

LIQUID LEAK SENSOR

OPERATION MANUAL

(Web Site Downloaded only)

For RS-1000 Series, as following models*

Control Unit:

RS-1000C	RS-1000C-NC
RS-1000CA	RS-1000CA-NC

Detection Unit:

RS-1000D	RS-1000PN
RS-1000P	RS-1000PP
RS-1000F	RS-1000FP

*For '**RS-1000 Series Standalone Detection Unit**', please refer a separate operation manual:
RS-1000DA-24V, RS-1000PA-24V, RS-1000FA-24V, RS-1000DAP, RS-1000PAP, RS-1000FAP

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Introduction

- We appreciate that you have chosen our Liquid Leak Sensor.
- Before you install or operate it, please read this operation manual thoroughly, and follow the instruction in order to avoid any accidents, malfunction, defects and hazards.
- Please keep this manual with good care as long as the sensor is being operated.

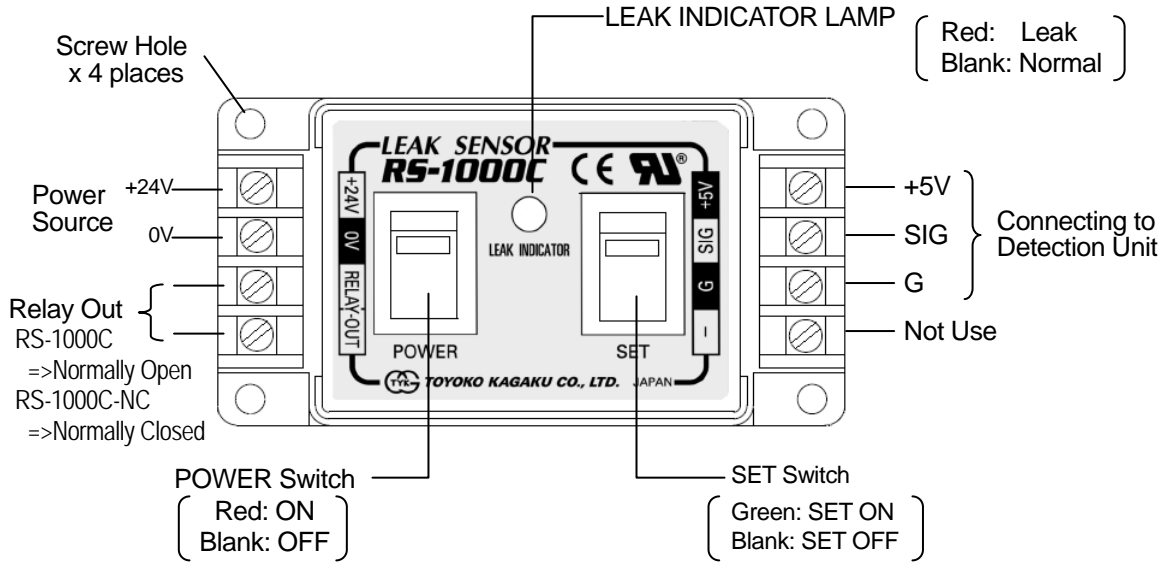
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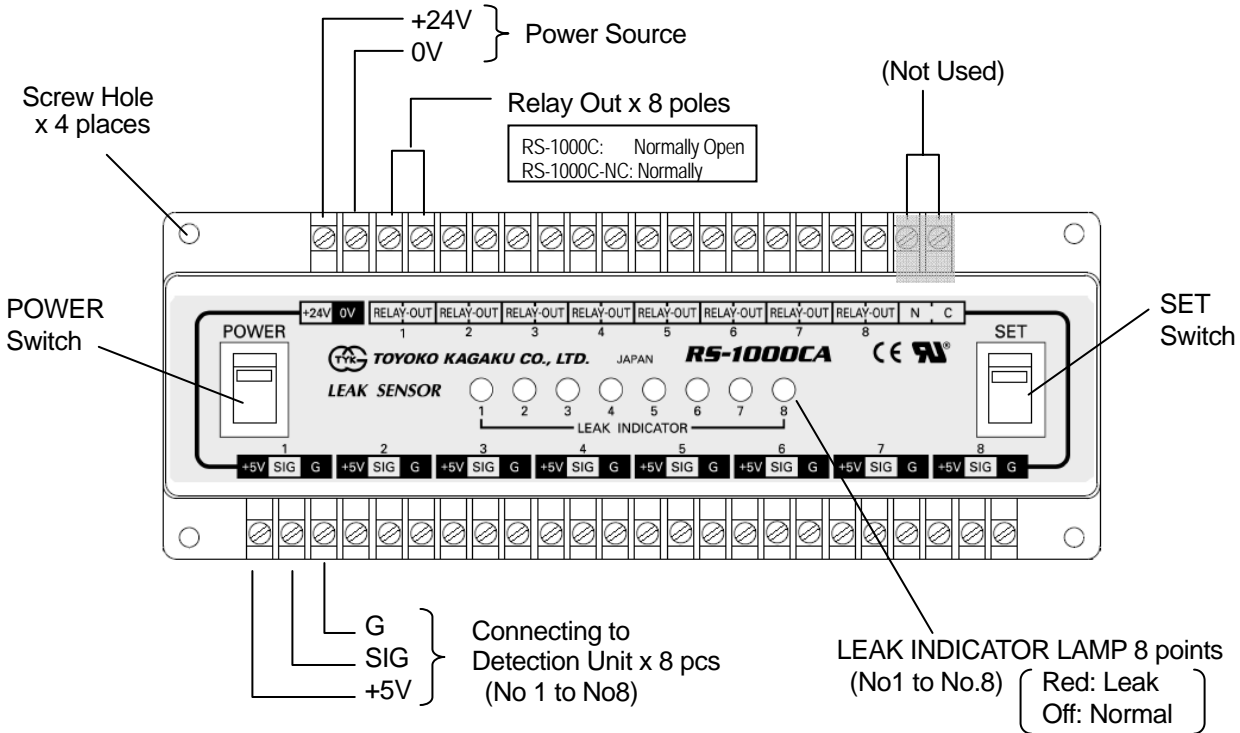
1. Designation of Sensors

