MODEL: R3-WTU

Remote I/O R3 Series

MULTI POWER INPUT MODULE

(clamp-on current sensor type CLSE use)

Functions & Features

• Measures simultaneously several variables of a heavy-current power system including computing bidirectional current, phase and harmonics
• 1 or 2 systems
• Uses clamp-on current sensors; No need of current transformers
• Current sensors are easy to install in existing systems

Typical Applications

• Energy demand management in manufacturing plants and buildings
• Multi-functional power monitor incorporated in electric devices or in switching boards: saves space, wiring works, and cost

27.5 (1.08)
130 (5.12)
109 (4.29)
mm (inch)
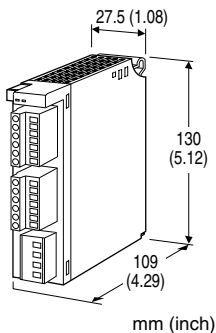
MODEL: R3–WTU1[1]ES[2]

ORDERING INFORMATION

• Code number: R3-WTU1[1]ES[2]
Specify a code from below for each of [1] and [2].
  (e.g. R3-WTU12ES/D/Q)
• Specify the specification for option code /Q
  (e.g. /C01)

CONFIGURATION

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

[1] NO. OF SYSTEMS

1: 1 system
2: 2 systems

INPUT

E: 480 V AC / Sensor type CLSE

COMMUNICATION MODE

S: Single

[2] OPTIONS (multiple selections)

Data Capacity (address/slot occupied)
blank: 16 words (1)
/D: 32 words (2)
Be sure to use the R3-BSW base with free address setting capability. Refer to 'TRANSMISSION DATA DESCRIPTIONS.'
Other Options
blank: none
/Q: Option other than the above (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

• PC configurator software (model: R3CON)
Downloadable at our web site.
• 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.
• Network module (model: R3-Nx, R30Nx)
Data resetting from the host device is possible with: V.2.00 or higher versions of the R3-NC1, R3-NC3, R3-NE1 and R3-NM1; V.1.06 or higher versions of the R3-NCIE1; and V.1.06 or higher versions of the R30NECT1, R330NCIE1, and R30NE1. (Confirm the firmware version on R3CON.)
For other versions and models, use R3CON PC Configurator to reset data.
For use with the R3-NLx, consult us.

GENERAL SPECIFICATIONS

Connection
  Internal bus: Via the Installation Base (model: R3-BSx)
  Voltage input: Separable terminal block
  (applicable wire dia. ≤ 2.5, 0.5 – 3.5 mm^2, stripped length 7 mm)
  Current input: Separable terminal block
  (applicable wire dia. ≤ 2.4, 0.5 – 3.5 mm^2, stripped length 10 mm)
  Internal Power: Via the Installation Base (model: R3-BSx)
Configuration: Single phase/2-wire and 3-wire, 3-phase/3-

wire balanced/unbalanced load, 3-phase/4-wire balanced/unbalanced load

Isolation: Sensor core to sensor output or current input or voltage input to internal bus or internal power

Measured variables

  Voltage: 1 – N, 2 – N, 3 – N, 1 – 2, 2 – 3, 3 – 1

  Current: 1, 2, 3, N

  Active / reactive / apparent power: 1, 2, 3, Σ

  Power factor: 1, 2, 3, Σ

  Frequency

  Active energy: Incoming / outgoing

  Reactive energy: Incoming / outgoing / lag (inductive) /lead (capacitive)

  Apparent energy

  Active / reactive / apparent power intervals (demand)

  Average (demand) current: 1, 2, 3, N

  Harmonic contents: Σ

  Voltage: 1 – N, 2 – N, 3 – N, 1 – 2, 2 – 3, 3 – 1

  Current: 1, 2, 3, N

  Max. and min. values

  Demand history: 1 to 4

  (Programmable within 1 – 60 min.; factory set to 30 min.)

RUN indicator: Bi-color (red/green) LED; Red when the internal bus operates normally.

ERR indicator: Bi-color (red/green) LED; Red with input abnormality (input ≥ 120 %, frequency out of 45 – 65 Hz range); Green in normal operating conditions.

