

AnyWireASLINK

Startup Guide (Selection)

◆ASLINKSENSOR Proximity type (Shield type)



M18 type

Dimensi
Dimensi
Dimensi
Dimensi

◆ASLINKSENSOR Proximity type (Shield and sputter re



M18 type

Dimensi
Dimensi
Dimensi

◆ASLINKSENSOR Proximity type (Non-shield type



M18 type

Dimensi
Dimensi
Dimensi
Dimensi

◆ASLINKSENSOR Proximity type (Amplifier relay



φ 4 type

Amplifier Dimensi
Com

Head Dimension A: φ 4x16 Dimensi
Dimension C: M4x16 Dimensi

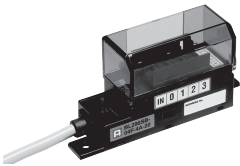
◆ASLINKSENSOR Proximity type (Full stainless bo



M18 type

Dimensi
Dimensi
Dimensi

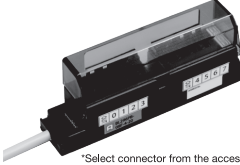
◆ASLINKTERMINAL Integrated small 4-point terminal



*Select EP connector (e-CON) from items of accessories.

Dimension A: 21×80.8×37.7

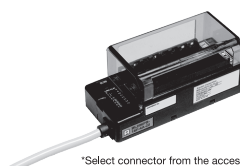
◆ASLINKTERMINAL Integrated small 8-point terminal



*Select connector from the accessory items when connecting e-CON.

Dimension A: 21×100×37.1

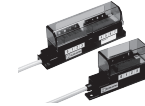
◆ASLINKTERMINAL Integrated small 16-point terminal



*Select connector from the accessory items when connecting e-CON.

Dimension A: 43×91×37.1

◆ASLINKTERMINAL Power distribution unit



*Select connector from the accessory items when connecting e-CON.

Dimension A: 21×80.8×37.7
Dimension B: 21×100×37.1

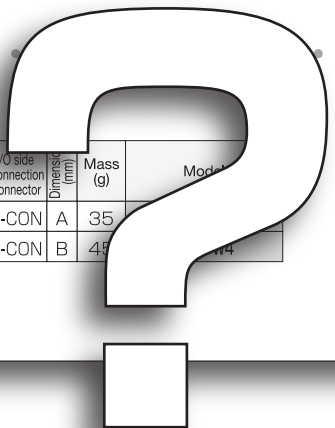


| Number of I/O points | | Input/output specifications | Method | Consumption current (mA) | | Connection | I/O side Connection connector | Dimension (mm) | Mass (g) | Model |
|--|--------|-----------------------------|--------|--------------------------|----------|--------------------------|-------------------------------|----------------|----------|--------------------|
| Input | Output | | | Transistor side | I/O side | | | | | |
| 4 | | DC input | NPN | 5 | 22 | 4-wire type (insulation) | e-CON | A | 40 | BL296SB-04F-4A-20 |
| 4 | | DC input | PNP | 5 | 22 | 4-wire type (insulation) | e-CON | A | 40 | BL296SB-04FS-4A-20 |
| 2 | 2 | DC input / Tr output | NPN | 5 | 18 | 4-wire type (insulation) | e-CON | A | 40 | BL296XB-04F-4A-20 |
| 2 | 2 | DC input / Tr output | PNP | 5 | 18 | 4-wire type (insulation) | e-CON | A | 40 | BL296XB-04FS-4A-20 |
| | 4 | Tr output | NPN | 5 | 8 | 4-wire type (insulation) | e-CON | A | 40 | BL296PB-04F-4A-20 |
| | 4 | Tr output | PNP | 5 | 8 | 4-wire type (insulation) | e-CON | A | 40 | BL296PB-04FS-4A-20 |
| DIN rail adaptor for fitting ASLINKTERMINAL integrated type small 4-point terminal (4 sets included) | | | | | | | | | | ADP-T96 |

| Number of I/O points | | Input/output specifications | Method | Consumption current (mA) | | Connection | I/O side Connection connector | Dimension (mm) | Mass (g) | Model |
|--|--------|-----------------------------|--------|--------------------------|----------|--------------------------|-------------------------------|----------------|----------|-------------------|
| Input | Output | | | Transistor side | I/O side | | | | | |
| 8 | | DC input | NPN | 6 | 40 | 4-wire type (insulation) | e-CON | A | 40 | BL296SB-08F-4-20 |
| 8 | | DC input | PNP | 6 | 40 | 4-wire type (insulation) | e-CON | A | 40 | BL296SB-08FS-4-20 |
| 4 | 4 | DC input / Tr output | NPN | 6 | 20 | 4-wire type (insulation) | e-CON | A | 40 | BL296XB-08F-4-20 |
| 4 | 4 | DC input / Tr output | PNP | 6 | 26 | 4-wire type (insulation) | e-CON | A | 40 | BL296XB-08FS-4-20 |
| | 8 | Tr output | NPN | 6 | 10 | 4-wire type (insulation) | e-CON | A | 40 | BL296PB-08F-4-20 |
| | 8 | Tr output | PNP | 6 | 10 | 4-wire type (insulation) | e-CON | A | 40 | BL296PB-08FS-4-20 |
| DIN rail adaptor for fitting ASLINKTERMINAL integrated type small 8-point terminal (4 sets included) | | | | | | | | | | ADP-T96 |

| Number of I/O points | | Input/output specifications | Method | Consumption current (mA) | | Connection | I/O side Connection connector | Dimension (mm) | Mass (g) | Model |
|---|--------|-----------------------------|--------|--------------------------|----------|--------------------------|-------------------------------|----------------|----------|--------------------|
| Input | Output | | | Transistor side | I/O side | | | | | |
| 16 | | DC input | NPN | 8 | 80 | 4-wire type (insulation) | e-CON | A | 60 | BL296SB-16F-4A-20 |
| 16 | | DC input | PNP | 8 | 80 | 4-wire type (insulation) | e-CON | A | 60 | BL296SB-16FS-4A-20 |
| 8 | 8 | DC input / Tr output | NPN | 8 | 50 | 4-wire type (insulation) | e-CON | A | 60 | BL296XB-16F-4A-20 |
| 8 | 8 | DC input / Tr output | PNP | 8 | 50 | 4-wire type (insulation) | e-CON | A | 60 | BL296XB-16FS-4A-20 |
| | 16 | Tr output | NPN | 8 | 15 | 4-wire type (insulation) | e-CON | A | 60 | BL296PB-16F-4A-20 |
| | 16 | Tr output | PNP | 8 | 15 | 4-wire type (insulation) | e-CON | A | 60 | BL296PB-16FS-4A-20 |
| DIN rail adaptor for fitting ASLINKTERMINAL integrated type small 16-point terminal (4 sets included) | | | | | | | | | | ADP-W96 |

| Number of I/O points | | Input/output specifications | Method | Consumption current (mA) | | Connection | I/O side Connection connector | Dimension (mm) | Mass (g) | Model |
|----------------------|--------|-----------------------------|--------|--------------------------|----------|--------------------------|-------------------------------|----------------|----------|-------|
| Input | Output | | | Transistor side | I/O side | | | | | |
| | | | | 1 | | 4-wire type (insulation) | e-CON | A | 35 | |
| | | | | 1 | | 4-wire type (insulation) | e-CON | B | 45 | |



AnyWireASLINK System

The user can configure the AnyWireASLINK system in two different ways depending on the user's system.

