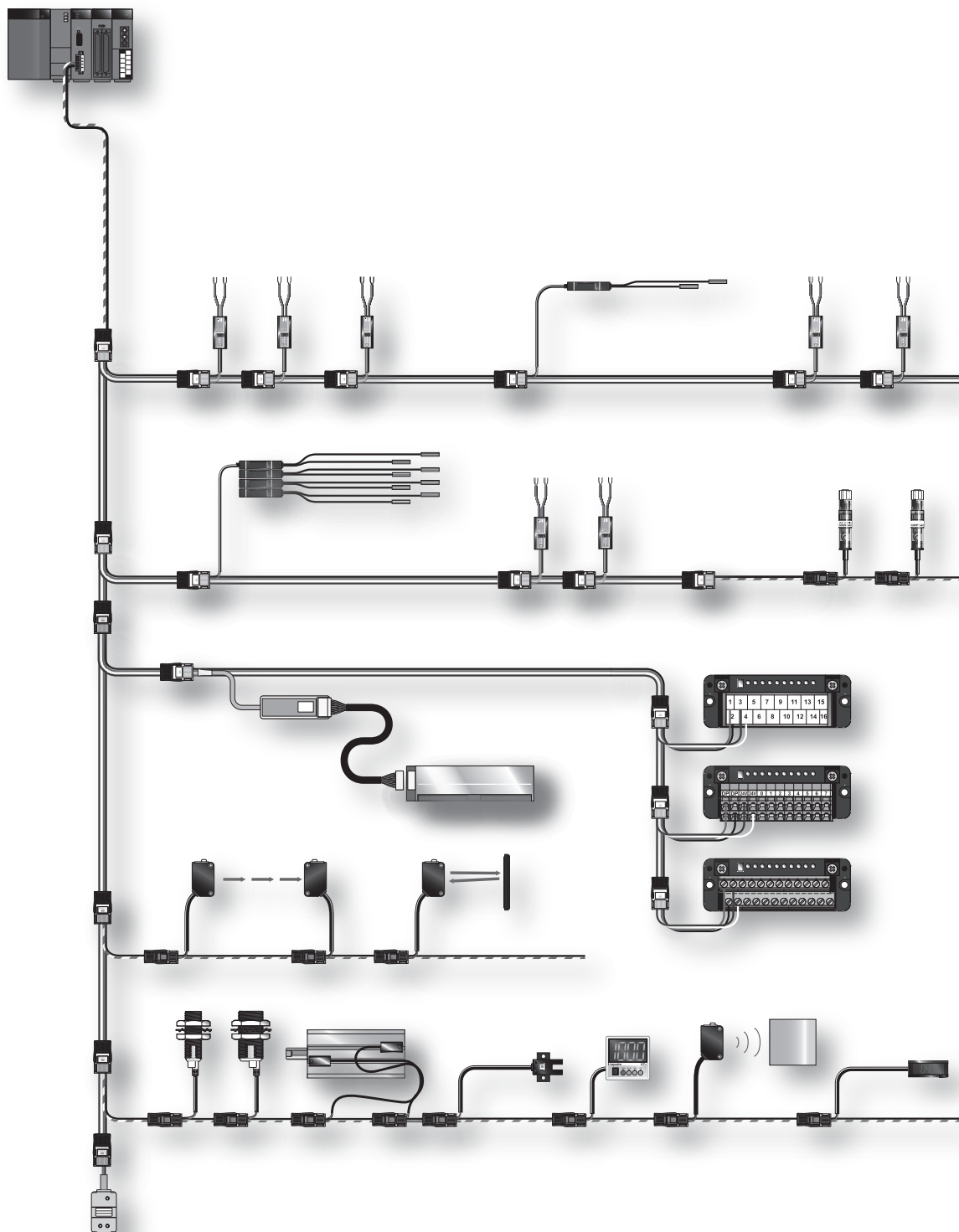


AnyWireASLINK

Startup Guide (Wiring)



Wiring of AnyWireASLINK System

Features

1. Power superimposed transmission signal

This system transmits signal using power superimposed transmission method. Therefore, the transmission signal (DP, DN) has a limit on the current it can carry. The limit is determined in accordance with the wire diameter and the total extension.

2. General-purpose cable applicable

A general-purpose cabtyre cable and a dedicated flat cable can be used.

Using the dedicated flat cable in combination with LP connector (dedicated insulation displacement connector) makes it easy to connect, branch, add and remove the cable.

