e-Front runners

c UL us LISTED CE

Integrated Controllers MICREX-SX Series

Programmable Logic Controller

SPB

Compact and Full of Functions!

30-points basic unit
(Actual size)

High Performance SPB Programmable Logic Controller is Packed with Many Useful Functions in a Compact Body.

Compact size

Ideal for reducing control panel space.

	External Dimensions (mm)		
	Width	Height	Depth
20-points basic unit	80	90	81
30-points basic unit	110	90	81
40-points basic unit	140	90	81
60-points basic unit	180	90	81
16-points expansion unit	64	90	81
32-points expansion unit	110	90	81
60-points expansion unit	180	90	81

Two programming languages

With one type of hardware, SPB is applicable to two programming languages:

- SX mode: MICREX-SX (language compliant with IEC)
- N mode: FLEX-PC N (language of ladder and instruction words)

Large-capacity memory

Programming with rich memory

	Memory capacity			
	Porogram memory		Data memory	
Type	SX mode *1	N mode	SX mode	N mode
20points basic unit	2Ksteps	4Ksteps	5Kwords	9Kwords
30points basic unit			8.5Kwords	
40points basic unit	4Ksteps	8Ksteps		
60points basic unit				

*1 There are Included the initiated value of the retain memory.

High-speed processing

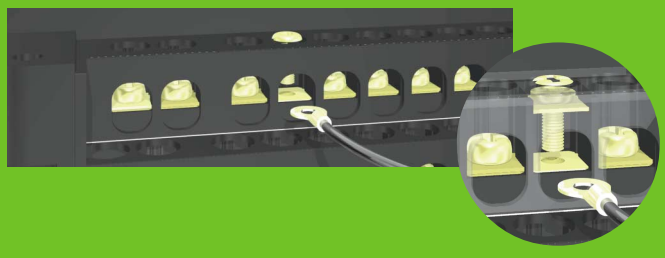
Ideal for small-size machines requiring fast processing.
Fast 0.44 µsec. per Sequence instruction and 2.19 µsec(N mode). and 1.50 µsec(SX mode). for Data instructions.

Many types of instructions

Many types of instructions allow ease of programming.
The program size can be reduced by effectively using a combination of instruction words.
SX mode: 202 types, N mode: 211 types.

Self-lifting terminal block & Finger protection

Use of the self-lifting terminal block - the terminals automatically pop up when unscrewed, reducing the wiring works and preventing less of screws. The finger protection structure ensures safety.



Online program edit function

Allows program modification without interrupting machine operation.

International standards conformity

All SPB models conform to the UL/cUL standards as well as the CE mark standard.

Two analog timers

Two analog timers are built in for convenient fine-tuning and testing.

Communication & Networking

Communication adapters are available for RS-232C, RS-485, and simplified personal computer link connections.

POD direct connection

The SPB can be connected to the POD via the loader port. No special communication unit is required.

Diversified functions for expanding applications

- Internal high-speed counter function
- Interrupting function
- Pulse train output function
- Pulse catch function
- Constant scan setting
- Pulse width modulation function

Adapted to analog control

Multi-range (voltage / current) adapted. 3 types of analog unit with detachable terminal blocks are added to the lineup.
Capable of analog control, such as temperature control by PID instruction.

C o n t e n t s

SPB Lineups

Basic Unit

20-points Basic Unit: NW0P20□-□

Power voltage: 100-200V AC, 24V DC
Input: 12 points, Output: 8 points
Relay output, Transistor output
Stand alone unit no expansion

30-points Basic Unit: NW0P30□-□

Power voltage: 100-200V AC, 24V DC
Input: 16 points, Output: 14 points
Relay output, Transistor output
Connectable up to five expansion units

40-points Basic Unit: NW0P40□-□

Power voltage: 100-200V AC, 24V DC
Input: 24 points, Output: 16 points
Relay output, Transistor output
Connectable up to five expansion units
Calendar function (year, month, day, hour, minute, second, day of week) (different type)

60-points Basic Unit: NW0P60□-□

Power voltage: 100-200V AC, 24V DC
Input: 36 points, Output: 24 points
Relay output, Transistor output
Connectable up to five expansion units
Calendar function (year, month, day, hour, minute, second, day of week) (different type)

Expansion Unit

●Digital I/O Unit

16-points I/O Expansion Unit: NW0E16□-3
Input: 8 points, Output: 8 points
Relay output, Transistor output

16-points Input Expansion Unit: NW0E16X
Input: 16 points

16-points Output Expansion Unit: NW0E16□-0
Relay output, Transistor output

32-points I/O Expansion Unit: NW0E32□-3
Input: 16 points, Output: 16 points
Relay output, Transistor output

60-points I/O Expansion Unit: NW0E60R-31
Power voltage: 100-200V AC
Input: 32 points, Relay output: 28 points

●Analog Unit

Analog Input Unit: NW0AX04-MR
Multi-range input: 4ch

Analog Output Unit: NW0AY04-MR
Multi-range output: 4ch

Analog I/O Unit: NW0AW03-MR
Multi-range input: 2ch
Multi-range output: 1ch

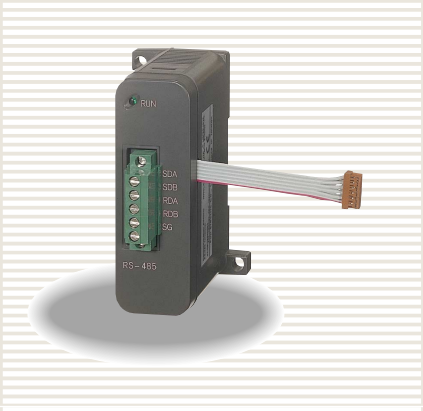
Thermocouple Input Module: NW0AX04-TC
Input: 4ch

Resistance Bulb Input Module: NW0AX04-PT
Input: 4ch

Communication Adapter

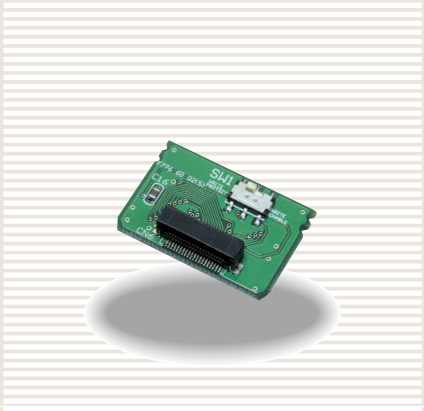
RS-232C Adapter: NW0LA-RS2
General-purpose communication mode: RS-232C
1ch

RS-485 Adapter: NW0LA-RS4
General-purpose communication mode: RS-485
Simplified CPU link mode
1ch



Option

Memory Card: NW8PMF-8
Flash ROM for 40/60-points basic unit



System Configurations

Expansion Digital I/O System

●Basic Unit + Digital I/O Unit

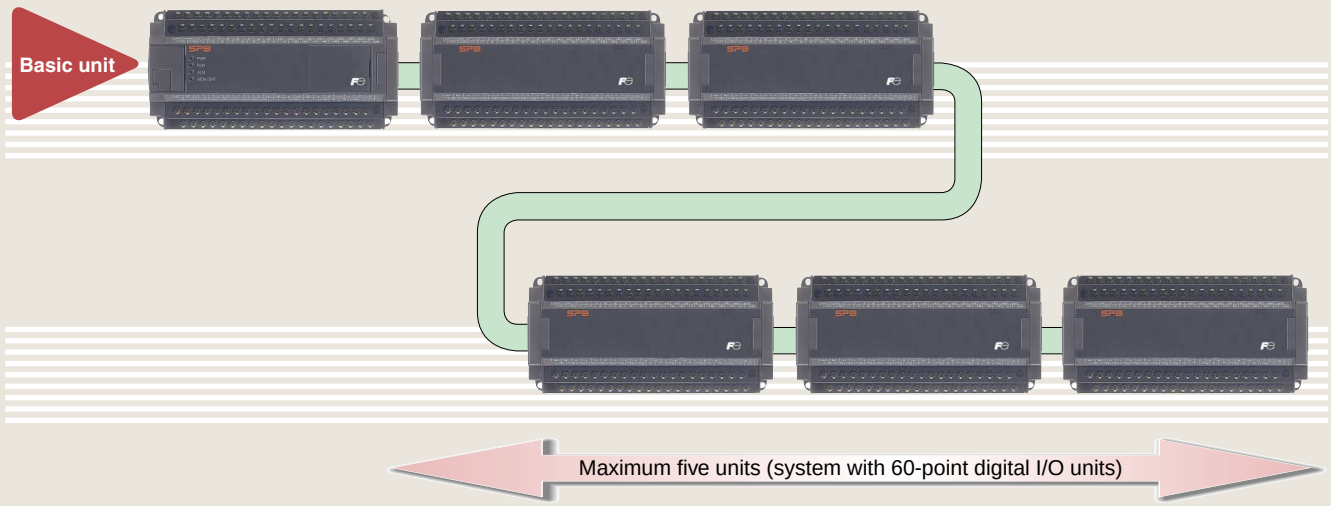
For the SPB, the number of I/O points can be increased up to 360 by adding digital I/O units to the basic unit. Up to five digital I/O units can be added.

	I/O Points	Max. digital I/O points
NW0P20□-3□	20 points	20 points
NW0P30□-3□	30 points	330 points
NW0P40□-3□	40 points	340 points
NW0P60□-3□	60 points	360 points

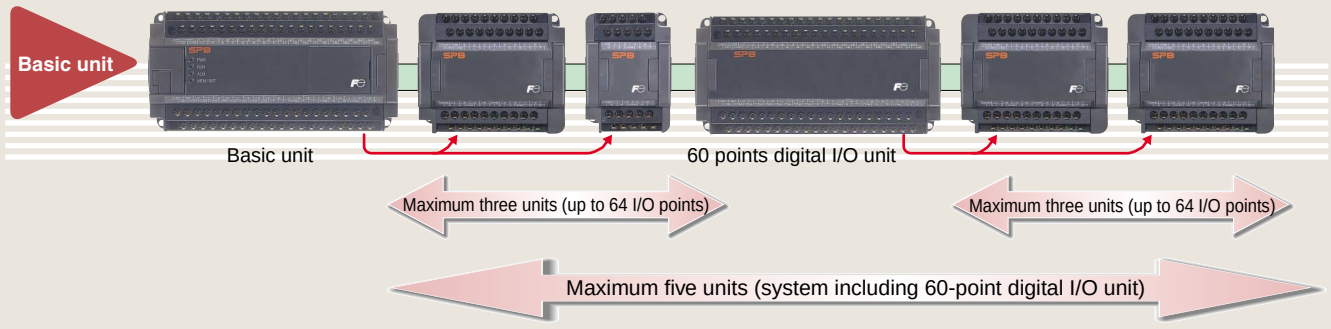
System with 60-point digital I/O units

A maximum of five 60-point digital I/O units, or 300 digital I/O points can be added.

360 points (60+60+60+60+60)



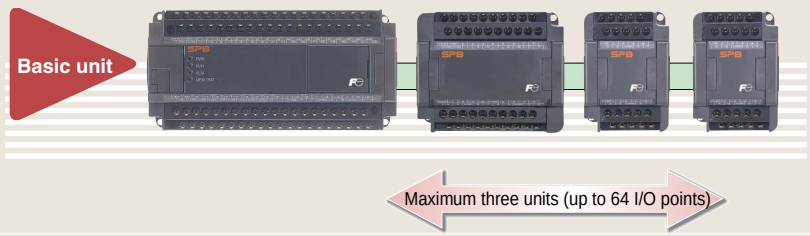
System with a combination of 16- 32- and 60-point digital I/O units



* The basic unit and 60-point digital I/O unit require a power supply. The 16-/32-point digital I/O units are supplied the power from the basic unit and 60-point digital I/O unit as indicated with an arrow (→). One basic unit or one 60-point digital I/O unit can supply power to a maximum of three expansion units (64 or fewer I/O points).