① System configuration with a direct connection to the sequencer

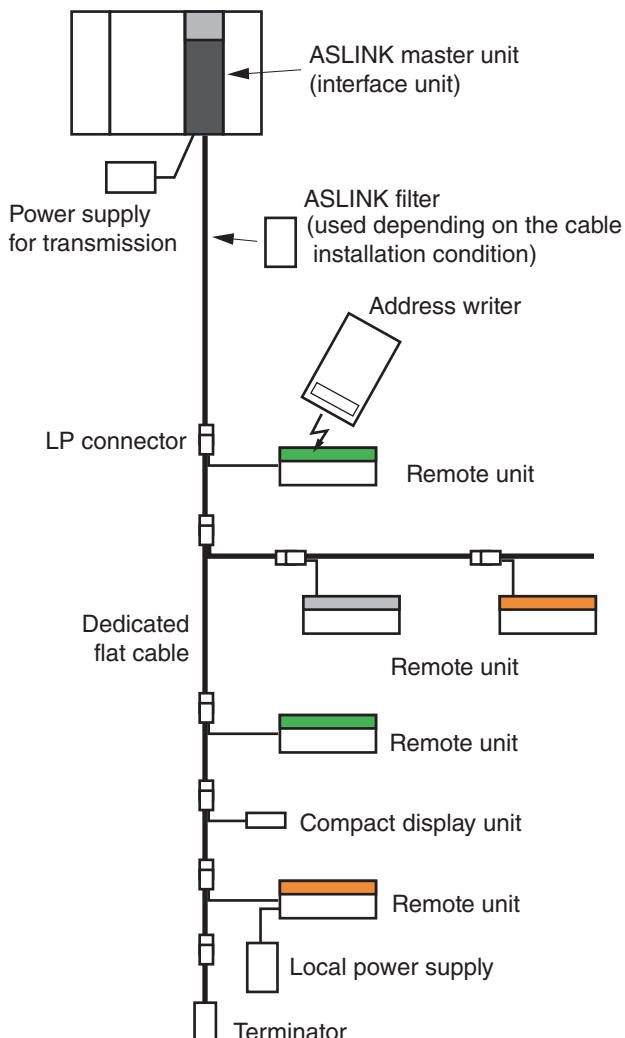
Master: Interface unit for direct connection to the sequencer

② System configuration with the OpenFieldBus

Master: Bridge/gateway for the OpenFieldBus connection

① Sequencer

■ Illustration of configuration






Features

- Can build a reduced wiring system with a direct link to the sequencer, save the labor at the system startup, and save the space inside the control panel.
- The AnyWireASLINK system has a high level of compatibility with sequencers supplied by Mitsubishi Electric and, with this combination, it performs to the best of its ability.

■ Basic color representation for the AnyWireASLINK remote units

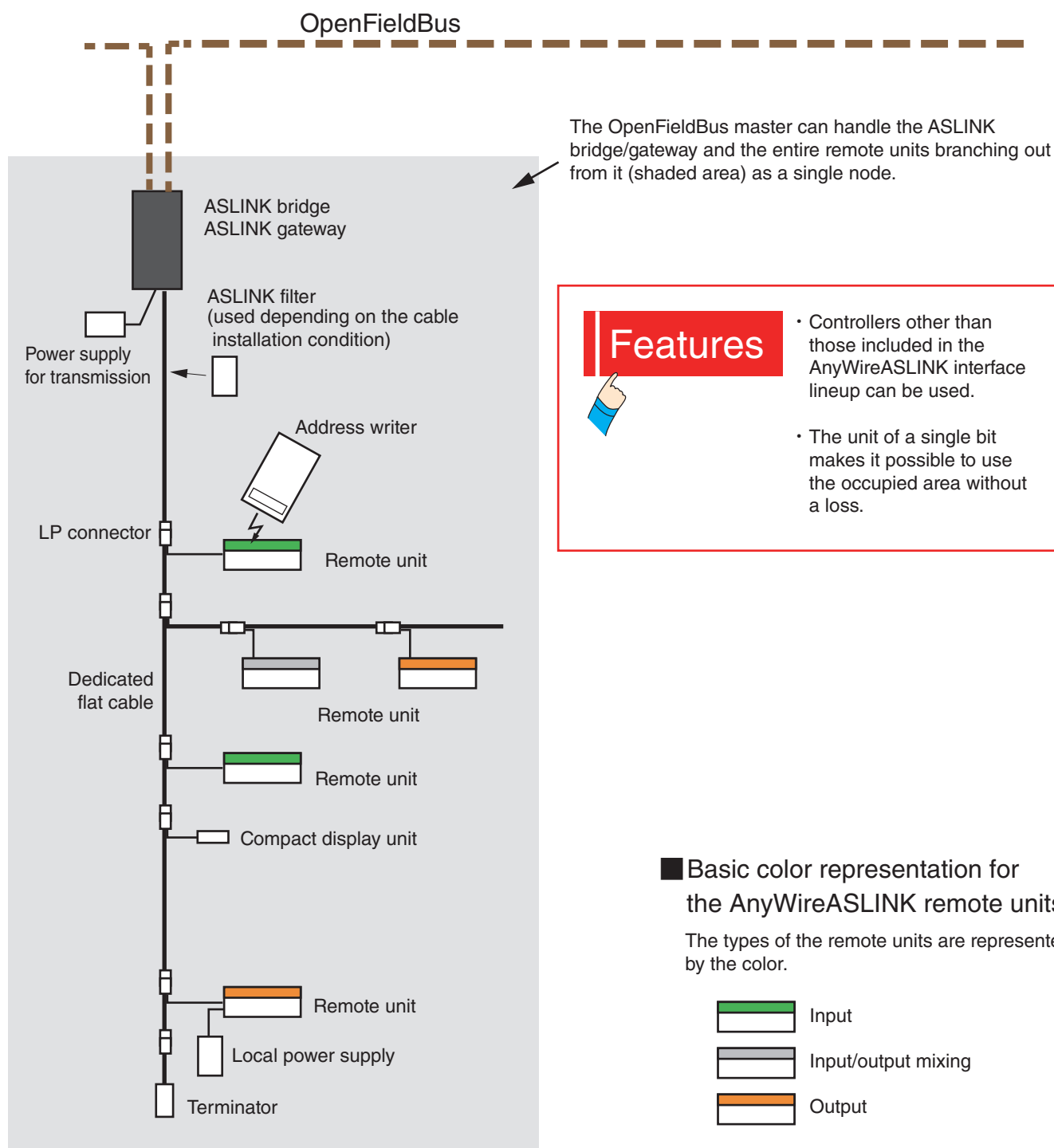
The types of the remote units are represented by the color.

