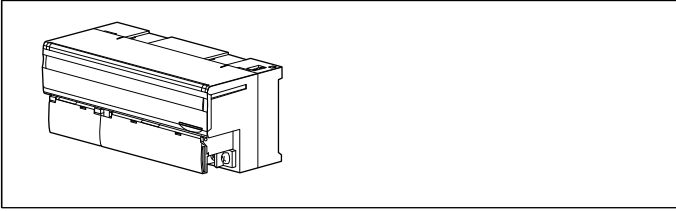


Remote I/O R7 Series

MULTI POWER MONITORING MODULE

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



MODEL: R7CWTU-2[1]1-AD4

ORDERING INFORMATION

- Basic module: R7CWTU-2[1]1-AD4
- Specify a code from below for [1].
(e.g. R7CWTU-221-AD4)

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.)

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 available.
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 M-System's 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...

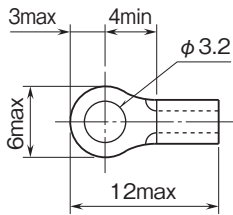
- Terminating resistor (110 Ω , 0.25 W)

GENERAL SPECIFICATIONS

- Connection:** M3 screw terminals (torque 0.5 N·m)
Recommended solderless terminal: Refer to the drawing on the end of this section.
Applicable wire size: 0.3 to 0.75 mm²
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
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
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 terminal size (unit: mm)



CC-Link COMMUNICATION

CC-LinkVer.1.10

Connector: M3 screw terminal

Network cable: CC-Link cable designated by Mitsubishi Electric

Station number: 1 - 64 (rotary switch)

Station Type: Remote device

Data allocation: 1

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

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

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

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: $\leq 5 \text{ k}\Omega$ / $\leq 2 \text{ V}$ for ON;
 $\geq 100 \text{ k}\Omega$ / 4 V for OFF

Operation mode: Discrete and pulse counter

INSTALLATION

Power consumption

• AC: $< 8 \text{ VA}$

• DC: $< 3 \text{ W}$

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 lbs)

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.

Sampling time:

Frequency: ≤ 1 sec.

Other: ≤ 500 msec.

Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

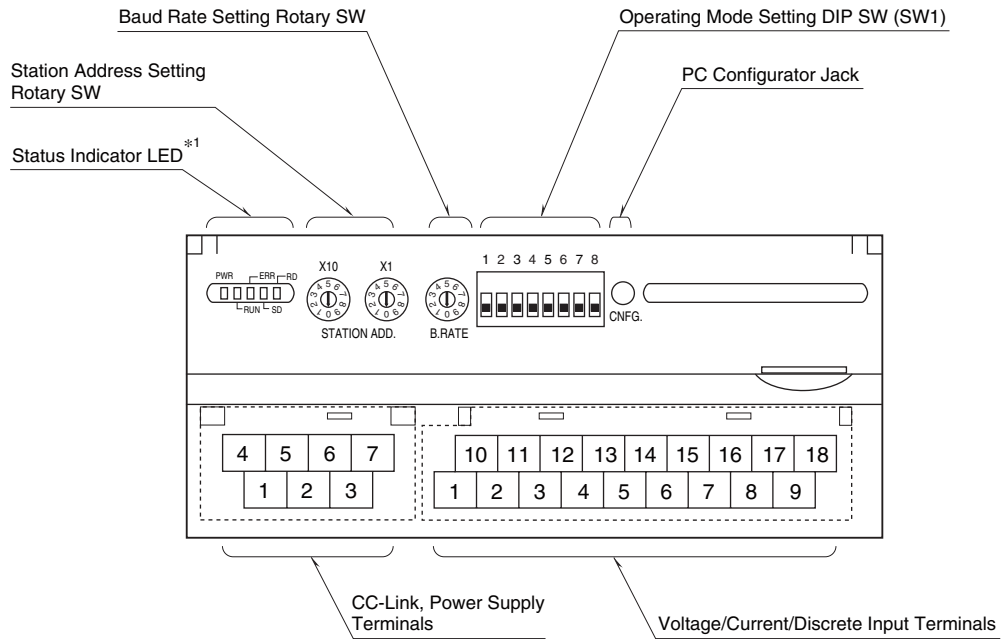
Dielectric strength:

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



TERMINAL CONNECTIONS

System / Application	Terminal	System / Application	Terminal
Single phase / 2-wire	<p>Diagram showing source (L1, N) connected to terminals P1, P2, 1K, 1L. Load is connected to terminals K, L.</p>	<p>Single phase / 3-wire</p> <p>Three phase / 3-wire unbalanced load (2CT)</p> <p>Diagram showing source (L1, N/L2, L3) connected to terminals P1, P2, P3, 1K, 1L, 2K, 2L, 3K, 3L. Load is connected to terminals K, L.</p>	
Three phase / 3-wire, balanced load	<p>Diagram showing source (L1, L2, L3) connected to terminals P1, P2, P3, 1K, 1L. Load is connected to terminals K, L.</p>	<p>Three phase / 4-wire, balanced load</p> <p>Diagram showing source (L1, L2, L3, N) connected to terminals P1, N, 1K, 1L. Load is connected to terminals K, L.</p>	
Three phase / 4-wire, unbalanced load	<p>Diagram showing source (L1, L2, L3, N) connected to terminals P1, P2, P3, N, 1K, 1L, 2K, 2L, 3K, 3L. Load is connected to terminals K, L.</p>		

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



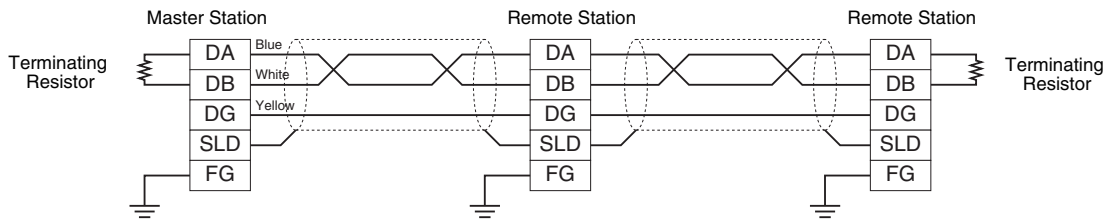
CONNECTION DIAGRAMS

■ POWER SUPPLY, CC-Link TERMINAL ASSIGNMENT

4	5	6	7
DA	DG	U(+)	V(-)
1	2	3	
DB	SLD	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	11	12	13 1ch	14 1ch	15 1ch	16	17	18
P3	NC	NC	1K	2K	3K	DI1+	DI3+	COM
1	2	3	4 1ch	5 1ch	6 1ch	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

