

General Specifications

GS 12A01A02-71E

Model FLXA21
2-Wire Analyzer
FOUNDATION Fieldbus
Communication

■ General

FOUNDATION Fieldbus is the digital communication line for the field instruments, whose signal is internationally standardized by Fieldbus Foundation.

The Fieldbus bi-directional digital communication performance makes possible for the field instruments and the control devices to be a complete on-line system, superseding the existing analog transmission lines.

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

FLXA™21 FOUNDATION Fieldbus 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
FOUNDATION Fieldbus specifications grant the interoperability of the field instruments without preparing designated software for the instrument.
- Multi-sensing function
FLXA21 FOUNDATION Fieldbus model, has three independent AI function blocks.
- Alarm function
FLXA21 FOUNDATION Fieldbus model securely supports various alarm functions, such as high/low alarm, notice of block error, etc. based on Fieldbus specifications.



- Link master function
FLXA21 FOUNDATION Fieldbus model support the Link Master function. This function enables backup of network manager and local control only by field devices.
- 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)
- Simple HMI menu structure in 12 languages
- Quick setup menu for immediate measurement
- Indication of sensor wellness
- Software download function
Software download function permits to update FLXA21 software via a FOUNDATION fieldbus. Typical use of this function is to add new features such as function blocks and diagnostics to existing devices
- Supported tools
DTM for FieldMate™
FLXA21 FOUNDATION Fieldbus model can be connected with DeltaV/AMS by EMERSON Process Management.
This device can't be connected with DeltaV 9.3 / AMS 9 and older version of them.
Version of them are follows:
DeltaV 10.3 / AMS 10.5
DeltaV 11.3 / AMS 11.5
DeltaV 12.3 / AMS 12.5
DeltaV 13.3 / AMS 13.0

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■ General Specifications

1. Basic

■ Measurement Object/Sensor Type

- pH/Oxidation-reduction Potential (pH/ORP)
- Conductivity (SC)

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) Sensor module

2. Measurement

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

■ Input Specification

Dual high impedance input ($\geq 10^{12} \Omega$)

■ 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: ± 0.01 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 $\mu\text{S}/\text{cm}$
max.: 200 $\text{mS} \times (\text{Cell constant})$
(over range 2000 mS/cm)

Resistivity:

min.: 0.005 $\text{k}\Omega / (\text{Cell constant})$
max.: 1000 $\text{M}\Omega \times \text{cm}$

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 $\mu\text{S} \times \text{K cm}^{-1}$ to 200 $\text{mS} \times \text{K cm}^{-1}$
Accuracy: $\pm 0.5\%$ of reading
1 $\mu\text{S} \times \text{K cm}^{-1}$ to 2 $\mu\text{S} \times \text{K cm}^{-1}$
Accuracy: $\pm 1\%$ of reading

Resistivity

0.005 $\text{k}\Omega / \text{K cm}^{-1}$ to less than 0.5 $\text{M}\Omega / \text{K cm}^{-1}$
Accuracy: $\pm 0.5\%$ of reading
0.5 $\text{M}\Omega / \text{K cm}^{-1}$ to 1 $\text{M}\Omega / \text{K cm}^{-1}$
Accuracy: $\pm 1\%$ of reading

Temperature

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

Temperature compensation

NaCl table: $\pm 1\%$
Matrix: $\pm 3\%$

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} .

3. Electrical

■ Output Signal

Digital communication signal based on FOUNDATION Fieldbus 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 Fieldbus communication conform to the standard specifications (H1) of FOUNDATION fieldbus.

DD and CFF: The actual file can be downloaded from www.fieldbus.com

■ Function Block:

Three AI blocks

■ 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)
 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 glands 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)

■ Regulatory Compliance

■ Safety, EMC and RoHS Compliance

Safety: UL 61010-1
 UL 61010-2-030
 NM EN 61010 1, NM EN 61010 2 030
 GB30439 Part 1
 CAN/CSA-C22.2 No.61010-1
 CAN/CSA-C22.2 No.61010-2-030
 EN 61010-1
 EN IEC 61010-2-030
 EMC: EN 61326-1 Class A, Table 2 (For use in industrial locations)
 EN 61326-2-3
 EN 61326-2-5
 NM EN 61326 1, NM EN 61326 2 3
 NM EN 61326 2 5
 RCM: EN 61326-1 Class A, Table 2
 Korea Electromagnetic Conformity Standard Class A 한국 전자파적합성 기준

RoHS: EN IEC 63000 (Style 3.06 and later)

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.

