

KRK

WATER QUALITY CONTROL

Process Sensors
3600 Part.2



Kasahara

Process Sensors WATER QUALITY CONTROL

NO.3600 Part 2

KASAHARA CHEMICAL INSTRUMENTS CORP.

CONTENTS

01 UV/COD Monitor



UV-700W

P01

02 TURBIDITY & COLORITY



Turbidity & Colority Monitor
for Drinking Water

TCR-700W

P02

03 SS & TURBIDITY



TSS-700W-H

P03

04 TURBIDITY



TSS-700W-L

P04

05 SS & TURBIDITY



90° scattered Light System
SS/Turbidity Monitor

TR-700Z

P05

06 TURBIDITY



Turbidity Monitor

TR-700V

P05

07 pH / ORP



pH/ORP Monitor

PC-700/OC-700

P06

08 MLSS

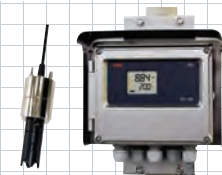


MLSS Monitor

MC-700

P07

09 DO(GALVANIC)



DO Monitor(Galvanic)

DC-700

P07

10 EMC

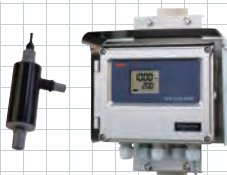


Electro-Magnetic Density Monitor

EMC-700

P08

11 CONDUCTIVITY



Conductivity Monitor

EC-700

P08

12 UV/COD



UV / COD Monitor

UV-2700

P09

13 TURBIDITY



Surface scattered Light,
Turbidity Monitor

TRD-51U SYSTEM

P10

14 TURBIDITY



Laser, scattered Light Method
Turbidity Monitor

TR-5500

P11

15 pH/ORP



pH/ORP Monitor

PC-502/OC-502

P12

16 FLUORIDE



Fluoride Ion Monitor

KF-502

P13

17 CHLORIDE



Chloride Ion Monitor

CL-502

P14

18 DO(GALVANIC)



DO Monitor(Galvanic)

DC-502G

P15

19 MLSS



MLSS Monitor

MC-502

P16

20 TURBIDITY



Transmission Light Method
Turbidity Monitor

TR-502V

P17

21 SS & TURBIDITY



90° scattered Light
SS & Turbidity Monitor
SS-502 P18

22 TURBIDITY



Turbidity Monitor
for Drinking Water
TR-502 P19

23 COLORITY



Colority Monitor
for Drinking Water
CR-502 P20

24 TURBIDITY



90° scattered Light,
Turbidity Monitor
TR-502Z P21

25 TURBIDITY



Laser scattered Light Method
Turbidity Monitor
TR-502L P22

26 TURBIDITY & COLORITY



Turbidity & Colority Monitor
for Drinking Water
TCR-502 P23

27 CONDUCTIVITY



Conductivity Monitor
EC-502 P24

28 EMC



Electro-Magnetic Density Monitor
EMC-502 P25

29 PROCESS MONITOR



Process Monitor, Flow Type
CR-502P P26

30 COPPER



Copper Monitor
CU-502 P27

31 NICKEL



Nickel Monitor
Ni-502 P28

32 COPPER



Copper Monitor
CU-800 P29

33 NICKEL



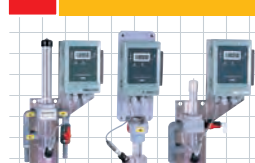
Nickel Monitor
Ni-800 P30

34 CHLORINE



Residual Chlorine Monitor
Special Specifications
RC-100 P31

35 CHLORINE



Residual Chlorine Monitor
RC-100A P32

36 Chlorophyll



Chlorophyll Monitor
CHL-502 P33

37 CLEANER



Brush Cleaners for pH Electrode
BHC-1T P34

38 CLEANER



Jet Air Cleaning Unit
KWJ-3 P34

39 CLEANER



Wiping Cleaners for
optical Detectors
BHC-7WP P35

40 CLEANER



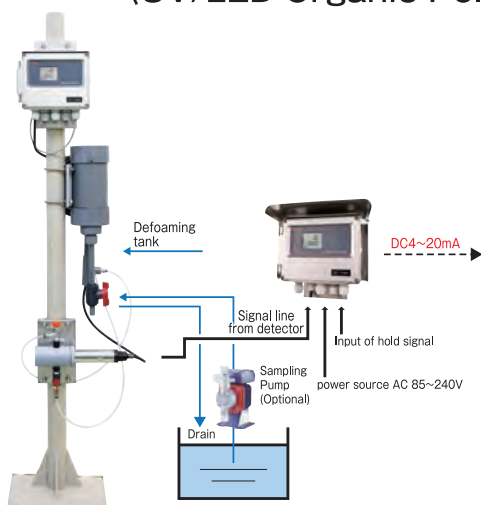
Brush Cleaners for
optical Detectors
BHC-1S P35

UV/COD

01 UV-700W

UV/COD Monitor

〈UV/LED Organic Pollution Monitor, **Hg⁺ Free**〉

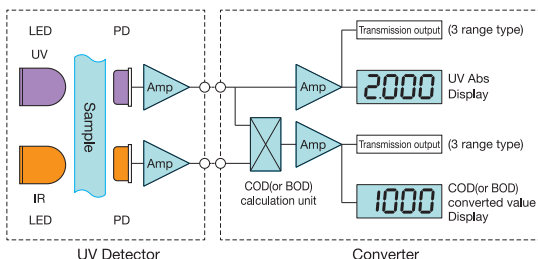


Displays both UV absorbance and COD converted value

Outline

- 2 optical path, 2 wave length measurement to correct turbidity influence

Automatically calculate UV Abs signal-Turbidity signal (IR) system



※IR = Infrared rays (near infrared rays), turbidity measuring wave length

One monitor displays both UV absorbance and COD

In order to display UV absorbance as COD, input relation between UV Abs by UV-700W and manually analyzed COD value in advance, then measure.



※Be sure to obtain correlation with COD before use.
If the correlation is unknown, please use UV absorbance (Abs) as an index of organic pollutants.

Detector installation example

Immersive type MDL : UVD-LH

Measurement by fixing UV detector to immersive type holder sideways and immerse with metal fittings in the measuring tank



Attach and detach of UV Detector and Maintenance



Meter

Product name	UV Type COD Monitor (UV Organic Pollution Monitor)											
Model	㊦ Standard Type:UV-700W-10 (Cell Path 10mm) ㊦ High density type:UV-700W-5 (Cell Path 5mm)											
Display	LCD 4 digits, 2 steps Upper:converted COD value(mg/ℓ), Lower:UV Abs											
Measuring system	㊦ UV-700W-10:0.000~2.000Abs/cm (UV) 0~400mg/ℓ (Converted COD Cr) ㊦ UV-700W-5: 0.000~4.000 Abs/cm (UV) 0~1000mg/ℓ (Converted COD Cr) ※Depending upon the water quality, Conversion measurement can not be made below 1000mg/ℓ (or 400mg/ℓ).											
Transmission output	DC4~20mA, 2 system, 3 range switch <table><tr><td></td><td>UV Abs(Abs/cm)</td><td>Converted COD value(Cr)</td></tr><tr><td>㊦ UV-700W-10</td><td>0~2Abs/cm</td><td>0~ 400mg/ℓ Cr(MAX)</td></tr><tr><td>㊦ UV-700W-5</td><td>0~4Abs/cm</td><td>0~1000mg/ℓ Cr(MAX)</td></tr></table>				UV Abs(Abs/cm)	Converted COD value(Cr)	㊦ UV-700W-10	0~2Abs/cm	0~ 400mg/ℓ Cr(MAX)	㊦ UV-700W-5	0~4Abs/cm	0~1000mg/ℓ Cr(MAX)
	UV Abs(Abs/cm)	Converted COD value(Cr)										
㊦ UV-700W-10	0~2Abs/cm	0~ 400mg/ℓ Cr(MAX)										
㊦ UV-700W-5	0~4Abs/cm	0~1000mg/ℓ Cr(MAX)										
Conversion	Converting coefficient y=a+bx											
Repeatability	Within ±2%(F.S.)											
Stability	Within ±2%(F.S.)											
Resolution	UV:0.001Abs/cm, COD:1mg/ℓ UV-700W-5 UV:0.001Abs/cm, COD:0.1mg/ℓ UV-700W-10											
Cleaning method	Automatic cleaning with a wiper Cleaning cycle:once an hour (possible to set 30min~12hrs) Frequency of cleaning:1(possible to set 1~5 times)											
Power voltage	AC85~240V											

Detector

Product name	Probe type UV LED detector		
Model	A Standard type UVD-255-10(optical Cell Path : 10mm) B High Density type UVD-255-5 (optical Cell Path : 5mm)		
Measuring wavelength	UV:255nm, IR:880nm		
Measuring system	2 optical path, 2 wave length light absorbance		
Flow type measuring system ①	Flow type holder : UVD-FLH2 + Defoaming tank : VU-100 +Detector : UVD-255		
Flow type measuring system ②	Flow type holder : UVD-FLH2 + Detector : UVD-255		
Immersive type measuring system	Immersive type holder : UVD-LH + Detector : UVD-255 ※Immersion fittings, pipes, hanging chains are optional		
Material	Detector : SUS-316, quartz(option:sapphire), wiper rubber Holder, Defoaming tank : PVC		
Cable	5m		
Standard component	Standard flow type detector(detector+holder)with fixing board, Defoaming tank, PP tube 2m×2, Converter, Check Filter		
Optional accessories	50A Pole stand, Sunshade cover		

Turbidity/Colority

02 TCR-700W

Turbidity & Colority Monitor

(Transmitted Light Method)

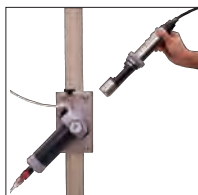
Cell Length 60mm, High Sensitive



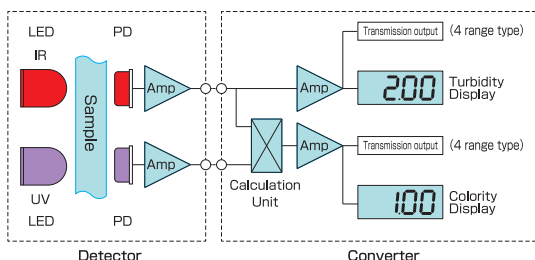
Automatic wiper cleaning system



Attach and detach of Detector

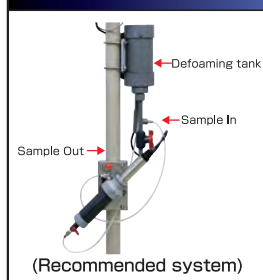


● Probe type 2-wave length turbidity/colority sensor system



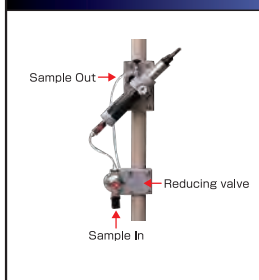
※IR=Infrared rays

A:Flow type system ①



(Recommended system)

B:Flow type system ②



■ Features

- Simultaneous measurement and display of both turbidity and colority
- Minimum display of 0.01→0.1 selective. (at 10 degrees or less)
- Turbidity/Colority 4-range transmission output (DC 4~20mA)

■ Converter

Model	TCR-700W
Display	Upper:Turbidity (polystyrene turbidity standard) Lower:Colority (Cobalt platinate standard)
Range	Turbidity:0~50 degrees Colority:0~50 degrees
Resolution	0.01 degree:range of 9.99 degrees or less 0.1 degree:range of 10~50 degrees
Repeatability	Within ±0.1 degrees
Turbidity revision	Automatic turbidity correction when measuring colority
Transmission output	Turbidity / Colority DC 4-20mA, (each circuit) 4 ranges manually selected Load resistance 250-500Ω 0~5/0~10/0~20/0~50(Degree)
Alarm contact	Non-voltage a contact(each 1 circuit)
Power-supply voltage	AC85~240V 50/60Hz
Material	Polycarbonate, with surface metallic silver coating

■ Detector

Principle	2-path 2-wavelength transmitted light measurement method
Model	A:TCRD-60W(With wiper) B:TCRD-60(Without wiper)
System	A:Flow type:Defoaming tank+Flow type holder①+Detector B:Flow type:Flow type holder②+Reducing valve+Detector
Cleaning	Automatic wiper cleaning system Cleaning cycle:once an hour(possible to set 30min~12hrs) Cleaning frequency:once(possible to set 1~5 times) Possible to clean detector manually by removing from holder.
Material	Detector:SUS-316, quartz, FKM
Standard component	A:Flow type system①(Standard) Main body, Holder(TCRD-FLH), Tank, Detector(W/cable 5m) B:Flow type system② Main body, Valve, Holder(TCRD-FLHG), Detector(W/cable 5m)
Optional accessories	Standard solution, 50A Pole stand, Sampling pump, Sunshade cover

SS/Turbidity

03 TSS-700W-H

SS/Turbidity Monitor

Transmitted Light Method, Cell Length 20mm



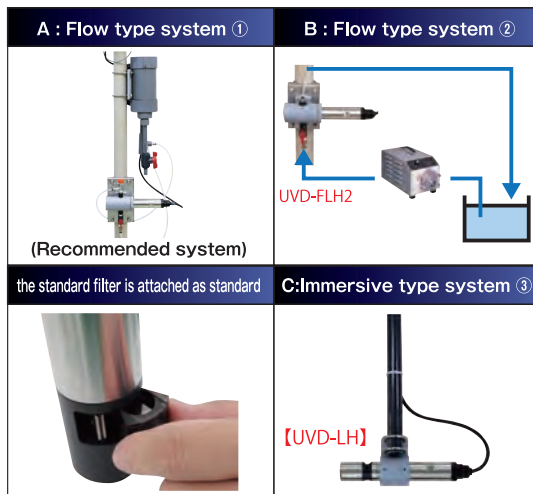
Attach and detach of Detector and Maintenance is easy



Automatic wiper cleaning system



Measuring Diagram



- Measurement of SS density and turbidity by switching Selective measurement



- Correlation between SS and turbidity, with calculation system of $y=a+bx$
Possible to set correlation factor between manually obtained SS and turbidity of sample water by operating \blacktriangle \blacktriangledown keys.

Converter

Product name	SS/Turbidity monitor
Model	TSS-700W-H
Display	LCD 4 digits
Range	Turbidity: 0~1000 degrees (FTU or mg/l) SS: 0~1000mg/l (Converted SS value)
Resolution	1 degree (100~1000), 0.1 degree (99.9 degrees or less)
Repeatability	Within $\pm 2\%$ (F.S.)
Transmission	DC 4~20mA (insulated type)
output	3 ranges manually selected 0~1000/0~500/0~100 degree (or mg/l)
Alarm contact	Low & High, each a point of contact (Non-voltage)
SS Conversion function	Conversion factor can be set ($y=a+bx$) (x =turbidity, y =SS)
Power-supply voltage	AC85~240V 50/60Hz
Material	Polycarbonate, (with surface metallic silver coated)
Outer dimensions	244×196×105mm (With hood), Weight: About 2.5kg

Detector

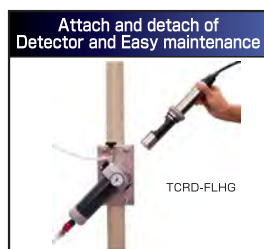
Principle	Near infrared transmitted light measurement method
Model	A: TSSD-20W (With wiper) B: TSSD-20 (Without wiper)
Cleaning	Automatic wiper cleaning system Cleaning cycle: once an hour (possible to set 30min~12hrs) Cleaning frequency: once (possible to set 1~5 times)
Material	Detector: SUS-316, quartz, FKM
Standard component	A: Flow type system ① (Standard) Main body, Holder (UVD-FLH2), Tank (VU-100), Detector (W/cable 5m) standard Filter B: Flow type system ② Main body, Valve, Holder (UVD-FLH2), Detector (W/cable 5m) standard Filter C: Immersive type system Main body, Immersive type holder (UVD-LH), Detector standard Filter
Optional accessories	Turbidity standard solution, 50A Pole stand, Sunshade cover

Turbidity

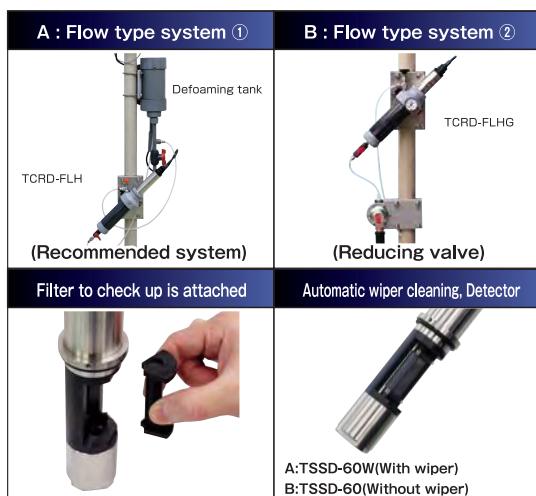
04 TSS-700W-L

Turbidity Monitor

Transmitted Light method Cell Length 60mm



Measuring Diagram



Usage

Water purification plant, simplified drinking water system, water tank, industrial water, waste water from the plants, water for food industry,

Converter

Product name	Turbidity monitor
Model	TSS-700W-L
Display	LCD 4 digits(FTU or mg/ℓ)
Range	Turbidity:0~50 degrees(FTU or mg/ℓ) Abs:0~2Abs/60mm
Resolution	Turbidity:0.1(10~50), 0.01(9.99 degree or less) Abs:0.001/60mm
Repeatability	Within ± 2%/F.S.
Transmission output	DC 4~20mA(Insulated type) 3 ranges manually selected 0~50/0~10/0~5(Turbidity) 3 ranges manually selected 0~2/0~1/0~0.5Abs/60mm
Alarm contact	Low & High, each a point of contact(Non-voltage)
Power-supply voltage	AC85 ~ 240V 50/60Hz
Material	Polycarbonate, with surface metallic silver coated
Outer dimensions	244×196×105mm(With hood), Weight:About 2.5kg

Detector

Principle	Near infrared transmitted light measurement method
Model	A:TSSD-60W(With wiper) B:TSSD-60(Without wiper)
Cleaning	Automatic wiper cleaning system Cleaning cycle:once an hour(possible to set 30min~12hrs) Cleaning frequency:once(possible to set 1~5 times) Possible to clean detector manually by removing from holder
Material	Detector:SUS-316, quartz, FKM
Standard component	A:Flow type system①(Standard) Main body, Holder(TCRD-FLH), Tank(VU-100), Detector(W/cable 5m) B:Flow type system② Main body, Valve, Holder(TCRD-FLHG), Detector(W/cable 5m)
Optional accessories	Turbidity standard solution, 50A Pole stand, Sunshade cover

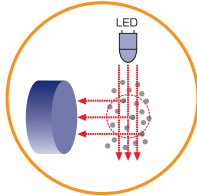
SS/Turbidity

05 TR-700Z

SS / Turbidity Monitor (90° Scattered light system)



- Correlation between SS and turbidity, with calculation system of $y=a+bx$
Possible to set correlation factor between manually obtained SS and turbidity of sample water by operating $\blacktriangle \blacktriangledown$ keys.



Meter

Name of product	Turbidity/SS Monitor
Model	TR-700Z
Display	LCD 4 digits 2 steps (With a back light)
Measuring range	Turbidity : 0~500NTU (Std) SS:0~500mg/ℓ (Converted value) ※ If SS turb. - turbidity relation is not 1:1, SS measuring range differs.
Minimum Resolution	0.1 Degree (at under 100) 1 Degree (at 100~500 degree)
Transmit output	DC 4~20 mA 4 steps range ① 0.0~20.0 (NTU or mg/ℓ) ② 0.0~100.0 (NTU or mg/ℓ) ③ 0.0~200 (NTU or mg/ℓ) ④ 0.0~500 (NTU or mg/ℓ)
SS Conversion	Conversion coefficient $y=a+bx$ (x =turbidity, y =SS) is possible to set
Contact output	High & Low limit each a contact (No voltage)
Hold output	Transmit output and contact output are holded on maintenance
Cleaning function	Cleaning setting function
Power supply	AC 85-240V 50/60Hz

Detector

Name of product	90°Scattered light SS/Turbidity Detector
Measuring principle	90°Scattered light measuring system
Model	① Standard type TRD-120N ② Immersive type TRD-120HN(Holder : 1~1.5m) ③ Flange type TRD-120HFN ④ Flow type TRD-120FN + TRD-FH
Cable Length	5m standard

06 TR-700V

Turbidity Monitor

Transmitted Light Method Cell Length 30mm



Measurement of near-infrared transmission light, sensitive Turbidity detector.
Seldom influenced by outside light and color.



Meter

Name of product	Turbidity Monitor
Model	TR-700V
Display	LCD 4 digits (With a back light)
Measuring unit	Kaolin turbidity unit:mg/ℓ Formazine turbidity unit:FTU Please specify at ordering
Measuring range	0~2000 (FTU or mg/ℓ)
Minimum Resolution	1 FTU or 1mg/ℓ
Transmit output	DC 4~20mA (isolated type) 4 steps range 0~100/0~500/0~1000/0~2000(FTU or mg/ℓ)
Accuracy	Within $\pm 3\%$ (at equivalent input)
Contact output	High & Low limit each a contact (No voltage)
Hold output	Transmit output and contact output are holded on maintenance
Cleaning function	Cleaning setting function
Power supply	AC 85-240V 50/60Hz

Detector

Name of product	Near-infrared pulse transmission light system turbidity detector
Model	Throw-in type:SSD-110N-30 Immersion type:SSD-110HN-30
Holder length	1~1.5m (SSD-110HN-30 Standard)

pH/ORP

07 PC-700/OC-700

pH/ORP Monitor



■ Features

- Liquid crystal display with backlight
- Simple key operation
Select MODE→NEXT→▲▼→ENT
At maintenance time, output hold is possible by MAINT key
- Correctable to operational value with measured value shifting function
- With holding function, capable of output holding at maintenance time
(by the non-voltage contact point input signal from outside)
- With hysteresis setting function, averaging function
- Electrode washing unit stand-by (optional)

■ Meter

Name of product	pH Monitor	ORP Monitor
Model	PC-700 (4 wire System)	OC-700 (4 wire System)
Measuring principle	Glass Electrode Method	Pt Electrode Method
Display	4 digits (With a back light)	
Measuring range	pH:0.00~14.00 Temperature : 0.0~50.0℃	ORP:-1900~+1900mv Temperature : None
Transmit output	DC 4-20mA 0.00~14.00pH	DC 4-20mA -700~+700 mV(Initial)
Contact output	High & Low limit each a contact (No voltage)	
Hold output	Transmit output and contact output are holded on maintenance	
Cleaning function	Cleaning setting function	
Power supply	AC 85-240V 50/60Hz	
Optional accessories	50A Pole stand, Sunshade cover	

■ Optional Electrode

	Model	Type	Temp Compensation	Liquid Junction	Cable Length
pH	GR-1	Liquid Filling Type	without	single	5m
	GR-11	Liquid Filling Type	attached	single	5m
	GR-1B	Liquid Filling Type	without	single	5m
	MK-11	Liquid Non-filling Type	without	double	5m
ORP	OR-1	Liquid Filling Type	without	single	5m
	MK-OR	Liquid Non-filling Type	without	double	5m
	MK-ORF	Liquid Non-filling Type (for Flow Type)	without	double	5m

pH/ORP Detector, Holder, Cleaner



MLSS/DO

08 MC-700 MLSS Monitor (Sludge Density Meter)

Continuous Measurement of activated Sludge Density(MLSS) in an Aeration Tank



Immersion type Detector
SSD-110HN-6



Standard type
SSD-110N-6



Calibration filter

■ Meter

Name of product	MLSS monitor
Model	MC-700
Measuring principle	Near-infrared pulse transmission light system
Display	LCD 4 digits (With a back light)
Measuring range	MLSS : 0~20000 mg/ℓ (Standard) Turbidity : 0~20000 degree (Option)
Minimum Resolution	1 × 10 mg/ℓ
Accuracy	Within ±2% (at equivalent input)
Transmit output	DC4~20mA 3 steps range RANGE 1: 0~5000 mg/ℓ RANGE 2: 0~10000mg/ℓ RANGE 3: 0~20000mg/ℓ
Contact output	High & Low limit each a contact (No voltage)
Hold output	Transmit output and contact output are holded on maintenance
Cleaning function	Cleaning setting function
Power supply	AC 85-240V 50/60Hz

■ MLSS detector

Model	Throw-in type:SSD-110N-6 Immersion type:SSD-110HN-6
Cable Length	6m standard
Material	POM, SUS304, PVC
Holder length	1.5m(Standard)
External dimensions	Detector:φ43×218mm Holder:φ38×1500mm(Standard)

09 DC-700

DO Monitor



Throw-In type
OXP-2VNY-SK



Immersion type
OXP-2VNY-H

Cartridge Type DO Sensor
OXNIT® OX-VW2



■ Meter

Name of product	DO Monitor
Model	DC-700
Display	LCD 4 digits 2steps (With a back light)
Measuring range	DO:0.00~19.99 mg/ℓ Temperature:0.0~50.0℃
Accuracy	Within ±0.1mg/ℓ(at equivalent input)
Transmit output	DC 4-20mA 3 steps range Range1:0.00~5.00mg/ℓ Range2:0.00~10.00mg/ℓ Range3:0.00~20.00mg/ℓ(Initial setting)
Contact output	High & Low limit each a contact(No voltage)
Hold output	Transmit output and contact output are holded on maintenance
Additional function	Cleaning setting function
Temperature compensation	Automatic compensation by thermistor(1kΩ)
Power supply	AC 85-240V 50/60Hz
Optional accessories	50A Pole stand, Sunshade cover

■ Detector

Measuring method	Galvanic cell type Cartridge type DO Sensor exchange type
Model	Throw-In type probe:OXP-2VNY-SK Immersion type probe:OXP-2VNY-H(L=1.5m) DO sensor:OXNIT OX-VW2
Cable length	5m(Standard)

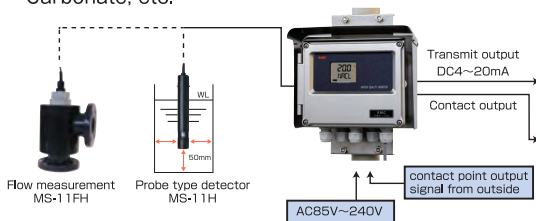
*OXNIT® is the KASAHARA's registered trade mark.

10 EMC-700

Electro-Magnetic Density Monitor



- Capable of density Measurement of every kind of chemical solution Acid, Alkali, such as Sulfuric Acid, Hydrochloric Acid, Nitric Acid, NaOH, KOH, Sodium Carbonate, etc.



Meter

Name of product	Electro-Magnetic Density Monitor
Model	EMC-700
Measuring principle	Electro-Magnetic Induction System
Measuring objects	Please specify the object (NaCl, KCl, NaCO ₃ , HCl, HNO ₃ , H ₂ SO ₄ , HF, etc...)
Measuring Range	Weight percentage:0~25% (or g/ℓ) Electrical conductivity:0~200mS/cm
Accuracy	Within ±2% (at F.S.)
Transmit output	DC 4~20mA (isolated type) 3 range
Contact output	High & Low limit each a contact (no-voltage)
Hold output	Transmit output and contact output are held on maintenance
Power supply	AC 85~240V 50/60Hz
Optional accessories	50A Pole stand, Sunshade cover

Detector

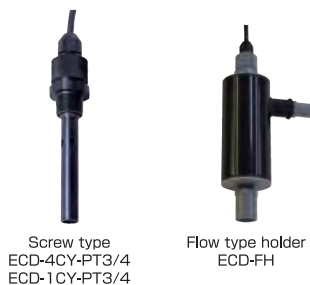
Product name	Electro-Magnetic Density Detector
Model	MS-11 (Standard Type) MS-11H (Immersive Type) MS-11FH (Flow Type)
Outer dimensions	φ40×257mm
Material	PVC (Black)
Cable	5m standard

11 EC-700

Conductivity Monitor



- Excellent chemical resistant Conductivity Electrode
- Measurement of SI unit and old unit shifting is possible SI unit (mS/m, S/m) and old unit (mS/cm) can be shifted and measured.



Meter

Name of product	Field installation high density type Electrical Conductivity Monitor	Field installation low density type Electrical Conductivity Monitor
Model	Meter:EC-700-H Electrode:ECD-4CY	Meter:EC-700-L Electrode:ECD-1CY
Measuring principle	AC 2 Electrode System	
Display	LCD 4 digits (With a back light)	
Measuring range	EC:0~20 S/m (0~200mS/cm) Temperature:0~100°C	EC:0~2 S/m (0~20mS/cm) Temperature:0~100°C
Repeatability	Within ±2% (at F.S.)	
Transmit output	DC 4~20mA (insulation type) 3 range switching ※temperature is only display	
Contact output	High & Low limit each a contact point (no-voltage)	
Hold output	Transmit output and contact output are held on condition of the following. ①At the time of "Mainte" key operation ②Inputting non-voltage contact signals from outside.	

Detector

Product name	High density type electrical conductivity electrode	Low density type electrical conductivity electrode
Model	ECD-4CY	ECD-1CY
Standard type	ECD-4CY-PT3/4	ECD-1CY-PT3/4
Screw-in type	ECD-4CY-PT3/4 + ECD-FH	ECD-1CY-PT3/4 + ECD-FH
Flow-through type	ECD-4CY-F	ECD-1CY-F
Cell constant	θ=400m ⁻¹ (4.0cm ⁻¹)	θ=100m ⁻¹ (1.0cm ⁻¹)
Measurement condition	Temperature:Within 0~80°C	

UV/COD

12 UV-2700

UV/COD Monitor (Ultra-Violet Rays Absorvancy Method, Organic Pollution Monitor)

Capable of Simultaneous Display and Continual Measurement of COD value and Absorbance or COD value and Turbidity

(COD converted value : mg/ℓ)

(UV Abs)

(FTU or mg/ℓ)

LCD display with back light

Easy to read in the dark
Top figure shows COD converted value
Lower shows Absorbance (UV, VIS, UV-VIS) or Turbidity (Formazin or Kaolin turbidity)
Absorbance or Turbidity (FTU or mg/ℓ) can be shown by NEXT switch

Operation display light

ALM : when mercury lamp deteriorates, it lights.
CLN : at the time of wiper cleaning, it lights.
UV : display lamp of UV (254nm) at measuring mode
VIS : display lamp of VIS (546nm) at measuring mode
MAINT : at the time of maintenance, it lights and holds transmission output.

Measuring cell cleaning function

Automatic cleaning of measuring cell by operating wiper once an hour. Cleaning cycle is changeable by setting. Also, chemical injection unit is linked to this cleaning cycle.

Simple key operation

Calibration and measurement is simple by only 6key operation
MODE, ▲, ▼, NEXT, MAINT

Easily attachable or removable optical unit

Easily removed and inspected at the time of maintenance.

With calibration filter knob

For span calibration of UV-COD meter.
Filter is Push ON, pull OFF type.

Easily maintained I/V circuit board

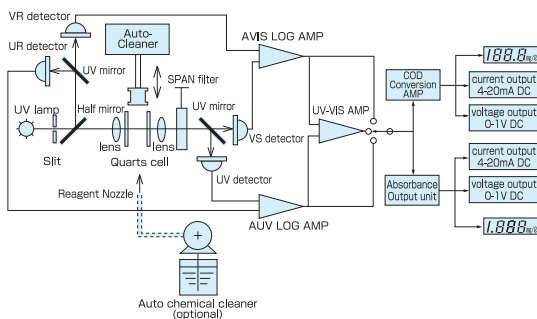
Inspect and adjust I/V board at the front.



COD value & UV/turbidity measurement UV-2700 (STD.)

Outline

This UV-COD monitor has the COD value conversion function, can display both UV absorbency and COD value at the same time, and makes the measuring / recording, to be answering to the requirement for the 21 Century. The influence of the polluted elements can be corrected by the operation circuit making the difference between UV signal & VIS signal & measures COD element exclusively. This improved system has increased the measuring reliability of the instrument.



Meter

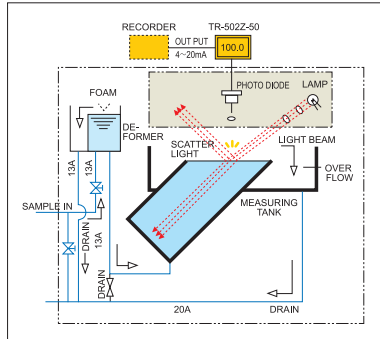
Measuring principle	2-wavelength light absorbance method (UV:254nm/VIS:546nm)
Measuring method	Circulating cell system by drawing sample water (cell length:10mm)
Display	LCD 4 digits Top:COD display Lower:select one of UV Abs/VIS Abs/UV-VIS Abs/Turbidity
Measuring range	COD: 0~50.0/100.0/200.0 mg/ℓ UV Abs: 0.000~0.500//1.000/2.000 Abs VIS Abs: 0.000~0.500//1.000/2.000 Abs UV-VIS Abs: 0.000~0.500//1.000/2.000 Abs Turbidity: 0~250/500/1000*(formazin turbidity standard)
Transmission output	Output 1: DC 4~20mA(isolation type) load resistance less than 500Ω DC 0~1V (no isolation type) Output 2: DC 4~20mA(isolation type) load resistance less than 500Ω DC 0~1V (no isolation type) Output 1: Select among COD/UV Abs/VIS Abs/UV-VIS Abs Output 2: Select among UV Abs/VIS Abs/UV-VIS Abs/Turbidity *Output 1 & 2 can hold during calibration and setting.
COD conversion function	COD(mg/ℓ):(y) = a + bx is possible to set a: Intercept b: slope x: UV Abs or UV-VIS Abs *Obtain correlation between (manually analyzed) UV value and COD value and correlation coefficient (r) before use
Cleaning method	Wiper cleaning Cleaning cycle:once an hour (possible to set within 10 min. and 24 hrs.) Cleaning time:possible to set 1~5 times
Power supply	AC 85~240V 50/60 Hz
Calibration	Zero : pure, distilled water/tap water Abs Span: ① calibration filter 0.8 Abs (Standard) ② potassium hydrogen phthalate solution (additional preparation is necessary)
Standard component	Monitor (UV-2700), testing tank ball valve (13A), spare fuse, O ring set, Cleaning rubber
Optional accs.	Fixing stand (65A), Shade cover (SUS-304), Chemical cleaning unit(UVCL-70), Correlation examination, AQUA monitor unit, instrument for Aqua monitor (UV-2700Z)

Turbidity

13 TRD-51U SYSTEM

Surface Scattered Light, Turbidity Monitor

■ Measuring system (inside the detector unit)



Span-check is easy with scattering calibration plate on calibration / checking



■ Out Line

This turbidity meter uses **surface scattering light measuring system**, and is composed of detector unit and indication converter, test sample water that is brought into turbidity detecting section through deforming tank is discharged on drain side, while rippling waves so designed as hardly happening on the surface of the water. On the hand, the light beam from the floodlight section that is placed slantly on the upper part of measuring tank is illuminated on the water surface of measuring tank, and generates scattering light in proportion to turbidity density. **This scattering light** is introduced to the upper detector and the light volume is detected, and through the converter the density indication is made, **The light beam** that is transmitted without being scattered on the surface of measuring tank advances to the angle direction of the measuring tank so that it can not become disturbing light on the side of the measuring tank.

■ Features

- Excellent surface scattering light measuring system.
- Optical system dew-condensation prevention performance.
- Span-check is easy with scattering calibration plate on calibration / checking.

■ Component

Converter	TR-502Z-50
Detector	TRD-51U

■ Meter

Product Name	Surface Scattered Light, Turbidity Monitor
Model	TR-502Z-50
Display	LED Red 4 figures digital display
Measuring Range	Kaoline turbidity or Formazine Turbidity 0~200 (mg/ℓ or FTU):Standard 0~1000 (mg/ℓ or FTU):Option
Transmittal Output	DC 4 ~ 20mA (isolated type) 4 range (Manual change) A:0~20 / 0~50 / 0~100 / 0~200 (mg/ℓ or FTU) (Standard) B:0~100 / 0~200 / 0~500 / 0~1000 (mg/ℓ or FTU) (Optional)
Resolution	0.1 (In the case of a F.S. 0~200) 1 (In the case of a F.S. 0~1000)
Accuracy	Within ±2 % (Full Scale)
Power Supply	AC 100V 50 /60 Hz (AC 220V:optional)

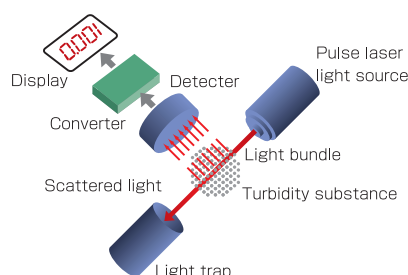
■ Detector

Product Name	Surface Scattered System Turbidity Detector
Model	TRD-51U
Measurement condition	Temperature : Within 0~40°C Pressure : Less than 0.1MPa Discharge flow: 0.5~5ℓ
Power Supply	AC 100V 50 /60 Hz (AC 220V:optional)
Material	PVC, Brass, SPCC, Rubber
Connection attachment	Sample entrance : 13A PVC socket or φ18 tube Sample exit : 20A PVC socket or φ38 tube
Std. component	Detector unit : TRD-51U, Deforming tank, Connection attachment unit Span calibration board, Zero calibration cap, Meter

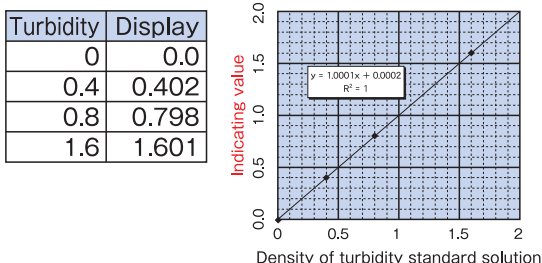
Turbidity

14 TR-5500 NEPHELOC_® Laser scattered Light Method, Turbidity Monitor

■ Measuring Theory



■ Linearity features



■ Out Line

If 660nm red pulse laser bundle is projected into the sample water, strong scattered light occurs. This scattered light is detected by the light receiving element angled at 90°, transferred to the converter as density signal, calculated, amplified and digitally displayed. Laser turbidity monitor sensitively measures molecule turbidity little influenced by colority.

■ Features

- Laser scattered light method, sensitive turbidity detector
Sensitive of 0.001 measurement of 0.000~2.000
- 3-range manual selection of transmission output 0~0.5/0~1.0/0~2.0
- Either PSL or formazine turbidity is possible to measure Span calibration is possible either with polystyrene standard solution or formazine standard solution.
- Simple and reliable zero calibration
Reliable zero-calibration system with light source cutout (the first standard)
- Simple and reliable span calibration
Simple span calibration by simple span calibration board (the second standard)
Standard span calibration is also possible by standard turbidity solution (the first standard)
- Detector and converter of simple fixing and instrumentation
Detector and converter is separate type and easy to fix and instrument
- With function of checking list of detector's trouble and calibration



■ Meter

Product Name	Laser scatter light type Turbidity Monitor
Model	TR-5500
Measuring Method	Laser Scatter light System (Nephelometry Method)
Display	LED 4 figures digital display
Measuring Unit	Formazine Turbidity:NTU
Measuring Range	0.000~2.000 (NTU)
Resolution	0.001
Transmittal Output	DC 4 ~ 20mA (isolated type) 3 range (Manual change) 1) 0.000~0.500 NTU 2) 0.000~1.000 NTU (Initial setting) 3) 0.000~2.000 NTU
Accuracy	Within ±3 % (Full Scale)
Alarm Point	High, a point of contact(no voltage)
Power Supply	AC 100V 50/60 Hz
Measurement condition	Temperature : Within 0~40°C Pressure : About 0.1~0.5MPa (at the pressure control valve entrance) Discharge flow: About than 0.05ℓ/min ※No Coexistence (Bubble, Fluoride, Organic solvent)
Connection attachment	Sample entrance : 20A socket Sample exit : φ4×φ6 PP Tube
Std. component	Meter, Detector, panel fixer, Calibration containers, Flow Type Holder, pressure reducing valve, In-line type holder, Calibration filter, PP tube, Instruction manual, written guarantee
Optional	Pole stand, Turbidity Std Solution, Sunshade cover

■ Usage

Turbidity measurement of water purification plants, simplified drinking water facilities, swimming pools, discharging water from the filtration facilities, industrial water, recycled waste water supply, etc.

pH/ORP

15 PC-502/OC-502

pH/ORP Monitor



■ Features

- Correctable to operation control value with measured value shifting function
- With holding function, and capable of output holding at maintenance time (by the non-voltage contact point input signal from outside)
- With hysteresis setting function, and averaging function

■ Optional Electrodes

	Model	Type	Temp Compensation	Liquid Junction	Cable Length
pH	GR-1	Liquid Filling Type	without	single	5m
	GR-1B	Liquid Filling Type	attached	single	5m
	GR-1B	Liquid Filling Type	without	single	5m
	MK-1	Liquid Non-Filling Type	without	double	5m
	MK-11	Liquid Non-Filling Type	attached	double	5m
ORP	OR-1	Liquid Filling Type	without	single	5m
	MK-OR	Liquid Non-Filling Type	without	double	5m
	MK-ORF	Liquid Non-Filling Type (for In-line Type)	without	double	5m

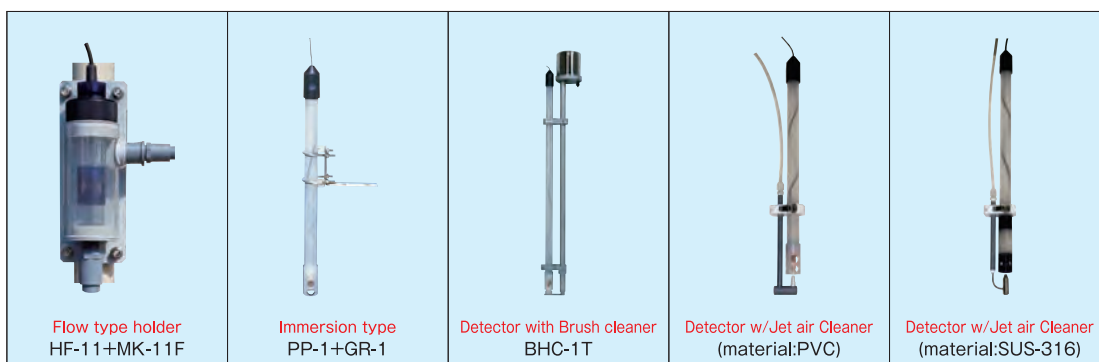
■ Meter

Name of product	pH Monitor	ORP Monitor
Model	PC-502	OC-502
Display	LED 3. 1/2 Digits	
Measuring Range	0.00~14.00	-1900~+1900mV
Min. Resolution	0.01pH	1mV
Transmit output	DC4~20mA (initial setting) 0~14pH	DC4~20mA (initial setting) 0~±700mV
	With scaling function	
Contact output	High & Low each a, b contact	
Hold Function	Transmit output & contact output	
Shift Range of	Within ±2pH	Within ±100mV
Measured Value	(adjust value to operational Value)	
Power Supply	AC 85~240V 50/60Hz	

■ Optional Accessories (please specify at ordering)

Electrodes, PP Holder, Flow type holder, Connector box, Fixing tool, Brush cleaner, Jet cleaners.

■ pH/ORP Detector, Holder, Cleaner



Fluoride Ion

16 KF-502

Simplified Fluoride Ion Monitor

Solid Membrane Type, Fluoride Electrode Method.



Detector with
Jet air Cleaning Unit

Immersion type Detector



Outline

This monitor gives continuous measurement of Free Fluoride Ion (F^-) in the water using the ion electrode. It is used for controlling waste water from the semi-conductor plant or the hydrogen-Fluoride using plant and discharging water.

In case the sample water contains calcium, aluminum or iron more than certain level, it may be influenced. This monitor cannot measure total fluoride.

Reliable Fluoride Ion Electrode Method

By using fluoride lanthanum solid film as Fluoride Ion induced membrane, measurement of from low to high density with good linearity is possible. For better measurement, use it around neutral pH.

Jet Air Cleaning Unit (option)



Meter

Measuring Method	Ion Electrode Method
Display	LED red 3-1/2 digit
Measuring Range	0~1000mg/ℓ (optional: 0~2000mg/ℓ)
Resolution	0.1mg/ℓ (Less than 199.9mg/ℓ) 1mg/ℓ (at 200 ~ 1000 mg/ℓ)
Accuracy	Within $\pm 2\%$ (Full Scale)
Transmittal Output	DC 4 ~ 20mA (isolated type) 5 range (Manual change) 0~10 / 0~20 / 0~100 / 0~200 / 0~1000 mg/ℓ
Alarm Point	High & Low limit each a contact (no-voltage) Contact point capacity: AC200V 1A max Hysteresis setting enabled
Hold output	Transmission output and contact point output by input of no voltage contact point signal from outside at maintenance time
Measured value shift	Shift range: within ± 10 mg/ℓ
Power Supply	AC 85 ~ 240V free input 50 / 60 Hz
Std. component	Meter, Fluoride Ion Electrode, PP holder (1m) panel fixer, Fluoride Ion standard solution, ISAB, calibration containers, Beaker Instruction manual, guarantee card

Fluoride Ion Electrode

Product name	Liquid non-filling type Fluoride Ion Electrode
Model	MK-FYT
Measuring object	Free Fluoride Ion in Solution
Temperature	automatic temperature compensation
Measurement condition	pH : within 4 ~ 9 (Fixed as much as possible) Temperature : Within 0~40°C
Material	PP, Ceramics, LaF
Holder length	1.0m Standard.
Cable length	5m Standard.
Selectivity	Al^{3+} , OH^- 10^{-1} Fe^{3+}1 Ca^{2+} 10^2 NO^- , CH_3COO^- 10^3 Cl^- , Br^- , I^- , HCO^- 10^4

Chloride Ion

17 CL-502

Simplified Chloride Ion Monitor

Solid Membrane Type, Chloride Electrode Method.



Standard type Detector



Immersion type Detector



■ Outline

This simple-type Chloride Ion Monitor can make just by immersing the detector into the water, successive and high-sensitivity measurement of underwater Chloride Ion density. This instrument can be applied widely for monitoring measurement of process water, drainage, etc. at the foodstuff industry or the chemical industry, as well as water quality measurement of the water courses. The detector is Inner solution non-supply type, and is designed with double-junction type of solution contacting system, in order to enable long-term stable measurement.

During measurement, be careful of necessitating the minimum-limit of flow speed around the detector surface.

■ Features

- **Reliable Chloride ion Electrode Method**
By using silver solid film as Chloride Ion induces membrane, measurement of from low to high density with good linearity is possible. For better measurement, use it around neutral pH.
- With holding function, and capable of output golding at maintenance time

Meter

Product Name	Chloride Ion Monitor
Display Method	LED red 3-1/2 digit
Measuring Range	0 ~ 1000mg/ℓ (optional: 0 ~ 1999mg/ℓ)
Measuring Method	Chloride Ion Electrode
Minimum Resolution	1mg/ℓ
Accuracy	Within ±2% (FS)
Transmittal Output	DC 4 ~ 20mA (isolated type) Range 1: 0 ~ 100mg/ℓ Range 2: 0 ~ 500mg/ℓ Range 3: 0 ~ 1000mg/ℓ
Alarm Point	High & Low limit each a contact (no-voltage) Contact point capacity: AC 200V 1A MAX Hysteresis setting enabled
Hold output	Transmission output and contact point output by input of no voltage contact point signal from outside at maintenance time
Measured value shift	Shift range: within ±10mg/ℓ
Calibration	By Chloride Ion standard solution
Power Supply	AC 85 ~ 240V free input 50/60 Hz
Outer Dimension	96(W)×96(H)×163(H)mm
Std. component	Meter, Chloride Ion Electrode, PP holder (1m) Panel fixer, chloride ion standard solution, ISAB, calibration containers, beaker Instruction manual, guarantee card

Outer Dimensions Drawing

Frange Type Fixing Tool	Standard Electrode (Liquid Non-Filling Type)	Standard Electrode + PP Holder
France, JIS 10K 50A equivalency	MK-CLT	

■ Chloride Ion Electrode

Product name	Chloride Ion Electrode
Model	MK-CLT
Measuring object	Free Chloride Ion
Temperature	automatic temperature compensation
Measuring condition	pH:within 4 ~ 9 (Fixed as much as possible) Temperature:within 0 ~ 40°C
Material	PP, ceramics, Ag ₂ S, PVC
Selectivity	S ²⁻ Coexistence is impossible. CN ⁻ , I ⁻ 10 ⁻⁵ Br ⁻ , S ₂ O ₃ ²⁻ 10 ⁻² NO ₃ ⁻ , SO ₄ ²⁻ , CO ₃ ²⁻ , PO ₄ ³⁻ , F ⁻ 10 ³
Cable length	5m Standard
Holder length	PP-1 1.0m Standard

DO

18 DC-502G

DO Monitor

DO Sensor Exchange Type



Throw in type
DO Detector W/sinker
OXP-2VNY-SK



Immersion Type
DO Detector
OXP-2VNY-H



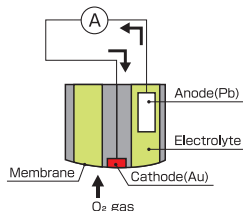
Cartridge Type DO Sensor

OXNIT®:OX-VW2

We have realized the long life DO Sensor which has the Minimum cathode (gold electrode) and less reaction against galvanic cell. High sensitive Sensor with less influenced by flow speed.



*OXNIT® is the KASAHARA's registered trademark.



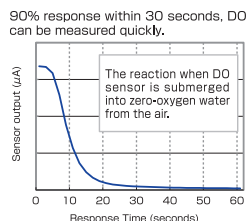
- Sensor cartridge is easily replaced and maintained



DO Sensor
OXNIT®
OX-VW2

- Quick response,

With little flow speed, Measurement is OK. 90% response within 30 seconds, As cathode (Au) is Minimum, measurement is OK with little flow speed.



- Long life DO Sensor **OXNIT®**

Meter

Model	DC-502G
Measuring principle	Galvanic cell type membrane electrode method
Display	Red LED 3 1/2 digits
Measuring range	0.00 - 19.99 mg/ℓ
Min.resolution	0.01 (Standard) *0.1 (Option)
Measuring accuracy	±0.02mg/ℓ (at equivalent input)
Transmit output	DC 4-20mA (insulation type) Load resistance: Less than 500Ω Range1: 0.00-5.00mg/ℓ Range2: 0.00-10.00 mg/ℓ Range3: 0.00-19.99 mg/ℓ (Initial setting)
Contact output	High & Low limit each a, b contact (No voltage)
Hold output	Transmit output and contact output are held by inputting non-voltage contact signals from outside.
Power supply	AC 85-240V 50/60Hz
External dimensions	96 (W) × 96 (H) × 163 (D) mm

DO Detector

Name of product	Galvanic DO Detector
Measuring method	Galvanic cell type Membrane Electrode Method Cartridge type DO Sensor, exchange type "OXNIT" OX-VW2
Model	① Throw-In type OXP-2VNY-SK ② Immersion type OXP-2VNY-H (L=1.5m) ※ (Throw-In type DO Probe + Holder) ③ Immersion type with movable flange OXP-2VNY-HF (L=1.5m) ※ (Throw-In type DO Probe + Holder + movable flange)
Detector holder (*Immersion type)	Holder length 1.5m (Standard)
Cable length	5m (Standard)
DO Sensor	Cartridge type DO Sensor: OX-VW2 (OXNIT)
Temperature compensation	Automatic compensation (by thermistor 1kΩ)
Standard components	① Meter body (DC-502G) ② Panel fixing tool ③ Instruction manual ④ Warranty ⑤ DO Probe ⑥ DO Sensor (OX-VW2) ⑦ Deoxidizer ⑧ DO saturation table

MLSS

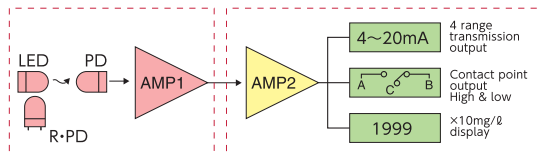
19 MC-502

MLSS Monitor

Continuous Measurement of activated Sludge Density (MLSS) in an Aeration Tank



Measuring theory



Features

- As this detector is near-infrared ray transmission light type, it brings you stable and continuous measurement without influence by outer light or coloring.
- As this detector uses strong chemical proofed optical window against dirt, a cleaning unit is not necessary as its self cleaning system.
- As the calibration filter is attached as standard, span calibration is easy.
- 2~4 point zero and span calibration is possible.

Usage

- Activated sludge density of sewage, human waste, combine septic tank, agriculture village, factory effluent, and measurement of returned sludge density
- Muddy sludge, turbidity and density of various process

Meter

Measuring system	Near Infrared Transmission Light System
Measuring object	Activated sludge density, high density turbidity
Display	LED 3-1/2 digits
Measuring range	0~19990 mg/L (0~1999x10mg/L) *for convenience' sake, it may be indicated as 0~20000mg/L
Minimum resolution	1x10mg/L
Accuracy	Within $\pm 5\%$ (FS) under certain conditions
Transmission output	DC 4~20mA (isolation type) 4 range switch ① 0~2500 mg/L (0~250x10mg/L) ② 0~5000 mg/L (0~500x10mg/L) ③ 0~10000 mg/L (0~1000x10mg/L) ④ 0~19990mg/L (0~1999x10mg/L)
Contact point output	High a, low b point, (non voltage) Contact point capacity: AC 200V 1A (resistant load) or less
Hold output	Transmission output and contact point output is held by non voltage contact signal from outside.
Calibration	Zero: with distilled water or tap water Span: ① sludge with already known density by manual analysis (the first standard) ② simplified calibration with calibration filter (the second standard)
Power source	AC 85~240V 50/60Hz
Outer dimensions	96 (W) x 96 (H) x 163 (D) mm
Standard components	Converter, detector, panel fixing device, calibration filter, Handling Instruction

Detector

Product Name	MLSS detector
Model	① standard type SSD-110N-6 ② immersive type SSD-110HN-6
Detector cable length	6m (standard)
Sample water	Temperature 0~40°C or less No coexistence of solvent, hydrogen peroxide, strong oxide
Liquid junction	POM, SUS304, PVC *If sample water is chemicals, possible to change to stainless steel junction treated with fluorine or resin. (optional)
Detector holder length	1.5m (standard)

Turbidity

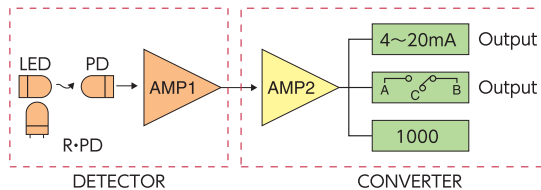
20 TR-502V

Turbidity Monitor

Transmitted Light Method, Cell Length 30mm



Measuring Diagram



Features

- Measurement of near-infrared transmission light, sensitive turbidity detector
Seldom influenced by outside light and color
- Wide range of density from low to high density
Measuring range of 0~2000 resolution of 1
- Automatic correction of LED light source luminance with reference light
Automatic correction of measuring errors by LED deterioration and temperature change
- No standard solution at span calibration with calibration filters
Using the second standard simplified calibration device, standard solution is not necessary
The first standard needs standard solution

Measuring theory

Feeble signal in proportion to SS/ turbidity density from the near-infrared detector, which is composed of near-infrared LED, light receiving element and special optical window and pre-amplifier is calculated and amplified and digitally displayed.

Meter

Product Name	Near-infrared type Turbidity Monitor
Model	TR-502V
Measuring Method	Near-infrared pulse transmission light System
Display	LED Red 3-1/2 figures
Measuring Range	0~2000 (mg/ℓ or FTU)
Minimum Resolution	1mg/ℓ (or FTU)
Accuracy	Within ±5% (Full Scale)
Transmittal Output	DC 4 ~ 20mA (isolated type) 5 range (Manual change) 0~100 / 0~200 / 0~500 / 0~1000 / 0~2000 mg/ℓ (or FTU)
Alarm Point	Low and High, each a, b point of contact (no voltage)
Hold output	Transmission output and point output by input of no voltage point signal from outside at maintenance time
Power Supply	AC 85 ~ 240V free input 50 / 60 Hz
Outer dimensions	96(W)×96(H)×163(D) mm
Std. component	Meter, Detector, panel fixer, Calibration containers, Instruction manual, written guarantee

Near-infrared pulse transmission light system Detector

Model	Standard type : SSD-110N-30 Immersion type : SSD-110HN-30
Material	PVC, SUS-304, hard glass, POM
Cable	6 m standard

Usage

- Measurement of turbid-treated water at civil engineering site
- SS/Turbidity measurement of sewage, waste water from the farmers' villages

SS/Turbidity

21 SS-502

SS & Turbidity Monitor

Near-infrared 90°scattered Light measuring System

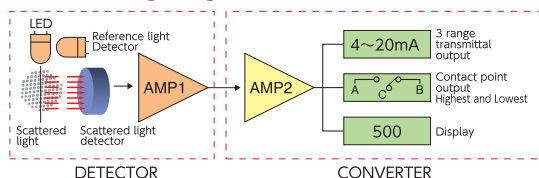


Flow type detector
TRD-120FN+TRD-FH

Detector with
jet air
washing unit

Immersion type
detector
TRD-120HN

Measuring Diagram



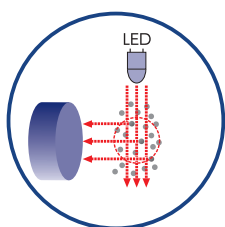
Outline

There is a constant correlation between SS in the waste water and scattered light turbidity. By obtaining the correlation factor $y=a+bx$ and inputting this factor, turbidity is converted to SS density. SS or turbidity is sensitively measured at SS mode or at turbidity mode individually.

Span calibration and switching is done by simple operation of 4 keys.

Features

- Measurement of SS density and turbidity by switching
Selective measurement of pollution of the waste water as SS density or turbidity
- Correlation between SS and turbidity, with calculation system of $y=a+bx$
Possible to set correlation factor between manually obtained SS and turbidity of sample water by operating \blacktriangle \blacktriangledown keys.
- 90°Scattered light measuring system



Meter

Product name	SS/Turbidity Monitor
Model	SS-502
Display	LED 3-1/2 digits
Measuring range	Standard: Turbidity:0~500 NTU (Standard) SS:0~500mg/ℓ (Converted Value) ※ If SS & turbidity relation is not 1:1, SS measuring range differs.
Resolution	0.1 (NTU or SS mg/ℓ) (in case measuring range is 100) 1 (NTU or SS mg/ℓ) (in case range is 200~500)
Transmittal Output	DC 4~20mA (isolated type) 3 range system ① 0.0~100.0 (NTU or SS mg/ℓ) ② 0~200 (NTU or SS mg/ℓ) ③ 0~500 (NTU or SS mg/ℓ)
SS conversion	Conversion coefficient $y=a+bx$ (x =turbidity, y =SS) is possible to set
Span Calibration	① After span calibration with formazine turbidity standard solution, set conversion coefficient. ② 1 point or 2 point calibration of SS value of sample water after manual analysis.
Contact point output	a (high), b (low) (non voltage) contact capacity: within AC 200V 1A
Hold output	Transmittal output and contact output are held by inputting non voltage contact signal from outside.
Power Supply	AC 85~240V, 50/60Hz
Outer dimension	96 (H) × 96 (W) × 163 (D) mm

Detector

Product name	90°Scatter Light SS/Turbidity Detector
Model	① Standard type :TRD-120N ② Immersion type :TRD-120HN (standard) ③ Flange type :TRD-120HFN ④ Flow type :TRD-120FN+TRD-FH
Measuring theory	90°scattered Light Measuring System
Liquid junction	PVC, hard glass, SUS-304
Cable length	6 m (standard)
Holder length	1.5m (standard)
Detector fixing	Arm type support or exclusive flange support
Cleaning device	① Wiper cleaner (option) ② Jet air cleaner (option)

Turbidity

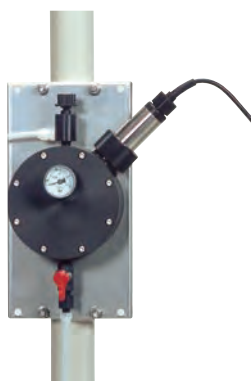
22 TR-502

Turbidity Monitor for Drinking Water (Transmitted Light Method)

Continuous and sensitive turbidity measurement of water purification plant, simple drinking water system, swimming pool, etc.



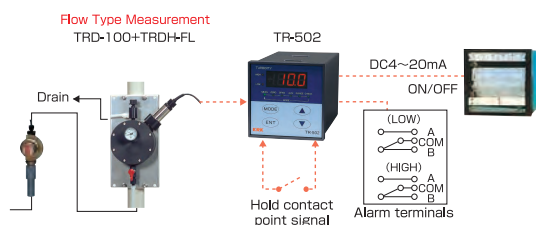
TRD-100



TRD-100+TRDH-FL



Measuring Diagram



Measuring theory

Output signal in proportion to turbidity from the detector which is composed of LED light source projector, light receiving element and pre-amplifier is calculated and amplified by the converter and digitally displayed and measured.

This TR-502 of transmitted light measuring method can give you sensitive and continuous density measurement of water purification plant, simple drinking water system, swimming pool, etc.

Features

- Continuous turbidity measurement of **0.1~100.0 Degree (FTU)**
- Manual selection 5-range transmission output (DC 4 ~20mA)
- Automatic correction of LED luminance with reference light
- Either polystyrene or formazine standard solution is available

Meter

Measuring Method	Transparency light System
Display	LED Red
Measuring Range	0.0~100.0 (Degree or FTU)
Accuracy	Within ± 0.3 degree (Full Scale 10 degree) (or Within $\pm 3\%$ Full Scale)
Transmittal Output	DC 4 ~ 20mA (isolated type) 5 range (Manual change) 0~5 / 0~10 / 0~20 / 0~50 / 0~100 degree(or FTU)
Span calibration	Polystyrene or Kaolin or Formazine(FTU)
Alarm Point	Low and High, each a, b point of contact (no voltage)
Hold output	Transmission output and point output by input of no voltage point signal from outside at maintenance time
Power Supply	AC 85 ~ 240V free input 50 / 60 Hz
Outer dimensions	96(W)×96(H)×163(D) mm
Std. component	Meter, Detector, panel fixer, Calibration containers, pressure control valve, In-line type holder, Instruction manual, written guarantee

Detector

Measuring Method	Transparency light System
Model	TRD-100+TRDH-FL (Detector:TRD-100 Flow Type holder:TRDH-FL)
Material	PVC, SUS-304, quartz glass, POM
Cable	5 m standard

Usage

Water purification plant, simplified drinking water system, water tank, industrial water, waste water from the plants, water for food industry, swimming pool, etc.

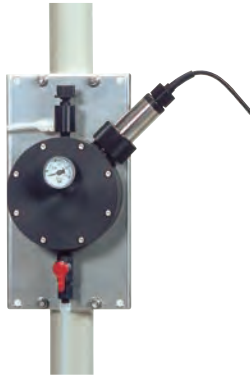
Colority

23 CR-502

Colority Monitor for Drinking Water
(Transmitted Light Method)



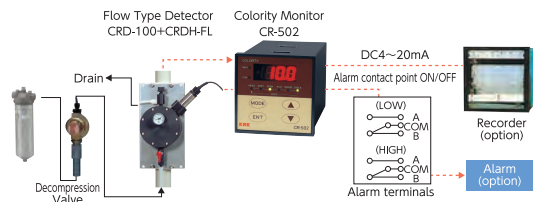
Standard Detector
CRD-100



Flow type Detector
CRD-100+CRDH-FL



Measuring Diagram



Outline

Automatic continuous colority measurement of city water supply, simplified drinking water system, water tank for the buildings, bath tub water, swimming pool water, waste water from the plants, laboratory, recycled waste water supply, etc.

Measuring theory

Signals in proportion to colority from the detector which is composed of LED light source of 370nm wave length, light receiving element, is calculated, treated and measured.

Features

- Automatic continuous measurement of colority of city water for 24 hours
- Using transmission measuring system, accurate colority measurement by solving the cause of measuring error by eye-sight.
- LED light source by pulse-modulated light system, and seldom influenced by the outer light

Meter

Measuring Method	Transparency Light System
Display	LED Red 3 figures
Measuring Range	0.0~50.0(Degree)
Accuracy	Within ± 0.3 degree (Full Scale 10 degree) (or Within $\pm 3\%$ Full Scale)
Transmittal Output	DC 4 ~ 20mA (isolated type) 5 range (Manual change) 0~2 / 0~5 / 0~10 / 0~20 / 0~50 degree
Span calibration	by Color standard solution
Measurement condition	Temperature: Within 0~40°C Pressure : About 0.1~0.5MPa (at the pressure control valve entrance) Discharge flow: About than 0.05ℓ/min ※No Coexistence (Bubble, Fluoride, Organic solvent)
Power Supply	AC 85 ~ 240V free input 50 / 60 Hz
Alarm Point	Low and High, each a, b point of contact
Hold output	Transmission output and point output by input of no voltage point signal from outside at maintenance time
Outer dimensions	96 (W) × 96 (H) × 163 (D) mm
Std. component	Meter, Detector, panel fixer, Calibration containers, pressure control valve, In-line type holder, Instruction manual, written guarantee

Detector

Measuring Method	Transparency Light System (370nm)
Model	CRD-100+CRDH-FL (Detector: CRD-100 (Cable length 5m) Flow Type holder: CRDH-FL)

Turbidity

24 TR-502Z 90°scattered Light Turbidity Monitor



Flow type Detector
TRD-120FN+TRD-FH



Standard type Detector
TRD-120N



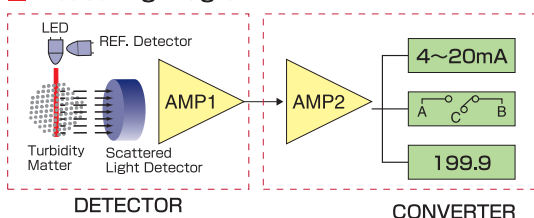
Immersion type Detector
TRD-120HN



Detector with jet-air washing unit



Measuring Diagram



Outline

This 90°near infrared scattered light method, sensitive turbidity monitor can give you continuous measurement of turbidity of especially low density, such as drinking water, swimming pool, river, waste water from the plants, septic tank discharging water, etc. and can record by output signal and control by alarm.

Measuring theory

Light bundle from LED light source is projected into sample water, and scattered light is produced in proportion to density of turbidity substance. On the other hand, current signal in proportion to scattered light is produced from the light receiving part which is located at 90°direction from the projector, and can be measured through the converter at display as turbidity.

Features

With simplified zero calibration unit, ultra pure water is not necessary for zero calibration
The second standard simplified zero calibration unit increased reliability of zero calibration.

Meter

Product Name	90°scatter Light System Turbidity Monitor
Model	TR-502Z
Measuring Method	Near-infrared 90°Scatter Light System
Measuring Range	0.0~500.0 (Degree or NTU)
Measuring Unit	Kaoline (degree = mg/ℓ) Std., Formazine (NTU) optional
Resolution	0.1 / Less than 200 degree (or NTU) 0.01 / 200~500 degree (or NTU)
Accuracy	Within ± 2% (Full Scale)
Surrounding conditions	Temperature: 0~40°C
Transmittal Output	DC 4 ~ 20mA (isolated type)
Alarm Point	Low and High, each a, b point of contact
Hold output	Transmission output and point output by input of no voltage point signal from outside at maintenance time
Calibration	Zero: pure water (First Std.) Zero calibration filter (Second Std.) Span: Turbidity Std. matter. (Kaoline, Formazine, Polystyrene)
Power Supply	AC 85 ~ 240V free input 50 / 60 Hz
Std. component	Meter, Detector, panel fixer, Zero Calibration filter

Detector

Measuring Method	90°Scatter light System
Model	1. Standard type: TRD-120N 2. Immersion type: TRD-120HN 3. Frange type: TRD-120HFN 4. In-line type: TRD-FH + TRD-120FN
Measurement condition	Temperature: Within 0~40°C ※No Coexistence (Bubble, Fluoride, Organic solvent)
Holder length	1.5m Std.
Cable length	6m Std.
Material	PVC, SUS-304, Glass

Usage

Water purification plant, simplified drinking water system, water tank, industrial water, waste water from the plants, water for food industry.

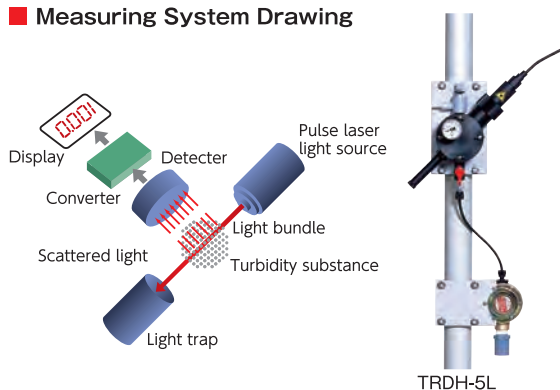
Turbidity

25

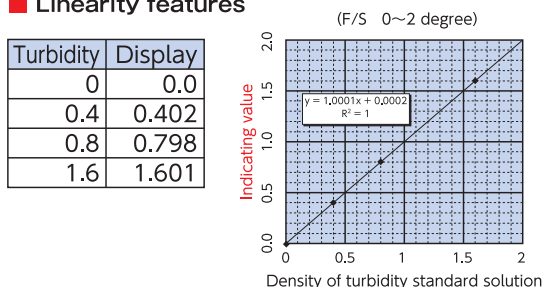
TR-502L NEPHELOC_®

Laser scattered Light Method
Turbidity Monitor

Measuring System Drawing



Linearity features



Outline

If 660nm red pulse laser bundle is projected into the sample water, strong scattered light occurs. This scattered light is detected by the light receiving element angled at 90°, transferred to the converter as density signal, calculated, amplified and digitally displayed. Laser turbidity monitor sensitively measures molecule turbidity little influenced by colority.

Features

- Laser scattered light method, sensitive turbidity detector
Sensitive of 0.001 measurement of 0.000~2.000
- 3-range manual selection of transmission output 0~0.5/0~1.0/0~2.0
- Either PSL or formazine turbidity is possible to measure
Span calibration is possible either with polystyrene standard solution or formazine standard solution.
- Simple and reliable zero calibration
Reliable zero-calibration system with light source cutout (the first standard)
- Simple and reliable span calibration
Simple span calibration by simple span calibration board (the second standard)
Standard span calibration is also possible by standard turbidity solution (the first standard)

Meter

Product Name	Laser scatter light type Turbidity Meter
Model	TR-502L
Measuring Method	Laser scatter light System (nephelometry method)
Display	LED 4 figures digital display
Measuring Range	0.000~2.000 (mg/ℓ or NTU)
Resolution	0.001 (mg/ℓ or NTU)
Transmittal Output	DC 4 ~ 20mA (isolated type) 3 range (Manual change) 1) 0.000~0.500 (mg/ℓ or NTU) 2) 0.000~1.000 (mg/ℓ or NTU) (Initial setting) 3) 0.000~2.000 (mg/ℓ or NTU)
Accuracy	Within ±3 % (Full Scale)
Alarm Point	Low and High, each a, b point of contact (no voltage)
Power Supply	AC 85~240V 50 / 60 Hz
Measurement condition	Temperature: Within 0~40℃ Pressure : About 0.1~0.5MPa (at the pressure control valve entrance) Discharge flow: About than 0.05ℓ/min ※No Coexistence (Bubble, Fluoride, Organic solvent)
Connection attachment	Sample entrance: 20A socket Sample exit : φ4×φ6 PP Tube
Std. component	Meter, Detector, panel fixer, Calibration containers, Flow Type holder, pressure reducing valve, Calibration filter, PP tube
Optional	Pole stand, Turbidity Std Solution.

Usage

Turbidity measurement of water purification plants, simplified drinking water facilities, swimming pools, discharging water from the filtration facilities, industrial water, recycled waste water supply, etc.

Turbidity/Colority

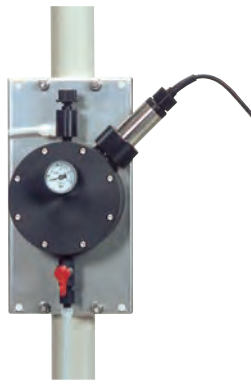
26 TCR-502

Turbidity & Colority Meter

Transmitted Light Method, Cell Length 60mm, High Sensitive



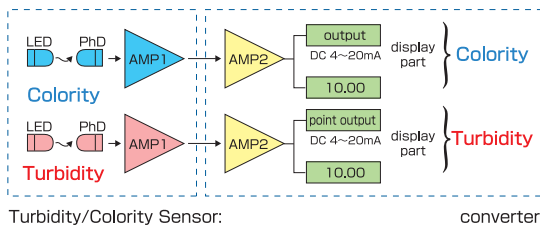
TCRD-100



TCRD-100+TCRD-FL



Measuring Diagram



Features

- Double beam optical system is adopted and is successful of sensitive colority measurement without influenced by turbidity.
- Minimum display of 0.01→0.1 selective, at 10 degrees or less
- Turb/Colority 4-range transmission output (4~20mA)
- Probe type 2-wave length turbidity/colority sensor.

Usage

Water purification plant, simplified drinking water system, water tank, industrial water, waste water from the plants, water for food industry.

Meter

Measuring Method	Double beam, Transparency light System
Measuring Range	Turbidity:0.0~50.0 (degree or FTU) Colority:0.0~50.0 (degree)
Resolution	Select 0.1 / 0.01 degree
Accuracy	Within ± 0.3 degree (Full Scale 10 degree) (or Within $\pm 3\%$ Full Scale)
Transmittal Output	Turbidity / Colority two lines DC 4 ~ 20mA (isolated type) Load resistance: 250~500 Ω 4 range (Manual change) 1) 0~5 2) 0~10 3) 0~20 4) 0~50
Hold output	Transmission output and point output by input of no voltage point signal from outside at maintenance time
Measurement condition	Temperature: Within 0~40 $^{\circ}\text{C}$ Pressure : About 0.1~0.5MPa (at the pressure control valve entrance) Discharge flow: About than 0.05 ℓ /min
Power Supply	AC 85 ~ 240V free input 50 /60 Hz
Std. component	Meter, Detector, panel fixer, 2 calibration containers, pressure control valve, In-line type holder, Instruction manual, written guarantee

Detector

Product name	Turbidity/Colority Detector
Model	TCRD-100+TCRD-FL (Detector : TCRD-100 Flow Type holder : TCRD-FL)
Measuring Method	Double beam, Transparency light System
Material	PVC, SUS-304, quartz glass, POM
Cable	5m standard

Conductivity

27 EC-502

Conductivity Monitor

Excellent chemical-resistant type, Carbon EC Electrode.



Features

- Measurement of SI unit and old unit shifting is possible
SI unit (mS/m, S/m) and old unit (mS/cm) can be shifted and measured.
- Possible to set and change cell constant as you need.
- The electrode of screw and cap nut fixing
The flow type measuring tank for process piping is also prepared.

Technical Information

Conductivity unit converting table

If you divide old conductivity unit ($\mu\text{S}/\text{cm}$) by 10, it becomes new unit (SI unit) of conductivity unit (mS/m).
Because of unit change, cell constant (θ) changes.
Cell constant (θ) is equal to new unit (SI unit) cell constant (m^{-1}), if you multiply old unit (cm^{-1}) by 100.

Conductivity

Old unit ($\mu\text{S}/\text{cm}$)	New unit (SI unit) mS/m
0.1	0.01
0.5	0.05
1	0.1
5	0.5
10	1
50	5
100	10
500	50
1000	100

Remarks : μ means 10^{-6} , m means 10^{-3}
Example : $1000\mu\text{S}/\text{cm}=1\text{mS}/\text{cm}=0.001\text{S}/\text{cm}$
 $1\mu\text{S}/\text{cm}=100\mu\text{S}/\text{m}=0.1\text{mS}/\text{cm}$

Meter

Product Name	Conductivity Monitor (for Middle/High Density)	Conductivity Monitor (for Low/Middle Density)
Model	EC-502 (H)	EC-502 (L)
Display	LED red 2-row Upper: EC Value Lower: Water Temp (only display)	
Measuring Range	SI unit 0~20S/m Old unit (0~200mS/cm) Temp 0~100°C (only display)	0~2000mS/m (0~20mS/cm)
Display Range	SI unit ①0.000~0.200S/m ②0.000~2.000S/m ③0.000~20.00S/m Old unit ①0.000~2000mS/cm ②0.00~20.00mS/cm ③0.0~200.0mS/cm	①0.00~20.00mS/m ②0.00~200.0mS/m ③0.00~2000mS/m ①0.000~0.200mS/cm ②0.000~2.000mS/cm ③0.000~20.00mS/cm
Repeatability	within 0.5% (F.S.)	
Transmit output	DC4~20mA 3 range switchng	
Contact Output	High/Low Limit each a,b contact point (No voltage)	
Power supply	AC85~240V 50/60Hz	
Standard component	Meter body, EC Electrode, Panel fixing tool	

EC Detector

Model	ECD-4CY	ECD-1CY
Cell constant	400 m^{-1} (Old unit: 4cm^{-1})	100 m^{-1} (Old unit: 1cm^{-1})
Principle	AC 2 Electrode System, Carbon Electrode	
Sample Temperature	0~80°C	
Material	PPS, Carbon, FKM, PP	
Installation	Screw-in type, Flow type, Throw-in type	
Cable Length	5m Standard	

EMC

28 EMC-502 Electro-Magnetic Density Monitor

Capable of density measurement of every kind of chemical solution such as acid, alkali, salt, etc.



Flow measurement holder
MS-11FH



Immersive type
MS-11H



Standard type
MS-11



Features

- Electro-magnetic density sensor is used
No polarization, so not influenced by dirt or SS
- Density measurement of high density salt without dilution
Electric non-contact type, measurement of high density chemical solution

Acid surface treatment process

Sulfuric acid, hydrochloric acid, nitric acid, etc.

Alkaline surface treatment process

NaOH, KOH, sodium carbonate, etc.

Salt control of sea water and food stuff

Cultivation farm, salt water treatment food staff process, etc.

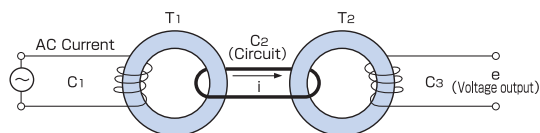
Density control of various kinds of chemical solution

Density control of various kinds of plating solution, surface treated water.

Measuring Theory

This electro-magnetic density detector is equipped with the toroidal coil and the pre-amplifier in the chemical-proofed PVC case. If you immerse this detector into conductive water solution, induced current flows in proportion to density/conductivity of the solution.

This electro-magnetic density detector can give you continuous measurement of sample density without being influenced by dirt, color, and SS of the sample solution.



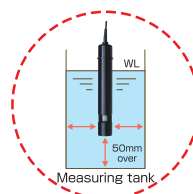
Meter

Product name	Electro-Magnetic density Meter
Model	EMC-502
Display	LED red 3-1/2 digit
Measuring objects	Please specify the object (NaCl, KCl, NaCO ₃ , HCl, HNO ₃ , H ₂ SO ₄ , etc...)
Measuring Range	Please specify the Measuring Range, Measuring Unit (0~500mS/cm, 0~25Wt/VOL%(NaCl), etc...)
Resolution	0.01% (Within 0~10%) 0.1% (Within 0~25%)
Accuracy	Within ±2% (Full Scale)
Transmittal Output	DC4~20mA (isolated type) 3 range
Alarm Point	Low and High, each a, b point of contact (no-voltage)
Hold output	Transmission output and point output by input of no voltage point signal from outside at maintenance time
Power Supply	AC85~240V free input 50/60Hz
Std. component	Meter, Detector, panel fixer.

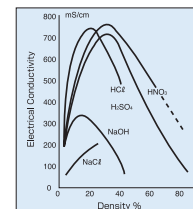
Detector

Product name	Electro-Magnetic density detector
Model	MS-11 (Standard Type) MS-11H (Immersive Type) MS-11FH (Flow Type)
Measurement condition	Temperature: Within 0~40°C ※No Coexistence (Bubble, Organic solvent)
Outer dimensions	φ40×257mm
Material	PVC(Black)
Cable	5m standard

Detector Installing condition



Relation between Liquid Density and Conductivity



Density

29 CR-502P

Process Monitor, Flow Type

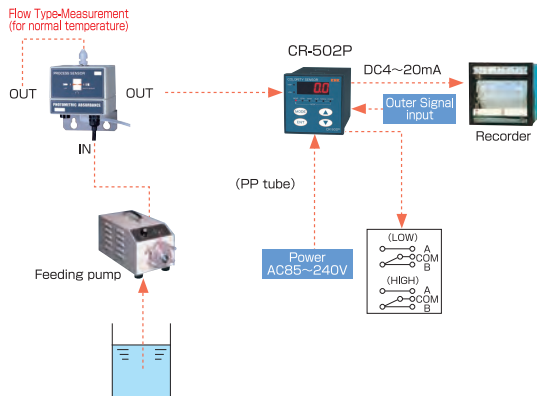
Density Measurement of various kind of Processes Solution.



CRD-10F (for normal temperature)
Sensor of excellent chemical-resistant



Measuring system Diagram



Features

- Measurement of various kinds of liquid density such as Copper Sulfate, Nickel, etc. Measures high density Copper, Nickel, Ozone, various kinds of liquid.
- In-line type, light absorbance method process monitor In-line type density sensor of excellent chemical-resistant. (CRD-3F)
- Measuring wave length and measuring optical path length can be selected according to the kind and density of the liquid, and can be used as the exclusive liquid density monitor. (optional)
- The material of liquid junction is excellent chemical-resistant.

Meter

Name of product	Flow type Industrial Process Monitor
Measuring principle	Light absorbance Method
Measuring wavelength	It chooses from the following. 255, 390, 460, 520, 660nm
Measuring unit	① Absorbance: Abs(Standard) ② Density: g/l (Option)
Measuring range	① Absorbance: 0.000~2.000Abs(Standard) ② Concentration: (Option)
Transmittal Output	DC4~20mA(isolated type) 3 range(Manual change) 0~0.5/0~1/0~2 Abs
Alarm Point	Low and High, each a, b contact point (no-voltage)
Hold output	Transmission output and point output by input of no-voltage point signal from outside at maintenance time
Outer dimensions	96(W)×96(H)×163(D)mm
Power Supply	AC85~240V free input 50/60Hz
Weight	About 1.3kg
Std. component	Meter, Detector, panel fixer, Instruction manual, written guarantee

Process Detector

Model	CRD-3F
Measuring wave length	It chooses from the following. 255, 390, 460, 520, 660nm
Cell length	It chooses from the following. 3mm(Standard), optional(5, 10mm)
Cable Length	5m standard
Material	PPS, PP, Quartz, FKM
Measurement condition	Temperature: Less than 40°C Pressure : Less than 0.2MPa ※No Coexistence (Bubble, Suspended Solid, Organic solvent)

Copper (Cu)

30 CU-502

Copper Monitor

Measurement of **Copper** Density of **Cu** plating Process,
Copper sulfate etching Solution, etc.



In-line type Detector
CUD-3F



Probe-type Detector
CUD-3P/10P-LQ
(W/Flow type holder)

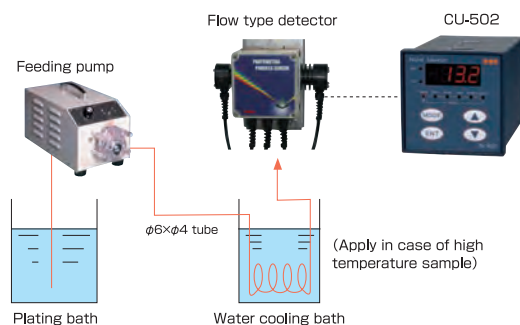


Probe-type Detector
Cleaning by brush

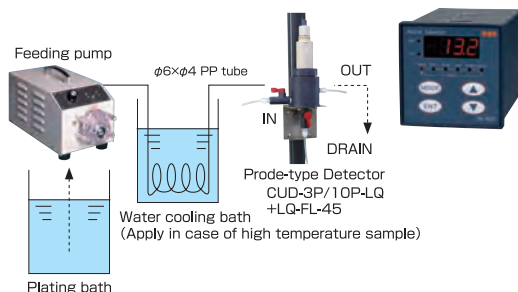


Measuring Diagram

A:Flow type system①



B:Flow type system② (Probe type detector)



Meter

Product name	Copper Density Monitor of the plating Solution
Display	LED red 3 digits standard (or 3·1/2 digits: CuSO ₄)
Measuring range	Copper density: 0.0~80.0g/ℓ Cu (standard) : 0.00~19.99g/ℓ Cu (low density optional) Copper sulfate density: 0~300g/ℓ CuSO ₄ (optional)
Resolution	Cu: 0.1g/ℓ (FS: 0~80g/ℓ) standard 0.01g/ℓ (FS: 0~20g/ℓ)
Accuracy	Within ±2% (FS)
Transmission output	DC4~20mA (isolated type) 3 range manual switch
(High Density)	Cu: 0~20/0~50/0~80g/ℓ Cu (standard) CuSO ₄ : 0~100/0~200/0~300g/ℓ CuSO ₄ (option)
Contact point output	High & Low each a, b contact point (no-voltage)
Hold output	Current output and contact point output can be held by non voltage contact point signal from outside.
Span Calibration	By copper standard solution
Temp. compensation	Automatic control by semi-conductor temperature element.
Power source	AC85~240V, 50/60Hz
Standard components	Indicating converter, detector (optional), calibration container (in case of probe type) ×1

Detector

Model		High density (FS: 0~80g/ℓ)	Low density (FS: 0~20g/ℓ)
① Probe type		CUD-3P-LQ	CUD-10P-LQ
② In line type (60°C or less)		CUD-3F	CUD-10F
Measuring method	Light absorbance method		
Cable length	6m standard		
Material of liquid junction	① high density probe type: PPS, PVC, Quartz, FKM ② low density probe type: PPS, Quartz, PVC, FKM ③ Flow type: PPS, Quartz, PP, FKM		
Condition	Sample temperature: 0~40°C or less (probe type) 0~60°C or less (in-line type)		
Fixing	50A fixing pole or fix on the wall (in-line type)		

Nickel (Ni)

31 Ni-502

Nickel Monitor

Nickel Monitor for **Nickel** Plating Process.



In-line type Detector
NCD-3F/10F



probe-type Detector
W/Flow type holder
NCD-3P/10P-LQ
+LQ-FL-45



Probe-type Detector
Cleaning by brush

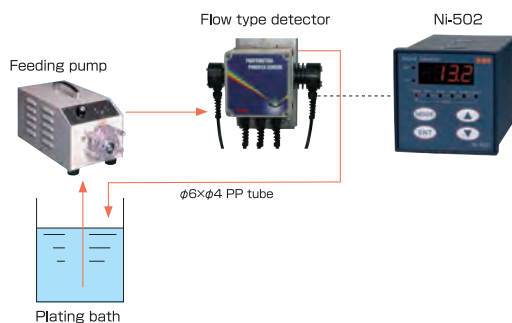


Measuring Theory

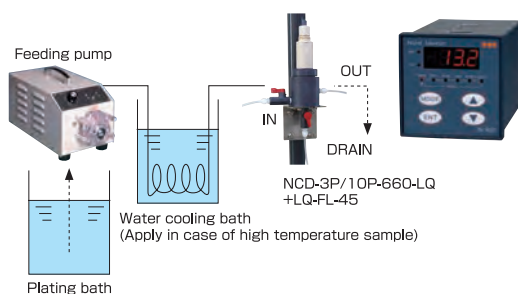
The signal in proportion to nickel density from the density sensor which is composed of LED as light source, a photo sensor as a light-receiver, and an optical window, is calculated and amplified by the converter and digitally displayed as nickel density. In order to prevent LED deterioration and influence on temperature change, this sensor is equipped with automatic temperature compensation system and measures nickel density of the nickel solution correctly.

Measuring Diagram (Flow type)

A:Flow type system① (Recommended system)



B:Flow type system② (Probe type detector)



Meter

Model

Product name	Nickel Monitor												
Display	LED 3-1/2 digits Red												
Measuring range	① For High density: 0.0~199.9g/ℓ ② For Low density: 0.00~19.99g/ℓ												
Resolution	① For High density: 0.1 g/ℓ ② For Low density: 0.01 g/ℓ												
Accuracy	Within ±2% of FS												
Transmission output	DC4~20mA (isolated type) 3 range <table><tr><td></td><td>FS: 0~200g/ℓ</td><td>FS: 0~20g/ℓ</td></tr><tr><td>Range 1</td><td>0~50g/ℓ</td><td>0~5g/ℓ</td></tr><tr><td>Range 2</td><td>0~100g/ℓ</td><td>0~10g/ℓ</td></tr><tr><td>Range 3</td><td>0~200g/ℓ</td><td>0~20g/ℓ</td></tr></table>		FS: 0~200g/ℓ	FS: 0~20g/ℓ	Range 1	0~50g/ℓ	0~5g/ℓ	Range 2	0~100g/ℓ	0~10g/ℓ	Range 3	0~200g/ℓ	0~20g/ℓ
	FS: 0~200g/ℓ	FS: 0~20g/ℓ											
Range 1	0~50g/ℓ	0~5g/ℓ											
Range 2	0~100g/ℓ	0~10g/ℓ											
Range 3	0~200g/ℓ	0~20g/ℓ											
Span calibration	with Nickel Standard Solution												
Contact output	High & Low limit each a, b contact point (no-voltage)												
Hold output	Transmit output and contact output are held by inputting non voltage contact signals from outside.												
Power supply	AC85~240V free input 50/60Hz												

Detector

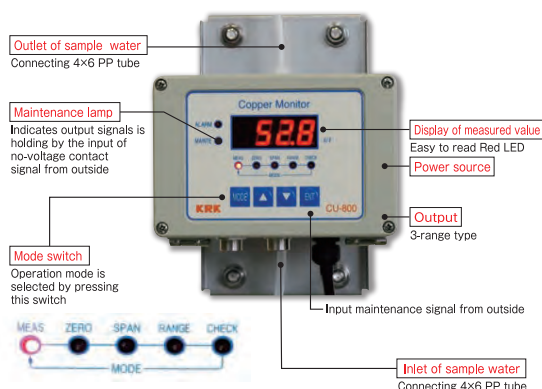
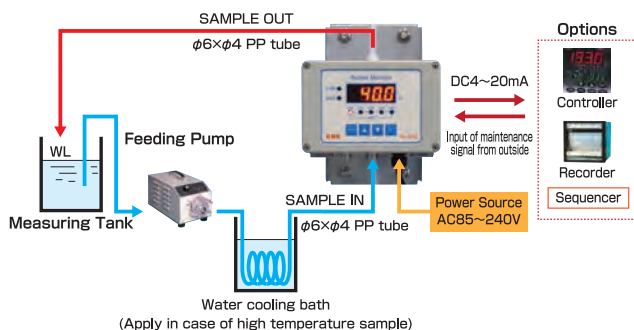
Model		High density (FS: 0~200g/ℓ)	Low density (FS: 0~20g/ℓ)
	① probe type	NCD-3P-660-LQ	NCD-10P-400-LQ
	② In line type	NCD-3F-660	NCD-10F-400
Measuring method	Light absorbance method		
Cable length	6m standard		
Material of liquid junction	① high density probe type: PPS, PVC, Quartz, FKM ② low density probe type: PPS, Quartz, PVC, FKM ③ Flow type: PPS, Quartz, PP, FKM		
Condition	Sample temperature: 0~40°C or less (probe type) 0~60°C or less (in-line type)		
Fixing	50A fixing pole or fix on the wall (in-line type)		

Copper (Cu)

32 CU-800

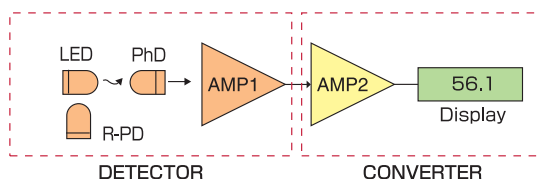
Copper Monitor
(0~80g/ℓ Cu Measurement)

Measuring System



Measuring Theory

LED from light source, photo cell at receiver, signal related to the density from density sensor formed at optical windows, etc. are amplified at converter and digitally displayed. Also, in order to prevent deterioration of sensor LED and influence by temperature change, it has automatic temperature compensation system, and correctly measures density of plating solution.



Outline

This is a In-Line type Copper Density Monitor which continuously measures Copper density such as copper sulfate plating solution, copper etching solution, etc. And installation, Calibration and Maintenance is easy because detector and indicating converter are unified.

Density signal from the meter is connected to various kind of controller and is controlled to be appropriate copper density.

Meter

Product name	Copper Density Meter of Copper plating solution		
Display	LED red 4 digits		
Model (instructed)	CU-800(for High Density Measurement) CU-800L(for Low Density Measurement)		
Measuring range	CU-800(High) :0.0~80.0g/ℓ(Cu) CU-800L(Low):0.00~20.00g/ℓ(Cu)		
Resolution	① 0.1g/ℓ(high density), ② 0.01g/ℓ(low density), ③ 1g/ℓ(copper sulfate)		
Transmittal output	DC4~20mA(isolation type), load resistance 250~500Ω, Std.		
	Cu(high) FS:80g/ℓ	Cu(low) FS:20g/ℓ	Cu sulfate FS:300g/ℓ
	Range 1 0~80	0~20	0~300
	Range 2 0~50	0~10	0~200
	Range 3 0~20	0~5	0~100
	※Transmittal output cable is 5m standard with Y terminal		
Accuracy	Within ±2% of F.S		
Ambient temperature	0~40℃		
Hold function	DC output 4~20mA by inputting no-voltage contact point signal from outside		
Power voltage	AC100/110V 50/60Hz, Cable 5m, with plug, standard ※In case of 200~240V or cable extension, instruction in advance is appreciated because Y terminal treatment is applied without 3p plug		
Weight	About 2kg		

Cu Detector

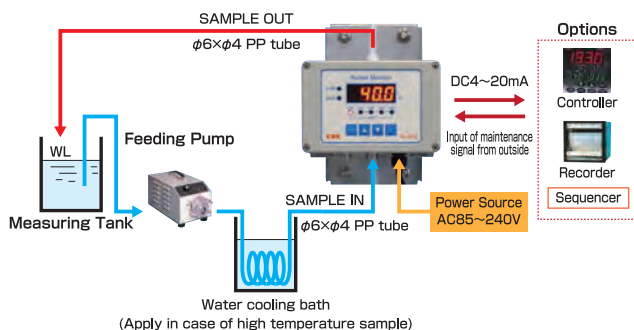
Model	High density: CUD-3C Low density: CUD-10C
Method	Light Absorbance Method, In-line type measurement
Material	PPS, Quartz, PP
Sample condition	Sample pressure :0.2 MPa or less Sample temperature:80℃ or less
Pyping	PP tube(φ6×φ4)
Installation	Pole or fix on the wall(SUS-304 fixing board is standard)
Std. component	Detector and indicating converter are unified. Pole fixing board (SUS-304), PP tube (3m), Power cable 5m, Current output signal cable 5m, Hold signal cable 5m, Handling Instruction, Written Guarantee
Optional ACCS.	exclusive plug, cable with connector (max, 10m), Standard solution for calibration, relay box, extension cable, Feeding pump for supplying liquid (Tell us power source and frequency)

Nickel(Ni)

33 Ni-800

Nickel Monitor (0~200 g/l Ni measuring standard)

Measuring System



Outline

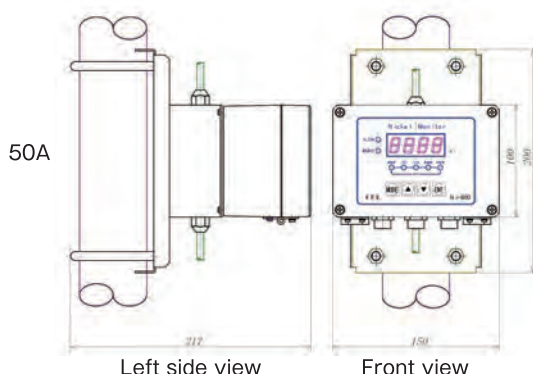
This is a In-Line type Nickel Density Meter which continuously measures Nickel density of nickel plating process of electronic parts and controls density.

Density signal can be appropriately controlled by connecting to optional Recorder, Controller, Sequencer, etc.

Common Features(Ni-800 & CU-800)

- 1 Detector/Converter Unified Type In-line Density Meter
Easy to install, calibrate and maintain
- 2 During operation, measuring value display can be OFF
Measured value can be controlled by the remotely-installed recorder and adjuster
- 3 3-range type transmittal output 4~20mA DC
Recording range and control range of measured value is changeable
- 4 Excellent chemical-resistant, heat-resistant Detector
Main material are quartz, PPS, PP, etc.
- 5 Easy, and 4-Key Operation is OK
4-keys : **MODE**, **▲**, **▼**, **ENT**
Function display lamp :
MEAS→**ZERO**→**SPAN**→**RANGE**→**CHECK**→...

Outer Dimensions



Meter

Product name	Nickel Density Meter of Nickel plating	
Display	LED red 4 digits	
Model (Instructed)	Ni-800(for High Density Measurement) Ni-800L(for Low Density Measurement)	
Measuring range	Ni-800(High) : 0.0~200.0g/l Ni Ni-800L(Low) : 0.00~20.00g/l Ni	
Resolution	0.1g/l(for High Density Measurement) 0.01g/l(for Low Density Measurement)	
Transmittal output	DC4~20mA(isolation type), load resistance 250~500Ω	
	Ni (high) FS : 200 g/l	Ni (low) FS : 20 g/l
Range 1	0~200	0~20
Range 2	0~100	0~10
Range 3	0~50	0~5
	※Transmittal output cable is 5m standard with Y terminal	
Accuracy	Within ± 2% of F.S	
Hold function	DC output 4~20mA is held by inputting no-voltage contact point signal from outside	
Power voltage	AC100/110V 50/60Hz, Cable 5m, with plug, standard ※ In case of 200~240V or cable extension, instruction in advance is appreciated because Y terminal treatment is applied without 3p plug	

Ni Detector

Model	High density: NiD-3C Low density: NiD-10C
Method	Light Absorbance Method, In-line type measurement
Sample condition	Sample pressure : 0.2 MPa or less Sample temperature: 80°C or less
Pyping	PP tube(φ6×φ4)
Installation	Pole or fix on the wall(SUS-304 fixing board is standard)
Std. component	Detector and indicating converter are unified. Pole fixing board (SUS-304), PP tube (3m), Power cable 5m, Current output signal cable 5m, Hold signal cable 5m, Handling Instruction, Written Guarantee
Optional ACCS.	exclusive plug, cable with connector (max. 10m), Standard solution for calibration, relay box, extension cable, Feeding pump for supplying liquid (Tell us power source and frequency)

Chlorine

34 RC-100 Special Specifications

Residual Chlorine Monitor (Non-Reagent / Polarographic 3 Electrode Method)



RC-100A-27
[1] 0.0~50.0mg/ℓ
[2] 0~200mg/ℓ

For High Density



RC-100Z
0.00~2.00mg/ℓ

For Total Chlorine



RC-100L
0.00~2.00mg/ℓ

For Sea Water

pH condition	pH 3.5~10.5	pH 5.8~8.6	pH 6.0~8.0
Principle	No-reagent polarographic method		
Measuring System	Bead-cleaning type, minute solid 3 electrode system		
Display	Digital 3 digits LCD		
Accuracy	Within $\pm 5\%$ of full scale		
Response Time	90% within 1 minute		
Transmitting output	DC4~20mA(isolation type)		
Contact Point Output	Hi/Lo each 1a		
Power Supply	AC85~250V 50/60Hz		
Installing	Fixing on the wall or fixing 50A pole pipe		
Applications	For Food Plant Sterilization Process.	For Waste Water Measurement.	For Sea Water. For Thermal power plant.

