

# Quick Start Guide

Release 1.0

## PAT-Heater-4

Docking station for PAT-Cell-HT test cells



The information in this manual has been carefully checked and believed to be accurate; however, no responsibility is assumed for inaccuracies.

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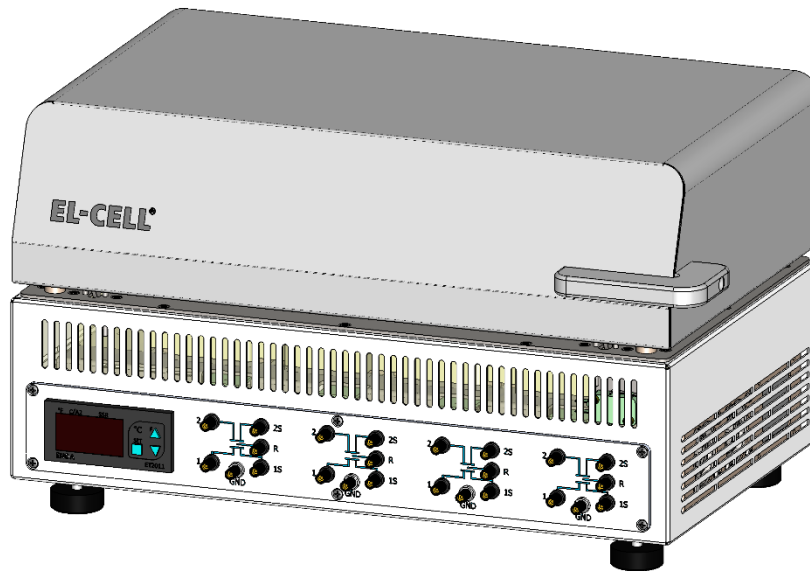
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## 1 Product Description

The PAT-Heater-4 is a heated docking station connecting up to 4 PAT-Cell-HT or PAT-Cell-Aqu-HT to any potentiostat or battery tester. The working temperature is adjustable from 10°C above ambient temperature up to 200°C.

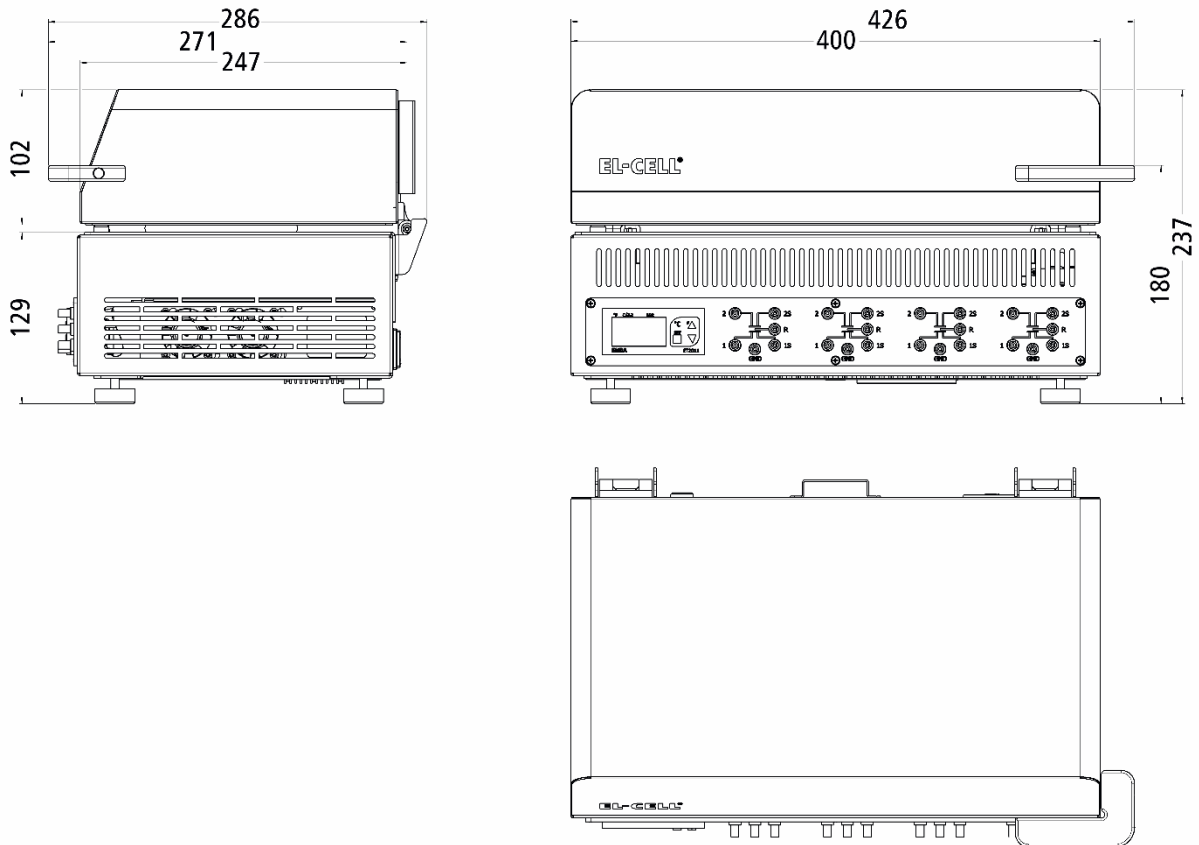
The PAT-Heater-4 saves wiring effort, because it is not necessary to renew the connection between cell and potentiostat for every battery test. At the same time, the easy-to-access banana sockets at the side of the docking station allow to choose between full and half cell control.



