General Specifications
Model FLXA21
2-Wire Analyzer
PROFIBUS PA Communication
GS 12A01A02-72E

■ General

PROFIBUS is a vendor-independent and open fieldbus based on the international standard IEC61158 and IEC61784. It covers a wide range of applications in manufacturing and process automation fields.

Vendor-independence and openness allow communication between devices of different manufactures with no special interface adjustment.

FLXA™21 PROFIBUS PA model offers more flexible instrumentation through a higher level communication capability and proposes the cost reduction by multidrop wirings with fewer cables.

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.

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.

■ Features

• Interoperability
  PROFIBUS PA specifications grant the interoperability of the field instruments without preparing designated software for the instrument.

• Multi-sensing function
  FLXA21 PROFIBUS PA model, has three independent AI function blocks.

• Alarm function
  FLXA21 PROFIBUS PA model securely supports various alarm functions, such as high/low alarm, notice of block error, etc. based on PROFIBUS specifications.

• Self-diagnostic function
  A reliable self-diagnostic function based on the NAMUR NE107 standard detects failures in the hardware of pH/ORP sensor, conductivity sensor, and communications.

• 2 kinds of measurements; pH/ORP, Conductivity (SC)

• Connection of digital FU20F pH/ORP SENCOM Sensor

• Simple HMI menu structure in 12 languages

• Quick setup menu for immediate measurement

• Indication of sensor wellness

• Supported tools
  DTM for FieldMate
  EDD for SIEMENS SIMATIC PDM

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General Specifications

1. Basic
   - Measurement Object/Sensor Type
     - pH/Oxidation-reduction Potential (pH/ORP) (analog sensor)
     - Conductivity (SC)
     - pH/Oxidation-reduction Potential (pH/ORP) (digital sensor)
   Note: The available measurement object depends on a sensor module installed on the analyzer.

2. Measurement

2-1. pH/Oxidation-reduction Potential (pH/ORP) with analog sensors
   - Input Specification
     Dual high impedance input (≥10\(^{12}\) Ω)
   - Input Range
     pH: -2 to 16 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
   - Performance (Accuracy)
     (The specifications are expressed with simulated inputs.)
     pH
       Linearity: ±0.01 pH
       Repeatability: ±0.01 pH
       Accuracy: ±0.1 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)
     (over range 2000 mS/cm)

2-3. pH/Oxidation-reduction Potential (pH/ORP) with digital sensor, FU20F pH/ORP SENCOM Sensor
   - Input Specification
     Bi-directional digital communication (RS-485) between FU20F and FLXA21
   - Input Range (depending on FU20F)
     pH: 0 to 14 pH
     ORP: -1500 to 1500 mV
     rH: 0 to 100 rH
     Temperature: -10 to 105 °C

3. Electrical
   - Output Signal
     Digital communication signal based on PROFIBUS PA protocol.
   - Communication Requirements:
     Supply Voltage: 9 to 32 V DC
     Current Draw: 24 mA (max)
     Bus connection and Fieldbus cable type according to recommendation based on IEC 1158-2.
   - Functional Specifications:
     Functional specifications for PROFIBUS communication conform to the PROFIBUS PA Ver 3.02
     GSD file: The actual file can be downloaded from www.profibus.com
   - Function Block:
     Three AI blocks

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

Performance (Accuracy)
(The specifications are expressed with simulated inputs.)
Conductivity
  More than 2 μS x K cm\(^{-1}\) to 200 mS x K cm\(^{-1}\)
  Accuracy: ±0.5% of reading
  1 μS x K cm\(^{-1}\) to 2 μS x K cm\(^{-1}\)
  Accuracy: ±1% of reading
Resistivity
  0.005kΩ / K cm\(^{-1}\) to less than 0.5MΩ /K cm\(^{-1}\)
  Accuracy: ±0.5% of reading
  0.5MΩ / K cm\(^{-1}\) to 1MΩ /K cm\(^{-1}\)
  Accuracy: ±1% of reading
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 (of reading on the display)
Note: “K” means cell constant.
YOKOGAWA provides conductivity sensors of which cell constants are 0.1 to 10 cm\(^{-1}\)
4. Mechanical and others

■ 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.

