LV462

Amplifier for fiber optics

en 01-2012/05 50118005

up to 525mm

up to 120mm

10 - 30 V DC

- 3-digit display for indicating and setting the switching threshold
- NEW: AutoSet function for easy sensor adjustment
- Menu functions for setting the range and various time functions
- Switch for changing between light and dark switching
- PNP or NPN switching output
- Indicator diode for operation and switching output
- Connection via cable or cable with M8 connector

IEC 60947...

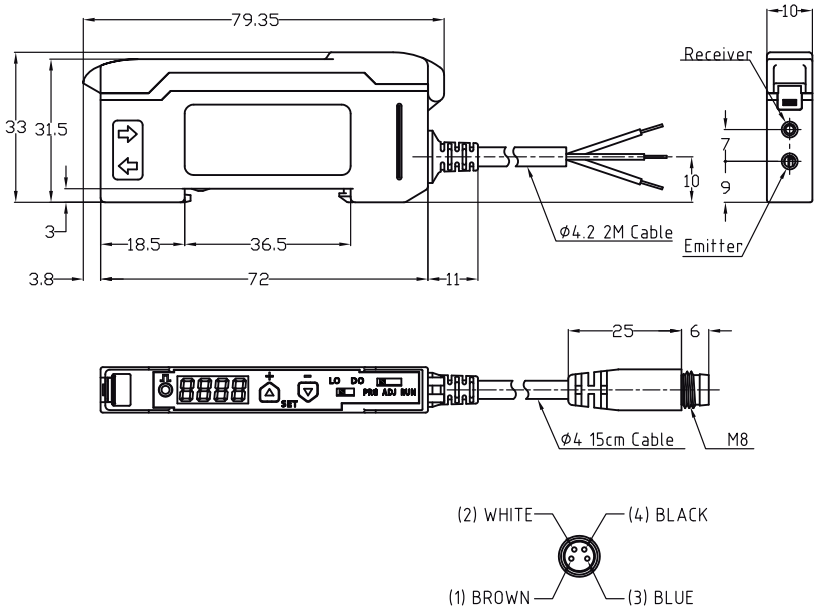
IEC 60947...

Accessories:

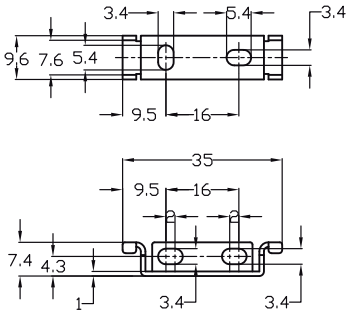
(available separately)

- Plastic fiber optics (KF, KFX)
- Ready-made cables (KB …)

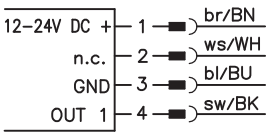
Dimensioned drawing

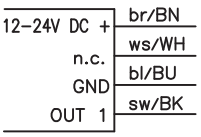


Supplied mounting accessories



Electrical connection





Specifications

		Throughbeam principle	Scanning principle
Optical data			
Operating range/scanning range [1]		up to 525 mm	up to 120 mm
Light source		LED (modulated light)	
Wavelength		660 nm (visible red light)	
Timing		**Setting SP-H**	**Setting SP-L**
Switching frequency [2]		500 Hz	250 Hz
Response time		1 ms	2 ms
Delay before start-up		≤ 450 ms	
Electrical data			
Operating voltage U_B		12 … 24 VDC ± 10 %	
Residual ripple		≤ 10 % of U_B	
Open-circuit current		≤ 45 mA	
Switching output	…/4…	pin 4/black: PNP	
	…/2…	pin 4/black: NPN	
Function		light/dark switching, adjustable by means of a switch	
Switching output time functions		switch-on/switch-off delay, passing contact (on actuation or fall-back), adjustable times: 2 ms, 20 ms, 50 ms, 100 ms, 500 ms, 1 s, 5 s, 10 s	
Signal voltage high/low		≥ (U_B - 2.5 V)/≤ 2.5 V	
Output current		≤ 100 mA	
Sensitivity		adjusted using the AutoSet function or **+/-** buttons	
Indicators			
Red LED		Switching output active	
Display		7-segment LED, 4-digit, display of switching threshold/operating mode, menu-driven sensor setting	
Mechanical data			
Housing		ABS	
Weight		63 g with 2000 mm cable 70 g with 150 mm cable and M8 connector	
Connection type		cable 2000 mm, 3 x 0.25 mm², or cable 150 mm with M8 connector, 4-pin	
Fiber optic connection		clamp-mounting, 2 x Ø 2.2 mm	
Environmental data			
Ambient temp. (operation/storage)		-10 °C … +60 °C/-40 °C … +70 °C	
Protective circuit [3]		2, 3	
Protection class		IP 54	
Standards applied		EN 60947-5-2	
Options			
Sensor setting		menu-driven using display and **+/-** buttons	