REACH: Regulation EC 1907/2006

■ Explosion Protected Type Compliance

Item	Description	'Type' in MS code
Europe (ATEX)	<p>[Intrinsic safety "ia"]</p> <p>Applicable Standard: EN IEC 60079-0, EN 60079-11</p> <p>Certificate No: DEKRA 11ATEX0109X</p> <p>Marking/Rating:  II 1 G Ex ia IIC T4 Ga, FISCO field device</p> <p>Ambient Temperature: -20 to 55°C</p> <p>Power Supply / Signals: See the control drawing.</p> <p>Electrical parameters: See the control drawing.</p> <p>Dielectric strength:</p> <p>500 V a.c. r.m.s. between</p> <ul style="list-style-type: none"> - Supply terminals and the earth terminal - the terminals of Measuring Modules excluding PH, SC and ISC and the earth terminal - Supply terminals and the terminals of Measuring Modules - the terminals of Measuring Module 1 and the terminals of Measuring Module 2 <p>700 V d.c. between</p> <ul style="list-style-type: none"> - the terminals of PH, SC and ISC Measuring Modules and the earth terminal <p>Specific conditions of use:</p> <p>Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.</p> <p>Since the enclosure of the Model FLXA202 is made of aluminium, if it is mounted in an area where the use of EPL Ga (category 1 G) equipment is required, it shall be installed such that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.</p> <p>On-site assembling: See Use's Manual IM 12A01A03-01EN.</p> <p>Installation and erection: See the control drawing.</p> <p>Maintenance and Repair:</p> <p>Warning: A modification of the equipment would no longer comply with the construction described in the certificate documentation.</p> <p>Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.</p> <p>Control Drawing: Refer to (1)</p>	-CB
International (IECEx)	<p>[Intrinsic safety "ia"]</p> <p>Applicable Standard: IEC 60079-0, IEC 60079-11</p> <p>Certificate No: IECEx DEK 11.0044X</p> <p>Marking/Rating: Ex ia IIC T4 Ga, FISCO field device</p> <p>Ambient Temperature: -20 to 55°C</p> <p>Power Supply / Signals: See the control drawing.</p> <p>Electrical parameters: See the control drawing.</p> <p>Dielectric strength:</p> <p>500 V a.c. r.m.s. between</p> <ul style="list-style-type: none"> - Supply terminals and the earth terminal - the terminals of Measuring Modules excluding PH, SC and ISC and the earth terminal - Supply terminals and the terminals of Measuring Modules - the terminals of Measuring Module 1 and the terminals of Measuring Module 2 <p>700 V d.c. between</p> <ul style="list-style-type: none"> - the terminals of PH, SC and ISC Measuring Modules and the earth terminal <p>Specific conditions of use:</p> <p>Electrostatic charges on the non-metallic or coated parts of the two wire analyzer shall be avoided.</p> <p>Since the enclosure of the Model FLXA202 is made of aluminium, if it is mounted in an area where the use of EPL Ga (category 1 G) equipment is required, it shall be installed such that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.</p> <p>On-site assembling: See Use's Manual IM 12A01A03-01EN.</p> <p>Installation and erection: See the control drawing.</p> <p>Maintenance and Repair:</p> <p>Warning: A modification of the equipment would no longer comply with the construction described in the certificate documentation.</p> <p>Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.</p> <p>Control Drawing: Refer to (1)</p>	

