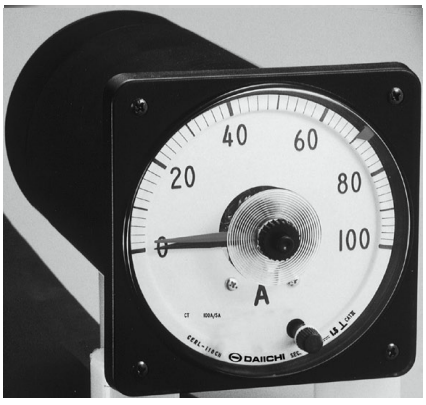
HIGHEST / LOWEST INDICATING INSTRUMENT - RL Series

EXTERNAL WITH ALARM CONTACT - ERL Series

RL－80C

RL－110C



ERL－110CH

RL Series

Recently, power plant and factory etc. have been promoting automation and unmanned rationalization of receiving electric power distribution equipment. At the time of control power, can use this model meter to make sure the maximum (minimum) value for the instantaneous or the certain time.

This instrument meter has more suitable for record the occurrence of ground accident and the short circuit accident like Vo Meter, because this indicating instrument had added with the record pointer can indicate the maximum (minimum) value of instantaneously.

In addition, this series meter be fully satisfied with high reliability and also with standard JIS C 1102-1~9 (IEC 60051-1 matching)

Features

► 2 size: 110mm degree and 80mm degree.

► AC voltage, ammeter and transformer indicator is all in one type, without accessory box.

► Mechanical strength is strong.

► Record pointer can be reset by push the button at the cover.
Electromagnetic reset combined use type also can be manufactured.

► Meter with Incombustible material can be manufactured as specify.

► Adopting transducer with electronics technology, more type product is expanded.

ERL Series

Power plant and factory etc. have been promoting automation and unmanned rationalization of receiving electric power distribution equipment. For power management, this instrument meter can make sure the maximum value for the instantaneous or the certain time.

This instrument meter had added with contact less type warning upper limit, so the alarm signal will be operate in the time when electric variable exceeds setting value. With the application of the output contact, please use in rationalization such as automation or laborsaving in measurement control and meintatenance of electric equipment.

Features

► With maximum alarm contact output
(Contact capacity: AC250V, 0.5A resistance load)

► AC voltage, ammeter and transformer indicator is all in one type, without accessory box.

► Record pointer can be reset by push the button at the cover.
Electromagnetic reset combined use type also can be manufactured.

► Meter with Incombustible material can be manufactured as specify.

► Adopting transducer with electronics technology, more type product is expanded.

Application Vo Meter

With 3 phase circuit, AC voltmeter can measure the abnormal electric potential when the earth faults the grounding. Or as for generated voltage at the time of earth fault, it can grasp the maximum value by record pointer.

Usage

As shown in the figure 1 at below, connected 3 unit primary side single phase VT type like Y and it can carry out the neutral point to ground. Delta connection of the secondary side and open 1 place to connects Vo Meter at there.

When 1 full line ground accident is occurs, 3 times voltage will impress to Vo Meter between line voltage like figure at below.

Selected Maximum Scale

Selects the value which fraction does not occur at 1.5 times at phase voltage or primary line voltage of VT is generally max. scale value of Vo Meter. For commonness meter line phase, intrinsic maximum scale value become same, whichever select the max. scale value of line voltage or phase voltage.

Please have a reference at below Ex. max. scale value figure as our company standard phase voltage scale display.

There is a single phase type VT and three phase all in one type VT for Vo Meter VT use. Primary rating of 3 phase all in one type VT is line phase, but when wire connect like Y inside primary and the neutral point is taken, it becomes the same relation as the single phase type VT of primary rating /√3.

Please look at the following table for the example rate of VT, max. scale value and intrinsic max. scale value of meter.