1) Operating range/scanning range dependent on the fiber optics used
2) With a duty cycle of 1:1
3) 2=polarity reversal protection, 3=short circuit protection for all outputs

Order guide

	Designation	Part no.
PNP types		
Connection: cable 2000 mm, 3 x 0.25 mm²	LV462.4/4	50118400
Connection: cable 150 mm with M8 connector, 4-pin	LV462.4/4X-150-M8	50118401
NPN types		
Connection: cable 2000 mm, 3 x 0.25 mm²	LV462.4/2	50118402
Connection: cable 150 mm with M8 connector, 4-pin	LV462.4/2X-150-M8	50118403

Tables

Notice!

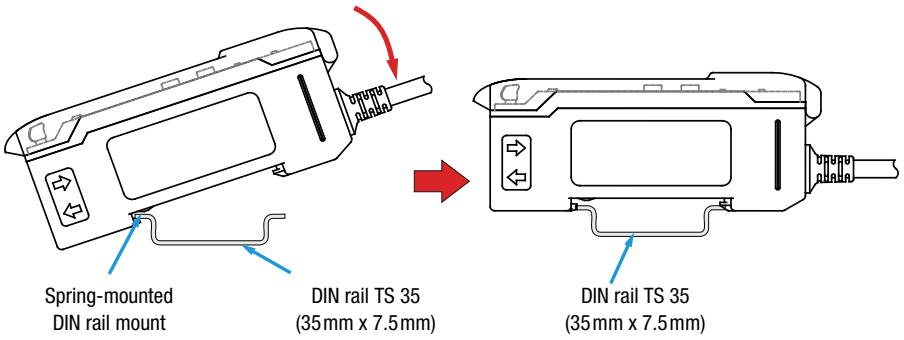
Detailed specifications on the range/scanning range are enclosed in the data sheets of our fiber optics type **KF** or **KFX**.

Diagrams

Remarks

- **Approved purpose**: This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.

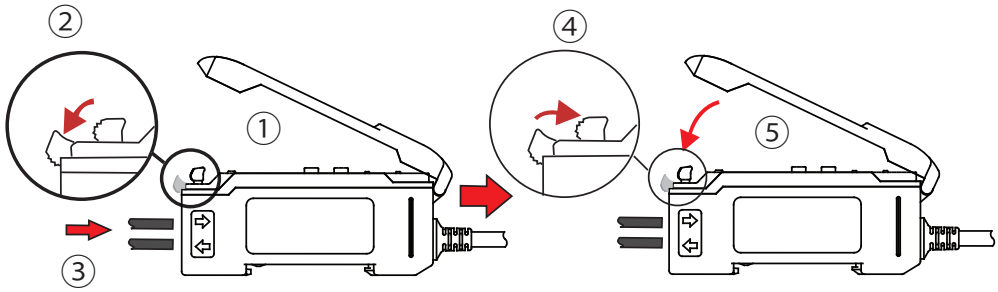
Mounting the amplifier



The amplifier is mounted as shown on a TS 35 DIN rail while disconnected from voltage.

Alternatively, the amplifier can also be mounted without a DIN rail using the mounting accessory (supplied) and M3 screws.

Installing the fiber optics



① Open the transparent protective cover.