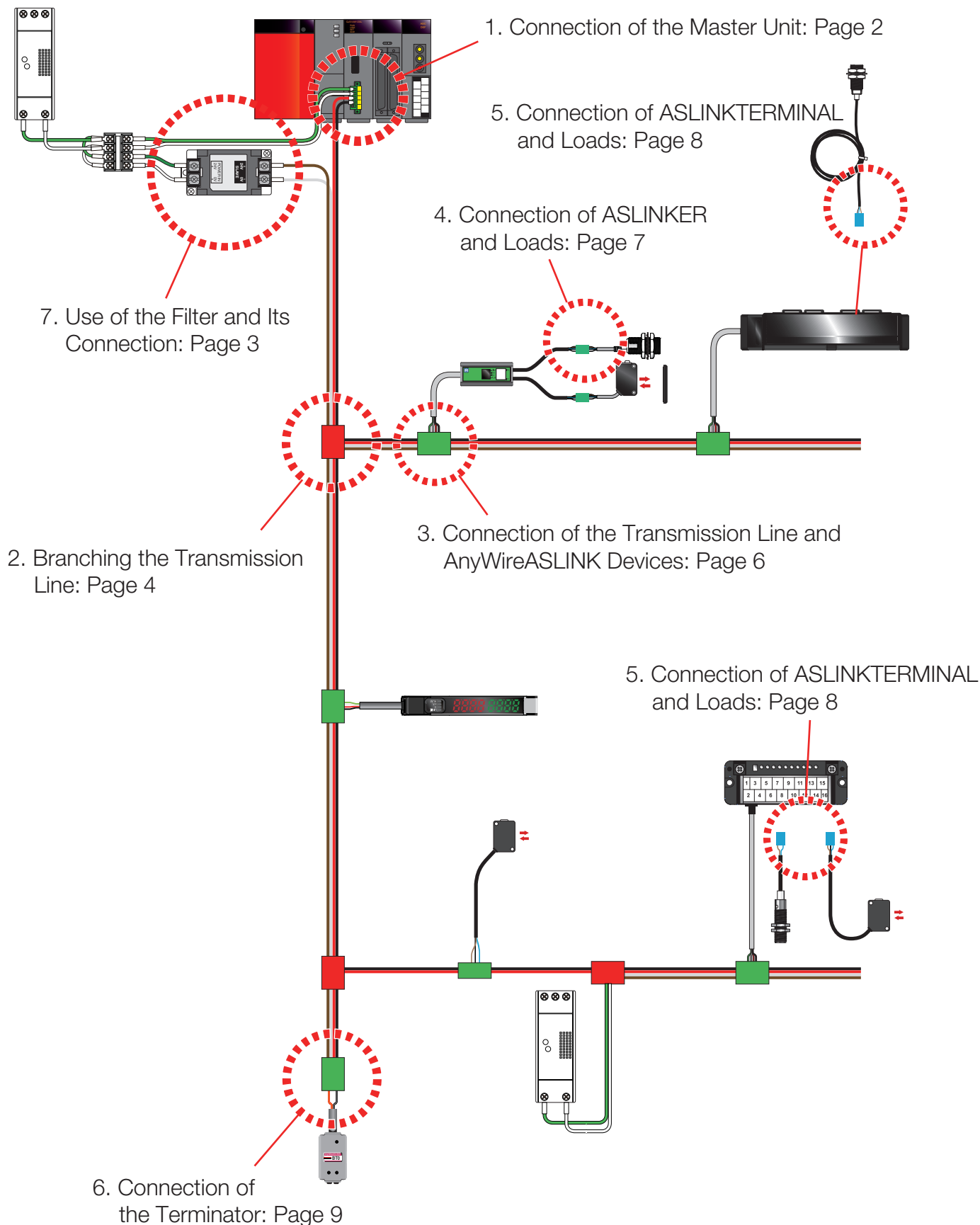
3. Topology-free

- Applicable topologies include T-branch, multi-drop, star and tree connections and they can be mixed in one system.
- There is no prescription in the cable length between slave units.
- Connections and branching can be made by using general-purpose connectors and terminal blocks.
- A choice can be made between the batch power supply system (use the same power supply for the master and slave units) and the local power supply system (use separate power supplies for the master and slave units).

Fundamentals in Wiring

Shown below is a typical example of the AnyWireASLINK system.

As the connections made at sections encircled with red dotted lines are important, refer to respective pages for specifics.



1. Connection of the Master Unit

This section describes a typical connection made in the AnyWireASLINK system.

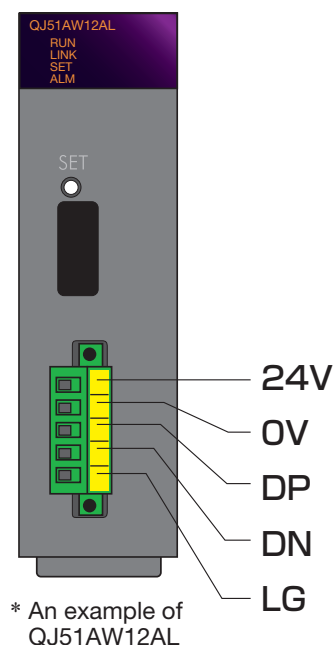
Transmission line wire diameter: $0.75\text{mm}^2 - 1.25\text{mm}^2$

Power line wire diameter: $0.75\text{mm}^2 - 2.0\text{mm}^2$

Description	Wire type	Wire diameter	Conductor	Temperature rating
Transmission line (DP, DN)	UL-compliant general-purpose 2-wire cable (VCTF, VCT)	1.25mm^2	Copper stranded wire	70°C or higher
		0.75mm^2		
	UL-compliant general-purpose wire	1.25mm^2		90°C
		0.75mm^2		
	Dedicated flat cable	1.25mm^2		
		0.75mm^2		
Power line (24V, 0V)	UL-compliant general-purpose 2-wire cable (VCTF, VCT)	$0.75\text{mm}^2 - 2.0\text{mm}^2$	Copper stranded wire	70°C or higher
	UL-compliant general-purpose wire	$0.75\text{mm}^2 - 2.0\text{mm}^2$	Copper stranded wire/plain copper wire	
	Dedicated flat cable	1.25mm^2	Copper stranded wire	90°C
		0.75mm^2		

Terminal assignment in the transmission terminal block

Terminal	Description
24V	These terminals supply the power for driving the transmission circuit in the AnyWireASLINK system. Connect a 24 VDC external power supply here.
0V	
DP	These are the terminals used to transmit signals in the AnyWireASLINK system. DP: Transmission line (+), DN: Transmission line (-) Connect these terminals to the DP and DN terminals on the slave units and terminator.
DN	
LG	This terminal is connected to the neutral point on the noise filter inserted between the 24V and 0V terminals. Make a connection to the ground together with the functional ground (FG) terminal of the sequencer at one point.



Transmission terminal block specifications

Type	MC 1, 5/5-STF-3.81 (PHOENIX CONTACT)
Fastening torque	0.2 – 0.3 N·m A screwdriver with a blade of 0.4 x 2.5 mm is necessary.

Applicable rod terminals

Although this terminal block allows for the connection of bare wires, it is advised to crimp rod terminals for safety reasons.

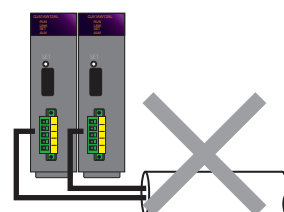
Termination of a single 0.75 mm^2 wire: AI 0,75-8 GY (PHOENIX CONTACT)

Termination of two 0.75 mm^2 wires: AI-TWIN2 x 0,75-8 GY (PHOENIX CONTACT)

Termination of a single 1.25 mm^2 wire: AI 1,5-8 BK (PHOENIX CONTACT)



