

# Preliminary

## GaN Microwave Generator

### RIU256K0-40TG



#### Product Features

- 2400~2500MHz (ISM band)
- 6kW CW Peak Power @ 50V
- Built with GaN-on-SiC HEMT Transistors
- Excellent Thermal Stability and Ruggedness
- High-Frequency Stability
- Digital Controllability

#### Applications

- High Power Industry
- Microwave CVD Reactor
- Plasma Generator
- MW Heating and Drying
- Semiconductor Equipment



#### Description

RIU256K0-40TG is a 6kW, GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIU256K0-40TG provides continuous wave (CW) and or pulse output power adjustable from 300W to 6000W at frequencies ranging between 2400MHz and 2500MHz. The RIU256K0-40TG is a remote-type microwave generator system with the SSPA head and power supply unit separately, providing greater system flexibility. The RIU256K0-40TG comes equipped with a 6kW SSPA head, 380VAC Power Supply Unit (PSU), a DC cable, and a Window-based GUI.

#### Electrical Specifications

PARAMETER		UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	Adjustable Range	MHz	2400	-	2500	Fo
	Step Size	kHz	500	-	-	Fstep
	Step Sweep Time	us		500		Fst
Output Power	Adjustable Range	kW	0.3	-	6	Po
	Step Size	kW	0.1	-	-	Pstep
Operating Mode		CW and or Pulse				
Power Spectrum Bandwidth**		kHz	-	-	500	Sb
Frequency Accuracy & Stability		ppm	-2.5	-	2.5	Fs
Efficiency (DC to RF)		%	-	-	58	Eff
Operating Voltage	PSU	V	360	-	440	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	-	-	-

# Preliminary

## GaN Microwave Generator

### RIU256K0-40TG



## Generator Alarm & Protection Features

PARAMETER	State	CONDITION
Output Power	Alarm	Output Power > 6.3kW
Over-Temperature	Alarm	System Temperature > 50° C
Reflected Power	Alarm	Reflected Power > Output Power*0.5
PLL Unlock <sup>(1)</sup>	Disabled	-
Over-Temperature	Disabled	System Temperature > 55° C
Reflected Power	Disabled	Reflected Power > 3kW

### \*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.

## SSPA Head Mechanical Specifications

PARAMETER	UNIT	VALUE
Dimensions (W x D x H)	mm	432 x 722x 238 432 x 902 x 238 (/w isolator)
SSPA Head Weight	kg	48.7 54.2 (/w isolator)
Microwave Output Port	-	WR340
DC & GND	-	Circular Connector 4pin (Female)
I/O Connector		USB, Ethernet
Cooling Requirements	-	Water Cooling Rate 12L/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	3/8" Tapered Pipe Thread

Remarks: Dimensions and Connectors may be subject to change.

