


# RackMount 16CH

## Operator's Manual

PalmSens BV

Version 004, 2026-11-17

PalmSens

## If you have problems

First make sure to check the “Troubleshooting” section in this document and the Knowledge Base on our website: www.palmsens.com/knowledgebase/. This page contains support information on installation, software updates, and training. Please make sure your software and firmware are up-to-date.



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Please describe the problem in as much detail as possible. Sending us the relevant method files, data files and screenshots can be helpful. Please include your instrument model and serial numbers, as well as any applicable software and firmware version you are using.

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See Appendix A for CE declaration of conformity.

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# Chapter 1. Safety considerations

## 1.1. Inspection

Inspect the instrument for shipping damage when received. In case of doubts, please notify PalmSens BV immediately. A damaged instrument can be a safety hazard. Keep the box the instrument was shipped in case it is required for evidence.

## 1.2. General safety information

This instrument has been designed and tested in accordance with IEC 61010-1 and applicable national deviations. It complies with the safety requirements for electrical equipment for measurement, control, and laboratory use.

Use of the instrument in a manner not specified by the manufacturer may impair the protection provided by the equipment. This instrument is a professional laboratory device designed for use by trained personnel. Improper use may result in electric shock, fire hazard, or damage to the instrument.



*Figure 1. Symbol to warn against the possibility of an electrical shock, located on the rear-end of the instrument.*

Read this manual carefully before installing or operating the instrument. Only qualified personnel should install, service, or repair this equipment. Do not open the enclosure. There are no user-serviceable parts inside. Disconnect the instrument from the mains supply before cleaning or performing maintenance.

## 1.3. Mains power requirements

- Supply voltage: 100-240 VAC ±10%
- Frequency: 50-60 Hz
- Maximum power consumption: 90 W

Do not use an inadequately rated mains supply cord. The supply cord must be rated for at least 1 A and your local mains voltage (a minimum 250 V rating is recommended). Do not modify the power cord configuration without authorization

from the manufacturer. The mains outlet must:

- Be properly grounded (protective earth).
- Be easily accessible at all times.
- Match the voltage and frequency specified above.

The mains plug serves as the disconnecting device. In case of emergency, disconnect the plug from the mains supply.

### 1.4. Protective earth (grounding)

This instrument is classified as Class I equipment and must be connected to a protective earth (PE) conductor.



Operating the instrument without a protective earth connection may result in serious injury or death due to electric shock.

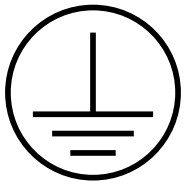


*Figure 2. Protective Earth Symbol located on the rear-end of the instrument.*

DO NOT:

- Operate the instrument without a protective earth connection.
- Use inadequately rated extension cords or any extension cords without a protective earth conductor.
- Intentionally interrupt the earth connection.

The ground of the internal circuitry can be switch to chassis-ground using a slider button at the rear-end of the instrument.

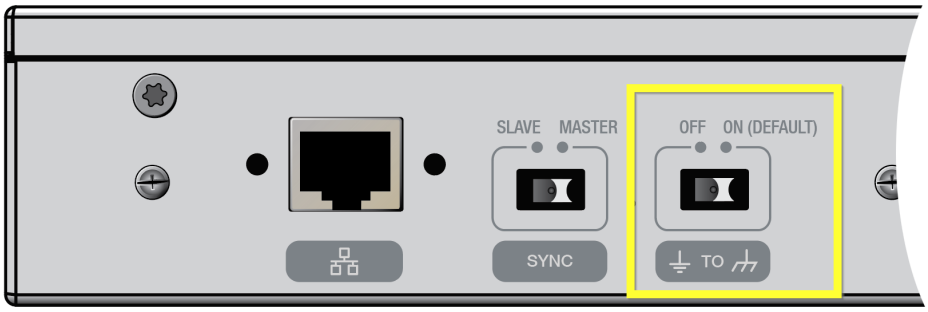



*Figure 3. Slider switch to connect or disconnect the internal circuitry ground to the chassis.*

The setting of the slider button is only relevant when your instrument is not equipped with Galvanically Isolated channels. If you are unsure of this setting, leave it in the default ON setting.

When your instrument is not equipped with Galvanically Isolated channels, the inside circuitry ground of the potentiostat channels are connected to the housing (which is connected to protective earth). This creates the possibility of ground loops when more than two grounded instruments are connected to the same cell. The slider switch allows to disconnect the internal ground from the housing, which protects from ground loops. For noise performance it is best to leave the internal ground connected to the housing / protective earth.

### 1.5. Rack installation safety

When installing the instrument in a 19" rack:

- Ensure the rack is stable and properly secured.
- Do not overload the rack or branch circuit.
- Ensure adequate ventilation; do not block ventilation openings.
- Allow sufficient airflow to prevent overheating.
- Maintain access to the mains plug for emergency disconnection.
- If multiple instruments are installed in the same rack, ensure that total power consumption does not exceed the rack's or circuit's rated capacity.

### 1.6. Overcurrent protection

Be advised:

- The RackMount 16CH features a dual fuse compartment located next to the power cable inlet. Ensure that two identical fuses are used. The recommended type is: Miniature Fuse, 5 x 20 mm, 1 A, Quick-Acting F, L, 250 VAC.
- Fuse replacement must be performed by qualified personnel.
- Disconnect the instrument from the mains supply before replacing fuses.

### 1.7. Environmental conditions

Never use the instrument in a corrosive atmosphere. Operate the instrument only within the specified environmental limits:

- Indoor use only
- Pollution Degree: PD2 (Normally only non-conductive pollution occurs, with occasional temporary conductivity caused by condensation)
- Operating temperature: between 0 °C and 45 °C
- Relative humidity: 10% to 80%, non-condensing
- Installation category: CAT II
- Altitude: Up to 2500 m



Do not operate the instrument in corrosive or explosive atmospheres or in the presence of flammable gases or vapors.

### 1.8. Safe use of measurement connections

Although the instrument is powered from mains voltage, the measurement channels are designed for low-voltage electrochemical experiments.

- Do not connect the measurement terminals to hazardous live voltages.
- Ensure that connected external equipment complies with applicable safety standards.
- Avoid creating ground loops between the instrument and other equipment.
- Only use accessories with the instrument that are supplied by PalmSens BV.

### 1.9. Cleaning and maintenance

Disconnect the mains plug before cleaning.

- Use a dry or slightly damp cloth only.
- Do not use solvents or spray cleaners.
- Do not allow liquids to enter the enclosure.

### 1.10. Service and repairs

Servicing must only be performed by authorized service personnel.



Opening the enclosure exposes hazardous voltages even when the instrument is switched off but still connected to the mains supply.

Always disconnect the mains plug before servicing.

### 1.11. Emergency procedure

In case of:

- Smoke
- Burning smell
- Unusual noise
- Liquid ingress
- Mechanical damage

Immediately disconnect the mains plug from the wall outlet and contact the manufacturer or authorized service personnel.

### 1.12. Compliance

The RackMount 16CH is CE compliant, see Appendix A for the EU Declaration of Conformity. The RackMount 16CH is also compliant with FCC rule part 15B.

# Chapter 2. Introduction

## 2.1. About the RackMount 16CH

The RackMount 16CH is a multi-channel potentiostat in a 19" enclosure which allows for placement in standard industrial 19" racks. The optional feet allow for easy placement on a desk as well. The RackMount 16CH comes in different configurations where all channels consist of either EmStat4 LR modules or EmStat Pico XR modules. Another in-factory option is to have each channel operate galvanically isolated from ground. This allows for instance for using multiple channels simultaneously in the same cell. The instrument's internal hardware allows for precise measurement synchronization across all channels. The instrument has four cell connectors, each DB25 connector connects to four different potentiostat channels. PalmSens provides different cables and adapters for optimal use of the connectors.

The RackMount 16CH is equipped with an internal Linux-based Lablink controller which runs, buffers and stores each measurement. The Lablink system allows for running (long duration) measurements detached from a PC and sharing channels of the instrument via the Local Area Network (LAN). The onboard Lablink controller ensures measurements continue to run even if the connection to the host PC is lost due to a shutdown, reboot, or cable disconnection.

The instrument is designed to be used by multiple users simultaneously. Channels can be claimed by users via the PSTrace Xpress software or in a browser window.

## 2.2. Scope of this manual

This manual covers the handling, characteristics, troubleshooting, and other practical information regarding the hardware specifics of the RackMount 16CH, as well as maintenance and compliance.

Please refer to the Quick Installation Guide that was supplied with the instrument for instructions on installing the instrument and the software. Additionally, the section Getting Started in the PSTrace Xpress help section, that is installed with the software, provides detailed instructions for conducting first measurements with your instrument.

### 2.3. Hardware capabilities

Each channel of the RackMount 16CH circuitry encompasses the hardware for the following aspects:

- Signal generation (DAC) and signal acquisition (ADC)
- Control loop for 3-electrode systems
- Analog Front-End with different filter settings for optimal signal acquisition
- Filters and signal conditioning
- Current-to-voltage converter (TIA)
- Microcontroller for parsing and running MethodSCRIPTs, hardware control, communication and user interaction
- Memory for buffering and storing data and parameters

An internal industrial PC controls all channels and enables communication with Lablink functionality.

### 2.4. Potentiostat modes

Each channel of the RackMount 16CH-ES4 can work in two different modes, the potentiostatic (PSTAT) mode and the galvanostatic (GSTAT) mode. The channels of the RackMount 16CH-ESP only support the potentiostatic mode.

**Potentiostatic mode:** in this mode, the channel regulates the potential at the working electrode relative to the reference electrode. To achieve the desired working potential, the counter electrode is adjusted accordingly, within the constraints of the control amplifier's compliance limit.

**Galvanostatic mode:** in this mode, the channel precisely controls the current between the working and counter electrodes, maintaining it at the specified fraction of the selected current range (up to its maximum limit). The counter electrode is adjusted to the necessary potential, within the control amplifier's compliance limit, to achieve the desired cell current. While the reference electrode is not part of the control loop, it is typically used to monitor the potential at a specific point in the electrochemical cell relative to the working electrode.

See Chapter 9 for the applicable potential ranges and compliance specifications.

### 2.5. RackMount 16CH configurations

The RackMount 16CH is available in different configurations. The following table

shows which configurations are available.

*Table 1. Available RackMount 16CH configurations*

| Article code | Model | Galvanic Isolation |
|---|---|---|
| H-RM16CH-R-E-G0-**XXX** | Rack | No |
| H-RM16CH-R-E-G1-**XXX** | Rack | Yes |
| H-RM16CH-D-E-G0-**XXX** | Desktop | No |
| H-RM16CH-D-E-G1-**XXX** | Desktop | Yes |

Where **XXX** = **ES4** for EmStat4 LR potentiostat-channels or **ESP** for EmStat Pico XR potentiostat-channels.

