General

The model FLXA2® two-wire analyzer, one model of FLEXA® series, offers single or dual sensor measurement. The modular-designed analyzer offers 4 kinds of measurements – pH/ORP (oxidation-reduction potential), contacting conductivity (SC), inductive conductivity (ISC) or dissolved oxygen (DO) – with the respective sensor module.

For dual sensor measurement, the combination of two same type sensor inputs – pH/ORP and pH/ORP, SC and SC, and DO and DO – are available with two sensor modules. Dual sensor measurement offers additional functionalities; calculated data function and redundant system.

Variety of calculated data from two measuring parameters is selectable for each measurement. On the redundant system built on two measuring parameters of two sensor inputs, main output parameter is automatically switched over to the second sensor output in case of the main sensor’s failure condition.

In the FLXA21 Human Machine Interface (HMI), 2-wire type analyzer FLXA21 offers easy touch screen operation and simple menu structure in 12 languages. Menus of display, execution and setting are displayed in a selected language.

The analyzer FLXA21 automatically recognizes the installed sensor module and prepares the necessary menus for right configuration, even for dual sensor measurement.

For immediate measurement, the FLXA21 offers quick setup functionality. The quick setup screen appears when the analyzer is powered. Only a few setups – date/time, language, basic sensor configurations and output – will start the measurement.

The FLXA21 offers the best accuracy in measurement with temperature compensation functionality and calibration functionality. Sensor diagnostics and sensor wellness indication make measurement reliable. Logbook of events and diagnostic data is a useful information source for maintenance.

For the wide range of industrial environment, the FLXA21 is designed with the enclosure of plastic, stainless steel or stainless steel with corrosion-resistant coating. And, for hazardous location, the FLXA21 has approvals of ATEX and IECEx.

Features

• 4 kinds of measurements; pH/ORP, SC, ISC and DO
• Dual sensor measurement on 2-wire type analyzer; pH/ORP and pH/ORP, SC and SC, and DO and DO
• Calculated data from dual sensor measurement
• Redundant system on dual sensor measurement
• Easy touch screen operation on 2-wire type analyzer
• Simple HMI menu structure in 12 languages
• Quick setup menu for immediate measurement
• Indication of sensor wellness
• Enclosure – plastic, stainless steel or stainless steel with corrosion-resistant coating
• Hazardous location approvals – ATEX and IECEx
General Specifications

1. Basic

- Measurement Object
  - pH/Oxidation-reduction Potential (pH/ORP)
  - Conductivity (SC)
  - Inductive Conductivity (ISC)
  - Dissolved Oxygen (DO)
  Note: The available measurement object depends on a sensor module installed on the analyzer.

- Analyzer Structure
  Module structure

- Composition of Analyzer
  One (1) Housing assembly
  One (1) or two (2) Sensor modules

- Combination of Sensor Module when two modules are installed
  Combinations of two same sensor modules are available;
  pH/ORP and pH/ORP
  SC and SC
  DO and DO

2. Measurement

2-1. pH/Oxidation-reduction Potential (pH/ORP)

- Input Specification
  Dual high impedance input (≥10\(12\) Ω)

- Input Range
  pH: -2 to 16 pH (with option /K: 0 to 14 pH)
  ORP: -1500 to 1500 mV
  rH: 0 to 100 rH

  Temperature:
  Pt1000: -30 to 140 °C
  Pt100: -30 to 140 °C
  6k8: -30 to 140 °C
  PTC10k: -30 to 140 °C
  NTC 8k55: -10 to 120 °C
  3k Balco: -30 to 140 °C
  PTC500: -30 to 140 °C

- Output Range
  pH: min. span 1 pH
  max. span 20 pH
  ORP: min. span 100 mV
  max. span 3000 mV
  rH: min. span 2 rH
  max. span 100 rH

  Temperature: min. span 25 °C
  max. span 170 °C

- Performance (Accuracy)
  (The specifications are expressed with simulated inputs.)
  pH
  Linearity: ±0.01 pH
  Repeatability: ±0.01 pH
  Accuracy: ±0.01 pH

  ORP
  Linearity: ±1 mV
  Repeatability: ±1 mV
  Accuracy: ±1 mV

  Temperature
  with Pt1000, 6k8, PTC10k, NTC 8k55, 3k Balco, PTC500
  Repeatability: ±0.1 °C
  Accuracy: ±0.3 °C

  with Pt100
  Linearity: ±0.4 °C
  Repeatability: ±0.1 °C
  Accuracy: ±0.4 °C

2-2. Conductivity (SC)

- Input Specification
  Two or four electrodes measurement with square wave excitation, using max 60m (200ft) cable (WU40/ WF10) and cell constants from 0.005 to 50.0 cm\(^{-1}\)

- Input Range
  Conductivity:
  min.: 0 µS/cm
  max.: 200 mS x (Cell constant)

  Resistivity:
  min.: 0.005 kΩ / (Cell constant)
  max.: 1000 MΩ x cm

  Temperature:
  Pt1000: -20 to 250 °C
  Pt100: -20 to 200 °C
  Ni100: -20 to 200 °C
  NTC 8k55: -10 to 120 °C
  Pb36(JIS NTC 6k): -20 to 120 °C

- Output Range
  Conductivity:
  min. 0.01 µS/cm
  max. 2000 mS/cm (max 90% zero suppression)

  Resistivity:
  min. 0.001 kΩ / cm
  max. 1000 MΩ x cm (max 90% zero suppression)

  Temperature:
  min. span 25 °C
  max. span 270 °C

- Performance (Accuracy)
  (The specifications are expressed with simulated inputs.)
  Conductivity
  2 µS x K cm\(^{-1}\) to 200 mS x K cm\(^{-1}\)
  Accuracy: ±0.5%FS

  1 µS x K cm\(^{-1}\) to 2 µS x K cm\(^{-1}\)
  Accuracy: ±1%FS

  Resistivity
  0.005kΩ / K cm\(^{-1}\) to 0.5MΩ / K cm\(^{-1}\)
  Accuracy: ±0.5%FS

  0.5MΩ / K cm\(^{-1}\) to 1MΩ / K cm\(^{-1}\)
  Accuracy: ±1%FS

  Temperature
  with Pt1000, Pb36, Ni100
  Accuracy: ±0.3 °C
  with Pt100, NTC 8k55
  Accuracy: ±0.4 °C

  Temperature compensation
  NaCl table: ±1 %
  Matrix: ±3 %

  Step response: 90 % (< 2 decades) in 7 seconds

  Note: "FS." means maximum setting value of analyzer output.
  "K" means cell constant.
  YOKOGAWA provides conductivity sensors of which cell constants are 0.1 to 10 cm\(^{-1}\).
2-3.  Inductive Conductivity (ISC)

■ Input Specification
Compatible with the Yokogawa inductive conductivity
ISC40 series with integrated temperature sensor:
NTC30k or Pt1000.

■ Input Range
Conductivity:  0 to 2000 mS/cm at 25 °C reference
temperature.
Temperature:  -20 to 140 °C
Cable length:
max. 60 meters total length of fixed sensor
cable + WF10(J) extension cable.
Influence of cable can be adjusted
by doing an AIR CAL with the cable
connected to a dry cell.

■ Output Range
Conductivity:
min. span: 100 µS/cm
max. span:  2000 mS/cm (max 90% zero
suppression)
Temperature:
min. span 25 °C
max. span 160 °C

■ Performance (Accuracy)
(The specifications are expressed with simulated
inputs.)
(Output span is 0-100 µS/cm or more)
Conductivity:
  Linearity: ±(0.4 %F.S. + 0.3 µS/cm)
  Repeatability: ±(0.4 %F.S. + 0.3 µS/cm)
Temperature:  ±0.3 °C
Step response:  90 % (< 2 decades) in 8 seconds
Note: "F.S." means maximum setting value of analyzer
output.

2-4.  Dissolved Oxygen (DO)

■ Input Specification
The FLXA21 accepts output from membrane covered
Dissolved Oxygen sensors. These sensors can
be Galvanic type, where the sensor generates its
own driving voltage or Polarographic type, where
the sensor uses external driving voltage from the
converter.
The input range is 0 to 50 µA for Galvanic sensors
and 0 to 1 micro A for Polarographic sensors.
For temperature compensation, the FLXA21 accepts
Pt1000 (DO30 sensor) and NTC22k elements
(OXYFERM and OXYGOLD sensors).

■ Input Range
DO30 sensor:
  Dissolved Oxygen: 0 to 60 mg/l (ppm)
  Temperature:  -20 to 150 °C
  Note: Process temperature for DO30 is 0 to 40 °C
Hamilton sensors:
Oxyferm:
  Measurement range: 10 ppb to 40 ppm
  Temperature range:  0 to 130 °C
Oxygold G:
  Measurement range: 2 ppb to 40 ppm
  Temperature range:  0 to 130 °C
Oxygold B:
  Measurement range: 8 ppb to 40 ppm
  Temperature range:  0 to 100 °C

■ Output Range
DO concentration:
  mg/l (ppm):
    min.: 1 mg/l (ppm)
    max.: 50 mg/l (ppm)
  ppm:
    min.: 1 ppm
    max.: 9999 ppm
% saturation:
    min.: 10 %
    max.: 600 %
Temperature:
min. span 25 °C
max. span 170 °C

■ Performance (Accuracy)
(The specifications are expressed with simulated
inputs.)
Performance in ppm mode:
  Linearity: ±0.05 ppm or ±0.8% F.S., whichever is
greater
  Repeatability: ±0.05 ppm or ±0.8% F.S., whichever
  is greater
  Accuracy: ±0.05 ppm or ±0.8% F.S., whichever is
greater
Performance in ppb mode:
  Linearity: ±1 ppb or ±0.8% F.S., whichever is
greater
  Repeatability: ±1 ppb or ±0.8% F.S., whichever is
greater
  Accuracy: ±1 ppb or ±0.8% F.S., whichever is
  greater
Temperature
  Linearity: ±0.3 °C
  Repeatability: ±0.1 °C
  Accuracy: ±0.3 °C
Note: "F.S." means maximum setting value of analyzer
output.

