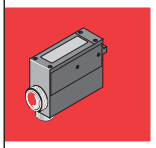


Technical Description

The TL80 color mark scanner series is extremely versatile, and thanks to its simple configuration, it can respond to an extensive range of application requirements. Most of the electronic functions are easily set by the user, i.e. type of output, type of output pulse, timer, and light source.

The TL80 can be equipped with an analog output that supplies a signal proportional to the contrast level detected. This may be used, for example, to ease installation while monitoring the maximum focal point. The device is also characterized by a high switching frequency, which allows it to interface with high speed automatic machines. A wide range of lenses is offered with the TL80: 9, 18 or 28 mm. There is also a fiber optic version available that allows a choice of light sources, and is equipped with a wide range of fibers capable of performing in limited space situations or in harsh environmental conditions.

The TL80 is characterized by a large depth of field. This allows considerable tolerance to target vibration and the ability to compensate for irregularities in materials to be detected.

Adjustment of the contrast threshold is via a rear mounted thumbwheel assisted by 2 LEDs which indicate the direction to turn.

The different connection permutations provided by the TL80 color mark scanner allows it to be fully compatible with the TL7 and the TL8.

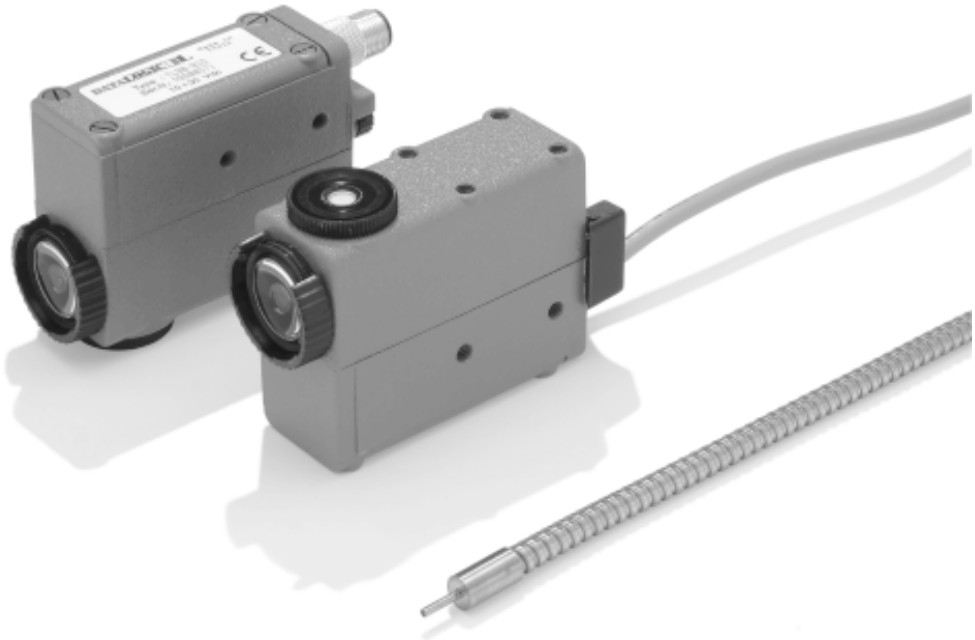
* Cable included

Features

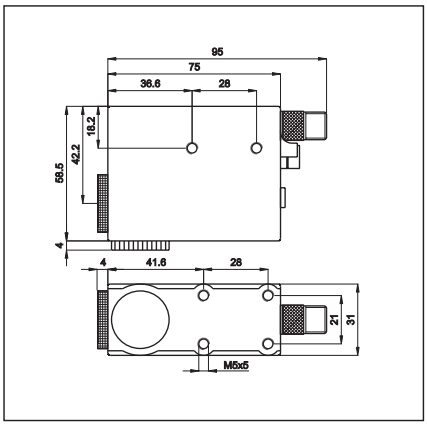
- Selectable green or red LED light source
- 9 or 18 mm scanning distance (interchangeable lens)
- Large depth of field
- Version with long distance scanning (28 mm)
- Fiber optic version available with a wide range of fibers
- Dark/light pulse and timer selection in all versions
- Easy to adjust
- Protection class IP67
- Analog output voltage from 0 to 5 V