Low-end cutout: Converted as 0 % for the input below a preset value; programmable within 0 – 99.9 %; factory set to 1 %

Data resetting: All energy values; MAX / MIN current values; MAX / MIN values other than current; and AVG (demand) values

Data resetting from the host device is possible with: V.2.00 or higher versions of the R3-NC1, R3-NC3, R3-NE1 and R3-NM1; V.1.06 or higher versions of the R3-NCIE1; and V.1.06 or higher versions of the R30NECT1, R30NCIE1, and R30NE1. (Confirm the firmware version on R3CON.)

INPUT SPECIFICATIONS

Frequency: 50 / 60 Hz (45 – 65 Hz)

• **Voltage Input**

Rated voltage

Line-to-line (delta voltage): 480 V

Line-neutral (phase voltage): 277 V (single-phase / 2-wire and 3-wire)

Consumption VA: ≤ 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 % continous, 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 – 115 % of the rating

Voltage, apparent power: ≤ 120 % of the rating

Active/reactive power: ±120 % of the rating

Frequency: 45 – 65 Hz

Power factor: ±1

INSTALLATION

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) Use the R3-BSW with Option /D.

Weight: 170 g (0.37 lb)

PERFORMANCE in percentage of span

Accuracy (at 23°C ±10°C or 73.4°F ±18°F, 45 – 65 Hz)

Add the accuracy of the current sensor for overall values.

  Voltage: ±1.0 % of the rating

  Current: ±1.0 % of the rating

  Power: ±1.0 % of the rating

  Power factor: ±3.0 %

  Frequency: ±1.0 % of the rating

  Energy: ±2 %

  Harmonic contents: ±2.5 % of the rating

Conversion data: 16 bits / 32 bits

Data allocation mode: 16 or 32

(Refer to 'TRANSMISSION DATA DESCRIPTIONS.')

Current consumption: 60 mA

Input response time: ≤ 2 sec. (0 – 100 % ±1 %) ≤3 sec. for frequency and harmonic contents

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute (voltage input or current input to internalbus or internal power)

2000 V AC @ 1 minute (sensor core to sensor output)

2000 V AC @ 1 minute (power input to FG; isolated on the power supply module)

TRANSMISSION DATA DESCRIPTIONS

■ MEASURANDS

• **16-word Mode (standard)**

Measurands and assigned word numbers are specified using the R3CON PC Configurator.

Max. 16 words per module (slot). 1 word = 16 bits, 2 words = 32 bits

• 32-word Mode (option /D)

Measurands and assigned word numbers are specified using the R3CON PC Configurator.

Max. 32 words by virtually assigning addresses (n) and (n+1) per module. 1 word = 16 bits, 2 words = 32 bits

Be sure to use the R3-BSW base with free address setting capability. DO NOT assign the address (n+1) to any module.

A duplicate address will cause malfunctions.

■ RESET

Measurands to be reset can be specified among: all energy values, MAX / MIN current values, MAX / MIN values other than current and AVG (demand) values.

Refer to 'I/O DATA DESCRIPTIONS' in the R3-WTU instruction manual for resetting from the host device.

