

Rectangular Style Analog Panel Meters

- UL Recognized - File # E91015
Except for the Wattmeters & Frequency Meters
- Plastic case with Glass Window
- Calibration not affected when mounted on steel
- Three popular sizes:
2-1/2", 3-1/2", 4-1/2"



For Specifications and Dimensions see the last pages

Ordering Information

| Frequency, Self-Shielding Movement | | Not  | | |
|------------------------------------|---------|--|--------------------|--------------------|
| Range | Voltage | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 187 | 3-1/2" Model 87 | 4-1/2" Model 89 |
| 45-55 Hz | 120V | 35136 | 35142 | 35148 |
| 55-65 Hz | 120V | 35138 | 35144 | 35150 |
| 380-420 Hz | 120V | 35140 | 35146 | 35152 |
| 45-55 Hz | 240V | 35137 | 35143 | 35149 |
| 55-65 Hz | 240V | 35139 | 35145 | 35151 |
| 380-420 Hz | 240V | 35141 | 35147 | 35153 |



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Ordering Information

| 4-20 mA Process Meters, Dial Indicates 0-100% | | | | |
|---|-------------|-------|--------------------------|-------------|
| Size | Style | Model | Approx. Impedance (Ohms) | Catalog No. |
| 3-1/2" | Rectangular | 27 | 5.0 | 35023 |
| 4-1/2" | Rectangular | 29 | 5.0 | 35024 |

| Wattmeters, Self Shielding Movement | | | Not  | | |
|-------------------------------------|---------|------|---|--------------------|--------------------|
| Range | Maximum | | Model / Size and Catalog Number | | |
| | Volts | Amps | 2-1/2" Model 177 | 3-1/2" Model 77 | 4-1/2" Model 79 |
| 0-20 | 150 | .400 | < > | < > | 10714 |
| 0-75 | 150 | 1.0 | 10860 | 10650 | 10720 |
| 0-150 | 150 | 2.0 | < > | < > | 10730 |
| 0-300 | 150 | 4.0 | < > | < > | 10740 |
| 0-600 | 300 | 4.0 | < > | 10680 | 10750 |
| 0-750 | 150 | 10.0 | 10900 | 10690 | 10760 |
| 0-1500 | 300 | 10.0 | 10910 | 10700 | 10770 |
| 0-3000 | 300 | 20.0 | 10920 | 10710 | 10780 |

< > Available on special order

Ordering Information

| DC Voltmeters, Self-Shielding Movement | | | | |
|--|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 127 | 3-1/2" Model 27 | 4-1/2" Model 29 |
| 0-1.5 | 1000 Ohms per Volt | 09020 | 07290 | 07620 |
| 0-3 | | 09030 | 07300 | 07630 |
| 0-5 | | 09040 | 07310 | 07640 |
| 0-8 | | 09050 | < > | 07650 |
| 0-10 | | 09060 | 07330 | 07660 |
| 0-15 | | 09080 | 07350 | 07670 |
| 0-25 | | 09090 | 07360 | 07680 |
| 0-30 | | 09100 | 07370 | 07690 |
| 0-50 | | 09110 | 07380 | 07700 |
| 0-100 | | 09130 | 07400 | 07710 |
| 0-150 | | 09140 | 07410 | 07720 |
| 0-200 | | 09160 | 07430 | 07730 |
| 0-250 | | 09170 | 07440 | 07740 |
| 0-300 | | 09180 | 07450 | 07750 |
| 0-500 | | 2000 Ohms per Volt | 09200 | 07470 |
| 0-750 | < > | | 07490 | 07770 |
| 0-1000 | < > | | 07495 * | 07780 * |
| 0-1500 | < > | | 07520 * | 07790 * |
| 0-2000 | 09225 * | | 07530 * | 07800 * |
| 0-2500 | < > | | 07550 * | 07810 * |
| 0-3000 | < > | | 07560 * | 07820 * |
| 0-4000 | < > | | < > | 07830 * |
| 0-5000 | < > | | 07600 * | 07840 * |
| < > Available on special order | | | | |
| * External multipliers (Model 183) are furnished on 2-1/2" DC meters 750 volts or higher and on 3-1/2" and 4-1/2" DC Meters 1000 volts or higher | | | | |



