General Specifications

Model FLXA21
2-Wire Analyzer

The model FLXA21® two-wire analyzer is used for continuous on-line measurements in industrial installations. It offers an option for single or dual sensor measurement, making it the most flexible 2-wire analyzer available. The model FLEXA21® modular-designed series analyzer offers 4 parameter choices – pH/ORP (oxidation-reduction potential), contacting conductivity (SC), inductive conductivity (ISC) or dissolved oxygen (DO) – with the respective sensor module.

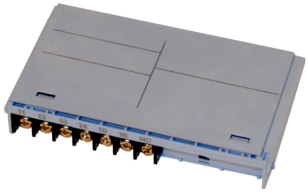
For dual sensor measurement, the sensor modules must be the same parameter – pH/ORP and pH/ORP, SC and SC, and DO and DO. Dual sensor measurement offers additional functionalities including a variety of calculated data from the two measuring parameters, as well as, the option to program the analyzer as a redundant system. In the redundant system the main output parameter is automatically switched over to the second sensor output in case of the main sensor's failure. ISC is only available as a single measurement.

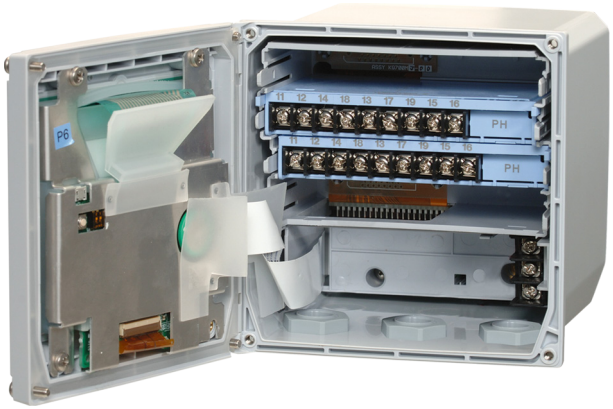
When the analyzer is initially powered on the FLXA21® automatically recognizes the installed sensor module and initiates Quick Start menus for fast easy start up. Only a few setups; date/time, language, basic sensor configurations and output, are needed to start the measurement.

The FLXA21® incorporates the same unique Human Machine Interface (HMI) as seen in the EXA450 series; offering easy touch screen operation and a simple intuitive menu structure available in 12 different selectable languages.

The FLXA21® provides industry proven measurement accuracy incorporating essential temperature compensation and calibration functionalities, with advanced self-diagnostics and sensor wellness indication to provide a highly reliable measurement. The logbook of events and diagnostic data provided are useful information sources for preventive maintenance.

Yokogawa designed the FLXA21® to withstand a wide range of industrial environments. The FLXA21® is housed in a robust NEMA 4X, IP66 mountable enclosure, and meets all the CE regulatory standards. It is designed to have the option for enclosure housing selection to meet specific industry needs: poly carbonate, stainless steel or stainless steel with corrosion resistant coating.





Features

- One analyzer can accept any of 4 types of measurements; pH/ORP, Contacting Conductivity (SC), Inductive Conductivity (ISC) and Dissolved Oxygen (DO)
- Dual sensor measurement on a 2-wire type analyzer pH/ORP and pH/ORP, SC and SC, and DO and DO
- Modular design: replaceable sensor modules
- Redundant system on dual sensor measurement
- Intuitive easy touch screen operation on 2-wire type analyzer
- Unique HMI menu structure in 11 languages (Polish pending)
- Quick setup menu for fast and east measurement operation
- Online Sensor Wellness checking for predictive maintenance
- NEMA 4X / IP66 Enclosure

General Specifications

Basic

Measurement Parameter

The FLXA21® can be configured to measure:

- pH/Oxidation-reduction Potential (pH/ORP)
- Contacting Conductivity (SC)
- Inductive Conductivity (ISC)
- Dissolved Oxygen (DO)

Note: The available measurement parameter depends on a sensor module installed in the analyzer.

Analyzer Structure

Module structure

Composition of Analyzer

One (1) Base module General Purpose

- CSA, FM, ATEX, (pending)
- FOUNDATION Fieldbus, (pending)
- PROFIBUS (pending)

One (1) or two (2) Sensor modules inputs

The FLXA21® supports up to two sensors of the same type, thereby reducing installation costs.

Allowable combinations when two modules are installed are:

- pH/ORP and pH/ORP
- SC and SC
- DO and DO

Measurement

pH/Redox Potential (pH/ORP)

Input Specification

Dual high impedance input (≥10^{12} Ω), compatible with all Yokogawa pH/ORP sensors and most competitor electrodes.

Input Range

pH	: -2 to 16 pH
ORP	: -1500 to 1500 mV
rH	: 0 to 100 rH

Temperature:

Pt1000	: -30 to 140 °C (-22 to 284°F)
Pt100	: -30 to 140 °C (-22 to 284°F)
6k8	: -30 to 140 °C (-22 to 284°F)
PTC10k	: -30 to 140 °C (-22 to 284°F)
NTC 8k55	: -10 to 120 °C (-22 to 284°F)
3k Balco	: -30 to 140 °C (-22 to 284°F)
PTC500	: -30 to 140 °C (-22 to 284°F)

Cable length : 60 meters (196 feet) from the sensor to the analyzer

Output Range

pH	: min. Span 1 pH
	: max. Span 20 pH
ORP	: min. Span 100 mV
	: max. Span 3000 mV
rH	: min. Span 2 rH
	: max. Span 100 rH
Temperature	: min. Span 25 ºC
	: max. Span 200 ºC (for 8.55kV NTC sensor max. 120 ºC)

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)

Linearity	: ±0.3 ºC
Repeatability	: ±0.1 ºC
Accuracy	: ±0.3 ºC

with Pt100

Linearity	: ±0.4 ºC
Repeatability	: ±0.1 ºC
Accuracy	: ±0.4 ºC

Calibration

Semi-automatic 1 or 2 point calibration using pre configured NIST, US, DIN buffer tables 4, 7 & 9, or with user defined buffer tables, with automatic stability check; or Manual adjustment to grab sample.

Conductivity (SC)

Input Specification

Two or four electrode measurement with square wave excitation. Any cell constant from 0.005 to 50.0 cm-1 can be used. Influence of cable can be adjusted by doing an AIR CAL with the cable connected to a dry cell.