Applications

- Color mark detection in packaging machines
- Print centering on packages
- Plastic bag positioning in heat-selling machines
- Code reading in the pharmaceutical and cosmetic industry
- Tube positioning in filling and casing machines
- Registration control in the direction of travel
- Color contrast detection
- Sorting of objects according to color contrast detection



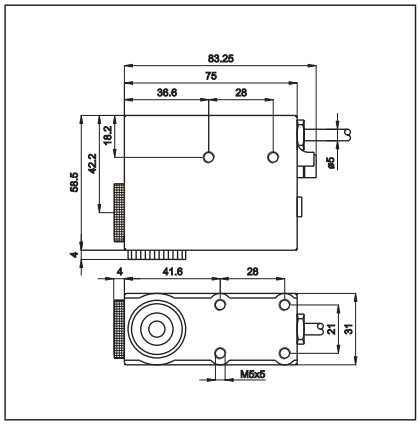
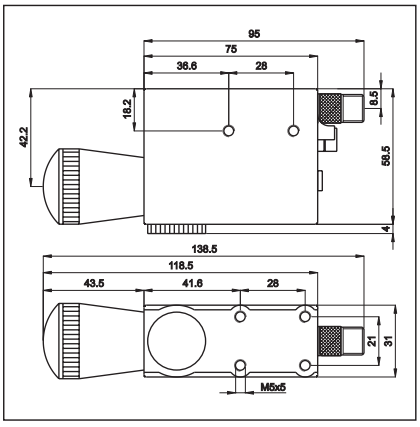
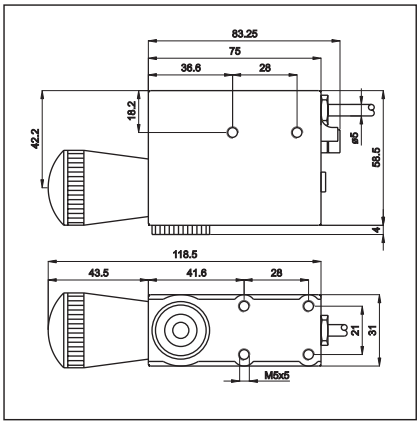
Series	TL80, Connector
Standard lens models	9mm/18mm
Fiber optic models	Depends on fiber



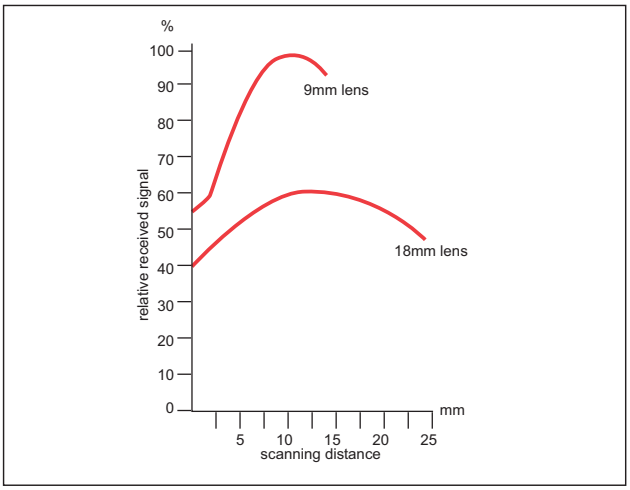
Standard Lens	
9mm (0.35 in.) red/green light Spot: vertical	BOS TL80-015
9mm (0.35 in.) red/green light Spot: horizontal	BOS TL80-015L
18mm (0.71 in.) red/green light Spot: vertical	BOS TL80-065
18mm (0.71 in.) red/green light Spot: horizontal	BOS TL80-065L
28mm (1.1 in.) red/green light Spot: vertical	
28mm (1.1 in.) red/green light Spot: horizontal	
Fiber-Optics	
red/green light	BOS TL80F-045
red/IR light	BOS TL80F-055

