

# Water Analyzer Products Description

An enterprise with foresight for  
environment and future

# HUMAS product line

## On-Line Water analyzer products

01 TURBY 2100 (Automatic turbidity meter)			02 CL 4000 (Automatic chlorine analyzer)			03 TNP 4000 (Automatic total nitrogen and phosphorous analyzer)		
04 TN 4000 (Automatic total nitrogen analyzer)			05 TP 4000 (Automatic total phosphorous analyzer)			06 PHOSPO L 4000 (Automatic phosphoric acid analyzer)		
07 PHOSPO MH 4000 (Automatic phosphoric acid analyzer)						08 TOC 4000W (Automatic TOC analyzer)		
09 Other automatic analyzer  • CU 4000 (Automatic copper analyzer) • AL 4000 (Automatic aluminum analyzer) • FE 4000 (Automatic iron analyzer) • SI 4000 (Automatic silica analyzer)						10 MULTI 4000 (Multit-water analyzer)		



*is our company brand name.*

*Your satisfaction is guaranteed on all of our products.*

## Off-Line Water analyzer products

11  
Water test kit



12  
HS-1000Plus  
(Portable  
water analyzer)



13  
HS-2300Plus  
(Water analyzer  
for lab)



14  
HS-3300  
(Water analyzer  
& spectro-  
photometer)



15  
HS-R200  
(Reactor)



16  
TURBY-1000  
(Portable  
turbidity meter)



17  
HS-1000DW  
(Drinking water  
analyzer)



18  
ColiTest  
(Total coliforms  
& E.coli)



# ON - LINE

Water  
analyzer  
products

## >> TURBY 2100 (Automatic turbidity meter)



### Application

- Water quality control at filtration plants
- Discharge of water monitoring at wastewater treatment plants
- Industries related to pure water, ultra-pure water
- River and sea monitoring
- Water and sewage pipeline monitoring
- Membrane filtration
- Swimming pool
- U-city

### Features

- Outstanding precision, accuracy, reproducibility
- Satisfaction of ISO 7027 Standard Method (90° diffusion ray)
- Wiper cleaning for easy maintenance
- Output of various signals for versatile application  
\* Sensor : RS-485, monitor : RS-485 or 0~5V or LAN communication(option)
- LED lamp (semi-permanent)
- Self-diagnosis of lamp and detector
- Adjustable measuring range by purpose

### Specifications

Measuring principle	90° diffusion ray measuring method (ISO7027 Method)
Measuring range	0~5NTU, 0~100NTU, 0~4000NTU
Source of light	LED(860±30nm)
Reproducibility	Below <±1% FS
Precision	Below <±1% FS
Minimum scale unit	0.0001NTU
Measurement unit	NTU, FTU, FNU, mg/L
Applicable temperature	0~50℃
Correction method	Two-point calibration, zero memory function
Cleaning method	Wiper cleaning method, time-setting of cleaning cycle
Screen display	Digital LCD
Output signal	Sensor : RS-485, monitor : 4~20mA, 0~5V, RS-485, LAN communication(option)
Alarm setting	Two points (high, low), LCD display & buzzer setting
Power	AC 220V, 60Hz, AC 110V(option)
Probe material	Exterior : SUS316L, interior : PVC
Weight	5kg
Sample insertion & outflow fitting	8mm / 12mm
Cable water-proof	IP68 (max. 2m underwater)
Data storage function	Max. 64,000
Self-diagnosis function	Lamp, Detector
Cable length	Standard : 5m (option: orderable)
Bubble trap device	Removal of micro bubble, inflow velocity : 500mL~2000mL/min. External structure of bubble trap device may be subject to change.

# ON - LINE

Water  
analyzer  
products

## >> CL 4000 (Automatic chlorine analyzer)



### Application

- Water control at filtration plants
- Cooling tower, swimming pool, water tank, water pipeline monitoring, U-City, all places sterilizing chlorine

### Features

- Continuous real-time measurement with DPD method
- Outstanding precision, accuracy, reproducibility
- Automatic operation for max. 30 days
- Inexpensive maintenance
- Various output signals – alarm warning, under calibration, equipment trouble, external run/stop, shutoff of inflow water, Cl<sub>2</sub> pump in operation
- Auto start function after blackout
- LED lamp (semi-permanent)
- Adjustable of sample replacement cycle by changing measuring time
- Analysis of total residual chlorine or free residual chlorine on optional basis
- Remote control
- Application of ballast water

