



INDUSTRIAL CONTROL

PRESENSE PHOTOELECTRIC SENSORS

VLP50 Series

Benefits

- Comfortable and fast teaching procedure
- Comfortable thanks to display LEDs visible from all sides
- Maximum flexibility thanks to uniform housing design
- Sealed housing for absolute impermeability
- Exact positioning and detection of small parts
- Extremely long detection distance
- Excellent performance
- Wide range of models for different applications type

Diffuse sensor -

- Precise detection
- Detects objects with various shapes and surfaces even more reliably
- Visible or Infrared LED for all accuracy requirements
- Range of up to 2.5 m
- Response times < 0.34 ms
- Axial or 90 degrees radial optics is available for tubular sensors type
- Flush installation
- Compact body for space saving

Retro-reflective sensors

- Visible and Infrared LED
- Range of up to 12 m
- Response times < 0.34 ms
- Detection of transparent objects
- Axial or 90 degrees radial optics is available for tubular sensors type
- Flush installation
- Compact body for space saving

Through beam sensors

- Infrared light source
- Range of up to 30 m
- Regulation of transmit power via potentiometer
- Axial or 90 degrees radial optics is available for tubular sensors type
- Compact body for space saving



Diffuse photoelectric proximity sensors series



PRODUCT HIGHLIGHTS

- Excellent performance for numerous applications
- Extremely long distance, adjustable via potentiometer
 - ✓ Through-beam type: up to 30m
 - ✓ Retroreflection type: up to 12m
 - ✓ Diffuse reflection type: up to 2.5m
- AC type and DC type available
- Robust plastic housings (IP 65)
- High device availability in industrial environments
- Range between -25 °C ... +50 °C

Optical data		Functions	
Sensing distance	See Selection Table	Indicator LED, green	Operating voltage indicator
Type of light	See Selection Table	Indicator LED, yellow	Switching output indicator
Light spot size	See Selection Table	Sensitivity adjustment	Via potentiometer
Emitting element	Red LED (peak emission wavelength 630nm, modulated)	Adjustment possibilities	N.O./N.C. via control input (IN)
Minimum sensing object	<ul style="list-style-type: none"> • Through-beam type: min Ø20mm opaque object (Setting distance between emitter and receiver is 30m) • Retroreflective type: min Ø54mm opaque, translucent or transparent object (note 3,5) • Diffuse type: Opaque, translucent or transparent object (note 5) 	Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U_s	10 ~30V/DC 24 ~240V/AC 10 ~240V/DC	Dimensions	See dimensional drawings
No-load current, I₀	≤ 30 mA	Enclosure rating	IP 65
Output current, I_e	≤ 100 mA	Material, housing	ABS
Protective circuits	Reverse-polarity protection, U _s / short-circuit protection, 500V AC for one min. between all supply terminals connected together and enclosure	Material, front screen	PMMA
Switching output, Q	PNP/NPN/Relay (see Selection Table)	Type of connection	See Selection Table
Output function	N.O./N.C., Relay (N.O./N.C.)	Ambient temperature: operation	-25 ... +55 °C
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz	Weight (plug device)	Approx. 120 g
Response time	≤ 1 ms	Weight (cable device)	Approx. 200 g
Control input: Potentiometer	+ = NC - = NO	Distance Control: Potentiometer	0.....Distance
Environmental resistance			
Population degree	3(industrial environment)	EMC	EN60947-5-2
Protection	IP65(IEC)	Vibration resistance	10~55Hz frequency,0.5mm amplitude in X,Y and Z directions for 1.5 hours each
Temperature	-25 ~+55°C(No dew condensation or icing allowed), Storage: -40 ~+70°C	Shock resistance	294m/s acceleration (30G approx.) in X, Y and Z directions for three times each
Humidity	50% RH (70°C)		
Light intensity	Incandescent light: less than 3,000Lux/Sunlight: less than 10,000Lux		

(1) With connected IP 65 plug

(2) The default measure temperature conditions is +23 °C, when didn't specify measure condition.

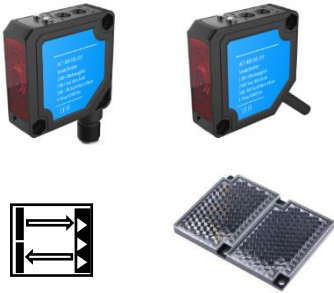
(3) Detection range and objects of Retroreflective type sensor apply to TD-08 reflector.

(4) Detection range and hysteresis of diffuse reflective type sensor apply to detection objects of gloss white paper (200x200mm).