1.1. Control Unit

(1) RS-1000C/ RS-1000C-NC (Non-Discriminative Single Output)



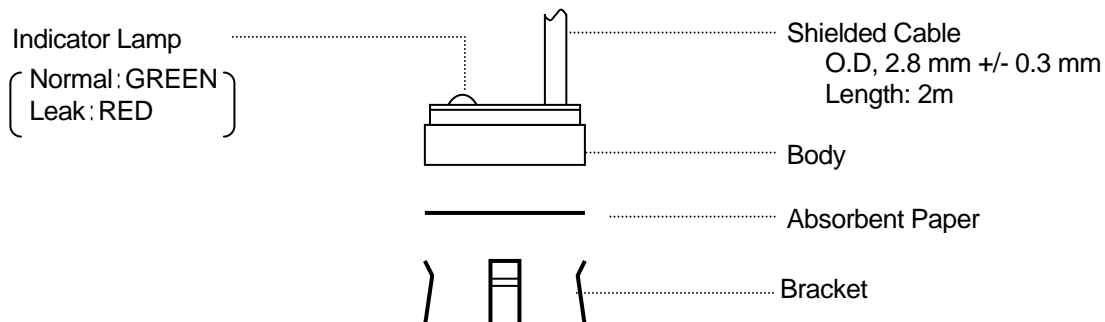
(2) RS-1000CA / RS-1000CA-NC (Discriminative Multi-Sensing)



* Each INDICATOR LAMP corresponds with each Detection Unit Terminal Number respectively.

