TS Series

Programmable DC Power Supply

认证



TS Series 3U model

功率	电压	电流	型号	尺寸
5 kW to **100** kW	**5** Vdc to **6000** Vdc	**1.2** Adc to **8000** Adc	**275**	**3**U to **16**U

1 描述

The TS Series offers many models spanning a wide voltage and current range, while still maintaining among the highest power density rack-mount packaging. The TS Series covers voltages from 5 Vdc up to 6000 Vdc (floating) and current levels from 1.2 Adc up to 8000 Adc. Models 5 kW to 15 kW are available in a 3U chassis, models 20 kW and 25 kW are available in a 4U chassis, models 30 kW are available in a 6U chassis, models 40 kW and 50 kW are available in an 8U chassis with removable casters, models 75 kW models are available in a 12U chassis with removable casters, and 100 kW models are available in a 16U chassis with removable casters. In addition, there are several special low voltage high current models, enabling a more cost-effective solution for these requirements. All TS Series power supplies come standard with isolated 37-pin external I/O, RS232, Remote Interface Software, IVI drivers, and LabVIEW drivers for integration into a variety of programming environment.

2 可用集成选件

+ISO	High Isolation Output
+HS	High Slew Rate Output
+GPIB	IEEE-488 GPIB
+BD	Integrated Blocking Diode
+LXI	LXI TCP/IP Ethernet
+WC	Water Cooling

3 产品规格

规格如有变更，恕不另行通知。除非另有说明，所有规格均在产品的最大额定值下测量。

3.1 AC Input Specifications

参数	值	条件
1Φ AC Input Voltage	208 Vac (operating range 187 - 229 Vac) 240 Vac (operating range 216 - 264 Vac)	1Φ, 2-wire + ground; Available on 5 kW models only
3Φ AC Input Voltage	208 Vac (operating range 187 to 229 Vac) 240 Vac (operating range 216 to 264 Vac) 380/400 Vac (operating range 342 to 440 Vac) 415 Vac (operating range 373 to 456 Vac) 440 Vac (operating range 396 to 484 Vac) 480 Vac (operating range 432 to 528 Vac)	3Φ, 3-wire + ground
Input Frequency	50 Hz to 400 Hz	
Power Factor	> 0.92 at maximum power (3Φ Input) > 0.70 at maximum power (1Φ Input)	
AC Input Isolation	±2500 Vdc, maximum input voltage to ground	

3.2 DC Output Specifications

参数	值	条件
Voltage Ripple	Model specific. Refer to chart of available models.	
Line Regulation	Voltage mode: ± 0.004% of full scale Current mode: ± 0.02% of full scale	
Load Regulation	Voltage mode: ± 0.01% of full scale Current mode: ± 0.04% of full scale	
Stability	± 0.10% for 8 hrs. after 30 min. warm-up	
Efficiency	85% to 95% Model specific. Refer to chart of available models.	
Maximum Slew Rate	< 170 ms for a programmed output voltage change from 0 to 63% < 200 ms for a programmed output current change from 0 to 63%	Standard Models
Maximum Slew Rate	< 5 ms for a programmed output voltage change from 0 to 63% < 10 ms for a programmed output current change from 0 to 63%	Models with High Slew Rate Output (+HS) Option
Bandwidth	3 Hz with remote analog voltage programming 2 Hz with remote analog current programming	Standard Models
Bandwidth	60 Hz with remote analog voltage programming 45 Hz with remote analog current programming	Models with High Slew Rate Output (+HS) Option
DC Output Isolation	±1000 Vdc, maximum output voltage to ground	Models Rated ≤1000 Vdc
DC Output Isolation	±(3000 Vdc + Vo/2), maximum output voltage to ground where Vo is the maximum output voltage of the power supply	Models Rated >1000 Vdc or Models with +ISO Option

3.3 Programming Interface Specifications

参数	值	条件
Front Panel Programming	Stepless aluminum rotary knobs and keypad	
Computer Interface	RS232, D-sub DB-9, female (Standard) LXI TCP/IP Ethernet RJ45 (Option +LXI) IEEE-488 GPIB (Option +GPIB)	

3.3 Programming Interface Specifications

参数	值	条件
External User I/O Port	37-pin D-sub DB-37, female Referenced to Earth ground; isolated from power supply output See User Manual for pin layout	Analog and Digital Programming
Remote Sense Limits (Wired)	3% maximum voltage drop from output to load	Available for models ≤ 1000 Vdc without High Isolation Output (+ISO) option

3.4 Accuracy Specifications

参数	值	条件
Voltage Programming Accuracy	± 0.075% of max rated voltage	
Over Voltage Trip Programming Accuracy	± 0.075% of max rated voltage	
Current Programming Accuracy	± 0.075% of max rated current	
Over Current Trip Programming Accuracy	± 0.075% of max rated current	
Voltage Readback Accuracy	± 0.2% of max rated voltage	
Current Readback Accuracy	± 0.2% of max rated current	

3.5 External User I/O Specifications

参数	值	条件
Analog Programming and Monitoring Levels	0-10 Vdc	
Analog Output Impedances	Voltage output monitoring: 100 Ω Current output monitoring: 100 Ω +10V reference: 1 Ω	
Digital Programming and Monitoring Limits	Input: 0 to 5 Vdc, 10 kΩ input impedance Output: 0 to 5 Vdc, 5 mA drive capacity	

3.6 Physical Specifications

参数	值	条件
Racking Standard	EIA-310	
Rear Support Rails	Included	
Size and Weight	3U 5.25" H x 19" W x 24" D (13.34 x 48.26 x 60.96 cm) 74 lbs (34.57 kg)	5 kW Models
Size and Weight	3U 5.25" H x 19" W x 24" D (13.34 x 48.26 x 60.96 cm) 94 lbs (42.64 kg)	10 kW Models
Size and Weight	3U 5.25" H x 19" W x 24" D (13.34 x 48.26 x 60.96 cm) 125 lbs (56.70 kg)	15 kW Models
Size and Weight	4U 7” H x 19” W x 24” D (17.8 x 48.2 x 60.9 cm) 160 lbs (72.6 kg)	20 kW Models; 380/415 Vac and 440/480 Vac, 3Φ input
Size and Weight	6U 10.5" H x 19" W x 24" D (26.67 x 48.26 x 60.96 cm) 185 lbs (83.9 kg)	20 kW Models; 208/240 Vac, 3Φ input

3.6 Physical Specifications

参数	值	条件
Size and Weight	4U 7” H x 19” W x 24” D (17.8 x 60.9 x 48.2 cm) 180 lbs (81.7 kg)	25 kW Models; 380/415 Vac and 440/480 Vac, 3Φ input
Size and Weight	6U 10.5" H x 19" W x 24" D (26.67 x 48.26 x 60.96 cm) 220 lbs (99.79 kg)	25 kW Models; 208/240 Vac, 3Φ input
Size and Weight	6U 10.5" H x 19" W x 24" D (26.67 x 48.26 x 60.96 cm) 245 lbs (111.13 kg)	30 kW Models
Size and Weight	With casters removed: 8U 14” H x 19” W x 24” D (35.6 x 48.2 x 60.9 cm) 315 lbs (142.9 kg) With casters attached: 17.75” H x 19” W x 24” D (45.1 x 48.2 x 60.9 cm) 315 lbs (142.9 kg)	40 kW Models
Size and Weight	With casters removed: 8U 14” H x 19” W x 24” D (35.6 x 48.2 x 60.9 cm) 355 lbs (161.0 kg) With casters attached: 17.75” H x 19” W x 24” D (45.1 x 48.2 x 60.9 cm) 355 lbs (161.0 kg)	50 kW Models
Size and Weight	With casters removed: 12U 21” H x 19” W x 24” D (53.3 x 48.2 x 60.9 cm) 540 lbs (244.9 kg) With casters attached: 24.75” H x 19” W x 24” D (62.9 x 48.2 x 60.9 cm) 540 lbs (244.9 kg)	75 kW Models
Size and Weight	With casters removed: 16U 28” H x 19” W x 24” D (71.1 x 48.2 x 60.9 cm) 725 lbs (328.9 kg) With casters attached: 31.75” H x 19” W x 24” D (80.7 x 48.2 x 60.9 cm) 725 lbs (328.9 kg)	100 kW Models

3.7 Environmental Specifications

参数	值	条件
Ambient Operating Temperature	-25°C to 50°C	
Storage Temperature	-40°C to +85°C	
Humidity	Relative humidity up to 95% non-condensing	

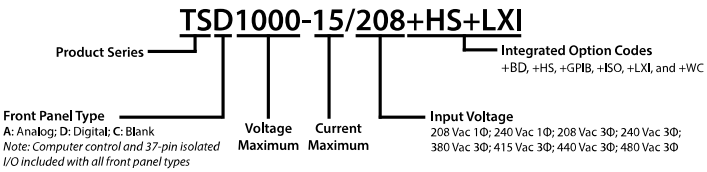
3.7 Environmental Specifications

参数	值	条件
Temperature Coefficient	0.04%/°C of maximum output voltage 0.06%/°C of maximum output current	
Air Cooling	Side air inlet, rear exhaust	3U and 6U Models
Air Cooling	Front and side air inlet, rear exhaust	4U, 8U, 12U, and 18U Models
Water Cooling	25°C maximum inlet temperature 1.5 GPM minimum flow rate for 3U/4U units 3.0 GPM minimum flow rate for 6U/8U units 4.5 GPM minimum flow rate for 12U units 6.0 GPM minimum flow rate for 16U units 80 PSI maximum pressure 1/4” NPT male pipe size (3U/4U models) 1/2” NPT male pipe size (6U/8U/12U/16U models) Front air intake, rear exhaust (6U/8U/12U/16U models only)	With Water Cooling (+WC) Option

3.8 Regulatory Specifications

参数	值	条件
EMC	Complies with 2014/30/EU (EMC Directive) CISPR 22 / EN 55022 Class A	
Safety	Complies with EN61010-1 and 2014/35/EU (Low Voltage Directive)	
CE Mark	Yes	
RoHS Compliant	Yes	

