ZEBRA ELECTRONICS

TRD SERIES
DC FAST CHARGER

USER MANUAL
(ENGLISH)

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Green Energy Meets EVs FOR A GREENER WORLD

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ABOUT THIS DOCUMENT

Purpose

This document serves as the user manual for the TRD Series DC Fast Charger.
The figures provided in this document are for reference only.

Intended Audience

This user manual provides guidance for end users on safe use of the TRD Series DC Fast Charging unit.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

⚠ DANGER

Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

NOTE

Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

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1. Safety Information

Statement

Before transporting, storing, installing, operating, using, and/or maintaining the equipment, read this document, strictly follow the instructions provided herein, and follow all the safety instructions on the equipment and in this document. In this document, "equipment" refers to the products, software, components, spare parts, and/or services related to this document; "the Company" refers to the manufacturer (producer), seller, and/or service provider of the equipment; "you" refers to the entity that transports, stores, installs, operates, uses, and/or maintains the equipment.

The Danger, Warning, Caution, and Notice statements described in this document do not cover all the safety precautions. You also need to comply with relevant international, national, or regional standards and industry practices. The Company shall not be liable for any consequences that may arise due to violations of safety requirements or safety standards concerning the design, production, and usage of the equipment.

The equipment shall be used in an environment that meets the design specifications. Otherwise, the equipment may be faulty, malfunctioning, or damaged, which is not covered under the warranty. The Company shall not be liable for any property loss, personal injury, or even death caused thereby.

Comply with applicable laws, regulations, standards, and specifications during transportation, storage, installation, operation, use, and maintenance.

Do not perform reverse engineering, decompilation, disassembly, adaptation, implantation, or other derivative operations on the equipment software. Do not study the internal implementation logic of the equipment, obtain the source code of the equipment software, violate intellectual property rights, or disclose any of the performance test results of the equipment software.

The Company shall not be liable for any of the following circumstances or their consequences:

- The ambient temperature range during charging should be between -30 °C and +50 °C (without direct sunlight) and at a relative humidity of between 5 % and 95 %. Use the charging station only within these specified operating parameters.
- Equipment damage due to force majeure such as earthquakes, floods, volcanic eruptions, debris flows, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, and other extreme weather conditions
- Operation beyond the conditions specified in this document.
- Installation or use in environments that do not comply with international, national, or regional standards
- Installation or use by unqualified personnel
- Failure to follow the operation instructions or safety precautions on the product or in this document
- Unauthorized modifications to the product or software code or removal of the product
- Damage caused during transportation by you or a third party authorized by you
- Storage conditions that do not meet the requirements specified in this document
- Failure to comply with local laws, regulations, and related standards due to the materials and tools prepared by the customer

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- Interruption or suspension caused by power failures, billing system faults, computer errors or viruses, hacker attacks, theft, data loss, or any other factor beyond the reasonable control of the Company's equipment
- Network faults, equipment faults, or configuration adjustment of third-party charging products
- Damage caused by your or a third party's negligence, intentional breach, gross negligence, or improper operations or damage not caused by the Company.

1.1 Personal Safety

⚠ DANGER

Ensure that power is off during installation. Do not install or remove a cable with power on. Transient contact between the core of the cable and the conductor will generate electric arcs or sparks, which may cause a fire or personal injury.

⚠ DANGER

Non-standard and improper operations on the energized equipment may cause fire or electric shocks, resulting in property damage, personal injury, or even death.

⚠ DANGER

Before operations, remove conductive objects such as watches, bracelets, bangles, rings, and necklaces to prevent electric shocks.

⚠ DANGER

During operations, use dedicated insulated tools to prevent electric shocks or short circuits. The insulation and voltage resistance must comply with local laws, regulations, standards, and specifications.

⚠ WARNING

During operations, wear personal protective equipment such as protective clothing, insulated shoes, goggles, safety helmets, and insulated gloves.

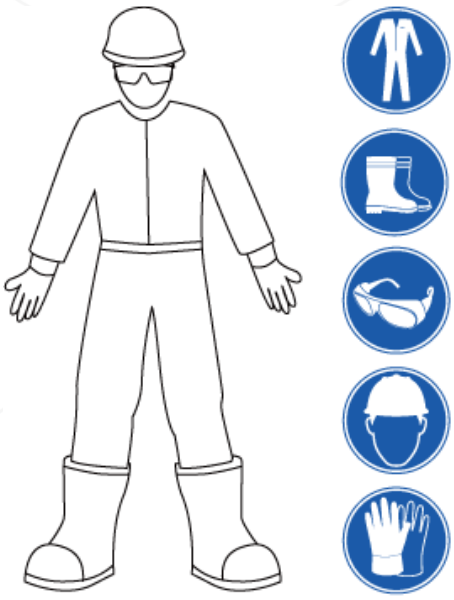

Figure 1-1 Personal Protective Equipment

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General Requirements

- Do not stop protective devices. Pay attention to the warnings, cautions, and related precautionary measures in this document and on the equipment.
- If there is a likelihood of personal injury or equipment damage during operations, immediately stop, report the case to the supervisor, and take feasible protective measures.
- Do not power on the equipment before it is installed or confirmed by professionals.
- Do not touch the power supply equipment directly or with conductors such as damp objects. Before touching any conductor surface or terminal, measure the voltage at the contact point to ensure that there is no risk of electric shock.
- Do not touch a running fan with your hands, components, screws, tools, or boards. Otherwise, personal injury or equipment damage may occur.
- In the case of a fire, immediately leave the building or the equipment area and activate the fire alarm or call emergency services. Do not enter the affected building or equipment area under any circumstances.

Personnel Requirements

- Only professionals and trained personnel are allowed to operate the equipment.
    - Professionals: personnel who are familiar with the working principles and structure of the equipment, trained or experienced in equipment operations and are clear of the sources and degree of various potential hazards in equipment installation, operation, maintenance
    - Trained personnel: personnel who are trained in technology and safety, have required experience, are aware of possible hazards on themselves in certain operations, and are able to take protective measures to minimize the hazards on themselves and other people
- Personnel who plan to install or maintain the equipment must receive adequate training, be able to correctly perform all operations, and understand all necessary safety precautions and local relevant standards.
- Only qualified professionals or trained personnel are allowed to install, operate, and maintain the equipment.
- Only qualified professionals are allowed to remove safety facilities and inspect the equipment.
- Personnel who will perform special tasks such as electrical operations, working at heights, and operations of special equipment must possess the required local qualifications.
- Only authorized professionals are allowed to replace the equipment or components (including software).
- Only personnel who need to work on the equipment are allowed to access the equipment.

