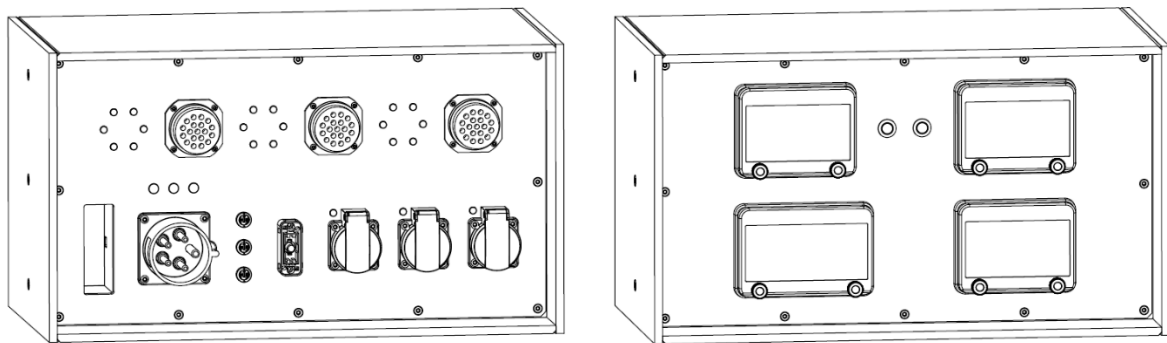




TESLA TECH
www.TeslaTech.GmbH

USER MANUAL

FOR TTPF32-001 SERIES POWER DISTRIBUTION UNIT



Dear Customer,

Thank you for choosing a Tesla Entertainment Kft. product and for your trust in the Tesla Tech brand. We appreciate your commitment to quality and professional power solutions. At Tesla Tech, our mission is to provide you with dependable, high-performance power distribution systems, supported by exceptional service both before and after purchase, and throughout the entire product lifecycle.

This user manual contains essential information on the safe installation, operation, and maintenance of your device. Please read it carefully before use to ensure reliable performance and to prevent injury or damage.

⚠ Important Notice: By operating this device, the user confirms that they have read and understood this manual and are familiar with all safety instructions. The unit must only be used in accordance with the procedures and safety measures described herein.

⚠ Warning: Do not attempt to operate, open, or service the unit before reading this manual in full. Keep this guide for future reference, it contains information necessary for safe operation and maintenance.

Yours faithfully,
Daniel Korponai
Managing Director

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1. General Safety Instructions

This section contains essential safety instructions that must be followed during the installation, operation, and maintenance of this device. Failure to observe these instructions may result in electric shock, fire, personal injury, or equipment damage.

The device must only be operated by persons who have received appropriate electrical safety and accident prevention training and who are physically and mentally fit for the task. The operator is responsible for ensuring safe and compliant operation of the device in accordance with this manual and applicable regulations.

Tesla Entertainment Kft. assumes no liability for damage or malfunction resulting from improper use, modification, or non-compliance with these instructions.

**Risk of Personal Injury or Industrial Accident:**

Failure to follow the safety instructions in this manual may result in serious injury, electric shock, or property damage. Always adhere to prescribed procedures when handling, installing, or maintaining this device.

**Risk of Electric Shock:**

Hazardous voltages are present inside the unit. Failure to comply with this manual may result in severe or fatal electric shock. Work on live components must only be performed by qualified electricians authorized to work on low-voltage systems.

1.1 Intended Use

- This Power Distribution Unit (PDU) is designed exclusively for **professional use** in temporary or mobile power systems such as **events, film production, touring, or industrial applications**.
- The device must only be operated within its specified technical ratings (voltage, current, and IP protection).
- Any use outside these limits, including operation in explosive atmospheres, constitutes **improper use** and releases Tesla Entertainment Kft. from any liability for resulting damage or injury.

1.2 Workplace Safety

- Keep the work area clean, organized, and free from obstacles. Loose tools or cables may cause tripping hazards.
- Position the device so that it does not obstruct walkways, exits, or vehicle routes.
- Ensure adequate lighting, accessibility, and a stable, level surface at the installation site.

1.3 Electrical Safety

- Before connecting the device, verify that **protective earthing (PE)** is properly installed and that the mains socket or power source is in good condition.
- Confirm that the **supply voltage and frequency** match the rated values specified on the device's identification label.
- The **total connected load** of all connected equipment must not exceed the rated current and power specified on the device's identification label.
- **Do not open or disassemble** the device. There are **no user-serviceable parts inside**. Internal components may remain energized even after disconnection.
- Any form of **unauthorized modification** or repair is strictly prohibited.
- Protect the device from **heat sources, direct sunlight, and moisture**.
- Do not cover the device or ventilation openings or place objects on the device.
- In environments with strong sunlight or temperature fluctuations, **condensation** may form inside the unit; ensure the device is operated according to this user manual.
- Avoid running cables over sharp edges, tight bends, or high-traffic areas.
- Regularly inspect all power cables and connectors. Do not use the device if any part is damaged.
- Never lift, suspend, or pull the device by its cables.
- For outdoor applications, connect only equipment that is **rated and certified for outdoor use**.
- Do not allow the device to stand in water or other conductive liquids.
- Avoid strong impacts, vibration, or dropping the unit, as this may cause internal damage.
- Repairs must only be performed by qualified personnel **using original Tesla Tech spare parts**.
- Always disconnect the device from the mains before performing any maintenance, repair, or part replacement.
- Electrical safety inspections shall be carried out at regular intervals in accordance with applicable national regulations (e.g., HD 60364 or local equivalents). Refer also to the **6. Maintenance** section of this manual.

1.4 Personal Safety

- Keep unauthorized persons, especially **children**, away from the operating area.
- When not in use, store the device in a **dry, dust-free environment**, out of the reach of children.
- Allow only **trained and authorized** personnel to operate the PDU.
- To prevent unintentional startup, always switch connected equipment off before connecting or disconnecting it from the PDU.
- Do not operate the device in **explosive or flammable** environments.
- Never operate the device under the influence of **alcohol, drugs, or medication** that may impair judgment or reaction time.

