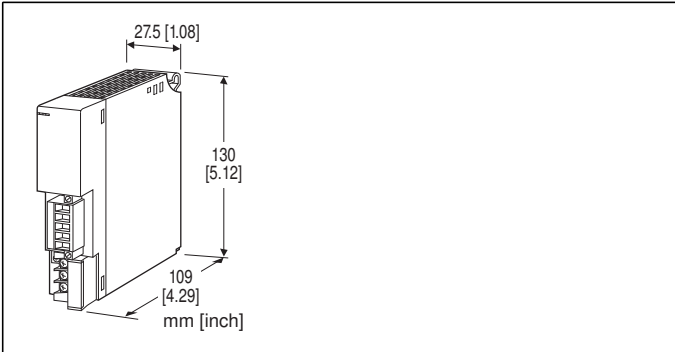


Remote I/O R3 Series

LonWorks INTERFACE MODULE

(I/O 56 points)



MODEL: R3-NL2-[1][2]

ORDERING INFORMATION

- Code number: R3-NL2-[1][2]
- Specify a code from below for each of [1] and [2].
(e.g. R3-NL2-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.

[2] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our 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

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)

ERR indicator: Bi-color (green/red) LED; Green ON in normal status; Green blinks when the APB file is not adequately imported; Green/Orange turn ON in turn in an abnormality.

■ 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 ϕ = 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

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 12 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

Possible I/O combinations

Analog I/O

| Input | Output | Network Variable Type |
|-------|--------|------------------------------------|
| 56 | 0 | SNVT_lev_percent |
| 0 | 56 | SNVT_lev_percent |
| 32 | 24 | SNVT_lev_percent (factory default) |

Temperature Input (°C input module use)

| Input | Output | Network Variable Type |
|-------|--------|-----------------------|
| 56 | 0 | SNVT_temp |
| 56 | 0 | SNVT_temp_p |

Discrete I/O (Usable with the R3-DA16x and the R3-DC16x)

| Input | Output | Network Variable Type |
|-------|--------|-----------------------|
| 56 | 0 | SNVT_switch |
| 0 | 56 | SNVT_switch |
| 32 | 24 | SNVT_switch |

Totalized Pulse I/O (Usable as analog I/O)

| Input | Output | Network Variable Type |
|-------|--------|-----------------------|
| 56 | 0 | SNVT_count |
| 0 | 56 | SNVT_count |
| 32 | 24 | SNVT_count |

Totalized Pulse Input, Discrete I/O (Totalized pulse usable as analog input) (Usable with the R3-DA16x and the R3-DC16x)

| Totalized Pulse Input | Discrete | | Network Variable Type |
|-----------------------|----------|--------|---------------------------|
| | Input | Output | |
| 16 | 16 | 16 | SNVT_count SNVT_switch |

PERFORMANCE

Insulation resistance: ≥ 100 MΩ 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)

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)

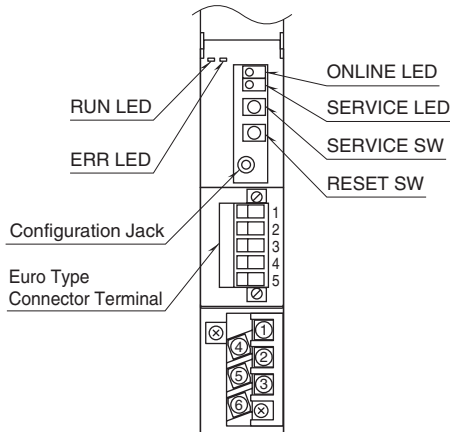
Atmosphere: No corrosive gas or heavy dust

Mounting: Installation Base (model: R3-BSx)

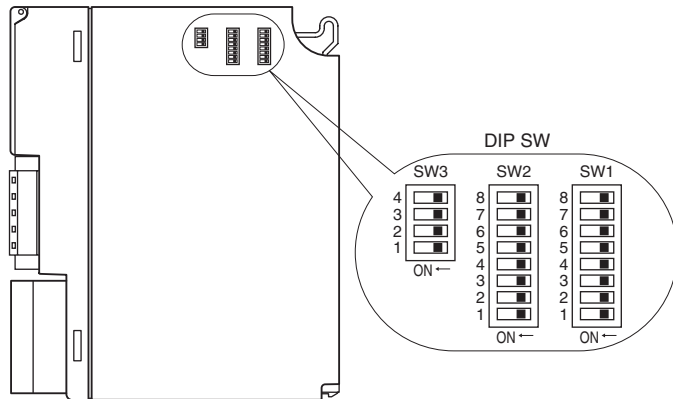
Weight: 200 g (0.44 lb)