1.2. Detection Unit

(1) RS-1000D (Body Material: PVC)

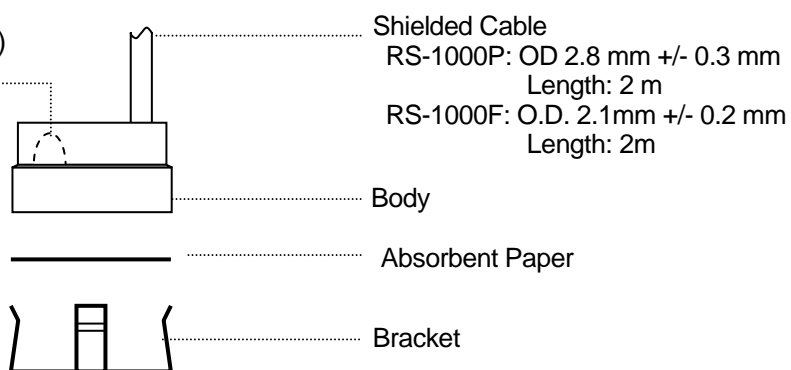


(2) RS-1000P (Body Material: P.P.)

RS-1000F (Body Material: PFA)

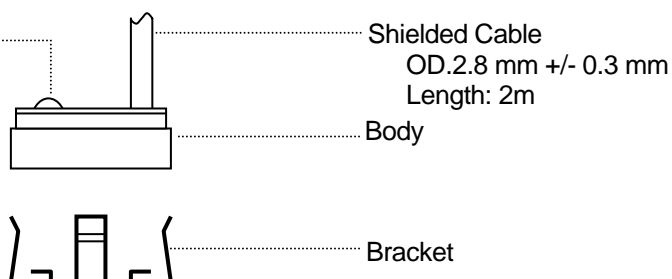
Indicator Lamp
embedded inside the case

(Normal : GREEN)
(Leak : RED)



(3) RS-1000PN (Body Material: PVC)

Indicator Lamp
(Normal : GREEN)
(Leak : RED)

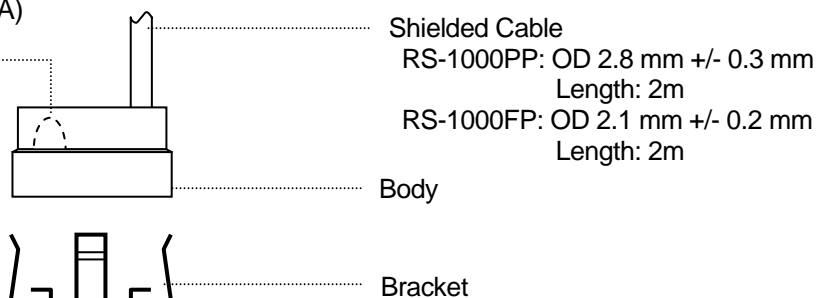


(4) RS-1000PP (Body Material: P.P.)

RS-1000FP (Body Material: PFA)

Indicator Lamp
embedded inside the case

(Normal : GREEN)
(Leak : RED)



2. Installation of Detection Unit

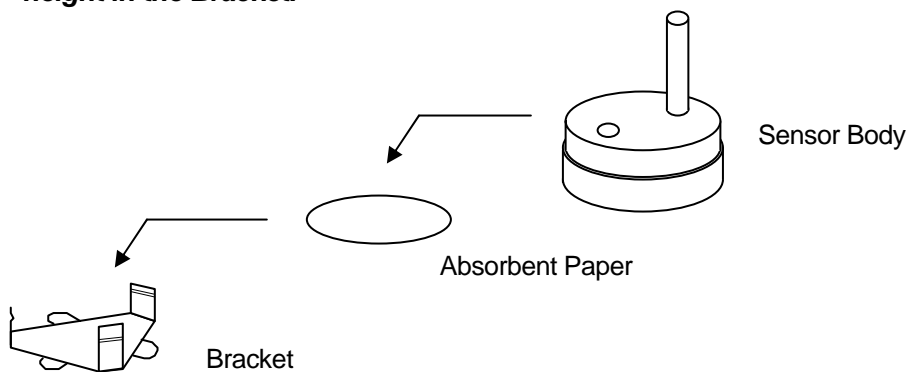
2.1. RS-1000D / RS-1000P / RS-1000F

- (1) Place the Bracket of the Detection Unit on the surface where you want to detect the leakage, and fix it firmly.
- (2) Place a piece of the Absorbent Paper onto the Bracket.

