PUMOTIX

OPERATIONAL MANUAL

# OHMIC PROBE SENSOR

# PLL-R2

FOR CNC PLASMA CUTTING



**CONTENTS:**

# 1 General information.

The PLL-R2 set is designed for metal workpiece surface search in CNC plasma cutting devices.

The set consists of two devices: power supply unit PLL-R2P and measuring unit PLL-R2S. The measuring unit is to be installed next to the torch on the Z axis, and the PLLR2P power supply unit is to be installed onto a control panel of a CNC system. The units are connected via cable (Fig. 7).

The sensor allows to adjust the sensitivity. PLL-R2 is equipped with trigger indicators, as well as an opto-isolated interface for connecting to a CNC machine controller.

The sensor provides with measurements when cutting parts are located under water (the response threshold is selected individually by the sensor response sensitivity adjusting).

The measuring unit PLL-R2S has the international protection class IP50 (protection against dust penetration in quantities, that do not affect the performance of the product).

### Set of Delivery

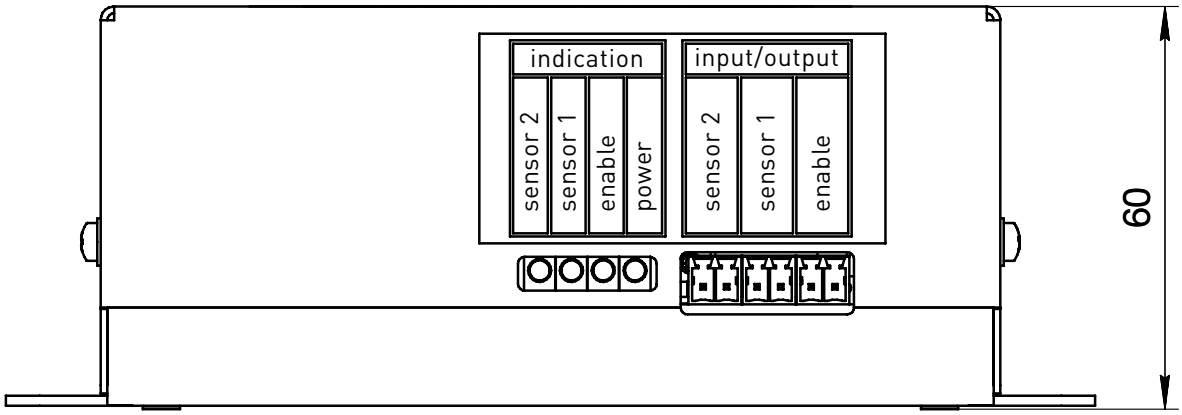
- PLL-R2P device – 1 pc.
- PLL-R2S device – 1 pc.
- Connecting cable – 1 pc.
- Mating connectors – 6 pcs.
- Sensor with cable – 1 pc.

# 2 Product Features and Specifications.

| Parameter | Value |
|---|---|
| PLL-R2 supply voltage | 230 VAC |
| PLL-R2 input power | 6 W |
| Measured resistance, approximately | <1 MOhm |
| Measured voltage | 40 V |
| Insulation resistance | 500 MOhm |
| Working temperature | 0...60 °C |
| Overall dimensions of PLL-R2P (W x H x D) | 161 x 60 x 70 mm |
| Overall dimensions of PLL-R2S (W x H x D) | 138 x 66 x 95 mm |
| Protection class | IP50 |
| Weight with packaging | 1.5 kg |

**Attention!**

All connections shall only be provided in deenergised state!