1.5 Environmental Safety

- Operate the device only within its specified **IP protection class**.
- For outdoor or semi-outdoor use, ensure that all **unused sockets and inlets** are securely closed with their protective lids.
- When connectors are in use, ensure that only **properly mated, IP-rated plugs or cable assemblies** are used, maintaining the device's overall ingress protection level.
- The declared IP rating applies **when all covers are closed** or **when compatible IP-rated connectors** are properly engaged.
- Avoid operation in environments with excessive **dust, humidity, corrosive vapors, or strong vibrations**.
- Protect connectors from **direct exposure to rain** when not mated.

2. General Information

Abbreviation	Term
AUX	Auxiliary output connector
CEE	Industrial plug and socket system. The term CEE is based on the IEC 60309 specification (formerly IEC 309 and CEE17, also published by CENELEC as EN 60309), an international IEC standard for "plugs, sockets and couplers for industrial purposes"
HDPE	High-Density Polyethylene
MCB	Miniature Circuit-Breaker
PDU	Power Distribution Unit
RCBO	Residual Current Circuit-Breaker with Overcurrent Protection
Syntax® SSX	Professional 19-pin connector system compatible with Socapex® SL419 series, the Syntax SSX series.

2.1 General Overview

The TTPF32-001 Series is a professional portable power distribution unit (PDU) designed for high-reliability operation in **event, film, broadcast, and industrial** environments.

The enclosure is made from **UV-resistant, water-repellent black HDPE** with a structured surface, and securely mounted inside a custom flightcase. This dual-layer construction combines rugged protection and portability, offering **IP54** protection suitable for safe operation in both **indoor and semi-outdoor** conditions.

Rear Panel Components

- 1 x 32A three-phase five-pole CEE type input plug,
- 3 x phase presence indicator white LED, that indicates the presence of phase voltage (L1, L2, L3),
- 3 x 16A single-phase three-pole (AUX 1 ... 3) AUX connectors (refer to 2.4 AUX Connectors),
- 3 x RCBO "I / ON" state phase indicator green LED for AUX connectors,
- 3 x 16A three-phase nineteen-pole (Soca 1 ... 3 | Channel 1 ... 6) Syntax® SSX 19 Pin type connectors with IP67 protective caps,
- 18 x RCBO "I / ON" state phase indicator green LED for Syntax® SSX connectors,
- 3 x fuse holders for independent auxiliary circuits (e.g. phase indicator white LEDs and working light power supply unit),

- 1 x Han® GND grounding connector.

Front Panel Components

- 2 x illuminated switches for front and rear working lights.

Under the Hinged Windows

- 1 x C32A four-pole Main MCB,
- 3 x C16A 30mA two-pole (1P+N) A-type RCBO for AUX connectors¹,
- 18 x C16A 30mA two-pole (1P+N) A-type RCBO for Syntax® SSX 19 Pin type connectors.

All phase-presence indicator white LEDs are powered via an independent fused auxiliary circuit. In the event of an MCB trip, indicators remain operational, supporting fault diagnostics (e.g., phase loss detection).

The PDU is designed for safe and efficient power distribution in demanding applications such as film production, live events, or temporary construction site environments.

2.2 Technical Data

The following section lists the key **technical specifications** for the TTPF32-001 Series. All parameters are verified according to the relevant IEC/EN standards for low-voltage switchgear and controlgear assemblies.

Parameter	Specification
Rated voltage (U_n)	400VAC, 3P+N+PE
Rated current (I_{nA})	32A
Rated frequency (f_n)	50/60Hz
Maximum continuous load	22kVA ² (22kW at $\cos\varphi = 1$)
Rated diversity factor (RDF)	0,28
Rated conditional short-circuit current (I_{cc})	10kA (in accordance with EN 60898)
Protection class	Class I (protective earth)
Ingress protection	IP54 (enclosure closed)

¹ For J1 type AUX connector, RCBO is C10A 30mA 2P (1P+N) A-type. For G1 type AUX connector, RCBO is C13A 30mA 2P (1P+N) A-type. For B1 type AUX connector, RCBO is C13A 30mA 2P (1P+N) A-type.

² At 30 °C ambient air temperature.

Parameter	Specification
Impact resistance	IK10 (Enclosure)
Input	1x CEE 32A 5P
Input protection	1x Main MCB C32A 4P
Output	3x AUX connector 16A 3P (refer to 2.4 AUX Connectors) 3x Syntax® SSX 16A 19P connector with IP67 protective cap 1x Han® GND connector
Output protection	3x RCBO C16A 30mA 2P (1P+N) A-type ³ for AUX connectors 18x RCBO C16A 30mA 2P (1P+N) A-type for Syntax® SSX connectors
Phase indicator	3x Phase presence indicator white LED 3x RCBO „I / ON“ state phase indicator green LED for AUX connectors 18x RCBO „I / ON“ state phase indicator green LED for Syntax® SSX connectors
Illumination	1x Front working light with switch 1x Rear working light with switch
Material	UV-resistant, water-repellent black high-density polyethylene (HDPE) with a textured surface and securely mounted inside a custom flightcase
Operating temperature ⁴	-25 °C to +40 °C
Storage temperature	-25 °C to +40 °C
Weight	24kg (including flightcase)
Dimensions	340 x 560 x 500 in mm (Height x Width x Depth) including flightcase
Certification	CE EN 61439 (Part 1 & 4)

³ For J1 type AUX connector, RCBO is C10A 30mA 2P (1P+N) A-type. For G1 type AUX connector, RCBO is C13A 30mA 2P (1P+N) A-type. For B1 type AUX connector, RCBO is C13A 30mA 2P (1P+N) A-type.

