

ISO 9001
ISO14001



Manufacturer

TLV CO., LTD.

Kakogawa, Japan

is approved by LRQA Ltd. to ISO 9001:2001



Instruction Manual

iT5-ZB Battery Replacement Procedure
for iTrapSensor Monitoring System

172-65744M-02

Publication date 18 October 2024

Copyright © 2024 TLV CO., LTD.

Table of Contents

Safety Considerations 3

Storing the battery pack 5

Replacing the sensor battery 6

Replacing the repeater battery 9

After replacing the battery of the ZB system 13

Safety Considerations

- Read this section carefully before use and be sure to follow the instructions.
- Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.
- The precautions listed in this manual are designed to ensure safety and prevent equipment damage and personal injury. For situations that may occur as a result of erroneous handling, three different types of cautionary items are used to indicate the degree of urgency and the scale of potential damage and danger: DANGER, WARNING and CAUTION.
- The three types of cautionary items above are very important for safety: be sure to observe all of them as they relate to installation, use, maintenance and repair. Furthermore, TLV accepts no responsibility for any accidents or damage occurring as a result of failure to observe these precautions.

Cautionary items and definitions



Danger

Indicates an urgent situation which poses a threat of death or serious injury



Warning

Indicates that there is a potential threat of death or serious injury



Caution

Indicates that there is a possibility of injury or equipment/product damage

Safety considerations for the product



Danger

DO NOT apply heat to the battery pack or throw it into a fire. Failure to observe this precaution could result in leakage of the battery fluid, excessive heat generation, rupture or ignition.



Danger

DO NOT disassemble the battery pack. Failure to observe this precaution could result in leakage of the battery fluid, excessive heat generation, rupture or ignition.



Danger

DO NOT cause the battery pack to become wet by immersing in water, salt water or liquid chemicals. Failure to observe this precaution could result in leakage of the battery fluid, excessive heat generation, rupture or ignition.



Danger

DO NOT wipe/rub the surfaces of this product with a dry cloth etc. There is the danger of electrostatically charging the unit, which may result in ignition or explosions, especially in hazardous locations.



Danger

Aluminum is used in this product. Do not expose the product to impact or friction. Exposure to impact or friction may result in ignition or accidental explosions.



Danger

When installing or working at high elevations, take measures to ensure against dropping the product or parts. Failure to take such measures could result in personal injury if persons passing below are struck by a falling object, or other accidents.

**Danger**

DO NOT leave unit where it will be exposed to direct sunlight or in areas that will become very hot, such as interiors of cars, near heating equipment, etc. Failure to observe this precaution could result in leakage of the battery fluid, excessive heat generation, rupture or ignition.

**Danger**

If fluid leaks from the battery pack resulting in eye contact, flush eyes with clean water immediately. There is a danger of loss of vision. Do not rub the eyes, and seek medical care after flushing thoroughly with clean water.

**Warning**

Cease use of the battery pack immediately if the unit exhibits abnormal operation. If irregularities such as fluid leakage, an unusual smell, unusual heat generation, discoloration or deformation are noticed, cease use of the unit immediately. If use is continued under such conditions, excessive heat generation, ignition or rupture may result.

**Warning**

If battery fluid leaks and comes into contact with the body, rinse immediately. There is danger of resultant damage to the skin. Immediately rinse any battery fluid off with clean water.

**Caution**

When not intending to use for extended periods of time, remove the battery pack from the unit and store in a dry, cool, dark location. Failure to observe this precaution could result in fluid leakage, rust, deterioration in performance or a reduction in service life.

**Caution**

Do not dispose of the battery pack with normal garbage. If at any time the battery pack becomes unusable, observe your company regulations for proper disposal in accordance with local laws. If proper disposal is impossible, insulate the contact terminals by covering them with tape and return them to a TLV office.