For detailed information for the selection of measurands and other settings, refer to the R3CON Users Manual.
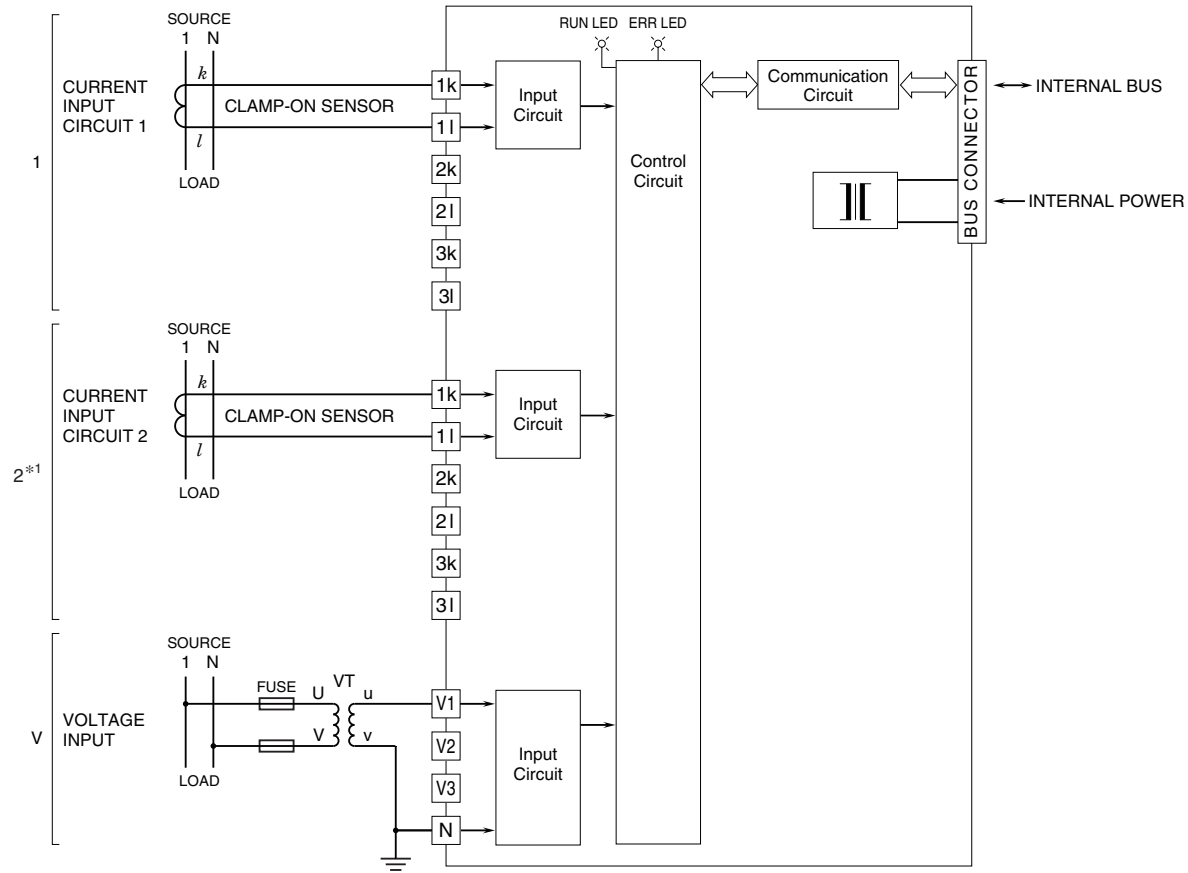
EXTERNAL VIEW
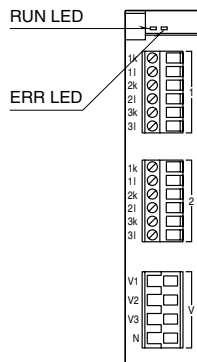
EXTERNAL DIMENSIONS   unit: mm [inch]

*Provided only with two circuits option.
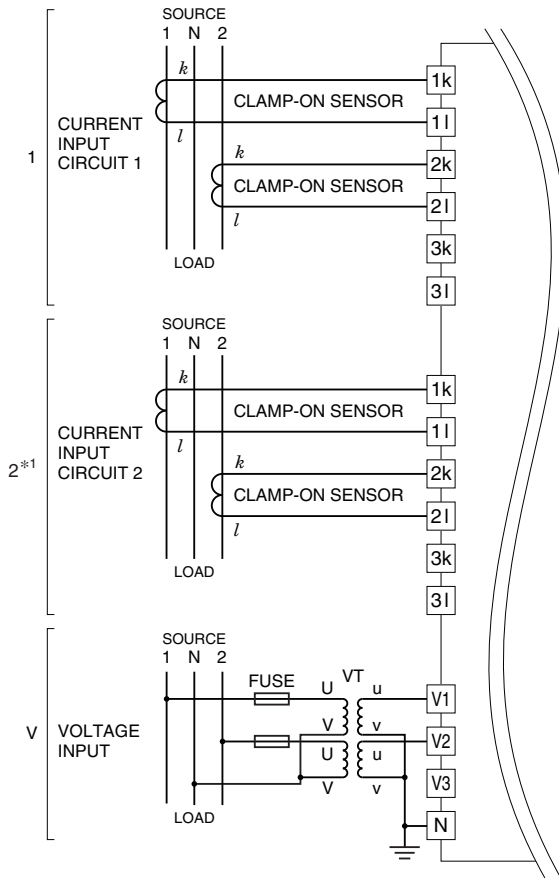
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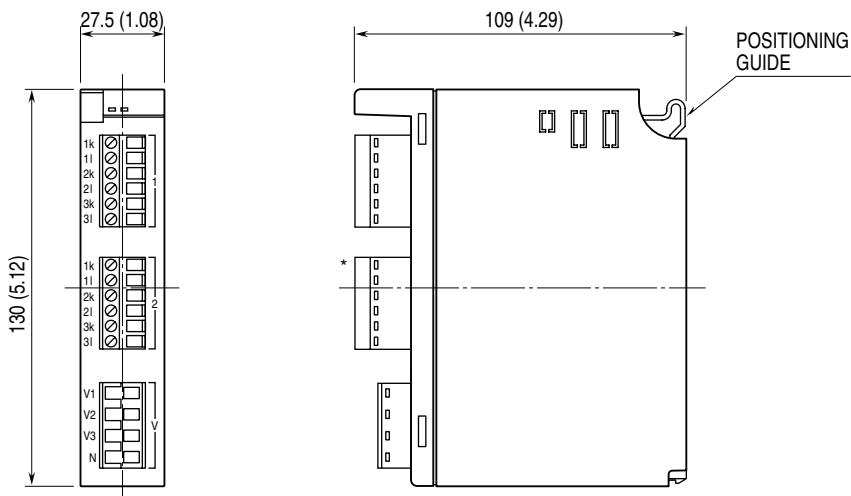
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