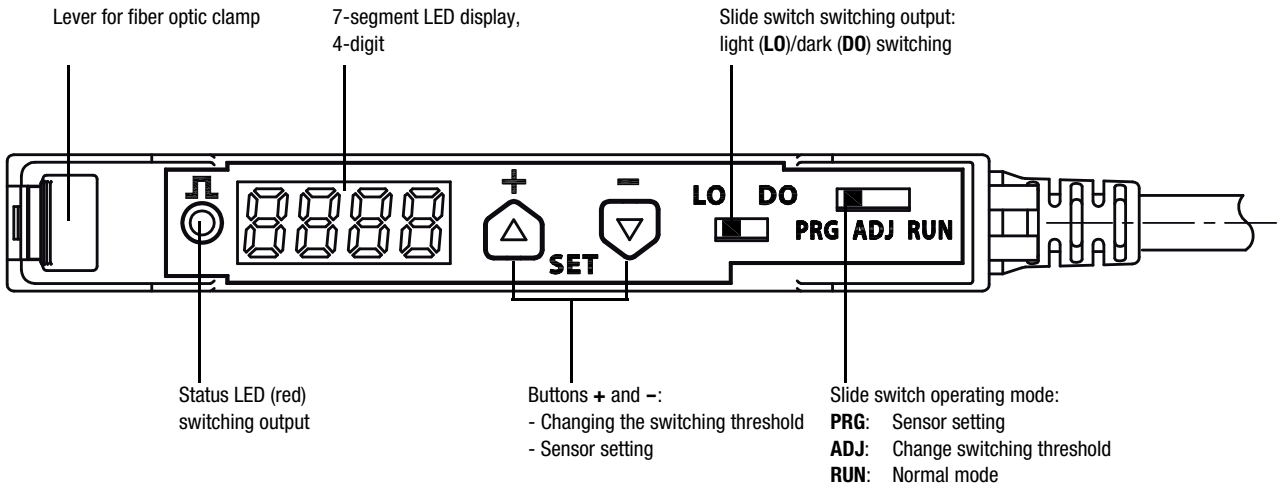
② Push down the lever of the fiber optic clamp to open.

③ Lead the **KF**/**KFX** type fiber optics in completely as far as they will go (ca. 12mm deep) into the fiber optic intake. **When doing so, observe the transmitter/receiver assignment** on the amplifier (transmitter at bottom / receiver on top).

④ Pull up the lever of the fiber optic clamp to close. Check if the clamp is secure by pulling lightly on the fiber optics.

⑤ Close the transparent protective cover.

Controls and indicators



PRG ADJ RUN	Selector switch **Operating mode**	**RUN**: **ADJ**: **PRG**:	normal mode - no settings possible **AutoSet** function is possible, switching threshold can be adjusted with buttons **+** and **–** menu-driven device setting via display and buttons **+** and **–**
LO DO	Selector switch **Switching output**	**LO**: **DO**:	switching output **light switching**: if throughbeam fiber optics are installed, the switching output is active when the light path is free; if a scanning system is installed, the switching output is active when an object is detected. The status LED illuminates when the switching output is active. switching output **dark switching**: the switching behavior is the inversion of the **light switching** setting.
+ – SET	Control buttons **+** and **–**	Button **+**: Button**–**:	the value in the display is incremented by 1 digit each time the button is pressed. the value in the display is decremented by 1 digit each time the button is pressed. **Note**: If a button is kept pressed, the value in the display is continuously changed in steps of 10.
	Indicator **Transmitting power**	 **H**: **L**:	the **first location on the left** of the display indicates the set transmitting power in operating modes **RUN** and **ADJ** standard sending pulse length (setting **SP-H**) long sending pulse for more range (setting **SP-L**)
	Indicator **Switching threshold**		the **3 locations to the right** of the screen indicate the set switching threshold in operating modes **RUN** and **ADJ** (value range: **000 … 999**). sepending on the setting **LO / DO**, the sensor switches when the set switching threshold value is undershot or overshot.
	Status LED (red) **Switching output state**	LED **ON** LED **OFF**	switching output active. switching output inactive.

