

Compact City Water Analyzer

MWB4-70

This analyzer is for continuous monitoring water quality at faucet feed line or at water receiving tank from city water supply pipe (maximum 7 parameters).

Measurement items are turbidity, color and residual chlorine as standard and conductivity, pH, water temperature and water pressure as optional.

It is designed to enable installation at narrow space as compact B4 size and to realize high reliability, durability and easy maintenance.

Features

Safety Design, Easy to Read & Easy Operation

- (1) Measurement items are displayed in real time at the large color display. Trend indication is available. It can be utilized to analyze cause of abnormality.
- (2) Easy to understand dialogic touch screen is adopted.
- (3) Separated electronics unit and analyzing unit; insulated electronics unit can prevent any electric accident while doing maintenance of detector in the analyzing unit.

High Reliability

- (1) Improved stability of turbidity and color measurements
Occurrence of air bubbles in the cell is decreased by reversal flow cleaning system in the any event when bubbles are generated.
- (2) Time-proven non-contact swing rotary type electrode is adopted for chlorine electrode. It enables stable measurement for long time with original ceramic beads cleaning even at the time when sample flow varies.
- (3) An electric dehumidification unit is equipped in order to prevent dew condensation inside of the analyzer. Long product life can be realized by preventing rust.



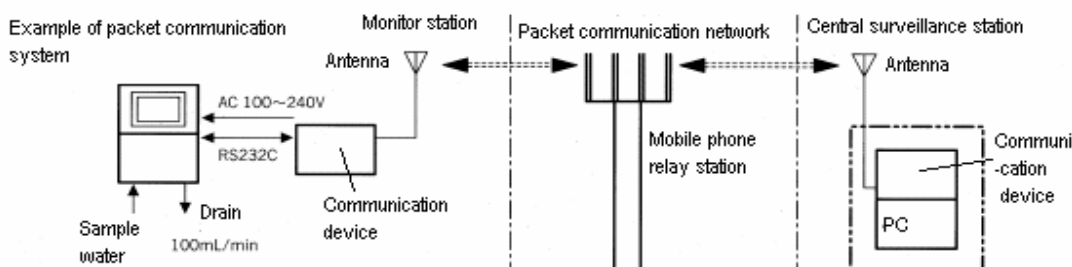
Extensive output system for measurement data

Two digital communication interfaces, RS232C and RS485 are supplied as standard other than DC 4~20mA analog output.

Superior Maintainability

- (1) Remote operation like cleaning and zero calibration can be done by contact signal or RS-232C or RS485. It could save maintenance cost.
- (2) The measurement data is logged in internal memory for three months as one minute value and for one year as hourly value. Logged data can be copied to optional memory card and available to read data by PC.
- (3) As self-diagnostic function "Caution" signal or "Alarm" signal would arise depending on the contents of failure. It can offer effective maintenance work.

