



M72, M96



ML72, ML144



ML96



ML110

Model	M72, M96	ML72, ML144	ML96	ML72, ML96, ML144, ML110
Description	Full Scale deflection 90°	Full Scale deflection 90°	Full Scale deflection 240°	Full Scale deflection 240°
Movement Type	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension	Moving-coil with central magnetic Core; spring-mounted bearing jewel suspension
Accuracy	± 1.5% of Full Scale	± 1.5% of Full Scale	± 1.5% of Full Scale for ML96, ML144, ML110 + 2.5% of Full Scale for ML72	± 1.5% of Full Scale for ML96, ML144, ML110 + 2.5% of Full Scale for ML72
Sensitivity	1000Ω/V (Voltmeter); 200Ω/V (Ammeter)	1000Ω/V (Voltmeter); 200Ω/V (Ammeter)	1000Ω/V (Voltmeter); 200Ω/V (Ammeter)	1000Ω/V (Voltmeter); 200Ω/V (Ammeter)
Operating Voltage	600 V RMS max.	600 V RMS max.	600 V RMS max.	600 V RMS max.
Test Voltage	2.5 KV for 1 minute at 50 Hz	2.5 KV for 1 minute at 50 Hz	2.5 KV for 1 minute at 50 Hz	2.5 KV for 1 minute at 50 Hz
Construction & Design	According to IS 1248; EN 60051	According to IS 1248; EN 60051	According to IS 1248; EN 60051	According to IS 1248; EN 60051
Scale	According to DIN 43802	According to DIN 43802	According to DIN 43802	According to DIN 43802
Casing	Size 72, 96 ABS Case with Glass Front	Size 72, 96 ABS Case with Glass Front	Size 72, 96, 144 ABS Case with Glass Front	Size 72, 96, 144 ABS Case with Glass Front Size 110 ABS Case with Clear Polycarbonate Cover
Dimensions and Panel cutout	Refer Dimensions Page Overleaf		Refer Dimensions Page Overleaf	

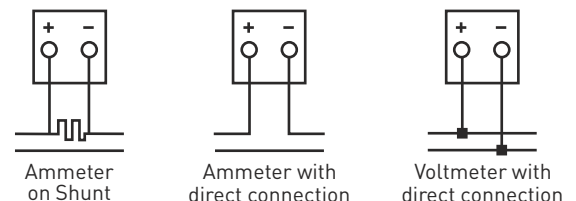
Ammeters				Voltmeters	
μA	mA	A*	On shunt	mV	V
	1 mA	1 A	-A/60 mV		1 V
	1.5 mA	1.5 A	-A/75 mV		1.5 V
	2 mA	2 A	-A/100 mV		2 V
	2.5 mA	2.5 A			2.5 V
	4 mA	4 A			4 V
	5 mA	5 A	5A/75 mV		5 V
	6 mA	6 A	6A/75 mV		6 V
	10 mA	10 A	10A/75 mV		10 V
	15 mA	15 A	15A/75 mV		15 V
	20 mA	20 A	20A/75 mV		20 V
	25 mA	25 A	25A/75 mV		25 V
	30 mA	30 A	30A/75 mV		30 V
	40 mA	40 A	40A/75 mV		40 V
	50 mA	50 A	50A/75 mV	50 mV	50 V
	60 mA		60A/75 mV	60 mV	60 V
	75 mA		75A/75 mV	75 mV	75 V
	100 mA		100A/75 mV	100 mV	100 V
	150 mA		150A/75 mV	150 mV	150 V
	250 mA		250A/75 mV	250 mV	250 V
	400 mA		400A/75 mV	400 mV	400 V
	500 mA		500A/75 mV	500 mV	500 V
	600 mA		600A/75 mV	600 mV	600 V
	800 mA		800A/75 mV	800 mV	800 V
			and higher		1000 V

Ordering Information: Model, Input Range, Scale

Notes

- Ranges common to M and ML Series
- All other refer to M Series only
- * For ML72 DC direct current upto 1A. Above 1A use with external shunt.
- a) Double stamping / non-standard / centre zero marking available.
- b) Zero supp. DC ammeter for 4-20mA & voltmeter for 1-5V available.
- c) Voltmeters with sensitivity 10K Ohms / V available in 90°
- d) Rubber gaskets for vibration proof available.
- e) Other ranges subject to technical feasibility.
- f) Terminal Protection Cover (Optional) on request for all Models except ML144