| | |
|---|---------------------|
|  | Input |
|  | Input/output mixing |
|  | Output |

② OpenFieldBus

CC-Link IE TSN, CC-Link IE Field, CC-Link, Ethernet, PROFINET, DeviceNet, PROFIBUS

■ Illustration of configuration



AnyWireASLINK Devices

AnyWireASLINK devices are classified into four main groups.

The devices that are required for the fundamental configuration and the address writer are essential and additional devices can be connected depending on the conditions of use.

Fundamental
devices for
the system
configuration

(1) Master unit

Transmission of signals, I/O data, parameters,
basic RAS functions

See page 4.

(2) Remote unit

Reception of transmitted signals, I/O data serial and
parallel conversions

See page 8.

(3) Terminator

Transmission waveform shaping module

See page 16.

Essential for
the system
operation

(4) Address writer

Setting remote unit addresses and parameters

See page 16.

Saving
man-hours

(5) Dedicated flat cable LP connector

Relaying, extension, branching, addition and removal
will be possible with attaching and detaching operation.

See page 17.

Required
depending
on the system
condition

(6) ASLINK filter

Parallel installation of transmission and power lines for
the distance of 50m or longer, consideration of
CE standard

See page 18.

1. Master Unit Selection

ASLINK master unit lineup

◆ Basic specifications

Legends ○: Supported, ×: Not supported






| Classification | Type | Appearance | Model | Max. number of I/O points | Max. number of units connected | Single unit simplified replacement | Word transmission | 1024 points |
|-------------------------|-------------|---|---------------|---|--------------------------------|------------------------------------|-------------------|-------------|
| MELSEC series interface | MELSEC iQ-R |  | RJ51AW12AL | Bits 256 inputs 256 outputs Words 512 inputs 512 outputs | 128 units | ○ | ○ | × |
| | MELSEC-L |  | LJ51AW12AL | Bits 256 inputs 256 outputs | 128 units | × | × | × |
| | MELSEC-Q |  | QJ51AW12AL | Bits 256 inputs 256 outputs | 128 units | × | × | × |
| | MELSEC iQ-F |  | FX5-ASL-M | Bits Total number of inputs/outputs*1 448 | 128 units | × | × | × |
| | MELSEC-F |  | FX3U-128ASL-M | Bits Total number of inputs/outputs 128 | 128 units | × | × | × |

*1 If the unit is used with a combination other than GX Works3 (Ver. 1.047Z or later) and FX5U CPU unit (Ver. 1.100 or later), the maximum number of I/O points will be 384 (inputs + outputs ≤ 384 points) (max. 256 inputs, max. 256 outputs).

| Classification | Type | Appearance | Model | Max. number of I/O points | Max. number of units connected | Single unit simplified replacement | Word transmission | 1024 points |
|----------------------------------|------------------|---|------------|---|--------------------------------|------------------------------------|-------------------|-------------|
| Bridge unit for CC-Link networks | CC-Link IE TSN |  | NZ2AW1GNAL | Bits 512 inputs 512 outputs Words 512 inputs 512 outputs | 256 units | ○ | ○ | ○ |
| | CC-Link IE Field |  | NZ2AW1GFAL | Bits 256 inputs 256 outputs | 256 units | × | × | × |
| | CC-Link |  | NZ2AW1C2AL | Bits 256 inputs 256 outputs | 128 units | × | × | × |
| Gateway for open networks | SLMP |  | B2G78-E1 | Bits 256 inputs 256 outputs | 128 units | ○ | × | × |
| | MODBUS/TCP | | | | | | | |
| | EtherNet/IP | | | | | | | |
| | PROFINET |  | B2G78-PN1 | Bits 256 inputs 256 outputs | 128 units | ○ | × | × |
| | EtherCAT |  | B2G78-EC1 | Bits 256 inputs 256 outputs | 128 units | ○ | × | × |
| | DeviceNet |  | B2G78-D1 | Bits 256 inputs 256 outputs | 128 units | × | × | × |
| | PROFIBUS |  | B2G78-PB1 | Bits 256 inputs 256 outputs | 128 units | × | × | × |
| PC Bus master interface | PCI Express |  | B2P8-E01 | Bits 256 inputs 256 outputs | 128 units | × | × | × |

◆ Digital link function

Legends ◎: Programming and engineering tool supported*1, ○: Programming supported, ×: Not supported

| Classification | Type | Appearance | Model | Detection of sensor cable disconnection | Sensing level monitor | Reading/writing parameters |
|-------------------------|-------------|---|---------------|---|-----------------------|----------------------------|
| MELSEC series interface | MELSEC iQ-R |  | RJ51AW12AL | ◎ | ◎ | ◎ |
| | MELSEC-L |  | LJ51AW12AL | ◎ | ◎ | ◎ |
| | MELSEC-Q |  | QJ51AW12AL | ◎ | ◎ | ◎ |
| | MELSEC iQ-F |  | FX5-ASL-M | ◎ | ◎ | ◎ |
| | MELSEC-F |  | FX3U-128ASL-M | ◎ | ◎ | ◎ |

*1 Engineering tools make it easy to monitor the operation and set up parameters.

