DC UNINTERRUPTIBLE POWER SUPPLY

DUPS-1PH-28-560-A01

The "DUPS-1PH-28-560-A01" is a DC uninterruptible power supply with multiple output capabilities, capable of charging an internal two BB2590 battery and delivering 28 VDC loads when connected to Universal AC input. In the event of power interruptions or low input voltage, it maintains regulated output from the internal battery. Key features include DC UPS functionality, continuous built-in testing, various charging modes, voltage protection, fanless cooling, and adjustable output between 24-36 VDC. It meets MIL-STD-810 standards and supports multiple operational modes, making it versatile and reliable for various applications.

- DC UPS Function
- Constant current charge mode
- Constant voltage charge mode
- Battery over-voltage protection
- Battery under-voltage protection
- Conduction cooling without fan
- Droop-method current sharing
- Continuous built-in test
- During power failure automatically supplies regulated 28 VDC to loads

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Designed to meet the demanding requirements of military and defense applications, this rugged outdoor UPS (Uninterruptible Power Supply) system ensures seamless power continuity in the harshest environments. Engineered for durability, mobility, and reliability, the system operates efficiently under extreme weather and challenging field conditions.

Powered by an AC input, the UPS provides stable output power while simultaneously charging its internal batteries. In the event of a power outage or input failure, it instantly switches to battery mode without any interruption, ensuring continuous operation of mission-critical equipment.

This military-grade UPS system not only delivers robust performance in outdoor environments but also stands out with its intuitive and operator-friendly interface ensuring ease of use in high-stress, field conditions.

Equipped with a battery connection switch, the system allows users to easily select whether the internal batteries are active or isolated. Separate output control switch enables manual activation or shutdown of the output power. For real-time monitoring, the unit features a clear LED status panel.

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Product Overview

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1. PRODUCT OVERVIEW

"DUPS-1PH-28-560-A01" is a DC uninterruptible power supply with multiple output capability. When connected to the Universal AC, unit can charge two internal BB2590 battery with smart battery charging protocols and also delivers 28 VDC to loads through output connectors. If there is a case such as a power interrupt or input voltage lower than a prespecified voltage value, unit can supply regulated 28 VDC to loads from internal battery. So that DUPS-1PH-28-560-A01 simply functions as a DC uninterruptible power supply.

1.1. FEATURES

- DC UPS Function
- Continuous built-in test
- Constant current charge mode
- Constant voltage charge mode
- Battery over-voltage protection
- Battery under-voltage protection
- Conduction cooling without fan
- Adjustable regulated output between 24-36 VDC
- During power failure automatically supplies regulated 28 VDC to loads

Technical Specifications

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2. TECHNICAL SPECIFICATIONS

Table 1: Electrical Specification

PARAMETER	VALUE	UNIT
Input Voltage	85-264	Vac
Input Frequency	47-63	Hz
Output Voltages	28	Vdc
Maximum Output Current	20	A
Maximum Output Power*	560	W
Stored Energy	500	Wh
Battery Charge Voltage	10 - 16.8	Vdc
Maximum Battery Charge Current (Per block)	3	A
Maximum Battery Discharge Current (Per block)	10	A
Operating Temperature	-32 / +52	°C
Storage Temperature	-40 / +63	°C

Table 2: Mechanical Specification

PARAMETER	VALUE	UNIT
Dimensions	200*260*265	mm
Weight (without batteries)	6.7	kg
Case Color	Green 383 Camouflage	-

Table 3: Environmental Specification

DESCRIPTION	PROCEDURE
Temperature	MIL STD 810 H METOD 501.7 Procedure I (+63°) & Procedure II (+52°) MIL STD 810 H METOD 502.7 Procedure I (-40°) & Procedure II (-32°)
Humidity	MIL STD 810 H METOD 507.6 Procedure II
Dust & Sand	MIL STD 810 H METOD 510.7 Procedure I-II
Vibration	MIL STD 810 H METOD 514.8 Procedure I (Category 20-a Table 514.8C-I Figure 514.8C)
Shock	MIL STD 810 H METOD 516.8 Procedure I (20g/11ms and 40g/11ms sawtooth)
Rain	MIL STD 810 H METOD 506.6 Procedure I (1.7mm/min)

*Maximum power can supplied when AC source connected. For Battery operation it depend on state of charge of the batteries. For maximum output all batteries must be charged and balanced.