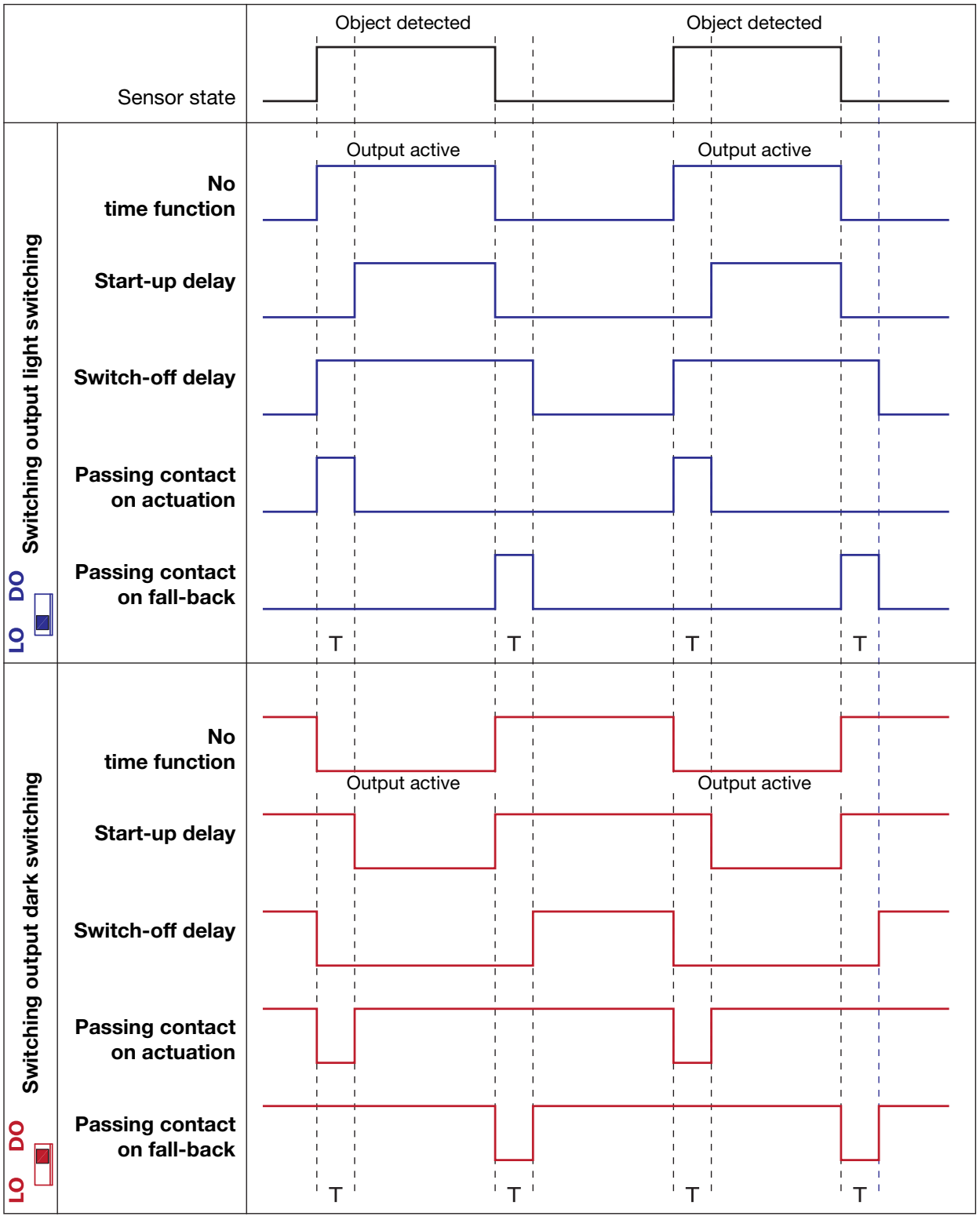
Menu-driven sensor setting

The LV462 can be adjusted to meet customer requirements with a simple menu-driven system.
To do this, set the **selector switch** for the **operating mode** to position **PRG**.

