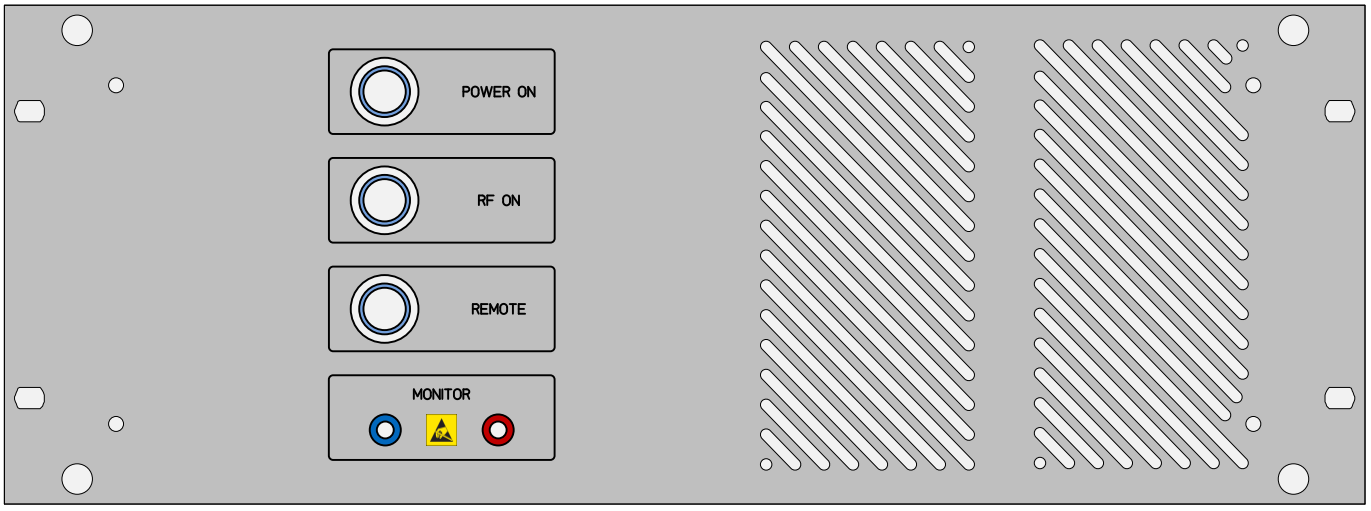
High Power - Signal Generator
KU SG 1000 – 50 WG – RACK



User Manual

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High Power – Signal Generator

KU SG 1000 – 50 WG - RACK

User manual

KU SG 1000 – 50 WG - RACK
is a product of

Kuhne electronic GmbH

Scheibenacker 3
95180 Berg
Deutschland

Developed and produced in EU

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Important Notes

- This device generates a high power RF-signal. Because of the high output power improper usage can lead to injuries. Only skilled persons should operate the unit.
- The signal generator has a built-in security function against high VSWR.
- Kuhne electronic accepts no liability for damages caused by improper usage.
- Repairs should only be done by a professional workshop.
- The device should be protected against splash and direct sun light.
- Never clean with cleaning supplies. A slightly moist cloth should be used for cleaning.
- Connect the device only at the intended power supply connector and with the specified voltage.
- Don’t set the generator into operation when turning from a cold into a warm room. Wait until it has reached room temperature.
- In case of damages, caused by non-observance of this notes, the warranty will expire. Kuhne electronic do not assume any liability for follow damages.
- Do not cover the air inlet and air outlet

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Description

The KU SG 1000 – 50 WG – RACK is a high power signal generator for 10.0 GHz.
The output signal is generated from a PLL-oscillator. Then, this signal is amplified by a power amplifier up to min. 50 W.
The power amplifier is protected against bad VSWR through a circulator. Full reflexion is possible without damaging the amplifier.
Manual mode:
The output power can be switched on by a pushbutton on the front panel.
Two female connectors for providing the monitor-voltage are also located on the front panel.
Remote mode:
The signal generator can be remote controlled over LAN via a terminal program.

Operation

STANDBY
After powering up the signal generator on the rear panel, the signal generator is in standby.
Standby is displayed with a slow flashing of the POWER ON led.

POWER ON
Switches the main power supply of the signal generator on and off
If the main power supply is on, the blue led circle of the POWER ON pushbotton is on.

RF ON
Switches the RF signal of the signal generator on and off
If the RF signal is on the blue led circle of the RF ON pushbotton is on.

REMOTE
Switches the signal generator into remote state
If the signal generator is in remote state the blue led circle of the REMOTE pushbotton is on.
In remote state the RF ON pushbotton and the POWER ON pushbutton are deactivated.
Checking the state of the signal generator with the LAN interface is always possible.

