Saab TransponderTech

U6 UPS

USER & INSTALLATION MANUAL

SAAB TECHNOLOGIES

SAAB

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i Copyright

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ii Disclaimer

While reasonable care has been exercised in the preparation of this manual, Saab TransponderTech shall incur no liability whatsoever based on the contents or lack of contents in the manual.

iii DISPOSAL INSTRUCTIONS

Broken or unwanted electrical or electronic equipment parts shall be classified and handled as 'Electronic Waste'. Improper disposal may be harmful to the environment and human health. Please refer to your local waste authority for information on return and collection systems in your area. Saab will accept the return of discarded units produced by Saab TransponderTech.

iv VALIDITY OF THIS DOCUMENT

This installation manual is valid for U6 UPS with following part numbers:

- 7000 125-800, U6 UPS

v Manual Part Number and Revision

Part number 7000 125-810, revision A1.

vi Disposal Instructions

Broken or unwanted electrical or electronic equipment parts shall be classified and handled as 'Electronic Waste'. Improper disposal may be harmful to the environment and human health. Please refer to your local waste authority for information on return and collection systems in your area.

vii Contact Information

For installation, service, ordering info and technical support please contact your local Saab TransponderTech representative. A list with dealers, OEM partners and service stations can be found at our website, listed under the corresponding product page.

www.saab.com/maritime

For the latest manual and certificates please visit:
https://www.saab.com/transpondertechsupport

TABLE OF CONTENTS

TABLE OF FIGURE

TABLE OF TABLES

1 SAFETY INSTRUCTIONS

1.1 General

Saab TransponderTech assumes no liability for customer not complying with requirements in this section or warnings and cautions elsewhere in this document.

This safety instruction section refers to all components of the U6 UPS, referred to as “equipment” in this section.

1.2 Installation and Service

Only qualified technicians shall do installation and servicing of equipment. Electrical fuses must be replaced with correct types.

To prevent electrical shock hazard and damage to the equipment, the equipment shall be connected to electrical ground. A power supply corresponding to the voltage rating of the equipment shall be used. Failure to comply with this requirement may damage the equipment.

To ensure proper functioning of the equipment, only cables specified in this document may be used. Failure to comply with this requirement may cause unexpected behaviour of the equipment.

The equipment may not in any way be opened or modified; doing so may cause fire, shock hazard or serious injury.

2 SYSTEM OVERVIEW

2.1 Product Description

The U6 UPS is an optional component of the R6 Navigation System designed to enhance its functionality with multiple power sources, offering back-up capabilities and power transition.

Functioning as a power switch, the U6 UPS accepts input power ranging from 100V to 240V AC and 24V DC, providing redundancy in input and outputting 24V DC.

Additionally, when an appropriate battery is connected to the U6 UPS, it serves as a third independent back-up power source. The battery remains charged as long as any of the other input sources provides power.

3 INSTALLATION

3.1 Equipment part numbers

The table below lists the U6 UPSs most common parts and accessories.

Name	Part number
U6 UPS	7000 125-800
Battery 24VDC 12 Ah	7000 000-856
UPS battery cable M12 to open 2m	7000-125-546
Power cable M12 to open 2m	7000-125-544

Table 1 - U6 UPS and accessories

3.2 Equipment Installation Environment

The table below lists the IEC 60945 equipment classification for the system.

Name	Part number	IEC 60945 installation category
U6 UPS	7000 125-800	Protected
Battery 24VDC 12 Ah	7000 000-856	Protected

Table 2 - IEC 60945 equipment classification

3.3 Minimum cable bending radius

When installing the cables, the minimum recommended bending radius for power cables are 10 times the cable diameter.

