

AnyWireASLINK system Products Guide

ASLINKAMP

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

 Ver.1.1

L□-A1AW

- 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-A1AW	Base unit
LB-A1AW	Extension unit

This product is analog input 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 a 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
If a fault occurs with the Product under the normal operating conditions assumed in the Product specifications and according to the instructions of this manual within the above warranty period, faulty parts shall be replaced or repaired free of charge.
Note: The following cases are exempted from the scope of warranty:

- [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.

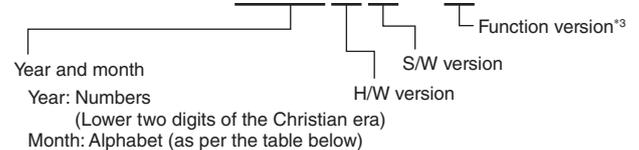
It depends on remote units whether word address setting is enabled or not.

[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



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]

	Ver. 1.0*5
	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.

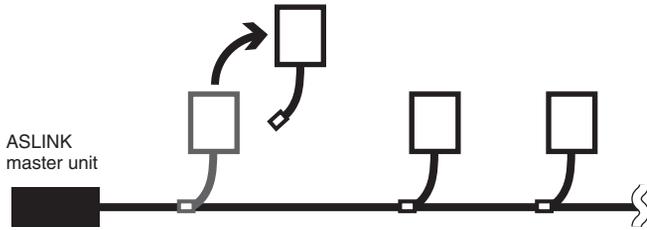
For remote units that handle word data, word address settings are required.

[About Single Unit Simplified Replacement]

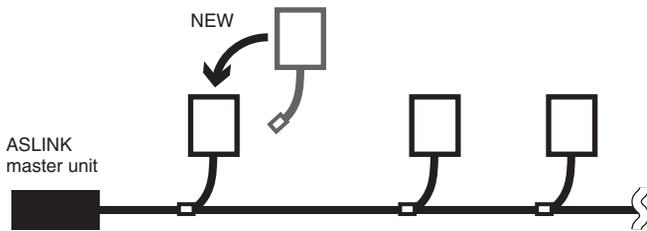
During replacement of a remote unit, this function enables automatic settings of address and parameters of the existing remote unit into a new remote unit. (After replacement of the remote unit, address and parameter setting procedure using the address writer is not required.)

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

■ Step 2 Disconnect a remote unit to be replaced.



■ Step 3 Connect a new remote unit.



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

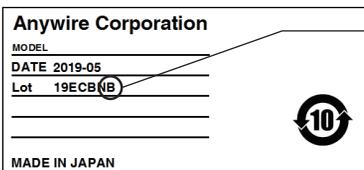


- It is necessary that both the master unit and remote unit should be compatible with the single unit simplified replacement function.
- Before disconnection and connection of the remote unit, be sure to turn OFF the power supply.
- For compatibility of a remote unit with the single unit simplified replacement 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.



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 2-wire type (non-isolated)	
Ch-to-Ch isolation	Isolated	
Measurement input 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}	
	1024 points ^{*3}	
	Input specification setting	
	Reference point shift mode	
	Number of moving averages	
	Automatic address/parameter setting	
	User offset/gain adjustment ^{*1}	
	Alarm bit setting ^{*1*4}	
Address	Bit address setting	<input type="radio"/>
	Word address setting ^{*1*2}	<input type="radio"/>

*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.
*3 This function is available when this unit is connected to the AnyWireASLINK system whose number of bit data points has been set at 1024 (input: 512 points, output: 512 points).
For details, refer to the manual for the master unit.

*4 To use this function, a master unit that supports the word transmission function is required.
For details, refer to the manual for the master unit together with this manual.

■ Detecting functions (Status details)

Functions	Remote unit voltage drop	<input type="radio"/>
	I/O disconnection	<input checked="" type="checkbox"/>
	I/O short-circuit	<input checked="" type="checkbox"/>
	Sensing level drop	<input checked="" type="checkbox"/>
	I/O power supply drop	<input checked="" type="checkbox"/>

[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	
User offset/gain adjustment (Equipment parameters 5 to 7)	Available with S/W version "B" (If lot No. is indicated in 3 digits (year and month only), these functions are not available.) * Not available with S/W version "C" or later version.
Alarm bit setting (Equipment parameters 8 to 13)	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.)
LED indication for single unit simplified replacement function ^{*4}	

*4 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.



Example:

Lot No. 19ECBNB

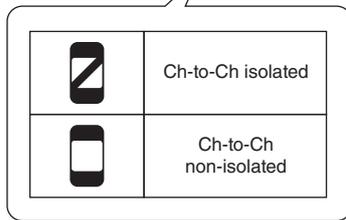
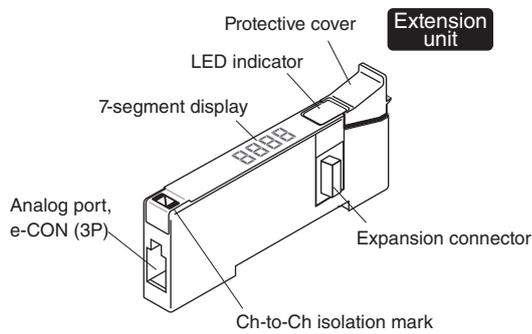
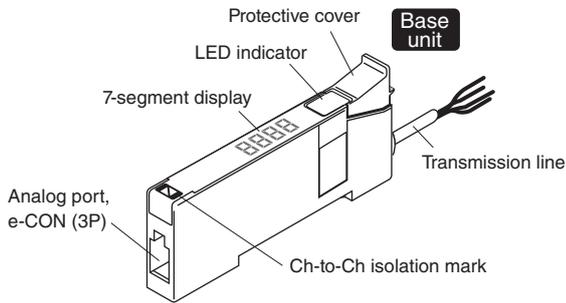
H/W version ————
S/W version ————
Function version ————

[Included in the Package]

LA-A1AW (Base unit)	This product ... 1
LB-A1AW (Extension unit)	This product ... 1

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

[Name of Each Part]



[How to Connect AnyWireASLINK]

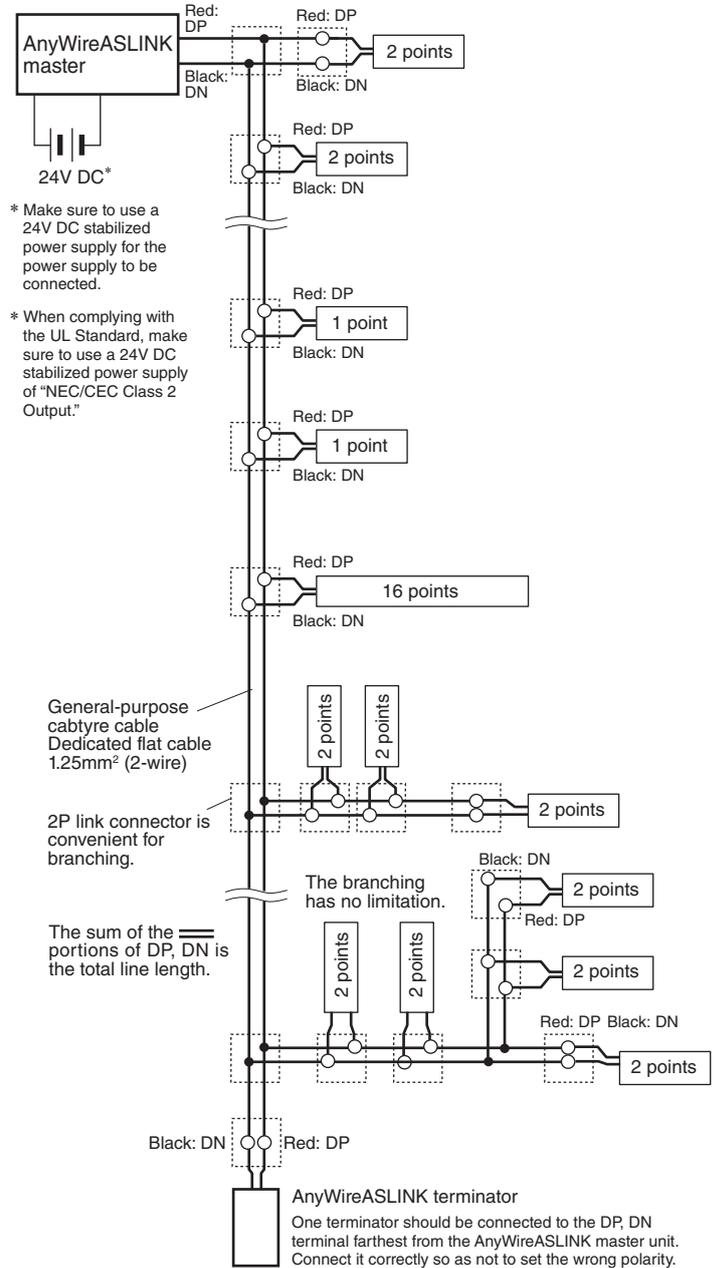
The AnyWireASLINK can employ a two-wire or four-wire terminal selectively depending on the load current. If the load current is small, using a two-wire (non-isolated) terminal allows for achieving simplified wiring without local power supply.

