

CURRENT MEASUREMENT PROBES

MN SERIES AC CURRENT PROBES



MODELS MN01 & MN02

Small and compact, ideal complement for any meter to measure AC currents in low-power secondary transformers or industrial applications

Patent #1385787 - Mini-Clamp Design



FEATURES

- Clothes pin shape makes them ideal for use in tight areas, such as breaker panels, controller panels or outlets
- Jaw opening accommodates conductors up to 0.39 inch diameter

MN01

- Measurements from 2 A to 150 A_{AC}
- Excellent companions to all DMMs, permits very low AC current measurements

MN02

- Measurement ranges:
50 mA to 100 A (1 Ω load)
50 mA to 90 A (10 Ω load)
- Designed for DMMs, loggers, recorders and oscilloscopes
- (48 to 10,000) Hz frequency range
- 1 mA/A from (1 to 10) Ω load output signals

MODELS	MN01	MN02
ELECTRICAL		
Nominal Range	150 A _{AC}	100 A _{AC}
Measurement Range	(2 to 150) A _{AC}	50 mA to 100 A _{AC} (1 Ω load) 50 mA to 90 A _{AC} (10 Ω load)
Transformation Ratio	1000:1	
Output Signal	1 mA/A (150 mA _{AC} @ 150 A)	1 mA/A (100 mA _{AC} @ 100 A)
Phase Shift	Not specified	< 3° (1 Ω load) < 6° (10 Ω load)
Overload	170 A for 10 min ON, 30 min OFF	
Frequency Range	(48 to 500) Hz	48 Hz to 10 kHz
Load Impedance	≤ 10 Ω	
Open Secondary Voltage	≤ 30 V	
Output Termination	5 ft (1.5 m) lead with (2) 4 mm safety banana plugs	
MECHANICAL		
Maximum Conductor Size	Ø 0.39 in (10 mm)	
Dimension	(4.43 x 1.48 x 1.02) in (112.5 x 37.5 x 26) mm	
Weight	6.35 oz (180 g)	
Material	Polycarbonate UL 94 V2	
ENVIRONMENTAL		
Operating Temperature	(14 to 122) °F (-10 to 50) °C	
Storage Temperature	(-40 to 176) °F (-40 to 80) °C	
Operating Relative Humidity	(0 to 85) % RH decreasing linearly above 95 °F (35 °C)	
SAFETY		
Safety Rating	IEC 61010-2-32: 300 V CAT IV, 600 V CAT III, Pollution Degree 2	
Ingress Protection	IP40	

Consult factory for NIST Calibration prices.

CAT. #	DESCRIPTION
2129.17	AC Current Probe Model MN01 (150 A, 1 mA/A, Lead)
2129.20	AC Current Probe Model MN02 (100 A, 1 mA/A, Lead, 1 % Accuracy)



CURRENT MEASUREMENT PROBES

MN SERIES AC CURRENT PROBES



MODELS MN05 & MN09

Small and compact, ideal complement for any meter to measure AC currents in low-power secondary transformers or industrial applications



Patent #1385787 - Mini-Clamp Design



MN05



SCAN TO LEARN MORE



MN09

FEATURES

- Clothes pin shape makes them ideal for use in tight areas, such as breaker panels, controller panels or outlets
- Jaw opening accommodates conductors up to 0.39 inch diameter

MN05

- Measurements from 5 mA to 100 A_{AC}
- Permits very low AC current measurements
- Compatible with any voltmeter, multimeter, or other current measurement instrument with an input impedance greater than 1 MΩ.

MN09

- Measurements from (1 to 150) A_{AC}
- DC voltage output enables you to overcome low AC sensitivity of certain measurement instruments
- Bandwidth up to 500 Hz

