

Please use the attached sheets for the pages listed below in the following manuals.

IM 21B04C01-01E (9th)

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YVP110

Advanced Valve Positioner

IM 21B04C01-01E 9th Edition

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1.8 EMC Conformity Standards

EN61326-1 Class A, Table 2 (For use in industrial locations)



CAUTION

This instrument is a Class A product, and it is designed for use in the industrial environment. Please use this instrument in the industrial environment only.

1.9 Installation of Explosion Protected Type Positioner



CAUTION

To preserve the safety of explosionproof equipment requires great care during mounting, wiring and piping. Safety requirements also place restrictions on maintenance and repair activities. Please read the following section very carefully.

1.9.1 FM Certification

A) FM Intrinsically Safe Type

Cautions for FM Intrinsically safe type. (Following contents refer "Doc No. IFM017-A12 P.1, 1-1, 2, 2-1, and 2-2.")

Note 1. Model YVP110 Advanced Valve Positioner with optional code /FS15 are applicable for use in hazardous locations.

- Applicable standard: FM3600, FM3610, FM3611, FM3810, ANSI/NEMA250
- Intrinsically safe, with FISCO parameters, for use in Class I, II, III, Division 1, Groups A, B, C, D, E, F, G and Class I, Zone 0, AEx ia IIC
- Non-incendive for Class I, Division 2, Groups A, B, C, D and Class I, Zone 2, Group IIC
- Indoor/Outdoor hazardous locations, NEMA 4X
- Ambient Temperature: -40 to 60°C

Note 2. Electrical Data

Rating 1

For Groups A, B, C, D, E, F and G or Group IIC

Maximum Input Voltage V_{max} : 24 V

Maximum Input Current I_{max} : 250 mA

Maximum Input Power P_{max} : 1.2 W

Maximum Internal Capacitance C_i : 1.76 nF

Maximum Internal Inductance L_i : 0 μ H

or

Rating 2

For Groups A, B, C, D, E, F and G or Group IIC

Maximum Input Voltage V_{max} : 17.5 V

Maximum Input Current I_{max} : 360 mA

Maximum Input Power P_{max} : 2.52 W

Maximum Internal Capacitance C_i : 1.76 nF

Maximum Internal Inductance L_i : 0 μ H

or

Rating 3

For Groups C, D, E, F and G or Group IIB

Maximum Input Voltage V_{max} : 17.5 V

Maximum Input Current I_{max} : 380 mA

Maximum Input Power P_{max} : 5.32 W

Maximum Internal Capacitance C_i : 1.76 nF

Maximum Internal Inductance L_i : 0 μ H

- In the rating 1, the output current of the barrier must be limited by a resistor "Ra" such that
 $I_o = U_o/R_a$.
- In the rating 2 or 3, the output characteristics of the barrier must be the type of trapezoid which are certified as the FISCO model.
- The safety barrier may include a terminator.
- More than one field instruments may be connected to the power supply line.

Note 3. Installation

- Dust-tight conduit seal must be used when installed in Class II and Class III environments.
- Control equipment connected to the Associated Apparatus must not use or generate more than 250 Vrms or Vdc.
- Installation should be in accordance with ANSI/ISA RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70) Sections 504 and 505.
- The configuration of Associated Apparatus must be Factory Mutual Research Approved under FISCO Concept.
- Associated Apparatus manufacturer's installation drawing must be followed when installing this equipment.
- The YVP series are approved for Class I, Zone 0, applications. If connecting AEx[ib] associated Apparatus or AEx ib I.S. Apparatus to the YVP series the I.S. circuit is only suitable for Class I, Zone 1, or Class I, Zone 2, and is not suitable for Class I, Zone 0, or Class I, Division 1, Hazardous (Classified) Locations.

1.9.2 ATEX Certification



WARNING

- Do not open the cover when energized.
- When the ambient temp. $\geq 70^{\circ}\text{C}$,
Use the heat-resisting cable $\geq 90^{\circ}\text{C}$
- Take care not to generate mechanical sparking when access to the instrument and peripheral devices in hazardous 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

A) ATEX Intrinsically Safe Type

Caution for ATEX Intrinsically Safe Type.



NOTE

Keep the safety use conditions for both 1G and 1D when used in the hazardous gas and dust area.

