

Operating Instructions

Part No.: 315 690 002 001

Issue: 07.2020

Portable UPS for communication under water with inbuilt mains rectifier and charged batteries

110 to 230VAC 50/60Hz

28 to 36 VDC 8A

Part No.: USV-UWT.142100

Software-Version: 2.0

Date: October 2016



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List of abbreviations

A	Ampere
AC	Alternating Current
Ah	Ampere hour
°C	degree Celsius
CPU	Central processing unit
DIN	German industrial standard (Deutsche Industrie Norm)
EMC	Electromagnetic compatibility
F	Fuse
HF	High frequency
HU	Height Unit
Hz	Hertz
I	current
I ₅	Charging current which loads the battery within 5 hours
IEC	International Electrotechnic Committee
IP	Indice de Protection
kg	kilogram
LCD	Liquid crystal display
LED	Light emitting diode
mA	Milliampere
MIL STD	Military Standard
m	metre
mm	millimetre
mV	milliVolt
NBB	standardized battery size of the NATO
NSN	NATO Stock Number
OTAN	NATO Organisation du Traité Atlantique Nord
PFC	Power factor controller
ptp	peak to peak, value for amplitude double
PWM	Puls width Modulation
RAL	German institute for delivery specifications (Reichsausschuß für Lieferbedingungen)
TKZ	Part Number (TeileKennZeichen)
U	Voltage
UPS	Uninterruptible Power Supply
V	Volt
VG	Norm for defense devices (Verteidigungsgerätenorm)
VHF	Very High Frequency
W	Watt
“	inch

Procedure for inserting additional pages

Principle:

Inserting a new page for the first time please add a letter of the middle of the alphabet to the page number. Inserting a new page for the second time please choose a letter of the middle of the remaining letters of the alphabet. Use this principle for every insertion.

Example:

The page to be inserted between page 14 and 15 gets the page number 14M.

The second and the third pages to be inserted will be numbered as follows.

The second page:

If the page has to be inserted in front of 14M it gets page number 14F.

If the page has to be inserted after 14M it gets page number 14U.

The third page:

Please use the following table to assign the page numbers.

No. of change	Letter																									
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z			
1												*														
2						*													*							
3			*						*						*						*					
4		*		*				*		*				*		*				*		*				
5	*				*		*				*		*					*		*				*		

1. Description

Portable power supply for Uninterruptible Supply of 30 VDC – appliances with mains rectifier and charged batteries.

Mains voltage

110 to 230VAC 50/60Hz maximum 4A

Output voltage

28 to 36 VDC 8A

1.1. General information

The portable power supply 230VAC 50/60Hz maximum 8A output, further on named USV-UWT.142100 or just device is used for power supply of underwater communication device UT 2200 of the company ELAC-Nautik GmbH and for other technical devices with 30V net voltage.

The power supply is done via built-in batteries.

Usually the USV-UWT.142100 will be used with AC via public current.

After the battery is full the charger integrated in the USV-UWT.142100 uses trickle charging mode. There is no time limit for leaving the integrated batteries on the net – they will not be damaged.

ATTENTION:

Do not charge the device as long as the under water telephone is connected because the telephone can not cope with 36V voltage of the batteries.

1.2. Technical description range of delivery

1.2.1. Name of device

Portable power supply for under water communication with built-in mains rectifier and charged batteries

110 to 230VAC 50/60Hz maximum 4A

30 VDC 8A

Including:

110 to 230V 50/60 Hz The device can be used with 110 to 230 Voltage net
(wide-range entrance).

30 VDC 8A The device transforms the AC to DC (30 Voltage / 8A).

28 VDC to 32 VDC 8A The device provides up to 8A DC from the integrated batteries
in the range from 28 to 32V.

1.2.2. NATO stock number

Portable USV for under water communication.

110 to 230VAC 50/60Hz

28VDC to 32VDC 8A

Part No.: USV-UWT.142100

NATO stock number: 6140-12-xxx-xxxx

1.2.3. Supplier

Nortec Electronics GmbH & Co. KG

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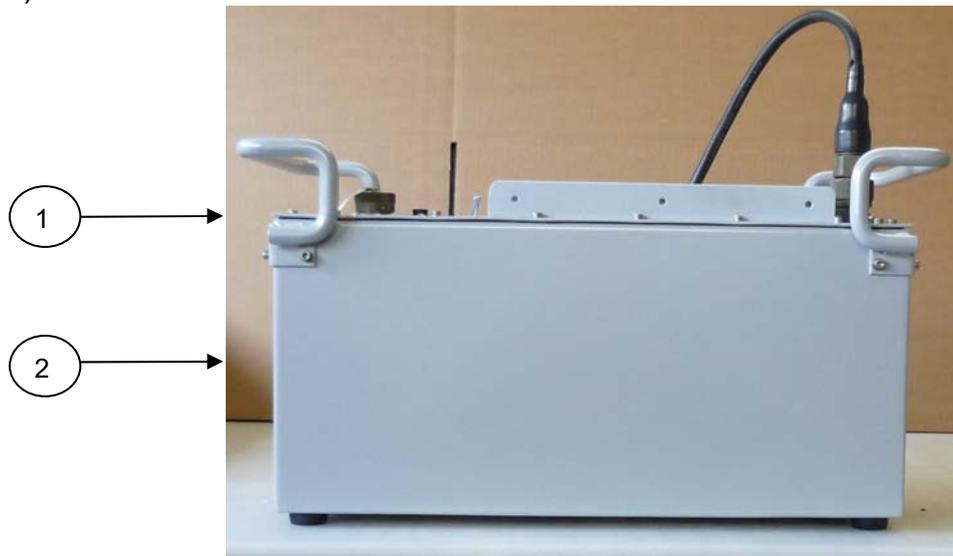
Hersteller Code C3410

1.3. Description of the functions

The following components are integrated in the portable box which is made of powder coated stainless steel.

