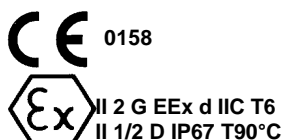


## High Density Light Barriers IRL-235.-S/E / ILN-235.-S/E / ILD-235.-S/E


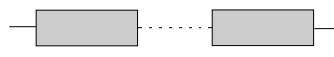
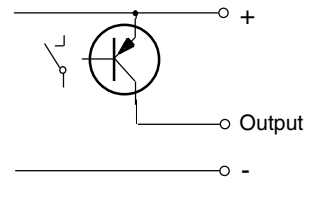
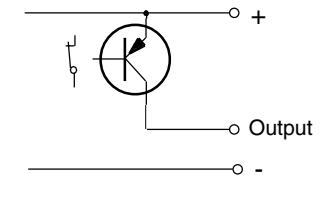

### ILD-235.-S/E



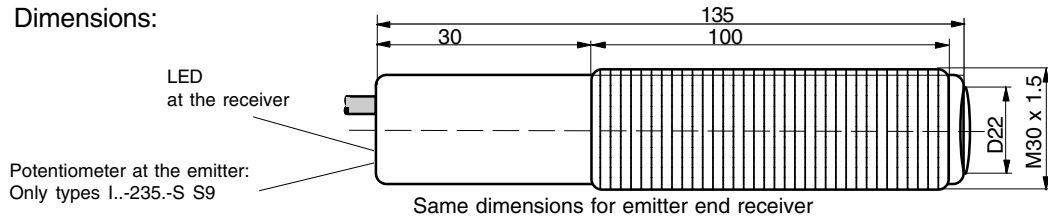
- Emitter with 2 different light sources
- Very High penetration capacity in polluted areas.
- Optimal alignment by visualization by LED into receiver optic and visible red light of the transmitter
- Types A to D with 4 different emitter frequencies
- Type HS with emitter disable input
- Series ILD: Applicable in Ex-Zones 1, 2, 20/21, 22
- Series ILN: Applicable in Ex-Zones 2, 22

