



## Operating Instructions

**BTL 2016/2 (30596)**

**BTL 2016/3 (30595)**

**BTL 2016/4 (30594)**

**BTL 2016/2 with temperature monitoring (30862)**

**BTL 2016/3 with temperature monitoring (30863)**

**BTL 2016/4 with temperature monitoring (30864)**



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**Note!**

In order to ensure the correct operation of the battery testing and charging system, it is necessary to have a continuous 4-pole cable connecting the charging system, the wiring as well as the plug-in connection to the battery.

When connecting the battery testing and charging system to the battery, make sure that the negative connection on the vehicle must be routed directly to the negative pole of the battery and NOT via the chassis; otherwise, measurement errors can occur.

You can find connection diagrams to download on our website: [www.poelz.at](http://www.poelz.at)

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# 1 Introduction

The Industrieelektronik Pölz GmbH battery testing and charging system (BTL) that you have purchased is a high-quality product. Here is an overview of the most important benefits that you will enjoy:

- Using the battery testing and charging system, your batteries are always ready to go and it is also possible to charge auxiliary equipment like torches or radios, for example, at the same time.
- The battery testing and charging system detects automatically whether a battery system or a 12- or 24-volt vehicle battery is connected and adapts the charging voltage automatically.
- The battery testing and charging system runs with a four-wire system. This means that you can connect any vehicle (12 V / 24 V) at any parking space.
- Charging cables of up to 50 m ( $4 \times 2.5 \text{ mm}^2$ ) per unit are possible.
- The fully automatic processor-controlled battery testing and charging system is particularly suitable for long-term charging.
- On detecting defective batteries and power failures, the battery testing and charging system issues an alarm.
- The gentle charging process ensures a long service life for the battery.
- Display of operating and error messages.
- No sparking on connection. Depending on the battery's measuring result, the system continuously pulses a charging current of 0 A to a maximum of 16 A.
- You can connect any type of external monitoring equipment or alarms to the potential-free alarm output. This

means that the battery testing and charging system plays its part in securing parking spaces.

- You can integrate the battery testing and charging system with Industrieelektronik Pölz GmbH's space monitoring system or connect it to an existing phone alarm system.
- You can enhance the battery testing and charging system with an Industrieelektronik Pölz GmbH temperature monitoring system. The system shows the temperature on the display and adapts the charging behaviour to the temperature response.

## 1.1 Liability and Warranty

Use the battery testing and charging system only in accordance with its intended use (see also Chapter **2.1 INTENDED USE**).

The manufacturer warranties the battery testing and charging system within the scope of the conditions of sale and delivery that apply in each case.

The manufacturer accepts no liability for damage due to ignoring the information in these operating instructions as well as to incorrectly assembling, operating or servicing the battery testing and charging system.

## 1.2 Customer Service

If you need technical information or have any queries or need to order spare parts, please contact your local dealer or e-mail our customer service: [office@poelz.at](mailto:office@poelz.at)

To ensure that your inquiry is processed quickly, please state the following information:

- Device type
- Item number
- Serial number

You will find the device type and the serial number on the type plate on your battery charging and compensating box (see also Chapter **3.2 TYPE PLATE**). For information on the item number, see also Chapter **8.2 TECHNICAL DATA**.

## 1.3 About these Operating Instructions

These operating instructions are a component of the scope of supply; you must always keep them at the location of the battery testing and charging system.

The guide includes all the information you need for assembling the battery testing and charging system, for operating, servicing, dismantling and disposing of it.

Read the operating instructions carefully before using the system and observe the safety and warning instructions to ensure perfect operation of your battery testing and charging system.

## 1.4 Explanation of Symbols and Instructions

This symbol warns you of a hazardous location. This signal word describes the severity of the imminent danger.



### **Danger!**

Personal injury can occur in the case of incorrect handling.

### **Caution!**

Damage to equipment or property can occur in the case of incorrect handling.

### **Danger, electrical hazard!**



This symbol warns you of an electrical hazard.

Touching live parts can lead to injury or even be fatal.

### **Fire hazard!**



This symbol warns you of a fire hazard.

### **Note!**



This symbol indicates tips and useful information on handling the battery testing and charging system in the best possible way.

## 2 Safety Information

The battery testing and charging system made by Industrieelektronik Pözl GmbH has been manufactured and inspected in accordance with valid standards and guidelines and recognized technical regulations. However, incorrect use can lead to physical harm to users or damage to the battery testing and charging system.

Always comply to the letter with the safety information and warnings given in these operating instructions.

### 2.1 Intended Use

The battery testing and charging system is intended exclusively for gentle, pulsed charging and trickle charging rechargeable lead-acid batteries with a minimum capacity of 32 Ah.

The battery testing and charging system is fitted with a maximum of 4 slots for connecting to 2, 3 or 4 battery systems or vehicles with a rated battery voltage of 12 V or 24 V.

Any other use is not the intended use and voids the warranty.

Supported battery types:

- All lead-acid batteries (lead-acid - accumulators) with a rated battery - voltage of 12 V or 24 V that are used in vehicles.

### Danger!

Only ever use the battery testing and charging system to load the battery types that are described in these operating instructions.



If you use other types of rechargeable batteries, there is a risk of injury or damage to property.

