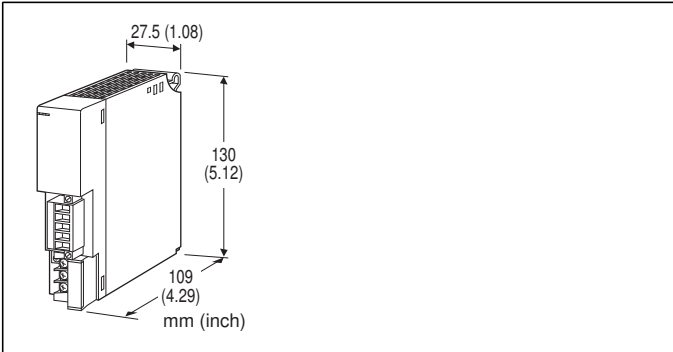


Remote I/O R3 Series

LonWorks INTERFACE MODULE

(analog I/O 16 points, discrete I/O 48 points)



MODEL: R3-NL1-[1][2]

ORDERING INFORMATION

- Code number: R3-NL1-[1][2]
- Specify a code from below for each of [1] and [2].
(e.g. R3-NL1-R/Q)
- Specify the specification for option code /Q
(e.g. /C01)

[1] POWER INPUT

N: No power supply

AC Power

K3: 100 - 120 V AC

(Operational voltage range 85 - 132 V, 47 - 66 Hz) *

L3: 200 - 240 V AC

(Operational voltage range 170 - 264 V, 47 - 66 Hz) *

DC Power

R: 24 V DC

(Operational voltage range 24 V $\pm 10\%$, ripple 10 %p-p max.) *

* Not selectable for use with independent power modules or network modules with the internal power input options.

[2] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to M-System's web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

RELATED PRODUCTS

- XIF File (Device Interface File)

XIF file is used to define a LonWorks device when programmed on LonMaker.

GENERAL SPECIFICATIONS

Connection

LonWorks: Euro type connector terminal

(applicable wire size: 0.2 to 2.5 mm², stripped length 7 mm)

Internal bus: Via the Installation Base

(model: R3-BSx)

Internal power: Via the Installation Base (model: R3-BSx)

Power input, RUN contact output: M3 separable screw terminal (torque 0.5 N·m)

Screw terminal: Nickel-plated steel

Isolation: LonWorks to internal bus or internal power to power input to RUN contact output to FG

Input error data setting: Input value setting at input module error with side DIP SW

Dual communication setting: Set with the side DIP switch

Data allocation setting: Set with the side DIP switch

RUN indicator: Bi-color (green/red) LED; Green ON in communications with another device online or changing the output data (turns off after 25 seconds of no communication); Red ON when receiving data (function selected with DIP SW)

ERR indicator: Bi-color (green/red) LED; Green ON or blinking at communication error; Red ON at transmitting data (Function selected with DIP SW)

■ RUN CONTACT OUTPUT

RUN contact: Turns on while the green RUN LED is ON (LonWorks in normal communication)

Rated load: 250 V AC @ 0.5 A ($\cos \phi = 1$)

30 V DC @ 0.5 A (resistive load)

Maximum switching voltage: 250 V AC or 30 V DC

Maximum switching power: 250 VA or 150 W

Minimum load: 1 V DC @ 1 mA

Mechanical life: 2×10^7 cycles (rate 300 cycles/min.) When driving an inductive load, external contact protection and noise quenching recommended.

LonWorks COMMUNICATION

Neuron Chip: FT3120 (NeuronID printed in numbers and bar code [peel-off code 39 format])

Transceiver: FT-X1 (equivalent to FTT10A)

Transmission speed: 78 kbps

Twisted-pair cable

Distance, free topology: 500 meters

Max. 64 nodes/channel

LNS: Ver. 3.0 Service Pack 8 or higher

Network variable type

Analog: SNVT_lev_percent or SNVT_temp (selectable)

Discrete: SNVT_switch

ONLINE indicator: Red LED

ON: Off-line or no network information (decommissioned)

Blinking in approx. 0.5 Hz: On-line

(ready to communicate network variables)

Blinking in approx. 5 Hz for 30 sec.: Wink message received

SERVICE indicator: Green LED

OFF: Normal operations

Blinking in approx. 0.5 Hz: No network information

ON: Internal program error

SERVICE switch: Used to identify the node in LonWorks network configuration

RESET switch: Resetting the Neuron Chip

Numbers of data (*factory setting)

Analog Input	Analog Output
16	0
12	4
8 (*)	8 (*)
4	12
0	16
Discrete Input	Discrete Output
0	48
48	0

INSTALLATION

Power consumption

•AC: Approx. 20 VA

•DC: Approx. 12 W

Current consumption (no power supply): 100 mA

Output current (power supply): 250 mA continuous at 20 V DC; 400 mA for 10 minutes

