ALARIS
KUHNE
INSPIRING THE NEXT RF SOLUTION

v1.0.1

KU SG 2.45-450 A

2.4 – 2.5 GHz ISM-Band
Microwave Power Generator

Manual

A DIVISION OF

ALARIS
THE RF TECHNOLOGY GROUP

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Kuhne electronic GmbH
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Specification

Type	KU SG 2.45-450 A
Output frequency range	2400 ... 2500 MHz
Frequency steps	100 kHz (10 kHz optional)
Frequency stability	+/- 3 ppm
Output power	0 ... 450 W at 50 Ohms
Power steps	1 W
Power accuracy	+/- 0.2 dB max.
Signal waveform	Continous wave, Pulsed (various frequencies)
Protection	VSWR (Isolator), Over temperature (70°C Hotspot), UV/OV/OC protection (32 +/- 1.5 V)
Temperature range	-20 °C ... 60 °C
Features (selection)	Find best frequency function Frequency sweep function Pulse mode with regulated power Phase Shift 0.7° steps (Option) Water and air cooling possible
Optional	Combining of two generators (master-slave with phase control) for more signal generators use Phase Shift Option with 10 MHz Ref.
Supply voltage	32 V
Current Consumption	max. 26 A @ 450 W
Case	Milled aluminium, nickel plating
Output connector	N-female, 50 Ohms
Control input	Serial Interface, 3.3 V UART interface Analog interface 0 V ... 10 V External I2C bus extensions
Dimensions (w x d x h)	180 mm x 65 mm x 40 mm
Weight	typ. 1500 g

See programmer's guide for UART communication.

Features:

- LDMOS technology
- Reverse polarity protection
- Milled aluminium
- Over- / Undervoltage warning and protection
- ON/OFF – Control over interface or analog
- Over temperature protection
- Frequency-Sweep function
- Algorithm find frequency with min. reflection

Applications:

- Warming or heating through microwaves
- Plasma generation
- Disinfection and sanitization
- Sintering and production of nanostructures

Accessories:

- Recommended power supply: RACM120036SAVENC

- Recommended heat sink: SK 200 - 160 WK 18-07 Liquid cold plate

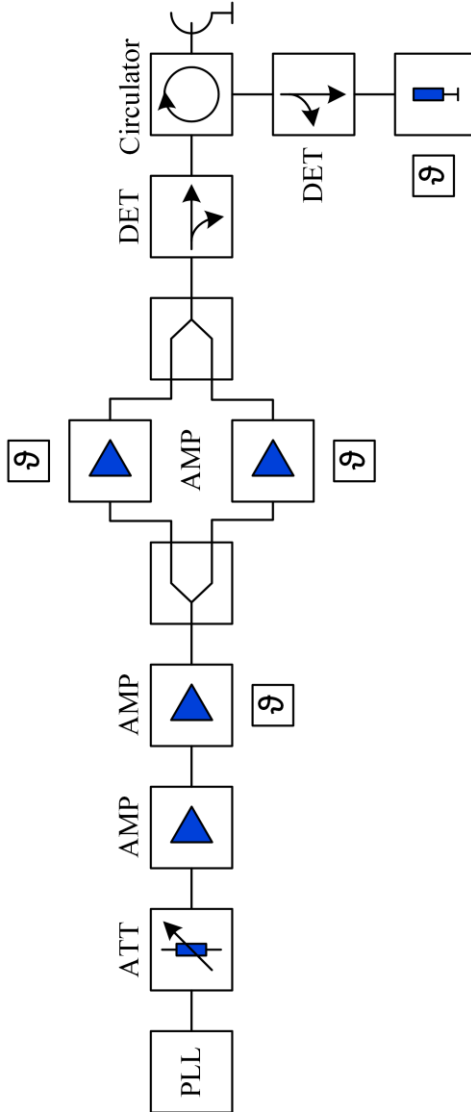**Generator should be mounted on heat sink!**

CE Konformität / CE Conformity

EMC directive 2014/30/EU
Low voltage directive 2014/35/EU
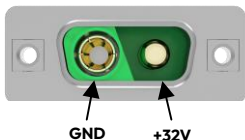RoHS directive 2011/65/EU

C E

Directors: Ian Duke/Gustav Wenhold
Reg no: HRB 3350 Hof, VAT-ID-No: DE 813343044, WEEEReg.-Nr. DE34186665

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Block Diagram

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Peripherals

DC PORT

The DC connector is delivered with a 2-pin plug in terminal for 6 mm^2

GND   **+32V**
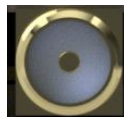
CONTROL PORT

(1) – PWR IN (Analog 0-10V)
(2) – FREQ IN (Analog 0-10V)
(3) – ENABLE (switching threshold 1.36V active high)
(4) – ENABLE 2 (switching threshold 4.4V active high)
(5) – UART RX
(6) – FWD MON
(7) – REV MON
(8) – TEMP MON
(9) – GPO EXT
(10) – UART TX
(11) – GND
(12) – GND
(13) – GND
(14) – SDA
(15) – SCL

The 15 pin connector is delivered with a empty coupling housing and 15 pin solder contacts.

REF PORT

external 10 MHz Reference input

LED

The LED indicates different operating conditions, warnings and alarms.

Normal operation

Error state This LED lights up for various errors, you can use the INFO command to query it.

Overvoltage and undervoltage warning

Pulse mode is active

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Peripherals description

The microwave generator has three different input modes:
0: Digital via UART
1: Analog with ENABLE (default)
2: Analog with ENABLE_2

PWR adjust

Analog input for output power control: $P \approx V_{in} * 45$ W/V

FREQ adjust

Analog input for output frequency control: $f \approx 2400$ MHz + $V_{in} * 10$ MHz/V

FWD MON

Analog output for forward power monitoring: $P \approx V_{out} * 45$ W/V (accuracy ±5W)

TEMP MON

Analog output for temperature monitoring: $T = V_{temp} * 10$ °C/V - 30 °C

REV MON

Analog output for reverse power monitoring: $P \approx V_{out} * 45$ W/V (not compensated, deviations possible)
GND

Reference ground connection

ENABLE (Inputmode 1)

TTL compatible input for enabling/disabling of the microwave generator
0V – disabled
3.3V – enabled

ENABLE 2 (Inputmode 2)

TTL compatible input for enabling/disabling of the microwave generator
0V – disabled
10V – enabled

RF Status

Output for RF Status
0V – disabled
10V - enabled

All inputs are 10V tolerant. Higher input voltages may damage internal circuitry.

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Dimensions

14.8 mm

40 mm

RF-OUT

GND POWER +32V

87 mm

180 mm

STATE

REF

87 mm

MICROWAVE POWER GENERATOR
KU SG 2.45 - 450 A
2400 ... 2500 MHz - 0 ... 450 W

ALARIS
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MADE IN GERMANY by Kuhne electronic GmbH

UART / I2C / ANALOG
INTERFACE

CE

65 mm

71 mm

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