

PJS-R6-1360-2680-120

Portable Jamming System based on Reactive Signal Generation

Backpack Portable

The **Portable Jamming System PJS** from COMLAB is designed to inhibit remote control activities via wireless RC equipment and via public provider networks in a frequency range from 20 MHz up to 2700 MHz.

Features

- Power amplifier with high power output and outstanding efficiency. Total composite jamming power of 120 W
- 6 Frequency bands with multiple signal generators (simultaneous operation in all bands)
- 20...2700 MHz Frequency range in specified bands (Filters)
- Portable box, configurable to backpack
- Vehicle Mount Kit (Option)
- Simple to configure and operate

Jammed Applications

- Radio Control
- VHF Band
- UHF Band
- GSM Bands (900/1800/1900)
- 3G/UMTS Bands
- LTE Bands
- Toys 2.4 GHz
- ISM Bands
- WiFi 802.11b/g

Electrical Specifications

Reactive Signal Generation:

- | | |
|-----------|---------------------------------|
| • Range 1 | 20-270 MHz (ISM/VHF) |
| • Range 2 | 270-530 MHz (ISM/UHF) |
| • Range 3 | 700-1000 MHz (GSM900/iDEN/LTE) |
| • Range 4 | 1600-1900 MHz (GSM1800) |
| • Range 5 | 1900-2200 MHz (PCS1900/DECT/3G) |
| • Range 6 | 2400-2700 MHz (WLAN, LTE2.6) |

Power Amplifier Range:

- | | |
|---------------------|--------------|
| • Power Amplifier 1 | 20-600 MHz |
| • Power Amplifier 2 | 20-600 MHz |
| • Power Amplifier 3 | 500-2700 MHz |

Composite Output Power:

- | | |
|---------------|--------------|
| • Amplifier 1 | Typ. 25 Watt |
| • Amplifier 2 | Typ. 25 Watt |
| • Amplifier 3 | Typ. 70 Watt |

All main components of the system are monitored. In unlikely event of a failure the operator will take notice immediately.

Built in Test (BITE)

Impedance

50 Ω

Output return loss

≤12 dB

Antennas

3 Antenna Omni 360°

Power supply / Battery Charger

190-240 VAC, 50±1 Hz

Ext. power

24V/12A

Max. power consumption (continuous)

≤ 300Watt

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Operation Principles

Operating modes:

- Reactive Signal Generation RSG:
The system is measuring via Rx-Antennas the actual situation of transmissions and transmits via Tx antennas appropriate jamming signals on the same frequencies. This technology is used over the whole frequency band! It provides an excellent jamming performance because the jamming energy is applied where and when it is really needed (no waste of jamming energy).

Programming options

- Simple switch on/off operation.
- Strap carry remote control unit (Option)
- The RGS bands are programmable to allow frequency band exceptions from jamming. It allows the use of important communication channels of the authorities.
- Ethernet Interface to external Tablet PC or Laptop
- The portable jamming system provides air synchronisation capabilities. If multiple portable jamming systems are used in the same area they work synchronised. Thus all PJS have their record and transmission cycle at the very same time.

Use of multiple systems in parallel (Air Sync)

