IRCOS JSC

ARTIKUL-H1

Manpack Wideband Automatic Direction Finder

ИРКОС

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ARTIKUL-H1 Manpack Automatic Direction Finder is designed for direction finding and localization of radio emitters. Due to its small size and light weight, **ARTIKUL-H1** can be used in hard-to-reach places.

In terms of its functions and capacities, it is as good as mobile, portable or fixed direction finders. **ARTIKUL-H1** Manpack Direction Finder can be used both as a standalone unit and as an option to mobile or fixed direction finding station to handle “the last mile” tasks.

The direction finder works as a correlative interferometer. The direction finder works in the range between 25 and 3000 MHz. However, for frequencies below 110 MHz, DF parameters (RMS and field sensitivity) are not rated. Direction finding accuracy depends on the frequency range. In the lowest part of the frequency range, the direction finding error may reach 10-15 degrees but at the range from 150 MHz and higher, the error will not exceed 2-3 degrees. The weight of the direction finder equipment does not exceed 14 kg. The continuous run time of that unit is minimum 4 hours; with an additional battery it can run up to 10 hours.

ARTIKUL-H1 can function in three different modes: Handheld, Fixed and Mobile.

The main mode is the Handheld mode. All **ARTIKUL-H1** components are installed on a special frame on the back of operator. The equipment includes an antenna system, **ARTIKUL-2K** Two-Channel Panoramic Radio Receiver and a set of batteries. The direction finder is controlled from a small notebook.

Before starting the unit, the operator shall connect the notebook and the panoramic receiver with a control cable. The notebook can be fixed on a special frame on the chest of the operator. This frame has a special retention screw to fix it in a horizontal or vertical position. The frame to install the direction finding equipment has two straps to carry on operator’s back. For a better fixation of the equipment frame, there are two additional straps – chest strap and waist strap.

After the equipment frame is safely secured on the operator’s back, the operator shall move the antenna in its operation position using a special lever on the frame. The operator can easily move the antenna in its operation position and back without any need to dismount the frame from his back.

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Fig. 1. ARTIKUL-H1. Operation in Handheld mode

Such a solution is convenient for crossing difficult areas, brushwood, bushes etc. – the operator can retract the antenna system, pass through the obstacle and then move it up again without any need to shutdown his equipment..

After the antenna system is moved back in its operation position, the operator should run **SMO-PPK** application to control his panoramic / direction finding unit. **SMO-PPK** application is software to handle all general radio monitoring tasks including spectrum panoramic analysis, radio signal search, listening to demodulated broadcasting, radio signal recording and emitter direction finding.

In the Fixed mode, the antenna system of that handheld direction finder is attached to a special portable mast with the length up to 4 meters. Such a solution ensures a better radio accessibility and a larger coverage area to detect emitters