1.2 Electrical Safety

⚠ DANGER

Before connecting cables, ensure that the equipment is intact. Otherwise, electric shocks or fires may occur.

⚠ DANGER

Non-standard and improper operations may result in fire or electric shocks.

⚠ DANGER

Prevent foreign matter from entering the equipment during operations. Otherwise, equipment damage, load power derating, power failure, or personal injury may occur.

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⚠ WARNING

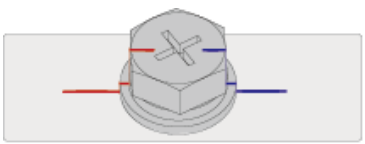
For the equipment that needs to be grounded, install the ground cable first when installing the equipment and remove the ground cable last when removing the equipment.

⚠ CAUTION

Do not directly connect aluminum cables to prevent electrochemical corrosion of copper and aluminum.

General Requirements

- Follow the procedures described in the document for installation, operation, and maintenance. Do not reconstruct or alter the equipment, add components, or change the installation sequence without permission.
- Install temporary fences or warning ropes and hang "No Entry" signs around the operation area to keep unauthorized personnel away from the area.
- Before installing or removing power cables, turn off the switches of the equipment and its upstream and downstream switches.
- The charging station shall be equipped with sufficient power access capacity for the equipment. The AC input voltage and current of the equipment shall meet the technical specifications.
- When an emergency occurs, power off the equipment immediately (press an emergency stop button if any). Do not perform other operations. Contact professionals to perform subsequent operations.
- If any liquid is detected inside the equipment, disconnect the power supply immediately and do not use the equipment.
- Before performing operations on the equipment, check that all tools meet the requirements and record the tools. After the operations are complete, collect all of the tools to prevent them from being left inside the equipment.
- Before installing power cables, check that cable labels are correct and cable terminals are insulated.
- When installing the equipment, use a torque tool of a proper measurement range to tighten the screws. When using a wrench to tighten the screws, ensure that the wrench does not tilt and the torque error does not exceed 10% of the specified value.
- Ensure that bolts are tightened with a torque tool and marked in red and blue after double-check. Installation personnel mark tightened bolts in blue.
- Quality inspection personnel confirm that the bolts are tightened and then mark them in red. (The marks must cross the edges of the bolts.)



- Ensure that all slots are installed with boards or filler panels. Avoid hazards caused by hazardous voltages or energy on boards. Ensure that the air channel is normal, control electromagnetic interference, and prevent dust and other foreign objects on the backplane, baseplate, and boards.
- After the installation is complete, ensure that protective cases, insulation tubes, and other necessary items for all electrical components are in position to avoid electric shocks.

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- After the installation is complete, clean up the installation tools, metal parts, and sundries inside and around the equipment in a timely manner.
- If the equipment has multiple inputs, disconnect all the inputs before operating the equipment.
- Before maintaining a downstream electrical or power distribution device, turn off the output switch on the power supply equipment.
- During equipment maintenance, attach "Do not switch on" labels near the upstream and downstream switches or circuit breakers as well as warning signs to prevent accidental connection. The equipment can be powered on only after troubleshooting is complete.
- If fault diagnosis and troubleshooting need to be performed after power-off, take the following safety measures: Disconnect the power supply. Check whether the equipment is live. Install a ground cable. Hang warning signs and set up fences.
- Check equipment connections periodically, ensuring that all screws are securely tightened.
- Only qualified professionals can replace a damaged cable.
- Do not scrawl, damage, or block any labels or nameplates on the equipment. Promptly replace labels that have worn out.
- Do not use solvents such as water, alcohol, or oil to clean electrical components inside or outside of the equipment.

Grounding Requirements

- Ensure that the grounding impedance of the equipment complies with local electrical standards.
- Ensure that the equipment is connected permanently to the protective ground. Before operating the equipment, check its electrical connection and ensure that the equipment is reliably grounded (the grounding resistance is less than or equal to 4 ohms).
- Do not operate the equipment in the absence of a properly installed ground conductor.
- Do not damage the ground conductor.
- For the equipment that uses a three-pin socket, ensure that the ground terminal in the socket is connected to the protective ground point.
- If high touch current may occur on the equipment, ground the protective ground terminal on the equipment enclosure before connecting the power supply; otherwise, electric shock as a result of touch current may occur.

Cabling Requirements

- When selecting, installing, and routing cables, follow local safety regulations and rules.
- When routing power cables, ensure that there is no coiling or twisting. Do not join or weld power cables. If necessary, use a longer cable.
- After a cable is split, take protective measures on the split cable terminals.
- Ensure that all cables are properly connected and insulated, and meet specifications.
- Ensure that the slots and holes for routing cables are free from sharp edges, and that the positions where cables are routed through pipes or cable holes are equipped with cushion materials to prevent the cables from being damaged by sharp edges or burrs.
- Ensure that cables of the same type are bound together neatly and straight and that the cable sheath is intact. When routing cables of different types, ensure that they are away from each other without entanglement and overlapping.
- When cable connection is completed or paused for a short period of time, seal the cable holes with sealing putty immediately to prevent small animals or moisture from entering.
- Secure buried cables using cable supports and cable clips. Ensure that the cables in the backfill area are in close contact with the ground to prevent cable deformation or damage during backfilling.

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- If the external conditions (such as the cable layout or ambient temperature) change, verify the cable usage in accordance with the IEC-60364-5-52 or local laws and regulations. For example, check that the current-carrying capacity meets requirements.
- Do not perform any improper operations, for example, dropping cables directly from a vehicle. Otherwise, the cable performance may deteriorate due to cable damage, which affects the current-carrying capacity and temperature rise.

ESD Requirements

NOTICE

The static electricity generated by human bodies may damage the electrostaticsensitive components on boards, for example, the large-scale integrated (LSI) circuits.

- When touching the equipment and handling boards, modules with exposed circuit boards, or application-specific integrated circuits (ASICs), observe ESD protection regulations and wear ESD clothing and ESD gloves or a wellgrounded ESD wrist strap.
- When holding a board or a module with exposed circuit boards, hold its edge without touching any components. Do not touch the components with bare hands.
- Package boards or modules with ESD packaging materials before storing or transporting them.

