INSTRUCTION MANUAL
(DETAILED VERSION)

POWER LINE SUPER MULTI-METER

SQLC-72L

DAIICHI ELECTRONICS CO., LTD.

Contents

Introduction

Thank you for purchase of DAIICHI product.
Please read this instruction manual carefully before use.
Keep this manual for future reference.
Please contact with us in case this manual is lost or damaged.

Safety Precaution

■ Usage environment and conditions

Don't use this product in the following conditions.

① Locations beyond the ambient temperature range (-10...+55 ℃) and humidity range (5...90 % RH).
② Locations with excessive corrosive gas (SO_2 / H_2S / etc.)
③ Locations with excessive dust.
④ Locations with excessive vibration or shocks.
⑤ Locations with excessive exogenous noise.
⑥ Altitude over 2000 m.
⑦ When measure the following inverter output directly, error will becomes large.
Cycle control, SCR phase angle control, PWM inverter.

■ Outdoor use conditions.

① These products are not a dustproof, waterproof, and splash proof construction.
Please avoid the place with much dust. Please do not install in the place directly exposed to the rain and water droplets. (IP code : IP40)
② Please do not install in the place directly exposed to the sun even through the glass. Discoloration and degradation of a name plate, and deformation of the box by the surface temperature rise may caused.
③ Product life may shorten when the daily average temperature exceeds 40 ℃.

■ Mounting and wiring

Please refer to this instruction manual for installation and the wiring.

⚠CAUTION

- Please refer to connection diagram for the wiring. An improper connection may cause troubles.
- Hot line work is prohibited. There is a risk of explosion by electric shock, device malfunction, burning, fire, or gas.
- Please use an electrical wire size suitable with the rated current.
Use unsuitable size electric wire, which may lead to a fire.
- Please carry out coating removal of a covering electric wire by reasonable length. If covering removal is too long, there is a possibility of short-circuiting with the next electric wire. Moreover, if covering removal of an electric wire is too short, a mating defect and poor contact may be caused.
- Be careful of the short circuit by the exposure of conductor.
- Please use it combining the current sensor of this product and exclusive use.
Please use a current sensor within input rated range.
- Since a current sensor (exclusive use) is only for low-voltage circuits, it cannot be used for a high-voltage circuit. Connecting with a high-voltage circuit is dangerous.
When using with a circuit of 600 A or more, please connect the current sensor of the 5 A rated the (CTF-5A) on the secondary side of the instrument for the current transformer (secondary 5 A).
- Primary cable to connect to the current sensor, please use the penetrable insulated wire.
Please do not use non-insulated wire and conductor (bus bar, etc.).
- As for the core division surface of a current sensor, characteristics worsen by adhesion of dust or accrual of rust. Be careful not to attach dirt to a core division surface. When dirty, please clean with a dry cloth.
- As for the core division surface of a current sensor, characteristics worsen by adhesion of dust or accrual of rust. Be careful not to attach dirt to a core division surface.
When dirty, please clean with a dry cloth.
- Please do not continuously energized the secondary side of the current sensor in an open state.
However, this product has a built-in protection circuit of the secondary terminal open.
There is no problem in the open in the wiring construction period.
- The current sensor has polarity. Please note the time of installation.

■ Preparation
This product must be set before use. Please read this manual and make the setting correctly.
If you make a mistake on the setting it does not operate correctly.

■ Maintenance and inspection
① Inspection during energization is dangerous.
② No replacement in periodic inspection.
③ Please wipe off lightly with the dry soft cloth.
Please do not use the organic solvent, chemicals, cleaners, etc., such as an alcohol, for cleaning.

■ Storage
If you want to long-term storage, please avoid the following environment.
- Locations beyond the ambient temperature range and humidity range. -25...+70 ℃, 5...90 % RH
- Daily average temperature more than 40 ℃.
- Location corresponding to the usage environment and use conditions (②...④).

■ Countermeasures against troubles
If this product breaks down within the warranty period, it will be repairs by DAIICHI Electronics.

■ Disposal
Please dispose of this product as industrial waste (noncombustible).
Mercury parts and a nickel-cadmium battery are not used for this product.

■ Warranty period
The warranty period of the product is one year after the date of delivery.

■ Warranty scope
In the state of the normal use of product-specification within the range according to this instruction manual, the trouble within the warranty period performs exchange or repair gratuitously.
However, if it corresponds to the next, it does not warrant.
① If it breaks down when converted or repaired except our company.
② If it breaks down by use out of specification range.
③ If the cause of trouble is based on cause other than this product.
④ Transportation, movement, damage by falling, and trouble.
⑤ Other, natural disasters, disasters, etc. In the case where the supplier side (Company and agent) is not responsible.
This warranty is a guarantee for the delivered product. Cannot warrant the damage induced by trouble of this product.

■ Replacement cycle of the product
We recommend updating the product for 10 years as a rough standard.

■ Change of instruction manual written contents.
This instruction manual changes written contents without a notice by product improvement etc.

Composition of type

Type: SQLC-72L-

Specification code

① Hardware model	
A	Hardware model A

② Auxiliary supply	
1	85...264 V AC 80...143 V DC
2	20...56 V DC

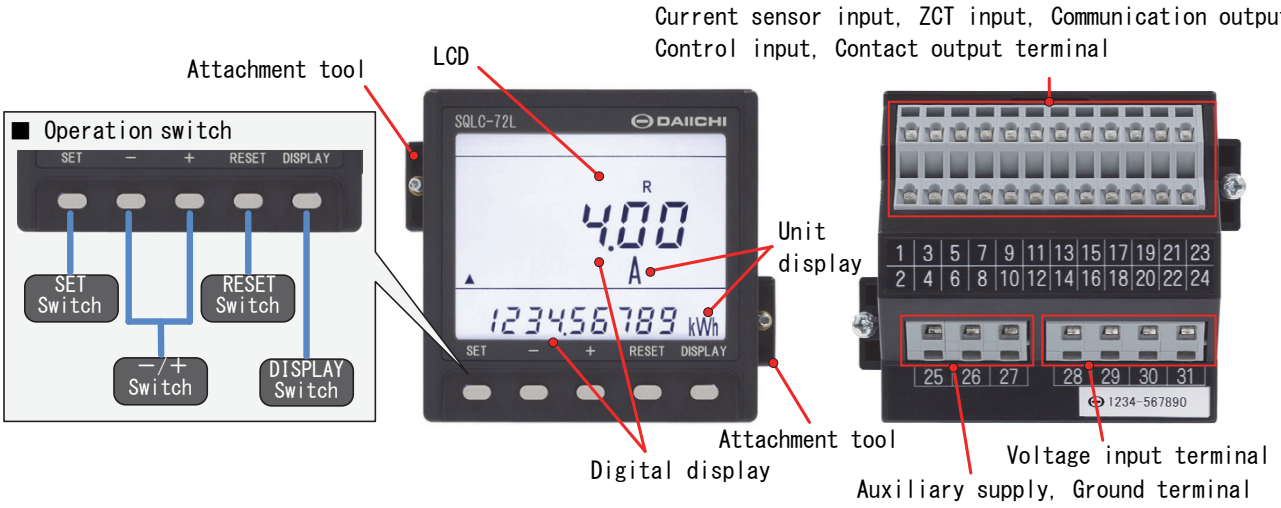
③ Control input, Communication output, Contact output	
1	Control input : DI ×1 Communication output : MODBUS RTU Contact output : DO ×2

1 Product outline

1.1 Features of product

- Small Multi-meter, DIN 72 mm square size
- Input circuit is a 3 phase 3 wire, 1 phase 3 wire, 1 phase 2 wire, 3 phase 4 wire shared.
- 400 V direct connection is possible (110 V / 220 V / 440 V shared)
- Compliant for international standards [IEC 60688：2012 (Transducer), IEC 62053：2003 (Electricity metering equipment), CE marking]
- Equipped with a liquid crystal panel with a wide viewing angle.
- Equipped with a high visibility high-intensity white backlight.
- Wiring can be confirmed by the test function.
- Screw-less spring-type terminal block the adoption. Wiring man-hours can be reduced.
- RS485 Communication output (MODBUS RTU) , Alarm output, Pulse output can be output simultaneously.

1.2 Part names

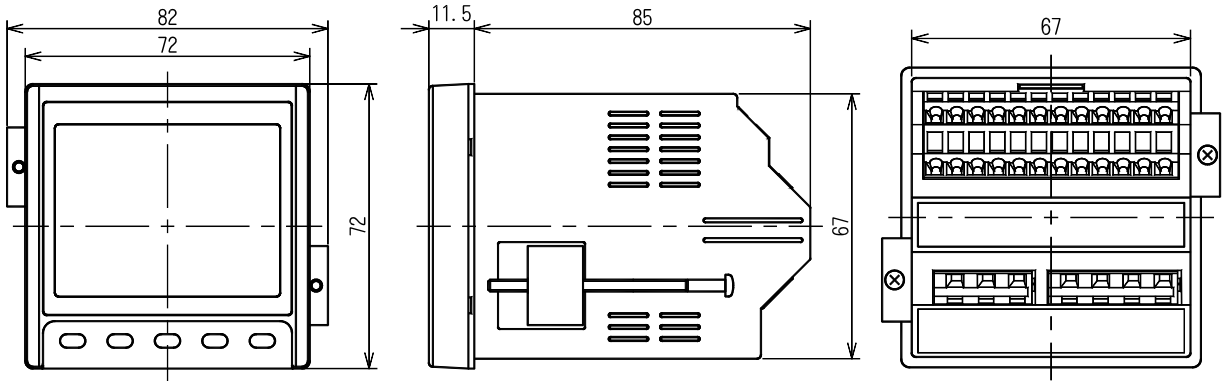


1.3 Bundled items

① Instruction Manual (Instruction・Operation) ····· 1
② Attachment tool ····· 2
③ Termination resister for communication (100 Ω) ····· 1

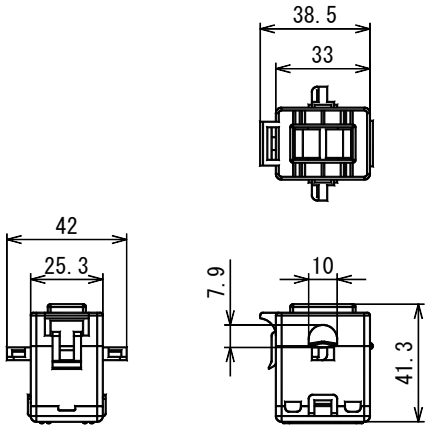
2 Dimensions

2.1 SQLC-72L

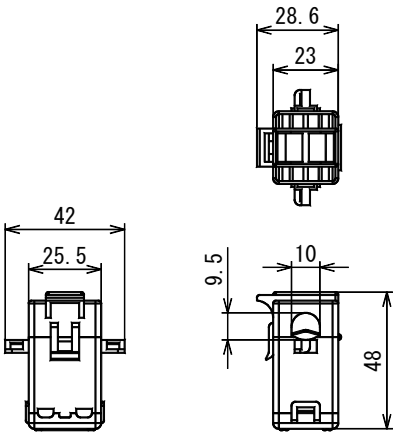


2.2 Current sensor (option) : Made by MULTI MEASURING INSTRUMENTS Co., Ltd.

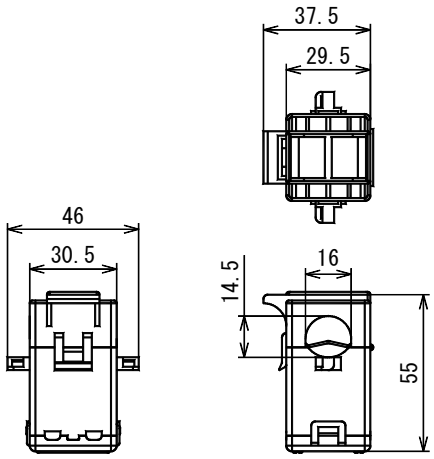
5A (CTF-5A)



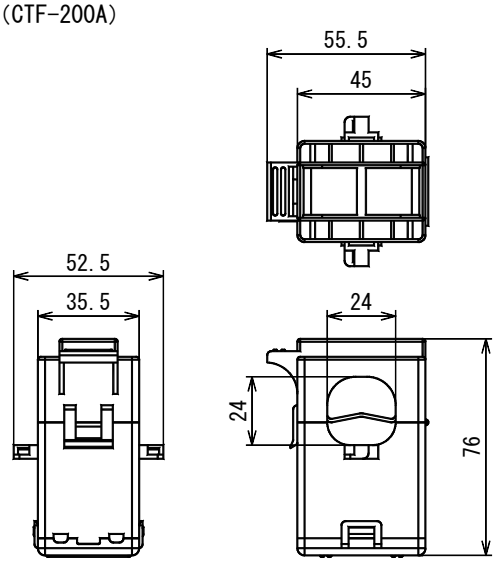
50A (CTF-50A)



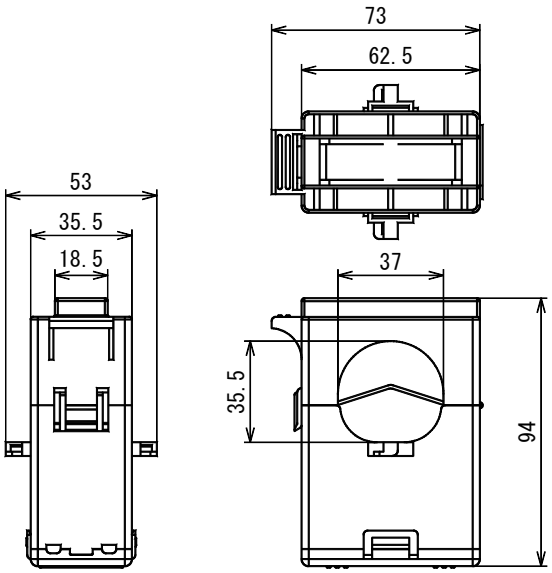
100A (CTF-100A)



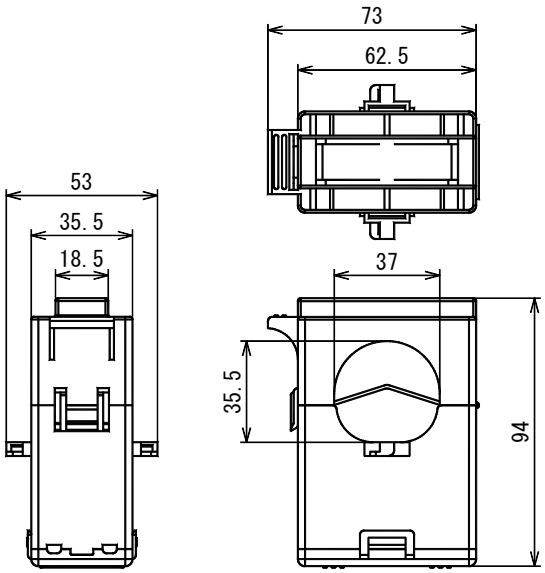
200A (CTF-200A)



400A (CTF-400A)

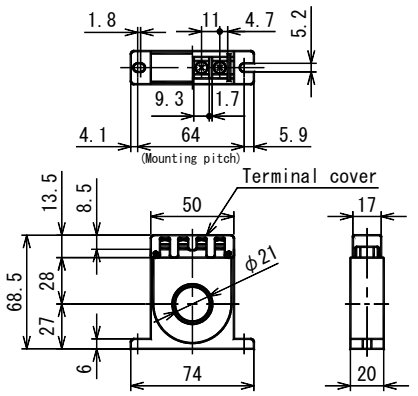


600A (CTF-600A)

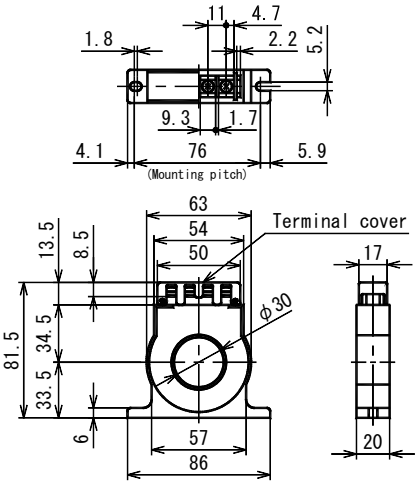


2.3 Zero-phase current transformer ZCT (option) : Made by OMRON Corporation

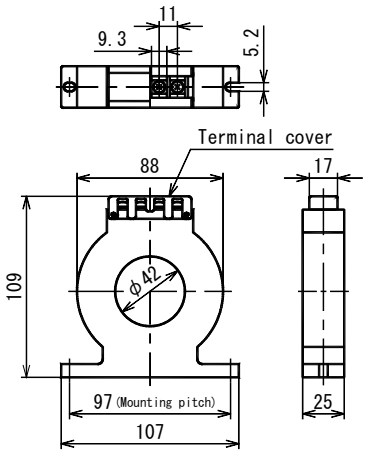
50A (OTG-LA21)



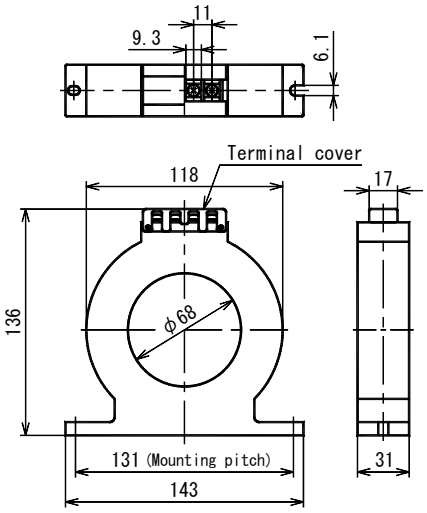
100A (OTG-LA30)



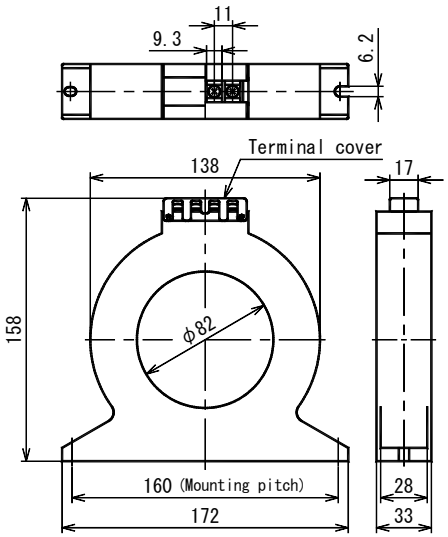
200A (OTG-LA42)



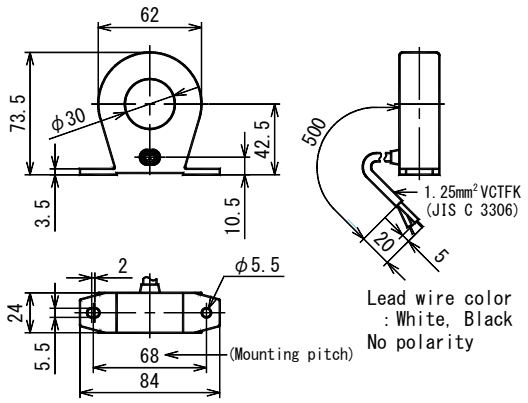
400A (OTG-LA68)



600A (OTG-LA82)

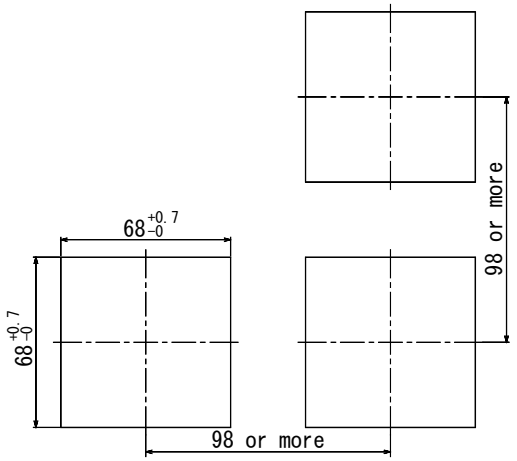


100A for outdoor (OTG-LA30W)



3 Installation instructions

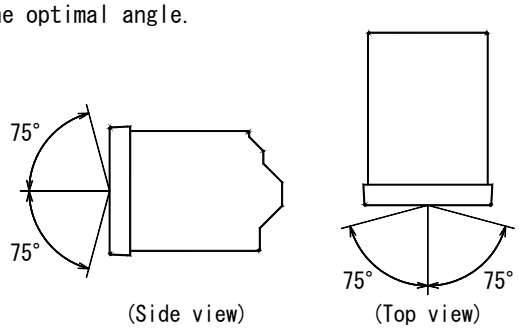
■ Panel cutout dimensions



Panel cutout

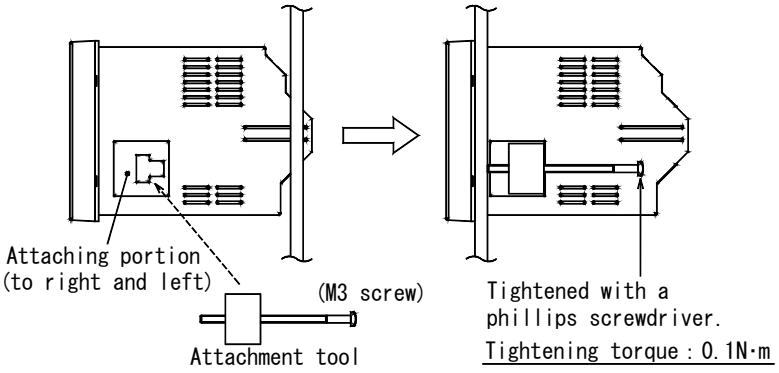
■ Mounting position

Since the LCD contrast is changed in accordance with the monitoring angle, please be installed at the optimal angle.