Note 1. Model YVP110 Advanced Valve Positioner with optional code /KS25 for potentially explosive atmospheres:

- Applicable standard: EN60079-0:2006, EN60079-11:2007, EN60079-26:2007, EN60079-27:2006, EN61241-0:2006, EN61241-1:2004, EN61241-11:2006 and EN60529
- Certificate: KEMA 08ATEX0114 X

Note 2. Ratings

Type of Protection:

II 1G Ex ia IIB/IIC T4

II 1D Ex iaD 20 IP65 T100°C

II 1D Ex tD A20 IP65 T100°C

Maximum Surface Temperature for dust proof.: T100°C

Ambient Temperature Ex ia or Ex iaD:

-40°C to $+60^{\circ}\text{C}$

Ambient Temperature Ex tD: -40°C to $+80^{\circ}\text{C}$

Ambient Humidity: 0 to 100%RH

(No condensation)

Degree of Protection of the Enclosure: IP65

Electrical Parameters:

For Ex ia IIC or Ex iaD

$U_i = 24.0\text{ V}$, $I_i = 250\text{ mA}$, $P_i = 1.2\text{ W}$,

$C_{int} = 1.76\text{ nF}$, $L_{int} = 0\text{ }\mu\text{H}$

or

For Ex ia IIB/ IIC or Ex iaD (FISCO model)

$U_i = 17.5\text{ V}$, $I_i = 380\text{ mA}$, $P_i = 5.32\text{ W}$,

$C_{int} = 1.76\text{ nF}$, $L_{int} = 0\text{ }\mu\text{H}$

For II 1D Ex tD

Input signal: 32 Vdc,

Output current: 17 mA

Note 3. Installation

All wiring shall comply with local installation requirements.

(Refer to the installation diagram)

Note 4. Maintenance and Repair

The instrument modification or parts replacement by other than authorized representative of Yokogawa Electric Corporation is prohibited and will void KEMA Intrinsically safe Certification.

Note 5. Special Conditions for Safe Use

Because the enclosure of the Valve Positioner is made of aluminium, if it is mounted in an area where the use of category 1G apparatus is required, it must be installed such, that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

Once used as apparatus of equipment category 1D in type of protection Ex tD, the valve positioner is no longer suitable as apparatus of equipment category 1G or 1D in type of protection Ex ia or Ex iaD.

Note 6. Installation Instructions

When used in a potentially explosive atmosphere, requiring the use of apparatus of equipment category 1D, suitable certified cable entry devices or certified blanking elements with a degree of ingress protection of at least IP6X according to EN 60529 shall be used and correctly installed.

Note 7. Installation

When used in potentially explosive atmosphere for category 1D, need not use safety barrier.

I.S. values Power supply-field device:

$$P_o \leq P_i, U_o \leq U_i, I_o \leq I_i$$

Calculation of max. allowed cable length:

$$C_{cable} \leq C_o - \sum C_i - \sum C_i \text{ (Terminator)}$$

$$L_{cable} \leq L_o - \sum L_i$$

Number of Devices

The number of devices (max. 32) possible on a fieldbus link depends on factors such as the power consumption of each device, the type of cable used, use of repeaters, etc.

B) ATEX Flameproof Type

Caution for ATEX flameproof type.

Note 1. Model YVP110 Valve Positioner with optional code /KF2 is applicable for potentially explosive atmospheres:

- Applicable standard:
EN60079-0:2009, EN60079-1:2007
- Certificate: KEMA 10ATEX0023 X
- Group: II
- Category: 2G
- Type of Protection and Marking Code:
Ex d IIC, T6 or T5 Gb
- Ambient Temperature: T6; -40 to 65°C
T5; -40 to 80°C

Note 2. Electrical Data

- Supply voltage: 32 V DC max.
- Output signal: 17 mA DC

Note 3. Installation Instructions

- The cable glands and blanking elements shall be certified in type of protection flameproof enclosure "d" suitable for the conditions of use and correctly installed.
- With the use of conduit entries a sealing device shall be provided either in the flameproof enclosure or immediately on the entrance thereto.
- To maintain the degree of ingress protection IP65 according to EN 60529 special care must be taken to avoid water entering the breathing and draining device when the valve positioner is mounted with the feedback shaft in the upright position.

Note 4. Operation

- Keep strictly the WARNING on the label on the positioner.
AFTER DE-ENERGIZING, DELAY 5 MINUTES BEFORE OPENING.
WHEN THE AMBIENT TEMP. $\geq 70^\circ\text{C}$,
USE HEAT-RESISTING CABLE & CABLE GLAND $\geq 90^\circ\text{C}$.

