265 V (1 phase)
Input frequency range: 45-65 Hz
Power factor (typ): > 95%
Output voltage range: 110 - 440 V
Rated power: 15 kW
Mass: 69 kg
CE
1113043


PIPISTREL
Goriška cesta 50a
SI-5270 Ajdovščina
www.pipistrel-aircraft.com
Charger
Type: H1001P3KW
SN:
Input voltage range: 90-265 V (1 phase)
Input frequency range: 45-65 Hz
Power factor (typ): > 95%
Output voltage range: 110 - 440 V
Rated power: 3 kW
Mass: 14,5 kg
CE
1113045

DELIVERY

Portable battery charger Off-board Charger H100 unit is delivered together with:
- 5 m charging cable with charging plug (IEC 62196-2)
- 10 m power supply cable with three phase plug (IEC 60309)

CHARGING PROCEDURES

Off-board Charger H100 offers two modes of charging procedures, FULL CHARGE and REST CHARGE procedure. Both charging modes are given as an option on the charger display.

FULL CHARGE is the standard charging procedure performed before the flight.

REST CHARGE is the procedure used to prepare the batteries for a period of inactivity. This process will charge the batteries to an optimum level for aircraft storage (SOC 70-80% at the end of the rest charge process. SOC range for battery storage is 30-80 %SOC). This feature was introduced for aircraft that gets stored over a long period of time (over winter for example). Storing a 100% may have a negative impact on battery life, therefore only a partial charge is beneficial. The procedure should be repeated every 90 days, during storage period, to maintain the batteries in optimal condition.

DANGER, HIGH VOLTAGE!

Under no circumstances and in any way do not open any part of the Off-board Charger H100 during operation.

CAUTION!

Do not touch or disconnect the charging cable from the aircraft plug-in socket while charging.

FULL CHARGE PROCEDURE (BATTERIES CHARGED 100%)

1. Park the aircraft and engage parking brake.
2. Connect the charger power supply cable to the power network.
3. Check if the charging cable plug is connected to the designated port on the charger.
4. Turn the charger rocker switch to ON position.
5. Connect the charging cable plug to the charging port socket on the aircraft.
6. Select "FULL CHARGE" option on the charger display, see Figure 009.
7. Select desired charging current input on the left-side list, see Figure 009.

CAUTION! Power network circuit breaker rating should support the chosen charging current input selected on the charger.

NOTE: Low charging current increases charging time, but reduces battery stress and heating.

8. Press "CHARGE" on the charger display to start the charging procedure, see Figure 009.

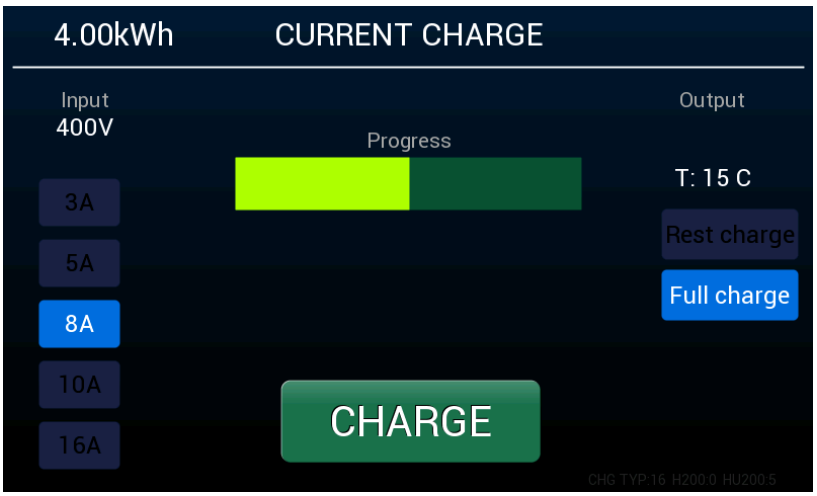


Figure 012

9. Charger display will show charging process, power and remaining time to fully recharge the batteries. Charging procedure can be stopped at any time by pressing "CANCEL" on the charger display, see Figure 010.

