

General Specifications

TB830D, FLXA402T Surface Scattering Light Turbidity Analyzer

GS 12E04B40-01EN

■ General

To keep good quality in industrial or drinking water and rivers or streams, "Turbidity" is one of the important measurement parameters to control water quality.

Turbidity analyzer is more than ever demanded not only for water treatment, but currently for measurement/detection of suspended substances in industrial waste or of turbidity at chemical processing facility.

Since their sales began in 1959, Yokogawa turbidimeters have been continuously developed and improved using various measurement principles suited for various applications. With its many achievements, Yokogawa has earned its customers' confidence.

Surface Scattering Light Turbidity Detector TB830D and Liquid Analyzer FLXA402T, is a next-generation analyzer, adopting the surface scattered light method, which is less susceptible to contamination by non-contact with the sample, realizing high efficiency in facility operations with our latest digital sensor technology.

FLXA402T is a converter designed, being tailored from the well-received FLXA402, to provide multiple detector measurement. In addition to conventional analog output, Modbus TCP, Modbus RTU/RS485 are available.

The technology of predictive maintenance prevents accidental shutdown of the factory and reduces OPEX.

TB830D has drastically improved maintainability and minimized the maintenance time.



■ Features

TB830D

- Surface scattering type measurement method
- Long life of 3 years by LED light source.
- High sensitivity, High precision
 - Realized good linearity, repeatability
- Measuring range: 0-2 FNU/NTU to 0-2000 FNU/NTU
- Improved cleaning system for less maintenance
 - Easy cleaning cell structure

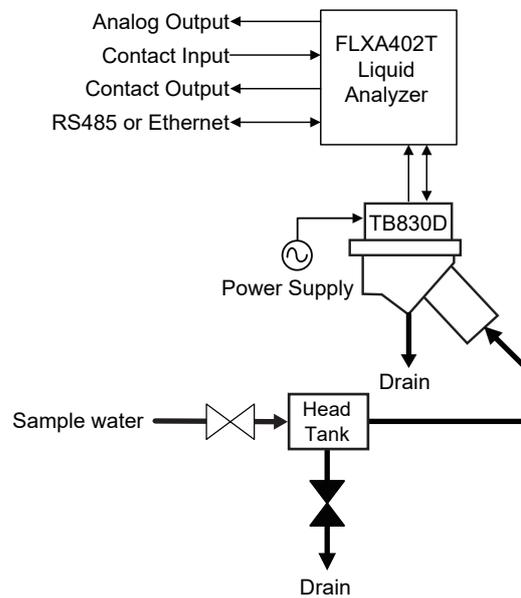
FLXA402T

- Active diagnosis advice service
 - Detects disconnection of lens heater
 - Condition of light source, dryness level of detector
 - Input element failure, calibration failure, various circuit failures, etc.
- Multiple detector/sensor connection
 - Turbidity, pH, Conductivity
- Analog outputs, Digital communications (Modbus RTU or Modbus TCP/IP)
- Multilingual display
 - English, German, French, Chinese, Korean, Spanish, Portuguese, Japanese
- Automatic analog output range switching (2 or 3 range changing)

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■ System Configuration

For example, the diagram below is a system without sampling system.



For example, the diagram below is a system with automatic cleaning and automatic zero calibration

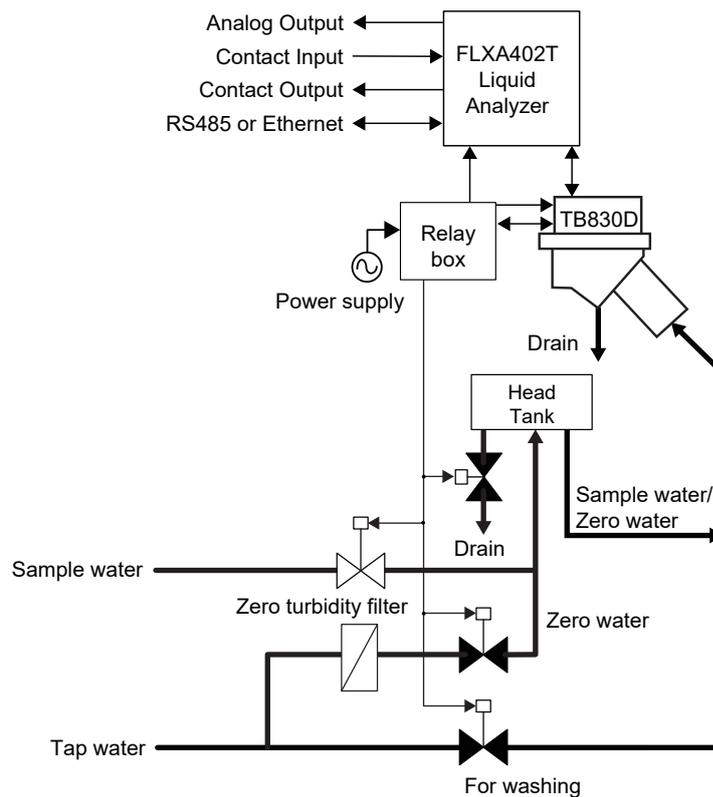


Figure 1

■ Standard Specifications

1. TB830D Surface Scattering Light Turbidity Detector

■ Measurement

Turbidity of tap water, river water, and water used in general processes

■ Detector

Measuring method: Surface scattering-light measurement

Light source: White Light LED, Infrared light LED (860 nm)

Measuring range:

0-2 to 0-2000 NTU (Turbidity standard: Formazin, White Light)

0-2 to 0-2000 FNU/NTU (Turbidity standard: Formazin, 860 nm)

Linearity:

Upper range limit of 1000 FNU/NTU or less;
±2% F.S. or ±0.04 FNU/NTU
whichever is greater

Over 1000 FNU/NTU and 2000 FNU/NTU or less;
±4% F.S.

Repeatability:

±1% of reading or ±0.02 FNU/NTU
whichever is greater

Response time: Within 2 minutes

(90% response, sample flow rate 3 L/min)

Sample conditions:

(with the sampling system)

Flow rate; 2 to 10 L/min

Pressure; 20 to 500 kPa max

Temperature; 0 to 50°C (The ambient temperature should not exceed 30°C.)

Zero Calibration water and Cleaning (tap) water conditions

Turbidity; 2 FNU/NTU or less

Temperature; 0 to 50°C (The ambient temperature should not exceed 30°C.)

Pressure; 100 to 500 kPa

Flow rate; (piping system-dependent)

Zero; 2 to 10 L/min

Cleaning water; 3 to 6 L/min

Water Consumption;

(with automatic cleaning, with automatic zero calibration, time preset at the factory shipment)

Zero; Approx. 380 L/day
(In case of 2 L/min flow rate)

Cleaning water;
Approx. 90 L/day (In case of 3 L/min flow rate)

(without the sampling system)

Flow rate; 1.5 to 2 L/min

Temperature; 0 to 50°C (The ambient temperature should not exceed 30°C.)

■ Electrical

AC Power Supply

Ratings (Acceptable range) (Solenoid valve for Sampling system)

-NN: 100 to 240 VAC (90 to 264 VAC)

-10: 100 VAC (90 to 110 VAC)

-12: 110 VAC (99 to 121 VAC)

-20: 200 VAC (180 to 220 VAC)

-22: 220 VAC (198 to 242 VAC)

Class D grounding (ground resistance: 100 ohm or less)

Frequency: 50/60Hz

Acceptable range: 50Hz±5%, 60Hz±5%

Power consumption (Sampling system)

-NN, -A5: 15 VA

-A1, -A2, -A3: 150 VA (including the converter's)

Communication signal:

RS485 (Modbus RTU) 9600 bp

The maximum cable length between Analyzer and Detector is 20 m.

■ Mechanical and others

Material:

Case; m-PPE resin

Wetted parts; m-PPE, PVC (Rigid polyvinyl chloride), PE, PP, Fluororubber (FKM)

Finish: none

Color: Black

Protection: IP65, Type4X (electric part on upper body of the detector)

*: A separate rainproof cover is required for outdoor installation. Required a roof to avoid direct sunshine.

Weight: approx; 3.5 kg (detector only)

Mounting (option):

Pipe- or rack-mounted

Terminal screw size: M3 (Earth terminal: M4)

Cable gland:

3 hole, M20 cable gland x 3 (for detector)
(For 6.5 to 12 mm outer diameter cable)

Pipe connection:

Detector connection: 25 mm ID hose joint

Conduit adapter (option):

G1/2, 1/2NPT or M20 × 1.5 mm

Stainless steel tag plate (option)

In case you specified Option code /SCT, Tag plate which is printed numbers is shipped with product. You can attach this tag by wire.

Warm up time: Approx. 30 min

Installation/Storage environment:

Indoors (A separate rainproof cover is required for outdoor installation.)

Ambient Operating Temperature;

-5 to 55°C (Samples or tap water may need protection against freezing.)

Storage temperature; -30 to 70°C

Humidity; 10 to 90 % RH at 40°C (No condensation)

■ Sampling system, others

Sampling system -A1, -A2, -A3 is specified, the detector, the sampling system, the solenoid valve for the sampling system, the head tank are assembled in a stanchion. In this case FLXA402T is other model.

When FLXA402T -ST (Assembled in stanchion) is specified, the product is shipped with the sampling system assembled in the stanchion.

Piping connections:

System with sampling system;

VP16 for sample inlet, tap water inlet

VP40 for drain

Sampling system stanchion:

Paint; Baked polyurethane resin finish

Color; Munsell 0.6GY3.1/2.0 equivalent

Material; Carbon steel or stainless steel

Weight; approx. 50 kg
(in full specifications, excluding combination instruments)

Installation; Fixed with anchor bolts

Relay box:

Control box for solenoid valve for sampling system
Cable gland; 8 cable glands (outer diameter of applicable wires; 6.5 to 12 mm)

Weight; approx. 2 kg

Installation; assembled in a stanchion

Terminal box A: A box embedded with an arrester for power supply and a circuit protector

Cable gland; 4 cable glands (outer diameter of applicable wires; 6.5 to 12 mm)

Weight; approx. 2 kg

Installation; assembled in a stanchion

Terminal box B: A box for power distribution

Cable gland; 4 cable glands (outer diameter of applicable wires; 6.5 to 12 mm)

Weight; approx. 1 kg

Installation; assembled in a stanchion

■ Safety, EMC, and RoHS conformity standards

Safety (*1):

UL: UL 61010-1, UL 61010-2-030

CSA: CAN/CSA-C22.2 No.61010-1
CAN/CSA-C22.2 No.61010-2-030

CE, UKCA: EN 61010-1, EN IEC 61010-2-030

Morocco/LVD Arrêté:
NM EN 61010 1, NM EN 61010 2 030

GB: GB30439

Installation altitude: 2000 m or less

Overvoltage Category based on IEC 61010: II(*)

Pollution level: IEC 61010: 2 (**)

(*) Installation category, called over-voltage category, specifies impulse withstand voltage. Equipment with Category II is energy-consuming equipment to be supplied from the fixed installation.

(**) 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:

CE, UKCA: EN 61326-1 Class A, Table 2 (For use in industrial locations)

EN 61326-2-3

EN IEC 61000-3-2

EN 61000-3-2

EN 61000-3-3

Morocco/EMC Arrêté:

NM EN 61326 1

NM EN 61326 2 3

NM EN 61000 3 2

NM EN 61000 3 3

RCM: EN61326-1 Class A

Korea Electromagnetic Conformity Standard

한국 전자파적합성 기준 Class A

Environmental regulation:

RoHS Directive (*2): EN IEC 63000

REACH: Regulation EC 1907/2006

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 and UK.

(*1): Except for sampling system (-A2, -A3)

(*2): Except for sampling system (-A1, -A2, -A3)

2. FLXA402T Liquid Analyzer

FLXA402T Liquid Analyzer is a common converter for Chlorine sensor unit and Turbidity detector. In this GS, only function and specification are provided for the connection between FLXA402T and TB830D.

2.1 Measurement

■ Specification of the turbidity detector

See "1. TB830D Surface Scattering Light Turbidity Detector". TB800D or TB810D is also connectable to FLXA402T.

Turbidity: lower limit -1.000 NTU

upper limit 9999 NTU

Unit: NTU, FNU, FTU, mg/L You can input any letters by alphanumeric.

Display resolution:

0.001 NTU (when the measured value is less than 0.2 NTU)

Maximum number of digits to display after the decimal point

■ pH (PH)

When 2nd Input is -P1 (PH)

High accurate pH measurement by the embedded calibration standard table, temperature compensation function, stability check function.

- Constant diagnosis of impedance, asymmetric potential, slopes.
- Continuous diagnosis of the condition of the electrode (dirt, breakage, disconnection), detector (sample surface level)
- Data saving of the latest five calibration results for future maintenance
- Predicts the maintenance or calibration time

Input Specification

Dual high impedance input ($\geq 10^{12} \Omega$)

Input Range

pH: -2 to 16 pH

Temperature:

Pt1000; -30 to 140°C

Pt100; -30 to 140°C

PTC500; -30 to 140°C

6k8; -30 to 140°C

PTC10k; -30 to 140°C

NTC 8k55; -10 to 120°C

3k Balco; -30 to 140°C

Output Range

pH: min. span 1 pH

max. span 20 pH

Temperature: min. span 25°C

max. span 170°C

Performance (The specifications are expressed with simulated inputs.)

pH:

Linearity; ± 0.01 pH

Repeatability; ± 0.01 pH

Temperature: with Pt1000, 6k8, PTC10k, NTC 8k55, 3k Balco, PTC500

Linearity; $\pm 0.3^\circ\text{C}$

Repeatability; $\pm 0.1^\circ\text{C}$

with Pt100:

Linearity; $\pm 0.4^\circ\text{C}$

Repeatability; $\pm 0.1^\circ\text{C}$

Performance (pH detector combined in standard solution)

Response time: 10 seconds (90 % response, Temperature equilibrium at 20°C using the pH detector and sufficiently agitated standard solution)
 Linearity: ± 0.1 pH (using PH8EFP, PH8EHP)
 ± 0.15 pH (using YOKOGAWA standard detector other than the above)

Output item: select pH/Temperature (linear)

Temperature compensation:

Automatic or manual. Compensation to Nernst equation. Process compensation by configurable temperature coefficient. Manual adjustment with automatic stability check.

Calibration

Semi-automatic 1 or 2 point calibration using pre-configured NIST, US, DIN buffer tables 4, 7 & 9, with automatic stability check. Manual adjustment.

■ Conductivity (SC)

When 2nd Input is -C1 (SC)

High accurate conductivity measurement by the embedded calibration standard table, temperature compensation function, cell check function. Compatible to both two or four-electrode detectors, 5 types of temperature detector.

Input Specification

Two or four electrodes measurement with square wave excitation, cell constants from 0.005 to 50.0 cm⁻¹, YOKOGAWA SC4AJ, SC210G, SC8SG

Input Range

Conductivity:
 min.; 0 μ S/cm
 max.; 200 mS x (Cell constant) (max. 2000 mS/cm)
 Temperature:
 Pt1000; -20 to 250°C
 Pt100; -20 to 200°C
 Ni100; -20 to 200°C
 NTC 8k55; -10 to 120°C
 Pb36(JIS NTC 6k); -20 to 120°C

Output Range

Conductivity:
 min.; 0.01 μ S/cm
 max.; 2000 mS/cm (max 90% zero suppression)
 Temperature:
 min.; span 25°C
 max.; span 270°C

Performance (Accuracy)

(The specifications are expressed with simulated inputs.)

Conductivity
 2 μ S x K cm⁻¹ to 200 mS x K cm⁻¹:
 Linearity; $\pm 0.5\%$ F.S.
 Repeatability; $\pm 0.5\%$ F.S.
 1 μ S x K cm⁻¹ to 2 μ S x K cm⁻¹:
 Linearity; $\pm 1.0\%$ F.S.
 Repeatability; $\pm 1.0\%$ F.S.
 Temperature (Pt1000, PB36NTC, Ni100):
 Linearity; $\pm 0.3^\circ$ C
 Repeatability; $\pm 0.1^\circ$ C
 Temperature compensation:
 NaCl table; $\pm 1\%$

Step response:
 90% (< 2 decades) in 7 seconds

Note: "F.S." means maximum setting value of converter output.
 "K" means cell constant.

YOKOGAWA provides conductivity sensors of which cell constants are 0.1 to 10 cm⁻¹.

Output item

select Conductivity/Temperature (linear)

Temperature compensation

Automatic or manual in the temperature range of the C (measurement range) Temperature configurable 0 to 100°C (default 25°C)

Calculation

IEC60746-3 NaCl tables (default) Process compensation by configurable temperature coefficient; Manual adjustment with automatic stability check 0 to 10.0%/°C

Calibration

Manual, Automatic. Automatic with preset OIML (KCl) standard solution, with automatic stability check. Sample calibration

Note: According to OIML (International Organization of Legal Metrology) No.56 (1981), Electrode conductivity.

AC output

2 or 4 point 4-20 mA for the display, recording, operation control. Parameter is selected conductivity/temperature.

2.2 Electrical

Display

Display: QVGA color LCD with a touch screen

Message Language:

English, German, French, Chinese, Korean, Spanish, Portuguese, Japanese

Note: You may find some image loss, uneven brightness, or afterimage on display. They are generated from the product features but not defects

AC Power supply

Ratings: 100 to 240 V AC
 Acceptable range; 90 to 264 V AC
 Ratings: 50/60 Hz
 Acceptable range; 50 Hz $\pm 5\%$, 60 Hz $\pm 5\%$
 Power Consumption: 35 VA

Output signal

Isolated outputs: 4-20 mA DC
 Accuracy: ± 0.02 mA
 Repeatability: ± 0.02 mA
 Linearity: ± 0.02 mA
 Maximum load: 600 Ω
 Number of outputs: select by suffix code
 2 isolated outputs; -N2
 4 isolated outputs; -N4
 (Not isolated between analog outputs 1 and 2)

Output range: Configure within measurement range

Minimum range; minimum measurement range
 Maximum range; maximum measurement range

(*) In case automatic range switching function is enable, low range is fixed by 0 NTU.

Automatic range switching function:

Ch1; No switching or switching in 2 or 3 points
 You can select the followings.
 "Manual range switching, Remote range switching, Automatic 2 ranges switching, Automatic 3 ranges switching"
 Ch2-Ch4; No switching
 You can select the followings.
 "Manual switching, Remote 2 range switching"

Output function: Linear or polyline output (If you specify one point current output % value and one point process value between upper and lower limit values, they are linearly interpolated and output, respectively)

Output current; 2.4 to 21.6 mA

Output signal during maintenance (HOLD):
Enable/Disable keep output value function during setting, calibration and maintenance (Automatic hold function). You can set HOLD value the last value or any value between 2.2 mA to 22.0 mA

Burn out function (NAMUR 43):
Analyzer can output 2.2 mA (Burn down) or to alarm failure.

Burn down; 2.2 mA

Burn up; 22.0 mA

Contact outputs

Type: No-voltage contact output
Number: 4 contacts (S1/S2/S3/S4)
Contact S4 is for Fail-safe function.
Function: Selectable 4 functions among Alarm, maintenance mode, cleaning/calibration status, mA1 output range status.

Identification of range switching:
Contacts (S1/S2/S3) identifies mA output range. Up to 3 contacts are used for 3 ranges. Refer to User's manual when using 2 contacts to identify 3 ranges.

Switch capacity:
Maximum values; 100 VA, 250 V AC, 5A (*)
Maximum values; 50 W, 24 V DC, 5A (*)

(*): This specification is in case of "-N2". In case of "-N4", maximum switch current capacity is 4 A.

Contact input

Type: Non-voltage contact output
Number: 2 contacts (-N4), 1 contact (-N2)
Function: Select among Remote 2range switching, Remote 3range switching Remote cleaning start, Remote calibration start, Disable

Remote range switching:
By contact input, mA output is switched to range "2" or range "3". Range "3" is available only to mA1.

Short-circuit resistance (on resistance):
maximum 200 Ω

Open resistance (off resistance):
minimum 100k Ω

Digital communication (option)

Ethernet (Modbus TCP):
10/100 Mbps
Cable length; maximum 100 m

RS-485 (Modbus RTU):
115200/38400/9600 bps

Cable length;
115200 bps; maximum 600 m
38400 bps,9600 bps; maximum 1200 m

Analog Input (mA, O/I code: -N4)

Temperature compensation (pH, SC)
Isolated Input: 4 to 20 mA DC
Accuracy: ± 0.02 mA
Number: 1

2.3 Calibration, cleaning, diagnosis and other functions

Calibration function:
Zero calibration; Calibration by zero water
Lamp-off calibration; If the turbidity to be measured exceeds 200 NTU, zero calibration is possible by turning off the light source

Slope calibration; Check tool with zero water, standard solution.

Sample correction; Zero point correction and sensitivity correction by any sample (actual process)

Automatic calibration function:
Automatic zero calibration with membrane filtered water

Automatic cleaning:jet cleaning (configurable cleaning time/cycle) (only for the product type with automatic cleaning)

Diagnostic function:
Heater disconnection, light source monitoring

2.4 Mechanical and others

Housing: Die-cast aluminum

Case:
Color; Silver gray
Finish; Urethane coating, high anti-corrosion coating

Window: Polycarbonate

Protection: IP66 NEMA Type 4X (USA), CSA Type 4X (Canada)

Please add Hood option (/H) in case of using outdoor

Size: 165×165×168.5 mm (W×H×D)
Not included cable gland

Weight: Maximum 1.5 kg

Mounting hardware (option): stainless fittings
-Pipe and wall mounting hardware
-Panel mounting hardware

Hood (option):
-Stainless steel
-Stainless steel with chemically resistant coating

Terminal screw size: M3 (Earth terminal: M4)

Cable gland: 8 holes, M20 Cable gland x 8
(For 6 to 12 mm outer diameter cable)

Note: Please screw up them by yourself

Conduit adapter (option): G1/2, 1/2NPT or M20 × 1.5
Note: Please order required numbers.

Stainless Steel Tag Plate (option): In case you specified Option code /SCT, Tag plate on which is the number is printed is shipped with product. You can attach this tag by wire.

Warm up time: Approx. 30 min

Installation/Storage environment:
Ambient Operating Temperature; -20 to 55°C
Storage Temperature; -30 to 70°C
Humidity; 10 to 90% RH at 40°C
(No condensation)

2.5 Safety, EMC, and RoHS conformity standards

Safety:

CE: EN 61010-1, EN IEC 61010-2-030

UL: UL 61010-1, UL 61010-2-030

CSA: CAN/CSA-C22.2 No.61010-1
CAN/CSA-C22.2 No.61010-2-030

Morocco/LVD Arrêté:

NM EN 61010 1

NM EN 61010 2 030

GB: GB30439

Installation altitude: 2000 m or less

Category based on IEC 61010: II (*)

Pollution degree based on IEC 61010: 2 (**)

(*) Installation category, called over-voltage category, specifies impulse withstand voltage.

Equipment with Category II is energy-consuming equipment to be supplied from the fixed installation.

(**) Pollution degree indicates the degree of existence of solid, liquid, gas or other inclusions which may reduce dielectric strength.

Degree 2 is the normal indoor environment.

EMC:

CE: EN 61326-1 Class A, Table 2 (For use in industrial locations)

Influence of immunity environment

(Criteria A): Output shift is specified within $\pm 10\%$ of F.S.

EN 61326-2-3

EN 61000-3-2

EN IEC 61000-3-2

EN 61000-3-3

RCM: EN61326-1 Class A

Korea Electromagnetic Conformity Standard

한국 전자파적합성 기준 Class A

Morocco/EMC Arrêté:

NM EN 61326 1

NM EN 61326 2 3

NM EN 61000 3 2

NM EN 61000 3 3

Environmental regulation:

RoHS Directive: EN IEC 63000

REACH: Regulation EC 1907/2006

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.

■ Model and Codes

Model	Suffix code	Option code	Description
TB830D	.....	.....	Surface Scattering Light Turbidity Detector
Light source and Turbidity standard	-F8 -FS	..... .....	White LED, Formazin, 0-2 NTU to 0-2000 NTU 860 nm, Formazin, 0-2 FNU/NTU to 0-2000 FNU/NTU
Type	-AB -AD -AG -AJ	..... ..... ..... .....	General purpose for CE, RCM, China standard General purpose for CSA General purpose for KC General purpose (*1)
Sampling system	-NN -A1 -A2 -A3 -A5	..... ..... ..... ..... .....	Without sampling system (*2) With sampling system (without automatic cleaning, without automatic zero calibration) (*3) (*4) (*13) With sampling system (with automatic cleaning, without automatic zero calibration) (*3) (*14) With sampling system (with automatic cleaning, with automatic zero calibration) (*3) (*14) Without sampling system, with relay box (*2)
Material and Connection of Sampling system	-AN -SN -AD -AB -SD -SB	..... ..... ..... ..... ..... .....	Without sampling system (Detector mounting bracket Carbon steel) (*5) Without sampling system (Detector mounting bracket Stainless steel) (*5) Carbon steel stanchion, base mounting Carbon steel stanchion, rear mounting Stainless steel stanchion, base mounting Stainless steel stanchion, rear mounting
Solenoid valve for Sampling system	-NN -10 -12 -20 -22	..... ..... ..... ..... .....	Without Solenoid valve (*15) 100 V AC 110 V AC 200 V AC 220 V AC
—	-NN	.....	Always -NN
—	-NN	.....	Always -NN
Option		/L02 /L03 /L05 /L10 /L20 /SCT /U /R /CB /CD /CF /ARS /PHN7 /PHU7 /TT3 /FC /PHN2 /PHU2 /L	Connection cable for analyzer 2 m (*6) Connection cable for analyzer 3 m (*6) Connection cable for analyzer 5 m (*6) Connection cable for analyzer 10 m (*6) Connection cable for analyzer 20 m (*6) Stainless steel tag plate Pipe mounting hardware (SUS) Rack or wall mounting hardware (SUS) Conduit adapter G1/2×1 pcs Conduit adapter 1/2NPT× 1 pcs Conduit adapter M20×1.5×1 pcs With arrester (*7) With pH (Using FLXA402) (without ultrasonic cleaning) (*8) (*10) (*13) (*14) With pH (Using FLXA402) (with ultrasonic cleaning) (*8) (*10) (*13) (*14) With 500ml KCl reserve tank for pH (*10) (*11) With Free Available Chlorine Analyzer (*8) (*9) (*13) (*14) With pH (Using FLXA402T 2nd input) (without ultrasonic cleaning) (*8) (*11) (*13) (*14) With pH (Using FLXA402T 2nd input) (with ultrasonic cleaning) (*8) (*11) (*13) (*14) Air denoising for Low Range (*12)

*1: "-AJ" is no standard.

*2: Install the head tank so that the flow rate of the detector is the specified flow rate (1.5 to 2 L/min). Customers have to arrange a head tank.

*3: 1 μm zero turbidity filter is supplied with the product.

*4: Cleaning, zero calibration, span calibration are enabled manually.

*5: This is selectable only when Sampling system "-NN" or "-A5" is specified.

*6: This is not selectable when Sampling system "-A1", "-A2", "-A3" is specified. 1 m cable is supplied with the product. Select this code for other cable length to change if necessary.

*7: This is not selectable when Type -AD is specified.

*8: This is selectable only when "-A1", "-A2", "-A3" for Sampling system is specified.

*9: For TB830D equipped with Non-reagent type Free Available Chlorine Analyzer. You need one converter just for the chlorine analyzer. Selectable only when "-AJ" (no standard) is specified.

The TB830D cannot be equipped with both a pH sensor and a Non-reagent type Free Available Chlorine Analyzer.

Prepare the following products separately. Refer to GS 12F05B10-01EN for FC800D Non-reagent type Free Available Chlorine Analyzer.

