BWF Series

BWF-11/21/31/41 Series

At a glance

- Supported Interfaces : RS232C, RS422
- Transmission distance : 100m or 200m
- Easy alignment of the optical axis
- Compact (weight : 500g)

Model	Supply voltage	Transmission distance	Directional angle
BWF-11A / B	12 to 24VDC	100m	±2°
BWF-21A / B		200m	±1°
BWF-31A / B	100VAC (50/60Hz)	100m	±2°
BWF-41A / B		200m	±1°

Product description

- A device that uses infrared light to transmit data wirelessly, enabling wireless communication.
- A variety of other interface options are also available in our lineup such as RS485 or Ethernet.
- Visible LED indicator shows the staus of communication and connections.
- Ideal for data communication between mobile and static equipments such as stacker cranes (automated storage systems), automated cranes, and traversers.

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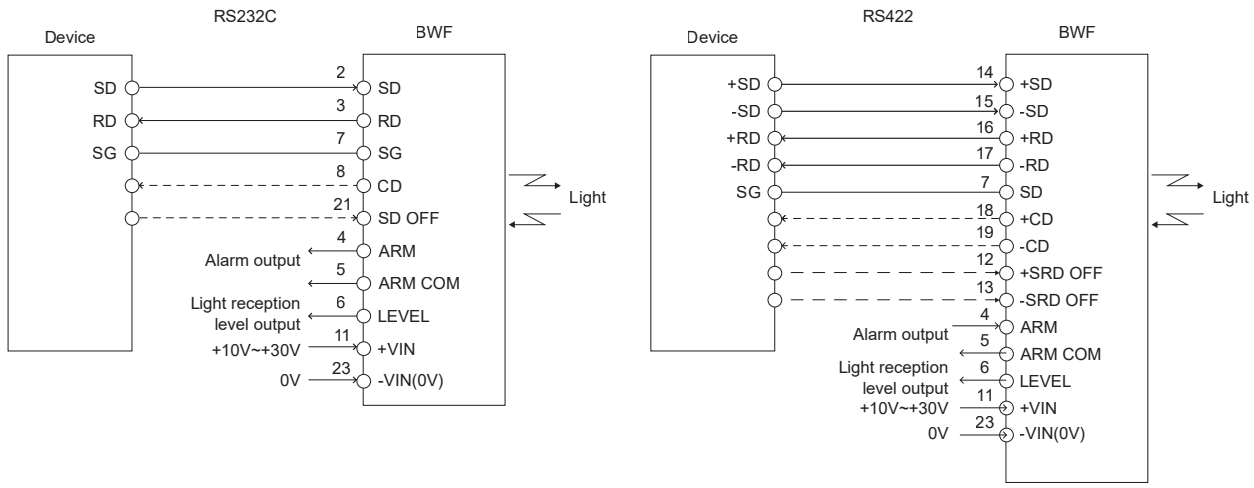
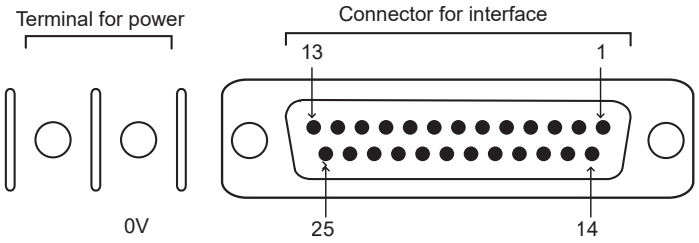
Specification

