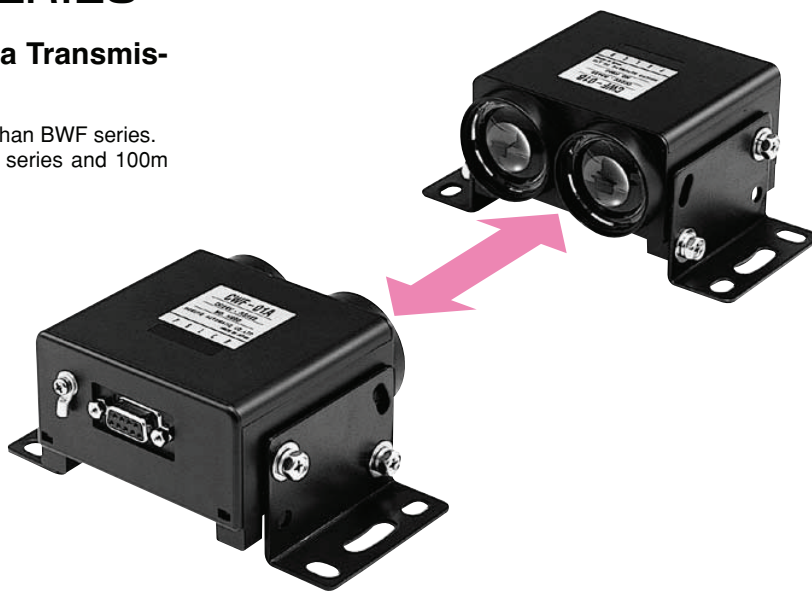


# Serial Type Optical Data Transmission Device

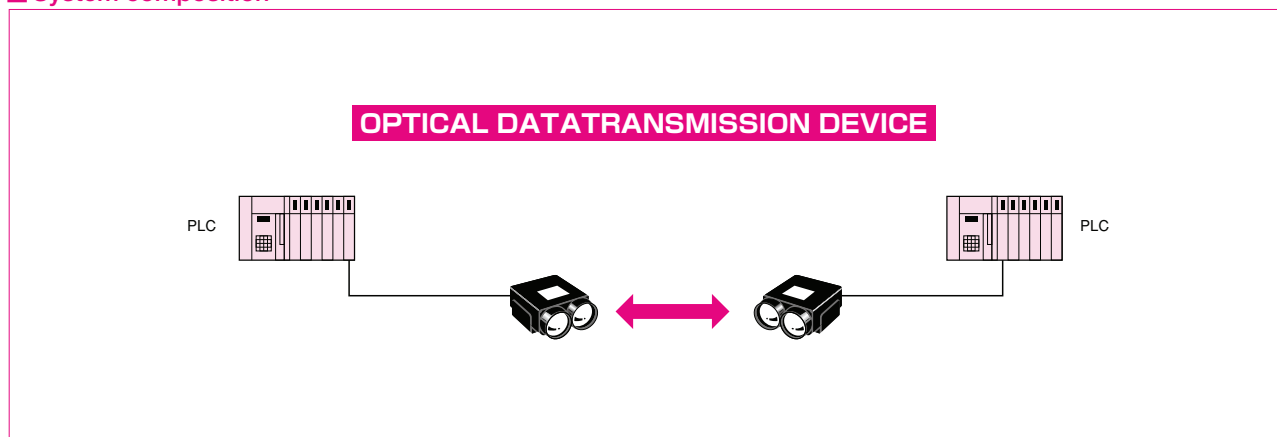
## CWF/EWF SERIES

### Small size/light weight type Data Transmission Device

- This device is smaller size and lighter weight than BWF series.
- Transmission distance 50m or 80m for CWF series and 100m for EWF series.



#### System composition



#### Type/Models

Type	Interface	Model No.	Transmission distance	Power source
Serial type	RS-422	CWF-01A	50m	24VDC (±10%)
		CWF-01B		
	RS-232C	CWF-02A		
		CWF-02B		
	RS-422	CWF-11A	80m	10 to 30VDC
		CWF-11B		
	RS-232C	CWF-12A		
		CWF-12B		
RS-422	EWF-11A	100m	24VDC (±10%)	
	EWF-11B			

# CWF-01/02/11/12

## RS-232C/RS-422 type

Small size, light weight & middle distance (50m & 80m)

- This is smaller size and lighter weight than BWF series
- This is a middle distance type Serial Data Transmission Device with 50m and 80m.
- I/O signal with max.128 points can be transmitted with exclusive serial/parallel converter, ISP-A1C-C (16 points per unit).