For further information, refer to the iQSS reference manual of Mitsubishi Electric as there are some limitations depending on sequencers.

| Classification | Type | Appearance | Model | Detection of sensor cable disconnection | Sensing level monitor | Reading/writing parameters |
|----------------------------------|------------------|---|------------|---|-----------------------|----------------------------|
| Bridge unit for CC-Link networks | CC-Link IE TSN |  | NZ2AW1GNAL | ◎ | ◎ | ◎ |
| | CC-Link IE Field |  | NZ2AW1GFAL | ◎ | ◎ | ◎ |
| | CC-Link |  | NZ2AW1C2AL | ◎*2 | ◎*2 | ◎*2 |
| Gateway for open networks | SLMP |  | B2G78-E1 | ○ | ○ | ○ |
| | EtherNet/IP | | | ○*3 | ○*3 | ○*3 |
| | MODBUS/TCP | | | ○ | ○ | ○ |
| | PROFINET |  | B2G78-PN1 | ○ | ○ | ○ |
| | EtherCAT |  | B2G78-EC1 | ○ | ○ | ○ |
| | DeviceNet |  | B2G78-D1 | ○ | ○ | × |
| | PROFIBUS |  | B2G78-PB1 | ○ | ○ | × |
| PC Bus master interface | PCI Express |  | B2P8-E01 | ○ | ○ | ○ |

*1 Engineering tools make it easy to monitor the operation and set up parameters.

For further information, refer to the iQSS reference manual of Mitsubishi Electric as there are some limitations depending on sequencers.

*2 Effective only if the controller is Mitsubishi sequencer and the CC-Link operation mode is Ver. 2.00.

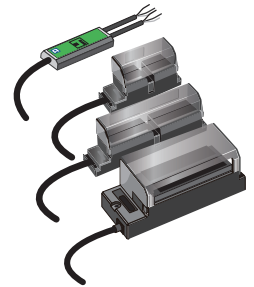
*3 For further information, refer to the B2G78-E1 user's manual as there are some limitations depending on the system version.

2. Selection of Remote Units

This section explains approaches to selecting AnyWireASLINK remote units. There are four different perspectives.

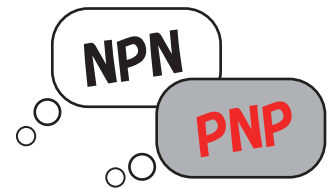
(1) Estimation of the number of remote units

Estimate the total number of units required by allocating suitable units based on the system size and distribution of I/O points.




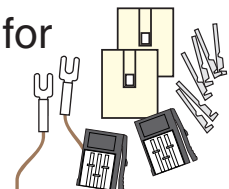
(2) Functions required for remote units

Consider remote units that support sensors to be connected and control method of output loads.



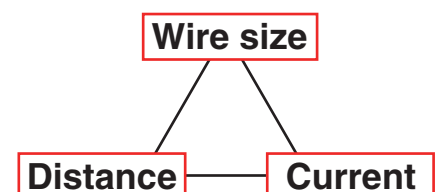
(3) Optimum connection of loads

Consider remote units that support the optimum scheme for the connection of sensors and output loads to be used. 



(4) Limitations on the transmission line

The transmission line is subject to limitations of “wire size, distance and current”. Consider if the current consumption of remote units used is appropriate for the transmission area to be constructed.



(1) Estimation of the number of remote units

■ Product lineup

- ① A remote unit has three major functions as follows. Select the unit most suitable for the site and sensors used.

Digital I/O terminal

Turning ON/OFF general-purpose loads and sensors
Detection of disconnection and short-circuit of sensor cable

Analog input terminal

Analog control of general-purpose loads and sensors

Sensors with integrated transmission/sensing function

ON/OFF operations, visualization

- ② A remote unit has various choices of I/O points as follows. Select the most suitable number of points depending on the density of loads.

1 point

2 points

4 points

8 points

16 points

32 points

1 word (16 points)

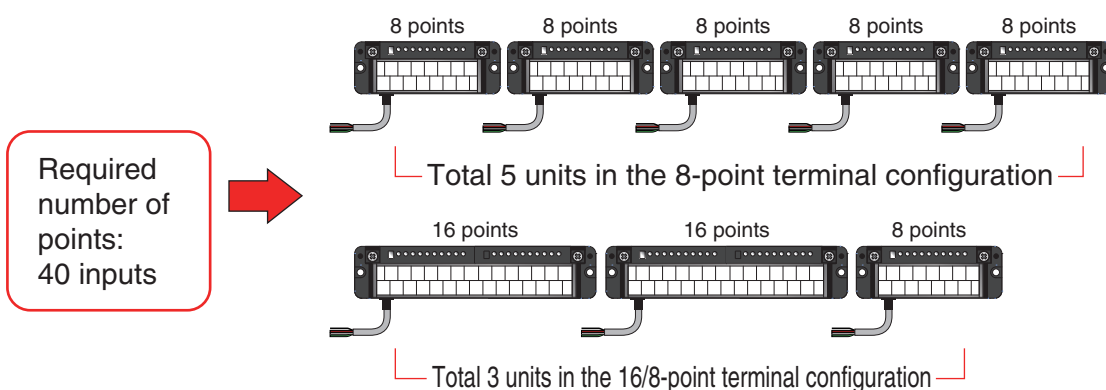
- ③ Three I/O methods are available for the digital I/O unit. Select any of the following choices depending on the load specification.

NPN

PNP

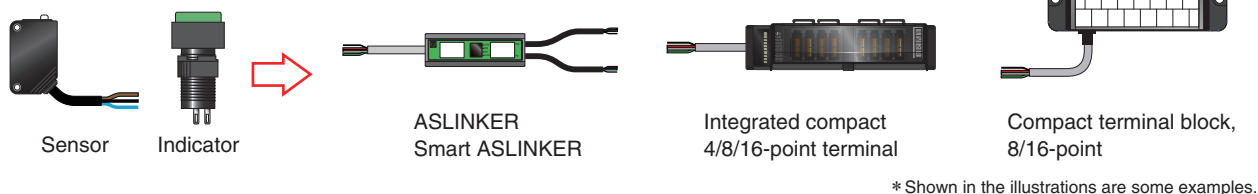
Relay (output)

■ Required number of units

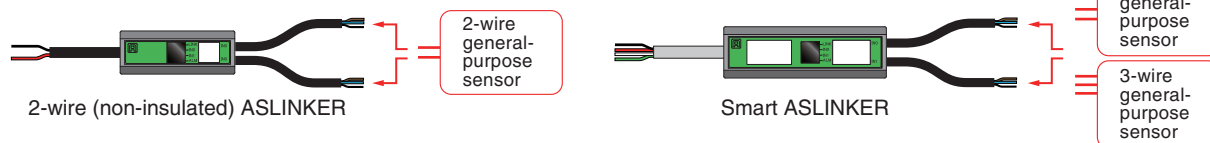


(2) Functions required for remote units

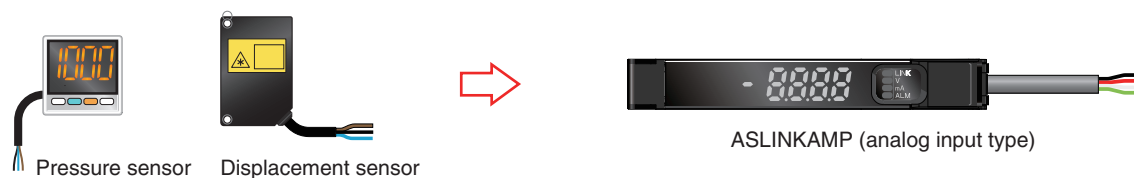
① If wishing to turn ON/OFF general-purpose sensors and output loads



