

Multi Power Transducer

which can be “held in one hand”

Power Monitoring of
Existing Equipment

Pocket-sized, compact module can be squeezed into a tight space
inside existing distribution boards

CO₂ emissions can be calculated!
(energy conversion value)

Model: M50XWTU

NEW CE

- Universally adaptable features including CE marking and three-phase/4-wire configuration
- Measured variables include AC voltage/current, power, CO₂ emissions (energy conversion value), harmonic distortion and more.
- Max. 4-circuit inputs for single-phase/2-wire system, max. 2-circuit inputs for single- or three-phase/3-wire system
- 480 V AC input
- Modbus communication
- Modbus plus 2-point energy count pulse outputs

See Page 5 for detailed information.



Model: M5XWTU

- 290 measured variables (three-phase/3-wire system)
- 240 V AC input
- You can choose one of the following output options: Modbus communication, analog output, or energy count pulse/alarm output

Model: M5XWT

- 104 measured variables except harmonic contents (three-phase/3-wire system)
- 240 V AC input
- Modbus communication



Easy Retrofitting
**Clamp-on
Current Sensor
CLSE Series**

CE



Power line cable

As calls for becoming carbon neutral increase, visualization of CO₂ emissions intensity has become essential.

Model **M5XWTU**, **M5XWT** and **M50XWTU Multi Power Transducers**, thanks to their compact package, can fit into a tight space of both new and existing panels or manufacturing equipment.

They realize easily a detailed energy consumption monitoring via Modbus communication.

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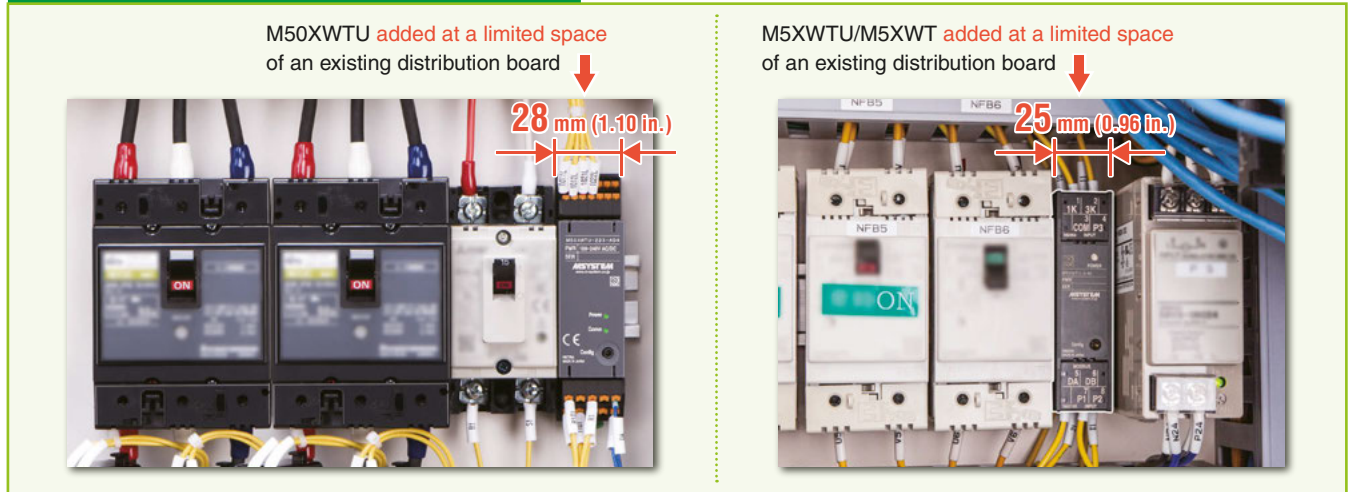
Make Greener automation

Installation

The low-profile modules can be installed side by side with circuit breakers.

The **M5XWTU**, **M5XWT** and **M50XWTU** **Multi Power Transducers**, featuring the 41 mm (1.61 in.) deep, terminal block style housing, are suitable for installation in a tight space of breaker boxes or wall-mounted panels. Compact modules can be squeezed into a minimum open space found in existing panels.