■ Installation

Insert from the front panel cut hole.
Install as shown in the figure below.

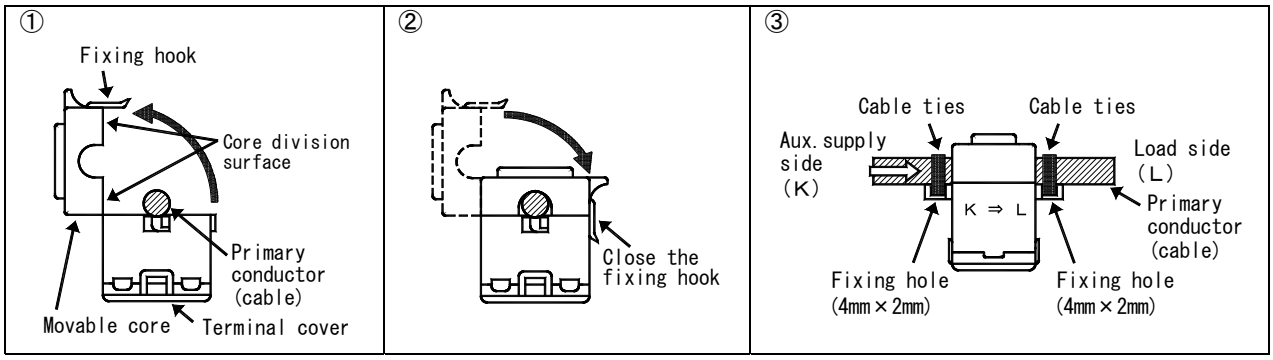


■ Connection of current sensor

① Remove the fixing hooks, and open the movable core.
Please check the mounting direction of the current sensor. (Symbol : Power supply side K, Load side L)
Pass the wirees in the center of the current sensor.

② Make sure that there is no dust on the core division surface.
Until the sound of the fixing hook is, please close the movable core.

③ To secure the current sensor to the wire in the cable ties.



● Solderless terminal to be used in the secondary terminal of the current sensor, please use the Solderless terminal of the specified.
Solderless terminal for M3 screw (Without insulation sleeve)
Tightening torque : 0.5...0.6 N·m

● CT inside diameter and wiring length of current sensor

Primary current	Type	CT inside diameter	Wiring length (Max.)
5 A	CTF-5A	10 mm	10 m
50 A	CTF-50A	10 mm	50 m
100 A	CTF-100A	16 mm	
200 A	CTF-200A	24 mm	
400 A	CTF-400A	37 mm	
600 A	CTF-600A	37 mm	

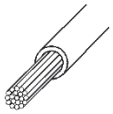
■ Connection method

(1) Applicable wire

Terminal is a screw-less spring-type terminal. Fit wire size, please refer to the table below.

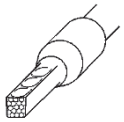
Terminal	Wire	Applicable wire					
		Single wire	Flexible stranded wire	Stranded wire, rod terminal (Ferrule with insulating collar)	Stranded wire, rod terminal (Ferrule without insulating collar)	Two stranded wire, rod terminal (Twin ferrule with insulating collar)	Delamination of wire
Voltage input, Auxiliary supply, Ground	Cross-sectional area	0.08 ... 2.5 mm^2		0.25 ... 1.5 mm^2		0.5 $mm^2 \times 2$	5 ... 6 mm
	AWG	28 ... 12		24 ... 16		22	
Current sensor, ZCT, Communication output, Control input, Contact output	Cross-sectional area	0.08 ... 2.5 mm^2		0.25 ... 1.5 mm^2		0.5 $mm^2 \times 2$	
	AWG	28 ... 12		24 ... 16		22	

Flexible stranded wire



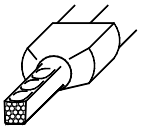
Single wire

Stranded wire, rod terminal (Ferrule with insulating collar)



Stranded wire, rod terminal (Ferrule without insulating collar)

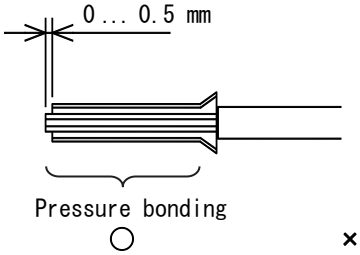
Two stranded wire, rod terminal (Twin ferrule with insulating collar)

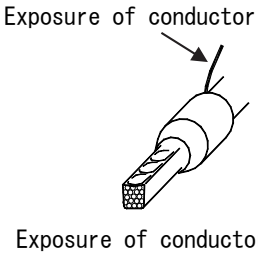


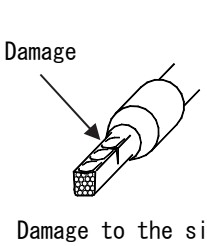
In case of flexible stranded wire, please be careful not to loosen the wire. There is a rod terminal as a preventive measure.
Rod terminal of recommendation, please refer to the following.
Also, please use a dedicated crimping tool to rod terminal.

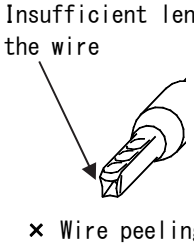
Twin ferrule with insulating collar can crimp more two standard wires at the same time.
Please use in the case of two wires to daisy chain, such as one terminal.

- Rod terminal : WAGO, Ferrule with insulating collar ／ Ferrule without insulating collar, 216 series
- Crimping tool : WAGO, Ferrule crimping tool 206-204 (Applicable wire : 0.25 mm^2 to 4 mm^2)
- Please use a rod terminal that matches the wire size.
- The tip of the wire, please cut the length of the rod terminal (or about 0.5 mm long).
- After the rod terminal crimping, please check the appearance.









(2) Connection method

① Stripping 5-6 mm a coating of the tip of the wire. Or, crimping the rod terminal.
The screwdriver of the flat-blade screwdriver cutting edge (3.5 mm × 0.5 mm)

② Insert the screwdriver to screwdriver insertion slot, open the spring.

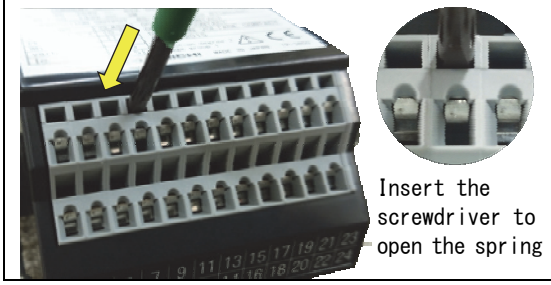
③ To insert the wire to the wire insertion slot.

④ Pull out the screwdriver, close the spring.

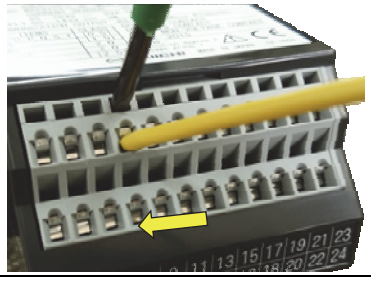
【Recommended screwdriver】Cutting edge 3.5 mm×0.5 mm
WAGO made screwdriver : 210-720, 210-657, 210-658, 210-120J, 210-350/01, 210-258J

① 5 ... 6 mm Without of loosened and twisting and bending

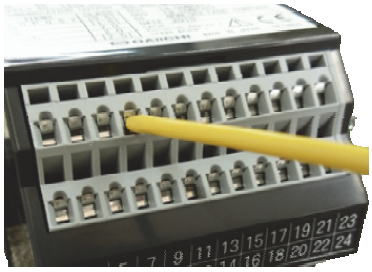
② Screw driver



③



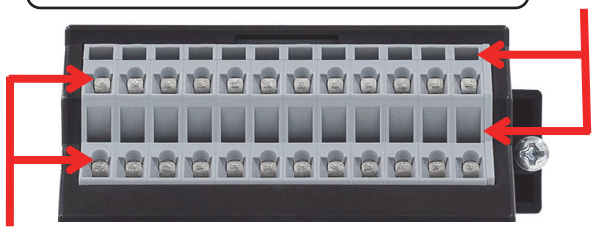
④



【Screwdriver and wire insertion slot】

【Upper position terminal】

Current sensor, ZCT, Communication output,
Control input, Contact output



Wire insertion slot

【Lower position terminal】

Screwdriver
insertion slot

Wire insertion slot

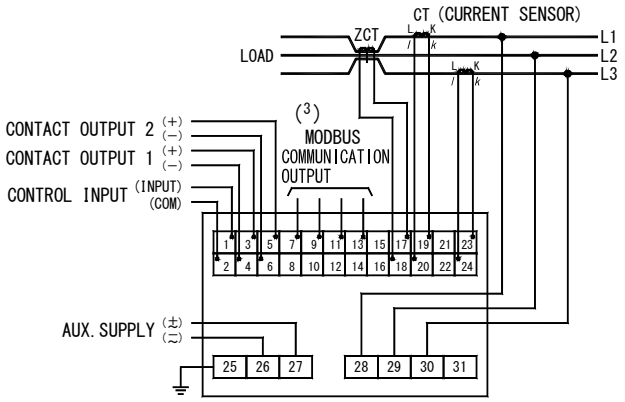
Auxiliary supply, Ground

Voltage input

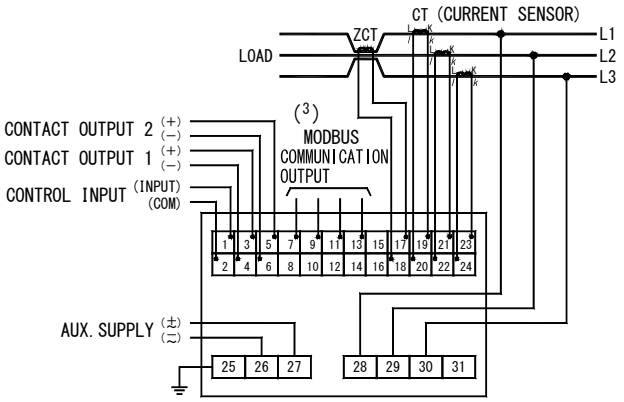
4 Connection

4.1 Low-voltage circuit (1)(2)

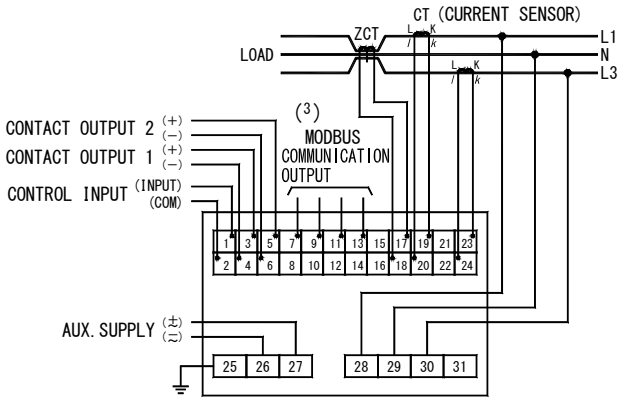
■ 3 phase 3 wire (2VT2CT)



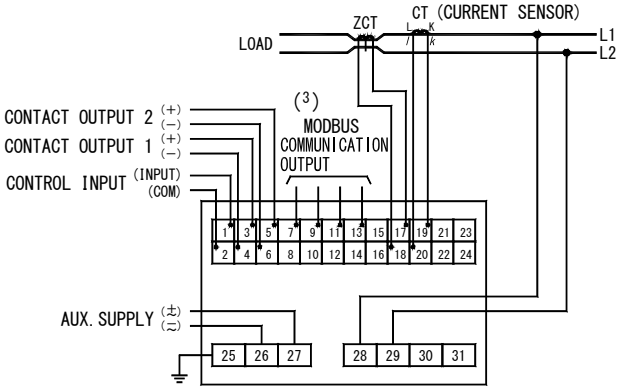
■ 3 phase 3 wire (2VT3CT)



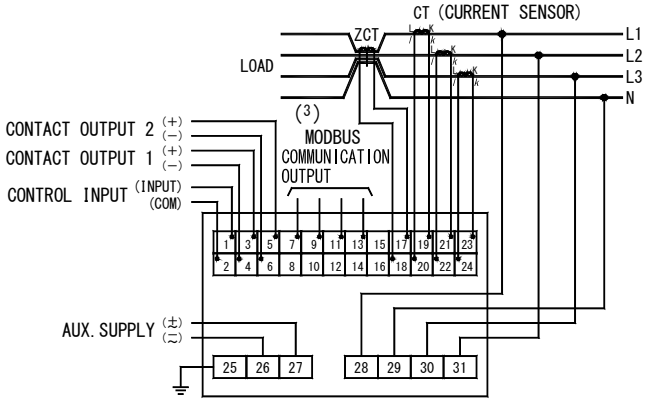
■ 1 phase 3 wire



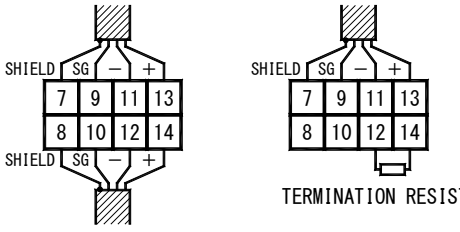
■ 1 phase 2 wire



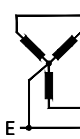
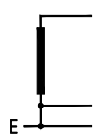
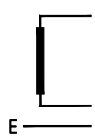
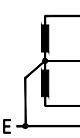
■ 3 phase 4 wire (3VT3CT)



Wiring of communication output (3)
【Daisy chain (line type)】【Termination unit】

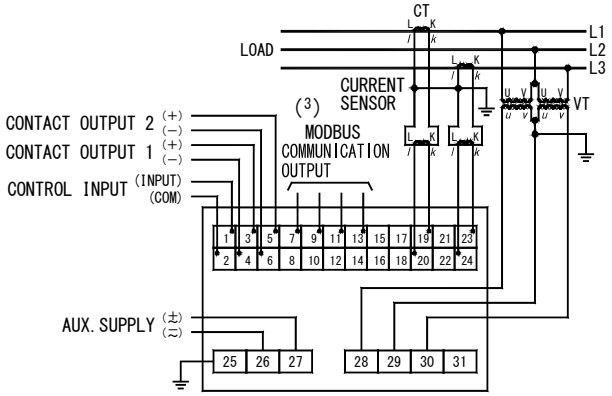


Maximum rated voltage by wiring type

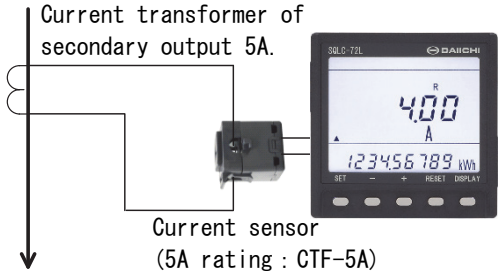
Wiring type	3 phase 4 wire	3 phase 3 wire (Ground)	3 phase 3 wire (Ungrounded)	1 phase 2 wire (Ground)	1 phase 2 wire (Ungrounded)	1 phase 3 wire
						
Maximum rated voltage	277V (L-N) 480V (L-L)	220V (L-L)	480V (L-L)	220V (L-L)	480V (L-L)	220V (L-N) 440V (L-L)

4.2 High-voltage circuit (4)

■ The use example of high-voltage circuit, 3 phase 3 wire (2VT2CT)



Current sensor connection diagram of circuit of 600A or more and high-voltage circuit. (2)



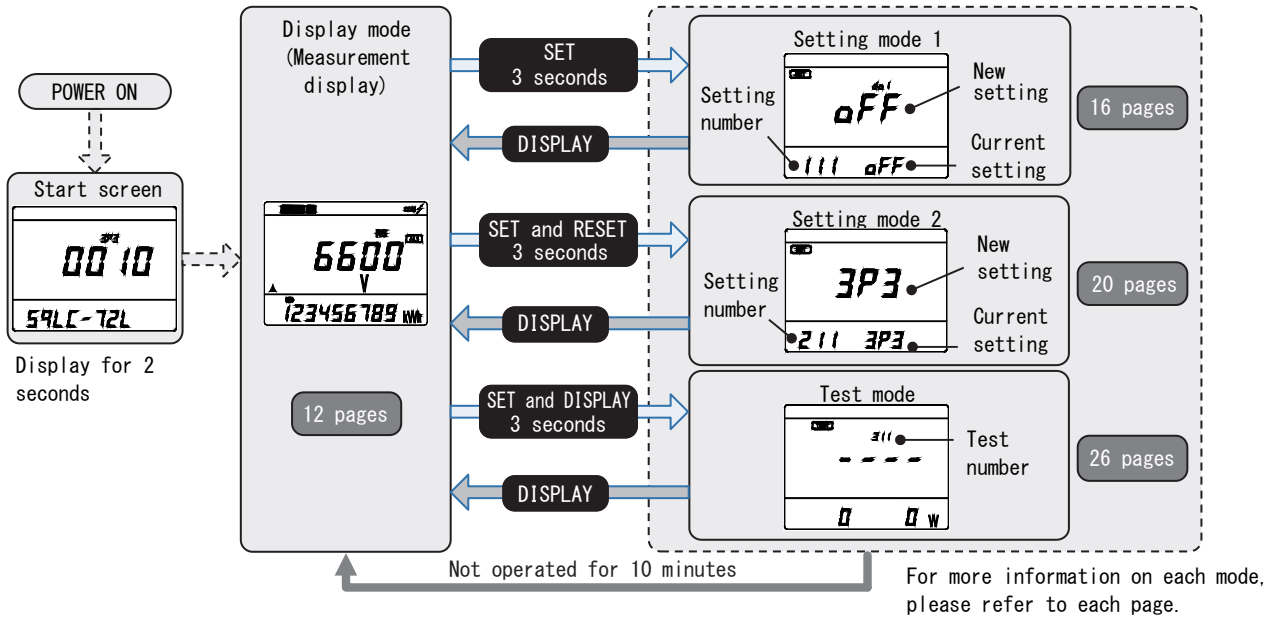
Note(1) In case of the low-voltage circuit (600 V or less), the secondary grounding of VT / CT is not required.
In case of the 110V / 220V / 440V direct input, VT is not required.

Note(2) When using with a circuit of 600 A or more, please connect the current sensor of the 5 A rated the (CTF-5A) on the secondary side of the instrument for the current transformer (secondary 5 A).

Note(3) Communication output terminal (7-8, 9-10, 11-12 ,13-14) are connected internally respectively.
In case of the daisy chain, please connect in accordance with the 10 pages figure.
Termination resistor for the communication output, please use at the end of equipment.
Please connect the termination resistor between the terminals (+)(−) of communication output.

Note(4) In case of the high-voltage circuit, using instrument transformers (VT), and instrument for the current transformer (CT) of secondary rated 5 A, please ground the secondary side.
Current sensor in the secondary of the current transformer, please connect the current sensor (CTF-5A) of 5A rating.

