

# AnyWireASLINK System Product Guide

ASLINKSENSOR



## BS-K1117C-M□□-3012

Smartclick is a registered trademark of OMRON Corporation.

### [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.



- 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 before attempting to mount or replace.
- 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.



- 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, keep the transmission lines and I/O cables away from high-voltage and power cables.
- Connectors and terminals
  - Pay careful attention to the cable length and how to fix the cable so as to avoid stress on the connector and connected cable, and prevent removal even if they are stressed.
  - 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. 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 User's Manual, 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: Amplifier built-in type, chemical-ready type with M12 connector

|                    |                                  |
|--------------------|----------------------------------|
| BS-K1117C-M12-3012 | M12, fluoropolymer resin coating |
| BS-K1117C-M18-3012 | M18, fluoropolymer resin coating |
| BS-K1117C-M30-3012 | M30, fluoropolymer resin coating |



Protection is separately required because material of cable is PVC.

### [Function]

| Model            | ASLINK SENSOR 2-wire type (not-insulated)      |
|------------------|--|
| Detection method | Inductive type                                 |
| Function         | Sensitivity adjustment value (threshold value) |
|                  | Hysteresis                                     |
|                  | Alarm judgment value                           |
|                  | Alarm judgment time                            |
|                  | Normally open/normally close                   |
|                  | Delay timer                                    |
|                  | Slave unit voltage drop                        |
|                  | Sensing level drop                             |

### [Items in Package]

|                    |                   |
|--------------------|-------------------|
| BS-K1117C-M12-3012 | Main body ..... 1 |
| BS-K1117C-M18-3012 | Nut ..... 2       |
| BS-K1117C-M30-3012 |                   |



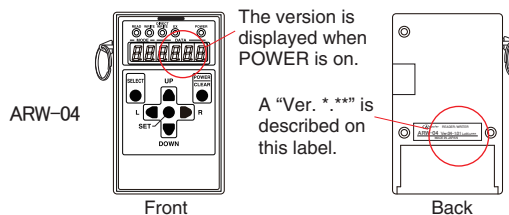
Make sure to use the attached nut for this equipment. If any other nut is fitted, main body may be damaged.

\* Purchase the mounting fixture separately if required.

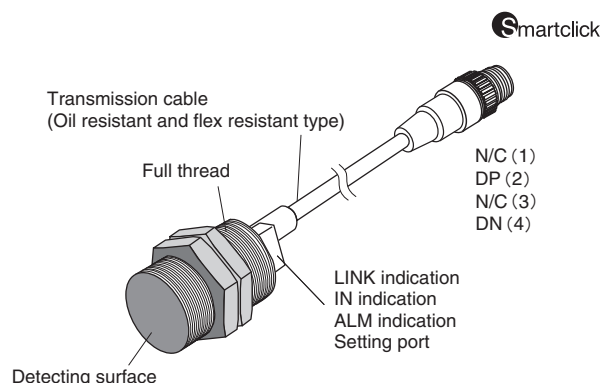
\* Option

Purchase the washer separately for M12 (model BS-K-M12-SW), washer for M18 (model BS-K-M18-SW), as required.

\* "Address writer ARW-04(Ver04-101 or higher) or ARW-03(Ver2.10 or higher)" is required for setting to the main body. Prepare it together.



### [Name of each part]



Example of BS-K1117C-M18-3012



## [Notes on Combined Use with 4-wire Type (Insulated) Terminal]

If any of the side-by-side lines of DP, DN, 24V and 0V exceeds the total length of 50m in a power supply system to be supplied, serially connect the “ASLINK filter [Type ANF-01]” or “filter of COSEL Co., Ltd. [Type EAC-06-472]” to 24V and 0V in the starting position of the side-by-side lines.

This will improve noise resistance, reduce the impact of crosstalk by transmission signals and stabilize the signals.

In any case of power supply to the entire system from the master driving power supply or power supply from the local power supply, insert a filter.

Insert the “ASLINK filter [Type ANF-01]” regardless of installation method and distance when complying with CE Standard.

