

# AnyWireASLINK System Products Guide



ASLINKSENSOR [ASLINK Sensor]

**BS-K5217-M□□-3012**

## [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 Products 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.

## [Type]

AnyWireASLINK proximity sensor: Built-in amplifier, capacitive type

BS-K5217-M18-3012	M18, polyarylate (black)
BS-K5217-M30-3012	M30, polyarylate (black)

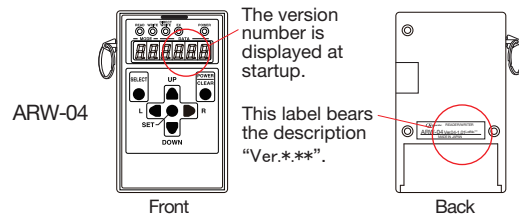
## [Function]

Model	ASLINKSENSOR 2-wire type (non-isolated)
Detection method	Capacitive type
Features	Sensitivity adjustment (threshold)
	Hysteresis
	Alarm determination level
	Alarm determination time
	Normally open/Normally closed
	Delay timer
	Slave unit voltage drop
	Sensing level drop
Teaching error	

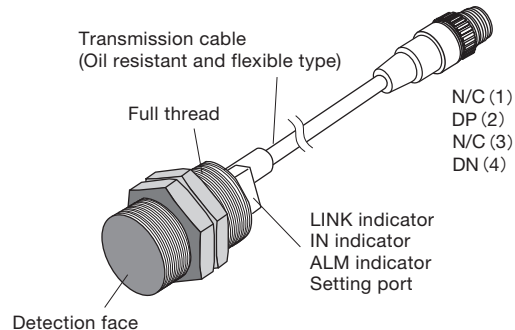
## [Included in the Package]

BS-K5217-M18-3012	This product ... 1
BS-K5217-M30-3012	Nut ... 2

- \* Mounting fitting should be purchased separately as required.
- \* An Address Writer ARW-04 (Ver. 04-1.01 or later) or ARW-03 (Ver. 2.10 or later) is necessary for setting up the product. Order one at the same time.



## [Name of Each Part]



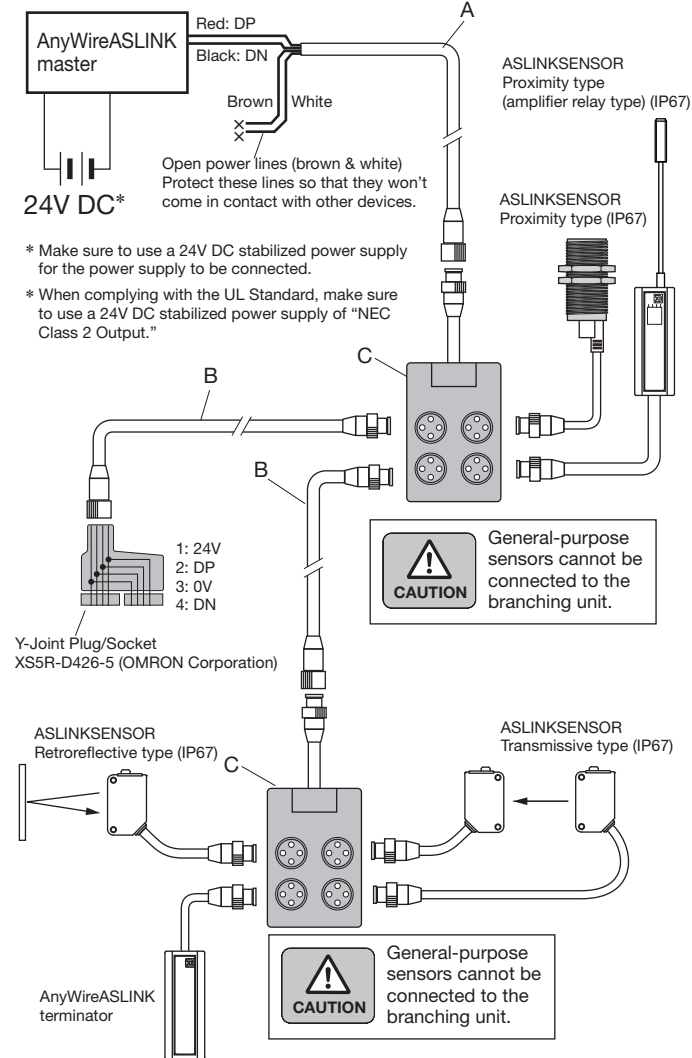
BS-K5217-M18-3012 shown as an example

## [AnyWireASLINK Terminal]

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 a 2-wire (non-isolated) terminal only



A Waterproof trunk cable (1.25mm<sup>2</sup>)

Model	Description
BL2-0C1S-3K	Loose wires on one end, straight M12, 3m

B Waterproof trunk cable (1.25mm<sup>2</sup>)

Model	Description
BL2-1S1P-3K	Straight M12 on both ends, 3m
BL2-1S1P-5K	Straight M12 on both ends, 5m
BL2-1S1P-10K	Straight M12 on both ends, 10m