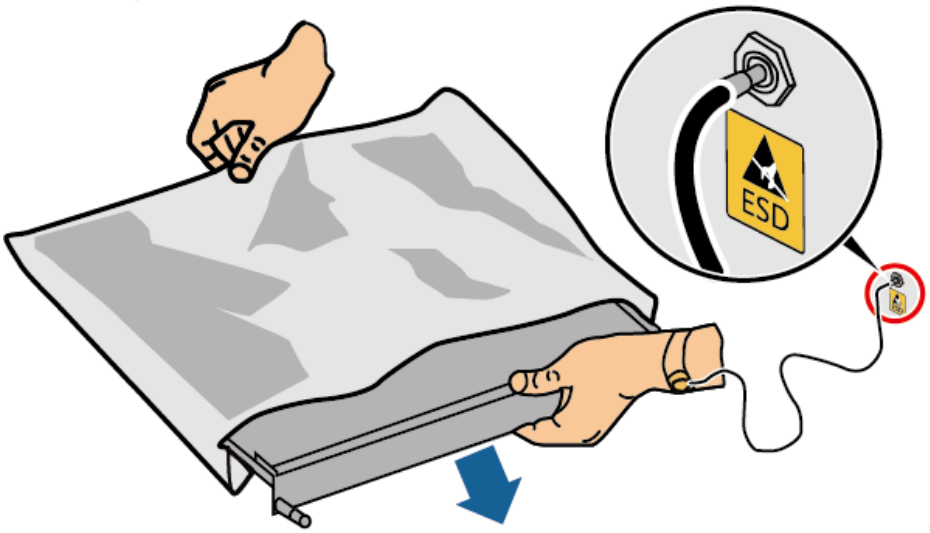

Figure 1-2 Wearing an ESD wrist strap

1.3 Environment Requirements

⚠ DANGER

Do not expose the equipment to flammable or explosive gas or smoke. Do not perform any operation on the equipment in such environments.

⚠ DANGER

Do not store any flammable or explosive materials in the equipment area.

⚠ DANGER

Do not place the equipment near heat sources or fire sources, such as smoke, candles, heaters, or other heating devices. Overheat may damage the equipment or cause a fire.

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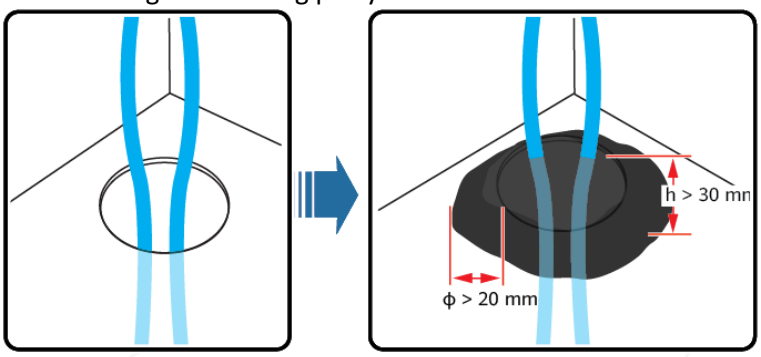
⚠ WARNING

To prevent damage or fire due to high temperature, ensure that the ventilation vents or heat dissipation systems are not obstructed or covered by other objects while the equipment is running.

General Requirements

- Ensure that the equipment is stored in a clean, dry, and well ventilated area with proper temperature and humidity and is protected from dust and condensation.
- Keep the installation and operating environments of the equipment within the allowed ranges. Otherwise, its performance and safety will be compromised.
- Do not install, use, or operate outdoor equipment and cables (including but not limited to moving equipment, operating equipment and cables, inserting connectors to or removing connectors from signal ports connected to outdoor facilities, working at heights, performing outdoor installation, and opening doors) in harsh weather conditions such as lightning, rain, snow, and level 6 or stronger wind.
- Do not install the equipment in an environment with dust, smoke, volatile or corrosive gases, infrared and other radiations, organic solvents, or salty air.
- Do not install the equipment in an environment with conductive metal or magnetic dust.
- Do not install the equipment in an area conducive to the growth of microorganisms such as fungus or mildew.
- Do not install the equipment in an area with strong vibration, noise, or electromagnetic interference.
- Ensure that the site complies with local laws, regulations, and related standards.
- Ensure that the ground in the installation environment is solid, free from spongy or soft soil, and not prone to subsidence. The site must not be located in a low-lying land prone to water or snow accumulation, and the horizontal level of the site must be above the highest water level of that area in history.
- Before opening doors during the installation, operation, and maintenance of the equipment, clean up any water, ice, snow, or other foreign objects on the top of the equipment to prevent foreign objects from falling into the equipment.
- When installing the equipment, ensure that the installation base is solid enough to bear the weight of the equipment.
- All cable holes must be sealed. Seal the used cable holes with sealing putty. Seal the unused cable holes with the caps delivered with the equipment. The following figure shows the criteria for correct sealing with sealing putty.



- After installing the equipment, remove the packing materials such as cartons, foam, plastics, and cable ties from the equipment area.

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1.4 Mechanical Safety

⚠ DANGER

When working at heights, wear a safety helmet and safety harness or waist belt and fasten it to a solid structure. Do not mount it on an insecure moveable object or metal object with sharp edges. Make sure that the hooks will not slide off.

⚠ WARNING

Ensure that all necessary tools are ready and inspected by a professional organization. Do not use tools that have signs of scratches or fail to pass the inspection or whose inspection validity period has expired. Ensure that the tools are secure and not overloaded.

⚠ WARNING

Before installing equipment in a cabinet, ensure that the cabinet is securely fastened with a balanced center of gravity. Otherwise, tipping or falling cabinets may cause bodily injury and equipment damage.

⚠ WARNING

When pulling equipment out of a cabinet, be aware of unstable or heavy objects in the cabinet to prevent injury.

⚠ WARNING

Do not drill holes into the equipment. Doing so may affect the sealing performance and electromagnetic containment of the equipment and damage components or cables inside. Metal shavings from drilling may short-circuit boards inside the equipment.

General Requirements

- Repaint any paint scratches caused during equipment transportation or installation in a timely manner. Equipment with scratches cannot be exposed for an extended period of time.
- Do not perform operations such as arc welding and cutting on the equipment without evaluation by the Company.
- Do not install other devices on the top of the equipment without evaluation by the Company.
- When performing operations over the top of the equipment, take measures to protect the equipment against damage.
- Use correct tools and operate them in the correct way.