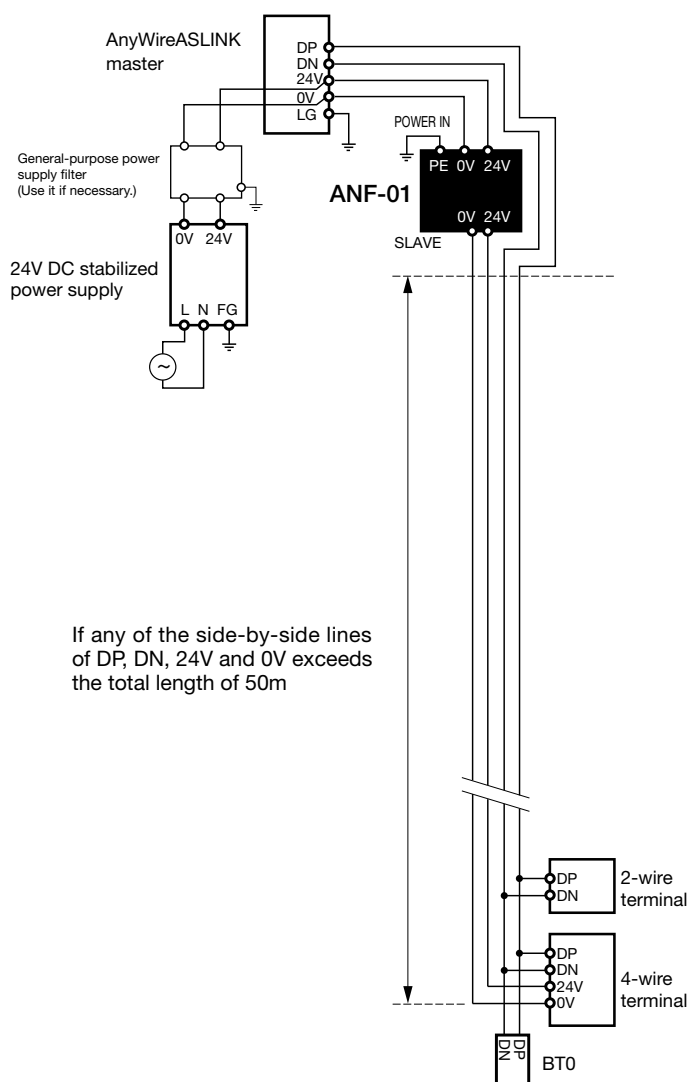
### ■ Filter allowable power current

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

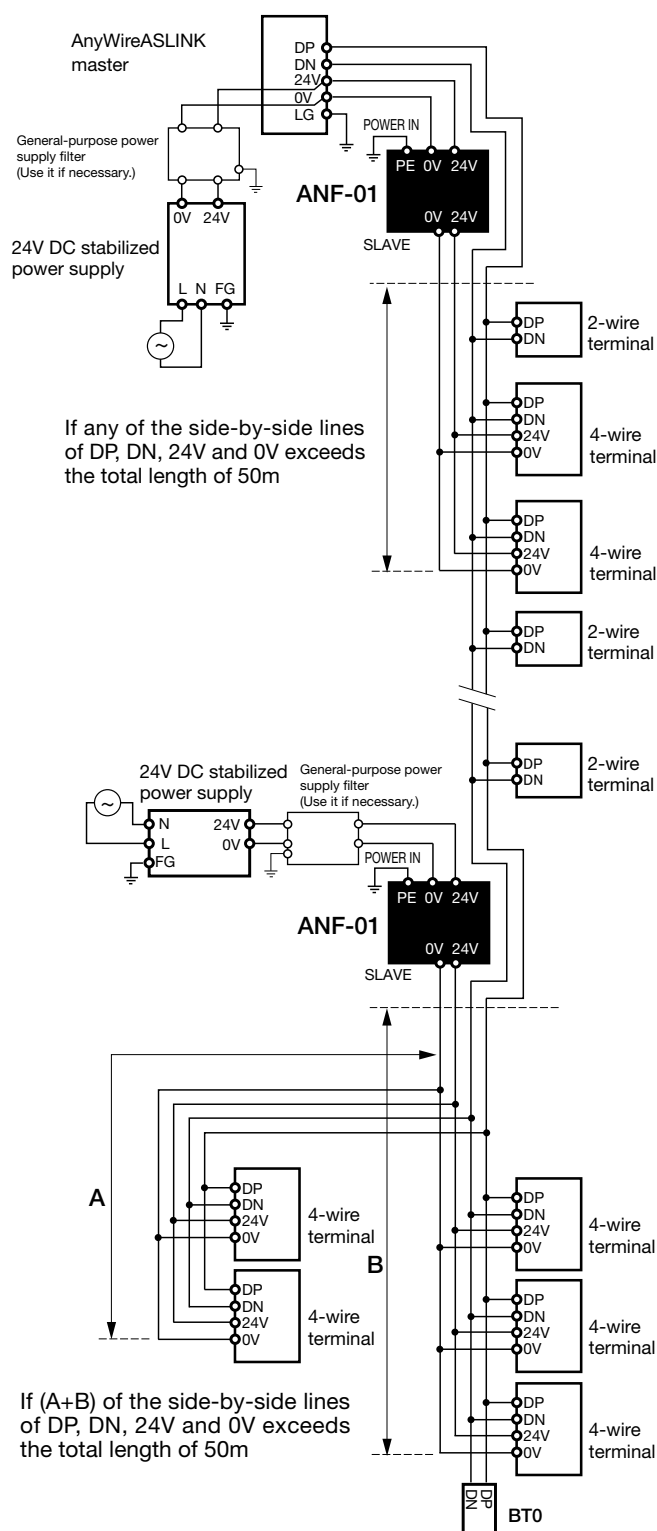
### ■ AnyWire Type: ANF-01 Connection example

(The following is the explanatory connection diagram. Actual terminal arrangement should meet each device.)

