



MITSUBISHI ELECTRONIC MULTI-MEASURING INSTRUMENT

MODEL **ME96SS**







MITSUBISHI Electric Multi-Measuring Instrument SS Series features high performance and crystal clear display. With simple operating functions, SS Series is the best support your measuring and monitoring systems.

ME96Super-S

5 Advantages

Expand Line-up

Three model line-up High-spec class

- Standard class
- Economy class

Enhanced Measuring Functions

Improved Measuring Accuracy

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Variety of Complementary Features Password function
 Special primary voltage/current and special secondary voltage are settable
 Periodic monitoring function

Impressive Monitoring Functions

Advanced alarm display
 Motor starting current mask

Succeeded Display Functions Large bar-graph display
 Special display
 High-brightness backlight



Outline

MODBUS® RTU System (ME96SSH-MB/ME96SSR-MB with ME-0052-SS96 (optional plug-in module))

Central monitor	 MODBUS® RTU communication system optimizes computer monitoring operations Attachment of ME-0052-SS96 (optional) enables remote monitoring of the contact input signal and on/off control of the contact output signal Digital input signals can be latched for over 30ms, and there is no need for external latch circuits
Converter USB RS485 (MODBUS®RTU) RS485 (MODBUS®RTU)	ME-0052-SS96 optional unit SHT(OFF) CC(ON) AL PAL TAL ACB status ME-0052-SS96 Max. Baud rate: 38.4kbps Max. Connection Distance: 1,200m Max. Connection Units: 31 COptional Plug-in Module ME-0052-SS96> Digital Input: 5 points (24VDC) Digital Output: 2 points (35VDC)

CC-Link System (ME96SSH-MB/ME96SSR-MB with ME-0040C-SS96 (optional plug-in module))



- Remote monitoring of contact signal leading to less wiring, less spacing
- Digital unit signal can be latched for over 30ms, and there is no need for external latch circuits



 Abnormal Signal (Facility)
 Abnormal Signal (Earth Leakage)
 Abnormal Signal (Temperature)
 Circuit Breaker Status Signal, etc

<CC-Link Interface>

- Max. Baud rate: 10Mbps
- Max. Connection Distance: 100m (10Mbps)~1,200m (156kbps)
- Max. Connection Units: 42
- Digital Input: 4 points (24VDC)

Analog/Pulse/Alarm Output System (ME96SSH-MB/ME96SSR-MB with ME-4210-SS96 (optional plug-in module))



- Remote monitoring of A, DA, V, W, var, VA, PF, Hz, Harmonics Current RMS value and Harmonics voltage RMS value at 4 to 20mA output (max.4 outputs)
- Active energy, reactive energy, apparent power and periodic energy (ME96SSH-MB) can be monitored by pulse output (max.of 2 pulse)
- Can remotely monitor upper/lower limit alarm by contact output (max.1 point)

<Analog output specifications>

- 4-20mA
- 4 outputs
- Resistance load 600Ω or less
- <Pulse output specifications>
- No-voltage a contact point
- 35VDC, 0.1A
- Select output from pulse widths of 0.125, 0.5 or 1s
- <Alarm output specifications>
- No-voltage a contact point
- 35VDC, 0.1A
- <Digital input specifications>
- 1 point (24VDC)



ME96 Super-S Series Features

Expand Line-up

Three Model Line-up



Model name	Transmission/Option specifications	Main measurement items
ME96SSH-MB (High-spec class)	MODBUS® RTU communication Plug-in module (options) • Analog/Pulse/Contact output/input • CC-Link communication • Digital input/output (for MODBUS® RTU communication)	A, DA, V = $\pm 0.1\%$ W, var, VA, Hz = $\pm 0.2\%$ PF = 1.0% Wh = class 0.5s (IEC 62053-22) varh, Vah = class 2.0 (IEC 62053-23) Harmonics = 31^{st} -deg (max) Rolling demand
ME96SSR-MB (Standard class)	MODBUS® RTU communication Plug-in module (options) • Analog/Pulse/Contact output/input • CC-Link communication • Digital input/output (for MODBUS® RTU communication)	A, DA, V = $\pm 0.2\%$ W, var, VA, HZ = $\pm 0.5\%$ PF = 2.0% Wh = class 1.0 (IEC 62053-21) varh = class 2.0 (IEC 62053-23) Harmonics = 13^{th} -deg (max)
ME96SSE-MB (Economy class)	MODBUS [®] RTU communication	A, V = $\pm 0.5\%$ W, Hz = $\pm 0.5\%$ PF = 2.0% Wh = class 1.0 (IEC 62053-21)

Optional Plug-in Modules

Model name	Analog output	Pulse/Alarm output	Contact input	Contact output	Transmission function	Used with
ME-4210-SS96	4	2	1	—	_	
ME-0040C-SS96	—	—	4	—	CC-Link	ME0699D MR
ME-0052-SS96	—	—	5	2	—	WL9033H-WD

Note: Optional Plug-in Module can not be used with ME96SSE-MB.

Enhanced Measuring Functions

Improved Measuring Accuracy

- •Measuring accuracy of items such as current, voltage and active energy has been improved.
 - current/voltage ±0.1%
 - active energy class 0.5s
 - Harmonics 1st to 31st

• Functions added for measuring Single phase 2-wire and Single phase 3-wire

Single phase 2-wire





• Functions added for measuring Three phase 3-wire system star circuits and 400V direct connections

Three phase 3-wire system (star circuit)



ME96 Super-S Series Features



Succeeded Display Functions

Large Bar Graph Display

Bar Graph Display

Each measuring items can be displayed by a bar graph. With bar graph display, one can grasps the rated value and percentage against the alarm value instantly.

(1) Bar Graph Fixed Display

Measuring items can be displayed by bar graph. The _____ mark indicates that display is fixed.

Furthermore, the + and buttons can be used to change the display between items measured.

t V AVG ⇔t A AVG ⇔tΣW ⇔tΣ VAR ⇔tΣ PF ⇔t Hz



Note: Alarm indicator blinks when it is set on alarm mode.

(2) Digital Values Display by Bar Graph

Values on the tri-level digital display can be shown by bar graphs (Except when the tri-level display is measuring the same items). Bar graph shows the digital value of



Special Display

Special Display by Display Pattern P00

Display can be selected as desired Display Pattern P00.



Max/Min Display Function

Maximum/Minimum Value Display

The maximum and minimum value of each measuring items can be displayed. Since the max/min display shows the current value as well as max/min values, the display can be used for monitoring. Also,range of minimum value to maximum value is shown by bar graph.



High-brightness Backlight

- •High-reliability and high-brightness backlight is built in
- •Backlight brightness can be adjusted from level 1 to 5 (default setting is 3)
- "Always-on mode" or "Automatic off mode" can be selected (default setting is automatic off mode)





ME96NS Series

ME96SS Series

Impressive Monitoring Functions

Advanced Alarm Display

- (1) Backlight blinks when an alarm occur.
- (2) Automatic or manual alarm cancel can be selected.
- (3) Upper/lower limits of up to four points can be monitored.
- (4) Alarm output delay time can be set.

Time of alarm output after the maximum value and minimum value is reached can be set. With this function, alarm output caused by frequency change at start-up current of a motor and start-up of private power generating facility can be avided. Furthermore, maximum value and minimum value do not update during alarm delay.





Motor Starting Current Mask

During motor current monitoring, this function can be used to prevent updating the maximum value and alarm output. Although the maximum value is not updated, the current value is displayed. The starting current mask time can be set in the range from 1s to 5min.



Note: Set the starting current threshold to a value lower than the lower limit value in consideration of fluctuations in load current during operation.



ME96 Super-S Series Features

Variety of Complementary Features

Password Function

With the password function, the following items can be protected from an accidental execution.

No.	Password-protected item	No.	Password-protected item
1	shift to the setting mode	5	Adjust the time limit of rolling demand
2	Reset the max./min. values	6	Reset the peak value of rolling demand
3	Reset the value of active energy, reactive energy and apparent energy	7	Reset the value of operating time
4	Reset the value of periodic active energy		

Special Primary Voltage/Current and Special Secondary Voltage are settable

(1) Special primary current

1A~30kA

Under 10A: Top two digits setting Over 10A: Top three digits setting



(2) Special primary voltage

60V~75kV Under 100V: Top two digits setting

Over 100V: Top three digits setting



(3) Special secondary voltage

Three phase 4-wire system





Three phase 3-wire, Single phase 2-wire system

Periodic Monitoring Function

Power consumption can be measured in two individual intervals (e.g., peak/off-peak, day/night, etc.).

The time segments can be switched according to the setting via communication or the digital input (DI).

(The time segments cannot be switched manually (button operation).)

Rolling Demand Function

Rolling demand is the estimated power consumption in a specified period (interval). There are two way calculation of rolling demand.

1Rolling block

Use rolling block to set the interval and sub-intervals from 1~60min (1min intervals). Rolling demand is calculated and updated at the end of each sub-interval.

<Example: Interval, 15min; Sub-interval, 5min>





Power consumption (period 1)



Power consumption (period 2)

2 Fixed block

Use fixed block to set the interval from 1~60min (1min intervals). Rolling demand is calculated and updated at the end of each interval. (For fixed block, use the same time limits both of interval and sub-interval).







• Even during a setup of a facility, where no current/voltage input is found, analog output, pulse output, alarm output, contact output, and communication data is replied. This allows for checkup of wiring and monitoring program system. *Depending on the optional unit and settings, the test function may not be available (may not be displayed).

(1) Communications Test

()Display

- •The same as for the operating mode, display patterns and other data are shown as set.
- •Both maximum and minimum values can be displayed.

2 Communication data

- •Communication items and value are the same one on the display. The items value that are not displayed is 0 (zero).
- •Measuring items set for alarm will be displayed at the time of an alarm.
- Input/Output contact status can be monitored.