Rectangular Style Analog Panel Meters

Ordering Information

| DC Millivoltmeters, Self-Shielding Movement | | | | |
|--|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 127 | 3-1/2" Model 27 | 4-1/2" Model 29 |
| 0-50 | 10.0 | 06990 | 06930 | 06950 |
| 0-100 | 20.0 | < > | 06940 | 06960 |
| < > Available on special order | | | | |

| DC Taut-Band Microammeters, Self-Shielding Movement | | | | |
|--|----------------------------------|---------------------------------|------------------|------------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 127T | 3-1/2" Model 27T | 4-1/2" Model 29T |
| 0-10 | 4900 | 04246 | 03839 | 03939 |
| 0-15 | 1960 | 04248 | 03841 | 03941 |
| 0-25 | 1960 | 04251 | 03851 | 03951 |
| 0-50 | 960 | 04261 | 03961 | 03961 |
| 0-100 | 500 | < > | 03871 | 03971 |
| < > Available on special order | | | | |



Rectangular Style Analog Panel Meters

Ordering Information

| DC Microammeters, Self-Shielding Movement | | | | |
|--|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 127 | 3-1/2" Model 27 | 4-1/2" Model 29 |
| 0-50 | 1800 | 04260 | 03860 | 03960 |
| 0-100 | 1800 | 04270 | 03870 | 03970 |
| 0-200 | 1100 | 04280 | 03880 | 03980 |
| 0-500 | 90 | < > | 03890 | 03990 |
| 25-0-25 | 1800 | 04243 | 03900 | 04000 |
| 50-0-50 | 1800 | 04245 | 03910 | 04010 |
| 100-0-100 | 1100 | 04247 | 03920 | 04020 |
| 500-0-500 | 43 | < > | 03930 | 04030 |
| < > Available on special order | | | | |

| DC Milliammeters, Self-Shielding Movement | | | | |
|--|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 127 | 3-1/2" Model 27 | 4-1/2" Model 29 |
| 0-1 | 43.0 | 05760 | 04790 | 05070 |
| 0-1.5 | 43.0 | < > | 04810 | 05080 |
| 0-3 | 2.0 | 05790 | 04820 | 05090 |
| 0-5 | 2.0 | 05800 | 04830 | 05100 |
| 0-10 | 10.0 | 05810 | 04840 | 05110 |
| 0-15 | 6.6 | 05830 | 04860 | 05120 |
| 0-20 | 5.0 | < > | 04880 | 05130 |
| 0-25 | 4.0 | 05860 | 04890 | 05140 |
| 0-50 | 2.0 | 05880 | 04910 | 05150 |
| 0-75 | 1.3 | < > | < > | < > |
| 0-100 | 1.0 | 05910 | 04940 | 05170 |
| 0-150 | .66 | 05930 | 04960 | 05180 |
| 0-200 | .5 | 05940 | 04980 | 05190 |
| 0-250 | .4 | < > | 05000 | 05200 |
| 0-300 | .33 | < > | 05010 | 05210 |
| 0-500 | .2 | 05990 | 05030 | 05220 |
| 0-750 | .13 | < > | 05050 | 05230 |
| 0-1000 | .05 | 06020 | 05060 | 05240 |
| < > Available on special order | | | | |



Rectangular Style Analog Panel Meters

Ordering Information

| DC Ammeters, Self-Shielding Movement | | | | |
|---|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 127 | 3-1/2" Model 27 | 4-1/2" Model 29 |
| 0-1 | .050 | 01680 | 00230 | 00450 |
| 0-1.5 | .033 | 01690 | 00240 | 00460 |
| 0-2 | .025 | 01709 | 00250 | 00470 |
| 0-3 | .0166 | 01710 | 00260 | 00480 |
| 0-5 | .010 | 01720 | 00270 | 00490 |
| 0-10 | .005 | 01730 | 00280 | 00500 |
| 0-15 | .0033 | 01740 | 00290 | 00512 |
| 0-25 | .0020 | 01750 | 00300 | 00520 |
| 0-30 | .0017 | 01760 | 00310 | 00530 |
| 0-50 | .001 | 01770 | 00320 | 00540 |
| 0-75 | 10.0 | 01780 † | 00330 † | 00550 † |
| 0-100 | 10.0 | 01790 † | 00340 † | 00560 † |
| 0-150 | 10.0 | 01800 † | 00350 † | 00570 † |
| 0-200 | 10.0 | 01810 † | < > | 00580 † |
| 0-250 | 10.0 | < > | < > | 00590 † |
| 0-300 | 10.0 | < > | 00380 † | 00600 † |
| 0-500 | 10.0 | < > | 00390 † | 00610 † |
| 0-750 | 10.0 | < > | 00400 † | 00620 † |
| 0-1000 | 10.0 | < > | 00410 † | 00630 † |
| 15-0-15 | .0033 | < > | < > | 00640 |
| 30-0-30 | .0017 | 01880 | 00430 | 00650 |
| 50-0-50 | .001 | 01890 | 00440 | 00660 |

< > Available on special order

† DC current meters are self-contained for ranges up to and including 50 amperes.