Storing the battery pack

- The battery pack is vacuum-packed. Do not open the package until shortly before replacing the batteries.
- Store the battery pack in a room away from direct sunlight.
Store the battery pack in an environment with an ambient temperature range of 5 °C to 30 °C and relative humidity of less than 50%. Make sure to use the batteries for replacement within 6 months of shipment.
- For battery packs that are shipped with a HUMITECTOR (humidity indicator card), do not use the battery pack if the 30% moisture sensing portion of the HUMITECTOR has turned to lavender (or pink) or if more than 6 months has passed since shipment.
- Store the battery pack with the side marked "This side up" facing up. Failure to observe these instructions may lead to deterioration of the battery.

Replacing the sensor battery

- Do not replace batteries in the explosion-proof areas. Make sure to replace the battery in a safe area.
- Make sure that there is no condensation inside the battery compartment after battery replacement. Replacing the battery in wet weather is strictly prohibited. It is recommended to replace the battery in an air-conditioned room with low humidity.
- To ensure waterproof performance, replace the packing with a new one when the cover is opened.
- Use silicone compound grease. (Grease used when shipped from the factory: Toray Dow Corning Molykote 111 compound)



Note

Different grease is used for the repeater.

- Make sure to use a new battery pack when replacing the battery pack. (If replaced with a partially used battery, erroneous results may be returned when calculating the remaining battery life.)

Battery replacement kit

The following items are included in the ZB-SU battery replacement kit.

Description	Qty.	Remarks
ZB-SU battery pack	1	
Packing	1	

Replacing the battery pack

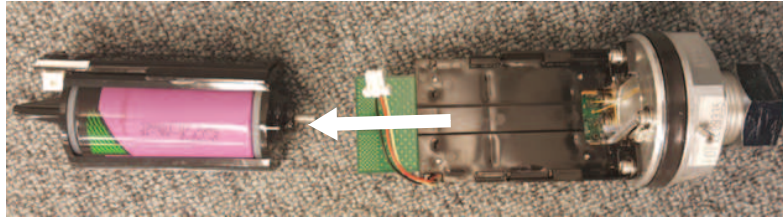
1. Loosen the M4 screw on the sensor cover using a hex key (distance across flats: 3 mm). (If the spring washer is not removed, the cap screw will not loosen.) Twist the cap clockwise as viewed from above and pull it upwards.



2. Disconnect the connector connected to the battery pack by pushing the connector tab. **Do not pull the wire when disconnecting the connector.**

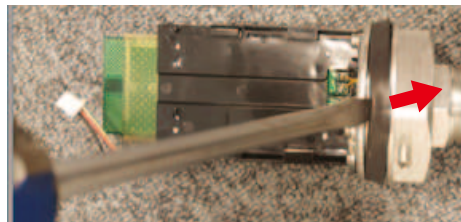


3. Remove the battery pack from the body.



4. Remove the packing.

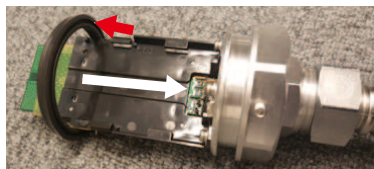
How to remove: To avoid scratching the sealing surface of the main unit, wrap the tip of the flathead screwdriver with insulation tape and insert it into the gap on the upper side of the packing, and stretch the packing. (Make sure to wrap the tip of the flathead screwdriver.)



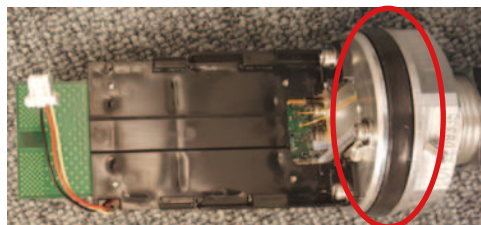
Insert the flathead screwdriver and stretch the packing. (The tip of the screwdriver must be wrapped with insulation tape.) Cut the extended portion of the packing with pliers.



5. Wipe the remaining grease, sand and dust adhered to the groove with a cloth. (Wipe the bottom of the groove.) Insert a new packing. (Insert the packing from the grooved side.)



