

FLXA202 / FLXA21 2-Wire Analyzer Start-up Manual

IM 12A01A02-12E

This Start-up Manual explains mainly the installation and wiring of the FLXA202/FLXA21.
For detailed information and other information, the User's Manual of the FLXA202/FLXA21
should be referred to.

Introduction

Thank you for purchasing the FLXA™ 202/FLXA™ 21 2-Wire Analyzer.

Please read the following respective documents before installing and using the FLXA202/FLXA21. When the FLXA21 with the output of FOUNDATION Fieldbus or PROFIBUS PA Communication is used, please refer to the User's Manual, [IM 12A01A02-71E](#) or [IM 12A01A02-72E](#), too.

The related documents are as follows.

General Specifications

Contents	Document number	Note
FLXA202 2-wire Analyzer	GS 12A01A03-01EN	For FLXA202. Online manual
FLXA21 2-wire Analyzer	GS 12A01A02-01E	For FLXA21. Online manual
FLXA21 2-wire Analyzer FOUNDATION Fieldbus Communication	GS 12A01A02-71E	For FLXA21. Online manual
FLXA21 2-wire Analyzer PROFIBUS PA Communication	GS 12A01A02-72E	For FLXA21. Online manual

* the "E" or "EN" in the document number is the language code.

User's Manual

Contents	Document number	Note
FLXA202/FLXA21 2-wire Analyzer Start-up Manual	IM 12A01A02-12E	Attached to the product (This manual)
Safety Instruction Manual	IM 00C01C01-01Z1	For type "-AB", "-CB", or "-DB" Attached to the product
FLXA202/FLXA21 2-wire Analyzer Safety Precautions	IM 12A01A02-20E	For intrinsic safety, nonincendive and Type n. Attached to the product
FLXA202/FLXA21 2-wire Analyzer Installation and Wiring	IM 12A01A03-01EN	Online manual
FLXA202/FLXA21 2-wire Analyzer Operation of pH/ORP	IM 12A01A03-31EN	For pH/ORP (-P1) selection Online manual
FLXA202/FLXA21 2-wire Analyzer Operation of SC	IM 12A01A03-32EN	For Conductivity (SC) (-C1) selection Online manual
FLXA202/FLXA21 2-wire Analyzer Operation of ISC	IM 12A01A03-33EN	For Inductive conductivity (ISC) (-C5) selection Online manual
FLXA202/FLXA21 2-wire Analyzer Operation of DO	IM 12A01A03-34EN	For Dissolved oxygen (DO) (-D1) selection Online manual
FLXA202 2-wire Analyzer Operation of SENCOM SA-pH/ORP	IM 12A01A03-36EN	For pH/ORP of SENCOM SA (-S5) selection Online manual
FLXA202 2-wire Analyzer Operation of SENCOM SA-SC	IM 12A01A03-37EN	For Conductivity (SC) of SENCOM SA (-S5) selection Online manual
FLXA21 2-wire Analyzer FOUNDATION Fieldbus Communication	IM 12A01A02-71E	For FLXA21, output "-F" Online manual
FLXA21 2-wire Analyzer PROFIBUS PA Communication	IM 12A01A02-72E	For FLXA21, output "-P" Online manual

* The "E" or "EN" in the document number is the language code.

Note: Please read the Safety Precautions ([IM 12A01A02-20E](#)) before using the product.

The Safety Precautions includes Control Drawings of intrinsic safety, nonincendive and Type n that describes specific condition for using FLXA202/FLXA21 in hazardous/classified location.

An exclusive User's Manual might be attached to the products whose suffix codes or option codes contain the code "Z" (made to customers' specifications). Please read it along with this manual.

Technical Information

Contents	Document number	Note
FLXA202 2-wire Analyzer Selection Guide for Intrinsic Safety type Associated Apparatus	TI 12A01A02-42EN	Online manual
FLXA202/FLXA21 2-Wire Analyzer HART Communication	TI 12A01A02-60E	Online manual

* The "E" or "EN" in the document number is the language code.

You can download the latest documents from our website. Scan QR code.

<http://www.yokogawa.com/an/flxa202/download/>



Read corresponding user's manual for details about sensors or other related products.

■ Note on Handling User's Manuals

- Please hand over the user's manuals to your end users so that they can keep the user's manuals on hand for convenient reference.
- Please read the information thoroughly before using the product.
- The purpose of these user's manuals is not to warrant that the product is well suited to any particular purpose but rather to describe the functional details of the product.
- No part of the user's manuals may be transferred or reproduced without prior written consent from YOKOGAWA.
- YOKOGAWA reserves the right to make improvements in the user's manuals and product at any time, without notice or obligation.
- If you have any questions, or you find mistakes or omissions in the user's manuals, please contact our sales representative or your local distributor.

■ Drawing Conventions

Some drawings may be partially emphasized, simplified, or omitted, for the convenience of description.

Some screen images depicted in the user's manual may have different display positions or character types (e.g., the upper / lower case). Also note that some of the images contained in this user's manual are display examples.

■ Copyright and Trademark Notices

FLEXA, FLXA and SENCOM are trademarks or registered trademarks of Yokogawa Electric Corporation.

All other company and product names mentioned in this user's manual are trademarks or registered trademarks of their respective companies.

We do not use TM or ® mark to indicate those trademarks or registered trademarks in this user's manual.

■ Product Disposal

The instrument should be disposed of in accordance with local and national legislation/regulations.

■ Warranty and service

Yokogawa products and parts are guaranteed free from defects in workmanship and material under normal use and service for a period of (typically) 12 months from the date of shipment from the manufacturer.