3.4 System interconnection overview

3.4.1 Basic Setup

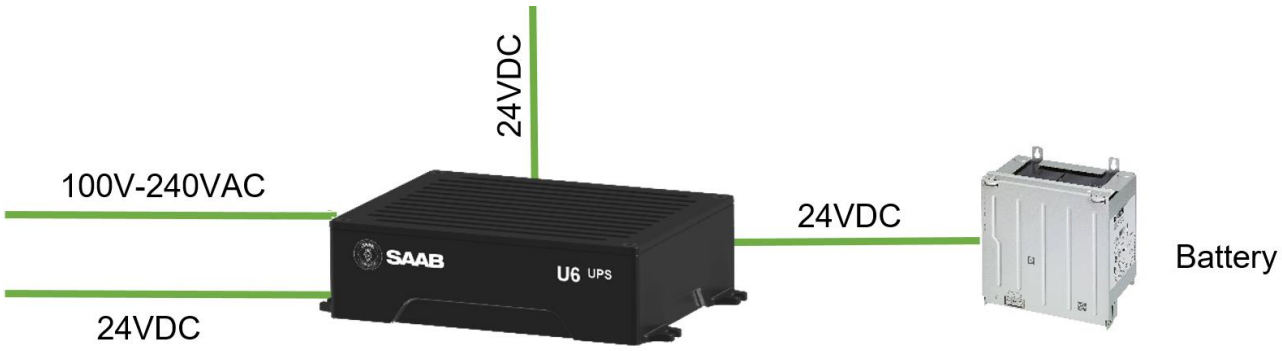

Figure 1 - Basic overview

3.4.2 Installation Procedure

When installing the U6 UPS it is recommended to follow the steps described in this installation manual. Details of the installation procedure can be found in the coming sections of the manual.

Recommended installation steps:

1. Mount the U6 UPS in a suitable location
    a. Unit shall be wall or shelf mounted
    b. Secure the unit to wall or shelf with 4pcs M4 Bolts, one for each mounting leg.
2. Connect DC Out to the units which should be supplied with redundant power
3. Connect the AC Connector to a 100-240V AC power source, if AC is used
4. Connect DC In to a 24VDC power source, if DC is used
5. Connect the battery to the Batt connector.

Warning!

Attention to Polarity!

Failure to install the UPS battery cable to the battery correctly, will damage the U6 UPS

Note: DC can be connected at the same time as AC, but is in that case used as a backup in case of failure or fluctuations on AC.

3.4.3 Installing the U6 UPS

3.4.3.1 Location

When mounting the U6 UPS, please consider the following:

- Mount the unit so that the LEDs can be observed if needed for troubleshooting purposes.
- The temperature and humidity should be moderate and stable, +15ºC to +35ºC. (Operating temperature: -15ºC to +55ºC.)
- Select a location away from excessive heat sources.
- Avoid areas where there is a high flow of humid salt air.
- Avoid places with high levels of vibrations and shocks.
- Ensure there is sufficient airflow around unit for efficient cooling.
- Ensure that the different cables can be connected without violating their minimum bending radius.

3.4.3.2 Clearance Area

Leave a clearance around the U6 UPS Sensor to facilitate service and installation. Recommended clearance area should be minimum 150 mm for cables. Minimum bending radius on the connected cables should also be observed as well (see section 3.1.3).

3.4.4 Functional monitoring by U6 UPS LEDs

Figure 2 - LEDs on U6 UPS

1. **100-240V AC**
   This LED is lit when the unit detect voltage input on the *100V-240V AC* port. This primary power and always selected when AC is present.
2. **DC In**
   This LED is lit when the unit detect voltage input on the *DC In* port. This is secondary power which is selected if AC is not present.
3. **Status LEDs**
   The Status LEDs shows the charging status. See Table 3 - Status LEDs. On a battery with low voltage the charging process proceed as follows:
   - Trickle phase. Brings the battery voltage to an acceptable level for bulk phase.

     Note: If the Status LEDs does not light up to indicate a different charging phase within 24 hours, the battery must be replaced.
   - Bulk phase. Constant current to bring the voltage to an acceptable level for absorption phase.
   - Absorption phase. Brings the battery to full charge.
   - Float phase. The battery is maintained and ready to use.

Table 3 - Status LEDs

	Green LED	**Red LED**
Trickle phase	OFF	OFF
Bulk phase	ON	ON
Absorption phase	OFF	ON
Float phase	ON	OFF

4. **DC Out**

   The LED is lit when output voltage is present.

