

# CURRENT MEASUREMENT PROBES

## MR SERIES AC/DC CURRENT PROBES

### MODELS MR415 / 416 / 526

*General Purpose Hall Effect Current Probes for use with DMMs, Data Loggers and Power Analyzers*

### SPECIFICATIONS

| MODELS                 | MR415                                                                                                                                                                 | MR416                                                                                                | MR526                                                                                                                                                                                                  |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ELECTRICAL             |                                                                                                                                                                       |                                                                                                      |                                                                                                                                                                                                        |
| Current Range          | 0.5 to 400A <sub>AC</sub> ,<br>600A <sub>DC</sub>                                                                                                                     | 0.5 to 40A <sub>AC</sub> ,<br>60A <sub>DC</sub><br>0.5 to 400A <sub>AC</sub> ,<br>600A <sub>DC</sub> | 0.5 to 100A <sub>AC</sub> , 150A <sub>DC</sub><br>0.5 to 1000A <sub>AC</sub> , 1400A <sub>DC</sub>                                                                                                     |
| Output Signal          | 1mV/A                                                                                                                                                                 | 10mV/A, 1 mV/A                                                                                       | 10mV/A, 1mV/A                                                                                                                                                                                          |
| Frequency Range        | DC to 30kHz (-3dB) (depending of current value)                                                                                                                       |                                                                                                      |                                                                                                                                                                                                        |
| Phase Shift At 50/60Hz | ≤1.5°@ 400A                                                                                                                                                           | ≤2.2°@ 40A<br>≤1.5° @ 400A                                                                           | ≤2°@ 100A ≤1.5° @ 800A                                                                                                                                                                                 |
| Load Impedance         | >1MΩ and ≤100pF                                                                                                                                                       |                                                                                                      |                                                                                                                                                                                                        |
| Overload               | 3000A <sub>DC</sub> or 1000A <sub>AC</sub> continuous for < 1kHz                                                                                                      |                                                                                                      |                                                                                                                                                                                                        |
| Zero Adjust            | Automatic on both ranges                                                                                                                                              |                                                                                                      |                                                                                                                                                                                                        |
| Power Source           | 9V Alkaline battery (NEDA 1060A, 6LR61) or 5V DC Micro-USB type B                                                                                                     |                                                                                                      |                                                                                                                                                                                                        |
| Battery Life           | 50H typical                                                                                                                                                           |                                                                                                      |                                                                                                                                                                                                        |
| Low Battery Indication | Green LED blinking                                                                                                                                                    |                                                                                                      |                                                                                                                                                                                                        |
| Overload Indication    | Red LED on when measurement > than selected range                                                                                                                     |                                                                                                      |                                                                                                                                                                                                        |
| Output Termination     | Double-insulated 5 ft (1.5m) lead with two 4mm safety banana plugs                                                                                                    |                                                                                                      |                                                                                                                                                                                                        |
| MECHANICAL             |                                                                                                                                                                       |                                                                                                      |                                                                                                                                                                                                        |
| Maximum Conductor Size | Cables:<br>(1) 1.18" (30mm) or (2) .94" (24mm)<br><br>Bus Bar:<br>(1) 1.97 x 0.39" (50 x 10mm) or<br>(2) 1.23 x 0.39" (31.5 x 10mm) or<br>(3) 0.98 x 0.31" (25 x 8mm) |                                                                                                      | Cables:<br>(1) 1.5" (39mm) or (2) 1" (25.4mm)<br><br>Bus Bar:<br>(1) 1.97 x 0.49" (50 x 12.5mm) or<br>(2) 0.98 x 0.2" (25 x 5mm);<br>(1) 1.24 x 0.30" (31.5 x 10mm) or<br>(3) 0.98" x 0.31" (25 x 8mm) |
| Dimensions (H x W x D) | 8.82 x 3.82 x 1.73"<br>(224 x 97 x 44mm)                                                                                                                              |                                                                                                      | 9.31 x 3.82 x 1.73"<br>(236.5 x 97 x 44mm)                                                                                                                                                             |
| Weight (with Battery)  | 0.98lbs (440g)                                                                                                                                                        |                                                                                                      | 1.15lbs (520g)                                                                                                                                                                                         |
| ENVIRONMENTAL          |                                                                                                                                                                       |                                                                                                      |                                                                                                                                                                                                        |
| Operating Temperature  | 14° to +131°F (-10 to +55°C)                                                                                                                                          |                                                                                                      |                                                                                                                                                                                                        |
| Storage Temperature    | -40° to +176°F (-40 to +80°C)                                                                                                                                         |                                                                                                      |                                                                                                                                                                                                        |
| Relative Humidity      | Up to 85% @ 35°C                                                                                                                                                      |                                                                                                      |                                                                                                                                                                                                        |
| SAFETY                 |                                                                                                                                                                       |                                                                                                      |                                                                                                                                                                                                        |
| Ingress Protection     | IP 40                                                                                                                                                                 |                                                                                                      |                                                                                                                                                                                                        |
| EMC                    | EN 61326-1                                                                                                                                                            |                                                                                                      |                                                                                                                                                                                                        |
| Safety Rating          | IEC 61010-1, EN 61010-2-32, Pollution Degree 2, 600V CAT III                                                                                                          |                                                                                                      |                                                                                                                                                                                                        |

