AnyWireASLINK System Product Guide

ASLINKSENSOR [Laser Spot, Retroreflective Type]

BS-L0217-1K

■ Note on use

For setting addresses and other parameters, ARW-04 (Ver. 04-1.01 or later version) is required. Prepare the Address Writer separately.

[Notes on Safety]

Precautions that must be observed in order to use this system safely are indicated as shown below. You must observe these precautions.

⚠ WARNING	A WARNING indicates a potentially hazardous situation which, if not handled correctly, could result in death or serious injury.
⚠ CAUTION	A CAUTION indicates a potentially hazardous situation which, if not handled correctly, may result in personal injury or property damage.

⚠ **WARNING**

○ System Safety
This system is intended for general industrial applications. It does not have functions for supporting applications requiring higher levels of safety such as safety-related devices or accident prevention systems. The product must not be used for these purposes.
○ Always turn off the power in installing or replacing the system.
○ Prolonged continuous flow of a rated load current or higher or a transit current due to load short-circuit, etc., in the hybrid unit including the output unit and the output circuit may result in smoking or firing. An external safety device such as a fuse must be installed.

⚠ **CAUTION**

○ System power supply
Use a stable, 24V DC power supply. Use of an unstable power supply may cause problems with the system.
○ Separately route high-voltage and power cables
Although the AnyWireASLINK has a high noise margin, install the transmission line and I/O cables away from high-voltage and power cables.
○ Connectors and terminals
 - Consider the length and securing method of cables so that the cables and connectors would not be subjected to any stress and, even if they are under stress, they would not become loose.
 - Make sure to prevent any metal objects from getting inside the connectors or the terminal blocks.
 - Short-circuits caused by metal objects or mis-wiring are likely to damage the device.
○ Do not impose any external loads on the units. Doing so may cause a failure.
○ Do not disconnect or reconnect between the transmission line and slave units when the transmission line is active. A malfunction may occur.
○ Use the AnyWireASLINK within the range of the specifications and conditions shown below.

[Warranty]

■ Warranty period
The warranty on the delivered Product shall continue to be effective for one (1) year after the delivery thereof to a location as designated by the original owner.

■ Scope of warranty
Should a defect occur in any part of the Product during the foregoing warranty period when it is used normally in accordance with the specifications described in this Product Guide, the Company shall replace or repair the defect free of charge, except when it arises as a result of:
[1] Misuse or abuse of the Product by the owner;
[2] Fault caused by other than the delivered Product;
[3] The unauthorized modification or repair of the Product by any person other than the Company's personnel;
[4] Any unusual force of nature, disaster or other cause beyond the Company's control.
The term "warranty," as used herein, refers to the warranty applicable to the delivered product alone. The Company shall not be liable for consequential or incidental damages resulting from any malfunction.

■ Repair at cost
After the expiration of the warranty period, the owner shall be responsible for all costs and expenses incurred for the troubleshooting and repair of the Product. Even during the warranty term, the Company shall repair any defects arising from causes other than within the scope of the warranty as specified above, at the owner's cost.

■ Changes in the product specifications and the descriptions in the manual
The descriptions in this manual may be subject to change without notice.

[Laser Safety]

■ Warning label
An explanation label is provided on the side face of this sensor according to JIS C 6802:2014 and IEC 60825-1:2007.

クラス1 レーザ製品 CLASS 1 LASER PRODUCT

⚠ WARNING	Do not look directly into the laser beam because it is dangerous. Provide a consideration to prevent the reflective beam from harming human eyes by terminating the path of laser beam. If the sensor is used with the laser beam path open, pay attention not to let the beam hitting human eyes directly by avoiding eye level for the laser beam path.

[Type]

AnyWireASLINK sensor: Laser spot, retroreflective type, bit operation

BS-L0217-1K	Input 1 point

[Functions]

Model	ASLINKSENSOR 2-wire type (non-isolated)
Detection method	Retroreflective type
Description	Remote address change*1
	Sensitivity adjustment (threshold)
	Hysteresis
	Alarm determination level
	Alarm determination time
	Light ON/Dark ON
	Operation mode
	Sensing level mode switching
	Delay timer
	One shot
	Laser beam ON/OFF
	Mutual interference prevention
	Optical axis check indication

*1 To use this function, the master unit compatible with each function is required. For details, refer to this manual together with the manual for the master unit.

■ Detecting functions (Status details)

Description	Slave unit voltage drop	○
	I/O disconnection	✕
	I/O short-circuit	✕
	Sensing level drop	○
	I/O power supply drop	✕
	Laser output operation error	○

*2 It depends on lot No. whether this function is available or not.

[Function Compatibility by Lot No.]

This unit has undergone addition of functions and change of specifications according to version upgrading. Available functions and specifications of the unit vary depending on lot No.

Function/specification	Lot No.
Detection of laser output operation error	Available with lot No. that indicates year and month digits of "20D" or later.

■ How to check

Lot No. is indicated on the lot label.
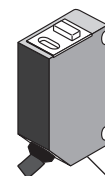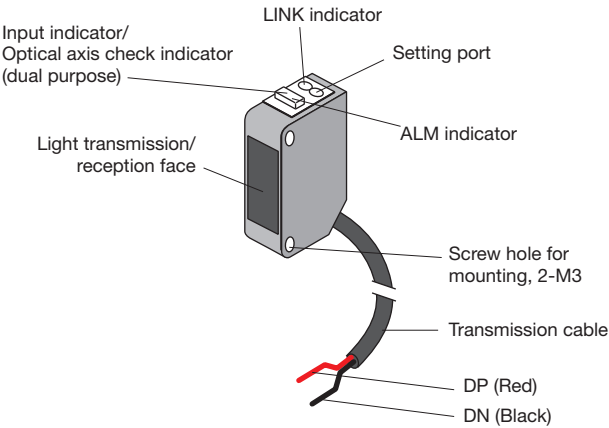
Bottom of this unit

Example: Lot No. 19E

May 2019

[Included in the Package]

BS-L0217-1K	This product ... 1

＊Mounting fitting should be purchased separately as required.

