Point Sensor PSO/PSO+

Type 17-85M6-1102.A00

Installation Instructions

Origin Installation Instructions

Language: EN

BARTEC

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1. Safety

1.1. Safety and Manual

The Point Sensor PSO/PSO+ is intended for use as Point Sensor in BARTEC Water Detection Systems.

To ensure safe operation and accurate leak detection, it is necessary to carefully design the Water Detection System and follow this Installation Instructions as well as those for the other components of the Water Detection System.

Read and understand this Installation Instructions carefully and completely before working with the Point Sensor PSO/PSO+ or other parts of the Water Detection System.

Keep this Installation Instructions for future reference along with the documentation of the Water Detection System and pass it on to the end user or future user if applicable.

All generally applicable legal regulations, relevant installation and operating regulations (e.g., DIN VDE 0100 series and/or other national regulations), and other binding guidelines - such as those regarding occupational safety, accident prevention, and environmental protection - must be observed.

Applicable Documents

– Installation Instructions of the monitoring and control device to be used
– BARTEC Storage conditions (21-0000-7Q0001)

WARNING!

Risk of serious injury due to improper use or misuse

Improper use of the product may result in serious injury or death.

- Read and understand these Installation Instructions and the Applicable Documents in their entirety before using or installing the product.
- Follow the safety instructions and warnings.

1.2. Intended Use

The Point Sensor PSO/PSO+ is intended for use as a Point Sensor in BARTEC Water Detection Systems in non-explosive atmospheres. It is intended for connection to the BARTEC monitoring and control devices RLAnet, RDA01 and RDW03.

The Point Sensor PSO/PSO+ can be used to detect electrically conductive liquids (e.g., water) and electrically non-conductive liquids (e.g., oil).

The Point Sensor PSO/PSO+ can be installed on various materials; metallic surfaces in the vicinity of the sensor or the optics do not impair its function (example: oil collection tray made of sheet steel).

1.3. Foreseeable Misuse

The following activities are a misuse of the product and are **not allowed**:

– Use of the Point Sensor PSO/PSO+ for purposes other than those described in the Intended Use
– Use of the Point Sensor PSO/PSO+ with third-party monitoring and control devices
– Commissioning of damaged or faulty system components
– Unauthorized technical modification of the Point Sensor PSO/PSO+
– Use in areas or in liquids that are chemically incompatible

1.4. Personal Qualification

For all phases of the product life cycle, from system planning to disposal, the relevant tasks must be carried out by qualified personnel. The personnel qualification requirements specified in DIN VDE 1000-10 and DIN VDE 0105-100 must be comply with.

1.5. Symbols and Signs

The warnings are intended to protect from dangerous situations and property damage.

In the Installation Instructions, the severity of possible dangers is indicated by the following symbols and signs:

DANGER!

Indicates an immediate danger to the life and health of people. Failure to comply will result in serious injury or death.

WARNING!

Indicates a possible danger to the life and health of people. Failure to comply this warning may result in serious injury or death.

CAUTION!

Indicates a possible danger to the health of people. Failure to comply this warning may result in injury.

NOTICE!

Indicates the possibility of material damage.Failure to comply this warning may result in damaging the product or surrounding products.

2. Product Description

The Point Sensor PSO/PSO+ consists of a PVC sensor housing with three height-adjustable spacer feet. Connected to BARTEC monitoring and control devices rapid alarm triggering is possible, if leak level reaches 2 mm. The height-adjustable spacer feet allow for slight adjustments to the leak level.