Input Range

Conductivity	: min. 0 µS/cm
	: max. 200 mS x Cell constant (over range 2000 mS/cm)
Resistivity	: min. 0.005 kΩ / Cell constant
	: max. 1000 MΩ x cm

Temperature:

Pt1000	: -20 to 250 ºC (-4 to 482°F)
Pt100	: -20 to 200 ºC (-4 to 392°F)
Ni100	: -20 to 200 ºC (-4 to 392°F)
NTC 8k55	: -10 to 120 ºC (14 to 248°F)
Pb36(JIS NTC 6k)	: -20 to 120 ºC (-4 to 248°F)

Cable length : 60 meters (196 feet) from the sensor to the analyzer. Influence of cable can be adjusted by doing an AIR CAL with the cable connected to a dry cell.

Output Range

Conductivity	: min. 0.01 µS/cm
	: max. 2000 mS/cm (max 90% zero suppression)
Resistivity	: min. 0.001 kΩ x cm
	: max. 1000 MΩ x cm (max 90% zero suppression)
Temperature	: min. 25 ºC (77°F)
	: max. 200 ºC (392°F) (for NTC 8k55 sensor max. 120 ºC (248°F))

Performance (Accuracy)
(The specifications are expressed with simulated inputs.)

Conductivity
2 µS x CC to 200 mS x CC
Accuracy : ±0.5%F.S.

1 µS x CC to 2 µS x CC
Accuracy : ±1%F.S.

Resistivity
0.005kΩ / CC to 0.5MΩ /CC
Accuracy : ±0.5%F.S.

0.5MΩ / CC to 1MΩ /CC
Accuracy : ±1%F.S.

Temperature
with Pt1000, Pb36, Ni100
Accuracy : ±0.3 ºC

with Pt100, NTC 8k55
Accuracy : ±0.4 ºC

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

Note: "F.S." means maximum setting value of analyzer output.
"CC" means Cell Constant. YOKOGAWA provides conductivity sensors of which cell constants are 0.01 to 10 cm^{-1}.

Calibration Semi-automatic calibration using pre-configured OIML (KCl) buffer tables with automatic stability check, or Manual adjustment to grab sample

Inductive Conductivity (ISC)

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

Input Range
Conductivity : 0 to 2000 mS/cm at 25 ºC (77°F)
min. : 0 µS/cm (at process temperature)
max. : 2 S/cm (at process temperature)

Temperature : -20 to 140 ºC

Cable length : max. 60 meters (196 feet) total length of the fixed sensor cable + WF10 extension cable. Influence of cable can be adjusted by doing an AIR CAL with the cable connected to a dry cell.

Output Range
Conductivity : min. span 100 µS/cm
: max. span 2000 mS/cm (max 90% zero suppression)

Temperature : min. 25 ºC
: max. 200 ºC

Performance (Accuracy)
(The specifications are expressed with simulated inputs.)
(Output span is 0-100 µS/cm or more)

Conductivity:
Linearity : ±(0.4 %F.S. + 0.3 µS/cm)
Repeatability : ±(0.4 %F.S. + 0.3 µS/cm)

Temperature : Accuracy: ±0.3 ºC

Note: "F.S." means maximum setting value of analyzer output.

Calibration
Semi-automatic calibration using pre-configured OIML (KCl) buffer tables with automatic stability check, or Manual adjustment to grab sample

Dissolved Oxygen (DO)

Input Specification
The FLXA21 accepts output from membrane covered Dissolved Oxygen sensors. These sensors can be Galvanic type, where the sensor generates its own driving voltage, Polarographic type, where the sensor uses external driving voltage from the transmitter, or Optical sensor where luminiscent technology is utilized.

The input range is 0 to 50 µA for Galvanic sensors, 0 to 1 micro A for Polarographic sensors and Optical sensors.

For temperature compensation, the FLXA21 accepts Pt1000 (DO30G and Visiferm sensor) and NTC22k elements (OXYFERM, OXYSENS and OXYGOLD sensors).

Input Range Output Range
DO30G sensor Input:
Dissolved Oxygen : 0 to 50 mg/l (ppm)

DO30G Sensor Output:
DO concentration : min.: 1 mg/1 (ppm)
: max.: 50 mg/1 (ppm)

% saturation : min.: 10%

Cable length : max. 60 meters (196 feet) total length of the fixed sensor cable + WF10 extension cable.

Hamilton™ Sensors Input and Output:
OXYFERM:
Measurement range : 10 ppb to saturation or 0.1 % - 200% of air oxygen
Temperature range : 0 to 130 ºC (32 to 266˚F)
OXYSENS:
Measurement range : 40 ppb to saturation
Temperature range : 0 to 60°C (32 to 140°F)
OXYGOLD G:
Measurement range : 1 ppb to saturation or 0.012 % - 200% of air oxygen
Temperature range : 0 to 130 °C (32 to 266°F)
OXYGOLD B:
Measurement range : 8 ppb to saturation or 0.1 % - 200% of air oxygen
Temperature range : 0 to 100 °C (32 to 212°F)
VISIFERM:
Measurement range : 4 ppb to 40 ppm
Temperature range : 0 to 130°C (32 to 266°F)

Performance (Accuracy)
(The specifications are expressed with simulated inputs.)

Performance in ppm mode:
- Linearity : ±0.05 ppm or ±0.8% F.S., whichever is greater
- Repeatability : ±0.05 ppm or ±0.8% F.S., whichever is greater
- Accuracy : ±0.05 ppm or ±0.8% F.S., whichever is greater

Performance in ppb mode:
- Linearity : ±1 ppb or ±0.8% F.S., whichever is greater
- Repeatability : ±1 ppb or ±0.8% F.S., whichever is greater
- Accuracy : ±1 ppb or ±0.8% F.S., whichever is greater

Temperature
- Linearity : ±0.3 ºC
- Repeatability : ±0.1 ºC
- Accuracy : ±0.3 ºC

Note: "F.S." means maximum setting value of analyzer output.

Electrical

Output Signal
FOUNDATION Fieldbus and PROFIBUS-PA (Pending)

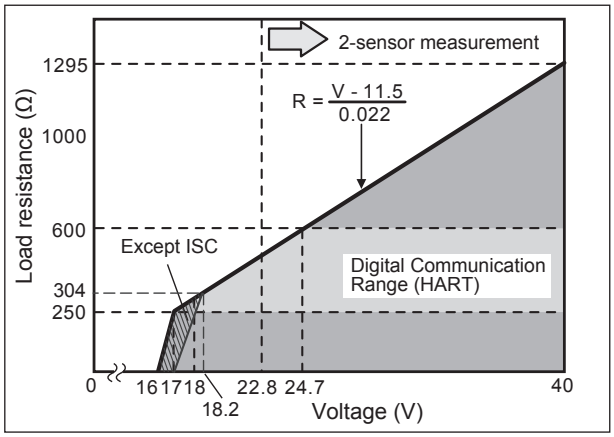
General : One 4-20 mA DC loop powered output
Note: Tolerance ±0.02 mA
: Bi-directional HART digital communication, superimposed on mA (4-20mA) signal

Output function : Linear or Non-linear (21-step table)

Burn out function : (NAMUR 43)
- Without HART/PH201G:
  - Down : 3.6 mA (signal: 3.8 to 20.5 mA for pH/ORP, SC and DO)
    (signal: 3.9 to 20.5 mA for ISC)
  - Up : 22mA
- With HART:
  - Down : 3.6 mA for pH/ORP, SC and DO
  - Down : 3.9 mA for ISC
    (signal: 3.8 to 20.5 mA for pH/ORP, SC and DO)
    (signal: 3.9 to 20.5 mA for ISC)
  - Up : 22mA

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

Maximum Load Resistance (Figure 1)
The FLEXA21® will not start-up below 16V and the load resistance has to be above 250 ohm, the HART communication will only work above 18.2VDC and 304 ohm load (max 600 ohm).



Supply Supply Voltage and Load Resistance

Display
LCD with a touch screen : Black/White: 213 x 160 pixels
Contrast adjustment available on the touch screen
Message language : 11 (English, Japanese, Chinese, Korean, German, Portuguese, Russian, Spanish, French, Italian and Czech, (Polish pending))
: One analyzer has all 11 languages.

Note: On a language selection screen, its title and description and its menu of languages are described in English.
Note: Only English alphabet and numeric are available for a tag number and an additional description for each value on the display screen and passwords.
Note: Only for message language on the screen, 11 languages are provided.

Mechanical and others

Housing Options Available
- Case : Polycarbonate
  : Stainless steel without painting
  : Stainless steel with epoxy coating
  : Stainless steel with urethane coating
- Case color and finish:
  - Color : Silver gray (equivalent to Munsell 3.2PB7.4/1.2) (for poly carbonate case, stainless steel cases with coating)
  - Finish : Electropolishing (for stainless steel case without painting)
- Window : Polycarbonate (flexible)
- Protection : NEMA4X, IP66

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

Cable and Terminal
Cable Size Requirements (Not Provided)
- Outer diameter : 6 to 12 mm
  (suitable for M20 cable gland)
  : 3.4 to 7 mm
  (grounding cable for poly carbonate case)
- Terminal screw size : M4

Cable Entry
Polycarbonate case:
1-Sensor measurement: 3 holes,
: M20 cable gland x 3 pcs,
: Sleeve x 1 pc (for grounding cable line)
2-Sensor measurement: 4 holes,
: M20 cable gland x 4 pcs,
: Sleeve x 1 pc (for grounding cable line)
Stainless steel case : 7 holes,
: M20 cable gland x 7 pcs
: Close up plug x 5 pcs

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

Mounting
Mounting hardware (option):
: Universal mounting kit (Note)
: Pipe and wall mounting hardware
: Panel mounting hardware

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

Hood (option) : Stainless steel
: Stainless steel with urethane coating
: Stainless steel with epoxy coating

Stainless Steel Tag Plate

Blank tag plate is hanging type (delivered with an analyzer).

When the additional code "/SCT" and a tag number is specified, the specified tag number is inscribed. (Inscription is optional.)

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
Poly carbonate : 144 x 144 x 151 mm (L x W x D) (without cable gland)
Stainless steel case : 165 x 165 x 160.1 mm (L x W x D) (without cable gland)

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

Ambient Operating Temperature
: -20 to +55 ºC (-4 to 131°F)

Storage Temperature : -30 to +70 ºC (-22 to 158°F)

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

Document
Following documents are delivered with an analyzer;
Paper copy : Start-up Manual written in English
CD-ROM : Start-up Manual (pdf) written in 12 languages
: User's Manual (pdf) written in English
: Safety Regulation Manual (pdf) for European region written in 25 languages

Regulatory Compliance
ATEX (and CSA/FM Pending)
Safety : EN61010-1
: CSA C22.2 N.61010-1
EMC : EN61326-1 Class A,Table 2 (For use in industrial locations)
: EN61326-2-3
: AS/NZS CISPR11
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. 2-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.

Digital Communication

Type of Digital Communication
- HART
- FOUNDATION Fieldbus (Pending)
- PROFIBUS (Pending)

Note: Only one kind of digital communication is available for one analyzer.

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

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

Features of FLEXA

Sensor Calculation
For pH + pH
For DO + DO

Differential	(input1) - (input2)
Average	(input1 + input2) / 2

Sensor Calculation
For SC + SC*

Ratio	(input1) / (input2)
Average	(input1 + input2) / 2
Differential	(input1) - (input2)
Passage[%]	(input2) / (input1) X 100
Rejection[%]	(input1 - input2) / (input1) X 100
Deviation[%]	(input2 – input1) / (input1) X 100
pH calc.	(VGB) pH=8.6+log{(input1) - (input2)/3}

Note: for resistivity, only differential and average can be selected.

PROFIBUS-PA Communications (Pending)

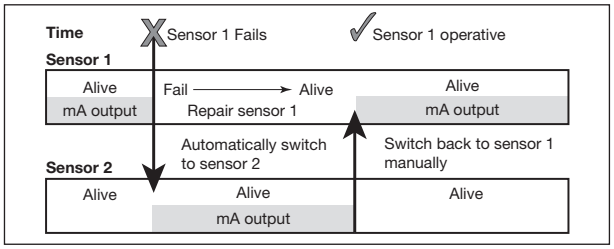
Input signal	: Digital
Supply voltage	: 9 to 32 V DC
Operating current	: 26.0 mA (pH) and 24.5 mA SC, ISC, and DO
Operating values	: According to IEC 1158-2
Bus connection	: Fieldbus interface based on IEC 1158-2 according to FISCO-Model
Power supply	: Power supply is achieved dependant on the application by means of segment coupler
Data transfer	: According to PROFIBUS- PA profile class B based on EN 50170 and DIN 19245 part 4
GSD file	: The actual file can be downloaded from www.profibus.com
Configuration	: Local with 6 keys
Software	: Firmware based on Siemens DPC31 stack.
Hardware	: PC- or PCMCIA-interfaces from Siemens
Other control	: Siemens PDM systems
Electrical connection	: Terminals acc. to IEC 1158-2
Fieldbus-cable-types	: Twisted and shielded two wire cable according to recommendation based on IEC 1158-2
Cable diameter	: 6 to 12 mm (0.24 to 0.47 inch)