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



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

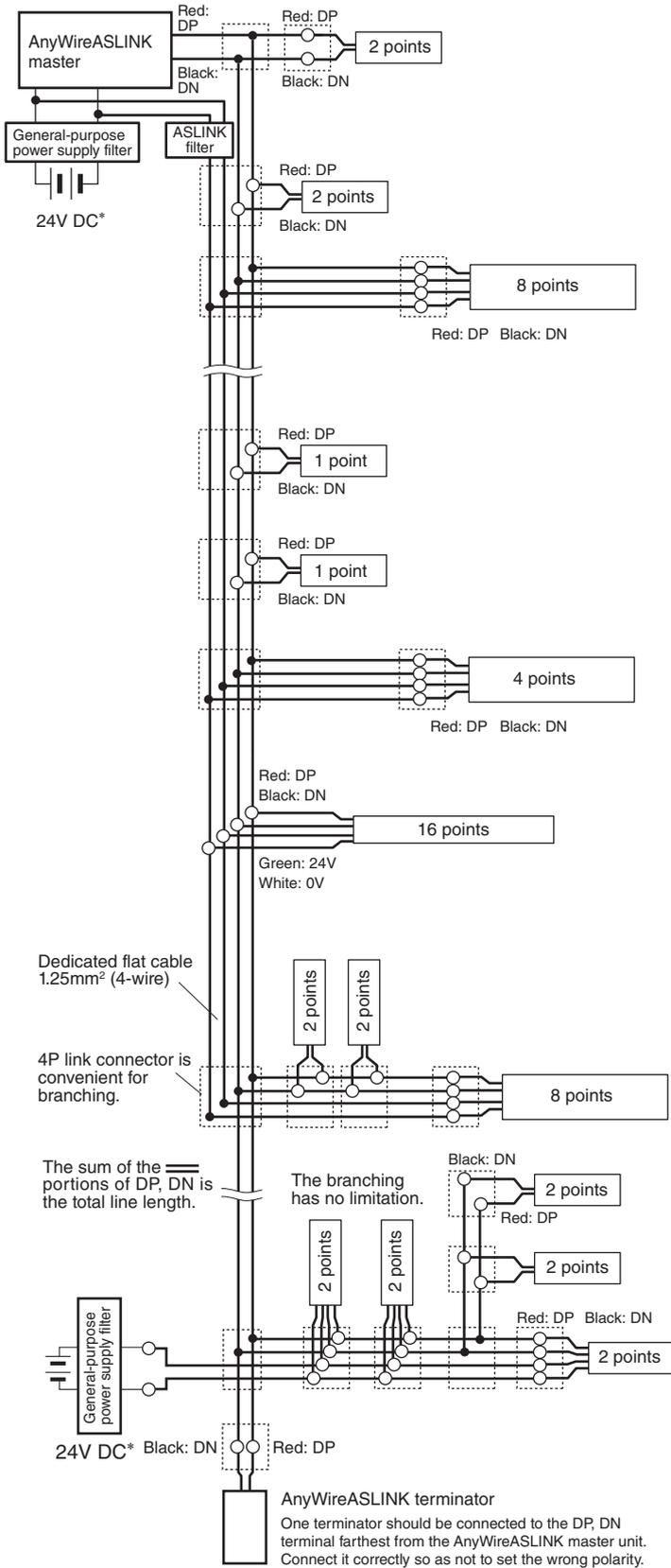
Size of the transmission line (DP, DN)	Supply current on the transmission line (DP, DN)		
	Total length: 50m or less	Total length: Over 50m, no longer than 100m	Total length: Over 100m, no longer than 200m
1.25mm ²	MAX 2A	MAX 1A	MAX 0.5A
0.75mm ²	MAX 1.2A	MAX 0.6A	MAX 0.3A
0.5mm ²	MAX 0.8A	MAX 0.4A	MAX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



- 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



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 unit or power is supplied to each terminal individually from their local power supply.

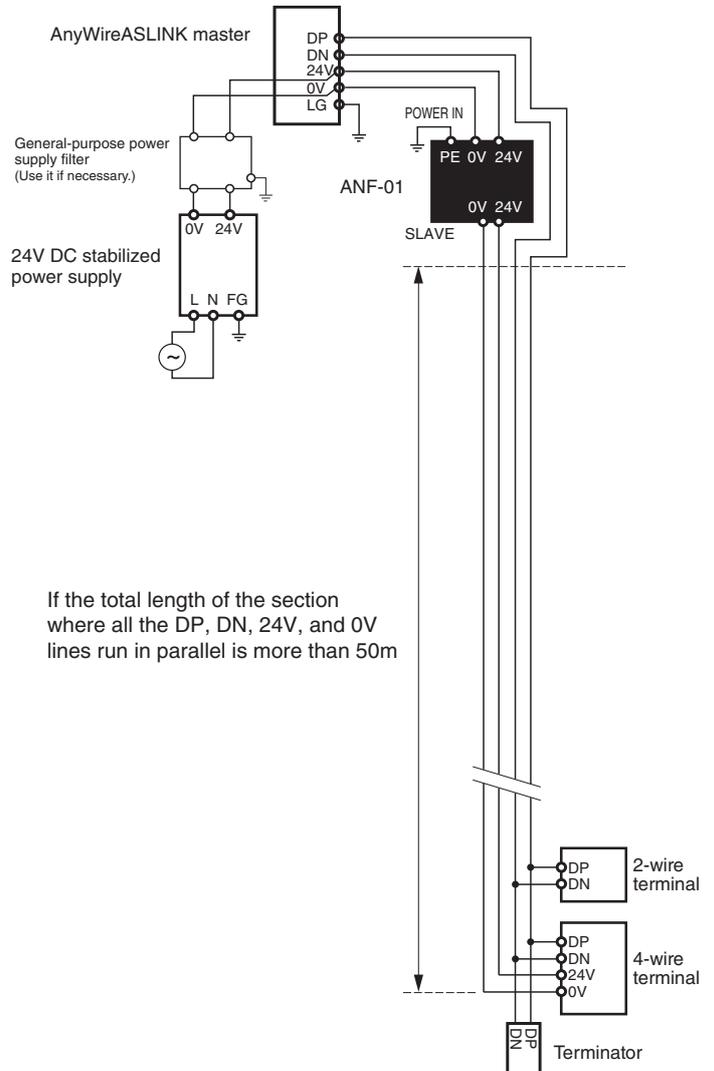
Insert the "ASLINK filter [Type ANF-01]" regardless of installation method and distance when complying with CE Standard.

■ Filter allowable current

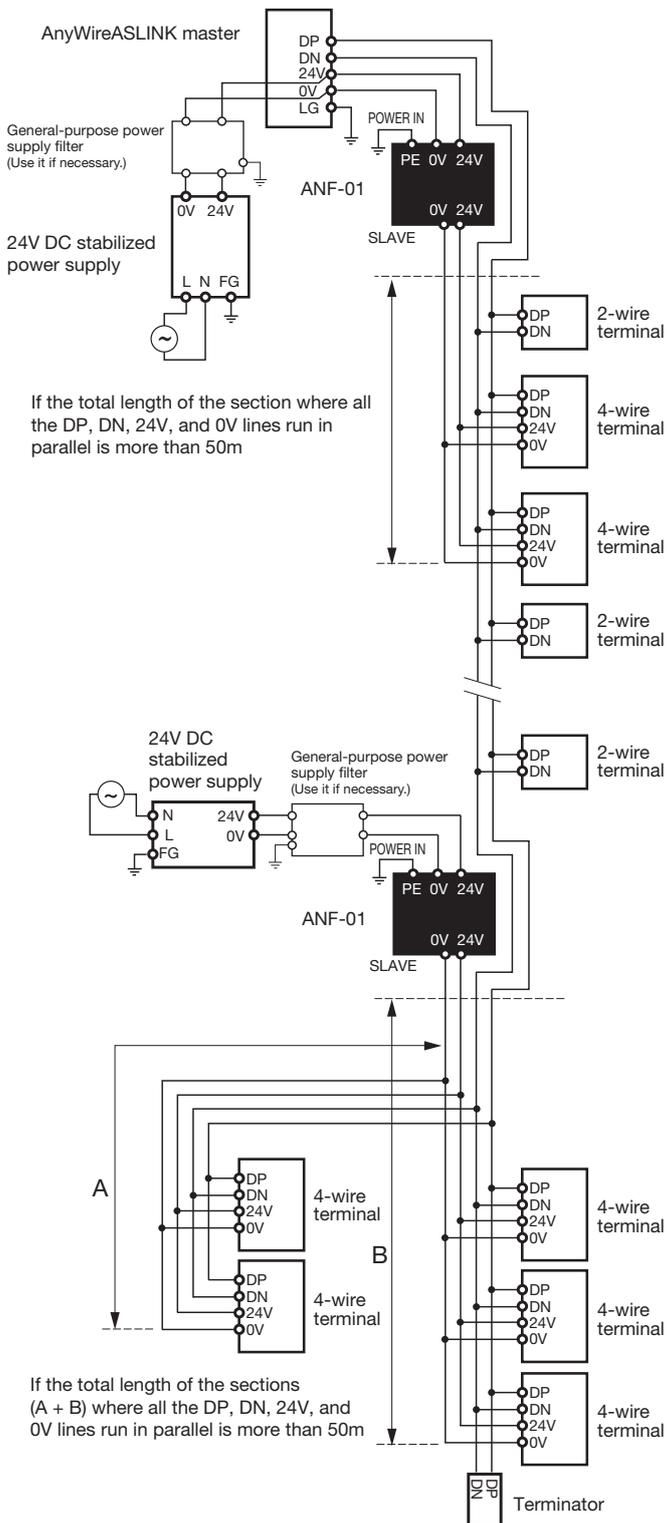
Product	Type	Allowable power current
ASLINK filter	ANF-01	MAX 5A/24V DC
Filter of COSEL Co., Ltd.	EAC-06-472	MAX 6A/24V DC