Moving Heavy Objects

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- Be cautious to prevent injury when moving heavy objects.
- If multiple persons need to move a heavy object together, determine the manpower and work division with consideration of height and other conditions to ensure that the weight is equally distributed.
- If two persons or more move a heavy object together, ensure that the object is lifted and landed simultaneously and moved at a uniform pace under the supervision of one person.
- Wear personal protective gears such as protective gloves and shoes when manually moving the equipment.
- To move an object by hand, approach to the object, squat down, and then lift the object gently and stably by the force of the legs instead of your back. Do not lift it suddenly or turn your body around.
- Move or lift the equipment by holding its handles or lower edges. Do not hold the handles of modules that are installed in the equipment.
- Do not quickly lift a heavy object above your waist. Place the object on a workbench that is half-waist high or any other appropriate place, adjust the positions of your palms, and then lift it.
- Move a heavy object stably with balanced force at an even and low speed. Put down the object stably and slowly to prevent any collision or drop from scratching the surface of the equipment or damaging the components and cables.
- When moving a heavy object, be aware of the workbench, slope, staircase, and slippery places. When moving a heavy object through a door, ensure that the door is wide enough to move the object and avoid bumping or injury.
- When transferring a heavy object, move your feet instead of turning your waist around. When lifting and transferring a heavy object, ensure that your feet point to the target direction of movement.
- When transporting the equipment using a pallet truck, ensure that the forks are properly positioned so that the equipment does not topple. Before moving the equipment, secure it to the pallet truck using ropes. When moving the equipment, assign dedicated personnel to take care of it.
- Choose sea or roads in good conditions for transportation as transportation by railway or air is not supported. Avoid tilt or jolt during transportation.

Working at Heights

- Any operations performed 2 meters or higher above the ground should be supervised properly.
- Only trained and qualified personnel are allowed to work at heights.
- Do not work at heights when steel pipes are wet or other risky situations exist. After the preceding conditions no longer exist, the safety owner and relevant technical personnel need to check the involved equipment. Operators can begin working only after safety is confirmed.
- Set a restricted area and prominent signs for working at heights to warn irrelevant personnel away.
- Set guard rails and warning signs at the edges and openings of the area involving working at heights to prevent falls.
- Do not pile up scaffolding, springboards, or other objects on the ground under the area involving working at heights. Do not stay or pass under the area involving working at heights.
- Carry operation machines and tools properly to prevent equipment damage or personal injury caused by falling objects.

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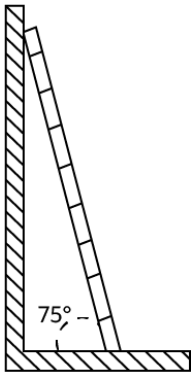
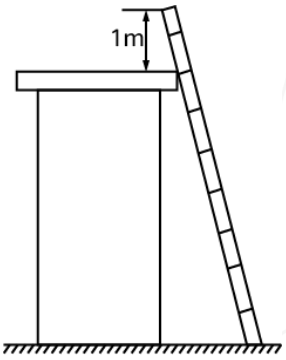
- Personnel involving working at heights are not allowed to throw objects from the height to the ground, or vice versa. Objects should be transported by slings, hanging baskets, aerial work platforms, or cranes.
- Do not perform operations on the upper and lower layers at the same time. If unavoidable, install a dedicated protective shelter between the upper and lower layers or take other protective measures. Do not pile up tools or materials on the upper layer.
- Dismantle the scaffolding from top down after finishing the job. Do not dismantle the upper and lower layers at the same time. When removing a part, ensure that other parts will not collapse.
- Ensure that personnel working at heights strictly comply with the safety regulations. The Company is not responsible for any accident caused by violation of the safety regulations on working at heights.
- Behave cautiously when working at heights. Do not rest at heights.

Using Ladders

- Use wooden or insulated ladders when you need to perform live-line working at heights.
- Platform ladders with protective rails are preferred. Single ladders are not recommended.
- Before using a ladder, check that it is intact and confirm its load bearing capacity. Do not overload it.
- Ensure that the ladder is securely positioned and held firm.
- When climbing up the ladder, keep your body stable and your center of gravity between the side rails, and do not overreach to the sides.
- When a step ladder is used, ensure that the pull ropes are secured.
- If a single ladder is used, the recommended angle for the ladder against the floor is 75 degrees, as shown in the following figure. A square can be used to measure the angle.





- If a single ladder is used, ensure that the wider end of the ladder is at the bottom, and take protective measures to prevent the ladder from sliding.
- If a single ladder is used, do not climb higher than the fourth rung of the ladder from the top.
- If you use a single ladder to climb up to a platform, ensure that the ladder is at least 1 m higher than the platform.

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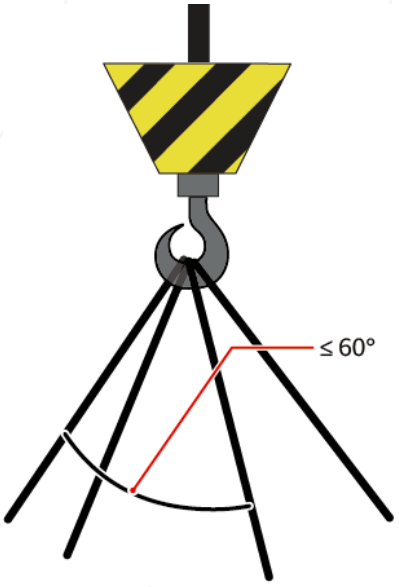
Hoisting

- Only trained and qualified personnel are allowed to perform hoisting operations.
- Install temporary warning signs or fences to isolate the hoisting area.
- Ensure that the foundation where hoisting is performed meets the loadbearing requirements.
- Before hoisting objects, ensure that hoisting tools are firmly secured onto a fixed object or wall that meets the load-bearing requirements.
- During hoisting, do not stand or walk under the crane or the hoisted objects.
- Do not drag steel ropes and hoisting tools or bump the hoisted objects against hard objects during hoisting.
- Ensure that the angle between two hoisting ropes is no more than 60 degrees, as shown in the following figure.



Drilling Holes

- Obtain consent from the customer and contractor before drilling holes.
- Wear protective equipment such as safety goggles and protective gloves when drilling holes.
- To avoid short circuits or other risks, do not drill holes into buried pipes or cables.
- When drilling holes, protect the equipment from shavings. After drilling, clean up any shavings.

1.5 Charging Equipment Safety

General Requirements

- When transporting the charging equipment separately, take proper protection measures to avoid equipment damage caused by vibration, collision, or falling.
- Keep children away from the charger.
- Do not place dangerous goods such as flammable, explosive, or combustible materials, chemicals, or flammable steam near the charger.
- Do not use the equipment when water or electrolyte leakage occurs.
- Do not use the charger when it is faulty. Do not operate the charger when charging exceptions occur. In such case, contact the maintenance personnel promptly.
- Do not disassemble, repair, or modify the charger by yourself. If you need to repair or modify the charger, contact professionals. Improper operations may cause equipment damage, water leakage, or electric leakage.
- Strictly follow the instructions on the label of the equipment. Otherwise, electric shocks and fire may occur.
- If the equipment is equipped with an emergency stop button, O&M personnel shall periodically check the button to ensure that it works properly.
- If a power failure occurs, only professional personnel or authorized O&M personnel are allowed to repair the equipment.
- Do not get close to the charging equipment in case of fire or flooding. Notify professionals who are familiar with the equipment and emergency handling methods in a timely manner.

