

Luminescence scanners

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General description

Modern production and processing techniques call for optical detection of markings by use of optical sensors of high sensitivity so that the productive cycle of machines and flow of goods in transit can be controlled. The normal optical fibre sensors are absolutely reliable, provided the marking is clearly distinguishable from the background.

In practice, however, this is not always the case, either because markings on a high-contrast texture, such as wood, cannot be read, or because there is no contrast at all, e.g. adhesive applied to paper, grease to metal, or oil on water. It may even be the basic intention that the markings should not be detected by the human eye.

In these and many similar cases, it is necessary to use luminescence scanners LDL. As the name suggests, they use the physical effect of photoluminescence.

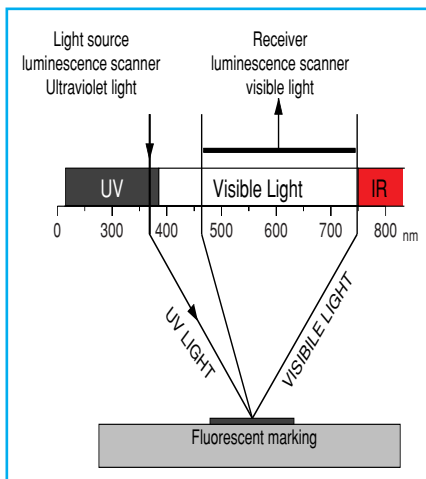
Operating principle

Inside the luminescence scanners LDL there is an emitter and a receiver which permit to recognise markings by transforming the light e.g. light of a short wavelength is converted to light of a longer wavelength. The luminescence scanner emits ultraviolet radiation with a wavelength of approx. 365nm; this activates a fluorescent substance which emits in the (predominantly) visually detectable range between 450 and 780nm. This luminescence radiation is picked up by the LDL luminescence scanner's light receiver. The optical signal (electronically prepared) is available for use as a switching signal. The luminescence scanners LDL work with modulated light, the receiver responding only to light of the same modulation frequency.

Fluorescent marking agents

A variety of fluorescent marking agents are commercially available which can be used in combination with the luminescence scanners LDL:

- highlighter pens
- chalks and crayons
- daylight paints
- optical brighteners
- textile markers
- fluorescent ink
- varnishes / lacquers
- plastic or carton labels
- oil / grease



Mounting Information

The luminescence scanners LDL can be mounted both axially or at 90°. This is due to the two position M12 connector and the two types of mounting brackets available for this sensor.

Adjustment of the sensitivity or response time (only LDL2) is made by inserting a small screwdriver into the rear of the sensor following the arrow mark. Adjust slowly until the desired setting is obtained.

Maintenance: Due to the UV solid state emitter

there is no changing of lamps needed as with other conventional luminescence scanners.

Keep lenses clean, occasionally wipe with a damp cloth and dry.


Applications

The luminescence scanners LDL can be used in all places where luminescence objects are to be scanned which are visible or non visible by the human eye.

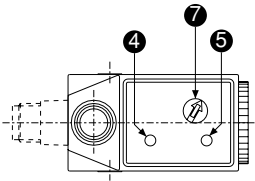
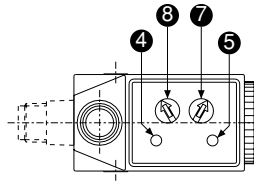
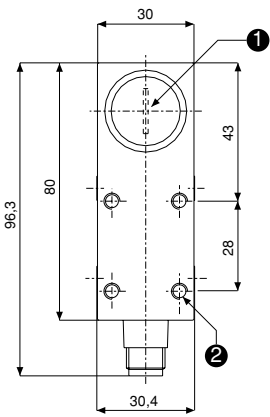
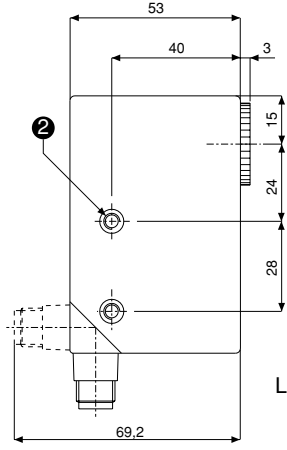
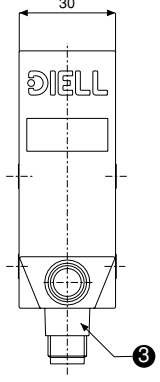
They are special adapted to recognize glue on carton as well as in applications where it is necessary to scan marks for quality control system or for the report controlling. They can also be used for scanning oil/grease on metal, illustrations, labels/stickers, tissue, special labels/stickers and identifications tags on goods.