■ AnyWire Type: ANF-01 Connection example

① Power supply to the entire system

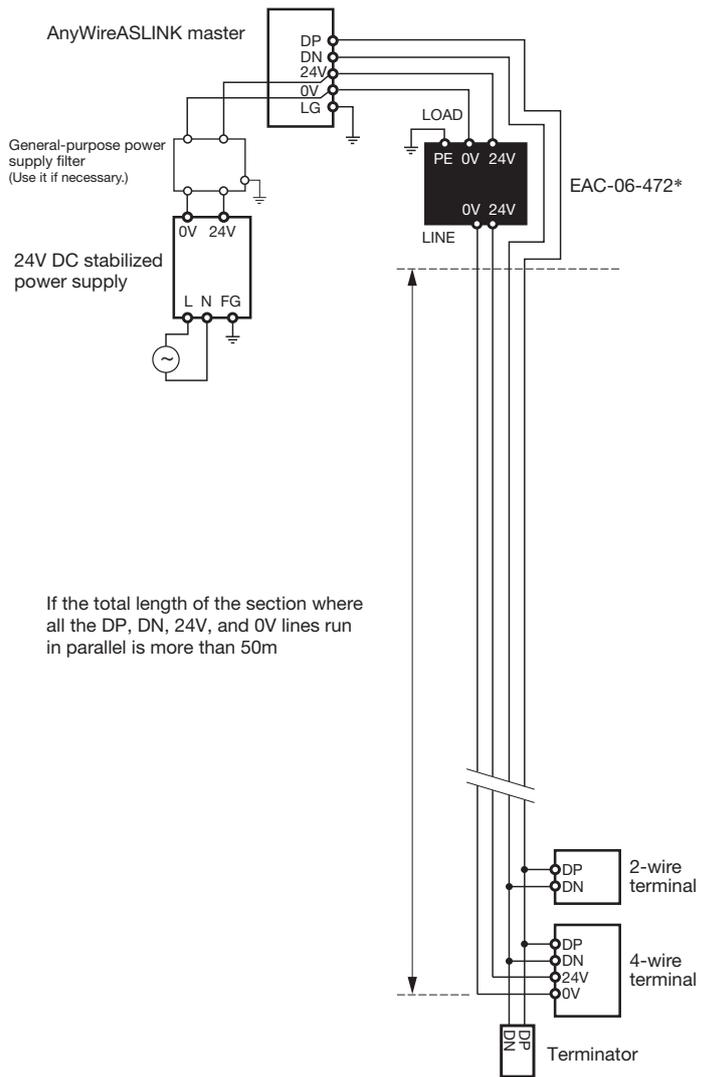


② Local power supply/branching

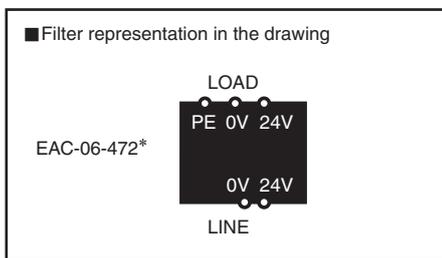
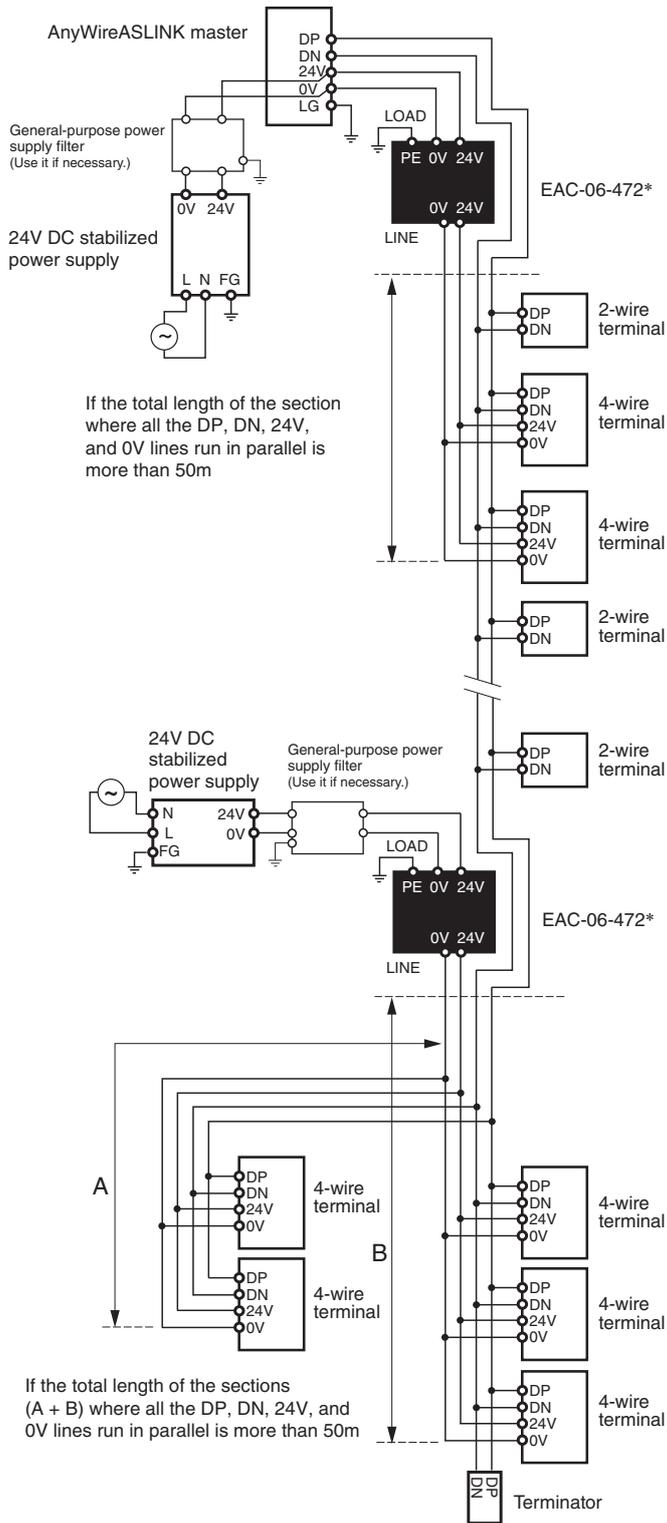


■ COSEL Co., Ltd. Type: EAC-06-472 Connection example

① Power supply to the entire system



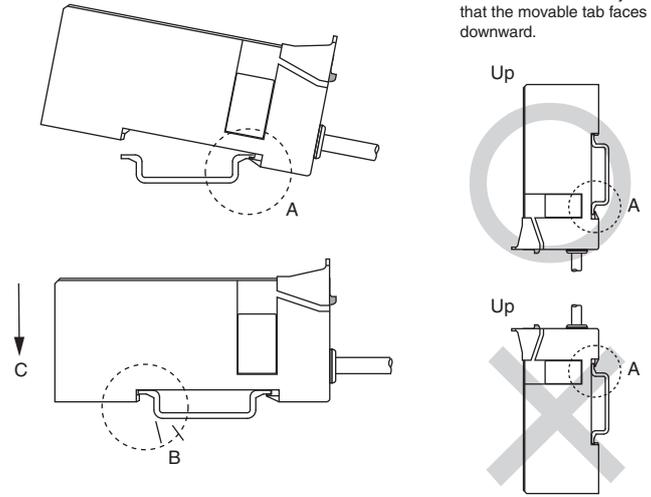
② Local power supply/branching



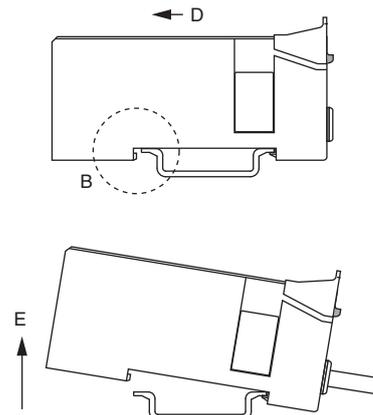
[Installation]

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.



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.



[Installation Location]

Install in the following indoor locations and dry location.