Charging Safety

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- This equipment can only be used for electric vehicles.
- When the charger is not used, place the charging connector in its holder to avoid contamination and damage.
- Before charging, check that the charging equipment is free from scratch, rust, or crack, and that the charging port, cable, and plug are intact. Do not usethe equipment when it is damaged.
- Before charging, check that the charging connector, connector holder insulator, contact pins, and port are free from foreign matter. If any foreign matter is found, report to the relative personnel immediately and stop the charging session.
- Before charging, ensure that the charging connector is properly inserted.
- Do not modify or disassemble the charging connector without permission. Do not connect external cables or conversion adapters to the equipment. Otherwise, charging exceptions or fire may occur.
- Do not use sharp objects such as screwdrivers or tweezers to contact the pin holes on the charging connector or the pins on the connector holder. Otherwise, the pins or pin holes may be damaged.
- Do not put your fingers into the charging plug.
- Do not immerse the charging connector in water.
- Do not step on or crunch the charging connector or cable.
- Do not touch the charging ports during a charging session.
- Do not remove the charging connector during charging to ensure personal and vehicle safety.
- It is recommended that you stop charging during thunderstorms. Lightningmay damage the charging equipment.
- When an emergency occurs, power off the equipment immediately (press an emergency stop button if any). Do not perform other operations. Contact professionals to perform subsequent operations.
- Do not drive the vehicle during charging. Charge the vehicle when it has stopped. Turn off the engine before charging a hybrid electric vehicle.
- Ensure that the whole charging process is monitored. In case of extreme weather such as typhoon, rainstorm, and hailstone, terminate the charging process immediately.
- After charging is complete, start the vehicle only after the charging connector is unplugged.

2. Product Description

2.1 Product Overview

The TRD Series DC Fast Charger is a next-generation DC charging unit designed for public and commercial use, offering exceptional performance, durability, and efficiency. Available in 80 kW and 120 kW power options, the unit delivers 250 A continuous and 300 A peak current output through two CCS2 connectors, enabling simultaneous or high-power charging for multiple electric vehicles.

Equipped with a 12.1-inch color touchscreen interface, the TRD Series DC Fast Charger provides an intuitive and user-friendly experience for operators and end users. Its compact and modular design allows easy installation, scalability, and power upgrades as charging demand increases.
The unit supports Ethernet, Wi-Fi, and LTE (mobile network) connectivity options, ensuring stable communication and seamless integration with backend systems. Through OCPP (Open Charge Point

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Protocol), the charger enables remote control, monitoring, and management, allowing operators to efficiently manage charging sessions, user access, and maintenance.

With integrated RFID card reader, energy metering (MID) , and dynamic load balancing features, the TRD Series DC Fast Charger optimizes available power and ensures a safe, efficient, and uninterrupted charging experience. Built with robust protection mechanisms, it includes overcurrent and leakage protection systems for maximum operational safety.

The TRD Series DC Fast Charger is designed in compliance with the PAS 1899 accessibility standard, ensuring inclusive use for all drivers. Its IP54 environmental protection and IK10 impact resistance ratings provide superior durability against outdoor conditions.

Delivering up to 96.5% efficiency, the TRD Series DC Fast Charger combines high-speed charging performance with low operating costs and supports custom branding options for site owners and operators.

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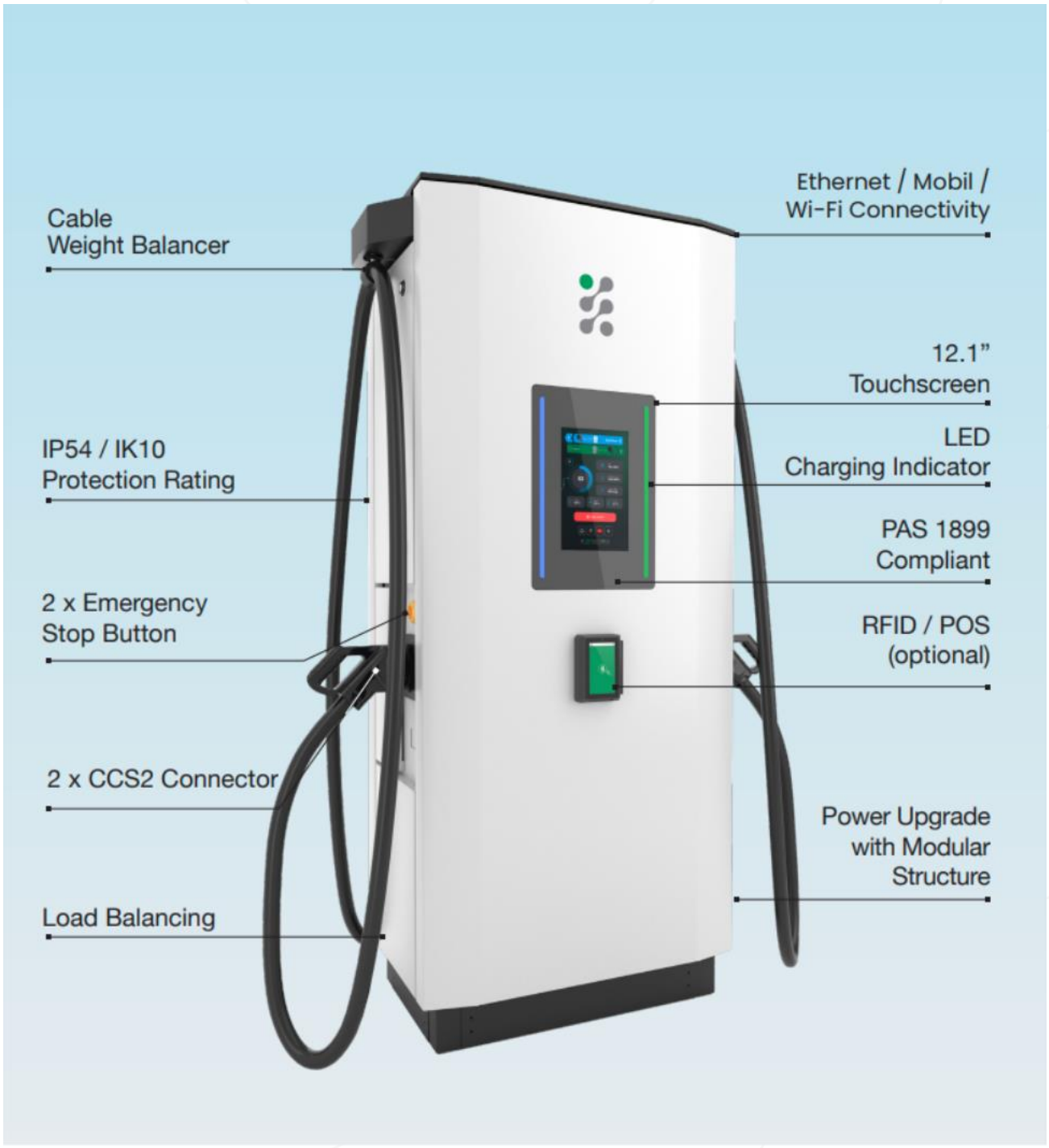
2.2 Product Introduction



