

**RC800D
Reagent Type Residual Chlorine
Sensor Unit
Start-up and Safety Precautions**

IM 12F04B10-01EN

◆ INTRODUCTION

Thank you for purchasing RC800D Reagent Type Residual Chlorine Sensor Unit.
This User's Manual contains all essential information for the user to make full use of RC800D.
Please read the following respective documents before installing and using the instrument.
The related documents are listed as follows.

General Specifications

Contents	Document number	Note
RC800D, FLXA402T Residual Chlorine Analyzer	GS 12F04B10-01EN	Online manual

"EN" in the document number is the language code.

User's Manual

Contents	Document number	Note
RC800D Reagent Type Residual Chlorine Sensor Unit Start-up and Safety Precautions	IM 12F04B10-01EN	Attached to the product (printed manual) (This manual)
RC800D Reagent Type Chlorine Sensor Unit	IM 12F04B10-02EN	Online manual
FLXA402T Liquid Analyzer for Turbidity detector and Chlorine sensor unit Start-up and Safety Precautions	IM 12A01G01-01EN	Attached to the product (printed manual)
FLXA402T Liquid Analyzer for Turbidity detector and Chlorine sensor unit Installation and Wiring	IM 12A01G01-02EN	Online manual
FLXA402T Liquid Analyzer for Turbidity detector and Chlorine sensor unit Operation of Converter	IM 12A01G01-03EN	Online manual
FLXA402T Liquid Analyzer for Turbidity detector and Chlorine sensor unit Operation of pH	IM 12A01G02-01EN	Online manual
FLXA402T Liquid Analyzer for Turbidity detector and Chlorine sensor unit Operation of SC	IM 12A01G03-01EN	Online manual

"EN" in the document number is the language code.

An exclusive User's Manual might be attached to the products whose suffix codes or option codes contain the code "Z" (made to customers' specifications). Please read it along with this manual.

Technical Information

Contents	Document number	Note
FLXA402T Liquid Analyzer for Turbidity and Chlorine MODBUS Communication	TI 12A01G01-62EN	Online manual

"EN" in the document number is the language code.

You can download the latest documents from our website. Scan QR code.

<http://www.yokogawa.com/an/flxa402t/download/>



Refer to each corresponding manual for other related products.

■ Notes on Handling User's Manuals

- Please hand over the user's manuals to your end users so that they can keep the user's manuals on hand for convenient reference.
- Please read the information thoroughly before using the product.
- The purpose of these user's manuals is not to warrant that the product is well suited to any particular purpose but rather to describe the functional details of the product.
- No part of the user's manuals may be transferred or reproduced without prior written consent from YOKOGAWA.
- YOKOGAWA reserves the right to make improvements in the user's manuals and product at any time, without notice or obligation.
- If you have any questions, or you find mistakes or omissions in the user's manuals, please contact our sales representative or your local distributor.

■ Drawing Conventions

Some drawings may be partially emphasized, simplified, or omitted, for the convenience of description.

Some screen images depicted in the user's manual may have different display positions or character types (e.g., the upper / lower case). Also note that some of the images contained in this user's manual are display examples.

■ Trademark Acknowledgements

- FLEXA, FLXA, SENCOM are trademarks or registered trademarks of Yokogawa Electric Corporation.
- All other company and product names mentioned in this user's manual are trademarks or registered trademarks of their respective companies.
- We do not use TM or ® mark to indicate those trademarks or registered trademarks in this user's manual.

■ Product Disposal

The instrument should be disposed of in accordance with local and national legislation/regulations.

■ Warranty and service

Yokogawa products and parts are guaranteed free from defects in workmanship and material under normal use and service for a period of (typically) 12 months from the date of shipment from the manufacturer.

Individual sales organizations can deviate from the typical warranty period, and the conditions of sale relating to the original purchase order should be consulted. Damage caused by wear and tear, inadequate maintenance, corrosion, or by the effects of chemical processes are excluded from this warranty coverage.

In the event of warranty claim, the defective goods should be sent (freight paid) to the service department of the relevant sales organization for repair or replacement (at Yokogawa discretion). The following information must be included in the letter accompanying the returned goods:

- Part number, model code and serial number
- Original purchase order and date
- Length of time in service and a description of the process
- Description of the fault, and the circumstances of failure
- Process/environmental conditions that may be related to the failure of the device.
- A statement whether warranty or non-warranty service is requested
- Complete shipping and billing instructions for return of material, plus the name and phone number of a contact person who can be reached for further information.

