Fe Fuji Electric

Innovating Energy Technology

Fuji Integrated Controllers

Programmable Controllers
MICREX-SX Series

SPH

Duplex analog output module: NP1AYH8VHR-MR

■Features
- Duplication of analog output
  - · Analog output can be duplicated with the duplex switch control signal.
  - · Switching from the operation to the waiting can be performed by the application program or the front switch.
  - · The status of operation and waiting can be confirmed with the OUT LED on the front face of the module.
  - · The terminal block drop detection function is built in.

- Duplication of analog output by the instruction from the 2-system or 3-system of controller.
  Operation instruction is available from controllers (max. of 3 systems) of different configurations to this module via the communication module.
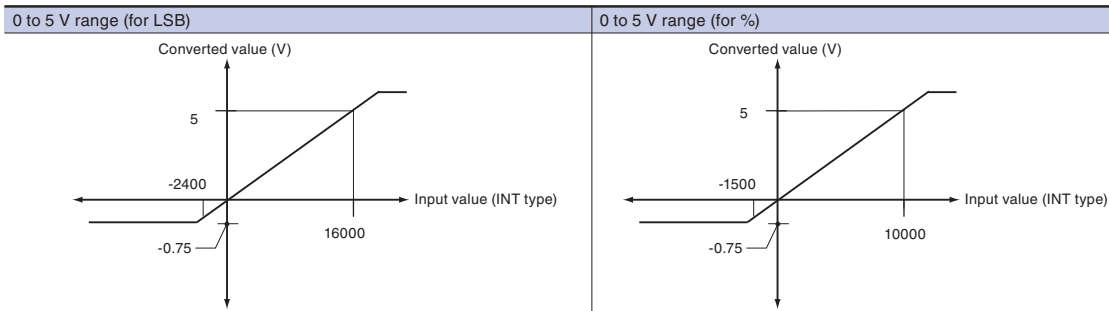
Operation mode	Overview
Single mode	Output data are provided by 1 unit of CPU and are D/A-converted.
DUPLEX mode (CPU duplication)	One of output data provided by 2 units of CPU is selected and D/A-converted.
DUAL mode (CPU duplication)	A mid value is selected from output data provided by 2 units of CPU and previous output value, and D/A-converted.
Triple mode (CPU triplication)	A mid value is selected from output data provided by 3 units of CPU, and D/A-converted.

- High speed and high accuracy
  High-speed conversion period of 3.2 ms/8 ch and high standard accuracy of ±0.25% enable a detailed control.

■Specifications

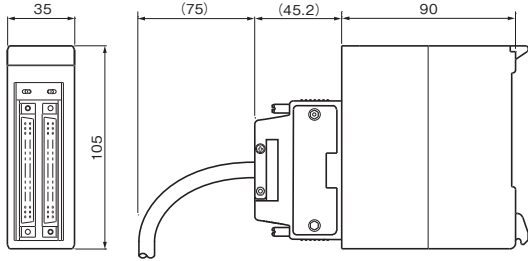| Model	NP1AYH8VHR-MR			
No. of output points	8 points			
Analog output range	0 to 5 V	1 to 5 V	0 to 10 V	-10 to +10 V
Load impedance	500 Ω or more		1 kΩ or more	
Max. resolution	1.25 mV			
Digital conversion	0 to 16000		0 to 16000	-8000 to 8000
Total accuracy	±0.25% of F.S.R			
Temperature coefficient	±0.007%/°C			
Max. noise deviation	±0.6% of F.S.R			
Conversion cycle	3.2 ms/8 points			
Response time	Conversion cycle + tact cycle (ms)			
Load short protection	Provided			
No. of occupied words	Input: 16 W + output: 34 W			
Insulation method	Between analog input terminal and FG: Photocoupler/transformer insulated			
Dielectric strength	500 V AC, 1 minute, between analog output terminals and FG (short-circuit current: 10 mA)			
Insulation resistance	10 MΩ or more with the 500 V DC of DC megger between total analog output terminals and FG			
Internal current consumption	200 mA or less (at rated load)			
Non use output treatment	Basically, open			
Applicable cable	Analog output cable Use an AWG #22 to 18 shielded twisted pair line.			
	Duplex switch signal cable (max. wire distance: 5m) Use an AWG #22 to 18 shielded straight cable.			
Weight	Approx. 260 g			
External connections	Detachable screw terminal block (M3 x 20 poles)			
Dimension	W35 x H105 x D111 mm (26 mm protrusion)			

■Characteristic diagram

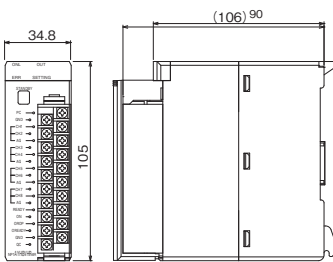| 0 to 5 V range (for LSB)	0 to 5 V range (for %)

