




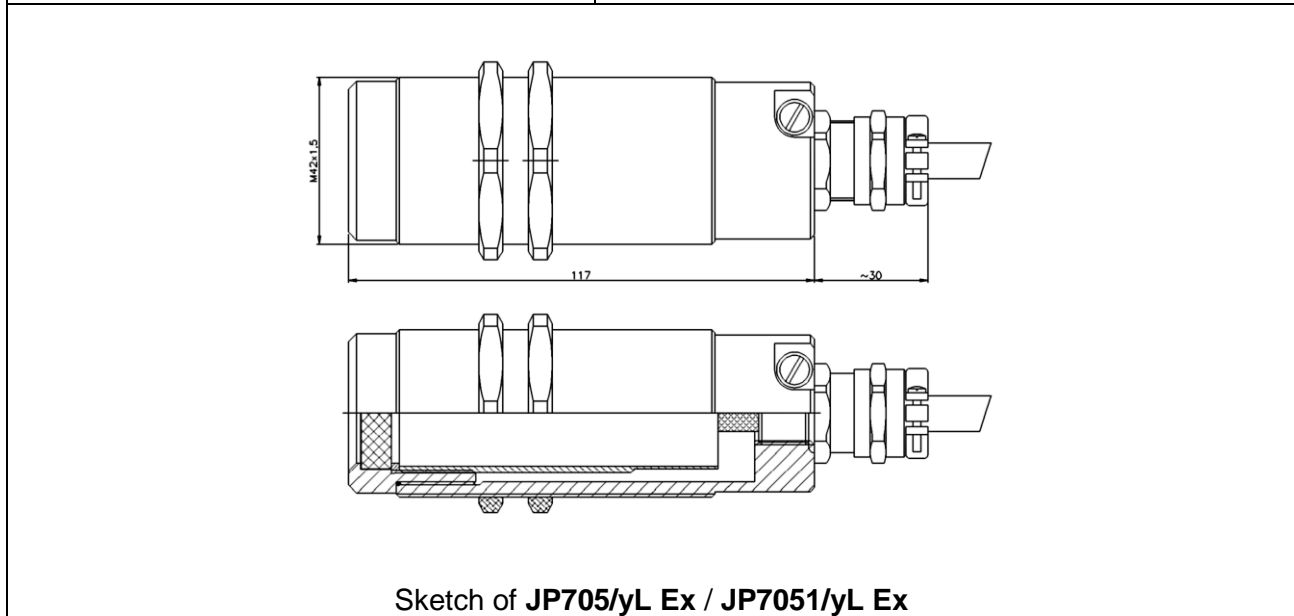
Operating Instructions

Reflex Scanner with Passive Background Response Suppression

JP705/yL Ex JP7051/yL Ex for Hazardous Areas

,41292.pdf'

Features	Applications
<ul style="list-style-type: none"> ✓ Various working ranges 100 mm, 200 mm, 300 mm ✓ Explosion-proof reflex scanner ✓  II 2G Ex d IIC T6 Gb ✓  II 2D Ex tb IIIC T80°C Db IP66 	<ul style="list-style-type: none"> ○ Detection of materials/objects in hazardous areas in Zone 1 or Zone 21 <div style="text-align: center;">  <p>JP705/yL Ex / JP7051/yL Ex reflex scanners</p> </div>



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1 Identification

1.1 Product Brand	“JP705/yL... Ex” reflex light barrier for hazardous (potentially explosive) areas		
1.2 Product Versions / Marking	Infrared light :	JP705/yL Ex	y = scanning range 100 mm, 200 mm or 300 mm
	Red light :	JP7051/yL Ex	
1.3 Manufacturer’s Name and Address	Fotoelektrik Pauly GmbH Wahrbrink 6, 59368 Werne, Germany		
01.4 Declaration of Conformity	The above products were developed and manufactured in conformance to the following standards or normative documents!		