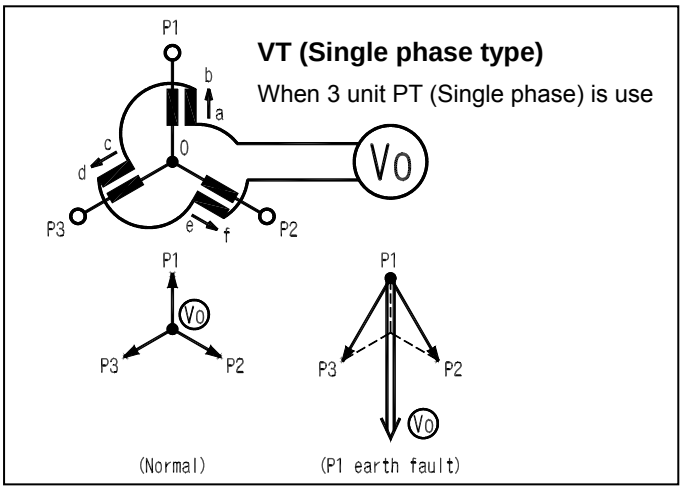


Figure 1

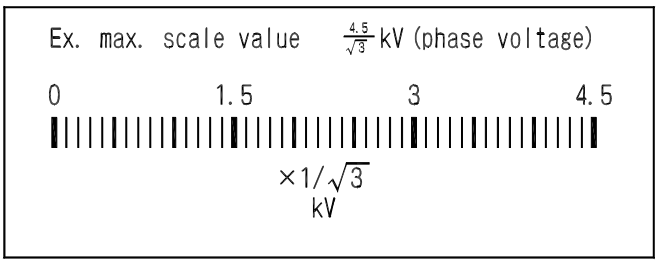


Figure 2

Kind of VT	Rate of VT	Max. scale	Intrinsic max. scale value of meter
3 unit single phase type VT is use	3300V/ $\frac{110}{\sqrt{3}} = \left(\frac{190}{3}\right)$ V or $\frac{3300}{\sqrt{3}}$ V/ $\frac{110}{3}$ V	4.5kV or $\frac{4.5}{\sqrt{3}}$ KV	150 V
	3300V/ 110 or $\frac{3300}{\sqrt{3}}$ V/ $\frac{110}{\sqrt{3}} = \left(\frac{190}{3}\right)$ V	4.5kV or $\frac{4.5}{\sqrt{3}}$ KV	259 V
All in one 3 phase VT type is use (Primary neutral is taken interior)	3300V/ $\frac{110}{3}$ V	4.5kV or $\frac{4.5}{\sqrt{3}}$ KV	150 V
	3300V/ $\frac{110}{\sqrt{3}} = \left(\frac{190}{3}\right)$ V	4.5kV or $\frac{4.5}{\sqrt{3}}$ KV	259 V

TYPE CODE DESIGNATION

(1) R L – (2) C (3) (4)

(1) Type of Measurand

Mark	Type of Measurand	Operation Principle
M	DC current, voltage	Permanent magnet moving coil
C	AC current, voltage	Rectifier
X	DC receiving indicator	Permanent magnet moving coil
Y	AC receiving indicator	Rectifier
W	AC power	Transducer
WV	Reactive power	Transducer
P	Power factor	Transducer

(2) Shape

Type	Dimension	Shell Diameter	Stud mounting
110	110 X 110	99 ϕ	M5 X 15
80	80 X 80	65 ϕ	M4 X 10

(3) Kind of Record Pointer

Symbol	Type
H	Highest Indicating Instrument
L	Lowest Indicating Instrument
HL	Highest / Lowest Indicating Instrument

(4) Kind of Circuit

Symbol	Circuit
12	Single Phase
13	Single Phase 3 Wire
33	Three Phase 3 Wire
34	Three Phase 4 Wire

STANDARD SPECIFICATIONS

ITEM		SPECIFICATION	
Standard		JISC 1102: 2007 [Electric Indicating Meter Direct Acting Type]	
		JISC 1103 [Dimensions Electric Indicating Meter Switchboards]	
		IEC 60051-1 Compliant	
Class		Refer to [RL Series List]	
Support system		Pivot system	
Swing angle of meter		205°	
Dimension meter from front		L-110C: 110×110mm ; L-80C: 80×80mm	
Length of scale		L-110C: 164mm ; L-80C: 115mm	
Color of scale plate		White	
Pointer		Instrument	Lance type (Black)
		Highest record	Lance type (Red)
		Lowest record	Lance type (Yellow)
		Rest of record	Manual rest with push button
Response time		When apply step input, final steady state value is measure up to 90% in time	
Installation posture		Vertical (⊥)	
Material panel		Iron plate and non-iron plate	
Thickness of panel		10mm or less (L-80C: 6mm or less)	
Color of cover		Black: Munsell N1.5 Dark blue: Munsell 7.5BG 4/1.5	
Material of case		Cover: Methacrylic acid resin (Antistatic Colcoat Treatment) Base: Flame-retarded ABS resin	
Insulation resistance		Between electric circuit and outer case	DC500V, 50MΩ or more
Voltage test		Between electric circuit and outer case	AC2210V, between 5sec.
Safety requirement	Standard	JISC 1010-1	
	Insulation	Between electric circuit and outer case: Base of insulation	
	Use	For indoor use (Cubicle etc.)	
	High altitude	2000m or less	
	Pollution	Pollution level 2	
	Measure category	CATⅢ	
	Max. circuit voltage	300V (Ammeter)	
Operated temperature/ Humidity limit		-10~55℃, Average day temperature 40℃ or less, 25~85% RH	
Storage temperature range		-20~70℃	

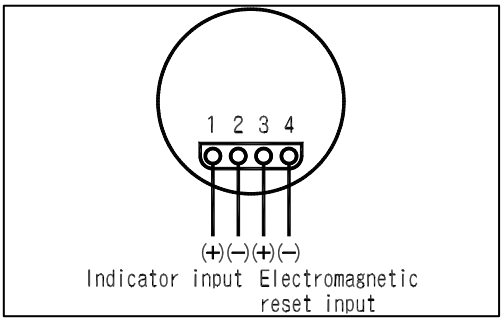
SPECIAL SPECIFICATIONS (Please Specify)

ITEM		SPECIFICATION	
Scale	Color line	Red, Green, Yellow (Please specify)	
	Color area (bar)	Red, Green, Yellow (Please specify)	
	Double scale	Please specify	
	Double seal	Please specify	
	Max. scale division	110 angle: 100 division ; 80 angle: 75 division	
	Special scale	Please specify	
Tropical specification		Rust preventative,「**FOR TROPICS**」will display at the name plate	
Rest equipment of record pointer Electromagnetic Reset		Voltage	AC110V ±15%, DC110V, 48V, 24V ±20% (Please specify)
		Consumption VA	10VA
		Apply time	Below 1 min.
Installation posture		Horizontal, or Inclined (specify the angle)	
Material of flame retardant		Cover	Polycarbonate resin

RESET EQUIPMENT OF RECORD POINTER

* Operation by Manual Reset (Standard Equipment)
Record pointer is possible to reset with operate the reset push button includes at center of the terminal cover. This equipment can be installed in all type models.

* Operation by Electromagnatic Reset (Specify)
Record pointer is possible to rest by electromagnetic reset applied voltage between 3-4 terminal. Record pointer will be rest in 1 sec. Please don't applied voltage more then 1 min. Please make polarity like chart below when indication instrument input and electromagnetic reset in direct current.



