

Picking Switch  
**SL-VPK01**



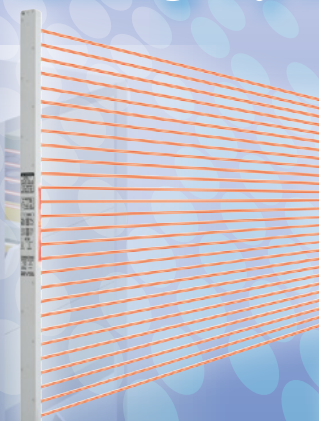
**NEW**  
Picking Switch for Shutter  
**SL-VPK02**



## The Picking Sensor Essential for Configuring a High-reliability Picking System



General Purpose &  
Slim Body Area Sensor  
**NA2-N SERIES**

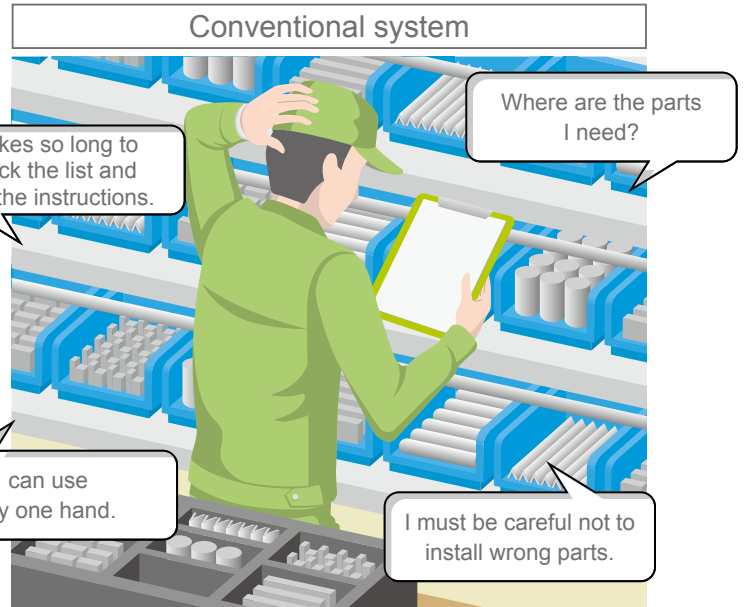


Compact Size Picking Sensor  
**NA1-PK3 SERIES**

Ultra-slim Body Picking Sensor  
**NA1-PK5 SERIES**  
**NA1-5 SERIES**

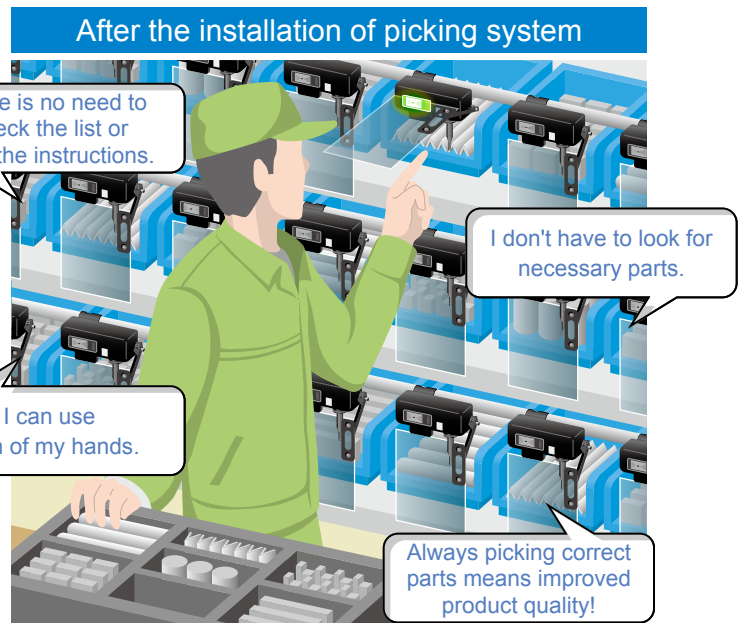


## Solution to Common Problems in Assembly Lines!



Picking parts while checking the parts list

### When Picking System Is Installed...



**Just pick the parts when the indicator lights. Same easy picking even when the number of parts types increase or the worker changes!**

Note: The shutter in the photo is only for display purposes. It is recommended to use plastic board in actual applications.