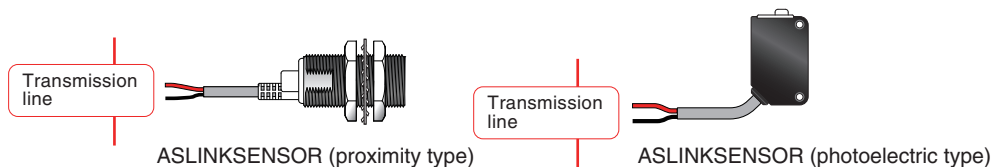
② If wishing to detect disconnection and short-circuit in the general-purpose sensor cable



③ If wishing to import an analog quantity output from a general-purpose analog sensor



④ If wishing to perform a preventive maintenance by monitoring the sensing level

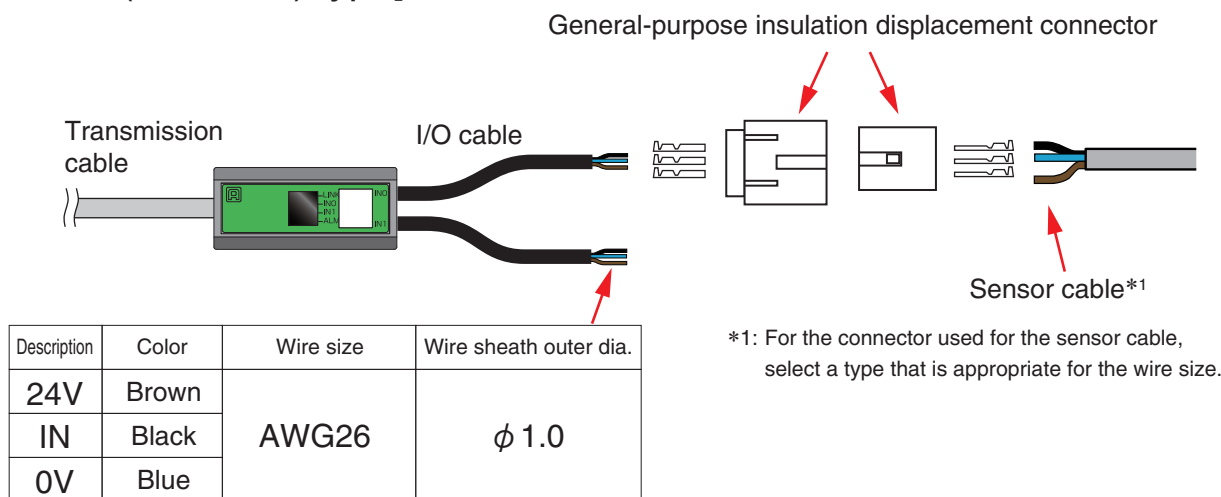


(3) Optimum connection of loads

- ① If wishing to create a detachable connection that extends the cable

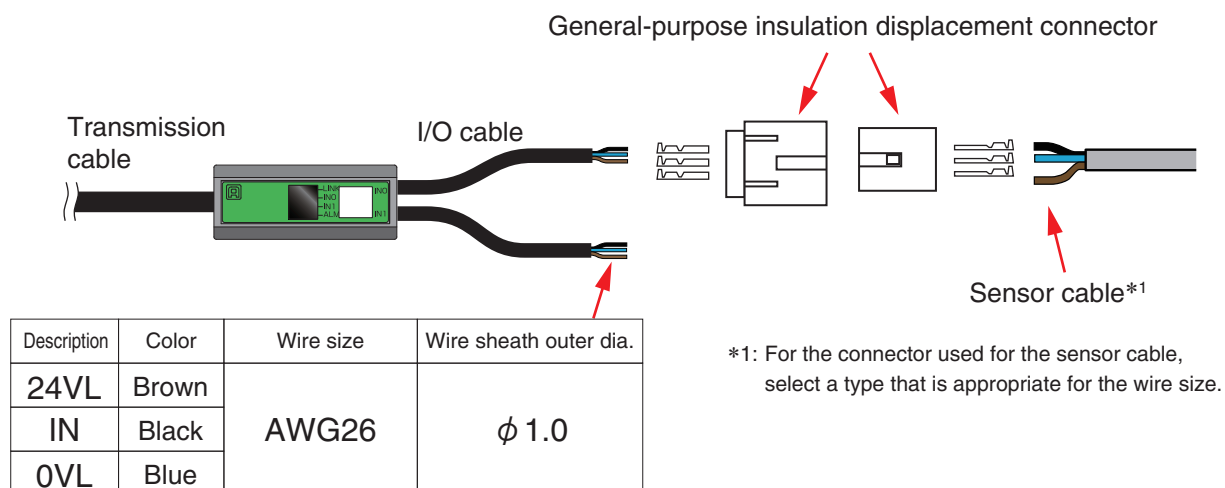
Connection with a general-purpose insulation displacement connector

[4-wire (insulated) type]



The 24V and 0V wires in the I/O cable are connected to the 24V and 0V lines in the transmission cable and can be used to drive the load.

[2-wire (non-insulated) type]



The 24VL and 0VL wires in the I/O cable provide a power taken out from the transmission signals DP and DN and can be used to drive the load.

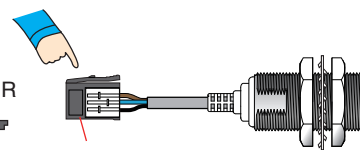
② If wishing to create a detachable connection that quickly extends the cable

e-CON
connection

[Smart ASLINKER]

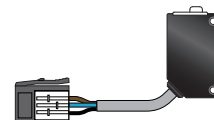
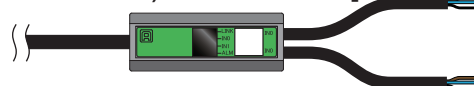


The sockets on the ASLINKER

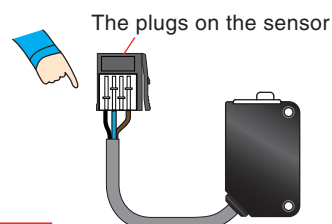


The plugs on the sensor

[2-wire (non-insulated) ASLINKER]



[Integrated compact 4/8/16-point terminal]