Upper Part of the device with all electrical components(Pic.:1- Pos 1)

Lower Part of the device with batteries 5 × 6V 10Ah in series connection (Pic.:1- Pos 2)



Pic. 1: UPS type USV-UWT.142100, complete side view

The device is ready for use if the batteries of the device have a voltage of more than 32V.

1.4. Range of application

The USV-UWT.142100 has been developed for the use on ships. It complies with safety class IP65. It provides the connected consumers with DC – Input with the needed current via built-in batteries. Before use, the batteries will be charged to optimum capacity at the available AC-net and kept in this state until they will be used.

The under water communication device UT 2200 which will be used by Wärtsilä ELAC Nautik GmbH will not be disturbed by the UPS USV-UWT or other communication devices nearby.

1.5. Function with batteries

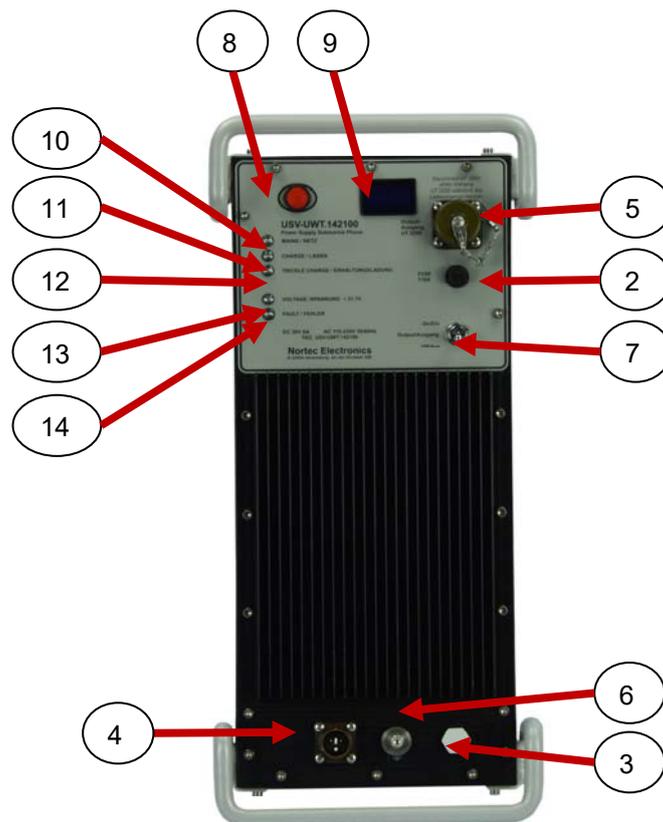
The device contains 5 maintenance-free GEL-batteries size 6V 10Ah.

The batteries are connected by low resistance bridges so that they form a 30V set.

The batteries are mounted shock-resistant in a foam-coated portable box.

The batteries secure the demanded autonomy time of about 30 hours communication at a continuous load of 10Watt.

1.5.1. Initial operation



Pic. 2: UPS Type USV-UWT.142100 , View from the TOP

The following security elements are on Upper Part of the device:

- (1) Mains inlet fuse F1: T4 on the power board inside the UPPER part.
- (2) Safeguarding output communication F2: T10A. To be reached from the outside.
- (3) Ventilation element for conducting battery gas (IP65)

The following connecting elements are on the UPPER part:

- (4) Net input plug 847-25A100N002
- (5) Junction box for communication cable according to VG95234 CA3102-E16S-4SB with dust cap
- (6) connecting screw for external ground cable (PE)

The following operating- and display elements are on the UPPER part:

- (7) DC-output on-/off-switch 15A (IP65)
- (8) Display activating button
- (9) Display
- (10) LED green - net available
- (11) LED yellow - precharge and charging
- (12) LED yellow - trickle-charging
- (13) LED red - battery voltage < 31,7V
- (14) LED red - fault

The device will be connected as follows:

Stick and lock the net cable Part No: 309 690 002 001 on the socket (4).

Via the plug of the net cable the USV-UWT.142100 is provided with alternating current.

On the side for net connection the cable has got a usual power plug according to DIN CEE.

At the socket (5) named UT 2200 the communication device can be connected with connecting cable part no: 309 690 002 002.

The ground screw (6) will be connected to ground via earth lead of minimum 4mm², M5 gable cable shoe and a ground nail for protecting consumers against electrocute in case of short circuit / stroke of lightning.

Press the key (8) for information concerning charging state of the connected batteries.

Detailed info about the charging process is displayed by LEDs (11) and (12).

By turning the power circuit breaker (7) up in position „ON“ the supply voltage of the battery to the UT 2200 (5) will be released.

1.5.2. Technical data USV-UWT.142100

unit name	Portable UPS for under water communication
HTZ/TKZ / Part No.	USV-UWT.142100
NSN/NATO Stock Number	6140-12-xxx-xxxx
technical data	
type:	USV-UWT.142100
Part No.:	USV-UWT.142100
Supplier:	Nortec Electronics GmbH & Co. KG
	An der Strusbek 32 B
	D - 22926 Ahrensburg
	Tel.: +49 (0) 4102 - 42002
	Fax: +49 (0) 4102 - 42840
	Email: info@nortec-electronics.de
Sales:	Wärtsilä ELAC Nautik GmbH
	Neufeldtstrasse 10
	24118 Kiel
	Email: elac.marketing@wartsila.com
Colour	RAL 9006
measurements (LxBxH) in mm / size	480 x 215 x 240
weight incl. batteries	19 kg incl. batteries
batteries	5 x Sonnenschein A506 / 10 S
Time of autonomy at 110W continous load	
+20°C	160 Min
0°C	140 Min
-20°C	80 Min
net voltage:	110V to 230V ±10% / 45-65Hz
input power:	< 300VA (max.)
output power charging max.:	36 VDC ±1% (constant voltage)
output voltage discharged min.:	27 VDC +/- 1%
output voltage disconnect:	Power Switch 15A
output current main charging:	8A ±5% (constant power)
efficiency factor at max. current:	>85%
ripple	max 300mV ptp
software-version date	USV-UWT.142100 V1.0 dated 01.10.2009
electrical safety:	According to EN 60950
operating range above datum line	0 to 3000m
temperature range in use °C	-20 to +50
temperature range storage °C	-30 to +70
safety class:	IP65

1.5.3. Display and functional tests

The display UPS (9) is located on the upper part of the UPS.

The battery voltage is shown on the display by pressing the keyboard switch (8) at any time before initial operation of the device.

A charged battery should have a minimum off-load-voltage at least of 31,8V.

If the voltage after charging by the built-in battery charger is below 31V after about 1 hour after the charging process is finished use the tester BT3002 for a capacity test.

The illumination of the display stops as soon as you stop pressing the button for saving battery capacity. It is not necessary to put the power circuit breaker in position „ON“ for showing voltage.

1.6. Portable box LOWER part

1.6.1. Operating range

The portable box is PE-foam-coated from the inside with PF 571.

The foam protects the batteries from shock and vibrations in daily use.

The portable box stays on solid rubber feet when put on the ground.

The batteries are mounted in the LOWER part of the portable box shock-resistant.

The colour used is RAL9006.

The lower part of the device consists of the following components:

- 1 portable box - steel-A2 - powder-coated
- 4 rubber feet with integrated vulcanized steel plates
- PE-foam elements for the inside of the portable box
- 2 battery bails
- 1 battery set consisting of 5×A506 10Ah
- 1 battery connection set
- 1 battery connection cable



Pic. 3: Portable box LOWER part without batteries view from top



Pic. 4: Portable box LOWER part without batteries view from the bottom

The LOWER part of the device is waterproof which is necessary in case the device stands in water.

The transportation handles are screwed on the portable box and are available as spare parts in case they are damaged.

1.6.2. Electrical function

Within the portable box foam-coated 5 sealed GEL-batteries 6V 10AH, type Sonnenschein A506 / 10 S are mounted in series operation.

The batteries are fixed with U-shape brackets so that they can not move inside the device in case the USV-UWT is thrown to the ground.

The series operation is done via 4 isolated cable bridges with fast-on-connectors.

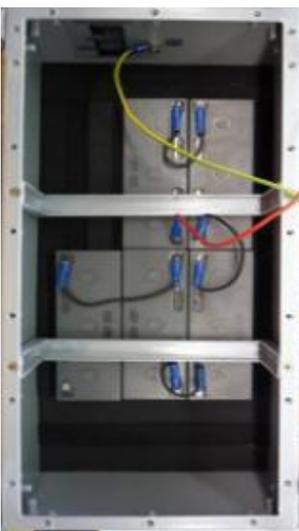
The plus- and minus-pole of this series operation are connected with the power circuit breaker in the UPPER part of the device via the battery connection cable.

At the smaller part inside the device you find a PE-screw (17).

ATTENTION

After changing the batteries please check that the green/yellow ground cable between PE-screw and UPPER part of the device has been fixed.

In case of electrical disturbances the BOTTOM part of the portable box must be grounded!



Pic. 5: Portable box LOWER part with batteries

Pic. 6: PE-Connector within portable box LOWER part

1.7. Portable box UPPER part

1.7.1. Operating range

The UPPER part of the device is fixed to the LOWER part of the portable box with 16 allen screws size M4 x 20 with a flat gasket in between.

In the UPPER part of the device a heat sink is integrated.