■ Housing
Case: Plastic (Polycarbonate)
Case color: Silver gray (equivalent to Munsell 3.2PB7.4/1.2)
Window: Polycarbonate (flexible)
Protection: IP66 (except Canada), NEMA Type 4X (USA), CSA Type 3S/4X (Canada)

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

■ Cable and Terminal
Cable size:
  Outer diameter:
  6 to 12 mm (suitable for M20 cable gland)
  3.4 to 7 mm (grounding cable)
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.
  Pin terminal: pin diameter: max. 1.9 mm
  Ring and spade terminal: width: max. 7.8 mm

■ Cable Entry
3 holes, M20 cable gland x 3 pcs,
Sleeve x 1 pc (for grounding cable line)
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
144 x 144 x 151 mm (W x H x D) (without cable gland)

■ Weight
Approx. 1 kg

■ Ambient Operating Temperature
-20 to +55 °C

■ Storage Temperature
-30 to +70 °C

■ Humidity
10 to 90% RH at 40°C (Non-condensing)

■ Document
Following documents are delivered with an analyzer;
Paper copy:
  User’s Manual for PROFIBUS PA Communication
    written in English
  Start-up Manual
    written in English
  Safety Precautions
    written in English
CD-ROM:
  Start-up Manual
    written in English
  User's Manual
    written in English
  Safety Regulations Manual
    for European region
    written in 25 languages
  General Specifications
    written in English
  Technical Information
    for HART Communication
    written in English
  User Setting Table
    of 5 kinds of measurement/sensor type
    written in English
Regulatory Compliance

Safety, EMC and RoHS Compliance

Safety:
UL 61010-1
UL 61010-2-030
CAN/CSA-C22.2 No.61010-1
CAN/CSA-C22.2 No.61010-2-030
EN 61010-1
EN 61010-2-030

EMC:
EN 61326-1 Class A, Table 2 (For use in industrial locations)
EN 61326-2-3
EN 61326-2-5
RCM: EN 61326-1 Class A, Table 2
Korea Electromagnetic Conformity
Standard Class A

RoHS:
EN 50581: 2012 (Style 3.03 or newer)
Installation altitude: 2000 m or less
Category based on IEC 61010: I (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.

Information of the WEEE Directive
This product is purposely designed to be used in a large scale fixed installations only and, therefore, is out of scope of the WEEE Directive. The WEEE Directive does not apply. The WEEE Directive is only valid in the EU.