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Errors

RF AMPLIFIER over temperature
If the RF amplifier tempreature becomes more than 50 degree celcius the RF ON LED starts flashing. If the temperature of the RF amplifier reaches 60 degree celcius the signal generator shuts down and the RF ON LED flashes faster.
The signal generator can be reset by pressing the RF ON pushbutton.

The error state of the amplifier can be checked via the LAN interface.
You have to send e0 to the signal generator. The possible answers are:

0 -> no error
1 -> amplifier hot (more than 50 degree celcius)
2 -> amplifier too hot (more than 60 degree celcius), the signal generator is in shut down

RF LOAD RESITOR over temperature
The signal generator is protected by a circulator and an load resistor for the reflected output power of the signal generator. The load resistor is well dimensioned to handle 50 watts reflected power.
If the load resistor reaches more than 80 degree celcius the signal generator shuts down.

The error state of the load resistor can be checked via the LAN interface.
You have to send e1 to the signal generator. The possible answers are:

0 -> no error
1 -> load resistor too hot (more than 80 degree celcius), the signal generator is in shut down

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Technical data

Type	KU SG 1000 – 50 WG - RACK
Output frequency	10.0 GHz
Output power	min. 50 W on 50 ohms
Signal	CW
Protection	VSWR (Isolator), Over temperature
Supply voltage	230 VAC / 50 … 60 Hz
Output	WR-90
Data interface	LAN (serial Ethernet adapter UDS1100 from Lantronix)
Temperature range	10 … 30° C (ambient)
Case	19" – rack mount case 4 HU / aluminium
Dimensions (w x d x h)	482.6 x 350 x 171 mm
Weight	11.25 kg

Monitor voltage: _____ volts @ _____ output power

Sig.:_____ QS: _____

CE This signal generator is CE compliant for use in an industrial environment. Certificates of conformity require that the signal generator is used in a shielded environment or anteroom.

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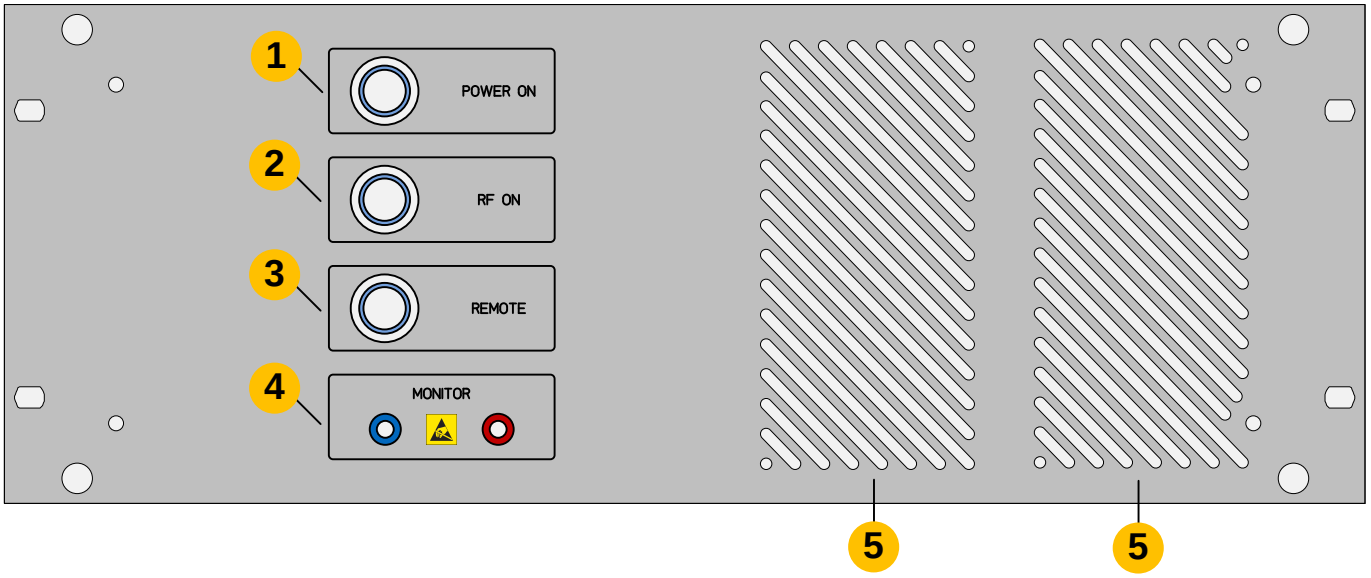
Front Panel