■ **SINGLE-PHASE/2-WIRE**

No need of grounding for a low voltage circuit.
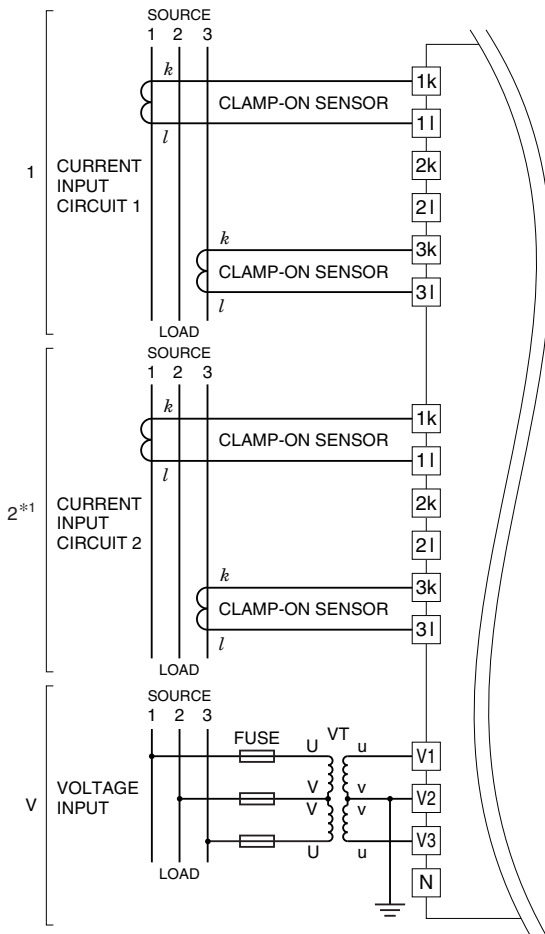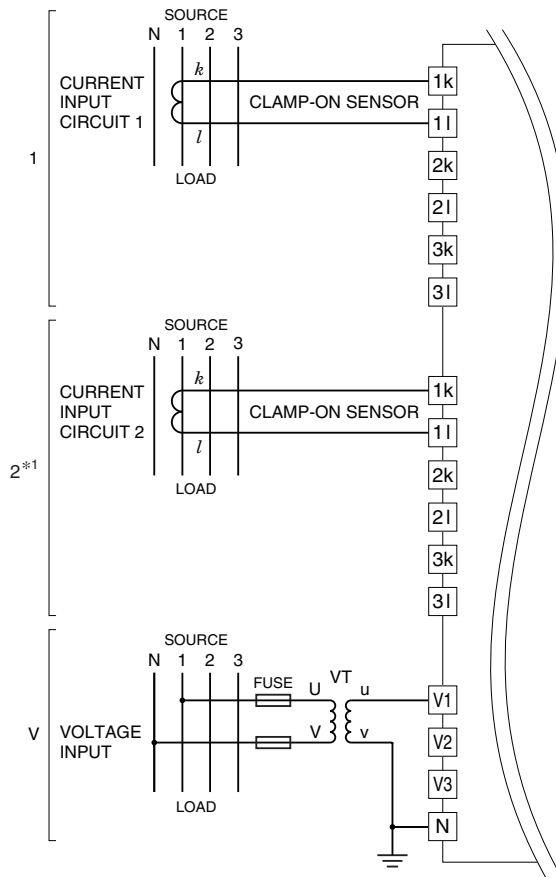*1. Provided only with two circuits option.