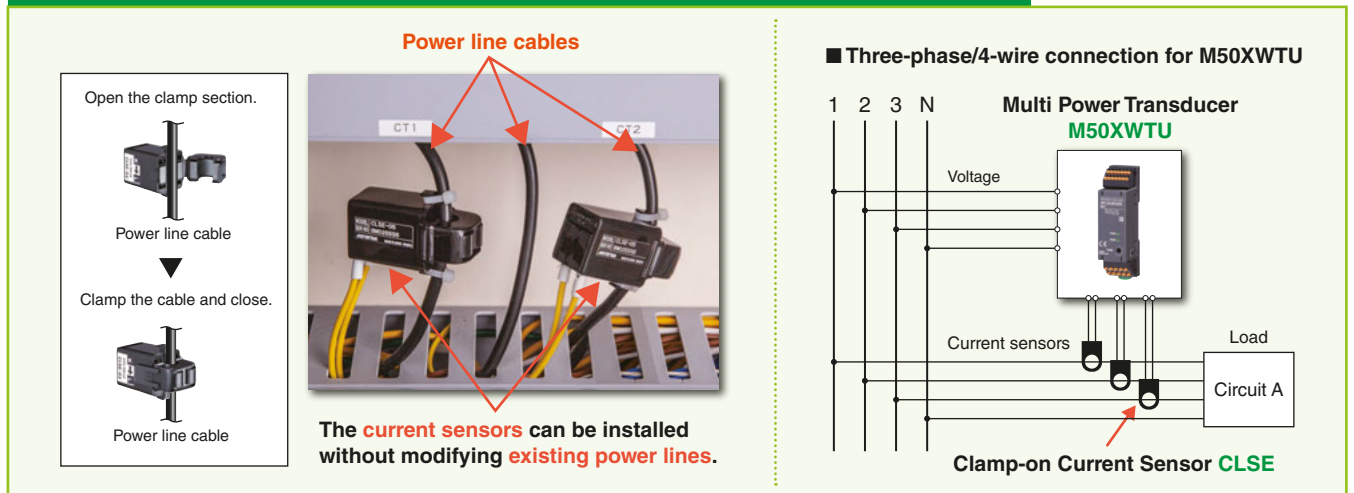
Multi Power Transducer can be retrofitted.



Current signals are measured by clamp-on sensors easily usable in existing equipment.

The current inputs are connected in one touch by using **Clamp-on Current Sensors** (Model: **CLSE**), needing no live cable modification. Furthermore, the **M5XWTU** and **M5XWT** use the voltage input to drive their internal circuits, needing no auxiliary power supply connection.

Clamp-on Current Sensors can be retrofitted with no power line modification.



Clamp-on Current Sensor

The one-touch clamp-type sensor, incorporating a nylon spring, can be easily installed on existing equipment, such as distribution boards. 5 A, 50 A, 100 A, 200 A, 400 A, and 600 A types are available.



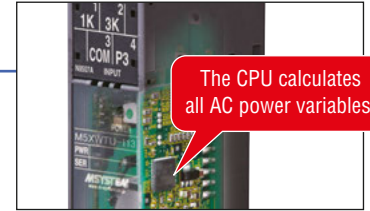
Model	CLSE-R5	CLSE-05	CLSE-10	CLSE-20	CLSE-40	CLSE-60
Applicable wire diameter	10 dia. max.	10 dia. max.	16 dia. max.	24 dia. max.	36 dia. max.	36 dia. max.
Operational range	5 A max.	50 A max.	100 A max.	200 A max.	400 A max.	600 A max.



Settings and Connection

The built-in CPU calculates the AC power variables instantaneously.

The built-in CPU calculates instantaneously up to 290^(*) variables including momentary values such as current, voltage, power, average values, maximum and minimum values, total harmonic distortion, and the 2nd to 31st harmonic contents, before updating the measured data in the memory every 500 milliseconds (approximate cycle).

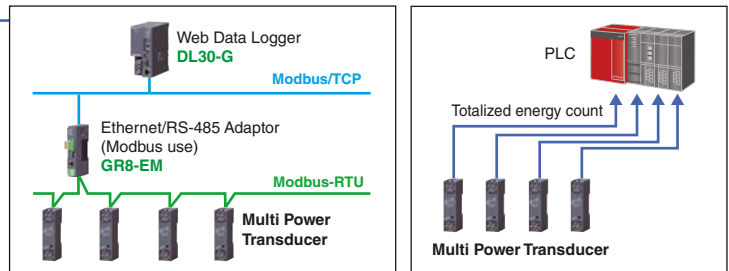


(*) Applicable to M5XWTU, three-phase/3-wire system. 104 variables for M5XWT (three-phase/3-wire), excluding harmonic contents from those for M5XWTU.

Modbus communication

Modbus communication, convenient for remote energy monitoring by PLC or data loggers, is selectable as standard. Monitoring points can be easily added by daisy-chain wiring of twisted-pair cables.

Other output options such as analog signal, energy count pulse and alarm contact^(*) are also available for direct input to PLC/DCS.

