QUAD Microinverter for Solar Water Pump

Smartest | Most Reliable | Lowest Cost

The QUAD microinverters for solar water pump (WP) are uniquely designed to run both grid connected and standalone water pumps. The inverter is suitable to run any type of electric motors (Induction, BLDC, and PMSM). The QUAD microinverters offer parallel operation for meeting any system power rating. With 4 individual DC input channels and independent maximum peak power tracking, it is the most compact and lightweight three-phase microinverter in the PV industry.

Four Panels, One Inverter

The Three-Phase QUAD microinverter uses patented technologies that eliminate the use of short- life electrolytic capacitors, providing high reliability, and a 25-year design life.

Based on a Per-Watt rating,
the QUAD has the lowest microinverter cost, the highest power output,the highest power density, and the lowest weight in the industry.

- **Maximum energy harvest**
- **Safe operation – all AC , with no high-voltage DC**
- **75% reduction in cable costs**
- **Best in class reliability**
- **No single-point of failure**
- **Cloud-based performance monitoring for each panel**
- **Run most of the water pumps**

Q2000-4301
Mode: WP

Input (DC) Specifications				
Number of channels		4		
PV Panel Rating Module (STC)	W	Up to 680 W_p per channel		
Input Power Clipping		None		
Maximum Input DC Current	A	16 per channel		
Full Power MPPT Voltage Range	V	34 - 45 per channel		
Extended MPPT Voltage Range	V	20 -60 per channel		
Start-up Voltage	V	19 per channel		
DC Connection Type		MC4 compatible panel receptacles		
Output (AC) Specifications				
Grid Connection Type		380V L-L from 3-φ	400V L-L from 3-φ	480V L-L from 3-φ
Operational Voltage Range	V	315 - 450	315- 450	422 - 528
Maximum Continuous Power [1]	W	2000 @ 52°C	2000 @ 60°C	2000 @ 60°C
Nominal Output Frequency	Hz	50		60
Operational Frequency Range	Hz	47.5 – 50.5 default		59.3 – 60.5 default
		Extendable according to various standards		
Power Factor		> 0.99, Default Programmable-0.99 leading/lagging		
Output THD	%	< 2, default		
Inrush Current	A	< 8		
Output Wiring Type		14 AWG		
Output Connection Type		T5 AC micro male connector 98053		
Safety and Protection				
Input Reverse Voltage Polarity Protection		Yes, Polarized PV Connectors		
Anti-Islanding Protection		Yes, programmable to meet various standards UL1741, UL1741 SA, Rule 21, IEC		
Integrated GFDI		Yes		
Isolation		Galvanic isolation		
Abnormal Voltage/ Frequency Trip Time		Less than 200ms		
Regulatory				
Regulatory Certifications		UL1741, UL1741 SA/Rule 21/HECO/Rule 14H, IEEE1547, IEEE1547.1, CSA22.2 No. 107.1, FCC Part 15-Class B. IEC62109-/2 IEC 61000-6-3/6-1 IEC 61000-3-2/3-3 EN50549-1:2019		

Efficiency and Operating Performance		
Maximum Efficiency	%	97.5
CEC Efficiency	%	97
MPPT Efficiency	%	Static: 99.85 – Dynamic: 99.8
Stand-by Consumption	mW	< 30
Communication		
Monitoring System		Wireless, Web-based monitoring through SparqLinq and SparqVu
Environmental		
Ambient Operating Temperature Range	°C (°F)	-40 to +65 (-40 to +149)
Relative Humidity	%RH	0 – 100 condensing
Mechanical		
Enclosure Rating		NEMA 6, IP-67
Cooling		Natural Convection
Dimensions (D x W x L)	mm (in)	41 x 284 x 375 (1.6x 11.18 x 14.76)
Weight	kg (lb)	4 (10)
Recommended Mounting		Rack mount with two M8, 1/4", or 5/16" bolts
Warranty		
Standard Limited Warranty		12 Years
Extended Warranty		25 Years

Programmable Parameters for Smart Grid		
Voltage Ride-through	Under Voltage	Maximum 4 levels with programmable ride-through time
	Over Voltage	Maximum 3 levels with programmable ride-through time
Frequency Ride-through	Under Frequency	Maximum 6 levels with programmable ride-through time
	Over Frequency	Maximum 4 levels with programmable ride-through time
Reconnect Time		Programmable wait time of 0-5 minutes
Power Ramp Rate		Programmable on both active and reactive power
Volt-VAR		Programmable VAR injection and power factor limit
Frequency-Watt		Programmable active power curtailment with an adjustable rate of Watt per Hz