Example of communication system configuration



Measurement parameter and performance

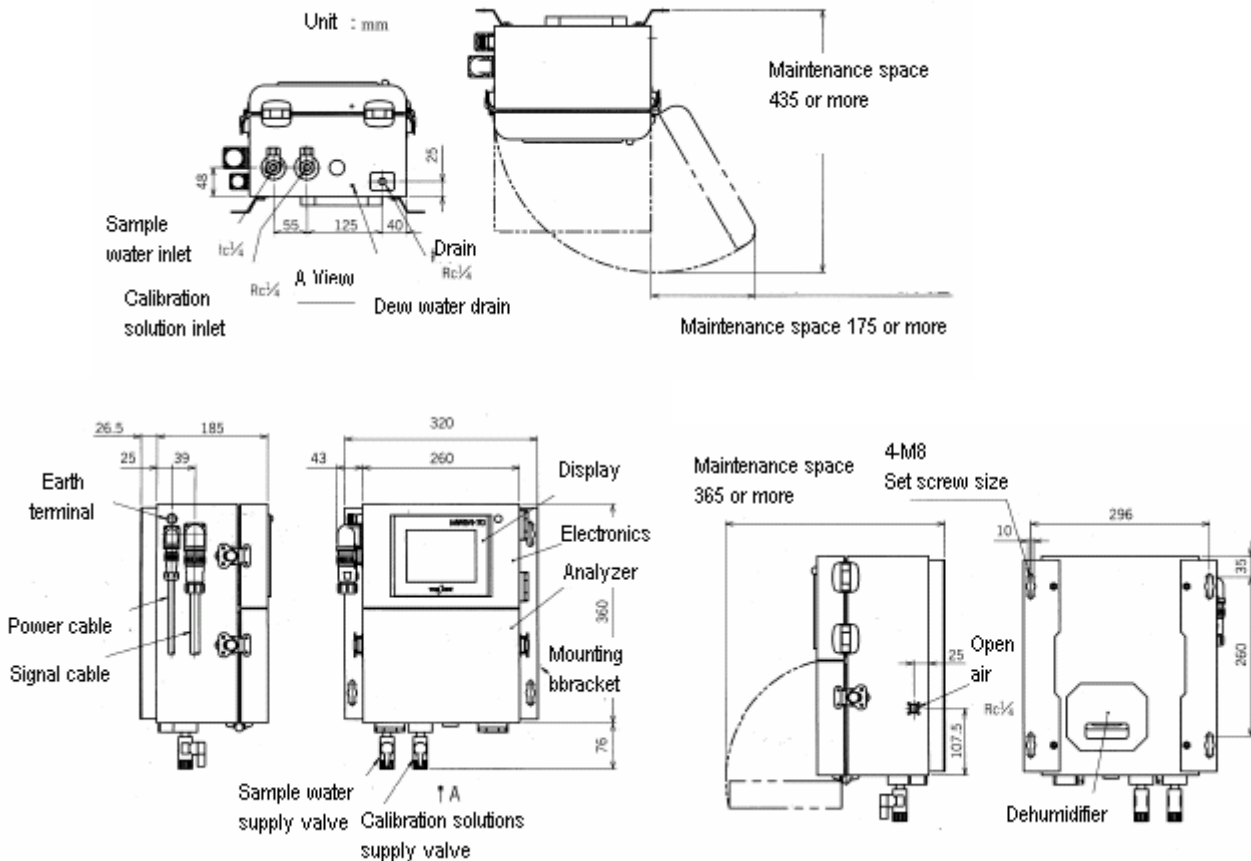
Measured item	Measuring method	Measuring range	Minimum indication	Linearity	Repeatability	Calibration method
Turbidity	Transmitted light method	0~2/0~4 degree	0.01 degree	Within +/-2.5% F.S.	Within +/-2% F.S	PSL standard solution
Color	Transmitted light method	0~10/0~20 degree	0.01 degree	Within +/-5% F.S.	Within +/-3% F.S	Color standard solution
Residual Chlorine	Polarographic method	0 ~ 2 mg/L	0.001mg/L	Within +/-2.5% F.S.	Within +/-2.5% F.S	DPD colorimeter method
Electric Conductivity	AC 2 polar method	0 ~ 50mS/m	0.1mS/m	Within +/-2% F.S.	Within +/-2% F.S	KCl Standard solution
pH	Glass electrode method	pH 2 ~ 12	0.01pH	Within +/-0.1pH	Within +/-0.1pH	pH7, 9 standard solution
Temperature	Platinum temperature sensor	0 ~ 50°C	0.1 °C	Within +/-0.5 °C	Within +/-0.5 °C	Standard thermometer
Pressure	Diffusion semiconductor	0 ~ 1MPa	0.001MPa	Within +/-0.5% F.S.	Within +/-0.5% F.S	Standard pressure indicator

