

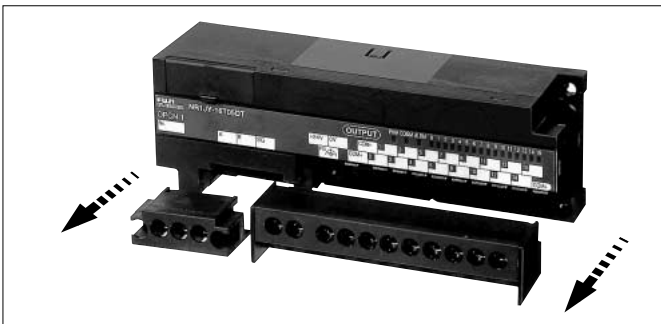
I/O Terminal: NR1 □

Compact type I/O terminal applicable to diverse field networks with a common frame size.

Wiring can be made directly to the main unit using the optional common extension terminal block without using the relay terminal block, allowing 25% reduction of the total installation space in comparison with the conventional wiring method.

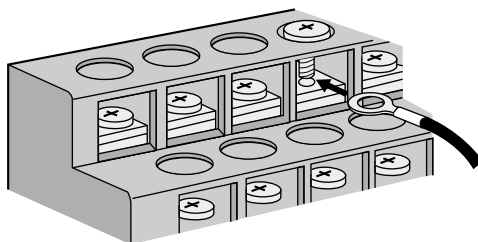
■ Features

- **Compatible with diverse device level networks**
Device level network which performs high-speed communication of I/O information and messages between a programmable controller, a personal computer, and other controllers and an inverter, a servo, an MMI device, and other FA devices, among diverse networks consisting of an FA system, ranging from the computer level to the bit level. The I/O terminal corresponds to open device level networks: OPCN-1, DeviceNet, T-link, LonWorks, and SX bus.
- **Easy maintenance**
Since removable terminal blocks are used as the terminal blocks for the communication section, power supply, and I/O, the main unit can be attached and removed easily.



- **Efficient safe terminal block structure**
This terminal block has terminal screws which are self-lifting by themselves after loosening, thus preventing screws from being lost at the time of wiring to the round amplifier terminal, increasing the wiring work efficiency. The use of power supply and I/O terminal blocks with the finger protection fitting (IP20) contributes to the safety of machines and equipment.

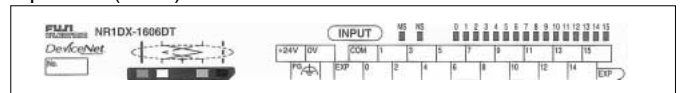
(Self-lifting screw terminals/Finger protection fitting)



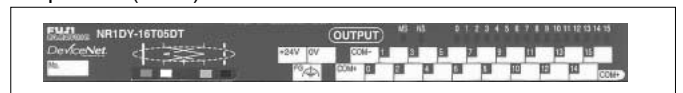
- **Preventing mis-wiring**
Uses different colors for the surface sheets of the main unit: input (white), output (black), and I/O mixture (zebra). Applicable networks are also displayed, enabling determination of the unit type at a glance.



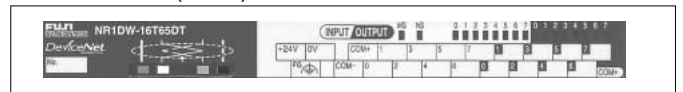
Input unit (white)



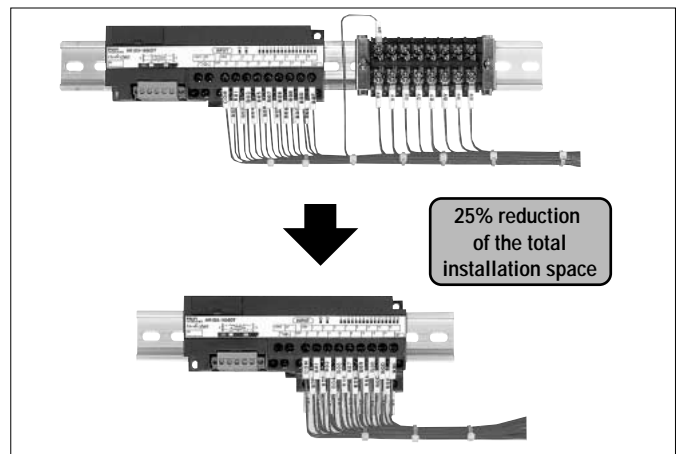
Output unit (black)



I/O mixture unit (zebra)



- **25% reduction of total installation space**
“Common extension terminal block” which extends the number of common terminals with one-touch operation is optionally available. The use of “common extension terminal block” eliminates the necessity of the separate relay terminal block for common extension, reducing the total installation space by 25%.



