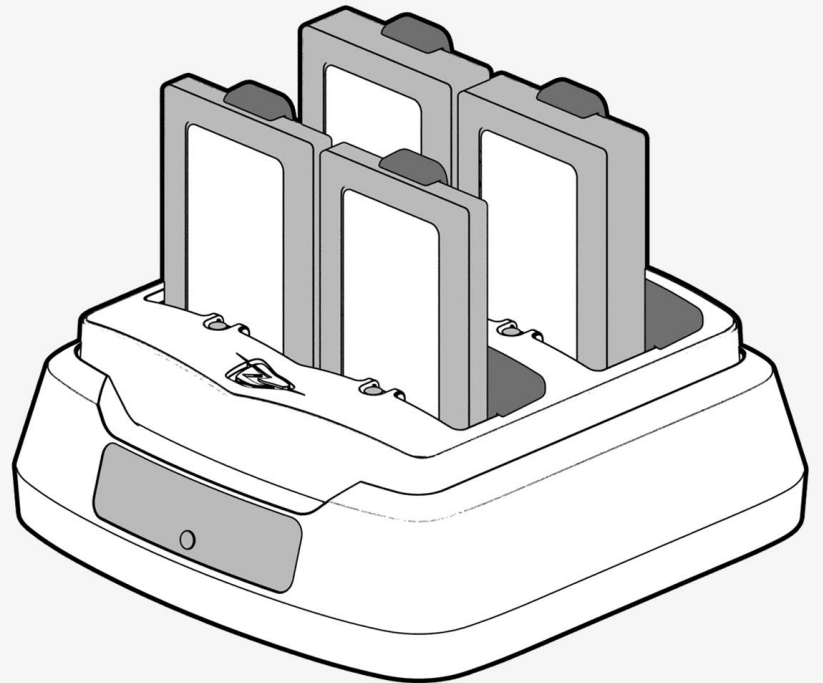




TECHNOLOGY
SOLUTIONS UK LTD
part of **HID**

USER GUIDE: 2136 4-SLOT BATTERY CHARGER



www.tsl.com

Design • Development • Manufacture

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INTRODUCTION

The Technology Solutions 2136 4-Slot Battery Charger is intended for charging Varta Microbattery's EasyPack™ 'L' and 'XL' rechargeable Li-Polymer battery packs. The charger can charge up to four batteries simultaneously. The four batteries can all be the same type, or can be two of each type. The charger senses which type of battery has been inserted and adjusts the charge rate accordingly. There is an individual charge status indicator for each battery slot. The charger also monitors the temperature of each battery pack and adjusts the charge rate to provide optimal charge rate whilst maintaining safe battery temperature.

The 2136 Battery Charger is powered by a 5.2V, 4.0A world traveller power supply.