### 2.2 General Safety Information

This battery testing and charging system is not intended for use by anybody (including children) with physical, sensory or mental challenges, who are inexperienced or do not have adequate knowledge unless they are supervised by a person who is responsible for their safety or who gives them instructions on using the battery testing and charging system.

Do not allow any children to handle the battery testing and charging system without supervision.

Immediately disconnect the battery testing and charging system from the mains supply if its mains cable or connecting cable is damaged.

To avoid a risk of tripping, do not use extension cables.

## 2.3 Installing the Battery Testing and Charging System

Installation work may only be carried out by qualified persons who have been assigned to carry out this work.

Disconnect the battery testing and charging system from the mains supply before starting installation work.

Inspect the battery testing and charging system and all its cables before use.

Make the connection to the mains supply in accordance with national installation instructions.

Observe the connection lengths between the battery testing and charging system and the battery. The connection length also includes the connection between the vehicle socket and the battery.

You can connect the battery testing and charging system to any 230 V / 50 Hz socket. Connecting any other mains voltage can damage the battery testing and charging system and is not permitted.

It is vital that the socket is earthed.

The battery testing and charging system contains components like switches and relays, for example, that can cause arcing and sparking. Maintain spacing of at least 10 cm to other devices and objects and ensure adequate ventilation.

Do not connect the battery testing and charging system on damp premises.

Ensure that the battery is fixed in the vehicle and that you make all the connections between the battery and the vehicle

socket in accordance with the connection diagram.

When connecting the battery testing and charging system to the battery, ensure that the negative connections on the vehicle are routed directly to the negative pole on the battery and not via the chassis; otherwise, measuring errors can occur.

Fuse-protect all the positive pole connections (e.g. between the battery testing and charging system and the battery or between the main and auxiliary battery and other auxiliary equipment).

If you use a 2-pole charging cable, note that it must not be longer than 2.5 m (2.5 mm<sup>2</sup>); otherwise, measuring errors can occur and the alarm output will be activated.

When operating with connecting terminals, disconnect the battery testing and charging system from the mains supply before opening or closing the connection to the battery.

## 2.4 Operating the Battery Testing and Charging System

Only use the battery testing and charging system at ambient temperatures between -20 °C and +50 °C.

Do not use the battery testing and charging system in the vicinity of explosive gases, flames and sparks.

Protect the battery testing and charging system from direct sunlight, heat and extreme fluctuations in temperature.

During charging, ensure adequate ventilation. Do not cover the battery testing and charging system.

No liquids must be able to enter the battery testing and charging system. Disconnect the battery testing and charging system from the mains supply if liquid or foreign bodies enter the system and have it inspected by the manufacturer or a qualified service engineer.

## 2.5 Dismounting the Battery Testing and Charging System

Before starting dismounting, disconnect the battery testing and charging system from the mains supply.

## 2.6 Maintenance on the Battery Testing and Charging System

Servicing work must only be carried out by qualified people who have been tasked with this work.

Before starting service work, disconnect the battery testing and charging system from the mains supply.

Under no circumstances should you try to open and repair the battery testing and charging system yourself, since there can be very high residual voltages. Only the manufacturer or a qualified service engineer are allowed to carry out repairs on the battery testing and charging system.

## 2.7 Storing the Battery Testing and Charging System

Store the battery testing and charging system in a dry safe place that is out of the reach of children.

## 2.8 Alterations and Modifications to the Battery Testing and Charging System

Do not make any alterations or modifications to the battery testing and charging system without the express permission of the manufacturer. Never deactivate the safety devices.

Use only original Industrieelektronik Pölz GmbH spare parts. If you use third-party spare parts there is no guarantee that they have been designed optimized for application or for safety.

## 2.9 Handling Rechargeable Lead-acid Batteries

Battery acid is corrosive. If you get battery acid on your clothes or your skin, rinse with lots of water and go to the doctor immediately.

Wear suitable work clothing, like protective gloves and clothing, and goggles, for example.

Follow the operating instructions for the rechargeable battery.

## 3 Description of the Device

### 3.1 Device Types

In these operating instructions, we will describe the following battery testing and charging systems:

- Battery testing and charging system  
**BTL 2016/2 (2 × 16 A)**  
**Item number: 30596**
- Battery testing and charging system  
**BTL 2016/3 (3 × 16 A)**  
**Item number: 30595**
- Battery testing and charging system  
**BTL 2016/4 (4 × 16 A)**  
**Item number: 30594**

#### With temperature monitoring system

##### Note!



You can add a temperature monitoring system to Industrie-elektronik Pözl GmbH's battery testing and charging system (see also Chapter [1.2 CUSTOMER SERVICE](#)).

- Battery testing and charging system  
**BTL 2016/2 (2 × 16 A)**  
**Item number: 30862**
- Battery testing and charging system  
**BTL 2016/3 (3 × 16 A)**  
**Item number: 30863**

- Battery testing and charging system  
**BTL 2016/4 (4 × 16 A)**  
**Item number: 30864**

The battery testing and charging system is fitted with a maximum of 4 slots for connecting to 2, 3 or 4 battery systems or vehicles.

##### Note!



You can retrofit a maximum of 4 slots for the battery testing and charging system at any time, since the device configures itself (see also Chapter [1.2 CUSTOMER SERVICE](#)).