EXTERNAL VIEW

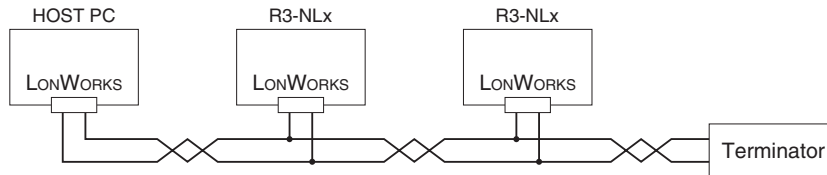
FRONT VIEW



SIDE VIEW



COMMUNICATION CABLE CONNECTIONS



TRANSMISSION DATA DESCRIPTIONS

ANALOG INPUT / OUTPUT

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

[Example 1]

Seven (7) of 8-point analog input module:

| Position | Module Type | Data Area | Network Variable |
|----------|-------------|-----------|-------------------------|
| Module 1 | R3-SV8S | 8 | nvoLV01 through nvoLV08 |
| Module 2 | R3-SV8S | 8 | nvoLV09 through nvoLV16 |
| Module 3 | R3-SV8S | 8 | nvoLV17 through nvoLV24 |
| Module 4 | R3-SV8S | 8 | nvoLV25 through nvoLV32 |
| Module 5 | R3-SV8S | 8 | nvoLV33 through nvoLV40 |
| Module 6 | R3-SV8S | 8 | nvoLV41 through nvoLV48 |
| Module 7 | R3-SV8S | 8 | nvoLV49 through nvoLV56 |
| Module 8 | R3-NL2-N | | |
| Module 9 | R3-PS3-R | | |

The same principle is applied to Analog Output (R3NL2-LVO56) or Temperature Input (R3NL2_T56, R3NL2_TP56).

■ DISCRETE INPUT / OUTPUT

One (1) data area can handle 16 points of discrete signals.

[Example 2]

Four (4) of 16-point discrete input module:

| Position | Module Type | Data Area | Network Variable |
|----------|-------------|-----------|-------------------------|
| Module 1 | R3-DA16S | 1 | nvoSW01 through nvoSW16 |
| Module 2 | R3-DA16S | 1 | nvoSW17 through nvoSW32 |
| Module 3 | R3-DA16S | 1 | nvoSW33 through nvoSW48 |
| Module 4 | R3-DA16S | 1 | nvoSW49 through nvoSW56 |
| Module 5 | R3-NL2-N | | |
| Module 6 | R3-PS1-R | | |

Channels 9 through 16 of the Module 4 are not transmitted.

■ MIXED I/O

Network Variables for the input channels are assigned first, and then those for the output channels are assigned to the next module position.

[Example 3]

Four (4) of 8-point analog input module and three (3) of 8-point analog output:

| Position | Module Type | Data Area | Network Variable |
|----------|-------------|-----------|-------------------------|
| Module 1 | R3-SV8S | 8 | nvoLV01 through nvoLV08 |
| Module 2 | R3-SV8S | 8 | nvoLV09 through nvoLV16 |
| Module 3 | R3-SV8S | 8 | nvoLV17 through nvoLV24 |
| Module 4 | R3-SV8S | 8 | nvoLV25 through nvoLV32 |
| Module 5 | R3-YV8S | 8 | nviLV01 through nviLV08 |
| Module 6 | R3-YV8S | 8 | nviLV09 through nviLV16 |
| Module 7 | R3-YV8S | 8 | nviLV17 through nviLV24 |
| Module 8 | R3-NL2-N | | |
| Module 9 | R3-PS3-R | | |

■ TOTALIZED PULSE INPUT / DISCRETE I/O

Network Variables for the discrete input channels are assigned first, and then those for the totalized pulse input channels are assigned to the next module position. Finally those for the discrete output channels are assigned to the following module position. The I/O modules must be assigned as in the following example. Adequate operation is not guaranteed in any other configuration.