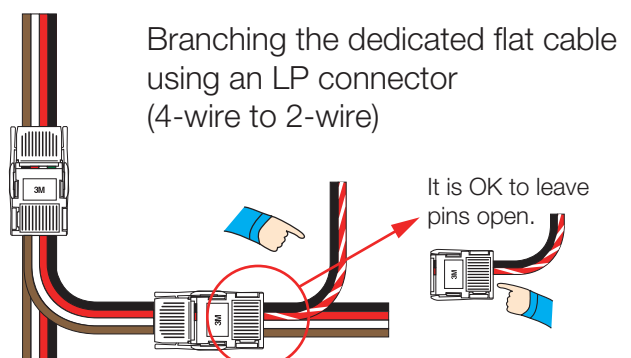
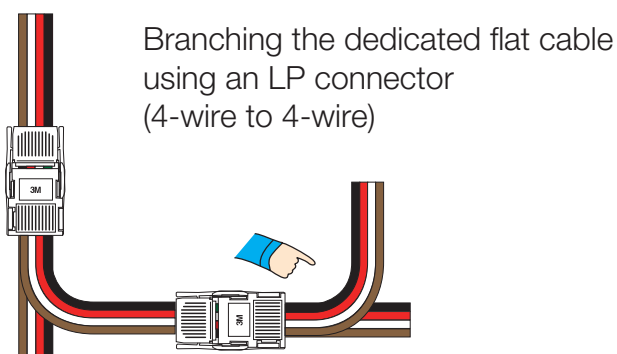
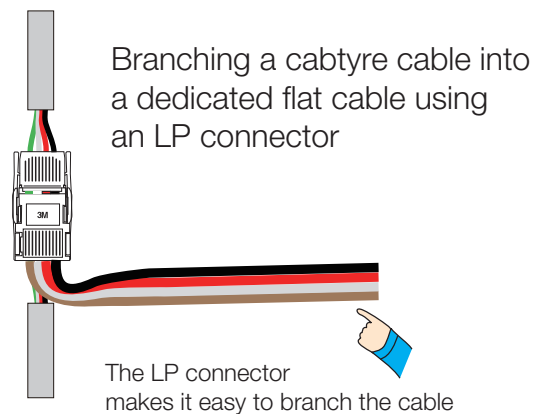
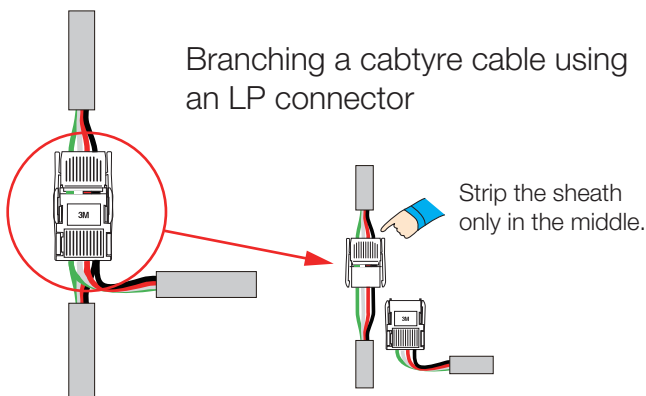
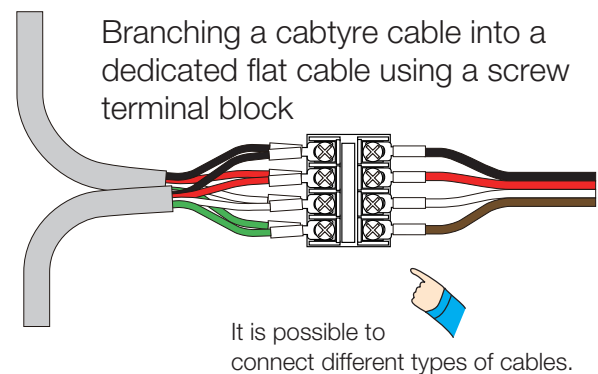
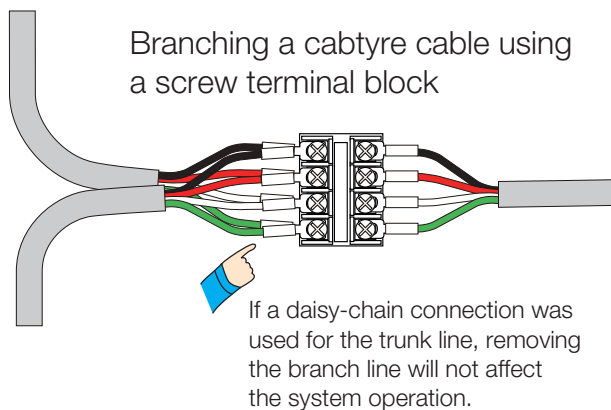
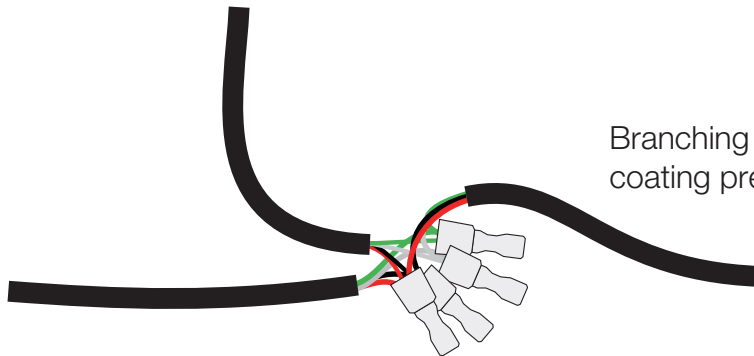
Do not use a multicore cable to bundle the transmission lines from different master units. Doing so will cause crosstalk between the lines, resulting in malfunction.



2. Branching the Transmission Line

There is no condition in branching the transmission line. However, note that the total extension is the sum of the length of transmission lines and cables from connected loads, which are used for one AnyWireASLINK system.

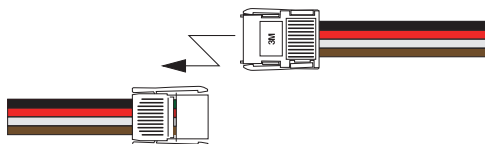
Connect two cables with the same symbol (DP, DN, 24V, and 0V) together at respective connections.



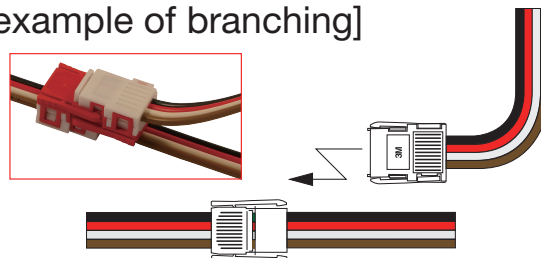
■ An example of attaching LP connectors to a cable

LP connector is a hermaphroditic connector; there is no plug or socket version. There is only one model. Although the model numbers are defined depending on the wire type, applicable wire size and number of poles, any model will fit with another as long as the number of poles is the same.

[An example of extension]



[An example of branching]



For example, two connectors are needed at each branching point to make a branch of the same wire size and the same number of wires.

In the AnyWireASLINK system, combinations of the signals, power supplies, wire colors and LP connector pin No. are defined. However, should there be a unique standard at the operation site, use a connection scheme by matching the polarity.

* General-purpose insulation displacement connectors may be used.