⁴ The average ambient temperature over a 24-hour period not exceeding 35 °C (in accordance with IEC/EN 61439 recommendations). Relative humidity: Maximum 100% at ambient temperatures from -25 °C to 27 °C, decreasing to 60% at 35 °C and 46% at 40 °C, non-condensing (in accordance with IEC/EN 61439 recommendations). Maximum installation altitude: ≤2000 m above sea level.

2.3 Cross-Section of Wires

All internal wiring uses **H07V-K or equivalent** flexible conductors, to ensure maximum flexibility, insulation integrity, and compliance with IEC 60228 standards for fine-stranded copper conductors. The conductor cross-sections are dimensioned according to the rated load current for each circuit as shown below.

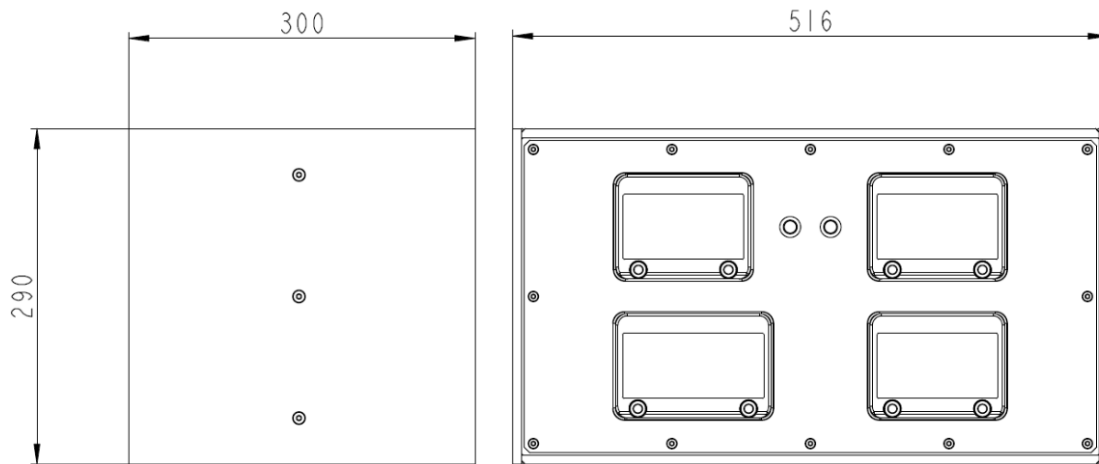
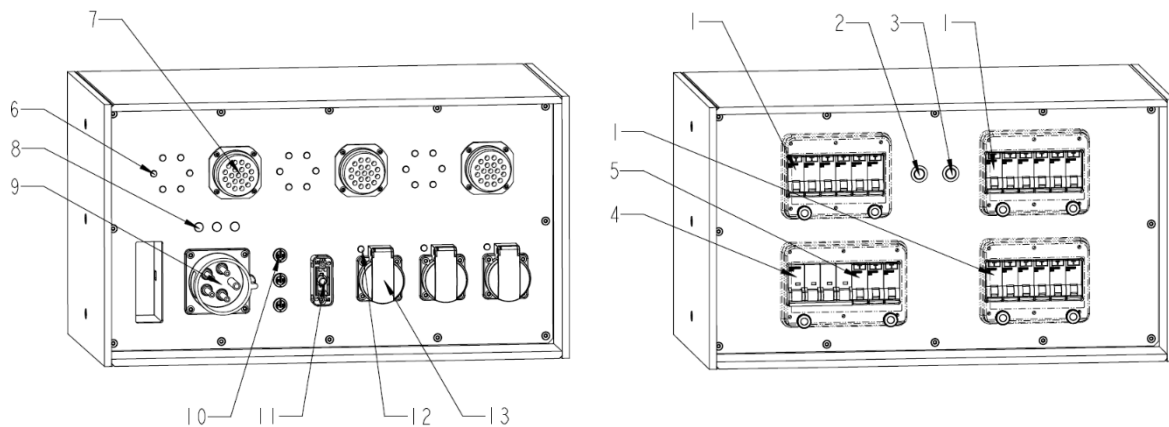
Connector type	Cross-section
CEE 32A	6mm ²
AUX	2,5mm ²
Syntax [®] SSX 16A	2,5mm ²
Han [®] GND	6mm ²

2.4 AUX Connectors

The following **AUX connector configurations** are available for this model. Each variant is defined by its national or regional standard, rated current, and ingress protection class.

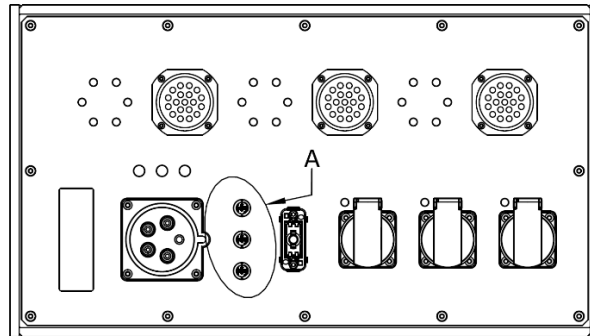
Code	Type	Rated Current	IP Code ⁵
F1	German / Austrian (Type F)	16A	IP54
F2	German / Austrian with gasket (Type F)	16A	IP54
E1	French / Belgian (Type E)	16A	IP44
G1	British (Type G)	13A	IP44
P1	powerCON [®] TRUE1 with sealing self-closing cap	16A	IP65
J1	Swiss T13 (Type J)	10A	IP54
J2	Swiss T23 (Type J)	16A	IP54
B1	USA / Canada (Type B)	15A	IP44
K1	Danish (Type K)	16A	IP44
CE	CEE 6h	16A	IP54

⁵ The stated IP rating applies when all enclosure lids and covers are fully closed. When connectors are mated, the overall ingress protection level may vary depending on the IP rating of the connected plugs. Users should ensure that all connected components maintain appropriate protection levels for the intended environment.