4 型号订购指南



5 型号

Max Voltage Vdc	5 kW	10 kW	15 kW	20 kW	25 kW	30 kW	40 kW	50 kW	75 kW	100 kW	Ripple[5] mVrms	Efficiency
Chassis Height	3U	3U	3U	4U/6U[2]	4U/6U[2]	6U	8U	8U	12U	16U		
5	900	1800[1]	2700[1]	—	—	—	—	—	—	—	50	84%
8	600	—	—	2500[3,4]	—	—	5000[4]	—	7500[4]	10000[4]	40	85%
10	500	900	—	2000[3]	2700[1]	—	4000	—	6000	8000	40	87%
16	300	600	900	—	—	1800	—	—	—	—	35	87%
20	250	500	750	1000	1250	1500	2000	2500	3750	5000	40	88%
25	200	400	600	800	1000	1200	1600	2000	3000	4000	40	89%
32	150	300	450	625	781	900	1250	1562	2343	3124	40	89%
40	125	250	375	500	625	750	1000	1250	1875	2500	40	89%
50	100	200	300	400	500	600	800	1000	1500	2000	50	89%
60	83	166	249	333	416	498	666	832	1248	1664	60	87%
80	62	124	186	250	312.5	372	500	625	937.5	1250	60	90%
100	50	100	150	200	250	300	400	500	750	1000	60	90%
125	40	80	120	160	200	240	320	400	600	800	100	90%
160	31	62	93	125	156	186	250	312	468	624	120	90%
200	25	50	75	100	125	150	200	250	375	500	125	91%
250	20	40	60	80	100	120	160	200	300	400	130	91%
300	16	32	48	66.6	83.3	96	133.2	166.6	249.9	333.2	160	91%
375	13	26	39	53.3	66.6	78	106.6	133.2	199.8	266.4	170	92%
400	12	24	36	50	62.4	72	100	125	187.2	249.6	180	92%
500	10	20	30	40	50	60	80	100	150	200	220	92%
600	8	16	24	33.3	41.6	48	66.6	83.2	124.8	166.4	250	92%
800	6	12	18	25	31.2	36	50	62.4	93.6	124.8	300	92%
1000	5	10	15	20	25	30	40	50	75	100	350	92%
1250	4	8	12	16	20	24	32	40	60	80	375	92%
1500	3.3	6.6	9.9	13.3	16.6	19.8	26.6	33.2	49.8	66.4	400	92%
2000	2.5	5	7.5	10	12.5	15	20	25	37.5	50	450	92%
3000	1.6	3.2	4.8	6.6	8.3	9.6	13.2	16.6	24.9	33.2	500	92%
4000	1.2	2.4	3.6	5	6.2	7.2	10	12.4	18.6	24.8	550	92%
5000	1	2	3	4	5	6	8	10	15	20	1500	92%
6000	0.8	1.6	2.5	3.3	4.1	5	6.6	8.3	12.3	16.4	1700	92%
AC Input Voltage Vac	**Input Current Per Phase** Aac											
208/240 Vac, 1Φ	41	—	—	—	—	—	—	—	—	—		
208/240 Vac, 3Φ	18	36	52	69	85	105	—	—	—	—		
380/415 Vac, 3Φ	10	20	29	38	47	57	76	94	141	188		
440/480 Vac, 3Φ	9	17	25	33	40	50	66	82	120	160		

[1] Models designated as special low-voltage high-current models that may vary in size and input current from the standard TS Series models within the same power envelope.

[2] 20/25 kW models with 380/415, 3Φ input or 440/480 Vac, 3Φ input come in a 4U chassis. 20/25 kW models with 208/240, 3Φ input come in a 6U chassis.

[3] Available with 380/415, 3Φ input or 440/480 Vac, 3Φ input only, 4U.

[4] 45ºC max ambient operating temperature rating for standard air cooled configurations. 50ºC max ambient operating temperature rating for configurations with Water Cooling (+WC) option.

[5] Ripple specifed for standard models. Ripple will be higher for models with the High Slew Rate Output (+HS) option page for more details.

6 特点

Scalable rack performance with configured-to-order features and options

大功率机架式系统

快速响应、精密稳压和纯净输出，满足关键负载需求。



TS 系列可编程直流电源提供 5 kW 至 100 kW 的功率输出，采用 3U–16U 机架式封装，电压范围涵盖 5 Vdc 至 6,000 Vdc（浮动），电流最高可达 10,000 Adc。电压模式和电流模式调节支持恒压/恒流运行，并可无缝切换。性能表现优异：负载瞬态恢复时间为 2 ms（50–100% 阶跃至 ±1% 以内），电压和电流编程精度均为 ±0.075%，纹波低（因型号而异，标准配置最低可达 35 mVrms）。效率因型号不同最高可达 92%，8U–16U 机箱配备可拆卸脚轮，便于独立使用或机架集成。

按订单配置，集成选项

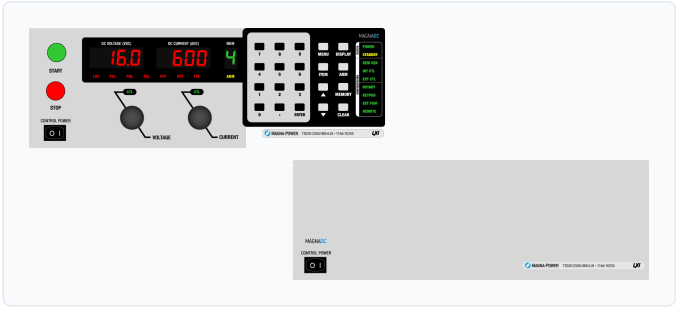
丰富的标准功能，按需扩展。



与 MagnaDC 产品线的其他系列一样，TS 系列电源拥有强大的控制基础：基于 RS232 的 SCPI 通信、隔离式后面板用户 I/O、LabVIEW 和 IVI 驱动程序，以及随附的远程接口软件。在此基础上，集成选项可让您根据每个系统的用途进行定制——高隔离输出 (+ISO) 用于扩展串联堆叠，高压摆率输出 (+HS) 提供更快的动态响应，LXI TCP/IP 以太网 (+LXI) 和 IEEE-488 GPIB (+GPIB) 提供额外的通信方式，此外还有保护和机械选项，例如集成式阻断二极管 (+BD) 或水冷 (+WC) 以替代标准风冷散热。

无级前面板控制，可选空白面板

需要操控时触手可及，无需时隐于无形。

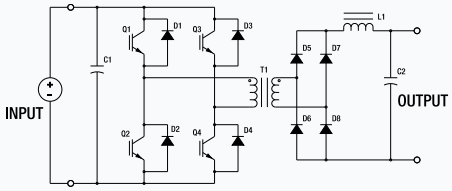


The standard SL front panel provides rotary and key-based control, bright digital metering, and clear status indicators, so operators can configure setpoints, start and stop the supply, and see system health at a glance. For OEMs and production tools, the optional blank (C-version) front panel removes local controls altogether while retaining full control via communication interfaces and rear 37-pin user I/O, keeping systems secure, clean, and operator-proof.

Rugged by design: safety + reliability, as you'd expect from Magna-Power.

可靠的电流馈电功率处理

坚固耐用的设计：自保护拓扑结构，确保持续运行。



The SLx Series uses a high-frequency, current-fed architecture that adds a control stage beyond conventional voltage-fed designs. This topology inherently limits fault energy—avoiding fast-rising current spikes and magnetic core saturation so the supply self-protects and your load stays safe. Paired with state-of-the-art SiC power semiconductors, SLx delivers class-leading power density, efficiency, and reliability, including continuous full-power operation up to 50°C ambient.

- Current-fed architecture with an added control stage vs. voltage-fed.
- Inherent surge immunity—no current spikes or core saturation.
- Self-protecting behavior under fault conditions.
- SiC devices for high density and efficiency; full power to 50°C.

安全功能与互锁

软启动、可编程保护以及机械线路断开装置，提供真正的安全保障。



MagnaDC supplies start gently and watch continuously. A soft-start stage keeps inrush below steady-state draw, while built-in diagnostics monitor line, thermal, and control conditions. In standby or on a diagnostic fault, an embedded AC contactor mechanically disconnects the mains, assuring the unit only processes power when intended. Faults are shown on the front-panel status display, through 5V digital outputs, and are queryable via SCPI.

- Programmable trips: Over voltage (OVT) and over current (OCT)/
- Control integrity: Program-line over-voltage detection.
- Thermal protection: Over temperature on internal heatsinks.
- Interlock/E-stop fault monitoring as a standard diagnostic.
- Field integration: 5V interlock input (with 5V reference) for a dry-contact, latching inhibit with control power maintained.

From lab scripts to factory PLCs, flexible programming & integration.

轻松实现软件集成

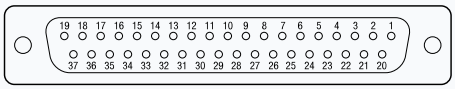
可读命令，快速响应——兼容任何编程语言。

MagnaDC 电源提供清晰的文本 API 接口，支持原生 SCPI———一种通过套接字通信发送的 ASCII 命令语言。超过 40 条详细文档化的命令涵盖启动/停止、电压和电流设定值、高精度测量以及完整配置——让您的脚本和系统从概念验证快速迈向生产部署。

- SCPI 命令集，行为一致可靠。
- 启动/停止与保护功能：启用输出、设置跳闸限值、查询状态。
- 高精度读取：电压、电流、功率及检测反馈。
- 面向开发者的文档与示例。

用于 PLC 控制或 PHIL 仿真的外部用户 I/O

像 I/O 模块一样接线——无需额外隔离。



Via the included rear 37-pin User I/O connector, MagnaDC supplies can be fully driven and monitored by external signals or a PLC. Voltage, current, OVT, and OCT set points are programmed with 0–10 V analog inputs, while each diagnostic condition has its own +5V digital status pin. Built-in +2.5V, +5V, and +10V reference rails let you use dry contacts without adding external supplies. All I/O is isolated from the output and referenced to earth ground as standard.

- 0–10 V analog programming for V, I, OVT, and OCT.
- Per-fault digital outputs: each diagnostic has its own +5V pin.
- Isolated user I/O referenced to earth ground—no extra isolators.
- With High Slew Rate Output (+HS), high-bandwidth response and fast rise times support HIL/PHIL simulation applications.

高性能主从操作

在不牺牲性能的前提下扩展电压或电流。

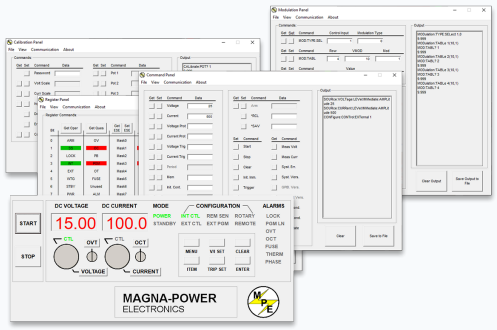


All MagnaDC supplies support master-slave operation, using gate-drive signals from the master when configured for parallel, so the whole stack behaves like a single supply—with one control loop and no noisy long analog references. The optional UID47 accessory simplifies wiring for series or parallel sets with near-equal sharing.

- Single control loop parallel operation: Master gate-drive to slaves for consistent dynamics.
- Plug & play with the UID47, enabling parallel or series stacks with current/voltage sharing.
- Series up to the DC isolation rating without added hardware.
- No additional ORing diodes required for parallel operation.

Magna-Power 软件、LabVIEW 和 IVI 驱动程序

从虚拟前面板到全自动化——开箱即用。



每台 MagnaDC 电源均包含 IVI 驱动程序和 NI LabVIEW 驱动程序，提供完整的 VI 集以及示例程序，让您在几分钟内即可与硬件通信。如需通过 PC 进行直接的前面板式控制，Magna-Power 远程接口软件可提供电源的全面视图——从命令和寄存器到校准和固件。

- 随附 IVI 和 NI LabVIEW 驱动程序及完整 VI 集。
- 示例程序助您快速启动集成和测试。
- 远程接口软件包含：
  - 虚拟前面板，用于手动控制
  - 命令面板，用于浏览和发送命令
  - 寄存器面板，用于实时状态监控
  - 校准面板，用于内部数字电位器
  - 固件面板，用于就地升级
  - 调制面板，用于模拟非线性曲线
- 所有通信接口在软件和驱动程序中均受支持，提供一致的编程体验。

State-of-the-art USA manufacturing with worldwide support

美国制造

垂直整合制造，实现全面质量管控。

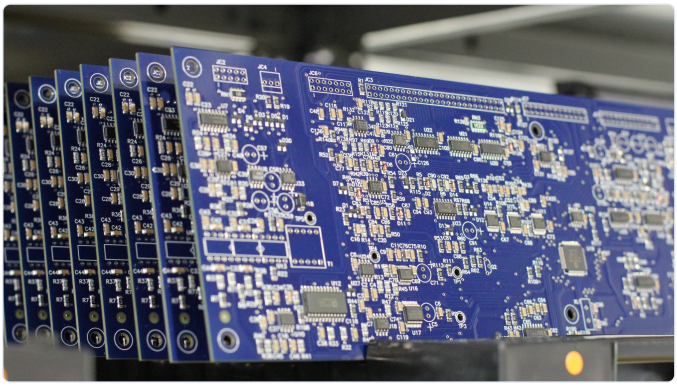


Magna-Power 产品的设计、制造、测试和售后服务均在位于新泽西州弗莱明顿的 Magna-Power 总部完成，总部面积达 73,500 平方英尺。金属加工、磁性元件制造、PCB 组装和老化测试均在内部完成，从而严格把控质量、成本和交货周期。

- 美国制造：工程设计、生产制造和售后服务集于一处。
- 内部生产：金属加工、磁性元件、SMT PCB 和表面处理。
- 可靠性验证：每台设备均经过全面测试、校准和老化试验。

全球服务与 OEM 零部件支持

工厂级专业技术，本地化响应。



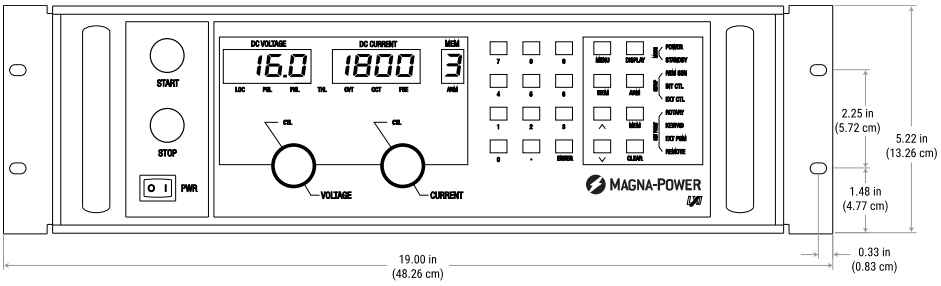
Magna-Power 以工厂及授权服务中心为其产品提供全面支持，服务网络覆盖北美、欧洲、英国、亚太、东亚及南美地区。无论是否在保修期内，均采用工厂标准流程和原厂零部件，将设备恢复至出厂规格。

- 全球覆盖：总部位于新泽西州，并设有多个区域授权服务中心。
- 一致的维修标准：采用工厂诊断流程、作业指导书和系统图纸。
- 原厂 OEM 零部件：经过测试的替换组件，确保可靠、高效的维修服务，最大限度减少停机时间。

