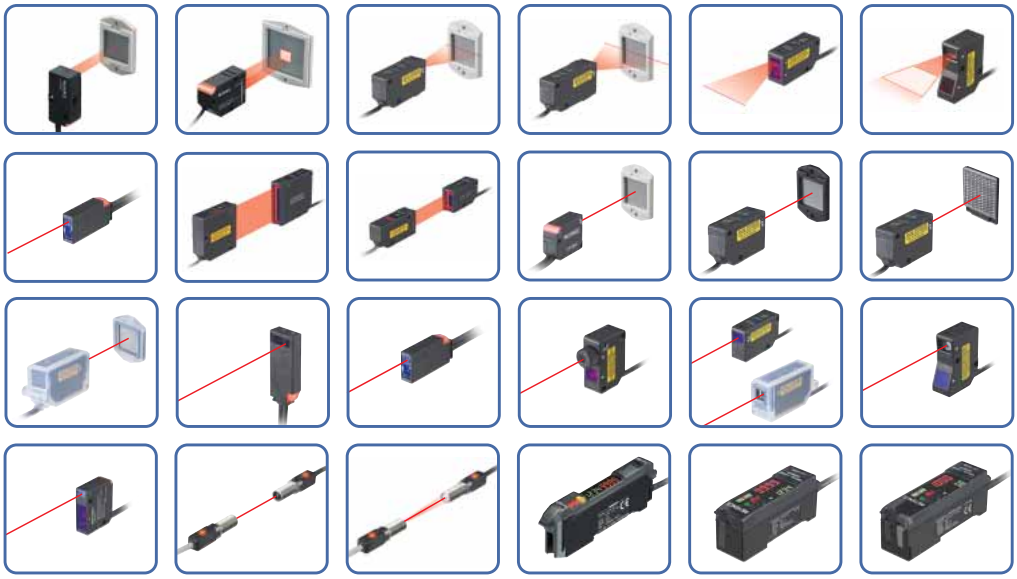
Laser Sensor Catalogue



Choose from the largest selection of laser sensors in the industry!

New laser sensors ➔ P. 6

NEW

Long-distance transparent object detection

Area retro-reflective lasers

KEYENCE

CE

Product composition

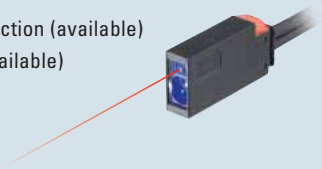
The LV Series are digital laser sensors consisting of both a sensor head and an amplifier.

Please note that the supported amplifier unit depends on the sensor head.

LV-S Series

- Compact size
- Transparent object detection (available)
- Zero datum function (available)

Sensor head



Amplifier

NEW LV-11SB
NEW LV-12SB

LV-H Series

Reflective/Retro-Reflective

- High-power
- Waterproof (available)

Sensor head

Amplifier

LV-21A
LV-22A
LV-20A

LV-H Series

Thru-beam

- 10 mm/30 mm area
- Analogue output

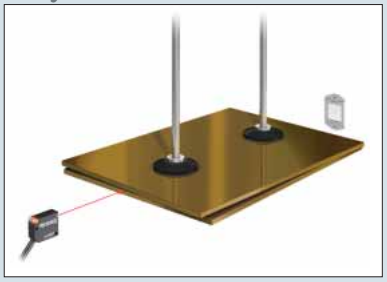
Sensor head

Amplifier

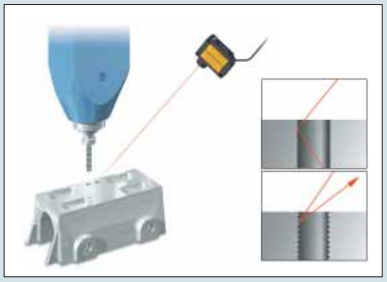
LV-51M
LV-52

Laser sensor features

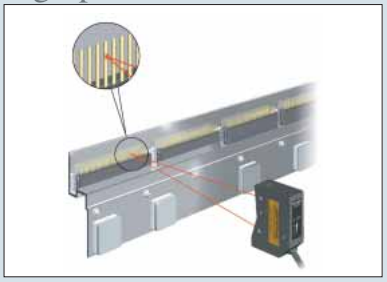
Visible beam allows for easy installation



Stable target detection from remote location



Small beam spot ensures high precision



Ask the Expert
Call us for Details on the LV Series

Product selection guide

Select an LV Series laser sensor according to these selection steps

Step 1	Step 2	Step 3	Step 4
Selecting a beam shape	Method of detection	Specific sensor head	Amplifier

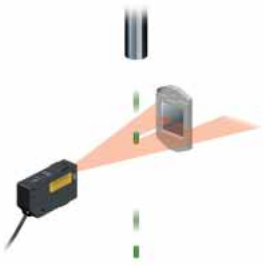
Step 1 Selecting a beam shape

Select a laser sensor head, either an area beam or small beam spot, according to the target that is to be detected.

Area Beam

The shape of the laser beam emitted on the target forms a line.

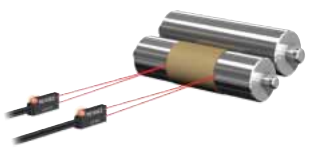
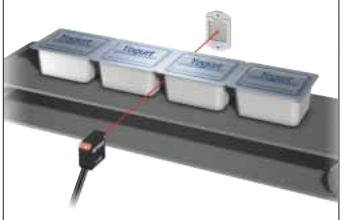
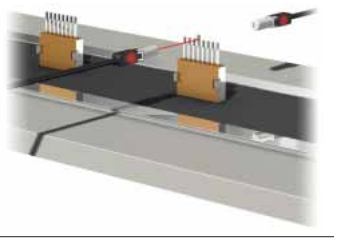
Effective for wide detection ranges, such as when the target's position varies as it passes through the beam.

Type	Area Beam		
	Reflective	Retro-Reflective	Thrubeam
Detecting image			
Page	P.4		

Small Beam Spot

The shape of the laser beam emitted on the work piece forms a small spot.

Effective for highly precise detection of minute targets.

Type	Small Beam Spot		
	Reflective	Retro-Reflective	Thrubeam
Detecting image			
Page	P.5		

Step2 Method of detection

Select either a reflective, retro-reflective, or thrubeam sensor based on the application.

If area beam was selected in Step 1

Area Beam

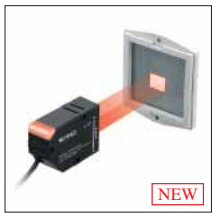
Retro-Reflective P.6

Highly precise target detection with easy installation

Area laser

LV-S62

Long-distance transparent object detection



LV-S63

Long distance

LV-H64

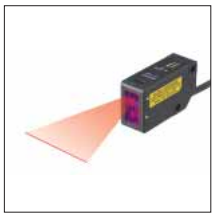
Wide

LV-H65

Reflective P.9

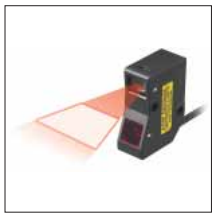
Small size and highly flexible installation

Long distance



LV-H42/H41*

Definite reflective



LV-H47

* LV-H41 is a class1 infrared laser model.

Thrubeam P.10

Unaffected by the target's colour or shape

10mm width

LV-H100

30mm width

LV-H300

High-power 10mm width

LV-H110

Ask the Expert
Call us for Details on the LV Series

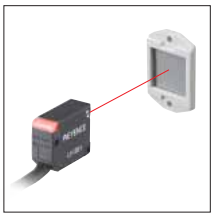
If small beam spot was selected in Step 1

Small Beam Spot

Retro-Reflective P.12

Highly precise target detection with easy installation

Small



LV-S61

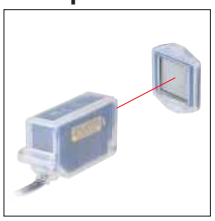
Standard

LV-H62

Long distance (up to 50 m)

LV-H67

Waterproof: IP67

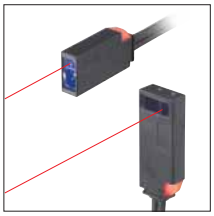


LV-H62F

Reflective P.14

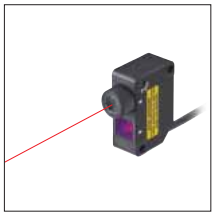
Small size and highly flexible installation

Small (side view)



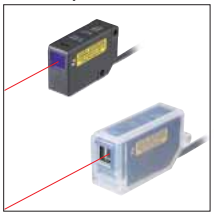
LV-S41 (S41L)

Adjustable beam spot



LV-H32

Coaxial structure (waterproof: IP67)

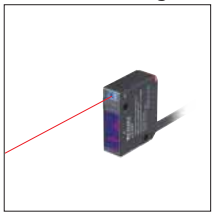


LV-H35 (H35F)

Ultra-small beam spot (diameter: 50 µm)

LV-H37

Adjustable distance setting

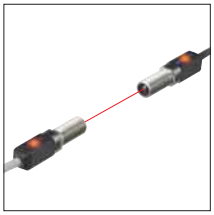


LV-S31

Thrubeam P.16

Unaffected by the target's colour or shape

Small: M6



LV-S71

Small: M6 (with slit)

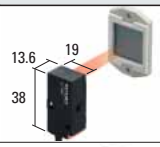
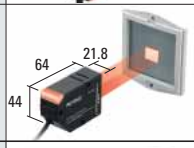
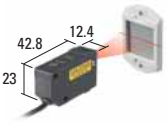
LV-S72

Step 3 Selecting a specific sensor head

Select a sensor head tailored to your application.

If area beam retro-reflective was selected in Step 2

Area Beam Retro-Reflective

Type	Shape (mm)	Detection distance*	Area width (mm)	Model	Supported amplifier	Dimensions diagram
Area Laser		ULTRA : 10m (5m) *1 SUPER : 8m (3.5m) TURBO : 5m (2m) FINE : 2.5m (0.7m)	Area spot: approx. 10 mm Small beam spot: approx. 2 mm (up to 500 m distance)	NEW LV-S62	NEW LV-11SB LV-12SB P.18	P.25
Long-distance transparent object detection		ULTRA : 30m SUPER : 25m TURBO : 15m FINE : 8m	Approx. 8 x 12 mm (up to 3.5 m distance)	NEW LV-S63		P.27
Long-distance area		SUPER : 400~1200mm (600~1500mm) *2 TURBO : 200~850mm (300~1000mm) FINE : 100~500mm (100~700mm)	Approx. 40 (up to 300 mm distance)	LV-H64	LV-21A LV-22A LV-20A P.19	P.35
Wide area		SUPER : 100~200mm (150~350mm) *2 TURBO : 10~150mm (10~250mm) FINE : 100mm (150mm)	Approx. 50 (up to 100 mm distance)	LV-H65		

All models support the P.R.O. function. The polarising filter reduces direct reflected light from a mirrored-surface target.

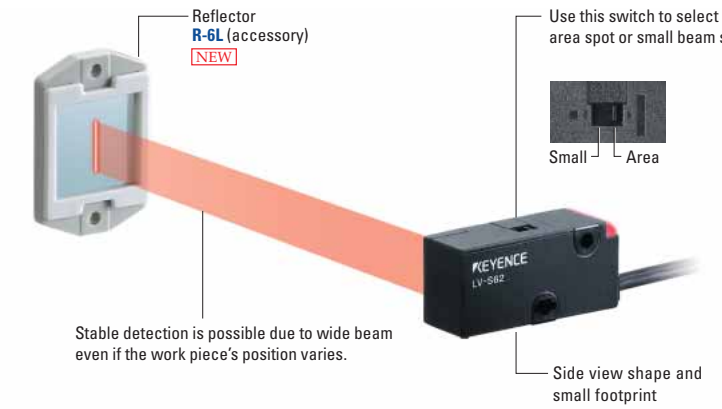
*1 Numbers not enclosed in parentheses are the detecting distance for area spot. Numbers enclosed in parentheses are the detecting distance for small beam spot.

*2 Numbers not enclosed parentheses are the detecting distance when an accessory reflector is used. Numbers enclosed in parentheses are the detecting distance when OP-51428 (sold separately) is used.

Product features

Area Laser NEW

LV-S62

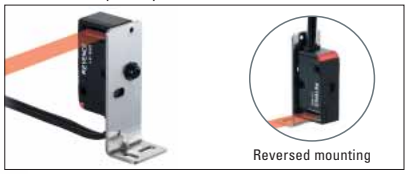


LV-S62 is perfect for transparent object detection. P.8

(Note) We recommend that, when LV-S62 is used for glass detection, the detecting distance be set to 1 m or less.

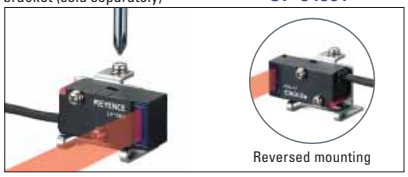
Using all of the mounting brackets allows you to adjust the optical axis right, left, up, and down.

When installing the rear mounting bracket (sold separately) **OP-84350**



When installing the rear mounting bracket (sold separately) **OP-84349**

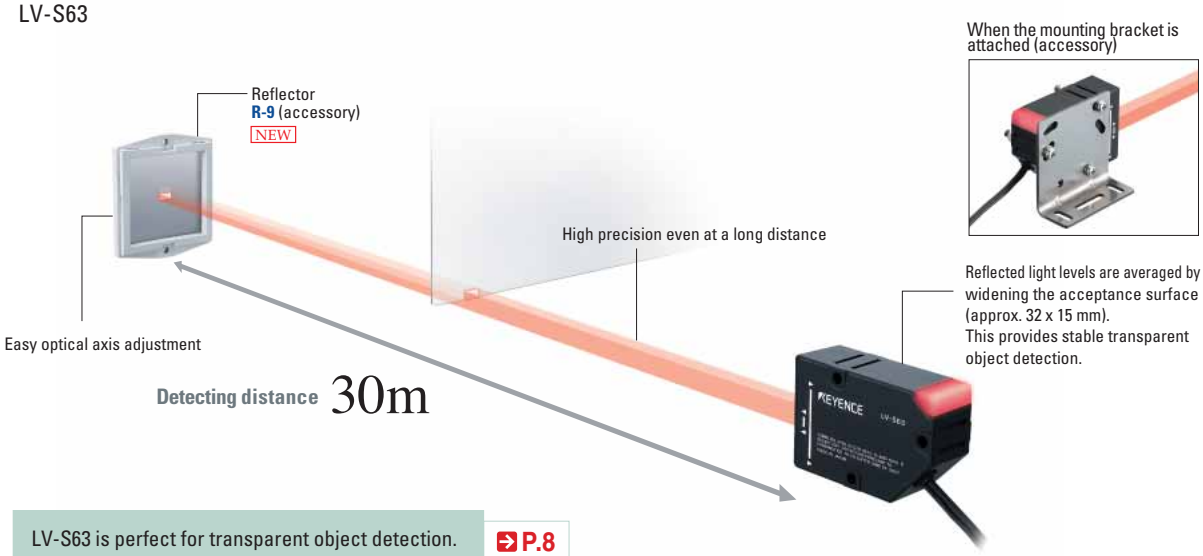
When installing the rear mounting bracket (sold separately) **OP-84351**



Be sure to use the dedicated mounting brackets because optical axis adjustment is required.