Wiring Diagram

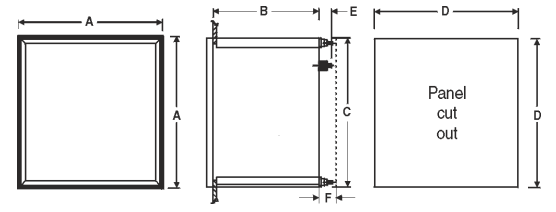


MODELS	SCALE LENGTH (mm)	REFER DRAWING	A	B	C	D	E	F	EXT. BOX # DRAWING
SQ72 (VOLTMETER & AMMETER UPTO 20A)	64	1	72	51.5	67	68	17	19	-
SQ72 (AMMETER ABOVE 20A)	64	1	72	51.5	67	68	23	19	-
M72,F72,C72, (72QF11,31)	60	1	72	37	66	68	13	19.5	5
72QW11,31,32,33, (72QV11,31,32,33)	60	1	72	37	66	68	13	19.5	4
72LW11,31,32,33, (72LV11,31,32,33)	110	1	72	37	66	68	13	22	4
ML72,MLC72 (Voltmeter),72LF11(#),72LF31(#),FL72(#)	110	1	72	37	66	68	13	22	-
MLC72 (Ammeter)	110	1	72	62	66	68	16	18	-
SQ96 (VOLTMETER & AMMETER UPTO 20A)	97	1	96	51.5	90	92	17	19	-
SQ96 (AMMETER ABOVE 20A)	97	1	96	51.5	90	92	23	19	-
M96 (Above 10A, E=18)	90	1	96	30	90	92	13	19.5	-
96QW11,31,32,33, (96QV11,31,32,33)	90	1	96	102	90	92	16	12	-
96LW11,31,32,33, (96LV11,31,32,33), 96LF11,31,FL96	155								
C96,96QF11,31,F96,M96 (4-20mA DC)	90	1	96	48	90	92	13	19.5	-
ML144,MLC144,144LF11,31,FL144	230	1	144	54	136	138	4	19	-
144QF11,31,F144	140	1	144	66	136	138	16	14	-
144QW11,31,32,33 (144QV11,31,32,33)	140	2	144	116	136	138	-	-	-
144LW11,31,32,33 (144LV11,31,32,33)	230	2	144	103	136	138	-	-	-
ML110,MLC110,110LF11,31,FL110	175	3	----As Per Drawing----						-
110LW,11,31,32,33, (110LV11,31,32,33)	175	3							4
ML96/MLC96 (Above 10A, E=18)	155	1	96	48	90	92	13	22	-

MODELS	SCALE LENGTH (mm)	REFER DRAWING	A	B	C	D	E	F	G	H	I	J	L	O	R	EXT. BOX # DRAWING
MR60,CR60	57	6	60	60	33	24	48	48	51.5	12	-	-	54	4BA	4.5	5 (CR60)
MR65,CR65	68	6	81	81	33	22	64	64	64	12	-	-	67	4BA	4.5	5 (CR65)
MR100,CR100	80	6	100	80	34	21	84	64	63	12	-	7	67	4BA	4.5	5 (CR100)
MR120,CR120	96	6	120	100	38	25	100	80	65	12	-	16	67	4BA	4.5	5 (CR120)

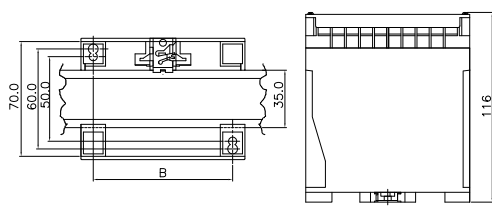
Dimensions (mm)

1

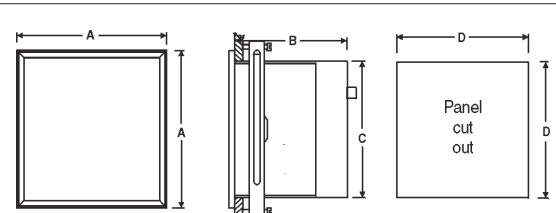


4 Dimension of DIN Series Power Line Transducers

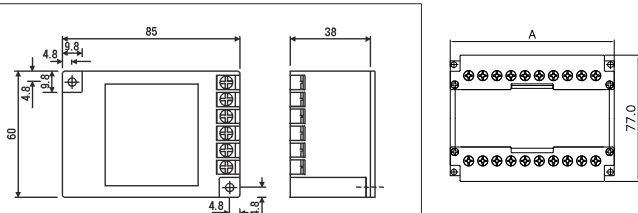
Case Size	A	B
I	75	60
II	100	85
III	150	135



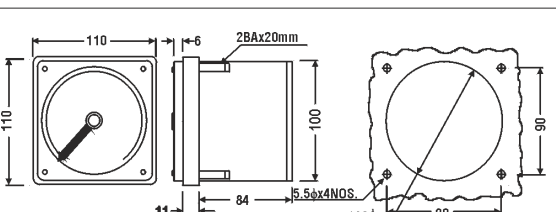
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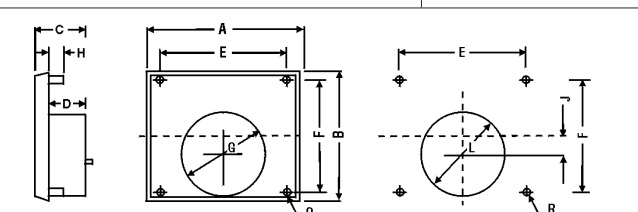
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Note : # For ranges greater than 100 mA & upto 5A AC use Models CR60, CR65, CR100, CR120, 72LF11,72LF31,FL72 & C72 with External CT Box supplied with the instruments (Drawing 5).