6. Apply grease lightly on the packing surface.



7. Remove the used battery and insert the new one by following the above procedures in reverse. Connect the battery harness. Place the cap and tighten the screws with a hex key. Communication will be restored automatically shortly after the battery has been replaced.

Continue to "Replacing the repeater battery".

Specifications

The following batteries are included in the battery pack. Dispose the battery pack in accordance with local regulations.

Number of batteries per pack	4
Model	TL-5930
Manufacturer	TADIRAN
Battery name	Lithium thionyl chloride battery (Li/SOCl ₂)
Size	D
Type	ER
Country of manufacture	Israel
Nominal capacity	19.0 Ah
IEC	ER33600
Shape	Cylinder
Temperature range	-55 to 85 °C

Replacing the repeater battery

- Make sure that there is no condensation inside the battery compartment after battery replacement. Replacing the battery in wet weather is strictly prohibited. It is recommended to replace the battery in an air-conditioned room with low humidity.
- To ensure waterproof performance, replace the packing with a new one when the cover is opened.
- Use fluorinated grease. (Prepare separately.) (Grease used when shipped from the factory: SUMICO LUBRICANT CO., LTD. Sumitec F931)



Note

Different grease is used for the repeater.

- Make sure to use a new battery pack when replacing the battery pack. (If replaced with a partially used battery, erroneous results may be returned when calculating the remaining battery life.)
- Battery packs can be replaced in explosion-proof areas, however battery cells cannot be replaced regardless of the area.

Battery replacement kit

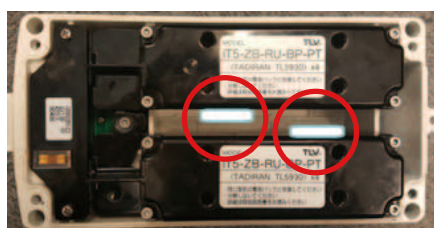
The following items are included in the ZB-RU battery replacement kit.

Description	Qty.	Remarks
ZB-RU battery pack	2	With a desiccant packet ⁰¹
Packing	1	

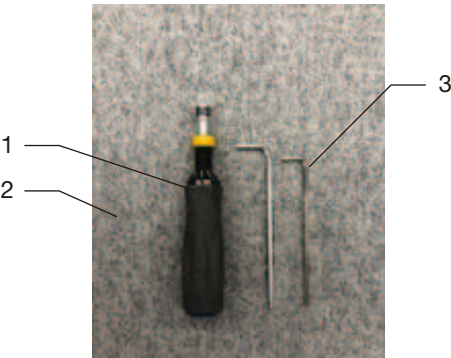
⁰¹Make sure to leave a packet of desiccant (silica gel) attached to the battery pack when replacing the battery pack. The desiccant is used to dehumidify inside the sensor.

Precautions when replacing the battery pack

A packet of desiccant (silica gel) is attached to each side of the battery pack. When attaching a packet of desiccant on the repeater body, make sure to attach the packet inside as shown below.



Tools required for replacing the battery pack



No.	Description
1	Torque driver (hex bit)
2	Hex key (distance across flats: 4 mm)
3	Hex key (distance across flats: 3 mm)

Replacing the battery pack

1. Loosen four M5 screws on the repeater body with a hex key (distance across flats: 4 mm) and remove the cover.



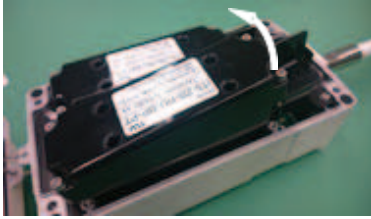
2. The repeater is equipped with two battery packs, however they should be replaced one by one. First remove four M4 screws with a hex key (distance across flats: 3 mm) from each corner of the battery pack to be replaced.



