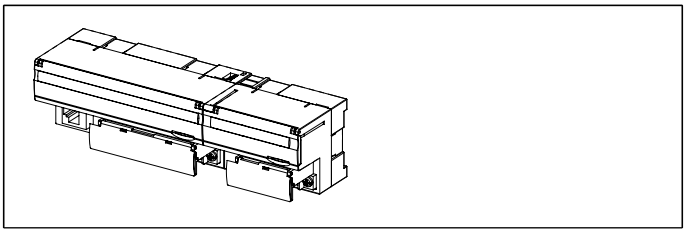
Remote I/O R7 Series

MULTI POWER MONITORING MODULE

(Clamp-on current sensor CLSE, Modbus/TCP (Ethernet))



MODEL: R7EWTU-2[1]1-AD4[2]

ORDERING INFORMATION

• Code number: R7EWTU-2[1]1-AD4[2]
Specify a code from below for each [1] and [2].
(e.g. R7EWTU-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 M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
EX-FACTORY SETTING
/SET: Preset according to the Ordering Information Sheet (No. ESU-7818-x)

FUNCTIONS & FEATURES

The R7EWTU is a Multi Power Monitoring Module for Modbus/TCP.
The R7EWTU 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

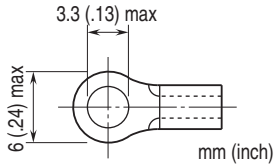
• PC configurator software (model: PMCFG)
Downloadable at M-System's web site.
A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.
• Clamp-on current sensor (model: CLSE)
The clamp-on current sensors, not included in this product package, must be ordered separately. Required number depends upon the system configuration.

GENERAL SPECIFICATIONS

Connection
Ethernet: RJ-45 connector
Power, input: 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 Ethernet 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: Connection, clamp-on sensor selection
Status indicator LED: PWR, RUN
User-configurable items: Front DIP SW
• Connection configuration
• Balanced/unbalanced
• Clamp sensor range
• Configuration method
(Refer to the manual for details)

■Recommended solderless terminal size - M3



ETHERNET COMMUNICATION

Communication Standard: IEEE 802.3u
Transmission: 10BASE-T, 100BASE-TX
Baud rate: 10/100 Mbps (Auto Negotiation function)
Protocol: Modbus/TCP
Data: RTU (Binary)
Max. number of socket connections: 2
Connection: RJ-45 modular jack
Transmission media: 10BASE-T (STP, Category 5) 100BASE-TX (STP, Category 5e)
Max. length of fieldbus segment: 100 meters
IP address: 192.168.0.1 (factoy default)
Configurable with software (model: PMCFG)
Port number: 502
Ethernet status indicator: LINK, LINK100, COL

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: ≤ 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: 300 g (0.66 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:

Harmonic contents and frequency: ≤ 1 sec.

Other: ≤ 500 msec.