Individual sales organisations can deviate from the typical warranty period, and the conditions of sale relating to the original purchase order should be consulted. Damage caused by wear and tear, inadequate maintenance, corrosion, or by the effects of chemical processes are excluded from this warranty coverage.

In the event of warranty claim, the defective goods should be sent (freight paid) to the service department of the relevant sales organisation for repair or replacement (at Yokogawa discretion). The following information must be included in the letter accompanying the returned goods:

- Part number, model code and serial number
- Original purchase order and date
- Length of time in service and a description of the process
- Description of the fault, and the circumstances of failure
- Process/environmental conditions that may be related to the failure of the device.
- A statement whether warranty or nonwarranty service is requested
- Complete shipping and billing instructions for return of material, plus the name and phone number of a contact person who can be reached for further information.

Returned goods that have been in contact with process fluids must be decontaminated/disinfected before shipment. Goods should carry a certificate to this effect, for the health and safety of our employees.

Material safety data sheets should also be included for all components of the processes to which the equipment has been exposed.

◆ Safety Precautions

■ Safety, Protection, and Modification of the Product

- In order to protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions described in this user's manual. We assume no liability for safety if users fail to observe these instructions when operating the product.
- If this instrument is used in a manner not specified in this user's manual, the protection provided by this instrument may be impaired.
- If any protection or safety circuit is required for the system controlled by the product or for the product itself, prepare it separately.
- Be sure to use the spare parts approved by Yokogawa Electric Corporation (hereafter simply referred to as YOKOGAWA) when replacing parts or consumables.
- Modification of the product is strictly prohibited.
- The following safety symbols are used on the product as well as in this manual.



WARNING

This symbol indicates that an operator must follow the instructions laid out in this manual in order to avoid the risks, for the human body, of injury, electric shock, or fatalities. The manual describes what special care the operator must take to avoid such risks.



CAUTION

This symbol indicates that the operator must refer to the instructions in this manual in order to prevent the instrument (hardware) or software from being damaged, or a system failure from occurring.

CAUTION

This symbol gives information essential for understanding the operations and functions.

NOTE

This symbol indicates information that complements the present topic.



This symbol indicates Function Ground Terminal. Do not use this terminal as the protective ground terminal.

■ Warning and Disclaimer

The product is provided on an "as is" basis. YOKOGAWA shall have neither liability nor responsibility to any person or entity with respect to any direct or indirect loss or damage arising from using the product or any defect of the product that YOKOGAWA can not predict in advance.

■ FLXA202/FLXA21

- The FLXA202/FLXA21 should only be used with equipment that meets the relevant IEC, American, Canadian, and Japanese standards. Yokogawa accepts no responsibility for the misuse of this unit.
- Don't install "general purpose type" instruments in the hazardous area.
- The Instrument is packed carefully with shock absorbing materials, nevertheless, the instrument may be damaged or broken if subjected to strong shock, such as if the instrument is dropped. Handle with care.

CAUTION

Electrostatic discharge

The FLXA202/FLXA21 contains devices that can be damaged by electrostatic discharge. When servicing this equipment, please observe proper procedures to prevent such damage. Replacement components should be shipped in conductive packaging. Repair work should be done at grounded workstations using grounded soldering irons and wrist straps to avoid electrostatic discharge.

CAUTION

- Do not use an abrasive or organic solvent in cleaning the instrument.
- Substitution of components may impair suitability for Division 2.
Do not remove or replace while circuit is live unless area is known to be non hazardous.
Explosion Hazard – Do not disconnect equipment unless area is known to be non hazardous.
Do not reset circuit breaker unless power has been removed from the equipment or the area is known to be non hazardous.
- This instrument is a EN61326-1 Class A product, and it is designed for use in the industrial environment. Please use this instrument in the industrial environment only.
- The HART communication may be influenced by strong electromagnetic field.
In this case another trial of the HART communication and/or operation with FLXA202/FLXA21 touch screen can be carried out.
- When you open the front panel, make sure the screws are completely out of the screw holes, and then open the front panel slowly in order not to damage the threaded parts on the housing. If the threaded parts are damaged and the screws cannot be tightened, the waterproof performance will deteriorate.
- When checking whether ORP meter is functioning properly by using the concentrated sulfuric acid, handle it with care.

● Safety, EMC and RoHS Compliance (FLXA202/FLXA21)

Safety: UL 61010-1
UL 61010-2-030
CAN/CSA-C22.2 No.61010-1
CAN/CSA-C22.2 No.61010-2-030
EN61010-1
EN61010-2-030

EMC: EN61326-1 Class A, Table 2 (For use in industrial locations)
Influence of immunity environment (Criteria A): Output shift is specified within $\pm 25\%$ of F.S.

EN61326-2-3

EN61326-2-5 (suffix code Output: -F, -P)

RCM: EN61326-1 Class A, Table 2

Korea Electromagnetic Conformity Standard Class A 한국 전자파적합성 기준

A급 기기 (업무용 방송통신기자재)

이 기기는 업무용 (A급) 전자파적합기기로서 판매자 또는
사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서
사용하는 것을 목적으로 합니다.

Russian: TR CU 020/2011 (suffix code Output: -A)

RoHS: EN IEC 63000 FLXA202; 1.06 and later, FLXA21; 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.

◆ CE marking products

■ Authorized Representative in EEA

The Authorized Representative for this product in EEA is Yokogawa Europe B.V. (Euroweg 2, 3825 HD Amersfoort, The Netherlands).

■ Identification Tag

This manual and the identification tag attached on packing box are essential parts of the product. Keep them together in a safe place for future reference.

■ Users

This product is designed to be used by a person with specialized knowledge.

