AnyWire® System Product Guide

AnyWire Picking Terminal series/ Transparent Type

A027PB-T02G-P/ light-emitting unit
A027XB-T02G-C/ light-receiving unit

Eject check input | Eject indicator lamp (Orange)

AnyWire is the registered trademark of Anywire Corporation in Japan.

The AnyWire System Product Guide describes the individual products. Refer to the Guide as necessary.

[Notes on Safety]

Precautions that must be observed in order to use this system safely are indicated as shown below. You must observe these precautions.

| ⚠ WARNING | A WARNING indicates a potentially hazardous situation which, if not handled correctly, could result in death or serious injury. | ⚠ CAUTION | A CAUTION indicates a potentially hazardous situation which, if not handled correctly, may result in personal injury or property damage. |

| ⚠ WARNING | > System Safety
 This system is intended for general industrial applications. It does not have functions for supporting applications requiring higher levels of safety such as safety-related devices or accident prevention systems. The product must not be used for these purposes.
> Always turn off the power before attempting installation or replacement. |

| ⚠ CAUTION | > System power supply
 Use a regulated, 24-VDC power supply. The use of a non-regulated power supply may cause problems with the system.
> Separately route high-voltage and power cables
 Although the AnyWire Bitty series has high noise tolerance, always route transmission cables 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.
 * Be careful to prevent any metal objects from entering 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.
> While the transmission line is energized, do not attempt to disconnect from the unit or re-connect slave units. Doing so may cause a malfunction.
> Do not use this product as a power supply for the AnyWire Bitty series or to open/close the parallel signals of a single board controller (SBC) or other controllers. Using the same power supply for multiple units may lead to a system failure.
> When using the AnyWire Bitty series, always conform to the specifications and conditions prescribed below. |

[Features]

* This product is compatible with the AnyWire Bitty series.
* Transparent picking unit
* The power is turned on when the light beam is interrupted.
* The transmission and supply of power are done using a regular two-wire cable.
* The detection range can be expanded by adding optional units.

[Type]

Bit Operation

A027PB-T02G-P	One point output	Eject indicator lamp (Green)
	With the address function	
A027XB-T02G-C	One point output	Eject indicator lamp (Green)
	One point input	Eject check input
	With the address function	

[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 acordance with the specifications described in this User's Manual, 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, disasters and other causes 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 the scope of the warranty as specified above, at the owner's cost.

[Connection]

The light-emitting and light-receiving units with the address function are fitted with a cabtyre cable for making the transmission line connection. Branch the cable from a transmission line by using a screw terminal block, link connector, or the like. For the trunk, use a cable with a size of at least 0.75 mm^2.

> Cable Specification

Purpose of connection	Outside diameter of sheath	Number of wires	Cable size	Cable length	Wiring color/signal name
For transmission line connection	$\phi 6$	4 wires	AWG #20*	Approx. 500 mm	DN : Black (transmission line**) DP : Red (transmission line**) 0 V : White (0V) 24 V : Green (DC24V)

* Do not use an AWG #20 cable to extend the line
** Note porality.
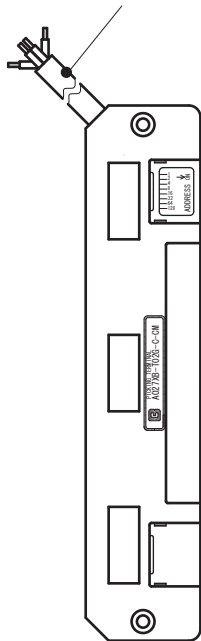
> To pressure-weld a link connector to the end of a unit cable

Use link connector 38104-F020-H00 FL, available from Sumitomo 3M Limited.
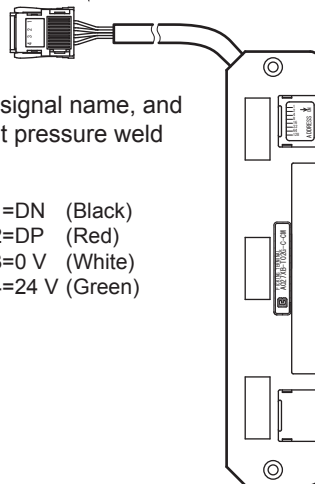
> Pin number, signal name, and cable color at pressure weld

1=DN (Black)
2=DP (Red)
3=0 V (White)
4=24 V (Green)

⚠ CAUTION The use of a dedicated tool for pressure welding the link connector is recommended to attain a stabile pressure weld.

SUZUDEN Co.,Ltd
Type: L-Tool-N

This figure shows an A027XB-T02G-P light-receiving unit with the address function. This example is also applicable to the A027PB-T02G-P.
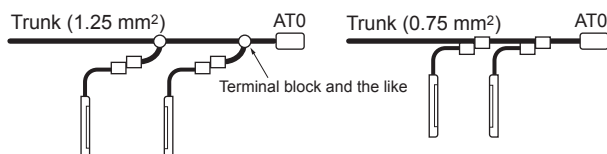
> Transmission line

Install the **AnyWire Bitty** series with 4-wire transmission lines (DP and DN) and power lines (24 V and 0 V).
Prepare an **AnyWire**-dedicated power supply (general-purpose 24-VDC stabilized power supply rated at 100 W or greater).