C Waterproof branching unit

Model	Description
BL2109-04-22	4 ports
BL2109-08-22	8 ports

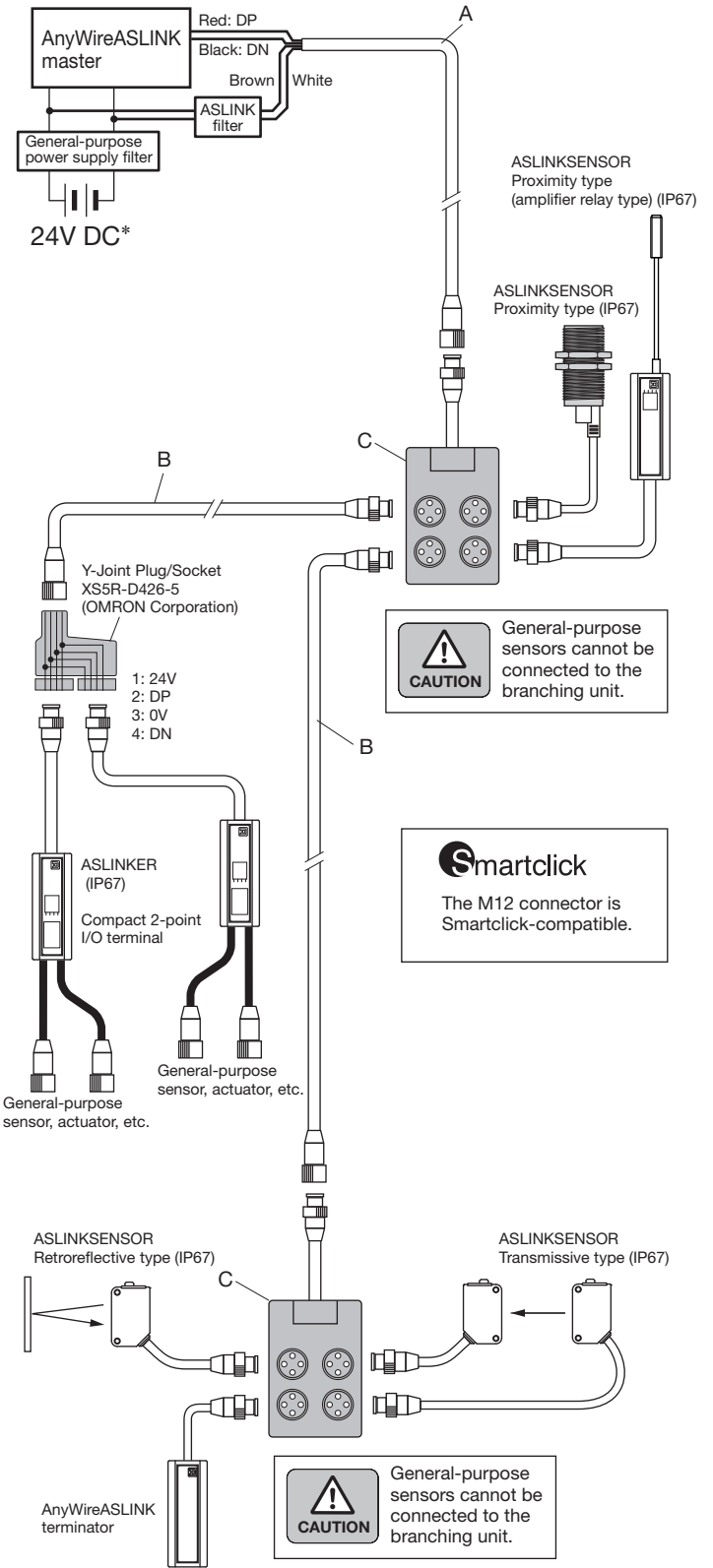
### ■ Relationship between the size and length of the transmission line and the supply current (Table 1)

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 <sup>2</sup>	MAX 2A	MAX 1A	MAX 0.5A
0.75mm <sup>2</sup>	MAX 1.2A	MAX 0.6A	MAX 0.3A
0.5mm <sup>2</sup>	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 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 BT0 (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



A Waterproof trunk cable (1.25mm<sup>2</sup>)

Model	Description
BL2-0C1S-3K	Loose wires on one end, straight M12, 3m

B Waterproof trunk cable (1.25mm<sup>2</sup>)

Model	Description
BL2-1S1P-3K	Straight M12 on both ends, 3m
BL2-1S1P-5K	Straight M12 on both ends, 5m
BL2-1S1P-10K	Straight M12 on both ends, 10m