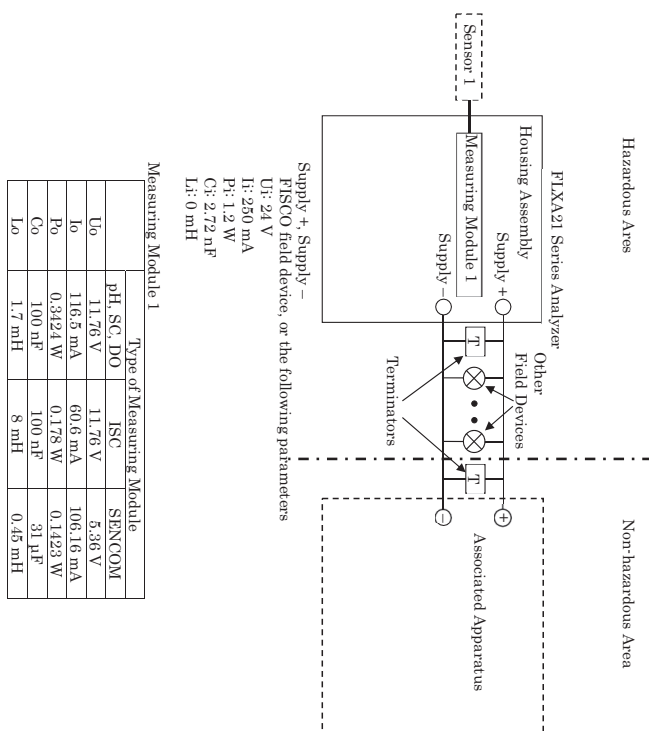
Item	Description	'Type' in MS code
United States (FM)	<p>[Intrinsically safe / Nonincendive]</p> <p>Applicable Standard: FM 3600, FM3610, FM3611, FM3810, NEMA 250, ANSI/UL 60079-0, ANSI/UL 60079-11, ANSI/UL 121201, ANSI/UL 61010-1, ANSI/UL 61010-2-030</p> <p>Certificate No: FM20US0046X</p> <p>Marking/Rating: IS CL I DIV 1 GP ABCD T4, CL I ZN 0 AEx ia IIC T4 NI CL I DIV 2 GP ABCD T4, CL I ZN 2 IIC T4 FISCO field device</p> <p>T4: for ambient temperature: -20 to 55°C</p> <p>Enclosure: Type 4X</p> <p>Power Supply / Signals: See the control drawing.</p> <p>Battery: No replaceable battery</p> <p>Electrical parameters: See the control drawing.</p> <p>Dielectric strength: 500 V AC, r.m.s. between - Supply terminals and the earth terminal - the terminals of Measuring Modules excluding PH, SC and ISC and the earth terminal - Supply terminals and the terminals of Measuring Modules - the terminals of Measuring Module 1 and the terminals of Measuring Module 2 700 V DC between - the terminals of PH, SC and ISC Measuring Modules and the earth terminal</p> <p>Specific conditions of use: See the control drawings.</p> <p>On-site assembling: See Use's Manual IM 12A01A03-01EN.</p> <p>Installation and erection: See the control drawing.</p> <p>Maintenance and Repair: Warning: A modification of the equipment would no longer comply with the construction described in the certificate documentation. Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.</p> <p>Control Drawing: Refer to (3)</p>	-CD
Canada (CSA)	<p>[Intrinsically safe / Nonincendive]</p> <p>Applicable Standard: CAN/CSA-C22.2 No.94.2, CAN/CSA-C22.2 No.213, CSA-C22.2 No.60079-0, CAN/CSA-C22.2 No.60079-11, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030</p> <p>Certificate No: FM23CA0014X</p> <p>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</p> <p>Ambient Temperature: -20 to 55°C</p> <p>Ambient Humidity: 0 – 100% (No Condensation)</p> <p>Enclosure: Type 4X</p> <p>Power Supply / Signals: See the control drawing.</p> <p>Battery: No replaceable battery</p> <p>Electrical parameters: See the control drawing.</p> <p>Dielectric strength: 500 V AC, r.m.s. between - Supply terminals and the earth terminal - the terminals of Measuring Modules excluding PH, SC and ISC and the earth terminal - Supply terminals and the terminals of Measuring Modules - the terminals of Measuring Module 1 and the terminals of Measuring Module 2 700 V DC between - the terminals of PH, SC and ISC Measuring Modules and the earth terminal</p> <p>Specific conditions of use: See the control drawings.</p> <p>On-site assembling: See Use's Manual IM 12A01A03-01EN.</p> <p>Installation and erection: See the control drawing.</p> <p>Maintenance and Repair: Warning: A modification of the equipment would no longer comply with the construction described in the certificate documentation. Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.</p> <p>Control Drawing: Refer to (2)</p>	

