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	S_b
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	-	-	-

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 (1)	Disabled	-
Over-Temperature	Disabled	System Temperature > 55° C
Reflected Power	Disabled	Reflected Power > 3kW

***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.

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	

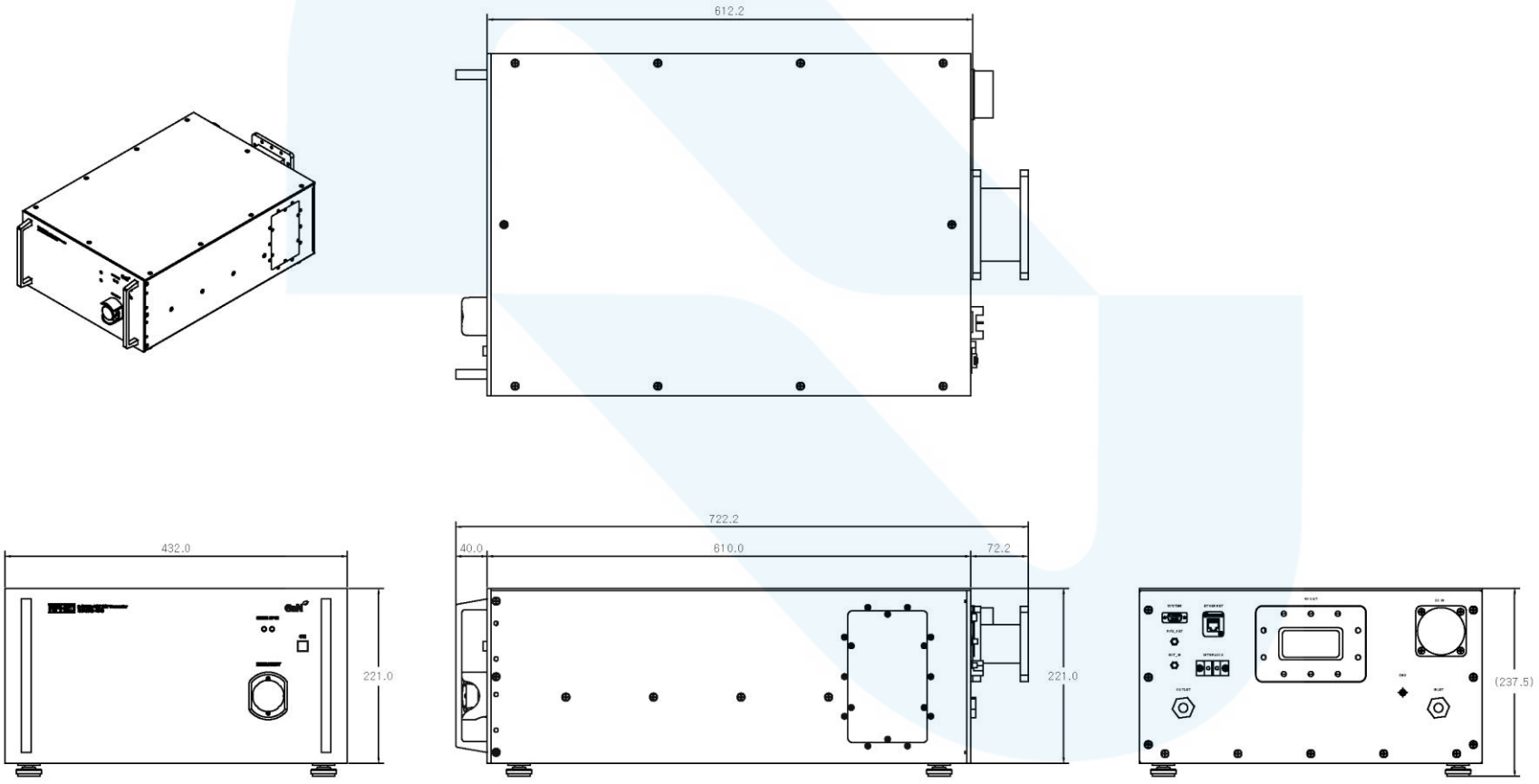
Remarks: Dimensions and Connectors may be subject to change.