1	POWER ON	Power ON/OFF for PA
2	RF ON	Power at ON-Pin of PA → RF ON/OFF
3	REMOTE	
4	MONITOR	Power monitor output in volts (uncalibrated) bl → GND; rt → signal **These connectors contain electrostatic sensitive devices. To prevent equipment damage, use proper grounding techniques. The length of attached wires may not exceed 3m.**
5		Air inlet

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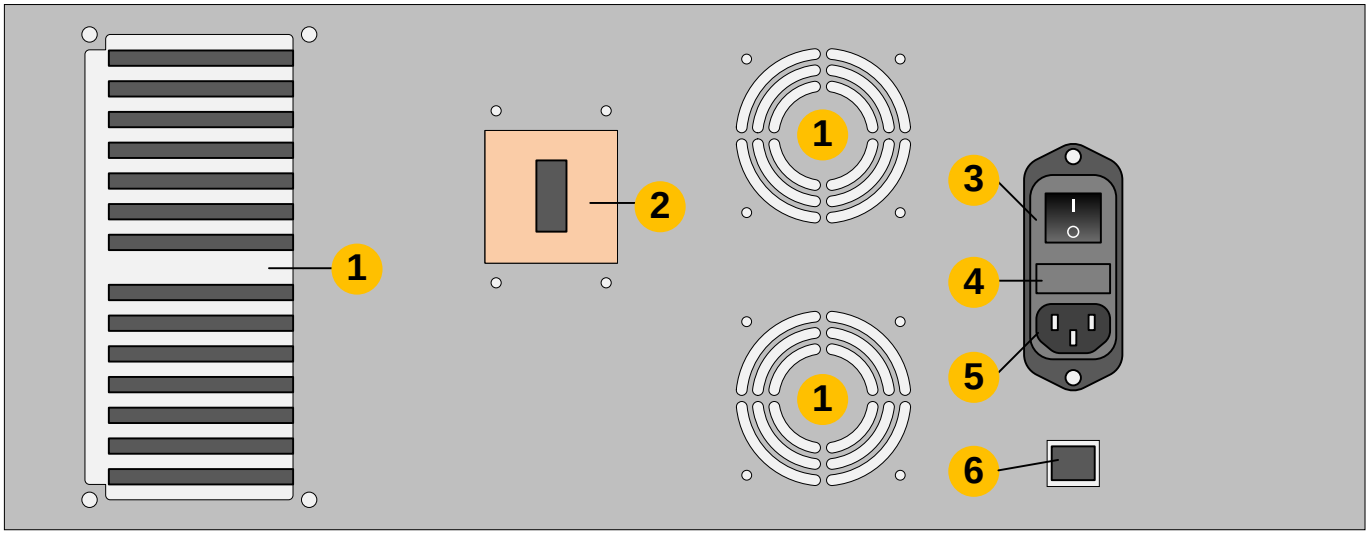
Rear panel



1		Air outlet
2	RF-output	Output of RF signal (WR-90); Screws:4x M4x8
3	Main Power switch	ON/OFF of the built-in power supply
4	Fuse	230 VAC / 4 AT
5	Supply voltage	230 VAC
6	LAN	

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Serial to Ethernet Adapter

The signal generator can be controlled and monitored via a LAN interface.
This feature is be done with the Serial to Ethernet Adapter UDS1100 from Lantronix.

On the control PC the CPR Manager Software from Lantronix must be installed.
After configuring the UDS1100 devices in the CPR Manager Software there are Virtual COM Ports on your system available.

For details about the CPR Manager Software please see the instruction from Lantronix.