5) 64-point module

35 (75) (45.2) 90

105

6) Terminal block protrusion module
(Resistance thermometer element input module
NP1AXH4-PT, NP1AXH4-TC
Thermo-couple input module **NP1AXH4-TC,**
NP1AXH8G-TC,
Analog input/output module**NP1AXH8□-MR,**
NP1AXH8□G-MR, NP1AYH8□-MR, NP1AYH4□G-MR,
NP1AYH4□-MR, NP1AWH6-MR),
Distributor module **NP1AXH4DG-MR,**
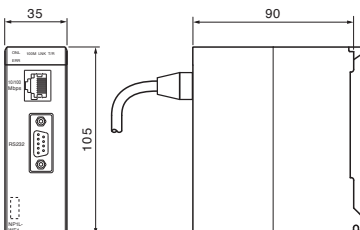Flow meter F/AD conversion module **NP1F-PI4**

35 111
90

105

7) Duplex analog output module
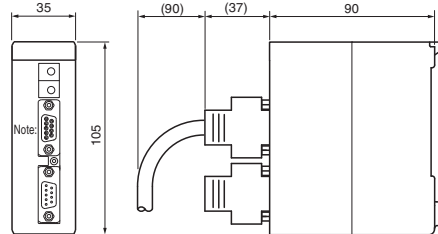**NP1AYH8VHR-MR**

34.8 (106) 90

105

(7) Communication module
1) Web module **NP1L-WE1**
Ethernet module **NP1L-ET1**

35 90

105

Note: This differs by type,
and whether or not
connectors and switches
exist, but outside
dimensions are the
same for all types.

2) General purpose communication module **NP1L-RS1/2/3/4**
PROFIBUS-DP master module **NP1L-PD1**,
PROFIBUS-DP slave module **NP1L-PS1**
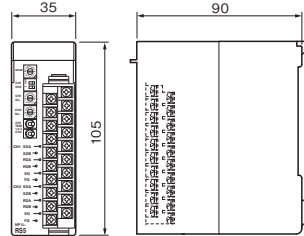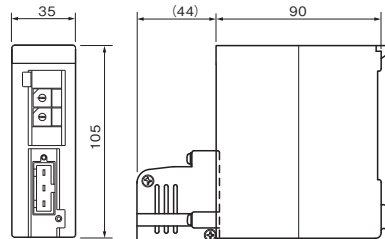PROFIBUS-DP interface module **NP1L-RP1**

35 (90) (37) 90

105

Note:

Note: This differs by type, and whether or not connectors and switches exist,
but outside dimensions are the same for all types.

General purpose communication module **NP1L-RS5**

35 90

105

3) T-link master module **NP1L-TL1**,
T-link slave module **NP1L-TS1**,
T-link interface module **NP1L-RT1**,
P-link module **NP1L-PL1**,
PE-link module **NP1L-PE1**,
OPCN-1 master module **NP1L-JP1**,
OPCN-1 slave module, **NP1L-JS1**,
OPCN-1 interface module **NP1L-RJ1**

35 (44) 90

105

Note: This differs by type, and whether or not connectors and switches exist, but
outside dimensions are the same for all types.

4) AS-i master module **NP1L-AS2**

35 (19) 90

105
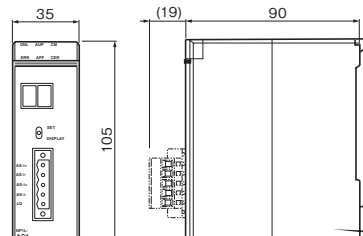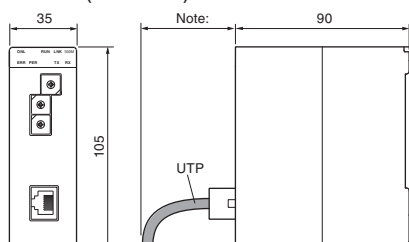
5) FL-net (OPCN-2) module **NP1L-FL3**

35 Note: 90

105

UTP

Note: For AUI and UTP cables, you need to take connector dimensions and cable bend
into consideration. (For bend radius, check the specification for the cable you use.)