Note 5. Maintenance and Repair

- The instrument modification or parts replacement by other than authorized representative of Yokogawa Electric Corporation is prohibited and will void KEMA Flameproof Certification.

C) ATEX Intrinsically safe (Ex ic)/Type n (Ex nA)

Note 1. Model YVP110 Advanced Valve Positioner with optional code /KN25

- Applicable standard:
EN60079-0:2009/EN60079-0:2012(Ex ic/Ex nA), EN60079-11:2012(Ex ic)
EN60079-15:2010(Ex nA)
- Ex ic: II 3G Ex ic IIC T4 Gc (Intrinsically safe)
- Ex nA: II 3G Ex nA IIC T4 Gc (Non-sparking)
- Ambient Temperature: -30 to 75°C
- Ambient Humidity:
0 to 100%RH (No condensation)
- Enclosure: IP65

Note 2. Electrical Data

- Ex ic: $U_i = 32 \text{ V}$, $C_i = 3.52 \text{ nF}$, $L_i = 0 \text{ }\mu\text{H}$
- Ex nA: 32 V DC MAX

Note 3. For the installation of this positioner, once a particular declared type of protection is selected, the other type of protection cannot be used. The installation must be in accordance with the description about type of protection in this instruction manual.

Note 4. In order to avoid confusion, unnecessary marking is crossed out on the label other than the selected type of protection when positioner is installed.

Note 5. Installation Instructions

- Cable glands, adapters 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.
- To maintain the degree of protection IP65 according to IEC 60529, special care must be taken to avoid water.

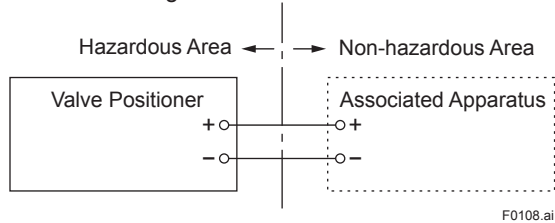
Note 6. Maintenance and Repair

- The instrument modification or parts replacement by other than authorized representative of Yokogawa Electric Corporation is prohibited and will void ATEX Ex ic and Ex nA.

Note 7. Ex ic Installation

- All wiring shall comply with local installation requirements (refer to the installation diagram)

Installation Diagram



Electrical Data: $U_i = 32\text{ V}$
 $C_i = 3.52\text{ nF}$
 $L_i = 0\text{ }\mu\text{H}$

Note 8. Ex ic Specific Conditions of Use

**WARNING**

- 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.
- When the lightning protector option is specified (/A), the apparatus is not capable of withstanding the 500V insulation test required by EN60079-11. This must be taken into account when installing the apparatus.
- WHEN THE AMBIENT TEMP. $\geq 70^\circ\text{C}$, USE THE HEAT-RESISTING CABLE AND CABLE GRAD $\geq 90^\circ\text{C}$
- POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE USER'S MANUAL

Note 9. Ex nA Installation

- Screws of terminals for field wiring connections shall be tightened with specified torque values: 1.2 N·m

**WARNING**

When using a power supply not having a nonincendive circuit, please pay attention not to ignite in the surrounding flammable atmosphere. In such a case, we recommend using wiring metal conduit in order to prevent the ignition.

Note 10. Ex nA Specific Conditions of Use

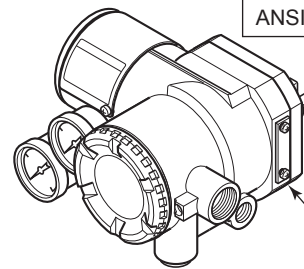
**WARNING**

- 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.
- WHEN THE AMBIENT TEMP. $\geq 70^\circ\text{C}$, USE THE HEAT-RESISTING CABLE AND CABLE GRAD $\geq 90^\circ\text{C}$
- POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE USER'S MANUAL
- DO NOT OPEN IN AN EXPLOSIVE ATMOSPHERE WHEN ENERGIZED

(2) Electrical Connection

The type of electrical connection is stamped near the electrical connection port according to the following marking.