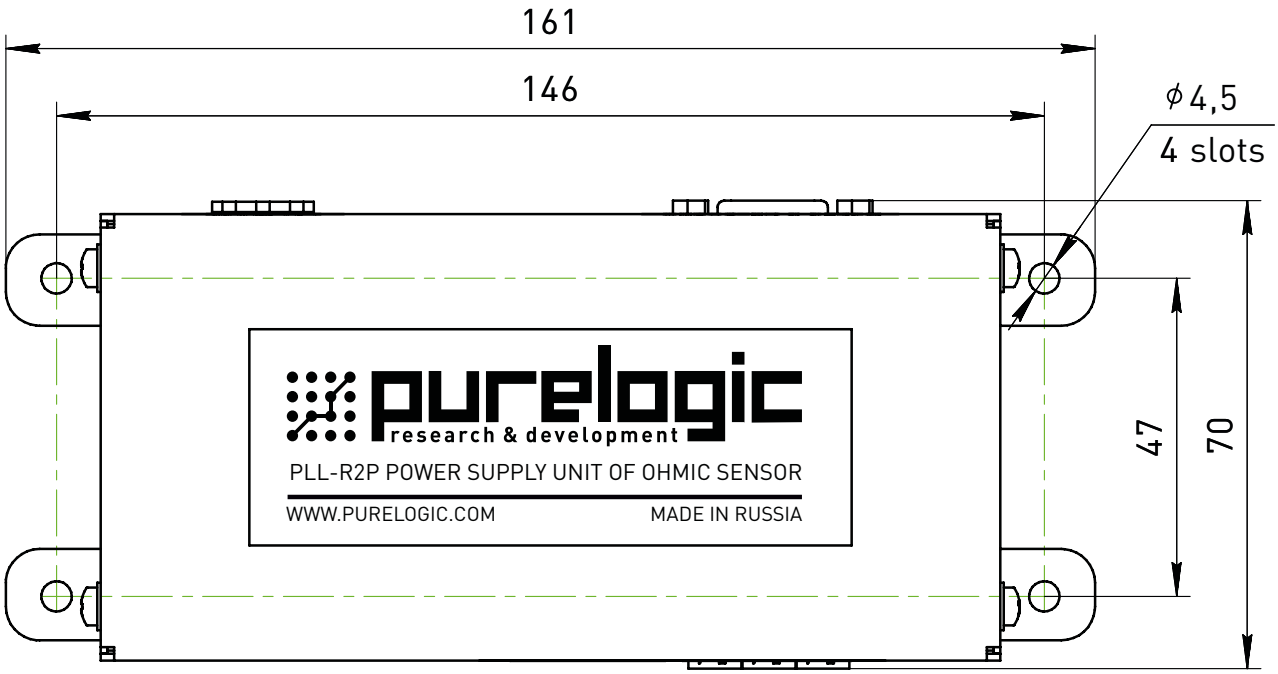




Figure 1 — PLL-R2P device dimensions.

