

PHOTOELECTRIC NON-CONTACT METER RELAY

EP

EP SERIES LIST

* Use relay box DM-61 for type EP-120C, 100C, 80C and 60C. Specify DM-63 from special specification.

* Relay box for type EP-120NC and 100NC is integral type.

Item		Operating Principle	Type	Max. scale value/ rated value	Internal resistance, Voltage fall, Current consumption, Consumption VA		Accessory Transducer	Diagram	Note
DC Current		Permanent Magnet Moving Coil Type	MEP-120NC, 100NC, 120C, 100C, 80C, 60C	100μA	1500Ω		—	C-1	*MEP-120NC, 100NC: External with shunt when 750mA exceeded.
				1mA	90Ω				
				5mA	20Ω				
				20mA	3Ω				
				30mA~30A	60mV				
				30A~10kA	60mV		Shunt		50mV, 100mV can manufactured
DC Voltage		Permanent Magnet Moving Coil Type	MEP-120NC, 100NC, 120C, 100C, 80C, 60C	50~900mV	4.5mA		—	C-2	—
				1~600V	1mA		Series resistor		
				750V~25kV	1mA				
DC Receiving Indicator		Permanent Magnet Moving Coil Type	XEP-120NC, 100NC, 120C, 100C, 80C, 60C	1mA	90Ω		—	C-1 C-2	—
				4~20mA	2.1Ω				
				1~300V	1mA				
AC Current		Rectifier Type	CEP-120NC, 100NC, 120C, 100C, 80C, 60C	10mA~15A	1VA or less		—	C-3	*CEP-120NC, 100NC: External MR-CTN when 350mA exceeded. *CEP-120C, 100C, 80C, 60C: External MR-CTN when 15A exceeded.
				20~100A	1VA		MR-CTN		
AC Current		Transducer Type	CEP-120CE, 100CE, 80CE, 60CE	10mA~15A	1VA or less		—	C-3	
				20~100A			MR-CTN		
AC Voltage		Rectifier Type	CEP-120NC, 100NC, 120C, 100C, 80C, 60C	3~600V	1mA		—	C-4	
				750V~25kV	1mA		Series resistor		
AC Voltage		Transducer Type	CTEP-120NC, 100NC, 120C, 100C, 80C, 60C	50~300V	1VA		VT-62ME	C-16	—
AC Receiving Indicator		Rectifier Type	YEP-120NC, 100NC, 120C, 100C, 80C, 60C	1mA	1300Ω		—	C-3	—
				3~300V	1mA			C-4	
Watt Meter	single phase	Transducer Type	WEP-120NC, 100NC, 120C, 100C, 80C, 60C-12	110V, 5A 220V, 5A	Voltage 2VA Voltage 3.5VA	Current 1VA Current 1VA	WT-62M-12	C-8	* Refer to accessory transducer outline drawing. * Refer to meter manufacturing limit and max. scale value.
	single phase 3 wire		WEP-120NC, 100NC, 120C, 100C, 80C, 60C-13	110V, 5A	Voltage each phase 2VA	Current each phase 1VA	WT-83M-13	C-5	
	3 phase		WEP-120NC, 100NC, 120C, 100C, 80C, 60C-33	110V, 5A 220V, 5A	Voltage each phase 2VA Voltage each phase 3.5VA	Current each phase 1VA Current each phase 1VA	WT-83M-33	C-5	
	3 phase 4 wire		WEP-120NC, 100NC, 120C, 100C, 80C, 60C-34	110/ $\sqrt{3}$ V, 5A 220/ $\sqrt{3}$ V, 5A	Voltage each phase 1.5VA Voltage each phase 3VA	—	WT-83M-34	C-6	
Var Meter	single phase	Transducer Type	WVEP-120NC, 100NC, 120C, 100C, 80C, 60C-12	110V, 5A 220V, 5A	Voltage each phase 3.5VA Voltage each phase 3.5VA	Current each phase 1.5VA Current each phase 1.5VA	* WVT-62M-12	C-8	* Specify frequency (50 or 60Hz). * Scale: Lead□var~0~Lag□var. * Refer to accessory transducer outline drawing. * Refer to meter manufacturing limit, max. scale value.
	3 phase (balanced)		WVBEP-120NC, 100NC, 120C, 100C, 80C, 60C-33	110V, 5A 220V, 5A	Voltage each phase 3.5VA Voltage each phase 3.5VA	Current each phase 1.5VA Current each phase 1.5VA	WVBT-83M-33	C-5	
	3 phase (unbalanced)		WVEP-120NC, 100NC, 120C, 100C, 80C, 60C-33	110V, 5A 220V, 5A	—	—	* WVT-83M-33	C-5	
	3 phase 4 wire		WVEP-120NC, 100NC, 120C, 100C, 80C, 60C-34	110V, 5A 220V, 5A	—	—	WVT-83M-34	C-7	
Power Factor Meter	single phase	Rectifier Type	PEP-120NC, 100NC, 120C, 100C, 80C, 60C-12	110V, 5A 220V, 5A	Voltage 1VA Voltage 2VA	Current 1VA Current 1VA	* PT-62M-12	C-8	* Specify frequency (50 or 60Hz). * Scale: Lead 0.5~1~Lag 0.5. * Refer to accessory transducer outline drawing.
	3 phase (balanced)		PBEP-120NC, 100NC, 120C, 100C, 80C, 60C-33	110V, 5A 220V, 5A	Voltage each phase 1VA Voltage each phase 2VA	Current each phase 1VA Current each phase 1VA	PBT-62M-33	C-9	
	3 phase (unbalanced)	Transducer Type	PEP-120NC, 100NC, 120C, 100C, 80C, 60C-33	110V, 5A 220V, 5A	—	—	* PT-63M-33	C-10	
	3 phase 4 wire (balanced)	Rectifier Type	PBEP-120NC, 100NC, 120C, 100C, 80C, 60C-34	110V, 5A 220V, 5A	—	—	PBT-62M-34	C-11	
	3 phase 4 wire (unbalanced)	Transducer Type	PEP-120NC, 100NC, 120C, 100C, 80C, 60C-34	110V, 5A 220V, 5A	—	—	* PT-64M-34	C-12	
Frequency		Transducer Type	AEP-120NC, 100NC, 120C, 100C, 80C, 60C	110V or 220V	45~55Hz 55~65Hz 45~65Hz 350~450Hz	For 110V, 1.7VA For 220V, 2.5VA	AEP-120NC, 100NC: FT-62M	C-13	* AEP-60C, 80C, 100C, 120C (external with DM-61) starting current protection circuit will external with FT-62M