Motor Mode	Unit	
Operating Mode Selection		Manual, or automatic (motor/grid)
Output Voltage Range	V	0-400 (Nominal), 0-460 L-L from 3ϕ
Output Frequency Range	Hz	2.5 to 130 (Programmable)
Frequency Accuracy		0.1%
Parallel Operation		Yes
Acceleration time	s	10s, linear acceleration (Programmable)
Load characteristics		$(\text{torque})\text{-}(\text{speed})^2$
Type of Motor		Induction, BLDC, PMSM
Monitoring		Output frequency, output current, output voltage, input power, under-voltage, temperature, grid/motor detection
Protective Function		Over-current, over-voltage, under-voltage, speed excessive, dry run protection

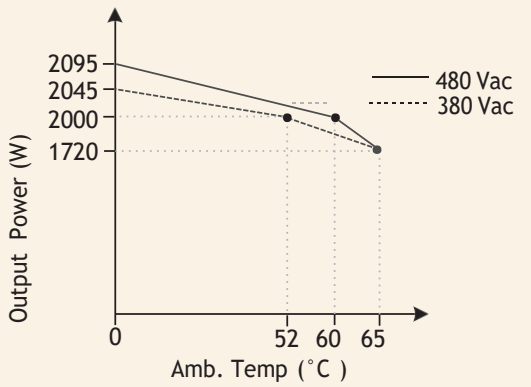
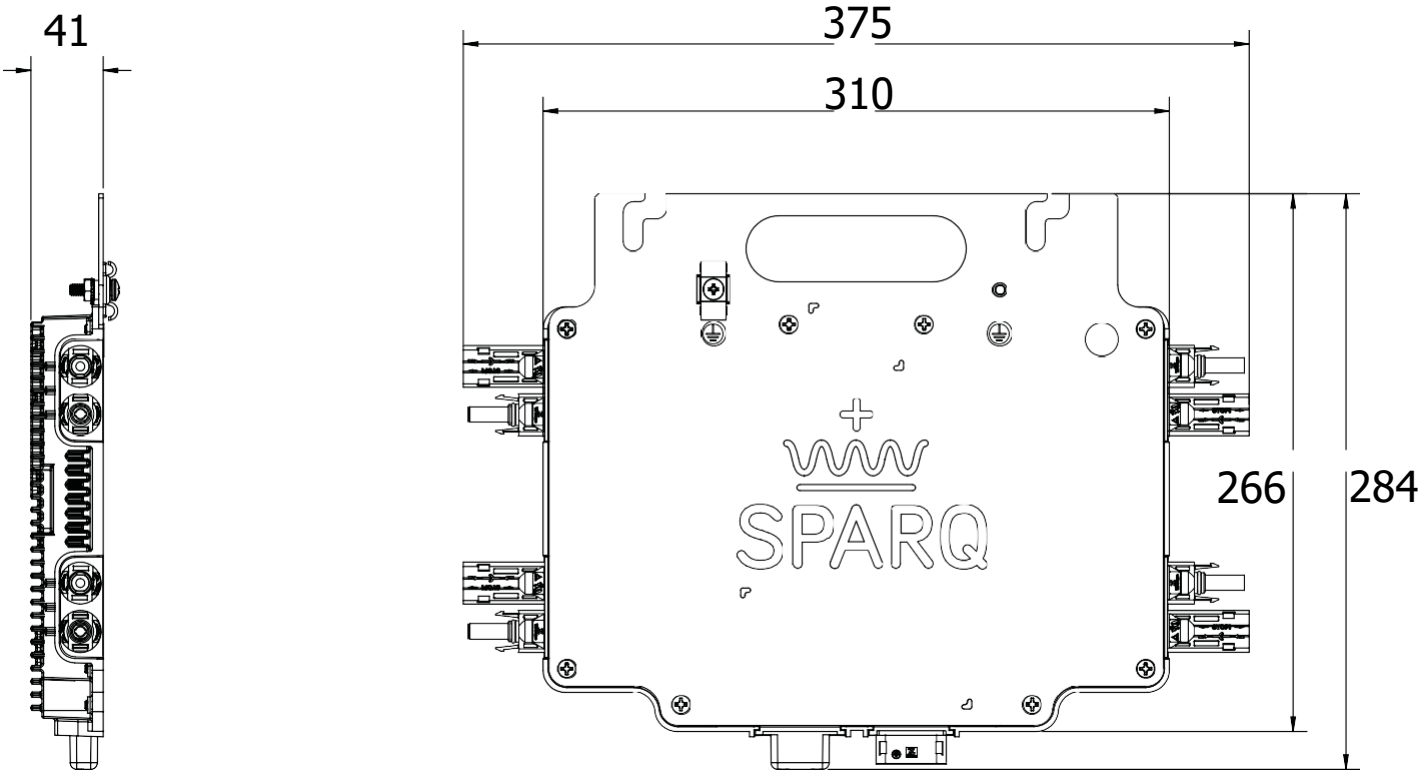