## Advantages of Use of Picking System

### Elimination of defects

Allows confirmation of picking of correct parts to help eliminate picking errors.

### Improvement of productivity

There is no need to refer to the parts list when picking parts. As a result, a significant increase in picking speed can be achieved.

### Reduction of worker education and training

Since the worker only needs to observe the picking operation, even a beginner can perform the task easily.



### Automobile Industry

- **Picking of parts for vehicle body assembly**

Picking system enables accurate assembly even on a mixed production line.

- **Assembly of engines, transmissions, automotive components**

Picking system is used in processes that handle many parts in order to eliminate installation of incorrect parts and to improve productivity.

- **Assembly of seats**

Picking system ensures accurate picking of parts in small-lot production of multiple types of products with different colors and specifications.



### Electronic Product Industry

- **Assembly of electronic products**

Picking system eliminates picking errors in cellular manufacturing systems.





## Lever Type

- Tapping of the lever prevents absent-mindedness and ensures reliable picking.
- Compact size and space-saving installation.
- Directly connectable to **S-LINK V** flexible wire-saving system.

### Picking Switch SL-VPK01

Common to **SL-VPK01** and **SL-VPK02**

Ideal for anti-absentmindedness in assembly lines



### Lamp colors selectable

It can be selectable from green (default), red, blue, and a two-stage indication (green, blue)\*.

\* The address setting remote controller (optional) is required for changing the lamp color.



Green lamp    Red lamp    Blue lamp

After lever switch is operated: Turn off



After lever switch operation  
Green lamp    Blue flash

Allows recheck after picking

### Remote controller

The **SL-VAR1** address setting remote controller (optional) enables easy setting of addresses and selection of lamp color. The remote controller helps reduce the setting workload during shelf rearrangement. The remote controller can be used repeatedly for changing settings.



For SL-VPK01 and SL-VPK02

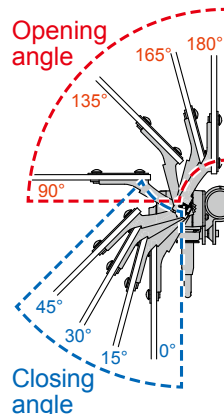
**NEW**  
Picking Switch for Shutter  
SL-VPK02

Suitable for picking of important maintenance parts and safety-related parts for which erroneous picking must be prevented by all means!



### Equipped with shutter for zero picking error

The shutter closes to prevent erroneous picking. The unit features a cantilever supporter and is compact, so it is suitable for installation on a narrow-width shelf for miniature parts.



### Four-stage setting for both opening angle and closing angle

The shutter operates properly even if the tray extends from the edge of parts shelf. The shutter closing delay time can also be adjusted in five stages.

Note: The product is equipped with an arm (shutter) that operates at high speed. Take note of the arm (shutter) moving range in order to prevent the arm (shutter) from hitting the worker's face or other parts of the body.



## Area Sensor Type

- Equipped with a large, bright and highly visible job indicator.
- Non-contacting sensing system allows reduction of man-hours and improvement of tact time.
- Compact size and space-saving installation.

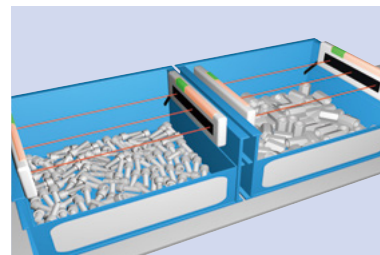
Compact Size Picking Sensor

### NA1-PK3 SERIES



### Space-saving cigarette-lighter size

Ultra-small dimensions of W24 × H70 × D8 mm W0.945 × H2.756 × D0.315 in. The unit can be installed in a limited space in a parts box.