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Electrical Measuring Instruments Catalogue e-No.99-024

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EP

COMMON STANDARD SPECIFICATION

Item		Specification
Class		EP-120: 1.5 class (Thermometer: 1.0 class) EP-100, 80, 60: 2.5 class (Thermometer: 2.0 class) Frequency Meter: 1.0 class, Power Factor Meter: 5.0 class
Support System		Pivot system
Meter deflection angle		75°
Dimension meter from front		EP-120C: 120 × 120mm, EP-100C: 100 × 100mm EP-80C: 80 × 80mm, EP-60C: 60 × 60mm
Scale length		EP-120C: 82.5mm, EP-100C: 70.5mm, EP-80C: 52mm, EP-60C: 38mm
Scale plate		White paint
Pointer		Stick-type (black)
Meter mounting position		Vertical (⊥)
Material panel		Iron plate or non-iron plate
Mounting panel thickness		10mm or less (PK-80C, PK-60C: 6mm or less)
Length of special cable (integral type excluded)		1m
Type according to output signal		Continuance output type
Pointer moving range		Passing full scale type
Setting range		Full scale
Tolerance of pick up value		±1.0% of scale length (1.5 class), ±2.0% (2.5 class)
Dead band		0.5% of scale length
Min. setting width		3% of scale length
Relay operation control system		H (upper limit), L (lower limit), HL (upper and lower limit)
Setting index		Lance type, H: red L: yellow
Relay control power		AC110V, 220V (2VA): +10% -15% (50/60Hz) DC24V (2.5W), 48V (5W), 110V (12W) ±15%
Contact configuration		2C contact for HL
Contact capacity		AC200V, 5A (resistance load) DC30V, 5A (resistance load)
Color of cover		Dark blue: (Munsell 7.5BG 4/ 1.5) Black: (Munsell N1.5)
Material of cover		Methacrylic acid resin (anti-static treatment)
Material of base		Phenol resin (EP-N: Flame-retarded ABS resin)
Insulation resistance		Between electric circuit and outer case DC500V, 50MΩ or more
Voltage test		Between electric circuit and outer case AC2230V, between 5sec.
Safety requiment	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	600V (Ammeter)
Operation temperature / Humidity range		-10~55℃, Average day temperature is 40℃ or less, 25~85% RH
Storage temperature range		-20~70℃

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COMMON SPECIAL SPECIFICATION

Item		Specification
Scale	Extend scale	CEP: 2~5-time extend (Please specify)
	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 section	120 angle: 100 section, 100 angle: 75 section, 80 angle: 62.5 section, 60 angle: 50 section
	Special scale	Please specify
Indicator manufacturing limit		DC50μA, DC15mV
DC relay control power		DC50V up to 350V (specify for variation range).
Relay operation control system		HH (upper limit 2 steps) ; LL (lower limit 2 steps)
Total length of dedicated cable		2.5m, 5m, 10m (Junction cable use)
Start current protection circuit		Variable or Fixed within 0~60 sec. Except: EP-120NC, 100NC
Contact delay circuit		Variable or Fixed within 0~60 sec. (Relay box: DM-63) Except: EP-120NC, 100NC
Mounting panel thickness		Above 12mm auxiliary fixture is required.
Tropical specification		Rust preventative, 「FOR TROPICS」 will display at the name plate.
Pointer		Knife-edge (Red), Stick-type (Black), combine use with multiple scale etc.
Meter mounting position		Horizontal, inclination installation (angle specified)
Flame-retarded material		Cover Polycarbonate resin
Protection circuit of meter		Overcurrent Specify for necessary tolerated dose.
		Overvoltage Specify for necessary tolerated dose.
Extended part of scale		Voltmeter ±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.
For RMS value rectifier type		AC Current, AC Voltage
For SCR control waves use		AC Current, AC Voltage, Wattmeter, Frequency

