

MM series

Surface Mounted Analog Panel Meters

The Jewell surface mounted MM series analog panel meter has the popular medallion shape that revolutionized the meter industry. This space saving design offers high visibility and rugged durability while blending with today's high technology applications.

Mechanisms/Sizes

T taut band

- Compact self-shielded taut band movement using simplified, frictionless suspension system supporting moving assembly. For applications that do not have severe shock and vibration.
- 1½" (MM1T), 2½" (MM2T), and 3½" (MM3T).

TB taut band

- High performance taut band movement having unique suspension system for shock resistance. Offers variety of ballistics with superior torque and damping capabilities.
- 2½" (MM2TB) and 3½" (MM3TB).

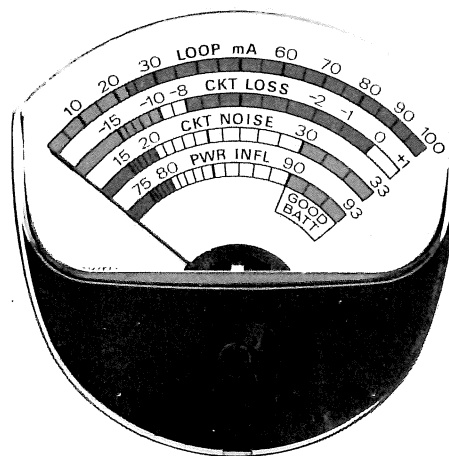
CM core-mag

- Compact, self-shielded D'Arsonval pivot and jewel movement providing excellent damping, repeatability and resistance to shock and vibration.
- 1½" (MM1CM), 2½" (MM2CM), and 3½" (MM3CM).

Pivot & Jewel

- D'Arsonval mechanism offering excellent sensitivity, repeatability and resistance to shock and vibration. Offers variety of ballistics with superior torque and damping capabilities.
- 2½" (MM2) and 3½" (MM3).

Jewell



Specifications

- **Performance** Meets requirements of American National Standard Institute ANSI C39.1.
- **Accuracy** All DC meters $\pm 2\%$ and all AC rectified-type meters $\pm 3\%$ of full scale at 23 degrees celsius.
- **Case** Precision molded, black thermoplastic, one-piece barrel and flange. Lexan material available on special orders.
- **Cover** Optically clear, molded Plexiglass cover snaps onto case. Glossy black is standard color. Special colors and Lexan material available on special orders.
- **Zero Set** Zero left is standard. Zero center, zero right, and offset zero available upon request.
- **Zero Adjuster** External adjuster on cover is standard on all models with minimum $\pm 3\%$ adjustment range.
- **Dial** White metal dial with sharp division marks, black printed numerals and radial arc. Special dials including mirrored and multicolor available upon request.
- **Pointer** Black lance pointer is standard. Knife edge or tubular pointers and red or white colors available upon request.
- **Deflection** T taut band standard is 100 degrees.
TB taut band standard is 100 degrees.
CM core-mag standard is 90 degrees.
Pivot & Jewell standard is 100 degrees for 100 microamp range and above and 90 degrees for below.
- **Terminals** Threaded stud-type terminals are standard. Solder lugs available upon request.
- **Mounting** The 1½" meters are mounted by single mounting ring which screws into case barrel. The 2½" and 3½" meters are available in three-stud mountings to ANSI C39.1 drilling plan.
- **Warranty** One year limited warranty.

Specifications subject to change without notice.

Ranges and Resistances

Standard Ranges	Standard Resistances			
	MM1T		MM1CM	
	MM2T	MM2TB	MM2CM	MM2
	MM3T	MM3TB	MM3CM	MM3
MICROAMPERES DC				
0-10	NA	3400	NA	NA
0-20	NA	1710	NA	2200
0-50	2560	1660	NA	1650
0-100	730	450	900	1325
0-200	225	197	500	460
0-500	272	41	200	280
50-0-50	730	450	900	1325
100-0-100	225	197	500	460
500-0-500	77	18	45	45
MILLIAMPERES DC				
0-1	77	18	45	45
0-5	7.9	CF	5	6
0-10	5.9	CF	CF	6
0-25	2	CF	CF	2
0-50	1	CF	CF	1
0-100	0.5	CF	CF	0.5
0-200	0.25	CF	CF	0.25
0-500	0.1	CF	CF	0.1
AMPERES DC				
0-1	0.05	0.05	CF	0.05
0-5	0.01*	CF	CF	0.01
0-10	0.005*	CF	CF	0.005
0-25	0.002*	CF	CF	0.002
0-50	0.001*	CF	CF	0.001

MM Series

Standard Ranges	Standard Resistances			
	MM1T	MM2TB	MM1CM	MM2
	MM2T		MM2CM	
	MM3T	MM3TB	MM3CM	MM3
MILLIVOLTS DC				
0-5	NA	20	CF	NA
0-10	NA	40	CF	NA
0-50	50	50	50	10
VOLTS DC (ohms/volt)				
0-1	1000	1000	1000	1000
0-5	1000	1000	1000	1000
0-10	1000	1000	1000	1000
0-15	1000	1000	1000	1000
0-25	1000	1000	1000	1000
0-30	1000	1000	1000	1000
0-50	1000	1000	1000	1000
0-100	1000	1000	1000	1000
0-150	1000	1000	1000	1000
0-200	1000	1000	1000	1000
0-500	1000	1000	1000	1000
VOLTS AC rectified (ohms/volt)				
0-150	1000	1000	1000	1000
0-300	1000**	1000	1000**	1000

NA – not available CF – consult factory

Standard resistance for all ammeters in ohms $\pm 10\%$ and for all voltmeters in ohms $\pm 5\%$.