It is recommended that the transmission master unit be installed close to a shelf to enable the efficient use of the power supplied by the power superimposed transmission.

You can use a commercial 4-wire cabtyre cable for the DP and DN lines.
The transmission line can be **up to 50 m long (total length, including the unit cable)**. For the transmission line trunk, use a cable with a size of 0.75 mm^2 or greater.
If a dedicated flat cable (FK4-075-100) is used, a T-junction can be made using a link connector.
Since the link connectors can support a line size of up to 0.75 mm^2, to use a trunk with a size of 1.25 mm^2, use a screw terminal block to relay the cables directly, or if the trunk already has a link connector, use the link connector to relay the cables and then use a screw terminal block for relay.

Trunk (1.25 mm^2)   AT0   Trunk (0.75 mm^2)   AT0

Terminal block and the like

Connect an AT0 terminator at the farthest end of the transmission line.

> Number of units that can be connected

A total of **up to 50 units**, such as the A027PB-T02G-P and (add-on) A027XB-T02G-C without the address function, can be connected to a transmission master unit.

⚠ CAUTION When installing a transmission line, route it as far away from the high-voltage and power cables as possible. Use one single transmission cable for each AnyWire Bitty series system. Do not attempt to combine two or more systems. Inappropriate installation and the combining of systems may lead to a malfunction.

> Select and purchase appropriate link connectors for the cables to be used.

Link connector type example

	Wire sheath diameter	Type offered by Sumitomo 3M Limited
Link connector for 0.75-mm^2 cabtyre cables	Equivalent products to dedicated flat cables	38104-0018-000 FL
	ϕ 1.8 ... 2.1	38104-F018-F00 FL
	ϕ 2.1 ... 2.4	38104-E018-E00 FL

LED
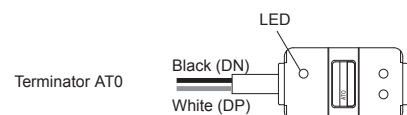
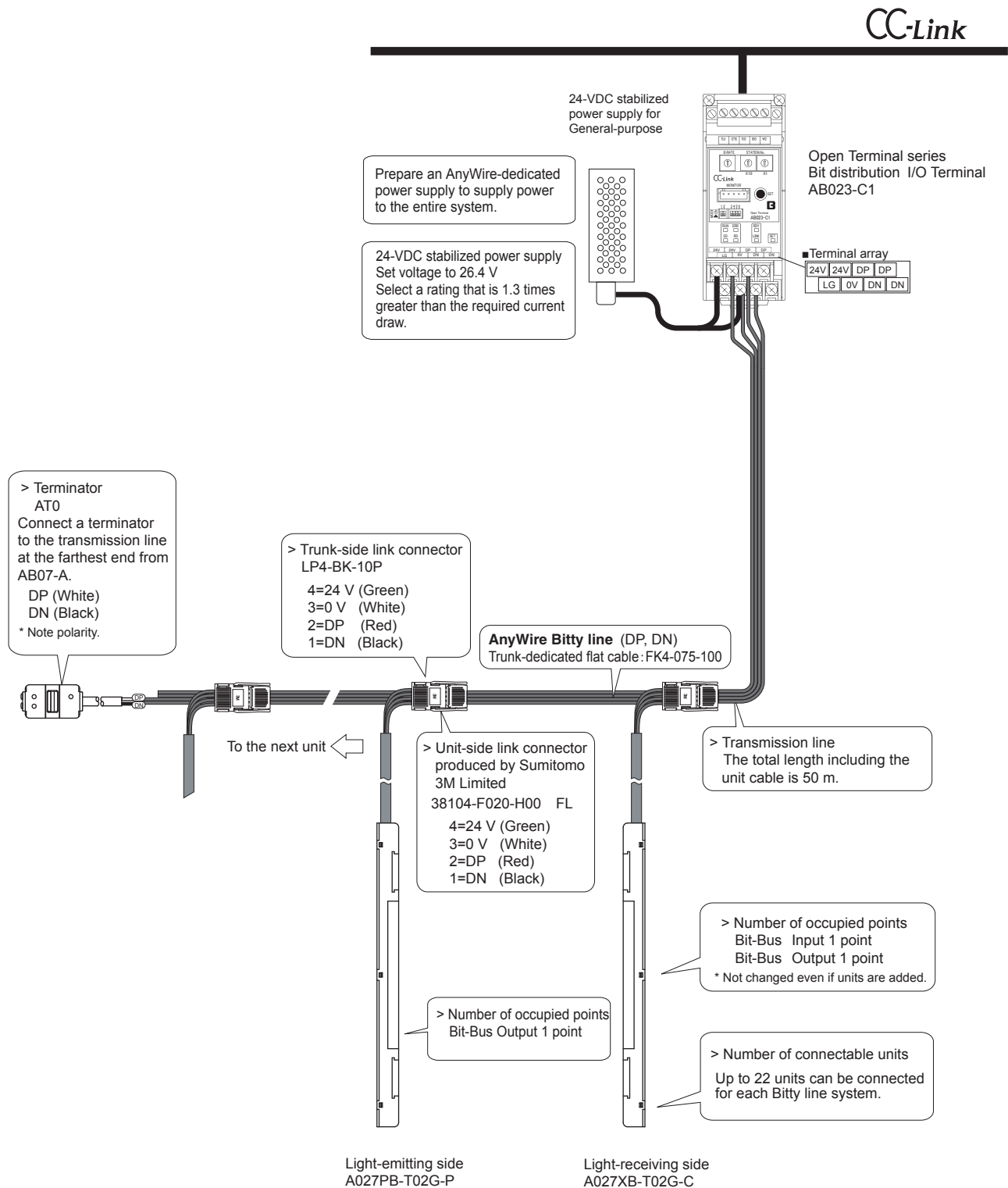Terminator AT0