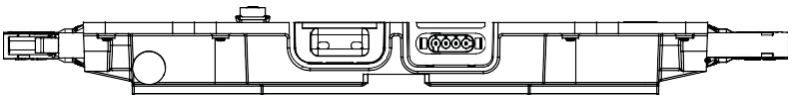
Fig. 1: Q2000-4301 AC Output Power vs Temperature Profile.

[1] For higher ambient temperature, please refer to the graphs shown in Fig. 1.

Mechanical Specifications (inverter)

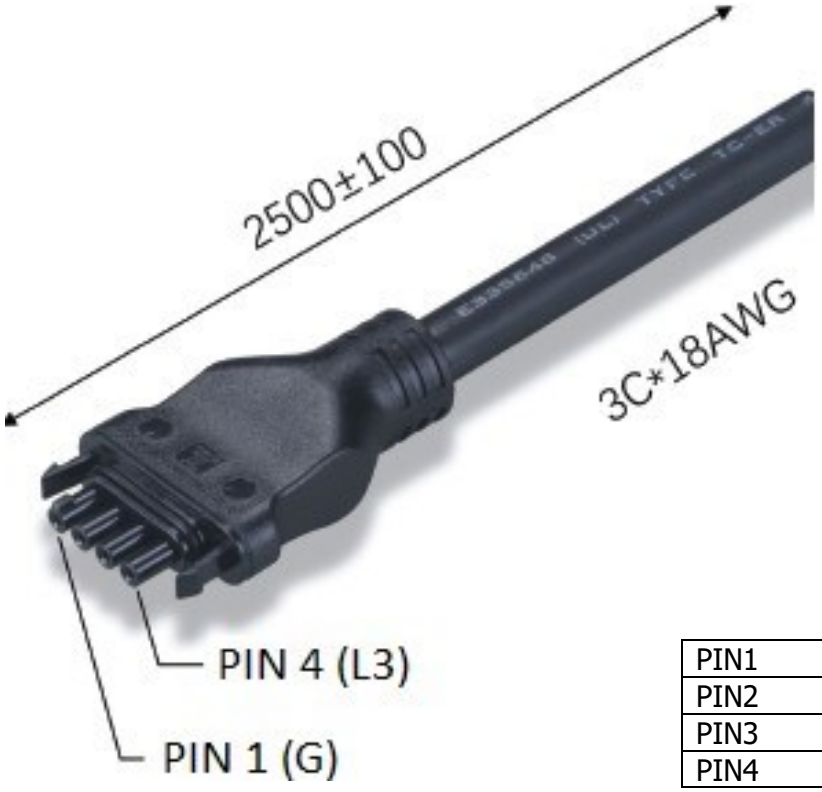


All dimensions in mm



Mechanical Specifications (cables)

Ti-Lane T5 free connector female 65069-16



PIN1	G: Empty
PIN2	L1: Wire color Red
PIN3	L2: Wire color Yellow
PIN4	L3: Wire color Blue

All dimensions in mm

AC Cable from T5 female to open, 3C, AWG 18

Region	Conduct Number	Colour Code	Length	Ti-lane P/N
India	3C	L1:Red; L2:Yellow; L3: Blue	2m	65069-14
India	3C	L1:Red; L2:Yellow; L3: Blue	2.5m	65069-16
India	3C	L1:Red; L2:Yellow; L3: Blue	4m	65069-15

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Model:
Q2000-4301
Mode: WP