ISO 9001:2008 ATEX

High Density Light Barriers IRL-239.-S/E / ILN-239.-S/E-GD / ILD-239.-S/E-GD

ILD-239.-S/E-GD

CE 0158

II 2G Ex d IIC T6 Gb
II 2D Ex tb IIIB T90°C Db IP67

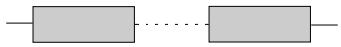
- Emitter with 2 different light sources
- Very High penetration capacity in polluted areas.
- Optimal alignment by visualization by LED into receiver optic and visible red light of the transmitter
- Types A to D with 4 different emitter frequencies
- Type HS with emitter disable input
- Series ILD: Applicable in Ex-Zones 1, 2, 21, 22
- Series ILN: Applicable in Ex-Zones 2, 22

Technical Data / Type	IRL-239.-S/E(-VA)(-DI)	ILN-239.-S/E(-VA)(-DI)-GD	ILD-239.-S/E(-VA)(-DI)-GD
Designation Emitter + Receiver	Ixx-239.-**S =** Emitter / Ixx-239.-**E =** Receiver		
Designation, combined applicable barriers	Ixx-239**A to D**-S/E = Light barriers with different emitter frequencies		
Designation, high speed light barriers	Ixx-239**HS**-S/E = Barrier with disable input and short response time		
Type of ex protection Gas, according to 2014/34/EU	none	II 3G Ex nA IIB T4 Gc	II 2G Ex d IIC T6 Gb
Type of ex protection Dust, according to 2014/34/EU	none	II 3D Ex tc IIIB T135°C Dc IP67	II 2D Ex tb IIIB T90°C Db IP67
Applicable in Ex zones	--	2, 22	1, 2, 21, 22
Sensing range	500m		
Minimum detectable object size	50mm (avoid mirror effects)		
Light source	Infrared 870nm and red light 623nm		
Directional angle (at a distance of 20m)	Emitter: appr.10° / Receiver: appr.7°		
Turn OFF delay TOFF, types A to D	30ms Note 1		
Turn OFF delay TOFF, type HS	1ms		
Turn ON delay TON, types A to D	400ms		
Turn ON delay TON, type HS	5ms		
Supply voltage	24 VDC +-10%		
Current consumption, emitter	20mA (Typ HS = 60mA)		
Current consumption, receiver	50mA		
Maximum power dissipation	Emitter: 1.68W / Receiver: 1.4W		
Output	PNP, 100mA, short circuit protected		
Emitter disable input, only type I..-235HS-S-**DI**	PNP compatible		
Housing	M30, brass, nickel plated. Optic: Light alloy AC 110		
Enclosure rating, at EN 60529 Note 2	IP 65	IP67	IP67
Ambient working temperature range T_{amb}	-20°C < T_{amb} < +60°C	-20°C < T_{amb} < +50°C	-20°C < T_{amb} < +50°C
Connection cable	2/3/4 + PE x 0.5mm², TPU, shielded, leads numbering marked, drag chain suitable, halogen-free		
Cable length	5m	10m	10m
Socket M12, only types IRL-239.-S/E **S99**	M12 RSF 5, 5 pins	--	--
Accessories	4 nuts M30 or optional 2 clamps		

Options:
- Types I..-239-E-**VA**: With integrated pollution indication output, PNP type.
- Typ **IRL**-239.-S/E **GF**: For fibre optics connection, without optic D=52mm, can only be used with fibre optics.
- Typ **IRL**-239.-S/E **S99**: With Socket M12, 5 terminals.
- Typ **IRL**-239.-S/E **S109**: Working temperature range: -20°C to **+100°C.**
- Typ: ILD-239..... **S117:** With special cable type Ölflex 810CP.
- Typ **IRL**-239.-S/E **S147:** Lenses special luted.
- Typ **IRL**-239.-S/E **S148:** Lenses special luted and special cable type Ölflex 810CP.
- Typ **IRL**-239**LS**-S/E **S153**: Working temperature range: -20°C to **+100°C**. Response time: **20ms**. With **DI-Function.**
- Typ **ILD-239.-S/E S156:** Working temperature range: **-30°C** to +50°C. special cable type Ölflex 810CP. Length: 5m, on ambient temperatures less the +5°C, the cable must not be agitated.
- IRL/ILN/ILD-239.-**E S189:** Receiver with special optic, diameter 75mm.
- IRL-239.-S/E **S213**: Temperature range -20°C up to **+100°C.** Receiver with special optic, diameter 75mm

LED indication
Principle function

Light beam interrupted
LED's shows red

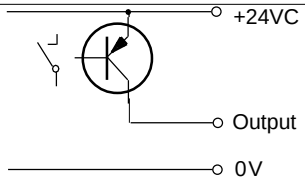


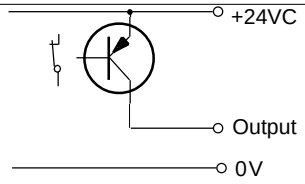
Light beam not interrupted
LED's shows yellow or green