■ How to dispose the batteries:

This is an explanation about the EU Battery Directive. This directive is only valid in the EU. Batteries are included in this product. Batteries incorporated into this product cannot be removed by yourself. Dispose them together with this product.

When you dispose this product in the EU, contact your local Yokogawa Europe B.V.office.

Do not dispose them as domestic household waste.

Battery type: Manganese dioxide lithium battery



Notice: The symbol (see above) means they shall be sorted out and collected as ordained in the EU Battery Directive.

■ 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. This product should be disposed in accordance with local and national legislation/regulations. The WEEE Directive is only valid in the EU.

◆ Control of Pollution Caused by the Product

This is an explanation for the product based on "Control of Pollution caused by Electronic Information Products" in the People's Republic of China.

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
外壳(金属)	×	×	×	×	○	○
外壳(塑料)	×	×	×	×	○	○
印刷电路板组件	×	×	×	×	○	○

○：表示该有害物质在该部件中所有均质材料中的含量都在GB/T26572所规定的限量要求以下。

×：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T26572所规定的限量要求。

环保使用期限：这个标志是基于SJ/T11364，在中国（不包括台湾，香港，澳门）贩售的电子电器产品所适用的环保使用期限。



只要遵守产品上关于安全及使用上的注意事项，从制造之日起计算在该年限内，不会发生制品内的有害物质外泄，突然变异，对环境或人体以及财产产生重大影响的情况。

（注）该年限是《环境保护使用期限》，不是产品的保质期限。

另外，关于替换部件的推荐替换周期，请阅读使用说明书。

Explosion Protected Type Compliance

FLXA202, FLXA21 (Output: -A)

Item	Description	'Type' in MS code
Europe (ATEX)	FLXA202 and FLXA21: [Intrinsic safety "ia"] Applicable Standard: EN IEC 60079-0, EN 60079-11	-CB
International (IECEx)	FLXA202 and FLXA21: [Intrinsic safety "ia"] Applicable Standard: IEC 60079-0, IEC 60079-11	
United States (FM)	FLXA202 and FLXA21: [Intrinsically safe / Nonincendive] Applicable Standard: FM 3600, FM3610, FM3611, FM3810, NEMA 250, ANSI/ISA 60079-0, ANSI/ISA 60079-11, ANSI/UL 121201, ANSI/ISA 61010-1	-CD
Canada (CSA)	FLXA202 and FLXA21: [Intrinsically safe / Nonincendive] Applicable Standard: C22.2 No.0, CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/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	
United States (FM)	FLXA202 and FLXA21: [Nonincendive] Applicable Standard: FM 3600, FM3611, FM3810, NEMA 250, ANSI/UL 121201, ANSI/ISA 61010-1	-DD
Canada (CSA)	FLXA202 and FLXA21: [Nonincendive] Applicable Standard: C22.2 No.0, CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030	
Canada (CSA)	FLXA202: [Type of protection 'n' / Nonincendive] Applicable Standard: C22.2 No.0, CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/CSA-C22.2 No.60079-0, CAN/CSA-C22.2 No.60079-11, CAN/CSA-C22.2 No.60079-15, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030	-DE
Europe (ATEX)	FLXA202: [Type of protection 'n'] Certificate: Not Applicable as per Annex VIII to ATEX 2014/34/EU Applicable Standard: EN IEC 60079-0, EN 60079-11, EN60079-15, EN60529	-DB
International (IECEx)	FLXA202: [Type of protection 'n'] Applicable Standard: IEC 60079-0, IEC 60079-11, IEC 60079-15	
China (NEPSI)	FLXA202 and FLXA21: [Intrinsic safety "ia"] Applicable Standard: GB3836.1-2010, GB3836.4-2010, GB 3836.20-2010	-CH
Korea (KCs)	FLXA202: [Intrinsic safety "ia"] Applicable Standard: Notice of Ministry of Labor No. 2016-54	-CG
	FLXA21: [Intrinsic safety "ia"] Applicable Standard: Notice of Ministry of Labor No. 2016-54	-EG

FLXA21 (Output: -F, -P)

Item	Description	'Type' in MS code
Europe (ATEX)	Applicable Standard: [Intrinsic safety "ia"] EN IEC 60079-0, EN 60079-11	-CB
International (IECEx)	Applicable Standard: [Intrinsic safety "ia"] IEC 60079-0, IEC 60079-11	
United States (FM)	Applicable Standard: [Intrinsically safe / Nonincendive] FM 3600, FM3610, FM3611, FM3810, NEMA 250, ANSI/ISA 60079-0, ANSI/ISA 60079-11, ANSI/UL 121201, ANSI/ISA 61010-1	-CD
Canada (CSA)	Applicable Standard: [Intrinsically safe / Nonincendive] C22.2 No.0, CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/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	
United States (FM)	Applicable Standard: [Nonincendive] FM 3600, FM3611, FM3810, NEMA 250, ANSI/UL 121201, ANSI/ISA 61010-1	-DD
Canada (CSA)	Applicable Standard: [Nonincendive] C22.2 No.0, CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030	
China (NEPSI)	Applicable Standard: [Intrinsic safety "ia"] GB3836.1-2010, GB3836.4-2010, GB 3836.20-2010	-CH
Korea (KCs)	Applicable Standard: [Intrinsic safety "ia"] Notice of Ministry of Labor No. 2016-54	-EG

1. Instrument Check

Upon delivery, unpack the instrument carefully and inspect it to ensure that it was not damaged during shipment. If damage is found, retain the original packing materials (including the outer box) and then immediately notify the carrier and the relevant Yokogawa sales office.