Screw Size	Marking
ISO M20 × 1.5 female	M
ANSI 1/2 NPT female	N



Location of the marking

F0109.ai

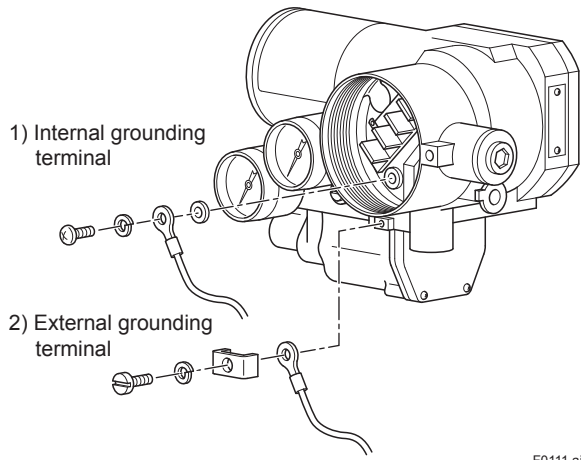
(3) Installation

**WARNING**

All wiring shall comply with local installation requirement and local electrical code.

The grounding terminals are located on the inside and outside of the terminal area.

Connect the cable to grounding terminal in accordance with wiring procedure 1) or 2).



F0111.ai

Wiring Procedure for Grounding Terminals

(4) Operation



WARNING

- OPEN CIRCUIT BEFORE REMOVING COVER. INSTALL IN ACCORDANCE WITH THIS USER'S MANUAL
- Take care not to generate mechanical sparking when access to the instrument and peripheral devices in hazardous 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.

- Carbon disulphide is excluded for enclosures under gas atmosphere.

(5) Maintenance and Repair

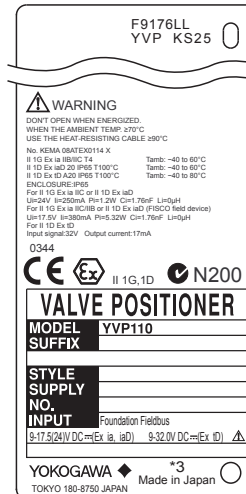


WARNING

The instrument modification or parts replacement by other than authorized Representative of Yokogawa Electric Corporation is prohibited and will void the certification.

(6) Name Plate

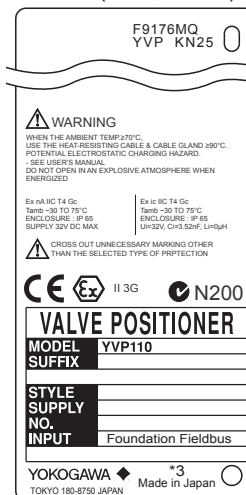
- Name plate for intrinsically safe type



- Name plate for flameproof type



- Name plate for /KN25 (Ex ic, Ex nA)



F0110.ai

MODEL: Specified model code.

SUFFIX: Specified suffix code.

STYLE: Style code.

SUPPLY: Air supply pressure.

NO.: Serial number and year of production*1.

INPUT: Type of electrical input (FOUNDATION FIELDBUS).

YOKOGAWA ♦ TOKYO 180-8750 JAPAN:

The manufacturer name and the address*2.

- *1: The third figure from the last of the serial number shows the year of production. For example, the production year of the product engraved in "NO." column on the name plate as follows is 2001.

12A220566 108

The year 2001

- *2: "180-8750" is a zip code which represents the following address.

2-9-32 Nakacho, Musashino-shi, Tokyo Japan

- *3: The production year is shown on the place of *3 (for example "2013.02").

6. Maintenance

6.1 General

The modular structure of the YVP110 increases the ease of maintenance work. This chapter describes cleaning and part replacement procedures that should be done for maintenance of the YVP110.

The YVP110 is a precision instrument; read the following carefully when carrying out maintenance.

For calibrations, see Chapter 5.



CAUTION

Precautions for ATEX, and JIS flameproof type instruments

- Flameproof type instruments must be, as a rule, removed to a non-hazardous area for maintenance and be disassembled and reassembled to the original state. For details, see "Installation and Operating Precautions for JIS Flameproof Equipment" later in this manual.
- On the flameproof type instruments the terminal cover is locked by an Allen head bolt (shrouding bolt). When a shrouding bolt is driven clockwise by an Allen wrench, it is going in and cover lock is released, and then the cover can be opened. When a cover is closed it should be locked by a shrouding bolt without fail. Tighten the shrouding bolt to a torque of 0.7 N·m.

