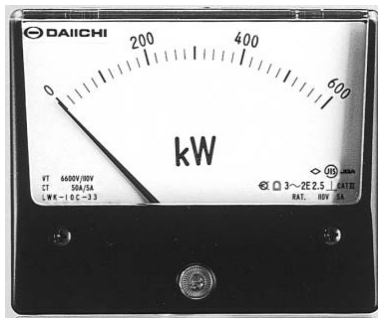


Rectangle Type Meter - LK Series



LK-8C



LK-10C



LK-12C

LK-series is rectangle meter, 3 size for this type: LK-12, LK-10 & LK-8. Panel cut dimension is conformity with JIS C 1103.

LK-series has original design for instrument cover. It's not only suited for switchboard or panel instrument but also suited for electrical or electronic set. LK-series is a reliable meter be fully satisfied with standard JISC 1102-1~9 (IEC 60051-1 matching) and adopt a most suitable operating principle for measuring object.

Our products improve with realibility special specification for overdue environmental conditions as cold resistance and tropical specification. Please consider to use our product on oversea such as Frigid Zone and Tropical Zone.

FEATURES

- ▶ High quality and high performance meter.
- ▶ Flame Retardant Material Meter can manufacture by specify.
- ▶ Panel locked by 2 screws.

RECTANGLE TYPE METER - LK SERIES

TYPE CODE DESIGNATION

L (1) K - (2) (3) C (4) - (5)

(1) Type of measurand

Mark	Measurand	Operation Principle
M	DC current / voltage	Permanent magnet moving coil
X	DC receiving indicator	Permanent magnet moving coil
Y	AC receiving indicator	Rectifier
S	AC current / voltage	Moving iron
C	AC current / voltage	Rectifier/ RMS value rectifier
W	AC power	Transducer
WVB	Reactive power (balanced)	Transducer
WV	Reactive power (unbalanced)	Transducer
PB	Power factor (balanced)	Transducer
P	Power factor (unbalanced)	Transducer
A	Frequency meter	Transducer

(2) Shape

Mark	Rectangle Meter
12	120 × 100
10	100 × 83
8	80 × 67

(4) Special Specifications

Mark	Specification
H	For SCR
C	Cycle Control
L	With Lamp
S	With Shield

(3) Structure

Mark	Structure
N	Transducer all-in-one type

(5) Kind of Circuit

Mark	Circuit
12	Single phase
13	Single phase 3-wire
33	3 phase 3-wire
34	3 phase 4-wire

*Please specify this circuit for AC power, Reactive power & Power factor

OBLONG METER - LK SERIES

COMMON STANDARD SPECIFICATIONS

ITEM	SPECIFICATION	
Standard	JISC 1102: 2007 [Electric Indicating Meter Direct Acting Type]	
	JISC 1103 [Dimensions Electric Indicating Meter Switchboards]	
	IEC 60051-1 Conformity	
Class	Refer to [List of LK series]	
Support system	Pivot system (Part of system is Taut band)	
Swing angle of meter	86°	
Dimennsion meter from front	LK-12C: 120×100mm LK-10C: 100×83mm LK-8C : 80×67mm	
Length of scale	LK-12C: 95mm LK-10C: 80mm LK-8C : 61mm	
Color of scale plate	White	
Pointer	Lance shape (Black)	
Installation posture	Vertical (⊥)	
Material panel	Iron or non-iron plate	
Thickness panel	10mm or less (LK-10C & LK-8C type: 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 molding (Antistatic treatment)	
Insulation resistance	Between electric circuit and outer case	DC500V, 50MΩ or more
Voltage test	Between electric circuit and outer case	AC3320V, between 5sec.
Safety requiments	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	CAT III
	Max. circuit voltage	600V (Ammeter)
Operated temperature/ Humidity limit	-10~55°C, Average day temperature 40°C or less, 25~85% RH (Reference ambient temperature 45°C for steel ship rules)	
Storage temperature range	-20~70°C	

OBLONG METER - LK SERIES

COMMON SPECIAL SPECIFICATIONS (Please Specify)