Returned goods that have been in contact with process fluids must be decontaminated/disinfected before shipment. Goods should carry a certificate to this effect, for the health and safety of our employees.

Material safety data sheets should also be included for all components of the processes to which the equipment has been exposed. Read this User's Manual before operating RC800D to make full use of the function.

Throughout this user's manual, you will find several different types of caution or warnings. Follow the cautious message for safety precautions.

◆ CE marking products

In relation to CE marking, the authorized representative for this product in EEA:

Yokogawa Europe B.V.

Euroweg 2, 3825 HD Amersfoort, The Netherlands

and the importer for this product into the EU/EEA market via the YOKOGAWA sales channel is:

Yokogawa Europe B.V.

Euroweg 2, 3825HD Amersfoort, The Netherlands

In relation to UKCA marking, the importer for this product into the Great Britain market via the YOKOGAWA sales channel is :

Yokogawa United Kingdom Limited

Stuart Road Manor Park Runcorn, WA7 1TR, United Kingdom

◆ Control of Pollution Caused by the Product

This is an explanation for the product based on “Control of Pollution caused by Electronic Information Products” in the People’s Republic of China.

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
外壳(金属)	×	○	○	○	○	○
外壳(塑料)	×	○	○	○	○	○
印刷电路板组件	×	○	○	○	○	○

○： 表示该有害物质在该部件中所有均质材料中的含量都在GB/T26572所规定的限量要求以下。

×： 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T26572所规定的限量要求。

环保使用期限：这个标志是基于SJ/T11364，在中国（不包括台湾，香港，澳门）贩售的电子电器产品所适用的环保使用期限。



只要遵守产品上关于安全及使用上的注意事项，从制造之日起计算在该年限内，不会发生制品内的有害物质外泄，突然变异，对环境或人体以及财产产生重大影响的情况。

（注）该年限是《环境保护使用期限》，不是产品的保质期限。

另外，关于替换部件的推荐替换周期，请阅读使用说明书。

◆ Safety Precautions

■ Safety, Protection, and Modification of the Product

- In order to protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions described in this user's manual. We assume no liability for safety if users fail to observe these instructions when operating the product.
- If this instrument is used in a manner not specified in this user's manual, the protection provided by this instrument may be impaired.
- If any protection or safety circuit is required for the system controlled by the product or for the product itself, prepare it separately.
- Be sure to use the spare parts approved by Yokogawa Electric Corporation (hereafter simply referred to as YOKOGAWA) when replacing parts or consumables.
- Modification of the product is strictly prohibited.
- The following safety symbols are used on the product as well as in this manual.



WARNING

This symbol indicates that an operator must follow the instructions laid out in this manual in order to avoid the risks, for the human body, of injury, electric shock, or fatalities. The manual describes what special care the operator must take to avoid such risks.



CAUTION

This symbol indicates that the operator must refer to the instructions in this manual in order to prevent the instrument (hardware) or software from being damaged, or a system failure from occurring.

CAUTION

This symbol gives information essential for understanding the operations and functions.

NOTE

This symbol indicates information that complements the present topic.



This symbol indicates Protective Ground Terminal.

■ Warning and Disclaimer

The product is provided on an “as is” basis. YOKOGAWA shall have neither liability nor responsibility to any person or entity with respect to any direct or indirect loss or damage arising from using the product or any defect of the product that YOKOGAWA can not predict in advance.



WARNING

Installation and wiring

The RC800D should only be used with equipment that meets the relevant IEC, American or Canadian standards.

Yokogawa accepts no responsibility for the misuse of this unit.

Don't install “general purpose type” instruments in the hazardous area.

Do not use an abrasive or organic solvent in cleaning the instrument.

Electrostatic discharge

The RC800D contains devices that can be damaged by electrostatic discharge. When servicing this equipment, please observe proper procedures to prevent such damage. Replacement components should be shipped in conductive packaging. Repair work should be done at grounded workstations using grounded soldering irons and wrist straps to avoid electrostatic discharge.