#### ① Power supply to the entire system -----



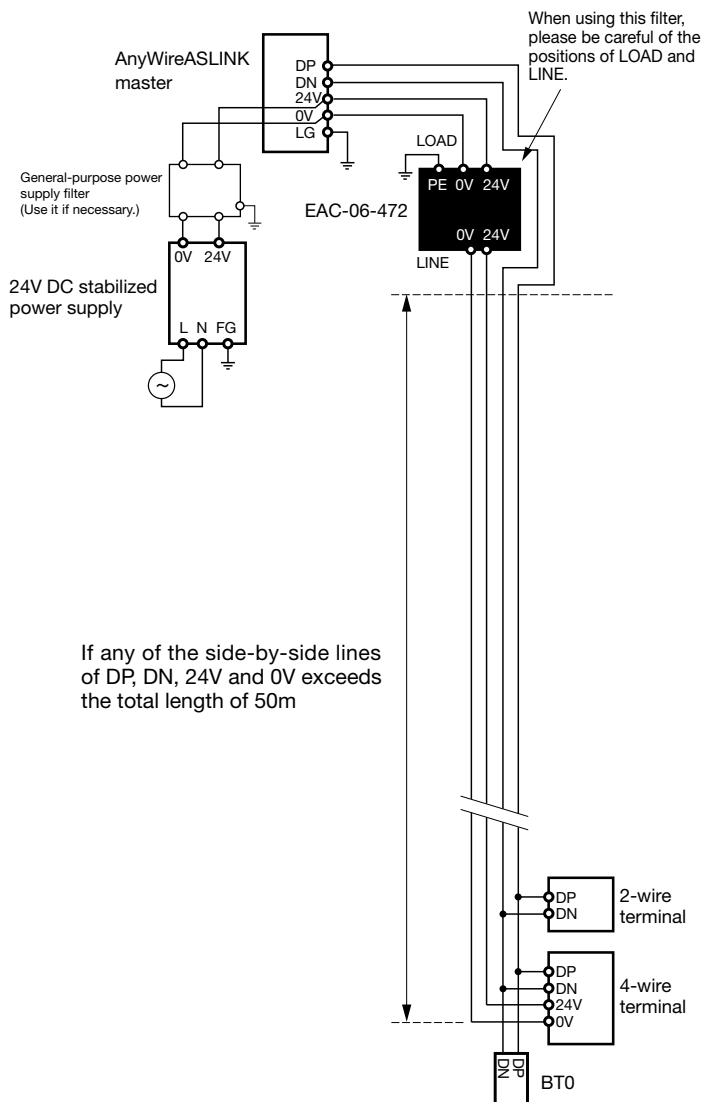
#### ② Local power supply/branching -----



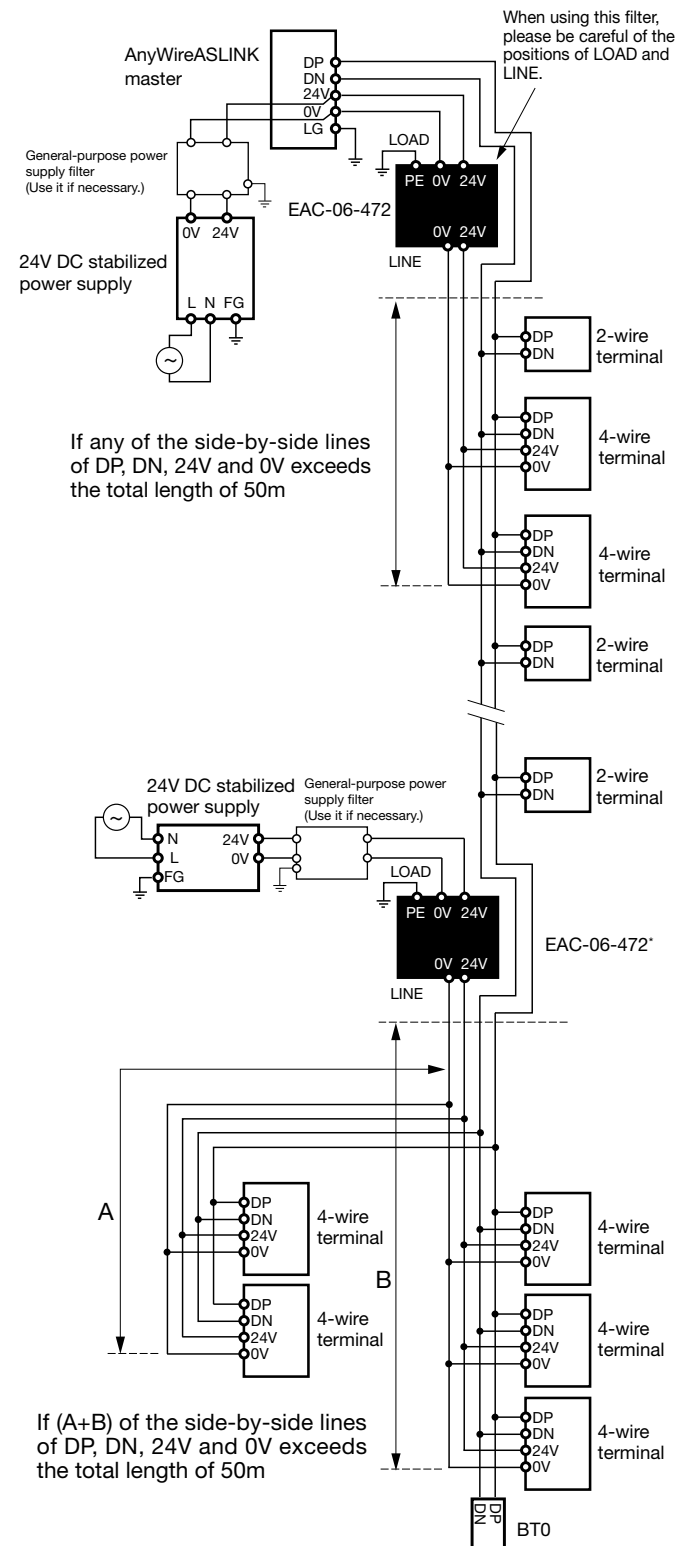
## ■ COSEL Co., Ltd. Type: EAC-06-472 Connection example