PARTS OF THE 2136 BATTERY CHARGER

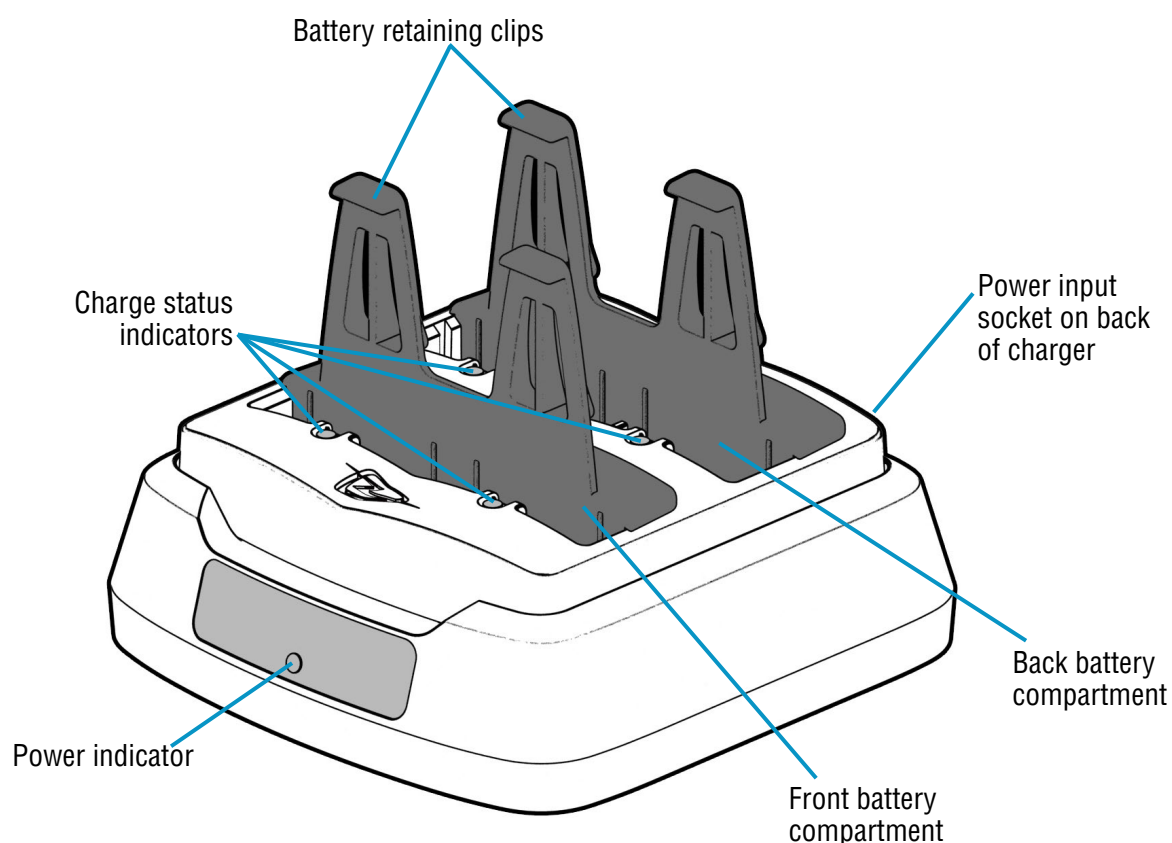


FIGURE 1: Parts of the 2136 Battery Charger

INSERTING AND REMOVING THE BATTERY RETAINING CLIPS

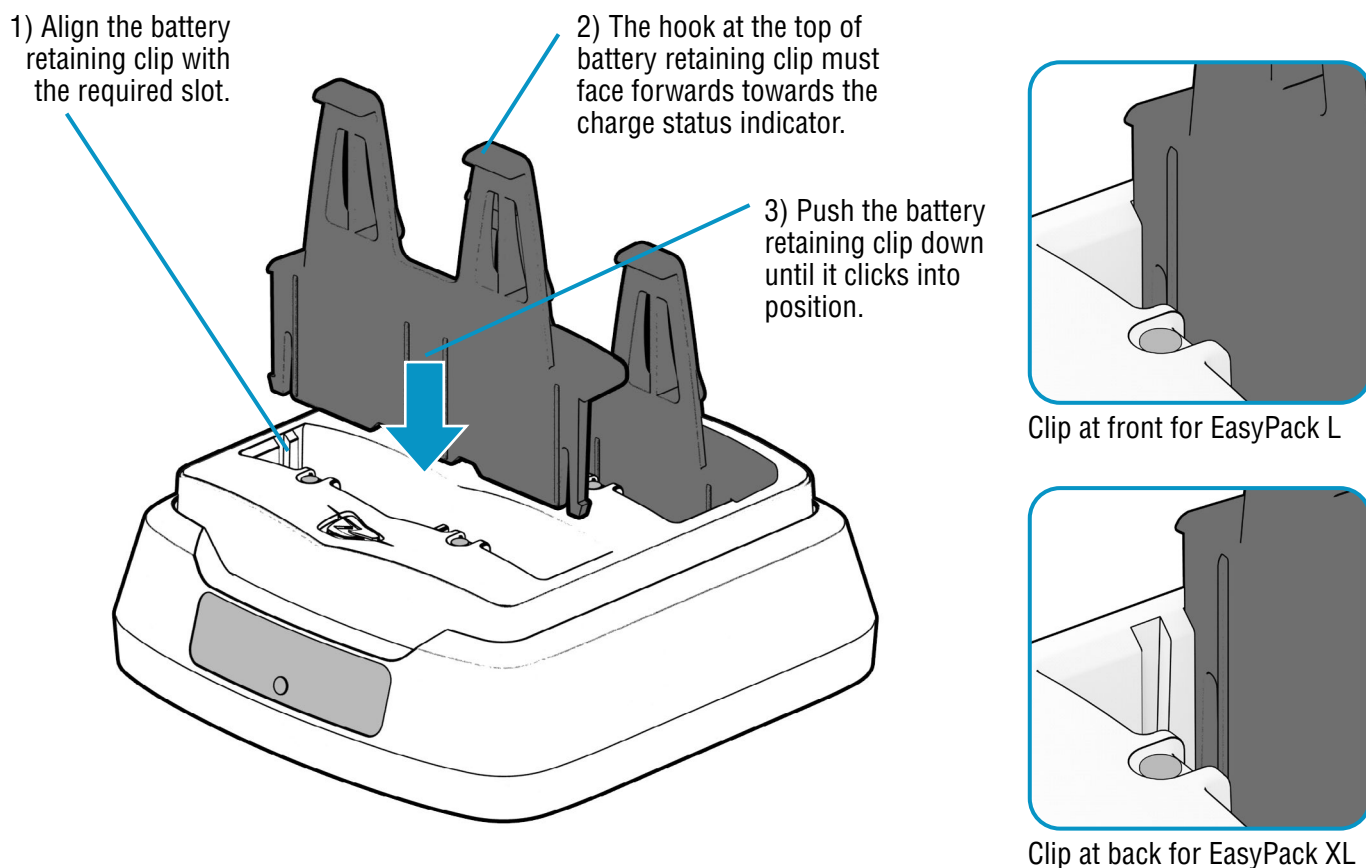


FIGURE 2: Inserting the battery retaining clips

The battery retaining clips are required to hold the battery in position during charge. The clips do not determine the charge rate, but if they are not correctly positioned then the battery will not make the necessary electrical contact and will not be charged. It is possible to have the front and back battery compartments set for the same or different battery packs. It does not matter which compartment is set for which battery type.