## 2.6. Accessories

The RackMount 16CH is supplied standard with the following accessories:

- IEC C13 mains power cable
- Ethernet cable
- Hardware Sync Link cable
- 1x PalmSens Dummy Cell
- 4x cell-connector adapters with internally connected REs and CEs (shipped with galvanically isolated RackMount 16CH only)

Also included:

- PSTrace Xpress™ software for Windows (on USB drive)
- Manual (hard copy)
- Quick Start (hard copy)
- Calibration report for each channel (hard copy)

### RE/CE Combiners

Each RackMount 16CH includes four RE/CE Combiners for use with the standard cell cables as standard. These adapters bridge the reference (RE) and counter (CE) electrodes across four channels, streamlining your cell setup. By consolidating these connections, the RE/CE Combiners eliminate the need to manually stack individual leads for each four-channel cable assembly. The main application for using the adapters is when multiple instrument channels are measuring in the same cell, having multiple WE's versus a common RE and CE. Therefore these RE/CE Combiners are only shipped when the instrument is configured with galvanically isolated channels (G.I.)




*Figure 4. RE/CE Combiner for combining four counter and four reference electrodes*

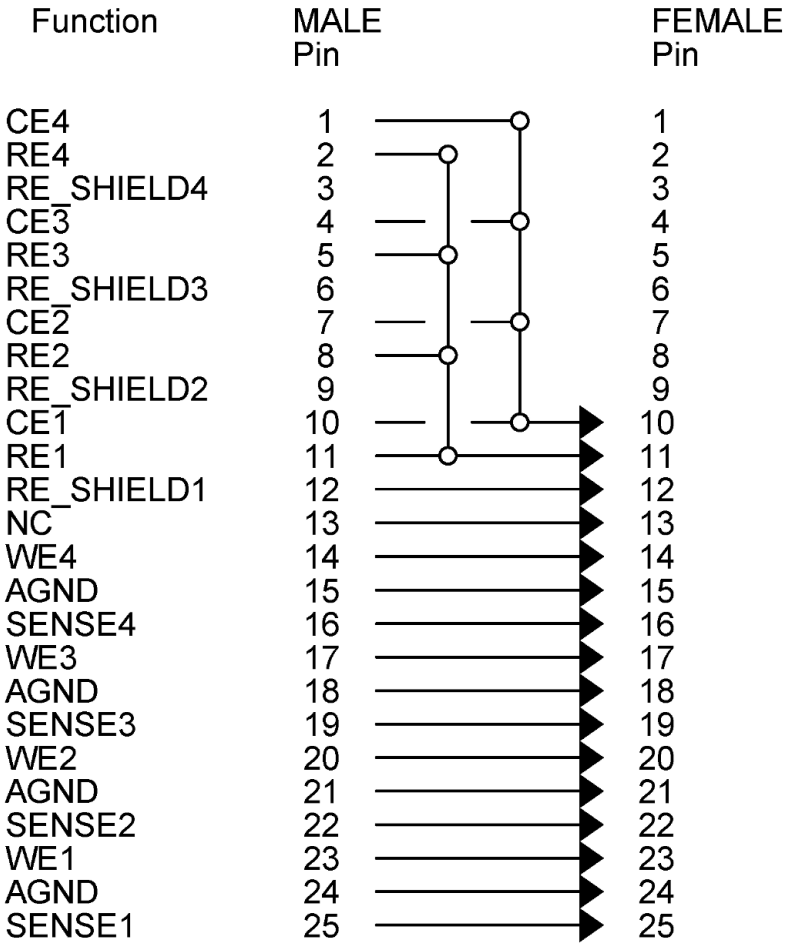



*Figure 5. Connection diagram of the RE/CE Combiner*

## 2.7. Software

The RackMount 16CH is compatible with PSTrace Xpress v1.8 and later. PSTrace Xpress is available on the USB stick supplied with the RackMount 16CH, via download at my.palmsens.com, or through the Windows Store.

# Chapter 3. Installation

## 3.1. Preparing for operation

If the RackMount 16CH was taken from a cold location into a warm, humid location, water vapor might condense at the inside. If this is the case, it is important to leave the instrument in the room for at least an hour before connecting it to the power supply. For mounting the RackMount 16CH in a 19" rack, follow the steps in the next section. In case the RackMount 16CH was ordered in the desktop version, place the RackMount 16CH on a flat solid surface. Ensure adequate clearance at both sides of the instrument for the air inlets, and at the rear for the air outlet, Ethernet cable, and mains power cable.

### Rack mount installation

Follow the steps below if the RackMount 16CH was ordered in the configuration for placement in a 19" rack.

1. Preparation:
    - **Stability:** Verify that the 19" rack is stable and properly secured to the floor or wall before mounting the instrument.
    - **Load Capacity:** Ensure the total power consumption of all installed instruments does not exceed the rated capacity of the rack or the branch circuit.
    - **Acclimatization:** If the instrument was moved from a cold environment to a warm, humid one, allow it to sit in the installation room for at least one hour before connecting it to power to prevent internal condensation.
2. Mounting the Instrument:
    - **Brackets:** Use the two mounting brackets located at the front of the instrument to secure it into the rack.
    - **Ventilation:** Maintain adequate airflow by ensuring ventilation openings are not blocked. Allow sufficient space on both sides of the instrument near the air inlets.
    - **Rear Clearance:** Ensure there is enough depth at the rear for the connection of the ethernet cable, the mains power cable and the air outlets.
3. Electrical Connections:
    - **Accessibility:** The mains power plug serves as the primary disconnecting

device; it must remain easily accessible at all times for emergency disconnection.

- **Grounding:** The instrument must be connected to a properly grounded (protective earth) wall outlet.
- **Stacking:** If multiple RackMount 16CH units are stacked for hardware synchronization, connect them in series using the "In" and "Out" Link ports at the rear with the provided synchronization cables.

## 3.2. Overview of rear switches and connectors

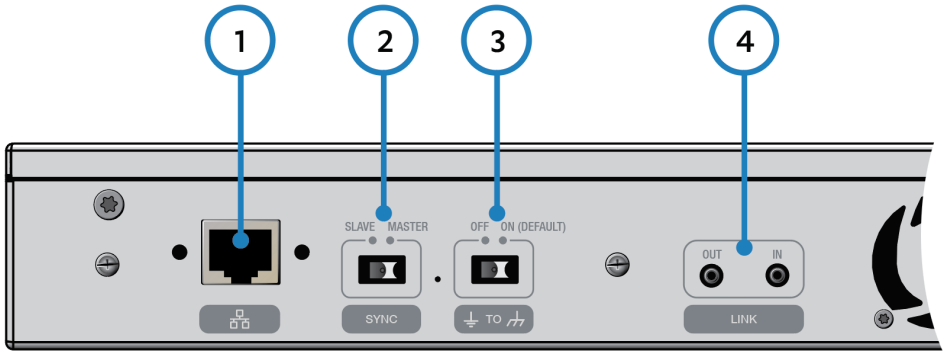



*Figure 6. Rear view of the RackMount 16CH*

1. RJ45 ethernet port
2. Slave / master switch for hardware synchronization. See Section 4.7 for more information
3. Chassis to ground setting switch. See Section 1.4 for more information
4. Link connectors for hardware synchronization between multiple RackMount 16CH instruments. See Section 4.7 for more information

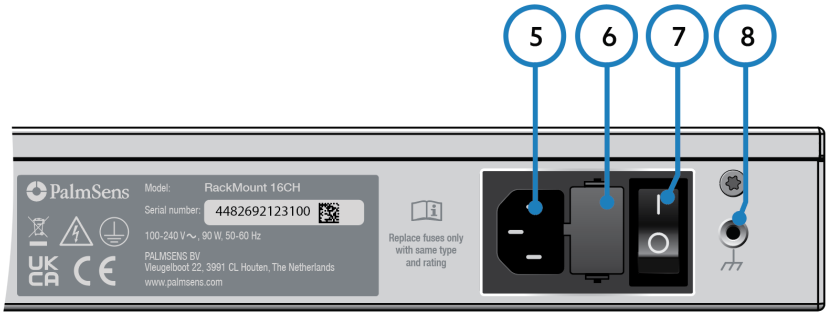



*Figure 7. Rear view of the RackMount 16CH*

5. IEC-320 C-14 power connector
6. Fuse box. See Section 1.6 for more information

7. Power switch
8. Chassis ground. See Section 4.6 for more information

### 3.3. Overview of front switch and connectors

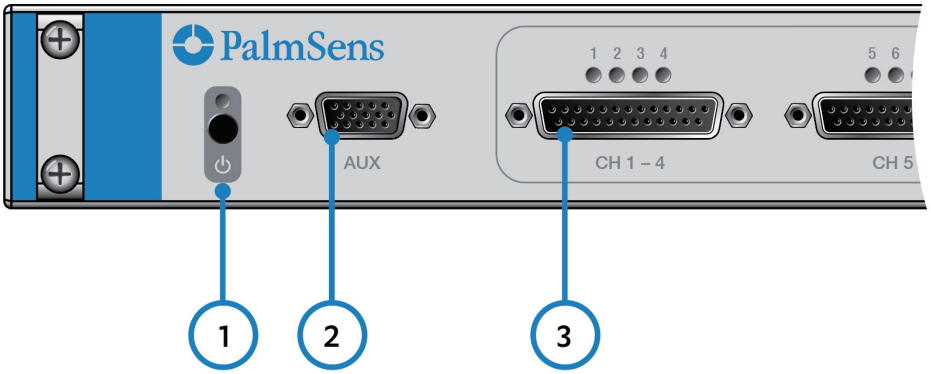



*Figure 8. Front view of the RackMount 16CH*

1. Soft power switch with Power/Status LED indicator
2. Auxiliary port. See Section 4.5 for more information
3. Connector for connecting to four individual potentiostat channels

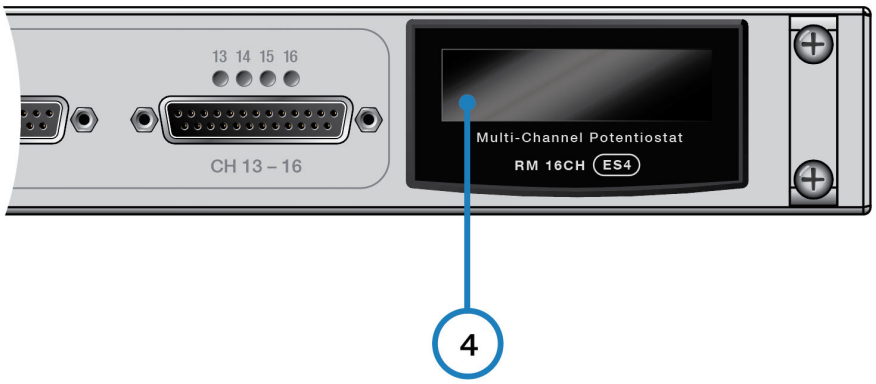



*Figure 9. Front view of the RackMount 16CH showing the display*

4. Status display. See Section 4.4 for more information

# Chapter 4. Operating the RackMount 16CH

This section describes how the RackMount 16CH is operated.

## 4.1. Powering up

The RackMount 16CH can be installed in a standard 19-inch rack or placed on a stable, flat surface. Once positioned, follow these steps to power the unit:

1. Connect the ethernet cable to the network port.
2. Connect the power cable to the AC inlet.
3. Toggle the main power switch located on the rear panel to the ON position.

Once powered on, verify that the Power/Status LED on the front panel illuminates in amber color. This color means that the instrument is powered and ready to be booted.