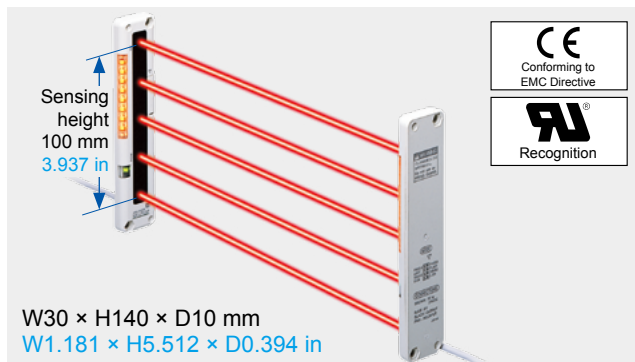
Picking of miniature parts such as screws



NA1-PK3 Cigarette lighter

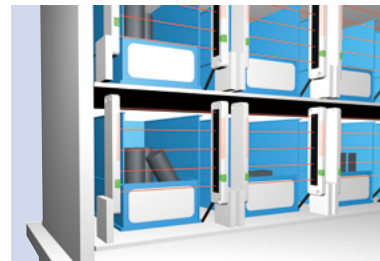
Ultra-slim Body Picking Sensor

### NA1-PK5 SERIES NA1-5 SERIES



### Only 10 mm 0.394 in in thickness

Space-saving installation means the unit does not get in the way of worker productivity.



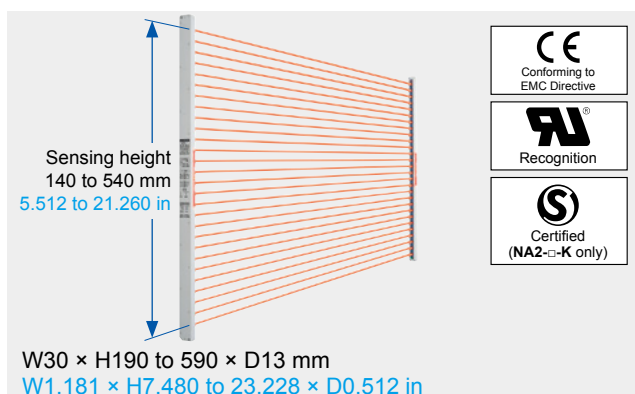
Confirmation of removal of mechanism parts



Flexible cable routing

General Purpose & Slim Body Area Sensor

### NA2-N SERIES

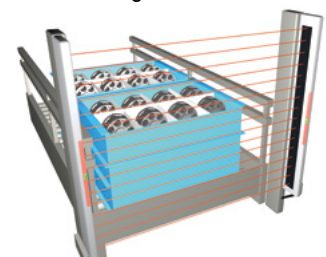


### Maximum sensing height of 540 mm 21.260 in (28 beam channels)

The maximum sensing height is 540 mm 21.260 in (28 beam channels). With the beam pitch of 20 mm 0.787 in (minimum sensing object: ø30mm ø1.181 in) and sensing range of 5 m 16.404 ft, the unit responds to a wide range of needs.