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3. Electrical

- **Output Signal**
  
  **General:** One output of 4-20 mA DC
  
  Note: Tolerance: ±0.02 mA
  
  Bi-directional HART digital communication, superimposed on mA (4-20mA) signal
  
  **Output function:**
  
  Linear or Non-linear (21-step table)
  
  **Burn out function:** (NAMUR 43)
  
  Without HART/PH201G:
  
  Down: 3.6 mA
  
  (signal: 3.8 to 20.5 mA for pH/ORP, SC and DO)
  
  (signal: 3.9 to 20.5 mA for ISC)
  
  Up: 22mA
  
  With HART/PH201G:
  
  Down: 3.6 mA for pH/ORP, SC and DO
  
  Down: 3.9 mA for ISC
  
  (signal: 3.8 to 20.5 mA for pH/ORP, SC and DO)
  
  (signal: 3.9 to 20.5 mA for ISC)
  
  Up: 22mA

- **Power Supply**

  Nominal 24 V DC loop powered system
  
  One (1) Sensor module (1 input):
  
  16 to 40V DC (for pH/ORP, SC and DO)
  
  17 to 40V DC (for ISC)
  
  Two (2) Sensor modules (2 inputs):
  
  22.8 to 40V DC (for pH/ORP, SC and DO)

- **Maximum Load Resistance**

  Refer to the Figure 1.

- **Display**

  LCD with a touch screen:
  
  Black/White: 213 x 160 pixels
  
  Contrast adjustment available on the touch screen
  
  Message language:
  
  12 (English, Chinese, Czech, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, and Spanish)
  
  One analyzer has all 12 languages.

  Note: Description for a selection of language and language names are written in English.

  Note: Only English alphabet and numeric are available for a tag number, an additional description for each value on the display screen and passwords.

  Note: Only for message language on the screen, 12 languages are provided.

4. Mechanical and others

- **Housing**

  **Case:**
  
  • Plastic (Polycarbonate)
  
  • Stainless steel without painting
  
  • Stainless steel with epoxy coating
  
  • Stainless steel with urethane coating

  **Case color and finish:**

  **Color:** Silver gray (equivalent to Munsell 3.2PB7.4/1.2)
  
  (for plastic case, stainless steel cases with coating)

  **Finish:** Electropolishing (for stainless steel case without painting)

  **Window:** Polycarbonate (flexible)

  **Window frame for stainless steel cases:**

  For stainless steel case without painting:
  
  Polycarbonate with painting, color: silver
  
  For stainless steel cases with coating:
  
  Polycarbonate, color: silver gray (equivalent to Munsell 3.2PB7.4/1.2)

  **Protection:** IP66 (except Canada), NEMA4X (except Canada), Type 3S/4X (Canada)

- **Plate**

  Main name plate: inside case cover
  
  Regulation plate: on the case outside

- **Cable and Terminal**

  **Cable size:**

  **Out diameter:**
  
  6 to 12 mm (suitable for M20 cable gland)
  
  3.4 to 7 mm (grounding cable for plastic case)

  **Terminal screw size:** M4
  
  torque of screw up: 1.2 N*m

  **Wire terminal:**

  Pin terminal, ring terminal and spade terminal can be used for analyzer’s power supply terminals and sensor terminals.

  For the grounding terminal on the stainless steel case, ring terminal should be used.

  Pin terminal: pin diameter: max. 1.9 mm

  Ring and spade terminal: width: max. 7.8 mm

- **Cable Entry**

  **Plastic case:**

  1-Sensor measurement:
  
  3 holes,
  
  M20 cable gland x 3 pcs,
  
  Sleeve x 1 pc (for grounding cable line)
  
  Close up plug x 1 pc

  2-Sensor measurement:
  
  4 holes,
  
  M20 cable gland x 4 pcs,
  
  Sleeve x 1 pc (for grounding cable line)
  
  Close up plug x 1 pc

  **Stainless steel case:**

  7 holes,
  
  M20 cable gland x 7 pcs
  
  Close up plug x 5 pcs

  Note: Cable gland and plug are delivered with an analyzer, but not assembled into the analyzer.