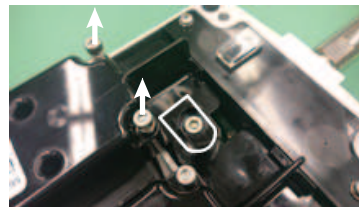
3. Twist the knob by hand, so that the flat side of the knob faces the battery pack to be replaced.



4. Pull the battery pack out from the body.



5. Insert a new battery pack and mount it by following the removal procedure in reverse.
 - a. Insert the battery pack and press until a click is felt.
 - b. Twist the knob back to the original position.
 - c. Secure the battery pack with four M4 screws with a hex key (distance across flats: 3 mm).
6. Remove four M4 screws from the other battery pack. Twist the knob by hand so the flat side of the knob faces the battery pack to be replaced. Follow the removal procedure described earlier.



7. Make sure that both of the battery packs are securely mounted, then place the cover back on the repeater and secure it with four screws.
8. Replace the packing on the cover.
 - a. Remove the old packing.
 - b. Clean the surface (cover and body) where the packing is attached with a waste cloth.
 - c. Apply a thin layer of grease to the packing groove on the cover. If the large amount of grease is applied, the packing will not fit easily into the groove and the waterproof function may deteriorate. Use the cotton swab included in the kit to thoroughly apply grease to the bottom of the groove.
 - d. Attach a new packing.



Note

Make sure that the packing is not twisted.

- e. Apply a thin layer of grease to a new packing.



9. After confirming that both battery packs are securely in place, fix the cover to the repeater body with four M5 screws with a hex key (distance across flats: 4 mm). (Tightening torque: 1.5 N·m (1.1 lbf·ft))

Continue to "After replacing the battery of the ZB system".

Specifications

The following batteries are included in the battery pack. Dispose the battery pack in accordance with local regulations.

Number of batteries per pack	4
Model	TL-5930
Manufacturer	TADIRAN
Battery name	Lithium thionyl chloride battery (Li/SOCl ₂)
Size	D
Type	ER
Country of manufacture	Israel
Nominal capacity	19.0 Ah
IEC	ER33600
Shape	Cylinder
Temperature range	-55 to 85 °C

After replacing the battery of the ZB system

When replacing the DS (data station) battery, the displayed battery consumption requires a manual reset. If not reset, the ZB system will display the battery consumption in a depleted state. **Make sure to reset the battery consumption level after replacing the battery, ideally within a few days.**

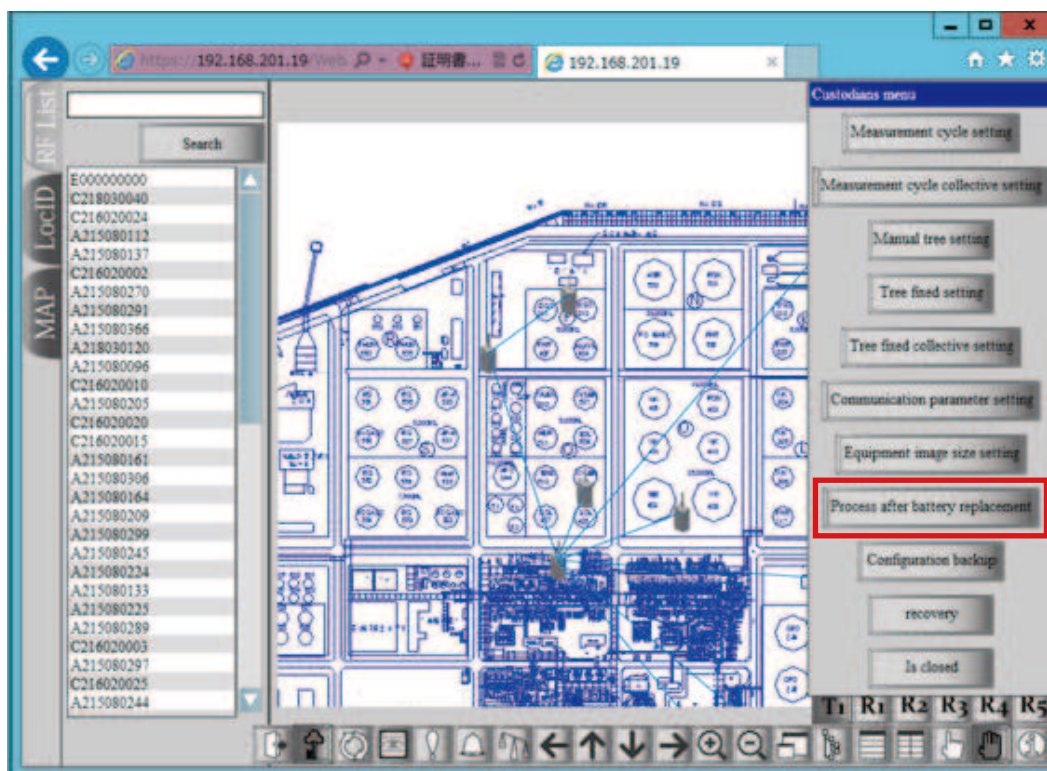
The battery consumption level cannot be reset if no wireless devices are connected to the data station.

