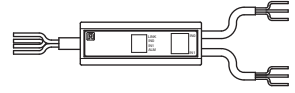


ASLINKER [Smart ASLINKER]

BL2LN87SB-02D□-CC20



■ Note on use ⇒ A separate Address Writer is required to set addresses and other data.

* For more information, refer to [Various Settings] on page 9.

[Type]

BL2LN87SB-02D-CC20	NPN input
BL2LN87SB-02DS-CC20	PNP input

[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.



A WARNING indicates a potentially hazardous situation which, if not handled correctly, could result in death or serious injury.



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



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



- 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
 - Pay careful attention to the length and installation of cable wiring to ensure that connectors and cables are neither overloaded nor disconnected.
 - 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.

[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 Pictogram*1]

	Ver. 1.0*2		Compatible with Ver. 1.1*3
---	------------	---	----------------------------

- *1 The pictogram may not be marked (or stuck) depending on the product.
- *2 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.
- *3 For details of Ver. 1.1, refer to the subsequent pages.

[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 unit connected.

To handle word data, word address settings are required for remote units.

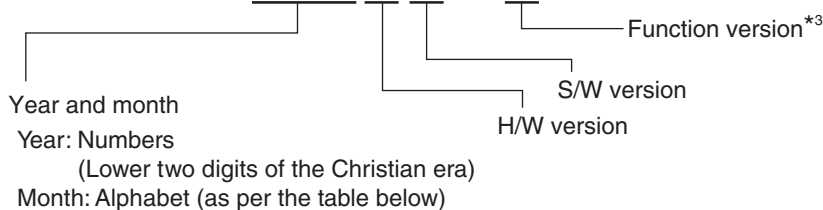
It depends on remote units whether word address setting is enabled or not.

[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 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.

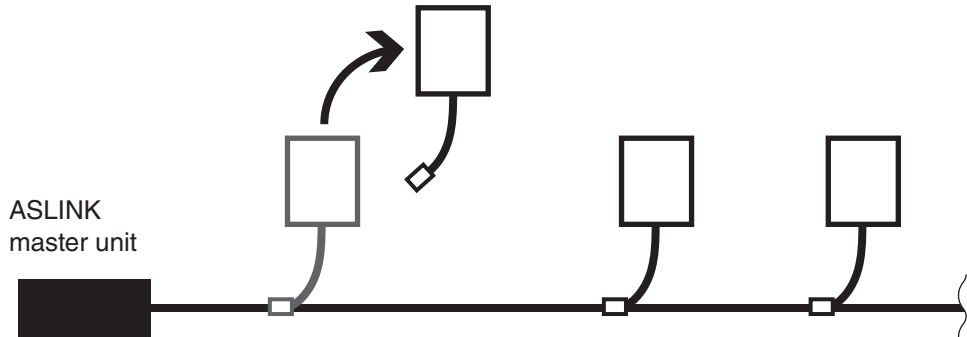
For remote units that handle word data, word address settings are required.

[About Single Unit Simplified Replacement]

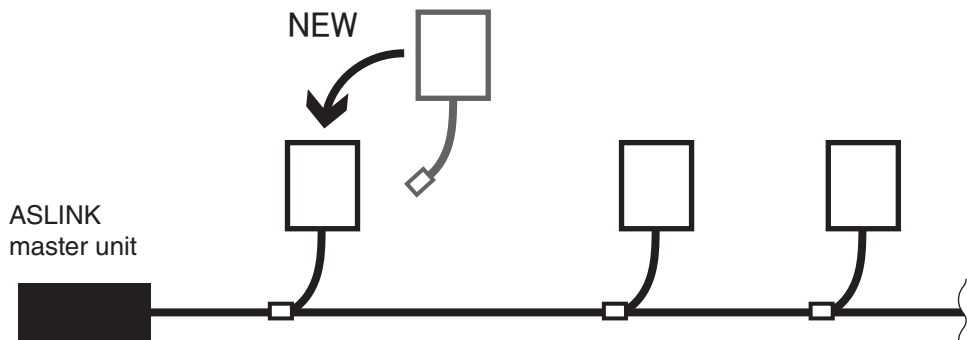
During replacement of a remote unit, this function enables automatic settings of address and parameters of the existing remote unit into a new remote unit. (After replacement of the remote unit, address and parameter setting procedure using the address writer is not required.)

■ 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.



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	19ECB(8)
_____	_____
_____	_____
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	Specifications	Connection targets	Functions					Address		
			Bit transmission	Word ^{*1*2}	Single unit simplified replacement ^{*3}	Remote address change ^{*3}	Detection of sensor cable disconnection		Bit address setting	Word address setting
ASLINKER 4-wire (isolated) cable type	NPN input: 2 points PNP input: 2 points Alarm bit: 2 points ^{*1}	General-purpose sensors General-purpose switches	○	○	○	○	2-wire type sensor ○	3-wire type sensor ○	○	×

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

*2 This terminal can be used in connection to the AnyWireASLINK unit for word transmission. Note that this terminal cannot handle word data by setting a word address.

*3 To use these functions, a master unit that supports each 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	Sensing level drop	I/O disconnection	I/O short-circuit	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.

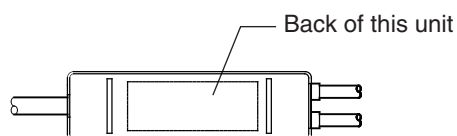
Function	Lot No.
Word transmission ^{*4}	Available with S/W version "B" or later version (If lot No. is indicated in 3 digits (year and month only), these functions are not available.)
LED indication for single unit simplified replacement function ^{*5}	
Alarm bit setting (Equipment parameters 5 and 13)	

*4 This terminal can be used in connection to the AnyWireASLINK unit for word transmission. Note that this terminal cannot handle word data by setting a word address.

*5 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:

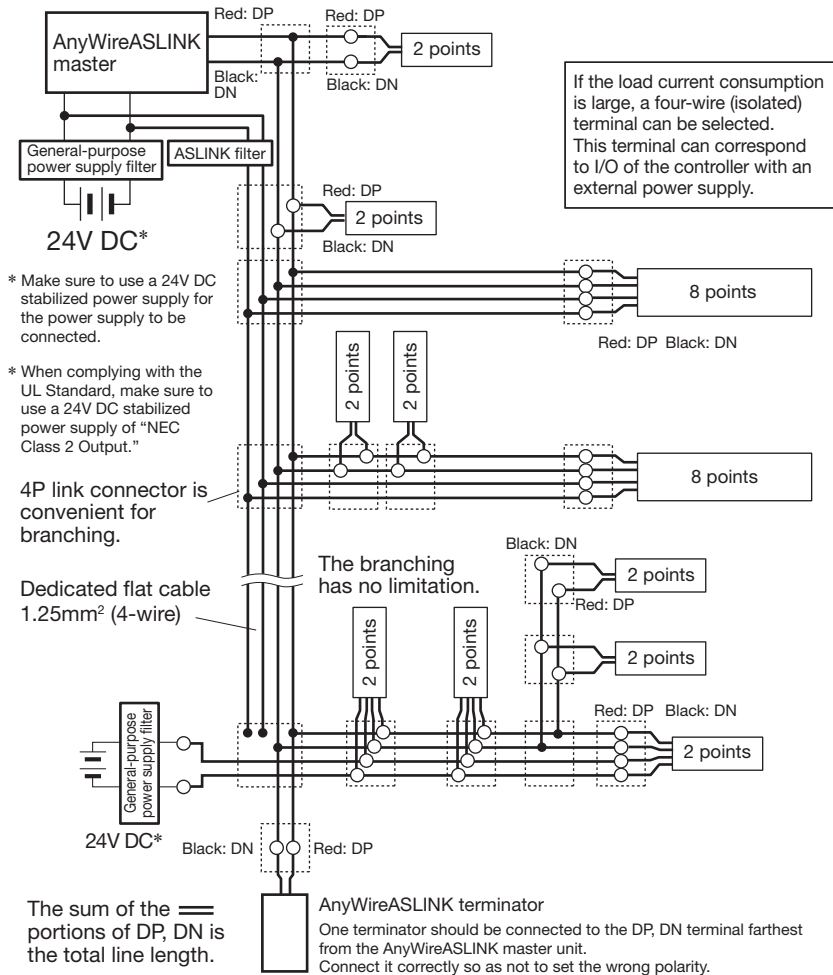
Lot No. 19ECBNB

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

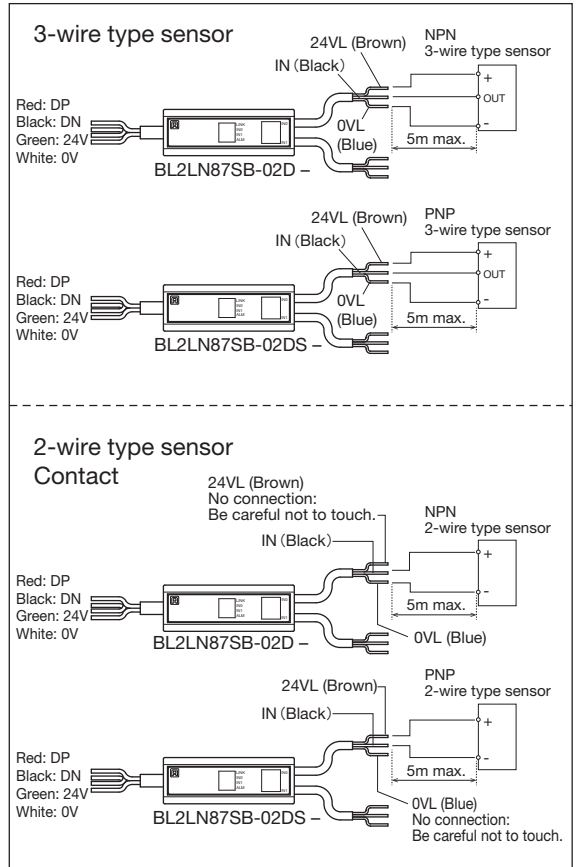
[How to Connect AnyWireASLINK]

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 example of load



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

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

CAUTION 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.

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.

[Installation 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 Use of 4-Wire (Isolated) Terminal]

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

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

The above filters must be inserted regardless of whether power is supplied to all terminals collectively from the power supply for the master or power is supplied to each terminal individually from their local power supply.

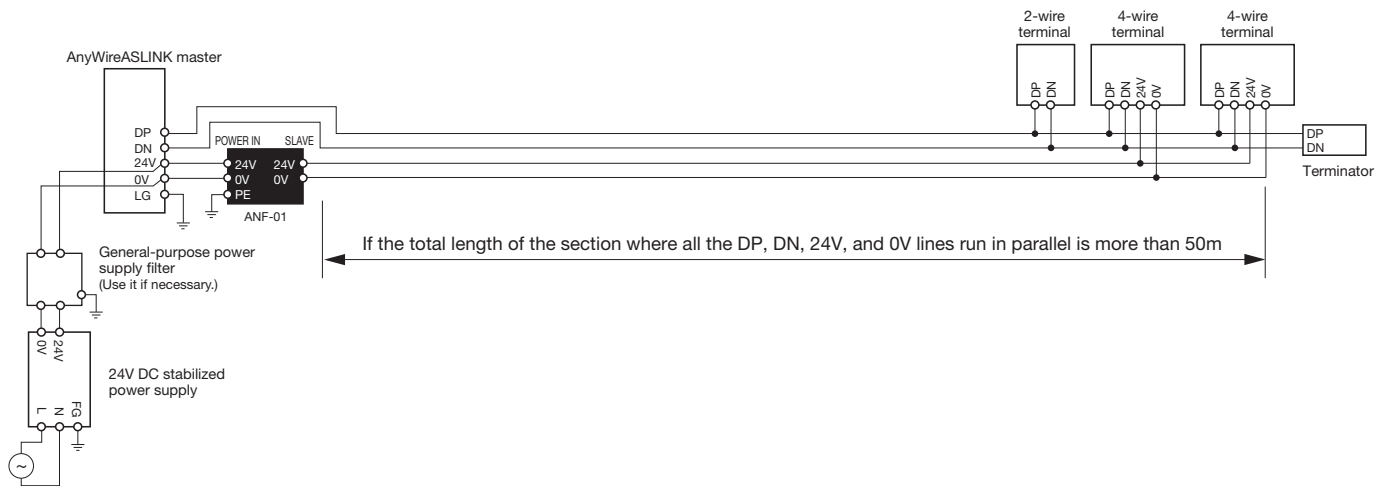
Insert the "ASLINK filter [Type ANF-01]" regardless of installation method and distance when complying with CE Standard.

■ Filter allowable current

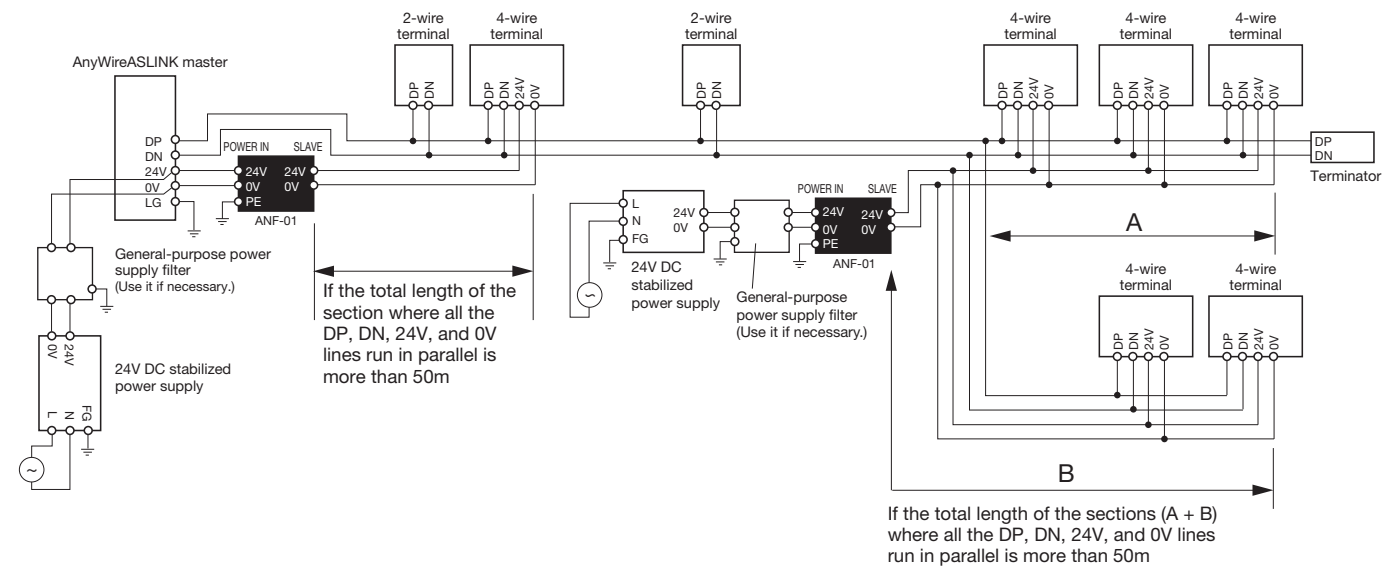
Product	Type	Allowable power current
ASLINK filter	ANF-01	MAX 5A/24V DC
Filter of COSEL Co., Ltd.	EAC-06-472	MAX 6A/24V DC