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2.3 Specifications

ELECTRICAL SPECIFICATIONS	Charger Type	DC Ultra Fast Charging
	DC Output Power	80kW-120kW (Modular)
	DC Output Current	250A (Continuous) - 300A (max)
	DC Output Voltage (Range)	200Vdc - 1.000Vdc
	Input Voltage Rating	~230/400Vac(3P+N+PE)±10%
	Frequency	(50 ±0,5)Hz
	Input Current Rating	200A(Max.)
	Charging Mode	Mod 4
	Efficiency Factor (Max.)	96,5% Max.
	Power Factor	0.98
	EV Communication	DIN70121 , ISO15118
	Energy Metering	MID Certificate
	Load Management	Dynamic load balancing in double connector models
	Cooling	Open circuit air cooling
	Number of Connectors	2
	Connectivity	Ethernet / Wifi / LTE
	Overcurrent Protection (DC Outputs)	2 x 315A Fuse
	Overcurrent Protection (AC Input)	4-Pole 250A Circuit Breaker
	Overvoltage Protection	SPD (Type 1-2)
	Current Leakage Protection	Type A RCD (Optional)
	Ground Fault Protection	Yes
	Reactive Power Prevention	Yes
USER INTERFACE	Charging Indicator	400mm RGB LED
	Touch Screen	12.1''
	User Authentication	Mobile App, RFID
	Card Reader	ISO14443A Mifare RFID
	Credit Card	POS Optional
	Accessibility	PAS1899
PHYSICAL SPECIFICATIONS	Environmental Protection	IP54 (Outdoor)
	Impact Rating	IK10
	Operating Temperature	(-)35°C~(+)50°C
	Storage Temperature	(-)40°C~(+)75°C
	Relative Humidity	5%~95% (non-condensing)
	Cable Length	5 m
	Weight	275 kg
	Dimensions(mm)	G915 x D505 x Y1825
	EV Connector Type	CCS2 Cable IEC 62196
	Cable Management System	Available
	Mounting Method	Concrete Base
	Power Input	Bottom
	Work Environment	Indoor / Outdoor
	Screen Protection	Anti-Reflective
	Connector Holder	Sensor Equipped
FIRMWARE SPECS	Central Management	OCPP compliant station control and monitoring management system
	Firmware Updates	Automatic firmware updates from Zebra Electronics cloud
	Smart Charging	via OCPP charging profiles
	Language	Multi-Language
	Backend Communication Protocol	OCPP 1.6j and OCPP 2.0.x (Upgradable)

STANDARTS	Compatible Standards	IEC/EN 61851-1, IEC/EN 61851-23, IEC/EN 61851-24, IEC/EN 60529, IEC/EN 62262, IEC/EN 61439-7, IEC/EN 62368-1, IEC/EN 61851-21-2, IEC/EN 62196-1,IEC/EN 62196-3, ISO 14443-A, PAS1899

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2.4 PAS 1899 Compliance Statement

This charging station is fully compliant with PAS 1899:2022, the UK's Publicly Accessible Standard for accessible electric vehicle (EV) chargepoints. Developed in collaboration with disability organizations, industry experts, and regulators, this standard ensures that EV chargepoints are inclusive and usable by as many people as possible, including those with physical, sensory, and cognitive impairments.

Key Design Considerations

- **Physical Accessibility:**
  - The charger provides clear ground space for wheelchair approach, reachable height for controls and connectors, and appropriate cable management to prevent tripping hazards.
- **Installation Positioning:**
  - The unit is installed considering approach angles, unobstructed access routes, and turning radii per accessibility guidelines.
  - In accordance with PAS 1899 section 3.1.3 (Base Requirements), the concrete base must extend at least 150 mm above ground level to meet visibility, clear access, and spatial compliance requirements defined in the standard.

Product-Specific Accessibility Features

- **Accessibility Mode:**
  - A dedicated on-screen accessibility button enables Accessibility Mode. When activated, all interactive areas on the touchscreen interface are restricted to a 5 cm radius, facilitating use by individuals with limited mobility or reach.
- **Component Placement:**
  - The emergency stop button, charging socket, and payment terminal are all positioned according to the dimensional and spatial requirements defined in PAS 1899. This ensures that they are reachable from a seated position and accessible through clear approach paths.

By adhering to PAS 1899, we demonstrate our commitment to building inclusive infrastructure and supporting equal access to electric mobility for all users, regardless of their abilities.

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2.5 Physical Overview and Functional Features

DUAL

CONNECTOR

The TRD Series DC Fast Charging Unit is offered with dual connectors.

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2.6 RGB LED Status Indicators

LED Status Colors	Blinking	Steady On
Green	Preparing	Available
Blue	Finishing	Charging
Red	Emergency	Not Available, Faulty
Turquoise	-	Charging has been paused.

Table 2-1 RGB Led Description

NOTE

- “Blinking” indicates an ongoing process or transition (e.g., preparing, finishing).
- “Steady On” shows the current stable state (e.g., available, charging, paused).
- If the LED turns red, check the system for possible faults or emergency conditions before continuing operation.

3. Procedures

3.1 Charging Connection Procedures

- Verify that the LED indicators on the charging unit are steadily illuminated in green, confirming that the unit is in a ready-to-charge state.
- Remove the charging connector from its holder and insert it into the charging inlet of the electric vehicle.
- Then, select a charging initiation method and start the charging process.