(2) Alarm/Contact Output Operation Test

①Displays current alarm and contact status.

②Press the Reset button for 2sec, and regardless if there is an alarm or not, the display and contact output will operate as follows.

Status	Display	Output terminal
Alarm	ON	Open
No alarm	OFF	Closed

(3) Analog Output Operation Test	
Display the output items.	

1) Display the output items.		Output	Output specs
2 Press the + or - button to change the		Output	4-20mA
analog output.	▼	0%	4mA
Note: Default value is 0%.	25%	25%	8mA
	50%	50%	12mA
	75%	75%	16mA
	100%	100%	20mA

(4) Pulse Output Operation Test

Press the Reset button one time to output one pulse.

Note: After reaching 50, count will return to 1.

 $\underline{0} \rightarrow 1 \rightarrow 2 \rightarrow \cdots \rightarrow 49 \rightarrow 50 \text{ [pulse]}$ Note: Default value is 0 pulses.

Standards

All products are compliant with CE Marking, UL Standards, KC mark and FCC/IC.



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Specifications

ME96SSH-MB

Model name		ME96SSH-MB				
Phase wire		Three phase 4-wire, Three phase 3-wire (3CT, 2CT), Single phase 3-wire, Single phase 2-wire (common use)				
Rating Current Voltage		5AAC, 1AAC (common use)				
		Voltage	Three phase 4-wire: 277/480VAC (max) Three phase 3-wire: Delta connections: 220VAC (max), Star connections: 440VAC (max) Single phase 3-wire: 220/440VAC (max) Single phase 2-wire: Delta connections: 220VAC (max), Star connections: 440VAC)			
			Frequency	50-60Hz (common use)		
		Current (A)		A1, A2, A3, AN, AAVG	±0.1%	
		Current demand (DA)	1	DA1, DA2, DA3, DAN, DAAVG	±0.1%	
		Voltage (V)		V12, V23, V31, V _{AVG} (L-L) V1N, V2N, V3N, V _{AVG} (L-N)	±0.1%	
		Active power (W)		W1, W2, W3, Σ W	±0.2%	
		Reactive power (var)		var1, var2, var3, Σ var	±0.2%	
		Apparent power (VA)		VA1, VA2, VA3, Σ VA	±0.2%	
Magai	romont	Power factor (PF)		PF1, PF2, PF3, Σ PF	±1.0%	
ite	ms	Frequency (Hz)		Hz	±0.2%	
a	nd	Active energy (Wh)		Imported, Exported	class 0.5S (IEC62053-22)	
acci	lracy	Reactive energy (varl	ר)	Imported lead, lag Exported lead, lag	class 2.0 (IEC62053-23)	
		Apparent energy (Var	ן)	-	class 2.0	
		Harmonic current (HI)		1 st to 31 st degree (odd number degree only)	±2.0%	
		Harmonic voltage (H)	/)	1 st to 31 st degree (odd number degree only)	±2.0%	
		Rolling demand (DW)		Rolling block, fixed block	±0.2%	
		Periodic Active energy (Wh)		Periodic active energy 1, 2	class 0.5S (IEC62053-22)	
		Operating time		Operating time 1, 2	(Reference)	
		Analog output respon	se time	2s or less (except HI, HV. HI, HV: 10s or less)	2s or less (except HI, HV. HI, HV: 10s or less)	
Instantaneous value		A/V: RMS calculation, W/var/VA/Wh/varh/Vah: Digital multiplication, PF: Power ratio calculation, Hz: Zero-cross, HI/HV:FFT				
	modou	ing mound	Demand value	DA: Thermal type calculation, DW: Rolling den	nand calculation	
		Туре		LCD with backlight		
		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		6 digits each at upper, middle, and lower line		
Display	No. of d and segmen	isplay digits ts	Digital display	A, DA, V, W, var, VA, PF: 4 digits DW, Hz: 3 d Wh, varh, VAh: 9 digits (6 or 12 possible) Harmonic distortion ratio, content ratio: 3 digits Operating time: 6 digits Contact input/output:	gits 5 Harmonic RMS: 4 digits //O	
			Bar graph	21 segment bar graph, 22 segment indicator		
		Display updating	time interval	0.5s or 1s (selectable)		
	•	Communicatio	n	MODBUS® RTU communication		
		Available optional plug	-in module	ME-4210-SS96 ME-0040C-SS96 ME-0052-SS96		
		Power Failure Comp	ensation	Non-volatile memory used (items: setting value, max/min value, active/reactive energy, apparent energy, periodic active energy, rolling demand, operating time)		
		VT		Each phase 0.1VA (110VAC), 0.2VA (220VAC), 0.4VA (440VAC)		
Consu	Imption (A)	СТ		Each phase 0.1VA (5AAC)		
		Auxiliary power circui	t	7VA (at 110VAC), 8VA (at 220VAC), 5W (at 100VDC)		
	Auxiliary power		100-240VAC (±15%), 100-240VDC (-30 +15%)			
	Weight		0.5kg			
	Dimensions		96×96×86 (H×W×D)			
	Installation method		Embedded			
		Operating temper	ature	-5~+55°C (average operating temperature: 35 or less per day)		
	Operating humidity		0~85% RH (non condensing)			
Storage temperature		-25~+75°C (average temperature: 35 or less per day)				
Storage humidity		0~85% RH (non condensing)				

Notes 1. Class values based on 100% of rated value. Notes 2. Harmonic measurements where distortion ratio (content rate) is 100% or more may exceed ±2.0%. Notes 3. Harmonic current cannot be measured without voltage input.





ME96SSR-MB

Model name		ME96SSR-MB				
Phase wire		Three phase 4-wire, Three phase 3-wire (3CT, 2CT), Single phase 3-wire, Single phase 2-wire (common use)				
Current Voltage		5AAC, 1AAC (common use)				
		Rating	Voltage	Fhree phase 4-wire: 277/480VAC (max) Fhree phase 3-wire: Delta connections: 220VAC (max), Star connections: 440VAC (max) Single phase 3-wire: 220/440VAC (max) Single phase 2-wire: Delta connections: 220VAC (max), Star connections: 440VAC)		
			Frequency	50-60Hz (common use)		
		Current (A)		A1, A2, A3, AN, AAVG	±0.2%	
		Current demand (DA)		DA1, DA2, DA3, DAN, DAAvg	±0.2%	
		Voltage (V)		V12, V23, V31, V _{AVG} (L-L) V1N, V2N, V3N, V _{AVG} (L-N)	±0.2%	
		Active power (W)		W1, W2, W3, Σ W	±0.5%	
		Reactive power (var)		var1, var2, var3, Σ var	±0.5%	
		Apparent power (VA)		VA1, VA2, VA3, Σ VA	±0.5%	
Magau	romont	Power factor (PF)		PF1, PF2, PF3, Σ PF	±2.0%	
ite	ms	Frequency (Hz)		Hz	±0.5%	
a	nd	Active energy (Wh)		Imported, Exported	class 1.0 (IEC62053-21)	
accu	iracy	Reactive energy (varh	1)	Imported lead, lag Exported lead, lag	class 2.0 (IEC62053-23)	
		Apparent energy (Vah)	-	_	
		Harmonic current (HI)		1 st to 13 th degree (odd number degree only)	±2.0%	
		Harmonic voltage (HV	()	1 st to 13 th degree (odd number degree only)	±2.0%	
		Rolling demand (DW)		-	-	
		Periodic Active energy	y (Wh)	Periodic active energy 1, 2	class 1.0 (IEC62053-21)	
		Operating time		Operating time 1, 2	(Reference)	
		Analog output respon	se time	2s or less (except HI, HV. HI, HV: 10s or less)		
	Measu	rina method	Instantaneous value	A/V: RMS calculation, W/var/VA/Wh/varh/Vah: Digital multiplication, PF: Power ratio calculation, Hz: Zero-cross, HI/HV:FFT		
		3	Demand value	DA: Thermal type calculation		
		Туре		LCD with backlight		
				6 digits each at upper, middle, and lower line		
Display	No. of di and segmen	splay digits ts	Digital display	A, DA, V, W, var, VA, PF: 4 digits Hz: 3 digits Wh, varh: 9 digits (6 or 12 possible) Harmonic distortion ratio, content ratio: 3 digits Operating time: 6 digits Contact input/output: I/	Harmonic RMS: 4 digits O	
			Bar graph	21 segment bar graph, 22 segment indicator		
		Display updating	time interval	0.5s or 1s (selectable)		
		Communicatio	n	MODBUS® RTU communication		
	,	Available optional plug-	in module	ME-4210-SS96 ME-0040C-SS96 ME-0052-SS96		
		Power Failure Compe	ensation	Non-volatile memory used (items: setting value, max/min value, active/reactive energy, periodic active energy, operating time)		
		VT		Each phase 0.1VA (110VAC), 0.2VA (220VAC), 0.4VA (440VAC)		
Consu	mption	СТ		Each phase 0.1VA (5AAC)		
(•	,	Auxiliary power circuit	1	7VA (at 110VAC), 8VA (at 220VAC), 5W (at 100VDC)		
	Auxiliary power		100-240VAC (±15%), 100-240VDC (-30 +15%)			
	Weight		0.5kg			
	Dimensions		96×96×86 (H×W×D)			
	Installation method		Embedded			
		Operating temperating	ature	-5~+55°C (average operating temperature: 35 or less per day)		
		Operating humic	dity	0~85% RH (non condensing)		
		Storage tempera	ture	-25~+75°C (average temperature: 35 or less per day)		
Storage humidity			ty	0~85% RH (non condensing)		

Notes 1. Class values based on 100% of rated value. Notes 2. Harmonic measurements where distortion ratio (content rate) is 100% or more may exceed ±2.0%. Notes 3. Harmonic current cannot be measured without voltage input.