■ Sampling Part

Model	FC-27	FC-220	FC-200
Structure	Overflow type flow cell		
Material	PVC, PA, Silicon Rubber		

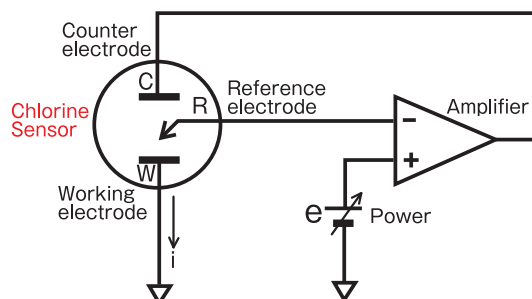
■ Sensor Part

Model	① RE-21C-010N ② RE-30C-01N	RE-20	RE-253C-010N
Temp Compensation	Automatic Temp Compensation by thermistor		
Cleaning Method	A : Mechanical beads cleaning B : Continuous electrolytic cleaning		A

■ Outline

This monitor is mainly used to continuously detect residual chlorine in the water by 3 electrode system and polarographic method without using reagent, the dirt sticking to the electrode and also chemical dirt can be prevented by electrical and chemical cleaning function operated from outside together with bead-grinding. It differs from 2 electrode system and capable of stable measurement without being affected by interference substance and conductivity.

■ Measuring Principle Drawing



Chlorine

35 RC-100A

Residual Chlorine Monitor



■ Overflow type flow cell

Standard measurement is overflow type flow cell system. Raising the sample water level up to over flow pipe, and make the flow volume = flow speed to be constant which goes to the measuring tank at the certain head. Simpler flow compensation than in-line type, and no flow characteristics of the detector.

■ Meter

Measuring object	Mode A: free residual chlorine Mode B: total residual chlorine
Measuring theory	No-reagent polarographic method
Measuring system	Bead-washing type, minute solid 3 electrode system
Measuring range	0.00~2.00mg/ℓ(standard)
Display	Digital 3 digits LCD Minimum resolution: 0.01mg/ℓ
Accuracy	Within ± 5% of full scale(flow volume, pH, temperature, conductivity at the certain time)
Sample water pH range	Mode A: pH 5.8~8.0 Mode B: pH 5.8~8.6
Corresponding time	90% within 1 minute
Temp. compensation	Automatic temperature compensation by Thermister
Transmission output	DC4~20mA(isolation type), max. resistant load 500Ω
Electrolytic wash	Electrolytic washing sequence by one of the below operation: 1) CLEAN. Terminal(cleaning trigger terminal) short circuit 2) CLEAN. Key input 3) POWER ON(power on cleaning) 4) 24 hour timer
Power source	AC85~250V 50/60Hz
Fixing	Fixing on the wall (standard) or fixing 50A pipe

■ Sampling part

Model	FC-30A
Structure	Overflow type flow cell
Sampling flow	1.5~3ℓ/min
Liquid junction	PVC, PA, Alumina, silicone rubber
Sample inlet	Outer diameter 18φhose nipple
Sample outlet	Outer diameter 18φhose nipple(open air, no back pressure)

■ Sensor

Model	RE-22B(standard)
Sample temp.	0~45℃(no freezing)
Temp. compensation	Automatic temperature compensation by Thermister
Fixing	Fix on the side of FC-30A measuring part
Electrode cleaning	Mode A: Mechanical grinding cleaning with beads Mode B: Mechanical grinding cleaning with beads and continuous electrolytic cleaning

Applications

Used for bath tubs, hot spring water, water-purification plant, industrial water, city water.

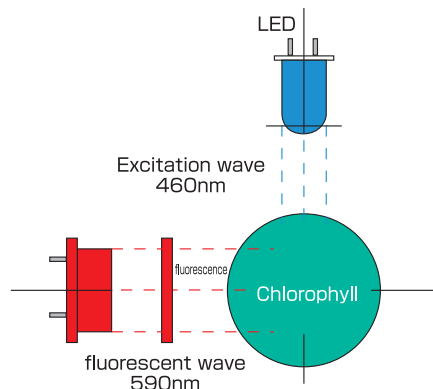
Chlorophyll

36 CHL-502

Chlorophyll Monitor

For cultured pond, Fishery study, environmental test of red tide, bloom and wealth nourishment of the sea, river and lakes, cell study of chlorophyll

Fluorescent measuring method



Measuring range: 0~200 $\mu\text{g}/\ell$
(uranine conversion value)

Measuring Theory

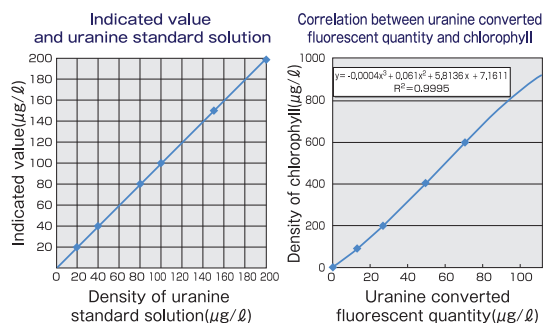
Chlorophyll is contained in algae (phytoplankton) existing rivers, sea, lakes, etc. and acting important role to photosynthetic reaction. Chlorophyll absorbs blue light and produces red light (fluorescent).

This CHL-502 is using this feature and by making blue excitation light source at projector and red fluorescent receiver at detector. It measures real fluorescent strength according to chlorophyll density in the living cells of phytoplankton. It is suitable for cultivation test and simple chlorophyll measurement at the field.

This fluorescent strength differs from the kind of plankton. Therefore, in order to obtain absolute value of chlorophyll, it is necessary to obtain correlation between acetone extraction method.

Calibration and measurement

As it is difficult to obtain absolute value standard of chlorophyll sensor, we obtain chlorophyll from uranine converted fluorescent strength by calibrating the second standard "uranine" standard solution ($\mu\text{g}/\ell$ =ppb) and measuring fluorescent strength produced according to the chlorophyll density.



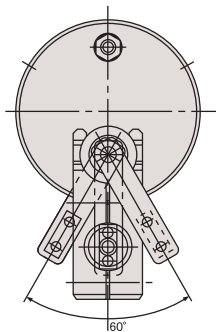
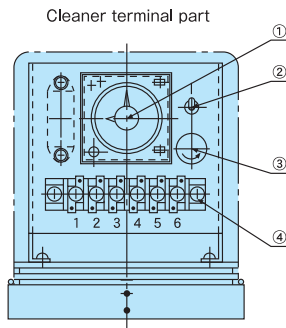
Specification

Product name	Chlorophyll Monitor
Model	Monitor :CHL-502 Detector:CHL-120D(6m cable standard)
Object	Chlorophyll
Measuring range	0.0~200 $\mu\text{g}/\ell$
Minimum resolution	0.1 $\mu\text{g}/\ell$
Display	LED Red 3-1/2桁
Measuring theory	Fluorescent method
Wave length	Excitation wave length :460nm Fluorescent wave length:590nm
Transmission output	DC4~20mA(isolation type)
Conversion	Possible to set conversion coefficient ($y=a+bx$) (x = uranine, y =chlorophyll)
Measuring method	Immerge sensor part
Alarm contact point	High, low each a, b contact point (non voltage) Contact point capacity AC100V, within 1A
Hold output	Hold transmission output and contact output by non voltage contact signal
Sample water	5~35 $^{\circ}\text{C}$ non freezing, avoid direct sun shine
Ambient condition	Temp.0~40 $^{\circ}\text{C}$ humidity:less than 0~90% RH
Power	AC85~240V 50/60Hz
Dimensions	Monitor :96(W)×96(H)×163(D)mm Detector:φ40×250mm
Weight	Monitor :1.3kg Detector:500g
Standard component	Monitor, detector, panel fitting device Instruction manual, container for calibration
Optional item	Uranine standard solution(200 $\mu\text{g}/\ell$) 250mℓ

Cleaner

37 BHC-1T

Brush Cleaners for pH Electrode



Cleaning brush swing drawing



pH Detector with Brush cleaner
BHC-1T

Outline

This cleaner washes the electrode surface intermittently by swinging the polyethylene brush and cleans the stains sticking to the tip of the pH/ORP electrode. Washing cycle and washing time are optionally set and changed with the built-in timer. The detector is easily attached or removed.

Specifications

Product Name	Brush cleaning system
Model	BHC-1T(With a timer) Independent use
Installation method	Immersion type
Cleaning method	Intermittent cleaning by swing operation of a brush
Object for use	pH electrode, ORP electrode
Cleaning cycle	0.5~3 hour
Cleaning time	0.5~10 minutes
Material	SUS-304, PP, PVC, polyethylene
Power supply	AC 100V±10V 50/60Hz
Holder length	1000mm

38 KWJ-3

Jet Air Cleaning Unit



Electro-magnetic valve unit
SVU-1B



Control unit
BHC-7J



for DO Detector



for Turbidity Detector



for pH Detector

Meter

Product Name	Jet Air Cleaning Unit	
	Kinds	Material
Model	KWJ-3-DO-PVC:For DO Detector	PVC, POM
	KWJ-3-TR-PVC:For 90°Scattered Turbidity Detector	PVC, POM
	KWJ-3-ML-PVC:For MLSS Detector	PVC, POM
	KWJ-3-PH-SUS:For PH/ORP Detector	PVC, SUS-316
	KWJ-3-PH-PVC:For PH/ORP Detector	PVC, POM
Control Unit	BHC-7J, Power Supply:AC-100V	
EMC Valve Unit	SVU-1B, Power Supply:AC-100V	
Air Source	Air pump or compressor, etc	
Tubing	φ10×φ7 tubing	
Pressure	0.1~0.5 MPa	
Cleaning Cycle	1~24 Hour	
Cleaning Time	1~5 min.	

Cleaner

39 BHC-7WP Wiping Cleaners for optical Detectors



Control Unit
BHC-7



for ABS Detector
BHC-7WP-ABS



for turbidity Detector
BHC-7WP-90°

This cleaner mainly cleans the stains sticking to the **optical window of the detector** by the rotation of the wiper rubber.

■ Features

- While cleaning, no-voltage contact point signal is ON, and after connected to 502-type density monitor, transmission output is kept holding.
- Number of cleaning is optionally set within the range of 1~5 times
- Cleaning period is optionally set within the range of 1~24 hrs.
- Stains at the detector are cleaned by rubber-wiper.
- Various kind of rubber wiper is available according to the kind of the detector.
- If the detector is fixed outdoors, the cover to prevent outer light is necessary

■ Brush cleaning unit

Model	BHC-7WP
Material	SUS-304, PPS, PVC, FKM
Combination	Control unit: BHC-7
Holder length	500~2000mm(Optional)
Cable length	6m(Standard)

40 BHC-1S Brush Cleaners for optical Detectors



for 90° Scattered Turbidity Detector
BHC-1S-TB



for MLSS Detector
BHC-1S-ML

■ Control unit

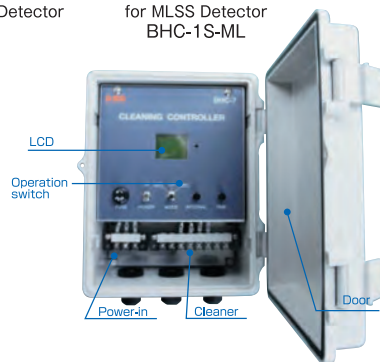
Model	BHC-7
Structure	Water-proofing structure
Cleaning cycle	1~24 hour (optional setting enabled by each 1 hour interval)
Cleaning time	1~5 minutes(Setup to any value)
Standby time	30 seconds
Input-and-output signal	Non-voltage point-of-contact signal under cleaning capacity at point: AC100V within 1A

■ Brush cleaning unit (BHC-1S)

Material	SUS-316, PP, PVC
Power supply	AC 100V±10V 50/60Hz
Holder length	1000mm
Combination	Control unit: BHC-7



Control Unit



Inside View of Control Unit

Water Quality Control Process Sensors No.3600E part2 Table of Content

Item	Product Name	Model	Page
01	UV/COD Monitor(Organic Pollution Monitor)	UV-700W	1
02	Turbidity & Colority Monitor	TCR-700W	2
03	SS/Turbidity Monitor	TSS-700W-H	3
04	Turbidity Monitor	TSS-700W-L	4
05	SS/Turbidity Monitor	TR-700Z	5
06	Turbidity Monitor	TR-700V	5
07	pH/ORP Monitor	PC-700/OC-700	6
08	MLSS Monitor	MC-700	7
09	DO Monitor(Galvanic)	DC-700	7
10	Electro-Magnetic Density Monitor	EMC-700	8
11	Conductivity Monitor	EC-700	8
12	UV/COD Monitor	UV-2700	9
13	Turbidity Monitor,Surface Scattered Light	TRD-51U SYSTEM	10
14	Turbidity Monitor,Laser Scattered Light	TR-5500	11
15	PH/ORP Monitor	PC-502/OC-502	12
16	Fluoride Ion Monitor	KF-502	13
17	Chloride Ion Monitor	CL-502	14
18	DO Monitor(Galvanic)	DC-502G	15
19	MLSS Monitor	MC-502	16
20	Turbidity Monitor	TR-502V	17
21	SS/Turbidity Monitor	SS-502	18
22	Turbidity Monitor	TR-502	19
23	Colority Monitor	CR-502	20
24	Turbidity Monitor,90° Scattered Light	TR-502Z	21
25	Turbidity Monitor,Laser Scattered Light	TR-502L	22
26	Turbidity & Colority Monitor	TCR-502	23
27	Conductivity Monitor	EC-502	24
28	Electro-Magnetic Density Monitor	EMC-502	25
29	Process Monitor	CR-502P	26
30	Copper Monitor	CU-502	27
31	Nickel Monitor	Ni-502	28
32	Copper Monitor	CU-800	29
33	Nickel Monitor	Ni-800	30
34	Residual Chlorine Monitor(Special Spec.)	RC-100 Series	31
35	Residual Chlorine Monitor	RC-100A	32
36	Chlorophyll Monitor	CHL-502	33
37	Brush Cleaner	BHC-1T	34
38	Jet Air Cleaner Unit	KWJ-3	34
39	Wiping Cleaner Unit	BHC-7WP	35
40	Brush Cleaner Unit	BHC-1S	35



KRK

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