

M183 SERIES

AC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

- AC/DC POWER SUPPLY
- 115VAC, 50/60/400Hz, 3- phase
- HIGH EFFICIENCY
- HIGH DENSITY
- SINGLE DC OUTPUT
- UP TO 1000 W



<p>Applications</p> <p><i>Military (Airborne, ground-fix, shipboard), Ruggedized, Telecom, Industrial</i></p>											
<p>Special Features</p> <ul style="list-style-type: none"> • Miniature size • High efficiency • Wide input range • Input / Output isolation • Limited Inrush Current • External On/Off Inhibit • <u>Fixed</u> switching freq. (400 kHz) • External sync. capability • <u>EMI</u> filters included • Up to 28 W/in³ • Power Factor 85%-90% at 75-100% load. • Indefinite short circuit protection with auto-recovery • Over-voltage shutdown with auto-recovery • Over temperature shutdown with auto-recovery 											
<p>Electrical Specifications</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><u>Input Voltage Range</u> AC Input range: 103 -127V_{AC}, 50/60/400Hz, 3-phase.</p> <p>Optional: Can be configured for continuous work during 80 V_{AC} transient IAW MIL-STD-704F.</p> </td> <td style="width: 33%; vertical-align: top;"> <p><u>DC Output</u> Voltage range: 5V to 50V Output power: Up to 1000W Output current: Up to 42A</p> </td> <td style="width: 33%; vertical-align: top;"> <p><u>Isolation</u> Input to Output: 500V_{DC} Input to Case: 500V_{DC} Output to Case: 100V_{DC}</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p><u>Line/Load regulation</u> Less than 1% (Low line to high line, no load to full load, -55°C to +85°C).</p> </td> <td style="vertical-align: top;"> <p><u>Efficiency</u> 90% typical (full load, nominal line voltage, room temperature)</p> </td> <td style="vertical-align: top;"> <p><u>EMC**</u> Designed to meet MIL-STD-461F: CE102, CS101, CS114, CS115, CS116, RE102, RS101, RS103</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p><u>Ripple and Noise</u> 100-150mV_{p-p}, typical (max. 1%) without external capacitance.</p> </td> <td style="vertical-align: top;"> <p><u>Turn on Transient</u> No Voltage over shoot during power on.</p> </td> <td></td> </tr> </table>			<p><u>Input Voltage Range</u> AC Input range: 103 -127V_{AC}, 50/60/400Hz, 3-phase.</p> <p>Optional: Can be configured for continuous work during 80 V_{AC} transient IAW MIL-STD-704F.</p>	<p><u>DC Output</u> Voltage range: 5V to 50V Output power: Up to 1000W Output current: Up to 42A</p>	<p><u>Isolation</u> Input to Output: 500V_{DC} Input to Case: 500V_{DC} Output to Case: 100V_{DC}</p>	<p><u>Line/Load regulation</u> Less than 1% (Low line to high line, no load to full load, -55°C to +85°C).</p>	<p><u>Efficiency</u> 90% typical (full load, nominal line voltage, room temperature)</p>	<p><u>EMC**</u> Designed to meet MIL-STD-461F: CE102, CS101, CS114, CS115, CS116, RE102, RS101, RS103</p>	<p><u>Ripple and Noise</u> 100-150mV_{p-p}, typical (max. 1%) without external capacitance.</p>	<p><u>Turn on Transient</u> No Voltage over shoot during power on.</p>	
<p><u>Input Voltage Range</u> AC Input range: 103 -127V_{AC}, 50/60/400Hz, 3-phase.</p> <p>Optional: Can be configured for continuous work during 80 V_{AC} transient IAW MIL-STD-704F.</p>	<p><u>DC Output</u> Voltage range: 5V to 50V Output power: Up to 1000W Output current: Up to 42A</p>	<p><u>Isolation</u> Input to Output: 500V_{DC} Input to Case: 500V_{DC} Output to Case: 100V_{DC}</p>									
<p><u>Line/Load regulation</u> Less than 1% (Low line to high line, no load to full load, -55°C to +85°C).</p>	<p><u>Efficiency</u> 90% typical (full load, nominal line voltage, room temperature)</p>	<p><u>EMC**</u> Designed to meet MIL-STD-461F: CE102, CS101, CS114, CS115, CS116, RE102, RS101, RS103</p>									
<p><u>Ripple and Noise</u> 100-150mV_{p-p}, typical (max. 1%) without external capacitance.</p>	<p><u>Turn on Transient</u> No Voltage over shoot during power on.</p>										
<p>Protections ***</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><u>Input</u></p> <ul style="list-style-type: none"> • Inrush Current Limiter Peak value of 6 x I_{nom} for inrush currents lasting over 50µs. </td> <td style="width: 33%; vertical-align: top;"> <p><u>Output</u></p> <ul style="list-style-type: none"> • Passive Over-Voltage Protection Transorb on outputs, chosen at 120% ± 10% of nominal voltage. • Overload / Short-circuit Continuous protection (10 to 30% above maximum current) for unlimited time. </td> <td style="width: 33%; vertical-align: top;"> <p><u>General</u></p> <ul style="list-style-type: none"> • Over Temperature Protection Shutdown if baseplate temperature rises above +105°C ± 5°C. Automatic recovery upon cool down when baseplate temperature drops below +95°C ± 5°C. </td> </tr> </table>			<p><u>Input</u></p> <ul style="list-style-type: none"> • Inrush Current Limiter Peak value of 6 x I_{nom} for inrush currents lasting over 50µs. 	<p><u>Output</u></p> <ul style="list-style-type: none"> • Passive Over-Voltage Protection Transorb on outputs, chosen at 120% ± 10% of nominal voltage. • Overload / Short-circuit Continuous protection (10 to 30% above maximum current) for unlimited time. 	<p><u>General</u></p> <ul style="list-style-type: none"> • Over Temperature Protection Shutdown if baseplate temperature rises above +105°C ± 5°C. Automatic recovery upon cool down when baseplate temperature drops below +95°C ± 5°C. 						
<p><u>Input</u></p> <ul style="list-style-type: none"> • Inrush Current Limiter Peak value of 6 x I_{nom} for inrush currents lasting over 50µs. 	<p><u>Output</u></p> <ul style="list-style-type: none"> • Passive Over-Voltage Protection Transorb on outputs, chosen at 120% ± 10% of nominal voltage. • Overload / Short-circuit Continuous protection (10 to 30% above maximum current) for unlimited time. 	<p><u>General</u></p> <ul style="list-style-type: none"> • Over Temperature Protection Shutdown if baseplate temperature rises above +105°C ± 5°C. Automatic recovery upon cool down when baseplate temperature drops below +95°C ± 5°C. 									