### Specifications

Measuring method	DPD Method
Measuring range	0~2/10 mg/L
Measuring cycle	2.5min, available of 150sec~999sec
Reproducibility	<±3%
Minimum scale unit	0.001mg/L
Sample temperature	Temperature : 5 ~ 40℃
Sample inflow velocity	200~500mL/min
Reagent replacement cycle	One month (when mixing DPD reagent)
Calibration method	Two-point calibration (Low, High), zero memory function
Screen display	128*64dot Graphic LCD
Status output	Calibrating, alarm warning, equipment trouble, shutoff of inflow water, external run/stop, discontinuation of measurement, Cl <sub>2</sub> pump in operation
Alarm setting	Two types (high, low), LCD display & buzzer setting
Power	AC 220V, 60Hz, 110V(option)
Weight	15kg
Dimension	350(W) * 450(D) * 200(H)mm
Inflowing sample water fitting & effluent sample water fitting	Inflowing sample water fitting : 6 mm Effluent sample water : 6 mm
Self-diagnosis function	Lamp, Detector self-checking
Applicable environment	Non-vibration, temperature : 5~40℃, humidity: 90% at 40℃
Mounting	Available of Wall mounting



# ON - LINE

Water  
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## >> TNP 4000 (Automatic total nitrogen and phosphorous analyzer)



### Features

- Simultaneous analysis of total nitrogen / phosphorous in one hour
- TMS connection and various output signals (RS-232C, 4~20mA, DC24V external output (equipment trouble, alarm warning))
- Logging report on alarm, replacement of consumables and error
- Automation stop upon equipment trouble (display of causes such as no cooling water, no reagent, overheating reactor, lamp trouble on screen)
- Automatic control function (start/stop measuring instrument on remote basis)
- Degree of diluted water/washing water contamination on screen display (alarm display)
- Versatile application (Discharge water in wastewater treatment plants / river, lake and others of consumers' choice / TMS)

### Specifications

Measuring method	Total nitrogen : ultraviolet absorbance intensity method, Total phosphorous : ascorbic acid reduction method
Measuring range	TN : 0~100mg/L / TP : 0~20mg/L
Source of light	TN : Deuterium Lamp / TP: 880nmLED
Minimum scale unit	0.001 mg/L
Detection method	Photodiode detector
Repeatability	±3% of FS
Accuracy	±3% of FS
Heating method	Independent heating of total nitrogen and total phosphorous based on 120℃ direct heating method (two thermal reactors)
Sample measurement	Quantitative control by measuring cup
Reagent measurement	Quantitative pump control
Measuring time	60 min. / one measurement (measuring cycle can be set)
Display method	Color LCD(10 Inch) Touch screen
Storage method	HDD storage(320G), use of USB memory stick
Status output	Normal service, calibration , malfunction
Reagent replacement cycle	Two weeks
Data output	4~20mA, RS-232C, TCP/IP
Power	AC 220V, 60Hz (110V optional)
Applicable temperature	0 ~ 60℃
Applicable humidity	Under 85% RH
Material of case	Steel, paint Mnusell No. 9.8GY 8.5/0.4
Dimension	600(W) * 662(D) * 1700(H)mm
Weight	Approximately 200kg

# ON - LINE

Water  
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## >> TN 4000 (Automatic total nitrogen analyzer)



### Features

- Analysis of total nitrogen in one hour
- TMS connection and various output signals (RS-232C, 4~20mA, DC24V external output (equipment trouble, alarm warning))
- Logging report on alarm, replacement of consumables and error
- Automation stop upon equipment trouble (set to service status) (Display of causes such as no cooling water, no reagent, overheating reactor, lamp trouble on screen)
- Automatic control function (start/stop measuring instrument on remote basis)
- Degree of diluted water/washing water contamination on screen display (alarm display)
- Versatile application (Discharge water in wastewater treatment plants / river, lake and others of consumers' choice / TMS)

### Specifications

Measuring method	Ultraviolet absorbance intensity method
Measuring range	0 ~ 100mg/L
Source of light	Deuterium Lamp
Minimum scale unit	0.001mg/L
Detection method	Photodiode detector
Reproducibility	±3% of F.S
Accuracy	±3% of F.S
Heating method	Direct heating method
Sample measurement	Quantitative control by measuring cup
Reagent measurement	Quantitative pump control
Measuring time	60 min. / one measurement (measuring cycle can be set)
Display method	Color LCD(10 inch) Touch screen
Storage method	HDD storage(320G), use of USB memory stick
Status output	Normal service, calibration , malfunction
Reagent replacement cycle	Two weeks
Data output	4~20mA, RS-232C, TCP/IP
Power	AC 220V, 60Hz (110V optional)