FOUNDATION Fieldbus H1 Communications (Pending)

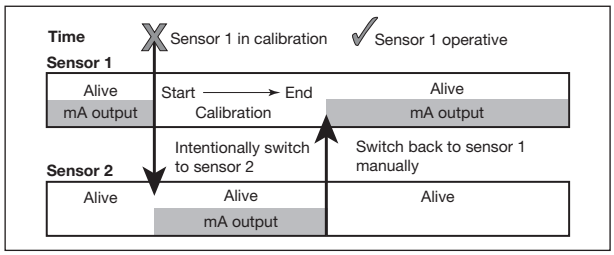
Input signal	: Digital
Supply voltage	: 9 to 32 V DC
Operating current	: 26.0 mA (pH) and 24.5 mA SC, ISC, and DO
Operating values	: According to IEC 1158-2
Bus connection	: Fieldbus interface based on IEC 1158-2 according to FISCO-Model
Power supply	: Power supply is achieved dependant on the application by means of segment coupler
Data transfer	: FF Specification Rev. 1.4, Basic device
Function blocks	: 3xAI, Transducer, Resource
Files	: Actual file can be downloaded from our homepage
Configuration	: Local with 6 keys,
Software	: National Instruments, NI-FBUS configurator
Hardware	: FBUS-interfaces from National Instruments (AT-FBUS and PCMCIA FBUS)
Other control systems	: Yokogawa PRM, DMT

Redundancy

A Variety of calculated data from two measuring parameters is selectable for each measurement. The redundant system is a function of backing up the 1st module with the 2nd module. This function is designed such that under normal conditions, the sensor-1 pH value is the current output and if the sensor 1 fails, the sensor-2 pH value is the current output.



Example 1: sensor failure

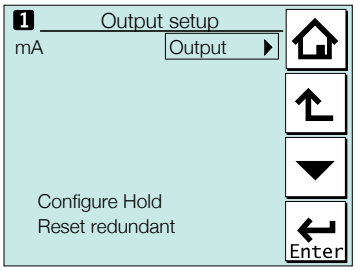


Example 2: sensor calibration

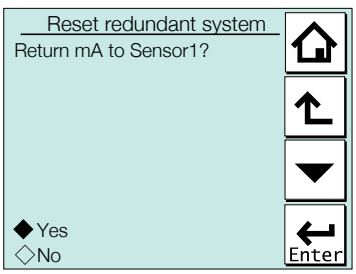
If sensor 1 fails, the output is automatically switched to the sensor-2 value.

Even if a failure on the sensor 1 is recovered automatically after failure detection, the output will not be switched back automatically and the sensor 2 value will continue to be output.

After repairing sensor 1, reset the backup made by the redundant system. This enables the sensor 1 value to be incorporated in the output.On the Reset redundant system, selection of “Yes” makes the output return to the output of the 1st module.



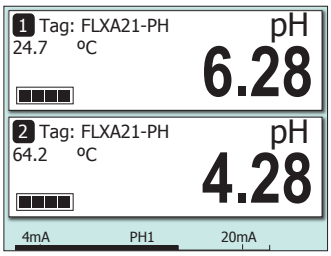
This display is the example when “Redundant” is selected as a process parameter.



Example 2: Calibration

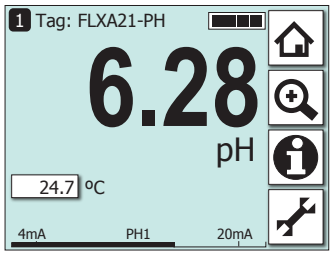
Display and Operating Interface

The Display is a Black/White LCD touch screen. FLXA21® uses the same unique Human Machine Interface (HMI) as seen in the EXA450 series, offering easy touch screen operation and simple menu structure. Graphical keys on the right and other areas of the touch screen respond to contact as virtual push buttons. (Figures below show a conductivity and pH measurement, and the value will reflect the sensor modules installed in the FLXA21®)



Home Display

Home Display appears upon startup when two sensor modules are connected. (Home display is not available when only one sensor is connected)



Main Display

Main Display appears upon startup when one sensor module is connected. When a FLEXA21® has two sensor modules in the unit, selecting Sensor 1 or Sensor 2 on the home display brings up the main display of the selected sensor.

Status screen

Status screen or Information button(), gives access to diagnostic information with regard to the analyzer or sensors.

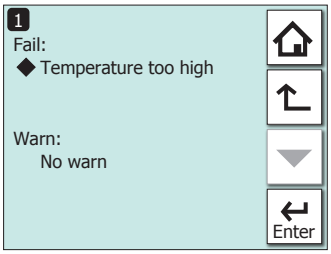
No malfunction detected

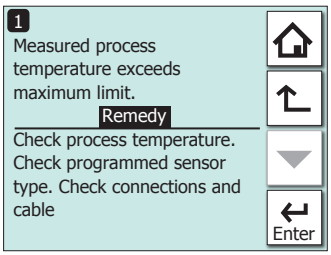
Warning

When a warning indicator appears, maintenance is required. Pressing this key displays the detected malfunction code, and pressing the malfunction codes displays troubleshooting guide lines for resolving the malfunction.

Fail

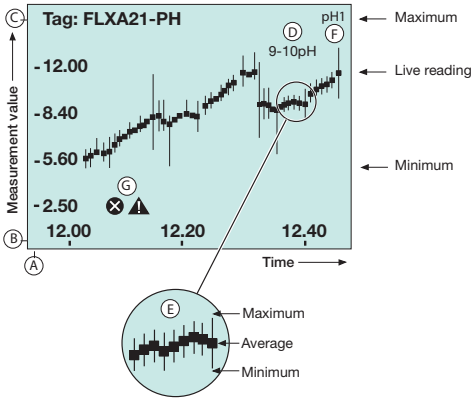
Indicates malfunction. Pressing this key displays the detected malfunction code, and pressing the malfunction codes displays troubleshooting guidelines for resolving the malfunction.