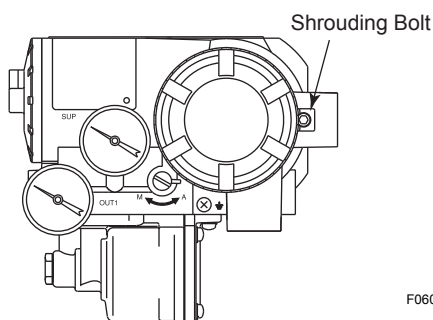


Figure 6.1 Shrouding Bolts

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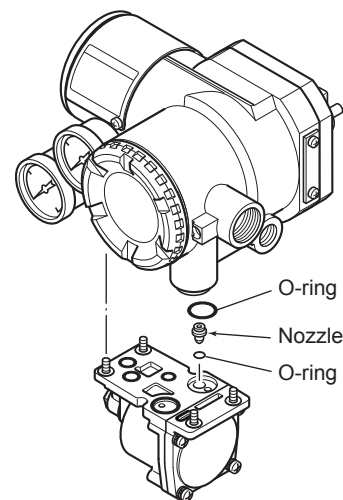
6.2 Periodic Inspections

To maintain problem-free plant operation, periodic inspections are essential. At each periodic inspection, be especially careful when ensuring that:

- No external damage can be seen.
- No leakage from the YVP110 or the piping around it can be detected.
- No build up in the drain, or dust or oil adhering to the air supply line has occurred.

6.2.1 Cleaning the Fixed Nozzle

The fixed nozzle of the YVP110 is attached to the control relay's surface that engages the YVP110's main structure (see Figure 6.2). Detach the control relay from the main structure of YVP110 by following the instruction shown in 6.3.1. Thread a wire with a 0.25-mm diameter through the nozzle to clean it. After cleaning the nozzle, place the nozzle and O-ring at the original position and attach the control relay again.



F0602.ai

Figure 6.2 Cleaning the Nozzle



CAUTION

All the O-rings used for the sealing of pneumatic signal circuits are made of silicon rubber. The sealing capability is degraded if general silicon grease is applied. When applying grease to a sealing part, use a type of grease compatible with silicon rubber, such as fluoride grease and grease for silicon rubber.

7. Standard Specifications

■ Standard Specifications

Applicable Control Valve:

Linear or Rotary Motion Control Valve
(Diaphragm Actuator and Cylinder)

Functions:

Function Blocks:

AO: One Analog Output
DI: Two Discrete Inputs
OS: One Splitter Block
IS: One Input Selector
AR: One Arithmetic
PID: One or Two PID Control Functions
(Optional)



NOTE

IS, AR and PID (2 blocks) function blocks are applicable for only software download function (/EE).

Link Master Function

Pressure Sensor (Optional)

Flow Characterization Feature:

Linear
Equal Percentage (50 : 1)
Equal Percentage (30 : 1)
Quick Opening
Camflex Percentage
Customer Characterization (10 segments)

Auto Tuning Function

Valve Position Detecting Function

Continuous Diagnostics Function:

Total Travel
Number of Cycles
Time Open/Time Close/Time Near Close

Housing Materials:

Case: Aluminum die-cast
Paint: Polyurethane resin-baked finish
Color: Deep-sea moss-green
(Munsell 0.6GY3.1/2.0 or equivalent)

Communication:

Digital: FOUNDATION fieldbus

Supply Voltage:

9 to 32V DC for general use and flameproof type
9 to 24V DC for intrinsically safe type Entity model
9 to 17.5V DC for intrinsically safe type FISCO model

Conditions of Communication Line

Supply Voltage: 9 to 32V DC

Current Draw:

Steady state: 17 mA max.

Software download state: 41 mA max.

Output Signals and Pressure Gauge Scale:

No gauge in standard. Pressure gauge can be selected as option. The supply pressure unit on the name plate for non-gauge model is Pa.