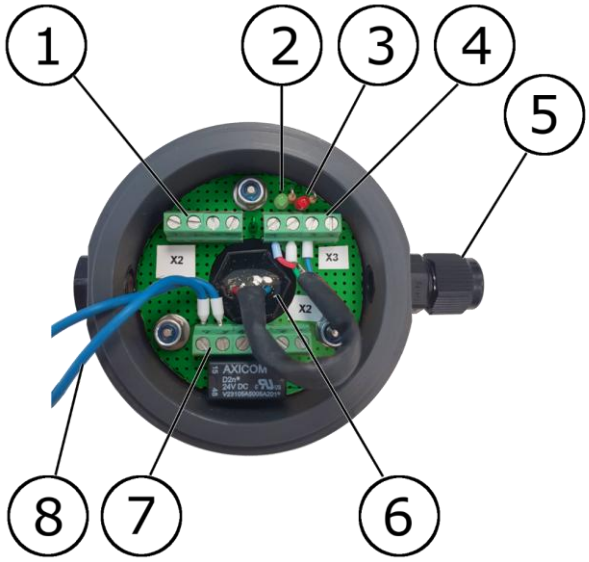
Top View

Perspective view, showing cable glands

Bottom view, showing spacer feet and sensor/optics

Inside the sensor housing, a circuit board contains the terminal blocks, LEDs for status monitoring, and the sensor or optical assembly. A second circuit board also contains additional terminal blocks (PSO+ only).

Lower housing section (PSO and PSO+)



No.	Description
1	Terminal Block X2
2	LED green, shows power supply
3	LED red, shows leak detection status
4	Terminal Block X3
5	Cable gland
6	Sensor or Optical assembly
7	Terminal Block X2
8	Connection cable lower / upper housing section (PSO+ only)

Upper housing section (PSO+ only)

No.	Description
9	Terminal Block X1
10	Connection cable lower / upper housing section (PSO+ only)
11	Cable gland
12	Terminal Block X1

Combining options:

The Point Sensor PSO can be used with BARTEC monitoring and control devices RDA01 or RDW03 and other sensors PS, PSO, PSO+ and SCR. Location detection is not supported. Using parallel connection.

The Point Sensor PSO+ can be used with BARTEC monitoring and control device RLAnet and other sensors PS, PSO+ and SCR. Location detection is supported.
Usage with BARTEC monitoring and control devices RDA01 or RDW03 without location detection supported. Using series connection.

In summary, up to 50 pcs. of point sensor PS, PSO, and PSO+ or up to 500 m of sensor cable SCR can be connected to the monitoring and control device in any combination.

Inside the sensor housing of Point Sensor PSO+ there is an additional circuit board with terminal blocks mounted. This enables the series connection of the point sensors and the sensor cable and allows for precise location detection.

3. Accessories

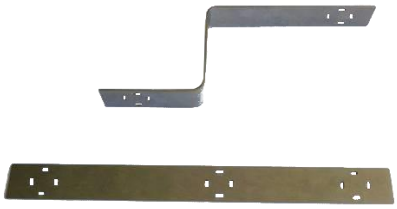
Product	Order-No.
Connection cable LIYY 4 x 0,5 mm²	02-4042-0011
SCR Terminal connector for RLAnet, T-splitter	05-0080-0161
SCR Final resistance 220 kΩ für RDA, RDW	05-0080-0164
SCR Separating module	05-0080-0162
SCR T-splitter	17-85Z4-3200
SCR Connector installation kit	05-0091-0054
SCR Bushing installation kit	05-0091-0055
Bendable mounting plate (spacer ASH)	05-0135-0002
Mounting tape	05-0091-0045

For more information see Accessory data sheet (Document No.: 03-0330-0886).

Installation recommendation

Installation with Bendable mounting plate (spacer ASH) and Mounting tape:

Bending the Bendable mounting plate according to the installation situation



Bendable mounting plate with Mounting tape, fixed with an adhesive bonding point

Bendable mounting plate fixed with Mounting tape

Notes:

- The Bendable mounting plate can also be installed using cable ties
- Apply mounting tape to protect the type plate of the PSO/PSO+
- The flexibility of the Bendable mounting plate allows for easy removal and maintenance