(The following is the explanatory connection diagram. Actual terminal arrangement should meet each device.)

### ① Power supply to the entire system -----

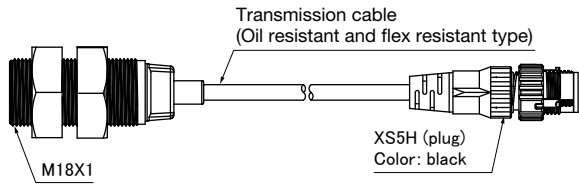


### ② Local power supply/branching -----

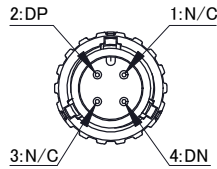


## [About connection]

Connect with the AnyWireASLINK transmission line (DP, DN).



Example of BS-K1117C-M18-3012

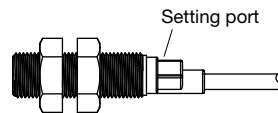
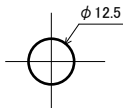


## [Installation example]

When setting is expected to be changed again, install so that the setting port can be observed.

<BS-K1117C-M12-3012>

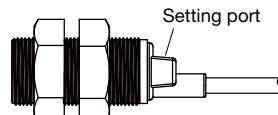
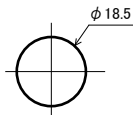
- Installation hole diameter



Tightening torque: 0.6 N·m

<BS-K1117C-M18-3012>

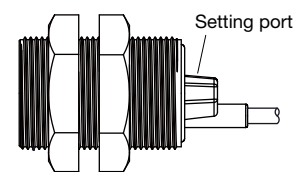
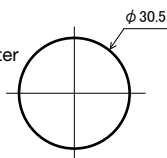
- Installation hole diameter



Tightening torque: 1.2 N·m

<BS-K1117C-M30-3012>

- Installation hole diameter



Tightening torque: 2.0 N·m



When fixing the main body, leave room for a margin so as not to stress the cable and connecting connector.  
Do not tighten screws excessively. Failure may result.

## [Installation location]

- Location where the unit is not subject to vibration or shock
- Location where humidity is not condensed
- Location where the atmosphere is free of corrosive gas, flammable gas and sulfur
- Location where the unit is removed from high-voltage or high-current cables
- Location where the unit is removed from cables and controllers that generate servo, inverter or other high-frequency noise.
- Location not exposed to direct sunlight

## [Precaution for use]

- This unit is used by connecting with the AnyWireASLINK transmission line. This unit does not operate even if this is directly connected to the I/O card of sequencer, etc.
- Use this unit within a proper voltage range.
- Also include the transmission line attached to the main body in the total length.

