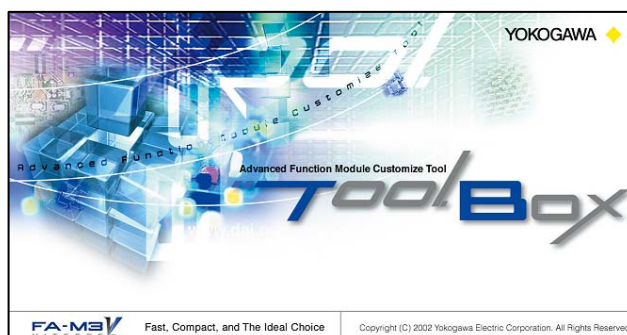


Technical Information

TI 34M06H55-04E

Positioning Module (F3YP22/24/28)
ToolBox for Positioning Module (SF663-MCW)
New Products Introduction

FA-M3V V I T E S S E™ Leading Edge Controller











www.yokogawa.com/itc

- ⇒ Positioning Module(multi-channel pulse output)
(F3YP22-0P/F3YP24-0P/F3YP28-0P)
- ⇒ ToolBox for Positioning Module(for F3YP22/24/28)
(SF663-MCW)
- ⇒ New Products Summary/Instruction Manuals
- ⇒ Differences from Positioning Module F3YP14/18-0N
– Precaution of migration to new products

Positioning Module(multi-channel pulse output)
F3YP22-0P/F3YP24-0P/F3YP28-0P



	Pulse Output	Communication	Analog Output
Single function PTP (2/4/8/15 Axes)	F3YP22/24/28 • 2Axes/4Axes/8Axes • Output Pulse Rate : 7.996Mpps • Start Up time : 0.04ms~ • Control Period : 0.125ms • Pulse Counter : 1ch Released 2013/01 	F3NC96-0N/F3NC97-0N • Built-in MECHATROLINK-II/-III interface- Up to 15 axes per module • High-speed, high-throughput communication Transmission rate: 100Mbps Cycle time: 0.25ms for 4 axes (for F3NC97-0N) 2004/02 2009/07 	
Advanced function PTP (1/2/4Axes)	F3NC32-0N/F3NC34-0N • 2 or 4 axes per module - Max. pulse rate: 5Mpps - Linear, circular, helical interpolation - Built-in pulse counter & general I/O contacts 2004/08 		F3NC51-0N/F3NC52-0N - Speed reference voltage output - Linear/circular interpolation 1997/08 
Motion	Techno's PLMC40 - Up to 4 axes per module - Precise motion control - Synchronous control, electronic cam, contour control, multi-axial interpolation 	Techno's PLMC-MII EX - Built-in MECHATROLINK-II interface - Up to 16 axes per module - Precise motion control - Synchronous control, electronic cam, contour control, multi-axial interpolation  	F3NC61-0N - for torque control - Analog output (2ch), analog input, built-in pulse counter 2000/10 

F3YP22/24/28 Product Overview

- Positioning modules mounted onto the base module of an FA-M3 range free controller.
- Generate a position control path according to commands from the CPU module and output position reference as pulse trains.
- Up to two, four and eight axes control by F3YP22, 24 or 28 respectively
- For driving servo motors or drivers, as well as stepper motors or drivers in position control applications with higher frequency pulse.



Positioning Module (Multi Channel Pulse Output)
F3YP22-0P / F3YP24-0P / F3YP28-0P

Offer the accelerating capability for electronics manufacturing equipment.

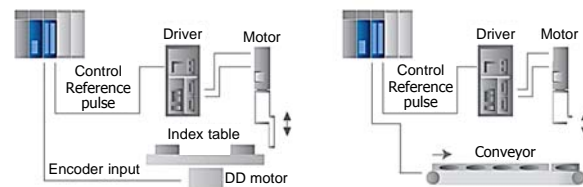
Higher Speed and Shorter Control Period

- Shorter start up time
- Shorter control cycle
- Higher output pulse frequency
- Faster READ/WRITE command(for F3SP7□)
 - Application speeding example
 - LED testing machine/LED taping machine
 - Cycle time:0.166 s/pcs. → 0.1 s/pcs.
 - Connector Manufacturing equipment
 - Cycle time:1,000 rpm → 2,000 rpm
 - Coater
 - Line speed :30 m/min → 80 m/min



Embedded High-speed Pulse Counter with Positioning Functions

- Fine positioning and speed detection
- Stable and accurate control by counter-triggered positioning and high-speed pulse output
- Synchronized control with peripheral devices by cam-operated switch



Higher Speed and Shorter Control Period

Shortening cycle time of positioning

Shorter Startup Time

- Startup time
 - 40μs for 1axis
 - 90μs for 4axes
 - 150μs for 8axes
- 125μs or less delay even with other axes in motion.
- 1μs start up time enabled for external trigger

Shorter Control Cycle (1ms→0.125ms)

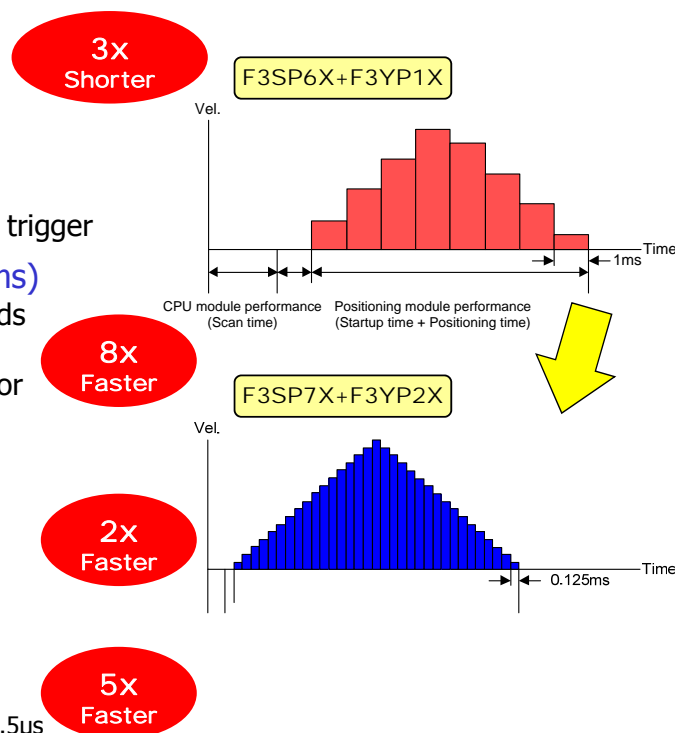
- Smoother output positioning commands
- Stable motor control
- Quick response to change speed and/or target position during operation
- High speed update of status (complete position, current position)

Higher Pulse Frequency

- Output pulse rate: up to 7.996Mpps.

READ/WRITE Command

- Enabled faster scan time (for F3SP7 □)
 - READ 11words:shortened from 64.6μs to 12.5μs



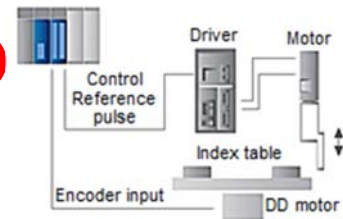
Embedded High-speed Pulse Counter

Capable for Various applications

Accurate Detection by High-speed Pulse Counter

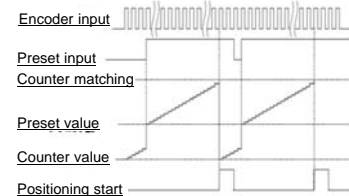
- 1 channel pulse input capable up to 8Mpps
 - Linear counter/ Ring counter
 - 3 high-speed contact inputs and two high-speed contact outputs for a counter.
 - Cam-operated switch function: 16 points
 - Refresh cycle: from 1μs

2x more



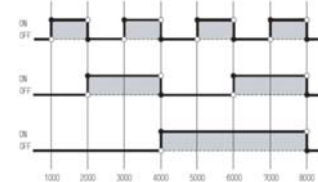
Counter-triggered start and High-speed contact output reducing control dispersion and delay

- Immediate main axis or an external device detection enables quicker and more accurate positioning
- Free from scanning time to control, contribute to produce stable quality product



Enable to synchronize with external devices by cam operated switch function

- Detect the main axis position, start external devices quickly
- Enable to accelerate scan time and shorten ladder programs

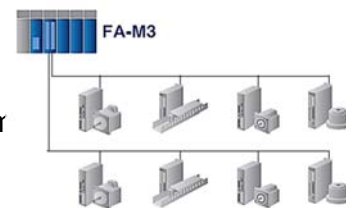


8-axes max. for Single Module, Cutting Space and Cost

Reduces cost of your equipment

Most suitable for multi axial positioning system

- Capable of up to 8axes control by single module
Reduces module cost per one-axis
- Enabled to build 128 axes maximum positioning system by using 16modules of 8axes model(F3YP28-0P)

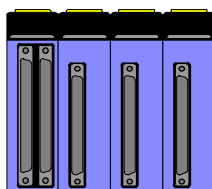


Line up 3 models, 2-axes/4-axes/8-axes

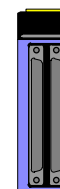
- New 2-axes model with compatible software interface
- 2-axes model for small applications.

High-speed pulse counter/High-speed input-output contact

- All-in-one module including pulse counter and DIO
- Multi-functions built-in single slotted module, save more space and costs



- Positioning module(8axes)
- Pulse counter module(1ch.)
- Output module(2points)
- Input module(3points)

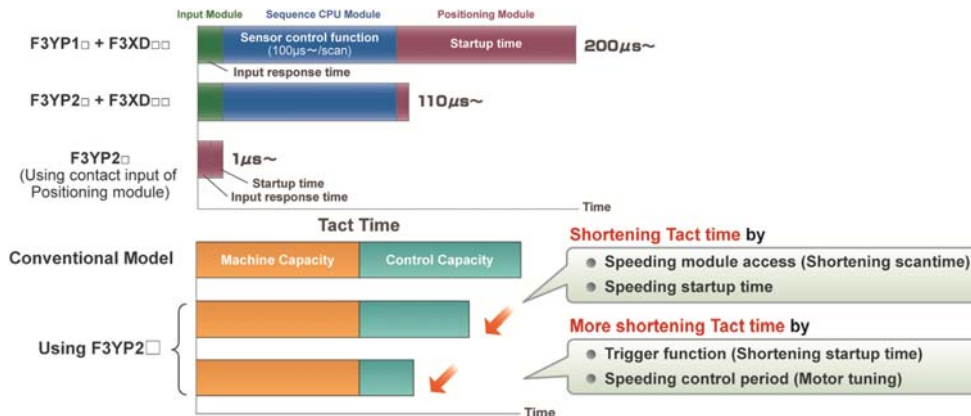
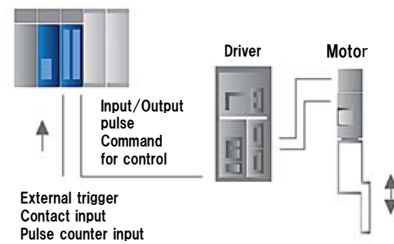


Space 1/4
Costs 2/3

Features: New functions for reducing equipment tact time

Quick startup and stop by trigger function

- Startup time available at 1μs by direct trigger from external devices with preset destination or speed.
 - Software trigger
 - Contact input trigger
 - Counter status trigger
 - Counter zone coincidence trigger
 - Positioning Completed input relay trigger



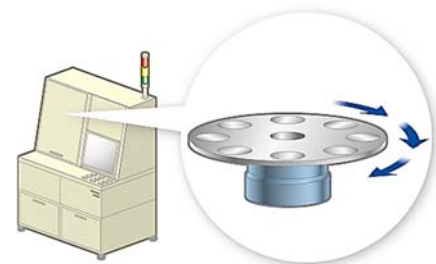
Features: New functions for reducing equipment sets up

New control mode/operation method

- Speed Control/ Speed-Position Switchover Control
 - Supports Speed control and Speed-Position Switchover Control in addition to Positioning Control - PTP operation, multi-axis linear interpolation
 - Effective for infinite rotation of main axis control

New Position Data Table Operation

- Running upon the preset position-speed data record registered on F3YP2□.
- For equipment using repeated movement
Position data: 10 data per axis



Record No.	Target position mode	Target position (pulse)	Acceleration/Deceleration mode	Target speed (pulse/s)	Acceleration time (ms)	Deceleration time (ms)	Startup speed (pulse/s)
1	0	0	1	2,000	100	100	0
2	1	131,072	1	2,000	100	100	0
3	0	32,767	1	10,000	200	200	0
4							
:							
9							
10							

Item		Specifications
		F3YP2□-0P
Control	Number of control axes	2-axes, 4-axes, 8-axes
	Control method	Open-loop control using position reference pulse output
	Output pulse type	RS-422A compliant differential line driver (ISL32172E or equivalent) Pulse type selectable for each axis: CW/CCW pulse, travel/direction pulse, and phase A/phase B pulse
	Output pulse rates	- Using servo motor CW/CCW : 7,996,000 Travel/direction : 7,996,000 Phase A/B(x4) : 7,996,000 Phase A/B(x2) : 3,998,000 Phase A/B(x1) : 1,999,000 - Using stepper motor CW/CCW : 1,999,000 Travel/direction : 1,999,000 Phase A/B(x4) : 1,999,000 Phase A/B(x2) : 999,500 Phase A/B(x1) : 499,750
	Control cycle time	0.125 ms
External contact input	4 inputs per axis (origin input, forward limit input, reverse limit input, encoder Z-phase input) (Digital filter of inputs are configurable independently, forward limit input and reverse limit input are assignable to general purpose input)	
External contact output	1 output per axis (deviation pulse clear signal)	

No.1 in Industry* (2x more)

No.1 in industry* (8x more)

*1 Up to 125 μs delay may be added if another axis is in motion.

Item		Specifications
		F3YP2□-0P
Counter	Number of channels	1
	Input pulse type	CW/CCW pulse, travel/direction pulse, phase A/phase B
	Input pulse rate (pulse/s)	CW/CCW : 2,000,000 (pulse/s) Travel/direction : 2,000,000 (pulse/s) Phase A/B (x4) : 8,000,000 (pulse/s) Phase A/B (x2) : 4,000,000 (pulse/s) Phase A/B (x1) : 2,000,000 (pulse/s)
	Operation mode	Linear counter mode, Ring counter mode
	Counter functions	Counter enable/disable, Counter preset, Counter matching, Electrical cam switch, Counter latch, Speed measurement, Positioning start/stop by external trigger input, counter matching
	Z-phase input for counter	1 input (assignable to counter latch input, counter preset input, etc.)
	External contact input for counter	3 inputs (assignable to latch input, preset input, enable input, external trigger input, etc.)
	External contact output for counter	2 outputs (assignable to counter matching output, cam switch output, etc.)
Data backup	Flash ROM (100,000 times rewritable)	
Current consumption (5 V DC)	F3YP28-0P : 280 mA F3YP24-0P : 240 mA F3YP22-0P : 210 mA	
External power supply (for pulse output / for counter contact output)	24V DC F3YP28-0P : 200 mA (190mA / 10mA) F3YP24-0P : 110 mA (100mA / 10mA) F3YP22-0P : 70 mA (60mA / 10mA)	
External wiring	Connector for positioning control F3YP28-0P : 48 pins connector x 2 F3YP24-0P : 48 pins connector x 1 F3YP22-0P : 48 pins connector x 1 Connector for pulse counter : 14 pins connector x 1	
External dimensions	28.9 (W) × 100 (H) × 83.2 (D) mm ⁴	
Weight	F3YP28-0P : 175g, F3YP24-0P : 110g, F3YP22-0P : 110g	

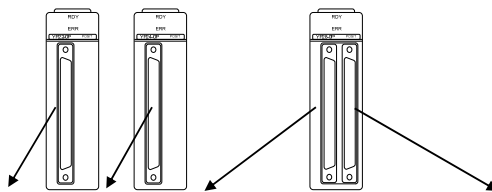
No.1 in Industry* (2x more)

*2 : Not including protrusions (see the external dimension diagram for more details).

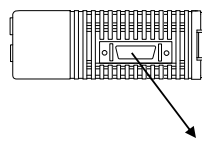
*3 : When you need to send a counter status change (e.g., counter coincidence and preset input) to the CPU module by an input relay interrupt, you can use Stop Immediately ACK relays for positioning functions by assigning them to the input relays for counters.

*4 : When using the module as a UL approved product, use limited voltage/current circuits or a Class 2 power supply for the external power supply.

● Positioning connector



● Counter connector



24b	Axis 4 Z-phase input (-)	24a	Axis 2 Z-phase input (-)
23b	Axis 4 Z-phase input (+)	23a	Axis 2 Z-phase input (+)
22b	Axis 4 pulse output A (+)	22a	Axis 2 pulse output A (+)
21b	Axis 4 pulse output A (-)	21a	Axis 2 pulse output A (-)
20b	Axis 4 pulse output B (+)	20a	Axis 2 pulse output B (+)
19b	Axis 4 pulse output B (-)	19a	Axis 2 pulse output B (-)
18b	Axis 4 deviation pulse clear	18a	Axis 2 deviation pulse clear
17b	Pulse output GND ²	17a	Pulse output GND ²
16b	Axis 3 Z-phase input (-)	16a	Axis 1 Z-phase input (-)
15b	Axis 3 Z-phase input (+)	15a	Axis 1 Z-phase input (+)
14b	Axis 3 pulse output A (+)	14a	Axis 1 pulse output A (+)
13b	Axis 3 pulse output A (-)	13a	Axis 1 pulse output A (-)
12b	Axis 3 pulse output B (+)	12a	Axis 1 pulse output B (+)
11b	Axis 3 pulse output B (-)	11a	Axis 1 pulse output B (-)
10b	Axis 3 deviation pulse clear	10a	Axis 1 deviation pulse clear
9b	Deviation pulse clear GND ²	9a	Deviation pulse clear GND ²
8b	External power supply 24 Vin ¹	8a	External power 24 Vin (GND) ¹
7b	Axis 4 origin input	7a	Axis 2 origin input
6b	Axis 4 forward limit input	6a	Axis 2 forward limit input
5b	Axis 4 reverse limit input	5a	Axis 2 reverse limit input
4b	Axis 3 origin input	4a	Axis 1 origin input
3b	Axis 3 forward limit input	3a	Axis 1 forward limit input
2b	Axis 3 reverse limit input	2a	Axis 1 reverse limit input
1b	Contact input common ²	1a	Contact input common ²

24b	Axis 8 Z-phase input (-)	24a	Axis 6 Z-phase input (-)
23b	Axis 8 Z-phase input (+)	23a	Axis 6 Z-phase input (+)
22b	Axis 8 pulse output A (+)	22a	Axis 6 pulse output A (+)
21b	Axis 8 pulse output A (-)	21a	Axis 6 pulse output A (-)
20b	Axis 8 pulse output B (+)	20a	Axis 6 pulse output B (+)
19b	Axis 8 pulse output B (-)	19a	Axis 6 pulse output B (-)
18b	Axis 8 deviation pulse clear	18a	Axis 6 deviation pulse clear
17b	Pulse output GND ²	17a	Pulse output GND ²
16b	Axis 7 Z-phase input (-)	16a	Axis 5 Z-phase input (-)
15b	Axis 7 Z-phase input (+)	15a	Axis 5 Z-phase input (+)
14b	Axis 7 pulse output A (+)	14a	Axis 5 pulse output A (+)
13b	Axis 7 pulse output A (-)	13a	Axis 5 pulse output A (-)
12b	Axis 7 pulse output B (+)	12a	Axis 5 pulse output B (+)
11b	Axis 7 pulse output B (-)	11a	Axis 5 pulse output B (-)
10b	Axis 7 deviation pulse clear	10a	Axis 5 deviation pulse clear
9b	Deviation pulse clear GND ²	9a	Deviation pulse clear GND ²
8b	External power supply 24 Vin ¹	8a	External power 24 Vin (GND) ¹
7b	Axis 8 origin input	7a	Axis 6 origin input
6b	Axis 8 forward limit input	6a	Axis 6 forward limit input
5b	Axis 8 reverse limit input	5a	Axis 6 reverse limit input
4b	Axis 7 origin input	4a	Axis 5 origin input
3b	Axis 7 forward limit input	3a	Axis 5 forward limit input
2b	Axis 7 reverse limit input	2a	Axis 5 reverse limit input
1b	Contact input common ²	1a	Contact input common ²

1	Counter input A (+)	8	Counter contact output 1
2	Counter input A (-)	9	External power supply 24 Vin (GND)
3	Counter input B (+)	10	Counter contact output 2
4	Counter input B (-)	11	External power supply 24 Vin
5	Counter Z-phase input (+)	12	Counter contact input 1
6	Counter Z-phase input (-)	13	Counter contact input 2
7	Counter contact input plus common	14	Counter contact input 3

¹: The external power supply 24 V is common to all axes. Connect one of two connectors or both connectors to the same power supply.
²: Four contact input commons, four deviation pulse clear GNDs, and four pulse output GNDs are connected, respectively, in the module.
³: The F3YP22-0P module does not support three and four axes. Never wire the pins for three and four axes on this module.

ToolBox for Positioning Module for F3YP22/24/28 SF663-MCW



ToolBox for Positioning Module(SF663-MCW) NEW

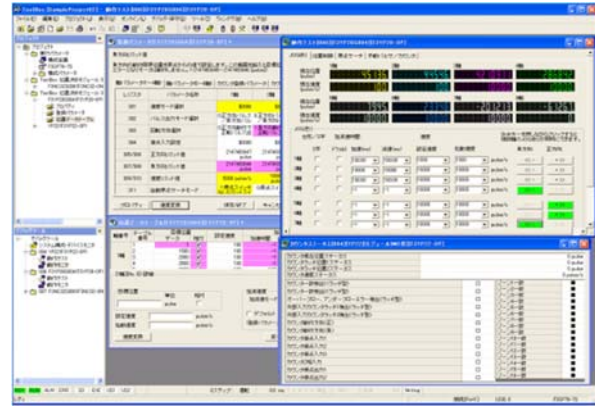
Totally support from set up to maintenance

- Functions: set up registered parameters, position data record and counter of positioning modules
- Action monitoring (Target position, Error status...)
- Action test (JOG, Position control, Origin search, Counter)



Functions

- Editing Parameters
 - Registered Parameters
 - Position Data
- Axis Monitor
- Action test
 - Jog
 - Position Control
 - Origin Search
 - Counter / Manual Pulse Generator



New Products Summary/Instruction Manuals



Positioning Module (with multi-channel output)

Name	Model	Specification
Positioning Module (with multi-channel output)	F3YP22-0P	2-axis control, 7.996 Mpps max. (for servomotor) or 1.999 Mpps max. (for stepper motor) One counter channel for encoder input, 8 Mpps max. Position control/speed control/switching between speed and position control, direct operation/position data record operation
	F3YP24-0P	4-axis control, 7.996 Mpps max. (for servomotor) or 1.999 Mpps max. (for stepper motor) One counter channel for encoder input, 8 Mpps max. Position control/speed control/switching between speed and position control, direct operation/position data record operation
	F3YP28-0P	8-axis control, 7.996 Mpps max. (for servomotor) or 1.999 Mpps max. (for stepper motor) One counter channel for encoder input, 8 Mpps max. Position control/speed control/switching between speed and position control, direct operation/position data record operation

ToolBox for Positioning Module for F3YP22/24/28

Name	Model	Specifications
ToolBox for Positioning Module for F3YP22/24/28	SF663-MCW	Multi-lingual version, Windows2000/XP/Vista/7 (x86,x64 for Vista and 7) compatible, CD-ROM, (for F3YP22/24/28)

※Instruction Manuals are included in CD-ROM as PDF files and help file.

Instruction Manuals

Positioning Module (with multi-channel pulse output)

Title	Document No.	
Hardware manual	IM 34M06C11-01E	Revised
Positioning Module (with multi-channel output) (F3YP22-0P,F3YP24-0P,F3YP28-0P)	IM 34M06H55-04	New

ToolBox for Positioning Module (for F3YP2□)

Title	Document No.	
FA-M3 ToolBox for Positioning Module	IM 34M06Q30-01E	Revised
FA-M3 ToolBox for Positioning Module for F3YP22/24/28	IM 34M06Q31-03E	New

※Instruction Manuals are included in CD-ROM as PDF files and help file. Instruction Manuals by printed materials are to be extra.
Please refer to IM list to order.

Differences from Positioning Module F3YP14/F3YP18-0N



❖ Differences from Positioning Module F3YP14/18-0N (1)

❖ Comparison of Specifications

- ❑ Software is upward compatible. The existing program operates normally. The maximum number of the module installation is changed from 36 (288 axes) to 16 (128 axes)
- ❑ Hardware is not compatible and requires revision of external wiring, as the external power supply for pulse output is changed from 5V DC to 24V DC
- ❑ Due to control cycle time and startup time are accelerated, adjustment of application may be required.

❖ Comparison of Specifications

Items		Specifications	
		F3YP1□-0N	F3YP2□-0P
Control	Number of control axes	4Axes, 8Axes	2Axes , 4Axes, 8Axes
	Control method	Open-loop control using position reference pulse output	Open-loop control using position reference pulse output
	Output pulse type	RS-422A compliant differential line driver (SN75ALS194 or equivalent) Pulse type selectable for each axis: CW/CCW pulse, travel/direction pulse	RS-422A compliant differential line driver (ISL32172E or equivalent) Pulse type selectable for each axis: CW/CCW pulse, travel/direction pulse, and phase A/phase B pulse
	Output pulse rates (pulse/s)	- Using servo motor CW/CCW : 3,998,000 Travel/direction : 3,998,000 - Using stepper motor CW/CCW : 499,750 Travel/direction : 499,750	- Using servo motor CW/CCW : 7,996,000 Travel/direction : 7,996,000 Phase A/B(x4) : 7,996,000 Phase A/B(x2) : 3,998,000 Phase A/B(x1) : 1,999,000 - Using stepper motor CW/CCW : 1,999,000 Travel/direction : 1,999,000 Phase A/B(x4) : 1,999,000 Phase A/B(x2) : 999,500 Phase A/B(x1) : 499,750
	Control cycle time	1.00ms	0.125ms
External contact input		4 inputs per axis (origin input, forward limit input, reverse limit input, encoder Z-phase input)	4 inputs per axis (origin input, forward limit input, reverse limit input, encoder Z-phase input) (Digital filter of inputs are configurable independently, forward limit input and reverse limit input are assignable to general purpose input)
External contact output		1 output per axis (deviation pulse clear signal)	1 output per axis (deviation pulse clear signal)

❖ Comparison of Specifications

Items		Specifications	
		F3YP1□-0N	F3YP2□-0P
Positioning functions	Units of measurement	pulse	pulse
	Control modes	Position control (PTP and multi-axis linear interpolation)	Position control (PTP and multi-axis linear interpolation), Speed control and Speed control to position control switchover
	Operation modes	Direct operation	Direct operation/ Position data record operation (10 position table per axes)
	Position reference	Absolute/incremental position reference -2,147,483,648 to 2,147,483,647 (pulse)	Absolute/incremental position reference -2,147,483,648 to 2,147,483,647 (pulse)
	Speed reference (pulse/s)	0.1 to 3,998,000 pps (using servo motor) 0.1 to 499,750 pps (using stepper motor)	1 to 7,996,000 pps (using servo motor) 1 to 1,999,000 pps (using stepper motor)
	Acceleration/deceleration curve	Automatic trapezoidal acceleration/deceleration (configurable startup speed) Automatic S-shape acceleration/deceleration (startup speed not configurable)	Automatic trapezoidal acceleration/deceleration (configurable startup speed) Automatic S-shape acceleration/deceleration (startup speed not configurable)
	Acceleration/deceleration time	0 to 32,767 ms (configurable independently for acceleration and deceleration)	0 to 32,767 ms (configurable independently for acceleration and deceleration) Acceleration/deceleration time unit selection (1ms or 0.01ms) Acceleration Setting and Deceleration Setting
	Origin search	Two types of automatic origin search Manual origin search (any combination of external contact inputs may be used)	Two types of automatic origin search Manual origin search (any combination of external contact inputs may be used)
	Manual operation	Jog operation	Jog operation/ Manual pulse generator mode
	Others	Change in target position during movement Change in specified speed during movement Current position setup/Software limit	Change in target position during movement Change in specified speed during movement Current position setup/Software limit Set Override Positioning start/stop by external trigger input, software triggerand value of pulse counter
	Startup time ¹⁾	0.09 ms for moving 1 axis 0.25 ms for moving 4 axes 0.50 ms for moving 8 axes	0.04 ms for moving 1 axis 0.09 ms for moving 4 axes 0.15 ms for moving 8 axes

❖ Comparison of Specifications

Item		Specifications	
		F3YP1□-0N	F3YP2□-0P
Counter	Number of channels		1
	Input pulse type		CW/CCW pulse, travel/direction pulse, phase A/phase B
	Input pulse rate (pulse/s)		CW/CCW : 2,000,000 (pulse/s) Travel/direction : 2,000,000 (pulse/s) Phase A/B (x4) : 8,000,000 (pulse/s) Phase A/B (x2) : 4,000,000 (pulse/s) Phase A/B (x1) : 2,000,000 (pulse/s)
	Operation mode		Linear counter mode, Ring counter mode
	Counter functions		Counter enable/disable, Counter preset, Counter matching, Electrical cam switch, Counter latch, Speed measurement, Positioning start/stop by external trigger input, counter matching
	Z-phase input for counter		1 input (assignable to counter latch input, counter preset input, etc.)
	External contact input for counter		3 inputs (assignable to latch input, preset input, enable input, external trigger input, etc.)
External contact output for counter		2 outputs (assignable to counter matching output, cam switch output, etc.)	
Data backup		Flash ROM (100,000 times rewritable)	Flash ROM (100,000 times rewritable)
Current consumption (5 V DC)		F3YP18-0N : 380mA F3YP14-0N : 320mA	F3YP28-0P : 280 mA F3YP24-0P : 240 mA F3YP22-0P : 210 mA
External power supply (for pulse output / for counter contact output)		5V DC F3YP18-0N : 700mA F3YP14-0N : 350mA	24V DC F3YP28-0P : 200 mA (190mA / 10mA) F3YP24-0P : 110 mA (100mA / 10mA) F3YP22-0P : 70 mA (60mA / 10mA)
External wiring		Connector for positioning control F3YP18-0N : 48 pins connector x 2 F3YP14-0N : 48 pins connector x 1	Connector for positioning control F3YP28-0P : 48 pins connector x 2 F3YP24-0P : 48 pins connector x 1 F3YP22-0P : 48 pins connector x 1 Connector for pulse counter : 14 pins connector x 1
External dimensions		28.9(W) × 100(H) × 83.2(D) mm ⁴	28.9(W) × 100(H) × 83.2(D) mm ⁴
Weight		F3YP18-0N : 145g, F3YP14-0N : 125g	F3YP28-0P : 175g, F3YP24-0P : 110g, F3YP22-0P : 110g

❖ Differences from Positioning Module F3YP14/18-0N (5)

❖ Differences of External Connection

□ Connector for position control

F3YP1□-0N			
24b	Axis 8 Z-phase input (-)	24a	Axis 6 Z-phase input (-)
23b	Axis 8 Z-phase input (+)	23a	Axis 6 Z-phase input (+)
22b	Axis 8 forward pulse (+)	22a	Axis 6 forward pulse (+)
21b	Axis 8 forward pulse (-)	21a	Axis 6 forward pulse (-)
20b	Axis 8 reverse pulse (+)	20a	Axis 6 reverse pulse (+)
19b	Axis 8 reverse pulse (-)	19a	Axis 6 reverse pulse (-)
18b	Axis 8 deviation pulse clear	18a	Axis 6 deviation pulse clear
17b	Axis 8 deviation pulse clear (GND)	17a	Axis 6 deviation pulse clear (GND)
16b	Axis 7 Z-phase input (-)	16a	Axis 5 Z-phase input (-)
15b	Axis 7 Z-phase input (+)	15a	Axis 5 Z-phase input (+)
14b	Axis 7 forward pulse (+)	14a	Axis 5 forward pulse (+)
13b	Axis 7 forward pulse (-)	13a	Axis 5 forward pulse (-)
12b	Axis 7 reverse pulse (+)	12a	Axis 5 reverse pulse (+)
11b	Axis 7 reverse pulse (-)	11a	Axis 5 reverse pulse (-)
10b	Axis 7 deviation pulse clear	10a	Axis 5 deviation pulse clear
9b	Axis 7 deviation pulse clear (GND)	9a	Axis 5 deviation pulse clear (GND)
8b	External power 5 Vin	8a	External power 5 Vin (GND)
7b	Axis 8 home position input	7a	Axis 6 home position input
6b	Axis 8 positive limit input	6a	Axis 6 positive limit input
5b	Axis 8 negative limit input	5a	Axis 6 negative limit input
4b	Axis 7 home position input	4a	Axis 5 home position input
3b	Axis 7 positive limit input	3a	Axis 5 positive limit input
2b	Axis 7 negative limit input	2a	Axis 5 negative limit input
1b	Contact input common	1a	Contact input common

F3YP2□-0P			
24b	Axis 4 Z-phase input (-)	24a	Axis 2 Z-phase input (-)
23b	Axis 4 Z-phase input (+)	23a	Axis 2 Z-phase input (+)
22b	Axis 4 pulse output A (+)	22a	Axis 2 pulse output A (+)
21b	Axis 4 pulse output A (-)	21a	Axis 2 pulse output A (-)
20b	Axis 4 pulse output B (+)	20a	Axis 2 pulse output B (+)
19b	Axis 4 pulse output B (-)	19a	Axis 2 pulse output B (-)
18b	Axis 4 deviation pulse clear	18a	Axis 2 deviation pulse clear
17b	Pulse output GND ²	17a	Pulse output GND ²
16b	Axis 3 Z-phase input (-)	16a	Axis 1 Z-phase input (-)
15b	Axis 3 Z-phase input (+)	15a	Axis 1 Z-phase input (+)
14b	Axis 3 pulse output A (+)	14a	Axis 1 pulse output A (+)
13b	Axis 3 pulse output A (-)	13a	Axis 1 pulse output A (-)
12b	Axis 3 pulse output B (+)	12a	Axis 1 pulse output B (+)
11b	Axis 3 pulse output B (-)	11a	Axis 1 pulse output B (-)
10b	Axis 3 deviation pulse clear	10a	Axis 1 deviation pulse clear
9b	Deviation pulse clear GND ²	9a	Deviation pulse clear GND ²
8b	External power supply 24 Vin ¹	8a	External power 24 Vin (GND) ¹
7b	Axis 4 origin input	7a	Axis 2 origin input
6b	Axis 4 forward limit input	6a	Axis 2 forward limit input
5b	Axis 4 reverse limit input	5a	Axis 2 reverse limit input
4b	Axis 3 origin input	4a	Axis 1 origin input
3b	Axis 3 forward limit input	3a	Axis 1 forward limit input
2b	Axis 3 reverse limit input	2a	Axis 1 reverse limit input
1b	Contact input common ²	1a	Contact input common ²

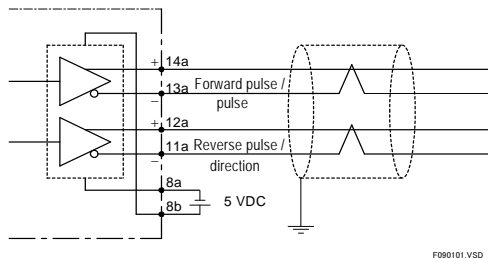
□ Connector for pulse counter

F3YP2□-0P			
1	Counter input A (+)	8	Counter contact output 1
2	Counter input A (-)	9	External power supply 24 Vin (GND)
3	Counter input B (+)	10	Counter contact output 2
4	Counter input B (-)	11	External power supply 24 Vin
5	Counter Z-phase input (+)	12	Counter contact input 1
6	Counter Z-phase input (-)	13	Counter contact input 2
7	Counter contact input plus common	14	Counter contact input 3

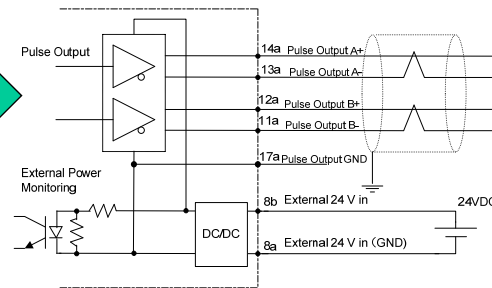
❖ Differences of Pulse Output Connection

- ❑ 24 VDC (20.4 to 26.4 VDC) external power is required for positioning command pulse output of F3YP2x-0P. (5VDC for F3YP1□-0N)
- ❑ The insulated DC/DC ground inside the module is connected to all connectors as the pulse output ground. If the pulse output is received by a line receiver, connect the pulse output ground to the ground of the target device.

● Pulse Output Connections for F3YP1□-0N



● Pulse Output Connections for F3YP2□-0P

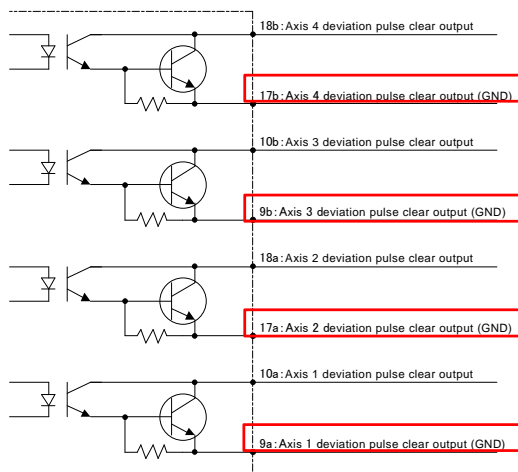


- Change connection to 8b of external power and 8a of external power (GND) from 5VDC to 24VDC
- Change connection to pulse GND of driver from 5Vin(GND) to pulse output GND(17a/17b) if the pulse output is received by a line receiver type motor/driver.

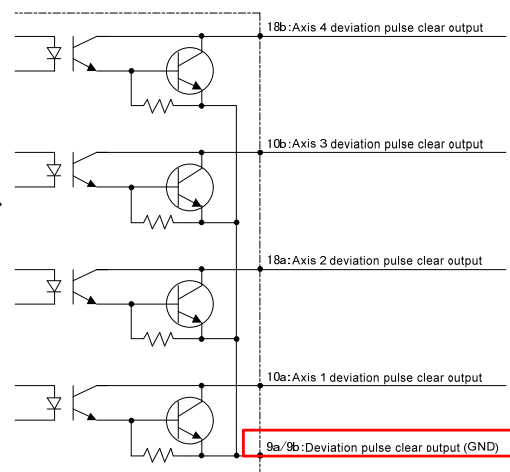
❖ Deviation pulse clear signals

- ❑ F3YP22, 24, and 28 have a shared ground for deviation pulse clear signals. (F3YP14-0N and F3YP18-0N have independent grounds for each axis.)

● F3YP1□-0N



● F3YP2□-0P



- Change from ground deviation pulse clear signals of each axis on F3YP1□-0N (9a/17a/9b/17b) to only 9a/9b on F3YP2□-0P