[Example 4]

One (1) of 16-point totalized pulse input module, one (1) of 16-point discrete input module, and one (1) of 16-point discrete output:

| Position | Module Type | Data Area | Network Variable |
|----------|-------------|-----------|-------------------------|
| Module 1 | R3-DA16S | 1 | nvoSW01 through nvoSW16 |
| Module 2 | R3-PA16S | 16 | nvoC01 through nvoC16 |
| Module 3 | R3-DC16S | 1 | nviSW01 through nviSW16 |
| Module 4 | R3-NL2-N | | |
| Module 5 | R3-PS1-R | | |

I/O COMBINATIONS

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

On-line download is available for Device Image files at our homepage.

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

■ANALOG INPUT / OUTPUT

| NO. of DATA | | NETWORK VARIABLE | DEVICE IMAGE | USABLE FUNCTIONAL BLOCKS |
|-------------|--------|------------------|--|--------------------------|
| INPUT | OUTPUT | | | |
| 56 | 0 | SNVT_lev_percent | R3NL2_LVI56_103.XIF R3NL2_LVI56_103.APB | NodeObject NL2LVIn |
| 0 | 56 | SNVT_lev_percent | R3NL2_LVO56_103.XIF R3NL2_LVO56_103.APB | NodeObject NL2LVOOut |
| 32 | 24 | SNVT_lev_percent | R3NL2_LVI32O24_104.XIF R3NL2_LVI32O24_104.APB | NodeObject NL2LVIO |

■TEMPERATURE INPUT (°C)

| NO. of DATA | | NETWORK VARIABLE | DEVICE IMAGE | USABLE FUNCTIONAL BLOCKS |
|-------------|--------|------------------|--|--------------------------|
| INPUT | OUTPUT | | | |
| 56 | 0 | SNVT_temp | R3NL2_TI56_103.XIF R3NL2_TI56_103.APB | NodeObject NL2TIIn |
| 56 | 0 | SNVT_temp_p | R3NL2_TPI56_103.XIF R3NL2_TPI56_103.APB | NodeObject NL2TPIIn |

■DISCRETE INPUT / OUTPUT

| NO. of DATA | | NETWORK VARIABLE | DEVICE IMAGE | USABLE FUNCTIONAL BLOCKS |
|-------------|--------|------------------|--|--------------------------|
| INPUT | OUTPUT | | | |
| 56 | 0 | SNVT_switch | R3NL2_SWI56_103.XIF R3NL2_SWI56_103.APB | NodeObject NL2SWIn |
| 0 | 56 | SNVT_switch | R3NL2_SWO56_103.XIF R3NL2_SWO56_103.APB | NodeObject NL2SWOut |
| 32 | 24 | SNVT_switch | R3NL2_SWI32O24_103.XIF R3NL2_SWI32O24_103.APB | NodeObject NL2SWIO |

■TOTALIZED PULSE INPUT / OUTPUT

| NO. of DATA | | NETWORK VARIABLE | DEVICE IMAGE | USABLE FUNCTIONAL BLOCKS |
|-------------|--------|------------------|--|--------------------------|
| INPUT | OUTPUT | | | |
| 56 | 0 | SNVT_count | R3NL2_CI56_103.XIF R3NL2_CI56_103.APB | NodeObject NL2CIn |
| 0 | 56 | SNVT_count | R3NL2_CO56_104.XIF R3NL2_CO56_104.APB | NodeObject NL2COut |
| 32 | 24 | SNVT_count | R3NL2_CI32CO24_103.XIF R3NL2_CI32CO24_103.APB | NodeObject NL2CInOut |