Long-Distance Transparent Object Detection NEW

LV-S63

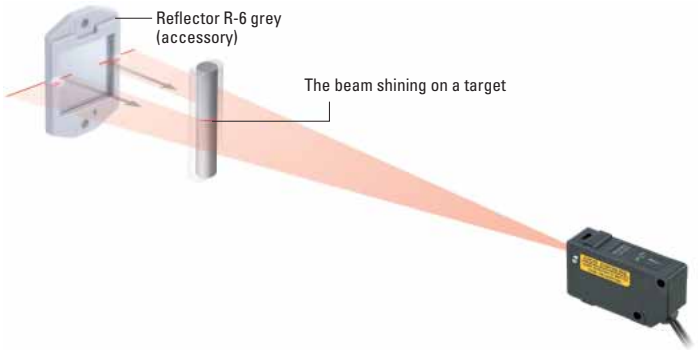


LV-S63 is perfect for transparent object detection. P.8

(Note) We recommend that, when LV-S63 is used for glass detection, the detecting distance be set to 3.5 m or less.

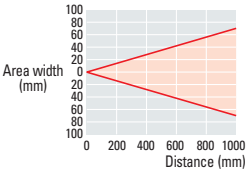
Long-Distance Area

LV-H64



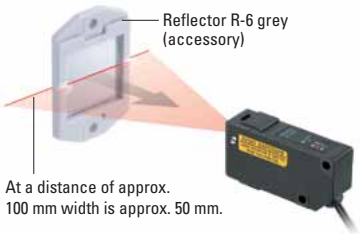
When the mounting bracket is attached (accessory)

Detection distance – area width characteristics (typical example)



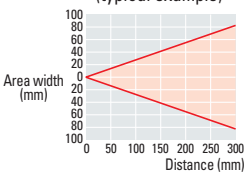
Wide Area

LV-H65

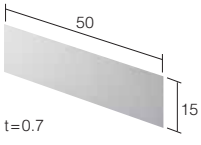


When the mounting bracket is attached (accessory)

Detection distance – area width characteristics (typical example)



Options for LV-H64 and H65

Name	Reflective tape (sold separately)
Model	OP-51428
Shape	

What sets the LV-S62/LV-S63 apart from conventional sensors for transparent object detection?

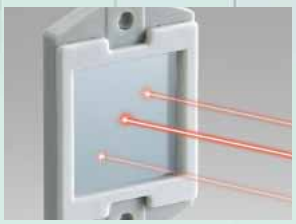
Beam Shape

Area Laser

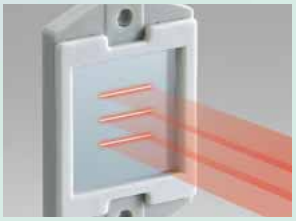
Area beams are excellent for detecting targets with gaps.

Unlike small beam spots, area beams are less affected by vibrating targets or backgrounds.

LV-S63 also spreads the spot's depth (8 x 12 mm) to provide more stability.



Small spot
Large light quantity variation if position shifts



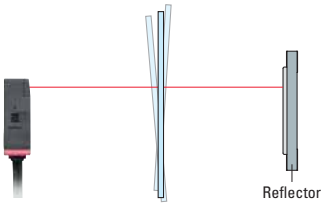
Area beam
Small light quantity variation even if position shifts

Laser Beam

High-frequency superimposition drive circuit

Can stably detect vibrating/inclining transparent targets

Due to the characteristics of lasers, the slightest incline of a transparent target can cause light diffraction resulting in unstable detection. The newly-developed laser drive circuit found in the LV-S62 and LV-S63 compensates for this phenomenon.



Whereas most lasers use asingle wavelength, the LV-S62/S63 uses high-frequency superimposition technology to take a wide range of wavelengths. This has enabled the practical elimination of transparent quantity changes.

Amplifier

World's first zero datum function

The amplifier cancels light quantity variation.

The zero datum function always monitors the received light quantity when there is no transparent object and keeps the displayed value at 0 (light quantity variation cancellation). If a transparent object is input, the function displays the difference. This makes it very easy for the LV series amplifier to stably detect transparent targets.

(Patent pending)

Amplifier unit
LV-11SB/12SB
NEW

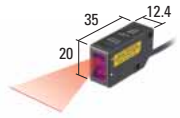
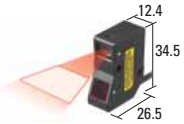
Ask the Expert
Call us for Details on the LV Series

Step 3 Selecting a specific sensor head

Select a sensor head tailored to your application.

If area beam reflective was selected in Step 2

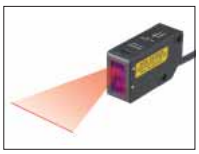
Area Beam Reflective

Type	Shape (mm)	Detecting distance (mm)	Area width (mm)	Model	Connectable amplifier	Dimensional outline drawing
Long Distance		SUPER : 1000 TURBO : 500 FINE : 250	Approx. 48x0.4 (at 200 mm distance)	LV-H42	LV-21A LV-22A LV-20A P.19	P.34
Definite reflective		55~85 * Common in all power modes	Approx. 21x0.7 (at 70 mm distance)	LV-H47		P.33

Product features

Long Distance

LV-H42



When the mounting bracket is attached (accessory)

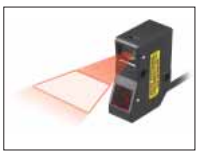
Slit (accessory)

Lens (sold separately)

LV-L01

Definite Reflective

LV-H47



When the mounting bracket is attached (accessory)

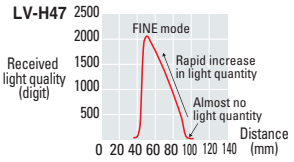
Slit (accessory)

Lens (sold separately)

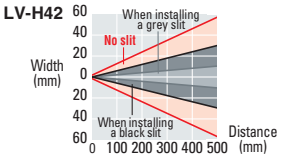
LV-L02

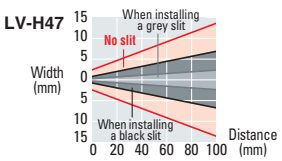
Characteristics figure

Characteristics of received light quantity and distance (typical example)



Characteristics of detecting distance and area width (typical example)





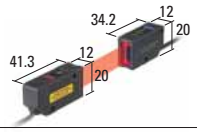
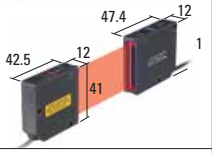
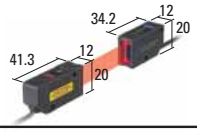
Ask the Expert
Call us for Details on the LV Series

Step 3 Selecting a specific sensor head

Select a sensor head tailored to your application.

If area spot thrubeam was selected in Step 2

Area Spot Thrubeam

Type	Detecting width (mm)	Shape (mm)	Detecting distance (mm)	Area width (mm)	Model	Connectable amplifier	Dimensional outline drawing
Standard	10		2000 * Common in all power modes	Approx. 12	LV-H100	LV-51M LV-52 P.19	P.37
	30			Approx. 32	LV-H300		
High powered	10			Approx. 12	LV-H110		

Product features

Standard /High Power (10 mm wide)

LV-H100/110

When the mounting bracket is attached (accessory)

LV-B101 (Mounted vertical)

(2 Brackets To 1 Set)

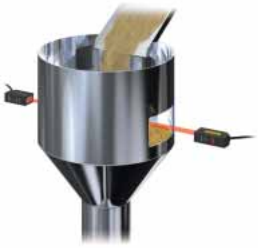
When the mounting bracket is attached (accessory)

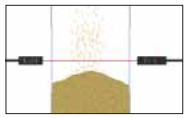
LV-B102 (Mounted horizontal)

(2 Brackets To 1 Set)

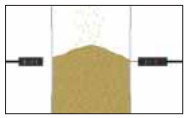
Example using the LV-H110

LV-H110 is a sensitivity-improved type of LV-H100. LV-H110 detects only workpieces that completely interrupt light.





OFF: Ignores small workpieces.



ON: Responds to work pieces with complete light interruption

Standard (30 mm wide)

LV-H300

When the mounting bracket is attached (accessory)

LV-B301 (Mounted vertical)

(2 Brackets To 1 Set)

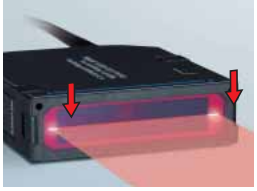
When the mounting bracket is attached (accessory)

LV-B302 (Mounted horizontal)

(2 Brackets To 1 Set)

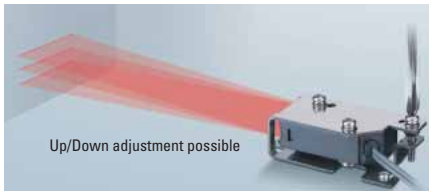
Easy optical axis adjustment via visible beam

You can clearly see beam because a light diffuser sheet is inserted into the end of the receiver. This makes optical axis adjustment extremely easy.



Mounting brackets provide beam position adjustment.

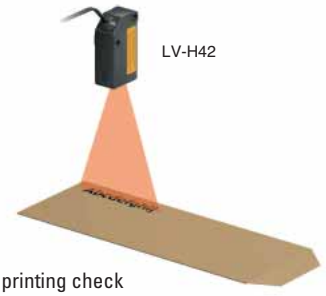
Two types of mounting brackets are available: Brackets for mounting vertical and brackets for mounting horizontal. Be sure to use the dedicated mounting bracket.



Application

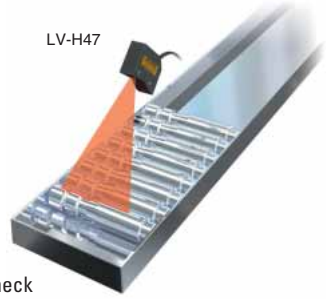
Area spot

Long distance, area detection



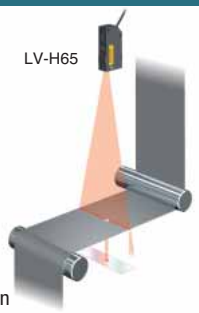
Envelope printing check

Area detection, definite-reflective



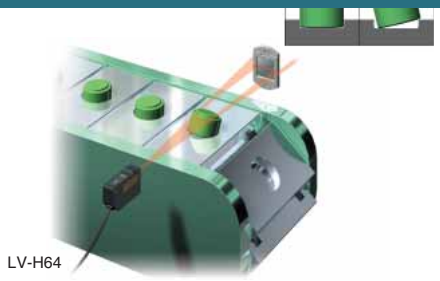
Shaft arrival check

Area retro-reflective (wide)



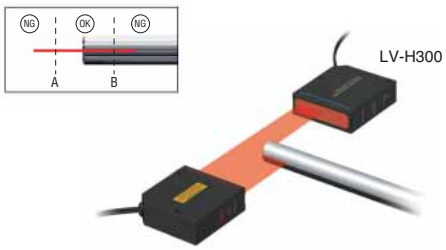
Sheet break detection

Area retro-reflective (long distance)



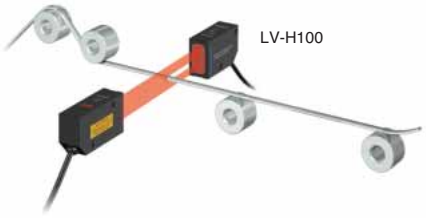
Workpiece not inserted properly

Area thrubeam (30 mm wide)



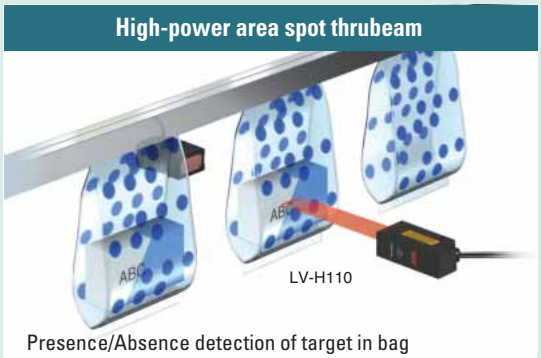
Workpiece location detection

Area thrubeam (10 mm wide)



Cotton looseness/cut detection

High-power area spot thrubeam



Presence/Absence detection of target in bag

High-power area spot thrubeam

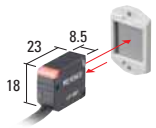
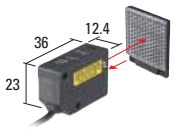
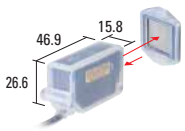
Seal number counting

Step 3 Selecting a specific sensor head

Select a sensor head tailored to your application.

▶ If small beam spot retro-reflective was selected in Step 2

Small Beam Spot Retro-Reflective

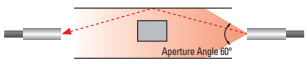
Type	Shape (mm)	Detection distance (m)	Spot diameter (mm)	Model	Connectable amplifier	Dimensional outline drawing
Small		ULTRA : 2 SUPER : 1.5 TURBO : 1 FINE : 0.75 HSP : 0.5	Approx. ø2.5 (Up to 0.5m distance)	LV-S61	NEW LV-11SB LV-12SB P.18	P.29
Standard		SUPER : 7 TURBO : 5 FINE : 2	Approx. ø1.5 (Up to 1 m distance)	LV-H62	LV-21A LV-22A LV-20A P.19	P.32
Long distance (up to 50 m)		SUPER : 30* TURBO : 30 FINE : 20 * Use OP-42198: 50m	Approx. 50 x 15 (At 10 m distance)	LV-H67		P.32
Waterproof: IP67		SUPER : 5 TURBO : 3.5 FINE : 1.5	Approx. ø2 (At 2 m distance)	LV-H62F		P.32

*All models support the P.R.O. function. The polarizing filter reduces direct reflected light from a mirrored-surface work piece.

Difference from fibre sensor

Fibre sensor

Normal through-beam type



Beam bends behind

The fibre sensor is affected by the surrounding environment because beam is widely spread.

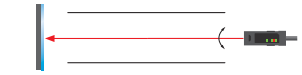
Narrow-beam through-beam type

Difficult to adjust optical axis

It is difficult to adjust the optical axis because beam is invisible.

Laser sensor

Straight-beam, retro-reflective type



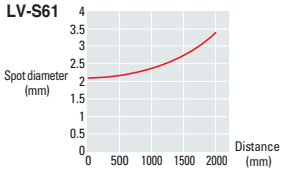
Solution

Optical axis adjustment is easy because the laser sensor is not affected by the surrounding environment.