## Environmental Specifications

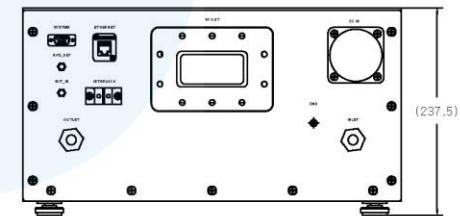
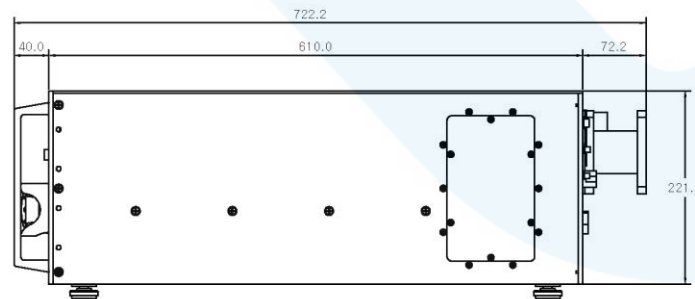
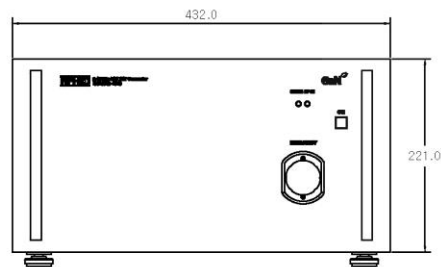
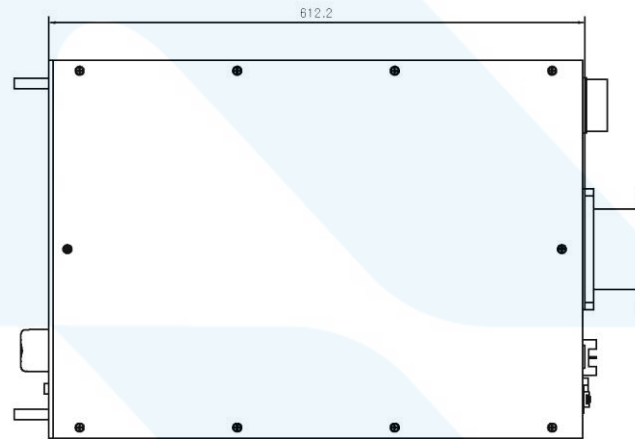
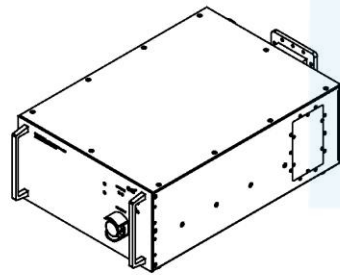
PARAMETER	UNIT	VALUE
Operating Case Temperature <sup>(1)</sup>	°C	15 ~ 50
Environmental/Storage Temperature	°C	10 ~ 40

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

**Preliminary**  
**GaN Microwave Generator**  
**RIU256K0-40TG**



**GaN SSPA Head Dimension (RIU256K0-20G)**



**Preliminary**  
**GaN Microwave Generator**  
**RIU256K0-40TG**



**Power Supply Unit Specifications (SPD1818K-40T)**

PARAMETER	UNIT	VALUE
Input Voltage	VAC	3Ø4W400 ±10%
Frequency	Hz	45-66
Power Factor	%	98 ≥ Typ.
PSU Efficiency	%	96
Output Voltage	VDC	50
Output Current	A	330 max.
Weight	Kg	32
Dimensions (W x D x H)	mm	483 x 432 x 177
Cooling	-	Air Cooling

**PSU Image**

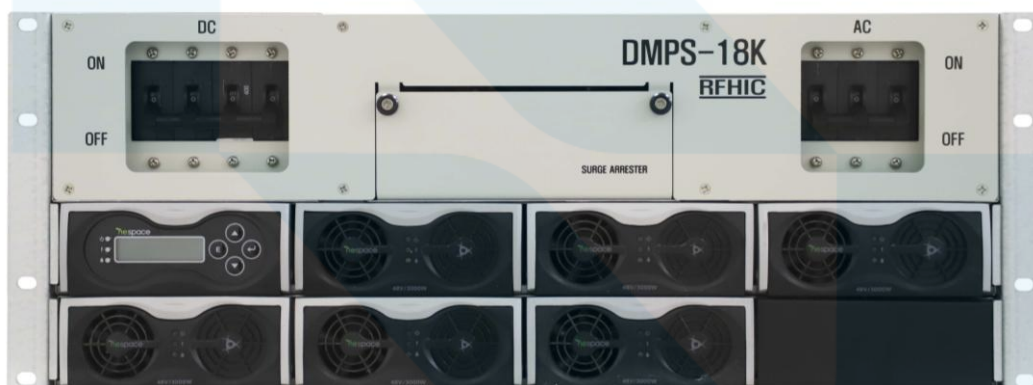


Figure 1: 18kW, SPD1818K-40T Power Supply Unit (Back View)