Explosion Protected Type Compliance

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>“Type” in MS code</th>
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<tbody>
<tr>
<td>Canada (CSA)</td>
<td>[Intrinsically safe / Nonincendive] Applicable Standard: C22.2 No.0-10 (R2015), CAN/CSA-C22.2 No.94-M91 (R2011), C22.2 No.213-M1987 (R2013), CAN/CSA-C22.2 No.60079-0.11, CAN/CSA-C22.2 No.60079-11:14, CAN/CSA-C22.2 No.61010-1-12, CAN/CSA-C22.2 No.61010-2-030-12 Certificate No: 2425510 Marking/Rating: Ex ia IIC T4 Ga, FISCO field device Intrinsically safe for Class I, Division 1, Groups A, B, C, D, T4 Nonincendive for Class I, Division 2, Groups A, B, C, D, T4 Ambient Temperature: -20 to 55°C Ambient Humidity: 0 – 100% (No Condensation) Enclosure: IP66, NEMA 4X Control Drawing: Refer to (2)</td>
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</table>
| United States (FM) | [Nonincendive]  
|                 | Applicable Standard:  
|                 | Certificate No: 3039632  
|                 | Marking/Rating:  
|                 | NI CL I, DIV 2, GP ABCD ZN 2 IIC T4: for ambient temperature: -20 to 55°C  
|                 | Enclosure: Type 4X  
|                 | Control Drawing: Refer to (3)                                                | -DD               |
| Canada (CSA)    | [Nonincendive]  
|                 | Applicable Standard:  
|                 | C22.2 No.0-10 (R2015), CAN/CSA-C22.2 No.94-M91 (R2011), C22.2 No.213-M1987 (R2013), CAN/CSA-C22.2 No.61010-1-12, CAN/CSA-C22.2 No.61010-2-030-12  
|                 | Certificate No: 2425510  
|                 | Marking/Rating: Nonincendive for Class I, Division 2, Groups A, B, C, D, T4  
|                 | Ambient Temperature: -20 to 55°C  
|                 | Ambient Humidity: 0 – 100% (No Condensation)  
|                 | Enclosure: IP66, NEMA 4X  
|                 | Control Drawing: Refer to (2)                                                | -CH               |
| China (NEPSI)   | [Intrinsic safety ‘ia’]  
|                 | Applicable Standard: GB3836.1-2010, GB3836.4-2010, GB 3836.20-2010  
|                 | Certificate No: GYJ18.1051X  
|                 | Marking/Rating: Ex ia IIC T4 Ga, FISCO field device  
|                 | Ambient Temperature: -20 to 55°C  
|                 | Control Drawing: Refer to (4)                                                | -CH               |
| Korea (KOSHA)   | [Intrinsic safety ‘ia’]  
|                 | Applicable Standard: Notice of Ministry of Labor No. 2016-54  
|                 | Certificate No: 15-AV4BO-0160X  
|                 | Marking/Rating: Ex ia IIC T4, FISCO field device  
|                 | Ambient Temperature: -20 to 55°C  
|                 | Control Drawing: Refer to (4)                                                | -EG               |

Mar. 23, 2018-00
### 11.2 Control Drawing (FOUNDATION Fieldbus / PROFIBUS PA Type)

#### Specific Conditions of Use

- When operating FLXA21 through the display window or touching the non-metallic part of the enclosure of FLXA21, take the following measures to minimize the risk of explosion from electrostatic discharge:

  - Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth.

- To avoid electrostatic charge on the operator:

  - Earth the operator through a wrist-strap,
  - Operate FLXA21 on the conductive floors, wearing anti-static work clothes and electrostatic safety shoes,
  - Neutralize the operator and FLXA21 by a static elimination bar which has a metal part earthed through resistor from 100kΩ to 100MΩ.

- In case that those measures cannot be taken or static electricity cannot be suppressed, bring a gas detector and make sure there is no ignition capable atmosphere around FLXA21 before the operation.

#### Notes:

1. The associated apparatus must be a linear source or a FISCO power supply.
2. Sensor 1 may be simple apparatus or intrinsically safe apparatus.
3. **WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE USER’S MANUAL**
Intrinsic safety, Nonincendive

Model: FLEXA Series  
Date: April 17, 2015  
Rev.1: May 29, 2017  
Doc. No.: IFM039-A72

Control drawing (FOUNDATION Fieldbus / PROFIBUS PA type)

Installation for Division 1 / Zone 0, 1

Applicable models: FLXA21-D-x-x-CD-xx-xx-F-..., FLXA21-D-x-x-CD-xx-xx-P-...

Unclassified Location Hazardous (Classified) Location

- Class I, Division 1, Groups A, B, C, D, or
- Class I, Zone 0, 1, Group IIC

Temperature Class: T4

Measuring Module 1 (Note 8):

- Type of Measuring Module
- pH, SC, DO ISC SENCOM

- Uo 11.76 V
- Io 60.6 mA
- Po 0.178 W
- Co 31 μF
- Lo 19 mH

Unclassified Location Hazardous (Classified) Location

- Class I, Division 2, Groups A, B, C, D, or
- Class I, Zone 2, Group IIC

Temperature Class: T4

Measuring Module 1 (Note 8):

- Type of Measuring Module
- pH, SC, DO ISC SENCOM

- Uo 11.76 V
- Io 60.6 mA
- Po 0.178 W
- Co 31 μF
- Lo 19 mH

Specific condition of use:

- Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.

