General Specifications

Model EJA Series
Fieldbus Communication

GS 1C22T2-E

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 multi-sensing 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.

● 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 excluding intrinsically safe model.

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

Conditions of Communication Line:
Supply Voltage: 9 to 32 V DC
Supply Current: 16.5 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
One PID function block (option)
Link Master funtion (option)

YOKOGAWA

Yokogawa Electric Corporation
2-9-32 Nakacho, Musashino-shi, Tokyo, 180-8750 Japan
Phone: 81-422-52-5690 Fax: 81-422-52-2018

GS 1C22T2-E

6th Edition Aug. 2000

■ MODEL AND SUFFIX CODE

EJA□□□(□)-F□□□□-□□□□/□
└— Output signal ... Digital communication (FOUNDATION Fileldbus protocol)

■ OPTIONAL SPECIFICATIONS (For Explosion Protected type)

Item	Description	Code
Factory Mutual (FM)	FM Explosionproof Approval 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) Electrical connection: 1/2 NPT female *1	FF15
CENELEC (KEMA)	CENELEC (KEMA) Flameproof Approval EExd IIC T4, T5 and T6, Amb. Temp.: –40 to 80°C (–40 to 176°F) for T4 and T5, –40 to 75°C (–40 to 167°F) for T6 Max. process Temp.: T4; 120°C (248°F), T5; 100°C (212°F), T6; 85°C (185°F) Electrical connection: 1/2 NPT female, Pg 13.5 female and M20 female *2	KF5
Canadian Standards Association (CSA)	CSA Explosionproof Approval 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 *1	CF15
Japanese Industrial Standards (JIS)	JIS Flameproof Approval, Exdo II C T4X*3 *4	JF35
PID/LM function	PID control function, Link Master function *5	LC1

T01E.EPS

*1: Applicable for Electrical connection code 2 and 7.
*2: Applicable for Electrical connection code 2, 3, 4, 7, 8, and 9.
*3: If cable wiring is to be used, add the YOKOGAWA-assured flameproof packing adapter.
*4: In case the ambient temperature exceeds 45°C, use heat-resistant cables with maximum allowable temperature of 75°C or above.
*5: Set as Link Master device when shipped. Applicable Optional code for explosion protected type: JF35, KF5, and CF15.

< Settings When Shipped >

Tag Number (PD tag)	'PT1001' unless otherwise specified in order. (Not engraved on tag plate in such case.) *1
Output Mode (L_TYPE)	'Indirect' 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 mmH_2O, inH_2O, mmHg, inHg, Pa, hPa, kPa, MPa, g/cm^2, kg/cm^2, 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	'2 sec.'
Node Address	'0 × F5' unless otherwise specified in order

T02E.EPS

*1: Specified Tag Number is entered in the amplifier memory and also engraved on the stainless steel plate.
- For entry in the amplifier memory: Up to 32 letters using any of alphanumereics and symbols, - and ·
- For engraving on the stainless steel plate: Up to 16 letters using any of alphanumereics and symbols, -, ·, 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) 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 'Indirect.'
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 (PD tag)
7. Node Address

<Related Instruments>

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

<Reference>

FOUNDATION; Trademark of Fieldbus Foundation.

Example; When 50 to 1000 mmH_2O 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: mmH_2O
Output range:
Higher value 100
Lower value 0
Unit of output range: %