Confirmation of removal of parts from board racks

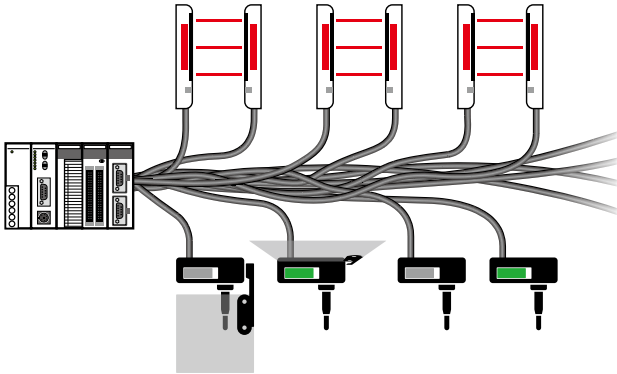


Confirmation of removal of large-size parts

# Wire-saving Installation

## 4

### Conventional wiring

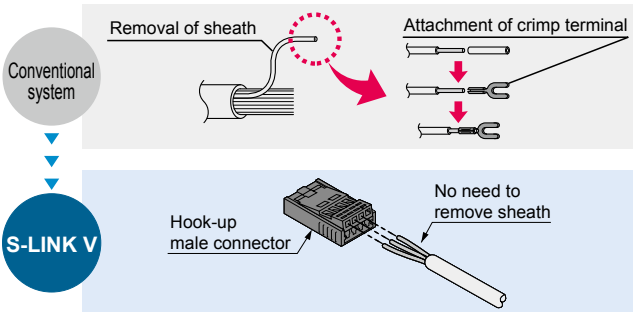


- Complex wiring results in tangled wires.
- Large expenses and many hours are required for rewiring when the layout is changed or shelves are added.

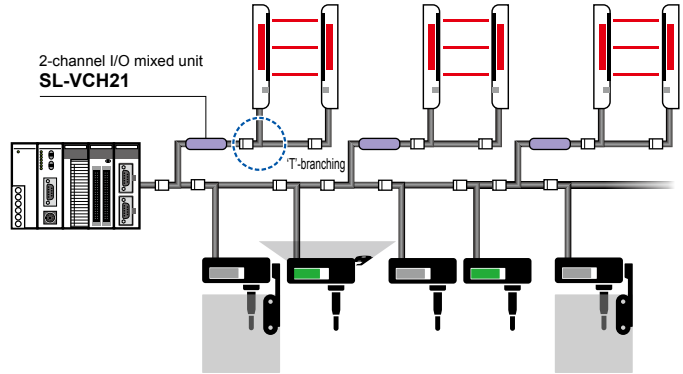
### Easy and secure connection

A variety of pressure contact connectors are available. The hook-up connector allows one-touch connection to the main cable linked to **S-LINK V** I/O units or to an **S-LINK V** I/O unit connected with sensors or other devices.

Pressure contact connectors enable immediate connection of additional units to desired locations and also allow easy maintenance.



### Flexible Wire-saving System S-LINK V

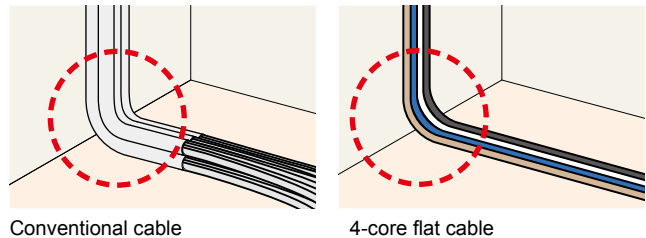


- 'T'-branching at any cable location in any number of times.
- Easy rewiring when the layout is changed or shelves are added.

### Advantages of 4-core flat cables

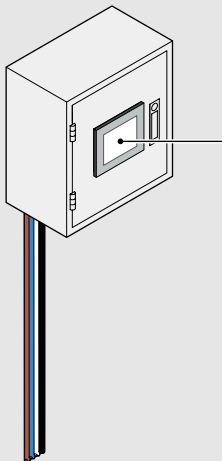
Ribbon-type 4-core flat cables can be easily and flexibly routed with a minimum space even in the tight space inside a machine or over a long distance.

They also allow easy branching and extension, and also facilitate additional wiring.