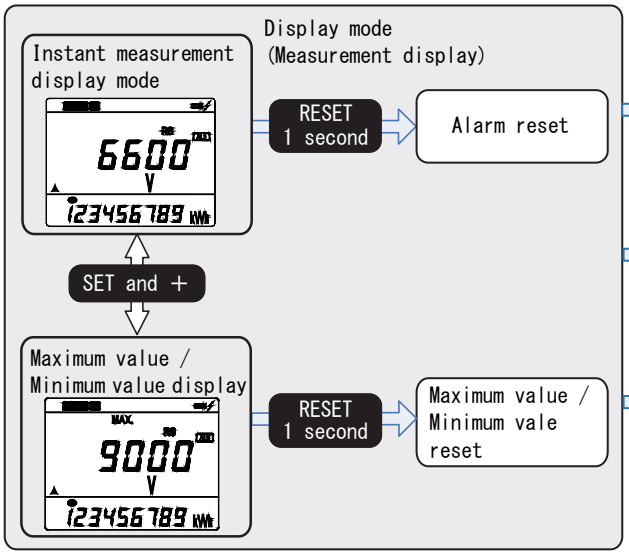
5 Operation and Screen



6 Display mode

6.1 Measurement display

Switch	Operation
SET	Switching of operation screen
−／＋	Switching of measuring element.
RESET (Pressing for more than 1 second)	Reset of each alarm (Instant measurement display mode)
	Reset of maximum value / minimum value (Maximum / Minimum value display mode)
DISPLAY	Switching of measurement display. Phase / Line / Average value (AVG)
SET (Pressing for more than 3 second)	Switch to setting mode 1
SET and RESET (Pressing for more than 3 second)	Switch to setting mode 2
SET and DISPLAY (Pressing for more than 3 second)	Switch to test mode



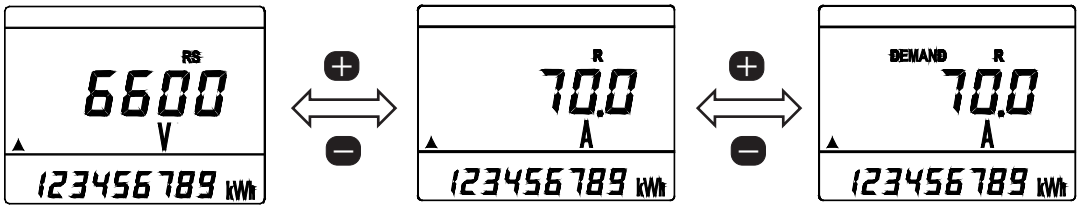
About the element symbol	
U	Voltage
I	Current
Id	Demand current
P	Active power
Pd	Demand active power
Q	Reactive power
S	Apparent power
PF	Power factor
f	Frequency
Io	Leakage current
Wh	Active energy
varh	Reactive energy

6.2 Instant measurement display mode

(1) Switching of main-monitor display element

Press the【SET】switch, to display the【▲】(operation effective display).
Then by pressing the【＋】【－】switch the display elements of the main-monitor.

【 Voltage (U) display 】　　【 Current (I) display 】　　【 Demand current (Id) display 】



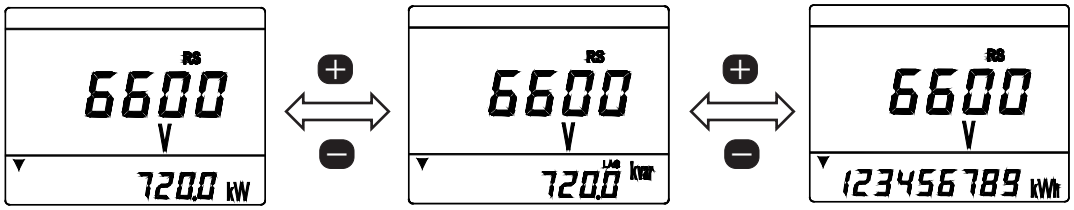
Measuring element is switched in the following order.

U ⇔ I ⇔ Id ⇔ P ⇔ Pd ⇔ Q ⇔ S ⇔ PF ⇔ f ⇔ Io ⇔ OFF

(2) Switching of the sub-monitor display element

Press the【SET】switch, to display the【▼】(operation effective display).
Then by pressing the【＋】【－】switch the display elements of the sub-monitor.

【 Active power (P) display 】　【Reactive power (Q) display】　【Receiving active energy (Wh) display】

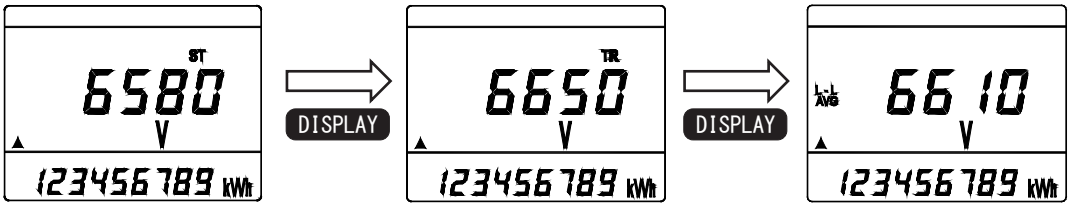


Measuring element is switched in the following order.

P ⇔ Q ⇔ Wh ⇔ -Wh ⇔ varh(LAG) ⇔ varh(LEAD) ⇔ -varh(LAG) ⇔ -varh(LEAD) ⇔ OFF

(3) Switching of phase (line) / average value (AVG) display

By pressing the【DISPLAY】switch the phase (line) display of the main-monitor.



Measuring element is switched in the following order.

	Measurement element (1,2,3,N : Phase, Σ : Total)		
	3 phase 3 wire	1 phase 3 wire	3 phase 4 wire
Voltage	U(L1-2) ⇔ U(L2-3) ⇔ U(L3-1) ⇔ U(L-L AVG)	U(L1-N) ⇔ U(L3-N) ⇔ U(L1-3) ⇔ U(L-N AVG)	U(L1-N) ⇔ U(L2-N) ⇔ U(L3-N) ⇔ U(L1-2) ⇔ U(L2-3) ⇔ U(L3-1) ⇔ U(L-N AVG) ⇔ U(L-L AVG)
Current, Demand current	I(L1) ⇔ I(L2) ⇔ I(L3) ⇔ I(AVG)	I(L1) ⇔ I(L3) ⇔ I(N) ⇔ I(AVG)	I(L1) ⇔ I(L2) ⇔ I(L3) ⇔ I(N) ⇔ I(AVG)
Active power, Demand active power	—	—	P(Σ) ⇔ P(L1) ⇔ P(L2) ⇔ P(L3)
Reactive power	—	—	Q(Σ) ⇔ Q(L1) ⇔ Q(L2) ⇔ Q(L3)
Apparent power	—	—	S(Σ) ⇔ S(L1) ⇔ S(L2) ⇔ S(L3)
Power factor	—	—	PF(Σ) ⇔ PF(L1) ⇔ PF(L2) ⇔ PF(L3)

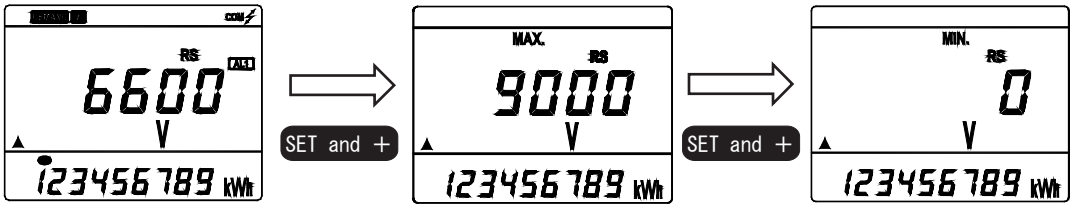
Display of phase / line, can be switched in the settings.

Setting	L123N	RSTN	UVWN
Phase, line display	L1	R	U
	L2	S	V
	L3	T	W
	N	N	N

6.3 Maximum value / Minimum value display mode

Pressing the【SET】and【＋】at instant measurement display mode, the switches to the maximum value display mode.
〔In maximum value display mode, to display the "MAX." 〕
Pressing the【SET】and【＋】at maximum value display mode, the switches to the minimum value display mode.
〔In minimum value display mode, to display the "MIN." 〕
The maximum value/ minimum value display mode, will be switched to the measuring element pressing the【＋】【－】switch. And, pressing the【DISPLAY】switch the phase (line).

【Instant measurement display mode】 【Maximum value display mode】 【Minimum value display mode】

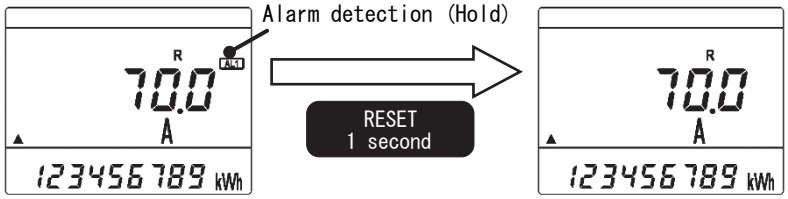


6.4 Reset

(1) Alarm reset

If the contact output is using the alarm output "HoLd (manual return)", press the【RESET】switch for more than 1 second at the instant measurement display mode, the alarm output is reset.
When set to "Auto (automatic return)" the alarm reset method, output is off in accordance with the alarm reset. Therefore, this operation is not necessary.

<Note> When the carry out this operation in the maximum / minimum measurement display mode, the maximum value / minimum value of measurement element in display is reset. Always instant measurement display mode, please carry out this operation.



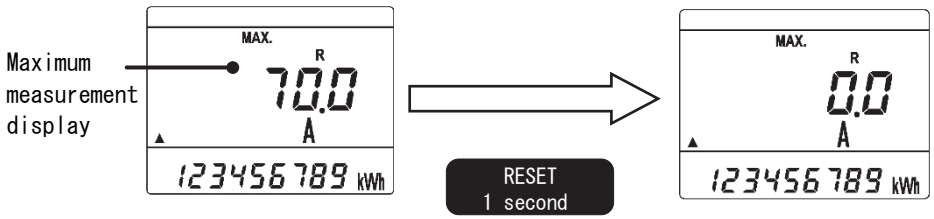
Instant measurement display mode　　Reset completion

(2) Maximum value ／ Minimum value reset

Resets the maximum value and the minimum value of the various measurement values.
Reset method has the following two types. Individually reset of measurement element.
Collectively reset all of the maximum value / minimum value.

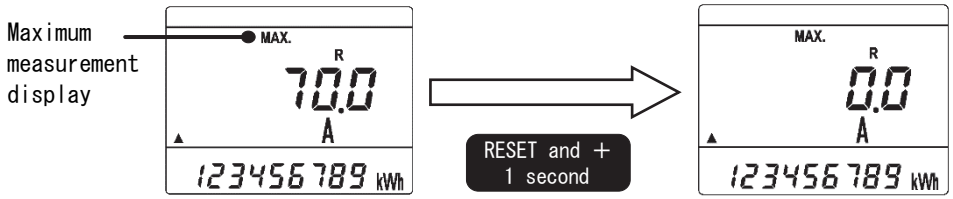
a) Individually reset
Resets the maximum and minimum values of a particular measurement element.
This operation does not reset the other maximum value and minimum value.
① Displays the measurement element that want to reset.
② Press the【RESET】for more than 1 second.

<Note> When the carry out this operation in the instant measurement display mode, the alarm output is reset. From to display the measurement elements of the maximum (or minimum value) to be reset, please carry out this operation.



Maximum value display mode　　Reset completion

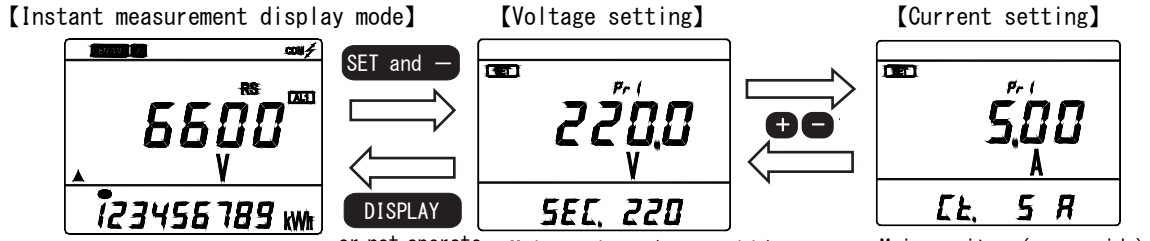
b) Reset collectively
Resets the maximum and minimum values of all measurement element.
Can be operated in the same way in the control input by the setting.
① At the maximum / minimum measurement display mode, press the【RESET】and【＋】for more than 1 second.



Maximum value display mode　　Reset completion

6.5 Setting value display mode

From the instant measurement display mode, press【SET】and【－】to enter setting value display mode.
Pressing the【＋】【－】switch in the setting value display mode, switching the voltage setting and current setting.
If you press the【DISPLAY】switch or do not operate any switches for over 10 seconds, the instant measurement display mode is restored.



or not operate for over 10 seconds

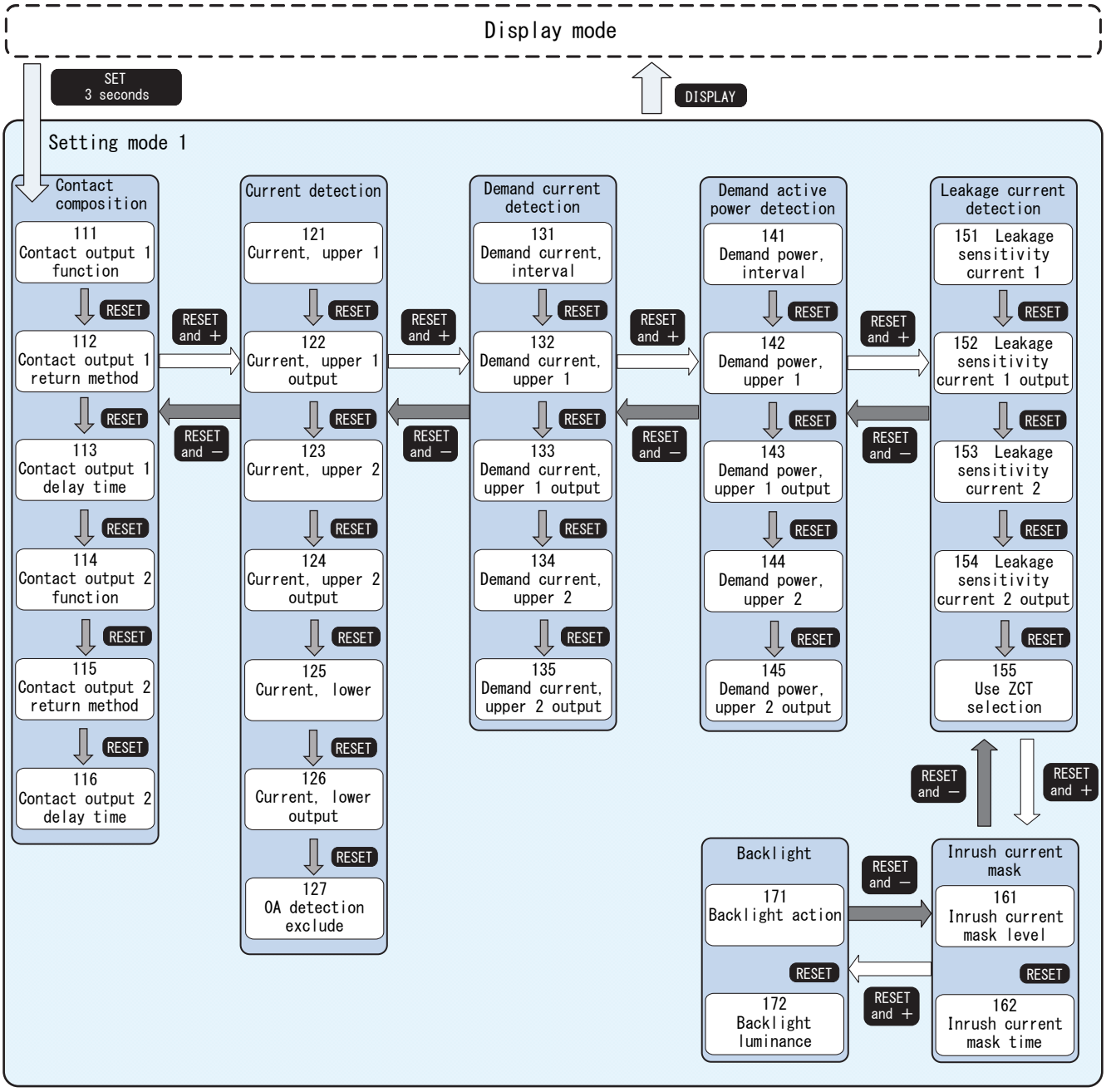
Main-monitor (upper side)
：Primary rated voltage
Sub-monitor (lower side)
：Secondary rated voltage

Main-monitor (upper side)
：Primary rated current
Sub-monitor (lower side)
：Current sensor rating

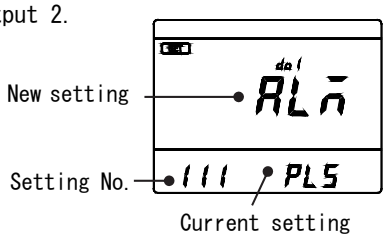
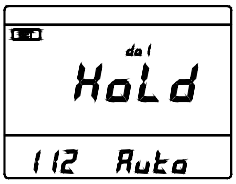
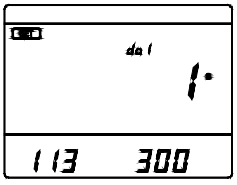
7 Setting

7.1 Setting mode 1
(Contact output structure, Various detection settings, Inrush current mask, Backlight action)

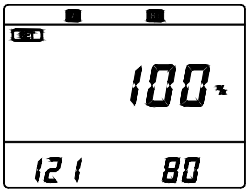
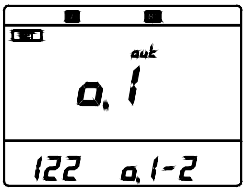
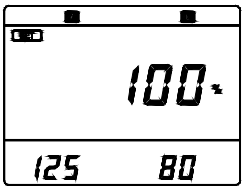
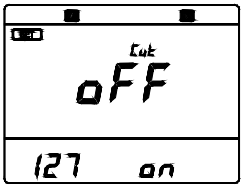
(1) Setting mode 1 flowchart



(2) Contact composition

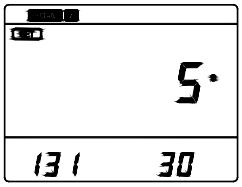
No.	Setting item	Contents of setting
111 114	Contact output 1 function Contact output 2 function	Set function of contact output 1 and contact output 2. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Function of contact output: OFF / oFF; Pulse output / PLS; Alarm output / ALm 
112 (5) 115 (5)	Contact output 1 return method Contact output 2 return method	Set return method of contact output 1 and contact output 2. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Return method: Auto return / Auto; Manual return / HoLd 
113 (5) 116 (5)	Contact output 1 delay time Contact output 2 delay time	Set contact delay time of contact output 1 and contact output 2. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Delay time: 0...300 s (1 s step) 

(3) Current detection

No.	Setting item	Contents of setting
121 123	Current, upper 1 Current, upper 2	Set detection value of the upper detection 1 and the upper detection 2 of current. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Detection value: 1...200% (1% step), OFF (Rated current at 100%, 1% step) 
122 (5) 124 (5) 126 (5)	Current, upper 1 output Current, upper 2 output Current, lower output	Set output allocation of upper detection 1 and upper detection 2, and lower detection. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Output: Contact output 1 / o.1; Contact output 2 / o.2; Contact output 1, 2 / o.1-2; OFF / oFF 
125	Current, lower	Set detection value of the lower detection of current. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Detection value: OFF, 1...200% (1% step) (Rated current at 100%, 1% step) 
127	OA detection exclude	Set exclude of the lower detection of current. [At the time of no input (OA)] Setting value is selecting in the【+】【−】. To update the setting value in the【SET】. Detection exclude: Exclude detection / on; Not exclude detection / oFF 

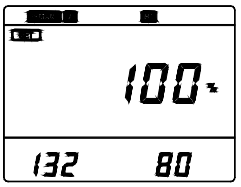
Note(5) This setting is [111 contact 1 function], [114 contact 2 function] is valid at the time of the alarm output.

(4) Demand current detection

<table>
<tr><th>No.</th><th>Setting item</th><th>Contents of setting</th></tr>
<tr><td>131</td><td>Demand current, interval</td><td>Set interval of demand current measurement.
Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.
<table>
<tr><th colspan="7">Interval</th></tr>
<tr><td>0 s</td><td>20 s</td><td>50 s</td><td>3 min</td><td>6 min</td><td>9 min</td><td>20 min</td></tr>
<tr><td>5 s</td><td>30 s</td><td>1 min</td><td>4 min</td><td>7 min</td><td>10 min</td><td>25 min</td></tr>
<tr><td>10 s</td><td>40 s</td><td>2 min</td><td>5 min</td><td>8 min</td><td>15 min</td><td>30 min</td></tr>
</table>


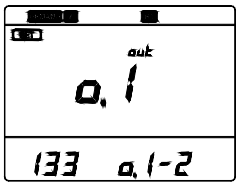
</td></tr>
<tr><td>132

134</td><td>Demand current, upper 1

Demand current, upper 2</td><td>Set detection value of the upper detection 1 and the upper detection 2 of demand current.
<table>
<tr><th>Detection value</th></tr>
<tr><td>5...200% (1% step), OFF</td></tr>
</table>
(Rated current at 100%, 1% step)
Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.