CAUTION

The Instrument is packed carefully with shock absorbing materials, nevertheless, the instrument may be damaged or broken if subjected to strong shock, such as if the instrument is dropped. Handle with care.

This instrument is a Class A product, and it is designed for use in the industrial environment. Please use this instrument in the industrial environment only.

When you open the front cover, make sure the screws are completely out of the screw holes, and then open the front cover slowly in order not to damage the threaded parts on the housing. If the threaded parts are damaged and the screws cannot be tightened, the waterproof performance will deteriorate.

Be careful to touch the concentrated sulfuric acid.

◆ Compliant Standards

Safety:

EN 61010-1, EN IEC 61010-2-030
 UL 61010-1, UL 61010-2-030
 CSA-C22.2 No.61010-1
 CSA-C22.2 No.61010-2-030
 GB30439
 Installation altitude: 2000 m or less
 Overvoltage Category based on IEC 61010: II
 Pollution level: IEC 61010: 2

Note

Pollution level shows the level of existing the solid, liquid and gas which break electrical isolation. Category 2 is applied to normal room environment.

EMC:

EN 61326-1 Class A, Table 2 (For use in industrial locations)
 EN 61326-2-3
 EN 61000-3-2
 EN IEC 61000-3-2
 EN 61000-3-3
 RCM: EN 55011 Class A, Group 1
 Korea Electromagnetic Conformity Standard
 한국 전자파적합성 기준 Class A

Environmental regulation:

RoHS Directive: EN IEC 63000

Waste Electrical and Electronic Equipment (WEEE) Directive :

This product is purposely designed to be used in a large scale fixed installations only and, therefore, is out of scope of the WEEE Directive. The WEEE Directive does not apply.

The WEEE Directive is only valid in the EU.

1. Instrument Check

Upon delivery, unpack the instrument carefully and inspect it to ensure that it was not damaged during shipment. If damage is found, retain the original packing materials (including the outer box) and then immediately notify the carrier and the relevant Yokogawa sales office.

Make sure the model and suffix code on the nameplate match your order and the necessary accessories are included.

■ Model & Suffix Codes

RC800D Reagent Type Residual Chlorine Sensor Unit

Model	Suffix code	Option code	Description
RC800D	.....	.....	Reagent Type Residual Chlorine Sensor Unit
Measurement Object	-F	.....	Free Available Chlorine (Free Chlorine)
	-C	.....	Combined Chlorine Insensitive Version (Free Chlorine)
	-T	.....	Residual Chlorine (Total Chlorine)
Type	-AB	.....	General purpose for RCM, CE, China standard
	-AD	.....	General purpose for CSA
	-AG	.....	General purpose for KC
	-AJ	.....	General purpose
Sampling System	-1N	.....	For tap water/water distribution measurement (without sand filter)
	-2N	.....	For raw water measurement One Sand Filter, with auto.cleaning
	-3N	.....	For raw water measurement DBL sand filter, with auto.cleaning
	-1A	.....	For tap water/water distribution measurement with auto.Zero calibration (without sand filter)
	-2A	.....	For raw water measurement One Sand Filter with auto.Zero calibration
	-3A	.....	For raw water measurement DBL sand filters with auto.Zero calibration
Stand Material	-AB	.....	Carbon steel stanchion
	-SB	.....	Stainless steel stanchion
Power Supply	-10	.....	100V AC, 50Hz
	-11	.....	100V AC, 60Hz
	-12	.....	110V AC, 50Hz
	-13	.....	110V AC, 60Hz
	-22	.....	220V AC, 50Hz
	-23	.....	220V AC, 60Hz
Pump for Air Purge	-NA	.....	Without pump for Air Purge
	-P1	.....	Pump for Purging Air (100V, 50/60 Hz)
	-P2	.....	Pump for Purging Air (110V, 50/60 Hz)
	-P4	.....	Pump for Purging Air (220V, 50/60 Hz)
—	-NN	.....	Always -NN
—	-NN	.....	Always -NN
Option	/SCT		Stainless Steel Tag Plate
	/CB3		Conduit adapter G1/2 x 3 pcs
	/CD3		Conduit adapter 1/2 NPT x 3 pcs
	/CF3		Conduit adapter M20 x 1.5 x 3 pcs
	/ARS		With Arrester
	/NR		Without reagent set for start-up