## System configuration

### S-LINK V control units



For RS-485 / RS-232C  
**SL-VGU1-485**



CE

For EtherCAT  
**SL-VGU1-EC**



CE

EtherCAT

For CC-Link  
**SL-VGU1-C**



CE

CC-Link

For DeviceNet  
**SL-VGU1-D**



CE

DeviceNet

For FP2 / FP2SH series  
**SL-VFP2**



CE

For PCI bus  
**SL-VPCI**



CE

Windows® 7 -compliant

For VME bus  
**SL-VVMES2**



CE

For Mitsubishi Electric Corp. MELSEC-Q series  
**SL-VMEL-Q**



CE

Picking switch  
**SL-VPK01 / SL-VPK02**



CE

For shutter

I/O unit  
**SL-VCH□**



CE

I/O connector unit  
**SL-VT□J**



CE

I/O terminal  
**SL-VTB□**



CE

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# SPECIFICATIONS

## Picking switch

Designation	Picking switch
Item	Model No.
	<b>SL-VPK01</b>
Supply voltage	24 V DC ±10 % (Supplied from the <b>S-LINK V</b> control unit. A separate power supply can also be used.)
Current consumption	24 V - 0 V line: 25 mA or less (When the lamp is ON)
Communication specification	Complies with <b>S-LINK V</b> protocol.
Communications mode	B mode, C mode
Address setting (using optional remote controller)	Input address (lever switch): 0 to 255 Output address (lamp): Select an offset of +32, +64, +128, or +256 for the input address
Lever switch (Input)	Turns ON when lever switch is tilted to angle of 15° or more or pulled downward for a distance of 1.6 mm <b>0.063 in</b> or more.
Lamp (Output)	Lamp (LED) color: Selectable from green (default), red, blue or 2-stage indication (green, blue) Turns ON when output signal from signal transmission line turns ON. Turns OFF when output signal from signal transmission line turns OFF.
Ambient temperature	0 to +50 °C <b>+32 to +122 °F</b> (No dew condensation) Storage: -20 to +60 °C <b>-4 to +140 °F</b>
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Material	Enclosure: Polycarbonate, Lamp cover: Polycarbonate Rear case: SGMCC, Pipe mounting holder: Cold rolled carbon steel (SPCC)
Cable	4-core cabtyre cable, 0.15 m <b>0.492 ft</b> long (With a snap male connector <b>SL-CP2</b> )
Net weight	200 g approx.

Designation	Address setting remote controller
Item	Model No.
	<b>SL-VAR1</b>
Supply voltage	AAA alkaline batteries: 2 pcs (Note)
Auto sleep	Incorporated (3 minutes)
Transmission method	Infrared (Peak emission wavelength: 940 nm <b>0.037 mil</b> )
Setting distance (Max)	100 mm <b>3.973 in</b> or less
Ambient temperature	5 to +45 °C <b>+41 to +113 °F</b> (No dew condensation) Storage: 0 to +55 °C <b>-32 to +131 °F</b>
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Material	Enclosure: ABS, Control panel: Polycarbonate Communications window cover: Polycarbonate Cover: Silicone, Mounting clip: Nylon, Keyring: SWRM6
Net weight	160 g approx. (excluding batteries)

Note: Batteries not included. Please purchase separately.