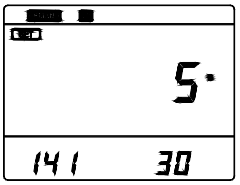
</td></tr>
<tr><td>133 (6)

135 (6)</td><td>Demand current, upper 1 output

Demand current, upper 2 output</td><td>Set output allocation of upper detection 1 and upper detection 2 of demand current.
<table>
<tr><th colspan="2">Output</th></tr>
<tr><td>Contact output 1</td><td>o.1</td></tr>
<tr><td>Contact output 2</td><td>o.2</td></tr>
<tr><td>Contact output 1, 2</td><td>o.1-2</td></tr>
<tr><td>OFF</td><td>oFF</td></tr>
</table>
Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】.


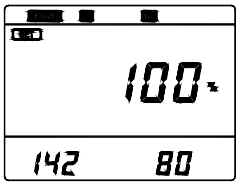
</td></tr>
</table>

(5) Demand power detection

<table>
<tr><th>No.</th><th>Setting item</th><th>Contents of setting</th></tr>
<tr><td>141</td><td>Demand power, interval</td><td>Set interval of demand power measurement.
Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.
<table>
<tr><th colspan="7">Interval</th></tr>
<tr><td>0 s</td><td>20 s</td><td>50 s</td><td>3 min</td><td>6 min</td><td>9 min</td><td>20 min</td></tr>
<tr><td>5 s</td><td>30 s</td><td>1 min</td><td>4 min</td><td>7 min</td><td>10 min</td><td>25 min</td></tr>
<tr><td>10 s</td><td>40 s</td><td>2 min</td><td>5 min</td><td>8 min</td><td>15 min</td><td>30 min</td></tr>
</table>


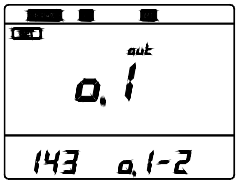
</td></tr>
<tr><td>142

144</td><td>Demand power, upper 1

Demand power, upper 2</td><td>Set detection value of the upper detection 1 and the upper detection 2 of demand power.
<table>
<tr><th>Detection value</th></tr>
<tr><td>5...200% (1% step), OFF</td></tr>
</table>
(Rated active power at 100%, 1% step)
Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.


</td></tr>
<tr><td>143 (6)

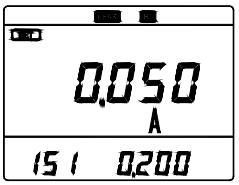
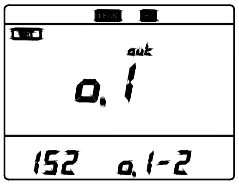
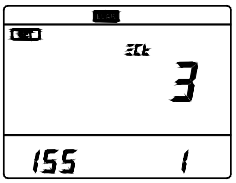
145 (6)</td><td>Demand power, upper 1 output

Demand power, upper 2 output</td><td>Set output allocation of upper detection 1 and upper detection 2 of demand power.
<table>
<tr><th colspan="2">Output</th></tr>
<tr><td>Contact output 1</td><td>o.1</td></tr>
<tr><td>Contact output 2</td><td>o.2</td></tr>
<tr><td>Contact output 1, 2</td><td>o.1-2</td></tr>
<tr><td>OFF</td><td>oFF</td></tr>
</table>
Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.


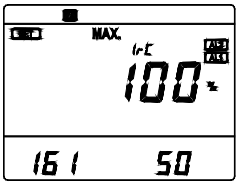
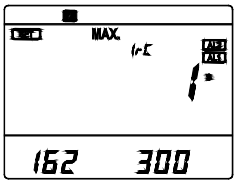
</td></tr>
</table>

Note(6) This setting is [111 contact 1 function], [114 contact 2 function] is valid at the time of the alarm output.

(6) Leakage current detection

No.	Setting item	Contents of setting
151 153	Leakage sensitivity current 1 Leakage sensitivity current 2	Set sensitivity current 1 and sensitivity current 2 of the leakage current detection. Setting value is selecting in the 【＋】【－】. To update the setting value in the 【SET】. Sensitivity current: OFF (oFF) / 0.050A / 0.100A / 0.200A / 0.400A / 0.800A 
152 (7) 154 (7)	Leakage sensitivity current 1 output Leakage sensitivity current 2 output	Set output allocation of detection 1 and detection 2 of leakage sensitivity current. Setting value is selecting in the 【＋】【－】. To update the setting value in the 【SET】. Output: Contact output 1 / o.1; Contact output 2 / o.2; Contact output 1, 2 / o.1-2; OFF / oFF 
155	Use ZCT selection	Set ZCT to use for leakage current measurement. Setting value is selecting in the 【＋】【－】. To update the setting value in the 【SET】. ZCT: Type 1 — OTG series (OMRON Corporation) / ZR series (Hitachi Industrial Equipment Systems Co.,Ltd.) / ZB, ZD series (TAIWA ELECTRIC INDUSTRIES CO.,LTD) → 1; Type 2 — M, BM, SM series (HIKARI TRADING CO.,LTD.) → 2; Type 3 — Circuit breaker [BW125] (Fuji Electric Co.,Ltd.) → 3 

(7) Inrush current mask

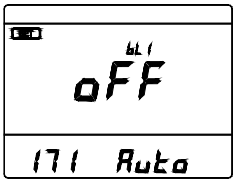
No.	Setting item	Contents of setting
161	Inrush current mask level	Set detection value of the inrush current. Detection value: 1...100% (1% step), OFF (Rated current at 100%, 1% step) Setting value is selecting in the 【＋】【－】. To update the setting value in the 【SET】. 
162	Inrush current mask time	Set mask time after the inrush current detection. During mask, maximum value of each measurement is not updated and alarm output is not performed. Mask time: 0...300 s (1 s step) Setting value is selecting in the 【＋】【－】. To update the setting value in the 【SET】. 

Note(7) This setting is [111 contact 1 function], [114 contact 2 function] is valid at the time of the alarm output.

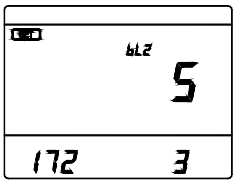
(8) Backlight

No.	Setting item	Contents of setting
171	Backlight action	Set backlight action. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Auto Off : When no operation is performed for 5 minutes switch, backlight will lights off automatically. It should be noted that, by the operation of each switch, and then lights on the backlight.
172	Backlight luminance	Set luminance of the backlight. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】.

Backlight action	
Auto off	Auto
Always-on	on
Always-off	oFF

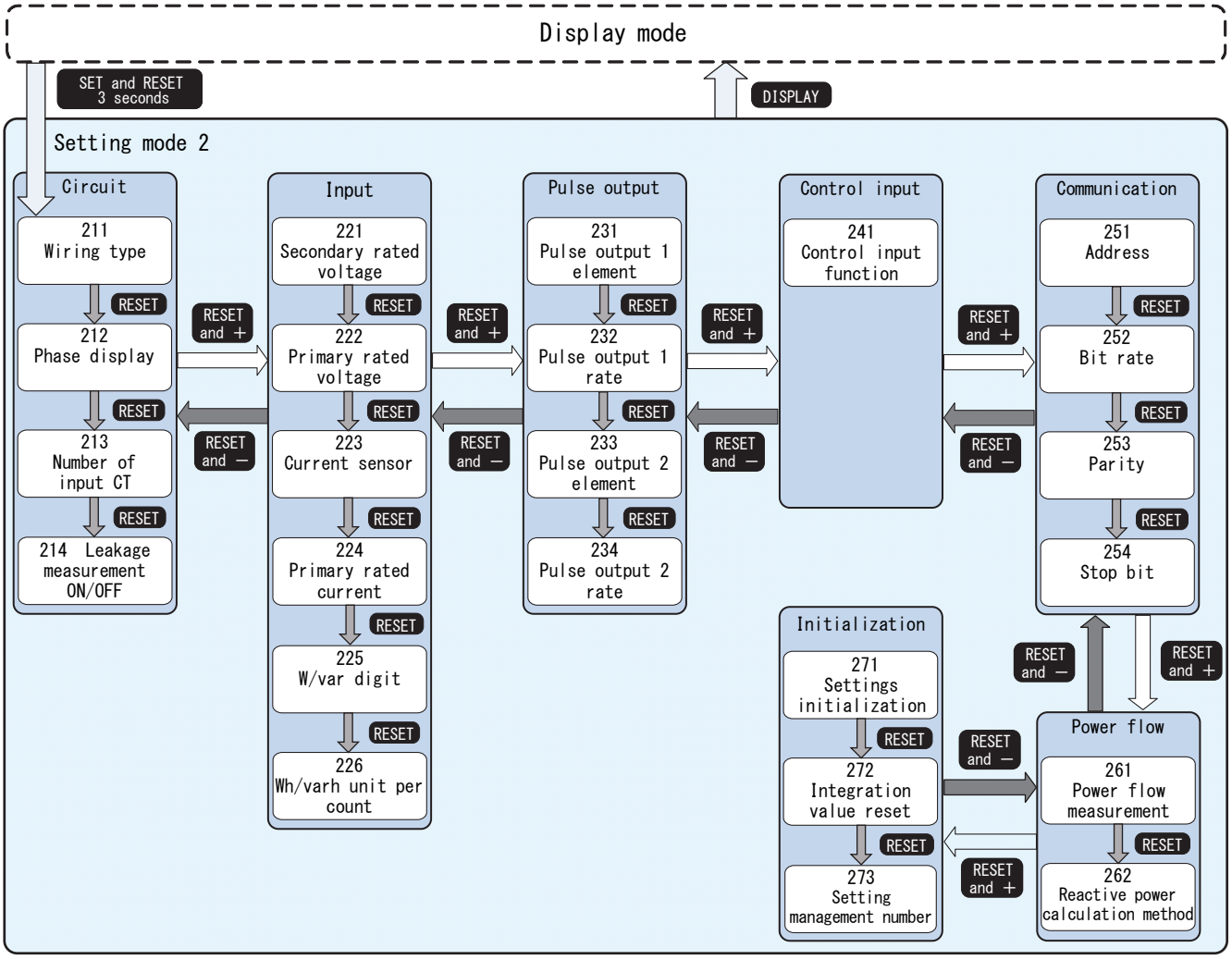


Backlight luminance	
Bright	5
	4
	3
	2
Dark	1



7.2 Setting mode 2
(Circuit, Input, Pulse output, Control input, Communication output, Initialization, etc.)

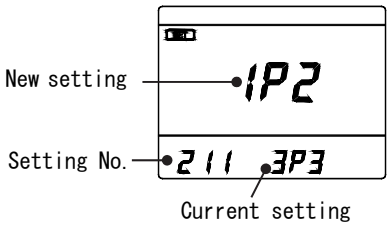
(1) Setting mode 2 flowchart



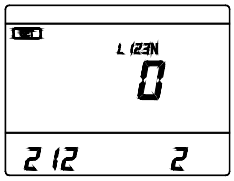
(2) Circuit

<table>
<tr><th>No.</th><th>Setting item</th><th>Contents of setting</th></tr>
<tr><td>211</td><td>Wiring type</td><td>Set wiring type of the input circuit.

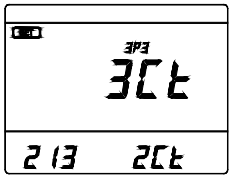
Setting value is selecting in the【+】【−】.
To update the setting value in the【SET】.

<table>
<tr><th colspan="2">Input circuit</th></tr>
<tr><td>3 phase 4 wire</td><td>3P4</td></tr>
<tr><td>3 phase 3 wire</td><td>3P3</td></tr>
<tr><td>1 phase 3 wire</td><td>1P3</td></tr>
<tr><td>1 phase 2 wire</td><td>1P2</td></tr>
</table>

</td></tr>
<tr><td>212</td><td>Phase display</td><td>Set display method of phase and line.

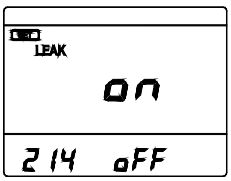
Setting value is selecting in the【+】【−】. To update the setting value in the【SET】.

<table>
<tr><th colspan="2">Phase display</th></tr>
<tr><td>L123N</td><td>0</td></tr>
<tr><td>RSTN</td><td>1</td></tr>
<tr><td>UVWN</td><td>2</td></tr>
</table>

</td></tr>
<tr><td>213 (8)</td><td>Number of input CT</td><td>Set number of input CT at the time of use in a 3 phase 3 wire circuit.

Setting value is selecting in the【+】【−】. To update the setting value in the【SET】.

<table>
<tr><th colspan="2">Number of input CT</th></tr>
<tr><td>2CT</td><td>2Ct</td></tr>
<tr><td>3CT</td><td>3Ct</td></tr>
</table>

</td></tr>
<tr><td>214</td><td>Leakage measurement ON/OFF</td><td>Set ON/OFF of the leakage measurement.

Setting value is selecting in the【+】【−】.
To update the setting value in the【SET】.

<table>
<tr><th colspan="2">Leakage measurement</th></tr>
<tr><td>Leakage measurement</td><td>on</td></tr>
<tr><td>Not leakage measurement</td><td>oFF</td></tr>
</table>


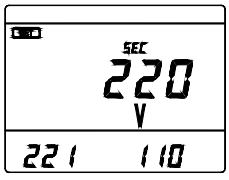
When set to "OFF", leakage current is not displayed.</td></tr>
</table>

Note(8) This setting is 【211 Wiring type】 is valid at the time of the 3 phase 3 wire.

(3) Input

<table>
<tr><th>No.</th><th>Setting item</th><th>Contents of setting</th></tr>
<tr><td>221</td><td>Secondary rated voltage</td><td>Set secondary rated voltage according to the VT to be used.

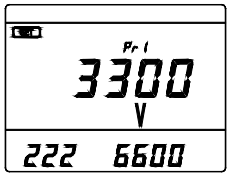
Setting value is selecting in the【+】【−】.
To update the setting value in the【SET】.

<table>
<tr><th>Secondary rated voltage</th></tr>
<tr><td>110 V</td></tr>
<tr><td>220 V</td></tr>
<tr><td>440 V</td></tr>
</table>


<Note> In case of use in the direct connection. The primary rated voltage setting and the secondary rated voltage setting, please set to the same value.</td></tr>
<tr><td>222</td><td>Primary rated voltage</td><td>Set primary rated voltage for the secondary rated voltage.

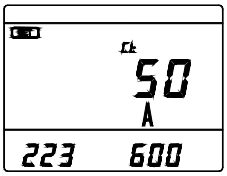
Setting value is selecting in the【+】【−】.
To update the setting value in the【SET】.

<Note> In case of use in the direct connection.
The primary rated voltage setting and the secondary rated voltage setting, please set to the same value.

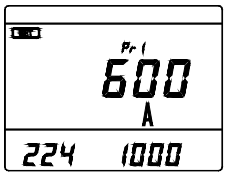


<table>
<tr><th>No.</th><th>Rating</th><th>No.</th><th>Rating</th><th>No.</th><th>Rating</th><th>No.</th><th>Rating</th><th>No.</th><th>Rating</th><th>No.</th><th>Rating</th></tr>
<tr><td>1</td><td>110.0 V</td><td>6</td><td>400 V</td><td>11</td><td>690 V</td><td>16</td><td>2200 V</td><td>21</td><td>6.60 kV</td><td>26</td><td>18.40 kV</td></tr>
<tr><td>2</td><td>110 V</td><td>7</td><td>415 V</td><td>12</td><td>880 V</td><td>17</td><td>2.20 kV</td><td>22</td><td>11.00 kV</td><td>27</td><td>20.00 kV</td></tr>
<tr><td>3</td><td>220.0 V</td><td>8</td><td>440 V</td><td>13</td><td>990 V</td><td>18</td><td>3300 V</td><td>23</td><td>13.20 kV</td><td>28</td><td>22.00 kV</td></tr>
<tr><td>4</td><td>220 V</td><td>9</td><td>460 V</td><td>14</td><td>1100 V</td><td>19</td><td>3.30 kV</td><td>24</td><td>13.80 kV</td><td></td><td></td></tr>
<tr><td>5</td><td>380 V</td><td>10</td><td>480 V</td><td>15</td><td>1650 V</td><td>20</td><td>6600 V</td><td>25</td><td>16.50 kV</td><td></td><td></td></tr>
</table></td></tr>
</table>

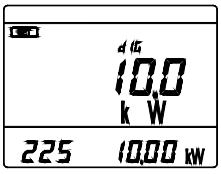
<table>
<tr><th>No.</th><th>Setting item</th><th>Contents of setting</th></tr>
<tr><td>223 (9)</td><td>Current sensor</td><td>
Set the current sensor to be used.

Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.
<table>
<tr><th>Current sensor</th></tr>
<tr><td>5 A</td></tr>
<tr><td>50 A</td></tr>
<tr><td>100 A</td></tr>
<tr><td>200 A</td></tr>
<tr><td>400 A</td></tr>
<tr><td>600 A</td></tr>
</table>


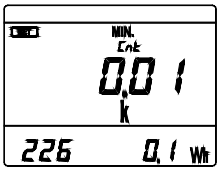
</td></tr>
<tr><td>224</td><td>Primary rated current</td><td>
Set primary rated current.

Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.
<table>
<tr><th>No.</th><th>Rating (/5 A)</th><th>No.</th><th>Rating (/5 A)</th><th>No.</th><th>Rating (/5 A)</th><th>No.</th><th>Rating (/5 A)</th><th>No.</th><th>Rating (/5 A)</th></tr>
<tr><td>1</td><td>5.00 A</td><td>11</td><td>40.0 A</td><td>21</td><td>300.0 A</td><td>31</td><td>1600 A</td><td>41</td><td>7500 A</td></tr>
<tr><td>2</td><td>6.00 A</td><td>12</td><td>50.0 A</td><td>22</td><td>400 A</td><td>32</td><td>1800 A</td><td>42</td><td>8000 A</td></tr>
<tr><td>3</td><td>7.50 A</td><td>13</td><td>60.0 A</td><td>23</td><td>500 A</td><td>33</td><td>2000 A</td><td>43</td><td>9.00 kA</td></tr>
<tr><td>4</td><td>8.00 A</td><td>14</td><td>75.0 A</td><td>24</td><td>600 A</td><td>34</td><td>2500 A</td><td>44</td><td>10.00 kA</td></tr>
<tr><td>5</td><td>10.00 A</td><td>15</td><td>80.0 A</td><td>25</td><td>750 A</td><td>35</td><td>3000 A</td><td>45</td><td>12.00 kA</td></tr>
<tr><td>6</td><td>12.00 A</td><td>16</td><td>100.0 A</td><td>26</td><td>800 A</td><td>36</td><td>3500 A</td><td>46</td><td>15.00 kA</td></tr>
<tr><td>7</td><td>15.00 A</td><td>17</td><td>120.0 A</td><td>27</td><td>900 A</td><td>37</td><td>4000 A</td><td>47</td><td>20.00 kA</td></tr>
<tr><td>8</td><td>20.00 A</td><td>18</td><td>150.0 A</td><td>28</td><td>1000 A</td><td>38</td><td>4500 A</td><td>48</td><td>30.00 kA</td></tr>
<tr><td>9</td><td>25.00 A</td><td>19</td><td>200.0 A</td><td>29</td><td>1200 A</td><td>39</td><td>5000 A</td><td></td><td></td></tr>
<tr><td>10</td><td>30.00 A</td><td>20</td><td>250.0 A</td><td>30</td><td>1500 A</td><td>40</td><td>6000 A</td><td></td><td></td></tr>
</table>


</td></tr>
<tr><td>225</td><td>W/var digit</td><td>
Set display digit for active power / reactive power.

Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.
<table>
<tr><th>Display digit</th></tr>
<tr><td>3 digits</td></tr>
<tr><td>4 digits</td></tr>
</table>


</td></tr>
<tr><td>226</td><td>Wh/varh unit per count</td><td>
Set unit of the minimum count value of active energy display and communication data. The set unit counts as the least significant digit. [Max. 9 digits (999999999)]
If it exceeds the maximum value, counting from 0 again.