● Accessories

Name	Q'ty	Parts No.	Remarks
Polishing powder (Alumina)	1 Bottle	K9088PE	For polishing electrode
Lubricant	1	K9041RA	For Liquid flow pump drive
Glass beads	1	K9332ZJ	2 bags / 1 Q'ty (including spare)
Valve sheet	4	K9041HC	For Liquid flow pump (for spare)
Bellophram	1	L9819AB	For sample pump (for spare)
	1	L9819AA	For reagent pump (for spare)
Tool	1	K9041SK	For Valve sheet replacement
Hardware for Bellophram	1 set	K9041SW	For Bellophram replacement
Allen wrench	1 set	L9827AB	Nominal size: 1.5 mm
		L9827AC	Nominal size: 2.5 mm
		L9827AD	Nominal size: 4 mm
		L9827AE	Nominal size: 5 mm
		L9827AF	Nominal size: 6 mm
		L9827AT	Nominal size: 2 mm

2. Wiring and Installation

For details, refer to the User's Manual IM 12A01G01-02EN.

2.1. Installation Site

Select an installation site where

Ambient Operating temperature:	-5 to +55 °C
Storage Temperature:	-30 to +70 °C
Humidity:	10 to 90% RH at 40°C (Non-condensing)

Install the RC800D Reagent type Residual Chlorine Sensor Unit at a location that

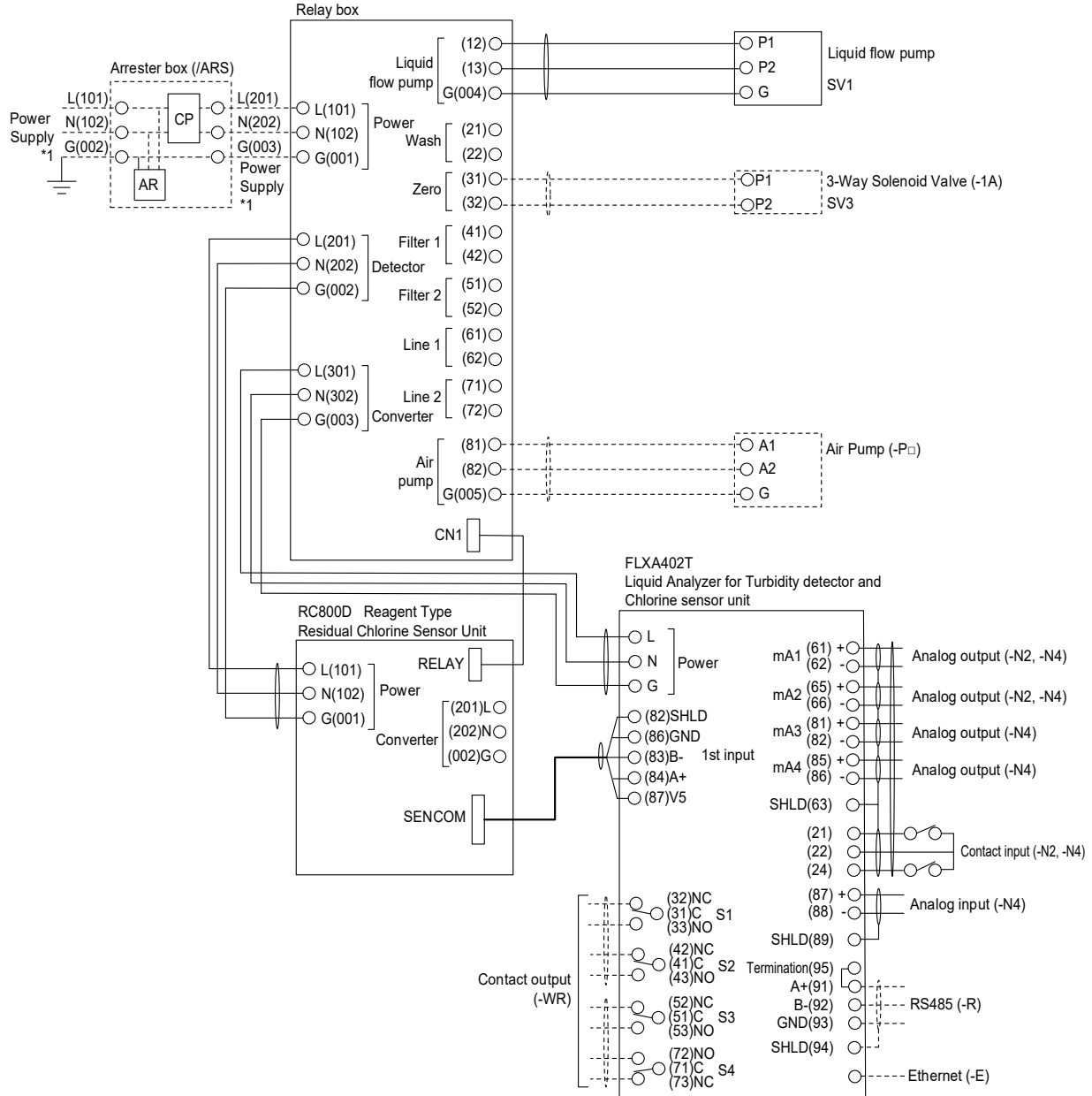
- is free from rain water such as an indoor location or in a cabinet.
- has low vibration.
- has low corrosive gas.
- is low humidity.
- has low temperature variation and where the temperature is maintained at or as near to room temperature as possible.
- allows sufficient maintenance space with easy maintenance access.
- allows drainage.

