ISO 9001:2015 / ATEX

Speed Control Sensors PSS/PSN/PSD-LTD-GD S173 / PSD-LTD-GD-S173-V2-DCI

PSN-LTD-GD S173 — **Housing M18** — **PSD-LTD-GD S173 / PSD-LTD-GD-S173-V2-DCI**

CE

Ex II 3G Ex nA IIB T4
II 3D Ex tD A22 IP67 T135°C

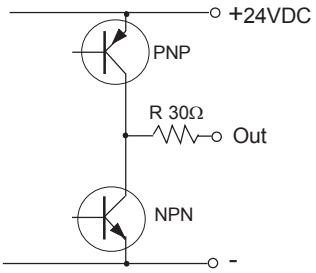
- Well applicable with plastic and glass fibre optics
- Laser-emitter, red light 650nm
- Type PSD: applicable in Ex Zones 1 + 20/21
- Type PSN: applicable in Ex Zones 2, 22
- Speed control up to 100'000 RPM
- Wide temperature range: -30°C to +50°C

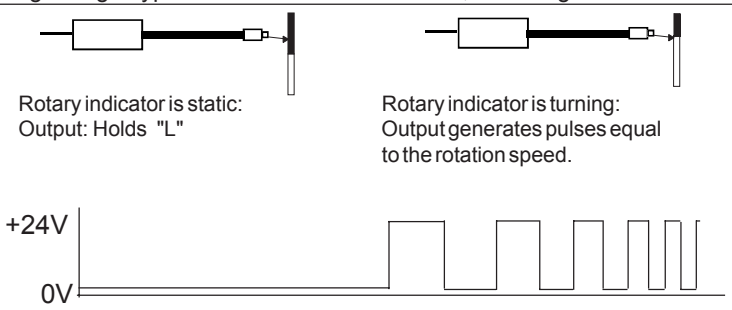
CE 1258

Ex II 2G Ex d IIC T6
II 1/2D Ex tD A20/A21 IP67 T90°C

Technical Data / Type	PSS-LTD S173	PSN-LTD-GD S173	PSD-LTD-GD S173(-V2)
Type of Ex protection, Gas, at 94/9/EC	None	II 3G Ex nA IIB T4	II 2G Ex d IIC T6
Type of Ex protection, Dust, at 94/9/EC	None	II 3D Ex tD A22 IP67 T135°C	II 1/2D Ex tD A20/A21 IP67 T90°C
Applicable in Ex Zones	--	Zone 2, 22	Zones 1, 2, 20/21, 22
Laser class	Class II, 650nm red, Po <= 1mW, radiant power stabilized		
Switching frequency	3Hz - 10kHz[Note1]		
Rise/fall time	<= 20us		
Speed measurment accuracy	+-0.5%		
Supply voltage	24VDC (20 to 28VDC)		
Absolute maximum input voltage Um	30VDC		
Current consumption	44mA		
Power dissipation	maximum 1.3W		
Power up delay time	10 seconds		
Output	1 x Push-Pull, short circuit protected, maximum 50mA		
Output impedance	max.30Ω		
External potentiometer, only PSD-LTD-GD S173	nominal 500kR (10kR to 500kR allowed)		
Ambient illumination	only for using in enclosed ambients		
Housing	M18, brass, nickel plated		
Enclosure rating at EN 60529	IP 65	IP 67	
Vibration and shock resistance	Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms		
Working temperature T_{Amb}	-10°C < T_{Amb} < +50°C	-30°C < T_{Amb} < +50°C [Note 2]	
PSN/PSD-LTD S173, connection cable	4 x AWG24 (0.2mm²) , shielded, core insulation: Semi-Rigid-PVC, Jacket: Special-PVC, Length = 3m		
PSD-LTD-GD-S173-V2-DCI, cable	IEEE 802.3 Transceiver Cable, PVC/PP, 4 pairs, 3 x AWG28 + 1 x AWG24, shielded , L=0.4m (0.3m + 0.1m)		
PSS-LTD S173, connection cable	4 x AWG24 (0.2mm²) , shielded, Jacket: PVC, Length = 3m		
Cable, minimum bending radius	75mm		
Socket, type: PSS-LTD S173/S99	Socket, M12 5 terminals	not available	
Optical fibre connection	M18 connection, system Matrix		
Options	- PSS-LTD **S173/S99**: Socket M12: Lumberg RSF 5 - PSD-LTD-**S173-V2-DCI**: With external potentiometer		
Accessories, included all types	- 2x Nuts M18		
Accessories, POF's, not included	- POF type: PE-M18-3000-1-T-4.6-2G3D - POF type: PE-M18-3000-1-T-6.1-2G3D		
Accessory POF adapter, not included	- M18 fast fixing adapter for POF Type: POFAD18-2.2-6x8		
Accessories, PSS-LTD S99 not included	- Single ended cordset, straight type: RKTS 5-298/xx or right angle type: RKTW/RKWTH 5-298/xx , Lumberg M12/5P		