Designation	Picking switch for shutter
Item	Model No.
	<b>SL-VPK02</b>
Power supply voltage	24 V DC ±10 % (Supplied from a <b>S-LINK V</b> control unit. A separate power supply is also available.)
Current consumption	24 V DC line: 25 mA or less (When the lamp is ON) Current for shutter operation: 450 mA or less
Communication specification	Complies with <b>S-LINK V</b> protocol.
Communication mode	B mode, C mode
Address setting (using optional remote controller)	Input address (lever switch): 0 to 255 Output address (lamp, shutter): Select an offset of +32, +64, +128, or +256 from the input address.
Number of I/Os	1 lever input, 1 lamp or shutter output
Lever switch (Input)	Turns ON when lever switch is tilted to angle of 15° to 30° or pulled downward for a distance of about 2 mm <b>0.079 in</b> or more.(Note)
Lamp (Output)	Lamp (LED) color: Selectable from green (default), red, blue or 2-stage indication (green, blue) Turns ON when output signal from signal transmission line turns ON. Turns OFF when output signal from signal transmission line turns OFF.
Recommended shutter	Material: Danpla (plastic board) Maximum thickness: 5 mm <b>0.197 in</b> Maximum weight: 50 g approx. Recommended size: W300 × H210 mm <b>W11.811 × H8.268 in</b>
Ambient temperature	0 to +50 °C <b>+32 to +122 °F</b> (No dew condensation) Storage: -20 to +60 °C <b>-4 to +140 °F</b>
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Material	Front cover: Polycarbonate Lamp cover: Polycarbonate, Rear case: ABS Pipe mounting holder: Cold rolled carbon steel (SPCC) Driving shaft: SUM Arm: Cold rolled carbon steel (SPCC)
Cable	4-core cabtyre cable, 0.15 m <b>0.492 ft</b> long (With a snap male connector <b>SL-CP2</b> )
Weight	250g approx.

Note: Pulling load is 19.6N or less. Make sure that stress by forcible bend or pulling is not applied directly to the lever part.

## Area sensor

Model No.	NA1-PK3	NA1-PK3-PN
Number of beam channels	3 beam channels	
Sensing height	49.2 mm <b>1.937 in</b>	
Sensing range (Note 2)	30 to 300 mm <b>1.181 to 11.811 in</b>	
Beam pitch	24.6 mm <b>0.969 in</b>	
Sensing object	ø29 mm <b>ø1.142 in</b> or more opaque object (completely beam interrupted object)	
Supply voltage	12 to 24 V DC ±10 % Ripple P-P 10 % or less	
Output	NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)	PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 1 V or less (at 100 mA source current) 0.4 V or less (at 16 mA source current)
Output operation	ON or OFF when one or more beam channels are interrupted, selectable by operation mode switch	
Response time	10 ms or less (when interference prevention function is used: 30 ms or less)	
Ambient temperature	-10 to +55 °C <b>+14 to +131 °F</b> (No dew condensation or icing allowed), Storage: -20 to +70 °C <b>-4 to +158 °F</b>	
Dimensions (mm in)	W24 × H70 × D8 <b>W0.945 × H2.756 × D0.315</b>	

Notes: 1) 5 m **16.404 ft** cable length type and pigtail type are also available.

2) The sensing range is the possible setting distance between the emitter and the receiver.

Model No.	NA1-PK5	NA1-5	NA1-PK5-PN	NA1-5-PN
Number of beam channels	5 beam channels			
Sensing height	100 mm <b>3.937 in</b>			
Sensing range (Note)	0.1 to 1.2 m <b>0.328 to 3.937 ft</b> (0.05 to 0.5 m <b>0.164 to 1.640 ft</b> when set to SHORT)	0.2 to 3 m <b>0.656 to 9.843 ft</b> (0.05 to 1 m <b>0.164 to 3.281 ft</b> when set to SHORT)	0.1 to 1.2 m <b>0.328 to 3.937 ft</b> (0.05 to 0.5 m <b>0.164 to 1.640 ft</b> when set to SHORT)	0.2 to 3 m <b>0.656 to 9.843 ft</b> (0.05 to 1 m <b>0.164 to 3.281 ft</b> when set to SHORT)
Beam pitch	25 mm <b>0.984 in</b>			
Sensing object	ø35 mm <b>ø1.378 in</b> or more opaque object (completely beam interrupted object)			
Supply voltage	12 to 24 V DC ±10 % Ripple P-P 10 % or less			
Output	NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)	PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 1 V or less (at 100 mA source current) 0.4 V or less (at 16 mA source current)		
Output operation	ON or OFF when one or more beam channels are interrupted / ON or OFF when two or more beam channels are interrupted, selectable by operation mode switch			
Response time	10 ms or less (when the interference prevention is used, in Light state: 30 ms or less, in Dark state: 13 ms or less)			
Ambient temperature	-10 to +55 °C <b>+14 to +131 °F</b> (No dew condensation or icing allowed), Storage: -20 to +70 °C <b>-4 to +158 °F</b>			
Dimensions (mm in)	W30 × H140 × D10 <b>W1.181 × H5.512 × D0.394</b>			

Note: The sensing range is the possible setting distance between the emitter and the receiver.