ITEM		SPECIFICATION	
Scale	Color line	Red, Green, Yellow (Please specify)	
	Extend scale	LCK, LSK: 2~5-time extend	
	Color area (bar)	Red, Green, Yellow (Please specify)	
	Double scale	Please specify	
	Double seal	Please specify	
	Max. scale division	12 type: 100 division 10 type: 80 division 8 type: 60 division	
	Special scale	Please specify	
Vibration proof specification		Vibration	2~10Hz, amplitude 15mm p-p 10~55Hz, 29.4m/s ²
		Shock	147m/s ² , 30-time
Tropical specification		Rust preventative, 「FOR TROPICS」 will display at the name plate	
Pointer		Knife shape (red), Rod shape (black), combine use with multiple scale etc.	
Control pointer		Lancet shape (red), 2 control pointer also possible to manufacture (red × 2)	
Installation posture		Horizontal, or Inclined (specify the angle)	
Flame-retardant materials	Cover	Polycarbonate resin	
Protection circuit of meter		Overcurrent	Specify necessary tolerated dose
		Overvoltage	Specify necessary tolerated dose
Extended part of scale		Voltmeter	Up to ±10%, ±20%, ±30% of central scale value 75% or more of scale length
		Ammeter	Up to 20% of upper limit value of effective measuring range 95% or more of scale length
			Up to 50% of upper limit value of effective measuring range 75% or more of scale length
For SCR control waves		AC current, AC voltage, Wattmeter, Frequency	
For cycle control use		AC current, AC voltage (Rectifier Type)	
With lamp		DC6V (10mA), DC12, 24, 48V (6mA)	
Test report		Specify the useful frequency and number of copies of report require	
Scale (Single item)		Not JIS mark	
Color of cover		Specified color	
Terminal cover		Please consultation with us	
Others		Please consultation with us for special frequency	

ITEM TO SPECIFY WHEN MAKE PURCHASE

- 1).Type Name
- 2).Rated (Max. scale / Input) *1
- 3).Color of cover
- 4).Terminal cover
- 5).Units
- 6).Options (Refer to Common Special Specification)
- 7).Test report (specify use frequency and number of copies require)

*1. For max.scale value of watt or var meter, please refer to List of Standard Max. Scale Value.
Please specify frequency of the power factor meter according to the specification.

OBLONG METER - LK SERIES

LIST OF LK SERIES

MODEL		LK - 12 (N) C		LK - 10C		LK - 8C		
JIS SYMBOL		KS - 3d		KS - 5b		KS - 6b		
Product	Principle	Type	Class	Type	Class	Type	Class	
DC Ammeter	Moving Coil	LMK-12C	1.5	LMK-10C	2.5	LMK-8C	2.5	
DC Voltmeter		LMK-12C	1.5	LMK-10C	2.5	LMK-8C	2.5	
DC Receiving Indicator	Moving coil	LXK-12C	1.5	LXK-10C	2.5	LXK-8C	2.5	
AC Receiving Indicator	Rectifier	LYK-12C	1.5	LYK-10C	2.5	LYK-8C	2.5	
AC Ammeter	Moving iron	LSK-12C	1.5	LSK-10C	2.5	LSK-8C	2.5	
AC Voltmeter		LSK-12C	1.5	LSK-10C	2.5	LSK-8C	2.5	
AC Ammeter	Rectifier	LCK-12C	1.5	LCK-10C	2.5	LCK-8C	2.5	
AC Voltmeter		LCK-12C	1.5	LCK-10C	2.5	LCK-8C	2.5	
Watt Meter	Single phase	Transducer	LWK-12NC-12	1.5	LWK-10C-12	2.5	LWK-8C-12	2.5
	Single phase 3-wire		LWK-12NC-13	1.5	LWK-10C-13	2.5	LWK-8C-13	2.5
	3 phase		LWK-12NC-33	1.5	LWK-10C-33	2.5	LWK-8C-33	2.5
	3 phase 4-wire		LWK-12NC-34	1.5	LWK-10C-34	2.5	LWK-8C-34	2.5
Var Meter	Single phase	Transducer	LWVK-12NC-12	1.5	LWVK-10C-12	2.5	LWVK-8C-12	2.5
	3 phase (balanced)		LWVBK-12NC-33	1.5	LWVBK-10C-33	2.5	LWVBK-8C-33	2.5
	3 phase (unbalanced)		LWVK-12NC-33	1.5	LWVK-10C-33	2.5	LWVK-8C-33	2.5
	3 phase 4-wire		LWVK-12NC-34	1.5	LWVK-10C-34	2.5	LWVK-8C-34	2.5
Power Factor Meter	Single phase	Transducer	LPK-12NC-12	5.0	LPK-10C-12	5.0	LPK-8C-12	5.0
	3 phase (balanced)		LPBK-12NC-33		LPBK-10C-33		LPBK-8C-33	
	3 phase (unbalanced)		LPK-12NC-33		LPK-10C-33		LPK-8C-33	
	3 phase 4-wire (balanced)		LPBK-12NC-34		LPBK-10C-34		LPBK-8C-34	
	3 phase 4-wire (unbalanced)		LPK-12NC-34		LPK-10C-34		LPK-8C-34	
Frequency Meter	Transducer	LAK-12C	1.0	LAK-10C	1.0	LAK-8C	1.0	

► Keep in mind please, Transducer type meter does transitional indication at voltage input start.