Diaphragm, Single acting Cylinder			
Calibration unit	Supply Air Pressure	Pressure Gauge Scale	
		Supply Air	Output Signal
Pa	140 to 400 kPa	400 kPa	400 kPa
kgf/cm ²	1.4 to 4 kgf/cm ²	4 kgf/cm ²	4 kgf/cm ²
bar	1.4 to 4 bar	4 bar	4 bar
psi	20 to 60 psi	60 psi	60 psi

Double acting Cylinder			
Calibration unit	Supply Air Pressure	Pressure Gauge Scale	
		Supply Air	Output Signal
Pa	200 to 700 kPa	1 MPa	1 MPa
kgf/cm ²	2 to 7 kgf/cm ²	10 kgf/cm ²	10 kgf/cm ²
bar	2 to 7 bar	10 bar	10 bar
psi	30 to 105 psi	150 psi	150 psi

Pressure Gauge Case:

Stainless steel JIS SUS 304

Normal Operating Conditions:

Air Supply pressure:

Single Acting Actuator:

20 to 60 psi (140 to 400 kPa)

Double Acting Actuator:

30 to 100 psi (200 to 700 kPa)

Vibration Limit: 4 mm at 5 to 15 Hz;

2G at 15 to 2000 Hz

Shock limit: 10G

Manual Operation:

Available using Auto/Manual (A/M) transfer switch

Zero Adjustment Range:

–15 to 85% of span

■ Optional Specifications (For Explosion Protected types)

Item	Description	Code
Explosionproof type	CSA Explosionproof Approval*1 Applicable standard: C22.2 No. 0, No. 0.4, No. 0.5, No. 25, No. 30, No. 94, No. 1010.1 Certificate: 1186507 Explosionproof for Class I, Division 1, Class B, C & D; Class II, Groups E, F & G., Class III. Enclosure Type: NEMA4X Temp. Class: T5/T6 Amb.Temp.: -40 to 82°C(-40 to 180°F) for T5, -40 to 75°C(-40 to 167°F) for T6	CF1
	FM Explosionproof Approval*1 Applicable standard: FM3600, FM3615, FM3810, ANSI/NEMA250 Explosion proof for Class 1, Division 1, Groups A, B, C and D; Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G Enclosure Type: NEMA 4X Temp. Class: T6 Amb. Temp.: -40 to 80°C (-40 to 176°F)	FF1
	FM Intrinsically Safe, Nonincendive Approval*1 Applicable standard: FM3600, FM3610, FM3611, FM3810, ANSI/NEMA250 IS/ I, II, III/1/ABCDEF/G/T4 Ta=60°C; Type 4X I/0/AEx ia/IIC/T4 Ta=60°C; Type 4X, NI/II/2/ABCD/T4 Ta=60°C; Type 4X, I/2/IIC/T4 Ta=60°C; Type 4X, S/II/2/FG/T4 Ta=60°C; Type 4X, S/III/2/T4 Ta=60°C; Type 4X Entity Parameters: Groups A, B, C, D, E, F, and G and Group IIC Vmax=24 V, Imax=250 mA, Pi=1.2 W, Ci=1.76 nF, Li=0 mH FISCO Parameters: Groups A, B, C, D, E, F, and G and Group IIC Vmax=17.5 V, Imax=360 mA, Pi=2.52 W, Ci=1.76 nF, Li=0 mH Groups C, D, E, F, and G and Group IIB Vmax=17.5 V, Imax=380 mA, Pi=5.32 W, Ci=1.76 nF, Li=0 mH Nonincendive Field Wiring Parameters: Groups A, B, C, D, E, F, and G and Group IIC: Vmax=32 V, Ci=1.76 nF, Li=0 mH	FS15
	FM Nonincendive Approval for /EE Software download *5 Applicable standard: FM3600, FM3611, FM3810 Class I, Division 2, Group A, B, C, & D Class II, Division 2, Group F & G and Class III, Division 1 Class I, Zone 2, Group IIC in Hazardous (Classified) locations Enclosure: "NEMA4X", Temp. Cl.: T4, Amb. Temp. -40 to 60°C (-40 to 140°F) Vmax.=32V, Ci=3.52 nF, Li=0μH	FN15
	ATEX Flameproof Approval*2 Applicable standard: EN60079-0:2009, EN60079-1:2007 Certificate: KEMA 10ATEX0023 X II 2G Ex d IIC T6 or T5 Gb Amb. Temp.: -40 to 65°C (-40 to 149°F) for T6, -40 to 80°C (-40 to 176°F) for T5 Special fastener: Class A2-50 or more	KF2
	ATEX Intrinsically Safe Approval*2 Applicable standard: EN60079-0:2006, EN60079-11:2007, EN60079-26:2007, EN60079-27:2006, EN61241-0:2006, EN61241-1:2004, EN61241-11:2006 and EN60529 Certificate: KEMA 08ATEX0114 X II 1G Ex ia IIB/IIC T4 II 1D Ex iaD 20 IP65 T100°C II 1D Ex tD A20 IP65 T100°C Maximum Surface Temperature for dust proof: T100°C Ambient Temperature for Ex ia/Ex iaD: -40 to 60°C (-40 to 140°F) Ambient Temperature for Ex tD: -40 to 80°C (-40 to 176°F) Enclosure: IP65 For Ex ia IIC or Ex iaD: Ui=24.0 V, li=250 mA, Pi=1.2 W, Ci=1.76 nF, Li=0 μH For Ex ia IIB/ IIC or Ex iaD (FISCO model): Ui=17.5 V, li=380 mA, Pi=5.32 W, Ci=1.76 nF, Li=0 μH For II 1D Ex tD: Input signal: 32 Vdc, Output current: 17 mA	KS25
	ATEX Intrinsically safe (Ex ic) / Type n (Ex nA)*2*5 Applicable standard: EN60079-0:2009/EN60079-0:2012(Ex ic/Ex nA), EN60079-11:2012(Ex ic), EN60079-15:2010(Ex nA) Amb. Temp: -30 to 75°C (-22 to 167°F), Enclosure: IP65 Ex ic: II 3G Ex ic IIC T4 Gc (Intrinsically safe) Ui=32 V, Ci=3.52 nF, Li=0 μH Ex nA: II 3G Ex nA IIC T4 Gc (Non-sparking) 32 V DC MAX.	KN25
	TIIS Flameproof Approval*3 Certificate: TC15453, TC15452 for option code /BP Ex d IIC T6 Amb. Temp.: -20 to 60°C	JF3
Attached flameproof packing adapter*4	Electrical connection: G1/2 female Applicable cable: O.D. 8 to 12 mm	G11