- **Mounting**

  **Mounting hardware (option):**

  • Universal mounting kit (Note)
  
  • Pipe and wall mounting hardware
  
  • Panel mounting hardware

  **Note:** This kit contains the pipe and wall mounting hardware and the panel mounting hardware.

  **Hood (option):**

  • Stainless steel
  
  • Stainless steel with urethane coating
  
  • Stainless steel with epoxy coating
**Stainless Steel Tag Plate**
When the additional code “/SCT” with a tag number is specified, the tag plate on which the tag number is inscribed is delivered with the analyzer.
Tag plate is hanging type.

**Conduit Adapter**
Using optional adapter
* G1/2 (quantity: 4)
* 1/2NPT (quantity: 4)
* M20 x 1.5” (quantity: 4)
These conduit adapters are delivered with an analyzer, but not assembled into the analyzer.

**Size of Housing Case**
Plastic: 144 x 144 x 151 mm (L x W x D) (without cable gland)
Stainless steel case: 165 x 165 x 160 mm (L x W x D) (without cable gland)

**Weight**
Approx. 1 kg (Plastic housing)
Approx. 2 kg (Stainless steel housing)

**Shipping Details**
Package size: Approx. 340 x 340 x 370 mm (L x W x H)

**Ambient Operating Temperature**
-20 to +55 °C

**Storage Temperature**
-30 to +70 °C

**Humidity**
10 to 95% RH (Non-condensing)

**Document**
Following documents are delivered with an analyzer;
Paper copy:
- Start-up Manual
  - written in English
CD-ROM:
- Start-up Manual (pdf)
  - written in 5 languages
- User’s Manual (pdf)
  - written in English
- Safety Regulation Manual (pdf)
  - for European region
  - written in 25 languages

**Regulatory Compliance**
Safety: EN61010-1
UL 61010-1
CSA C22.2 No.61010-1
EMC: EN61326-1 Class A, Table 2 (For use in industrial locations)
EN61326-2-3
AS/NZS CISPR11
Korea Electromagnetic Conformity Standard

Installation altitude: 2000 m or less
Category based on IEC 61010: l (Note 1)
Pollution degree based on IEC 61010: 2 (Note 2)

Note 1: Installation category, called over-voltage category, specifies impulse withstand voltage.
Equipment with “Category I” (ex. two wire transmitter) is used for connection to circuits in which measures are taken to limit transient over-voltages to an appropriately low level.

Note 2: Pollution degree indicates the degree of existence of solid, liquid, gas or other inclusions which may reduce dielectric strength. Degree 2 is the normal indoor environment.

Explosion-proof (Intrinsically safe type):
(for suffix code: -EA)
ATEX Intrinsically safe approval
Applicable standard
- Electrical Apparatus for Potentially Explosive Atmospheres
- EN 60079-0:2009 General requirements
- EN 60079-11:2007 Intrinsically safety “i”
- EN 60079-28:2007 Equipment with equipment protection level (EPL) Ga
- EN 60529:1992 Degrees of protection provided by enclosures (IP Code)

Type of protection
II 1G Ex ia IIC Ga
Group: I
Category: 1G
T4: for ambient temperature: -20 to 55°C
T6: for ambient temperature: -20 to 40°C
Atmosphere pressure: 80kPa (0.8bar) to 110kPa (1.1bar)
Degree of Protection of the Enclosure: IP66

IECEx Intrinsically safe
Applicable standard
- IEC 60079-0: 2007 Part 0:
  General requirements
- IEC 60079-11: 2006 Part 11:
  Intrinsic safety “i”
- IEC 60079-28: 2006 Part 26:
  Construction, test and marking of Group II Zone 0 electrical apparatus
- IEC 60529: 2001 Degrees of protection provided by enclosures (IP Code)

Type of protection
Ex ia IIC Ga
T4: for ambient temperature: -20 to 55°C
T6: for ambient temperature: -20 to 40°C
Atmosphere pressure: 80kPa (0.8bar) to 110kPa (1.1bar)
Degree of Protection of the Enclosure: IP66

Electrical Parameters (Ex ia)
Each housing assembly (base module) and each sensor module are respectively certificated.
Input parameters of sensor module meet output parameters of housing assembly.