Characteristics figure

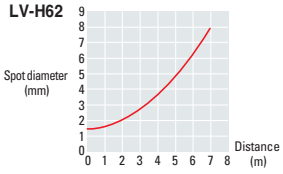
Characteristics of detecting distance and spot diameter (typical example)

LV-S61



Characteristics of detecting distance and spot diameter (typical example)

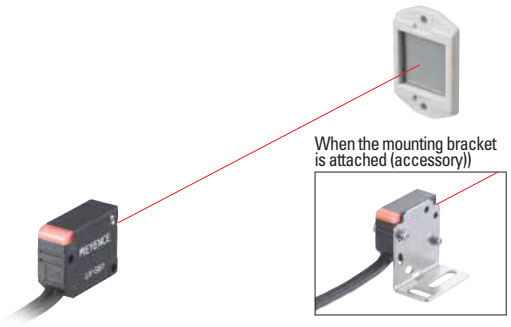
LV-H62



Product features and mounting brackets

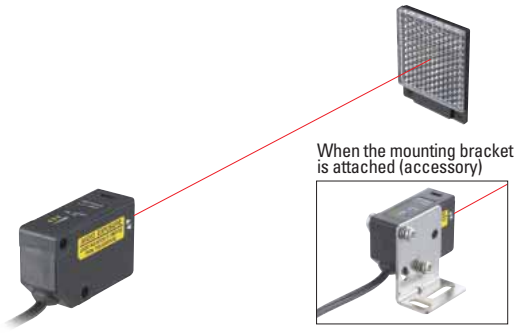
Small

LV-S61



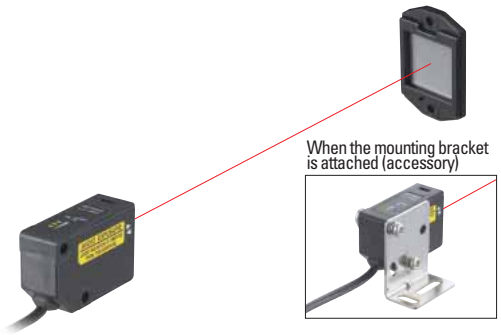
Long Distance (upto 50m)

LV-H67



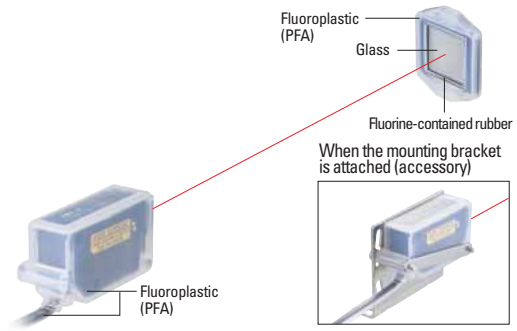
Standard

LV-H62



Waterproof: IP67

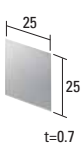
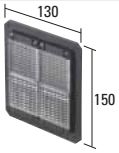
LV-H62F



Reflector (accessory)

Type	Reflector				
Model	OP-51430 (R-6 grey)	R-6	R-7	OP-95388 (R-2)	R-8
Accessory model	LV-S61	LV-H62		LV-H67	LV-H62F
Shape					
Dimensions	P.29	P.32	P.32	P.33	P.32

Reflector (option)

Type	Reflective tape	Reflector
Model	OP-42197	OP-42198
Supported model	LV-S61/H62	LV-H67
Shape		
Dimensions	–	P.33

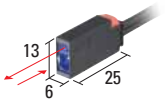
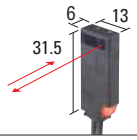
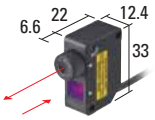
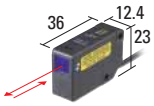
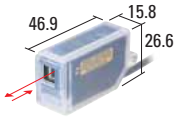
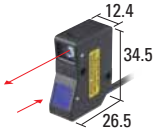
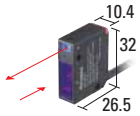
* The detecting distance remains unchanged even if the reflective tape is used.

Step 3 Selecting a specific sensor head

Select a sensor head tailored to your application.

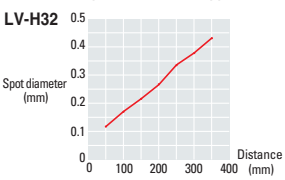
▶ If small beam spot reflective type is selected in Step 2

Small Beam Spot Reflective

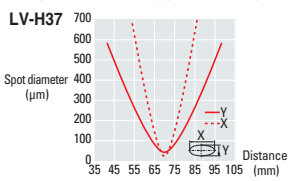
Type	Shape (mm)	Detection distance (mm)	Spot diameter (mm)	Model	Connectable amplifier	Dimensional outline drawing
Small		ULTRA : 500 SUPER : 400 TURBO : 300 FINE : 200 HSP : 150	Approx. ø1.2 (Up to 500 mm distance)	LV-S41	NEW LV-11SB LV-12SB P.18	P.29
Small side view		ULTRA : 400 SUPER : 320 TURBO : 240 FINE : 160 HSP : 120	Approx. ø1.2 (Up to 400 mm distance)	LV-S41L		
Adjustable beam spot		SUPER : 1000 TURBO : 500 FINE : 250	ø0.8 or less (Up to 300 mm distance)	LV-H32	LV-21A LV-22A LV-20A P.19	P.33
Coaxial structure		SUPER : 600 TURBO : 300 FINE : 150	Approx. ø2 (Up to 600 mm distance)	LV-H35		P.32
Waterproof: IP67		SUPER : 450 TURBO : 200 FINE : 100	Approx. ø2 (Up to 450 mm distance)	LV-H35F		P.32
Ultra-small beam spot		70±15 * Common in all power modes	Approx. 50µm (At 70 mm distance)	LV-H37		P.33
Small adjustable distance setting		Adjustment range*: 50 to 200 * Range in which the reference distance can be adjusted without reference to the response time	Approx. ø2 (Up to 200mm distance)	LV-S31	NEW LV-11SB LV-12SB P.18	P.28

Characteristics figure

Characteristics of detecting distance and minimum spot diameter (typical example)



Characteristics of setting distance and spot diameter (typical example)

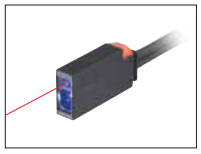


Ask the Expert
Call us for Details on the LV Series

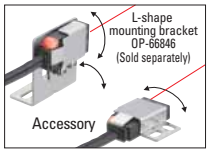
Product features and mounting brackets

Small

LV-S41 (S41L)



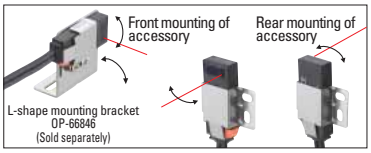
When the mounting bracket is attached



Small Side-View

LV-S41L

When the mounting bracket is attached



Adjustable Beam Spot

LV-H32

When the mounting bracket is attached (accessory)

Adjustable by hand

Spot adjustment can be easily made by turning the focus ring by hand.

Also lockable

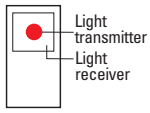
It is safe because of the lens position lock feature.

Coaxial Structure

LV-H35

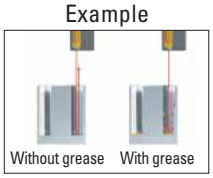
When the mounting bracket is attached (accessory)

Coaxial structure



Front view

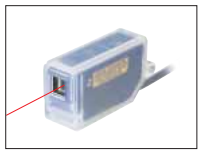
Example



With the coaxial structure, the LV-H35 can receive reflected light even from a small gap.

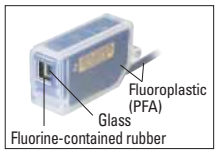
Waterproof: IP67

LV-H35F



When the mounting bracket is attached (accessory)

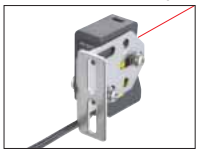
Material



Ultra-small Beam Spot (50μm)

LV-H37

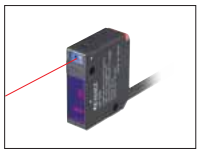
When the mounting bracket is attached (accessory)



The supplied magnifying glass enables users to check the beam spot position.

Small Adjustable Distance Setting

LV-S31



When the mounting bracket is attached (accessory)

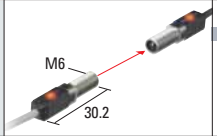
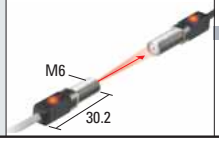
Ask the Expert
Call us for Details on the LV Series

Step 3 Selecting a specific sensor head

Select a sensor head tailored to your application.

If small beam spot thrubeam type is selected in Step 2

Small Beam Spot Thrubeam

Type	Shape (mm)	Detection distance (mm)	Spot diameter (mm)	Model	Connectable amplifier	Dimensional outline drawing
Small beam spot		500mm * in all power modes	Approx. ø1.2 (Up to 500 mm distance)	LV-S71	NEW LV-11SB LV-12SB P.18	P.30
Step differentiation		500mm * in all power modes	Approx. ø6 (At 500 mm distance)	LV-S72		

Product features

Small Beam Spot

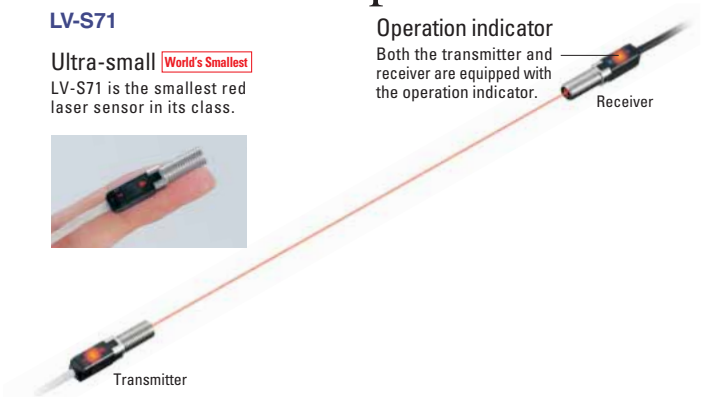
LV-S71

Ultra-small World's Smallest

LV-S71 is the smallest red laser sensor in its class.

Operation indicator

Both the transmitter and receiver are equipped with the operation indicator.



Standard mounting bracket (accessory)

Small type mounting bracket (option)

OP-66869

The optical axis can be adjusted from above.

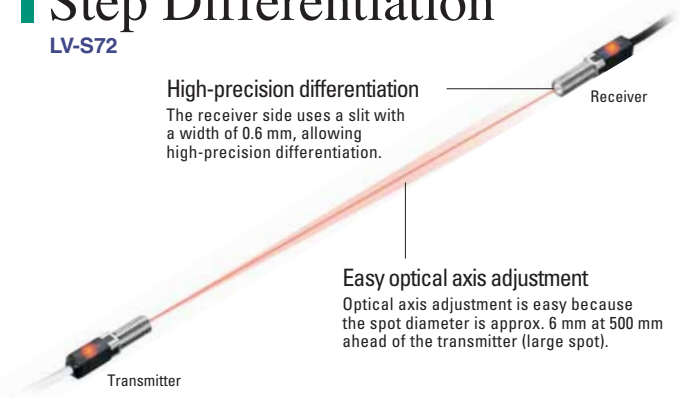
Each symmetrical mounting bracket (two sets)

Step Differentiation

LV-S72

High-precision differentiation

The receiver side uses a slit with a width of 0.6 mm, allowing high-precision differentiation.

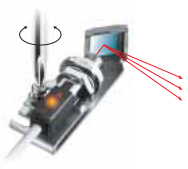


Easy optical axis adjustment

Optical axis adjustment is easy because the spot diameter is approx. 6 mm at 500 mm ahead of the transmitter (large spot).

Side viewer attachment (option)

LV-F1



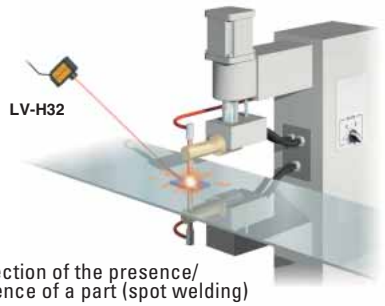
The optical axis can be adjusted from above.

(2 Brackets To 1 Set)

Application

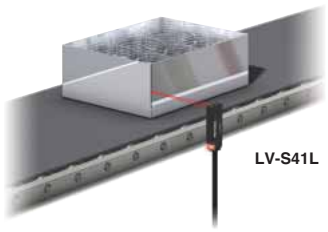
Small beam spot

Small beam spot reflection (adjustable beam spot)



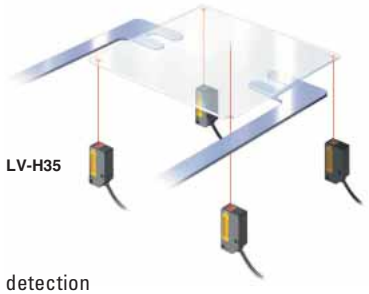
Detection of the presence/
absence of a part (spot welding)

Small beam spot reflection (side view)



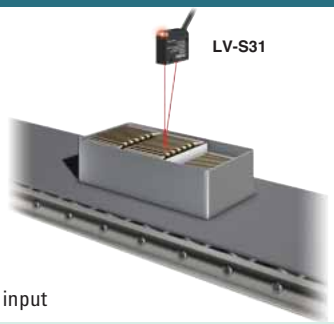
Rack stop position detection

Small beam spot reflective (coaxial structure)



Glass detection

Small beam spot reflective (distance setting)

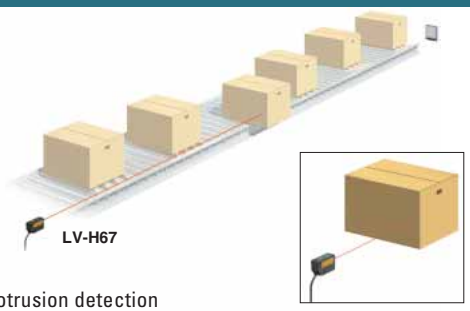


Counter input

Small beam spot retro-reflective (small)

Detection of work pieces remaining in the mold.

Small beam spot retro-reflective (long distance)

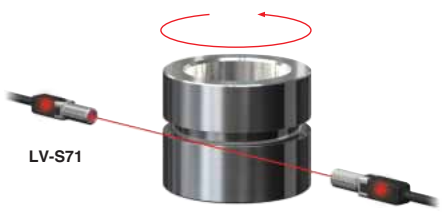


Protrusion detection

Small beam spot thrubeam (small, M6)

Floating cover detection

Small beam spot thrubeam (small, M6)



De-burr checking

Step 4 Selecting an amplifier

When using one amplifier, select the main unit. When using two or more amplifiers, select one main unit and one or more expansion units.

▶ If the LV-S series is selected in Step 3

LV-S Series

The main unit comes with an amplifier mounting bracket.
The expansion unit comes with an end unit.

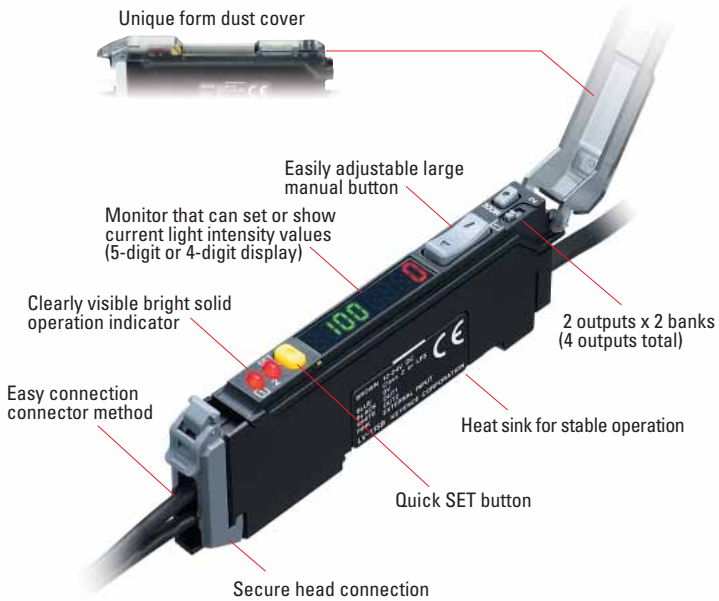
Type	Shape (mm)	Number of ON/OFF outputs	External input *	Model		Dimensions
				NPN output	PNP output	
Main unit		2	1	NEW LV-11SB	NEW LV-11SBP	P.31
Expansion unit		2	1	NEW LV-12SB	NEW LV-12SBP	

* For external input, select "light emission stop", "tuning", "set value bank selection" or "received light quantity shift."
Up to 16 expansion units can be installed to one main unit.

Connectable sensor heads

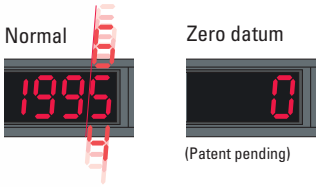
Reflective	LV-S41, LV-S41L, LV-S31
Retro-Reflective	LV-S61, LV-S62, LV-S63
Thrubeam	LV-S71, LV-S72

Part names and features



The LV-S series comes with the world's first zero datum function.

Usually* the first digit of the digital display will drift when there is no workpiece. The zero datum function* clears the display to 0, eliminating this drifting status. (Returning to the nominal display when light is interrupted)



(Patent pending)

[Supplement]
Datum means reference. Zero datum is a function that changes the light quantity display to 0 when there is on work piece at 0 reference.