* Available on special versions. Contact factory for further details.

** Depending on configuration, an external filter may be required to comply with EMI requirements.

Environmental Conditions

Designed to meet MIL-STD-810F

Temperature

Operating: -55°C to +85°C (base plate)

Storage: -55°C to +125°C

Altitude

Method 500.4, Procedure I & II, 40,000 ft. and 70,000 ft.

Operational

Salt Fog

Method 509

Fungus Resistance

Method 508

Humidity

Method 507.4 - Up to 95%.

Salt and Dust

Method 510, Procedure I

Vibration and Shock

Shock: Saw-tooth, 20g peak, 11ms.

Vibration: Figure 514.5C-17. General minimum integrity exposure, 1 hour per axis.

Reliability

150,000 hours, calculated IAW MIL-HDBK-217F Notice 2 at +85 °C (at baseplate), Ground Fix conditions.

Environmental Stress Screening (ESS)

Including random vibration and thermal cycles is also available. Please consult factory for details.

† Thresholds and protections can be modified / removed – please consult factory

Pin Assignment

Connector J1 (Input)

Connector type: M24308/24-38F or eq.

Mating connector: M24308/2-2F or eq.

Pin No.	Pin Function	Pin No.	Pin Function
1	N.C.	9	PHASE C
2	PHASE C	10	PHASE C
3	N.C.	11	N.C.
4	PHASE B	12	PHASE B
5	PHASE B	13	N.C.
6	N.C.	14	PHASE A
7	PHASE A	15	PHASE A
8	N.C.		

Connector J2 (Output) Standard Version

Connector type: M24308/23-39F or eq.

Mating connector: M24308/4-3F or eq.