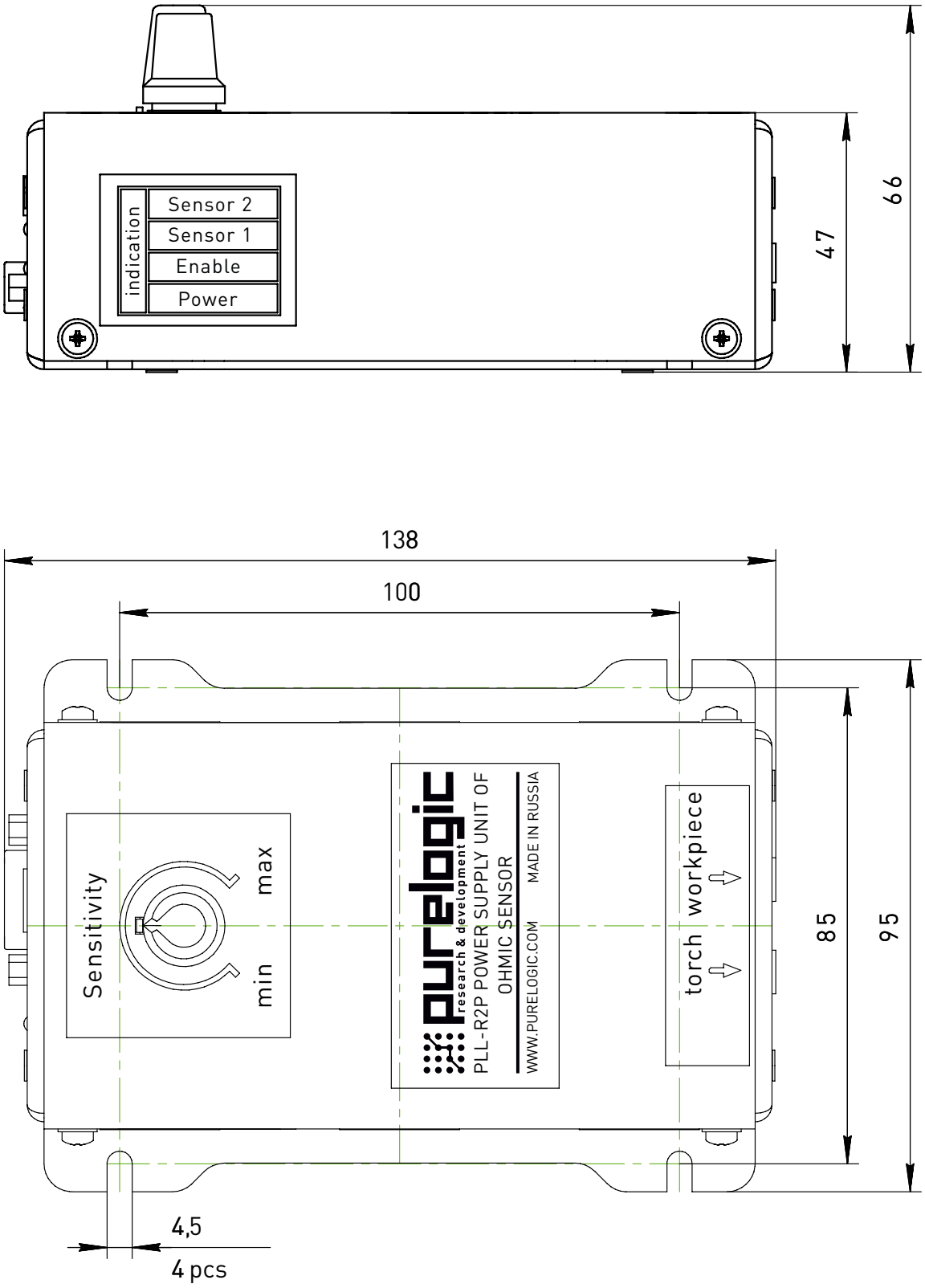
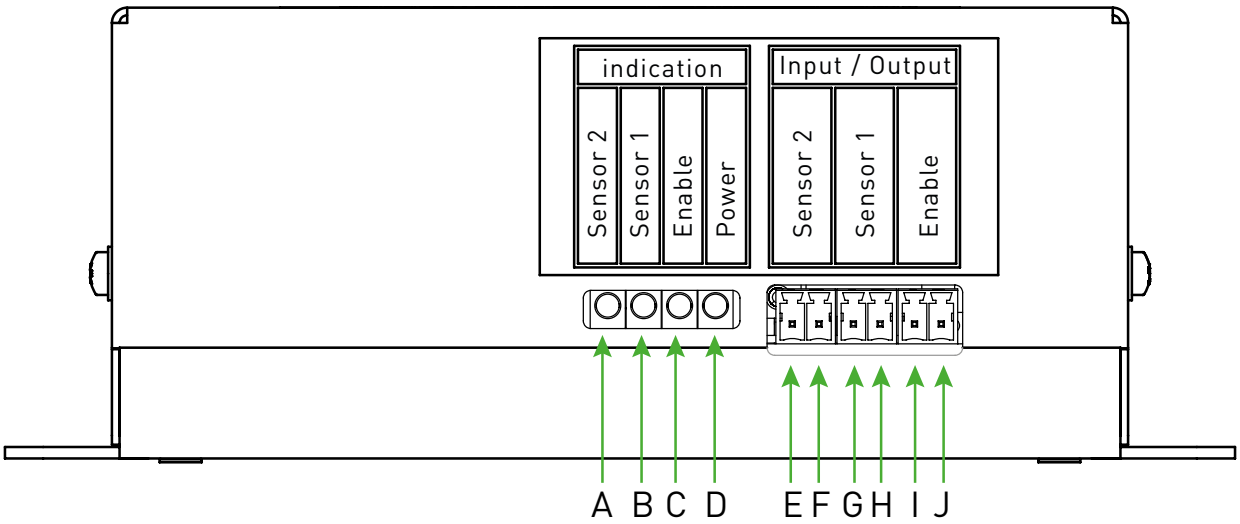



