General Specifications

EJA Series
Fieldbus Communication

DPharp

FOUNDATION

GS 01C22T02-00EN

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. Also, the precise transmission of various process data including the PV and MV of the field instruments is well established by the Fieldbus multisensing function. Thus, based on FOUNDATION fieldbus specifications, EJA Fieldbus models offer more flexible instrumentation through a higher level communication capability and propose the cost reduction by multi-drop wirings with less cables.

■ FEATURES

- **Interoperability**
  FOUNDATION fieldbus specifications grant the interoperability of the field instruments without preparing designated softwares for the instrument.

- **Reduction of instrumentation cost**
  The multi-drop wiring on the Fieldbus communication line contributes to the reduction of wiring cost.

- **Two AI function blocks**
  EJA110 Fieldbus model, for example, has two independent AI function blocks for pressure calculations: one for differential pressure and the other for static pressure.

- **Alarm function**
  EJA Fieldbus models securely support various alarm functions, such as high/low alarm, notice of block error, etc. based on FOUNDATION fieldbus specifications.

- **Self-diagnostic function**
  The reliable self-diagnostic function detects the measuring range failure, the temperature·static pressure failure, and the hardware failure, such as pressure sensor, temperature sensor or amplifier assembly, etc.

- **Software download function (option)**
  Software download function permits to update EJA software via a FOUNDATION fieldbus.
  Typical use of this function is to add new features such as function blocks and diagnostics to existing devices.

- **PID function block (option)**
  PID function block enables field devices to control processes.
  The option includes the link master function.

■ STANDARD SPECIFICATIONS

For items other than those described below, refer to each General Specification sheet.

Applicable Model:
All DPharp EJA series.

Output Signal:
Digital communication signal based on FOUNDATION fieldbus protocol.

Supply Voltage:
9 to 32 V DC for general use, flameproof type, and nonincendive
9 to 24 V DC for intrinsically safe type Entity model
9 to 17.5 V DC for intrinsically safe type FISCO model

Conditions of Communication Line:
Supply Voltage: 9 to 32 V DC
Current Draw:
Steady state: 16.5 mA (max)
Software download state: 40.5 mA (max)

Power Supply Effect:
No effect (within the supply voltage of 9 to 32 V DC)

External Zero Adjustment:
External zero is continuously adjustable with 0.01% incremental resolution of max span.

Functional Specifications:
Functional specifications for Fieldbus communication conform to the standard specifications (H1) of FOUNDATION fieldbus.
Function Block:
Two AI function blocks [1]
One PID function block (option)
Link Master funtion (option)

[1]: Contact Yokogawa sales representative for the use of function block for static pressure.

EMC Conformity Standards:
EN 61326-1 Class A, Table2 (For use in industrial locations)
EN 61326-2-3
EN 61326-2-5 (For Fieldbus)

YOKOGAWA ◆

■ MODEL AND SUFFIX CODE

EJA□□□(□)-F□□□□-□□□□/□

└── Output signal ... Digital communication (FOUNDATION Fieldbus protocol)

■ OPTIONAL SPECIFICATIONS

Item	Description	Code
Factory Mutual (FM)	FM Explosionproof Approval *1 *3 　Applicable standard: FM3600, FM3615, FM3810, ANSI/NEMA250 　Explosionproof for Class I, Division 1, Groups B, C and D 　Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G 　Hazardous (classified) locations, indoors and outdoors (NEMA 4X) 　Temperature class: T6 　Amb. Temp.: –40 to 60°C (–40 to 140°F)	FF15
Canadian Standards Association (CSA)	CSA Explosionproof Approval *1 *3 　Applicable standard: C22.2 No.0, No.0.4, No.25, No.30, No.94, No.142, No 1010.1 　Certificate: 1010820 　Explosionproof for Class I, Division 1, Groups B, C and D 　Dustignitionproof for Class II/III, Division 1, Groups E, F and G 　Temp. Class: T4, T5, T6 Encl Type 4x　Amb. Temp.: –40 to 80°C (–40 to 176°F) 　Max. Process Temp.: T4; 120°C (248°F), T5; 100°C (212°F), T6; 85°C (185°F) 　Electrical connection: 1/2 NPT female Process Sealing Certification 　Dual Seal Certified by CSA to the requirement of ANSI/ISA 12.27.01 　No additional sealing required. Primary seal failure annunciation: at the zero adjustment screw	CF15
TIIS Certification	TIIS Flameproof Approval, Ex do II C T4X *4 *5 *6 *8 *9 *10	JF35
PID/LM function	PID control function, Link Master function *7	LC1
Software download function	Based on FOUNDATION Fieldbus Specification (FF-883) Download class: Class1	EE

*1:　Applicable for Electrical connection code 2, 7 and C.
*2:　(Not used)
*3:　Lower limit of ambient temperature is –15°C (5°F) when /HE is specified.
*4:　See certificate list of TIIS flameproof approval below.