### ILN-235.-S/E

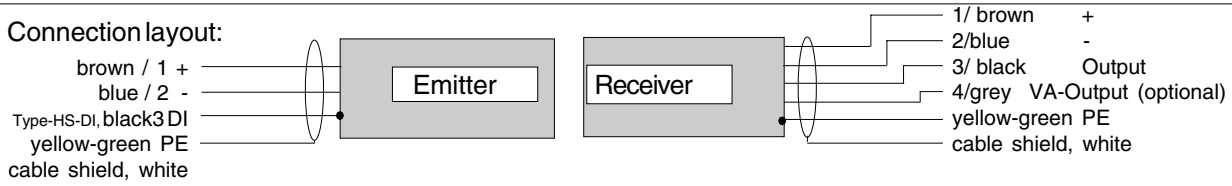


Technical data	Series	IRL-235.-S/E(-VA)(-DI)	ILD-235.-S/E(-VA)(-DI)	ILN-235.-S/E(-VA)(-DI)
Designation Emitter + Receiver		Ixx-235.-S = Emitter / Ixx-235.-E = Receiver		
Designation, combined applicable barriers		to235A bis D-S/E = Barriers with different frequencies		
Designation, high speed barrier		Ixx-235HS-S/E = Barrier wit disable input and short response time		
Type of ex protection Gas, at 94/9/EG		none	II 2 G EEx d IIC T6	II 3 G EEx nA II T5
Type of ex protection Dust, at 94/9/EG		none	II 1/2 D IP67 T90°C	II 3 D IP67 T100°C
Applicable in Ex zones		none	1, 2, 20/21, 22	2, 22
Range		>200m		
Minimum detectable object size		22mm (avoid mirror effects)		
Light source		Infrared 880nm and red light 630nm		
Optical beam pattern (at a distance of 10m)		Emitter: appr. 40° / Receiver: appr. 7°		
Turn OFF delay $t_{OFF}$ , types A to D		30ms <sup>Note 1</sup>		
Turn OFF delay $t_{OFF}$ , type HS		1 ms		
Turn ON delay $t_{ON}$ , types A to D		400ms		
Turn ON delay $t_{ON}$ , type HS		5ms		
Supply voltage		24 VDC (20 to 28VDC)		
Current consumption, emitter		20mA (Type HS = 60mA)		
Current consumption, receiver		50mA		
Maximum power dissipation		Emitter: 1.68W / Receiver: 1.4W		
Output		PNP, 100mA, short circuit protected		
Electrical input, only type I...-235HS-S-DI		Disable input, PNP compatible		
Housing		M30, brass, nickel plated		
Protection rating, at EN 60529		IP 65	IP67	IP67
Maximum ambient working temperature TA		-20°C < TA < +60°C	-20°C < TA < +50°C	-20°C < TA < +50°C
Connection cable, shielded		2/3(4) x AWG24, L=5m	2/3(4)+PE x 0.5mm <sup>2</sup> , L=10m	
Accessories		4 nuts M30 or optional 2 clamps		
Options		- Pollution indication output VA - Cable length up to 100m - Type for fibre optics connection: <b>IRL-235.-S/E-GF</b> - Oil resistant connection cable Ölflex 810CP; Type: ILD-235..... <b>S117</b> - Adjustable emitter power, Pot. at the emitter: Type I...-235.. <b>S9</b>		
LED Indication Function		 Light beam interrupted LED's shows red		 Light beam not interrupted LED's shows yellow or green
Output Configuration and Connection Diagram				
Output Function		Light beam interrupted <span style="float: right;">24 VDC</span> 0 V		Light beam not interrupted
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		
ATEX related designations		CE0158 Device type Certification number: TA: -20° < TA < 50° Date of construction: Numeral 4 to 7 of the serial number	 ILD: II 2 G EEx d IIC T6 / II 1/2 D IP67 T90°C ILN: II 3 G EEx nA II T5 / II 3 D IP67 T100°C DMT 99 ATEX E 054 Electrical data according to the chart	
Note 1: If a receiver is influenced by other emitters, TOFF may increase up to 400ms				

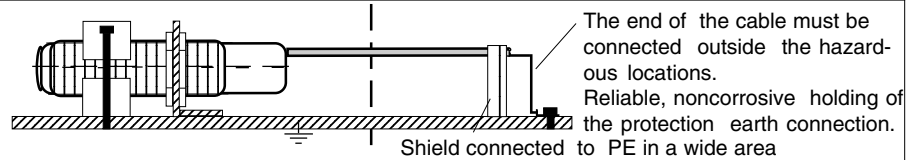
**Dimensions:**



**Connection layout:**



**Equipotential Bonding at Ex Devices:**



**Operating Manual / EC - Declaration of Conformity:**

**Ex protection:**

**General regulations for all types of Ex devices:**

It is necessary to take into consideration the valid international and national rules and regulations. The maximum rated supply voltage  $U_m = 30VDC$  must not be exceeded. The local equipotential bonding have to be done. 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. In Ex zones 20/21 and 22, do not operate the sensors without fixed dustproof potentiometer sealing screw. After adjust the potentiometer, the dustproof sealing screw with undamaged packing ring, must be screwed down. Damaged or lost screws or packing rings must be replaced.

**Types: ILD-** are applicable in Ex zones 1, 2 and 20/21, 22. For the zones 20/21 only the front part (optical lens) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.

**Types: ILN-** are 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.

**Arrangement of light barriers , types I..-235A 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 up to 400ms.

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

**Arrangement of light barriers , type I..235HS-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  $\geq 10ms$ .

The DI input is PNP compatible.

**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-235 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 ambience. The load (Relay or other loads) must be connected at " - " (minus).

Because the emitters has a very high optical power, it's to avoid mirroring effects at the background, when not all receivers are located at the same side.

**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 medium. Equipment must only be repaired by the manufacturer.

**Safety Informations**

**The Light Barrier IRL/ILN/ILD-235-.. must not be used for Accident-Prevention!** When installing and operating with the light barrier, it is necessary to take into consideration the relevant international and other national regulations. ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL(BGR 104), BetrSichV, single directive 1999/92/EG.

**Standards met:**

- EN 50014, EN 50018, EN 50281-1-1;
- EN 50081-1/-2, EN 50082-1/-2, EN 60529
- Ex-Protection: 94/9/EG (ATEX 100a)
- Machine Directive: 98/37/EG
- Low Voltage Directive: 73/23/EWG, 93/68/EWG
- EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

**General Notes**

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.

**Approvals: DMT 99 ATEX E 056/N1/N4**

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 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG