AnyWireASLINK System Products Guide

ASLINKAMP
[Analog Output Unit
(Ch-to-Ch Isolated Type with 7-segment Display)]

A. Ver.1.1

L□-D□1AW

■ Note on use ⇒ A separate Address Writer is required to set addresses and other data.
  ∗ For more information, refer to [Various Settings] on page 8.

[Type]

LA-DA1AW	Current	Base unit	LA-DV1AW	Voltage	Base unit
LB-DA1AW		Extension unit	LB-DV1AW		Extension unit

This product is analog output unit for AnyWireASLINK system.

[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.
○ Before installation, replacement and/or cleaning of the product, be sure to turn OFF the power supply for 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.
○ If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

⚠ 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 remote units when the transmission line is active. A malfunction may occur.
○ Use the AnyWireASLINK within the range of the specifications and conditions shown below.
○ The equipment is an Open type device which is intended to be installed in an suitable external enclosure for fire, shock and mechanical protections.
○ Equipment installation, wire insulations, routing and separations shall in compliance with NEC/CEC and any requirements from local authorities.

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

[About AnyWireASLINK Ver. 1.1]

New functions have been added to AnyWireASLINK products in May 2019 onward. Also, for the purpose of differentiation of compatible functions, indication of product lot number (lot No.) has been changed.

Compatible functions vary depending on lot No. Please understand the following description thoroughly to use each product.

Functions added to Ver. 1.1 are as follows:

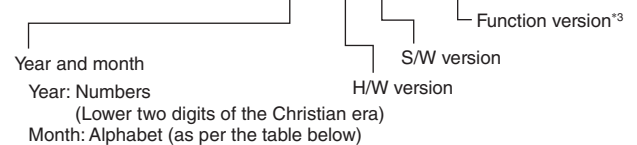| Functions available with Ver. 1.1 |
|---|
| Word transmission∗1∗2 |
| Single unit simplified replacement∗1 |

∗1 To use these functions, the master unit compatible with each function is required.
  For details, refer to this manual together with the manual for the master unit.
∗2 You can use this function with the word-transmission AnyWireASLINK system connected.
  To handle word data, word address settings are required for remote units.
  It depends on remote units whether word address setting is enabled or not.

[About Lot No.]

As a result of the addition of functions, indication of lot No. has been changed from 3 digits (conventional format: year and month only) to 6 digits or 7 digits.

Example:

Lot No. 19ECBNB

Year and month
Year: Numbers
  (Lower two digits of the Christian era)
Month: Alphabet (as per the table below)
H/W version
S/W version
Function version∗3

Alphabet	A	B	C	D	E	F	G	H	I	J	K	L
Month	1	2	3	4	5	6	7	8	9	10	11	12

"19E" means May 2019.

∗3 Some products have no indication of function version.

[About Pictogram∗4]

A	Ver. 1.0∗5
A.	Compatible with Ver. 1.1

∗4 The pictogram may not be marked (or stuck) depending on the product.
∗5 AnyWireASLINK device not compatible with Ver. 1.1 (word transmission and single unit simplified replacement functions)
  Some products, not marked with the Ver. 1.1 pictogram, are compatible with the functions included in Ver. 1.1. Refer to the lot No. and the product guide for ultimate confirmation.

[About Word Transmission]

The master unit compatible with the word transmission function provides areas for transmission and receiving of word data (numerical information) such as analog data and sensing level data.
Using this function enables reduction of occupancy of bit information area by word data.
To enable word transmission, it is necessary that the system should be configured only with remote units compatible with the word transmission function.
A remote unit incompatible with the word transmission function cannot be connected to the AnyWireASLINK system to conduct word transmission.
For remote units that handle word data, word address settings are required.
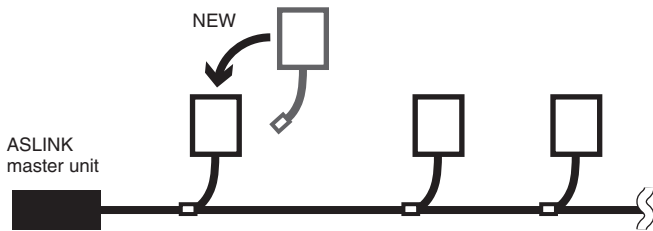
[About Single Unit Simplified Replacement]

During replacement of a remote unit, this function enables automatic settings of address and parameters of the existing remote unit into a new remote unit. (After replacement of the remote unit, address and parameter setting procedure using the address writer is not required.)

■Step 1 Turn OFF the 24V DC power supply for the master unit.

■Step 2 Disconnect a remote unit to be replaced.

ASLINK master unit
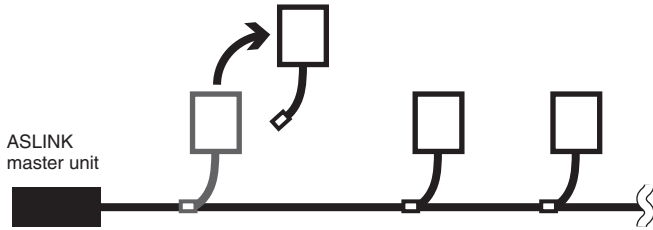
■Step 3 Connect a new remote unit.

NEW

ASLINK master unit

■Step 4 Turn ON the 24V DC power supply to the master unit.

⚠ **CAUTION**

- It is necessary that both the master unit and remote unit should be compatible with the single unit simplified replacement function.
- Before disconnection and connection of the remote unit, be sure to turn OFF the power supply.
- For compatibility of a remote unit with the single unit simplified replacement function, see the lot No. and the manual for the remote unit.
- When a remote unit of a new function version is replaced with that of an old function version, the single unit simplified replacement function cannot be used.
- Operation is enabled in the case where the model of the remote unit before replacement is the same as that after replacement.
- If the model of the remote unit before replacement is different from that after replacement, a model mismatching error occurs, disabling address and parameter settings.
- Operation is enabled in the case where the address of the remote unit for replacement is the factory-set address (bit address 511).
- Several remote units cannot be simultaneously replaced. For replacement of several remote units, conduct the replacement procedure for each unit one by one.
- For a remote unit incompatible with the single unit simplified replacement function, set an address and parameters by using the address writer as in the conventional manner.
- For details of the single unit simplified replacement function (limitations, conditions, etc.), refer to the manual for the master unit.

■Identification of function version

Function version information is given on the lot label.
* The design and contents of the lot label may vary depending on the product model and lot No.

Anywire Corporation
MODEL
DATE 2019-05
Lot   19ECBNB
MADE IN JAPAN

Function version:
When an equipment parameter is changed due to functional upgrading, etc., the function version will be updated (for example: A→B→C).
When a remote unit of a new function version is replaced with that of an old function version, the single unit simplified replacement function cannot be used.

[Functions]

Model	ASLINKAMP 4-wire type (isolated)	
Ch-to-Ch isolation	Isolated	
Analog output range	Voltage: 0-10V, 0-5V, 1-5V Current: 4-20mA, 0-20mA	
Resolution	1/16000	
Functions	Bit transmission	
	Word transmission*1*2	
	Single unit simplified replacement*2	
	Remote address change*2	
	Output specification setting	
	Offset/gain adjustment	
	Automatic address/parameter setting	
Address	Bit address setting	○
	Word address setting*1*2	○

*1 It depends on lot No. whether this function is available or not.
*2 To use these functions, a master unit that supports each function is required. For details, refer to this manual together with the manual for the master unit.

■Detecting functions (Status details)

| Functions	Remote unit voltage drop	○
	I/O disconnection	×
	I/O short-circuit	×
	Sensing level drop	×
	I/O power supply drop	○

[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.
Word transmission	Available with S/W version "B" or later version (If lot No. is indicated in 3 digits (year and month only), these functions are not available.)
Word address setting	
LED indication for single unit simplified replacement function*3	

*3 The single unit simplified replacement function works even if the lot No. does not support the LED indication for the single unit simplified replacement function.
(When the master unit executes the single unit simplified replacement function, addresses/parameters will be written, if specified conditions are satisfied.)

■How to check

Lot No. is indicated on the lot label.

Side surface of this unit
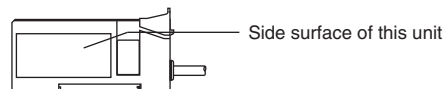
Example:

Lot No. 19ECBNB

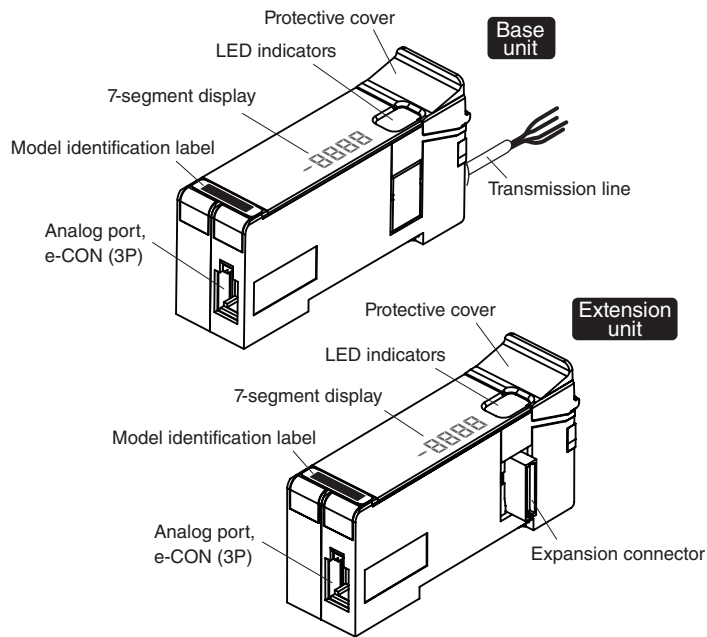H/W version
S/W version
Function version

[Included in the Package]

L□-D□1AW	This product ... 1

* A connector for an analog device shall be separately purchased.

[Name of Each Part]

Base unit
- Protective cover
- LED indicators
- 7-segment display
- Model identification label
- Analog port, e-CON (3P)
- Transmission line

Extension unit
- Protective cover
- LED indicators
- 7-segment display
- Model identification label
- Analog port, e-CON (3P)
- Expansion connector

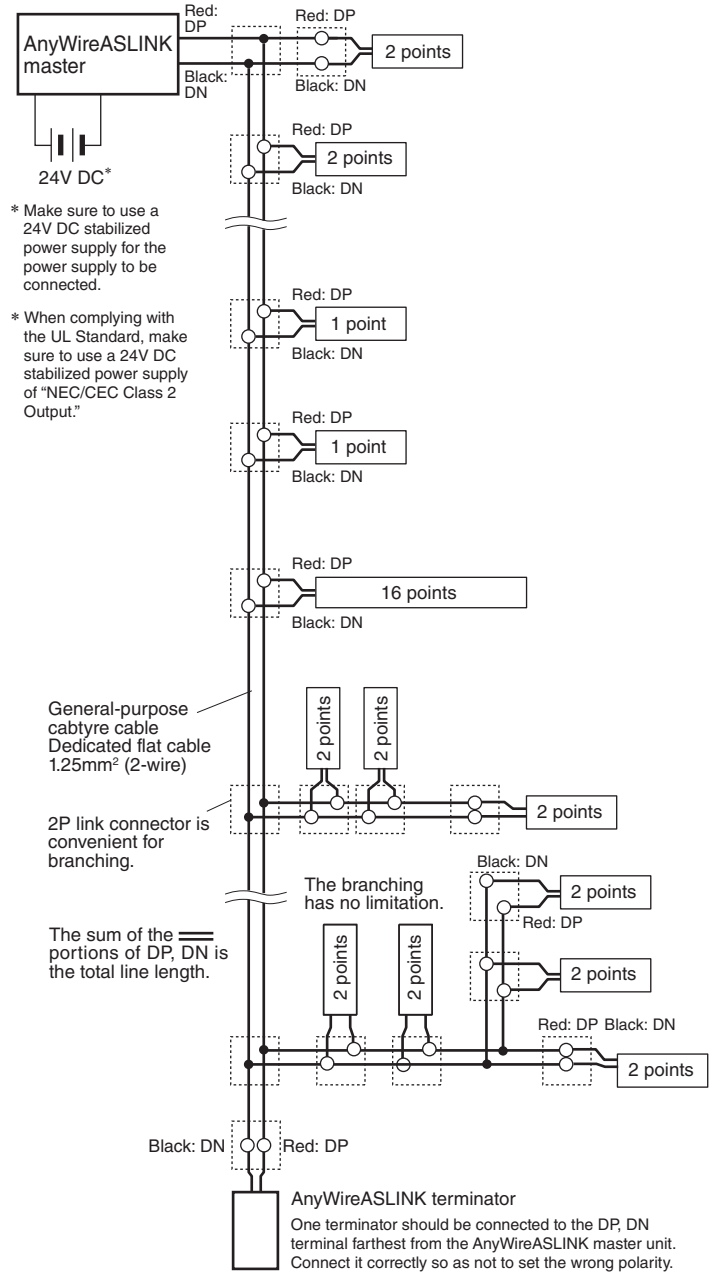| Model		Ch-to-Ch isolated	Ch-to-Ch non-isolated
Current		A	A
Voltage		V	V

[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

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/CEC Class 2 Output."

General-purpose cabtyre cable
Dedicated flat cable
1.25mm² (2-wire)

2P link connector is convenient for branching.

The branching has no limitation.

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

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.

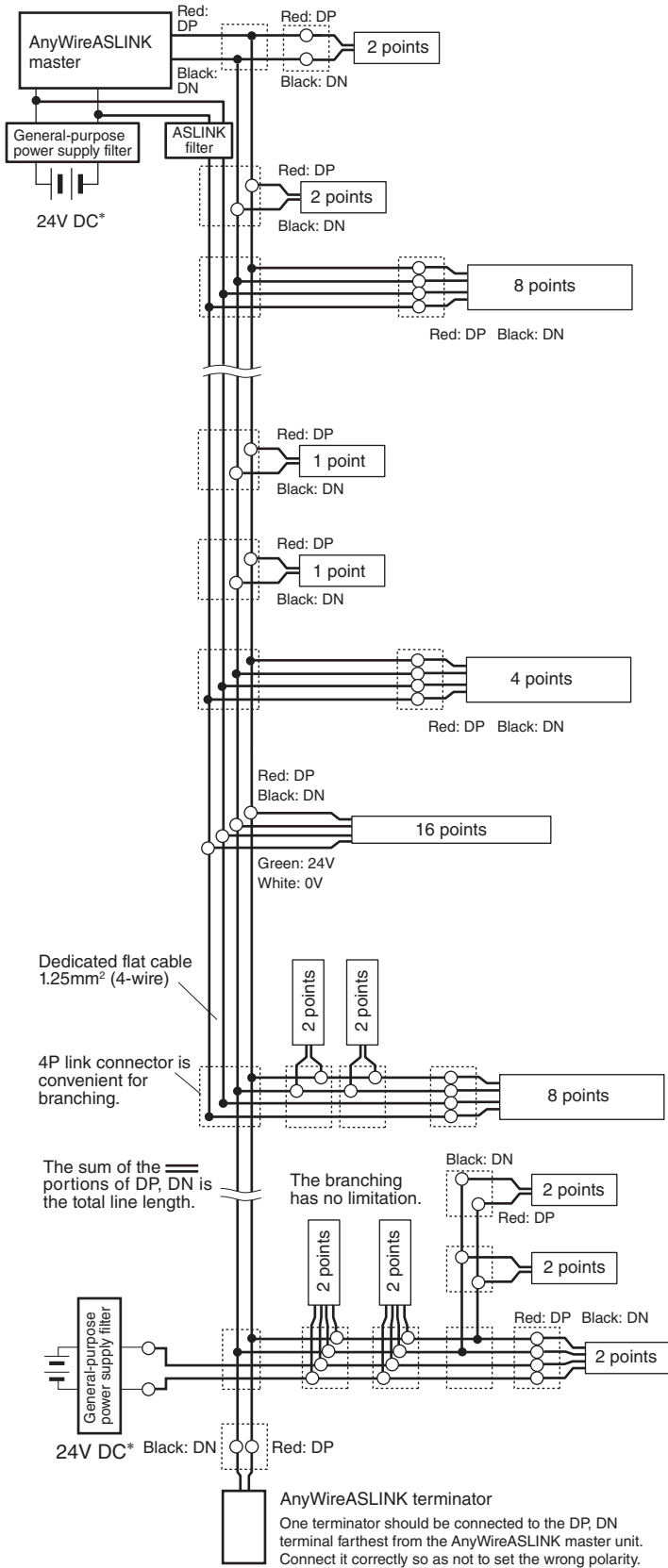■ Relationship between the size and length of the transmission line and the supply current (Table 1)

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
1.25mm²	MAX 2A	MAX 1A	MAX 0.5A
0.75mm²	MAX 1.2A	MAX 0.6A	MAX 0.3A
0.5mm²	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

Red: DP

Red: DP
Black: DN
2 points

Black: DN

General-purpose power supply filter

ASLINK filter

24V DC*

Red: DP
2 points
Black: DN

8 points
Red: DP Black: DN

Red: DP
1 point
Black: DN

Red: DP
1 point
Black: DN

4 points
Red: DP Black: DN

Red: DP
Black: DN
16 points
Green: 24V
White: 0V

Dedicated flat cable 1.25mm^2 (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

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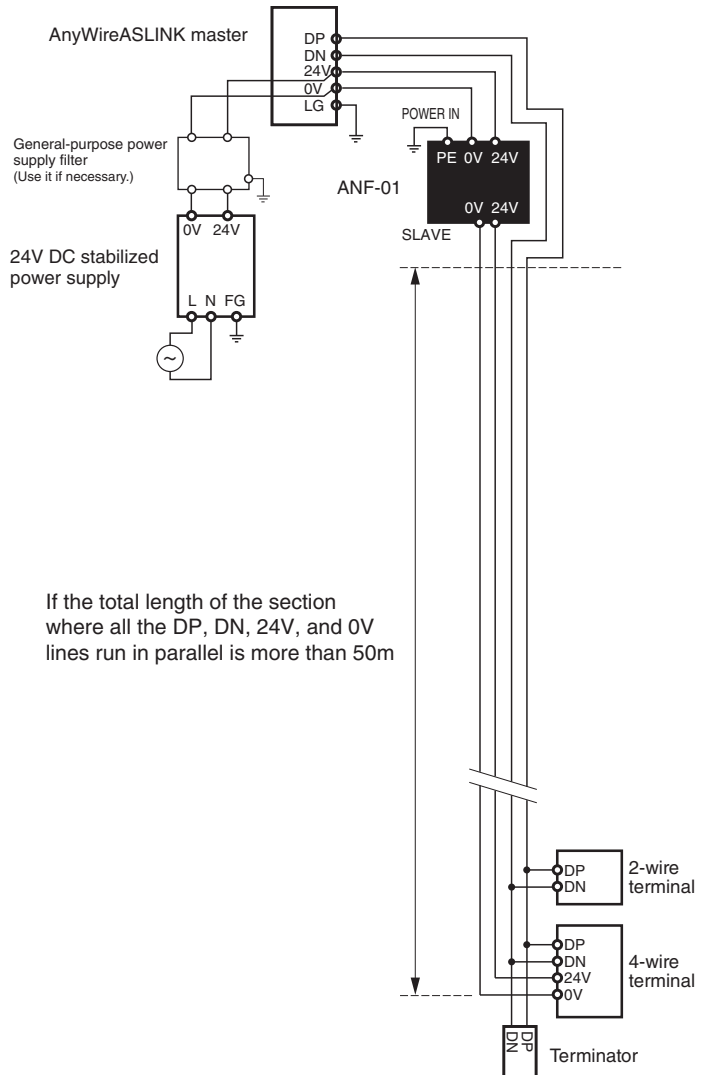
Insert the "ASLINK filter [Type ANF-01]" regardless of installation method and distance when complying with CE Standard.

■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
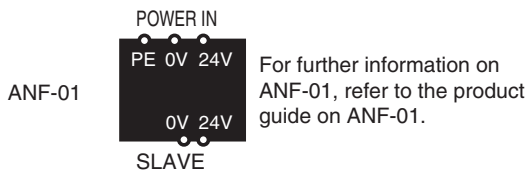
①Power supply to the entire system

AnyWireASLINK master

DP
DN
24V
0V
LG

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

POWER IN

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

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

DP
DN
24V
0V
LG

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

POWER IN

ANF-01

PE 0V 24V

0V 24V

SLAVE

0V 24V

24V DC stabilized
power supply

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

POWER IN

PE 0V 24V

0V 24V

ANF-01

SLAVE

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

＊When using this filter, please be careful of the positions of LOAD and LINE.

AnyWireASLINK master

DP
DN
24V
0V
LG

LOAD

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

PE 0V 24V

0V 24V

EAC-06-472＊

LINE

0V   24V

24V DC stabilized
power supply

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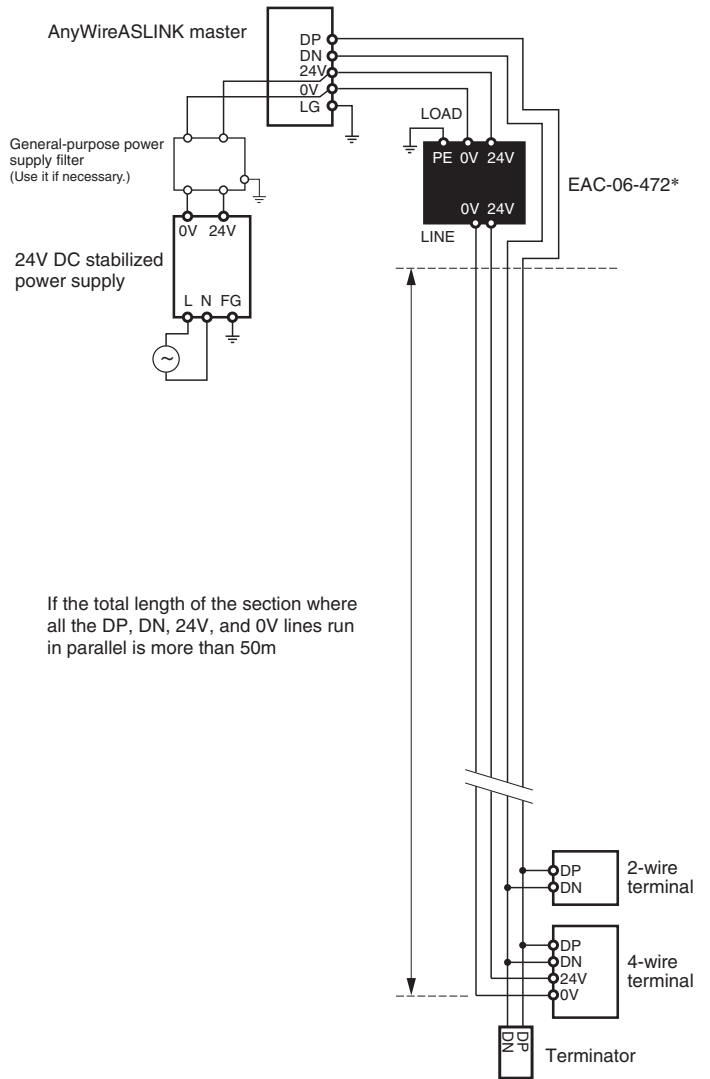
② Local power supply/branching -------------------------------

＊When using this filter, please be careful of the positions of LOAD and LINE.

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

LOAD
PE 0V 24V

0V 24V
LINE

EAC-06-472*

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

LOAD
PE 0V 24V

0V 24V
LINE

EAC-06-472*

[Installation]

The installation and removal methods are the same for base unit and extension units.

Hook the movable tab on the A side on the DIN rail.
Push the unit in the direction of C until the fixed tab B on the opposite side clicks.

Install the unit vertically so
that the movable tab faces
downward.

Up

A

C

B

Up

A
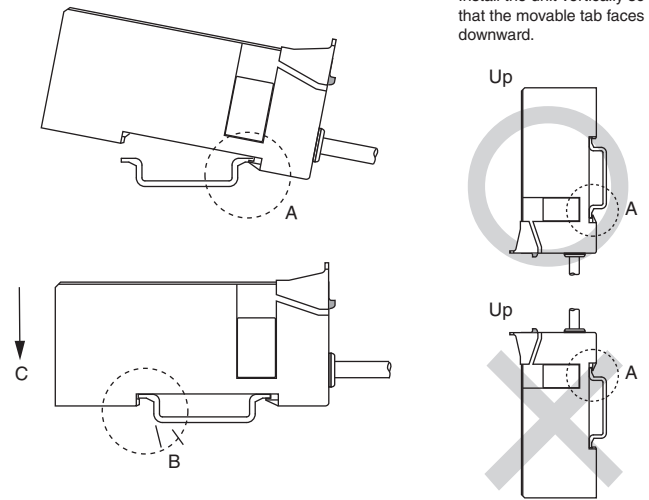
Push the unit in the direction of D and free the fixed tab B from the DIN rail.
While keeping the unit pushed, pull it up in the direction of E to lift the body and
take it off the rail.

D

B

E
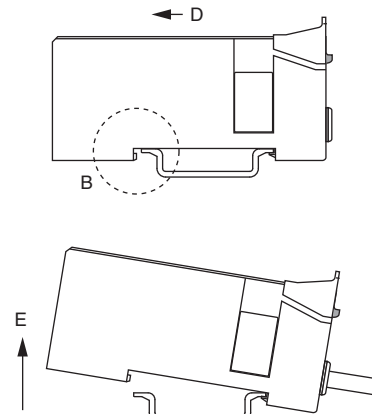
[Installation Location]

Install in the following indoor locations and dry location.

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

[Notes on the Use]

To connect the unit to the transmission line or add a new extension unit to the base unit, always stop the transmission signal.
If the connection is made with a live wire, the unit may stop working by interpreting the chattering caused during the connection as an error.

[Expansion]

This analog output unit enables connections of extension units to the base unit. Remove the connector cover on the base unit and connect a unit to be added to the built-in expansion connector.

Remove the connector cover.
(Do not misplace the cover.)

Expansion connector

Extension unit

Base unit
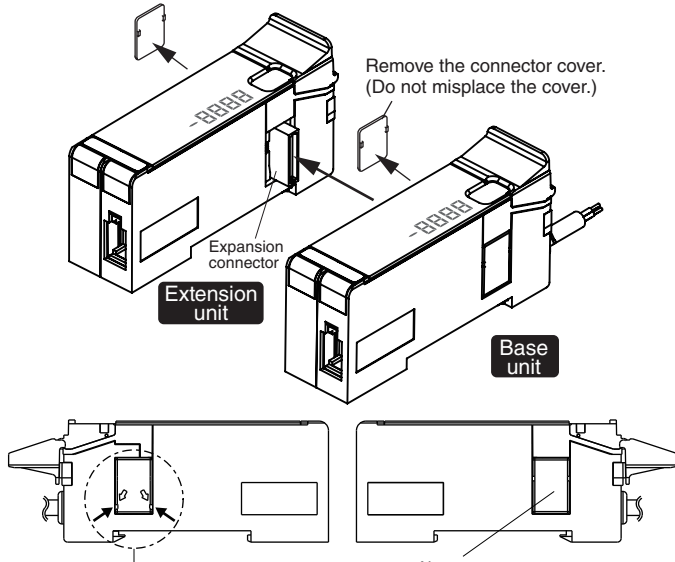
<How to remove the connector cover>
Insert the tip of a tool, such as tweezers, into one of the holes in the direction shown by the black arrow and pull it open.

<Note>
Do not remove the connector cover on this side.

The maximum number of units to be expanded should be determined in the range that satisfies the following conditions.

■ Current consumption

L□-D□1AW	DP-DN	3.2mA ①
L□-DA1AW	24V-0V	56.7mA ②
L□-DV1AW		34.0mA ③

■ Number of occupied points

L□-D□1AW	16 points ④

■ Conditions to be considered for expansion

Maximum number of additional units in connecting remote units to a master unit	31 ⑤
Total DP-DN current consumption for a block consisting of a master unit and added remote units	DP-DN: 800mA or less ⑥
Total current consumption on the 24V-0V line used for a single block as described above	24V-0V: 800mA or less ⑦

■ Conditions to be considered for a single system

The total number of input/output points occupied by connected devices should not exceed the maximum transmission points per system set in the master unit	Input: 256 points or less Output: 256 points or less ⑧
Total DP-DN current consumption of connected devices should not exceed the maximum permissible current supply per system	50m/1.25mm²: 2A ⑨ (Refer to page 2)

Example)

Transmission path conditions: Transmission distance 50m (total length), transmission line size 1.25mm², 256 input and output points respectively
Device conditions: One unit of LA-DA1AW and only five units of LB-DA1AW are connected
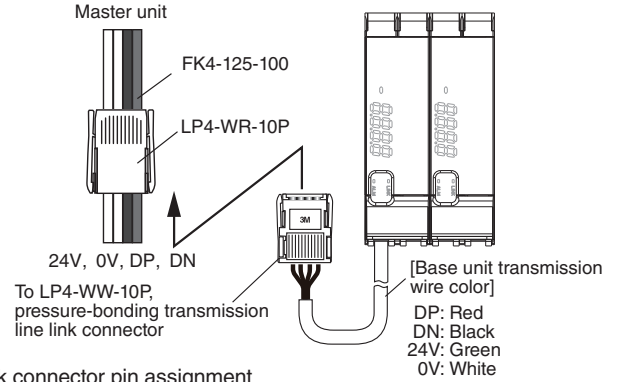Analog device 24V current consumption 50mA × 6 units ⑩

(1) Considerations based on the limit on the number of occupied I/O points
LA-DA1AW: 16 output points × 1 unit ④, LB-DA1AW: 16 output points × 5 units ④
Max. number of output points: 256 ⑧ ÷ 16 = 16
$16 \times 1 + 16 \times 5 = 96 \leq 256$ ⑧ (max. number of output points)

(2) Validation based on the DP-DN current consumption per block
LA-DA1AW: 3.2mA × 1 unit ①, LB-DA1AW: 3.2mA × 5 units ①
i.e. LA-DA1AW: (3.2mA × 1 unit), LB-DA1AW: (3.2mA × 5 units = 16.0mA)
Therefore, $3.2mA + 16.0mA = 19.2mA \leq 800mA$ ⑥ → OK

(3) Validation based on the 24V-0V current consumption per block
LA-DA1AW: 56.7mA × 1 unit ②, LB-DA1AW: 56.7mA × 5 units ②
Analog unit: 50mA × 6 units ＊Not necessary to include in the calculation because they are driven by an external power supply
i.e. LA-DA1AW: (56.7mA × 1 unit), LB-DA1AW: (56.7mA × 5 units)
56.7mA + 283.5mA = 340.2mA
Therefore, $340.2mA \leq 800mA$ ⑦ → OK

(4) Validation based on the DP-DN current consumption per system
LA-DA1AW: 1 unit, LB-DA1AW: 5 units,
total 6 units → 3.2mA × 6 units = 19.2mA ①
Therefore, $19.2mA \leq 2A$ ⑨ → OK

Other conditions: Combined connections to LB-A12W, LB-A1AW, LB-D□12W and LB-D□1AW are enabled.
Combined channel ranges are enabled.
Connections to LB-F1011 and LBL-R10W are disabled.

Analog input unit
4-20mA
1-5V

4-20mA
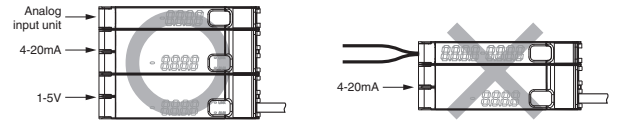
[Transmission Line Connection]

Connect the transmission line of the analog output master unit to the transmission line of the AnyWireASLINK master unit.

Master unit

FK4-125-100

LP4-WR-10P

24V, 0V, DP, DN

To LP4-WW-10P, pressure-bonding transmission line link connector

[Base unit transmission wire color]
DP: Red
DN: Black
24V: Green
0V: White

■ Link connector pin assignment

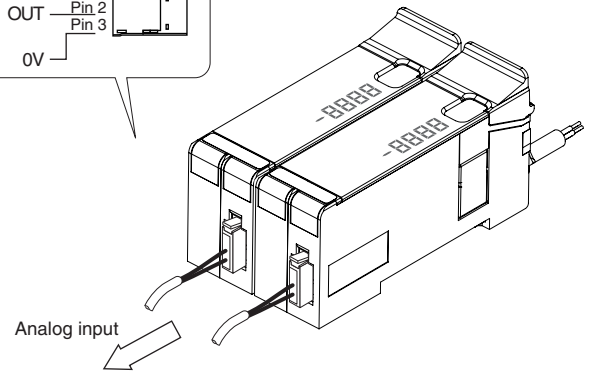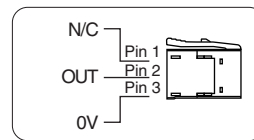| Pin No.	Description	Wire color
1	DN	Black
2	DP	Red
3	0V	White
4	24V	Green

The LP connector (link connector) is a connector that integrates male and female terminals.
It makes it easy to "connect" and "branch" the line simply by connecting two connectors of the same type.
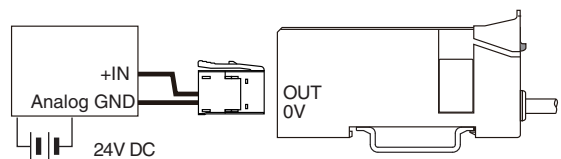
[Connection on the Analog Side]

■ Compatible connector on the analog side ＊Purchase the connector separately.
Example) Mini clamp wire mount plug 37103 − ＊＊＊＊ − ＊00 FL (3M Japan)

■ Pin assignment on the analog side

N/C — Pin 1
OUT — Pin 2
Pin 3
0V

Analog input

■ Connection example

+IN
Analog GND
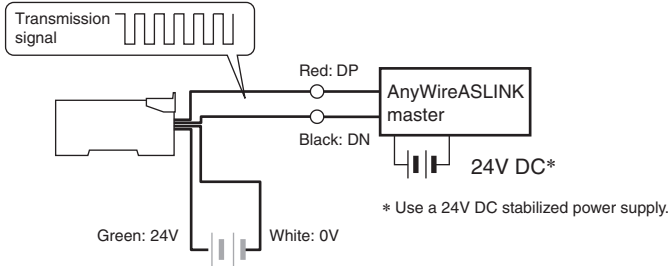
24V DC

OUT
0V

[Various Settings]

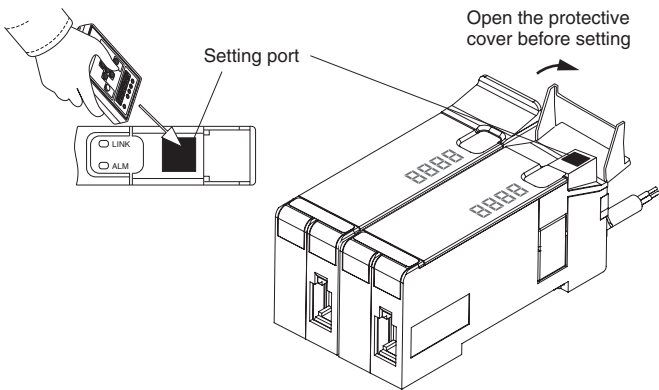| Address setting | Parameter setting |

■ Common procedure for address writer operation

> Be sure to connect to the AnyWireASLINK master unit to use.
> ARW-04 (an address writer) of Rev. (Ver.) 2.01 or later is needed for word address setting.
> ARW-04 of Rev. (Ver.) 1.01 or later will do for parameter settings other than word addresses.
> For the details of the operating method, refer to the product guide of ARW-04.

1. Connect this unit to the AnyWireASLINK master unit.
   A transmission signal is needed to write or read setting parameters.
   Set parameters with the address writer with a transmission signal connected to the transmission line (DP, DN) and power supply (24V/0V) of the terminal.

Transmission signal

Red: DP
Black: DN
AnyWireASLINK master
24V DC*

∗ Use a 24V DC stabilized power supply.

Green: 24V   White: 0V

2. All AnyWireASLINK devices require settings.
   Open the protective cover of the analog output unit to be set and point the address writer toward the setting port to perform settings.
   (Hold the light emitting/receiving part as close to the setting port as possible.)
   Keep the covers on units not being set closed.

Setting port

Open the protective cover before setting

LINK   ALM

| Address setting |

■ Address number setting

For address numbers, specify the leading number of the transmission frames to be allocated to the unit.
This unit is compatible with the setting of both bit and word addresses.
Note that the occupied area varies depending on the address to be set.

∗ Refer to the lot No. to check whether word address setting is enabled.

> In the case where the unit is used with bit address setting
>
> Starting from the preset address number, 16 points of the bit output information area are occupied.
>
> Bit output information area
> 0   15   48   63
>
> Set address: "Bit 0"   Set address: "Bit 48"
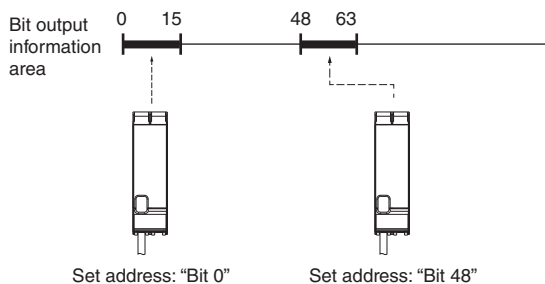
In the case where the unit is used with word address setting

Starting from the preset address number, one word of the word output information area is occupied.

Word output information area
0   1   3   4

Set address: "Word 0"   Set address: "Word 3"
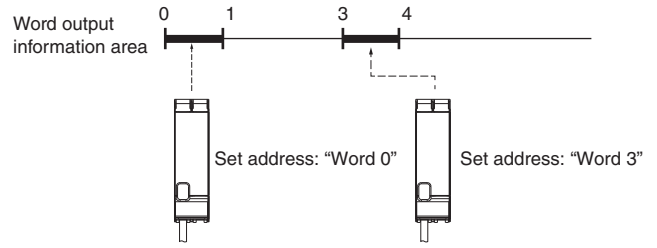
⚠ **CAUTION**

The factory-set address is "bit address 255" or "bit address 511," which indicates that an address has not been set.
The factory-set address varies depending on lot No., as follows:
    For S/W version "B" or later version: 511
    For S/W version "A" or 3-digit lot No.: 255
Input and output operations are disabled with the factory-set address.
When the automatic address setting function is enabled by the address/parameter automatic setting (equipment parameter 17), the addresses of connected extension units will be automatically changed from the factory-set addresses.
In this case, address setting using the address writer is disabled.

Example:

Lot No. 19ECBNB

S/W version

| Parameter setting |

＜Current type＞

■ Output specification setting [Equipment parameter 1]

Set the analog output specification.

Variable	Description
0	0-20mA
1	4-20mA

Factory setting: 1

During the output specification setting, the specification that has been set is displayed.

Output specification	Variable	7-segment display
0-20mA	0	0.20.
4-20mA	1	4.20.

After startup at receipt of a transmission signal, the preset output specification setting is displayed for approx. 3 seconds, and then the display changes to indicate an actual output value.

■ Offset/gain adjustment mode setting [Equipment parameter 2]

Set whether or not the offset/gain adjustment is enabled.

Variable	Description
0	Disabled
1	Enabled

Factory setting: 0

■ Offset/gain adjustment factor setting [Equipment parameters 13 to 15]

Set the offset/gain adjustment factors.

Equipment parameter 13 determines the 0mA offset adjustment current for the 0-20mA setting.
[Setting range: -1.00 to 8.00]   Factory setting: 0

Equipment parameter 14 determines the 4mA offset adjustment current for the 4-20mA setting.
[Setting range: -1.00 to 8.00]   Factory setting: 400

Equipment parameter 15 determines the 20mA gain adjustment current for the 0-20mA and 4-20mA settings.
[Setting range: 16.00 to 22.00]   Factory setting: 2000

Variable → Current
0000   → 0.00mA
0300   → 3.00mA
9020   → -0.20mA
∗ The value "9" on the 4th digit means a negative value.

《Application example》

When a digital value of "0" is output in the 4-20mA mode, the signal, which is supposed to be 4mA, reads as 4.5mA due to the influence of temperature and other environmental factors:
Since there is an error of +0.5mA, set the parameter 14 to "350" (3.5mA).

Note: The 7-segment display shows the value of 3.5mA, which is the value set. Note that the 7-segment display is not for actual current flowing.
Also, note that the examples of data characteristics (page 12) change depending on the offset/gain adjustment.
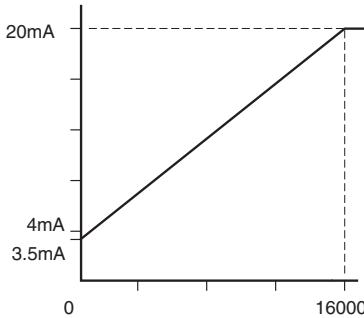
＜Voltage type＞

■ Output specification setting　[Equipment parameter 1]

Set the analog output specification.

Variable	Description
0	0-10V
1	0-5V
2	1-5V

Factory setting: 2

During the output specification setting, the specification that has been set is displayed.

Output specification	Variable	7-segment display
0-10V	0	0-10.
0-5V	1	0.5.
1-5V	2	1-5.

■ Offset/gain adjustment mode setting　[Equipment parameter 2]

Set whether or not the offset/gain adjustment is enabled.

Variable	Description
0	Disabled
1	Enabled

Factory setting: 0

■ Offset/gain adjustment factor setting　[Equipment parameters 10 to 14]

Set the offset/gain adjustment factors.

Equipment parameter 10 determines the 0V offset adjustment voltage for the 0-10V setting.
[Setting range: -0.50 to 2.00]　　　　　　　　　Factory setting: 0

Equipment parameter 11 determines the 10V gain adjustment voltage for the 0-10V setting.
[Setting range: 8.00 to 11.00]　　　　　　　　Factory setting: 1000

Equipment parameter 12 determines the 0V offset adjustment voltage for the 0-5V setting.
[Setting range: -0.500 to 2.000]　　　　　　　Factory setting: 0

Equipment parameter 13 determines the 1V offset adjustment voltage for the 1-5V setting.
[Setting range: -0.500 to 2.000]　　　　　　　Factory setting: 1000

Equipment parameter 14 determines the 5V gain adjustment voltage for the 0-5V and 1-5V settings.
[Setting range: 4.000 to 5.500]　　　　　　　Factory setting: 5000

In the 0-10V mode
Variable	→	Voltage
0000	→	0.00V
0300	→	3.00V
9020	→	-0.20V

In the 0-5V and 1-5V modes
Variable	→	Voltage
0000	→	0.000V
1200	→	1.200V
9200	→	-0.200V

＊The value "9" on the 4th digit means a negative value.

《Application example》 Refer to the current type.

■ Output condition with a disconnection of DP-DN line and a remote unit voltage drop　[Equipment parameter 3]

Set the output operation when there is a disconnection of DP-DN line and a remote unit voltage drop.

Variable	Description
0	Hold
1	0 clear

Factory setting: 0

Behaviors in 0 clear
In the 0-20mA mode:	0mA
In the 4-20mA mode:	0mA
In the 0-10V mode:	0V
In the 0-5V mode:	0V
In the 1-5V mode:	0V

Hold: Holds the output immediately before the error.
0 clear: The output is forced to "0" if an error occurs.

■ Automatic address/parameter setting (for base unit only)　[Equipment parameter 17]

This function enables address and parameter settings of the base unit to be automatically reflected on extension units.

Variable	Automatic address/parameter setting
0	Automatic setting disabled Addresses and parameters are not set automatically.
1	Automatic address setting Only the addresses are set on added extension units from the base unit automatically.
2	Automatic parameter setting Only the parameters are set on added extension units from the base unit automatically.
3	Automatic address and parameter setting Addresses and parameters are set on added extension units from the base unit automatically.

Factory setting: 0
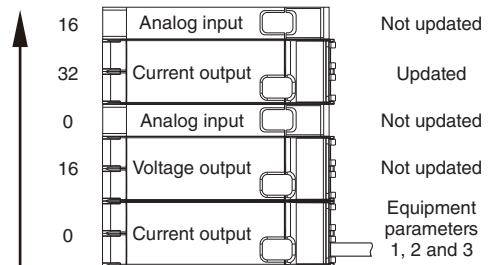
Automatic address setting

Addresses are assigned to extension units with an increment of 16 in order from the unit closest to the base unit and starting from the address of the base unit.
Addresses are updated at the startup and whenever the addresses are modified on the baser unit.

Automatic parameter setting

Parameters are updated for units of the same type (current or voltage output) as the base unit and, if the type is different (different current/voltage or analog input unit), parameters are not updated and the updated data will be passed on to the next unit.
The parameters that can be updated are parameters 1, 2 and 3 only. (The offset/gain correction values will not be updated.)
Parameters are updated at the startup and whenever the parameters are modified on the base unit.

Example)
When the value of equipment parameter 17 is "3"

Addresses to be set		Equipment parameters
16	Analog input	Not updated
32	Current output	Updated
0	Analog input	Not updated
16	Voltage output	Not updated
0	Current output	Equipment parameters 1, 2 and 3

⚠ CAUTION　Be sure to return the variable to 0 after the completion of automatic setting.
Otherwise, the following unexpected operations may be caused when an extension unit is added or replaced:
- The address and the parameter are automatically set upon connection, or
- The single unit simplified replacement function does not work correctly.

[Data Configuration]

<In the case where the unit is used with bit address setting>

Bit output information area　　　　　　　　　　* n = Bit address number set in this unit

Address offset	n+15	n+14	n+13	n+12	n+11	n+10	n+9	n+8	n+7	n+6	n+5	n+4	n+3	n+2	n+1	n
Description	Conversion data (16-bit binary data)															

<In the case where the unit is used with word address setting*[1]>

Word output information area　　　　　　　　* n = Word address number set in this unit

Address offset	Description
n	Conversion data (16-bit binary data)

Significant output value: 0 to 16000 (0Hex to 3E80Hex)

Behaviors when data outside the range of 0 to 16000 were output:

Exceeding 16000 ·· Same as the behavior with an output of 16000
Less than 0 (negative) ·· Same as the behavior with an output of 0
* Negative values are complements of 2

*1 Both master unit and remote unit must be compatible with the word transmission function.

■ Status details

The contents of an alarm detected with this unit can be checked with the "status detail area*[2]" 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: Remote unit voltage drop (DP-DN-side voltage drop)
b5: I/O power supply drop (24V-0V-side voltage drop)

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

[Monitor Display]

LED indicators are used to show the operational status of ASLINKAMP. The indicators are the same for base unit and extension units.