■ Checking the model and suffix code

● FLXA202

Make sure the model and suffix code on the nameplate affixed to the left side of the housing. Make sure they match the information in your order. Be sure to apply correct power to the unit as detailed on the nameplate. Refer to table 2.

NOTE

Be sure to apply correct power to the unit , as detailed on the nameplate.

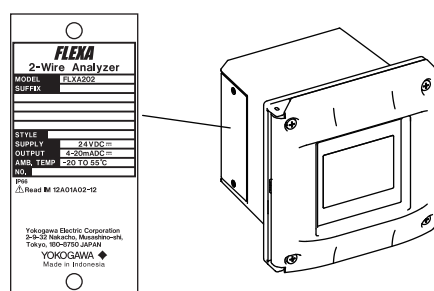


Figure 1.1 Example of nameplate (FLXA202)

● FLXA21

Make sure the model and suffix code on the nameplate affixed to the left side or inside of the housing. Refer to table 3.

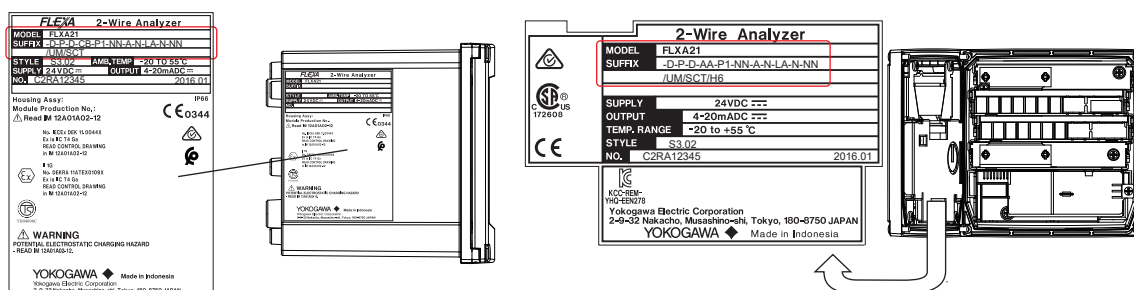


Figure 1.2 Example of nameplate (FLXA21)

● Checking the accessories

Make sure the accessories in Table 1 are included.

Table 1 Accessories

	Product Name	Quantity	Remark
Cable glands	FLXA202	3 sets	One rubber plug attachment.
	FLXA21	3 or 4 sets	4 sets when 2 sensors are used. One grommet for grounding attachment.
pH analyzer (-P1)	Jumper	2 pcs/module	
	Grommet set	1 set/module	
SENCOM SA (-S5)	Grommet	1	
	Accessory	1	1 shield bracket, 2 screws, 2 ferrite cores, 2 wiring bands
Option	Bracket	1 set	Option code /UM*, /U, /PM
	Sun shade hood	1 set	Option code /H6, /H7, /H8
	Tag plate	1	Option code /SCT
	Adapter for conduit work	3 or 4 sets	Option code /CB4, /CD4, /CF4 4sets when FLXA21 are used.
Startup Manual		1 copy	This manual
Safety Precautions		1 copy	

*: The universal mounting kit (/UM) contains the brackets for both /U and /PM options.

Table 2 Model and suffix code (FLXA202)

Model	Suffix code	Option code	Description
FLXA202	.....	.....	2-Wire Analyzer
Power supply	-D	.....	Always -D
Housing	-B -C -D	.....	Aluminum alloy cast + urethane coating Aluminum alloy cast + epoxy coating Aluminum alloy cast + high anti-corrosion coating
Display	-D	.....	Anti-glare LCD
Type	-AB -AD -AG -AQ -AR -CB -CD -CF -CG -CH -CQ -CR -DB -DD -DE	.....	General purpose for CE, RCM General purpose for CSA General purpose for KC General purpose for EAC with PA General purpose for EAC IS for ATEX, IECEx IS for FM, CSA IS for TIIS IS for KCs IS for NEPSI IS for EAC with PA IS for EAC Type n for ATEX, IECEx NI for FM, CSA Type n for CSA
1st input	-P1 -C1 -C5 -D1 -S5	.....	pH/ORP Conductivity (SC) Inductive conductivity (ISC) Dissolved oxygen (DO) SENCOM SA (SSA)
2nd input	-NN -P1 -C1 -D1	.....	Without input pH/ORP Conductivity (SC) Dissolved oxygen (DO)
Output	-A	.....	4-20 mA + HART
—	-N	.....	Always -N
Language set	-LA	.....	English and 11 languages
Country	-N -J	.....	Global except Japan Japan
—	-NN	.....	Always -NN
Option	Mounting hardware Hood Tag plate Conduit adapter Measurement law	/UM /U /PM /H6 /H7 /H8 /SCT /CB4 /CD4 /CF4 /CB5 /CD5 /CF5 /K	Universal mounting kit 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 G1/2 x 3 pcs 1/2NPT x 3 pcs M20 x 1.5 x 3 pcs G1/2 x 3 pcs for Type n 1/2NPT x 3 pcs for Type n M20 x 1.5 x 3 pcs for Type n With Measurement Law certificate

Table 3 Model and suffix code (FLXA21)

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 -AQ -AR -CB -CD -CH -EG -EQ -ER -DD	..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	General purpose for CE, RCM General purpose for CSA General purpose for KC General purpose for EAC with PA General purpose for EAC IS for ATEX, IEC Ex IS for FM, CSA IS for NEPSI IS for KCs IS for EACEx with PA IS for EACEx NI for FM, CSA
1st input	-P1 -C1 -C5 -D1	..... ..... ..... .....	pH/ORP Conductivity (SC) Inductive conductivity (ISC) Dissolved oxygen (DO)
2nd input	-NN -P1 -C1 -D1	..... ..... ..... .....	Without input pH/ORP Conductivity (SC) Dissolved oxygen (DO)
Output	-A	.....	4-20 mA + HART
—	-N	.....	Always -N
Language set	-LA	.....	English and 11 languages
Country	-N -J	..... .....	Global except Japan 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 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)

2. Wiring and Installation

Open the front panel and remove the plastic wiring covers, and then install the cable glands (refer to the Appendix A1). Re-install the wiring cover after the wiring is completed. Refer to the user's manual [IM 12A01A03-01EN](#) for details.

2.1 Installation site

The FLXA202/FLXA21 is weatherproof and can be installed both inside and outside. It should, however, be installed as close as possible to the sensor to avoid long cable runs between the instrument and sensor. When a pH sensor is used, the cable length including the sensor cable should not exceed 20 meters (65.6 feet); 60 meters (197 feet) when using BA10 extension box and WF10 cable. For a conductivity sensor the cable run should not exceed 60 meters (197 feet). For dissolved oxygen the sensor cable run should not exceed 30 meters (100 feet).

Select an installation site that meets the following conditions.

- Mechanical vibrations and shocks are negligible
- No relay switch and power switch are installed close to the converter
- There is space for cable connection beneath the cable glands

- Not exposed to direct sunlight or severe weather conditions
- Maintenance is possible
- No corrosive atmosphere
- Ambient Operating Temperature: -20 to +55 °C
- Humidity: 10 to 90% RH at 40 °C (Non-condensing)
- Water Protection: IP66 (except Canada), NEMA 4X (except Canada), Type 3S/4X (Canada)

If the instrument is installed outside and exposed to direct sunlight, a sun shade hood should be used.

The FLXA202/FLXA21 can be mounted on a wall, pipe or panel when the mounting kit is ordered. For dimensional information please refer to the Appendix, Mounting methods.

CAUTION

- Make sure the power supply is switched off before starting the installation.
- Power rating must comply with FLXA202/FLXA21 specification. Power voltage must match with the one indicated on the name plate.
- When you open the front panel, make sure the screws are completely out of the screw holes. Then open the front panel slowly in order not to damage the threaded parts on the housing. If the threaded parts are damaged and the screws cannot be tightened, the waterproof performance will deteriorate.
- Be careful not to lose the four front panel screws.

2.2 Wiring

2.2.1 Cables, Terminals, glands and conduit adapter

The supplied cable glands are for cables with an outside diameter of 6 to 12 mm (0.24 to 0.47 inches). Unused cable entry holes must be sealed with cable glands including the supplied close up plugs. When you protect cables with conduit, select conduit adapters with an option code / CB4, /CD4 or /CF4. For details refer to the User's Manual [IM 12A01A03-01EN](#).

CAUTION

- Be careful not to be injured by the sharp hole edges on the housing.
- When installing cable glands, hold cable glands and tighten cable gland nuts to a torque of 6 N•m. If cable glands, not gland nuts, are tightened, O-rings may be come out from the proper positions.
- When using a cable conduit, use a flexible conduit to avoid stress on the conduit adapter. The stress on the conduit adapter may damage the housing .

2.2.2 Wiring the power supply

Power rating must comply with FLXA202 specification.

FLXA202/FLXA21 is a 2-wire analyzer and can be powered by a DC power supply.

- Output is FOUNDATION Fieldbus and PROFIBUS PA option
The Power Supply voltage is 9 to 32V DC.
- Output is mA with HART

The load resistance: impedance of electronic equipment: typically 250 Ohm

Number of input modules: 1-sensor measurement or 2-sensor measurement.

One (1) Sensor module (1 input):

16 to 40 V DC (for analog sensor of pH/ORP, SC and DO)

17 to 40 V DC (for ISC)

21 to 40 V DC (for SA11 SENCOM Smart Adapter connected)

Two (2) Sensor modules (2 inputs):

22.8 to 40 V DC (for analog sensor of pH/ORP, SC and DO)

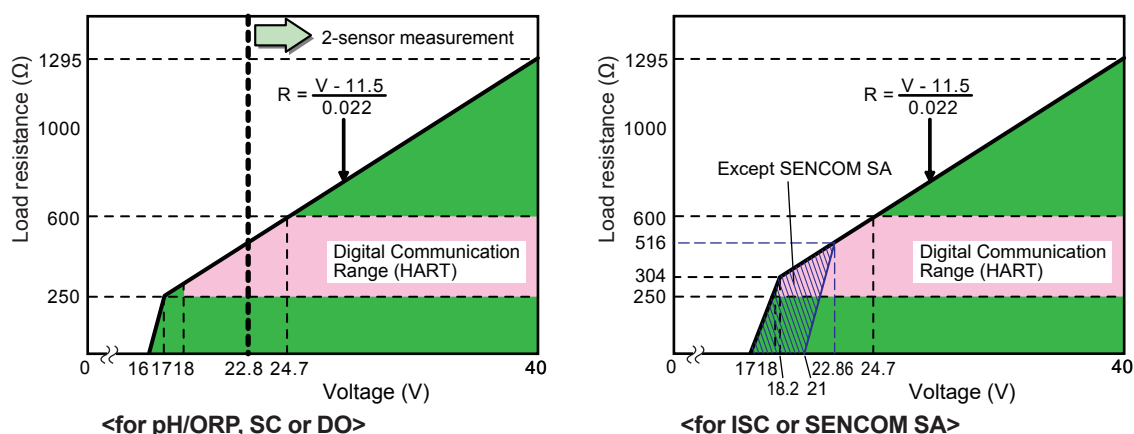


Figure 2.8 Supply Voltage and Load Resistance

Open the front panel and remove the wiring covers to make the terminal block accessible.