For information on FLXA402T, read the user's manual IM 12A01G01-02EN.

2.2 Wiring

Wire the main power supply of RC800D to the relay box. When "/ARS" is specified, wire the main power supply to Arrester Box. Refer to user's manual IM 12F04B10-02EN for details.

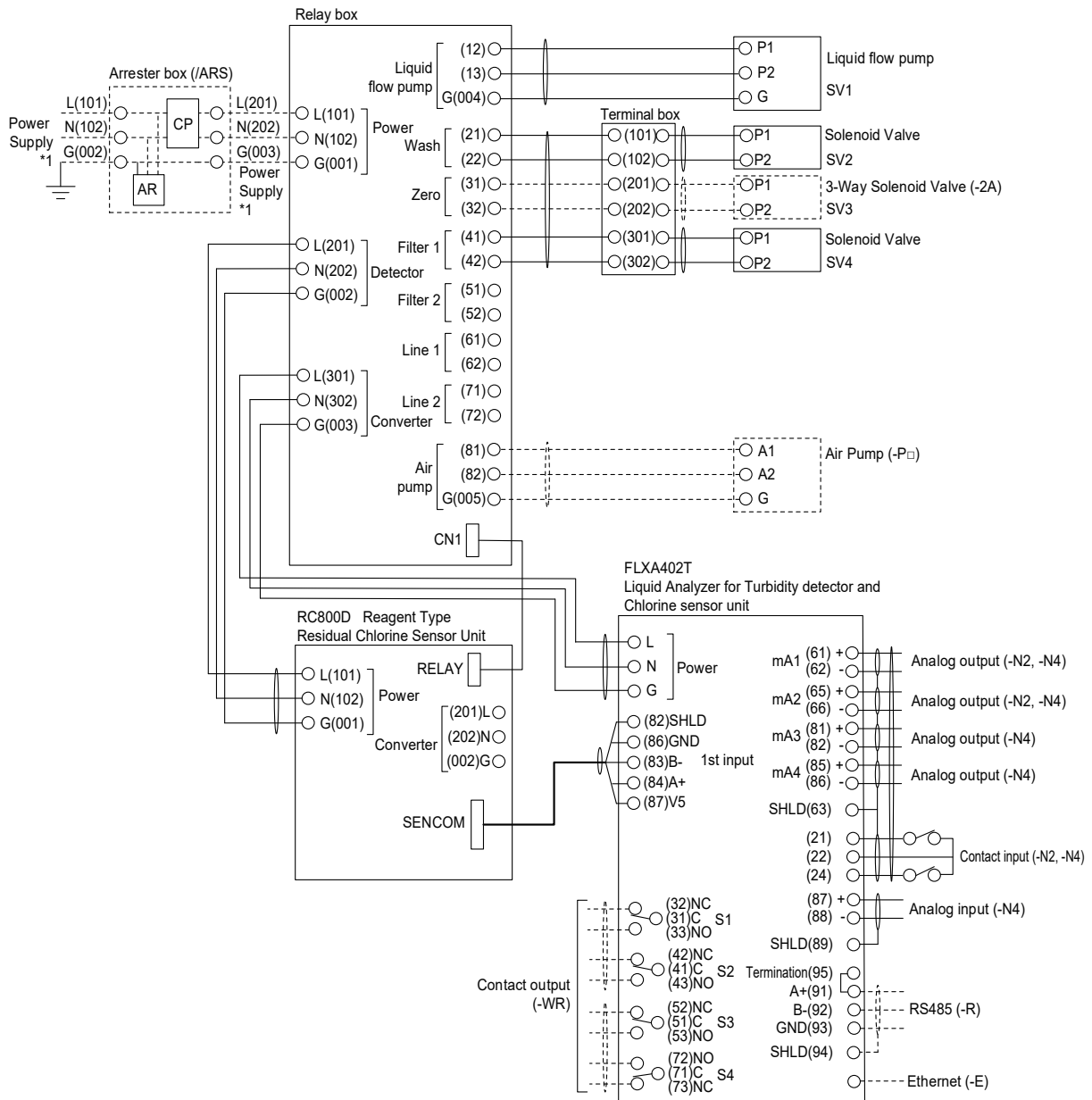
(1) For tap water/water distribution measurement (without sand filter) (Sampling system: -1N, -1A)



