



# OEM SOURCE MEASURE UNIT USER MANUAL

Manual version: 1.0.0  
Product code: P2005Y  
Product Version: 2.0  
Firmware Version: 2.7

# Contents

<b>1. EU Declaration of Conformity</b> .....	<b>3</b>
<b>2. Safety</b> .....	<b>6</b>
2.1 Warning.....	6
2.2 Use of Equipment.....	6
2.3 Hazard Icons .....	6
2.4 Power Cord Safety.....	6
2.5 Servicing .....	7
2.6 Health and Safety – Servicing.....	7
<b>3. Requirements</b> .....	<b>8</b>
<b>4. Unpacking</b> .....	<b>8</b>
4.1 Packing List .....	8
4.2 Damage Inspection .....	8
<b>5. Specifications</b> .....	<b>9</b>
5.1 Voltage Source and Measurement Specifications .....	9
5.2 Current Measurement Specifications .....	9
5.3 Voltmeter (Vsense 1 and Vsense 2) .....	10
<b>6. Operation</b> .....	<b>11</b>
6.1 OEM Headers.....	11
<b>7. Troubleshooting</b> .....	<b>13</b>

# 1. EU Declaration of Conformity

## We

**Company Name:** Ossila BV

**Postal Address:** Biopartner 3 building, Galileiweg 8

**Postcode:** 2333 BD Leiden

**Country:** The Netherlands

**Telephone number:** +31 (0)71 3322992

**Email Address:** info@ossila.com

**declare that the DoC is issued under our sole responsibility and belongs to the following product:**

**Product:** OEM Source Measure Unit (P2005Y2)

**Serial number:** P2005A xxxx-xxxx

## Object of declaration:

OEM Source Measure Unit (P2005Y2)

**The object of declaration described above is in conformity with the relevant Union harmonisation legislation:**

EMC Directive 2014/30/EU

RoHS Directive 2011/65/EU

**Signed:**



**Name:** Dr James Kingsley

**Place:** Leiden

**Date:** 13/12/2024

**Декларация за съответствие на ЕС**

Производител: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Декларира с цялата си отговорност, че посоченото оборудване съответства на приложимото законодателство на ЕС за хармонизиране, посочено на предходната(-ите) страница(-и) на настоящия документ.

**[Čeština] Prohlášení o shodě EU**

Výrobce: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Prohlašujeme na vlastní odpovědnost, že uvedené zařízení je v souladu s příslušnými harmonizačními předpisy EU uvedenými na předchozích stranách tohoto dokumentu.

**[Dansk] EU-overensstemme Iserklæring**

Producent: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Erklærer herved, at vi alene er ansvarlige for, at det nævnte udstyr er i overensstemmelse med den relevante EU-harmoniseringslovgivning, der er anført på den/de foregående side(r) i dette dokument.

**[Deutsch] EU-Konformitätserklärung**

Hersteller: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Wir erklären in alleiniger Verantwortung, dass das aufgeführte Gerät konform mit der relevanten EU-Harmonisierungsgesetzgebung auf den vorangegangenen Seiten dieses Dokuments ist.

**[Eesti keel] ELi vastavusavaldus**

Tootja: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Kinnitame oma ainuvastutusel, et loetletud seadmed on kooskõlas antud dokumendi eelmisel lehelküljel / eelmistel lehekülgedel ära toodud asjaomaste ELi ühtlustamise õigusaktidega.

**[Ελληνικά] Δήλωση πιστότητας ΕΕ**

Κατασκευαστής: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Δηλώνουμε υπεύθυνα ότι ο αναφερόμενος εξοπλισμός συμμορφώνεται με τη σχετική νομοθεσία εναρμόνισης της ΕΕ που υπάρχει στις προηγούμενες σελίδες του παρόντος εγγράφου.

**[Español] Declaración de conformidad UE**

Fabricante: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Declaramos bajo nuestra única responsabilidad que el siguiente producto se ajusta a la pertinente legislación de armonización de la UE enumerada en las páginas anteriores de este documento.

**[Français] Déclaration de conformité UE**

Fabricant: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Déclarons sous notre seule responsabilité que le matériel mentionné est conforme à la législation en vigueur de l'UE présentée sur la/les page(s) précédente(s) de ce document.