## [Various settings]

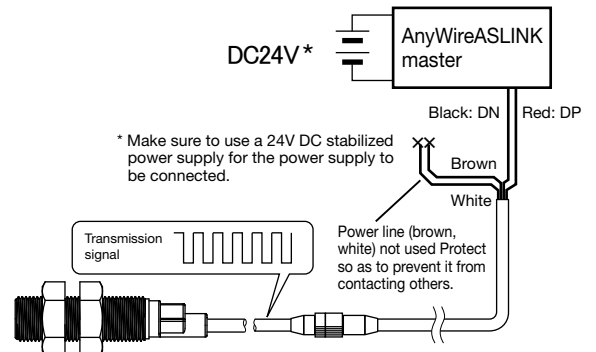
### ■ Items

Address number setting   Teaching   Parameter setting

### ■ Common procedure for address writer operation

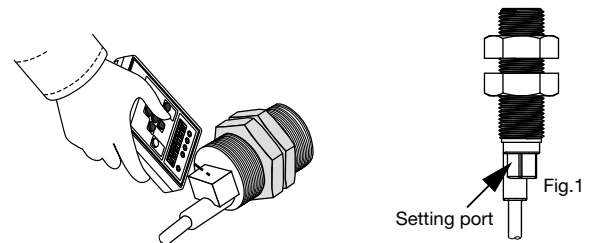
To use the address writer, make sure to connect it to the AnyWireASLINK master unit.  
Address writer ARW-04(Ver04-101 or higher) or ARW-03 (Ver2.10 or higher) is required for operation.  
For detailed operation procedures, refer to the product guide of the address writer.

1. Connect the AnyWireASLINK slave to the AnyWireASLINK master unit.  
Make settings with the address writer, while transmission signals (DP, DN) are being supplied.



2. Setting is required for all AnyWireASLINK devices.

Direct the address writer to the setting port (Fig.1) of the main body.  
Bring the light emitting/receiving part as close to the setting port as possible.



\* When setting is changed in [WRITE] mode, the setting is reflected after the system is started up again.  
When setting is changed in [DIRECT WRITE] mode, the setting is reflected at a time when writing is completed.

\* If this equipment is arranged in parallel, use the remote head (ARW-RH) together to prevent writing into an unintended terminal.

## Address number setting

An address number indicates an allocation starting number in the transmission frame written in the terminal.  
Set an address number between "0~254."



The factory setting of the terminal is "255," which means no setting.  
When the address number is set at 255, the terminal does not perform an input/output operation.  
Make sure to set an address number between "0~254" prior to use.

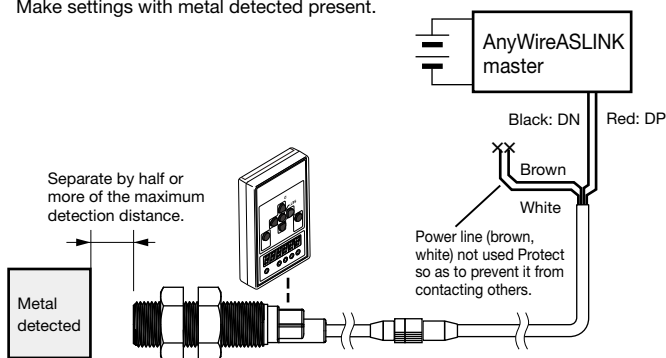
## Teaching

Memorize a state with work/without work in ASLINKSENSOR.

Make settings with work which is actually used.  
When setting, separate by 50% or more of the maximum detection distance.

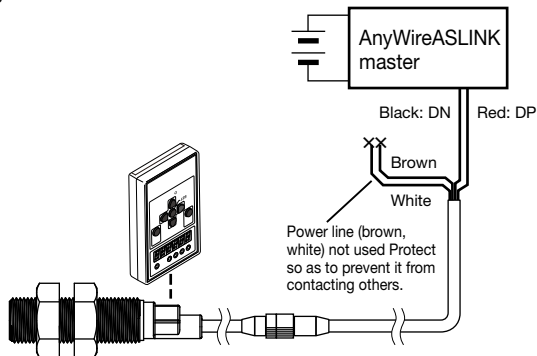
### [SET ON setting]

Make settings with metal detected present.



### [SET OFF setting]

Make settings with metal detected absent.



## Parameter setting

### Setting of threshold value

Set threshold value of sensing level to judge detected/not detected.

\* Difference in detecting state memorized in teaching is determined to be 100%.

• Address writer (ARW-04, ARW-03): Parameter 01

| Variable | Unit |
|----------|------|
| 0 - 100  | %    |

Default: BS-K1117C-M12-3012 : 6  
BS-K1117C-M18-3012 : 10  
BS-K1117C-M30-3012 : 12

### Setting of hysteresis

Set sensing change amount necessary to turn detecting state ON to OFF from turning detecting state OFF to ON.

• Address writer (ARW-04, ARW-03): Parameter 02

| Variable | Unit |
|----------|------|
| 0 - 100  | %    |

Default: 5

### Setting of alarm value Hi

Set upper limit value of alarm judgment value.

• Address writer (ARW-04, ARW-03): Parameter 03

| Variable | Unit |
|----------|------|
| 0 - 100  | %    |

Default: 80

\* Set alarm value such that Hi>Lo.

### Setting of alarm value Lo

Set lower limit value of alarm judgment value.

• Address writer (ARW-04, ARW-03): Parameter 04

| Variable | Unit |
|----------|------|
| 0 - 100  | %    |

Default: BS-K1117C-M12-3012 : 7  
BS-K1117C-M18-3012 : 11  
BS-K1117C-M30-3012 : 13

\* Set alarm value such that Hi>Lo.