(Note)

*1: Power terminal "G" on Relay box or Arrester box must be grounded (ground resistance: 100 ohm or less).
In case of selecting /ARS, power supply cable connects with L(101), N(102) and G(001) in Arrester box.
In case of not selecting /ARS, power supply cable connects with L(101), N(102) and G(002) in Relay box.

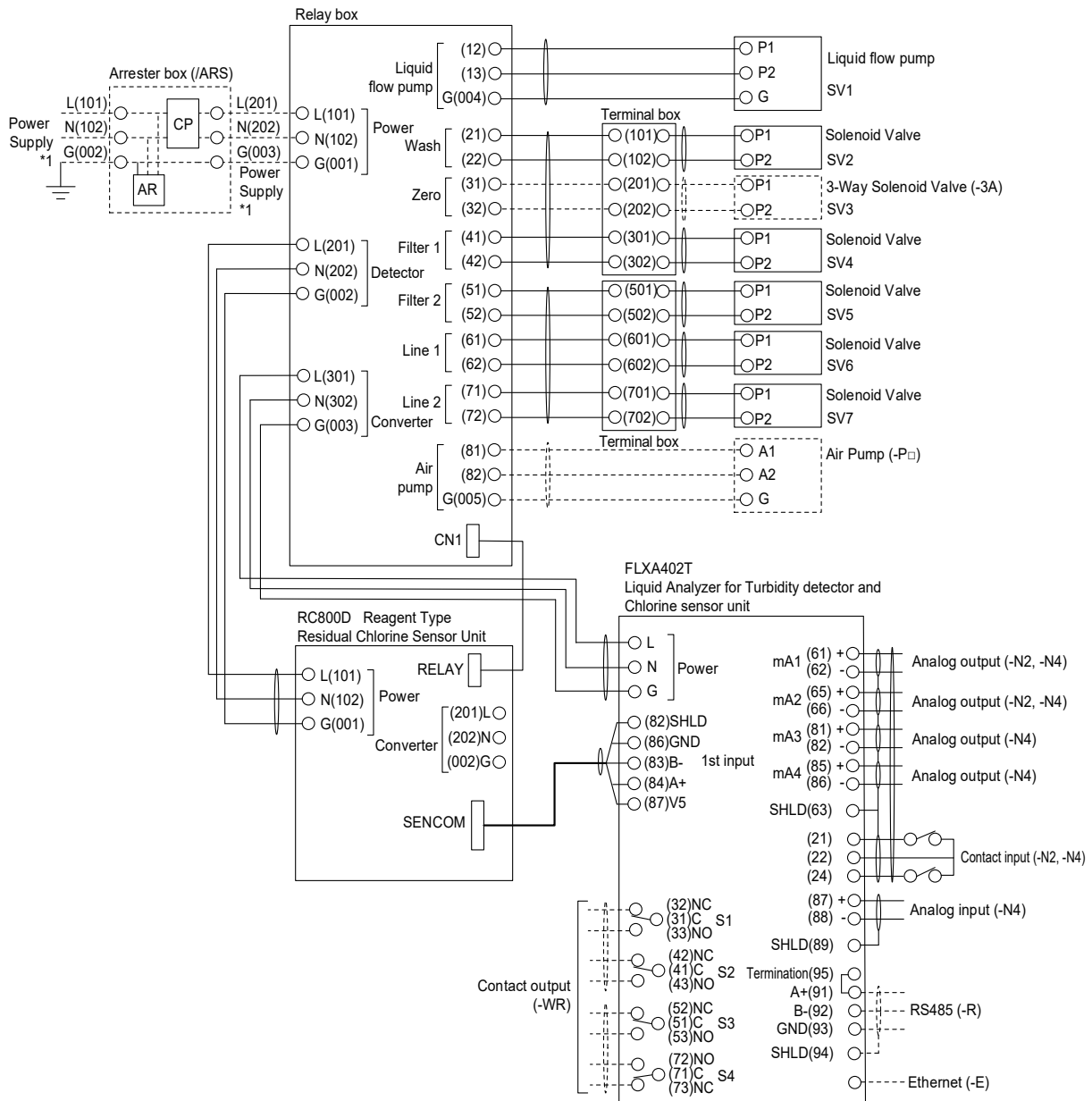
**(2) For raw water measurement One Sand Filter, with auto. cleaning
(Sampling system: -2N, -2A)**