Setting value is selecting in the【＋】【－】.
To update the setting value in the【SET】.
<table>
<tr><th colspan="2">Full load power kW/kvar (10)</th><th colspan="4">Setting value kWh/kvarh</th></tr>
<tr><td colspan="2">Below 1</td><td>0.01</td><td>0.001</td><td>(12) 0.0001</td><td>(13) 0.000001</td></tr>
<tr><td>Over 1</td><td>Below 10</td><td>0.1</td><td>0.01</td><td>0.001</td><td>0.0001</td></tr>
<tr><td>Over 10</td><td>Below 100</td><td>1</td><td>0.1</td><td>0.01</td><td>0.001</td></tr>
<tr><td>Over 100</td><td>Below 1,000</td><td>(11) 10</td><td>1</td><td>0.1</td><td>0.01</td></tr>
<tr><td>Over 1,000</td><td>Below 10,000</td><td>(11) 100</td><td>(11) 10</td><td>1</td><td>0.1</td></tr>
<tr><td>Over 10,000</td><td>Below 100,000</td><td>(11) 1,000</td><td>(11) 100</td><td>(11) 10</td><td>1</td></tr>
<tr><td>Over 100,000</td><td>Below 1,000,000</td><td>Disable</td><td>(11) 1,000</td><td>(11) 100</td><td>(11) 10</td></tr>
<tr><td>Over 1,000,000</td><td>Below 10,000,000</td><td>Disable</td><td>Disable</td><td>(11) 1,000</td><td>(11) 100</td></tr>
</table>


</td></tr>
</table>

Note(9) In case of use in the circuit that exceeds the high-voltage circuit and 600 A.
Set the current sensor to 5 A, used in conjunction with the current transformer for the general purpose of the instrument.

Note(10) Full load power (kW/kvar) ＝ K × Primary rated voltage [V] × Primary rated current [A] × 10^{-3}
(K : 3 phase 3 wire / 3 phase 4 wire＝$\sqrt{3}$, 1 phase 3 wire＝2、1 phase 2 wire＝1)

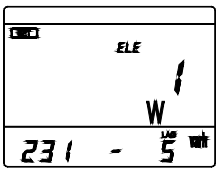
Note(11) Units of display and communication data of the integrated active energy is MWh / Mvarh.

Note(12) The liquid crystal is "0001kWh" display.

Note(13) The liquid crystal is "0.01Wh" display.

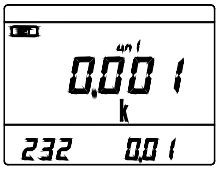
(4) Pulse output

No.	Setting item	Contents of setting
231 233	Pulse output 1 element Pulse output 2 element	Set output element of pulse output 1 and pulse output 2. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】.



Setting value		
OFF	—	oFF
Active energy (Receiving)	Wh	1
Active energy (Transmission)	-Wh	2
Reactive energy (Receiving LAG)	varh LAG	3
Reactive energy (Receiving LEAD)	varh LEAD	4
Reactive energy (Transmission LAG)	-varh LAG	5
Reactive energy (Transmission LEAD)	-varh LEAD	6

No.	Setting item	Contents of setting
232 234	Pulse output 1 rate Pulse output 2 rate	Set output pulse rate of pulse output 1 and pulse output 2. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】.



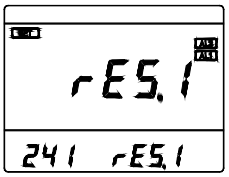
Full load power (kW, kvar) (14)		Setting value, kWh(kvarh)/pulse			
	Below 1	0.1	0.01	0.001	(15) 0.0001
Over 1	Below 10	1	0.1	0.01	0.001
Over 10	Below 100	10	1	0.1	0.01
Over 100	Below 1,000	100	10	1	0.1
Over 1,000	Below 10,000	1,000	100	10	1
Over 10,000	Below 100,000	10,000	1,000	100	10
Over 100,000	Below 1,000,000	100,000	10,000	1,000	100
Over 1,000,000	Below 10,000,000	1,000,000	100,000	10,000	1,000

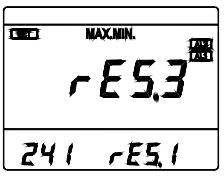
Note(14) Full load power (kW/kvar) = K × Primary rated voltage [V] × Primary rated current [A] × 10^{-3}
(K : 3 phase 3 wire / 3 phase 4 wire=√3, 1 phase 3 wire=2, 1 phase 2 wire=1)

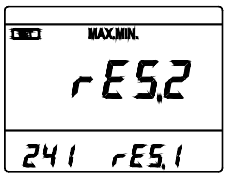
Note(15) The liquid crystal is "0001kWh" display.

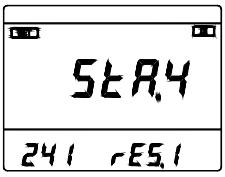
(5) Control input

No.	Setting item	Contents of setting
241	Control input function	Set function of the control input. Setting value is selecting in the【+】【−】. To update the setting value in the【SET】.



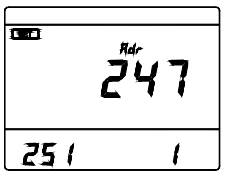
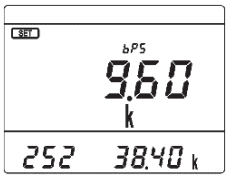
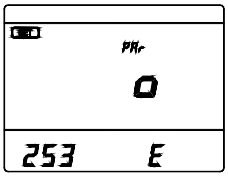
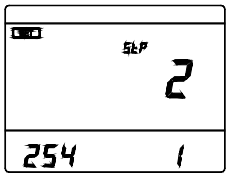




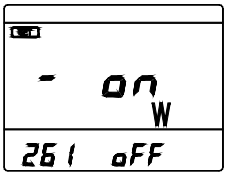
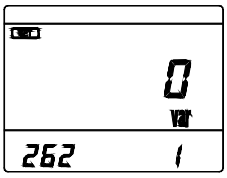


Function of control input	
Alarm reset	rES.1
Maximum / Minimum value reset	rES.2
All reset (Alarm, Max./Min. value)	rES.3
State input	StA.4

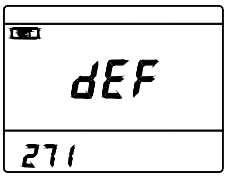
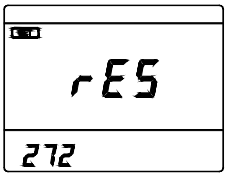
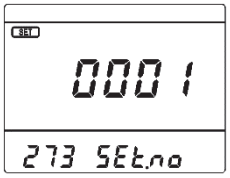
(6) Communication

No.	Setting item	Contents of setting
251	Address	Set address of the device in MODBUS communication output. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Address: 1 ...247 
252	Bit rate	Set bit rate (bps) of the MODBUS communication output. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Bit rate: 4800bps 4.80k; 9600bps 9.60k; 19200bps 19.20k; 38400bps 38.40k 
253	Parity	Set parity of the MODBUS communication output. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Parity: Nothing —; Even number E; Odd number o 
254	Stop bit	Set stop bit of the MODBUS communication output. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Stop bit: 1 bit 1; 2 bit 2 

(7) Power flow

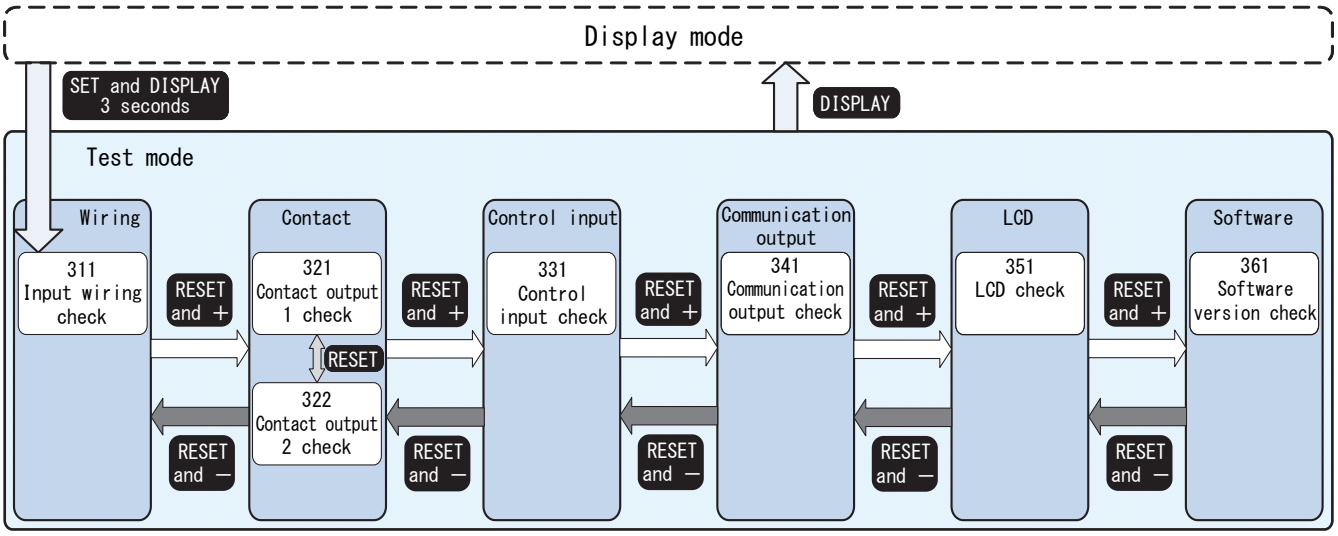
No.	Setting item	Contents of setting
261	Power flow measurement	Set power flow measurement with an awareness of the transmission / receiving of reactive power and power factor. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Power flow measurement: General measurement oFF; Power flow measurement on 
262	Reactive power calculation method	Set reactive power calculation method. Setting value is selecting in the【＋】【－】. To update the setting value in the【SET】. Rreactive power calculation method: Q=UIsinϕ 0; Q=√(S²-P²) 1 

(8) Initialization

No.	Setting item	Contents of setting
271	Settings initialization	Each setting value is initialized (return to the default settings). 
272	Integration value reset	Resets each active energy and reactive energy (= 0). Press the【SET】3 seconds to reset all of the integrated value. 〔Wh, -Wh, varh (LAG), -varh (LAG), varh (LEAD), -varh (LEAD)〕 
273	Setting management No.	If the setting by the communication has been made, to display the [setting management No.] is specified from the host. Settings can be used, such as the management of data. <Note> Setting management No. cannot be changed by the main part. When other setup is changed by the main part, a setting management No. is also changed into 0000. 

8 Test mode

Test mode is equipped with features that can be utilized, such as during start-up of equipment.

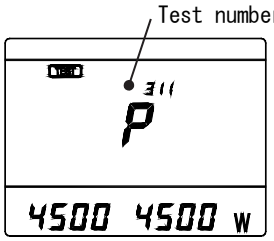


(1) Input wiring check

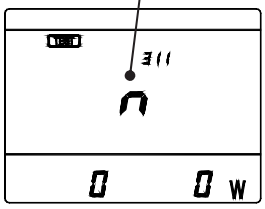
The connection state of voltage input and current input can be check.
Displays each phase of the active power value, and phase sequence of voltage.
Therefore, it will easily determine the mistake of connection of input.
Display example (3 phase 3 wire)
Main-monitor : Positive phase sequence "P" (Positive),
Negative phase sequence "n" (Negative),
Display when no input : "----"
(In case of 3φ4W, 1φ3W,
1φ2W circuit : "----")
Sub-monitor (left) : L1 phase of active power
Sub-monitor (right) : L3 phase of active power

<Note> All connection mistake can not determine.

In the case of negative phase order, "n" flashes



[Positive phase sequence]

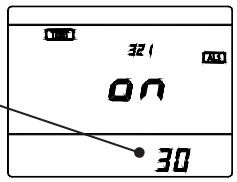


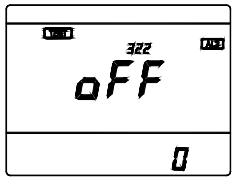
[Negative phase sequence]

(2) Contact output check

Measurement (voltage, current) with no input, can check the operation of pulse output and alarm output.
The operation of contact output 1 can be check by the "321".
The operation of contact output 2 can be check by the "322".
〔Pulse output〕
『OFF (oFF)』: Pulse output OFF
『ON (on)』 : Pulse output (pulse width 250 ms) is output every second. And also displays the number of output pulses.
〔Alarm output〕
『OFF (oFF)』: Contact OFF
『ON (on)』 : Contact ON
Switch the 『OFF (oFF)』 ⇔ 『ON (on)』 in the【SET】switch.
Please use it, such as the connection confirmation of the connection destination.

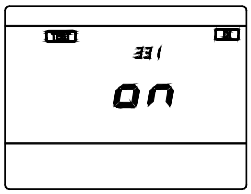
The number of output pulses (in the case of a pulse output)





(3) Control input check

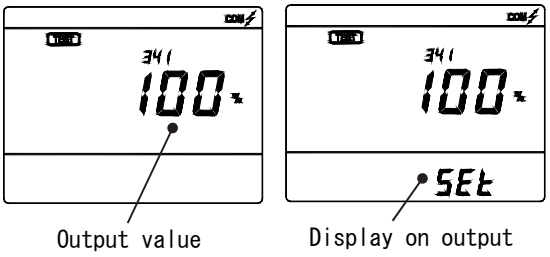
Check of control input
State of the control input is displayed on the screen.
『OFF (oFF)』: Control input OFF
『ON (on)』 : Control input ON



(4) Communication output check

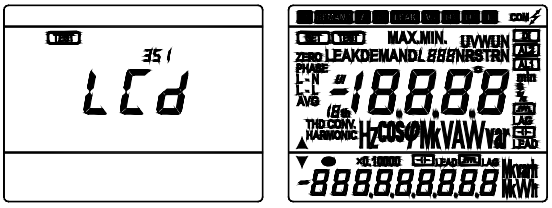
Check of communication output
Measurement (voltage, current) with no input, numeric data of fixed communication output (0%, 50%, 100%, SEq) will be able to reply.
Select the numeric data in the【＋】【－】switch, and press the 【SET】switch, the measurement data of all measuring elements have been changed.
Numerical data : 0% (measurement data 0), 50% (measurement data 5000) 100% (measurement data 10000), SEq (sequence number)

Please use it, such as counter test of the host system.
With regard to the sequence number, please refer to the "SQLC-72L Communication Specifications".



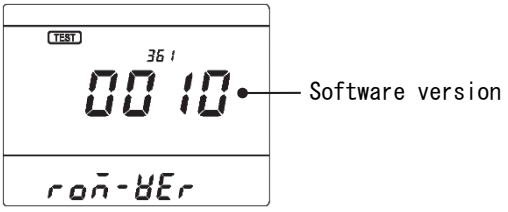
(5) LCD check

Check of LCD
The LCD can be check.
Every time the【SET】switch is pressed, display is switched over.



(6) Software version check

Software version
Version of the software can be check.



9 Specifications

(1) Rating

Item			Specifications		Note
Input circuit			Common use for 3 phase 4 wire [3φ4W], 3 phase 3 wire [3φ3W] (2VT2CT, 2VT3CT), 1 phase 3 wire [1φ3W], 1 phase 2 wire [1φ2W]		Settable
Input	Rated voltage	3φ3W 1φ2W	Common use for 110 V AC, 220 V AC, 440 V AC, 50/60 Hz		Settable
		1φ3W	100-200 V AC 50/60 Hz		
		3φ4W	Common use for 110/√3 V AC, 220/√3 V AC, 440V/√3 V AC 50/60 Hz		
	Rated current		Current sensor	5 A, 50/60 Hz	Settable
				50 A, 50/60 Hz	
				100 A, 50/60 Hz	
				200 A, 50/60 Hz	
				400 A, 50/60 Hz	
				600 A, 50/60 Hz	
	Leakage current		Rated sensed current	0.05 A / 0.1 A / 0.2 A / 0.4 A / 0.8 A	
			Low-voltage zero-phase current transformer (ZCT)	OMRON Corporation : OTG series	Settable
				Hitachi Industrial Equipment Systems Co.,Ltd : ZR series	
				TAIWA ELECTRIC INDUSTRIES CO.,LTD : ZB, ZD series	
				HIKARI TRADING CO.,LTD : M, BM, SM series (low-voltage)	
				FUJI ELECTRIC CO.,LTD : Circuit Breaker (BW125)	
	Control input (DI)		Non-voltage contact input : 1ch, Contact capacity : 24 V DC, Approx. 10 mA		
Output	Communication output		MODBUS RTU RS-485 Half-duplex two-wire system, asynchronous communication method.		
	Contact output (16)		2ch Optical MOS-FET relay, Normally-open contact, Contact capacity : 30 V DC, 70 mA		
Auxiliary supply	Auxiliary supply range and power consumption		[1] 85...264 V AC (Rated voltage. 100/110 V AC, 4 VA) 50/60 Hz (Rated voltage. 200/220 V AC, 5 VA) 50/60 Hz 80...143 V DC (Rated voltage. 100/110 V DC, 2 W)		Specify either [1] or [2]
			[2] 20...56 V DC (Rated voltage. 24 V DC, 3.5 W) (Rated voltage. 48 V DC, 3 W)		
	Inrush current (time constant)		110 V AC : 2.2 A or less (Approx. 3 ms) 220 V AC : 4.4 A or less (Approx. 3 ms) 110 V DC : 1.6 A or less (Approx. 3 ms) 24 V DC : 2.7 A or less (Approx. 2.2 ms) 48 V DC : 5.3 A or less (Approx. 2.2 ms)		

Note(16) Rated contact output is 30V DC, 70 mA, but can be used up to 125 V AC/DC, 70mA.

(2) Measurement function

Measurement item	Measurement possible item (1, 2, 3, N : Phase, Σ : Total)				Class index (17) (18)	Max.	Min.	Note
	3φ3W	1φ3W	1φ2W	3φ4W				
Voltage	U12, U23, U31, ULLavg	U1N, U3N, U13, ULNavg	U	U12, U23, U31, ULLavg, U1N, U2N, U3N, ULNavg	0.5	○	○	Select setting of phase display. 「L1-2-3-N」, 「R-S-T-N」, 「U-V-W-N」
Current	I1, I2, I3, Iavg	I1, I3, IN, Iavg	I	I1, I2, I3, IN, Iavg	0.5	○	○	
Demand current	Id1, Id2, Id3, Idavg	Id1, Id3, IdN, Idavg	Id	Id1, Id2, Id3, IdN, Idavg	0.5	○	○	
Active power	ΣP		P	ΣP, P1, P2, P3	0.5	○	○	
Demand power	ΣPd		Pd	ΣPd, Pd1, Pd2, Pd3	0.5	○	○	
Reactive power	ΣQ		Q	ΣQ, Q1, Q2, Q3	0.5	○	○	Select the calculation method. $Q=UI\sin\phi$ or $Q=\sqrt{(S^2-P^2)}$
Apparent power	ΣS		S	ΣS, S1, S2, S3	0.5	○	○	The voltage balances of 3-phase 3-wire are conditions.
Power factor	ΣPF		PF	ΣPF, PF1, PF2, PF3	1.5	○	○	「----」 is displayed at the case of low input.
Frequency	f				0.5	○	○	0.0Hz is displayed at the case of low input.
Leakage current	Io				2.5 (19)	○	—	0A is displayed when an input is 3 mA or less.
Active energy	Receiving / Transmission				2.0	—	—	Receiving / Transmission is measured individually.
Reactive energy	Receiving (LAG·LEAD) / Transmission (LAG·LEAD)				2.0	—	—	Receiving (LAG/LEAD) and Transmission (LAG/LEAD) is measured individually.

Note(17) If not specified, the intrinsic error of the digital display is % to full scale and the output is % to output span. Also, based on principle operation, if the following inverter output is measured directly, error will become larger. Cycle control SCR phase angle control, PWM.

Note(18) Apply to the product only. Does not include error of current sensor, ZCT.

Note(19) If rated sensed current of leakage current is 0.05 A AC, class index becomes 5.0.