Specifications

ME96SSE-MB

Model name				ME96SSE-MB						
		Phase wire		Three phase 4-wire, Three phase 3-wire (3CT, 2CT), Single phase 3-wire, Single phase 2-wire (common use)						
			Current	5AAC, 1AAC (common use)						
	F	Rating	Voltage	Three phase 4-wire: 277/480VAC (max) Three phase 3-wire: Delta connections: 220VAC (max), Star connections: 440VAC (max) Single phase 3-wire: 220/440VAC (max) Single phase 2-wire: Delta connections: 220VAC (max), Star connections: 440VAC)						
			Frequency	50-60Hz (common use)						
		Current (A)		A1, A2, A3, AN, AAVG	±0.5%					
		Voltage (V)		V12, V23, V31, V _{AVG} (L-L) V1N, V2N, V3N, V _{AVG} (L-N)	±0.5%					
Measu ite	rement ms	Active power (W)		W1, W2, W3, Σ W	±0.5%					
a	nd	Power factor (PF)		PF1, PF2, PF3, Σ PF	±2.0%					
accu	iracy	Frequency (Hz)		Hz	±0.5%					
		Active energy (Wh)		Imported	class 1.0 (IEC62053-21)					
		Operating time		Operating time 1, 2	(Reference)					
Measuring method Instantaneou			Instantaneous value	A/V: RMS calculation, W: Digital multiplication, PF: Power ratio calculation, Hz: Zero-cross						
		Туре	9	LCD with backlight						
				6 digits each at upper, middle, and lower line						
Display	No. of d and segmen	isplay digits ts	Digital display	A, V, W, PF: 4 digits Hz: 3 digits Wh: 9 digits (6 or 12 possible) Operating time: 6 digits						
			Bar graph	21 segment bar graph, 22 segment indicator						
		Display updating	time interval	0.5s or 1s (selectable)						
		Communicatio	n	MODBUS® RTU communication						
		Power Failure Comp	ensation	Non-volatile memory used (items: setting value, max/min value, active energy, operating time)						
		VT		Each phase 0.1VA (110VAC), 0.2VA (220VAC),	0.4VA (440VAC)					
Consu (V	mption (A)	СТ		Each phase 0.1VA (5AAC)						
Ľ.		Auxiliary power circuit	t	7VA (at 110VAC), 8VA (at 220VAC), 5W (at 100VDC)						
		Auxiliary powe	er	100-240VAC (±15%), 100-240VDC (-30 +15%)						
		Weight		0.5kg						
		Dimensions		96×96×86 (H×W×D)						
	-	Installation meth	nod	Embedded						
		Operating temper	ature	-5~+55°C (average operating temperature: 35 of	or less per day)					
		Operating humi	dity	0~85% RH (non condensing)						
		Storage tempera	ture	-25~+75°C (average temperature: 35 or less pe	er day)					
		Storage humid	ity	0~85% RH (non condensing)						

Notes 1. Class values based on 100% of rated value.



Standards Compliance

Elect	rom	agnetic Compatibility								
Emissions										
		Radiated Emission	EN61326-1/CISPR 11, FCC Part15 Subpart B Class A							
		Conducted Emission	EN61326-1/CISPR 11 FCC Part15 Subpart B Class A							
		Harmonics Measurement	EN61000-3-2							
		Flicker Meter Measurement	EN61000-3-3							
Ī	mm	nunity								
		Electrostatic discharge Immunity	EN61326-1/EN61000-4-2							
		Radio Frequency Electromagnetic field Immunity	EN61326-1/EN61000-4-3							
		Electrical Fast Transient/Burst Immunity	EN61326-1/EN61000-4-4							
		Surge Immunity	EN61326-1/EN61000-4-5							
		Conducted Disturbances, Induced By Radio Frequency Fields Immunity	EN61326-1/EN61000-4-6							
		Power Frequency Magnetic Field Immunity	EN61326-1/EN61000-4-8							
		Voltage Dips and Short Interruptions	EN61326-1/EN61000-4-11							
Safat	~									

Sal									
	Europe	CE、as per EN61010-1							
	U.S. and Canada	cRUus as per UL61010-1、IEC61010-1							
	Installation Category	Ш							
	Measuring Category	II							
	Pollution Degree	2							

Notes Regarding MODBUS® RTU Communication

Item	Specifications
Interface	RS-485 2-wire half-duplex transmission
Protocol	RTU mode
Transmission method	Asynchronous
Connection type	Multi-point bus
Baud rate	2,400/4,800/9,600/19,200/38,400bps
Data bit	8
Stop bit	1 or 2
Parity	Odd, even, none
Address	1 to 255 (0:for broadcast mode)
Distance	1,200m (max)
Max. connectable units	31 units
Terminal Resistance	120 Ω 1/2W
Recommended Cable	Shielded twisted-pair AWG24 to 14

Notes Regarding CC-Link Communication

Item	Specifications
No. of occupied stations	1 Station Remote device station
CC-Link version	CC-Link Ver 1.10/Ver 2.00
Baud rate	10Mbps/5Mbps/2.5Mbps/625kbps/156kbps
Transmission method	Broadcast polling system
Synchronous method	Frame synchronous system
Encoding method	NRZI
Transmission path format	Bus format (EIA RS485)
Transmission format	HDLC
Error control system	$CRC (X^{16} + X^{12} + X^5 + 1)$
Number of connectable units	42 units (max, remote device station)
Remote station Number	1 to 64

For CC-Link connection cables, please use the dedicated cables.
 For information regarding dedicated cables, please refer to the CC-Link Partner Product Catalog published by the CC-Link Partner Association or CC-Link Partner Product Information on the CC-Link Partner Association website (http://www.cc-link.org).
 Notes 1. Dedicated CC-Link cables compatible with Ver. 1.00 cannot be used in tandem with dedicated CC-Link high-performance cables compatible with Ver. 1.00.

with Ver. 1.00.
 Notes 2. In the case of systems consisting of units compatible with Ver. 1.00, 1.10 or 2.00 used in tandem with Ver. 1.00 or 1.10 cables, Ver. 1.00 specifications will apply for the maximum total cable length and length of cables between stations.
 Notes 3. For terminal resistance, be sure to use 110 Ω ±5% (1/2W product) when using dedicated CC-Link cables or 130 Ω ±5% (1/2W product) when using dedicated CC-Link high-performance cables.

Option Specifications

Item	Specification	Optional Plug-in Module type							
Analog output	4-20mA (0~600 Ω)	ME-4210-SS96							
Pulse/Alarm output	No-voltage "a" contact Capacity: 35VDC, 0.1A	ME-4210-SS96							
Digital input	19-30VDC 7mA or less	ME-4210-SS96, ME-0040C-SS96, ME-0052-SS96							
Digital output	No-voltage a contact Capacity: 35VDC, 0.2A	ME-0052-SS96							

Operating Instructions

Functions



NO.	Segment name	Description
1	Lead Status	Power factor status is lead
2	Lag status	Power factor status is lag
3	Scale of the bar graph	The scale of the bar graph
4	Outside range	Measurement value is outside range of scale of the bar graph
5	Alarm indicator	The setting value of the upper or lower limit
6	Bar graph status	The item expressed with the bar graph
7	Phase status	The phase for each of the digital displays
8	Digital	The measured value is displayed in a digital number
9	Unit	The unit for each of the digital display
10	Metering status	When it is blinking, the instrument is counting active energy
11	Harmonics	The digital displays are harmonics values
12	Setup status	Setup mode
13	Test status	Test mode
14	Clock status	When it is blinking, the instrument is counting operating time
15	Alarm status	The upper or lower limit value was exceeded
16	Communication status	The instrument is equipped with communication function

Button Functions

	Basic functions	Special functions							
Button	Functions	Butt	on	Functions					
(PET)	Set up setting items such as primary voltage and	DISPLAY	Push for 2s	Manual display change ⇔ Cyclic display change					
	current, and choose and indicate setting itmes	PHASE	Push for 2s	Manual phase change ⇔ Cyclic phase change					
🛨 or 🗩	Change setting and bar graph display	+ + -	Push for 2s	Zoom display of Wh, varh etc					
MAX/MIN	Change display from Max/Min to instantaneous value	+ + RESET	Push for 2s	Reset all the Max/Min values					
PHASE	Change phase	+ or -	Push for 1s	Fast forward or fast return values when setting					
	Change diaplay			Reset Wh, varh, Vah values to zero by					
DISPLAT	Change display	SET + RESE	T) + (PHASE)	hoiding down the buttons for 2 sec					

Set-up

For correct measurement, it is necessary to set the primary voltage/current in set-up mode. Access set-up mode from the measurement mode and set the necessary items. Factory default settings will apply to items not set.

•Set-up workflow (in the case of ME96SSH-MB)



 \Rightarrow

 \Box

<---> Select cancel

->

Move to next screen

Skip remaining settings

Return to previous setting item

(SET)

(DISPLAY)

or 🕞

Press for 1s

(SET)

 (\pm)

Notes 1. Basic measurements are possible by adjusting settings in menu 1

(area enclosed by dotted line).

Notes 2. Item settings vary depending on the model. Notes 3. Setting confirmation menu 9 (test mode) is not displayed in the setting mode.



Basic Set-up Operations

To access setting mode, press and hold the \underline{SET} and \underline{RESET} buttons down at the same time for 2s. Press the \underline{SET} button to display the items to be set, and the + and - buttons to set the details. Settings can be saved for each set-up menu No. To do so, press the \underline{SET} button when the End screen is displayed.

The underlined setting parameter are the initial value.

Set-up menu 1: Basic settings (set phase wire system, display pattern, Using VT/direct input, CT primary current, etc.)



Operating Instructions



Set-up menu 2: Communication settings (MODBUS® RTU, CC-Link communication settings) (CC-Link communication only possible when ME-0040C-SS96 is installed to ME96SSH-MB, ME96SSR-MB)













primary current value" is

Operating Instructions



Set-up menu 6: Analog output setting (ME96SSH-MB, ME96SSR-MB only)

This menu will not appear if ME-4210-SS96 (optional) is not installed.

