

PD Series



PMD-96

* Electrical Measuring Instruments, have a long history and established performance, playing an important role in indicating quick and precise operational conditions of electric power systems.

* Along with recent rapid technical improves in switchboard instrumentation, they are also heading for diversification as well as more compactness and sophistication.

* With this in mind, we are always trying every effort to satisfy such customers need, and have developed put DIN Standard Meters on the market, latest addition to our regular series.

* With these DIN Standard Meter, you applications will be widened for more international specification in switchboard instrumentation.



PAD-96

Features

- * High quality and high performance meter.
- * Transducer integration system is adopted
(Power meter / Var meter / Power factor meter / Frequency meter)
- * Comform standard : IEC 60051-1 (performance), DIN-43700 (outer dimension)
- * 2-pointer type meter can be manufactured.
- * Product has been expanded by adopting transducer with electronics technology.
- * Meter with flame retardant material can be manufactured as you specify.

Manufacturing Type List

Product		Operating Principle	Type		Class	Accessory Transducer		1-pointer mass(g)	2-pointer mass(g)
			1-pointer	2-pointer		1-pointer	2-pointer		
DC Ammeter / Voltmeter		Permanent Magnet Moving Coil	PMD-96	PMD-96-2	1.5	—	—	210	240
AC Ammeter / Voltmeter		Moving Iron	PSD-96	PSD-96-2	1.5	—	—	250	300
AC Ammeter / Voltmeter		Rectifier	PCD-96	PCD-96-2	1.5	—	—	210	240
DC Receiving Indicator		Permanent Magnet Moving Coil	PXD-96	PXD-96-2	1.5	—	—	210	240
AC Receiving Indicator		Rectifier	PYD-96	PYD-96-2	1.5	—	—	210	240
Power Meter	Single phase	Transducer Type	PWD-96-12	PWD-96-12-2	1.5	WT-62M-12	WT-62M-12	1080	1110
	Three phase		PWD-96N-33	PWD-96-33-2		—	WT-83M-33	1080	1110
	Three phase 4 wire		PWD-96N-34	PWD-96-34-2		—	WT-83M-34	1080	1110
Reactive Power Meter	Single phase	Transducer Type	PWVD-96-12	PWVD-96-12-2	1.5	WVT-62M-12	WVT-62M-12	1080	1110
	Three phase		PWVD-96N-33	PWVD-96-33-2		—	WVT-83M-33	1080	1110
	Three phase 4 wire		PWVD-96-34	PWVD-96-34-2		WVT-83M-34	WVT-83M-34	1080	1110
Power Factor Meter	Single phase	Transducer Type	PPD-96-12	PPD-96-12-2	5.0	PT-62M-12	PT-62M-12	1020	1050
	Three phase (balanced)		PPBD-96N-33	PPBD-96-33-2		—	PBT-62M-33	1020	1050
	Three phase (unbalanced)		PPD-96N-33	PPD-96-33-2		—	PT-63M-33	1020	1050
	Three phase 4 wire		PPD-96-34	PPD-96-34-2		PT-64M-34	PT-64M-34	1020	1050
Frequency Meter		Transducer Type	PAD-96	PAD-96-2	1.0	—	FT-62M	610	640

* Keep in mind please : Transducer type meter does transitional indication at voltage input start.

Items To Specify When Purchase (Specify The Following Items)

- (1) Type name
- (2) Rated value (max. scale/ input) *1
- (3) Color of meter cover
- (4) Terminal cover (specify if necessary)
- (5) Units
- (6) Option (refer to Common Special Specification)
- (7) Test report (specify frequency 50Hz or 60Hz and set of copies necessary)

*1 Refer to standard max. scale value list as for max. scale of power meter or var meter.
Specify for frequency regarding power factor meter upon specification list.

Common Standard Specification

Item		Specification
Standard		Performance: Compliant with IEC 60051-1 Outline: DIN-43700
Class		Refer to [List of PD Series]
Support system		Pivot system
Swing angle of meter		90°
Dimension meter from front		96 × 96mm
Scale length		97mm
Scale plate		White
Pointer		Lance (black)
Meter mounting position		Vertical (⊥)
Mounting panel material		Steel plate
Mounting panel thickness		7mm or less
Color of cover		Black: (Munsell N1.5) Cover: Methacrylic acid resin molding (Antistatic treatment)
Case material		Cover: Phenol (P□D-96N-□ is ABS)
Base material		Phenol resin
Insulation resistance	Between electric circuit & case	DC500V 50MΩ or more
Voltage test	Between electric circuit & case	AC3320V, 5sec.
Safety Requirements	Standard	JIS C 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)
Operating temperature Humidity range		-10 ~ 55℃, Average temperature 40℃ or less, 25 ~ 85% RH (Refer to steel ship rules ambient temperature 45℃)
Storage temperature range		-20 ~ 70℃