4 TECHNICAL SPECIFICATIONS

4.1 U6 UPS

4.1.1 Physical

Dimensions:	Height: 53 mm Width: 205 mm Depth: 138 mm
Weight:	1.4 kg

4.1.2 Electrical

Input AC Voltage:	100 - 240V AC (Optimal performance) 90 - 250V AC (Operational performance)
Input DC Voltage:	24V DC
Output DC Voltage:	24V DC
Output Power:	50W

4.1.3 Environmental

Temperature:	-15˚C to +55˚C (Operational) -30˚C to +80˚C (Storage)
EMC:	IEC 60945 ed.4 compliant VDC interfaces

5 MAINTENANCE

5.1 Replacing fuse

The UPS has two accessible fuses. The AC Fuse is located on the AC power inlet and the DC Fuse located on the side of the U6 UPS.

Warning!

Disconnect the main power supply before you replace a fuse. Disconnect the electrical connectors for AC, DC and the battery.

AC FUSES: Main power T2A 250V, 5x20 mm.

Symptom: The AC power indicator does not light up when power is applied and the main switch is in the on position.

DC FUSE: 5A medium acting, 5x20 mm.

Symptom: The DC Out indicator does not light up when power is applied.

Make sure to use the correct fuse rating, in the correct location.

5.2 Service and repairs

All service of the U6 UPS shall be performed of a by Saab TransponderTech authorized service organization. Unauthorized service results in unnecessary risks of exposing personnel to hazardous voltages, electromagnetic radiation and materials that may affect the health. It will also result in discontinuance of the warranty of the U6 UPS.

Hazardous voltage

Warning!

Do not remove the cover!

The U6 UPS contains equipment with touchable parts, which operates with hazardous power levels. If the cover is removed these parts will be accessible.

5.3 Contacting Support

The primary source for support and RMA issues for end customers should be the local dealer where the equipment was purchased in the first place. Another option is to contact one of our OEM partners or affiliate service stations and request help. An updated list with our dealers, OEM partners and service stations can be found at our website, www.saab.com/maritime, listed under the corresponding product.

It is also possible to contact Saab TransponderTech's technical support if this is preferred.

We recommend contacting us via email at support.transpondertech@saabgroup.com for most accurate and detailed help. If the situation is very urgent then it is of course also possible to call us at normal Swedish workdays and working hours. Telephone **+46-13-189420**.

Before contacting support, always check the following information and include it in the first email, or have it ready at the phone call:

- Unit Revision
- Serial Number.

For the latest manual, firmware and certificates please visit https://www.saab.com/transpondertechsupport

6 ELECTRICAL INTERFACES

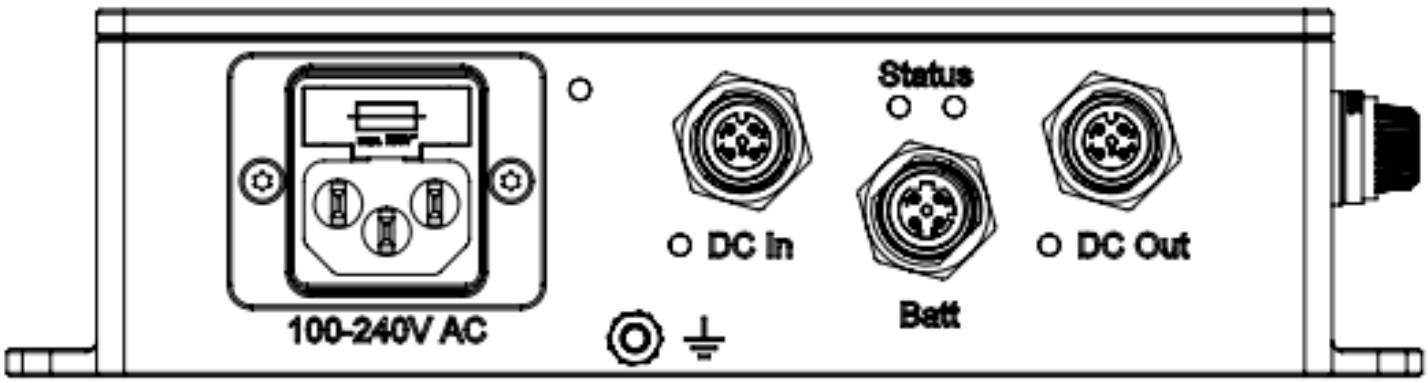

Figure 4 - U6 UPS connectors (rear view)