Black (DN)
White (DP)

⚠ CAUTION A terminator (AT0) is a composite element for stabilizing transmission waveforms.
Connect an AT0 at the farthest end from the master with the transmission line.
Note that an AT0 has polarities. (The LED lights during normal operation.) Incorrect connections may cause malfunctions or failures.

[Connection Example]

The following shows an example of a connection from an AnyWire Bit distribution I/O Terminal (AB023-C1: CC-Link Gateway) to a light-emitting unit with the address function (A027PB-T02G-P) and a light-receiving unit with the address function (A027XB-T02G-C).
The figure shows an example in which the connection is branched by link connectors.

CC-Link

24-VDC stabilized power supply for General-purpose

Prepare an AnyWire-dedicated power supply to supply power to the entire system.

24-VDC stabilized power supply
Set voltage to 26.4 V
Select a rating that is 1.3 times greater than the required current draw.

Open Terminal series
Bit distribution I/O Terminal
AB023-C1

■Terminal array

24V	24V	DP	DP
LG	0V	DN	DN

> Terminator
AT0
Connect a terminator to the transmission line at the farthest end from AB07-A.
DP (White)
DN (Black)
* Note polarity.

> Trunk-side link connector
LP4-BK-10P
4=24 V (Green)
3=0 V (White)
2=DP (Red)
1=DN (Black)

AnyWire Bitty line (DP, DN)
Trunk-dedicated flat cable：FK4-075-100

To the next unit

> Unit-side link connector produced by Sumitomo 3M Limited
38104-F020-H00 FL
4=24 V (Green)
3=0 V (White)
2=DP (Red)
1=DN (Black)

> Transmission line
The total length including the unit cable is 50 m.

> Number of occupied points
Bit-Bus Input 1 point
Bit-Bus Output 1 point
* Not changed even if units are added.

> Number of occupied points
Bit-Bus Output 1 point

> Number of connectable units
Up to 22 units can be connected for each Bitty line system.

Light-emitting side
A027PB-T02G-P

Light-receiving side
A027XB-T02G-C

[Address Setting]

* Address numbers correspond to the input and output points of the controller.
* Set an address by using the address setting switches on the A027PB-T02G-P and A027XB-T02G-C units with the address function.
  The set number indicates the input and output address of the unit and occupies one point.
  This terminal checks and updates data on a bit-by-bit basis.
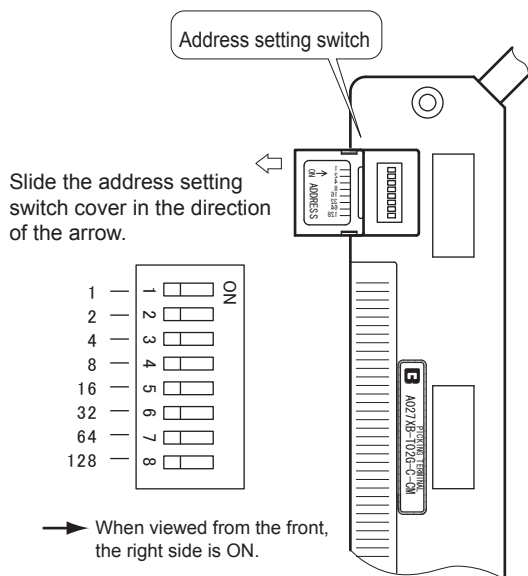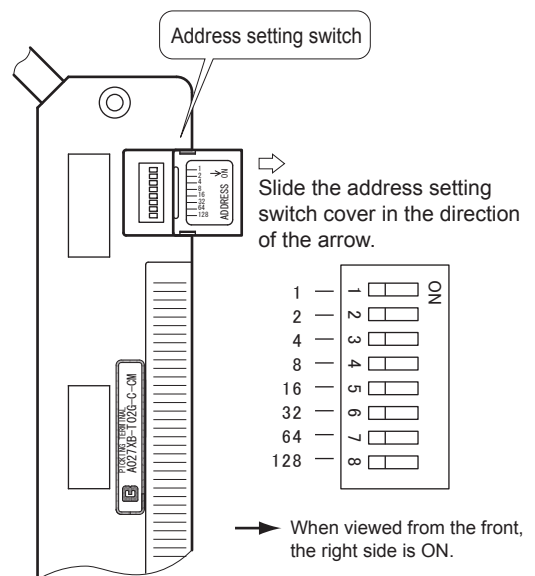* You can set an address on a point-by-point basis.
* You cannot set 255.