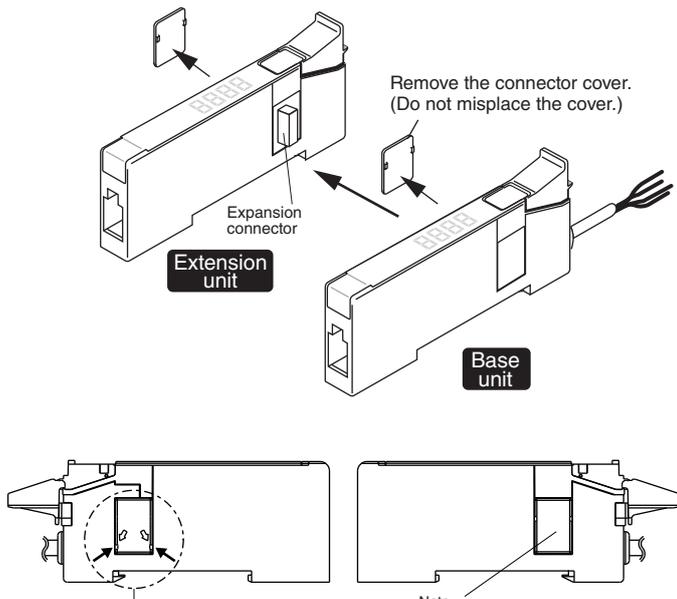
- Locations where this product is not directly subject to vibration or shock
- Locations where this product is not directly exposed to dust
- Locations where this product is not directly exposed to conductors, such as metal chips or spatters
- Locations without condensation
- Locations where the atmosphere 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 input unit enables connections of extension unit and power supply 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.



<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 following conditions should be considered, as well as specifications of the AnyWireASLINK system such as the number of transmission points and allowable supply current of transmission line (DP-DN).

■ Maximum number of units that can be connected

Up to 31 units (extension units, power supply units for the analog input units, etc.) can be connected to a base unit. (32 units in total, including the base unit)

■ Current consumption of transmission line (DP-DN) per block

Current consumption of the transmission line (DP-DN) for the base unit and the units connected to the base unit should be 800mA max. in total.

■ 24V current consumption per block

Current consumption of the 24V line for the base unit and the units connected to the base unit should be 800mA max. in total.

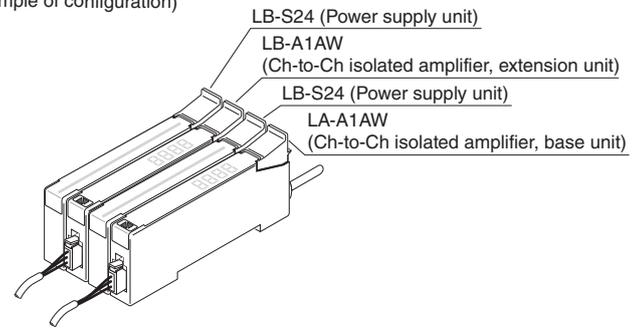
Other conditions: Combined connections to LB-A12W, LB-A1AW, LB-D□12W and LB-D□1AW are enabled.
Combined channel ranges are enabled.
Connections to LB-F1011 and LBL-R10W are disabled.



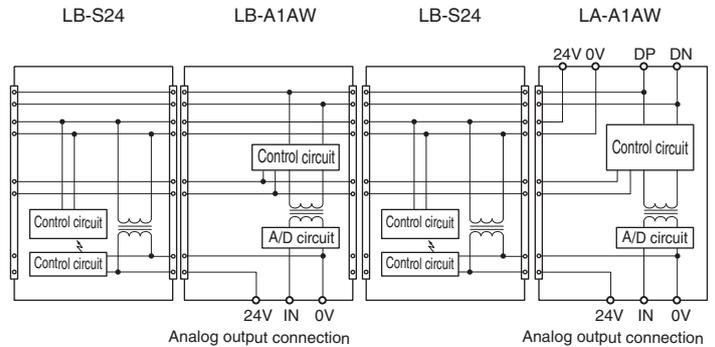
[Ch-to-Ch Isolation]

To connect analog output only, connect it directly to LA-A1AW and LB-A1AW.
If 24V power supply is required for the analog output unit, connect the dedicated power supply unit (LB-S24) adjacent to the analog output unit.
When power is supplied to the transmission line (24V, 0V), it will be output to the analog input connector after passing through the power supply unit (isolation).

Example of configuration)



Block diagram)



[Transmission Line Connection]

Connect the transmission line of the analog input base unit to the transmission line of the AnyWireASLINK master unit.

The 24V and 0V pins of the base unit are used to supply 24V to load via the analog input connector of each channel in combination with the power supply unit.

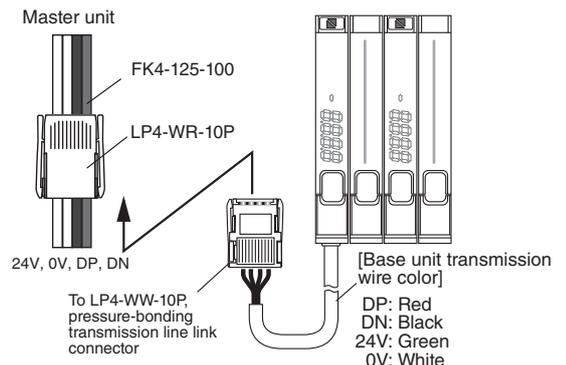
■ Link connector pin assignment

Pin No.	Description
1	DN
2	DP
3	0V
4	24V

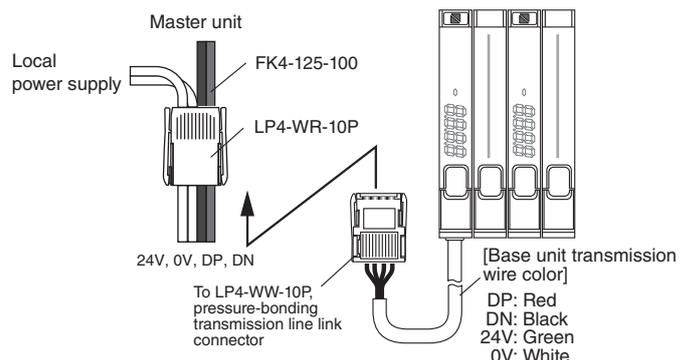
The LP connector (link connector) is a connector that integrates male and female terminals.
It makes it easy to "connect" and "branch" the line simply by connecting two connectors of the same type.

[Connection to 4-core trunk cable]

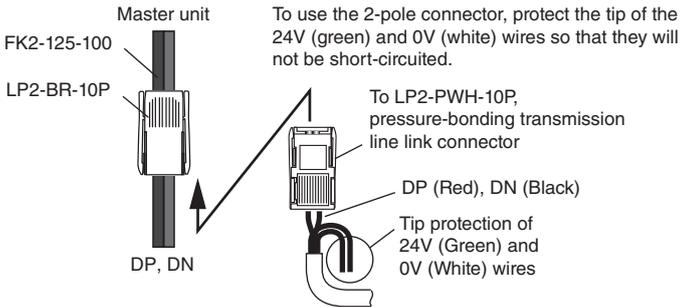
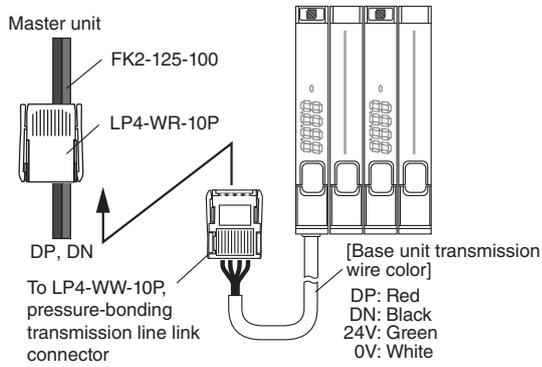
Example of batch power supply)



Example of local power supply)



[Connection to 2-core trunk cable]

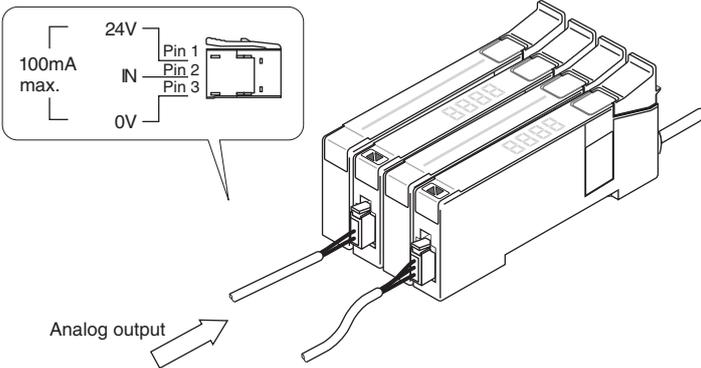


[Connection on the Analog Side]

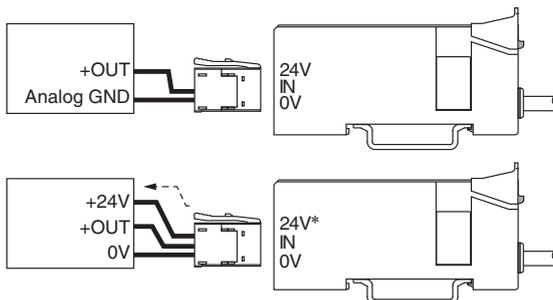
Compatible connector on the analog side *Purchase the connector separately.

Example) Mini clamp wire mount plug 37103 - **** - *00 FL (3M Japan)

Pin assignment on the analog side



Connection example



* To supply power to a sensor, connect the power supply unit (LB-S24).