C Waterproof branching unit

Model	Description
BL2109-04-22	4 ports
BL2109-08-22	8 ports

**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.

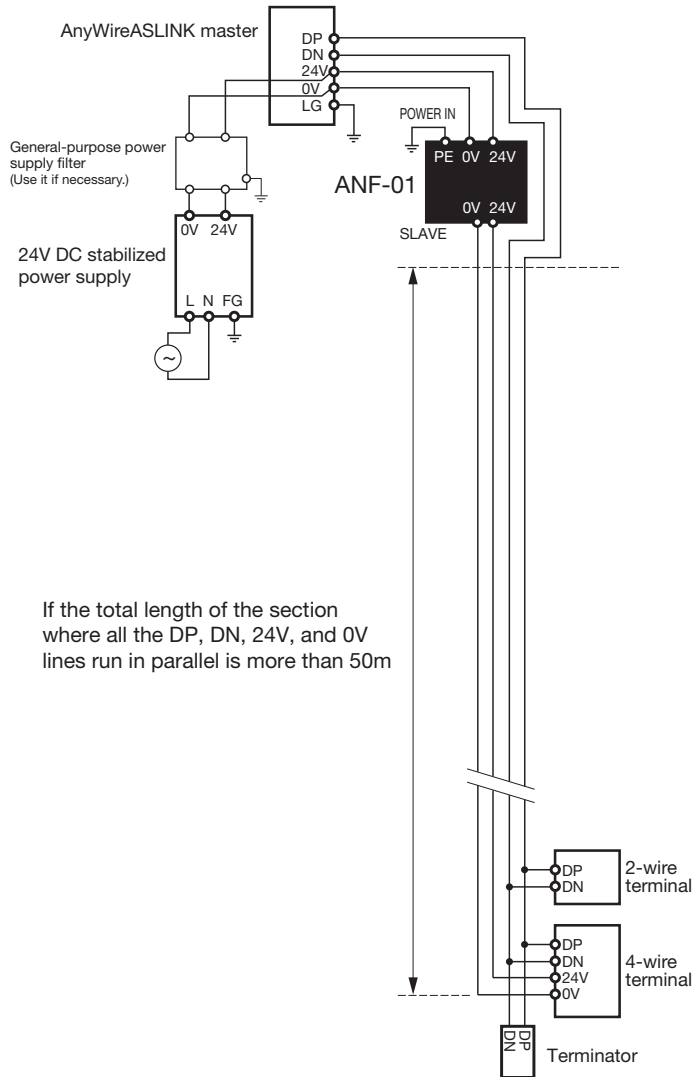
**Filter allowable current**

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

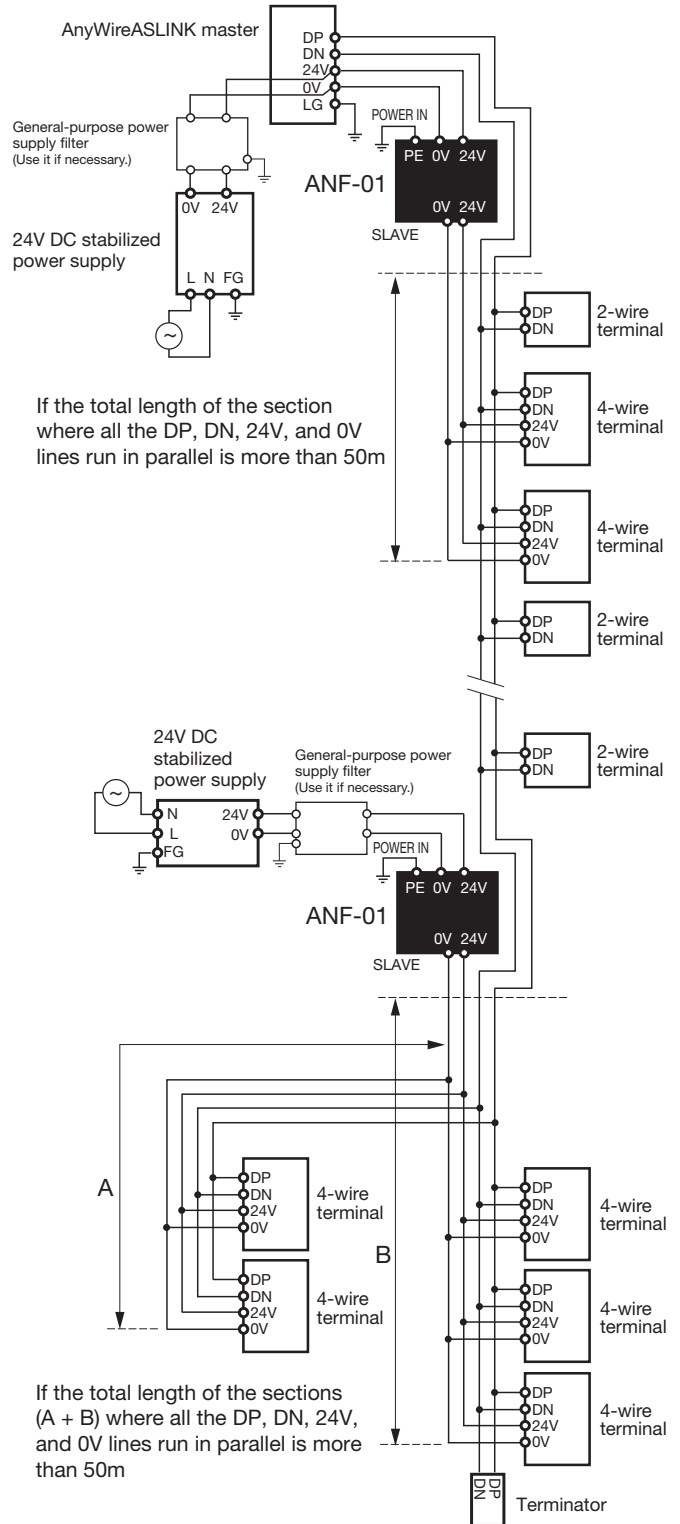
**AnyWire Type: ANF-01 Connection example**

(The drawing below is a connection diagram for the purpose of explanation. Actual connection should be made in accordance with the terminal arrangement on each device.)