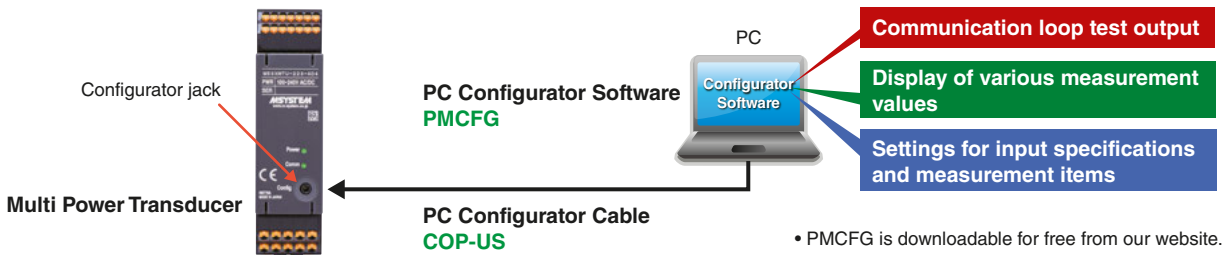


(*) Options for M5XWTU. Modbus only for M5XWT. Modbus plus energy count pulse signals are available for M50XWTU.

Free setup software tool with convenient functions

The **PMCFG PC Configurator Software** is used to set up various parameters of the **Multi Power Transducer** (Model: **M5XWTU / M5XWT / M50XWTU**). It has a convenient monitoring window showing all measurement values in real time.

The loop test output mode, in which any output value can be simulated without actually connecting to active input circuits, is useful for system commissioning.

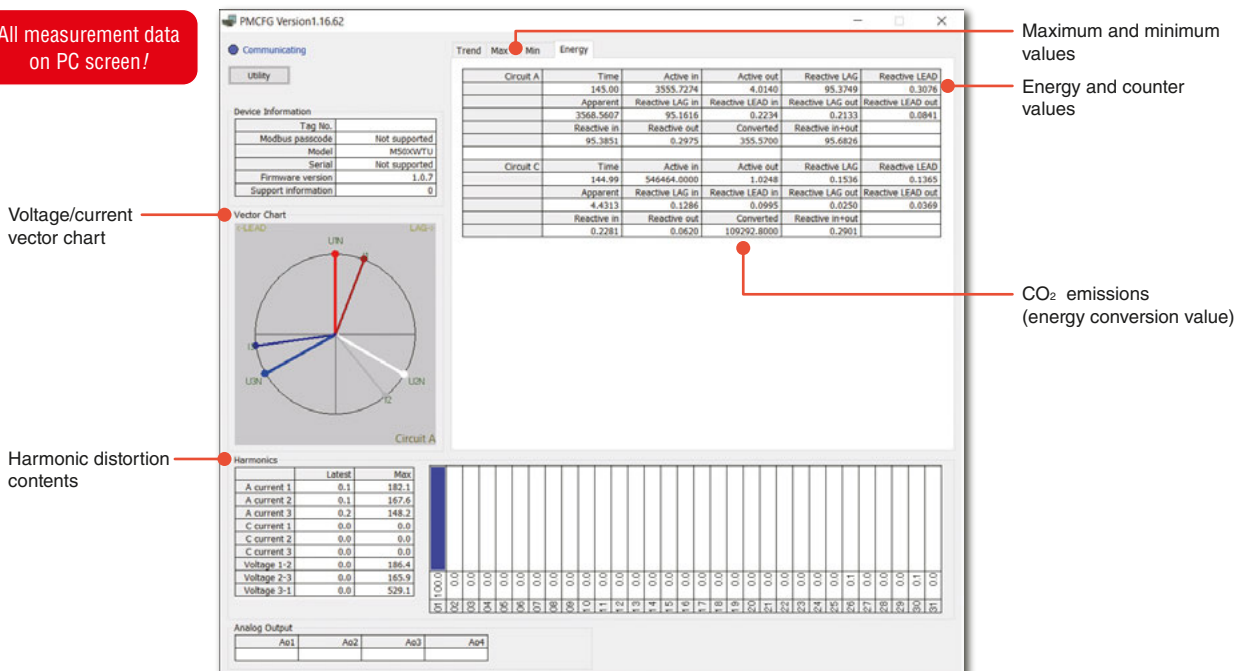


• PMCFG is downloadable for free from our website.

Monitoring window example (PC Configurator Model: PMCFG)

• Monitoring window for M50XWTU

All measurement data on PC screen!

