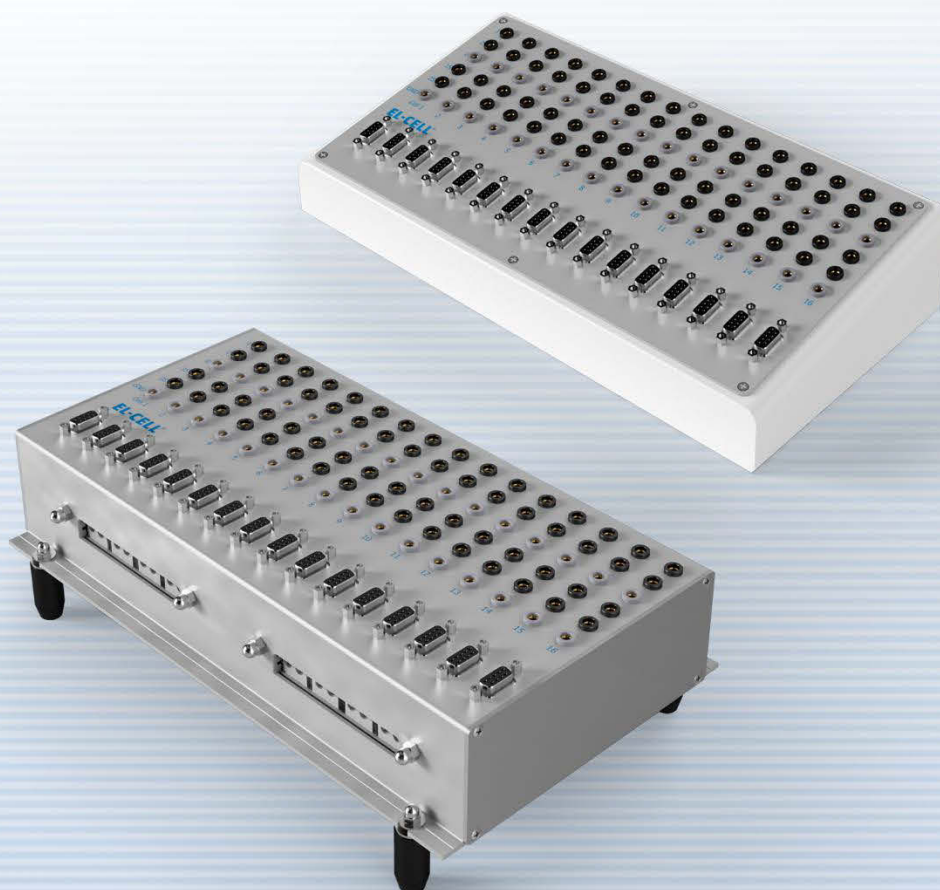EL-CELL®
electrochemical test equipment

User Manual

Release 1.1

PAT-Connect-16
Adapter box for flexible wiring connections

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

EL-CELL GmbH maintains the right to make changes without further notice to products described in this manual to improve reliability, function, or design. EL-CELL GmbH does not assume any liability arising from the use or application of this product.

EL-CELL GmbH

Tempowerkring 8

21079 Hamburg - Germany

phone: +49 40 79012-737

fax: +49 40 79012-736

e-mail: info@el-cell.com

web: www.el-cell.com

Content

1 Product description

The PAT-Connect-16 box serves the most flexible connection between an external battery tester or multi-channel potentiostat and the PAT-Stand-16/PAT-Chamber-16. The individual connection between a given PAT-Cell in the stand /chamber and the corresponding channel of the battery tester can be configured via an array of banana sockets at the front of the connection box. That gives the largest possible freedom to choose between the various full and half cell control modes.

In addition, the PAT-Connect box feeds through all the auxiliary analog signals provided by the PAT series test cells - temperature, pressure and buffered half cell voltages - and makes these signals available to the external battery tester.