		BWF-11A / 11B	BWF-21A / 21B	BWF-31A / 31B	BWF-41A / 41B
Electronics	Supply voltage	12 to 24VDC (Allowable operating voltage 10 to 30VDC)		100VAC (Allowable operating voltage 85 to 110VAC) 50/60Hz	
	Current consumption	150mA or less (when 12VDC), 80mA or less (when 24VDC)		40mA	
	Light source	LED (860nm)	LED (870nm)	LED (860nm)	LED (870nm)
	Modulated frequency	A type (Transmission : 5.5MHz, reception : 6.0MHz) B type (Transmission : 6.0MHz, reception : 5.5MHz)			
Communication	Transmission distance	100m	200m	100m	200m
	Directional angle	±2°	±1°	±2°	±1°
	Transmission speed	up to 19.2kbps			
	Interface	RS232C / RS422			
	Connection	Connector type (D-sub connector with 25-pin), M3 screw terminal for power source			
Function	Indications lamps	Power source, carrier detect, data input, data output, light-reception level margin (Red LED) POW (Power lamp) : Light-up when power source ON CD (Carrier detect lamp) : Light-up when light-reception, light-reception margin level 1 SD (Data input lamp) : Light-up when transmission data input RD (Data output lamp) : Light-up when reception data output L1 (Light-reception level lamp) : Light-up when margin 1.5 times L2 (Light-reception level lamp) : Light-up when margin 2 times L3 (Light-reception level lamp) : Light-up when margin 2.5 times			
	Reception output (ARM)	Photo-coupler (35V, 50mA) ON when light-receiving level margin 1.5 times or more OFF when it is 1.5 times or less			
	Light-reception level output	0 to 5V (in proportion to light-reception amount)			
General	Ambient illuminance	20,000lx or less			
	Ambient temperature and humidity	-10 to +50 ℃, 85%RH or less (without dew, frost)			
	IP protection	IP60 (IP64 is available if option accessories are used)			
	Weight	500g			
	Size W x D x H (mm)	100 x 161 x 57.5 (with bracket)			

Connection



Connection

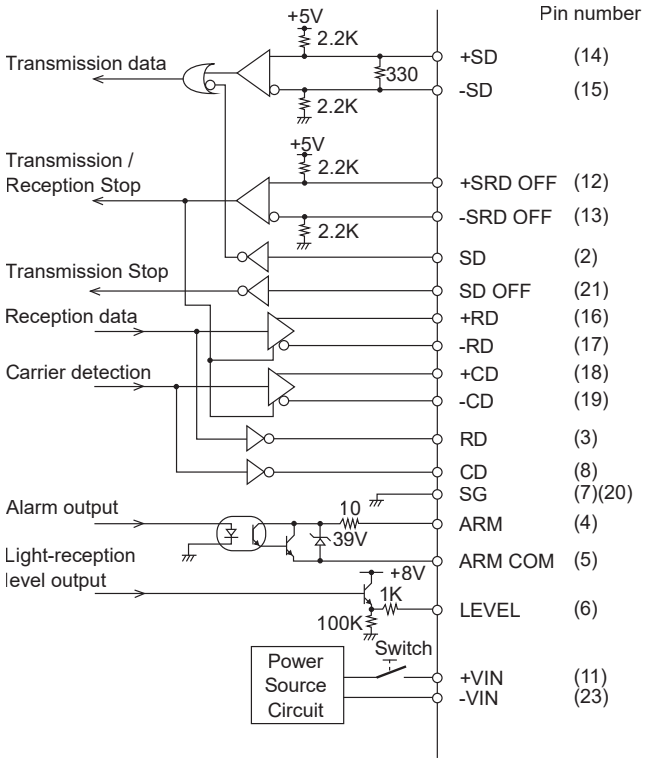


Interface	Pin No.	Symbols	Functions
RS-232C	2	SD	Transmission data
	3	RD	Reception data
	8	CD	Reception carrier detect
	21	SD OFF	Transmission stop
RS-422	14	+SD	Transmission data (+)
	15	-SD	Transmission data (-)
	16	+RD	Reception data (+)
	17	-RD	Reception data (-)
	18	+CD	Reception carrier detect (+)
	19	-CD	Reception carrier detect (-)
	12	+SRD OFF	Transmission / reception stop (+)
	13	-SRD OFF	Transmission / reception stop (-)
Level	6	LEVEL	Light-reception level output
—	7, 20	SG (0V)	Ground for signal
Warning	4	ARM	Warning output (ARM)
	5	ARM COM (0V)	
Power source	11	+VIN	DC Power (voltage 10 to 30VDC)
	23	-VIN (0V)	