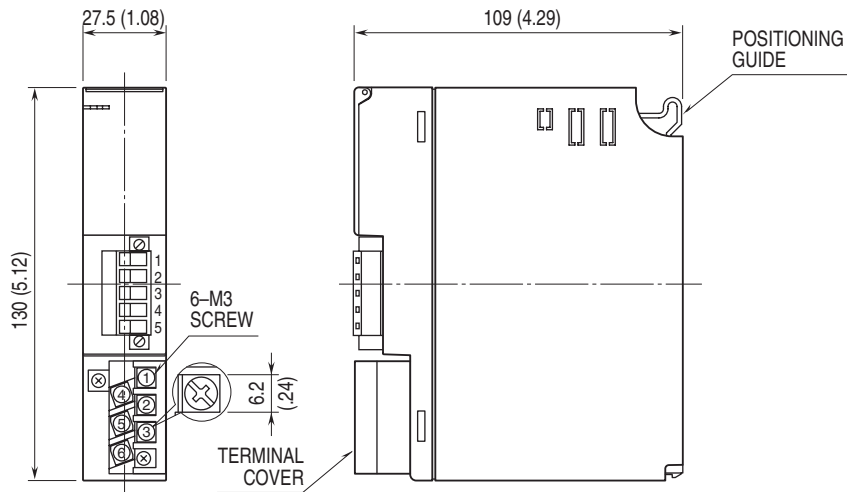
■TOTALIZED PULSE INPUT / DISCRETE INPUT / DISCRETE OUTPUT

| NO. of DATA | | | NETWORK VARIABLE | DEVICE IMAGE | USABLE FUNCTIONAL BLOCKS |
|--------------|----------|--------|---------------------------|--|--------------------------|
| TOTAL. PULSE | DISCRETE | | | | |
| INPUT | INPUT | OUTPUT | | | |
| 16 | 16 | 16 | SNVT_count SNVT_switch | R3NL2_CI16SWI16SWO16_103.XIF R3NL2_CI16SWI16SWO16_103.APB | NodeObject NL2CISWIO |

XIF File: Device Interface File (external interface)

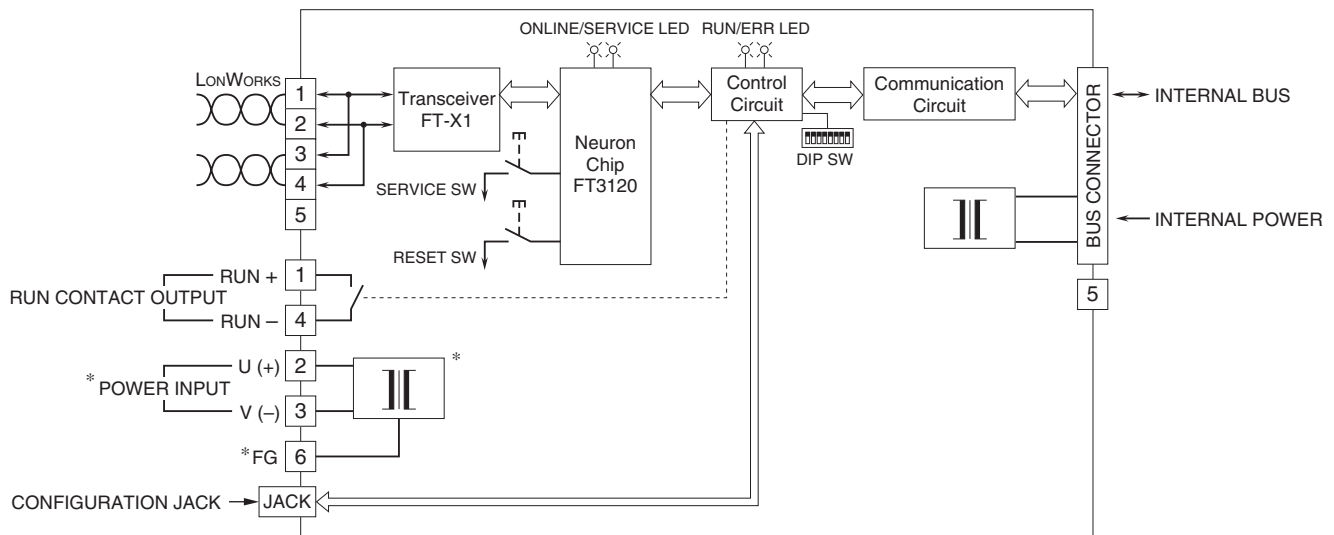
APB File: Downloadable Application Image File (program for NeuronChip)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Caution: FG terminal is NOT a protective conductor terminal.



*Not provided with 'No Power Supply' type module.



Specifications are subject to change without notice.