

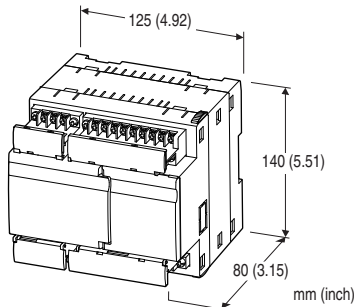
## Remote I/O R9 Series

### MULTI POWER MONITORING UNIT

(Clamp-on current sensor CLSE, LonWorks)

#### Functions & Features

- Multi Power Monitoring Unit for LonWorks.
- By using clamp-on current sensors, there is no need of current transformers.
- Up to 8 circuits can be measured. (Common voltage measurement)
- Current sensors are easy to install in existing systems. Wide input range of 5 to 600 A is available.
- All measured values, counter values, display mode, setting data are stored in the non-volatile memory when power is off.
- By using SD card, data logging of current and power etc. with calendar is available.



### MODEL: R9LWTU-2001-AD4[1]

#### ORDERING INFORMATION

- Code number: R9LWTU-2001-AD4[1]
- Specify a code from below for [1].  
(e.g. R9LWTU-2001-AD4/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

#### CONFIGURATION

2: Single-phase/2-wire, 3-phase/3-wire, single-phase/3-wire; 8 circuits

#### CONNECTION

0: Terminal block

#### I/O

0: Without

#### EXTENSION UNIT

1: With connection

#### AUXILIARY POWER SUPPLY

AD4: universal

100 – 240 V AC (Operational range 85 – 264 V, 50 / 60 Hz) /  
110 – 240 V DC (Operational range 99 – 264 V,  
ripple 10 %p-p max)

#### [1] 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

- Discrete I/O extension unit (model: R9WTU-ED)
- Multi power monitoring extension unit (model: R9WTU-EP)
- PC configurator software (model: PMCFG)
- XIF File (Device Interface File)

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

The XIF files and Software are downloadable at our web site. To connect the module to a PC a dedicated cable is required (refer to our web site or instruction manual).

- Clamp-on current sensor (model: CLSE)

The clamp-on current sensors, not included in this product package, must be ordered separately. Required number depends upon the system configuration.

- SD card

A SD card is required to store data in the unit. Use the specified model number of memory card.

Available for purchase from us. Consult us.

- Hagiwara Solutions NSD6-004GH(B21SEI)  
(NSD6-004GH(A00SDI, NSDA-004GT,  
NSDA-004GL ... discontinued)
- Apacer Technology AP-ISD04GIS4B-3T  
(AP-ISD04GIS4B-T ... discontinued)

#### GENERAL SPECIFICATIONS

Construction: Stand-alone

Degree of protection: IP20

Connection

Auxiliary power or voltage input: M3.5 screw terminals  
(torque 0.8 N·m)

Current input: M3 screw terminals (torque 0.5 N·m)

**LonWorks:** M3 screw terminals (torque 0.5 N·m)

**Solderless terminal:** Refer to the drawing at the end of the section.

**Recommended manufacturer:** Japan Solderless Terminal MFG.Co.Ltd, Nichifu Co.,Ltd

**Applicable wire size**

**M3 screw terminal:** 0.25 to 1.65 mm<sup>2</sup> (AWG 22 to 16)

**M3.5 screw terminal:** 1.04 to 2.63 mm<sup>2</sup> (AWG 16 to 14)

**Configuration:** Single-phase/2-wire, single-phase/3-wire, 3-phase/3-wire

**Screw terminal:** Nickel-plated steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Sensor core to sensor output or current input or voltage input to LonWorks to auxiliary power to FE1

■ **Measured variables**

**Voltage:** R - N, S - N, T - N, R - S, S - T, T - R

**Current:** R, S, T, N

**Active / reactive / apparent power:** R, S, T, Σ

**Power factor:** R, S, T, Σ

**Frequency**

**Active energy:** Incoming

**Reactive energy:** Incoming lag

**Active / reactive / apparent power intervals (demand)**

**Average (demand) current:** R, S, T, N

**Harmonic contents:** Σ

**Voltage:** R - N, S - N, T - N, R - S, S - T, T - R

**Current:** R, S, T, N

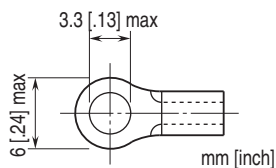
**Max. and min. values**

**Calendar log (inserting SD card):** Voltage, Current, power, electric energy, power factor

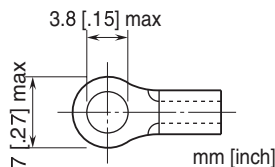
**Operating mode setting:** Connection, clamp-on sensor selection