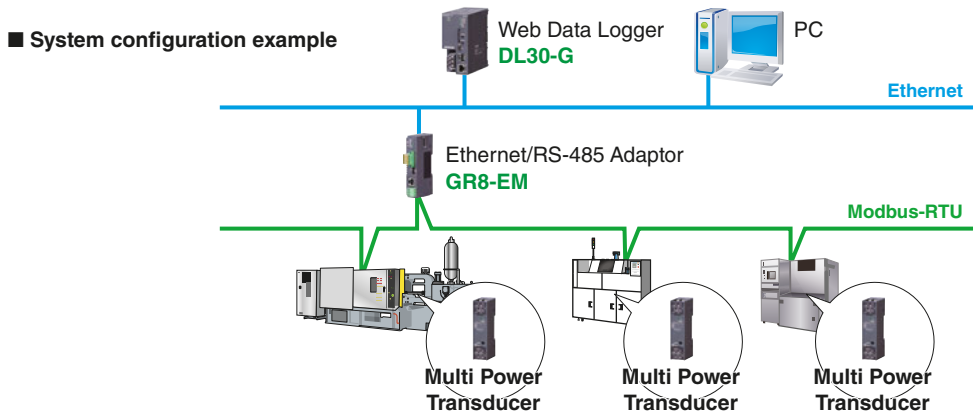


Applications

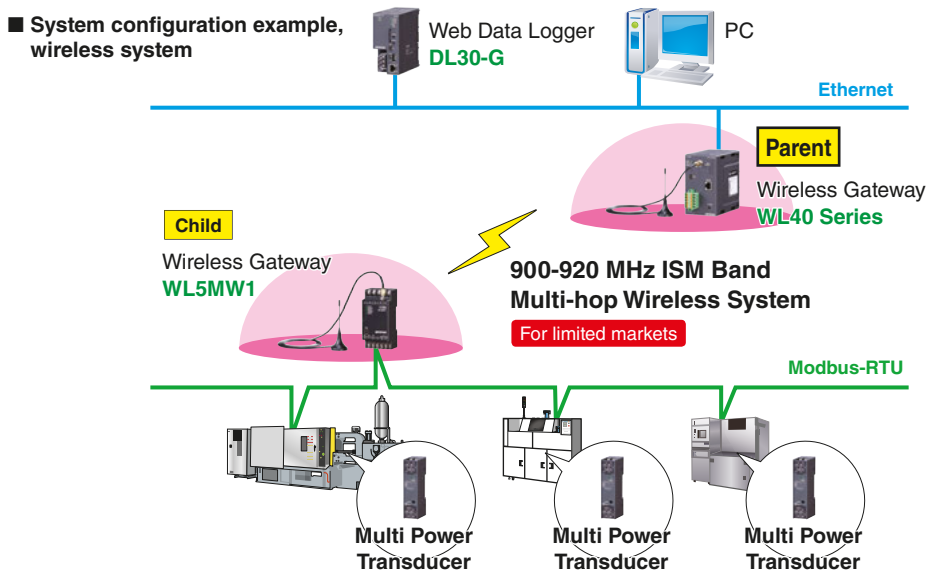
You can start a single- or multi-point power monitoring system with the Modbus.

Precise power management is essential to achieving carbon neutrality. You can install the **Multi Power Transducers** (Model: **M5XWTU / M5XWT / M50XWTU**) in a small space, even on existing equipment.

You can start with a small budget and gradually increase the number of measurement points, extending to overall management. For example, using **Web Data Logger** (Model: **DL30-G**) may be ideal as it enables Modbus communication at a reasonable cost.



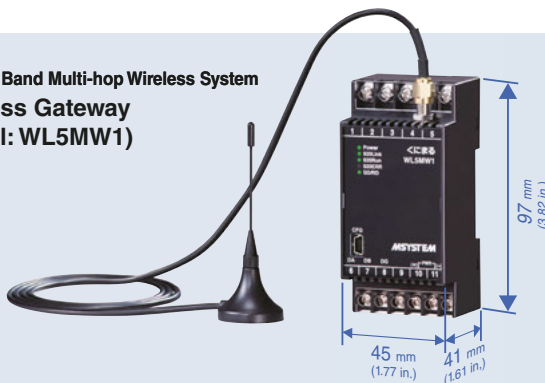
The **Wireless Gateway** allows the wireless transmission of the Modbus communication of the **Multi Power Transducers** (Model: **M5XWTU / M5XWT / M50XWTU**).



Features of 900-920 MHz band

- Frequencies on the 900-920 MHz bands are highly diffractive and obstacle resistant.
- A network is constructed with an exceptionally reliable multi-hop system.
- Communication is available for a line-of-sight distance of up to 1 km.
- No license application is required.
- No communication wiring work is required.

920 MHz Band Multi-hop Wireless System Wireless Gateway (Model: WL5MW1)



- Modbus-RTU transparent, 920 MHz band wireless gateway
- The gateway connects to Modbus remote I/Os and transfers Modbus-RTU protocol onto a wireless communication network.
- The compact terminal block style module can be installed in shallow panels such as breaker boxes and control panels on machines.

Child

Wireless Gateway
Model: **WL5MW1**

Limited to Japanese market

Multi Power Transducer with Universally Adaptable Features (Model: M50XWTU)

The widely used **M5-UNIT Series Multi Power Transducer** (Model: **M5XWTU**) has been upgraded to **M50X-UNIT Series Multi Power Transducer** (Model: **M50XWTU**) with more universally adaptable features such as CE marking and the three-phase/4-wire connection.

By employing tension-clamp terminal blocks with a greater number of field connections, the module can handle multiple system inputs at once.



NEW

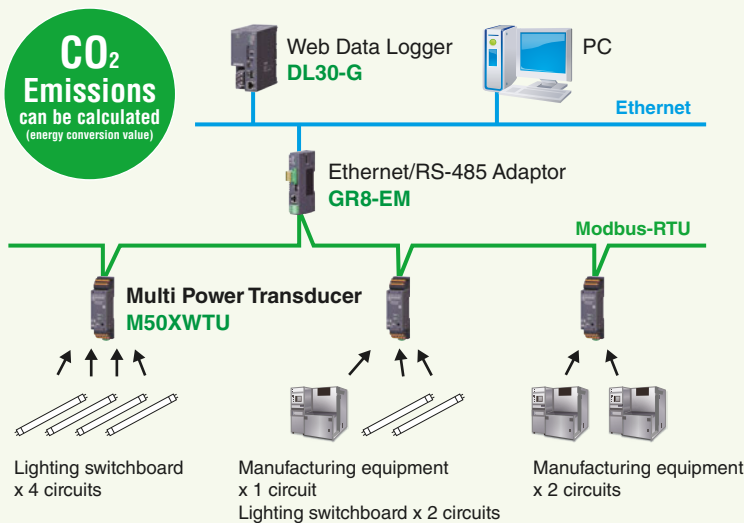
**Multi Power Transducer
Model: M50XWTU**



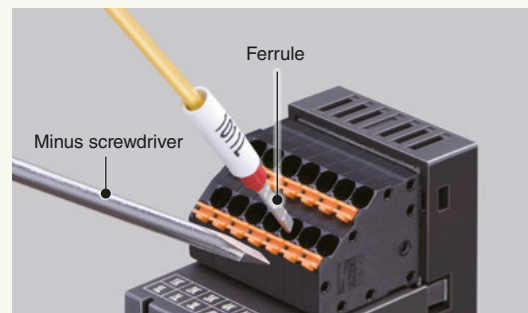
FEATURES

- Three-phase/4-wire system input connection
- CO₂ emissions (energy conversion value) can be calculated.
- Max. 4-circuit inputs for single-phase/2-wire system, max. 2-circuit inputs for single- or three-phase/3-wire system by single module
- Max. 480 V AC direct input
- CE marking
- Two energy count pulse outputs
- Clamp-on current sensor input (5 to 600 A)
- Modbus communication
- Communication loop test output

System configuration example



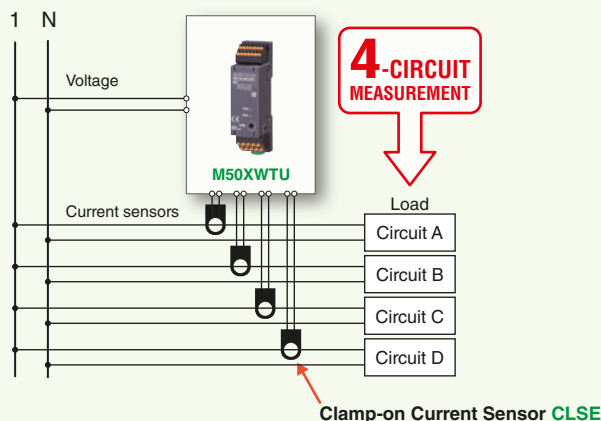
Tension-clamp terminal connection



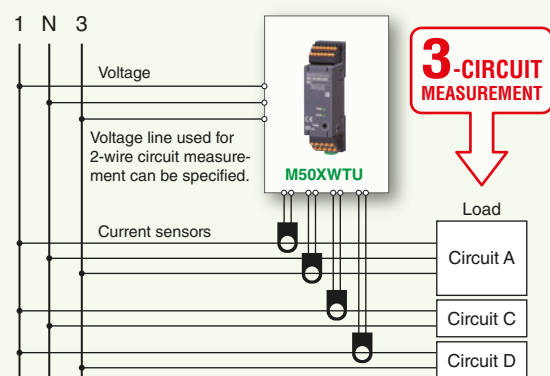
Wiring to the tension-clamp terminal block is quick and easy. Ferrules, solid or stranded wires of up to 1.5 mm² can be used.