Two different versions of the PAT-Connect-16 are available:

2 PAT-Connect-16-C
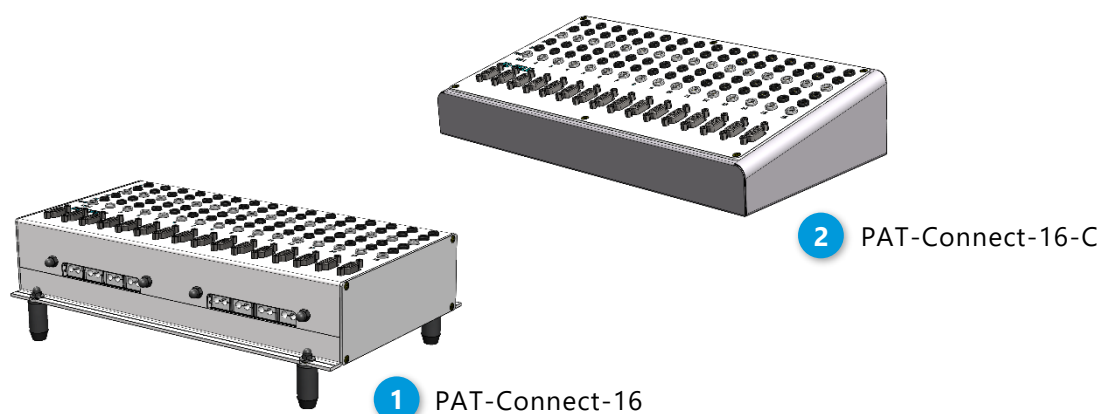
1 PAT-Connect-16

1 The PAT-Connect-16 for connection to the PAT-Stand-16. This version is for wall mounting or placing on the bench.

2 The PAT-Connect-16 C for connection to the PAT-Chamber-16. This version is permanently attached to the PAT-Chamber.

Features

- Easy-to-access banana sockets for plug-in of the cell cables of the battery tester / potentiostat (sockets available for WE, WE-Sense, RE, CE, CE-Sense, and GND)

- Sub-D Connector for optional auxiliary signals: buffered half cell voltages, temperature, sensor signals

- Available as modular box (PAT-Connect-16) to be placed on the bench or fixed on the wall, or as an attachment on top of the PAT-Chamber-16 C (PAT-Connect-16 C)

2 Technical data
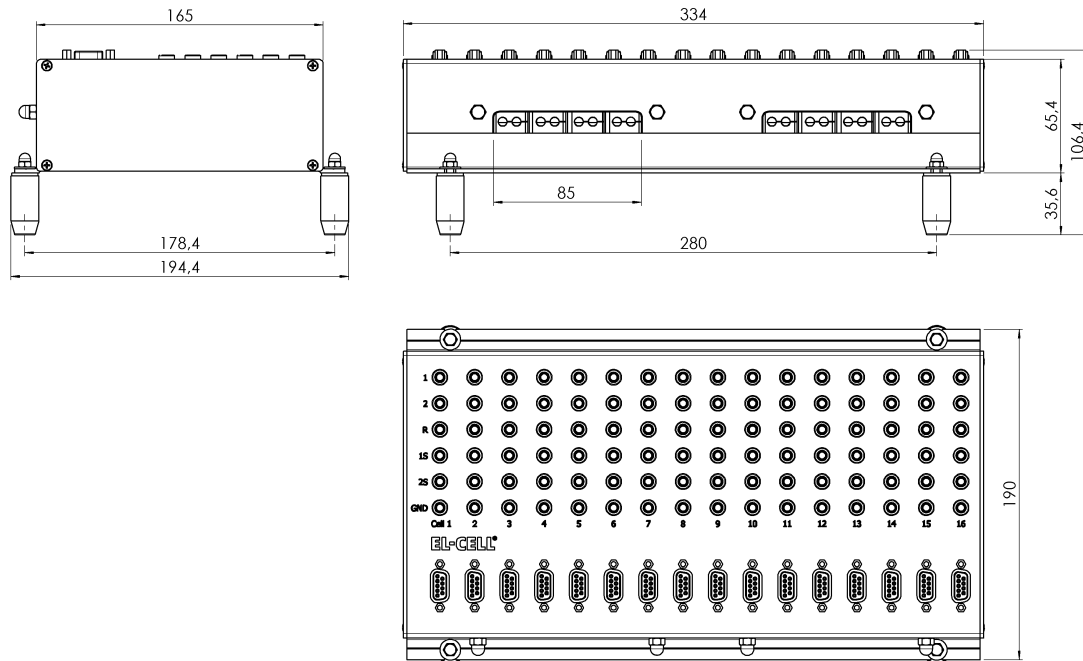
Dimensions PAT-Connect-16:
334 mm (width) x 195 mm (depth) x 106 mm (height)
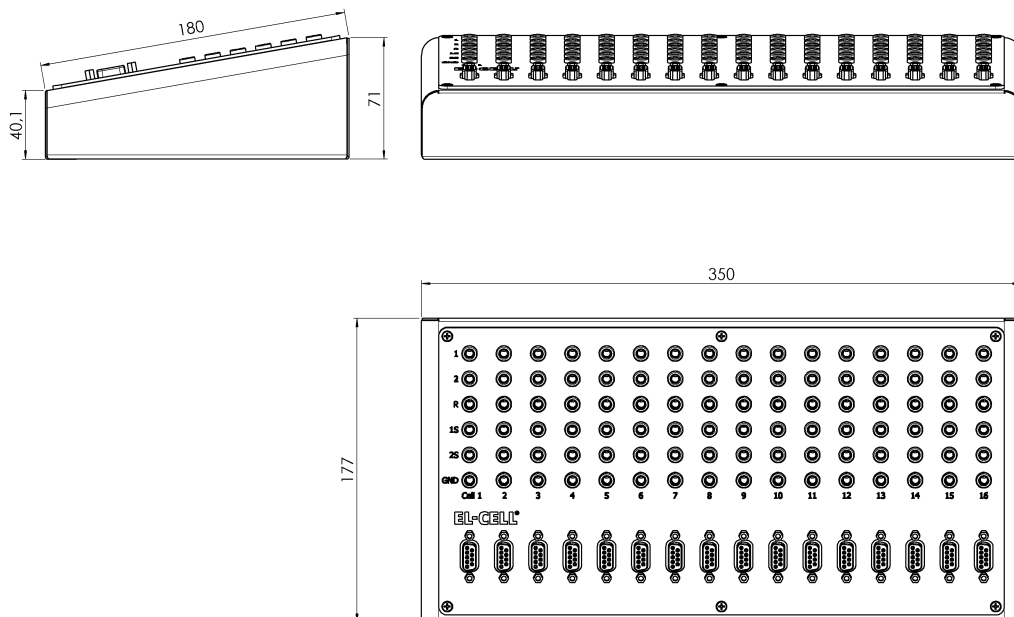
Dimensions PAT-Connect-16 C:
350 mm (width) x 177 mm (depth) x 75 mm (height)