*When the retro-reflective type or thrubeam type is used

Popular DSC function

The LV-S series comes with the DSC function.

Ask the Expert
Call us for Details on the LV Series

If the LV-H series is selected in Step 3

LV-H Series
Reflective or Retro-Reflective

The main unit comes with an amplifier mounting bracket.
The expansion unit comes with an end unit.

Type*1	Shape (mm)	Number of ON/OFF outputs	External calibration input *2	Laser emission stop input *2	Analog output	Model		Dimensions
						NPN output	PNP output	
Main unit		2	1	1	0	LV-21A	LV-21AP	P.36
Expansion unit		2	0	0	0	LV-22A	LV-22AP	

*1. The LV-20A is also available to supports the zero line. (It does NOT have a cable for power or outputs).
*2 external inputs on the expansion units can be used for calibration. However, laser emission stop input cannot be used on the expansion units.
Up to seven additional expansion units can be installed for each main unit.

Connectable sensor heads

Reflective	LV-H32, LV-H35, LV-H35F, LV-H37, LV-H42, LV-H47
Retro-Reflective	LV-H62, LV-H67, LV-H62F, LV-H64, LV-H65

Amplifier unit for invisible infrared LV-H41

The amplifier unit comes with the amplifier mounting bracket.

Type	Shape (mm)	Number of ON/OFF outputs	External calibration input	Laser emission stop input	Analog output	Model	Dimensions
						NPN output	
Main unit		2	1	1	0	LV-11A	P.36

(Note) Only the LV-H41 and LV-H51 can be used with the LV-11A amplifier.

LV-H Series Thrubeam

The main unit comes with an amplifier mounting bracket.
The expansion unit comes with an end unit.

Type	Shape (mm)	Number of ON/OFF outputs	External calibration input	Laser emission stop input *1	Analog output	Model		Dimensions
						NPN output	PNP output	
Main unit		2	0	1	1	LV-51M	LV-51MP	P.39
Expansion unit		2	0	0	0	LV-52	LV-52P	

*1. Laser emission stop input on the main unit only.
Up to seven additional expansion units can be installed for each main unit.

Connectable sensor heads

Through-beam type	LV-H100, LV-H300, LV-H110

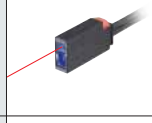
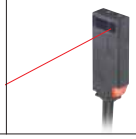
Specifications

Straight-Beam, Retro-Reflective

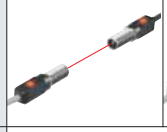
Type		Small beam spot	Area beam	Long-distance transparent object
Model		LV-S61	NEW LV-S62	NEW LV-S63
Shape				
Light source		Visible light semiconductor laser		
Detecting distance*	ULTRA	2m	10m (5m)	30m
	SUPER	1.5m	8m (3.5m)	25m
	TURBO	1m	5m (2m)	15m
	FINE	0.75m	2.5m (0.7m)	8m
	HSP	0.5m	—	—
Ambient temperature used		–10 to +50°C		
Material	Case	Glass reinforced plastic		
	Lens cover	Acrylic		
	Reflective mirror	Polycarbonate, acrylic		
Weight		Approx. 70 g	Approx. 65 g	Approx. 110 g
Dimensions		P.29	P.25	P.26

* The parentheses indicate the detecting distance when the small beam spot is used.

Reflective

Type		Small	Small side view	Adjustable distance definite reflective
Model		LV-S41	LV-S41L	LV-S31
Shape				
Light source		Visible light semiconductor laser		
Detecting distance	ULTRA	500mm	400mm	50~200mm (adjustment range)
	SUPER	400mm	320mm	
	TURBO	300mm	240mm	
	FINE	200mm	160mm	
	HSP	150mm	120mm	
Ambient temperature used		–10 to +50°C		0 to 50°C
Material	Case	Glass reinforced plastic		
	Lens cover	Acrylic		
	Reflective mirror	Polycarbonate, acrylic		
Weight		Approx. 70 g		Approx. 75 g
Dimensions		P.28	P.29	P.38

Thrubeam

Type		Small standard	Small (with slit)
Model		LV-S71	LV-S72
Shape			
Light source		Visible light semiconductor laser	
Detecting distance	ULTRA	500mm	
	SUPER		
	TURBO		
	FINE		
	HSP		
Ambient temperature used		–10 to +50°C	
Material	Case	Glass reinforced plastic	
	Lens cover	Acrylic	
	Reflective mirror	Polycarbonate, acrylic	
Weight		Approx. 70 g	
Dimensions		P.30	P.30

Type	Side-view attachment for thrubeam	
Model	LV-F1	
Shape		
Applicable head	LV-S71	LV-S72
Detecting distance	250mm	400mm
Ambient temperature used	–10 to +50°C (No condensation)	
Material	Metal part: Stainless steel Mirror part: Glass	
Vibration	10 to 55 Hz, double amplitude: 1.5 mm, 2 hours in each of X, Y and Z axis directions	
Weight	Approx. 22 g	
Dimensions	P.30	

Contains a symmetrical mounting bracket (two in total).

Type	Compact mounting bracket for thrubeam	
Model	OP-66869	
Shape		
Applicable head	LV-S71	LV-S72
Detecting distance	500mm	
Ambient temperature used	–10 to +50°C (No condensation)	
Material	Metal part: Stainless steel	
Vibration	10 to 55 Hz, double amplitude: 1.5 mm, 2 hours in each of X, Y and Z axis directions	
Weight	Approx. 14 g	
Dimensions	P.30	

Contains a symmetrical mounting bracket (two in total).

Laser specifications

Sensor head	LV-S31/S41/S41L/S61/S71/S72	NEW LV-S62/S63
Wavelength	655nm	660nm
Maximum output	350μW	315μW
FDA class*	Class 1	
IEC class	Class 1	
JIS class	Class 1	

* IEC60825-1 based classification is made according to FDA (CDRH) Laser Notice No. 50 Regulations.

LV-S Series

Amplifier

Type		Main unit	Expansion unit (1 line)
Model*1	NPN output	NEW **LV-11SB**	NEW **LV-12SB**
	PNP output	NEW **LV-11SBP**	NEW **LV-12SBP**
Shape			
Response time	Except **LV-S31**	HSP: 80 µs FINE: 250 µs TURBO: 500 µs SUPER: 2 ms ULTRA: 4ms (LV-S62 and LV-S63 cannot select HSPmode.)	
	LV-S31 standard mode	SPED 1:500 µs SPED 2:2ms SPED 3:8ms SPED 4:32ms	
	LV-S31 high-speed mode	250 µs	
Control output		NPN(PNP) open-collector x 2 ch 40 VDC (30 V) or lower 100 mA max. per output	
Control input		Light emission stop input, external calibration, set value bank selection input, or shift input	
Number of interference preventive units*2		Power mode: HSP — Number of units: None; FINE/TURBO — 2 units; SUPER/ULTRA — 4 units	
Expansion of unit*3		Up to 16 expansion units can be installed (17 units including the main unit)	
Rating	Power supply voltage*4	12 to 24 VDC ripple (P-P) 10% max. Class 2	
	Power consumption	Normal: 1.5 W max. (62.5 mA max. for 24 V)	
		Eco Half / Eco All: 1.35 max. (57.3 mA max. for 24 V)	
Ambient temperature used*3		–10 to +50°C (No condensation)	
Vibration		10 to 55 Hz, 1.5-mm double amplitude, 2 hours for each X, Y, and Z axis	
Material		Main body, cover: Polycarbonate	
Weight (including 2-m cable)		Approx. 80 g	
Dimensions		P.31	

*1. LV-S62 and LV-S63 can ONLY be used with amplifiers ending with B or BP.

*2. Numbers for the LV-S31 are four in standard mode and two in high-speed mode.

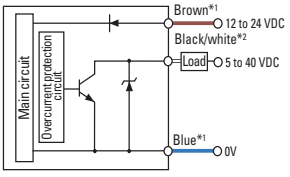
*3. To connect several units they must be mounted on a METAL DIN rail. Ensure that the output current is 20mA max. With several units connected, the allowable ambient temperature range varies as follows:
1 to 2 units conneted: -10 to +55°C
3 to 10 units conneted: -10 to +50°C
11 to 16 units conneted: -10 to +45°C

*4. When more than 8 units connected, be sure to use supply voltage 24 VDC Ripple (P-P) 10% max.

Input/Output Circuits

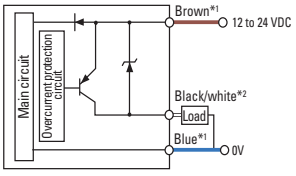
Output circuit

LV-11SB/12SB



*1. The LV-11SB only
*2. Black: Control output 1, white: Control output 2

LV-11SB/12SB

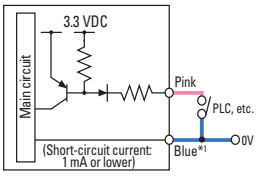


*1. The LV-11SBP only
*2. Black: Control output 1, white: Control output 2

Input circuit

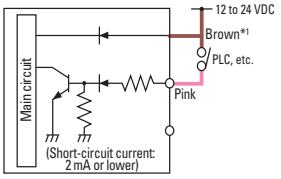
Laser emission stop input/External calibration input/Setting value bank selection input/Received light intensity shift input

LV-11SB/12SB



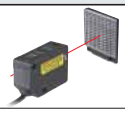
* The **LV-11SB** only

LV-11SBP/12SBP



* The **LV-11SBP** only

Straight-Beam, Retro-Reflective

Type		Small beam spot	High power
Model		LV-H62	LV-H67
Shape			
FDA class		Class II	
IEC class		Class 2	
Light source		Visible light semiconductor laser Wavelength: 650 nm	
Detecting distance	FINE	2m	20m
	TURBO	5m	30m
	SUPER	7m	30m*1
Ambient temperature used		–10 to +55°C (No condensation)	
Material	Case	Glass reinforced plastic	
	Lens cover	Transparent plastic*2	
	Reflective mirror	Polycarbonate, Acrylic	ABS plastic, Acrylic
Weight		Approx. 45 g	
Dimensions		P.32	

*1 The detecting distance is 50 m when **OP-42198** is used.
*2 Norbornene plastic or acrylic

Small Beam Spot

Type		Straight-beam coaxial	Adjustable beam spot	Ultra-small beam spot
Model		LV-H35	LV-H32	LV-H37
Shape				
FDA class		Class II		
IEC class		Class 2		
Light source		Visible light semiconductor laser Wavelength: 650 nm		
Detecting distance	FINE	150mm	250mm	70±15mm
	TURBO	300mm	500mm	
	SUPER	600mm	1000mm	
Ambient temperature used		–10 to +55°C (No condensation)		
Ambient humidity used		35% to 85% RH (No condensation)		
Material	Case	Glass reinforced plastic*1		
	Lens cover	Transparent plastic	Acrylic*2	Glass*2
Weight		Approx. 45 g		
Dimensions		P.32	P.33	

*1 Norbornene plastic or acrylic
*2 The **LV-H32** and the **LV-H37** receivers are polyarylate

Area Beam, Retro-Reflective

Type		Long distance	Wide
Model		LV-H64	LV-H65
Shape			
FDA class		Class II	
IEC class		Class 2	
Light source		Visible light semiconductor laser Wavelength: 650 nm	
Detecting distance	FINE	100 to 500 mm (100 to 700 mm)	100mm (150 mm)
	TURBO	200 to 850 mm (300 to 1000 mm)	10 to 150 mm (10 to 250 mm)
	SUPER	400 to 1200 mm (600 to 1500 mm)	100 to 200 mm (150 to 350 mm)
Ambient temperature used		–10 to +55°C (No condensation)	
Material	Case	Reinforced glass/plastic	
	Lens	Norbornene plastic	
	Reflective mirror	Polycarbonate, acrylic	
Weight		Approx. 45 g	
Dimensions		P.35	

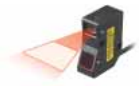
* The parentheses indicate the detecting distance when **OP-51428** is used.

Waterproof (IP67)

Type		Straight-beam coaxial	Retro-reflective
Model		LV-H35F	LV-H62F
Shape			
FDA class		Class II	
IEC class		Class 2	
Light source		Visible light semiconductor laser Wavelength: 650 nm	
Detecting distance	FINE	100 mm	1.5 m
	TURBO	200 mm	3.5 m
	SUPER	450 mm	5 m
Ambient temperature used		–10 to +55°C (No condensation)	
Ambient humidity used		35% to 85% RH (No condensation)	
Material	Case	Fluoroplastic (PFA)	
	O-ring	Fluororubber	
	Lens cover	Glass	
Weight		Approx. 80 g	Approx. 100 g
Dimensions		P.32	

* The cable minimum bend radius is 25mm.

Area Beam

Type		Area definite reflective	Long-distance area	
Model		LV-H47	LV-H42	LV-H41
Shape				
FDA class		Class II		Class I
IEC class		Class 2		Class 1
Light source		Visible light semiconductor laser Wavelength: 650 nm		Invisible light semiconductor laser Wavelength: 785 nm
Detecting distance	FINE	55~85mm	250mm	
	TURBO		500mm	
	SUPER		1000mm	
Ambient temperature used		–10 to +55°C (No condensation)		
Ambient humidity used		35% to 85% RH (No condensation)		
Material	Case	Glass reinforced plastic		
	Lens cover	Glass*1	Polyarylate	
Weight		Approx. 45 g		
Dimensions		P.35		

*1. The receiver is polyarylate.

LV-H Series

Amplifier Specifications (for reflective/retro-reflective sensor heads)

Model	NPN Output	LV-21A	LV-22A	LV-20A	LV-11A(dedicated to LV-H41)
	PNP Output	LV-21AP	LV-22AP	—	
Shape					
Main unit / Expansion unit		Main unit	Expansion unit (1 line)	Expansion unit (0 line)	Main unit
Response speed		FINE: 80 µs/ TURBO: 500 µs/ SUPER TURBO: 4 ms		280 µs to 4.7 ms	FINE: 500 µs/ TURBO: 2 ms/ SUPER TURBO: 8 ms
Control output		NPN (PNP) open-collector x 2 channels, 40 VDC (30 V) max., max. 100 mA, residual voltage (1.0 V max.)			
Protection circuit		Reverse polarity protection, overcurrent protection, surge absorption			
Expansion of units		Up to 7 additional expansion units can be installed (8 units including the main unit),			
Number of interference preventive units*1		Power mode: FINE / TURBO / SUPER; Number of units: None / 2 units / 4 units			
Rating	Power supply voltage	12 to 24 VDC ripple (P-P) 10% max. (For the LV-20A/22A/22AP, the power supply voltage is supplied from the main unit.)			
	Power consumption	1.5 W max. (125 mA max. for 12 V, 62.5 mA max. for 24 V)			
Ambient temperature used		–10 to +55°C (No condensation)*2			
Ambient humidity used		35% to 85% RH (No condensation)			
Material		Main body, cover: Polycarbonate			
Weight		Approx. 120 g		Approx. 75 g	
Dimensions		P.36			

* 1 To connect several units they must be mounted on a METAL DIN rail. Ensure that the output current is 20 mA max. With several units connected, the allowable ambient temperature range varies as follows:

* 2 When 2 to 5 expansion units are additionally installed: -10℃ to +50℃. When 6 or 7 expansion units are additionally installed: -10℃ to +45℃.