- **Contributing to panel design standardization**
The unit frame is unified to a compact size of 148x50x40 (WxHxD: mm), allowing design standardization without worrying about external view modifications by I/O specifications and network specifications. Network modifications can be dealt only with unit replacement.
- **Enabling DIN rail attachment**
Not only usual screw attachment but also DIN rail attachment is possible.

Programmable Controllers

MICREX-SX series SPH

Communication Module

■ Models

Product name		Model (= Product code)	Specification
OPCN-1 SX bus	16-point input	NR1□X-1606DT	24V DC, 16-point bi-directional input, removable terminal block
	8-point Ry output	NR1□Y-08R07DT	240V AC/110V DC, 8-point Ry output, removable terminal block
T-link	16-point Tr output *2	NR1□Y-16T05DT	24V DC, 16-point Tr sink output, removable terminal block
DeviceNet *1	8/8-point mixture	NR1□W-16T65DT	24V DC, 8-point source input, 12-24V DC, 8-point Tr sink output, removable terminal block
LonWorks	16-point input	NR1LX-1606DT	24V DC, 16-point bi-directional input (4 points can be used as pulse inputs), removable terminal block
	8-point Ry output	NR1LY-08R07DT	240V AC/110V DC, 8-point Ry output, removable terminal block
	9-point input/2-point output	NR1LW-11R80DT	24V DC, 9-point source input (4 points can be used as pulse inputs), 2-point Ry output, removable terminal block
Option		NR1XV-CB1	Common extension terminal block (9 pins)

*1: □ specification (applicable network specification): J=OPCN-1, S=SX bus, T=T-link, D=DeviceNet

*2: Tr output products without a fly-wheel diode are also offered. (Model: NR1□Y-16T05DTZ701)

■ Specifications

● General specifications

Item	Specification	
Applicable standards	IEC 61131-2, UL508	
Physical environment	Operating ambient temperature	0 to ± 55°C (Lon Works-based product: -10 to +55°C)
	Storage temperature	-20 to +70°C
	Relative humidity	20 to 95%RH (without condensation)
	Dust	No dust present
	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: 19.6m/s ² , 2 hours for each direction, 6 hours total
	Resistance to shock	Peak acceleration: 147m/s ² , 3 times for each direction
Electrical operating condition	Electrostatic discharge	Contact discharge: ± 6kV, air discharge: ± 8kV
	Radiative radio frequency electromagnetic field	80 to 1,000MHz: 10V/m
	Fast transient burst wave	2kV
	Conductive radio frequency interference	0.15 to 80MHz, 10Vrms
	Lightning surge	Common mode 2kV, normal mode: 1kV
	Square wave noise	Noise power supply 1.5kV, pulse width 1us, Rising time 1ns
Installation and wiring conditions	Structure	IP20 Panel-mount type
	Screw fastening torque	Terminal screw, terminal block mounting screw: 0.5-0.6N·m Unit mounting screw: 1 to 1.5N·m
	Cooling system	Natural cooling

● Power supply specifications

Item	Specification	
Rated input voltage	24V DC	
Input voltage range	21.6 to 26.4V DC (LonWorks-based product: 20.4 to 27.6V DC)	
Dropout tolerance	1ms	
Inrush current	5A, 1ms or less (LonWorks-based product: 3A, 5ms or less 25A, 5ms or less for the NR1LY-08R07DT)	
Dielectric strength	1500V AC, 1 minute (Between input terminal and ground)	
Insulation resistance	10MΩ or more (500V DC megger) (Between input terminal and ground)	
Power consumption	OPCN-1	NR1□X-1606DT (16-point input): 1.4W or less
	SX bus	NR1□Y-08R07DT (8-point Ry output): 3W or less
	T-link	NR1□X-16T05DT (16-point Tr output): 1.4W or less
	DeviceNet	NR1□X-16T65DT (8/8-point mixture): 1.4W or less
	LonWorks	NR1LX-1606DT (16-point input): 1.6W or less NR1LY-08R07DT (8-point Ry output): 3W or less NR1LW-11R80DT (9-point input/2-point Ry output): 1.6W or less NR1LW-11R67DT (9-point input/2-point Ry output): 1.6W or less