(Note)

*1: Power terminal "G" on Relay box or Arrester box must be grounded (ground resistance: 100 ohm or less).
 In case of selecting /ARS, power supply cable connects with L(101), N(102) and G(001) in Arrester box.
 In case of not selecting /ARS, power supply cable connects with L(101), N(102) and G(002) in Relay box.

**(3) For raw water measurement DBL sand filter, with auto.cleaning
(Sampling system: -3N, -3A)**



(Note)

*1: Power terminal "G" on Relay box or Arrester box must be grounded (ground resistance: 100 ohm or less).
 In case of selecting /ARS, power supply cable connects with L(101), N(102) and G(001) in Arrester box.
 In case of not selecting /ARS, power supply cable connects with L(101), N(102) and G(002) in Relay box.



CAUTION

Turn off the power supply to RC800D before wiring. Power rating must comply with RC800D specifications. Power voltage must match with the one indicated on the nameplate.

■ Wiring power supply and grounding

Provide RC800D with a power supply whose voltages and frequencies conform to the specifications. Grounding wiring also must be made to prevent electric shock and to prevent the instrument from being affected by noise. Power supply and grounding cable must be provided by customers. The specification of the cables are described as below.

Table1 Specification of power cable

Rated voltage	300V or above
Rated temperature	75°C or above
Number of cores, Wire diameter	3 L, N, G: 0.75 to 2.5 mm ² (AWG18 to14)
Sheath outer diameter	Ø6.5 to Ø12.5 mm
Cable termination	Strip the outer sheath of 80 mm, provide the termination. L, N: M3 round terminal G: M4 round terminal

● Without Arrester box (when /ARS is not specified)

Connect the power cable to the terminal shown in Figure 1 inside the Relay box. RC800D does not have a power switch. Provide a double-sided switch on the power line. Ground wiring should satisfy class D (ground resistance 100 Ω or less).

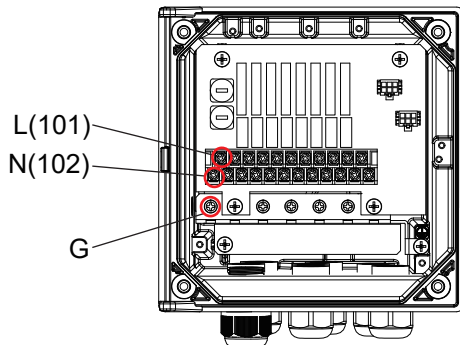


Figure 1 Relay box

● With Arrester box (when /ARS is specified)

Connect the power cable to the terminal shown in Figure 2 inside the Arrester box. Ground wiring should satisfy class D (ground resistance 100 Ω or less).