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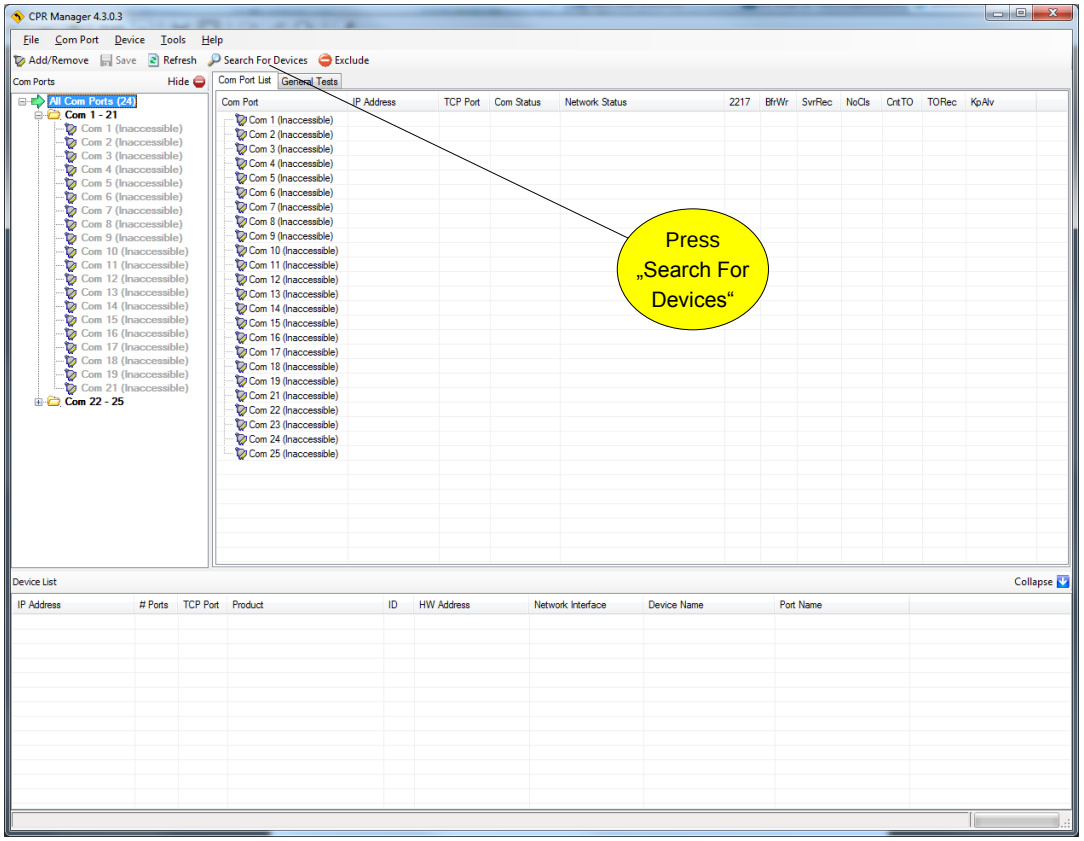