		Without integral indicator	With integral indicator
Wetted parts material code	**S**	C15296	C15297
	H, A	C15298	C15299
	T, D	C15300	C15301
	M, B	C15302	C15303

*5:　If cable wiring is to be used, add the YOKOGAWA-assured flameproof packing adapter.
*6:　In case the ambient temperature exceeds 45°C, use heat-resistant cables with maximum allowable temperature of 75°C or above.
*7:　Set as basic device when shipped.
*8:　TIIS (The Technology Institution of Industrial Safety) Certification is a new notation for the explosionproof approval in Japan instead of JIS.
*9:　Not applicable for Electrical connection code A, C and D.
*10:　Not applicable for Option code HC and HE.

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< Settings When Shipped >

Tag Number (Tag plate)	As specified in order *1
Software Tag (PD tag)	'PT1001' unless otherwise specified in older *2
Output Mode (L_TYPE)	'Direct' unless otherwise specified in order
Calibration Range (XD_SCALE) Lower/Higher Range Value	As specified in order
Unit (CAL_UNIT) of Calibration Range	Selected from mmH₂O, inH₂O, mmHg, inHg, Pa, hPa, kPa, MPa, g/cm², kg/cm², bar, mbar, psi, torr, atm (Only one unit can be specified.)
Output Scale (OUT_SCALE) Lower/Higher Range Value	'0 to 100%' unless otherwise specified
Unit of Output Scale (OUT_SCALE)	As specified in order
Damping Time Constant (PV_FTIME)	'2 sec.'
Node Address	'0xF5' unless otherwise specified in order
Operation Functional Class (When /LC1 is specified)	'BASIC' unless otherwise specified in order

*1:   Specified Tag Number is engraved on the stainless steel plate: Up to 16 letters using any of alphanumerics and symbols of [-], [.], and [/].
*2:   Specified Software Tag is entered in the amplifier memory: Up to 32 letters using any of alphanumerics and symbols of [-] and [.].

Explanation of Fieldbus parameters:

(1) XD_SCALE: Set the input value from Transducer block (input range of sensor) which corresponds to 0% value and 100% value of the calculation in the AI function block. In the case of EJA series, the value set as calibration range should be entered to this parameter.

(2) OUT_SCALE: Output scaling parameter. Set the output value which corresponds to 0% value and 100% value of the calculation in the AI function block. In the case of EJA series, the value set as output scale should be entered to this parameter. When integral indicator is required, this output is shown on LCD.

(3) CAL_UNIT: The unit of calibration by sensor. This is used as the unit of XD_SCALE.

(4) L_TYPE: Determines if the values passed by the tranducer block to the AI block may be used directly (Direct) or if the value is in different units and must be converted linearly (Indirect Linear) or with square root (Indirect SQRT), using the input range defined by XD_SCALE and the associated output range (OUT_SCALE).

< Ordering Information >
1. Model, suffix codes, and optional codes
2. Calibration range (XD_SCALE)
3. Units of calibration range:
   Specify only one unit from the table, 'Settings when shipped.'
4. Output mode (L_TYPE)
   Select 'Direct,' 'Indirect Linear,' or 'Indirect SQRT.' Otherwise the mode is factory set to 'Direct.'
5. Output scale and units (OUT_SCALE)
   When integral indicator is required, scale range should be specified with the range limit specifications up to 5 digits (excluding any decimal point) for low or high range limits within the range of -19999 to 19999.
6. Tag Number (for tag plate)
7. Software Tag (PD tag)
8. Node Address
9. Operation Functional Class
   Select 'BASIC' or 'LINK MASTER' when /LC1 is specified.

Example; When 50 to 1000 mmH₂O for calibration range and 0 to 100% output range is required, specify the values as follows:

Calibration range:	Higher value	1000
	Lower value	50
Calibration unit:		mmH₂O
Output range:	Higher value	100
	Lower value	0
Unit of output range:		%

< Related Instruments >
The customer should prepare instrument maintenance tool, terminator, fieldbus power supply etc.

< Reference >
FOUNDATION; Trademark of Fieldbus Foundation.

CE marking is not applied to the product from the end of February 2016.