Higher range DC current meters (50 mV) listed above are calibrated for 5' leads and require external shunts.



Rectangular Style Analog Panel Meters

Ordering Information

| AC Microammeters Rectifier Type, Self-Shielding Movement | | | | |
|---|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 147 | 3-1/2" Model 47 | 4-1/2" Model 49 |
| 0-100 | 3400 | < > | 04120 | 04160 |
| 0-200 | 2400 | < > | < > | 04170 |
| 0-300 | 1800 | < > | 04140 | 04180 |
| 0-500 | 1200 | < > | 04150 | 04190 |
| < > Available on special order | | | | |

| AC Milliammeters, Iron Vane Movement | | | | |
|---|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 157 | 3-1/2" Model 57 | 4-1/2" Model 59 |
| 0-10 | 650.0 | < > | 05440 | 05510 |
| 0-15 | 887.0 | < > | 05499 | < > |
| 0-25 | 270.0 | < > | 05460 | 05530 |
| 0-50 | 80.0 | 06130 | 05470 | 05540 |
| 0-100 | 17.2 | 06140 | 05480 | 05550 |
| 0-250 | 3.1 | 06150 | 05490 | 05560 |
| 0-500 | .9 | 06152 | 05500 | 05570 |
| < > Available on special order | | | | |



Rectangular Style Analog Panel Meters

Ordering Information

| AC Milliammeters Rectifier Type, Self Shielding Movement | | | | |
|---|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 147 | 3-1/2" Model 47 | 4-1/2" Model 49 |
| 0-1 | 600 | < > | 06850 | 06880 |
| 0-2 | 400 | < > | 06860 | 06890 |
| 0-5 | 200 | < > | 06870 | 06900 |
| < > Available on special order | | | | |

| AC Ammeters, Iron Vane Movement | | | | |
|--|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 157 | 3-1/2" Model 57 | 4-1/2" Model 59 |
| 0-1 | .213 | 02270 | 01120 | 01290 |
| 0-1.5 | .105 | < > | 01130 | 01302 |
| 0-2 | .065 | 02290 | 01140 | 01310 |
| 0-3 | .028 | 02300 | 01145 | 01320 |
| 0-5 | .008 | 02310 | 01160 | 01330 |
| 0-10 | .004 | 02320 | 01170 | 01340 |
| 0-15 | .0025 | 02330 | 01180 | 01350 |
| 0-25 | .002 | 02340 | 01190 | 01360 |
| 0-30 | .0015 | 02350 | 01200 | 01370 |
| 0-50 | .001 | 02360 | 01210 | 01380 |
| 0-75 | .0002 | < > | 03434 | 03436 |
| 0-75 | .008 | 02370 † | < > | < > |
| 0-100 | .008 | 02380 † | 01230 † | 01400 † |
| 0-150 | .008 | 02390 † | 01240 † | 01410 † |
| 0-200 | .008 | < > | 01250 † | 01420 † |
| 0-250 | .008 | 02410 † | 01260 † | 01430 † |
| 0-300 | .008 | 02420 † | 01270 † | 01440 † |
| 0-500 | .008 | 02422 † | 01280 † | 01450 † |
| < > Available on special order | | | | |
| † These meters are 5 amp meters with scales as indicated and require external donut transformers | | | | |



Rectangular Style Analog Panel Meters

Ordering Information

| AC Voltmeters Rectifier Type, Self Shielding Movement | | | | |
|---|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 147 | 3-1/2" Model 47 | 4-1/2" Model 49 |
| 0-1 | 2000 Ohms per Volt | < > | 08120 | 08300 |
| 0-3 | | < > | 08130 | 08310 |
| 0-5 | | < > | < > | 08320 |
| 0-10 | | < > | < > | 08330 |
| 0-15 | | < > | < > | 08340 |
| 0-50 | | < > | < > | 08350 |
| 0-100 | | < > | 08180 | 08360 |
| 0-150 | | < > | 08190 | 08370 |
| 0-300 | | < > | < > | 08371 |
| < > Available on special order | | | | |