- Low-voltage directive 2014/35/EU
- EMC directive 2014/30/EU
- ATEX directive 2014/34/EU

EC-Type Examination Certificate of Equipment and Components for Use in Hazardous Areas (Directive 94/9/EC):

Certificate No.: **BVS 08 ATEX E 122**

Marking:  II 2G Ex d IIC T6 Gb
II 2D Ex tb IIIC T80°C Db IP66

IECEX Certificate of Conformity, IEC Certification Scheme for Explosive Atmospheres:

Certificate No.: **IECEX BVS 12.0029X**

Marking: Ex d IIC T6 Gb
Ex tb IIIC T80°C Db IP66

Applied Standards and Technical Specifications:

IEC 60079-0:2011, modified General Requirements
+ Cor.:2012 + Cor.:2013

IEC 60079-1:2014 Equipment protection flameproof enclosure “d”

IEC 60079-31:2013 Equipment dust ignition protection by enclosure “t”

2 Product Description

2.1 General Functions and Range of Applications, Use in Accordance with the Intended Purpose

The “JP705/yL Ex“ or “JP7051/yL Ex“ reflex scanner was developed for use in hazardous areas in Zone 1 and Zone 21.

The “JP705/yL Ex“ and “JP7051/yL Ex“ reflex scanners consist of a transmitter and a receiver. The transmitter and receiver electronics are fitted onto a joint printed circuit board. The printed circuit board is accommodated in a flameproof enclosure. The transmitting and receiving beam is formed to produce a joint overlapping area. The object to be scanned should have at least the size of the overlapping area. The surface of the object being scanned serves itself as a reflection area. A sufficiently high reflection level causes the receiver to respond.

When 24VDC supply voltage is applied, the transmitter light is switched on and the receiver is in direct receiving readiness. A modulated light signal is generated by the transmitter. The “JP705/yL Ex” type works with invisible infra-red light. The “JP7051/yL Ex” type works with visible red light. The transmitted light signal has a defined clock ratio. The receiver sees the modulated light transmitted by the transmitter and reflected by the scanned object itself. The switching output in the receiver is switched on or off depending on the selected signal mode – bright-switching or dark-switching.

When the “bright-switching” signal mode is selected, the transistor is switched on when an object is detected – i.e. the reflex scanner is occupied.

When the “dark-switching” signal mode is selected, the transistor is switched on if there is no object positioned in the reflex scanner’s detection area – the reflex scanner is not occupied therefore.

When switched on, the switching output supplies a voltage potential of 24VDC. When switched off, the P-N-P transistor provides a high level of impedance (obstructed).

The switching state of the reflex scanner is typically evaluated with a PLC or a monitoring device. Depending on the logical operator used, a pull-up or pull-down resistor may be necessary.

The reflex scanner works with passive background response suppression. Reflex scanners are available with three different permanently set working ranges.

Working ranges: 30 ... 100 mm, 30 ... 200 mm or 30 ... 300 mm. The reflex scanner can be used to track materials or detect the presence of an object in the many different automated industrial applications.

2.2 Dimensions and Weight (for transport purposes)

Designation	Type	Dimensions	Weight
Infra-red light reflex light barrier	JP705/yL Ex	M42 x 147mm	approx. 1500 g (incl. 5 m cable)
Red light reflex light barrier	JP7051/yL Ex	M42 x 147mm	approx. 1500 g (incl. 5 m cable)

2.3 IP Code

Designation	Type	IP Code
Infra-red light reflex light barrier	JP705/yL Ex	IP66 – Protection against Dust and Powerful Water Jets
Red light reflex light barrier	JP7051/yL Ex	IP66 – Protection against Dust and Powerful Water Jets

The cable entry used at the transmitters and receivers determines the conformance of the entire enclosure to the degree of IP protection. Only the cable entries with “M16 x 1.5” threading which are included in the scope of supply may be used.