(5) Please use actual sensor to validate testing effect, before testing transparent or translucent object.

Type	Sensing distance (Sn)	Light source	Power supply	Switching output	Switching mode	Connectio type	Housing Material	Part Number
Diffuse type	0 ... 2500 mm	Red light	10 ~30V/DC	PNP	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-D-PZD-2.5C
Diffuse type	0 ... 2500 mm	Red light	10 ~30V/DC	NPN	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-D-NZD-2.5C
Diffuse type	0 ... 2500 mm	Red light	10 ~30V/DC	PNP	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-D-PZD-2.5Y
Diffuse type	0 ... 2500 mm	Red light	10 ~30V/DC	NPN	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-D-NZD-2.5Y
Diffuse type	0 ... 2500 mm	Red light	24 ~240V/AC 12 ~240V/DC	Relay	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-D-RZD-2.5C
Diffuse type	0 ... 2500 mm	Red light	24 ~240V/AC 12 ~240V/DC	Relay	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-D-RZD-2.5Y
Diffuse type BGS	0 ... 1200 mm	Infrared light	10 ~30V/DC	PNP/NPN	NO	Plastic plug, M12, 4-pin	Plastic	VLP50-D-NPOD-1.2C
Diffuse type BGS	0 ... 1200 mm	Infrared light	10 ~30V/DC	PNP/NPN	NC	Plastic plug, M12, 4-pin	Plastic	VLP50-D-NPCD-1.2C

Retroreflective photoelectric proximity sensors series



PRODUCT HIGHLIGHTS

- Excellent performance for numerous applications
- Extremely long distance, adjustable via potentiometer
 - ✓ Through-beam type: up to 30m
 - ✓ Retroreflection type: up to 12m
 - ✓ Diffuse reflection type: up to 2.5m
- AC type and DC type available
- Robust plastic housings (IP 65)
- High device availability in industrial environments
- Range between $-25\text{ °C} \dots +50\text{ °C}$

Optical data		Functions	
Sensing distance	See Selection Table	Indicator LED, green	Operating voltage indicator
Type of light	See Selection Table	Indicator LED, yellow	Switching output indicator
Light spot size	See Selection Table	Sensitivity adjustment	Via potentiometer
Emitting element	Red LED (peak emission wavelength 630nm, modulated)	Adjustment possibilities	N.O./N.C. via control input (IN)
Minimum sensing object	<ul style="list-style-type: none"> • Through-beam type: min Ø20mm opaque object (Setting distance between emitter and receiver is 30m) • Retroreflective type: min Ø54mm opaque, translucent or transparent object (note 3,5) • Diffuse type: Opaque, translucent or transparent object (note 5) 	Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U _a	10 ~30V/DC 24 ~240V/AC 10 ~240V/DC	Dimensions	See dimensional drawings
No-load current, I ₀	≤ 30 mA	Enclosure rating	IP 65
Output current, I _e	≤ 100 mA	Material, housing	ABS
Protective circuits	Reverse-polarity protection, U _a / short-circuit protection, 500V AC for one min. between all supply terminals connected together and enclosure	Material, front screen	PMMA
Switching output, Q	PNP/NPN/Relay (see Selection Table)	Type of connection	See Selection Table
Output function	N.O./N.C., Relay (N.O./N.C.)	Ambient temperature: operation	-25 ... +55 °C
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz	Weight (plug device)	Approx. 120 g
Response time	≤ 1 ms	Weight (cable device)	Approx. 200 g
Control input: Potentiometer	+ = NC - = NO	Distance Control: Potentiometer	0.....Distance
Environmental resistance			
Population degree	3(industrial environment)	EMC	EN60947-5-2
Protection	IP65(IEC)	Vibration resistance	10~55Hz frequency,0.5mm amplitude in X, Y and Z directions for 1.5 hours each
Temperature	-25 ~+55°C(No dew condensation or icing allowed), Storage: -40 ~+70°C	Shock resistance	294m/s acceleration (30G approx.) in X, Y and Z directions for three times each
Humidity	50% RH (70°C)		
Light intensity	Incandescent light: less than 3,000Lux/Sunlight: less than 10,000Lux		

(1) With connected IP 65 plug

(2) The default measure temperature conditions is +23 °C, when didn't specify measure condition.

(3) Detection range and objects of Retroreflective type sensor apply to TD-08 reflector.

(4) Detection range and hysteresis of diffuse reflective type sensor apply to detection objects of gloss white paper (200x200mm).