> * Always set the same values for paired A027PB-T02G-P and A027XB-T02G-C units. If different values are set, no operation is performed.

"An eject indicator lamp" is provided for the A027PB-T02G-P and A027XB-T02G-C, and corresponds to Bit-Bus output.
"Eject check input" is output from A027XB-T02G-C, and corresponds to Bit-Bus input.

> Setting example

Bit address	Switch setting							
	1	2	4	8	16	32	64	128
0								
:	:	:	:	:	:	:	:	:
6		O	O					
:	:	:	:	:	:	:	:	:
254	O	O	O	O	O	O	O	

* Speed setting is not supported.
* Set an address so as not to exceed the maximum number of transmission points, including the number of points of the local terminal.

⚠ CAUTION To change the switch setting, first turn off the power to the AnyWire system. Otherwise, a malfunction may occur.

Address setting switch

Slide the address setting switch cover in the direction of the arrow.

1 — 1
2 — 2
4 — 3
8 — 4
16 — 5
32 — 6
64 — 7
128 — 8

→ When viewed from the front, the right side is ON.

Light-emitting unit with the address function (front)

A027PB-T02G-P

Address setting switch

Slide the address setting switch cover in the direction of the arrow.

1 — 1
2 — 2
4 — 3
8 — 4
16 — 5
32 — 6
64 — 7
128 — 8

→ When viewed from the front, the right side is ON.
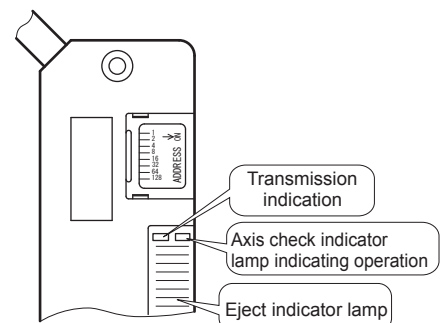
Light-receiving unit with the address function (front)

A027XB-T02G-C

[Monitor Indication]

* This unit has a monitor function.
* The LINK lamp indicates the system state, as explained in the table below.
* If the state is other than normal, turn the power off immediately, eliminate the cause, check for the cause, and then turn the power back on.
* The optical axis check indicator lamp of the light-receiving unit goes out when the optical axes of the light-emitting and light-receptive units are aligned and the unit enters the operation state.
  While the unit is in the operation state, the lamp changes to indicate operation, but if the light beam is interrupted, the lamp indicates input ON.

Indication LED	Indicative state	Monitor information
LINK (Red)	Flashing	Normal
	Goes out	Disconnection of power
	Lights up	Abnormal transmission
	Goes out	
Axis check operation indication (Red)	Goes out	Matching
	Lights up	Displaced
	Goes out	Input OFF
	Lights up	Input ON

◯ Lights up ● Goes out

Transmission indication

Axis check indicator lamp indicating operation

Eject indicator lamp

Light-receiving unit with the address function (front)
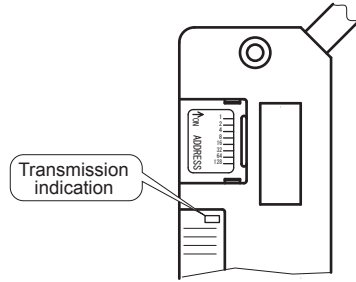
A027XB-T02G-C

[Installation and Detection]

There are three detection positions on a terminal.
Install the unit so as to align the optical axes of the light-emitting and light-receiving units.
To check whether the optical axes are aligned, check the optical axis check indicator lamp on the light-receiving unit.
In the case of a (slave) unit without the address function, install and check it similarly.

The transmission indicator of the light-emitting unit with the address function flashes and the unit is placed in the operation state when the unit receives transmission clock.

The transmission indicator of the light-receiving unit flashes and the optical axis check indicator lamp lights up simultaneously, when the unit receives transmission clock.
Then, when the unit receives an optical signal from the light-emitting side, the initial setting function operates first and the indicator lamp lights out after about one second, and then the unit is placed in the operation state.
After placed in the operation state, the indicator lamp lights up when light is interrupted (ON is detected).

When the optical axis check indicator lamp does not light out
 * re-adjust the optical axes
 * check whether the addresses of the light-emitting and the light-receiving units with the address function match.