DIMENSIONAL DRAWING (PDU without flightcase)**COMPONENT DESIGNATIONS (Electrical)**

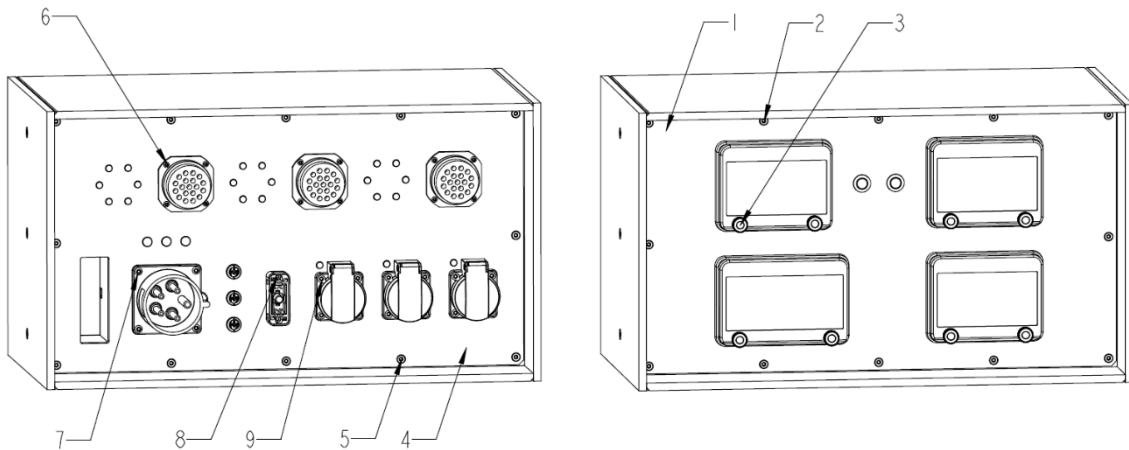
- | | |
|--|--|
| 1. Syntax® SSX connector - Soca 1 ... 3 Channel 1 ... 6 - RCBOs | 7. Syntax® SSX 16A 19P connector |
| 2. Front working light switch | 8. Phase indicator white LED |
| 3. Rear working light switch | 9. Power input plug CEE 32A 5P |
| 4. Main MCB | 10. Independent fuse (A) |
| 5. AUX connector - AUX 1 ... 3 - RCBOs | 11. Han® GND connector |
| 6. Phase indicator green LED for Syntax® SSX - Soca 1 ... 3 - connector channels | 12. Phase indicator green LED for AUX - AUX 1 ... 3 - connectors |
| | 13. AUX connector |

COMPONENT DESIGNATIONS (Fuse Holder)



- A. Fuse holder with 5x20mm miniature time lag ceramic fuse. T2,5A fuse on L1 phase and T1A fuse on L2, L3 phases.

COMPONENT DESIGNATIONS (Mechanical)



- | | |
|--|--|
| 1. Front cover plate (removable part) | 5. Rear cover plate fixing screw |
| 2. Front cover plate fixing screw | 6. Syntax® SSX - Soca 1 ... 3 - fixing screw |
| 3. Hinged inspection window with knurled screw | 7. CEE - 32A Power Input - fixing screw |
| 4. Rear cover plate (removable part) | 8. HAN® GND fixing screw |
| | 9. AUX 1 ... 3 - fixing screw |

3. Operation

3.1 Basic Operation

⚠ Important Notice: This device must only be commissioned and operated by qualified or electrically skilled personnel in accordance with applicable electrical safety regulations (e.g., IEC/EN 60364). Always verify the mechanical integrity of the enclosure, connectors, and cables before energizing the unit.

Follow the steps below to safely commission and operate the **TTPF32-001 Series** PDU:

1. Power Connection

- Connect the **CEE 32A 5P supply plug** to the corresponding socket.
- Ensure that the connector is **fully engaged and locked** to prevent accidental disconnection.
- Once energized, the **three white phase presence indicator LEDs (L1, L2, L3)** on the rear panel will illuminate continuously, confirming voltage on each phase.
- The internal **working light power supply unit (PSU)** is also powered at this stage.

2. Energizing the Unit

- On the front panel, release the knurled screws of the hinged windows by turning them counterclockwise and carefully open the covers.
- Switch the **Main MCB (C32A, 4P)** from position **"0 / OFF"** to **"I / ON."**
- Then switch each **RCBO (C16A, 30mA, A-type)** from **"0 / OFF"** to **"I / ON."**

3. RCBO Test Procedure

- Verify the operation of each RCBO by pressing its **test ("T") button**.
- The RCBO should **trip immediately** and **return to the "0 / OFF"** position when the test button is pressed.
- Reset each RCBO to the **"I / ON"** position after testing.
- The RCBO test must be performed **before each commissioning and at least once per month** during continuous operation.

4. Load Connection

- After completing the above steps, switch all RCBOs back to **"0 / OFF."**
- Connect the electrical consumers to the output connectors:
 - Remove the IP67 protection caps from the Syntax® SSX 19-pin connectors.
 - Verify that all plugs are **correctly aligned, fully inserted, and securely latched**.
- Once connected, switch the RCBOs to **"I / ON"** to energize the outputs.
- The green **"I / ON"** indicator LEDs will illuminate, confirming that the respective outputs are live.

5. Ensuring IP Protection

- Close **all hinged protective windows** and **tighten the knurled screws clockwise** to restore full enclosure protection.
- The unit provides **IP54 ingress protection** only when all covers are closed and all unused connectors are properly capped. When connectors are mated, ingress protection depends on the mated connector pair's rating.

- When the covers are open, protection is reduced to **IP30**, and the unit may **only be used indoors** in dry, non-condensing environments.