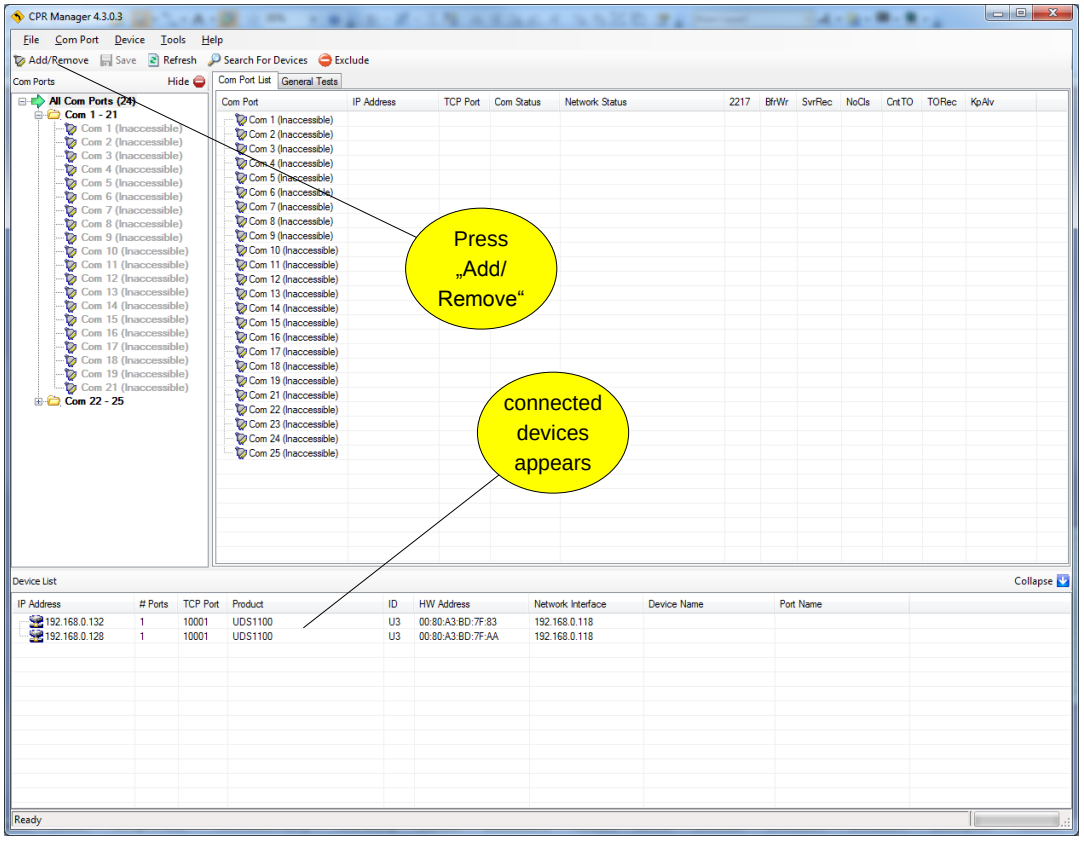

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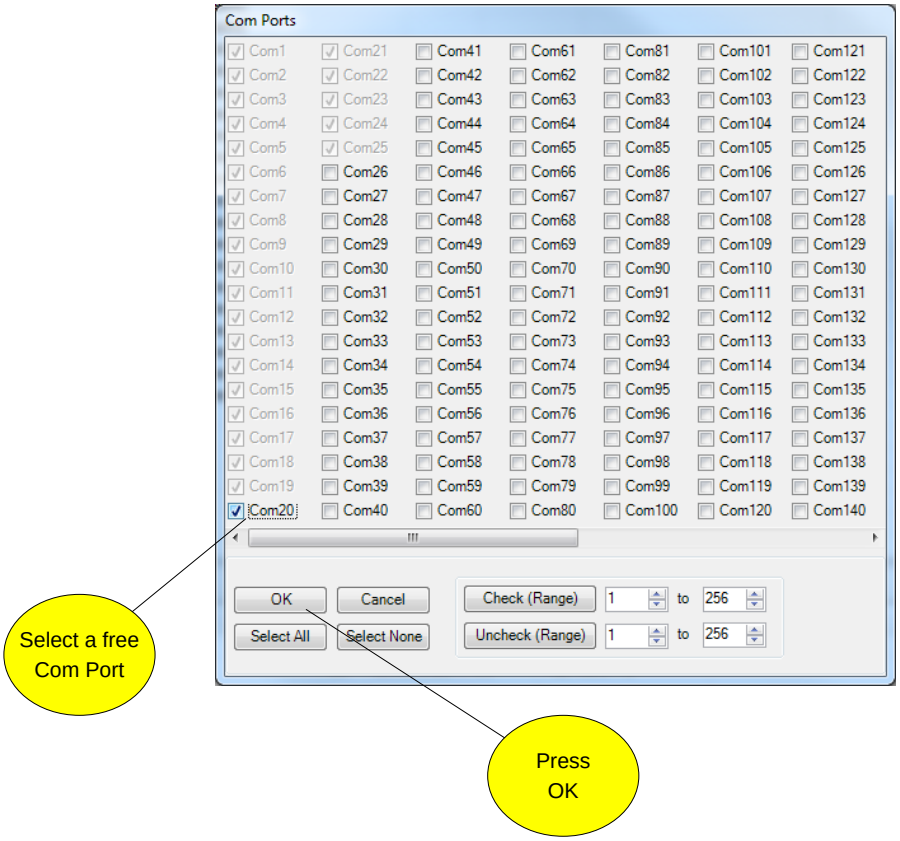

