



 **REER**

PHARO

The PHARO Safety Laser Scanner is an optoelectronic protection device for accident prevention.

PHARO is suitable for the protection of personnel exposed to risks deriving from both machines and systems with dangerous organs as well as from possible collisions with automatic guided vehicles (AGVs).

With the PHARO Safety Laser Scanner it is possible to create **programmable protected horizontal or vertical areas** of variable shape suitable to all applications without the need to use a separate reflector or receiver.

The device does not require an external control unit because **all the safety functions are built-in.**

The PHARO Safety Laser Scanner features a **Configuration Memory Module** built into the removable connector, which stores the data related to the protected zones programmed and to the operating parameters set.

This module enables the user to replace a faulty sensor with a new device without the need for reconfiguration and therefore maintaining the pre-existing configuration, without the possibility of errors or tampering.

The stored data can only be modified by authorised personnel.

It is also possible to use the data measured by the scanner to aid the navigation of AGV automatic guided vehicles or for dimensional detection of objects.

Each sensor can create **2 independently programmable controlled zones:**

- 2 safety zones with maximum radius of 4 metres
- 2 warning zones with maximum radius of 20 metres.

MAIN FEATURES

Scanning area: 190° / 4 m radius.
 Resolution configurable from 30 mm to 150 mm:
 from hand detection to access control.
 Configuration software via RS232 serial port
 2 safety zones and 2 warning zones, programmable.
 Programming by means of:

1. graphic user interface
2. teach-in
3. data transfer from file (from PC or from another laser scanner).

Configuration Memory Module for easy re-installation.
 Detailed self-diagnosis via display and remote serial output.
 Built-in start/restart interlock, selectable.
 Feedback input for control of external relays (EDM).

Model:	PHR 332
Protective (safety) fields:	2
Warning zones:	2
Configuration Memory Module:	Yes



Safety level: Type 3 – SIL 2 - SILCL 2 - PL d - Cat. 3

- 2006/42/EC "Machinery Directive"
- 2004/108/EC " Electromagnetic Compatibility (EMC)"
- 2006/95/EC "Low Voltage Directive (LVD)"
- IEC/EN 61496-1 Ed. 2 e IEC/TS 61496-3 "Safety of machinery - Electro-sensitive protective equipment- General requirements and tests"
- EN ISO 13849-1 "Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design"
- IEC/EN 62061 "Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- IEC 61508 "Functional safety of electrical/electronic/programmable electronic safety-related systems"
- IEC/TS 62046 Ed. 2 "Safety of machinery – Application of protective equipment to detect the presence of persons"
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components".

GENERAL TECHNICAL DATA

Safety level	Type 3 according to IEC/TS 61496-3 SIL 2 – SILCL 2 according to IEC 61508 - IEC 62061 PL d – Cat. 3 according to ISO 13849-1
Light source	laser diode wavelength 905 nm
Laser source class	1 - according to EN 60825-1
Scanning angle	190°
Angular resolution	0,25° / 0,50°
Response time (ms)	configurable 60 / 120 (with 2 scans)
Start/Restart	automatic - timed automatic - manual reset (selectable via software)
Serial interface - configuration	RS 232
Serial interface - data transmission	RS 422
Configuration and operating parameter setting	via configuration software (UCS)
Configuration Memory Module	built into the main connector
Signalling	display indications in 7 segments and LEDs for self-diagnosis and sensor status
Power supply (Vdc)	24 -30% +20%
External relay control	feedback input with enabling, selectable
Main connection	connector with screw terminals (13-pole cable)
Serial interface connection for configuration	cable pre-wired with 2 connectors: M8 4-pole / subD 9-pole
Electrical connections	max. cable length 30 m, cross-section 0.5 mm ²
Protection rating	IP 65
Operating temperature (°C)	-10 / +50

SAFETY ZONE

Max. range (m)	4
Resolution (mm)	30 - 40 - 50 - 70 - 150 configurable
Min. target reflectivity	1,8%
Safety outputs	2 PNP self-testing - 500 mA at 24Vdc