**[Hrvatski] E.U izjava o sukladnosti**

Proizvođač: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Izjavljujemo na vlastitu odgovornost da je navedena oprema sukladna s mjerodavnim zakonodavstvom EU-a o usklađivanju koje je navedeno na prethodnoj(nim) stranici(ama) ovoga dokumenta.

**[Italiano] Dichiarazione di conformità UE**

Produttore: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Si dichiara sotto la propria personale responsabilità che l'apparecchiatura in elenco è conforme alla normativa di armonizzazione UE rilevante indicata nelle pagine precedenti del presente documento.

**[Latviešu] ES atbils tības deklarācija**

Ražotājs: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Ar pilnu atbildību paziņojam, ka uzskaitītais aprīkojums atbilst attiecīgajiem ES saskaņošanas tiesību aktiem, kas minēti iepriekšējās šī dokumenta lapās.

**[Lietuvių k.] ES atitikties deklaracija**

Gamintojas: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

atsakingai pareiškia, kad išvardinta įranga atitinka aktualius ES harmonizavimo teisės aktus, nurodytus ankstesniuose šio dokumento

**[Magyar] EU-s megfelelőségi nyilatkozat**

Gyártó: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Kizárólagos felelőségünk mellett kijelentjük, hogy a felsorolt eszköz megfelel az ezen dokumentum előző oldalán/oldalain található EU-s összehangolt jogszabályok vonatkozó rendelkezéseinek.

**[Nederlands] EU-Conformiteitsverklaring**

Fabrikant: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Verklaart onder onze uitsluitende verantwoordelijkheid dat de vermelde apparatuur in overeenstemming is met de relevante harmonisatiewetgeving van de EU op de vorige pagina('s) van dit document.

**[Norsk] EU-samsvarserklæring**

Produsent: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Erklærer under vårt eiansvar at utstyret oppført er i overholdelse med relevant EU-harmoniseringslovverk som står på de(n) forrige siden(e) i dette dokumentet.

**[Polski] Deklaracja zgodności Unii Europejskiej**

Producent: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Oświadczamy na własną odpowiedzialność, że podane urządzenie jest zgodne ze stosownymi przepisami harmonizacyjnymi Unii Europejskiej, które przedstawiono na poprzednich stronach niniejszego dokumentu.

**[Por tuguês] Declaração de Conformidade UE**

Fabricante: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Declara sob sua exclusiva responsabilidade que o equipamento indicado está em conformidade com a legislação de harmonização relevante da UE mencionada na(s) página(s) anterior(es) deste documento.

**[Română] Declarație de conformitate UE**

Producător: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Declară pe proprie răspundere că echipamentul prezentat este în conformitate cu prevederile legislației UE de armonizare aplicabile prezentate la pagina/paginile anterioare a/ale acestui document.

**[Slovensky] Vyhlásenie o zhode pre EÚ**

Výrobca: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Na vlastnú zodpovednosť prehlasuje, že uvedené zariadenie je v súlade s príslušnými právnymi predpismi EÚ o harmonizácii uvedenými na predchádzajúcich stranách tohto dokumentu.

**[Slovenščina] Izjava EU o skladnosti**

Proizvajalec: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

s polno odgovornostjo izjavlja, da je navedena oprema skladna z veljavno uskladitveno zakonodajo EU, navedeno na prejšnji strani/prejšnjih straneh tega dokumenta.

**[Suomi] EU-vaatimusten mukaisuusvakuutus**

Valmistaja: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Vakuutamme täten olevamme yksin vastuussa siitä, että tässä asiakirjassa luetellut laitteet ovat tämän asiakirjan sivuilla edellisillä sivuilla kuvattujen olennaisten yhdenmukaistamista koskevien EU-säädösten vaatimusten mukaisia.

**[Svenska] EU-försäkran om överensstämmelse**

Tillverkare: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Vi intygar härmed att den utrustning som förtecknas överensstämmer med relevanta förordningar gällande EU-harmonisering som finns på föregående sidor i detta dokument.

