CREATIVE CUSTOMER SATISFACTION

LIGHTING SOLUTION
LED Illuminators for Machine Vision

Building Block Power Supply that Pursues "Expandability",
"Field Adaptability", "Operability", and "Flexibility"

CE

BB Series

NEW

Lineup of 3 units and 10 models


Master unit


Slave unit


Interface unit

CCS Inc.

Adopting the building block system※ realizes

※ Building block system: A method of configuring a system in the same manner as piling up blocks through the selection and combination of units.

Lineup introduction

Master unit

Unit provided with setting and control functions.
This controls all connected units.
Constant lighting and strobe lighting types are available.
You can choose from either 12V or 24V output types depending on the type of lighting to be connected.

Model name

Constant lighting	12V	BB-V12P30-M
	24V	BB-V24P30-M
Strobe lighting	12V	BB-V12S30-M
	24V	BB-V24S30-M

Slave unit

Unit designed for expanding lights. This can be added and connected depending on the number of lights you use.
Constant lighting and strobe lighting types are available.
You can choose from either 12V or 24V output types depending on the type of lighting to be connected.

Model name

Constant lighting	12V	BB-V12P30-S
	24V	BB-V24P30-S
Strobe lighting	12V	BB-V12S30-S
	24V	BB-V24S30-S

Interface unit

Unit for external control provided with a parallel communication function.
CMOS input and photocoupler input types are available.

Model name

CMOS	BB-CPC-S
Photo coupler	BB-CPP-S

Description of model names

Master unit / Slave unit

BB-V □□□30-□

1 2 3

1 Output type※1)
- 12 — 12V output
- 24 — 24V output

2 Lighting type※2)
- P — Constant lighting
- S — Strobe lighting

3 Unit type
- M — Master
- S — Slave

Interface unit

BB-CP□-S

4

4 Parallel communication input type※3)
- C — CMOS input
- P — Photocoupler input

*1) Our LED light is available in 12V input and 24V input types. Please select either of these types depending on the type of light you intend to use.
*2) The constant lighting type enables the setting of intensity in 256 steps (light control) through PWM (Pulse Width Modulation) control. The strobe lighting type is specified for overdrive, and can be set to lighting times ranging from 0.001 to 1ms.
*3) The CMOS input type performs external control input and output using CMOSs in the same manner as our PD2 series digital power supplies. The photocoupler input type performs external control input and output using photocouplers.

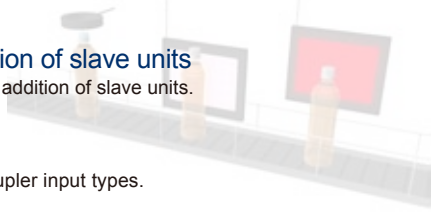
Expandability — Lineup of 3 units and 10 models

1 Realizes a wide variety of system configurations through the selection and combination of units
・Lineup of 3 master, slave, and interface units, and 10 models.

2 Easy addition and expansion of functions
・Comprehensive lighting control systems with multiple functions can be configured by adding units.

3 Units with different specifications can be integrated by a master unit
・You can choose either constant lighting or strobe lighting types for master and slave units.
(A maximum of 18 units can be connected: 1 master unit, 15 slave units, and 2 interface units)

4 Flexibly corresponds to changes of inspection environments through the addition of slave units
・The addition of lights due to changes of inspection environments can be flexibly handled through the addition of slave units.



5 Controls more than one lighting unit through interface units
・Interface units (parallel communication function) can be selected from either CMOS input or photo-coupler input types.
(A maximum of eight slave units can be controlled through communication.)

optimum light control environments.

Field adaptability — Adaptable to field environments

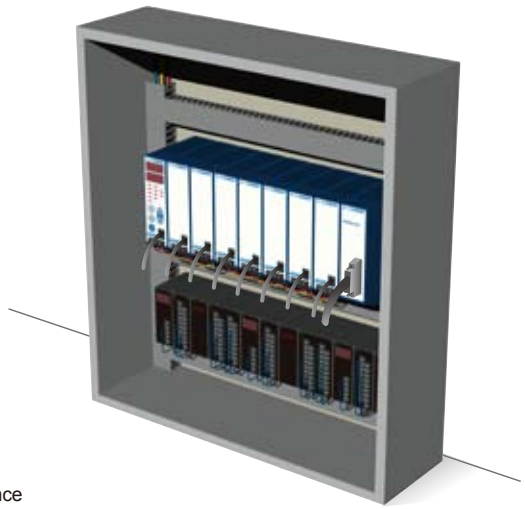
1 DIN rail mounting suitable for installation environments
・Can be installed on DIN rails in a single operation without the need for screws or tools.