(5) Please use actual sensor to validate testing effect, before testing transparent or translucent object.

Type	Sensing distance (Sn)	Light source	Power supply	Switching output	Switching mode	Connectio type	Housing Material	Part Number
Retroreflective type	0 ... 12m	Red light	10 ~30V/DC	PNP	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-R-PRM-12C
Retroreflective type	0 ... 12m	Red light	10 ~30V/DC	NPN	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-R-NRM-12C
Retroreflective type	0 ... 12m	Red light	10 ~30V/DC	PNP	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-R-PRM-12Y
Retroreflective type	0 ... 12m	Red light	10 ~30V/DC	NPN	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-R-NZM-2.5Y
Retroreflective type	0 ... 12m	Red light	24 ~240V/AC 12 ~240V/DC	Relay	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-R-RZM-2.5C
Retroreflective type	0 ... 12m	Red light	24 ~240V/AC 12 ~240V/DC	Relay	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-R-RZM-2.5Y

(1): The sensing distance of the Retroreflection type is referring to the reflector TD-08. The sensing distance represents the detectable range of the detection object.

Through-beam photoelectric proximity sensors series



PRODUCT HIGHLIGHTS

- Excellent performance for numerous applications
- Extremely long distance, adjustable via potentiometer
 - ✓ Through-beam type: up to 30m
 - ✓ Retroreflection type: up to 12m
 - ✓ Diffuse reflection type: up to 2.5m
- AC type and DC type available
- Robust plastic housings (IP 65)
- High device availability in industrial environments
- Range between -25 °C ... +50 °C

Optical data		Functions	
Sensing distance	See Selection Table	Indicator LED, green	Operating voltage indicator
Type of light	See Selection Table	Indicator LED, yellow	Switching output indicator
Light spot size	See Selection Table	Sensitivity adjustment	Via potentiometer
Emitting element	Red LED (peak emission wavelength 630nm, modulated)	Adjustment possibilities	N.O./N.C. via control input (IN)
Minimum sensing object	<ul style="list-style-type: none"> • Through-beam type: min Ø20mm opaque object (Setting distance between emitter and receiver is 30m) • Retroreflective type: min Ø54mm opaque, translucent or transparent object (note 3,5) • Diffuse type: Opaque, translucent or transparent object (note 5) 	Default settings	Max. scanning distance and N.O.
Electrical data		Mechanical data	
Operating voltage, +U _s	10 ~30V/DC 24 ~240V/AC 10 ~240V/DC	Dimensions	See dimensional drawings
No-load current, I ₀	≤ 30 mA	Enclosure rating	IP 65
Output current, I _e	≤ 100 mA	Material, housing	ABS
Protective circuits	Reverse-polarity protection, U _s / short-circuit protection, 500V AC for one min. between all supply terminals connected together and enclosure	Material, front screen	PMMA
Switching output, Q	PNP/NPN/Relay (see Selection Table)	Type of connection	See Selection Table
Output function	N.O./N.C., Relay (N.O./N.C.)	Ambient temperature: operation	-25 ... +55 °C
Switching frequency, f (ti/tp 1:1)	≤ 1000 Hz	Weight (plug device)	Approx. 120 g
Response time	≤ 1 ms	Weight (cable device)	Approx. 200 g
Control input: Potentiometer	+ = NC - = NO	Distance Control: Potentiometer	0.....Distance
Environmental resistance			
Population degree	3(industrial environment)	EMC	EN60947-5-2
Protection	IP65(IEC)	Vibration resistance	10~55Hz frequency,0.5mm amplitude in X, Y and Z directions for 1.5 hours each
Temperature	-25 ~+55°C(No dew condensation or icing allowed), Storage: -40 ~+70°C	Shock resistance	294m/s acceleration (30G approx.) in X, Y and Z directions for three times each
Humidity	50% RH (70°C)		
Light intensity	Incandescent light: less than 3,000Lux/Sunlight: less than 10,000Lux		

(1) With connected IP 65 plug

(2) The default measure temperature conditions is +23 °C, when didn't specify measure condition.

(3) Detection range and objects of Retroreflective type sensor apply to TD-08 reflector.

(4) Detection range and hysteresis of diffuse reflective type sensor apply to detection objects of gloss white paper (200x200mm).