Please note the device-specific description and equipment of your battery testing and charging system. You will find the device type on the type plate on your battery testing and charging system (see also Chapter [3.2 TYPE PLATE](#)).

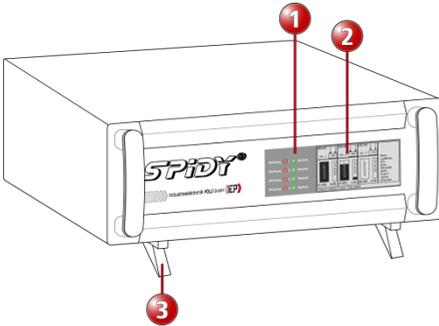
### 3.2 Type Plate

 <b>Industrietechnik PÖZL GmbH</b> <small>Grossendorf 122, 4551 Ried im Traunkreis Tel.: +43(0) 7588 70122 Mail: office@poetz.at</small>	
<b>30594 BTL 2016/4</b>	
Power supply:	230V
Mains frequency:	50Hz
Power consumption:	max. 1800W
Rated output voltage/Current:	30 V/max. 16A
Ambient temperature:	-20°C/+50°C
Protection class:	IP 21
Serial number:	
EAN Code:	
	

(Symbolic graphic)

### 3.3 Device Overview

#### 3.3.1 Device Overview with Fan



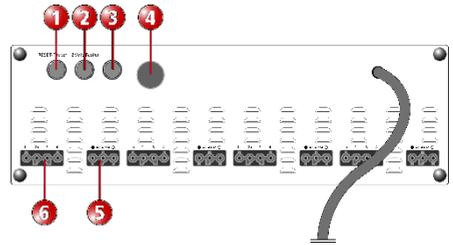
- ① LED display field
- ② Display
- ③ Fold-out feet

#### Risk of overheating!



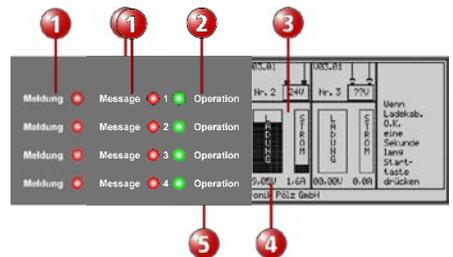
Always fold out the feet to ensure that the battery testing and charging system is adequately ventilated from below.

#### 3.3.2 Device Overview of Buttons / Connections / Outputs



- ① RESET button
- ② <2 VOLT button
- ③ Confirmation button
- ④ Internal USB
- ⑤ ALARM (3-pin relay output)
- ⑥ 4-pole connecting cable to the vehicle/battery (wires) 1+ 2+ 3- 4-

#### 3.3.3 Device Overview of Display



- ① Message LED display (operational and error messages)
- ② Operation LED display (with active charging)
- ③ Display field
- ④ Status line
- ⑤ Information line

2 to 4 display views are active depending on how many slots you are using.

### 3.4 Description of Function

The battery testing and charging system has the following functions:

- 4-pole connecting cable for charging and measuring as well as for longer cable lengths 50 m max. (4 × 2.5 mm<sup>2</sup>)
- Automatic voltage detection and switching from 12 V to 24 V
- 3-pole potential-free alarm output for monitoring or issuing alarms
- Design that is short circuit-proof and protected against polarity reversal
- <2 VOLT button for charging deeply discharged batteries
- RESET button for restarting the battery testing and charging system

### 3.5 Technical Description

#### 3.5.1 4-Pole Connecting Cable per Parking Space

The battery testing and charging system runs with a 4-pole connecting cable:

- 2-pole charging connection for gentle, pulsed charging and switch off to 0 A on charging to full capacity
- 2-pole measuring connection for permanent measurement

This means that you can connect any vehicle (12 V / 24 V) at any parking space.



#### Note!

Ensure that all four wires have the same cross-section (4 × 2.5 mm<sup>2</sup>).

#### 3.5.2 Normal Charging

The battery testing and charging system measures the vehicle voltage every 50 ms and checks the battery for the following:

- **Is the battery fully or partially charged?**  
Depending on the measuring result, the battery testing and charging system pulses more or less charge. When the battery is completely charged, the battery testing and charging system switches off and shows the following message on the display: **Pause** and displays 0 A charging current on the status line.



#### Note!

The gentle pulsed charging and permanent measurement during the charging process makes it possible to considerably increase the battery's service life.

- **Is one of the connected batteries defective?**  
The battery testing and charging system has a detection rate of about 95 % for a defective battery and issues an alarm.
- **Are the plug-in connections and the battery acid levels OK?**  
Depending on the result of the measurement, the battery testing and

charging system issues a corresponding error message on the display.

### 3.5.3 Automatic Voltage Detection

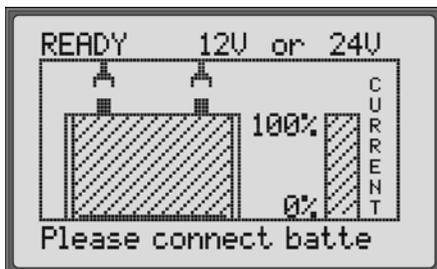
The battery testing and charging system detects whether a battery system or a vehicle with a 12 V or 24 V supply voltage is connected. Depending on the fill level, the battery testing and charging system starts gentle, pulsed charging of the battery.