*Figure 10. Power/Status LED on the front showing amber color when standby*

Press and hold the power button for two seconds. The Power/Status LED will turn blue and the display shows "Starting Lablink". Shortly after the display shows "Initializing... obtaining IP address" where the internal Lablink will try to receive an IP address from the local DHCP server.




*Figure 11. The display showing the internal Lablink is trying to obtain an IP address*

### System warm-up requirements

To ensure the RackMount 16CH delivers peak signal integrity and maintains its

specified thermal stability, a brief initialization period of at least 20 minutes is required. While the unit will pass signal immediately upon powering on, the internal analog circuitry requires time to reach a state of thermal equilibrium. During the first several minutes, subtle fluctuations in component temperature can lead to minor variances in gain accuracy and noise floor performance. The RackMount 16CH utilizes high-precision components that are calibrated to perform within specific tolerances once they reach a stable internal temperature.



Recommended warm-up duration: 20 minutes.

## 4.2. Connecting to the local network

To access the RackMount 16CH make sure it is connected to the same Local Area Network (LAN) as the PC or laptop you are using. The internal Lablink is preconfigured to obtain an IP address automatically via DHCP. Please ensure that your network has DHCP enabled so that an IP address can be assigned automatically. When the Lablink inside the RackMount 16CH has obtained an IP address, the Lablink can be configured in the browser via http://lablink.local.

See Chapter 5 for detailed information on how to setup and configure the RackMount 16CH Lablink connection for the first time.

### In case lablink.local cannot be found

In case you cannot connect to the Lablink in your browser via http://lablink.local make sure you are in the same subnet. It might also be possible that the locally hosted page lablink.local cannot be found due to the way your internal network is configured. In this situation it is recommended to proceed to installing PSTrace Xpress and retrieve the IP address of the RackMount 16CH from the PSTrace Xpress Lablink settings window. You can also open a browser window directly to the RackMount 16CH from PSTrace Xpress. Alternatively you can type the IP address that is shown on the instrument's display in your browser address bar.



The IP address of the RackMount 16CH is shown on its display. You can type the IP address in the address bar of your browser to access its Lablink dashboard.

See also section Section 5.2.

## 4.3. Cell connections

### Cell connectors

The RackMount 16CH has four cell connectors on the front, each connector connects to four individual potentiostat-channels.

Each connector consists of a D-Sub DB25 female connector. The following schematics show the four-in-one-cell connector pin-out and pin functions. The channel number for each function is added as suffix, i.e. WE4 means working electrode for channel 4.

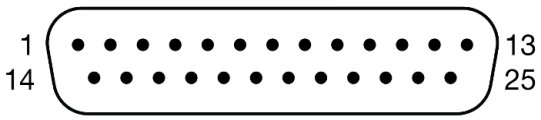



*Figure 12. Four channel connectors, each connecting to four cells*

*Table 2. Channel 1-4 connector pin-out*

| Pin | Function | Pin | Function | Pin | Function |
|---|---|---|---|---|---|
| **1** | CE4 | **11** | RE1 | **21** | AGND2 |
| **2** | RE4 | **12** | RE_SHIELD1 | **22** | WE2_2* |
| **3** | RE_SHIELD4 | **13** | NC | **23** | WE1 |
| **4** | CE3 | **14** | WE4 | **24** | AGND1 |
| **5** | RE3 | **15** | AGND4 | **25** | WE2_1* |
| **6** | RE_SHIELD3 | **16** | WE2_4* | | |
| **7** | CE2 | **17** | WE3 | | |
| **8** | RE2 | **18** | AGND3 | | |
| **9** | RE_SHIELD2 | **19** | WE2_3* | | |
| **10** | CE1 | **20** | WE2 | | |

**Only available with RackMount 16CH-ESP version*

The pin-out for the other three connectors for channels 5-8, 9-12 and 13-16 are identical so each pin function can be identified by adding 4, 8 or 12 to the channel number for each connector. For instance pin 10 on the connector for channels 5-8 is CE5, or the counter electrode of channel 5.

For **galvanically isolated** instruments each channel has its own ground (AGND).

### Standard cable assembly

The standard four-channel-in-one cell cable is a precision-engineered one-meter cable, specifically designed to ensure optimal measurement accuracy with your instrument. The cable is supplied with either four leads per channel (ES4 version) or five leads per channel (ESP version). See the table below.

*Table 3. Standard cell cable leads for the ES4 and ESP versions of the RackMount 16CH*

| Marker color | Marker text | Function |
|---|---|---|
| **Black** | C# | Counter electrode |
| **Blue** | R# | Reference electrode |
| **Red** | W# | Working electrode |
| **Green** | GND# | Ground |
| **Yellow*** | S# | Second Working electrode |

**The S# lead with the yellow marker is only available for the RackMount 16CH-ESP version*

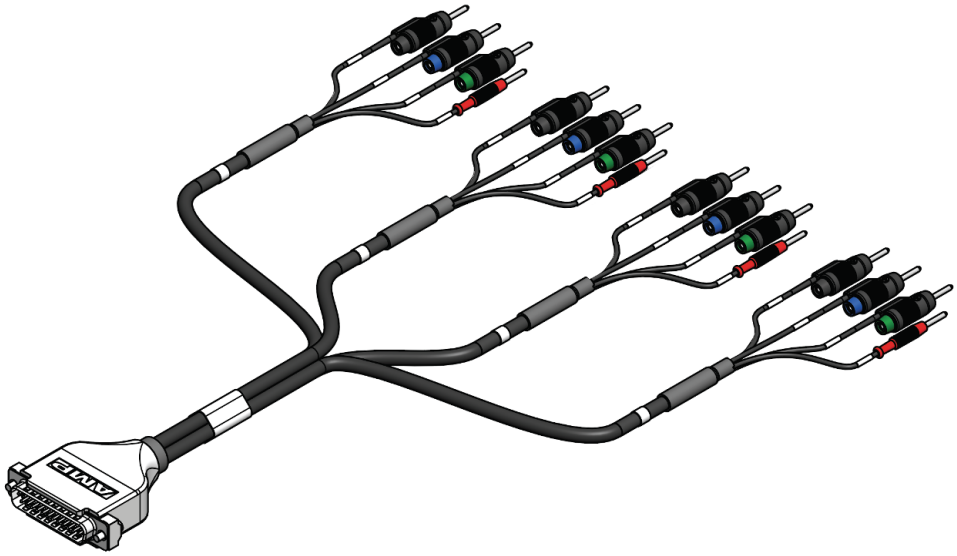


*Figure 13. The RackMount16CH default cable for ES4 channels (length not to scale)*

In most cases PalmSens potentiostats are delivered with a cell cable terminated with 2-mm pins as the lead connectors for the cell / electrodes / sample (excluding some models that come with SPE connectors). Each lead is accompanied by a crocodile (alligator) clip of the same color.



We advise keeping an unused lead connected with its crocodile clip. This practice prevents accidental electrical contacts with the exposed pin, minimizing the risk of unintended electrical contacts.

Each electrode cable is individually shielded, and the entire cable features an external shielding mesh. The shielding extends up to the beginning of the banana plug. When you are using a Faraday cage, it is advisable to keep the entire banana plugs inside the Faraday cage housing to ensure the cage shields the banana plug.

### 2-electrode cell connection

For a 2-electrode setup, combine the counter and reference electrode leads. The counter electrode plug of the cell cable is stackable, allowing for convenient combination.

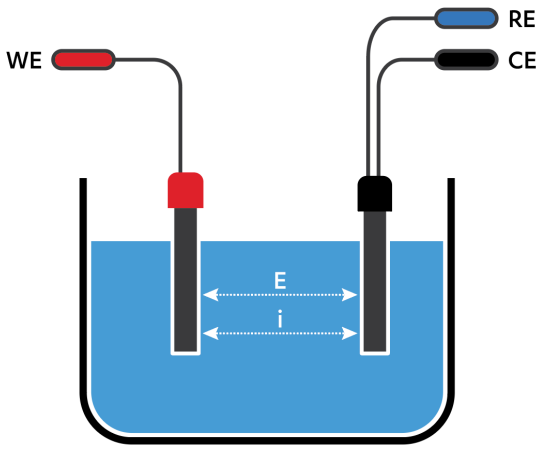



*Figure 14. 2-electrode cell connection*

During a measurement in a 2-electrode setup, the potential will be applied between the two electrodes and the current will flow between the same two electrodes. This means the applied potential includes the potential drop across the working electrode's interface, the potential drop across the solution, and the potential drop across the counter electrode's interface. Any changes at the counter electrode will influence the result. If your counter electrode is expected to be stable during the measurement due to low currents or a short duration of the measurement, you can use this setup almost equivalent to a 3-electrode setup. Otherwise, this setup is only used for applications where the full cell potential is an interesting parameter, for example, fuel cells, batteries, capacitors, dummy cells or electronic components.

Please avoid connecting a self-powered sample, such as batteries, fuel cells or supercapacitors, to an unpowered potentiostat, as this action can potentially damage the equipment. It is advisable to disconnect the sample before turning off the potentiostat to mitigate any risk of damage to the device.

### 3-electrode cell connection

The 3-electrode setup is the most common configuration for electrochemical measurements. In this arrangement, connect the corresponding leads to the respective electrodes.

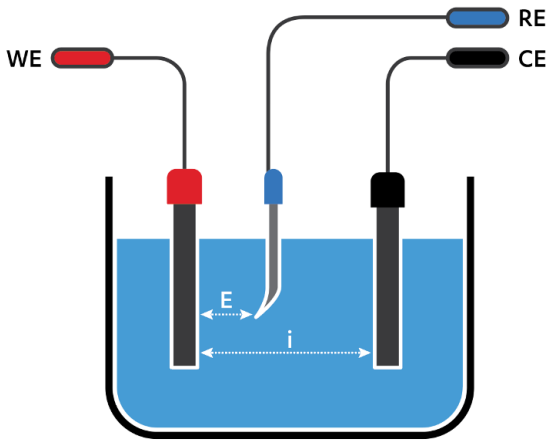



*Figure 15. 3-electrode cell connection*

Similar to the 2-electrode setup, the working electrode carries the current and potential. In this setup, the counter electrode also carries the current and polarizes versus the working electrode (WE). However, the potential is measured between the working and reference electrodes, denoted as WE vs. RE. This potential is the one set and read in the plot results. The potential WE vs. CE is referred to as the 'cell potential,' and it is recorded in special cases. In potential-controlled experiments, the potentiostat maintains a loop to ensure that the potential read (WE vs. RE) remains as programmed in the setup, consistently driving this potential towards the WE vs. CE polarization. This has the advantage that the potential drop across the counter electrodes interface is compensated. Another advantage is that the reference electrode does not carry any current and will thus keep a stable potential during the measurement. This means the potential of the working electrode is more accurate and reproducible.

### Using the RackMount 16CH as a polypotentiostat

With hardware synchronization enabled, it is possible to use the RackMount 16CH as a polypotentiostat where the working electrodes of multiple channels are used in the same cell, with a single counter and reference electrode. Depending on whether your system has galvanically isolated channels, there are different approaches for using the RackMount 16CH as a poly-potentiostat. See Section 4.6.1. To verify if your instrument is equipped with galvanic isolation verify if the serial number ends with

“G1” for a galvanically isolated instrument, or "G0" for a non-galvanically isolated instrument. Refer to the manual of PSTrace Xpress to see how to configure the RackMount 16CH for synchronized measurements. For more detailed information about using your instrument or other PalmSens instrument models as a poly-potentiostat, go to our website and search for the application note "Multiple Working Electrodes in the Same Cell".