**Status indicators:** Power, SD Card

■ Recommended solderless terminal size - M3



■ Recommended solderless terminal size - M3.5



## 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

**Status indicator:** ONLINE, ERR, TX/RX, SVCE (service)

**Operation switch:** Service, reset

## INPUT SPECIFICATIONS

**Frequency:** 50 / 60 Hz (45 - 65 Hz)

• **Voltage Input**

**Rated voltage**

• **Between lines:** 400 V AC

• **Line-neutral (phase voltage):** 230 V (single-phase / 2-wire and 3-wire)

**Input burden:** ≤  $U_{LN}^2 / 300$  kΩ / phase

**Overload capacity:** 200 % of rating for 10 sec., 120 % continuous

**Selectable primary voltage range:** 50 - 400 000 V

• **Current Input**

**CLSE-R5:** 0 - 5 A AC

**CLSE-05:** 0 - 50 A AC

**CLSE-10:** 0 - 100 A AC

**CLSE-20:** 0 - 200 A AC

**CLSE-40:** 0 - 400 A AC

**CLSE-60:** 0 - 600 A AC

**Overload capacity:** 120 % continuous, 500 % for 10 sec.

Note: Use for the circuit not exceed 480 V

**Selectable primary current range:** 1 - 20 000 A (Using CLSE-R5 the unit is configurable only with LonMaker.)

**Operational range**

**Current:** 0 - 120 % of the rating

**Voltage:** 10 - 120 % of the rating

**Apparent power:** ≤ 120 % of the rating

**Active/reactive power:** ±120 % of the rating

**Frequency:** 45 - 65 Hz

**Power factor:** ±1

## INSTALLATION

**Auxiliary power supply**

• **AC:** < 9 VA

• **DC:** < 3 W

**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:** Surface or DIN rail

**Weight:** 500 g (1.1 lb)

## PERFORMANCE

**Accuracy** (at 10 - 35°C or 50 - 95°F, 45 - 65 Hz)<sup>1</sup>

Add the accuracy of the current sensor for overall values.

**Voltage:** ±0.5 % of the rating<sup>2</sup>

**Current:** ±0.5 % of the rating<sup>2</sup>

**Power:** ±0.5 % of the rating<sup>2</sup>

**Power factor:** ±1.5 %

**Frequency:** ±0.1 % of the rating<sup>2</sup>

**Energy:** ±1 %

**Harmonic contents:** ±2 % of the rating<sup>2</sup>

\*1. Sensor error margin not included

\*2. The described accuracy levels are ensured at the input

1% or more for neutral current in a 1-phase/3-wire circuit and phase-S current in an unbalanced 3-phase/3-wire circuit.

**Data update period:**

**Harmonic contents and frequency:** ≤ 1 sec.

**Other:** ≤ 500 msec.

**Calendar clock:** (with battery backup)

**Accuracy:** Monthly deviation 3 minutes at 25°C

**Back up period:** Approx. 2 years at 25°C without power

With the power on, no battery drain

**Battery:** Primary lithium battery (non-removable)

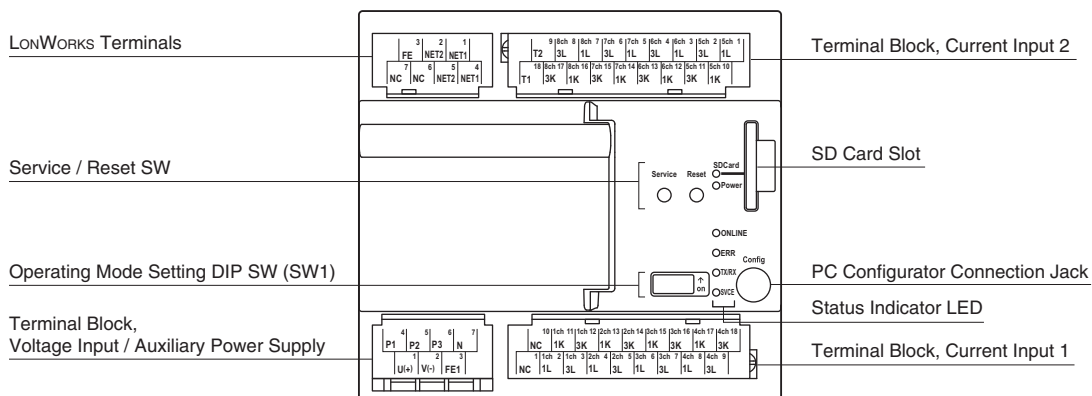
**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:** 2000 V AC @ 1 minute

(current input or voltage input to LonWorks to auxiliary power or FE1)

## EXTERNAL VIEW

### FRONT VIEW



## TERMINAL CONNECTIONS

Use the model CLSE clamp sensor for current inputs.