These are only a few examples of the vast methods of applications where luminescence scanners can be used.


3.4

SERIE	LDL
	
Luminescence scanners - DC	
<ul style="list-style-type: none"> ◆ Long-life UV light source ◆ Operating elements on UV light source ◆ Interchangeable objective lenses for different scanning distances ◆ Insensitive to surface reflections ◆ Output 100mA, short circuits protected ◆ High and adjustable sensitivity (LDL2 model) ◆ 2 position adjustable M12 connector exit ◆ Sturdy metal housing ◆ IP65 protection degree ◆ Complete protection against electrical damage 	



DIMENSIONAL DRAWING	
 <p>LDL1/**</p>	 <p>LDL2/**</p>
	
 <p>LDL/**</p>	
Key	
<ol style="list-style-type: none"> 1 Position and shape of UV light spot 2 Mounting holes M5x5,5mm 3 2 position M12 plug-in exit 4 Green LED (supply) 5 Yellow LED (state indicator) 6 Lens (interchangeable: 10, 20 and 50mm) 7 Sensitivity adjustment 8 Switching frequency adjustment 	

3 scanning distances

It's possible to change three different lens to have different scanning distances (10, 20 and 50mm).

Long life UV light source

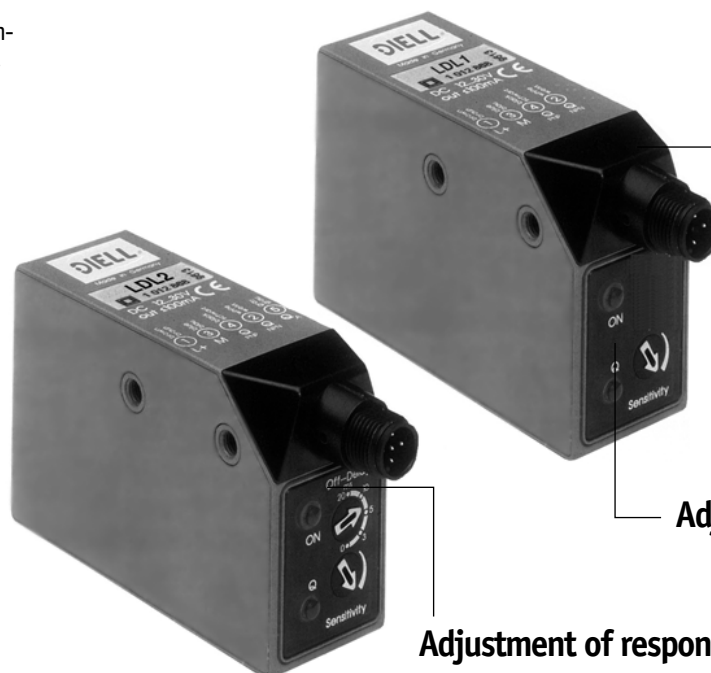
No replacement and no maintenance necessary.

Metal housing IP65

All models are enclosed in a sturdy metal housing especially for harsh environments.

LED indicators

supply and state indicator.



M12 output connector

Turnable in 2 position, axial and 90°.