7 图纸

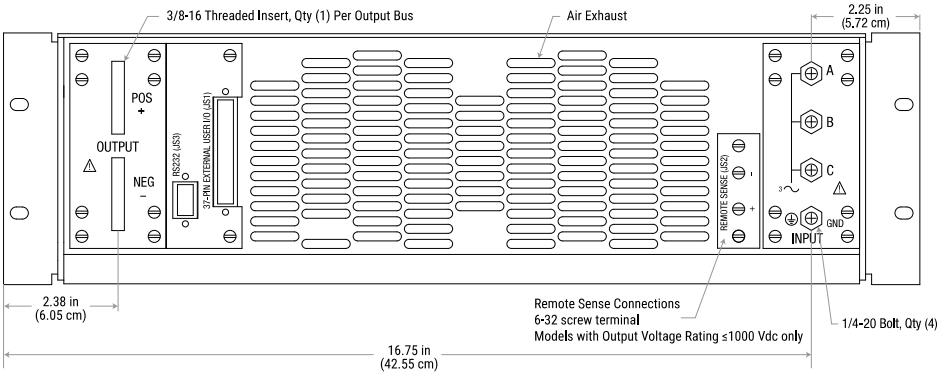
Front Panel

3U Models



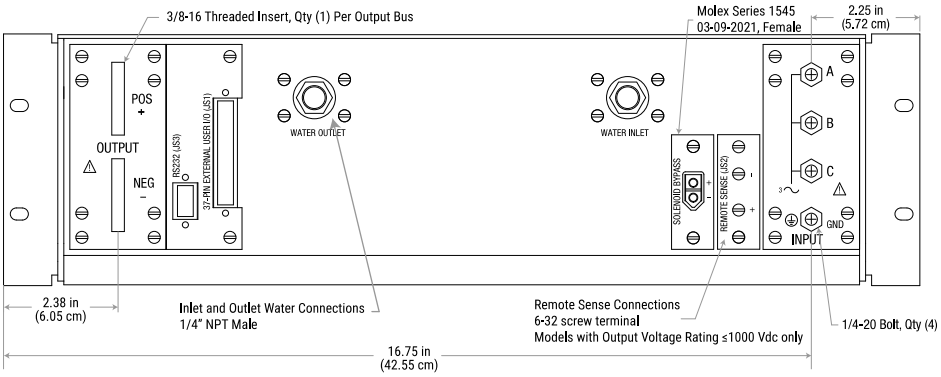
Rear Panel

3U Models



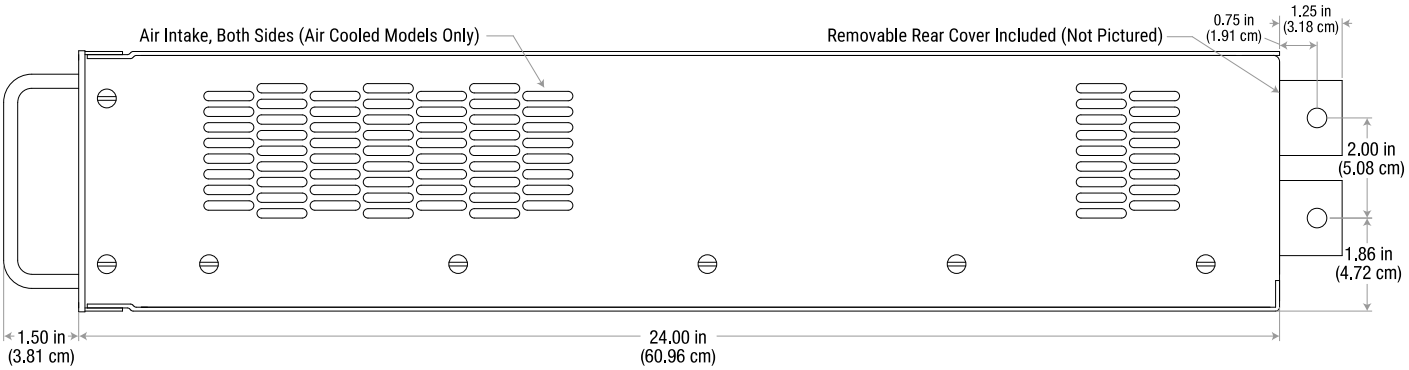
Rear Panel

3U Models, With Water Cooling (+WC) Option



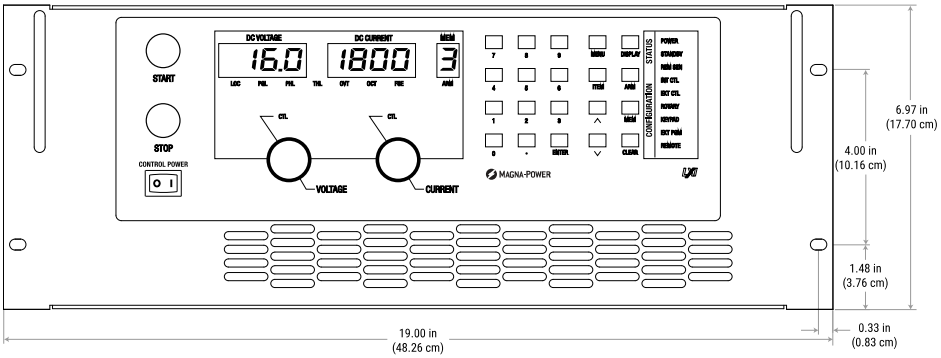
Side Panel

3U Models



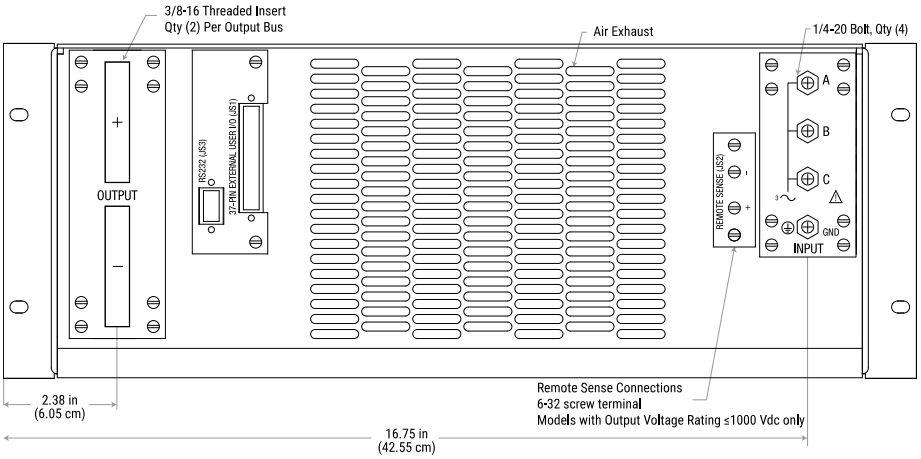
Front Panel

4U Models



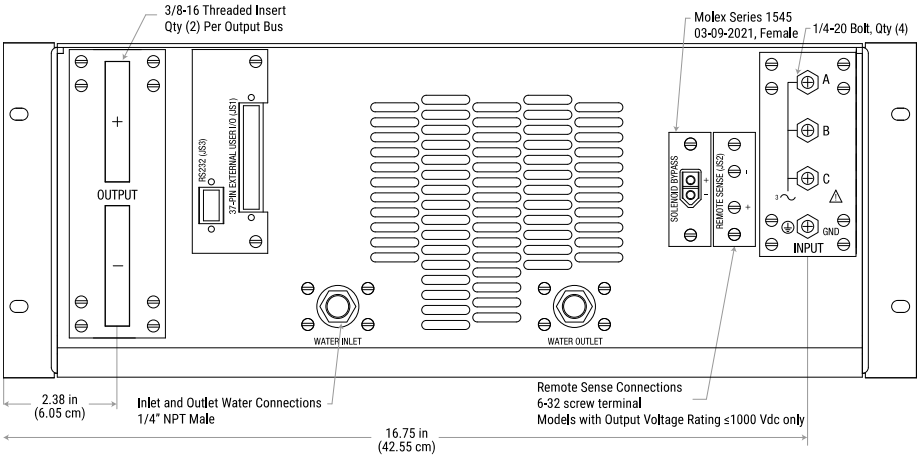
Rear Panel

4U Models



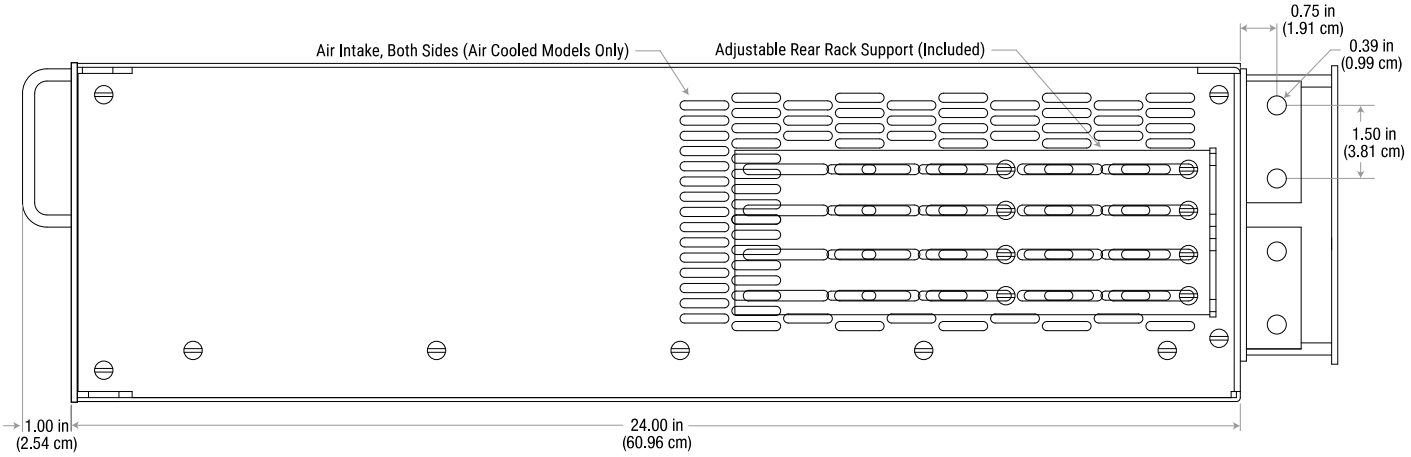
Rear Panel

4U Models, With Water Cooling Option (+WC)



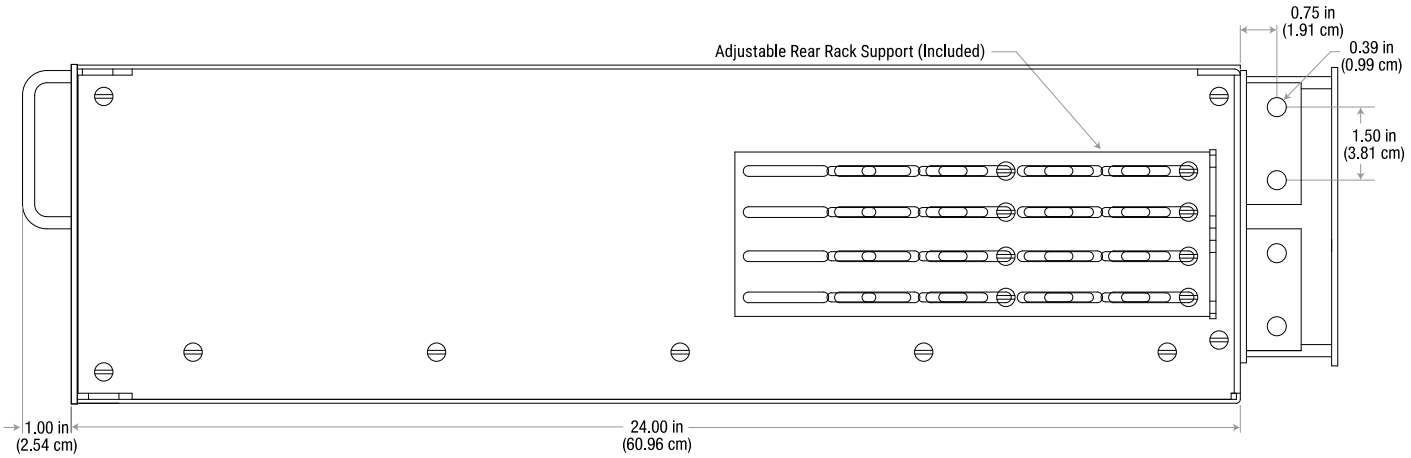
Side Panel

4U Models

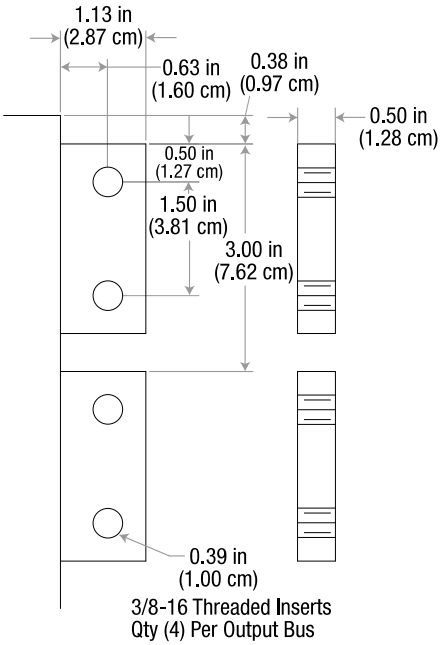


Side Panel

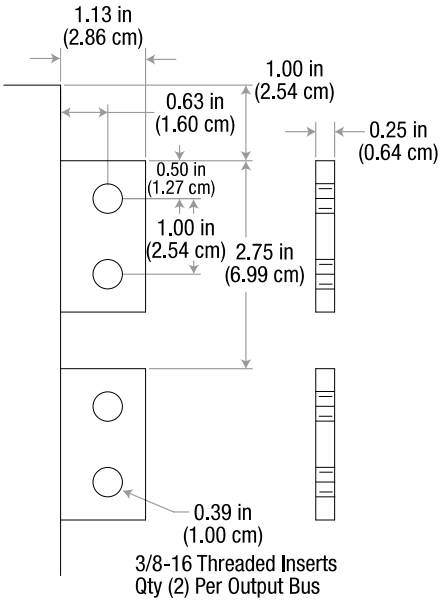
4U Models, With Water Cooling Option (+WC)



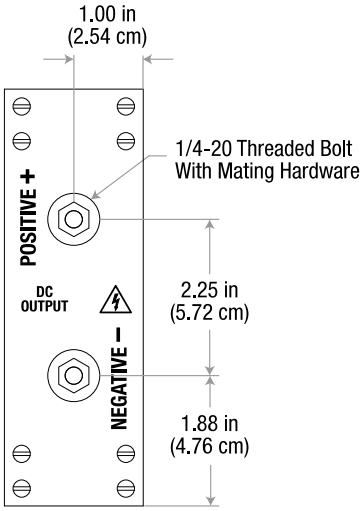
DC Output Bus
4U Models, Rated Below 125 Vdc



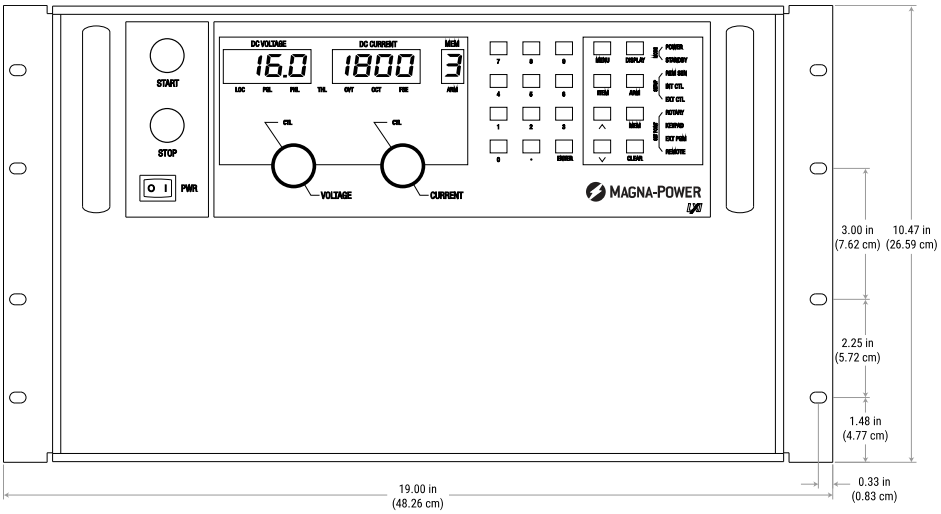
DC Output Bus
4U Models, Rated 125 Vdc to 1000 Vdc



DC Output Bus
4U Models, Rated Above 1000 Vdc or with High Isolation Option (+ISO)