**Polypotentiostat setup for systems with Galvanic Isolation**

In this setup it is possible to use different techniques at the different working electrodes at the same or even at different times. You can also use this setup to perform the same technique on all channels. Use this setup in case your instrument is equipped with galvanically isolated channels. With Galvanic Isolation the channels don’t share a fixed reference point. As a result, the potentiostats of the different channels can share the same reference and counter electrodes. They will just apply the required potential difference between the working and reference electrode without interference from the other channels. If the working electrodes were fixed on a common potential, the reference and counter electrode couldn’t be adjusted by all channels to different potential differences.

Connect the Reference Electrode (RE) plug (blue) of all channels you intend to use to the reference electrode in your cell array. Connect the Counter Electrode (CE) plug (black) of all channels you intend to use to the counter electrode in your cell array. This means there will be multiple connections to these two electrodes.



The RackMount 16CH comes standard with RE/CE Combiners to facilitate the connection of all reference and counter electrodes for each four-in-one cell connector. See Section 2.6.1

Connect each working electrode to the WE lead (red) of a different channel. For example, connect the WE plug of channel 1 to the working electrode assigned to channel 1. Then connect the WE plug of channel 2 to the working electrode assigned to channel 2, and so on. All ground leads must be disconnected to ensure the GI capability. This setup can also be applied to more than one cell array. See the scheme in the Figure below.

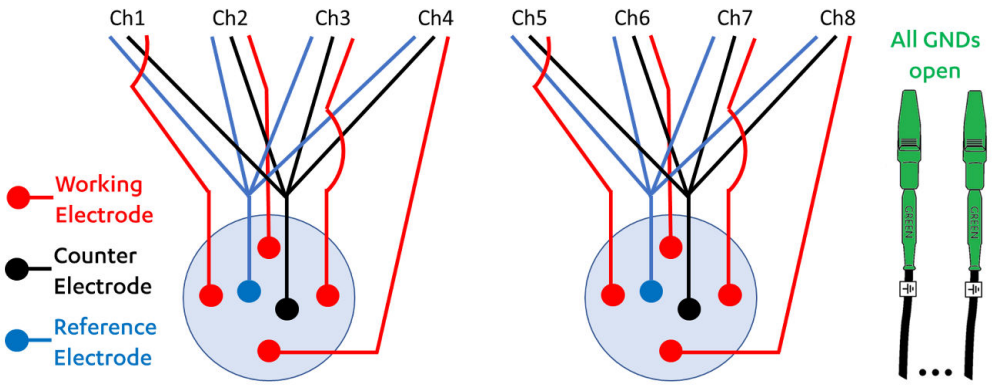



*Figure 16. Connection scheme for 2 cell arrays each with 4 WEs (for systems with galvanic isolation)*

**Polypotentiostat setup for systems without Galvanic Isolation**

This setup allows you to run only the same technique at the same time with multiple working electrodes in the same cell. This setup is limited to be used with techniques that support Hardware Synchronization. If you are using multiple instruments in your setup, make sure to connect the synchronization link cables as explained in section Section 4.7.

Connect the Reference Electrode (RE) plug (blue) and the Counter Electrode (CE) plug (black) of channel 1 to the reference and counter electrode in your cell. For channel 2, connect the Reference Electrode (RE) plug (blue) to the Counter Electrode (CE) plug (black) of the same channel. For channel 3, connect the RE plug (blue) to the CE plug (black) of that channel. Continue in this way until all channels you want to use in this measurement have their RE plug connected to their own CE plug. Next, connect the Working Electrode plugs (red) to the Working Electrodes in your cell. For example, connect the Working Electrode plug of channel 1 to the Working Electrode assigned to channel 1, the Working Electrode plug of channel 2 to the Working Electrode assigned to channel 2, and so on. This setup can also be applied to more than one cell array. You can connect one ground lead to a Faraday cage if applicable. The rest of the ground leads can remain disconnected. See the scheme in the Figure below.

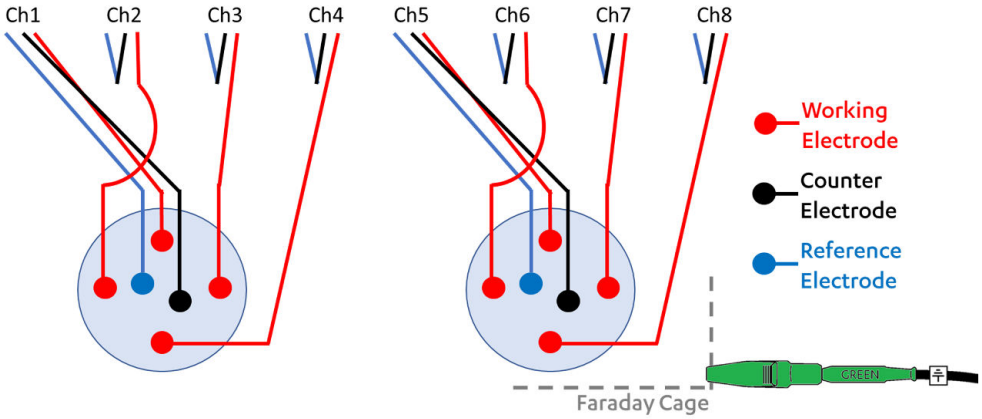



*Figure 17. Connection scheme for 2 cells each with 4 WEs (no galvanic isolation present).*

## 4.4. Display and cell indicators

Each individual channel has a status indicator to show in what state the channel is. The channel status is shown by means of different indicator colors. Table 4 shows the meaning for each color.

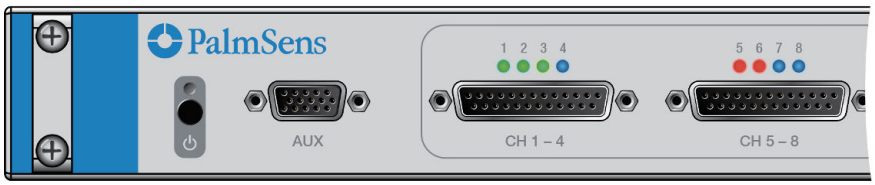



*Figure 18. Channel status indicators showing different colors*

*Table 4. Channel status indicator colors*

| Indicator color | Channel status |
|---|---|
| **Blue** | Available and cell is off (cell is at open circuit) |
| **Green** | Claimed and cell is off |
| **Red** | Claimed and cell is active (current is flowing) |

The instrument's display shows the following information (where the numbers refer to locations shown in Figure 19):

*Table 5. Display information on the RackMount 16CH*

| Element | Information |
|---|---|
| 1 | Boot status and after booting: IP Address,<br>alternating with friendly Lablink-name |
| 2 | [Active Users] / [Registered Users] |
| 3 | Internal storage space used |
| 4 | Fan speed |

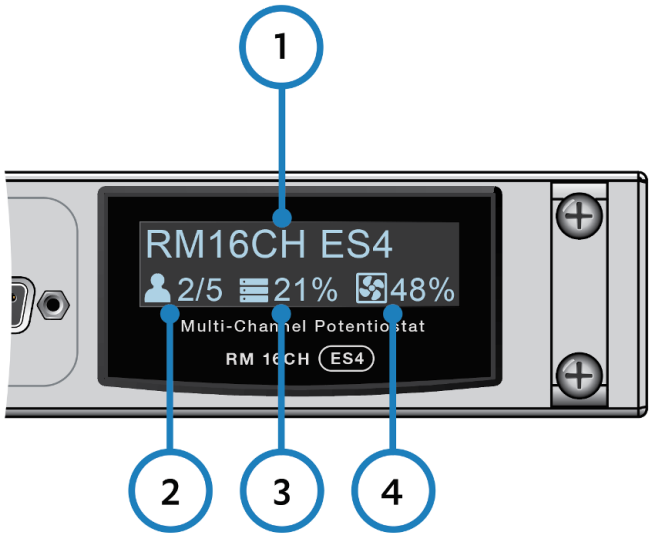



*Figure 19. Display showing status information*

### 4.5. Auxiliary port pin-out

Most of the auxiliary port pins are routed to the first channel of the RackMount 16CH instrument. Pin 7 is routed to all channels and can be used to trigger a measurement on channels that are waiting for a digital start signal. Pin 12 is a buffered version of the Hardware Sycnhronization start signal. See Section 4.7.

The following schematic and table show the auxiliary port pin-out and pin functions.

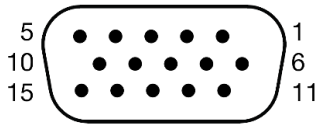



*Figure 20. The front view of the female port (DE-15) on the RackMount 16CH*

*Table 6. RackMount 16CH auxiliary port pin functions*

| Pin | Function |
|---|---|
| **1** | GPIO 0* (channel 1) |
| **2** | GPIO 3* (channel 1) |
| **3** | Analog In (channel 1)<br>-10 to 10 V (16-bit) |
| **4** | SCL EXT (channel 1) |
| **5** | SDA EXT (channel 1) |
| **6** | GPIO 1* (channel 1) |
| **7** | Digital input trigger to all channels (Active Low)<br>Pulled up to 3.3 V via 10 kΩ |
| **8** | NC |
| **9** | 5 V digital power line (max. 300 mA) |
| **10** | GND |
| **11** | GPIO 2* (channel 1) |
| **12** | Sync start signal used with hardware synchronization |
| **13** | NC |
| **14** | GND |
| **15** | Analog Out (channel 1)<br>0 - 3.3 V (14-bit) |

**Pulled up to 3.3 V via 100 kΩ, input/output.*



The AUX port is rated for use with cables with a length of up to 3 meters.

## 4.6. Chassis ground

The RackMount 16CH chassis is permanently connected to Earth through the protective conductor of the AC power cable. For optimal noise reduction, you can connect a Faraday cage to the chassis ground using a standard 4 mm banana plug.

### Galvanic Isolation (GI)

The RackMount 16CH is available with optional galvanically isolated channels. The grounding configuration depends on your specific model:

- **Non-GI Models:** All potentiostat channel grounds are connected to the chassis ground.
- **GI Models:** Potentiostat channels are galvanically isolated and are not connected to earth ground. This is also known as floating channels.

**Identification:** To determine if your instrument has galvanically isolated channels, check the serial number label on the rear panel. Models with galvanic isolation are marked with the "G1" suffix. If this suffix is absent, your instrument uses a common chassis ground for all channels.

### 4.7. Hardware synchronization

In case there are multiple RackMount 16CH instruments present, they can be stacked on top of each other. The Link ports at the rear can be used to connect them for running hardware-synchronized measurements. These measurements allow for running a measurement with multiple WE's in the same cell. The working electrodes will all be measured in parallel, so you could perform four Cyclic Voltammetry measurements (or another electrochemical technique) absolutely synchronized at multiple different working electrodes in the same solution. Refer to our knowledge base for experimental details.