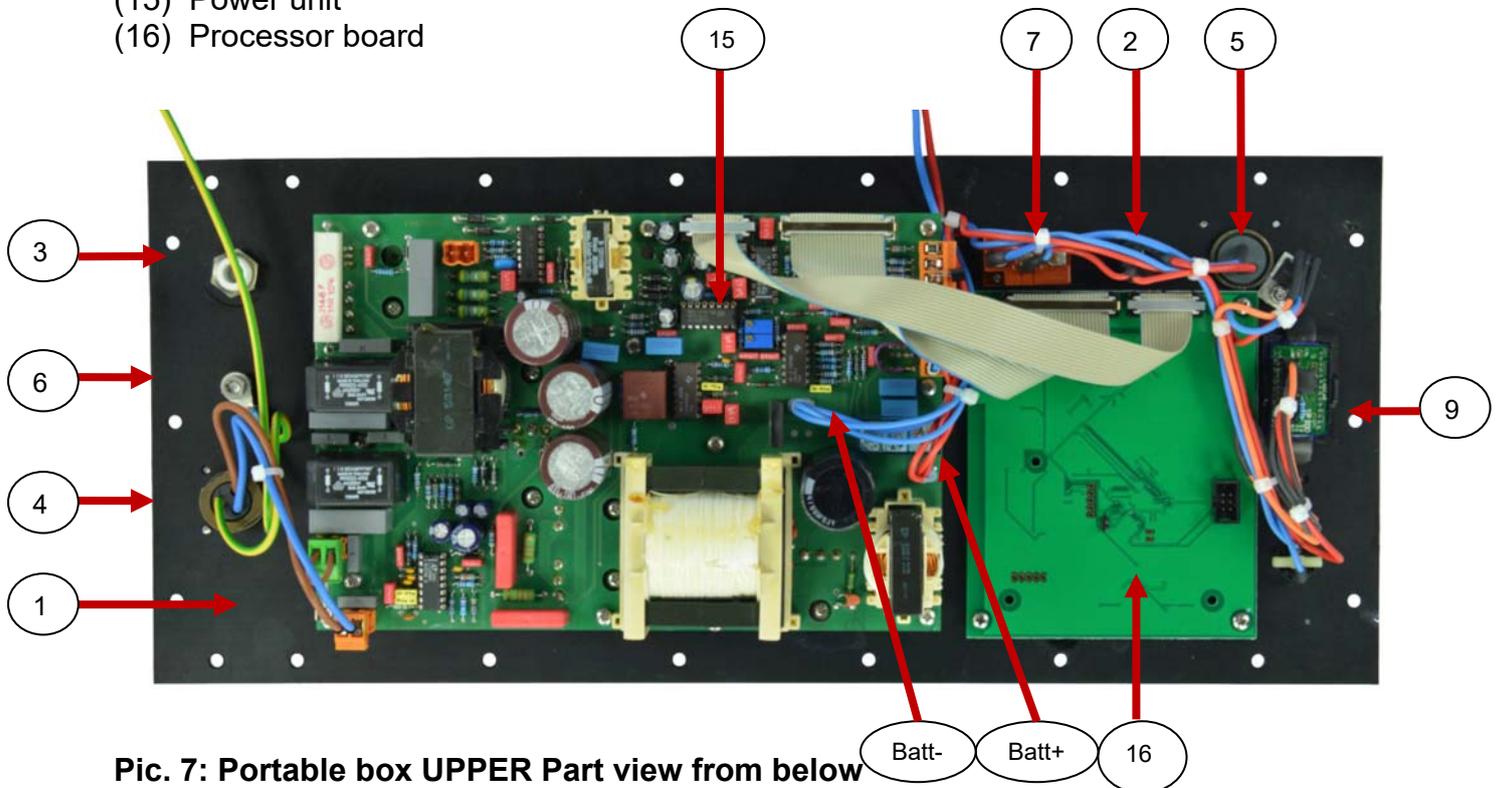
The heat which can develop on the boards on the inside of the UPPER part will be drained convective via the heat sink.

On the UPPER part of the USV-UWT.142100 all connectors and display elements as well as the ventilation of the LOWER part of the device are mounted. If dust cap is put on the USV-UWT.142100 conforms in minimum to protection class IP65. A ventilation screw (3) is needed to drain dangerous detonating gas which can develop if the battery charger or the battery itself is defect. The ventilation screw conforms to IP65.

1.7.2. Electrical functions

Following components are mounted on the UPPER part:

- (1) Power inlet fuse
- (2) Fuse communication device output
- (3) Ventilation screw
- (4) Mains lead with cable gland
- (5) Geräteanschlußdose
- (6) PE-screw with marking
- (7) Power circuit breaker output UT 2200
- (9) Display
- (15) Power unit
- (16) Processor board



Pic. 7: Portable box UPPER Part view from below

1.7.2.1. Power inlet fuse (1)

The power inlet fuse is mounted on the power unit next to the 2-pole plug-connector which is used for plugging the net cable in. The glass fuse is dimensioned 250V T4A which will be changed using needle nose pliers.

1.7.2.2. Fuse communication device output (2)

The communication device output UT2200 is protected with a glass fuse T10A. This fuse can be reached from the outside. Using a screwdriver size 2 you can open the fuse holder.

1.7.2.3. Ventilation screw (3)

In case of a defect battery (i.e. a defect cell) the remaining cells get an overload.

Using sealed batteries this will lead to the opening of the valves.

Detonating gas (hydrogen and oxygen) is leaking. If the concentration of the gas is high a spark might be enough i.e. a relay switching operation to initiate an explosion which damages at least the USV-UWT.

For this reason the USV-UWT includes a spaciouly laid out ventilation screw which enables the escaping of the gas.

1.7.2.4. Mains lead with cable gland (4)

The net cable 1,5m Part No: 309 690 002 001 is implemented in the device via a waterproof VG- connection.

The PE-lead of the net-cable (green/yellow) will be fixed with ground screw (6) on the PE-connection screw (17) in the LOWER part of the device.

1.7.2.5. Processor board with 5 LEDs

The processor board contains 5 LEDs for showing the charging process.