Operating Instructions

Operation (for ME96SSH-MB)

Display Change

Press (DISPLAY), the measurement display switches over.

Example of changing display (Three phase 4-wire system; display pattern: P01; no additional screens)

Changing Phases

Press (PHASE), the current phase and the voltage phase switches over.

Bar Graph Display

Items measured can be displayed on the bar graph. By displaying one item by a bar graph and other three items by digital numbers four elements can be displayed at once.

Bar graph explanation

The ▶ or _____ mark indicates that the measurement item is displayed on the bar graph.

Select bar graph

Press the \oplus or \bigcirc button to select the measurement items to be displayed on the bar graph.

Example of switching between changing current value

display and maximum/minimum value display screens

(MAX/MIN)

150

ß

θ

1298

1200

Maximum/Minimum value

display screen

720

MAX

MIN

9000

8

kμ

U

inninn

ЪP

1200

457

6600

Current value display screen

Maximum/Minimum Display Values

Press the (MAX/MIN) button to change to the maximum and minimum values of the display screen. Press it again to return to the current value display screen.

Reset Maximum/Minimum Values

Press the (RESET) button for 2s to reset the maximum/minimum values of the measurement items displayed. The maximum/minimum values will become the current values.

Press the (RESET) and (+) buttons simultaneously for 2s to reset all

maximum/minimum values. The maximum/minimum values will become the current values.

Displaying Active energy/Reactive energy/Apparent energy

Change the unit (M, k, none) or increase the digits in the bottom display for power used/reactive power used/apparent power used/time-based power used to check the lower/higher-order digits. Push the \oplus and \bigcirc buttons simultaneously for 2s to switch between screens.

Power used (receiving): Example of changing 012,345,678,901,234.567Wh

•Reset Active energy/Reactive energy/Apparent energy

Press the (SET), (RESET) and (PHASE) buttons simultaneously for 2s to reset all of the following together: active energy/reactive energy/apparent energy (this operation only works on the current value display screen).

Changing Upper/Lower Limits for Alarm Activation and Cancellation

When measurement values exceed the upper/lower limit values that have been set, an alarm activates and the screen begins to blink. The blinking \blacktriangle mark on the bar graph indicates the current upper/lower limit value settings.

During Alarm Generation

Alarm condition: When a measured value exceeds the alarm value setting, the screen begins to flash and the alarm contact closes. Alarm cancelled: When the alarm is cancelled, the screen stops flashing and the alarm contact opens.

If the item that caused the alarm is displayed on the screen, the digital value, unit (A, V, W, var, PF, HZ, %, DM, THD) and phase (1, 2, 3, N) will be displayed as shown in the table below. If the item is not displayed on the screen, the screen will not flash.

Alarm status	Digital value	Unit	Phase
Alarm activated	Flashing	Flashing	Flashing
Alarm on hold	On	Flashing	Flashing
Alarm cancelled	On	On	On

* Only flashes if the phase that caused the alarm is being displayed

Alarm Cancel

The alarm can be reset automatically or manually. The alarm recovery method varies according to the reset method setting.

Automatic (Auto)	The alarm resets automatically when the measurement value returns to within the upper/lower limit set value.						
	The alarm setting changes to "on hold" even after the measurement value becomes returns to within the upper/lower limit value setting. Once the						
	value returns to within the upper/lower limit value set, perform the following alarm recovery operations.						
	(Note: Alarm recovery operations cannot be carried out from the maximum/minimum value display screen or contact input screen.)						
	<to alarm="" and="" cancel="" item="" select=""></to>						
Manual (Hold)	When the item that caused the alarm is displayed, press the (RESET) button to deactivate the alarm.						
	/ For items with phases such as current and voltage, it is necessary to						
	verses the (RESET) button for each phase to cancel the alarm.						
	<to alarms="" all="" cancel="" for="" items=""></to>						
	To cancel alarms for all items at once (batch), press the (RESET) button for 2s when in operating mode.						

Alarm delay Time

If an alarm delay time has been set, alarm notification begins only when the measurement value exceeds the upper/lower limit alarm value for a period longer than the alarm delay time.

Harmonic Display

The harmonic effective value, distortion ratio and content ratio can be displayed. To do so, first set the harmonic display (set-up menu: 3.7).

Upper: Degree No. Middle: Distortion (content) ratio Lower: Effective value

	Harmoni	c current	N-phase harr	monic current	Harmonic voltage			
Degree	RMS	Distortion (content) ratio	RMS	Distortion (content) ratio	RMS	Distortion (content) ratio		
Harmonic total	0	0	0	_	0	0		
1st (fundamental)	0	_	0	Ι	0	—		
3rd, 5th, 7th, 9th,								
11th, 13th, 15th,								
17th, 19th, 21st,	0	0	0	—	0	0		
23rd, 25th, 27th,								
29th ane 31st								

Changing the Harmonic Degree Display

Press the \oplus or \bigcirc button to change the harmonic degree.

Display Pattern Contents

The items set in display patterns and additional settings will be displayed as explained in the following table.

● ME96SSH-MB Screen Display (Three phase 4-wire)

				Screer	 set based on display pattern 							Additional screens (set in set-up menu Nos. 3, 7 and 8)															
											No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24	No.25	No.26
Display	pattern	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	Wh	Wh exported	varh	varh Imported (lead)	varh exported (lag)	varh exported (lead)	VAh	Periodic active energy Wh1	Periodic active energy Wh2	Rolling demand	Harmonic current	Harmonic current N-phase	Harmonic voltage	DI status	DO status	Operating time 1	Operating time 2
	Upper	Α	Α	A	A					1		İ.			<u> </u>			-	-	-	Degree No.	Degree No.	Degree No.	DI	DO	-	-
P01	Middle	w	w	PF	-													Periodic	Periodic	Peak value	Distortion (content) ratio	_	Distortion (content) ratio	DI No.	DO No.	hour1	hour2
	Lower	v	PF	v	AN													energy Wh1	energy Wh2	Demand value	RMS	RMS	RMS	Contact status	Contact status	Operating time	Operating time
	Upper	Α	Α	A	A		l –				-	-			i —	1		Samo	Samo	Samo	Samo	Samo	Samo	Same	Same	Samo	Samo
P02	Middle	V	W	PF	-		1					Wh			1	1		as	as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh	AN						Wh	exported						above	above	above	above	above	above	above	above	above	above
	Upper	Α	Α	A	A	Α	A			i –					i – –	i –		Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P03	Middle	PF	PF	PF	PF	PF	-											as	as	as	as	as	as	as	as	as	as
	Lower	V	W	var	VA	Hz	AN											above	above	above	above	above	above	above	above	above	above
	Upper	Α	Α	A	A	Α	A	A		1	-	-	-	-	- 1	- 1	-	1			1	1					1
	Middle	V	w	var	V۵	PF	H7	_						varh	varh	varh		Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P04 -	winduic	•		vai			112				Wh	Wh	varh	Imported	exported	exported	VAh	as	as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	varh	VAh	Wh	Wh	AN				exported		(lead)	(lag)	(lead)		above	above	above	above	above	above	above	above	above	above
	Upper	PF	Hz	VA			İ 👘								1			Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P05	Middle	A	W	W														as	as	as	as	as	as	as	as	as	as
	Lower	var	var	var														above	above	above	above	above	above	above	above	above	above
P06	Upper	A1	V1N	Α	A													Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
	Middle	A2	V2N	-	-													as	as	as	as	as	as	as	as	as	as
	Lower	A3	V3N	V	AN													above	above	above	above	above	above	above	above	above	above
	Upper	A	A1	V1N	A													Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P07	Middle	V	A2	V2N	-													as	as	as	as	as	as	as	as	as	as
	Lower	W	A3	V3N	AN													above	above	above	above	above	above	above	above	above	above
	Upper	A	A	A1	V1N	A					-	-						Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P08	Middle	V	W	A2	V2N	-					Wh	Wh						as	as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	A3	V3N	AN						exported			ļ			above	above	above	above	above	above	above	above	above	above
	Upper	A	A1	DA1	V1N	A	DA											Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P09	Middle	DA	A2	DA2	V2N	-	-								L			as	as	as	as	as	as	as	as	as	as
	Lower	V	A3	DA3	V3N	AN	DAN	D 4										above	above	above	above	above	above	above	above	above	above
Dia	Upper	A	A	A1	DA1	VIN	A	DA										Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P10	Middle	DA	DA	A2	DA2	V2N	-	-										as	as	as	as	as	as	as	as	as	as
	Lower	V	VV	AJ	DA3	V3IN	AN	DAN										above	above	above	above	above	above	above	above	above	above
DII	Opper	A	A	DAT	VIIN	A	DA				-	-						Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
FII	Lower	Wh	V M/b	DA2	VZIN						Wh	ovported						above	above	above	above	above	above	above	above	above	above
	Lloper	VVII	VVII	DAS				DA			_	exponed						0.000	above	0.000	0.000	0.000	above	0.000	above	0.000	above
D10	Middle		- M	A V		VV \/					_	14/1-						Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
112	Lowor	Wh	Wb	Wh	Wb	Wh		DAN			Wh	evnorted						above	above	above	above	above	above	above	above	above	above
	Lippor	Δ1	VIN	W/1	vor1			V	V		_	exponed	_	_			_	40010	40010	aboro	00010	10010	aboro	40010	40010	10010	aborto
	Opper	<u></u>	VIIN		vari	100		v	v									Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P13	Middle	A2	V2N	W2	var2	VA2	PF 2	Hz	Hz	AN	Wh	Wh	varb	Varn Imported	varn	varn	VAh	as	as	as	as	as	as	as	as	as	as
	Lower	A3	V3N	W3	var3	VA3	PF 3	Wh	varh	VAh	vvii	exported	Valli	(lead)	(lag)	(lead)	VAII	above	above	above	above	above	above	above	above	above	above
	Upper	⊢ree	⊢ree	⊢ree	⊢ree						-	-	-	-	-	-	_	Same	Same	Same	Same	Same	Same	Same	Same	Same	Same
P00	Middle	Free	Free	Free	Free						Wh	Wh	varh	varh Imported	varh exported	varh exported	VAh	as	as	as	as	as	as	as	as	as	as
	Lower	⊢ree	⊢ree	⊢ree	Free							- npontou		(lead)	(lag)	(lead)		20076									