2.2.3 Cables, terminals and glands for FOUNDATION Fieldbus or PROFIBUS PA

Wire and install the system by referring to chapter 2 in the FLXA21 User's manual ([IM 12A01A02-71E](#) or [IM 12A01A02-72E](#)). The FOUNDATION Fieldbus or PROFIBUS PA power supply is 9 to 32 V DC. The wiring is the same.

However, for the FOUNDATION Fieldbus or PROFIBUS PA cables, see Table 2.1.

Table 2.1 FOUNDATION Fieldbus or PROFIBUS PA Cables and transmissible Length

Parameters	Conditions	Type A	Type B	Type C	Type D
Max DC Resistance, Ω/km	per conductor	22	56	132	20
Max Attenuation, dB/km	1.25 f, (39 kHz)	3.0	5.0	8.0	8.0
Gauge	—	#18 AWG (0.82 mm ²)	#22 AWG (0.32 mm ²)	#26 AWG (0.13 mm ²)	#16 AWG (1.25 mm ²)
Max Length, meters	—	1,900	1,200	400	200

Note: 1900 m is trunk + sum of Spurs (Max length type A cable)

Yokogawa recommends the use of Type A.

Usage of Type B and D is restricted.

Yokogawa does not recommend the use of Type C.

Table 2.2 Recommended length of Spur Cables

Number of spur cables	Length of a non-intrinsically safe spur cable
15-16	60 m
13-14	90 m
1-12	120 m

Note: • 1 device per spur.
• Keep as short as possible (min 1 m)

• DIP switches

Figure 2.4 shows the DIP switches for setting the address and write protection.

Normally, you do not have the change them from the default settings.

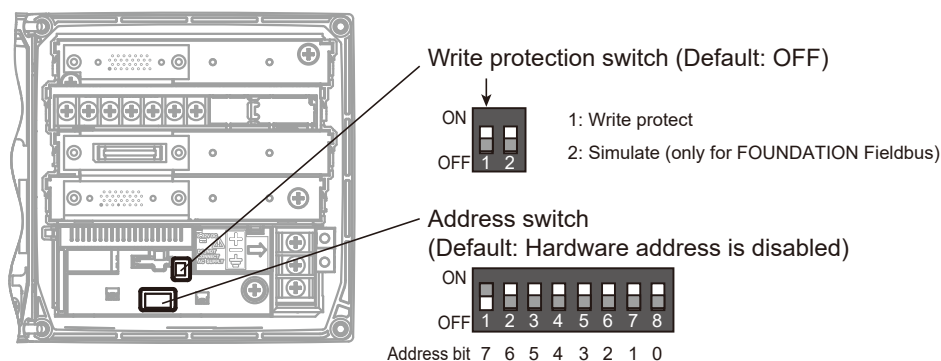
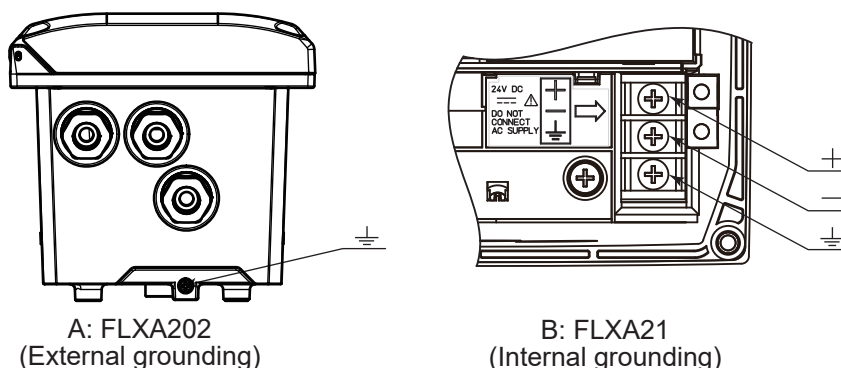


Figure 2.4 DIP switches

2.2.4 Grounding

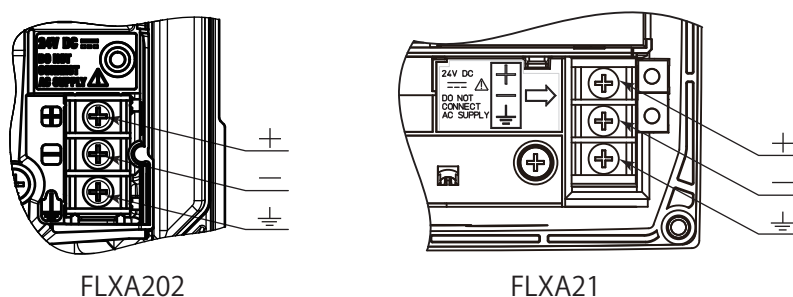
The way of connecting the grounding is different from FLXA202, FLXA21.

- FLXA202
The ground cable is connected to the outer terminal marked $\perp$
- FLXA21
The ground cable is connected to the inner terminal marked $\perp$



2.2.5 Connection of the power supply

The power supply is connected to the terminals marked with + and – which corresponds with the polarity of the DC power supply. The shield of cable is connected to the terminal marked $\perp$, then replace ground wiring cover. For details, refer to the User's Manual [IM 12A01A03-01EN](#).



CAUTION

The FLXA202/FLXA21 is used with a DC power supply. Do not use an alternating current or 100 volt mains power supply.