### 3.5.4 Potential-free Alarm Output (3-Pole)

The battery testing and charging system is fitted with a 3-pole relay output. You can connect external monitoring facilities or alarms to this potential-free alarm output. Depending on the configuration of the alarm output, it is possible to output different alarms.

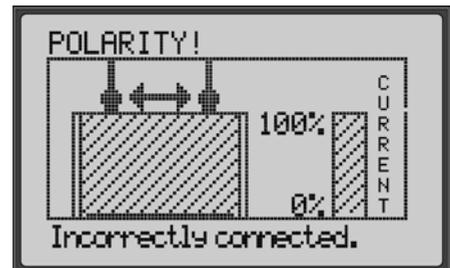
### 3.5.5 Short Circuit-Protection

The battery testing and charging system is fitted with short circuit-protection. If you touch the connecting terminals or short-circuit them while the mains cable is connected, charging does not start and the battery testing and charging system displays the main screen.



### 3.5.6 Protection Against Polarity Reversal

The battery testing and charging system is protected against polarity reversal. If you have connected the connecting terminals to the battery incorrectly, the system does not start the charging process and displays **Polarity!** on the status bar.



### 3.5.7 <2 VOLT Button for Charging Deeply Discharged Batteries

The battery testing and charging system cannot detect batteries whose charge level is less than 2 V.

1. Press the <2 VOLT button on your battery testing and charging system to pre-charge the battery (about 0.5 min). A higher battery voltage is indicated to the battery testing and charging system and it starts the charging process.
2. After this the battery testing and charging system switches to normal charging (see also Chapter [3.5.2 NORMAL CHARGING](#)) and continues the charging process.

**Note!**

If the connected battery is defective, the battery testing and charging system switches off automatically.

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**3.5.8 RESET button**

You can acknowledge error messages using the RESET button on your battery testing and charging system.

---

**Caution!**

Acknowledging the error does not eliminate it!



Check and eliminate the possible causes of the error shown on the display like the intermediate fuse, the battery acid level, defective contacts or batteries, for example, (see also Chapter **8.1 ERROR MESSAGES AND POSSIBLE CAUSE(S)**).

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## 4 Installation

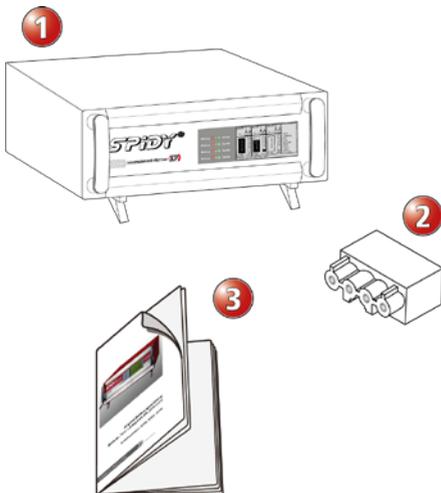
### Danger!



Installation work may only be carried out by qualified persons who have been assigned to carry out this work.

### 4.1 Unpacking the Battery Testing and Charging System

Remove the packaging material.



- ① Battery testing and charging system
- ② Device-side 4-pole connecting plug
- ③ Operating instructions

### Optional Version:

- Bracket
- Cable reel with or without compressed air supply/plug
- Charging plug
- Charging cable (4 × 2.5 mm<sup>2</sup>, 4-pole)
- Vehicle socket
- 3-pole alarm output plug
- Temperature monitoring

Check that the contents of the package are complete and inspect for possible damage. If any components are missing or are damaged, contact our customer service immediately (see also Chapter [1.2 CUSTOMER SERVICE](#)).

### Note!



You can integrate the battery testing and charging system with Industrieelektronik Pözl GmbH's space monitoring system or connect it to an existing phone alarm system (see also Chapter [1.2 CUSTOMER SERVICE](#)).

## 4.2 Installing the Battery Testing and Charging System



### Danger, electrical hazard!

Disconnect the battery testing and charging system from the mains supply before starting installation work.



### Fire hazard!

The battery testing and charging system contains components like switches and relays, for example, that can cause arcing and sparking.

Maintain spacing of at least 10 cm to other devices and objects and ensure adequate ventilation.

You can install or set up the battery testing and charging system outside a vehicle (e.g. in a vehicle hall, on a parking space, etc.).



### Note!

Install the battery testing and charging system such that you can easily read the display and reach the buttons.

Use Industrieelektronik Pözl GmbH's cable reel to connect the battery testing and charging system to a vehicle or a battery. You can order cable reels from our customer service (see also Chapter [1.2 CUSTOMER SERVICE](#)).



### Caution!

Use flexible cables and ensure that the cable is completely rolled out when it is connected.

You can enhance the battery testing and charging system with a temperature monitoring system. The system shows the temperature on the display and adapts the charging behaviour to the temperature response. If the battery overheats, the battery testing and charging system interrupts the power supply. You can order cable reels from our customer service (see also Chapter [1.2 CUSTOMER SERVICE](#)).