Product name	Model	Specifications and names		Ordering code	Standards CE *2	UL cUL	LR *3	NK
Analog output module	NP1AYH4IG-MR	High-speed multi-range output 4 ch, between channels insulated, resolution: 14 bits (current type)	Screw terminal	NP1AYH4IG-MR	○	○	○	○
	NP1AYH8V-MR	High-speed multi-range output 8 ch, resolution: 14 bits (voltage type)	Screw terminal	NP1AYH8V-MR	○	○	○	○
	NP1AYH8I-MR	High-speed multi-range output 8 ch, resolution: 14 bits (current type)	Screw terminal	NP1AYH8I-MR	○	○	○	○
	NP1AYH8VHR-MR	Duplex type multi-range output 8 ch, resolution: 14 bits (voltage type)	Screw terminal	NP1AYH8VHR-MR				
Analog I/O module	NP1AWH6-MR	High-speed multi-range I/O, input 4 ch, output 2 ch, resolution: 14 bits	Screw terminal	NP1AWH6-MR	○	○		
Communication module	NP1L-WE1	Web module 10BASE-T/100BASE-TX Web server function (Japanese version) *9		NP1L-WE1	○	○		
	NP1L-ET1	Ethernet interface module 10 BASE-T/100 BASE-TX		NP1L-ET1	○	○		
	NP1L-FL3	FL-net (OPCN-2) module Ver. 3 (10/100 Mbps)		NP1L-FL3	○	○		
	NP1L-LW1	Lon Works interface module (78 kbps) Accessories: Connector for cable connected		NP1L-LW1		○		
	NP1L-PL1	P-link module Accessories: P/PE-link connector		NP1L-PL1		○		
	NP1L-PE1	PE-link module Accessories: P/PE-link connector		NP1L-PE1		○		
	NP1L-LE1	LE-net module		NP1L-LE1	○	○	○	○
	NP1L-LL2	LE-net loop2 module		NP1L-LL2	○	○	○	○
	NP1L-RS1	General purpose communication module RS-232C (connector), RS-485 (connector) each 1 ch		NP1L-RS1	○	○	○	○
	NP1L-RS2	General purpose communication module RS-232C (connector) 1 ch		NP1L-RS2	○	○	○	○
	NP1L-RS3	General purpose communication module RS-232C (connector) 2 ch		NP1L-RS3	○	○	○	○
	NP1L-RS4	General purpose communication module RS-485 (connector) 1 ch		NP1L-RS4	○	○	○	○
	NP1L-RS5	General purpose communication module RS-485 (screw terminal) 2 ch		NP1L-RS5	○	○	○	○
	NP1L-JP1	OPCN-1 master module Accessories: OPCN-1 connector, terminating resistors (2 pieces)		NP1L-JP1	○	○	○	○
	NP1L-JS1	OPCN-1 slave module Accessories: OPCN-1 connector		NP1L-JS1	○	○	○	
	NP1L-RJ1	OPCN-1 interface module Accessories: OPCN-1 connector, SX bus terminating plug (2 pieces)		NP1L-RJ1	○	○	○	○
	NP1L-DN1	DeviceNet master module Accessories: Screw connector (for cable attachment)		NP1L-DN1	○	○		
	NP1L-DS1	DeviceNet slave module 1 ch Accessories: Screw connector (for cable attachment)		NP1L-DS1	○	○		
	NP1L-RD1	DeviceNet interface module Accessories: Screw connector (for cable attachment), SX bus terminating plug (2 pieces)		NP1L-RD1	○	○		
	NP1L-TL1	T-link master module Accessories: T-link connector, T-link terminating resistor (2 pieces)		NP1L-TL1	○	○	○	○
	NP1L-RT1	T-link interface module Accessories: T-link connector, SX bus terminating plug (2 pieces)		NP1L-RT1	○	○	○	○
	NP1L-TS1	T-link slave module Accessories: T-link connector		NP1L-TS1	○	○	○	
	NP1L-PD1	PROFIBUS-DP master module Communication standard (IEC 66158, EN 50171, DIN 19245)		NP1L-PD1	○	○		
	NP1L-PS1	PROFIBUS-DP slave module Communication standard (IEC 66158, EN 50171, DIN 19245)		NP1L-PS1	○			
	NP1L-RP1	PROFIBUS-DP interface module Communication standard (IEC 66158, EN 50171, DIN 19245)		NP1L-RP1	○			
	NP1L-AS2	AS-i master module Ver. 2.1 Accessories: Screw connector (for cable attachment)		NP1L-AS2	○	○		
	NP1L-SL1	S-LINK master module 1 ch Accessories: Screw connector (for cable attachment)		NP1L-SL1				
	NP1L-RM1	Remote terminal master/slave module		NP1L-RM1				
		Function as a master/slave station of remote terminal RM20/RM21 series						
	NP1L-OL1	SX bus electrical-optical converter (PCF cable) Accessories: SX bus terminating plug		NP1L-OL1	○	○		
	NP1L-OL2	SX bus electrical-optical converter (Quartz cable) Accessories: SX bus terminating plug		NP1L-OL2		○		
