

PORTABLE JAMMING SYSTEM: PJS-R6-1360-2680-120 JAMMER

CONFIDENTIAL

The Portable Jamming System PJS 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 in specific bands. The exiter is even capable for operation up to 3000MHz.

FEATURES

- Power amplifier with high power output and outstanding efficiency. Total composite jamming power of 120 W
- Reactive, Active and Hybrid Operation Mode
- 6 Frequency bands with multiple signal generators (simultaneous operation in all bands)
- Programmable Sub-Bands & Programmable Notch Filter
- Portable box, configurable to backpack
- Vehicle Mount Kit (Option)
- Simple to configure and operate
- Battery on outer face, can be replaced easily in field
- MIL STD 810



JAMMED APPLICATION

- 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
RANGE 2	270-530 MHz(ISM/VHF)
RANGE 3	690-990 MHz (GSM 900/iDEN/LTE)
RANGE 4	1600-1900 MHz (GSM 1800)
RANGE 5	1900-2200 MHz(PCS 1900/DECT/3G)
RANGE 6	2400-2700MHz(WLAN,LTE 2.6)
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.70Watt
BUILT IN TEST(BITE)	All main components of the system are monitored. In unlikely event of a failure the operator will take notice immediately
TECHNICAL FEATURES	
IMPEDANCE	50 Ohm
OUTPUT RETURNS LOSS	≤ 12dB
ANTENNAS	3 Antenna Omni 360°
POWER SUPPLY/BATTERY CHARGER	190-240 Vac,50 ±1 Hz
EXT.POWER	24 V/25 A
MAX POWER CONSUPTION (CONTINUOUS)	≤ 400 Watt

OPERATION PRINCIPLES

OPERATING MODES:

- Reactive Signal Generation RSG:

The system is measuring via Rx-Antennas the actual situation of transmissions in the working area of the PJS and transmits via Tx antennas appropriate jamming signals on the same frequencies. The measuring time is 100 μs typ. The signal will be transmitted repeatedly afterwards up to the next measuring cycle.

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).

- Active Signal Generation with RSG:

A Base Spectrum Band is an active Band within the RSG. It continuously transmits the Jamming Signal regardless of present Receiving Signal (Active Technology).

- Hybrid Signal Generation:

In the Hybrid Mode the PJS offers possibility to use reactive and active technology within the same RSG Band.

- Ethernet Interface to external Tablet PC or Laptop
- Simple switch on/off operation.
- Strap carry remote control unit (Option)

PROGRAMMING NOTCH FILTER

- The RSG bandwidth is programmable to allow frequency band exceptions from jamming. It allows the use of important communication channels of the authorities. It is possible to program a notch frequency which will not be jammed for own communication.

PROGRAMMABLE SUB-BANDS

- Up to 6 Reactive Sub-Bands can be programmed in a RSG-Band. For each Sub-Band start- and stop-frequency as well as relative gain can be programmed. Since there are 6 RSG-Bands, a total of 36 Reactive Sub-Bands can be programmed.
- Up to 8 Base Spectrum Bands can be programmed in a RSG-Band. For each Base Spectrum Sub-Band start- and stop-frequency as well as relative power level can be programmed. Since there are 6 RSG-Bands, a total of 48 Base Spectrum Bands can be programmed.

USE OF MULTIPLE SYSTEMS OF MULTIPLE SYSTEMS IN PARALLEL (AIR SYNC)

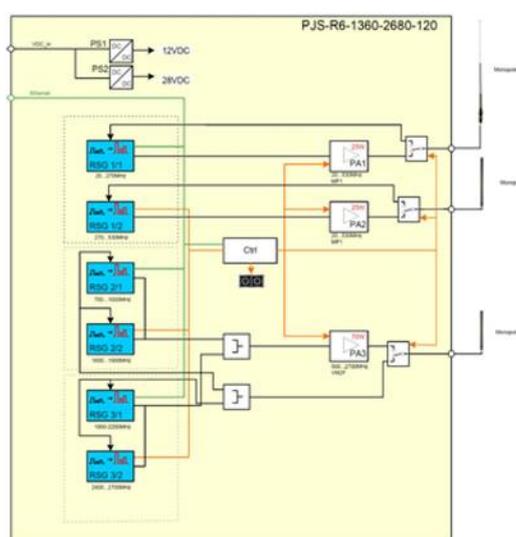
- The portable jamming system provides air synchronization capabilities. If multiple portable jamming systems are used in the same area they work synchronized.