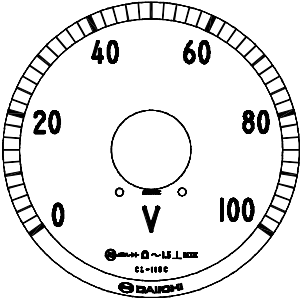
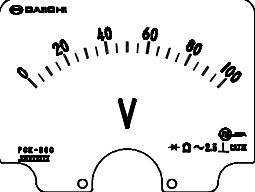
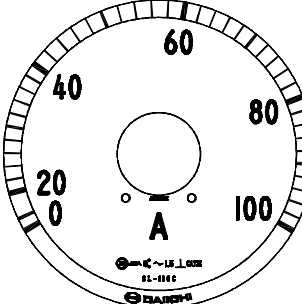
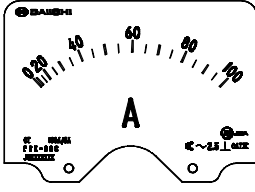
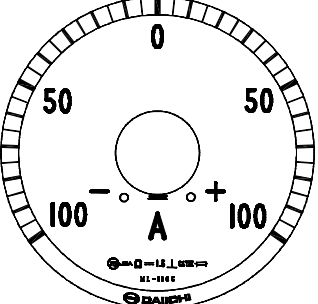
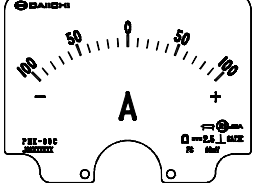
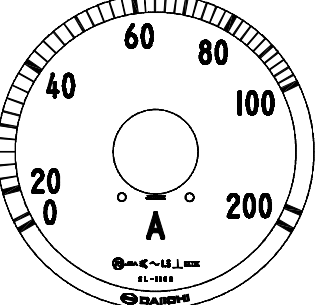
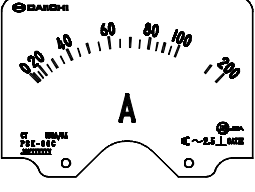
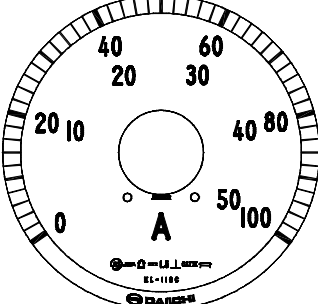
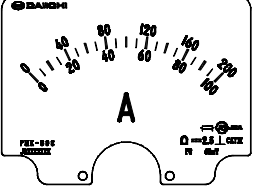
NEEDLE STYLE INDICATOR STANDARD SCALE DIVISION

Max. scale value (10-time)		1	1.5	2	2.5	3	4	5	6	7.5	8	9
Type	LK-12(N)C	20	30	40	25	30	40	25	30	37.5	40	45
	LK-10C, LK-8C	20	30	20	25	30	20	25	30	15	16	18

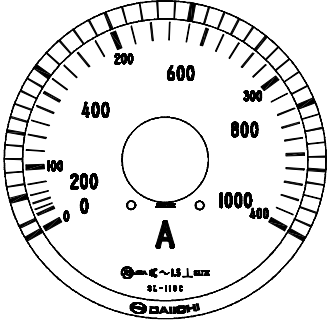
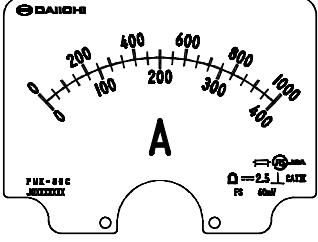
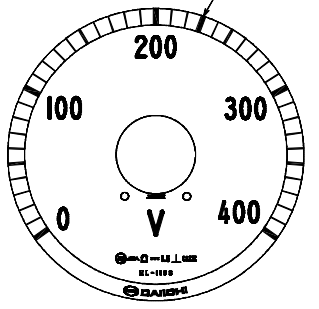
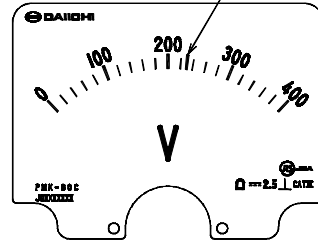
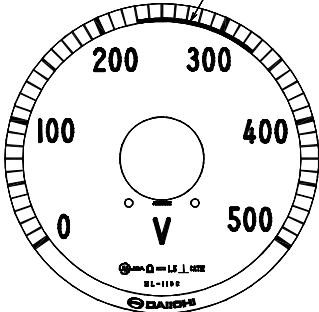
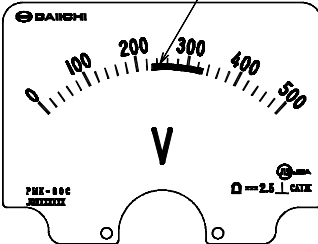