Output / Function:





Note 1: The real reachable switching/rotary frequency is dependent on the condition and the partition of the marking disc and the type, the working condition and the length of the optical fibres.

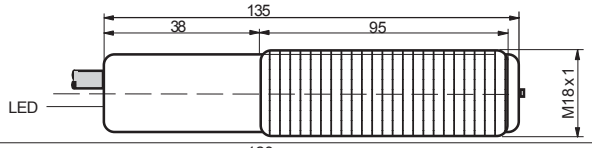
Note 2: Temperature range: Cable static: -30°C to +50°C
Cable dynamic: -15°C to +50°C

ATEX related designations:

CE 1258 — Manufacturer with address — Ex — Date of construction: Numeral 5 to 8 of the serial number
Type PSD-LDT-GD S173: II 2G Ex d IIC T6, II 1/2D Ex tD A20/A21 IP67 T90°C — EC certification number: : DMT 99 ATEX E 056
Type PSN-LTD-GD S173: II 3G Ex nA IIB T4, II 3D Ex tD A22 IP67 T135°C — Declaration by manufacturer at 94/9/EC:
TA: -30°C < TA < +50°C — Electrical data according to the chart

PSX-LTD-GD-S173_e7/2023-03-13/MP

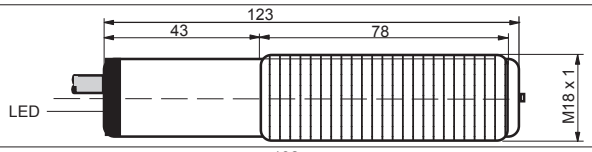
Dimensions
PSD-LTD-GD S173
PSN-LTD-GD S173:



Connection layout:

brown	+24VDC
black	0V
red	Output
orange	PE
white	Cable shield

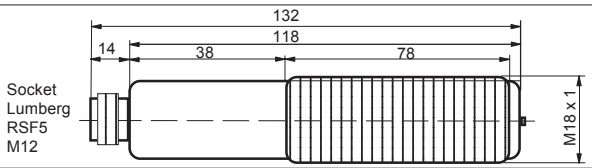
Dimensions
PSS-LTD S173:



Connection layout::

brown	+24VDC
black	0V
red	Output
orange	PE
white	Cable shield

Dimensions
PSS-LTD S173/S99:



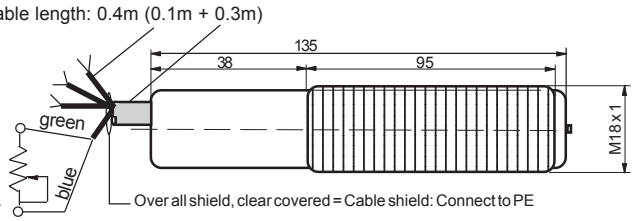
Connection layout:

1/brown	+24VDC
2/white	NC
3/blue	0V
4/black	Output
5/grey	PE

Dimensions PSD-LTD-GD-S173-V2-DCI:

Do not connect the internal shieldings and the tracing wire at any potential! Connect the outside cable shield at PE.

External potentiometer 500kR.
Do not connect the wires to other potentials.

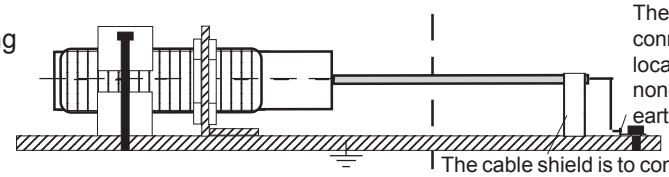


Connection layout:
Cable 1:

red	+24VDC
black	0V
grey	Output
white	0V
yellow	PE
orange	PE
blank	Cable shielding
blue	Ext. Pot A
green	Ext. Pot B

Do not connect the shield of this pair to any potential

Equipotential Bonding prescription:



The end of the cable must be connected outside the hazardous location. Check the reliable, noncorrosive holding of the protection earth connection.