# ON - LINE

Water  
analyzer  
products

## >> TP 4000 (Automatic total phosphorous analyzer)



### Features

- Analysis of total phosphorous in one hour
- TMS connection and various output signals (RS-232C, 4~20mA, DC24V external output (equipment trouble, alarm warning))
- Logging report on alarm, replacement of consumables and error
- Automation stop upon equipment trouble (set to service status) (Display of causes such as no cooling water, no reagent, overheating reactor, lamp trouble on screen)
- Automatic control function (start/stop measuring instrument on remote basis)
- Degree of diluted water/washing water contamination on screen display (alarm display)
- Versatile application (Discharge water in wastewater treatment plants / river, lake and others of consumers' choice /TMS)



### Specifications

Measuring method	Ascorbic acid reduction method
Measuring range	0~20 mg/L
Source of light	880nmLED
Minimum scale unit	0.001mg/L
Detection method	Photodiode detector
Accuracy	±3% of FS
Heating method	Direct heating method
Sample measurement	Quantitative control by measuring cup
Reagent measurement	Quantitative pump control
Measuring time	60 min. / one measurement (measuring cycle can be set)
Display method	Color LCD(12 inch) Touch screen
Storage method	HDD storage(320G), use of USB memory stick
Status output	Normal service, calibration , malfunction
Reagent replacement cycle	Two weeks
Data output	4~20mA, RS-232C, TCP/IP
Power	AC 220V, 60Hz (110V optional)



# ON - LINE

Water  
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## >> PHOSPO L 4000 (Automatic phosphoric acid analyzer)



### Features

- Ascorbic acid reduction method
- LED lamp (semi-permanent)
- Automatic operation for up to two weeks without filling up reagent (basis: 15 min. measuring cycle)
- Various external output signals: alarm warning, equipment trouble
- Measuring cycle adjustable by purpose
- Automatic calibration / cleaning
- Logging report on alarm, replacement of consumables and error

### Specifications

Items for measurement	PO4-L
Measuring method	Ascorbic acid reduction method
Measuring range	0.01~1/2/4/6ppm
Precision	±3% of F.S
Resolution	0.002/0.001Abs
Measuring cycle	15 min.
Flow rate of sample water	200 ~ 500ml / min (250ml/min. recommended)
Reagent replacement cycle	Two weeks
Data output	4~20mA, RS-232C
Status output	Normal service, calibration, malfunction
Dimension	500(W) * 350(D) * 950(H)
Weight	62.5 kg
Power	AC 220V, 60Hz (AC 110V Option)
Applicable environment	Non-vibration, temperature : 5~40℃, humidity: 90% at 40℃

# ON - LINE

Water  
analyzer  
products

## >> PHOSPO MH 4000 (Automatic phosphoric acid analyzer)



### Features

- Molybdo Vanadate method
- LED lamp (semi-permanent)
- Automatic operation for up to six months without filling up reagent
  - Basis: 5 min of measuring cycle ( three months if measuring range is 0~50ppm)
- Various external output signals : alarm warning, equipment trouble, external equipment in operation
- Automatic calibration function (calibration cycle: 5 min. ~ 30 days)
- Automatic cleaning function (cleaning cycle: 5 min. ~ 30 days)
- Automatic cleaning function in case of serious contamination of optical system
- Adjustable measuring cycle (5 ~ 166 min.)

### Specifications

Measuring method	Molybdo Vanadate method
Measuring range	Choose from 0~15, 0~50mg/L
Reproducibility	0~15mg/L : <±2% or 0.05mg/L, 0~50mg/L : <±2% or 1mg/L
Measuring cycle	5 ~ 166 min.
Minimum scale unit	0.001mg/L
Detection limit	0~15mg/L : 0.05mg/L, , 0~50mg/L : 1mg/L
Reagent replacement cycle	Six months (0~50mg/L : three months)
External signal output (DC24V)	Calibration , malfunction, sample pump control, external equipment in operation
Cleaning	Automatic cleaning
Calibration	Automatic calibration
Data output	4~20mA, 0~5V, RS-485, LAN communication (option)

# ON - LINE

Water  
analyzer  
products

## >> TOC 4000W (Automatic TOC analyzer)



### Features

- World's premium automatic total organic carbon measuring instrument
- Max. six channels on optional basis: frequency and cycle of six sample lines subject to free selection
- Max. five-point manual calibration or two-point automatic calibration