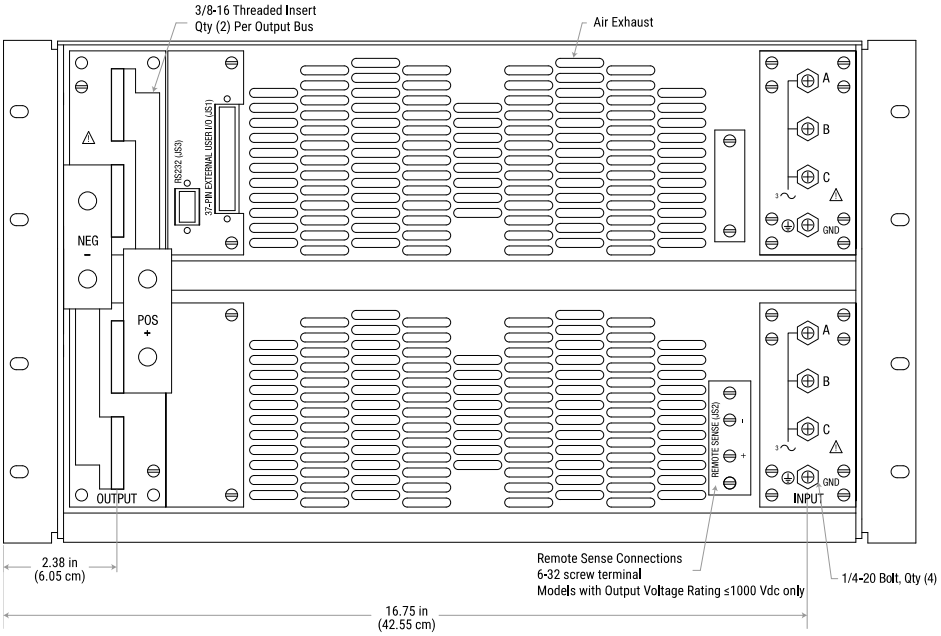


Front Panel
6U Models



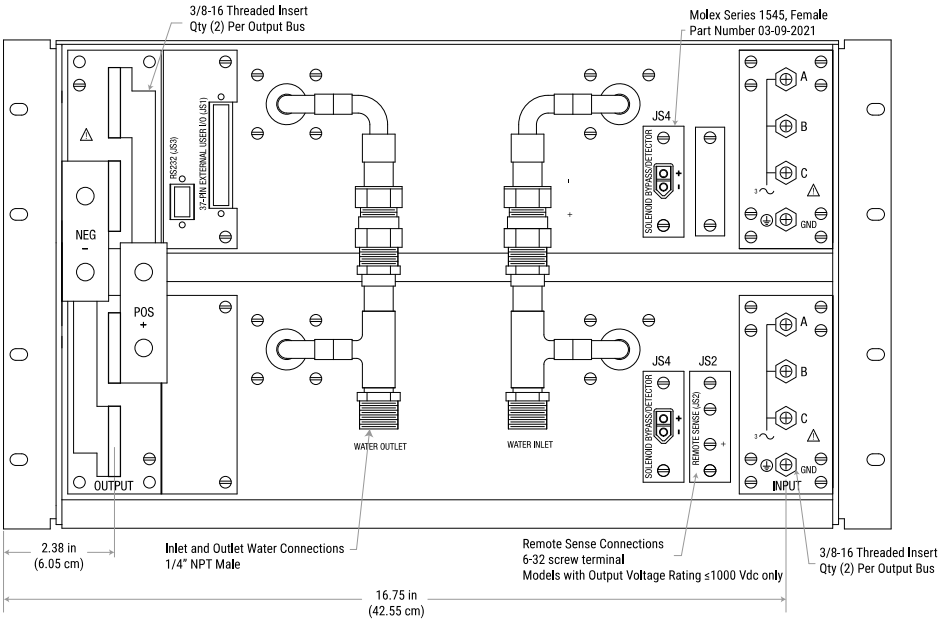
Rear Panel

6U Models



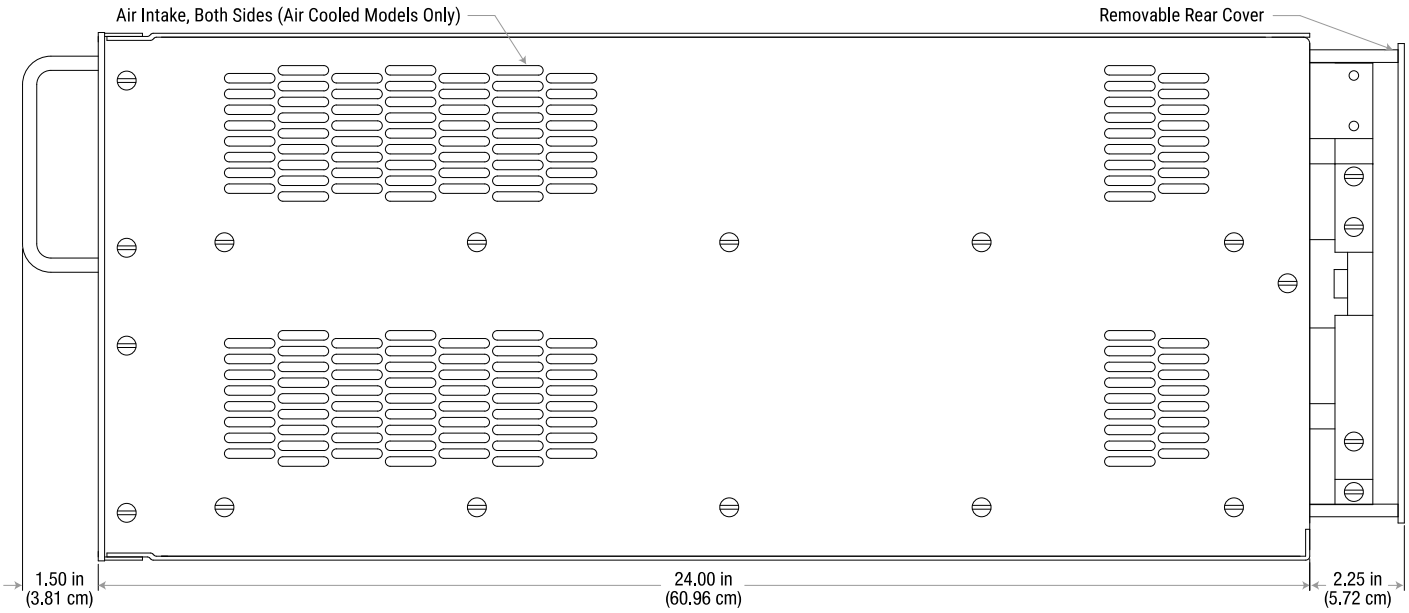
Rear Panel

6U Models, With Water Cooled (+WC) Option



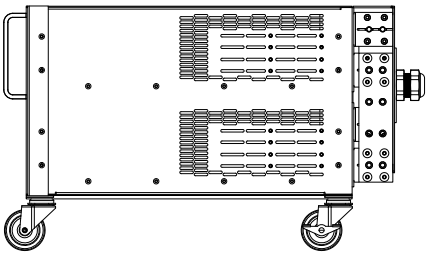
Side Panel

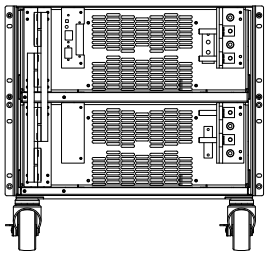
6U Models

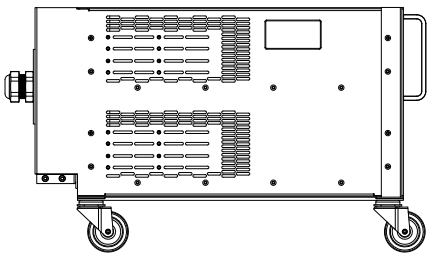


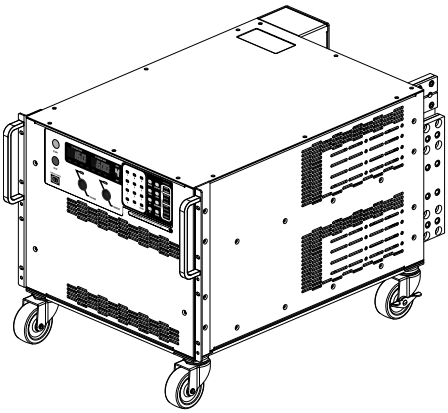
Full View