ME96SSH-MB Screen Display (Three phase 3-wire, Single phase 3-wire, Single phase 2-wire)

		001001	11 301 04	Scu on	uspiuy j	pattern					Auditic	1141 3010	0113 (301	in set up	, monu i	103. 0, 7	unu 0)				
							No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17	No.18	No.19	No.20
Display	pattern	No.1	No.2	No.3	No.4	No.5	Wh	Wh exported	varh	varh Imported (lead)	varh exported (lag)	varh exported (lead)	Periodic active energy Wh1	Periodic active energy Wh2	Rolling demand	Harmonic current	Harmonic voltage	DI status	DO status	Operating time 1	Operating time 2
	Upper	A	Α	A	1								-	-	-	Degree No.	Degree No.	DI	DO	_	-
P01	Middle	w	w	PF									Periodic active	Periodic active	Peak value	Distortion (content) ratio	Distortion (content) ratio	DI No.	DO No.	hour1	hour2
	Lower	v	PF	v									energy Wh1	energy Wh2	Demand value	RMS	RMS	Contact status	Contact status	Operating time	Operating time
	Upper	A	Α	Α			-	-					Same	Same	Same	Same	Same	Same	Same	Same	Same
P02	Middle	V	W	PF			Wh	Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh				exported					above	above	above	above	above	above	above	above	above
	Upper	A	A	A	A								Same	Same	Same	Same	Same	Same	Same	Same	Same
P03	Middle	PF	PF	PF	PF								as	as	as	as	as	as	as	as	as
	Lower	V	W	var	Hz								above	above	above	above	above	above	above	above	above
	Upper	A	A	A	A	A	-	-	-	-	-	-	Samo	Samo	Samo	Samo	Samo	Samo	Samo	Samo	Samo
P04	Middle	V	W	var	PF	Hz	Wh	Wh	varh	varh Imported	varh exported	varh exported	as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	varh	Wh	Wh		CAPOILOU		(lead)	(lag)	(lead)	40010	40010	40010	45010	40010	aboro	aboro	40010	aboro
	Upper	PF	Hz										Same	Same	Same	Same	Same	Same	Same	Same	Same
P05	Middle	w	W										as	as	as	as	as	as	as	as	as
	Lower	var	var										above	above	above	above	above	above	above	above	above
	Upper	A1	V12	A									Same	Same	Same	Same	Same	Same	Same	Same	Same
P06	Middle	A2	V23	-									as	as	as	as	as	as	as	as	as
	Lower	A3	V31	V									above	above	above	above	above	above	above	above	above
	Upper	A	A1	V12									Same	Same	Same	Same	Same	Same	Same	Same	Same
P07	Middle	V	A2	V23									as	as	as	as	as	as	as	as	as
	Lower	<u>w</u>	A3	V31	1/10								above	above	above	above	above	above	above	above	above
Dee	Upper	A	A	A1	V12		-	-					Same	Same	Same	Same	Same	Same	Same	Same	Same
P08	widdle	V	VV VV/In	A2	V23		Wh	wn					as	as	as	as	as	as	as	as	as
	Lower	VVn	VVn	A3	V31			exported					above	above	above	above	above	above	above	above	above
Poo	Upper		AT A2	DAT	V12								Same	Same	Same	Same	Same	Same	Same	Same	Same
F09	Lowor		A2	DA2	V23								above	above	above	above	above	above	above	above	above
	Linnor	Ň		A1		V12							0	0	0	0	0	0	0	0	0
P10	Middle			Δ2		V23							Same	Same	Same	Same	Same	Same	Same	Same	Same
	Lower	V	W	A3	DA3	V31							above	above	above	above	above	above	above	above	above
	Upper	A	A	DA1	V12		-	-					Samo	Samo	Samo	Samo	Samo	Samo	Samo	Samo	Samo
P11	Middle	DA	V	DA2	V23			Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	DA3	V31		Wh	exported					above	above	above	above	above	above	above	above	above
	Upper	A	A	A	DA	W	-	-					Same	Same	Same	Same	Same	Same	Same	Same	Same
P12	Middle	DA	W	V	V	V		Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh	Wh	Wh	Wh	exported					above	above	above	above	above	above	above	above	above
	Upper	A1	V12	W	V	V	-	-	-	-	-	-					_	~			
P13	Middle	A2	V23	var	Hz	Hz	Wb	Wh	vorb	varh	varh	varh	Same as	Same as	Same as	Same as	Same as	Same as	Same as	Same as	Same as
P13	Lower	A3	V31	PF	Wh	varh	wn	exported	vam	(lead)	(lag)	(lead)	above	above	above	above	above	above	above	above	above
	Upper	Free	Free	Free	Free		-	_	-	-	-	-		0				C		0	
P00	Middle	Free	Free	Free	Free		Wh	Wh	varh	varh Imported	varh exported	varh exported	as	as	as	as	as	as	as	as	as
	Lower	Free	Free	Free	Free			exported	varn imported (lead)	(lag)	(lead)	above ab	auove	auove	above	auove	above	above	above	auove	

ME96SSR-MB Screen Display (Three phase 4-wire)

				Screer	n set ba	sed on (display p	pattern							Additic	onal scre	ens (set	in set-up	menu N	los. 3, 7	and 8)				
											No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24
Display	pattern												-	varh	varh	varh	Periodic	Periodic		Harmonic					
		No.1	No.2	No.3	No.4	N0.5	N0.6	No.7	No.8	No.9	Wh	Wh	varh	Imported	exported	exported	active	active	Harmonic	current	Harmonic	DI	DO	Operating	Operating
												exported		(lead)	(lag)	(lead)	Wh1	Wh2	current	N-phase	voltage	status	status	time 1	time 2
	Upper	Α	Α	А	A												-	-	Degree No.	Degree No.	Degree No.	DI	DO	- 1	-
	Mininia	14/	14/	DE													Pariodic	Pariodic	Distortion		Distortion	DINA		haund	
P01	widdle	vv	vv	PF	_												active	active	(content) ratio	_	(content) ratio	DI NO.	DO NO.	nouri	nour2
	Lowor	v	DE	v													energy	energy	DMG	DMS	DMS	Contact	Contact	Operating	Operating
	LOwer	v		v													wni	Wh2	1111/13	111/10	111103	status	status	time	time
	Upper	A	A	A	A						-	-					Same	Same	Same	Same	Same	Same	Same	Same	Same
P02	Middle	V	W	PF	-						Wh	Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh	AN							exported					above	above	above	above	above	above	above	above	above
	Upper	A	A	A	A	A	A										Same	Same	Same	Same	Same	Same	Same	Same	Same
P03	Middle	PF	PF	PF	PF	PF	-										as	as	as	as	as	as	as	as	as
	Lower	V	VV A	var	VA A		AN					_				_	40070	above	above	above	above	above	above	00000	above
	Opper	A	A	A	A		A	A			-	-	-	_	_	-	Same	Same	Same	Same	Same	Same	Same	Same	Same
P04	Middle	V	w	var	VA	PF	Hz	-			Wb	Wh	work	varh	varh	varh	as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	varh	VAh	Wh	Wh	AN			wn	exported	vam	(lead)	(lan)	(lead)	above	above	above	above	above	above	above	above	above
	Uppor	DE	H7	1/4										()	(3)	()	0	C	C	C	Come	C	C	Come	Come
P05	Middle	W	W	Ŵ													Same	Same	Same	Same	Same	Same	Same	Same	Same
1 00	Lower	var	var	var													above	above	above	above	above	above	above	above	above
	Upper	A1	V1N	A	A												Same	Same	Same	Same	Same	Samo	Same	Same	Same
P06	Middle	A2	V2N	-	-												as	as	as	as	as	as	as	as	as
	Lower	A3	V3N	V	AN												above	above	above	above	above	above	above	above	above
	Upper	Α	A1	V1N	A												Same	Same	Same	Same	Same	Same	Same	Same	Same
P07	Middle	V	A2	V2N	-												as	as	as	as	as	as	as	as	as
	Lower	W	A3	V3N	AN												above	above	above	above	above	above	above	above	above
	Upper	A	A	A1	V1N	A					-	-					Same	Same	Same	Same	Same	Same	Same	Same	Same
P08	Middle	V	W	A2	V2N	-					Wh	Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	A3	V3N	AN						exported					above	above	above	above	above	above	above	above	above
Daa	Upper	A	A1	DA1	V1N	A	DA										Same	Same	Same	Same	Same	Same	Same	Same	Same
P09	Middle	DA	A2	DA2	V2N	-											as	as	as	as	as	as	as	as	as
	Lower	V	A3	DA3			DAN	DA									above	above	above	above	above	above	above	above	above
P10	Middlo			A1 A2	DAT	VIN											Same	Same	Same	Same	Same	Same	Same	Same	Same
1 10	Lower	V	W	Δ3	DA3	V2N	ΔΝ	ΠΔΝ									above	above	above	above	above	above	above	above	above
	Upper	Å	A	DA1	V1N	A	DA	5/11			-	-					Samo	Samo	Samo	Samo	Samo	Same	Samo	Samo	Same
P11	Middle	DA	V	DA2	V2N	_	-					Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	DA3	V3N	AN	DAN				Wh	exported					above	above	above	above	above	above	above	above	above
	Upper	Α	Α	Α	DA	w	A	DA			-	-					Same	Same	Same	Same	Same	Same	Same	Same	Same
P12	Middle	DA	W	V	V	V	-	-			140	Wh					as	as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh	Wh	Wh	AN	DAN			Wn	exported					above	above	above	above	above	above	above	above	above
	Upper	A1	V1N	W1	var1	VA1	PF 1	V	V	Α	-	-	-	-	-	-									
P12	Middle	A2	V2N	W2	var2	VA2	PF 2	Hz	Hz	-		Wb		varh	varh	varh	Same	Same	Same	Same	Same	Same	Same	Same	Same
F13		4.0	VON	14/0		1440	DEC	140			Wh	exported	varh	Imported	exported	exported	above	above	above	above	as above	above	above	as above	above
	Lower	A3	V3N	W3	var3	VA3	PF 3	wn	varh	AN				(lead)	(lag)	(lead)									
	Upper	Free	Free	Free	Free						-	-	-	-	-	-	Same	Same	Same	Same	Same	Some	Same	Same	Same
POO	Middle	Free	Free	Free	Free							Wh		varh	varh	varh	as	as	as	as	as	as	as	as	as
1.00	Lower	Free	Fron	Froc	Fron						Wh	exported	varh	Imported	exported	exported	above	above	above	above	above	above	above	above	above
	Lower	FIGE	FIEE	гіее	Fiee						CAPOIL			(lead)	(iag)	(lead)		l						I	

