

CHLORINE DEMAND METER

CLD-7M

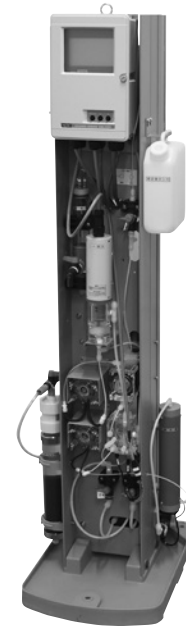
This instrument is used to measure the "chlorine demand" of a sample in advance in the chlorination process in water supply and to perform optimal chlorine dosing.

Features

- A contact-less swing rotary residual chlorine electrode (with bead cleaning) is used for the detection part, so long-term stable measurement can be performed.
- The transmitter has a built-in microcomputer and has various diagnostic functions such as abnormal flow rate and calibration failure.
- Equipped with automatic zero calibration function and automatic cleaning function, you can obtain highly reliable and stable data for a long period of time.

Standard Specifications

Product name	: Chlorine Demand Meter
Model	: CLD-7M
Measurement object	: Chlorine demand for advanced treated water When used in the raw water system, it is equipped with ozone cleaning and a filtration device.
Measurement method	: Electrolytic current control method using a polarographic residual chlorine sensor
Detector	: CLR-26-A Swing rotary type (Built-in temperature compensated thermistor)
Detecting Electrode	: 2132
Measurement Range	: (2 ranges remote / automatic / manual) 0 to 10/20mg/L (standard) 0 to 5/10mg/L 0 to 5/20mg/L (The unit can also be ppm depending on the specification.)
Display	: Digital (LCD, minimum display; 2 decimal places)
Measurement output signal	: DC 4 to 20mA Load resistance 600 Ω or less Insulated output



Contact output signal	: ● Range display, maintenance, power off, sample out, reagent out, flow rate error, cleaning, calibrating, calibration not possible ; Contact capacity DC 30V, 0.1A (Resistive load) ● Concentration upper limit alarm ; Contact capacity AC 125V, 1A (resistive load)
Contact input signal	: ● Range switching (low range at open contact, high range at closed contact) ; Contact capacity DC 30V, 0.1A (resistive load) ● Cleaning command, calibration command (contact closure 100ms or more); contact capacity DC 30V, 0.1A (resistive load)
Sample Condition	: Temperature; 2 to 30°C (No freezing) Pressure; 0.02 to 0.1MPa (0.2 to 1kgf/cm ²) Consumption; 1 to 3L/min (Analysis part introduction flow rate 15mL/min) Precautions for target water quality; When using in a raw water system, it is necessary to install piping that can blow clean the inside of the piping from the water sampling point to the instrument with clean water.

Reagent : Composition; 20% NaCl solution (with phosphate buffer)
 Consumption; 0.5 mL/min (about 25 L/30 days) Composition in 50L
 Sodium chloride10kg
 Disodium hydrogen phosphate.....500g
 Potassium dihydrogen phosphate...3kg
 *Amount of NaCl in measurement range 0 to 10mg/L
 Available in 10% (5kg used in 50L)

Wetted material : Acrylic resin, rigid PVC, fluorine resin tube, polyethylene tube

Liquid delivery : Send sample water and reagent solution to the flow cell with a liquid transfer pump

Power : AC 100V±10%, 50/60Hz
Power consumption : About 200VA (average), maximum about 280VA

Construction : indoor installation free-standing (Rainproof measures are required for outdoor installation)

Ambient temperature / humidity : 5 to 50°C, 85%RH or less

Material : Transmitter; Aluminum die-cast
 Detector; Aluminum
 Mounting part; Aluminaum alloy
 Terminal box; SPCC (steel plate)
 Transmitter, detector;
 Pantone 537C (Munsell 5PB8/1 equivalent)
 Terminal box; Grey (Munsell N5.5 equivalent)
 Mounting part; Grey (Munsell N6 equivalent)

Quantity : Approx. 50kg

Piping connection port : Sample water inlet; Rc (PT) 1/2
 Reagent inlet; Rc (PT) 1/2
 Drain; Rc (PT) 1
 Cleaning water inlet; Rc (PT) 1/2

Piping connection port : Diameter 6mm to 12mm Waterproof plug for cable

● Automatic cleaning function

Cleaning method : water cleaning (standard), ozone + water cleaning (optional)

Cleaning start mode : manual; key operation starts cleaning
 Automatic; internal timer starts cleaning
 Remote; Cleaning starts with external contact input

Cleaning cycle : 0 to 24h variable (initial value 12h)

Cleaning time : water jet cleaning; fixed at 2 min
 Ozone cleaning; 8min fixed (option)

Waiting time after cleaning : 0 to 30 min variable (initial value 15 min)

Output hold time during cleaning : Cleaning time + waiting time

Sample condition : Humidity; 2 to 30°C
 Pressure; 0.2 to 0.7MPa (2 to 7kgf/cm²)
 Consumption; Approx. 3L/min
 Water quality; Equivalent to tap water, no combined chlorine

● Automatic zero calibration function

Sequence : Cleaning → Calibration → Standby

Calibration solution : Pass activated carbon filtered water

Calibration start mode : Automatic; start calibration with internal timer
 Remote; Calibration starts with external contact input

Calibration cycle : Variable from 0 to 999h (initial value 24h)

Calibration time : Approx. 10min (Maximum 17min)

Standby time after calibration : Variable from 0 to 30min (initial value 15min)

Output hold time during calibration : Cleaning time + calibration time + standby time

Features

Repeatability : ±3%FS (NH₄Cl by standard solution)

Linearity : ±3%FS (NH₄Cl by standard solution)

Response speed : 90% Within 5 minutes (with sample water volume of 3 L/min from the sample water inlet)

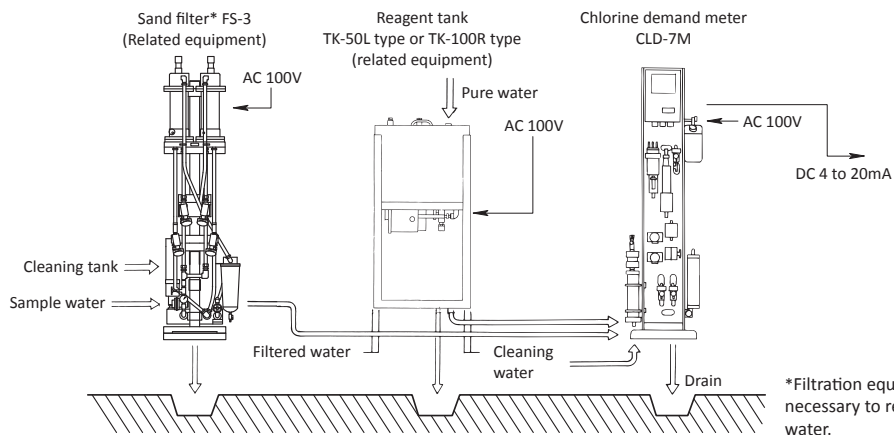
Stability : Zero drift ±3% FS/month (with zero calibration solution)
 Span drift ±5% FS/month (with standard solution)

Operating principle

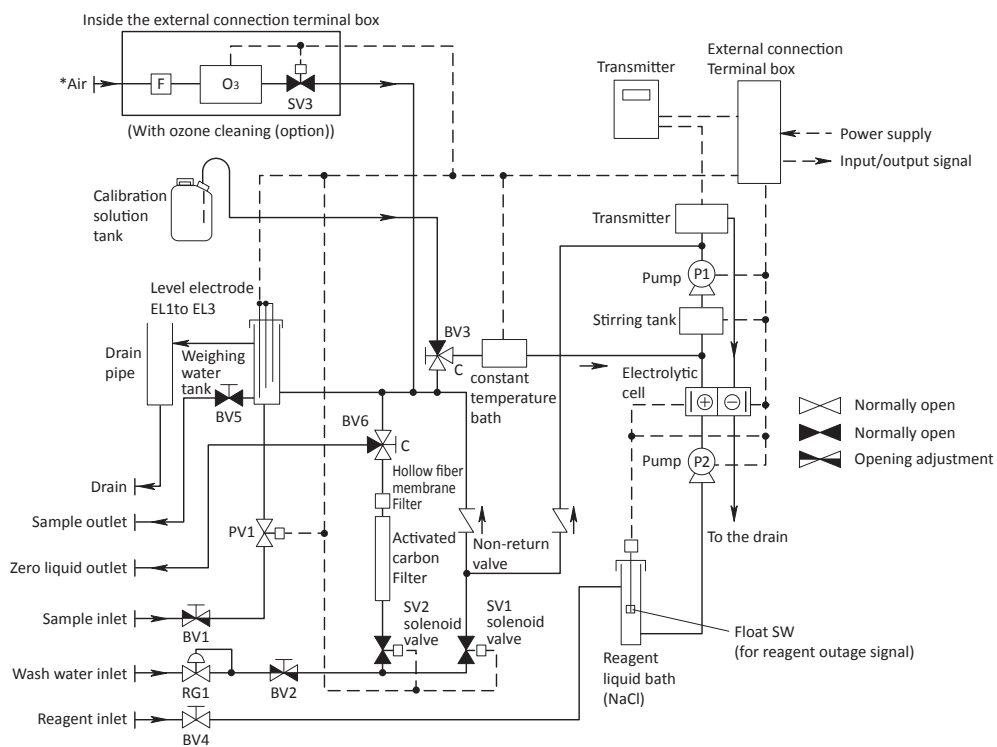
A control system is configured in which the amount of chlorine generated is controlled by electrolysis current so that the chlorine concentration in the chlorine detector is always constant (eg 5 ppm).

In this control system, when chlorine is consumed due to an increase in ammonia, etc. in the sample water, the electrolytic current is increased to replenish the chlorine. In this case, the chlorine replenishment amount is the amount of chlorine consumed by the sample (=chlorine demand), so the chlorine demand can be obtained by measuring the electrolysis current.

System Configuration Sample



Measurement system diagram



Code	Name
BV1	Sample water adjustment valve
BV2	Wash water stop valve
BV3	Switching valve
BV4	Reagent stop valve
BV5	Sample water outlet valve
BV6	Activated carbon filtered water outlet valve
SV1	Solenoid Valve
SV2	Solenoid Valve
PV1	Pinch valve
RG1	Pressure reducing valve
P1	Feed pump
P2	Feed pump
EL1	Level Electrode
EL2	Level Electrode
EL3	Level Electrode
F	Air filter
O ₃	Ozone generator
SV3	Solenoid valve