Standard specifications

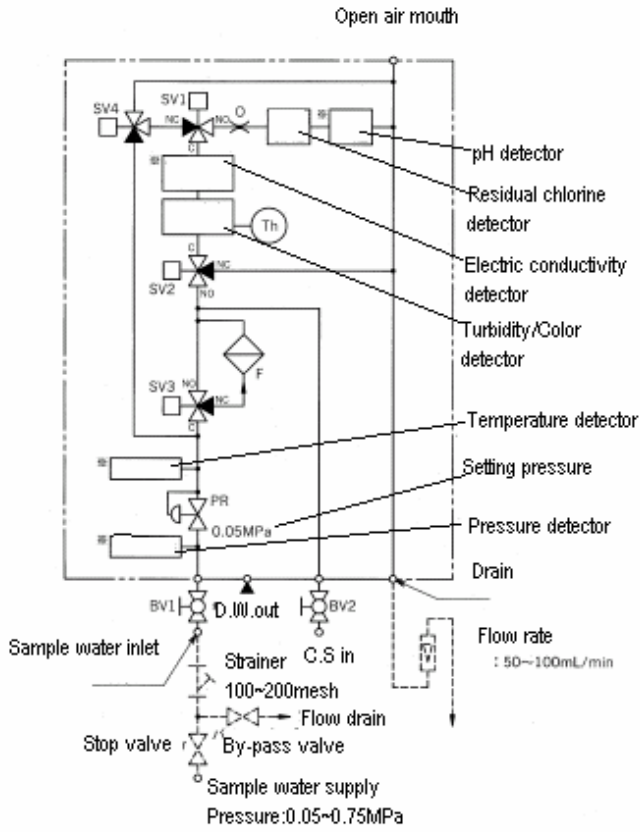
Name of product	Compact City Water Analyzer	Contact Signal	Cleaning demand: Cell window cleaning starts (Turbidity/Color)
Model	MWB4-70	Input	Calibration demand: Automatic zero calibration starts (Turbidity / Color / Residual chlorine)
Measuring objects	Turbidity, Color, Residual Chlorine, Electric Conductivity, pH, Temperature, Pressure		(Contact capacity: 30VDC 0.1A 500mS or more)
Measuring range	2 range-change over for turbidity and color	Communication system	Interfaces: RS232C (Isolated) and RS485 (Isolated)
Change-over			Communication speed: 9600BPS
Indication method	Color touch screen LCD		Synchronous system: Asynchronous method
Temp. Compensation	For Residual Chlorine, EC and pH Between 0 and 40°C		Control system: Half-duplex communication method
Response time	Within 3 min. 90% response	Recording function	One train for communication (special connector)
Power Source	100~240VAC+/-10% 50/60Hz		One train for maintenance (C-SUB connector)
Power Consumption	Approx. 60/82VA (AC100/240V)	Sample water condition	Recording data such as measured value to memory card and processing the data with PC are available.
Output	DC4~20mA for each parameter Isolated (- side for each parameter is common)		Recordable for one year's worth of hourly data and for three months' worth of one minute data of each measurement item.
Contact Signal Output	Alarm 1: General alarm (Measurement up-upper/low-lower alarm, light source abnormal light source, residual chlorine motor abnormal, sensor abnormal, start-up mode abnormal)		No water outage or no stagnation of water flow
	Alarm 2: General alarm (Concentration upper /lower alarm, water temperature compensation abnormal, Automatic calibration abnormal)		Temperature: 0 ~ 40°C (No freezing)
	Under Maintenance: During ST-BY mode		Pressure: 0.05~0.75MPa
	Duration of event: Under auto cleaning, calibration, drain, abnormality judgment		pH: pH5.5 ~ 8.6 variation shall be within pH1
	(Contact capacity: 30VDC 0.2A load resistance)	Sample water consumption volume	EC: 8mS/cm (80μS/cm) or more
	Power off: Close when power is off (Contact capacity: 24VDC 0.2A load resistance)	Material of wetted parts	Sample flow rate: 50 ~ 100mL/min.
		Piping connection	4.5m ³ /month or less (9m ³ /month with by-pass flow 100mL/min)
			Polyurethane, PP, Acrylic, Stainless steel, FKM and etc.
			Sample water inlet: RC1/4
			Drain: RC1/4

Mounting	Calibration solution inlet: RC1/4 Vent: RC1/4	Automatic cleaning	Hold time of transmission: Approx. 13min. + 9 min. (Fixed) for calibration Cleaning cell window by reversed water flash of sample water for turbidity and color Starting by internal timer or external contact input Cycle selection: Select one among 10/15/20/30/60min.
Cable port	Suitable for wall or rack mounting Water proof connector 2 pieces 3m cables for power inlet and for input/output signals are attached		
Ambient temperature	0 ~ 40°C (no freezing)		
humidity	Less than 85% RH (No dew condensation)		
Weight	Approx. 11kgs		
Construction	Indoor installation (Equivalent to IP43)		
Case material	Aluminum	Options	Beads cleaning by electrode self-rotation for residual chlorine. Free standing frame (indoor mounting) Outdoor Cubicle with temperature controller Automatic sampling unit for abnormal condition Leakage detection unit for inside of analyzer
Painting color	Light gray (Equivalent to Munsell 5PB 8/1)		
Automatic calibration	Zero calibrations for Turbidity, Color and Residual chlorine, Starting by internal timer or external contact input (Zero calibration solution is prepared by filtration of sample water) Cycle setting : 0 ~ 24 hours Time for calibration: Approx. 13 min. (Fixed)		

Outline dimensions



Flow Sheet



No.	Description
BV1	Sample water supply valve
BV2	Calibration solution supply valve
SV1	Solenoid valve for cleaning water
SV2	Solenoid valve for drain
SV3	Solenoid valve for zero water changing
SV4	Solenoid valve for open air
Th	Sensor for temperature compensation
F	Filter for zero water
PR	Pressure release valve for sample water
O	Orifice