Single M50XWTU module can measure up to 4 circuits! Space-saving and economical.

4 x single-phase/2-wire circuits



1 x single-phase/3-wire + 2 x single-phase 2-wire circuits



• Please see data sheet for more connection/application examples.

Specifications



W25 x H97 x D41 mm
(0.96" x 3.82" x 1.61")

Product name		Multi Power Transducer (PC programmable, self-powered)		
Model		M5XWTU		
Configuration		Single phase / 2-wire and 3-wire, 3-phase / 3-wire		
General Specifications	Construction			
	Connection	M3.5 screw terminals (torque 0.8 N-m)		
	Screw terminal	Nickel-plated steel (standard) or stainless steel		
	Applicable wire size	---		
	Housing material			
	Isolation	Current input or voltage input to analog output or pulse output or Modbus		
	Measured variables	Voltage: R-S, S-T, T-R Current: R, S, T Active power Reactive power Apparent power Power factor Frequency	Active energy: Incoming / outgoing Reactive energy: Incoming / outgoing / lag (inductive) / lead (capacitive) Apparent energy Average active power (demand) Average reactive power (demand) Average apparent power (demand) Average (demand) current: R, S, T	Harmonic distortion Overall distortion ratio, content rate (2nd to 31st) Voltage: R-S, S-T, T-R Current: R, S, T Max. and min. values
	Simplified measurement mode			
	Power indicator LED			
	Modbus Communication	Communication Standard		
Transmission distance				
Baud rate				
Protocol				
Node address				
Parity				
Stop bit				
Max. number of nodes				
Transmission media				
Internal terminating resistor				
Communication indicator LED		---		
Frequency				
Input/Output Specifications	<ul style="list-style-type: none"> • Voltage Input Rated voltage: 240 V AC Input range: 80 - 260 V AC (Phase voltage range is 80 - 130 V for single-phase/3-wire) Consumption VA: P1 - P2: ≤ 3 VA (power consumption of internal circuit) P2 - P3: voltage²/≤ 1.5MΩ VA 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 Input range: 0 - 120% of the rating Low-end cutout (current): 0 - 99.9% (default setting: 1%) Selectable primary current range: 1 - 20 000 A (only with CLSE-R5, refer to the configurator settings) ■ Analog output Default setting is DC current output 4 - 20 mA Types DC current output: 0 - 20 mA DC DC voltage output: -10 - +10 V DC DC voltage output: -5 - +5 V DC (3 types can be switched by DIP switch and PC) Outputs: Voltage, current, various powers, power factor, frequency, harmonic current and harmonic voltage <ul style="list-style-type: none"> • DC current output range 0 - 20 mA DC Output available range: 0 - 23 mA DC Minimum span: 1 mA Load resistance: 550 Ω • DC voltage output range -10 - +10 V DC Output available range: -11.5 - +11.5 V DC Minimum span: 1 V Load resistance: Output drive 1 mA max. (e.g. When 0 - 10 V DC, 10 V±1 mA = 10kΩ) • DC voltage output range -5 - +5 V DC Output available range: -5.75 - +5.75 V DC Minimum span: 500 mV Load resistance: Output drive 1 mA max. (e.g. When 1 - 5 V DC, 5 V±1 mA = 5000Ω) ■ Pulse / alarm output Outputs assignable to pulse: various energy Outputs assignable to alarm: Voltage, current, various powers, power factor, frequency, various energy average, current average, harmonic current and harmonic voltage Output type: Photo MOSFET relay Rated load: 160 V 150 mA AC/DC at peak ON resistance: 8 Ω max. Leakage current during opening: 2 μA max. 			
	Operating temperature			
	Operating humidity			
	Atmosphere			
	Mounting			
	Weight	80 g (2.8 oz)		
	Power consumption	---		
	Performance	Accuracy (*3)	Analog output accuracy (*5)	
		Voltage: ±0.5 % (*4)	Temp. coefficient: ±0.0075 %/°C (0.004 %/°F)	
		Current: ±0.5 % (*4)	Sampling time: ≤ 500 msec.	
Power: ±0.5 % (*4)		Analog output response time: ≤ 1.5 sec. (0 to 99%)		
Power factor: ±1.5 %		Insulation resistance: ≥ 100 MΩ with 500 V DC		
Frequency: ±0.5 Hz	Dielectric strength: 2000 V AC @ 1 minute (current input or voltage input to analog output or pulse output or Modbus to ground)			
Energy: ±2 % (power factor ≥ 0.5, input ≥ 10%)				

(*3) Sensor error margin not included.