2.2.6 Wiring covers

● FLXA202

NOTE

Wiring covers are required intrinsic safety (Type is -C*).
In the case of type -S5, only wiring cover 1 is attached to the FLXA202.
In the case of other types, the cover is not attached to the FLXA202.

When two sensor modules are used, the upper-level module is for input 1 and the lower-level module is for input 2. For ease of installation, first wire input 2 sensor on the lower-level module, and attach the wiring cover 1; then wire input 1 sensor on the upper-level module and replace the module wiring cover 2. For details, refer to the User's Manual [IM 12A01A03-01EN](#).

● FLXA21

When two sensor modules are used, the upper-level module is for input 1 and the lower-level module is for input 2. For ease of installation, first wire input 2 sensor on the lower-level module (A), and attach the wiring cover; then wire input 1 sensor on the upper-level module (B) and replace the module wiring cover (C).

When all wiring is completed and all wiring covers have been installed, the front panel can be closed and the power can be switched on. For details, refer to the User's Manual [IM 12A01A03-01EN](#).

2.2.7 Wiring the sensor

The FLXA202/FLXA21 can be used with a wide range of commercially available sensor types, both from Yokogawa and other manufacturers.

Terminal screw size is M4, and torque of screw up is 1.2N•m

Pin terminal, ring terminal and spade terminal can be used.

Pin terminal: pin diameter: max. 1.9mm

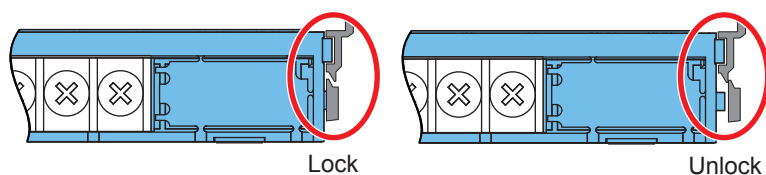
Ring and spade terminal: width: max. 7.8mm

For details on the sensors, refer to the respective instruction manuals of the sensors.

See User's Manual [IM 12A01A03-01EN](#) for more information on wiring the sensor.

CAUTION

Confirm that all locking-tabs (including for BLANK slots) of FLXA21 are in "Lock" position before you close the front panel. If the locking-tabs are in "Unlock" position, the front panel may be interfered with locking-tabs.



CAUTION

- Do not tighten up four front panel screws one by one.
- Each front panel screw should be tightened up in two times of screwing. And, firstly the screw at the upper left should be screwed a bit, the next is at the lower right, third is at the upper right, and fourth is at the lower left. The second round is the same sequence again to tighten up four screws.
- Do not use an electric screwdriver with high revolutions. If an electric screwdriver is used for these front panel screws, the revolutions of the electric screwdriver should be less than 400 rpm.
- Four screws should be tightened to the following torque; 0.8 to 0.9 N•m

3. Operation

When all wiring is completed, turn on the power to the instrument. Make sure that the LCD screen turns on, and then the Quick-setup appears. When you use SENCOM SA and connect no SENCOM SA or incompatible sensors, an error appears to indicate inappropriate setting or measurement error. If configurations are not proper, an error may be displayed, or the measurement values may be incorrect. Check the initial settings and change them to suit your purpose. For details, refer to the following User's Manual.

Contents	Document number
FLXA202/FLXA21 2-Wire Analyzer Operation of pH/ORP	IM 12A01A03-31EN
FLXA202/FLXA21 2-Wire Analyzer Operation of SC	IM 12A01A03-32EN
FLXA202/FLXA21 2-Wire Analyzer Operation of ISC	IM 12A01A03-33EN
FLXA202/FLXA21 2-Wire Analyzer Operation of DO	IM 12A01A03-34EN
FLXA202 2-Wire Analyzer Operation of SENCOM SA-pH/ORP	IM 12A01A03-36EN
FLXA202 2-Wire Analyzer Operation of SENCOM SA-SC	IM 12A01A03-37EN

- **Change language**

The default language setting for the FLXA202/FLXA21 is English. To select a different language other than English, refer to the User's Manual [IM 12A01A03-01EN](#).

- **Operation**

According to the sensor to be used, refer to appropriate user's manual about operation.

4. Maintenance

■ Periodic maintenance

The FLXA202/FLXA21 requires very little periodic maintenance, except to make sure the front window is kept clean in order to permit a clear view of the display and allow proper operation of the touchscreen. If the window becomes soiled, clean it using a soft damp cloth or soft tissue.

To deal with more stubborn stains, a neutral detergent may be used.

When you must open the front cover and/or glands, make sure that the seals are clean and correctly fitted when the unit is re-assembled in order to maintain the housing's weatherproof integrity against water and water vapor.

The pH measurement uses high impedance sensors and may otherwise be prone to problems caused by exposure of the circuitry to condensation.



CAUTION

Never use harsh chemicals or solvents. In the event that the window does become heavily stained or scratched, refer to the parts list for replacement part numbers.

- **Battery**

The FLXA202/FLXA21 has a logbook feature that uses a clock to provide the timings. The instrument contains a lithium cell (battery) to continue the clock function while the power is turned off. Although the cell has an expected working life of 10 years, this is not guaranteed. When this cell needs replacing, contact your nearest Yokogawa service center.

■ Periodic maintenance of the sensor

Please follow the manual of each sensor about the maintenance of the sensor.

- **Predictive maintenance**

The FLXA202/FLXA21 has a unique prediction function (wellness check).

By making settings concerning the sensor wellness check, you can grasp the condition of the sensor in the gauge display in the Detail screen and carry out predictive maintenance.

Revision Record

Dec. 2021/12th Edition

Change KOSHA to KCs.