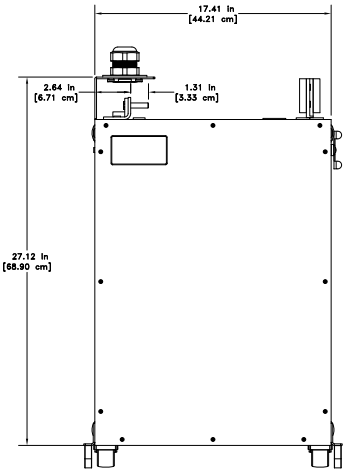
8U Models

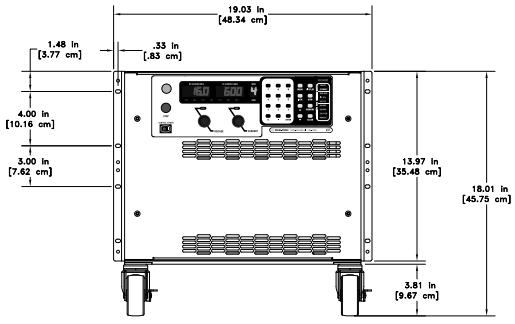






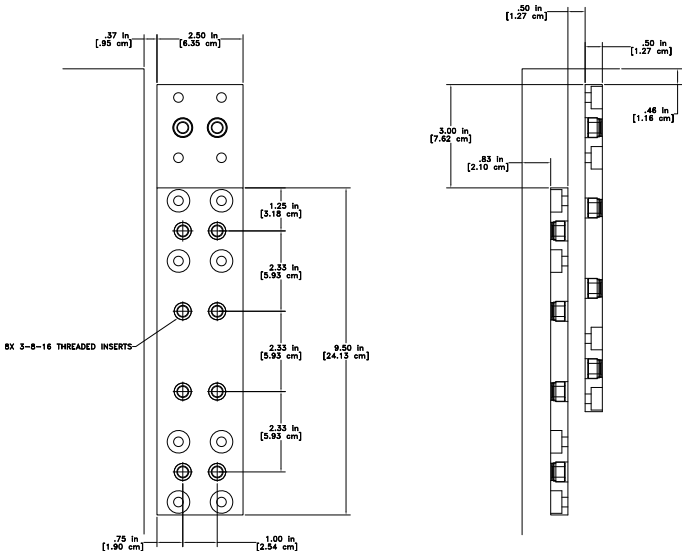






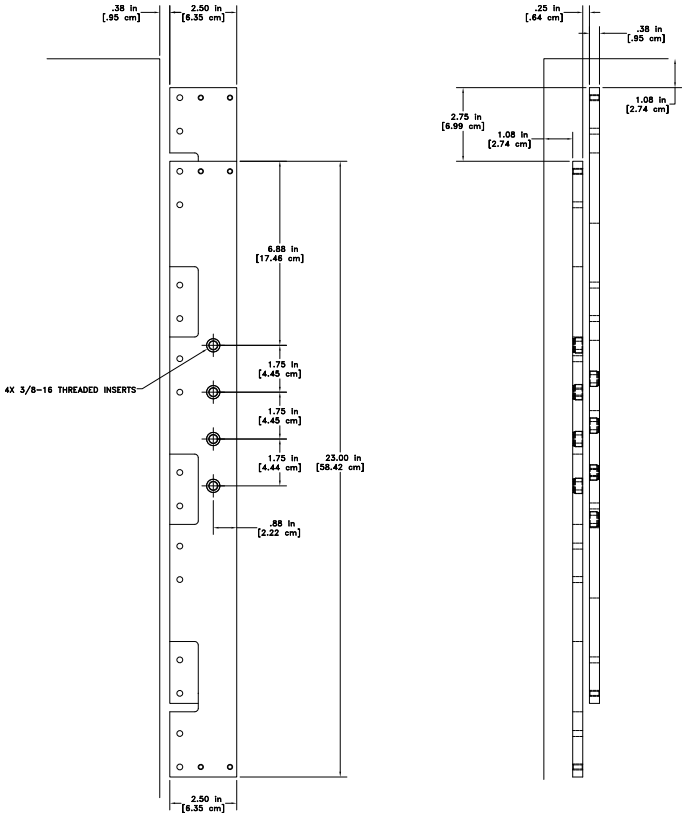
DC Output Bus

8U Models, Rated Below 125 Vdc



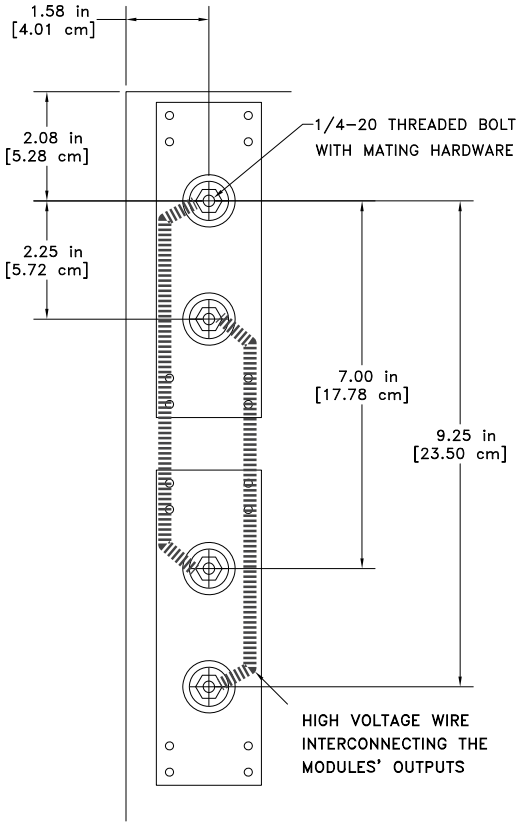
DC Output Bus

8U Models, Rated 125 Vdc to 1000 Vdc



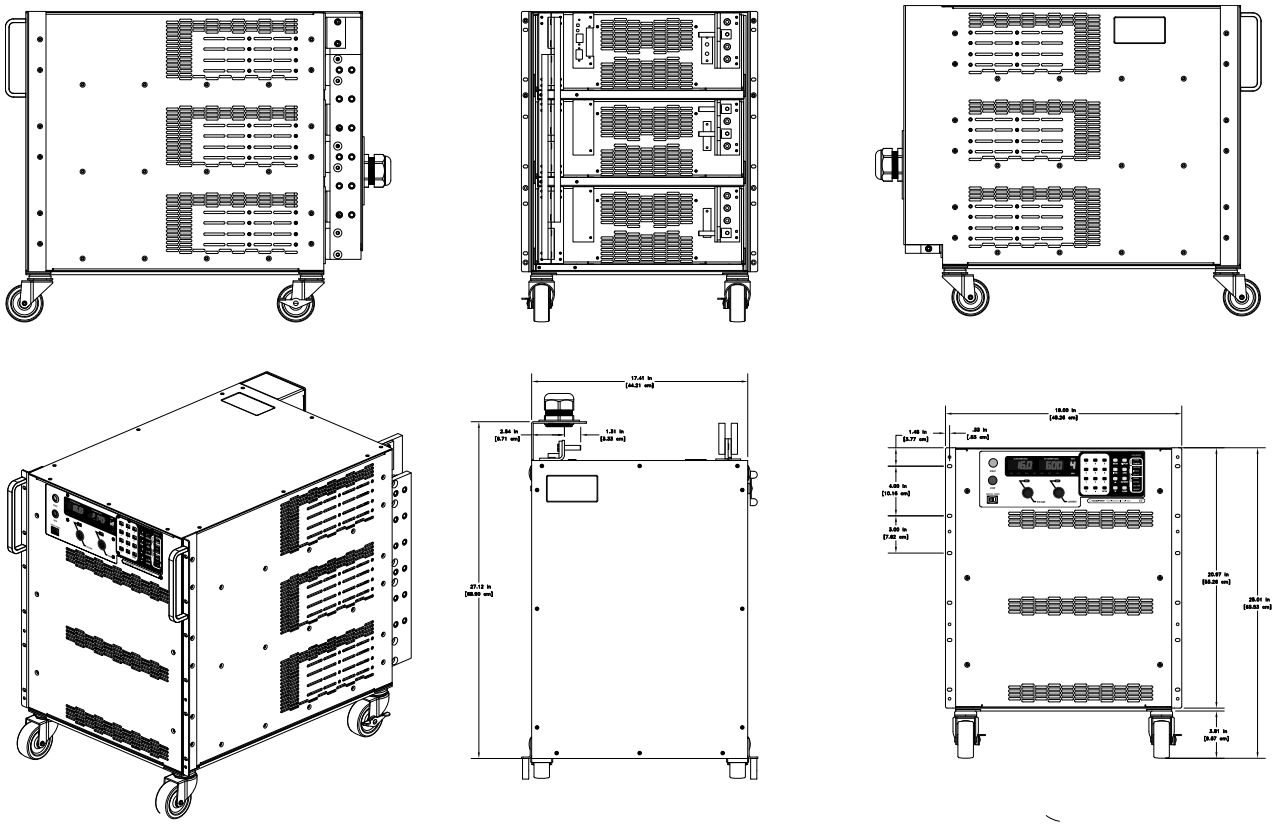
DC Output Bus

8U Models, Rated Above 1000 Vdc or with High Isolation Output (+ISO)