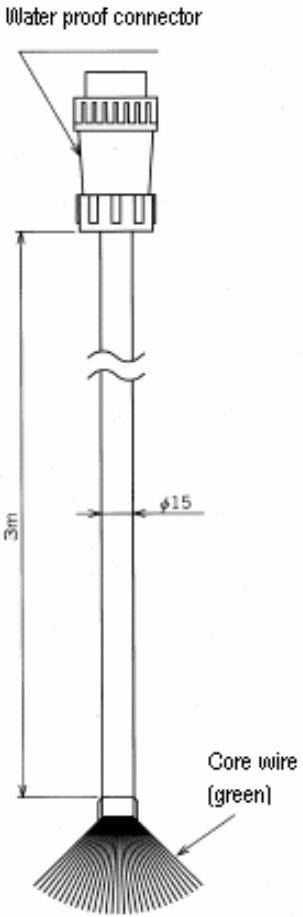
Note:

C.S. in = Calibration solution inlet
 D.W out = Dew condensation water outlet

* Detectors for your specified measuring items are to be assembled. (Maximum 7 parameters)

Output/Input Signal Table

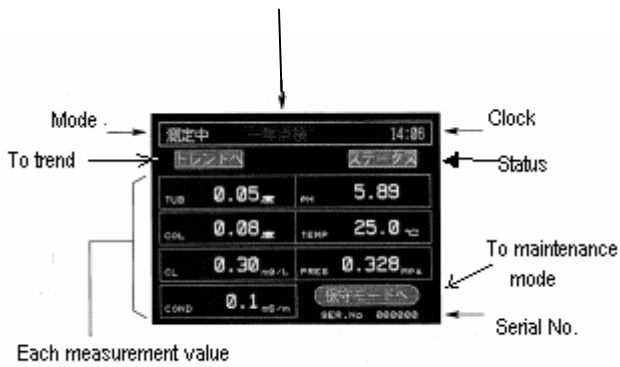
Connector No.	Color of line	Type of Signal	Description of Signal
1	Black	Analog output 4 ~ 20mADC	+ Turbidity Measurement Value
2	White/Black		- Value
3	Red	ditto	+ Color Measurement Value
4	White/Red		- Value
5	Green	ditto	+ Residual Chlorine M'ment Value
6	White/Green		- Value
7	Yellow	ditto	+ Electric Conductivity M'ment Value
8	White/Yellow		- Value
9	Brown	ditto	+ pH Measurement Value
10	White/Brown		- Value
11	Blue	ditto	+ Temperature M'ment Value
12	White/Blue		- Value
13	Gray	ditto	+ Pressure Measurement Value
14	White/Gray		- Value
15	Orange	Contact input (Puls)	Cleaning Demand
16	White/Orange		Calibration Demand
17	Purple	ditto	Spare 1
18	White/Purple		Spare 2
19	Bright green	ditto	COM
20	White/B.green		Contact output (Status)
21	Peach	ditto	Alarm 1
22	White/Peach		Alarm 2
23	Azure	ditto	Under Maintenance
24	White/Azure		During Event
25	White	ditto	Spare (For option)
26	Black/White		Power Cut
27	Black/Green	Analog input 4 ~ 20mADC	+ Convert to digital output of flow meter/Level meter
28	Red/Green		-
29	Black/Yellow	Digital output RS-232C	R X D
30	Red/Yellow		T X D
31	Black/Brown		COM
32	Red/Brown	Nil	
33	Black/Blue		
34	Black/Gray	Digital output RS-485	+
35	Black/Gray		-
36	Red/Gray	Grouding	COM
37	Shield Wire		D Type



Signal Cable

Touch Screen

Alarm indication
(When touching here, alarm table will be on)