Consult factory for special ranges and resistance.

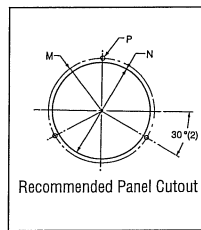
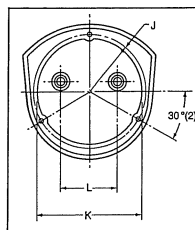
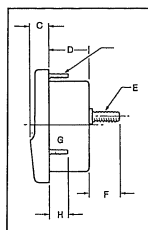
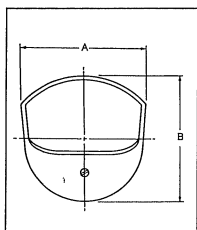
* Meters 1 1/2" supplied as 50MVDC for use with external shunt (not supplied).

** Not furnished for 1 1/2" meters.

Dimensions

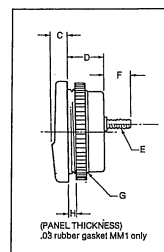
Standard three-stud mounting for 2 1/2" and 3 1/2" meters

MODELS	A	B	C	D	E	F	G	H	J	K	L	M	N	P
MM2	2.73 in	2.73 in	0.48 in	1.01 in	10-32 UNF-2A	0.50 in	4-40 UNC-2A	0.45 in	1.22 in	2.19 in	1.00 in	1.22 in	2.22 in	0.125 in
MM2TB	69.34 mm	69.34 mm	12.19 mm	25.65 mm	on CL	12.70 mm		11.43 mm	30.99 mm	55.63 mm	25.40 mm	30.99 mm	56.39 mm	3.175 mm
MM2T	2.73 in	2.73 in	0.48 in	1.01 in	1/4-28 UNF-2A	0.75 in	4-40 UNC-2A	0.45 in	1.22 in	2.19 in	1.20 in	1.22 in	2.22 in	0.125 in
MM2CM	69.34 mm	69.34 mm	12.19 mm	25.65 mm	0.235 above CL	19.05 mm		11.43 mm	30.99 mm	55.63 mm	30.48 mm	30.99 mm	56.39 mm	3.175 mm
MM3	3.50 in	3.48 in	0.48 in	1.01 in	1/4-28 UNF-2A	0.75 in	6-32 UNC-2A	0.45 in	1.58 in	2.70 in	1.38 in	1.38 in	2.82 in	0.150 in
	88.90 mm	88.39 mm	12.19 mm	25.65 mm	0.44 above CL	19.05 mm		11.43 mm	40.13 mm	68.58 mm	35.05 mm	35.05 mm	71.63 mm	3.81 mm
MM3TB	3.50 in	3.48 in	0.48 in	1.01 in	10-32 UNF-2A	0.75 in	6-32 UNC-2A	0.45 in	1.58 in	2.70 in	1.38 in	1.38 in	2.82 in	0.150 in
	88.90 mm	88.39 mm	12.19 mm	25.65 mm	0.44 above CL	19.05 mm		11.43 mm	40.13 mm	68.58 mm	35.05 mm	35.05 mm	71.63 mm	3.81 mm
MM3T	3.50 in	3.48 in	0.48 in	1.01 in	1/4-28 UNF-2A	0.75 in	6-32 UNC-2A	0.45 in	1.58 in	2.70 in	1.20 in	1.58 in	2.82 in	0.150 in
MM3CM	88.90 mm	88.39 mm	12.19 mm	25.65 mm	on CL	19.05 mm		11.43 mm	40.13 mm	68.58 mm	30.48 mm	40.13 mm	71.63 mm	3.81 mm



Recommended Panel Cutout

1 1/2" meters



Single ring mounting for 1 1/2" meter

MODELS	A	B	C	D	E	F	G	H	K	L	M
MM1T	1.75 in	1.75 in	0.37 in	1.00 in	6-32 UNC	0.23 in	1.5-18 UNF-2A	0.22 in	1.70 in	0.75 in	1.55 in
MM1CM	44.45 mm	44.45 mm	9.40 mm	25.40 mm	0.185 above CL	5.84 mm		5.59 mm	43.18 mm	19.05 mm	39.37 mm

Scale and Pointer

METER	scale	pointer
MM1T,	1.57 in	0.905 in
MM1CM	39.88 mm	22.99 mm
MM2T,	2.37 in	1.36 in
MM2CM	60.20 mm	34.54 mm
MM2,	2.48 in	1.426 in
MM2TB	62.99 mm	36.22 mm
MM3T,	3.33 in	1.91 in
MM3CM	84.58 mm	48.51 mm
MM3,	3.38 in	1.94 in
MM3TB	85.85 mm	49.28 mm