

General Specifications

FVX110
Fieldbus Segment Indicator



GS 01S01C01-01EN

The FVX110 is a field indicator that allows you to switch and display up to 16 indicated values for FOUNDATION™ fieldbus devices. Turn the scroll knob on the case to switch displays. No complex operation is needed in the field and you can observe the indicated values easily. An LCD display with LED backlight and a variety of displays has increased user-friendliness and visibility.

The FVX110 offers as standard not only the functions of a field indicator, but also PID function block, Link master, and software download functions.



■ FEATURES

■ Interoperability

Field instruments that comply with the FOUNDATION fieldbus specifications are fully interoperable; no longer is there a need for custom designed software to communicate with other devices.

■ Up to 16 process variables can be switched and displayed

Up to 16 process variables from multiple field instruments can be displayed, significantly reducing instrumentation costs. Furthermore, support of the FOUNDATION fieldbus digital communications protocol enables the display of signal data from third-party fieldbus compliant field devices.

■ Full dot matrix LCD with backlight

The backlit full dot-matrix LCD clearly displays text and graphics such as bar graphs, a scroll bar, and icons that indicate the page turning direction and scroll knob turning direction.

■ Link master function

The FVX110 supports a link master function that enables backup of network management and allows local control using field devices.

■ Function blocks

To facilitate device diagnostics, two functions blocks each are provided for the multiple analog output (MAO), arithmetic (AR), and input selector (IS), and a single function block is provided for the following: signal characterizer (SC), integrator (IT), and PID.

■ Software download function

With this function, it is possible to download updates or upgrades to the FVX110 software. Typical uses of this function are the addition of function blocks and diagnostics for existing devices.

■ Self-diagnosis function

A reliable self-diagnostic function based on the NAMUR NE107 standard detects failures in the ambient temperature limit, communications, and hardware such as the LCD and amplifier assembly.

■ STANDARD SPECIFICATIONS

□ FUNCTIONAL SPECIFICATIONS

Functional specifications for Fieldbus communication conform to the standard specifications (H1) of FOUNDATION fieldbus.

Supply Voltage

9 to 32 V DC for general use, flame proof type, Type n, or nonincendive.

9 to 24 V DC for intrinsically safe type Entity model

9 to 17.5 V DC for intrinsically safe type FISCO model

Communication Requirements

Supply Voltage: 9 to 32 V DC

Current consumption: Steady condition: 15 mA (max)

Software download condition:

24 mA (max)

Ambient Temperature Limits

-20 to 70°C (-4 to 158°F)

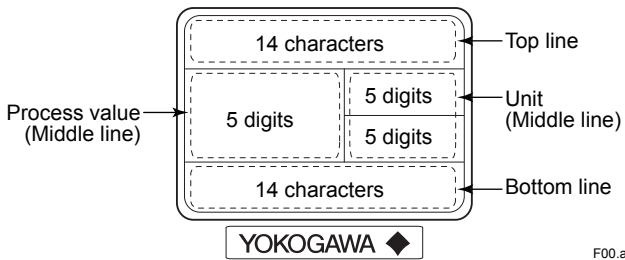
Ambient Humidity Limits

0 to 100 %RH

LCD Display

- 84 column x 32 lines full-dot matrix with LED backlight.
- 3 lines indication as
 - Top line
14 alphanumeric indication of main description (Main Tag) such as PD TAG of field device. Scroll up to maximum 32 alphanumeric
 - Middle line
5 digits process value including +/- sign and unit of 5digits x 2 lines
 - Bottom line
14 alphanumeric of communication status and indicate description (Sub Tag) such as block information.

Bar graph, Scroll bar, Page information, Scroll direction information, Squawk



□ **PHYSICAL SPECIFICATIONS**

Enclosure

Material

Housing: Low copper cast aluminum alloy or ASTM CF-8M stainless steel. (optional)

Coating of housing:

[for aluminum housing]

Polyester resin powder coating

Mint-green paint (Munsell 5.6BG 3.3/2.9 or its equivalent)

[for option code /P□ or /X2]

Epoxy and polyurethane resin solvent coating

Body: 316L SST

Scroll Knob: 316L SST

Cover O-rings: Buna-N

Name plate and tag: 316 SST

Wired tag plate: 316 SST

Degrees of protection

IP66/IP67, Type 4X

Weight

1.2 kg (2.6 lb) *

*: Without mounting bracket.

Add 1.5 kg (3.3 lb) for Amplifier housing code 2.

Electrical Connections

Refer to "MODEL AND SUFFIX CODE"

Display Scroll Functions

Single scroll and cyclic scroll (Scan mode)

Display up to 16 variables

EMC Conformity Standard:

EN61326-1 Class A, Table 2

EN 61326-2-3

EN 61326-2-5 (for fieldbus)

EU RoHS Directive

EN 50581

Link Master Function:

Link Master function is supported.

Function Block:

Block name	Number	Execution time	Note
MAO	2	30 ms	Output eight analog signals from field devices
IS	2	30 ms	Input Selector block provides selection of up to eight inputs and generate an output based on the configured action
AR	2	30 ms	Arithmetic block permits simple use of popular measurement math function
PID	2	45 ms	Works as a field controller in conjunction with another function block.
SC	1	30 ms	An output of Signal Characterizer block is a nonlinear function of the respective input. The function is determined by a table
IT	1	30 ms	Integrator block integrates a variable as a function of the time or accumulates the counts

MODEL AND SUFFIX CODES

Model	Suffix code	Description
FVX110	Fieldbus segment indicator
Output signal	-F	Digital communication (FOUNDATION Fieldbus protocol)
Amplifier housing	1	Cast aluminum alloy
	2	ASTM CF-8M stainless steel*1
Electrical connection	0	G 1/2 female, one electrical connection without blind plug
	2	1/2 NPT female, two electrical connections without blind plugs
	4	M20 female, two electrical connections without blind plugs
	5	G 1/2 female, two electrical connections and a blind plug*2
	7	1/2 NPT female, two electrical connections and a blind plug*2
	9	M20 female, two electrical connections and a blind plug*2
	A	G 1/2 female, two electrical connections and a 316 SST blind plug
Mounting bracket	L	316 SST 2-inch pipe mounting
	N	None
Optional Codes	/□	Optional Specification

*1: Not applicable for electrical connection code 0, 5, 7 or 9

*2: Material of a blind plug; aluminum alloy for code 5 and 9, and SUS304 for code 7.

OPTIONAL SPECIFICATIONS (For Explosion Protected type)

