

# Preliminary

## GaN Microwave Generator

### RIK0930K-40TG



## Product Features

- 900 ~ 930MHz
- High Output power : 30kW(CW) Peak Power
- Using GaN on SiC HEMT
- 60% System Efficiency
- High reliability & stability, long-run operation
- High frequency-stability with PLL technology
- Digitally Adjustable 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
- Materials Processing
- Study of biological phenomena



## Description

RIK0930K-40TG is a 30kw, GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIK0930K-40TG provides continuous wave (CW) and or pulse output power adjustable from 1000w to 30,000W at frequencies ranging between 900MHz and 930MHz. The RIK0930K-40TG is a turn-key solution microwave generator system that comes with a 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 <sub>o</sub>
	Step Size	kHz	500	-	-	F <sub>step</sub>
Output Power	Adjustable Range	kW	1	-	30	P <sub>o</sub>
	Step Size	kW	0.1	-	-	-
Operating Mode		CW and or Pulse				
Power Spectrum Bandwidth**		kHz	-	-	500	S <sub>b</sub>
Frequency Accuracy & Stability		ppm	-2.5	-	2.5	F <sub>s</sub>
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	-	5.6	-	-
Pulse Mode	Pulse Repetition Frequency	kHz	0.01	-	50	-
	Pulse Length	ms	0.02	-	100	-
	Pulse Width	us	10	-	-	-

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## Generator Alarm & Protection Features

PARAMETER	State	CONDITION
Output Power	Alarm	Output Power > 30kW
Over-Temperature	Alarm	System Temperature > 60 C°
Reflected Power	Alarm	Reflected Power > 6kW
PLL Unlock <sup>(1)</sup>	Disabled	
Over-Temperature	Disabled	System Temperature > 55 C°
Reflected Power	Disabled	Reflected Power > 7.5kW
Water Temp	Disabled	System Temperature > 28 C°
Water Flow	Disabled	System Flow < 40L/min

### \*Remarks

<sup>(1)</sup> 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	793 x 1017 x 1900
Weight	kg	500
Microwave Output Port	-	WR975
DC & GND	-	Circular Connector 4pin (Female)
I/O Connector		USB, D-Sub 9-Pin, Ethernet
Cooling Requirements	-	Water Cooling Rate 50L/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	3/4" Tapered Pipe Thread

Remarks: Dimensions and Connectors may be subject to change.

## Environmental Specifications

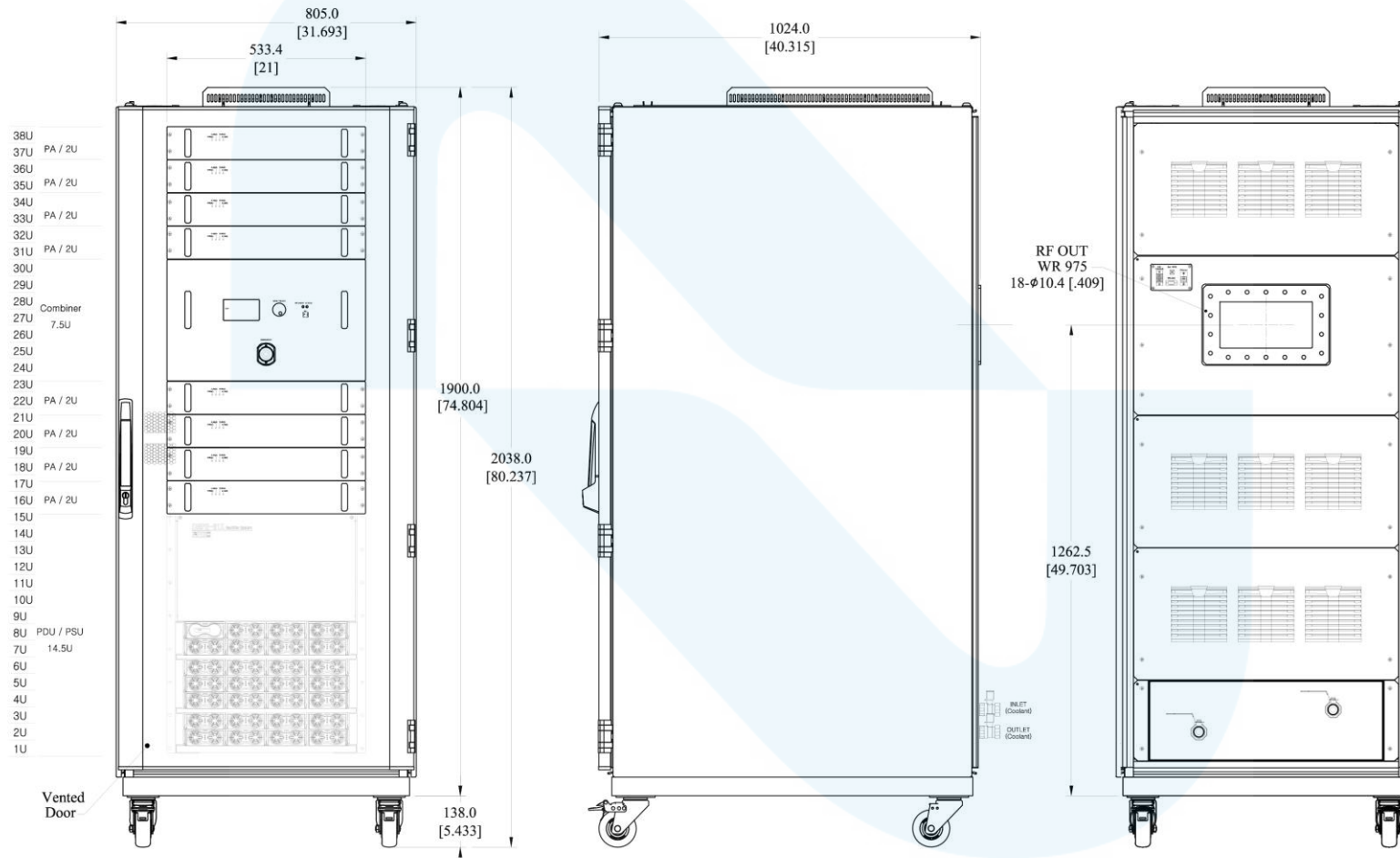
PARAMETER	UNIT	VALUE
Operating Case Temperature <sup>(1)</sup>	°C	15~50
Environmental/Storage Temperature	°C	10 ~ 40

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

**Preliminary**  
**GaN SSPA Microwave Generator**  
**RIK0930K-40TG**



**Generator Dimension**



**Preliminary**  
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## Revision History

Part Number	Release Date	Version	Description	Data Sheet Status
RIK0930K-40TG	January, 2022	0.1	Initial release of datasheet	Preliminary
RIK0930K-40TG	October, 2022	0.2	Step size revised, dimensioned layout revised	Preliminary



### Certification

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

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