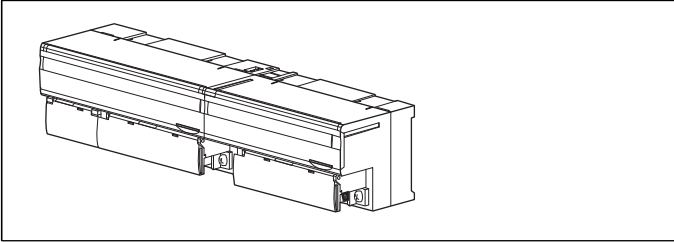


## Remote I/O R7 Series

### MULTI POWER MODULE

(Clamp-on current sensor CLSE, LonWorks)



### ORDERING INFORMATION

- Basic module: R7LWTU-2[1]1-AD4[2]  
Specify a code from below for each [1] and [2].  
(e.g. R7LWTU-221-AD4/Q)
- Specify the specification for option code /Q  
(e.g. /C01)
- Extension module: R7LWTU-EA8[1]  
Specify a code from below for [1].  
(e.g. R7LWTU-EA8/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

### MODEL: R7LWTU-2[1]1-AD4[2]

### CONFIGURATION

- 2: Single phase / 2-wire and 3-wire,  
3-phase / 3-wire and 4-wire

### [1] NO. OF SYSTEMS

- 1: 1 system, Di / Pi x 4 (internal power 5 V)  
(no connection with extension module)
- 2: 2 systems

### INPUT

- 1: 240 V AC / CLSE

### POWER INPUT

#### Universal

**AD4:** 100 - 240 V AC / 110 - 240 V DC (universal)  
(Operational voltage range 85 - 264 V AC, 50 - 60 Hz /  
99 - 264 V DC, ripple 10 %p-p max.)

### [2] OPTIONS

- blank: none
- /Q: With options (specify the specification)

### EXTENSION MODULE: R7LWTU-EA8[1]

### I/O TYPE

**EA8:** Di / Pi, 8 points (internal power 5 V)

### [1] OPTIONS

- blank: none
- /Q: Option other than the above (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

### FUNCTIONS & FEATURES

The R7LWTU is a Multi Power Module for LonWorks. The R7LWTU uses clamp-on current sensors, there is no need of current transformers. 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. A 'basic' module can be attached with an 'extension' module (except R7LWTU-211-AD4) because of this, it is able to use it as 2-circuit power and 8 discrete inputs module.

### RELATED PRODUCTS

- 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 M-System's web site. To connect the module to a PC a dedicated cable is required (refer to M-System's 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.

### GENERAL SPECIFICATIONS

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

**Configuration:** Single phase/2-wire and 3-wire, 3-phase/3-wire balanced/unbalanced load, 3-phase/4-wire balanced/unbalanced load

**Screw terminal:** Nickel-plated steel

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

**Isolation:** Sensor core to sensor output or current input or voltage input to discrete input to LonWorks or FG to power