### Setting of alarm value monitoring time

Set monitoring time of alarm judgment value.

• Address writer (ARW-04, ARW-03): Parameter 05

| Variable | Unit |
|----------|------|
| 3 - 255  | %    |

Default: 50

### Setting of normally open/normally close

Set normally open/normally close.

• Address writer (ARW-04, ARW-03): Parameter 06

| Variable | Description                        |
|----------|------------------------------------|
| 0        | Normally open<br>ON with work      |
| 1        | Normally close<br>OFF without work |

Default: 0

### Setting of operation mode change

Set presence/absence of alarm diagnosis function.

• Address writer (ARW-04, ARW-03): Parameter 07

| Variable | Description  |
|----------|--|
| 0        | Simple mode<br>Alarm diagnosis function is disabled. |
| 1        | Normal mode<br>Alarm diagnosis function is enabled.  |

Default: 0

### Setting of delay timer ON/OFF

Set ON delay timer/OFF delay timer.

• Address writer (ARW-04, ARW-03): Parameter 10

| Variable | Description  |
|----------|--|
| 0        | No delay timer<br>Delay timer is disabled.           |
| 1        | ON delay timer<br>ON delay timer is enabled.         |
| 2        | OFF delay timer<br>OFF delay timer is enabled.       |
| 3        | ON/OFF delay timer<br>ON/OFF delay timer is enabled. |

Default: 0

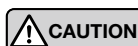
### Setting of delay timer value

If delay timer is set with parameter 10, delay time can be set.

• Address writer (ARW-04, ARW-03): Parameter 11

| Variable | Unit |
|----------|------|
| 0 - 255  | 10ms |

Default: 0













Parameters [08, 09, 12 to 19] are items related to internal setting. Do not set them.

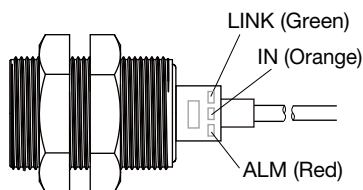
## [Monitor Display]

Operating state of the main body is displayed by LED.

Normal state: LINK flashing, ALM unlit, IN ON lit/OFF unlit

| Name            | Indication status   | Description  |
|-----------------|---|--|
| LINK<br>(Green) | Lit    | Transmission signal error  |
|                 | Flashing   | Transmission signal is normally supplied.  |
|                 | Unlit    | No transmission signal   |
| ALM<br>(Red)    | Lit    | Sensing level drop*  |
|                 | Flashing   | Slave unit voltage drop  |
|                 | Unlit    | Normal   |
| LINK<br>ALM     | Alternate flashing<br>LINK <br>ALM  | When master unit detects duplication of ID (address) of this unit or non-setting |
| IN<br>(Orange)  | Lit    | ON   |
|                 | Unlit    | OFF  |

\* Only when alarm diagnosis function is enabled.



## [Parameter and item]

| Parameter                             | Variable | Description  | Variable at factory setting     |
|---------------------------------------|----------|--|---------------------------------|
| [01] Threshold value                  | 0-100%   | Set threshold value of sensing level to judge detected/not detected.   | M12 : 6<br>M18 : 10<br>M30 : 12 |
| [02] Hysteresis                       | 0-100%   | Set sensing change amount necessary to turn detecting state ON to OFF. | 5                               |
| [03] Alarm value Hi                   | 0-100%   | Set upper limit value of alarm judgment value.                         | 80                              |
| [04] Alarm value Lo                   | 0-100%   | Set lower limit value of alarm judgment value.                         | M12 : 7<br>M18 : 11<br>M30 : 13 |
| [05] Alarm value Monitoring time      | 3-255    | Set monitoring time of alarm judgment value. (1=100ms)                 | 50                              |
| [06] Normally open/<br>Normally close | 0        | Normally open  | 0                               |
|                                       | 1        | Normally close   |                                 |
| [07] Operation mode                   | 0        | Simple mode  | 0                               |
|                                       | 1        | Normal mode  |                                 |
| [10] Delay timer<br>ON/OFF            | 0        | Delay timer is disabled.   | 0                               |
|                                       | 1        | ON delay timer   |                                 |
|                                       | 2        | OFF delay timer  |                                 |
|                                       | 3        | ON/OFF delay timer   |                                 |
| [11] Delay timer value                | 0-255    | Set delay time. (1=10ms)   | 0                               |

## [Troubleshooting]

When the LED on the main body displays as follows, take measures as shown below.