Item	Description	'Type' in MS code
United States (FM)	<p>[Nonincendive]</p> <p>Applicable Standard: FM 3600, FM3611, FM3810, NEMA 250, ANSI/UL 121201, ANSI/UL 61010-1, ANSI/UL 61010-2-030</p> <p>Certificate No: FM20US0046X</p> <p>Marking/Rating: NI CL I DIV 2 GP ABCD T4, CL I ZN 2 IIC T4</p> <p>T4: for ambient temperature: -20 to 55°C</p> <p>Enclosure: Type 4X</p> <p>Power Supply / Signals: See the control drawing.</p> <p>Battery: No replaceable battery</p> <p>Electrical parameters: See the control drawing.</p> <p>Dielectric strength:</p> <ul style="list-style-type: none"> 500 V AC, r.m.s. between <ul style="list-style-type: none"> - Supply terminals and the earth terminal - the terminals of Measuring Modules excluding PH, SC and ISC and the earth terminal - Supply terminals and the terminals of Measuring Modules - the terminals of Measuring Module 1 and the terminals of Measuring Module 2 700 V DC between <ul style="list-style-type: none"> - the terminals of PH, SC and ISC Measuring Modules and the earth terminal <p>Specific conditions of use: See the control drawings.</p> <p>On-site assembling: See Use's Manual IM 12A01A03-01EN.</p> <p>Installation and erection: See the control drawing.</p> <p>Maintenance and Repair:</p> <p>Warning: A modification of the equipment would no longer comply with the construction described in the certificate documentation.</p> <p>Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.</p> <p>Control Drawing: Refer to (3)</p>	-DD
Canada (CSA)	<p>[Nonincendive]</p> <p>Applicable Standard: CAN/CSA-C22.2 No.94.2, CAN/CSA-C22.2 No.213, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030</p> <p>Certificate No: FM23CA0014X</p> <p>Marking/Rating: Nonincendive for Class I, Division 2, Groups A, B, C, D, T4</p> <p>Ambient Temperature: -20 to 55°C</p> <p>Ambient Humidity: 0 – 100% (No Condensation)</p> <p>Enclosure: Type 4X</p> <p>Power Supply / Signals: See the control drawing.</p> <p>Battery: No replaceable battery</p> <p>Electrical parameters: See the control drawing.</p> <p>Dielectric strength:</p> <ul style="list-style-type: none"> 500 V AC, r.m.s. between <ul style="list-style-type: none"> - Supply terminals and the earth terminal - the terminals of Measuring Modules excluding PH, SC and ISC and the earth terminal - Supply terminals and the terminals of Measuring Modules - the terminals of Measuring Module 1 and the terminals of Measuring Module 2 700 V DC between <ul style="list-style-type: none"> - the terminals of PH, SC and ISC Measuring Modules and the earth terminal <p>Specific conditions of use: See the control drawings.</p> <p>On-site assembling: See Use's Manual IM 12A01A03-01EN.</p> <p>Installation and erection: See the control drawing.</p> <p>Maintenance and Repair:</p> <p>Warning: A modification of the equipment would no longer comply with the construction described in the certificate documentation.</p> <p>Only personnel authorized by Yokogawa Electric Corporation can repair the equipment.</p> <p>Control Drawing: Refer to (2)</p>	
China (NEPSI)	<p>[Intrinsic safety "ia"]</p> <p>Applicable Standard: GB/T 3836.1-2021, GB/T 3836.4-2021</p> <p>Certificate No: GYJ22.3555X</p> <p>Marking/Rating: Ex ia IIC T4 Ga, FISCO field device</p> <p>Ambient Temperature: -20 to 55°C</p> <p>Control Drawing: Refer to (4)</p>	-CH
Korea (KCs)	<p>[Intrinsic safety "ia"]</p> <p>Applicable Standard: Notice of Ministry of Labor No. 2021-22</p> <p>Certificate No: 21-KA4BO-0916X</p> <p>Marking/Rating: Ex ia IIC T4 Ga, FISCO field device</p> <p>Ambient Temperature: -20 to 55°C</p> <p>Control Drawing: Refer to (4)</p>	-EG

■ Control Drawings

(1) ATEX and IECEx Intrinsic safety “ia”

Yokogawa Electric Corporation		Model		FLXA21	
Control drawing (FOUNDATION Fieldbus / PROFIBUS PA type)					
No.	IEE039-A32	Page	1	Revision	0
		Date	2019-10-18		



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. When accessing the display window or other non-metallic parts of the enclosure of FLXA21, take the following measures to minimize the risk of explosion from electrostatic discharges, in addition to avoiding any actions that cause the generation of electrostatic charges, such as rubbing with a dry cloth.

To avoid electrostatic charge on the operator,

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

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.

DEKRA Certification B.V.
 Measuring device 1231, 1232, 1233, 1234
 P.O. Box 5136, 6807 FD Arnhem

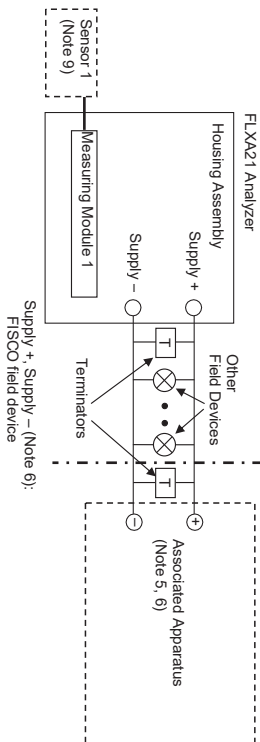
(2) FM and CSA Intrinsic safety, Nonincendive

Yokogawa Electric Corporation	Model	FLXA21 / FLXA202
Title	Control drawing (FOUNDATION Fieldbus / PROFIBUS PA type)	
No.	IFM039-A72	
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Installation for Division 1 / Zone 0, 1

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

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 9):

	Type of Measuring Module
pH, SC, DO	ISC
Uo	11.76 V
Io	116.5 mA
PO	0.3424 W
Co	100 nF
Lo	1.7 mH