2 DC24V input specification suitable for power source environments
・Control operations can be integrated with DC24V inputs in common with machine vision equipment.

3 Simple wiring and easy maintenance
・Can be connected to interface units (parallel communication function) through a single cable. Also connected to other units via the coupling connector of the main body, which eliminates extra wiring.

4 Space-saving compact design
・Compact bodies has realized weight reductions. In addition, a compact design contributes to space-saving installation.

5 Unified design and size
・Unification of design and body size with other units improves operability and maintenance performance.



Operability — Easy operation enables smooth working on site.

1 Centralized control by a master unit
・A wide variety of setting and control functions are integrated into the master unit. Connected units can be identified by ID numbers.

2 One-touch operation
・Units can be operated using panel buttons. Reliable setting using one-touch operation has improved operability.

3 Improved reproducibility and visibility
・Digital displays provide clear readings at a glance. Operation conditions can be checked and setting values can be controlled easily.

4 Set-data Protection
・A locking function is employed in order to prevent set values from being change. Data is reliably protected allowing for the maintenance only by authorized operators.

5 Error display function
・When any errors occur, details are displayed on the display panel, allowing for the early implementation of countermeasures.

Flexibility — Operation function can be selected to suit specific environments.

1 Flexible selection of operation functions
・The lighting mode can be selected and the lighting frequency and signal logic can be changed for the constant lighting type.
・Pulse width and delay time can be set and signal logic can be changed for the strobe lighting type.

A wide variety of system configurations

Lineup of 3 units and 10 models

Master unit

- **Type 1** 12V output and constant lighting
- **Type 2** 24V output and constant lighting
- **Type 3** 12V output and strobe lighting
- **Type 4** 24V output and strobe lighting

Select one from four types.

Slave unit

- **Type 1** 12V output and constant lighting
- **Type 2** 24V output and constant lighting
- **Type 3** 12V output and strobe lighting
- **Type 4** 24V output and strobe lighting

Select required quantities.

Interface unit

- **Type 1** CMOS input
- **Type 2** Photocoupler input

Select when using external control.

Combination example

Type 1

12V output and constant lighting

+

Type 1 **Type 4**

12V output and constant lighting
24V output and strobe lighting

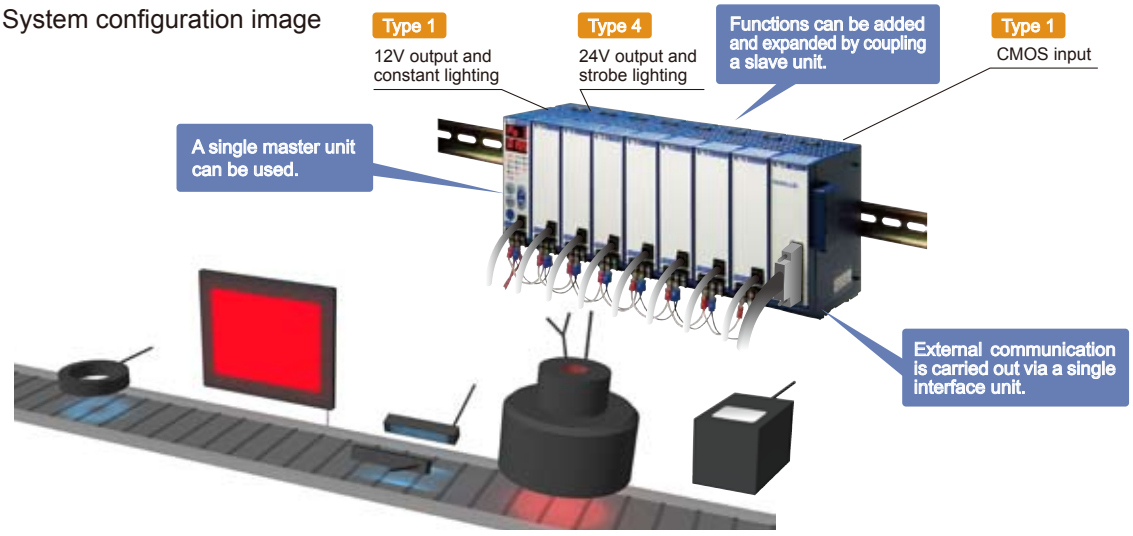
+

Type 1

CMOS input

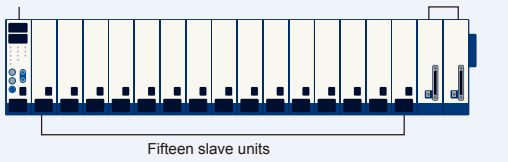
Combining units for a comprehensive multi-function lighting control system

System configuration image



A maximum of 18 units can be coupled.