Consult factory for NIST Calibration prices



MR415

MR416

MR526



### FEATURES

- The jaw shape enables users to clamp on to cables or small bus bars
- Powered by battery or standard external 5V power source via micro-USB connector
- Measures up to 1000A<sub>AC</sub> and 1400A<sub>DC</sub> (model dependent)
- Automatic Zero DC reset function
- Auto Power Off enable/disable function
- Millivolt output compatible with most equipment and instruments
- Battery life up to 50 hours
- Safety rating 600V CAT III



4mm Banana Plug Terminals

| CATALOG NO. | DESCRIPTION                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1200.80     | AC/DC Current Probe Model MR415 (400A <sub>AC</sub> , 1mV/A & 600A <sub>DC</sub> , 1mV/A, 4mm Banana Plug Lead) - Replaces MR410                                              |
| 1200.82     | AC/DC Current Probe Model MR416 (40A <sub>AC</sub> , 60A <sub>DC</sub> , 10mV/A & 400A <sub>AC</sub> , 600A <sub>DC</sub> , 1mV/A, 4mm Banana Plug Lead) - Replaces MR411     |
| 1200.83     | AC/DC Current Probe Model MR526 (100A <sub>AC</sub> , 150A <sub>DC</sub> , 10mV/A & 1000A <sub>AC</sub> , 1400A <sub>DC</sub> , 1mV/A, 4mm Banana Plug Lead) - Replaces MR521 |