Jul. 2021/11th Edition

Change the standards and nameplates, addition IM. (pages 2, 5, 7,8)

Jan. 2021/10th Edition

Revised overall

Mar. 2018/9th Edition

Change the location of the nameplate, addition of Type n, deletion of stainless steel housing, etc.

Oct. 2015/8th Edition

Addition of FLXA202

Apr. 2015/7th Edition

Change of "type of ground" of the stainless steel housing (pages 14 and 15), Note for wall mounting (pages 14 and 15)

Oct. 2014/6th Edition

Correction of discriptions and words

Oct. 2013/5th Edition

Addition of MONITOR display, Correction of discriptions and words

Sep. 2013/4th Edition

Pages are significantly reduced

Feb. 2012/3rd Edition

Addition of descriptions and drawings for intrinsically safe type, Change of descriptions of messages on displays, Change of figures of housing due to change of position of external grounding for stainless steel housing, Change of figures of wiring covers, Change of description of message language due to addition of message languages, And, other corrections

Aug. 2010/2nd Edition

Followings are mainly revised;

Addition of grounding terminal position on stainless housing with specific mountings, Addition of plate position on stainless housing with specific coatings, Addition of explanation of sleeve for grounding wire for plastic housing, Correction of torques, Addition of Note, Warning etc., Addition of detail descriptions for wire terminals, Addition of drawings of housing with hood, Addition of example displays for calculated data and redundant system, Addition of explanation of passwords, Correction of errors on the User setting tables

May 2010/1st Edition

Newly published

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Thank you for selecting our FLXA202/FLXA21 2-Wire Analyzer.
The following revision has been made on User's Manual, IM 12A01A02-12E 12th Edition.
Please read carefully before using the FLXA202/FLXA21.

Note

◆ Revised Explosion Protected Type Compliance

- The Explosion Protected Type Compliance for China (NEPSI) and Korea (KCs) on page 7 have been revised as below.

Product	Item	Applicable Standard
FLXA202, FLXA21 (Output: -A, -F, -P)	China (NEPSI)	GB/T 3836.1-2021, GB/T 3836.4-2021
FLXA202, FLXA21 (Output: -A, -F, -P)	Korea (KCs)	Notice of Ministry of Labor No. 2021-22

- FLXA202 Type “-DE” (Type n for CSA) has been removed.as shown on the following page.
- Type “-CD”, “-DD” for **FLXA202, FLXA21 (Output: -A) FLXA21 (Output: -F, -P)** on page 7 have been revised as the following page.

◆ Revised Safety Compliance (page 5)

- Applicable standards have changed from EN 61010-2-030 to **EN IEC 61010-2-030**.

◆ Revised Description on Model and Suffix Code

- The description of “-CD”, “-DD” has changed, from “.. for FM, CSA” to “.. for **US, Canada**”.
- The description of “-CQ” has changed from “.. for EAC with PA” to “.. for **EACEx** with PA”.
- The description of “-CR” has changed, from “.. for EAC” to “.. for **EACEx**”.
- The description of “-CF” has changed from “.. for TIIS” to “.. for **JAPAN**”.

◆ Revised the protection type “Type n” to “Increased Safety ‘ec’”.

FLXA202, FLXA21 (Output: -A)

Item	Description	'Type' in MS code
United States (FM)	FLXA202 and FLXA21: [Intrinsically safe / Nonincendive] 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	-CD
Canada (FM)	FLXA202 and FLXA21: [Intrinsically safe / Nonincendive] 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	
United States (FM)	FLXA202 and FLXA21: [Nonincendive] Applicable Standard: FM 3600, FM3611, FM3810, NEMA 250, ANSI/UL 121201, ANSI/UL 61010-1, ANSI/UL 61010-2-030	-DD
Canada (FM)	FLXA202 and FLXA21: [Nonincendive] 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	
Canada (CSA)	FLXA202: [Type of protection 'n' / Nonincendive] Applicable Standard: C22.2 No.0, CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/CSA-C22.2 No.60079-0, CAN/CSA-C22.2 No.60079-11, CAN/CSA-C22.2 No.60079-15, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030	-DE
Europe (ATEX)	FLXA202: [Increased Safety 'ec'] Certificate: Not Applicable as per Annex VIII to ATEX 2014/34/EU Applicable Standard: EN IEC 60079-0, EN 60079-11, EN IEC60079-7, EN60529	-DB
International (IECEx)	FLXA202: [Increased Safety 'ec'] Applicable Standard: IEC 60079-0, IEC 60079-11, IEC60079-7	

FLXA21 (Output: -F, -P)

Item	Description	'Type' in MS code
United States (FM)	[Intrinsically safe / Nonincendive] 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	-CD
Canada (FM)	[Intrinsically safe / Nonincendive] 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	
United States (FM)	[Nonincendive] Applicable Standard: FM 3600, FM3611, FM3810, NEMA 250, ANSI/UL 121201, ANSI/UL 61010-1, ANSI/UL 61010-2-030	-DD
Canada (FM)	[Nonincendive] 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	

◆ Added WARNINGS to the following sections. (page 13)

2.2.4 Grounding

The way of connecting the grounding is different from FLXA202, FLXA21.

- FLXA202



WARNING

Use ring crimp terminals for grounding terminals. The size of the terminal screw is M4 and the screw tightening torque is 1.4 N•m.

- FLXA21



WARNING

The size of the terminal screw is M4 and the screw tightening torque is 1.2 N•m.

2.2.5 Connection of the power supply



WARNING

Use M4 screws for the power terminal block. Tightening torque is 1.2 N•m. Pin terminals, ring terminals, and spade terminals (Y-shaped terminals) can be used as wiring terminals.