SPECIFICATION SHEET

TOADKK

ORGANIC POLLUTION MONITOR UV METER OPM-1610

Organic Pollution Monitor UV Meter OPM-1610 is an ultraviolet absorbance spectrophotometer that has been commercialized based on our over 30 years of experience and results. This instrument is used to determine the degree of organic pollution in wastewater discharged from factories and business sites from the absorbance of ultraviolet rays. The calculated values are correlated with CODMn and are used to calculate the pollutant load associated with the total water quality control. Make sure that good correlation is obtained beforehand.

Feature

○Achieved miniaturization

The immersion type detector, which has been well received by conventional machines, has been downsized, enabling simple installation. It can also be used as a water sampling system by using a receiving tank.

○Adopt a new type of optical system

- ●Stable measurement by feedback control of light intensity has been realized
- ●Use of power-saving lamps and other factors allowed elimination of a heater to stabilize the light intensity of the lamp, dramatic reduction of power consumption reduced (by approximately 80% compared to our previous model). The immersion type also eliminates the need for sampling pumps, enabling further power savings.

○Equipped with anti-corrosion zinc as standard

It is resistant to corrosion and is also suitable for measurement in poor environments.

Standard specification

Product name	: Organic Pollution Monitor UV Meter
Model	: OPM-1610
Measurement target	: Organic pollutants in wastewater from factories, workplaces, etc.
Measurement method	: 2-Wavelength Absorbance Spectrometry (ultraviolet light (UV); 254nm, visible light (VIS);660nm).
Measurement range	: UV absorbance; 0 to 2.5Abs
Transmission output range	: The upper limit is 0.5 to 2.5 in 0.1 increments. The lower limit is fixed to "0". The measured value can also be displayed in 10mm cell length conversion absorbance. 0 to 1.0Abs for 25mm cells. 0 to 2.5Abs for 10mm cells 0 to 4.17Abs are displayed for 6mm cells
Measurement cell	: Immersion Parallel Cell (Select from 6mm, 10mm, 2mm)
Cell cleaning method	: Automatic cleaning with a wiper Wash cycle; 1 to 9999min (60 for initial setting) Numbers of washes; 0 to 99 (2 for initial setting) Wait time after washing; 0 to 999 sec (10 for initial setting)
Sample water condition	: Sample water temperature; 0 to 45°C (do not freeze) Flow rate (immersion type); 0.75m/sec or less (Note on installation on pages 7 and 9) Flow rate (sampling type) 3 to 6L/min
Detector max water depth	: 6m
Calibration method	: Zero calibration; with pure water Span calibration; with potassium hydrogen phthalate solution (The calibration container is a standard accessory.)
Indicatable items	: UV-VIS/UV/VIS/COD conversion value/turbidity conversion value/SS concentration/sample water temperature

Transmission output : DC 4 to 20mA load resistance 600Ω or less insulated type
Any 3 types from UV-VIS/UV/VIS/COD conversion value/Turbidity conversion value/SS concentration conversion value/Sample water temperature can be selected and output simultaneously (non-insulated between transmission outputs) COD conversion value/ turbidity conversion value/SS concentration conversion value is the value of the primary formula conversion from absorbance.

Contact output signal : Alarm signal a (NO) contact output
(Any 3 points can be selected and used for contact outputs 1 to 3 from the following 9 items)
Maintenance in progress
Cleaning in progress
Bulk alarm*
Measured value upper limit alarm
Lamp error
No sample water
Leakage alarm
Wiper drive motor failure
Sample water temperature error
*PV high limit alarm, lamp failure, no sample water, water leakage alarm, wiper drive motor error, and sample water temperature abnormalities are included in the alarms
Power-off signal c (NO/NC) Fixed to contact output 4
Contact Capacitance DC 30V 0.1A or less
AC 125V 0.1A or less (resistive load)

Contact input signal : Clean start signal... by external program for cleaning control
Non-voltage contact input
ON-resistance 50 Ω or less, short-circuit current max. 5 mA, open-circuit voltage DC 24V, make time 0.1 sec. or more

Digital output (Optional) : Communication output RS-485 or USB memory for data recording
- Digital communication output
  Interface RS-485
- USB memory (data in CSV format)
  Memory contents; year, month, day, hour, minute, UV value, VIS value,COD-equivalent, turbidity-equivalent, SS-concentration-equivalent, and water temperature values

Sampling period; can be arbitrarily set from 1 to 999 min
Storage period; approximately 5 years of data stored at 1 minute sampling period.
When free space is exhausted, data cannot be written. Periodically delete old data.

Power source : AC 100 to 240V±10% 50/60Hz
Power consumption : Av. approx 10VA, Max approx. 20VA
Mounting method : immersion type, winding type, suspending type, water sampling type
Main materialas : Transmitter ; aluminum die-casting
Detector; Main unit…SUS316, PP, zinc, silicone rubber
Cell…Sapphire glass
Wiper…FPM or SUS304
Coating color : Transmitter; metallic silver
Protecticive construction : Transmitter; IP65
Transmitter wiring port : Cable gland 6 points
(Diameter for φ6 to φ12)
(1 among them is for detector cable)
Cable ground can be removed and the cable can be connected (G1/2×6)
Dedicated cable : 1 cable from detector to transmitter
Standard length; water sampling formula 3m
Length is specified for immersion type, winding type, and suspending type up to 30m (optional)
External dimension (refer to the dimension drawing) : Transmitter;
Approx 181(W)×95(D)×180(H)mm
Detector;
Approx 148(W)×112(D)×437(H)mm
(not including connecting cable)
The immersion type (H) varies depending on the specification
Weight : Transmitter; Approx. 2.0kg
Detector; Approx 5 .9 kg (Not including cable weight)
Installation condiction : Outdoor installation available
Ambient temperature; −5 to 50˚C
Ambient humidity (transmitter);
95% RH or less
Free from vibration, impact and corrosive gases. The location where the detector is installed should be such that the sample water is substituted, which can be representative of the value of the sample water.
Related equipement : Load Calculator; When calculating pollution load,CALD-2030 loading calculator is recommended.