Specific condition of use

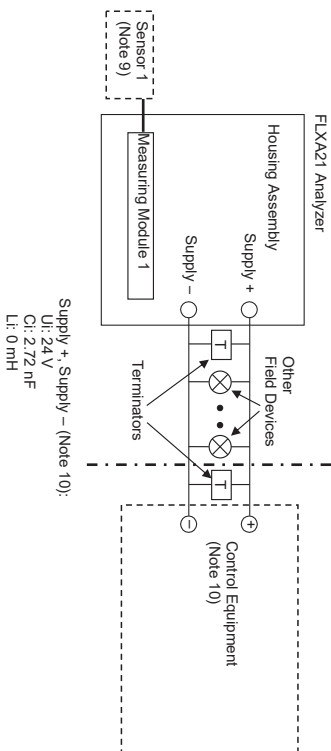
-Precautions shall be taken to minimize the risk of non-metallic parts and painted parts of the enclosure. When the equipment is used in hazardous locations, avoid any action which generates electrostatic discharge such as rubbing with a dry cloth.

Yokogawa Electric Corporation	Model	FLXA21 / FLXA202
Title	Control drawing (FOUNDATION Fieldbus / PROFIBUS PA type)	
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Installation for Division 2 / Zone 2

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

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 9):

	Type of Measuring Module
pH, SC, DO	ISC
Uo	11.76 V
Io	116.5 mA
PO	0.3424 W
Co	100 nF
Lo	1.7 mH

Specific condition of use:

-Precautions shall be taken to minimize the risk of non-metallic parts and painted parts of the enclosure. When the equipment is used in hazardous locations, avoid any action which generates electrostatic discharge such as rubbing with a dry cloth.

Yokogawa Electric Corporation		Model		FLXA21 / FLXA202	
Title		Control drawing (FOUNDATION Fieldbus / PROFIBUS PA type)			
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Notes:

1. No revision to this drawing without prior approval of FM.
2. In US, the associated apparatus and the associated nonincendive field wiring apparatus must be FM-approved.
3. In US, installation must be in accordance with the National Electric Code (NEPA 70), ANSI/ISA-RP12.06.01 and relevant local codes.
4. In Canada, installation must be in accordance with the Canadian Electric Code Part I (C22.1), ANSI/ISA-RP12.06.01 and relevant local codes.
5. In US, FISCO installation must be in accordance with ANSI/UL-60079-25.
6. In Canada, FISCO installation must be in accordance with CAN/CSA-C22.2 No. 60079-25.
7. In US, the associated apparatus, the FISCO/FNICO power supply, the associated nonincendive field wiring apparatus and the terminators must be FM-approved.
8. The associated apparatus must be a FISCO power supply or a linear source meeting the following conditions.

$$U_o \text{ (or } V_{oc}) \leq U_i$$

$$I_o \text{ (or } I_{sc}) \leq I_i$$

$$P_o \leq P_i$$

$$C_o \text{ (or } C_a) \geq C_i + C_{cable}$$

$$L_o \text{ (or } L_a) \geq L_i + L_{cable}$$

7. Control equipment connected to the associated apparatus must not use or generate a voltage which exceeds U_m of the associated apparatus.
8. The control drawing of the associated apparatus must be followed when installing the equipment.
9. 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.
10. The control equipment must be a FM-approved FISCO power supply, FNICO power supply or the 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.

$$U_o \text{ (or } V_{oc}) \leq U_i$$

$$C_o \text{ (or } C_a) \geq C_i + C_{cable}$$

$$L_o \text{ (or } L_a) \geq L_i + L_{cable}$$

Yokogawa Electric Corporation		Model		FLXA21 / FLXA202	
Title		Control drawing (FOUNDATION Fieldbus / PROFIBUS PA type)			
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11. 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.
AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES
12. 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
13. AVERTISSEMENT - DANS LE CAS OÙ LE BÔTIER DE L'ANALYSEUR EST EN ALUMINIUM, S'IL EST MONTÉ EN ZONE 0, IL DOIT ÊTRE INSTALLÉ DE MANIÈRE À CE QUE, MÊME EN CAS D'INCIDENTS RARES, LES SOURCES D'INFLAMMATION DUES AUX CHOCS ET AUX ÉTINCELLES DE FRICTION SOIENT EXCLUES.
14. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT – LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.
15. WARNING – SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY AND SUITABILITY FOR DIVISION 2 / ZONE 2.
AVERTISSEMENT – LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

(3) NEPSI and KCs Intrinsic safety “ia” (Refer to App. (1) ATEX and IECEx Control Drawing)