Select models that support the wire size and current carrying capacity.

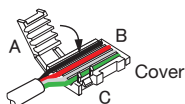
■ AnyWireASLINK pin assignment

Description	Wire color	LP connector pin No.
DP	Red	2
DN	Black	1
24V	Brown/Green	4
0V	White	3

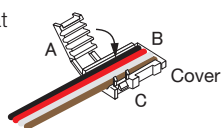
[At the end of the cable]

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

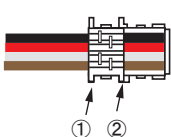
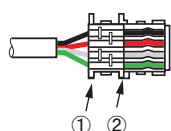
Cabletyre cable



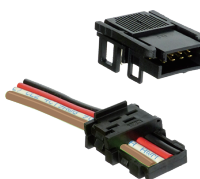
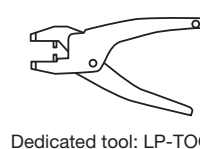
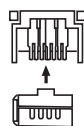
Dedicated flat cable



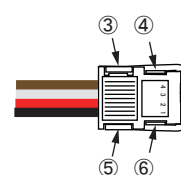
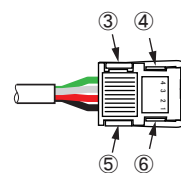
The condition in which the cover is fitted. Ensure that the hooks ① and ② are engaged.



Pressure-bond using a dedicated tool by guiding the metal fittings on the connector body into the holes in the cover.



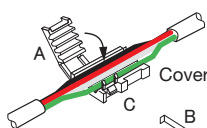
After pressure-bonding, ensure that hooks ③ to ⑥ are securely engaged.



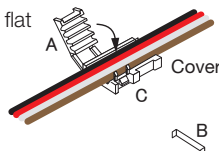
[In the middle of the cable]

Cut off B on the cover, place the wires in grooves so that the black wire (DN) is closest to the hinge of the cover, fold A over and engage the hook C to secure it.

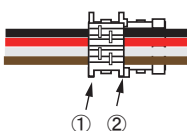
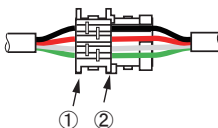
Cabletyre cable



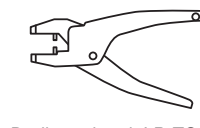
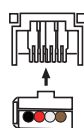
Dedicated flat cable



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

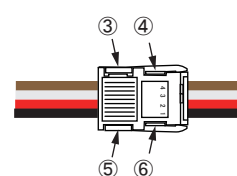
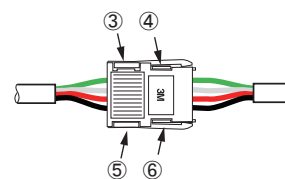


Pressure-bond using a dedicated tool by guiding the metal fittings on the connector body into the holes in the cover.



Dedicated tool: LP-TOOL

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



3. Connection of the Transmission Line and AnyWireASLINK Devices

This section describes typical examples of devices used in the AnyWireASLINK system.

[Transmission cable]

- Transmission cable
 - 4-wire (insulated) type
 - 2-wire (non-insulated) type
- An example of applicable LP connector*1
LP4-WW-10P

Red (DP)
Black (DN)
Green (24V)
White (0V)

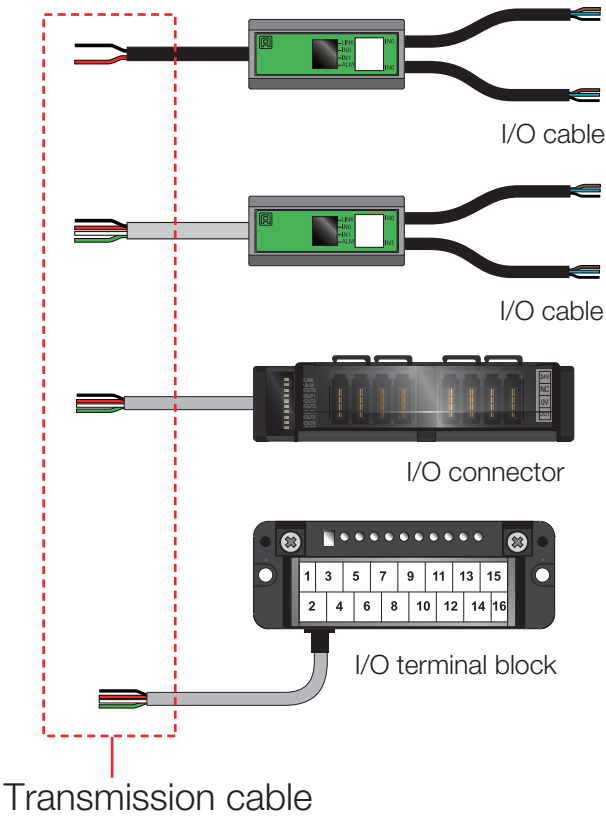
Description	Pin No.
DN	1
DP	2
0V	3
24V	4

2-wire (non-insulated) type

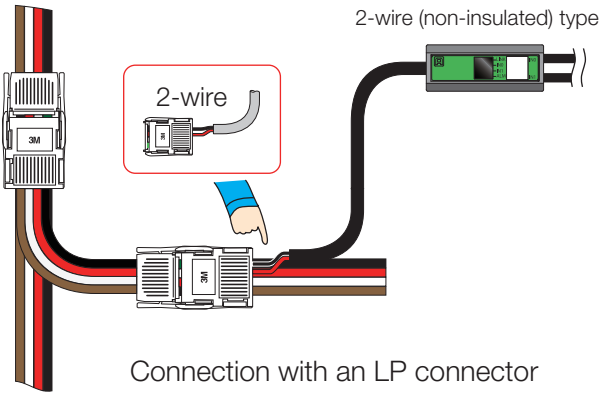
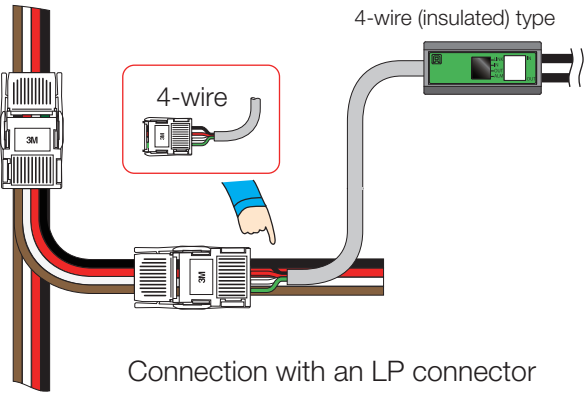
Red (DP)
Black (DN)