Item	Description	Code
Factory Mutual (FM)	FM Explosionproof Approval *1 Applicable Standard: FM3600, FM3615, FM3810, ANSI/NEMA 250 Explosionproof for Class I, Division 1, Groups B, C and D, Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G, Enclosure Rating: Type 4X Temperature class: T6, Amb. Temp.: -40 to 60°C (-40 to 140°F)	FF1
	FM Intrinsically Safe and Nonincendive Approval *1 Applicable Standard: FM3600, FM3610, FM3611, FM3810, ANSI/NEMA 250, ISA60079-27 Intrinsically Safe for Class I,II, & III, Division 1, Groups A,B,C,D,E,F & G, Entity, FISCO. /Class I, Zone 0, AEx ia IIC, Enclosure: Type 4X, Temp. Class: T4, Amb. Temp.: -40 to 60°C (-40 to 140°F). Intrinsically Apparatus Parameters : [FISCO (IIC)] Ui=17.5 V, li=500 mA, Pi=5.5 W, Ci=1.76 nF, Li=0 μH [FISCO (IIB)] Ui=17.5 V, li=500 mA, Pi=5.5 W, Ci=1.76 nF, Li=0 μH [Entity] Ui=24 V, li=250 mA, Pi=1.2 W, Ci=1.76 nF, Li=0 μH Nonincendive for Class I, Division 2, Groups A, B, C and D, NIFW, FNICO Class I, Zone 2, Group IIC, NIFW, FNICO Class II, Division 2, Groups F&G, and Class III, Division 1 Enclosure: "Type 4X", Temp. Class: T4, Amb. Temp.: -40 to 60°C (-40 to 140°F) Nonincendive Apparatus Parameters : Vmax.= 32 V, Ci = 1.76 nF, Li = 0 μH	FS15
ATEX	ATEX Flameproof Approval *1 Applicable Standard: EN 60079-0, EN 60079-1, EN60079-31 Certificate: KEMA 10ATEX0157 X II 2G, 2D Ex db IIC T6 Gb, Ex tb IIIC T80°C Db Degree of protection : IP66/IP67 Amb. Temp. (Tamb) for gas-proof : T6; -50 to 75°C (-58 to 167°F) Max. surface Temp. for dust-proof : T80°C (Tamb: -30°C to 75°C)	KF25
	ATEX Intrinsic Safety Approval *1 Certificate: DEKRA 11ATEX0022 X Applicable standards: EN 60079-0, EN 60079-11 II 1G Ex ia IIB/IIC T4 Ga, II 1D Ex ia IIIC T80°C Da IP6X Amb. Temp. : -40 to 60°C (-40 to 140°F) Max. Surface Temp. for dust-proof: T80°C (Tamb.: -40 to 140°F) Enclosure : IP66/IP67 [FISCO (IIC)] Ui=17.5V, li=500mA, Pi=5.5W, Ci=3.52nF, Li=0μH [FISCO (IIB)] Ui=17.5V, li=500mA, Pi=5.5W, Ci=3.52nF, Li=0μH [Entity] Ui=24V, li=250mA, Pi=1.2W, Ci=3.52nF, Li=0μH	KS25

Item	Description	Code
Canadian Standards Association (CSA)	CSA Explosionproof Approval ^{*1} Certificate: 2325751 Applicable Standard: C22.2 No.0, C22.2 No.0.4, C22.2 No.0.5, C22.2 No.25, C22.2 No.30, C22.2 No.94, C22.2 No.60079-0, C22.2 No.60079-1, C22.2 No.61010-1-04 Explosion-proof for Class I, Groups B, C and D. Dustignition-proof for Class II/III, Groups E, F and G. When installed in Division 2, "SEAL NOT REQUIRED" Enclosure: Type 4X, Temp. Class: T6 Ex d IIC T6 Enclosure: IP66/IP67 Amb.Temp.: -50 to 75°C (-58 to 167°F)	CF1
	CSA Intrinsically safe and Nonincendive Approval ^{*1} Certificate: 2422326 Applicable Standard: C22.2 No.0, C22.2 No.0.4, C22.2 No.25, CAN/CSA C22.2 No.94, CAN/CSA C22.2 No.157, C22.2 No.213, CAN/CSA C22.2 No.61010-1-04 CAN/CSA C22.2 No.60079-0, CAN/CSA E60079-11, CAN/CSA E60079-15, IEC 60529 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G, Class III Division 1; Ex ia IIB/IIC T4 Amb. Temp.: -40 to 60°C (-40 to 140°F) Encl. Type 4X, IP66/IP67 Entity Parameters for Intrinsically Safe : Ui (Vmax) = 24V, Ii (Imax) = 250mA, Pi (Pmax) = 1.2W, Ci = 3.52nF, Li = 0μH or Ui (Vmax) = 17.5V, Ii (Imax) = 500mA, Pi (Pmax) = 5.5W, Ci = 3.52nF, Li = 0μH Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division 2, Groups F & G, Class III Division 1; Ex nL IIC T4 Amb. Temp.: -40 to 60°C (-40 to 140°F) Encl. Type 4X, IP66/IP67 Entity Parameters for Nonincendive : Ui = 32V, Ci = 3.52nF, Li = 0μH	CS15
IECEX	IECEX Flameproof Approval ^{*1} Applicable Standard: IEC 60079-0, IEC60079-1 Certificate: IECEX KEM 10.0071 X Flameproof for Zone 1, Ex db IIC T6 Gb Enclosure: IP66/IP67 Amb.Temp.: -50 to 75°C(-58 to 167°F)	SF25
	IECEX Intrinsic Safety Approval ^{*1} No. IECEX DEK 11.0004 X Applicable Standard: IEC 60079-0, IEC 60079-11 Ex ia IIB/IIC T4 Ga, Ex ic IIC T4 Gc Ambient Temperature : -40 to 60°C Enclosure: IP66/IP67 Intrinsically safe ratings (Ex ia IIB/IIC T4) [Entity] Ui = 24 V, Ii = 250 mA, Pi = 1.2 W, Ci = 3.52 nF, Li = 0 μH [FISCO IIC] Ui = 17.5 V, Ii = 500 mA, Pi = 5.5 W, Ci = 3.52 nF, Li = 0 μH [FISCO IIB] Ui = 17.5 V, Ii = 500 mA, Pi = 5.5 W, Ci = 3.52 nF, Li = 0 μH Intrinsically safe ratings (Ex ic IIC T4): Ui = 32 V, Ci = 3.52 nF, Li = 0 μH	SS25