NOTE: *Be aware not to use 2 or more pieces of the Paper at a time in the Bracket.*

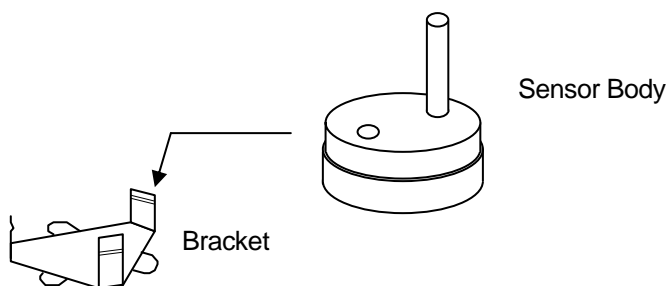
- (3) To mount the body, push it into the Bracket to the bottom completely.

NOTE: *Verify that the Body has fixed entirely and it does not hook up at intermediate height in the Bracket.*



2.2 RS-1000PN / RS-1000PP / RS-1000FP (These models are Paperless Type)

- (1) Place the Bracket of the Detection Unit on the surface where you want to detect the leakage, and fix it firmly.
- (2) To mount the Body, push it into the Bracket to the bottom completely.



NOTE: *Do not use any Absorbent Paper for these Paperless Type sensors.*

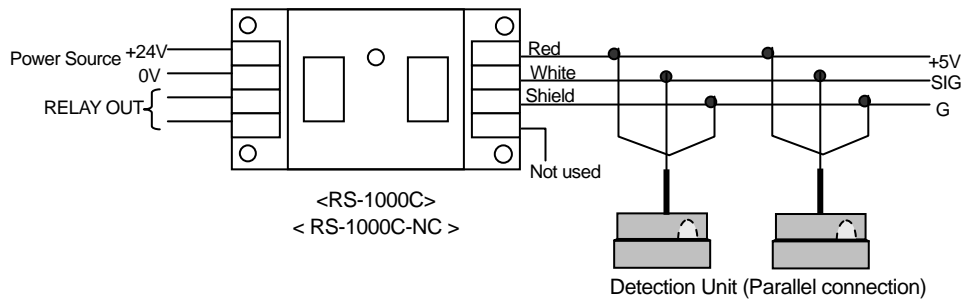
NOTE: *Verify that the Body has fixed entirely and it does not hook up at intermediate height in the Bracket.*

WARNING: *These detection units must be used with RS-1000 series control unit. Do not connect them with the other equipments than specified in this manual.*

3. Wiring Instruction

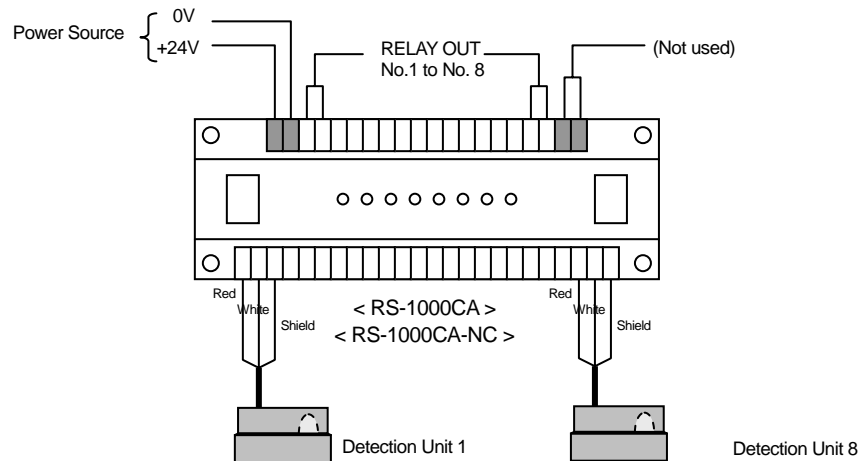
3.1. RS-1000C/ RS-1000C-NC

- (1) The Detection Unit has a 2-core shielded cable, 2 meters long (*except optional length*).
- (2) Connect a red lead to the Control Unit's terminal **+5V**, a white lead to terminal **SIG** and a shield lead to terminal **G** respectively.
- (3) When 2 or more Detection Units will be used, follow the same procedure to every detection units as above. Please note that the wirings should be parallel connection. Maximum number of the Detection Units connected to one Controller at a time is 10.
- (4) Connect the power source, 24VDC, to Control Unit's terminals **+24V** and **0V**.
- (5) Your load device may be connected to the terminal of **RELAY OUT**.