■ AnyWire Type: ANF-01 Connection example

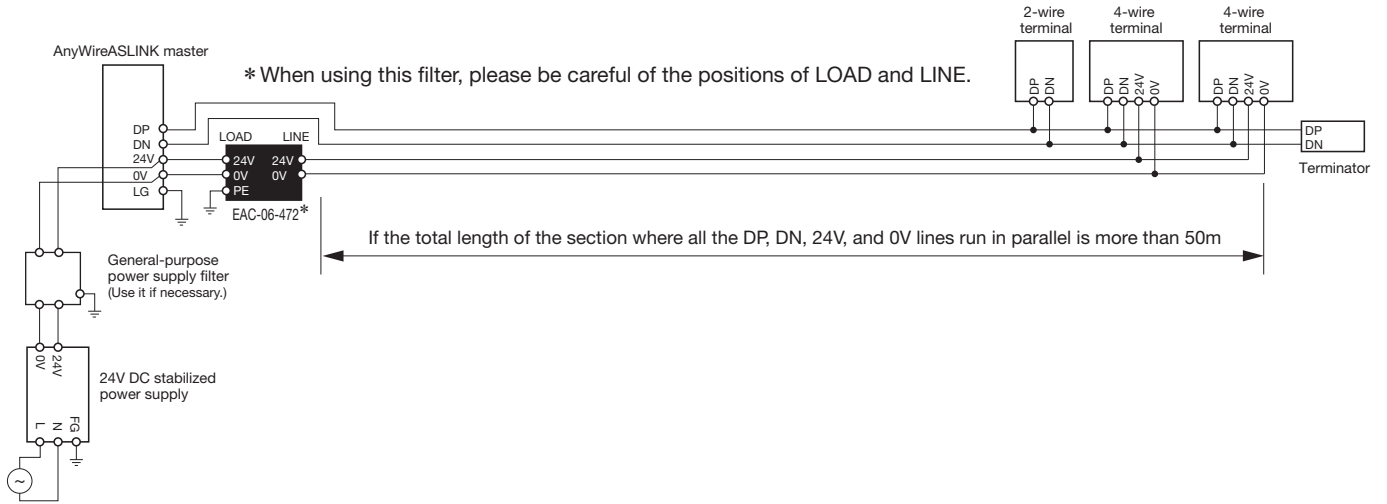
① Power supply to the entire system



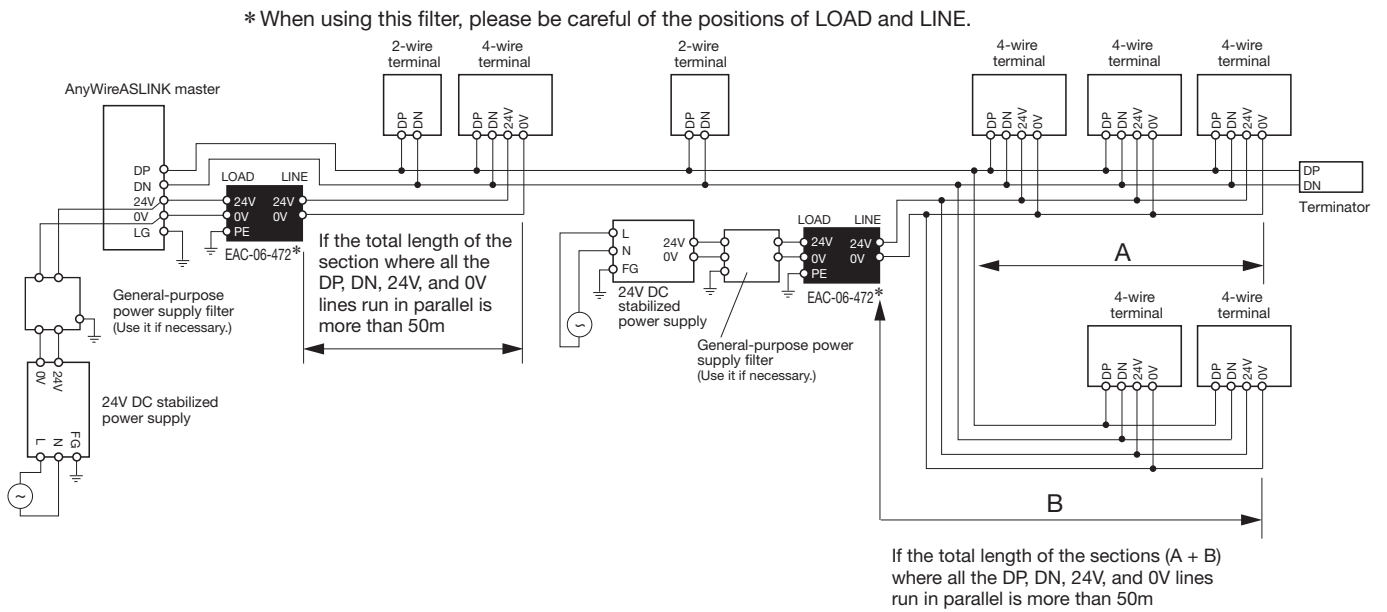
② Local power supply/branching



① Power supply to the entire system



② Local power supply/branching



[Detection of Sensor Cable Disconnection and Short-circuit]

[Disconnection monitoring function]