Operating temperature: -10 to +55°C (14 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Installation Base (model: R3-BSx)

Weight: 200 g (0.44 lb)

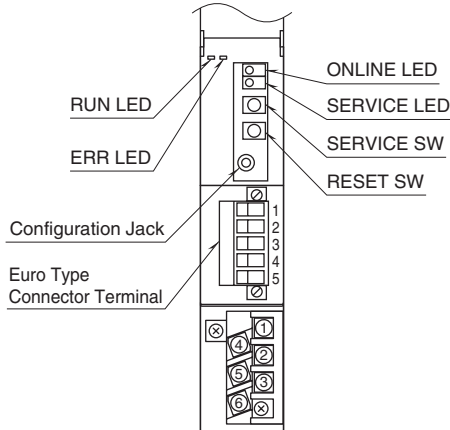
PERFORMANCE

Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

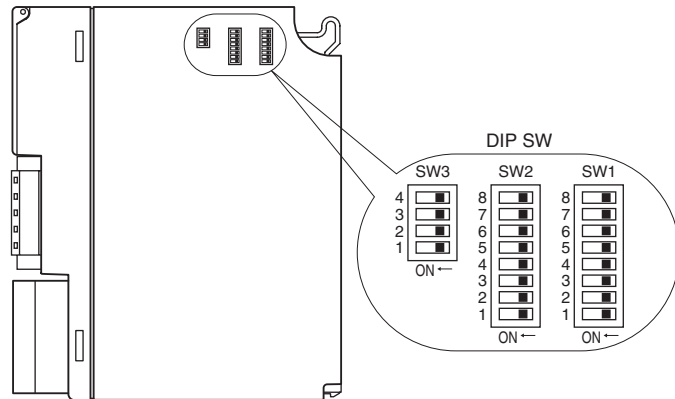
Dielectric strength: 1500 V AC @ 1 minute (LonWorks or internal bus or internal power to power input to RUN contact output to FG)

EXTERNAL VIEW

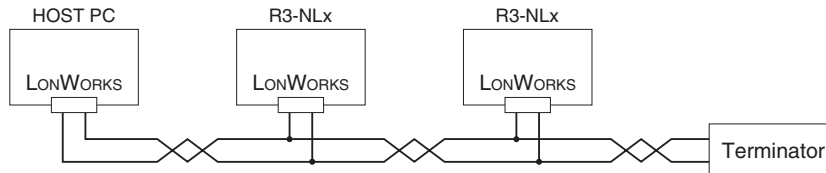
■ FRONT VIEW



■ SIDE VIEW



COMMUNICATION CABLE CONNECTIONS



TRANSMISSION DATA DESCRIPTIONS

The DIP SW located at the side of the module specifies each I/O module's data allocation (occupied data area).

Data are assigned in turn from Slot 1, in order of Functional Blocks (Input or GetValue/R3Di first, followed by Output or SetValue/R3Do).

The 1st output must be the 1st transmitted data in the slot next to the one with the last input data.

[Example 1]

	Data Area	
Module 1	4	GetValue [0 – 3]
Module 2	4	GetValue [4 – 7]
Module 3	4	SetValue [0]
Module 4	1	SetValue [1]
Module 5	1	SetValue [2]
Module 6	1	SetValue [3]
Module 7	1	SetValue [4]
Module 8	1	SetValue [5]
Module 9	1	SetValue [6]
Module 10	1	SetValue [7]

[Example 2]

	Data Area	
Module 1	1	GetValue [0]
Module 2	4	GetValue [1 – 4]
Module 3	4	GetValue [5 – 7] The 4th data, Slot 3 is invalid.
Module 4	1	SetValue [0]
Module 5	4	SetValue [1 – 4]
Module 6	4	SetValue [5 – 7] The 4th data, Slot 6 is invalid.

When the data consist of only inputs or outputs, data for the total of 16 Functional Blocks (GetValue [0 – 15] or R3Di [0 – 2], or SetValue [0 – 15] or R3Do [0 – 2]) are assigned to each module position from Slot 1.

I/O COMBINATIONS

A dedicated Device File for each I/O device depending upon I/O combinations is required using an integration tool such as Lon Maker.

On-line download is available for Device Image files at M-System's homepage.

Functional Blocks usable for respective files are not identical to all. Refer to the manual.