ITEM TO SPECIFY WHEN PURCHASE

1. Type
2. Max. scale value
3. Response time
4. Rating of CT & VT
5. Record pointer rest system
   (a) Manual rest type
   (b) Manual & Electromagnetic combined usage type
6. Auxiliary power for manual & electromagnetic combined usage type
7. Option (refer to special specification)

Specification List of RL Series

LIST OF SPECIFICATION

Product		Model	Max. Input & Rated	Consumption VA & Internal Resistance		Response time (sec)		Attached Transducer	Notes
				Voltage	Current	L-110C	L-80C		
DC Ammeter		MRL-110C☐	20mA	—	below 500Ω	0.2	0.15	—	MRL-80CHL response time: 0.2 sec. only
		MRL-80C☐	50mA	—	500Ω		0.2		
		MTRL-110☐, 80C☐	100μA~10A	—	60mV	0.2	0.15,0.2	—	Specify aux. power AC100V or AC200V
DC Voltmeter		MRL-110C☐, 80C☐	15V~300V	20mA	—	0.2	0.15,0.2	—	MRL-80CHL response time: 0.2 sec. only
		MTRL-110C☐,80C☐	60mV~200mV 500mV~14V	1kΩ 10kΩ	—	0.2	0.15,0.2	—	Specify aux. power AC100V or AC200V
AC Ammeter		CRL-110C☐ CRL-80C☐ *1	1A~10A	—	below 6VA	0.1, 0.15, 0.2 0.5 ~30		*1 —	*1) CRL-80 response time: 0.1, external AT-62M, response time: 1~15, external MR-CTN 80 degree: below 15 sec
AC Voltmeter		CRL-110C☐ CRL-80C☐ *2	100~300V	below 6VA	—	0.1, 0.15, 0.2 0.5~30		*2 —	*2) CRL-80 response time: 0.1,1~15, external VT-62M, 80 angle: below 15 sec. 0.15~0.5 sec. external DH-41 (Except Vo Meter)
DC Receiving Indicator		XRL-110C□	20mA	—	below 500Ω	0.2	0.15,0.2	—	XRL-80CHL response time: 0.2 sec only.
		XRL-80C□	50mA	—	500Ω			—	
		XRL-110C☐ XRL-80C☐	15V~300V	20mA	—	0.2	0.15, 0.2	—	
AC Receiving Indicator		YRL-110C☐ YRL-80C☐	1A~10A	—	below 6VA	0.1, 0.15, 0.2 0.5~30		*3 —	*3) YRL-80 response time: 0.1, external AT-62M, response time: 1~15, external MR-CTN, 80 degree: below 15 sec.
		YRL-110C☐ YRL-80C☐	100~300V	below 6VA	—			*4 —	*4) YRL-80 response time: 0.1,1~15, external VT-62M, 80 degree: below 15 sec. 0.15~0.5 sec. external DH-41 (except Vo Meter)
Watt Meter	Single phase	WRL-110C☐-12 WRL-80C☐-12	110V, 5A 220V, 5A	2VA	1VA	0.5~30		WT-83M-12	—
	3 phase	WRL-110C☐-33 WRL-80C☐-33	110V, 5A 220V, 5A	Each phase 2VA	Each phase 1VA	0.5~30		WT-83M-33	—
Var Meter	Single phase	WVRL-110C☐-12 WVRL-80C☐-12	110V, 5A 220V, 5A	2VA	1VA	0.5~30		WVT-83M-12	Specify Frequency
	3 phase (balance)	WVBRL-110C☐-33 WVBRL-80C☐-33	110V, 5A 220V, 5A	Each phase 2VA	Each phase 1VA	0.5~30		WVBT-83M-33	Specify Frequency
Power Factor Meter	Single phase	PRL-110C☐-12 PRL-80C☐-12	110V, 5A 220V, 5A	3VA	1VA	2~30		PT-83M-12	Specify Frequency
	3 phase	PRL-110C☐-33 PRL-80C☐-33	110V, 5A 220V, 5A	Each phase 3VA	Each phase 1VA	2~30		PT-83M-33	Specify Frequency

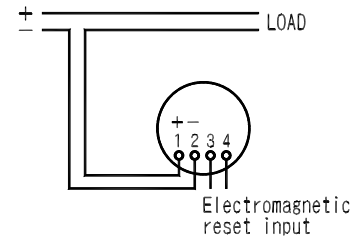
Specification List of RL Series

LIST OF RL SERIES

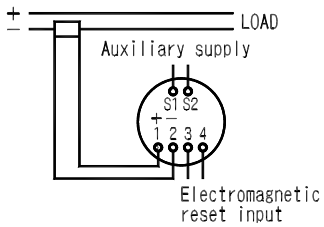
MODEL			RL – 110C			RL – 80C		
Type		Principle	Model	Class	Record Pointer Accuracy	Model	Class	Record Pointer Accuracy
DC Ammeter		Moving coil	MRL-110C☐	1.5	± 2.0%	MRL-80C	1.5	± 2.0%
DC Voltmeter			MRL-110C☐	1.5	± 2.0%	MRL-80C	1.5	± 2.0%
AC Ammeter		Rectifier	CRL-110C☐	1.5	± 2.0%	CRL-80C	1.5	± 2.0%
AC Voltmeter			CRL-110C☐	1.5	± 2.0%	CRL-80C	1.5	± 2.0%
DC Receiving Indicator		Moving coil	XRL-110C☐	1.5	± 2.0%	XRL-80C	1.5	± 2.0%
AC Receiving Indicator		Rectifier	YRL-110C☐	1.5	± 2.0%	YRL-80C	1.5	± 2.0%
Watt Meter	Single phase	Transducer	WRL-110C☐-12	1.5	± 2.0%	WRL-80C-12	1.5	± 2.0%
	3 phase		WRL-110C☐-33	1.5	± 2.0%	WRL-80C-33	1.5	± 2.0%
Var Meter	Single phase	Transducer	WVRL-110C☐-12	1.5	± 2.0%	WVRL-80C-12	1.5	± 2.0%
	3 phase		WVRL-110C☐-33	1.5	± 2.0%	WVRL-80C-33	1.5	± 2.0%
Power Factor Meter	Single phase	Transducer	PRL-110C☐-12	5.0	± 6.0%	PRL-80C-12	1.5	± 6.0%
	3 phase		PRL-110C☐-33	5.0	± 6.0%	PRL-80C-33	1.5	± 6.0%