## 2. Safety

### 2.1 Warning

- Do **NOT** connect external voltage sources to either SMU channel.
- The absolute maximum input voltage for the Vsense channels is  $\pm 12$  V. Do **NOT** apply input while not powered.

### 2.2 Use of Equipment

The Ossila Source Measure Unit is designed to be used as instructed. It is intended for use under the following conditions:


- Indoors in a laboratory environment (Pollution Degree 2)
- Altitudes up to 2000m
- Temperatures of 5°C to 40°C; maximum relative humidity of 80% up to 31°C.

The unit is supplied with a 24 VDC power adapter, in accordance with European Commission regulations and British Standards. Use of any other electrical power cables, adaptors, or transformers is not recommended.

### 2.3 Hazard Icons

The following symbols can be found at points throughout the rest of the manual. Note and read each warning before attempting any associated operations associated with it:

Table 2.1. Hazard warning labels used in this manual.

Symbol	Associated Hazard
	Electrical shock

### 2.4 Power Cord Safety



Emergency power disconnect options: use the power cord as a disconnecting method and remove from wall. To facilitate disconnect, make sure the power outlet for this cord is readily accessible to the operator.

## 2.5 Servicing

If servicing is required, please return the unit to Ossila Ltd. The warranty will be invalidated if:

- Modification or service has been carried out by anyone other than an Ossila engineer.
- The Unit has been subjected to chemical damage through improper use.
- The Unit has been operated outside the usage parameters stated in the user documentation associated with the Unit.
- The Unit has been rendered inoperable through accident, misuse, contamination, improper maintenance, modification, or other external causes.

## 2.6 Health and Safety – Servicing



Servicing should only be performed by an Ossila engineer. Any modification or alteration may damage the equipment, cause injury, or death. It will also void your equipment's warranty.

## 3. Requirements

The OEM Source Measure Unit requires 24 VDC power supply.

## 4. Unpacking

### 4.1 Packing List

The standard items included with the Ossila OEM Source Measure Unit set are:

- 5 x Ossila OEM Source Measure Unit.
- 5 x 24 VDC power adaptor.
- 5 x USB-B cables.
- USB memory stick pre-loaded with the user manual, software installer, QC data, and USB drivers.

### 4.2 Damage Inspection

Examine the components for evidence of shipping damage. If damage has occurred, please contact Ossila directly for further action. The shipping packaging will come with a shock indicator to show if there has been any mishandling of the package during transportation.



## 5. Specifications

The basic specifications of the Ossila Source Measure are shown here. For the full specifications please see the [Ossila Source Measure Unit User Manual](#).

The Ossila Source Measure Unit has 2 SMU channels which can source/measure voltage and measure current, and 2 voltmeter channels.

### 5.1 Voltage Source and Measurement Specifications

Table 5.1. Voltage source and measurement specifications.

Mode	OSR	Range	Accuracy	Precision	Resolution
Sourcing	N/A	$\pm 10\text{ V}$	$\pm 10\text{ mV}$	333 $\mu\text{V}$	1.7E-4
Measuring	1 to 4	$\pm 10\text{ V}$	$\pm 10\text{ mV}$	100 $\mu\text{V}$	1.0E-4
	5 to 9	$\pm 10\text{ V}$	$\pm 10\text{ mV}$	50 $\mu\text{V}$	1.0E-5

**Warning:** Do **Not** attach external voltage sources to either SMU channel as this may cause damage to the unit.

### 5.2 Current Measurement Specifications

The current measurement of the Ossila Source Measure Unit is spread over 5 ranges. Each range has a different maximum current, accuracy, and resolution. As the range number increases, the maximum measurable current decreases, but the accuracy and resolution increase.

Table 5.2. Current measurement specifications.

Range	Max Current	Accuracy <sup>1</sup>	Precision <sup>2</sup>	Resolution	Burden
1	$\pm 200\text{ mA}$	$\pm 500\text{ }\mu\text{A}$	10 $\mu\text{A}$	1 $\mu\text{A}$	< 10mV
2	$\pm 20\text{ mA}$	$\pm 10\text{ }\mu\text{A}$	1 $\mu\text{A}$	100 nA	< 10mV
3	$\pm 2\text{ mA}$	$\pm 1\text{ }\mu\text{A}$	100 nA	10 nA	< 10mV
4	$\pm 200\text{ }\mu\text{A}$	$\pm 100\text{ nA}$	10 nA	1 nA	< 10mV
5	$\pm 20\text{ }\mu\text{A}$	$\pm 10\text{ nA}$	1 nA	100 pA	< 10mV

<sup>1</sup> Accuracy has been measured at the maximum current of that range.

