Remote I/O R7 Series

MULTI POWER MONITORING MODULE

(Clamp-on current sensor CLSE, CC-Link)

115 [4.53]
53 [2.09]
54 [2.13]
mm [inch]
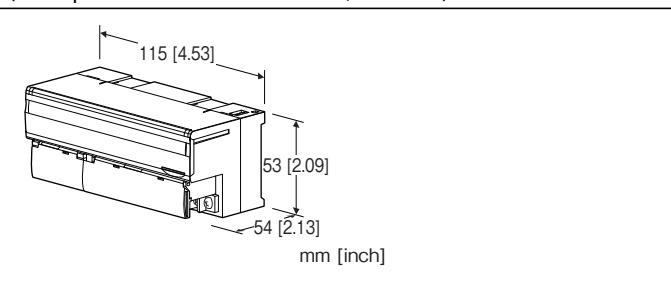
MODEL: R7CWTU-2[1]1-AD4[2]

ORDERING INFORMATION

• Basic module: R7CWTU-2[1]1-AD4[2]
Specify a code from below for each of [1] and [2].
  (e.g. R7CWTU-221-AD4/Q)
• Specify the specification for option code /Q
  (e.g. /C01/SET)

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 points (internal power 5 V)
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)

SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating

EX-FACTORY SETTING
/SET: Preset according to the Ordering Information Sheet
 (No. ESU-7814-x)

FUNCTIONS & FEATURES

The R7CWTU is a Multi Power Monitoring Module for CC-Link.
The R7CWTU 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 availabe.
All measured values, counter values, display mode, setting data are stored in the non-volatile memory when power is off.

RELATED PRODUCTS

• PC configurator software (model: PMCFG)
Downloadable at our web site.
A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.
• 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.

PACKAGE INCLUDES...

• Terminating resistor (110 Ω, 0.5 W)

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^2 (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 CC-Link 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 / apparent power: 1, 2, 3, Σ
  Power factor: 1, 2, 3, Σ
  Frequency

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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

Operating mode setting: Configurator software and DIP switch setting; connection, balanced/unbalanced, clamp-on sensor type (refer to the manual for details)

Status indicator LED: PWR

■Recommended solderless terminal size - M3

CC-Link COMMUNICATION

CC-Link Ver.1.10

Connector: M3 screw terminal

Network cable: CC-Link cable designated by Mitsubishi Electric

Station number: 1 - 64 (rotary switch, default:00)

Station Type: Remote device

Data allocation: 1

Baud rate setting: 156 kbps (default), 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps (rotary switch)

Status indicator LEDs: RUN, ERR, SD, RD

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 (three-phase/4-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 – 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

■ Discrete input

Common: Negative common

Maximum frequency: 10 Hz

Minimum pulse width: 50 msec.

Totalized pulse range: 0 - 999 999 999

Count at overflow: Reset and restart at '1.'

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

Detecting levels: ≤ 5 kΩ / ≤ 2 V for ON; ≥ 100 kΩ / 4 V for OFF

Operation mode: Discrete and pulse counter

INSTALLATION

Power consumption

•**AC:** < 8 VA

•**DC:** < 3 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: 210 g (0.46 lb)

PERFORMANCE

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

Add the accuracy of the current sensor for overall values.

Voltage: ±0.5 % of the rating

Current: ±0.5 % of the rating

Power: ±1.0 % of the rating

Power factor: ±1.5 %

Frequency: ±0.1 % of the rating

Energy: ±2.0 % of the rating (range 5 - 100 %, PF 1)

Harmonic contents: ±2.0 % 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, for neutral current with 3-phase/4-wire unbalanced load, and 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 CC-Link or FG to input power)
1000 V AC @ 1 minute (current input or voltage input to discrete input)

