MQD SERIES

DC POWER SUPPLIES

- 20 TO 60 KW
- CURRENT FED
- PROGRAMMABLE

MAGNA-POWER
ELECTRONICS, INC.

MQD SERIES

MODULAR POWER

20 KW TO 60 KW DC POWER SUPPLIES

FEATURES

- 60 Models: 10 to 800 Vdc, 24 to 5400 Adc
- Series and parallel master/slave operation
- High dielectric withstand: 2500 Vac
- All user interface circuitry referenced to earth ground
- OVT and OCT shutdown standard
- Automatic V/I crossover
- Optional IEEE-488, RS485, and Ethernet programming
- Front panel potentiometers for stepless rotary control
- Front panel keypad and up/down control for digital control
- 100 memory states with front panel memory indicator
- Auto sequencing by time or external triggering
- Modulation with addition or multiplication
- Front panel calibration
- User friendly controls and indicators
- Remote Interface Software with self-teaching features
- Drivers: Certified LabWindows/CVI and LabVIEW for GPIB, Serial, and TCP/IP communications
- High power factor
- CE Mark

SIZE MATRIX

PWR (kW)	SIZE (H"xW"xD")	WEIGHT
20	38½X22x29	280
30	38½X22x29	395
40	38½X22x29	510
50	49X22x29	645
60	49X22x29	760

CE

SPECIFICATIONS:

Input voltage: 208/240 Vac, 50-60 Hz, 3-phase; 380/415 Vac, 50-60 Hz, 3-phase; 440/480 Vac, 50-60 Hz, 3-phase
Regulation line and load combined: 0.10%
Stability: 0.10% for 8 hours after 30 minute warm up
Transient response: 10 ms to recover within 2% of regulated output with a 30% step load change
Ambient Temperature: 0 to 50°C
Programming resistors: 1K full scale for output voltage, output current, over voltage, and over current shutdown
Temperature coefficient: 0.04%/°C of maximum output current

NOTES:
1. Specifications subject to change without notice.
2. Specify optional EMI filter to meet EMC requirements.
3. Other options consult factory.

MODELS AND RATINGS

MODEL	VOLTS Vdc	AMPS Adc	RIPPLE mVrms	PWR kW
MQD10-1800	0-10	0-1800	40	
MQD16-1200	0-16	0-1200	35	
MQD32-600	0-32	0-600	40	
MQD50-400	0-50	0-400	50	
MQD80-250	0-80	0-250	60	
MQD125-160	0-125	0-160	100	
MQD200-100	0-200	0-100	125	20.0
MQD250-80	0-250	0-80	130	
MQD375-54	0-375	0-54	170	
MQD500-40	0-500	0-40	220	
MQD600-32	0-600	0-32	250	
MQD800-24	0-800	0-24	270	
MQD10-2700	0-10	0-2700	40	
MQD16-1800	0-16	0-1800	35	
MQD32-900	0-32	0-900	40	
MQD50-600	0-50	0-600	50	
MQD80-375	0-80	0-375	60	
MQD125-240	0-125	0-240	100	
MQD200-150	0-200	0-150	125	30.0
MQD250-120	0-250	0-120	130	
MQD375-81	0-375	0-81	170	
MQD500-60	0-500	0-60	220	
MQD600-48	0-600	0-48	250	
MQD800-36	0-800	0-36	270	
MQD10-3600	0-10	0-3600	40	
MQD16-2400	0-16	0-2400	35	
MQD32-1200	0-32	0-1200	40	
MQD50-800	0-50	0-800	50	
MQD80-500	0-80	0-500	60	
MQD125-320	0-125	0-320	100	
MQD200-200	0-200	0-200	125	40.0
MQD250-160	0-250	0-160	130	
MQD375-108	0-375	0-108	170	
MQD500-80	0-500	0-80	220	
MQD600-64	0-600	0-64	250	
MQD800-48	0-800	0-48	270	
MQD10-4500	0-10	0-4500	40	
MQD16-3000	0-16	0-3000	35	
MQD32-1500	0-32	0-1500	40	
MQD50-1000	0-50	0-1000	50	
MQD80-625	0-80	0-625	60	
MQD125-400	0-125	0-400	100	
MQD200-250	0-200	0-250	125	50.0
MQD250-200	0-250	0-200	130	
MQD375-135	0-375	0-135	170	
MQD500-100	0-500	0-100	220	
MQD600-80	0-600	0-80	250	
MQD800-60	0-800	0-60	270	
MQD10-5400	0-10	0-5400	40	
MQD16-3600	0-16	0-3600	35	
MQD32-1800	0-32	0-1800	40	
MQD50-1200	0-50	0-1200	50	
MQD80-750	0-80	0-750	60	
MQD125-480	0-125	0-480	100	
MQD200-300	0-200	0-300	125	60.0
MQD250-240	0-250	0-240	130	
MQD375-162	0-375	0-162	170	
MQD500-120	0-500	0-120	220	
MQD600-96	0-600	0-96	250	
MQD800-72	0-800	0-72	270	