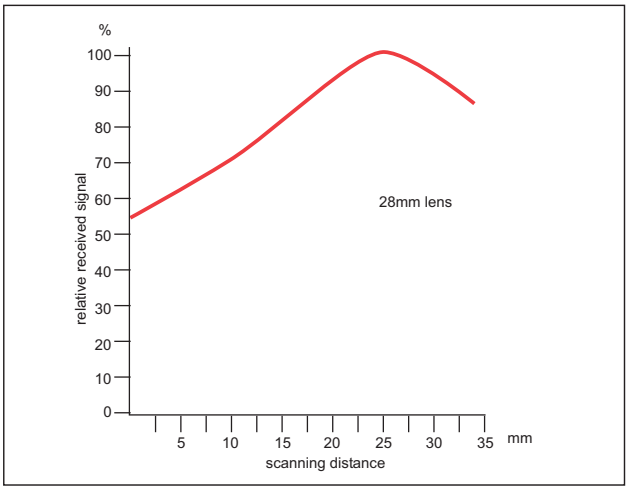
Voltage supply	10 to 30 Vdc
Voltage ripple	2.0 V p-p max
Supply current (no load)	80 ma
Output type	selectable PNP/NPN
Output function	selectable Light/Dark operate
Voltage drop, output	1.2 V (NPN), 2.2 V (PNP)
Rated output current	200 ma
Time delay	20 ms, selectable
Protections	Short circuit, polarity reversal
On/Off delay	50 ms
Switching frequency	10 kHz
Analog output	0–5 V, 10KW load
Sensitivity/Range adjustment	Thumb-wheel
LED indicators	Red Output
Emitter light source, green	Green LED (565nm)
Emitter light source, red	Red LED (635 nm)
Emitter light source, infrared (IR)	Infrared (880 nm
Ambient operating temperature	-10°C to +55°C (+14°F to +131°F)
Storage temperature	-20°C to +70°C (-4°F to +158°F)
Degree of protection per IEC 529	IP 67
Housing material	ZAMA (metal alloy)
Sensing face material	glass
Connection	4-pin, Micro connector
Recommended Connector	BKS-S19/S20

Note: Refer to accessories section for additional lenses and fiber optic cables.

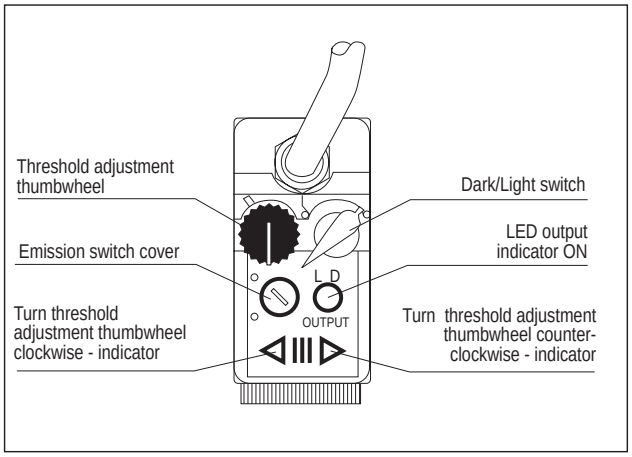
TL80, Cable Out	TL80, Long-range, Connector	TL80, Long-range, Cable Out
9mm/18mm	28mm	28mm
Depends on fiber		
		