Model No. (Note 2)	NA2-N8	NA2-N12	NA2-N16	NA2-N20	NA2-N24	NA2-N28
Number of beam channels	8 beam channels	12 beam channels	16 beam channels	20 beam channels	24 beam channels	28 beam channels
Sensing height	140 mm <b>5.512 in</b>	220 mm <b>8.661 in</b>	300 mm <b>11.811 in</b>	380 mm <b>14.961 in</b>	460 mm <b>18.110 in</b>	540 mm <b>21.260 in</b>
Sensing range (Note 3)	5 m <b>16.404 ft</b>					
Beam pitch	20 mm <b>0.787 in</b>					
Sensing object	ø30 mm <b>ø1.181 in</b> or more opaque object (completely beam interrupted objects)					
Supply voltage	12 to 24 V DC ±10 % Ripple P-P 10 % or less					
Output	<NPN output type> NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 2 V or less (at 100 mA sink current) 1 V or less (at 16 mA sink current)			<PNP output type> PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 2 V or less (at 100 mA source current) 1 V or less (at 16 mA source current)		
Output operation	ON when all beam channels are received (OFF when one or more beam channels are interrupted)					
Response time	10 ms or less (12 ms or less when the interference prevention function is used)					
Ambient temperature	-10 to +55 °C <b>+14 to +131 °F</b> (No dew condensation or icing allowed), Storage: -10 to +60 °C <b>+14 to +140 °F</b>					
Dimensions (mm in)	W30 × H190 × D13 <b>W1.181 × H7.480 × D0.512</b>	W30 × H270 × D13 <b>W1.181 × H10.630 × D0.512</b>	W30 × H350 × D13 <b>W1.181 × H13.780 × D0.512</b>	W30 × H430 × D13 <b>W1.181 × H16.929 × D0.512</b>	W30 × H510 × D13 <b>W1.181 × H20.079 × D0.512</b>	W30 × H590 × D13 <b>W1.181 × H23.228 × D0.512</b>

Notes: 1) 5 m **16.404 ft** cable length type is also available.

2) PNP output type has a suffix "**-P**" to the model number.

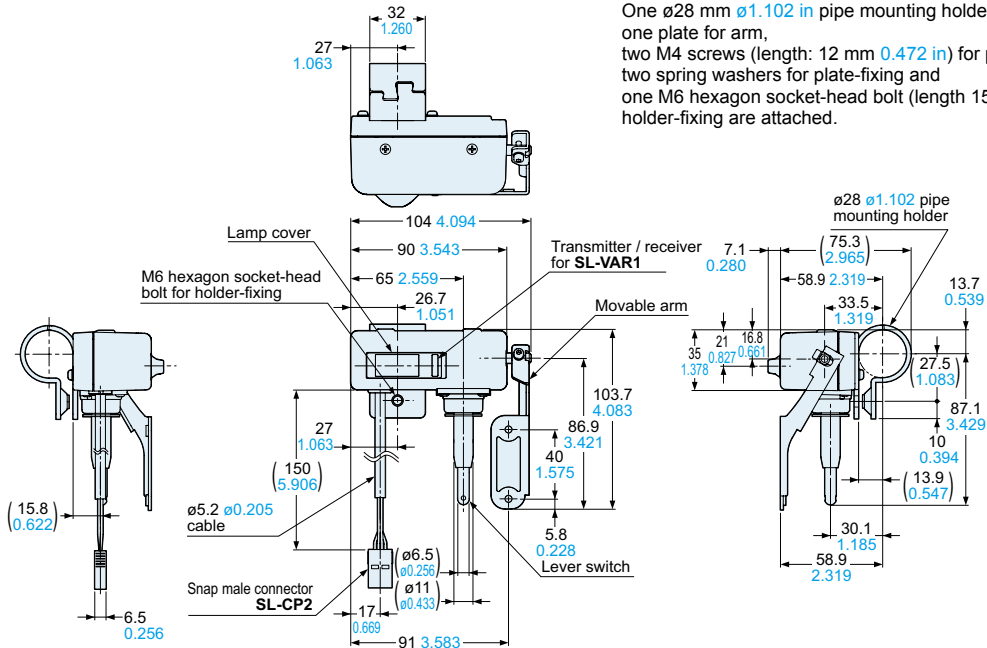
3) The sensing range is the possible setting distance between the emitter and the receiver.