Features

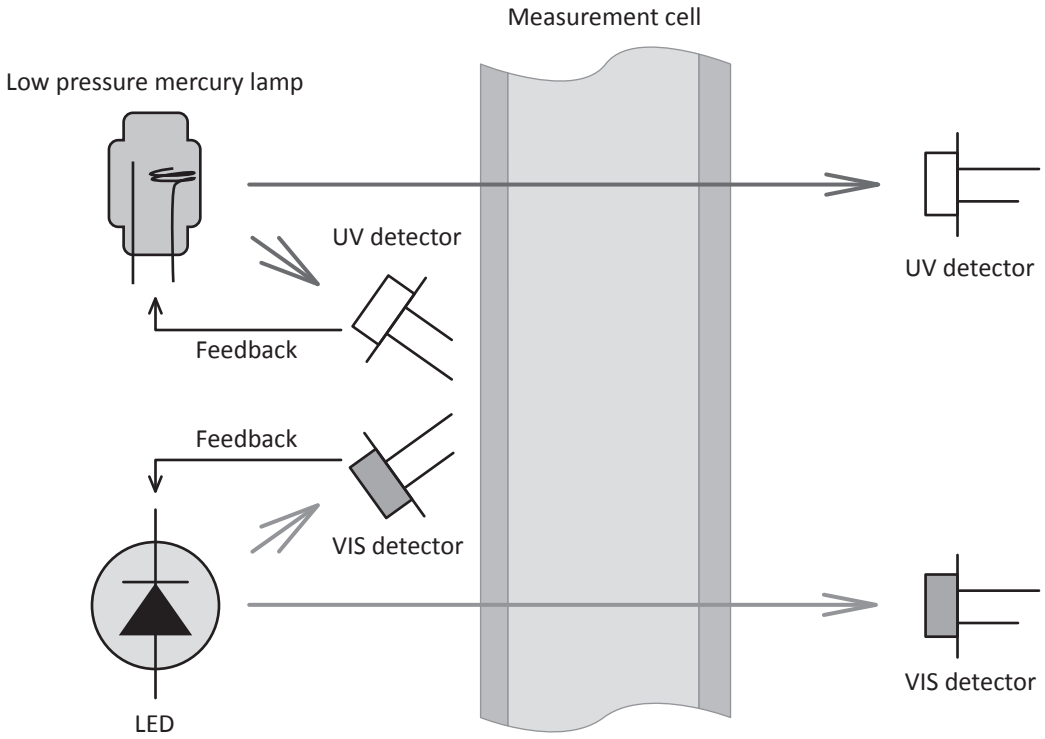
UV absorbance linearity : Within ±2%FS (by calibration solution)
UV absorbance repeatability : Within ±2%FS (by calibration solution)
UV absorbance zero drift : Within ±2%FS/week
UV absorbance span drift : Within ±2%FS/week
(FSs have 2.5Abs of UV-absorbance)
Responsiveness : 90% response within 30seconds

Estimated value of COD conversion output by cell length

Cell length	COD value (mg/L)
25mm	0 to 50
10mm	50 to 100
6mm	100 to 500

Immersion type parallel cell
(select from 6mm, 10mm, or 25mm)

Principle of operation



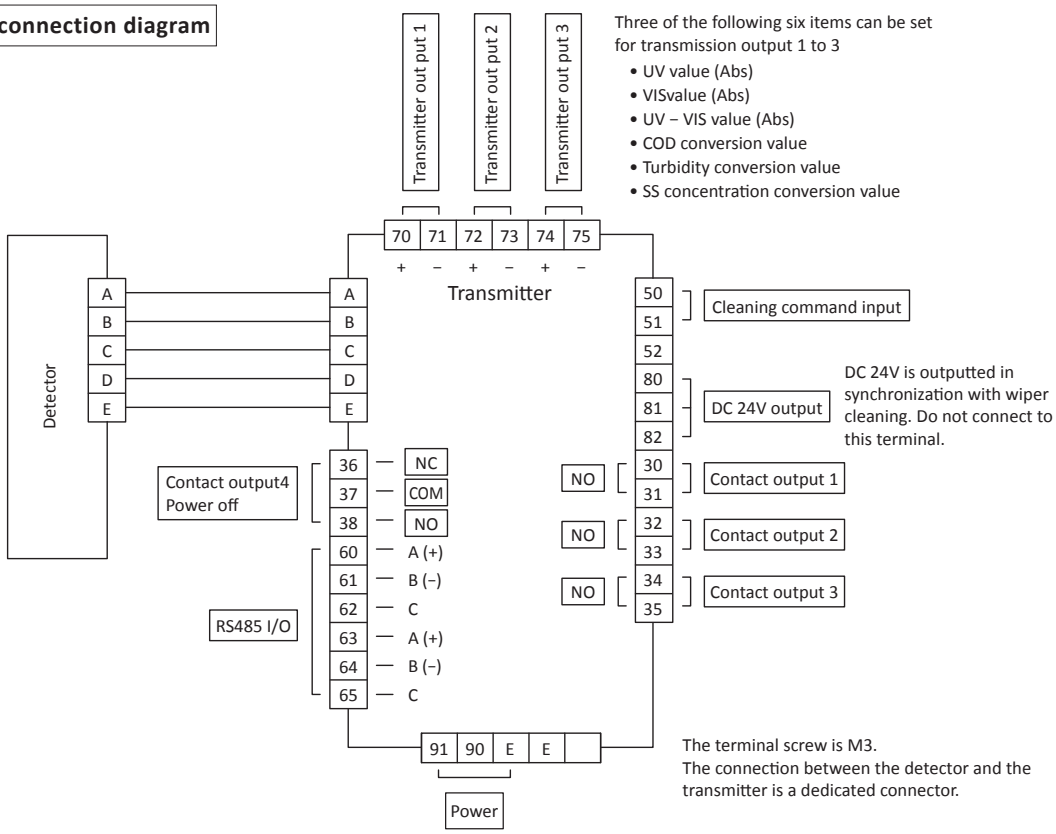
The measurement is performed using a two wavelength light source that stabilizes the two light quantities of UV (ultraviolet light) and VIS (visible light).

UV measurement uses the bright line of an ozone-less low-pressure mercury lamp at 254nm. VIS measurement is performed by irradiating an LED at 660nm with a pulse light to measure turbidity.

Conversion to COD value may be used by determining the correlation between the value obtained by the absorbance AUV of UV and COD manual analysis value, or by determining the correlation between the value AUV-α×AVIS obtained by excluding the absorbance AVIS of VIS due to the effect of turbidity and the COD manual analysis value.

α=correction factor (can be arbitrarily set).