Connection Diagram

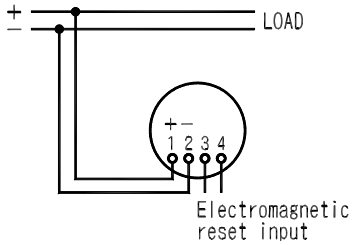
DC Ammeter



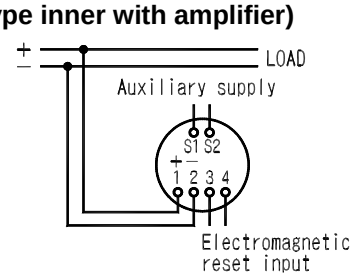
DC Ammeter external with Shunt (Type inner with amplifier)



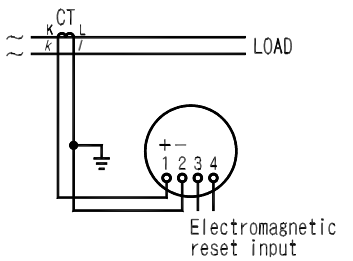
DC Voltmeter



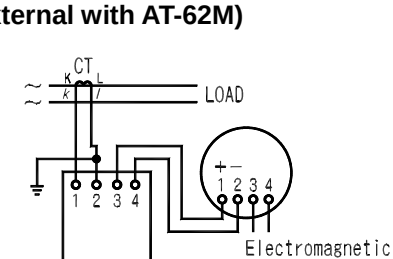
DC Voltmeter (Type inner with amplifier)



AC Ammeter



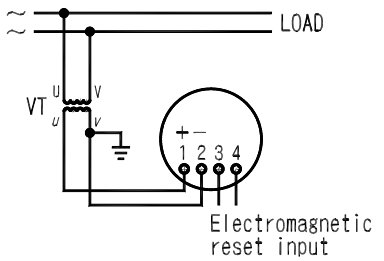
AC Ammeter (External with AT-62M)



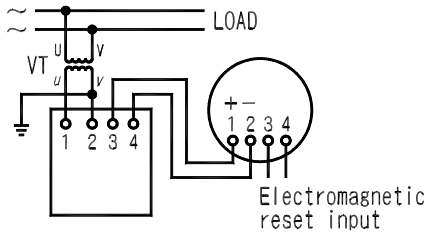
Specification List of RL Series

Connection Diagram

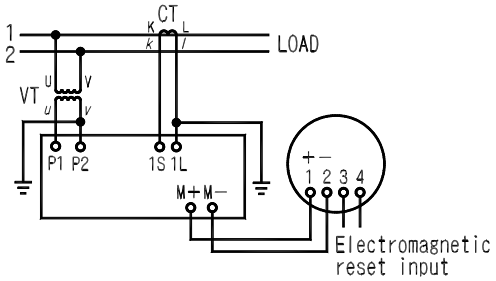
AC Voltmeter



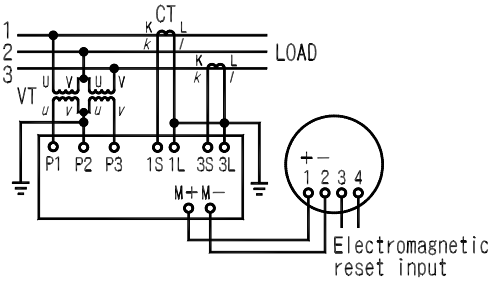
AC Voltmeter
(External with VT-62M)



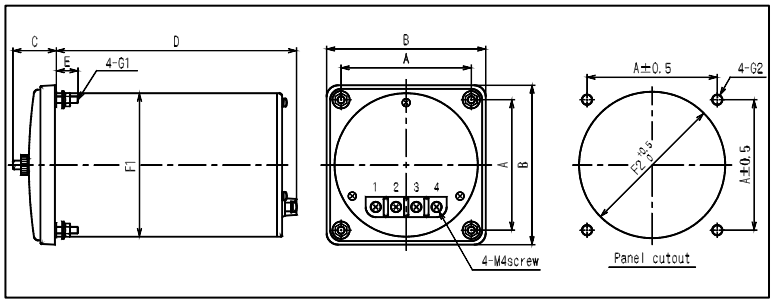
Single phase Wattmeter
Single phase Var Meter
Single phase Power Factor Meter



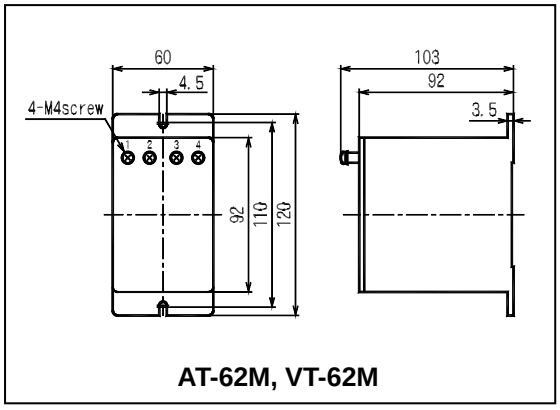
3 phase Wattmeter
3 phase Var Meter
3 phase Power Factor Meter