| AC Voltmeters, Iron Vane Movement | | | | |
|---|----------------------------------|---------------------------------|-----------------|-----------------|
| Range | Approx. Impedance (Ohms) @ 60 Hz | Model / Size and Catalog Number | | |
| | | 2-1/2" Model 157 | 3-1/2" Model 57 | 4-1/2" Model 59 |
| 0-1.5 | 3 | < > | < > | 08710 |
| 0-3 | 12 | < > | 08540 | 08720 |
| 0-5 | 33 | 09390 | 08550 | 08730 |
| 0-10 | 133 | 09400 | 08566 | 08740 |
| 0-15 | 300 | 09420 | 08580 | 08750 |
| 0-25 | 833 | 09440 | 08599 | 08760 |
| 0-50 | 3,333 | 09450 | 08610 | 08770 |
| 0-100 | 16,166 | 09460 | 08620 | 08780 |
| 0-150 | 25,000 | 09470 | 08630 | 08790 |
| 0-250 | 41,166 | 09490 | 08650 | 08800 |
| 0-300 | 50,000 | 09500 | 08660 | 08810 |
| 0-500 | 83,333 | 09520 † | 08680 † | 08820 † |
| 0-750 | 125,000 | < > | 08690 † | 08830 † |
| 0-1000 | 166,666 | < > | 08700 † | 08840 † |
| † External multipliers, Model 183 are furnished on AC meters having a range of 500 volts or higher. All others have self contained multipliers. | | | | |
| < > Available on special order | | | | |

Rectangular Style Analog Panel Meters

| Specifications | |
|------------------------------|---|
| Accuracy | ±2% full scale (iron-vane), ±3% (rectifier) |
| Wattmeters: | ±2% full scale; Compensated meters: ±3% full scale |
| Movement | Model 57, 59, 157 Iron-vane, magnetically damped Wattmeters: Dynamometer All others: Annular, rectifier type, self-shielding |
| Suspension | Pivot and jewel; "T" styles: taut band |
| Tracking | ±3% |
| Shielding | Calibration is unaffected by magnetic panel mounting |
| Response Time | 1.5 seconds maximum |
| Overload (1 sec.) | 10 times F.S. |
| Overload (Continuous) | 1.5 times F.S. |
| Repeatability | 2 %, tautband: .5% |
| Dial | Sharp clear scale. Each dial arc is calibrated to track the specific type of movement used |
| Resistance | ±15% of meter impedance |
| Pointer | Spade pointer with black, matte finish |
| Scale Length | Models 177 & 157: 1.6" (40.6mm) Models 147, 127 & 127T: 1.8" (45.7mm) Models 57 & 77: 2.3" (58.4mm) Models 27, 27T & 47: 2.5" (63.5mm) Models 59 & 79: 3.50" (89.0mm) Models 29, 29T & 49: 3.9" (99.0mm) |
| Net Weight | Models 57 & 157: 5 oz. (0.14 kg) Model 127, 127T & 147: 7 oz. (0.20 kg) Models 27, 27T, 47 & 59: 8 oz. (0.23 kg) Models 77 & 177: 9 oz. (0.26 kg) Models 29, 29T & 49: 11 oz. (0.31 kg) Model 79: 12 oz. (0.34 kg) |

Rectangular Style Analog Panel Meters

| Frequency Meter Specifications | |
|---------------------------------------|---|
| Accuracy | 45-55 Hz ± 0.3 Hz (120V-240V) |
| | 55-65 Hz ± 0.3 Hz (120V-240V) |
| | 380-420 Hz ± 1.2 Hz (120V-240V) |
| Movement | Small core magnet, self-shielding |
| Suspension | Pivot and jewel |
| Shielding | Calibration is unaffected by magnetic panel mounting |
| Center Scale Value | 50/60/400 Hz |
| Power Consumption | 1.6 VA |
| Warm-up Time | 5 minutes |
| Max. Input: Voltage (10 sec) | 150, 120V normal |
| | 280, 240V normal |
| Dial | Sharp clear scale. Each dial arc is calibrated to track the specific type of movement used |
| Case | High density black plastic |
| Operating Temperature | -4°F to + 149°F (-20°C to + 65°C) |
| Pointer | Spade pointer with black, matte finish |
| Scale Length | Model 187: 1.8" (45.7mm) |
| | Model 89: 3.5" (89.0mm) |
| | Model 87: 3.9" (99.0mm) |
| Net Weight | Model 187: 5 oz. (0.14 kg) |
| | Model 87: 8 oz. (0.23 kg) |
| | Model 89: 11 oz. (0.31 kg) |

Rectangular Style Analog Panel Meters

Dimensions

3-1/2" Model 27 & 27T, 47, 57, & 87



3-1/2" Model 77



4-1/2" Model 29 & 29T, 49, 59, & 89



4-1/2" Model 79



2-1/2" Model 177



2-1/2" Model 127 & 127T, 147, 157, & 187

