

## FEATURES

- ▶ High Power Density in SIP-9 Package
- ▶ Small Footprint: 26 x 9.2 mm (1.02" x 0.36")
- ▶ Ultra-wide 4:1 Input Range
- ▶ Fully Regulated Output
- ▶ Wide Operating Temperature Range
- ▶ Under-Voltage, Overload and Short Circuit Protection
- ▶ I/O-Isolation Voltage 1500 VDC
- ▶ Remote On/Off Control
- ▶ UL/cUL/IEC/EN 62368-1 Safety Approval



## PRODUCT OVERVIEW

The MEW1000 Series is a family of 2W isolated, fully regulated DC-DC converters engineered for space-limited industrial and embedded applications that demand wide input flexibility and stable output performance. Featuring a high power density SIP-9 package and an ultra-compact footprint of 26 × 9.2 mm (1.02" × 0.36"), it enables easy drop-in integration where PCB area is critical.

With an ultra-wide 4:1 input voltage range, the MEW1000 Series helps simplify system design across varying DC bus conditions while maintaining regulated output. It also integrates key protections including under-voltage, overload, and short-circuit protection, along with remote on/off control for system-level power management. Providing 1500 VDC I/O isolation, the series supports improved safety and noise separation in multi-rail designs. The MEW1000 Series is certified to UL/cUL/IEC/EN 62368-1, helping streamline safety compliance for end equipment.

### Model Selection Guide

| Model Number | Input Voltage (Range) | Output Voltage | Output Current |      | Input Current |          | Reflected Ripple Current | Max. capacitive Load | Efficiency (typ.) |
|--------------|-----------------------|----------------|----------------|------|---------------|----------|--------------------------|----------------------|-------------------|
|              |                       |                | Max.           | Min. | @Max. Load    | @No Load |                          |                      |                   |
|              |                       |                | mA             | mA   | mA(typ.)      | mA(typ.) |                          | μF                   | %                 |
| MEW1021      | 24<br>(9 ~ 36)        | 3.3            | 500            | 125  | 97            | 20       | 300                      | 2200                 | 71                |
| MEW1022      |                       | 5              | 400            | 100  | 110           |          |                          | 1000                 | 76                |
| MEW1023      |                       | 12             | 167            | 42   | 106           |          |                          | 170                  | 79                |
| MEW1024      |                       | 15             | 134            | 33   | 105           |          |                          | 110                  | 80                |
| MEW1025      |                       | ±5             | ±200           | ±50  | 114           |          |                          | 470#                 | 73                |
| MEW1026      |                       | ±12            | ±83            | ±21  | 108           |          |                          | 100#                 | 77                |
| MEW1027      |                       | ±15            | ±67            | ±17  | 106           |          |                          | 47#                  | 79                |
| MEW1031      | 48<br>(18 ~ 75)       | 3.3            | 500            | 125  | 49            | 15       | 600                      | 2200                 | 70                |
| MEW1032      |                       | 5              | 400            | 100  | 58            |          |                          | 1000                 | 72                |
| MEW1033      |                       | 12             | 167            | 42   | 54            |          |                          | 170                  | 78                |
| MEW1034      |                       | 15             | 134            | 33   | 54            |          |                          | 110                  | 78                |
| MEW1035      |                       | ±5             | ±200           | ±50  | 60            |          |                          | 470#                 | 70                |
| MEW1036      |                       | ±12            | ±83            | ±21  | 55            |          |                          | 100#                 | 76                |
| MEW1037      |                       | ±15            | ±67            | ±17  | 55            |          |                          | 47#                  | 76                |

# For each output

### Input Specifications

| Parameter                         | Model            | Min.           | Typ. | Max. | Unit |
|-----------------------------------|------------------|----------------|------|------|------|
| Input Surge Voltage (1 sec. max.) | 24V Input Models | -0.7           | ---  | 50   | VDC  |
|                                   | 48V Input Models | -0.7           | ---  | 100  |      |
| Start-Up Threshold Voltage        | 24V Input Models | 4.5            | 6    | 8.5  |      |
|                                   | 48V Input Models | 8.5            | 12   | 17   |      |
| Under Voltage Shutdown            | 24V Input Models | ---            | ---  | 8    |      |
|                                   | 48V Input Models | ---            | ---  | 16   |      |
| Short Circuit Input Power         | All Models       | ---            | ---  | 1500 | mW   |
| Internal Filter Type              |                  | Capacitor type |      |      | mW   |
| Internal Power Dissipation        |                  | ---            | ---  | 2500 |      |