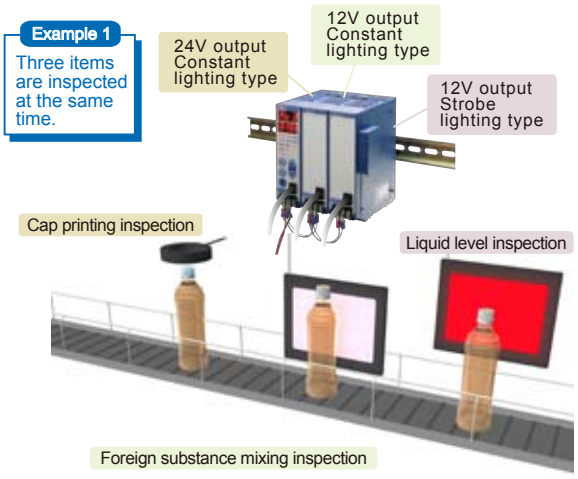
Units with different specifications can also be coupled.
This allows for the configuration of large-scale lighting control systems.



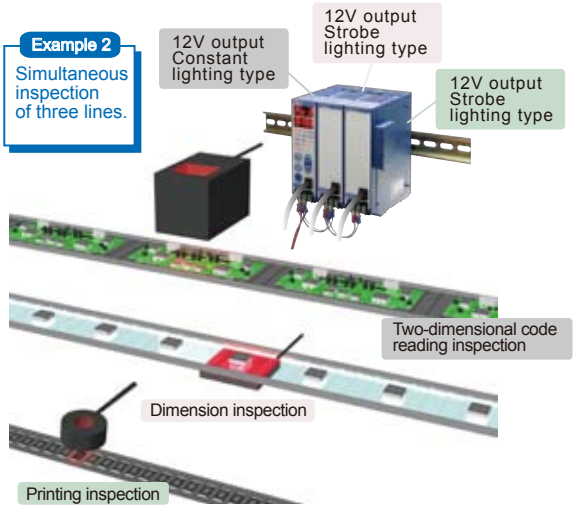
Examples of system configurations

Constant lighting and strobe lighting types are combined for the inspection of many items.

Example 1
Three items are inspected at the same time.

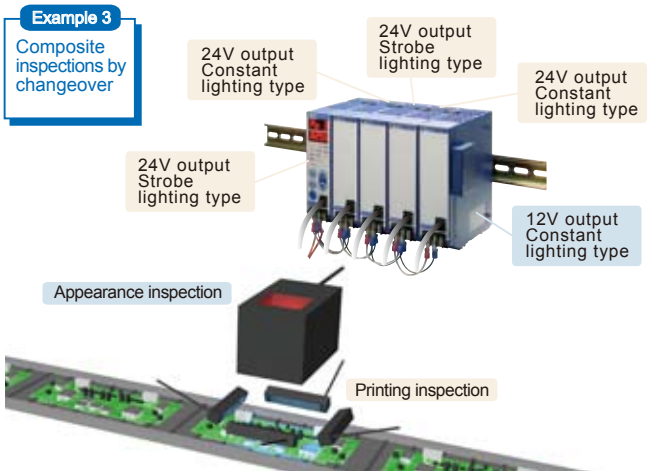


Example 2
Simultaneous inspection of three lines.



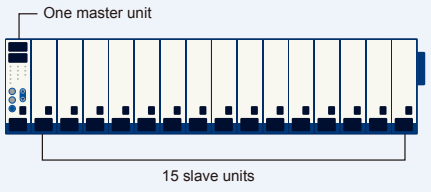
Different combinations of units enable the flexible handling of a wide variety of inspection items.

Example 3
Composite inspections by changeover



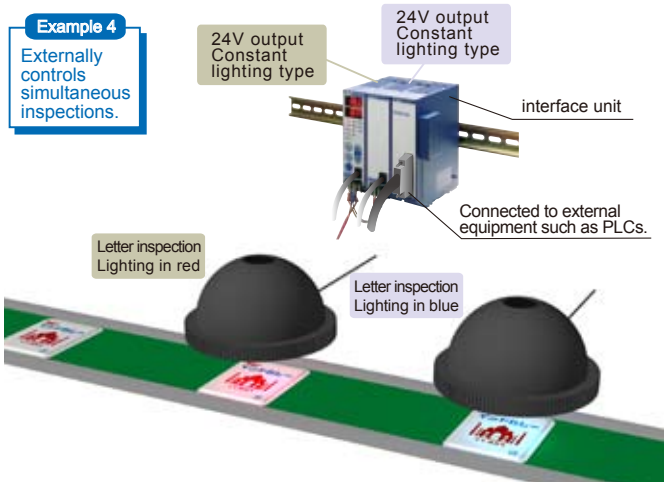
Up to 15 units are controlled integrally.