**Measured variables**

**Voltage:** 1-N, 2-N, 3-N, 1-2, 2-3, 3-1

**Current:** 1, 2, 3, N

**Active / reactive:**  $\Sigma$

**Power factor:**  $\Sigma$

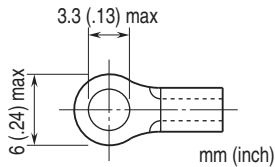
**Frequency**

**Active energy:** Incoming

**Reactive energy:** Incoming

**Status indicator LED:** PWR

**Recommended solderless terminal size - M3**



## LonWorks COMMUNICATION

**Neuron Chip:** FT3150

(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**

Line-to-line (delta voltage): 240 V

Line-neutral (phase voltage): 138 V

**Consumption VA:**  $\leq U_{LN}^2 / 300 \text{ k}\Omega / \text{phase}$

**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 (only with CLSE-R5, refer to the configurator settings)

**Operational range**

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

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

**Active/reactive power:**  $\pm 120$  % of the rating

**Frequency:** 45 - 65 Hz

**Power factor:**  $\pm 1$

**Discrete input**

**Common:** Negative common

**Maximum frequency:** 10 Hz

**Minimum pulse width:** 50 msec.

**Totalized pulse range:** 0 - 9 999 999

**Count at overflow:** Reset and restart at '0.'

**Detecting voltage/current:** 5 V DC / 5 mA approx.

**Detecting levels:**  $\leq 5 \text{ k}\Omega / \leq 2 \text{ V}$  for ON;

$\geq 100 \text{ k}\Omega / 4 \text{ V}$  for OFF

**Operation mode:** Discrete and pulse counter

## INSTALLATION

**Power consumption**

**• AC:**

Basic module: < 5 VA

Basic with extension module: < 6 VA

**• DC:**

Basic module: < 1.5 W

Basic with extension module: < 2 W

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

**Storage temperature:** -20 to +65°C (-4 to +149°F)

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

**Atmosphere:** No corrosive gas or heavy dust

**Mounting:** DIN rail

**Weight:**

Basic module: 200 g (0.44 lb)

Extension module: 90 g (0.2 lb)

## PERFORMANCE

**Accuracy** (at 10 - 35°C or 50 - 95°F, 45 - 65 Hz)

Add the accuracy of the current sensor for overall values.

**Voltage:**  $\pm 0.5$  % of the rating

**Current:**  $\pm 0.5$  % of the rating

**Power:**  $\pm 1.0$  % of the rating

**Power factor:**  $\pm 1.5$  %

**Energy:**  $\pm 2.0$  % of the rating (range 5 - 100 %, PF 1)

**Frequency:**  $\pm 0.1$  % of the rating

The described accuracy levels are ensured at the input 1 % or more for phase 2 current with 3-phase/3-wire unbalanced

load and for neutral current with 1-phase/3-wire.

**Data update period:**

Frequency: ≤ 1 sec.

Other: ≤ 500 msec.