PRG ADJ RUN

	Function (PRG ADJ RUN)	Direction of movement in the menu → on pressing the button				
on pressing the button – Direction of movement in the menu	**Sending pulse length** (Sending pulse)	 short	 long			
	Sending pulse power (Power)	 50 %	 100 %			
	Display brightness (Power save)	 standard	 reduced	 minimum		
	Time function (Delay)	 no time function	 start-up delay	 switch-off delay	 passing contact on actuation	 passing contact on fall-back
	Delay time	 t = 2 ms	 t = 20 ms	 t = 50 ms	 t = 100 ms	 t = 500 ms
		 t = 1 s	 t = 5 s	 t = 10 s		
	Display orientation (Display position)	 standard	 turned by 180°			

Time functions



T is the set **delay time dt-1** … **dt-8**.

Only one of the four possible time functions can be activated at any given time. First select the required function and then assign a delay time to it.

Example: A switch-off delay of 100ms is to be set

1. Select " switch-off delay" time function: 

2. Select "100ms" delay time: 

Adjusting the operating range

Menu functions **sending pulse length** and **sending pulse power** are used to adjust the range.

Setting in the menu:

SP-L / **Po-2** — XLR = 4 x SR — maximum operating/scanning range (extra long range)

SP-L / **Po-1** or **SP-H** / **Po-2** — LR = 2 x SR — medium operating/scanning range (long range)

SP-H / **Po-1** — SR — minimum operating/scanning range (standard range)

Recommended settings:

Application	Type of object	Object size	Operating/scanning range	Range	Configuration
Scanning system	not transparent	any	long	XLR	SP-L / Po-2
	not transparent		medium	LR	SP-L / Po-1 | SP-H / Po-2
	transparent	large, plane	long	XLR	SP-L / Po-2
			medium	LR	SP-L / Po-1 | SP-H / Po-2
Throughbeam system	not transparent	rather large	long	XLR	SP-L / Po-2
	not transparent	small parts	medium	LR	SP-L / Po-1 | SP-H / Po-2
	transparent	any	long	LR	SP-L / Po-1 | SP-H / Po-2
			short	SR	SP-H / Po-1

Adjusting the switching threshold

To set the switching point, the switching threshold must be set.
To set the switching threshold, set the **selector switch** for the **operating mode** to the **ADJ** position.

The switching output is active when

- the switching threshold in the **light switching setting** (**LO**) is **overshot** by the reception signal in the sensor.
- the switching threshold in the **dark switching setting** (**LD**) is **undershot** by the reception signal in the sensor.

Setting the switching threshold using the AutoSet function (based on the example of a scanning system - a throughbeam system is set analogous to this)

Switching output light switching Selector switch **switching output** in position **LO**, Setting to maximum range **SP-L** / **Po-2** 	**Switching output dark switching** Selector switch **switching output** in position **DO**, Setting to maximum range **SP-L** / **Po-2** 
① Place object in light beam. ② Press button **–** and reduce switching threshold to **000**. The red status LED for the switching output is **OFF**. ③ Press button **+** and keep pressed until the red status LED for the switching output is **ON**. Release the button. ④ Ready - the sensor is now set. ④ Check cut-in/cut-out point. Fine adjustment of the switching threshold is possible by briefly pressing button **+** or **–**.	① Place object in light beam. ② Press button **–** and reduce switching threshold to **000**. The red status LED for the switching output is **ON**. ③ Press button **+** and keep pressed until the red status LED for the switching output is **OFF**. Release the button. ④ Ready - the sensor is now set. ④ Check cut-in/cut-out point. Fine adjustment of the switching threshold is possible by briefly pressing button **+** or **–**.
Remarks: The sensor is optimally set when the displayed switching threshold is 50 … 100 digits. If the displayed value is smaller, reduce the range. If the value shown is near to setting limit **999**, then set a higher range.	
If, at a displayed value of **999**, the status LED is not **ON**, then the range is too low. Check the range setting, reduce the object distance.	If, at a displayed value of **999**, the status LED is not **OFF**, then the range is too low. Check the range setting, reduce the object distance.

Manual adjusting of the switching threshold

If the **selector switch** for the **operating mode** is in the **ADJ,** position, the switching threshold can be set manually.

Button **+**: The switching threshold in the display is incremented by 1 digit each time the button is pressed.

Button **+**: The switching threshold in the display is decremented by 1 digit each time the button is pressed.

If a button is kept pressed, the value in the display is continuously changed in steps of 10.