| LINK                        | IN      | ALM                               | Cause  | Measures  |
|-----------------------------|---------|-----------------------------------|--|---|
| ○ Unlit                     | ○ Unlit | ○ Unlit                           | <ul style="list-style-type: none"> <li>ASLINKSENSOR is not connected to the AnyWireASLINK system.</li> <li>Power supply for the AnyWireASLINK system itself is not turned on.</li> </ul> | <ul style="list-style-type: none"> <li>Confirm that there is no disconnection between the ASLINKSENSOR and the AnyWireASLINK system, and recover the connection.</li> <li>Confirm the power status of the AnyWireASLINK system, and turn on the power.</li> </ul> |
| ● Lit                       | ○ Unlit | ○ Unlit                           | <ul style="list-style-type: none"> <li>Directly connected to 24-0V power supply.</li> </ul>  | <ul style="list-style-type: none"> <li>Reconnect anew to AnyWireASLINK system</li> </ul>  |
| ◎ Flashing (0.5s alternate) | ○ Unlit | ◎ Flashing (0.5s alternate)       | <ul style="list-style-type: none"> <li>ASLINKSENSOR remains at address 255 (factory setting).</li> <li>ASLINKSENSOR has a duplicate address number with another unit.</li> </ul>         | <ul style="list-style-type: none"> <li>Set address other than 255.</li> <li>Look for any other unit which has the same error indication, and set any address number different from it.</li> </ul>   |
| —                           | —       | ◎ Flashing (0.2s lit, 1.0s unlit) | <ul style="list-style-type: none"> <li>Transmission signal level lowering is being sensed.</li> </ul>  | <ul style="list-style-type: none"> <li>Decrease the number of units connected to the same AnyWireASLINK system.</li> <li>Shorten the transmission line between the ASLINKSENSOR and the master unit.</li> </ul>   |
| ◎ Flashing                  | —       | ● Lit                             | <ul style="list-style-type: none"> <li>Sensing level lowers.</li> </ul>  | <ul style="list-style-type: none"> <li>Confirm state of ASLINKSENSOR, and adjust the position and clean the detecting surface.</li> </ul>   |

When the following errors are indicated by the address writer, take measures as shown below.

| Indication | Cause                         | Measures   |
|------------|-------------------------------|--|
| [E-0303]   | The set parameter is invalid. | Confirm the parameter and set a correct parameter. |

Take the following measures in the following cases.

| Symptom                         | Measures  |
|---------------------------------|---|
| Cannot detect.                  | <ul style="list-style-type: none"> <li>Is the metal detected in the proper position?<br/>→ Make adjustment so that the metal detected is within the proper range from the ASLINKSENSOR detecting surface.</li> <li>Is the wiring correct?<br/>→ Confirm that the ASLINKSENSOR transmission wire is connected correctly to the AnyWireASLINK transmission line (DP, DN).</li> <li>Is a power supply of proper capacity supplied to the AnyWireASLINK master unit and slave unit?</li> <li>Was teaching performed?<br/>→ Set teaching with work actually detected.</li> <li>Is this used within the rated detecting range?<br/>→ Use within the rated range.</li> </ul> |
| Cannot set with address writer. | <ul style="list-style-type: none"> <li>Is the wiring correct?<br/>→ Re-confirm connection of ASLINKSENSOR transmission wire.</li> <li>Is power supplied to the AnyWireASLINK system?<br/>→ Confirm the power supply.</li> <li>Is the set parameter correct?<br/>→ Confirm the parameter and set a correct parameter.</li> </ul>   |



## [Specifications]

### ■ General Specifications

|  |                                      |
|--|--------------------------------------|
| Operating ambient temperature/humidity | -10~60°C, 10~90%RH (No condensation) |
| Storage ambient temperature/humidity   | -25~70°C, 10~90%RH (No condensation) |
| Operating atmosphere                   | No corrosive gas                     |
| Altitude for use *1                    | 0~2000m                              |
| Degree of contamination *2             | 2 or less                            |

\*1 AnyWireASLINK apparatus must not be stored or used under an environment pressurized higher than that of the atmospheric pressure at an altitude 0m. A malfunction will occur.

\*2 This is an indicator to show the degree of occurrence of a conductive substance in an environment where the device is used.  
At the degree of contamination 2, only non-conductive contamination occurs.  
However, temporary conductivity may occur due to environment setting.

### ■ Transmission specification

|                                |  |
|--------------------------------|--|
| Operating power supply voltage | Voltage DC24[V]+15~-10%(21.6~27.6[V] DC) with a ripple 0.5[V]p-p max.  |
| Transmission method            | Full-duplex total frame/cyclic method  |
| Synchronization method         | Frame/bit synchronization method   |
| Transmission procedure         | Dedicated protocol   |
| Connection mode                | Bus type (Multi-drop method, T-branch method, Star, Tree branch method)  |
| Number of connection points    | Up to 512 points (IN 256 points + OUT 256 points)  |
| Number of connection units     | Up to 128 units  |
| RAS function                   | Transmission wire disconnection sensing,<br>transmission wire short-circuit sensing,<br>transmission power decrease sensing,<br>ID duplication, ID non-setting sensing |