<sup>2</sup> Precision has been measured at the highest OSR (9).

**Warning:** Do **NOT** apply currents to a SMU channel that are greater than the maximum current of the active range as this may cause damage to the unit.

## 5.3 Voltmeter (Vsense 1 and Vsense 2)

The Ossila Source Measure Unit has two additional voltage measurement channels marked as Vsense1 and Vsense2. They are designed to accurately detect small voltages while simultaneously having a wide dynamic range of  $\pm 10$  V. **Table 5.3** lists the specifications of these additional channels.

**Note:** The Vsense modules share a ground plane with the SMU module of the same number (i.e., Vsense 1 shares a ground plane with SMU 1) and hence is not isolated.

**Table 5.3.** Voltmeter specifications.

OSR	Range	Accuracy	Precision	Resolution
1 to 4	1 to 5	$\pm 10$ mV	100 $\mu$ V	100 $\mu$ V
5 to 9	1 to 5	$\pm 10$ mV	50 $\mu$ V	10 $\mu$ V

## 6. Operation

For information on the installation and operation of the Source Measure Unit, please see the [Ossila Source Measure Unit User Manual](#) and the [Source Measure Unit Programming Documentation](#).

### 6.1 OEM Headers

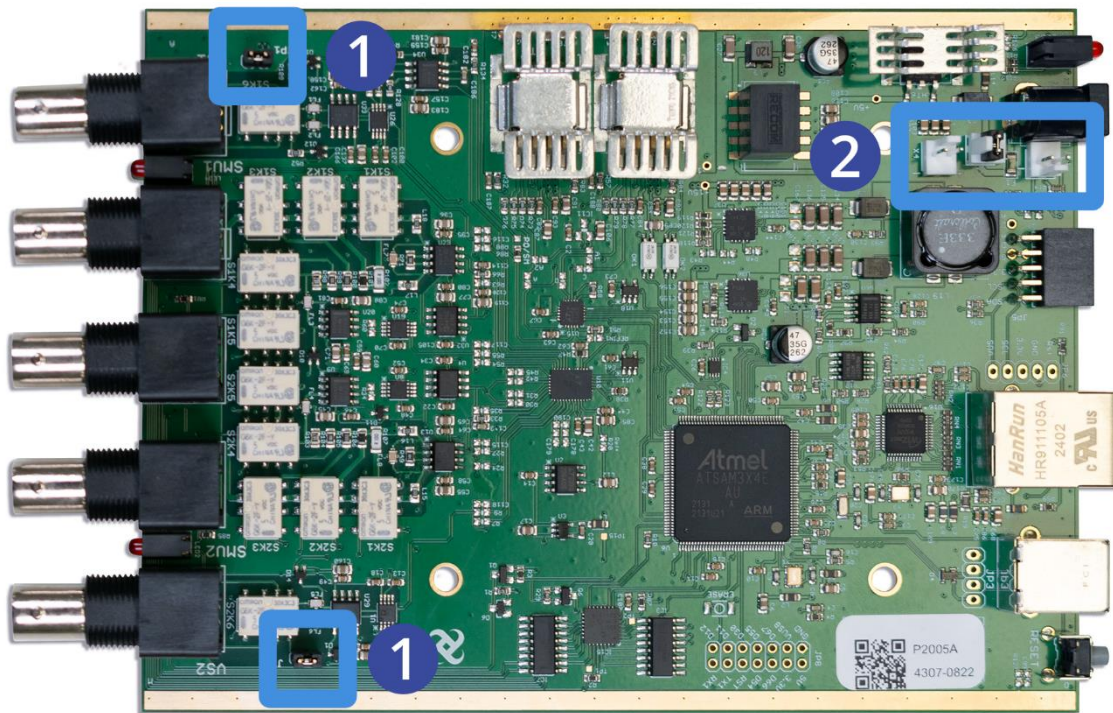


Figure 6.1. Important headers on the Source Measure Unit.