EXTERNAL VIEW

Baud Rate Setting Rotary SW
Station Address Setting Rotary SW
Status Indicator LED
Operating Mode Setting DIP SW (SW1)
PC Configurator Jack
CC-Link, Power Supply Terminals
Voltage, Current, Discrete Input Terminals
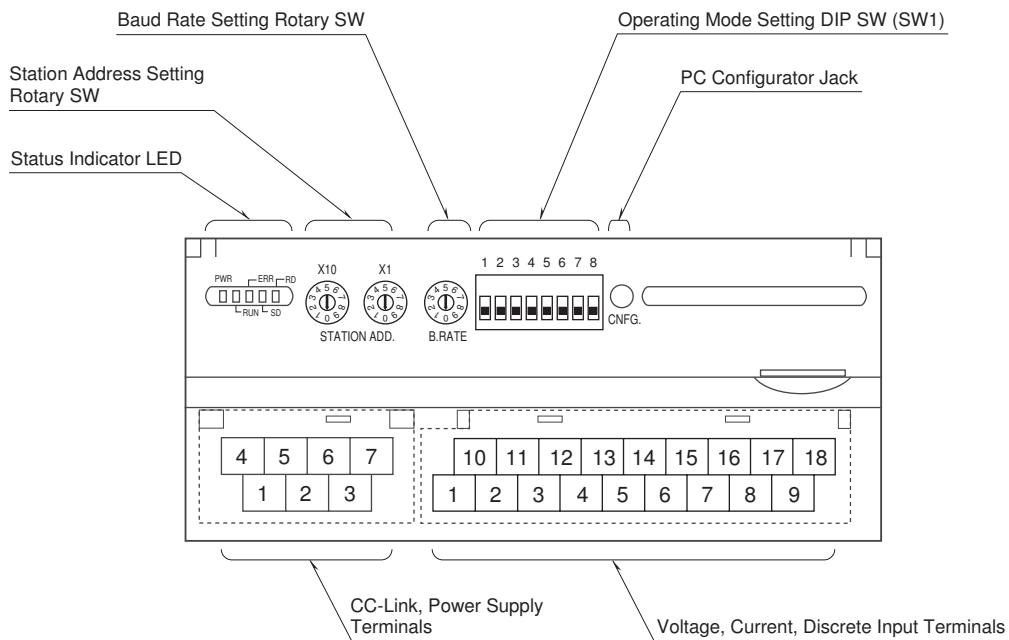
TERMINAL CONNECTIONS

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

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

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MODEL: R7CWTU

CONNECTION DIAGRAMS

■ POWER SUPPLY, CC-Link TERMINAL ASSIGNMENT

4 DA	5 DG	6 U (+)	7 V (−)
1 DB	2 SLD	3 FG	

1. DB White
2. SLD Shield
3. FG FG
4. DA Blue
5. DG Yellow
6. U (+) Power input (+)
7. V (−) Power input (−)

■ MASTER CONNECTION
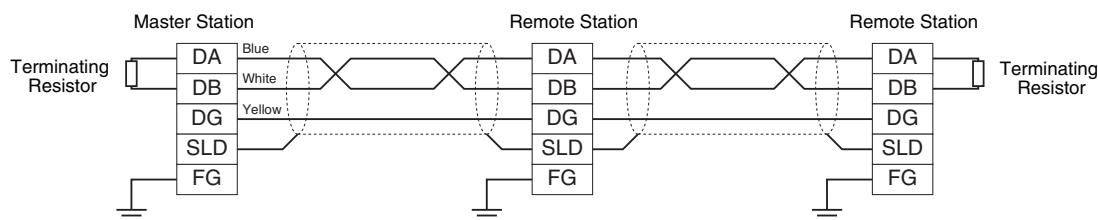
Note: Be sure to turn ON the terminating resistor located at both ends of the modules.
  Crosswire between terminals DA – DB.
  Master unit is connectable at both ends and at other points.