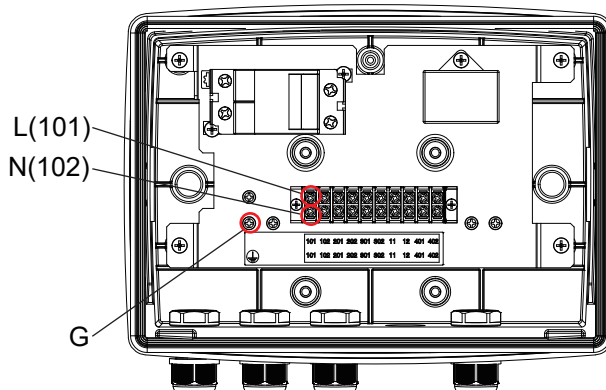


Figure 2 Arrester box



WARNING

- You must install external power supply switch or circuit breaker for power supply.
- The external power supply switch or a circuit breaker must comply with a current rating of 5A or IEC60947-1 or IEC60947-3
- Yokogawa recommend installing the external power supply switch, circuit breaker and RC800D all in the same location.
- Install the external power supply switch or circuit breaker to the place where operators access easily. To alert users, put a label on the external power switch.
- Fix securely onto constructions or walls all power lines including wire cables of power supply by using stanchion, cable rack, conduit or vinyl band.
Unplugged cables are dangerous and may cause an electric shock.



WARNING

- Use wiring cables with heat resistance above 75 °C, waterproof rating IP65 or higher.
- Tightening torque to the four screws of sensor unit cover is 1.4 N·m.
- For power supply, wire cables with a flammability rating of UL 2556 VW-1 or equivalent.



WARNING

The cross sectional area of the protective grounding wire should be 0.75 to 2.5 mm². For CSA safety standard (Type: -AD), use cables with a cross section of 0.75 - 2.1 mm².

CAUTION

- When you open the front cover, make sure the screws are completely out of the screw holes, and then open the front cover slowly in order not to damage the threaded parts on the housing. If the threaded parts are damaged and the screws cannot be tightened, the waterproof performance will deteriorate.
- Don't lose the four screws of the front cover.

● Wiring of FLXA402T

Refer to FLXA402T Installation and Wiring (IM 12A01G01-02EN).

3. Operation

Before starting an operation, follow the next procedure.

- (1) Check piping and wiring are all correctly provided.
- (2) Prepare reagent and feed it into the tank.
- (3) Set up the beads in the flow cell.
- (4) Polish the measurement electrode.
- (5) Check the sand volume if there is sand filter cylinder
- (6) Feed sample and tap water.
- (7) Turn on the power and set to Maintenance mode.
- (8) Verify the pump operation and the water flow rate. Check there is no water leakage.
- (9) Check operation of air pump or solenoid valve.
- (10) Run zero water and conduct running-in operation.
- (11) Configure parameters on the converter and sensor unit.
- (12) Confirm the reading is stable. Perform Zero/Span calibration.
- (13) Switch to a measurement mode. Start a regular measurement.

Refer to IM 12F04B10-02EN for details.

4. Maintenance

■ Periodic maintenance

When you must open the front cover and/or glands, make sure that the seals are clean and correctly fitted when the unit is re-assembled in order to maintain the housing's weatherproof integrity against water and water vapor.

CAUTION

Never use harsh chemicals or solvents. If the instrument does become heavily stained or scratched, you may need to replace some parts. Consult Yokogawa.

● Fuse

There is a circuit board mounted fuse protecting the instrument. If a fuse blows soon after the change, contact Yokogawa.

Revision record

Sep. 2023/ 7th Edition

Revised conformity standards (p. 6).

June 2022/ 6th Edition

Added standard number (p. 6).

Mar. 2022/ 5th Edition

CE marking products compliant (pages 4, 6, 7).

Added the accessory part numbers (page 8).

Oct. 2021/ 4th Edition

Corrected the wiring diagrams. (pages 10 to 12)

Sep 2021/ 3rd Edition

Deleted the suffix codes from RC800D (page 7)

Added the suffix code on FLXA402T (pages 10 to 12)

May 2021/ 2nd Edition

Modified a description in Model and Suffix Codes.

May 2021/ 1st Edition

Newly released.

Yokogawa Electric Corporation
2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750, JAPAN
<http://www.yokogawa.com/>