Figure 2 — PLL-R2S device dimensions.

# 3 Controls, indication and connection.




| Indication | Input / Output |
|---|---|
| A: Sensor 2 | F: Sensor 2 (output) |
| B: Sensor 1 | H: Sensor 1 (output) |
| C: Enable | J: Enable |
| D: Power | E, G, I: common |

Figure 3 — Front view of the PLL-R2P device.

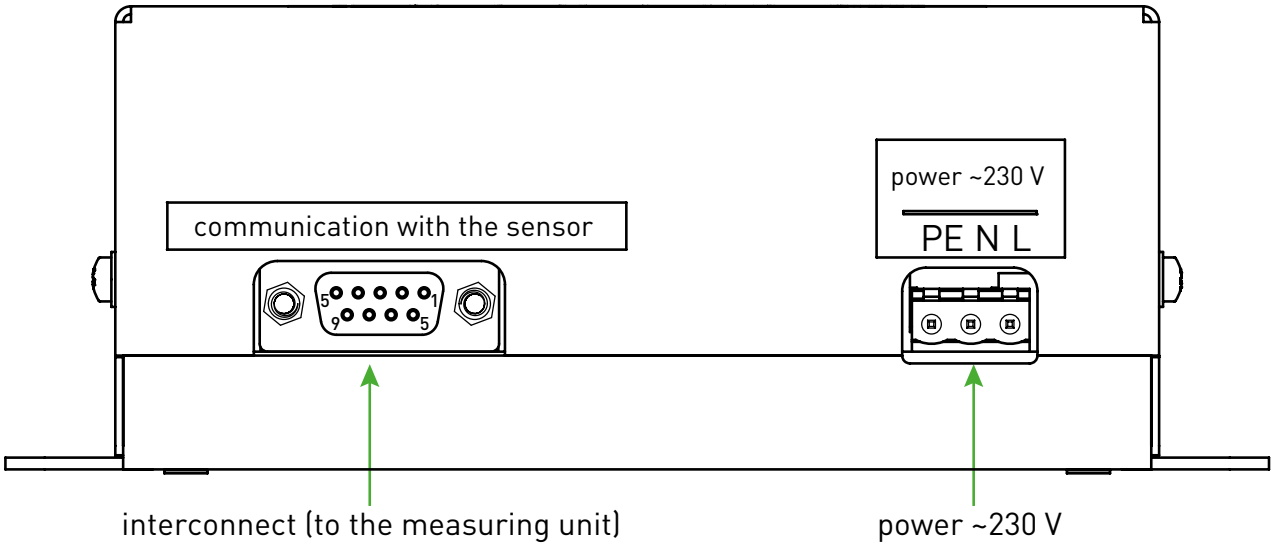



Figure 4 — Rear view of the PLL-R2P device.