[Various Settings]

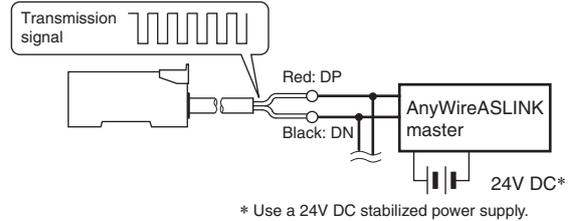
Address setting

Parameter setting

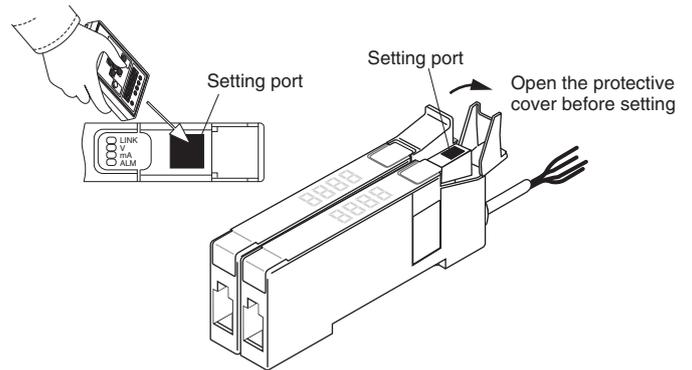
Common procedure for address writer operation

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) of the terminal.



2. All AnyWireASLINK devices require settings.
Open the protective cover of the analog input 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.



Address setting

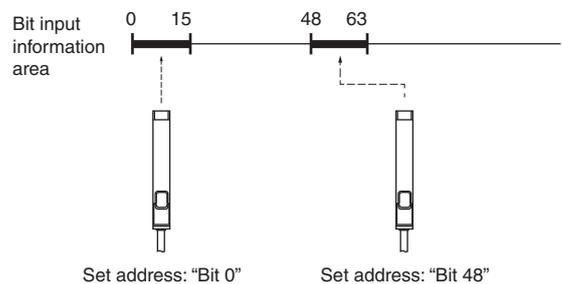
Address number setting

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 input information area are occupied.



In the case where the unit is used with word address setting

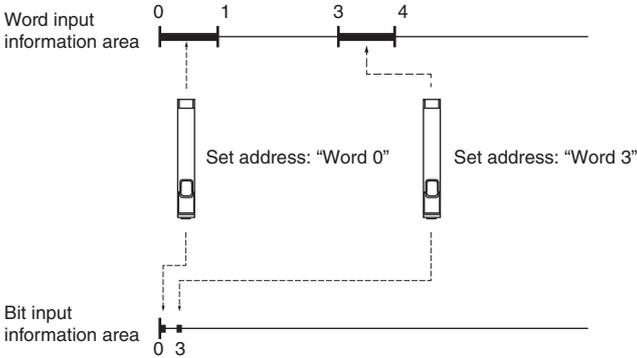
Starting from the preset address number, one word of the word input information area is occupied.

When alarm bit is used depending on the alarm bit setting (equipment parameter 10), one point of the bit input information area is also occupied.

Word address setting determines an occupied part of the word input information area, and also automatically determines an occupied part of the bit input information area.

Word address and bit address cannot be freely set each.

Relationship between the occupied part of the word input information area and the occupied part of the bit input information area depending on word address setting is shown below.



* To use alarm bit, setting of equipment parameter 10 is required.

CAUTION

When you set a word address, make sure that the occupied parts of the word input information area and the bit input information area are not duplicated by those assigned to any other remote unit.

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: Bit address 511

For S/W version "A" or 3-digit lot No.: Bit address 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

Input specification setting [Equipment parameter 1]

This parameter is used to specify the analog input specification.

Variable	Input specification	7-segment display	LED indication
0	0-10V	00.10	"V" is lit. LINK V mA ALM
1	0-5V	00.5	"V" is lit. LINK V mA ALM
2	1-5V	10.5	"V" is lit. LINK V mA ALM

3	0-20mA	00.20	"mA" is lit. LINK V mA ALM	Factory setting: 0
4	4-20mA	40.20	"mA" is lit. LINK V mA ALM	

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

Reference point shift mode [Equipment parameter 2]

This function is used to adjust an offset error between this analog input unit and an analog output unit being connected.

The reference point will shift by a preset reference point adjustment value.

Variable	Reference point shift mode	Factory setting: 0
0	Reference point shift mode OFF	
1	Every time the variable is changed from 0 to 1, the reference point will be updated depending on the unit being connected.	
2	Reference point shift mode ON Conversion starts with the reference point fixed at a value specified with variable 1.	

* When the user adjustment mode change setting (equipment parameter 7) is 1, the reference point shift mode does not work.

When the value of parameter 2 is changed from 0 to 1, the 7-segment display in the reference point shift mode shows the input specification setting of parameter 1.

Input specification	7-segment display	LED indication	Reference point
0-10V	00.10	"V" is lit. LINK V mA ALM	0V
0-5V	00.5	"V" is lit. LINK V mA ALM	0V
1-5V	10.5	"V" is lit. LINK V mA ALM	1V
0-20mA	00.20	"mA" is lit. LINK V mA ALM	0mA
4-20mA	40.20	"mA" is lit. LINK V mA ALM	4mA

A result of averaging of the input voltage or current at this time (the number of averaging: 32) is determined as a reference point adjustment value.

For AnyWireASLINK transmission, a value of "measured value - reference point adjustment value" is stored as input data.

When the value of parameter 2 is changed to 2, the display changes to the reference point shift mode.

While the value of parameter 2 is 1, the 7-segment display shows "CHG" and "Pr2" alternately.



When the value of parameter 2 is changed from 0 to 1

Current input specification setting is displayed (for approx. 1 second).

When the value of parameter 2 remains at 1

"CHG" and "Pr2" are alternately displayed.

When the value of parameter 2 is changed from 1 to 2

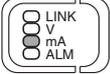
The display shifts to conversion in the reference point shift mode, and indicates an input analog value.

■ Display example during the operation

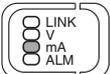
After startup at receipt of a transmission signal, the preset input specification setting is displayed for approx. 3 seconds, and then the display changes to indicate an actual input value.

Example) Operation in the 4-20mA input specification setting

■ To use the input signal directly

Display of set specification  

↓ Approx. 3 seconds

A measured input value is displayed.
(Example) 12mA input status  

■ To use the reference point shift mode

[Example: Input specification setting of 4-20mA]

1. Reference point adjustment

To adjust a difference at the reference point, output 4mA load current.
A measured input value is displayed on this unit. (In this example, the difference is -0.2mA.)



2. Reference point shift mode setting

Variable of parameter 2 is changed from 0 to 1.



Variable of parameter 2 is changed to 2.



↓ Approx. 3 seconds

3. Operation of the reference point shift mode

After approx. 3 seconds, a measured value after shift is displayed on this unit. (+0.2mA offset)



■ To cancel the reference point shift mode

1. During operation of the reference point shift mode

A measured value with shift is displayed.
(Example) 12mA input status



2. Reference point shift mode cancel setting

Variable of parameter 2 is changed to 0.



↓ Approx. 3 seconds

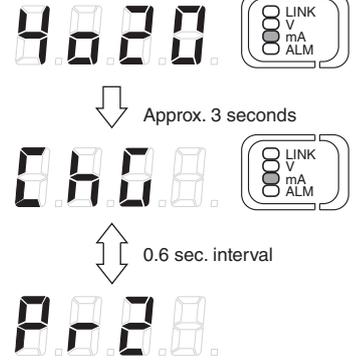
3. Cancellation of the reference point shift mode

After approx. 3 seconds, a measured value without shift is displayed.
(Value after cancellation of +0.8mA offset)



■ When operation of the reference point shift mode is incomplete

If you set variable 2 in parameter 2 within approx. 3 seconds after setting variable 1 in this parameter so as not to turn ON the setting, the display changes to show "CHG" and "Pr2" alternately at 0.6-second intervals.



Set variable 2 in parameter 2 to turn ON the setting.

■ Number of moving averages setting [Equipment parameter 3]

This parameter is used to specify the number of moving averages for analog input. For the number of moving averages, a value of variable plus 1 is used.

Variable	Number of moving averages
0 to 31	1 to 32

Factory setting: 0

■ Offset adjustment setting [Equipment parameter 5]

This parameter is used to specify the offset adjustment function.

* Set equipment parameter 7 to "User Offset/Gain Adjustment Mode ON" before the setting.

* For S/W version "B"; this function is available.

For S/W version "C" or later version, this function is not available.

Variable	Offset adjustment
0	User offset adjustment value hold*1
1	User offset adjustment value update Every time the variable is changed from 0 to 1, the user offset adjustment value will be updated depending on the unit being connected.
2	User offset adjustment value clear

Factory setting: 0

*1 This function operates depending on the setting of equipment parameter 7.

■ Gain adjustment setting [Equipment parameter 6]

This parameter is used to specify the gain adjustment function.

* Set equipment parameter 7 to "User Offset/Gain Adjustment Mode ON" before the setting.

* For S/W version "B"; this function is available.

For S/W version "C" or later version, this function is not available.

Variable	Gain adjustment
0	User gain adjustment value hold*2
1	User gain adjustment value update Every time the variable is changed from 0 to 1, the user gain adjustment value will be updated depending on the unit being connected.
2	User gain adjustment value clear

Factory setting: 0

*2 This function operates depending on the setting of equipment parameter 7.

■ User adjustment mode change setting [Equipment parameter 7]

This parameter is used to specify the user adjustment mode change.