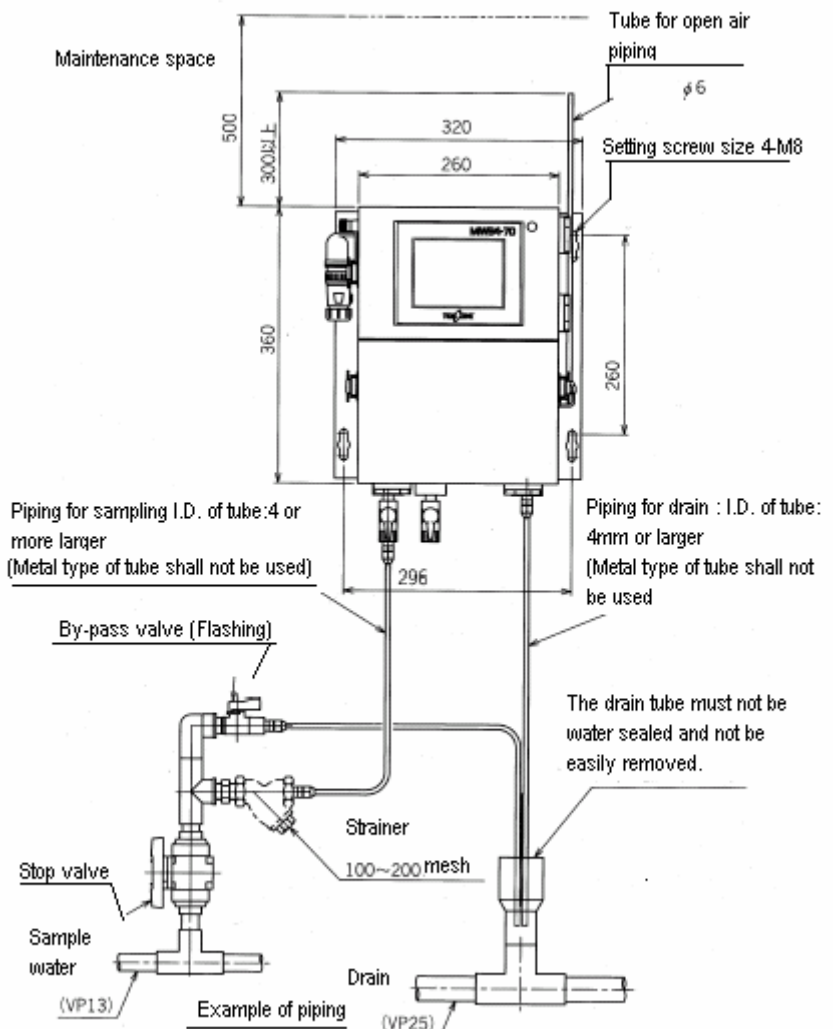
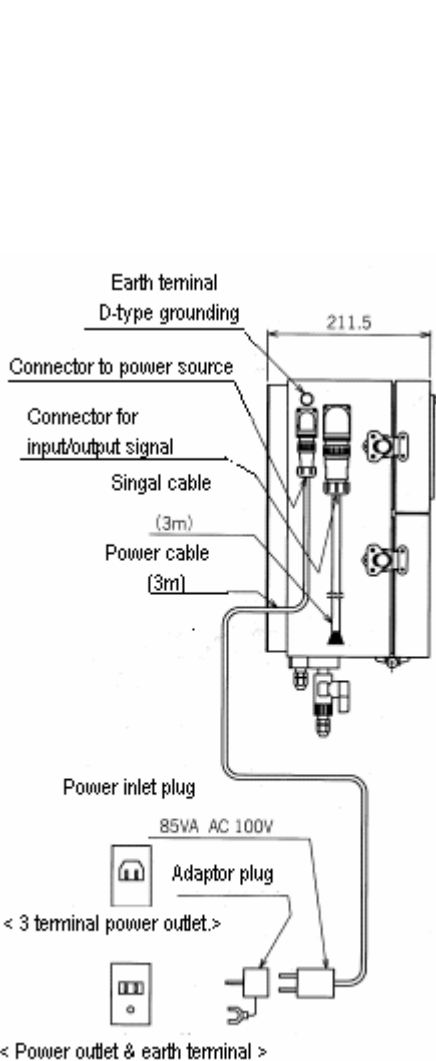


(When touching specific parameter, setting contents will be on.)

When touching the word or the value indicated in the display, the indication will be changed or the indicated operation will proceed.

Indication Part	Contents
Each measurement Value	On-going measurement value will be displayed during automatic measurement
Mode	Measurement or Maintenance will be indicated
Clock	Time is displayed
Alarm	When alarm is occurred, Alarm indication in on.
Serial No.	Production serial number to the analyzer is displayed
To Trend	When touching it, trend graph data will be displayed.
Status	When touching it, automatic cleaning and calibration setting will be indicated.
To Maintenance Mode	When keep pressing, the display will be shift to Maintenance Mode.

Example of Installation



1. Installation condition of analyzer
 - a) The analyzer shall be installed at the place where is free from rain, wind and direct sun light.
 - b) The place where sample that meets below 4. "Sample water condition" can be drawn.
 - c) No vibration is occurred.
 - d) The place where no electrical noise source is near by.
 - e) The place where enough maintenance space is available to easily do maintenance work.

2. Installation

This analyzer is designed as wall hanging or rack mounting for the installation. Therefore, please make holes at wall before mounting so that the analyzer can be installed at wall with 4 pieces of screw in horizontal position. Analyzer weight is approx. 11kgs.