Sensor: FC800D-□□-AJ-NN-NN/L02

Converter: FLXA402T-A-B-AJ-CL-NN-N□-WR-N□-J-ST-NN

- *10: For TB830D equipped with pH sensor. You need one converter just for the pH sensor. Selectable only when “-AJ” (no standard) is specified.
Prepare the following products separately. Refer to GS 12B07B02-E, GS 12J05C02-00E, GS 12A01F01-01EN, GS 19C01B05-01EN.
- pH sensor: PH8EFP-03-TN-TT1-N-G*A (/PHN7 or /PHU7 and without /TT3)
PH8EFP-03-TN-TT3-N-G*A (/PHN7 or PHU7 and with /TT3)
- pH holder: PH8HF-PP-JPT-T-NN-NN*A (/PHN7 without ultrasonic cleaning)
PH8HF-PP-JPT-T-S3-C1*A (/PHU7 with ultrasonic cleaning)
- pH converter: FLXA402-A-B-AJ-P1-NN-A□-□□-N-□-J-NN (/PHN7 or /PHU7)
Pulse generator for clean unit: PG400-A-B-AJ-PU-00-J-ST (/PHU7 with ultrasonic cleaning)
- *11: For TB830D equipped with pH sensor. One converter can be shared with the scattered light turbidity detector.
Analog pH sensors can be used.
For the 2nd Input of the converter, specify “-P1” (pH) to connect an analog pH sensor
Prepare the following products separately. Refer to GS 12B07B02-00E, GS 12J05C02-00E, GS 19C01B05-01EN.
- pH sensor: PH8EFP-03-TN-TT1-N-G*A (/PHN2 or /PHU2 and without /TT3)
PH8EFP-03-TN-TT3-N-G*A (/PHN2 or /PHU2 and with /TT3)
- pH holder: PH8HF-PP-JPT-T-NN-NN*A (/PHN2 without ultrasonic cleaning)
PH8HF-PP-JPT-T-S3-C1*A (/PHU2 with ultrasonic cleaning)
- Pulse generator for clean unit: PG400-A-B-□-PU-00-□-ST
- *12: For low turbidity (200 NTU or less) measurement range and the application which may generate bubbles, select this code for head tank.
Do not select this code for high turbidity (above 200 NTU) measurement range because the influence of air bubbles is small, and the turbidity in the sample may block the air bubble removal piping or reduce the flow rate.
- *13: When the Sampling system “-A1” is specified, the sampling system does not support CE or Chinese standards. The product cannot be sold to the area to which these regulations apply.
- *14: When the Sampling system “-A2” or “-A3” is specified, the sampling system does not support CE, RCM, CSA, Chinese standards. The product cannot be sold to the area to which these regulations apply.
- *15: Specify “-NN” when the Sampling system “-NN” or “-A1” is selected.

● Accessories

Name	Q'ty	Remarks
Silicone cloth	1	Part number: K9210KS
Check tool	1	—
Desiccant	1	For spare. 4 pcs/Q'ty (Part number: K9657RJ)
Desiccant	1	For operation. 4 pcs/Q'ty (Part number: K9657RJ) (When the code for “Without sampling” is specified)
Pipe mounting hardware (Option)	1	For “/P” (Option)
Rack mounting hardware (Option)	1	For “/R” (Option)
Soft vinyl chloride tube (Ø33 × Ø25 Black)	1 set (1 m x 2)	For piping detector (when the code for “Without sampling” is specified)
Clamp	1	For piping detector (when the code for “Without sampling” is specified)

● Spare Parts

Name	Part No.	Description	Frequency of Replacement
LED ASSY (white)	K8004BD	When “-F8” is selected.	3 years
LED ASSY (IR)	K8004BE	When “-FS” is selected.	3 years
Desiccant (4 pcs/Q'ty)*	K9657RJ	—	Yearly
Drain tube	K9411JM	—	Yearly
Fuse	A1633EF	—	—
Fuse	A1624EF	for Sampling system “-A2” “-A3”. The relay box uses two fuses.	—
1 µm filter	K9008ZD	—	Yearly

*: Use within a year after purchasing.

● Mounting Hardware (Option)

Select each corresponding hardware based on the table below.

Model	Mounting type		
	Wall	Pipe	Panel
TB830D	/R	/U (Pipe mounting)	NA
FLXA402T	/UM* or /U	/UM* or /U	/UM* or /PM

*: Universal mounting kit (/UM) contains pipe, wall mounting hardware (/U) and panel mounting hardware (/PM).

● Parts for Sampling system

Name	Part No.
Pinch valve for drain (100V, 110V)	K9411JG
Pinch valve for drain (200V, 220V)	K9411JH
Solenoid valve for cleaning water or zero water (100V)	A1014MZ
Solenoid valve for cleaning water or zero water (110V)	A1016MZ
Solenoid valve for cleaning water or zero water (200V)	A1015MZ
Solenoid valve for cleaning water or zero water (220V)	A1017MZ
Solenoid valve for sample (100V, 110V)	K9411DT
Solenoid valve for sample (200V, 220V)	K9411DU
Head tank (with manual valve)	K9411GC
Head tank (with pinch valve 100V, 110V)	K8004FB
Head tank (with pinch valve 200V, 220V)	K8004FC
Head tank mounting hardware	K8004LD
Zero turbidity filter (1 μm)	K9411UA

● Required Number of Conduit Adapters

If you need to provide conduit work with cables, specify the conduit adapter by Option code.

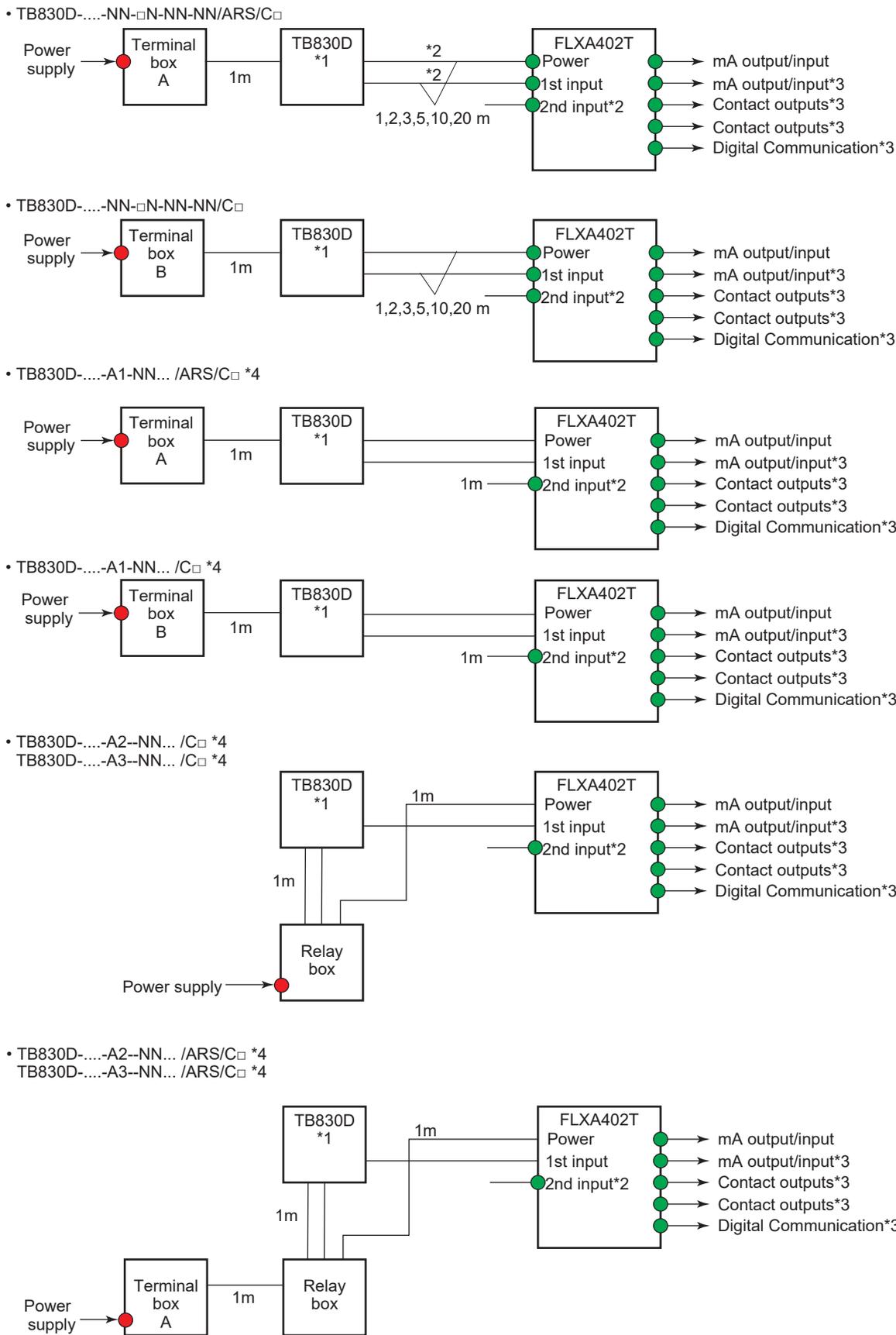
Conduit adapters and dedicated cable glands, which are used in place of the standard cable gland for cable entry holes, are supplied with the product.

You can specify the conduit adapter by Option code for both TB830D and FLXA402T, however, be aware of the following.

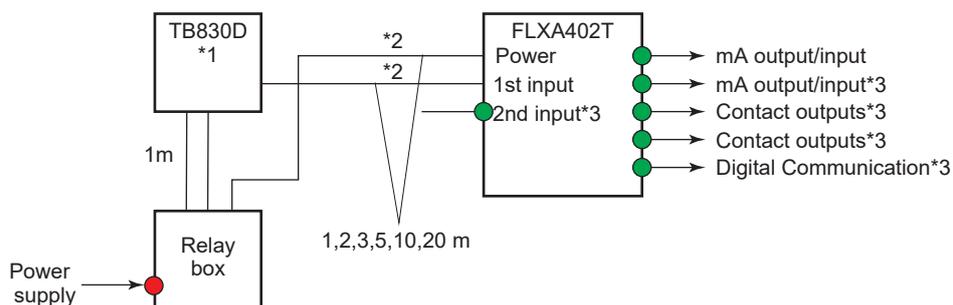
- When FLXA402T Digital communication “-E” (Modbus TCP/IP) is selected

If you attach a conduit adapter on the Modbus TCP/IP cable entry, you need an Ethernet dedicated conduit adapter. Be sure to specify FLXA402T “/C□6”.

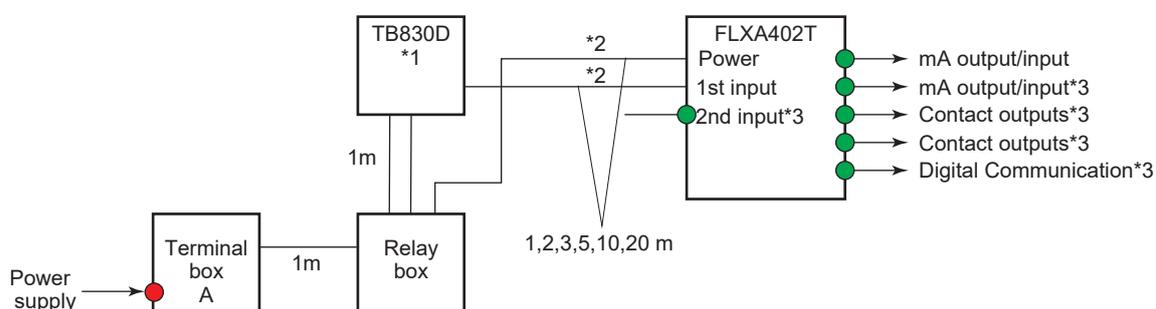
Next diagram shows the position of each cable entry (●●) where you can attach conduit adapters for the conduit.



- TB830D-....-A5--NN... /C□ *4



- TB830D-....-A5--NN... /ARS/C□



- *1: Conduit piping is not allowed to TB830D because the wiring inlet is on the moving part.
- *2: The standard cable length between FLXA402T and TB830D is 1 m. You can change the cable length by specifying a code from Option code.
- *3: The number of cable entry holes to be used are defined by the specification as below.

Spec. Code	2nd Input		mA output/input		Contact Outputs		Digital Communication		
	-NN	the others	-N2	-N4	-WR	-NR	-N	-E	-R
Required No. of cable entry holes	0	1	1	2	2	0	0	1*	1

*: Conduit exclusively for Ethernet

- *4: When /PH□2, /PH□7, or /FC is specified, FLXA402 or FLXA402T can be connected. Conduit can be provided to these products' mA I/O, contact output, digital communication wiring.

• Solenoid valve (SV1 to SV4)

Requirement for solenoid valves.

	Port size	Valve type	Max. working pressure	Max. Working pressure differential
SV1 (Measure)	15A	Motor valve 3 terminals (Open, Shut, Common)	1 MPa	1 MPa
SV2 (Wash)	RC3/8	Solenoid valve N.C. (*1)	1.5 MPa	0.5 MPa
SV3 (Zero)	RC3/8	Solenoid valve N.C. (*1)	1.5 MPa	0.5 MPa
SV4 (Drain)	Φ21×Φ18 Silicon tube	Pinch valve N.C. (*1)	—	—

*1: Valve opens when energized.

Recommended cable for solenoid valves.

Cable length	1.2 m	
Rated voltage	300 V AC	
Specification	SV1	AWG17 3-core cable, M3 round terminal
	SV2, SV3, SV4	AWG20 2-core cable, M3 round terminal

FLXA402T Liquid Analyzer for Turbidity and Chlorine

Liquid Analyzer FLXA402T is a common analyzer for Turbidity detector and Chlorine sensor unit. The table below for Model and Suffix code (MS code) applies the combination between FLXA402T and TB830D.

Model	Suffix code	Option code	Description
FLXA402T	.....	.....	Liquid Analyzer for Turbidity and Chlorine
Power supply	-A	.....	AC version
Housing (*1)	-B	.....	Aluminum alloy cast + urethane coating
	-D	.....	Aluminum alloy cast + high anti-corrosion coating
Type	-AB	.....	General purpose for CE, RCM, China standard
	-AD	.....	General purpose for CSA
	-AG	.....	General purpose for KC
	-AJ	.....	General purpose
1st Input	-TB	.....	SENCOM for Turbidity
2nd Input (*2)	-NN	.....	Without Input
	-P1	.....	pH
	-C1	.....	Conductivity (SC)
	-TB	.....	SENCOM for Turbidity (*3)
mA Output/Input	-N2	.....	2 x 4-20 mA Output + 1 x Contact Input (without HART)
	-N4	.....	4 x 4-20 mA Output + 2 x Contact Input + 1 x 4-20 mA Input (without HART)
Contact Outputs	-WR	.....	Contact outputs (Wash and Fail contact outputs)
	-NR	.....	Without Contact outputs (without Wash and Fail contact outputs)
—	-N	.....	Always -N
Digital Communication	-N	.....	Without Digital communication
	-E	.....	Modbus TCP/IP
	-R	.....	Modbus RTU (RS-485)
Country (*4)	-N	.....	Global except Japan
	-J	.....	Japan
Assembled in stanchion	-NN	.....	Not assembled in stanchion (*9)
	-ST	.....	Assembled in stanchion
—	-NN	.....	Always -NN
Option	Mounting hardware (*5) Hood Tag plate Conduit adapter (*7)	/UM	Universal mounting kit (*6)
		/U	Pipe and wall mounting hardware
		/PM	Panel mounting hardware
		/H6	Hood, stainless steel
		/H7	Hood, stainless steel + urethane coating
		/SCT	Stainless steel tag plate
		/CB4	G1/2 x 4 pcs
		/CD4	1/2 NPT x 4 pcs
		/CF4	M20 x 1.5 x 4 pcs
		/CB6	G1/2 x 3 pcs + G1/2 for Ethernet x 1 pcs (*8)
/CD6	1/2 NPT x 3 pcs + 1/2 NPT for Ethernet x 1 pcs (*8)		
/CF6	M20 x 1.5 x 3 pcs + M20 for Ethernet x 1 pcs (*8)		

*1: Urethane coating is acid resistant. Heavy duty coating is acid/alkali resistant.

*2: To detectors connected to 2nd input, none of the following is available: automatic cleaning, automatic zero calibration, wiper cleaning.

If you want to select FC800D and TB830D, select FC800D (-CL: SENCOM SA for Chlorine) on the first input. Select "-TB" on the second input of FLXA402T in FC800D (GS 12F05B10-01EN).

*3: SENCOM Turbidity is for TB820D (GS 12E01B30-01EN) or TB830D.

*4: Select only "-J" if you use the converter in Japan. Only SI unit (International System of Units) applies.

*5: See "● Mounting Hardware (Option)".

*6: Universal mounting kit contains pipe, wall mounting hardware (/U) and panel mounting hardware (/PM).

*7: See "● Required Number of Conduit Adapters".

*8: Available only when "-E" (Modbus TCP/IP) to Digital communication is selected.

*9: When "-ST" is specified, neither Mounting hardware (/UM, /U, /PM) nor Hood (/H6, /H7) can be selected.

For TB830D, when a Sampling system "-A□" (with sampling system) is selected, always select "-ST". For the second input, always select "-NN" (Without input). However, when "/PH□2" is selected, select "-P1" (pH) for the second input.

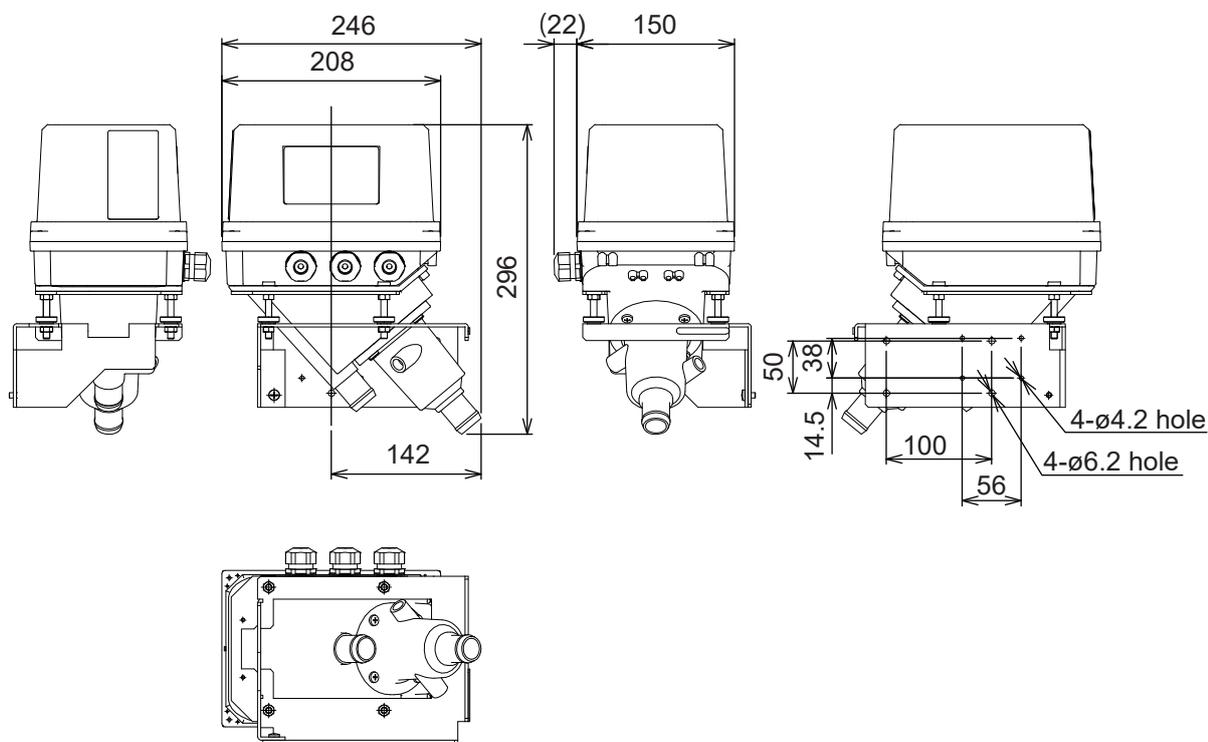
■ Optional parts

Name		Parts number	Quantity	Remark
Mounting hardware	for pipe, wall mounting (stainless)	K9703SS	1 set	same as Option code /U
	for panel mounting (stainless)	K9703ZD	1 set	same as Option code /PM
Sun shade hood	Stainless	K9698WK	1 set	same as Option code /H6
	stainless + urethane	K9698WL	1 set	same as Option code /H7
Rubber plug attachment		K9334CN	1 pcs	for Cable gland
Fuse		A1633EF	1 pcs	250V/2.5A (minimum 5 pcs)
SD card		A1019NL	1 pcs	2 GB industrial SD card (with power failure recovery) Customers can provide the cards with spec: Storage capacity: 128 MB or greater Type: SD, SDHC

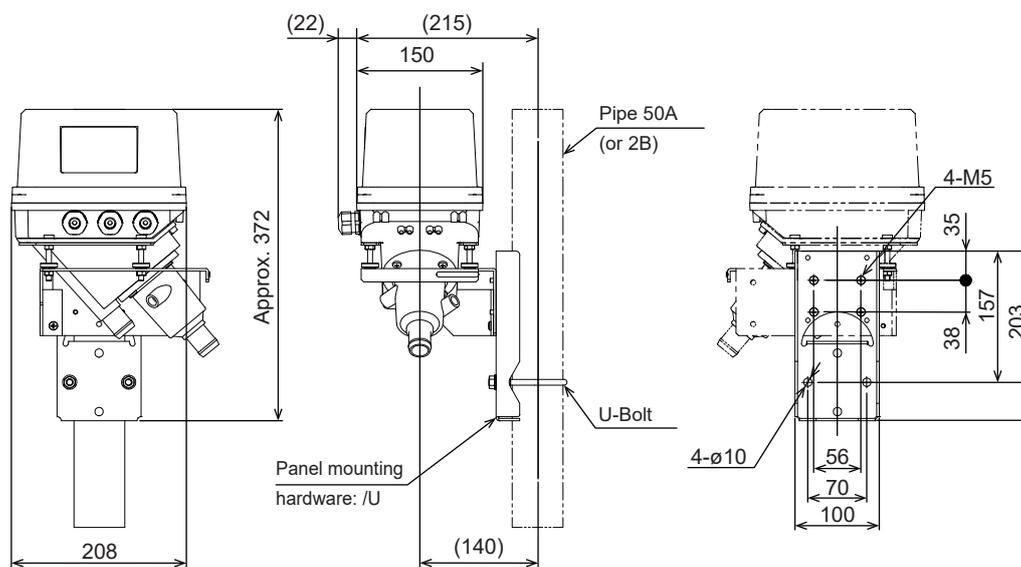
■ Dimensions (TB830D Surface Scattering Light Turbidity Detector)

- Without sampling system (-NN, -A5)
- TB830D Surface Scattering Light Turbidity Detector

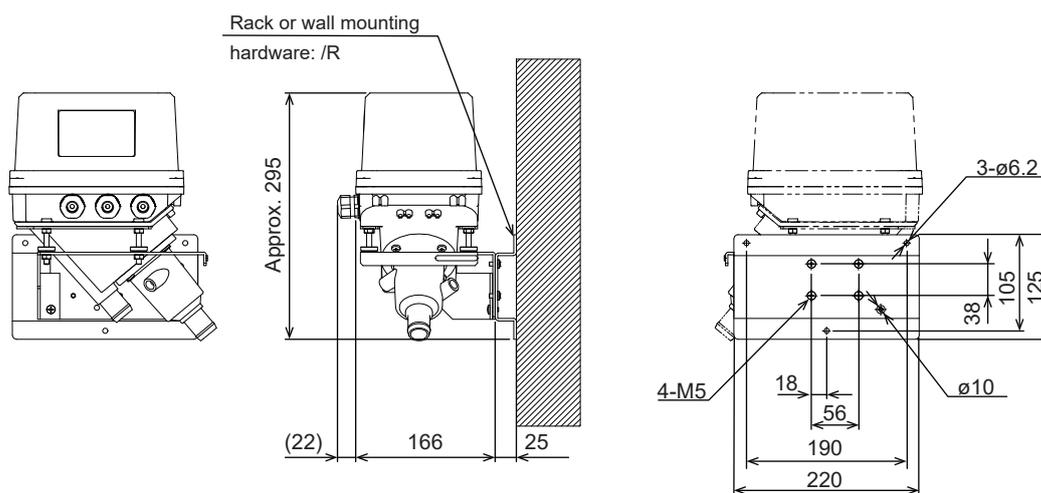
Unit: mm



● Pipe mounting hardware (/U) for -NN, -A5 Without sampling system



● Rack or wall mounting hardware (/R) for -NN, -A5 Without sampling system

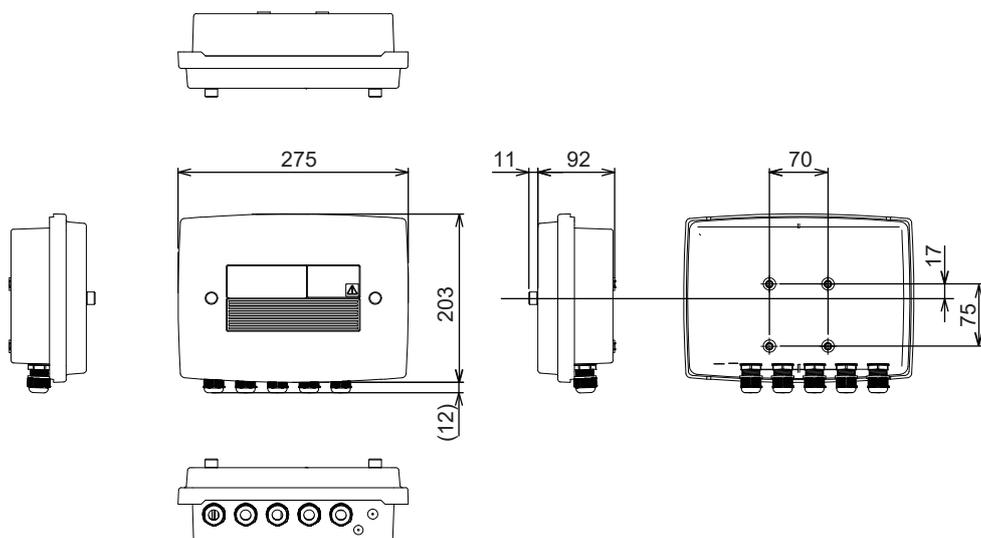


- **Terminal box A**

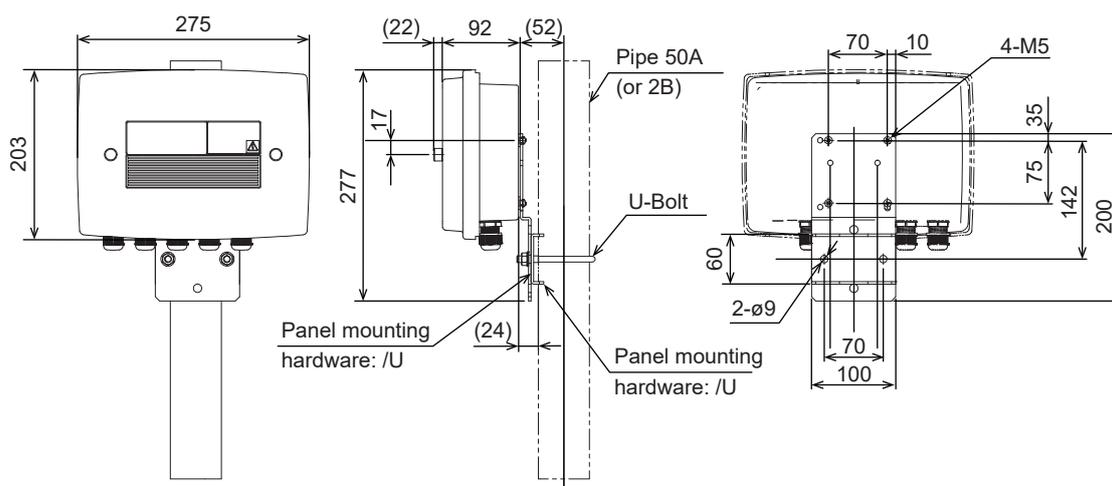
Terminal box A is supplied when "/ARS" option code is specified.