Transmission indication

Light-emitting unit (front)
A027PB-T02G-P

Transmission indication

Optical axis check indicator lamp indicating operation

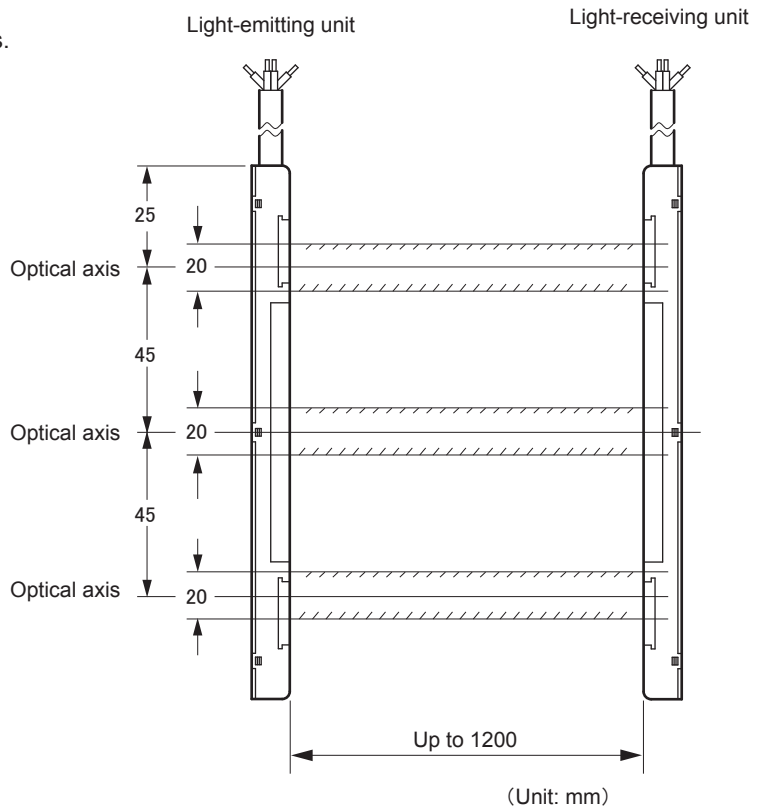Eject indicator lamp
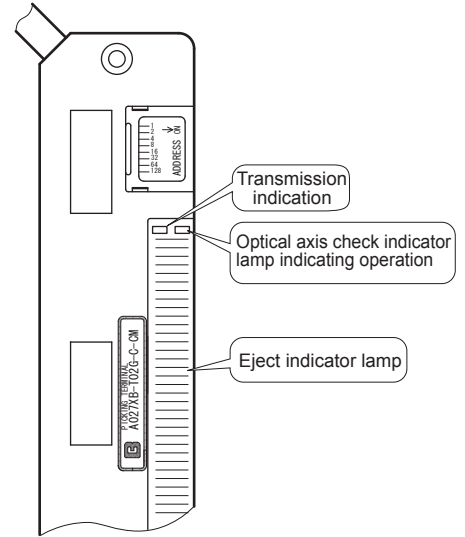
Light-receiving unit (front)
A027XB-T02G-C
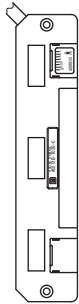
∗ Do not install the unit in the environment where the unit is exposed to sunlight and other disturbance light.
If light is not interrupted, turn the sensitivity adjustment knob right to adjust sensitivity. However, it shorten the detectable distance.

⇨ Slide this cover to operate the sensitivity adjustment knob.

At detection, make sure that the light is interrupted at any of three positions (▨ areas) for at least 0.2 seconds.
If a (slave) unit without the address function is added, the light beam must be interrupted at any of six detection positions.

| ⚠ CAUTION | Do not forcibly pull a cable. Do not fix a unit while its cable is under tension. Otherwise, a failure may occur. |