### Specifications

Items for measurement	Total Organic Carbon
Measuring principle	Wet oxidization (UV Lamp) / NDIR measuring method
Measuring method	NPOC or TP-IC (alternativeness)
Measuring range	0~5ppm, 0~10ppm, 0~100ppm, 0~1000ppm
Reaction time	Approx. 5 min. (90% reaction)
Channel	Max. six channels (optional)
Flow rate of sample water	Above 100mL/min., particle diameter <90um
Temperature of sample water	5~50 °C
Resolution	1ppb (for 0~5ppm)
Precision	±2% of FS
Acidic solution	Phosphoric acid solution (20%)
Oxidizing agent	Sodium persulfate
Calibration reagent	KHP
Carrier gas	High-purity dry nitrogen : 0.2 ~ 0.8 MPa
	Consumption : approx. 80mL/min. for carrier, approx. 320mL/min. for aeration
Calibration	Manual(max. five point) or Automatic
Power	AC 220V, 50/60Hz
Display	10.4 inch touch screen
Alarm indication on screen	No sample, no standard sample, no reagent, detector trouble, no carrier gas, transportation tube exchange, UV lamp exchange, calibration trouble, leakage, system alarm
Alarm output	TOC high/low measurement error, instrument trouble
Data output	4~20mA (under 500Ω load resistance), RS-232 output
Data storage	Storage in PC and external USB memory
Applicable environment	5~40 °C ambient temperature, 5~80% ambient humidity (no dew condensation)

# ON - LINE

Water  
analyzer  
products

- >> **FE 4000**  
(Automatic iron analyzer)
- >> **AL4000**  
(Automatic aluminum analyzer)
- >> **SI 4000**  
(Automatic silica analyzer)
- >> **CU 4000**  
(Automatic copper analyzer)



## Features

- Wide application range : filtration plants, water treatment plants, boiler water, etc.
- Various external output signals: alarm warning, under, calibration, equipment trouble, external pump in operation, etc.
- Semi-permanent use as LED light source
- Auto start function after black out, remote control (possible)

## Specifications

>> FE 4000 (Automatic iron analyzer)	
Items for measurement	Total Iron
Measuring range	Low density : 0.5~100ppb / High density : 0.05~5ppm
Precision	±5
Resolution	Low density : 0.1ppb / high density : 0.01ppm
Measuring cycle	Low density : 6 min./cycle, high density : 3 min./cycle
Flow rate of sample water	200~500mL/min (250mL/min.recommended)
Reagent replacement cycle	Four weeks
Data output	4~20mA, RS-485
External output	Alarm, equipment trouble, under calibration, external pump in operation, remote control
Power	AC 220V, 60Hz (AC 110V Option)
Applicable environment	Non-vibration, temperature : 5~40℃, humidity : 90% at 40℃

>> AL4000 (Automatic aluminum analyzer)	
Items for measurement	Aluminum
Measuring range	0.01 ~ 0.3ppm
Precision	±10% of FS
Resolution	0.003/0.01Abs
Measuring cycle	10 min.
Flow rate of sample water	200~500mL/min (250mL/min.recommended)
Reagent replacement cycle	Four weeks
Data output	4~20mA, RS-485
External output	Alarm, equipment trouble, calibration, external pump in operation, remote control
Power	AC 220V, 60Hz (AC 110V Option)
Applicable environment	Non-vibration, temperature : 5~40℃, humidity : 90% at 40℃

>> SI 4000 (Automatic silica analyzer)	
Items for measurement	Silica
Measuring range	1~4000ppb as SiO <sub>2</sub>
Precision	±5
Resolution	Low density : 1ppb
Measuring cycle	10 min./cycle
Flow rate of sample water	200~500mL/min (250mL/min.recommended)
Reagent replacement cycle	Eight weeks
Data output	4~20mA, RS-485
External output	Alarm, equipment trouble, calibration, external pump in operation, remote control
Power	AC 220V, 60Hz (AC 110V Option)
Applicable environment	Non-vibration, temperature : 5~40℃, humidity : 90% at 40℃

>> CU 4000 (Automatic copper analyzer)	
Items for measurement	Copper
Measuring range	0.1 ~ 10ppm
Precision	±5% of FS
Resolution	0.006/0.001Abs
Measuring cycle	5 min.
Flow rate of sample water	200~500mL/min (250mL/min.recommended)
Reagent replacement cycle	Four weeks
Data output	4~20mA, RS-485
External output	Alarm, equipment trouble, calibration, external pump in operation, remote control
Power	AC 220V, 60Hz (AC 110V Option)
Applicable environment	Non-vibration, temperature : 5~40℃, humidity : 90% at 40℃

# ON - LINE

Water  
analyzer  
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## >> MULTI 4000 (Multi-water analyzer)



Turbidity



Residual chlorine



pH



ECD



Temperature



Option (DO, ORP etc)

