# SPECIFICATION SHEET

## CHROMATICITY / TURBIDITY METER COL-110

This instrument measures two components of color and turbidity in the water simultaneously by the transmissive light measurement method of one light path and two wavelengths.

### Features

○**Measure color/turbidity with one unit.**
Since we use two wavelengths to measure color and turbidity, turbidity measurement and chromaticity measurement with corrected turbidity component are possible with one unit.

○**Designed with easy-to-see display and easy operation.**
The large color display on the front shows the measured values of color and turbidity simultaneously in real time. Trend display is also possible, so it is useful for analyzing causes such as abnormal conditions.
The operation part is easy to operate because it is an easy-to-understand, interactive touch panel.

○**Reliable and stable measurement for a long period of time.**
We control the bubble generation of the water in the measurement cell using our own method. Even if air bubbles are mixed in, they are discharged at the time of cleaning, so we maintain a stable measurement.
In addition, zero calibration solution is introduced into the measurement cell at regular intervals to perform automatic zero calibration to compensate for the contamination of the cell window, thus maintaining accurate measurement.
The electronic dehumidifying element is built into the dehumidifying unit to prevent the effect of condensation on the cell window and the inside of the unit, as well as internal corrosion. This ensures a stable measurement for a long period of time.

○**Built-in data memory**
Measurement data is stored in the built-in memory for three months per minute and one year per hour. You can use a memory card (optional) to copy the data to take home.

### Standard specifications

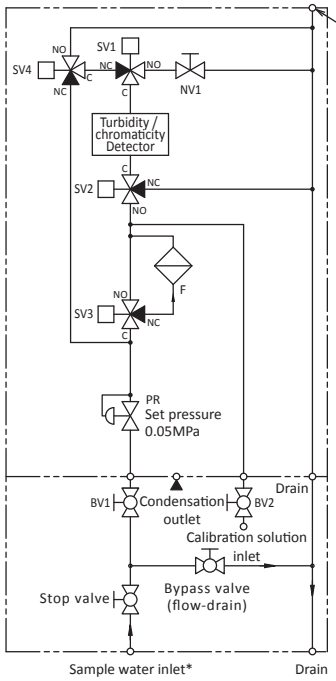
| | |
|---|---|
| Product name | : Chromaticity / Turbidity Meter |
| Model | : COL-110 |
| Measurement target | : Chromaticity and turbidity in water |
| Measurement method | : Transmitted light measuring method<br>Optical path length 100mm<br>(Reflectance type) |
| Display method | : Color touch panel LCD |
| Measurement range | : Chromaticity; 0 to 10/20/30 (units are degrees or DEGs)<br>Turbidity; 0 to 2/4/5/1 (units are degrees, mg/L or ppm) |




| | |
|---|---|
| Minimum display | : Chromaticity; 0.01<br>Turbidity; 0.01 |
| Transmission output | : Measured items DC 4 to 20mA Isolated (common-side of each item) Loading resistor 600Ω or less |
| Contact signal output (5 points) | : ●Color limit upper limit alarm<br>●Turbidity upper limit warning<br>●Equipment error; Automatic calibration error, Light source error, Sensor error, Start mode error, Compensation water temperature error alarm<br>●Maintenance, Event in Progress; ST-BY in Progress, Automatic Cleaning, Automatic Zero Calibration in Progress, Error Detection in Progress Contact Capacitance... DC 24V 0.2A Resistive Load<br>●Power-off; contact capacity... DC 30V 0.2A resistive load |
| Contact signal input | : Clean directive; cell window wash start Calibration command; automatic zero calibration start<br>ON resistance 200 Ω or less<br>Short-circuit current; 35mA<br>Open-circuit voltage; DC 12V (Pulse width 500mS or more) |
| Recording function | : Memory card with data such as measured values. Record on (compact flash) and can process data on PC. (The memory card uses our designated product.)<br>One hour value can be recorded for one year and one minute value can be recorded for three months. |
| Repeatability | : Chromaticity; ±3%FS<br>Turbidity; ±2%FS |

