

L18 Laser Line INSTALLATION MANUAL



CLASS 1 LASER PRODUCT

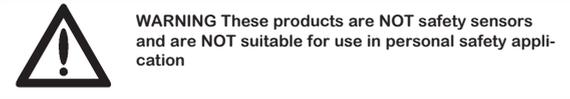
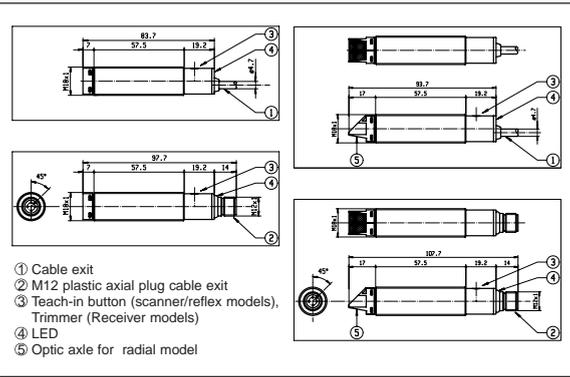
Red laser light
wavelength = 655 nm; repetitively pulsed emission.
PPL and PTL300: Frequency = 4840 Hz;
pulse duration = 9.3 µs;
maximum output power = 0.4 mW
PLT: Frequency = 8330 Hz;
pulse duration = 12 µs;
maximum output power = 0.2 mW
Classified according to IEC EN 60825-1/A2:2001-01.
Complies with 21 CFR 1040.10 and 1040.11 except for
deviation pursuant to Laser Notice N° 50 dated July 26,
2001.

1-877-INPROX-7

INPROX SENSORS

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MECHANICAL DRAWINGS



SUPPLIED MATERIAL

- Installation manual
- INN1 photoelectric sensor
- INN2 M18 ring nut
- Trimmer adjustment accessory IN82 for receivers

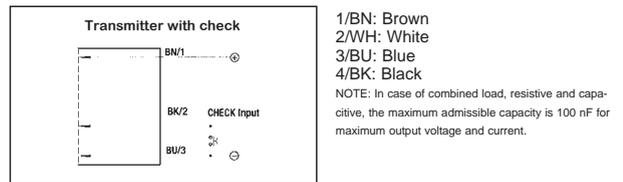
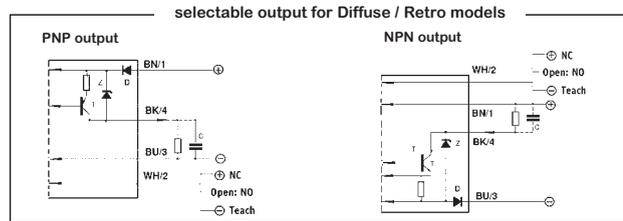
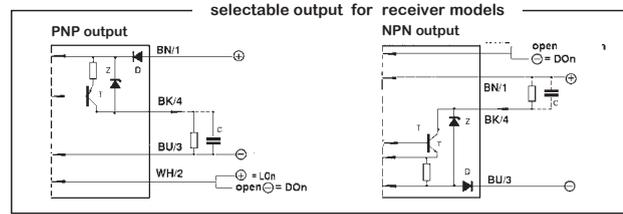
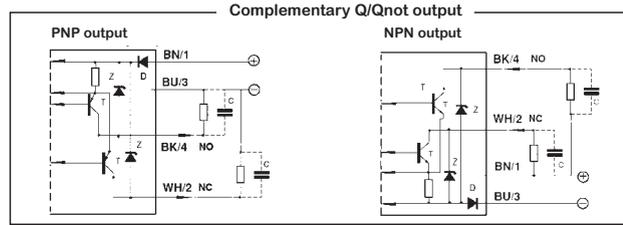
GENERAL DESCRIPTION

M18 cylindrical photoelectric sensor, RED LASER emission, M18, DC Sensitivity adjustment for all models (by means teach-in button placed on the sensor in retro-reflex and diffuse-scanner models or by means trimmer placed on the receiver in through beam models)
In models with LO/DO selectable output (4 wires) pin 2 (White) can be used also as remote control for the sensitivity adjustment. The button is in any case present.

CAUTIONS

The laser devices, also if class 1, always emit an intense and very concentrate light; the intentional and prolonged observation of this light can cause problems. As a result, it is advisable, where possible, to install the laser sensors so as the beam cannot exceed the operating area. We also suggest avoiding that the laser beam direction permanently meets the operator's eyes.