3 Installation

When purchased in combination with a PAT-Stand-16 or PAT-Chamber-16, the PAT-Connect box comes always readily connected upon delivery. The connection cables between docking station and connect box are available in different lengths:

- PAT-Connect-16 Cable Set (10/10), 700 mm length, ECE1-00-0152-A

- PAT-Connect-16 Cable Set (10/10), 1000mm length, ECE1-00-0152-B

- PAT-Connect-16 Cable Set (10/10), 2000 mm length, ECE1-00-0152-C
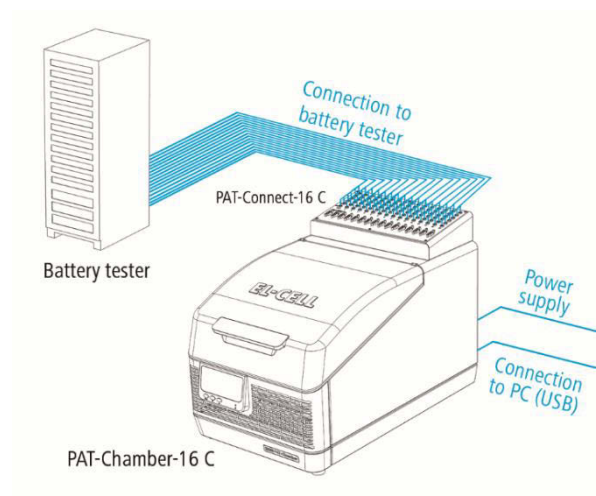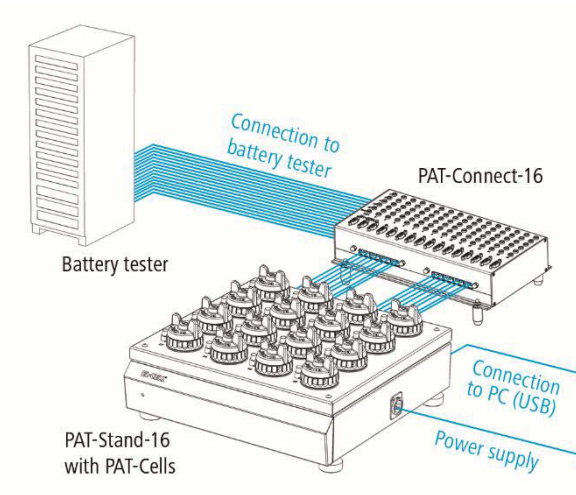
3.1 PAT-Connect-16 connections