6. Commissioning Completion

- Commissioning is now complete.
- **Operation may begin by switching on the connected consumers.**
- Ensure that all indicators show normal operation before proceeding.

7. Shutdown Procedure

- To safely de-energize the device:
 - Switch the **Main MCB** to **"0 / OFF."**
 - Then switch off the **supply MCB** or upstream circuit.
 - Disconnect all connected consumers and remove their plugs.
 - Unplug the **main CEE 32A supply plug**.
 - Replace the IP67 protective caps on all unused Syntax® SSX connectors.

8. Storage

- Store the unit in a **dry, dust-free environment**, away from direct sunlight, moisture, and children.
- For reuse, repeat the procedure from **Step 1** onward.

9. Operating Conditions

- The device is designed for continuous operation within the following environmental limits:
 - **Ambient operating temperature:** -25 °C to +40 °C
 - **Average over 24 h:** ≤ +35 °C
- Operation outside these limits may impair performance or reduce the service life of components.

3.2 Other Operational Functions

Front and Rear Working Lights

- The front panel features **two blue-illuminated pushbuttons** for controlling the **front and rear LED working lights**.
- The pushbuttons remain softly illuminated for easy visibility in low-light environments.
- Illumination is provided by **natural white LED strips** mounted in recessed aluminium profiles, ensuring uniform light distribution for setup, operation, or maintenance in dark or confined spaces.
- Each LED strip provides approx. 75 lm of natural white light (4000K).
- The working lights are powered via an **independent fused auxiliary circuit**, allowing continued operation even if the main MCB trips, ensuring visibility and safety during troubleshooting.

4. Faults and Their Rectification

This section provides guidance for identifying and rectifying common operational faults. Only a qualified electrician or authorized service technician may perform troubleshooting or corrective maintenance. If the following measures do not resolve the issue, contact Tesla Entertainment Kft. or an authorized service partner for assistance.

⚠ Warning: Only qualified personnel may perform fault diagnosis or repair work on electrical equipment. Before performing any inspection or corrective work, disconnect the device completely from the mains supply and verify that it is de-energized. Never attempt to open or service the device while energized.

4.1 No Voltage at Sockets - Device Volt-Free

Symptoms:

- No output voltage present.
- Phase indicator LEDs (L1, L2, L3) do not illuminate.

Possible Causes:

- The upstream supply circuit or CEE plug is not energized.
- The input plug is not fully inserted or the locking mechanism is not engaged.
- A fault has occurred at the supply source (e.g., tripped upstream protection).

Corrective Actions:

1. Verify that the mains supply is active and correctly connected.
2. Ensure the input plug is fully inserted and locked into place.
3. Check the upstream MCB or protection device and reset if tripped.
4. If the issue persists, isolate the device and have the supply point inspected by a qualified electrician.

4.2 Miniature Circuit Breaker (MCB) Tripped

Symptoms:

- The MCB handle is in the "0 / OFF" position.
- Connected sockets have no voltage.

Possible Causes:

- Short-circuit or overload on one or more outputs.

- Excessive load current exceeding the MCB rating.
- Thermal protection of the MCB has tripped due to prolonged overload.

Corrective Actions:

1. Disconnect all connected equipment (consumers).
2. Inspect all extension cables and connected devices for visible damage, overheating, or insulation faults.
3. If damaged:
 - Remove the faulty cable or equipment from service.
 - Have repairs performed by qualified personnel.
4. If no visible damage is found, allow several minutes for the MCB's thermal protection to cool.
5. Reset the MCB by switching it to the "I / ON" position.
6. Reconnect loads one by one and monitor current draw.
7. If the MCB trips again, a short-circuit or overload persists, disconnect the device and request professional service.

⚠ Important Notice: The total connected load must not exceed the rated current shown on the device label. If the current draw exceeds the nominal rating, the MCB will trip to prevent overheating and cable damage.

4.3 RCBO (Residual Current Circuit-Breaker with Overcurrent Protection) Tripped

Symptoms:

- One or more RCBOs have switched to the "0 / OFF" position.
- The respective socket(s) are de-energized.

Possible Causes:

- Earth leakage or insulation fault in a connected device.
- Short-circuit or overload on the output circuit.
- Moisture or contamination causing unintended leakage currents.

Corrective Actions:

1. Disconnect all connected loads from the affected circuit.
2. Visually inspect cables, connectors, and connected devices for damage or moisture.

3. If damaged:
 - Remove the defective cable or device from service.
 - Arrange repair or replacement by a qualified technician.
4. If no visible damage is found, reset the RCBO to "I / ON."
5. If it trips again, an earth leakage or internal fault is present.
6. Do not continue using the device until the fault is located and rectified by an authorized electrician.

⚠ Important Notice: The RCBO provides dual protection (overcurrent + residual current). Frequent tripping indicates a genuine fault and must not be ignored.

4.4 Phase Indicator LED(s) Dim or Not Illuminated

Symptoms:

- One or more white phase indicator LEDs are dim or off.
- Other LEDs and sockets may still function.

Possible Causes:

- Supply voltage fluctuation or loss of one phase.
- Fault in the phase indicating circuit.
- Loose connection or neutral failure on the supply side.

Corrective Actions:

1. Verify that all three phases (L1, L2, L3) and the neutral conductor are present at the CEE input.
2. Inspect the supply plug and cable for damage or loose contacts.
3. Check upstream power distribution for phase failure or imbalance.
4. If a single phase is missing, **do not operate three-phase loads** until the fault is corrected, as unbalanced operation may cause component stress.
5. If all phases are present but the LED still does not illuminate, have the device inspected by an authorized service technician.

4.5 Indicator LEDs or Working Lights Not Functioning

Symptoms:

- Phase indicator LEDs, front light, or rear light do not illuminate, but sockets are live.

Possible Causes:

- Blown internal fuse protecting the auxiliary circuits.
- LED or wiring failure.