MAGNA-POWER ELECTRONICS, INC.

81 Fulton Street, Boonton, NJ 07005
(973) 263-0017 FAX: (973) 263-1928
E-mail: sales@magna-power.com
http://www.magna-power.com

Magna-Power Electronics' **MQD SERIES** combines the best of dc power processing with multiprocessor embedded control. A combination of high and medium frequency power processing technologies improves response, shrinks package size, and reduces cost. **MQD SERIES** power supplies are current fed and are more tolerant to abusive loads than conventional switching power supplies.

MQD SERIES power supplies offer an unusual blend of both analog and digital control. Two front panel potentiometers are available to set voltage and current for stepless analog control. Alternatively, voltage, current, over voltage trip, and over current trip may be programmed through a rear connector via resistance, voltage, or current. With simple configuration changes, the **MQD SERIES** power supplies will accept keypad entries and up/down key presses for programming voltage, current, over voltage trip, and over current trip. Key strokes are kept to a minimum by a repeat last command feature. RS232 communications is embedded in the control circuitry allowing full computer control with SCPI commands. An optional IEEE-488 to RS232 converter, Ethernet to RS232 converter, and other communications converters are available to echo commands over the communications bus.

MQD SERIES power supplies can be configured through the front panel for different applications. The power supply can be programmed to have its control functions accessible from the front panel, rear connector, or through RS232 communications. Sensing can be established at the output terminal of the power supply or through a rear terminal block for sensing at the load. An external interlock can be set to enable operation only when an external connection is made. Even calibration has been simplified with front panel access to calibration digital potentiometers.

MQD SERIES power supplies incorporate an optically isolated feedback system. The result is that all user interface circuitry is reference to earth ground -- not the negative terminal of the power supply. This enables users to connect external circuitry without concern of ground loops or voltage breakdown.

MQD SERIES power supplies offer both master/slave parallel and series operation. This enables two or more power supplies to be placed in parallel for increased output current or in series for increased output voltage. With master/slave operation, power supplies operate at near equal voltage and current.

MQD SERIES power supplies can operate as a voltage source or current source depending on the control settings and load conditions. If the power supply is operating as a voltage source and the load increases to a point beyond the current command setting, the power supply automatically crosses over to current mode control and operates as a current source at that setting.

One-hundred memory states are available to program voltage, current, over voltage trip, over current trip, and time period. Set points can be auto sequenced with time or external triggering. Special programming codes allow repeating to create a power function generator. The first 10 memory states are displayed on the front panel to simplify programming tasks.

MQD SERIES power supplies have an analog input to modulate the digital programming signal. The modulator can be programmed to modulate the voltage or current command setting and to act as a multiplier or adder. The modulator can be applied to tailor the output profile by sensing output voltage or current, respond to transducers, simulate sources such as photovoltaic cells, and compensate for line drop without sense leads.

Remote Interface Software is included to provide sophisticated computer control. This software provides a virtual control panel to emulate the power supply's front panel, a command panel to send and monitor SCPI commands, a register panel to monitor registers, and a calibration panel to provide easy access to calibration digital potentiometers.

MQD SERIES power supplies have extensive diagnostic functions -- all of which when activated take command to shut down the system. Diagnostic functions include phase loss, excessive thermal conditions, over voltage trip, over current trip, fuse clearing, and program line. Program line monitors externally applied analog set point signals to insure they are within the specified range. Upon a diagnostic fault condition, main power is disconnected and the diagnostic condition is latched into memory. Pressing the clear key clears the memory. All diagnostic functions can be monitored through a rear connector. Furthermore, control functions can also be set through the rear connector to allow simultaneous control of one or more **MQD SERIES** units.