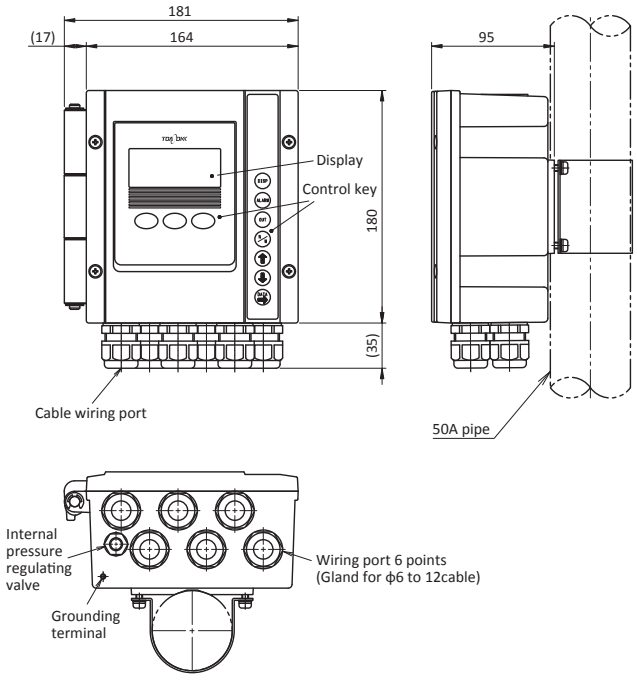
Terminal connection diagram



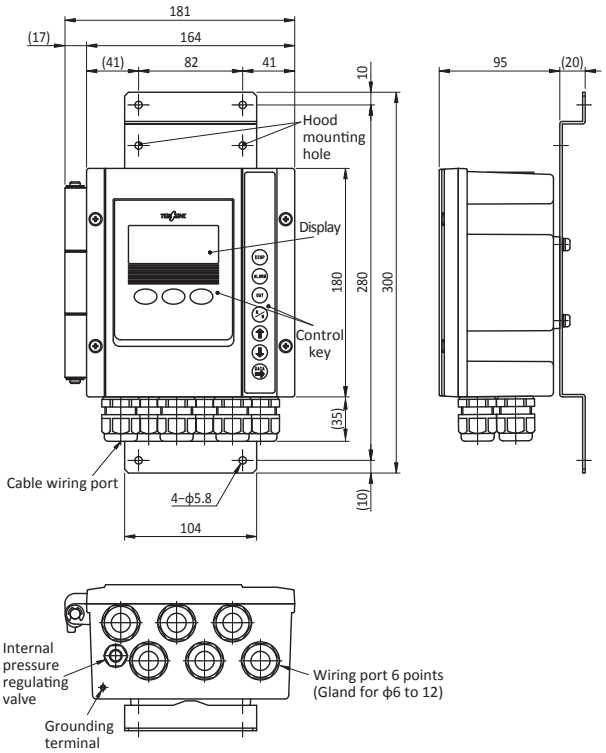
Dimensions

Unit : mm

● Pole mounting



● Installed on a wall or rack



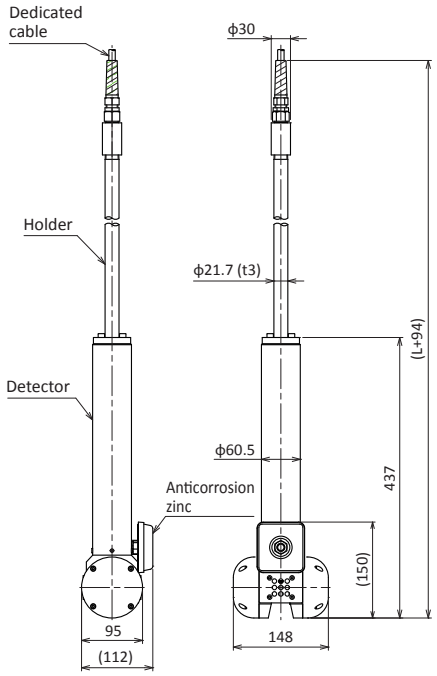
● Hood (option)

It is recommended for installation under direct sunlight outdoors.

Material : SUS304
Mounting methods : 50 A pipe or wall mounted
Code No. : 7049930K

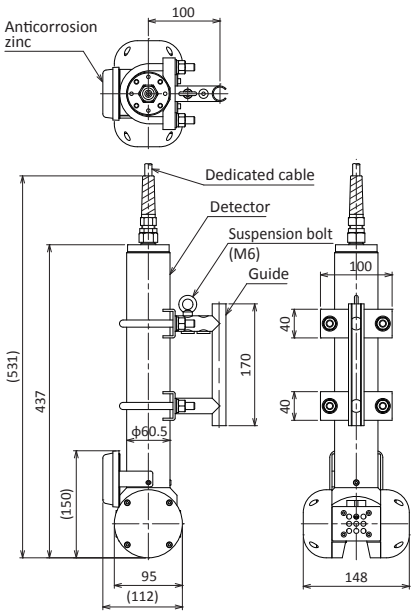
Dimensions Unit : mm

● Detector for immersion type

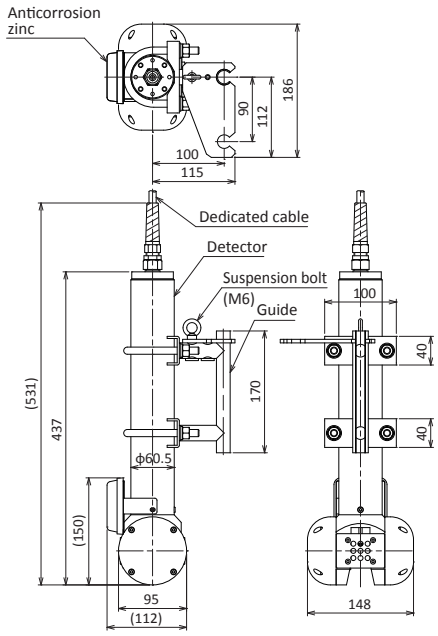


● Detector for winding type

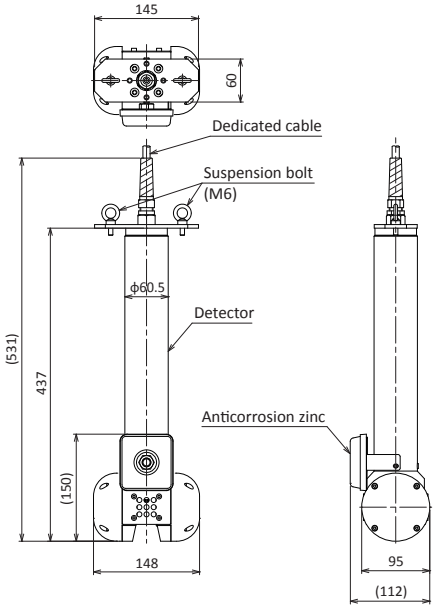
[For one guide pipe]