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3.2 User Interface

Figure 3-1 Home Page

3-2 Language Selection

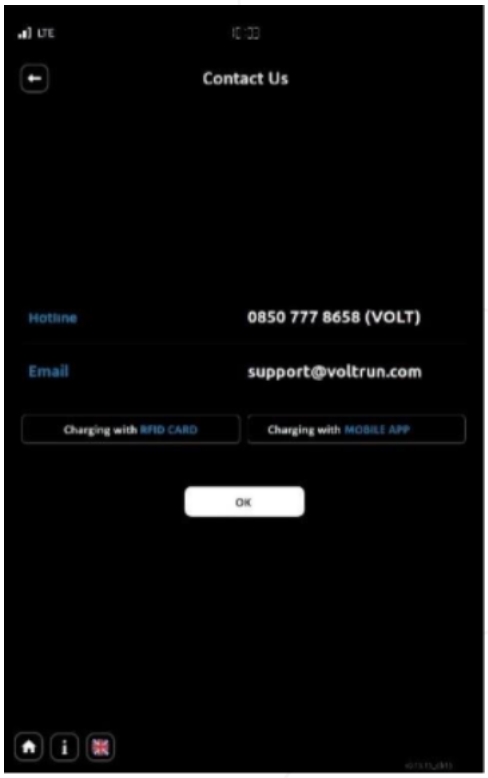

Figure 3-3 Contact Information

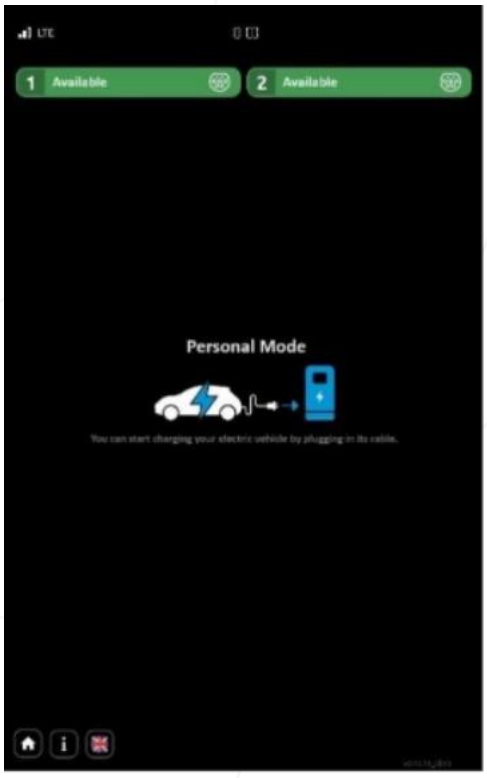

Figure 3-4 Vehicle Connection

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Figure 3-5 Charging Process

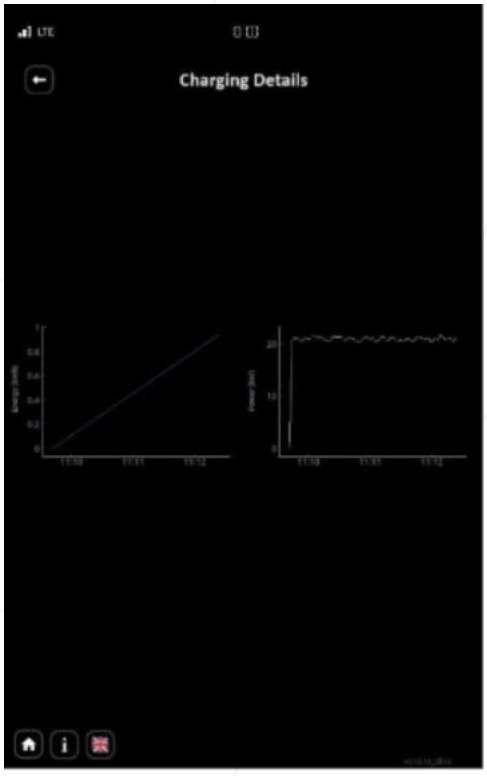

Figure 3-6 Charging Details

Figure 3-7 Charging Summary Interface

Figure 3-8 Emergency

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3.3 Charging Start Procedures

3.3.1 RFID Card

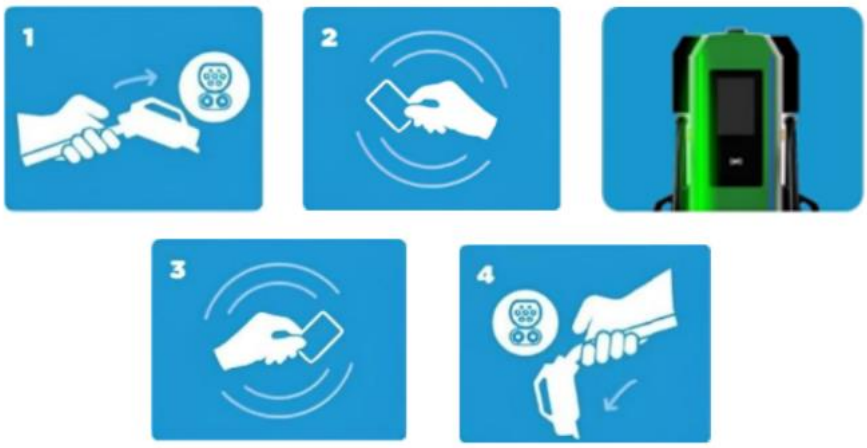

Figure 3-9 Charging with RFID card

Step 1: Present your RFID card to the reader.

Step 2: Remove the charging connector from its holder and plug it into the electric vehicle's charging socket.

Step 3: After presenting the card, observe that the LED indicator is flashing green and the screen shows communication with the vehicle. Confirm that the LED turns solid blue, indicating the charging session has started.

Step 4: Once the charging session is complete, scan your RFID card again to end the session. Alternatively, press the "Stop Charging" button on the screen.

Step 5: Disconnect the charging connector from the vehicle socket and place it back into the connector holder.

3.3.2 QR Code Station ID

Figure 3-10 Charging with QR Code or Station ID

Step 1: To start the charging session, tap the "Start/Stop Charging" button in the mobile application. Then, either scan the QR code or enter the unit ID displayed on the screen to select the desired charging socket.

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Step 2: Remove the charging connector from its holder and plug it into the electric vehicle's charging socket.
Step 3: After presenting the card, observe that the LED indicator is flashing green and the screen shows communication with the vehicle. Confirm that the LED turns solid blue, indicating the charging session has started.
Step 4: Stop the charging session using your mobile app.
Step 5: Disconnect the charging connector from the vehicle socket and place it back into the connector holder.

4. Troubleshooting

If you encounter any issues with the charging unit, please refer to the solutions below. For persistent problems, contact our technical support team or the manufacturer by providing detailed information about the fault.