Each RackMount 16CH comes with a Hardware Sync cable. To synchronize multiple RackMount 16CH instruments, use the supplied Link cables to connect them in a series via the 'In' and 'Out' ports on the rear panel. To link your instruments:

1. Connect the **Link cable** to the **Out** port of the first instrument.
2. Connect the other end to the **In** port of the second instrument.
3. Repeat this sequence for each additional instrument in the stack to complete the chain.

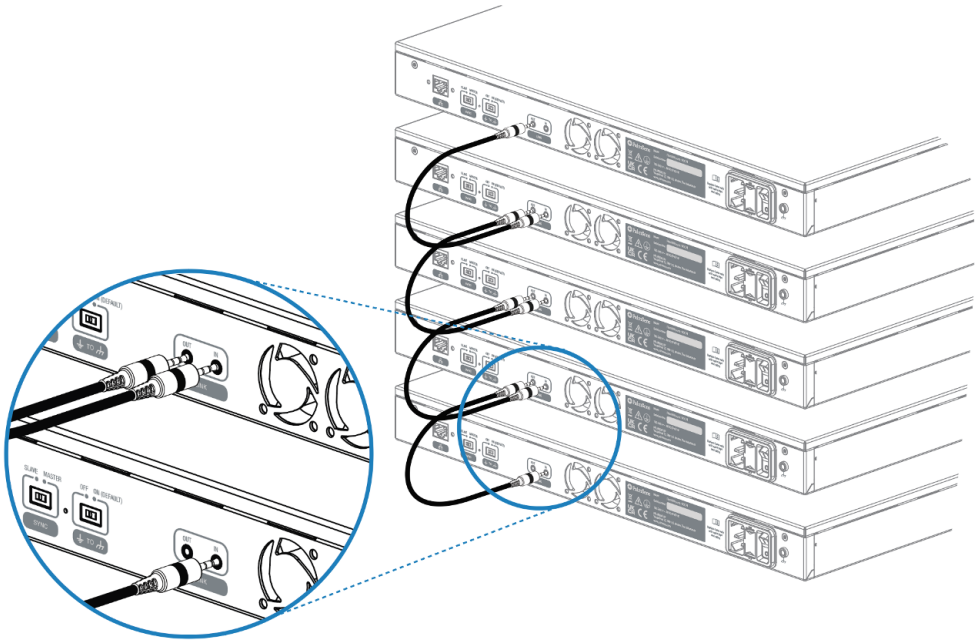


*Figure 21. Daisy chaining multiple RackMount 16CH instruments via the Link ports for hardware synchronization*

The synchronization works with a leader/follower protocol, where a Master channel sends out the synchronization signals to all Slave channels. In each stack of instruments there can only be one instrument with the Master channel. This is the first channel of the instrument with the Sync setting set to "Master". See Figure 22.

Make sure to set only one instrument in a stack of linked instruments as the Master and all others as Slave.

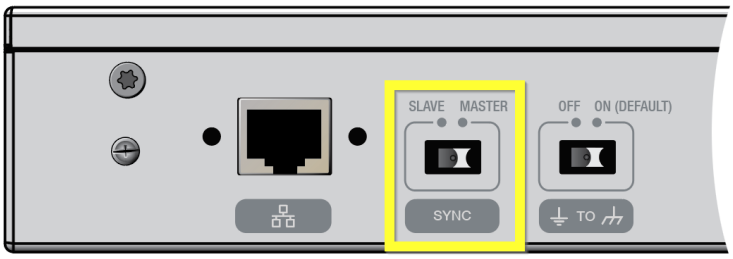



*Figure 22. Switch for setting the instrument as Master or Slave*

# Chapter 5. Setting up the Lablink connection

The RackMount 16CH is powered by the PalmSens proprietary Lablink platform.

**Key Features and Connectivity**

- **Local Hosting:** The Lablink platform is hosted locally by the RackMount 16CH hardware or on Lablink Hubs within the network.
- **Accessibility:** The RackMount 16CH channels can be accessed by different users on the Local Area Network (LAN).
- **Resource Management:** The platform centralizes control, allowing for efficient sharing of instruments or instrument-channels and synchronized data management.

## 5.1. First-time configuration

**Step 1: Accessing the RackMount 16CH via your browser**

Make sure your PC is in the same network as the RackMount 16CH and open a browser window to http://labink.local. This address points to a page hosted on the RackMount 16CH which shows all the available Lablink-powered devices in your network.

**Step 2: Registering the first user**

Click on the IP address (in blue) of the RackMount 16CH you just installed. You can use the serial number at the back of the RackMount 16CH to verify which is the one you want to install. A window opens that allows you to register as a new user.



For more information about user management see Chapter 6.

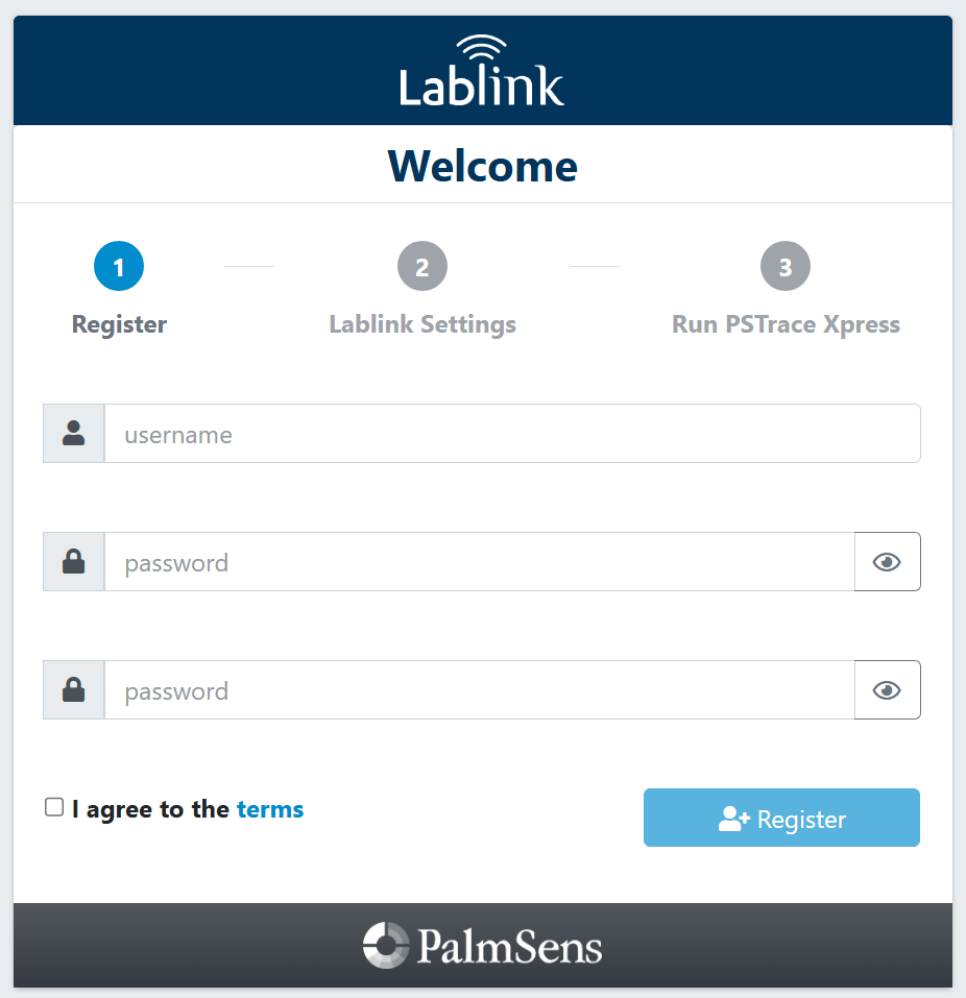



*Figure 23. RackMount 16CH Welcome Wizard first step*

### Step 3: Set username and password

Choose a username and a password. The username will be shown to other users of the RackMount 16CH when connecting to one or more channels in PSTrace Xpress. There is no specific limit for the number of users registered to a single RackMount 16CH.

### Step 4: Lablink settings

In the next window you can change the Lablink name of your RackMount 16CH at your convenience. You can also change the default Ethernet network settings.

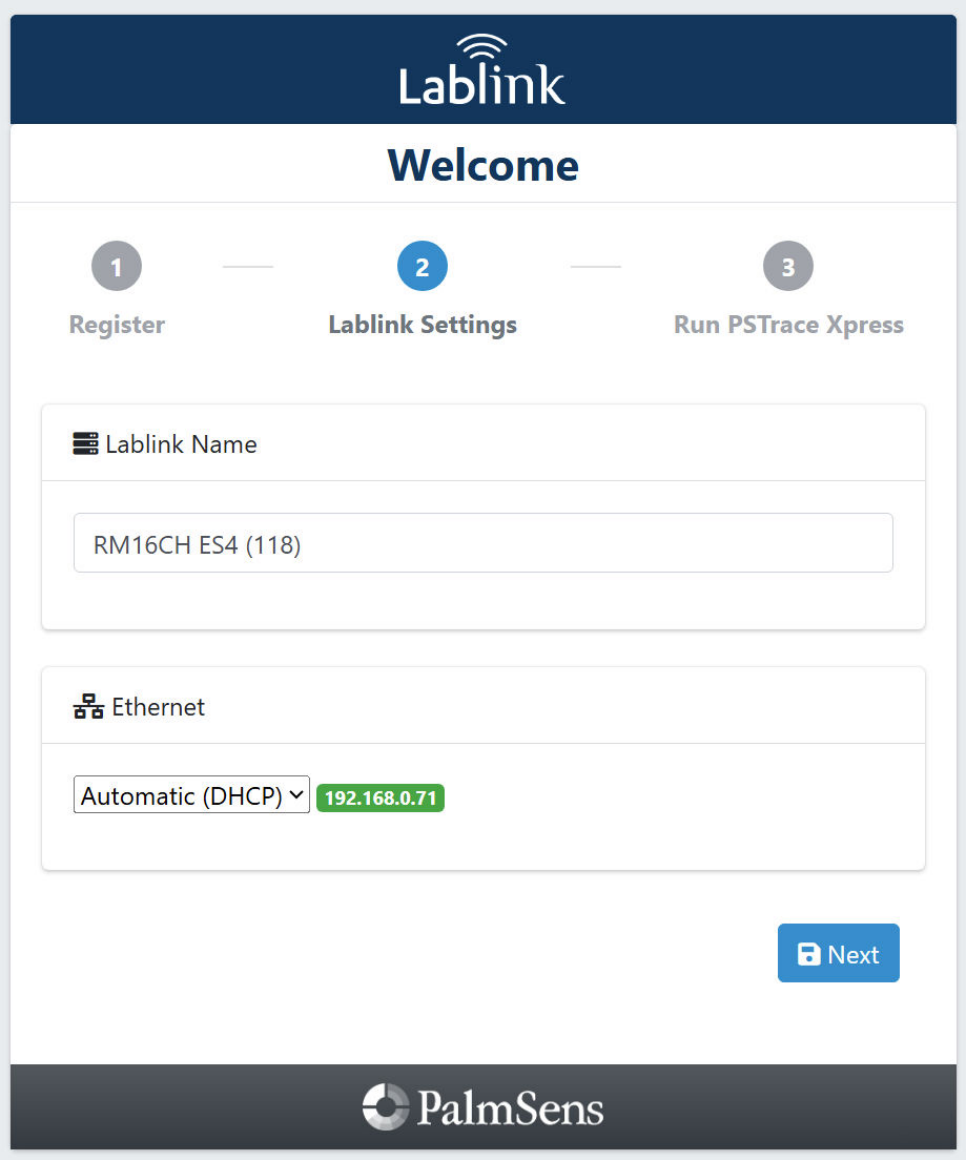



*Figure 24. RackMount 16CH Welcome Wizard second step*

**Step 5: Run PSTrace Xpress**

The browser will now show the instructions to install and run PSTrace Xpress.