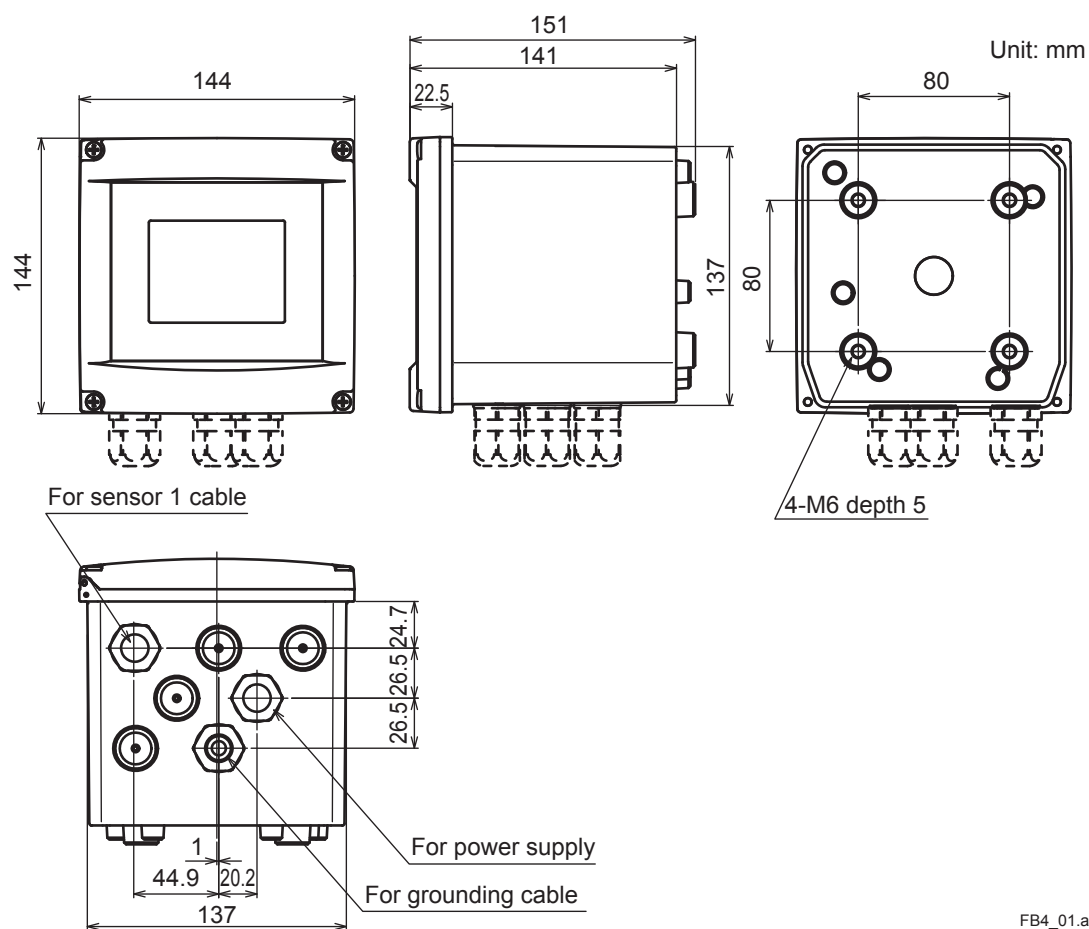
■ Model & Suffix Codes

Model	Suffix code	Option code	Description
FLXA21	.....	.....	2-Wire Analyzer
Power supply	-D	.....	Always -D
Housing	-P	.....	Plastic
Display	-D	.....	Anti-glare LCD
Type	-AB -AD -AG -CB -CD -CH -EG -DD	..... ..... ..... ..... ..... ..... ..... .....	General purpose for CE, RCM General purpose for CSA General purpose for KC IS for ATEX, IECEx (Note 1) (Note 2) IS for FM, CSA (Note 1) IS for NEPSI (Note 1) IS for KCs (Note 1) NI for FM, CSA (Note 3)
1st input	-P1 -C1	..... .....	pH/ORP Conductivity (SC)
2nd input	-NN	.....	Without input
Output (Note 4)	-F	.....	FOUNDATION Fieldbus
—	-N	.....	Always -N
Language set (Note 5)	-LA	.....	English and 11 languages
Country	-N	.....	Global except Japan
—	-NN	.....	Always -NN
Option	Mounting hardware Hood Tag plate Conduit adapter	/UM /U /PM /H6 /H7 /H8 /SCT /CB4 /CD4 /CF4	Universal mounting kit (Note 6) Pipe and wall mounting hardware Panel mounting hardware Hood, stainless steel Hood, stainless steel + urethane coating Hood, stainless steel + epoxy coating Stainless steel tag plate Conduit adapter (G1/2 x 4 pcs) Conduit adapter (1/2NPT x 4 pcs) Conduit adapter (M20 x 1.5 x 4 pcs)