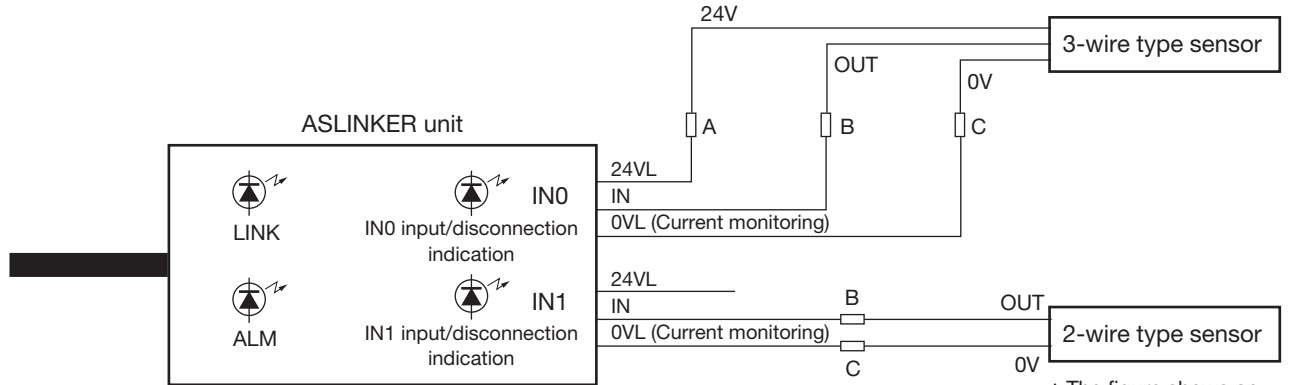
- ① Power supply line disconnection monitoring function
 - 3-wire type sensor: Applied to 24VL line (A) and 0VL line (C)
 - 2-wire type sensor: Applied to IN line (B) and 0VL line (C) (NPN)
 - Applied to 24VL line (A) and IN line (B) (PNP)
- ② Signal line disconnection monitoring function
 - 3-wire type sensor: Applied to IN line (B) and 0VL line (C)
 - 2-wire type sensor: Applied to IN line (B) and 0VL line (C) (NPN)
 - Applied to 24VL line (A) and IN line (B) (PNP)

Conditions of target sensor

[2-wire type sensor]
 - Applied to ON/OFF sensor with 0.35mA or more leak current

[3-wire type sensor]
 - Applied to ON/OFF sensor incorporating Zener diode output protection (breakdown voltage: 47V or less)

* For information on sensors proven to be compatible with the disconnection detecting function, please access our website. <http://www.anywire.jp>



* The figure shows an example of NPN type.

<Operation during disconnection>

- ① The power supply line disconnection monitoring function works for IN0 and IN1 individually. No differentiation between 24VL line (A) disconnection and of 0VL line (C) disconnection.
 - ② The signal line disconnection monitoring function works for IN0 and IN1 individually.
 - NPN type: No differentiation between IN line (B) disconnection and 0VL line (C) disconnection
 - PNP type: No differentiation between 24VL line (A) disconnection and IN line (B) disconnection
- * When 0VL line disconnection occurs with NPN type sensor, or when 24VL line disconnection occurs with PNP type sensor, it is possible that both power supply line disconnection and signal line disconnection are brought into detection status.

At occurrence of disconnection, it is indicated with the LED on the unit, equipment parameter and alarm bit*¹.

*¹ It depends on lot No. whether alarm bit settings are enabled or not.

<Operation during restoration>

- ① Power supply line disconnection error will be automatically reset by eliminating the cause of disconnection.
 - ② Signal line disconnection error will be retained even after the cause of disconnection is eliminated. To reset this error, it is necessary that the reset command should be written with the relevant parameter.
- Note: Even while the signal line disconnection error is retained, signal transmission is enabled.

⚠ Precautions for Use

- Do not connect an analog output sensor (4-20mA, 1-5V, etc.). Otherwise, a fault occurs with the analog sensor.
- The cable length between this unit and a sensor should be 5m max.
- Transmission line 0V and I/O line 0VL must not be used in common. Otherwise, the disconnection detecting function does not work.
- To use a mechanical contact (such as a switch), disable the monitoring function.
- This function is intended to detect disconnection of 24V, OUT and 0V lines of general-purpose sensors, not to detect a fault of sensors.

[Short-circuit monitoring function]

- ③ Power supply line short-circuit monitoring function
 This function detects short-circuit between 24VL line (A) and 0VL line (C).

<Operation at occurrence of short-circuit>

When these lines are short-circuited, all data are turned OFF. Short-circuit is indicated with the LED on the unit, and the status detail area.

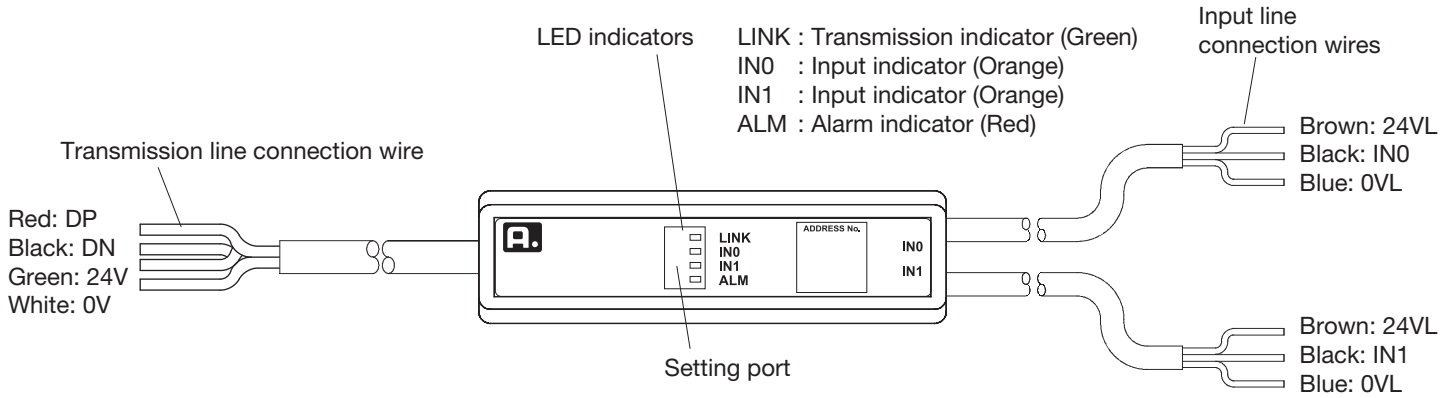
<Operation during restoration>

For operation to eliminate the cause of short-circuit, manual restoration or automatic restoration can be selected depending on the parameter setting. While the short-circuit error is activated (retained), signal transmission and power supply to sensors are disabled.

⚠ Precautions for Use

- Transmission line 24V and I/O line 24VL must not be used in common. Otherwise, the short-circuit detecting function does not work.

[Name of Each Part]



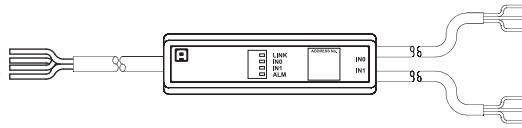
[Connection Method]

■ Example of fitting the LP connector at the end of transmission line

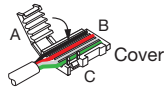
Applicable LP connector: LP4-WW-10P

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

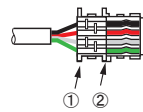
Red: DP
Black: DN
Green: 24V
White: 0V



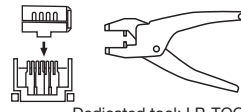
Place the wires in the grooves so that the black wire (DN) is on the hinge side of the cover, fold A over B and engage the hook C to fasten it.



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

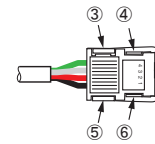


Pressure-bond using a dedicated tool by guiding the metal bracket on the connector body into the hole of the cover.