LED indicators
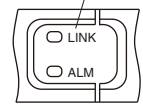
LED name	Display status		Description
LINK (Green)	Lit	▬▬▬	Transmission signal error Model mismatching error*[3]
	Flashing	▪▪▪▪▪▪▪	Transmission signal received
	Unlit	☐	No transmission signal (disconnection and reverse connection of DP and DN lines included)
ALM (Red)	Flashing	▪ ▪ ▪ ▪	Remote unit voltage drop Model mismatching error*[3]
	Unlit	☐	No ALM available
LINK ALM	Alternate flashing LINK ▬ ▪ ▪ ▪ ALM ▪ ▪ ▪ ▪		ID duplicated*[4] or ID unregistered*[5]
LINK ALM	LINK ▬▬▬ ALM ▪ ▪ ▪ ▪		Model mismatching error*[3]

*3 This indication appears when the use of the single unit simplified replacement function fails. (This operation occurs on the S/W version "B" or later version.)
*4 The duplication is detected when the master unit executes automatic address recognition.
*5 For S/W version "B" or later version: This indication appears when transmission signal and power supply are normally connected, and the unit is set to the factory-set address.
For S/W version "A" or 3-digit lot No.: This condition is detected when the master unit executes automatic address recognition.

Example:

Lot No. 19ECBNB
└── S/W version

Analog output value, remote unit voltage drop, or low I/O power supply message is indicated on the 7-segment display.

7-segment display
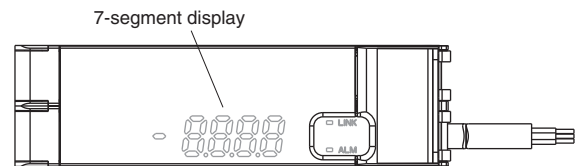
■ Low voltage (DP-DN) on the remote unit detected

d.P.d.n.
⇕ 0.6 sec.
L.o.

LINK
ALM Flashing

Check the following and eliminate the relevant cause.
- If the 24V DC power supply voltage to the AnyWireASLINK master unit is in the allowable voltage range
- If there is any loose terminal or poor contact on the trunk and branch lines
- If the current on the unit and connected loads satisfies the system conditions

■ Low I/O power supply (24V-0V) detected

d.c.2.4.
⇕ 0.6 sec.
L.o.

LINK
ALM Lit

If the voltage of 24V DC power supplied to the unit becomes significantly low (near 16V), the message "dc24 Lo" is displayed and the unit stops functioning. Check the supply voltage and take actions to increase the voltage to the allowable range.

[Troubleshooting]

LINK	ALM	Cause	Remedy
○ Unlit	○ Unlit	- The AnyWireASLINK transmission signal is not connected.	- Check if a disconnection has occurred between this unit and the AnyWireASLINK system, and repair the connections as required.
		- The AnyWireASLINK system is not turned on.	- Check the power supply to the AnyWireASLINK system, and supply power to it.
● Lit	○ Unlit	- The DP-DN line is directly connected to the 24-0V power supply.	- Reconnect the power to the AnyWireASLINK system.
		- A unit incompatible with Ver. 1.1 is connected to the AnyWireASLINK system for word transmission.	- A remote unit incompatible with Ver. 1.1 cannot be used in connection to the AnyWireASLINK system for word transmission. Check the setting of the master unit, and lot No. of the remote unit.
◎ Flashing (alternates with a 0.5 sec. interval)	◎ Flashing (alternates with a 0.5 sec. interval)	- The address of this unit remains unchanged from the factory-set address.	- Set an address. *You cannot use the unit with the address before shipment.
		- The address of this unit duplicates that of another remote unit.	- Set the address again so that it does not duplicate another unit's address.
—	◎ Flashing (Lit for 0.2 sec., unlit for 1.0 sec.)	- The voltage of the internal power supply to this unit (DP-DN) is dropped.	- Reduce the number of units connected to the same AnyWireASLINK system. - Shorten the transmission line between this unit and the master unit.
● Lit	◎ Flashing (Lit for 0.5 sec., unlit for 0.5 sec.)	- Single unit simplified replacement has failed.	- Defective connections and the like may have caused single unit simplified replacement to fail. Remove the remote unit after replacement, and make connections again. - When two or more replacement remote units are simultaneously connected, the single unit simplified replacement function does not work. - Check if the replacement remote unit is of the same type as that of the remote unit before the replacement. - Check if the function version for the replacement remote unit is older than that of the remote unit before the replacement. *If the function version of the replacement remote unit is older, the single unit simplified replacement function does not work. - Check if the address of the replacement remote unit is the same as the address before shipment (a bit address of 511). *If the address of the replacement remote unit is not the same as the address before shipment, the single unit simplified replacement function does not work. - When replacing a extension unit, check if the equipment parameter 17 of the base unit is set at 0. If the equipment parameter 17 of the base unit is set at a number other than 0 (zero), the single unit simplified replacement function does not work.

If the following error is indicated on ARW-04, 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 is disabled	- Is the wiring correct? → Check the connection of analog port and transmission line again. - Is the power supplied to the AnyWireASLINK system? → Check the power supply. - Are the addresses set? → Set the addresses. - Is the unit used in the rated output range? → Use it in the rated detection range.
Setting cannot be made with the address writer	- Is the wiring correct? → Check the connection of transmission line and see if the transmission signal is sent. - Is the power supplied to the AnyWireASLINK system? → Check the power supply. - Is the protective cover opened during the setting? → Open the protective cover. Setting cannot be made with the cover closed. - Are the parameters set correctly? → Refer to the parameter correspondence table and correct the setting.

[Internal Circuits]

＜Base unit＞

＜Extension unit＞
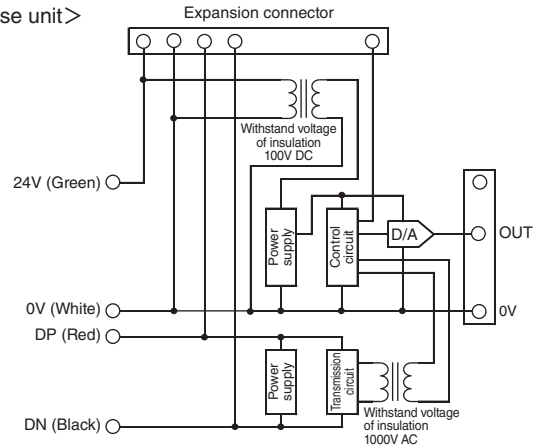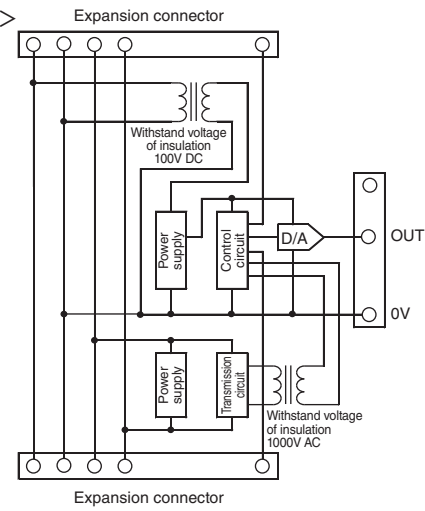
[Equipment Parameters and Their Settings]

＜Current type＞

	Item		Parameter variables
01	Output specification setting Factory setting: 1	0	0-20mA output
		1	4-20mA output
02	Offset/gain adjustment mode Factory setting: 0	0	Disabled
		1	Enabled
03	DP-DN line disconnection Output status with remote unit voltage drop Factory setting: 0	0	Hold
		1	0 clear
13	Offset/gain adjustment factor		Determines the 0mA offset adjustment current for the 0-20mA setting
14			Determines the 4mA offset adjustment current for the 4-20mA setting
15			Determines the 20mA gain adjustment current for the 0-20mA and 4-20mA settings
17	Automatic address/ parameter setting (for master unit only) Factory setting: 0	0	Automatic setting disabled
		1	Automatic setting for address only
		2	Automatic setting for parameters only
		3	Automatic address and parameter setting