● I/O specifications

(1) I/O specifications of OPCN-1/SX bus/T-link/DeviceNet-based products

● Input specifications

Item	Specification
Type	NR1□X-1606DT, NR1□W-16T65DT *
Rated input voltage	24V DC
Max. input voltage	26.4V DC
Ripple percentage	5% or less
Rated input current	7mA
Input type	No polarity
Input impedance	3.3kΩ
Operating voltage	ON voltage range: 15 to 26.4V OFF voltage range: 0 to 5V
Input delay time	OPCN-1, DeviceNet: 3ms/3ms
ON/OFF filtering time	SX bus: Can be changed collectively through parameter setup. T-link: 5ms/5ms
No. of points per common	16 points/common (Mixture model: 8 points/common)
Isolation	Photocoupler
Dielectric strength	1500V AC, 1 minute (Between input terminals and ground)
Insulation resistance	10MΩ or more (500V DC megger) (Between input terminals and ground)
Internal current consumption	24V DC, 70mA or less (When all points are turned ON)

* [OFF to ON] - [ON to OFF]: 1-1, 3-3 (default), 3-10, 10-10, 30-30, 100-100ms

● Transistor output specifications

Item	Specification
Rated output voltage	24V DC
Allowable output voltage range	19.2-30V DC
Output format	Sink
Rated load current	0.5A/point (30V DC), 4A/common
Max. load current	0.6A/point (30V DC), 4.8A/common
Output voltage drop	1.5V or less (0.5A)
Output delay time	OFF to ON: 1ms or less ON to OFF: 1ms or less
Leakage current when OFF	0.1mA max.
Surge current	2A, 10ms
Surge suppresser circuit	Clamp diode
Common configuration	16 points/common (8 points/common only for mixture products)
Insulation method	Photocoupler insulation
Dielectric strength	1500V AC, one minute, between input terminals and FG
Insulation resistance	10MΩ or more with a 500V DC megger Between input terminals and FG
Internal current consumption	24V DC, 70mA or less (all points ON)

● Relay output specifications

Item	Specification
Rated output voltage	240V AC, 110V DC
Max. allowable output voltage	264V AC or less, 110V DC or less
Max. load current	30/250V DC: 2A/point, 110V DC: 0.2A/point
Output delay time	OFF to ON: 10ms or less ON to OFF: 10ms or less
Leakage current when OFF	None
Surge suppresser circuit	None
Min. load voltage, current	5V DC, 1mA
Max. open/close frequency	1800 times/hour
Common configuration	1 point/common
Insulation method	Relay insulation + photocoupler insulation
Dielectric strength	1500V AC, one minute, between input terminals and FG
Insulation resistance	10MΩ or more with a 500V DC megger Between input terminals and FG
Internal current consumption	24V DC, 140mA or less (all points ON)

(2) I/O specification of LonWorks-based product

• Input specification

Item	Specification	
	NR1LX-1606DT	NR1LW-11R80DT
No. of input points	DI: 12 points, PI (Pulse input) : 4 points*1	DI: 5 points, PI (Pulse input) : 4 points*1
Input common composition	16 points/common	9 points/common
Input type	None polarity	Source input
Rated voltage	24V DC	
Max. voltage	26.4V DC	
Rated current	7mA	
Input impedance	3.3kΩ	
Max. pulse input frequency	20Hz	
Pulse input measurement range	0-2147483648 (31 bits, incremental method)	
Standard operation range	OFF to ON 15 to 26.4V, ON to OFF 0 to 5V	
Input delay time	OFF to ON 10ms or less, ON to OFF 10ms or less	
Input type	DC (EN 61131 Type 2)	
Insulation	Photo coupler	
Delating condition	None	

* 1 PI can be used also as DI.