① Power supply to the entire system



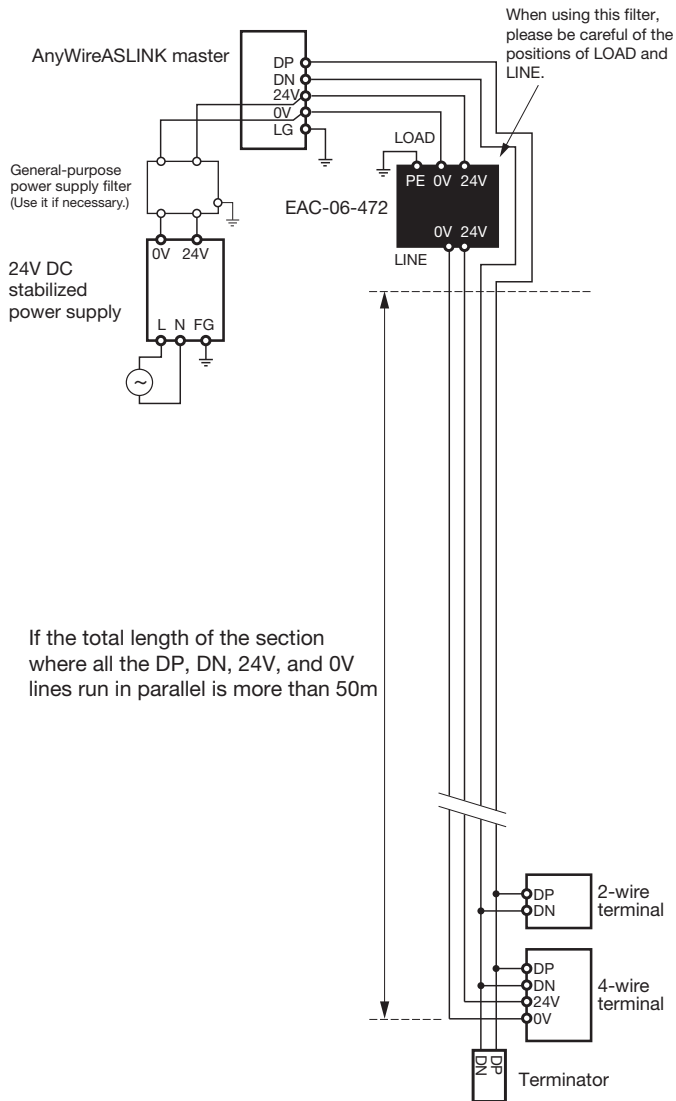
② Local power supply/branching



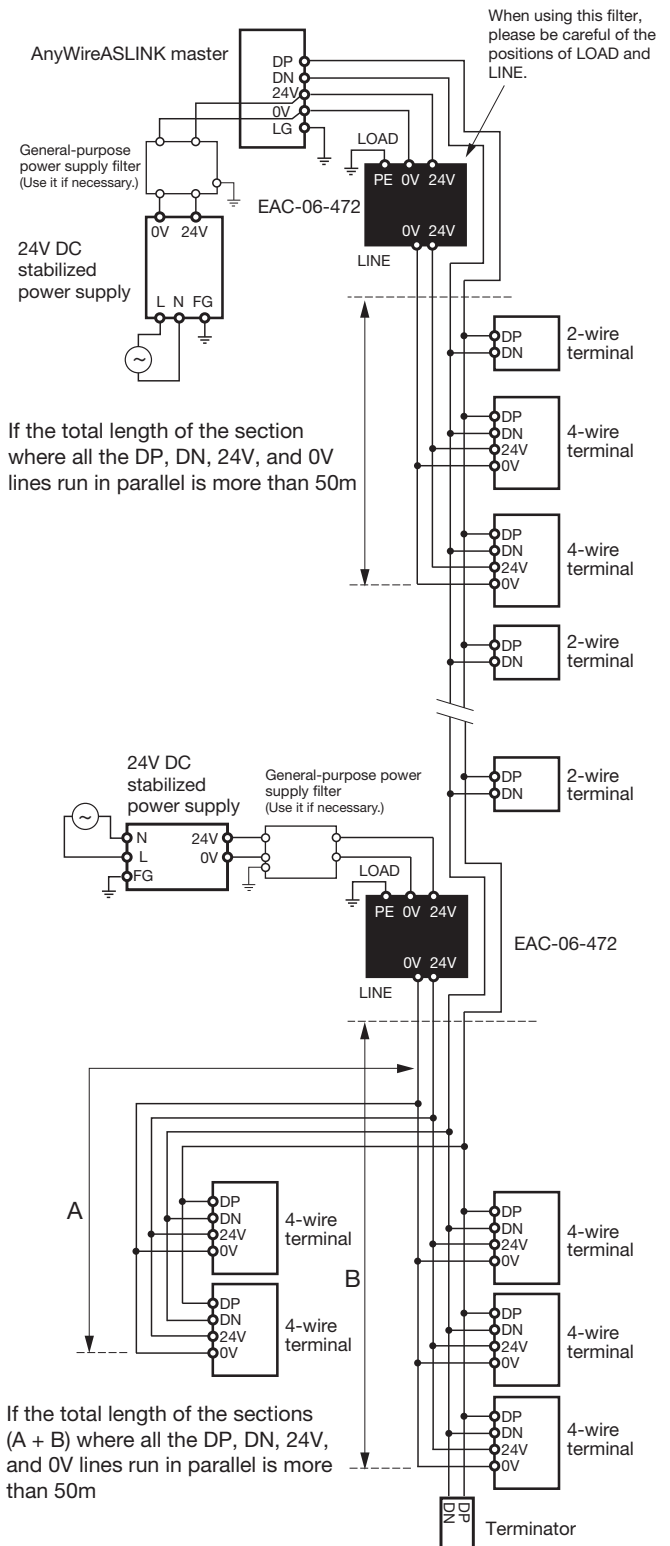
## ■ COSEL Co., Ltd. Type: EAC-06-472 Connection example