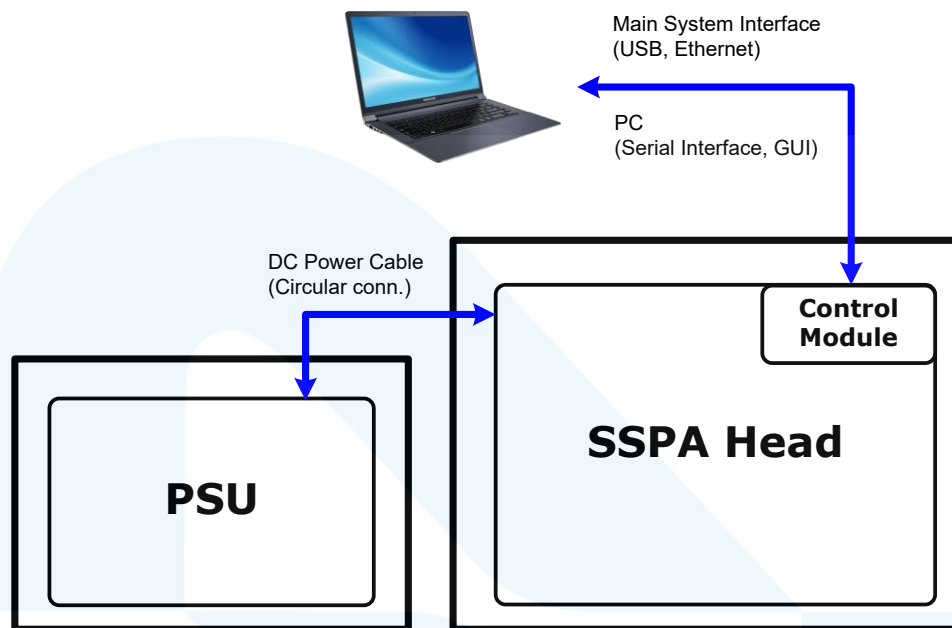


Figure 2: 18kW, SPD1818K-40T Power Supply Unit (Back View)

**Preliminary**  
**GaN Microwave Generator**  
**RIU256K0-40TG**



**Microwave Generator Setup and Interface Concept**



**Preliminary**  
**GaN Microwave Generator**  
**RIU256K0-40TG**



## Revision History

Part Number	Release Date	Version	Description	Data Sheet Status
RIU256K0-40T	August, 2018	0.1	Initial release of datasheet	Preliminary
RIU256K0-40TG	April, 2021	0.2	Part Number Revised, Dimensions Revised, Exterior Features Revised	Preliminary
RIU256K0-40TG	October, 2021	0.3	Revision of specifications (dimensions, water rate, voltage, PSU voltage)	Preliminary
RIU256K0-40TG	January, 2021	0.4	Revision of Protection specifications, Addition of Frequency Step Size, Output Power, Dimensions, Environmental Specifications. Change in Water Cooling Requirements.	Preliminary
RIU256K0-40TG	August, 2022	0.5	Revision of Alarm & Protection Features, Dimensions, Power Supply Unit Serial Name	Preliminary
RIU256K0-40TG	October, 2022	0.6	Dimension parameters revised.	Preliminary
RIU256K0-40TG	October, 2023	0.7	Revision of PSU voltage range	Preliminary
RIU256K0-40TG	February, 2026	0.8	Frequency Sweep time added	Preliminary



### Certification

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

RFHIC Corporation reserves the right to make changes to any products herein or to discontinue any product at any time without notice. While product specifications have been thoroughly examined for reliability, RFHIC Corporation strongly recommends buyers to verify that the information they are using is accurate before ordering. RFHIC Corporation does not assume any liability for the suitability of its products for any particular purpose, and disclaims any and all liability, including without limitation consequential or incidental damages. RFHIC products are not intended for use in life support equipment or application where malfunction of the product can be expected to result in personal injury or death. Buyer uses or sells such products for any such unintended or unauthorized application, buyer shall indemnify, protect, and hold RFHIC Corporation and its directors, officers, stockholders, employees, representatives and distributors harmless against any and all claims arising out of such unauthorized use. All sales inquiries and support should be directed to the local authorized geographic distributor for RFHIC Corporation. For customers in the US, please contact the US sales team through our website at <https://rfhicusa.com/>. For all other inquiries, please contact our international sales team through our website portal at <https://rfhic.com/contact/>