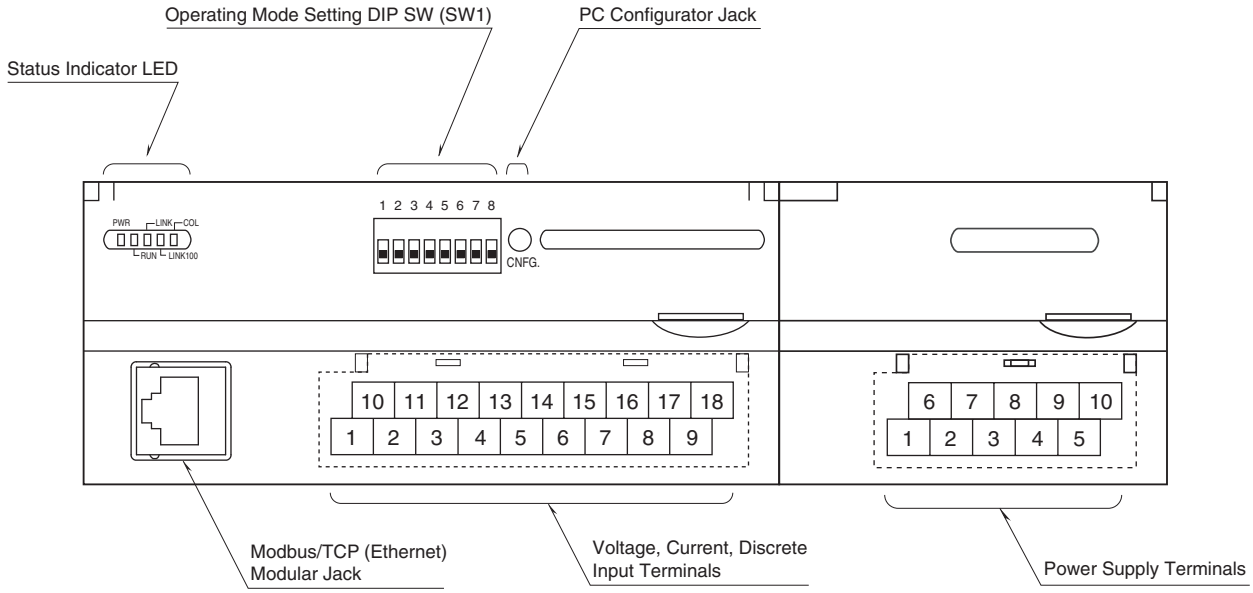
Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength:

1500 V AC @ 1 minute (Current input or voltage input or discrete input to Ethernet to power supply to FE1)

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

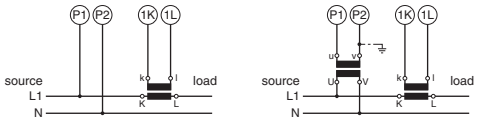
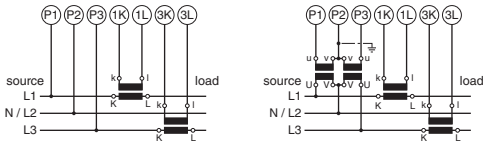
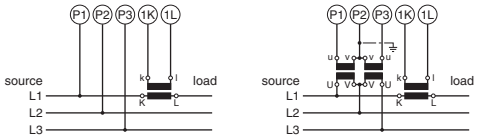
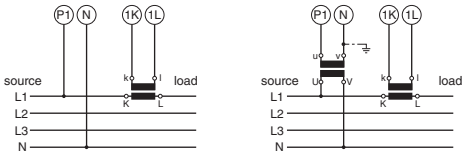
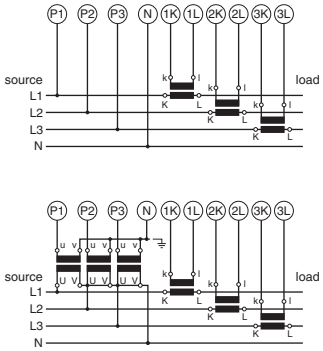
EXTERNAL VIEW



■ **STATUS INDICATOR LED**

LED	COLOR	STATUS	OPERATION
PWR	Red	ON	Normal operating
		Blink ≈0.5 Hz	No input or input overflow
		Blink ≈2 Hz	Setting error or device abnormality
		OFF	Internal power 5V abnormality
RUN	Red	ON	Normal communication
LINK	Red	ON	On with LINK on
LINK100	Red	Blink	Blink in 100BASE communication
COL	Red	Blink	Blink in collision