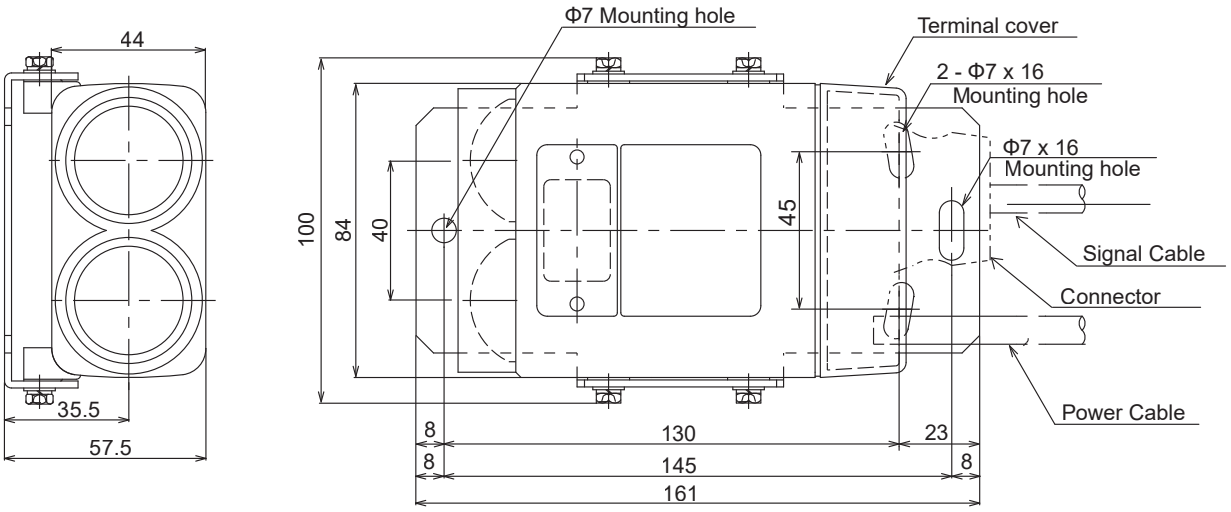
*Please do not short the power 0V and the signal ground (SG).

ARM output : Turns ON when the received light margin is 1.5 times or higher.

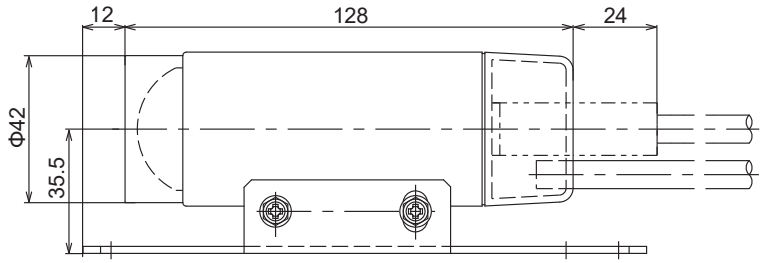
I/O Circuit



External dimension



Adjustable angle for ±2° for both up.down and right/left



Option

Splash-proof bracket for BWF (IP64)

Code	Ref.
PPDMP08	For splash-proof use

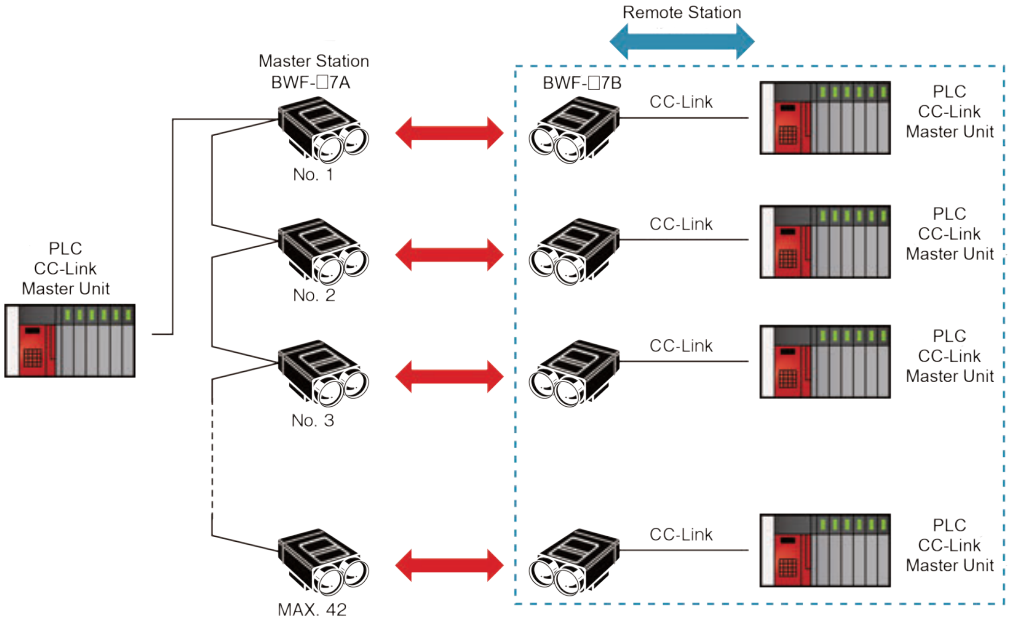
BWF Series

Open Network Type (CC-Link)