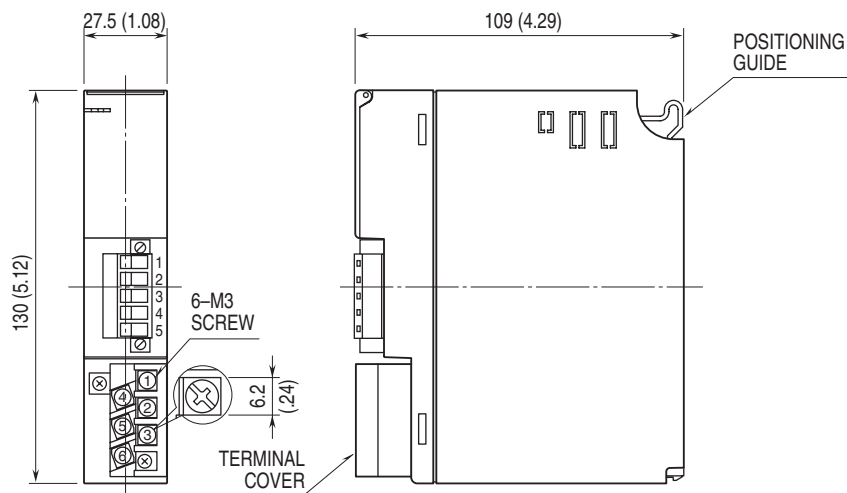
■ ANALOG INPUT / OUTPUT

NO. of DATA		DEVICE IMAGE (APB FILE)	USABLE FUNCTIONAL BLOCKS
INPUT	OUTPUT		
16	0	R3NL1_1_101.APB	NodeObjet, GetValue [0 ... 15] (Can be defined from 0 to 15)
12	4	R3NL1_2_101.APB	NodeObjet, GetValue [0 ... 11], SetValue [0 ... 3]
8	8	R3NL1_3_101.APB	NodeObjet, GetValue [0 ... 7], SetValue [0 ... 7]
4	12	R3NL1_4_101.APB	NodeObjet, GetValue [0 ... 3], SetValue [0 ... 11]
0	16	R3NL1_5_101.APB	NodeObjet, SetValue [0 ... 15]

■ DISCRETE INPUT / OUTPUT

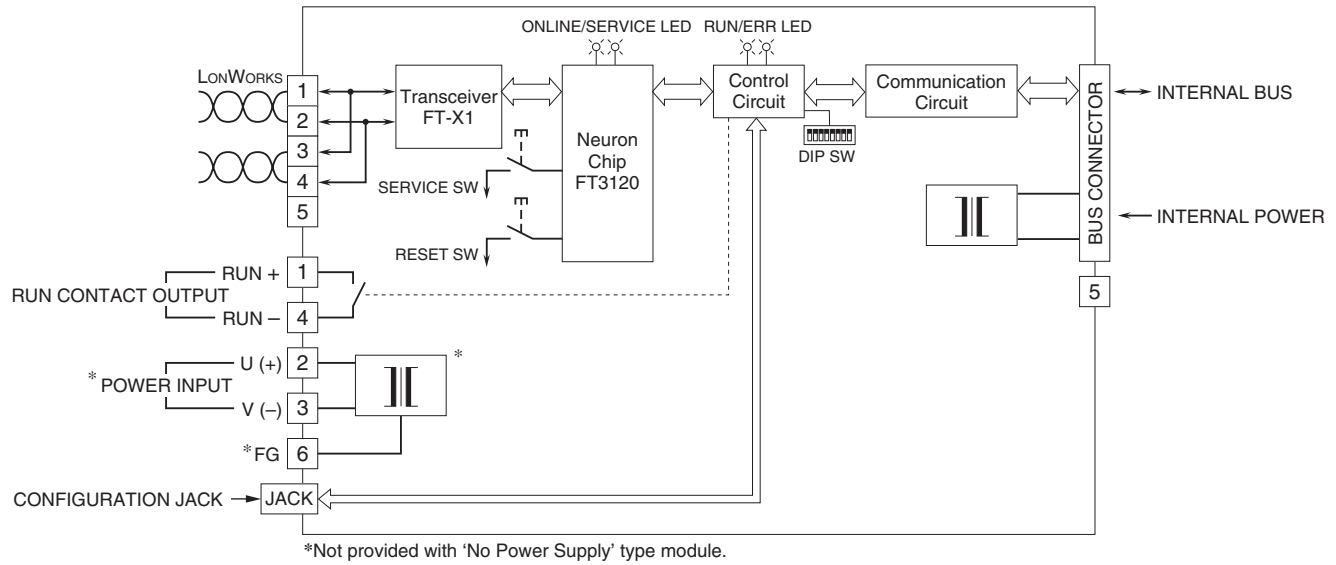
NO. of DATA		DEVICE IMAGE (APB FILE)	USABLE FUNCTIONAL BLOCKS
INPUT	OUTPUT		
0	48	R3NL1_6_101.APB	NodeObjet, R3Do [0 ... 2] (One (1) block can handle 16 contacts.)
48	0	R3NL1_7_101.APB	NodeObjet, R3Di [0 ... 2]

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Caution: FG terminal is NOT a protective conductor terminal.



Specifications are subject to change without notice.