

Programmer's reference for KU SG 2.45-450 A and KU SG 2.45-250 D



Serial Interface

General Description

Our microwave generators have a serial interface for external control. It has the following specification:

- 3.3V logic levels
- 115200 BAUD data rate
- 8 data bits, 1 stop bit
- No parity, no flow control

Programmer's reference

All commands must be followed by a „carriage return“ (0x0D). If the sent command is unknown, the module returns „*\r“.

Monitoring

Command	Function	Return Value
INFO	error messages	
V?	query software version	
SN?	query serial number	5 digits and \r
AC:	activation code for features (8 digits)	String and \r
M0	operating voltage, in mV	5 digits and \r
M1	power consumption in mA	5 digits and \r
M4	freq_in in mV	5 digits and \r
M5	pwr_in in mV	5 digits and \r
M6	forward power	5 digits and \r
M7	reverse power	5 digits and \r
M8	power consumption in W	5 digits and \r
M9	efficiency in %	5 digits and \r
T0	driver temperature	4 digits and \r
T1	output transistor above	4 digits and \r
T2	output transistor below	4 digits and \r
T3	temperature terminating resistor	4 digits and \r
T4	MCU temperature	4 digits and \r
PLL?	returns status of the PLL's	3 Strings with \r

Controls

Command	Function	Return Value
A	set output power in watts (4 digits)	A\r or N\r
f	frequency in kHz (7 digits)	A\r or N\r
f?	query frequency in kHz	7 digits and \r
B	reverse power limit in watt (4 digits)	A\r or N\r
B?	query reverse power limit	4 digits and \r
C	preserve power in memory when powered off	A\r or N\r
C?	status of C (-1: deactivated; 0 ... 450 or 250: startpower)	Up to 3 digits and \r
O	signal generator ON incl. idle	A\r or N\r
o	signal generator OFF incl. quiescent current	A\r or N\r
o?	is the signal generator ON?	0\r or 1\r
IM0	Input mode digital	A\r or N\r
IM1	Input mode analog / low voltage enable signal (0 / 3.3V)	A\r or N\r
IM2	Input mode analog / low voltage enable signal (0 / 10V)	A\r or N\r
IM?	which input mode is active?	0\r, 1\r or 2\r
BL	start bootloader for firmware update	

Serial Interface**Pulsmode**

Command	Function	Return Value
PM0	pulse mode OFF	A\r or N\r
PM1	pulse mode ON	A\r or N\r
PM?	is pulse mode ON?	0\r or 1\r
PMP	pulse periode (5 digits in µs) 6 – 99999 µs	A\r or N\r
PMP?	returns pulse periode	5 digits and \r
PMW	pulse width (5 digits in µs) 1 – 99998 µs (1-24 µs without regulation as option)	A\r or N\r
PMW?	returns pulse width	5 digits and \r
NM0	noise mode off	A\r or N\r
NM1	noise mode on	A\r or N\r
NM?	is noise mode on?	0\r or 1\r
NML	noise level (2 digits in %) 1 – 20%	A\r or N\r
NML?	returns noise mode level	2 digits and \r

Frequenz Sweep

Command	Function	Return Value
fs0	stop frequency sweep	A\r or N\r
fs1	start frequency sweep	A\r or N\r
fs2	best frequency find, sets direction to 0 (up), freq to start and sets the best frequency	A\r or N\r
fs?	is the frequency sweep ON ?	0\r or 1\r
fsb	sweep-start(begin)-frequency in kHz (7 digits)	A\r or N\r
fsb?	sweep-start frequency query	7 digits and \r
fse	sweep-stop(end)-frequency in kHz (7 digits)	A\r or N\r
fse?	sweep-stop frequency query	7 digits and \r
fss	frequency – steps in kHz (7 digits)	A\r or N\r
fss?	frequency – steps query	7 digits and \r
fsd	Dwell time per frequency (4 digits) 1 - 1000 ms	A\r or N\r
fsd?	query Dwell time	4 digits and \r

Description

ON/OFF CONTROL (O/r)

Enabling and disabling the amplifier can either be done via the serial interface or via external inputs on the 15-pin connector.

Turn on sequence:

- 1.) Activate the RF signal either via command „O“ or via a high level on EN or EN_2
- 2.) Set output frequency and power

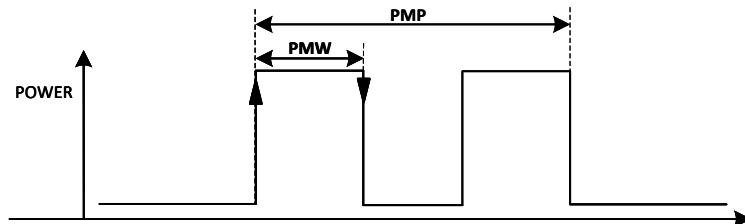
Turn off sequence:

- 1.) Deactivate the RF signal either via command „o“ or via a low level on EN or EN_2

PULSE MODE

During pulse mode, the RF signal is turned on and off with respect to the specified values (see commands „PM1“ and „PM0“).

Beispiel / Example



Turn on sequence:

- 1.) Specify the PULSE periode in μ s via commands „PMP“
- 2.) Specify the PULSE width in μ s via commands „PMW“
- 3.) Set output frequency and power
- 4.) Activate the RF signal in pulse mode via command „PM1“
- 5.) Activate RF via command „O“

Turn off sequence:

- 1.) Deactivate RF signal via command „o“
- 2.) Deactivate the pulse mode with command „PM0“

NOISE MODE

With activated noise mode, the pulse period varies in a random way around the set value. It is defineable in a range between 1 to 20 % maximum variation.

FREQUENCY SWEEP (fs1)

Command „fs1“ starts the „frequency sweep“ algorithm. The frequency sweep then runs in a continuous loop for the set range with the specified dwell time (1 – 1000 ms) in the set power. The frequency steps can also be adjusted, standard 100 kHz steps as option 10 kHz.

Description

SAVE TO EEPROM (ES)

Command „ES“ saves the following parameters to the internal EEPROM:

- Frequency
- Output power
- ON/OFF control setting
- Reflection limit
- On-time for pulse mode
- Off-time for pulse mode
- Noise Mode
- Noise Mode Level
- Sweep mode
- Sweep start frequency
- Sweep stop frequency
- Sweep step size
- Sweep step dwell time