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

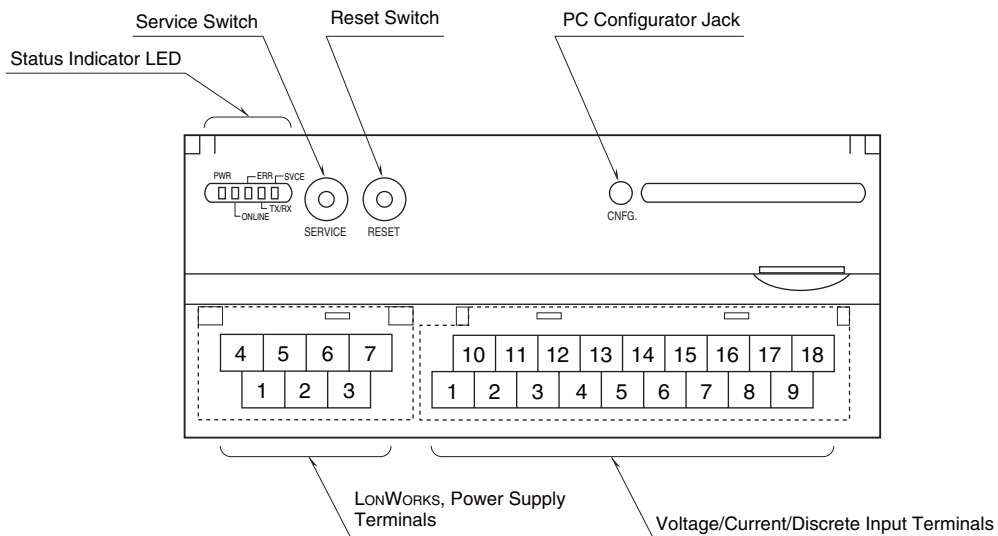
**Dielectric strength:**

2000 V AC @ 1 minute (current input or voltage input or discrete input to LonWorks or FG to input power)

1000 V AC @ 1 minute (current input or voltage input to discrete input)

## EXTERNAL VIEW

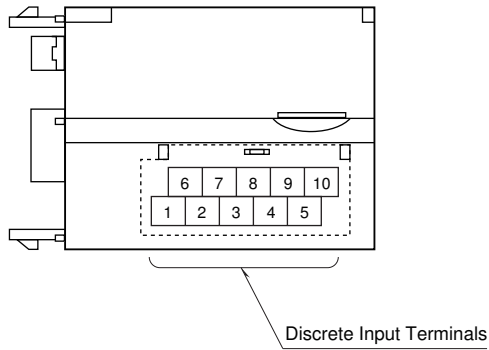
### ■ BASIC MODULE



### ■ STATUS INDICATOR LED

ID	STATUS	COLOR	FUNCTION
PWR	ON	Green	Internal power 5V normal operating
	OFF		Internal power 5V abnormality
ONLINE	ON	Green	Online
	Blink ≈2 Hz		Wink message received
	OFF		Abnormality
ERR	ON	Red	Writing in non-volatile memory
	Blink ≈ 0.5 Hz		No input or input overflow
	Blink ≈2 Hz		Abnormality
	OFF		Normal operating
TX/RX	ON	Green	In communication
	OFF		No connection
SVCE	ON	Green	Internal program error
	Blink ≈0.5 Hz		No network service
	OFF		Normal operating

## EXTENSION MODULE



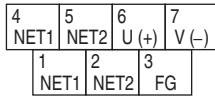
## TERMINAL CONNECTIONS

System / Application	Terminal	System / Application	Terminal
Single phase / 2-wire		Single phase / 3-wire	
Three phase / 3-wire, balanced load		Three phase / 3-wire unbalanced load (2CT)	
Three phase / 4-wire, balanced load		Three phase / 4-wire, unbalanced load	

Note: Use CLSE for CT.  
Grounding is unnecessary for low-voltage circuit.

## CONNECTION DIAGRAMS

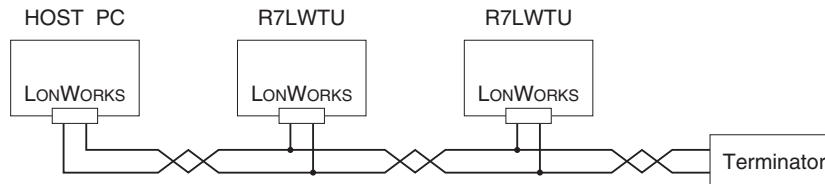
### ■ POWER SUPPLY, LONWORKS TERMINAL ASSIGNMENT



NO.	ID	FUNCTION, NOTES
1	NET1	LONWORKS communication 1
2	NET2	LONWORKS communication 2
3	FG	FG
4	NET1	LONWORKS communication 1
5	NET2	LONWORKS communication 2
6	U (+)	Power input
7	V (-)	Power input

Note: LONWORKS wiring must be paired between NET1 terminals and/or NET2 terminals.

### ■ HOST PC CONNECTION



## TERMINAL ASSIGNMENTS

### ■ BASIC MODULE

#### • 1 Circuit, 4 point discrete

10	11	12	13	14	15	16	17	18
P3	NC	NC	1K	2K	3K	DI1+	DI3+	COM
1	2	3	4	5	6	7	8	9
P1	P2	N	1L	2L	3L	DI2+	DI4+	COM

PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	P1	Voltage Input P1	10	P3	Voltage Input P3
2	P2	Voltage Input P2	11	NC	Unused
3	N	Voltage Input N	12	NC	Unused
4	1ch 1L	1ch current input 1L	13	1ch 1K	1ch current input 1K
5	1ch 2L	1ch current input 2L	14	1ch 2K	1ch current input 2K
6	1ch 3L	1ch current input 3L	15	1ch 3K	1ch current input 3K
7	DI2 +	Discrete input 2	16	DI1 +	Discrete input 1
8	DI4 +	Discrete input 4	17	DI3 +	Discrete input 3
9	COM	Discrete input common	18	COM	Discrete input common

#### • 2 Circuits

10	11	12	13	14	15	16	17	18
P3	NC	NC	1K	2K	3K	1K	2K	3K
1	2	3	4	5	6	7	8	9
P1	P2	N	1L	2L	3L	1L	2L	3L

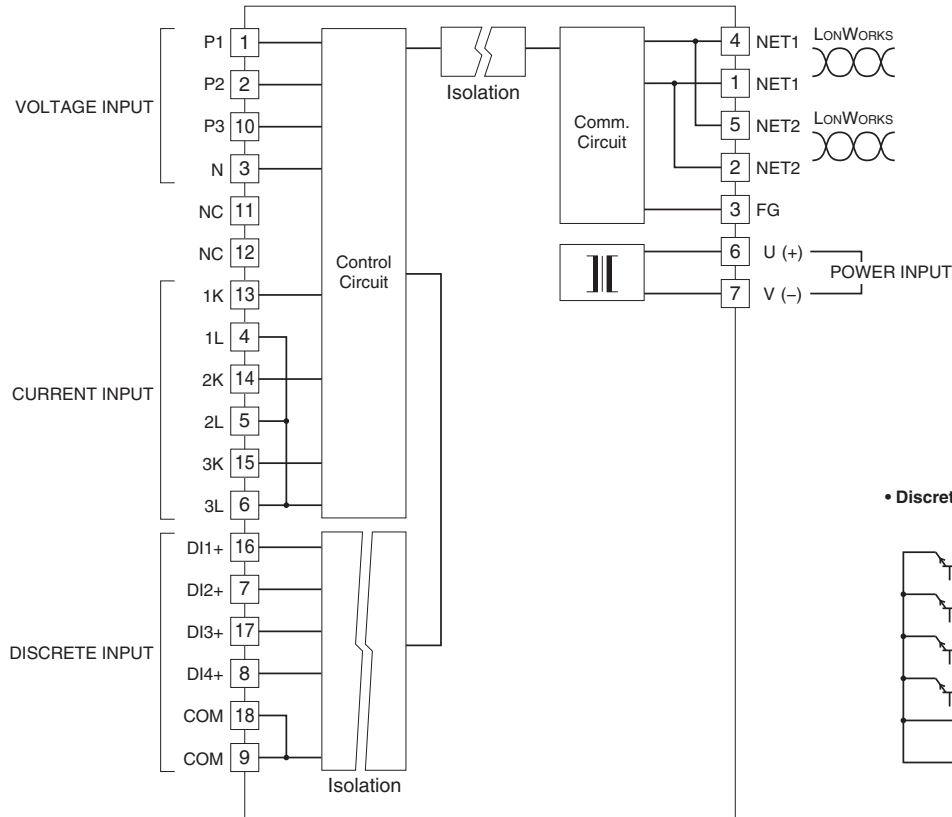
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	P1	Voltage Input P1	10	P3	Voltage Input P3
2	P2	Voltage Input P2	11	NC	Unused
3	N	Voltage Input N	12	NC	Unused
4	1ch 1L	1ch current input 1L	13	1ch 1K	1ch current input 1K
5	1ch 2L	1ch current input 2L	14	1ch 2K	1ch current input 2K
6	1ch 3L	1ch current input 3L	15	1ch 3K	1ch current input 3K
7	2ch 1L	2ch current input 1L	16	2ch 1K	2ch current input 1K
8	2ch 2L	2ch current input 2L	17	2ch 2K	2ch current input 2K
9	2ch 3L	2ch current input 3L	18	2ch 3K	2ch current input 3K



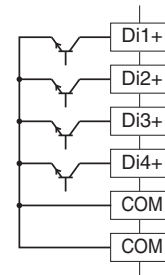
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

### ■ BASIC MODULE

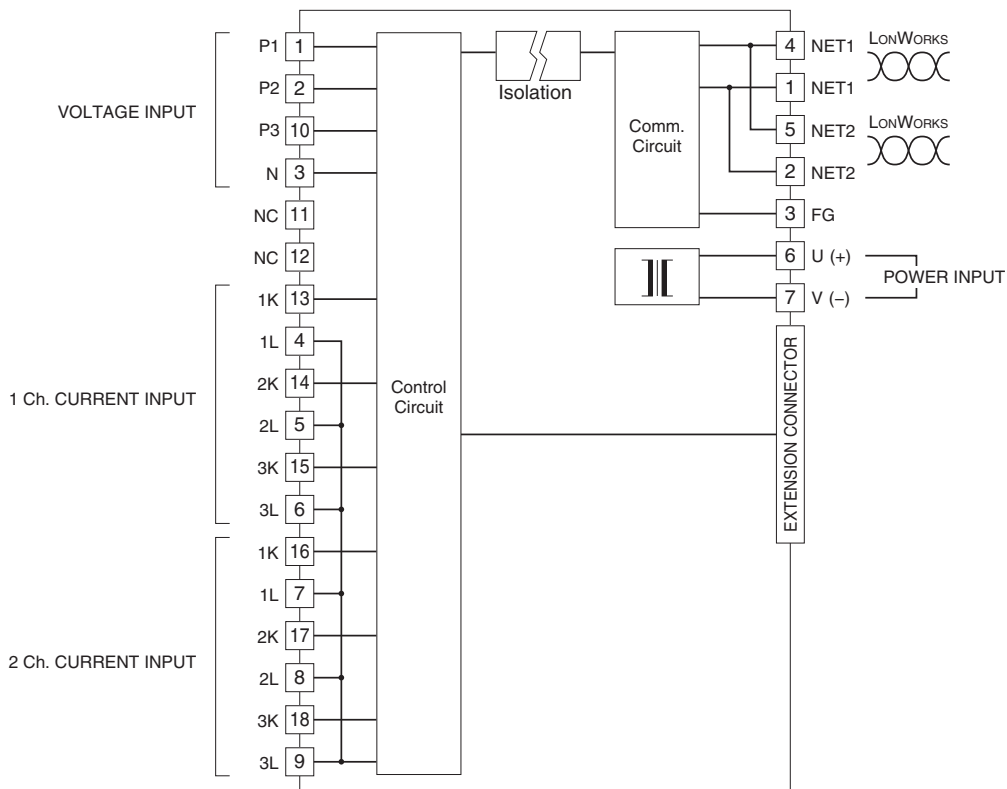
#### • 1 Circuit, 4-point Discrete Inputs



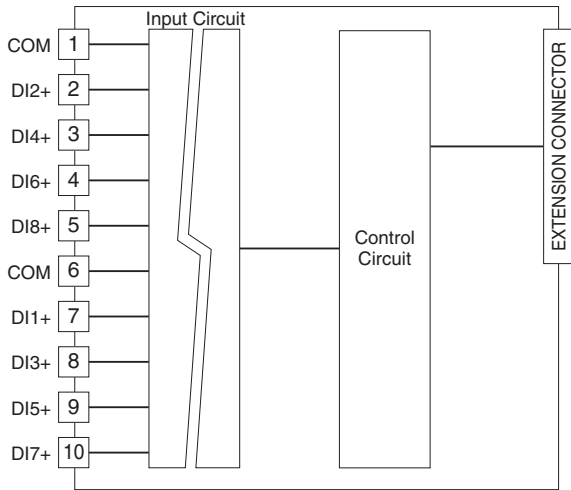
#### • Discrete input connection e.g.



#### • 2 Circuits



■ EXTENSION MODULE



Specifications are subject to change without notice.