* For S/W version "B"; this function is available.

For S/W version "C" or later version, this function is not available.

Variable	Description
0	User offset/gain adjustment mode OFF
1	User offset/gain adjustment mode ON

Factory setting: 0

■ **Threshold upper limit setting** [Equipment parameter 8]

This parameter is used to specify a threshold upper limit.
 * For S/W version "B" or later version, this function is available.
 For S/W version "A" or 3-digit lot No., this function is not available.

Input specification	Setting range
0-10V setting	-0.13 to 10.13
0-5V setting	-0.06 to 5.06
1-5V setting	0.95 to 5.05
0-20mA setting	-0.25 to 20.25
4-20mA setting	3.80 to 20.20

Factory setting: 0

Variable → Current

0000 → 0.00mA

0300 → 3.00mA

9020 → -0.20mA

* When the 4th digit is "9," it indicates a negative value.

■ **Threshold lower limit setting** [Equipment parameter 9]

This parameter is used to specify a threshold lower limit.
 * For S/W version "B" or later version, this function is available.
 For S/W version "A" or 3-digit lot No., this function is not available.

Input specification	Setting range
0-10V setting	-0.13 to 10.13
0-5V setting	-0.06 to 5.06
1-5V setting	0.95 to 5.05
0-20mA setting	-0.25 to 20.25
4-20mA setting	3.80 to 20.20

Factory setting: 0

0-10V mode
 Variable → Voltage

0000 → 0.00V

0300 → 3.00V

9020 → -0.20V

0-5V/1-5V mode
 Variable → Voltage

0000 → 0.00V

1200 → 1.20V

9020 → -0.20V

* When the 4th digit is "9," it indicates a negative value.

■ **Alarm bit mode change setting** [Equipment parameter 10]

This parameter is used to specify the alarm bit output mode.
 * For S/W version "B" or later version, this function is available.
 For S/W version "A" or 3-digit lot No., this function is not available.

Variable	Description
0	Alarm bit disabled
1	Hysteresis mode
2	Upper and lower limit mode
3	Upper limit mode
4	Lower limit mode

Factory setting: 0

* The alarm bit mode is enabled only when this unit is used with word address setting.

■ **Alarm bit polarity setting** [Equipment parameter 11]

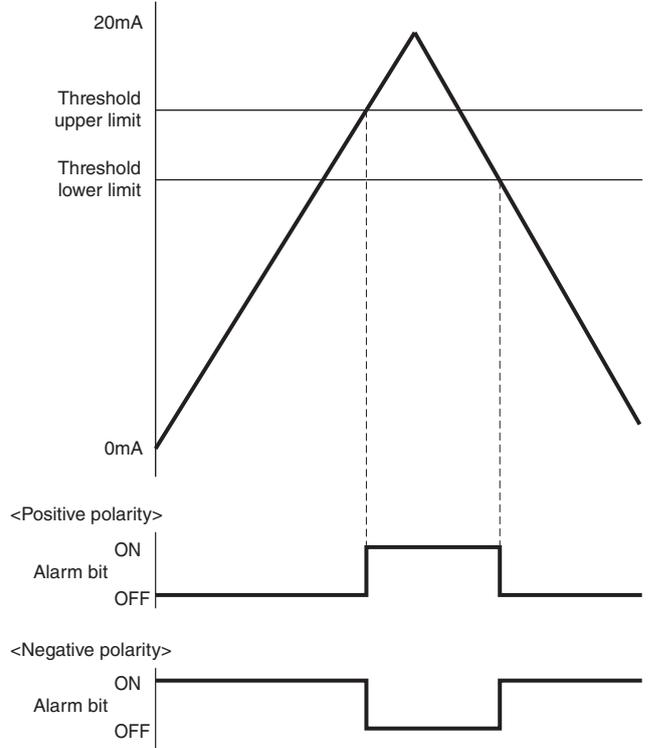
This parameter is used to specify the polarity of alarm bit.
 * For S/W version "B" or later version, this function is available.
 For S/W version "A" or 3-digit lot No., this function is not available.

Variable	Description
0	Positive polarity
1	Negative polarity

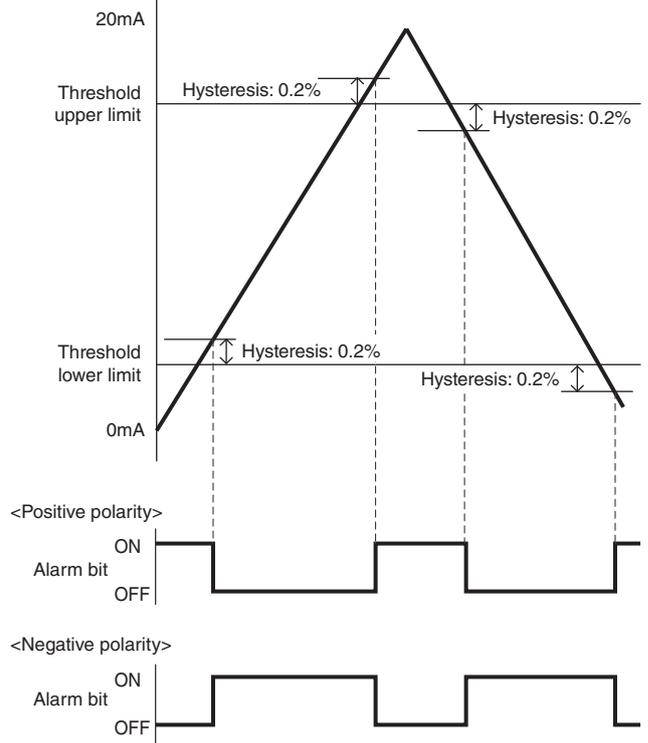
Factory setting: 0

* The alarm bit mode is enabled only when this unit is used with word address setting.

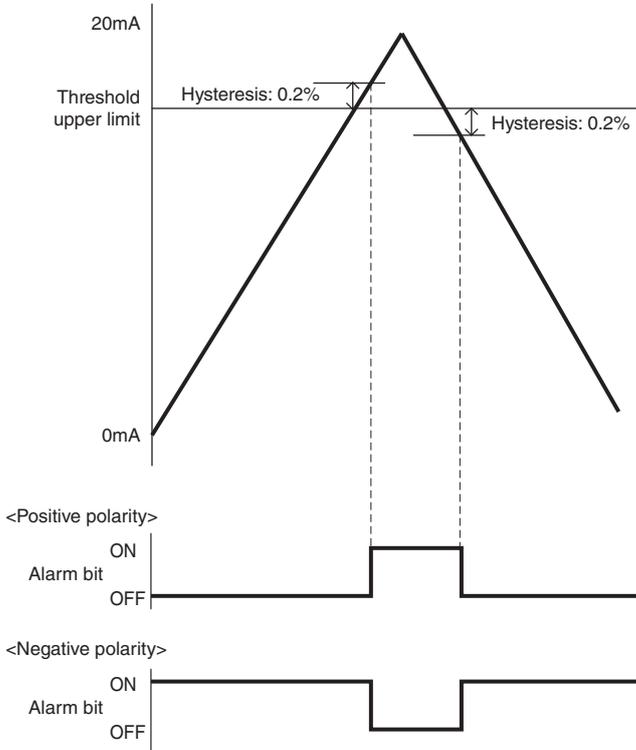
In the case of hysteresis mode, 0-20mA



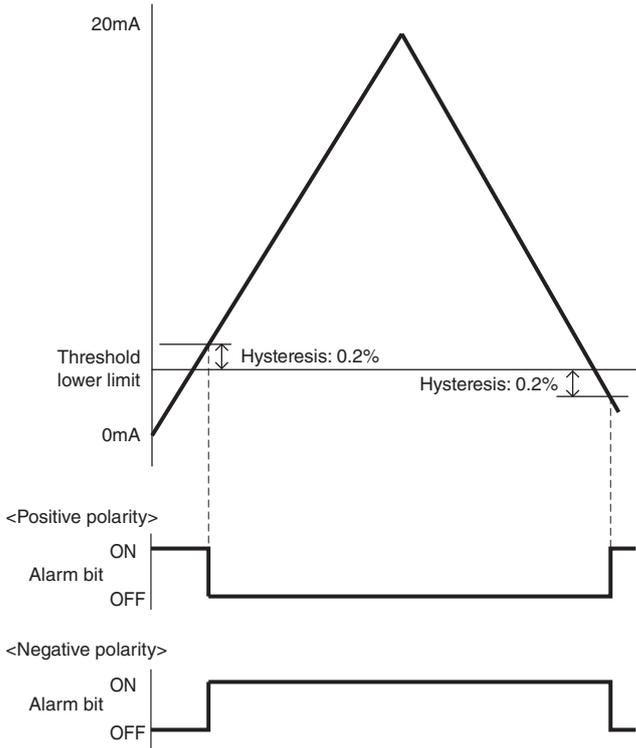
In the case of upper and lower limit mode, 0-20mA



In the case of upper limit mode, 0-20mA



In the case of lower limit mode, 0-20mA



Alarm bit hold setting [Equipment parameter 12]

This parameter is used to specify operation when the alarm bit is ON.
 * For S/W version "B" or later version, this function is available.
 For S/W version "A" or 3-digit lot No., this function is not available.

