

digitalYEWFLO Series Vortex Flowmeter Installation Manual

Manual Change No. 17-0024-E

Please use the attachment sheets for the IM 01F06A01-01EN (2nd).

No.	Page / Section	Addition/Correction	Description
1	Front page	Added a new GS No. to the document list. (Please add to the contents on the right and use it.)	Doc. No. : GS 01F06S00-01EN Doc. Name : digitalYEWFLO Series Vortex Flowmeter List of RoHS (2011/65/EU) Directive Compliant Products
2	8	Addition of description for Piping Precautions. (Please add to the contents on the right and use it.)	●Piping Condition In case the piping conditions are compounded, install on the straight pipe section where the upstream part is sufficiently rectified.
3	39	10.1 ATEX	Update standard
4	59, 60	12.1 ATEX	Update standard
5	69	13. PED (PRESSURE EQUIPMENT DIRECTIVE)	Update standard
6	Appendix	Added 「Notes for the Identification Tag」(Please add the contents of the last page and use it.)	The Identification Tag which is enclosed with a product. Please keep the Identification Tag with this document.

10. EXPLOSION PROTECTED TYPE INSTRUMENT



NOTE

- Read Chapter 12 for Fieldbus Communication Type Intrinsically safe approval.

In this chapter, further requirements and differences for explosion protected type instrument are described. For explosion protected type, the description in this chapter is prior to other description in this User's Manual.



WARNING

- Only trained persons use this instrument in industrial locations.



CAUTION

- Process temperature and ambient temperature on this section are the specifications for explosion protected type. Read IM 01F06A00-01EN Section 13.1 "Standard Specifications" before operating.

10.1 ATEX



WARNING

- Only trained persons use this instrument in industrial locations.
- Electrostatic charge may cause an explosion hazard. Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth on coating face of product.

(1) Technical Data

• Flameproof

Applicable Standard : EN 60079-0: 2012+A11: 2013, EN 60079-1: 2014

Certificate : DEKRA 11ATEX0212X

Type of Protection:

Ex d IIC T6...T1 Gb (Integral Type and Remote Type Detector)

Ex d IIC T6 Gb (Remote Type Converter)

Group: II, Category: 2 G

Specification of Protection:

Temperature Class: (Integral Type and Remote Type Detector)

Temperature Class	Process Temperature
T6	-40°C to +80°C
T5	-40°C to +100°C
T4	-40°C to +135°C
T3	-40°C to +200°C
T2	-40°C to +300°C
T1	-40°C to +450°C

*1 Note: Use /HT version above +250°C

Temperature Class: T6 (Remote Type Converter)

Ambient Temperature:

-30 to +60°C (With Indicator)

-40 to +60°C (Without Indicator)

Power Supply: 10.5 to 42Vdc max.

Output Signal: Current Output; 4 to 20mA

Pulse Output; On=2Vdc, 200mA

Off=42Vdc, 4mA

Special Fastener: Class A2-50 or more

• Intrinsically Safe

Applicable Standard: EN 60079-0: 2012+A11: 2013, EN 60079-11: 2012

Certificate: DEKRA 13ATEX0192 X

Type of protection:

Ex ia IIC T4...T1 Ga (Integral Type)

Ex ia IIC T6...T1 Ga (Remote Type Detector)

Ex ia IIC T4 Ga (Remote Type Converter)

Group: II, Category: 1 G

Ambient Temperature:

-50 to +60°C (Integral Type)

-50 to +80 [+79]°C (Remote Type Detector)

(Option /LT below -29°C, [] for Option /MV at T6)

-50 to +80°C (Remote Type Converter)

12. EXPLOSION PROTECTED TYPE INSTRUMENT FOR FIELDBUS COMMUNICATION TYPE



NOTE

Read Chapter 10 for other Explosion Protected Type of digital YEW FLO Series Vortex Flowmeter.

In this section, further requirements and differences for explosion protected type instrument are described. For explosion protected type instrument, the description in this chapter is prior to other description in this Instruction Manual.



WARNING

- Only trained persons use this instrument in industrial locations.



CAUTION

- Process temperature and ambient temperature on this section are the specifications for explosion protected type. Read IM 01F06A00-01EN Section 13.1 "Standard Specifications" before operating.