### Housing assembly

<table>
<thead>
<tr>
<th>Input parameters</th>
<th>Supply and output circuit (terminals + and -):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UI, Vmax = 30 V</td>
</tr>
<tr>
<td></td>
<td>li, lmax = 100 mA</td>
</tr>
<tr>
<td></td>
<td>Pi, Pmax = 0.75 W</td>
</tr>
<tr>
<td></td>
<td>Cl = 13 nF</td>
</tr>
<tr>
<td></td>
<td>Li = 0 mH</td>
</tr>
<tr>
<td></td>
<td>(Linear source)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output parameters</th>
<th>Sensor module input circuit (CN2 or CN3 on back board):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uo, VT, Voc = 13.65 V</td>
</tr>
<tr>
<td></td>
<td>Io, Ii, Ioc = 50 mA</td>
</tr>
<tr>
<td></td>
<td>P = 0.372 W</td>
</tr>
<tr>
<td></td>
<td>Co, Ca = 80 nF</td>
</tr>
<tr>
<td></td>
<td>Lo, La = 7.7 mH</td>
</tr>
</tbody>
</table>
**pH/ORP Sensor module, SC Sensor module and DO Sensor module**

<table>
<thead>
<tr>
<th>Input parameters</th>
<th>Output parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input parameters</strong></td>
<td><strong>Output parameters</strong></td>
</tr>
<tr>
<td>U\textsubscript{i}, V\textsubscript{max} = 13.92 V</td>
<td>Sensor input circuit(pH: terminals 11 through 19; SC: terminals 11 through 16, DO: terminals 11 through 18)</td>
</tr>
<tr>
<td>I\textsubscript{i}, I\text{max} = 50 mA</td>
<td>U\textsubscript{0} V, V\textsubscript{oc} = 11.76 V</td>
</tr>
<tr>
<td>P, P\textsubscript{max} = 0.374 W</td>
<td>I\textsubscript{0}, I\text{max} = 116.5 mA</td>
</tr>
<tr>
<td>C\textsubscript{i} = 40 nF</td>
<td>P = 0.342 W</td>
</tr>
<tr>
<td>L\textsubscript{i} = 2.9 mH</td>
<td>C, C\textsubscript{a} = 100 nF</td>
</tr>
<tr>
<td><strong>Input parameters</strong></td>
<td><strong>Output parameters</strong></td>
</tr>
<tr>
<td>U\textsubscript{i}, V\text{max} = 13.92 V</td>
<td>Sensor input circuit(terminals 11 through 17)</td>
</tr>
<tr>
<td>I\textsubscript{i}, I\text{max} = 50 mA</td>
<td>U\textsubscript{0} V, V\text{oc} = 11.76 V</td>
</tr>
<tr>
<td>P, P\text{max} = 0.374 W</td>
<td>I\textsubscript{0}, I\text{max} = 60.6 mA</td>
</tr>
<tr>
<td>C\textsubscript{i} = 40 nF</td>
<td>P = 0.178 W</td>
</tr>
<tr>
<td>L\textsubscript{i} = 7.7 mH</td>
<td>C, C\textsubscript{a} = 100 nF</td>
</tr>
</tbody>
</table>

**ISC Sensor module**

<table>
<thead>
<tr>
<th>Input parameters</th>
<th>Output parameters</th>
</tr>
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<td>C, C\textsubscript{a} = 100 nF</td>
</tr>
</tbody>
</table>

**5. Digital Communication**

- **Kind of Digital Communication**
  - HART or PH\textsubscript{201}G dedicated distributor
    - Note: Only one kind of digital communication is available for one analyzer.

- **Output Value Parameter (HART)**
  - Four value parameters are available for one digital communication.
    - For 1-sensor measurement, these parameters are measured values.
    - For 2-sensor measurement, refer to the next item.

- **Digital Communication of 2-Sensor Measurement (HART)**
  - Even when two sensor modules are installed, only one digital communication is available for 2-sensor measurement.
  - Four value parameters can be selected from the followings:
    - Measured values of two sensors
    - Calculated data of 2-sensor measurement

- **Specific Contact Output with dedicated distributor, model PH\textsubscript{201}G (Style B)**
  - The distributor, model PH\textsubscript{201}G, is designed to connect with the 2-Wire Analyzer.
  - This distributor supplies drive power to the analyzer and receives simultaneously 4-20 mA DC signal from the analyzer.
  - This signal is converted to 1-5 V DC signal in the distributor.
  - This distributor also receives digital signals superimposed on the 4-20 mA DC signal, and provides contact outputs

  **Input/Output signal:**
  - Number of available drive/signal point: 1
  - Output signal: 1-5 V DC (2 points) (Note)
  - Load resistance: 2 k\Omega or less (1-5 V DC output)
  - Isolation system: Loop isolation type
  - Note: Two output signals for one analyzer’s analog output are provided. Two 1-5 V DC output signals are same.

  **Contact output:**
  - Contact rating:
    - 250 V AC, maximum 100 VA
    - 220 V DC, maximum 50 VA
  - Hold contact output:
    - NC contact, normally energized
    - Contact closes when power is off or during Hold situation.
  - Null contact output:
    - NC contact, normally energized
    - Contact closes when power is off or during Fail/Warning conditions.
  - Wash contact output:
    - NO contact
    - Contact closes during wash cycles.