Variable	Description
0	Disabled (Hold is disabled)
1	Enabled (Hold is enabled)

Factory setting: 0

When the alarm bit hold function is set to "Enabled," alarm bit ON status is retained after the alarm bit is turned ON until the alarm bit clear command (equipment parameter 13) is turned from OFF to ON.

* The alarm bit mode is enabled only when this unit is used with word address setting.

Alarm bit clear command [Equipment parameter 13]

When the alarm bit hold function (equipment parameter 12) is set to "Enabled," turning the alarm bit clear command from OFF to ON clears the alarm bit. (The alarm bit turns from ON to OFF.)

* For S/W version "B" or later version, this function is available.
 For S/W version "A" or 3-digit lot No., this function is not available.

Variable	Description
0	OFF
1	ON

Factory setting: 0

* After the alarm bit clear command is turned ON once, turn it OFF.

If the alarm bit clear command remains ON, the alarm bit does not work.

* The alarm bit mode is enabled only when this unit is used with word address setting.

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.

When power is supplied to the base unit, or when the address or parameter setting of the base unit is changed, it will be reflected on the extension units.

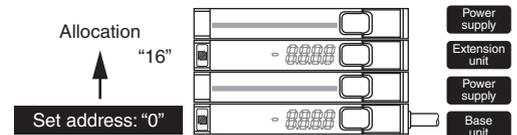
* Parameters that will be reflected by the automatic setting function are equipment parameters 1 to 3 only.

Reference point updating should be individually conducted.

Variable	Automatic address/parameter setting
0	Automatic setting disabled Address/parameter setting is required for the base unit and extension unit each.
1	Automatic address setting Only the addresses are serially allocated on added extension units from the base unit automatically.
2	Automatic parameter setting Only the parameters are set on added extension unit from the base unit automatically.
3	Automatic address and parameter setting The addresses are serially allocated on added extension unit from the base unit automatically. The parameters are set on added extension units from the base unit automatically.

Factory setting: 0

Example) In the case of variable 1 (automatic address setting)



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>

Data is sent by using the bit input information area.
The sent data will be updated every bit transmission cycle time × 2.

Bit input 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	A/D conversion data (16-bit binary data)															

A/D conversion value: 0 to 16000 (0Hex to 3E80Hex)
Lower limit over, analog port open*1: -200 (FF38Hex*2)
Upper limit over: 16200 (3F48Hex)

*1 For 1-5V, 4-20mA

*2 The negative side is expressed by the complement of 2.

<In the case where the unit is used with word address setting*3>

Data is sent by using the word input information area and bit input information area.
The word input information data will be updated every word transmission cycle time × 1.

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

Address offset	Description
n	A/D conversion data (16-bit binary data)

A/D conversion value: 0 to 16000 (0Hex to 3E80Hex)
Lower limit over, analog port open*1: -200 (FF38Hex*2)
Upper limit over: 16200 (3F48Hex)

Bit input information area

Address offset	n
Description	Alarm bit

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

<Items common to both bit address setting and word address setting>

■ Sensing level

This unit also transmits an A/D conversion value to the "sensing level area*4" on the master unit.

Sensing level	Description
	A/D conversion data (16-bit binary data)

A/D conversion value: 0 to 16000 (0Hex to 3E80Hex)
Lower limit over, analog port open*1: -200 (FF38Hex*2)
Upper limit over: 16200 (3F48Hex)

■ Status details

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

Status detail area of the master unit

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

b0: Remote unit voltage drop (DP-DN-side voltage drop)

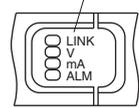
*4 This can be used on the master unit having the sensing level and the status detail area. For details, refer to the manual of the master unit.

[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*5
	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*5
	Unlit	No ALM available
LINK ALM	Alternate flashing LINK ALM	ID duplicated*6 or ID unregistered*7
LINK ALM	LINK ALM	Model mismatching error*5
V (Orange)	Lit	For voltage input
mA (Orange)	Lit	For current input

*5 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.)

*6 The duplication is detected when the master unit executes automatic address recognition.

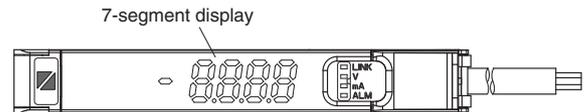
*7 For S/W version "B" or later version: This indication appears when transmission signal and power supply are normally connected, and the unit is set to the factory-set address. For S/W version "A" or 3-digit lot No.: This condition is detected when the master unit executes automatic address recognition.

Example:

Lot No. 19ECBNB

S/W version

Analog input value, input error, remote unit voltage drop, or reference point shift mode operation message is indicated on the 7-segment display.



■ Input error detection

Input value lower limit over



Repetition

Connect an analog output, or check for wire break, etc.
Check the input value to ensure use in the specification range.

■ Input error

Example: In the case of analog port open status or wire break

0-10V : 0.00□ (Last digit is unfixed)

0-5V : 0.00□ (Last digit is unfixed)

1-5V : Lo __

0-20mA : 0.00□ (Last digit is unfixed)

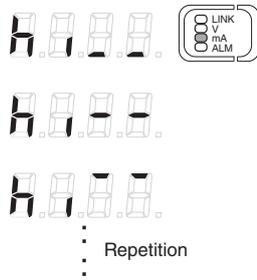
4-20mA : Lo __

ALM unlit

For 1-5V, 4-20mA:

Digital data: -200 (FF38Hex.)

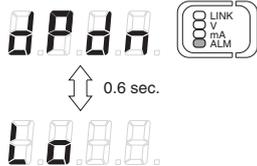
Input value upper limit over



Check the input value to ensure use in the specification range.

ALM unit
Digital data: 16200 (3F48Hex.)

■ Low voltage on the remote unit detected



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

[Troubleshooting]

LINK	ALM	Cause	Remedy
○ Unlit	○ Unlit	- The AnyWireASLINK transmission signal is not connected. - The AnyWireASLINK system is not turned on.	- Check if a disconnection has occurred between this unit and the AnyWireASLINK system, and repair the connections as required. - 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. - A unit incompatible with Ver. 1.1 is connected to the AnyWireASLINK system for word transmission.	- Reconnect the power to the AnyWireASLINK system. - 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. - The address of this unit duplicates that of another remote unit.	- Set an address correctly. * You cannot use the unit with the address before shipment. - 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 an 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 the address writer, take the following action.

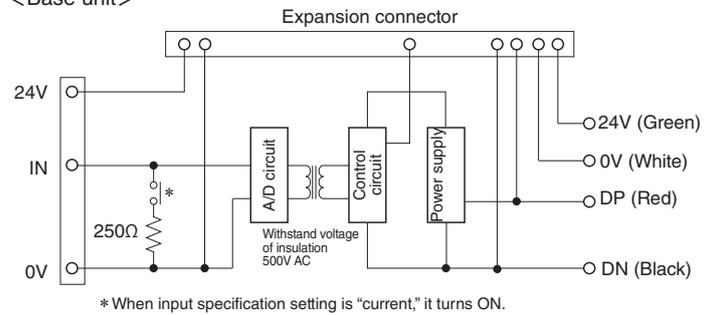
Display	Cause	Remedy
[E-0303]	The parameter setting is incorrect.	Refer to the parameter correspondence table and correct the setting.

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

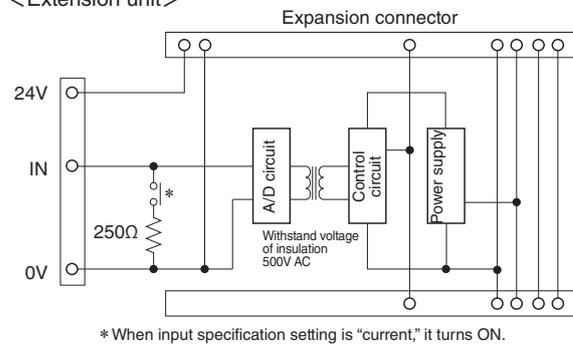
Symptom	Remedy
Detection is disabled	- Is the wiring correct? → Check the connection of analog port and transmission line again. - Is the power supplied to the AnyWireASLINK system? → Check the power supply. - Are the addresses set? → Set the addresses. - Is the unit used in the rated input range? → 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]

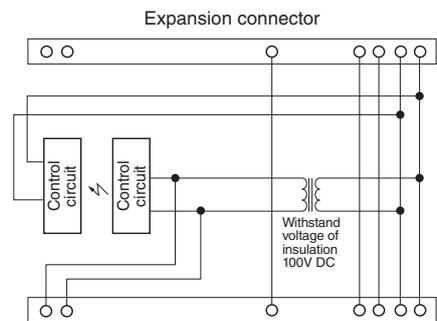
<Base unit>



<Extension unit>



<LB-S24>



[Equipment Parameters and Their Settings]