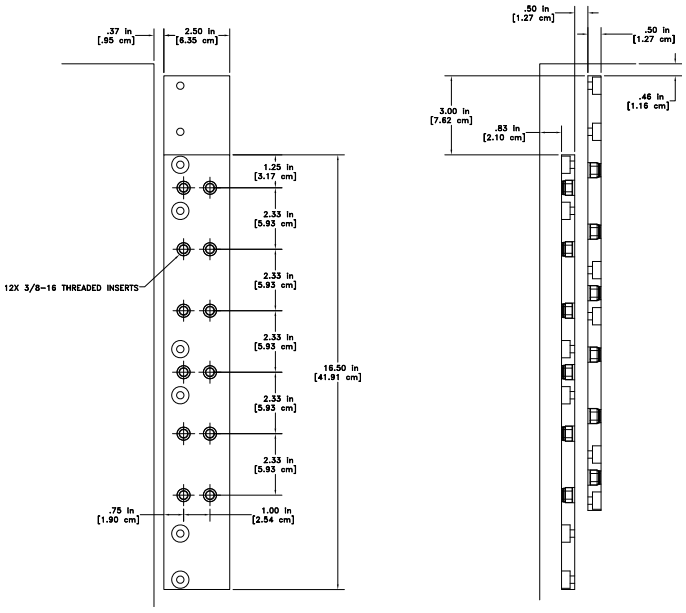
Full View

12U Models



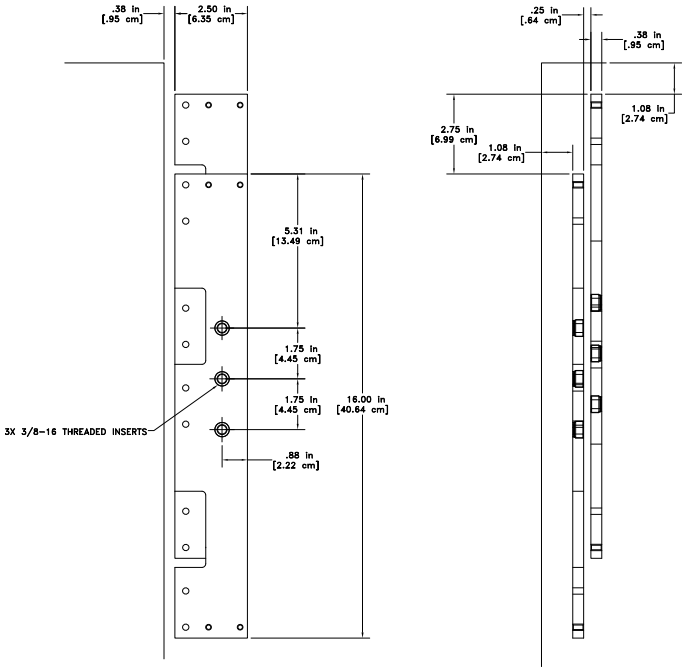
DC Output Bus

12U Models, Rated Below 125 Vdc



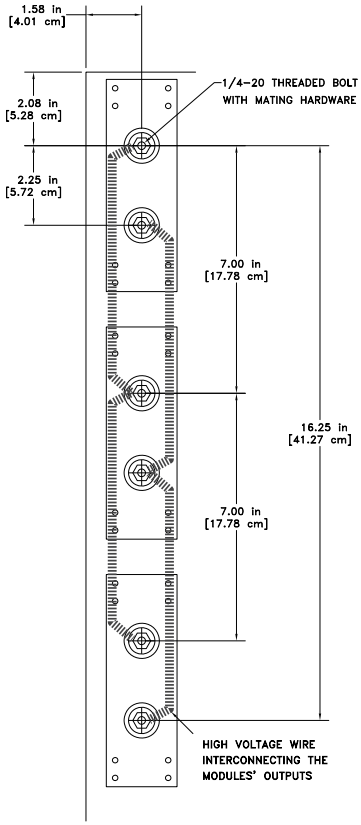
DC Output Bus

12U Models, Rated 125 Vdc to 1000 Vdc



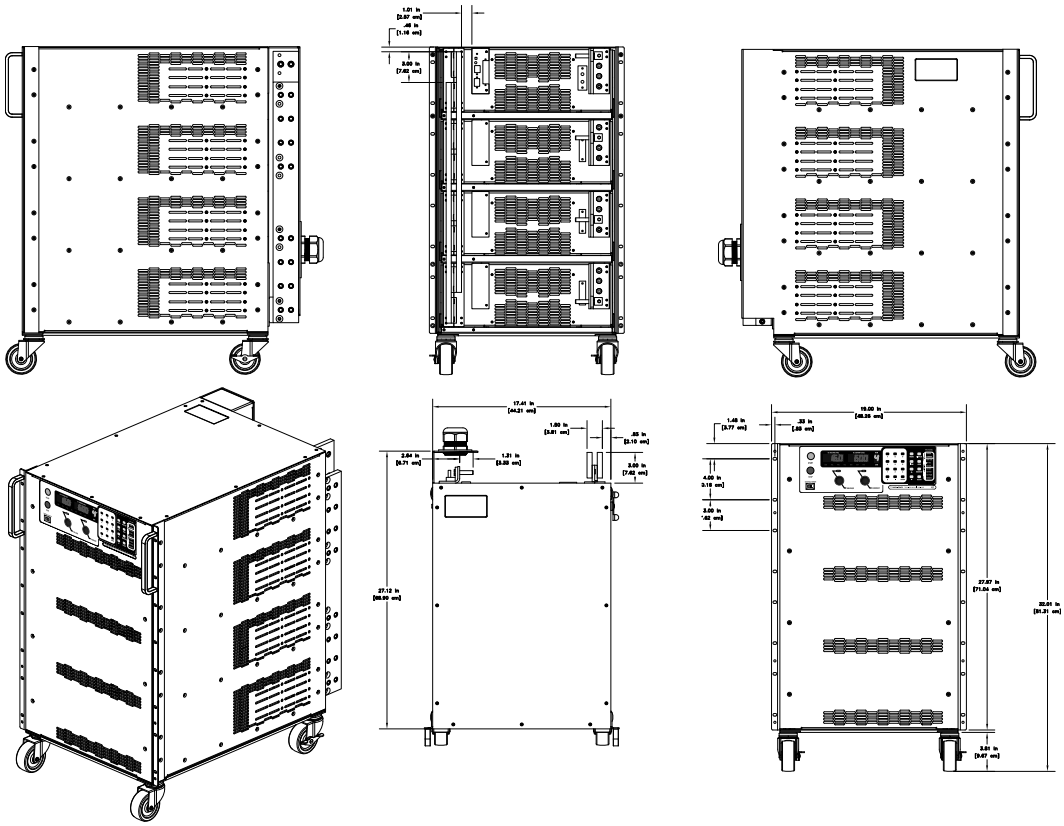
DC Output Bus

12U Models, Rated Above 1000 Vdc or with High Isolation Output (+ISO)



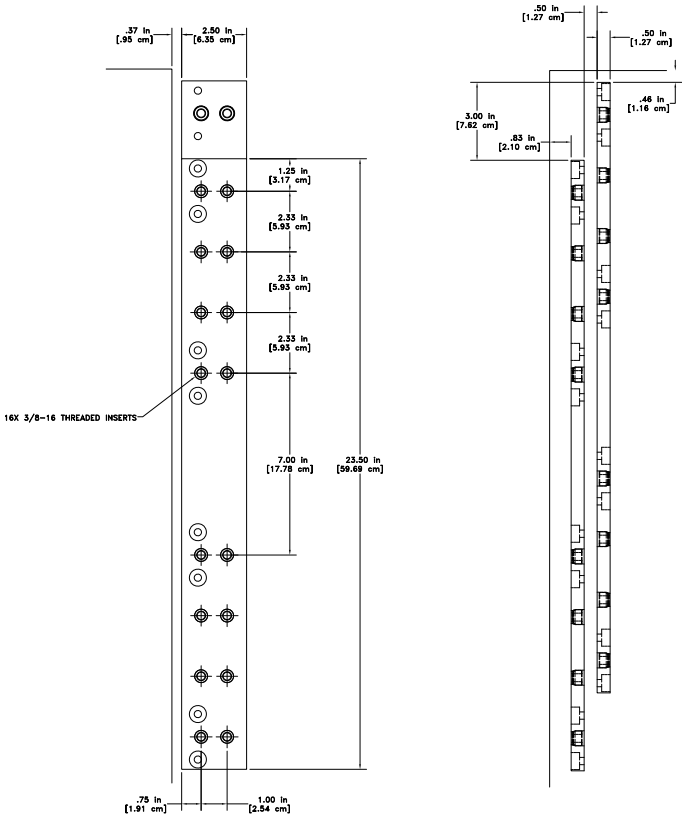
Full View

16U Models



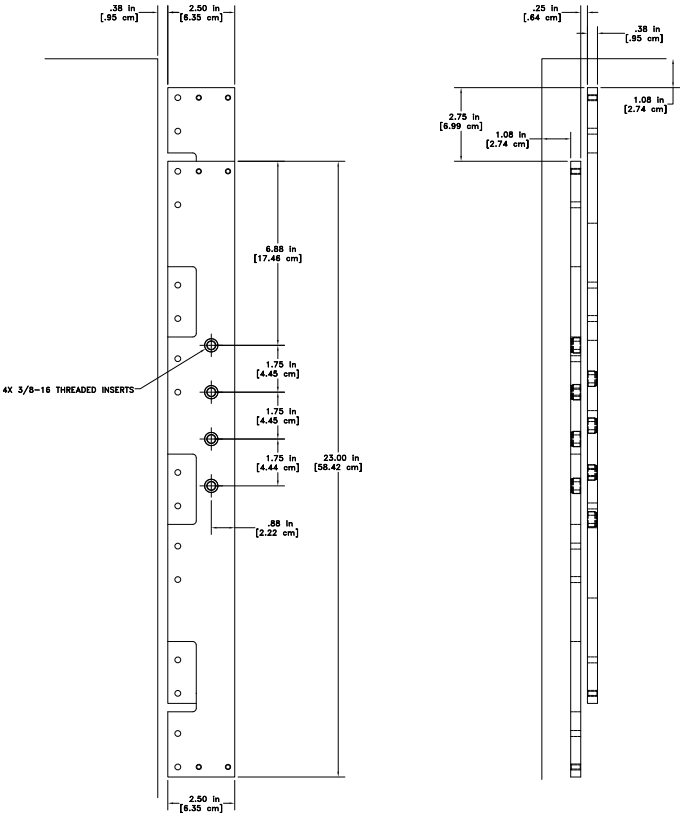
DC Output Bus

16U Models, Rated Below 125 Vdc



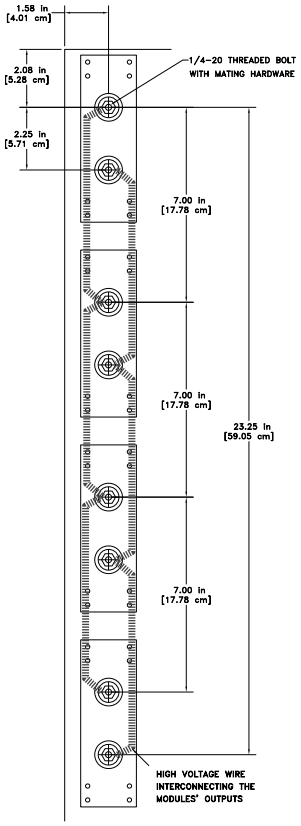
DC Output Bus

16U Models, Rated 125 Vdc to 1000 Vdc



DC Output Bus

16U Models, Rated Above 1000 Vdc or with High Isolation Output (+ISO)



8 可用集成选件

+ISO High Isolation Output

适用于额定电压为 250 Vdc 至 1000 Vdc 的型号，+ISO 选项可大幅提升输出隔离性能，适用于应用需要浮地连接或将设备串联且超出标准 ±1000 Vdc 输出隔离额定值的情况。

Certain applications require floating the output voltage to values beyond the power supply isolation rating. Magna-Power's High Isolation Output Option (+ISO) enables any TS Series or MT Series model with a peak output voltage rating of 250 Vdc through 1000 Vdc to be rated for a higher voltage output isolation. Improved isolation is achieved by a novel output stage with improved controller isolation. In addition to being able to float the power supply to a higher output voltage, this option also enables lower voltage units to be tied together in series up to its new higher isolation rating, in accordance with the table below.

Availability

The +ISO option is available for models with maximum output voltage rating from 250 Vdc to 1000 Vdc from the following product series:

- TS Series
- MT Series
- ML Series

The +ISO option cannot be combined with the +BD or +WC options. Addition of the +ISO option will cause the product's wired remote sense feature to be removed.

Specifications

The output isolation for Magna-Power Electronics TS Series and MT Series programmable DC power supplies is as follows, where Vo is output voltage rating of the particular model:

Product Series	DC Output Isolation (Standard) (Models Rated Up to 1000 Vdc)	DC Output Isolation (With +ISO Option) (Models Rated Up to 1000 Vdc)
TS Series	±1000 Vdc, max output voltage to ground	±(3000 Vdc + Vo/2), max output voltage to ground, where Vo is the max rated voltage
MT Series	±1000 Vdc, max output voltage to ground	±6000 Vdc
ML Series	±1500 Vdc, max output voltage to ground	±6000 Vdc

+HS High Slew Rate Output

一种硬件和控制修改方案，将标准输出级替换为低电容薄膜电容器和/或高均方根电流额定铝电解电容器。此选项可提供更高带宽以及更快的输出上升和下降时间。

The high slew rate option solves several limitations inherent in switching power supply design. Rapid voltage transitions require internal electronics to supply the energy to charge and discharge output capacitors. Peak currents internal to the power supply define slew rate; utilizing less capacitance enables voltage transitions in shorter time periods. Additionally, less capacitance reduces requirements for discharge demands during open circuit conditions.

The standard output stage Magna-Power Electronics power supplies has been designed to provide the lowest possible output ripple voltage within the constraints of available components, size, and cost. Part of the output stage consists of a bank of aluminum electrolytic capacitors which has the desired electrical properties to provide this function. These components require bleed resistors to discharge any voltage when the power supply has no load and is disabled. While the presence of these components and the resulting performance are normally industry accepted, there are applications where lower output capacitance and lower loss bleed resistors are extremely desirable and higher ripple voltage is acceptable. To meet this need, a high-slew rate option is available which has an output stage consisting of low capacitance film and aluminum electrolytic capacitors and lower loss bleed resistors. Applications for the high-slew rate option include battery charging, photovoltaic emulation, power waveform generation, and medium speed power pulsing. These applications all benefit from higher bandwidth and in many cases, can tolerate increased ripple voltage.