Dedicated tool: LP-TOOL

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



[Various Settings]

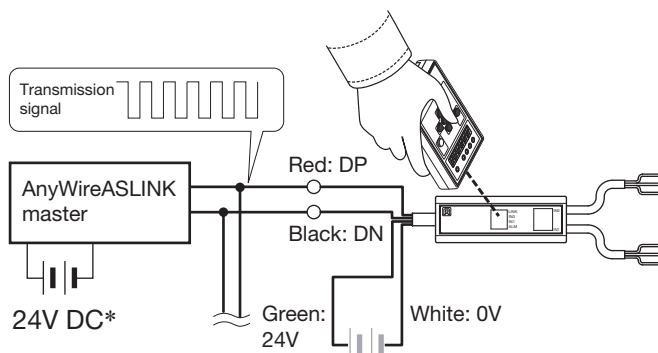
Address setting

Parameter setting

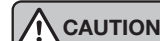
■ Common procedure for address writer operation

Be sure to connect to the AnyWireASLINK master unit to use.
ARW-04 (address writer) of Rev. (Ver.) 1.01 or later version is required for address setting.
For the details of the operating method, refer to the product guide of ARW-04.

Connect this unit to the AnyWireASLINK master unit.
With the transmission signal (DP/DN) and power supply (24V/0V) being connected, set parameters with the address writer.



* For the power supply to be connected, be sure to use a 24V DC stabilized power supply.




Make sure that the 24VL wire (brown) and 0VL wire (blue) are not short-circuited while power is supplied. Short-circuit may cause a fault of the equipment.

Address setting

An address number is set as a beginning number from which part of the transmission frame is occupied to the terminal. Set the address number within the range of bit address "0 to 254."

- Set the address number so that the area occupied by the terminal does not exceed the transmission points of the master unit.
- Make sure that the address number setting is not duplicated.
- Also, use the address writer to read an address number that has been written in the terminal.

 **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: 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.

Example:

Lot No. 19ECBNB

S/W version


Parameter setting

■ Disconnection monitoring function setting [Equipment parameter 1]

This parameter is used to specify whether the disconnection detecting function is enabled or disabled, and the target for monitoring.

Variable	Description
0	Disconnection detecting function OFF
1	Monitoring enabled for power supply line only
2	Monitoring enabled for signal line only
3	Monitoring enabled for both power supply and signal lines

Factory setting: 3

 **CAUTION**

Although the unit can be used with the setting of "monitor both power supply and signal lines" with the connection of 2-wire type sensors, I/O disconnection may be caused depending on the sensor to be connected. If that happens, change the setting as follows.

Example 1: "Signal line disconnection" occurs all the time. → Set to "Monitoring enabled for power supply line only."

Example 2: "Power supply line disconnection" occurs all the time. → Set to "Monitoring enabled for signal line only."

Example 3: Both "power supply line disconnection" and "signal line disconnection" occur. → Turn OFF the disconnection detecting function (disconnection detection disabled).

*It is not possible to change the setting channel by channel. Pay attention to the setting if both 2-wire and 3-wire type sensors are used.

■ Disconnection detection enabled CH setting [Equipment parameter 2]

This parameter is used to specify channels supporting the disconnection detecting function.

Variable	Description
0	Both IN0 and IN1
1	IN0 only
2	IN1 only

Factory setting: 0

■ Short-circuit notification cancel setting [Equipment parameter 12]

This parameter is used to specify how to clear short-circuit status after short-circuit is detected.

Variable	Description
0	Automatic restoration
1	Manual restoration

Factory setting: 0

■ Alarm information output destination setting [Equipment parameter 5]

This parameter is used to specify alarm information output destination in the bit input information area of the master unit. For alarm information, two bits are used. * For alarm information output, setting equipment parameter 13 is required.

Variable	Description
0	Subsequent to input signal
1	Latter half of input information area

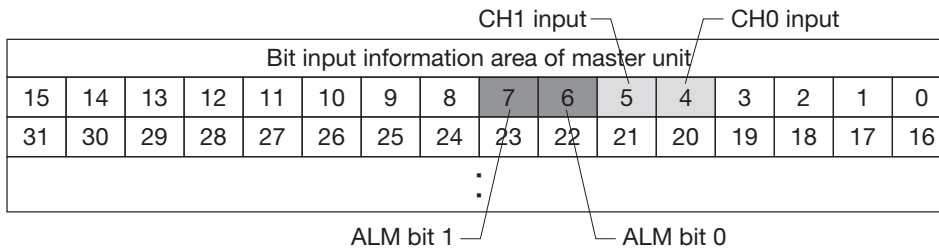
Factory setting: 0

◆ Subsequent to input signal

Alarm information is output to address n+2 or n+3 subsequent to corresponding input signal address setting.

Address	n+0	n+1	n+2	n+3
Description	CH0 input	CH1 input	ALM bit 0	ALM bit 1

Example: When this unit is set to address "4"

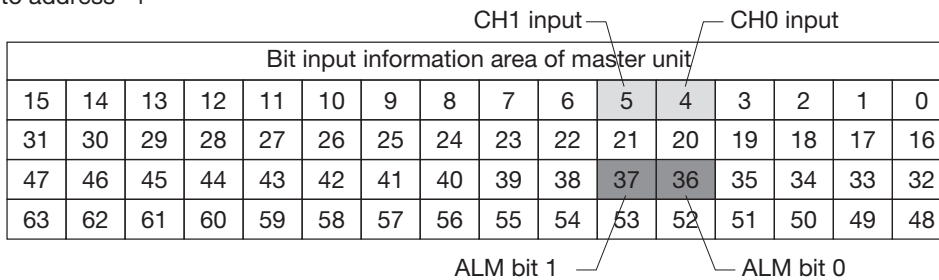


◆ Latter half of input information area

Alarm information is output to the latter half of the input information area corresponding to the setting of the number of bit transmission points for the master unit.

Address	n+0	n+1	$n + (\text{number of input points} / 2) + 0$	$n + (\text{number of input points} / 2) + 1$
Description	CH0 input	CH1 input	ALM bit 0	ALM bit 1

Example: When the number of bit transmission points for the master unit is "input: 64 points, output: 64 points," and this unit is set to address "4"



■ Alarm information notification pattern setting [Equipment parameter 13]

This parameter is used to output detected alarm information (I/O disconnection, I/O short-circuit, remote unit voltage drop, I/O power supply drop) into the bit input information area. To set this parameter, select one of six patterns. Alarm information bits are two bits. Contents of information vary depending on the notification pattern.

Priority of alarm events is fixed in the order of “remote unit voltage drop”→“I/O short-circuit”→“I/O disconnection”→“I/O power supply drop.” When several alarm events are simultaneously detected, an alarm event with higher priority is notified.

Variable	Description
0	Alarm notification OFF
1	Notification by differentiating disconnected CH (When ALM bit is normal: OFF mode)
2	Notification by differentiating disconnected CH (When ALM bit is normal: ON mode)
3	Notification by differentiating disconnected CH and short-circuit/power supply drop (When ALM bit is normal: OFF mode)
4	Notification by differentiating disconnected CH and short-circuit/power supply drop (When ALM bit is normal: ON mode)
5	Notification by differentiating sensor cable error/voltage drop (When ALM bit is normal: OFF mode)
6	Notification by differentiating sensor cable error/voltage drop (When ALM bit is normal: ON mode)

Factory setting: 0

◆ Notification by differentiating disconnected CH

At occurrence of I/O disconnection, the ALM bit corresponding to a disconnected channel is turned ON.

At occurrence of I/O short-circuit or voltage drop, both ALM0 and ALM1 are turned ON.