Thus all PJS have their record and transmission cycle at the very same time.



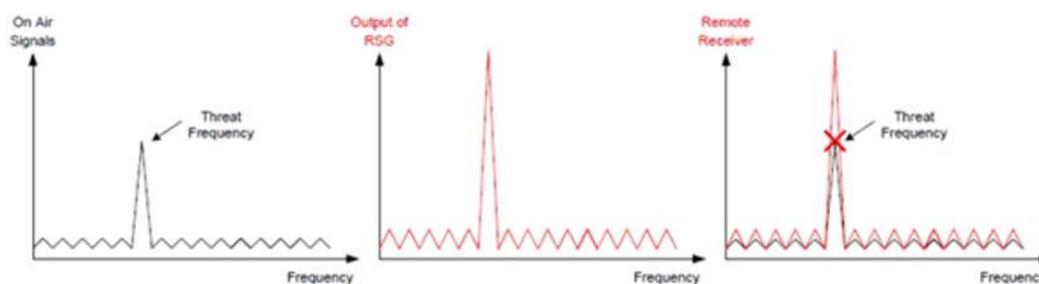
MECHANICAL SPECIFICATIONS	
SINGLE BODY	Max 598 x 320 x 150 mm
WEIGHT	≤15.5 Kg (Incl.Antennas, Single Battery)
COLOR	Olive green or costumer color
BACKPACK	According customer requirements
ENVIROMENTAL CONDITIONS	
TEMPERATURE RANGE	Operation: -20 to +55°C Storage: -20 to +85°C
RELATIVE AMBIENT HUMIDITY	95% non condensing
INGRESS PROTECTION	Blowing rain according to MIL STD 810G

Block Diagram

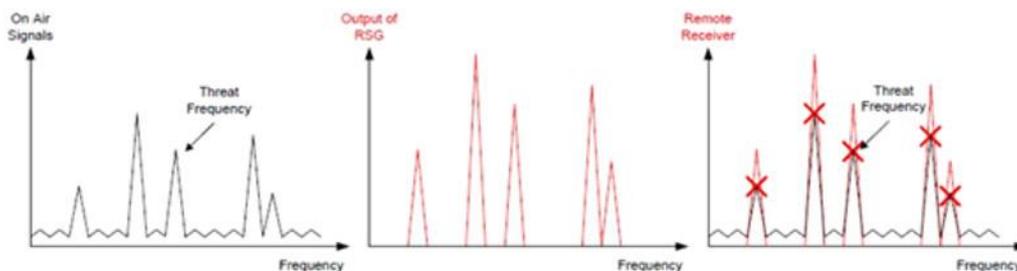


WORKING PRINCIPLE OF RSG

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.

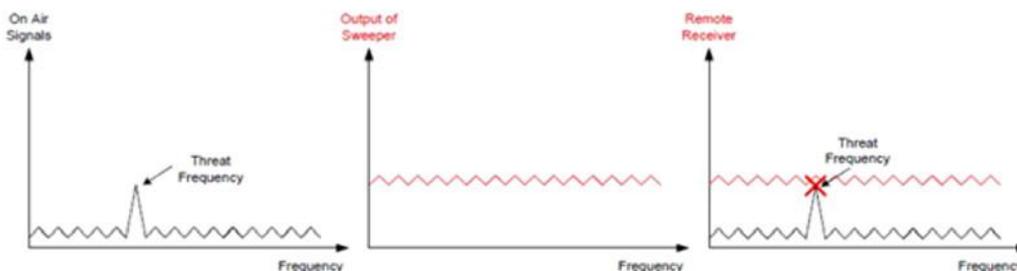


The RSG has still an excellent performance even if there are multiple carrier frequencies in the air that could be used for unwanted actions. If there is carrier frequency that should not be jammed, e.g. for convoy communication, the RSG can be programmed to ignore this specific frequency.