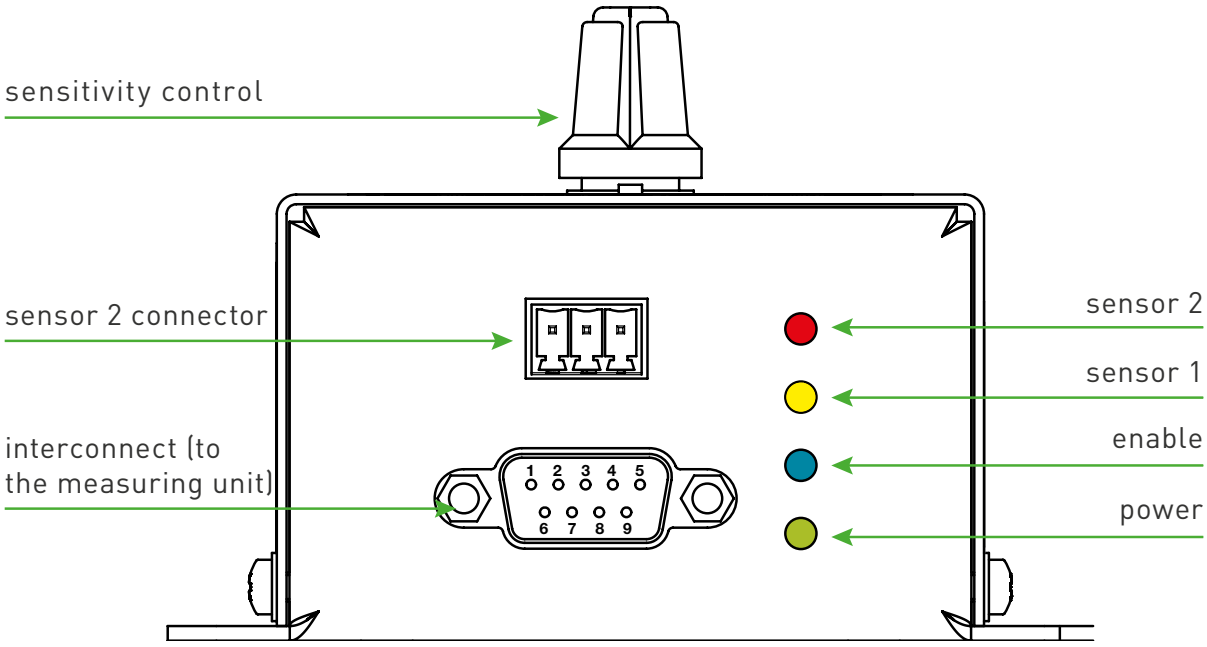



Figure 5 — Front view of the PLL-R2S device.

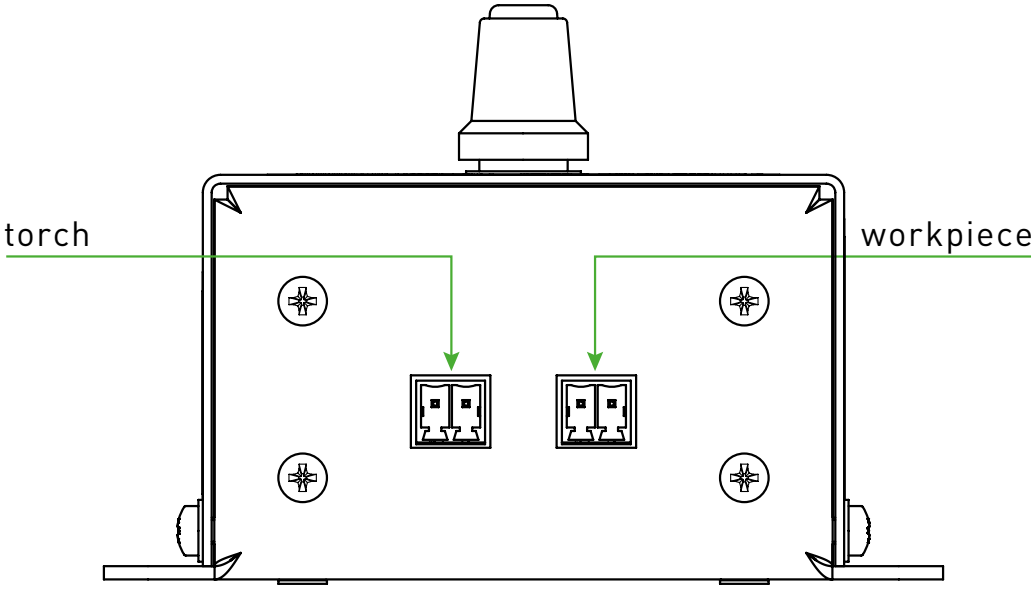



Figure 6 — Rear view of the PLL-R2S device.