2.4 Ambient Conditions and Limits for Operation and Storage

Ambient temperature ($T_{amb.}$): -20 °C to +60 °C
Storage temperature: -20 °C to +70 °C

2.5 Safety Information, Summary (use for purposes other than that intended)



The owner / managing operator / installer must acquire information about the Ex regulations that apply to his area of application and conform to these regulations. The same applies when cables and conductors are being installed and wired. In applications in Zone 21 it must be ensured when installing the connection cable that electrostatic charging cannot lead to ignitable discharges.



The reflex scanner may be installed only by an authorised and qualified person with the required specialist knowledge on how electrical equipment should be installed in hazardous areas.



The requirements of EN 60079-0 and EN 60079-1 must be observed.



The reflex scanner may not be dismantled.



If the connection is established in a hazardous area:
the power supply cable for the transmitter and receiver must be connected in an enclosure. The enclosure used must meet the requirements of a recognised type of protection (complying with EN60079-0, Section 1.2).



If the enclosure or cable entry is damaged or no longer leak-tight, the device must be put out of operation.



External sources of heat or cold in the form of radiating sources capable of impermissibly heating or cooling the device's surfaces are not admissible and special care must be taken to prevent them occurring.

3 Definitions – Technical Data

(See enclosed data sheet in the annex for a precise specifications)

Reflex Scanner	JP705/yL Ex	JP7051/yL Ex
Sensing ranges (surface black – see relative data sheet also)	30...100 mm (y =100) 30...200 mm (y =200) 30...300 mm (y =300)	
Enclosure	Material: VA	
	Dimensions: M42x1.5 x 147 mm	
Voltage supply	24VDC	
Power consumption	40mA / <1W without load	
Connection	No. cable 4x0.75mm ² shielded (typical length 5 m)	
Operating temperature	-20 to +60 °C	
Emitted light	LED 880 nm, invisible	LED 650 nm, visible
Switching output	P-N-P transistor, short-circuit proof 60 mA (Optional: N-P-N transistor, short-circuit proof 60 mA)	
Signal mode	Bright-switching (Optional: dark-switching)	
Switch indicator	green LED	
Operating temperature	-20 to +60 °C	
Steady light resistance	> 80 kLux	
Access time	< 12ms/switch transition	
Interference suppression	Forced synchronisation	

4 Preparing the Product for Use

The reflex scanner must be aligned to the object to be detected.

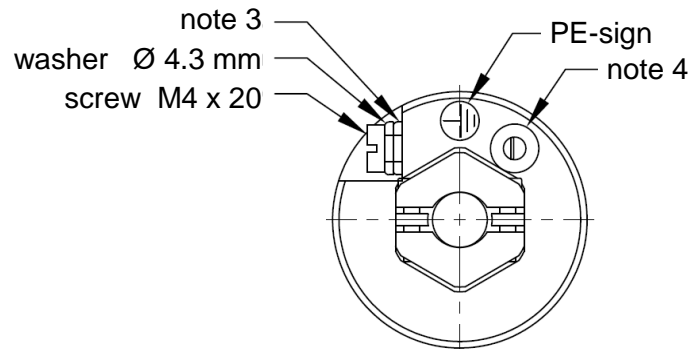
When installing, observe the following operating instructions and the data sheets in the annex.

5 Connection

5.1 Wiring the reflex scanner

Wire the JP705/yL Ex and JP7051/yL Ex reflex scanners in accordance with the data sheet, see annex.

5.2 PE connection at the reflex scanner



Note 3: Connection for cable lug with ring eyelet, internal diameter 4.3 mm, External diameter maximum of 9.5mm.

Note 4: Connection for rigid wire from 0.5 to 6mm² or flexible wire with wire end ferrule of 0.5 to 4 mm².

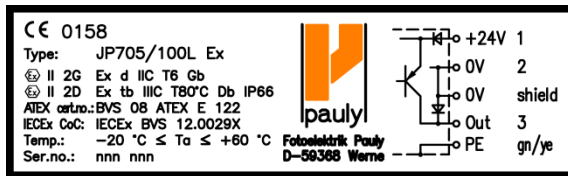


Only one of the two connection possibilities may be used, either that described in note 3 or in note 4!