(The drawing below is a connection diagram for the purpose of explanation. Actual connection should be made in accordance with the terminal arrangement on each device.)

### ① Power supply to the entire system

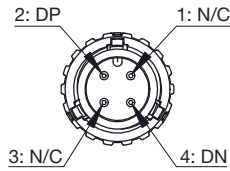
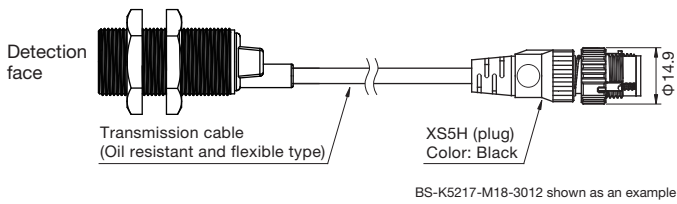


### ② Local power supply/branching



## [Connection Method]

Connect the sensor to the AnyWireASLINK transmission line (DP, DN).

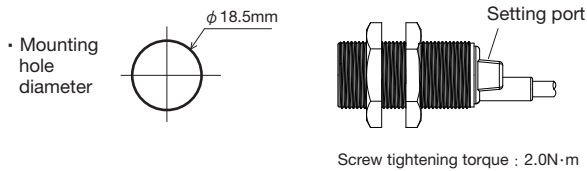


Smartclick

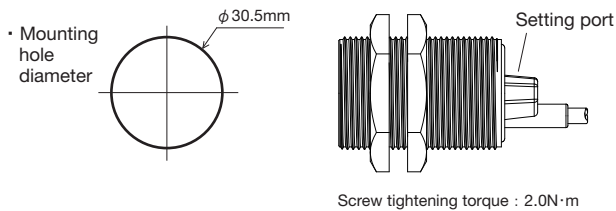
## [Installation Example]

Should it be expected that the settings will be modified in the future, mount the sensor so that its setting port is visible.

<BS-K5217-M18-3012>



<BS-K5217-M30-3012>



### 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.

## [Installation Location]

- Locations where this product is not directly subject to vibration or shock
- 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

## [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]

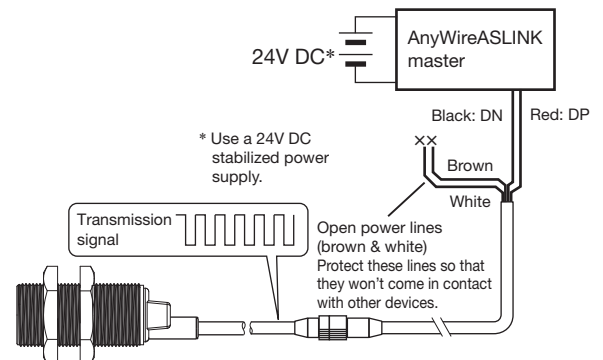
### Types of settings

Address number setting   Teaching   Parameter setting

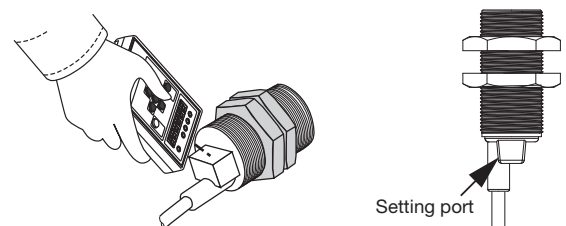
### Common procedure for address writer operation

Use the Address Writer with the sensor connected to the AnyWireASLINK master unit. An Address Writer ARW-04 (Ver. 04-1.01 or later) or ARW-03 (Ver. 2.10 or later) is required for the operation. For further information on the operation, refer to the product guide for the Address Writer.

1. Connect an AnyWireASLINK slave unit to the AnyWireASLINK master unit. Perform settings using the Address Writer with the transmission signal (DP, DN) supplied.