3. Piping

- a) Pipe the sample water and drain by using tube. The sample water supply line and drain line must be of tube so that no water pressure load is applied at valves and etc. at analyzer side.
- b) Use metal joint like stainless steel for supplying line pressurized.
- c) Please provide stop valve and by-pass valve (co-use to flush for cleaning) at sample water supply side.

The required sample flow rate is approx. 50 ~ 100mL/min. It is recommended to waste 100 ~ 200 mL /min. as by-pass flow (Waste water). The sample water should not be accumulated in sampling line to shorten rag time. Also please provide a strainer having 100~200 mesh when it is needed considering the quality of water.

- d) The drain piping must be in open air at the end.
- e) The piping from the sampling point (The point where sample water is drawn) to the analyzer shall be in the appropriate length that it takes within 3 to 5 minutes to introduce the sample water to the analyzer after taking the water at the sampling point. Example: Approx. 3 to 5 meter of the length in case of 13A tube (Maximum length shall be 3 meter in case of $\phi 4 \times \phi 6$ of tube)

4. Sample water condition

- a) There should be no cuts in water supply or retention.
- b) Temperature of sample water: 0 ~ 40°C (no freezing)
- c) Pressure of sample water: 0.05 ~ 0.75MPa
- d) Flow volume of sample water: 50~100mL/min.
- e) If air bubbles excessively mingled into the sample water, it would be required to arrange de-bubbling device in preceding step to analyzer such as arrangement of bypass.

List of standard accessories

No.	Code No. & description	Q'ty	
1	145A Instruction manual	1	
2	145B Inspection report	1	
3	104A288 Fuse	1	
4	123G031 Beads	1	
5	118G130 Power cable	1	3m
6	118C504 Adaptor	1	Power inlet
7	7127830K Signal cable	1	3m
8	59341000 Calibration tank	3	
9	136C057 Beaker	3	
10	136C019 Wash bottle PP	1	
11	143F192 Standard solution	1	For pH m'tment
12	143F193 Standard solution	1	
13	6535310K Span cal. tube	1	
14	143C140 Silica-gel	1	
15	141D002 Silicon grease	1	
16	115A569 O-ring S22.4	2	Dryer case
17	115A448 O-ring S28	1	Bead case
18	115A035 O-ring P15	1	For pH
19	117B409 Vent coupling	1	
20	116B150 P.P. tube	1m	Air vent

Special accessories

- For parts of piping (For installation, separate sales)

Description	Code No.	Use
Flow meter	127A629	Sample water inlet 0~200mL/min.
Elbow union	117B409	For flow meter, R1/4 PP
PP tube	116B150	Sample water inlet, $\phi 4 - \phi 6 \times 10m$
Metal connector	117A506	Sample water inlet, R1/4, SUS316
Half union	117B405	Drain, R1/4 PP
Y-type strainer	117A864	1/2 SUS316
Flow control valve	126B866	For sample water bypass, 1/4 PVC

- Memory card

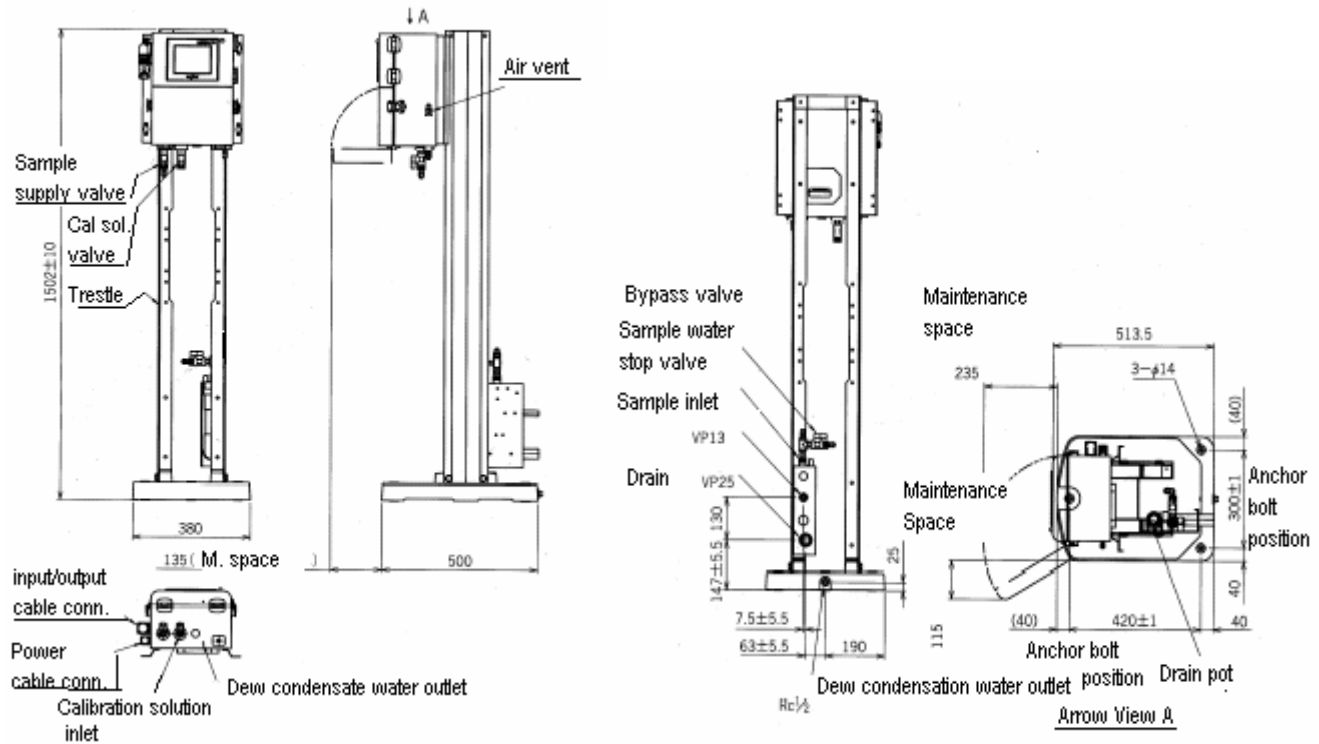
Code No. 7135040K (CFS Ass'y) 256MB with case