## DIMENSIONS (Unit: mm in)

Refer to our website for dimensions of area sensors.  
The CAD data can be downloaded from our website.

### SL-VPK02

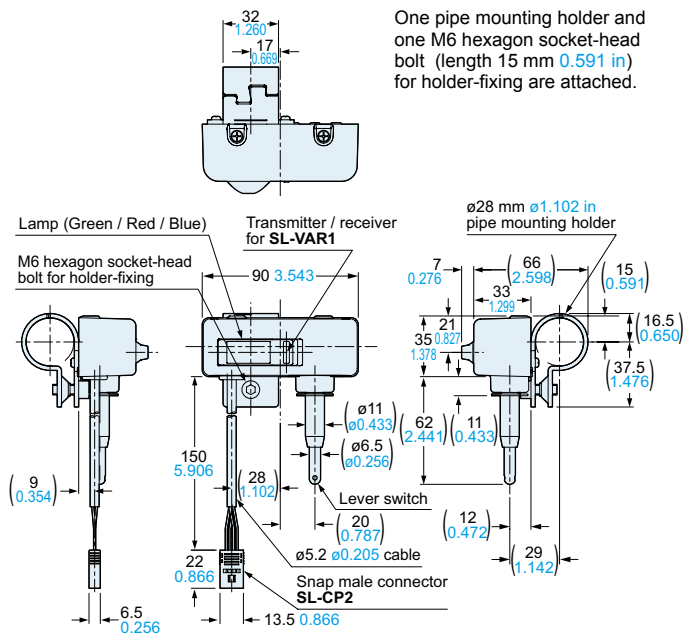
### Picking switch



One  $\varnothing 28$  mm  $\varnothing 1.102$  in pipe mounting holder,  
one plate for arm,  
two M4 screws (length: 12 mm  $0.472$  in) for plate-fixing,  
two spring washers for plate-fixing and  
one M6 hexagon socket-head bolt (length 15 mm  $0.591$  in) for  
holder-fixing are attached.

### SL-VPK01

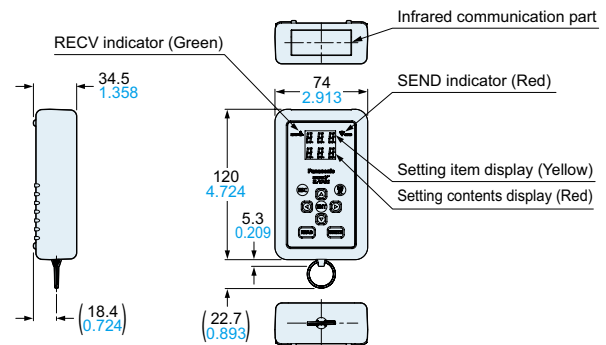
### Picking switch



One pipe mounting holder and  
one M6 hexagon socket-head  
bolt (length 15 mm  $0.591$  in)  
for holder-fixing are attached.

### SL-VAR1

### Address setting remote controller (optional)



## Mounting

- Use  $\varnothing 28$  mm  $\varnothing 1.102$  in pipes for the installation of the product.