A single master unit enables the integrated control of up to 15 slave units.



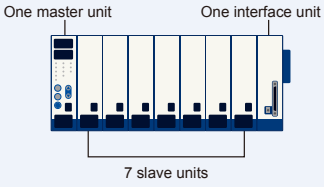
Controls more than one lighting unit by external controller through the interface unit.

Example 4
Externally controls simultaneous inspections.



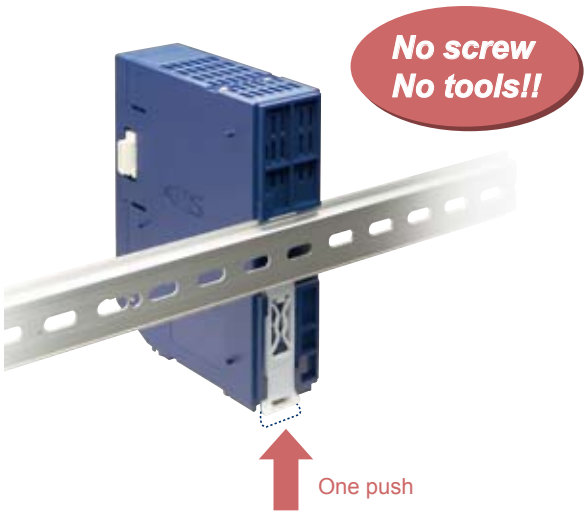
Up to 8 units are controlled by one interface-unit.

One interface unit controls up to eight units through communication.



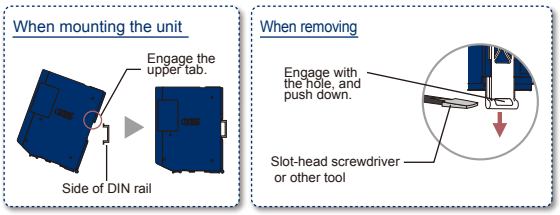
DIN rail mounting suitable for installation environments

Easy mounting

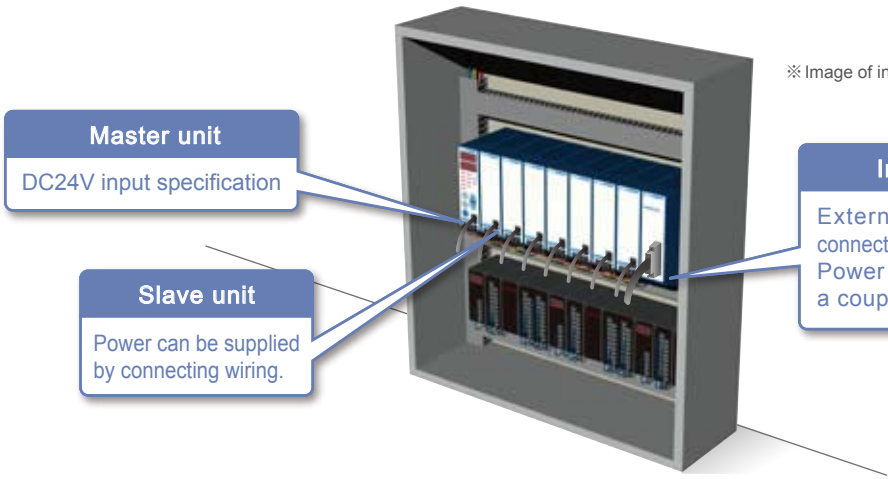


Optional stand is available.

Compatible with installation environments other than DIN rails.



Installation into control box.



※Image of installation into a control box

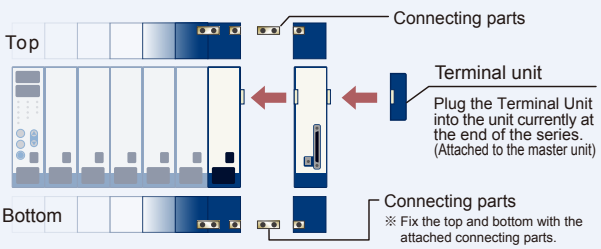
Master unit
DC24V input specification

Slave unit
Power can be supplied by connecting wiring.

Interface unit
External control can be connected using a single cable. Power is supplied through a coupled connector.