Corrective Actions:

1. Confirm that there is no phase loss or neutral absence.
2. Inspect fuseholders (see Chapter 5. **Repair**) and replace fuses only with identical ratings.
3. If the issue persists, contact a qualified technician for further diagnosis.

4.6 General Troubleshooting Notes

- Always document recurring faults, tripping events, or component replacements in a maintenance log in accordance with HD 60364-6.
- Repeated operation of protection devices (MCBs or RCBOs) may indicate improper load balancing or defective connected equipment.
- After each fault, perform a visual inspection of cables and connectors before re-energizing the device.
- If the source of the fault cannot be safely identified, isolate the device and seek assistance from a qualified professional.

5. Repair

Warning - Risk of Electric Shock and Injury:

The user must not carry out repairs on this device. Opening or removing the enclosure covers exposes live components and presents a serious electrical hazard. Unauthorized access or modification is strictly prohibited.

5.1 Authorized Repairs

- During the warranty period, the device may only be repaired by Tesla Entertainment Kft. or by an authorized service partner.
- Any repair, replacement, or modification performed without authorization will void the warranty and release the manufacturer from all responsibility.
- Only qualified electricians may perform repairs after the warranty period, and all work must comply with applicable electrical safety standards (e.g., HD 60364, EN 61439-1).
- After any repair, a **complete electrical safety test** (insulation resistance, continuity of PE, functional verification) must be performed before recommissioning.

5.2 Connector Replacement (QCR System)

This device utilizes Quick Connector Replacement (QCR) technology for simplified maintenance of panel-mounted connectors. QCR allows a qualified technician to replace a damaged connector without disassembling the entire power distribution unit.

- All connectors are fixed using stainless-steel or black-coated (Cr VI-free) galvanized steel screws.
- Internal conductors are pre-wired with sufficient slack to permit connector removal and replacement without strain.
- Only **original Tesla Tech or manufacturer-approved connectors** must be used for replacement.

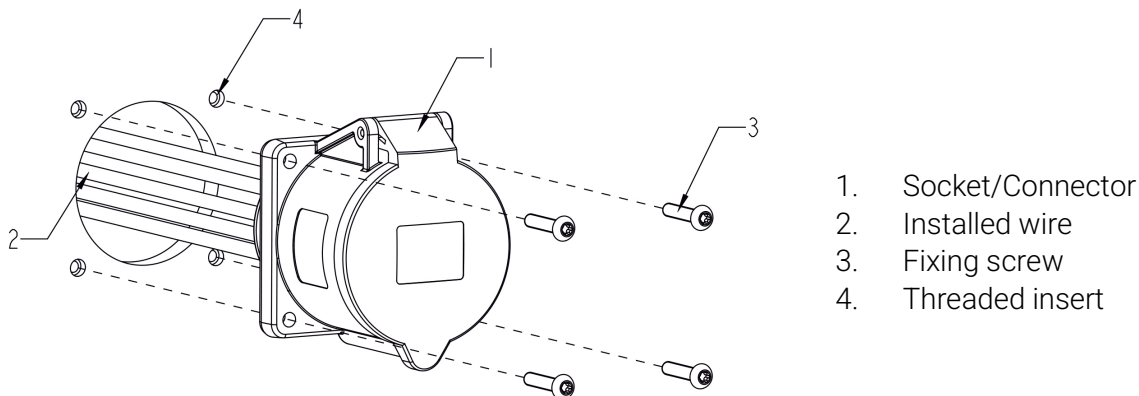
Types and tightening torques of fixing screws

Fixing screw location	Fixing screw type	Maximum tightening torque
Front cover plate	M4 Torx (T20)	0,8Nm
Rear cover plate	M4 Torx (T20)	0,8Nm
CEE 32A input plug	M5 Torx (T25)	1,0Nm
Soca - 1 ... 3 - sockets	M3 Torx (T15)	0,6Nm
AUX - 1 ... 3 - sockets	M4 Torx (T20)	0,8Nm
HAN® GND ⁶	M4 HEX (3mm)	1,0Nm

⁶ Fixed mounting, not QCR.

Replacing a Defective Connector (Qualified Personnel Only)

1. **Isolate the device** from the mains supply and verify de-energization.
2. Using the appropriate screwdriver, **unscrew the fixing screws (3)** of the defective connector (1) counter-clockwise from the threaded inserts (4).
3. Carefully **pull** the connector out to gain access to the **internal terminal screws (2)**.
4. **Loosen the terminal screws** and disconnect the conductors.
5. **Install the new connector**, ensuring each wire is reconnected in the correct sequence and tightened to the specified torque according to the installation manual of the spare part(s).
6. **Reinsert** the connector and tighten the fixing screws according to the torque values listed above.
7. After replacement, a **complete electrical safety test** (insulation resistance, continuity of PE, functional verification) must be performed before recommissioning.



⚠ Important: Do not exceed the maximum tightening torque. Over-tightening may cause the threaded insert to rotate or detach, rendering it unusable.