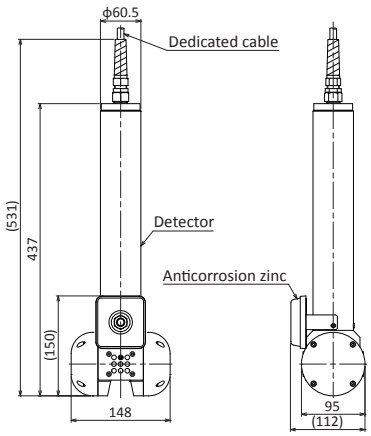
[For two guide pipes]



● Detector for Suspending type



● Detector for water sampling type

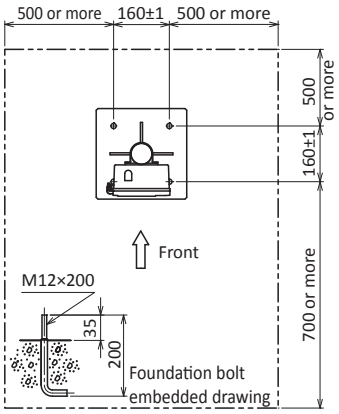


Installation

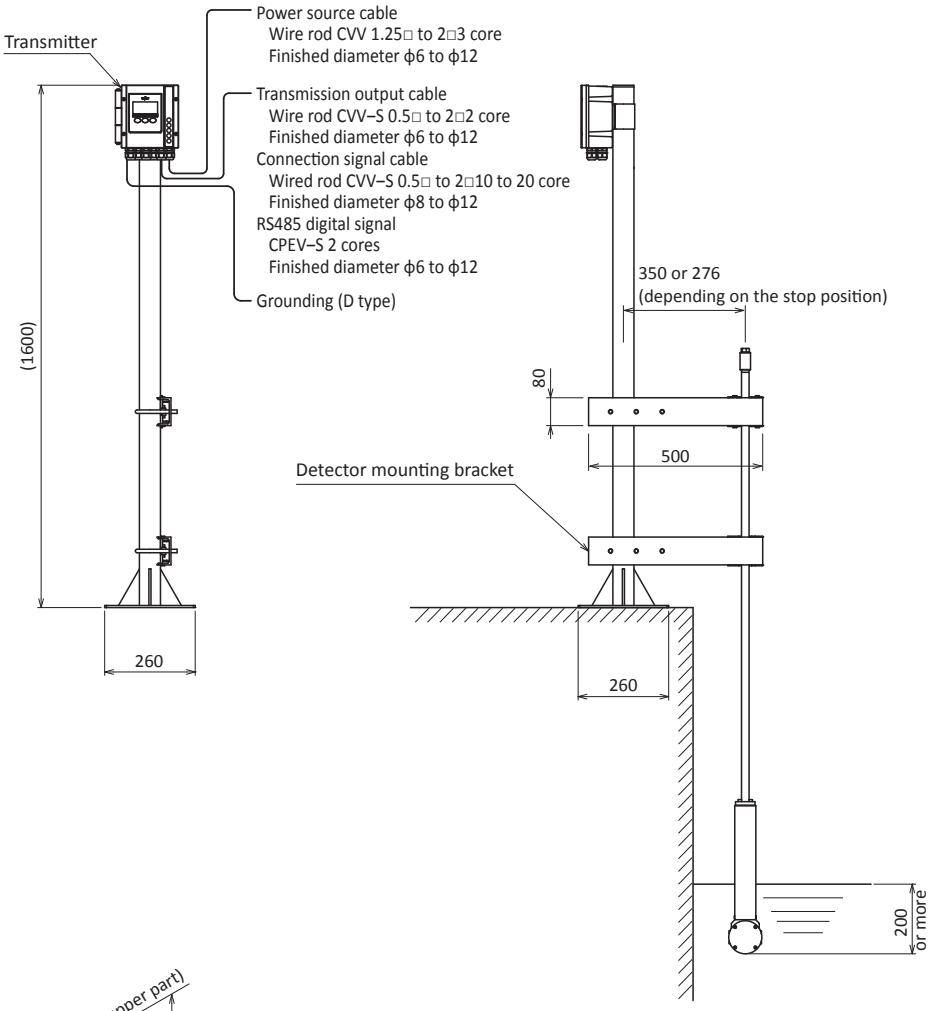
Unit : mm

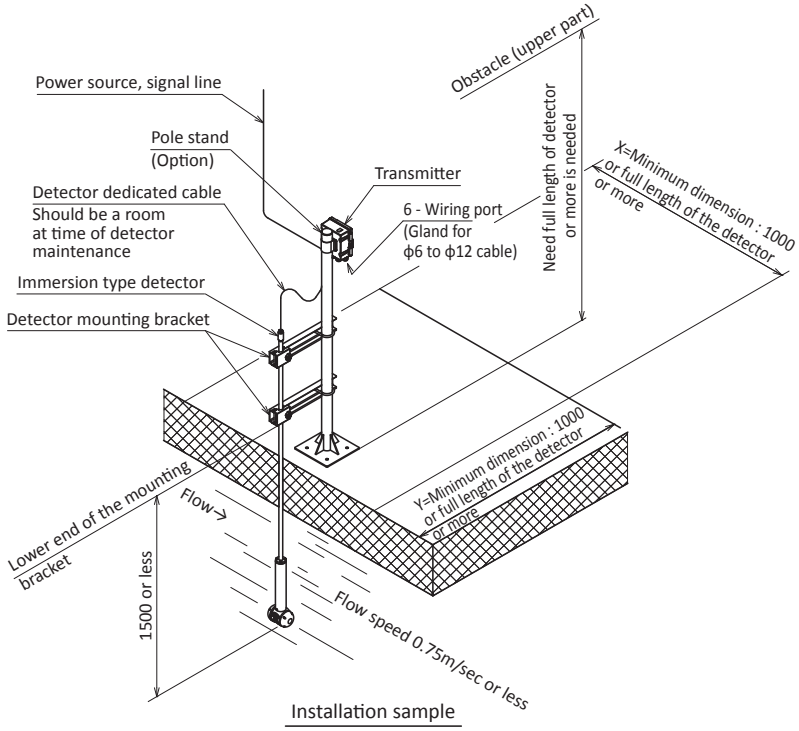
● Immersion type

1. Platform installation dimensions
Maintenance space and foundation bolt position



2. Outer dimensions of frame





Installation sample

(Notes)

1. Install the detector so that the pulling-up work during maintenance can be performed easily and safely. Also consider the force acting on the lower end of the detector due to the weight and flow velocity of the detector, and firmly mount the detector.
2. Secure a space of at least the full length of the detector so that the detector can be placed in the X or Y direction of the maintenance space. (Refer to the drawing)
3. The minimum liquid level depth of the detector should be 200mm or more.
4. When routing the dedicated cable (accessory) between the detector and the transmitter, pull up the detector so that maintenance and inspection can be performed. Also, keep the dedicated cable away from noise sources such as power lines.
5. Grounding should be Class D grounding and separate from power grounding.
6. Be sure to install an earth leakage breaker on the power supply line.
7. The shape of the pole stand and detector mounting bracket differs depending on the specifications. Refer to the delivery specifications.