LV-L01 Specifications (lens attachment for LV-H42) (Unit: mm)

Name		LV-L01	When slit 1 is mounted	When slit 2 is mounted	When slit 3 is mounted	When slit 4 is mounted
Detecting distance	FINE	200	175	150	125	100
	TURBO	400	350	300	250	200
	SUPER	800	700	600	500	400
Area thickness	50 mm	2.6				
	100 mm	4.0				
	150 mm	5.5				
Area width	50 mm	15.0	11.5	9.5	7.5	5.5
	100 mm	26.0	20.0	17.0	13.0	10.0
	150 mm	37.0	29.0	24.0	19.0	14.0
Case material		Polyacetal (main body) Arton (lens)				
Weight		Approx. 1 g				
Dimensions		P.34				

Typical example of "width x thickness" of area in LV-L01 detecting distance (Unit: mm)

Distance	LV-H42	LV-H42+black slit	LV-H42+grey slit	LV-L01	L01+slit 1	L01+slit 2	L01+slit 3	L01+slit 4
100	26 x 0.6	13 x 0.6	5 x 0.6	27 x 4	20 x 4	17 x 4	13 x 4	10 x 4
200	48 x 0.4	25 x 0.4	9 x 0.4	49 x 7	38 x 7	32 x 7	25 x 7	19 x 7
300	70 x 0.8	36 x 0.8	13 x 0.8	72 x 10	56 x 10	47 x 10	36 x 10	27 x 10
400	92 x 1.34	48 x 1.34	17 x 1.34	94 x 13	73 x 13	61 x 13	48 x 13	36 x 13

LV-L02 Specifications (lens attachment for LV-H47) (Unit: mm)

Name		LV-L02	When slit 1 is mounted	When slit 2 is mounted	When slit 3 is mounted	When slit 4 is mounted
Area thickness	55 mm	3.0				
	70 mm	3.4				
	85 mm	3.8				
Area width	55 mm	17.0	13.0	11.0	8.5	6.0
	70 mm	20.5	15.5	13.0	10.0	7.5
	85 mm	24.0	18.0	15.0	11.5	9.0
Case material		Polyacetal (main body) Arton (lens)				
Weight		Approx. 1 g				
Dimensions		P.34				

LV-H Series

Thrubeam

Type		Area thrubeam		
		High power	High performance	
Model		**LV-H110**	**LV-H100**	**LV-H300**
Shape				
Detecting area		10 mm		30 mm
FDA class		Class II		
IEC class		Class 2		
Light source		Visible light semiconductor laser Wavelength: 650 mm		
Detecting distance		2000 mm		
Ambient temperature used		–10 to +55°C (No condensation)		
Ambient humidity used		35% to 85% RH (No condensation)		
Material	Case	Glass reinforced plastic		
	Lens cover	Transmitter: Glass Receiver: Polyarylate		
Weight		Approx. 80 g		Approx. 100 g
Dimensions		P.37		

* Use a dedicated mounting bracket to install the sensor.

Amplifier Specifications

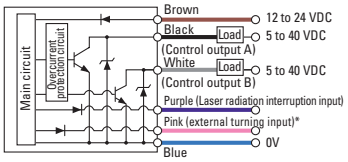
Model	NPN Output	**LV-51M**	**LV-52**
	PNP Output	**LV-51MP**	**LV-52P**
Main unit / Expansion unit		Main unit	Expansion unit (1 line)
Shape			
Response speed		FINE	TURBO	SUPER
		80 µs	500 µs	4 ms
Inspection mode		Light intensity distinction / edge detection		
Control output		NPN (PNP) open-collector x 2 channels, 40 VDC (30 V) or lower, max. 100 mA, residual voltage (1.0 V or lower)		
Monitor output		1 - 4 V for 1 - 4 V voltage output and FINE display 0 - 3000, load resistance 20 kΩ or higher (**LV-51M/LV-51MP** only)		
Protection circuit		Reverse polarity protection, overcurrent protection, surge absorption		
Expansion of units		Up to 7 additional expansion units can be installed (8 units including the main unit),		
Number of interference preventive units*1		FINE: No device (0) TURBO: 2 units SUPER: 4 units		
Rating	Power supply voltage	12 to 24 VDC ripple (P-P) 10% max. (For the **LV-52/52P**, the power supply voltage is supplied from the main unit.)		
	Power consumption	1.5 W max. (125 mA max. for 12 V, 62.5 mA max. for 24 V)		
Ambient temperature used		–10 to +55°C (No condensation)*1		
Ambient humidity used		35% to 85% RH (No condensation)		
Material		Main body, cover: Polycarbonate		
Weight		Approx. 120 g		Approx. 75 g
Dimensions		P.39		

*1 To connect several units they must be mounted on a METAL DIN rail. Ensure that the output current is 20 mA max. With several units connected, the allowable ambient temperature range varies as follows:
When 2 to 5 expansion units are additionally installed: -10°C to +50°C.
When 6 or 7 expansion units are additionally installed: -10°C to +45°C.

LV-H / LV-S Series

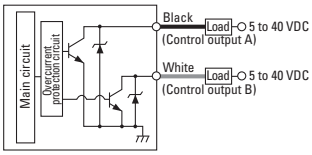
Input/Output Circuits

NPN
LV-21A/11A/51M



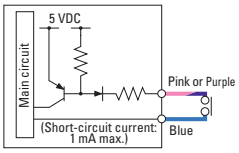
* Orange (monitor output) only for **LV-51M**

NPN
LV-22A/52

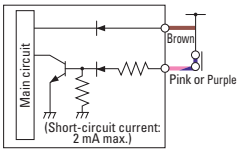


Laser emission interruption (main unit only)
External calibration input

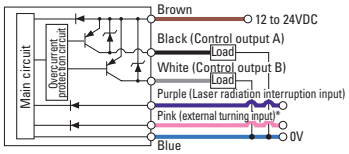
NPN
LV-21A/11A/51M



PNP
LV-21AP/51MP

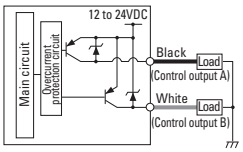


PNP
LV-21AP/51MP

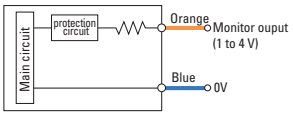


* Orange (monitor output) only for **LV-51MP**

PNP
LV-22AP/52P



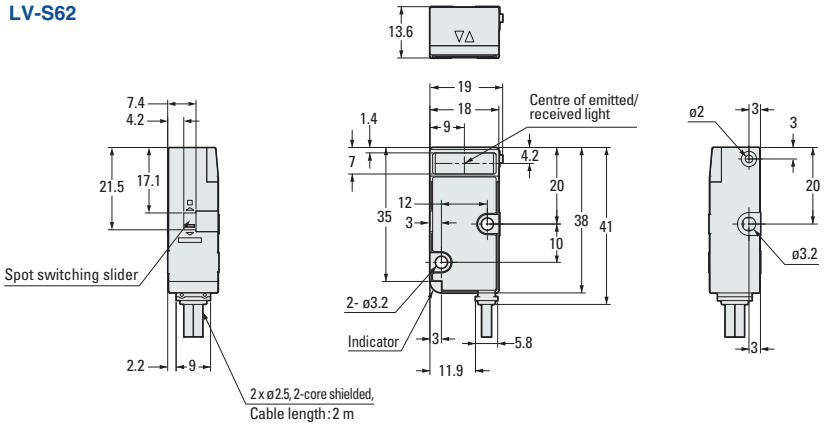
Analogue output circuit diagram for monitor (**LV-51M/51MP** only)



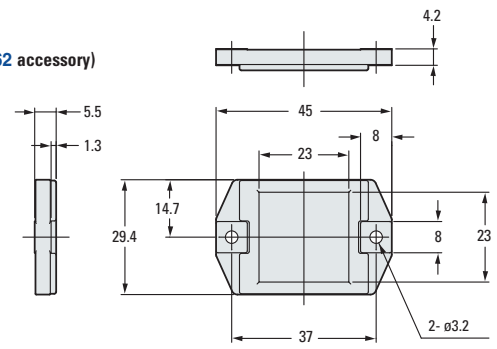
Dimensions

Unit: mm

LV-S62

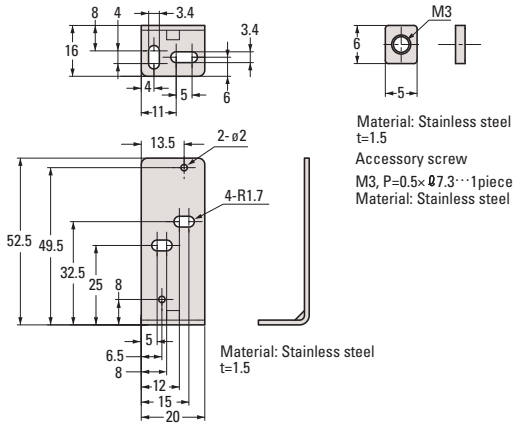


Reflector R-6L (LV-S62 accessory)

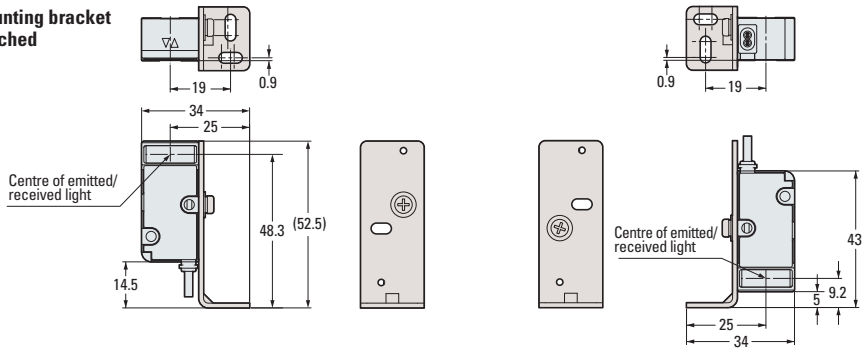


OP-84350

L-shape mounting bracket for LV-S62 (Option)

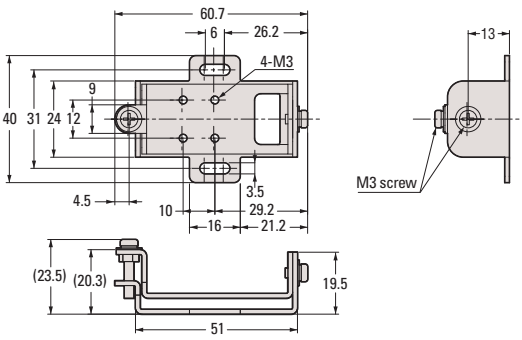


Mounting bracket attached



OP-84349

Rear mounting bracket for the LV-S62 (Option)

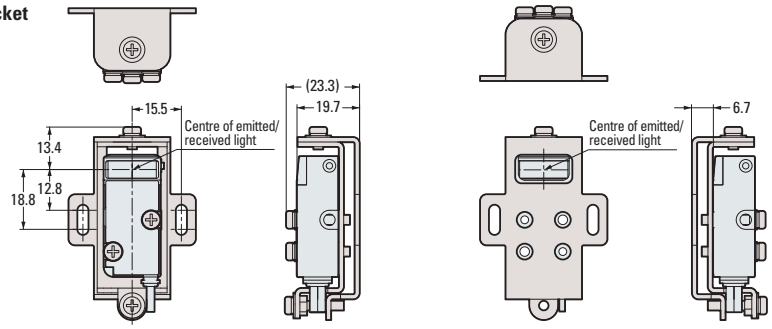


Material: Stainless steel
t=1.5

Accessory screws
M3, P=0.5× ø5···1piece
Material: Stainless steel
M3, P=0.5× ø16.5···1piece
Material: Stainless steel
M3, P=0.5× ø18···2piece
Material: Stainless steel

Accessory nut
M3···1 piece
Material: Stainless steel

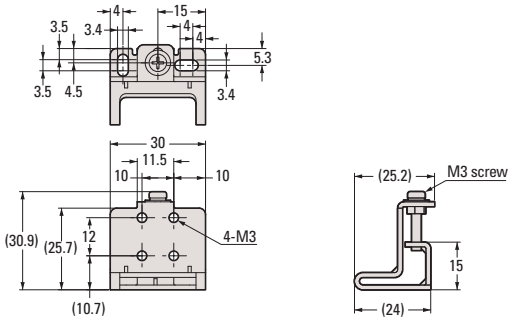
Mounting bracket attached



LV-S Series

Unit: mm

OP-84351
Side mounting bracket for LV-S62 (Option)

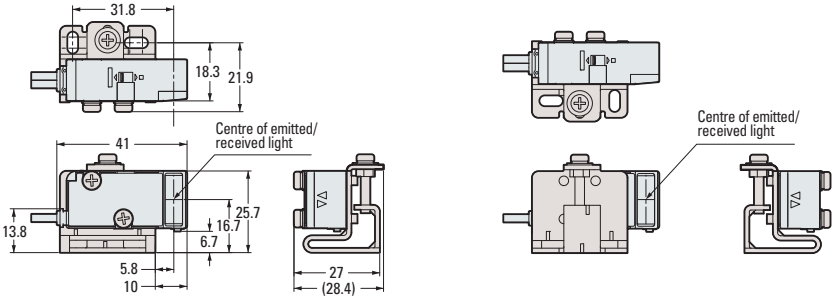


Material: Stainless steel
t=1.5

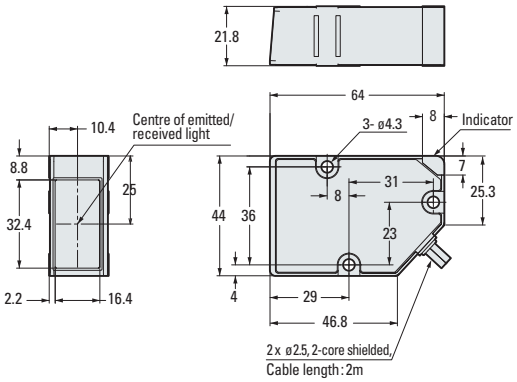
Accessory screws
M3, P=0.5× ℓ16.5···1piece
Material: Stainless steel
M3, P=0.5× ℓ18···2piece
Material: Stainless steel

Accessory nut
M3···1 piece
Material: Stainless steel

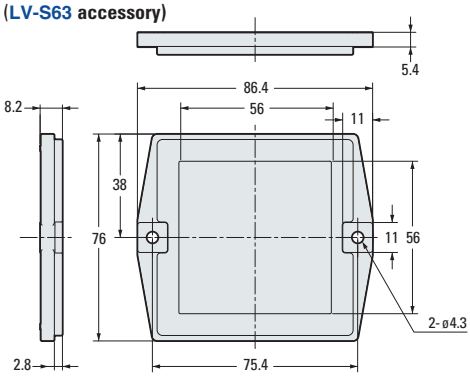
Mounting bracket attached



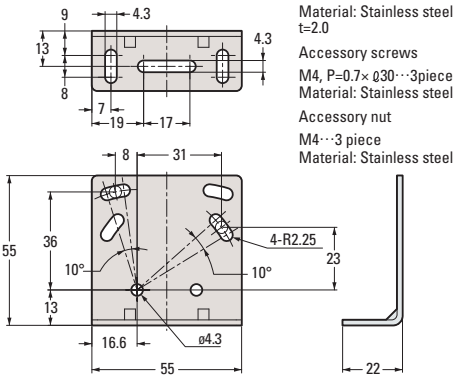
LV-S63



Reflector R-9
(LV-S63 accessory)



Rear mounting bracket for LV-S63 (Accessory)