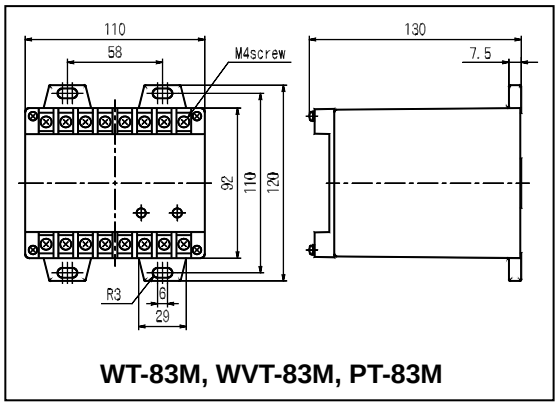
Dimensions



Dimensions For Accessory Transducer



AT-62M, VT-62M



WT-83M, WVT-83M, PT-83M

Type	A	B	C	D	E	F1	F2	G1	G2	weight (kg)
RL-110C	90	110	30	167 (MTRL: 169)	15	99Φ	101Φhole	M5 screw	7Φhole	1.1
RL-80C	64	80	22.5	168 (MTRL: 169)	10	65Φ	67Φhole	M4 screw	5.5Φhole	1.0

Specification List of ERL-110C Series

STANDARD SPECIFICATION

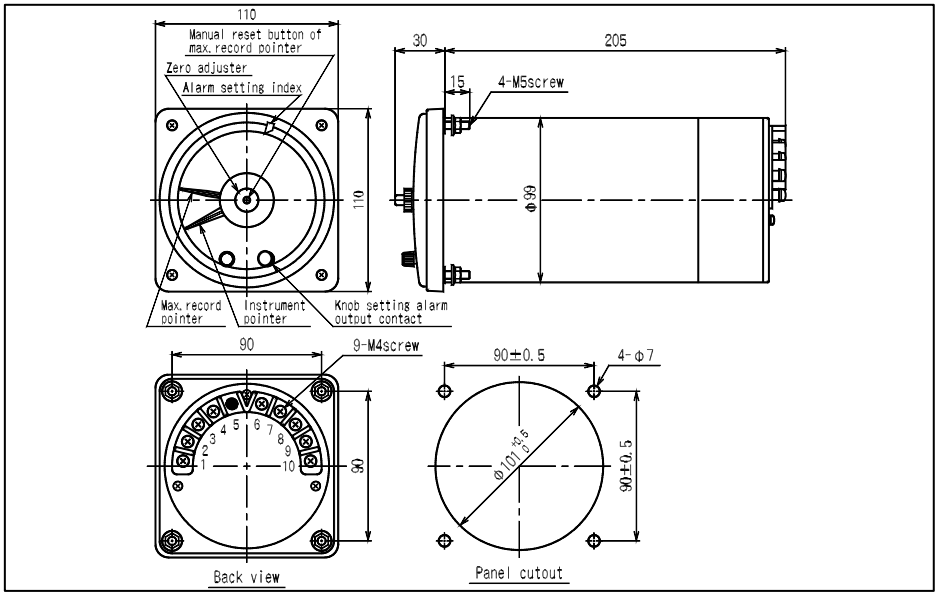
ITEM		SPECIFICATION	
Class		Refer to [ERL Specification List]	
Support system		Pivot system	
Swing angle of meter		205°	
Dimension meter from front		110×110mm	
Length of scale		164mm	
Scale plate		White	
Pointer	Instrument	Lance type, Black	
	Highest record	Lance type, Red	
	Reset record	Manual rest with push button	
Response time		When apply step input, final steady state value is measure up to 90% in time	
Installation posture		Vertical (⊥)	
Material panel		Iron plate and non-iron plate	
Thickness panel		Below 10mm	
Type of output signal		Passing type not contact output (holding type)	
Pointer moving range		Passing full scale type	
Setting range		Full scale	
Pickup value tolerance		±1.0% of scale length	
Dead band		1.0% of scale length	
Min. setting width		3% of scale length	
Relay operation control system		H (upper limit)	
Setting index		Triangle, Red	
Relay control power		AC110V or AC220V (4.5VA): +10%-15% (50/60Hz) DC100V or DC110V (30.VA): -20%+30% (For CERL-110CH Only)	
Contact structure		1C contact	
Contact capacity		AC200V, 0.5A, (resistance load) ; DC30V, 2A (resistance load)	
Color of cover		Black: (Munsell N1.5) Dark blue: (Munsell 7.5BG4/1.5)	
Material of case		Cover: Methacrylic acid resin molding (Antistatic prevention treatment) Base: Flame-retarded ABS resin	
Insulation resistance		Between electric circuit and outer case	DC500V, 50MΩ or more
Voltage test		Between electric circuit and outer case	AC2210V, between 5sec.
Safety requirement	Standard	JISC 1010	
	Insulation	Between electric circuit and outer case: Base of insulation	
	Use	For indoor use (Cubicle etc.)	
	High altitude	2000 or less	
	Pollution	Pollution level 2	
	Measure category	CATⅢ	
	Max. circuit voltage	300V (Ammeter)	
Operated temperature / humidity range		-10~55℃, Average day temperature is 40℃ or less, 25~85% RH	
Storage temperature range		-20~70℃	