	NP2L-OE1	SX bus electrical-optical converter Accessories: SX bus terminating plug		NP2L-OE1	○	○		
	NP2L-RP1	SX bus electrical-electrical repeater Accessories: SX bus terminating plug		NP2L-RP1	○	○		
	NP2L-BH1	SX bus duplex connection unit		NP2L-BH1				
	FNC160A-C20	T-link optical converter Accessories: T-link connector, T-link terminating resistor		NH5F-OCHTL17				
	FNC360A-C20	P/PE-link optical converter Accessories: P/PE-link connector, P/PE-link terminating resistor, ferrite core		NH5F-OCHPE17				
Positioning module*8	NP1F-HC2	High-speed counter module 500 kHz x 2 ch Input signal voltage: 5 V DC Accessories: Optional connector		NP1F-HC2	○	○		
	NP1F-HC2MR	High-speed counter module 200 kHz x 2 ch, Input signal voltage: 5/12/24 V DC Accessories: Optional connector		NP1F-HC2MR	○	○		
	NP1F-HC2MR1	High-speed counter module 50 kHz x 2 ch, Input signal voltage: 5/12/24 V DC Accessories: Optional connector		NP1F-HC2MR1	○	○		
	NP1F-HC8	High-speed counter module 50 kHz x 8 ch Input signal voltage: 5 V DC Accessories: Optional connector		NP1F-HC8	○	○		
	NP1F-HP2	Pulse train output module Pulse train instruction 250 kHz x 2 ch Optional connector		NP1F-HP2	○	○		
	NP1F-MP2	Pulse train positioning control combined module output pulse: 250 kHz x 2 ch, feedback pulse: 500 kHz Accessories: Optional connector		NP1F-MP2	○	○		
	NP1F-MA2	Analog command positioning control combined module Feedback pulse: 500 kHz x 2 ch Accessories: Optional connector		NP1F-MA2	○	○		
Function module	NP1F-MM1	Memory card interface module Memory card interface 1 ch Accessories: Memory card mounting bracket, dummy card		NP1F-MM1	○	○		
	NP1F-DMY	Dummy module		NP1F-DMY	○	○	○	○
	NP1F-MU1	Multi-use communication module RS-232C x 1 ch, RS-485 x 1 ch Communication by the arbitrary protocol		NP1F-MU1	○	○		
	NP1F-PI4	Flow meter F/AD conversion module 10 kHz x 4 ch, between channels insulated		NP1F-PI4				
Extended FB software package	NP4N-IPAC	SX instrumentation package (Japanese version)		NP4N-IPAC	-	-	-	-
	NP4N-ITGR	Fuji Integrated Support Tool (@E.Integrator) (Japanese/English versions)		NP4N-ITGR	-	-	-	-
Personal computer loader *10	NP4H-SEDBV3	Programming Support Tool Expert (D300win) software package Version 3 (Japanese/English versions)		NP4H-SEDBV3	-	-	-	-
	NP4H-SWN	Programming Support Tool Standard (Japanese/English versions)		NP4H-SWN	-	-	-	-
Handy monitor	NW0H-S3ES	SPH applicable English type, Accessories: Loader cable (1 m, 1 piece)		NW0H-S3ES	-	-	-	-
Loader connecting cable	NP4H-CB2	Programming support tool connection cable for personal computer (used with the converter: NW0H-CNV)		NP4H-CB2	-	-	-	-
	NW0H-CNV	Signal converter for personal computer: RS-232C/RS-422 (used with the loader connecting cable: NP4H-CB2).		NW0H-CNV	○	-	-	-
ROM cassette	NP8PMF-16	User ROM cassette for the SPH200, Capacity: 16 MB		NP8PMF-16	-	-	-	-
	NP8PCF-256	User ROM card compact flash memory for the SPH300/SPH2000, Capacity: 256 MB		NP8PCF-256	-	-	-	-
	NP8PSD-002	User ROM card SD memory card for the SPH3000/SPH3000 MM, Capacity: 2 GB		NP8PSD-002	-	-	-	-

○ | Applicable   - | Not applicable

*2   The compliance with the CE marking is confirmed for a single unit in the SX series. Be sure to check the compliance with the standard of the final product in which the SX series is built.
*3   To prevent vibration, the module must be fixed for each of the base boards.
*8   Connectors (solder type) for digital input, output, I/O mixture and positioning module are separately sold.
      Applicable connector type: Fujitsu FCN-361J040-AU (connector), FCN-360C040-B (cover), our product type: **NP8V-CN**
*9   Ask our sales representative for the English version and the Chinese version.
*10   The OS and the Japanese conversion software are not included.