BOS TL80-011		
BOS TL80-011L		
BOS TL80-061		
BOS TL80-061L		
	BOS TL80-025	BOS TL80-021
	BOS TL80-025L	BOS TL80-021L
BOS TL80F-041		
BOS TL80F-051		
10 to 30 Vdc	10 to 30 Vdc	10 to 30 Vdc
2.0 V p-p max	2.0 V p-p max	2.0 V p-p max
80 ma	80 ma	80 ma
selectable PNP/NPN	selectable PNP/NPN	selectable PNP/NPN
selectable Light/Dark operate	selectable Light/Dark operate	selectable Light/Dark operate
1.2 V (NPN), 2.2 V (PNP)	1.2 V (NPN), 2.2 V (PNP)	1.2 V (NPN), 2.2 V (PNP)
200 ma	200 ma	200 ma
20 ms, selectable	20 ms, selectable	20 ms, selectable
Short circuit, polarity reversal	Short circuit, polarity reversal	Short circuit, polarity reversal
50 ms	166 ms	166 ms
10 kHz	3 kHz	3 kHz
0–5 V, 10KW load	0–5 V, 10KW load	0–5 V, 10KW load
Thumb-wheel	Thumb-wheel	Thumb-wheel
Red Output	Red Output	Red Output
Green LED (565nm)	Green LED (565nm)	Green LED (565nm)
Red LED (635 nm)	Red LED (635 nm)	Red LED (635 nm)
Infrared (880 nm_	Infrared (880 nm	Infrared (880 nm_
-10°C to +55°C (+14°F to +131°F)	-10°C to +55°C (+14°F to +131°F)	-10°C to +55°C (+14°F to +131°F)
-20°C to +70°C (-4°F to +158°F)	-20°C to +70°C (-4°F to +158°F)	-20°C to +70°C (-4°F to +158°F)
IP 67	IP 67	IP 67
ZAMA (metal alloy) glass	ZAMA (metal alloy)	ZAMA (metal alloy)
–	–	–
2m cable (4-wire, 22 AWG)	4-pin, Micro connector	2m cable (4-wire, 22 AWG)
	BKS-S19/S20	

Scanning Diagrams (Lens Models)

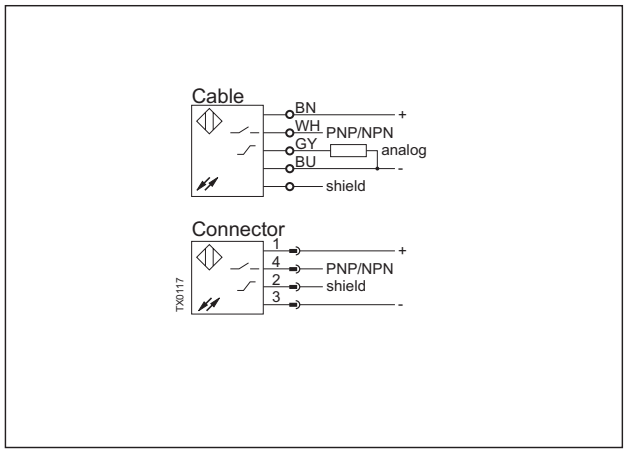


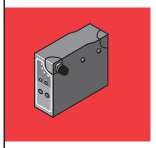


Control Panel



Connections





Technical Description

The TLµ series forms a color mark scanner family based on microprocessor architecture. By pressing the "MARK" key and then the "BKGD" key, the sensor can evaluate the best technical application conditions to autoconfigure parameters providing maximum operating performance.

During this phase, the color mark scanner supplies the optimal threshold level, the output pulse, and selects the best emission LED for detecting contrasts.
The two available models allow remote control through 2 wires, which duplicate the functions of the keys provided on the device. This makes setting easy even when the mark reader is unattainable by the operator. By setting the sensor's internal dip-switches, the 2 wires can also be used to select four different contrast types remotely. The aim of this feature is to quickly modify the configuration of the device in situations where the contrast to be detected changes frequently.

To ease the already simple setting procedure, two LED's provide information on the device's operating state.
The TLµ mark reader series is available with objective versions and 9 or 18 mm lens versions. Connection can be made through a cable or M12 connector with 3 positions that permits adaptation of the sensor to the different mounting requirements of automatic machines.