---

**Control Drawing**

[Diagram of control drawing showing Hazardous Location and Non-Hazardous Location]

**Electrical data are as follows:**
- Maximum Voltage (U\textsubscript{i}) = 30V
- Maximum Current (I\textsubscript{i}) = 100mA
- Maximum Power (P\textsubscript{i}) = 0.75W
- Internal Capacitance (C\textsubscript{i}) = 13F
- Internal Inductance (L\textsubscript{i}) = 0mH

**Note:**
1. The output current must be limited by a resistor “R” such that I\text{max}=U\textsubscript{i}/R (linear source).
2. Safety barrier certified by a notify body in EU as ATEX should be used.
3. When using non isolation barrier, connect (“1”) to IS earthing system.
4. Sensor module 2 is installed when required. When measuring inductive conductivity, only one module can be installed.
### 6. Model & Suffix Codes

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Option code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLXA21</td>
<td></td>
<td></td>
<td>2-Wire Analyzer</td>
</tr>
<tr>
<td>Power supply</td>
<td>-D</td>
<td></td>
<td>Always -D</td>
</tr>
<tr>
<td>Housing</td>
<td>-P</td>
<td></td>
<td>Plastic</td>
</tr>
<tr>
<td></td>
<td>-S</td>
<td></td>
<td>Stainless steel</td>
</tr>
<tr>
<td></td>
<td>-U</td>
<td></td>
<td>Stainless steel + urethane coating</td>
</tr>
<tr>
<td></td>
<td>-E</td>
<td></td>
<td>Stainless steel + epoxy coating</td>
</tr>
<tr>
<td>Display</td>
<td>-D</td>
<td></td>
<td>Anti-glare LCD</td>
</tr>
<tr>
<td></td>
<td>-N</td>
<td></td>
<td>Without display (Note 1)</td>
</tr>
<tr>
<td>Type</td>
<td>-AA</td>
<td></td>
<td>General purpose</td>
</tr>
<tr>
<td></td>
<td>-EA</td>
<td></td>
<td>ATEX, IECEx (Note 6)</td>
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<tr>
<td>1st input</td>
<td>-P1</td>
<td></td>
<td>pH/ORP</td>
</tr>
<tr>
<td></td>
<td>-C1</td>
<td></td>
<td>Conductivity (SC)</td>
</tr>
<tr>
<td></td>
<td>-C5</td>
<td></td>
<td>Inductive conductivity (ISC)</td>
</tr>
<tr>
<td></td>
<td>-D1</td>
<td></td>
<td>Dissolved oxygen (DO)</td>
</tr>
<tr>
<td>2nd input (Note 2)</td>
<td>-NN</td>
<td></td>
<td>Without input</td>
</tr>
<tr>
<td></td>
<td>-P1</td>
<td></td>
<td>pH/ORP</td>
</tr>
<tr>
<td></td>
<td>-C1</td>
<td></td>
<td>Conductivity (SC)</td>
</tr>
<tr>
<td></td>
<td>-D1</td>
<td></td>
<td>Dissolved oxygen (DO)</td>
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<tr>
<td>Output</td>
<td>-A</td>
<td></td>
<td>4-20 mA + HART</td>
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<tr>
<td></td>
<td>-N</td>
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<td>Always -N</td>
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<tr>
<td>Language set (Note 3)</td>
<td>-LA</td>
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<td>English and 11 languages</td>
</tr>
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<td>Country (Note 4)</td>
<td>-N</td>
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<td>Global except Japan</td>
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<td></td>
<td>-J</td>
<td></td>
<td>Japan</td>
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<tr>
<td>Mounting hardware</td>
<td>/UM</td>
<td></td>
<td>Universal mounting kit (Note 5)</td>
</tr>
<tr>
<td></td>
<td>/U</td>
<td></td>
<td>Pipe and wall mounting hardware</td>
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<tr>
<td></td>
<td>/PM</td>
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<td>Panel mounting hardware</td>
</tr>
<tr>
<td>Hood</td>
<td>/H6</td>
<td></td>
<td>Hood, stainless steel</td>
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<td></td>
<td>/H7</td>
<td></td>
<td>Hood, stainless steel + urethane coating</td>
</tr>
<tr>
<td></td>
<td>/H8</td>
<td></td>
<td>Hood, stainless steel + epoxy coating</td>
</tr>
<tr>
<td>Tag plate</td>
<td>/SCT</td>
<td></td>
<td>Stainless steel tag plate</td>
</tr>
<tr>
<td>Conduit adapter</td>
<td>/CB4</td>
<td></td>
<td>Conduit adapter (G1/2 x 4 pcs)</td>
</tr>
<tr>
<td></td>
<td>/CD4</td>
<td></td>
<td>Conduit adapter (1/2NPT x 4 pcs)</td>
</tr>
<tr>
<td>Measurement law</td>
<td>/K</td>
<td></td>
<td>With Measurement Law certificate (Note 7)</td>
</tr>
</tbody>
</table>