(3) Detailed specification

Item		Specification, Performance
Conformity standards		Transducer IEC 60688 : 2012, JIS C 1111 : 2006 Active energy IEC 62053-21 : 2003, JIS C 1271-1 : 2011 Reactive energy IEC 62053-23 : 2003, JIS C 1273-1 : 2011
CE marking		EMC Directive (2014/30/EU) EN61000-6-2 , EN61000-4-2, -3, -4, -5, -6, -8, -11 EN61000-6-4 , EN55011 class A, Group1 Low Voltage Directive (2014/35/EU) EN61010-1
Safety		IEC 61010-1 : 2010 Measurement Category Ⅲ, Maximum use voltage : 300V (line to neutral), Pollution degree 2
Operating method		Current, Voltage : RMS value computing type. Demand current : Arithmetic method according with bimetallic type (Time to reach 95 % of a final constant value) Demand power : Average value within the demand interval Active power, Active energy : Time-division multiplication method Reactive power, reactive energy : Time division multiplication method ($Q=UI\sin\phi$) or the method for calculating from the power and apparent power [$Q=\sqrt{(S^2-P^2)}$]. (Selected in the setting) Apparent power : Calculates for voltage and current Power factor : Calculates for power and reactive power Frequency : Zero cross cycle computing type Leakage current : Fundamental-wave RMS value computing type
Display updating time		1 second
Influence of temperature		Usage group I 10...35 ℃ : Within class index. 0...45 ℃ : Within two times of a class index. -10...55 ℃ : Within three times of a class index.
Interval setting	Demand current	0 s / 5 s / 10 s / 20 s / 30 s / 40 s / 50 s / 1 min / 2 min / 3 min / 4 min / 5 min / 6 min / 7 min / 8 min / 9 min / 10 min / 15 min / 20 min / 25 min / 30 min. The response time for time limit 0 second is less than 1 second.
	Demand power	
Contact output	Output	2ch
	Output form	Optical MOS-FET relay, Normally-open contact
	Contact capacity (20)	30 V DC, 70 mA (Resistance load, Inductive load)
	Output factor	Pulse output or Alarm output or OFF (not used) (Seting for each contact outputs)
	Return method	Auto or Manual (Setting for each contact outputs) Only the alarm output.
	Contact delay time	0...300 s (1 s step) (Setting for each contact outputs) Only the alarm output.
Pulse output	Output measurands	Active energy (Receiving / Transmission), Reactive energy (Receiving LAG / Transmission LAG / Receiving LEAD / Transmission LEAD)
	Output form	Optical MOS-FET relay, Normally-open contact
	Pulse width	250±10 ms (When the output pulse period of rated power constitutes speed more than 2 pulse / second by setting of an VT ratio, a CT ratio and output pulse rate, an output pulse width is 100...130 ms.)
	Output pulse rate	Output pulse rate can be selected in the follwing ranges. ・3φ3W, 3φ4W : Full load power (kW, kvar) = $\sqrt{3}$ × Rated voltage (V) × Rated current (A) × 10^{-3} ・1φ3W : Full load power (kW, kvar) = 2 × Rated voltage (V) × Rated current (A) × 10^{-3} ・1φ2W : Full load power (kW, kvar) = Rated voltage (V) × Rated current (A) × 10^{-3}

Full load power (kW, kvar)		Output pulse rate, kWh (kvarh) /pulse			
Below 1		0.1	0.01	0.001	0.0001
Over 1	Below 10	1	0.1	0.01	0.001
Over 10	Below 100	10	1	0.1	0.01
Over 100	Below 1,000	100	10	1	0.1
Over 1,000	Below 10,000	1,000	100	10	1
Over 10,000	Below 100,000	10,000	1,000	100	10
Over 100,000	Below 1,000,000	100,000	10,000	1,000	100
Over 1,000,000	Below 10,000,000	1,000,000	100,000	10,000	1,000

Note(20) Rated contact output is 30 V DC, 70 mA but can be used up to 125 V AC/DC, 70 mA.

Item				Specification, Performance
Alarm output	Current	Detection factor		Upper 1, Upper 2, Lower. (Set individually)
		Function		Measurement value ≧ Upper setting value, alarm display and output. (OR output of each phase) Measurement value ≦ Lower setting value, alarm display and output. (OR output of each phase)
		Setting range		1...200 % of the rated. (1 % step), OFF
		Lower detection exclude function		Lower detection is excepted by current 0 A. ON (Exception : Without detection), OFF (Without exception : Detection)
		Hysteresis		2 % (% to rating)
	Demand current Demand power	Detection factor		Upper 1, Upper 2. (Set individually)
		Function		Demand measurement value ≧ Alarm display and output with upper setting value (OR output of each phase)
		Setting range		5...200 % of the rated. (1 % step), OFF
		Hysteresis		2 % (% to rating)
	Leakage current	Detection factor		Sensed current 1, Sensed current 2. (Set individually)
		Function		A leakage current measurement value reaches in a sensed current, and an alarm will be carried out if the operating time passes.
		Sensed current		50 % ＜ 100 % (% to rated sensed current value)
		Rated sensed current value		0.05 A / 0.1 A / 0.2 A / 0.4 A / 0.8 A
		Operating time		Time-delay type (0.1 s ＜ 2 s)
Control input	Specification	Input point		1ch
		Input rating		Non-voltage contact input (24 V DC, 10 mA)
		Minimum operation pulse width		300 ms, Continuation applying is possible.
		Function setting		Setting to the following function is possible.
	Function	Alarm output reset		All the outputs of an alarm output (when a return method is manual return) are reset.
		Maximum / minimum value reset		All maximums and minimum values are reset.
		ALL reset		An alarm output, and maximum/minimum value are reset.
		State input		The state of control input is outputted to a MODBUS communication output.
Communication output		Output		1ch
		Communication system		RS-485 Half-duplex two-wire system, asynchronous communication method.
		Protocol		MODBUS RTU mode (The details of the protocol, please refer to the communication specification)
		Bit rate		4800 bps / 9600 bps / 19200 bps / 38400 bps
		Transmission code		NRZ
		Start bit		1 bit
		Data bit		8 bit
		Parity		Nothing / Even number / Odd number
		Stop bit		1 bit / 2 bit
		Transmission character		Binary
		Cable length		1000 m (Max.)
		Address		1...247 (Max. connectable : 31 units)
		Error detection		CRC-16 ($X^{16}+X^{15}+X^{2}+1$)
		Termination resistor		100 Ω, 1 W, Install to the terminal. (Accessory)
Test function		Communication output		Without any input, and outputs measured value of communication output. 0, 50, 100%, SEQ output. SEQ : Send the sequence number
		Contact output	Pulse output	Without any input, and outputs an pulse output (1...2 individual). 1s / 1pulse (pulse width : 250 ms)
			Alarm output	The ON / OFF the alarm output without adding input. Switching at the front switch
		Input wiring		Displays the input wiring state and voltage phase state (positive phase, negative phase) and each phase of the power value
		Control input		To view the state of the control input (DI)

Item		Specification, Performance	
Display	LCD	Main-monitor : 4,1/2 digits Character height : 10 mm Sub-monitor : 9 digits Character height : 6 mm	
		LCD view angle : Upper and lower view angle 75 ° , Right and left view angle 75 °	
	Backlight	White backlight Backlight can select brightness from five steps of 1 to 5. Always-on, Auto off (after 5 minutes without operating), Always-off. Setting is possible	
Power interruption backup		Maximum value, Minimum value, Active energy, Reactive energy, Each setting value. Maintained in nonvolatile memory.	
Insulation resistance		Between auxiliary supply, AC input and ground. (Communication, contact output, control input is grounding.)	50 MΩ or more at 500 V DC
		Between auxiliary supply and AC input, control input, communication output, contact output.	
		Between communication output, contact output and control input.	
		Between contact outputs.	
Voltage test		Between auxiliary supply, AC input and ground. (Communication, contact output, control input is grounding.)	2210 V AC (50/60 Hz) 5 seconds
		Between auxiliary supply and AC input, control input, communication output, contact output.	
		Between communication output, contact output and control input.	500 V AC (50/60 Hz) 5 seconds
		Between contact outputs.	
Impulse voltage test		Between auxiliary supply, AC input and ground. (Communication, contact output, control input is grounding.)	6 kV 1.2/50 μs
		Between auxiliary supply and AC input, control input, communication output, contact output.	
		Between AC input and auxiliary supply, control input, communication output, contact output.	
		Between auxiliary supply terminals. (Other circuit grounding)	
		Between AC input terminals. (Other circuit grounding)	
Damped oscillatory wave immunity test IEC61000-4-12		Peak voltage : 2.5 kV, frequency : 1 MHz ±10 %, Add 3 times for 30 seconds. Error : Within ±10 %. And, malfunction and communication stop must not occur. ・Auxiliary supply circuit (Normal / Common) ・AC voltage input circuit (Normal / Common) ・AC current input circuit (Common)	
Square impulse immunity test For B-402 Standards		Add noise (1μs, 100 ns width) repeatedly for 5 minutes. Error : Within ±10 %. And, malfunction and communication stop must not occur. ・Auxiliary supply circuit (Normal / Common) 1.5 kV or more ・AC voltage input circuit (Normal / Common) 1.5 kV or more ・AC current input circuit (Common) 1.5 kV or more ・Contact output circuit (Common) 1.0 kV or more ・Control input circuit (Common) 1.0 kV or more ・Communication output circuit (Induction) 1.5 kV or more	
Radio wave immunity test		Radio wave band : 5W, 1m on 150 MHz, 400 MHz band. Cellular phone, wireless LAN : 2.4 GHz, 5 GHz band. Continued irradiation with radio wave on 0.5 m. Error : Within ±10 %. And, malfunction and communication stop must not occur.	
Electrostatic discharge immunity test IEC 61000-4-2		Usually, it tests by the busy condition. When powered up. Air discharge : 15 kV, Contact discharge : 8 kV, a error is within ±10 %. And, malfunction and communication stop must not occur. Capacitor charge system	
Vibration		IEC 60068-2-6 : 2007 Frequency range : 10...55 Hz, Single amplitude : 0.15 mm, Sweep cycle : 10 times	
Impact		IEC 60068-2-27 : 2008 Peak acceleration : 500 m/s^2	
Input consumption VA	Voltage input	0.03 VA or less (110 V AC) 0.09 VA or less (220 V AC) 0.35 VA or less (440 V AC)	
Overload capacity	Voltage input	2 times 10 seconds and 1.2 times continuation of rated voltage.	
	Auxiliary supply	1.5 times 10 seconds and 1.2 times continuation of rated voltage. (AC) 1.5 times 10 seconds and 1.3 times continuation of rated voltage. (DC)	

Item		Specification, Performance
Construction	Case outline	72×72×85 mm (W×H×D)
	Mass	Approx. 250g
	Material	Case : ABS (V-0) , Cocer : ABS (V-0) , Terminal board : Nylon6.6
	Terminal block	Spring pressure terminal block
	Protection rating	IP40
Operating temperature and humidity limits		-10...+55℃, 5...90 % RH (Non condensing)
Storage temperature limits		-25...+70℃

(4) Measuring range

Measurands	Measuring range		Low input cut	Limiter (Upper:Display, lower : Communication)
Line voltage	Secondary rating 110 V	0...150 V	Less than 20% of full scale	101% of full scale
	Secondary rating 220 V	0...300 V		10100
	Secondary rating 440 V	0...600 V		
Phase voltage	Secondary rating 110 V	3φ4W : 0...150/√3 V 1φ3W : 0...150 V	Less than 20% of full scale	101% of full scale
	Secondary rating 220 V	3φ4W : 0...300/√3 V		5831
	Secondary rating 440 V	3φ4W : 0...600/√3 V		
Current, Demand current	0...Current sensor rating		Less than 0.5% of the rated	201% of the rated
				20100
Active power Demand power Reactive power	- rated power ...0... + rated power Rated power [kW] = VT ratio × CT ratio ・VT ratio : Primary rated voltage/110 ・CT ratio : Primary rated current/5		Less than ±0.5% of the rated	-201%, +201% of the rated
				-20100, 20100
Apparent power	0...+ rated power Rated power [kW] = VT ratio × CT ratio ・VT ratio : Primary rated voltage/110 ・CT ratio : Primary rated current/5		Less than 0.5% of the rated	0%, +201% of the rated
				0, 20100
Power factor	LEAD 0...1...LAG 0		"----" is displayed (out of measurement range) when it is 20% or less of the voltage full scale or 2% or less of the current rating.	LEAD 0.000, LAG 0.000 「----」is displayed of low input.
				0, 10000 FFFFH for low input.
Frequency	45...65 Hz		At 20% or less of the voltage full scale, 0 Hz	44.80 Hz, 65.20 Hz 0Hz for low input.
				4480, 6520 0 for low input.
Leakage current	0...0.8 A		Less than 0.003 A	0.960A
				12000
Active energy	0...999999999 kWh (MWh) By the setting and the full load power, position and unit of the decimal point (k/M) is changed.		—	—
Reactive energy	0...999999999 kvarh (Mvarh) By the setting and the full load power, position and unit of the decimal point (k/M) is changed.		—	—

(5) Default settings

Setting mode : Setting 1		
No.	Item	Default setting
111	Contact output 1 function	OFF
112	Contact output 1 return method	AUTO : Automatic return
113	Contact output 1 delay time	0 second
114	Contact output 2 function	OFF
115	Contact output 2 return method	AUTO : Automatic return
116	Contact output 2 delay time	0 second
121	Current, upper 1	OFF
122	Current, upper 1 output	OFF
123	Current, upper 2	OFF
124	Current, upper 2 output	OFF
125	Current, lower	OFF
126	Current, lower output	OFF
127	OA detection exclude	ON : Exclude detection
131	Demand current, interval	0 second
132	Demand current, upper 1	OFF
133	Demand current, upper 1 output	OFF
134	Demand current, upper 2	OFF
135	Demand current, upper 2 output	OFF
141	Demand power, interval	0 second
142	Demand power, upper 1	OFF
143	Demand power, upper 1 output	OFF
144	Demand power, upper 2	OFF
145	Demand power, upper 2 output	OFF
151	Leakage sensitivity current 1	OFF
152	Leakage sensitivity current 1 output	OFF
153	Leakage sensitivity current 2	OFF
154	Leakage sensitivity current 2 output	OFF
155	Use ZCT selection	Type 1
161	Inrush current mask level	OFF
162	Inrush current mask time	0 second
171	Backlight action	AUTO : Automatic OFF
172	Backlight luminance	3

Setting mode : Setting 2		
No.	Item	Default setting
211	Wiring type	3P3:3 phase 3 wire
212	Phase display	1 : RSTN
213	The number of input CT	2CT
214	Leakage measurement ON/OFF	ON
221	Secondary rated voltage	220 V
222	Primary rated voltage	220.0 V
223	Current sensor	5 A
224	Primary rated current	5.00 A
225	W/var digit	4 digits
226	Wh/varh unit per count	0.1 Wh
231	Pulse output 1 element	OFF
232	Pulse output 1 rate	0.01 k
233	Pulse output 2 element	OFF
234	Pulse output 2 rate	0.01 k
241	Control input function	1 : Alarm reset
251	Address	1
252	Bit rate	9.60 kbps
253	Parity	E : Even number
254	Stop bit	1
261	Power flow measurement	OFF : General measurement
262	Reactive power calculation method	0 : $Q=UI\sin\phi$

10 Description of functions

10.1 Contact output

(1) Contact function

・Contact output can be set to pulse output or alarm output.

【Seting】No.111 Contact output 1 function
No.114 Contact output 2 function

(2) Alarm output

・Assign the output (output 1, output 2, output 1 and output 2) for each alarm setting.
(All of the alarm, can be output in the OR to contact output)

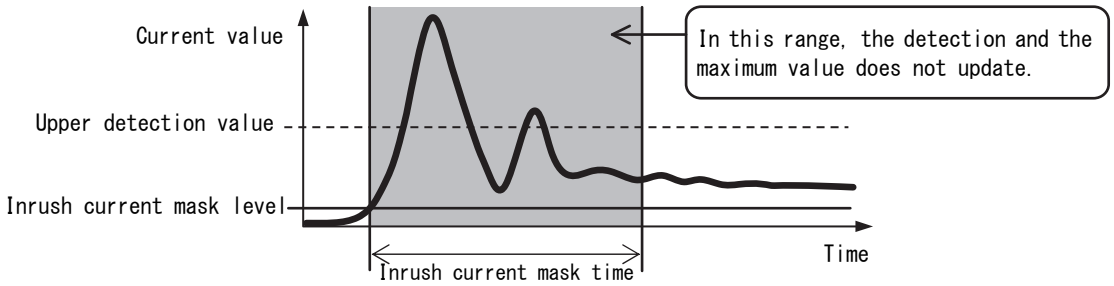
【Setting】No.122 Current, upper 1 output
No.124 Current, upper 2 output
No.126 Current, lower output
No.133 Demand current, upper 1 output
No.135 Demand current, upper 2 output
No.143 Demand power, upper 1 output
No.145 Demand power, upper 2 output
No.152 Leakage sensitivity current 1 output
No.154 Leakage sensitivity current 2 output

10.2 Inrush current mask function

・According to the a inrush current (such as a transformer a inrush current and motor starting current), it prevents the update of the alarm output and maximum value.

・Between the current value exceeds the a inrush current mask level of the mask time, the detection and the maximum value of each upper alarm does not update.

【Setting】No.161 Inrush current mask level
No.162 Inrush current mask time



10.3 Power flow measurement

・Set power flow measurement with an awareness of the transmission / receiving of reactive power and power factor.

【Setting】No.261 Power flow measurement

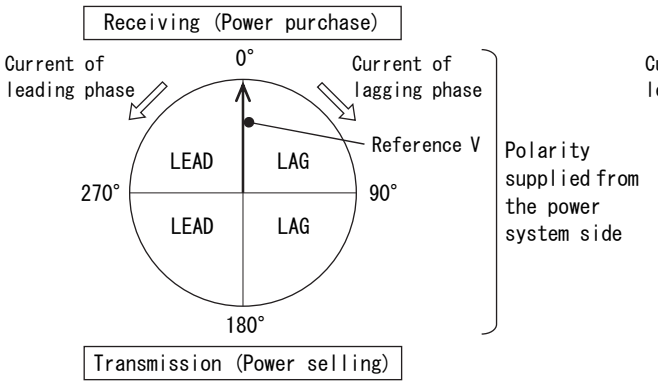
General measurement (OFF)

: Displays the polarity (LAG / LEAD) supplied from the power system side. (Both receiving and transmission)

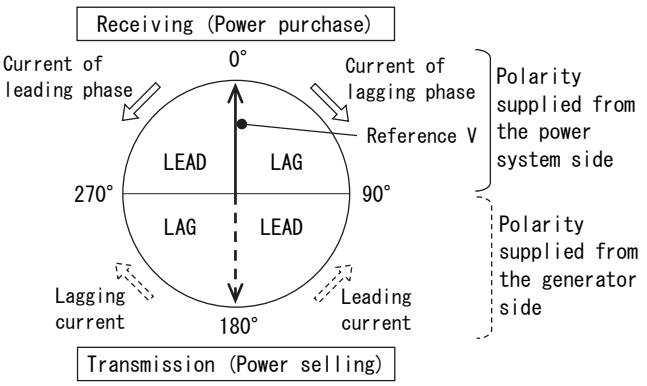
Power flow measurement (ON)

: Displays the polarity (LAG / LEAD) supplied from the power system side. (At receiving)
Displays the polarity (LAG / LEAD) supplied from the power generation side. (At transmission)

【Polarity display of the general measurement (OFF) setting】



【Polarity display of power flow measurement (ON) setting】



11 Multi-Meter Configuration Software (SQLC-CS-01)

11.1 Outline

Multi-Meter Configuration Software (SQLC-CS-01) is a SQLC-72L dedicated setup tool.
The following data management is possible.

- Edit and save setting value data.
- Write setting value data into SQLC-72L.
- Read setting value data from SQLC-72L.
- Output the setting value data in CSV file.

11.2 Hardware requirements

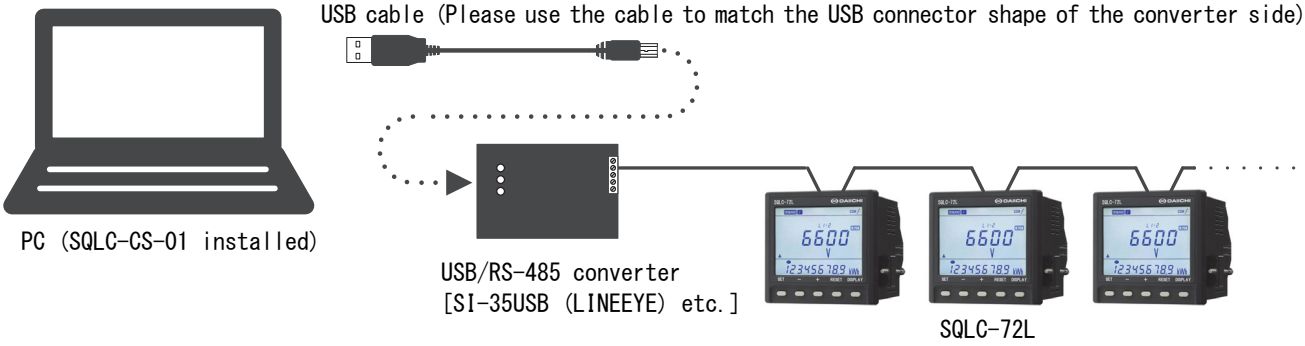
Item	Specification
Personal Computer	PC-AT based computer
Operating System	Windows® 7 (32bit / 64bit), Windows® 8.1 (32bit / 64bit), Windows® 10 (32bit / 64bit)
CPU	32-bit processor : 1 GHz or faster, 64-bit processor : 1.6 GHz or faster
Memory	32-bit processor : 1 GB or more, 64-bit processor : 2 GB or more
HDD	Free space 100 MB or more [If the Microsoft .NET Framework 4.5 is not installed, free space 300 MB or more]
Display	Resolution : 1024×768 or higher, High Color (65536 colors) or higher
Interface	RS-232C or USB 2.0
Communication port	RS-232C port ×1 or USB (A) port ×1
Other	Mouse, Keyboard

Installation, connection, such as the operation method, please refer to the included manual to SQLC-CS-01.