The battery consumption level can be reset manually from the following.

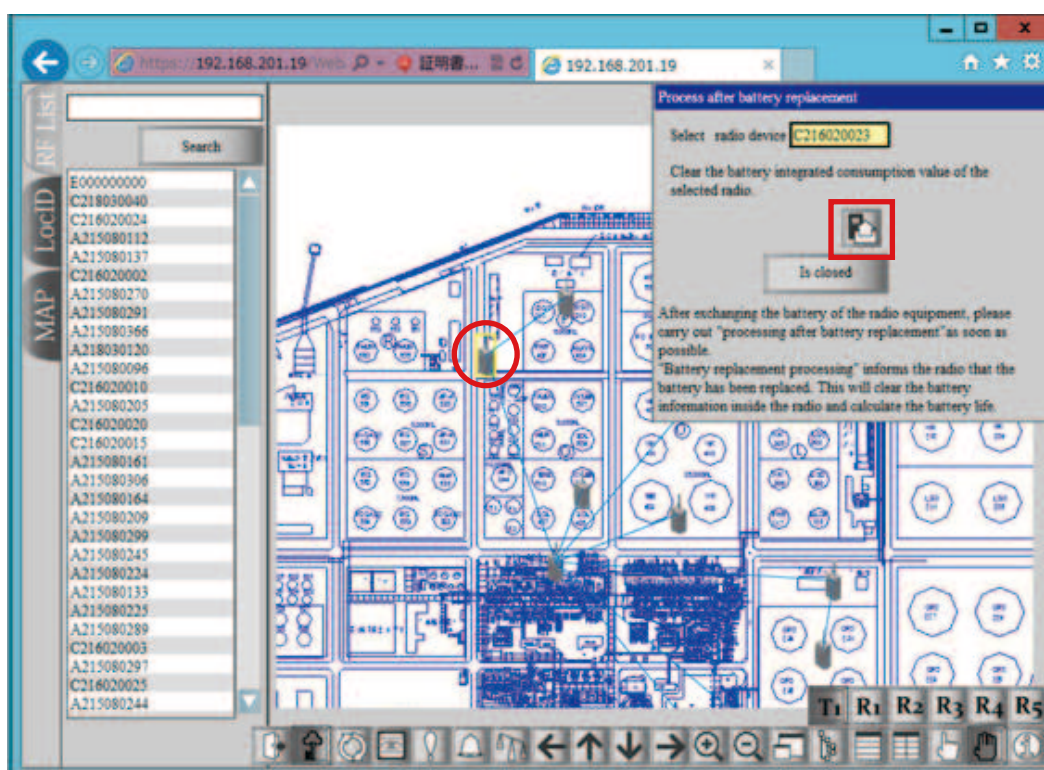
- Web screen on the DS
- iT5-DataUploader

Web screen on the DS

Login to the DS web application as an administrator. Open ZB-Manager and click "Process after battery replacement" button in the administrator menu.