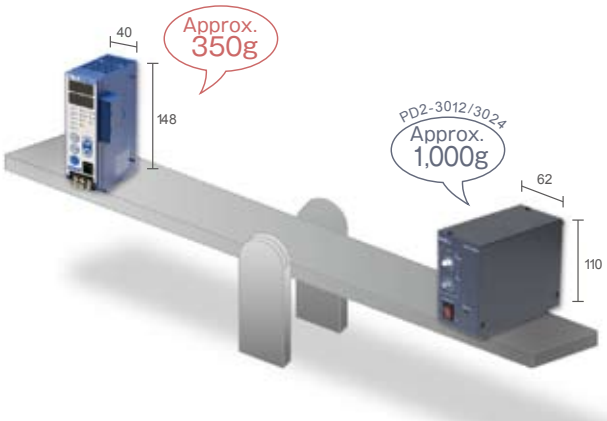
Unit can be connected in a single operation.

Just insert into the coupling connector.



※Caution
Make sure that the power is turned off before connecting or separating the unit. Connecting or separating the unit with the power ON may damage the system.

Compact design (*compared with our conventional products)



BB power supply series

- Master unit
  Appoximately 400g
- Slave unit
  Appoximately 400g
- Interface unit
  Appoximately 300g

Digital power supply series

- Strobe power supply
  PTU2-3012 / 3024
  Appoximately 1,200g

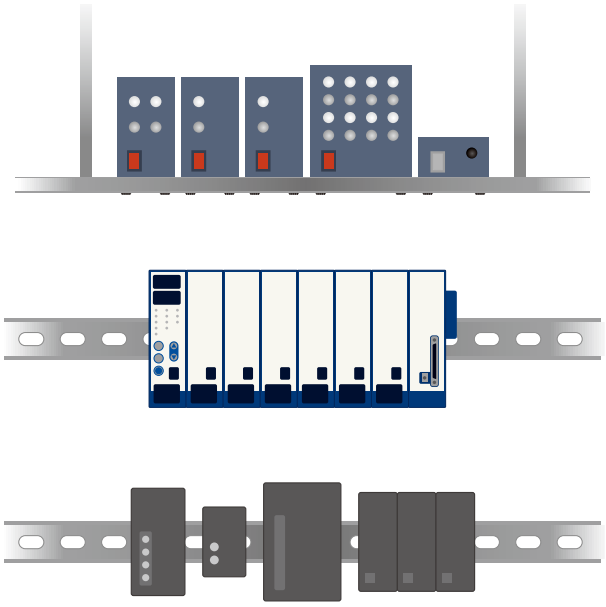
Weight reductions attained through the employment of compact bodies.

The weights of units have been drastically reduced in comparison with conventional units.
Units can be carried and installed easily.

Slimlining has been realized through compact designs.

As the width of the units is 40mm, even when multiple units are connected they can be operated and controlled in small spaces.

Unified design and size



The design and size of the unit bodies have been unified.

The unified design and size has been employed to realize building block concept for easy installation.The unified design and size of unit bodies allows for adaptation to installation environments.

Operability and visibility have been improved.

The employment of panel buttons and digital display panels has improved operability, increased reproducibility and visibility.

Central operation by master unit

A wide range of settings and control functions

LED lamp

LED lamp indicates a function that can be selected.
(Selected function flashes on the display)

- Ch : For selecting channels
- Brt : For setting light control data (constant lighting type only)
- Pls : For setting the pulse width
- Dly : For setting the delay time (strobe type only)
- Opt : For setting optional functions

Panel buttons

The unit can be operated by the panel buttons. Reliable one-touch settings improvs operability.

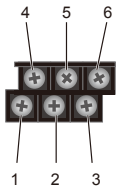
- SEL ···Select button
  Select the function desired to be set.
- ▲▼ ···Numerical value setting buttons (up/down buttons)
- RANG ···Range button
  Shifts the digits of numerical values.
- ENT/LOCK ···Enter/lock button
  Confirms a function or numerical value. When this button is pressed and held down, it is locked, and when it is held down again, lock is released.

Terminal configuration

Equipped with a DC24V input terminal, a trigger signal input terminal, and an FG terminal.

Terminal block

TRIG+ | TRIG− | — | 24V+ | 24V− | FG



Pin configuration

Pin number	Description
1	24V+
2	24V−
3	FG
4	TRIG+
5	TRIG −
6	Nothing to be connected

Recommended crimp terminal : NICHIFU M3 crimp terminals with insulating sheath Ring or "Y" TMEV 1.25-3

Mounting screw hole for mounting to stand.