Control Equipment (Note 9)

- Ui: 24 V
- Ci: 2.72 nF
- Li: 0 mH

Specific condition of use:

- Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.
Notes:
1. No revision to this drawing without prior approval of FM.
2. Installation must be in accordance with the National Electric Code (NFPA 70), ANSI/ISA-RP12.06.01 and relevant local codes.
3. FISCO installation must be in accordance with ANSI/UL-60079-25.
4. The associated apparatus must be FM-approved.
5. The associated apparatus must be a FISCO power supply or a linear source meeting the following conditions:
   - $U_o \leq U_i$
   - $I_o \leq I_i$
   - $P_o \leq P_i$
   - $C_o \geq C_i + C_{cable}$
   - $L_o \geq L_i + L_{cable}$
6. Control equipment connected to the associated apparatus must not use or generate a voltage which exceeds $U_m$ of the associated apparatus.
7. The control drawing of the associated apparatus must be followed when installing the equipment.
8. When installed in Division 1, Zone 0 or Zone 1, Sensor 1 may be a simple apparatus or an intrinsically safe apparatus meeting the conditions below. When installed in Division 2 or Zone 2, Sensor 1 may be a simple apparatus or a nonincendive field wiring apparatus meeting the conditions below, or alternatively, it may be equipment suitable for Division 2 or Zone 2 respectively, if a suitable wiring method other than nonincendive field wiring is employed.
   - $U_i \geq U_o$
   - $I_i \geq I_o$
   - $P_i \geq P_o$
   - $C_i \leq C_o - C_{cable}$
   - $L_i \leq L_o - L_{cable}$
9. The control equipment must be an FM-approved FISCO power supply, FNICO power supply or an associated nonincendive field wiring apparatus meeting the conditions below. Alternatively, it may be general-purpose equipment, if a suitable wiring method other than nonincendive field wiring is employed.
   - $U_o \leq U_i$
   - $C_o \geq C_i + C_{cable}$
   - $L_o \geq L_i + L_{cable}$
10. WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – WHEN THE EQUIPMENT IS USED IN HAZARDOUS LOCATIONS, AVOID ANY ACTION WHICH GENERATE ELECTROSTATIC DISCHARGE SUCH AS RUBBING WITH A DRY CLOTH.
11. WARNING – IN THE CASE WHERE THE ENCLOSURE OF THE ANALYZER IS MADE OF ALUMINUM, IF IT IS MOUNTED IN ZONE 0, IT MUST BE INSTALLED SUCH THAT, EVEN IN THE EVENT OF RARE INCIDENTS, IGNITION SOURCES DUE TO IMPACT AND FRICTION SPARKS ARE EXCLUDED.
12. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY AND SUITABILITY FOR DIVISION 2 / ZONE 2.
Non-Hazardous Area

- Class I, Zone 0, 1, Group IIC, or
- Class I, Division 1, Groups A, B, C, D
- Temperature Class: T4

Specific condition of use:
Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.

Measuring Module 1 (Note 6):

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<thead>
<tr>
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Supply +, Supply – (Note 3):

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Housing Assembly

Measuring Module 1

FLXA21 Analyzer

Sensor 1 (Note 6)

Terminators

Other Field Devices

Control Equipment (Note 7)

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Non-Hazardous Area

- Class I, Zone 0, 1, Group IIC, or
- Class I, Division 1, Groups A, B, C, D

Specific condition of use:
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Control Devices (Fieldbus & PROFIBUS PA type)

Installation for Zone 0, 1 / Division 1

Applicable models: FLXA21-D-x-x-CD-xx-xx-F-..., FLXA21-D-x-x-CD-xx-xx-P-...