[Name of Each Part]

- Input indicator/ Optical axis check indicator (dual purpose)
- LINK indicator
- Setting port
- ALM indicator
- Light transmission/ reception face
- Screw hole for mounting, 2-M3
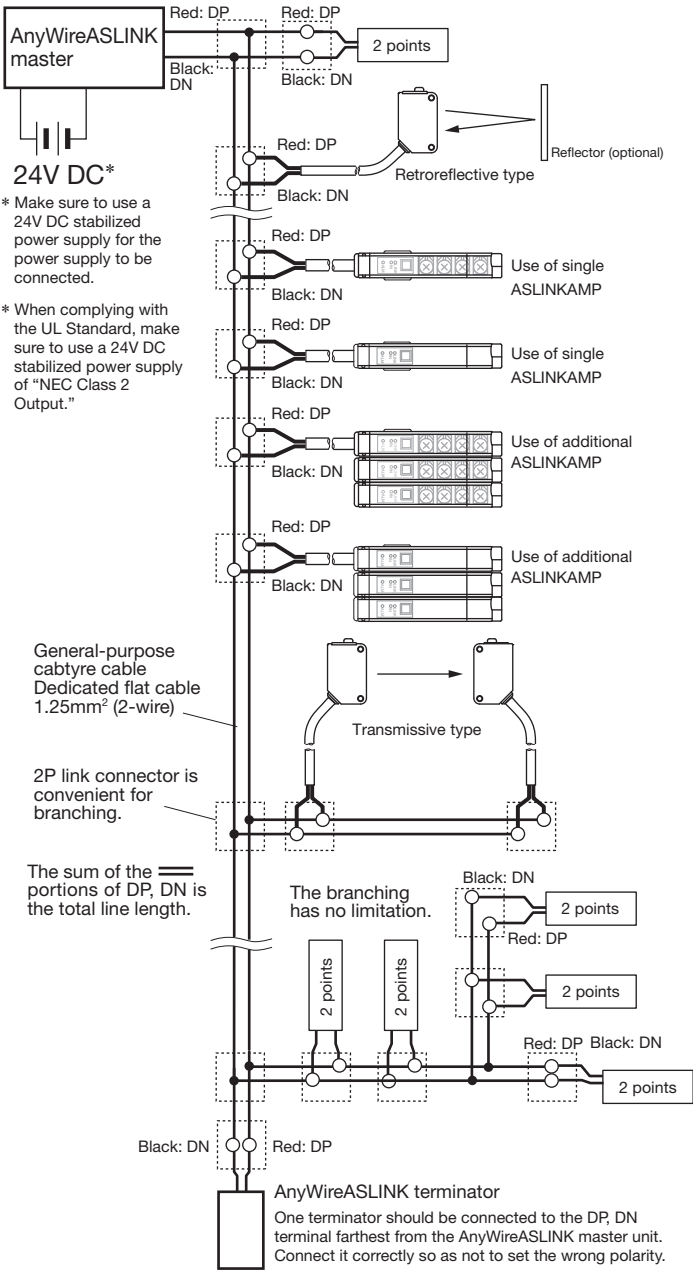- Transmission cable
- DP (Red)
- DN (Black)

[How to Connect AnyWireASLINK]

The AnyWireASLINK can employ a two-wire or four-wire terminal selectively depending on the load current. If the load current is small, using a two-wire (non-isolated) terminal allows for achieving simplified wiring without local power supply.
In the case of prioritizing the sites of concentrated loads and/or the number of connections, hybridization with a four-wire (isolated) terminal, which supports local power supply, is also possible.
Make sure to use a four-wire (isolated) terminal in the case of input and load driving using an external power supply.

[System Configuration Example]

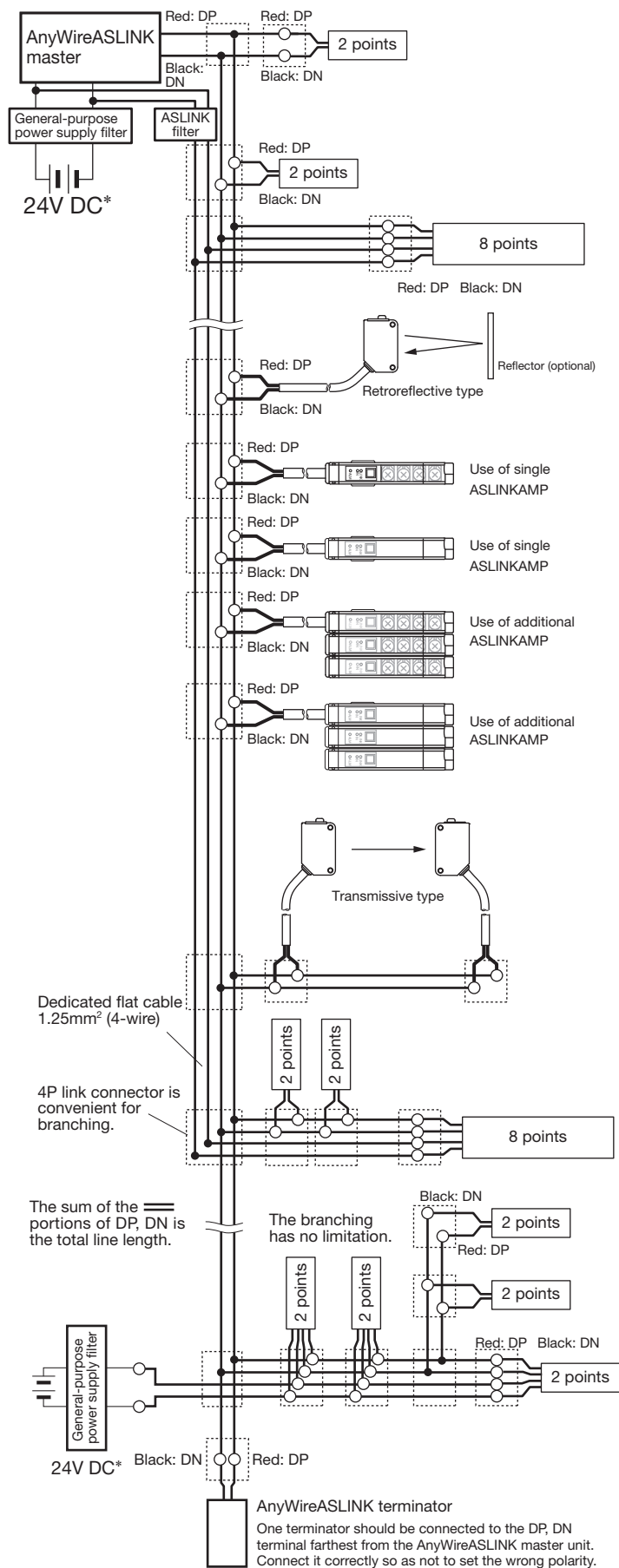■Connection with 2-wire (non-isolated) terminals only

AnyWireASLINK master

Red: DP
Black: DN

2 points

24V DC*

＊ Make sure to use a 24V DC stabilized power supply for the power supply to be connected.

＊ When complying with the UL Standard, make sure to use a 24V DC stabilized power supply of "NEC Class 2 Output."

Red: DP
Black: DN
Reflector (optional)
Retroreflective type

Red: DP
Black: DN
Use of single ASLINKAMP

Red: DP
Black: DN
Use of single ASLINKAMP

Red: DP
Black: DN
Use of additional ASLINKAMP

Red: DP
Black: DN
Use of additional ASLINKAMP

General-purpose cabtyre cable Dedicated flat cable 1.25mm^2 (2-wire)

Transmissive type

2P link connector is convenient for branching.