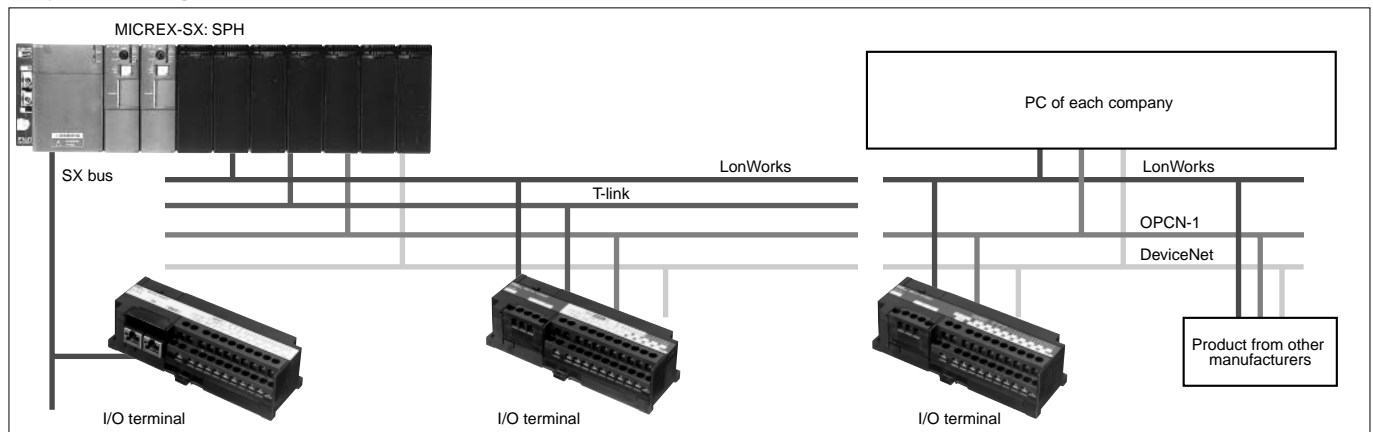
• Communication specifications

Item	Specification				
	DeviceNet	OPCN-1(Former JPCN-1)	SX bus	T-link	LonWorks
Transmission line format	Bus configuration (multi-drop, T-branching)	Bus configuration (multi-drop)	Bus configuration (ring)	Bus configuration (multi-drop)	Free topology (bus-structure/star-structure)
Max. signal point	128 words (2048 points)/master (When configurator is not used)	127 words (2032 /master)	512 words (8192 points)	100 words (8192 points)	228 bytes
Transmission speed/distance	125kbps/500m 250kbps/250m 500kbps/100m (Changes with the switch)	125kbps/1km 250kbps/800m 500kbps/480m 1Mbps/240m (Changes with the switch)	25Mbps/25m	500kbps/1km	78kbps/500 to 2700m
No. of connected stations	64 node	31 stations	254 stations (including CPU module)*2	32 stations	64 units/segment
Electric characteristics	-	EIA RS-485	EIA RS-422	Pulse transfer method	-
Transmission line	DeviceNet cable	Shielded twist pair cable	SX bus expansion cable	Shielded twist pair cable	Twist pair (1P-S)
No. of occupied words*1	8 points: 1 word 16 points: 1 word	8/8 (Mixture): 2 words			

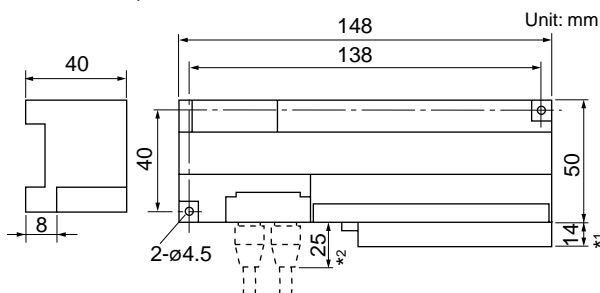
*1 When the master module of MICREX-SX series is used

*2 The maximum number of I/O terminal connections is 10 per base. Up to 22 units can be connected by extending the number of base boards between I/O terminals.

■ System configuration



■ Dimensions, mm



Notes: *1 When the extension terminal block is mounted.
*2 When the SX bus-adapted unit is connected.

• Output specification

Item	Specification	
	NR1LY-08R07DT	NR1LW-11R80DT
No. of output points	DO: 8 points	DO: 2 points
Output common composition	1 point/common	
Rated voltage	240V AC 110V DC	
Max. load current	Relay output 30V DC/240V AC: 2A, 110V DC: 0.2A	
	Voltage output 24V DC: 50mA/point	
Min. load current	5V DC: 1mA	
Output delay time * 1	OFF to ON 10ms or less ON to OFF 10ms or less	
Leakage current at the time of OFF	0.1mA or less (200V AC 60Hz)	
Surge protection	None	Varistor
Output protection	None	
Max. operating frequency	1800 times/hour	
Insulation	Photo coupler+Relay	Relay
Output type * 1	Relay output	Relay output or 24V DC voltage output
Delating condition	None	

■ Extension terminal block

Used to extend the common terminal block that is mounted on the lower side of the main unit.

Type: **NR1XB-CB1**

The terminals are divided into two groups for electrical connection: □ and ■ as shown below.

To COM/EXP of the main unit To mounting screw of terminal block (right side)