WIRING DIAGRAMS



CODE DESCRIPTION		PTL3009BP7TE1	
Photoelectric Sensor Series	P	M1	Standard cable
		E1	M12 connector
Diffuse Proximity	TL	T	Axial optics Straight
Polarized Retro Reflective	PL	R	Radial optics (90 degree)
Receiver with sensitivity adjustment	LR	8	4 wire NO/NC
Transmitter	LT	7	4 wire Q/Qnot
300mm max range (200mm 90-radial)	300	C	Transmitter with check
20m (22m, 35m & 5m* see specifications)	20M	P	PNP output
50m max range	50M	N	NPN output
M18 18mm diameter cylindrical body	9	P	PBT Plastic housing
		B	NBT metal housing

INSTALLATION

- Make sure that the operating voltage is correctly stabilized with a maximum ripple being within the specified figure as stated in the catalog.
- In the event that the noise induced by the power lines is greater than that specified by the EC regulation (interference immunity), detach the sensor cables from the power and high voltage lines and insert the cable in an earthed metal conduit.
- Do not use alcohol or chemical products to clean lens.
- Do not allow a strong light such as sun light to radiate directly on the sensor.

Sensitivity Adjustment

- **Diffuse reflection**
Place the target object at the sensing distance required, checking that the optical axis is perpendicular to the surface of the object. Assuming the worst possible conditions (object statistically smaller and object or part of object darker than the background), position the object at the furthest possible point from the sensor. Press the teach button or connect pin 2 (white cable) to earth for 2-5 secs. until the yellow signal LED switches back on constantly. The threshold is set at 50% of the detected signal, thus giving the device a standard sensitivity adjustment. Remove the object and check that the yellow LED has switched off. If the yellow LED remains switched on, fine sensitivity adjustment is required.
To carry out the fine adjustment connect pin 2 (white cable) to earth or press the Teach-in button for t > 8 secs., until the yellow signal LED starts flashing. The threshold is set below the detected signal of the hysteresis amplitude. Remove the object and check that the yellow LED has switched off.

- **Polarized**
Install the retro-reflector so that its surface is perpendicular to the sensor's optical axis. Make sure that the distance between the sensor and the retro-reflector is not greater than that specified for the retro-reflector in use. Provisionally secure the sensor in a stable position and select the output state. To achieve the best alignment, use the following procedure. Press the Teach button, or connect pin 2 (white cable) to earth for t > 8 secs., until the yellow signal LED starts flashing. The threshold is set below the detected signal of the hysteresis amplitude. Adjust the sensor by moving it vertically and horizontally until the LED switches on constantly, or at least until the frequency of the flashes decreases. Repeat the operation until it is no longer possible to vary the frequency at which the yellow LED flashes. Secure the sensor in a stable position and check that the LED switches off when the beam is interrupted by the target object.
In this way a correct centring on the retro-reflector in use and a fine adjustment of device sensitivity have been carried out. This adjustment is ideal for the accurate detection of semi-transparent objects.
For applications in which the target objects are not transparent, the standard adjustment is

Declaration of conformity INPROX SENSORS
Declare under our sole responsibility that this products are in conformity with the following EEC directive: 89/336 and 73/23 and amendment.

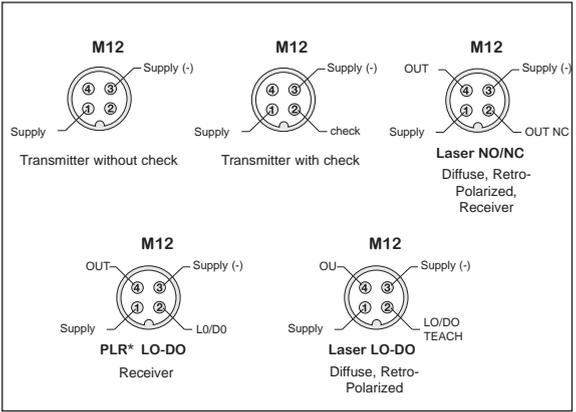
recommended (after having carried out the operations described above). This gives the highest possible margin of immunity to the dust or dirt which can deposit on the optical elements. To carry out a standard adjustment press the Teach button or connect pin 2 (white cable) to earth for 2-5 secs until the yellow signal LED switches back on constantly. The threshold is set at 50% of the detected signal.
Check that the LED switches off when the beam is interrupted by the target object. If the yellow LED remains switched on, fine sensitivity adjustment is required