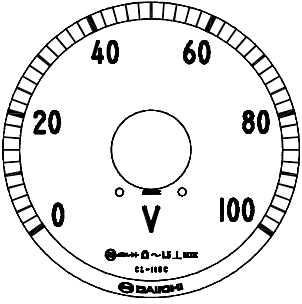
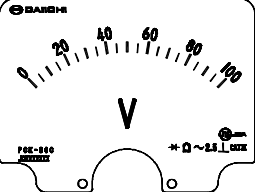
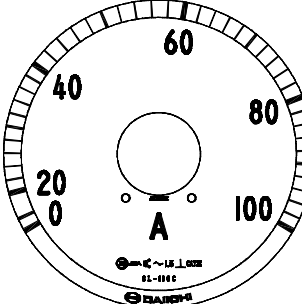
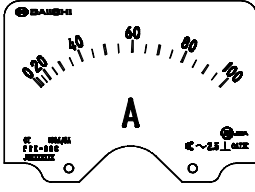
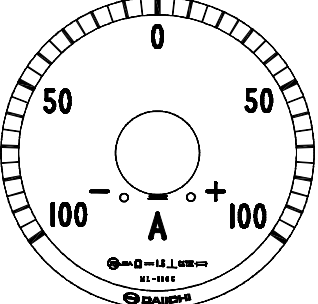
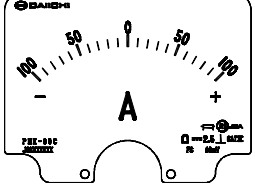
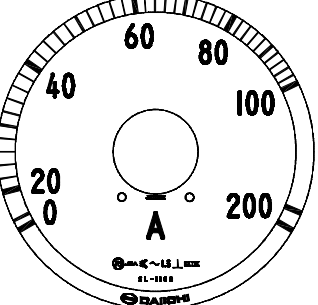
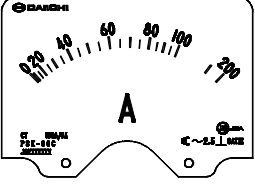
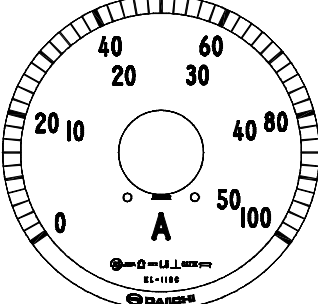
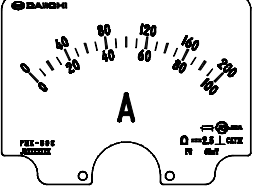
Common Special Specification (Specify)

ITEM		SPECIFICATION	
Scale	Color line	Red, Green, Yellow (Please specify)	
	Extend scale	PSD, PCD: 2~5-time extend	
	Color area (bar)	Red, Green, Yellow (Please specify)	
	Double scale	Please specify	
	Double seal	Please specify	
	Max. scale division	30 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, Inclined (specify the angle)	
Flame-retardant materials	Cover	Polycarbonate resin	
Protection circuit of meter	Overcurrent	Specify necessary tolerated dose	
	Overvoltage		
Extended part of scale	Voltmeter	Please consultation with us	
	Ammeter		
For SCR control waves		AC current, AC voltage, Power Meter, Reactive Power Meter, Frequency	
For cycle control use		AC current, AC voltage (Rectifier Type)	
Test report		Specify the useful frequency and number of copies of report require	
Scale (Single item)		Not JIS mark	
Terminal cover		Please consultation with us	
Others		Please consultation with us for special frequency	

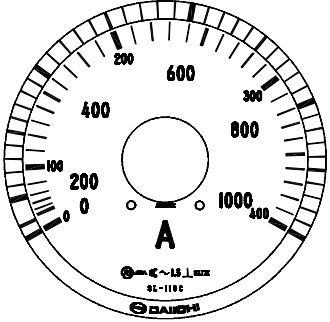
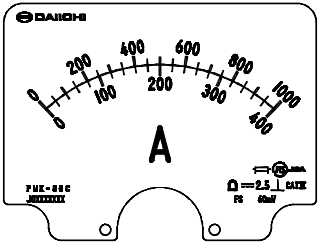
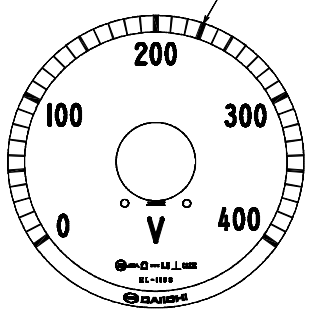
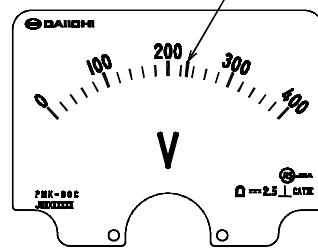
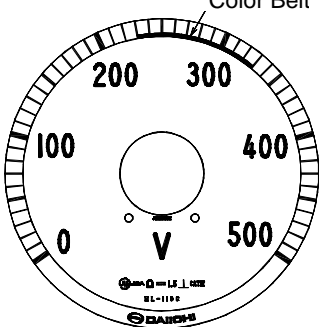
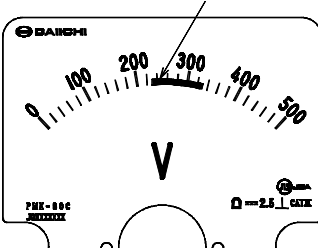
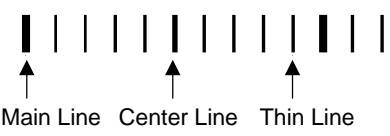
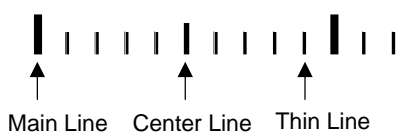
Standard Scale Division

Max. scale value (Integer 10-time)	1	1.5	2	2.5	3	4	5	6	7.5	8	9
Scale division no.	20	30	20	25	30	20	25	30	15	16	18

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

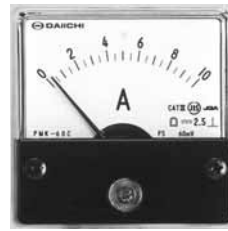
Scale Specification	Wide Angle Meter Ex.: L-110C	Square Shape Meter Ex.: PK-80C
<p>Double Scale Double Seal</p> <p>Scale digit: Black Scale line : Black Unit mark : Black Scale division : Refer to standard lancet shape pointer division Standard place a seal of scale figure : Higher value will display 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 $36 \times 1000 \text{min}^{-1}$</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>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.