



Quasar is a line of switch-mode rectifiers for surface treatment processes, electro-winning and water treatment, that adopts pulse width modulation (PWM) technique for the controlling of current amplitude.

Electrical Features

- > High speed IGBT technology
- > Modular power platform and multi-tower interconnection
- > Microprocessor controlled
- > Up to 40% power saving versus Silicon Controlled Rectifier (SCR)
- > $\cos \phi \geq 0.93$ at rated load
- > Low output current ripple
- > High precision voltage and current regulation (1000 steps)
- > Fast response time and high stability to load variation ($\sim 1\text{ms}$)

Hardware Features

- > 15 to 180cm height
- > 43 x 43cm base size
- > Light weight
- > Main switch and operator control panel in the front
- > All input/output connections in the back for easy access

Software Features

- > Simple output parameters and waveform programming from the operator panel (current, voltage, cycle time and ramp time)
- > Customized software available
- > A/h and A/min meters for precise thickness and dosing pumps control

Operation Modes

- > Manual
- > Automatic (Via PC or PLC)

Available Interfaces

- > RS485 / RS232 *
- > Profibus-DP
- > DeviceNet
- > Modbus/TCP
- > Profinet
- > EthernetIP
- > Analogue 0-10V
- > Analogue 4-20mA - via remote control only

* Standard feature

Quasar
500



Quasar
300



Quasar
100



— 2 Years Warranty —

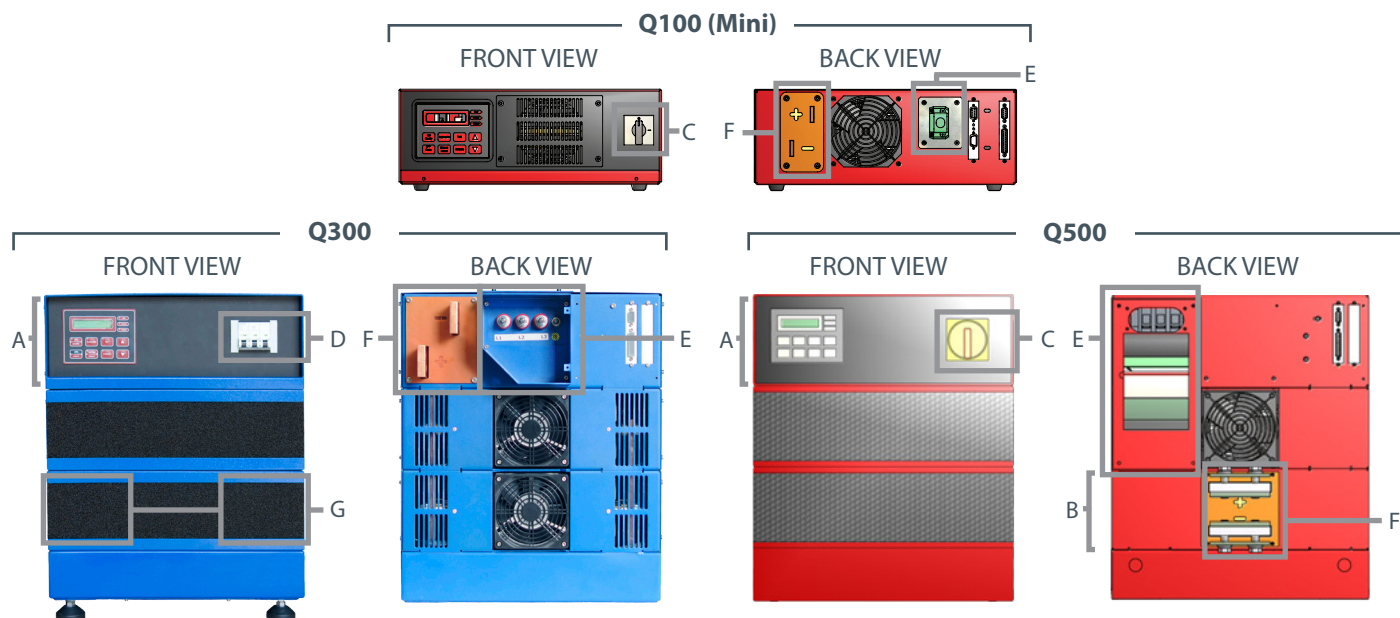
Machine Types

Type	Output ¹		
	Max voltage ² [V]	Max current per tower [A]	
		Air	Water
DC - Direct Current (forward)	10	5000	8000
	12	5000	8000
	16	5000	7000
	20	4500	6000
	25	3600	4800
	30	2700	4000
	50	2250	2400
	60	1890	2000
	80	1350	1300
	90	1260	1200
	100	1080	960
	160	675	tba
	250	360	480
	400	225	tba
	450	198	tba
DCR - Direct Current Reverse (forward and reverse)	12	3300	6000
	16	3300	6000
	25	2400	3600
	30	2100	3000
	50	1750	2100

¹ Based on machine's configurations with an input voltage of 400VAC.

² Standard voltages. Other values upon request. Please contact our technical center.