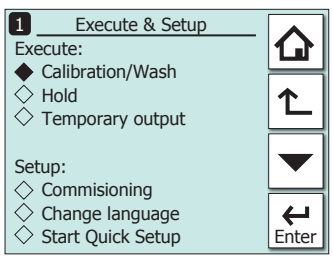
Trend Screen

Trend Screen appears when the primary value on the main display is pressed, or when the Trend button(), on the Zoom display is pressed.



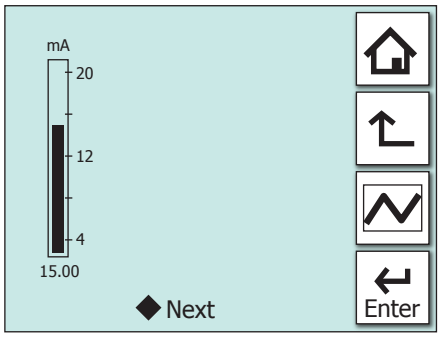
A: X axis Show the Time scale
(user programmable from 15 minutes to 14 days)
B: Y axis Measurement value axis user (programmable)
C: Tag No.
D: Current measurement value with unit
E: Trend (maximum, minimum and average values during the display update time)
F: Icon (current measurement value, and maximum and minimum values until the display update)
G: Warn/Fail indicators (indicated only during Warn/Fail status)

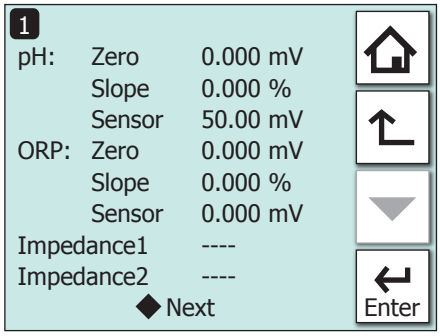
Maintenance screen (Execute & Setup) appears when the commissioning button is pressed. The maintenance screen gives access to calibration, commissioning and configuration of the instrument. These operations can be protected by passwords.

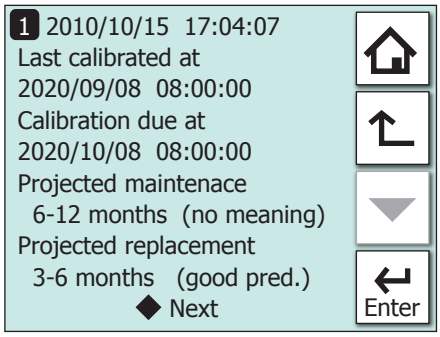


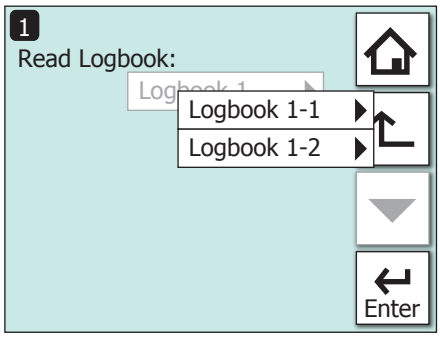
Zoom Display

Zoom Display appears when the Zoom button on the main display is pressed. The Zoom display shows an easy-to-read graphical display of the output status. When “Next” is pressed it will give access to current sensor settings, sensor wellness, last known calibration data, and log book data.







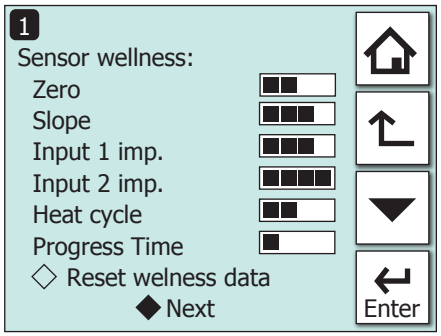


Sensor Wellness

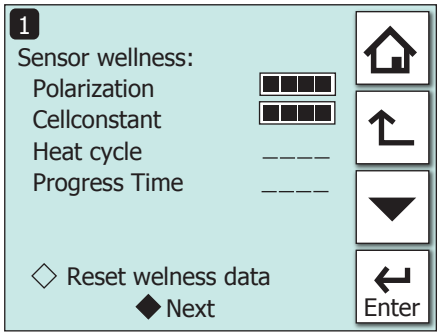
It is important that the system be well maintained to make a precise measurement. The electrodes must be properly cleaned and regularly calibrated. At the Sensor wellness window, the healthiness of a sensor is displayed. A larger number of in each gauge indicates that the particular parameter is sound. A gauge is indicated for only those parameters whose sensor wellness setting is “enabled,” while a bar (—) is displayed if the sensor wellness setting is “disabled.”

Sensor wellness setup can be made in Commissioning — Measurement setup — Sensor diag. settings.

The Reset wellness data button allows you to reset data except temperature calibration. This is done when a new sensor is installed.



For pH



For SC

The FLXA21® still utilizes the same self diagnostics as seen in the EXA series.

On-line checks	: Impendence of glass (pH)
Faults	
Off-line checks	: Zero
	: Slope
Calibration Due	
Projected replacement	

Model & Suffix Code

Model	Suffix code	Option code	Description
FLXA21			2-Wire Analyzer
Power supply	-D		Always -D
Housing	-P		Poly carbonate
	-S		Stainless steel
	-U		Stainless steel + urethane coating
	-E		Stainless steel + epoxy coating
Display	-D		Standard LCD
	-N		Without display (Note 1)
Type	-AA		General purpose
	-EA		ATEX, IECEx, FM, CSA (Note 6)
1st input	-P1		pH/ORP
	-C1		Conductivity (SC)
	-C5		Inductive conductivity (ISC)
	-D1		Dissolved oxygen (DO)
2nd input (Note 2)	-NN		Without input
	-P1		pH/ORP
	-C1		Conductivity (SC)
	-D1		Dissolved oxygen (DO)
Output	-A		4-20 mA + HART
—	-N		Always -N
Language set (Note 3)	-LA		English and 11 languages
Country (Note 4)	-N		Global except Japan
	-J		Japan
—	-NN		Always -NN
Option	Mounting hardware	/UM	Universal mounting kit (Note 5)
		/U	Pipe and wall mounting hardware
		/PM	Panel mopunting hardware
	Hood	/H6	Hood, stainless steel
		/H7	Hood, stainless steel + urethane coating
		/H8	Hood, stainless steel + epoxy coating
	Tag plate	/SCT	Stainless steel tag plate
	Conduit adapter	/CB4	Conduit adapter (G1/2 x 4 pcs)
		/CD4	Conduit adapter (1/2NPT x 4 pcs)
		/CF4	Conduit adapter (M20 x 1.5 x 4 pcs)

Notes:

1 : HMI (Human Machine Interface) is not available on the analyzer. HART communication is to be used.