Pin No.	Pin Function	Pin No.	Pin Function	Pin No.	Pin Function
1	N.C	10	OUT RTN (-)	19	OUT (+)
2	N.C	11	OUT RTN (-)	20	OUT RTN (-)
3	INHIBIT	12	OUT RTN (-)	21	OUT RTN (-)
4	OUT (+)	13	OUT RTN (-)	22	OUT RTN (-)
5	OUT (+)	14	OUT (+)	23	OUT RTN (-)
6	OUT (+)	15	OUT (+)	24	OUT RTN (-)
7	OUT (+)	16	OUT (+)	25	OUT RTN (-)
8	OUT (+)	17	OUT (+)		
9	OUT RTN (-)	18	OUT (+)		

* All output parallel pins should be connected together for best performance.

Connector J2 (Output) Optional**

Connector type: M24308/23-39F or eq.

Mating connector: M24308/4-3F or eq.

Pin No.	Pin Function	Pin No.	Pin Function	Pin No.	Pin Function
1	SENSE	10	OUT RTN (-)	19	OUT (+)
2	SENSE RTN	11	OUT RTN (-)	20	OUT RTN (-)
3	INHIBIT	12	OUT RTN (-)	21	OUT RTN (-)
4	OUT (+)	13	OUT RTN (-)	22	OUT RTN (-)
5	OUT (+)	14	OUT (+)	23	OUT RTN (-)
6	OUT (+)	15	OUT (+)	24	OUT RTN (-)
7	OUT (+)	16	OUT (+)	25	OUT RTN (-)
8	OUT (+)	17	OUT (+)		
9	OUT RTN (-)	18	OUT (+)		

* All output parallel pins should be connected together for best performance.

** Please consult factory for details.

Functions and Signals

INHIBIT signal

The INHIBIT signal is used to turn the power supply ON and OFF.

TTL "1" or OPEN – Power supply active (output turned on).

TTL "0" or SHORT to Output RTN – Power supply inhibited (output turned off).

If this function is not required, leave this pin unconnected.

SENSE

The SENSE line is used to achieve accurate voltage regulation at load terminals.

To use this feature, connect this pin directly to load's positive terminal.

If this function is not required, short SENSE pin to OUTPUT pins as close as possible to the unit.

SENSE RTN

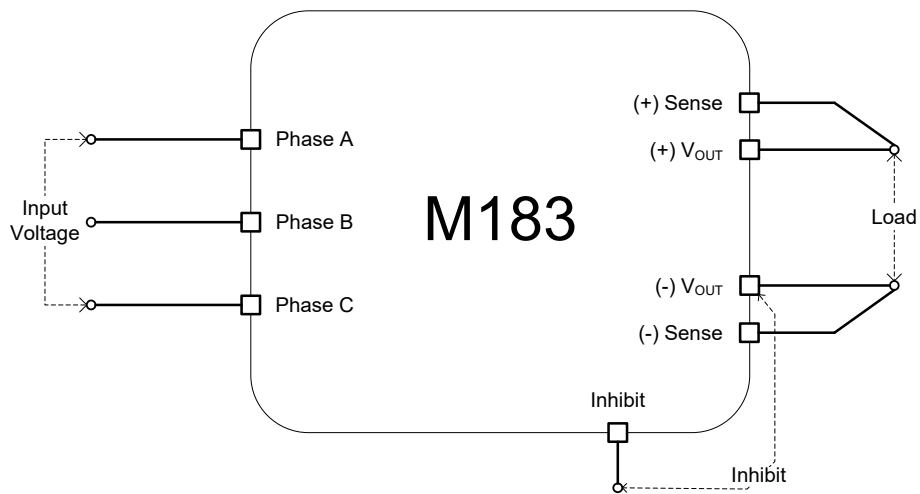
The SENSE RTN line is used to achieve accurate voltage regulation at load terminals.

To use this feature, connect this pin directly to load's negative terminal.