### ■ Individual specification

|  |   |
|--|---|
| Number of occupying points   | Input 1 point   |
| Consumption current  | Received and supplied from the AnyWireASLINK transmission signal (DP,DN).<br>M12: 6.9mA      M18: 7.0mA<br>M30: 7.0mA |
| Detection method   | Electromagnetic induction detection   |
| With/without shield  | Shield type   |
| Detection target   | Magnetic metal  |
| Standard detected object   | M12: Iron 12×12×1mm      M18: Iron 18×18×1mm<br>M30: Iron 30×30×1mm   |
| Detection distance (at ambient temperature 23°C)                       | M12: 2.0mm (max.)      M18: 5.0mm (max.)<br>M30: 10.0mm (max.)  |
| Stable detection distance (within operating ambient temperature range) | M12: 0~1.6mm      M18: 0~4.5mm<br>M30: 0~9.0mm  |
| Differential   | Depending on parameter setting  |
| Response time *3   | Maximum 10ms  |
| Influence of temperature (within operating ambient temperature range)  | Use detection distance at 23°C as a standard.<br>M12: within ±20%      M18: within ±10%<br>M30: within ±10%           |
| Influence of voltage   | Within ±1% of detection distance in a range of the AnyWireASLINK master supply power voltage 27.6 to 21.6V            |
| Protective structure *4  | IP67 (in-house standards, oil-proof)  |
| Mass (main body, cable)  | M12: Approx. 24g      M18: Approx. 34g<br>M30: Approx. 68g  |
| Mass (nut)   | M12: Approx. 2g      M18: Approx. 5g<br>M30: Approx. 8g   |

\*3 The time from detection of ON or OFF to sending of a transmission signal.  
This time + 2 transmission cycle times is the transmission delay time.

\*4 Oil resistance was confirmed with oil specified by us and cutting oil\*. Breakdown-proof against oil, but there is no guarantee that breakdown will not occur. Do not use in any position always subject to splashing and under jet flow.

\* Cutting oil specified by us Insoluble (YUSHIRON CUT KM557, KZ313S).

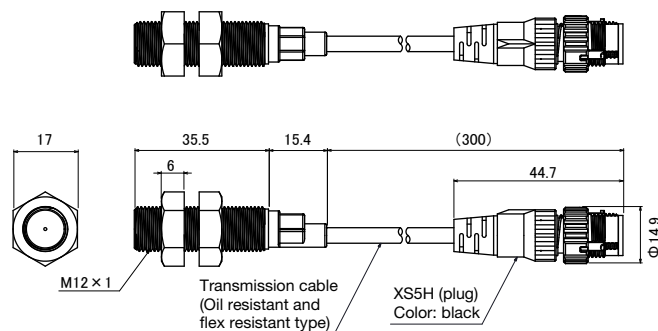
water-soluble (YUSHIRO-KEN EC50, AP-EX-E7, FGS700) Immersion at ambient temperature 55°C

\* Lubricant specified by us (VELOCITY OIL No.3) Immersion at ambient temperature 55°C

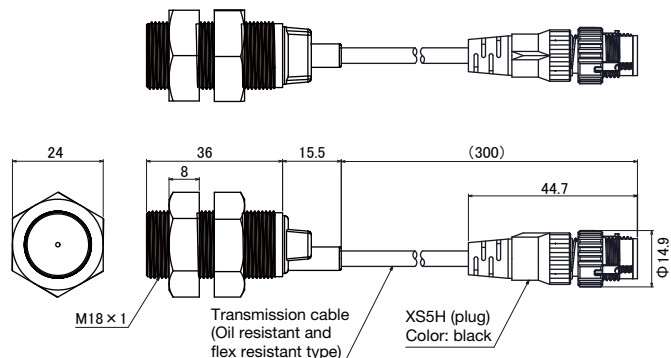
## [Outside Dimensions]

Unit: mm

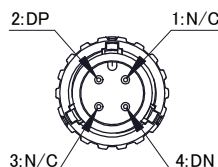
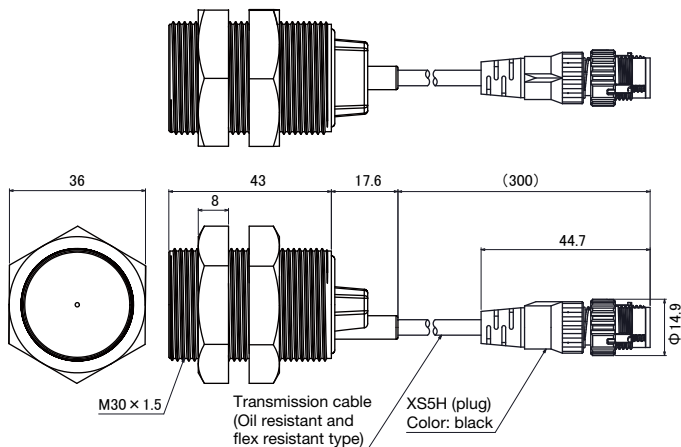
BS-K1117C-M12-3012



BS-K1117C-M18-3012



BS-K1117C-M30-3012



Smartclick

Pin layout in connector is common to all.



[Address]

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