# CURRENT MEASUREMENT PROBES

## GENERAL PURPOSE PROBES SELECTION CHART

| Series                                                                              | Model | Ratio  | Measurement Range           |                           | Output Signal |                            | Phase Shift** | Maximum Conductor Size        |                         | Output Connection | Catalog No. |
|-------------------------------------------------------------------------------------|-------|--------|-----------------------------|---------------------------|---------------|----------------------------|---------------|-------------------------------|-------------------------|-------------------|-------------|
|                                                                                     |       |        | AC                          | DC                        | Current       | Voltage                    |               | Ø Cable                       | Bus Bar                 |                   |             |
|    | MN01  | 1000:1 | 2 to 150A                   | –                         | 1mA/A*        | –                          | N/A           | 0.39" (10mm)                  | N/A                     | Leads             | 2129.17     |
|                                                                                     | MN02  | 1000:1 | 50mA to 100A<br>50mA to 90A | –                         |               | –                          | N/A           | 0.39" (10mm)                  | N/A                     | Leads             | 2129.20     |
|                                                                                     | MN03  | –      | 2 to 100A                   | –                         |               | 1mV/A                      | N/A           | 0.39" (10mm)                  | N/A                     | Leads             | 2129.18     |
|                                                                                     | MN05  | –      | 5mA to 10A<br>1 to 100A     | –                         |               | 1mV/A<br>1mV/A             | N/A           | 0.39" (10mm)                  | N/A                     | Leads             | 2129.19     |
|                                                                                     | MN09  | –      | 1 to 150A                   | –                         |               | 100mVdc/Aac                | N/A           | 0.39" (10mm)                  | N/A                     | Leads             | 2129.21     |
|    | MN103 | –      | 1mA to 10A<br>1 to 100A     | –                         |               | 1mV/A<br>1mV/A             | N/A           | 0.47" (12mm)                  | N/A                     | Leads             | 1031.02     |
|                                                                                     | MN114 | –      | 1mA to 10A                  | –                         |               | 100mV/A                    | <8°           | 0.47" (12mm)                  | N/A                     | Leads             | 2110.71     |
|                                                                                     | MN185 | 1000:1 | 50mA to 120A                | –                         | 1mA/A         | –                          | <3.5°         | 0.47" (12mm)                  | N/A                     | Jacks             | 100.185     |
|  | MN255 | –      | 0.1 to 24A<br>0.1 to 240A   | –                         |               | 100mV/A<br>10mV/A          | <2.5°         | 0.78" (19.8mm)                | N/A                     | Leads             | 2115.81     |
|                                                                                     | MN291 | –      | 0.5 to 240A                 | –                         |               | 100mVdc/Aac                | N/A           | 0.78" (19.8mm)                | N/A                     | Leads             | 2115.84     |
|                                                                                     | MN307 | –      | 10mA to 12A                 | –                         |               | 100mV/A                    | <2.5°         | 0.78" (19.8mm)                | N/A                     | Leads             | 2116.23     |
|                                                                                     | MN312 | 1000:1 | 0.1 to 200A                 | –                         | 1mA/A*        | –                          | <2.5°         | 0.78" (19.8mm)                | N/A                     | Jacks             | 2116.24     |
|                                                                                     | MN352 | –      | 0.1 to 150A                 | –                         |               | 10mV/A                     | <2.5°         | 0.78" (19.8mm)                | N/A                     | Jacks             | 2116.26     |
|                                                                                     | MN353 | –      |                             | –                         |               | 10mV/A                     | <2.5°         | 0.78" (19.8mm)                | N/A                     | Leads             | 2116.27     |
|                                                                                     | MN375 | –      | 0.1 to 10A                  | –                         |               | 100mV/A                    | <1.5°         | 0.78" (19.8mm)                | N/A                     | Leads             | 2115.41     |
|                                                                                     | MN379 | –      | 5mA to 6A<br>0.1 to 120A    | –                         |               | 200mV/A<br>10mV/A          |               | 0.78" (19.8mm)                | N/A                     | Leads             | 2153.01     |
|  | SL206 | –      | 10mA to 1.5A<br>50mA to 60A | 10mA to 2A<br>50mA to 80A | –             | 1mV/mAac/dc<br>10mV/Aac/dc | <1°           | 0.46" (11.8mm)                | N/A                     | Leads             | 1201.45     |
|  | MD301 | 1000:1 | 2 to 500A                   | –                         |               | 1mVdc/Aac                  | N/A           | 1.18" (30mm)<br>2 x 500kc-mil | 2.48 x 0.20" (63 x 5mm) | Leads             | 1201.07     |

\*Output Protection for open secondary

\*\*Phase shift indicated at maximum rating

Note: Models MN103, MN106, MN114 & MN185 are not CE compliant. MN200 & MN300 series are UL approved except MN379.

Consult factory for NIST Calibration price.