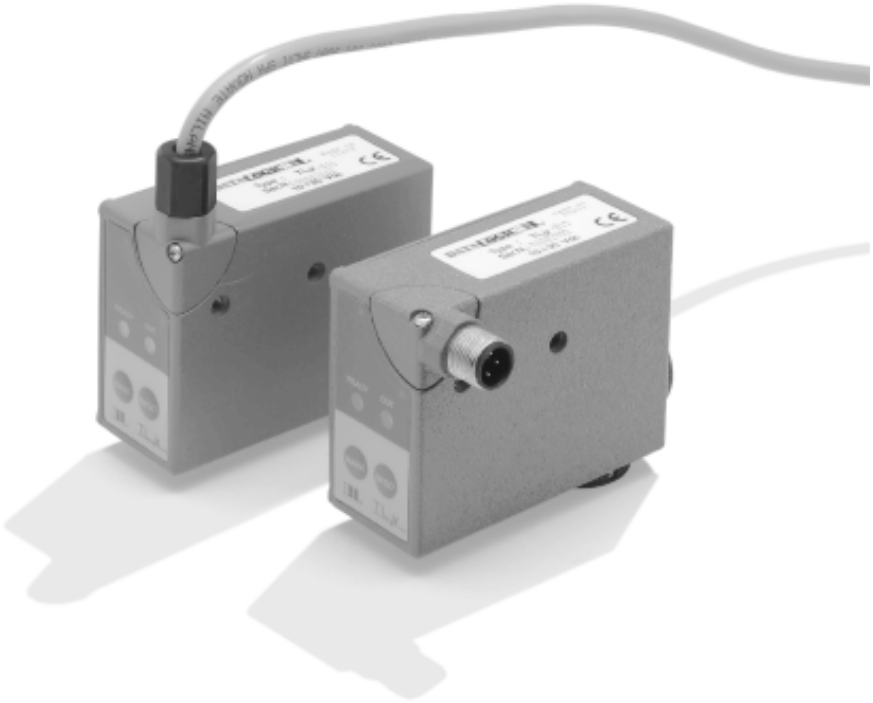
All versions of the TLµ include an analog output capable of providing a signal in the set-up phase proportional to the detected contrast. The IP67 protected metal housing makes it suitable for harsh industrial environments.

Features

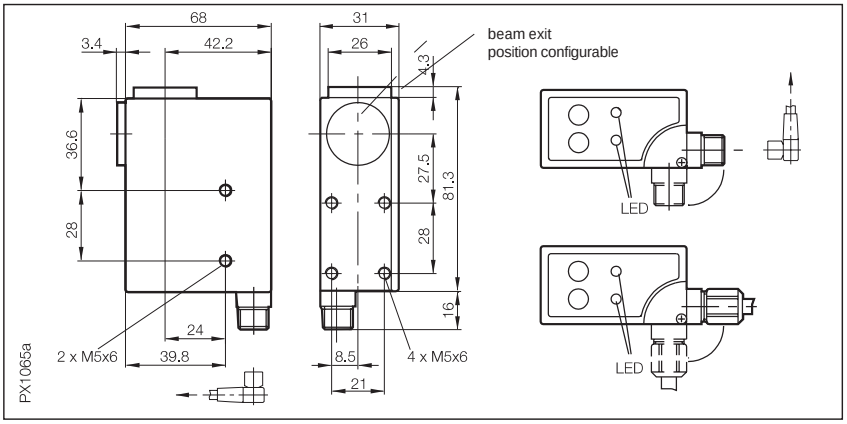
– "Teach-In" Microprocessor control
– Automatic selection of Red/ Green emission
– Automatic selection of out-put pulse (Dark or Light)
– Remote teach-in adjustment or selection of four diff-erent contrast settings
– Straight or 90° optics
– Keyboard lock function
– Timer function on all models
– Three position M12 connec-tor or cable connection
– Metal housing - IP67

Applications

– Mark detection in packaging machines
– Print centering on packages
– Positioning based on detected contrast
– Small object detection



Series	BOS TLµ, Cable-out	BOS TLµ, Quick disconnect
Standard lens model	**9 mm/18mm**	**9 mm/18mm**