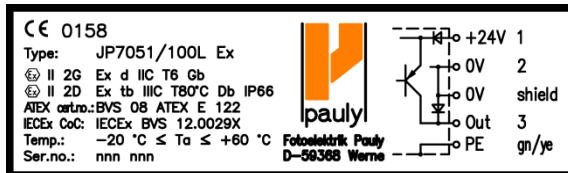
6 Marking the Reflex Scanner

The reflex scanners are marked with the following stickers.

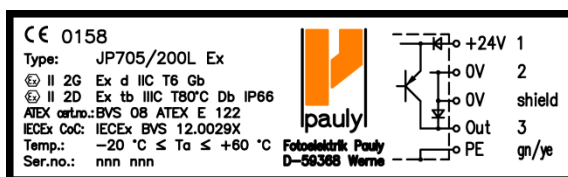
Reflex Scanner:
JP705/100L Ex



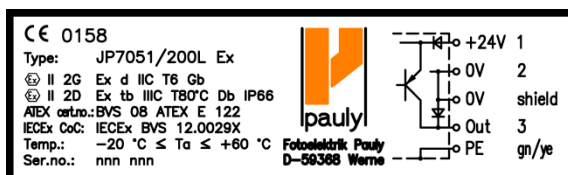
Reflex Scanner:
JP7051/100L Ex



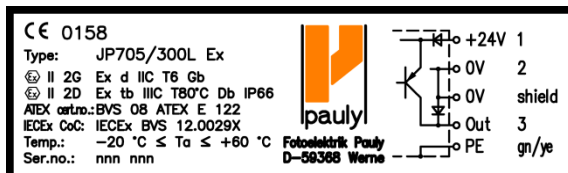
Reflex Scanner:
JP705/200L Ex



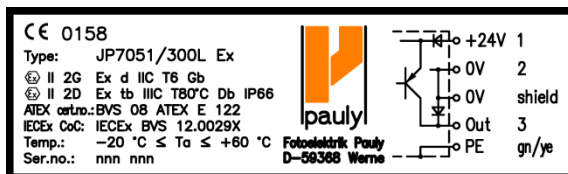
Reflex Scanner:
JP7051/200L Ex



Reflex Scanner:
JP705/300L Ex



Reflex Scanner:
JP7051/300L Ex



7 Maintenance and Cleaning

- ❖ Maintenance and cleaning work may be done only by qualified personnel who are familiar with the location and have received the relevant instructions.
- ❖ Only a damp cloth may be used to clean the viewing glass. Do not use any caustic detergents!
- ❖ If the enclosure and/or cable entry are damaged or no longer leak-tight, the device must be put out of operation.
- ❖ Repairs to the device itself may be done only by the manufacturing company itself.

8 Spare Parts List

Designation	Type	Version	Order Code
Infra-red light reflex scanner	JP705/100L Ex	/e2/5mK4/ir/24VDC [/h] or [/d]	4129A01
Infra-red light reflex scanner	JP705/200L Ex	/e2/5mK4/rl/24VDC [/h] or [/d]	4129A02
Infra-red light reflex scanner	JP705/300L Ex	/e2/5mK4/rl/24VDC [/h] or [/d]	4129A03
Red light reflex scanner	JP7051/100L Ex	/e2/5mK4/rl/24VDC [/h] or [/d]	4129M01A01
Red light reflex scanner	JP7051/200L Ex	/e2/5mK4/rl/24VDC [/h] or [/d]	4129M01A02
Red light reflex scanner	JP7051/300L Ex	/e2/5mK4/rl/24VDC [/h] or [/d]	4129M01A03

For order enquiries the type, version and order code must be specified.

9 Decommissioning the Product

- ❖ The product may be decommissioned only by qualified personnel who are familiar with the location and have received the relevant instructions.

10 Annex – Supplementary Documents

Data sheet	(Infra-)red light reflex scanner	E_41291	2017-08-24
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D-59368 Werne, 2017-08-24

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