# CURRENT MEASUREMENT PROBES

## GENERAL PURPOSE PROBES SELECTION CHART

| SERIES                                                                              | MODEL | RATIO  | MEASUREMENT RANGE                                     |                             | OUTPUT SIGNAL |                                        | PHASE SHIFT**  | MAXIMUM CONDUCTOR SIZE |                                         | OUTPUT CONNECTION | CATALOG NO. |
|-------------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------|-----------------------------|---------------|----------------------------------------|----------------|------------------------|-----------------------------------------|-------------------|-------------|
|                                                                                     |       |        | AC                                                    | DC                          | CURRENT       | VOLTAGE                                |                | Ø CABLE                | BUS BAR                                 |                   |             |
|    | MR415 | —      | 0.5 to 400A                                           | 0.5 to 600A                 | —             | 1mV/A                                  | ≤1.5°          | 1.18" (30mm)           | 2 bus bar<br>1.24 x 0.39" (31.5 x 10mm) | 5 ft (1.5m) Lead  | 1200.80     |
|                                                                                     | MR416 | —      | 0.5 to 40A<br>0.5 to 400A                             | 0.5 to 60A<br>0.5 to 600A   | —             | 10mV/A<br>1mV/A                        | ≤2.2°<br>≤1.5° | 1.53" (39mm)           | 2 bus bar<br>1.95 x 0.19" (50 x 5mm)    | 5 ft (1.5m) Lead  | 1200.81     |
|                                                                                     | MR526 | —      | 0.5 to 100A<br>0.5 to 1000A                           | 0.5 to 150A<br>0.5 to 1400A | —             | 10mV/A<br>1mV/A                        | ≤2°<br>≤1.5°   | 1.53" (39mm)           | 2 bus bar<br>1.95 x 0.19" (50 x 5mm)    | 5 ft (1.5m) Lead  | 1200.83     |
|    | SR601 | 1000:1 | 0.1 to 1200A                                          | —                           | 1mA/A*        | —                                      | <0.5°          | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Jacks             | 2113.43     |
|                                                                                     | SR604 | 1000:1 | 0.1 to 1200A                                          | —                           | 1mA/A*        | —                                      | <0.5°          | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Leads             | 2113.44     |
|                                                                                     | SR651 | —      | 0.1 to 1200A                                          | —                           | —             | 1mV/A                                  | <0.5°          | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Jacks             | 2113.45     |
|                                                                                     | SR701 | 1000:1 | 1mA to 1000A                                          | —                           | 1mA/A*        | —                                      | <0.7°          | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Jacks             | 2116.29     |
|                                                                                     | SR704 | 1000:1 | 1mA to 1000A                                          | —                           | 1mA/A*        | —                                      | <0.7°          | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Leads             | 2116.30     |
|                                                                                     | SR752 | —      | 0.1 to 1000A                                          | —                           | —             | 1mV/A                                  | <0.7°          | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Leads             | 2116.32     |
|                                                                                     | SR759 | —      | 1mA to 1A<br>10mA to 10A<br>0.1 to 100A<br>1 to 1000A | —                           | —             | 1000mV/A<br>100mV/A<br>10mV/A<br>1mV/A | <1°            | 2.05" (52mm)           | 1.95 x 0.19" (50 x 5mm)                 | Leads             | 2116.33     |
|  | K100  | —      | 0.1mA to 3A                                           | 0.05mA to ±4A               | —             | 1mV/mA                                 | N/A            | 0.18" (4.5 mm)         | N/A                                     | Plugs             | 1200.67     |
|                                                                                     | K110  | —      | 0.1mA to 300mA                                        | 0.05mA to ±450mA            | —             | 10mV/mA                                | N/A            |                        | N/A                                     | Plugs             | 2111.73     |
|  | LM102 | 1000:1 | 50mA to 200A                                          | —                           | 1mA/A*        | —                                      | <3°            | 0.63" (16 mm)          | N/A                                     | Leads             | 2153.04     |
|                                                                                     | LM103 | —      | 0.1 to 200A                                           | —                           | —             | 1mV/A                                  | <3°            |                        | N/A                                     | Leads             | 2153.05     |

\*Output Protection for open secondary

\*\*Phase shift indicated at maximum rating

Note: All SR probes listed on this chart are UL approved, however not all SR series probes are UL approved; please consult factory.

Consult factory for NIST Calibration price.



## OUTPUT TERMINATIONS

### Lead with BNC

Insulated 6.5 ft (2m) coaxial cable with insulated BNC connector rated 600Vrms



### Jacks

Two standard safety banana jacks (4mm)



### Leads

Double/reinforced 5 ft (1.5m) leads with 4mm safety banana plug



### Shrouded Banana Plugs

Two 4mm safety banana plugs; standard ¾" (19mm) spacing



# AMPFLEX® AND MINIFLEX® PROBES - SELECTION CHARTS

| SERIES                                                                            | MODEL             | RATIO | MEASUREMENT RANGE          | OUTPUT SIGNAL                    | MAXIMUM CONDUCTOR SIZE | CATALOG NO. |
|-----------------------------------------------------------------------------------|-------------------|-------|----------------------------|----------------------------------|------------------------|-------------|
|  | MF 300-10-2-10-HF | —     | 30A / 300A                 | 100mV/A, 10mV/A                  | 2.95" (70mm)           | 2126.84     |
|  | MA114             | —     | 3A / 30A / 300A / 3000A    | 1mV/mA, 100mV/A<br>10mV/A, 1mV/A | 4" (101mm)             | 2153.41     |
|  | 300-24-2-10       | —     | 30A / 300A                 | 100mV/A, 10mV/A                  | 7.48" (190mm)          | 2112.88     |
|                                                                                   | 1000-24-1-1       | —     | 1000A                      | 1mV/A                            | 7.48" (190mm)          | 2112.39     |
|                                                                                   | 1000-24-2-1       | —     | 100A / 1000A               | 10mV/A, 1mV/A                    | 7.48" (190mm)          | 2112.98     |
|                                                                                   | 1000-36-2-1       | —     | 100A / 1000A               | 10mV/A, 1mV/A                    | 11" (290mm)            | 2113.00     |
|                                                                                   | 3000-24-1-1       | —     | 3000A                      | 1mV/A                            | 7.48" (190mm)          | 2112.46     |
|                                                                                   | 3000-36-1-1       | —     |                            |                                  | 11" (290mm)            | 2112.48     |
|                                                                                   | 3000-24-2-1       | —     | 300A / 3000A               | 10mV/A, 1mV/A                    | 7.48" (190mm)          | 2113.05     |
|                                                                                   | 6000-36-2-0.1     | —     | 600A / 6000A               | 1mV/A, 0.1mV/A                   | 11" (290mm)            | 2113.21     |
|                                                                                   | 30000-24-2-0.1    | —     | 3000A / 30,000A            |                                  | 7.48" (190mm)          | 2113.33     |
|  | 24-3001           | —     | 300A / 3000A <sub>AC</sub> | 10mV/A, 1mV/A                    | 7.48" (190mm)          | 2120.81     |

Consult factory for NIST Calibration price

## OSCILLOSCOPE & BNC TERMINATED PROBES

| MODEL                                                                                                   | MEASUREMENT RANGE           |                             | OUTPUT SIGNAL     | PHASE SHIFT*               | MAXIMUM CONDUCTOR SIZE |                                            | OUTPUT CONNECTION            |                            |
|---------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|-------------------|----------------------------|------------------------|--------------------------------------------|------------------------------|----------------------------|
|                                                                                                         | AC                          | DC                          | VOLTAGE           |                            | Ø CABLE                | BUS BAR                                    |                              |                            |
| SL261<br>            | 100mA to 10A<br>1 to 100A   |                             | 100mV/A<br>10mV/A | <1.5°                      | 0.46"<br>(11.8mm)      | N/A                                        | 6.5 ft (2m)<br>Lead<br>w/BNC |                            |
| MN261<br>            |                             |                             |                   | <2.5°                      | 0.78"<br>(19.8mm)      |                                            |                              |                            |
| SR661<br>            |                             |                             | —                 | 100mV/A<br>10mV/A<br>1mV/A | <1°                    | 2.05"<br>(52mm)                            |                              | 1.96 x 0.19"<br>(50 x 5mm) |
| MN251T<br>MN379T<br> |                             |                             |                   | 1mV/A                      | <2.5°                  | 0.78"<br>(20mm)                            |                              | 0.78"<br>(20mm)            |
|                                                                                                         | 200mV/A                     | <4°                         |                   |                            |                        |                                            |                              |                            |
|                                                                                                         | 0.5 to 240A                 |                             | 10mV/A            | <2.2°                      |                        |                                            | 10 ft (3m)<br>Lead<br>w/BNC  |                            |
|                                                                                                         | 0.005 to 6A                 |                             |                   |                            |                        |                                            |                              |                            |
|                                                                                                         | 0.1 to 120A                 |                             |                   |                            |                        |                                            |                              |                            |
| MH60<br>             | 0.5 to 100A                 | 0.5 to 100A                 | 10mV/A            | <1°                        | 1.02"<br>(26mm)        | N/A                                        | 6.6 ft (2m)<br>Lead<br>w/BNC |                            |
| MR417<br>            | 0.5 to 40A<br>0.5 to 400A   | 0.5 to 60A<br>0.5 to 600A   | 10mV/A<br>1mV/A   | ≤2.2°<br>≤1.5°             | 1.18" (30mm)           | 2 bus bar<br>1.24 x 0.39"<br>(31.5 x 10mm) |                              |                            |
| MR527<br>            | 0.5 to 100A<br>0.5 to 1000A | 0.5 to 150A<br>0.5 to 1400A |                   | ≤2.2°<br>≤1.5°             | 1.53" (39mm)           | 2 bus bar<br>1.96 x 0.19"<br>(50 x 5mm)    |                              |                            |

\*Phase shift indicated at maximum rating. Note: All probes are rated 600V CAT III and CE compliant. Not all models are UL approved; please consult factory. Consult factory for NIST Calibration price.