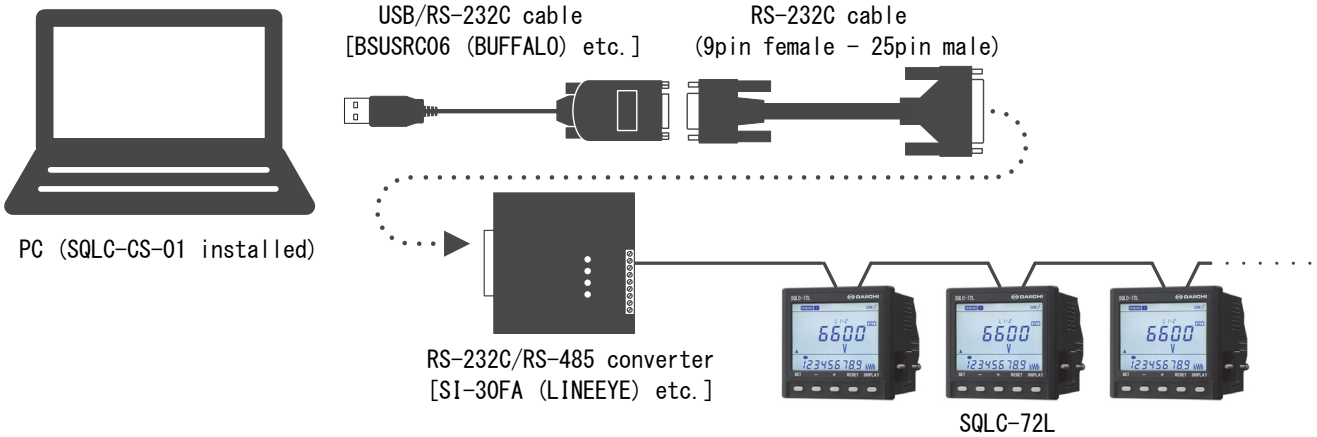
11.3 System configuration

■ No serial (COM) port on the PC
Using the USB port, please to the following system configuration.

(1) Using the USB / RS-485 converter

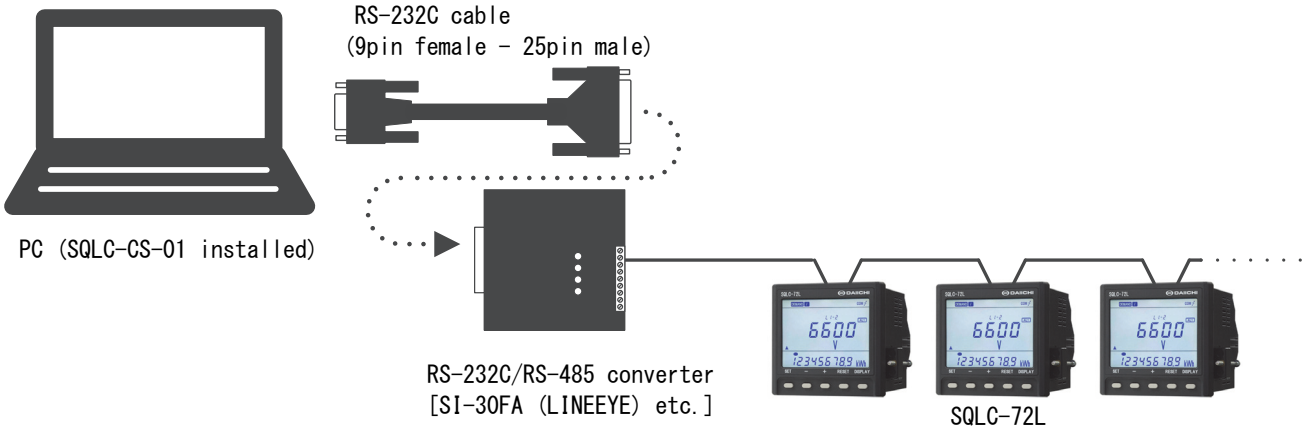


(2) Using the USB / RS-232C cable and RS-232C / RS-485 converter



■ There is a serial (COM) port on the PC

Using the serial (COM) port, please to the following system configuration.



12 Troubleshooting

Trouble	Probable cause	Treatment
Display is not lights	Auxiliary supply has not been applied to the terminal number 26 and 27.	Please by applying an auxiliary supply.
	Failure of equipment.	Replacement of equipment.
Backlight disappears	The display is off by the auto off function, or it is set to always off.	Please press the switch, or please check backlight operation setting.
Error of the measurement value is large	Voltage and current (primary and secondary rating) setting is wrong.	Please check the setting of current sensor and secondary voltage and primary voltage and primary current.
	Wiring is wrong.	Please check the wiring.
	Rated frequency out of range (45...65Hz).	This product can not be used.
Active energy and reactive energy amount of error is large. (Display, communication, pulse output)	Voltage and current (primary and secondary rating) setting is wrong.	Please check the setting of current sensor and secondary voltage and primary voltage and primary current.
	Pulse rate setting is wrong.	Please check the setting of the output pulse rate.
	Wiring is wrong.	Please check the wiring.
Communication error occurs	The communication cable is disconnected or not properly connected (polarity, etc.).	Please refer to the confirmation of communication cable.
	Communication setting is wrong. (Address, Bit rate, Parity, Stop bit)	Please check the settings of communication output.
Pulse output is not provided	Contact function is set to alarm output or OFF.	Please check the settings of contact function.
	Contact function is a pulse output, is set to other elements.	Please check the settings of pulse output element.
Alarm output is not provided	Contact function is set to pulse output or OFF.	Please check the settings of contact function.
	Contact delay time is set.	Please check the setting of contact delay time.
Alarm output does not reset	Contact return method is set to "manual return".	Please check the setting of contact return method.
	More than one alarm output is generated.	Please check the detecting element, the setting of alarm output allocation.

Appendix table

■ Appendix table 1-1

Rated power list (3 phase 3 wire / 3 phase 4 wire)

Primary rated voltage / Primary rated current	22.00kV [W]	20.00kV [W]	18.40kV [W]	16.50kV [W]	13.80kV [W]	13.20kV [W]	11.00kV [W]	6600V [W]	3300V [W]	2200V [W]	1650V [W]
5A	200.0 k	181.8 k	167.3 k	150.0 k	125.5 k	120.0 k	100.0 k	60.00 k	30.00 k	20.00 k	15.00 k
6A	240.0 k	218.2 k	200.7 k	180.0 k	150.5 k	144.0 k	120.0 k	72.00 k	36.00 k	24.00 k	18.00 k
7.5A	300.0 k	272.7 k	250.9 k	225.0 k	188.2 k	180.0 k	150.0 k	90.00 k	45.00 k	30.00 k	22.50 k
8A	320.0 k	290.9 k	267.6 k	240.0 k	200.7 k	192.0 k	160.0 k	96.00 k	48.00 k	32.00 k	24.00 k
10A	400.0 k	363.6 k	334.5 k	300.0 k	250.9 k	240.0 k	200.0 k	120.0 k	60.00 k	40.00 k	30.00 k
12A	480.0 k	436.4 k	401.5 k	360.0 k	301.1 k	288.0 k	240.0 k	144.0 k	72.00 k	48.00 k	36.00 k
15A	600.0 k	545.5 k	501.8 k	450.0 k	376.4 k	360.0 k	300.0 k	180.0 k	90.00 k	60.00 k	45.00 k
20A	800.0 k	727.3 k	669.1 k	600.0 k	501.8 k	480.0 k	400.0 k	240.0 k	120.0 k	80.00 k	60.00 k
25A	1000 k	909.1 k	836.4 k	750.0 k	627.3 k	600.0 k	500.0 k	300.0 k	150.0 k	100.0 k	75.00 k
30A	1200 k	1091 k	1004 k	900.0 k	752.7 k	720.0 k	600.0 k	360.0 k	180.0 k	120.0 k	90.00 k
40A	1600 k	1455 k	1338 k	1200 k	1004 k	960.0 k	800.0 k	480.0 k	240.0 k	160.0 k	120.0 k
50A	2000 k	1818 k	1673 k	1500 k	1255 k	1200 k	1000 k	600.0 k	300.0 k	200.0 k	150.0 k
60A	2400 k	2182 k	2007 k	1800 k	1505 k	1440 k	1200 k	720.0 k	360.0 k	240.0 k	180.0 k
75A	3000 k	2727 k	2509 k	2250 k	1882 k	1800 k	1500 k	900.0 k	450.0 k	300.0 k	225.0 k
80A	3200 k	2909 k	2676 k	2400 k	2007 k	1920 k	1600 k	960.0 k	480.0 k	320.0 k	240.0 k
100A	4000 k	3636 k	3345 k	3000 k	2509 k	2400 k	2000 k	1200 k	600.0 k	400.0 k	300.0 k
120A	4800 k	4364 k	4015 k	3600 k	3011 k	2880 k	2400 k	1440 k	720.0 k	480.0 k	360.0 k
150A	6000 k	5455 k	5018 k	4500 k	3764 k	3600 k	3000 k	1800 k	900.0 k	600.0 k	450.0 k
200A	8000 k	7273 k	6691 k	6000 k	5018 k	4800 k	4000 k	2400 k	1200 k	800.0 k	600.0 k
250A	10.00 M	9091 k	8364 k	7500 k	6273 k	6000 k	5000 k	3000 k	1500 k	1000 k	750.0 k
300A	12.00 M	10.91 M	10.04 M	9000 k	7527 k	7200 k	6000 k	3600 k	1800 k	1200 k	900.0 k
400A	16.00 M	14.55 M	13.38 M	12.00 M	10.04 M	9600 k	8000 k	4800 k	2400 k	1600 k	1200 k
500A	20.00 M	18.18 M	16.73 M	15.00 M	12.55 M	12.00 M	10.00 M	6000 k	3000 k	2000 k	1500 k
600A	24.00 M	21.82 M	20.07 M	18.00 M	15.05 M	14.40 M	12.00 M	7200 k	3600 k	2400 k	1800 k
750A	30.00 M	27.27 M	25.09 M	22.50 M	18.82 M	18.00 M	15.00 M	9000 k	4500 k	3000 k	2250 k
800A	32.00 M	29.09 M	26.76 M	24.00 M	20.07 M	19.20 M	16.00 M	9600 k	4800 k	3200 k	2400 k
900A	36.00 M	32.73 M	30.11 M	27.00 M	22.58 M	21.60 M	18.00 M	10.80 M	5400 k	3600 k	2700 k
1000A	40.00 M	36.36 M	33.45 M	30.00 M	25.09 M	24.00 M	20.00 M	12.00 M	6000 k	4000 k	3000 k
1200A	48.00 M	43.64 M	40.15 M	36.00 M	30.11 M	28.80 M	24.00 M	14.40 M	7200 k	4800 k	3600 k
1500A	60.00 M	54.55 M	50.18 M	45.00 M	37.64 M	36.00 M	30.00 M	18.00 M	9000 k	6000 k	4500 k
1600A	64.00 M	58.18 M	53.53 M	48.00 M	40.15 M	38.40 M	32.00 M	19.20 M	9600 k	6400 k	4800 k
1800A	72.00 M	65.45 M	60.22 M	54.00 M	45.16 M	43.20 M	36.00 M	21.60 M	10.80 M	7200 k	5400 k
2000A	80.00 M	72.73 M	66.91 M	60.00 M	50.18 M	48.00 M	40.00 M	24.00 M	12.00 M	8000 k	6000 k
2500A	100.0 M	90.91 M	83.64 M	75.00 M	62.73 M	60.00 M	50.00 M	30.00 M	15.00 M	10.00 M	7500 k
3000A	120.0 M	109.1 M	100.4 M	90.00 M	75.27 M	72.00 M	60.00 M	36.00 M	18.00 M	12.00 M	9000 k
3500A	140.0 M	127.3 M	117.1 M	105.0 M	87.82 M	84.00 M	70.00 M	42.00 M	21.00 M	14.00 M	10.50 M
4000A	160.0 M	145.5 M	133.8 M	120.0 M	100.4 M	96.00 M	80.00 M	48.00 M	24.00 M	16.00 M	12.00 M
4500A	180.0 M	163.6 M	150.5 M	135.0 M	112.9 M	108.0 M	90.00 M	54.00 M	27.00 M	18.00 M	13.50 M
5000A	200.0 M	181.8 M	167.3 M	150.0 M	125.5 M	120.0 M	100.0 M	60.00 M	30.00 M	20.00 M	15.00 M
6000A	240.0 M	218.2 M	200.7 M	180.0 M	150.5 M	144.0 M	120.0 M	72.00 M	36.00 M	24.00 M	18.00 M
7500A	300.0 M	272.7 M	250.9 M	225.0 M	188.2 M	180.0 M	150.0 M	90.00 M	45.00 M	30.00 M	22.50 M
8000A	320.0 M	290.9 M	267.6 M	240.0 M	200.7 M	192.0 M	160.0 M	96.00 M	48.00 M	32.00 M	24.00 M
9000A	360.0 M	327.3 M	301.1 M	270.0 M	225.8 M	216.0 M	180.0 M	108.0 M	54.00 M	36.00 M	27.00 M
10000A	400.0 M	363.6 M	334.5 M	300.0 M	250.9 M	240.0 M	200.0 M	120.0 M	60.00 M	40.00 M	30.00 M
12000A	480.0 M	436.4 M	401.5 M	360.0 M	301.1 M	288.0 M	240.0 M	144.0 M	72.00 M	48.00 M	36.00 M
15000A	600.0 M	545.5 M	501.8 M	450.0 M	376.4 M	360.0 M	300.0 M	180.0 M	90.00 M	60.00 M	45.00 M
20000A	800.0 M	727.3 M	669.1 M	600.0 M	501.8 M	480.0 M	400.0 M	240.0 M	120.0 M	80.00 M	60.00 M
30000A	1200 M	1091 M	1004 M	900.0 M	752.7 M	720.0 M	600.0 M	360.0 M	180.0 M	120.0 M	90.00 M

<Note 1> If the setting was the following conditions, the pulse width of the pulse output will be 100 - 130ms. (Normal, 240 - 260ms)
If set the primary rating of the colored part of the-list (voltage and current).
If set the output pulse rate to the fastest (can be set from 4 steps).

■ Appendix table 1-2

Rated power list (3 phase 3 wire / 3 phase 4 wire)

Primary rated voltage / Primary rated current	1100V [W]	990V [W]	880V [W]	690V [W]	480V [W]	460V [W]	440V [W]	415V [W]	400V [W]	380V [W]	220.0V [W]	110.0V [W]
5A	10.00 k	9000	8000	6273	4364	4182	4000	3773	3636	3455	2000	1000
6A	12.00 k	10.80 k	9600	7527	5236	5018	4800	4527	4364	4145	2400	1200
7.5A	15.00 k	13.50 k	12.00 k	9409	6545	6273	6000	5659	5455	5182	3000	1500
8A	16.00 k	14.40 k	12.80 k	10.04 k	6982	6691	6400	6036	5818	5527	3200	1600
10A	20.00 k	18.00 k	16.00 k	12.55 k	8727	8364	8000	7545	7273	6909	4000	2000
12A	24.00 k	21.60 k	19.20 k	15.05 k	10.47 k	10.04 k	9600	9055	8727	8291	4800	2400
15A	30.00 k	27.00 k	24.00 k	18.82 k	13.09 k	12.55 k	12.00 k	11.32 k	10.91 k	10.36 k	6000	3000
20A	40.00 k	36.00 k	32.00 k	25.09 k	17.45 k	16.73 k	16.00 k	15.09 k	14.55 k	13.82 k	8000	4000
25A	50.00 k	45.00 k	40.00 k	31.36 k	21.82 k	20.91 k	20.00 k	18.86 k	18.18 k	17.27 k	10.00 k	5000
30A	60.00 k	54.00 k	48.00 k	37.64 k	26.18 k	25.09 k	24.00 k	22.64 k	21.82 k	20.73 k	12.00 k	6000
40A	80.00 k	72.00 k	64.00 k	50.18 k	34.91 k	33.45 k	32.00 k	30.18 k	29.09 k	27.64 k	16.00 k	8000
50A	100.0 k	90.00 k	80.00 k	62.73 k	43.64 k	41.82 k	40.00 k	37.73 k	36.36 k	34.55 k	20.00 k	10.00 k
60A	120.0 k	108.0 k	96.00 k	75.27 k	52.36 k	50.18 k	48.00 k	45.27 k	43.64 k	41.45 k	24.00 k	12.00 k
75A	150.0 k	135.0 k	120.0 k	94.09 k	65.45 k	62.73 k	60.00 k	56.59 k	54.55 k	51.82 k	30.00 k	15.00 k
80A	160.0 k	144.0 k	128.0 k	100.4 k	69.82 k	66.91 k	64.00 k	60.36 k	58.18 k	55.27 k	32.00 k	16.00 k
100A	200.0 k	180.0 k	160.0 k	125.5 k	87.27 k	83.64 k	80.00 k	75.45 k	72.73 k	69.09 k	40.00 k	20.00 k
120A	240.0 k	216.0 k	192.0 k	150.5 k	104.7 k	100.4 k	96.00 k	90.55 k	87.27 k	82.91 k	48.00 k	24.00 k
150A	300.0 k	270.0 k	240.0 k	188.2 k	130.9 k	125.5 k	120.0 k	113.2 k	109.1 k	103.6 k	60.00 k	30.00 k
200A	400.0 k	360.0 k	320.0 k	250.9 k	174.5 k	167.3 k	160.0 k	150.9 k	145.5 k	138.2 k	80.00 k	40.00 k
250A	500.0 k	450.0 k	400.0 k	313.6 k	218.2 k	209.1 k	200.0 k	188.6 k	181.8 k	172.7 k	100.0 k	50.00 k
300A	600.0 k	540.0 k	480.0 k	376.4 k	261.8 k	250.9 k	240.0 k	226.4 k	218.2 k	207.3 k	120.0 k	60.00 k
400A	800.0 k	720.0 k	640.0 k	501.8 k	349.1 k	334.5 k	320.0 k	301.8 k	290.9 k	276.4 k	160.0 k	80.00 k
500A	1000 k	900.0 k	800.0 k	627.3 k	436.4 k	418.2 k	400.0 k	377.3 k	363.6 k	345.5 k	200.0 k	100.0 k
600A	1200 k	1080 k	960.0 k	752.7 k	523.6 k	501.8 k	480.0 k	452.7 k	436.4 k	414.5 k	240.0 k	120.0 k
750A	1500 k	1350 k	1200 k	940.9 k	654.5 k	627.3 k	600.0 k	565.9 k	545.5 k	518.2 k	300.0 k	150.0 k
800A	1600 k	1440 k	1280 k	1004 k	698.2 k	669.1 k	640.0 k	603.6 k	581.8 k	552.7 k	320.0 k	160.0 k
900A	1800 k	1620 k	1440 k	1129 k	785.5 k	752.7 k	720.0 k	679.1 k	654.5 k	621.8 k	360.0 k	180.0 k
1000A	2000 k	1800 k	1600 k	1255 k	872.7 k	836.4 k	800.0 k	754.5 k	727.3 k	690.9 k	400.0 k	200.0 k
1200A	2400 k	2160 k	1920 k	1505 k	1047 k	1004 k	960.0 k	905.5 k	872.7 k	829.1 k	480.0 k	240.0 k
1500A	3000 k	2700 k	2400 k	1882 k	1309 k	1255 k	1200 k	1132 k	1091 k	1036 k	600.0 k	300.0 k
1600A	3200 k	2880 k	2560 k	2007 k	1396 k	1338 k	1280 k	1207 k	1164 k	1105 k	640.0 k	320.0 k
1800A	3600 k	3240 k	2880 k	2258 k	1571 k	1505 k	1440 k	1358 k	1309 k	1244 k	720.0 k	360.0 k
2000A	4000 k	3600 k	3200 k	2509 k	1745 k	1673 k	1600 k	1509 k	1455 k	1382 k	800.0 k	400.0 k
2500A	5000 k	4500 k	4000 k	3136 k	2182 k	2091 k	2000 k	1886 k	1818 k	1727 k	1000 k	500.0 k
3000A	6000 k	5400 k	4800 k	3764 k	2618 k	2509 k	2400 k	2264 k	2182 k	2073 k	1200 k	600.0 k
3500A	7000 k	6300 k	5600 k	4391 k	3055 k	2927 k	2800 k	2641 k	2545 k	2418 k	1400 k	700.0 k
4000A	8000 k	7200 k	6400 k	5018 k	3491 k	3345 k	3200 k	3018 k	2909 k	2764 k	1600 k	800.0 k
4500A	9000 k	8100 k	7200 k	5645 k	3927 k	3764 k	3600 k	3395 k	3273 k	3109 k	1800 k	900.0 k
5000A	10.00 M	9000 k	8000 k	6273 k	4364 k	4182 k	4000 k	3773 k	3636 k	3455 k	2000 k	1000 k
6000A	12.00 M	10.80 M	9600 k	7527 k	5236 k	5018 k	4800 k	4527 k	4364 k	4145 k	2400 k	1200 k
7500A	15.00 M	13.50 M	12.00 M	9409 k	6545 k	6273 k	6000 k	5659 k	5455 k	5182 k	3000 k	1500 k
8000A	16.00 M	14.40 M	12.80 M	10.04 M	6982 k	6691 k	6400 k	6036 k	5818 k	5527 k	3200 k	1600 k
9000A	18.00 M	16.20 M	14.40 M	11.29 M	7855 k	7527 k	7200 k	6791 k	6545 k	6218 k	3600 k	1800 k
10000A	20.00 M	18.00 M	16.00 M	12.55 M	8727 k	8364 k	8000 k	7545 k	7273 k	6909 k	4000 k	2000 k
12000A	24.00 M	21.60 M	19.20 M	15.05 M	10.47 M	10.04 M	9600 k	9055 k	8727 k	8291 k	4800 k	2400 k
15000A	30.00 M	27.00 M	24.00 M	18.82 M	13.09 M	12.55 M	12.00 M	11.32 M	10.91 M	10.36 M	6000 k	3000 k
20000A	40.00 M	36.00 M	32.00 M	25.09 M	17.45 M	16.73 M	16.00 M	15.09 M	14.55 M	13.82 M	8000 k	4000 k
30000A	60.00 M	54.00 M	48.00 M	37.64 M	26.18 M	25.09 M	24.00 M	22.64 M	21.82 M	20.73 M	12.00 M	6000 k

<Note 1> If the setting was the following conditions, the pulse width of the pulse output will be 100 - 130ms. (Normal, 240 - 260ms)
If set the primary rating of the colored part of the-list (voltage and current).
If set the output pulse rate to the fastest (can be set from 4 steps).

■ Appendix table 2

Rated power list (1 phase 3 wire)

Primary rated voltage / Primary rated current	110.0V [W]
5A	1000
6A	1200
7.5A	1500
8A	1600
10A	2000
12A	2400
15A	3000
20A	4000
25A	5000
30A	6000
40A	8000
50A	10.00 k
60A	12.00 k
75A	15.00 k
80A	16.00 k
100A	20.00 k
120A	24.00 k
150A	30.00 k
200A	40.00 k
250A	50.00 k
300A	60.00 k
400A	80.00 k
500A	100.0 k
600A	120.0 k
750A	150.0 k
800A	160.0 k
900A	180.0 k
1000A	200.0 k
1200A	240.0 k
1500A	300.0 k
1600A	320.0 k
1800A	360.0 k
2000A	400.0 k
2500A	500.0 k
3000A	600.0 k
3500A	700.0 k
4000A	800.0 k
4500A	900.0 k
5000A	1000 k
6000A	1200 k
7500A	1500 k
8000A	1600 k
9000A	1800 k
10000A	2000 k
12000A	2400 k
15000A	3000 k
20000A	4000 k
30000A	6000 k

<Note 1> If the setting was the following conditions, the pulse width of the pulse output will be 100 - 130ms. (Normal, 240 - 260ms)
If set the primary rating of the colored part of the-list (voltage and current).
If set the output pulse rate to the fastest (can be set from 4 steps).

■ Appendix table 3-1

Rated power list (1 phase 2 wire)

Primary rated voltage / Primary rated current	22.00kV [W]	20.00kV [W]	18.40kV [W]	16.50kV [W]	13.80kV [W]	13.20kV [W]	11.00kV [W]	6600V [W]	3300V [W]	2200V [W]	1650V [W]
5A	100.0 k	90.91 k	83.64 k	75.00 k	62.73 k	60.00 k	50.00 k	30.00 k	15.00 k	10.00 k	7500
6A	120.0 k	109.1 k	100.4 k	90.00 k	75.27 k	72.00 k	60.00 k	36.00 k	18.00 k	12.00 k	9000
7.5A	150.0 k	136.4 k	125.5 k	112.5 k	94.09 k	90.00 k	75.00 k	45.00 k	22.50 k	15.00 k	11.25 k
8A	160.0 k	145.5 k	133.8 k	120.0 k	100.4 k	96.00 k	80.00 k	48.00 k	24.00 k	16.00 k	12.00 k
10A	200.0 k	181.8 k	167.3 k	150.0 k	125.5 k	120.0 k	100.0 k	60.00 k	30.00 k	20.00 k	15.00 k
12A	240.0 k	218.2 k	200.7 k	180.0 k	150.5 k	144.0 k	120.0 k	72.00 k	36.00 k	24.00 k	18.00 k
15A	300.0 k	272.7 k	250.9 k	225.0 k	188.2 k	180.0 k	150.0 k	90.00 k	45.00 k	30.00 k	22.50 k
20A	400.0 k	363.6 k	334.5 k	300.0 k	250.9 k	240.0 k	200.0 k	120.0 k	60.00 k	40.00 k	30.00 k
25A	500.0 k	454.5 k	418.2 k	375.0 k	313.6 k	300.0 k	250.0 k	150.0 k	75.00 k	50.00 k	37.50 k
30A	600.0 k	545.5 k	501.8 k	450.0 k	376.4 k	360.0 k	300.0 k	180.0 k	90.00 k	60.00 k	45.00 k
40A	800.0 k	727.3 k	669.1 k	600.0 k	501.8 k	480.0 k	400.0 k	240.0 k	120.0 k	80.00 k	60.00 k
50A	1000 k	909.1 k	836.4 k	750.0 k	627.3 k	600.0 k	500.0 k	300.0 k	150.0 k	100.0 k	75.00 k
60A	1200 k	1091 k	1004 k	900.0 k	752.7 k	720.0 k	600.0 k	360.0 k	180.0 k	120.0 k	90.00 k
75A	1500 k	1364 k	1255 k	1125 k	940.9 k	900.0 k	750.0 k	450.0 k	225.0 k	150.0 k	112.5 k
80A	1600 k	1455 k	1338 k	1200 k	1004 k	960.0 k	800.0 k	480.0 k	240.0 k	160.0 k	120.0 k
100A	2000 k	1818 k	1673 k	1500 k	1255 k	1200 k	1000 k	600.0 k	300.0 k	200.0 k	150.0 k
120A	2400 k	2182 k	2007 k	1800 k	1505 k	1440 k	1200 k	720.0 k	360.0 k	240.0 k	180.0 k
150A	3000 k	2727 k	2509 k	2250 k	1882 k	1800 k	1500 k	900.0 k	450.0 k	300.0 k	225.0 k
200A	4000 k	3636 k	3345 k	3000 k	2509 k	2400 k	2000 k	1200 k	600.0 k	400.0 k	300.0 k
250A	5000 k	4545 k	4182 k	3750 k	3136 k	3000 k	2500 k	1500 k	750.0 k	500.0 k	375.0 k
300A	6000 k	5455 k	5018 k	4500 k	3764 k	3600 k	3000 k	1800 k	900.0 k	600.0 k	450.0 k
400A	8000 k	7273 k	6691 k	6000 k	5018 k	4800 k	4000 k	2400 k	1200 k	800.0 k	600.0 k
500A	10.00 M	9091 k	8364 k	7500 k	6273 k	6000 k	5000 k	3000 k	1500 k	1000 k	750.0 k
600A	12.00 M	10.91 M	10.04 M	9000 k	7527 k	7200 k	6000 k	3600 k	1800 k	1200 k	900.0 k
750A	15.00 M	13.64 M	12.55 M	11.25 M	9409 k	9000 k	7500 k	4500 k	2250 k	1500 k	1125 k
800A	16.00 M	14.55 M	13.38 M	12.00 M	10.04 M	9600 k	8000 k	4800 k	2400 k	1600 k	1200 k
900A	18.00 M	16.36 M	15.05 M	13.50 M	11.29 M	10.80 M	9000 k	5400 k	2700 k	1800 k	1350 k
1000A	20.00 M	18.18 M	16.73 M	15.00 M	12.55 M	12.00 M	10.00 M	6000 k	3000 k	2000 k	1500 k
1200A	24.00 M	21.82 M	20.07 M	18.00 M	15.05 M	14.40 M	12.00 M	7200 k	3600 k	2400 k	1800 k
1500A	30.00 M	27.27 M	25.09 M	22.50 M	18.82 M	18.00 M	15.00 M	9000 k	4500 k	3000 k	2250 k
1600A	32.00 M	29.09 M	26.76 M	24.00 M	20.07 M	19.20 M	16.00 M	9600 k	4800 k	3200 k	2400 k
1800A	36.00 M	32.73 M	30.11 M	27.00 M	22.58 M	21.60 M	18.00 M	10.80 M	5400 k	3600 k	2700 k
2000A	40.00 M	36.36 M	33.45 M	30.00 M	25.09 M	24.00 M	20.00 M	12.00 M	6000 k	4000 k	3000 k
2500A	50.00 M	45.45 M	41.82 M	37.50 M	31.36 M	30.00 M	25.00 M	15.00 M	7500 k	5000 k	3750 k
3000A	60.00 M	54.55 M	50.18 M	45.00 M	37.64 M	36.00 M	30.00 M	18.00 M	9000 k	6000 k	4500 k
3500A	70.00 M	63.64 M	58.55 M	52.50 M	43.91 M	42.00 M	35.00 M	21.00 M	10.50 M	7000 k	5250 k
4000A	80.00 M	72.73 M	66.91 M	60.00 M	50.18 M	48.00 M	40.00 M	24.00 M	12.00 M	8000 k	6000 k
4500A	90.00 M	81.82 M	75.27 M	67.50 M	56.45 M	54.00 M	45.00 M	27.00 M	13.50 M	9000 k	6750 k
5000A	100.0 M	90.91 M	83.64 M	75.00 M	62.73 M	60.00 M	50.00 M	30.00 M	15.00 M	10.00 M	7500 k
6000A	120.0 M	109.1 M	100.4 M	90.00 M	75.27 M	72.00 M	60.00 M	36.00 M	18.00 M	12.00 M	9000 k
7500A	150.0 M	136.4 M	125.5 M	112.5 M	94.09 M	90.00 M	75.00 M	45.00 M	22.50 M	15.00 M	11.25 M
8000A	160.0 M	145.5 M	133.8 M	120.0 M	100.4 M	96.00 M	80.00 M	48.00 M	24.00 M	16.00 M	12.00 M
9000A	180.0 M	163.6 M	150.5 M	135.0 M	112.9 M	108.0 M	90.00 M	54.00 M	27.00 M	18.00 M	13.50 M
10000A	200.0 M	181.8 M	167.3 M	150.0 M	125.5 M	120.0 M	100.0 M	60.00 M	30.00 M	20.00 M	15.00 M
12000A	240.0 M	218.2 M	200.7 M	180.0 M	150.5 M	144.0 M	120.0 M	72.00 M	36.00 M	24.00 M	18.00 M
15000A	300.0 M	272.7 M	250.9 M	225.0 M	188.2 M	180.0 M	150.0 M	90.00 M	45.00 M	30.00 M	22.50 M
20000A	400.0 M	363.6 M	334.5 M	300.0 M	250.9 M	240.0 M	200.0 M	120.0 M	60.00 M	40.00 M	30.00 M
30000A	600.0 M	545.5 M	501.8 M	450.0 M	376.4 M	360.0 M	300.0 M	180.0 M	90.00 M	60.00 M	45.00 M

<Note 1> If the setting was the following conditions, the pulse width of the pulse output will be 100 - 130ms. (Normal, 240 - 260ms)
If set the primary rating of the colored part of the-list (voltage and current).
If set the output pulse rate to the fastest (can be set from 4 steps).

■ Appendix table 3-2

Rated power list (1 phase 2 wire)

Primary rated voltage / Primary rated current	1100V [W]	990V [W]	880V [W]	690V [W]	480V [W]	460V [W]	440V [W]	415V [W]	400V [W]	380V [W]	220.0V [W]	110.0V [W]
5A	5000	4500	4000	3136	2182	2091	2000	1886	1818	1727	1000	500
6A	6000	5400	4800	3764	2618	2509	2400	2264	2182	2073	1200	600
7.5A	7500	6750	6000	4705	3273	3136	3000	2830	2727	2591	1500	750
8A	8000	7200	6400	5018	3491	3345	3200	3018	2909	2764	1600	800
10A	10.00 k	9000	8000	6273	4364	4182	4000	3773	3636	3455	2000	1000
12A	12.00 k	10.80 k	9600	7527	5236	5018	4800	4527	4364	4145	2400	1200
15A	15.00 k	13.50 k	12.00 k	9409	6545	6273	6000	5659	5455	5182	3000	1500
20A	20.00 k	18.00 k	16.00 k	12.55 k	8727	8364	8000	7545	7273	6909	4000	2000
25A	25.00 k	22.50 k	20.00 k	15.68 k	10.91 k	10.45 k	10.00 k	9432	9091	8636	5000	2500
30A	30.00 k	27.00 k	24.00 k	18.82 k	13.09 k	12.55 k	12.00 k	11.32 k	10.91 k	10.36 k	6000	3000
40A	40.00 k	36.00 k	32.00 k	25.09 k	17.45 k	16.73 k	16.00 k	15.09 k	14.55 k	13.82 k	8000	4000
50A	50.00 k	45.00 k	40.00 k	31.36 k	21.82 k	20.91 k	20.00 k	18.86 k	18.18 k	17.27 k	10.00 k	5000
60A	60.00 k	54.00 k	48.00 k	37.64 k	26.18 k	25.09 k	24.00 k	22.64 k	21.82 k	20.73 k	12.00 k	6000
75A	75.00 k	67.50 k	60.00 k	47.05 k	32.73 k	31.36 k	30.00 k	28.30 k	27.27 k	25.91 k	15.00 k	7500
80A	80.00 k	72.00 k	64.00 k	50.18 k	34.91 k	33.45 k	32.00 k	30.18 k	29.09 k	27.64 k	16.00 k	8000
100A	100.0 k	90.00 k	80.00 k	62.73 k	43.64 k	41.82 k	40.00 k	37.73 k	36.36 k	34.55 k	20.00 k	10.00 k
120A	120.0 k	108.0 k	96.00 k	75.27 k	52.36 k	50.18 k	48.00 k	45.27 k	43.64 k	41.45 k	24.00 k	12.00 k
150A	150.0 k	135.0 k	120.0 k	94.09 k	65.45 k	62.73 k	60.00 k	56.59 k	54.55 k	51.82 k	30.00 k	15.00 k
200A	200.0 k	180.0 k	160.0 k	125.5 k	87.27 k	83.64 k	80.00 k	75.45 k	72.73 k	69.09 k	40.00 k	20.00 k
250A	250.0 k	225.0 k	200.0 k	156.8 k	109.1 k	104.5 k	100.0 k	94.32 k	90.91 k	86.36 k	50.00 k	25.00 k
300A	300.0 k	270.0 k	240.0 k	188.2 k	130.9 k	125.5 k	120.0 k	113.2 k	109.1 k	103.6 k	60.00 k	30.00 k
400A	400.0 k	360.0 k	320.0 k	250.9 k	174.5 k	167.3 k	160.0 k	150.9 k	145.5 k	138.2 k	80.00 k	40.00 k
500A	500.0 k	450.0 k	400.0 k	313.6 k	218.2 k	209.1 k	200.0 k	188.6 k	181.8 k	172.7 k	100.0 k	50.00 k
600A	600.0 k	540.0 k	480.0 k	376.4 k	261.8 k	250.9 k	240.0 k	226.4 k	218.2 k	207.3 k	120.0 k	60.00 k
750A	750.0 k	675.0 k	600.0 k	470.5 k	327.3 k	313.6 k	300.0 k	283.0 k	272.7 k	259.1 k	150.0 k	75.00 k
800A	800.0 k	720.0 k	640.0 k	501.8 k	349.1 k	334.5 k	320.0 k	301.8 k	290.9 k	276.4 k	160.0 k	80.00 k
900A	900.0 k	810.0 k	720.0 k	564.5 k	392.7 k	376.4 k	360.0 k	339.5 k	327.3 k	310.9 k	180.0 k	90.00 k
1000A	1000 k	900.0 k	800.0 k	627.3 k	436.4 k	418.2 k	400.0 k	377.3 k	363.6 k	345.5 k	200.0 k	100.0 k
1200A	1200 k	1080 k	960.0 k	752.7 k	523.6 k	501.8 k	480.0 k	452.7 k	436.4 k	414.5 k	240.0 k	120.0 k
1500A	1500 k	1350 k	1200 k	940.9 k	654.5 k	627.3 k	600.0 k	565.9 k	545.5 k	518.2 k	300.0 k	150.0 k
1600A	1600 k	1440 k	1280 k	1004 k	698.2 k	669.1 k	640.0 k	603.6 k	581.8 k	552.7 k	320.0 k	160.0 k
1800A	1800 k	1620 k	1440 k	1129 k	785.5 k	752.7 k	720.0 k	679.1 k	654.5 k	621.8 k	360.0 k	180.0 k
2000A	2000 k	1800 k	1600 k	1255 k	872.7 k	836.4 k	800.0 k	754.5 k	727.3 k	690.9 k	400.0 k	200.0 k
2500A	2500 k	2250 k	2000 k	1568 k	1091 k	1045 k	1000 k	943.2 k	909.1 k	863.6 k	500.0 k	250.0 k
3000A	3000 k	2700 k	2400 k	1882 k	1309 k	1255 k	1200 k	1132 k	1091 k	1036 k	600.0 k	300.0 k
3500A	3500 k	3150 k	2800 k	2195 k	1527 k	1464 k	1400 k	1320 k	1273 k	1209 k	700.0 k	350.0 k
4000A	4000 k	3600 k	3200 k	2509 k	1745 k	1673 k	1600 k	1509 k	1455 k	1382 k	800.0 k	400.0 k
4500A	4500 k	4050 k	3600 k	2823 k	1964 k	1882 k	1800 k	1698 k	1636 k	1555 k	900.0 k	450.0 k
5000A	5000 k	4500 k	4000 k	3136 k	2182 k	2091 k	2000 k	1886 k	1818 k	1727 k	1000 k	500.0 k
6000A	6000 k	5400 k	4800 k	3764 k	2618 k	2509 k	2400 k	2264 k	2182 k	2073 k	1200 k	600.0 k
7500A	7500 k	6750 k	6000 k	4705 k	3273 k	3136 k	3000 k	2830 k	2727 k	2591 k	1500 k	750.0 k
8000A	8000 k	7200 k	6400 k	5018 k	3491 k	3345 k	3200 k	3018 k	2909 k	2764 k	1600 k	800.0 k
9000A	9000 k	8100 k	7200 k	5645 k	3927 k	3764 k	3600 k	3395 k	3273 k	3109 k	1800 k	900.0 k
10000A	10.00 M	9000 k	8000 k	6273 k	4364 k	4182 k	4000 k	3773 k	3636 k	3455 k	2000 k	1000 k
12000A	12.00 M	10.80 M	9600 k	7527 k	5236 k	5018 k	4800 k	4527 k	4364 k	4145 k	2400 k	1200 k
15000A	15.00 M	13.50 M	12.00 M	9409 k	6545 k	6273 k	6000 k	5659 k	5455 k	5182 k	3000 k	1500 k
20000A	20.00 M	18.00 M	16.00 M	12.55 M	8727 k	8364 k	8000 k	7545 k	7273 k	6909 k	4000 k	2000 k
30000A	30.00 M	27.00 M	24.00 M	18.82 M	13.09 M	12.55 M	12.00 M	11.32 M	10.91 M	10.36 M	6000 k	3000 k

<Note 1> If the setting was the following conditions, the pulse width of the pulse output will be 100 - 130ms. (Normal, 240 - 260ms)
If set the primary rating of the colored part of the-list (voltage and current).
If set the output pulse rate to the fastest (can be set from 4 steps).

DAIICHI ELECTRONICS CO., LTD.

Tokyo Office : 11-13, Hitotsuya 1-chome, Adachi-ku, Tokyo, 121-8639, JAPAN.
TEL : +81-3-3885-2411 , Fax : +81-3-3858-3966

Kyoto Office : 1-19, Ichinobe-Nishikawahara, Jyoyou-shi, Kyoto, 610-0114, JAPAN.
TEL : +81-774-55-1391 , Fax : +81-774-54-1353

Revision A, DATE : September 28, 2018