Annual operational spare parts list

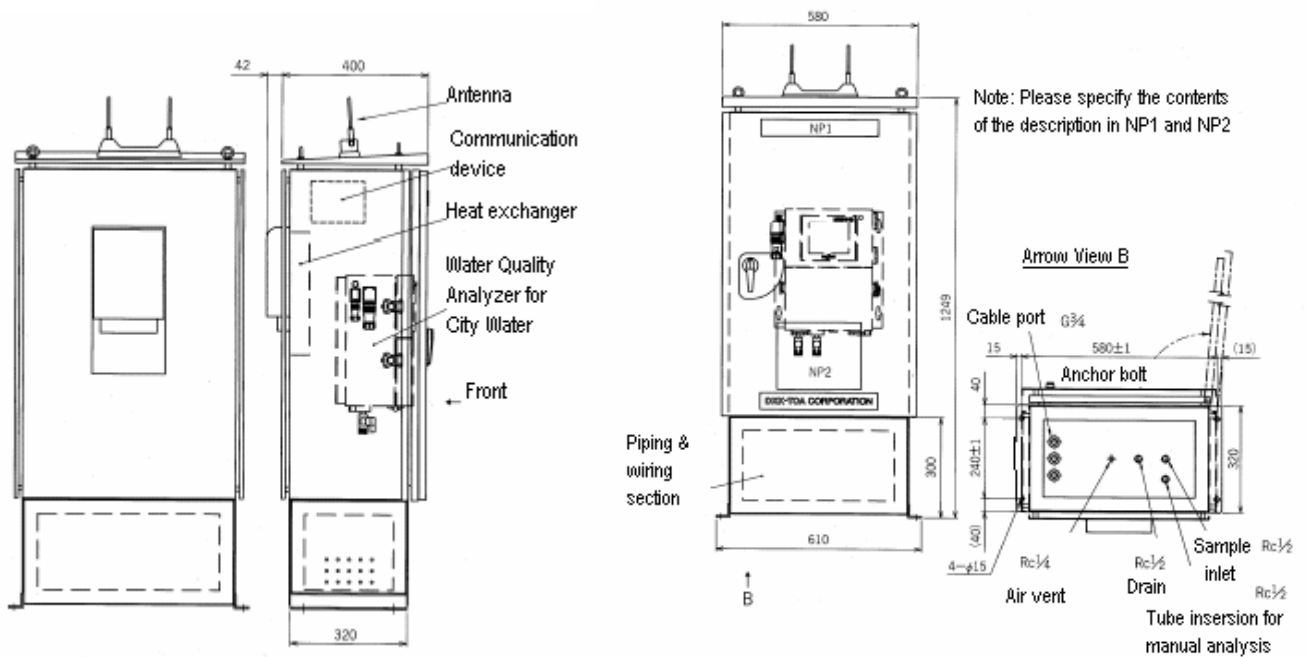
No.	Code No. / Description	Annual Qty		Remarks
		C/S	S/P	
1	123G031 Beads	1		
2	143F061 pH buffer powder		1	pH
3	143F062 pH buffer powder		1	pH
4	ELP-065 pH electrode		2	pH
5	7136950K Motor for R.C.		1	
6	116E534 Urethane tube		2m	
7	115A035 O-ring P15		2	pH
8	115A448 O-ring S28		2	
9	115A569 O-ring S22.4		4	
10	143C140 Silica-gel		1	
11	117E611 Orifice		1	
12	136A270 Filter cartridge		1	Zero
13	143C050 Color Std. Sol.		1	
14	143D039 Turbidity Std. Sol.		1	
15	6485960K EC Std. Sol.		2	EC