BLADE STYLE INDICATOR STANDARD SCALE DIVISION

Max. scale value (10-time)		1	1.5	2	2.5	3	4	5	6	7.5	8	9
Type	LK-12(N)C	50	75	40	50	60	80	50	60	75	80	45
	LK-10C, LK-8C	50	30	40	50	30	40	50	30	37.5	40	45

EX. SCALE

Scale Specification	Wide Angle Meter Ex.: L-110C	Square Shape Meter Ex.: PK-80C
<p>Standard Scale</p> <p>Scale digit: Black Scale line : Black Unit mark : Black Scale division : Refer to standard lancet shape pointer division</p>		
<p>Moving iron type can be left out the lower value part of scale Scale division : Refer to standard lancet shape pointer division</p>		
<p>± Scale Meter (Both Side Deflect Meter)</p> <p>Scale digit: Black Scale line : Black Unit mark : Black</p>		
<p>Extend Scale (2-Fold Extend)</p> <p>Scale digit: Black ; Extend part: Red Scale line : Black ; Extend part: Red Unit mark : Black</p>		
<p>Single Scale Double Seal Meter</p> <p>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</p>		

EX. SCALE

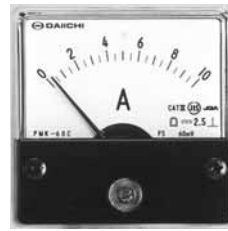
Scale Specification	Wide Angle Meter Ex.: L-110C	Square Shape Meter Ex.: PK-80C
<p>Double Scale Double Seal</p> <p>Scale digit: Black Scale line : Black Unit mark : Black Scale division : Refer to standard lancet shape pointer division Standard place a seal of scale figure : Higher value will display at outside & smaller value will display at inside For wide angle meter : Higher value will display at inside & smaller value will display at outside</p>		
<p>Coloring Scale (Color Line)</p> <p>Scale color line : Red, Yellow, Green Possible combine the color line & color figure to use for double scale</p>		
<p>Color Belt</p> <p>Color Belt : Red, Yellow, Green</p>		
<p>Scale line and Scale figure</p> <p>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</p> <p>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</p> <p>3) Please have a consultation with us if scale division is different with standard division (odd scale) Please specify for Max. division</p> <p>4) Display 「0」 will be left out if the scale figure after decimal point is Zero. (like scale figure 1 as below)</p> <p>5) Display 「0」 will be left out if the scale figure before decimal point is Zero. (like scale figure 0.5 as below)</p> <p>Ex. : For range value 1.5</p>	 <p>Main Line Center Line Thin Line</p>	 <p>Main Line Center Line Thin Line</p>
 <p>Wide Angle Meter Scale will display by 「1.0」 for wide angle meter (except BRL & RL series)</p>	 <p>Square Share Meter BRL & RL series is same scale as square share meter</p>	

§ Wide Angle METER §

STANDARD DIVISION 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		20		20
1.5		30		30
2		20		40
2.5		25		25
3		30		30
4		20		40
5		25		25
6		30		30
7.5		15		37.5
8		16		40
9		18		45

§ Wide Angle METER §



LK series



F series



F series

MODEL	RL-110C BRL-110CH Utility meter		F-15, 17 Note) 4-digit scale of 2T is not manufacturable. L-110C L-80C EL-110C		
	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

§ Wide Angle METER §

STANDARD DIVISION 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	0 2 4 6 8 10		50	0 2 4 6 8 10	50
1.5	0 5 10 15		30	0 2 4 6 8 10 12 14 15	75
2	0 5 10 15 20		40	0 5 10 15 20	40
2.5	0 5 10 15 20 25		50	0 5 10 15 20 25	50
3	0 10 20 30		30	0 5 10 15 20 25 30	60
4	0 10 20 30 40		40	0 10 20 30 40	80
5	0 10 20 30 40 50		50	0 10 20 30 40 50	50
6	0 20 40 60		30	0 10 20 30 40 50 60	60
7.5	0 20 60 60 75		37.5	0 20 40 60 75	75
8	0 20 40 60 80		40	0 20 40 60 80	80
9	0 30 60 90		45	0 30 60 90	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.