Dear Customers,

June 2018
Fuji Electric Co., Ltd.

MICREX-SX Series SPH
Announcement of Release of 4-axis Pulse Output Module

Thank you very much for your continued patronage of Fuji programmable controller.
We hereby announce that we have released the 4-aixs pulse output module in MICREX-SX series SPH.

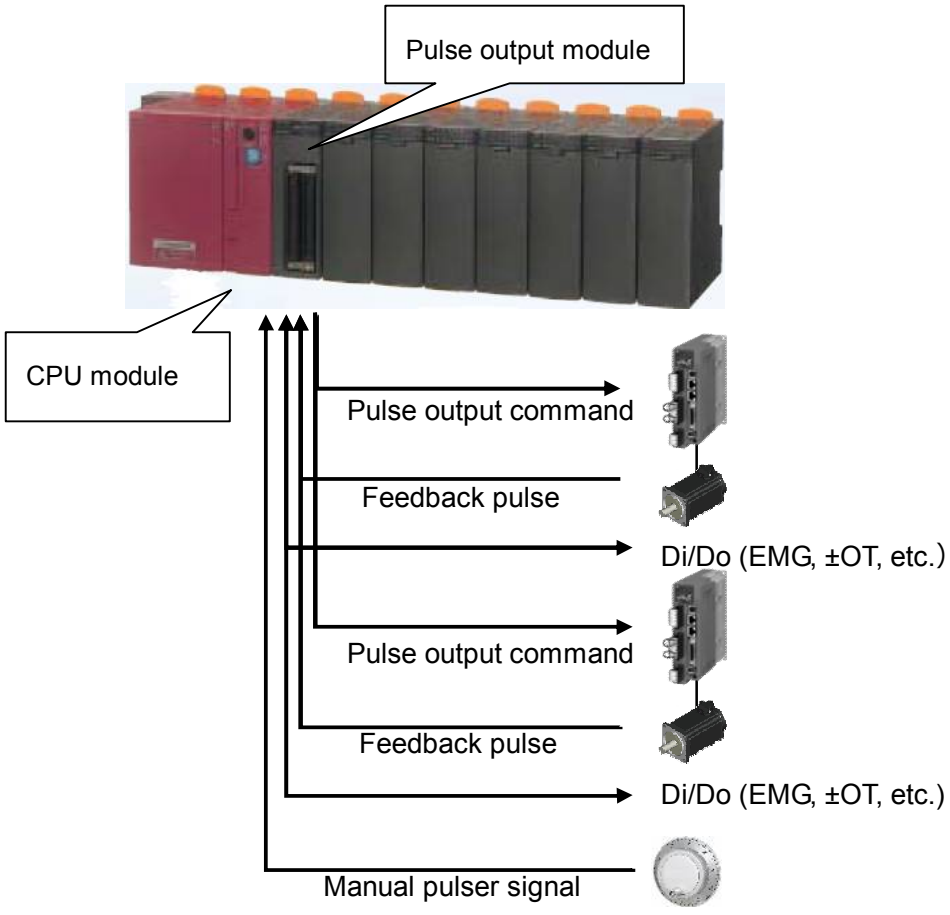
1. Released Model

Product name	Type (Ordering code)	Specification
4-axis pulse output module	NP1F-HD4	Differential pulse output command 5MHz × 4 axes

2. Release Date

Order: Started on June 1, 2018
Shipment: Started on August 1, 2018

3. Product Overview



- 4-axis pulse output, Differential signal, Max. frequency: 5MHz.
- The following positioning functions are provided.
  Single-axis linear positioning, Rotator positioning, Multi-axis linear interpolation positioning, 2-axis circular interpolation positioning, Helical interpolation positioning, Position command positioning, Feedback pulse count, Manual pulser input positioning, PWM pulse output, Automatic origin return, Absolute position encoder control, Electrical cam control, Backlash correction

  Pulse output command (forward pulse + reverse pulse, 90-degree phase-differential two-phase pulse, pulse + direction signal Max. 5MHz)
  Feedback pulse count (Phase A, Phase B Max. 5MHz)
  Number of external I/O signal points Input: 5 points/axis, Output: 2 points/axis
  Acceleration/deceleration characteristics Trapezoidal acceleration/deceleration, Sigmoid acceleration/deceleration
  Positioning command data Increment pulse count + Frequency control data
  Deceleration point calculation Automatic calculation
  Manual pulser input 1 axis/module

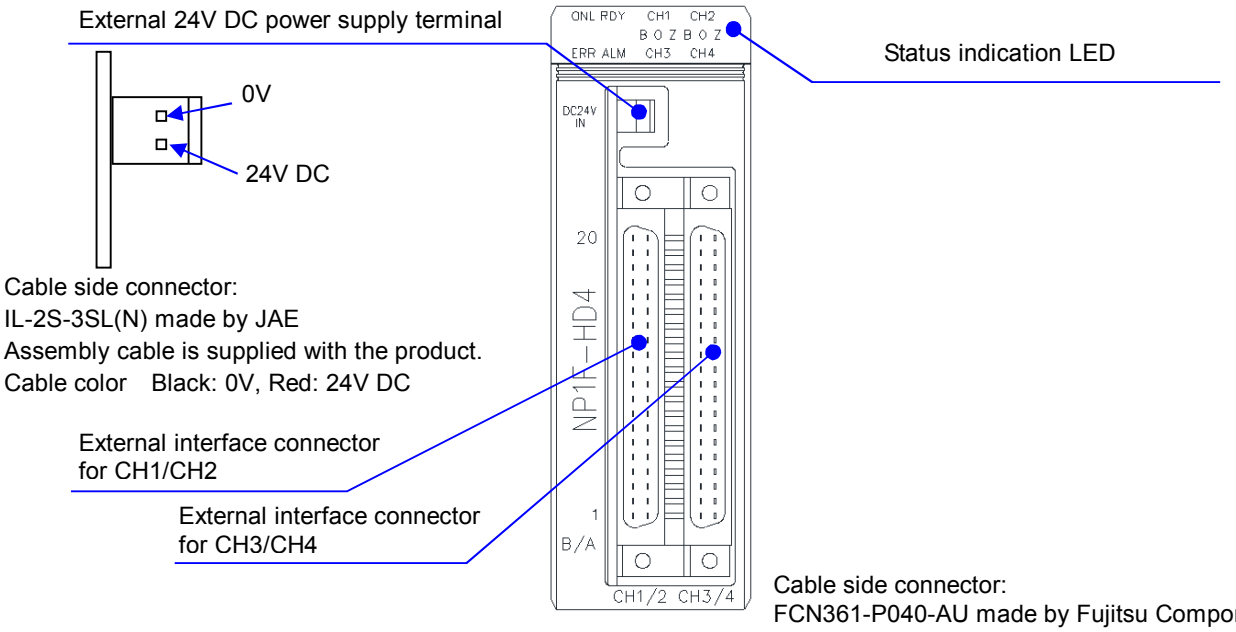
(1) General specification

Item		Specification
Physical environmental conditions	Operating ambient temperature	0 to 55°C
	Storage temperature	-25 to +70°C
	Relative humidity	20 to 95%RH, no condensation Transport condition: 5 to 95%RH, no condensation
	Pollution degree	2, no condensation
	Corrosion immunity	Free from corrosive gases. Not stained with organic solvents
	Operating altitude	2000m or less above sea level (Transport condition: 70kPa or more)
Mechanical service conditions	Vibration	Half amplitude: 0.15mm, Constant acceleration: 19.6 m/s^2 Two hours in each direction, Total six hours
	Shock	Acceleration peak: 147 m/s^2 , Three times in each direction
Electrical service conditions	Noise immunity	Noise voltage 1.5kVp-p, rise time 1ns, pulse width 1μs (noise simulator)
	Electrostatic discharge	Contact discharge: ±6kV, Aerial discharge: ±8kV
	Radiated, radio-frequency, electromagnetic field	10V/m (80 to 1000MHz)
	EFT/B (Electrical fast transient/burst)	Power supply line, I/O signal line (AC unshielded line): ±2kV Communication line, I/O signal line (Excl. AC unshielded line): ±1kV
	Conducted radio frequency	150kHz to 80MHz, 10V
	Power frequency magnetic field	50Hz, 30A/m
Construction		Panel-mounted type (open equipment)
Cooling		Air cooling

Note: For the other general specifications, refer to the catalogue for SPH (No. 22B2-E-0004).

(2) Supported version of programming support tool “SX-Programmer”
The following version is required to use NP1F-HD4.
- Expert (D300win) V3 (Type: NP4H-SEDBV3) : V3.6.12 or later (Scheduled on June 2018)
- Standard (Type: NP4H-SWN) : V3.0.18 or later (Scheduled on July 2018)

(3) Module appearance



(4) Individual specifications

Item		Specification
Number of control axes		4 axes
Position control		Open loop
Acceleration/deceleration characteristics		Trapezoidal acceleration/deceleration, Sigmoid acceleration/deceleration
Position data		Max. 2^{32}bit-1/command
Command pulse	Command frequency	5MHz
	Command frequency resolution	24 bits
	Output type	Differential output (forward pulse + reverse pulse, 90-degree phase-differential two-phase pulse 4 multiplication, pulse + direction signal)
Feedback pulse	Input frequency	5MHz
	Input type	Differential input (90-degree phase-differential two-phase pulse 1 multiplication / 2 multiplication / 4 multiplication, forward pulse + reverse pulse)
Manual pulser	Input frequency	5MHz
	Input type	Differential input (90-degree phase-differential two-phase pulse 1 multiplication / 2 multiplication / 4 multiplication, forward pulse + reverse pulse)
Control function		1 type (pulse generation mode)
I/O signal		Input signal 20 points / 4 axes Output signal 4 points / 4 axes
Combination actuator		Servo system or stepping motor with pulse input function
Number of occupied words		I/O area (Input: 36 words, Output: 20 words, Total: 56 words)
Number of occupied slots		1 slot
Internal current consumption		24V DC, 120mA
External power supply		24V DC, 95mA supplied from external power supply
Mass		Approx. 190g

(5) Function list

No.	Item	Function
1	SX bus interface	Various types of data can be exchanged via SX bus.
2	Pulse output command	A pulse output command signal of forward pulses or reverse pulses is output.
3	Current value count	Command pulses are counted and the command current value is detected.
4	External pulse count	Feedback pulses or manual pulser are counted.
5	Phase-Z position detection	The command position at the rising (or falling) edge of phase-Z is detected.
6	Interrupt position detection (Interrupt positioning operation)	The command position at the rising (or falling) edge of external interrupt signal is detected.
7	Self startup frequency setting	The self startup frequency can be set.
8	Trapezoidal acceleration/deceleration	Trapezoidal acceleration/deceleration calculation is performed.
9	Sigmoid acceleration/deceleration	Sigmoid acceleration/deceleration calculation is performed.
10	Automatic deceleration point calculation	Automatic calculation of the deceleration point is performed.
11	Continuous frequency updating	The command frequency of the pulse generator is continuously updated.
12	Update setting of number of command pulses	The number of command pulses is updated during pulse output of the pulse generator.
13	Pulse output stop operation	The acceleration value of trapezoidal deceleration or sigmoid deceleration for when pulse output is stopped can be selected.
14	Emergency stop operation	Quick stop operation is performed when an emergency stop error is detected.
15	±OT error detection	Deceleration-and-stop operation is performed when a ±OT error is detected.
16	Transmission error monitoring	SX bus transmission errors and module control program errors of the CPU module are monitored. When a transmission error is detected, quick stop operation is performed.
17	Multiplication of feedback pulse	The multiplication (×1, ×2, or ×4) of the feedback pulse can be selected.
18	External input signal detection	The input statuses of all the DI signals are detected.
19	External output signal setting	All the DO signals can be controlled by the CPU module.