Mechanical Specifications

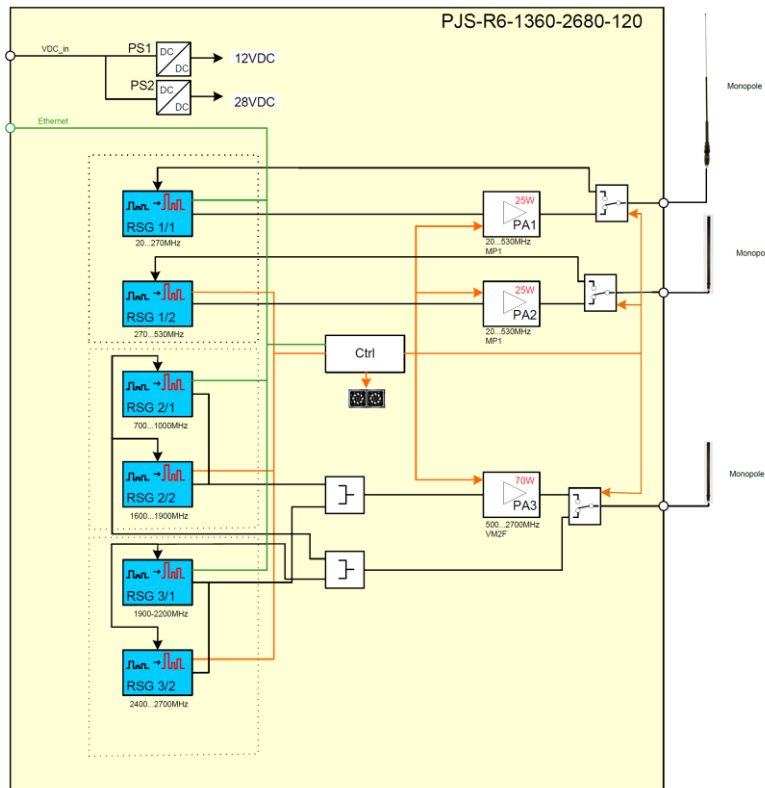
Single body	Max. 520x320x150mm
Weight	19.3 kg without antennas total (depending on accessories)
Colour	Black or dark green
Backpack	According Customer requirements

Environmental Conditions

Operation	Easy switch on with Remote control
Temperature range:	
• Operation	-20 to +50 °C
• Storage	-25 to +85 °C
Relative ambient humidity	95 % non condensing
Ingress Protection	IP 54

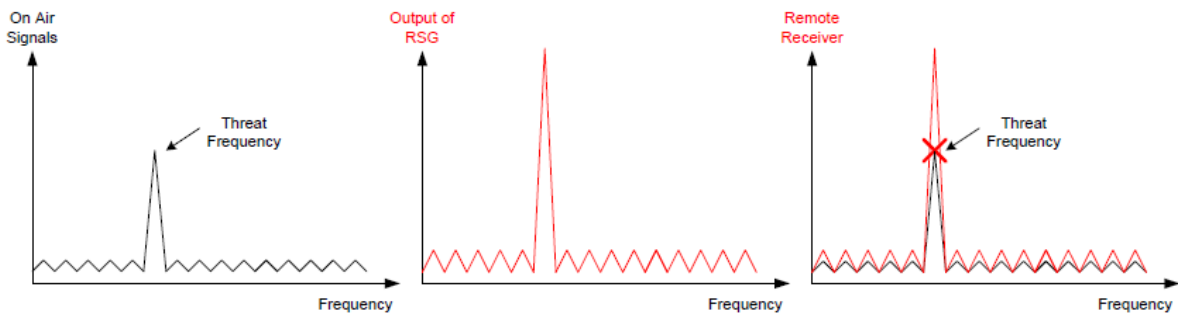
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Block Diagram

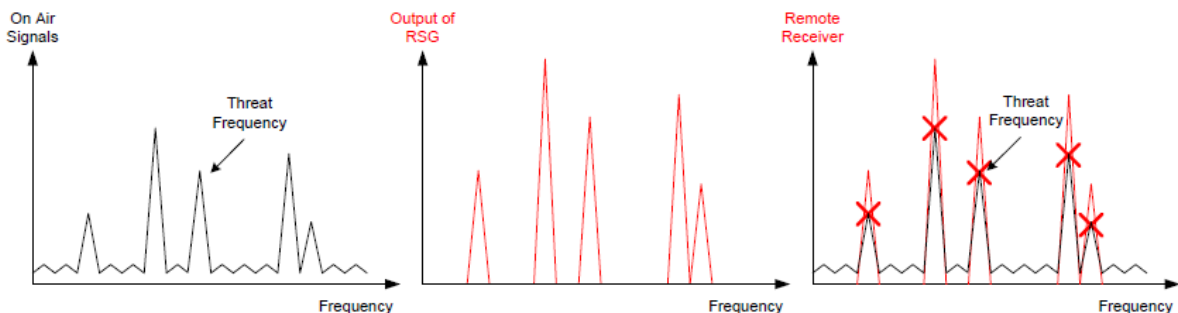


Working Principle of RSG

The on air signals are detected immediately and overpowered by the jammer. The RSG is in any case faster than the decoder in the RCIED trigger. The Figure below shows a possible scenario of the RSG operation.