When "/C□" option code is specified, Terminal box A can be conduit wired.

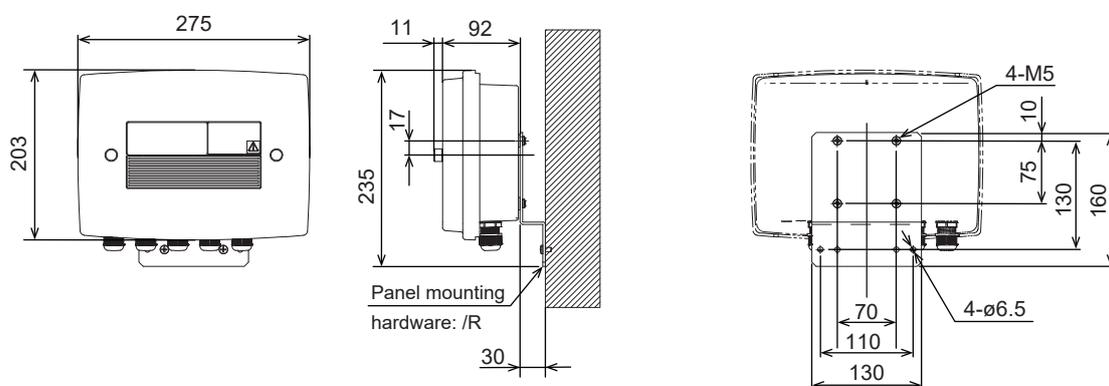
Unit: mm



- **Installation of pipe mounting hardware (/U) on the terminal box A**



- **Installation of rack or wall mounting hardware (/R) on the terminal box A**



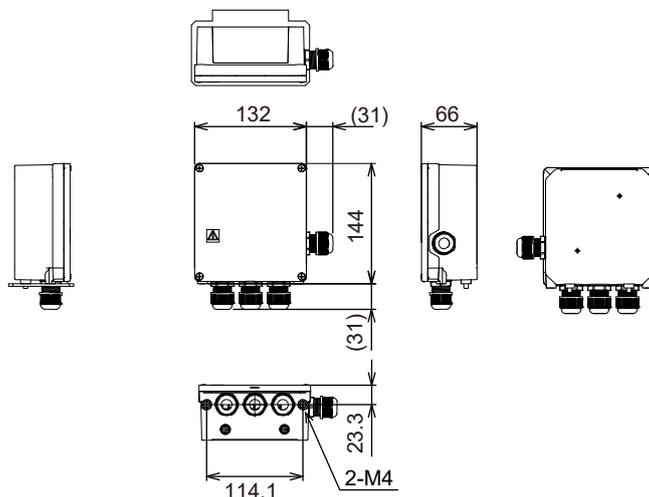
● Terminal box B

Terminal box B is supplied with the product in the following cases.

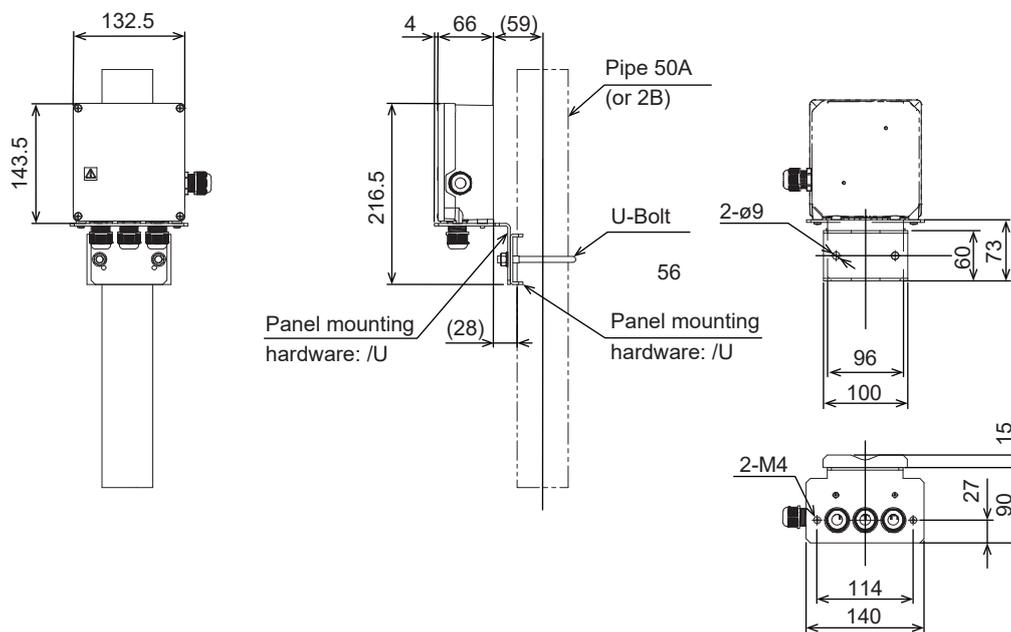
- When both Sampling system “-NN” and Option “/C□” (Conduit adapter) are specified, but “/ARS” (with Arrester) is not specified.
- When Sampling system “-A1” is specified but “/ARS” (with Arrester) is not specified.
- When Sampling system “-A2” or “-A3” is specified and Option “/PH□2” or “/PH□7” or “/FC” is specified, but “/ARS” (with Arrester) is not specified.

Terminal box B can be conduit wired.

Unit: mm

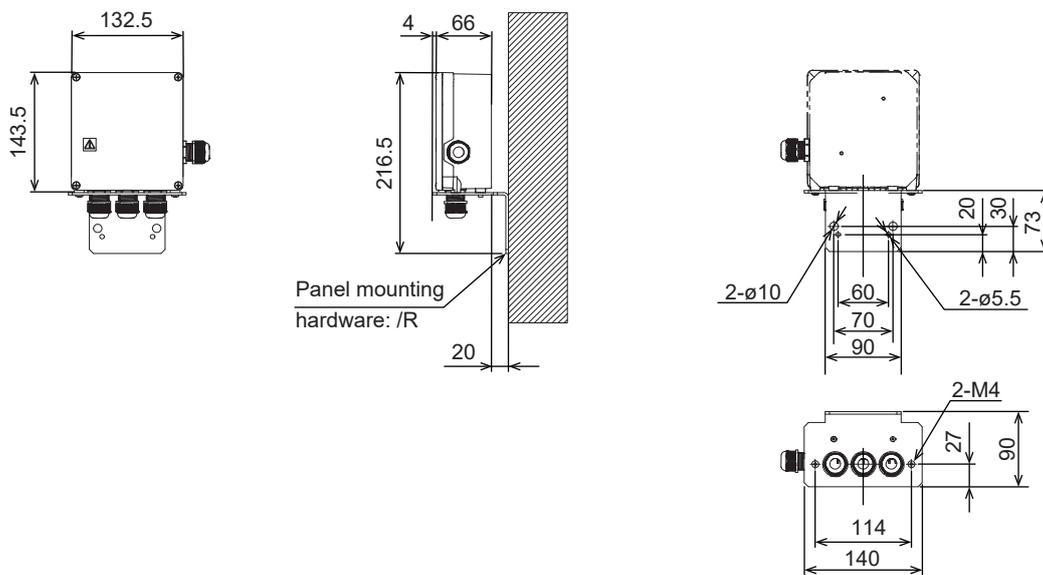


● Installation of pipe mounting hardware (/U) on the terminal box B



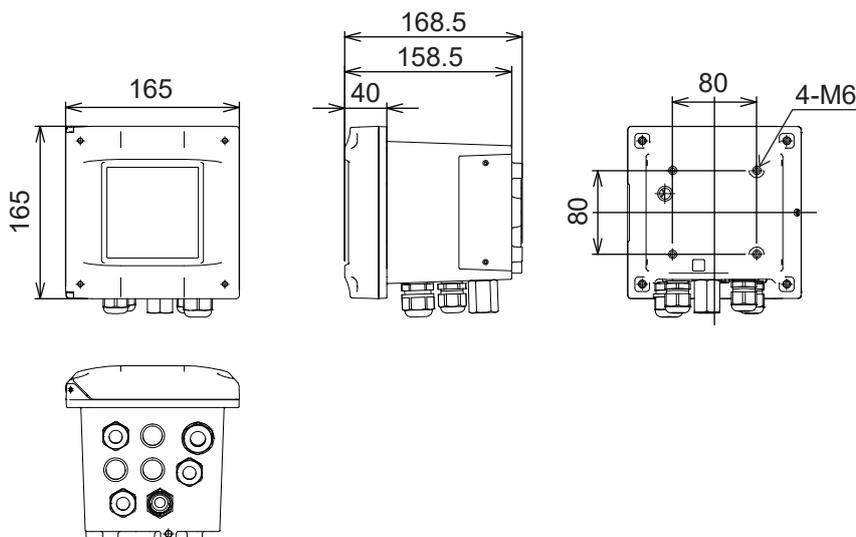
- Installation of rack or wall mounting hardware (/R) on the terminal box B

Unit: mm



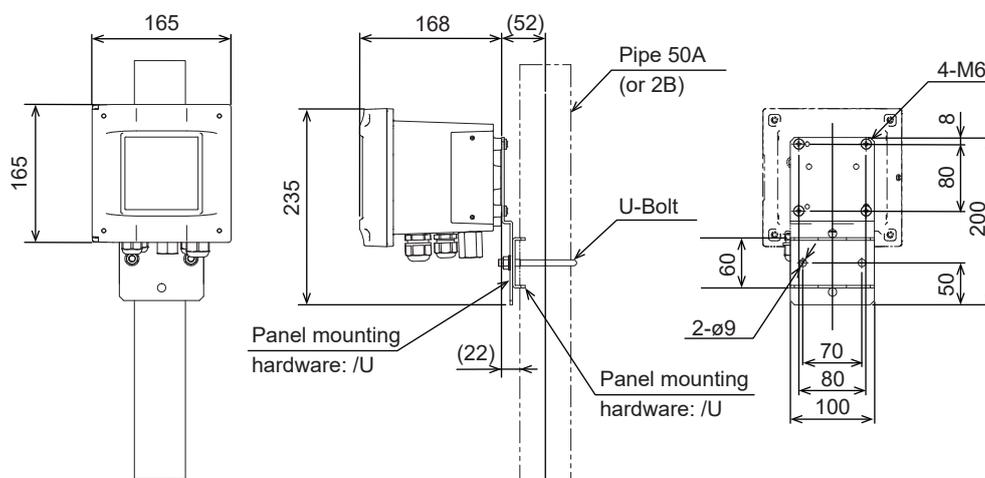
- Relay box

A relay box is supplied with the product when "-A2", "-A3", or "-A5" is specified. A relay box is used to drive the solenoid valve for Automatic cleaning/Automatic zero calibration. Select /C□ (conduit adapter) to provide conduit wiring to the relay box.

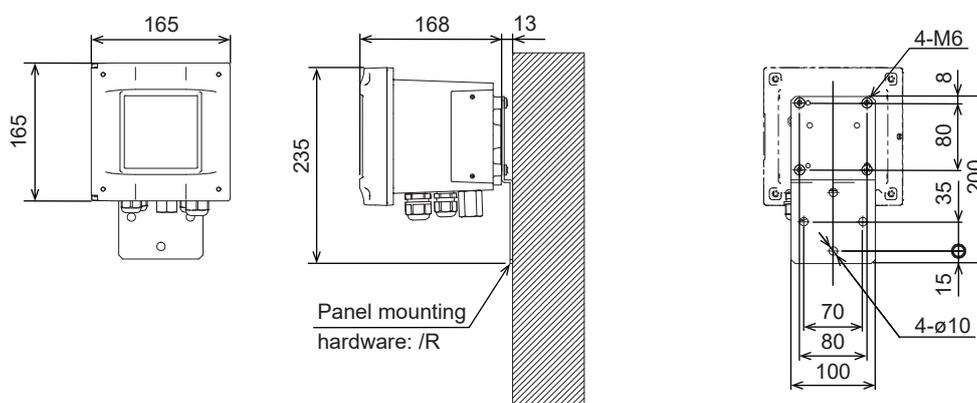


● Installation of pipe mounting hardware (/U) on the relay box

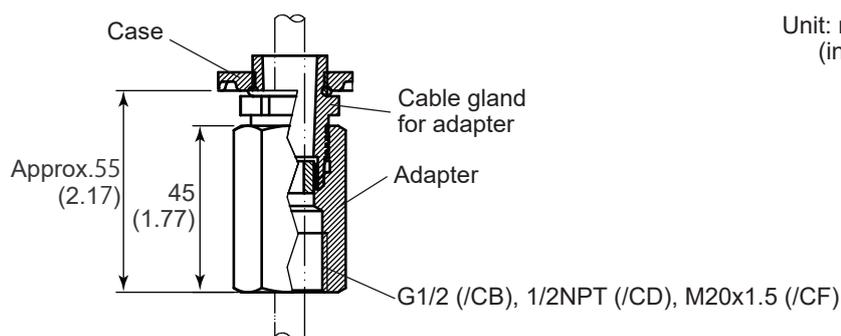
Unit: mm



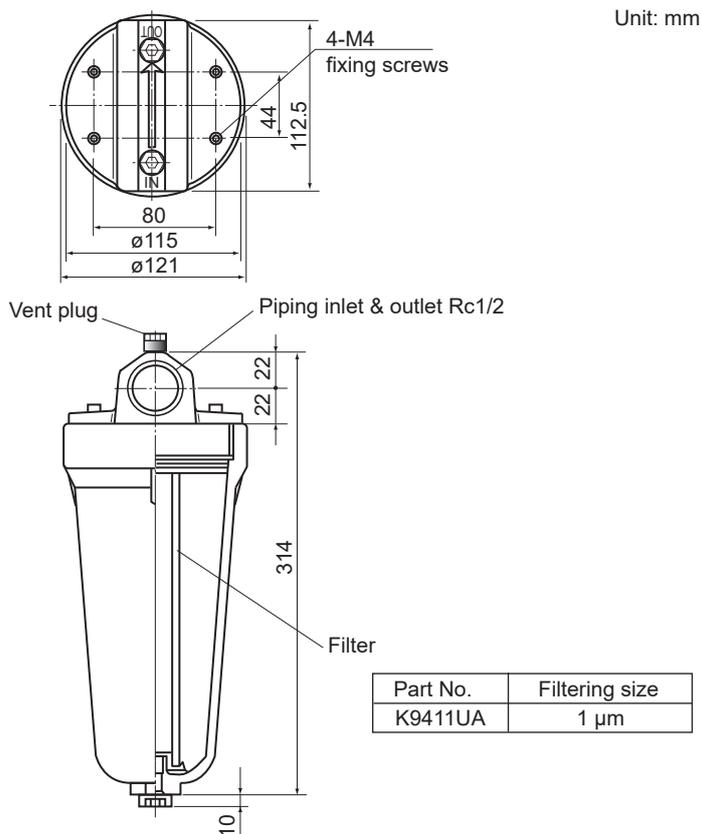
● Installation of rack or wall mounting hardware (/R) on the relay box



● Conduit adaptor (/CB, /CD, /CF)

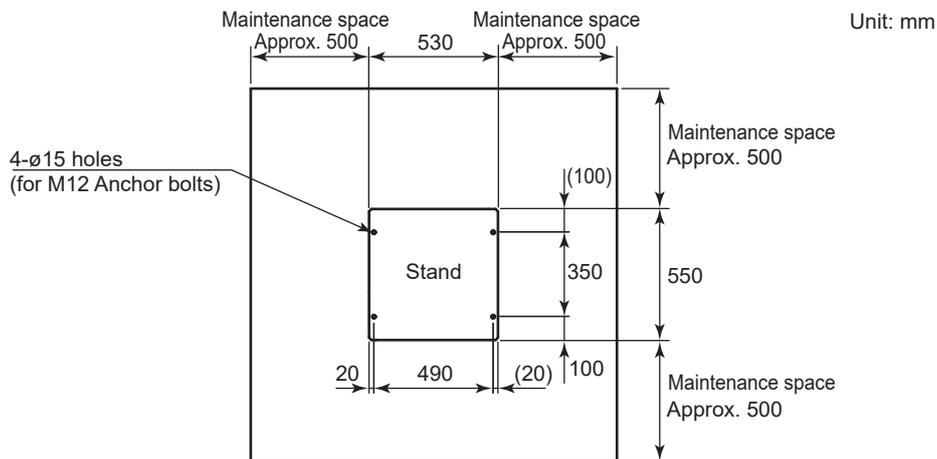


● Zero Turbidity Filter



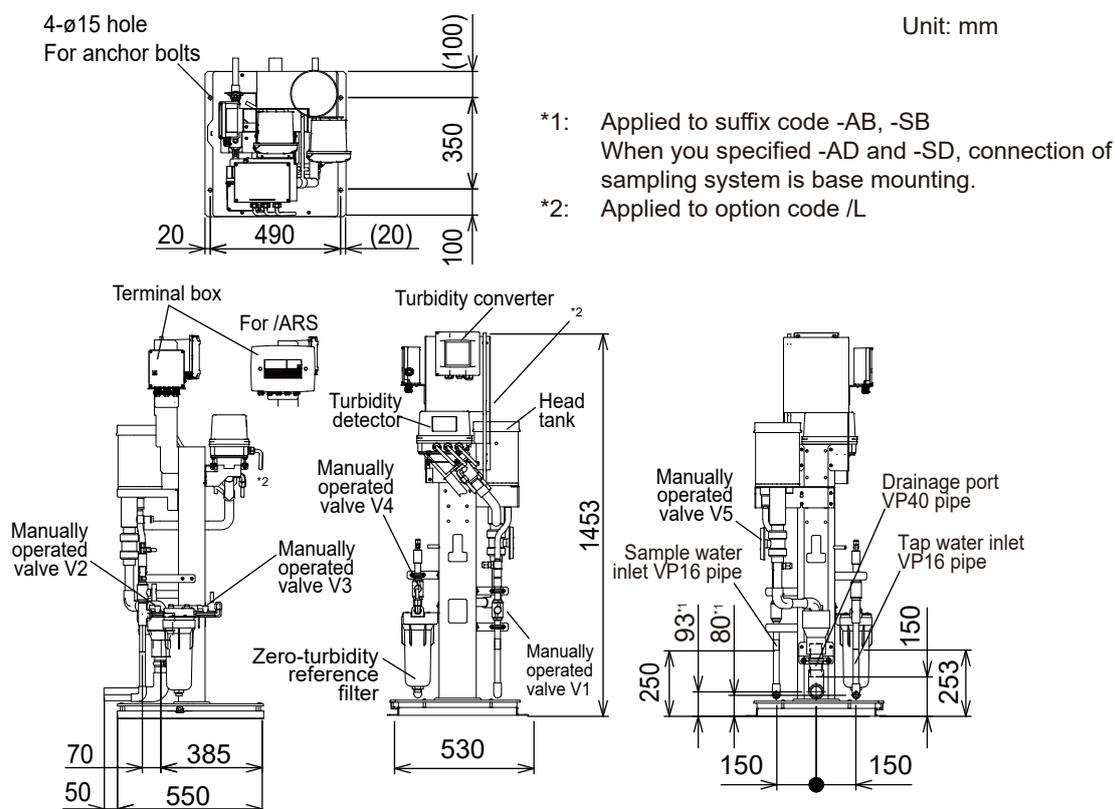
■ With sampling system (-A1, -A2, -A3)

● Maintenance space



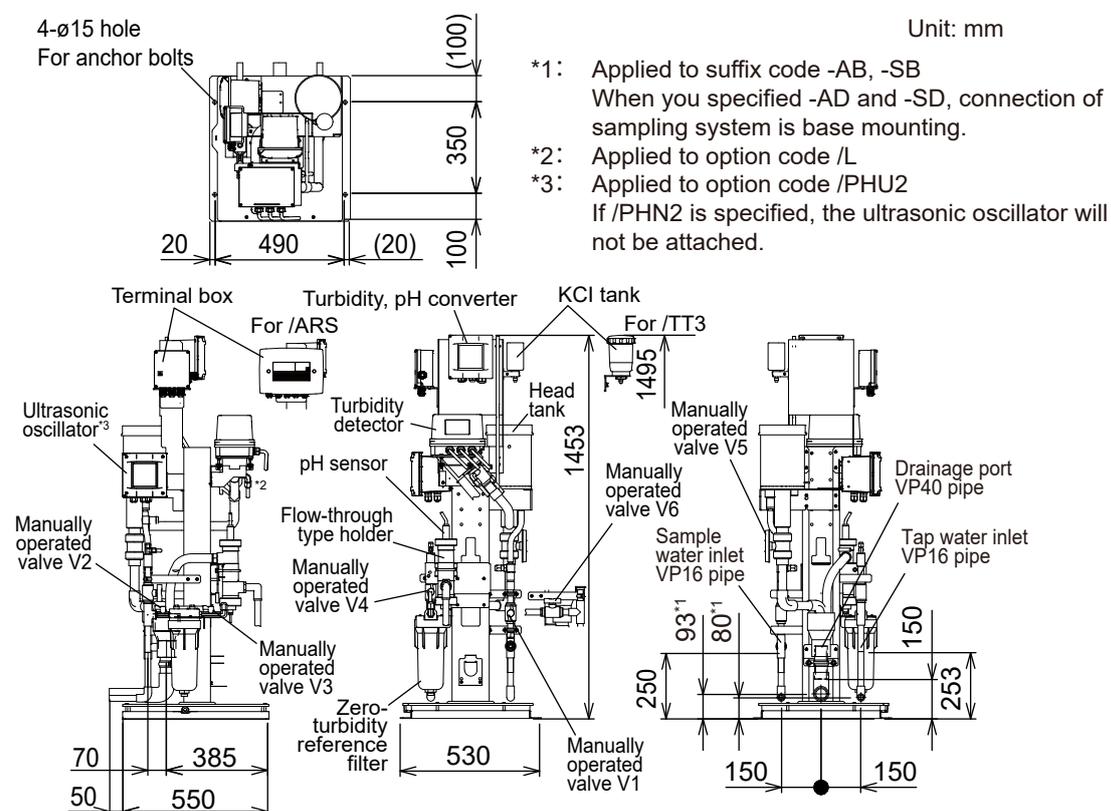
- With sampling system (with stanchion, without automatic cleaning, without automatic zero calibration)

TB830D-□-□-A1-□-NN-NN-NN

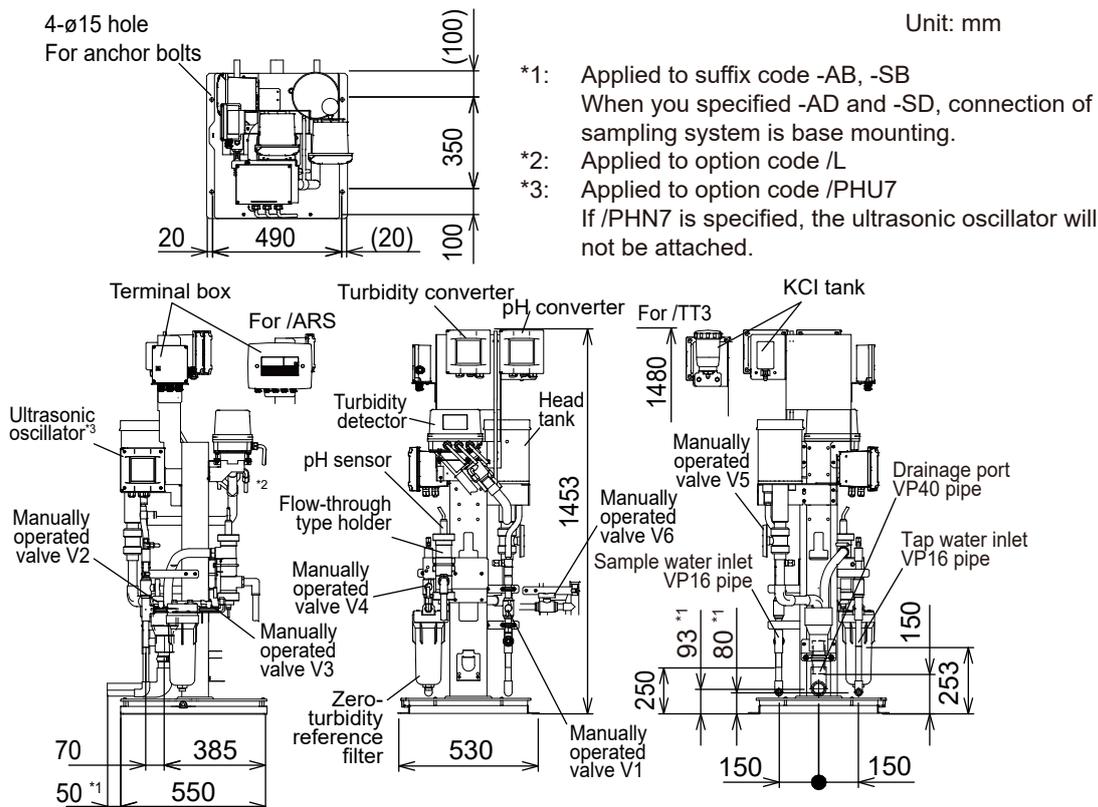


- With sampling system (with stanchion, with without automatic cleaning, without automatic zero calibration)

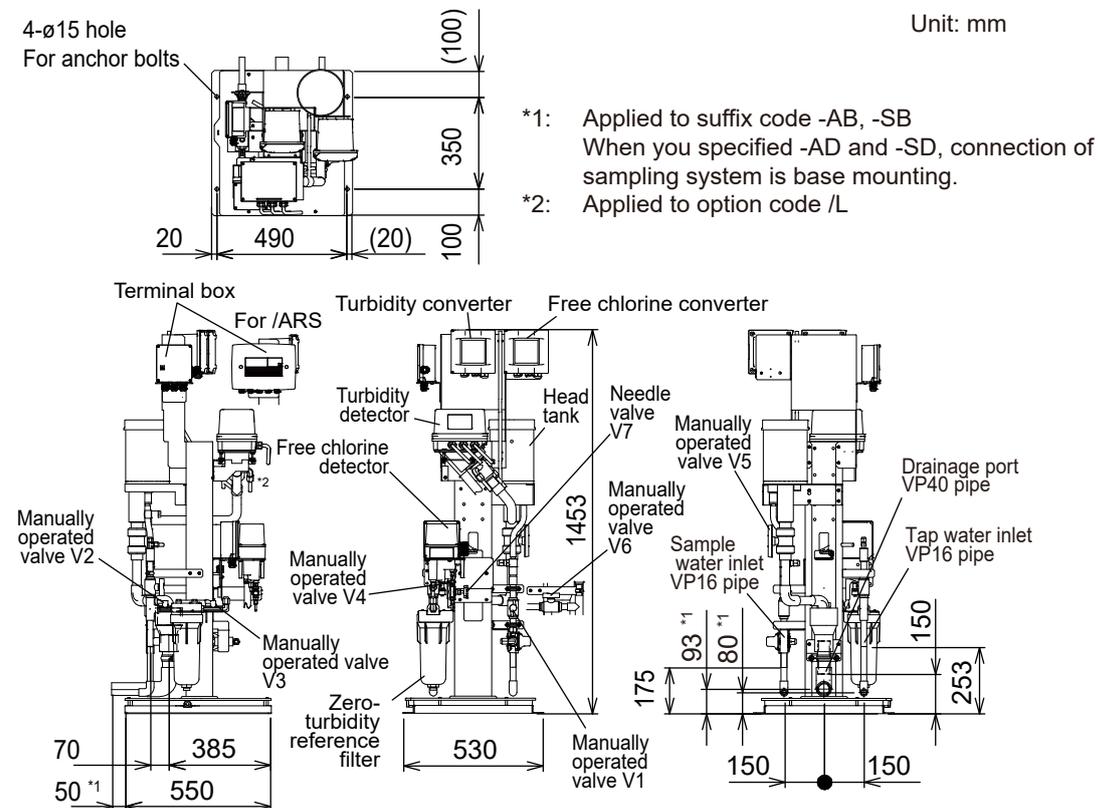
TB830D-□-□-A1-□-NN-NN-NN/PH□2



● With sampling system (with stanchion, without automatic cleaning, without automatic zero calibration)
TB830D-□-□-A1-□-NN-NN-NN/PH□7

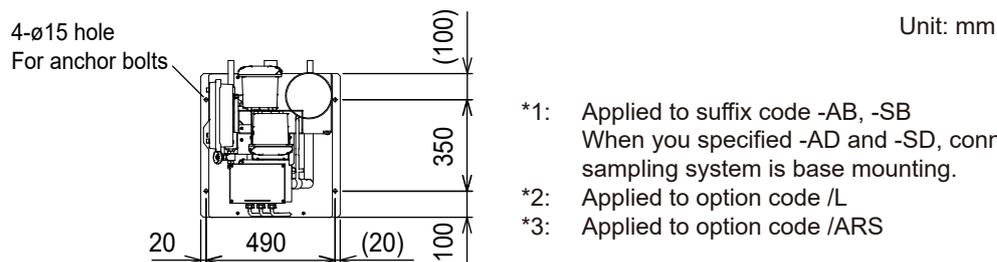


● With sampling system (with stanchion, without automatic cleaning, without automatic zero calibration)
TB830D-□-□-A1-□-NN-NN-NN/FC



● With sampling system (with stanchion, with automatic cleaning, without automatic zero calibration)

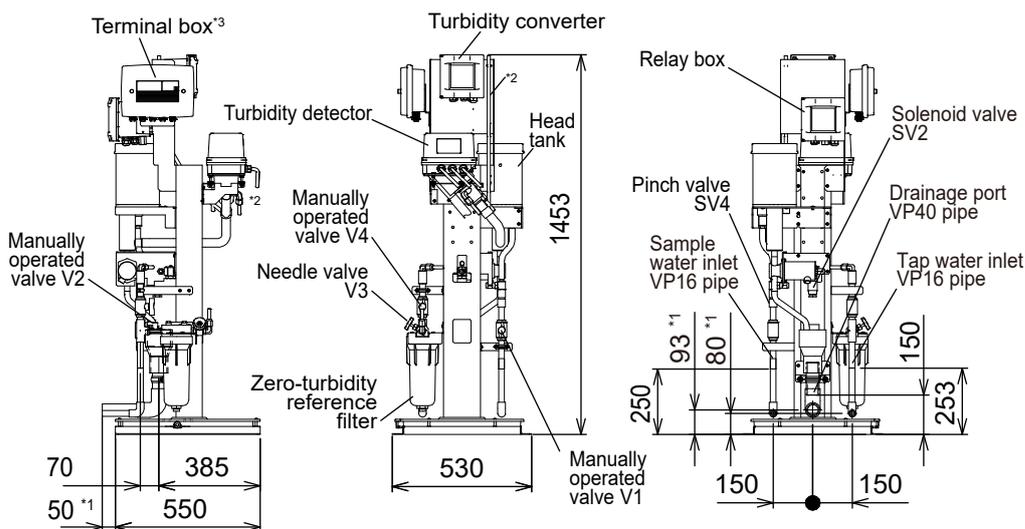
TB830D-□-□-A2-□-□-NN-NN



*1: Applied to suffix code -AB, -SB
When you specified -AD and -SD, connection of sampling system is base mounting.