The figure below shows only one circuit.

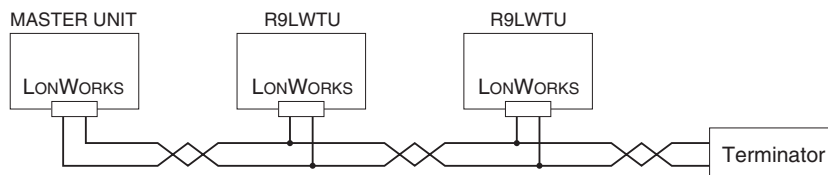
A maximum of eight (8) current sensor inputs can be connected (Ch. 1 through Ch. 8).

Grounding is not required for low voltage circuits.

System / Application	Terminal	System / Application	Terminal
Single-phase / 2-wire		Three-phase / 3-wire balanced load	
Single-phase / 3-wire		Three-phase / 3-wire unbalanced load	

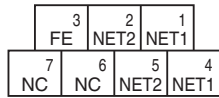
## COMMUNICATION CABLE CONNECTIONS

### ■ MASTER CONNECTION



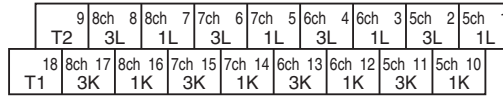
## TERMINAL ASSIGNMENTS

### • Network



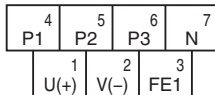
No.	ID	FUNCTION
1	NET1	LONWORKS comm. 1
2	NET2	LONWORKS comm. 2
3	FE	Comm. ground
4	NET1	LONWORKS comm. 1
5	NET2	LONWORKS comm. 2
6	NC	Unused
7	NC	Unused

### • Current Input 2



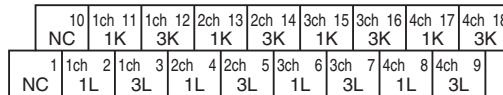
No.	ID	FUNCTION	No.	ID	FUNCTION
1	5ch 1L	Ch.5, Current input 1L	10	5ch 1K	Ch.5, Current input 1K
2	5ch 3L	Ch.5, Current input 3L	11	5ch 3K	Ch.5, Current input 3K
3	6ch 1L	Ch.6, Current input 1L	12	6ch 1K	Ch.6, Current input 1K
4	6ch 3L	Ch.6, Current input 3L	13	6ch 3K	Ch.6, Current input 3K
5	7ch 1L	Ch.7, Current input 1L	14	7ch 1K	Ch.7, Current input 1K
6	7ch 3L	Ch.7, Current input 3L	15	7ch 3K	Ch.7, Current input 3K
7	8ch 1L	Ch.8, Current input 1L	16	8ch 1K	Ch.8, Current input 1K
8	8ch 3L	Ch.8, Current input 3L	17	8ch 3K	Ch.8, Current input 3K
9	T2	Unused	18	T1	Unused