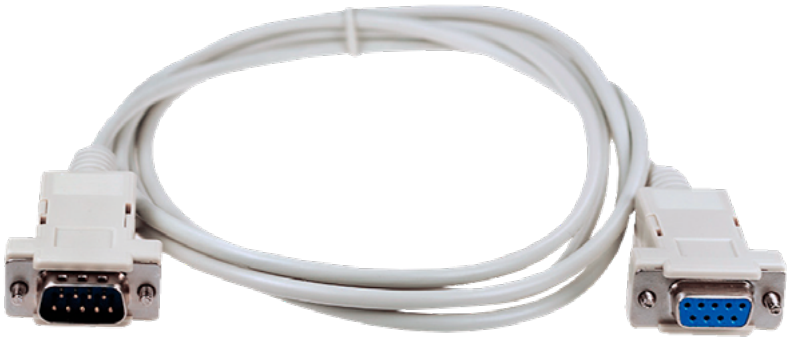




Figure 7 — Interconnecting cable diagram.

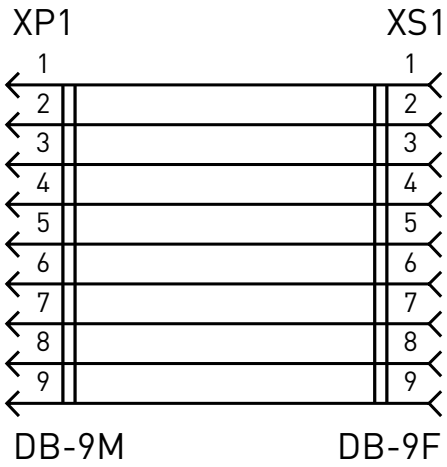



Figure 8 — Interconnecting cable diagram.