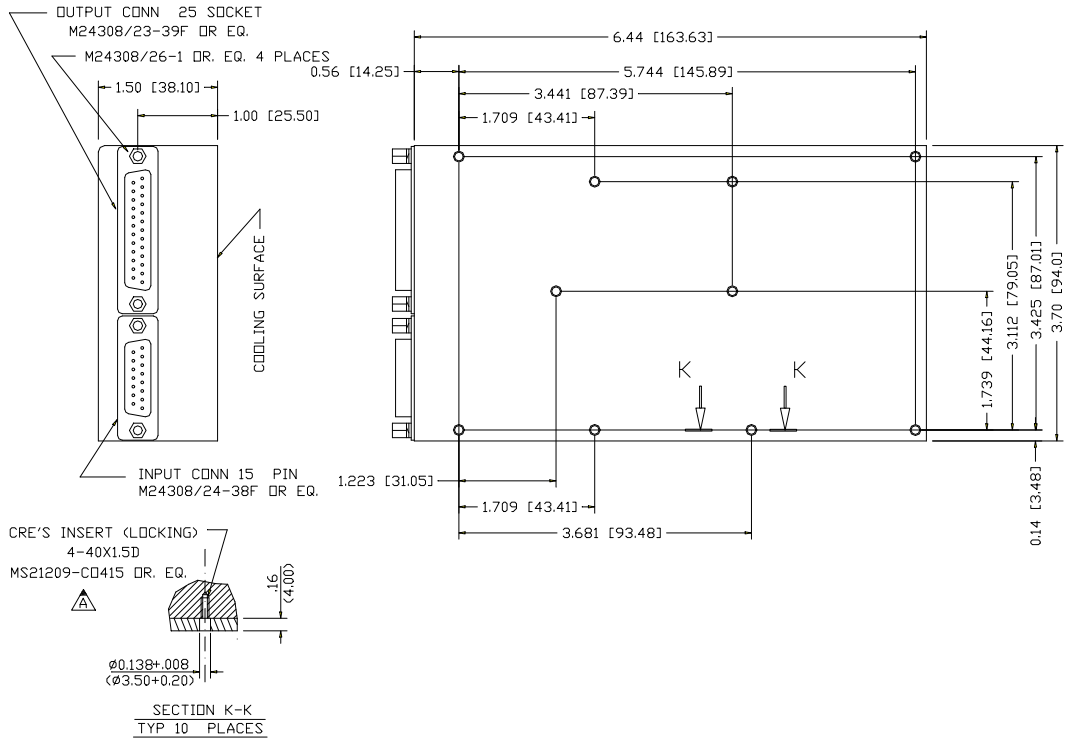
If this function is not required, short SENSE RTN pin to OUTPUT RTN pins as close as possible to the unit.

Note: The use of remote sense has a limit of voltage dropout between the converter's output and the load's terminals of approximately 5% of nominal output voltage.

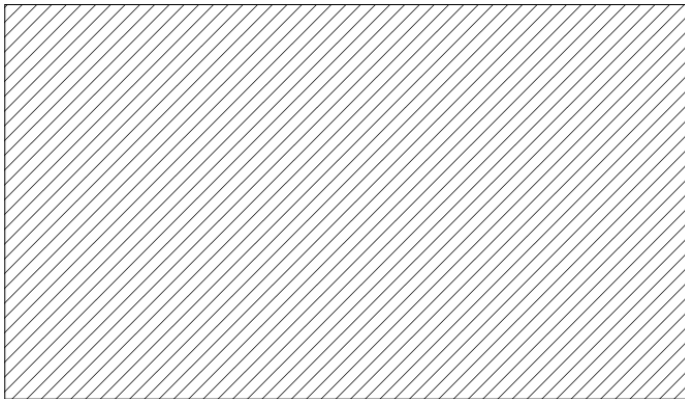
Typical Connection



Outline Drawing



Heat Dissipation Surface



Dissipation Area
23.84 in²
(15380 mm²)

Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:
 .XX ±.02 IN
 .XXX ±.01 IN
3. Weight: 37.4 oz (1075 g)
4. Parasolid 3D model available

Standard Configurations

Part number	Input		Output	
	Voltage range	Frequency	Voltage	Current
M183-100	3-phase, 103 to 127 V _{AC}	50/60/400 Hz	5 V _{DC}	40 A
M183-101	3-phase, 103 to 127 V _{AC}	50/60/400 Hz	12 V _{DC}	40 A
M183-102	3-phase, 103 to 127 V _{AC}	50/60/400 Hz	15 V _{DC}	40 A
M183-103	3-phase, 103 to 127 V _{AC}	50/60/400 Hz	24 V _{DC}	40 A
M183-104	3-phase, 103 to 127 V _{AC}	50/60/400 Hz	28 V _{DC}	36 A
M183-105	3-phase, 103 to 127 V _{AC}	50/60/400 Hz	48 V _{DC}	20 A

Note: Specifications are subject to change without prior notice by the manufacturer