Output function and wiring diagram (cable):

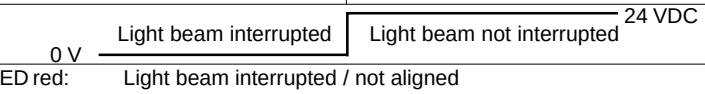
Receiver:		Emitter:	
1	= +24VDC	1	= +24VDC
2	= 0V	2	= 0V
3	= Output	3	= DI (N4)
4	= VA-Output		

Cable shield, connect to PE
N4: Only type IR.-239HS-(-GD)-S-DI





Output function



Alignment and controlling by LED display:

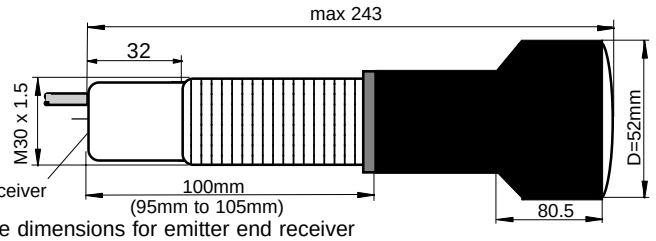
LED red: Light beam interrupted / not aligned
LED yellow: polluted lenses / badly aligned
LED green: Light beam free / well aligned
visible flushing red light source of the emitter lens

ATEX RELATED MARKINGS:
CE 0158 Manufacturer with address, Matrix
Device type ILD-239.-GD: II 2G Ex d IIC T6 Gb, II 2D Ex tb IIIB T90°C Db IP67
Device type ILN-239.-GD: II 3G Ex nA IIB T4 Gc, II 3D Ex tc IIIB T135°C Dc IP67
T_{amb}: -20°C < T_{amb} < +50°C

Date of production (Year/Week):
Numbers 5 to 8 of the serial number (year/cw)
EC-Type-Examination: DMT 99 ATEX E 056
ATEX declaration by manufacturer, 2014/34/EU
Electrical data according to the chart

Note 1: If a receiver is influenced by other emitters, TOFF may increase up to 400ms.
Note 2: Optic standard IP 54, on request IP 67.

Dimensions:
IRL-239.-S/E
ILN-239.-S/E-GD
ILD-239.-S/E-GD
(IRL-239.-S/E GF
w/o optic D=52mm)

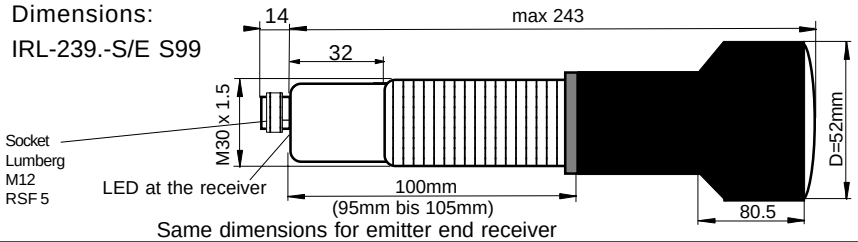


Same dimensions for emitter end receiver

Wiring diagram:

	IRL-239.-S ILN-239.-S-GD ILD-239.-S Emitter	IRL-239.-E ILN-239.-E-GD ILD-239.-E-GD Receiver
+24VDC	1	1
0V	2	2
Output	--	3
VA-Output	--	4
DI Input	3	--
PE/PA	yellow-green	yellow-green
Cable shield	white	white

Dimensions:
IRL-239.-S/E S99

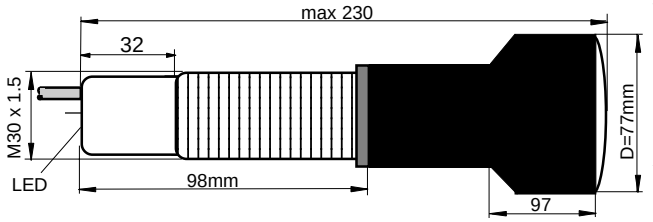


Same dimensions for emitter end receiver

Wiring diagram:

	IRL-239.-S S99 Emitter	IRL-239.-E S99 Receiver
+24VDC	1/brown	1/brown
0V	3/blue	3/blue
Output	--	4/black
VA-Output	--	2/white
DI Input	4/black	--
PE/PA	5/grey	5/grey
Cable shield	at the socket housing	

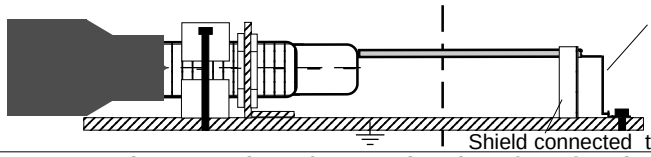
Dimensions
Receiver:
I..-239.-E S189



Wiring diagram: I..-E S189:

	Socket IRL-239.-E S99/189	Cable IRL-239.-E ILN-239.-E-GD ILD-239.-E-GD
+24VDC	1	1
0V	3	2
Output	4	3
VA-Output	2	4
PE/PA	5	yellow-green
Cable shield	at the socket housing	white

Equipotential Bonding
at Ex d Devices:



The end of the cable must be connected outside the hazardous locations.
Reliable, noncorrosive holding of the protection earth connection.