**Output Specifications**

| Parameter                       | Conditions                          | Min. | Typ.  | Max.  | Unit              |
|---------------------------------|-------------------------------------|------|-------|-------|-------------------|
| Output Voltage Setting Accuracy |                                     | ---  | ---   | ±2.0  | %Vnom.            |
| Output Voltage Balance          | Dual Output, Balanced Loads         | ---  | ±1.0  | ±2.0  | %                 |
| Line Regulation                 | Vin=Min. to Max. @Full Load         | ---  | ±0.3  | ±0.5  | %                 |
| Load Regulation                 | Io=25% to 100%                      | ---  | ±0.5  | ±0.75 | %                 |
| Ripple & Noise                  | 0-20MHz Bandwidth                   | ---  | 30    | 50    | mV <sub>P-P</sub> |
| Transient Recovery Time         | 25% Load Step Change <sub>(2)</sub> | ---  | 100   | 300   | μs                |
| Transient Response Deviation    |                                     | ---  | ±3    | ±5    | %                 |
| Temperature Coefficient         |                                     | ---  | ±0.01 | ±0.02 | %/°C              |
| Short Circuit Protection        | Continuous, Automatic Recovery      |      |       |       |                   |

**General Specifications**

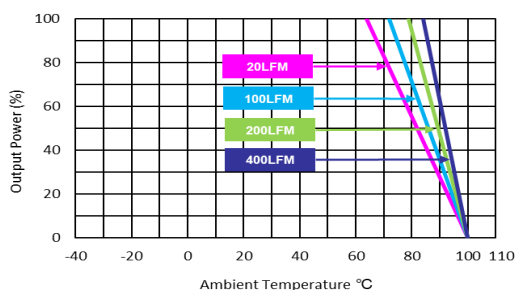
| Parameter                 | Conditions                                                            | Min.      | Typ. | Max. | Unit  |
|---------------------------|-----------------------------------------------------------------------|-----------|------|------|-------|
| I/O Isolation Voltage     | 60 Seconds                                                            | 1500      | ---  | ---  | VDC   |
| I/O Isolation Resistance  | 500 VDC                                                               | 1000      | ---  | ---  | MΩ    |
| I/O Isolation Capacitance | 100kHz, 1V                                                            | ---       | 250  | 500  | pF    |
| Switching Frequency       |                                                                       | ---       | 300  | ---  | kHz   |
| MTBF (Calculated)         | MIL-HDBK-217F@25°C, Ground Benign                                     | 1,280,574 | ---  | ---  | Hours |
| Safety Approvals          | UL/cUL 60950-1 recognition(CSA certificate)                           |           |      |      |       |
|                           | UL/cUL 62368-1 recognition(UL certificate), IEC/EN 62368-1(CB-report) |           |      |      |       |

**Remote On/Off Control**

| Parameter                     | Conditions                                                  | Min. | Typ. | Max. | Unit |
|-------------------------------|-------------------------------------------------------------|------|------|------|------|
| Converter On                  | Under 0.6 VDC or Open Circuit, drops down to 0VDC by 2mV/°C |      |      |      |      |
| Converter Off                 | 2.9 to 15 VDC                                               |      |      |      |      |
| Standby Input Current         |                                                             | ---  | 1    | 3    | mA   |
| Control Input Current ( on )  | Vin = 0V                                                    | ---  | ---  | -1   | mA   |
| Control Input Current ( off ) | Vin = 5.0V                                                  | ---  | ---  | 1    | mA   |
| Control Common                | Referenced to Negative Input                                |      |      |      |      |

**Environmental Specifications**

| Parameter                                                                            | Min. | Max. | Unit     |
|--------------------------------------------------------------------------------------|------|------|----------|
| Operating Ambient Temperature Range (For Power Derating see relative Derating Curve) | -40  | +85  | °C       |
| Case Temperature                                                                     | ---  | +100 | °C       |
| Storage Temperature Range                                                            | -55  | +105 | °C       |
| Humidity (non condensing)                                                            | ---  | 95   | % rel. H |
| Lead Temperature (1.5mm from case for 10Sec.)                                        | ---  | 260  | °C       |

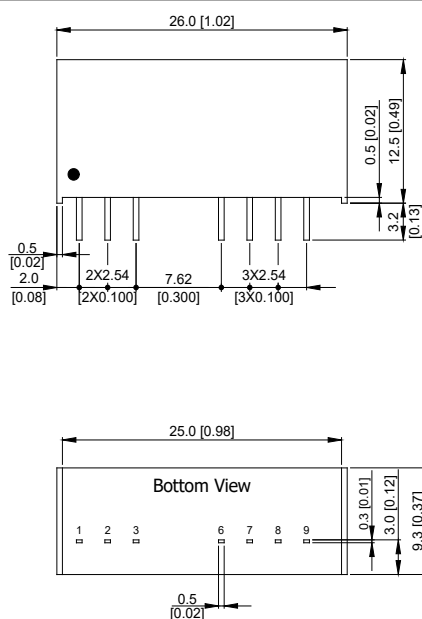
**Power Derating Curve**


### Notes

- 1 Specifications typical at Ta=+25°C, resistive load, nominal input voltage and rated output current unless otherwise noted.
- 2 Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
- 3 Please do not operate the product without a minimum load condition.
- 4 We recommend to protect the converter by a slow blow fuse in the input supply line.
- 5 Other input and output voltage may be available, please contact MINMAX.
- 6 Specifications are subject to change without notice.
- 7 The repeated high voltage isolation testing of the converter can degrade isolation capability, to a lesser or greater degree depending on materials, construction, environment and reflow solder process. Any material is susceptible to eventual chemical degradation when subject to very high applied voltages thus implying that the number of tests should be strictly limited. We therefore strongly advise against repeated high voltage isolation testing, but if it is absolutely required, that the voltage be reduced by 20% from specified test voltage. Furthermore, the high voltage isolation capability after reflow solder process should be evaluated as it is applied on system.