Description	Pin No.
DN	1
DP	2
N/C	3
N/C	4

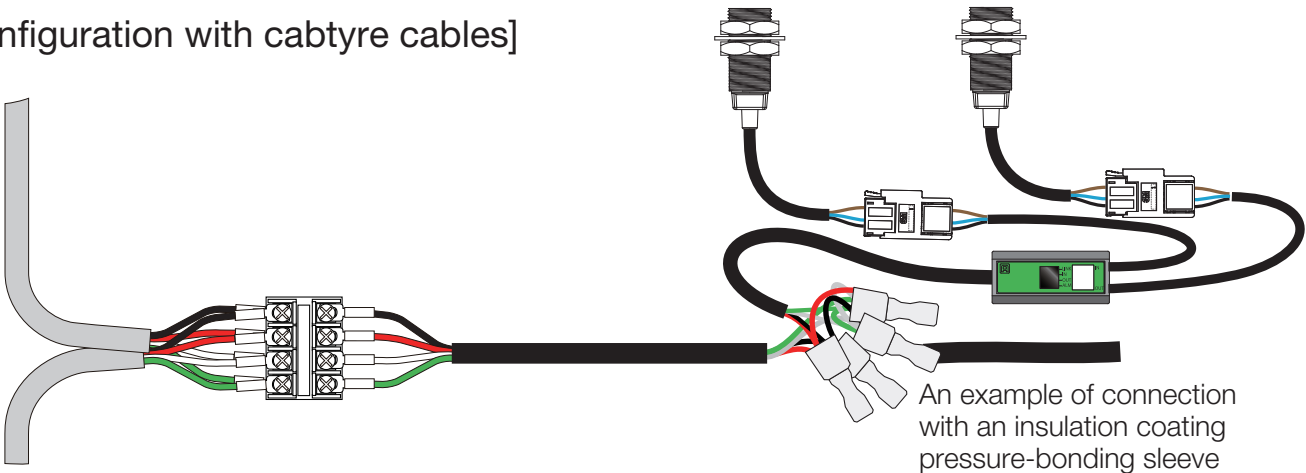
*1: This is a connector that is effective in installing the transmission line using the dedicated flat cable. General-purpose insulation displacement connectors may also be used.



[Configuration with dedicated flat cables]



[Configuration with cabtyre cables]



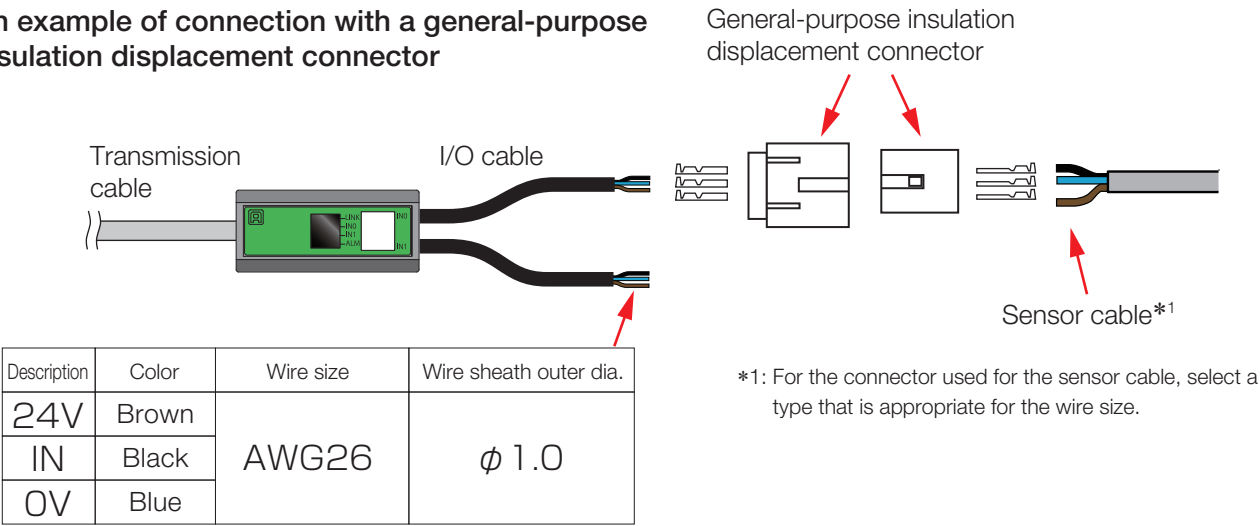
4. Connection of ASLINKER and the Load

■ ASLINKER I/O cable connection

General-purpose insulation displacement connector

[4-wire (insulated) type]

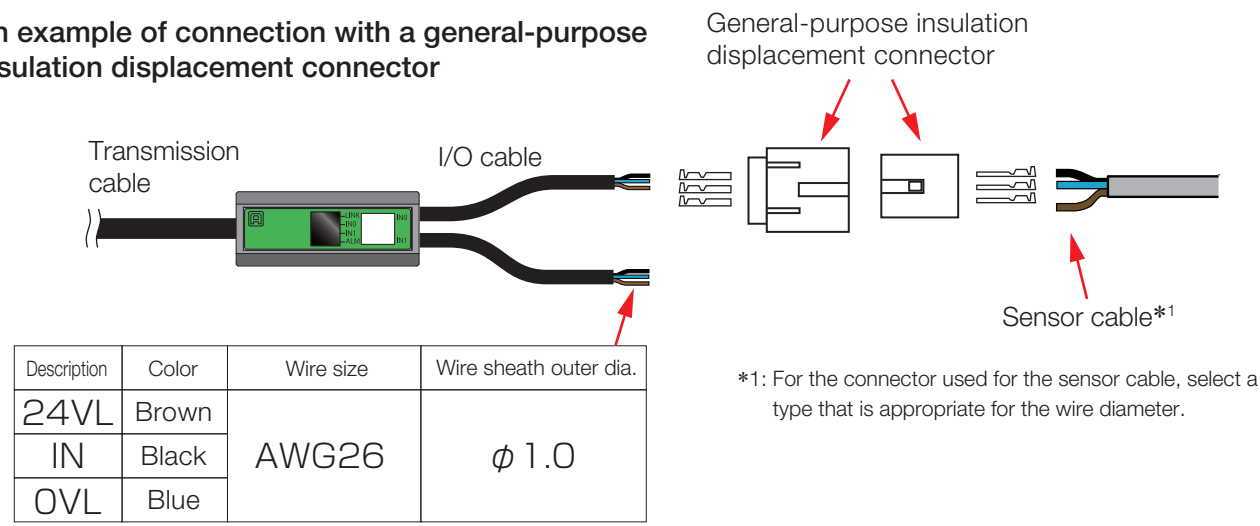
An example of connection with a general-purpose insulation displacement connector



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]

An example of connection with a general-purpose insulation displacement connector



The 24VL and OVL 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.