## Specifications

Item	Specification	
Turbidity	Measuring range : 0~5NTU cleaning method : automatic wiper cleaning	Reproducibility : under $\pm 1\%$ F.S precision : under $\pm 1\%$ F.S light source : LED lamp (semi-permanent)
Residual chlorine	Measuring method : reagent or non-reagent, measuring range : 0~2 mg/L	reproducibility : under $\pm 3\%$ , minimum scale unit : 0.001mg/L
pH	Measuring method : glass electrode, anchimon electrode	measuring range : 0~14pH Resolution : 0.01pH
ECD	Measuring range : 0~500us/cm electrode material : SUS316	Precision : $\pm 1\%$ F.S
Temperature	Measuring range : 0 ~ 80 °C	



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# OFF - LINE

Water  
analyzer  
products

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## >> Water test kit



### Features

- Developed on the basis of our standard method, EPA standard method and AWWA standard method
- Allows simple manipulation and easy analysis even for beginners
- Analysis time saved by up to 10 times compared to standard method
- Sold at 30 ~ 40% cheaper than imported products
- More than 60 analyzable items including COD, total nitrogen, total phosphorous and heavy metals
- Data deviation under  $\pm 3\%$ ,  $R^2=0.99$  during standard sample analysis



# OFF - LINE

Water  
analyzer  
products

## >> Water test kit

HS-1000DW HS-1000Plus HS-1000SW  
HS-2300Plus HS-3300 HS-R200사용

### Analysis items for drinking water

Category	Item	Analytical Item	Range(mg/L)	Method						Cat.No.
Drinking water	HS-Cl <sub>2</sub> (Free)	Chlorine, Free	0.02~3	DPD						83020
	HS-Fe(T)	Iron, Total	0.05~3	1,10-Phenanthroline						84020
	HS-NH <sub>3</sub> (N)	Nitrogen, Ammonia	0.015~0.5	Salicylate						85020
	HS-F	Fluoride	0.05~1.5	Spadns						86020
	HS-Cu	Copper	0.04~5	Bathocuproine						87020
	HS-Cl	Chloride	0.4~10	Mercuric Thiocyanate						88020
	HS-Zn	Zinc	0.01~3	Zincon						89020
	HS-Mn	Manganese	0.006~1	PAN						90020
	HS-Al	Aluminum	0.01~0.3	ECR						91020
	HS-NO <sub>3</sub> (N)	Nitrogen, Nitrate	0.05~3	Cadmium Reduction						92020

HS-1000DW HS-1000Plus HS-1000SW  
HS-2300Plus HS-3300 HS-R200사용

### Water quality analysis kit items

Category	Item	Analytical Item	Range(mg/L)	Method						Cat.No.
Chemical Oxygen Demand	HS-COD-UR	COD <sub>(Cr)</sub> (Chemical Oxygen Demand)	5~40	Reactor Digestion						01011
	HS-COD-LR	COD <sub>(Cr)</sub> (Chemical Oxygen Demand)	15~150	Reactor Digestion						01012
	HS-COD-MR	COD <sub>(Cr)</sub> (Chemical Oxygen Demand)	50~1500	Reactor Digestion						01013
	HS-COD-HR	COD <sub>(Cr)</sub> (Chemical Oxygen Demand)	500~15000	Reactor Digestion						01014
	HS-COD <sub>(Mn)</sub> -L	COD <sub>(Mn)</sub> (Chemical Oxygen Demand)	0.6~20	Reactor Digestion						01110
	HS-COD <sub>(Mn)</sub> -H	COD <sub>(Mn)</sub> (Chemical Oxygen Demand)	20~100	Reactor Digestion						19014
Nitrogen, phosphorous	HS-TN-U	TN(Nitrogen, Total)	0.2~5	Cadmium Reduction						02011
	HS-TN(CA)-L	TN(Nitrogen, Total)	1~50	Chromatropic acid						02022
	HS-TN(CA)-H	TN(Nitrogen, Total)	10~100	Chromatropic acid						02024
	HS-NO <sub>3</sub> (N)-L	NO <sub>3</sub> -N(Nitrogen, Nitrate)	0.2~10	Cadmium Reduction						05020
	HS-NO <sub>3</sub> -N(CA)	NO <sub>3</sub> -N(Nitrogen, Nitrate)	0.5~30	Chromatropic acid						05030
	HS-NO <sub>3</sub> (N)-H	NO <sub>3</sub> -N(Nitrogen, Nitrate)	1~15	Brucine						05010
	HS-NO <sub>2</sub> (N)-L	NO <sub>2</sub> -N(Nitrogen, Nitrite)	0.1~1	NED						04012
	HS-NO <sub>2</sub> (N)-H	NO <sub>2</sub> -N(Nitrogen, Nitrite)	10~150	FSS						04014
	HS-NH <sub>3</sub> (N)-U	NH <sub>3</sub> -N(Nitrogen, Ammonia)	0.03~1	Indophenol						06031
	HS-NH <sub>3</sub> (N)-L	NH <sub>3</sub> -N(Nitrogen, Ammonia)	0.2~6	Nessler						06022
	HS-NH <sub>3</sub> (N)-H	NH <sub>3</sub> -N(Nitrogen, Ammonia)	2~60	Nessler						06024
	HS-TP-L	TP(Phosphors, Total)	0.01~3	Ascorbic acid						03012
	HS-TP-H	TP(Phosphors, Total)	1~15	Molybdo Vanadate						03014
	HS-PO <sub>4</sub> (P)-L	PO <sub>4</sub> -P(Orthophosphate)	0.01~3	Ascorbic acid						07012
	HS-PO <sub>4</sub> (P)-H	PO <sub>4</sub> -P(Orthophosphate)	1~15	Molybdo Vanadate						07014