The sum of the ═ portions of DP, DN is the total line length.

The branching has no limitation.

Black: DN
2 points
Red: DP

2 points
2 points

2 points

Red: DP Black: DN
2 points

Black: DN Red: DP

AnyWireASLINK terminator
One terminator should be connected to the DP, DN terminal farthest from the AnyWireASLINK master unit. Connect it correctly so as not to set the wrong polarity.

■Relationship between the size and length of the transmission line and the supply current (Table 1)

Size of the transmission line (DP, DN)	Supply current on the transmission line (DP, DN)		
	Total length: 50m or less	Total length: Over 50m, no longer than 100m	Total length: Over 100m, no longer than 200m
1.25mm^2	MAX 2A	MAX 1A	MAX 0.5A
0.75mm^2	MAX 1.2A	MAX 0.6A	MAX 0.3A
0.5mm^2	MAX 0.8A	MAX 0.4A	MAX 0.2A

⚠ CAUTION
- Refer to Table 1 so that the size and length of the transmission line and the allowable supply current lie within an appropriate range.
- Connect the same symbols (DP, DN) correctly between the AnyWireASLINK master unit and each device.
- The branching length or branch number has no limitation.
- Include the length of the cable provided with the terminal in the "total line length."
- Connect the terminator (with polarity) on the transmission line terminal farthest from the AnyWireASLINK master unit.

■ Example of mixed installation with 2-wire (non-isolated) and 4-wire (isolated) terminals

AnyWireASLINK master

General-purpose power supply filter

ASLINK filter

24V DC*

Red: DP Red: DP
Black: DN Black: DN
2 points

Red: DP
Black: DN
2 points

Red: DP Black: DN
8 points

Red: DP
Reflector (optional)
Black: DN
Retroreflective type

Red: DP
Black: DN
Use of single ASLINKAMP

Red: DP
Black: DN
Use of single ASLINKAMP

Red: DP
Black: DN
Use of additional ASLINKAMP

Red: DP
Black: DN
Use of additional ASLINKAMP

Transmissive type

Dedicated flat cable 1.25mm² (4-wire)

4P link connector is convenient for branching.

2 points 2 points
8 points

The sum of the ▬ portions of DP, DN is the total line length.

The branching has no limitation.

Black: DN
2 points
Red: DP

2 points
2 points

2 points
2 points

Red: DP Black: DN
2 points

General-purpose power supply filter

24V DC*

Black: DN Red: DP

AnyWireASLINK terminator

One terminator should be connected to the DP, DN terminal farthest from the AnyWireASLINK master unit. Connect it correctly so as not to set the wrong polarity.

⚠ CAUTION To connect loads (e.g. I/O ports) that are controlled with a power supply other than the one used for the AnyWireASLINK system, always use a 4-wire (isolated) terminal. Otherwise, malfunction may be caused.

[Notes on Combined Use of 4-Wire (Isolated) Terminal]

If the total length of the sections where all the DP, DN, 24V, and 0V lines run in parallel in the power supply system is more than 50m, connect an ASLINK filter (Type ANF-01) or a filter manufactured by COSEL Co., Ltd. (Type EAC-06-472) in series to the 24V and 0V lines at a position where these four lines start running in parallel.

This will improve noise resistance, suppress the adverse effects of crosstalk caused by transmitted signals, and stabilize signals.

The above filters must be inserted regardless of whether power is supplied to all terminals collectively from the power supply for the master or power is supplied to each terminal individually from their local power supply.
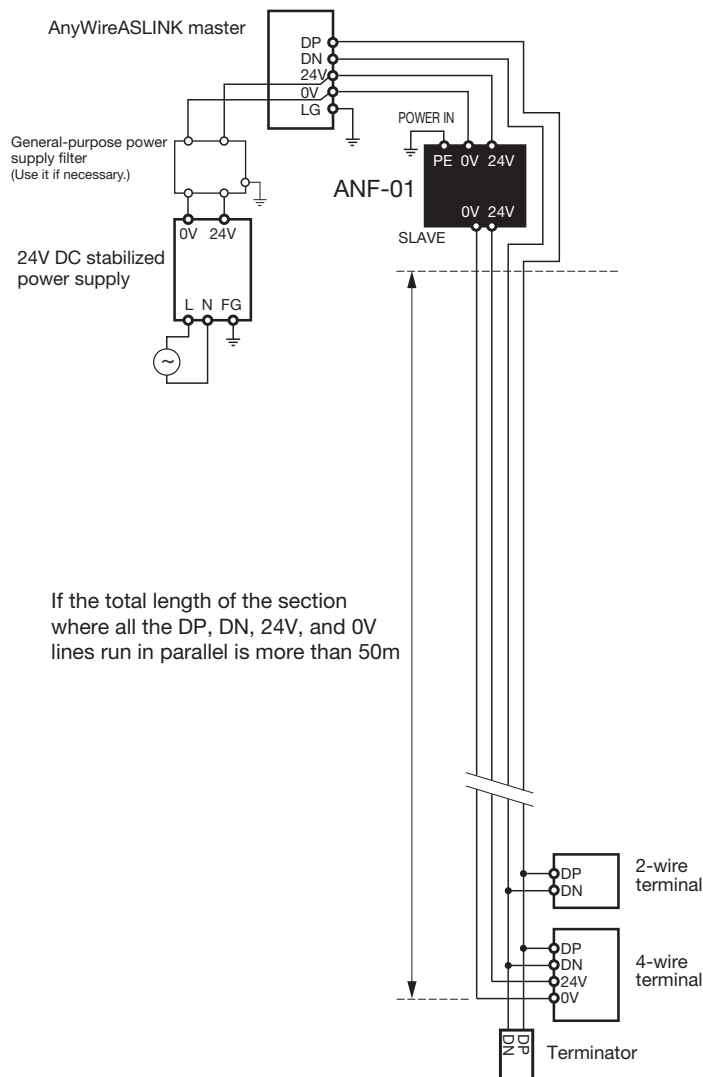
> Insert the "ASLINK filter [Type ANF-01]" regardless of installation method and distance when complying with CE Standard.
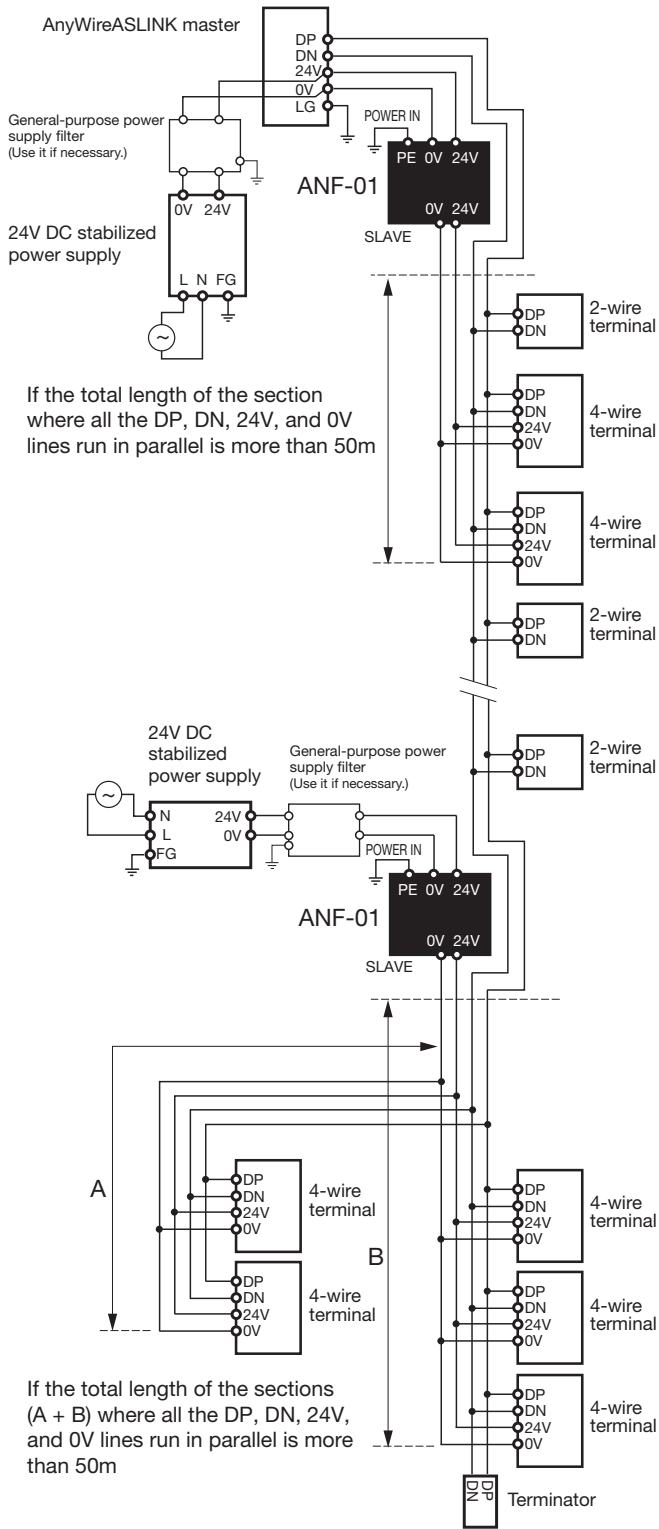
■ Filter allowable current