MODELS	MN05	MN09
ELECTRICAL		
Nominal Range	10 A _{AC} ; 100 A _{AC}	150 A _{AC}
Measurement Range	5 mA to 10 A _{AC} (1 to 100) A _{AC}	(1 to 150) A _{AC}
Transformation Ratio	Voltage output	N / A
Output Signal	1 mV/mA, 1 mV/A (10 V _{AC} @ 10 A, 100 mV _{AC} @ 100 A)	100 mV/A (15 V _{DC} @ 150 A _{AC})
Phase Shift	Not specified	
Overload	10 A Range: 15 A 100 A Range: 150 A	170 A for 10 min ON, 30 min OFF
Frequency Range	(48 to 500) Hz	
Load Impedance	≥ 1 MΩ	≥ 50 KΩ
Open Secondary Voltage	–	≤ 30 V
Output Termination	5 ft (1.5 m) lead with (2) 4 mm safety banana plugs	
MECHANICAL		
Maximum Conductor Size	Ø 0.39 in (10 mm)	
Dimension	(4.43 x 1.48 x 1.02) in (112.5 x 37.5 x 26) mm	
Weight	6.35 oz (180 g)	
Material	Polycarbonate UL 94 V2	
ENVIRONMENTAL		
Operating Temperature	(14 to 122) °F (-10 to 50) °C	
Storage Temperature	(-40 to 176) °F (-40 to 80) °C	
Operating Relative Humidity	(0 to 85) % RH decreasing linearly above 95 °F (35 °C)	
SAFETY		
Safety Rating	IEC 61010-2-32: 300 V CAT IV, 600 V CAT III, Pollution Degree 2	
Ingress Protection	IP40	

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CAT. # DESCRIPTION


2129.19 AC Current Probe Model MN05 (100 A, 1 mV/A & 10 A, 1 V/A, Lead)

2122.19 AC Current Probe Model MN09 (150 A, 100 mV_{DC}/A_{AC}, Lead)



CURRENT MEASUREMENT PROBES

GENERAL PURPOSE PROBES SELECTION CHART

Series	Model	Ratio	Measurement Range		Output Signal		Phase Shift**	Maximum Conductor Size		Output Connection	CAT. #
			AC	DC	Current	Voltage		Ø Cable	Bus Bar		
	MN01	1000:1	(2 to 150) A	–	1 mA/A*	–	N / A	0.39 in (10 mm)	N / A	Leads	2129.17
	MN02	1000:1	50 mA to 100 A 50 mA to 90 A	–	1 mA/A*	–	N / A	0.39 in (10 mm)	N / A	Leads	2129.20
	MN05	–	5 mA to 10 A (1 to 100) A	–	–	1 mV/mA 1 mV/A	N / A	0.39 in (10 mm)	N / A	Leads	2129.19
	MN09	–	(1 to 150) A	–	–	100 mV _{DC} / A _{AC}	N / A	0.39 in (10 mm)	N / A	Leads	2129.21
	MN114	–	1 mA to 10 A	–	–	100 mV/A	< 8 °	0.47 in (12 mm)	N / A	Leads	2110.71
	MN185	1000:1	50 mA to 120 A	–	1 mA/A	–	< 3.5 °	0.47 in (12 mm)	N / A	Jacks	100.185
	MN255	–	(0.1 to 24) A (0.1 to 240) A	–	–	100 mV/A 10 mV/A	< 2.5 °	0.78 in (20 mm)	N / A	Leads	2115.81
	MN261	–	(0.1 to 24) A (0.5 to 240) A	–	–	100 mV/A 10 mV/A	< 6 °	0.78 in (20 mm)	N / A	BNC	2115.82
	MN291	–	(0.5 to 240) A	–	–	100 mV _{DC} / A _{AC}	N / A	0.78 in (20 mm)	N / A	Leads	2115.84
	MN307	–	10 mA to 12 A	–	–	100 mV/A	< 2.5 °	0.78 in (20 mm)	N / A	Leads	2116.23
	MN312	1000:1	(0.1 to 200) A	–	1 mA/A*	–	< 2.5 °	0.78 in (20 mm)	N / A	Jacks	2116.24
	MN352	–	(0.1 to 150) A	–	–	10 mV/A	< 2.5 °	0.78 in (20 mm)	N / A	Jacks	2116.26
	MN353	–	(0.1 to 150) A	–	–	10 mV/A	< 2.5 °	0.78 in (20 mm)	N / A	Leads	2116.27
	MN373	–	(0.01 to 2.4) A (0.1 to 200) A	–	–	1000 mV/A 10 mV/A	< 3 °	0.78 in (20 mm)	N / A	Leads	2116.28
	MN375	–	(0.1 to 10) A	–	–	100 mV/A	< 1.5 °	0.78 in (20 mm)	N / A	Leads	2115.41
	MN379	–	5 mA to 6 A (0.1 to 120) A	–	–	200 mV/A 10 mV/A	< 4 °	0.78 in (20 mm)	N / A	Leads	2153.01
	MN379T	–	5 mA to 6 A (0.1 to 120) A	–	–	200 mV/A 10 mV/A	< 4 °	0.78 in (20 mm)	N / A	Lead w / BNC	2153.02
	SL206	–	10 mA to 1.5 A 50 mA to 60 A	10 mA to 2 A 50 mA to 80 A	–	1 mV/mA _{AC/DC} 10 mV/A _{AC/DC}	< 1 °	0.46 in (12 mm)	N / A	Leads	1201.45
	MD301	1000:1	(2 to 500) A	–	–	1 mV _{DC} / A _{AC}	N / A	1.18 in (30 mm) (2 x 500) kcmil	(2.48 x 0.20) in (63 x 5) mm	Leads	1201.07
	MD305	1000:1	(1 to 600) A	–	1 mA/A	–	< 1 °	1.18 in (30 mm) (2 x 500) kcmil	(2.48 x 0.20) in (63 x 5) mm	Leads	1201.36

*Output protection for open secondary.

**Phase shift indicated at maximum rating.

Note: Models MN103, MN114 and 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	CAT. #
			AC	DC	CURRENT	VOLTAGE		Ø CABLE	BUS BAR		
	MR415	—	(0.5 to 400) A	(0.5 to 600) A	—	1 mV/A	≤ 1.5 °	1.18 in (30 mm)	2 bus bar (1.24 x 0.39) in (31 x 10) mm	5 ft (1.5 m) Lead	1200.80
	MR416	—	(0.5 to 40) A (0.5 to 400) A	(0.5 to 60) A (0.5 to 600) A	—	10 mV/A 1 mV/A	≤ 2.2 ° ≤ 1.5 °	1.53 in (39 mm)	2 bus bar (1.95 x 0.19) in (50 x 5) mm	5 ft (1.5 m) Lead	1200.82
	MR526	—	(0.5 to 100) A (0.5 to 1000) A	(0.5 to 150) A (0.5 to 1400) A	—	10 mV/A 1 mV/A	≤ 2 ° ≤ 1.5 °	1.53 in (39 mm)	2 bus bar (1.95 x 0.19) in (50 x 5) mm	5 ft (1.5 m) Lead	1200.83
	SR601	1000:1	(0.1 to 1200) A	—	1 mA/A*	—	< 0.5 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Jacks	2113.43
	SR604	1000:1	(0.1 to 1200) A	—	1 mA/A*	—	< 0.5 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Leads	2113.44
	SR651	—	(0.1 to 1200) A	—	—	1 mV/A	< 0.5 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Jacks	2113.45
	SR701	1000:1	1 mA to 1000 A	—	1 mA/A*	—	< 0.7 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Jacks	2116.29
	SR704	1000:1	1 mA to 1000 A	—	1 mA/A*	—	< 0.7 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Leads	2116.30
	SR752	—	(0.1 to 1000) A	—	—	1 mV/A	< 0.7 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Leads	2116.32
	SR759	—	1 mA to 1 A 10 mA to 10 A (0.1 to 100) A (1 to 1000) A	—	—	1000 mV/A 100 mV/A 10 mV/A 1 mV/A	< 1 °	2.05 in (52 mm)	(1.95 x 0.19) in (50 x 5) mm	Leads	2116.33
	K100	—	0.1 mA to 3 A	0.05 mA to ± 4.5 A	—	1 mV/mA	N / A	0.18 in (4.5 mm)	N / A	Plugs	1200.67
	K110	—	(0.1 to 300) mA	(0.05 to ± 450) mA	—	10 mV/mA	N / A	0.18 in (4.5 mm)	N / A	Plugs	2111.73
	LM102	1000:1	50 mA to 200 A	—	1 mA/A*	—	< 3 °	0.63 in (16 mm)	N / A	Leads	2153.04
	LM103	—	(0.1 to 200) A	—	—	1 mV/A	< 3 °	0.63 in (16 mm)	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 (2 m) coaxial cable with insulated BNC connector rated 600 Vrms



Jacks

Two standard safety banana jacks (4 mm)



Leads

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







Shrouded Banana Plugs

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









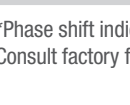
CURRENT MEASUREMENT PROBES

AMPFLEX® AND MINIFLEX® PROBES - SELECTION CHARTS

SERIES	MODEL	RATIO	MEASUREMENT RANGE	OUTPUT SIGNAL	MAXIMUM CONDUCTOR SIZE	CAT. #
	MF 300-10-2-10-HF	–	(30 / 300) A	100 mV/A, 10 mV/A	2.95 in (75 mm)	2126.84
	MF 3000-14-1-1-HF	–	3000 A	1 mV/A	3.93 in (100 mm)	2126.86
	MA114	–	(3 / 30 / 300 / 3000) A	1 mV/mA, 100 mV/A 10 mV/A, 1 mV/A	4 in (101 mm)	2153.41
	300-24-2-10	–	(30 / 300) A	100 mV/A, 10 mV/A	7.48 in (190 mm)	2112.88
	1000-24-1-1	–	1000 A	1 mV/A	7.48 in (190 mm)	2112.39
	1000-24-2-1	–	(100 / 1000) A	10 mV/A, 1 mV/A	7.48 in (190 mm)	2112.98
	1000-36-2-1	–	(100 / 1000) A	10 mV/A, 1 mV/A	11 in (280 mm)	2113.00
	3000-24-1-1	–	3000 A	1 mV/A	7.48 in (190 mm)	2112.46
	3000-36-1-1	–	3000 A	1 mV/A	11 in (280 mm)	2112.48
	3000-24-2-1	–	(300 / 3000) A	10 mV/A, 1 mV/A	7.48 in (190 mm)	2113.05
	3000-48-2-1	–	(300 / 3000) A	10 mV/A, 1 mV/A	15 in (381 mm)	2112.01
	6000-36-2-0.1	–	(600 / 6000) A	1 mV/A, 0.1 mV/A	11 in (280 mm)	2113.21
	30000-24-2-0.1	–	(3000 / 30,000) A	1 mV/A, 0.1 mV/A	7.48 in (190 mm)	2113.33
	24-3001	–	300 A / 3000 A _{AC}	10 mV/A, 1 mV/A	7.48 in (190 mm)	2120.81

Consult factory for NIST Calibration price.

OSCILLOSCOPE & BNC TERMINATED PROBES

MODEL	MEASUREMENT RANGE		OUTPUT SIGNAL VOLTAGE	PHASE SHIFT*	MAXIMUM CONDUCTOR SIZE		OUTPUT CONNECTION
	AC	DC			Ø CABLE	BUS BAR	
 SL261	100 mA to 10 A (1 to 100) A		100 mV/A 10 mV/A	< 1.5 °	0.46 in (12 mm)	N / A	6.5 ft (2 m) Lead w / BNC
 MN261	(0.1 to 24) A (0.5 to 240) A	–	100 mV/A 10 mV/A	< 2.5 °	0.78 in (20 mm)	N / A	6.5 ft (2 m) Lead w / BNC
 SR661	(0.1 to 12) A (0.1 to 120) A (1 to 1200) A	–	100 mV/A 10 mV/A 1 mV/A	< 1 °	2.05 in (52 mm)	(1.96 x 0.19) in (50 x 5) mm	6.5 ft (2 m) Lead w / BNC
 MN251T MN379T	(0.5 to 240) A	–	1 mV/A	≤ 2.5 °	0.78 in (20 mm)	(0.78 x 0.19) in (20 x 5) mm	10 ft (3 m) Lead w / BNC
	(0.005 to 6) A (0.1 to 120) A	–	200 mV/A 10 mV/A	≤ 4 ° ≤ 2.2 °	0.78 in (20 mm)	(0.78 x 0.19) in (20 x 5) mm	10 ft (3 m) Lead w / BNC
 MH60	(0.5 to 100) A	(0.5 to 100) A	10 mV/A	< 1 °	1.02 in (26 mm)	N / A	6.6 ft (2 m) Lead w / BNC
 MR417	(0.5 to 40) A (0.5 to 400) A	(0.5 to 60) A (0.5 to 600) A	10 mV/A 1 mV/A	≤ 2.2 ° ≤ 1.5 °	1.18 in (30 mm)	2 bus bar (1.24 x 0.39) in (32 x 10) mm	6.6 ft (2 m) Lead w / BNC
 MR527	(0.5 to 100) A (0.5 to 1000) A	(0.5 to 150) A (0.5 to 1400) A	10 mV/A 1 mV/A	≤ 2.2 ° ≤ 1.5 °	1.53 in (39 mm)	2 bus bar (1.96 x 0.19) in (50 x 5) mm	6.6 ft (2 m) Lead w / BNC

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