12.1 ATEX



WARNING

- Only trained persons use this instrument in industrial locations.
- Electrostatic charge may cause an explosion hazard. Avoid any actions that cause the generation of electrostatic charge, such as rubbing with a dry cloth on coating face of product.

■ Technical Data

• Intrinsically Safe Ex ia

Applicable Standard: EN 60079-0: 2012+A11: 2013, EN 60079-11: 2012

Certificate: KEMA 03ATEX1136X

Type of Protection: Ex ia IIC T4...T1 Ga (Integral Type)

Ex ia IIC T6...T1 Ga (Remote Type Detector)

Ex ia IIC T4 Ga (Remote Type Converter)

Group: II

Category: 1 G

Ambient Temperature: -40 to +60°C (Integral Type)
-50 to +80[+78]°C (Remote Type Detector)
-40 to +80°C (Remote Type Converter)

(Option /LT below -29°C, []

Option /MV at T6)

Electrical Data: Entity Ui = 24 V,
Ii = 250 mA, Pi = 1.2 W,
Ci = 3.52 nF, Li = 0 mH
FISCO(IIC) Ui = 17.5 V,
Ii = 500 mA, Pi = 5.5 W,
Ci = 3.52 nF, Li = 0 mH

Connect sensor circuit of DYA and DY-N (/HT)

(Integral Type)

Temperature Class	Process Temperature
T4	≤ +135°C
T3	≤ +200°C
T2	≤ +250°C
T1	≤ +250°C

(Remote Type Detector)

Temperature Class	Process Temperature*
T6	≤ +84/[+78]°C
T5	≤ +100°C
T4	≤ +135°C
T3	≤ +199°C
T2	≤ +299/[+288]°C
T1	≤ +449/[+438]°C

*: Use /HT option above +250°C, use /LT option below -29 °C, [] for /MV option.

• Intrinsically Safe Ex ic

Applicable Standard: EN 60079-0: 2012+A11: 2013
EN 60079-11:2012

Type of Protection: Ex ic IIC T4...T1 Gc (Integral Type)
Ex ic IIC T6...T1 Gc (Remote Type Detector)
Ex ic IIC T5...T4 Gc (Remote Type Converter)

Group: II

Category: 3 G

Enclosure: IP66/67

Overvoltage Category: I

Ambient Temperature:

-40 to +60°C (Integral Type)

-50 to +80 [+79]°C (Remote Type Detector)
(Option /LT below -29°C, [] for Option /MV at T6)

-40 to +80°C (Remote Type Converter)

(Integral Type)

Temperature Class	Process Temperature
T4	-40°C to +135°C
T3	-40°C to +199°C
T2	-40°C to +250°C
T1	-40°C to +250°C

(Remote Type Detector)

Temperature Class	Process Temperature
T6	-196°C to +84[+79]°C
T5	-196°C to +100°C
T4	-196°C to +135°C
T3	-196°C to +199°C
T2	-196°C to +299[+289]°C
T1	-196°C to +449[+439]°C

*: Use /HT option above +250°C, use /LT option below -29°C, [] for /MV option.

Electrical data:

Supply and Output Circuit (SUPPLY + and -);

FISCO Field Device

Entity Concept:

Maximum Input Voltage U_i : 32Vdc

Internal Capacitance C_i : 3.52nF

Internal Inductance L_i : 0mH

Electrical Connection: ANSI 1/2 NPT female,
ISO M20 X 1.5 female

For the connection of DYA to DY-N :

Maximum cable capacitance: 160nF

Electrical Connection: ANSI 1/2 NPT female, ISO
M20 X 1.5 female

Special conditions for safe use

1. For process temperatures above 250°C the flow meters of the /HT version must be used.
 2. Because the enclosures of the flow meters and the flow converter are made of aluminium alloy, when used in a potentially explosive atmosphere requiring apparatus of equipment category 1 G, they must be installed so, that even in the event of rare incidents, an ignition source due to impact of friction between the enclosure and iron/steel is excluded.
- Precautions shall be taken to minimize the risk from electrostatic discharge of painted parts.
 - The dielectric strength of at least 500 V a.c. r.m.s. between the intrinsically safe circuits and the enclosure of the flow meter or the converter is limited only by the overvoltage protection.

