

WEATHER RADAR CORE

PRECIPITATION WRCP-1



DESCRIPTION

The **mini weather radar WRCP-1** is a small, high technology unit which is portable or easily mounted. It has a reach of 20-30 km, and is very accurate for precipitation nuclei and storms in real time. The WRCP-1 also comes at a very competitive price.

The **WRCP-1** has *FMCW Performance PLUG-IN technology*, which means it is a zero radiation unit compared to other radar models. Its emission is less than 20% of the power of a normal mobile phone and about 0.1% that of a large radar. The **WRCP-1** can be securely mounted anywhere without presenting any radiation danger to the user.

The **WRCP-1** does not need 2-3 minutes for the magnetron to warm up, as with other radars.



FEATURES

The broadband radar technology is 100% solid state with InstaOn™ technology, and is operational within 16 seconds. Its rapid rotation of 24-36 rpm provides detailed monitoring information from the precipitation cell. The WRCP-1 has no rival at a short range, due to its low power consumption and 12-24 V DC supply. Power consumption: 1.45A (20W@13.8V DC); Wait 170mA (2.5W).

The **WRCP-1 radar** is proposed as the best equipment for real-time monitoring of weather conditions in areas of complex topography. ***It can be used for applications in urban areas and for monitoring canoeing or rafting routes, for zonal information about the possibility of local storms, for example.*** The storm cell tracking response is very rapid due to the high processing speed of the antenna, compared with larger radars.

The **WRCP-1** is delivered as an easy installation unit, consisting of an antenna, a connection box and a PC with **SWRCP-V.01 software**. Its easy installation, connection and operation require no training.

The radar WRCP-1 has an antenna of diameter 489 mm, height 280mm and weight 7.4kg; ideal for transporting in a small briefcase or backpack. The entire unit with communication box + laptop weighs 12kg. A desktop PC is available for permanent locations.

The WRCP-1 is designed for maximum portability and to withstand vibration and dust, etc during transport.

SOFTWARE SWRCP-V.01

The WRCP-1 weather radar system includes a laptop or desktop computer with pre-installed SWRCP-V.01 software to act as a web server and database for recordings. The operating system is Linux.



All radar functions are controlled via an easy-to-use and intuitively designed website. The configuration allows users to select ranges of 1-50 km with all other radar operating parameters. The user can select the radar base map anywhere in the world with internet access. If internet access is not available when recording images, maps can be downloaded once the computer connects to the internet. The recording and playback options allow the operator to record weather events even when the system is not connected. These sessions can be recorded and played back later through the web interface, either from the server computer itself or from another computer connected to the server network. All these features make this radar the most cost-effective, powerful, versatile and economical on the market. Because of the web environment, the system can have a number of users connected to a single radar, using different devices, such as tablets, smartphones and computers, regardless of the operating system they use.

WRCP-1 RADAR USES

- ✦ Local monitoring of the formation of precipitation nuclei.
- ✦ Surveillance of agricultural fields.
- ✦ Flood monitoring for rivers and paths.
- ✦ Sports and competition events.
- ✦ Monitoring of storm tracking mobile units.
- ✦ Defence system for tactical UAVs.

USES OF METEOROLOGICAL RADAR

Natural disasters, floods and tropical storms are increasingly more numerous in many regions around the world. During recent years, flood damage has increased exponentially due to increasingly intense and concentrated rainfall flooding population areas. The experience of many years has shown that flood control measures by themselves are not able to prevent loss of life and property. Radar equipment is required for weather forecasting and is the basis for management and successful prevention and decision making. Meteorological radar is the most important piece of equipment for making hydrometeorological decisions, due to the ability to observe and detect precipitation nuclei with high resolution. The smaller X-band radars are a good alternative at a low price for this functionality. These types of radar devices are used very successfully in areas with lots of cloudiness or precipitation, as their microwave system does not interact with water or mist in the sky and is more precise than large fixed radars.

Many countries are incorporating mobile radar systems with fixed installations, due to their low maintenance and low installation costs. The radars are used to improve short-term quantitative precipitation forecasts of 30-60 minutes, called nowcasts. Monitoring storm cells is very important to analyse their behaviour and predict their future locations.



SPECIFICATIONS

Features	Technical data
Conformity	CE, FCC (ID: RAY3G4G), IC: 4697A-3G4G
Environmental	IEC60945: 2002 Operating temperature: -25° to +55°C (-13° to +130°F) Relative humidity: +35° C (95° F), 95% RH waterproofing: IPX6
Relative wind speed	51 m/sec (Max:100 Knots)
Power consumption (with 10 m cable)	Operating: 20W a 21 W a 13.8Vdc Stanby: 2.9W a 13.8Vdc ~ 170mA
DC input (end of radar cable)	9 VDC to 31.2Vdc (12/24 V systems) Minimu input voltage 10.75Vdc
Transmitter source	No magnetrón – (Transistors)
External dimensions	Height 280 mm x Diameter 489 mm (Altura 11" x Diámetro 19.3")
Scanner weight (without cable)	7.4 kg (16.31 lbs)
Radar antenna parameters	
Radar range	50 m (200 ft) to 66 km (36 nm) con 18 range settings (nm/sm/km)
Rotation	24/36/48 rpm +/-10%
Transmitter frequency	X-band - 9.3 to 9.4 Ghz
Transmitter	No magnetrón (no preheating time)
Polarisation plane	Horizontal
Transmitter maximum	165 mW (nominal)
Sweep repetition frequency	200 - 540 Hz (dependent mode)
Sweep time	1.3 ms+/- 10%
Sweep bandwidth	75 MHz max
Horizontal beamwidth (Tx and Rx antena)	5.2°+/-10% (-3 dB ancho)
Separation Control objective	OFF: 5.2°+/-10% (-3 dB width) Bajo: ~4.4°+/-10% (-3 dB width) Medio: ~3.2°+/-10% (-3 dB width) Alto: ~2.6°+/-10% (-3 dB width)
Vertical Beamwidth (Tx y Rx)	25°+/-20% (-3 dB width)
Sidelobe level (Tx y Rx)	Below -18 dB (inside ±10°);Below de -24 dB (±10°)
Operating noise	Less than 6 dB
Wiring / Installation	
Com protocol	High-speed Ethernet
RI10 connector	NMEA2000 / SimNet with interface box RI10
Connection cable length	10 m (33 ft) Cable de B&G 20 m (65.6 ft)
Maximun cable length connection	30 m (98.5 ft) – available as option
Screws (4)	M8x30 - 304 stainless steel