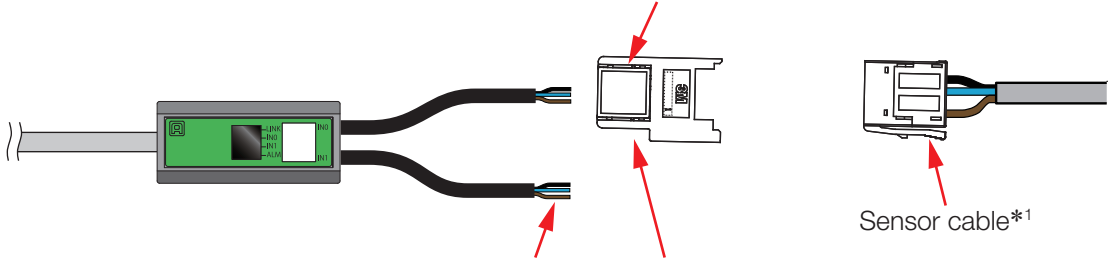
ASLINKER I/O cable connection

e-CON

[4-wire (insulated) type]

An example of connection with an e-CON connector

Wire mounting socket, 4-pole (3M Japan Limited)
37304-3122-000 FL (yellow cover)
37304-3101-000 FL (red cover)



Description	Color	Wire size	Wire sheath outer dia.
24V	Brown	AWG26	$\phi 1.0$
IN	Black		
0V	Blue		

Pin No.	Description
1	24V
2	N/C
3	0V
4	IN

Pin No.	Description
1	24V
2	N/C
3	0V
4	OUT

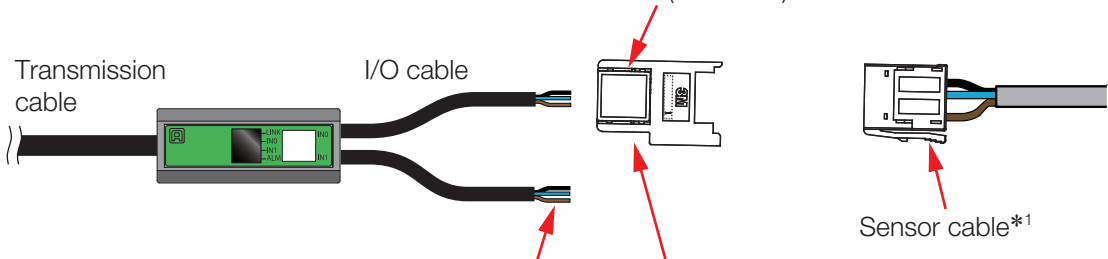
*1: For the EP connector to be pressure-bonded to the sensor cable, select a type that is appropriate for the wire diameter.

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]

An example of connection with an e-CON connector

Wire mounting socket, 4-pole (3M Japan Limited)
37304-3122-000 FL (yellow cover)
37304-3101-000 FL (red cover)



Description	Color	Wire size	Wire sheath outer dia.
24VL	Brown	AWG26	$\phi 1.0$
IN	Black		
0VL	Blue		

Pin No.	Description
1	24VL
2	N/C
3	0VL
4	IN

Pin No.	Description
1	24V
2	N/C
3	0V
4	OUT

*1: For the EP connector to be pressure-bonded to the sensor cable, select a type that is appropriate for the wire diameter.

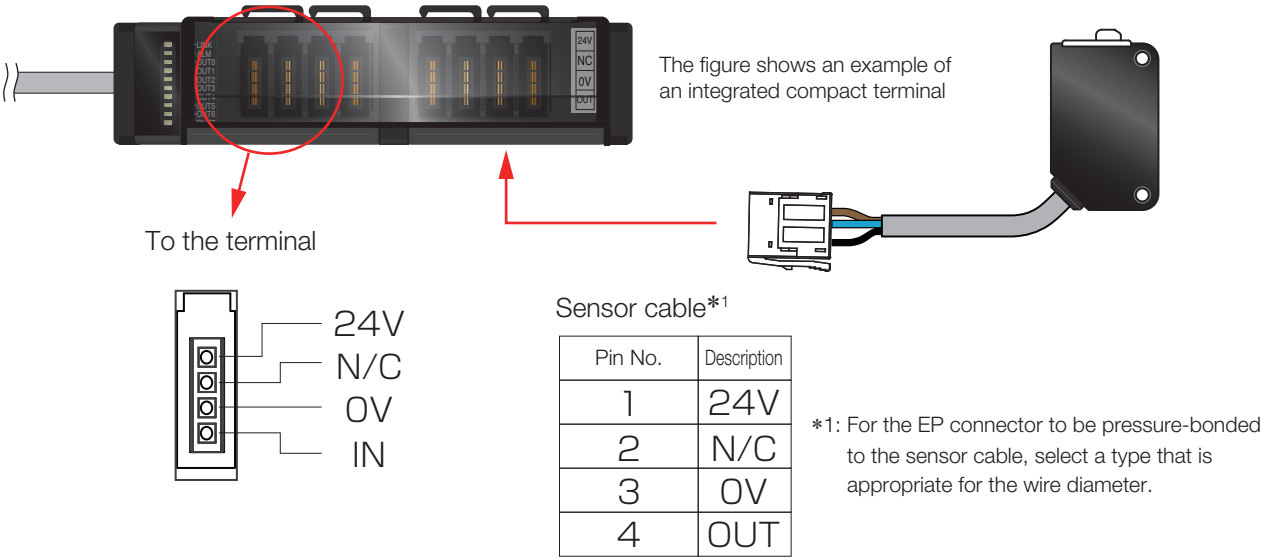
The 24VL and 0VL wires in the I/O cable provide a power taken out from the transmission signals DP and DN and can be used to drive the load.