The RSG scans the frequency band. Within this frequency band the RSG detects all carrier frequencies that could be used for unwanted actions. Then the RSG generates the required output immediately and jams the unwanted signal by a certain dB amount.



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The RSG has still an excellent performance even if there are multiple carrier frequencies in the air that could be used for unwanted actions. If there is carrier frequency that should not be jammed, e.g. for convoy communication, the RSG can be programmed to ignore this specific frequency.

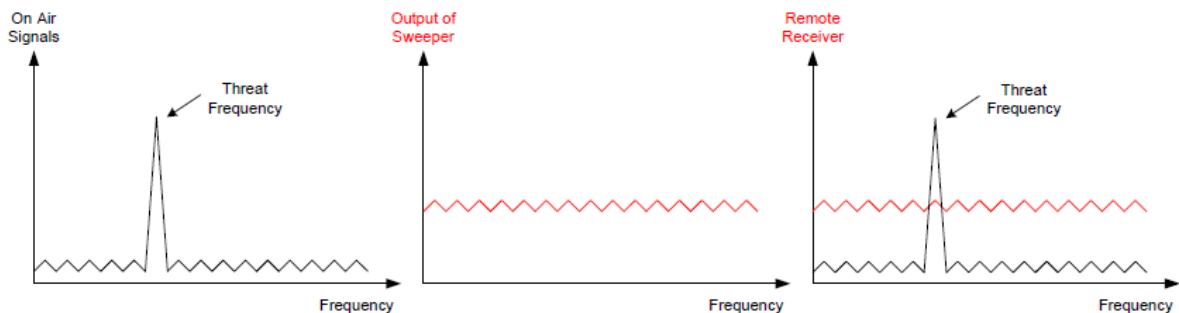
The RSG receiver part can detect carrier frequencies with -90dBm signal strength. This high sensitivity allows the RSG to jam even very weak signal. In case the threat signal is less than -90dBm it will be jammed with the basic noise emitted by the PJS.

Working Principle of regular Sweep Generator

Usually manufacturers of Jamming Systems rely on different types of sweep generators. The sweep generator has a constant power output from a certain start frequency to a certain stop frequency, as shown in the diagrams below.

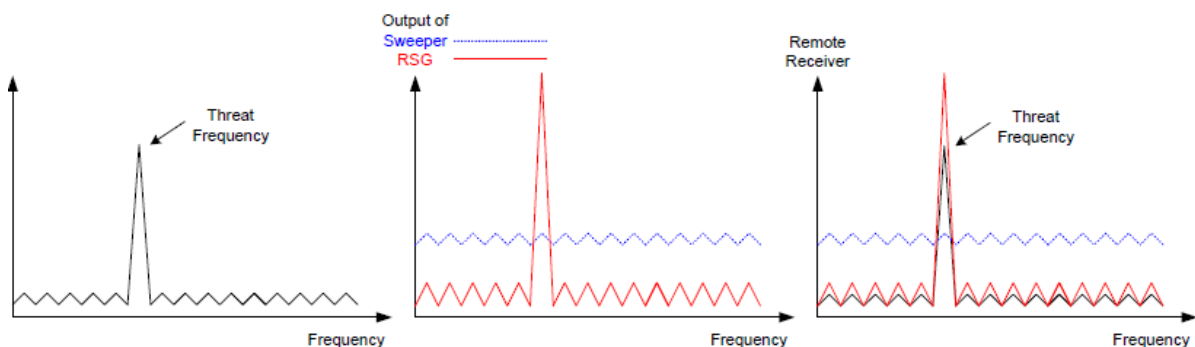


If not, the transmitter's triggering signal will be stronger than the jamming signal and the threat will not be neutralized.