Light-emitting unit   Light-receiving unit

25

Optical axis — 20

45

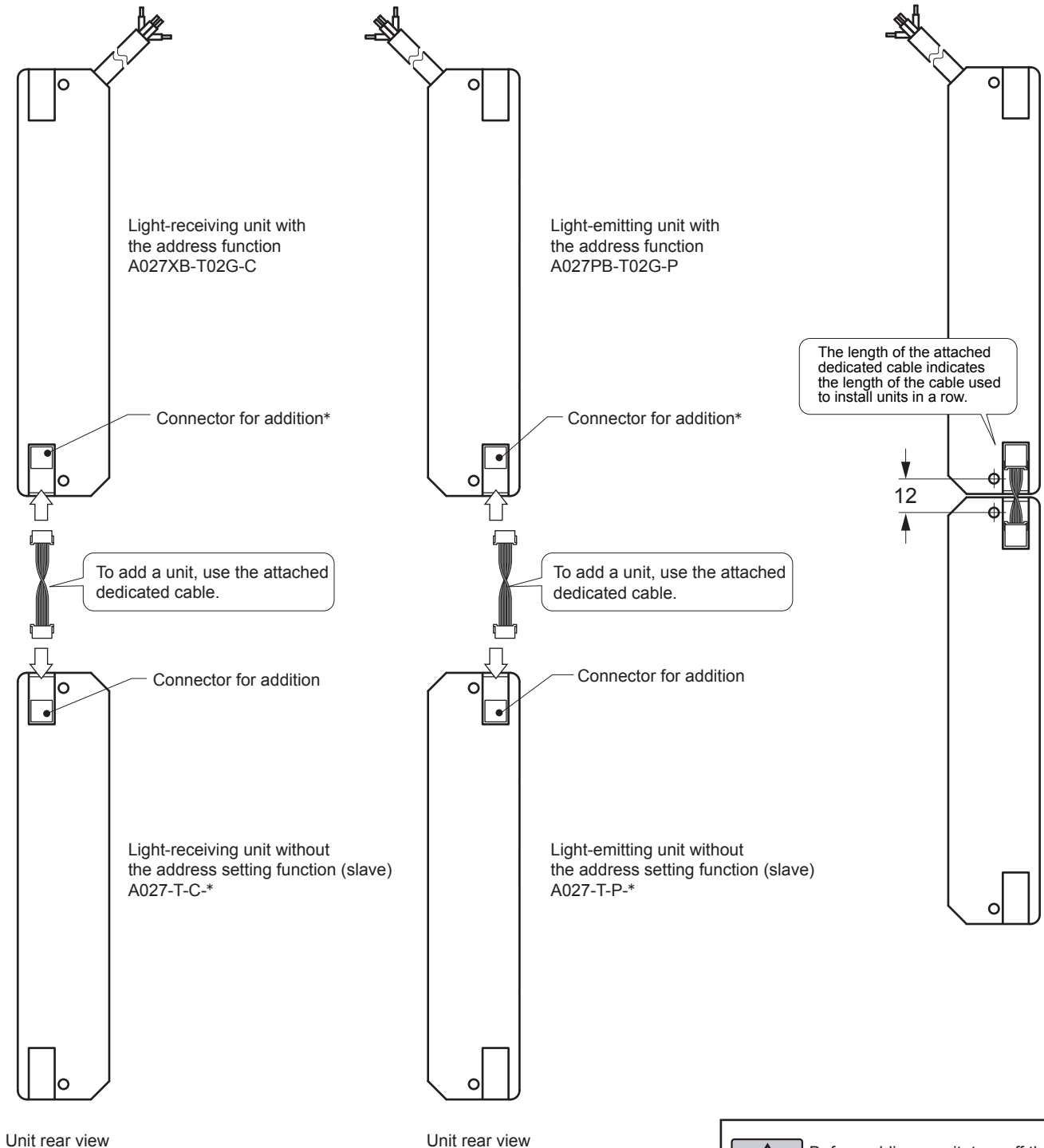Optical axis — 20

45

Optical axis — 20

Up to 1200

(Unit: mm)

[Addition of Units]

A single A027-T-P or A027-T-C unit, without the address setting function, can be independently added to the A027PB-T02G-P and A027XB-T02G-C light-emitting and light-receiving units with the address function. Doing so increases the detectable range vertically.

Even if a unit is added, only one point is occupied.
The eject indicator lamp of the A027-T-P and A027-T-C units without the address setting function does not light up, but the units do have this detection function.

> Connection

Light-receiving unit with
the address function
A027XB-T02G-C

Light-emitting unit with
the address function
A027PB-T02G-P

The length of the attached
dedicated cable indicates
the length of the cable used
to install units in a row.

Connector for addition*

Connector for addition*

12

To add a unit, use the attached
dedicated cable.

To add a unit, use the attached
dedicated cable.

Connector for addition

Connector for addition

Light-receiving unit without
the address setting function (slave)
A027-T-C-*

Light-emitting unit without
the address setting function (slave)
A027-T-P-*

Unit rear view

Unit rear view

⚠ **CAUTION** Before adding a unit, turn off the power to the AnyWire system. Otherwise, a malfunction may occur.