| | |
|---|---|
| Calibration method | : Chromaticity; By color standard solution (cobalt chloride)<br>Turbidity; By PSL or Kaolin standard solution |
| Automatic zero calibration | : Zero calibration solution; Sample water is filtered through a built-in zero filter<br>Calibration start; internal timer or external start cycle setting; 0 to 24 hours (optional)<br>Calibration time: Approximately 13 minutes (fixed)<br>Transmission output hold time; Calibration time approx. 13 minutes + 9 minutes (fixed) |
| Automatic cleaning | : Start cleaning of the cell window by draining water injection of the measurement cell sample; Internal timer or external start cycle setting; 0 to 24 hours (optional)<br>Retransmission output hold time; wash time approx. 2 minutes +1<br>Minute (Fixed) |
| Sample water conditions | : To meet the standards stipulated in the Water Supply Law. Or equivalent treated water quality<br>Temperature; 0 to 40˚C (no freezing)<br>Pressure; 0.05 to 0.75MPa<br>Equipment introduction flow: 100 to 500 mL/min (Standard 200 mL/min) |
| Grounding material | : Polyurethane, PP, acrylic, SUS,FPM, etc |
| Piping connection port | : Sample water entry port Rc 1/4, Effluent port Rc 1/4, Calibration solution entry port Rc 1/4, Open air port Rc 1/4 |
| Distribution line port | : 2 waterproof connectors<br>With 3 m cables for power supply and I/O signals |
| Ambient temperature and humidity | : 0 to 40˚C (do not freeze) 85% RH or less (not condensing) |
| Power supply voltage | : AC 100 to 240V±10% 50/60Hz |
| Power consumption | : Approx. 40/55VA (AC 100/240V)<br>Up to about 60/75VA (AC 100/240V) |
| Mounting method | : Wall or rack mount |
| Weight | : Approx. 11kg |
| Structure | : Indoor installment (IP43) |
| Case material | : Aluminum |
| Color | : Light gray (equivalent to mansell 5 PB 8/1) |

## Measurement system flow

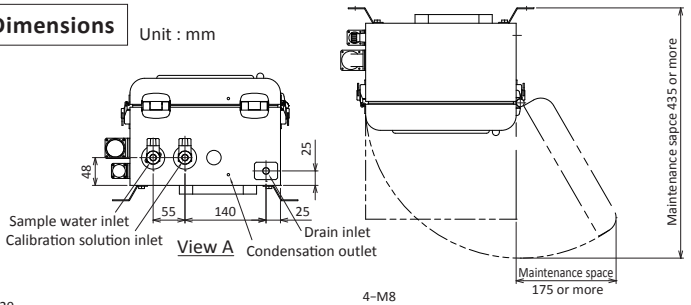


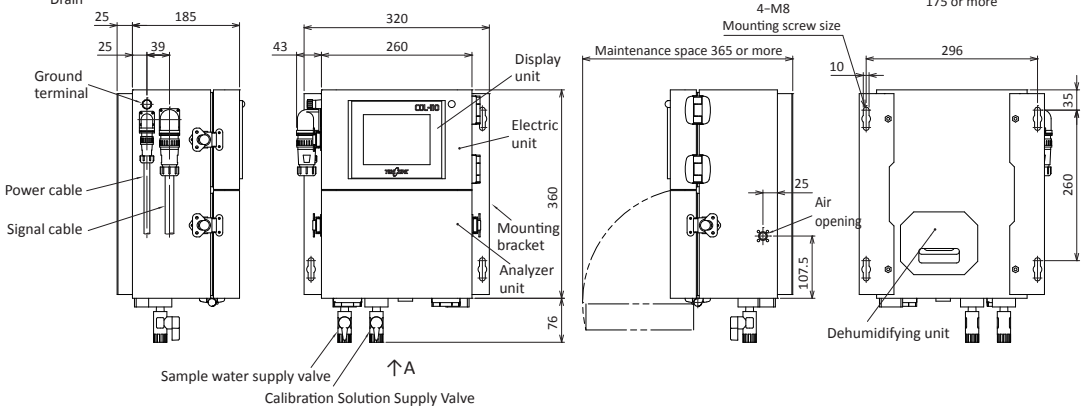

| No. | Name |
|---|---|
| BV1 | Sample supply valve |
| BV2 | Calibration solution supply valve |
| SV1 | Solenoid valve for cleaning water |
| SV2 | Drain electromagnetic valve |
| SV3 | Zero water switching solenoid valve |
| SV4 | Atmospheric release solenoid valve |
| F | Zero water filter |
| PR | Pressure reducing valve for water |
| NV1 | Flow adjustment valve |

* Sample water inlet
(Pressure : 0.05 to 0.75MPa)
Please provide a strainer of about #80 to #100 mesh as necessary

## Dimensions

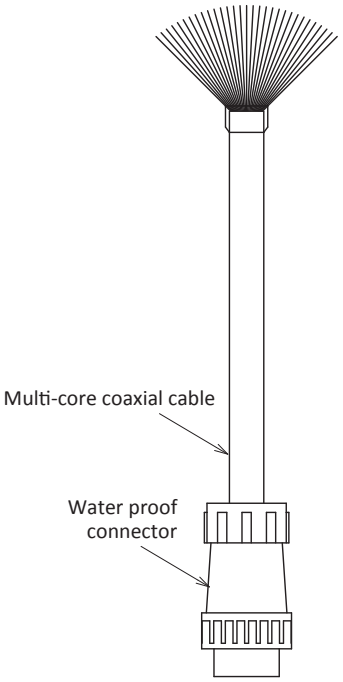
Unit : mm



## I/O signal list (standard)

| Connector No. | Wire color | Terminal No. | Signal |
|---|---|---|---|
| #1 | Black | CH1 | Turbidity (+) |
| #2 | White/Black | CH-GND | Turbidity (−) |
| #3 | Red | CH2 | Chromaticity (+) |
| #4 | White/Red | CH-GND | Chromaticity (−) |
| #5 to #14 | Unconnected | | |
| #15 | Green | 51 | Cleaning start |
| #16 | White/Green | 52 | Calibration start |
| #17 to #18 | Unconnected | | |
| #19 | Yellow | 50 | Input COM |
| #20 | White/Yellow | 30 | Output COM |
| #21 | Brown | 31 | Chromaticity alarm |
| #22 | White/Brown | 32 | Turbidity alarm |
| #23 | Blue | 33 | Equipment error |
| #24 | White/Blue | 34 | Maintenance/Event in progress |
| #25 | Gray | 35 | Spare |
| #26 | White/Gray | 36 | Power off |
| #27 to #36 | Unconnected | | |
| #37 | Shield | | Earth |




## Product code

COL110-0-□□□□□□□□

- Measurement range of chromaticity
  - 1 ····· 0 to 10
  - 2 ····· 0 to 20
  - 3 ····· 0 to 30
- Units of chromaticity
  - 1 ····· Degrees
  - 2 ····· DEG
- Turbidity measurement range
  - 1 ····· 0 to 2
  - 2 ····· 0 to 4
  - 3 ····· 0 to 5
  - 4 ····· 0 to 10
- Tubidity units
  - A ····· Degrees
  - B ····· mg/L
  - C ····· ppm
- Turbidity standard material
  - 1 ····· Polystyrene (measurement range 0 to 2/4)
  - 2 ····· Kaolin
  - 3 ····· Polystyrene (Measuring range 0 to 5/10)
- Indoor self-supporting rack assembly
  - 0 ····· None (standard)
  - 1 ····· Exists[*1]
- Digital output function
  - 0 ····· None (Standard: 15 core)
  - 1 ····· Exists (25 core)[*2]
- Description format
  - A ····· Japanese (standard)
  - B ····· English

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

*1. When "With" is selected for indoor self-assembling frame, the "Relay terminal box" is assembled on the frame (rear side) before shipment. Therefore, the power input and I/O signals are connected with the "relay terminal box".
We construct and ship the inner piping from COL-110 main unit to the sample water inlet/drain outlet of the rack.

*2. The digital-output function is "RS-232C""RS-485". For details, please contact your sales representative.