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			

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

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

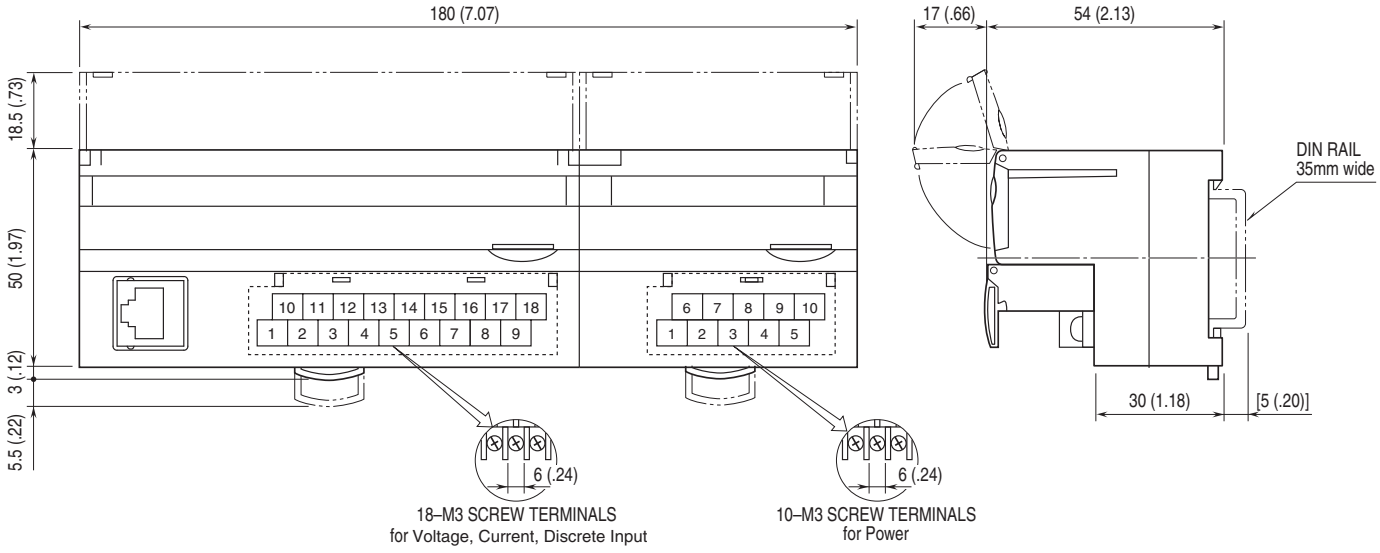
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	P1	Voltage Input P1	10	P3	Voltage Input P3
2	P2	Voltage Input P2	11	NC	Unused
3	N	Voltage Input N	12	NC	Unused
4	1ch 1L	1ch current input 1L	13	1ch 1K	1ch current input 1K
5	1ch 2L	1ch current input 2L	14	1ch 2K	1ch current input 2K
6	1ch 3L	1ch current input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

■ POWER SUPPLY

6	7	8	9	10
NC	NC	NC	NC	NC
1	2	3	4	5
NC	NC	FE1	U+	V–

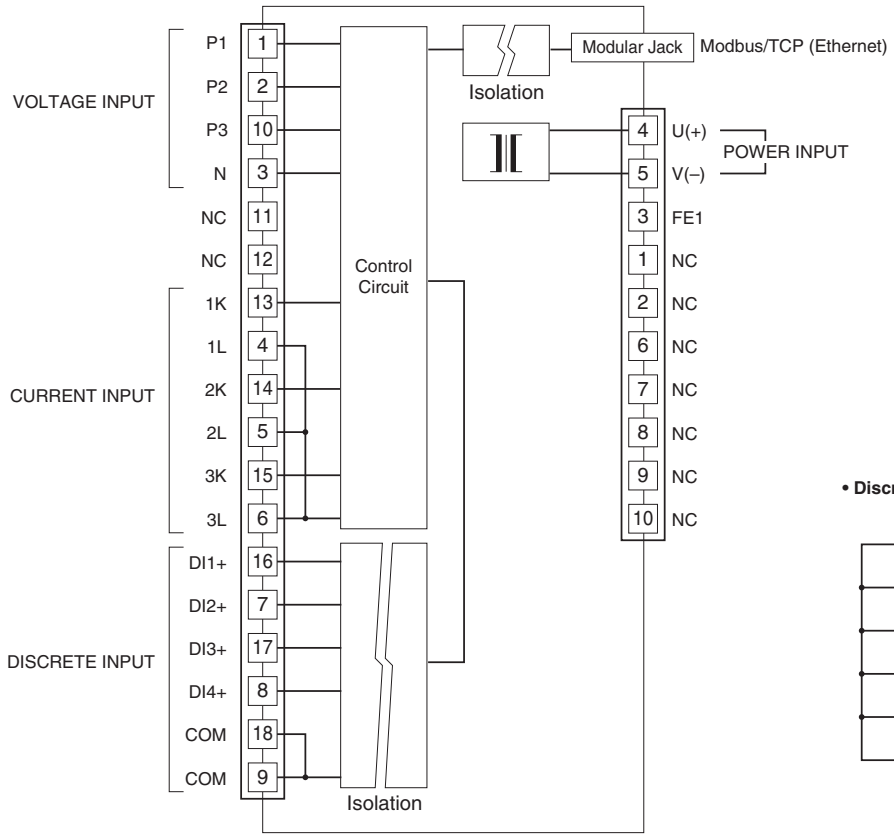
PIN No.	ID	FUNCTION	PIN No.	ID	FUNCTION
1	NC	Unused	6	NC	Unused
2	NC	Unused	7	NC	Unused
3	FE1	Power ground	8	NC	Unused
4	U+	Power input +	9	NC	Unused
5	V–	Power input –	10	NC	Unused