# OFF - LINE

Water  
analyzer  
products

## >> Water test kit

■ HS-1000DW 
 ■ HS-1000Plus 
 ■ HS-1000SW  
■ HS-2300Plus 
 ■ HS-3300 
 ■ HS-R200사용

### Water quality analysis kit items

Category	Item	Analytical Item	Range(mg/L)	Method	<span style="color: yellow;">■</span>	<span style="color: red;">■</span>	<span style="color: cyan;">■</span>	<span style="color: magenta;">■</span>	<span style="color: blue;">■</span>	<span style="color: green;">■</span>	Cat.No.
Heavy metals and others	HS-ABS	Detergents	0.03~0.3	Crystal Violet							40010
	HS-Al	Aluminum	0.01~0.3	ECR							27010
	HS-Cd	Cadmium	0~0.5	Dithizone							41010
	HS-Cl-L	Chloride	1~20	Mercuric Thiocyanate							35012
	HS-Cl-H	Chloride	20~60	Mercuric Thiocyanate							35014
	HS-Cr(T)	Chromium, Total	0.1~1	Diphenylcarbazide							12010
	HS-Cr(+6)	Chromium, Hexavalent	0.1~1	Diphenylcarbazide							11010
	HS-Cl <sub>2</sub> (T)	Chlorine, Total	0.1~2	DPD							10020
	HS-Cl <sub>2</sub> (Free)	Chlorine, Free	0.1~2	DPD							10030
	HS-Cu	Copper	0.1~5	Bathocuproine							15010
	HS-Co	Cobalt	0.05~2	PAN							43010
	HS-CN	Cyanide	0.005~0.5	DP							25010
	HS-F	Fluoride	0.1~1.5	SPANDS							26010
	HS-Fe(T)	Iron, Total	0.1~5	Phenanthroine							16010
	HS-Fe(+2)	Iron, Ferrous	0.1~5	Phenanthroine							16020
	HS-H <sub>2</sub> O <sub>2</sub> -L	Hydrogen peroxide	0.5~30	Titanium Sulfate							26012
	HS-H <sub>2</sub> O <sub>2</sub> -H	Hydrogen peroxide	3~300	Titanium Sulfate							26014
	HS-Hardness	Hardness(Ca&Mg)	0.1~4	Calmagite							24020
	HS-I <sub>2</sub>	Iodine	0.1~2	DPD							36010
	HS-Mn	Manganese	0~20	Periodate Oxidation							13010
	HS-Ni	Nickel	0.05~2	PAN							42010
	HS-Pb	Pb(LEAD)	0.1~5	PAR							38010
	HS-Phenol	Phenol	0.1~10	Driect Photometric							09012
	HS-S	Sulfide	0.5~5	Methylene Blue							37010
	HS-SO <sub>4</sub> -L	Sulfate	5~50	Gravimetric							08012
	HS-SO <sub>4</sub> -H	Sulfate	10~70	Gravimetric							08014
	HS-Si-H	Silica	20~100	Molybdosilicate							44014
	HS-Si-L	Silica	0.5~20	Molybdosilicate							44012
	HS-Zn	Zinc	0.1~5	Zincon							17010
Sea water analysis	HS-COD <sub>(Mn)</sub> -SW	COD <sub>(Mn)</sub> (Chemical Oxygen Demand)	0.2~3	Permanganate							29010
	HS-TN-SW	TN(Nitrogen, Total)	0.1~2.5	Cadmium Reduction							28010
	HS-NO <sub>3</sub> (N)-SW	NO <sub>3</sub> -N(Nitrogen, Nitrite)	0.1~2	Cadmium Reduction							31010
	HS-NO <sub>2</sub> (N)-SW	NO <sub>2</sub> -N(Nitrogen, Nitrite)	0.05~1	NED							32010
	HS-NH <sub>3</sub> (N)-SW	NH <sub>3</sub> -N(Nitrogen, Ammonia)	0.03~1	Indophenol							33010
	HS-TP-SW	TP(Phosphorus, Total)	0.01~3	Ascorbic Acid							30010
	HS-PO <sub>4</sub> (p)-SW	PO <sub>4</sub> -P(Orthophosphate)	0.01~3	Ascorbic Acid							34010