TERMINAL ASSIGNMENTS

• 1 Circuit, 4 point discrete

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

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EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS   unit: mm [inch]

115 (4.53)

17 (.66)   54 (2.13)

18.5 (.73)

50 (1.97)

3 (.12)

5.5 (.22)

4	5	6	7
1	2	3	

10	11	12	13	14	15	16	17	18
1	2	3	4	5	6	7	8	9

DIN RAIL
35mm wide

30 (1.18)   [5 (.20)]

6 (.24)

6 (.24)

7–M3 SCREW TERMINALS
for CC-Link, Power

18–M3 SCREW TERMINALS
for Voltage, Current, Discrete Input
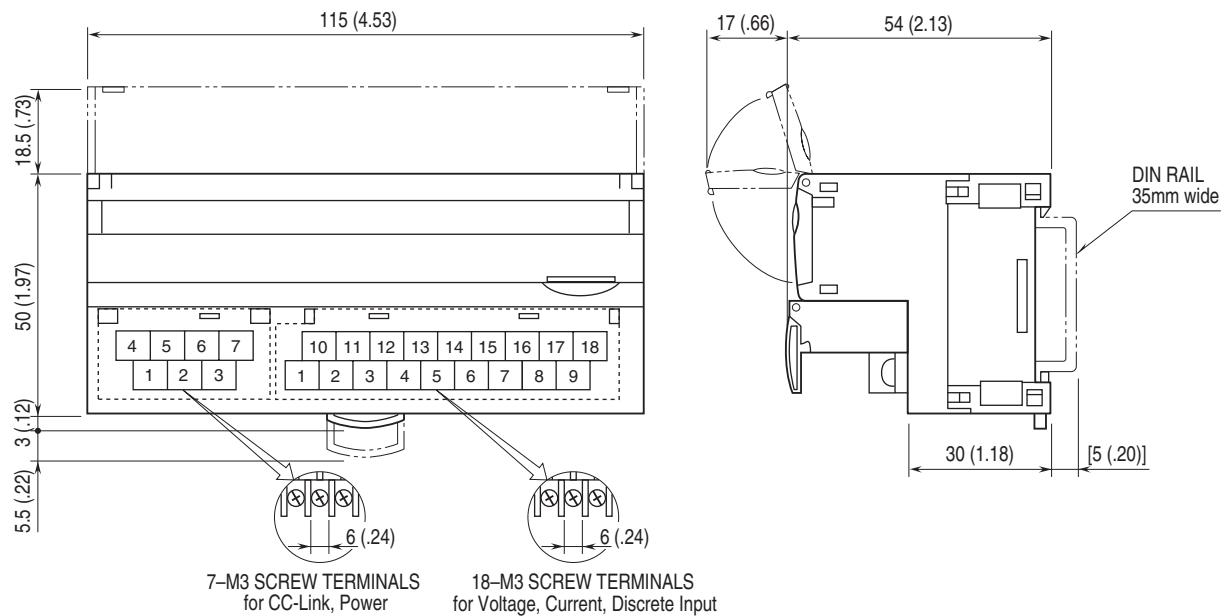
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

• **1 Circuit, 4-point Discrete Input**
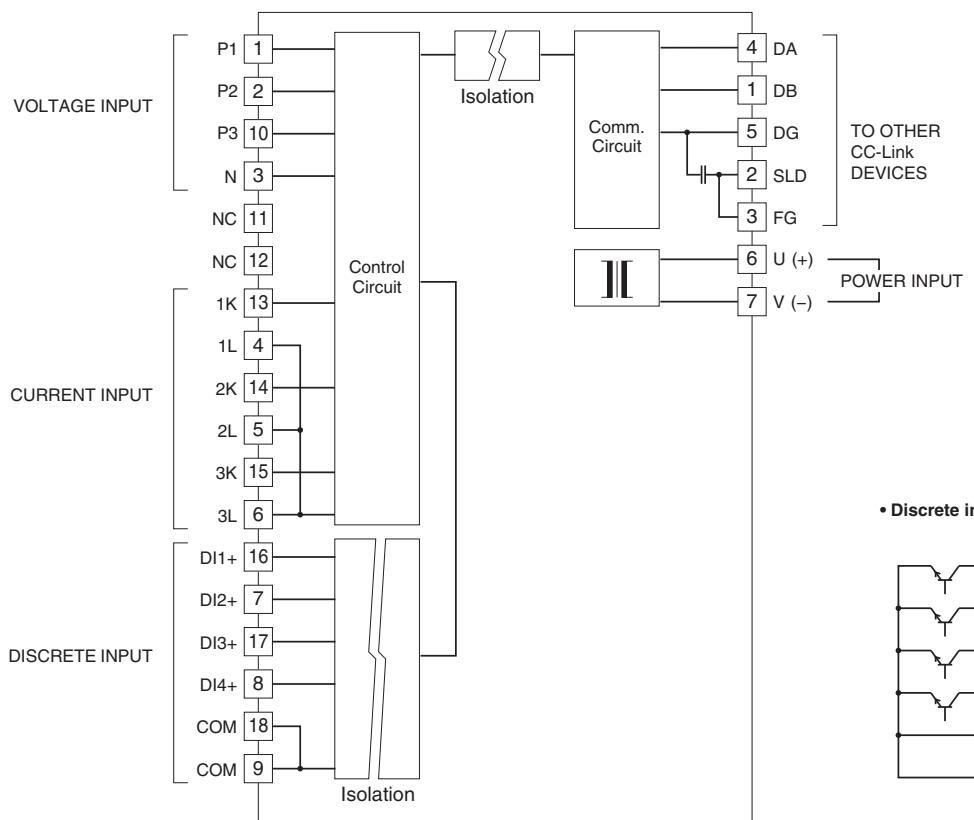
• **Discrete input connection e.g.**