2 : When a 2nd input is selected, only the same kind of the 1st input is available.
For example, when a 1st input is "-P1", the 2nd input must be the same "-P1".
The combination of ISC and ISC is not available.

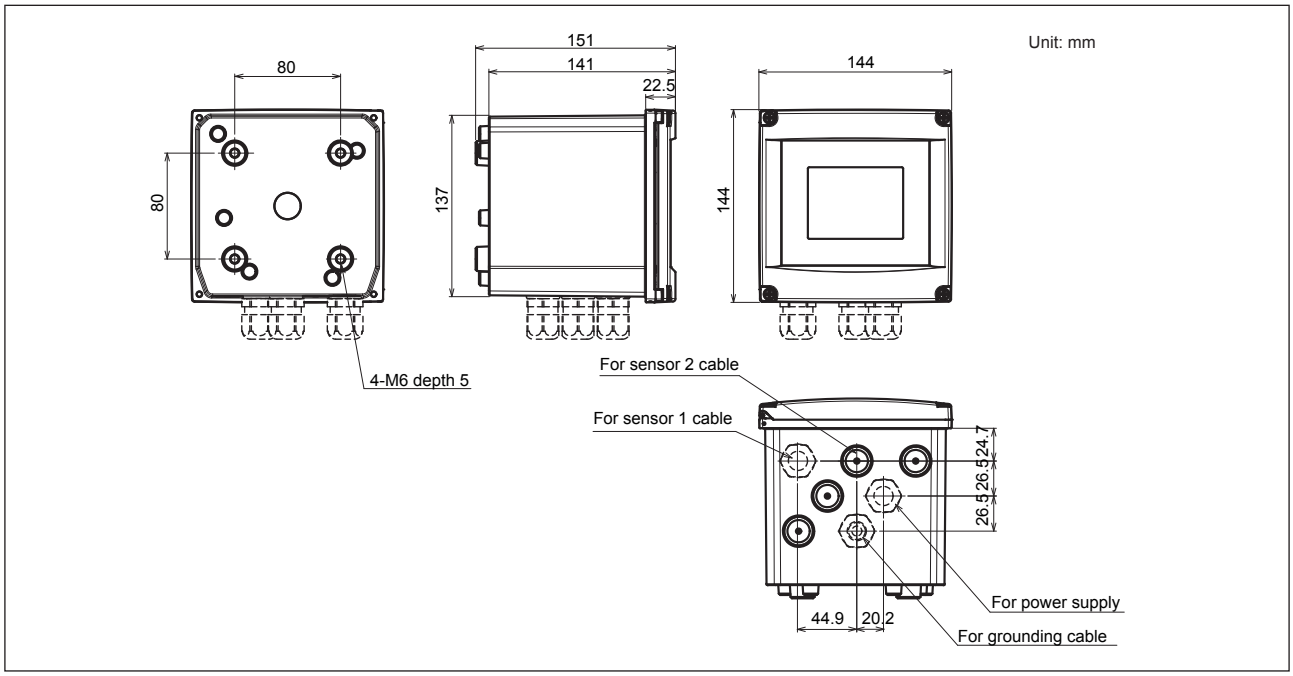
3 : These languages are message languages on the analyzer's display.
One analyzer has English and 11 languages. All languages are as follows;
English, German, Portuguese, Russian, Japanese, Korean, Chinese, Spanish, Czech, Italian, French and Polish (pending).

4 : When an analyzer is used in Japan, it must meet the Japanese Measurement Law.
Only SI units must be used on the analyzer and its documents in Japan.

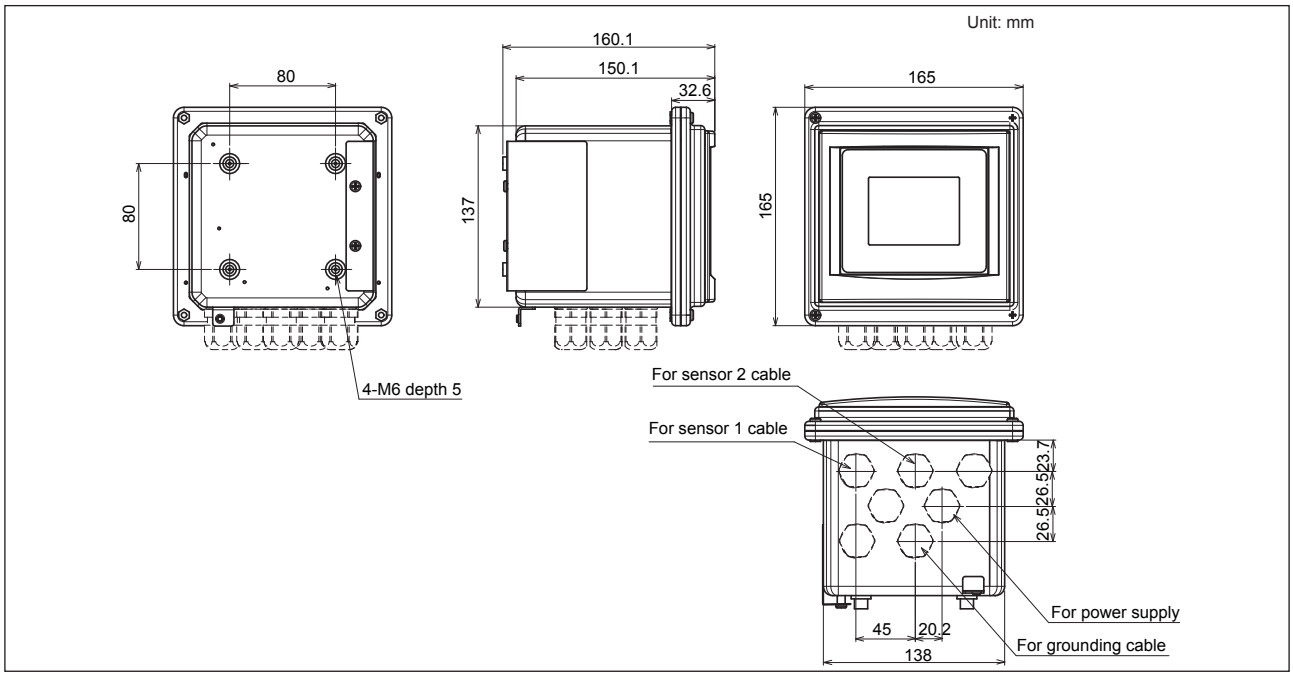
5 : The universal mounting kit contains the pipe and wall mounting hardware (/U) and the panel mounting hardware (/PM).

6 : The type "-EA" is intrinsically safe type and non-incendive/type "n" of ATEX, IECEx, FM and CSA. (pending).

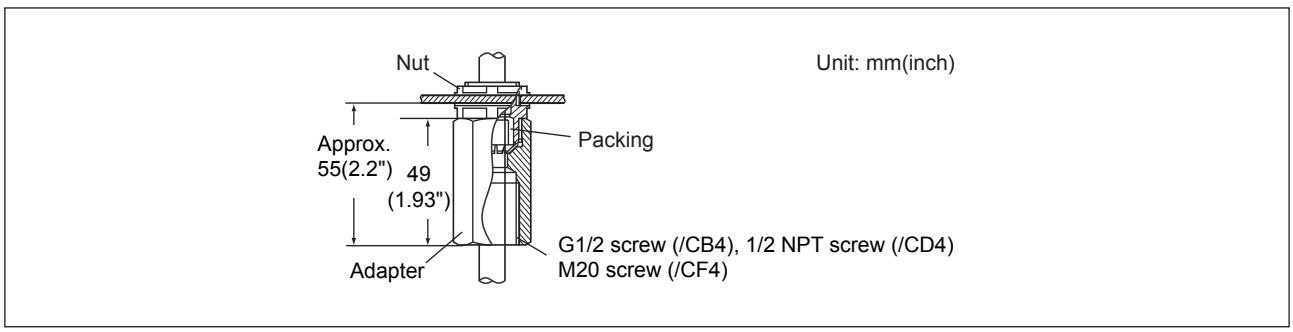
Dimensions and Mounting



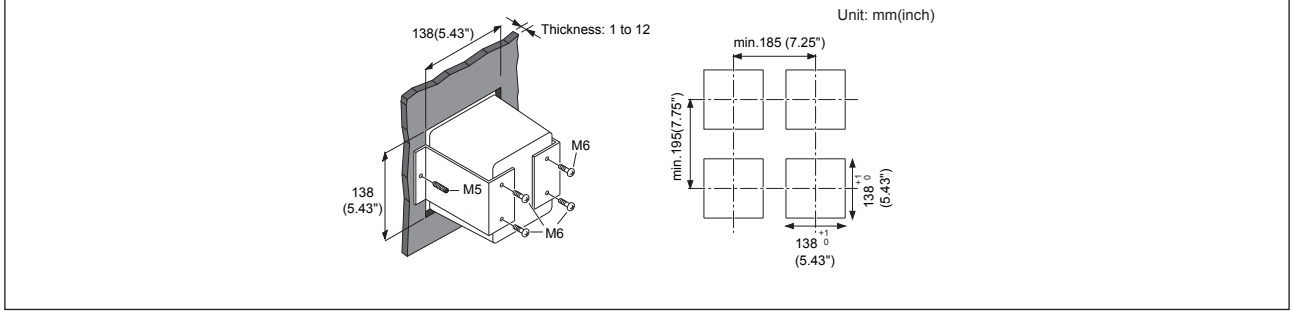
Poly carbonate Housing



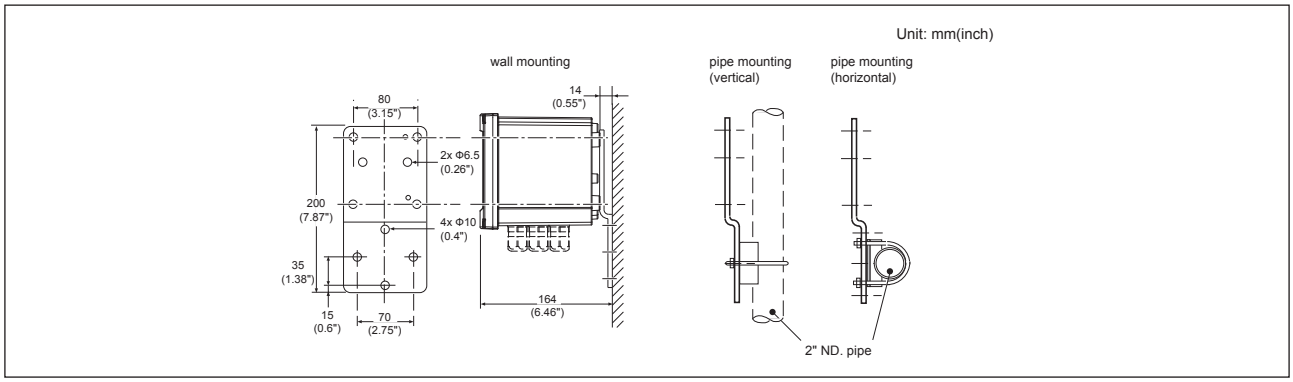
Stainless Steel Housing



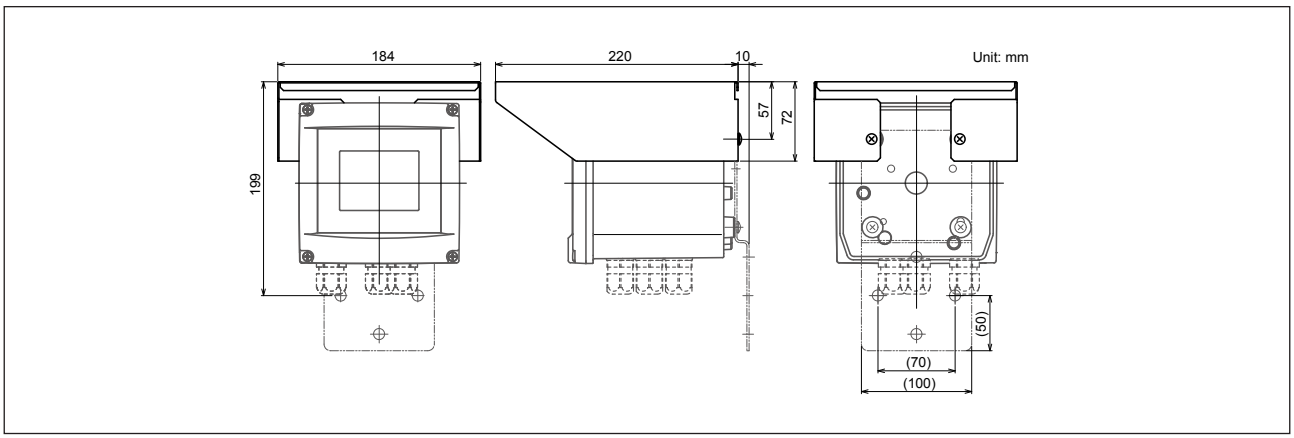
Conduit adapter



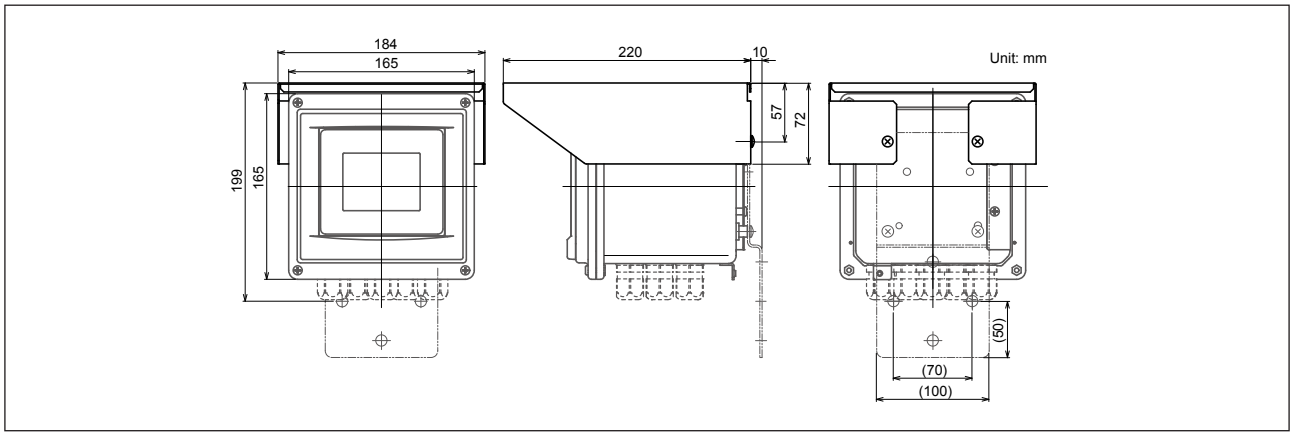
Option /PM: panel mounting diagram



Option /U: wall and pipe mounting diagram