4. Technical Data

Parameters	Values/Properties
Detection	electrically conductive liquids (e.g., water), electrically non-conductive liquids (e.g., oil) 2 mm to 4 mm above the mounting surface, slightly adjustable
Installation	freestanding, floor-mounted, downwards facing sensor or optical assembly
Durability sensor or optical assembly	Resistant to oils, fats, solvents, and aqueous solutions; not resistant to strong acids, strong bases, or halogenated hydrocarbons
Dimensions	Ø 80 mm, 70 mm high, without cable glands
Protection class	IP 65/ IP 67
Wight	PSO approx. 240 g PSO+ approx. 270 g
Ambient Temperature sensor housing	-25 °C to +50 °C, Humidity 5 % to 95 %, not condensing
Ambient Temperature Optic/sensor and spacer feet (components with contact to the leaking fluid)	-25 °C to +80 °C
Storage temperature	-30 °C to +60 °C
Diameter connection cable, clamping range cable gland	5,0 mm to 7,5 mm
Kind of terminals	Terminal block with screw terminals, max. 1,5 mm²
Rated Voltage	24 V DC ± 10 %, 0,4 W or 230 V
	collective alarm output, 2 changeover contacts, DC-13, 1 A, 12 V bis 48 V, Fail save
Status monitoring	Inside the sensor housing, using 2 LEDs LED green PSO/PSO+ powered, power ON LED red Relais condition, operation mode, leakage detection/operation mode (fail-save circuit) PSO/PSO+ ready for leak detection, in operation

5. Function Description

The detection principle of the Point Sensor PSO/PSO+ is based on total internal reflectance within its optical module. The Point Sensor PSO/PSO+ can be connected to the power supply either centrally via the signal line of the monitoring and control device or decentrally using a separate power supply (plug-in power supply).

Combining it with the monitoring and control device enables monitoring of the measurement circuit.

The potential-free relay output is used as a collective alarm output. The two relay contacts of the Point Sensor PSO/PSO+ can be used in open-circuit mode. This operating principle allows for the detection of wire breaks and power outages.
A changeover contact indicates the switching state to the connected monitoring and control device.
Actuators can be connected directly to the second changeover contact to, for example, operate a shut-off valve.

Function table		
Leaking fluid	not present	present
Operation condition	Ready, Operation mode	Alarm mode
LED red (Operation mode)	Red light ON	Red light OFF
Relais coil	powered	unpowered
Relais contact NO - C	closed (1)	opened
Relais contact NC - C	opened	closed (2)

6. Installation

Carefully plan and design the BARTEC Water Detection System. Install all components of the system properly.

The sensor or optics of the Point Sensor PSO/PSO+ is a sensitive component, damage to it can impair its reliable operation. Avoid damaging the sensor or optics of the Point Sensor PSO/PSO+.

NOTICE!

Possible damage to components due to improper transport, storage, or installation

Malfunctions of the Point Sensor PSO/PSO+ possible

- Transport and store the Point Sensor PSO/PSO+ carefully and in original packing only
- Protect the Point Sensor PSO/PSO+ from damage (e.g. due to impact, moisture, contamination)
- Observe the BARTEC Storage conditions

Install the Point Sensor PSO/PSO+ on a suitable position where any leaking fluid can collect. Installation at the lowest point of the mounting surface is recommended.

If electrical connectors are required between multiple Point Sensor PSO/PSO+, the connectors must be protected from moisture or other liquids. If necessary, use spacers between the connectors and the mounting surface. See also Chapter 3. Accessories.

6.1. Electrical Installation

WARNING!

Fire and electric shock hazard due to Water Detection System

Risk of injury due to fire and electric current

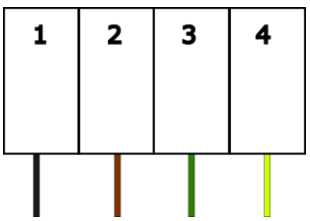
- Before starting installation and maintenance work disconnect all circuits from the power supply and ensure that they are discharged.

Carefully open the upper housing section of the sensor housing of the Point Sensor PSO/PSO+. Use a flathead screwdriver into the side notch.

The Electrical Installation of the Point Sensor PSO/PSO+ must be done accordingly to the Wiring diagram. Observe the Technical Data. If necessary, attach wire end ferrules to the ends of the wires.

Connecting the Connection Cable

The connection cable (e.g., LIYY) must be connected to the Point Sensor PSO/PSO+ according to the following configuration situation. If a Point Sensor PSO is used, connect it to terminal block X2; if a Point Sensor PSO+ is used, connect it to terminal block X1.