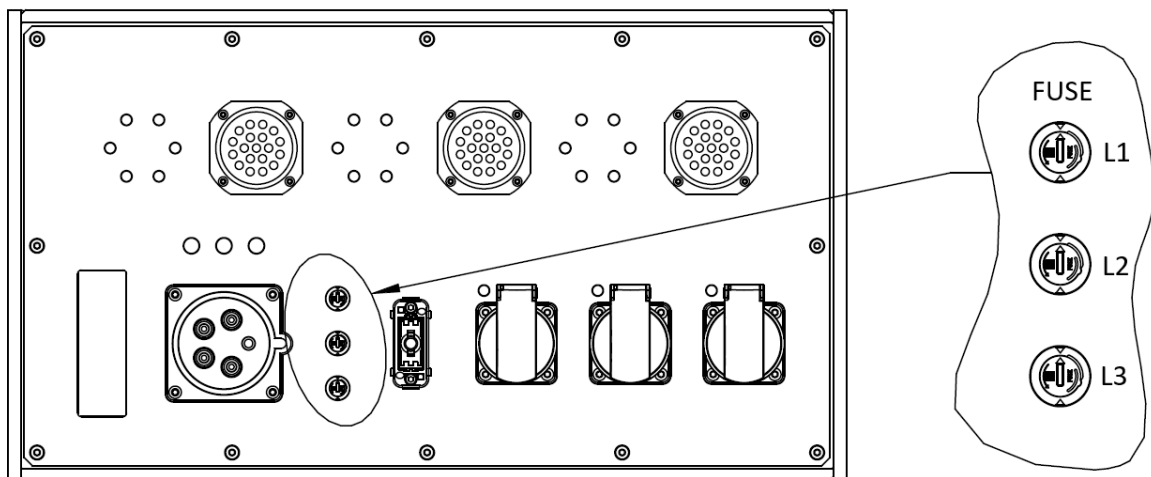
5.3 Replacing Blown Fuses

⚠ Caution - De-energize Before Proceeding

All fuse replacement operations must be performed only when the device is completely disconnected from the mains power supply.

⚠ Important Notice: Using incorrect fuse ratings or failing to properly close the fuseholder may lead to malfunction or loss of protection.

1. Identify the fuseholder location according to Chapter 2. **General Information**
2. Unscrew the fuseholder cap and **inspect the fuse** using a continuity tester.
3. Replace any blown fuse with one of **identical type and rating** from the table below.
4. Close the fuseholder securely by twisting the cap clockwise.



Replacement fuse types

Circuit fuse	Type	Part number
L1	T2,5A, Ceramic, 5x20mm	Schurter 0001.2508
L2, L3	T1A, Ceramic, 5x20mm	Schurter 0001.2504

6. Maintenance

Regular inspection and maintenance are essential to ensure the continued safe and reliable operation of this power distribution unit (PDU). All maintenance work must be performed in accordance with HD 60364-6 and applicable **national electrical safety regulations**.

6.1 General Requirements

- Maintenance and inspection must be carried out **only by qualified electricians or authorized service personnel**.
- The operator is responsible for establishing suitable maintenance intervals, considering **frequency of use, environmental conditions, and operating load**.
- Tesla Entertainment Kft. recommends a **minimum inspection interval of 12 months**, or more frequently under harsh or outdoor conditions (e.g., high humidity, dust, or frequent handling).

⚠ Warning: Before performing any maintenance or inspection, disconnect the PDU from all power sources and verify that it is de-energized. Never perform maintenance on live circuits.

⚠ Important Notice: All maintenance procedures and inspections must be documented and retained for verification as part of the product's conformity assessment and ongoing operational safety program.

6.2 Routine User-Level Checks

The following checks may be performed by trained users as part of regular operation:

- Test each **RCBO or RCCB** monthly by pressing the "T" (Test) button. The device should trip immediately. Reset after successful verification.
- Check all **socket covers** to ensure they close and latch securely.
- Visually inspect **connector contacts** to confirm they are clean, free from oxidation, and undamaged.
- Verify that **hinged inspection windows** are intact and can be securely closed.
- Inspect **handles and grips** for cracks, wear, or deformation.
- Check all **external fixing screws** for tightness and corrosion.
- Ensure the **identification label** (nameplate) is legible and securely attached.
- Clean the unit using a **soft, dry cloth**. If necessary, use a mild, non-conductive cleaning agent. Never use solvents, alcohol, or pressurized water.

6.3 Professional Inspection

In addition to routine checks, a **qualified electrician** must perform a detailed inspection and functional test at the defined maintenance interval. This includes:

- Verification of the **mechanical integrity** of the enclosure, connectors, and mounting hardware.
- Testing of the **continuity of protective earthing (PE)** conductors.
- Measurement of **insulation resistance** between live conductors and protective earth (minimum 1 MΩ at 500VDC).
- **Functional testing of all MCBs and RCBOs**, including verification of tripping characteristics and correct reset operation.
- Verification that all **phase presence indicators**, working lights, and auxiliary circuits operate correctly.
- Inspecting the **condition of internal wiring** for signs of overheating, discoloration, mechanical stress, or loose terminals.
- Confirmation that **IP and IK protection levels** are maintained (including seals, covers, and hinged elements).
- Documentation of all test results in accordance with HD 60364-6 and application-specific maintenance records.
- Testing shall be performed using calibrated instruments traceable to national measurement standards.

⚠ Warning: Before performing insulation resistance measurements, all auxiliary and electronic circuits (e.g., working light PSU, VMR, Power Monitoring Device, LEDs, or control wiring) must be disconnected or isolated from the test circuit. Remove all fuses (5.3 Replacing Blown Fuses) or disconnect terminal points as necessary to prevent damage. Do not apply insulation test voltage (typically 500 VDC) to sensitive control components, as permanent failure may occur.

6.4 Damaged Equipment

If any mechanical or electrical damage is identified during inspection or operation:

- Immediately **remove the device from service**.
- Do not attempt to repair the device unless authorized by Tesla Entertainment Kft. during warranty period.
- Repairs must only be performed using **original Tesla Tech spare parts**.
- After repair, the unit must undergo a **complete electrical safety and functional test** before being returned to service.

7. Cleaning

Regular cleaning helps maintain safe operation and extend the service life of the power distribution unit (PDU). Always clean the unit according to the following safety and operational guidelines.

7.1 General Requirements

- Before cleaning, **disconnect the device from all power sources** and ensure it is completely **de-energized**.
- Ensure all **connectors, socket covers, and hinged windows** are fully closed and securely **latched**.
- If any covers or windows must remain open, **only dry cleaning** is permitted.
- Do **not** use cleaning agents that are **flammable, conductive, or corrosive**.