Optional system

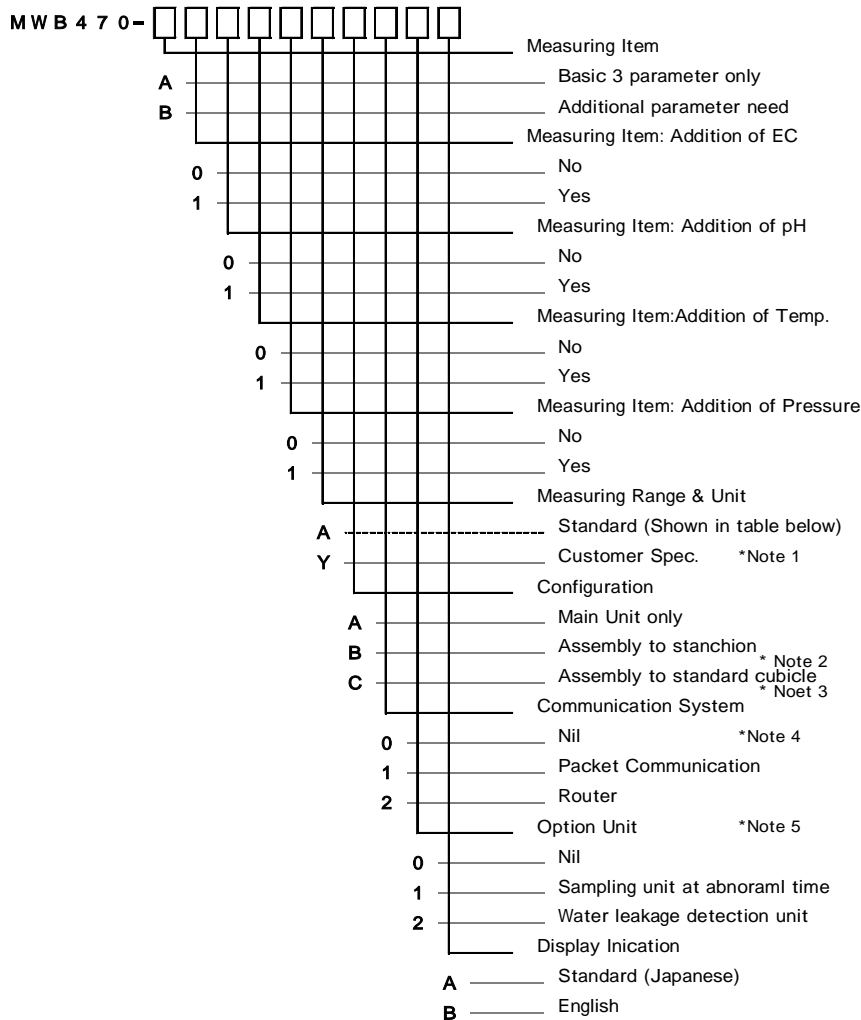
- Free standing frame



- Outdoor cubicle



Product Code



*1. Standard measuring range & unit

	Measuring items	Range & Unit
1	Turbidity	0~2/0~4 degree (2 ranges)
2	Color	0~10/20 degree (2 ranges)
3	Residual Chlorine	0~2mg/L
4	EC	0~50mS/m
5	pH	pH2~12
6	Temperature	0~50°C
7	Pressure	0~1MPa

Please refer to DKK-TOA Corporation in case of customer's specification required.

*2. Indoor type, the piping work is completed such as sample water IN/OUT. Refer to page 7.

*3. Outdoor type (for non cold weather region and heat controller equipped). Refer to page 7.

*4. DKK-TOA will advise to user through the distributor regarding the selection of communication device, system model (protocol converter etc.) and data processing software such as MEX-2000.

*5. It is possible to add one of which, sampling unit at abnormal time or water leakage detection unit.

DKK-TOA CORPORATION



CAUTION

Do not operate products before consulting instruction manual.

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Local Representative:

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