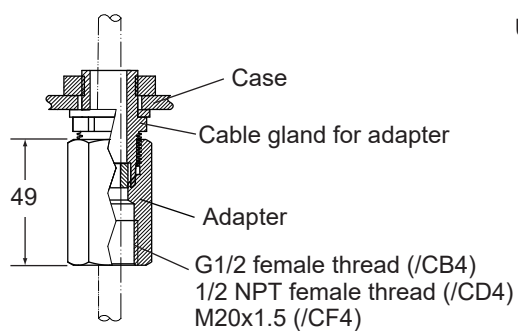
Notes:

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

■ Dimensions and Mounting

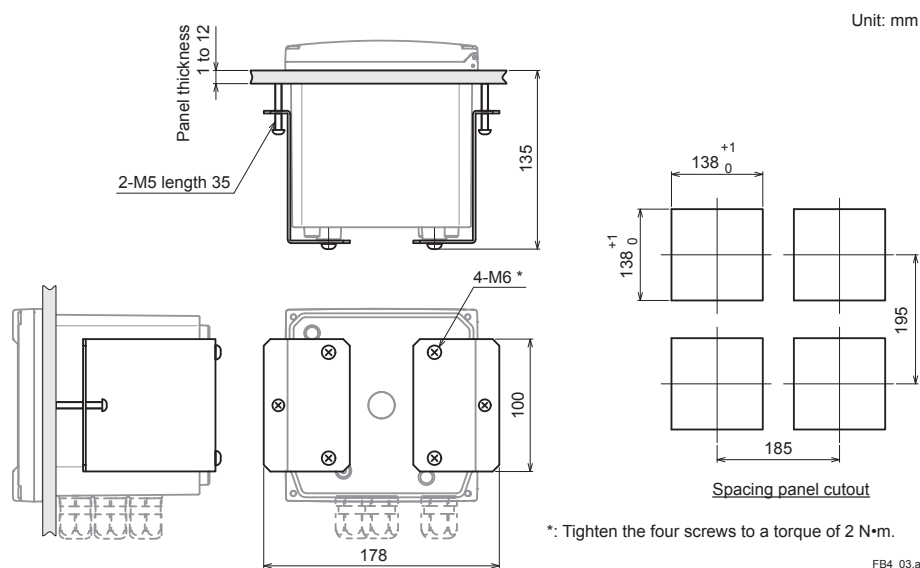


Conduit Adapter (Option code: □/CB4, □/CD4, □/CF4)

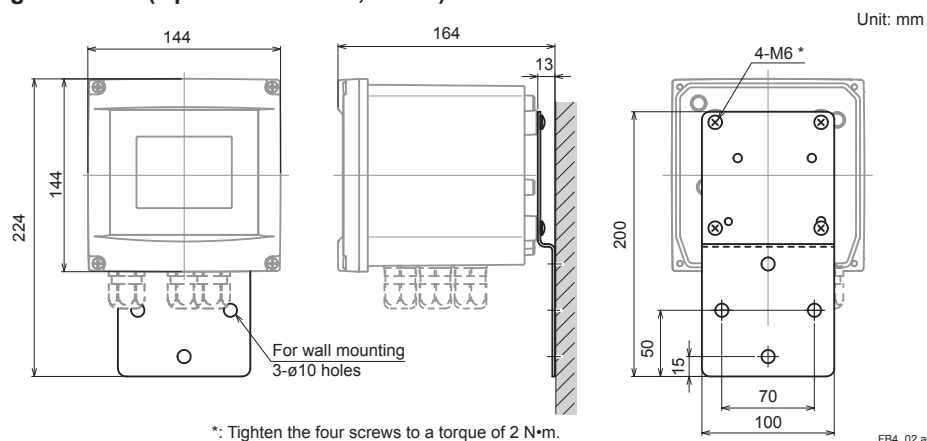


(Note) The universal mounting kit (/UM) contains the pipe and wall mounting hardware (/U) and the panel mounting hardware (/PM).