System with a combination of 16- and 32-point digital I/O units

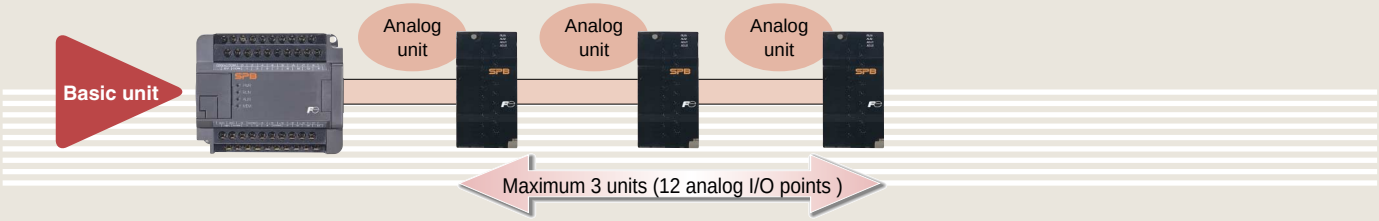
The system with no 60-point digital I/O units allows addition of a maximum of three units, or 64 digital I/O points.



Expansion Analog System

●System expanded only with analog units

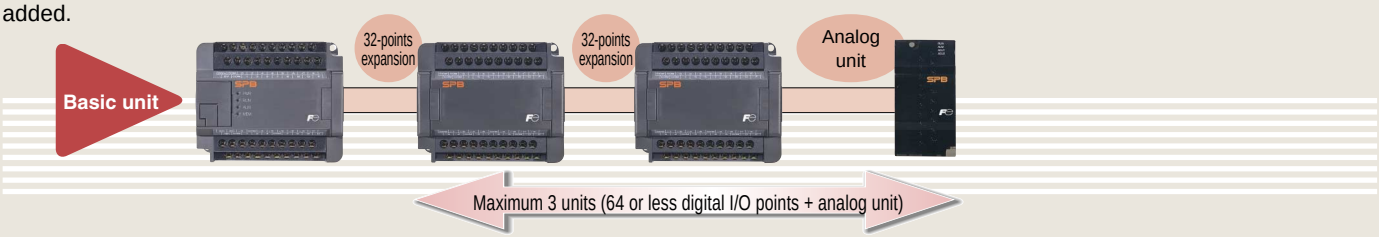
For the SPB, up to three analog units can be added to the basic unit.
By doing so, the number of analog I/O points can be increased up to 12.



●System expanded with a combination of digital I/O unit and analog unit

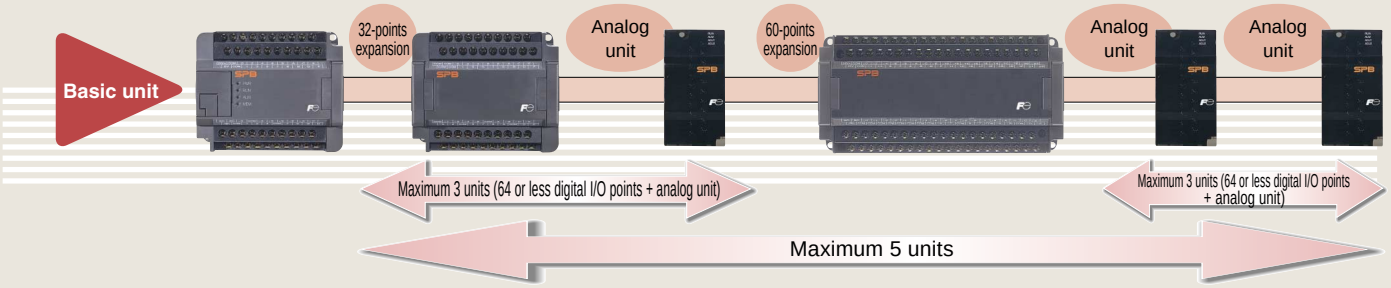
System without 60-point digital I/O units

Also when the basic unit is used in combination with 16-/32-point digital I/O units and/or analog units, a maximum of three units can be added.



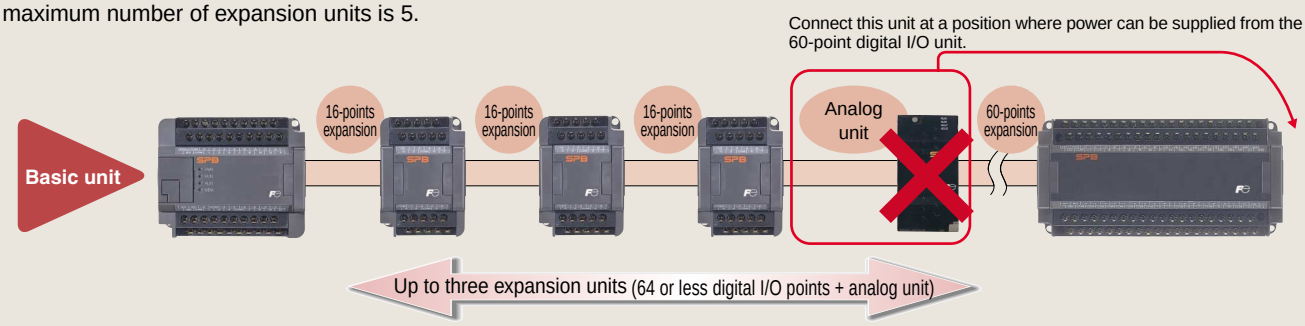
System with 60-point digital I/O units

When the basic unit is used in combination with 60-point digital I/O units and/or analog units, a maximum of five units can be added (up to three analog units).



Points for system expansion

To each of the basic unit and 60-point digital I/O unit, a maximum of three units can be added (64 or fewer I/O points + analog unit). Note that the maximum number of expansion units is 5.



Basic unit and maximum number of expansion units

- The 20-point basic unit does not allow connecting expansion units.
- The maximum number of expansion units varies depend ing on the basic unit and digital I/O unit versions.
- Note that some basic unit versions do not allow connect ing analog units. See the table given on the right for details.

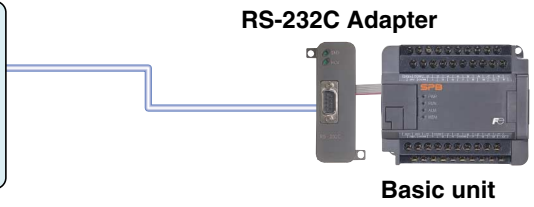
		Max. number of connectable expansion units		Connection of analog unit
		Digital I/O unit Older than version 10	Digital I/O unit Version 10 or later	
Versions of basic unit	Older than version 10.07	2 units	2 units	Impossible
	10.07 to 20.10	2 units	3 units	Possible
	Version 20.11 or later	2 units	5 units	Possible

System Configurations

Communication Systems

●System based on RS-232C Adapter: NW0LA-RS2

- Personal computer
- Printer
- Barcode reader
- Other devices for RS-232C

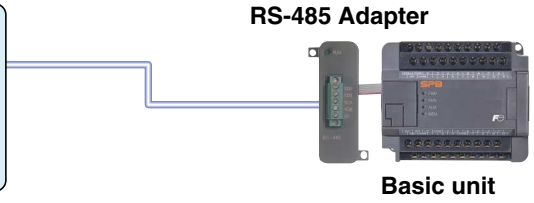


Item	Specification
Electrical specifications	RS-232C
Communication specifications	Half-duplex transmission
Connection form	1:1
Transmission rate	38.4kbps max.
Transmission distance	15m max.
User interface	Nonsequenced transmission/ command set type transmission

●System based on RS-485 Adapter: NW0LA-RS4

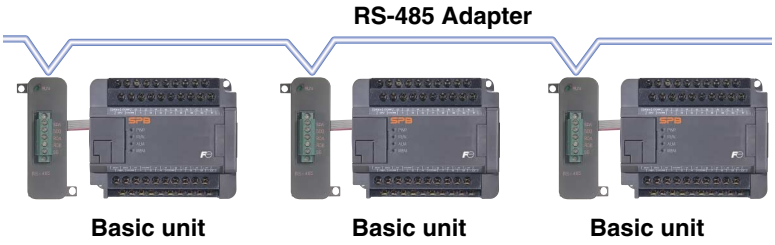
1) RS-485 mode

- Personal computer
- Barcode reader
- Other devices for RS-485



Item	Specification
Electrical specifications	RS-485
Communication specifications	Half-duplex transmission
Connection form	1:31 (max.)
Transmission rate	38.4kbps max.
Transmission distance	1km max.
User interface	Nonsequenced transmission/ command set type transmission

2) Simplified CPU link mode



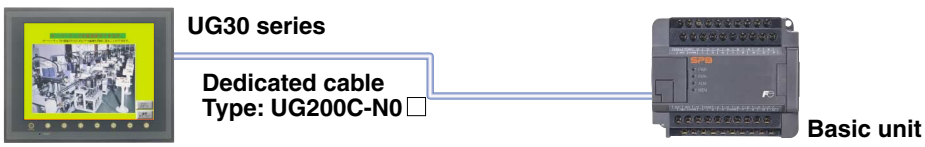
Item	Specification
Electrical specifications	RS-485
Communication specifications	NP link micro
Connection form	Bus
Transmission rate	125kbps max.
Transmission distance	500m max.
Number of units connected	16 units max.
Data amount	32 words/station max.

●POD Connections

* When connecting with the NB series, the transmission rate is limited to 19.2 kbps and the data amount to 8 words/station.

1) Loader port connection

The programmable operation display (POD) can directly be connected to the loader port.



2) General-purpose communication connection

Connection through the RS-232C/RS-485 adapter is possible.

Specifications

Basic Unit / Expansion Unit Specifications

●General Specifications

Item		Specification
Physical environment	Operating ambient temperature	0 to +55 ˚C
	Storage (transport) temperature	–25 to +70 ˚C
	Relative humidity	20 to 95% RH no condensation
	Pollution level	Level 2 (IEC61131-2)
	Corrosive gas	Free from corrosive gases, not stained with organic solvents
	Altitude/Atm.	2000m or less above sea level (Transport condition : 70kPa or more)
Mechanical operating condition	Vibration resistance	Half amplitude 0.15mm, Constant acceleration 19.6m/s^2, 2 hours in each direction, 6 hours in total
	Impact resistance	Peak acceleration 147m/s^2 (IEC conformance), 3 times in each direction
Electrical operating condition	Electrostatic discharge resistance	± 6 kV: contact discharge, ± 8 kV: aerial discharge (class 3)
	Radiation resistance	10V/m (80 to 1,000MHz)
	Noise immunity	Noise simulator method, rising 1ns, Pulse width 1µs, 1.5kV
Grounding method		Type D grounding (ground resistance 100Ω)
Structure		Panel-mounted type IP30
Installation method		Installation direction: Vertical
		Fixing method: Direct installation (M4 screws) or installation with JIS/IEC (35mm wide) support rail
Cooling method		Ambient air-cooled

●Performance Specifications (N mode)