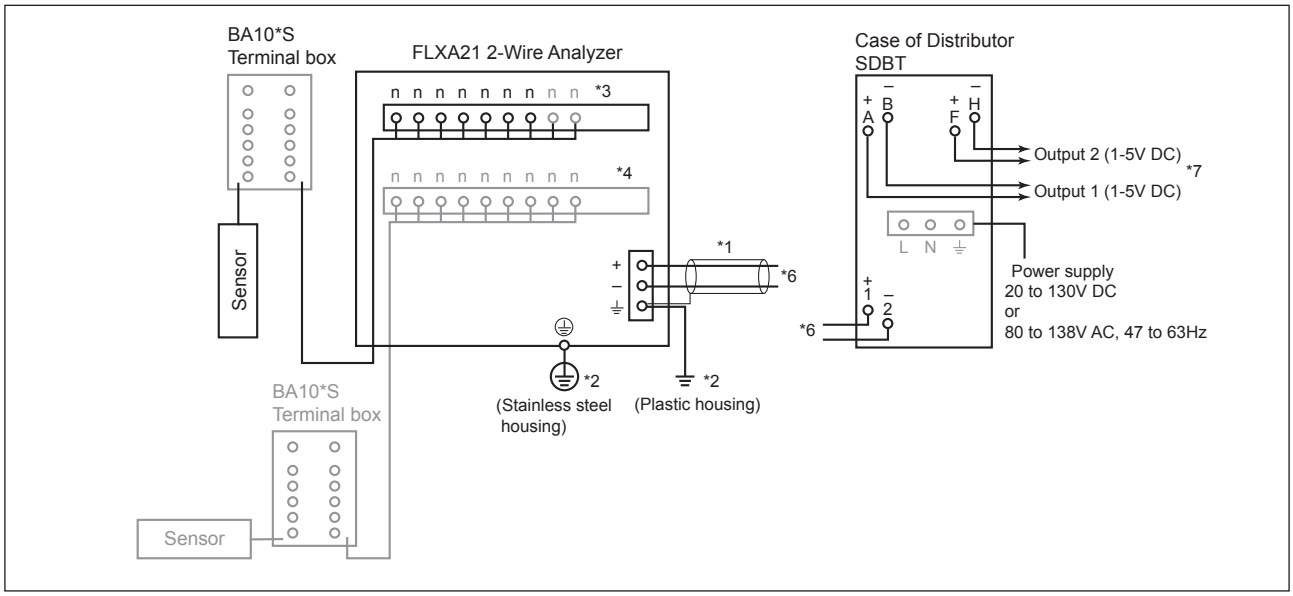
Housing with stainless steel hood (Option /H6 /H7 /H8) (Poly carbonate housing)



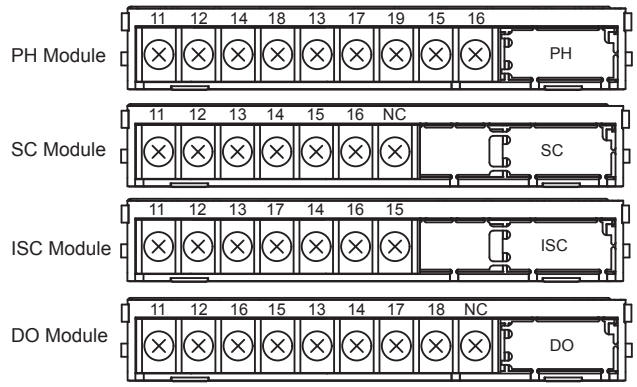
Housing with stainless steel hood (Option /H6 /H7 /H8) (Stainless steel housing)

Note: When option code "/UM" is specified, universal pipe/wall/pannel mounting kit are supplied
---same as option code "/U" and "/PM" both specified.

Wiring Diagrams



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



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