2. Settings are required for all AnyWireASLINK devices. Perform the settings with the Address Writer pointed toward the setting port on ASLINKSENSOR. (Hold the light emitting and light receiving parts as close as possible to the setting port.)

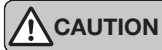


\* If the settings were modified in the [WRITE] mode, new settings will be reflected after rebooting the system.  
If the settings were modified in the [DIRECT WRITE] mode, new settings will be reflected upon completion of the writing operation.

\* If a multiple number of the sensors are arranged parallel, use a remote head (ARW-RH) as well to prevent writing to a wrong terminal.

## Address number setting

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



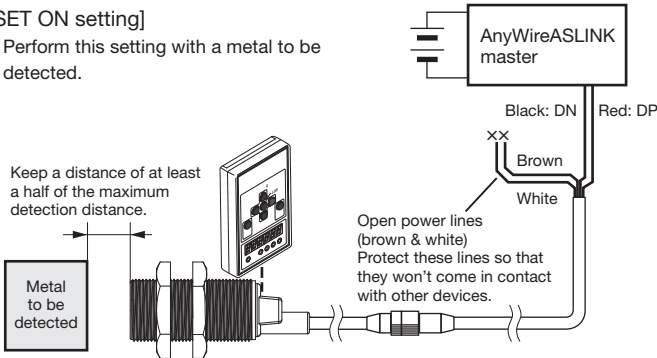
The factory setting of the terminal is "255," which means no setting.  
If the address number is set to 255, the terminal does not perform I/O operations.  
Before using the terminal, be sure to set an address number between 0 and 254.

## Teaching

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

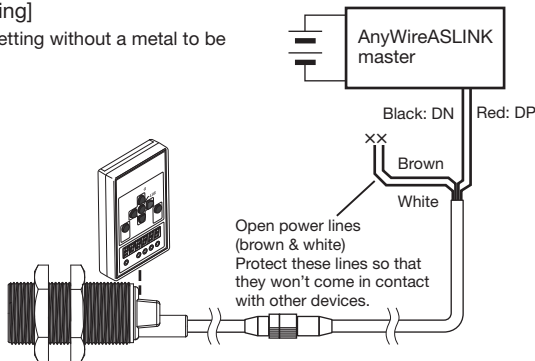
### [SET ON setting]

Perform this setting with a metal to be detected.



### [SET OFF setting]

Perform this setting without a metal to be detected.



Perform the setting with the workpiece to be used in the operation.  
In performing the setting, keep a distance of at least 50% of the maximum detection distance.  
If there is not sufficient difference between the conditions with and without a workpiece, the ALM indicator will flash to notify it. In this case, perform the setting again.

## Parameter setting

### ■ Threshold setting

This parameter determines the threshold of sensing level for detecting the workpiece.

\* The gap in the detection conditions stored in memory in teaching is assumed to be 100%.

- Address Writer (ARW-04, ARW-03): Parameter 01

Variable	Unit
0-100	%

Factory Setting: BS-K5217-M18-3012: 5  
BS-K5217-M30-3012: 6

### ■ Hysteresis setting

This parameter determines the variation in sensing level required to turn the detection condition OFF after it is turned ON.

- Address Writer (ARW-04, ARW-03): Parameter 02

Variable	Unit
0-100	%

Factory Setting: 5

### ■ Alarm Hi setting

This parameter determines the upper limit for issuing an alarm.

- Address Writer (ARW-04, ARW-03): Parameter 03

Variable	Unit
0-100	%

Factory Setting: 80

\* Set the alarm level so that the relationship  $Hi > Lo$  will be satisfied.

### ■ Alarm Lo setting

This parameter determines the lower limit for issuing an alarm.

- Address Writer (ARW-04, ARW-03): Parameter 04

Variable	Unit
0-100	%

Factory Setting: BS-K5217-M18-3012: 6  
BS-K5217-M30-3012: 7

\* Set the alarm level so that the relationship  $Hi > Lo$  will be satisfied.

### ■ Alarm monitoring time setting

This parameter determines the monitoring time of alarm determination.

- Address Writer (ARW-04, ARW-03): Parameter 05

Variable	Unit
3-255	100ms

Factory Setting: 50

### ■ Normally open/Normally closed setting

This parameter determines the normally open or normally closed operation of contacts.

- Address Writer (ARW-04, ARW-03): Parameter 06

Variable	Description
0	Normally open ON with a workpiece
1	Normally closed ON without a workpiece

Factory Setting: 0

### ■ Alarm diagnosis setting

This parameter enables or disables the alarm diagnosis feature.

- Address Writer (ARW-04, ARW-03): Parameter 07

Variable	Description
0	OFF Alarm diagnosis disabled
1	ON Alarm diagnosis enabled

Factory Setting: 0

### ■ Delay timer ON/OFF setting

This parameter sets up the ON delay and OFF delay timers.

- Address Writer (ARW-04, ARW-03): Parameter 10

Variable	Description
0	Without delay timer Delay timer disabled
1	ON delay timer ON delay timer enabled
2	OFF delay timer OFF delay timer enabled
3	ON/OFF delay timer ON/OFF delay timer enabled

Factory Setting: 0

### ■ Delay setting

Once a delay timer has been enabled with Parameter 10, it is possible to set up the delay.