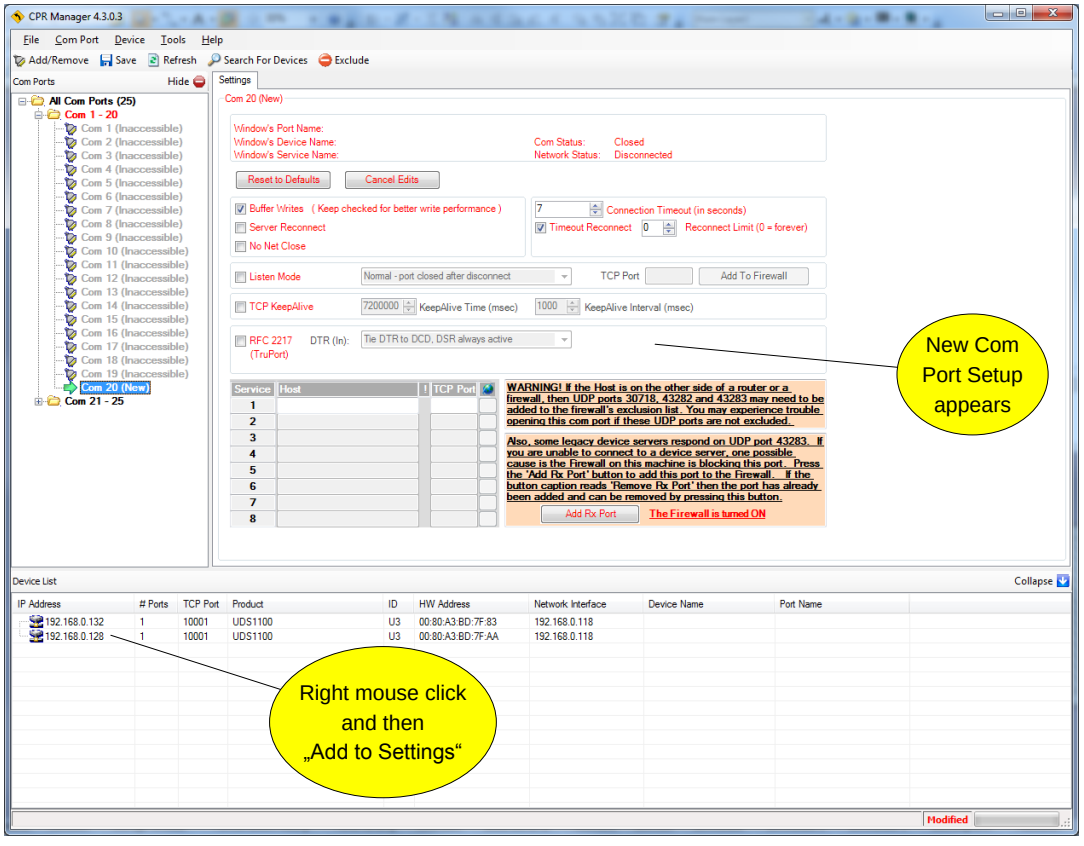

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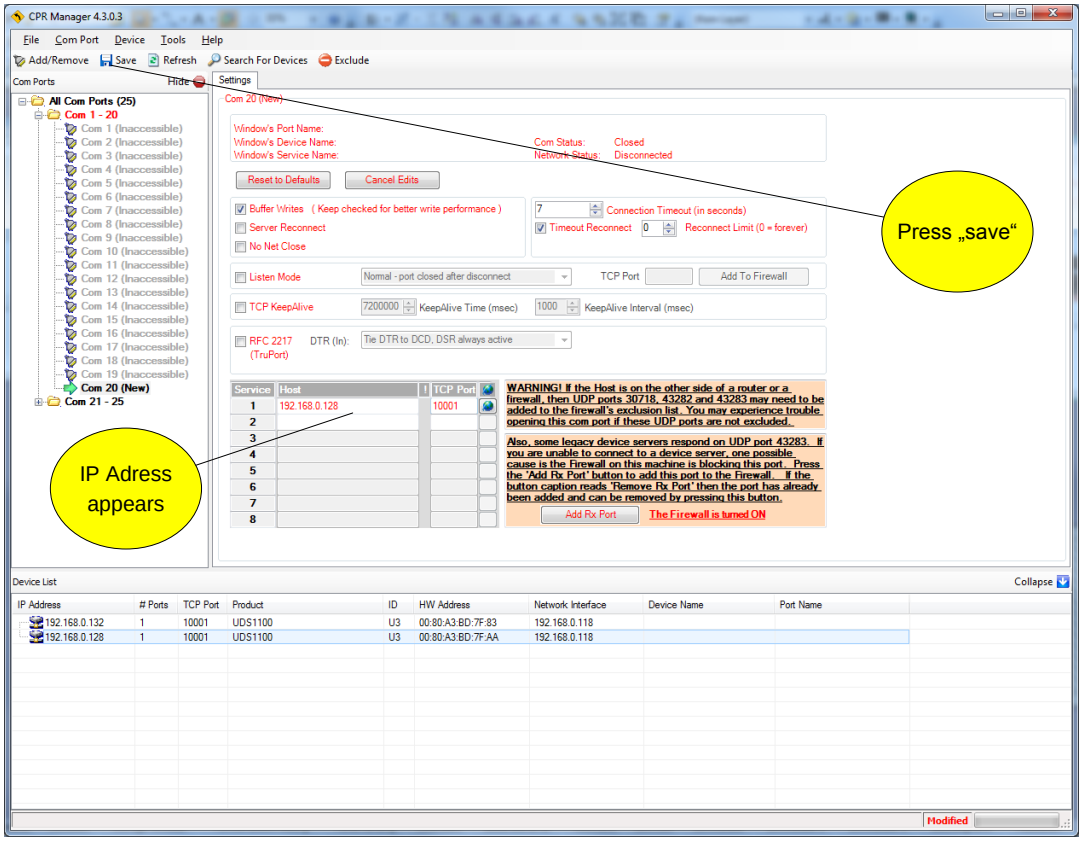