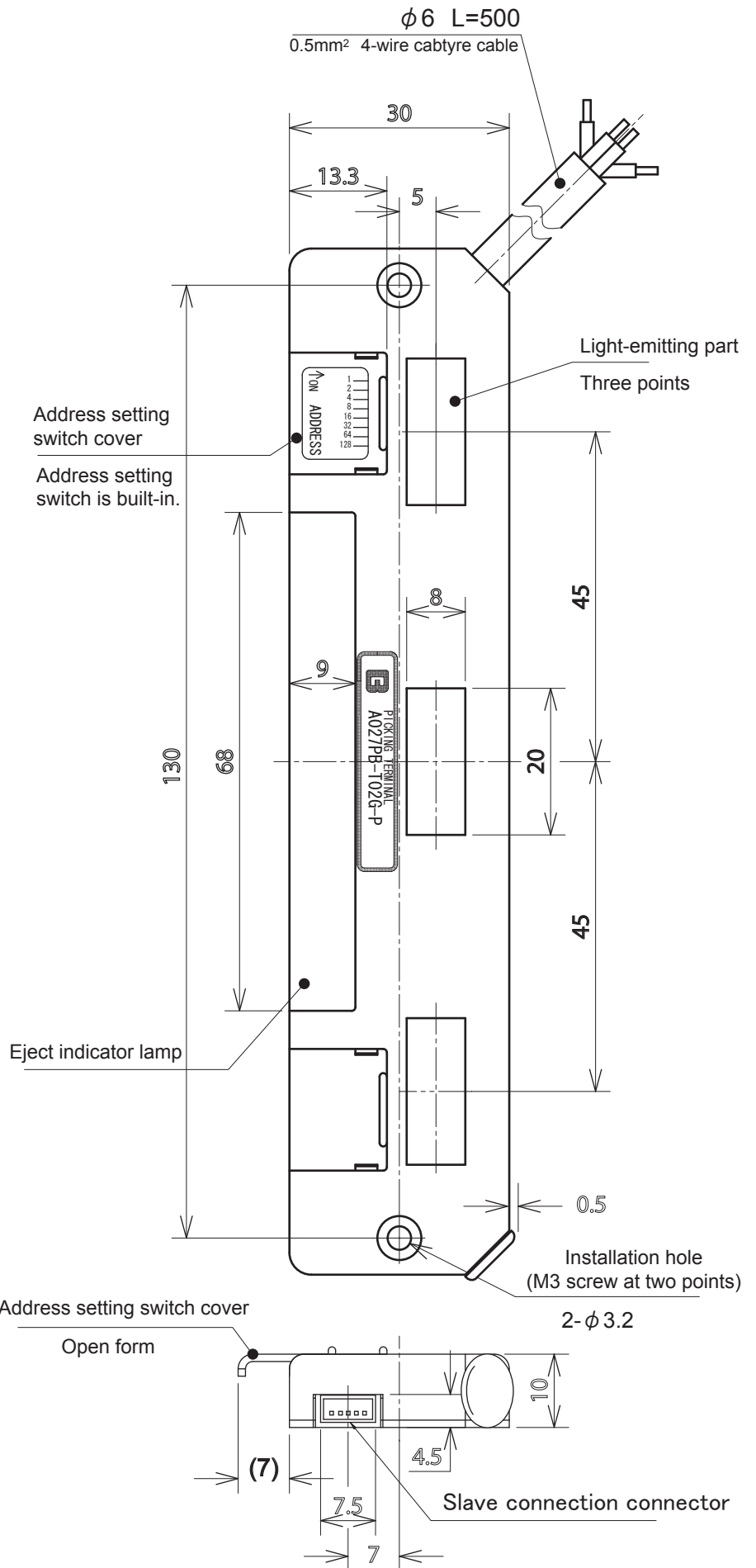∗ If no unit is added, make sure that no foreign objects can get into the connector.

[Outer Dimensions]

Unit: mm

Light-emitting unit with the address function（A027PB-T02G-P）

ϕ6　L=500
0.5mm² 4-wire cabtyre cable

30

13.3

5

Light-emitting part

Three points

Address setting switch cover

↑ON
ADDRESS
1
2
4
8
16
32
64
128

Address setting switch is built-in.

3

16.6

140

95

5

130

68

9

8

45

20

45

PICKING TERMINAL
A027PB-T02G-P

0.5

Eject indicator lamp

Installation hole
(M3 screw at two points)

2-ϕ3.2

0.5

Address setting switch cover

Open form

Mass：60 g

(7)

7.5

7

4.5

10

Slave connection connector
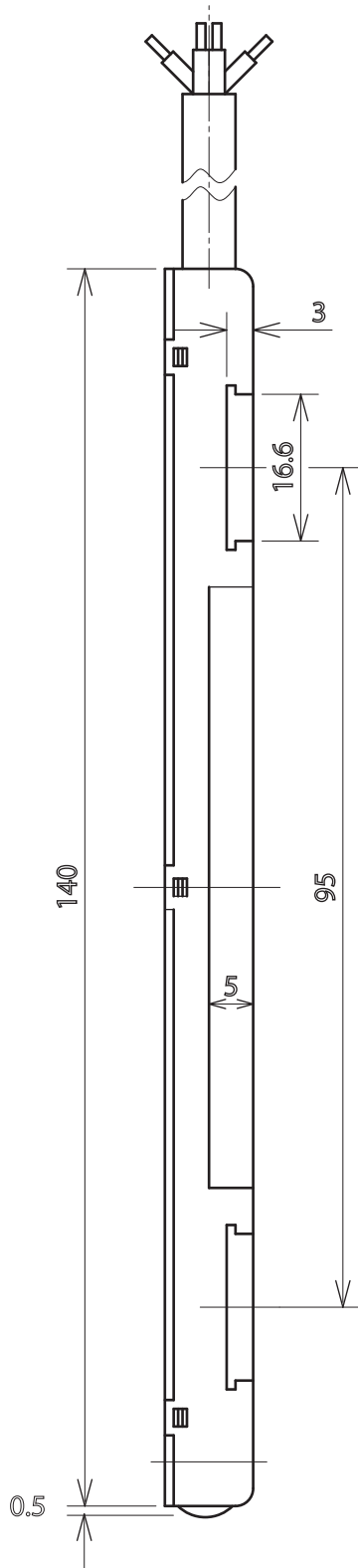
[Outer Dimensions]

Unit：mm

Light-receiving unit with the address setting function（A027XB-T02G-C）

φ6　L=500
0.5mm²　4-wire cabtyre cable

30

5

13.3

Light-receiving part
Three points

ADDRESS ON
1
2
4
8
16
32
64
128

Address setting
switch cover

Address setting
switch is built-in.