The cable shield is to connect to PE in a wide area.

Operating Manual / CE Declaration of Conformity:

Ex Protection:
It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum input voltage Um=30VDC must not be exceeded. The local equipotential bonding have to be done reliable and noncorrosive. The protective earth (PE) is solid connected with the housing. Other then original manufacturer, additional optical components are not allowed in hazardous locations. The cable have to be installed and protected against damages. The cable with termination fittings, or in cable tray systems and installed in a manner to avoid tensile stress at the termination fittings. Inside hazardous locations only use certificated Ex housings. All cable terminals must be connected outside hazardous locations.
Type: PSD-LTD-GD S173: Only applicable in Ex Zones 1, 2 and 20/21, 22. For the zones 20/21 only the front part (fibre optics connection) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.
Type: PSN-LTD-GD S173: Only applicable in Ex zones 2 and 22.
General mounting prescriptions:
Do not exceed the maximum ratings. The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected short. The cable shield should be connected to the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables.
Function:
The sensor can only be used with connected fibre optics. Laser light reflection alterations, generated by the marking disc of the spraying apparatus, will be amplified and formed.
Potentiometer, only type PSD-LTD-GD-S173-V2-DCI
Use the potentiometer to adjust the sensor at different marking discs, POF and mechanical arrangements. Set the potentiometer as well, that the output signal will be free of failures over the operating range. The potentiometer has a nominal rating of 500kR. (Do not exceed 500kR). The internal cable shieldings and the the tracing wire must NOT be connected at any potential! Connect the outside cable shield at PE.
Potentiometer adjustment, only type PSD-LTD-GD-S173-V2-DCI
Turn the sensor potentiometer clockwise to the end. Set the sprayer rotation speed to 90 RPM. Adjust the potentiometer to an output signal free of failures. Increase to rotation speed of the sprayer to the maximum. The output signal must be free of failures at all times.
Using the fibre optics
The sensor PS.-LTD S173 must not go into operation without mounted fibre optics. The fibre optics must be handled careful. Do not use optical fibres longer then 10m. The functional safety of the sensor is given by the condition of the marking disc and the careful working up of the optical fibres. The fibre optics must not be buckled or laid with a small radius. Buckled or bad laid fibre optics results to a strong decrease of performance. Avoid performance decreasing and failures caused by wear, by a functional mounting of the fibre optics. If self-conditioned POFs are using, a special cutter or an other professional tool must be used for cutting the POFs.
Maintenance
Protect the fibre optic adaptor of the sensor and the optical fibres against pollution. If the fibre optic or the sensor are contaminated, clean with alcohol. Do not use aggressive solvents. Plastic optical fibres can be destroyed by strong solvents. Equipment must only be repaired or serviced by the manufacturer. **Safety regulations for Laser devices class 2**
The sensors types PS.-LTD must not go into operation without mounted fibre optics. By the installation, the going into operation and the application, it is necessary to take into consideration the valid rule EN 60825 (Parts 12.5.1/12.6.1). Warning! Without mounted fibre optics the optical power reach Laser Class 2. Do not stare into the beam! With mounted fibre optics no safety measures are needed.
Safety Informations
The sensor PSS/PSN/PSD-LTD-(GD) S173 must not be used for Accident-Prevention! In worst case the output can change to any state! When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations. EN 60079-14, Single directive 1999/92/EG
Standards met:
EN 60079-0:2004, EN 60079-1:2004, EN 60079-15:2005, EN 60241-0:2004, EN 61241-1:2004; EN 60825-1:2006, EN 60825-2:2004; EN 60529:2000; EN 60950-1:2006; EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4
Ex protection: 94/9/EC. Machine directive: 2006/42/EC. EMC: 2004/108/EC. RoHS directive: 2002/95/EC
General Notes, disposal
We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. It neither emit or contain any damaging or siliconized substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.
EC-Declaration of Conformity
Types PSD-LTD-GD S173 / PSD-LTD-GD-S173-V2-DCI:
ATEX EC-Type-Examination. Certificate: DMT 99 ATEX E056
Type PSN-LTD-GD S173: Declaration of conformity by manufacturer at 94/9/EC.
ATEX certification of quality type production of Ex devices at the directive 94/9/EC, Certification No: SEV 21 ATEX 4580
The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety System ISO 9001:2015 with the ATEX module "Production", declares:

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