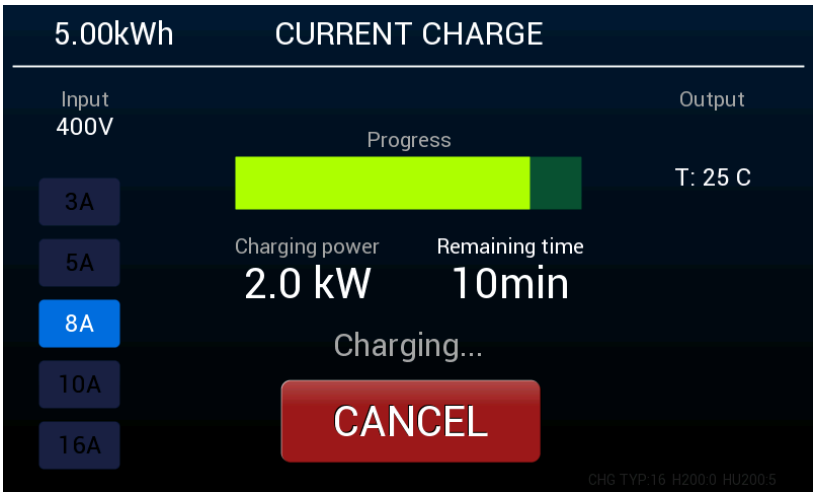


Figure 013

10. When charging process is completed press "CONFIRM" on the display, see Figure 011.

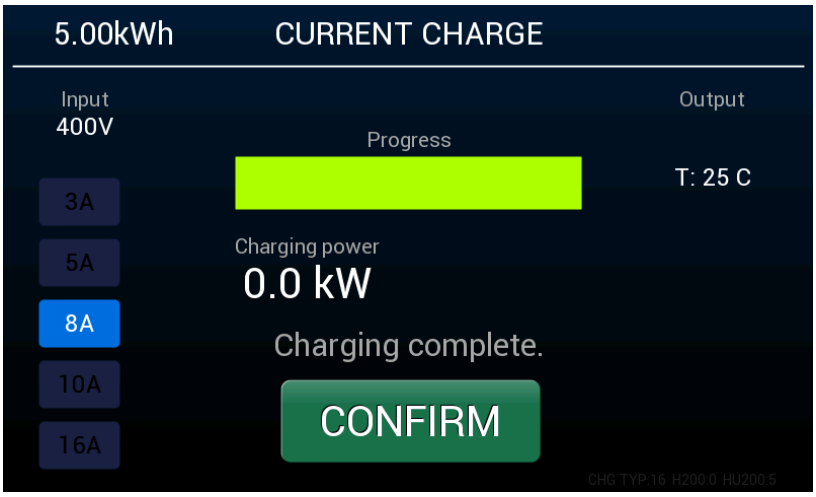


Figure 014

11. Disconnect the charging cable plug from the aircraft charging port.
12. Turn the charger rocker switch to OFF position.
13. Disconnect the charger power supply cable from the power network.

REST CHARGE PROCEDURE (BATTERIES CHARGED UP TO 70-80%)

1. To perform “REST CHARGE” procedure, follow the same procedure as “FULL CHARGE”, but press “REST CHARGE” option at the beginning of the charging process.

TROUBLESHOOTING

In case of an Error message (for example see Figure 012), press ‘‘CONFIRM’’, abort the charging procedure and contact Pipistrel support team for further assistance at support@pipistrel-aircraft.com

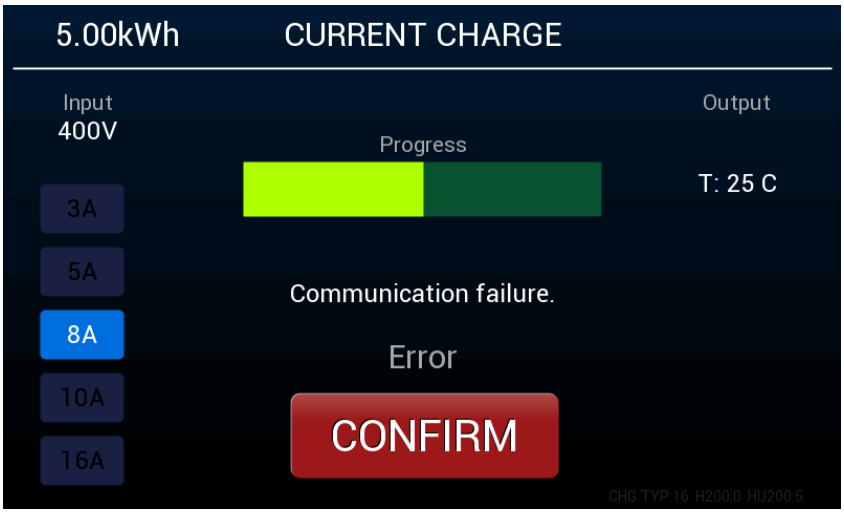


Figure 015

MAINTENANCE, LIFE LIMIT

No maintenance is required for SkyCharge Off-board Charger H100.

This page is intentionally left blank.

Pipistrel d.o.o.,
Goriška cesta 50a
SI-5270 Ajdovščina
Slovenia - EU

t +386 (0)5 3663 873
f +386 (0)5 3661 263
info@pipistrel-aircraft.com
www.pipistrel-aircraft.com

Pipistrel Italia
Via Fratelli Rusjan, 26
34070 Savogna d'Isonzo (GO)
Italy - EU
t +39 0481 522000
pipistrel@legalmail.it
www.pipistrel-aircraft.com

Pipistrel Vertical Solutions d.o.o.
Vipavska cesta 2
SI-5270 Ajdovščina
Slovenia - EU

t +386 5 366 38 73
f +386 5 366 12 63
info@pipistrel-aircraft.com
www.pipistrel-aircraft.com