### • Auxiliary Power Supply, Voltage Input



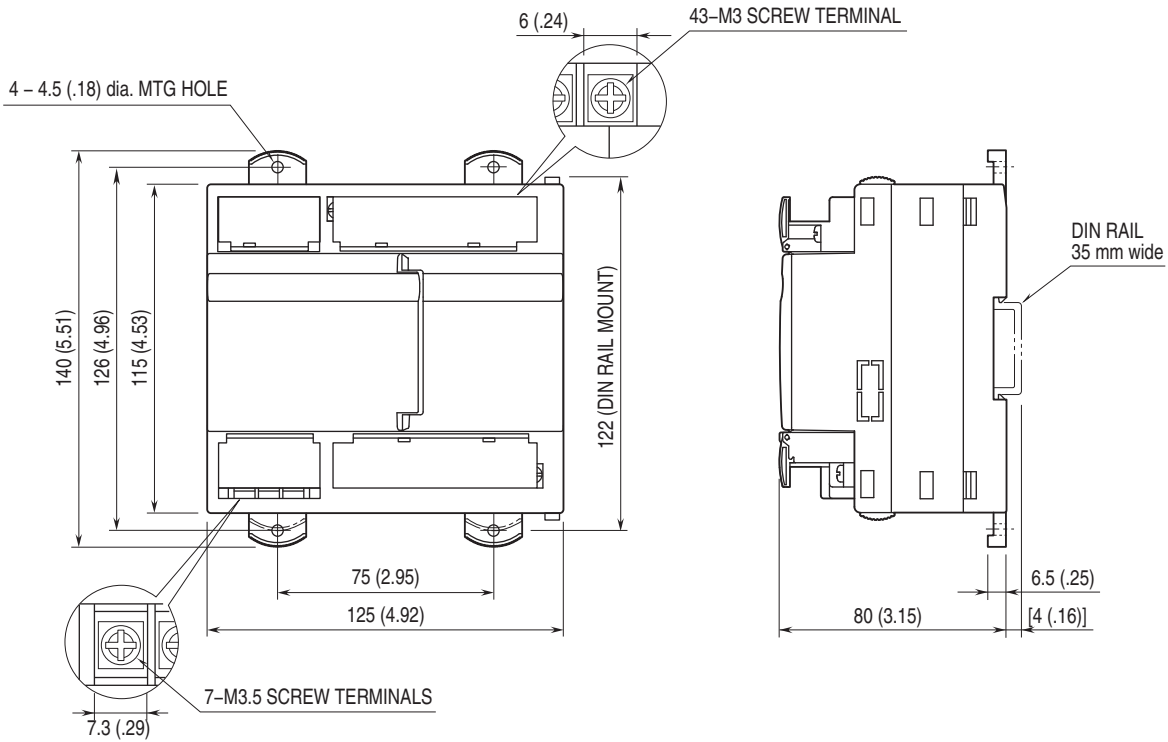
No.	ID	FUNCTION
1	U(+)	Auxiliary power (+)
2	V(-)	Auxiliary power (-)
3	FE1	Power ground
4	P1	Voltage input P1
5	P2	Voltage input P2
6	P3	Voltage input P3
7	N	Voltage input N

### • Current Input 1



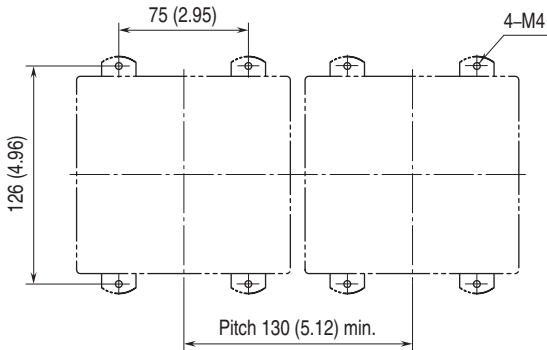
No.	ID	FUNCTION	No.	ID	FUNCTION
1	NC	Unused	10	NC	Unused
2	1ch 1L	Ch.1, Current input 1L	11	1ch 1K	Ch.1, Current input 1K
3	1ch 3L	Ch.1, Current input 3L	12	1ch 3K	Ch.1, Current input 3K
4	2ch 1L	Ch.2, Current input 1L	13	2ch 1K	Ch.2, Current input 1K
5	2ch 3L	Ch.2, Current input 3L	14	2ch 3K	Ch.2, Current input 3K
6	3ch 1L	Ch.3, Current input 1L	15	3ch 1K	Ch.3, Current input 1K
7	3ch 3L	Ch.3, Current input 3L	16	3ch 3K	Ch.3, Current input 3K
8	4ch 1L	Ch.4, Current input 1L	17	4ch 1K	Ch.4, Current input 1K
9	4ch 3L	Ch.4, Current input 3L	18	4ch 3K	Ch.4, Current input 3K

## EXTERNAL DIMENSIONS unit: mm [inch]

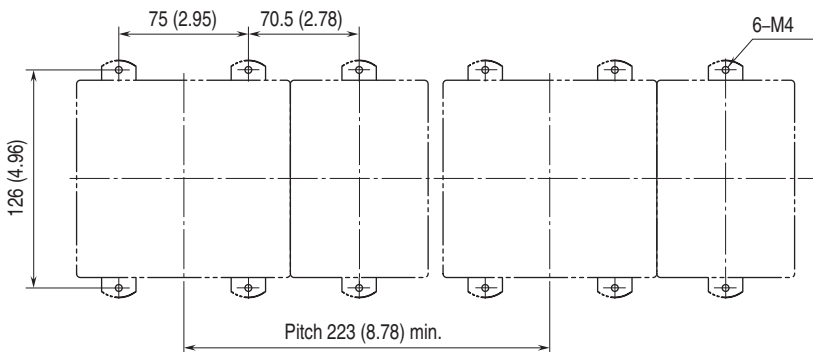


## MOUNTING REQUIREMENTS unit: mm [inch]

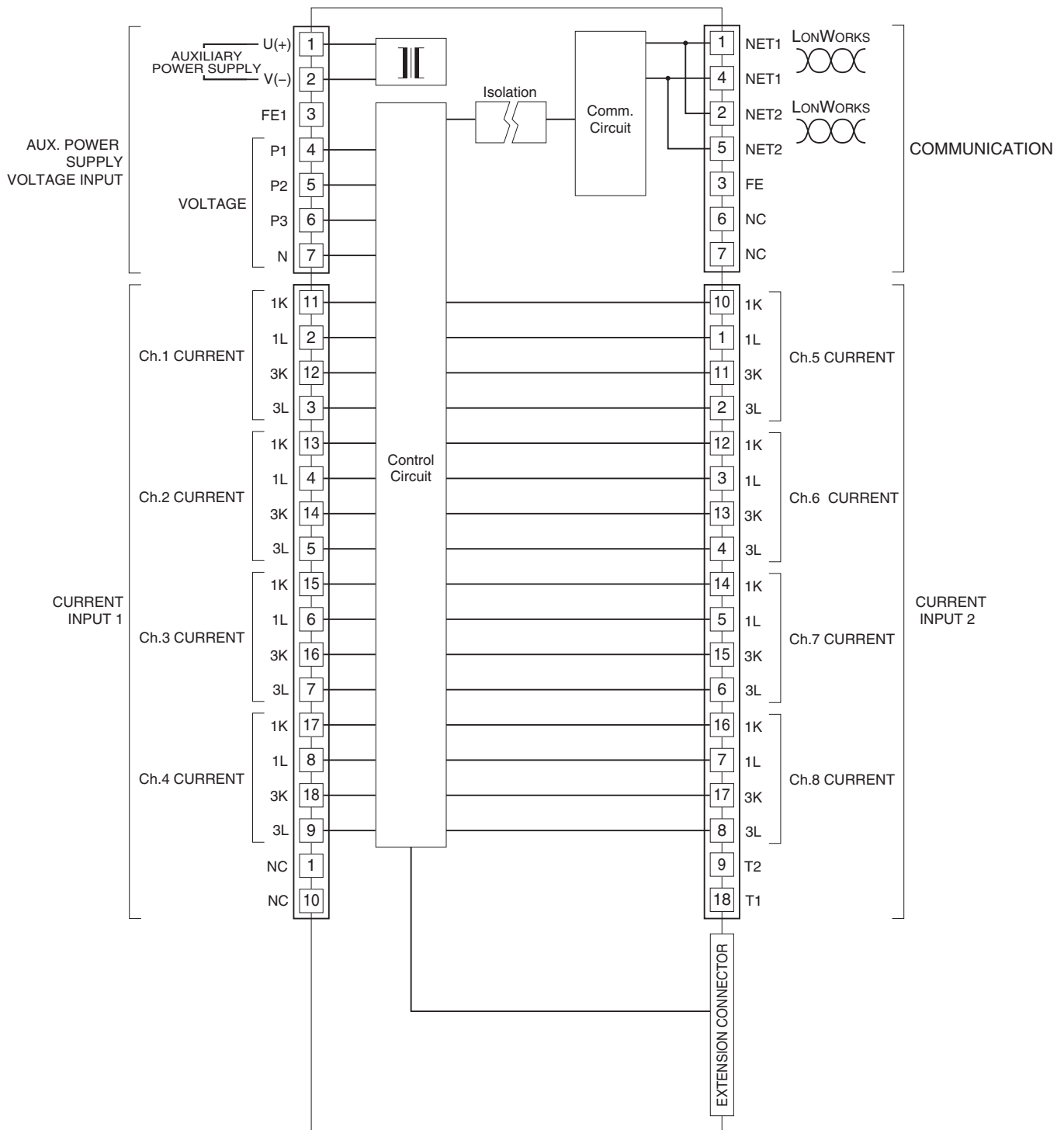
### ■ SINGLE MOUNTING



### ■ BASIC + EXTENSION UNIT



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.