Environmental Specifications

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

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

GaN SSPA Head Dimension (RIU256K0-20G)



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

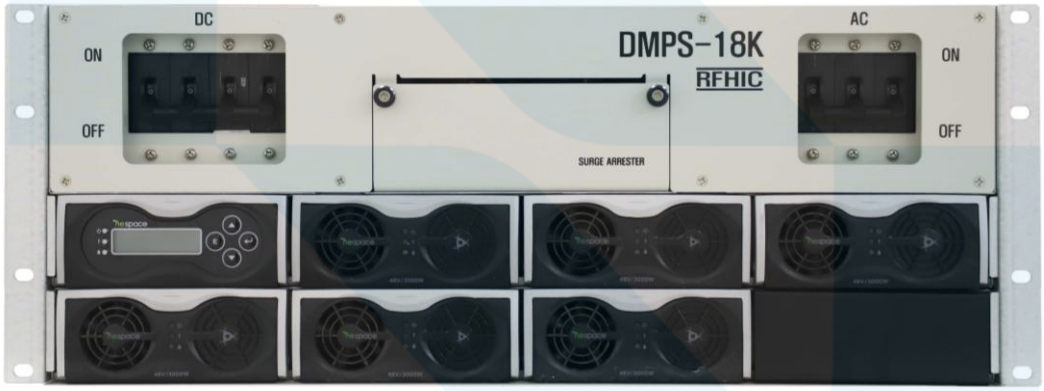
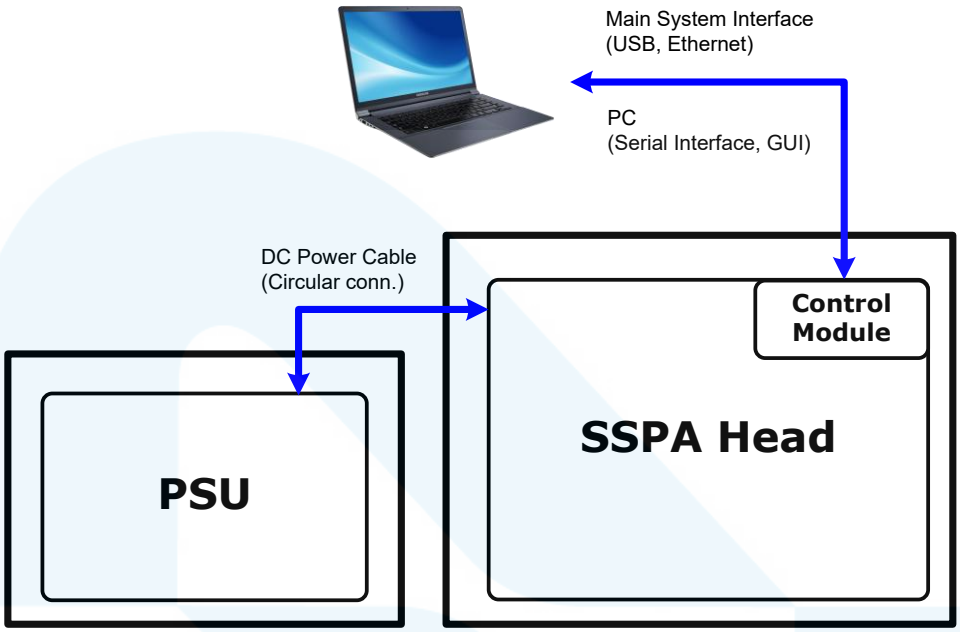


Figure 1: 18kW, SPD1818K-40T Power Supply Unit (Back View)

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

Microwave Generator Setup and Interface Concept



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

kiwa certified
MANAGEMENT SYSTEM
KS Q 9100:2018
AS9100 D

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