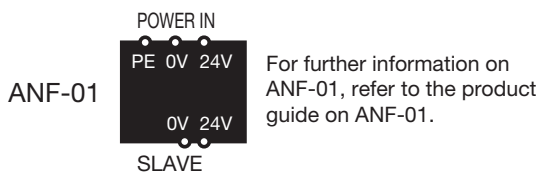| Product	Type	Allowable power current
ASLINK filter	ANF-01	MAX 5A/24V DC
Filter of COSEL Co., Ltd.	EAC-06-472	MAX 6A/24V DC

■ AnyWire Type: ANF-01 Connection example

① Power supply to the entire system

AnyWireASLINK master

DP
DN
24V
0V
LG

General-purpose power supply filter (Use it if necessary.)

24V DC stabilized power supply

0V 24V

L N FG

POWER IN
PE 0V 24V
ANF-01
0V 24V
SLAVE

If the total length of the section where all the DP, DN, 24V, and 0V lines run in parallel is more than 50m

DP
DN
2-wire terminal

DP
DN
24V
0V
4-wire terminal

DP
DN
Terminator

②Local power supply/branching

AnyWireASLINK master

General-purpose power supply filter
(Use it if necessary.)

DP
DN
24V
0V
LG

POWER IN

PE 0V 24V

ANF-01

0V 24V

SLAVE

24V DC stabilized power supply

0V 24V

L N FG

DP
DN — 2-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN — 2-wire terminal

If the total length of the section where all the DP, DN, 24V, and 0V lines run in parallel is more than 50m

24V DC stabilized power supply

General-purpose power supply filter
(Use it if necessary.)

N 24V
L 0V
FG

POWER IN

PE 0V 24V

ANF-01

0V 24V

SLAVE

DP
DN — 2-wire terminal

A

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

B

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

If the total length of the sections (A + B) where all the DP, DN, 24V, and 0V lines run in parallel is more than 50m

DP
DN Terminator

■Filter representation in the drawing

POWER IN

PE 0V 24V

ANF-01

0V 24V

SLAVE

For further information on ANF-01, refer to the product guide on ANF-01.

■COSEL Co., Ltd. Type: EAC-06-472 Connection example

①Power supply to the entire system

AnyWireASLINK master

General-purpose power supply filter
(Use it if necessary.)

DP
DN
24V
0V
LG

LOAD

PE 0V 24V

0V 24V

LINE

EAC-06-472

24V DC stabilized power supply

0V 24V

L N FG

If the total length of the section where all the DP, DN, 24V, and 0V lines run in parallel is more than 50m

DP
DN — 2-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN Terminator

② Local power supply/branching

AnyWireASLINK master

General-purpose power supply filter
(Use it if necessary.)

24V DC stabilized power supply

DP
DN
24V
0V
LG

LOAD

PE 0V 24V

0V 24V

LINE

EAC-06-472

0V 24V

L N FG

DP
DN — 2-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN — 2-wire terminal

If the total length of the section where all the DP, DN, 24V, and 0V lines run in parallel is more than 50m

DP
DN — 2-wire terminal

24V DC stabilized power supply

General-purpose power supply filter
(Use it if necessary.)

N 24V
L 0V
FG

LOAD

PE 0V 24V

0V 24V

LINE

EAC-06-472

A

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

B

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

DP
DN
24V
0V — 4-wire terminal

If the total length of the sections (A + B) where all the DP, DN, 24V, and 0V lines run in parallel is more than 50m

DP
DN — Terminator

■ Filter representation in the drawing

EAC-06-472

LOAD

PE 0V 24V

0V 24V

LINE

[Connection Method]

Connect the transmission line included in the master unit to the transmission line of the AnyWireASLINK master unit. Make sure that connections of the positive and negative polarities are correct.