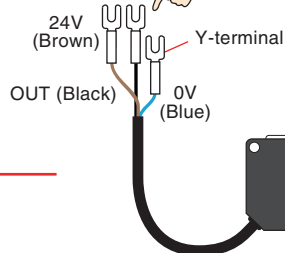
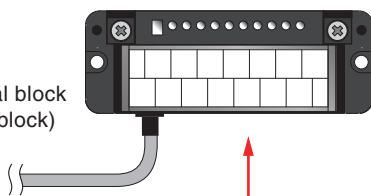
The plugs on the sensor

③ If wishing to connect to a terminal block

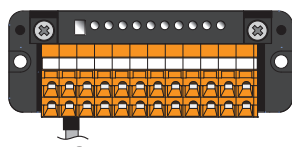
Connection with rod terminals
and crimp terminals

[Compact terminal block, 8/16-point]

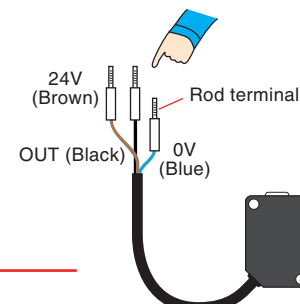
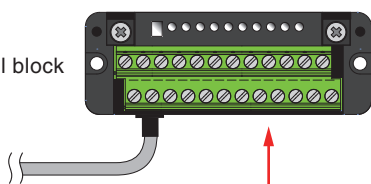
Standard terminal block
(screw terminal block)



Spring terminal block



Euro terminal block



(4) Limitations on the transmission line

The transmission line sends signals and supplies the power.

Therefore, it is subject to limitations of “wire size, distance and current”.

The current consumption of remote units and loads should not exceed the limitations.

(Table 1) Relationships between the wire size, distance and supply current of transmission line

| Wire size of transmission line (DP, DN) | Supply current of 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 |

Example 1

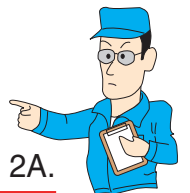
[Conditions]

- ① Transmission line wire size: 1.25mm²
- ② Transmission distance: 40m
- ③ Remote unit/number of units: BL296SB-08F-4-20 / 10 units

[Check]

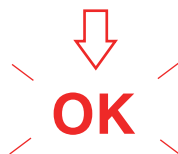
First, apply the transmission line conditions ① and ② to Table 1.

→ The current that can be passed through the transmission line (DP-DN) is 2A.



Next, determine the current drawn by ten BL296SB-08F-4-20 units from the transmission line.

- Burden on the transmission line (DP-DN) per unit: 6mA (from the product manual)
- There are ten units, consuming 60mA.
- Since the transmission line (DP-DN) can supply a current up to 2A, 60mA is not a problem.

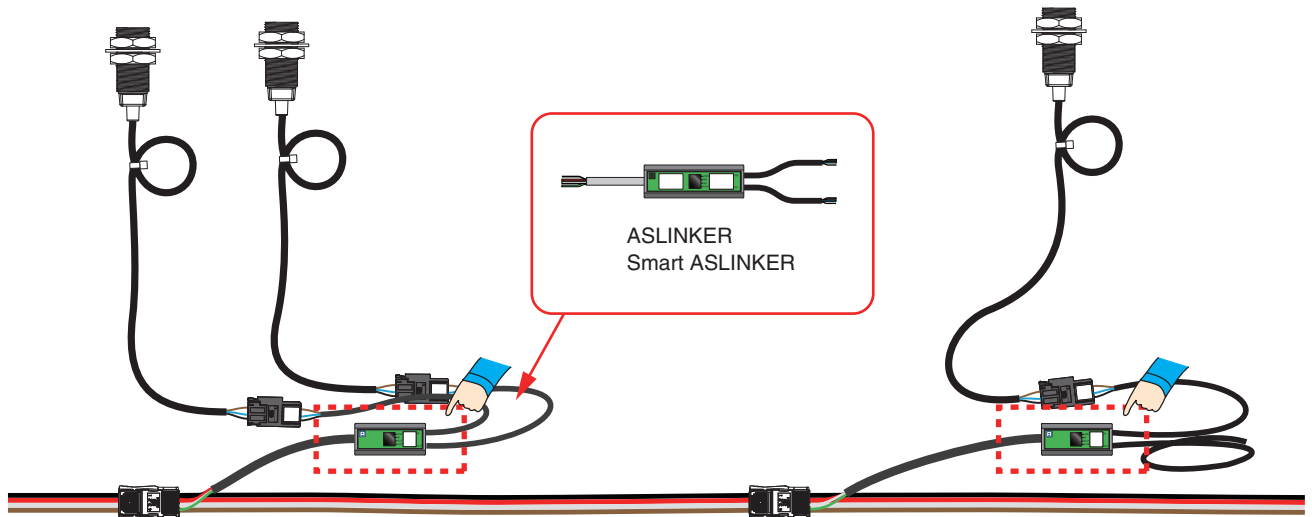


The power to drive the BL296SB-08F-4-20 unit and sensors connected to it will be supplied through the 24-0V terminals on this remote unit.

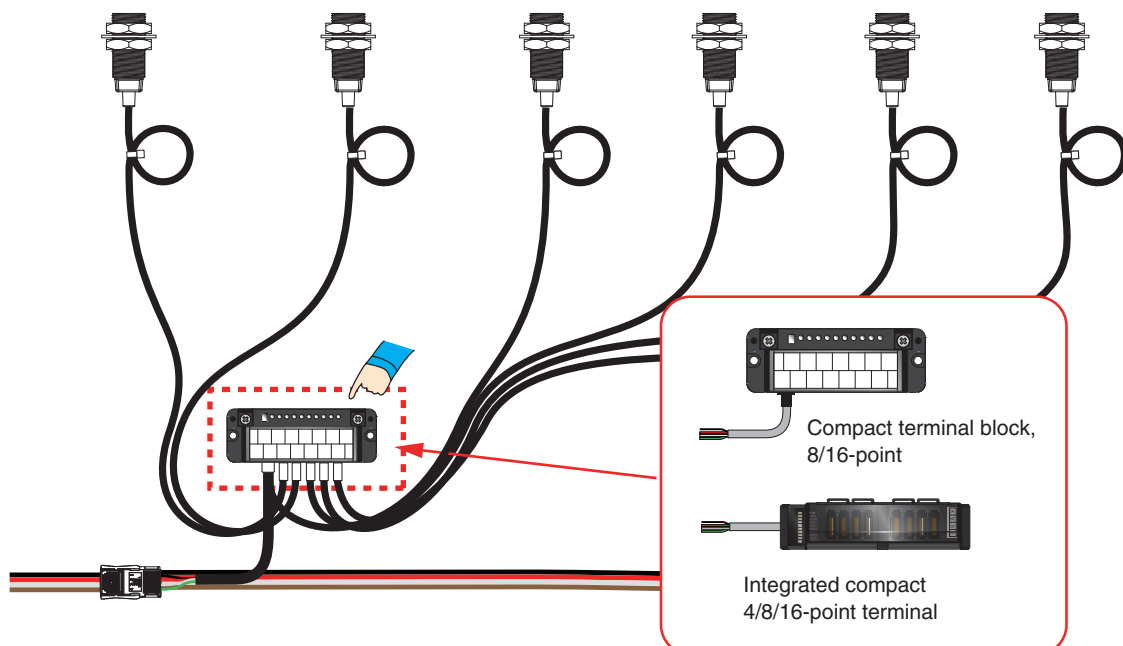
Unique Approaches to Selecting AnyWireASLINK

