Boostcap Ultracapacitors

by

Maxwell TECHNOLOGIES™

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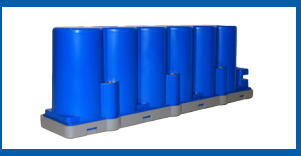
BMOD0058 E016 B02



FEATURES AND BENEFITS

- 16 V DC working voltage
- Individually balanced cells
- Compact, lightweight system
- Screw terminals
- RoHS compliant

TYPICAL APPLICATIONS

- Automotive subsystems
- Consumer electronics
- Portable power tools
- Renewable energy systems
- Short term UPS and telecom

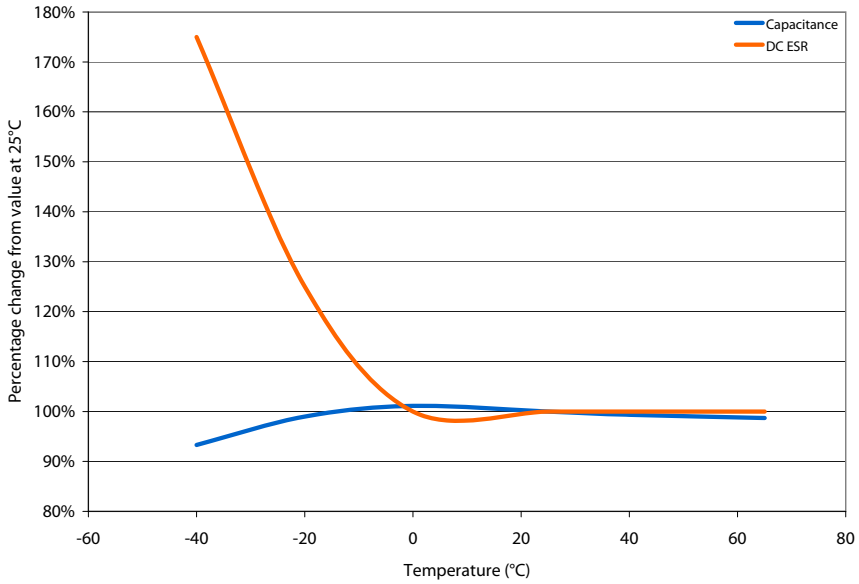
PRODUCT SPECIFICATIONS

ELECTRICAL	
Capacitance	
Nominal capacitance	58 F
Tolerance capacitance	- 0% / +20%
Voltage	
Rated voltage	16 V DC
Resistance	
ESR, DC (max., room temperature)	22 mΩ
ESR, AC (max., room temperature, 1kHz)	10 mΩ
Current	
Maximum continuous current	20 A
Maximum peak current, 1 sec.	204 A
Leakage current (After 72 hours at 25°C. Initial leakage current can be higher.)	50 mA
TEMPERATURE	
Operating temperature range (Cell case temperature)	-40°C to +65°C
Storage temperature range (Stored uncharged)	-40°C to + 70°C
POWER AND ENERGY	
Usable power density, Pd	2,220 W/kg
Usable power	1,400 W
Impedance match power density, Pmax	4,600 W/kg
Gravimetric energy density, Emax	3.3 Wh/kg
Energy available	2.1 Wh

DC LIFESPAN	
Endurance (at rated voltage and temperature)	2,000 hours
Capacitance change (% decrease from rated value)	≤20%
ESR change (% increase from rated value)	≤60%
Life Test (at rated voltage and 20°C)	10 years
Capacitance change (% decrease from rated value)	≤20%
ESR change (% increase from rated value)	≤100%
Cycle Test (Number of cycles)	500,000
Capacitance change (% decrease from rated value)	≤20%
ESR change (% increase from rated value)	≤100%
Shelf Life (Storage uncharged up to maximum storage temperature)	2 years
Capacitance change (% decrease from rated value)	10%
ESR change (% increase from rated value)	50%
CONNECTION	
Power output terminals	M5 Screw
Monitoring and control	N/A
Cell management	Passive
Maximum series voltage	640 V DC
PHYSICAL	
Dimensions	See drawing
Weight	0.63 kg
SAFETY	
Short circuit current (Current possible with short circuit from rated voltage. Do not use as an operating current.)	727 A
Certifications	RoHS
Surge voltage (voltage above this level can cause catastrophic failure)	16.8 V DC
Isolation voltage	2,500 V DC
ENVIRONMENTAL RATINGS	
Degrees of protection	IP54
Vibration resistance	IEC 60068-2-6
Shock resistance	IEC 60068-2-27, -29

TYPICAL CHARACTERISTICS

THERMAL CHARACTERISTICS



ADDITIONAL TECHNICAL INFORMATION

Capacitance and ESR, DC measured per document no. 1007239 available at www.maxwell.com.
Unless specified, all specifications are at 25°C.

Short circuit current (Isc) $= \frac{V_{RATED}}{ESR(DC)}$

Emax $= \frac{½\ CV^2}{3{,}600 \times mass}$

Pmax $= \frac{V^2}{4 \times ESR(DC) \times mass}$

Pd $= \frac{0.12V^2}{ESR(DC) \times mass}$

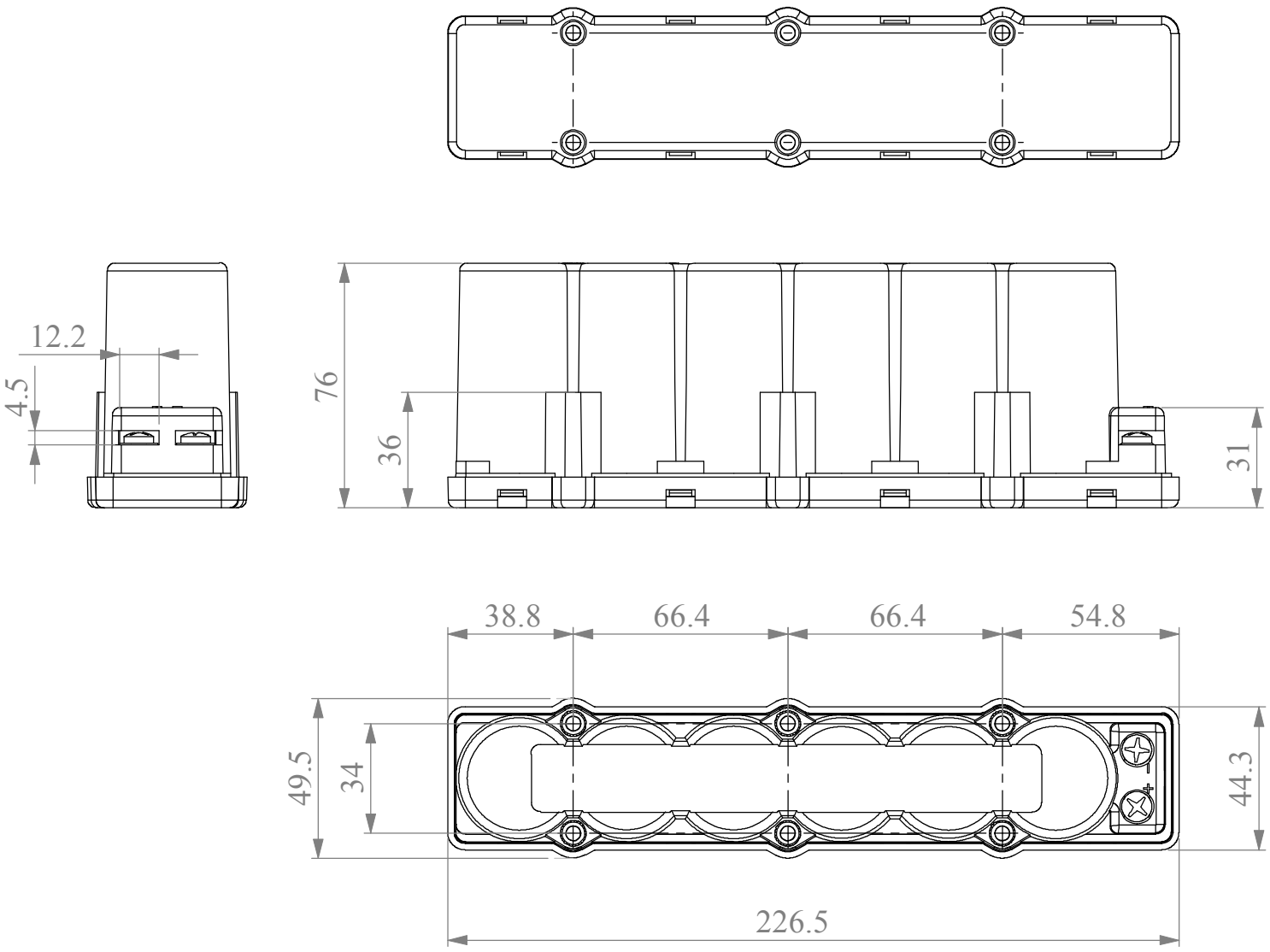
Maximum peak current (1 sec) $= \frac{½\ CV}{C \times ESR(DC) + 1}$

MOUNTING RECOMMENDATIONS

Do not reverse polarity. Mount with M4 screws, 40mm minimum length. Modules are designed to be connected into series or parallel strings. Clean terminals before mounting.

MARKINGS

Products are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.



Part Description	Dimensions (mm)			Package Quantity
	L (±0.5mm)	W (±0.5mm)	H (±0.5mm)	
BMOD0058 E016 B02	226.5	49.5	76.0	10

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice.
Please contact Maxwell Technologies directly for any technical specifications critical to application.

DATASHEET
K2 BMOD POWER SERIES 16 V MODULES

BMOD0110 P016 B01
BMOD0250 P016 B01
BMOD0500 P016 B01
BMOD0500 P016 B02

FEATURES AND BENEFITS

- Ultra-low internal resistance
- Highest power performance available
- Lowest time constant
- 16.2 V operating voltage
- Over 1,000,000 duty cycles
- Individually balanced cells
- Voltage and temperature sensor output included
- Compact, rugged, fully enclosed splash proof design

APPLICATIONS

- Transportation
- Automotive
- Industrial
- Uninterruptible Power Supplies (UPS)
- Telecommunication

PRODUCT SPECIFICATIONS

CAPACITANCE	BMOD0110	BMOD0250	BMOD0500 B01	BMOD0500 B02
Nominal capacitance	110 F	250 F	500 F	500 F
Tolerance capacitance	+20%			
VOLTAGE				
Rated voltage	16.2 V DC			
Surge voltage	16.8 V DC			
Maximum operating voltage	750 V DC			
Isolation voltage[1]	2,500 V AC			
RESISTANCE				
ESR, DC[2]	5.4 mΩ	4.1 mΩ	2.4 mΩ	2.4 mΩ
Resistance tolerance	Max.			
Thermal resistance (Rth)	1.1°C/W	0.91°C/W	0.5°C/W	0.5°C/W
TEMPERATURE				
Operating temperature range	-40°C to +65°C			
Storage temperature range	-40°C to +70°C			
Temperature characteristics				
Capacitance change	± 5% at 25°C (at -40°C)			
Internal resistance change	± 150% at 25°C (at -40°C)			
POWER				
Pd	2,300 W/kg	1,700 W/kg	2,700 W/kg	2,300 W/kg
Pmax	6,000 W/kg	4,400 W/kg	6,700 W/kg	6,700 W/kg
ENERGY				
Emax	1.49 Wh/kg	2.05 Wh/kg	3.17 Wh/kg	3.17 Wh/kg
LIFESPAN				
Endurance After 1,500 hours application of rated voltage at 65°C. Within % of initial specified value.				
Capacitance change	<20% decrease			
Internal resistance change	<60% increase			
Shelf life	After 1,500 hours storage at 65°C without load shall meet specification for endurance.			

BMOD0110 P016 B01
BMOD0250 P016 B01
BMOD0500 P016 B01
BMOD0500 P016 B02

Life test After 10 years at rated voltage and 25°C. Within % of initial specified value.				
Capacitance change	30% decrease			
Internal resistance	150% increase			
CYCLES				
Cycle test Capacitors cycled between specified voltage and half rated voltage under constant current at 25°C (1,000,000).				
Capacitance change Within % of initial specified value.	30% decrease			
Internal resistance Within % of initial specified value.	150% increase			
CURRENT	**BMOD0110**	**BMOD0250**	**BMOD0500 B01**	**BMOD0500 B02**
Leakage current [3]	1.5 mA	3.0 mA	5.2 mA	150 mA
Short circuit current (Isc) [4]	3,500 A	3,900 A	4,800 A	4,800 A
Maximum continuous current	30 A	115 A	150 A	150 A
Maximum peak current, 1 sec		2,000 A	4,000 A	4,000 A
CONNECTION				
Terminal	Screw			
MONITORING (IN-BUILT)				
Balancing[5]	VMS	VMS	VMS	Passive
Thermal monitoring	NTC			
SIZE				
Dimensions (L x W x H) (mm) (±0.5mm)	See drawings			
Weight	2.7 kg	4.45 kg	5.75 kg	5.75 kg
RATINGS				
Humidity resistance	IP65			
Vibration resistance	N/A	SAE J2380	SAE J2380	SAE J2380

[1] 50Hz, 1 min. Maximum string operating voltage 1,500 V DC.
[2] Max., room temperature.
[3] After 72 hours at 25°C. Initial leakage current can be higher.
[4] **CAUTION:** C urrent possible with short circuit from UR. Do not use as an operating current.
[5] VMS = Maxwell Technologies Voltage Management System.

MOUNTING RECOMMENDATIONS

BMOD0110 modules can be secured at 4 locations at provided holes for M6 bolts. Follow user manual instructions for terminal, balance and output connections.

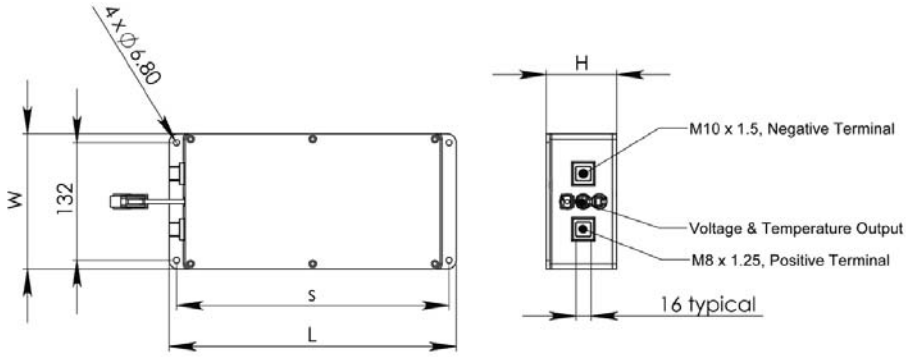
BMOD0250 and **BMOD0500** modules can be secured at 8 locations, 4 front face and/or 4 bottom face, at provided holes for M6 bolts. Follow user manual instructions for terminal, balance and output connections.

MARKINGS

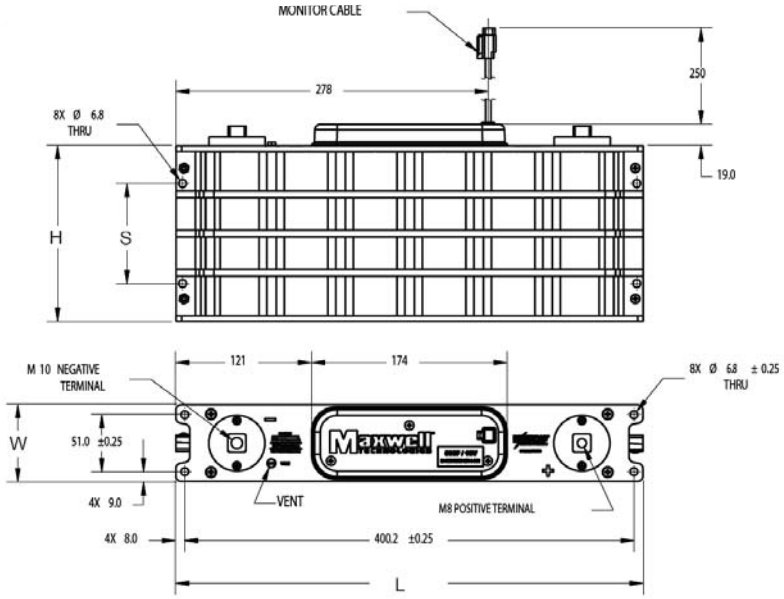
Modules are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.

BMOD0110 P016 B01
BMOD0250 P016 B01
BMOD0500 P016 B01
BMOD0500 P016 B02

DIMENSIONS (mm)



Part number	L (±0.25mm)	W (±0.25mm)	H (±0.5mm)	s (±0.5mm)
BMOD0110 P016 B01	260.1	154.9	79.3	240.0



Part number	L (±0.25mm)	W (±0.25mm)	H (±0.5mm)	s (±0.5mm)
BMOD0250 P016 B01	416.2	67.2	103.2	53.7
BMOD0500 P016 B01	416.2	67.2	156.7	89.3
BMOD0500 P016 B02	416.2	67.2	156.7	89.3

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice. Please contact Maxwell Technologies directly for any technical specifications critical to application.

BMOD0083 P048
BMOD0110 P048
BMOD0165 P048

TYPICAL FEATURES AND BENEFITS

- Ultra-low internal resistance
- Highest power performance available
- Lowest time constant
- 48.6 V operating voltage
- Individually balanced cells
- Over 1,000,000 duty cycles
- Voltage and temperature sensor output included
- Compact, rugged, fully enclosed splash-proof design

TYPICAL APPLICATIONS

- Transportation
- Automotive
- Industrial
- UPS
- Telecommunication

PRODUCT SPECIFICATIONS

CAPACITANCE	BMOD0083	BMOD0110	BMOD0165
Nominal capacitance	80 F	110 F	165 F
Tolerance capacitance	+20% / -5%	+20% / -5%	+20% / -5%
VOLTAGE			
Rated voltage	48.6 V DC	48.6 V DC	48.6 V DC
Surge voltage	50.4 V DC	50.4 V DC	50.4 V DC
Maximum operating voltage	750 V DC	750 V DC	750 V DC
Isolation voltage	2,500 V DC	2,500 V DC	2,500 V DC
RESISTANCE			
ESR, DC Max., room temperature	12.3 mΩ	8.1 mΩ	7.1 mΩ
Resistance tolerance	Max.	Max.	Max.
Thermal resistance (Rth)	0.39°C/W	0.30°C/W	0.25v
TEMPERATURE			
Operating temperature range	-40°C to +65°C	-40°C to +65°C	-40°C to +65°C
Storage temperature range	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Temperature characteristics			
Capacitance change % at 25° C (at -40°C)	± 5%	± 5%	± 5%
Internal resistance change % at 25° C (at -40°C)	± 150%	± 150%	± 150%
POWER			
Pd	2,000 W/kg	2,900 W/kg	3,200 W/kg
Pmax	5,400 W/kg	8,800 W/kg	7,900 W/kg
ENERGY			
Emax	2.48 Wh/kg	3.01 Wh/kg	3.81 Wh/kg
LIFESPAN			
Endurance After 1,500 hours application of rated voltage at 65°C. Within % of initial specified value.			
Capacitance change	<20% decrease	<20% decrease	<20% decrease
Internal resistance change	<60% increase	<60% increase	<60% increase

BMOD0083 P048
BMOD0110 P048
BMOD0165 P048

PRODUCT SPECIFICATIONS (cont.)

	BMOD0083	BMOD0110	BMOD0165
Life test At rated voltage and 25°C.	10 years	10 years	10 years
Capacitance change % of rated value	30% decrease	30% decrease	30% decrease
Internal resistance % of rated value	150% increase	150% increase	150% increase
Shelf Life	After 1,500 hours storage at 65°C without load shall meet specification for endurance.		
LIFE CYCLE			
Cycles Between specified voltage and half rated voltage under constant current at 25°C.	1,000,000	1,000,000	1,000,000
Capacitance change	30% decrease	30% decrease	30% decrease
Internal resistance	150% increase	150% increase	150% increase
CURRENT			
Leakage current After 72 hours at 25°C. Initial leakage current can be higher.	3 mA	4.2mA	5.2 mA
Short circuit current (Isc) **CAUTION:** C urrent possible with short circuit from UR. Do not use as an operating current.	4,700 A	6,000 A	6,900 A
Maximum continuous current	115 A	125 A	150 A
Maximum peak current, 1 sec 1 second, 10% duty cycle	1,080 A	1,410 A	1,850 A
CONNECTION			
Terminal	+ M8 x1.25/ - M10 x1.5	+ M8 x1.25/ - M10 x1.5	+ M8 x1.25/ - M10 x1.5
MONITORING			
Balancing	VMS (Voltage Management System)	VMS (Voltage Management System)	VMS (Voltage Management System)
Fan voltage	N/A	N/A	N/A
Thermal monitoring	NTC	NTC	NTC
SIZE			
Dimensions	See drawing	See drawing	See drawing
Volume	8.5 L	9.7 L	12.6 L
Weight	11 kg	12 kg	14.2 kg
RATINGS			
Environmental resistance	IP65	IP65	IP65
Vibration resistance	SAE J2380	SAE J2380	SAE J2380

ADDITIONAL TECHNICAL INFORMATION

Capacitance and ESR, DC measured per document no. 1007239, available at www.maxwell.com.

I_c = leakage current after 72 hours at 25°C

Isc (short circuit current) = $\frac{V_{RATED}}{ESR\ DC}$

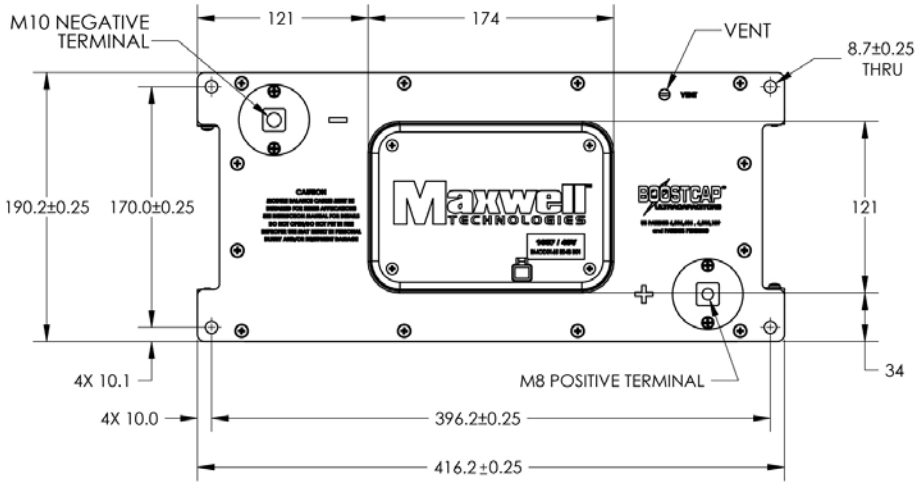
R_{th} = thermal resistance

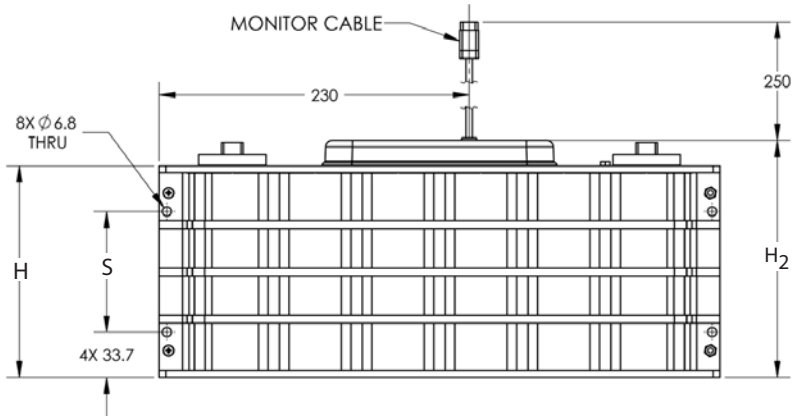
$$Pd = \frac{\frac{0.12V^2}{R\ (DC)}}{mass}$$

$$Pmax = \frac{\frac{V^2}{4R\ (1khz)}}{mass}$$

$$Emax = \frac{\frac{1}{2}\ CV^2}{3{,}600 \times mass}$$

BMOD0083 P048
BMOD0110 P048
BMOD0165 P048





DIMENSIONS (mm)

Part number	L (±0.25mm)	W (±0.25mm)	H (±0.25mm)	H_2 (±0.25mm)	s (±0.5mm)
BMOD0083 P048	416.2	190.2	103.2	126	53.7
BMOD0110 P048	416.2	190.2	120.2	143	70.7
BMOD0165 P048	416.2	190.2	156.7	180	89.3

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice.
Please contact Maxwell Technologies directly for any technical specifications critical to application.

MOUNTING RECOMMENDATIONS

Modules can be secured at 8 locations, 4 front face and/or 4 bottom face, at provided holes for M8 bolt. Follow user manual instructions for terminal, balance and output connections.

MARKINGS

Modules are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.

BMOD0020 P075

PRODUCT SPECIFICATIONS

CAPACITANCE	
Nominal capacitance	20 F
Tolerance capacitance	+20% / -0%
VOLTAGE	
Rated voltage	75 V DC
Surge voltage	90 V DC
Maximum operating voltage	86 V DC
Isolation voltage	2,500 V AC
RESISTANCE	
ESR, DC	25.6 mΩ
Resistance tolerance	Max.
TEMPERATURE	
Operating temperature range	-40°C to +65°C
Storage temperature range	-40°C to +70°C
Temperature characteristics[1]	
Capacitance change	± 5% at 25° C
Internal resistance change	± 150% at 25° C
POWER	
Pd	TBD
Pmax	TBD
ENERGY	
Emax	TBD
Energy available	11.7 Wh
LIFESPAN	
Lifetime 75 V DC, RT[7]	150,000 hours
Endurance[2]	
Capacitance change	20% decrease
Internal resistance change	60% increase
Life test[3]	
Capacitance change	20% decrease
Internal resistance	100% increase
CYCLES	
Cycles 75 V to 37.5 V DC, RT[7]	1,000,000
Capacitance change[4]	30% decrease
Internal resistance[4]	150% increase
CURRENT	
Leakage current[5]	150 mA
Short circuit current (Isc) [6]	4,800 A
Maximum continuous current	50 A
Maximum peak current, 1 sec	150 A
CONNECTION	
Terminal	Screw
MONITORING (IN-BUILT)	
Balancing	Passive
Thermal monitoring	PT100
SIZE	
Dimensions (L x W x H) (mm) (±0.5mm)	762 x 425 x 265
Weight	TBD
RATINGS	
Humidity resistance	IP54
Vibration resistance	SAE J2380

1 Within ± #% of initial measured value at #°C.
2 After 1,500 hours application of rated voltage at 65°C. Within % of initial specified value.
3 After 10 years at rated voltage and 25°C. Within % of initial specified value.
4 Within % of initial specified value.
5 After 72 hours at 25°C. Initial leakage current can be higher.
6 **CAUTION:** C urrent possible with short circuit from UR. Do not use as an operating current.
7 End of life charazterized as -20°C from nominal C, or increase of 100% in ESR.

BMOD0020 P075

FEATURES AND BENEFITS

- Ultra-low internal resistance
- Highest power performance available
- Lowest time constant
- 75 V operating voltage
- Temperature monitoring
- Over 1,000,000 duty cycles
- Water, dust and vibration resistance with IP54 and SAEJ 2380 compliance
- Passive balancing

APPLICATIONS

- Grid / Power Quality
- UPS / Backup for Heavy Machinery
- Wind Turbine Pitch Systems

INCLUDED IN BMOD0020 P075

2 Power connectors:

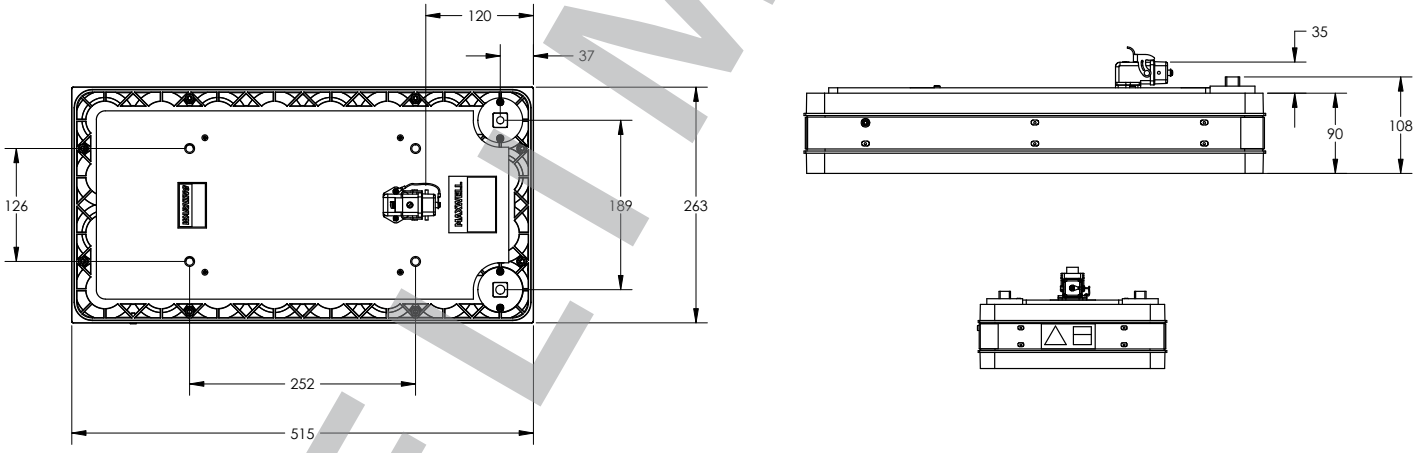
- 1x M8 (positive), 1x M10 (negative)
- Threaded aluminum

1 Monitoring connector

- Harting® HAN 09 37 003 0801 (base), 09 36 008 3001(insert)
- Thermal monitoring through PT100 Minco S17624PDYT20B

MARKINGS

Modules are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.



Part Number	Mass	L (±1.0mm)	W (±1.0mm)	H (±1.0mm)
BMOD0020 P270 B02	TBD	515mm	263mm	211mm

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice. Please contact Maxwell Technologies directly for any technical specifications critical to application.

BMOD0094 P075 B02

PRODUCT SPECIFICATIONS

CAPACITANCE	
Nominal capacitance	94 F
Tolerance capacitance	+20% / -0%
VOLTAGE	
Rated voltage	75 V DC
Surge voltage	90 V DC
Maximum operating voltage	86 V DC
Isolation voltage 50Hz, 1 min. Maximum string operating voltage 1,500 V DC	2,500 V AC
RESISTANCE	
ESR, DC Max., room temperature	15 mΩ
Resistance tolerance	Max.
Thermal resistance (Rth)	N/A
TEMPERATURE	
Operating temperature range	-40°C to +65°C
Storage temperature range	-40°C to +70°C
Temperature characteristics	
Capacitance change	± 5% at 25°C
Internal resistance change	± 150% at 25°C
POWER	
Pd	2,400 W/kg
Pmax	6,800 W/kg
ENERGY	
Emax	3.98 Wh/kg
Energy available Energy Available equals 1/2C (Vnom^2 – 1/2Vnom^2) /3600	55 Wh
LIFESPAN	
Lifetime 75 V DC, RT End of life characterized as -20% C from nominal C, or increase of 100% in ESR	150,000 hours
Endurance	
Capacitance change	<20% decrease
Internal resistance change	<60% increase
Life test	
Capacitance change	20% decrease
Internal resistance	100% increase

CYCLES	
Cycle life 75 to 37.5 V DC, RT	1,000,000
Capacitance change	30% decrease
Internal resistance	150% increase
CURRENT	
Leakage current	150 mA
Short circuit current (Isc)	4,800 A
Maximum continuous current	50 A
Maximum peak current, 1 sec 1 second, 10% duty cycle	150 A
Self discharge % of initial V; 29 hours RT 75V; 12 hours charge and hold	50%
CONNECTION	
Terminal	Screw
MONITORING (IN-BUILT)	
Balancing	Passive
Fan voltage	N/A
Thermal monitoring	PT100
SIZE	
Dimensions (L x W x H) (mm) (±0.5mm)	515 x 211 x 263
Weight	25 kg
RATINGS	
Humidity resistance	IP54
Vibration resistance	SAE J2380

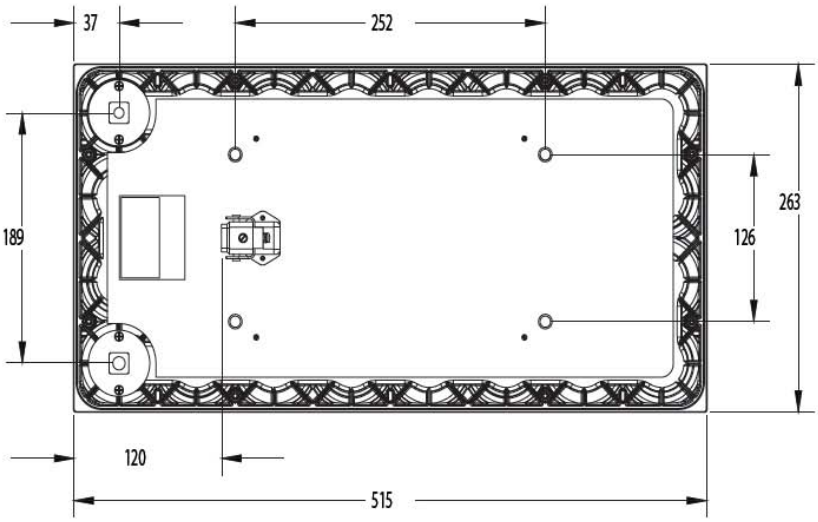
TYPICAL FEATURES AND BENEFITS

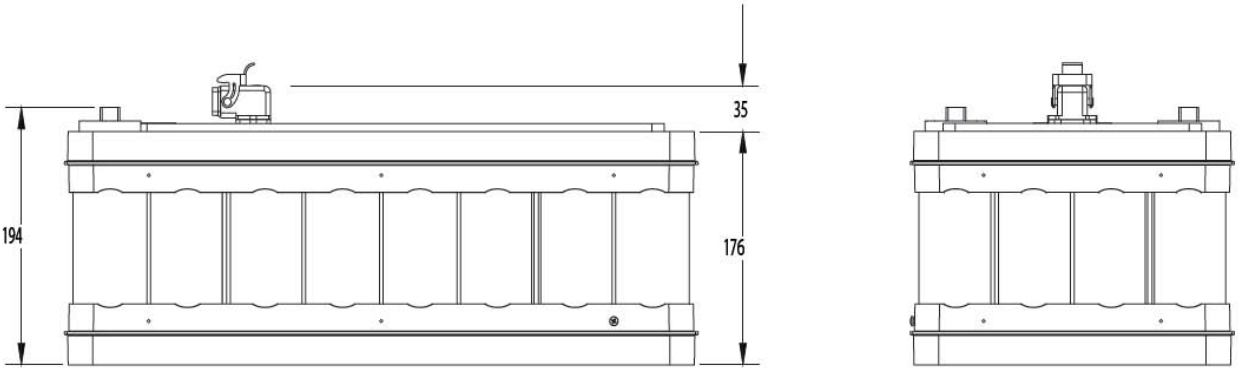
- Ultra-low internal resistance
- Highest power performance available
- Lowest time constant
- 75 V operating voltage
- Temperature monitoring
- Over 1,000,000 duty cycles
- Water, dust and vibrations resistant with IP54 and SAE J2380 compliance

TYPICAL APPLICATIONS

- Grid / Power quality
- UPS / Backup for heavy machinery
- Wind turbine pitch systems

BMOD0094 P075 B02





Product dimensions are in mm and for reference only unless otherwise identified. Product dimensions and specifications may change without notice. Please contact Maxwell Technologies directly for any technical specifications critical to application.

INCLUDED IN BMOD0063 P125

2 power connectors; threaded aluminium:

- 1x M8 (positive)
- 1x M10 (negative)

1 Monitoring connector:

- Harting® HAN 09 37 003 0801 (base), 09 36 008 3001 (insert) Thermal monitoring through PT100 Minco S17624PDYT20B

MARKINGS

Modules are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.

BMOD0063 P125 B14/B24/B04
BMOD0063 P125 B33

FEATURES AND BENEFITS

- CAN Bus digital monitoring and communications
- Highest power performance available
- Over 1,000,000 duty cycles
- Temperature and voltage monitoring
- Ultra-low internal resistance
- Shock and vibration immunity (ISO16750:T14, EN61373)

TYPICAL APPLICATIONS

- Buses
- Electric trains and trolleys
- Heavy duty transportation
- Cranes, RTGS
- Utility vehicles
- Mining Equipment

PRODUCT SPECIFICATIONS

CAPACITANCE	B04/B14/B24/B33
Nominal capacitance	63 F
Tolerance capacitance	+20% / -0%
VOLTAGE	
Rated voltage	125 V DC
Surge voltage	135 V DC
Maximum operating voltage	130 V DC
Isolation voltage 50Hz, 1 min. Maximum string operating voltage 1,500 V DC	4,000 V DC
RESISTANCE	
ESR, DC Max., room temperature	18 mΩ
Resistance tolerance	Max.
Thermal resistance (Rth)	0.032°C/W
TEMPERATURE	
Operating temperature range	-40°C to +65°C
Max. ambient operating temp.	+50°C
Storage temperature range	-40°C to +70°C
Temperature characteristics	
Capacitance change	± 5% at 25° C
Internal resistance change	± 150% at 25° C
POWER	
Pd	1,750 W/kg
Pmax	4,700 W/kg
ENERGY	
Emax	2.53 Wh/kg
Energy available Energy Available equals 1/2C (Vnom^2 – 1/2Vnom^2) /3600	101.7 Wh
CYCLES	
Cycles 125 V to 62.5 V DC, RT	1,000,000
Capacitance change Within % of initial specified value.	20% decrease
Internal resistance Within % of initial specified value.	100% increase

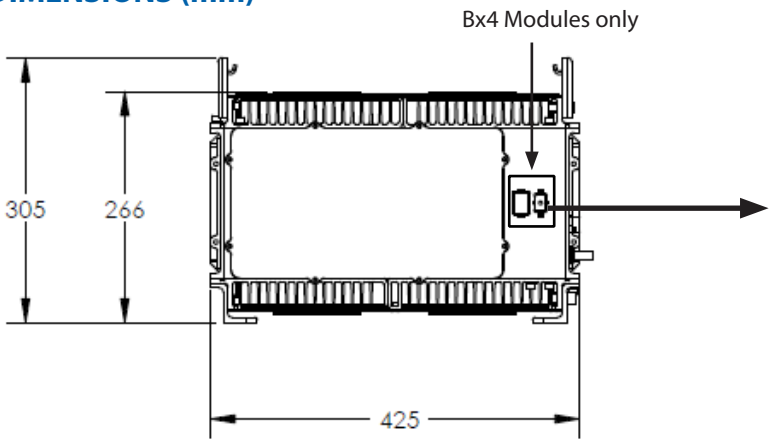
BMOD0063 P125 B14/B24/B04
BMOD0063 P125 B33

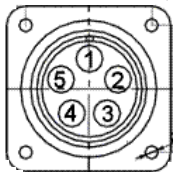
PRODUCT SPECIFICATIONS (cont.)

LIFESPAN	B04/B14/B24/B33
Lifetime 125 V DC, RT End of life characterized as -20% C from nominal C, or increase of 100% in ESR	100,000 hours
Endurance After 1,500 hours application of rated voltage at 65°C. Within % of initial specified value.	
Capacitance change	<20% decrease
Internal resistance change	<60% increase
Life test After 10 years at rated voltage and 25°C. Within % of initial specified value.	
Capacitance change	20% decrease
Internal resistance	100% increase
CURRENT	
Leakage current After 72 hours at 25°C. Initial leakage current can be higher.	5.2 mA
Maximum continuous current	150 A
Maximum peak current, 1 sec 1 second, 10% duty cycle	750 A
Maximum continuous current with fan cooling Assuming 15°C temperature rise above ambient temperature	150 A
Maximum continuous current with passive cooling Assuming 15°C temperature rise above ambient temperature	55 A
Self discharge % of initial V, 30 days RT 100V; 12 hours charge and hold	50%
CONNECTION	
Power terminal	Radsok®
Communications	See page 3
MONITORING	
Cell balancing	VMS (Maxwell Technologies® Voltage Management System)
Voltage and Temperature Monitoring	CANBus SAE J1939 (B14/B24/B33) Analog (B04)
SIZE	
Dimensions (L x W x H) (mm) (±0.5mm)	762 x 425 x 265 (B14/B24/B33) 619 x 425 x 265 (B04)
Weight	59.5 kg
RATINGS	
Fan power Max. each fan	12V / 42W (B14) 24V / 55W (B24/B33) No Fan (B04)
Humidity resistance	IP65; IP55 (fans)
Shock resistance	SAE J2464
Vibration resistance	EN 61373; ISO16750 Table 14

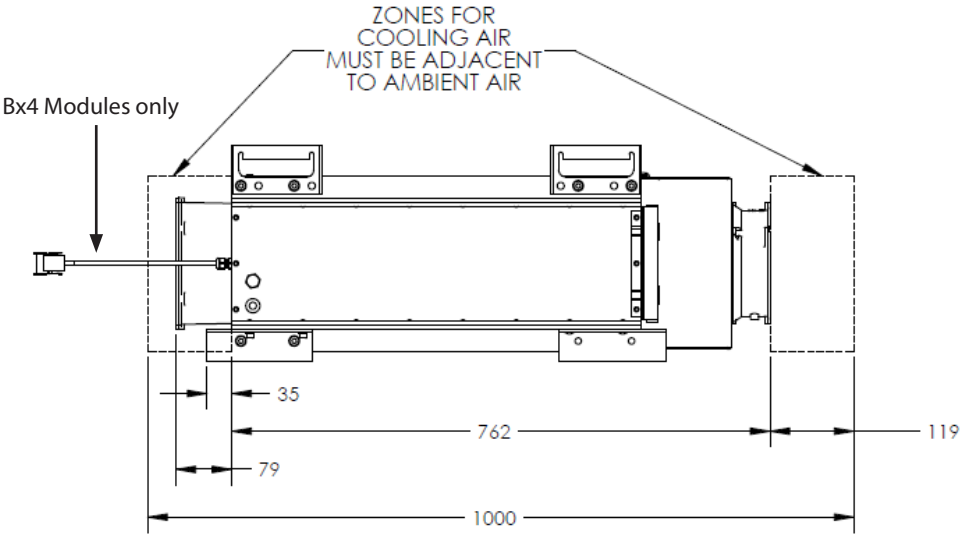
BMOD0063 P125 B14/B24/B04
BMOD0063 P125 B33

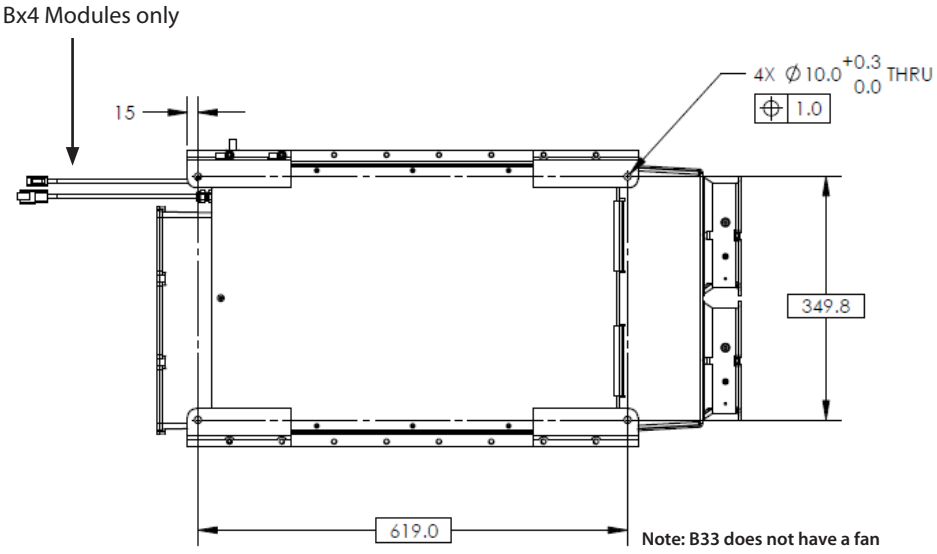
DIMENSIONS (mm)





Pin	Pin Assignment
1	Center Tap Voltage
2	Positive Tap Voltage
3	Temperature Sensor Lead 1 or 2
4	Temperature Sensor Lead 2 or 1
5	Negative Tap Voltage





Note: B33 does not have a fan

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice.
Please contact Maxwell Technologies directly for any technical specifications critical to application. *Drawing no. 1014553*

BMOD0063 P125 B14/B24/B04
BMOD0063 P125 B33

INCLUDED IN BMOD0063 P125

2 Power connectors:

- Mounting adapters with isolation and mating lug connectors
- Adapters for normal / perpendicular mounting of power cables (AUG 1/0)

1 CAN bus serial communications connector, male, Deutsch DTM04-08PA with WM-8D and 0462-201-20141 (B04/B14/B24)

1 CAN bus serial communications connector, female, Deutsch DTM06-08SA with WM-8S and 0460-201-20141 (B04/B14/B24)

1 ANALOG, 5 pin connecter (B33)

MOUNTING RECOMMENDATIONS

The module should be mounted to a strong chassis surface with four 6-32, or M4 screws. The mounting screws should have a mechanical locking method that is appropriate for the vibration levels. To provide the best possible EMI protection, the mounting surface should be electrically grounded. Do not reverse polarize.
The use of alternate module mounting orientations or custom feet other than those provided by Maxwell Technologies will result in voiding the warranty unless such uses have been disclosed to Maxwell and approved by Maxwell by express written consent prior to implementation.

MARKINGS

Modules are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.

BMOD0063 P125 B14
BMOD0063 P125 B24

INCLUDED IN BMOD0063 P125

2 Power connectors:

- Mounting adapters with isolation and mating lug connectors
- Optional adapters for normal / perpendicular mounting of power cables

1 CAN bus serial communications connector, male, Deutsch DTM04-08PA with WM-8D and 0462-201-20141

1 CAN bus serial communications connector, female, Deutsch DTM06-08SA with WM-8S and 0460-201-20141

MOUNTING RECOMMENDATIONS

The module should be mounted to a strong chassis surface with four 6-32, or M4 screws. The mounting screws should have a mechanical locking method that is appropriate for the vibration levels. To provide the best possible EMI protection, the mounting surface should be electrically grounded. Do not reverse polarize.
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Disclaimer of Warranty/Limitation of Liability

for Uses in Life Support Devices or Critical Systems

Maxwell Technologies, Inc. and its Affiliates (“Maxwell”) provide no warranties of any kind either express or implied, including (without limitation) the implied warranties of merchantability and fitness, for uses of its products as components in life support devices or critical systems.

“Life support devices” are devices or systems, which (a) are intended for surgical implant into a living body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with the instructions provided in the labeling can be reasonably expected to result in bodily injury to the user. An example of a life support device includes, but is not limited to, a heart pacemaker.

A “critical system” is any system whose failure to perform can affect the safety or effectiveness of a higher level system, or cause bodily or property injury by loss of control of the higher level device or system. An example of a critical system includes, but is not limited to, aircraft avionics.

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