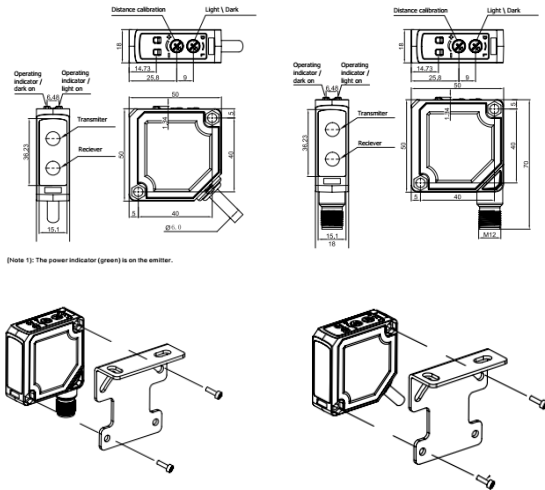
(5) Please use actual sensor to validate testing effect, before testing transparent or translucent object.

Type	Sensing distance (S _n)	Light source	Power supply	Switching output	Switching mode	Connectio type	Housing Material	Part Number
Through-beam type	0 ... 30m	Red light	10 ~30V/DC	PNP	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-DE-PZT-30C
Through-beam type	0 ... 30m	Red light	10 ~30V/DC	NPN	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-DE-PZT-30Y
Through-beam type	0 ... 30m	Red light	10 ~30V/DC	PNP	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-DE-NZT-30C
Through-beam type	0 ... 30m	Red light	10 ~30V/DC	NPN	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-DE-NZT-30Y
Through-beam type	0 ... 30m	Red light	24 ~240V/AC 12 ~240V/DC	Relay	NO/NC	Plastic plug, M12, 4-pin	Plastic	VLP50-DE-RZT-2.5C
Through-beam type	0 ... 30m	Red light	24 ~240V/AC 12 ~240V/DC	Relay	NO/NC	Cable, 2 m, 4-wire	Plastic	VLP50-DE-RZT-2.5Y

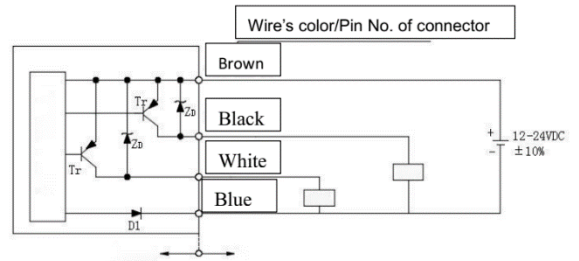
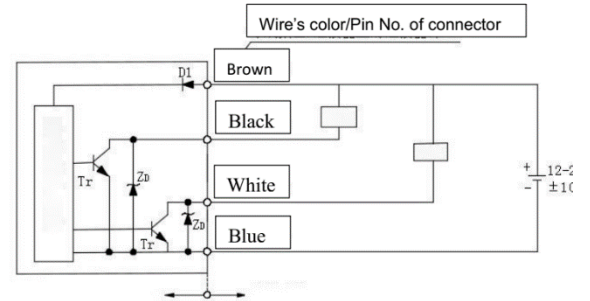
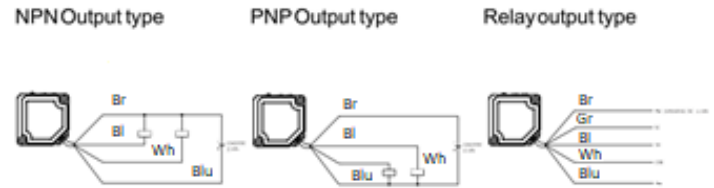
(1): Model marked on the Through-beam type with "E" for the emitter, with "D" for the receiver.

Mechanical dimensions (mm)

Sensor with M12 connector and integrated cable type



Wiring Diagram



Main circuit of sensor



Symbol ··· D1: Diode for power reverse connection protection





ZD: Zen-er diodes for surge voltage absorption

Tr: NPN output transistor

Options

Connect cable (2 cables are required for the Through-beam type)

Type	Model	Description		
Suitable for M12 plug-in connector type	Straight type 	V5-SM-24-C2	Length: 2m	Clamping ring: ϕ 14mm
		V5-SM-24-C5	Length: 5m	
	L-shaped type 	V5-SM-24L-C2	Length: 2m	Cable outer: ϕ 5.3mm
		V5-SM-24L-C5	Length: 5m	

Item	Model	Description
Sensor mounting bracket	VLP50-ZJ-1 	Material: Stainless steel
Reflector	TD-08 	50 x 50mm
	TD-09 	60 x 40mm
Reflective tape	FZ-12 	76 x 2800mm

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