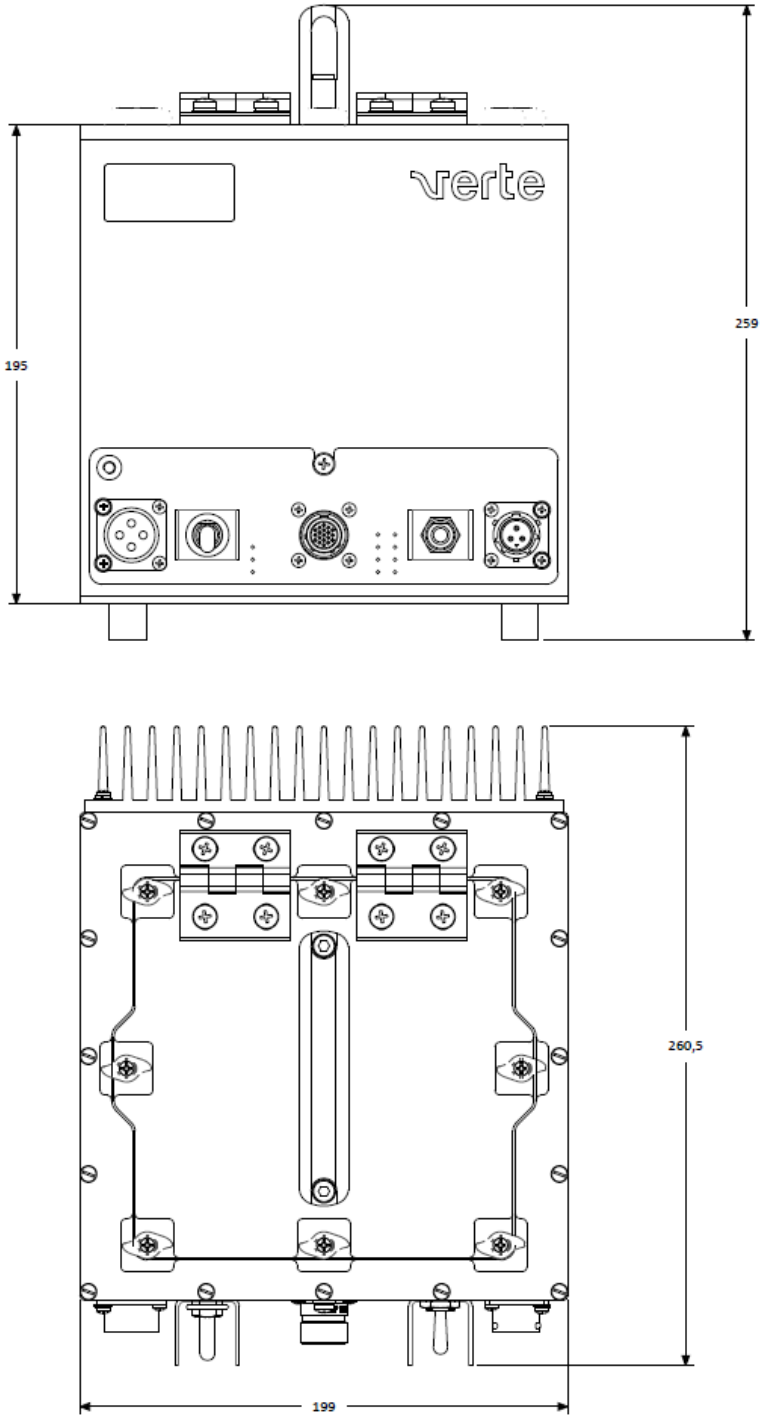

Figure 1: Mechanical **Specification in mm**

Warnings and Indicators

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3. WARNINGS AND INDICATORS

3.1. PANEL CONTROLS AND INDICATOR

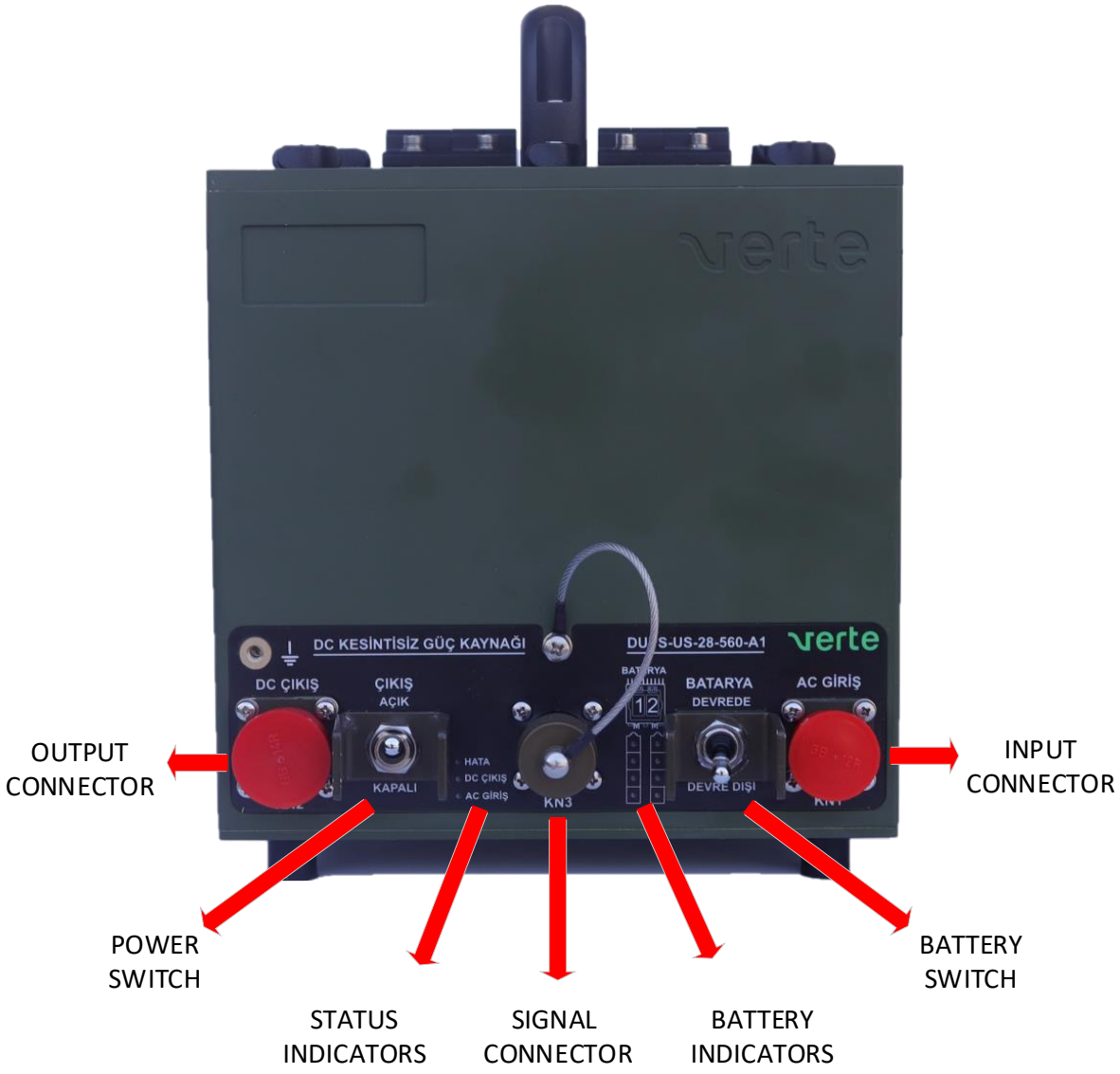


Figure 2: Panel Parts

3.1 CONNECTORS

Table 4: Connectors list

CONNECTOR	MANUFACTURER NAME
INPUT CONNECTOR (KN1)	**62GB-12E12-03PN**
INPUT CONNECTOR MATING	**62GB-16F12-03SN**
OUTPUT CONNECTOR (KN2)	**62GB-12E14-04SN**
OUTPUT CONNECTOR MATING	**62GB-16F14-04PN**
SIGNAL CONNECTOR (KN3)	**D38999/20WB35SN**
SIGNAL CONNECTOR MATING	**D38999/26WB35PN**

Table 5: KN1 Pinout

PIN NO	SIGNAL NAME
A	PHASE
B	NEUTRAL
C	EARTH

Table 6: KN2 Pinpout

PIN NO	SIGNAL NAME
A	28V
B	28V
C	28V_RTN
D	28V_RTN

Table 7: KN3 Pinout

PIN NO	SIGNAL NAME
1	-
2	-
3	CAN_Low
4	CAN_High
5	GND
6	RS_485_A
7	RS_485_B
8	RS_485_Z
9	RS_485_Y
10	GND
11	-
12	-
13	-

3.2 SWITCH

3.2.1 POWER SWITCH

The power switch is turns the output on and off. When the power switch is on the output connector supplies the voltage of 28VDC.

