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 Maintenability**

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**

![Example of packet communication system diagram](image)
### Measurement parameter and performance

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

### Standard specifications

**Name of product**
Compact City Water Analyzer

**Model**
MWB4-70

**Measuring objects**
- Turbidity, Color, Residual Chlorine,
- Electric Conductivity, pH,
- Temperature, Pressure

**Measuring range**
- 2 range-change over for turbidity and color

**Change-over method**
Color touch screen LCD

**Indication method**
- Temp: For Residual Chlorine, EC and pH Between 0 and 40°C
- Compensation: Within 3 min. 90% response
- Power Source: 100~240VAC+/−10% 50/60Hz
- Power: Approx. 60/82VA (AC100/240V)
- Consumption: Max. Approx. 85/108VA (AC100/240V)
- Output: DC4~20mA for each parameter Isolated (- side for each parameter is common)

**Contact Signal Output**
- Load resistance 600 Ω or less
- 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)
- Alarm 2: General alarm (Concentration upper/lower alarm, water temperature compensation abnormal, Automatic calibration abnormal)
- Under Maintenance: During ST-BY mode
- Duration of event: Under auto cleaning, calibration, drain, abnormality judgment

**Contact Signal Input**
- Contact capacity: 30VDC 0.2A load resistance
- Power off: Close when power is off

**Contact Signal Input**
- Contact capacity: 30VDC 0.2A load resistance
- Communication system: RS232C (Isolated) and RS485 (Isolated)

**Recording function**
- Recording data such as measured value to memory card and processing the data with PC are available.
- Recordable for one year’s worth of hourly data and for three months’ worth of one minute data of each measurement item.
- No water outage or no stagnation of water flow
- Temperature: 0 ~ 40°C (No freezing)
- Pressure: 0.05~0.75MPa
- pH: pH5.5 ~ 8.6 variation shall be within pH1
- EC: 8mS/cm (80μS/cm) or more
- Sample flow rate: 50 ~ 100mL/min.
- 4.5m/month or less
- Polyeurethane, PP, Acrylic, Stainless steel, FKM and etc.
- Sample water inlet: RC1/4
- Drain: RC1/4
Calibration solution inlet: RC1/4
Vent: RC1/4
Mounting: Suitable for wall or rack mounting
Cable port: 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. 11kg
Construction: Indoor installation (Equivalent to IP43)
Case material: Aluminum
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)
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.
Hold time of transmission: Approx. 2min. + 1 min. (Fixed) for cleaning
Beads cleaning by electrode self-rotation for residual chlorine.
Automatic cleaning
Cycle selection: Select one among 10/15/20/30/60min.
Hold time of transmission: Approx. 2min. + 1 min. (Fixed) for cleaning
Beads cleaning by electrode self-rotation for residual chlorine.
Automatic cleaning
Cycle selection: Select one among 10/15/20/30/60min.
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Hold time of transmission: Approx. 2min. + 1 min. (Fixed) for cleaning
Beads cleaning by electrode self-rotation for residual chlorine.
Flow Sheet

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV1</td>
<td>Sample water supply valve</td>
</tr>
<tr>
<td>BV2</td>
<td>Calibration solution supply valve</td>
</tr>
<tr>
<td>SV1</td>
<td>Solenoid valve for cleaning water</td>
</tr>
<tr>
<td>SV2</td>
<td>Solenoid valve for drain</td>
</tr>
<tr>
<td>SV3</td>
<td>Solenoid valve for zero water changing</td>
</tr>
<tr>
<td>SV4</td>
<td>Solenoid valve for open air</td>
</tr>
<tr>
<td>Th</td>
<td>Sensor for temperature compensation</td>
</tr>
<tr>
<td>PR</td>
<td>Filter for zero water</td>
</tr>
<tr>
<td>O</td>
<td>Pressure release valve for sample water</td>
</tr>
<tr>
<td>C.S in</td>
<td>Calibration solution inlet</td>
</tr>
<tr>
<td>D.W out</td>
<td>Dew condensation water outlet</td>
</tr>
</tbody>
</table>

Note:

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

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

**Example of Installation**

![Diagram of Touch Screen with Indications and 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 flash for cleaning) at sample water supply side.
   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 φ4 x φ6 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**

<table>
<thead>
<tr>
<th>No.</th>
<th>Code No. &amp; description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Instruction manual</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Inspection report</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Fuse</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Beads</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Power cable</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Adapter</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Signal cable</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Calibration kit</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Booster</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Mesh filter PP</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Standard solution</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Standard solution</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Span cal. tube</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Silica-gel</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Silicon grease</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>0-ring S22.4</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>0-ring G28</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>0-ring P15</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Y-strainer coupling</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>P.P. tube</td>
<td>1</td>
</tr>
</tbody>
</table>

**Special accessories**

- For parts of piping (For installation, separate sales)
  - Flow meter: 127A629, Sample water inlet 0~200mL/min.
  - Elbow union: 117B409, For flow meter, R1/4 PP
  - PP tube: 116B150, Sample water inlet, φ4 ~ φ6 x10m
  - Metal connector: 117A506, Sample water inlet, R1/4, SUS316
  - Half union: 117B405, Drain, R1/4 PP
  - Y-type strainer: 117A64, 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**

<table>
<thead>
<tr>
<th>No.</th>
<th>Code No. &amp; description</th>
<th>Annual Qty (Set)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>128001</td>
<td>1</td>
<td>Reagent</td>
</tr>
<tr>
<td>2</td>
<td>128002</td>
<td>1</td>
<td>pH buffer solution</td>
</tr>
<tr>
<td>3</td>
<td>128003</td>
<td>1</td>
<td>pH buffer solution</td>
</tr>
<tr>
<td>4</td>
<td>128004</td>
<td>1</td>
<td>pH electrode</td>
</tr>
<tr>
<td>5</td>
<td>128005</td>
<td>1</td>
<td>Motor for R.C.</td>
</tr>
<tr>
<td>6</td>
<td>128006</td>
<td>2</td>
<td>Uv lamp tube</td>
</tr>
<tr>
<td>7</td>
<td>128007</td>
<td>2</td>
<td>O-ring P15</td>
</tr>
<tr>
<td>8</td>
<td>128008</td>
<td>2</td>
<td>O-ring S22.4</td>
</tr>
<tr>
<td>9</td>
<td>128009</td>
<td>2</td>
<td>O-ring S22.4</td>
</tr>
<tr>
<td>10</td>
<td>128010</td>
<td>1</td>
<td>Silica-gel</td>
</tr>
<tr>
<td>11</td>
<td>128011</td>
<td>1</td>
<td>Office</td>
</tr>
<tr>
<td>12</td>
<td>128012</td>
<td>1</td>
<td>Filter cartridge</td>
</tr>
<tr>
<td>13</td>
<td>128013</td>
<td>1</td>
<td>Color Std. Sol.</td>
</tr>
<tr>
<td>14</td>
<td>128014</td>
<td>1</td>
<td>Turbidity Std. Sol.</td>
</tr>
<tr>
<td>15</td>
<td>128015</td>
<td>1</td>
<td>BCI Std. Sol.</td>
</tr>
<tr>
<td>16</td>
<td>128016</td>
<td>1</td>
<td>EC Std. Sol.</td>
</tr>
</tbody>
</table>
Optional system

- Free standing frame

Outdoor cubicle
*1. Standard measuring range & unit

<table>
<thead>
<tr>
<th>Measuring items</th>
<th>Range &amp; Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1   Turbidity</td>
<td>0<del>2/0</del>4 degree (2 ranges)</td>
</tr>
<tr>
<td>2   Color</td>
<td>0~10/20 degree (2 ranges)</td>
</tr>
<tr>
<td>3   Residual Chlorine</td>
<td>0~2mg/L</td>
</tr>
<tr>
<td>4   EC</td>
<td>0~50mS/m</td>
</tr>
<tr>
<td>5   pH</td>
<td>pH2~12</td>
</tr>
<tr>
<td>6   Temperature</td>
<td>0~50°C</td>
</tr>
<tr>
<td>7   Pressure</td>
<td>0~1MPa</td>
</tr>
</tbody>
</table>

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.