1. Whether connected loads are concentrated or distributed

[Example 1] If the loads of one to three devices were distributed, it is possible to simplify the wiring by bundling the cables with **ASLINKER**.



[Example 2] If the loads of four or more devices were concentrated, it is possible to simplify the wiring by bundling the cables all together with **ASLINKTERMINAL**.



2. Which remote unit to select – 2-wire type or 4-wire type?

In the AnyWireASLINK system, the power is supplied on the transmission line (DP-DN).

Using the power on the transmission line only

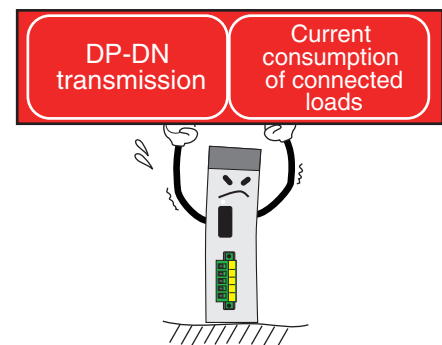
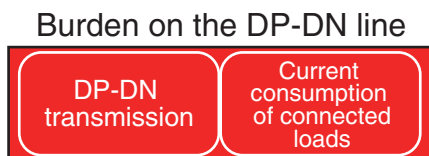
2-wire remote units

Using the power on the transmission line and external power simultaneously

4-wire remote units

■ Illustration of 2-wire (non-insulated) type unit

The power for the remote unit and loads connected to it is supplied through the transmission line (DP-DN).



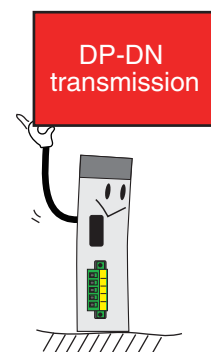
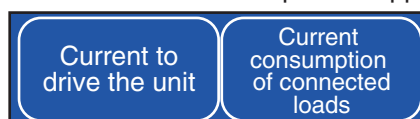
■ Illustration of 4-wire (insulated) type units

The power to drive the remote unit and loads connected to it is supplied by an external power supply (24V-0V).

Burden on the DP-DN line

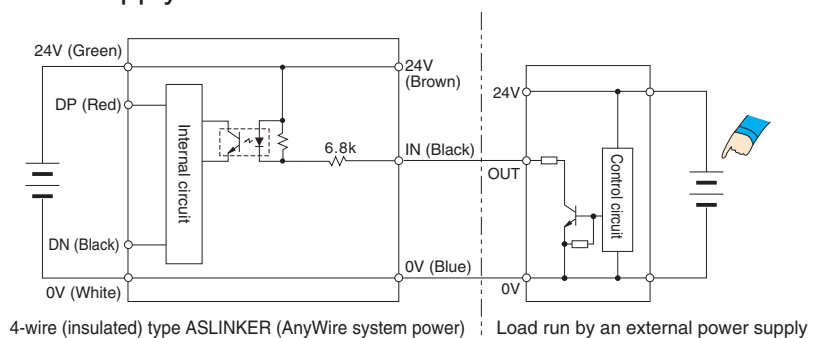


Burden on the external power supply



In a situation in which the current carrying capacity of DP-DN line is not sufficient but a connected load has a power supply, then 4-wire (insulated) type units are used to allow the power to be supplied from the power supply of the load.

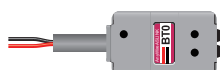
[An example of a system with a load having a power supply]



3. Terminator

This is a module that shapes the transmission waveform.
Connect one unit at the farthest end of the transmission line from the master unit.

■ When used in an AnyWireASLINK system with 128 or fewer remote unit connections.



BT0
(standard type)



BT0-12
(IP67 type)



BT0-C
(IP67 type)

■ When used in an AnyWireASLINK system with 129 or more remote unit connections.
(BLT1-C can switch between 128 units or less mode and 129 units or more mode with the address writer.)



BLT0
(Additional function type)



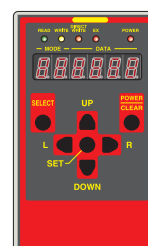
BLT1-C
(BT0, BLT0 switching type)

4. Address Writer

Essential

Model: ARW-04

Set addresses to access AnyWireASLINK remote units by using an address writer.



5. Dedicated Flat Cable and LP Connector

The **dedicated flat cable** and **LP connector** come in handy in situations in which the transmission line needs to be connected quickly, needs to be branched, or needs to be connected to a device with an LP connector.

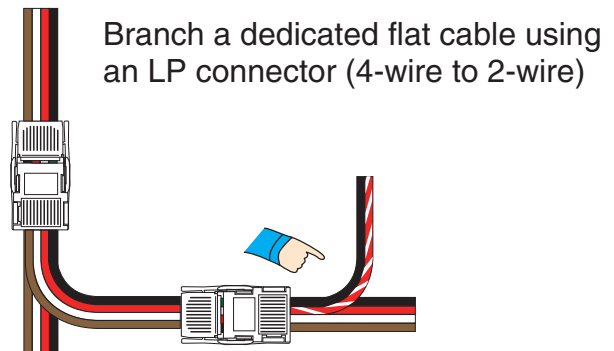
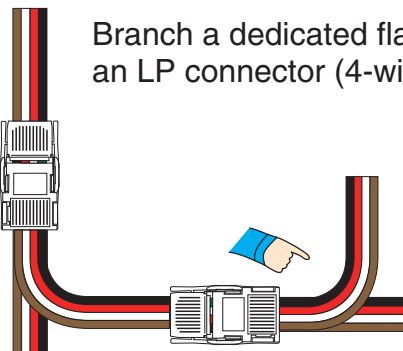
An LP connector is a hermaphroditic insulation displacement connector. It is possible to connect two connectors of the same type simply by applying pressure on the connector with cable.