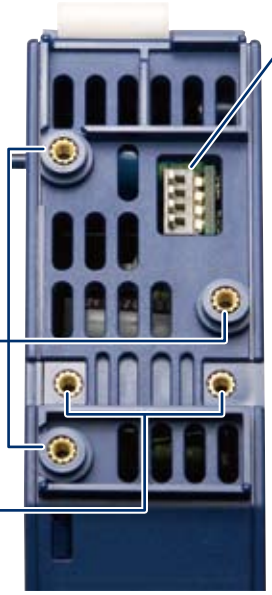
Used for mounting the unit instead of DIN rails.
Also used for mounting to the optional stand.

Mounting screw hole for connecting parts.

Use the attached connecting parts when fixing units.

Front

Bottom



Digital display panel

Operation conditions can be checked and set values can be controlled easily.
Also equipped with an error display function that notifies the user by error code when any errors occur.

Terminal unit

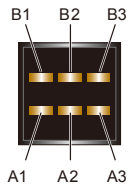
The Terminal Unit is inserted at the rear end of the unit.

※Caution
Do not remove the Terminal Unit while the power is turned on. Doing so may damage the system.

Output connector

Employs a connector with a new configuration. Used for connections with lighting units via the dedicated cable included. Two types are available for 12V and 24V lighting.

Output connector



Pin configuration

Pin number	Description
A1	LED ID
A2	Nothing to be connected
A3	Nothing to be connected
B1	Output+24V
B2	Output+12V
B3	COM

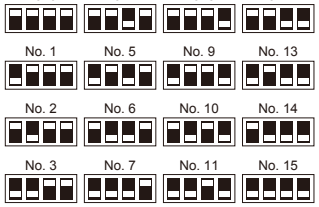
Items included

- Intermediate cable for 12V lighting for 12V output units.
- Intermediate cable for 24V lighting for 24V output units.

ID setting switch

All the units can be registered by ID numbers.

Switch positions for setting ID numbers



※Caution
Make sure that the power is turned off before setting ID numbers.
Setting numbers with the power ON may damage the system.

Points when setting ID numbers

ID numbers at the time of shipment are set at 0 for all units.
When adding a unit, set the master unit at ID No.0, and set the other units at ID No.1, 2,3 etc. in the order of coupling, in order to allow for easy operation and control.

※ See the User Manual for details related to each item.

Flexibility

Operation function can be selected to suit specific environment.

Customization is possible using the optional functions of units.

Constant lighting type

- Lighting modes can be selected from three modes, i.e., constant lighting, ON/OFF mode (*1), and trigger mode (*2).
- Lighting frequencies can be selected from 62.5, 125, 250, and 500kHz.
- The logic of the signal to be used can be selected.
  (Turns on at active high/active low.)

*1) Light on and off controlled by ON/OFF signal *2) Pulse lighting controlled by trigger signal.

Strobe lighting type

- Pulse width can be set in the range from 0.001 to 1ms.
- Delay time can be set in the range from 1 to 1,000µs.
- The logic of the signal to be used can be selected.
  (Turns on at active high/active low.)

From your current power supply to the BB power supply

	Application example	Your current power supply type	Corresponding BB series		BB power supply and other functions
1	·Uses one digital power supply. ·Uses one 12/24V LED light when using constant lighting. ·One channel with a capacity of 30W	Digital power supply ·PD2-3012 ·PD2-3024	 ·Master unit BB-V12P30-M/ BB-V24P30-M	·1 channel ·12/24V output ·30W capacity ·Constant lighting	·ON/OFF control ·Pulse lighting ·Setting of frequency ·Selection of signal logic
2	·Uses one strobe light power supply. ·Uses one 12/24V LED light when using strobe lighting. ·Two channels with a total capacity of 30W (PTU2 Series only)	Strobe light power supply ·PTU2-3012 ·PTU2-3024	 ·Master unit BB-V12S30-M/ BB-V24S30-M	·1 channel ·12/24V output ·30W capacity ·Strobe lighting	·Setting of lighting delay time ·Lighting test mode ·Selection of signal logic
3	·Uses two digital power supplies. ·Uses two 12/24V LED lights when using constant lighting. ·One channel with a capacity of 30W	Digital power supply ·PD2-3012 ·PD2-3024	 ·Master unit + ·Slave unit BB-V12P30-S/ BB-V24P30-S	·1 channel ·12/24V output ·30W capacity ·Constant lighting	·ON/OFF control ·Pulse lighting ·Frequency setting ·Selection of signal logic
4	·Uses two strobe light power supplies. ·Uses two 12/24V LED lights when strobe lighting. ·2 channels with a total capacity of 30W (PTU2 Series only)	Strobe light power supply ·PTU2-3012 ·PTU2-3024	 ·Master unit + ·Slave unit BB-V12S30-S/ BB-V24S30-S	·1 channel ·12/24V output ·30W capacity ·Strobe lighting	·Setting of lighting delay time ·Lighting test mode ·Selection of signal logic
5	·Uses LED light through external control. ·Used in parallel communication systems. ·CMOS type input signal.	Digital power supply/Strobe light power supply ·PD2-3012/PD2-3024 ·PTU2-3012/PTU2-3024	 ·Master unit + ·Interface unit BB-CPC-S	·Parallel communication ·CMOS input ·Communication control of up to eight units.	·Selection of signal logic
6	·Uses LED light through external control. ·Used in parallel communication systems. ·Photocoupler type input signal.	Digital power supply/Strobe light power supply ·PD2-3012/PTU2-3012 ·PD2-3024/PTU2-3024	 ·Master unit + ·Interface unit BB-CPP-S	·Parallel communication ·Photocoupler input ·Communication control of up to eight units.	·Selection of signal logic

Specifications

Products conforming to RoHS Directive.

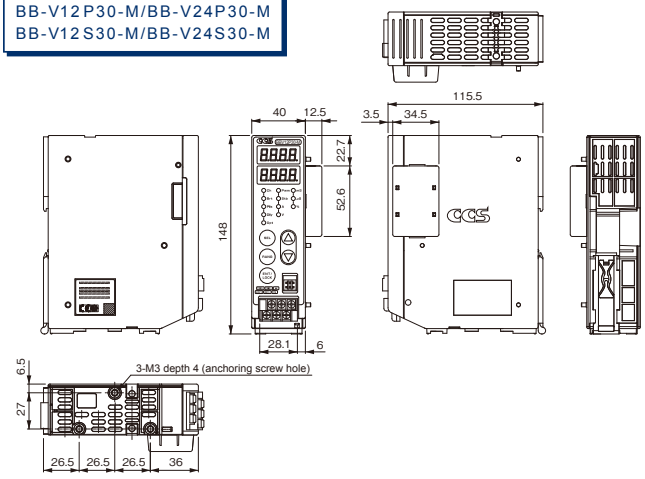
Product name		Master unit / Slave unit			
Model name	Master unit	BB-V12P30-M	BB-V24P30-M	BB-V12S30-M	BB-V24S30-M
	Slave unit	BB-V12P30-S	BB-V24P30-S	BB-V12S30-S	BB-V24S30-S
Lighting system		Constant lighting		Strobe lighting	
Drive method		Constant voltage			
Light control method		PWM control		Pulse width	
Channels		1 channel			
Applicable light (rating)		12V／30W	24V／30W	12V／30W	24V／30W
Input voltage (rated)		DC24V			
Input voltage (range)		DC21.6 ～26.4V	DC21.6 ～25.3V	DC21.6 ～26.4V	DC21.6 ～26.4V
Power consumption (typ.)		42W (during connection to 30W load)	42W (during connection to 30W load)	Mean power consumption:16W (during connection to 30W load) Peak power consumption:72W (during connection to 30W load and strobe)	Mean power consumption:16W (during connection to 30W load) Peak power consumption:26W (during connection to 30W load and strobe)
Output voltage (rated)		DC12V	DC24V	DC18V	DC48V
Output current (rated)		2.5A	1.25A	8.0A	4.3A
Power code length		5m max.			
Terminal block control cable length		5m max.			
Light cable length		5m max.			
Mounting method		On DIN rails, on bottom surface mounting hole/(Fixed using the optional self-support stand)			
Operating temperature and humidity		Temperature : 0-40℃, Humidity : 20-85%RH (with no condensation)			
Storage temperature and humidity		Temperature : -20-60℃, Humidity : 20-85%RH (with no condensation)			
Weight		350g max.	350g max.	350g max.	400g max.

Product name	Interface unit (parallel communications)	
Model name	BB-CPC-S	BB-CPP-S
Input voltage (rating)	DC24V (Supplied via coupled connector)	
Input voltage (range)	DC21.6-26.4V (Supplied via coupled connector)	
Power consumption (typ.)	10W (Supplied via coupled connector)	
External control input/output	Parallel bit system	
External control input /output specifications	No insulation, C-MOS level input/output LOW : 1.5V max., High : 3.5V min. 2.2k Ohms, 5V pull-up Input voltage range : 0V-5.5V DC	Photocoupler insulation : 24V input/output OFF : 10V max., ON : 14V min. OFF current : 4mA max., ON current : 5.8mA min. Input voltage range : 0V-26.4V DC
External control cable length	Less than or equal to 5m	
Use environment	Temperature : 0-40℃, Humidity : 20-85%RH (free from condensation)	
Storage environment	Temperature : -20-60℃, Humidity : 20-85%RH (free from condensation)	
Weight	300g max.	