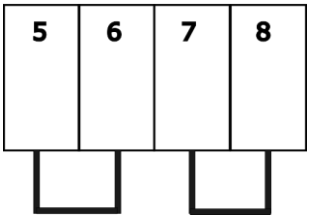


Configuration Situations (PSO+)

Depending on the system configuration of the Water Detection System and the location of the Point Sensor PSO/PSO+ (position in the wiring diagram), the Point Sensor PSO/PSO+ must be adapted to the specific application. The possible configuration situations for the terminal block:

Situation 1:

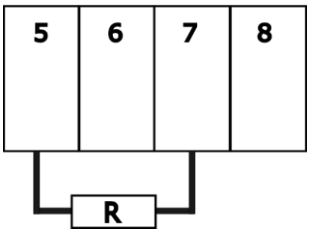
Point Sensor PSO+ as sensor at the end of the measurement circuit with location detection.



In delivery condition remove the end resistance and connect electrical jumpers according to picture.

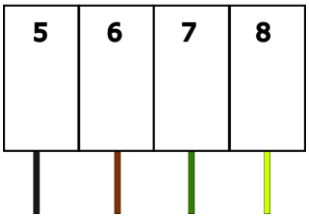
Situation 2:

Point Sensor PSO+ as sensor at the end of the measurement circuit without location detection (end resistance mounted in delivery condition).



Situation 3:

Point Sensor PSO+ in combination with several sensors in the measuring circuit (series connection).



Whether the location detection function is ensured depends on:

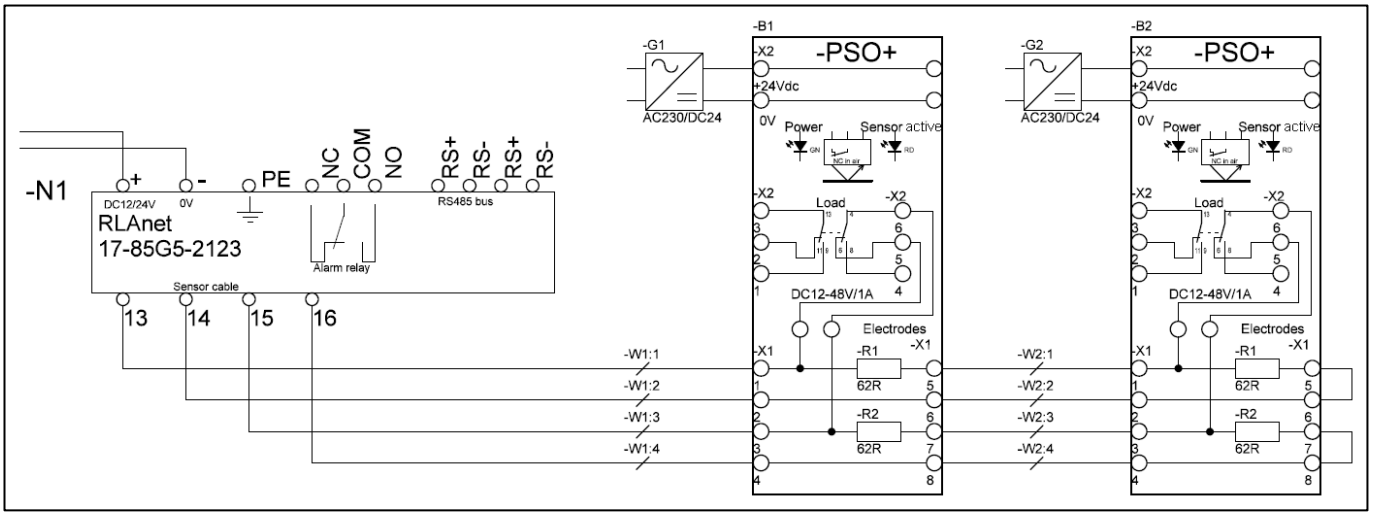
- the Point Sensor PSO/PSO+ used
- the configuration situation at the end of the measurement circuit
- the monitoring and control device used in the water detection system

Configuration Situation (PSO)