Regular Sweep Generator Vs. RSG

Now when we compare a regular sweep generator with an RSG and both have same output power. Regarding the diagrams below, it is obvious that the sweep generator is wasting 99% or more of its power over the frequency band. Whereas the Reactive Signal Generator uses 90% or more of its power on the threat frequency.



In this scenario, with assumption that the threat comes from a strong transmitter, the Jammer with sweep generator would be unable to jam the unwanted signal. But for Jammers with RSG Technology jamming of strong carrier frequencies is not an issue.

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Radiation and Human Health

ICNIRP Guidelines

The PJS-R6-1360-2680-120 complies with ICNIRP Guidelines, although the Operator should wear a proactive hood when the Jamming System is transmitting on his back.

Benefits due to RSG

The reactive technology minimizes the radiation affecting to the operator, because there is only radiation when a possible threat is in the vicinity.

Main switch and Built in test

The PJS is very easy to use. The operator just needs to enable the main switch. After a few seconds the PJS is transmitting.

Main Switch

- Press Main Switch in order to switch ON or OFF the PJS
- When PJS is in ON condition the Main Switch will be enlighten by a LED
- When the battery voltage is low switch LED is blinking
- When the PJS is switched ON the RSG LED is RED for a short time
- During operation the RSG LED is OFF
- In case of a RSG failure the RSG LED is RED constantly
- When the PJS is switched ON the PAU LED is RED for a short time
- During operation the PAU LED is blinking RED
- In case of a PAU failure the PAU LED is RED constantly

Reactive Signal Generator LED

Power Amplifier LED



For detailed system monitoring it is possible to connect a tablet-PC or laptop to the PJS. Afterwards access to each sub-unit is available for successful troubleshooting procedure.

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Interfaces



DC connector

Ethernet

The PJS provides a DC and Data connector.

The DC connector has functions as listed below:

- Charging of internal battery
- Use of additional battery pack
- Power supply from external DC/DC or AC/DC converter

The use of external DC/DC or AC/DC converter (Optional) allows unlimited operation of the PJS.

The Data connector has functions as listed below:

- Ethernet connector which can be connected to the tablet-PC or laptop. It is used for maintainers to have access for special configuration purposes.
- At the same connector a remote control can be connected. The optional wired remote control is used i to switch ON and OFF the PJS from a 20m distance.

Product Code

PJS-R6-1360-2680-120

PJS-MAN

PJS-TK

PJS-ANT-310-580

PJS-ANT-1640-2320

PJS-VEHICLE MOUNT

Other options on request

Portable Jamming System 20-2700MHz, 120Watt

Portable Jamming System Backpack frame

Portable Jamming System transportation kit (moving wheels)

Portable Jamming System Antenna 20-600MHz

Portable Jamming System Antenna 480-2800MHz

Magnetic mount for antennas, antenna cables, strap set (Option)

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Annexures

PJS-ANT-310-580
150cm, folded 77cm



PJS-ANT-328.5-287
66cm



PJS-ANT-1745-1910
54cm



PJS-VEHICLE MOUNT



Warranty

Warranty

1 Year

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Figures

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Transportation Box and Adapter Plate



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Battery Specifications

Voltage	24V (nominal)
Capacity	19.8 Ah
Discharge Current (continuous)	25A max.
Charging Current	20A max.
Protection	BMS integrated
Dimensions	Approx. 235x160x70mm
Battery Cell Type	Lithium Iron Phosphate (LiFePO4)
Battery Life	> 1000 Cycles (DOD90%) > 2000 Cycles DOD80%
	Battery Pack should be replaced by new one after 3 to 5 years
Self-discharge	< 5% (per month)
Temperature range (Charging)	0°C to +60°C
Temperature range (Discharging)	-30°C to +60°C
Temperature range (Storage)	-30°C to +60°C

Outline Drawing (in mm)