Dimensional diagrams (mm)

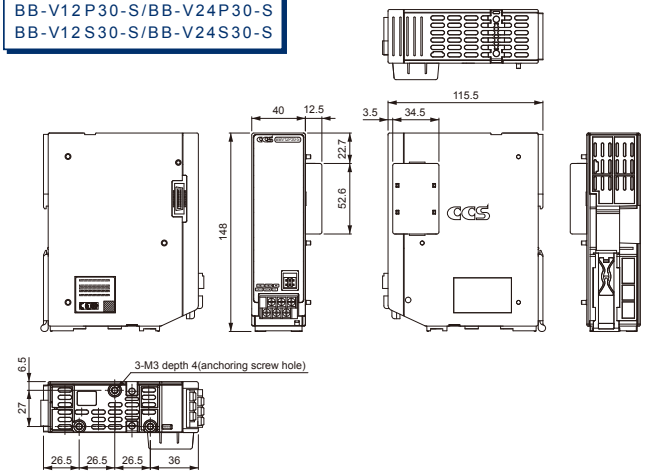
Master unit

BB-V12P30-M/BB-V24P30-M
BB-V12S30-M/BB-V24S30-M



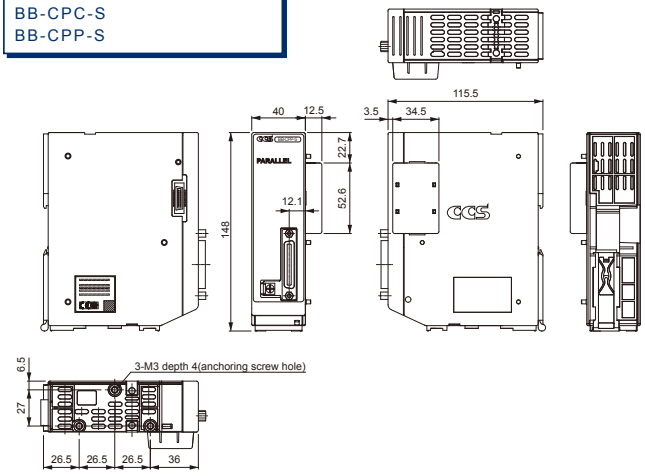
Slave unit

BB-V12P30-S/BB-V24P30-S
BB-V12S30-S/BB-V24S30-S

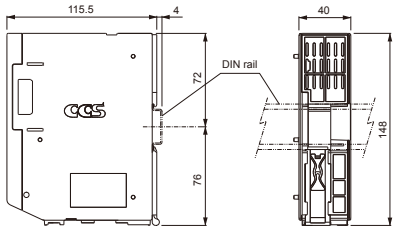


Interface unit

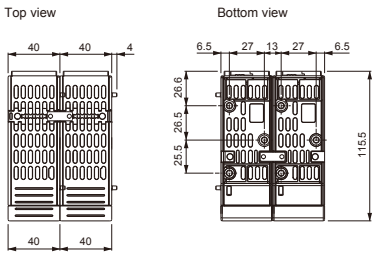
BB-CPC-S
BB-CPP-S



Installation of DIN rail



Connected assembly



Option

Stand

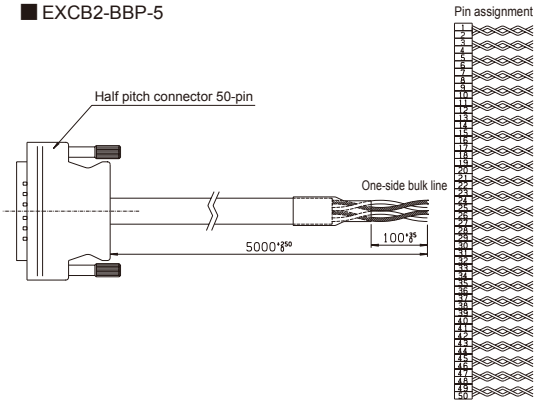
Optional to be attached to the unit.
Use this when fixing the unit with something other than DIN rail for desktop or floor-top use.

■ BB-FT

External control cable for parallel communication

Cable for connecting interface units (parallel communication type) and external equipment such as PLCs and image processing units.

■ EXCB2-BBP-5



Notes:

- Carefully read the product's instruction manual before use to ensure correct operation.
- Product specifications and design are subject to change without notice.
- Examples of workpiece imaging in this catalog are a guide that may be informative for choosing illuminations. Please check the functions of the equipment and requirements when choosing.

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