Product code ● Immersion type

OPM1610–3–□□□□□□□□□□

- Mounting method of transmitter
  - 1 … 50A pipe mounting
  - 2 … Wall mounting
- Digital output
  - 0 … None
  - 1 … RS-485
  - 2 … USB memory
- Arrester built in (power supply line, transmission line)
  - 0 … None
  - 1 … Built-in
- Transmitter sunshade
  - A … None (standard)
  - B … Equipped
- Detector cell length
  - 1 … 25mm
  - 2 … 10mm
  - 3 … 6mm
- Wiper material
  - A … Rubber wiper (FPM, standard)
  - B … SUS wiper[*1]
- Installation method
  - 0 … Pole stand: None
  - 1 … Pole stand (ZB1-1-B2 ; SUS304)
- Detector mounting method[*2]
  - A … Immersion type full length 1.0m (Including one detector mounting bracket)
  - B … Immersion type full length 1.5m (Including one detector mounting bracket)
  - C … Immersion type full length 2.0m (Including two detector mounting brackets)[*3]
  - D … Immersion type full length 2.5m (Including two detector mounting brackets)[*3]

  Custom spec. code;
  Numeric digit: 9
  Alphabet: Z
- Cable length (Transmitter to detector)
  - 2 … 5m
  - 3 … 10m
  - 8 … Others specified (Up to 30m maximum)
- Description form
  - 1 … Japanese (standard)
  - 2 … English

*1. Select in case of foulings where strong scales (oxides, hydroxides, sulfides, chlorides, inorganic salts, shellfish, etc.) adhere and require strong scraping.
To change the wiper material after delivery, please contact your sales representative.

*2. The flow rate condition of the immersion type is 0.75m/sec or less.
A distance from the lower end of the mounting bracket to the tip of the detector must be 1.5m or less.
In this case, please use 2 pieces of mounting brackets.
Even if the flow velocity condition is 0.5m/sec or less, the length from the lower end of the mounting bracket to the tip of the detector should be 2.0m or less.
As with the case mentioned above, use the two pieces of the mounting brackets to install the detector.
Where the flow rate exceeds 0.75m/sec, reduce the flow rate by providing a weir in a flow path.

*3. When the total length of the detector is 2.0m or more, use two mounting brackets as a rule.

Note

1. A transmission output range is 0.5 to 2.5 Abs. The range can be set in 0.1 Abs increments/decrements.
   The transmittance output at the time of shipment is 0 to 1.0Abs at 4 to 20mA for all cell lengths.
2. The absorbance can be displayed in 10-mm cell conversions and selected to be turned on or off.
   The factory default setting is 10 mm cell conversion display "Off" (as with the predecessors, OPM-410 and OPM-410A.)
3. The power supply is a free power supply from the rated voltage AC100V to AC240V.
4. The transmission power is DC4 to 20mA, and any 3 items among UV-VIS, UV, VIS, COD conversion, turbidity conversion, SS concentration conversion, and sample water temperature values.
5. For replacement, the specifications of the alarm output contacts may differ from those of the existing equipment.
   Therefore, please contact the department in charge of design development.

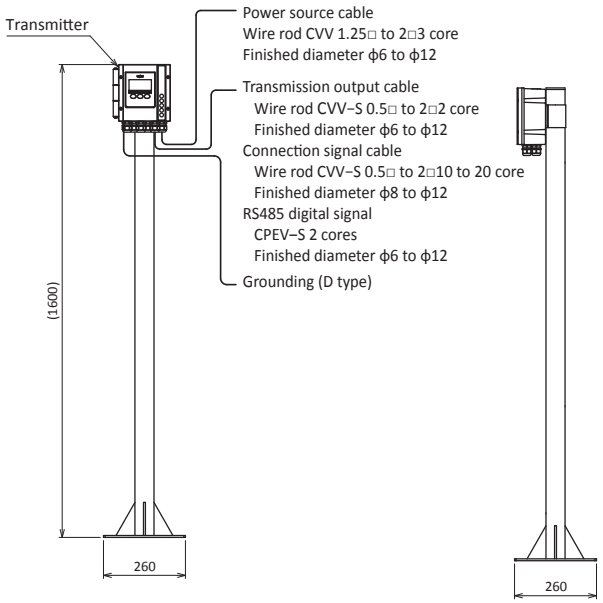
Reference: Anti-corrosion zinc is standard equipment.
If corrosion-resistant zinc is eroded, replacement is required at an appropriate time (when the volume is reduced to about 20% of the initial level).

Installation

Unit : mm

● Winding / Suspending type

1.Other dimensions of frame

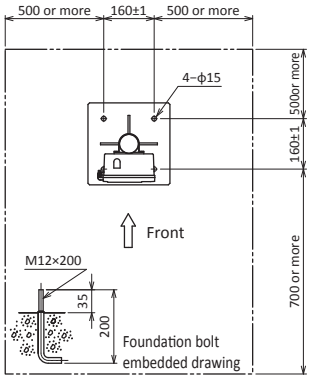


External diameter of winding machine

(Example : For 2m guide pipe
Note) If the take-up winch is made of stainless steel, the handle and fixed position are symmetrical.)

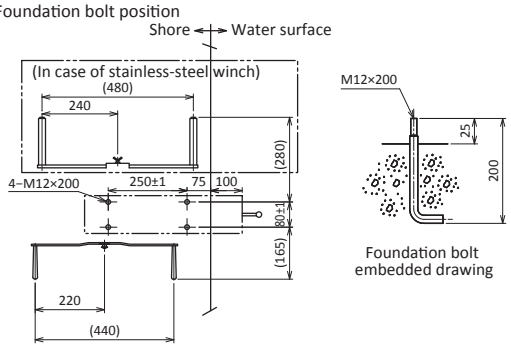
2.Platform installation dimensions

Maintenance space and foundation bolt position



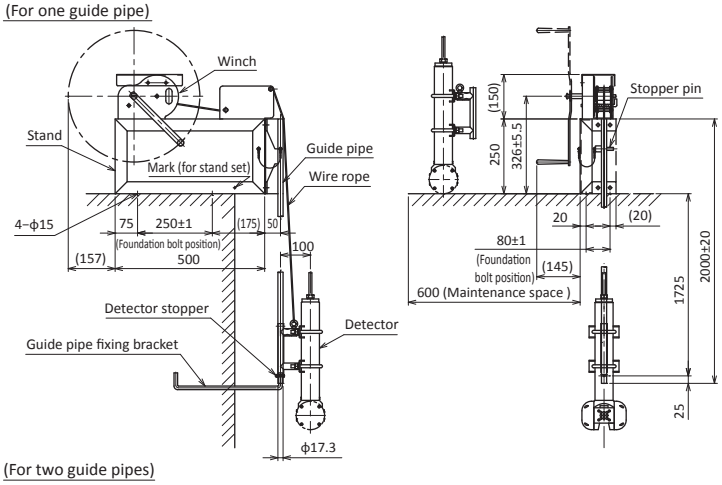
3.Winding device installation

Foundation bolt position



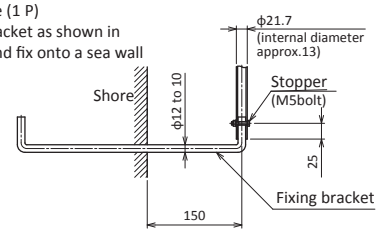
● Winding machine

(For one guide pipe)

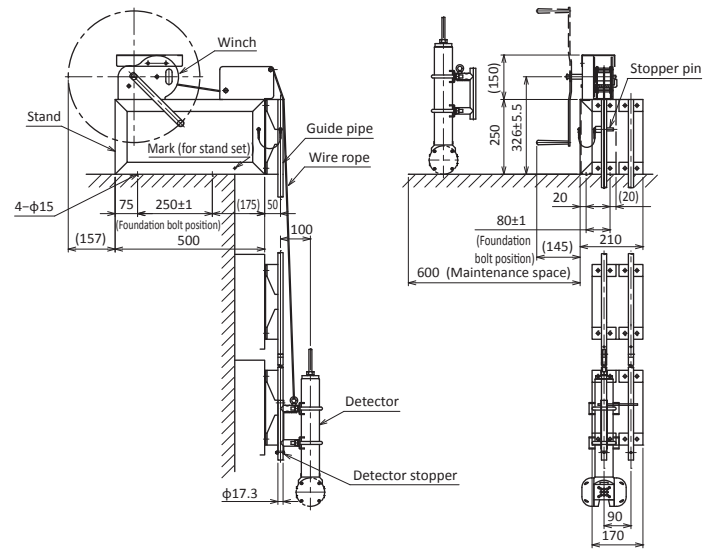


Fixing of guide pipe (1 P)

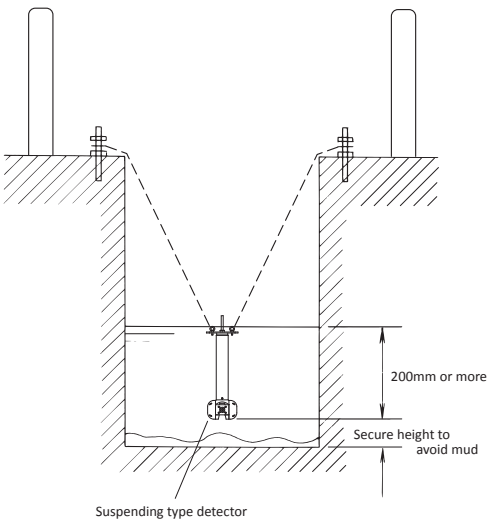
Prepare a fixing bracket as shown in the figure below and fix onto a sea wall



(For two guide pipes)



● Suspending type



Product code ● Winding / Suspending type

OPM1610–3–□□□□□□□□□□

- Mounting method of the transmiter
  - 1 ····· 50A pipe mounting
  - 2 ····· wall mounting
- Digital output
  - 0 ····· None
  - 1 ····· RS-485
  - 2 ····· USB memory
- Arrester built-in (Power line, transmission line)
  - 0 ····· None
  - 1 ····· Built- in
- Transmitter sunshade
  - A ····· None (standard)
  - B ····· Equipped
- Detector cell length
  - 1 ····· 25mm
  - 2 ····· 10mm
  - 3 ····· 6mm
- Wiper material
  - A ····· Rubber wiper (FPM ; standard)
  - B ····· SUS wiper[*1]
- Installation method
  - 0 ····· No pole stand
  - 1 ····· With pole stand (ZB1-1-B2 ; SUS304)
- Detector mounting method
  - E ····· Winding device (One guide pipe type) 2m[*2]
  - F ····· Winding device (One guide pipe type) 3m[*2]
  - G ····· Winding device (One guide pipe type) 4m[*2]
  - H ····· Winding device (Two guide pipes type) 2m[*3]
  - J ····· Winding device (Two guide pipes type) 3m[*3]
  - K ····· Winding device (Two guide pipes type) 4m[*3]
  - L ····· Winding device (Two guide pipes type) 5m[*3]
  - M ····· Winding device (Two guide pipes type) 6m[*3]
  - N ····· Existing winding device (One guide pipe type) used[*4]
  - P ····· Existing winding device (Two guide pipes type) used[*4]
  - Q ····· Suspending type (Provided with wo chains 3.5m each)[*5]
- Cable length (Converter to detector)
  - 2 ····· 5m
  - 3 ····· 10m
  - 8 ····· Other specifications (Max length 30m)
- Description form
  - 1 ····· Japanese (standard)
  - 2 ····· English

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. Select in case of foulings where strong scales (oxides, hydroxides, sulfides, chlorides, inorganic salts, shellfish, etc.) adhere and require strong scraping. To change the wiper material after delivery, please contact your sales representative.

*2. The flow rate condition of the winding type (single guide pipe) is 0.75m/sec or less.
However, if the flow velocity exceeds 0.3m/sec, fix the lower end of the guide pipe before use.