■ Installation



WARNING

- All wiring shall comply with local installation requirements and local electrical code.
- Use the suitable heat-resisting cables (over 90°C) for the digital YEW FLO Series Vortex Flowmeter when the ambient temperature exceeds 60°C and/or the process temperature exceeds 200°C.
- For flameproof; Cable glands, adapters and/or blanking elements shall be of Ex "d" for Ex "d" installations. They shall be installed so as to maintain the specified degree of protection (IP Code) of the flowmeter.
- For ATEX intrinsically safe Ex ic; Cable glands, adapter and / or blanking elements shall be of Ex "n", Ex "e", or Ex "d" and shall be installed so as to maintain the specified degree of protection (IP Code) of the equipment.

13. PED (PRESSURE EQUIPMENT DIRECTIVE)

This chapter is described further requirements and notices concerning the PED (Pressure Equipment Directive). The description in this chapter is prior to other description in this User's Manual.

(1) Technical Data

Pressure Equipment Directive:

Type of equipment: piping

Type of fluid: liquid and gas

Group of fluid: 1 and 2

Module: H

MODEL	DN(mm)*	PS(MPa)*	PS-DN(MPa·mm)	CATEGORY**
DY015	15	42	630	Sound Engineering Practice (SEP)***
DY025	25	42	1050	Sound Engineering Practice (SEP)***
DY040	40	42	1680	II****
DY050	50	42	2100	II****
DY080	80	42	3360	II****
DY100	100	42	4200	II****
DY150	150	42	6300	III
DY200	200	42	8400	III
DY250	250	42	10500	III
DY300	300	42	12600	III
DY400	400	25	10000	III

* PS: Maximum allowable pressure for Flow tube, DN: Nominal size

** Table 6 covered by ANNEXII of Directive 2014/68/EU

*** Article 4, paragraph 3 of Directive 2014/68/EU

**** MODELS classified in CATEGORY II shall not be used for unstable gases of Group 1.

CE Marking is indicated on the name plate of non-explosion protected type and ATEX explosion protected type.

(2) Installation



WARNING

- Please tighten the bolts for piping joint according to the appropriate torque values.
- Please take measure to protect the flowmeters from forces caused by vibration through piping.

(3) Operation



WARNING

- The temperature and pressure of fluid should be applied under the normal operating condition.
- The ambient temperature should be applied under the normal operating condition.
- Please pay attention to prevent the excessive pressure like water hammer, etc. When water hammer is to be occurred, please take measures to prevent the pressure from exceeding PS (maximum allowable pressure) by setting the safety valve, etc. at the system and the like.
- When external fire is to be occurred, please take safety measures at the device or system not to influence the flowmeters.
- Please pay attention not to abrade the metal pipe, when using the fluid to abrade the metal pipe such as slurry and sand are contained.

■Appendix: Notes for the Identification Tag

An exclusive User's Manual might be attached for products whose suffix code or optional codes contain code "Z". Please read it along with their standard manual.

The Identification Tag which is enclosed with a product.

Please keep the Identification Tag with this document.

Identification Tag <Sample>

Identification Tag	
Serial No.	S5T307289
Material	DY080
	Digital Vortex Flowmeter (80mm/3in)
MS Code	DY080-NALBJ1-0N
Comp. No.	0001
Qty	1 ST
Order Instruction	
TAG NO.	
FINAL DESTINATION JAPAN	
UPPER DISP FLOW RATE 上流流量	
SIZING DATA S1TBG08	
Customer PO	
Linkage No.	2003960242-000010

Identification Tag	
Serial No.	S5T307290
Material	DYA
	Digital Vortex Flow Converter (Remote)
MS Code	DYA-D0D
Comp. No.	0001
Qty	1 ST
Order Instruction	
TAG NO.	
FINAL DESTINATION JAPAN	
SOFTWARE TAG	
UPPER DISP FLOW RATE 上流流量	
SIZING DATA S1TBG08	
Customer PO	
Linkage No.	2003960242-000020