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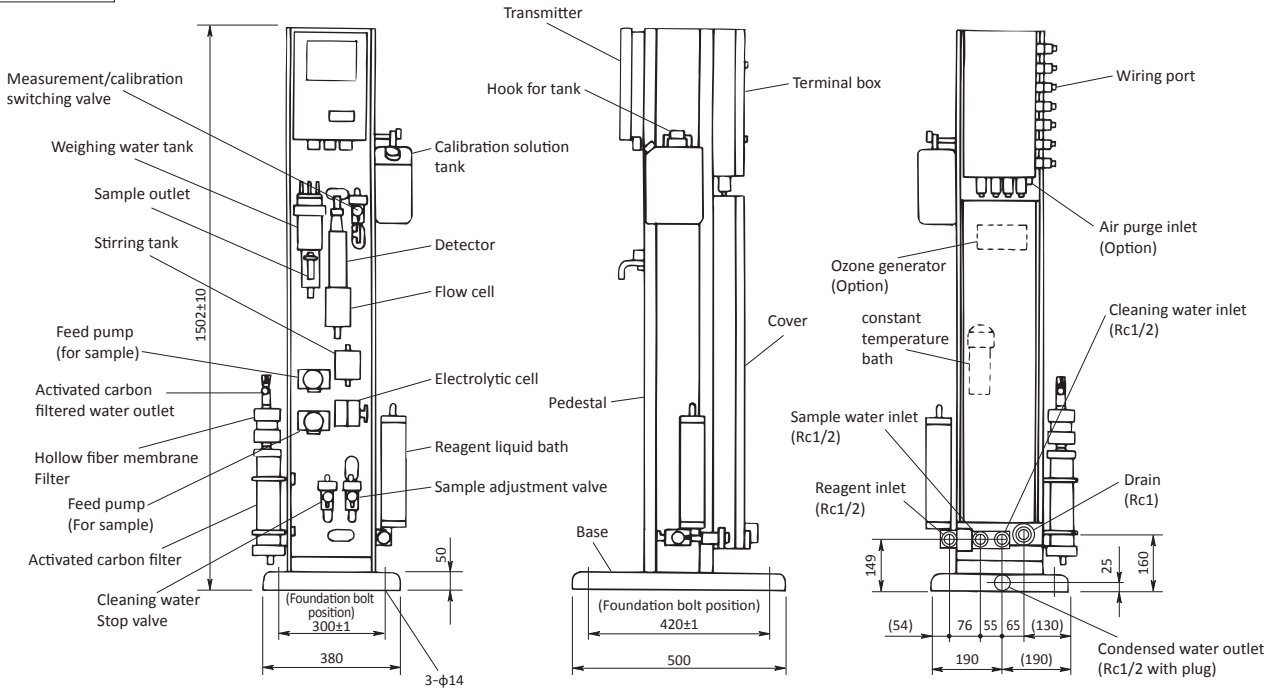
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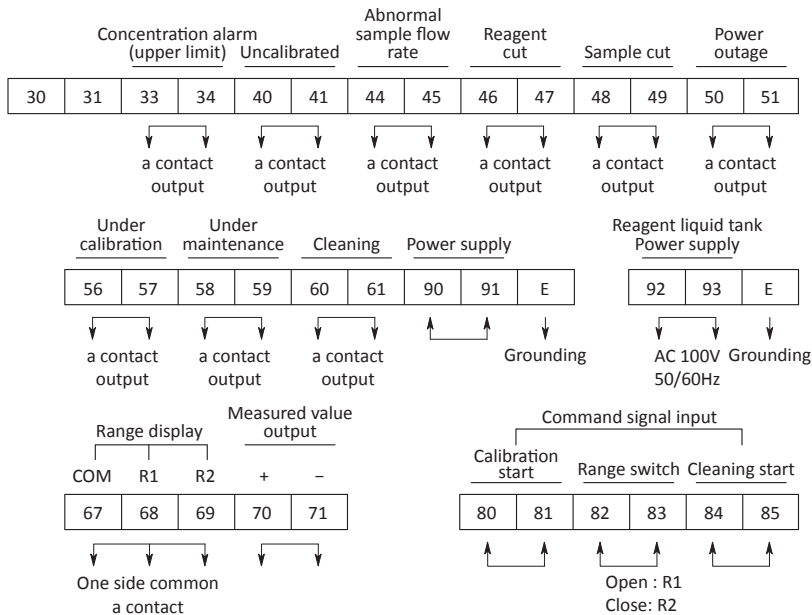
* Optional

Dimensions

Unit : mm



Terminal connection diagram



Note: Separate the ground for the instrument from the power ground, and use Class D ground (ground resistance 100 Ω or less).

Product code

CLD7M-1-	□	□	□	□	□	□	□	□	
	A								Power
	B								AC 100V 50/60Hz
	C								AC 110V 50/60Hz
	D								AC 115V 50/60Hz
	E								AC 200V 50/60Hz
	Z								AC 220V 50/60Hz
									Special
									Transmission output
	1								DC 4 to 20mA
	9								Special
									Measurement object
	1								Advanced treated tap water (standard)
	2								raw water*1
	9								Special
									Measurement Unit
	1								mg/L (Standard)
	2								ppm
	9								Special
									Measurement range (2 range remote / automatic / manual)*2
	A								0 to 10/20 (Standard)
	B								0 to 5/10
	C								0 to 5/20
	D								Others specified*3
									Automatic cleaning and calibration (zero)
	0								Cleaning water + with automatic calibration (standard)
	1								Water / O ₃ cleaning + with automatic calibration
	9								Special
									Air purge
	0								None (Standard)
	1								Equipped
	9								Special
									Built-in wiring port adapter
	0								None Cable Gland (φ6 to φ12)
	1								G1/2 (PF1/2)
	9								Special
									Language
	A								Standard
	B								English
	Z								Special

*1. If the sample water is raw water, be sure to select the option with ozone cleaning.

In addition, combination with a sand filter is essential.

*2. The initial setting (at the time of shipment) is automatic range switching.

*3. Please specify within the following range.

Range 1: 1 unit in the range of 5 to 10

Range 2: 1 unit in the range of 10 to 20

Note 1. Don't forget to separately order peripheral combination devices.

Reagent tank: TK-50L type

Sand filter: FS-3 type (if necessary)

Pure water device: G-10 type 134G005 (if necessary)

Related equipment

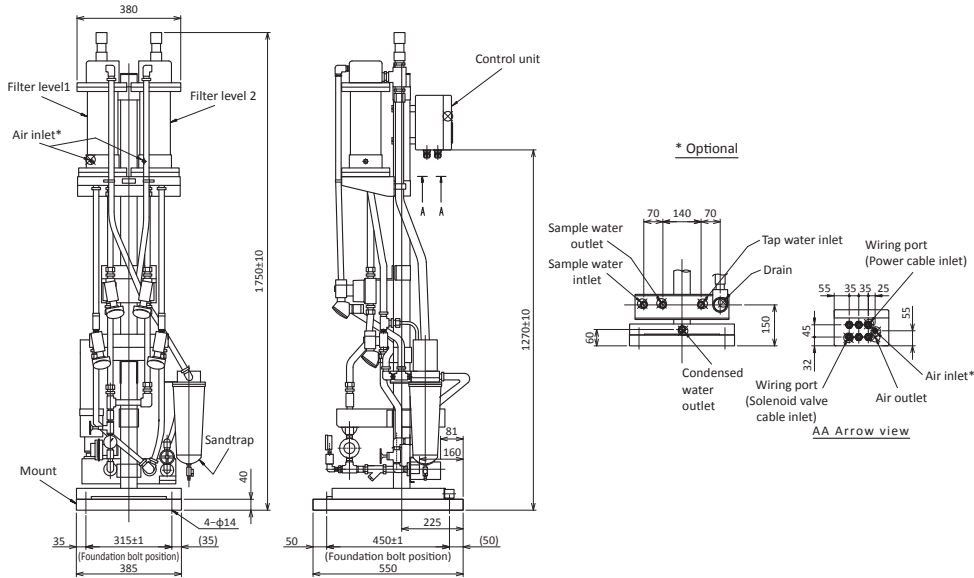
● Sand filter FS-3

Purpose : Removal of SS from sample water introduced into the water quality analyzer
 Method : 2-cylinder continuous sand filtration (alternate automatic backwashing)

Filter material : Sand (particle size 0.8 and 1.0mm)
 Filtration water : 1 to 6 L/min (depending on the amount of turbidity in the sample water)
 *Used when measuring samples with a lot of dirt or turbidity

Dimensions

Unit : mm

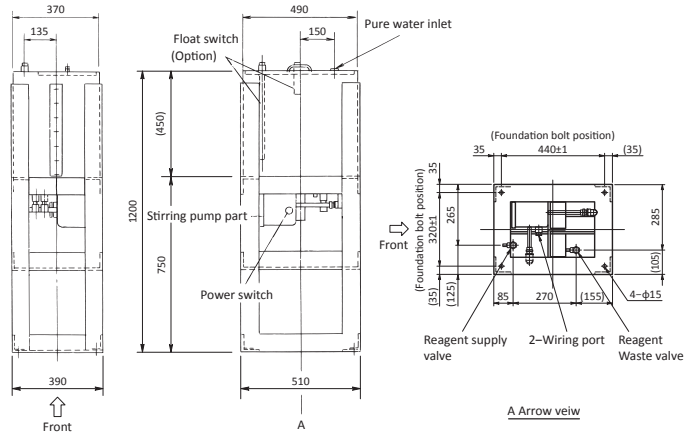


● Reagent liquid tank TK-50L type

Capacity : 50L
 Material : Hard vinyl chloride
 Agitation pump : AC 100V±10%, 50/60Hz power supply
 Power supply : Approx. 35VA
 Paint color : Gray rigid vinyl chloride ground color
 Weight : Approx. 40kg (Without reagent)
 Wiring connectionport : Liquid feed port; VP16 socket
 Liquid feed; VP16 socket
 Wiring connectionport : Diameter 6 to 12mm Waterproof plug for cable

Dimensions

Unit : mm



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Please read the operation manual carefully before using products.

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