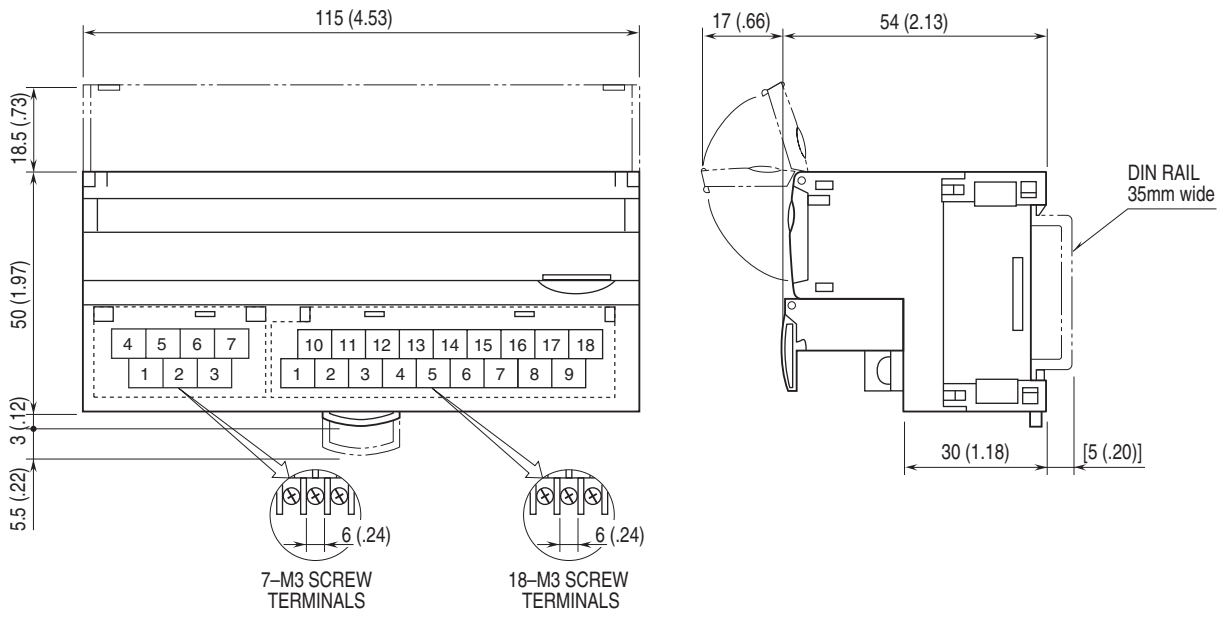
10	11	12	13 1ch	14 1ch	15 1ch	16 2ch	17 2ch	18 2ch
P3	NC	NC	1K	2K	3K	1K	2K	3K
1	2	3	4 1ch	5 1ch	6 1ch	7 2ch	8 2ch	9 2ch
P1	P2	N	1L	2L	3L	1L	2L	3L