Select the device with the replaced battery. The device ID is displayed in "Selected device ID". Save the settings on the data station.

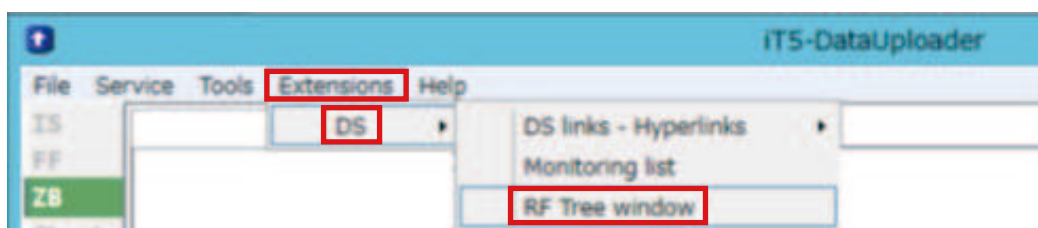


Close the "Process after battery replacement" window.

After a while, the battery icon displayed on screen will be full. The update time varies depending on the communication cycle. Check the battery status after approximately 12 hours.

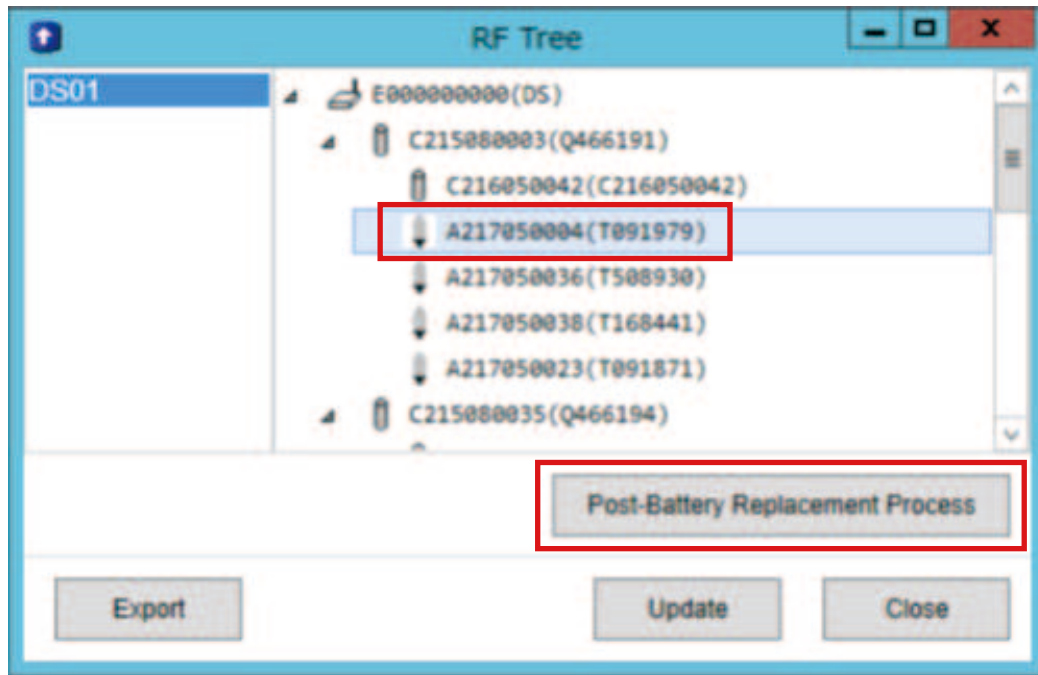
iT5-DataUploader

To open "RF Tree window", go to "iT5-DataUploader"→"Extensions"→"DS".



The RF Tree window will open.

Select the radio device from the list and click the "Post-Battery Replacement Process" button.



After a while, the battery icon displayed on screen will be full. The update time varies depending on the communication cycle. Check the battery status after approximately 12 hours.