Specification List of ERL-110C Series

STANDARD SPECIFICATION

ITEM		SPECIFICATION	
Scale	Color line	Red, Green, Yellow (Please specify)	
	Color area (bar)	Red, Green, Yellow (Please specify)	
	Double scale	Please specify	
	Double seal	Please specify	
	Max. scale division	110 angle: 100 division	
	Special scale	Please specify	
Tropical specification		Rust preventative,「**FOR TROPICS**」will display at the name plate	
Rest equipment of record pointer Electromagnetic Reset		Voltage	AC110V ±15% ; DC110V, 48V, 24V ±20% (Please specify)
		Consumption VA	10VA
		Apply time	Below 1 min.
Installation posture		Horizontal, inclination installation (specify the angle)	
Material of flame retardant		Cover	Polycarbonate resin

Dimensions



ITEM TO SPECIFY WHEN PURCHASE

1. Type
2. Max. scale value
3. Response time
4. Rating of CT or VT
5. Record pointer rest system
   (a) Manual rest type
   (b) Manual and Electromagnetic combined usage type
6. Aux. power for manual & electromagnetic combined usage type
7. Aux. power
8. Option (Refer to special specification)

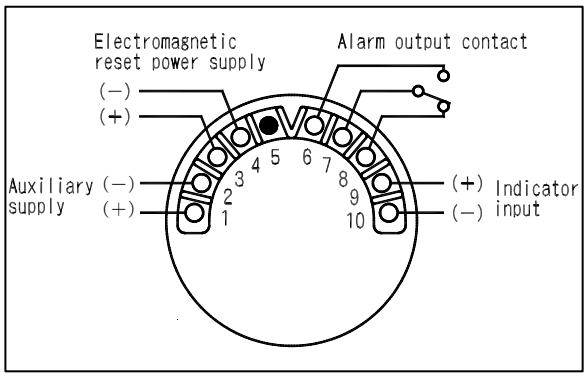
Specification List of ERL-110C Series

LIST OF SPECIFICATION

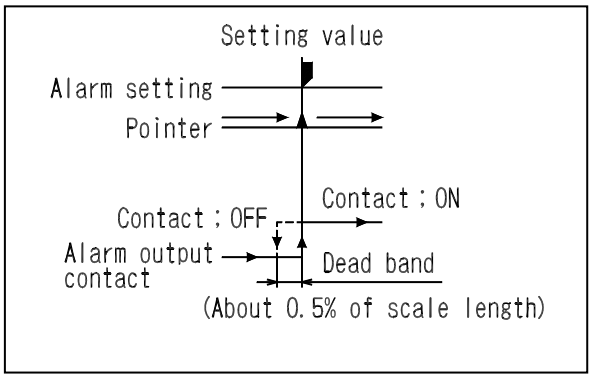
Type		Principle	Model	Class	Record Pointer Accuracy	Max. Input and Range	VA or Internal resistance		Response time (sec)	Transducer	Note
							Voltage	Current			
DC Ammeter		Moving coil	MERL-110CH	1.5	± 2.0%	20mA	—	Below 500Ω	0.2	—	
						50mA	—	200Ω			
						100mA	—	100Ω	0.1, 0.2		
		Transducer	MTERL-110CH			100μA~10A	—	60mV	0.2	Auxiliary Power AC100V or AC200V	
DC Voltmeter		Moving coil	MERL-110CH	1.5	± 2.0%	10V~300V	20mA	—	0.2		
		Transducer	MTERL-110CH			60mV~10V	1mA	—		Auxiliary Power AC100V or AC200V	
AC Ammeter		Rectifier	CERL-110CH	1.5	± 2.0%	0.1A~10A	—	Below 6VA	0.1, 0.15, 0.2	—	
									0.5~30		
AC Voltmeter			CERL-110CH			100V~300V	Below 6VA	—	0.1, 0.15, 0.2	—	
									0.5~30		
Watt Meter	Single phase	Transducer	WERL-110CH-12	1.5	± 2.0%	110V, 5A 220V, 5A	2VA	1VA	0.5~30	WT-83M-12	
	3 phase		WERL-110CH-33				Each phase 2VA	Each phase 1VA		WT-83M-33	
Var Meter	Single phase	Transducer	WVERL-110CH-12	1.5	± 2.0%	110V, 5A 220V, 5A	2VA	1VA	2~30	WVT-83M-12	Specify frequency
	3 phase		WVERL-110CH-33				Each phase 2VA	Each phase 1VA		WVT-83M-33	Specify frequency
Power Factor Meter	Single phase	Transducer	PERL-110CH-12	5.0	± 6.0%	110V, 5A 220V, 5A	2VA	1VA	2~30	PT-83M-12	Specify frequency
	3 phase		PERL-110CH-33				Each phase 2VA	Each phase 1VA		PT-83M-33	Specify frequency

Note:
Electromagnetic reset voltage: AC110V±15%, DC110, 48, 24V ±20%
It is possible to reset the record pointer by impressed electromagnetic reset voltage.
Record pointer will be reset in 1 sec. please do not impress it more than 1 min.