*3. The flow rate condition of the winding device (two guide pipes) is 1.0m/sec or less.
However, use the guide pipe with multiple intermediate fixed parts and lower ends fixed
The material of the platform of the winding equipment is SUS304 (without painting).
The winch material can also be changed to SUS with special specifications, but the left and right sides of the handle are reversed.Please contact your sales representative for the price in this case.
(*2, *3 common)

*4. This is the installation procedure when the existing OPM-410/410A type winding equipment is used as it is.

*5. As a simple installation method, it is suspended by two 3.5m wedges.
(When this specification is selected, the detector is equipped with two eyebolts.)
The flow rate is 0.75m/sec or less.

Note

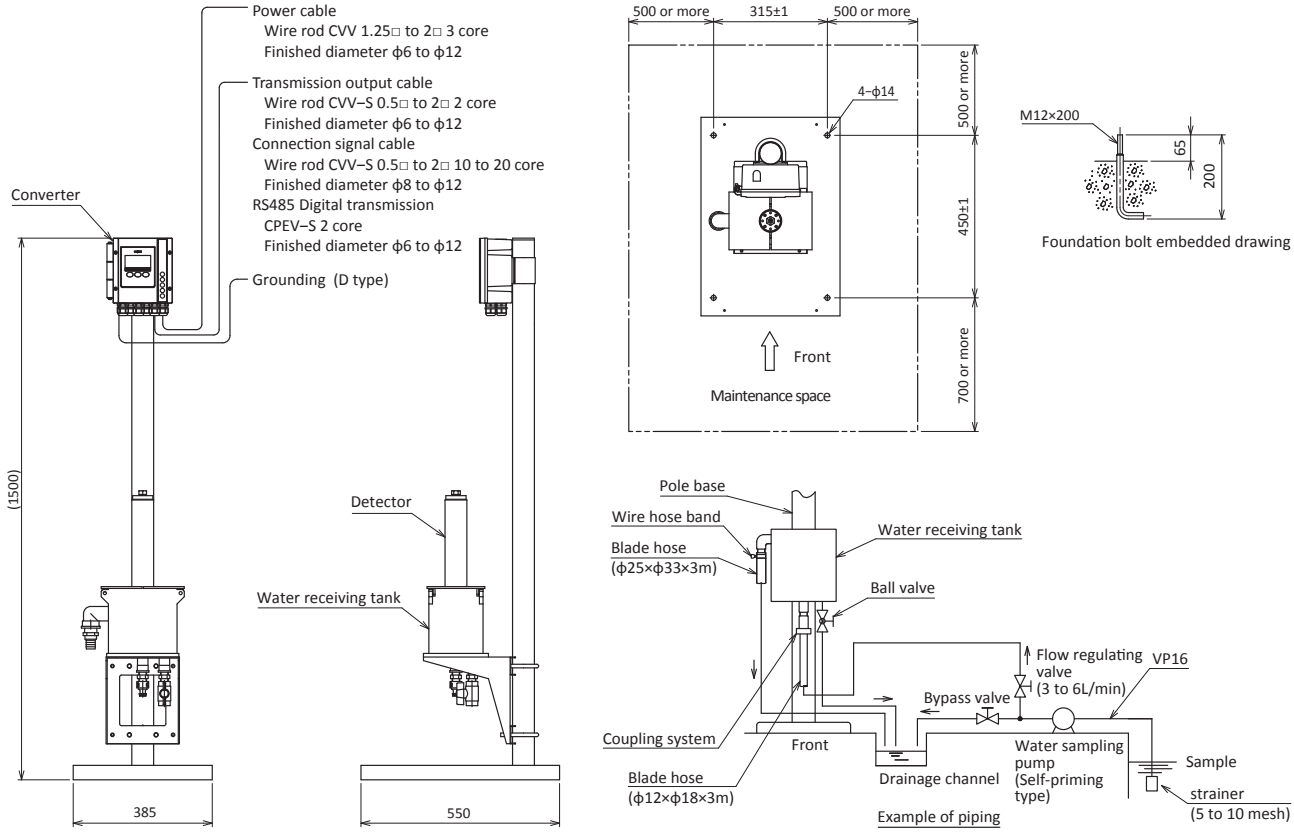
1. A transmission output range is 0.5 to 2.5 Abs. The range can be set in 0.1 Abs increments/decrements.
The transmittance output at the time of shipment is 0 to 1.0Abs at 4 to 20mA for all cell lengths.
2. The absorbance can be displayed in 10-mm cell conversions and selected to be turned on or off.
The factory default setting is 10 mm cell conversion display "off" (as with the predecessors, OPM-410 and OPM-410A.)
3. The power supply is a free power supply from the rated voltage AC100V to AC240V.
4. The transmission power is DC4 to 20mA, and any 3 items among UV-VIS, UV, VIS, COD conversion, turbidity conversion, SS concentration conversion, and sample water temperature can be selected.
5. For replacement, the specifications of the alarm output contacts may differ partially from those of the existing equipment. Please contact your sales representative.

Reference: Anti-corrosion zinc is standard equipment.
If corrosion-resistant zinc is eroded, replacement is required at an appropriate time (when the volume is reduced to about 20% of the initial level).