Item			Specification
Calculation control			Stored program repeated calculation method
I/O control method			Batch refresh method/Direct method
Program language			Ladder, mnemonic
Program capacity			Basic unit 20/30 points : 4K steps (flash memory built in) Basic unit 40/60 points : 8K steps (flash memory built in)
No. of instructions	Sequence instruction		45 types
	Applied instruction		166 types
Instruction processing speed			Basic instruction 0.44µs or more
			Applied instruction 2.19µs or more
I/O relay		X,Y	1024 points
Internal relay		M	1024 points
Expanded internal relay		M	3072 points
Latch relay		L	1024 points
Expanded latch relay		L	3072 points
Special relay		M	512 points
Timer	(10 ms base)	T	384 points (T000 to T17F)
	(1 ms base)	T	128 points (T180 to T1FF)
Counter (increment)		C	256 points
Register	Data register	D	8192 words
	Special register	D	256 points
	File register	R	Uses the program area depending upon the setting
Pointer	For branching	P	256 points
	For interrupt	I	10 points
Input filter time			Variable (No filter, 3ms/3ms (default), 10ms/10ms)
High-speed counter			Single-phase, 100kHz, 2points (unsigned 16-bit) or Two-phase, 50kHz, 1point (signed 32-bit)
Pulse output			1 to 100kHz, 2points (transistor output type basic unit only)
Self-diagnostic function			Memory check, watchdog timer, etc.
Memory backup			Program (including file registers), parameters • Built-in RAM + capacitor and built-in flash (20/30-points unit) • Built-in RAM + battery and built-in flash (40/60-points unit) Data memory (power failure retaining area) • Built-in RAM + capacitor (20/30-points unit) • Built-in RAM + battery (40/60-points unit) Backup time of the memory • Built-in RAM + capacitor backup time: About 2 weeks (at 25˚C) • Built-in RAM + battery backup time: About 5 years (at 25˚C) • Number of updates of built-in flash: About 100,000 times
Calendar			Accuracy ± 27 seconds/month (at 25˚C) (Calendar function adapted type only)

●Performance Specifications (SX mode)

Item	Specification			
Calculation control	Stored program, Cyclic scanning system (default task), periodic task, event task			
I/O control method	Whole: Scanning and batch refresh method Digital I/O: Synchronous refresh with task method			
Program language (Based on IEC 61131-3)	IL, ST, LD, FBD, SFC			
Program capacity	4K steps	2K steps		
No. of instructions	202 types			
Instruction processing speed (dimensions in µs)	Sequence instructions: Contact: 0.44~, Coil: 0.50~ Addition and subtraction instructions: 2.56~ Multiplications and division instructions: 3.88~ Timer instructions: 18.44~ Counter instructions: 13.88~			
No. of tasks	Default task: 1 Periodic task, event task: total 4			
No. of POUs	Program: 8 User FB: 16 User FCT: 16			
Data types *1	BOOL, WORD, DWORD, INT, DINT, UINT, UDINT, TIME, DT, Array data types (The array number are possible to the variable setting), Structured data types.			
Basic unit	60-points basic unit	40-points basic unit	30-points basic unit	20-points basic unit
Data memory capacity	8.5K words		5K words	
I/O memory (IQ) <Fixed>	512 words (The direct connected digital I/O are possible to synchronous refresh with task)			
System memory (SM) <Fixed>	512 words			
Standard memory (M) <Variable>	2.5K words (High-speed memory: 512 words fixed)		1.5K words (High-speed memory: 512 words fixed)	
Retain memory (RM) <Variable>	1K words		512 words	
User FB memory (FM) <Variable>	0K words (Max. 1.5K words)		0K words (Max. 1.5K words)	
System FB memory (SFM) <Variable>	4K words		2K words	
Timer <Variable>	256 points		128 points	
Counter <Variable>	128 points		64 points	
Edge detection <Variable>	512 points		256 points	
Others <Variable>	512 words		256 words	
FM characteristic initiated value <Variable>	0K words (Max. 384+3K words)		0K words (Max. 192+1.5K words)	
Temporary memory capacity	1K words (Average: 42 words/POU)			
Input filter time	Variable (No filter, 3ms/3ms, 10ms/10ms) Default (3ms/3ms)			
High-speed counter	Single-phase, 100kHz, 2points (unsigned 16-bit) or Two-phase, 50kHz, 1point (signed 32-bit)			
Pulse output	1 to 100kHz, 2points (transistor output type basic unit only)			
Self-diagnostic function	Memory check, watchdog timer, etc.			
Memory backup	Program (including file registers), parameters • Built-in RAM + capacitor and built-in flash (20/30-points unit) • Built-in RAM + battery and built-in flash (40/60-points unit) Data memory (power failure retaining area) • Built-in RAM + capacitor (20/30-points unit) • Built-in RAM + battery (40/60-points unit) Backup time of the memory • Built-in RAM + capacitor backup time: About 2 weeks (at 25˚C) • Built-in RAM + battery backup time: About 5 years (at 25˚C) • Number of updates of built-in flash: About 100,000 times			
Calendar	Accuracy ± 27 seconds/month (at 25˚C) (Calendar function adapted type only)			

*1 Data types: REAL type, DATE type, TOD type, STRING type are unsupported.

Specifications

Basic Unit / Expansion Unit Specifications

●Power Source Specifications

Item	Specification	
	AC Power Type	DC Power Type
Rated voltage	100 to 240V AC	24V DC
Voltage tolerance	85 to 264V AC	19 to 30V DC
Rated frequency	50/60Hz	—
Frequency tolerance range	47 to 63Hz	—
Allowable instantaneous	1 cycle or less	5 ms or less
Waveform distortion rate	5% or less	—
Waveform ripple ratio	—	3-phase full-wave rectified waveform: 5% or less
Rated output voltage (Output voltage variation)	24V DC±10% (21.6 to 26.4V DC)	
24V DC externally supplied current	Basic unit 20 points: 200mA Basic unit 30/40 points: 250mA Basic unit 60 points: 300mA Expansion unit 60 points: 300mA	—
Power consumption	Basic unit 20 points: 35VA or less Basic unit 30/40 points: 60VA or less Basic unit 60 points: 75VA or less Expansion unit 60 points: 75VA or less	Basic unit 20 points: 10W or less Basic unit 30/40 points: 25W or less Basic unit 60 points: 3W or less
Leak current	0.25mA or less	0.25mA or less
Rush current	40 Ao-p or less, 10ms or less	150 Ao-p or less, 10ms or less
Dielectric strength	2830 Vrms AC for 1 min. entire external terminals and ground	510 Vrms AC for 1 min. entire external terminals and ground
Isolation method	Transducer isolation	
Insulation resistance	10MΩ or more with a 500 V DC megger	

●Input Specifications

Item			Specification	
			Fast DC Input	Normal DC Input
Input signal	Rated voltage		24V DC	24V DC
	Voltage tolerance difference (min. to max.)		24V DC ±10% (including ripple)	24V DC ±10% (including ripple)
	Allowable ripple ratio		5%	5%
Input circuit characteristics	Input method		Both sink and source (bi-directional)	Both sink and source (bi-directional)
	Rated current		Approx. 5mA (at 24V)	Approx. 5mA (at 24V)
	Input impedance		Approx. 4.7kΩ	Approx. 4.7kΩ
	Standard operating range	ON voltage range	15 to 26.4V	15 to 26.4V
		OFF voltage range	0 to 5V	0 to 5V
	Input type		Conforms to Type 1	Conforms to Type 1
	Input delay time	Hardware	25µs or less	400µs
		Software	Can be set to No filter, 3ms/3ms, or 10ms/10ms by parameter (Default is 3 ms/3 ms)	
Isolation method			Photocoupler isolation	
Dielectric strength			1500V AC for 1 min. (between entire input terminals and FG)	
Insulation resistance			10MΩ or more with a 500 V DC megger (between entire input terminals and FG)	

Note: Terminal Nos. 0 to 3 of the basic unit are for high-speed DC input; other terminal numbers are generally for DC input.

●Output Specifications

Relay Output

Item		Specification
Output power condition	Rated voltage	240V AC, 110V DC
	Max. allowable voltage	264V AC, 140V DC
Output circuit characteristic	Output method	Relay
	Rated current	240 V AC/30 V DC: 2 A/point, 8 A/common 110 V DC: 0.2 A/point, 1.6 A/common
	Output delay time	10ms or less
	Min. load voltage/current	5V DC, 1mA
	Max. switching frequency	1800 times/hour
Output protection method	Built-in fuse	None
	Output type	Relay
	Surge suppress circuit	None
	Other output protection	None
Isolation method		Relay insulation
Dielectric strength		2300V AC for 1 min. (between entire output terminals and FG)
Insulation resistance		10MΩ or more with a 500 V DC megger (between entire output terminals and FG)

Transistor output (sink output, source output)

Item			Specification
Output power condition	Rated voltage	Normal output	24V DC
		High-speed output *1	5 to 24V DC
	Voltage tolerance difference	Normal output	19 to 30V DC (including ripple)
		High-speed output *1	4.5 to 26.4V DC
Output circuit characteristics	Rated current	Normal output	0.5A/1 point 0.8A/4 points common 1.6A/8 points common
		High-speed output *1	0.1A/1 point
	Output voltage drop	Normal output	1.5V or less (0.5A)
		High-speed output *1	1.5V or less (0.1A)
	Output delay time*2	Normal output	1ms or less
		High-speed output *1	5µs or less
	Leakage current at off		0.1mA or less
	Surge current resistance		2A max. (10ms)
	Max. switching frequency		1800 times/hour (inductive load)
Output protection method	Built-in fuse		None
	Surge suppress circuit		Zener diode
	Other output protection		None
External connection			Terminal board M3 fastened by screws
Isolation method			Photocoupler isolation
Dielectric strength			1500V AC for 1 min. (between entire output terminals and FG)
Insulation resistance			10MΩ or more with a 500V DC megger (between entire output terminals and FG)

*1 Bits 0 and 1 are enabled for high-speed output.
*2 ON time/OFF time changes when output frequency is high. For details, refer to Pulse Commands/Function Commands (FEH406) User's Manual.

Analog Unit Specifications

●Analog Input Unit: NW0AX04-MR

Item		Specification			
Type		**NW0AX04-MR**			
Number of input channels		4 channels			
Input impedance		1MΩ		250Ω	
Input tolerance		Voltage input: ±15 V		Current input: ±30mA	
Input range		0 to 5V 1 to 5V 0 to 10V	–10 to 10V	–20 to 20mA	0 to 20mA 4 to 20mA
Digital value *1		0 to 16000 (DEC)			
Max. resolution		Voltage: 1.25mV		Current: 5µA	
Overall accuracy (full scale)		±0.1% or less (23°C±5°C)			
		±0.3% or less (0 to 55°C), 1-5V range ±0.2% or less (0 to 55°C), other ranges		±0.4% or less (0 to 55°C)	
Sampling time		0.27ms x (Number of conversion enabled channels + 1)			
Input filtering time		Approx. 200µs (hard filter: time constant of primary delay)			
Input delay time *2		Max. 1.5ms/4 points + scan time (ms)			
Connection	External connection	Detachable terminal block: M3 screw, 20 poles			
	Applicable wire size	AWG#22-18 (Use shielded twisted pair cable.)			
Isolation method		Photocoupler isolation (no isolation between channels)			
Dielectric strength		500V AC for 1min. (between entire analog input terminals and FG (short-circuit current: 5mA)			
Insulation resistance		10MΩ or more with a 500V DC megger (between entire analog input terminals and FG)			
External current consumption (24V DC)		24V DC (+10%, –15%), full-wave rectification unavailable 100mA or less			
Rush current		5A or less			
Treatment of unused channel		Basically short-circuited (between V+ and COM)			
Number of occupied words		8 words (input: 6 words, output: 2 words)			
Mass		Approx. 250g			

*1 When the "–10 to 10V" or "–20 to 20mA" input range is used, the digital output range can be expanded to "–8,000 to 8,000" with the scaling function.
*2 For step response, input filtering time needs to be considered.
Note 1: The maximum deviation of noise is ±1% of full scale.
Note 2: At shipment the range is set to "0 to 10V".

●Analog Output Unit: NW0AY04-MR

Item		Specification				
Type		**NW0AY04-MR**				
Number of output channels		4 channels				
Output range		0 to 5V 1 to 5V	0 to 10V	–10 to 10V	0 to 20mA	4 to 20mA
External load impedance		1kΩ or more	2kΩ or more	2kΩ or more	500Ω or less	
Digital value *1		0 to 16000 (DEC)				
Maximum resolution		Voltage: 1.25mV			Current: 5µA	
Overall accuracy (full scale)		±0.1% or less (23°C±5°C)				
		±0.3% or less (0 to 55°C), 1-5V range ±0.2% or less (0 to 55°C), other ranges			±0.4% or less (0 to 55°C)	
Sampling time		1.0ms or less/4 points				
Output delay time		1.0ms or less/4 points + scan time (ms)				
Load short-circuit protection		Provided			—	
Connection	External connection	Detachable terminal block: M3 screw, 20 poles				
	Applicable wire size	AWG#22-18 (Use shielded twisted pair cable.)				
Isolation method		Photocoupler isolation (no isolation between channels)				
Dielectric strength		500V AC for 1 min. (between entire analog input terminals and FG (short-circuit current: 5mA)				
Insulation resistance		10MΩ or more with a 500V DC megger (between entire analog input terminals and FG)				
External current consumption (24V DC)		200mA or less			240mA or less	
		24V DC (+10%, –15%), full-wave rectification unavailable				
Rush current		5A or less				
Treatment of unused channel		Basically open				
Number of occupied words		8 words (input: 2 words, output: 6 words)				
Mass		Approx. 250g				

*1 When the "–10 to 10V" output range is used, the digital input range can be expanded to "–8,000 to 8,000" with the scaling function.
Note 1: The maximum deviation of noise is ±1% of full scale.
Note 2: At shipment the range is set to "0 to 10V".

●Analog I/O Unit: NW0AW03-MR

Item			Specification	
Type			**NW0AW03-MR**	
Input	Number of channels		2 channels	
	Input impedance		100kΩ	250Ω
	Input tolerance		Voltage input: ±15 V	Current input: ±30mA
	Input range		0 to 5V 1 to 5V 0 to 10V	0 to 20mA 4 to 20mA
	Overall accuracy (full scale)		±1% or less (0 to 55°C)	
	Conversion rate *1		8ms/2 channels	
	Input filtering time		Approx. 2.2ms (hard filter: time constant of primary delay)	
Output	Number of channels		1	
	Output range		0 to 5V 1 to 5V 0 to 10V	0 to 20mA 4 to 20mA
	External load impedance		2kΩ or more	500Ω or more
	Conversion rate *2		8ms/channel	
	Load short-circuit protection		Provided	—
	Overall accuracy (full scale)		±1% or less (0 to 55°C)	
Digital value			0 to 1000 (DEC)	
Maximum resolution			Voltage: 4mV	Current: 16µA
Connection	External connection		Detachable terminal block: M3 screw, 20 poles	
	Applicable wire size		AWG#22-18 (Use shielded twisted pair cable.)	
Isolation method			Photocoupler isolation (no isolation between channels)	
Dielectric strength			500V AC for 1min. (between entire analog input terminals and FG (short-circuit current: 5mA)	
Insulation resistance			10MΩ or more with a 500V DC megger (between entire analog input terminals and FG)	
External current consumption (24V DC)			200mA or less 24V DC (+10%, –15%), full-wave rectification unavailable	
Rush current			5A or less	
Treatment of unused channel			Input channel shall basically be short-circuited (between V+ and COM); output channel shall basically be open.	
Number of occupied words			8 words (input: 4 words, output: 4 words)	
Mass			Approx. 250g	

*1 For step response, input filtering time needs to be considered.
*2 Can respond by 0 to 90%
Note 1: The maximum deviation of noise is ±1% of full scale.
Note 2: At shipment the range is set as follows:
- Analog input: 0 to 10V
- Analog output: 0 to 10V

Specifications

Thermocouple Input Module Specifications

●NWOAX04-TC Specifications

Item	Specification
Types	**NW0AX04-TC**
Number of input channels	4 channels
Accuracy	± 0.3% or less (23˚C ± 5˚C) ± 0.7% or less (0 to 55˚C) *1
Cold contact compensation accuracy	± 1˚C
Noise	± 0.7% or less (when the shielding compensation cable used)
Effects of external resistance	Approx. 0.35μV/ Ω
Resolution	K, T: 0.2˚C, E, J, U, L: 0.1˚C B, R, S, N, PL ll, W5Re, W26Re: 1˚C
Input filter	Hardware filter (primary delay time constant): 50ms or less
Sampling interval	Approx. 100ms or less / 4 channels
Response time	Approx. 100ms or less / 4 channels + Scanning interval (ms)
Occupied words	8 words (Input: 6 words, output: 2 words)
Isolation method	Between analog input terminals and FG: Isolated Between analog input terminals and channels: Isolated
Dielectric strength	500V AC 1 minute Between thermocouple input module terminals and FG Between thermocouple input module terminals and channels
External power supply	24V DC (+10 to -15%) (Full wave rectification power supply cannot be used.)
External current consumption	24V DC: 150mA or less
Inrush current	24V DC: 5A or less
Used to the cable	Shielding compensation cable
Mass	Approx. 250g
External connections	Detachable screw terminal bock (M3) 20 poles

* 1 Precision not assured for B0-399˚C.

●Types and Ranges of the Thermocouple Input Module

Types of thermo-couple input	Celsius (˚C)			Fahrenheit (˚F)		
	Setting No.	Measuring temperature range	Resolution data	Setting No.	Measuring temperature range	Resolution data
K	00	0-1300	1	27	32-2372	1
	01	0-500		28	32-932	
	02	0-800		29	32-1472	
	03	0.0-500.0	0.1	30	32.0-932.0	0.1
	04	0.0-800.0		31	32.0-1472.0	
B	05	0-1800	1	32	32-3272	1
R	06	0-1700	1	33	32-3092	1
S	07	0-1700	1	34	32-3092	1
E	08	0-400	1	35	32-752	1
	09	0-700		36	32-1292	
	10	0.0-700.0	0.1	37	32.0-1292.0	0.1
J	11	0-500	1	38	32-932	1
	12	0-800		39	32-1472	
	13	0.0-500.0	0.1	40	32.0-932.0	0.1
	14	0.0-800.0		41	32.0-1472.0	
T	15	-50-400	1	42	-58-752	1
	16	-50.0-400.0	0.1	43	-58.0-752.0	0.1
N	17	0-1300	1	44	32-2372	1
U	18	0-400	1	45	32-752	1
	19	0-600		46	32-1112	
	20	0.0-600.0	0.1	47	32.0-1112.0	0.1
L	21	0-400	1	48	32-752	1
	22	0-900		49	32-1652	
	23	0.0-400.0	0.1	50	32.0-752.0	0.1
	24	0.0-900.0		51	32.0-1652.0	
PL II	25	0-1200	1	52	32-2192	1
W5Re, W26Re	26	0-2300	1	53	32-4172	1

Resistance Bulb Input Module Specifications

●NWOAX04-PT Specifications

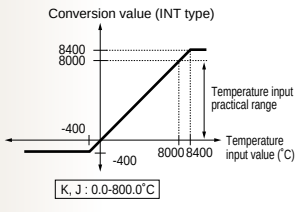
Item	Specification
Types	**NW0AX04-PT**
Number of input channels	4 channels
Accuracy	± 0.3% or less (23˚C ± 5˚C) ± 0.7% or less (0 to 55˚C)
Noise	± 0.7% or less (when the shielding compensation cable used)
Allowable resistance of input wire (per wire)	10Ω or less
Resolution	0.1˚C
Input filter	Hardware filter (primary delay time constant): Approx. 200ms or less
Sampling interval	500ms/ 4 channels
Response time	500ms or less / 4 channels + Scanning interval (ms)
Occupied words	8 words (Input: 6 words, output: 2 words)
Isolation method	Between analog input terminals and FG: Isolated Between analog input terminals and channels: Unisolated
Dielectric strength	500V AC 1 minute Between thermocouple input module terminals and FG
External power supply	24V DC (+10 to -15%) (Full wave rectification power supply cannot be used.)
External current consumption	24V DC: 150mA or less
Inrush current	24V DC: 5A or less
Used to the cable	Shielding compensation cable
Mass	Approx. 250g
External connections	Detachable screw terminal bock (M3) 20 poles

●Types and Ranges of the Resistance Bulb Input Module

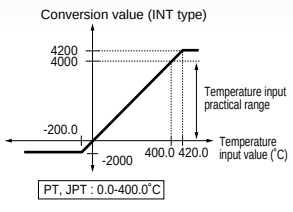
Types of thermo-couple input	Celsius (˚C)			Fahrenheit (˚F)		
	Setting No.	Measuring temperature range	Resolution data	Setting No.	Measuring temperature range	Resolution data
PT	00	0-200	1	20	32-392	1
	01	-50-150		21	-58-302	
	02	0-400		22	32-752	
	03	-200-200		23	-328-392	
	04	-200-600		24	-328-1112	
	05	0.0-200.0	0.1	25	32.0-392.0	0.1
	06	-50.0-150.0		26	-58.0-302.0	
	07	0.0-400.0		27	32.0-752.0	
	08	-200.0-200.0		28	-328.0-392.0	
	09	-200.0-600.0		29	-328.0-1112.0	
JPT	10	0-200	1	30	32-392	1
	11	-50-150		31	-58-302	
	12	0-400		32	32-752	
	13	-200-200		33	-328-392	
	14	-200-500		34	-328-932	
	15	0.0-200.0	0.1	35	32.0-392.0	0.1
	16	-50.0-150.0		36	-58.0-302.0	
	17	0.0-400.0		37	32.0-752.0	
	18	-200.0-200.0		38	-328.0-392.0	
	19	-200.0-500.0		39	-328.0-932.0	

●Characteristic Diagrams (Example)

(Thermocouple)



(Resistance Bulb)



Communication Adapter Specifications

●RS-485 Adapter: NW0LA-RS4

<General-purpose communication, basic specifications>

Item			Specification
Transmission standard			RS-485
External interface	Port		1 channel
	Transmission mode		Half-duplex transmission
	Synchronization mode		Start-stop transmission
	Transmission rate		1,200/2,400/4,800/9,600/19,200/38,400 bps
	Transmission distance		1km or less (with a transmission rate of 19,200 bps or less)
	Number of units connected		1:31 (max.)
	Connection method		European type removable terminal board (5 pins)
	Cable		Twisted pair cable with shield
Transmission specifications	Transmission procedure		Nonsequenced transmission / command set type transmission
	Transmission control code		Binary (without code conversion) or ASCII (with code conversion), EBCDIC (with code conversion)
	Error control	Hardware	Vertical parity (parity bit), framing, overrun error
		Software	Horizontal parity (BCC)
	Bit send-out order		Sent from LSB to MSB
	Data length that can be sent/received at a time (seen from SPB)		Max. 512 bytes (depends on mode)
	Start code		None, data with a length of 1 to 5 bytes
	End code		Data with a length of 1 to 5 bytes
	Character configuration		Start bit: 1 bit Data bit : 7 or 8 bits Parity bit: None, odd, even Stop bit: 1 or 2 bits

<Simplified CPU link, basic specifications>

Item			Specification
System specifications	Connection target		• SPB series basic unit • FLEX-PC NB series NP link micro, only with data link function
	Number of units connected		16 units max.
	Link capacity (1 station)		N mode: Variable: selected to 2, 4, 8, 16, or 32 words (through parameter setting) SX mode: Fixed to 8 words (when operating mode 21H is selected)
	Link area		Data register (D) area is used. (D1E00 to D1FFF)
	Communication form		Bus
	Refresh time		130ms or less/16 stations, 32 words for each station (When the SX mode is selected, with a scan time of 5ms or less), excluding the case when the loader network function is used
Communication specifications	Communication between link	Communication access mode	Polling/selecting mode
		Transmission level	Conforms to EIA standard, RS-485.
		Transmission mode	Half-duplex transmission
		Synchronization mode	Start-stop transmission
		Transmission rate	115,200 bps (when the SX mode is selected) 19,200 bps (when the NB compatible mode is selected)
		Transmission distance	500m or less
		Connection method	European type removable terminal board (5 pins)
		Cable	Twisted pair cable with shield
		Master station	Fixed to station 0 (station number set by parameters)
	Others	Configuration registration	Whether configuration is registered or not can be selected. (Registered to station 0 only when the SX mode is selected)
		Self diagnosis	Communication monitoring (omitted data bits,addition)
		Insertion and removal of active wire	Insertion and removal of link active wire are possible.