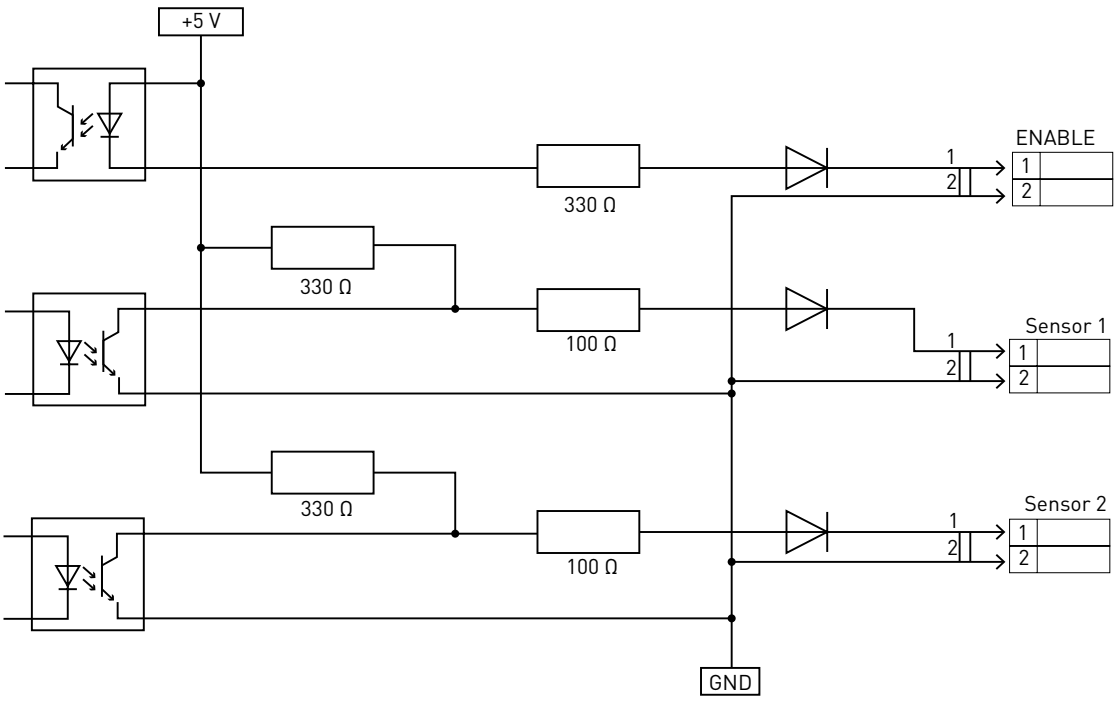



Figure 9 — Configuration of inputs and outputs.