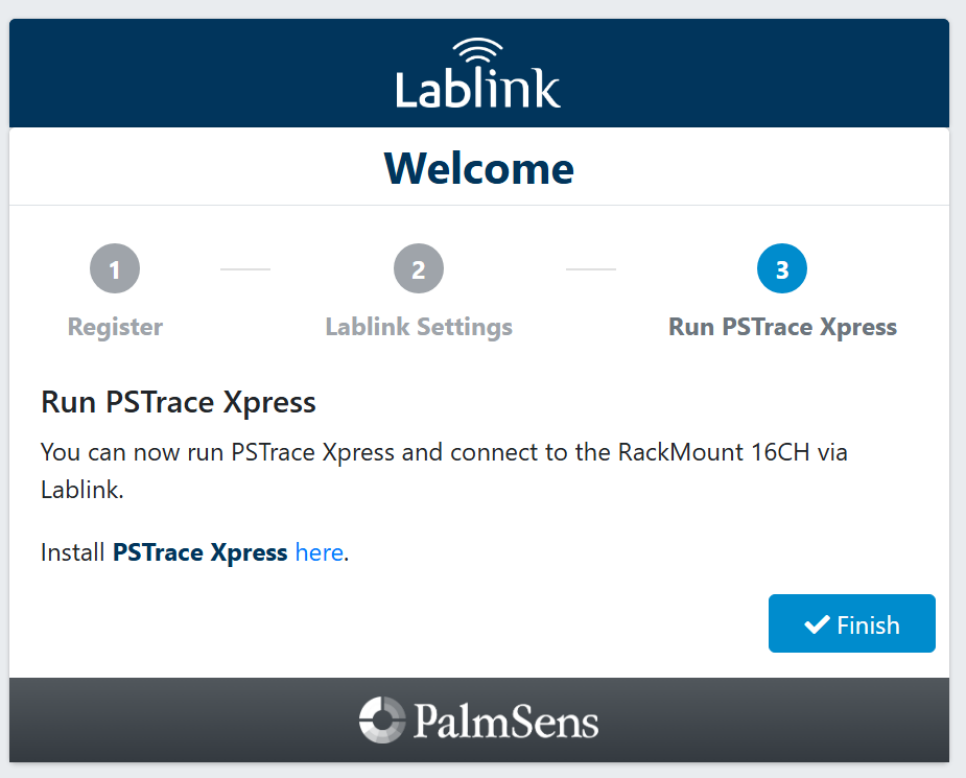



*Figure 25. RackMount 16CH Welcome Wizard second step*

**Step 6: RackMount 16CH Lablink dashboard**

After completing the setup you will be directed to the RackMount 16CH Lablink dashboard.

In the RackMount 16CH Lablink dashboard you can see:

- how many measurements are running
- how many users have registered on the RackMount 16CH
- how much of the internal storage is used
- and what is the status of each instrument channel.

Other things you can do in the Lablink Hub dashboard are:

- changing the RackMount 16CH Lablink name
- changing network settings
- removing users
- and browsing and deleting measurement data.

#### Step 7: Start using the RackMount 16CH

You are now ready to start using the RackMount 16CH with PSTrace Xpress. The next section explains how to configure the RackMount 16CH Lablink connection in PSTrace Xpress and how to start measurements via Lablink.

### 5.2. Configuring PSTrace Xpress for Lablink

To use the RackMount 16CH with PSTrace Xpress make sure you have PSTrace Xpress version 1.9 or later installed. Follow the steps below to configure PSTrace Xpress for RackMount 16CH operation.

#### Step 1: Open PSTrace Xpress

Launch PSTrace Xpress on your Windows PC. Make sure your PC is connected to the same Local Area Network (LAN) as the RackMount 16CH.



If this is the first time opening PSTrace Xpress it is recommended to read the PSTrace Xpress Help section “Getting Started with PSTrace Xpress and MyPalmSens” first.

#### Step 2: Connect to the RackMount 16CH

In the main window of PSTrace Xpress click on the button **Lablink** in the **Instruments** panel on the left hand-side. This opens the Settings window for Lablink.

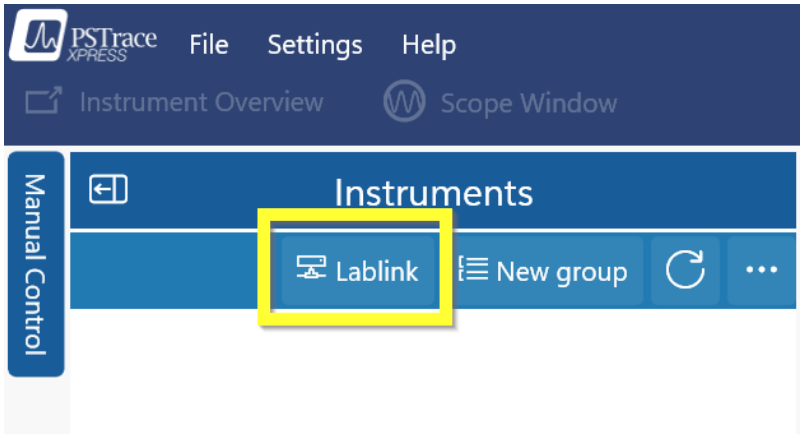



*Figure 26. Lablink button in PSTrace Xpress*

Enable the checkbox **Enable Lablink scanning** and allow the software to scan for available Lablink devices in the network. When the checkbox is set the first time, Windows will ask for permission to allow PSTrace Xpress to discover devices in the network. Make sure to allow this.




*Figure 27. Allow PSTrace Xpress to scan for available Lablink instruments*

Shortly after allowing the scan the available Lablink-powered devices will appear in the list.

### Step 3: Select your Lablink device

Click on the toggle button of the Lablink device (which the RackMount 16CH is) you want to connect with. Two input fields appear for entering a username and password. Enter the username and password you created when setting up the RackMount 16CH for the first time and click the small **OK** button next to the password field or press Enter. Then click **OK** again at the bottom of the Settings window.

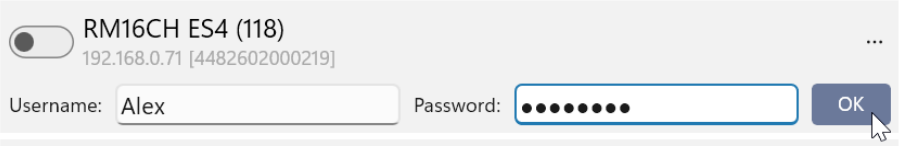



*Figure 28. Lablink button in PSTrace Xpress*

### Step 4: Connect to one or more channels

The **Instruments** panel in PSTrace Xpress now shows the RackMount 16CH instrument, allowing to connect to all or a subset of channels.

### Configuring the RackMount CH16 Lablink settings in the browser

The ••• icon at the right hand side in the RackMount 16CH list entry opens a context-menu. This menu contains an item **View in browser** which opens the Dashboard for the device directly in your default browser.

### 5.3. Grouping instruments or channels

In case you are interested in controlling only a subset of channels from the multi-channel instrument: Create a new group using the **New group** button found next to the **Lablink** button in PSTrace Xpress. You can change the group name by clicking the icon ••• next to it. Then select the channels you want to use with the CTRL or SHIFT keys and click the ••• icon on one of these channels. Then in the pop-up menu select **Move to › [Group name]** See the picture below. You can also drag and drop channels to the new group.

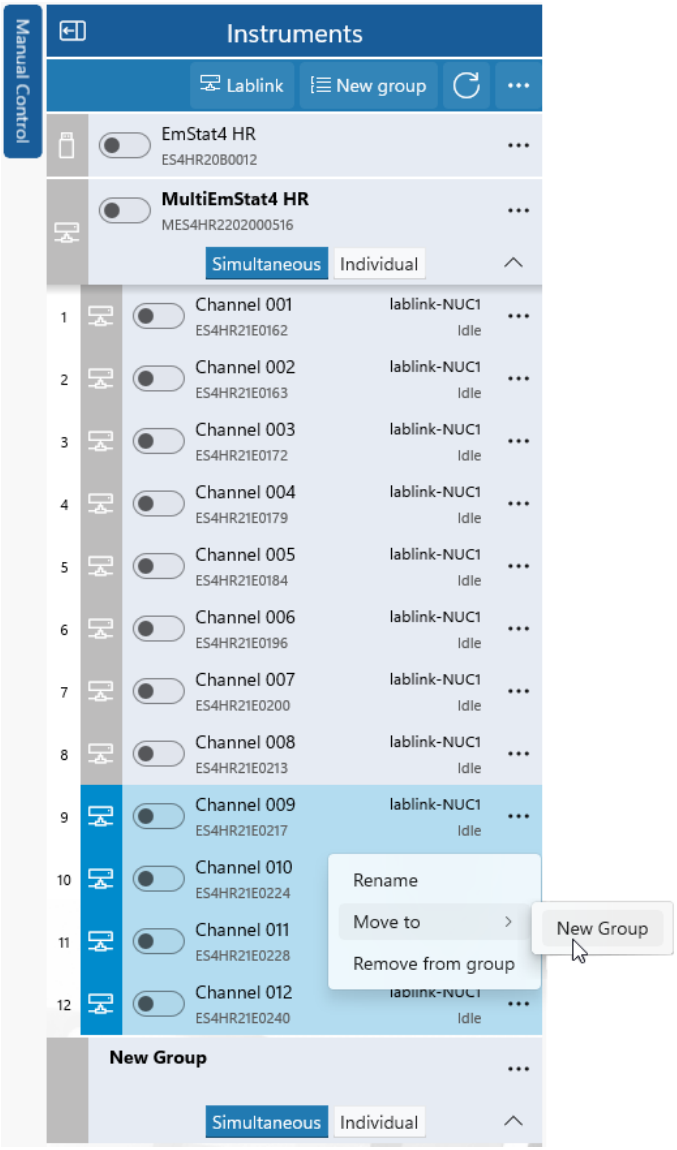



*Figure 29. Creating a new group in PSTrace Xpress with a subset of channels*

Channels can only be moved to a new group if they are not connected (toggle button is grey).

### 5.4. Channel identification

If you have multiple RackMounts connected, you can easily identify which physical instrument corresponds to a specific channel in the software. Simply navigate to the Lablink Dashboard on the Home page. In the list of connected instruments, locate the column featuring the icon. Clicking this icon causes the LED on the physical instrument or specific channel to blink briefly for quick identification.

# Chapter 6. User access and management

Lablink allows multiple users within the same network to access connected instruments without physically swapping cables or managing device connections manually. All users share equal access rights and the system relies on mutual trust and communication among colleagues. This section explains how user accounts work how to manage multi-user access and how to add or remove users from the RackMount 16CH.

## 6.1. User accounts and permissions

The RackMount 16CH Lablink connection supports multiple user accounts to enable shared access across a laboratory or research group. Each user registers with a username and password through the browser interface at http://lablink.local. User accounts serve primarily to identify who is using which instrument or channel preventing accidental interference between colleagues.

Lablink does not implement strict role-based permissions or administrator privileges. All registered users have equal access to:

- view connected instruments and their availability
- claim and release instruments or instrument channels
- start and monitor measurements
- and browse and download stored measurement data and methods.

The password requirement exists mainly to prevent unintended disruptions, such as accidentally disconnecting a colleague's active measurement or claiming a reserved channel. It is not designed as a security barrier against deliberate misuse.



User management in Lablink is based on the principle of mutual trust among colleagues.

## 6.2. Multi-user access

When a Lablink user connects to one or more instruments or channels (both referred to as "channels") in PSTrace Xpress these channels will automatically become unavailable to other users. In the Lablink Hub dashboard this can also be seen as the channel will be shown as "Claimed". The channel becomes available again once the user disconnects in PSTrace Xpress and no measurement is running. For planning or longer experiments users can reserve channels from the browser at

http://lablink.local using the **Claim** buttons ensuring predictable access without cable swapping.



The Claim buttons allow for making a long-term reservation on one or more instruments or channels.

Claiming a channel via the Lablink dashboard informs other Lablink users that it is reserved. The channel remains unavailable to others even after disconnecting.

Claims are not permanent: any other user can release a claim from the dashboard if needed. The claiming system exists solely to prevent accidental interference with ongoing experiments and to make it clear which user is responsible for each channel.



Any user can remove the claim from any other users in the Lablink dashboard. The claiming system is only to ensure that users cannot accidentally interfere with running experiments.

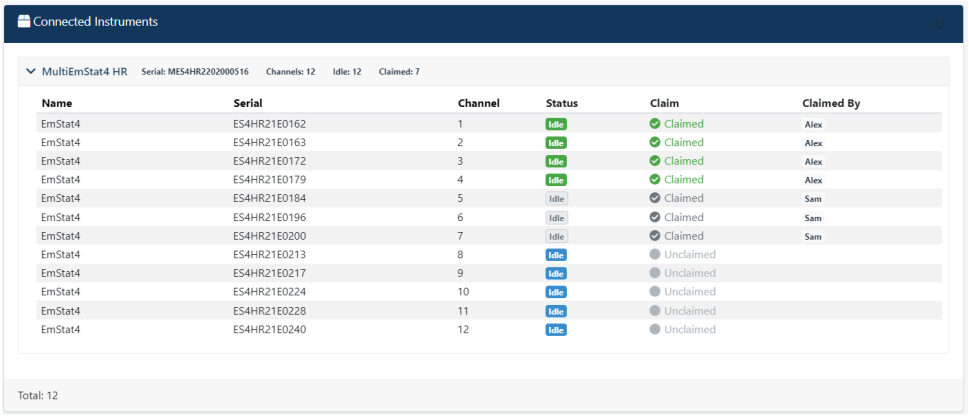



*Figure 30. An overview of claimed and available channels on lablink.local*

## 6.3. Adding users

Users can be added via the browser interface. If you are creating a user for another person make sure to logout first from your own account by clicking the user icon in the top-right corner and selecting **Logout**. This returns you to the sign-in screen where a new user can register.

On the sign-in screen click **Register as new user** to create a new account.

### 6.4. Deleting users

Users can be deleted from the Lablink dashboard. To delete one or more users from the RackMount 16CH go to the RackMount 16CH Lablink dashboard and make sure you are logged in. In the menu **Settings** select **Users**. This opens an overview of all registered users. The password of each user can be edited here and users can be deleted by clicking the delete button next to their name.

All users are automatically admin and can delete other users. For more information about user management. See also section Section 6.1.

# Chapter 7. Measurement control

## 7.1. Starting and monitoring measurements

Measurements are initiated from PSTrace Xpress. Once a measurement is started the method is transferred to the RackMount 16CH integrated Lablink controller which takes over execution. Users can monitor progress and view real-time data through the same client application used to start the measurement.

## 7.2. Running long-duration experiments

When running a measurement via Lablink this measurement is executed autonomously by the Lablink device. This means that even if the PC disconnects the measurement continues uninterrupted. This makes the RackMount 16CH especially suitable for long-duration experiments that may take hours or even days to complete.

## 7.3. Resuming measurements after disconnection

If a PC disconnects with the Lablink device the measurement continues uninterrupted. Users can reconnect in PSTrace Xpress or access results via the Lablink dashboard. Resuming a measurement can be done by reconnecting to the same instrument channel(s) in PSTrace Xpress. The Lablink controller inside the RackMount 16CH maintains the measurement state allowing users to pick up where they left off without data loss.

Once a connection to a channel is re-established while a measurement is still running, Lablink automatically synchronizes the data. If the buffer contains fewer than 50000 datapoints per active instrument or channel, Lablink instantly transmits the stored measurements and appends new data in real-time. The session continues in PSTrace Xpress seamlessly as if the software had been connected from the start. This flexibility allows you to resume measurements from any PC on the same network.



**Resuming a large measurement**

If the buffer exceeds 50000 datapoints per channel only new incoming data will be plotted to maintain system performance.

Once the measurement is complete all raw data metadata and method information are securely stored on the RackMount 16CH's internal storage. Users can load this

data for analysis or archiving.

## 7.4. Droplet detection

Optimized for Screen-Printed Electrodes (SPEs), each channel can be configured via software to trigger measurements automatically upon droplet detection. This minimizes the delay between sample deposition and data acquisition, ensuring you capture the most time-sensitive electrochemical responses. Droplet detection works by checking for the presence of a droplet between the CE and RE electrodes continuously before the start of the measurement. During droplet detection, the working electrode is disconnected so that current may not flow through the cell. Droplet detection can be enabled in the Method Editor in PSTrace Xpress by setting the checkbox **Enable droplet detection** in the section **Advanced**. The drop detection has no time-out. Either the **Skip** or **Abort** button can be used while drop detection is active.



**Reliability**

Droplet detection assumes that when a droplet is absent, the electrodes are floating. In cases where the electrodes have a path to ground, droplet detection may be less reliable.

### Working principle

Droplet detection deactivates the WE and initiates a -1V to 1V square wave at the CE. The system monitors the CE potential throughout this period. Without an RE connection, the CE potential cannot be regulated and will not oscillate. When a droplet completes the circuit to the RE, the CE potential will successfully perform the programmed 2V voltage jumps. During the detection loop, the WE remains off so no current can flow.

# Chapter 8. Measurement data management

## 8.1. Measurement data storage and retrieval

All measurements ran via Lablink are automatically stored on the RackMount 16CH. There is no setting to switch this on and off. Users can browse, download or delete measurement data through the Lablink dashboard. Data is organized by date, user and instrument/channel-name for easy retrieval.

All measurement data can be loaded directly in PSTrace Xpress via the menu: **File › Open Session...**. The RackMount 16CH can then be found at the top of the list with file locations.

## 8.2. Storing and loading method files to and from the RackMount 16CH

Method files can be saved directly to the RackMount 16CH by selecting it as the save location when saving a method in PSTrace Xpress. The Name field in the Method Editor is used for the filename when storing the method on the RackMount 16CH. This allows for easy retrieval and reuse of methods directly from the RackMount 16CH when setting up new measurements in PSTrace Xpress. Loading a method file from the RackMount 16CH in PSTrace can be done using the menu: **File › Open Method...** Select the RackMount 16CH as the source on the left-hand side of the dialog and select the method you want to open.

## 8.3. Deleting measurement data

Individual data files can be deleted directly from the dashboard to free up space. In the RackMount 16CH Lablink dashboard click on the **Measurement Data** button to browse all stored measurement data. You can filter the data by date user or instrument/channel.

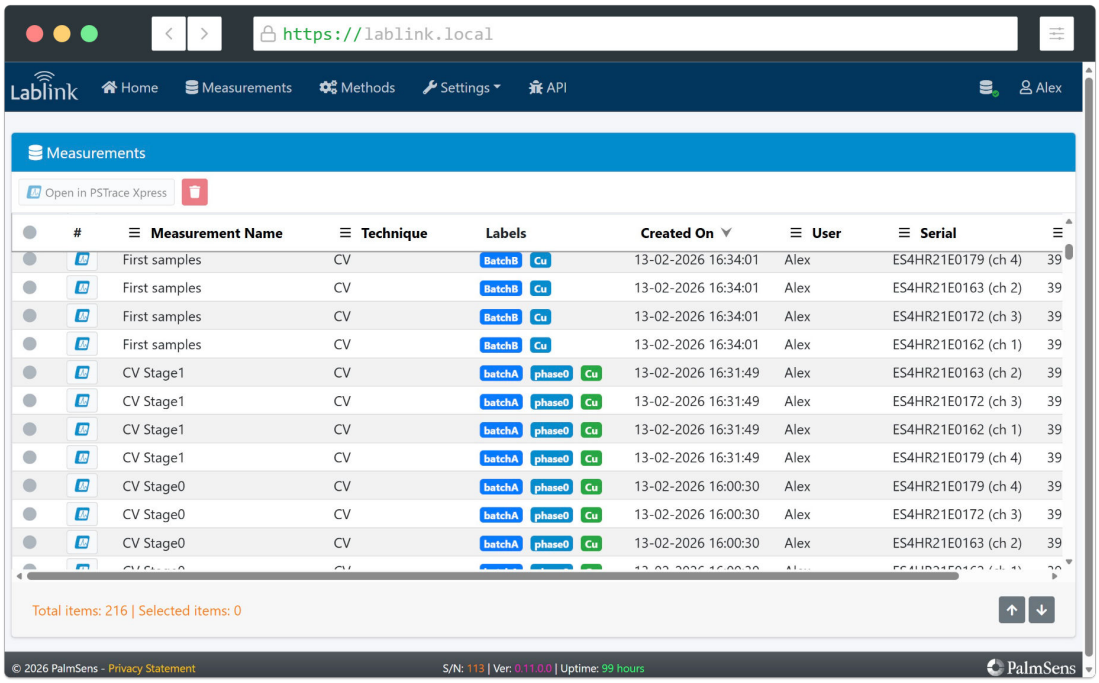



*Figure 31. Sorting measurement data for deletion in the Lablink Hub dashboard*

To help selecting the measurements that can be deleted it is advised to use the column filters to filter the data by measurement name, technique, date, user or instrument/channel and use the **Select All** checkbox in the columnheader of the table to select the filtered data for deletion.

# Chapter 9. System specifications

The following table shows the main potentiostat/galvanostat specifications for each channel.

*Table 7. Channel-specifications of the RackMount 16CH-ES4 and -ESP versions*

| | **Version: ES4** | **Version: ESP** |
|---|---|---|
| **General** | | |
| **dc-potential range** | ±3 V | -1.7 V to +2 V |
| **compliance voltage** | ±5 V | -2.0 V to +2.3 V |
| **maximum current** | ±30 mA | ±3 mA |
| **maximum current** | ±30 mA | ±3 mA |
| **Potentiostat** | | |
| **applied dc-potential resolution** | 100 µV | 395 µV |
| **applied dc-potential accuracy** | < 0.2% of value ±1 mV (offset) | < 0.2% of value ±1 mV (offset) |
| **current ranges** | 1 nA to 10 mA (8 ranges) | 100 nA to 5 mA (12 ranges) |
| **current measured in range** | ±3 x current range | ±0.6 x current range |
| **measured current resolution** | 0.009% of current range (92 fA on 1 nA range) | 0.006% of current range (5.5 pA on 100 nA range) |
| **measured current accuracy** | < 0.2% of value ±20 pA (bias) ±0.2% of range (offset) | Low Speed: < 0.5% of value ±0.1% of range (offset) High speed / Max range: < 1% of value ±0.1% of range (offset) |

| | | |
|---|---|---|
| **Galvanostat** | | |
| **current ranges** | 10 nA, 1 uA, 100 uA, 10 mA (4 ranges) | - |
| **applied dc-current range** | ±3 x current range | - |
| **applied dc-current resolution** | 0.01% of current range | - |
| **applied dc-current accuracy** | < 0.4% + 0.002 * current range (offset) | - |
| **potential ranges** | 50 mV, 100 mV, 200 mV, 500 mV, 1 V | - |
| **measured dc-potential resolution** | 96 µV, 48 µV, 19.2 µV, 9.6 µV, 4.8 µV (5 gains) | - |
| **measured dc-potential accuracy** | < 0.2% of value ±1 mV (offset) | - |

| FRA / EIS | | |
|---|---|---|
| **frequency range** | 200 kHz to 10 µHz | 200 kHz to 0.016 Hz |
| **applied amplitude** | 1 mV to 0.8 Vrms | 1 mV to 0.25 Vrms |

| FRA / GEIS | | |
|---|---|---|
| **frequency range** | 200 kHz to 10 µHz | - |
| **applied amplitude** | 0.002 x current range to<br>0.9 x current range rms | - |

| Electrometer | | |
|---|---|---|
| **bandwidth** | 500 kHz | 250 kHz |
| **electrometer amplifier input** | > 1 TΩ // 10 pF | > 1 TΩ // 10 pF |

| Other | | |
|---|---|---|
| **electrode connections** | 2 mm pins for RE, WE, CE and GND | 2 mm pins for RE, WE, WE2, CE and GND |
| **housing** | steel 19" housing:<br>444 x 335 x 44 mm (without front-handles and feet)<br>extra height with feet: 15 mm<br>extra depth with handles: 40 mm | |
| **weight** | 4.5 kg | |
| **temperature range** | 0 °C to +45 °C | |
| **power** | 100-240 V, 90 W, 50-60 Hz | |

| Auxiliary port (D-Sub 15) | |
|---|---|
| **analog input** | -10 to 10 V (16-bit)* |
| **analog output** | 0 - 3.3 V (14-bit)* |
| **digital I/O** | 4x digital input/output*<br>1x digital input for triggering start (all channels)<br>1x digital out for hardware sync signal (all channels) |
| **communication** | I2C for peripheral control* |
| **power** | 5 V-output (max. 300 mA) |

**Controlled by channel 1*

# Chapter 10. Maintenance and compliance

## 10.1. Temperature compliance

Our instruments are designed for indoor use at ambient temperatures between 0 °C and 45 °C.

## 10.2. Humidity compliance

PalmSens instruments have not been tested in high humidity environments. Elevated humidity may cause measurement errors if condensation forms on the electronics. This affects measurements mainly in the nA ranges or lower. Prolonged exposure to a condensing environment may severely decrease the life expectancy of the instrument and void its warranty.

## 10.3. Temperature drift

PalmSens instruments are calibrated at 21 °C. The most sensitive components of the instrument have temperature drift of 50 ppm. For instance, at 1 °C or 41 °C, measurement drift of up to 0.1% may be experienced.

## 10.4. Atmospheric pressure

PalmSens instruments are not intended for use in safety-critical applications. Consequently, the power supplies utilized are not selected based on a specific pressure rating.

## 10.5. Cleaning

Make sure to disconnect your instrument from any cell or power source, if applicable, prior to cleaning. Use a lightly dampened cloth with either clean water or water containing a mild detergent to clean the outside of the instrument. Alternatively, you can use isopropyl alcohol. Avoid using a wet rag and prevent any fluids from entering the instrument. It is crucial not to immerse the instrument in any cleaning solution.

## 10.6. Periodic calibration and preventive maintenance

PalmSens instruments are designed in a way that eliminates the need for periodic calibration. While not mandatory, PalmSens does provide a calibration service for users with specific demands such as QC/ISO purposes. This service includes a new calibration certificate. PalmSens instruments do not require preventive maintenance,

further simplifying their use and reducing the overall maintenance demands on users.

### 10.7. Service and repair

Your PalmSens instrument contains no user-serviceable parts internally. Any service or maintenance needs should be directed to a qualified service technician employed or authorized by PalmSens BV. Attempting to access or modify internal components without proper expertise may result in additional damage to the instrument and voids warranty. It is recommended to rely on authorized service personnel for any required maintenance or repairs.

### 10.8. Firmware and software Updates

Updates for the RackMount 16CH will be distributed and installed via PSTrace. When a new version of the RackMount 16CH firmware is available, PSTrace Xpress will notify you when you connect to the RackMount 16CH. Follow the instructions in PSTrace Xpress to update the RackMount 16CH firmware to the latest version.

### 10.9. RoHS compliance

All instruments from PalmSens have been built using lead-free components and lead-free solder. They are in compliance with the European RoHS (Restriction of Hazardous Substances) initiative.

# Chapter 11. Troubleshooting

## 11.1. Verifying your potentiostat

Your instrument can be tested by using the test sensor or dummy cell supplied with the instrument.

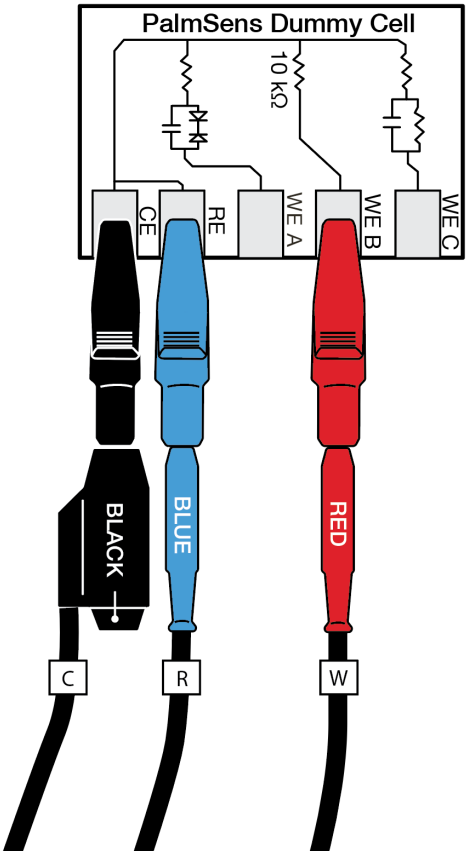



*Figure 32. PalmSens Dummy Cell*

The easiest way to verify the functioning of your instrument is to use the "WE B" circuit, which consists of a resistor with a value of 10 kΩ with a max deviation of 0.1%. The WE lead is connected to one side and both RE and CE to the other side of the resistor. Any of the electrochemical techniques can be applied. The current response obtained with a resistor with value R is equal to the applied potential or potential pulse divided by the value of R. So, if a potential of 0.5 V is applied on a resistor of 10 kΩ, the obtained current should be 0.5 V / 10 kΩ = 50 µA.

## 11.2. Noise

Our instruments are designed with hardware noise suppression filters to reject noise from internal and external sources. If a higher level of noise is your issue, the solving

strategies are rather numerous, but the sources for noise are also numerous. Here we describe the most successful and common methods for noise reduction. To determine the noise levels for your instrument, please refer to section "Measurement Noise" in the PSTrace Help.

### Power grid

Your power grid is using an alternating current. This undulating current influences the measured currents. PSTrace Xpress has a filter-setting for the mains frequency. In PSTrace Xpress, check in the 'General Settings' window if the mains frequency is set correctly (50 Hz or 60 Hz).

### Electrical fields

Our environment is filled with electrical fields. Some of them are created by devices around us as side effects or in case of wireless communication on purpose. Although it is a bad idea to measure directly next to an electric arc furnace, it is usually not possible to have a workspace free of electrical fields, especially not during point-of-care measurements. Nearby RF transmitters (Wi-Fi routers, mobile phones, industrial radios) may be interpreted by the instrument as valid electrochemical signals. Measurements performed near such sources may therefore deviate from stated specifications. A Faraday cage is usually sufficient to create a field-free environment. A metal box or cage out of metal mesh is a good Faraday cage. Even a shield out of aluminum foil can help. Place your electrochemical cell inside the Faraday cage and connect the cage to the ground lead (green) of the potentiostat. The cable delivered with your instrument has an inbuilt shield and should protect your signal outside the Faraday cage. This is one of the most effective methods to reduce noise.

### Contacts

Check if the cable contacts are corroded. If so, remove the stains, for example with sandpaper.

# Appendix A: CE Declaration

PalmSens

## EU DECLARATION OF CONFORMITY

CE

Certificate number: PSDOC-RM16CH-A

**Manufacturer:** PalmSens BV
**Address:** Vleugelboot 22,
3991 CL Houten,
The Netherlands

This declaration is valid for the following product:

**RackMount 16CH, multi-channel electrochemical analyzer**

The object of the declaration described above is in conformity with the Electromagnetic-Compatibility Directive 2014/30/EU (EMCD), the Low Voltage Directive (LVD) (2014/35/EU), the Cyber Resilience Act (CRA), the RoHS Directive 2011/65/EU and its amendment Directive (EU) 2015/863, and applicable standards listed below:

Safety
- EN 61010-1 (2010)

Immunity and Emission
- EN 61326-1 (2013) & EN 61326-1 (2021)
- EN 61000-3-2 (2014) & EN 6100-3-2 (2019) + A1 (2021)
- EN 61000-3-3 (2013) + A1 (2019)* + A2 (2021)* + AC (2022)
- EN 61000-3-12 (2011)
- EN 61000-3-11 (2000) & EN 61000-3-11 (2019)

Cyber Security
- EN 18031-1 (2024)

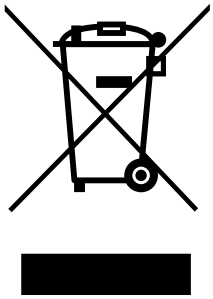
RoHS
- EN IEC 63000 (2018)

This declaration is issued under the sole responsibility of PalmSens BV.

Date: 1st of May 2026

C.J. van Velzen, CTO

# Appendix B: EU Waste Electrical and Electronic Equipment (WEEE) Directive



The pictogram shown above, located on the product and/or accompanying documents means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product to designated collection points where it will be accepted free of charge.

Alternatively, in some countries, you may be able to return your product to your local retailer upon purchase of an equivalent new product. Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point. Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

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