Because pressure-bonding is possible at the end of a cable or in the middle, adding, reducing or branching a cable will be easy.

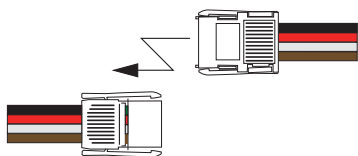
[Example]

■ Examples of correspondence between each wire color and link connector pin

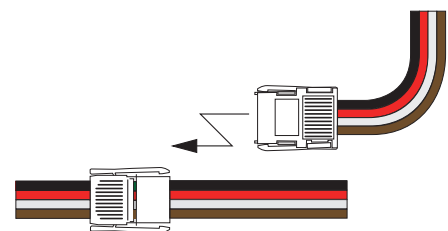
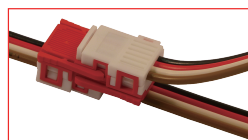
| FK4-125-100 | LP4-WR-10P | FK4-075-100 | LP4-WH-10P |
|-------------|------------|-------------|------------|
| Brown (24V) | 4 | Green (24V) | 4 |
| White (0V) | 3 | White (0V) | 3 |
| Red (DP) | 2 | Red (DP) | 2 |
| Black (DN) | 1 | Black (DN) | 1 |



[Extension]

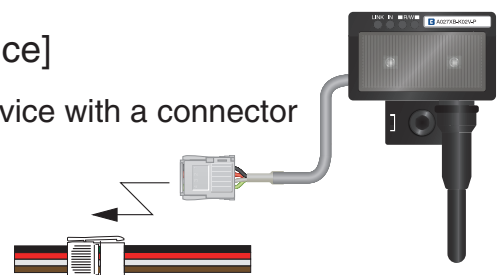


[Branching]



[Connecting a device]

In the case of a device with a connector



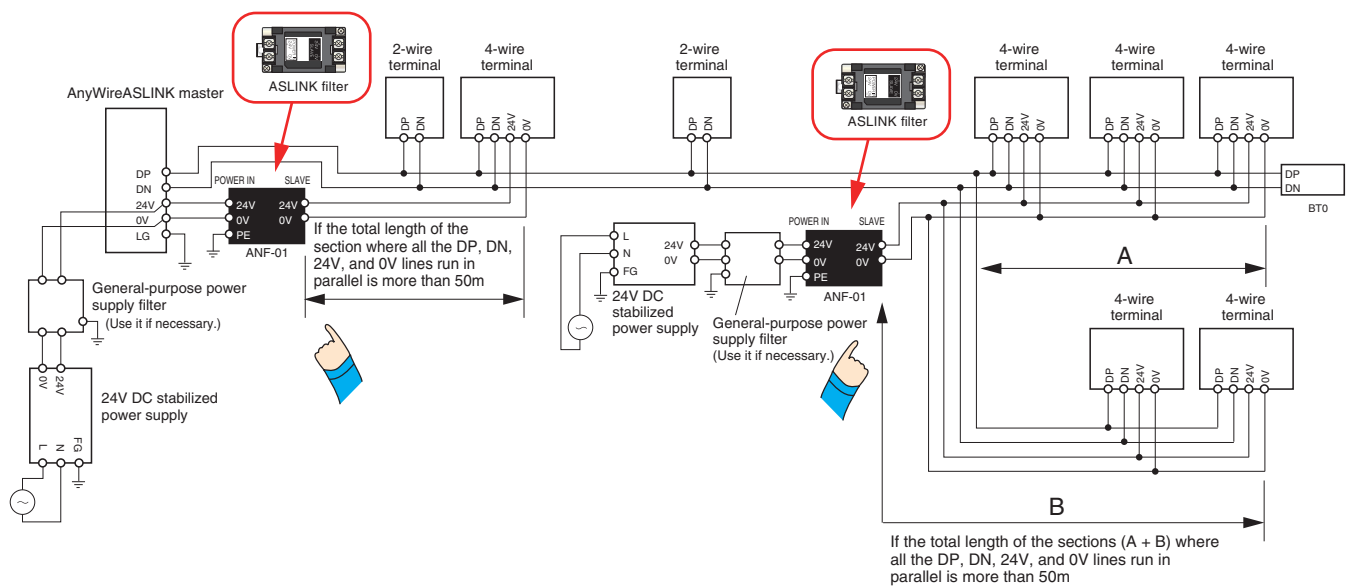
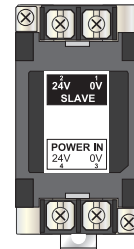
6. ASLINK Filter

Conditional

Model: ANF-01

This is a filter exclusive to the AnyWireASLINK system and, if the transmission line (DP-DN) and the AnyWireASLINK drive power line (24V-0V) run in parallel for more than 50 meters, it needs to be inserted in the 24V-0V line at the position where these lines start running in parallel.

The insertion is also required at the point of 24V-0V supply regardless of the length of the section if the CE standard is to be complied.



Check Sheet

Ensure that the selections made comply with the specifications of AnyWireASLINK.

[Basic check points] -----

| | | | |
|---|--------|--|---------|
| ① Number of units connected | | ≤ 128* | OK • NG |
| ② Total number of I/O points occupied by the remote units connected | Input | ≤ The number of I/O points in the master unit transmission setting* 256 inputs (max.) 256 outputs (max.) | OK • NG |
| | Output | | |
| ③ The “DP-DN” current drawn by the remote units connected or, if a 2-wire (non-insulated) unit was included, total current including the current drawn by the loads connected to that terminal. | A | 1.25mm ² ≤ 2A for the length of 50m or less ≤ 1A for the length exceeding 50m and up to 100m ≤ 0.5A for the length exceeding 100m and up to 200m | OK • NG |
| | | 0.75mm ² ≤ 1.2A for the length of 50m or less ≤ 0.6A for the length exceeding 50m and up to 100m ≤ 0.3A for the length exceeding 100m and up to 200m | |
| ④ Number of terminators | | Connect one unit at the farthest end from the master unit (basically) | OK • NG |
| ⑤ Number of address writers (ARW-04) | 1 | Address setting, parameter setting | OK • NG |
| ⑥ Number of ASLINK filters (ANF-01) | | Conditions The DP, DN, 24V, and 0V lines run in parallel for 50m or more In consideration of the CE standard | OK • NG |

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

If the current supplied by the transmission line (DP, DN) is not sufficient, consider replacing 2-wire remote units with 4-wire remote units, increasing the wire size, reducing the transmission distance, reducing the number of units connected, etc.

If the number of I/O points is not sufficient, consider adding a master unit or reduce the number of units connected.



[Address]

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