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●ME96SSR-MB Screen Display (Three phase 4-wire, Single phase 3-wire, Single phase 2-wire)

		Juicei	ii sei ba	Seu on	uispiay	Jallein				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	unional	Scieens	(361 11 3	er-up me	inu nos.	3, 7 anu	10)			
							No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13	No.14	No.15	No.16	No.17	No.18	No.19
Display	pattern	No.1	No.2	No.3	No.4	No.5	Wh	Wh exported	varh	varh Imported (lead)	varh exported (lag)	varh exported (lead)	Periodic active energy Wh1	Periodic active energy Wh2	Harmonic current	Harmonic voltage	DI status	DO status	Operating time 1	Operating time 2
	Upper	Α	A	A									-	-	Dearee No.	Dearee No.	DI	DO	-	-
P01	Middle	w	w	PF									Periodic active	Periodic active	Distortion (content) ratio	Distortion (content) ratio	DI No.	DO No.	hour1	hour2
	Lower	v	PF	v									energy Wh1	energy Wh2	RMS	RMS	Contact status	Contact status	Operating time	Operating time
	Upper	Α	A	A			-	-	1	1	1	1	Same	Same	Same	Same	Same	Same	Same	Same
P02	Middle	V	W	PF			W/b	Wh					as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh			VVII	exported					above	above	above	above	above	above	above	above
	Upper	Α	A	Α	A								Same	Same	Same	Same	Same	Same	Same	Same
P03	Middle	PF	PF	PF	PF								as	as	as	as	as	as	as	as
	Lower	V	W	var	Hz								above	above	above	above	above	above	above	above
	Upper	Α	A	Α	A	A	-	-	-	-	-	-	_							
P04	Middle	V	w	var	PF	Hz	Wh	Wh	varh	varh Imported	varh exported	varh exported	as above	as	as	as	as	as	as	as
	Lower	Wh	Wh	varh	Wh	Wh		exponed		(lead)	(lag)	(lead)	above	above	above	above	above	above	above	above
	Upper	PF	Hz										Same	Same	Same	Same	Same	Same	Same	Same
P05	Middle	W	W							1	1	1	as	as	as	as	as	as	as	as
	Lower	var	var								1	1	above	above	above	above	above	above	above	above
	Upper	A1	V12	A	1					1	1	1	Same	Same	Same	Same	Same	Same	Same	Same
P06	Middle	A2	V23	-							1	1	as	as	as	as	as	as	as	as
	Lower	A3	V31	V							1	1	above	above	above	above	above	above	above	above
	Upper	Α	A1	V12						1	1	1	Same	Same	Same	Same	Same	Same	Same	Same
P07	Middle	V	A2	V23							1	1	as	as	as	as	as	as	as	as
	Lower	W	A3	V31									above	above	above	above	above	above	above	above
	Upper	Α	A	A1	V12		-	-					Same	Same	Same	Same	Same	Same	Same	Same
P08	Middle	V	W	A2	V23		14/1-	Wh					as	as	as	as	as	as	as	as
	Lower	Wh	Wh	A3	V31		wn	exported					above	above	above	above	above	above	above	above
	Upper	Α	A1	DA1	V12								Same	Same	Same	Same	Same	Same	Same	Same
P09	Middle	DA	A2	DA2	V23								as	as	as	as	as	as	as	as
	Lower	V	A3	DA3	V31								above	above	above	above	above	above	above	above
	Upper	Α	A	A1	DA1	V12							Same	Same	Same	Same	Same	Same	Same	Same
P10	Middle	DA	DA	A2	DA2	V23							as	as	as	as	as	as	as	as
	Lower	V	W	A3	DA3	V31							above	above	above	above	above	above	above	above
	Upper	A	A	DA1	V12		-	-					Same	Same	Same	Same	Same	Same	Same	Same
P11	Middle	DA	V	DA2	V23		Wh	Wh					as	as	as	as	as	as	as	as
	Lower	Wh	Wh	DA3	V31			exported					above	above	above	above	above	above	above	above
	Upper	Α	A	A	DA	W	-	-					Same	Same	Same	Same	Same	Same	Same	Same
P12	Middle	DA	W	V	V	V	Wh	Wh					as	as	as	as	as	as	as	as
	Lower	Wh	Wh	Wh	Wh	Wh		exported					above	apove	above	above	above	above	apove	apove
	Upper	A1	V12	W	V	V	-	-	-	-	-	-	Samo	Samo	Samo	Samo	Samo	Samo	Samo	Samo
P13	Middle	A2	V23	var	Hz	Hz	Wh	Wh	varh	varh Imported	varh exported	varh exported	as	as	as	as	as	as	as	as
	Lower	A3	V31	PF	Wh	varh		exponed		(lead)	(lag)	(lead)	above	above	above	0.000	10000	above	above	00000
	Upper	Free	Free	Free	Free		-	-	-	-	-	-	Same	Same	Same	Same	Same	Same	Same	Same
P00	Middle	Free	Free	Free	Free		Wh	Wh exported	varh	varh Imported	varh exported	varh exported	as above	as above	as above	as above	as above	as above	as above	as above
	Lowel	riee	L LIEG	гіее	Fiee				JULIEO	(lead)	(iag)	(ieau)								

Operating Instructions

Display Pattern Contents

The items set in display patterns and additional settings will be displayed as explained in the following table.

•ME96SSE-MB Screen Display (Three phase 4-wire)

		Screer	n set ba	sed on (oattern	Additional screens (set in set-up menu No. 8)				
Display	pattern						No.6	No.7	No.8	
		No.1	No.2	No.3	No.4	No.5	Wh	Operating time 1	Operating time 2	
	Upper	A	Α	Α	A			-	-	
DO1	Middle	W	W	PF	-			hour1	hour2	
FUI	Lower	v	PF	v	AN			Operating time	Operating time	
	Upper	A	Α	A	A	Α	-	Same	Same as	
P02	Middle	V	W	PF	-	Hz	Wb	as		
	Lower	Wh	Wh	Wh	AN	Wh	VVII	above	above	
	Upper	A1	V1N	Α	A			Same	Same	
P03	Middle	A2	V2N	-	-		as		as	
	Lower	A3	V3N	V	AN			above	above	
	Upper	A	A1	V1N	A			Same	Same	
P04	Middle	V	A2	V2N	-			as	as	
	Lower	W	A3	V3N	AN			above	above	
	Upper	A	Α	A1	V1N	Α	-	Same	Same	
P05	Middle	V	W	A2	V2N	-	Wh	as	as	
	Lower	Wh	Wh	A3	V3N	AN		above	above	
	Upper	Free	Free	Free	Free		-	Same	Same	
P00	Middle	Free	Free	Free	Free		Wb	as	as	
	Lower	Free	Free	Free	Free		vvn	above	above	

●ME96SSE-MB Screen Display (Three phase 3-wire, Single phase 3-wire, Single phase 2-wire)

		Screer	n set ba	sed on	oattern	Additional screens (set in set-up menu No. 8)			
Display	pattern						No.6	No.7	No.8
		No.1	No.2	No.3	No.4	No.5	Wh	Operating time 1	Operating time 2
	Upper	A	Α	Α				-	-
DO1	Middle	W	W	PF				hour1	hour2
FUI	Lower	٧	PF	V				Operating time	Operating time
	Upper	A	Α	Α	A		-	Same	Same
P02	Middle	V	W	PF	Hz		Wb	as	as
	Lower	Wh	Wh	Wh	Wh		VVII	above	above
	Upper	A1	V12	Α				Same	Same
P03	Middle	A2	V23	-				as	as
	Lower	A3	V31	V				above	above
	Upper	A	A1	V12				Same	Same
P04	Middle	V	A2	V23				as	as
	Lower	W	A3	V31				above	above
	Upper	A	Α	A1	V12		-	Same	Same
P05	Middle	V	W	A2	V23		Wb	as	as
	Lower	Wh	Wh	A3	V31			above	above
P00	Upper	Free	Free	Free	Free		-	Same	Same
	Middle	Free	Free	Free	Free		Wb	as	as
	Lower	Free	Free	Free	Free		***	above	above

Phase/Wire Displays

The phase/wire system will be displayed as shown in the following table and is common for all models.

Top phase disp	Phase/Wire settings	1P2W	1P3W(1N2)	1P3W(1N3)	3P3W
	1	None	1	1	1
current	2	None	N	N	2
	3	None	2	3	3
Voltage	12	None	1N	1N	12
	23	None	2N	3N	23
	31	None	12	13	31

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External Dimensions/Installation/Connections

Dimensions

ME96SSH-MB, ME96SSR-MB

Mounting

1 Dimension of panel

Panel hole dimensions are as shown in the following figure. It can be attached to a panel with thickness of 1.6 to 4.0mm.