Connector orientation

9mm (0.35 in.) Red/green light Spot:	BOS TLµ-111	BOS TLµ-115
9mm (0.35 in.) Red/green light Spot:	BOS TLµ-111L	BOS TLµ-115L
18mm (0.71 in.) Red/green light Spot:	BOS TLµ-161	BOS TLµ-165
18mm (0.71 in.) Red/green light Spot:	BOS TLµ-161L	BOS TLµ-165L
9mm (0.35 in.) Red/green light Spot:2mm pt.		BOS TLµ-015 SH1668*
9mm (0.35 in.) White light Spot: Circular	BOS TLµ-011-SH1771*	BOS TLµ-515C
9mm (0.35 in.) Blue/red light Spot:	BOS TLµ-011-SH1683*	
Fiber optic readyRed/green light Spot: Fiber	BOS TLµ-111-SH1752	
Fiber optic readyWhite light Spot: Circular	BOS TLµ-011-SH1876*	BOS TLµ-545

Supply voltage U_B	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e	1.5 V	1.5 V
Rated isolation voltage U_i	75 V	75 V
Rated operational current I_e	200 mA	200 mA
No-load supply current I_0	80 mA	80 mA
Short-circuit protected	yes	yes
Permissible capacitance	1 µF	1 µF
On/Off delay	50 µs	50 µs
Frequency of operating cycles f	10 kHz	10 kHz
Emitter light source	Red (635nm), Green (565nm), Blue (475nm), White	Red (635nm), Green (565nm), White
Output	PNP/NPN selectable (default PNP)	PNP/NPN selectable (default PNP)
Output function	O /● automatically switched	O /● automatically switched
Analog output	0..5 V DC (2,5 V DC with Kodak gray card 90 % reflective)	0..5 V DC (2,5 V DC with Kodak gray card 90 % reflective)
Permissible ambient light	3000 Lux artificial light/10,000 Lux sunlight	3000 Lux artificial light/10,000 Lux sunlight
Sensitivity adjustment	automatic by pressing two buttons (Teach-in)	automatic by pressing two buttons (Teach-in)
Output function indication	LED red	LED red
Operating/Error indication	LED green	LED green
Ambient temperature range T_a	–15...+55 °C	–15...+55 °C
Degree of protection per IEC 529	IP 67	IP 67
Housing material	ZAMA diecast zinc	ZAMA diecast zinc
Material of sensing face	glass	glass
Spot size, 9mm lens	1.5 × 5mm	1.5 × 5mm
Spot size, 18mm lens	2x7mm	2x7mm
Connection	3m cable	4 Pin M12 connector
No. of wires × conductor cross section	6 x 22awg shielded	
Weight	600 g	500 g
Recommended connector		BKS-S 19-3/BKS-S 20-3
Emitter type	red/green visible (635 nm/565 nm)	red/green visible (635 nm/565 nm)

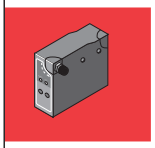
O /● = Light-On/Dark-On

* Default settings is NPN

Ordering Code - Accessories

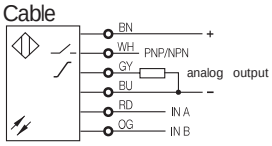
Description	Type	Sensing range
DLM-Z/BOC-596*	Lens	9mm, 5mm spot
DLM-Z/BOC-597*	Lens	18mm, 7mm spot
DLM-Z/32-1154*	Lens	28mm, 10mm spot
DLM-Z/BOC-511*	Lens	50mm, 12mm spot
BFO-OF-31*	Fiber Optic Cable	Diffuse .5 to 25mm
BFO-OF-32*	Fiber Optic Cable	Diffuse .5 to 25mm
BFO-OF-33*	Fiber Optic Cable	Thru-beam 60mm
BFO-OF-34*	Fiber Optic Cable	Diffuse .5 to 25mm
BFO-OF-35*	Fiber Optic Cable	Diffuse .5 tp 25mm