The clips can be inserted in one of two slots. The front slot (nearest the charge status indicator) is for the smaller EasyPack™ L battery. The rear slot (furthest from the charge status indicator) is for the larger EasyPack™ XL battery. Insert the clip with the hook at the top nearest the charge status indicator.

Push the clip vertically downwards into the appropriate slot. When it is fully inserted it will click and lock into place.

If the clip needs to be moved to reconfigure the charger, pull it vertically upwards so that it releases and then lift it out of the charger.

INSERTING AND REMOVING A BATTERY

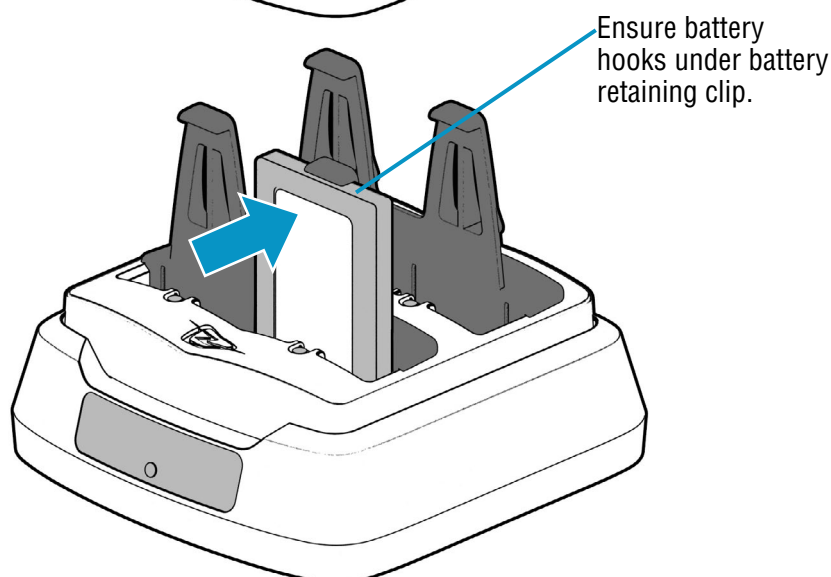
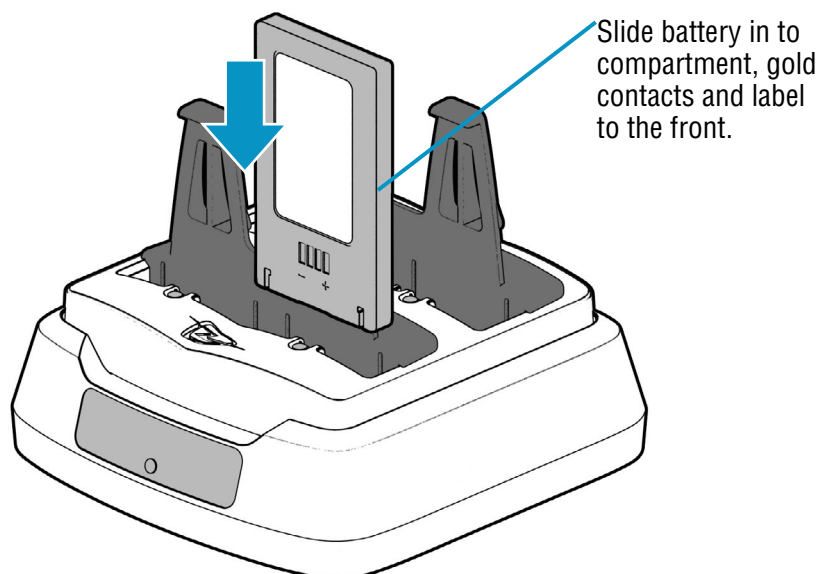
Insertion