- Address Writer (ARW-04, ARW-03): Parameter 11

Variable	Unit
0-255	10ms

Factory Setting: 0














Parameters 08, 09 and 12 through 19 are values relevant to the internal setting. Do not modify these values.

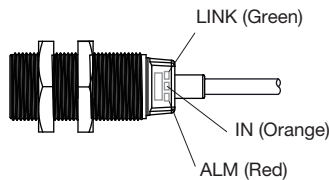
## [Monitor Display]

The operation status of ASLINKSENSOR is displayed by LED indicators.

Normal condition: LINK flashing, ALM unlit and IN ON (lit) or OFF (unlit)

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*
	Flashing (Lit for 0.2 sec, unlit for 1.0 sec) 	Slave unit voltage drop
	Flashing (alternates with a 0.1 sec interval) 	Teaching error
	Unlit 	Normal
LINK ALM	Alternate flashing LINK  ALM 	The master unit has detected that the unit ID (address) is either duplicated or unregistered
IN (Orange)	Lit 	ON
	Unlit 	OFF

\*Only if the alarm diagnosis feature is enabled



## [Troubleshooting]

If the following statuses of the LEDs are indicated on the 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). - The address of ASLINKSENSOR is duplicated.	- Assign an address other than 255. - 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 transmission signal level is detected 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	—	● Lit	- The sensing level is low.	- Check the condition of ASLINKSENSOR, adjust its position and clean the detection face.
⊙ Flashing	—	⊙ Flashing (alternates with a 0.1 sec interval)	- Teaching has not been performed properly.	- Perform the teaching operation again.

If the following error is indicated on the Address Writer, take the following action.

Display	Cause	Remedy
[E-0303]	The parameter setting is incorrect.	Check the parameters and correct them accordingly.

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

Symptom	Remedy
Detection cannot be made	- Is the metal piece to be detected in an appropriate position? → Adjust the position of metal piece so that it will be in an appropriate range from the detection face of ASLINKSENSOR. - Is the wiring correct? → Ensure that the ASLINKSENSOR transmission line is connected to the AnyWireASLINK system transmission line (DP, DN) properly. - Is there a power supply with a capacity appropriate for the AnyWireASLINK master and slave units and turned ON? → Check the power supply. - Has teaching been performed? → Perform teaching using the 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? → Check the connection of ASLINKSENSOR transmission line once more. - Is the power supplied to the AnyWireASLINK system? → Check the power supply. - Are the parameters set correctly? → Check the parameters and correct them accordingly.

## [Parameter and Setting Items]

Parameters	Variable	Description	Factory setting
[01.] Threshold	0-100%	The threshold of sensing level to determine if a detection is made	M18: 5 M30: 6
[02.] Hysteresis	0-100%	The change in the sensing level required for the detection status to change from ON to OFF	5
[03.] Alarm Hi	0-100%	The upper limit for alarm determination	80
[04.] Alarm Lo	0-100%	The lower limit for alarm determination	M18: 6 M30: 7
[05.] Alarm monitoring time	3-255	The monitoring time for alarm determination (1=100ms)	50
[06.] NO/NC	0	Normally open	0
	1	Normally closed	
[07.] Alarm feature	0	OFF	0
	1	ON	
[10.] Delay timer ON/OFF	0	Delay timer disabled	0
	1	ON delay timer	
	2	OFF delay timer	
	3	ON/OFF delay timer	
[11.] Delay	0-255	The delay for the delay timers (1=100ms)	0

## [Specifications]

### ■ General Specifications

Ambient temperature/humidity use	-10 – 60°C, 10 – 90%RH No condensation
Ambient temperature/humidity storage	-25 – 75°C, 10 – 90%RH No condensation
Atmosphere use	No corrosive gas
Altitude use*1	0 – 2000m
Pollution level*2	2 or less

- \*1 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.
- \*2 "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	Dedicated 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 units that can be connected	Up to 128 units
RAS features	Detection of transmission line disconnection, detection of transmission line short circuit, detection of transmission power drop, detection of duplicated/unregistered ID

### ■ Individual Specifications

Occupied number of points	1 input point	
Current consumption	Supplied by the AnyWireASLINK transmission signal (DP, DN)	
	M18: 7.5mA	M30: 7.6mA
Detection target*3	Conductors/dielectrics	
Standard detection substance	A grounded metal piece of 50×50×1mm	
Detection distance (at the ambient temperature of 23°C)	M18: 8mm (max.)	M30: 15mm (max.)
Stable detection distance	M18: 0 – 6.4mm	M30: 0 – 12mm
Hysteresis	Depends on the parameter setting	
Response time*4	10ms max.	
Influence of temperature	The detection distance at 23°C	
	M18: Within ±20%	M30: Within ±20%
Influence of voltage	Within ±1% of detection distance in the range of 27.6 to 21.6V power supply voltage for the AnyWireASLINK master unit.	
Protection class	IP67	
Weight (Main unit, cable)	M18: Approx. 30g	M30: Approx. 56g
Weight (Nut)	M18: Approx. 2g	M30: Approx. 3g