### Package Specifications

#### Mechanical Dimensions



#### Pin Connections

| Pin | Single Output | Dual Output   |
|-----|---------------|---------------|
| 1   | -Vin          | -Vin          |
| 2   | +Vin          | +Vin          |
| 3   | Remote On/Off | Remote On/Off |
| 6   | +Vout         | +Vout         |
| 7   | NC            | Common        |
| 8   | NC            | NC            |
| 9   | -Vout         | -Vout         |

NC: No Connection

- ▶ All dimensions in mm (inches)
- ▶ Tolerance: X.X±0.5 (X.XX±0.02)  
X.XX±0.25 (X.XXX±0.010)
- ▶ Pins ±0.1(±0.004)

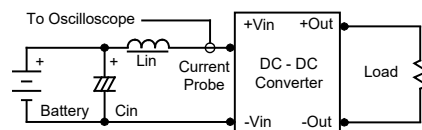
### Physical Characteristics

|               |                                                  |
|---------------|--------------------------------------------------|
| Case Size     | : 26.0x9.3x12.5 mm (1.02x0.37x0.49 inches)       |
| Case Material | : Plastic resin (flammability to UL 94V-0 rated) |
| Pin Material  | : Alloy 42                                       |
| Weight        | : 6.5g                                           |

## Test Setup

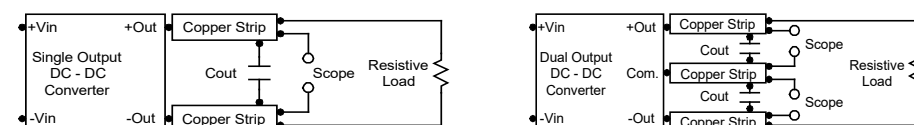
### Input Reflected-Ripple Current Test Setup

Input reflected-ripple current is measured with an inductor  $L_{in}$  (4.7 $\mu$ H) and  $C_{in}$  (220 $\mu$ F, ESR < 1.0 $\Omega$  at 100 kHz) to simulate source impedance. Capacitor  $C_{in}$ , offsets possible battery impedance. Current ripple is measured at the input terminals of the module, measurement bandwidth is 0-500 kHz.



### Peak-to-Peak Output Noise Measurement Test

Use a  $C_{out}$  0.47 $\mu$ F ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20 MHz. Position the load between 50 mm and 75 mm from the DC-DC Converter.



## Technical Notes

### Remote On/Off

Negative logic remote on/off turns the module off during a logic high voltage on the remote on/off pin, and on during a logic low. To turn the power module on and off, the user must supply a switch to control the voltage between the on/off terminal and the -Vin terminal. The switch can be an open collector or equivalent. A logic high is 2.9V to 15V. A logic low is under 0.6 VDC or open circuit, drops down to 0VDC by 2mV/°C. The maximum sink current at on/off terminal during a logic low is 1 mA. The maximum allowable leakage current of the switch at on/off terminal =(under 0.6VDC or open circuit) is 1mA.

### Maximum Capacitive Load

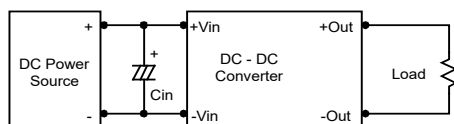
The MEW1000 series has limitation of maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time. The maximum capacitance can be found in the data sheet.

### Overcurrent Protection

To provide protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure current limiting for an unlimited duration. At the point of current-limit inception, the unit shifts from voltage control to current control. The unit operates normally once the output current is brought back into its specified range.

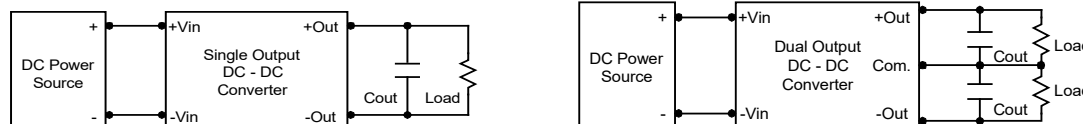
### Input Source Impedance

The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor on the input to insure startup. By using a good quality low Equivalent Series Resistance (ESR < 1.0 $\Omega$  at 100 kHz) capacitor of a 1.5 $\mu$ F for the 24V and 48V devices, capacitor mounted close to the power module helps ensure stability of the unit.



### Output Ripple Reduction

A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 3.3 $\mu$ F capacitors at the output.



### Thermal Considerations

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 100°C. The derating curves are determined from measurements obtained in a test setup.