# OFF - LINE

Water  
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## >> HS-1000Plus (Portable water analyzer)



### Features

- Light weight and simple design
- Semi-permanent light source-LED Lamp
- Battery and AC power compatible
- Function to automatically turn off LCD for power savings
- Use of vivid and bright graphic LCD

### Specifications

>> HS-1000Plus	
Items for measurement	23 items including COD(cr), COD(Mn), total nitrogen, total phosphorous, ammoniac nitrogen, nitric nitrogen, nitrate nitrogen, phosphoric acid etc
Display	128x64 Dot, Graphic LCD
Light source	LED (365,405,450,525,605,880 nm)
Power	100~240V Free Voltage 50/60Hz
Battery	Li ion, 3.7V 850mA
Data storage	1,000 data
Dimension	98(W)*202(D)*15(H)mm
Weight	450g
Cell type	16mm round vial
Option	Thermal printer, Bluetooth

>> HS-1000SW	
Items for measurement	Seawater COD(Mn), seawater total nitrogen, seawater total phosphorous, seawater ammoniac nitrogen, seawater nitric nitrogen, seawater nitrate nitrogen, seawater orthophosphate
Display	128*64 Dot, Graphic LCD
Light source	LED (365, 405, 450, 525, 605, 880nm)
Power	100 ~ 240V Free Voltage 50/60Hz
Battery	Li ion, 3.7V 850mA
Data storage	1,000 data
Dimension	98(W)*202(D)*15(H)mm
Weight	450g
Cell type	16mm round vial
Option	Thermal printer, Bluetooth

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## >> HS-2300Plus (Water analyzer for lab)



### Features

- Analyzes 40 various items
- Fit for use at lab
- Wide usage in national/public research centers, wastewater and sewage treatment plant, water discharge sites, etc.
- Semi-permanent light source-LED Lamp
- Storage of maximum 400 data ( download data by connecting to PC)

### Specifications

Display	128 * 64 Dot, Graphic LCD
Light source	LED ( 405, 450, 525, 605, 655, 880nm)
Data storage	400 EA (Data Download)
Power	100 ~ 240V Free Voltage 50/60Hz
Battery	Li ion, 3.7V 850mA
Dimension	250(W) * 200(D) * 85(H)mm
Weight	1.2 Kg
Cell type	16 mm round Vial
Others	Memory Data Search
Option	Thermal Printer





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## >> HS-3300 (Water analyzer & spectrophotometer)



### Features

- A combination of water analysis and UV-visible spectrophotometer!
- 4-Type Cell without need for cell holder replacement
- Use as seawater analyzer
- Analysis item: 70 items including COD(Cr), COD(Mn), total nitrogen, total phosphorous and heavy metals, etc.
- Certified product: passed strict EMI and safety test required to obtain CE certificate

### Specifications

Items for measurement	All items of water test kit
Wavelength range	190 ~ 1100
PC use	PC Management program
Scan speed	Max. 1000
Spectral bandpass width(nm)	<1
Light source	Deuterium, Tungsten-halogen
Monochromater	Concave blazed holographic grating
Detector	Si Photodiode
Wavelength accuracy	±0.3
Wavelength repeatability	<±0.05
Stray light (%)	<0.05
Photometric range	-0.3 ~ 3 ABS (0~200%T)
Photometric Accuracy	< 1% at 1ABS
Photometric repeatability (ABS)	±0.002 ABS at 1ABS
Drift (ABS/hr)	<±0.001 after 2hr warm-up
Baseline flatness(ABS)	±0.002ABS (after 1hr warm-up at 1100~200nm)
Noise (ABS)	<0.002ABS Peak to Peak
Display	6 inch LCD 320 * 240 dot
Sample cell	Automatic rotary type 8-position multi-cell
Power	100~120V (50/60Hz), 200~220V (50/60Hz)
Weight (kg)	11 kg
Dimension	440(W) * 405(D) * 235(H)mm
Ambient Temp(°C)	15 ~ 35
Accessories	4-type cell holder (standard) : 10mm, 25mm (square), 16mm, 25mm (round) Automatic rotary type 8-position multi-cell (option)

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## >> HS-R200 (Reactor)



### Application

An reactor for COD, TN, TP and others without the need for hot plate, water bath and autoclave. Temperature control and a timer function for convenient analysis.