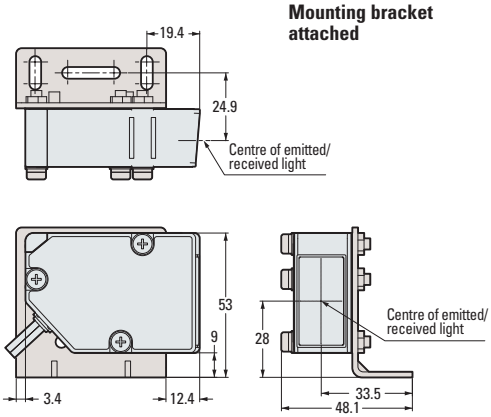


Material: Stainless steel
t=2.0

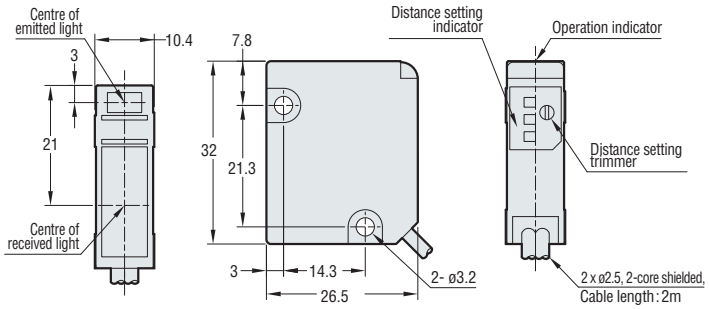
Accessory screws
M4, P=0.7× ℓ30···3piece
Material: Stainless steel

Accessory nut
M4···3 piece
Material: Stainless steel

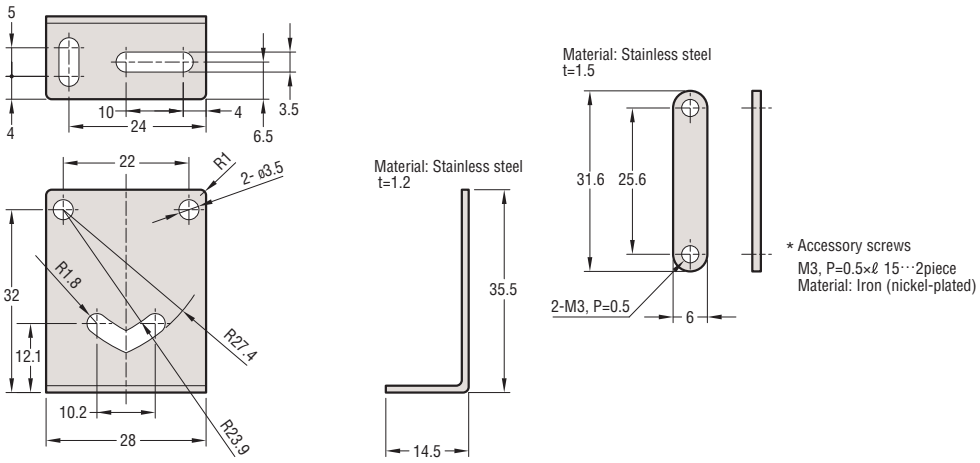
Mounting bracket attached



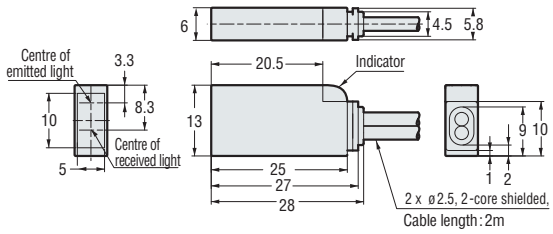
LV-S31

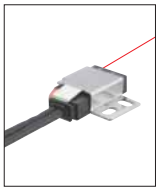


L-shape mounting bracket for LV-S31 (Accessory)

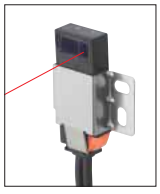


LV-S41



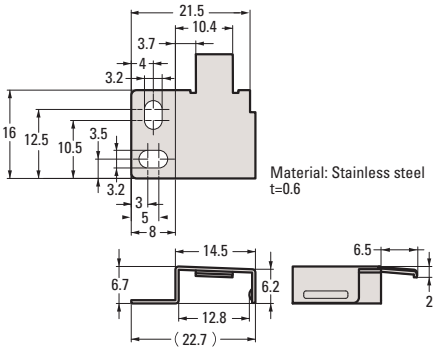


Installed bracket on the LV-S41



Installed bracket on the LV-S41L

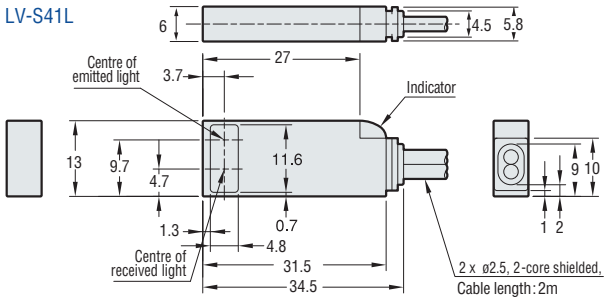
Mounting bracket for LV-S41/LV-S41L (Accessory)

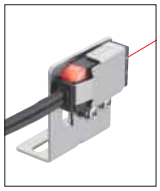


LV-S Series

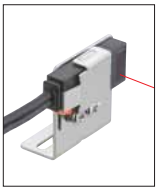
Unit: mm

LV-S41L



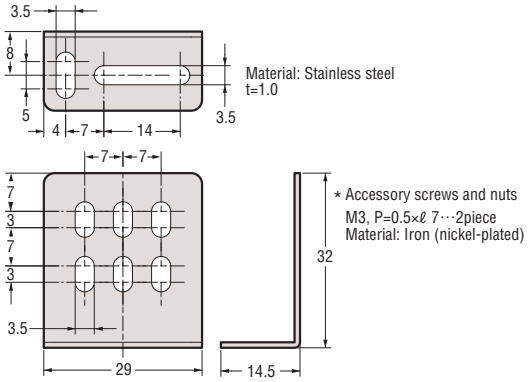


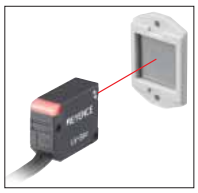
Installed bracket on the LV-S41



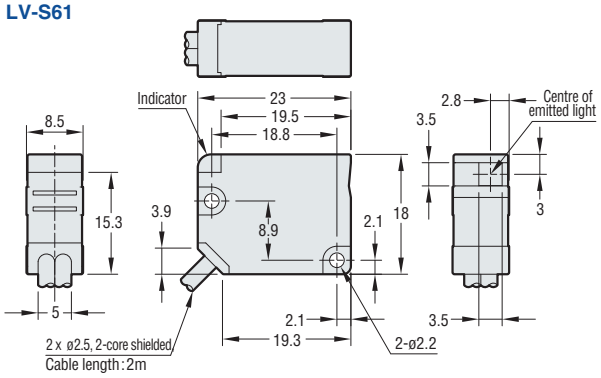
Installed bracket on the LV-S41L

OP-66846
L-shape mounting bracket for LV-S41/LV-S41L (Option)

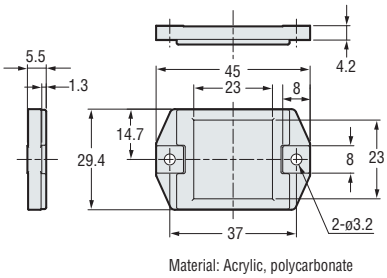




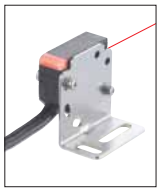
LV-S61



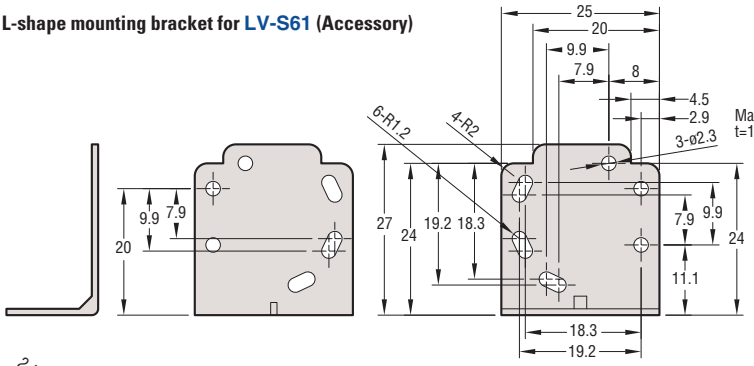
OP-51430 R-6 (Grey) (Accessory)

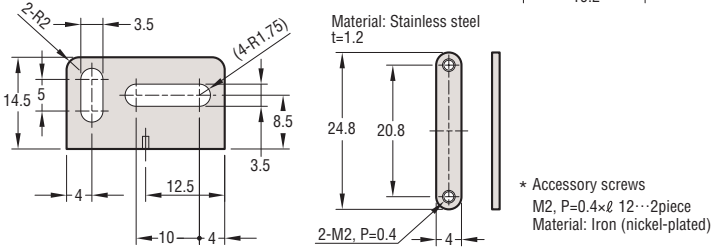


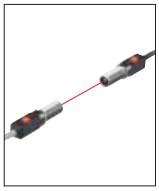
Material: Acrylic, polycarbonate



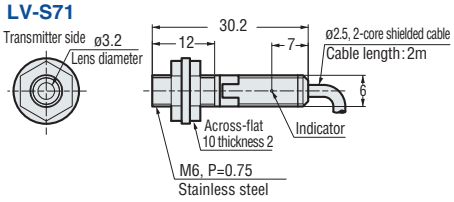
L-shape mounting bracket for LV-S61 (Accessory)



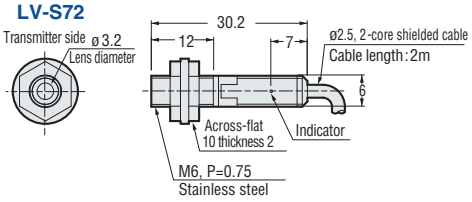




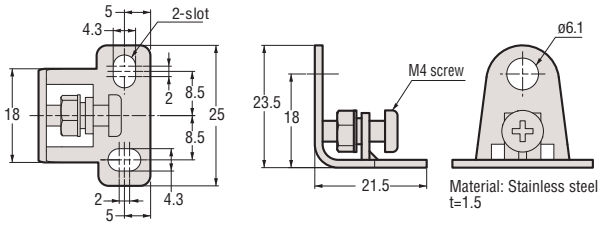
LV-S71

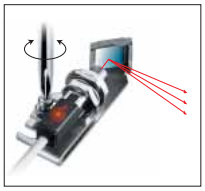


LV-S72

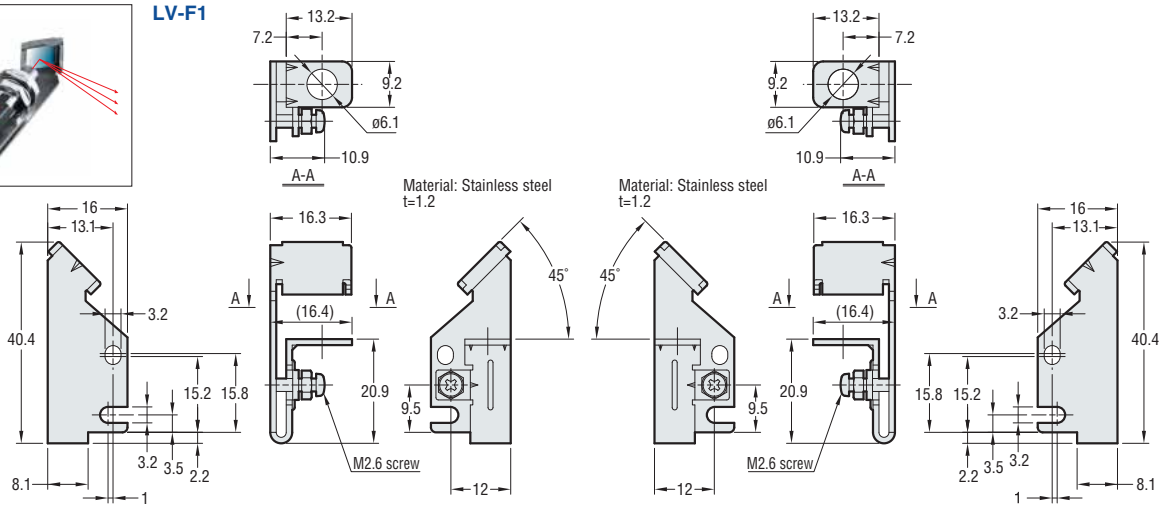


Mounting bracket for LV-S71 / LV-S72 (Accessory)

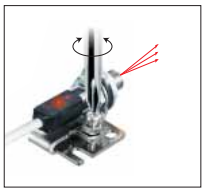




LV-F1

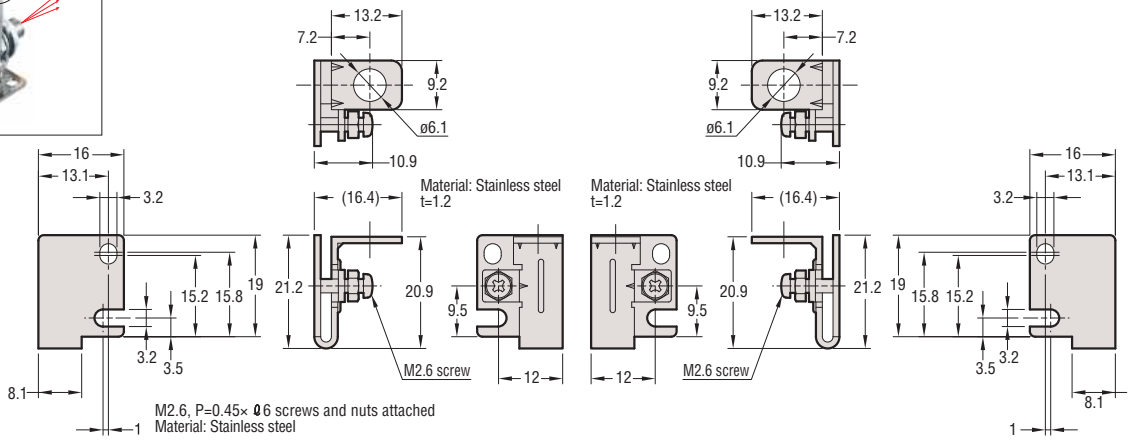


M2.6, P=0.45× ø6 screws and nuts attached
Material: Stainless steel



OP-66869

Compact mounting bracket for thrubeam (Option)