### 4.2.1 Installing the Battery Testing and Charging System on a Wall or Ceiling

A bracket, adapter rail and ventilation slits are included as additional accessories to allow you to install the battery testing and charging system on a wall or ceiling.

1. Mount the bracket, which has ventilation slits, on the wall or ceiling.

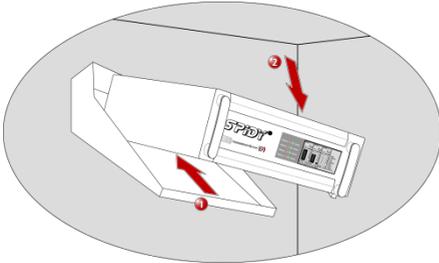


### Risk of overheating!

Only use a bracket with ventilation slits to ensure that the battery testing and charging system is ventilated adequately.

2. Fold the feet in.
3. Check that the adapter rail is fastened at the correct distance from the device.
4. Lift the battery testing and charging system into the bracket and push it back until it clicks into place. Press the

device downwards at the front until it is firmly seated in the bracket.



#### 4.2.2 Setting up the Battery Testing and Charging System

The battery testing and charging system has fold-out feet to allow you to set it up on a flat level surface.

1. Place the battery testing and charging system on a flat level surface.
2. Fold the feet out.



#### Risk of overheating!

Always fold out the feet to ensure that the battery testing and charging system is adequately ventilated from below.

#### 4.3 Connecting the Battery Testing and Charging System to the Mains Supply



#### Danger, electrical hazard!

Inspect the battery testing and charging system and all its cables before use.

230 V / 50 Hz socket. Connecting any other mains voltage can damage the battery testing and charging system and is not permitted.

Make the connection to the mains supply in accordance with national installation instructions.



#### Caution!

It is vital that the socket is earthed.



#### Caution!

With emergency power generators, extreme frequency fluctuations are possible that can damage the battery testing and charging system.

Using a type F plug, you can connect the battery testing and charging system to any

## 4.4 Connecting the Battery Testing and Charging System to the Battery

You can connect the battery testing and charging system to the cable reel / the vehicle socket as well as directly to the battery (optionally via the temperature - monitoring system) (see also Chapter **8.3 CONNECTION DIAGRAM**).

### Note!



Industrietechnik Pözl GmbH recommends a 4-pole connection of the battery testing and charging system; otherwise, measuring errors can occur.

Observe the following lengths of charging cable between the battery testing and charging system and the battery:

- With a cable cross-section of  $4 \times 1.5 \text{ mm}^2$ , the maximum charging cable length is 30 m per slot
- With a cable cross-section of  $4 \times 2.5 \text{ mm}^2$ , the maximum charging cable length is 50 m per slot

### Note!



The connection length also includes the connection between the vehicle socket and the battery.

### 4.4.1 Connecting the Battery Testing and Charging System to the Cable Reel / the Vehicle Socket (4-Pole)

1. Connect the device-side 4-pole connecting plug to the cable of the cable reel or to the plug leading to the vehicle. Pay attention to the following connections:
  - Wire 1 = charging cable +
  - Wire 2 = measuring cable +
  - Wire 3 = charging cable -
  - Wire 4 = measuring cable -
2. Connect the battery testing and charging system to the mains supply (see also Chapter **4.3 CONNECTING THE BATTERY TESTING AND CHARGING SYSTEM TO THE MAINS SUPPLY**).
3. The battery testing and charging system displays the following sage: **READY 12 V or 24 V / connect BATTERY**
4. Connect the charging cable to the battery by connecting the charging plug to the vehicle socket.

The battery testing and charging system automatically detects whether a 12 V or 24 V battery is connected. Depending on the fill level of the connected battery, the battery testing and charging system starts gentle, pulsed charging of it.

#### 4.4.2 Connecting the Battery Testing and Charging System to the Battery / Temperature Monitoring System using Connecting Terminals (4-Pole)

##### Caution!



When connecting the battery testing and charging system to the battery, ensure that the negative connections on the vehicle are routed directly to the negative pole on the battery and not via the chassis; otherwise, measuring errors can occur.

1. Connect wires 1 and 2 (positive poles of the charging and measuring cable) to the positive connecting terminal and wires 3 and 4 (negative poles of the charging and measuring cable) to the negative connecting terminal of the battery.

##### Danger, electrical hazard!



When operating with connecting terminals, disconnect the battery testing and charging system from the mains supply before opening or closing the connection to the battery.

2. Connect the positive connecting terminal to the battery's positive pole.

##### Note!



To protect the charging cable, you must put a 16 A intermediate fuse before the battery's positive pole.

##### Note!



Mount the temperature - monitoring system with the integrated fuse directly in the battery box instead of the intermediate fuse using the 4-pole connecting cable (see also the **installation instructions of the temperature monitoring system**).

3. Connect the negative connecting terminal directly to the battery's negative pole.
4. Connect the battery testing and charging system to the mains supply (see also Chapter **4.3 CONNECTING THE BATTERY TESTING AND CHARGING SYSTEM TO THE MAINS SUPPLY**).

The battery testing and charging system automatically detects whether a 12 V or 24 V battery is connected. Depending on the fill level, the battery testing and charging system starts gentle, pulsed charging of the battery.

#### 4.4.3 Connecting the Battery Testing and Charging System to the Vehicle Socket (2-Pole)



##### Note!

Industrietechnik Pözl GmbH recommends a 4-pole connection of the battery testing and charging system; otherwise, measuring errors can occur.

If you connect the battery testing and charging system to a 2-pole vehicle socket, note that it must not be longer than 2.5 m (2.5 mm<sup>2</sup>); otherwise, measuring errors can occur and the alarm output will be activated.

Join the two (charging and measuring) positive cables and the two (charging and measuring) negative (see also Chapter **8.3 CONNECTION DIAGRAM**).

#### 4.4.4 Connecting Monitoring Systems or Alarm to the Potential-free Alarm Output

The battery testing and charging system is fitted with a 3-pole relay output:

- On the left: Normally open contact (NOC)
- Middle: Root
- On the right: Normally closed contact (NCC)

To connect to a space monitoring board (LED display), Industrietechnik Pözl GmbH recommends the following assignment:

Connect the root and the normally closed contact to the contacts of the space monitoring board (LED display).

This switches off the LED display on the space monitoring board when the vehicle is connected and charging.

If an error occurs, the LED display on the space monitoring board flashes.

If there is no connection with the vehicle, the battery testing and charging system issues the following message: **Vehicle not connected** and the LED display on the space monitoring board lights up.

##### Note!



You can integrate the battery testing and charging system with Industrietechnik Pözl GmbH's space monitoring system or connect it to an existing phone alarm system (see also Chapter **1.2 CUSTOMER SERVICE**).

## 5 Operation

### Caution!



Only use the battery testing and charging system at ambient temperatures between -20 °C and +50 °C.

### 5.1 Commissioning the Battery Testing and Charging System

#### Fire hazard!



Do not use the battery testing and charging system in the vicinity of explosive gases, flames and sparks.

Protect the battery testing and charging system from direct sunlight, heat and extreme fluctuations in temperature.

After you connect the battery testing and charging system to the mains supply, the display shows the software version and the serial number. The battery testing and charging system is ready for operation and issues the following message: **READY 12 V or 24 V / connect BATTERY**

Follow the instructions in the scrolling text on the information line.

### 5.2 Starting Charging

After you have connected the battery testing and charging system to the battery, the charging process starts automatically.

#### Caution!



During charging, ensure adequate ventilation.

Do not cover the battery testing and charging system.

#### Charging is active

The battery testing and charging system displays the following sage: **Charging** and the LED display lights up in green.

Using the rising charging bar on the display field, you can read off the progress of charging.

#### Battery is fully charged

The battery testing and charging system displays the following message: **Pause** and displays 0 A charging current on the status line.

The battery testing and charging system continues to measure the vehicle voltage every 50 ms. Depending on the discharge status (due to auxiliary equipment like torches or radios, for example, the battery testing and charging system pulses more or less current (see also Chapter **3.5.2 NORMAL CHARGING**).

## Overheating of the battery

If you have added a temperature monitoring system to the battery testing and charging system, a sensor measures the temperature directly on the battery. If the battery overheats, the battery testing and charging system disconnects the power feed and issues the message below on the display: **Battery overtemperature!**

### 5.3 Starting Charging after an Interruption

Charging starts automatically if the charging process was interrupted or there was a power failure.

The battery testing and charging system measures the vehicle voltage; depending on the measuring result, it pulses more or less charge.

## 6 Dismantling



### **Danger, electrical hazard!**

Disconnect the battery testing and charging system from the mains supply before starting dismantling work.

Store the battery testing and charging system in a dry safe place that is out of the reach of children.

If you want to return the battery testing and charging system to Industrieelektronik Pözl GmbH, enclose the returns form (see also Chapter **8.4 RETURNS FORM (COPYING TEMPLATE)**).

### **Note!**



If you package the device incorrectly, it can be damaged.

Use only the original packaging materials or ensure that the device is packaged correctly.

## 7 Service

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### Danger!

Servicing work must only be carried out by qualified people who have been tasked with this work.

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### Danger, electrical hazard!

Before starting servicing work, disconnect the battery testing and charging system from the mains supply.

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### 7.1 Maintenance

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#### Note!

The battery testing and charging system is maintenance-free.

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Check the battery acid level and concentration every 4 weeks; if necessary, top up with distilled water or acid.

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### Caution!

Never use ordinary tap water.

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Check the connecting contacts for damage (risk of breakage) on a regular basis; also check if all the contacts are seated firmly in their holders, e.g. the plug-in connections (plug and socket) on the vehicle.

Keep the battery clean and dry. Carefully grease the connecting terminals with an acid-free, acid-resistant grease like Vaseline, for example. Ensure that the grease does not come into contact with the used sealing compound.

### 7.2 Cleaning

Use a soft, dry cloth to clean the battery testing and charging system. Avoid the use of chemical solvents and cleaning agents, since they can damage the surface and the labelling.

If you are using a 2-pole plug-in connection, use a brush to remove oxidation residue if necessary. Press the brass bolts apart to make a perfect connection to the battery testing and charging system.

### 7.3 Repairs

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#### Danger!

Under no circumstances should you try to open the battery testing and charging system yourself, since there can be very high residual voltages.



Only the manufacturer or a qualified service engineer are allowed to carry out repairs on the battery testing and charging system.

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## 8 Appendix

### 8.1 Error Messages and Possible Cause(s)

If an error occurs during the charging process, the battery testing and charging system issues an error message on the display together with a number and displays a description of the error as scrolling text on the information line. Apart from this, the system issues an alarm signal and the Message LED display lights up in red.

Acknowledge the error by disconnecting the battery and connecting it again or by pressing the RESET button on the battery testing and charging system (see also Chapter [3.3.2 DEVICE OVERVIEW OF BUTTONS / CONNECTIONS / OUTPUTS](#)).

#### Caution!

Acknowledging the error does not eliminate it!



Check and eliminate the possible causes of the error shown on the display like the intermediate fuse, the battery acid level, defective contacts or batteries, for example.

#### Note!



If you do not acknowledge the error, the battery testing and charging system restarts the charging process after about 2 hours.

#### Note!



When carrying out troubleshooting, it can be helpful to connect the vehicle to a different parking space. If the error occurs there too, it is in the vehicle.

If you want to return the battery testing and charging system to Industrieelektronik Pölz GmbH, enclose the returns form (see also Chapter [8.4 RETURNS FORM \(COPYING TEMPLATE\)](#)).

#### Note!



If you package the device incorrectly, it can be damaged. Use only the original packaging materials or ensure that the device is packaged correctly.

### 8.1.1 Incorrectly Connected Charging Cable

Error message	Possible cause(s)
<b>Polarity</b>	Charging cable is connected incorrectly
<b>Charging cable is defective</b>	Charging cable is connected incorrectly

### 8.1.2 Error Messages and Possible Cause(s)

No.	Error message	Possible cause(s)	Measures
1	<b>Pole voltage too high!</b>  Overvoltage and sparking occur. The battery testing and charging system switches off automatically.	Contact fault in the charging cable or plug-in connection. Intermediate fuse oxidises. The battery poles are loose or oxidised. The battery is defective.	Check the connecting contacts. Clean or replace the intermediate fuse and fuse holder on the vehicle. Clean the battery poles. Check the battery (acid level or concentration).
2	<b>Internal resistance too high</b>  (at start of charging)	Battery capacity is too low. Battery water level is too low. Cross-section of 2-pole charging cable is too small or cable is too long. Bad wiring. The battery is defective. The battery is close to the end of its useful life. The battery is defective.	Check battery's water level. Check cross-section and length of charging cable. Check the battery (acid level or concentration). Replace the battery.
3	<b>Charge progress is too low!</b>	The current consumption of defective auxiliary equipment like torches or radios, for example, is too high for a relatively long period of time. Short circuit to ground on the vehicle. The battery is defective.	Check the auxiliary equipment. Eliminate the short circuit to ground on the vehicle. Check the battery (acid level or concentration).
4	<b>Excessive self-discharge!</b>	No charging current present. Charging cable is defective. The battery is defective.	Check possible causes and eliminate them. Check the battery (acid level or concentration).

No.	Error message	Possible cause(s)	Measures
5	<b>No charging current!</b>  The measuring cable is connected but the connection of the charging cable to the battery is interrupted.	Connection of charging plug and vehicle socket is interrupted (contact pin is broken). The connection on the cable reel has been pulled out. The connection of the charging cable is interrupted. The fuse of the positive connection in the vehicle has dropped. The battery is defective.	Find the interrupted connection and eliminate it. Replace the fuse. Check the battery (acid level or concentration). If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
6	<b>Overtemperature!</b>	Ventilation is not adequate. The fan is defective or the ventilation holes on the side are blocked.	Clean the ventilation holes. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
7	<b>Charging cable is defective</b>	The charging cable is interrupted (see also error message 5). The poles were mixed up at installation.	Find the interrupted connection and eliminate it. Correct the connection of the positive and negative poles of the charging and measuring cable.
8	<b>Internal resistance too high</b>  (during the final stage of charging)	Permanent resistance error in the vehicle or auxiliary equipment (leakage current). The system does not issue the error message until it has occurred several times.	Check the vehicle or auxiliary equipment for minor short circuits (leakage current).
9	<b>Overcurrent of charging module</b>		Connect the battery again. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
10	<b>Overloading of charging module</b>		Connect the battery again. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).

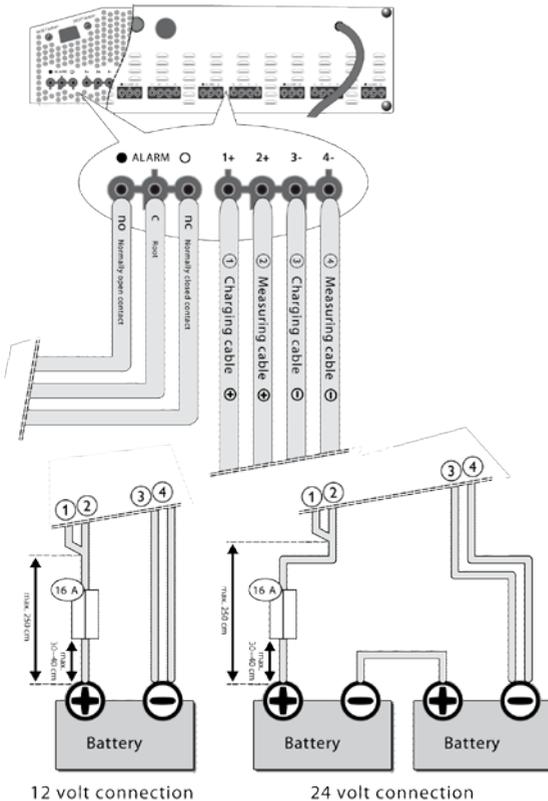
No.	Error message	Possible cause(s)	Measures
11	<b>Charging module communication error</b>		Switch off the device and switch it back on after five seconds. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
12	<b>Excessive line resistance</b>	Contact fault in the charging cable or plug-in connection. Cross-section of 2-pole charging cable is too small or cable is too long.	Check the connecting contacts. Clean the battery poles. Check the charging cable.
13	<b>Negative pole measuring error</b>	Contact fault in the charging cable to the battery's negative pole.	Find the interrupted connection and eliminate it. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
14	<b>Battery overtemperature!</b>	The battery is defective. The battery terminals are loose. The temperature sensor is defective.	Find the interrupted connection and eliminate it. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
15	<b>The battery of the temperature sensor is defective!</b>	The sensor is defective, short-circuited, or is not connected.	Check the sensor connections. If the fault happens again, please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).
16	<b>Pole voltage too high!</b>	Contact fault in the charging cable or plug-in connection. Intermediate fuse oxidises. The battery poles are loose or oxidised. The battery is defective.	Check the connecting contacts. Clean or replace the intermediate fuse and fuse holder on the vehicle. Clean the battery poles. Check the battery (acid level or concentration).
17	<b>Unknown charging module error</b>		Please contact our customer service (see also Chapter <b>1.2 CUSTOMER SERVICE</b> ).

System error	Measures
All the errors <b>from number 40 onwards</b> are system errors. The system displays a message containing only the error number.	Switch off the device and switch it back on after five seconds. If the fault happens again, please contact our customer service (see also Chapter <b><u>1.2. CUSTOMER SERVICE</u></b> ).

## 8.2 Technical Data

Power supply	230 V / +10 % / -15 %
Mains frequency	50 Hz
Power consumption	1800 W max.
Rated output voltage for charging and trickle charging	30 V / 16 A max.
Minimum battery capacity	32 Ah
Ambient temperature	-20 °C / +50 °C
Dimensions (W × H × D)	478 × 165 × 365 mm
Weight	12 kg approx.
Length of charging cables	4 × 2.5 mm <sup>2</sup> (50 m max.)
Protection class	Protection class I (according to DIN EN 61558)
Degree of protection	IP 21
Potential-free alarm output	10 A / 230 V max.
Item number BTL 2016/2	30596
Item number BTL 2016/3	30595
Item number BTL 2016/4	30594
Item number BTL 2016/2 with temperature monitoring system	30862
Item number BTL 2016/3 with temperature monitoring system	30863
Item number BTL 2016/4 with temperature monitoring system	30864

### 8.3 Connection Diagram



#### Caution!

When connecting the battery testing and charging system to the battery, ensure that the negative connections on the vehicle are routed directly to the negative pole on the battery and not via the chassis; otherwise, measuring errors can occur.



If you use a 2-pole charging cable, note that it must not be longer than 2.5 m (2.5 mm<sup>2</sup>); otherwise, measuring errors can occur and the alarm output will be activated.



#### Note!



Connect the negative connecting terminal directly to the battery's negative pole.

Mount the temperature monitoring system with the integrated fuse directly in the battery box instead of the intermediate fuse using the 4-pole connecting cable (see also the **installation instructions of the temperature monitoring system**).



## 8.4 Returns Form (Copying Template)

To  
 Industrieelektronik Pölz GmbH  
 Großendorf 122  
 A-4551 Ried im Traunkreis

Sender:	Address:
Contact:	Tel.:
Fax:	E-mail:
Industrieelektronik Pölz GmbH device type:	
Industrieelektronik Pölz GmbH serial number:	
Industrieelektronik Pölz GmbH item number:	
Error message:	
Description of error:	
Date:	
Company stamp and signature	

## 8.5 Disposal



### Battery testing and charging system

At the end of its useful life, never throw away the battery testing and charging system in domestic refuse under any circumstances. Consult your local council about the options available for correct environmentally friendly disposal.

### Batteries

Rechargeable batteries must be disposed of correctly. Dispose of used batteries at the collection points provided.

### Packaging



Observe locally applicable regulations for correct recycling.

## 8.6 Test Certificates



The battery testing and charging system made by Industrieelektronik Pözl GmbH has been manufactured and inspected in accordance with valid standards and guidelines and recognized technical regulations.

To obtain the complete inspection certification, please contact our customer service: [office@poelz.at](mailto:office@poelz.at)

## 8.7 Declaration of Conformity (DoC)



The CE mark confirms conformity of the device with the relevant EU directives.

Industrieelektronik Pözl GmbH hereby declares that the BTL 2016-2-3-4 battery testing and charging system complies with the specifications of the following European Union directives:

- Low-Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

Standards used:

- DIN 14679:2008-03

To obtain the complete declaration of conformity, please contact our customer service: [office@poelz.at](mailto:office@poelz.at)







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