Key Applications

For **battery charger applications**, output capacitance and internal bleed resistors present themselves as a load to the connecting batteries. One common practice is to use a series diode to block reverse current flow with the sacrifice of increased cost and lower efficiency. The high slew rate option, with its lower output capacitance and lower loss bleed resistors, enables direct connection to batteries without series blocking diodes.

For **photovoltaic emulation applications**, higher bandwidth and lower output capacitance enable improved performance with higher speed, maximum power tracker algorithms. Maximum power tracker circuitry deviates the operating point of photovoltaic arrays to determine maximum power output. Slow responding emulation sources can present a problem when the speed of the algorithm exceeds that of the source. Furthermore, with lower output capacitance, changes in the operating point and transients, caused by shorting the solar inverter input, produce lower unwanted input currents.

The high-slew rate option enables the power supply to operate as a **low frequency, power pulse generator**. With the special capacitors selected for this option, it is possible to superimpose waveforms or produce a medium speed pulse on top of the dc output and expect normal capacitor life. It is important to note that the power supply output is single quadrant; that is, the output voltage or current cannot reverse.

Specifications

SL Series Output Stage Ratings with the High Slew Rate Output Option Integrated

Voltage Maximum Rating (Vdc)	Output Capacitance (uF)	Output Voltage Ripple (Vrms)
5	4235	0.5
10	1740	0.6
16	1740	0.6
20	775	0.6
25	775	0.8
32	775	0.8
40	760	1.5
50	760	1.5
60	760	2.0
80	110	1.5
100	110	1.6
125	70	1.7
160	70	1.8
200	70	1.8
250	70	1.8
300	70	1.8
375	70	1.8
400	70	1.8
500	40	2.0
600	40	2.2
800	30	2.5
1000	30	3.4
1250	—	3.4
1500	—	4.0

XR Series Output Stage Ratings with the High Slew Rate Output Option Integrated

Voltage Maximum Rating (Vdc)	Output Capacitance (uF)	Output Voltage Ripple (Vrms)
5	13200	1.5
10	4080	1.6
16	4080	1.7
20	2340	1.8
25	1170	1.8
32	1170	1.8
40	240	1.8
50	240	1.8
60	240	2.0
80	240	2.2
100	160	2.5
125	160	3.0
160	160	2.8
200	160	4.0
250	160	1.6
300	160	1.8
375	160	1.8
400	160	1.8
500	56	3.0
600	56	3.0
800	52	3.0
1000	52	3.0
1250	18	3.5

Voltage Maximum Rating (Vdc)	Output Capacitance (uF)	Output Voltage Ripple (Vrms)
1500	18	3.5
2000	18	5.0
3000-10000	—	—

TS Series Output Stage Ratings with the High Slew Rate Output Option Integrated

Voltage Maximum Rating (Vdc)	Output Capacitance (uF)	Output Voltage Ripple (Vrms)
5	13200	0.5
8	9000	0.5
10	9000	0.5
16	4080	0.5
20	2340	0.8
25	2340	0.8
32	1170	0.8
40	1170	0.8
50	1170	0.8
60	300	1.2
80	300	1.2
100	200	1.6
125	200	1.6
160	200	1.6
200	200	2.0
250	200	2.0
300	200	2.2
375	200	2.2
400	200	2.4
500	200	2.7
600	120	2.6
800	70	2.6
1000	60	3.5
1250	18	3.5
1500	18	4.3
2000	18	3.8
3000	9	7.2
4000	9	4.0

Note:
For 20 to 30 kW models, multiply capacitance by 2
For 40, 50, 75, and 100 kW models, contact Magna-Power support

For MT Series and ML Series output stage ratings with the high slew rate output option, please inquire with your local sales partner regarding the specific model.

+GPIB IEEE-488 GPIB

IEEE-488 通用接口总线（GPIB）通信接口，提供完整的命令支持，并与其他 GPIB 设备兼容

The IEEE-488 interface, sometimes called the General Purpose Interface Bus (GPIB), is a general purpose digital interface system that can be used to transfer data between two or more devices. It is particularly well-suited for interconnecting computers and instruments. Some of its key features are:

- Up to 15 devices may be connected to one bus
- Total bus length may be up to 20 m and the distance between devices may be up to 2 m
- Communication is digital and messages are sent one byte (8 bits) at a time
- Message transactions are hardware handshaked
- Data rates may be up to 1 Mbyte/sec

The IEEE-488 GPIB interface in integrated with the power supply's rear communication ports. The IEEE 488 interface offers full compatibility with Magna-Power provided drivers, software and SCPI command set.

+BD Integrated Blocking Diode

在 MagnaDC 可编程直流电源的正极输出端内置散热片保护二极管，保护产品输出免受远超产品额定输出电压的反向电压损害。

The Integrated Blocking Diode Option (+BD) provides an internally heat-sunk protection diode on the positive output terminal of a MagnaDC programmable DC power supply. This diode protects the product's output from reverse voltage up to 1200 Vdc. All voltage sensing is performed after the protection diode—at the product's output terminals—making the diode's operation completely transparent to the performance of the power supply.

The +BD option is recommended for applications where there is significant back-emf or the possibility of a DC output voltage that could exceed the power supply's output voltage rating, such as:

- DC motor drives
- Battery and capacitor charging
- Large electromagnets

In these applications, the integrated blocking diode can be used to prevent back-emf from the energy stored in the load into the power supply's output. Furthermore, the integrated blocking diode will prevent the power supply's internal bleed resistance from discharging the energy storaged in the load when the power supply is off or in standby.

Availability

The +BD option is available for models with maximum output voltage rating as specified for the following product series:

- TS Series, models rated from 40 Vdc to 1000 Vdc
- MT Series, models rated from 125 Vdc to 1000 Vdc
- ML Series, models rated from 250 Vdc to 1000 Vdc

The +BD option cannot be combined with the +ISO option.

Specifications

Table 1. Specification for Integrated Blocking Diode (+BD) option

Reverse Voltage Rating Models Rated 125 Vdc to 1000 Vdc	1200 Vdc
Reverse Voltage Rating Models Rated Below 125 Vdc	200 Vdc
Additional Losses Models Rated 125 Vdc to 1000 Vdc	Up to 1.4%
Additional Losses Models Rated Below 125 Vdc	Up to 2.5%

+LXI LXI TCP/IP Ethernet

TCP/IP 以太网通信协议及单个 RJ-45 接口，符合 LXI C 类标准认证，适用于通过传统计算机网络进行套接字通信

Certified to the LXI Standard (Class C), version 1.4, this option allows the product to be fully controlled over an integrated

TCP/IP Ethernet interface. LXI is an instrumentation platform based on industry standard Ethernet technology designed to provide modularity, flexibility, and performance to small- and medium-sized systems. All of the product's standard SCPI commands are supported over the +LXI option, along with all provided software and drivers.

LXI's advantages are exemplified in its compact, flexible package providing high-speed I/O and reliable measurements. The Magna-Power Electronics LXI TCP/IP Ethernet option includes an embedded web-server, allowing web browser power supply control and monitoring from virtually anywhere.

Note: For xGen products, only the SCPI command protocol is available when LXI TCP/IP Ethernet interface is installed. Modbus communication protocol is not available through any interface when the LXI TCP/IP Ethernet interface is installed.

+WC Water Cooling

采用集成式中央热交换器和特殊绕制的磁性元件，水冷功能适用于特定的 Magna-Power 电源，专为高密度封装系统机柜设计，适用于产品标准风冷方式散热能力受限的应用场合。

Water Cooling (+WC) is available for Magna-Power power supplies to enable high-power density in cabinets where heat removal via standard air cooling is a challenge.

Water cooling is accomplished with chill plates and an integrated central heat exchanger. The chill plates provide a thermal conduction path for heat-sensitive components, while the central heat exchanger removes heat from the air internal to the enclosure. 1U, 3U, 6U and 9U water-cooled models feature enclosures without vent holes and are essentially sealed from the environment. An internal solenoid valve enables water flow only when the chill plate reaches 60°C; this operation prevents internal condensation.

Plumbing and Connections

1U SLx Series as well as 3U and 4U TS Series models utilize a 1/4" NPT male inlet and outlet for water flow. For **6U, 8U, 12U and 16U TS Series**, external plumbing interconnects power supply modules to a single 1/2" NPT male connection for the inlet and another for the outlet.

A minimum of 2.5" of clearance is recommended behind the enclosure for plumbing hardware and user connections. For systems requiring more than one power supply, plumbing connections must be paralleled; water should not flow from one power supply into another. When water-cooled power supplies are ordered with the Cabinet and Integration accessory, Magna-Power will parallel these connections, providing a single inlet and outlet for the entire rack.

> **Note:** The Water Cooling (+WC) option cannot be combined with the High Isolation Output (+ISO) option. On the TS Series, the Water Cooling (+WC) option is only available for models rated up to 1000 Vdc. On the SLx Series, *the Water Cooling (+WC) option is only available for models rated up to 1500 Vdc.*

Water Cooling Specifications

Series	Model Size	Min. Flow Rate	Pipe Size (NPT Male)	Max. Pressure	Max. Inlet Temp
SLx Series	1U	1.2 GPM	1/4"	80 PSI	40°C
TS Series	3U, 4U	1.5 GPM	1/4"	80 PSI	25°C
TS Series	6U, 8U	3.0 GPM	1/2"	80 PSI	25°C
TS Series	9U, 12U	4.5 GPM	1/2"	80 PSI	25°C
TS Series	16U	6.0 GPM	1/2"	80 PSI	25°C

*Front air intake and rear exhaust applicable to 6U through 16U models only.

9 产品图片



TS Series 3U model



TS Series 4U model, 20/25 kW DC output with 380/400 Vac, 415 Vac, 440 Vac or 480 Vac 3-phase AC input



TS Series 6U model, 20/25 kW DC output with 208/240 Vac AC input and all 30 kW models



TS Series 8U model, 40 kW and 50 kW DC output, front view with casters installed. Rack-mount kit also included.

















TS Series 16U model, 100 kW DC output, front view.



TS Series 16U model, 100 kW DC output, front angled view with casters installed. Rack-mount kit also included.



TS Series 16U model, 100 kW DC output, rear view with protective covers removed.



TS Series 16U model, 100 kW DC output, rear view with protective covers installed.



TS Series 16U model, 100 kW DC output, rear angled view with protective covers removed.



TS Series 16U model, 100 kW DC output, rear angled view with protective covers installed.



Qty (12) TS Series 16U 100 kW power supplies packaged in Qty (6) CAB-A4



Qty (9) TSD10-6000/480+LXI water cooled power supplies with integrated harmonic neutralizers to deliver 54 kA





Qty (12) 50 kW 8U TS Series power supplies packaged into Qty (3) CAB-A4



Qty (4) TSD10-4000/480 water cooled power supplies packaged into a CAB-B4 to deliver 16 kA from a single rack



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