WARNING ZONE

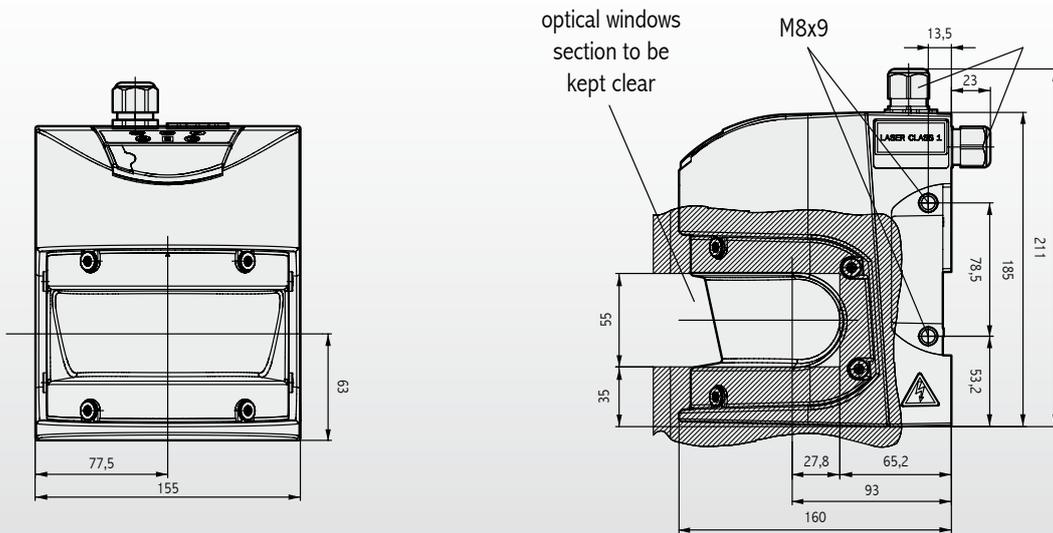
Max. range (m)	20 (for objects with 20% reflectivity)
Resolution (mm)	depending on the distance of the obstacle
Min. target reflectivity	20% at 20 m
Signalling outputs	1 PNP – 200 mA at 24 Vdc

MEASUREMENT ZONE

Max. range (m radius)	49
Resolution (mm)	depending on the distance of the target
Signalling output	1 PNP – 200 mA at 24 Vdc
Data transmission output	RS422 Serial with dedicated protocol

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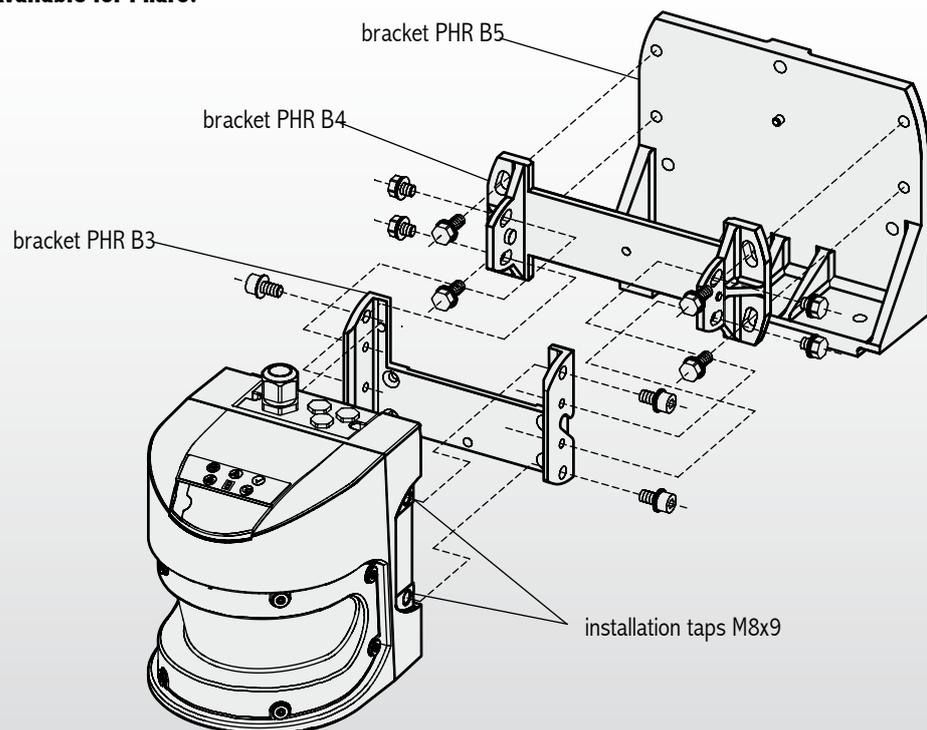
DIMENSIONS (mm)



INSTALLATION ACCESSORIES

Special installation brackets are available for Pharo:

- Fixed bracket PHR B3
- Adjustable bracket PHR B4
- Floor mounting bracket PHR B5



ORDERING INFORMATION (ordering codes on page 190)

Each Pharo Laser Scanner includes:

- PHR 332 Laser Scanner
- CD-ROM containing configuration software in English and Italian and multi-language instruction manual complete with CE declaration of conformity

ACCESSORIES

The following accessories are available for Pharo, to be ordered separately:

Model	Description
PHR C3L5	30-pole connector pre-wired with 13-wire cable 5 m long Built-in Configuration Memory Module
PHR CSL2	cable for serial connection between Pharo sensor and PC for configuring M8 4-pole / subD 9-pole connector, length 2 m
PHR B3	fixed attachment bracket
PHR B4	adjustable attachment bracket
PHR B5	floor mounting bracket

**WARNING!**

- For the main connection of the Pharo sensor, it is necessary to provide a 13-wire cable with 0.56 mm² cross-section. This cable is supplied with the PHR C3L5 main connector.
- To use the PHR B4 adjustable bracket it is also necessary to order the PHR B3 fixed bracket.
- To use the PHR B5 floor mounting bracket it is also necessary to order the PHR B3 fixed bracket and the PHR B4 adjustable bracket.
- AD SR0 and AD SR0A relay modules can be used for interfacing the safety output of Pharo Laser Scanner.