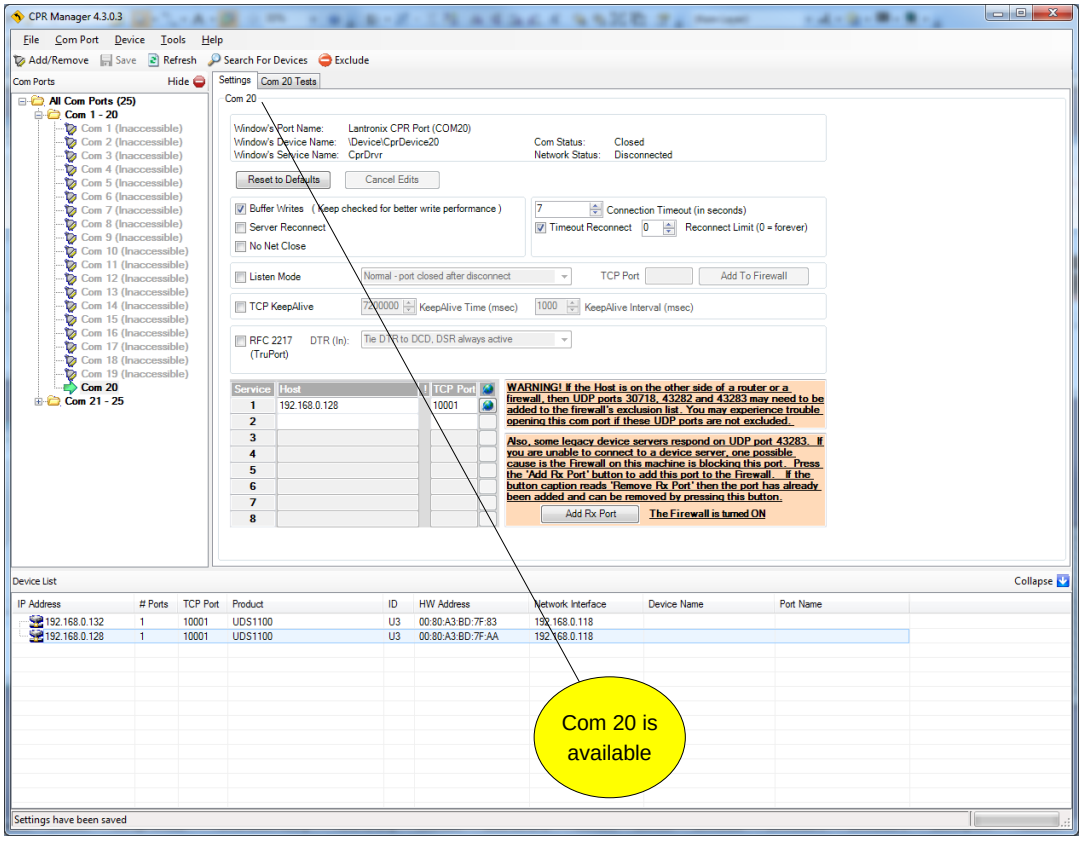

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LAN Interface (Virtual COM Port)

Readouts

sa

Status all
The signal generator returns its state as readable text.

t0

Temperature of amplifier
The signal generator returns the RF amplifier temperature. It returns always 2 characters. Example: 42. This means 42 degree celcius.

t1

Temperature of load resistor
The signal generator returns the RF load resistor temperature on the RF circulator. It returns always 2 characters. Example: 30. This means 30 degree celcius.

op

Output power
The signal generator returns the RF output power. It returns always 2 characters. Example: 49. This means 49 watts.

e0

Error 0 (overtemperature amplifier)
Returns 0 if the amplifier is in normal temperature range below 50 degree celcius.
Returns 1 if the amplifier temperature is between 50 and 60 degree celcius.
Returns 2 if the amplifier temperature is above 60 degree celcius and the signal generator shuts down the RF output.

e1

Error 0 (overtemperature load resistor)
Returns 0 if the load resistor is in normal temperature range below 80 degree celcius.
Returns 1 if the load resistor temperature is above 80 degree celcius and the signal generator shuts down the RF output.