Light transmission/reception face

UL style 2103
2-wire × AWG24 (black) φ4.1

Transmission line

Red: DP (+)
Black: DN (−)

Finished outer diameter of core wire
φ1.5
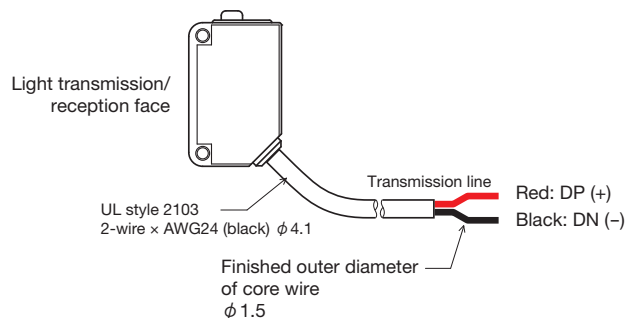
■ Example of fitting the LP connector at the end of transmission line

Applicable LP connector: LP2-PWH-10P

Place the wires in the grooves so that the black wire (DN) is on the hinge side of the cover, fold A over B and engage the hook C to fasten it.

A
B
C
Cover

The condition in which the cover is fitted.
Ensure that the hooks ① and ② are engaged.

① ②

Bracket insertion hole

Bracket

Pressure-bond using a dedicated tool by guiding the metal bracket on the connector body into the hole of the cover.

Dedicated tool: LP-TOOL

③ ④
⑤ ⑥

After pressure-bonding, ensure that the hooks ③ to ⑥ are securely engaged.

[Installation Example]

The bracket should be purchased separately.
M3 screw tightening torque: 0.25N·m or less

⚠ **CAUTION**

To secure the sensor, allow some extra length on the cable so that the cable and the connectors would not be subjected to any stress.
Do not tighten the screws too tight. Doing so may cause a failure or optical axis deviation.
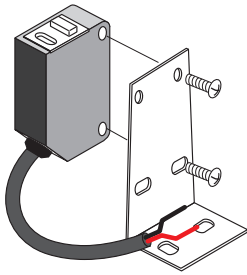
[Installation Location]

- Locations where this product is not directly subject to vibration or shock
- Locations where this product is not exposed to dust and/or water continuously, even if it is waterproof
- Locations where this product is not directly exposed to conductors, such as metal chips or spatters
- Locations without condensation
- Locations where the atmosphere is free of corrosive gases, flammable gases, and sulfur
- Locations far from high-voltage or high-current cables
- Locations far from servos, inverters, and other cables and controllers that generate high-frequency noise
- Locations where this product is not directly exposed to the sunlight

⚠ **CAUTION**

For an application in which the distance between the sensor and the reflector is 2m or less, use a reflector made of fine corner cubes.
For AKR-1 and AKR-2, the reception light level may change significantly with a slight deviation in the optical axis. When a reflector other than AKR-1 and AKR-2 is used, always ensure to validate the operation.

[Notes on the Use]

- This unit should be used by connecting it with the AnyWireASLINK transmission line. It will not work if it is connected directly to an I/O card for a PLC.
- Use it in an appropriate voltage range.
- The transmission line attached to ASLINKSENSOR should be counted in the determination of the total length.

[Various Settings]

| Address setting | Teaching | Parameter setting |

■ Common procedure for address writer operation

Use the address writer with the sensor connected to the AnyWireASLINK master unit.
An address writer ARW-04 (Ver. 04-1.01 or later) is required for the operation.
For further information on the operation, refer to the product guide for the address writer.

1. Connect the terminal to the AnyWireASLINK master unit.
   With the transmission signal (DP, DN) being connected, set parameters with the address writer.

Transmission signal

Red: DP

Black: DN

AnyWireASLINK master

24V DC*

* Use a 24V DC stabilized power supply.
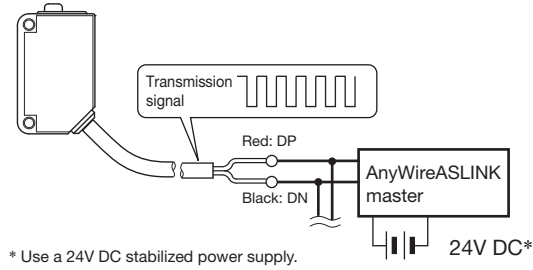
2. All terminals require settings.
   Perform the settings with the address writer pointed toward the setting port on the sensor.
   (Hold the light emitting/receiving part as close as possible to the setting port.)

Setting port
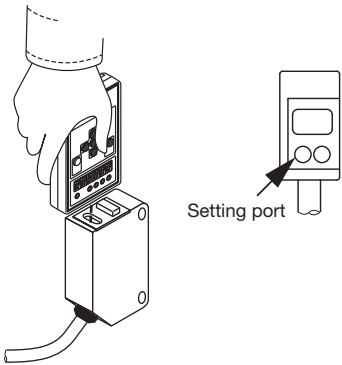
| Address setting |

For address numbers, specify the leading number of the transmission frames to be allocated to the terminal.
The address numbers of this unit are set between 0 and 254.

⚠ **CAUTION**

The factory setting of the terminal is "255," which means no setting.
If the address number is set to 255, the terminal does not perform I/O operations.
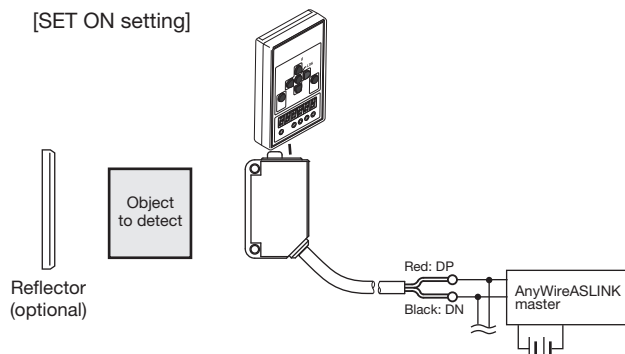Before using the terminal, be sure to set an address number between 0 and 254.

Teaching

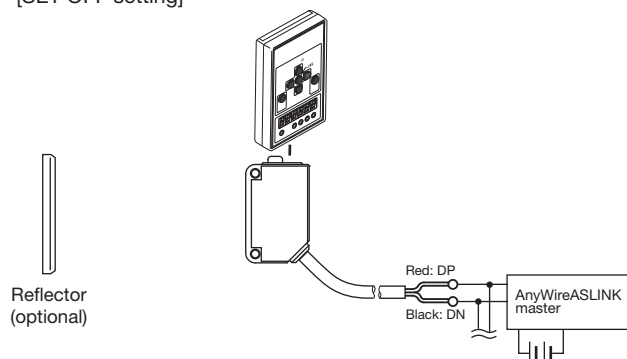Save the condition with and without a workpiece in the ASLINKSENSOR.

> The setting procedure should be conducted with a workpiece to be actually used.
> To select the "0–100%" mode for the light receiving level indication setting (equipment parameter 8), be sure to conduct teaching.