Note 1 : Applicable for Electrical connection code 2, 4, 7, 9, C and D.

OPTIONAL SPECIFICATIONS

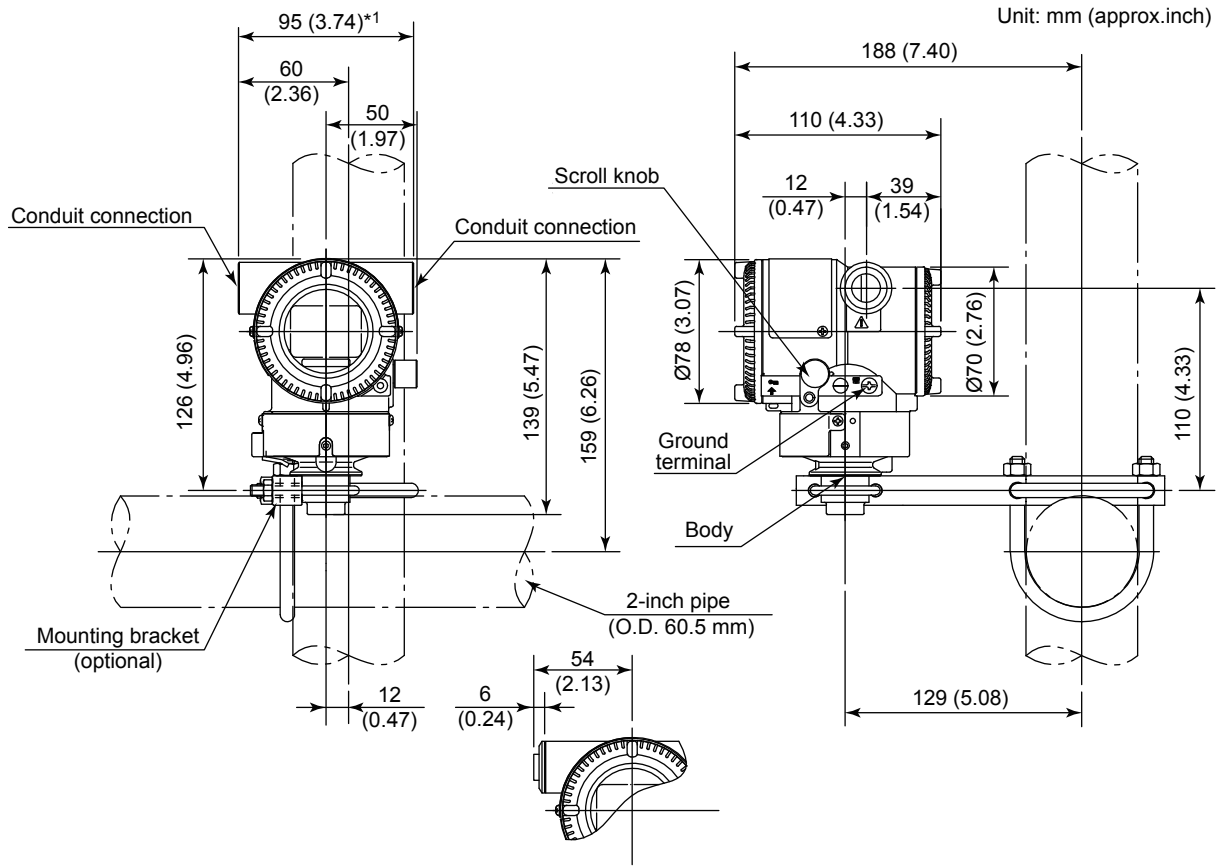
Item	Description	Optional code
Painting	Color change	Amplifier cover only ^{*1}
		Amplifier cover and terminal cover, Munsell 7.5 R4/14
	Coating change	Anti-corrosion coating ^{*2}
316 SST exterior parts	316 SST name plate, tag plate and screw ^{*3}	HC
Lightning protector	Power supply voltage: 10.5 to 32 V DC (10.5 to 30 V DC for intrinsically safe type, 9 to 32 V DC for Fieldbus communication type) Allowable current: Max. 6000A (1x40μs), Repeating 1000A (1x40μs) 100times	A
Wired tag plate	316 SST tag plate wired onto indicator (Tag No.: Maximum. 16 characters.)	N4