Adjustment of sensivity

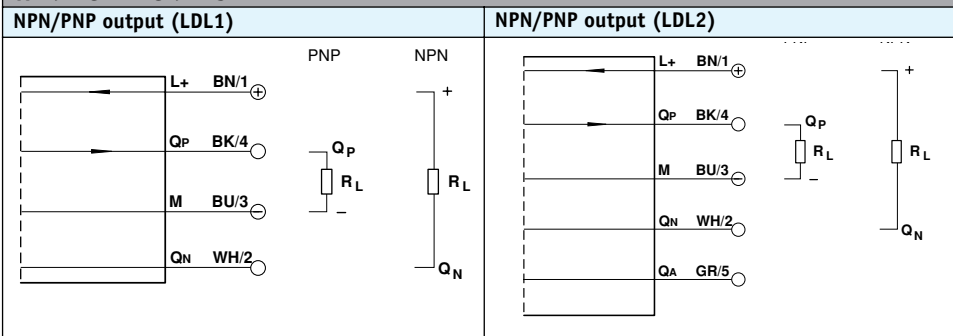
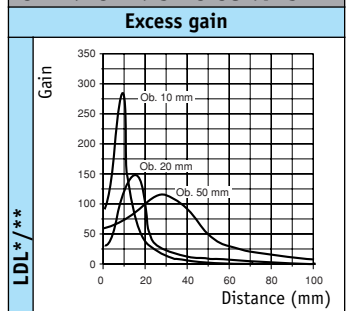
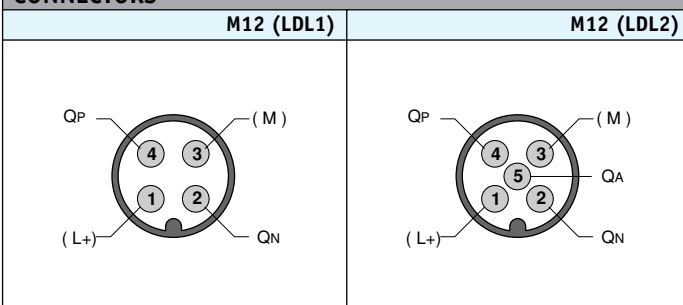
Adjustment of response time

ORDERING SYSTEM

serie			LDL 1 / 0 1			
luminescence scanner	LDL		01		scanning distance	10mm
model			02			20mm
standard	1		05			50mm
high sensitivity with timing and analog output	2					

SPECIFICATIONS

Model	LDL1/01	LDL1/02	LDL1/05	LDL2/01	LDL2/02	LDL2/05
Nominal sensing distance Sn	10mm	20mm	50mm	10mm	20mm	50mm
Light spot diameter	2x6mm	3x9mm	5x15mm	2x6mm	3x9mm	5x15mm
Lenses	2016348	2016349	2016350	2016348	2016349	2016350
Operating voltage	12-30Vdc					
Ripple	2Vpp					
Current consumption	60mA					
Load current	≤100mA					
Wavelength	UV light source at 380nm					
Duration of light source UV	100000 hours (with temperature of +25°C)					
Output type	NPN/PNP					
Analog output	-			0,5...10mA		
Output voltage HIGH	Uv (NPN); Uv≤3V (PNP)					
Output voltage LOW	<2V (NPN); 0V (PNP)					
Switching frequency	1,5KHz					
Response time	0,3ms					
Timing function	-			3, 5, 10, 20ms (selectable)		
Supply electrical protections	polarity reversal, transient					
Output electrical protections	short circuit					
Temperature range	-10...+55°C (in use); -25...+75°C (non in use)					
Shock and vibrations	IEC68					
Electromagnetic compatibility	IEC801					
Protection degree (DIN 40 050)	IEC IP65					
LED indicators	green (supply), yellow (state indicator)					
Weight (approx.)	400g					

WIRING DIAGRAMS

CHARACTERISTIC CURVES

CONNECTORS

OUTPUT LOGIC

	yes	no
Luminescence	yes	no
Output QN	LOW	HIGH
Output QP	HIGH	LOW
Led status	on	off