DIMENSIONS unit: mm (inch)

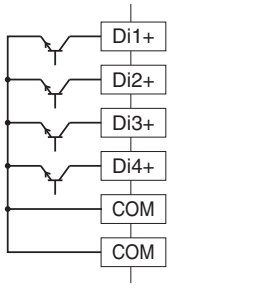


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

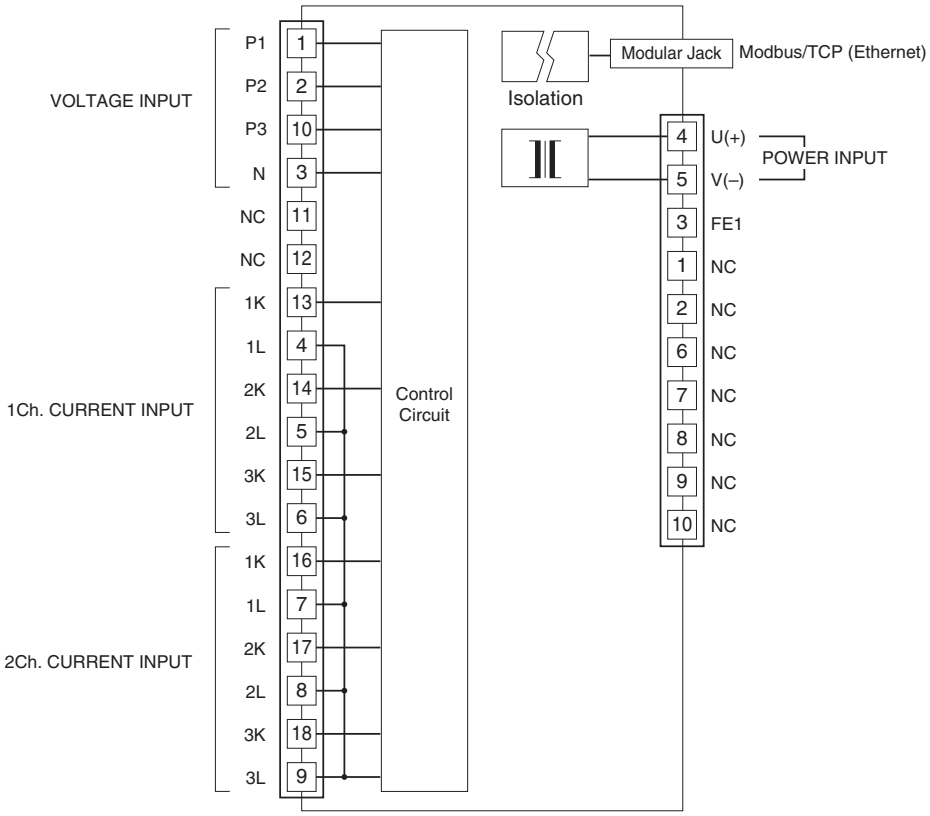
• 1 Circuit, 4-point Discrete Input



• Discrete input connection e.g.



• 2 Circuits



M-SYSTEM CO., LTD.
http://www.m-system.co.jp/

⚠ Specifications are subject to change without notice.