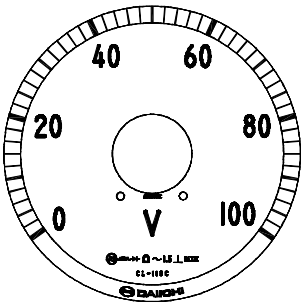
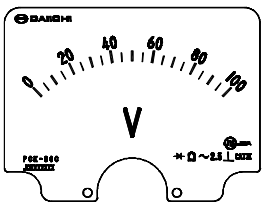
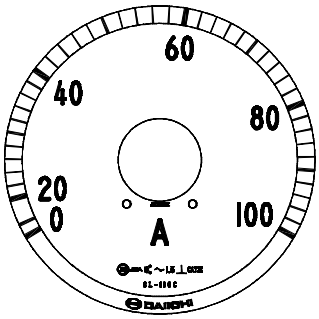
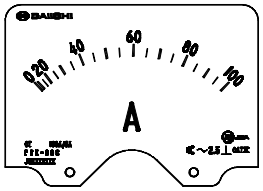
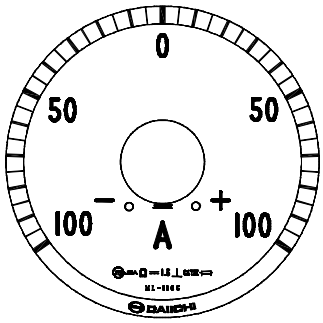
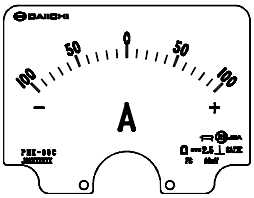
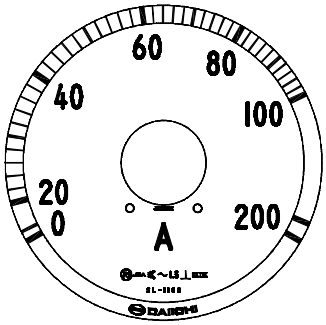
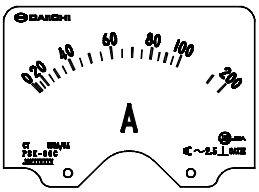
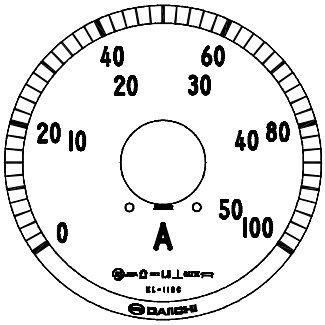
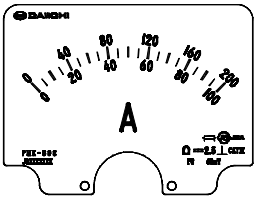
Connection Diagram



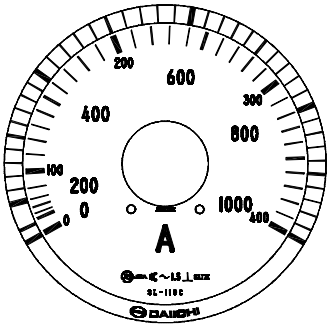
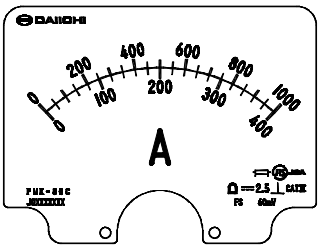
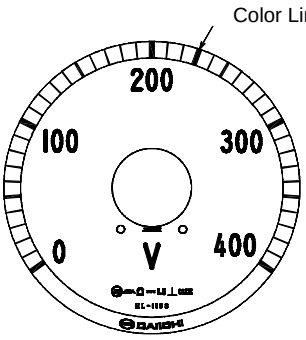
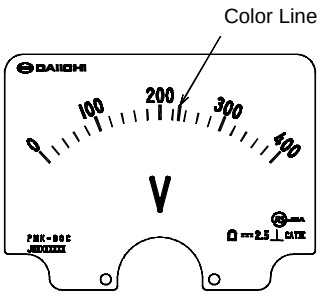
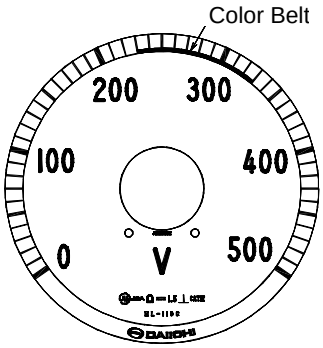
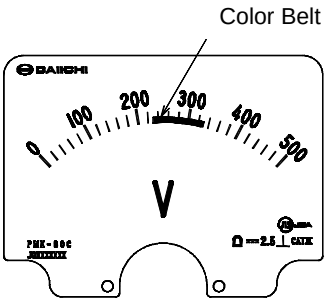
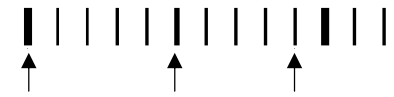
Behavior of Alarm Output Contact



EX. SCALE

Scale Specification	Wide Angle Meter Ex.: L-110C	Square Shape Meter Ex.: PK-80C
Standard Scale Scale digit: Black Scale line : Black Unit mark : Black Scale division : Refer to standard lancet shape pointer division		
Moving iron type can be left out the lower value part of scale Scale division : Refer to standard lancet shape pointer division		
± Scale Meter (Both Side Deflect Meter) Scale digit: Black Scale line : Black Unit mark : Black		
Extend Scale (2-Fold Extend) Scale digit: Black ; Extend part: Red Scale line : Black ; Extend part: Red Unit mark : Black		
Single Scale Double Seal Meter Scale digit: Black Scale line : Black Unit mark : Black Standard place a seal of scale figure : Higher value will display at inside & smaller value will display at outside		

EX. SCALE

Scale Specification	Wide Angle Meter Ex.: L-110C	Square Shape Meter Ex.: PK-80C
Double Scale Double Seal Scale digit: Black Scale line : Black Unit mark : Black Scale division : Refer to standard lancet shape pointer division Standard place a seal of scale figure : Higher value will display at outside & smaller value will display at inside For wide angle meter : Higher value will display at inside & smaller value will display at outside		
Coloring Scale (Color Line) Scale color line : Red, Yellow, Green Possible combine the color line & color figure to use for double scale		
Color Belt Color Belt : Red, Yellow, Green		
Scale line and Scale figure 1) Type of scale line Scale figure will print at main line Please refer to standard lancet shape pointer division & standard knife shape pointer division		

2) Figure of scale : Max. 4-digit (9999)
If 10000 is exceed, unit will be change like 6.6kV or use multiple like 36× 1000min^{-1}