3.2. RS-1000CA/ RS-1000CA-NC

- (1) The detection Unit has a 2-core shielded cable, 2 meters long (*except optional length*).
- (2) Connect a red lead to the control Unit's terminal **+5V**, a white lead to terminal **SIG** and a shield lead to terminal **G** respectively.
- (3) When 2 or more Detection Units will be used, follow the same procedure to every Detection Unit as above. Maximum number of the Detection Units used at a time is 8.
- (4) Connect the power source of 24VDC to the Control Unit's terminals **+24V** and terminals **0V**.
- (5) Your load devices may be connected to the terminal of **RELAY OUT**.



NOTE: Do not supply the power source before all the wiring has been completed. After wiring has completed, put the protection covers on the Control Unit's terminals before using the sensor.

4. Operation

WARNING: *The following procedure must be implemented after wiring has completed and prior to actual operation in the application.*

- (1) After required installation and wiring have been completed, turn on the **POWER** switch of the Control Unit, and make sure the **POWER** switch lights red LED to show the power is activated. At the same time, Indicator Lamp of Detection Unit is green.
- (2) Turn on the **SET** Switch of the Control Unit, and make sure the **SET** Switch lights its green LED. Now the relay output function becomes activated.

*RS-1000C: **RELAY OUT** is **open** at this condition. All RELAY OUT terminals of RS-1000CA are the same position at the initial hooking up.

RS-1000C-NC: **RELAY OUT is **closed** at this condition. All RELAY OUT terminals of RS-1000CA-NC are the same position at the initial hooking up.

Please be careful if SET Switch remains OFF all the time, the output of Control Unit never becomes ON by any condition.

Useful SET Switch: When either Control Unit or Detection Unit is power on, you may have rushing currency all the time, and this will activate output ON in a moment. SET Switch can avoid this momentary ON alarm reaching to your house system, eliminating a wrong alert.

- (3) Now the set procedure has completed. Verify the following status:

1] Control Unit: LEAK INDICATOR is blank, and **RELAY OUT** is not activated.

The output contact status is “reverse” between the standard model of RS-1000C/1000CA, and normally closed model of RS-1000C-NC/1000CA-NC.

2] Detection Unit: Indicator Lamp is green when there is normal condition.

*If Indicator Lamp is red, please check the absorbent paper, position of Detection Unit in the Bracket.

*If Indicator Lamp is blank, please check again the wiring and power source.

3] Leak Alarm Output: Verify the output status followed to the steps below:

a) RS-1000C/ RS-1000P/ RS-1000F

Take the Detection Unit out from the Bracket. The Indicator Lamp and LEAK INDICATOR becomes red. The **RELAY OUT** becomes “activated.”

b) RS-1000PN/ RS-1000PP/ RS-1000FP

Pour a drop of water to the edge of Detecting Unit until the Indicator Lamp becomes red. The LEAK INDICATOR is red, too. The **RELAY OUT** is activated.

After these verification tests are done, please set the units at the initial conditions and dry the water remaining around the Detection Unit.

The multi-terminal Unit of RS-1000CA and RS-1000CA-NC has independent set of sensor input and relay output by 8 pairs. When you apply some pairs of sensor and output set, you should implement the above same test for each pair one by one.