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



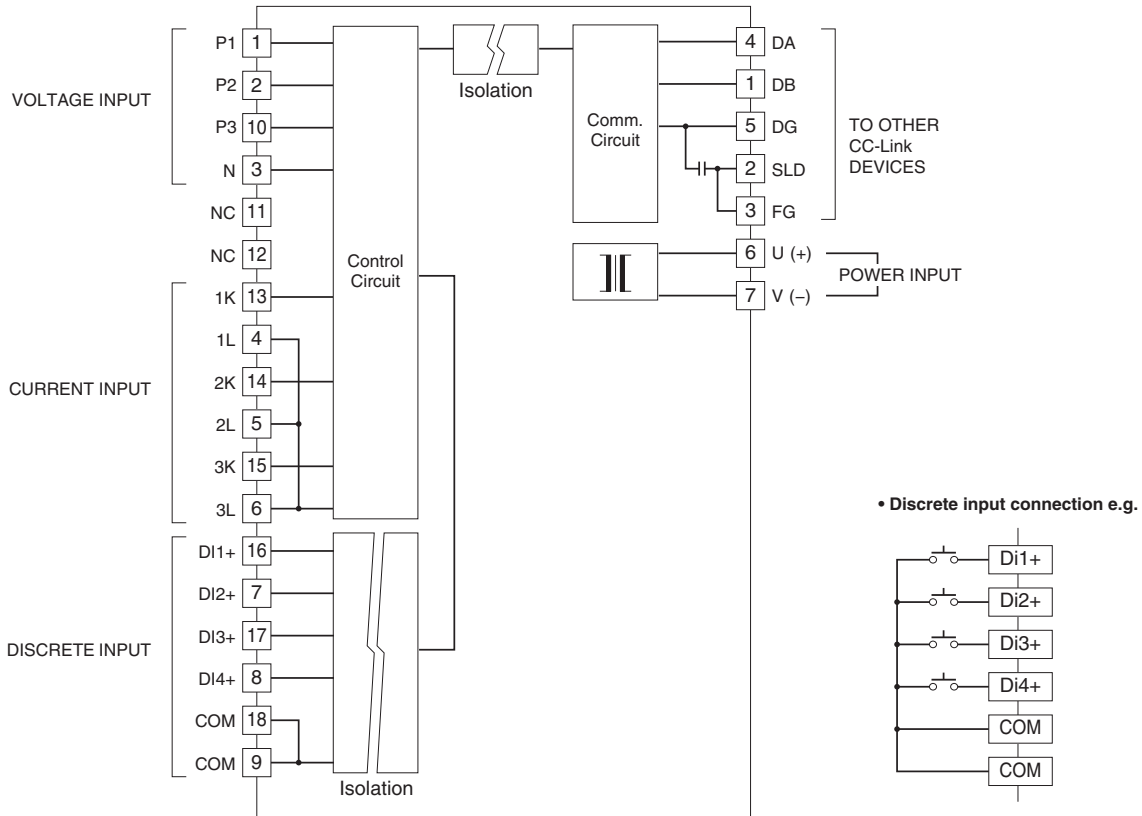
MODEL: R7CWTU

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

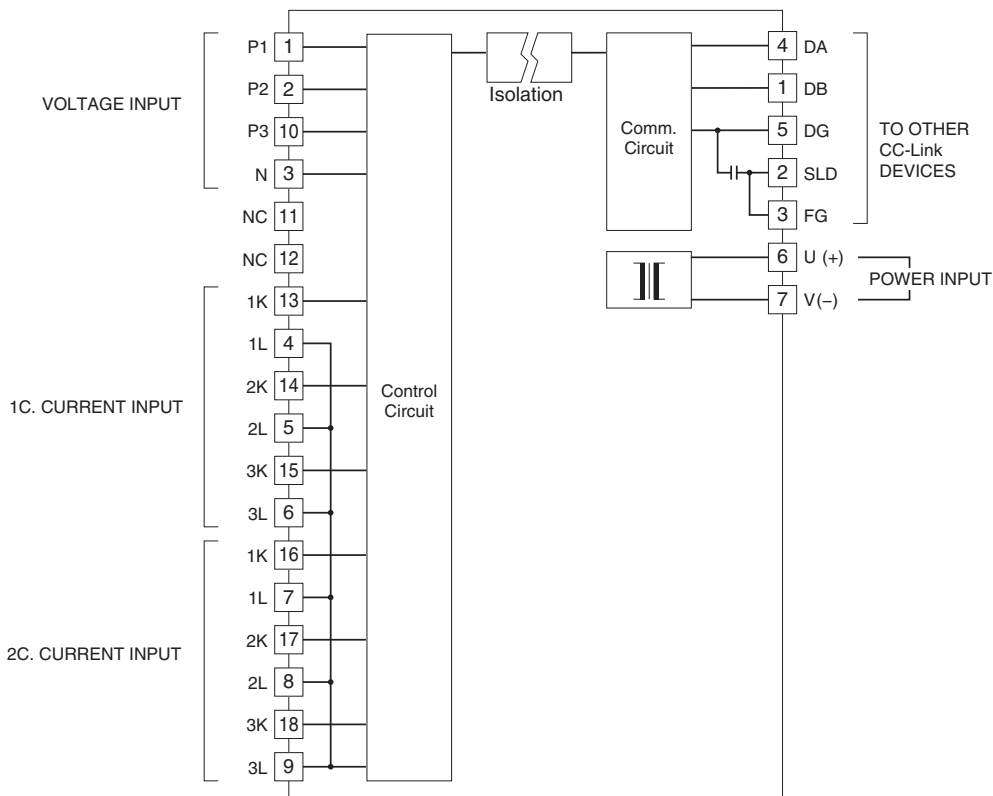


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

• 1 Circuit, 4 point discrete



• 2 Circuits





Specifications are subject to change without notice.



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