2 View Angle

The contrast of the display changes at view angle. Mount it at the position that is easy to see.

3 Attachment

For attachment of the basic device into the panel hole, attach according to the following procedure. ①The attachment lug is installed in two holes of the top and bottom of the basic device. ②Tighten the screws of the lug, and fix onto the panel.

.....

95.8 (COVER)

 Note
 To prevent damage to the panel and screws, do not fasten screws too tightly.

 Recommended torque for these products: 0.3~0.5N·m (approx. half of standard torque)

 Also, please tighten the upper and lower screws at the same time.

4 Installing Optional Plug-in Module

Main unit mounting screws: M3

When installing the optional plug-in module onto the basic device, install accoroding to the following procedure ①Remove the optional cover. ②Attach the optional

unit to the main unit.

Fit the protruding part of the optional unit into the slot in the main unit.

17.1

(106.9)

Wiring

1 Applicable Cable Size

The table on the right describes the applicable wire size.

Part	Screw type	Wire specifications
Auxiliary power supply, voltage		• Single-line, stranded-line: AWG24~14 (combined use of rod terminals possible for stranded-line applications)
input, MODBUS [®] RTU communication terminal	Screwless	Notes 1. AWG 24~18 can be used when compliance with UL standards is required. Notes 2. Rod terminals cannot be used when compliance with UL standards is required.
Current input terminal	Screwless	 Single-line, stranded-line: AWG24-14 (combined use of rod terminals possible for stranded-line applications) Notes 1. AWG 22-16 can be used for single-line applications when compliance with UL standards is required. Notes 2. Rod terminals cannot be used when compliance with UL standards is required.
Optional unit terminal	Screwless	 Single-line, stranded-line: AWG24-14 (combined use of rod terminals possible for stranded-line applications) Notes 1. AWG 24-18 can be used when compliance with UL standards is required. Notes 2. Rod terminals cannot be used when compliance with UL standards is required.

2 Wiring

Main Unit Input/Output Terminal

- ①Remove the wire casing at the end of the wire and solder to the rod terminal.
- ②With the lever pushed in, insert the wire and then release the lever to connect.

3 Confirmations

After wiring, make sure the following:

- □All wiring is connected
- There is no misitake in wiring

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Main Unit Terminal

Optional Plug-in Module Terminal

	Protective sheet
	There is a protective sheet covering the LCD screen to prevent scratching during panel installation. Please remove the sheet before using the meter. When removing the sheet, the LCD may turn on due to the static electricity generated. This is not abnormal; the LCD will turn off after a short time.
Note	Installation position
	If installing the unit at the panel edge, choose an installation position where there is sufficient space for wiring work.
	Optional unit
	Turn the auxiliary power supply off before attaching the optional unit. If attached with the power on, the main unit will not recognize the optional unit. To remedy this, turn off/restart the auxiliary power supply or execute the "instrument restart" operation

Wiring Diagrams

Three phase 3-wire system: Direct input, 2CT

Three phase 3-wire system: With VT, 3CT

External Dimensions/Installation/Connections

Wiring (Continued)

- Note
 4. Use shielded twisted-pair cables for transmission signal lines.
 5. Use terminal resistance (120Ω) for devices at both ends of the MODBUS[®] RTU communication transmission line. These meters can be terminated at 120Ω by short-circuiting the "T-" and "Ter" terminals.
 - 6. Use the thickest possible grounding wire to ensure low impedance.
 - 7. MODBUS® RTU transmission signal cables must not be in close proximity or bundled with high-voltage cables.

Optional Plug-in Module: ME-4210-SS96

Optional Plug-in Module: ME-0040C-SS96

Optional Plug-in Module: ME-0052-SS96

DI1-, DI2-, DI3-, DI4-, DI5-, are connected inside.

Wiring (Continued)

	1. Pulse output, alarm output, and contact input/output cables must not be in close proximity or bund high-voltage cables. When laid parallel, separate by the distance shown in the following table.	led with power cables or
	Condition Distance	
	Power lines under 600V/600A More than 30cm	
	Other power lines More than 60cm	
Note	 Analog output cables must not be in close proximity or bundled with other power cables or input cables power supply). In addition, to prevent noise, surge and induction, use shielded cables or twisted-pair cables are as short as possible. There is no insulation between the MODBUS® RTU communication portion and the optional ME-4210-54. Use only designated cables when connecting the CC-Link (see communication specifications). CC-Link be used at the same time as CC-Link dedicated high-performance cables. Normal data transmission can at the same time. The terminal resistance value varies depending on the type of dedicated cable. For cables connecting the CC-Link, connect shielded cables to "SLD" and ground "FG" cables. "St connected inside the unit. CC-Link transmission lines are small signal circuits: separate from strong electrical circuits by a dista 30cm or more if laid in parallel over a long distance. Ground the terminal before use. For CC-Link Master Unit Operations Manual for information on dedicated lines and wiring condition stations and terminal resistance supplied with the CC-Link Master Unit must always be used for the units at transmission line. If the meter is at the end of the CC-Link transmission line, connect it between the DA 	 s (e.g., VT, CT, auxiliary r cables. Make sure that SS96 unit. dedicated cables cannot not be guaranteed if used _D" and "FG" cables are ance of 10cm or more, or stance, distance between nt normal communication ns). both ends of the CC-Link and DB terminals.

Rated voltage for each phase/wire system

Phase/Wire	Connection	Rated voltage	Figure
Three phase 4-wire	Star	Max. 277VAC (L-N)/480VAC(L-L)	1
Three phase 3-wire	Delta	Max. 220VAC (L-L)	2
Three phase 5-wire	Star	Max. 440VAC (L-L)	3
Single phase 3-wire	-	Max. 220VAC (L-N)/440VAC(L-L)	4
Single phase 2 wire*	Delta	Max. 220VAC (L-L)	5
Single phase 2-wire	Star	Max. 440VAC (L-L)	6

* For circuits removed from three phase 3-wire (delta) system, the maximum rating is 220VAC. For circuits removed from three phase 4-wire (star), three phase 3-wire (star) and single phase 3-wire systems, the maximum rating is 440VAC.

Fig. 1. Three phase 4-wire (star)

Fig. 2. Three phase 3-wire (delta)

Fig. 4. Single phase 3-wire

Fig. 5. Single phase 2-wire (delta)

Fig. 6. Single phase 2-wire (star)

Related Products

EcoWebServerIII

Mitsubishi Electric Energy-saving Data Collection Server

Simple Set-up

When using the set-up software supplied, power management meters connected to CC-Link and measurement data can be set by mouse and keyboard operations.

Display Measurement Data as Graphs on a Web Browser

The main unit has a built-in web server that allows anyone, anywhere to understand the amount of energy being used in real time via computer without requiring additional software, thereby supporting early detection of energy waste.

Automatic Transmission of Data Collected, Mail Notifications and Contact Output

Users are notified of changes in energy, facilities, etc. via e-mail and alarms. Energy management targets and status monitoring of entire factories and buildings help ensure that problems onsite are detected without fail.

◇PLC data can also be sent to EcoWebServerIII by Ethernet.

Utilize an internal network to show the data of numerous company sites at a centralized location (e.g., head office).

ME110SS

ME110 Super-S Series Electronic Multi-measuring Instruments The innovative design of the SS Series is supporting the realization of energy-saving measurement monitoring systems that are easy to use and read

Common-use Models

Two phase wiring system (Three phase 3-wire and Three phase 4-wire systems) were required previously, but user needs can now be met with a single unit.

Enhanced Visibility

Wide-angle-view LCD with top and bottom tiers integrated for total freedom in installation. Crystal-clear display makes text even easier to read when viewed from the front.

Operating Time, CO₂ Conversion, Alarm Display Functions

Functions that enable load operating time measurement, conversion to CO₂ emissions and backlight blinking at the time of an alarm are incorporated.

EcoMonitorLight

Energy Measuring Unit Easily accessible "energy visualization" with a single unit!

A two-model line-up: a Three phase 3-wire system designed for users wanting simple power measurements at low cost; and a Three phase 4-wire system designed for users looking for basic power measurements plus something extra (harmonic measurements, alarm monitoring, etc.).

Simple Measurements

The built-in LCD enables easy setting, measurement and display of power used for energy management.

MODBUS® RTU (RS-485) Communication as Standard Equipment

Meters come with MODBUS[®] RTU communication as standard equipment, allowing the device to be used as a PLC system, other high-order system, display device (GOT), etc.

Logging/Communication Units for Expanded Measurement Applications

The product line-up also includes logging units/communication units (CC-Link communication unit) that can be incorporated as add-on options, enabling installations that best match to the customer's usage environment.

Logging unit: Data measured by the main unit (current, voltage, power, etc.) can be output to an SD memory card in CSV file format, realizing simple data management.

Highly Accurate Measurements and Support Functions

Customer activities are supported through functions such as 250µs high-precision (short-cycle load) measurement, operating time measurement, wiring error detection and test output.

Safety Precautions

To ensure safety, read the following items carefully before use and always comply with procedures during use. Special attention should be given to items enclosed in a box and marked "Caution." Additionally, please carefully read the operations manual supplied with the product before use, and ensure that the manual read by the end user as well.