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■ **SINGLE-PHASE/3-WIRE**

■ **THREE-PHASE/3-WIRE, BALANCED LOAD**

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MODEL: R3-WTU
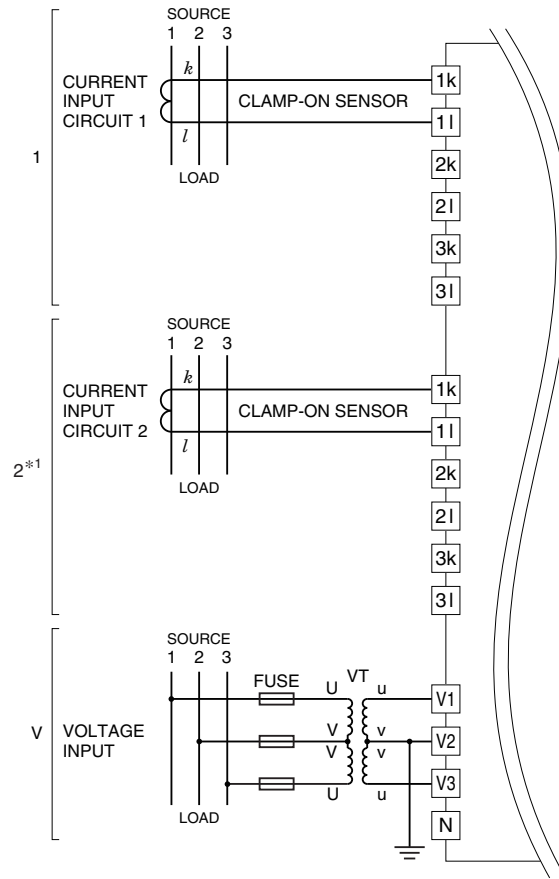
■ **THREE-PHASE/3-WIRE, UNBALANCED LOAD**

■ **THREE-PHASE/4-WIRE, BALANCED LOAD**

MG CO., LTD.
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MODEL: R3-WTU

■ **THREE-PHASE/4-WIRE, UNBALANCED LOAD**
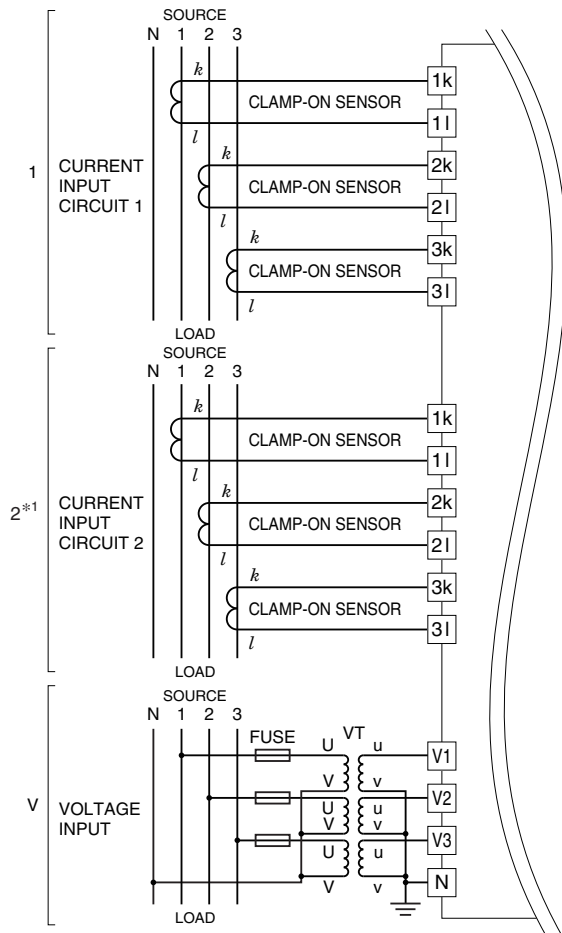
⚠ Specifications are subject to change without notice.

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