### Features

- Used to analyze items requiring reaction such as COD, TN, TP and heavy metals
- Easy to handle
- Fast heating
- Precise with temperature deviation under  $\pm 1^{\circ}\text{C}$

### Specifications

Max. measurement	25EA
Max. temperature	170 $^{\circ}\text{C}$
Speed of temperature increase	10 $^{\circ}\text{C}$ / min
Accuracy	$\pm 1^{\circ}\text{C}$
Power	100~240V Free Voltage 50/60Hz, 300W
Fuse	5A
Dimension	195(W)*310(D)*100(H)mm
Weight	3.5kg
Others	Timer

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## >> Turby-1000 (Portable turbidity meter)



### Features

- Lab Quality result in a unit (Resolution 0.01NTU)
- Wide measuring range and applicable to tap water, sewage and wastewater
- Extended lamp cycle compared to competitors' (15,000 hours)
- Easy to use and calibrate
- High accuracy and resolution

### Specifications

Measuring method	Nephelometric method
Measuring range	0~9.99, 10 ~ 99.9, 100 ~ 1000NTU
Accuracy	±2% (0~499NTU), ±3% (500 ~ 1000NTU)
Resolution	0.01NTU (0~9.99NTU)/ 0.1NTU (10~99.9NTU)/ 1NTU (100~1000NTU)
Repeatability	±1% or ±0.01NTU of result value
Light source	Tungsten lamp
Temperature operating	0 ~ 50℃
Display	128 * 64 dot
Power	100 ~ 240V Free Voltage, 50/60Hz
Size	98(W) * 202(D) * 50(H)
Weight	500g
Consumables	STD Solution Expiry date : six months
Option	Thermal printer, Data download cable

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## >> HS-1000DW (Drinking water analyzer)



### Features

- Monitoring drinking water with HS 1000DW
- Drinking water analyzer by using 25mm round cell
- Completely portable system
- Semi-permanent light source-LED Lamp

### Analysis items for drinking water

Item	Analytical Item	Range(mg/L)	Method	Pack	Cat.No.
HS-Cl <sub>2</sub> (Free)	Chlorine, Free	0.02~3	DPD	100	83020
HS-Fe(T)	Iron, Total	0.05~3	1,10-Phenanthroline	100	84020
HS-NH <sub>3</sub> (N)	Nitrogen, Ammonia	0.015~0.5	Salicylate	100	85020
HS-F	Fluoride	0.05~1.5	Spadns	100	86020
HS-Cu	Copper	0.04~5	Bathocuproine	100	87020
HS-Cl	Chloride	0.4~10	Mercuric Thiocyanate	100	88020
HS-Zn	Zinc	0.01~3	Zincon	100	89020
HS-Mn	Manganese	0.006~1	PAN	100	90020
HS-Al	Aluminum	0.01~0.3	ECR	100	91020
HS-NO <sub>3</sub> (N)	Nitrogen, Nitrate	0.05~3	Cadmium Reduction	100	92020

### Specifications

Display	128 * 64 Dot, Graphic LCD
Light source	LED (480, 525, 540, 560, 605, 660 nm)
Power	100 ~ 240V Free Voltage, 50/60Hz
Battery	Li ion, 3.7V 850mA
Data storage	1,000 EA
Size	98(W)*202(D)*15(H)mm
Weight	450g
Cell type	25mm round vial
Option	Thermal printer, Bluetooth

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## >> ColiTest (Total Coliforms & E.coli)



### Features

- Easy to use and measure
- Total coliforms / E.coli analyzed in 24 hours
- 20~50% cost savings compared to existing measurement methods
- Easy to identify the presence/absence for total coliforms & E.coli

### Specifications

Analysis method	DST (Defined Substrate Technology)
Detection limit	1CFU in a 100mL Sample
Cultivation time	24hr
Cultivation temperature	35±1 °C
Storage temperature	5~30 °C (cold storage recommended)

- ♦ Avoid direct sunlight and keep in cool place.
- ♦ Add one sodium thiosulfate when using sample of tap water which is containing residual chlorine

### Product information

Cat.No	Product Description
56200-03	ColiTest 100EA
56200-00	120mL Bottle 100EA
56200-04	ColiTest 100EA + 120mL Bottle 100EA
56200-10	Sodium Thiosulfate 100EA (Option)
56200-30	UV-Lamp







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