EXTERNAL SERIES RESISTOR (DC Control Power)

Rated value	Series resistor	Note
DC 48V	CRH 30G	Attached for EP-NC only
DC 110V	CRH 60G	

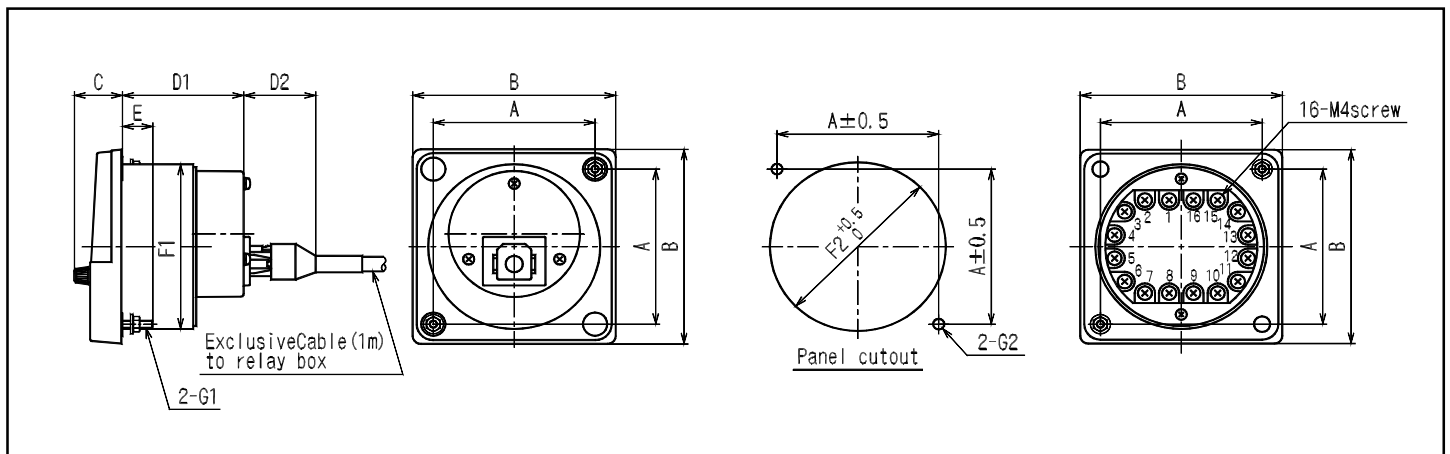
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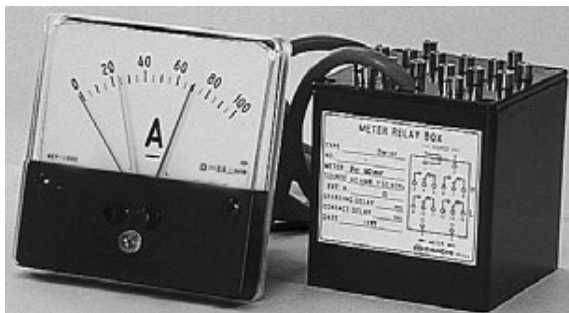
STANDARD SCALE SECTION

Max. scale value	1	1.5	2	2.5	3	4	5	6	7.5	8	9
EP-120NC, EP-120C	20	30	40	25	30	40	25	30	37.5	40	45
EP-100NC, EP-100C, 80C, 60C	20	30	40	25	30	20	25	30	15	16	18

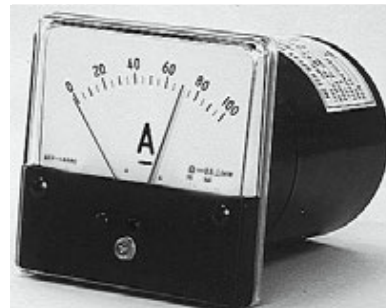
Outline Drawing



Type	A	B	C	D1	D2	E	F1	F2	G1	G2	weight (g)
EP-120NC	100	123	27.8	116	10	15	110 Φ	112 Φ hole	M5 screw	7 Φ hole	800
EP-100NC	80	100	23.8	116	10	15	85 Φ	87 Φ hole	M4 screw	5.5 Φ hole	750
EP-120C	100	123	27.8	59.5	36	15	110 Φ	112 Φ hole	M5 screw	7 Φ hole	1060
EP-100C	80	100	23.8	60	36	15	85 Φ	87 Φ hole	M4 screw	5.5 Φ hole	1010
EP-80C	64	80	23.8	74.5	36	10	65 Φ	67 Φ hole	M3 screw	4 Φ hole	930
EP-60C	48	60	24	74.5	33	10	52 Φ	54 Φ hole	M3 screw	4 Φ hole	870



EP Type



EP-N Type