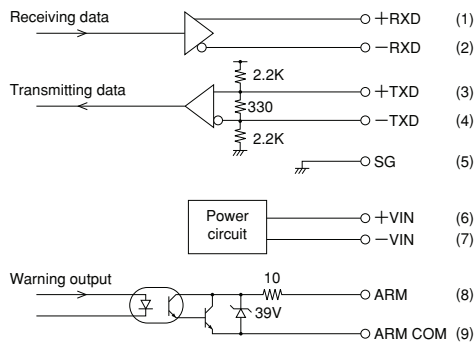


### Specifications

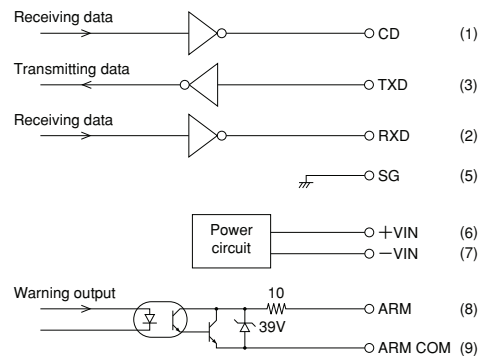
Type	Serial type			
	CWF-01A/01B	CWF-11A/11B	CWF-02A/02B	CWF-12A/12B
Model No.				
Transmission distance	50m	80m	50m	80m
Directional angle	$\pm 2^\circ$			
Transmission method	Full duplex two-way transmission			
Transmission speed	DC to 19.2kbps		DC to 9,600bps	
Input/Output interface	RS-422		RS-232C	
Modulation method	FSK modulation			
Modulation frequency	Type A (transmission 5.5MHz, reception 6.0MHz), Type B (transmission 6.0MHz, reception 5.5MHz)			
Power source	24VDC ( $\pm 10\%$ )	12 to 24VDC (10 to 30VDC)	24VDC ( $\pm 10\%$ )	12 to 24VDC (10 to 30VDC)
Current consumption	160mA (DC12V)/80mA (DC24V)			
Warning output (ARM)	Photo-coupler (35V, 50mA), ON when light-reception level margin is 1.5 times or more			
Connection	Connector (9pins D-sub connector)			
Ambient illuminance	20,000lux or less (Both halogen and incandescent lamp)			
Ambient temperature/humidity	-10 to +50°C, 85%RH or less (not icing, not condensing)			
Vibration resistance	Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions			
Impact resistance	490m/s <sup>2</sup> , each 10 time in X, Y and Z directions			
Noise resistance	Impluse noise simulator, pulse width 1 $\mu$ s, 100ns Repeated cycle 100Hz Normal mode 1,000V Common mode 500V			
Protective structure	IP60 (IEC Standard)			
Case material	ABS resin (Cover: Polycarbonate)			
Weight	Approx. 240g			

### Input/Output circuit

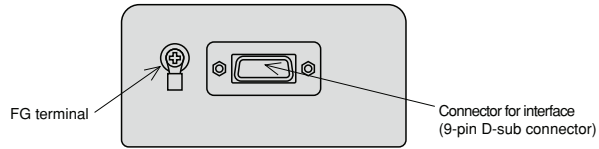
CWF-01A/01B /11A/11B (Interface: RS-422)



CWF-02A/02B /12A/12B (Interface: RS-232C)



## Connection



### CWF-01A/01B /11A/11B

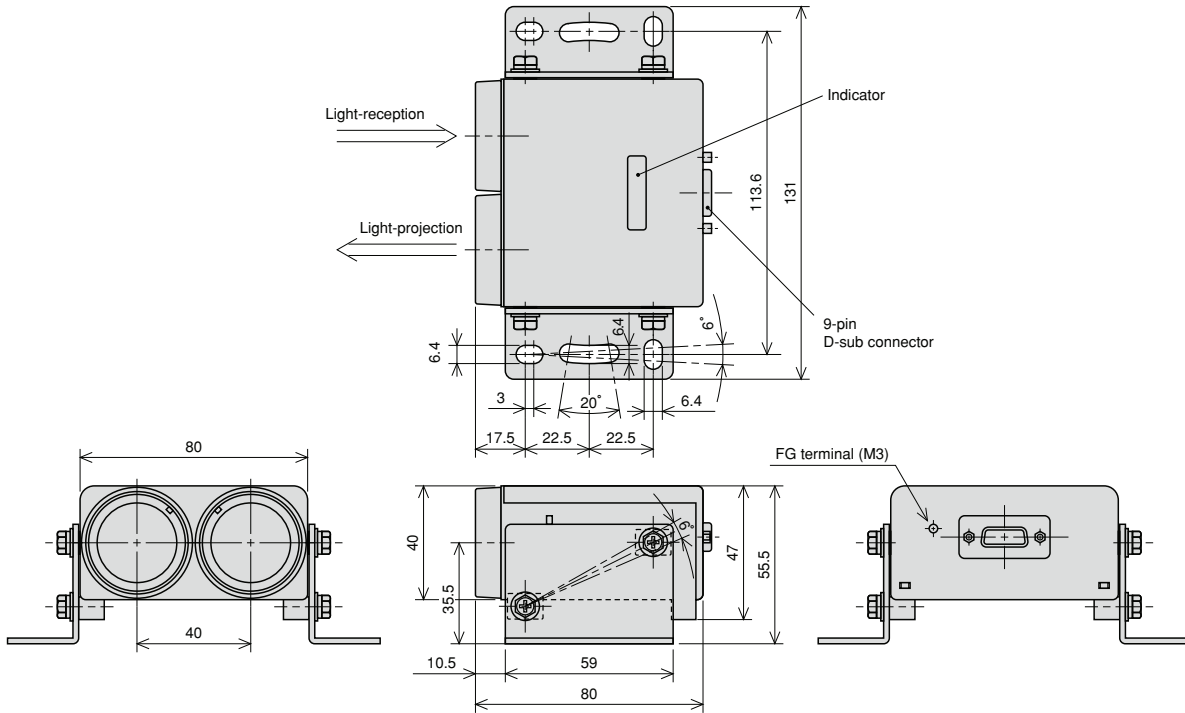
Interface	Pin No.	Symbols	Functions
RS-422	1	+RD	Reception data
	2	-RD	
	3	+SD	Transmission data
	4	+SD	
—	5	SG (0V)	GND for signal
Power source	6	+VIN	Power source (24VDC)
	7	-VIN (0V)	
Warning	8	ARM	Alarm output
	9	ARM COM	

### CWF-02A/02B /12A/12B

Interface	Pin No.	Symbols	Functions
RS-232C	1	CD	Reception data (Carrier detection)
	2	RD	Reception data
	3	SD	Transmission data
	4	NC	Non connection
—	5	SG (0V)	GND for signal
Power source	6	+VIN	Power source (24VDC)
	7	-VIN (0V)	
Warning	8	ARM	Alarm output
	9	ARM COM	

Note) Don't connect 0V for power source to ground for signal (SG).

## External dimensions



# EWF-11

## RS-422 type

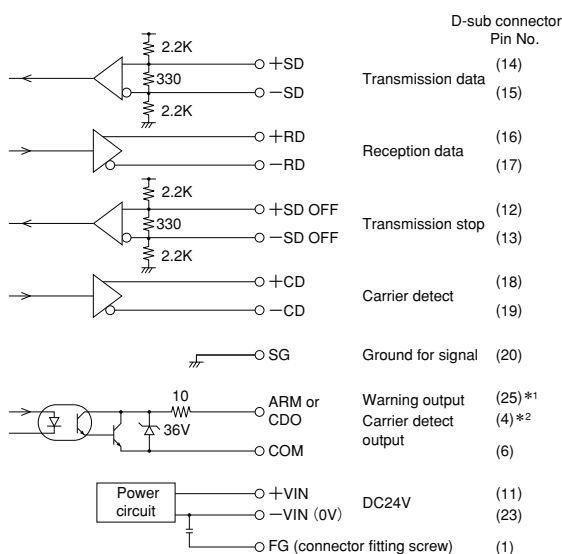
- It is easy to make an optical axis adjustment because of providing the axis coincident lamp.
- Lighter weight than CWF series (150g).
- 100m, Transmission distance.



### Specifications

Type	Serial type	
Model No.	EWF-11A	EWF-11B
Transmission distance	100m	
Directional angle	$\pm 2^\circ$	
Transmission method	Full duplex two-way transmission	
Transmission speed	DC to 19.2kbps	
Input/Output interface	RS-422	
Modulation method	FSK modulation	
Modulation frequency	Transmission 5.5MHz, reception 6.0MHz	Transmission 6.0MHz, reception 5.5MHz
Power source	24VDC ( $\pm 10\%$ )	
Current consumption	160mA (DC12V)/80mA (DC24V)	
Warning output	Photo-coupler (35V, 50mA), ON when light-reception level margin is 1.5 times or more	
Light-reception level Output	Photo-coupler NPN open-collector output, ON when light-reception	
Connection	Connector (25pins D-sub connector)	
Ambient illuminance	20,000lux or less (Both halogen and incandescent lamp)	
Ambient temperature/humidity	-10 to +50°C, 85%RH or less (not icing, not condensing)	
Vibration resistance	Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions	
Impact resistance	490m/s <sup>2</sup> , each 10 time in X, Y and Z directions	
Protective structure	IP40 (IEC Standard)	
Case material	ABS resin (Cover: Polycarbonate)	
Weight	Approx. 150g	

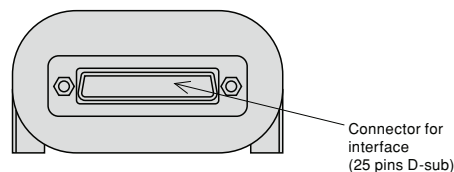
### Input/Output circuit



\*1. Operating point: ON when light-receiving level margin is 1.5 times or more (when L1 lights up).

\*2. Operating point: ON when light-receiving level margin is 1 time or more (when CD lights up).

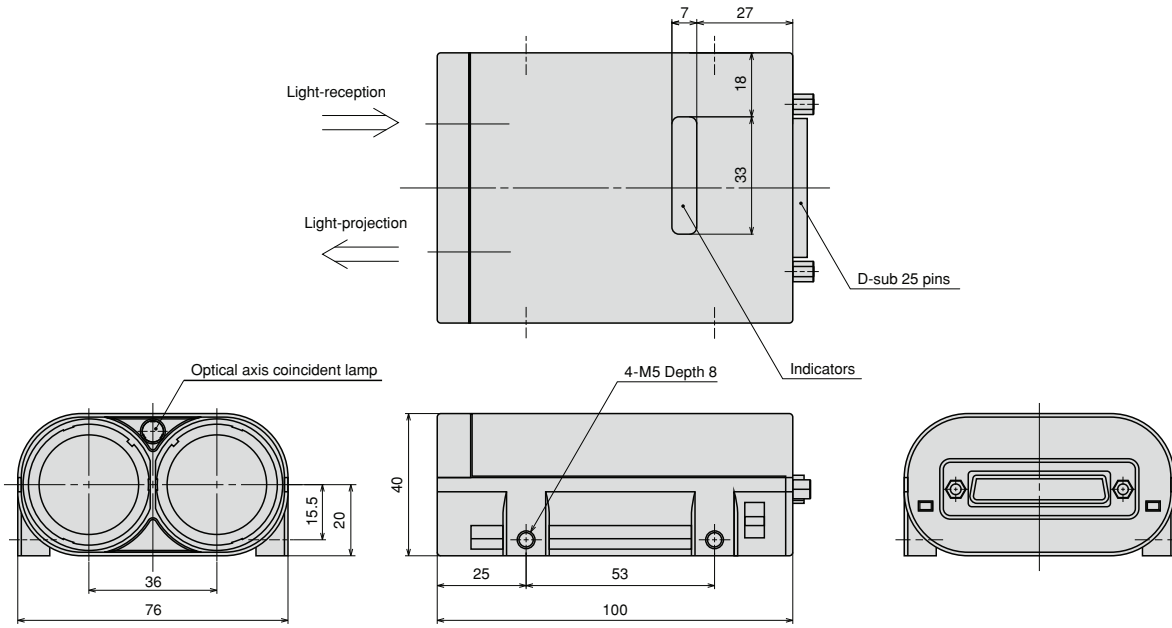
### Connection



Pin No.	Symbols	Functions
14	+SD	Transmission data
15	-SD	
16	+RD	Reception data
17	-RD	
12	+SD OFF	Transmission/Reception stop (+)
13	-SD OFF	Transmission/Reception stop (-)
18	+CD	Reception carrier detect (+)
19	-CD	Reception carrier detect (-)
20	SG	GND for signal
11	+VIN	Power source (24VDC)
23	-VIN	
4	ARM	Alarm output
25	CDO	Reception carrier output
6	D2	

Note) Don't connect 0V for power source to ground for signal (SG).

External dimensions



Optical axis coincident lamp

[Optical axis coincident lamp] lights up when optical axis will be coincident between EWF-11A and EWF-11B. [L1], [L2] and [C] light up.