*See accessories section for complete details

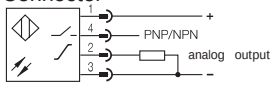


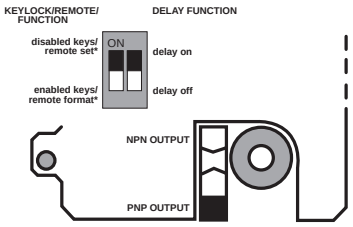
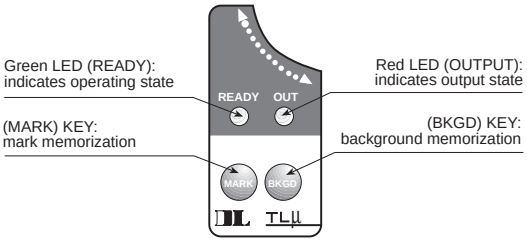
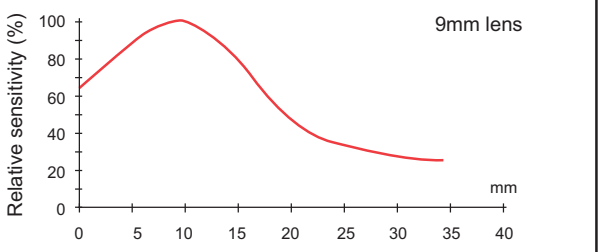
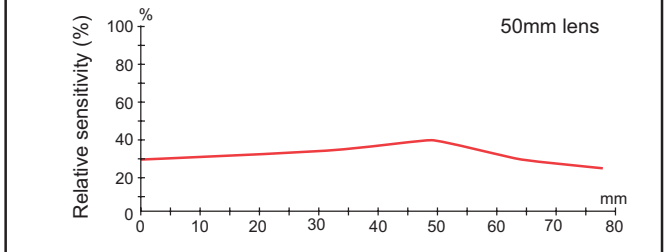
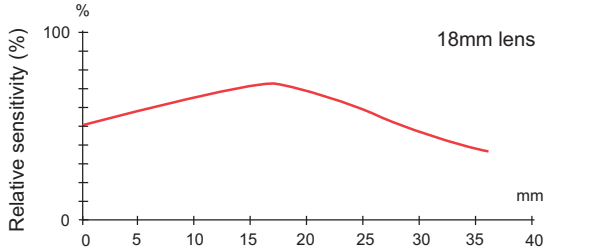
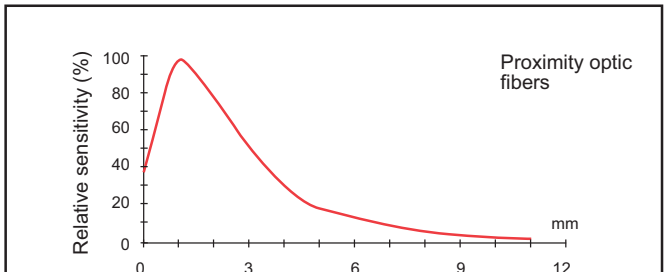
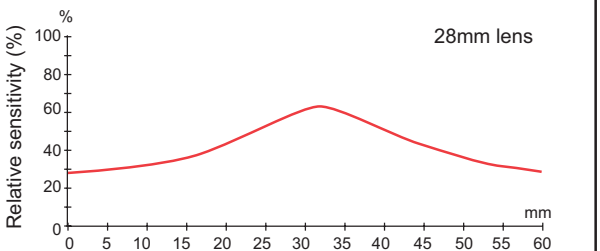
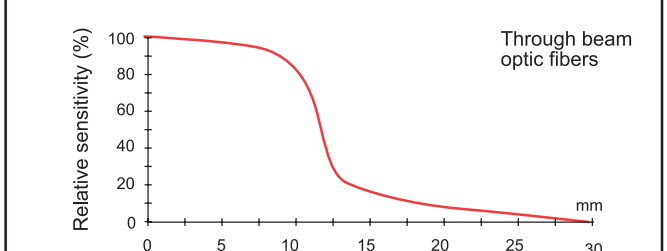
Connection Diagrams

Cable



Connector





Control Panel