

General Specifications

EJX Series
HART 5/HART 7 Communication



GS 01C25T01-01EN

DPharp EJX Series can perform remote setting and monitoring of measuring ranges, damping time constant, etc. through a HART protocol revision5(HART 5) and revision7(HART 7) compliant configuration tool.

■ FEATURES

- **Remote Ranging and Monitoring Functions**
Ranges can be remotely set and monitored through HART communication.
- **On-line Communication**
Output signal and communication signal do not interfere making on-line communication possible.
- **Enhanced Burst Mode and Event Notification (HART 7)**
Advanced burst mode includes the variety of transmission setting by specifying burst variables, update period, and message trigger mode, and event notification function gives you alert signal based on the status change in preset values and self-diagnosis.
- **Long Tag Supporting Up to 32 Characters (HART 7)**
Long tag secures a better asset management with abundant digits in its software.
- **Self-Diagnostic**
Pressure input outside of range limit, excessive ambient temperature, incorrect span setting etc. can be diagnosed through HART communication.
- **HART protocol revision selectable**
Selectable from HART 5 and HART 7.
- **NE107 Field Diagnostic Function**
In NAMUR recommendation NE107, alarms are standardized into four status signals (Failure, Function Check, Out of Specification, Maintenance Required).
This alarm management function can deliver recommended actions and appropriate diagnosis information for alarms to suitable persons.



■ STANDARD SPECIFICATIONS

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

HART Protocol Revision

HART protocol revision can be selected from 5 or 7 when ordering.
The protocol revision can be changed by user configuration.

Write Protection Switch:

Hardware/software write protection switch

Conditions of Communication Line:

- Supply Voltage;
 - General Use & Explosion proof Type
16.6 to 42 V DC
 - Intrinsically safe Type
Refer to each General Specification sheet.
- Load resistance;
See figure 1.

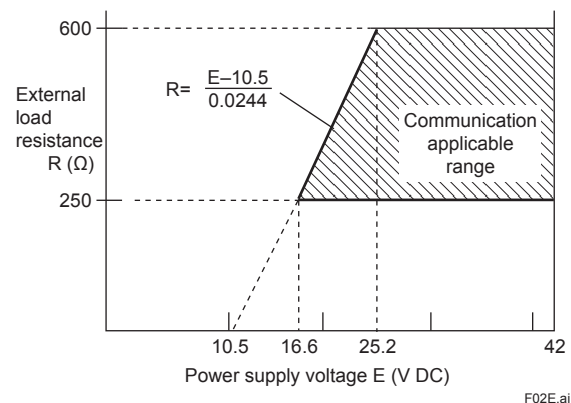


Figure 1. Relationship Between Power Supply Voltage and External Load Resistance

■ FUNCTIONAL SPECIFICATIONS

Functional specifications for remote setting and monitoring

ITEM	DISPLAY	SETTING	SUMMARY	Factory setting
Tag Number (Software Tag)	○	○	Up to 8 alphanumeric characters	As specified in order
Long Tag (Software Tag)	○	○	Up to 32 alphanumeric characters (HART 7)	As specified in order
Output Mode	○	○	LINEAR/SQUARE ROOT output	'LINEAR' unless otherwise specified in order
Display Function	○	○	LINEAR/SQUARE ROOT display	'LINEAR' unless otherwise specified in order
Display Mode	○	○	Input pressure, % of range, User set scale, Input static pressure, or % of static pressure range.	PRES %
Damping Adjustment	○	○	Software damping in 0.00 to 100.00 second	2 s
Lowest Limit of Calibration Range	○	○	Pressure equal to 4 mA value.	As specified in order
Highest Limit of Calibration Range	○	○	Pressure equal to 20 mA value.	As specified in order
Instantaneous Value of Input (Differential Pressure or Pressure)	○	—	Display actual Differential Pressure or actual Pressure.	—
Instantaneous Value of Output (Current)	○	—	Display actual % of calibrated span or 4-20 mA output value.	—
Unit of Calibration Range	○	○	In H ₂ O, in Hg, ftH ₂ O, mmH ₂ O, mmHg, psi, bar, mbar, g/cm ² , kg/cm ² , Pa, hPa, kPa, MPa, Torr, or atm	As specified in order
Constant Current Output	○	○	4 to 20 mA DC	—
Self-diagnostic	○	○	Pressure input outside of range limits, Excessive ambient temperature, or Incorrect rangesetting.	—
Advanced Test Output	○	○	Simulate device variable for fixed PV output with filtering functions such as damping and low cut mode. (HART 7)	—
Burst Mode	○	○	Continuous transmission of following information (Max. three burst messages for HART 7) <ul style="list-style-type: none"> • PV • % range/current • process vars/current • process vars/% range/current • self diagnosis (HART 7) 	—
Event Notification	○	○	Signal transmission triggered by detecting the setting change or the self-diagnostics as an event to alarm (HART 7)	—
Squawk	○	○	Identifying the transmitter by displaying the particular pattern on LCD (HART 7)	—
Multidrop Communication	○	—	Up to 15 (HART 5)/63 (HART 7) transmitters can be connected. An analog signal output available for one device in a loop for HART 7.	—