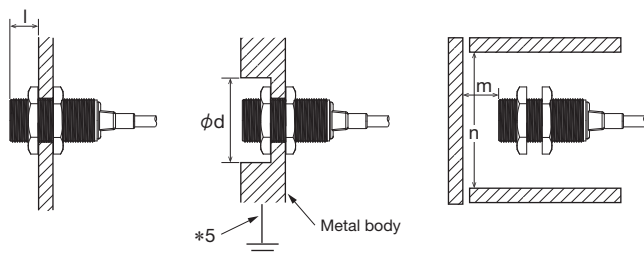
- \*3 The detection distance varies depending on the material.
- \*4 The time from detecting the ON or OFF condition until the transmission signal is sent. This time plus two transmission cycles will be the transmission delay.

#### <Ambient atmosphere>

Avoid using the device with splashes of water, oil or chemicals on it or in an atmosphere causing condensation as those fluids may be recognized as detection targets and leading to erroneous detections. The device is especially sensitive to dielectrics and can be influenced by even a tiny drop of water.

#### <Influence of surrounding metals>

If the device is to be mounted in a metal body, ensure the distances listed in the following table. Also ensure the distances shown on this table for installations in materials other than metals (such as resin) could have an influence on the detection.



- \*5 If the metal body is not grounded, the operation may be unstable. Always ground it.

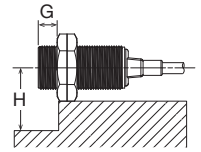
(Unit: mm)

	l	d	m	n
BS-K5217-M18-3012	15	40	10	60
BS-K5217-M30-3012	10	60	20	60

In addition, if a mounting fitting is used, ensure the distances listed in the table below.

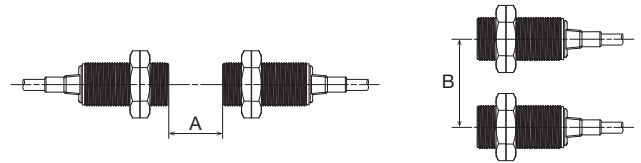
(Unit: mm)

	G	H
BS-K5217-M18-3012	15	30
BS-K5217-M30-3012	10	



#### <Mutual interferences>

If two sensors are arranged facing each other or parallel to each other, ensure the distances listed in the table below.



(Unit: mm)

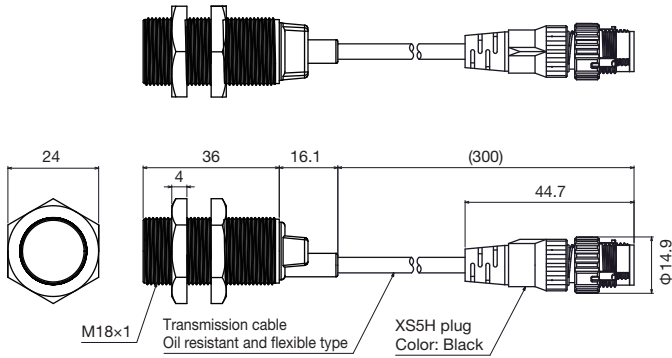
	A	B
BS-K5217-M18-3012	150	100
BS-K5217-M30-3012	300	200



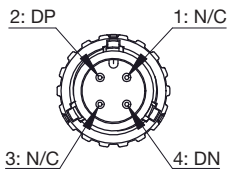
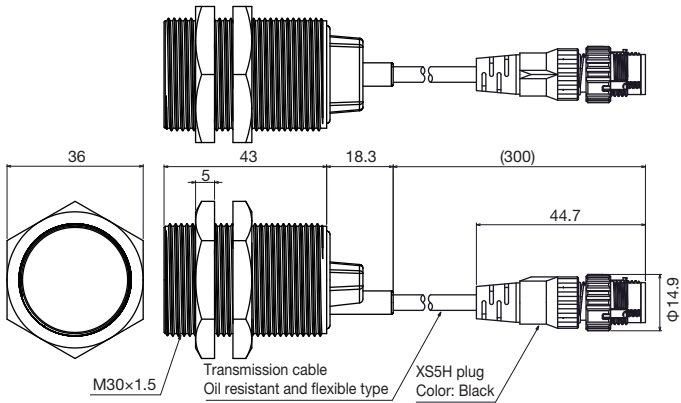
**[Outside Dimensions]**

Unit: mm

BS-K5217-M18-3012



BS-K5217-M30-3012



The connector pin assignment is common for all models.

**【中国版RoHS指令】**

电子信息产品上所标示记是依据SJ/T11364-2006规定,按照电子信息产品污染控制标识要求制定。本产品的环保使用期限为10年,如果遵守产品说明书中的操作条件使用电子信息产品,不会发生因产品中的有害物质泄漏或突变异常而引发严重的环境污染,人身事故,或损坏财产等情况。

的产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 [Cr (VI)]	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
安装基板	×	○	○	○	○	○
框架	○	○	○	○	○	○

本表格依据 SJ/T11364 的规定编制。  
 ○: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572 规定的限量要求以下。  
 ×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要求。



**[Address]**

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