Relative Index	Index	Parameter Name	Default (factory setting)	Write	Description
33	8033	ROUT_IN	—		Remote control output value set from a computer, etc.
34	8034	SHED_OPT	1		Defines the mode shedding actions, namely, the changes to be made to MODE_BLK.target and MODE_BLK.actual when (1) the value of RCAS_IN.status becomes Bad if MODE_BLK.actual = RCAS, or when (2) the value of ROUT_IN.status becomes Bad if MODE_BLK.actual = ROUT.
35	8035	RCAS_OUT	—	—	Remote setpoint sent to a host computer, etc.
36	8036	ROUT_OUT	—	—	Remote control output value
37	8037	TRK_SCALE	0-100%	Man	Upper and lower scale limits used to convert the output tracking value (TRK_VAL) to non-dimensional.
38	8038	TRK_IN_D			Switch for output tracking
39	8039	TRK_VAL			Output tracking value. When MODE_BLK.actual = LO, the value scaled from the TRK_VAL value is set in OUT.
40	8040	FF_VAL			Feed-forward input value. The FF_VAL value is scaled to a value with the same scale as for OUT, multiplied by the FF_GAIN value, and then added to the output of the PID computation.
41	8041	FF_SCALE	0-100%	Man	Scale limits used for converting the FF_VAL value to a non-dimensional value
42	8042	FF_GAIN	0	Man	Gain for FF_VAL
43	8043	UPDATE_EVT	—	—	Shows the contents of an update event upon occurrence.
44	8044	BLOCK_ALM	—	—	Shows the contents of a block alarm upon occurrence.
45	8045	ALARM_SUM	Enable		Shows the alarm summary (current alarm statuses, acknowledged/unacknowledged states, masking states)
46	8046	ACK_OPTION	0XFFFF		Selects whether or not the alarms related to the DI block are automatically self-acknowledged.
47	8047	ALARM_HYS	0.5%		Hysteresis for alarm detection and resetting to prevent each alarm from occurring and recovering repeatedly within a short time
48	8048	HI_HI_PRI	0		Priority order of HI_HI_ALM alarm
49	8049	HI_HI_LIM	+INF		Setting for HI_HI_ALM alarm
50	8050	HI_PRI	0		Priority order of HI_ALM alarm
51	8051	HI_LIM	+INF		Setting for HI_ALM alarm
52	8052	LO_PRI	0		Priority order of LO_ALM alarm
53	8053	LO_LIM	+INF		Setting for LO_ALM alarm
54	8054	LO_LO_PRI	0		Priority order of LO_LO_ALM alarm
55	8055	LO_LO_LIM	+INF		Setting for LO_LO_ALM alarm
56	8056	DV_HI_PRI	0		Priority order of DV_HI_ALM alarm
57	8057	DV_HI_LIM	+INF		Setting for DV_HI_ALM alarm
58	8058	DV_LO_PRI	0		Priority order of DV_LO_ALM alarm
59	8059	DV_LO_LIM	+INF		Setting for DV_LO_ALM alarm
60	8060	HI_HI_ALM	—	—	Alarm that is generated when the PV value has exceeded the HI_HI_LIM value and whose priority order* is defined in HI_HI_PRI. * Priority order: Only one alarm is generated at a time. When two or more alarms occur at the same time, the alarm having the highest priority order is generated. When the PV value has decreased below [HI_HI_LIM - ALM_HYS], HI_HI_ALM is reset.
61	8061	HI_ALM	—	—	As above
62	8062	LO_ALM	—	—	As above Reset when the PV value has increased above [LO_LIM + ALM_HYS].
63	8063	LO_LO_ALM	—	—	As above
64	8064	DV_HI_ALM	—	—	An alarm that is generated when the value of [PV - SP] has exceeded the DV_HI_LIM value. Other features are the same as HI_HI_ALM.
65	8065	DV_LO_ALM	—	—	Alarm that is generated when the value of [PV - SP] has decreased below the DV_LO_LIM value. Other features are the same as LO_LO_ALM.