BWF-17/27 Series

At a glance

- Direct connection to CC-Link network
- Transmission distance : 100m or 200m
- Up to 42 units can be connected to a single master station
- Max. 112 points and 15 words can be transmitted
- Easy alignment of the optical axis
- Compact (weight : 500g)



Product description

- A device that uses infrared light to transmit data wirelessly, enabling wireless communication.
- With support for long-distance transmission (up to 200 meters) and compatibility with CC-Link remote device stations, it offers seamless integration into factory automation systems.
- Ideal for data communication between mobile and static equipments such as stacker cranes (automated storage systems), automated cranes, and traversers.

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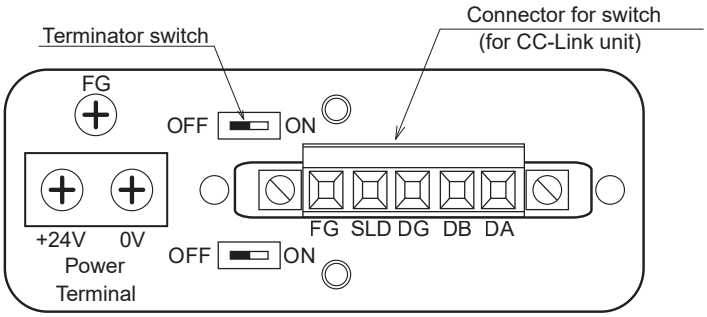
Specification