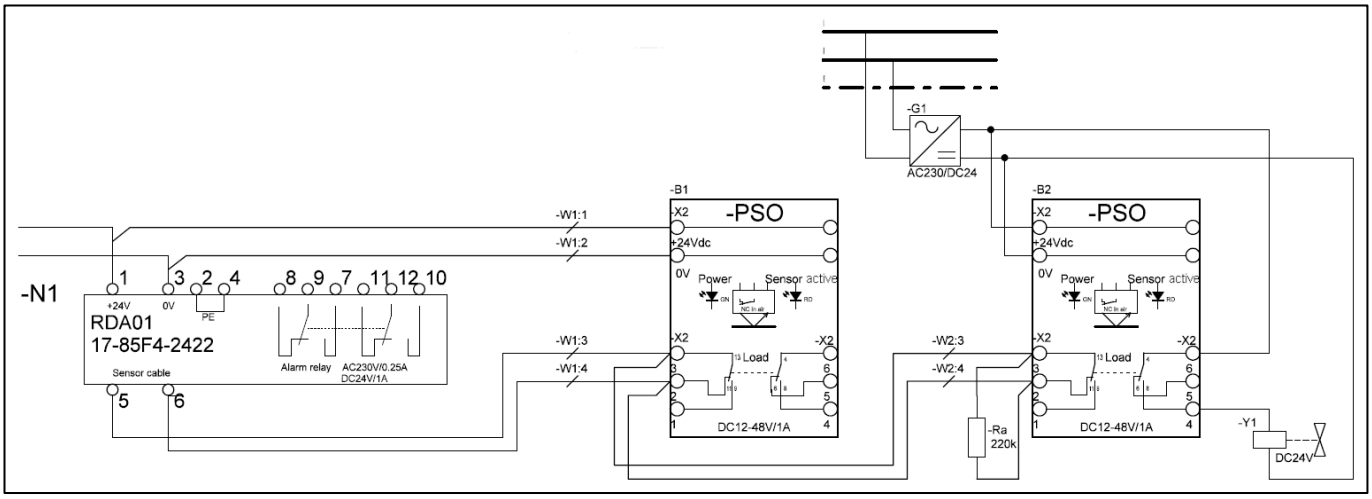
At the Point Sensor PSO there is no circuit board mounted in the upper housing section. The resistance is mounted at terminal block X2 (Pos. 2 and Pos. 3) (in delivery condition).

6.2. Wiring diagram

2 pcs. Point Sensor PSO+ connected to RLAnet (example)



2 pcs. Point Sensor PSO connected to RDA01 (example)



7. Commissioning

The Commissioning and Operation of the Point Sensor PSO/PSO+ is permitted only if the Point Sensor is in a clean and faultless state without any damage. If there is visible damage to the point sensor - particularly to the optics - it must not be commissioned. The Point Sensor must be repaired or replaced.

WARNING!

Fire and electric shock hazard due to Water Detection System

Risk of injury due to fire and electric current

- Before starting installation and maintenance work disconnect all circuits from the power supply and ensure that they are discharged.

Commissioning should be performed in the following steps:

– Check the electrical connection (see also Configuration Situations PSO/PSO+)
– Check the operating status using the LEDs (see Technical Data, Status monitoring)
– Make a functional test of the Point Sensor PSO/PSO+ or of each Point Sensor PSO/PSO+ using the leaking fluid (upon detection, the red LED must turn off and the relay must de-energize; this indicates that a leak is detected)
– Ensure reliable triggering of the Point Sensor PSO/PSO+ or of each Point Sensor PSO/PSO+
– Ensure proper signal processing by the monitoring and control device

8. Operation, Maintenance

To ensure safe operation and accurate leak detection of the Point Sensor PSO/PSO+ it must be maintained regularly. Maintenance may only be realized by qualified personnel in accordance with the personnel qualification. See chapter 1.4 Personal Qualification.

Check the Point Sensor PSO/PSO+ regularly, at least one a year to ensure it is in good working order.

WARNING!

Fire and electric shock hazard due to Water Detection System

Risk of injury due to fire and electric current

- Before starting installation and maintenance work disconnect all circuits from the power supply and ensure that they are discharged.