Add sensor error margin when using with the combination of the sensor.

(*4) An accuracy for rated input. The described accuracy levels are ensured at the input 1% or more for neutral current in a single-phase/3-wire circuit and phase-S current in a 3-phase/3-wire circuit.

(*5) Output accuracy for the setting value span is shown as following formula.

Output accuracy = (output range ÷ output setting value span) × 0.02%

For current output: Output accuracy = (output range ÷ output setting value span) × 0.04%

[Ex1] DC current output 4 - 20 mA: Output accuracy = (20 mA ÷ 16A) × 0.04% = 0.05%

Input accuracy and sensor error are added to total accuracy.



W25 x H97 x D41 mm
(0.96" x 3.82" x 1.61")



NEW



W28 x H105 x D41 mm
(1.10" x 4.13" x D.61")

Multi Power Transducer (PC programmable, self-powered)

M5XWT

Multi Power Transducer (PC programmable)

M50XWTU

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

Terminal block

M3.5 screw terminals (torque 0.8 N-m)

Nickel-plated steel (standard) or stainless steel

Flame-resistant resin (black)

Current input or voltage input to Modbus

Voltage: R-S, S-T, T-R

Current: R, S, T

Active power

Reactive power

Apparent power

Power factor

Frequency

Active energy: Incoming / outgoing

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

Apparent energy

Average active power (demand)

Average reactive power (demand)

Average apparent power (demand)

Average (demand) current: R, S, T

Max. and min. values

Calculates power from current values with fixed voltage values and power factor.

Green LED; Blinking patterns indicate different operating status of the transducer.

Half-duplex, asynchronous, no procedure

Conforms to TIA/EIA-485-A

500 meters max.

1200, 2400, 4800, 9600, 19200, 38400 bps (default: 38400 bps)

Modbus-RTU

1 to 247 (default: 1)

None, even or odd (default: odd)

1 or 2 (default: 1)

31 (excluding master)

Shielded twisted-pair cable (CPEV-S 0.9 dia.)

110 Ω

50 / 60 Hz (45 – 66 Hz)

• **Voltage Input**

Rated voltage: 240 V AC

Input range: 80 - 260 V AC

(Phase voltage range is 80 - 130 V for single-phase/3-wire)

Consumption VA: P1 - P2: ≤ 3 VA (power consumption of internal circuit)

P2 - P3: voltage²/≤ 1.5MΩ VA

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

Input range: 0 - 120% of the rating

Low-end cutout (current): 0 - 99.9% (default setting: 1%)

Selectable primary current range: 1 – 20 000 A

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

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

Tension clamp terminal

Lower connector (voltage input, power, Modbus) 0.2 - 1.5 mm², stripped length 8 - 9 mm

Upper connector (current sensor input, pulse output) 0.2 - 1.5 mm², stripped length 10 - 11 mm

Voltage input or current input to Modbus to pulse output 1 to pulse output 2 to power

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

Current: 1, 2, 3, N

Active power

Reactive power

Apparent power

Power factor

Frequency

Active energy: Incoming / outgoing

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

Harmonic distortion: Overall distortion ratio, content rate (2nd to 31st)

Max. and min. values

CO₂ emissions (energy conversion value)

Green LED turns ON while Modbus communication

• **Voltage Input**

Rated voltage for each wiring

Single-phase/2-wire: rated voltage 240 V AC

Single-phase/3-wire: phase voltage 240 V AC / line voltage 480 V AC

Three-phase/3-wire: line voltage 240 V AC

(480 V AC when voltage to ground for each line is ≤ 277 V)

Three-phase/4-wire: phase voltage 277 V / line voltage 480 V AC

Input range: 1-N, 2-N, 3-N: 50 to 277 V AC

1-2, 2-3, 3-1: 50 to 480 V AC

Consumption VA: Voltage circuit ≤ ULN² / 250 kΩ / ph

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

Input range: 0 - 120% of the rating

Low-end cutout (current): 0 - 99.9% (default setting: 1%)

Selectable primary current range: 1 – 20 000 A (only with CLSE-R5, refer to the configurator settings)

■ **Pulse output**

Outputs assignable to pulse: various energy

Output type: Photo MOSFET relay

Rated load: 30 V 200 mA AC/DC at peak

ON resistance: 1 Ω max.

Leakage current during opening: 2 μA max.