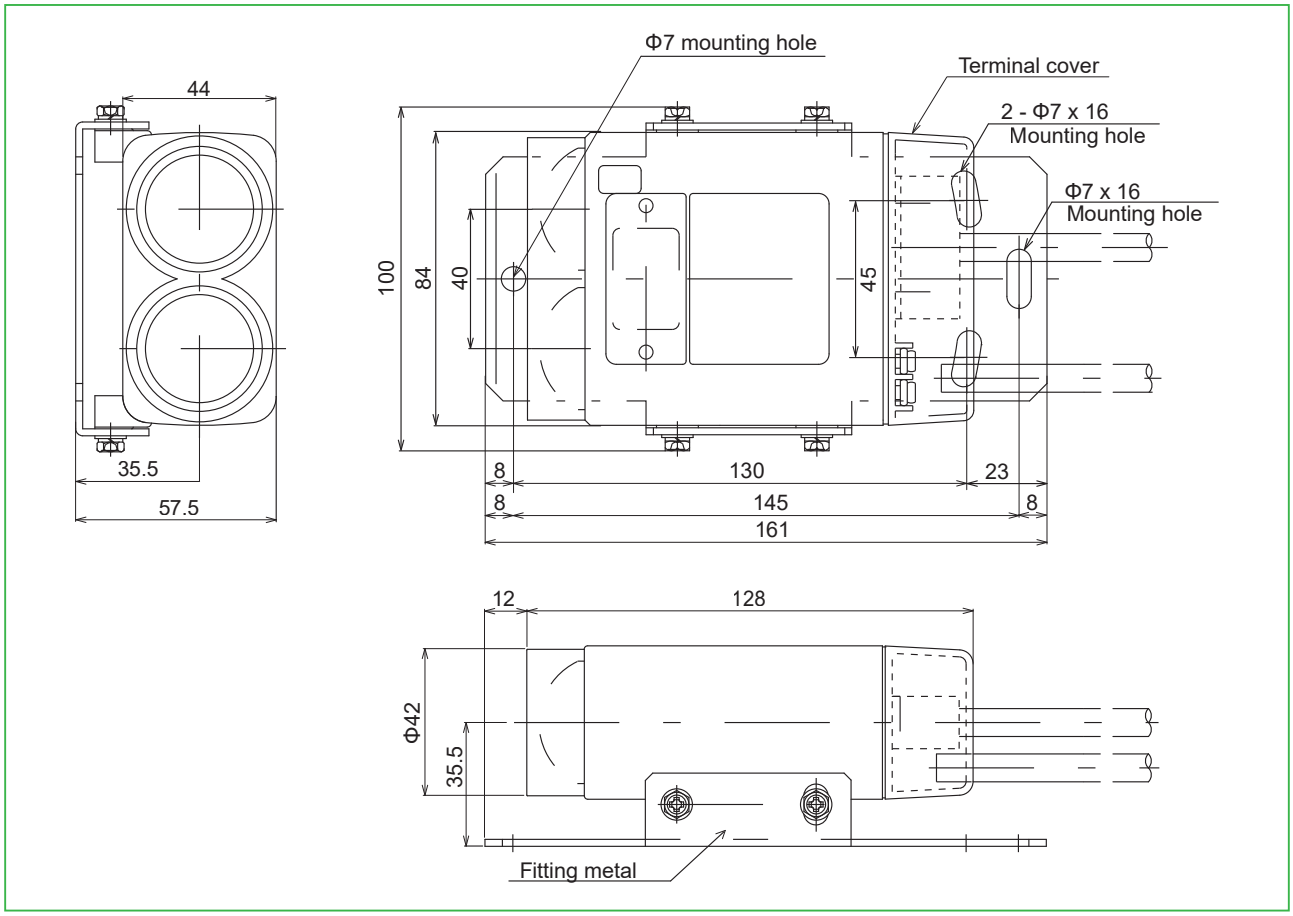
			BWF-17A / 17B	BWF-27A / 27B
Electronics	Supply voltage		24VDC (18 to 30VDC)	
	Current consumption		100mA or less (when 24VDC)	
	Light source		LED (860nm)	LED (870nm)
	Modulated frequency		A type (Transmission : 5.5MHz, Reception : 6.0MHz) B type (Transmission : 6.0MHz, Reception : 5.5MHz)	
Communication	Optical communication part	Transmission distance	100m	200m
		Directional angle	±2°	±1°
		Transmission speed	19,200bps	
	CC-Link part	Communication speed	10Mbps / 5Mbps / 2.5Mbps / 625kbps / 156kbps (Changeover by switch)	
		Communication system	Polling system	
		Synchronous system	Frame synchronous system	
		Transmission path	RS-485 bus	
		Transmission format	HDLC conformity	
		Remote station Nos.	1 to 64	
		Connecting cable	CC-Link exclusive cable	
		Max. extending cable	Speed (bps): 10Mbps, 5Mbps, 2.5Mbps, 625kbps, 156kbps	
			With standard extending cable: 100m, 150m, 200m, 600m, 1,200m	
			With superior extending cable: 100m, 160m, 400m, 900m, 1,200m	
		Terminator	110Ω (Connected between DA and DB of both ends unit) Changeover by switch	
		Connecting system	Connector type (terminal for DC power and FG)	
General	Ambient illuminance		20,000lx or less	
	Ambient temprature and humidity		-10～+50℃, 10～85%RH or less (without dew, frost)	
	Vibration resistance		Double amplitude 1.5mm, 10～55Hz, each 2 hour in X, Y and Z directions	
	Impact resistance		490m/s^2 each 10 times in X, Y and Z directions	
	IP protection		IP60	
	Weight		500g	
	Size W x D x H (mm)		100 x 161 x 57.5 (with bracket)	

Connection



Connector for CC-Link unit	
FG	Frame Ground
SLD	Shield
DG	Data Ground
DB	Data B
DA	Data A