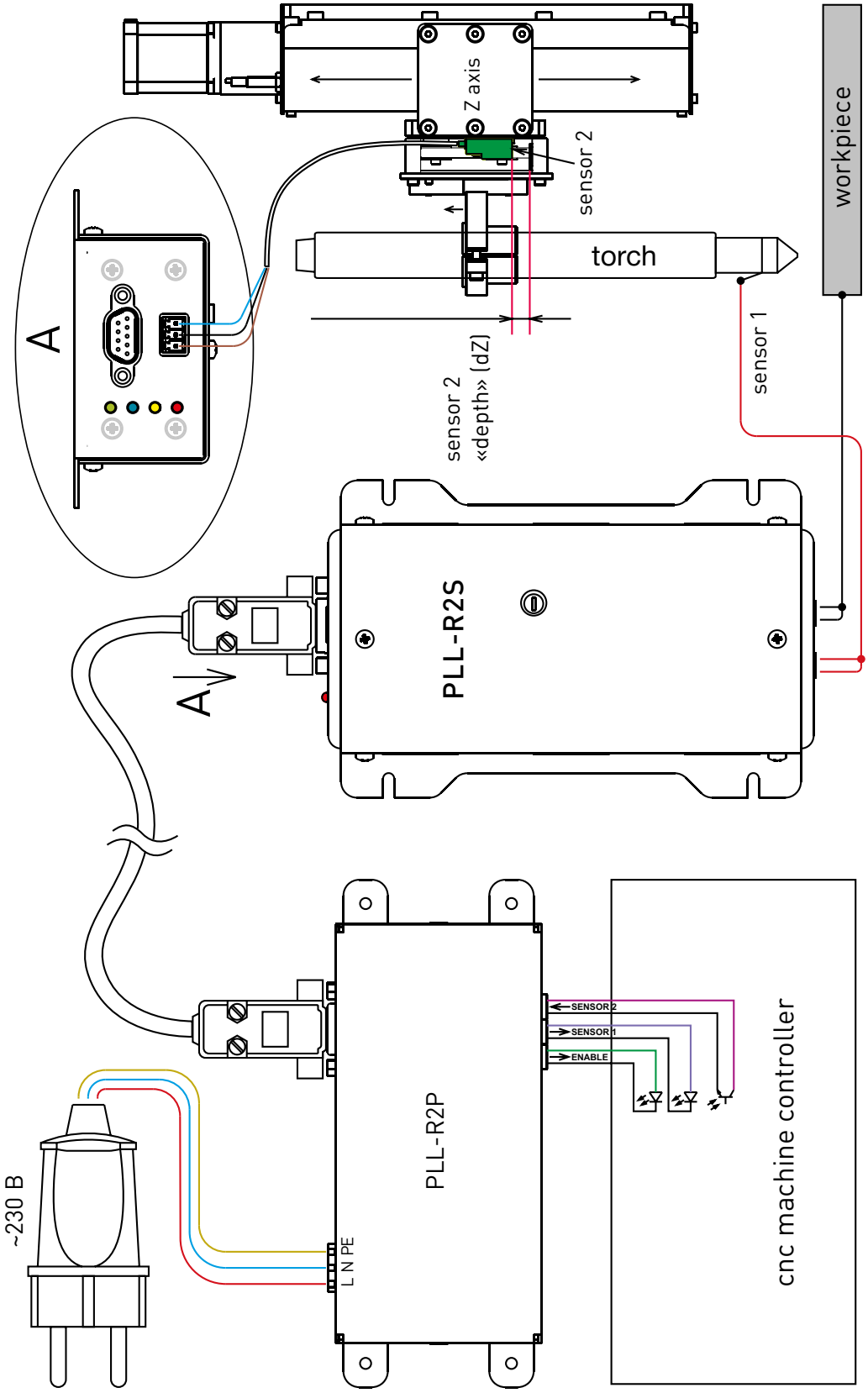



Figure 10 — Sensor connection to a CNC plasma system.

# 4 Description of sensor operation.



An ohmic probe sensor allows to detect workpiece surface when a torch moves down. When a torch cap touches a workpiece, "Sensor 1" signal appears. If the first sensor does not work for any reason, and the Z axis continues moving down, then dZ mm (Fig. 10) will trigger sensor 2 and two signals will immediately appear at the output: "Sensor 1" and "Sensor 2". In this case, to obtain the torch height above the workpiece surface, it is necessary to correct the Z coordinates by the distance dZ.

The sensitivity control is designed to reduce the sensor sensitivity in the case of strong interference, which can cause false activation, or increase the sensitivity in the case of contaminated workpiece.

# 5 Warranty.

The warranty period is 12 months after purchasing and is valid only if all operational conditions and scheduled maintenance are strictly followed.

### 1. General terms.

1.1. In case of product acquisition as separate components, Seller guarantees working ability of every component, but does not assume responsibility for the quality of their joint work (mismatch of components). If you have questions please consult our technical support team.

1.2. Seller does not guarantee compatibility of the purchased product with the one that Buyer already has or bought from third parties.

1.3. Product's component parts and configuration can be changed by manufacturer without notice due to the product consistent technical improvement.

### 2. Conditions for warranty acceptance.

2.1. The product is accepted only in the same completeness of set as it was purchased.

### 3. Warranty service procedure.

3.1. Warranty service is performed by testing the claimed product defect.

3.2. If the defect is proved, warranty repair is carried out.

### 4. We do not assume any responsibility for glass, electric lamps, starters and expendable materials as well as:

4.1. Damaged product caused by inappropriate transport and store conditions, wrong connection, operation in abnormal (off-design) mode, or in conditions which are not manufacturer-supplied (including temperature and humidity out of limits of recommended range), having damages due to third-party circumstances (voltage jumps, natural disasters, etc.), also having mechanical or thermal damages.

4.2. The product with traces of foreign objects or substances impact, including dust, liquids, insects, also objects having extraneous inscription.

4.3. The product with traces of unauthorized tampering and (or) repair process (traces of opening, home-made soldering, elements changing etc).

4.4. The product with self-diagnostic function that shows improper exploitation.

4.5. Technically complex product in respect of which assembly and integration and start-up works were not performed by Seller specialists or by recommended organizations, except in cases directly regulated under goods documentation.

4.6. In cases when the product exploitation was performed in conditions when power supply did not correspond with manufacturer's requirements, also when there is no electrical protection device.

4.7. The product which was resold by the initial buyer to the third party.

4.8. The product with defects which were caused by low-quality spare parts or fulfilled their service life spare parts, consumable materials, also using spare parts, consumable materials not corresponding with manufacturer's requirements.



We draw your attention to the fact that there can be some changes in this instruction due to the product consistent technical improvement. You can always download our latest versions at pumotix.com

Edition of 07.04.2021

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