5. Connection of ASLINKTERMINAL and Loads

I/O connections on the integrated compact terminal

e-CON

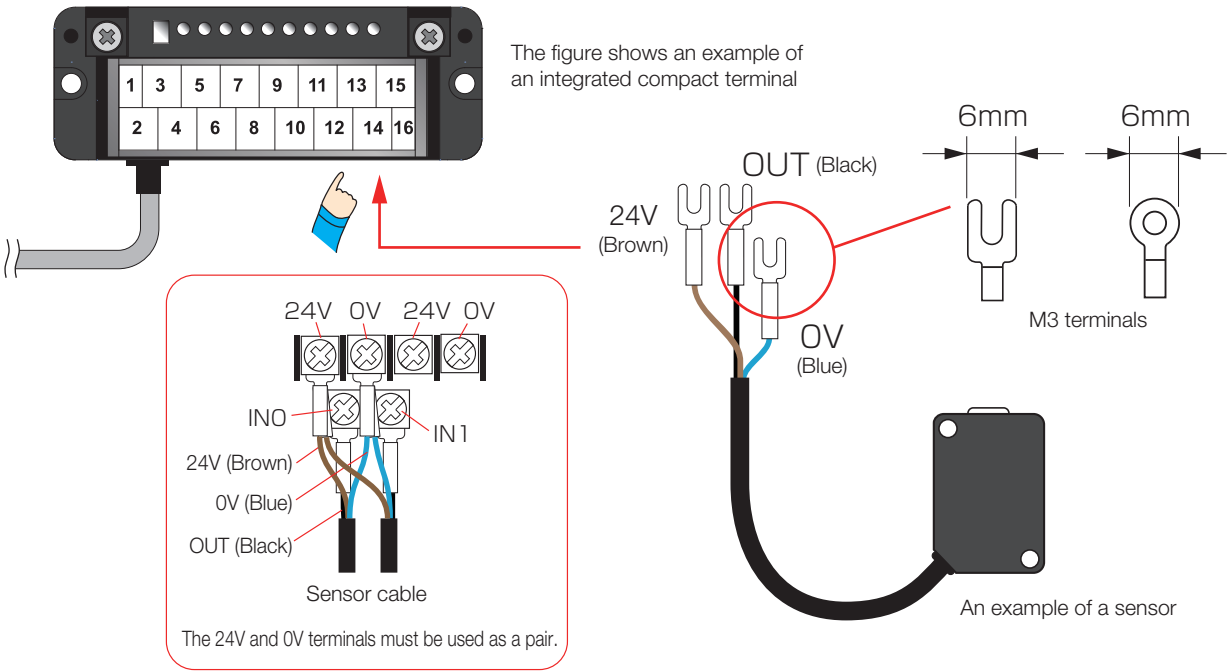
24V, 0V: These are pins to which the power supply is connected to drive the connected loads.
Because there is a limit in the current carrying capacity, refer to the user's manual for respective products.
IN/OUT: N is the pin for a signal input. OUT is the pin for a signal output.



I/O connections on the compact terminal block

Y-terminal, round terminal, rod terminal, bare wire

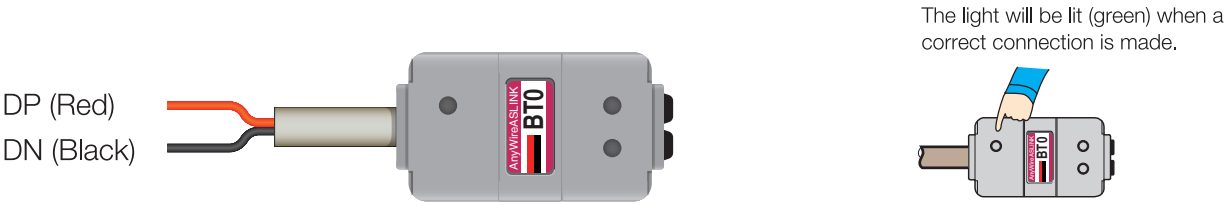
24V, 0V: These are the power supply terminals to drive the connected loads.
They are connected internally to the 24V and 0V terminals in the transmission cable.
IN/OUT: IN is the terminal for a signal input and OUT is the one for a signal output.



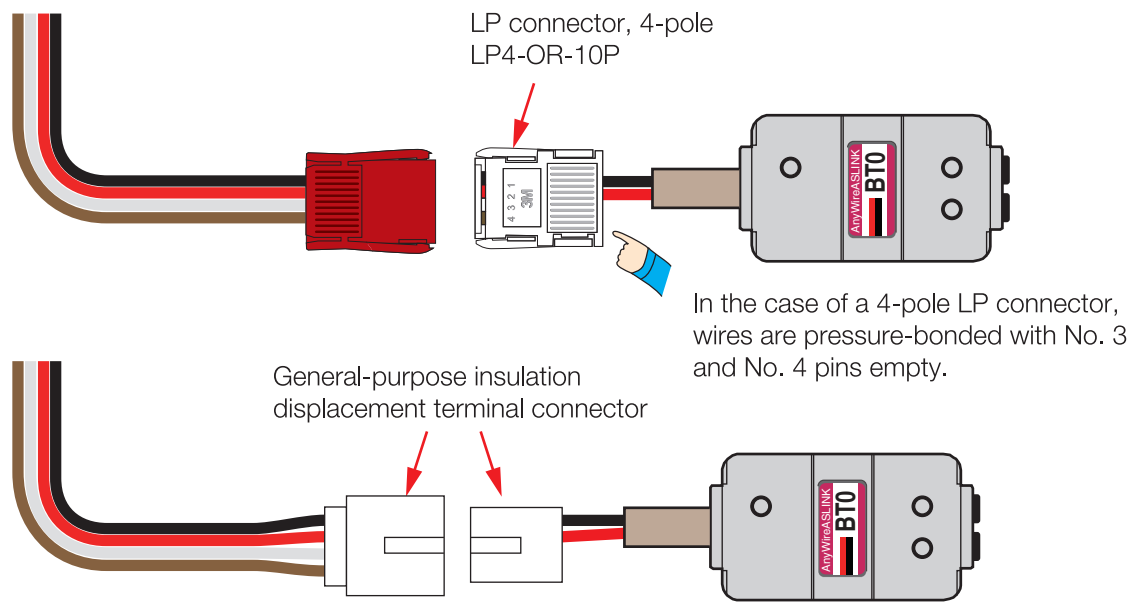
6. Connection of the Terminator

Connect the terminator (BT0) at the end of a transmission line, of which cable length from the ASLINK master unit is the longest. This terminator has a built-in circuit for shaping the transmission waveform.