4mm banana sockets

1 *(Lower electrode)*

2 *(Upper electrode)*

RE *(Reference electrode)*

1S *(Sense 1)*

2S *(Sense 2)*

GND *(Ground)*

Sub-D Connector

Optional auxiliary signals, e.g.:

- sensor signals

- temperature

- buffered half cell voltages
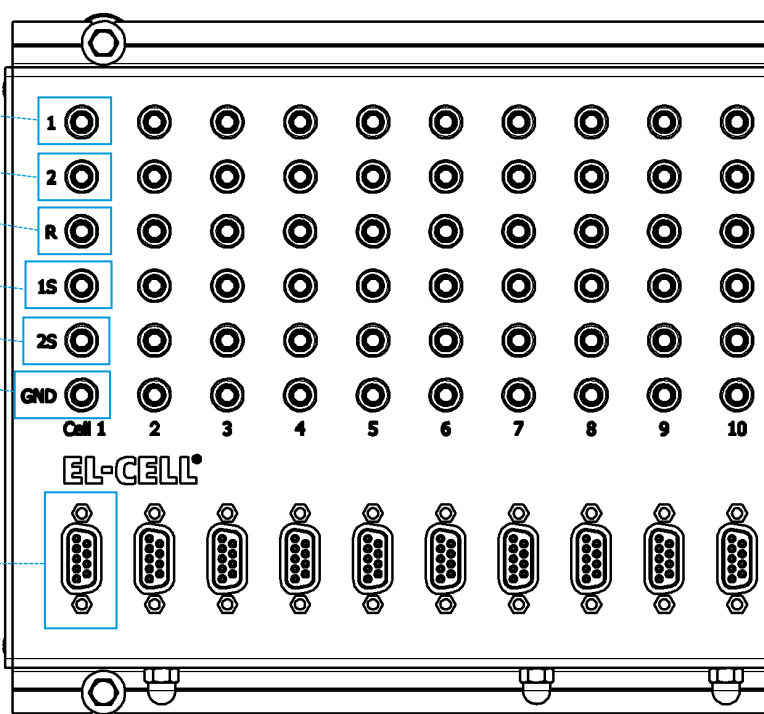
3.2 Control modes

The following schemes show how to connect, for a given test channel, the cell cable of the external battery tester or potentiostat to the banana sockets at the PAT-Connect box. Note that the naming conventions for the cell cable signals, and the number of signals (between 3 and 5), may differ between battery testers. The leads WE, CE and RE are always present, albeit possibly with other names.

1. Full cell control

Battery tester / potentiostat	WE	CE	RE	WE Sense	CE Sense
PAT-Connect-16	1	2	2S	1S	2S

2. Half cell control 1 vs R (lower half cell)

Battery tester / potentiostat	WE	CE	RE	WE Sense	CE Sense
PAT-Connect-16	1	2	R	1S	2S

3. Half cell control 2 vs R (upper half cell)

Battery tester / potentiostat	WE	CE	RE	WE Sense	CE Sense
PAT-Connect-16	2	1	R	2S	1S

The connection namings mentioned in the operation mode tables can differ from the used potentiostat. To view specific naming conventions from selected different manufacturers see the table below.

Important note: The application of our test cells is not limited to the potentiostats listed below. Our test cells can be used with all other potentiostats as well.

3.3 Cable colors and naming conventions

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

4 Cleaning

Wipe the PAT-Connect-16 with a moist tissue. Do not use aggressive chemicals for cleaning. Protect the device from dust and moisture.

5 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-Connect-16 ECE1-00-0130-A **or** PAT-Connect-16 C ECC1-03-0130-A

NOTE: The cables for connection between PAT-Chamber-16/PAT-Stand-16 and the PAT-Connect-16 must be ordered separately. The same applies for the available plug adapters 4 mm to 2 mm (ELT9081/X).

6 Available Accessories

- Adapter male 4 mm to female 2 mm, black (10pcs) ELT9081/X

7 Technical support

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

EL-CELL GmbH

Tempowerkring 8

21079 Hamburg - Germany

phone: +49 40 79012-737

fax: +49 40 79012-736

e-mail: info@el-cell.com

web: www.el-cell.com

8 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.