	When ALM bit is normal: OFF mode		When ALM bit is normal: ON mode	
	ALM bit 0	ALM bit 1	ALM bit 0	ALM bit 1
Normal	OFF	OFF	ON	ON
Disconnection of CH0	ON	-	OFF	-
Disconnection of CH1	-	ON	-	OFF
I/O short-circuit	ON	ON	OFF	OFF
Remote unit voltage drop	ON	ON	OFF	OFF
I/O power supply drop	ON	ON	OFF	OFF

◆ Notification by differentiating disconnected CH and short-circuit/power supply drop

At occurrence of I/O disconnection, the ALM bit corresponding to a disconnected channel is alternately turned ON and OFF for 0.25 seconds each.

At occurrence of I/O short-circuit, both ALM0 and ALM1 are turned ON. At occurrence of voltage drop, both ALM0 and ALM1 are alternately turned ON and OFF for 1 second each.

	When ALM bit is normal: OFF mode		When ALM bit is normal: ON mode	
	ALM bit 0	ALM bit 1	ALM bit 0	ALM bit 1
Normal	OFF	OFF	ON	ON
Disconnection of CH0	ON (0.25 sec.) ⇔ OFF (0.25 sec.)	-	OFF (0.25 sec.) ⇔ ON (0.25 sec.)	-
Disconnection of CH1	-	ON (0.25 sec.) ⇔ OFF (0.25 sec.)	-	OFF (0.25 sec.) ⇔ ON (0.25 sec.)
I/O short-circuit	ON	ON	OFF	OFF
Remote unit voltage drop	ON (1 sec.) ⇔ OFF (1 sec.)	ON (1 sec.) ⇔ OFF (1 sec.)	OFF (1 sec.) ⇔ ON (1 sec.)	OFF (1 sec.) ⇔ ON (1 sec.)
I/O power supply drop	ON (1 sec.) ⇔ OFF (1 sec.)	ON (1 sec.) ⇔ OFF (1 sec.)	OFF (1 sec.) ⇔ ON (1 sec.)	OFF (1 sec.) ⇔ ON (1 sec.)

◆ Notification by differentiating sensor cable error/voltage drop

At occurrence of I/O disconnection or I/O short-circuit, ALM0 is turned ON.

At occurrence of voltage drop, ALM1 is turned ON.

	When ALM bit is normal: OFF mode		When ALM bit is normal: ON mode	
	ALM bit 0	ALM bit 1	ALM bit 0	ALM bit 1
Normal	OFF	OFF	ON	ON
Disconnection of CH0	ON	-	OFF	-
Disconnection of CH1	ON	-	OFF	-
I/O short-circuit	ON	-	OFF	-
Remote unit voltage drop	-	ON	-	OFF
I/O power supply drop	-	ON	-	OFF

Key point

When this unit is disconnected from the trunk line of the AnyWireASLINK system (at occurrence of DP-DN disconnection), input signals and ALM bits are all turned OFF.
In the ALM bit normal-ON mode, ALM bits are ON in normal status, and at occurrence of DP-DN disconnection, ALM bits are OFF. Thus, this function enables monitoring of trunk line disconnection.

■ Power supply line disconnection information [Equipment parameter 3] * For read only

This parameter is used to check power supply line information when disconnection is detected.

Variable	Description
0	Normal
1	Disconnection of IN0 only
2	Disconnection of IN1 only
3	Disconnection of both IN0 and IN1

Factory setting: 0

■ Signal line disconnection information [Equipment parameter 4] * For read only

This parameter is used to check signal line information when disconnection is detected.

Variable	Description
0	Normal
1	Disconnection of IN0 only
2	Disconnection of IN1 only
3	Disconnection of both IN0 and IN1

Factory setting: 0

■ Signal line disconnection clear command [Equipment parameter 6]

This parameter is used to clear a signal line disconnection error.

* The signal line disconnection clear command is active only when the error signal is turned from OFF to ON.

Variable	Description
0	Clear command OFF
1	Clear command ON

Factory setting: 0

* When power is supplied, this unit will always start with the "0" setting.

■ Short-circuit notification cancel command [Equipment parameter 14]

This parameter is used to clear a short-circuit error when short-circuit notification cancel setting (equipment parameter 12) is "manual restoration."

* After execution of the short-circuit notification cancel command, set this parameter to OFF.

Otherwise, operation of the short-circuit notification cancel setting (equipment parameter 12) is the same as that of the automatic restoration setting.

Variable	Description
0	Cancel command OFF
1	Cancel command ON

Factory setting: 0

* When power is supplied, this unit will always start with the "0" setting.

[Data Configuration]

<When alarm bits are not used>

Bit input information area

Address offset	n+1	n
Description	IN1	IN0

*n = Bit address number assigned to this unit

<When alarm bits are used*¹, Subsequent to input signal>

Bit input information area

Address offset	n+3	n+2	n+1	n
Description	ALM bit 1	ALM bit 0	IN1	IN0

<When alarm bits are used*¹, Latter half of input area>

Bit input information area

Address offset	(Number of bit input points /2) + (n+1)	(Number of bit input points /2) + n	n+1	n
Description	ALM bit 1	ALM bit 0	IN1	IN0

Example: When the number of bit transmission points for the master unit is “input: 64 points, output: 64 points,” and this unit is set to address “4”

Bit input information area of master unit															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48

IN1
IN0
ALM bit 1
ALM bit 0

■ Status details

The contents of an alarm issued by this unit can be checked with the unit’s ALM indicator and 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
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b0: Remote unit voltage drop (DP-DN-side voltage drop)

b2: I/O disconnection
















b3: I/O short-circuit

b5: I/O power supply drop (24V-0V-side voltage drop)

*1 It depends on lot No. whether alarm bit settings are enabled or not.

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

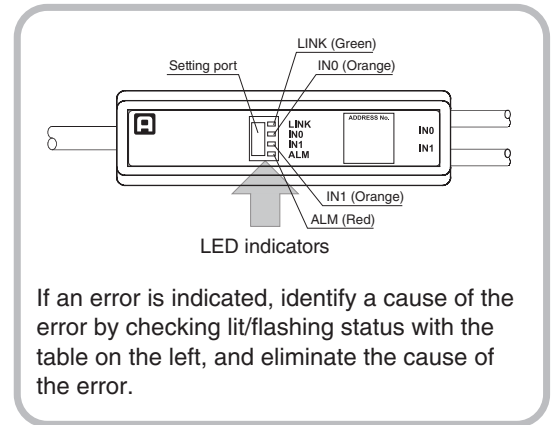
[Monitor Display]

LED name	Display status	Description
LINK (Green)	Lit 	Transmission signal error Model mismatching error* ¹
	Flashing 	Transmission signal received
	Unlit 	No transmission signal (disconnection and reverse connection of DP and DN lines included)
ALM (Red)	Lit 	I/O disconnection, I/O short-circuit, I/O power supply drop
	Flashing 	Remote unit voltage drop Model mismatching error* ¹
	Unlit 	No ALM available
LINK ALM	Alternate flashing LINK  ALM 	ID duplicated* ² or ID unregistered* ³
LINK ALM	LINK  ALM 	Model mismatching error* ¹
I/O (Orange)	Lit 	ON
	Unlit 	OFF
	ALM LINK I/O   	When I/O flashes in synchronization with LINK while ALM is lit, it indicates I/O disconnection.

*1 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.)

*2 This condition is detected when the master unit executes automatic address recognition.

*3 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.



[Troubleshooting]

<LINK does not flash>

Things to be checked	Remedy
Check the connection of this unit.	Disconnect this unit once, and then reconnect it.
Check conditions of the master unit and remote unit.	<ol style="list-style-type: none"> 1) If LINK on the master unit is flashing and LINK on the remote unit is lit, it is possible that the master unit has a fault or power supply (24V-0V) is directly connected to the DP-DN pins of the remote unit. * If LINK is lit while ALM is flashing, it means a failure in single unit simplified replacement. 2) If LINK on the master unit is flashing and LINK on the remote unit is unlit, it is possible that the power (24V DC) is not supplied to the master unit, there is a disconnection on the transmission line (DP, DN), or the remote unit has been damaged. 3) If LINK on the master unit is not flashing, check the power supply to the master unit. Also, since there is a possibility that some system error has occurred, refer to the user's manual of the master unit. 4) 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.

<ALM is lit>

Things to be checked	Remedy
Check the connection of I/O terminals on the remote unit.	<p>When IN flashes in synchronization with LINK while ALM is lit, the unit has I/O disconnection. If only ALM is lit, the unit has I/O short-circuit or I/O voltage drop. Check information by reading the status detail area*.</p> <ol style="list-style-type: none"> 1) Make sure that the remote unit I/O line and load are normally connected. Use caution about disconnection of the wiring and insufficient screw tightening. 2) To connect a mechanical contact (relay, switch, etc.) as load, OFF signal cannot be differentiated from disconnection. In this case, set the equipment parameter for the disconnection detecting function to OFF. 3) Check wiring of the remote unit terminals to ensure that the connected load meets the power supply and output specifications of ASLINKER, and adjust it as required. 4) Adjust the power supply voltage of an external power source connected to the remote unit I/O line, so that the power supply voltage does not exceed the rated voltage range (21.6V to 27.6V). Make sure that wires of the transmission line do not touch each other. Check for incorrect wiring of the terminals. <p>* Refer to the manual for the master unit.</p>

<ALM is flashing>

Things to be checked	Remedy
Check the voltage (24V DC) of external power supply to the master unit.	<p>Adjust the voltage of external power supply to the master unit so that it will be in the range from 21.6 to 27.6V. (Recommended voltage is 26.4V.) Check the total length. Review the total length and wire diameter of transmission line so that the load will not exceed the current limit supplied by the transmission line and adjust the connected load. (In the case of the wire size of 1.25mm² and total length of 50m or less, the current supplied by the transmission line is 2A.) * If ALM is flashing while LINK is lit, it means a failure in single unit simplified replacement.</p>

<LINK and ALM flashes alternately>

Things to be checked	Remedy
Check the address of the remote unit.	<p>The address of the remote unit is either unregistered or duplicated. Take the following actions. *The remote unit cannot be used with the factory-set address.</p> <ol style="list-style-type: none"> 1) Set a bit address correctly in a range of 0 to 254. 2) Check if there is a remote unit on which the indicator lamps are flashing in the same manner and reset the addresses so that they are not duplicated.

<LINK is lit and ALM is flashing: Model mismatching error (Failure in single unit simplified replacement)>

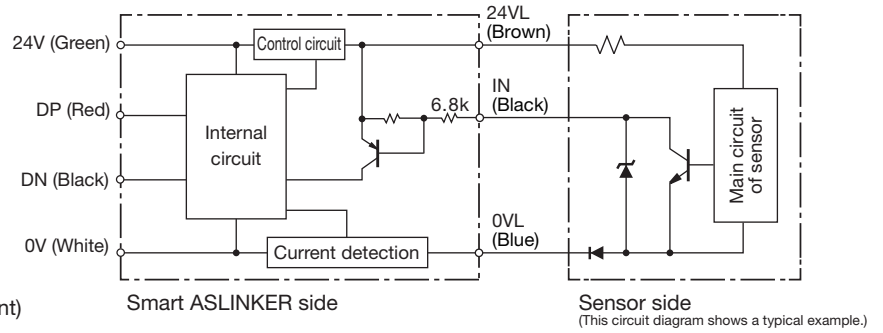
Things to be checked	Remedy
Check the connection of the remote unit.	<p>Defective connections and the like may have caused single unit simplified replacement to fail. Remove the remote unit after replacement, and make connections again. * When two or more replacement remote units are simultaneously connected, the single unit simplified replacement function does not work.</p>
Check the address of the remote unit.	<p>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.</p>
Check the model of the remote unit.	<p>Check if the replacement remote unit is of the same type as that of the remote unit before the replacement.</p>
Check the lot No. of the remote unit.	<p>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.</p>

[Configuration and Electrical Characteristics of Input Circuit]

4-wire (isolated) NPN input BL2LN87SB-02D-CC20

<Circuit conditions>

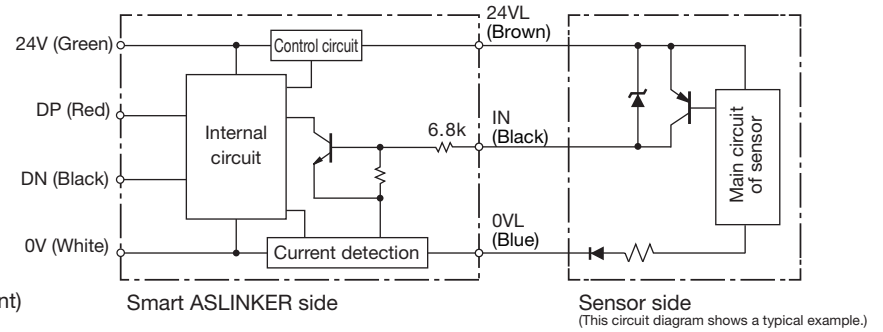
Rated input voltage:	24V DC
Max. switching current:	3.5mA
ON current:	2.2mA or more
OFF current:	1mA or less
ON voltage:	16V or more (24VL-IN)
OFF voltage:	8V or less (24VL-IN)
Allowable current at 24VL:	50mA max. (24VL-0VL) (per point)



4-wire (isolated) PNP input BL2LN87SB-02DS-CC20

<Circuit conditions>

Rated input voltage:	24V DC
Max. switching current:	3.5mA
ON current:	2.2mA or more
OFF current:	1mA or less
ON voltage:	16V or more (IN-0VL)
OFF voltage:	8V or less (IN-0VL)
Allowable current at 24VL:	50mA max. (24VL-0VL) (per point)



[Equipment Parameters and Their Settings]