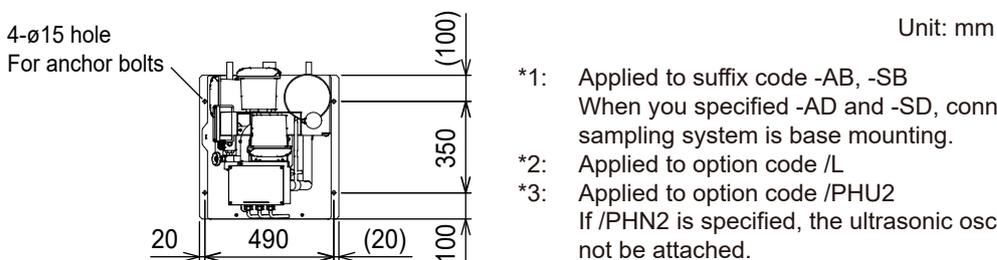
*2: Applied to option code /L

*3: Applied to option code /ARS



● With sampling system (with stanchion, with automatic cleaning, without automatic zero calibration)

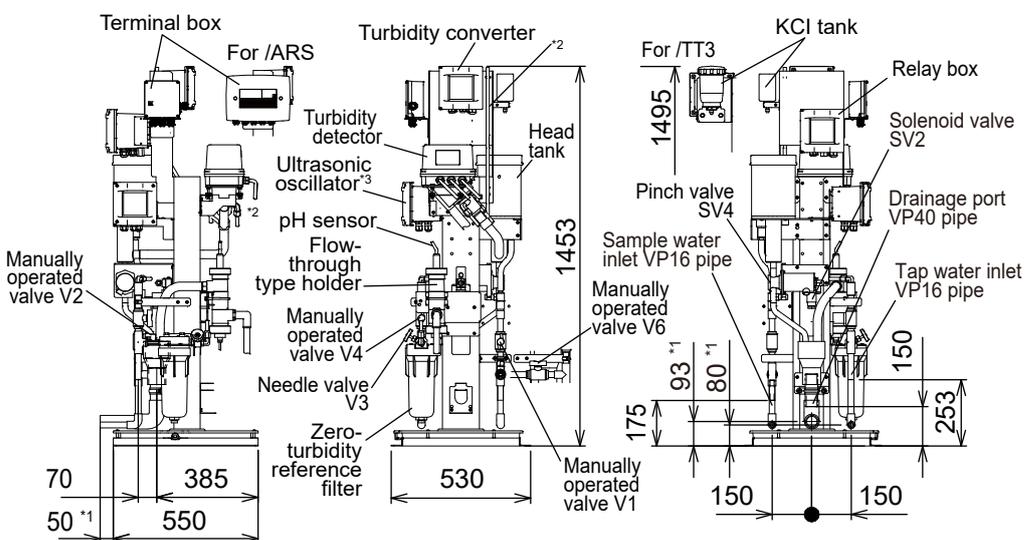
TB830D-□-□-A2-□-□-NN-NN/PH□2



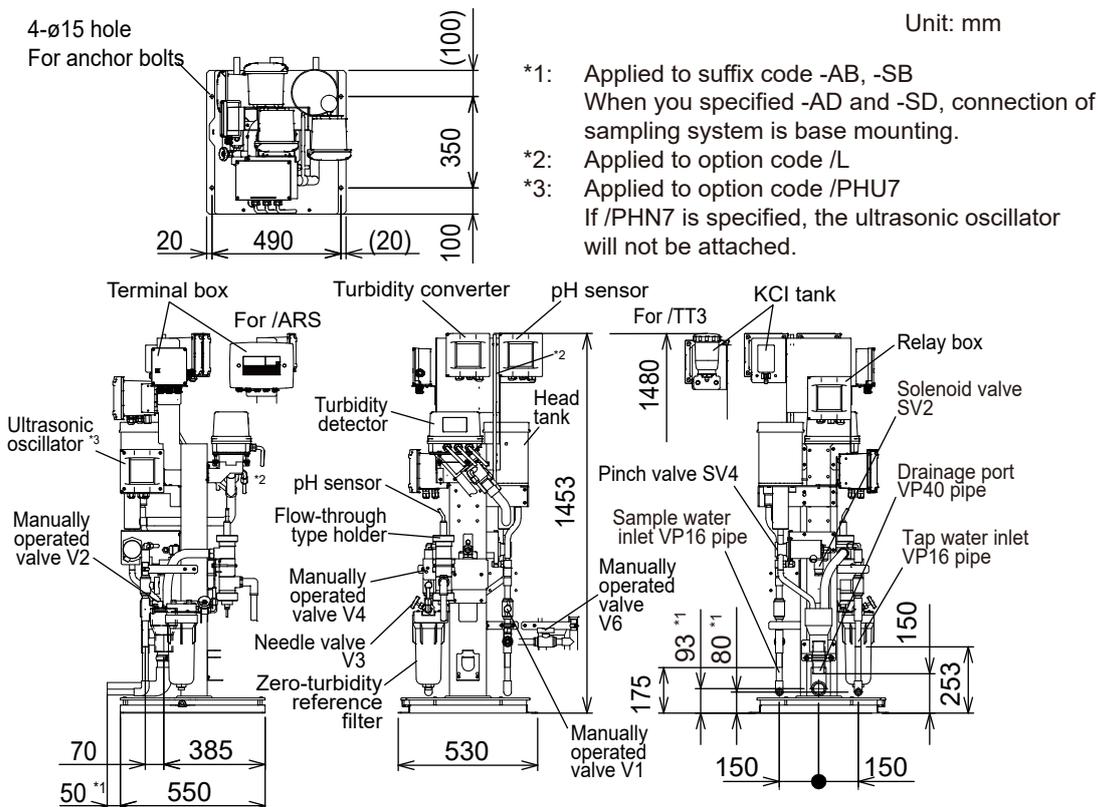
*1: Applied to suffix code -AB, -SB
When you specified -AD and -SD, connection of sampling system is base mounting.

*2: Applied to option code /L

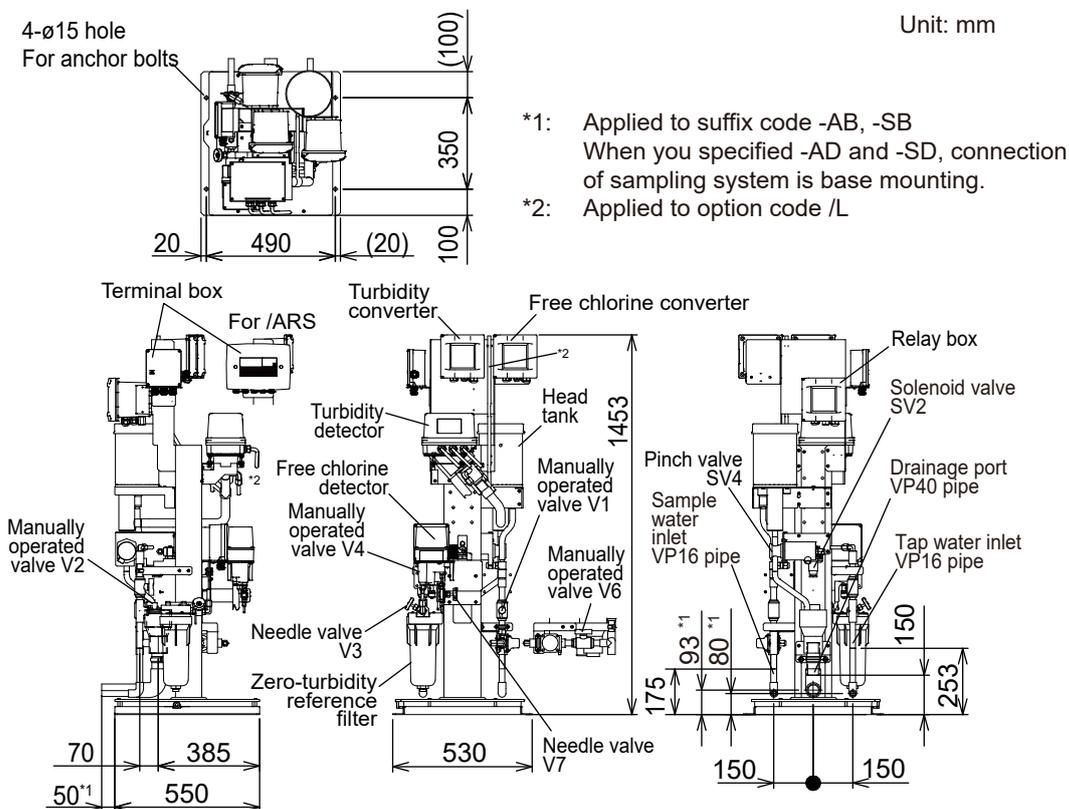
*3: Applied to option code /PHU2
If /PHN2 is specified, the ultrasonic oscillator will not be attached.



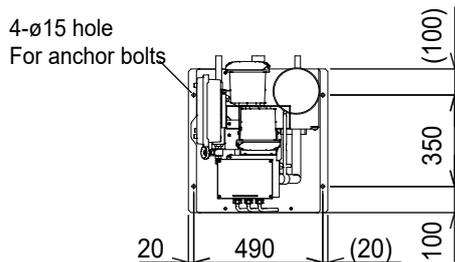
● With sampling system (with stanchion, with automatic cleaning, without automatic zero calibration)
TB830D-□-□-A2-□-□-NN-NN/PH□7



● With sampling system (with stanchion, with automatic cleaning, without automatic zero calibration)
TB830D-□-□-A2-□-□-NN-NN/FC

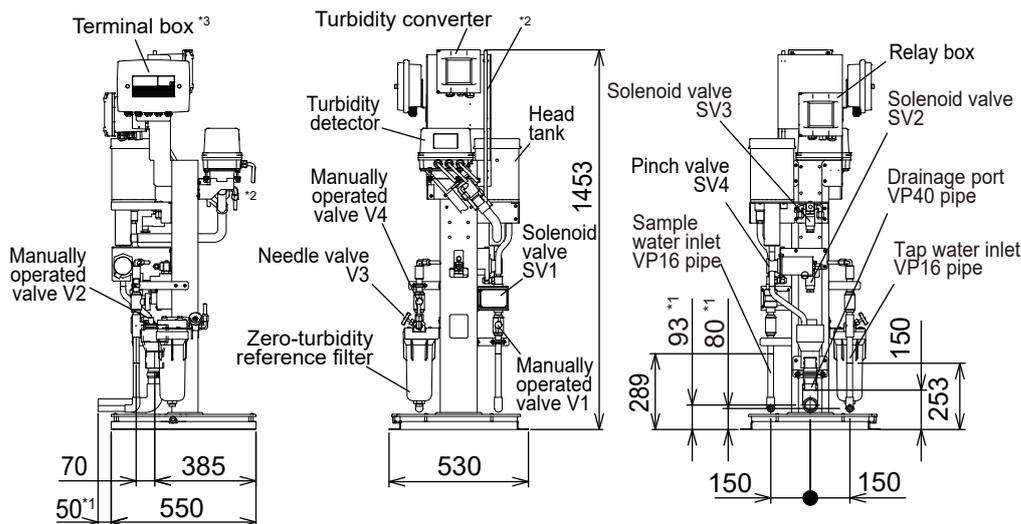


● With sampling system (with stanchion, with automatic cleaning, with automatic zero calibration)
TB830D-□-□-A3-□-□-NN-NN

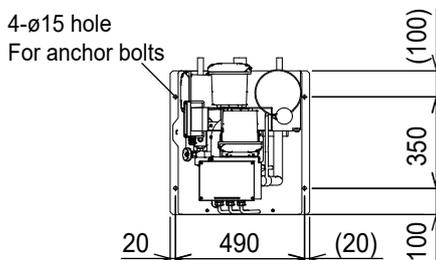


Unit: mm

- *1: Applied to suffix code -AB, -SB
 When you specified -AD and -SD, connection of sampling system is base mounting.
- *2: Applied to option code /L
- *3: Applied to option code /ARS

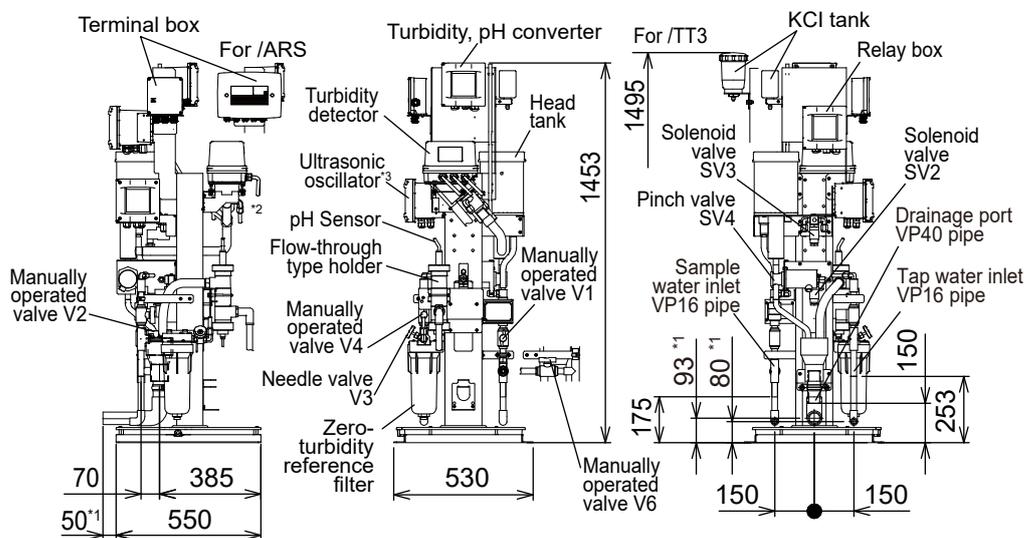


● With sampling system (with stanchion, with automatic cleaning, with automatic zero calibration)
TB830D-□-□-A3-□-□-NN-NN/PH□2



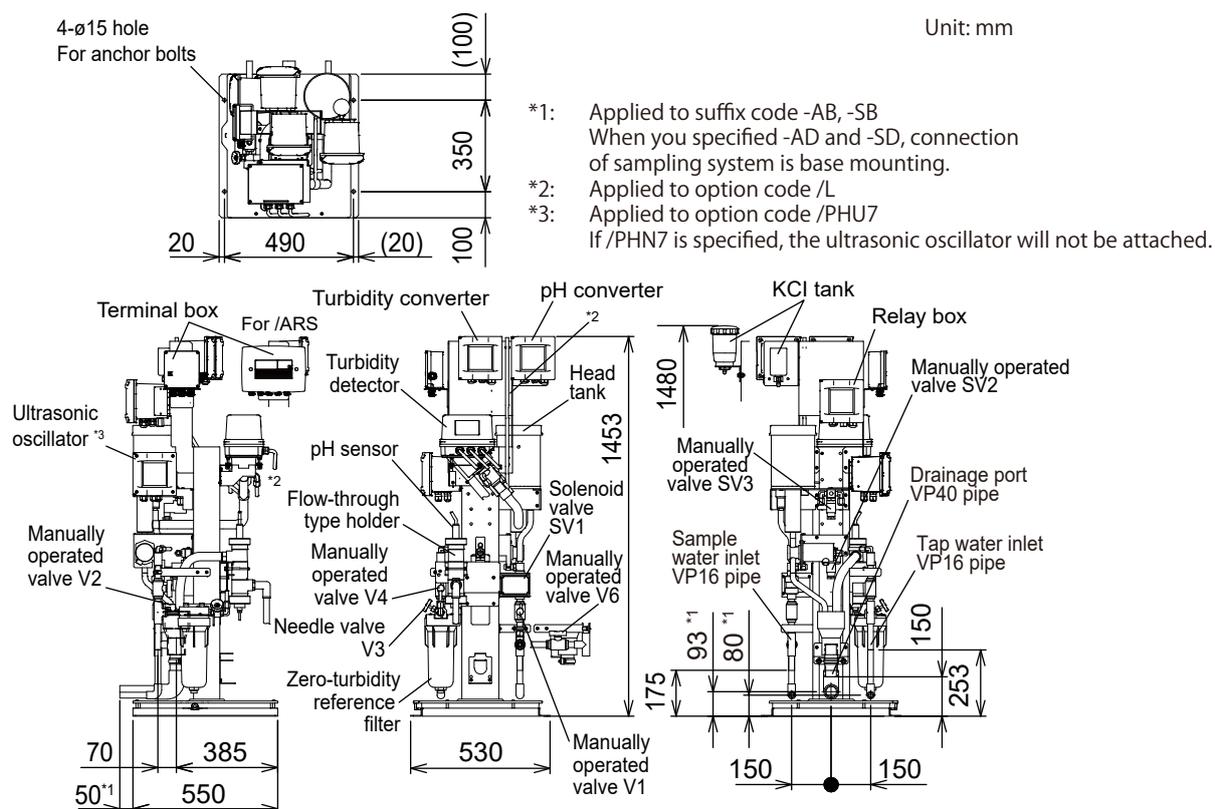
Unit: mm

- *1: Applied to suffix code -AB, -SB
 When you specified -AD and -SD, connection of sampling system is base mounting.
- *2: Applied to option code /L
- *3: Applied to option code /PHU7
 If /PHN7 is specified, the ultrasonic oscillator will not be attached.



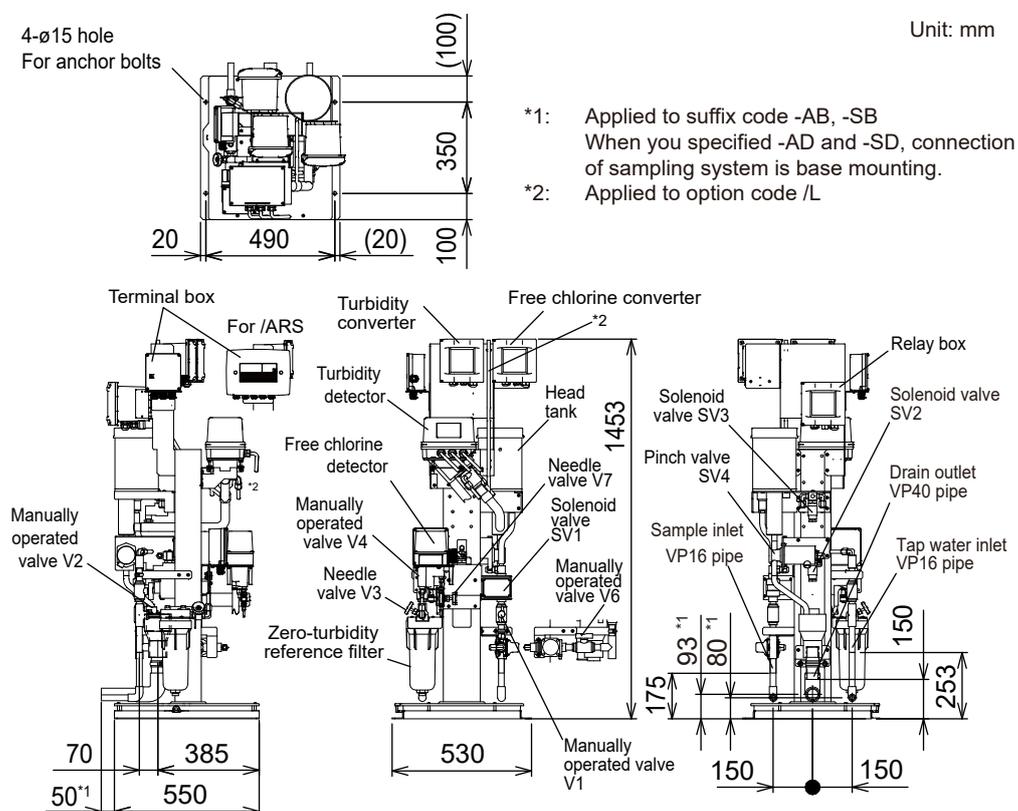
● With sampling system (with stanchion, with automatic cleaning, with automatic zero calibration)

TB830D-□-□-A3-□-□-NN-NN/PH□7



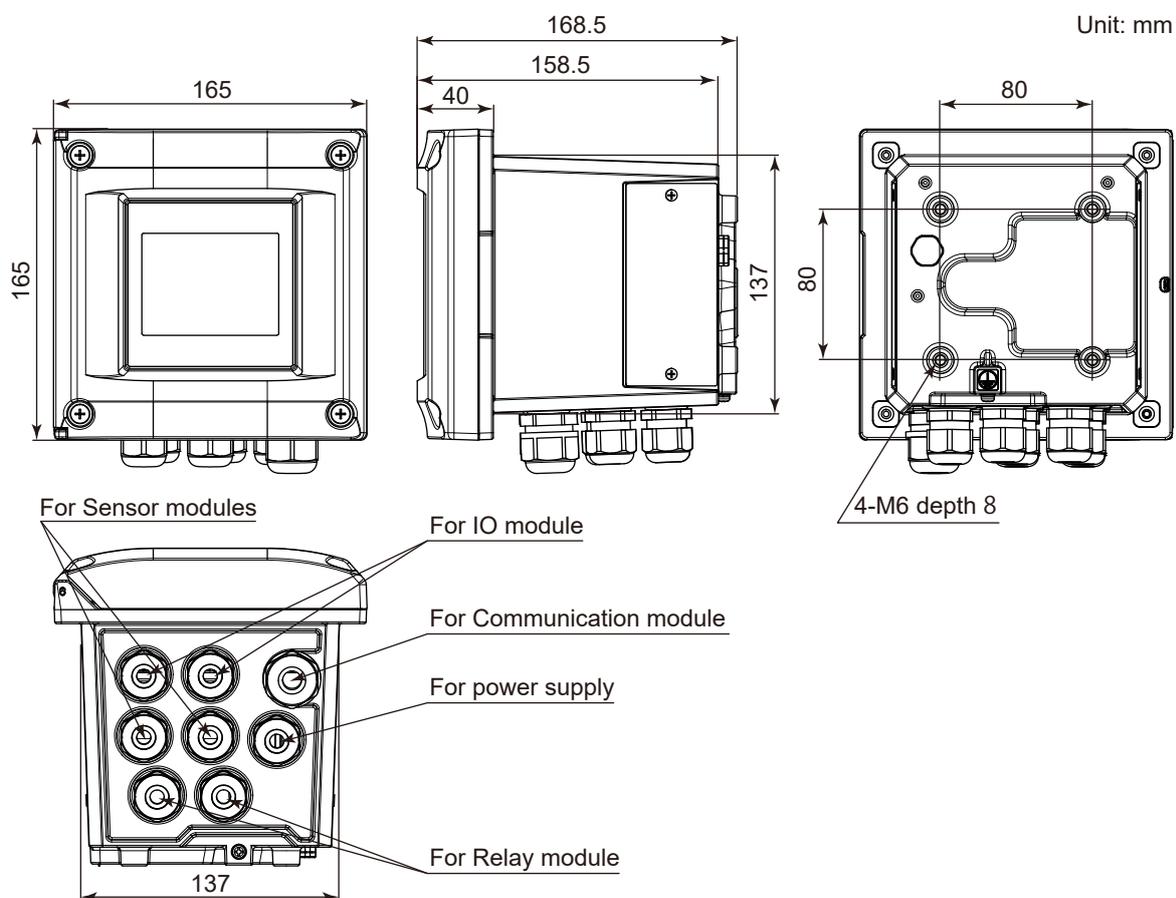
● With sampling system (with stanchion, with automatic cleaning, with automatic zero calibration)

TB830D-□-□-A3-□-□-NN-NN/FC

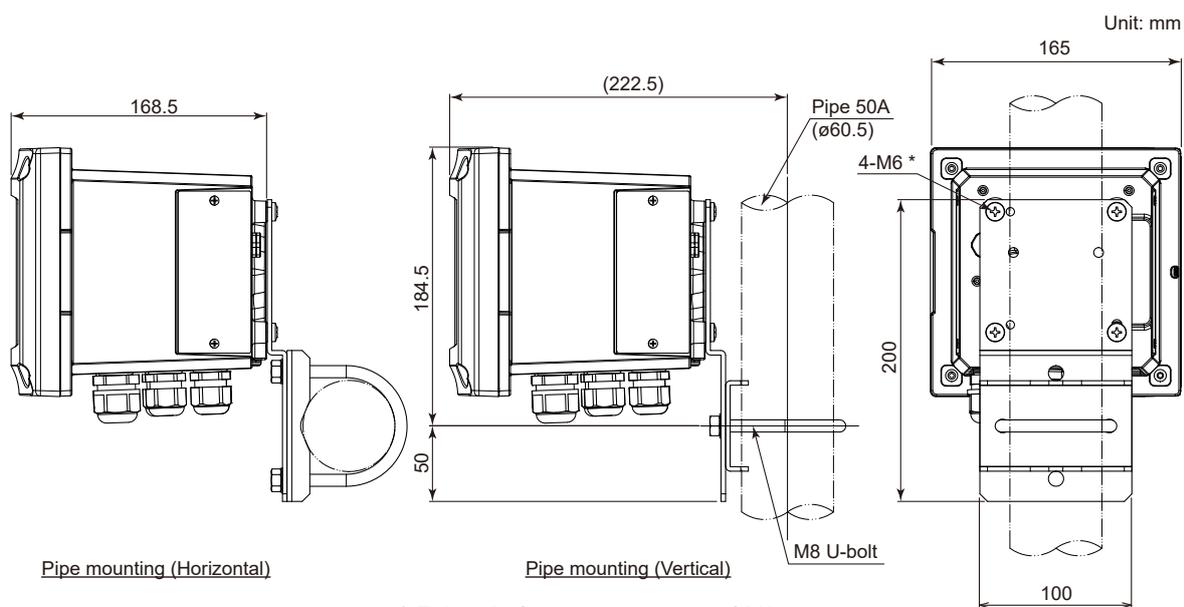


■ Dimensions (FLXA402T Liquid Analyzer for Turbidity and Chlorine)

FLXA402T Liquid Analyzer for Turbidity and Chlorine

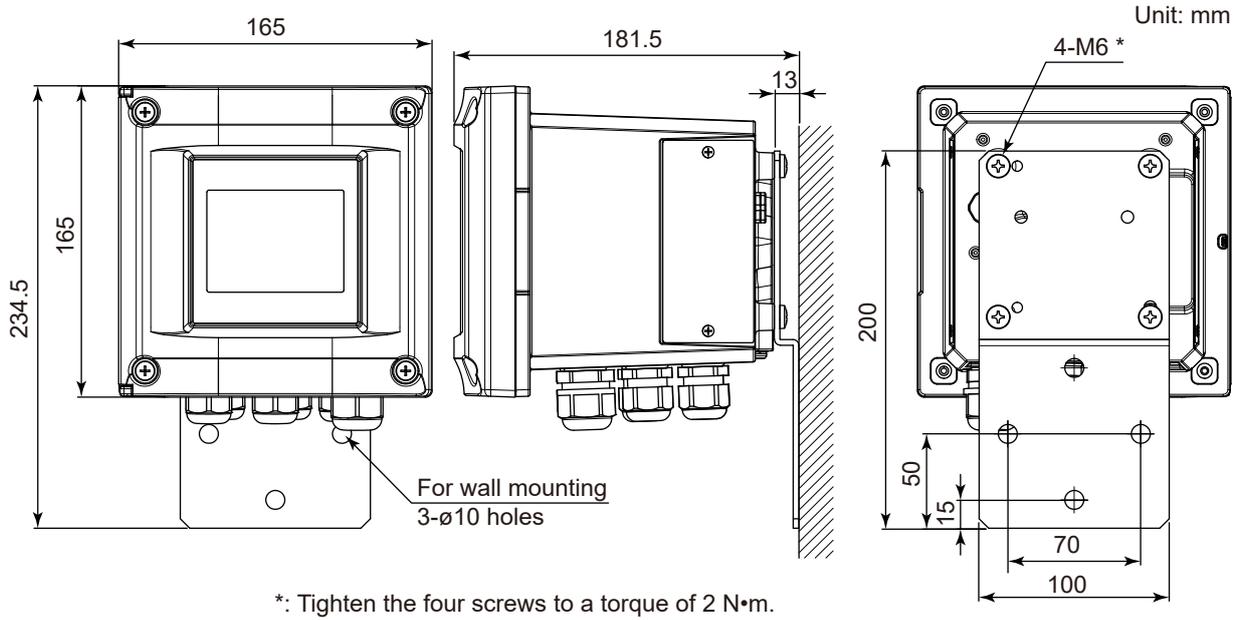


● Pipe mounting hardware (/U, /UM)



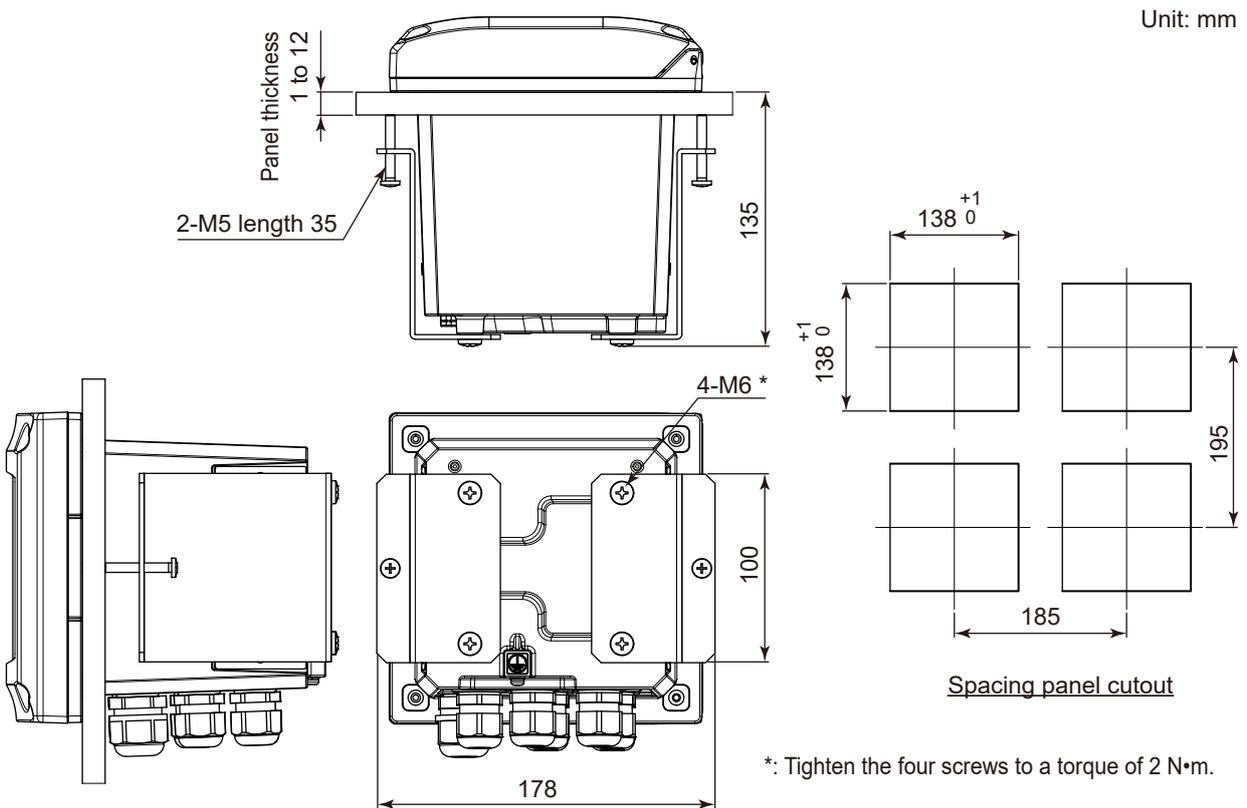
*: Tighten the four screws to a torque of 2 N•m.

Wall mounting hardware (/U, /UM)

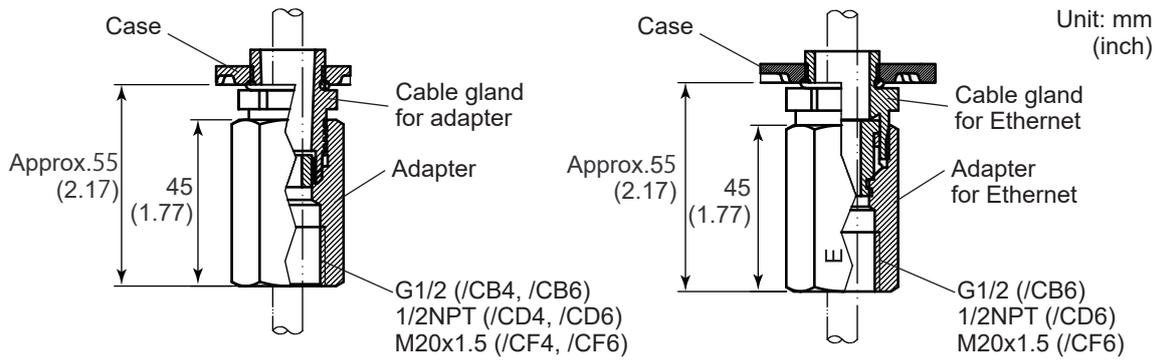


Note: For wall mounting, the wall should be strong enough to bear the weight of 8 kg or more.

● Panel mounting hardware (/PM, /UM)

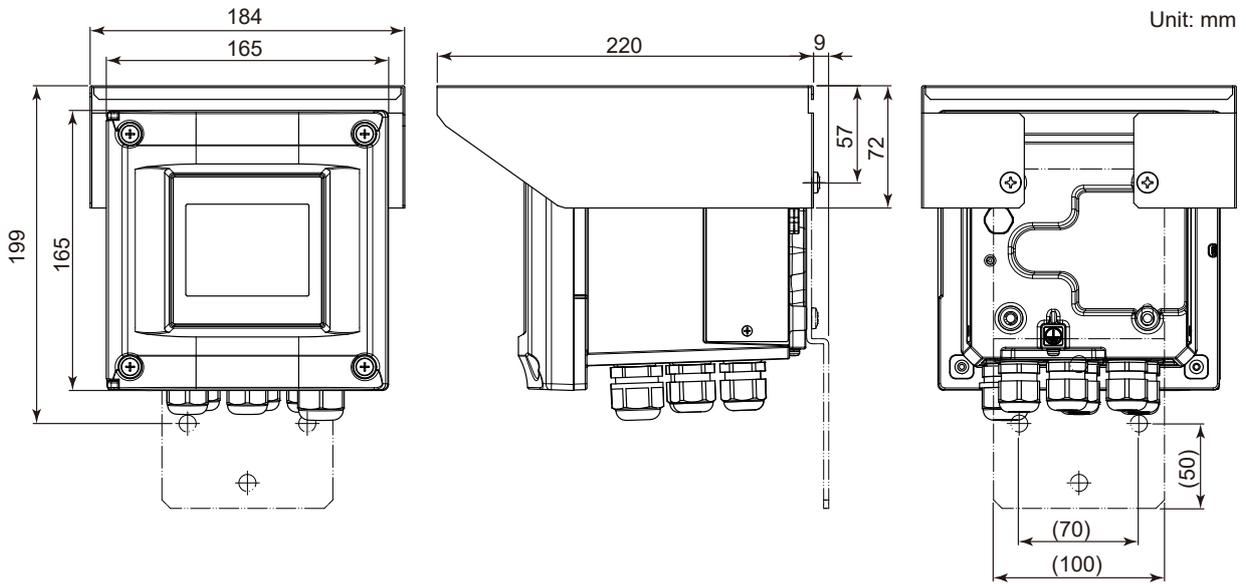


Conduit adaptor (/CB4, /CD4, /CF4/, /CB6, /CD6, /CF6)



Note: Universal Mounting kit (/UM) contains pipe, wall mounting hardware (/U) and panel mounting hardware (/PM).

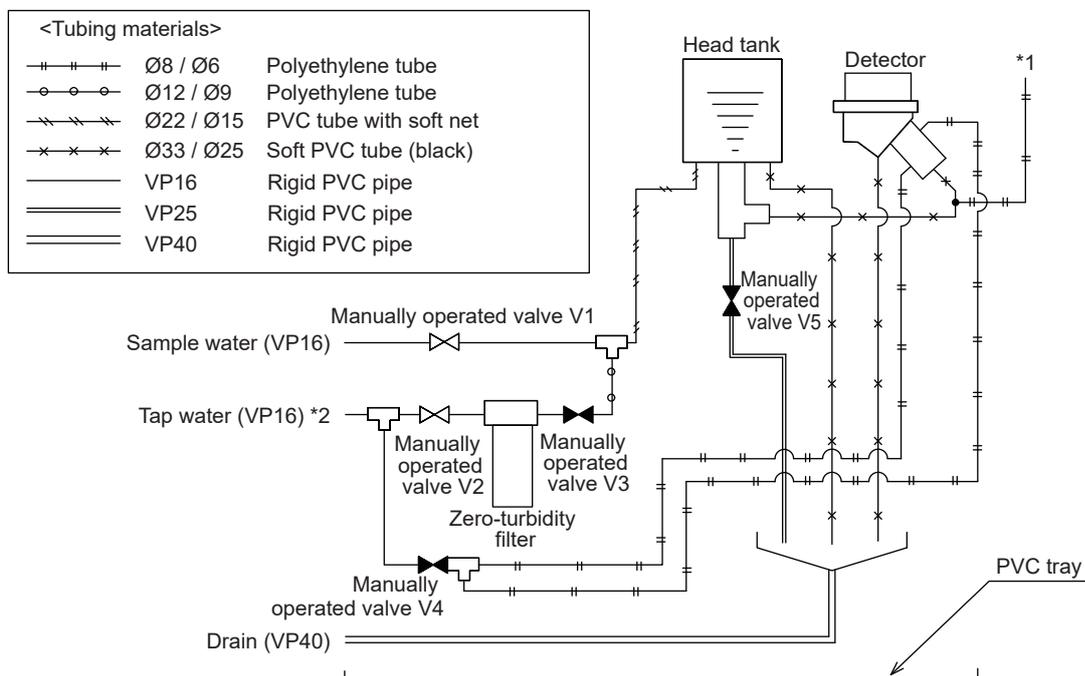
● **Hood Stainless steel (/H6, /H7)**



Piping

- A1 With sampling system (without automatic zero cleaning, without automatic zero calibration)

TB830D-□-□-A1-□-□-NN-NN

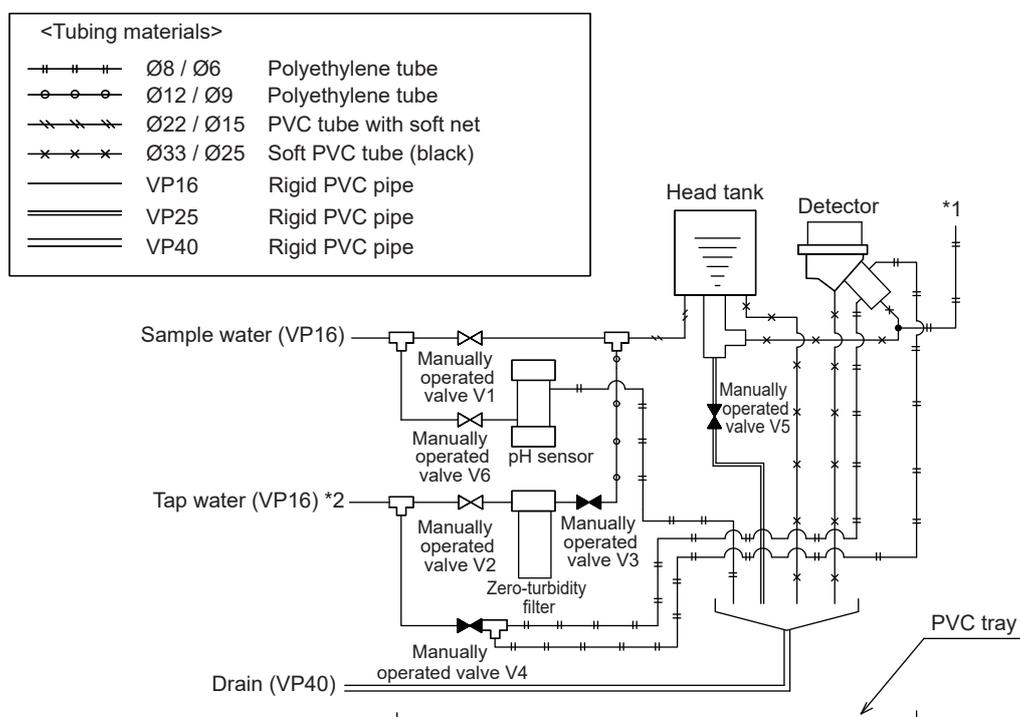


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

- A1 With sampling system (without automatic zero cleaning, without automatic zero calibration)

TB830D-□-□-A1-□-□-NN-NN/PH□

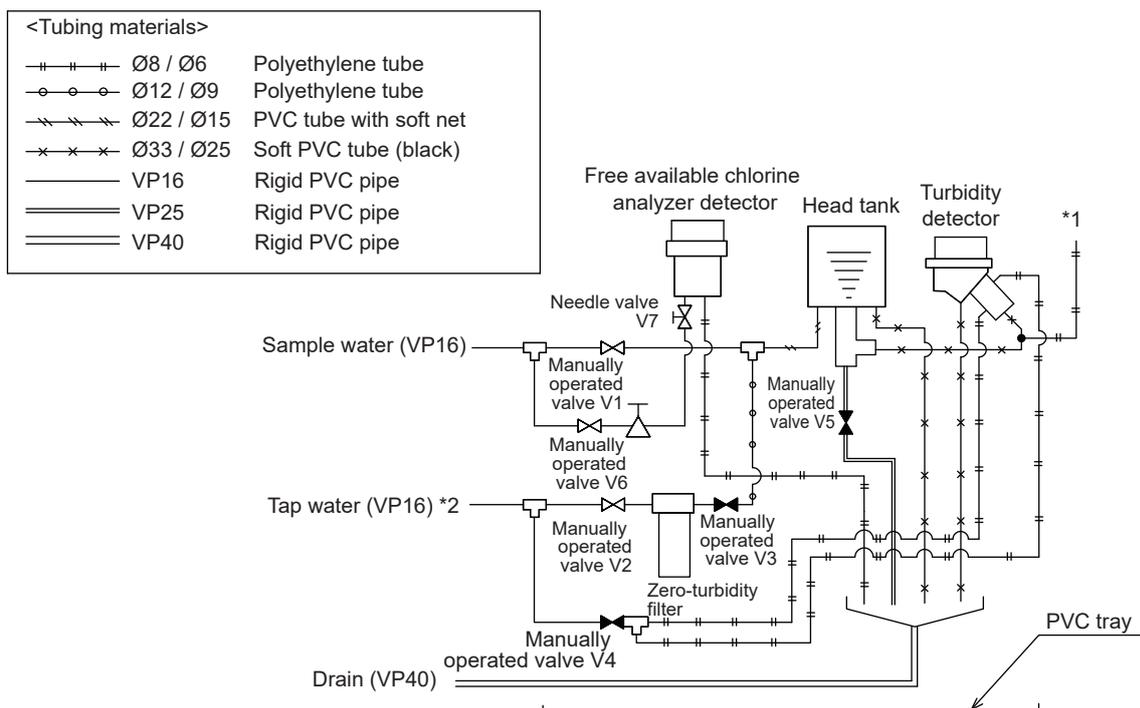


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● **-A1 With sampling system (without automatic cleaning, without automatic zero calibration)**

TB830D-□-□-A1-□-□-NN-NN/FC

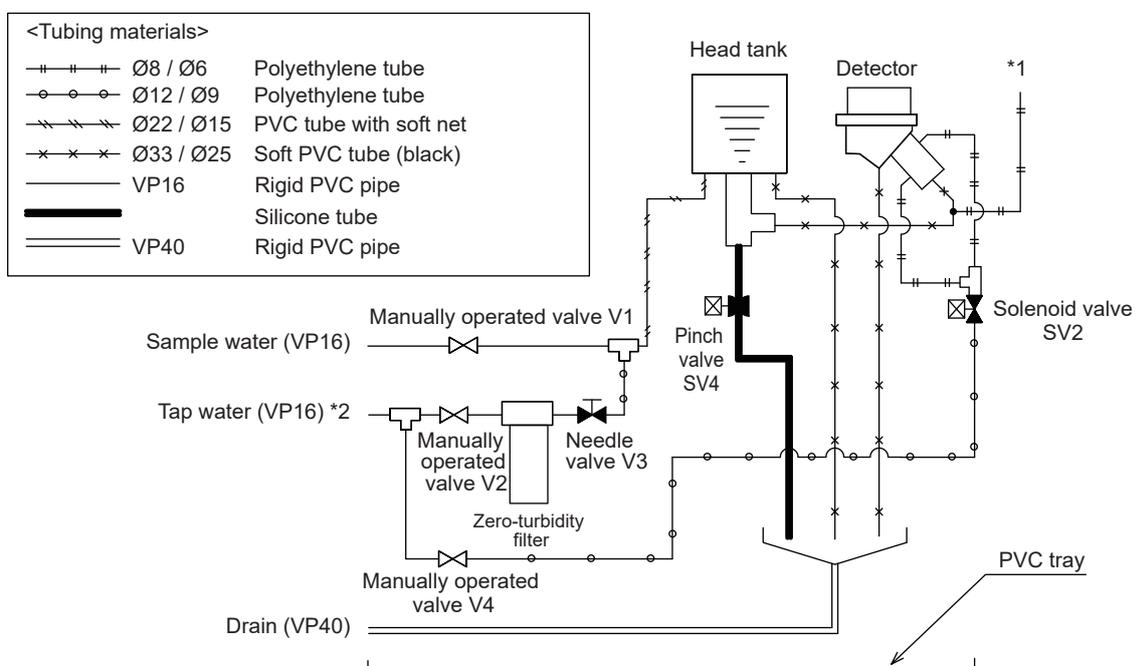


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● **-A2 With sampling system (with automatic cleaning, without automatic zero calibration)**

TB830D-□-□-A2-□-□-NN-NN

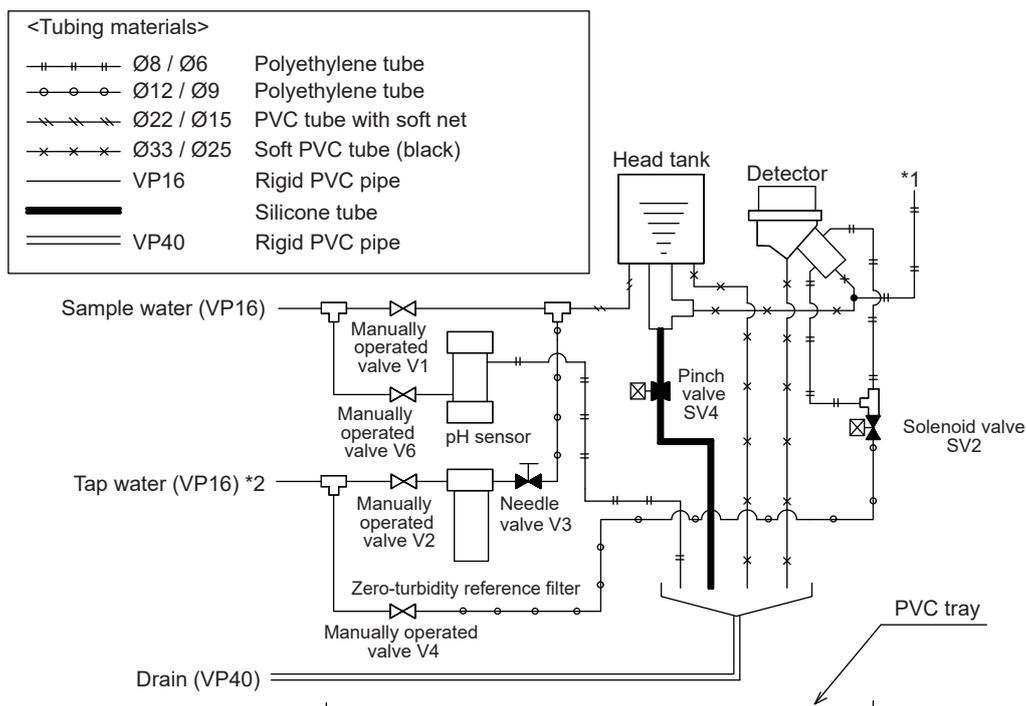


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● -A2 With sampling system (with automatic cleaning, without automatic zero calibration)

TB830D-□-□-A2-□-□-NN-NN/PH□

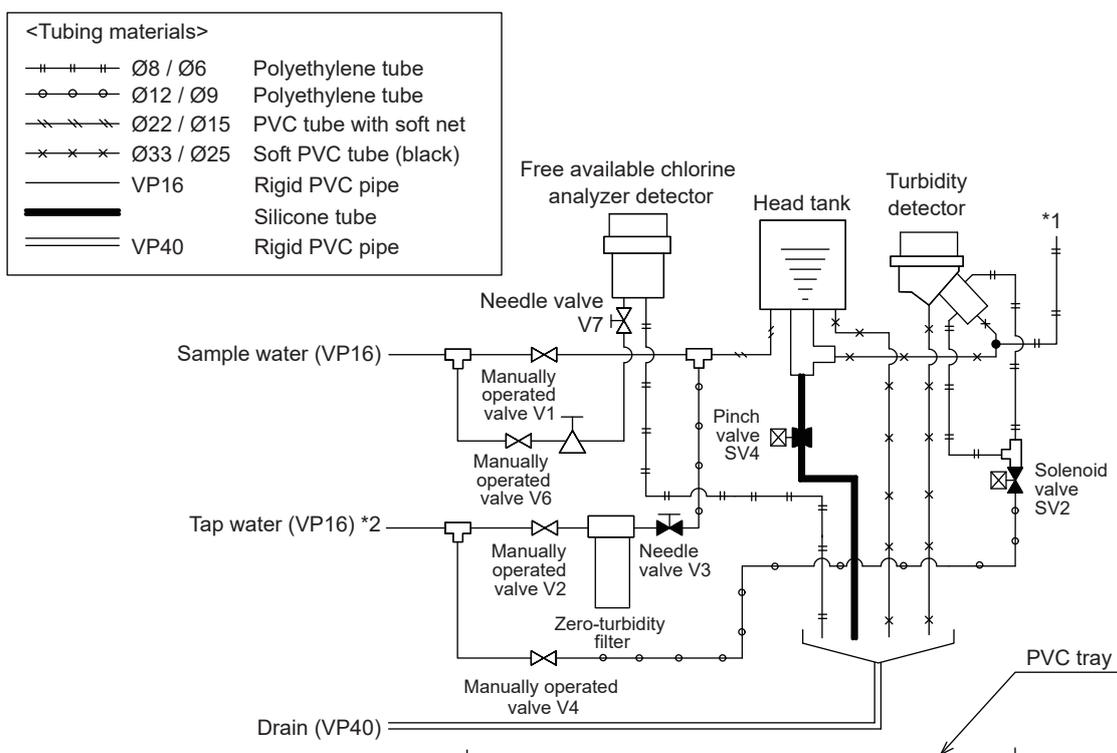


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● -A2 With sampling system (with automatic cleaning, without automatic zero calibration)

TB830D-□-□-A2-□-□-NN-NN/FC

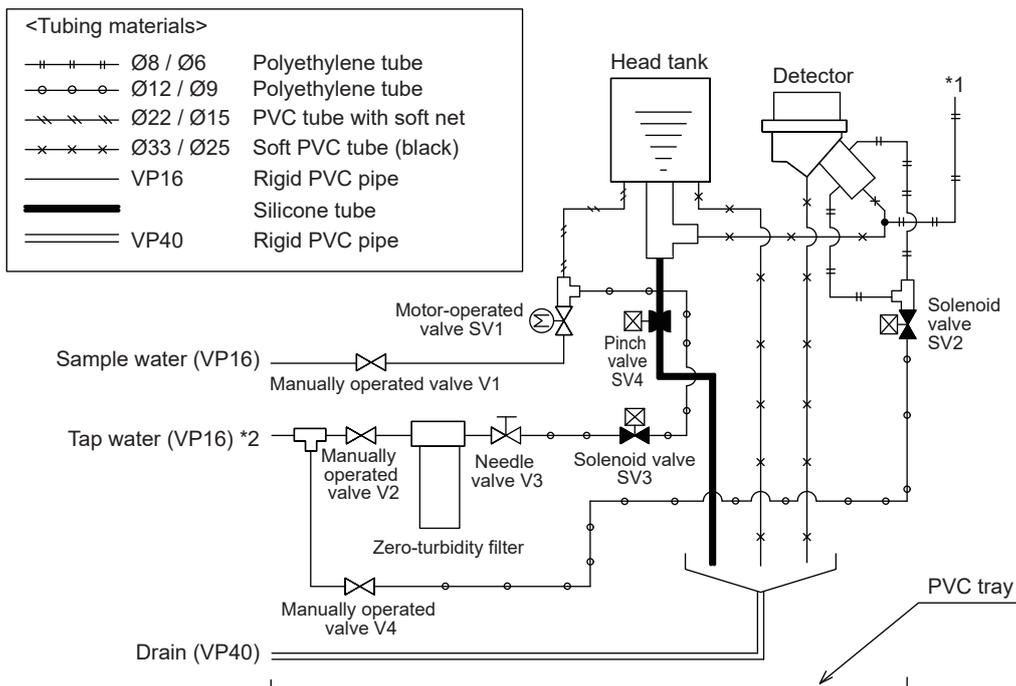


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● **A3 With sampling system (with automatic cleaning, with automatic zero calibration)**

TB830D-□-□-A3-□-□-NN-NN

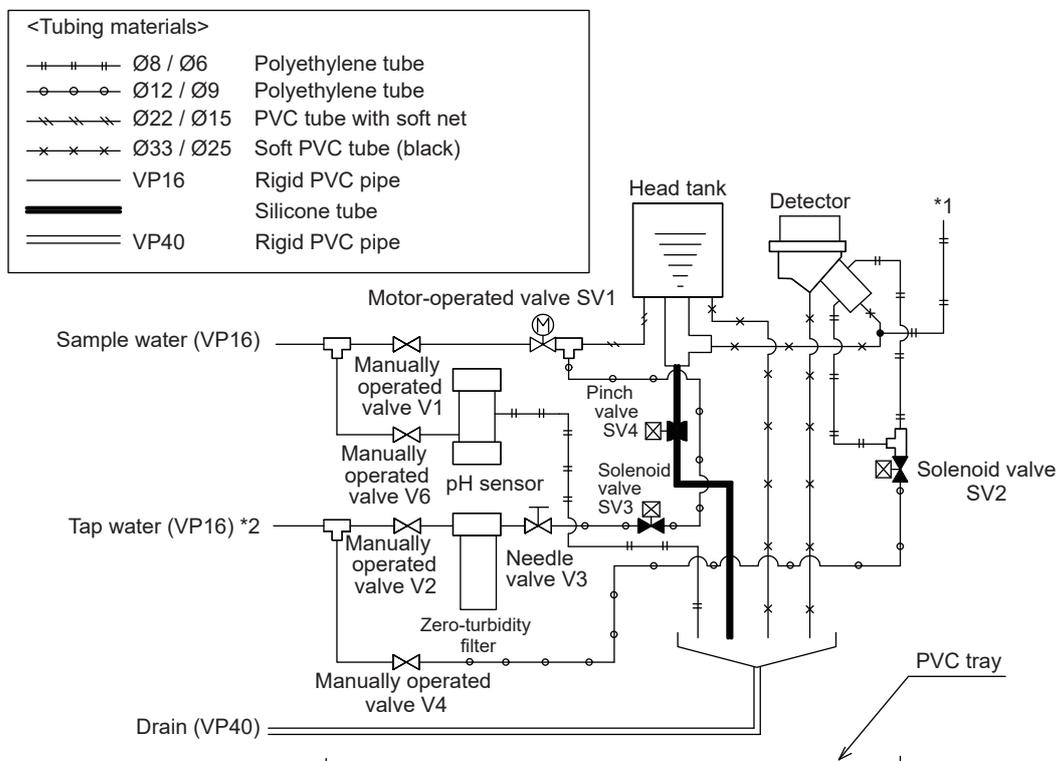


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● **A3 With sampling system (with automatic cleaning, with automatic zero calibration)**

TB830D-□-□-A3-□-□-NN-NN/PH□

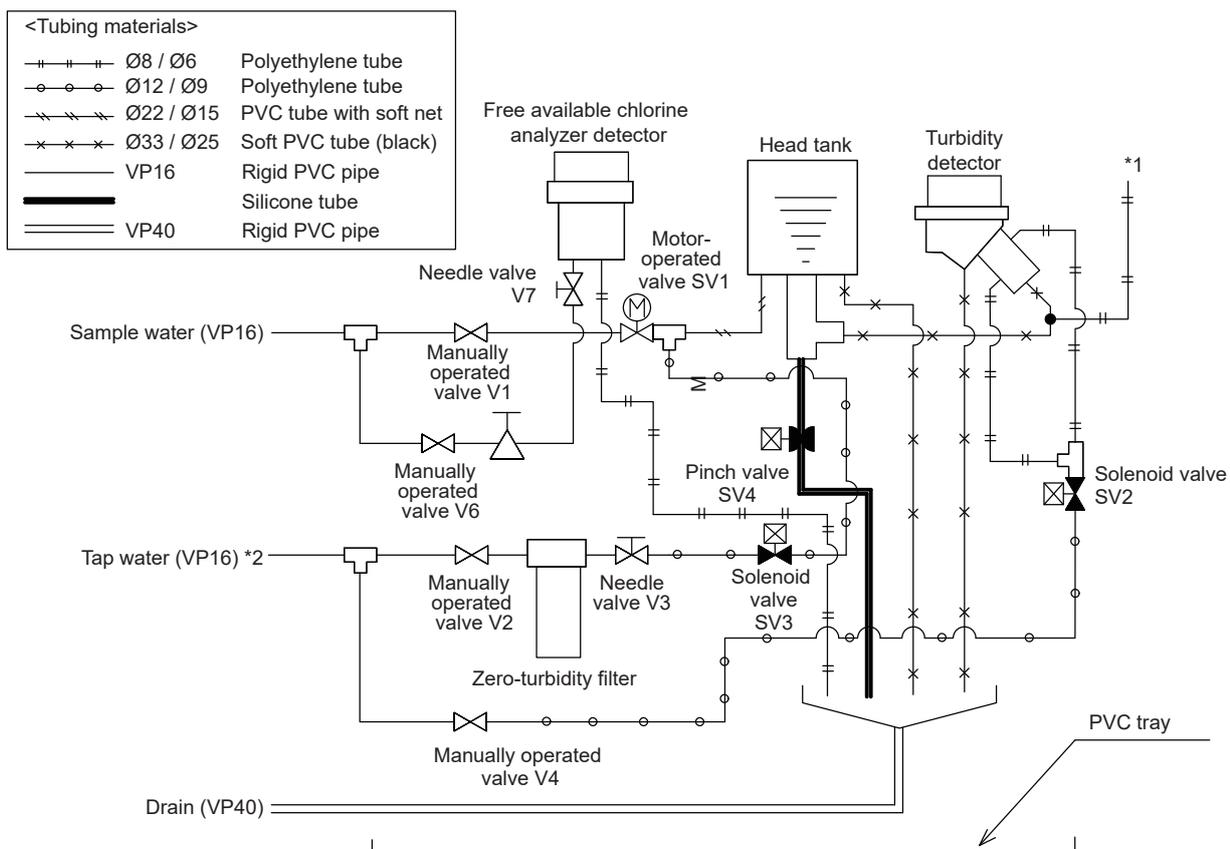


*1: Option Code /L (Air denoising for Low Range)

*2: You should install a check valve just before the tap water pipe to prevent backflow.

● A3 With sampling system (with automatic cleaning, with automatic zero calibration)

TB830D-□-□-A3-□-□-NN-NN/FC

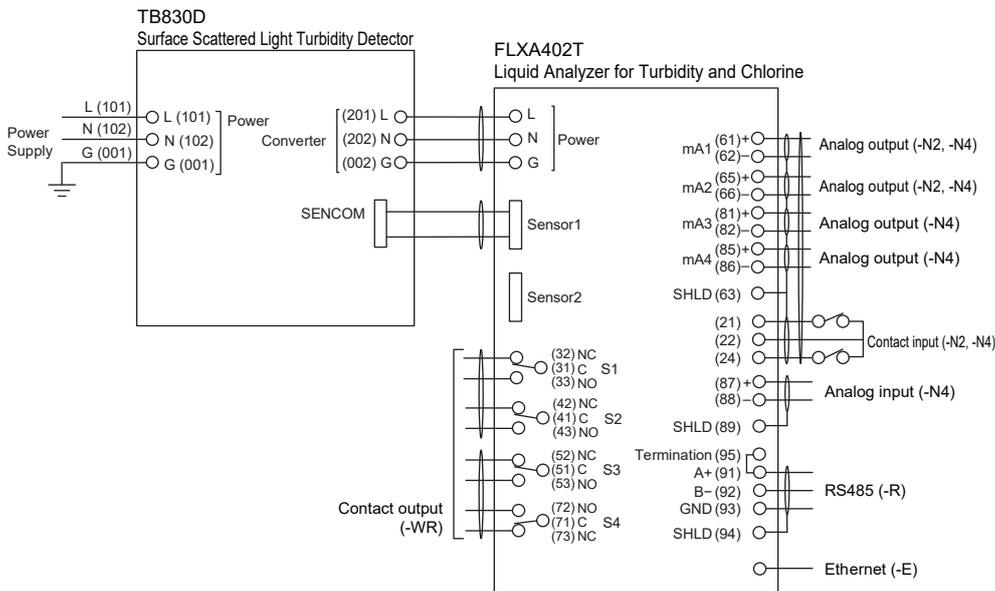


*1: Option Code /L (For bubble retardant)

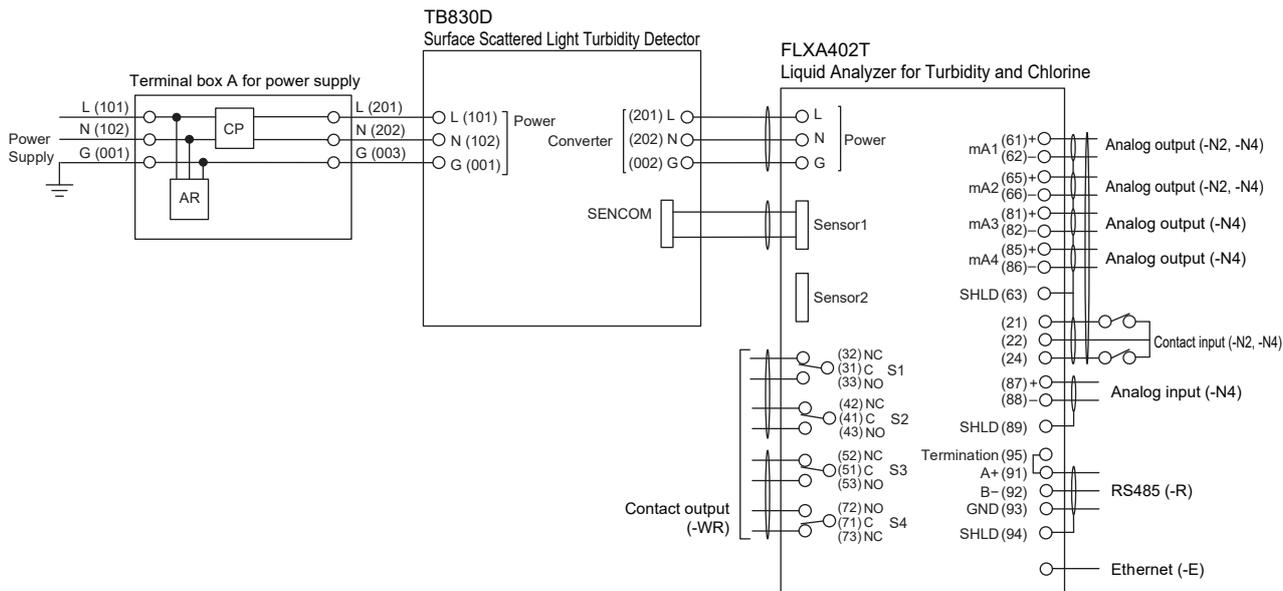
*2: You should install a check valve just before the tap water pipe to prevent backflow.

■ Wiring

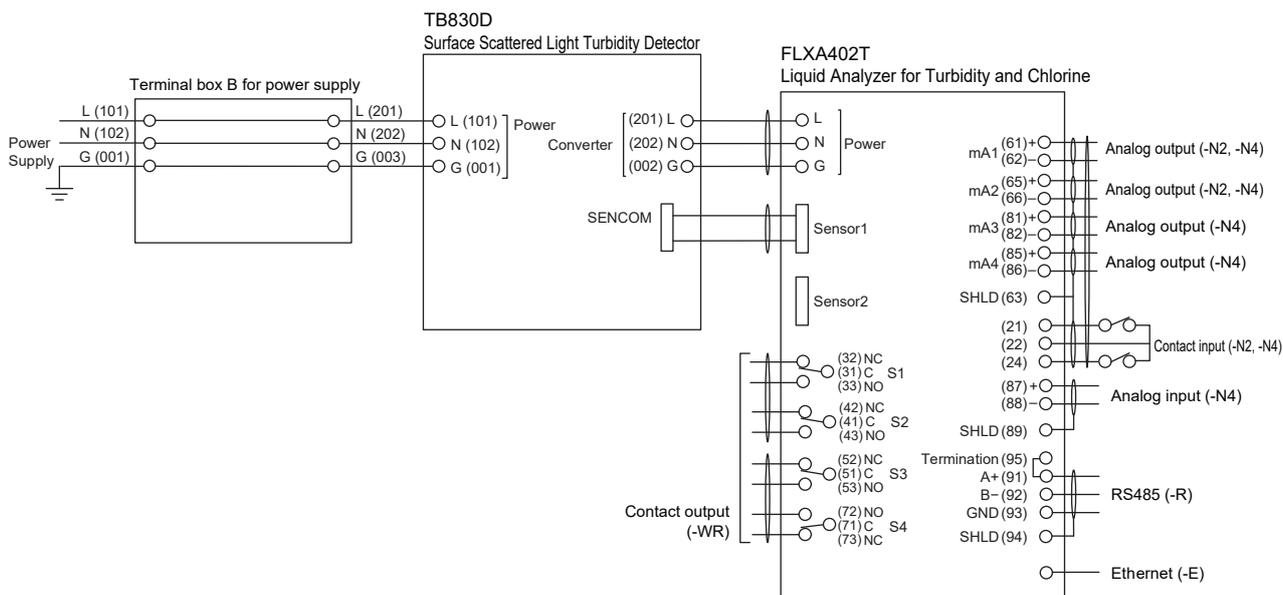
● TB830D-□-□-NN-NN-NN-NN-NN



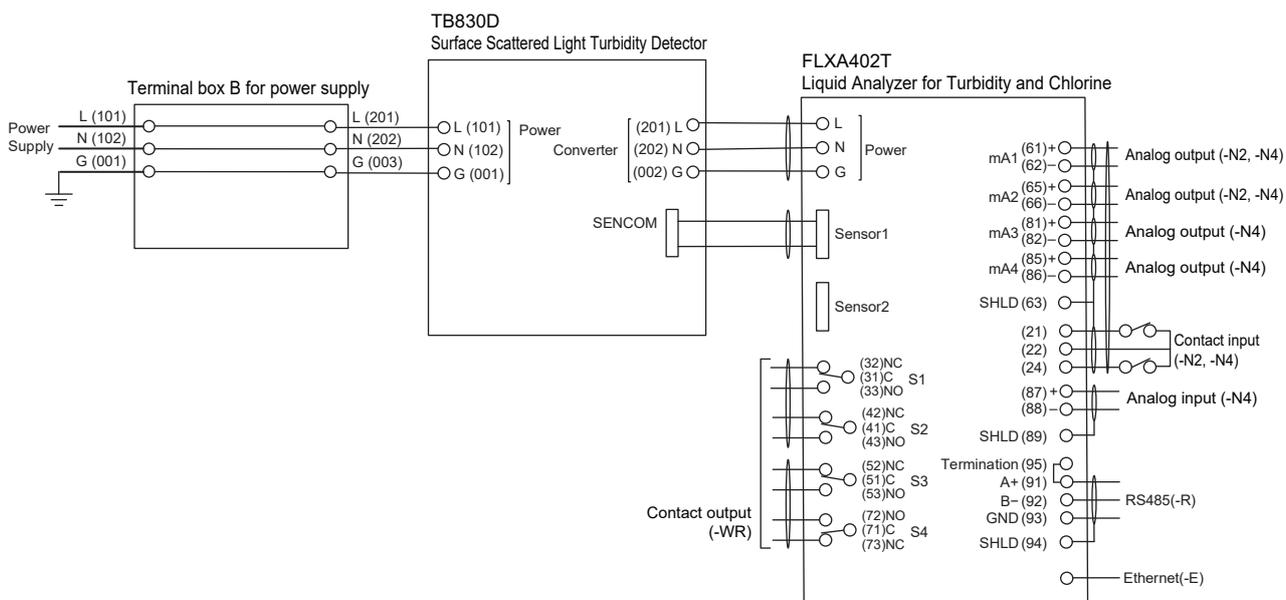
● TB830D-□-□-NN-NN-NN-NN-NN /ARS



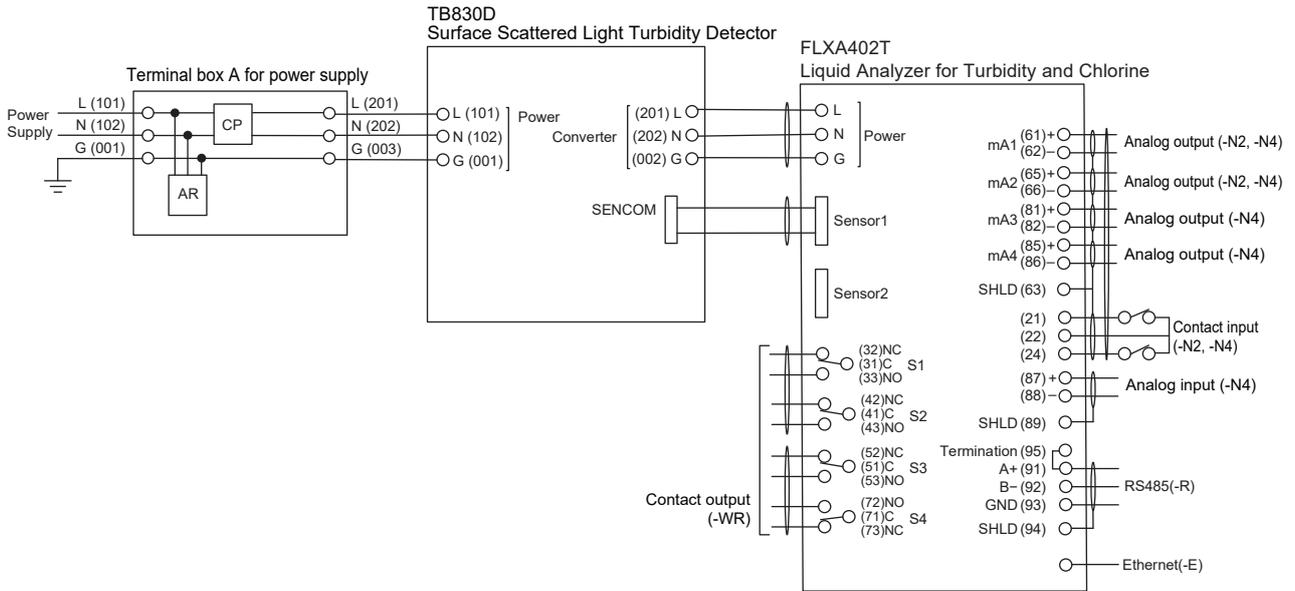
● TB830D-□-□-NN-NN-NN-NN-NN /C□



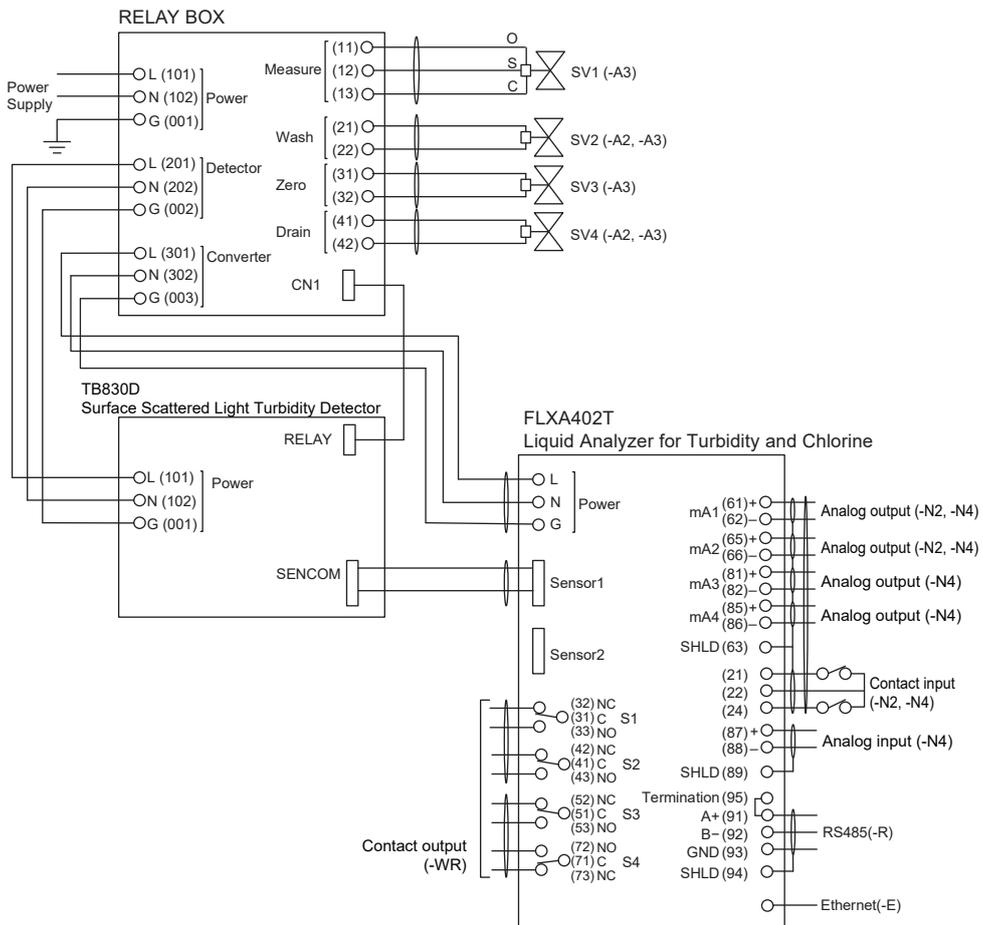
● TB830D-□-□-A1-□-NN-NN-NN



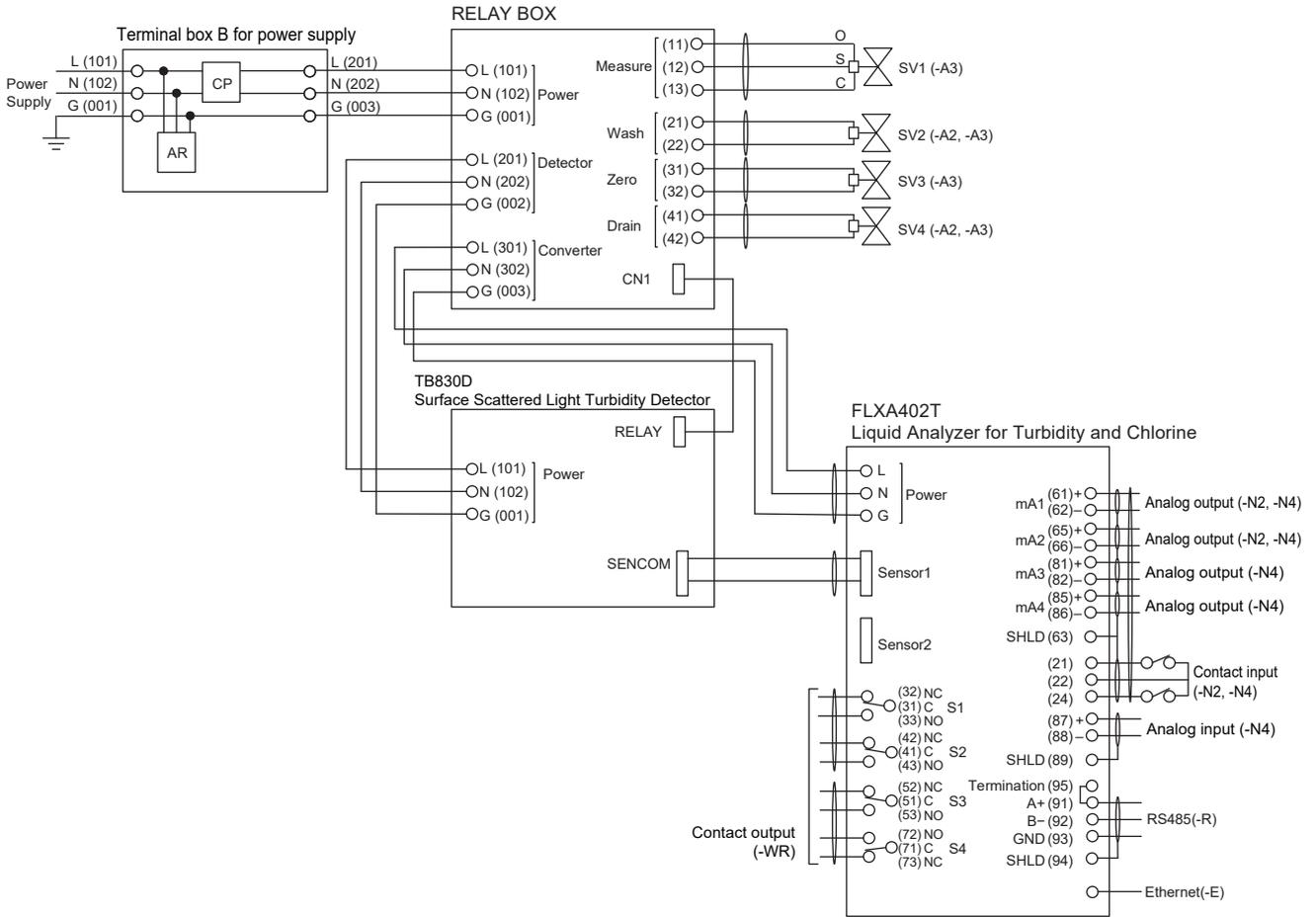
● TB830D-□-□-A1-□-□-NN-NN-NN /ARS



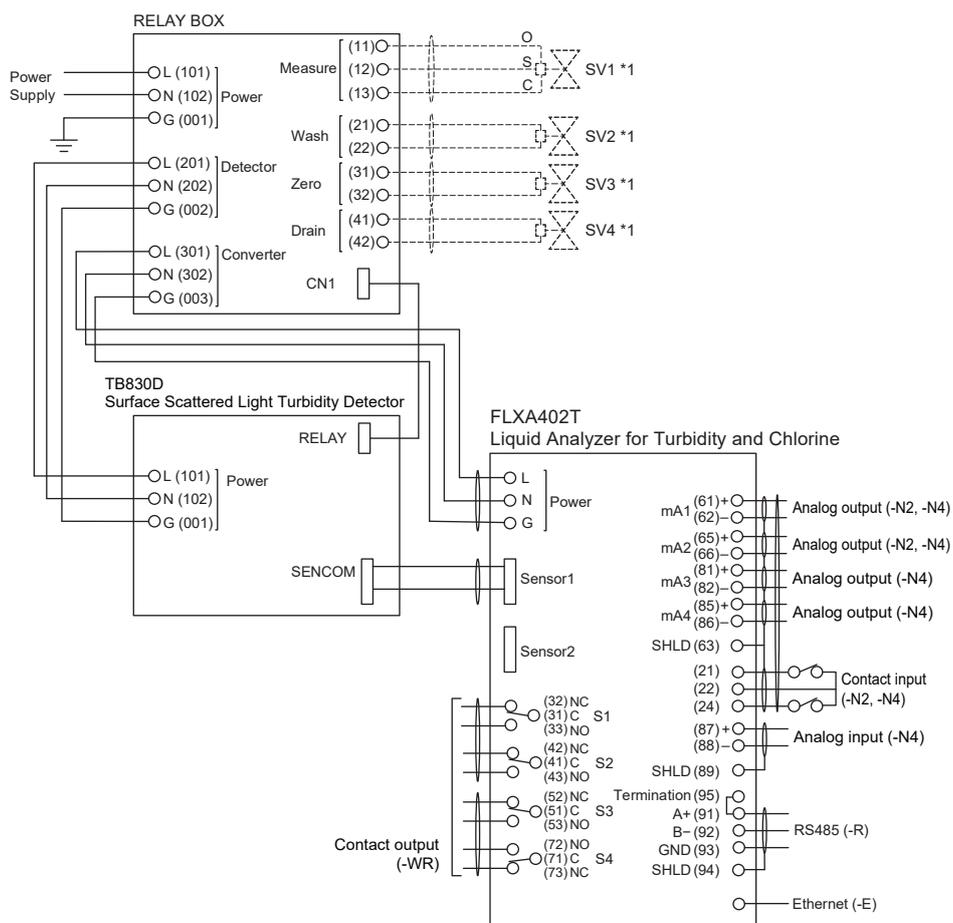
● TB830D-□-□-A2-□-□-NN-NN
TB830D-□-□-A3-□-□-NN-NN



● TB830D-□-□-A2-□-□-NN-NN /ARS
 TB830D-□-□-A3-□-□-NN-NN /ARS

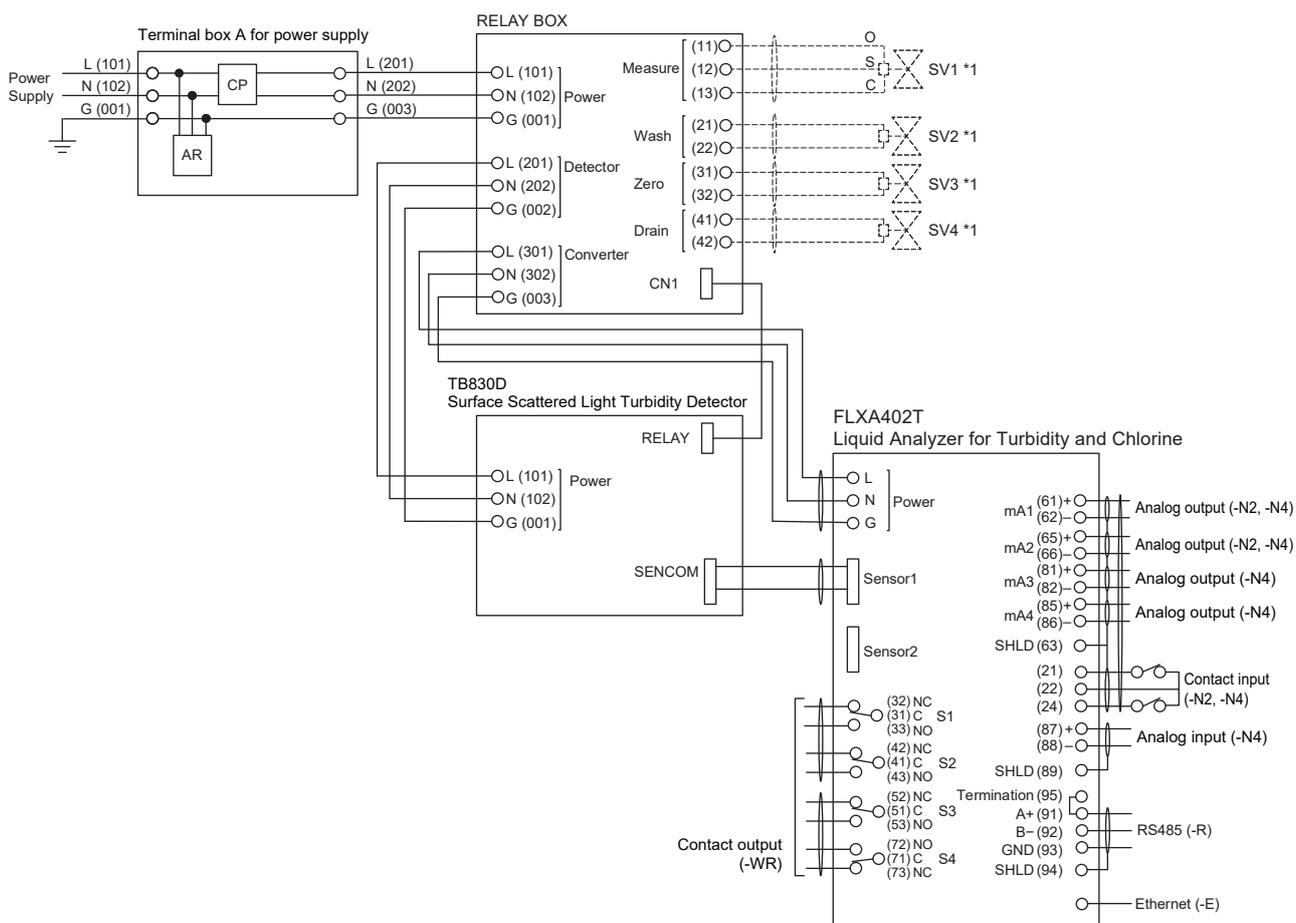


● TB830D-□-□-A5-NN-NN-NN-NN



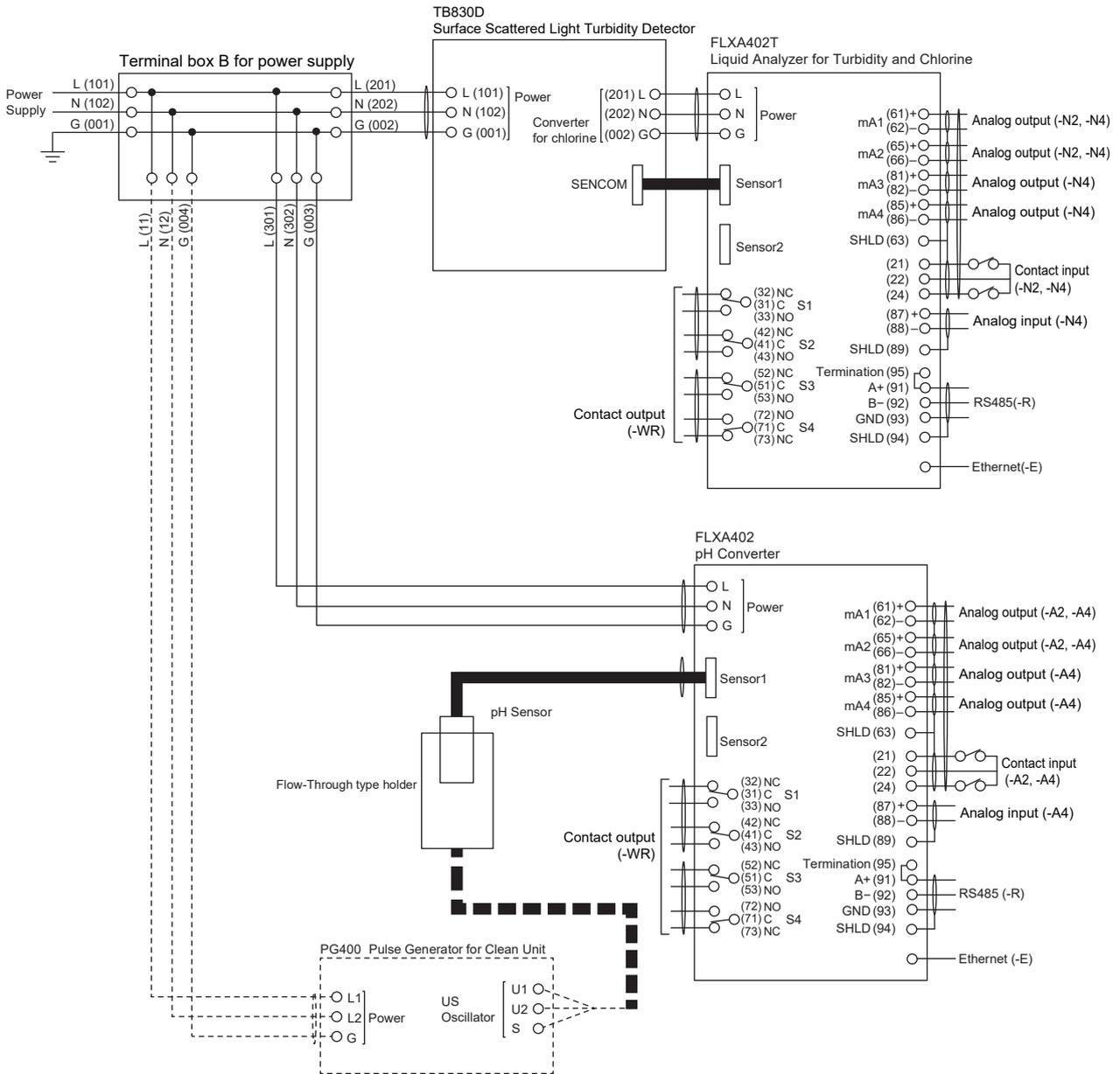
*1: In case of selecting -A5, purchase the solenoid valve corresponding input power supply and frequency and cables.
See ● Solenoid valve (SV1 to SV4).

● TB830D-□-□-A5-NN-NN-NN-NN /ARS

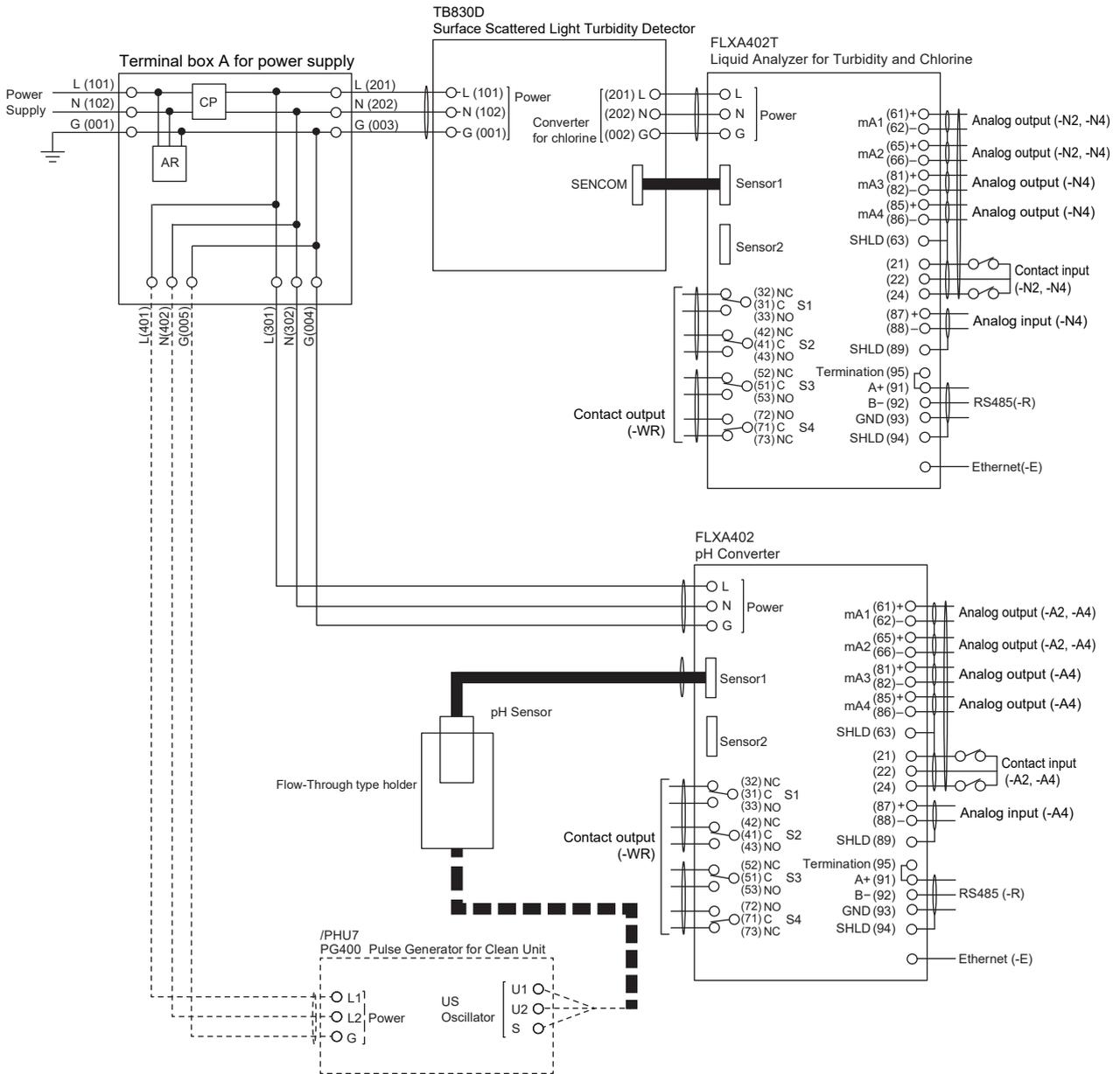


*1: In case of selecting -A5, purchase the solenoid valve corresponding input power supply and frequency and cables.
See ● Solenoid valve (SV1 to SV4).

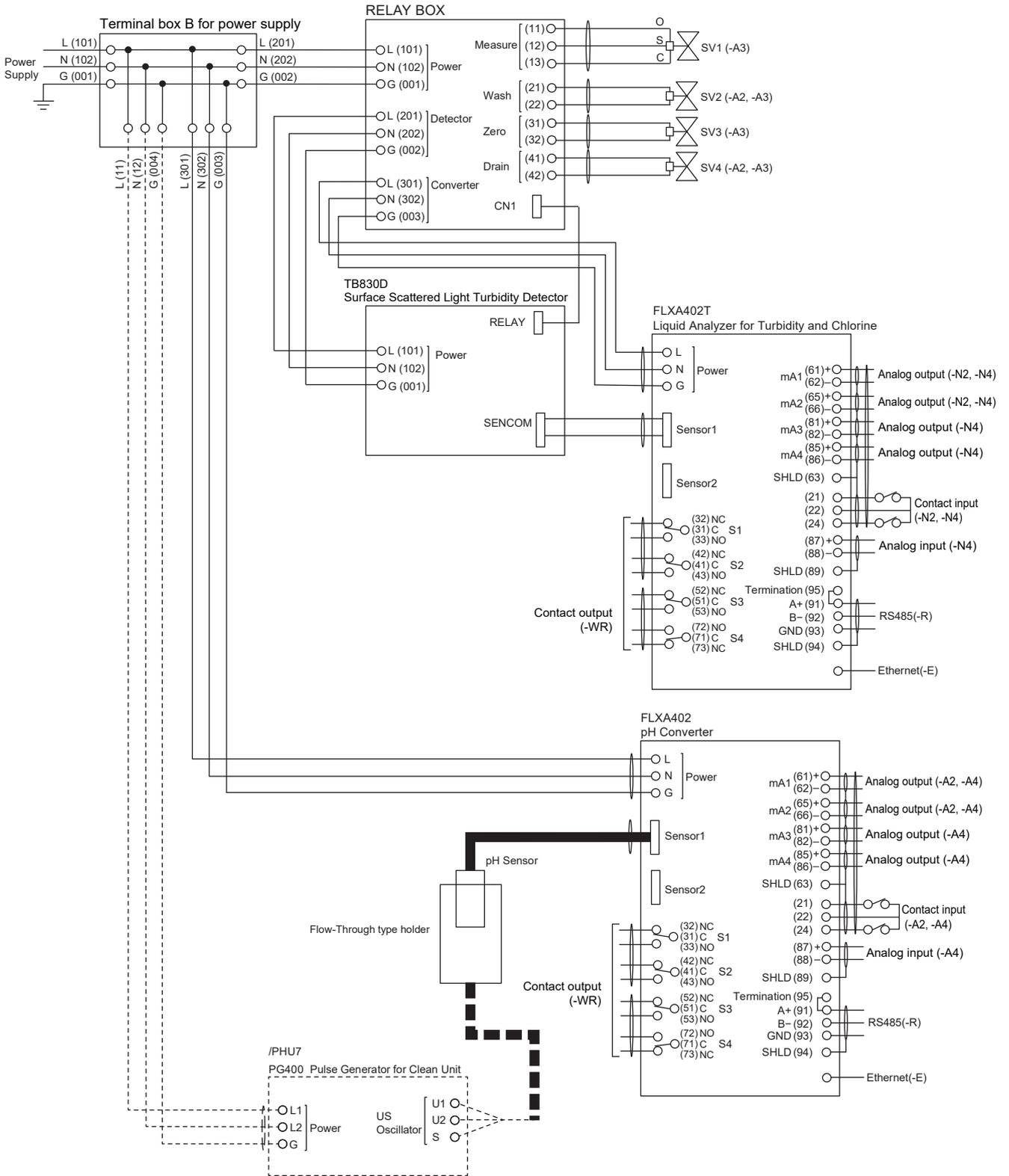
● TB830D-□-□-A1-□-NN-NN-NN/PH□7



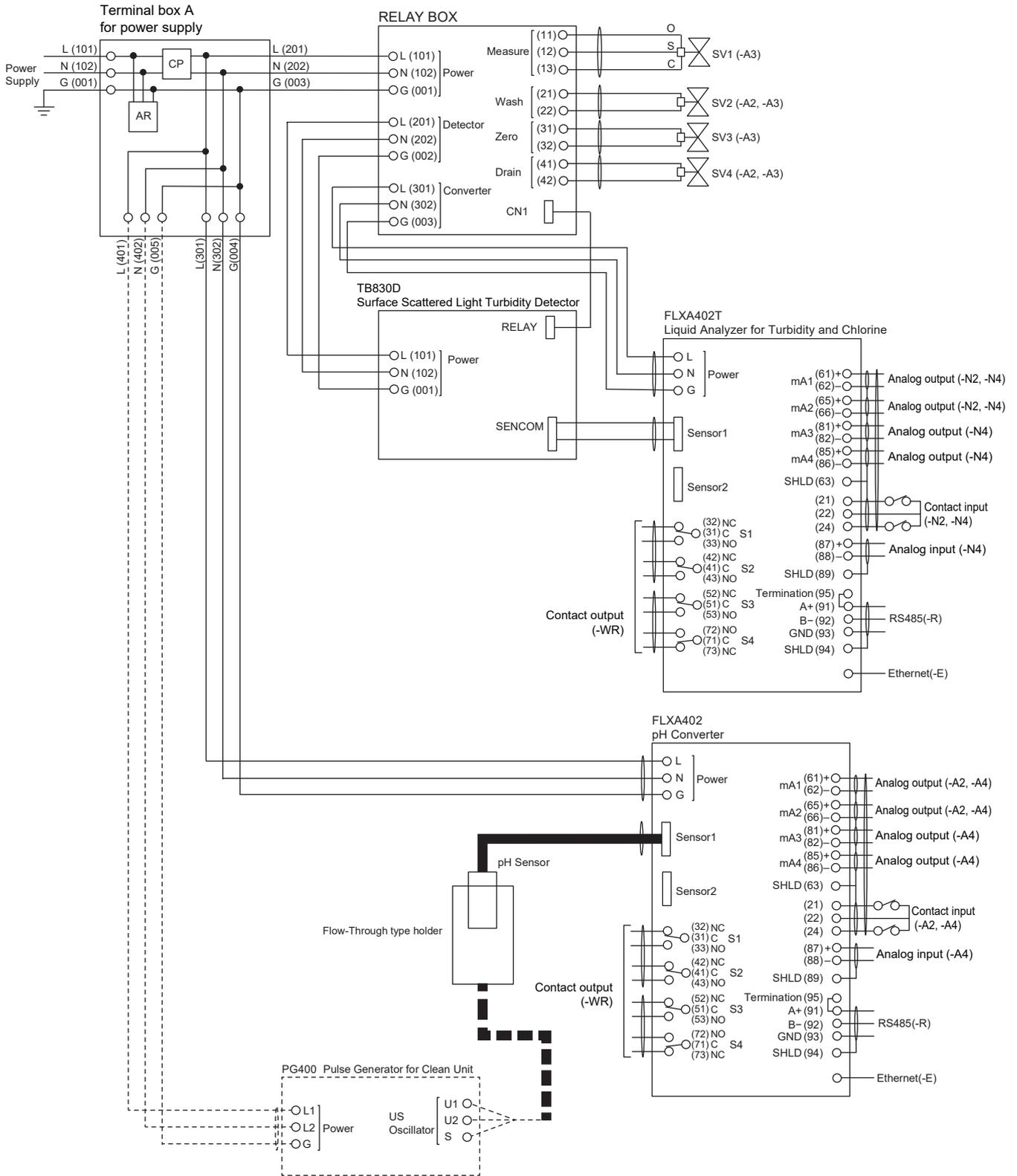
● TB830D-□-□-A1-□-NN-NN-NN/PH□7/ARS



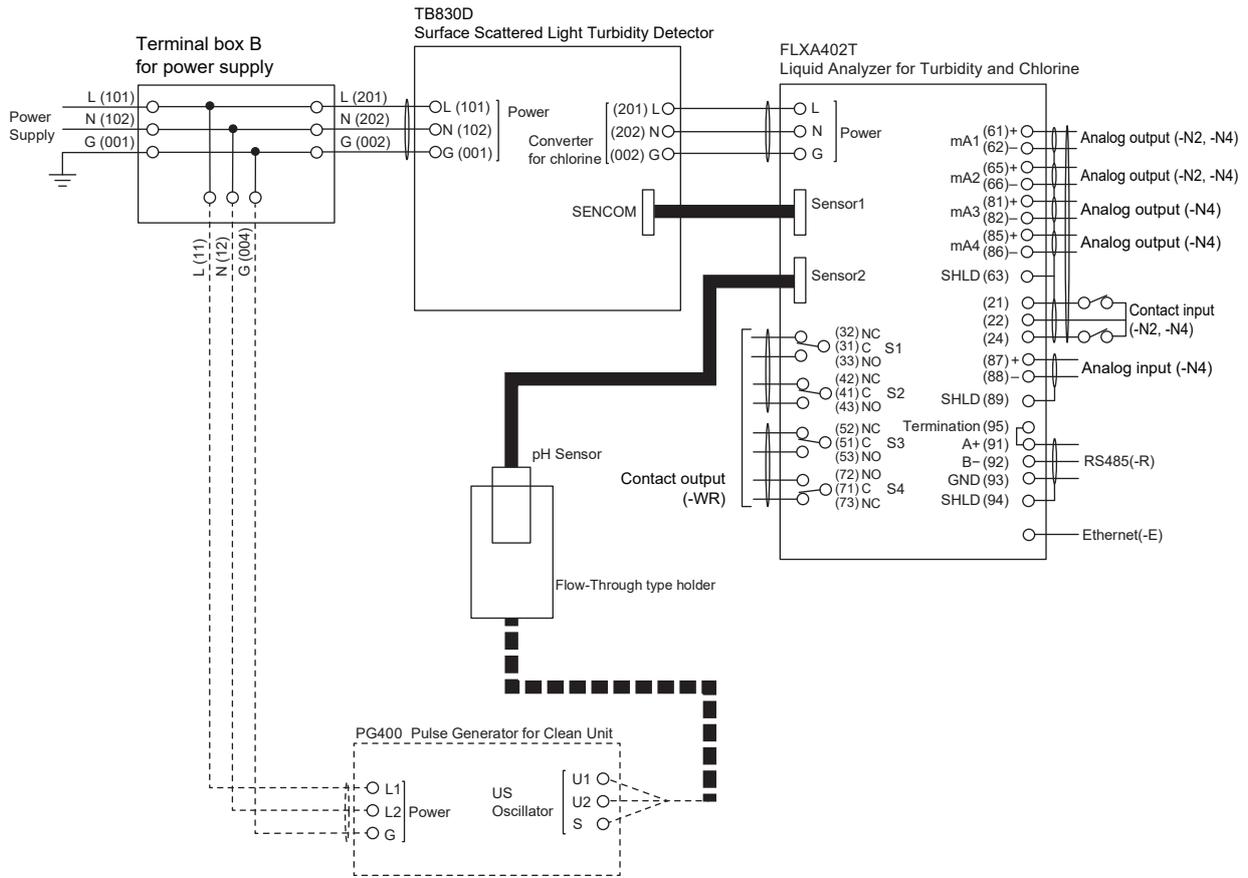
• TB830D-□-□-A2-□-□-NN-NN/PH□7
 TB830D-□-□-A3-□-□-NN-NN/PH□7



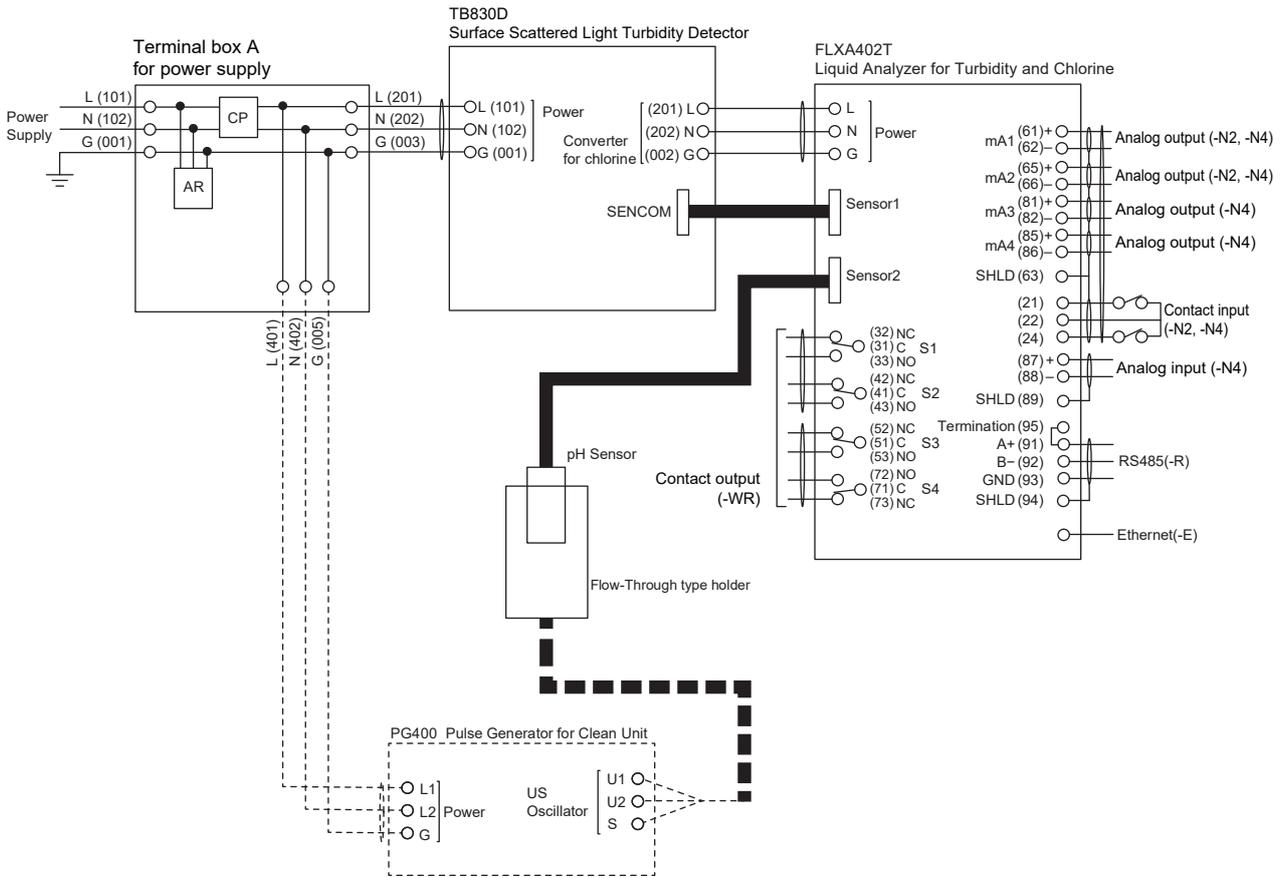
• TB830D-□-□-A2-□-□-NN-NN/PH□7/ARS
 TB830D-□-□-A3-□-□-NN-NN/PH□7/ARS