All processes in the USV-UWT are lead by a micro processor 80535

With a 14-pole pneumatic plug the device will be adjusted.

Hidden under the board you find the key (8) for activating the displays.

1.7.2.6. PE-screw (6) with marking

The ground connection protects the USV-UWT.142100 when used in open field against dangerous overvoltage i.e. stroke of lightning. The ground cable of minimum 4mm² will be fixed with the knurled nut using a gable cable shoe M5.

1.7.2.7. Power circuit breaker output UT 2200

The power circuit breaker „output on“ switches the battery voltage on the output UT 2200.

It conforms to IP65 and is dimensioned up to 15A.

1.7.2.8. Power unit (15)

The power unit includes the pulse width modulated power board.

The power unit for input voltage is dimensioned for 90VAC to 265VAC.

The power factor controller harmonizes the input of the current.

1.8. Displays

1.8.1. Display board

The battery voltage is shown on the display board at any time if you press the push-button DISPLAY (8).

1.8.2. LED displays

After connecting the net cable part No.: 309 690 002 001 to the connector (3) and the SCHUKO-plug to mains LED (10) is switched on. The microprocessor checks if batteries are available and starts the charging process. The state of the charging is shown via LEDs.

The mode which is used depends on the state of the battery, possible routines:

Battery activation **Precharge**
36V 1.0A

The LED (11) is blinking as long as the charging current has not reached 8A. This is possible if the batteries have been deep discharged without charging them directly afterwards again.

After precharge the usual 2 step main charging routine starts.

Main charge I

At nominal current 8A the battery will be charged until the voltage has reached 36V.

Main charge I **I-Charge**
36V 8.0A

The LED (11) shows yellow light permanently.

Main charge U **U-Charge**
36V 0,4A

The LED (11) shows yellow light permanently.

After charging current is below 0,4A the device starts trickle-charging.

In military battery maintenance the battery voltage is checked by the microprocessor.

Supervising phase **Supervision**
35V 0.0A

The LED (12) shows yellow light permanently.

If the voltage falls to 32V the power supply starts and charges the battery with 1A until the turn-off voltage of 35V is reached.

Trickle phase **Supervision**
35V 1.0A

The LED (12) shows yellow light flashing.

This routine can be repeated over and over again while keeping the USV-UWT.142100 on the net without damaging the battery.

ATTENTION:

Never charge the device while the underwater telephone is connected because the telephone cannot cope with the voltage of 36V.

2. Operation and maintenance

2.1. Initial operation

The device will be connected as follows:

Check battery sets while pressing key DISPLAY (8)

Connect net cable Part No: 309 690 002 001 to plug (3) and put into socket to mains 230(110)VAC 50/60 Hz

ATTENTION: Do not connect UT 2200 at this time

Connect ground cable if necessary to (6)

Connect communication cable for UT 2220 Part No: 309 690 002 002 to (5)

2.2. Display of faults

Display of faults USV-UWT.142100				
Report No.	Where	Description of faults	Cause	Action
1	LED (13)	U-battery < 31,7V	device not charged	Battery will be empty soon. Disconnect devices not in use.
2	LED (14) flashing	Capacity too low	less than 10Ah charged	Connect battery to tester BT3002
3	LED (14) Is on	Battery defect	Cell or part of the battery set defect	Battery gases or is overheated. Check battery with tester BT3002.

All LEDs are connected to the charging unit. So it's only signals by a connected power supply. Please consider that a inaccuracy of 0.1V is possible.

2.3. Maintenance

The device needs no special care or maintenance.

For dirt on the powder coated parts just use a wet towel for cleaning eventually use soft detergents and a soft brush (i.e. brush for dish washing).

Dirt on plugs or gills blow out with compressed air.

2.4. Stop operation

If USV-UWT.142100 is not in use it is not necessary to separate UPS and battery. The power circuit breaker should be switched off. The charging process allows to remain on the net as long as you like.

2.5. Net not available

If no power supply line is available the dryfit batteries can be kept in the device for 2 years without recharging without deep discharge in case the storage started with full batteries.

For recharging the battery connect the power plug when net is available.

3. Maintenance and repair A1 and A2

3.1. Maintenance and repair Level A1

3.1.1. Repair Level A1 dust hood and fuse

Tools:

slotted screwdriver size 1×6×150 (PH 1)

Phillips-tip screwdriver size 1 (PH 1)

In general the device needs no maintenance. The user is authorized to change mechanically destroyed dust cap of the connected UT 2200 therefore the connecting screw of the security cord will be unscrewed and the dust cap will be fixed by using a Phillips-tip screwdriver PH1. In case of too high output power (>10A) at the plug UT 2200 - caused by a defect communication device – the fuse can be changed using a slotted screwdriver. For the changing of all other elements the device has to be opened. These repairs are only permitted by trained personnel higher than level A1.

3.1.2. Repair Level A1 feet of portable box

Tools:

Phillips-tip screwdriver size 2 (PH 2)

In case of damaged feet of the device turn the device and put the transportation handles on a soft surface. The batteries are leak safe. Change the damaged feet with a Phillip-tip screwdriver.

3.1.3. Repair Level A1 transportation handles

Tools:

allen wrench size 3

The transportation handles can easily be changed when damaged because of fall. Unscrew the 2 transportation handles by taking the 4 allen screws M4×20 out and put the new handles on in reverse order. It is recommended to put in all screws at first and fix them afterwards.