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

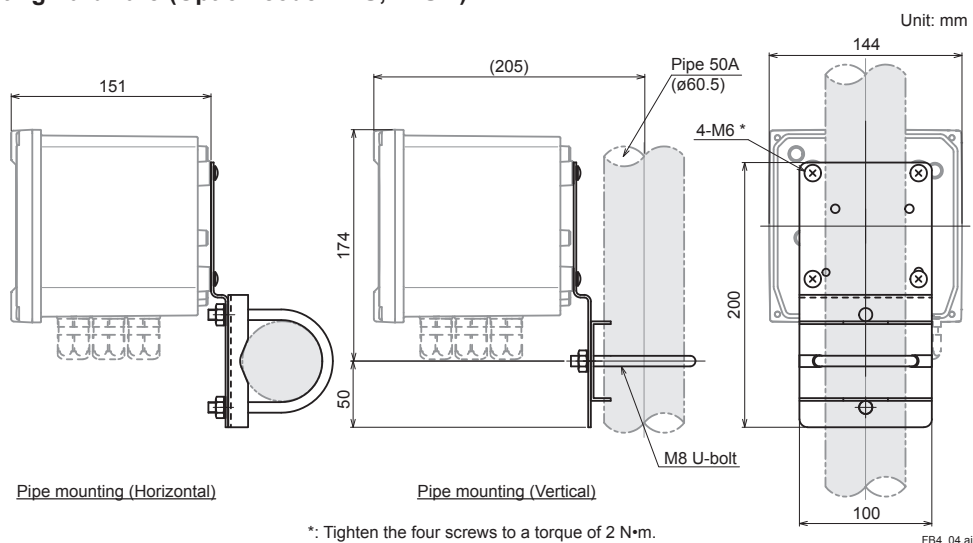


Wall mounting hardware (Option code: □/U, □/UM)

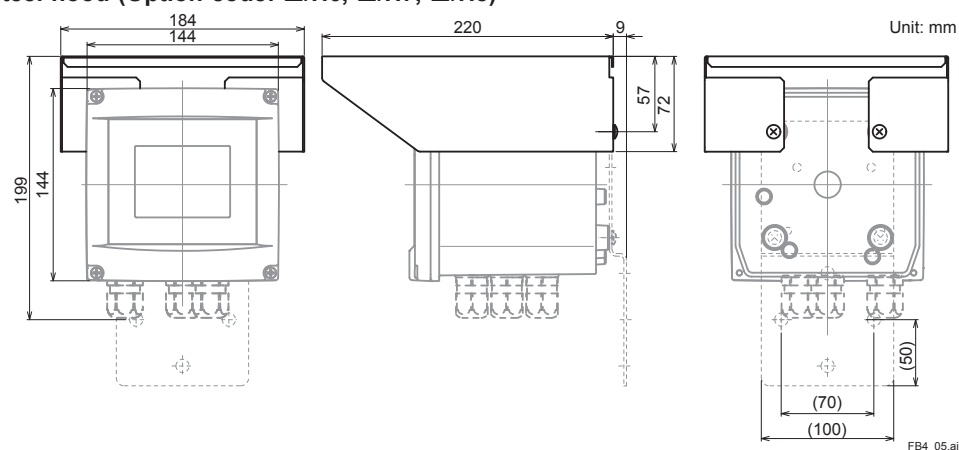


Note: The wall on which the analyzer is mounted should be strong enough to bear the weight of more than 8 kg.

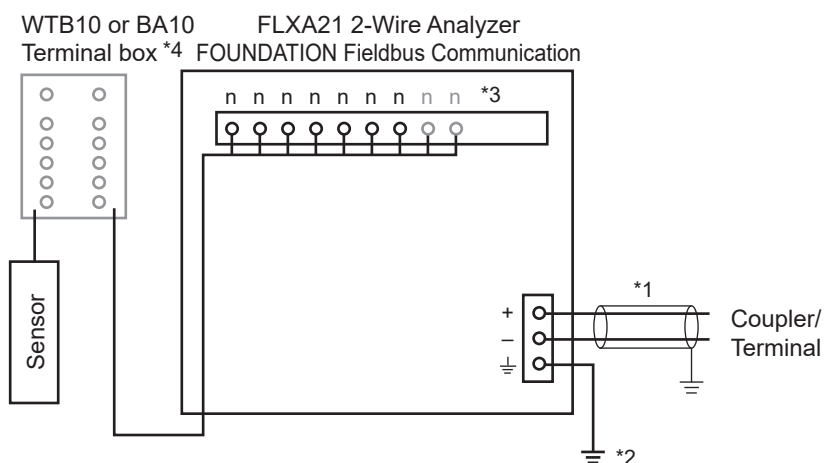
Pipe mounting hardware (Option code: □/U, □/UM)



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)

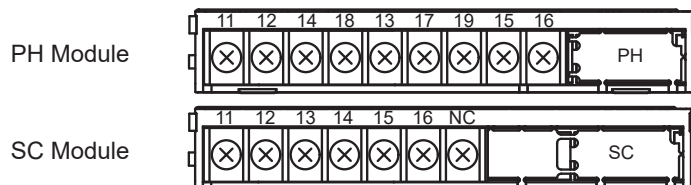
Connect the grounding cable to the \perp terminal of the power module inside.

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.



- GS 12A01A02-71E Sep. 05, 2023-00