Tests / Inspections / Checks:

– Visually inspect the Point Sensor PSO/PSO+ externally
– Visually inspect the Sensor or Optical assembly of the Point Sensor PSO/PSO+ for clean and good condition
– Make a functional test of the Point Sensor PSO/PSO+ functional test in combination with monitoring and control device and Check the operating status using the LEDs of the Point Sensor PSO/PSO+ (see chapter 4. Technical Data, Status monitoring)
– Check the connection cable to the Point Sensor PSO/PSO+

If necessary, adjust the inspection interval based on the expected level of contamination of the Point Sensor PSO/PSO+, but do not extend it. Document any inspections or maintenance carried out in the Water Detection System maintenance log.

9. Decommissioning, Dismounting

WARNING!

Fire and electric shock hazard due to Water Detection System

Risk of injury due to fire and electric current

- Before starting decommissioning or dismounting disconnect all circuits from the power supply and ensure that they are discharged.

Decommissioning and Maintenance of the Point Sensor PSO/PSO+ may only be realized by qualified personnel in accordance with the personnel qualification. See chapter 1.4 Personal Qualification.

– Disconnect all circuits from the power supply of the Water detection system and ensure that they are discharged.
– Carefully open the upper housing section of the sensor housing of the Point Sensor PSO/PSO+. Use a flathead screwdriver into the side notch.
– Dismount the Point Sensor PSO/PSO+ properly.

If necessary, store the Point Sensor PSO/PSO+ properely for future use. See chapter 4. Technical Data and BARTEC Storage conditions (Applicable documents).

10. Disposal, Recycling

The Point Sensor PSO/PSO+ must be disposed of properly in accordance with legal regulations. It consists mainly of plastic (PVC) and electrical components.

The Point Sensor PSO/PSO+

– don’t disassemble into its component parts
– don’t dispose with household waste
– dispose as electronic waste.

- Dispose the Point Sensor PSO/PSO+ properly in accordance with the country-specific regulations for electrical and electronic devices.
- Dispose the Point Sensor PSO/PSO+ as electronic waste.
- Don’t dispose the Point Sensor PSO/PSO+ with household waste.

11. Warranty

Scope

BARTEC warrants that all BARTEC products and accessories that are the subject of this manual will be free from defects in materials and workmanship from and after its date of purchase for a period of 12 (twelve) months.

For the avoidance of doubt, this limited product warranty will **not** cover any damage caused by:

- accidents,
- misuse, improper installation, operation, maintenance or repairs,
- neglect, or
- alteration.

Furthermore, BARTEC cannot be held liable under this warranty for:

- installation or removal costs,
- loss or damage to property,
- indirect, special, incidental or consequential damages (including, without limitation, loss of revenue or anticipated profits), or
- any other damages or costs directly or indirectly related to the warranty issue.

If all warranty conditions are met (as set forth below), BARTEC will, at its sole discretion:

- repair the product,
- replace the product, or
- refund the purchase price paid for the product.

This warranty gives you specific legal rights, and you may also have other rights which vary by country, state or province. Except as specifically provided otherwise in this limited product warranty, the BARTEC Group General Terms and Conditions shall apply.

General terms and conditions

BARTEC Global Terms and conditions are available at: https://bartec.com/general-terms-and-conditions-for-deliveries-and-services

Conditions

The limited product warranty is subject to the following conditions:

- proper installation, operation and maintenance in compliance with the state of the technology and the product documentation, and
- presence of completely filled in acceptance reports for all installation, maintenance and repairwork operations.

How to claim the warranty

To file a claim under the limited product warranty:

- Notify BARTEC or your local BARTEC representative by written correspondence or email within 30 days after identification of a possible warranty issue.
- If requested, you must provide any warranty-related information and documentation to BARTEC, including, without limitation:
- project planning documents, and
- acceptance reports for installation, operation, maintenance or repairwork.

Contact

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11-85M6-7D0001/C 07/2026-EHT-414087

Technical data subject to change without notice.

No claims for damage arising from alternations, errors or misprints shall be allowed.