This procedure avoids damages on the rivet nuts.

3.1.4. Repair Level A1 check batteries

Tools:

Tester BT3002

If the LED (14) is illuminated or flashing the battery is defect which means that the autonomy time of the USV-UWT.142100 of minimum 30 hours can not be reached anymore or the battery voltage after charging decreases too soon below 31,7V. The batteries can easily be checked using the Tester BT3002. Connect the Tester to the socket UT 2200. The discharging unit stresses the batteries with the current I_5 . The built-in processor measures the capacity which has been taken and shows the following results:

Battery ok or battery defect

3.1.5. Repair Level A1 change batteries

Tools:

allen wrench size 3

2 screw-wrench size 8

Phillips-tip screwdriver size 2 (PH 2)

needle nose pliers

Change the battery set as follows:

CAUTION

Take out power plug!

Unscrew the 16 allen screws of the UPPER part of the USV-UWT.142100.

Take of the UPPER part of the device and lay down next to the LOWER part of the device.

Unscrew the PE-screw from the PE-cable in the LOWER part of the device using a wrench size 8. This is not really necessary but reliefs the changing of the batteries.

Now the UPPER part of the device is free-moving.

Unscrew the battery bails using a Phillips-tip screwdriver.

Take the bails out of the device by carefully moving and shifting.

Untighten the battery connector by means of needle nose pliers.

Put the LOWER part overhead and move it back and forth to get the batteries out.

Take the battery connectors and the battery connection cable of the defect batteries and mount it to the new batteries.

Fix the battery cable tight on the new batteries.

Putting the new batteries in the device proceed in reverse order to the above mentioned steps.

CAUTION

Screw the PE-mains with new external teeth lock washer on the PE-screw tight!

Mount battery connection cable on UPPER part.

Mount UPPER part with gasket.

3.2. Additional repairs

Possible additional repairs:

- Replace net connectors
- Replace net input fuse
- Replace ventilation screw
- Replace plug connector UT 2200
- Replace fuse
- Replace power circuit breaker
- Replace display
- Replace pushbutton
- Replace power unit
- Replace processor board

These repairs are only allowed to higher maintenance levels.
Procedures for these repairs are described below.

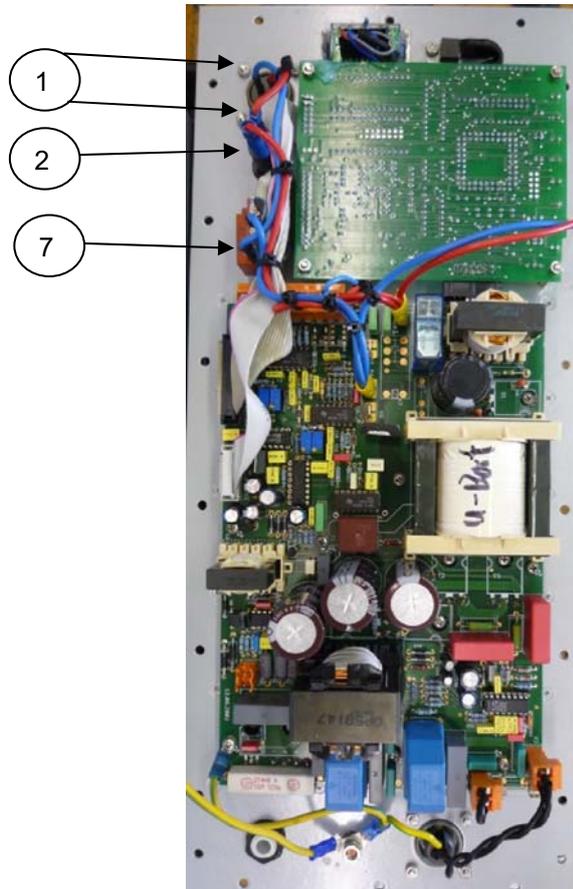
3.3. Replacement of consumables, Level A2

The following repairs are permitted:

- Replace connector UT 2200
- Replace fuse
- Replace net connector
- Replace power circuit breaker
- Replace ventilation screw
- Replace ground connection

The procedure for repairing the parts is described on the following pages.

3.3.1. Repair of connector UT 2200 (5)



Pic. 8: Upper Part of device view inside

Tools:

Phillips-tip screwdriver size 2(PH 2)
screw-wrench size 5
needle nose pliers
wire cutter

Unscrew the UPPER part from the portable box to be able to repair the device.

For details please read 3.1.5.

Unscrew the 4 mounting screws (1) from the outside with Phillips-tip screwdriver size 2(PH 2) and fix the nuts in the inside with the wrench.

Rip the cable binder by using the wire cutter.

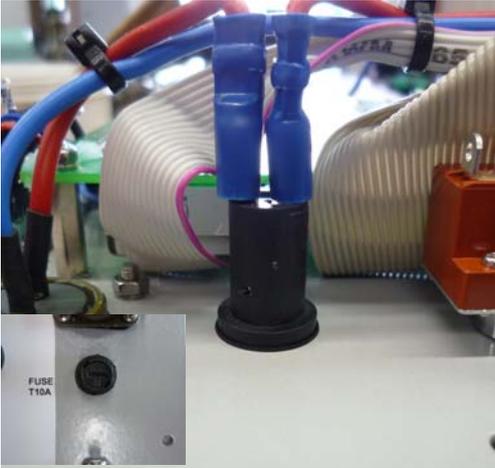
Use the needle nose pliers for getting the plus-pole of the fuse holder (2) and the minus-pole of the two-pole ON / OFF switch.