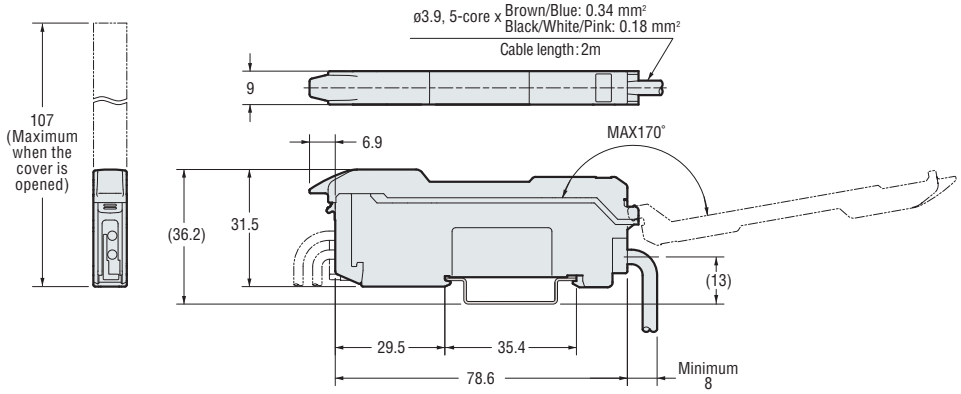


M2.6, P=0.45× ø6 screws and nuts attached
Material: Stainless steel

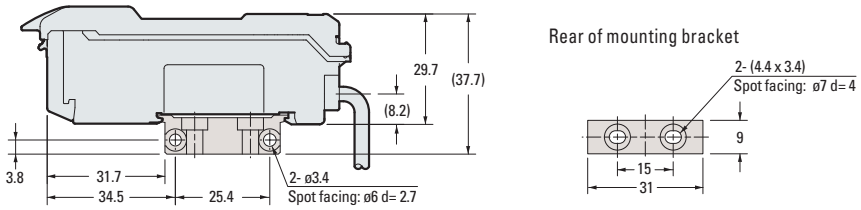
LV-S Series

Unit: mm

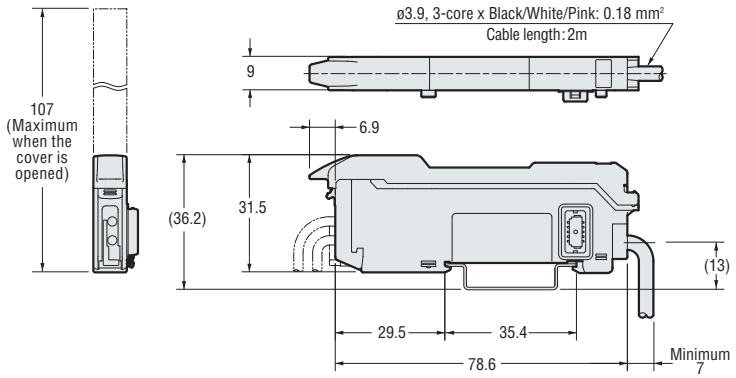
LV-11SB/11SBP



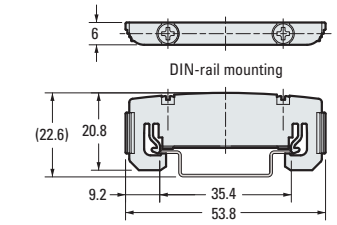
Mounting bracket attached (LV-11SB and LV-11SBP DIN rail accessory)



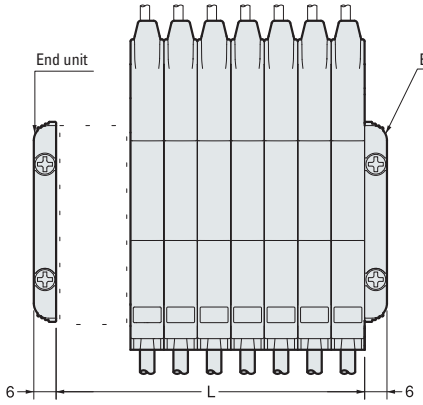
LV-12SB/12SBP



End unit (included with LV-12SB/LV-12SBP)



When several units are connected

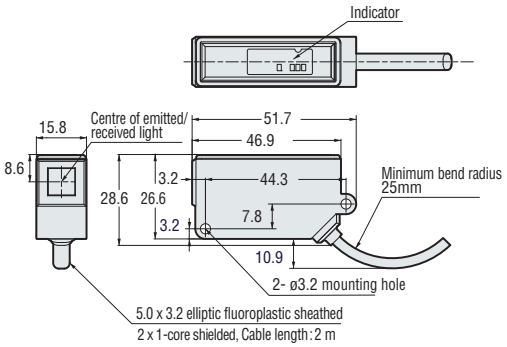


* Make sure to use end units when adding expansion units.

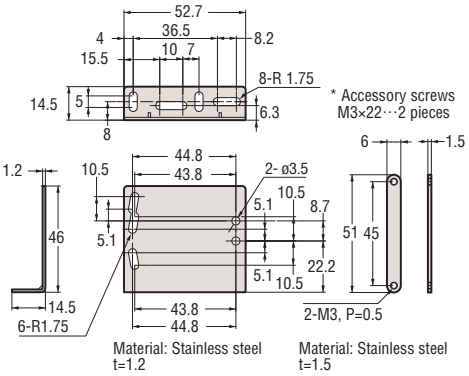
No. of expansion units	L	No. of expansion units	L
1	18	9	90
2	27	10	99
3	36	11	108
4	45	12	117
5	54	13	126
6	63	14	135
7	72	15	144
8	81	16	153

LV-H series reflective/retro-reflective

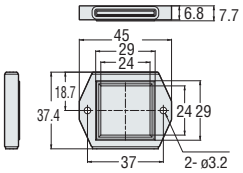
LV-H35F/H62F



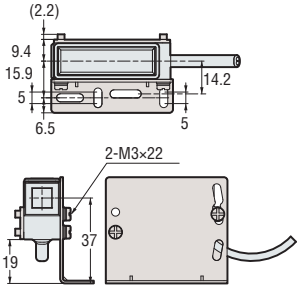
Mounting bracket (Accessory)



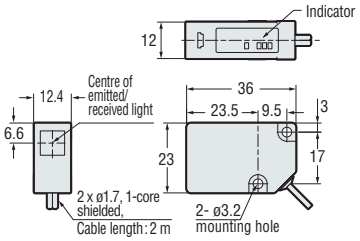
Reflector R-8 for LV-H62F (Accessory)



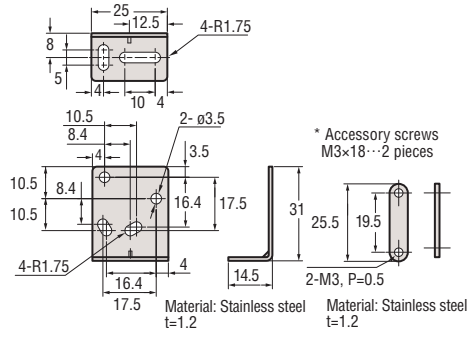
Mounting bracket attached



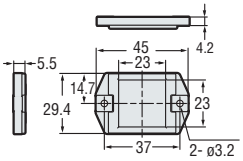
LV-H35/H62/H67



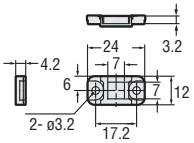
Mounting bracket (Accessory)



Reflector R-6 for LV-H62 (Accessory)

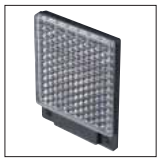


Reflector R-7 for LV-H62 (Accessory)

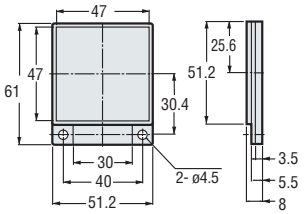


LV-H Series

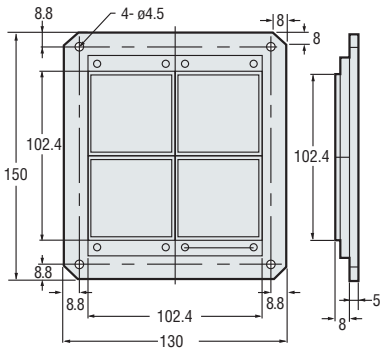
Unit: mm



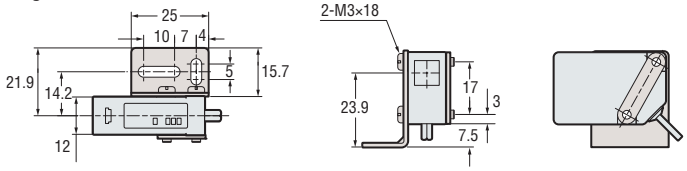
Reflector R-8 for LV-H67 (Accessory)



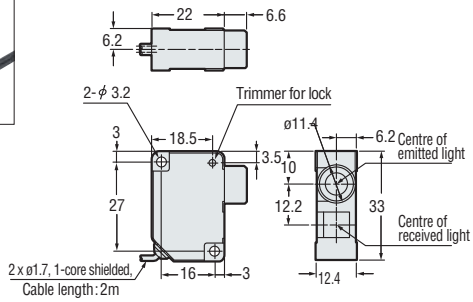
Long-distance reflector (optional)
OP-42198



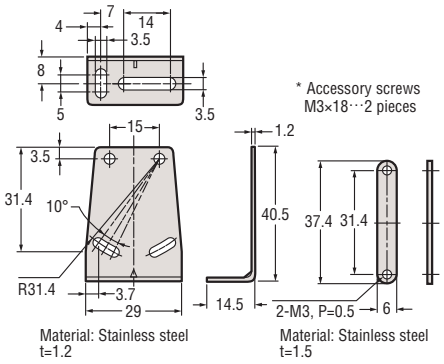
Mounting bracket attached



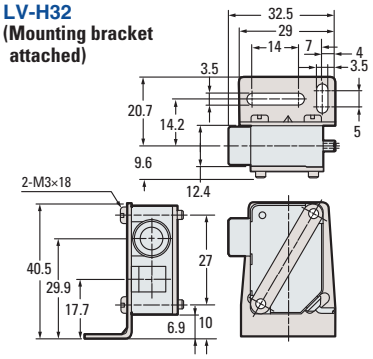
LV-H32



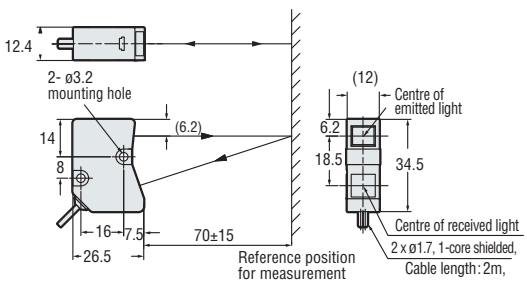
Mounting bracket for LV-H32 (Accessory)



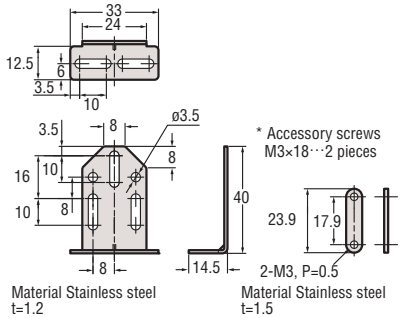
LV-H32
(Mounting bracket attached)

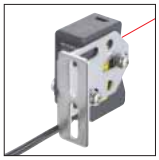


LV-H37/H47

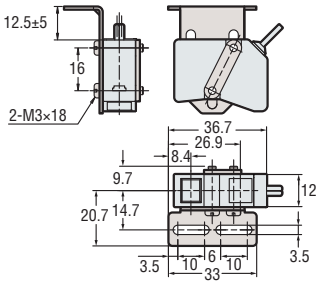


Mounting bracket for LV-H37/H47 (Accessory)

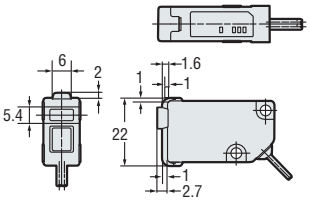




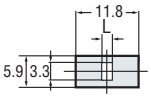
Mounting bracket attached
(LV-H37/H47 accessory)



When mounting LV-L01
(LV-H42/41)

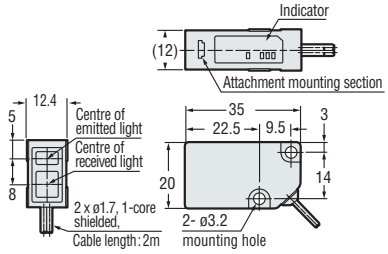


Slit sticker (included with LV-L01)

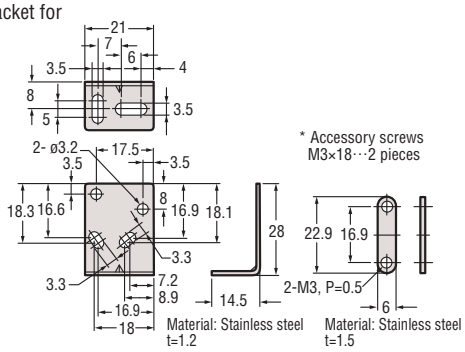


Slit sticker name	L
Slit 1	2.6
Slit 2	2.0
Slit 3	1.5
Slit 4	1.1

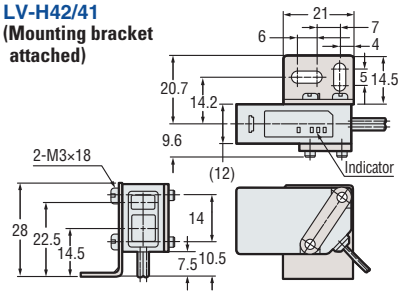
LV-H42/41



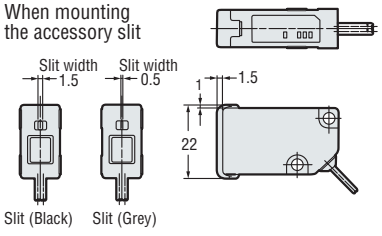
Mounting bracket for
LV-H42/41
(Accessory)



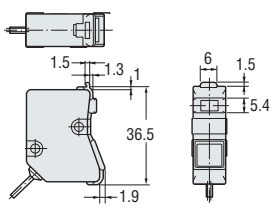
LV-H42/41
(Mounting bracket attached)



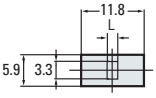
LV-H42/41
When mounting
the accessory slit



When mounting LV-L02
(LV-H47)



Slit sticker (included with LV-L02)

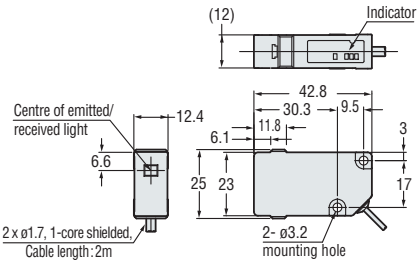


Slit sticker name	L
Slit 1	2.6
Slit 2	2.0
Slit 3	1.5
Slit 4	1.1

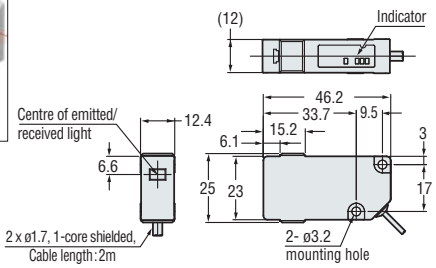
LV-H Series

Unit: mm

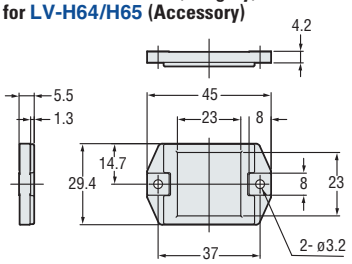
LV-H64



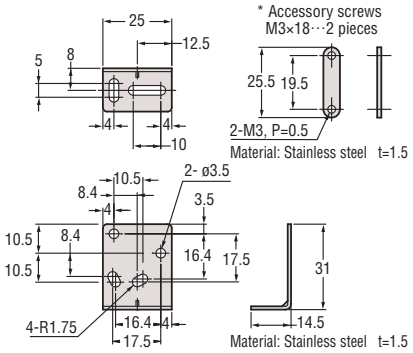
LV-H65



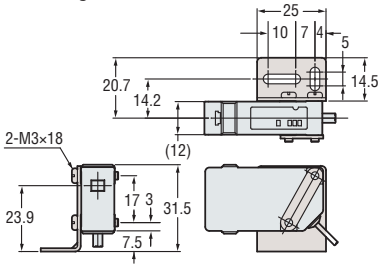
Reflector OP-51430 (R-6 grey)
for LV-H64/H65 (Accessory)



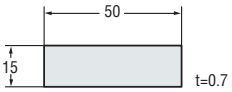
Mounting bracket
for LV-H64/H65 (Accessory)