⚠ Warning: Never use high-pressure water jets, steam cleaners, or immersion cleaning methods. Liquids under pressure can penetrate the enclosure, resulting in electrical hazards or irreversible equipment damage.

7.2 Recommended Cleaning Methods

Depending on the level of contamination, the following methods may be applied:

Dry Cleaning (for light dust or indoor use):

- Use a clean, dry, lint-free cloth or soft brush.
- Compressed air (max. 2 bar) may be used to remove loose dust from ventilation slots and external connectors.

Cleaning (for moderate dirt or outdoor use):

- Use a slightly damp cloth with **mild, non-abrasive detergent or neutral pH cleaning solution**.
- Wipe surfaces gently to remove dirt without damaging labels or markings.
- Avoid excessive moisture and prevent liquid from entering connectors, hinges, or cable entries.
- Dry thoroughly before reconnecting to power.

7.3 Post-Cleaning Inspection

After cleaning, perform the following checks:

- Verify all hinged windows and socket covers remain functional and properly sealed.
- Ensure no moisture or condensation remains inside or around connectors.
- Confirm that the IP protection rating is maintained before returning the device to service.

⚠ Important Notice: For devices operated outdoors, clean and inspect more frequently to prevent buildup of dust, salt, or other conductive contaminants. Only use cleaning materials compatible with the material of the PDU.

8. Warranty

8.1 Scope of Warranty

All Tesla Tech products are designed and manufactured by Tesla Entertainment Kft. to meet the highest standards of safety, performance, and reliability. Each unit undergoes rigorous quality control and electrical safety testing before leaving our facility.

This warranty covers defects in materials and workmanship that occur under normal, professional use, provided the product is installed, operated, and maintained in accordance with this user manual and all applicable electrical regulations.

8.2 Warranty Period

The warranty period is **one (1) year** from the date of purchase by the end user.

During this period, any verified defect resulting from faulty material or workmanship will be repaired or replaced free of charge.

8.3 Conditions

The warranty applies only when:

- The device has been professionally installed and operated within its rated specifications.
- The enclosure, wiring, and safety features remain unmodified.
- All maintenance and inspection work is performed by qualified electrical personnel.
- The device has not been opened, tampered with, or repaired without prior written authorization from Tesla Entertainment Kft.

Opening the enclosure (e.g., removing the cover plate fixing screws) or unauthorized repair immediately voids the warranty.

8.4 Exclusions

The warranty does **not** cover:

- Damage resulting from improper installation, overload, short circuit, or misuse.
- Normal wear and tear, corrosion, or damage from environmental exposure (e.g., condensation, dust, or chemicals).
- Damage caused by accident, negligence, or external impact (transport, shock, or fall).
- Consequential or indirect losses such as downtime, production loss, or lost revenue.
- Components subject to normal wear (e.g., seals, covers or labels).

If the unit has been modified, used beyond its intended purpose, or fitted with non-original components, the warranty becomes void.

8.5 Claim Procedure

If a defect is suspected:

- Disconnect the device from the power supply immediately and remove it from service.
- Contact Tesla Entertainment Kft. or your authorized distributor and provide:
 - The serial number and product identification,
 - A detailed description of the fault, and
 - A copy of the invoice or proof of purchase.
- If requested, return the unit to the manufacturer or an authorized service partner for inspection. Warranty service will be provided following verification of the defect.

Tesla Entertainment Kft. reserves the right to repair or replace the defective component or entire unit at its discretion. Repaired or replaced products remain covered for the remainder of the original warranty period.

8.6 Governing Conditions

All warranty terms are subject to the **General Terms and Conditions of Sale (GTCS)** of Tesla Entertainment Kft., available at: <https://teslatech.gmbh/GTCS>

9. Storing the Device

Proper storage ensures long-term reliability and trouble-free operation of the device. Observe the following recommendations when storing the PDU:

- **Clean before storage:** Always clean the device according to the instructions in Chapter 7. **Cleaning** before placing it into storage.
- **Packaging:** Use the original packaging or other suitable protective material to prevent mechanical damage and dust ingress.
- **Environment:** Store the unit in a dry, dust-free, and temperature-controlled environment within the range -25 °C to +40 °C.
- **Humidity:** The relative humidity should not exceed 80% (non-condensing).
- **Handling:** Avoid impacts, vibration, and stacking heavy objects on top of the device during storage.
- **Recommissioning:** Before reusing the unit after extended storage, perform a visual inspection and functional test according to Chapter 6. **Maintenance**.

10. Disposal

This product has been designed and manufactured using high-quality materials and components that can be reused or recycled. The symbol shown below indicates that this product must not be disposed of with regular household waste.

To prevent potential environmental and health hazards, please take the product to an authorized collection point or recycling facility for electrical and electronic equipment (EEE) waste, in accordance with the EU Directive 2012/19/EU (WEEE) and applicable local regulations.

Improper disposal may be subject to legal penalties under national waste management laws. For more information, contact your local waste disposal authority or the manufacturer.



11. Intellectual Property Notice

This document, including its structure, layout, and contents, is the intellectual property of Tesla Entertainment Kft.

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12. Certifications & Standards

- **CE Compliance:** All components and final assemblies are CE certified, conforming to the requirements of applicable European directives, including the Low Voltage Directive (2014/35/EU) and the EMC Directive (2014/30/EU).
- **Standards Compliance:** Designed in accordance with the following international standards:
 - EN 61439-1: Low-voltage switchgear and controlgear assemblies – General rules.
 - EN 61439-4: Assemblies for construction sites (ACS).
- **Manufacturer Information - Designed and Manufactured by:**
 - Tesla Entertainment Kft.
 - Address: H-1151 Budapest, Károlyi Sándor út 158.; Hungary
 - EU VAT ID: HU26587255
- **Country of Origin:** Hungary; all units are assembled and tested at our facility in Budapest.



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