[SET ON setting]

Object to detect

Reflector (optional)

Red: DP
Black: DN

AnyWireASLINK master

[SET OFF setting]

Reflector (optional)

Red: DP
Black: DN

AnyWireASLINK master

[Automatic setting for teaching]

> If you conduct teaching when "AD value indication" is selected for the light receiving level indication setting (equipment parameter 8), "threshold," "hysteresis," "alarm Hi" and "alarm Lo" values will be automatically calculated and set at the following ratio, based on the difference in AD values between SET ON status (workpiece is present) and SET OFF status (no workpiece).
>
> * When the "0–100%" mode is selected for light receiving level indication setting (equipment parameter 8), the automatic setting function for teaching is disabled.

Threshold	50%
Hysteresis	5%
Alarm Hi	80%
Alarm Lo	20%

Example)

①SET ON   AD value for workpiece present status is "0."

②SET OFF   AD value for workpiece absent status is "980."

With the difference "980" in AD values between SET ON status and SET OFF status defined as the reference (100%), the following parameters will be automatically set.
Threshold (Equipment parameter 1): 490 (50%)
Hysteresis (Equipment parameter 2): 49 (5%)
Alarm Hi (Equipment parameter 3): 784 (80%)
Alarm Lo (Equipment parameter 4): 196 (20%)

Parameter setting

■ Threshold setting   [Equipment parameter 1]

This parameter determines the level of light to be received for detecting a workpiece.

Variable	Description	
0–1023	AD value	* With the equipment parameter 8 setting of "0"
0–100	0–100%	* With the equipment parameter 8 setting of "1"

Factory setting: 50

■ Hysteresis setting   [Equipment parameter 2]

This parameter determines the light level required for the detection condition to change from ON to OFF.

Variable	Description	
0–1023	AD value	* With the equipment parameter 8 setting of "0"
0–100	0–100%	* With the equipment parameter 8 setting of "1"

Factory setting: 10

■ Alarm Hi setting   [Equipment parameter 3]

This parameter determines the upper limit for issuing an alarm.
* Set the alarm level so that the relationship Hi > Lo will be satisfied.

Variable	Description	
0–1023	AD value	* With the equipment parameter 8 setting of "0"
0–100	0–100%	* With the equipment parameter 8 setting of "1"

Factory setting: 0

■ Alarm Lo setting   [Equipment parameter 4]

This parameter determines the lower limit for issuing an alarm.
* Set the alarm level so that the relationship Hi > Lo will be satisfied.

Variable	Description	
0–1023	AD value	* With the equipment parameter 8 setting of "0"
0–100	0–100%	* With the equipment parameter 8 setting of "1"

Factory setting: 0

■ Alarm monitoring time setting   [Equipment parameter 5]

This parameter determines the monitoring time of alarm determination.

Variable	Unit	
3–255	100ms	Factory setting: 50

■ Light ON/Dark ON setting   [Equipment parameter 6]

This parameter determines Light ON or Dark ON.

Variable	Description	
0	Dark ON	
1	Light ON	Factory setting: 0

■ Operation mode setting　[Equipment parameter 7]

This parameter disables/enables the preventive maintenance function and optical axis check indication.

| Variable	Description
0	Preventive maintenance function OFF, optical axis check indication OFF
1	Preventive maintenance function ON, optical axis check indication OFF
2	Preventive maintenance function OFF, optical axis check indication ON
3	Preventive maintenance function ON, optical axis check indication ON

Factory setting: 2

<Preventive maintenance function>

By enabling the preventive maintenance function, it is possible to detect the drop in the sensing level.
The sensing level is determined to have dropped if the current sensing level remained within the range set with the alarm Hi (equipment parameter 3) and alarm Lo (equipment parameter 4) for a period set in the alarm monitoring time (equipment parameter 5).

(Example)
With the settings of:
Alarm Hi (equipment parameter 3)　　　　: 80
Alarm Lo (equipment parameter 4)　　　　: 20
Alarm monitoring time (equipment parameter 5): 50

＊An example of sensing level mode setting of "0–100% indication"
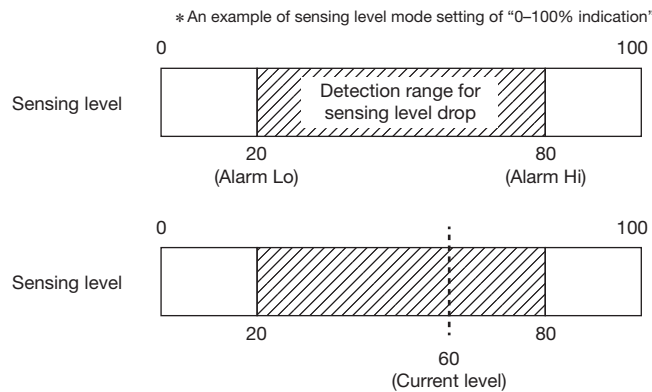
If this condition continues for 5000ms (equipment parameter 5: 50 × 100ms), it is detected as a drop in the sensing level and the user is notified with the ALM indicator on the unit and the alarm information is sent to the status detail area*1 on the master unit.

＊1 This can be used on the master unit having the status detail area.
　　For details, refer to the manual for the master unit.

<Optical axis check indication>

By enabling the optical axis check indication, the "IN/optical axis check indicator" blinks to notify the user if the current sensing level is near the threshold and the determination of ON/OFF condition is unstable.

＊The ON/OFF operation continues according to the threshold setting with the indication of unstable operation.

■ Sensing level mode setting　[Equipment parameter 8]

This parameter determines the sensing level.
Based on this setting, equipment parameters 1, 2, 3, 4 and the sensing level will be automatically set to AD value or a value in the range of 0 to 100%.

Variable	Description
0	AD value indication (0–1023 Digit)
1	0–100% indication

Factory setting: 0

＊Once the setting was modified by writing parameters from the host, the values of equipment parameters 1, 2, 3 and 4 will not be converted automatically.

■ ON delay setting　[Equipment parameter 10]

This parameter determines the ON delay time.

Variable	Unit
0–999	100ms

Factory setting: 0

■ OFF delay setting　[Equipment parameter 11]

This parameter determines the OFF delay time.

Variable	Unit
0–999	100ms

Factory setting: 0

■ One Shot setting　[Equipment parameter 12]

This parameter determines the One Shot time.

Variable	Unit
0–999	100ms

Factory setting: 0

■ Laser beam ON/OFF setting　[Equipment parameter 17]

The laser beam can be turned ON and OFF.

Variable	Description
0	Laser beam OFF
1	Laser beam ON
0→1	Laser output operation error clear*2

Factory setting: 1

＊2　Supported by products of Lot No. "20D" or later.

If the state shifts from laser beam OFF to ON, the laser output operation error is cleared and the laser beam will be turned ON again.

> Equipment parameters 【9】, 【13】 through 【16】, 【18】 and 【19】 are system parameters. Do not change their settings.