Equipment parameter	Variable	Description	Factory-set variable
【1】 Input specification setting	0	0-10V input	0
	1	0-5V input	
	2	1-5V input	
	3	0-20mA input	
	4	4-20mA input	
【2】 Reference point shift mode	0	Reference point shift mode OFF	0
	1	Every time the variable is changed from 0 to 1, the reference point will be updated depending on the unit being connected.	
	2	Reference point shift mode ON Conversion starts with the reference point fixed at a value specified in reference point shift mode OFF status.	
【3】 Number of moving averages	0 to 31	1 to 32	0
【5】 Offset adjustment	0	User offset adjustment value hold	0
	1	User offset adjustment value update Every time the variable is changed from 0 to 1, the user offset adjustment value will be updated depending on the unit being connected.	
	2	User offset adjustment value clear	
【6】 Gain adjustment	0	User gain adjustment value hold	0
	1	User gain adjustment value update Every time the variable is changed from 0 to 1, the user gain adjustment value will be updated depending on the unit being connected.	
	2	User gain adjustment value clear	
【7】 User adjustment mode change	0	User offset/gain adjustment mode OFF	0
	1	User offset/gain adjustment mode ON	
【8】 Threshold upper limit	0-10V setting	0	
	0-5V setting		
	1-5V setting		
	0-20mA setting		
	4-20mA setting		
【9】 Threshold lower limit	0-10V setting	0	
	0-5V setting		
	1-5V setting		
	0-20mA setting		
	4-20mA setting		
【10】 Alarm bit mode change	0	Alarm bit disabled	0
	1	Hysteresis mode	
	2	Upper and lower limit mode	
	3	Upper limit mode	
	4	Lower limit mode	
【11】 Alarm bit polarity	0	Positive polarity	0
	1	Negative polarity	
【12】 Alarm bit hold setting	0	Disabled (Hold is disabled)	0
	1	Enabled (Hold is enabled)	
【13】 Alarm bit clear command	0	OFF	0
	1	ON	
【17】 Automatic address/parameter setting * For base unit only	0	Automatic setting disabled Address/parameter setting is required for the base unit and extension units each.	0
	1	Automatic address setting Only the addresses are serially allocated 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 The addresses are serially allocated on added extension units from the base unit automatically. The parameters are set on added extension units from the base unit automatically.	

[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
Vibration resistance	Based on JIS B 3502
Shock resistance	Based on JIS B 3502
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 features	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 input: 16 points At the word address setting*4: Word input 1 word + Bit input 1 point*5		
Response time*6 (sampling period)	16ms max.		
Detection function	Remote unit voltage drop (DP-DN voltage drop)		
Current consumption	Transmission side (DP-DN): 20.0mA		
Weight	21g (Base unit) 16g (Extension unit)		
Measuring voltage range	0-10V, 0-5V, 1-5V (Input impedance: 100kΩ or more)		
Measuring current range	0-20mA, 4-20mA (Input impedance: 250Ω ±5% or less)		
Accuracy	(25°C)	±0.1% (16-digit)	
	(0 to 55°C)	±0.2% (32-digit)	
Input characteristics / Resolution	Input range	Digital output	Resolution
	0-10V	0-16000	625μV
	0-5V	0-16000	312.5μV
	1-5V	0-16000	250μV
	0-20mA	0-16000	1250nA
	4-20mA	0-16000	1000nA
Input error*7	Analog port open, wire break: Digital value -200		
Input value over	Lower limit over: Digital value -200		
	Upper limit over: Digital value 16200		
External power supply	Available when the power supply unit (LB-S24) is connected to each analog input unit. 24V-0V: 100mA max./ch For system expansion, 800mA max. in total		
Maximum absolute input	12V, 30mA		
Unit type/No.*8	LA-A1AW	115D	
	LB-A1AW	115E	

*4 It depends on lot No. whether word address setting is enabled or not.

*5 When alarm bit is used

*6 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."

*7 For 1-5V and 4-20mA mode settings only

*8 Code (hexadecimal) assigned to each type.

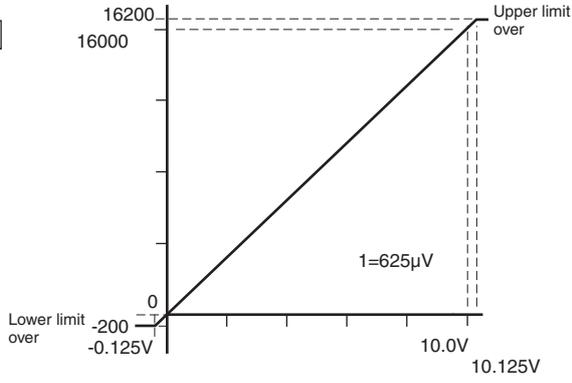
You can check the code by reading the relevant parameter from the master unit.
For details, refer to the manual of the master unit.

[Examples of Data Characteristics]

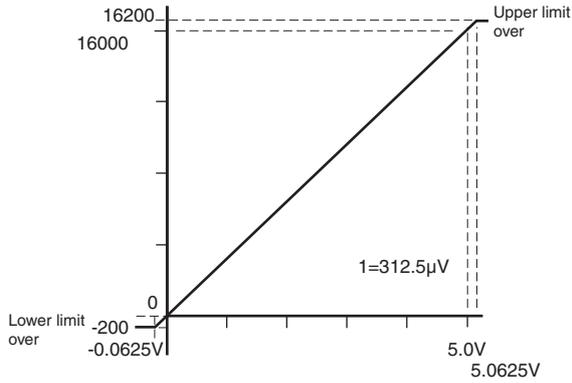
[Outside Dimensions]

Unit: mm

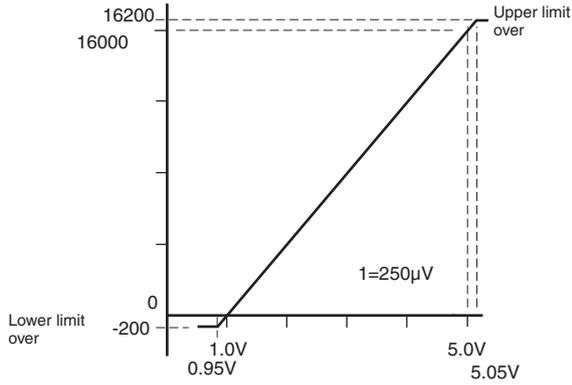
0 to 10V



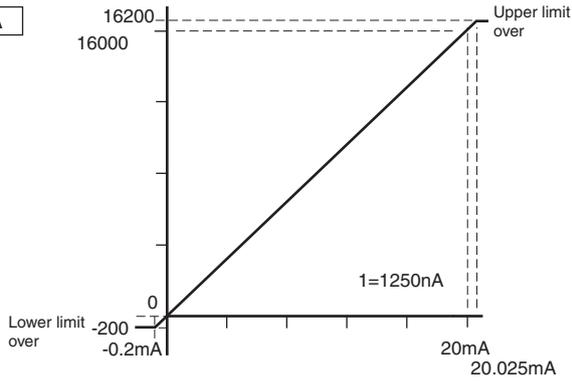
0 to 5V



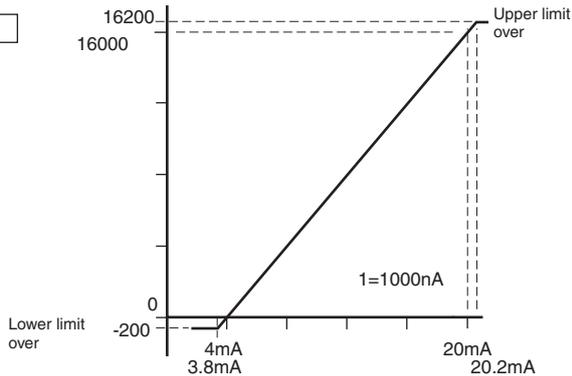
1 to 5V



0 to 20mA

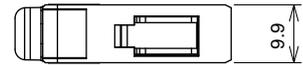
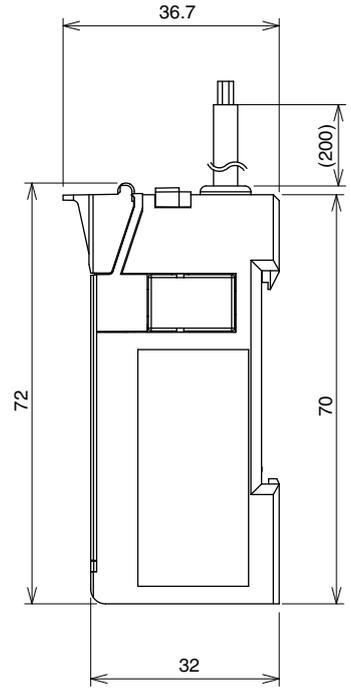
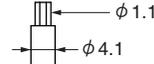


4 to 20mA

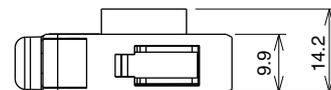
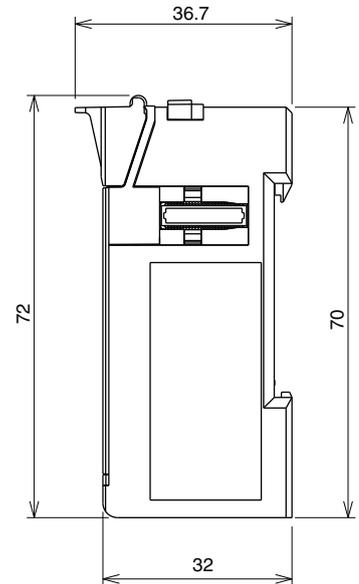
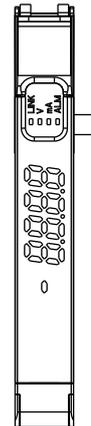


■ LA-A1AW

4-wire, AWG24
Cable length 200mm



■ LB-A1AW



[Address]

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