3.2.2 BATTERY SWITCH

The battery switch is used to connect or disconnect the battery within the unit. The switch should be set to OFF when the batteries are not in use or being stored.

3.3 INDICATORS

3.3.1 STATUS INDICATOR LEDS

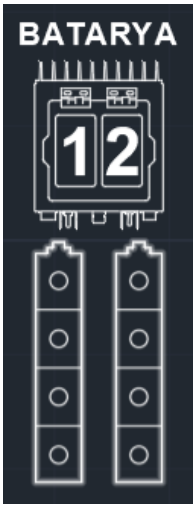
There are three status led

Fault Led: When error happens (OVP, OCP, OTP, UTP), it blinks.

DC Output Led: When unit supply output power, it's ON.

AC Input Led: When unit connected to Universal AC power source, it's ON.

3.3.2 BATTERY INDICATOR LEDS



A BB2590 contain 2 battery block and average of the State of Charge indicated with column of the leds. Two separate batteries indicated with the separate columns.

When charging the battery, highest led of the columns blinking and at other states leds are stedy.

State of charge ratings:

• (100% - 75%)

• (75% - 50%)

• (50% - 25%)

• (25% - 0%)

Operating Procedure

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4. USAGE INSTRUCTIONS

4.1. Operating Modes

The unit can be configured to operate in four different modes based on the connections and switch settings to meet various needs.

4.1.1. Power Supply Mode

When there is AC at the KN1 (input) connector and the power switch is turned on, unit supply output power from input. In this configuration, the system can be used as a power source without activating the battery.

Figure 3: Front Panel View In Power Supply Mode

4.1.2. Portable Power Supply Mode

When no other power source is available, if both the battery switch and the power switch are turned on, the unit supply output from batteries. In this configuration, the system can be used as a portable power supply.

Figure 4: Front Panel View In Portable Power Supply Mode

4.1.3. Uninterruptible Power Supply Mode

When there is AC at the KN1 (input) connector and both the battery switch and the power switch are turned on, the unit will charge the batteries and supply output power. In the event of a power outage, the unit supply output from batteries without any high voltage drop. In this configuration, the system can be used as an uninterruptible power supply.

Figure 5: Front Panel View In Uninterruptible Power Supply Mode

4.1.4. Charging Mode

When there is AC at the KN1 (input) connector and the battery switch is turned on, the unit will charge the batteries. In this configuration, the system can be used as a battery charger

Figure 6: Front Panel View In Charging Mode

Operator Maintenance Instructions

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5. OPERATOR MAINTENANCE INSTRUCTIONS

5.1. FAULT CONDITIONS

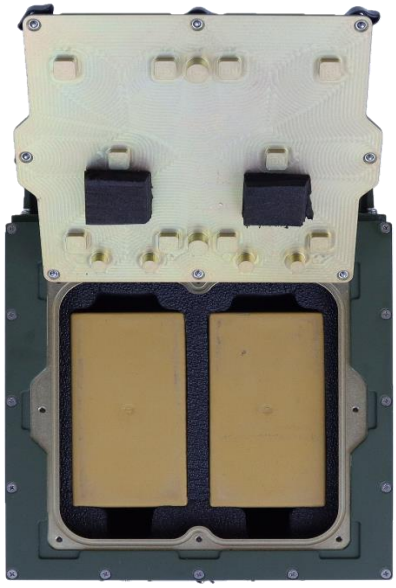
When the unit is not used properly or operated above the rated values, faults may occur or enter an error state.

Wait until the battery is fully charged while charging. If the unit needs to be turned off while charging, first turn off the power switch, then disconnect the input power. Finally, disable the battery switch. If the battery switch is turned off while the battery is charging without following these steps, the system enters an error state, and the red light blinks. After this period, the system resumes normal operation.

When power is supplied to the unit from the input or the battery switch is turned on, if the power LED does not light up when the power switch is turned on and there is no voltage at the output, contact the manufacturer.

5.2. BATTERY REPLACEMENT

1. Remove the screws located on the top of the unit by turning them counterclockwise by hand.
2. Get the battery out with hand.
3. Insert the new BB 2590 battery into the unit with the connector facing correct.
4. Close the cover and tighten the screws by turning them clockwise.



4.3. STORAGE AND MAINTENANCE

• The unit's power and battery switches should be kept in the off position when not in use.

• The unit should be stored in a closed environment away from direct sunlight.

• If the battery is to be stored inside the unit, it should be charged before storage.

• The unit should be powered on and the battery charged every six months.