*1: Not applicable for amplifier housing code 2

*2: Not applicable with color change option

*3: 316 SST or 316 LSST. The specification is included in amplifier housing code 2.

■ DIMENSIONS

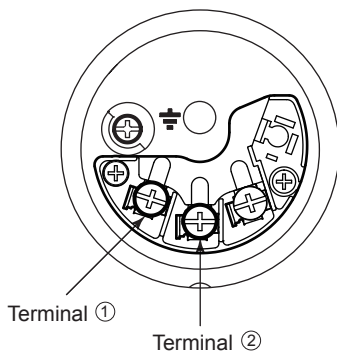


Electrical connection for code 5, 9, A and D

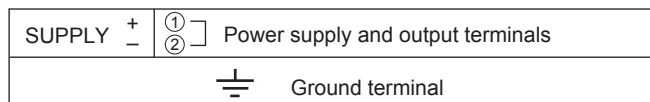
F01E.ai

*1: When electrical connection code 7 or C is selected, a blind plug is protruded upto 8 mm from the conduit connection.

● Terminal Configuration



● Terminal Wiring



F02E.ai

<Ordering Information>

Specify the following when ordering

1. Model, suffix codes, and option codes
2. Tag Number;
Specify software tag (up to 32 characters) to be written on the amplifier memory and Tag number (up to 18 characters, or 16 characters for /N4 tag) to be engraved on the tag plate separately.
3. Node Address
4. Operation Functional Class
Select 'BASIC' or 'LINK MASTER'

<Factory Setting>

Tag Number (Tag plate)	As specified in order
Software Tag (PD_TAG)	'UI1001' unless otherwise both Tag Number and software Tag specified in order
Node Address	'0xF5' unless otherwise specified in order
Operation Functional Class	BASIC or as specified

<Related Instruments>

The customer should prepare instrument maintenance tool, terminator, fieldbus power supply etc.

<Reference>

FOUNDATION; Trademark of Fieldbus Foundation

FX; Trademark of YOKOGAWA Electric Corp.

<Information on EU WEEE Directive>

EU WEEE (Waste Electrical and Electronic Equipment) Directive is only valid in the EU.

This instrument is intended to be sold and used only as a part of equipment which is excluded from WEEE Directive, such as large-scale stationary industrial tools, a large-scale fixed installation and so on, and, therefore, subjected to the exclusion from the scope of the WEEE Directive. The instrument should be disposed of in accordance with local and national legislation/regulations.