MODEL AND SUFFIX CODES

EJX□□□A-J□□□□-□□□□□/□

└─ The same option codes applicable for output signal code E can be specified.
 └─ Output signal . . . 4 to 20 mA DC with digital communication (HART 5/HART 7 protocol*)

*: HART 5 or HART 7 selectable. Specify HART 5 or HART 7 when ordering.

□ **Selection guide for HART 5 and HART 7**
 Select HART 5 or HART 7 according to Table 1.

Table 1. Selection guide for HART 5 and HART 7

Output signal code	Specified item when ordering "HART protocol revision"	HART protocol revision	Selection guide		Note
			Requirement for HART 7 functionality	Future change to HART 7	
-E	Not Available	HART 5	Select when HART 7 functionality is not required.	Select when future change to HART 7 is not required.	*1
-J	Specify '5'			Select when future change to HART 7 is required.	*2
		Specify '7'	HART 7	Select when HART 7 functionality is required. In this case, be sure to confirm that HART configuration tool supports HART 7 by Table 2.	-

*1: Refer to each EJX General Specifications (GS 01C25B) regarding output signal code -E. The code -E is available for only HART 5. This code will be unified to the new code "-J". Therefore the code "-J" is recommended for HART communication type.

*2: Indicate the most typical selection for HART communication. In case of selecting HART 7 without conforming to Table 2, communication will not be available. Select this when HART 7 functionality is not required.

□ **HART protocol revision and communication**

Protocol revision supported by HART configuration tool must be the same or higher than that of the EJX. HART 7 communication is supported by FieldMate R2.02 or later.

Table 2. HART protocol revision and communication

		Protocol revision supported by HART configuration tool	
		HART 5	HART 7
Protocol revision of EJX	HART 5	Communication Available	Communication Available
	HART 7	Communication Not Available	Communication Available

<Ordering Information>

Specify the following when ordering.

1. Model, suffix codes, and optional codes
2. Calibration range and units:
 - 1) Calibration range can be specified with range value specification up to 5 digits (excluding any decimal point) for low or high range limits within the range of -32000 to 32000.
 - 2) Specify only one unit from the above table, 'Unit of Calibration Range.'
3. Select linear or square root for output mode and display mode.

Note: If not specified, the instrument is shipped set for linear mode
4. Display scale and units (for transmitters equipped with the integral indicator only)

Specify either 0 to 100 % or 'Range and Unit' for engineering units scale:
Scale range can be specified with range limit specifications up to 5 digits (excluding any decimal point) for low or high range limits within the range of -32000 to 32000. Unit display consists of 6-digit, therefore, if the specified scaling unit excluding '/' is longer than 6-characters, the first 6 characters will be displayed on the unit display.

5. Tag Number (if required)

Specify tag number (up to 22 letters) to be engraved on the tag plate. The specified letters are written on "Tag" (the first 8 letters) and "Long tag" (22 letters)*2 in the amplifier memory.
6. Software tag
Specify this software tag when tag number which is different from the tag number specified in the "Tag Number" is required. The tag number specified*1 in "SOFTWARE TAG" will be entered on "Tag" (the first 8 letters) and "Long tag" (32 letters)*2 in the amplifier memory.
7. HART protocol revision
Specify the HART protocol revision "5" or "7".

*1: Up to 32 characters are specified

*2: Applicable only for HART 7

<Reference>

- *DPharp* **EJX**™ is a registered trademark of Yokogawa Electric Corporation.
- HART; Trademark of the HART Communication Foundation.