8

9

PICKING TERMINAL
A027XB-T02G-C

45

20

45

68

130

95

Eject indicator lamp

Installation hole
(M3 screw at two points)
2−φ3.2

0.5

3

16.6

140

5

0.5

Address setting switch cover

Open Form

10

4.5

7.5

7

(7)

Slave connection connector

Mass: 60 g

[Outer Dimensions]

Unit: mm

Light-emitting unit without the address function (A027-T-P)

Connector for addition

Light-emitting part
Three points

PICKING TERMINAL
A027-T-C

Eject indicator lamp

Installation hole
(M3 screw at two points)

2−φ3.2

Mass: 30 g

[Outer Dimensions]

Unit: mm

Light-receiving unit without the address setting function（A027-T-C）

Slave connection connector

Light-receiving part
Three points

Installation hole
(M3 screw at two points)
2−φ3.2

PICKING TERMINAL
A027-T-C

Eject indicator lamp

Mass：30 g

[Address] ━━━

Ⓐnywire **Anywire Corporation**
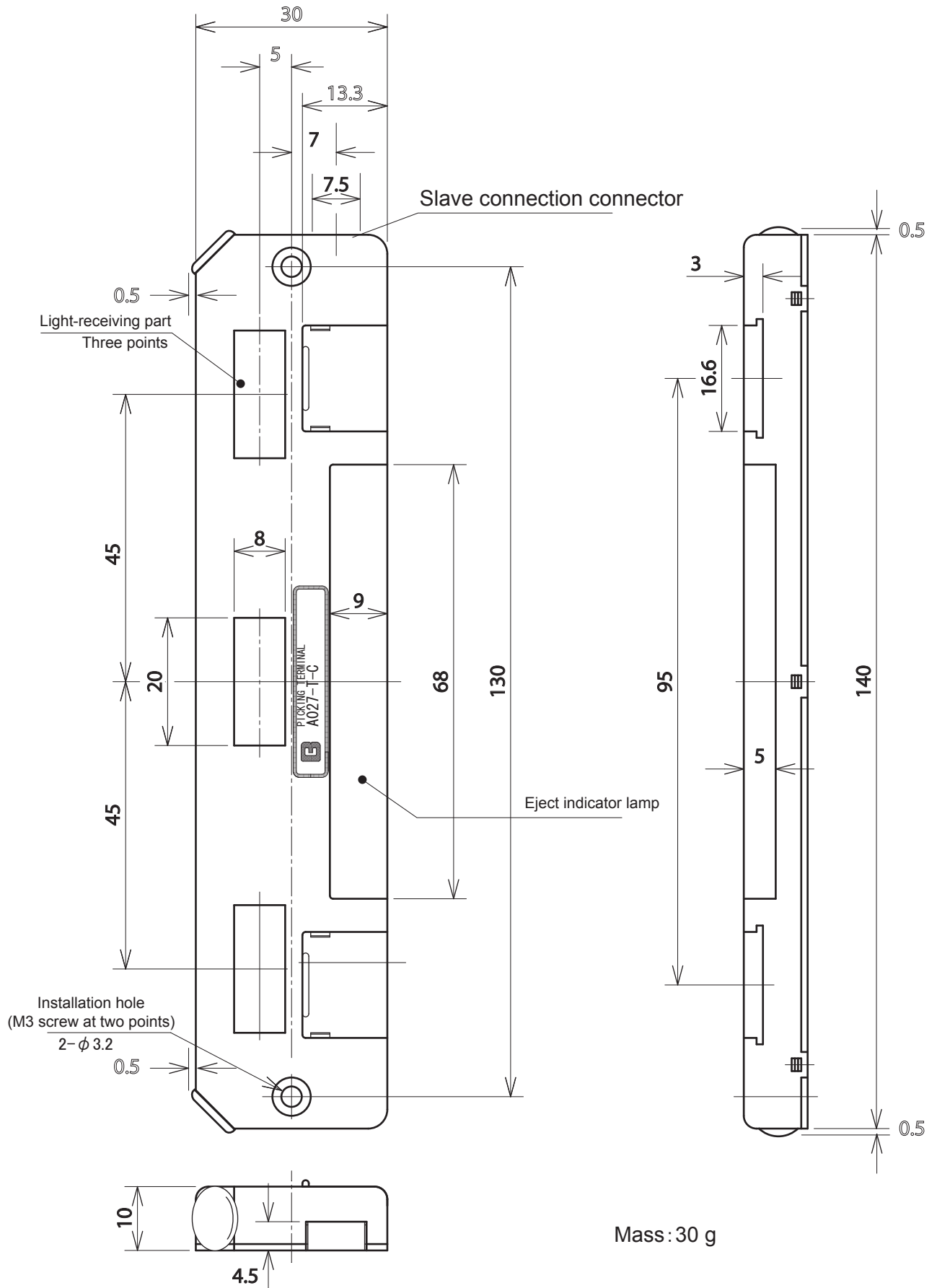
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