3) Please have a consultation with us if scale division is diffirent with standard division (odd scale)
Please specify for Max. division

4) Display「0」will be left out if the scale figure after decimal point is Zero. (like scale figure 1 as below)

5) Display「0」will be left out if the scale figure before decimal point is Zero. (like scale figure 0.5 as below)

Ex. : For range value 1.5

Wide Angle Meter
Scale will display by「1.0」for wide angle meter (except BRL & RL series)

Square Share Meter
BRL & RL series is same scale as square share meter

STANDARD DIVOSION OF LANCET-SHAPED POINTER

L series

PK series

MODEL	L-65C PK-60C, 80C, 100C LK-8C, 10C BRL-110CH Instant Meter		RL-80C PK-120C LK-12C F-10	
MAX. SCALE VALUE	SCALE DIVISION DIAGRAM	DIV.	SCALE DIVISION DIAGRAM	DIV.
1	0 2 4 6 8 10	20	0 2 4 6 8 10	20
1.5	0 *1 5 10 15	30	0 5 10 15	30
2	0 5 10 15 20	20	0 *2 5 10 15 20	40
2.5	0 5 10 15 20 25	25	0 5 10 15 20 25	25
3	0 *1 10 20 30	30	0 10 20 30	30
4	0 10 20 30 40	20	0 *2 10 20 30 40	40
5	0 10 20 30 40 50	25	0 10 20 30 40 50	25
6	0 20 40 60	30	0 20 40 60	30
7.5	0 20 40 60 75	15	0 *3 20 40 60 75	37.5
8	0 20 40 60 80	16	0 *6 20 40 60 80	40
9	0 30 60 90	18	0 *7 30 60 90	45

§ Wide Angle METER §

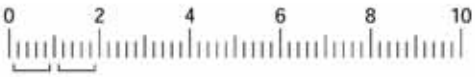
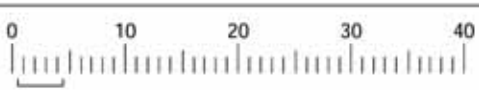
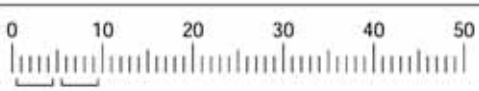
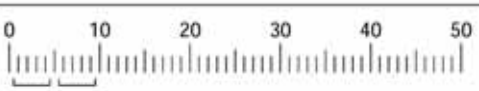
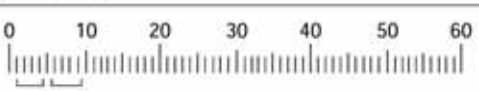
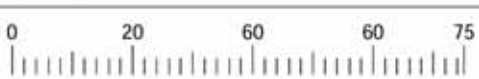
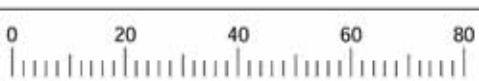
LK series

F series

F series

MODEL	RL−110C BRL−110CH Utility meter		F−15, 17 L−110C L−80C EL−110C Note) 4-digit scale of 2T is not manufacturable.	
MAX. SCALE VALUE	SCALE DIVISION DIAGRAM	DIV.	SCALE DIVISION DIAGRAM	DIV.
1	*2 0 2 4 6 8 10	50	*2 0 2 4 6 8 10	50
1.5	0 5 10 15	30	*8 0 5 10 15	75
2	*2 0 5 10 15 20	40	0 5 10 15 20	40
2.5	*4 0 5 10 15 20 25	50	0 5 10 15 20 25	50
3	0 10 20 30	30	*8 0 5 10 15 20 25 30	60
4	*2 0 10 20 30 40	40	0 10 20 30 40	40
5	*4 0 10 20 30 40 50	50	0 10 20 30 40 50	50
6	0 20 40 60	30	*8 0 10 20 30 40 50 60	60
7.5	0 20 40 60 75	37.5	I-110 & I-80: 37.5 DIVISION *9 0 20 40 60 75	75
8	0 20 40 60 80	40	0 20 40 60 80	40
9	0 30 60 90	45	*5 0 20 40 60 80 90	45

STANDARD DIVOSION OF KNIFE-EDGE POINTER

MODEL	PK−60C, 80C, 100C LK− 8C, 10C FK− 5C,		PK−120C LK− 12C FK− 7C	
MAX. SCALE VALUE	SCALE DIVISION DIAGRAM	DIV.	SCALE DIVISION DIAGRAM	DIV.
1		50		50
1.5		30		75
2		40		40
2.5		50		50
3		30		60
4		40		80
5		50		50
6		30		60
7.5		37.5		75
8		40		80
9		45		45

► Division line part of ⌊‾⌋ is omitted for moving iron type meter.

► For scale extended meter, red color line and numbers of extended part.

► Have a consultation with us for +/- meter, notation of max. scale value, multiple scale meter, etc.

► *1, becomes 15 divisions for scale extended ammeter PK-60C, PK-80C and LK-8C.

► *2, becomes 20 divisions for scale extended ammeter PK-120C, LK-12C, F-10, 15, 17, RL-80C and RL-110C.

► *3, becomes 15 divisions for scale extended ammeter PK-120C, LK-12C, F-10, 15, 17 and RL-80C.

► *4, becomes 25 divisions for scale extended ammeter RL-110C.

► *5, seal numbers: 0, 30, 60, 90 for type meter F-15, and 17.

► *6, becomes 16 divisions for scale extended ammeter PK-120C, LK-12C, F-10, RL-80C.

► *7, becomes 18 divisions for scale extended ammeter PK-120C, LK-12C, F-10, RL-80C.

► *8, becomes 30 divisions for scale extended ammeter F-15, 17.

► *9, becomes 37.5 divisions for scale extended ammeter F-15, 17.