●RS-232C Adapter: NW0LA-RS2

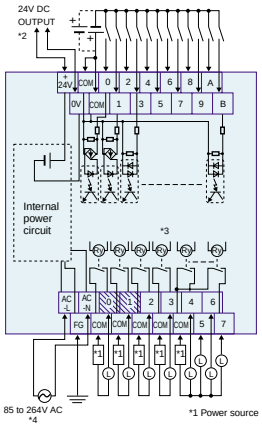
Item			Specification
Transmission standard			RS-232C
External interface	Port		1 channel
	Transmission mode		Half-duplex transmission
	Synchronization mode		Start-stop transmission
	Transmission rate		1,200/2,400/4,800/9,600/19,200/38,400 bps *1
	Transmission distance		15m or less
	Number of units connected		1: 1
	Connection method		D-Sub 9 pins, male
Transmission specifications	Transmission procedure		Nonsequenced transmission / command set type transmission
	Transmission control code		Binary (without code conversion) or ASCII (with code conversion), EBCDIC (with code conversion)
	Error control output type	Hardware	Vertical parity (parity bit), framing, overrun error
		Software	Horizontal parity (BCC)
	Bit send-out order		Sent from LSB to MSB
	Data length that can be sent/received at a time (seen from SPB)		Max. 512 bytes (depends on mode)
	Start code		None, data with a length of 1 to 5 bytes
	End code		Data with a length of 1 to 5 bytes
	Character configuration		Start bit: 1 bit Data bit: 7 or 8 bits Parity bit: None, odd, even Stop bit: 1 or 2 bits

*1 When using transmission rate 38400 bps, mount a ferrite core to the communication cable. For details, refer to RS-232C/RS-485 Communication Adapter (FEH405) User's Manual.

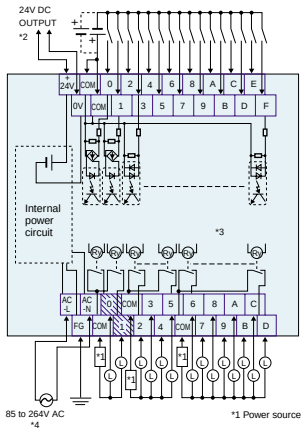
External Connection Diagrams

External Connection Diagrams

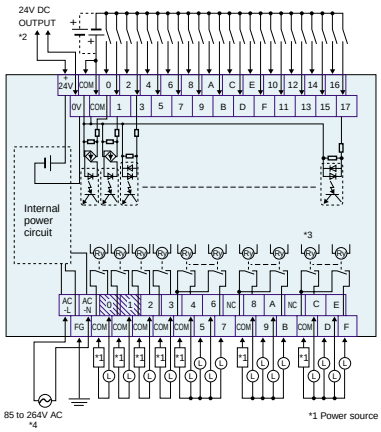
20-points Basic Unit



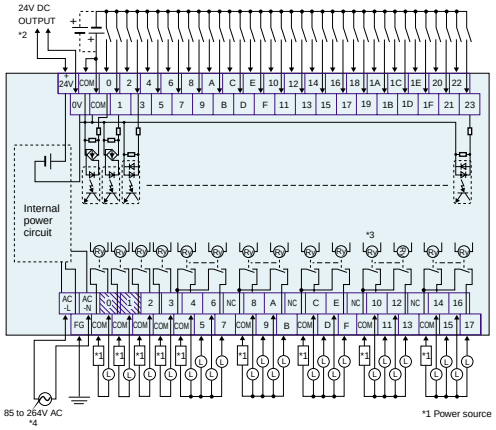
30-points Basic Unit



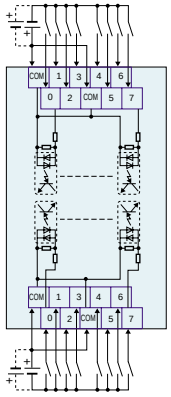
40-points Basic Unit



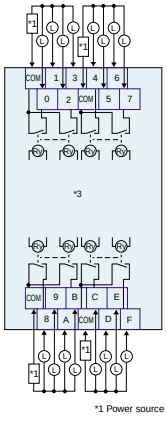
60-points Basic Unit



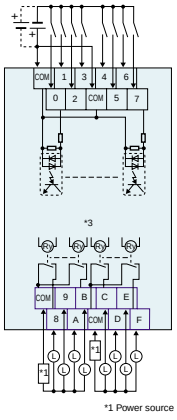
16-points Input Expansion Unit



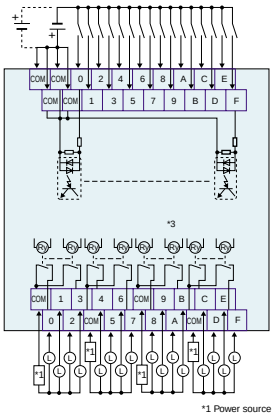
16-points Output Expansion Unit



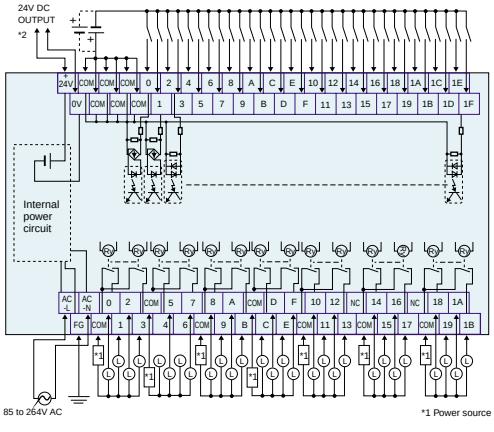
16-points I/O Expansion Unit



32-points I/O Expansion Unit

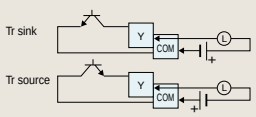


60-points I/O Expansion Unit

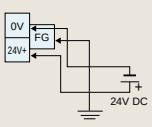


Note: 1 The figure above indicates external connection of the AC power supply/Ry output type.
*2 The DC power supply is not applicable to service power supply.

*3 The transistor type connection is shown below.



*4 The terminal arrangement of the DC power supply is shown below.



Note: 2 The output terminal ▨ can be used as a pulse output terminal in the case of transistor output.
Note: 3 For external connection of communication adapters, refer to RS-232C/RS-485 Communication Adapter (FEH405) User's Manual.
Note: 4 For external connection of analog unit, refer to Analog Unit (FEH407) User's Manual.

Control Functions

Enabling various controls with standard functions

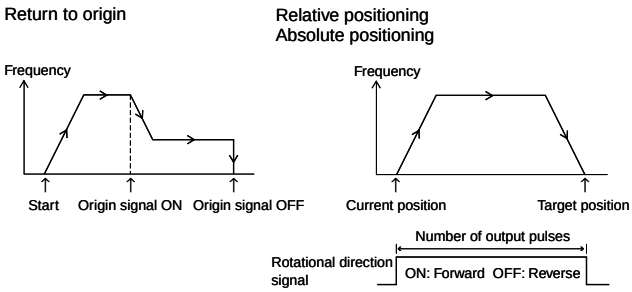
Pulse Train Output Function

With basic units of the Tr output type, the terminal for output bits 0 and 1 can be used not only as a usual external output but as pulse output with up to 100kHz.
The pulse output can be operated with dedicated instructions, allowing easy control based on pulse train output and pulse width modulation.

●Pulse Train Output

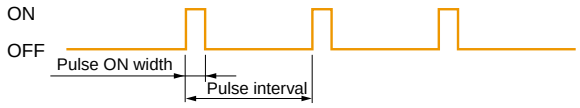
Positioning control with servo motors and stepping motors is possible without specialized units, based on the pulse train output instruction, return-to-origin instruction, relative positioning instruction, absolute positioning instruction, and other positioning instructions.

<Operation Patterns>



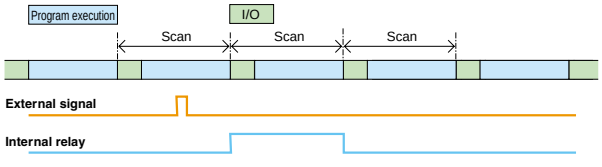
●Pulse Width Modulation

The pulse width modulation instruction allows pulse output with variable pulse ON width and pulse interval with the following specifications, enabling light control.



Pulse Catch Function

Regardless of the input filter time setting, the pulse catch function allows the SPB to detect a pulse (min. 50µsec.) shorter than the scan time and output it at the following scan. It can be used for detecting an object which moves at high speed.



High-speed Counter Function

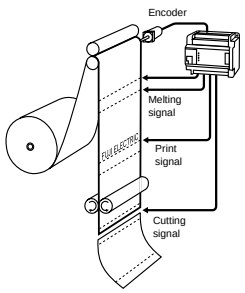
The SPB has a built-in high-speed counter which can count pulses at a maximum rate of 100kHz for a single phase or 50kHz for two phases.

●Specification

Item	Specification		
	1-phase	2-phasee	
Method	Preset increment counter	Preset increment/decrement counter	
Count input signal	1-phase increment signal x 2 ch	90-deg.phase difference 2phase signal x 1 ch	Counting pulse + Direction input x 1ch
Control input	Reset		
Counting speed	Max. 100kHz	Max. 50kHz	
Counting range	Unsigned binary 16 bits	Signed binary 32 bits	
Multiplication	x1, x2	x2, x4	x1
Reset	Soft reset by control input and command register		
Preset	Soft reset by control command register		

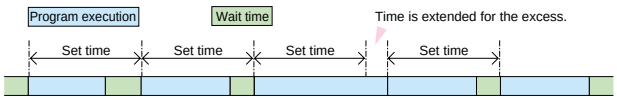
<Sample Application for Packing Machine>

The encoder output pulse can be input to the high-speed counter to control such a high-speed operation.



Constant Scan Function

For the control of a machine which outputs at constant intervals, constant scan can be set to suppress the irregular I/O operating times. Constant scan can be set in the range from 1 to 255 in units of 1 msec.

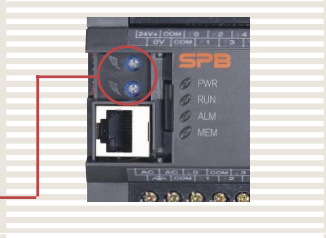


Interrupt Input Function

The SPB has an interrupt input function for interrupting normal program operation to initiate an interrupt program. It executes the interrupt program at the rise of the input from X0 to X3.

Analog Timer Function

The SPB has two analog timers as standard. Each timer value is converted to a digital value of 0 to 255 in the SPB and stored in the internal memories.



Programming Languages

One type of hardware applicable to two languages

- SX mode: Applicable to MICREX-SX (IEC61131-3 compatible language)
- N mode: Applicable to FLEX-PC N (IEC61131-3 incompatible language)

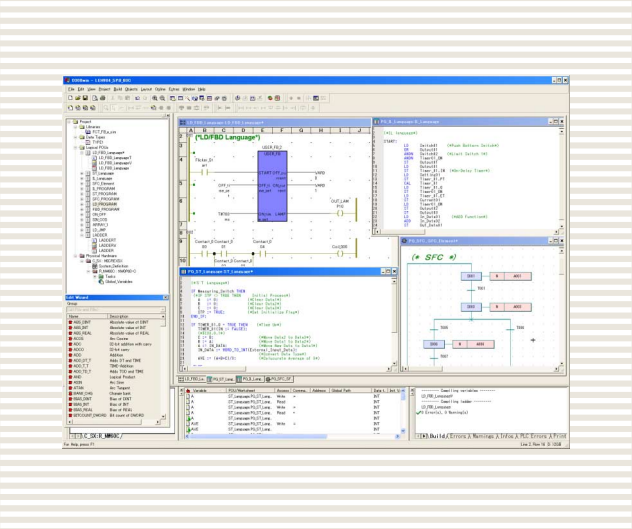
Programming support tool D300win

SX mode programming support tool NP4H-SEDBV3

IEC61131-3 compatible programming enabled

●Compatible with the IEC 61131-3 international standard

The use of a programming language system in compliance with international standards allows the user to produce programs that are understandable worldwide.
The MICREX-SX Series SPB is a programmable controller compliant with the above standards.



●Use of program components

Reuse of components improves the programming efficiency.
- Programming with labels (variables)
- Use of components through function blocks (FBs)

●Language set

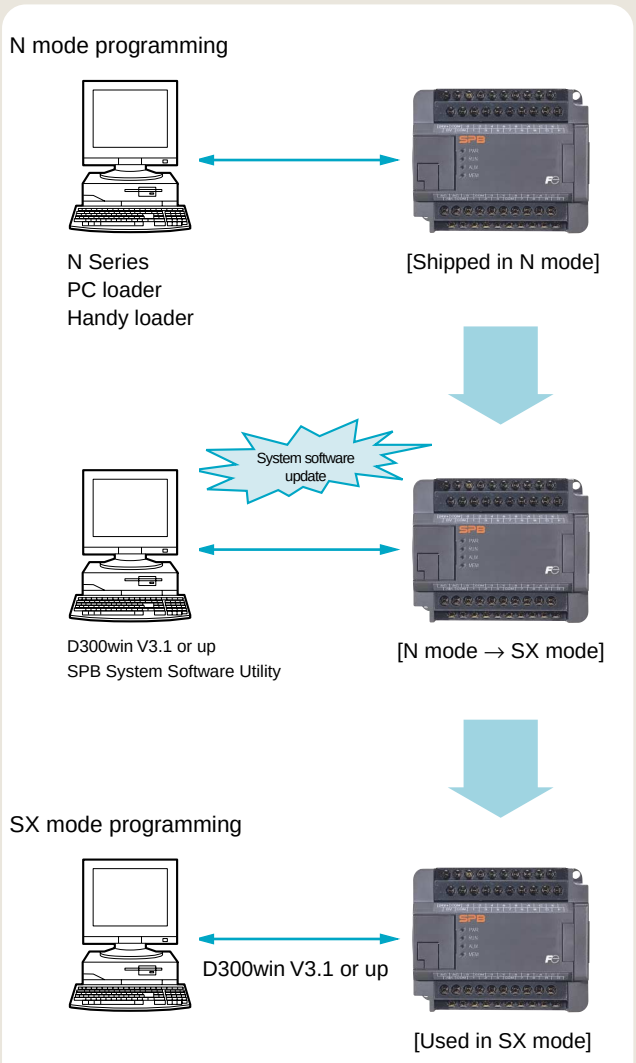
Five programming languages specified in IEC standards are all supported.
Optimum program expressions for the control contents can be used in combination.
IL language: Reducing application size
ST language: High-level language (IF, THEN, ELSE, etc.)
LD language: Replacing relay boxes
FBD language: Data processing system
SFC element: Application structure description

●Ample instruction words

Sufficient instruction words, as many as 202 types, enable to write any kind of programs at will.

●Replacing system software

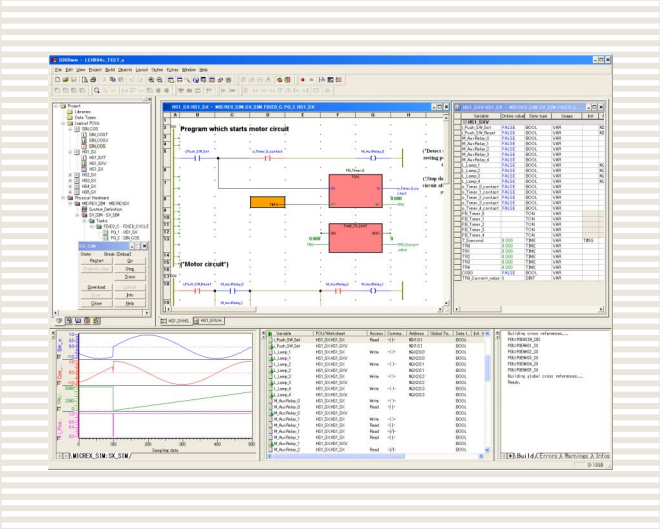
The SPB system software is in N mode when shipping from the factory.
To use it in SX mode, download the SX mode system software using the system software utility for D300win V3.1 or up.



Notes:
1. The SPB handy loader is disabled in SX mode. It is enabled only in N mode.
2. SX mode is enabled for SPB main unit version of V★★10 or up.

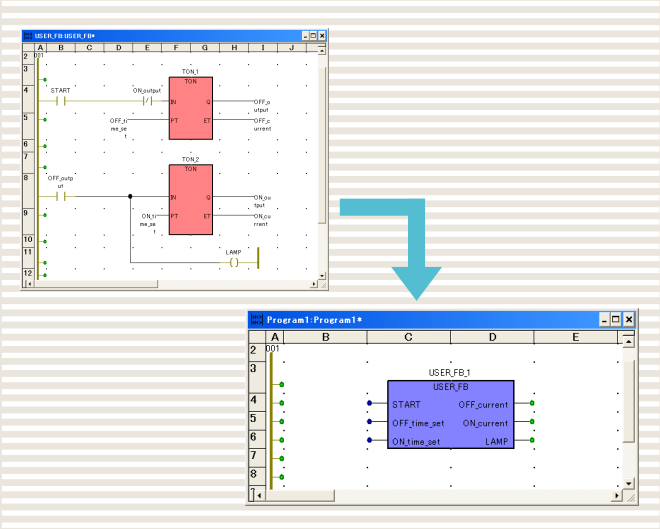
●Simulation function

Use of the simulation-dedicated software PLC function built in D300win enables logical testing of the program without using the actual unit.
Simulation is carried out for the program written in the programming language compliant with IEC61131-3. Because it enables monitoring or forced ON/OFF of an arbitrary signal, it can be expected to raise the programming and/or debugging efficiency for the SX Series.



●Use of FBs for user-original circuits

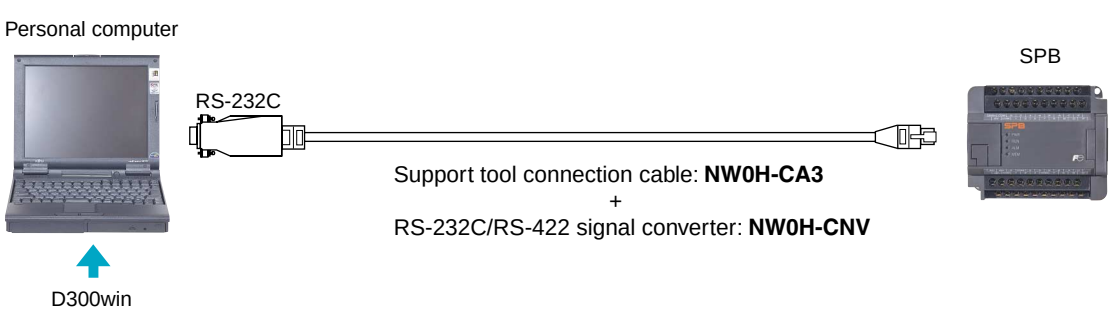
Formalized programs or circuits used frequently can be easily re-used by creating FBs. For creating user FBs, the language applicable to IEC61131-3 supported by D300win is available and no special languages are necessary. The function placed in a library form can be used alone efficiently without considering about debugging. In addition, creating an FB for individual control blocks facilitates circuit standardization and structuring.



●Operation environment

Item	Specification
Hardware	IBM-PC/AT compatible
CPU	Intel Pentium 233MHz or higher (when WindowsXP used, 350MHz or higher recommended.)
Hard disk	Free space of 220M bytes or more For D300win system software: 100M bytes or more For standard expansion FB package: 120M bytes or more
CD-ROM unit	1 unit (x 4 speed or faster), media: ISO 9660 format
Memory capacity	64M bytes or more (128M bytes or more recommended)
Keyboard	101 keyboard (when japaneas OS used, 106 keyboard)
Mouse	USB mouse, bus mouse, or PS2 mouse
Indicator	800 x 600-dots resolution or higher (1024 x 768-dots resolution or higher recommended)
Communication interface RS-232C	9,600bps to 57,600k bps (default setting according to the resource model selection)
OS	WindowsNT4.0(SP6 or higher), 2000, XP
Portability	Depends on a commercial mobile personal computer.
Environmental durability	Depends on environmental condition of a commercial personal computer.

●System Configuration



Programming Languages

Loader Software for Personal Computer

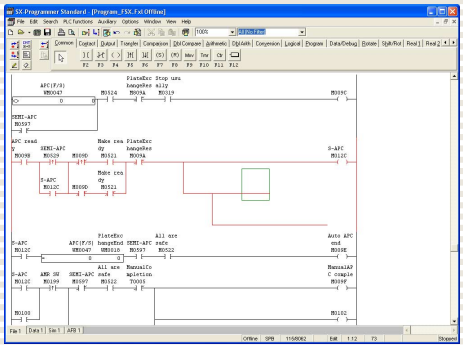
N mode programming support tool SX-Programmer Standard: NP4H-SWN

Enables same programming as FLEX-PC N Series

●Free-form circuit layout

Ladder diagram ruled lines and instruction symbols can be optionally arranged by a simple operation.

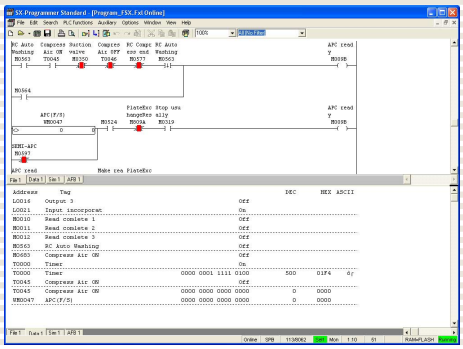
- **Ruled line write/delete**
  Ruled lines can be written by Ctrl+Arrow keys or deleted by Ctrl+Alt+Arrow keys.
- **Instruction symbol write**
  An instruction symbol can be optionally arranged by clicking on the corresponding icon or function key.



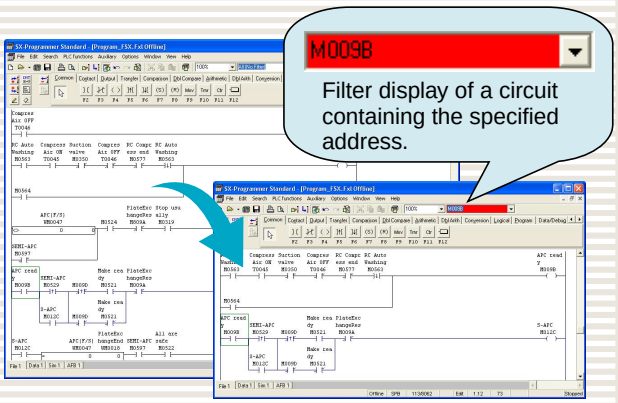
●Improved program edit and debugging workability

Information required for program edit/debugging can be displayed in a single window with the divided display feature showing a program and a datasheet or the filter function* for indicating only the circuit which uses a specific address or instruction.

<2-divided display>



<Filter function>

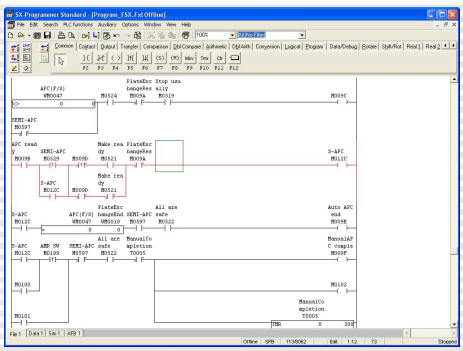


Support of the full-keyboard facilitates expeditious program editing and debugging in the field.

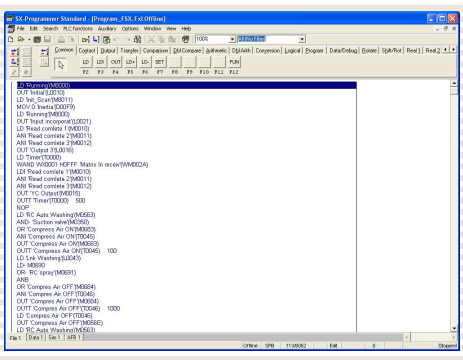
●Display/edit in 2 languages of ladder language and instruction words (mnemonic)

A circuit or the entire program can be displayed/edited in mnemonic (instruction words).

<Partial display/edit window>



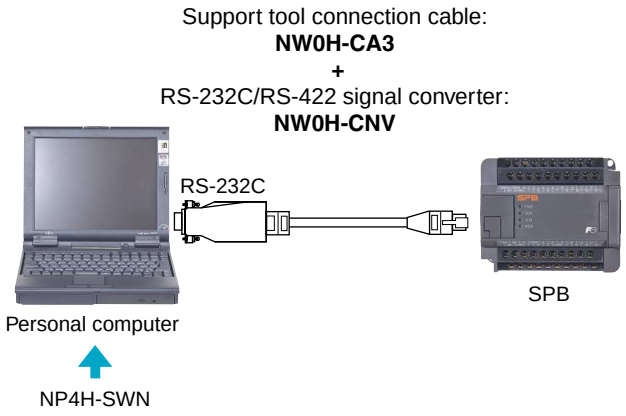
<Overall display/edit window>



●Operation environments

Item		Specification
Hardware		IBM-PC/AT compatible
CPU		Intel Pentium 100MHz or higher
Hard disk		Free space of 10M bytes or more (100M bytes or more recommended.)
CD-ROM unit		1 unit (x 4 speed or faster), media: ISO 9660 format
Memory capacity		32M bytes or more
Keyboard		101 keyboard (when Japanese OS used, 106 keyboard)
Mouse		USB mouse, series mouse, bus mouse, or PS2 mouse
Indicator		800 x 600-dots resolution or higher (1024 x 768-dots resolution or higher recommended)
Communication interface	RS-232C	9,600bps to 57,600k bps (Transmission speed is set automatically by the model for resource.)
OS		Windows95,98,Me,NT4.0(SP6 or higher), 2000, XP
Portability		Depends on a commercial mobile personal computer. Depends on environmental condition of a commercial personal computer.

●System Configurations



Handy Loader

A "palm-top" handy loader with maintenance function: NW0H-NE (English), NW0H-N (Japanese)

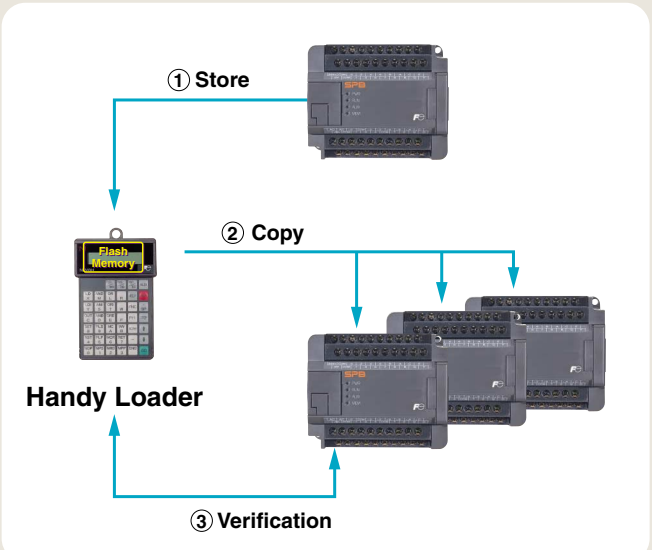
●Palm size convenient for portable use

Program edit and data monitor can be performed in the compact unit 90(W)x148(H)x38(D).

●Flash memory built in for user program storage

Two user programs with up to 32K steps can be stored in the internal memory of the handy loader. Stored programs can be copied to multiple basic units. The program in a basic unit can be compared with the program in the handy loader, allowing easy secure copy operation.

* Note that user data is not stored.
  The SPB handy loader is disabled in SX mode. It is enabled only in N mode.



●Basic Specifications

Item	Specification
Display section	LCD 16 characters x 2 lines with backlight
Keyboard section	40 embossed sheet keys with buzzer
User program memory	Built-in flash memory
Processor connection	RS-422

Online Adapter

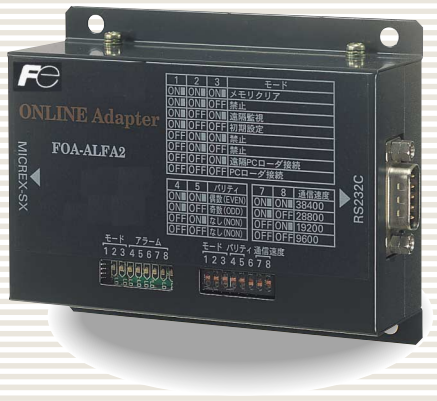
Facilitating configuration of remote maintenance system

Online Adapter: FOA-ALFA2

●Features

This module allows easy remote maintenance system configuration simply by connecting the online adapter to the loader port without changing any program on the PLC (MICREX-SX SPH/SPB) side. The SPB is based on SX mode.

- Bi-directional communication between the master station (personal computer) and slave station (SPH)
- Diverse functions
  - Failure monitor function • Data accumulation function
  - Integrated time monitor function
  - Communication functions of the each PLCs
- Calendar functions (year, month, day, hour, minute, second), and data backup functions (data memory, calendar IC memory) are provided too.



Online Adapter

●Specifications

General specifications

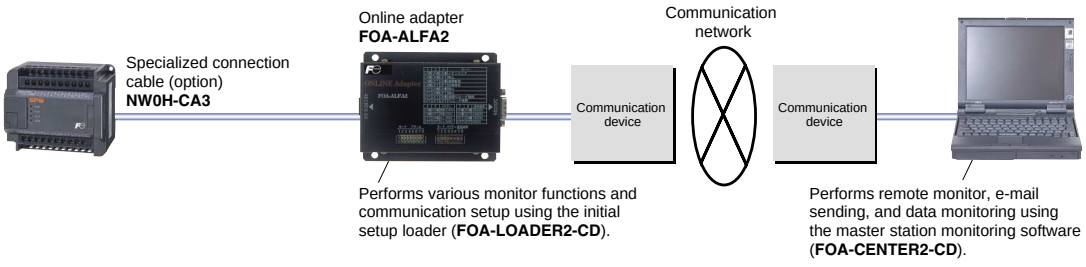
Item		Specification
Physical environment	Operating ambient temperature	0 to ± 55°C (without condensation)
	Storage temperature	-20 to ± 70°C (without condensation)
	Relative humidity	20 to -90%RH (without condensation)
	Contamination	Contamination level 2
	Corrosion resistance	No corrosive gas is present, no organic solvent adhesion
	Operating altitude/air pressure	Altitude of 2000m or less (air pressure of 70kPa or higher during transportation)
Mechanical operating condition	Resistance to vibration	One amplitude: 0.15mm, constant acceleration: 9.8m/s^2, 2 hours for each direction, 6 hours total
	Resistance to shock	Peak acceleration: 294m/s^2, 3 times for each direction
Electrical operating condition	Resistance to noise	Noise simulator method, rise time of 1ns, pulse width of 1µs, 1kV
	Resistance to electrostatic discharge	Contact discharge method: ± 6kV, air discharge method: ± 8kV
	Resistance to radiation electromagnetic field	10V/m (80 to 1000MHz)
Cooling system		Natural cooling
Insulation characteristic	Insulation resistance	10MΩ or more (between connectors and ground) with a 500V DC megger
Power supply method		Supplies 24V DC from PC or 12V DC from AC adapter.
Current consumption		24V: 60mA or less 12V: 120mA or less
Mass		Approx. 320g
Calendar accuracy		± 90 seconds/month (25°C, conduction)
Battery type/operating life		Lithium primary battery 3.6V **NP8P-BT** (Fuji Electric FA Components & Systems Co., Ltd.)/ 5 years (ambient temperature of 25°C)

Note: For operating environment, take into consideration the specifications of the communication devices used.
* Use the AC adapter only at the time of initial setup data transmission. Do not use it for connection with SPH/SPB (SX mode).

Functional specifications

Mode	Contents
Online adapter mode	Execution mode of various monitor functions
Loader mode	Monitors SPH/SPB (SX mode) programming monitor locally.
Remote mode	Monitors SPH/SPB (SX mode) programming monitor from a remote site.
Initial setup mode	Writes setup data necessary for various monitor functions using the initial setup loader.
Memory clear mode	Backup memory initialization (clear) mode

●System Configurations



●Initial setup loader (Model: FOA-LOADER2-CD) <Japanese version>

Creates initial setup data (each function setup).

- Sets the failure monitor, data accumulation, integrated time monitor functions and registers AT commands for communication.

Writes the initial setup data to the online adapter.
Reads the initial setup data from the online adapter.

●Master Station Monitoring Software (Model: FOA-CENTER2-CD) <Japanese version>

Slave station monitor function (reception of notification from slave station)

- Failure monitor function • Data accumulation function
- Integrated time monitor function

Access from the master monitor software (personal computer) to slave station.

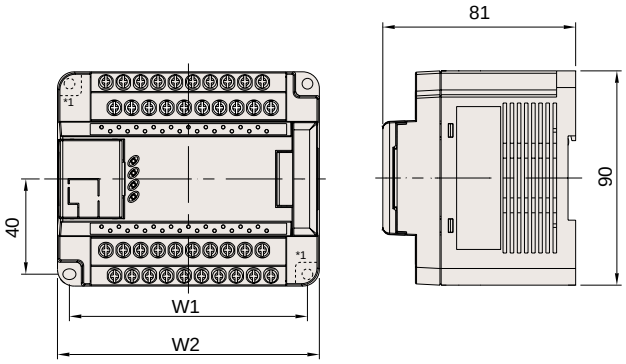
- Reads data accumulated in the online adapter.
- Automatically collects data by time specification (with circuit connection each time).
- Updates the initial setup data from a remote site. (Remote update function)
- Uses the personal computer loader software from a remote site.

Other functions

- Saves receive data as CSV files.
- Monitors accumulated data in bar graph form.
- Upon reception of failure information, automatically transfers the failure information to E-mail-based mobile tool through the internet using the online adapter.