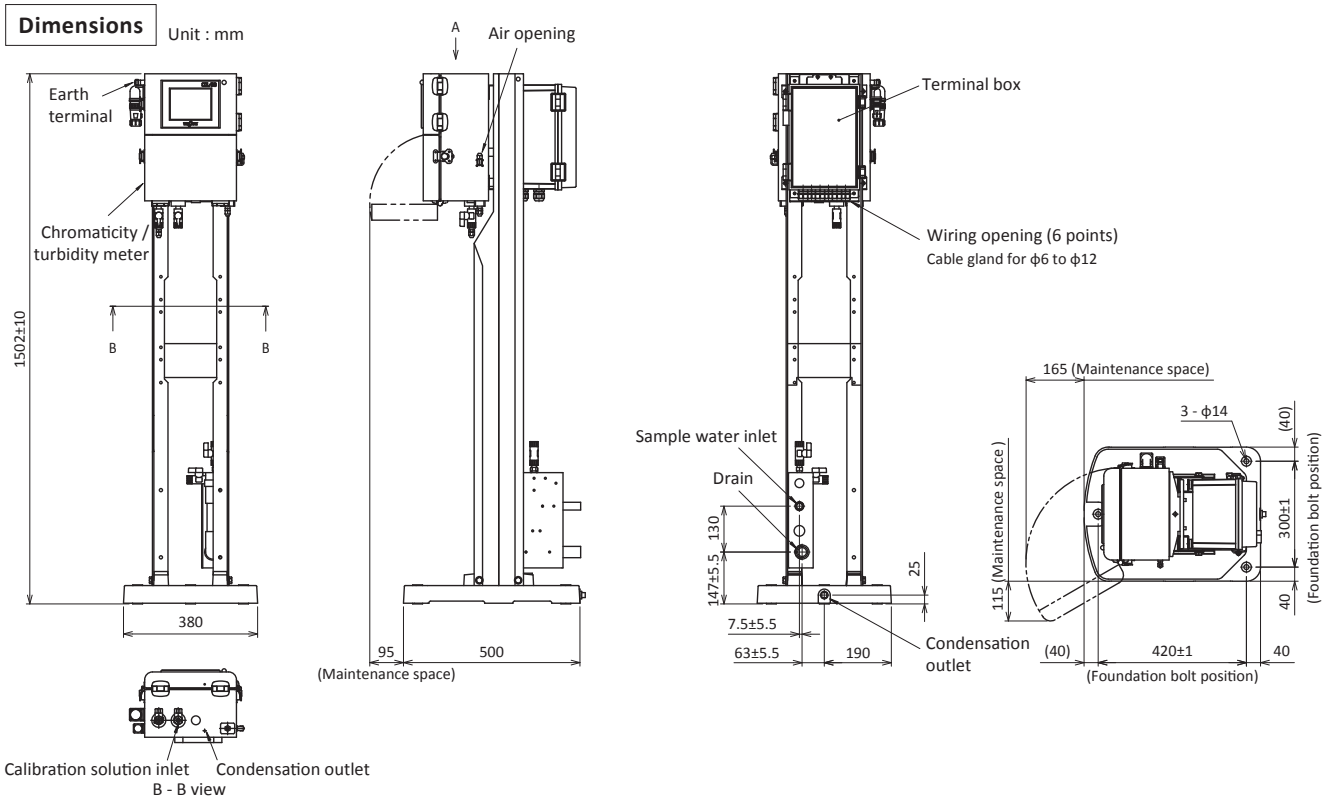
Note

1. When "None" is selected for indoor self-assembling frame, 3m of power cable (cable end is AC plug) and 3m of I/O signal cable (without cable end process) are attached and shipped.
When a relay terminal box is required, it is available as a special specification. For details, please contact your sales representative.
2. Supply voltage is AC-free power supply voltage of 50/60 Hz with AC 100 to 240V ±10%.
3. If you are requesting a CF card, please arrange it separately. Code No.7135040 K
4. Overseas (such as Korea) specifications can sometimes have different measurement items and measurement methods, so it cannot be handled by standard specifications. Please contact your sales representative for production support.
5. The sample water condition is "to meet the standards stipulated in the Water Supply Law, or to be equivalent to the quality of treated water." Contact your sales representative if you do not have the above mentioned water conditions.

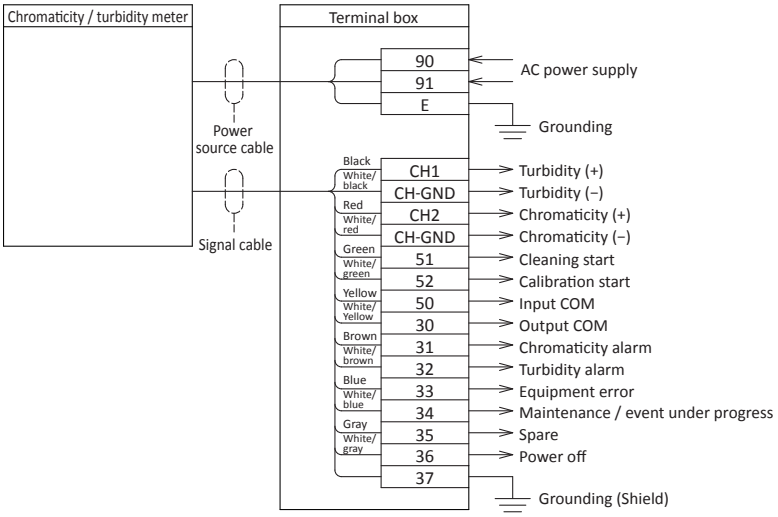
**Option** ● Indoor stand assembly type

## Dimensions

Unit : mm




## Terminal connection diagram




TOADKK

**DKK-TOA** CORPORATION

**⚠ CAUTION** Please read the operation manual carefully before using products.


Overseas Sales Division:
DKK-TOA Corporation
29-10, 1-Chome, Takadanobaba, Shinjuku-ku,
Tokyo 169-8648 Japan
Tel : +81-3-3202-0225 Fax : +81-3-3202-5685
E-mail : intsales@dkktoa.com