Now you can change the VG-plug. For mounting the new connector repeat the above mentioned steps in reverse order.

ATTENTION

Do not forget gasket under the plug

3.3.2. Replace fuse holder (2)



Pic. 9: Fuse holder

Tools:

needle nose pliers

pipe wrench width 14

allen wrench size 3

Unscrew the UPPER part from the portable box to be able to repair the device.

For details please read 3.1.5.

Unscrew the clamp nut at the outside by pipe wrench.

Take off the cable and take out the fuse holder.

The fuse holder can be changed.

Close the device by repeating the steps in reverse order.

3.3.3. Replace mains inlet connector (4)



Pic. 10: Netcable

Tools:

Phillips-tip screwdriver size 2(PH 2)

Open-end wrench size 5,5

Open-end wrench size 10

allen wrench size 3

Unscrew the UPPER part from the portable box to be able to repair the device.

For details please read 3.1.5.

Take the yellow 2-pole net plug out of the power board.

Unscrew the 4 fixation screws (1) from the outside while holding the screw-nuts with the open-end wrench size 5,5 from inside. The ground cable (Gn/Ge) (2) will be taken off using open-end wrench size 10 for taking the ground screw off. Now the mains plug can be taken off the front panel.

The VG-connector can be changed. Repeat the steps in reverse order.

For fixing the ground cable use a new external teeth lock washer.

ATTENTION:

Do not forget sealing gasket under the connector!

3.3.4. Replace power circuit breaker (7)



Pic. 11: Power circuit breaker

Tools:

allen wrench size 3
needle nose pliers
pipe wrench width 14

Unscrew the UPPER part from the portable box to be able to repair the device.

For details please read 3.1.5.

Take off fixation screw-nut on the top of the UPPER part with pipe wrench width 14.

Use allen wrench size 3 to take the 2 blue cables of the connector.

Put in the new power circuit breaker and fix all parts in reverse order.

3.3.5. Replace ventilation screw (3)



Pic. 12: Ventilation screw inside

Tools:

allen wrench size 3
open-end wrench SW 17
socket wrench SW 17

Unscrew the UPPER part from the portable box to be able to repair the device.
For details please read 3.1.5.
Unscrew the counter locknut with wrench width 17 and screw out the ventilation screw.
You might need an additional claw for this work.
Mount new ventilation with screw-nut from inside.

3.3.6. Replace ground connector (6)



Pic. 13: Ground connector screw

Tools:
combination wrench wrench-width 8
allen wrench size 4
allen wrench size 3

Unscrew the UPPER part from the portable box to be able to repair the device.
For details please read 3.1.5.
Fix the allen screw (6) with the allen wrench and unscrew the nut M5 from the ground cable.
Take off ring cables shoe.
Unscrew allen screw.
Mount new ground connector screw.
Put ring cables shoe and external teeth lock washer on earth bolt by using wrench 8mm.
While doing this fix the allen screw with the allen wrench.

4. Additional repair higher than Level A2(depot and industry)

Additional repairs such as the maintenance of the display and the change or repair of the power board is only permitted to especially trained personnel or by the supplier.

4.1. Change display (9)



Pic. 14: Display board

Tools:

Phillips-tip screwdriver size 1(PH 1)

slotted screwdriver 2,5

allen wrench size 3

cutter

silicone

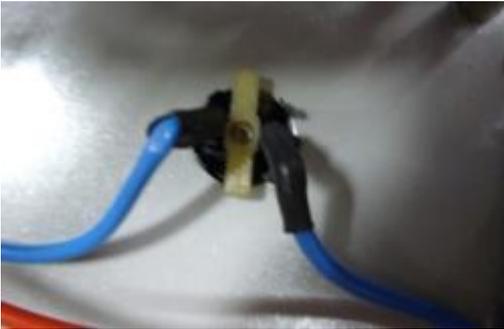
Unscrew the UPPER part from the portable box to be able to repair the device.

For details please read 3.1.5.

Use cutter to get display out of the silicone.

Pull out display and replace it with a new display and fix it with silicone from the inside.

4.2. Replace push-button (8)



Pic. 15: Constant voltage controller

Tools:

Phillips-tip screwdriver size 1(PH 1)

Flat screw driver size 1

Socket wrench size 5,5

slotted screwdriver 2,5

allen wrench size 3

forceps

soldering iron

Unscrew the UPPER part from the portable box to be able to repair the device.

For details please read 3.1.5.

Detach screw-nut from constant voltage controller using open-end wrench.

Take off the 4 fixation screws from the power board.

Turn the CPU up. Now you can reach the push-button.

Open the fixation latch using the Phillips-tip screwdriver size 1(PH 1).

The minus-pole cable (blue) is taken out of the 9-pole plug using the flat screwdriver.

The push-button will be taken out so far that the minus-pole can be soldered out of the constant voltage controller. Fix all parts in reverse order.

4.3. Replace power board (15)



Pic. 16: Power board view from above

tools:

Phillips-tip screwdriver size 1(PH 1)

allen wrench size 3

Unscrew the UPPER part from the portable box to be able to repair the device.
For details please read 3.1.5.

Unscrew 12 screws.