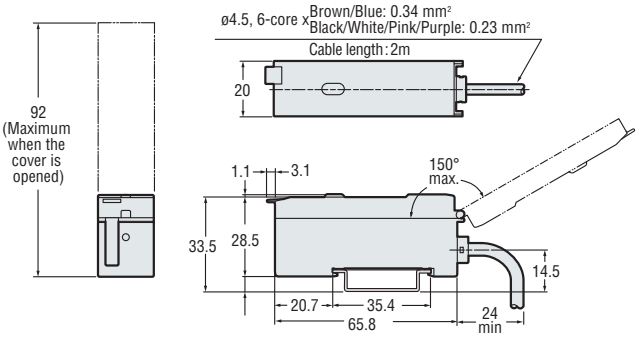
LV-H64/H65
(Mounting bracket attached)



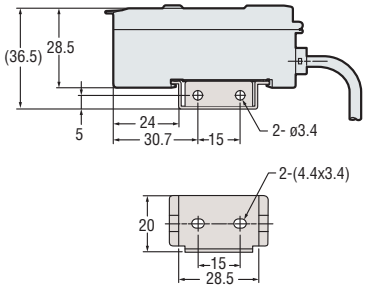
Optional reflective tape OP-51428



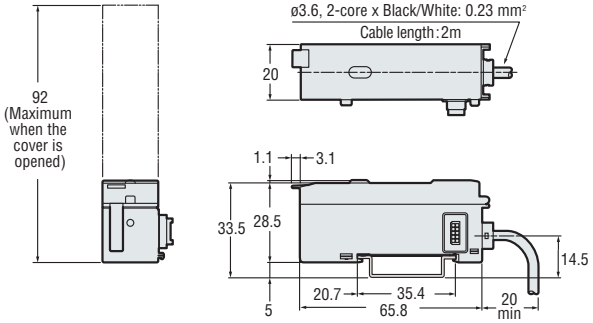
LV-21A/21AP/11A



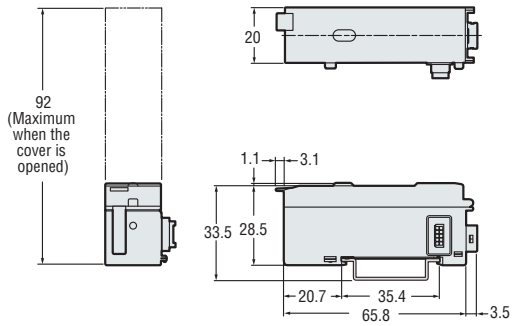
Mounting bracket attached (included with LV-21A/11A)



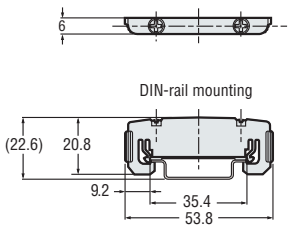
LV-22A/22AP



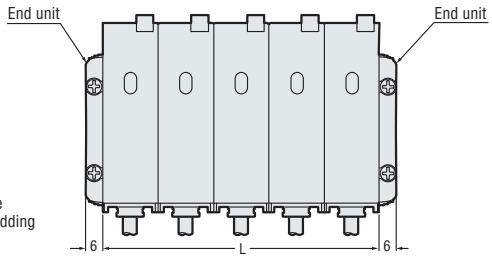
LV-20A



End unit (included with LV-22A/22AP)



When several units are connected:

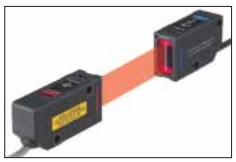


* Make sure to use end units when adding expansion units.

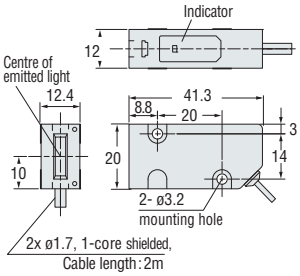
No. of units	L
1	40
2	60
3	80
4	100
5	120
6	140
7	160

LV-H Series

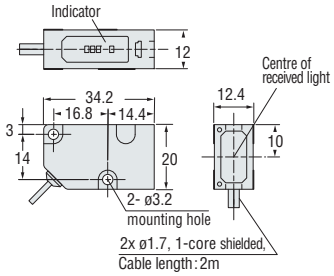
Unit: mm



LV-H100/H110 (Transmitter)



LV-H100/H110 (Receiver)



LV-B101 (Mounting bracket set includes 2 brackets for transmitter/receiver for LV-H100/H110)

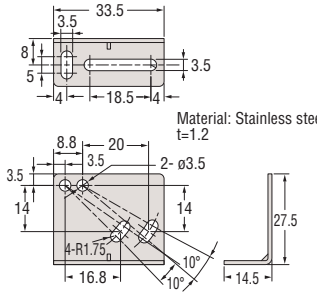


Plate nut for transmitter

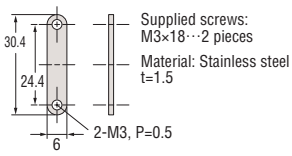
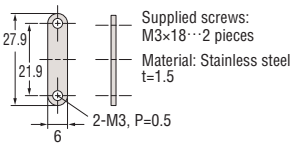


Plate nut for receiver



LV-B102 (Mounting bracket set includes 2 brackets for transmitter/receiver for LV-H100/H110)

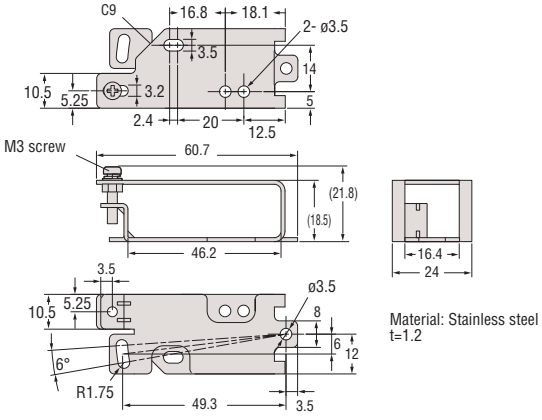


Plate nut for transmitter

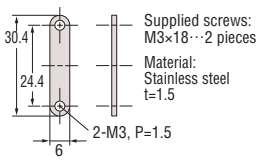
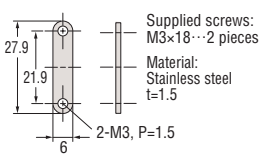
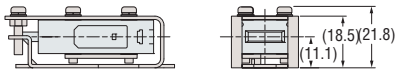


Plate nut for receiver

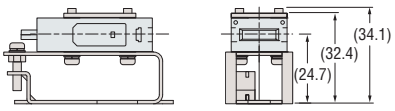


When the transmitter of the LV-H100/H110 is mounted (Inside)

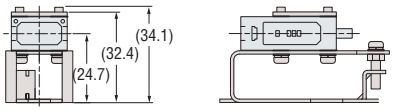


When the receiver of the LV-H100/H110 is mounted (Inside)

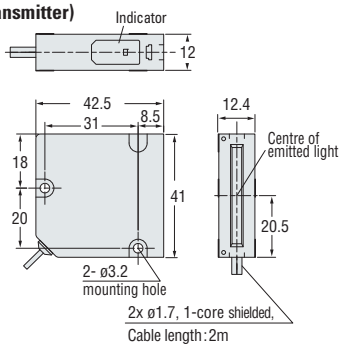
When the transmitter of the LV-H100/H110 is mounted (Outside)



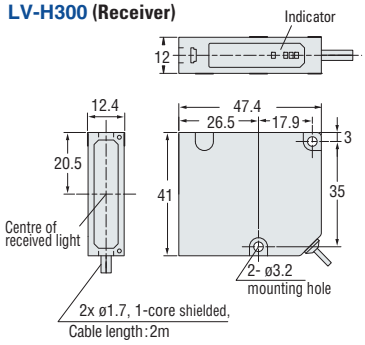
When the receiver of the LV-H100/H110 is mounted (Outside)



LV-H300 (Transmitter)



LV-H300 (Receiver)



LV-B301

(Mounting bracket for LV-H300, included two brackets for the transmitter and receiver.)

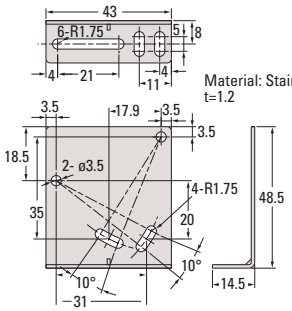


Plate nut for transmitter

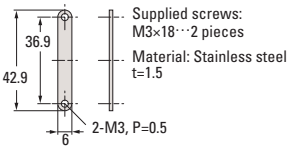
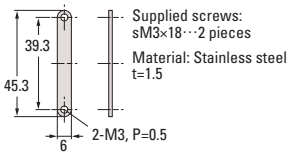


Plate nut for receiver



LV-B302

(Mounting bracket for LV-H300, included two brackets for the transmitter and receiver.)

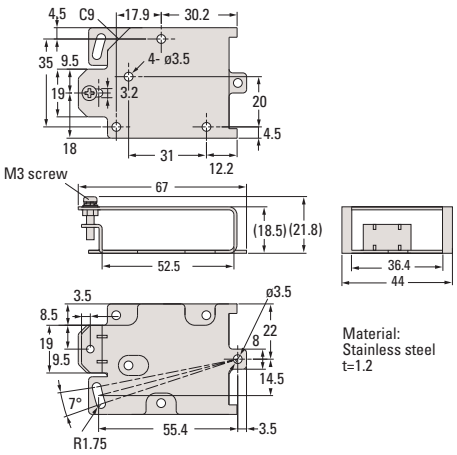


Plate nut for transmitter

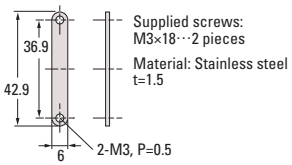
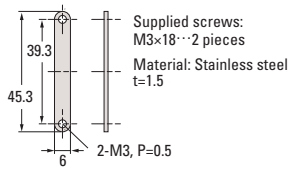
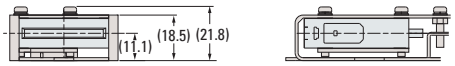


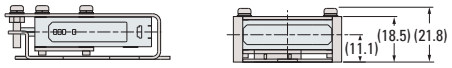
Plate nut for receiver



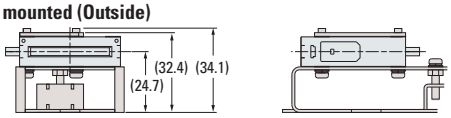
When the transmitter of the LV-H300 is mounted (Inside)



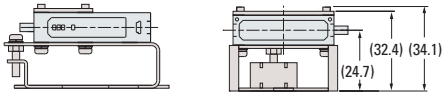
When the receiver of the LV-H300 is mounted (Inside)



When the transmitter of the LV-H300 is mounted (Outside)



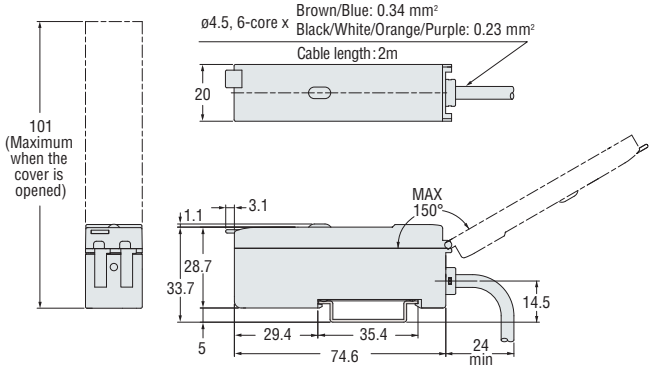
When the transmitter of the LV-H300 is mounted (Outside)



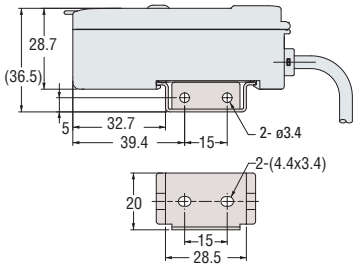
LV-H Series

Unit: mm

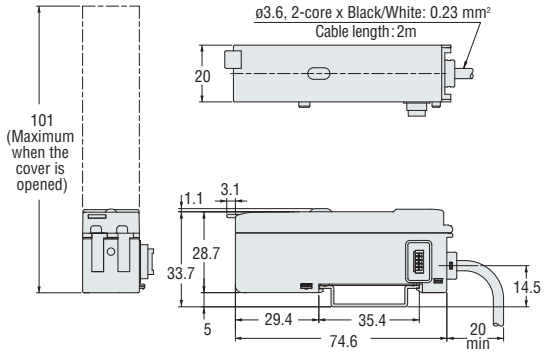
LV-51M/51MP



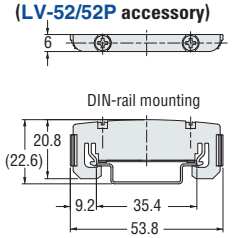
Mounting bracket attached
(LV-51M/51MP accessory)



LV-52/52P

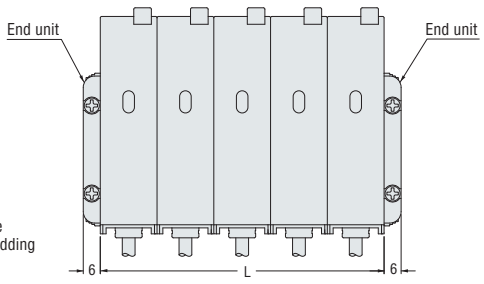


End unit
(LV-52/52P accessory)



No. of units	L
1	40
2	60
3	80
4	100
5	120
6	140
7	160

When several units are connected:



* Make sure to use end units when adding expansion units.

KEYENCE

Please visit: www.keyence.com

SAFETY WARNING
Please read the instruction manual carefully in order to safely operate any KEYENCE product.

KEYENCE GLOBAL HEADQUARTERS

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku, Osaka, 533-8555, Japan PHONE: +81-6-6379-2211

AUSTRIA
Phone: +43 22 36-3782 66-0 Fax: +43 22 36-3782 66-30

BELGIUM
Phone: +32 27 16 40 63 Fax: +32 27 16 47 27

CANADA
Phone: +1-905-696-9970 Fax: +1-905-696-8340

CHINA
Phone: +86-21-68757500 Fax: +86-21-68757550

CZECH REPUBLIC
Phone: +420 222 191 483 Fax: +420 222 191 505

FRANCE
Phone: +33 1 56 37 78 00 Fax: +33 1 56 37 78 01

GERMANY
Phone: +49 61 02 36 89-0 Fax: +49 61 02 36 89-100

HONG KONG
Phone: +852-3104-1010 Fax: +852-3104-1080

HUNGARY
Phone: +36 1 802 73 60 Fax: +36 1 802 73 61

ITALY
Phone: +39-02-6688220 Fax: +39-02-66825099

JAPAN
Phone: +81-6-6379-2211 Fax: +81-6-6379-2131

KOREA
Phone: +82-31-642-1270 Fax: +82-31-642-1271

MALAYSIA
Phone: +60-3-2092-2211 Fax: +60-3-2092-2131

MEXICO
Phone: +52-81-8220-7900 Fax: +52-81-8220-9097

NETHERLANDS
Phone: +31 40 20 66 100 Fax: +31 40 20 66 112

POLAND
Phone: +48 71 36861 60 Fax: +48 71 36861 62

SINGAPORE
Phone: +65-6392-1011 Fax: +65-6392-5055

SLOVAKIA
Phone: +421 2 5939 6461 Fax: +421 2 5939 6200

SWITZERLAND
Phone: +41 43-45577 30 Fax: +41 43-45577 40

TAIWAN
Phone: +886-2-2718-8700 Fax: +886-2-2718-8711

THAILAND
Phone: +66-2-369-2777 Fax: +66-2-369-2775

UK & IRELAND
Phone: +44-1908-696900 Fax: +44-1908-696777

USA
Phone: +1-201-930-0100 Fax: +1-201-930-0099

WW1-0129

LVSBG-WW-C-E 0129-4 E 600566 Printed in Japan