

User-Selectable Sensitivities To Work On Real-World Car Signals!



Selectable 4-stroke, 4-DIS/ 2-stroke, & 2-DIS engine RPM;
Selectable Trig(+)/Trig- on % & ms readings;
Selectable Sensitivity-Levels on RPM, Dwell, % & ms readings,
Bar-graph indication, BeepJack warning, Backlit display,
Display Hold... Full-Features!

New BM310 Series Automotive Multimeter



BRIGHT PEOPLE'S CHOICE
<http://www.brymen.com>



BM319



BM315

319	315	FUNCTIONS & FEATURES
●	●	3-5/6 Digits 6,000 Counts Large Easy-To-Read LCD Display
●	●	Fast Measurements, 5/Sec; Fully Auto-Ranging
●	●	24 Segment Analog Bar-graph Updates 40/Sec
●		Display Backlight
●	●	Beep-Jack™ Input Warning Guard Against Improper Amps-Terminal Plug In
●	●	Auto Power Off
●	●	Data Hold
●	●	DCV 0.01mV To 1000V
●	●	ACV 0.01mV To 1000V
●	●	Ohms 0.1Ω To 60MΩ
●	●	DCA 0.001A To 10A (6A continuous, 10A for 30sec per 5 minutes cool down interval)
●	●	ACA 0.001A To 10A (6A continuous, 10A for 30sec per 5 minutes cool down interval)
●		DCμA/mA 0.1μA To 600mA
●		ACμA/mA 0.1μA To 600mA
●		Capacitance 6.000μF To 2000μF
●		Type-K Temperature Readings -50°C To 1000°C / -58°F To 1832°F
●	●	Line-Level Frequency 10Hz To 50kHz
●	●	Diode Tester
●	●	Continuity Beeper
●	●	Dwell-Angle Function
●	●	%-Duty Function
●	●	ms-Fuel Injection Detector (Injection on-time) Function
●	●	IG-RPM Function (Primary-Signal via Test Leads)
●	●	IP-RPM Function (Secondary-Signal via Inductive Pickup Clip)
●	Optional	Inductive pickup clip, Accessory for IP-RPM Function
●	●	Selectable 4-Stroke, 4-Stroke-DIS / 2-Stroke or 2-Stroke-DIS for RPM Functions
●	●	Selectable 1, 2, 3, 4, 5, 6, 8, 10 or 12 Cylinders for Dwell and IG-RPM Functions
●	●	4 Selectable Trigger-Levels for IP-RPM, IG-RPM, Dwell, %-Duty and ms Functions
●	●	Selectable Positive (+) or Negative (-) Trigger for %-Duty and ms Functions
●	●	Rugged Fire-Retarded Casing
●	●	Replaceable Protective-Holster with Probe-Holders & Tilt-Stand
●	●	Batteries And Fuses Access Door
●	●	Optional Purchase Magnetic Hanger
●	●	600V General (Ohm, Capacitance ... etc.) Input Protection
●	●	Transient Protection Up To 6kV 1.2/50μs Lightning Surge
●	●	LVD Meets EN61010-1 2nd Edition CAT II 1kV
●	●	EMC EN61326-1:2006 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

Professional Choice Of Size & Functions For Automotive Industry!

Both IP (inductive) & IG (contact) RPM; ms Fuel-injection on-time; % Duty-cycle; Dwell-angle; Line-Level Hz; Temperature; Capacitance; Diode... Full-Functions! Stream-line Ergonomic, Magnetic Hanger, Protective Holster, Probe Holders, Tilt stand, Batteries & Fuses Access Cover... User-Friendly!



BM319 & BM315 GENERAL SPECIFICATION

Display: 3-5/6 digits 6,000 counts

Update Rate: 5 per second nominal

24 Segments Bar graph: 40 per second max

Operating Temperature: 0°C to 40°C

Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C

Altitude: Operating below 2000m

Storage Temperature: -20°C ~ 60°C, < 80% R.H. (with battery removed)

Temperature Coefficient: Nominal 0.15 x (specified accuracy) / °C @ (0°C ~ 18°C or 28°C ~ 40°C), or otherwise specified

Sensing: Average sensing

Pollution Degree: 2

Safety: Double insulation per IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed. & CAN/CSA C22.2 No. 61010.1-0.92 to Category II 1000V AC & DC

Transient Protection: 6kV (1.2/50µs surge)

Terminals (to COM) Measurement Category:

V : Category II 1000V AC & DC

A & mAµA : Category II 450V AC & DC

E.M.C. : Meets EN61326-1:2006 (EN55022,

EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11)

In an RF field of 3V/m:

Capacitance function is not specified

Other function ranges:

Total Accuracy = Specified Accuracy + 100 digits

Performance above 3V/m is not specified

Overload Protection:

µA & mA: 0.63A, IR 50kA@500Vac &

1.5kA@450Vdc

A: 6.3A, IR 50kA@500Vac & 1.5kA@450Vdc

V: 1050 Vrms, 1450 Vpeak

mV, OHM & others: 600 Vrms

Low Battery: Below approx. 2.3V

Power Supply: 1.5V AAA Size battery X 2

Power Consumption (typical): 4.3mA

APO Consumption (typical): 10µA

APO Timing: Idle for 34 minutes

Dimension: 161*80*50mm L*W*H (With Holster)

Weight: Approx. 340 gm (With Holster)

Accessories: Test lead pair; batteries installed; user's manual; BKP60 banana plug type-K thermocouple

(BM319 only); BP300 Inductive pickup clip (BM319 only)

Optional purchase accessories: Magnetic hanger BMH-01; BKB32 banana plug to type-K socket plug adaptor (BM319 only); BP300 Inductive pickup clip (BM315 only)

Special Features:

Backlight LCD (BM319 only)

± **Trigger:** Selectable positive & negative trigger slopes

Cylinder: 9 Selectable number of cylinders (1, 2, 3, 4, 5, 6, 8, 10 & 12) in Dwell and IG-RPM functions

Hold: Freezes the display data for later view

Range: Manual & Auto-ranging selection

RPM (4): For RPM of traditional 4-stroke engines which have 1 ignition on every 4 engine strokes

RPM (2): For RPM of DIS & traditional 2-stroke engines which have 1 ignition on every 2 engine strokes

RPM (2M) : For RPM of 2-stroke waste ignition (on-board) engines which have 1 ignition on every single engine stroke

Electrical Specification

Accuracy is given as +/- (% of reading digits + number of digits) or otherwise specified @ 23°C +/- 5°C and less than 75% R.H.

DC Voltage

RANGE	Accuracy
60.00mV	0.4%+3d
600.0mV	0.3%+3d
6.000V, 60.00V, 600.0V	0.4%+3d
1000V	0.7%+3d

Input Impedance: 10MΩ, 50 pF nominal

AC Voltage

RANGE	Accuracy
50Hz ~ 500Hz	
60.00mV, 600.0mV	2.0% + 5d
6.000V, 60.00V, 600.0V,	
1000V	2.2% + 5d

Input Impedance: 10MΩ, 50 pF nominal

Ohm

RANGE	Accuracy
600.0Ω	0.5%+6d
6.000KΩ, 60.00KΩ	0.5%+3d
600.0KΩ	0.8%+4d
6.000MΩ	1.0%+5d
60.00MΩ	1.5%+5d

Open Circuit Voltage: 0.45VDC typical

Audible Continuity Tester

Audible Threshold: Between 10Ω and 200Ω

Response time: 32ms

Capacitance (BM319 only)

RANGE	Accuracy
6.000µF	2.0%+5d
60.00µF, 600.0µF	3.5%+5d
2000µF	4.0%+5d

Accuracies with film capacitor or better

DC Current

RANGE	Accuracy	Burden Voltage
600.0µA ¹⁾	0.7%+3d	0.25 mV/uA
6000µA ¹⁾	0.5%+3d	
60.00mA ¹⁾	0.7%+3d	2.5 mV/mA
600.0mA ¹⁾	0.5%+3d	
6.000A	0.7%+3d	0.03V/A
10.00A ²⁾	0.5%+3d	

¹⁾ Ranges for BM319 only

²⁾ 6A continuous, >6A to 10A for 30 sec. max with 5 minutes cool down interval

AC Current

RANGE	Accuracy	Burden Voltage
50Hz ~ 500Hz		
600.0µA ¹⁾	2.2%+5d	0.25 mV/uA
6000µA ¹⁾	2.0%+5d	
60.00mA ¹⁾	2.2%+5d	2.5 mV/mA
600.0mA ¹⁾	2.0%+5d	
6.000A	2.2%+5d	0.03V/A
10.00A ²⁾	1.2%+5d	

¹⁾ Ranges for BM319 only

²⁾ 6A continuous, >6A to 10A for 30 sec. max with 5 minutes cool down interval

Diode Tester

RANGE	Accuracy
1.000V	1.0% + 3d

Test Current: 0.50mA typically

Open Circuit Voltage: < 1.6VDC typically

Temperature (BM319 only)

RANGE	Accuracy
-50 °C ~ 1000 °C	0.5% + 3d
-58 °F ~ 1832 °F	0.5% + 6d

K type thermocouple range & accuracy not included

IP-RPM* (Inductive pickup type)

	RANGE	Accuracy
RPM 4	240 -20000 RPM	2 RPM
RPM 2	120 -10000 RPM	2 RPM
RPM 2M	60 -5000 RPM	2 RPM

*Measurements via inductive pickup clip (optional purchase for BM315)

Four selectable trigger levels,

Sensitivity:

Level 1: 3.0V typically

Level 2: 4.5V typically

Level 3: 6.1V typically

Level 4: 8.1V typically

IG-RPM* (Contact signal type)

	RANGE	Accuracy
RPM 4	60 -20000 RPM	2 RPM
RPM 2	30 -10000 RPM	2 RPM
RPM 2M	15 -5000 RPM	2 RPM

*Measurements via test leads on Dwell, Fuel

injection-ms and ignition primary signals

Nine selectable Cylinders: 1, 2, 3, 4, 5, 6, 8, 10 & 12

Four selectable trigger levels,

Sensitivity:

Level 1: 0.8V typically

Level 2: 1.85V typically

Level 3: 3.75V typically

Level 4: 6V typically

DWELL

RANGE	Accuracy
0.0° ~ 360.0° *	1.2° /krpm+1d
0.0%~100.0%	0.04%/krpm/cyl+2d

Specified ranges depend on engine rpm and number of Cylinders (cyl)

*Nine selectable Cylinders: 1, 2, 3, 4, 5, 6, 8, 10 & 12

Four selectable trigger levels,

Sensitivity:

Level 1: 0.8V typically

Level 2: 1.85V typically

Level 3: 3.75V typically

Level 4: 6V typically

Fuel injection-ms detector

RANGE *	Accuracy
PFI / Multi Point Injection	
0.05ms ~ 250.0ms	0.05ms+1d
0.0%~100.0%	0.04%/krpm +2d
TBI / Single Point Injection	
0.05ms ~ 250.0ms	0.05ms+1d
0.0%~100.0%	0.04%/krpm/cyl +2d

*Specified range depends on engine rpm Selectable trigger slopes

Four selectable trigger levels,

Sensitivity:

Level 1: 0.8V typically

Level 2: 1.85V typically

Level 3: 3.75V typically

Level 4: 6V typically

Hz (Line-level) @ ACV & DCV

Function	Sensitivity (Sine RMS)	Range
6V	0.5V	10Hz - 10kHz
60V	5V	10Hz - 50kHz
600V	50V	10Hz - 50kHz
1000V	500V	45Hz - 1kHz

Accuracy: 0.1%+3d