### Features

- Heated chamber with temperature control from 10°C above ambient temperature up to 200°C
- 4 x 1 docking station for up to four PAT-Cell-HT or PAT-Cell-Aqu-HT
- Compatible with all of today's multi-channel potentiostats and battery testers
- Can be placed on the bench or inside a glove box
- Flexible wiring due to easy-to-access banana sockets

## 2 Technical Data



- Dimensions: 119 mm (width) x 301 mm (depth) x 84/114 mm (height without/ with PAT-Cells)
- Ambient temperature: 0 to 40°C
- Humidity: non condensing
- Weight: 0.67/3.00 kg (without/with PAT-Cells)
- **IP-Protection Class:** EN 60529 IP20

### 3 Installation

The PAT-Heater-4 should be placed on a flat, dry and clean surface.

#### Connection sockets

4 mm banana sockets for connection to the cell cable of a potentiostat or battery tester.

Adapters for connection of 2 mm banana plugs are attached upon delivery.

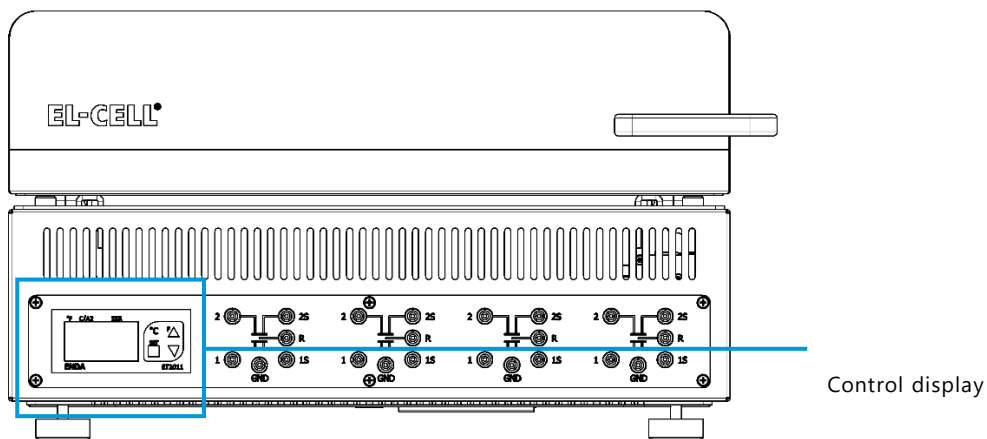
4 mm banana socket

Adapter male 4 mm to female 2 mm

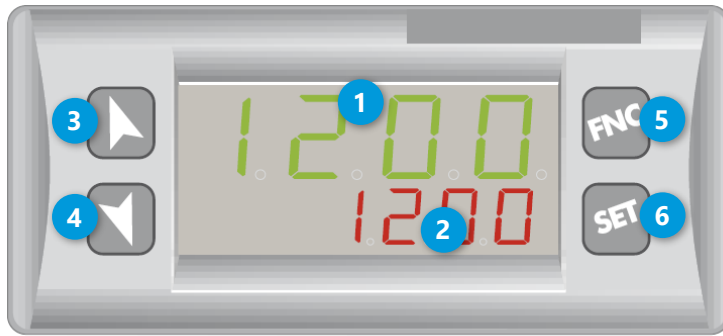


### 4 Operation

#### 4.1 Temperature control



The display at the front of the PAT-Heater-4 shows the actual and the setpoint temperature.

**Display functions:**

- 1 Display of actual temperature (°C) in green digits
- 2 Display of setpoint value in red digits
- 3 Adjustment (increase) of the setpoint value
- 4 Adjustment (decrease) of the setpoint value
- 5 Change of system parameters.

**Warning:** The FNC button allows changes to critical system parameters and limits. EL-CELL is not liable for damages caused by the misuse of these functions!

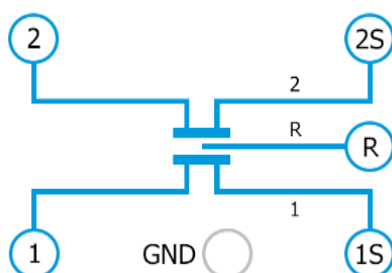
- 6 Confirms the setpoint value.

**How to change the temperature setpoint**

In order to change the setpoint temperature, adjust the displayed setpoint with the arrow buttons ( 3 and 4 ) press the Set button 6 .

## 4.2 Connection to an external potentiostat

Connect the cell cable of your potentiostat to the banana sockets at the front of the PAT-Heater-4. For the different operation modes, see the table below.



### Operation mode 1: Cell voltage control (1 vs 2)

<b>PAT-Heater-4</b>	1	1S	2	2S	R
<b>Potentiostat</b>	WE	WE-Sense	CE	CE-Sense RE	-

### Operation mode 2: Half cell voltage control (1 vs R)

<b>PAT-Heater-4</b>	1	1S	2	2S	R
<b>Potentiostat</b>	WE	WE-Sense	CE	CE-Sense	RE

### Operation mode 3: Half cell voltage control (2 vs R)

<b>PAT-Heater-4</b>	1	1S	2	2S	R
<b>Potentiostat</b>	CE	CE-Sense	WE	WE-Sense	RE

The namings mentioned in the above tables may differ from that of the potentiostat used. For the specific naming conventions of selected manufacturers see the table below.

**Important note:** The PAT-Heater can be used with any other potentiostat or battery tester as well.



**Cable colors and naming conventions**

<b>Exemplary potentiostat</b>	<b>WE</b>	<b>WE-Sense</b>	<b>CE</b>	<b>CE-Sense</b>	<b>RE</b>
<b>BioLogic</b> (i.e. VSP, VMP3)	WE Red cable	Ref1 Red cable	CE Blue cable	Ref3 Blue cable	Ref2 White cable
<b>Gamry Instruments</b> (i.e. Reference 3000™)	Green cable	Blue cable	Red cable	Orange cable	White cable
<b>Ivium Technologies</b> (i.e. IviumStat)	WE1 Red cable	S White cable	CE Black cable	-	RE Blue cable
<b>Metrohm Autolab</b> (i.e. PGSTAT Series)	WE Red cable	S Red cable	CE Black cable	-	RE Blue cable
<b>Princeton Applied Research</b> (i.e. PARSTAT 2273)	Green cable	Grey cable	Red cable	-	White cable

## 5 Test cell insertion and removal

For insertion of a PAT-Cell-HT into a socket of the PAT-Heater-4, align the flat side of the test cell with the flat side of the corresponding socket. Then insert the test cell, and press firmly down. For test cell removal, use the provided silicone gloves ([WBB9033](#)).

**Danger:** Hot surface. Do not touch test cell or ejection button when hot.

## 6 Cleaning

Wipe the PAT-Heater-4 with a moist tissue. Do not use aggressive chemicals for cleaning.

## 7 Unpacking

Check the contents of the packages against the list given below to verify that you have received all of the required components. Contact EL-CELL, if anything is missing or damaged.

**NOTE:** Damaged shipments must remain within the original packaging for freight company inspection.

### List of Components

- PAT-Heater-4 (without test cells) [ECE1-00-00110-A](#)
- 6 x adapter male 4 mm to female 2 mm (attached upon delivery) [ELT9081](#)
- Silicone oven mitt (pair) [WBB9033](#)



## 8 Spare Parts

- Adapter male 4 mm to female 2 mm [ELT9081](#)
- Silicone oven mitt (pair) [WBB9033](#)

## 9 Technical Support

Technical support for this product is exclusively provided by EL-Cell GmbH.

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## 10 Warranty

For a period of one year from the date of shipment, EL-Cell GmbH (hereinafter Seller) warrants the goods to be free from defect in material and workmanship to the original purchaser. During the warranty period, Seller agrees to repair or replace defective and/or nonconforming goods or parts without charge for material or labor, or, at the Seller's option, demand return of the goods and tender repayment of the price. Buyer's exclusive remedy is repair or replacement of defective and nonconforming goods, or, at Seller's option, the repayment of the price.

Seller excludes and disclaims any liability for lost profits, personal injury, interruption of service, or for consequential incidental or special damages arising out of, resulting from, or relating in any manner to these goods.

This Limited Warranty does not cover defects, damage, or nonconformity resulting from abuse, misuse, neglect, lack of reasonable care, modification, or the attachment of improper devices to the goods. This Limited Warranty does not cover expendable items. This warranty is void when repairs are performed by a non-authorized person or service center. At Seller's option, repairs or replacements will be made on site or at the factory. If repairs or replacements are to be made at the factory, Buyer shall return the goods prepaid and bear all the risks of loss until delivered to the factory. If Seller returns the goods, they will be delivered prepaid and Seller will bear all risks of loss until delivery to Buyer. Buyer and Seller agree that this Limited Warranty shall be governed by and construed in accordance with the laws of Germany.

The warranties contained in this agreement are in lieu of all other warranties expressed or implied, including the warranties of merchantability and fitness for a particular purpose.

This Limited Warranty supersedes all prior proposals or representations oral or written and constitutes the entire understanding regarding the warranties made by Seller to Buyer. This Limited Warranty may not be expanded or modified except in writing signed by the parties hereto.