NOTE: *The liquid detecting device in the Detection Unit is photoelectric sensitive device. When the Detection Unit receives a strong light from outside of the sensor Body (larger than 1,000lx), it may cause malfunction of detecting the leak liquid at the sensor from time to time. We recommend you to confirm that no such a strong light emitting instrument may not be located at close position to Detection Unit, or to put a screen avoiding the light may reach to the Detection Unit. The normal room lighting instrument may not effect the Detection Unit.*

5. Resetting after the Leak Detection

WARNING: *The liquid may contain hazardous acids, alkalis, or chemical substances. The following procedure has to be done by a well-trained person who is knowledgeable for that liquid.*

NOTE: *The protection gloves must be put on.*

NOTE: *In case of handling any chemicals that are obliged to wear the protection goggles, masks, etc. by regulation, you must follow the regulation.*

- (1) Turn the **SET** Switch and **POWER** Switch off. (Maintain **SET** Switch has turned off, you can take the Detection Unit out of Bracket without alert output signal to your system.
- (2) Remove the Detection Unit and wipe off its bottom clearly
- (3) Remove the wetted Absorbent Paper and wipe the Bracket and surroundings.
(If the Paperless Types are used, just wipe the Bracket and surroundings.)
- (4) Install new Absorbent Paper and place Detection Unit properly.
(For the Paperless Types, just place Detection Unit to the Bracket.)
- (5) Turn the **SET** Switch and **POWER** Switch on, now the reset procedure has completed.
- (6) Check the function of Leak Sensor followed by the above procedure.

NOTE: *The periodical check is recommended as following your factory protocol or regulations of maintenance plan, but more than at least annually.*

WARNING: *The Sensor is not designed explosion proof. Do not use in the hazardous area. For this category of UL standard does not allow to use in hazardous area, and UL does not evaluate for explosive circumstances.*

6. Specification

6.1. Control Unit

Model	RS-1000C	RS-1000C-NC	RS-1000CA	RS-1000CA-NC
Input Voltage	24V DC±10%			
Power Consumption	150mA below		200mA below	
Indication of LED	Red: Leak		Off: Normal	
Output, Relay Contact	NO, SPST Max 1A DC24V (resist load) 1 set	NC, SPST Max 1A DC24V (resist load) 1 set	NO, SPST Max 1A DC24V (resist load) 8 sets	NC, SPST Max 1A DC24V (resist load) 8 sets
Discriminative Detection	No		Yes	
Ambient Temp.	- 10 ~ 60 deg C (environment)			
Material	ABS Polymer			
Weight	90g		300g	

6.2. Detection Unit

Model	RS-1000D	RS-1000P	RS-1000F	RS-1000PN	RS-1000PP	RS-1000FP	
Supply Voltage	5V DC +/- 5%						
Power Consumption	20mA below						
Indication of LED	Red: Leak Green: Normal						
Connection with Control Unit	Required						
Ambient Temp.	- 10 ~ 60 deg C (environment)						
Material	Case	PVC	P.P.	PFA	PVC	P.P.	PFA
	Cable**	HT-PVC	HT-PVC	FEP	HT-PVC	HT-PVC	FEP
	Lamp	EPOXY	EPOXY (embedded)		EPOXY	EPOXY (embedded)	
Water Protect	Silicon Stuffed	Sealed, Silicon Stuffed		Silicon Stuffed	Sealed, Silicon Stuffed		
Weight	40g	55g		40g	55g		
Absorbent Paper	Required			Not Required			
Bracket	P/N-6417, P/N-6418, P/N-6419			P/N-6414	P/N-6416, P/N-6420B		

** Out diameter of the cable is shown as below, but the slight difference may remain as its tolerance because of the manufacturing process.

HT-PVC Cable: O.D. 2.8 mm +/- 0.3 mm, Length is 2 m (at factory, other than specific request when ordered)

FEP Cable: O.D. 2.1 mm +/- 0.2 mm, Length is 2 m (at factory, other than specific request when ordered)

6.3. Bracket

Models	P/N-6417	P/N-6418	P/N-6419	P/N-6414	P/N-6416	P/N-6420B
Sensors	RS-1000D/ RS-1000P/ RS-1000F			RS-1000PN	RS-1000PP/ RS-1000FP	
Material	SUS301+ Ni Plated	PVC		SUS301+ Ni Plated	SUS301 + Ni Plated	PVC
Installation	For M3 screw holes		For M4 screw	For M3 screw	For M3 screw Holes	For M4 Screw Hole

*For the information of dimension and outlook shape of the above products, these would be found in the brochure of "RS-1000/2000 Series Leak Sensor."