Common Issues and Solutions

- **"Station is currently offline" Error:**
  Solution: This indicates a loss of internet connection. Verify the network device, unit ID, server address, and port number. If the issue persists, contact technical support or the installation team.
- **No Power on Display or LED Indicators:**
  Solution: Check the power supply to the unit. Ensure the main switch is functioning properly. Do not attempt any repair. Contact Technical Support.
- **Red LED Indicators:**
  Solution: The unit has encountered a fault and cannot perform charging. Contact technical support.

NOTE For technical assistance, please provide the unit ID, the location of the charging station, and a detailed description of the issue.

5. Product Maintenance

Annual Maintenance Obligation

In order to maintain the reliability, operational safety, and compliance of the EV charging system, it is **mandatory** that each unit undergo a comprehensive maintenance service **at least once per year**. This maintenance must be performed **exclusively by Zebra Electronics or its officially authorized technical service team**.

The end user or facility operator is obligated to contact Zebra Electronics to schedule annual maintenance. No third-party or unauthorized personnel are permitted to inspect, open, service, or modify the internal components of the TRD Series DC Fast Chargers. Failure to comply with this obligation will void the product warranty and may compromise the safe operation of the system.

Annual maintenance includes functional testing, internal cleaning, checking of mechanical and electrical protection components (such as RCDs, fuse), inspection of ventilation and cooling elements, connector performance, firmware updates, and insulation integrity assessments. A detailed maintenance report is issued upon completion and must be stored by the operator for audit and service history tracking.

All rights to service, technical intervention, and maintenance of the product are reserved by Zebra Electronics.

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6. Charging DC Usage Description

Declaration

The Company will not be liable for any consequences of the following circumstances:

- After the charging is complete, the charging connector is not hung at the specified position on the charger as required. The charging connector is placed on the ground or hung elsewhere. The charging connector is damaged or faulty caused by dust accumulation or water intrusion due to erroneous operations.
- The enclosure of the product is broken or the cables are damaged due to abnormal use.
- The product is used in typhoons, rainstorms, hailstones, and other extreme weather conditions beyond the standard requirements.

Check Before Charging

- Before charging, check that the charging equipment is free from scratch, rust, or crack, and that the charging port, cable, and plug are intact. Do not use the equipment when it is damaged.
- Before charging, check that the charging connector, connector holder insulator, pins, and pin holes are free from foreign objects. If any foreign object is found, report to the relative personnel immediately and stop the charging session.
- Before charging, ensure that the charging connector is properly inserted into the EV socket.

Charging Requirements

- Do not use sharp objects such as screwdrivers or tweezers to contact the pin holes on the charging connector or the pins on the connector holder. Otherwise, the pins or pin holes may be damaged.
- Do not put your fingers into the charging plug.
- Do not step on or crunch the charging connector or charging cable.
- Do not drop the charging connector from a high position or put heavy objects on the charging connector.
- Do not immerse the charging connector in water.
- Do not use external cables or conversion adapters.
- Do not modify or disassemble the charging connector without permission. Otherwise, charging faults and even a fire may occur.
- Do not touch the charging ports during a charging session.
- Do not pull the charging cable during charging.
- Do not obliquely insert the charging connector into the holder.
- Do not shake the charging connector leftward or rightward when inserting the connector into the holder. Insert it horizontally.
- Do not use hard objects to knock the charger. Otherwise, the display and other components (such as the POS machine, cabinet, and lights) may be damaged.
- In low-temperature environments (ambient temperature < -30°C), do not bend or shake the charging cable repeatedly. Otherwise, the charging cable may be damaged.
- It is recommended that you stop charging during thunderstorms. Lightning may damage the charging equipment.
- When water or rain drops on the display (capacitive touchscreen) of the charger, the display may be activated automatically, which is a normal phenomenon.

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- In low-temperature weather, if the display of the charger is turned off for a long time and then turned on again, smearing may occur for a quick moment. This is a natural feature of the display (capacitive screen) and does not affect the normal use of the display.
- If the charging cable is coiled and bent or placed randomly during charging, do not forcibly drag the charging connector. Arrange the charging cable neatly. Do not twist or pull the charging cable during use.
- When using the charging connector, avoid excessive twisting of the charging cable. Ensure that the bending radius of the cable is greater than or equal to eight times the outer diameter of the cable.
- To ensure normal card swiping, the distance between the card and the RFID reader must be less than or equal to 1,5 cm, and the card must completely cover the RFID silkscreen card swiping area.
- Ensure that the whole charging process is monitored. In case of extreme weather such as typhoon, rainstorm, and hailstone, terminate the charging process immediately.
- During charging, if the charging port continuously emits an obvious irritating odor, terminate the charging process immediately and report the situation to the personnel at once.
- During charging, do not pull the charging connector or charging cable.
- Do not touch the charging connector during charging to avoid charging interruption due to misoperations.
- During charging, wait until the charging is complete or manually terminate the charging before removing the charging connector.
- When removing the charging connector, hold the handle of the charging connector with one hand, hold the lower part of the charging connector with the other hand, and pull out the charging connector horizontally.
- After the charging is complete, insert the charging connector into the charging connector holder and place the extended arm of the charging cable management module in the original position to prevent crunching the charging connector and charging cable.
- After the charging is complete, restore the charging cable to its original status and then insert the charging connector into the charging connector holder.
- After the charging is complete, swipe the card and check out before removing the charging connector. If the charging connector cannot be unplugged, use the emergency unlock device on the vehicle or contact the vehicle supplier. Do not forcibly unplug the charging connector to avoid unnecessary hardware damage.
- After charging is complete, start the EV only after the charging connector is unplugged.

Maintenance

- Do not clean the charging equipment during charging or when the charging cable is connected to the EV socket. Do not use steam cleaners or corrosive solvents to clean the charging equipment.
- Do not clean the charging connector by immersing it in any liquid.
- It is recommended that you use a high-pressure air gun or brush to clean the charging connector on a quarterly basis. You can also use lint-free cloth or cotton swabs to clean the charging connector.
- It is recommended that you check whether the charging connector is dirty each time you visit the charging station. If the charging connector is discarded randomly or falls on the ground, use the preceding methods to clean it in a timely manner.

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- If the charging connector or charging cable is damaged, replace the charging connector immediately.
- If the charging cable is twisted or placed in disorder, arrange the charging cable neatly and place it near the charger.

7. Acronyms and Abbreviations

DC	Direct Current
ESD	Electrostatic Discharge
EV	Electric Vehicle
ID	Identification Number
IP	Ingress Protection
O&M	Operation and Maintenance
RCD	Residual Current Device
RFID	Radio Frequency Identification
RGB	Red, Green, Blue
LED	Light Emitting Doide
QR	Quick Response (Code)

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