-20 to +65°C (-4 to +149°F)

30 to 90 %RH (non-condensing)

No corrosive gas or heavy dust

DIN rail

80 g (2.8 oz)

70 g (2.5 oz)

AC: Max. 3 VA (100 - 240 V AC) / DC: ≤ 1.5 W (100 - 240 V DC) [universal]

Accuracy (*3)

Voltage: ±0.5 % (*4)

Current: ±0.5 % (*4)

Power: ±0.5 % (*4)

Power factor: ±1.5 %

Frequency: ±0.5 Hz

Energy: ±2 %

(power factor ≥ 0.5, input ≥ 10%)

Temp. coefficient: ±0.0075 %/°C (0.004 %/°F)

Sampling time: ≤ 500 msec.

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute

(current input or voltage input to Modbus to ground)

Accuracy (*3)

Voltage: ±0.5 % (*6)

Current: ±0.5 % (*6)

Power: ±0.5 % (*6)

Power factor: ±1.5 %

Frequency: ±0.1 Hz

Energy: ±2 %

(power factor ≥ 0.5, input ≥ 10%)

Temp. coefficient: ±0.0075 %/°C (0.004 %/°F)

Sampling time: ≤ 500 msec.

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute

(current input or voltage input to Modbus to pulse output 1 to

pulse output 2 to power)

(*6) An accuracy for rated input. The described accuracy levels are ensured at the input 1% or more for neutral current in a single-phase/3-wire circuit, phase-2 current in a 3-phase/3-wire circuit and phase-N current in a 3-phase/4-wire circuit.

M5-UNIT Series Terminal Block Signal Conditioners

ISOLATORS & SENSOR INPUTS

Product name	Model
Isolator	M5YV
Input Loop Powered Isolator	M5SN
Universal Transmitter (PC programmable)	M5XU
Signal Transmitter (PC programmable)	M5XV
Signal Transmitter	M5VS
Signal Transmitter (narrow span input)	M5MV
Signal Transmitter (high speed response)	M5VF
Signal Transmitter (high speed response 30 μ sec.)	M5VF2
Signal Transmitter (high dielectric strength)	M5VSH
Voltage Divider	M5VV
Thermocouple Transmitter	M5TS
TC/RTD Transmitter (PC programmable)	M5XTR
RTD Transmitter	M5RS
Potentiometer Transmitter	M5MS
Current Loop Supply	M5D
Current Loop Supply	M5DY
Current Loop Supply (applicable to HART signal, opencircuit detection selectable)	M5DYH2
Tachogenerator Transmitter	M5TG
AC Transmitter	M5AC

Scheduled release date: March 2024

FREQUENCY I/O

Product name	Model
Pulse Isolator	M5PP
Pulse Isolator	M5YPD
Frequency Transmitter	M5PA
Frequency Transmitter (PC programmable)	M5XPA
Encoder Speed Transmitter (PC programmable)	M5XRP
DC/Frequency Transmitter	M5AP
Pulse Scaler	M5PRU

Under development

Scheduled release date: Sept. 2024

Under development

DC ALARMS

Product name	Model
DC Alarm	M5AVS
DC Alarm	M5SED

Under development

Under development

FUNCTION MODULES

Product name	Model
Adder (PC programmable)	M5XADS
Subtractor (PC programmable)	M5XSBS
Multiplier (PC programmable)	M5XMLS
Divider (PC programmable)	M5XDIS
Ratio/Bias Transmitter (PC programmable)	M5XREB
Ratio/Bias Transmitter (PC programmable)	M5XRTS
Linearizer (PC programmable)	M5XF
Square Root Extractor (PC programmable)	M5XFLS
Inverted Output Transmitter (PC programmable)	M5XUDS
Ramp Buffer (PC programmable)	M5XCRS
Track/Hold (PC programmable)	M5XAMS
Peak Hold (PC programmable)	M5XPHS
High/Low Selector (PC programmable)	M5XSES
Parameter Generator (PC programmable)	M5XMST

POWER TRANSDUCERS

Product name	Model
Multi Power Transducer (PC programmable, self-powered)	M5XWTU
Multi Power Transducer (PC programmable, self-powered)	M5XWT
PT Transmitter (RMS sensing)	M5PT
CT Transmitter (RMS sensing)	M5CT
CT Transmitter (clamp-on current sensor)	M5CTC

● Universal power supply

Supporting 100 to 240 V AC and 24 V DC

● Reliable 3-port isolation

3-port isolation between input, output, and power supply

● Loop test output

Simulated signals are output for operation testing without input signals. (PC programmable type only)

- Specifications may vary depending on the model. For details, check the specification sheet.



Website



Request Info

Your local representative:

MG CO., LTD.
(formerly M-System Co., Ltd.)
www.mgco.jp