

Preliminary

GaN SSPA Microwave Generator

RIK0915K-40TG



Product Features

- 900 ~ 930MHz
- High Output power : 15kW(CW) Peak Power
- Using GaN on SiC HEMT
- 60% System Efficiency
- High reliability & stability, long-run operation
- High frequency-stability with PLL technology
- Digital Controllability of Power, Frequency, Phase
- Very good frequency spectrum even at low power

Applications

- Building block for high-power systems
- Plasma generation
- Industrial Heating and Drying
- Microwave CVD
- Microwave sintering
- Microwave chemistry
- Materials processing
- Study of biological phenomena



Description

RIK0915K-40TG is a 15kw, GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIK0915K-40TG provides continuous wave (CW) and or pulse output power adjustable from 1000W to 15,000W at frequencies ranging between 900MHz and 930MHz. The RIK0915K-40TG is a turn-key microwave generator solution that comes pre-equipped with sixteen GaN solid-state power amplifiers, a 380VAC power supply unit (PSU), a DC cable, a Window-based GUI, and a PLL Synthesizer/Control Module.

Electrical Specifications

PARAMETER		UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	Adjustable Range	MHz	900	-	930	F _o
	Step Size	kHz	500	-	-	Fstep
Output Power	Adjustable Range	kW	1	-	15	P _o
	Step Size	kW	0.1	-	-	Pstep
Operating Mode		CW and or Pulse				
Power Spectrum Bandwidth**		kHz	-	-	500	S _b
Frequency Accuracy & Stability		ppm	-2.5	-	2.5	F _s
Efficiency (DC to RF)		%	-	-	60	Eff
Operating Voltage	PSU	V	380	-	415	VAC
	SSPA Head		-	50	-	VDC
Phase Shift	Operating Range	Deg	0	-	360	-
	Step Size	Deg	-	1	-	-
Pulse Mode	Pulse Repetition Frequency	kHz	0.01	-	50	-
	Pulse Length	ms	-	-	-	-
	Pulse Width	us	10	-	-	-

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Generator Alarm & Protection Features

PARAMETER	State	CONDITION
Output Power	Alarm	Output Power > 15kW
Over-Temperature	Alarm	System Temperature > 60 C°
Reflected Power	Alarm	Reflected Power 3kW
PLL Unlock ⁽¹⁾	Disabled	
Over-Temperature	Disabled	System Temperature > 55 C°
Reflected Power	Disabled	Reflected Power > 3.75kW

*Remarks

⁽¹⁾ A phase-locked loop (PLL) is a control system that generates an output signal whose phase is related to the phase of the input signal. The PLL is equipped with a voltage-driven oscillator that constantly adjusts to match the frequency of the input signal.

*Permanent damage may occur if any of these limits are exceeded. Electrical maximum ratings are not intended for continuous normal operation.

Mechanical Specifications

PARAMETER	UNIT	VALUE
Dimensions (W x D x H)	mm	600 x 750 x 1630
Weight	kg	480
Microwave Output Port	-	WR975
DC & GND	-	3P4W Lug Terminal
I/O Connector		USB, D-Sub 9-Pin, Ethernet
Cooling Requirements	-	Water Cooling Rate
		40L/Min, 5Bar
		Cooling Water Inlet Temperature
		20 °C~25°C (typ.)
		Relative humidity below dew point (non-condensing)
		* De-ionized water shall be used to prevent system damage
Fluid Inlet/Outlet Size	Inch	1/2" Tapered Pipe Thread

Remarks: Dimensions and Connectors may be subject to change.

Environmental Specifications

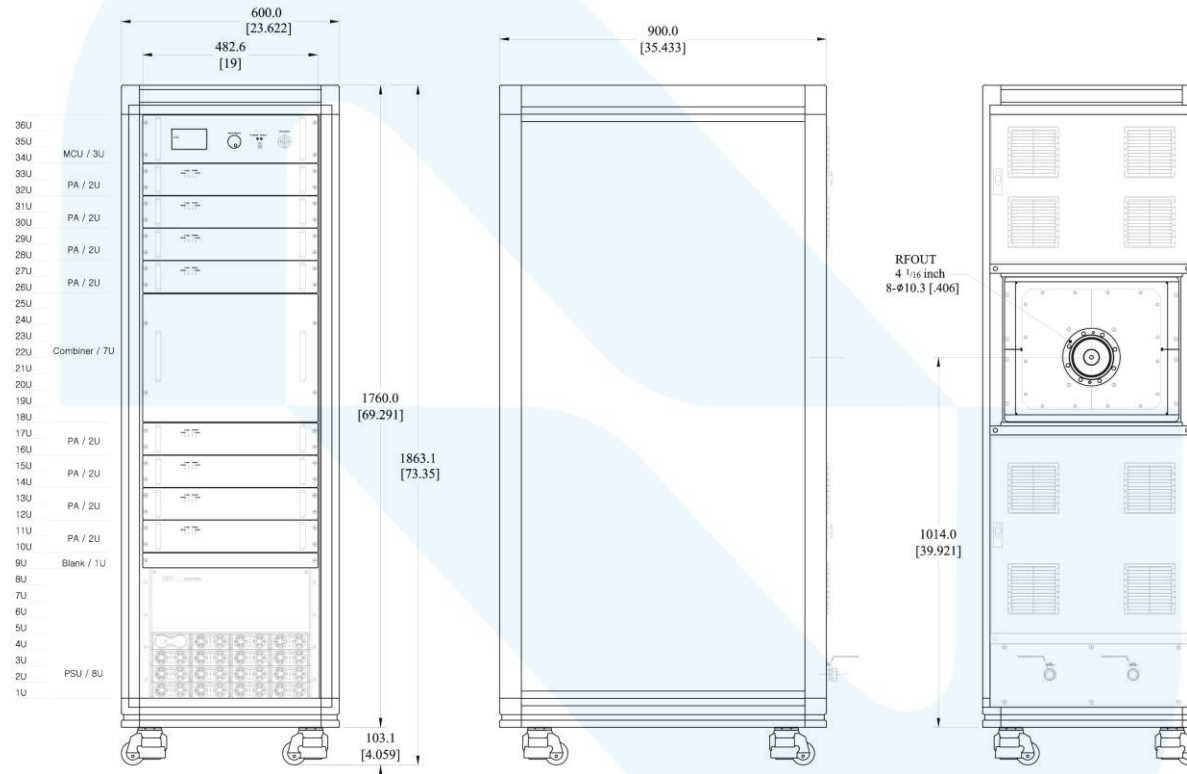
PARAMETER	UNIT	VALUE
Operating Case Temperature ⁽¹⁾	°C	15~50
Environmental/Storage Temperature	°C	10 ~ 40

Remarks: ⁽¹⁾ Operating case temperature is the temperature detected at the PA temp sensor.

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Generator Dimension



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Revision History

Part Number	Release Date	Version	Description	Data Sheet Status
RIK0915K-40TG	January, 2022	0.1	Initial release of datasheet	Preliminary
RIK0915K-40TG	January, 2022	0.2	Addition of step size steps, environmental specifications. Change in Water Cooling Conditions	Preliminary
RIK0915K-40TG	April, 2022	0.2	Product Size Edit	Preliminary
RIK0915K-40TG	October, 2022	0.3	Step size revised, dimension layout revised	Preliminary



Certification

This product is manufactured by a company that is certified for the AS9100D quality management system.

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