External dimension



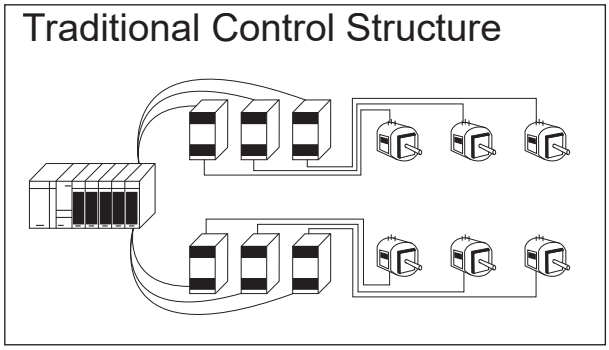
CC-Link Network Overview

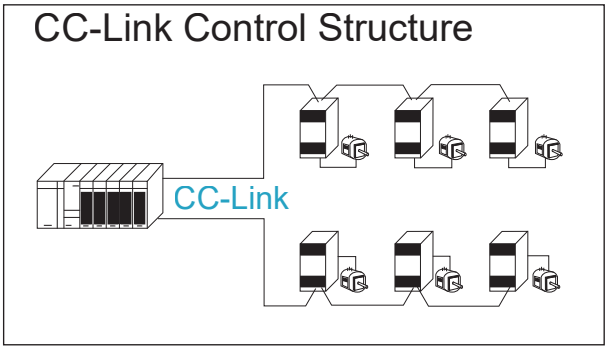
Background

CC-Link is a field network developed by Mitsubishi Electric Corporation in 1996. In 2000, the CC-Link Partner Association (CLPA) was established, and the network specifications were released to the public to promote its widespread adoption. Since then, CC-Link has become one of the leading open field networks used in factory automation worldwide.
CC-Link is fully compatible not only with Mitsubishi Electric's FA devices such as sensors, actuators, displays, and inverters, but also with various CC-Link family-compatible products offered by many manufacturers, enabling a high degree of interoperability across different vendors.

Network Structure

CC-Link networks are built using dedicated cabling based on RS-485 two-wire communication. Just like standard RS-485 wiring, termination resistors must be installed at both ends of the network to ensure signal stability. The wiring topology adopts a multi-drop configuration, where devices are connected in a daisy-chain (one-stroke) manner along a single communication line.





BWF-17/27 with CC-Link

The BWF-17/27 can be connected as a remote device station via CC-Link, allowing up to 42 units to be connected to a single master unit. It also supports master-to-master communication, enabling wireless communication between the station side and the remote side of a stacker crane.

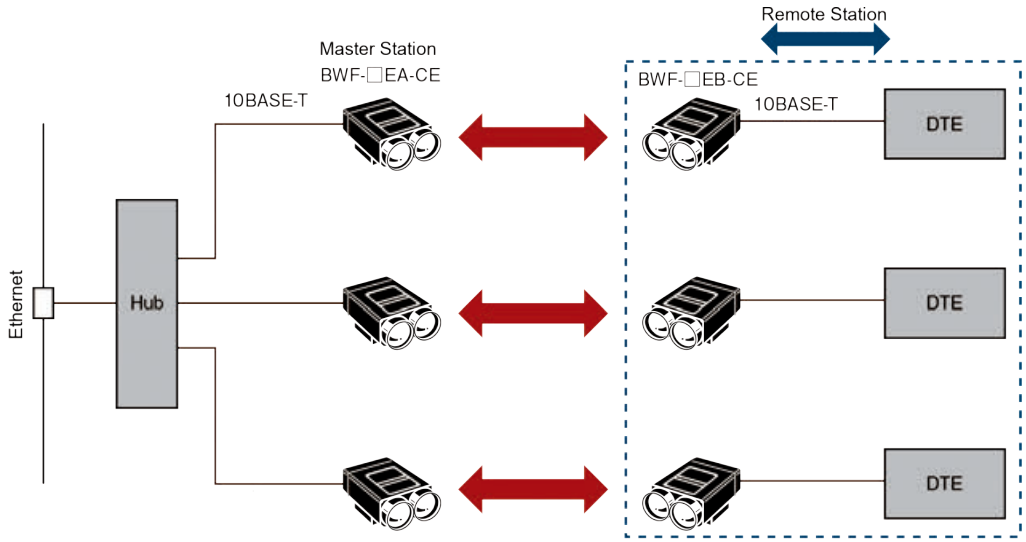
BWF Series

Open Network Type (Ethernet)

BWF-3E/4E Series

At a glance

- Supported Interface : Ethernet (10BASE-T)
- Transmission distance : 100m or 200m
- Easy alignment of the optical axis
- Compact (weight : 500g)



Product description

- A device that uses infrared light to transmit data wirelessly, enabling wireless communication.
- With Ethernet compatibility and high-speed 10 Mbps optical transmission, it enables smooth and reliable communication.
- Ideal for data communication between mobile and static equipments such as stacker cranes (automated storage systems), automated cranes, and traversers.