Installation for Zone 2 / Division 2

Applicable models: FLXA21-D-x-x-DD-xx-xx-F-..., FLXA21-D-x-x-DD-xx-xx-P-...

Specific condition of use:
Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.

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Non-Hazardous Area

- Class I, Zone 2, Group IIC, or
- Class I, Division 2, Groups A, B, C, D
- Temperature Class: T4

Specific condition of use:
Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.

Measuring Module 1 (Note 6):

<table>
<thead>
<tr>
<th>Type</th>
<th>Uo</th>
<th>Io</th>
<th>Po</th>
<th>Co</th>
<th>Lo</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>11.76 V</td>
<td>116.5 mA</td>
<td>0.3424 W</td>
<td>100 nF</td>
<td>1.7 mH</td>
</tr>
<tr>
<td>SC</td>
<td>11.76 V</td>
<td>60.6 mA</td>
<td>0.178 W</td>
<td>100 nF</td>
<td>8 mH</td>
</tr>
<tr>
<td>DO</td>
<td>5.36 V</td>
<td>106.16 mA</td>
<td>0.1423 W</td>
<td>31 μF</td>
<td>0.45 mH</td>
</tr>
</tbody>
</table>

Supply +, Supply – (Note 3):

<table>
<thead>
<tr>
<th>Ui</th>
<th>Ii</th>
<th>Pi</th>
<th>Ci</th>
<th>Li</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
<td>250 mA</td>
<td>1.2 W</td>
<td>2.72 nF</td>
<td>0 mH</td>
</tr>
</tbody>
</table>

Housing Assembly

Measuring Module 1

FLXA21 Analyzer

Sensor 1 (Note 6)

Terminators

Other Field Devices

Control Equipment (Note 7)

Supply +, Supply – (Note 7):

<table>
<thead>
<tr>
<th>Ui</th>
<th>Ci</th>
<th>Li</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
<td>2.72 nF</td>
<td>0 mH</td>
</tr>
</tbody>
</table>
Notes:

1. Installation must be in accordance with the Canadian Electric Code Part I (C22.1), ANSI/ISA-RP12.06.01 and relevant local codes.

2. FISCO installation must be in accordance with CAN/CSA-C22.2 No. 60079-25.

3. The associated apparatus must be a FISCO power supply or a linear source meeting the following conditions.

   \[
   \begin{align*}
   U_o (or \ V_o) & \leq U_i (or \ V_i) \\
   I_o (or \ I_{sc}) & \leq I_i (or \ I_{max}) \\
   P_o & \leq P_i \\
   C_o (or \ C_a) & \geq C_i + C_{cable} \\
   L_o (or \ L_{a}) & \geq L_i + L_{cable}
   \end{align*}
   \]

4. Control equipment connected to the associated apparatus must not use or generate a voltage which exceeds \( U_m \) of the associated apparatus.

5. The control drawing of the associated apparatus must be followed when installing the equipment.

6. When installed in Zone 0 or 1, or Division 1, Sensor 1 may be a simple apparatus or an intrinsically safe apparatus meeting the conditions below. When installed in Zone 2 or Division 2, Sensor 1 may be a simple apparatus or a non-incendive field wiring apparatus meeting the conditions below, or alternatively, it may be equipment suitable for Zone 2 or Division 2 respectively, if a suitable wiring method other than non-incendive field wiring is employed.

   \[
   \begin{align*}
   U_i (or \ V_{max}) & \geq U_o (or \ V_o) \\
   I_i (or \ I_{max}) & \geq I_o (or \ I_{sc}) \\
   P_i & \geq P_o \\
   C_i & \leq C_o – C_{cable} \\
   L_i & \leq L_o – L_{cable}
   \end{align*}
   \]

7. The control equipment must be a FISCO power supply, FNICO power supply or an associated non-incendive field wiring apparatus meeting the conditions below. Alternatively, it may be general-purpose equipment, if a suitable wiring method other than non-incendive field wiring is employed.

   \[
   \begin{align*}
   U_o (or \ V_o) & \leq U_i (or \ V_i) \\
   C_o (or \ C_a) & \geq C_i + C_{cable} \\
   L_o (or \ L_{a}) & \geq L_i + L_{cable}
   \end{align*}
   \]

8. WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD

9. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY

10. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR ZONE 2 / DIVISION 2.