[Data Configuration]

Address offset	n
Description	IN

＊n = Bit address number set in this unit

■ Sensing level

This unit sends the light reception level to the "sensing level area*3" on the master unit.

Sensing level	Light reception level (16-bit binary data)

Sensing level mode (equipment parameter 8)
　　　　　　　　indication in AD value: 0 to 1023 (0Hex to 3FFHex)
Sensing level mode (equipment parameter 8)
　　　　　　　　indication in 0–100%: 0 to 100 (0Hex to 64Hex)

＊3　This can be used on the master unit having the sensing level area.
　　For details, refer to the manual for the master unit.

■ Status details

The contents of an alarm detected with this unit can be checked with the "status detail area*4" on the master unit.
A bit corresponding to the status detail area turns ON depending on the contents of the alarm.

Status detail area of the master unit

Status details	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

b0: Slave unit voltage drop (DP-DN-side voltage drop)
b1: Sensing level drop
b6: Laser output operation error*5

＊4　This can be used on the master unit having the status detail area.
　　For details, refer to the manual for the master unit.
＊5　Supported by products of Lot No. "20D" or later.

[Concept of Interference Prevention]

The interference prevention function of this unit involves the address numbers of sensors.

They are divided in groups of even number by dividing the number of transmission points set on the AnyWireASLINK master unit by 16.

The interference prevention function works between sensors with address numbers of different groups.

Number of transmission points	Address				
512 points (256/256)	0–15	16–31	· · · ·	224–239	240–254
256 points (128/128)	0–7	8–15	· · · ·	112–119	120–127
128 points (64/64)	0–3	4–7	· · · ·	56–59	60–63
64 points (32/32)	0, 1	2, 3	· · · ·	28, 29	30, 31
Group	①	②	· · · ·	⑮	⑯

[Example: 512 point mode, sensor at address 10]
Interference can be prevented with sensors of address numbers 16 to 254.
Interference cannot be prevented with sensors of address numbers 0 to 15.

*The concept is the same for the interference prevention function between this unit and other ASLINKSENSOR (photoelectric) and ASLINKAMP (photoelectric, fiber) units.

[Monitor Display]

LED name	Display status		Description
LINK (Green)	Lit	▬▬▬	Transmission signal error
	Flashing	▪▪▪▪▪	Transmission signal supplied properly
	Unlit	☐	No transmission signal
ALM (Red)	Lit	▬▬▬	Sensing level drop*1
	Flashing	▪ ▪ ▪ ▪	Slave unit voltage drop
	Flashing Lit for 0.1 sec.⇔Unlit for 0.1 sec.	▬ ▬ ▬	Laser output operation error*2
	Unlit	☐	Normal
LINK ALM	Alternate flashing LINK ▬ ▬ ▬ ALM ▬ ▬ ▬		The master unit has detected that the unit ID (address) is either duplicated or unregistered
IN/ Optical axis check indication (Orange)	Lit	▬▬▬	ON
	Unlit	☐	OFF
	Flashing	▪▪▪▪▪	Unstable operation range*3

*1 Enabled when the preventive maintenance function is ON.
*2 Supported by products of Lot No. "20D" or later.
*3 Enabled when the optical axis check indication is ON.
The ON/OFF operation takes place even during indication of the unstable operation range.

Indicator — A
ALM (Red)
IN/Optical axis check indication (Orange)
LINK (Green)
Arrow A view
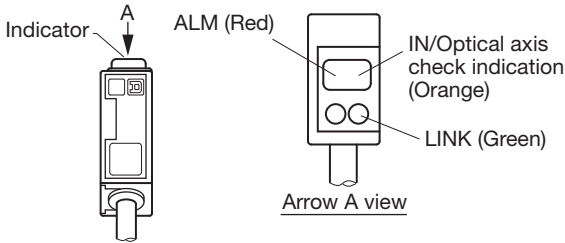
[Troubleshooting]

If the following errors are indicated on the display window of ASLINKSENSOR, take the following actions.

LINK	IN	ALM	Cause	Remedy
○ Unlit	○ Unlit	○ Unlit	- The ASLINKSENSOR is not connected to the AnyWireASLINK system. - The AnyWireASLINK system is not turned on.	- Check if there is a disconnection between the ASLINKSENSOR and AnyWireASLINK system and, if there was a disconnection, restore the connection. - Check the power supply of AnyWireASLINK system and turn ON the power.
● Lit	○ Unlit	○ Unlit	- Connected directly to the 24-0V power supply.	- Reconnect the power to the AnyWireASLINK system.
◎ Flashing (alternates with a 0.5 sec. interval)	○ Unlit	◎ Flashing (alternates with a 0.5 sec. interval)	- The address of ASLINKSENSOR remains as "255" (factory setting).	- Assign an address other than 255.
			- The address of ASLINKSENSOR is duplicated.	- Look for a unit that has the same error and assign an address different from the address of that unit.
—	—	◎ Flashing (Lit for 0.2 sec., unlit for 1.0 sec.)	- The voltage of internal power supply for the ASLINKSENSOR is low.	- Reduce the number of units connected to the same AnyWireASLINK system. - Reduce the length of transmission line between ASLINKSENSOR and the master unit.
—	—	◎ Flashing*4 (Lit for 0.1 sec., unlit for 0.1 sec.)	- A laser output operation error has been detected. - The transmission has stopped due to a laser output operation error. - There is a possibility that the unit has failed.	- Eliminate the cause and then reset the power or reset the error using the laser beam ON/OFF setting (equipment parameter 17), i.e. shifting the setting from "laser beam OFF" to "laser beam ON."
◎ Flashing	—	● Lit	- The sensing level is low.	- Check the condition of ASLINKSENSOR, adjust the optical axis and clean the transmission/reception face.
◎ Flashing	◎ Flashing (0.1 sec. interval)	—	- The light reception level is in the unstable region.	- Adjust the optical axis and the threshold.

*4 Supported by products of Lot No. "20D" or later.

If the following error is indicated on the address writer, take the following action.

Display	Cause	Remedy
【E-0303】	The parameter setting is incorrect.	Refer to the parameter correspondence table and correct the setting.

Should any of the following apply, take the following actions.

Symptom	Remedy
Detection cannot be made	- Is the angle of transmission/reception face correct? → If the transmission/reception face is displaced, install the unit properly. - Is the wiring correct? → Recheck the connection of ASLINKSENSOR transmission line. - Is there a power supply with a capacity appropriate for the AnyWireASLINK master and slave units and turned ON? → Check the power supply. - Are addresses set in the transmitter and receiver matched? → Set the same address for both the transmitter and receiver. - Has teaching been performed? → Perform teaching using a workpiece to be detected in the operation. - Is the sensor used in the specified detection range? → Use it within its rating.
Setting cannot be made with the address writer	- Is the wiring correct? → Recheck the connection of ASLINKSENSOR transmission line. - Is the power supplied to the AnyWireASLINK system? → Check the power supply. - Are the parameters set correctly? → Refer to the parameter correspondence table and correct the setting.