• **2 Circuits**

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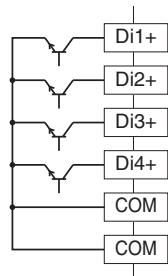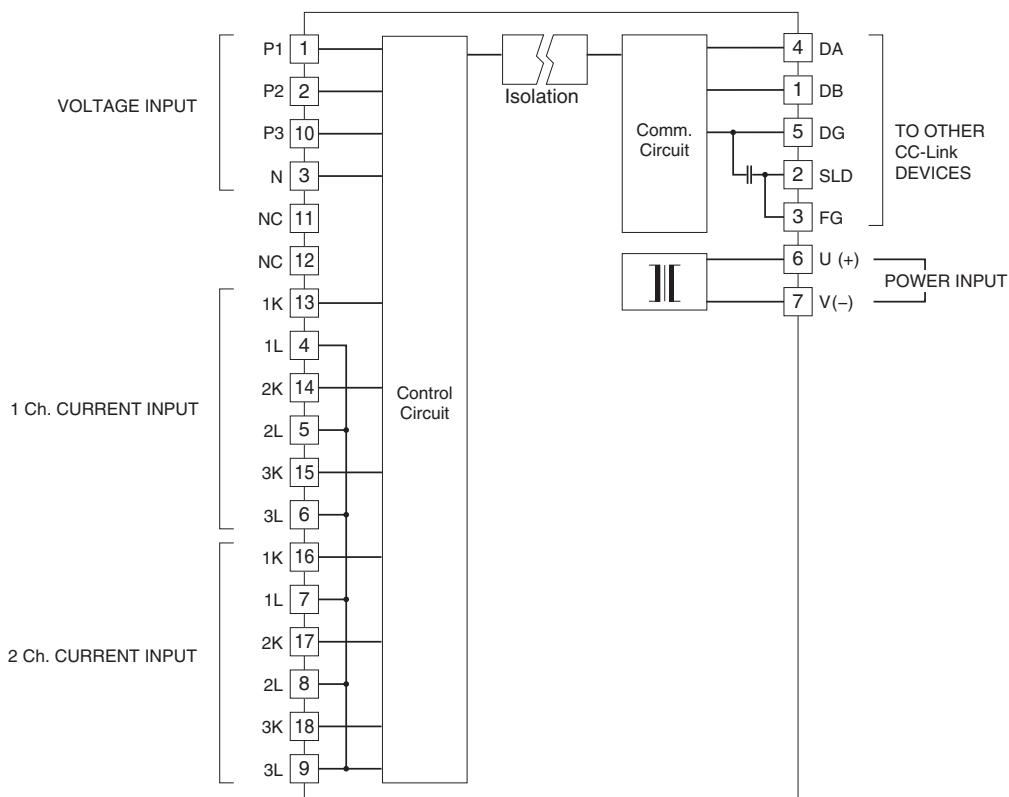
⚠ Specifications are subject to change without notice.