6.1 Fuse Interface

Type:	Panel Mount Fuse Holder
Maximum current:	5A, Medium Acting

6.2 100 – 240V AC Interface

Type:	C13
Function:	Power input
Fuse:	T2A

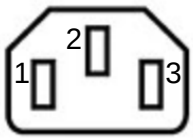

Figure 5 - C13 Connector

Function	Pin
Neutral	1
Ground	2
Positive	3

Table 4 - AC Power pins

The U6 UPS can be connected to Mains AC supply (100 - 240 VAC)

DC can be connected at the same time as AC, but is in that case used as a backup in case of failure or fluctuations on AC.

Note that when AC power is used the Mains supply socket shall be equipped with protective ground in order to provide grounding in the event of a fault in in AC supply.

6.3 24 VDC Power interfaces

6.3.1 Pins and sockets

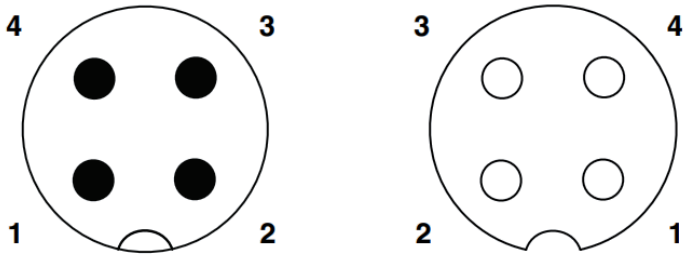

Figure 6 – Power Cable M12 Connectors A-coding Pin/Socket

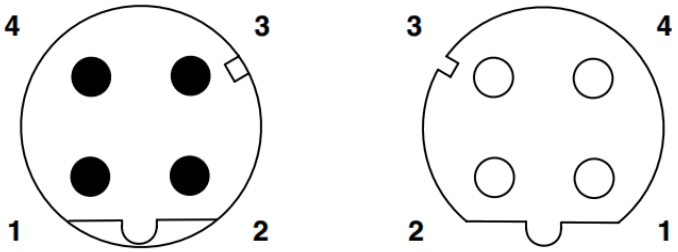

Figure 7 – Battery Cable M12 Connectors D-Coding Pin/Socket

6.3.2 Power cable M12

Marking:	Power cable M12 (7000-125-544)
Type:	A-Coding (7000-125-544)
Length:	2 m
Diameter:	6 mm
Connectors:	M12 to Open
Function:	Power input/output

NOTE: Pin 5 not used in the U6 UPS Connectors

6.3.2.1 Cable colour

Function	Pin	Cable colour
24 VDC	**1**	**Brown**
24 VDC	**2**	**White**
0 VDC	**3**	**Blue**
0 VDC	**4**	**Black**

Table 5 - DC Power pins

6.3.3 UPS battery cable M12

Marking: UPS battery cable M12 (7000-125-546)

Type: D-Coding (7000-125-546)

Length: 2 m

Diameter: 6 mm

Connectors: M12 to Open

Function: Power input/output

NOTE: Pin 5 not used in the U6 UPS Connectors

6.3.3.1 Cable colour

Function	Pin	Cable colour
Batt 24 VDC	1	Brown
N/C	2	White
Batt 0 VDC	3	Blue
Batt 0 VDC	4	Black