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LAN Interface (Virtual COM Port)

Readouts

rf

RF ON ?
Returns 1 if the RF ON is on
Returns 0 if the RF ON is off

ps

Power supply ON ?
Returns 1 if the PS ON is on
Returns 0 if the PS ON is off

mon

Monitor voltage
Returns the monitor voltage of the RF amplifier in mV, the signal generator returns 5 characters
Example: 04235. This means 4235 mV

sup

Main power supply voltage
Returns the main power supply voltage in mV, the signal generator returns 5 characters
Example: 12255. This means 12255 mV

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LAN Interface (Virtual COM Port)

Control commands

RF1

RF ON - Switches the RF on, this command works only if the main power supply is on
If the signal generator accepts the command it returns A if the command is not accepted the signal generator returns N

RF0

RF OFF - Switches the RF off, this command works only if the main power supply is on
If the signal generator accepts the command it returns A if the command is not accepted the signal generator returns N

PS1

Power Supply ON - Switches the power supply on
If the signal generator accepts the command it returns A if the command is not accepted the signal generator returns N

PS0

Power Supply OFF - Switches the power supply off
If the signal generator accepts the command it returns A if the command is not accepted the signal generator returns N

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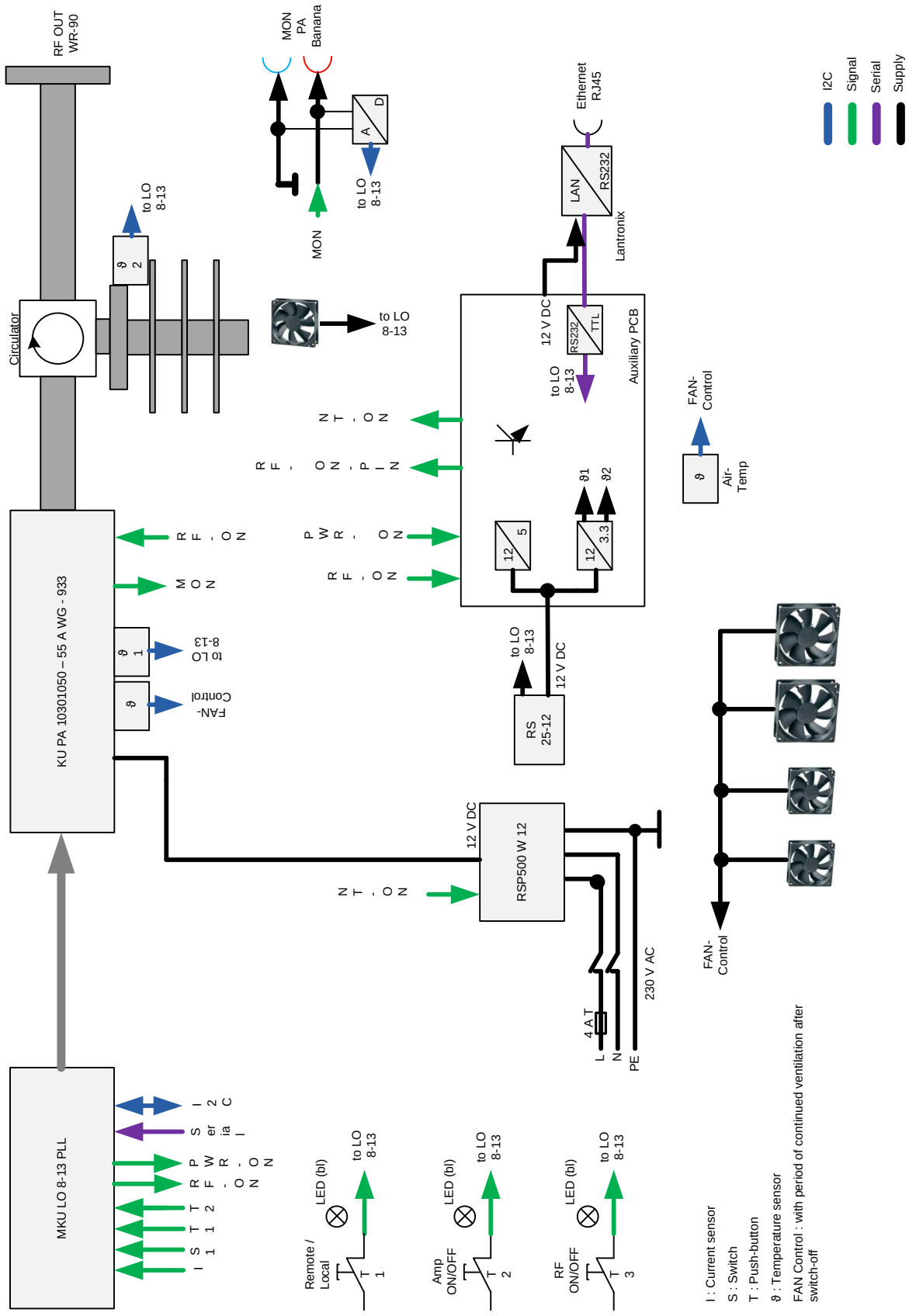

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