(4) NEPSI and KOSHA Intrinsically safe "ia"

(Relate to App. (1) ATEX and IECEx Control Drawing)
## 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>Display</td>
<td>-D</td>
<td></td>
<td>Anti-glare LCD</td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-AB</td>
<td></td>
<td></td>
<td>General purpose for CE, RCM</td>
</tr>
<tr>
<td>-AD</td>
<td></td>
<td></td>
<td>General purpose for CSA</td>
</tr>
<tr>
<td>-AG</td>
<td></td>
<td></td>
<td>General purpose for KC</td>
</tr>
<tr>
<td>-CB</td>
<td></td>
<td></td>
<td>IS for ATEX, IECEx (Note 5) (Note 7)</td>
</tr>
<tr>
<td>-CD</td>
<td></td>
<td></td>
<td>IS for FM, CSA</td>
</tr>
<tr>
<td>-CH</td>
<td></td>
<td></td>
<td>IS for NEPSI (Note 5)</td>
</tr>
<tr>
<td>-EG</td>
<td></td>
<td></td>
<td>IS for KOSHA (Note 5)</td>
</tr>
<tr>
<td>-DD</td>
<td></td>
<td></td>
<td>Ni for FM, CSA</td>
</tr>
<tr>
<td>1st input</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-P1</td>
<td></td>
<td></td>
<td>pH/ORP (Note 3)</td>
</tr>
<tr>
<td>-C1</td>
<td></td>
<td></td>
<td>Conductivity (SC)</td>
</tr>
<tr>
<td>-S1</td>
<td></td>
<td></td>
<td>pH/ORP (SENCOM sensor)</td>
</tr>
<tr>
<td>2nd input</td>
<td>-NN</td>
<td></td>
<td>Without input</td>
</tr>
<tr>
<td>Output (Note 1)</td>
<td>-P</td>
<td></td>
<td>PROFIBUS PA</td>
</tr>
<tr>
<td>—</td>
<td>-N</td>
<td></td>
<td>Always -N</td>
</tr>
<tr>
<td>Language set (Note 2)</td>
<td>-LA</td>
<td></td>
<td>English and 11 languages</td>
</tr>
<tr>
<td>Country</td>
<td>-N</td>
<td></td>
<td>Global except Japan</td>
</tr>
<tr>
<td>—</td>
<td>-NN</td>
<td></td>
<td>Always -NN</td>
</tr>
<tr>
<td>Option</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting hardware</td>
<td>/UM</td>
<td>Universal mounting kit (Note 4)</td>
<td></td>
</tr>
<tr>
<td>Hood</td>
<td>/H</td>
<td>Pipe and wall mounting hardware</td>
<td></td>
</tr>
<tr>
<td>/H6</td>
<td>Hood, stainless steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/H7</td>
<td>Hood, stainless steel + urethane coating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/H8</td>
<td>Hood, stainless steel + epoxy coating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tag plate</td>
<td>/SCT</td>
<td>Stainless steel tag plate</td>
<td></td>
</tr>
<tr>
<td>Conduit adapter</td>
<td>/CB4</td>
<td>Conduit adapter (G1/2 x 4 pcs)</td>
<td></td>
</tr>
<tr>
<td>/CD4</td>
<td>Conduit adapter (1/2NPT x 4 pcs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/CF4</td>
<td>Conduit adapter (M20 x 1.5 x 4 pcs)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. The FLXA21 has another output type of “4-20 mA + HART” (suffix code: -A). Refer to GS 12A01A02-01E.
2. 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.
3. This input is to be come from an analog pH/ORP sensor.
4. The universal mounting kit contains the pipe and wall mounting hardware (/U) and the panel mounting hardware (/PM).
5. Type “-CB”, “-CD”, “-CH”, “-EG” are intrinsic safety (IS).
6. Type “-DD” is nonincendive (NI).
7. Product registration is done by Yokogawa Taiwan Corporation as an importer in Taiwan.
Dimensions and Mounting