Table 6 - DC Power pins

6.4 GND interface

Type: M6 hex nuts and threaded rod

Function: Connection to ground

7 MECHANICAL DRAWINGS

7.1 U6 UPS Size and Mechanical Drawing

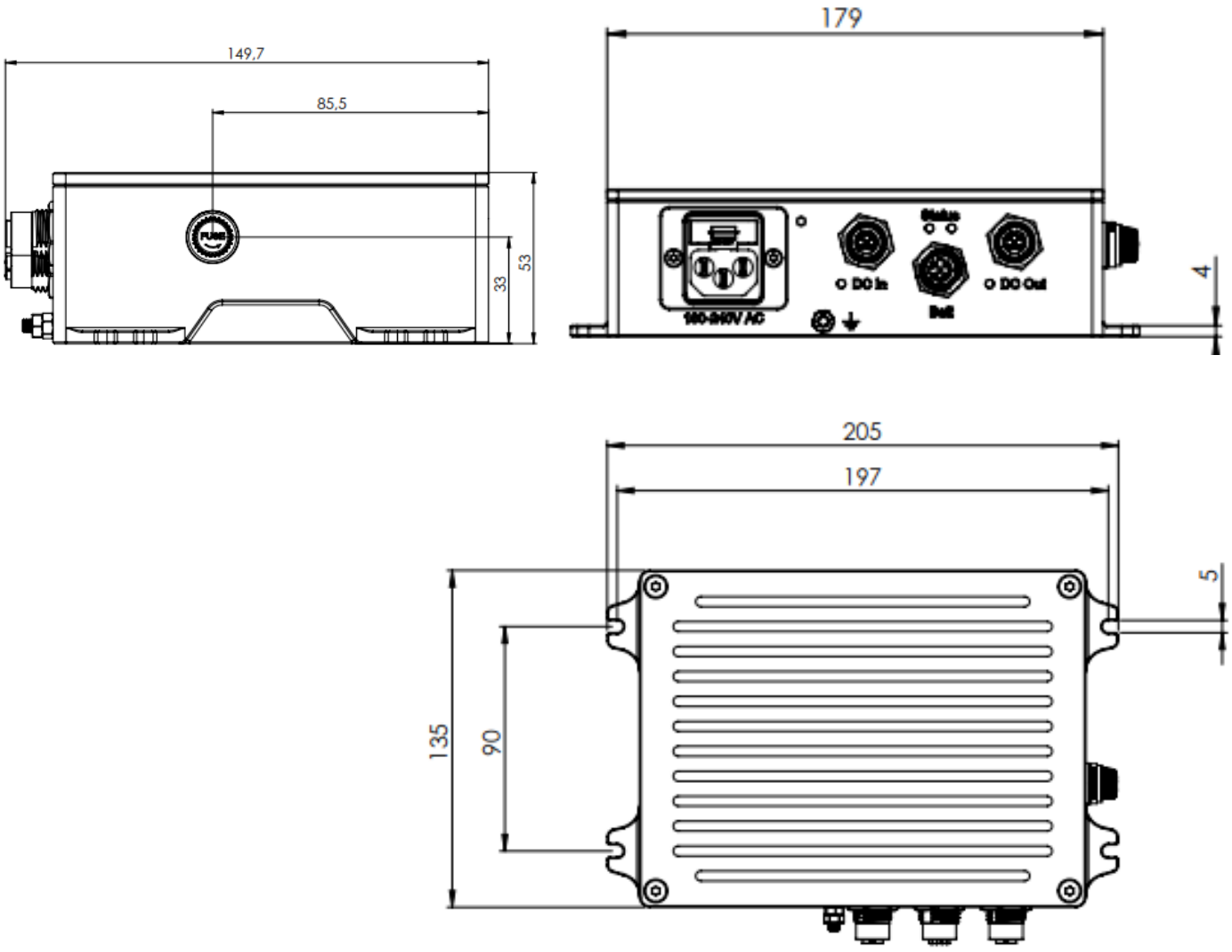

Figure 8 - Size and Mechanical Drawing [mm]

8 GLOSSARY

Term	Description
H/W	Hardware
ID	Identifier
IEC	International Electro-technical Commission
IMO	International Maritime Organization
Int	Internal
LED	Light Emitting Diode
N/A	Not available

Table 7 - Abbreviation List

8.1 Units

W	Watt
V	Voltage
A	Ampere
m	meter
mm	Millimetre
DC	Direct-Current
AC	Alternating-Current

Table 8 - Units List