Hardware Differences of Quasar Models



Technical Specifications

ELECTRICAL SPECIFICATIONS

			Q100 model	Q300 model	Q500 model
Output	Power	DC	Up to 8kW	Up to 32kW (Max 3 power modules)	Up to 110kW per tower (Max 9 power modules)
		DCR	Up to 4kW	Up to 20kW (Max 1 reverse module)	Up to 100kW per tower (Max 3 reverse modules)
	Voltage	DC	5 - 450VDC standard		
		DCR	5 - 50VDC standard		
	Operation Mode		Current Control or Voltage Control		
	Control accuracy		1/1000 of max current or voltage		
	Precision		99% on entire range		
	Current regulation range		$5V \leq V_{out} < 60V$: 5 - 100% of max current (2% available on request with CTRD02) $V_{out} \geq 60V$: 2 - 100% of max current		
	Voltage regulation range		$5V \leq V_{out} < 60V$: 10 - 100% of max voltage (5% available on request with CTRD02) $V_{out} \geq 60V$: 7 - 100% of max voltage - No voltage regulation without load -		
	Current ripple (RMS)		< 2.0% of rated output current in current operation mode (< 1.0% on Request)		
	Efficiency		89% (typ.) @ rated load / 92% (for $\geq 160VDC$) @ rated load		
	Regulation speed		10 - 90% in 250ms with 100ms reverse dead time		
	Secondary withstand voltage		50VAC 50Hz 1min. between secondary to earth		
	Pole to be connected to ground		Positive		
Main Supply	Line voltage		3 x 230VAC $\pm 10\%$, 3 x 400VAC $\pm 10\%$, 3 x 440VAC $\pm 10\%$, 3 x 480VAC $\pm 10\%$, 3 x 550VAC $\pm 10\%$ or 3 x 575VAC $\pm 10\%$		
	Frequency		50 - 60Hz		
	Neutral		NOT USED		
	Power factor		> 95% @ rated load		
	Primary current		Max 20A	Max 55A	Max 230A per tower
	Earth leakage current		See EMC filter input specifications		

GENERAL SPECIFICATIONS

		Q100 model	Q300 model	Q500 model	
Technology		Switching mode PWM, Full Bridge IGBT inverter			
Cooling Systems		Air			
		Water			
Operation Conditions	Location	Indoor use only			
	Ambient temperature	0 - 40°C			
	Relative humidity	15 - 85% not condensing			
	Filter obstruction - air cooled	15% max			
	Water input temp. - water cooled	19 - 22°C (rectifier rev. A1-A49) 19 - 28°C (rectifier rev. A50 or above)			
	Altitude	<= 2000m			
Degree of Protection		Air cooled	IP31	IP21 (on request NEMA12)	IP32
		Water cooled	IP43		IP42 (on request IP65)
Conformity of EU Directives		2006/95/EC - Low Voltage Directive			
		2004/108/EC - Electromagnetic Compatibility			

SERIAL INTERFACE
Communication Ports

RS232

RS485

Communication Protocols

CRS-ASCII	RS232 point-to-point and RS485 network
Modbus-RTU	RS232 point-to-point and RS485 network
Profibus-DP (On request)	Profibus-DP network
DeviceNet (On request)	CAN bus network
Modbus/TCP	Ethernet
Profinet	Ethernet
Ethernet/IP	Ethernet

PROTECTION
Surge

According to directive | EN 61000-4-5

2kV between each input phase and PE. 1kV across each input phase combination.

Output Short Circuit

Type	Software
Programmed limit	25% of I_{out_max}
Detection time	1ms

Phase Loss

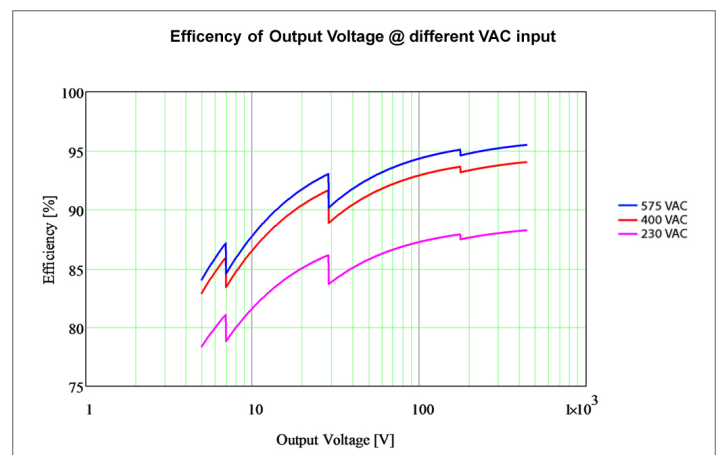
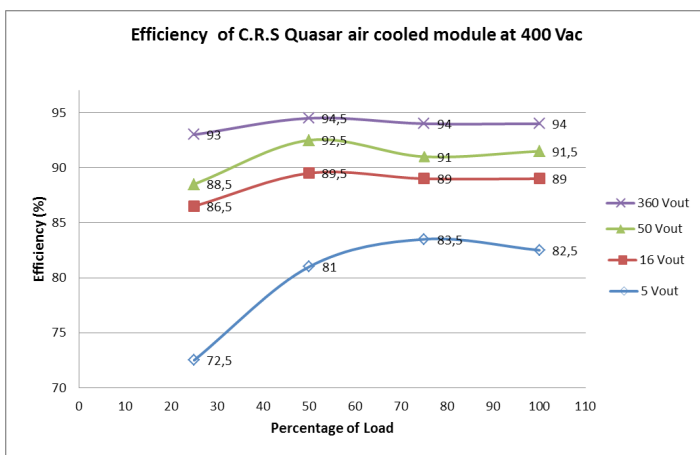
Type	Hardware	Software
Programmed limit	Half cycle	Adjustable via configuration parameter

Thermal Protection

With PTC on each module

FULL LOAD HARMONICS DISTORTION

Harmonic	Freq. (Hz)	Absorbed Current Distortions
3	150	-
5	250	< 22.5%
7	350	< 12.5%
9	450	-
11	550	< 11.0%
13	650	< 7.6%
17	850	< 8.0%
19	950	< 4.8%
THD		MAX 30%



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