Notes:
1. HMI (Human Machine Interface) is not available on the analyzer. HART communication is to be used. (To enable HART communication, a setup tool is to be provided.)
2. When a 2nd input is selected, only the same kind of the 1st input is available. For example, when a 1st input is "-P1", the 2nd input must be the same "-P1". The combination of ISC and ISC is not available.
3. These languages are message languages on the analyzer's display. One analyzer has English and 11 languages. All languages are as follows; English, Chinese, Czech, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian and Spanish.
4. When an analyzer is used in Japan, it must meet the Japanese Measurement Law. Only SI units must be used on the analyzer and its documents in Japan.
5. The universal mounting kit contains the pipe and wall mounting hardware (/U) and the panel mounting hardware (/PM).
6. The type "-EA" is intrinsically safe type of ATEX and IECEx. (The type of "intrinsically safe type of ATEX, IECEx, FM and CSA, and non-incendive of FM and CSA" is pending.)
7. The analyzer with Japanese Measurement Law certificate is available only for the following model:
   Only one pH measurement is certified. The output signal of 4 - 20 mA is certified. HART communication is not certified.
Dimensions and Mounting

Plastic Housing

Conduit Adapter (Option code: □/CB4, □/CD4, □/CF4)

Unit: mm

G1/2 screw (CB4), 1/2 NPT screw (CD4)
M20x1.5 screw (CF4)

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(Note) The universal mounting kit (UM) contains the pipe and wall mounting hardware (U) and the panel mounting hardware (PM).

Panel mounting hardware (Option code: PM, UM)

Wall mounting hardware (Option code: U, UM)

Pipe mounting hardware (Option code: U, UM)
Stainless steel hood (Option code: □/H6, □/H7, □/H8)

Stainless Steel Housing

Conduit Adapter (Option code: □/CB4, □/CD4, □/CF4)

Unit: mm

Unit: mm (inch)
(Note) The universal mounting kit (UM) contains the pipe and wall mounting hardware (U) and the panel mounting hardware (PM).

Panel mounting hardware (Option code: □/PM, □/UM)

Wall mounting hardware (Option code: □/U, □/UM)

*: Tighten the four screws to a torque of 2 N•m.
Pipe mounting hardware (Option code: □/U, □/UM)

Pipe mounting (Horizontal)  
Pipe mounting (Vertical)

*: Tighten the four screws to a torque of 2 N•m.

Stainless steel hood (Option code: □/H6, □/H7, □/H8)
Wiring Diagrams

1: Use a 2-conductor shielded cable with an outside diameter of 6 to 12 mm.
2: Ground FLXA21 (Class D ground: 100 ohm or less)
   The way of connecting the grounding cable varies depending on the plastic housing and stainless steel housing.
   In the case of the plastic housing, connect the grounding cable to the terminal of the power module inside, and in the case of the stainless steel housing, connect the grounding cable to the terminal of the housing.
   Use a cable with an outside diameter of 3.4 to 7 mm for the grounding line of the plastic housing.
3: Refer to module
4: Two modules can be connected to the same object. When measuring inductive conductivity, only one module can be connected.
5: The terminal box may need to be connected depending on the object under test or the sensor selected.
6: This line is connected to a distributor or 24 V DC power supply.
7: Two outputs of PH201G or SDBT are same.

Case of Distributor
PH201G (Style B)

Case of Distributor
SDBT
Inquiry Specifications Sheet for FLXA21 2-Wire Analyzer

Make inquiries by placing checkmarks (✓) in the pertinent boxes and filling in the blanks.

1. General Information
   Company name: ____________________________
   Contact Person: ____________________________ Department: ____________________________
   Plant name: ____________________________
   Measurement location: ____________________________
   Purpose of use: □ Indication, □ Recording, □ Alarm, □ Control

2. Measurement Conditions
   (1) Process temperature; ______ to ______ [°C]
   (2) Process pressure; ______ to ______ [kPa]
   (3) Flow rate; ______ to ______ [l/min]
   (4) Flow speed; ______ to ______ [m/s]
   (5) Slurry or contaminants; □ No, □ Yes
   (6) Name of process fluid; ____________________________
   (7) Components of process fluid; ____________________________
   (8) Others;

3. Installation Site
   (1) Ambient temperature; ______ to ______ [°C]
   (2) Location; □ Outdoors, □ Indoors
   (3) Others;

4. Requirements
   1st Input; □ pH/ORP, □ Conductivity (SC) □ Inductive conductivity (ISC) □ Dissolved oxygen (DO)
   2nd Input; □ With (same as 1st Input) □ Without