#### (I) Vsense Ground Header

These headers control the ground connection of the adjacent Vsense channels. When shorted, the Vsense will share the ground plane with the same numbered SMU channel (i.e., Vsense1 and SMU1 will share a ground plane). When disconnected, the ground of the Vsense channel will be floating.

## (II) Power Headers

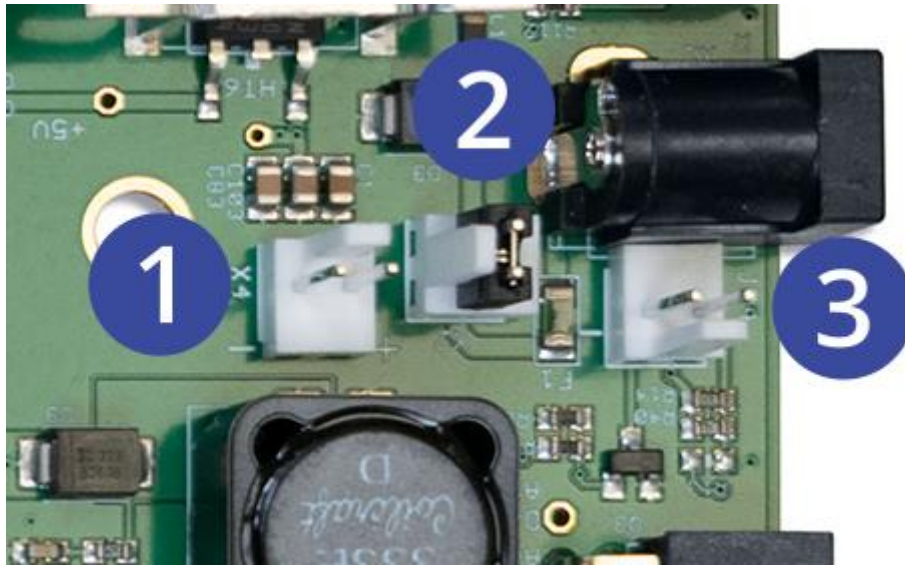


Figure 6.2. Power headers on the Source Measure Unit.

1. Do **NOT** use this header. Shorting it will prevent the unit from correctly powering on and can cause long-term damage to the unit.
2. Connector for the power socket, must be shorted for the unit to operate. This header can be used to add a power switch to the unit.
3. This header can be used to power a fan for active cooling of the unit. The output voltage is 12 V, and maximum power is 300 mW.

## 7. Troubleshooting

Most of the issues that may arise will be detailed here. However, if you encounter any issues that are not detailed here, then contact us by email at [info@ossila.com](mailto:info@ossila.com). We will respond as soon as possible.

Problem	Possible Cause	Action
No power/display	The power supply may not be connected properly.	Ensure the system is firmly plugged into the power supply, and that the plug is connected to both the adaptor and a working power socket.
	The power supply adaptor has a fault.	Contact Ossila for a replacement power supply adaptor.
Software does not start	The wrong version of Windows is installed on the computer.	Install the software on a computer with Windows 10 or newer.
	The software has not installed properly.	Try reinstalling the software.
Cannot connect to the system via USB	The USB cable may not be connected properly.	Ensure the USB cable is firmly plugged in at both ends.
	The USB cable may not be connected to a working USB port.	Try connecting the unit to a different USB port on the computer.
	The USB cable is defective.	Try using a different USB-B cable, and contact Ossila if necessary.
	The USB drivers may not be installed or may not have installed properly.	Try installing or reinstalling the drivers, they can be downloaded from the address given in the Software Installation section.
Cannot connect to the system via network	The MAC address of the unit is not registered with the internal network.	Register the system on the network using the MAC address obtained via a USB connection (see Source Measure Unit manual).
	The Ethernet cable may not be connected properly.	Ensure the Ethernet cable is firmly plugged in at both ends.
	The Ethernet cable is defective.	Try using a different Ethernet cable.