＜Voltage type＞

	Item		Parameter variables
01	Output specification setting Factory setting: 2	0	0-10V
		1	0-5V
		2	1-5V
02	Offset/gain adjustment mode Factory setting: 0	0	Disabled
		1	Enabled
03	DP-DN line disconnection Output status with remote unit voltage drop Factory setting: 0	0	Hold
		1	0 clear
10	Offset/gain adjustment factor		Determines the 0V offset adjustment voltage for the 0-10V setting
11			Determines the 10V gain adjustment voltage for the 0-10V setting
12			Determines the 0V offset adjustment voltage for the 0-5V setting
13			Determines the 1V offset adjustment voltage for the 1-5V setting
14			Determines the 5V gain adjustment voltage for the 0-5V and 1-5V settings
17	Automatic address/ parameter setting (for master unit only) Factory setting: 0	0	Automatic setting disabled
		1	Automatic setting for address only
		2	Automatic setting for parameters only
		3	Automatic address and parameter setting

[Specifications]

■General specifications

Operating ambient temperature/humidity	0 – 55°C, 10 – 90%RH (No condensation)
Storing ambient temperature/humidity	-25 – 75°C, 10 – 90%RH (No condensation)
Operating atmosphere	No corrosive gas
Operating altitude*1	0 – 2000m
Pollution level*2	2 or less
Means of protection	Class Ⅲ

*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	AnyWireASLINK protocol
Connection mode	Bus type (Multi-drop method, T-branch method, Tree branch method)
Number of connection points*3	Number of bit points: 1024 points max. (IN: 512 bits, OUT: 512 bits) Number of word points: 1024 words max. (IN: 512 words, OUT: 512 words)
Number of connection units	Up to 128 units
RAS function	Detection of transmission line disconnection, transmission line short-circuit, transmission power supply drop, and duplicated/unregistered ID

*3 The number differs depending on the master unit. Be sure to refer to the manual of the master unit for the number.

■Individual specifications

Number of occupied points		At the bit address setting: Bit output: 16 points At the word address setting*4: Word output: 1 word		
Response time*5		8ms max.		
Detection function		Remote unit voltage drop (DP-DN voltage drop) I/O power supply drop (24V-0V voltage drop)		
Current consumption	L□-DA1AW	Transmission side (DP-DN): 3.2mA		
		I/O side (24V-0V): 56.7mA		
	L□-DV1AW	Transmission side (DP-DN): 3.2mA		
		I/O side (24V-0V): 34.0mA		
Weight		LA-D□1AW 36g		
		LB-D□1AW 31g		
Output range	Current	0-20mA, 4-20mA (resistance of 250Ω or less for external load)		
	Voltage	0-10V, 0-5V, 1-5V (resistance of 10kΩ or more for external load)		
Accuracy	(25°C)	±0.3%		
	(0 to 55°C)	±0.5%		
Output characteristics/ resolution		Output range	Digital output	Resolution
		0-20mA	0-16000	1250nA
		4-20mA	0-16000	1000nA
		0-10V	0-16000	625µV
		0-5V	0-16000	312.5µV
		1-5V	0-16000	250µV
Unit type/No.*6		LA-DA1AW	1569	
		LB-DA1AW	156A	
		LA-DV1AW	156B	
		LB-DV1AW	156C	

*4 It depends on lot No. whether word address setting is enabled or not.
*5 Indicates the internal processing time of this unit.
For signal of the bit information area,
The maximum transmission delay time is defined as "this time + bit transmission cycle time × 2."
For signal of the word information area,
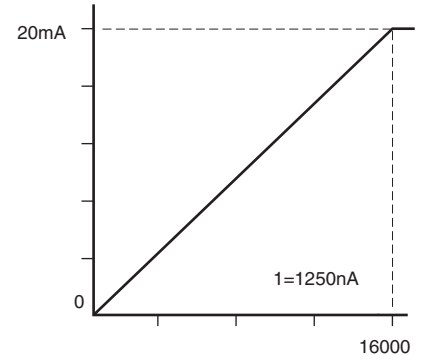The maximum transmission delay time is defined as "this time + word transmission cycle time."
*6 Code (hexadecimal) assigned to each type.
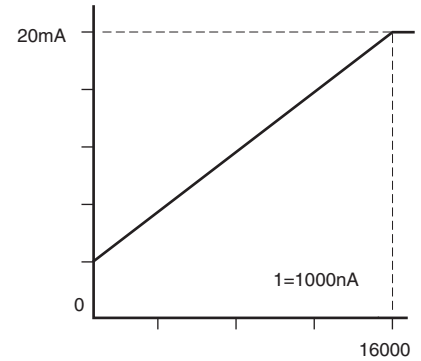You can check the code by reading the relevant parameter from the master unit.
For details, refer to the manual of the master unit.
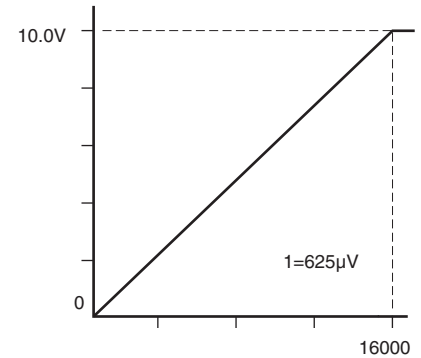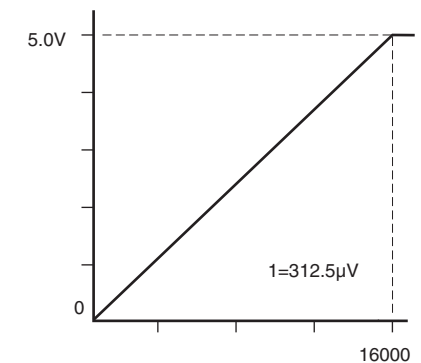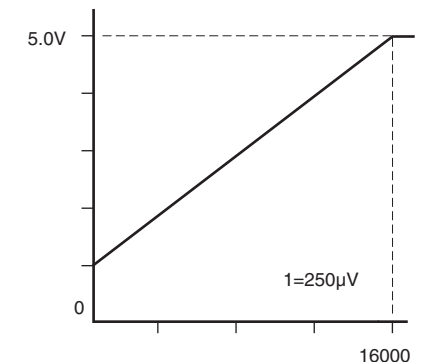
[Examples of Data Characteristics]
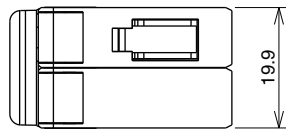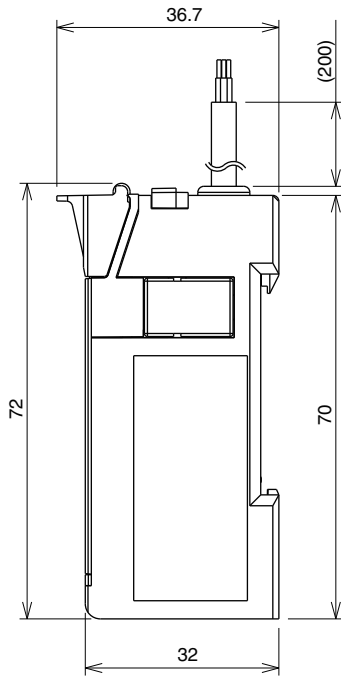
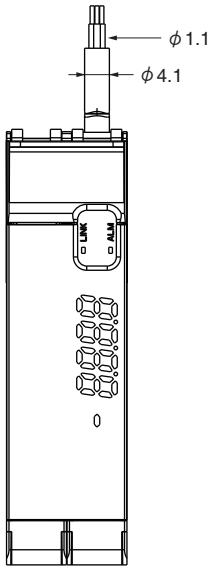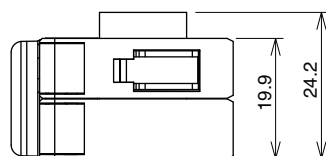0 to 20mA

4 to 20mA

0 to 10V

0 to 5V

1 to 5V

[Outside Dimensions]

Unit: mm

■LA-D□1AW

4-wire, AWG24
Cable length 200mm

φ1.1
φ4.1

36.7
(200)
72
70
32
19.9

■LB-D□1AW

36.7
72
70
32
19.9
24.2