Appendix 4. Software Download

A4.1 Benefits of Software Download

This function enables you to download software to field devices via a FOUNDATION Fieldbus to update their software. Typical uses are to add new features such as function blocks and diagnostics to existing devices, and to optimize existing field devices for your plant.

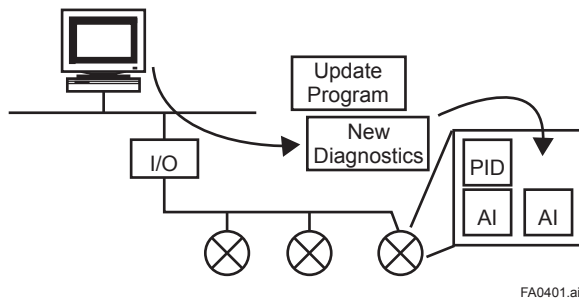


Figure A4.1 Concept of Software Downloading

A4.2 Specifications

Steady-state current: Max. 17 mA

Current Draw (Steady-state): 17 mA (max)

Current Draw (Software Download state):
41 mA (max)

Based on Fieldbus Foundation Specification
Download class: Class 1



NOTE

Class 1 devices can continue the specified measurement and/or control actions even while software is being downloaded to them. Upon completion of a download, however, the devices will be reset internally to make the new, downloaded software take effect, and this will halt fieldbus communication and function block executions for about one minute.

A4.3 Preparations for Software Downloading

For software downloading, you need to prepare the following:

- Software download tool
- Software for downloading file for each of the target field devices

For the software download tool, use only a program developed for that purpose. For details, see the software's User's Manual.



CAUTION

Do not hook up the software download tool to a fieldbus segment while the plant is in operation, as it may temporarily disturb the communication. Always connect the tool before starting operation.

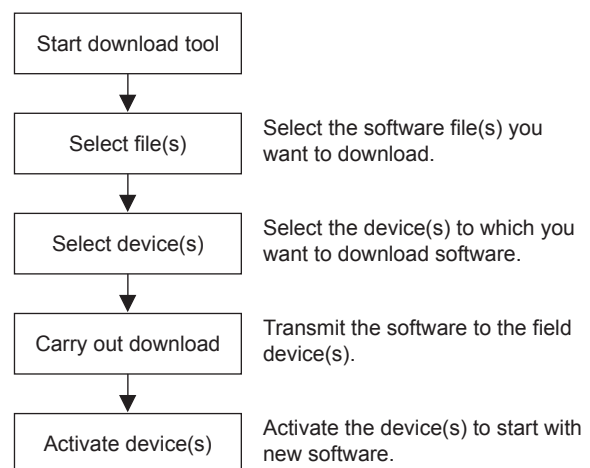


NOTE

The download tool can not execute downloading during other system connects to the system/network management VFD of the device.

A4.4 Software Download Sequence

The flowchart below outlines the software download procedure. Although the time taken for the entire procedure varies depending on the size of the field bus device's software, it generally take about 20 minutes where there is a one-to-one connection between a fieldbus device and download tool, and longer when multiple field devices are connected to the fieldbus.



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Figure A4.2 Flow of Software Download Procedure