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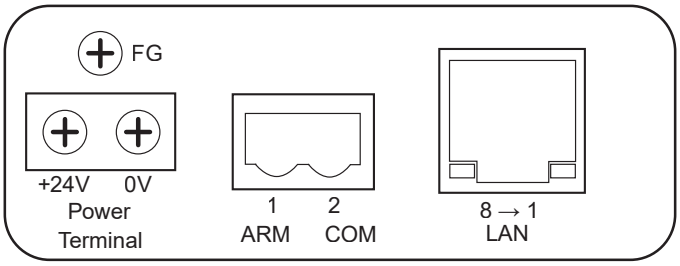
Specification

			BWF-3EA-CE / 3EB-CE	BWF-4EA-CE / 4EB-CE
Electronics	Supply voltage		DC24V (±15%)	
	Current consumption		Max.160mA (Input voltage DC24V)	
	Light source		LED (820nm)	
	Modulated frequency		A type (Transmission 25MHz, Reception 37.5MHz) B type (Transmission 37.5MHz, Reception 25MHz)	
Communication	Optical transmission part	Transmission distance	100m	200m
		Directional angle	Full angle 2°	Full angle 1°
		Transmission speed	10Mbps	
		Connection	Ethernet : RJ-45 modular jack CD : 2 pins connector Power supply : a terminal	
	Network part	Interface	Ethernet (10BASE-T)	
		Connection	RJ-45 Modular jack (supports automatic detection of straight-through and crossover cables with auto-negotiation enabled)	
Function	Indication lamps		PW : Power lamp FD : Full-duplex communication (Lights up during communicating) JM : Optical axis adjusting mode (Lights up during this mode) LK : Link state (Lights up during link-up state) SD : Carrier output lamp RD : Carrier input lamp S C : Local station carrier detection lamp 1 : Local station light-receiving level margin 1.5 times 2 : Local station light-receiving level margin 2.0 times 3 : Local station light-receiving level margin 2.5 times R C : Remote station carrier detection lamp 1 : Remote station light-receiving level margin 1.5 times 2 : Remote station light-receiving level margin 2.0 times 3 : Remote station light-receiving level margin 2.5 times	
	Reception output (ARM)		Photo-coupler transistor output Max. 30V, 50mA ON when carrier detect	
General	Ambient illuminance		10,000lx or less	
	Ambient temprature and humidity		-10～+50℃, 10～85%RH or less (without dew, frost)	
	Vibration resistance		Double amplitude 1.5mm, 10～55Hz, each 2 hour in X, Y and Z directions	
	Impact resistance		490m/s^2 each 10 times in X, Y and Z directions	
	IP protection		IP40	
	Weight		500g	
	Size W x D x H (mm)		100 x 161 x 57.5 (with bracket)	

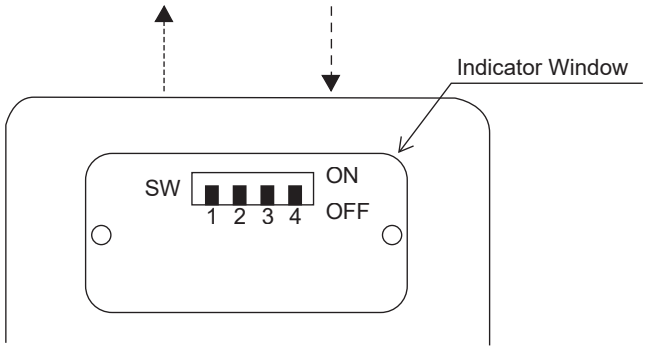
Connection



Pin No.	Functions
1	ARM
2	COM

Pin No.	MDI signals	Functions
1	TD+	Transmission data (+)
2	TD-	Transmission data (-)
3	RD+	Reception data (+)
4	—	Unused
5	—	Unused
6	RD-	Reception data (-)
7	—	Unused
8	—	Unused

Switching operation mode (dip SW)



Operation mode

	SW ON	SW OFF
SW 1	Optical axis adjustment mode	RUN
SW 2	Half-duplex	Full-duplex
SW 3	—	—
SW 4	Manual setting mode (SW 2 becomes active)	Automatic negotiating mode

Please restart the unit after changing the mode.

External dimension