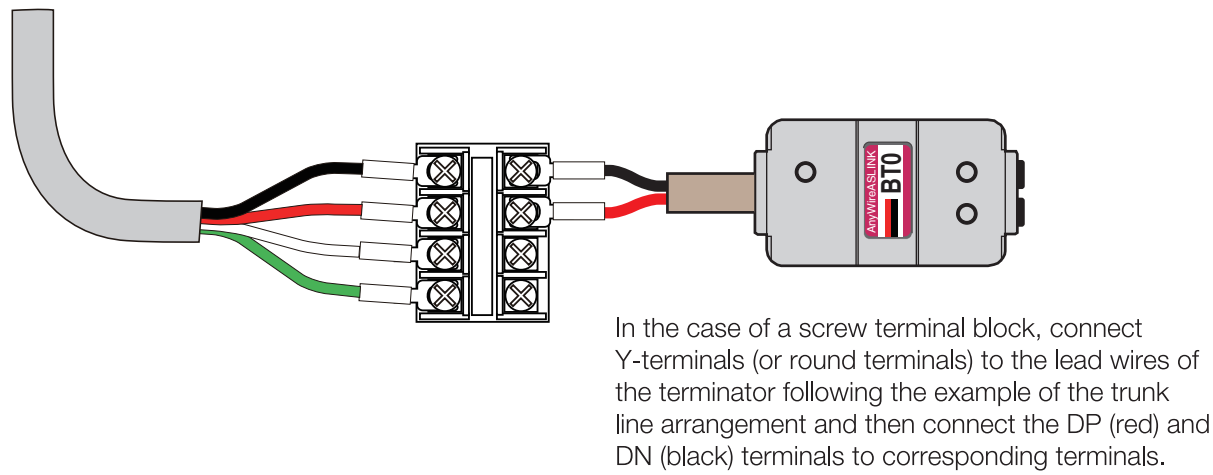
Ensure to make the connection correctly because there is a polarity.



[Configuration with dedicated flat cables]



[Configuration with cabtyre cables]



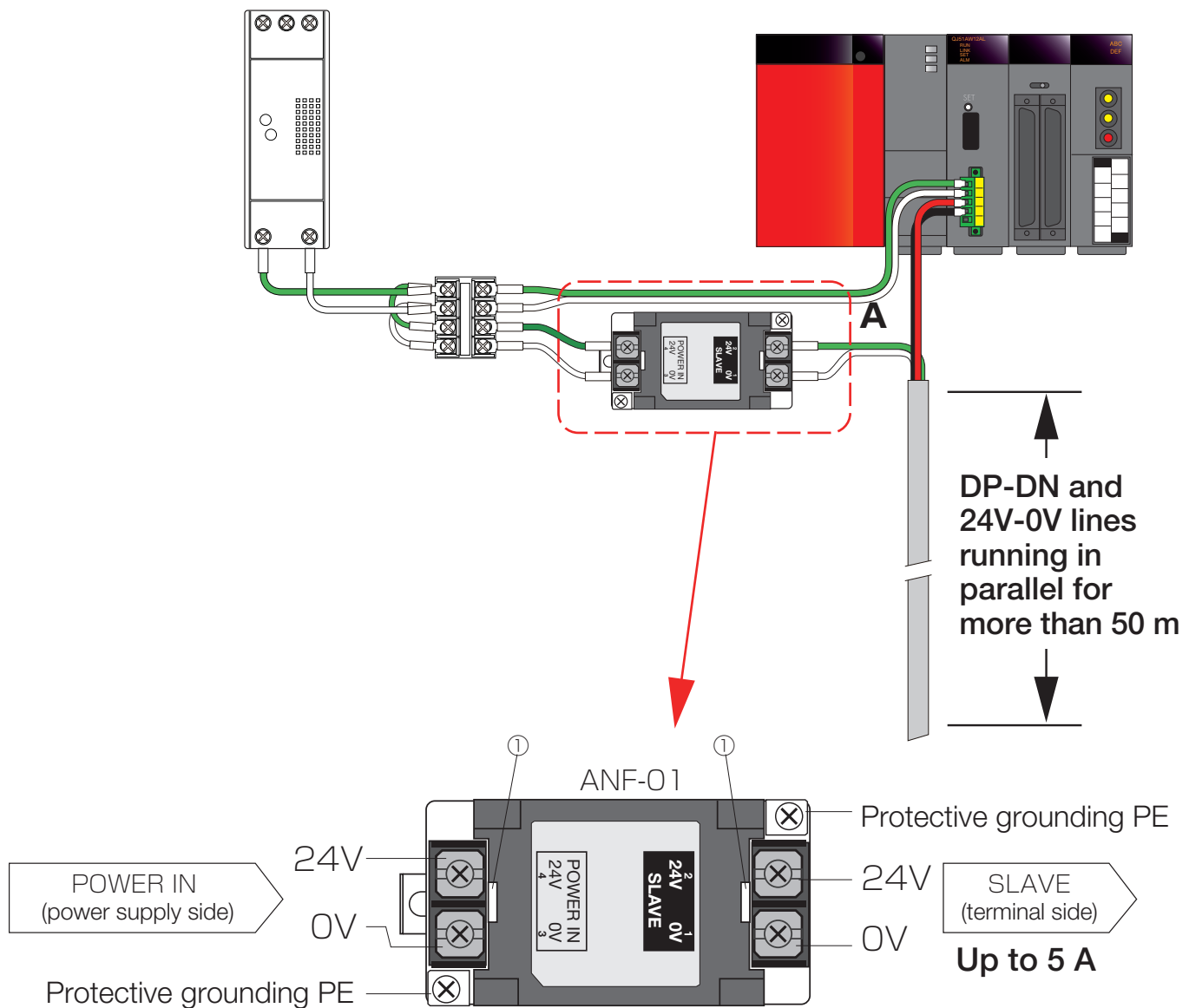
7. Use of the Filter and Its Connection

The filter offered exclusively for the AnyWireASLINK system is not a general-purpose noise filter. Use this filter if installation condition of the transmission line or compliance with the CE standard needs to be considered.

If the AnyWireASLINK power line (24V-0V) and the transmission line (DP-DN) are installed in parallel for more than 50 meters, this dedicated noise filter (ANF-01) needs to be inserted in series at the position (A) where the power supply is connected.

Also, insert it whenever the CE standard needs to be satisfied.

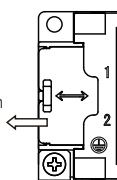
The ANF-01 is not a filter to prevent an external noise from entering the power line. Therefore, if there is such a concern, use a general-purpose noise filter immediately after the power supply or immediately before the power supply terminals in the same manner as ordinary noise suppression.



* The PE terminals are connected internally.

The symbol ① represents the terminal cover.
Pull it out over the terminals during the operation.
(This applies to both the power supply and terminal sides.)

Slide the tab in the direction of the arrow to pull out the terminal cover.



[Address]

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