Operating Manual, EC-/EU - Declaration of Conformity:

Installation prescriptions for Ex hazardous locations

Types ILD-239.-S/E..: Only certificated for Ex zones 1, 2, 21, 22.
Types ILN-239.-S/E..: Only applicable in Ex zones 2 and 22. The maximum rated supply voltage Um = 30VDC must not be exceeded.

WARNING: It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). Do not exceed the maximum ratings. The local equipotential bonding have to be done reliable and noncorrosive. The protective earth (PE) is solid connected with the housing. 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. To connect cables inside hazardous locations only use certificated Ex e housings. All cable terminals must be connected outside hazardous locations. Other then original manufacturer, additional optical lenses are not allowed in hazardous locations.

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.

Arrangement of light barriers , types I..-239A to D:

If several light barriers are installed close to another, it is necessary to use light barriers with different emitter frequencies (Types A to D). Light barriers with different emitter frequencies have no influence on each other. Precaution: If a receiver is influenced by other emitters of an other type, TOFF may increase from 30ms up to 400ms.

The high speed light barrier type -HS and the high temperature light barrier type IRL S153, can not be combined with light barriers types A to D.

To avoid interference effects, all emitters should be installed at the same side and all receivers at the other side. For indoor applications the background should be protected against clutters, by using light absorbing materials.

Arrangement of light barriers , type I..239HS-S-DI:

If several light barriers are installed close to another, it is necessary to use light barriers with emitters with disable input. By using the disable input DI, each emitter can be controlled in a short reaction time. If only one emitter is activated in the same time, a mutual influence is precluded.

DI= 0V or not connected = emitter enabled
DI= High (24VDC) = emitter disabled

The Disable Input DI must be activated for >= 10ms. The DI input is PNP compatible. The Emitter-Disable-Input DI can also be used for testing the associated receiver. By a short-time shut-off of the emitter, the switching off of the receiver output and with it the correct function of the receiver will be checked.

Function

If the light beam is not interrupted the output switches to ON (+24V). If the light beam is interrupted the output switches to OFF. The light barrier IRL/ILN/ILD-239 works with two different light sources, visible red light and infrared. The high density and the two different wavelengths gives a high penetration capacity at a heavy polluted ambiance. The load (Relay or other loads) must be connected at " - " (minus).

Pollution indication output "VA" (optional):

The VA output will be activated by polluted lenses or a bad alignment. If the lenses are polluted, the LED shows yellow and the VA output switches to ON (+24V). This function gives the possibility to recognize pollutions in a short time.

Alignment of the Light Barrier

The three color indication in the receiver optic allows an optimal alignment.

1. The emitter must be aligned this way, that the emitter lens is fully illuminated (By watching from the receiver at the emitter).
2. The receiver should be moved, until the LED (from the receiver) shows "green". Search the middle of the green range.

Maintenance

No special maintenance is required. If the lenses becomes dirty, they should be cleaned with a non-aggressive solvents. Equipment must only be repaired by the manufacturer.

Safety informations

The sensors series IRL/ILN/ILD-239.-S/E must not be used for Accident-Prevention! In worst case of disturbance, the outputs can show any state. The mounting, wiring, application and maintenance must be realized in accordance with this operating manual and the other relevant rules and prescriptions.

It is necessary to take into consideration the relevant international and other national regulations. Under others are this: IEC 60079-14, Direction 1999/92/EC. The light barriers series IRL/ILN-239.-S/E... corresponds to the following standards:

EN 60079-0:2012 +A11:2013, EN 60079-1:2007, EN 60079-15:2010, EN 60079-28:2007, EN 60079-31:2010, EN 60825-1:2006, EN 60825-2:2004; EN 60529_2014; EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4. ATEX directive: 2014/34/EU, Machine directive: 2006/42/EC, EMC directive: 2014/30/EU, RoHS directive: 2011/65/EU.

General Notes, disposal

The visible flushing of the red light source for the types A to D is a normal function and not an integral error. 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-/EU-Declaration of Conformity

ILD. ATEX EC-Type-Examination Certificate: BVS 10 ATEX E 130X. ILN: ATEX Declaration of conformity by manufacturer, according to the ATEX directive 2014/34/EU. ATEX certification of quality management, type production of Ex devices according to the ATEX directive 2014/34/EU. Certification No: BVS 15 ATEX ZQS / E118. The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety Management system ISO 9001:2008 with the ATEX module "Production", declares:

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