Dimensions [mm]

Basic Unit / Expansion Unit

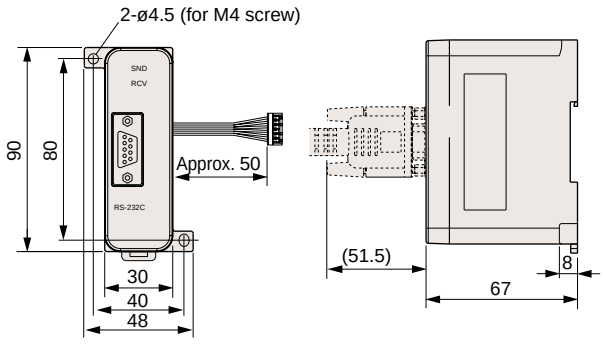


	W2	W1
20-point basic unit	80	70
30-point basic unit	110	100
40-point basic unit	140	130
60-point basic unit	180	170
16-point expansion unit	64	54
32-point expansion unit	110	100
60-point expansion unit	180	170

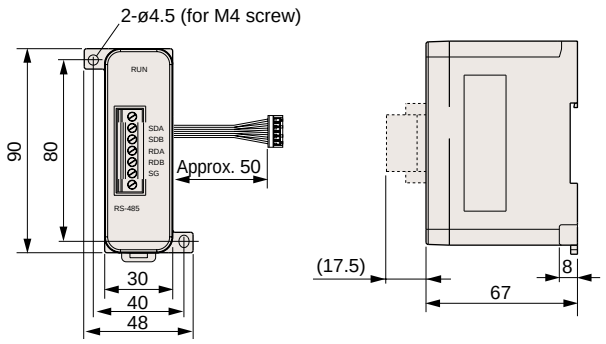
Note: The mounting hole of a basic unit of 60 point type is on four corners.
Other units has not the mounting hole on " *1 " part.

Communication Adapter

•RS-232C Adapter: NW0LA-RS2

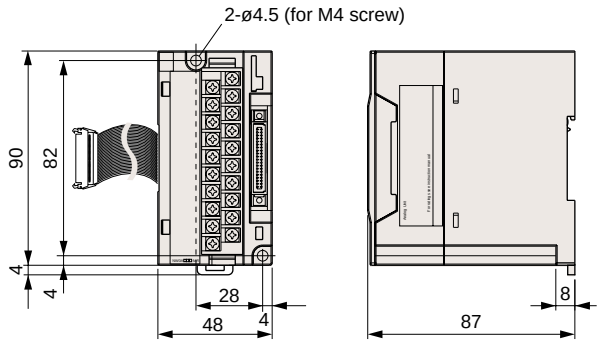


•RS-485 Adapter: NW0LA-RS4



Analog Unit

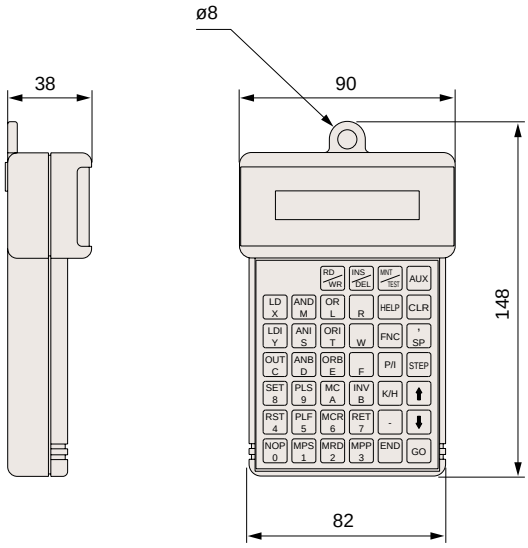
- Analog Input Unit: NW0AX04-MR
- Analog Output Unit: NW0AY04-MR
- Analog I/O Unit: NW0AW03-MR
- Thermocouple Input Module: NWOAX04-TC
- Resistance Bulb Input Module: NWOAX04-PT



Note: When analog unit and basic unit are installed and connected together, the distance between them must be approx. 10 to 20 mm.

Handy Loader

- English: NW0H-NE
- Japanese: NW0H-N



Ordering Informations

Standards	○	Certificated	△	Under planing		No planing	–	Exceptions

Basic Unit

Products names	Types (= Ordering codes)	Specifications			Standards		
		Power specifications	Input specifications	Output specifications	CE	UL/cUL	LR
20-points basic unit	**NW0P20R-31**	100 to 240V AC	24V DC 12 points	Ry 8 points	○	○	○
	NW0P20T-31			Tr sink 8 points	○	○	○
	NW0P20U-31			Tr source 8 points	○	○	○
	NW0P20R-34	24V DC		Ry 8 points	○	○	○
	NW0P20T-34			Tr sink 8 points	○	○	○
	NW0P20U-34			Tr source 8 points	○	○	○
30-points basic unit	**NW0P30R-31**	100 to 240V AC	24V DC 16 points	Ry 14 points	○	○	○
	NW0P30T-31			Tr sink 14 points	○	○	○
	NW0P30U-31			Tr source 14 points	○	○	○
	NW0P30R-34	24V DC		Ry 14 points	○	○	○
	NW0P30T-34			Tr sink 14 points	○	○	○
	NW0P30U-34			Tr source 14 points	○	○	○
40-points basic unit	**NW0P40R-31**	100 to 240V AC	24V DC 24 points	Ry 16 points	○	○	○
	NW0P40T-31			Tr sink 16 points	○	○	○
	NW0P40U-31			Tr source 16 points	○	○	○
	NW0P40R-31C			Ry 16 points	○	○	○
	NW0P40T-31C			Tr sink 16 points	○	○	○
	NW0P40U-31C			Tr source 16 points	○	○	○
	NW0P40R-34	24V DC		Ry 16 points	○	○	○
	NW0P40T-34			Tr sink 16 points	○	○	○
	NW0P40U-34			Tr source 16 points	○	○	○
	NW0P40R-34C			Ry 16 points	○	○	○
	NW0P40T-34C			Tr sink 16 points	○	○	○
	NW0P40U-34C			Tr source 16 points	○	○	○
60-points basic unit	**NW0P60R-31**	100 to 240V AC	24V DC 36 points	Ry 24 points	○	○	○
	NW0P60T-31			Tr sink 24 points	○	○	○
	NW0P60U-31			Tr source 24 points	○	○	○
	NW0P60R-31C			Ry 24 points	○	○	○
	NW0P60T-31C			Tr sink 24 points	○	○	○
	NW0P60U-31C			Tr source 24 points	○	○	○
	NW0P60R-34	24V DC		Ry 24 points	○	○	○
	NW0P60T-34			Tr sink 24 points	○	○	○
	NW0P60U-34			Tr source 24 points	○	○	○
	NW0P60R-34C			Ry 24 points	○	○	○
	NW0P60T-34C			Tr sink 24 points	○	○	○
	NW0P60U-34C			Tr source 24 points	○	○	○

Note: Pulse train output and PWM output are not available for relay output.

Expansion Unit

●Digital I/O Unit

Products names	Types (= Ordering codes)	Specifications			Standards		
		Power specifications	Input specifications	Output specifications	CE	UL/cUL	LR
16-points expansion unit *1	**NW0E16X**	No power sourc	24V DC 16 points	–	○	○	○
	NW0E16R-0		–	Ry 16 points	○	○	○
	NW0E16T-0			Tr sink 16 points	○	○	○
	NW0E16U-0			Tr source 16 points	○	○	○
	NW0E16R-3		24V DC 8 points	Ry 8 points	○	○	○
	NW0E16T-3			Tr sink 8 points	○	○	○
	NW0E16U-3			Tr source 8 points	○	○	○
32-points expansion unit *1	**NW0E32R-3**		24V DC 16 points	Ry 16 points	○	○	○
	NW0E32T-3			Tr sink 16 points	○	○	○
	NW0E32U-3			Tr source 16 points	○	○	○
60-points expansion unit *1	**NW0E60R-31**	Prpvided power sourc	24V DC 32 points	Ry 28 points	○	△	

*1 50mm expansion cable is supplied as accessory.

●Analog Unit

Products names	Types (= Ordering codes)	Specifications	Standards		
			CE	UL/cUL	LR
Analog Input Unit	**NW0AX04-MR**	Multi-range input: 4ch, Resolution: 14 bits (voltage / current)	○	○	○
Analog Output Unit	**NW0AY04-MR**	Multi-range output: 4ch, Resolution: 14 bits (voltage / current)	○	○	○
Analog I/O Unit	**NW0AW03-MR**	Multi-range input: 2ch, Multi-range output: 1ch, Resolution: 10 bits (voltage / current)	○	○	○
Thermocouple Input Module	**NW0AX04-TC**	Input: 4ch	○	△	
Resistance Bulb Input Module	**NW0AX04-PT**	Input: 4ch	○	△	

Communication Adapter

Products names	Types (= Ordering codes)	Specifications	Standards		
			CE	UL/cUL	LR
RS-232C adapter	**NW0LA-RS2**	RS-232C 1 channel (general-purpose communication mode, loader interface mode)	○	○	○
RS-485 adapter	**NW0LA-RS4**	RS-485 1 channel (general-purpose communication mode, loader interface mode, simplified CPU link mode)	○	○	○

Option

Products names	Types (= Ordering codes)	Specifications	Standards		
			CE	UL/cUL	LR
Memory card	**NW8PMF-8**	Flash ROM (for 40/60-points basic unit)	—	—	—
Battery	**NW8P-BT**	Lithium battery for backup	—	—	—

Programming Loader

Products names	Types (= Ordering codes)	Specifications	Standards		
			CE	UL/cUL	LR
SX-Programmer Standard	**NP4H-SWN**	For N mode, CD-ROM, English/Japanese edition, English/Japanese manual (PDF) Windows NT4.0 Workstation (Service Pack 6 or later)/2000, XP compatible	—	—	—
Programming support tool D300win	**NP4H-SEDBV3**	For SX mode, CD-ROM, English/Japanese edition, English/Japanese manual (PDF) Windows NT4.0 Workstation (Service Pack 6 or later)/2000, XP compatible, Version 3	—	—	—
Handy loader	**NW0H-NE**	English type: 1000mm loader cable x1: supplied as accessory (Type: NB-EC0100)		○	
	NW0H-N	Japanese type: 1000mm loader cable x1: supplied as accessory (Type: NB-EC0100)			

Loader Option

Products names	Types (= Ordering codes)	Specifications	Standards		
			CE	UL/cUL	LR
PC connection adapter (Signal converter)	**NW0H-CNV**	For personal computer loader-basic unit connection, RS-232C/RS-422 conversion, (combined with the optional loader cable: NW0H-CA3)	—	—	—
Loader cable	**NW0H-CA3**	Connection cable for personal computer loader-basic unit: 3000 mm straight cable (combined with the optional PC connection adapter: NW0H-CNV)	—	—	—

Online Adapter

Products names	Types	Ordering codes	Specifications	Standards		
				CE	UL/cUL	LR
Online adapter	**FOA-ALFA2**	**NP1L-FOA**	Adapted to MICREX-SX SPH/SPB (SX mode) series.			
Initial setup loader software <Japanese version>	**FOA-LOADER2-CD**	**NL4N-WNOL**	CD-ROM, (Adapted to SPH versions: LV3.00.25 or higher)	—	—	—
Master station monitoring software <Japanese version>	**FOA-CENTER2-CD**	**NL4N-WNOC**	CD-ROM, (Adapted to SPH versions: LV3.00.24 or higher)	—	—	—

⚠ Safety Considerations

- For safe operation, before using the product read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from which you purchased the product.
- Some of the products listed in this catalog may have limits on their use or location or may require periodic inspections. Call Fuji's sales representative for further information.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.

- Appearance and specifications are subject to change without prior notice for the purpose of product improvement.

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2004-9 (I04c/D01) FIS