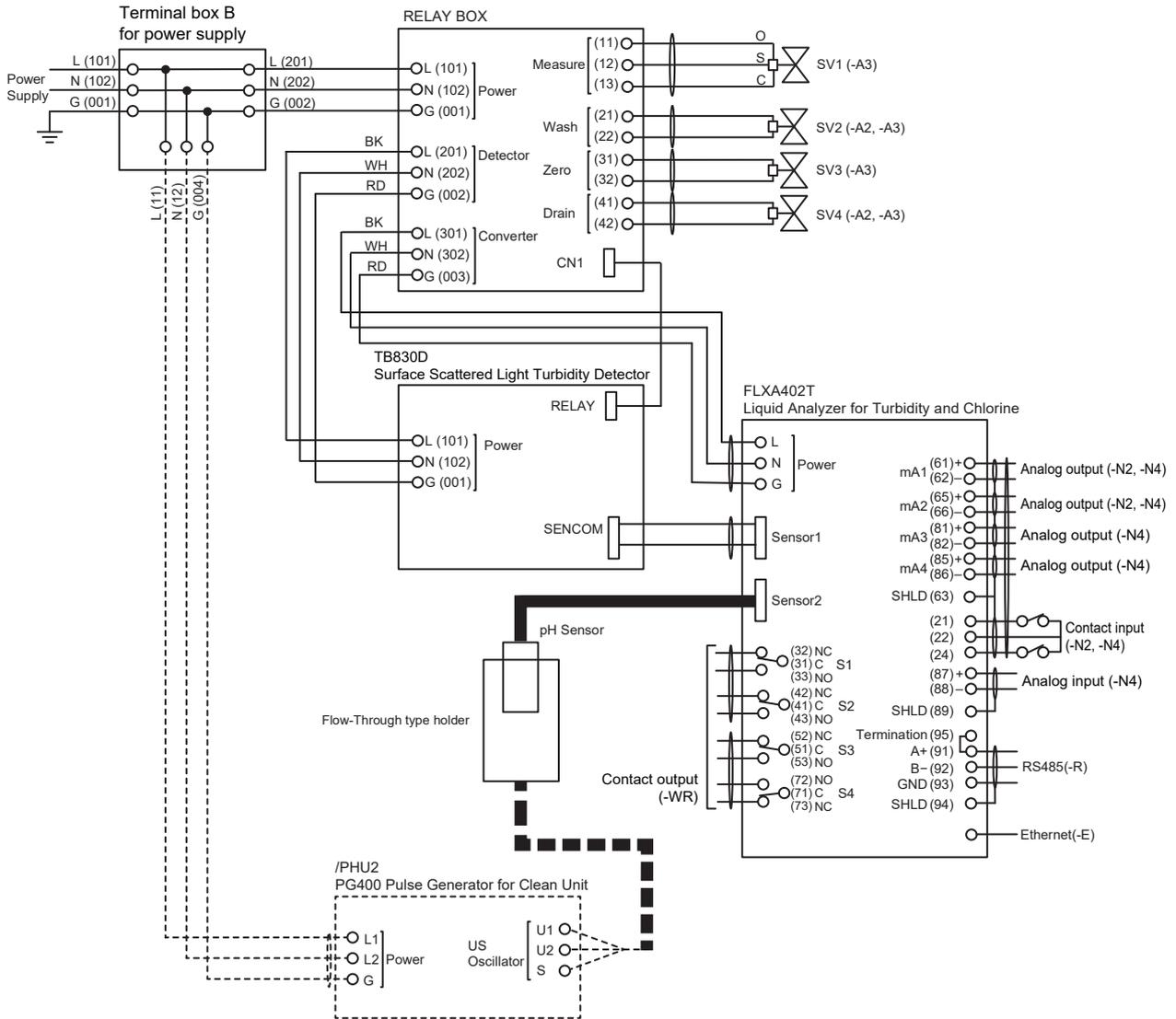
● TB830D-□-□-A1-□-NN-NN-NN/PH□2



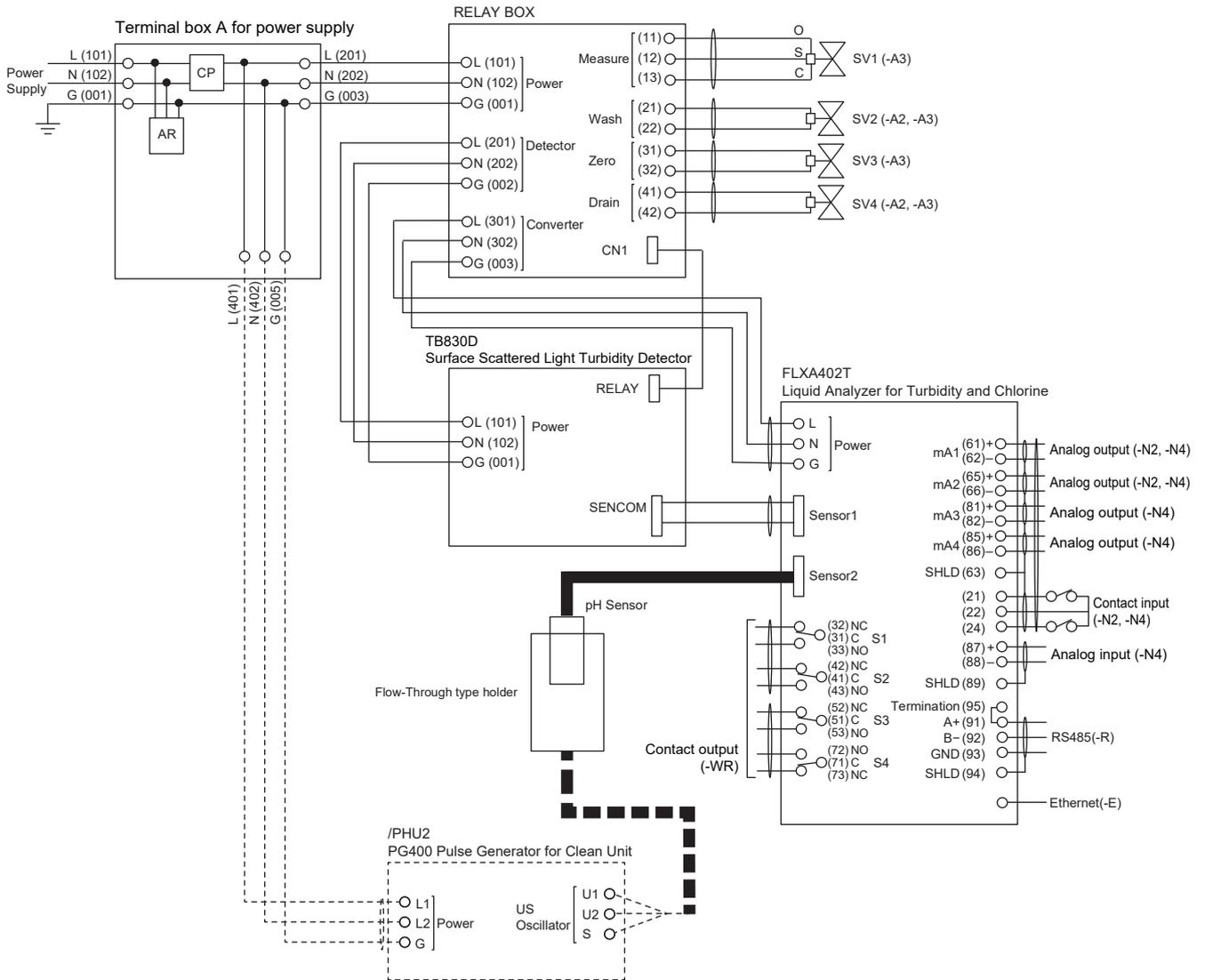
● TB830D-□-□-A1-□-NN-NN-NN/PH□2/ARS



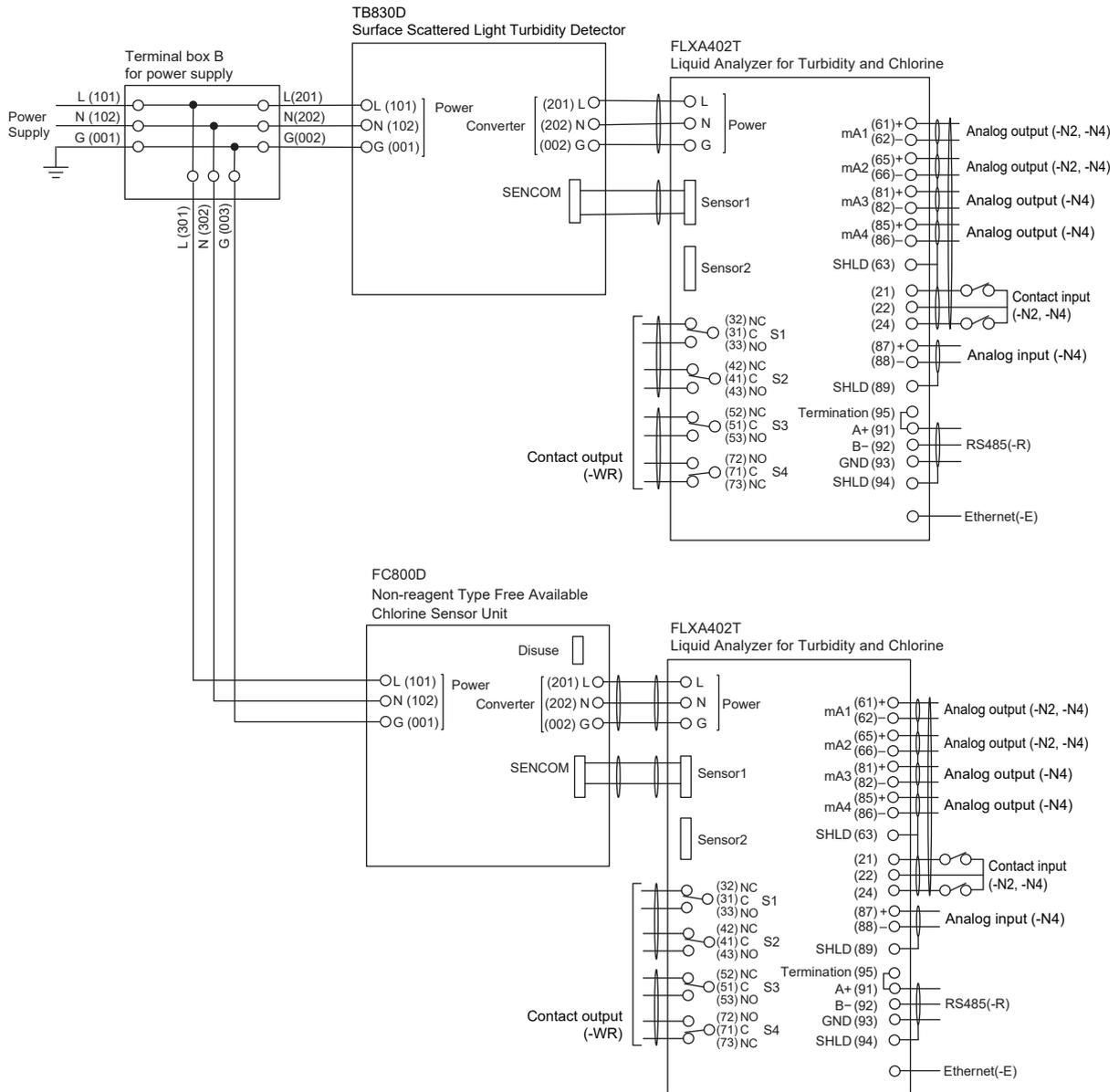
● TB830D-□-□-A2-□-□-NN-NN/PH□2
 TB830D-□-□-A3-□-□-NN-NN/PH□2



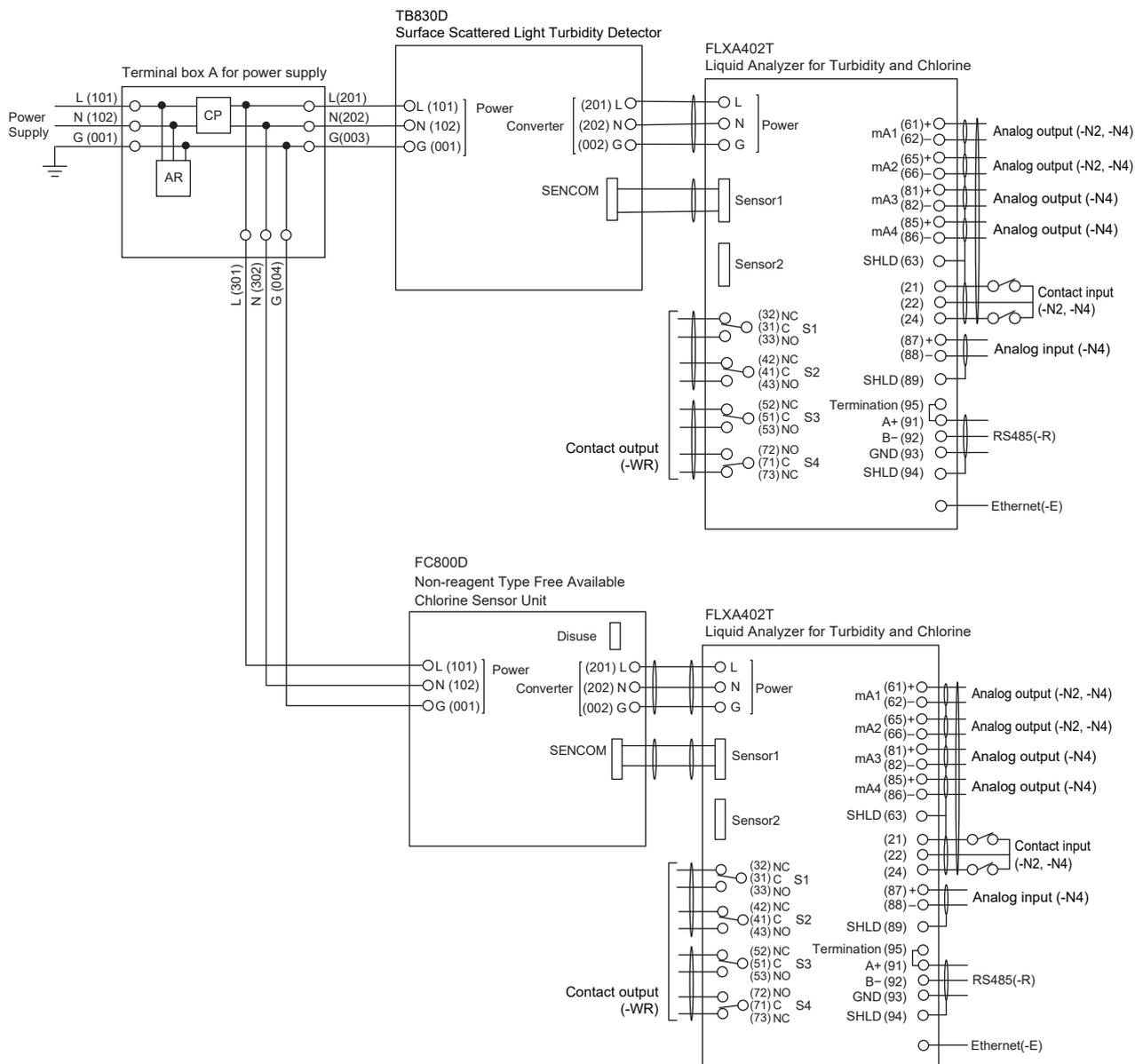
● TB830D-□-□-A2-□-□-NN-NN/PH□2 /ARS
 TB830D-□-□-A3-□-□-NN-NN/PH□2 /ARS



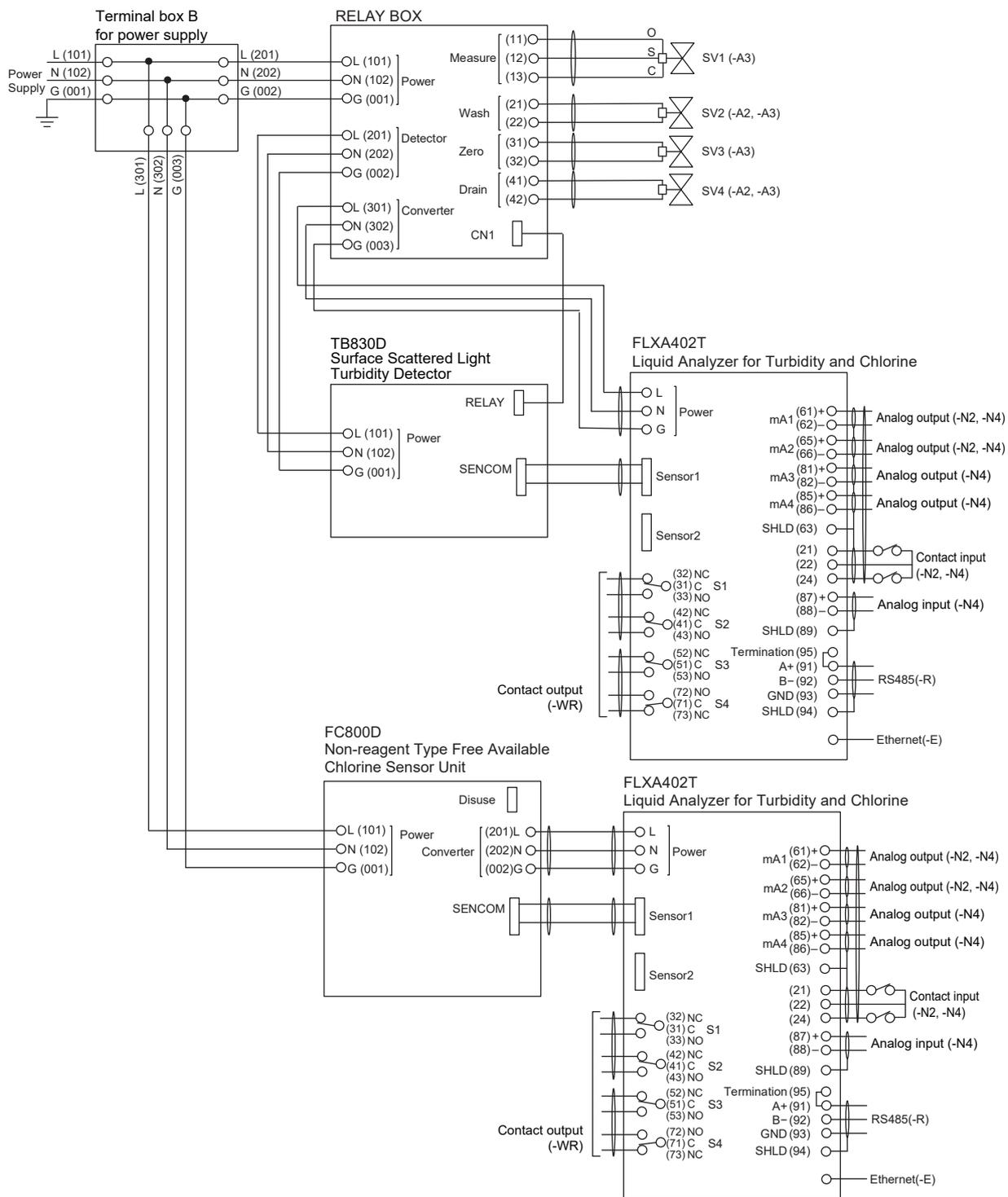
● TB830D-□-□-A1-□-NN-NN-NN/FC



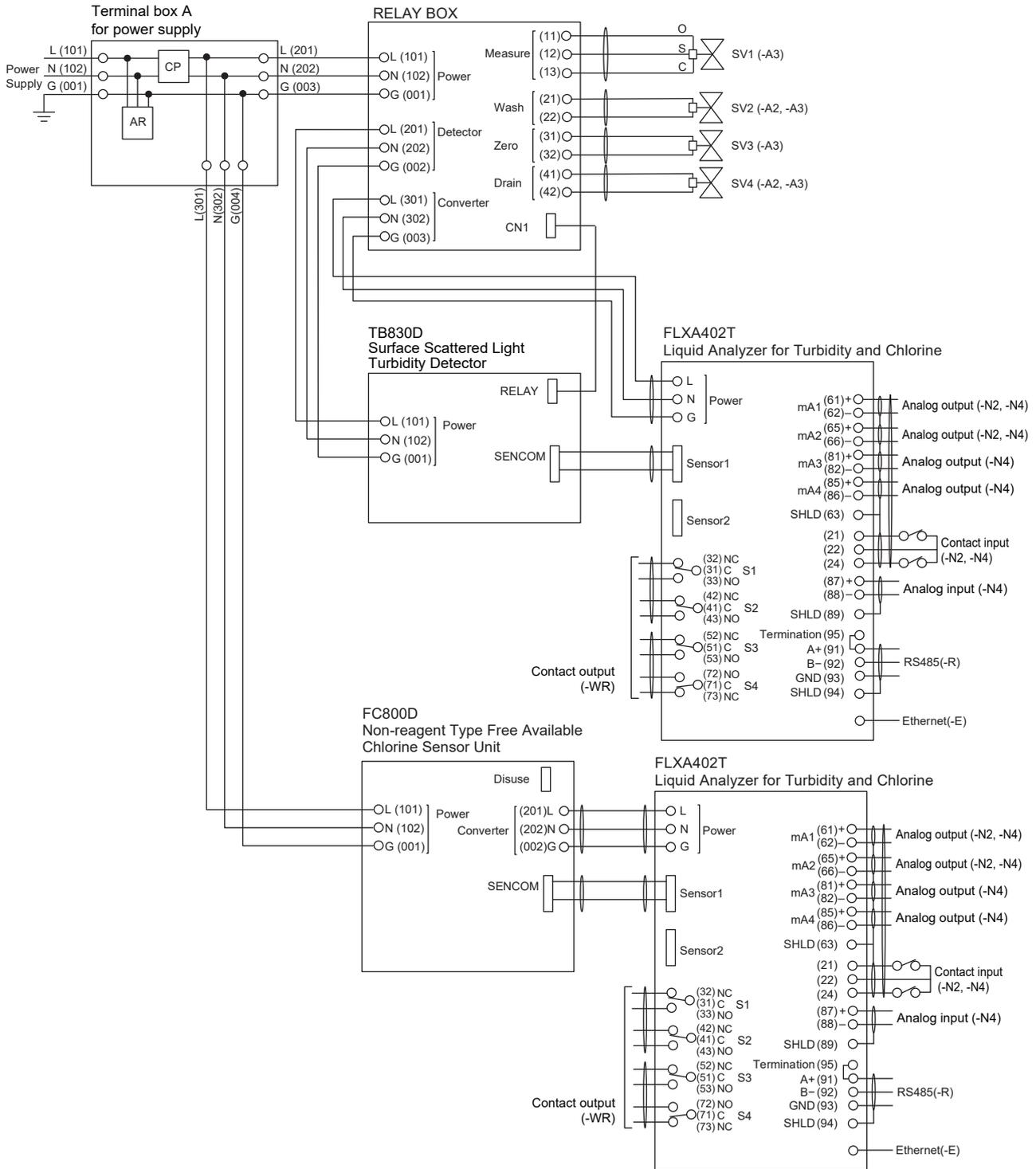
● TB830D-□-□-A1-□-NN-NN-NN/FC /ARS



● TB830D-□-□-A2-□-□-NN-NN/FC
 TB830D-□-□-A3-□-□-NN-NN/FC



● TB830D-□-□-A2-□-□-NN-NN/FC/ARS
 TB830D-□-□-A3-□-□-NN-NN/FC /ARS



■ System Configuration (Multiple Connections)

FLXA402T enables multiple sensor/detector connection for free chlorine, turbidity, pH, conductivity.

Select 2nd Input for pH or conductivity parameter.

Select -TB (TB830D-□□-A□-NN-□N-NN-NN-NN) for 1st input.

2nd Input	-TB		-P1	-C1
Connectable sensor/detector (to be purchased separately)	TB820D	TB830D	FU20 FU24 SM21/SR20 PH20 SC25V SC21 SC29C PH8E□P PH4□ PH4□□	SC4A SC42 SX42 SC4AJ SC8SG SC210G
Conditions	TB820D-□□-A□-NN-□□-CT-NN Don't select relay box for solenoid valve (-A5)	TB830D-□□-A□-NN-□N-NN-NN-NN Select always "-NN" (Without sampling system) for the Sampling system.	Except for Variopin connector (-VS) of FU20,FU24 Except for Variopin connector (-B□P25) of SC25V Except for Variopin connector (-V) of PH8E□P	Except for Variopin connector (-VS) of SC4A Except for Variopin connector (-□V,-□G) of SC42 Except for Variopin connector (-□V) of SX42 Except for Variopin connector (-VS) of SC4AJ, SC8SG.

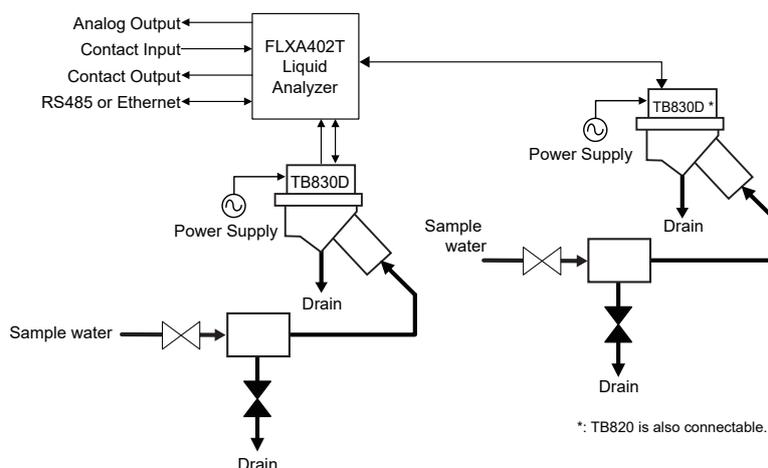
To connect FLXA402T to both a chlorine sensor and a turbidity detector, select CL (FC800D-□□-A□-NN-NN) for the 1st Input.

Invalid combination:

"-TB" (SENCOM for Turbidity) on 1st Input and "-CL" (SENCOM for Chlorine) on 2nd Input.

To connect FLXA402T to both a chlorine sensor and a turbidity detector, read the general specification GS 12F05B10-01EN for FC800D-FLXA402T.

FLXA402T 2nd input "-TB"



FLXA402T 2nd input "-P1" or "-C1"

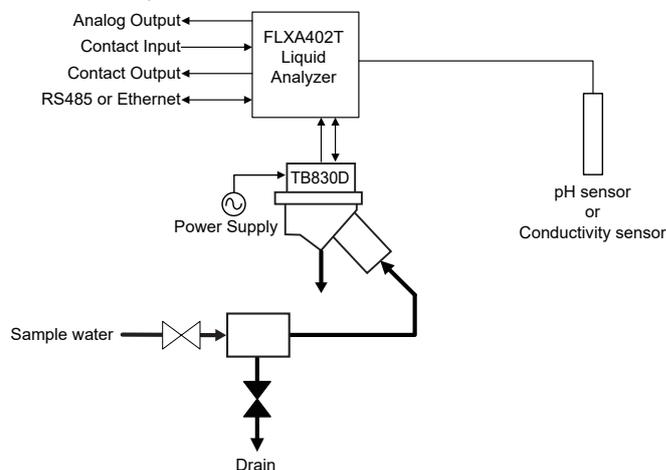


Figure 2