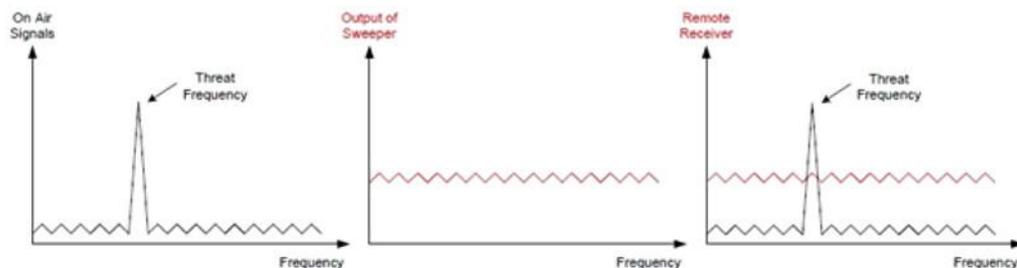
The RSG receiver part can detect carrier frequencies with -90dBm signal strength. This high sensitivity allows the RSG to jam even very weak signal. In case the threat signal is less than -90dBm it will be jammed with the basic noise emitted by the RSG.

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.

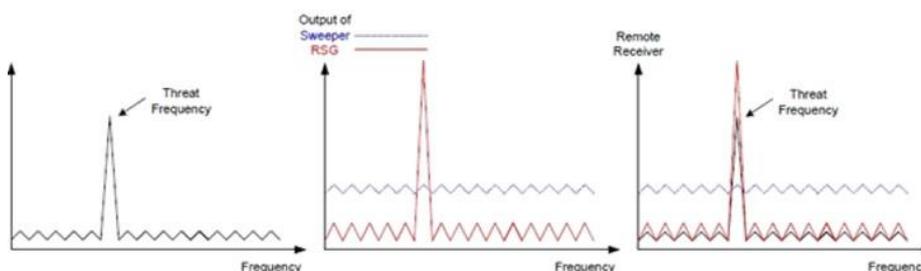


If not, the transmitter's triggering signal will be stronger than the jamming signal and the threat will not be neutralized.



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.

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 thread 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

REACTIVE SIGNAL GENERATOR LED

During operation the RSG LED is OFF

- In case of a RSG failure the RSG LED is RED constantly

POWER AMPLIFIER LED

When the PJS is switched ON the PAU LED is RED for a short time

- During operation the PAU LED is off
- In case of a PAU failure the PAU LED is RED constantly or blinking

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.

INTERFACE

The Data connector has functions as listed below:

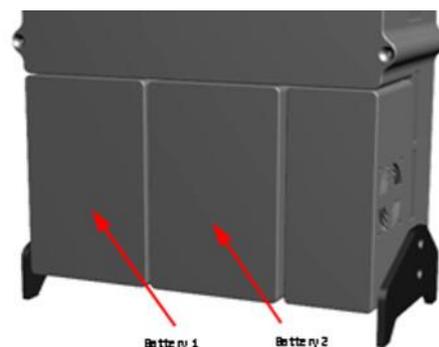
- Ethernet connector which can be connected to the tablet- PC or laptop. It is used for maintainers to have access for special configuration purposes.
- At the same connector a remote control can be connected. optional wired remote control is used i to switch ON and OFF from a 20m distance.





BATTERY SLOTS

- The PJS is powered from hot swappable Lithium Battery Packs. There are two Battery Slots.
- Alternatively the Battery Packs can be replaced with a AC/DC or DC/DC converter for unlimited operation time of the PJS-R6
- In order to charge the Batter Pack, it has to be detached from the PJS-R6 and inserted in the Battery Charger.



BATTERY SPECIFICATION	
VOLTAGE	25.2V (Standard)
CAPACITY	11.6Ah
DISCHARGE CURRENT	20A
CHARGING (CONTINUOUS)	Max 5 A
PROTECTION	BMS Integrated
DIMENSIONS	180 x 110 x 85 mm
TYPE BATTERY	Lithium Cobalt Oxide
LIFE	>300(Charge to 29.4 V/ Discharge to 19.25 V)
SELF DISCHARGE/STORAGE	Approx 1 year@25°C(Battery 60%charged prior)
CHARGING TEMPERATURE	-20°C to + 60°C
DISCHARGING TEMPERATURE	-20°C to + 60°C
TEMPERATURE RANGE (STORAGE)	-20°C to + 60°C

ACCESSORIES	
	Antenna 150cm, folded 77 cm
	Antenna 66 cm

ACCESSORIES	
	Antenna 54 cm
	Vehicle Mount