4.1 pH/ORP
   □ 1st Input
   (1) Measuring range; □ pH 0 to 14 □ ORP ______ to ______ mV □ ______________
   (2) Transmission output; □ 4 to 20 mA DC □ pH □ ORP □ Temperature
   (3) System configuration selection; □ Electrode, □ Holder, □ pH Converter, □ Cleaning system, □ Terminal box,
   □ Accessories
   (4) Electrode cable length; □ 3m, □ 5m, □ 7m, □ 10m, □ 15m, □ 20m, □ ____ m
   (5) Electrode operating pressure; □ 10 kPa or less, □ Greater than 10 kPa
   (6) Type of holder; □ Guide pipe, □ Submersion, □ Flow-through, □ Suspension, □ Angled floating ball,
   □ Vertical floating ball
   (7) Cleaning method; □ No cleaning, □ Ultrasonic cleaning, □ Jet cleaning, □ Brush cleaning
   (8) Sample temperature; □ -5 to 105°C, □ -5 to 100°C, □ -5 to 80°C
   (9) Others;

   □ 2nd Input
   (1) Measuring range; □ pH 0 to 14 □ ORP ______ to ______ mV □ ______________
   (2) Transmission output; □ 4 to 20 mA DC □ pH □ ORP □ Temperature
   (3) System configuration selection; □ Electrode, □ Holder, □ pH Converter, □ Cleaning system, □ Terminal box,
   □ Accessories
   (4) Electrode cable length; □ 3m, □ 5m, □ 7m, □ 10m, □ 15m, □ 20m, □ ____ m
   (5) Electrode operating pressure; □ 10 kPa or less, □ Greater than 10 kPa
   (6) Type of holder; □ Guide pipe, □ Submersion, □ Flow-through, □ Suspension, □ Angled floating ball,
   □ Vertical floating ball
   (7) Cleaning method; □ No cleaning, □ Ultrasonic cleaning, □ Jet cleaning, □ Brush cleaning
   (8) Sample temperature; □ -5 to 105°C, □ -5 to 100°C, □ -5 to 80°C
   (9) Others;
4.2 Conductivity

☐ 1st Input

1. Measuring range;

2. Transmission output; 4 to 20 mA DC

3. Detector/sensor:
   - SC4AJ
   - SC8SG
   - SC210G

4. Detector/sensor mounting method:
   - SC4AJ
   - SC8SG
   - SC210G

5. Electrode cable length:
   - SC4AJ: 3m, 5m, 10m, 20m
   - SC8SG: 5.5m, 10m, 20m
   - SC210G: 3m, 5m, 10m, 15m, 20m

6. Others;

☐ 2nd Input

1. Measuring range;

2. Transmission output; 4 to 20 mA DC

3. Detector/sensor:
   - SC4AJ
   - SC8SG
   - SC210G

4. Detector/sensor mounting method:
   - SC4AJ
   - SC8SG
   - SC210G

5. Electrode cable length:
   - SC4AJ: 3m, 5m, 10m, 20m
   - SC8SG: 5.5m, 10m, 20m
   - SC210G: 3m, 5m, 10m, 15m, 20m

6. Others;

4.3 Inductive conductivity

1. Measuring range;

2. Transmission output; 4 to 20 mA DC

3. System configuration selection:
   - ISC40GJ Sensor
   - Holder
   - Converter
   - BA20 Terminal box
   - WF10J Extension cable

4. Sensor mounting method:
   - ISC40FDJ Immersion holder
   - ISC40FFJ Flow-through holder
   - ISC40FSJ Direct insertion adapter

5. ISC40GJ Sensor cable length:
   - 5m, 10m, 15m, 20m

6. WF10J Extension cable length:
   - 5m, 10m, 20m, 30m, 40m

7. Others;

4.4 Dissolved oxygen

☐ 1st Input

1. Measuring range;
   - 0 to 50 mg/L

2. Transmission output; 4 to 20 mA DC

3. System configuration selection:
   - Electrode
   - Holder
   - Converter
   - Cleaning system
   - Terminal box
   - Maintenance parts set
   - Calibration set

4. Electrode cable length:
   - 3m, 5m, 10m, 15m, 20m

5. Type of holder:
   - Guide pipe
   - Submersion
   - Flow-through
   - Suspension
   - Angled floating ball
   - Vertical floating ball

6. Cleaning method:
   - No cleaning
   - Jet cleaning

7. Others;
2nd Input

(1) Measuring range: □ 0 to 50 mg/L □ ____________
(2) Transmission output: 4 to 20 mA DC
(3) System configuration selection: □ Electrode, □ Holder, □ Converter, □ Cleaning system,
               □ Terminal box, □ Maintenance parts set, □ Calibration set
(4) Electrode cable length: □ 3m, □ 5m, □ 10m, □ 15m, □ 20m
(5) Type of holder: □ Guide pipe, □ Submersion, □ Flow-through, □ Suspension,
                    □ Angled floating ball, □ Vertical floating ball
(6) Cleaning method: □ No cleaning, □ Jet cleaning
(7) Others;