Pull off flat cablenorm

Pull off plug coloured in orange

Put on new board

Take care that all 4 power components are in the right position on the heat sink.

Use thermal grease underneath.

Screw board.

Put on flat cable.

Put in plug coloured in orange.



Pic. 17: Main electronic components on power board on heat sink

5. Spare parts for USV-UWT

Main electronic components

No		Subject	Storage number	
0	UPS completely equipped with 5 batteries	Portable power supply USV-UWT Main electronic components –0	USV-UWT 142100	
1	Portable box bottom part without batteries	Portable power supply USV-UWT Main electronic components –1	USV-UWT 142100-001	
2	Battery set ready for installation	Portable power supply USV-UWT Main electronic components –2	USV-UWT 142100-002	
3	Portable box UPPER part ready for use	Portable power supply USV-UWT Main electronic components –3	USV-UWT 142100 -003	
4	Operating instructions E	Portable power supply USV-UWT Main electronic components –4		315 690 002 002

Portable box bottom part without batteries

No		Subject	Storage number	
1	Bottom part without batteries	Portable power supply USV-UWT UPS BOTTOM part - 1	USV-UWT 142100	
2	Bottom part powder coated, without portable handles	Portable power supply USV-UWT UPS BOTTOM part – 1		108 069 102 001
3	Set of two transportation handles powder coated	Portable power supply USV-UWT UPS BOTTOM part – 2		108 069 100 002
4	Foam, self-adhesive, for the inside of the portable box	Portable power supply USV-UWT UPS BOTTOM part – 3		108 069 102 003
5	Set of 4 feet for portable box	Portable power supply USV-UWT UPS BOTTOM part – 4		108 069 100 004
6	Battery bail	Portable power supply USV-UWT UPS BOTTOM part – 5		108 069 101 005
7	Flat packing rubber	Portable power supply USV-UWT UPS BOTTOM part – 6		108 069 102 007
8	Battery gas-proof 12V 16A	Portable power supply USV-UWT UPS battery set - 1	USV-UWT 142100-002	
9	Cell connector CU Fast-on-connector	Portable power supply USV-UWT UPS battery set – 2		308 069 201 002

Portable box UPPER part ready for use

No		Subject	Storage number	
1	Portable box UPPER Part ready for use	Portable power supply USV-UWT Portable box UPPER part -1	USV-UWT 142100-003	
2	Cover plate powder coated with front foil	Portable power supply USV-UWT Portable box UPPER part -2	108 069 301 013	
3	Ground connector A2	Portable power supply USV-UWT Portable box UPPER part -2	108 069 300 009	
4	VG Plug connector UT 2200 complete	Portable power supply USV-UWT Portable box UPPER part -3	108 069 301 008	
5	Dust cap 16S	Portable power supply USV-UWT Portable box UPPER part -4	110 069 301 018	
6	Plug connector VG 847-25A100N002	Portable power supply USV-UWT Portable box UPPER part -5	110 081 110 004	
7	Dust cap for 847-25A100N002	Portable power supply USV-UWT Portable box UPPER part -6	110 081 110 008	
8	Processor board ready for build-in	Portable power supply USV-UWT Portable box UPPER part -9	111 069 301 010	
9	Mini fuse AC IN 250VT2A	Portable power supply USV-UWT Portable box UPPER part -10	111 069 301 010	
10	Fuse insert F2 T10A 10er	Portable power supply USV-UWT Portable box UPPER part -11	111 069 300 002	
11	Fuse holder F2	Portable power supply USV-UWT Portable box UPPER part -12	111 069 301 003	
12	Ventilation screw with locknut	Portable power supply USV-UWT Portable box UPPER part -13	110 008 059 012	
13	Display illuminated	Portable power supply USV-UWT Portable box UPPER part -16	101 069 301 021	
14	Press key	Portable power supply USV-UWT Portable box UPPER part -17	108 069 301 011	
15	Power unit USV-UWT.142100 ready for installation	Portable power supply USV-UWT Portable box UPPER part -18	207 069 301 001	
16	Processor board	Portable power supply USV-UWT Portable box UPPER part -18	207 069 301 002	

Scope of delivery

No		Subject	Storage number	
1	Net cable	Net cable USV-UWT.142100 Additional equipment -1	309 690 002 001	

Additional equipment

No		Subject	Storage number	
1	Connection cable communication UT 2220	Connection cable UT 2200 - 16S-plug / open end 5m Additional equipment -2	309 690 002 002	

6. Documents

Konformitätserklärung Declaration of Conformity



Dokument-Nr.:
Document- No.:

07/20

Hersteller:
Supplier:

Nortec Electronics GmbH & Co. KG
An der Strusbek 32 B
D-22926 Ahrensburg

Tel.: +49 4102 42002
Fax: +49 4102 42840
Email: info@nortec-electronics.de

Produktbezeichnung:

Name of product:

USV-UWT

Part-No.: USV-UWT.142100

Das bezeichnete Produkt stimmt mit den Vorschriften folgender europäischer
Richtlinien überein:

The indicated product is in correspondence with the following regulations of European
Council:

EN 60950 et IEC 536

NorTec Electronics GmbH & Co. KG
An der Strusbek 32 B · 22926 Ahrensburg
Tel. +49 4102 42002 · Fax +49 4102 42840

A handwritten signature in black ink, appearing to be 'W. L. Stee', written in a cursive style.

Ahrensburg
24.07.2020

Unterschrift
Signature