1 Usage Environment and Conditions

- Do not use these products under any of the following conditions. Doing so may cause erroneous operation and/or reduced service life.
- Relative humidity over 85% or presence of condensation
 bration or shock
 Product is in direct contact with rain, water drops or sunlight
- Ambient temperature is outside the range of -5-55°C
 Daily average temperature over 35°C
 Relative humid
 Presence of excessive dust, corrosive gas, salt or oil/smoke
 Product is subject to excessive vibration or shock
 Altitude is above 2,000m
 Excessive external noise
 Pollution level is 2 or higher
 Transient overvoltage i • Transient overvoltage is 4,000V or higher · Presence of metal fragments or conducting substances

² Installation

- Please note the following items regarding installation. To ensure safety, installation is to be performed by a qualified technical electrician.
- Affix the main unit to the panel before use
 The LCD display contrast changes depending on the angle from which it is viewed. Install it in a position that ensures a suitable angle of view
 Tighten screws using a torque of approx. 0.3–0.5N m
 To prevent damage to the LCD, take care not to subject the LCD/front of the main unit to shock/impact.

	Auxiliary power supply and instrument ratings											
Auxiliary power supply			AC100~240V (±15%) 50-60Hz DC100~240V (-30%, +15%)									
	Instrument ratings	Voltage	3-phase, 4-wire: Max. 277/480VAC 3-phase, 3-wire: Delta connection: Max. 220VAC, Star connection: Max. 440VAC 1-phase, 3-wire: Max. 220/440VAC 1-phase, 2-wire: Delta connection: Max. 220VAC, Star connection: Max. 440VAC									
		Current	5A/1A									
		Frequency	50-60Hz (dual use)									

3 Connections

See pages 26~28 of this catalog for information regarding connections.

A CAUTION

- To ensure safety, connections are to be performed by an electrical engineer qualified in wiring.
- Check connection diagrams carefully before performing connections. Incorrect connections may result in VT burnout caused by a VT secondary-side short circuit or high voltage on the CT secondary side, which may lead to device malfunction, fire or electrical shock.
- Do not work with live wires; there is a risk of electric shock and exposure to high voltage due to short-circuiting or CT secondary side opening, which may lead to malfunction, fire or electrical shock.
- Use electrical wire sizes compatible with the rated current. Use of unsuitable sizes may cause heat generation, which may lead to a fire.
- After performing connections, check that no connections have been missed. Missed connections may result in erroneous operation or high voltage on the CT secondary side, which may lead to a fire or electrical shock.

4 Preparations Before Use

• Before use, perform settings such as the VT primary voltage, CT primary current, power scale and demand time limit in accordance with the operations manual supplied with the product; setting errors may cause incorrect measurement/operation.

5 Usage Procedures

- Use the products within the rated range. Using the products outside the rated range may cause erroneous operation or product malfunction.
- Do not use the products for special applications such as nuclear power, aerospace or medical devices/systems.

<u>/!\</u> CAUTION Do not make any modifications to the products. Using products after modification may cause a malfunction, electrical shock or fire.

6 Repairing at Time of Malfunction/Error

• If a product listed in this catalog malfunctions, read the troubleshooting section of the operations manual (detailed version) and confirm the symptoms. If the problem is not listed, please contact a Mitsubishi Electric representative.

7 Maintenance/Inspections

- Wipe away any dust/dirt on the surface of the product with a soft cloth.
- Do not leave chemical cloths, etc. in contact with the product for long periods, and avoid the use of benzene, thinner, etc. when wiping the product surface. Doing so may cause deformation or cause the coating to peel away.
- To ensure correct use for the full service life of the product, please perform the following inspections:
- ①Check for damage to the product ②Check for display malfunctions (e.g., does not respond to input) 3 Check for loose installation or terminal block wire connections (check regularly once every six months/year) always making sure that power has been turned off beforehand). (4) Check for unusual smell, noise or rise in temperature.

8 Storage

Do not store the product for long periods of time under any of the following conditions. Doing so may lead to a malfunction or reduced service life. • Ambient temperature outside the range of -25~+75°C • Daily average temperature of more than 35°C • Relative humidity exceeding 85% or condensation present

• Excessive dust, corrosive gas, salt or oil/smoke present Product is subject to excessive vibration or shock · Product is in direct contact with rain, water drops or sunlight

9 Disposal

These products do not use nickel-cadmium batteries. Dispose of them as industrial waste.

10 Warranty Period

The warranty period for the products in this catalog expires one year from the date of purchase or one year and six months after the date of manufacture; whichever is earliest. Even during the warranty period, the warranty shall not apply to malfunctions attributable to intentional negligence or erroneous use by the customer, and the fee for any repair required as the result of such negligence shall be the liability of the customer.

Mitsubishi Electric shall not be liable for: Damage that cannot be attributed to Mitsubishi Electric; lost opportunity or earnings resulting from failure of a Mitsubishi Electric product; damage, secondary damage or compensation for an accident resulting from special circumstances regardless of whether or not the circumstances were foreseeable; or damage to products or other services for products not manufactured by Mitsubishi Electric.

11 Product Exchange Cycle

Although it depends on usage conditions, as a guide, it is recommended that the products listed in this catalog be renewed after 10 years.

MITSUBISHI ELECTRONIC MULTI-MEASURING INSTRUMENT

Service Network

Country / Region	Company	Address	Telephone
Australia	Mitsubishi Electric Australia Pty. Ltd.	348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	+61-2-9684-7777
USA	Mitsubishi Electric Automation Inc.	500 Corporate Woods Parkway Vernon Hills, IL 60061, USA	+1-847-478-2100
Brazil	MELCO-TEC Rep. Com. e Assessoria Tecnica Ltda.	Av. Paulista, 1439-Cj.72, Cerqueira Cesar CEP 01311-200, Sao Paulo, SP, CEP:01311-200, Brazil	+55-11-3146-2200
Chile	Rhona S.A.	Agua Santa 4211 P.O. Box 30-D Vina del Mar, Chile	+56-32-2-320-600
China	Mitsubishi Electric Automation (CHINA) Ltd.	No. 1386 Hongqiao Road, Mitsubishi Electric Automation Center Shanghai China, 200336	+86-21-2322-3030
China	Mitsubishi Electric Automation (HongKong) Ltd.	10/F., Manulife Tower, 169 Electric Road, North Point, Hong Kong	+852-2887-8810
Colombia	Proelectrico Representaciones S.A.	Carrera 53 No 29C-73 - Medellin, Colombia	+57-4-235-30-38
Egypt	Cairo Electrical Group	9, Rostoum St. Garden City P.O. Box 165-11516 Maglis El-Shaab, Cairo - Egypt	+20-2-27961337
Europe	Mitsubishi Electric Europe B.V.	Gothaer Strasse 8, D-40880 Ratingen, Germany	+49-(0)2102-486-0
India	Mitlite Electric Company Pvt Ltd	Plot No-32, Sector-6, IMT Maneser,	+91-124-4695300
Indonesia	P. T. Sahabat Indonesia	P.O.Box 5045 Kawasan Industri Pergudangan, Jakarta, Indonesia	+62-(0)21-6610651-9
Korea	Mitsubishi Electric Automation Korea Co., Ltd	1480-6, Gayang-Dong, Gangseo-Gu, Seoul, Korea	+82-2-3660-9572
Laos	Societe Lao Import Co., Ltd.	43-47 Lane Xang Road P.O. BOX 2789 VT Vientiane Laos	+856-21-215043
Lebanon	Comptoir d'Electricite Generale-Liban	Cebaco Center - Block A Autostrade Dora, P.O. Box 11-2597 Beirut - Lebanon	+961-1-240445
Malaysia	Mittric Sdn Bhd	5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor, Malaysia	+603-5569-3748
Myanmar	Peace Myanmar Electric Co.,Ltd.	NO137/139 Botataung Pagoda Road, Botataung Town Ship 11161, Yangon, Myanmar	+95-(0)1-202589
Nepal	Watt & Volt House	KHA 2-65, Volt House Dillibazar Post Box: 2108, Kathmandu, Nepal	+977-1-4411330
Middle East Arab Countries & Cyprus	Comptoir d'Electricite Generale-International-S.A.L.	Cebaco Center - Block A Autostrade Dora P.O. Box 11-1314 Beirut - Lebanon	+961-1-240430
Pakistan	Prince Electric Co.	1&16 Brandreth Road, Lahore-54000, Pakistan	+92-(0)42-7654342
Philippines	Edison Electric Integrated, Inc.	24th Fl. Galleria Corporate Center, Edsa Cr. Ortigas Ave., Quezon City Metro Manila, Philippines	+63-(0)2-634-8691
Saudi Arabia	Center of Electrical Goods	Al-Shuwayer St. Side way of Salahuddin Al-Ayoubi St. P.O. Box 15955 Riyadh 11454 - Saudi Arabia	+966-1-4770149
Singapore	Mitsubishi Electric Asia Pte. Ltd.	307, Alexandra Road, #05-01/02 Mitsubishi Electric Building, Singapore 159943	+65-6473-2308
South Africa	CBI-electric: low voltage	Private Bag 2016, Isando, 1600, South Africa	+27-(0)11-9282000
Taiwan	Setsuyo Enterprise Co., Ltd	6th Fl., No.105, Wu Kung 3rd, Wu-Ku Hsiang, Taipei, Taiwan, R.O.C.	+886-(0)2-2298-8889
Thailand	United Trading & Import Co., Ltd.	77/12 Bamrungmuang Road, Klong Mahanak, Pomprab Bangkok Thailand	+66-223-4220-3
Uruguay	Fierro Vignoli S.A.	Avda. Uruguay 1274, Montevideo, Uruguay	+598-2-902-0808
Venezuela	Adesco S.A.	Calle 7 La Urbina Edificio Los Robles Locales C y D Planta Baja, Caracas - Venezuela	+58-212-241-9952
Vietnam	CTY TNHH-TM SA GIANG	10th Floor, Room 1006-1007, 255 Tran Hung Dao St., Co Giang Ward, Dist 1, Ho Chi Minh City, Vietnam	+84-8-8386727/28/29

Safety Tips: Be sure to read the instruction manual fully before using this product.

Precautions Before Use

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Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

MITSUBISHI ELECTRIC CORPORATION

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HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN