

Remote sensor system for DC 3-wire
4+4 signal transmission
Compact shape

Base part : **RC04E-422N-PU-__ (NPN)**
RC04E-422P-PU-__ (PNP)
Remote part : **RC04T-422N-PU-__ (NPN)**
RC04T-422P-PU-__ (PNP)

[Function of each component]

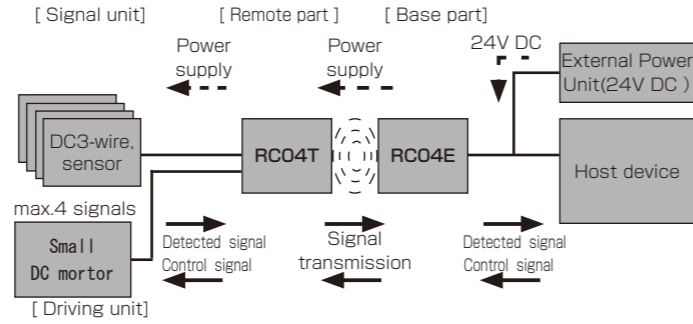
Driving unit : Small motors, solenoid valves can be connected.

Signal unit : Connects signal units such as detector switches or controllers.

Remote : A unit which is installed on the moving side and has following functions: to supply power for connected actuators, to transmit input signal from "detectors" to "base part" and to output the transmitted signals from "base part" to "detectors".

Base: A unit which is installed on the fixed side, and it has following functions: to supply power for "remote part" to "external controller" to "remote part".

System configuration

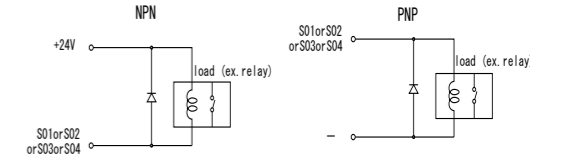


Wiring color

RC04T-422N/P-PU-__	electric power	RC04E-422N/P-PU-__	
Output+24 V	WH	Input+24 V	WH
Output0V	PaleBU	Input0 V	PaleBU
Output INZONE Iz	BK	Output INZONE Iz	BK
Input1 (SI1a)	BN	Output1 (SO1a)	BN
Input2 (SI2a)	RD	Output2 (SO2a)	RD
Input3 (SI3a)	OG	Output3 (SO3a)	OG
Input4 (SI4a)	YE	Output4 (SO4a)	YE
Output1 (SO1b)	GN	Input1 (SI1b)	GN
Output2 (SO2b)	BU	Input2 (SI2b)	BU
Output3 (SO3b)	VT	Input3 (SI3b)	VT
Output4 (SO4b)	GY	Input4 (SI4b)	GY

● When using an inductive load exceeding 50 mA, take measures against surges with a diode.

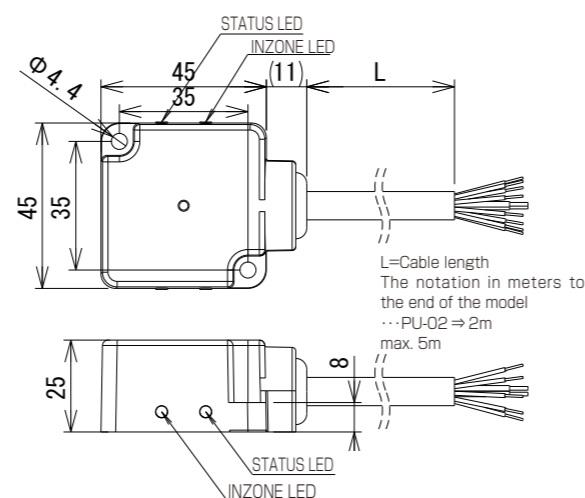
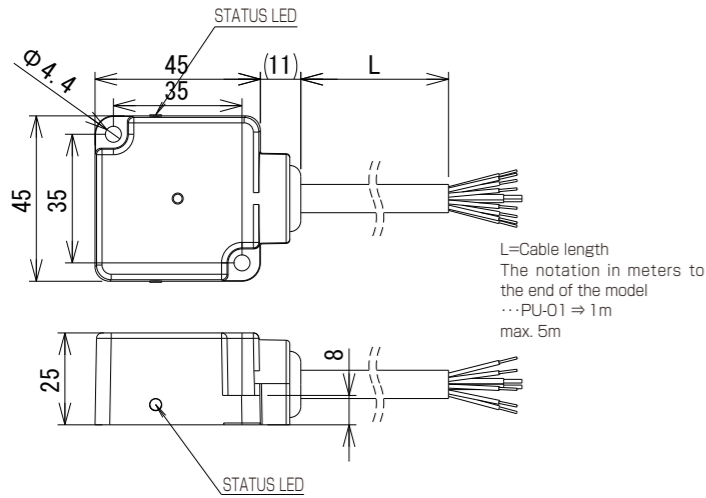
[Guidelines for element selection]
• Reverse withstand voltage : 10 times or more of circuit voltage
• Forward current : More than load current



Dimension

Remote part : RC04T-422N-PU-__, RC04T-422P-PU-__

Base part : RC04E-422N-PU-__, RC04E-422P-PU-__



Specification of the System

Type	NPN	RC04T-422N-PU-__	Type	NPN	RC04E-422N-PU-__
	PNP	RC04T-422P-PU-__		PNP	RC04E-422P-PU-__
Applicable sensor		DC 3-wire sensor	Operating voltage(Input voltage)		24 V DC ± 5 % (include ripple)
Output voltage		24V ± 1.5V DC	Current active		Max 1.4 A (with 1A drive)
Output current		≤ 1A (include output load current)	consumption static		Max 0.2 A (when not facing)
INPUT	Signals	4 signals	INPUT	Signals	4 signals
	Current load	≤ 7mA/1Input		Current load	≤ 7mA/1Input
	Signals	4 signals + 1 INZONE		Signals	4 signals + 1 INZONE
OUTPUT	Current load	≤ 200mA/1 output	OUTPUT	Current load	≤ 200mA/1 output
	protection circuit	Short-circuit protection, output surge absorption protection		protection circuit	Short-circuit protection, output surge absorption protection
Frequency		300Hz	protection circuit		Reverse connection protection, overheat protection, metal facing protection of the head*2, overcurrent protection
Led display		STATUS(green)	Frequency of operation		300Hz
Operating distance		0...3mm	LED indication		Status (Green), INZONE (Orange)
Center offset		Transmission distance is within 2 mm ± 4 mm Transmission distance 2 mm... 3 mm ± 1.5mm	Operating temperature		0...+50°C
Operating temperature		0...+50°C	Protection class		IP67
Protection class		IP67	Cable		PUR φ 7.7 (2x0.5mm ² + 9x0.18mm ²)
Cable		PUR φ 7.7 (2x0.5mm ² + 9x0.18mm ²)	Material		PBT
Material		PBT	Weight		Body 110g+ Cable 75g
Weight		Body 110g +Cable 75g/m			

*1 [RB] indicates robot cable specifications.

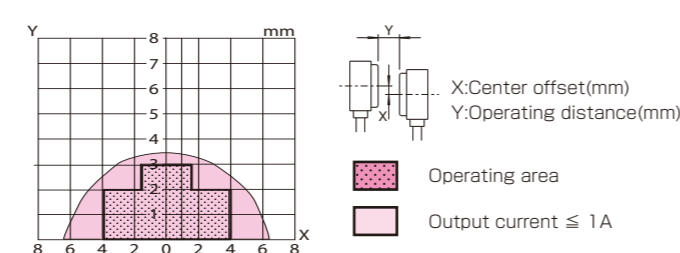
*2 Metal protection is a function to prevent metal heat generation when facing metal, and is not guaranteed to work with all metals. Do not intentionally place metal against the communication surface.

Available sensors

Use a sensor that operates correctly within the conditions in the table below.

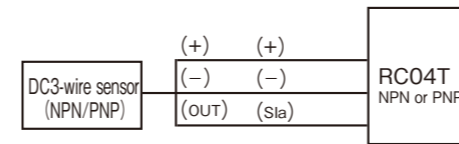
Supply voltage	24V DC
Residual voltage	≤ 6.5V
Load current	-

Typical Transmitting Diagram (Supply voltage at 24V / non-flush mount)



Wiring diagram

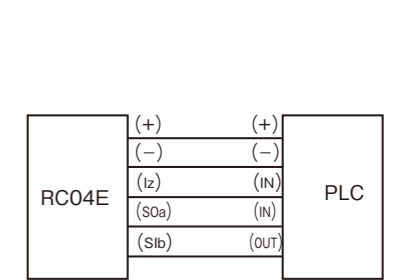
<When DC3-wire sensors are connected>



<When driving units are connected>



<Connection to an external PLC, etc.>



Protection function

The following is an explanation of the protection functions provided.

Reverse connection protection ... This function protects the circuit by preventing current from flowing to the internal circuit when +24V and 0V are connected in reverse on the power supply line of the base.

Overheat protection ... This function is that measures the temperature inside the output section and stops the power supply when the temperature exceeds a certain level. When the temperature drops, it restarts.

Short-circuit protection ... This function turns off the output for a certain period of time to protect the circuit when a current exceeding the specification flows through the signal output line due to wiring without load.

Overcurrent Protection ... This function detects the current inside the output section and stops transmitting for a certain period of time when the current exceeds a certain value, thereby protecting the circuit.

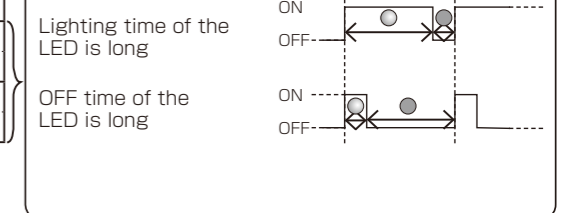
Output surge absorption protection...A surge absorption circuit is built in to protect the output circuit.

Metal facing protection of the head ... This function protects the circuit by stopping transmission for a certain period of time when metal is detected.

LED indication

■ Status LED (Green)

	LED	Blinking	Pattern	Meaning
Remote part	ON	●	—	The power supply is supplied.
	OFF	●	—	The power supply is not supplied.
Base part	Blink	⊙	The LED flashes at the same interval	Short circuit protection.
	Blink	⊙	Off time of the LED is long	Anomalous temperature
Base part	Blink	⊙	Lighting time of the LED is long	Oscillation circuit overcurrent, or when metal facing
	Blink	⊙	Off time of the LED is long	Supply voltage is high.
Base part	Blink	⊙	Lighting time of the LED is long	Supply voltage is low.
	Blink	⊙	Lighting time of the LED is long	Supply voltage is low.



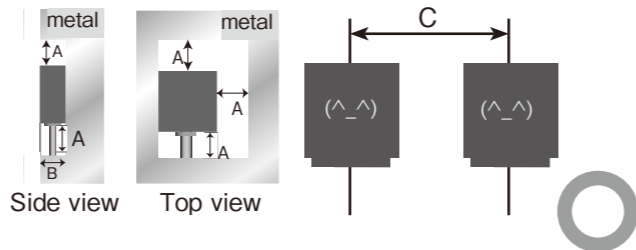
■ INZONE LED (Orange) Base part

The In zone LED lights up when remote part and the base part are in a confronting state and communication is possible

Installation method

· To avoid the influence of surrounding metals and mutual interference between products, be sure to open a space larger than the value shown in the table below. In addition to the mounting surface, only one surface of A (periphery) can be in contact with metal. (Fig. 1) The screw tightening torque is 1.5N·m.

Type code	A(Surroundings)	B(depth)	C (Parallel installation)
RC04T-422N-PU-__	6mm	25mm	135mm
RC04T-422P-PU-__			
RC04E-422N-PU-__			
RC04E-422P-PU-__			



(Fig. 1) Arranged with a space

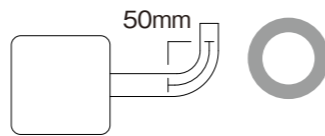
· When wiring the cable by bending it, use the cable outlet. Install so that the cable is straight (approximate: about 10 mm) Install the cable with a bending radius of 50 mm or more. (Figure 2)

· Excessive force on the cable during installation to avoid excessive stress Please do not pull with.

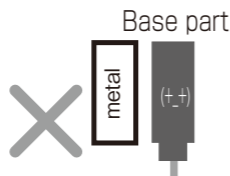
· Fix the cable so that the sensor, the base of the sensor, and the cable itself are not shaken or shocked.

· Since metal overheating and internal elements may be damaged, install the base part so that it does not face metal, and then turn on the power. (Fig. 3)

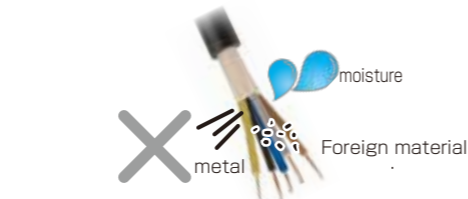
· If foreign matter get inside the device from the end of the cable, it may cause fire, smoke, fire, electric shock, or malfunction due to malfunction or short circuit. (Fig. 4)



(Fig. 2) Cable bending radius



(Fig. 3) Metal facing output



(Fig. 4) Foreign material invades inside the sensor

⚠ Precautions for installation and design

■ Be sure to check it as there are various dangers such as failure if it is installed incorrectly.

· To avoid heat generation and ignition due to induction heating, do not put metal objects between the operating heads.

· To avoid heat generation and unexpected accidents, remove metal chips and cutting chips from the transmission surface of the head.

· To avoid damaging the product due to abnormal heat generation, do not hold the transmission distance / center offset / overload condition outside the specifications for a long time.

· Impact and external noise may cause malfunction or failure. Route the cable away from power lines and high-voltage equipment without giving a shock. (Fig. 5)

· Make sure that the total current consumption of the connected devices does not exceed the output current value.

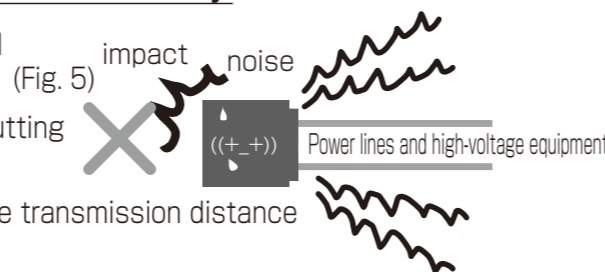
· In order to consider and reduce the self-heating of this product, take measures so that it can be used below the specified ambient temperature.

· To reduce the effect of self-heating (heat dissipation), it is recommended to mount it on metal using case mounting screws.

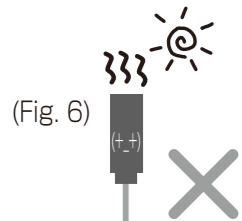
· If it is installed in a place where it is exposed to direct sunlight or hot air from a heater, it may cause a fire or malfunction. (Fig. 6)

· If you apply power to the remote part or energize either one with the base part sections facing each other, a failure may occur. (Fig. 7)

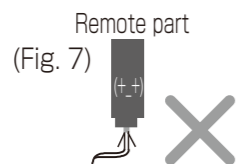
· Please use in an environment where it is not exposed to organic solvents or liquids containing them. (Fig. 8)



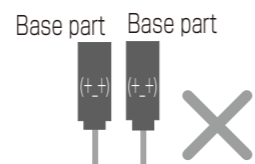
(Fig. 5)



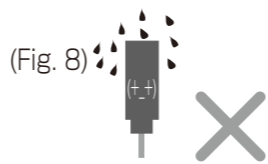
Direct sunlight and hot air



Power apply



Energized by facing each other



Liquids such as organic solvents

· The remote coupler system is a system for supplying and transmitting power and signals without contact. Do not use it for any purpose other than this one.

· Design with the combination described in the instruction manual or user's guide. Opposition in any other combination may cause malfunction or damage.

· Use a constant voltage power supply such as a switching power supply. (If a power supply with ripples above the rating, such as a full-wave rectified power supply, is used, it may cause malfunction.)

· If the power supply exceeds the rated voltage, there is a risk of overheating and ignition. Before supplying power, be sure to check that the power supply is specified in the specifications.

· Design it so that it can be used under the wiring and surrounding environment conditions specified in the specifications. Also, design to satisfy the "transmission distance", "center offset", "output voltage", and "output current". Designs outside the specifications may cause unexpected malfunctions, troubles, and malfunctions due to deterioration of internal parts.

· When wiring for installation, maintenance, failure, etc., be sure to check that the main breaker (power panel) is cut before performing the work. If you work while the line is live, you may get an electric shock or malfunction.

· As with other electronic devices, inrush current may be generated when the system starts up, so please set the power supply in consideration of the inrush current.

· Design the system so that the entire system works safely even if the external power supply is abnormal or the product fails.

· Please be careful about the influence on the material degradation due to the installation environment and the intrusion of foreign material. Especially when using it outdoors, please install it with less influence from ultraviolet rays.

⚠ Other notes

■ About product handling

· Do not disassemble or modify our products. It may cause a malfunction, fire, electric shock, etc., or cause serious damage. In addition, the warranty will be void if the product is disassembled or modified.

· If you are in an abnormal condition such as smoke, abnormal noise, or strange odor, discontinue use immediately as there is a risk of malfunction, fire, electric shock, or accident.

· Be sure to use accessories and specified parts. If you do not use it, it may cause malfunction, accident, malfunction, fire, etc.

· If you add or move equipment, please check the installation conditions again.

· When disposing of this product, dispose of it as industrial waste.

· Please note that the contents and specifications of this manual are subject to change without notice. If you have any questions about the contents of this manual, please contact us.

■ Standards and regulations

· The control communication device installed in the product corresponds to a "weak radio station (weak radio wave device)", so the Minister of Internal Affairs and Communications' radio station permit (diploma) is not required. However, please be careful when operating it as it may affect electronic devices and medical devices (pacemakers, etc.).

Product failures due to mishandling are increasing. Please be sure to read this manual, and if you have any concerns, please contact the following before energizing.

B & PLUS K.K.

<https://www.b-plus-kk.jp/> E-mail sales@b-plus-kk.jp