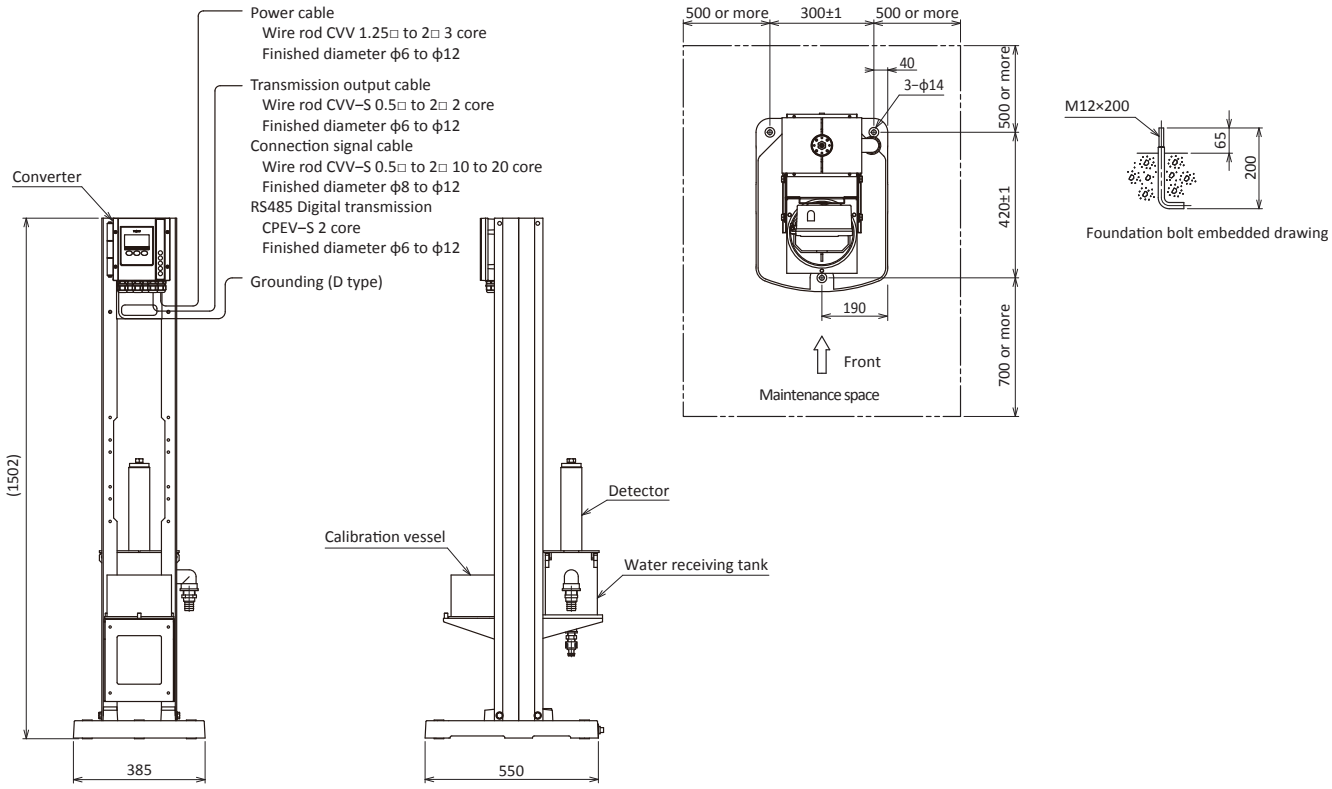
Installation

Unit : mm

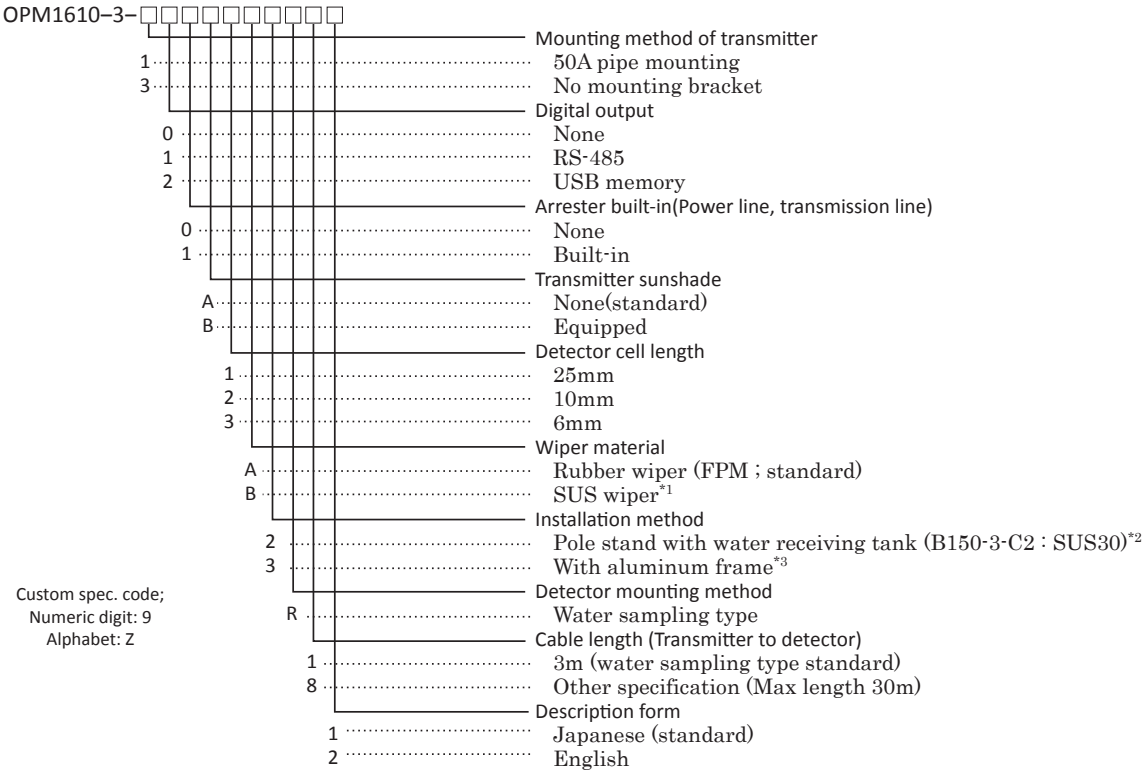
● Water sample type (Pole stand mounting)



● Water sampling type (aluminum frame mounting)



Product code ● Water sampling type



*1. Select in the case of foulings where strong scales (oxides, hydroxides, sulfides, chlorides, in organic salts, shellfish, etc.) adhere and require strong scraping.To change the wiper material after delivery, please contact your sales representative.
*2. The calibration container is a standard accessory.
*3. It is based on the same dimensions as our OPM-410, 410A models and is used for replacement, etc.

Note
1. A transmission output range is 0.5 to 2.5 Abs. The range can be set in 0.1 Abs increments/decrements. The transmittance output at the time of shipment is 0 to 1.0Abs at 4 to 20mA for all cell lengths.
2. The absorbance can be displayed in 10-mm cell conversions and selected to be turned on or off. The factory default setting is 10 mm cell conversion display "off" (as with the predecessors, OPM-410 and OPM-410A.)
3. The power supply is a free power supply from the rated voltage AC100V to AC240V.
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5. For replacement, the specifications of the alarm output contacts may differ partially from those of the existing equipment. Therefore, please contact your sales representative

Reference: Anti-corrosion zinc is standard equipment.
If corrosion-resistant zinc is eroded, replacement is required at an appropriate time (when the volume is reduced to about 20% of the initial level.)

DKK-TOA CORPORATION

CAUTION Please read the operation manual carefully before using producuts.

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Information and specifications are subject to change without notice.

Issued 01/2022