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

Unit: mm (inch)

Nut

Adapter

Approx.

56(2.2") 49
(1.93")

Packing

G1/2 screw (CB4), 1/2 NPT screw (CD4)

M20x1.5 screw (CF4)
(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)

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

Note: The wall on which the analyzer is mounted should be strong enough to bear the weight of more than 8 kg.
Stainless steel hood (Option code: □/H6, □/H7, □/H8)

Wiring Diagrams

*1: Use a 2-wire shielded cable with an outside diameter of 6 to 12 mm.
*2: Connect the analyzer to gland. (Class D ground: 100 ohm or less)
   Connect the grounding cable to the + terminal of the power module inside.
   Use a cable with an outside diameter of 3.4 to 7 mm for the grounding line of the plastic housing.
   The minimum cross sectional area of the protective grounding cable should be 0.75 mm².
*3: Terminal numbers for each sensor module are shown below.
*4: The terminal box may be necessary depending on the sensor cable length and the distance between the analyzer and the sensor.
   The SENCOM sensor is to be connected directly to the analyzer without a terminal box.
Inquiry Specifications Sheet for FLXA21 2-Wire Analyzer (PROFIBUS PA Communication)

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 (analog sensor) □ Conductivity (SC) □ pH/ORP (digital sensor, FU20F)
   - 2nd Input: ■ Without

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

4.2 Conductivity
   - (1) Measuring range; __________________________
   - (2) Detector/sensor; SC4AJ □ Two electrode system (0.02 cm⁻¹) □ Two electrode system (0.1 cm⁻¹)
     SC8SG □ Two electrode system (0.01 cm⁻¹) □ Two electrode system (10 cm⁻¹), □ Four electrode system (10 cm⁻¹)
     SC210G □ Two electrode system (0.05 cm⁻¹) □ Two electrode system (5 cm⁻¹)
   - (3) Detector/sensor mounting method; SC4AJ □ Adapter mounting, □ Welding socket, □ Welding clamp
     SC8SG □ Screw-in, □ Flow-through
     SC210G □ Screw-in, □ Flange, □ Flow-through, □ Screw-in with gate valve
   - (4) Electrode cable length; SC4AJ □ 3m, □ 5m, □ 10m, □ 20m
     SC8SG □ 5.5m, □ 10m, □ 20m
     SC210G □ 3m, □ 5m, □ 10m, □ 15m, □ 20m
   - (5) Others: ____________________

4.3 pH/ORP (digital sensor, FU20F)
   - (1) Measuring range; □ pH 0 to 14 □ ORP ______ to ______ mV □ ______________
   - (2) System configuration selection; □ Electrode, □ Holder, □ pH Converter, □ Cleaning system, □ Accessories
   - (3) Electrode cable length; □ 3m, □ 5m, □ 10m, □ 20m, □ ____ m
   - (4) Electrode operating pressure; □ 10 kPa or less, □ More than 10 kPa
   - (5) Type of holder; □ Guide pipe, □ Submersion, □ Flow-through, □ Suspension, □ Angled floating ball, □ Vertical floating ball
   - (6) Cleaning method; □ No cleaning, □ Jet cleaning
   - (7) Sample temperature; □ -5 to 105°C, □ -5 to 100°C, □ -5 to 80°C
   - (8) Others: ____________________

Subject to change without notice.