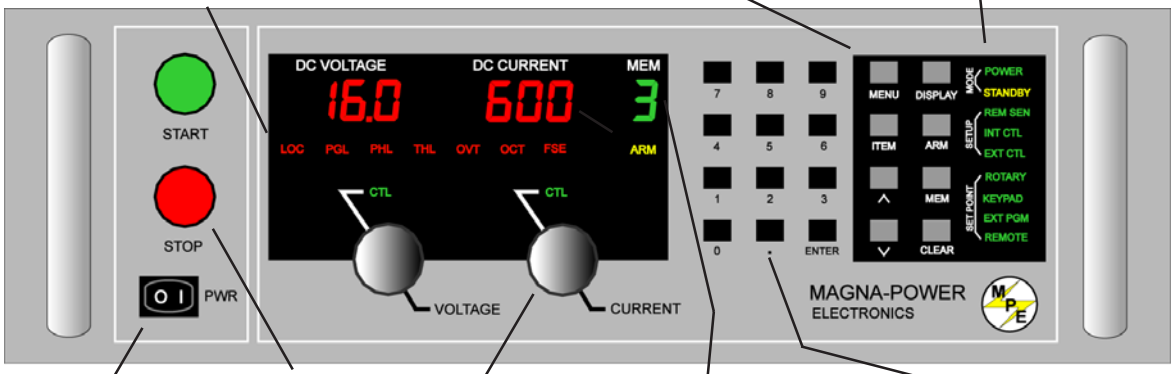
MQD SERIES supplies have three levels of over voltage/current protection: shutdown of controlling insulated gate bipolar transistors (IGBT's), disconnect of main power, and input fuses. After an over voltage/current trip condition, the supply must be reset.

MQD SERIES have push button start/stop controls. These controls are tied to a mechanical contactor which operates with the electronic switches to break the ac mains when stop is commanded. Unlike competing products, an off means both an electrical and mechanical break in the power circuit — not a break in an electronic switch. Safety comes first at Magna-Power Electronics.

DIAGNOSTICS
LOC: interlock
PGL: warns that a program line has opened
PHL: indicates a problem with input voltage
THL: indicates over-temperature
OVT: shows over voltage protection has tripped
OCT: shows over current protection has tripped
FSE: warns that a fuse has cleared
ARM: indicates power supply is ready for or operating in auto sequencing

FUNCTION KEYS
MENU: selects function
ITEM: selects item within function
DISPLAY: displays voltage and current setting
ARM: arms power supply for auto sequencing through states stored in memory
MEM: sets memory
CLEAR: clears setting or resets fault condition
▲: up
▼: down

MODE, SETUP, DISPLAY
POWER: indicates power output
STANDBY: indicates control power only
REM SEN: indicates remote sense
INT CTL: front panel controls enabled
EXT CTL: external controls enabled
ROTARY: potentiometer voltage/current control
KEYPAD: keypad voltage/current control
EXT PGM: external voltage/current control
REMOTE: RS232 control enabled



Energizes control circuits without turning on main power

Switches main power on and off

Sets voltage and current output in rotary mode

Meters display voltage, current, over voltage protection, over current protection, and memory step

Data entry through keyboard

MQD SERIES

MODULAR SIMPLICITY!

OUTLINE DRAWINGS AND ELECTRICAL INTERFACE

CONNECTOR JS1

TERM	PARAMETER	TERM	PARAMETER
1	REF GND	20	REF GND
2	REF GND	21	REF
3	VREF EXT	22	IREF EXT
4	TVREF EXT	23	TIREF EXT
5	VO2	24	IO2
6	REF CAL	25	VMOD
7	GND	26	+5
8	POWER	27	PGM LINE
9	THERMAL	28	STANDBY
10	INTERLOCK	29	PHASE LOSS
11	CUR CTL	30	VOLT CTL
12	STANDBY/ALM	31	RESERVE
13	ALM	32	OCT
14	EXT CTL	33	INT CTL
15	FUSE	34	OVT
16	RESERVE	35	RESERVE
17	START	36	ARM
18	CLEAR	37	INTERLOCK SET
19	STOP		

CONNECTOR JS3

TERM	PARAMETER
1	NC
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	NC

CONNECTOR JS2

TERM	PARAMETER
1	VO1REM-
2	VO1REM+