- **Through - beam**
Using the recommended brackets, provisionally install the emitter and receiver within the sensing distance. Position the components so that they coincide with the optical axis as much as possible.
Check that the sensitivity adjustment trimmer is turned to the furthest clockwise position. Adjust the emitter by moving it vertically and horizontally until the yellow LED on the receiver switches on.
Adjust the receiver by moving it vertically and horizontally until the yellow LED switches on constantly. Secure the system properly and proceed with the sensitivity adjustment.
Check that, when no object is present, the yellow LED on the receiver is constantly switched on. Turn the sensitivity adjustment trimmer in an anticlockwise direction until the LED switches off. Turn the trimmer in a clockwise direction until the signal LED switches back on constantly. This is the position in which the system can operate in the optimum conditions for detecting both solid parts and spaces with equal precision and with a good safety margin. If the target object does not create problems, the trimmer can be turned clockwise to the furthest position to achieve higher working limits.
Check that the yellow LED on the receiver switches off when the optical beam is interrupted. **Check input:** Some model have a test circuit in the emitter which enables a user friendly test to be effected in order to verify that the sensor is operating correctly. In light state connected the check input (BK/2 to ground) the pulses emission is interrupted. This condition simulates the presence of a target within the detection range and forces the receiver output to switch. If switching does not occur it indicates a fault in the system.

Digital adjustment notes
Beyond the nominal distance of the sensor, the fine adjustment has no effect on the operating distance. If a fine adjustment is required, the sensor must be used within the nominal sensing distance. To check if the sensor is capable of adjusting the sensitivity correctly, it is always advisable to carry out a fine adjustment and to make certain that the LED is flashing at the end of the procedure. If the LED remains constant, either the sensor operates at too high distance in relation to the target object or the sensor is not correctly aligned. If it is sufficient only to detect the presence of objects and this is not affected by backgrounds or other objects behind those to be detected, the sensor can be used till the distance indicated in the curves is reached. If necessary, repeat the setting by carrying out a brief teach.

Teach with Dark ON configuration
Warranty
INPROX SENSORS warrants for a period of one (1) year from the date of manufacturing that all products will be free from defects and commits oneself to repairing and replacing the goods that MD considers defective. Such warranty satisfaction is available only if any alleged defect has not been caused by misuse or improper installation.

CONNECTORS



SPECIFICATIONS

Model	PTL300	PPL020	PLR050	PLT050
Type	Diffuse Proximity	Pol. Retro-reflective	Receiver	Transmitter
Nominal Sensing Distance (Sn)	300 mm axial optic 200 mm radial optic (1) (100 mm)	22 m with OX110; 35 m with OXlaser; 5 m with OX100D		50 m
Emission	Laser diode (650nm)			Laser diode 650nm
Laser class	Laser class 1 (IEC 60825-1)			Laser class 1 (IEC 60825-1)
Tolerance	+15/-5% of the nominal sensing distance Sn			
Differential Travel		<10 %		
Repeat Accuracy	5%		10 %	
Operating Voltage	10 – 30 V d.c.			
Ripple	<10 %			
No-load Supply	<25 mA			
Load Current	100 mA			
Leakage Current	<10 µA (at V d.c. max)			
Voltage Drop	2V max a 100mA			
Output Type	NPN or PNP - Q/Qnot or NO /NC selectable			
Maximum Switching	800 Hz		1 kHz	
Time Delay Before Availability	200 ms			
Supply Electrical Protections	Polarity reversal, Transient			
Output Electrical Protections	Short circuit (autoreset)			
Temperature Range	-10 °C / +55 °C (without freeze)			
Check input				BK/2 connected to 0 V Emission disable
Temperature Drift	10 % Sr			
Interference to External Light	3000 lux (incandescent lamp); 10000 lux (sunlight)			
Protection Degree	IP67 (EN60529)			
Noise immunity	According EN60947-5-2			
Radiation	According EN60947-5-2			
LED Indicator	Yellow: fixed on (light state with EXG 2) blink (light state with 1<EXG<2)		Yellow: light state	Green: power on Yellow: on (emission enable) Yellow: off (emission disable)
Sensitivity Adjustment	Teach-In button		Trimmer	
Housing Material	Nichel –plated brass (metal housing), PBT (plastic housing), PC(cable exit)			
Lenses Material	Glass			
Tightening Torque	40Nm (metal housing)			
Weight (approx.)	0.20 kg			

(1) White target kodak 90% reflection 100 x 100 mm