Equipment parameter	Setting item	Description	Variable	Description
1	Disconnection monitoring function setting	Used to specify whether the disconnection detecting function is enabled or disabled. Factory setting: 0003	0000	Disconnection detecting function OFF
			0001	Monitoring enabled for power supply line only
			0002	Monitoring enabled for signal line only
			0003	Monitoring enabled for both power supply and signal lines
2	Disconnection detection enabled CH setting	Used to specify a number of input channels subject to this function when the disconnection detecting function is used. Factory setting: 0000	0000	Both IN0 and IN1
			0001	IN0 only
			0002	IN1 only
3	Power supply line disconnection information * For read only	Used to check power supply line information when disconnection is detected.	0000	Normal
			0001	Disconnection of IN0 only
			0002	Disconnection of IN1 only
			0003	Disconnection of both IN0 and IN1
4	Signal line disconnection information * For read only	Used to check signal line information when disconnection is detected.	0000	Normal
			0001	Disconnection of IN0 only
			0002	Disconnection of IN1 only
			0003	Disconnection of both IN0 and IN1
5	Alarm information output destination setting	Used to specify alarm information output destination in the input area of the resend unit. Factory setting: 0000	0000	Subsequent to input signal
			0001	Latter half of input information area
6	Signal line disconnection clear command	Used to clear a signal line disconnection error. Factory setting: 0000	0000	Clear command OFF
			0001	Clear command ON
7 to 11	Spare			
12	Short-circuit notification cancel setting	Used to specify how to clear short-circuit status after short-circuit is detected. Factory setting: 0000	0000	Automatic restoration
			0001	Manual restoration
13	Alarm information notification pattern setting	Used to specify an alarm information notification pattern. Factory setting: 0000	0000	Alarm notification OFF
			0001	Notification by differentiating disconnected CH (When ALM bit is normal: OFF)
			0002	Notification by differentiating disconnected CH (When ALM bit is normal: ON)
			0003	Notification by differentiating disconnected CH and short-circuit/power supply drop (When ALM bit is normal: OFF)
			0004	Notification by differentiating disconnected CH and short-circuit/power supply drop (When ALM bit is normal: ON)
			0005	Notification by differentiating sensor cable error/voltage drop (When ALM bit is normal: OFF)
			0006	Notification by differentiating sensor cable error/voltage drop (When ALM bit is normal: ON)
14	Short-circuit notification cancel command	Used to clear a short-circuit error when short-circuit notification cancel setting is "manual restoration." Factory setting: 0000	0000	Cancel command OFF
			0001	Cancel command ON
15 to 19	Spare			

[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 and IEC 61131-2
Shock resistance	Based on JIS B 3502 and IEC 61131-2
Atmosphere	No corrosive gas
Operating altitude*1	0 – 2000m
Pollution level*2	2 or less

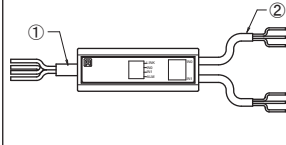
- *1 Do not use or store AnyWireASLINK devices in an environment where the pressure exceeds the atmospheric pressure at an altitude of 0 meters. Doing so may result in malfunction.
- *2 "Pollution level" is an index that indicates the degree of occurrence of conductive substances in the environment where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

■ Transmission specifications

Service power supply voltage	24V DC +15% to -10% (21.6 to 27.6V DC) with a ripple of 0.5Vp-p or less
Transmission method	DC power supply superimposed total frame/cyclic method
Synchronization method	Frame/bit synchronization method
Transmission procedure	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. (Input: 512 bits, Output: 512 bits) Number of word points: 1024 words max. (Input: 512 words, Output: 512 words)
Number of connection units*3	Up to 256 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.

■ Specifications of the cable included in ASLINKER

①	① Transmission side				② Input side			
	Signal name	Number of core wires	Core wire size	Core wire sheath outer diameter	Signal name	Number of core wires	Core wire size	Core wire sheath outer diameter
	DP (Red) DN (Black) 24V (Green) 0V (White)	4	AWG24	φ 1.1mm	IN (Black), 24VL (Brown), 0VL (Blue)	3	AWG26	φ 1.0mm

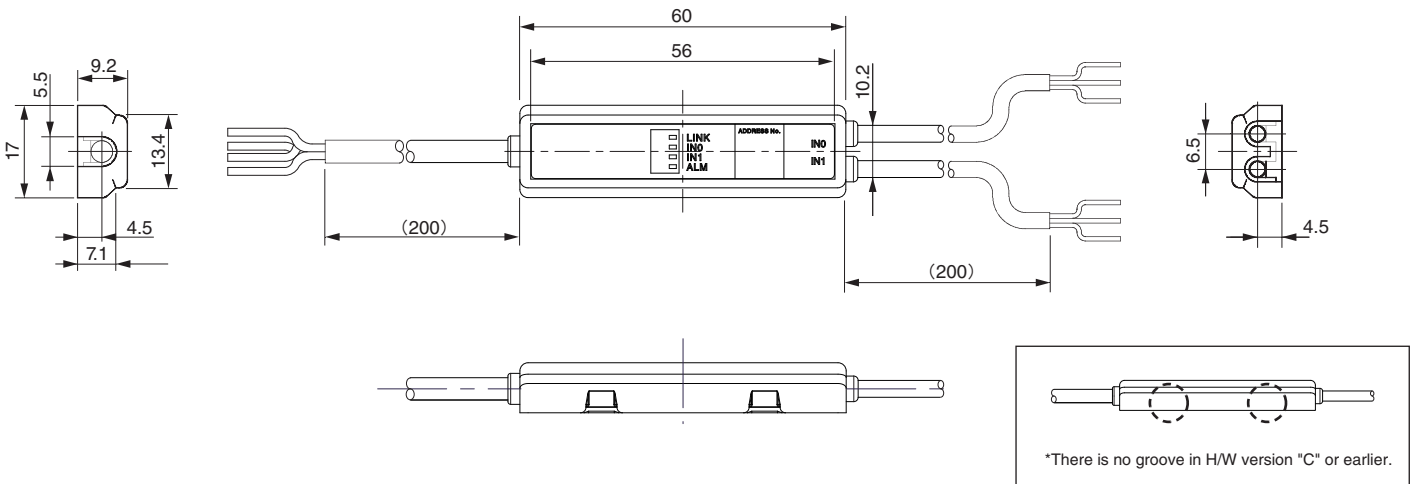
■ Individual specifications

Number of occupied points	Bit input: 2 to 4 points (Input: 2 points + Alarm bit: 2 points*4)	
Response time*5	1 ms max.	
Detection function	Remote unit voltage drop (DP-DN voltage drop) I/O disconnection I/O short-circuit I/O power supply drop (24V-0V voltage drop)	
Current consumption	Transmission side (DP-DN): 1.6mA I/O side*6 (24V-0V): 11.6mA	
Weight	60g	
Unit model No.*7	BL2LN87SB-02D-CC20 BL2LN87SB-02DS-CC20	0127 0128

- *4 It depends on lot No. whether alarm bits can be used or not.
- *5 Indicates an internal processing time required for this unit to recognize a signal change, apart from transmission delay time (2-cycle time).
- *6 Indicates a value assumed when all IN-0VL pins (NPN) or 24VL-IN pins (PNP) are short-circuited. To connect a 3-wire type sensor, add a total current consumption of the sensor.
- *7 Indicates the model-specific code (hexadecimal number). You can check the model No. by reading the relevant parameter from the master unit. For details, refer to the manual for the master unit.

[Outside Dimensions]

Unit: mm



[Directive on Waste Electrical and Electronic Equipment (WEEE)]



Note: This symbol mark is for EU countries only.
This symbol mark is according to the directive 2012/19/ EU Article 14 Information for users and Annex IX.

This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.

【中国版RoHS指令】

的产品中有害物质的名称及含量

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

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



基于中国标准法的参考规格：GB/T15969.2

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