Insert the battery with the gold contacts next to the label facing towards the charge status indicator for that battery compartment. Slide the battery down into the compartment and push it backwards to make sure it hooks under the battery retaining clip.

CAUTION!

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.



Removal

To remove the battery, pull the top forwards towards the charge status indicator so that it is clear of the hook on the battery retaining clip. Lift the battery out of the charge compartment.

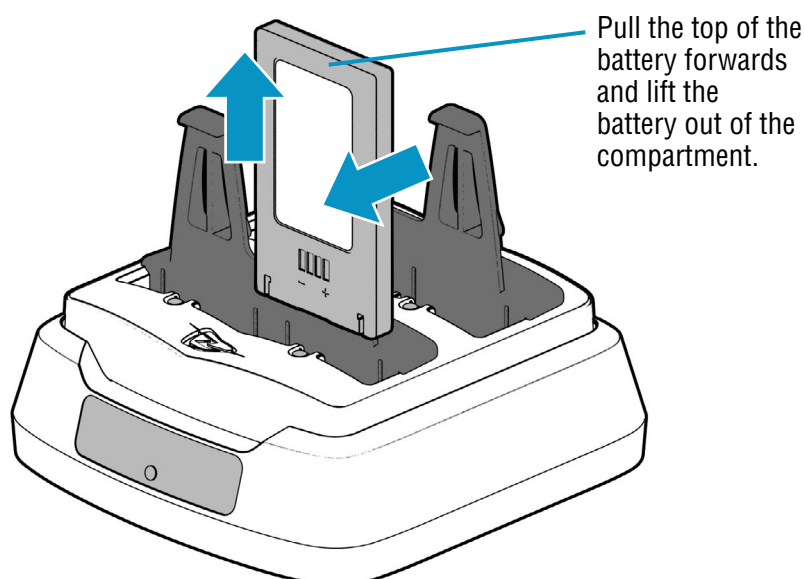


FIGURE 3: Inserting and removing a battery

CONNECTING THE POWER SUPPLY

Use only the provided 5.2V 4.0A power supply.

Plug the power supply into the socket on the back of the battery charger. Use an appropriate mains lead to connect the power supply to the mains. It is recommended that when the charger is not in use that the power supply is turned off and disconnected from the mains.

When the charger is powered the blue indicator on the front of the charger lights.

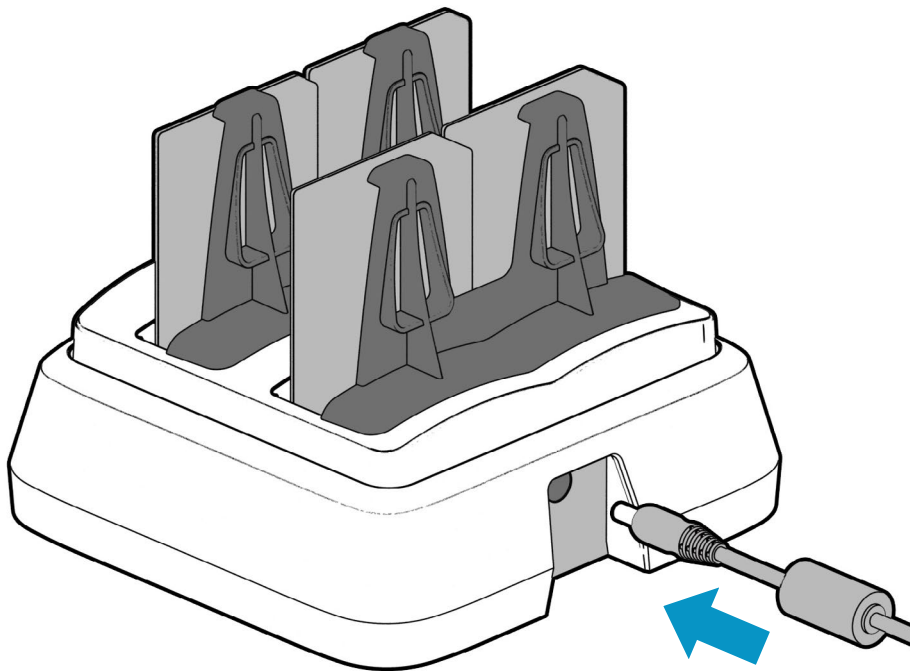


FIGURE 4: Battery Charger power input connector

CHARGING BATTERIES




Ensure that the battery retaining clips are positioned correctly for the required battery type (Section 3) and that the power supply is connected (Section 5).

Insert the battery or batteries (Section 4). Batteries can be inserted and removed at any time. It is not necessary to turn the charger power supply off to insert or remove a battery. Each charge compartment is independent of the others. A fully charged battery can be removed whilst other batteries are still charging. A battery can be inserted whilst other batteries are charging.

When a battery is inserted the charger senses whether it is an EasyPack™ L or EasyPack™ XL battery based on the Identification Resistor built into the battery and selects the appropriate charge rate. The charger performs a test of the battery to make sure it is safe to charge. So long as no problems are detected the charger starts to charge the battery. Charge in progress is indicated by a slow flash of the charge status indicator.

When the battery is fully charged the charge status indicator changes to light continuously.

If a fault is detected with a battery, or if the battery temperature is too high or too low for safe charging then the charge status indicator shows a fast flash.

LED colour and pattern	Status
Off	No battery in charge compartment.
Slow flash (one per one and half seconds) 	The battery is being charged.
Fast flash (five per second) 	There is a fault with the battery or it is too cold or too hot.
Continuous 	The battery is fully charged.

If the charger is located somewhere hot then it is possible that the additional heating of the battery whilst it is charged will cause the charger to indicate a fault on a battery. This will automatically clear once the battery cools down again. The battery charger adjusts the charge rate of each battery as necessary to attempt to avoid this from happening. As a result, if the charger is used in a warm location the batteries will take longer to charge. Keeping the charger in a cool location will ensure the fastest possible charge times.

If all four compartments of the charger are used then the charger itself will warm up. This causes it to slow the charge rate down. This means that charging four batteries will take longer than charging one, two or three batteries. Approximate charge times for fully discharged batteries, assuming an ambient temperature of 20°C are shown below:

Batteries being charged	Approximate charging time
Single EasyPack L	75 minutes
Single EasyPack XL	110 minutes
Two EasyPack L	80 minutes
Two EasyPack XL	158 minutes
Four EasyPack L	90 minutes
Four EasyPack XL	180 minutes

TROUBLESHOOTING AND MAINTENANCE

MAINTENANCE

For trouble-free service observe the following precautions when using the 2136 Battery Charger:

- Do not store or use the 2136 Battery Charger in any location that is dusty, damp, or wet.
- Do not attempt to use any other power supply than the recommended ones.
- Do not attempt to charge other types of battery.

TROUBLESHOOTING

Symptoms	Possible Cause	Action
The charger indicates a fault (fast flash)	The battery is too hot.	Leave the battery to cool down; the charger will automatically start to charge once the battery temperature falls.
		Move the charger to a cooler location.
	The battery is too cold.	Leave the battery to warm up; the charger will automatically start to charge once the battery temperature rises.
		Move the charger to a warmer location.
	The battery has a fault	Do not use the battery.
The charger indicates full charge (continuous indicator) after a short period of time.	The battery is already charged.	Use the battery.
	The battery has a fault.	Do not use the battery.
The charge status indicator does not light when a battery is inserted.	The charger is not powered.	Verify that the power supply is connected and powered. The blue power indicator on the front of the charger must be lit.
	The battery retaining clip is not in the correct location for the battery type.	Move the battery retaining clip to the correct location.
	The battery is not properly located.	Ensure the battery has been fully pushed into the compartment and is held by the hook on the battery retaining clip.
	The battery has a fault.	Do not use the battery.

REGULATORY AND SAFETY INFORMATION

CAUTION

Only use TSL® approved accessories, batteries, battery chargers, cradles and power supplies.

Do not attempt to charge wet or damp batteries. All components should be dry before connecting to an external power source.

Only use the product within the specified operating temperatures and environmental conditions.

POWER SUPPLY

Only use a TSL® approved power supply with an electrical output of 5.2V, 4.0A with the 2136 4-Slot Battery Charger. Using an alternative power supply will invalidate any approvals given to this device, void the warranty for the product, and may be dangerous.

BATTERY WARNING



CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

- If the battery is replaced by an incorrect type, this could result in an explosion.
- Dispose of batteries according to instructions.
- Use only TSL®-approved batteries.
- Use only TSL®-approved chargers.
- There are limits on how long a battery can operate or be in storage before replacement is required. The life cycle of a battery can be affected by factors such as heat, cold, harsh environments and impacts or drops.

EXPOSED PINS WARNING



Do not touch the exposed pins of the 4-Slot Battery Charger under any circumstances.

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

For EU Customers: All products at the end of their life must be returned to TSL® for recycling. For information on how to return product please contact TSL®.

WARRANTY

(A) Warranty

TSL®'s hardware Products are warranted against defects in workmanship and materials for a period of twelve (12) months from the date of shipment, unless otherwise provided by TSL® in writing, provided the Product remains unmodified and is operated under normal and proper conditions. Warranty provisions and durations on software, integrated installed systems, Product modified or designed to meet specific customer specifications ("Custom Products"), remanufactured products, and reconditioned or upgraded products, shall be as provided in the applicable Product specification in effect at the time of purchase or in the accompanying software license.

(B) Spare Parts

Spare parts (i.e. parts, components, or subassemblies sold by TSL® for use in the service and maintenance of Products) are warranted against defects in workmanship and materials for a period of thirty (30) days from the date of shipment. Spare parts may be new or originate from returned units under the conditions set forth in subsection D below.

(C) Repair of TSL branded hardware

For repairs on TSL® branded hardware Products under this Agreement, including repairs covered by warranty, the repair services provided are warranted against defects in workmanship and materials on the repaired component of the Product for a period of thirty (30) days from the shipment date of the repaired Product, or until the end of the original warranty period, whichever is longer. Any such defects shall be notified to TSL® in writing within 7 days of the same becoming apparent.

(D) Product Service

Products may be serviced or manufactured with parts, components, or subassemblies that originate from returned products and that have been tested as meeting applicable specifications for equivalent new material and Products. The sole obligation of TSL® for defective hardware Products is limited to repair or replacement (at TSL®'s option) on a "return to base (RTB)" basis with prior TSL® authorisation.

Customer is responsible for prompt shipment to TSL® and assumes all costs and risks associated with this transportation; return shipment to the Customer will be at TSL®'s expense. Customer shall be responsible for return shipment charges for product returned where TSL® determines there is no defect ("No Defect Found"), or for product returned that TSL® determines is not eligible for warranty repair. No charge will be made to Buyer for replacement parts for warranty repairs. TSL® is not responsible for any damage to or loss of any software programs, data or removable data storage media, or the restoration or reinstallation of any software programs or data other than the software, if any, installed by TSL® during manufacture of the Product.

(E) Original Warranty Period

Except for the warranty applying solely to the repaired component arising from a repair service as provided in Section C above, the aforementioned provisions do not extend the original warranty period of any Product that had either been repaired or replaced by TSL®.

(F) Warranty Provisions

The above warranty provisions shall not apply to any Product:

- (i) which has been repaired, tampered with, altered or modified, except by TSL®'s authorized service personnel;
- (ii) in which the defects or damage to the Product result from normal wear and tear, misuse, negligence, improper storage, water or other liquids, battery leakage, use of parts or accessories not approved or supplied by TSL®, or failure to perform operator handling and scheduled maintenance instructions supplied by TSL®;
- (iii) which has been subjected to unusual physical or electrical stress, abuse, or accident, or forces or exposure beyond normal use within the specified operational and environmental parameters set forth in the applicable Product specification; nor shall the above warranty provisions apply to any expendable or consumable items, such as batteries, supplied with the Product.

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ABOUT

ABOUT TSL®



Technology Solutions UK Ltd (TSL®), part of HID Global, is a leading manufacturer of high performance mobile RFID readers used to identify and track products, assets, data or personnel.

For over two decades, TSL® has delivered innovative data capture solutions to Fortune 500 companies around the world using a global network of distributors and system integrators. Specialist in-house teams design all aspects of the finished products and software ecosystems, including electronics, firmware, application development tools, RF design and injection mould tooling.

TSL® is an ISO 9001:2015 certified company.



ISO 9001: 2015

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