[Equipment Parameters and Their Settings]

Parameter	Variable	Description	Factory setting
【1】Threshold	0-1023[*1] (0-100%)	Light reception level for the detection	50
【2】Hysteresis	0-1023[*1] (0-100%)	Change in the light reception level required for the detection status to change from ON to OFF	10
【3】Alarm Hi	0-1023[*1] (0-100%)	Upper limit of light reception level for issuing an alarm	0
【4】Alarm Lo	0-1023[*1] (0-100%)	Lower limit of light reception level for issuing an alarm	0
【5】Alarm monitoring time	3-255	Monitoring time of the light reception level for issuing an alarm (1 = 100ms)	50
【6】Light ON/ Dark ON	0	Dark ON	0
	1	Light ON	
【7】Operation mode	0	Preventive maintenance function OFF, optical axis check indication OFF	2
	1	Preventive maintenance function ON, optical axis check indication OFF	
	2	Preventive maintenance function OFF, optical axis check indication ON	
	3	Preventive maintenance function ON, optical axis check indication ON	
【8】Light reception level indication	0	AD value indication (0-1023 Digit)	0
	1	0-100% indication	
【10】ON Delay	0-999	ON delay time (1 = 100ms)	0
【11】OFF Delay	0-999	OFF delay time (1 = 100ms)	0
【12】One Shot	0-999	One Shot time (1 = 100ms)	0
【17】Laser beam ON	0	Laser beam OFF	1
	1	Laser beam ON	
	0→1	Laser output operation error clear[*2]	

*1 The setting range depends on the equipment parameter 8 setting.
*2 Supported by products of Lot No. "20D" or later.

[Specifications]

■General specifications

Operating ambient temperature/humidity	0 – +55°C, 10 – 90%RH (No condensation)
Storing ambient temperature/humidity	-25 – +70°C, 10 – 90%RH (No condensation)
Operating ambient illuminance	Brightness on the reception face equivalent to 3000 lx of incandescent light
Vibration resistance	Based on JIS B 3502 and IEC 61131-2
Shock resistance	Based on JIS B 3502 and IEC 61131-2
Operating atmosphere	No corrosive gas
Operating altitude[*3]	0 – 2000m
Pollution level[*4]	2 or less

*3 Do not use or store AnyWireASLINK devices in an environment where the pressure exceeds the atmospheric pressure at an altitude of 0 meters. Doing so may result in malfunction.
*4 "Pollution level" is an index that indicates the degree of occurrence of conductive substances in the environment where the device is used.
Pollution level 2 means the occurrence of only pollution by non-conductive substances.
In such an environment, however, electrical conduction could occur due to accidental condensation.

■Transmission specifications

Service power supply voltage	24V DC +15% to -10% (21.6 to 27.6V DC) with a ripple of 0.5Vp-p or less
Transmission method	DC power supply superimposed total frame/cyclic method
Synchronization method	Frame/bit synchronization method
Transmission procedure	AnyWireASLINK protocol
Connection mode	Bus type (Multi-drop method, T-branch method, Tree branch method)
Number of connection points	512 max. (IN: 256, OUT: 256)
Number of connection units	Up to 128 units
RAS function	Detection of transmission line disconnection, transmission line short-circuit, and transmission power supply drop
	Detection of duplicated/unregistered ID

■Individual specifications

Number of occupied points	BS-L0217-1K: Input 1 point
Response time[*5]	1 – 2 cycles
Weight	33g
Detection method	Retroreflective
Detection distance	30m
Spot size[*7]	0.3 to 10m (using AKR-1)[*6]
Light source (illumination wavelength)	Red LD (655nm) JIS/IEC Class 1
Protective circuit	Short circuit protection of power supply, protection against reverse connection of power supply
Protection class	IP67
Current consumption	10mA

*5 A time required for ON/OFF detection until transmission signal output.
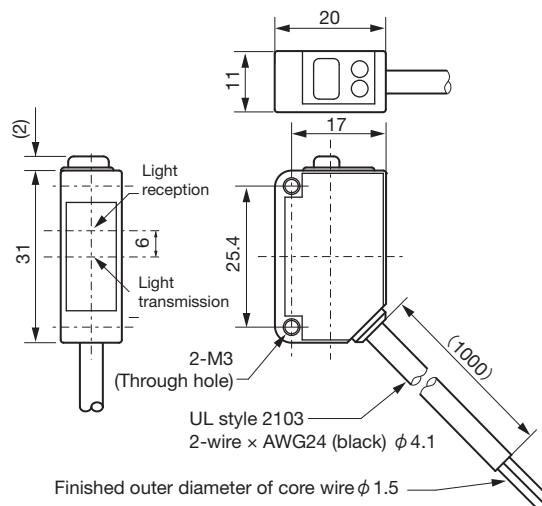To update data, 1-cycle transmission time is required in addition to the response time.
*6 To use the unit at a distance of 2m or less, use a reflector made of fine corner cubes.
For AKR-1 and AKR-2, the reception light level may change significantly with a slight deviation in the optical axis. When a reflector other than AKR-1 and AKR-2 is used, always ensure to validate the operation.
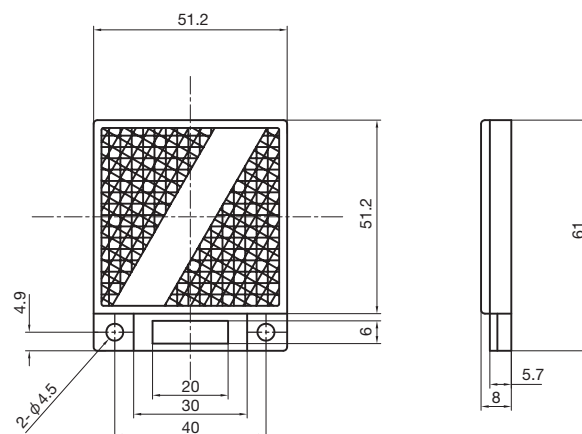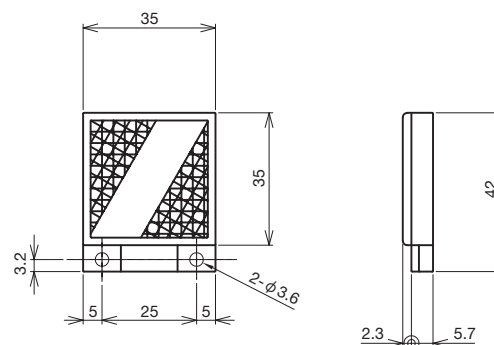*7 Reference value

[Outside Dimensions]

Unit: mm

<AKR-1>

<AKR-2>