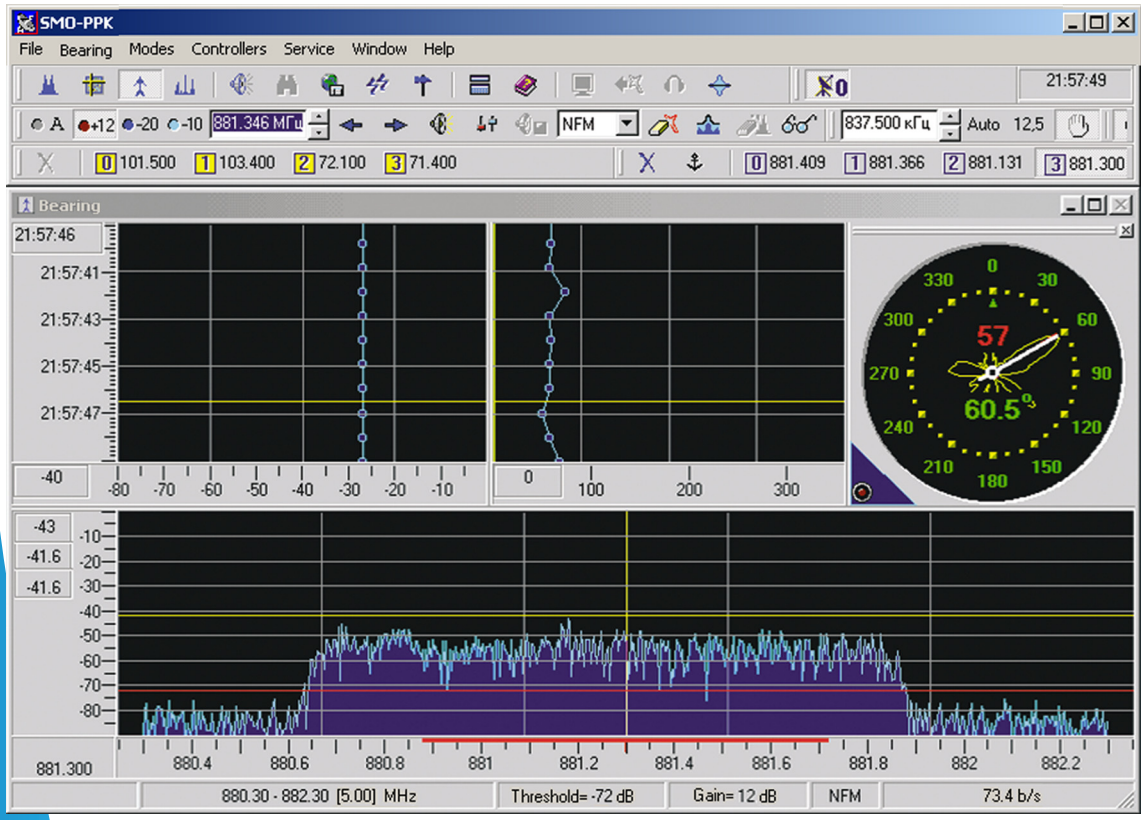


Fig. 2. SMO-PPK Software Package

Fig. 3. ARTIKUL-H1. Operation in Fixed mode

and take their bearings. Each meter from the ground adds about 4-6 dB to the level of received signals. Therefore, when the antenna system is installed on the mast, the direction finder coverage area will be larger.

To start operation in the Fixed mode, the operator should take his headphones off, put the antenna system in its transportation position, dismount the frame and put it on the ground. Then, he should fix his notebook on that frame like on a table and mount the tripod, which used as a mast. After that, the operator shall detach the antenna system from the frame and install it on the tripod.

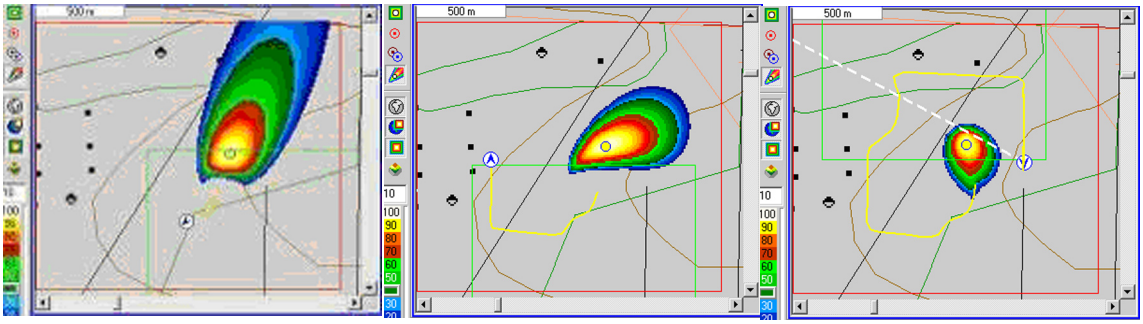
The antenna system includes an electronic compass to ensure an automatic reference to the north for that system; therefore, the operator does not have to expend time in doing it manually.

Also when you switch from the handheld mode to the fixed mode, you need not shutdown the equipment and thus you also save your time.

When the antenna system is installed on the tripod and raised to the required height, the operator should simply unfold the chair (included in the equipment set) and proceed with his work.

In the Mobile mode, the antenna system of the handheld direction finder is mounted on a roof of a car or other vehicle. When bearings are taken from a moving

Fig. 4. ARTIKUL-H1. Operation in Mobile mode



a) The beginning of the movement

b) Continuation of the movement

c) Further continuation of the movement

Fig. 5. Localization of the transmitter with single mobile direction finder and STALKER

vehicle, there are some additional options to quickly determine the location of emitters using just one direction finder. This is achieved through **STALKER** – a special navigation and mapping software (optional).

The antenna system of a handheld direction finder on the car roof is installed on a special bracket. The bracket itself is fixed on the roof by magnets and ensures a proper fixation of the antenna system at the speed up to 100 km/hr.

Basic Specifications

General	
Operating frequency range, receiving mode	25 – 3000 MHz
Intermodulation free dynamic range (3rd and 2nd order)	75 dB
Receiver sensitivity	0.8 - 1.5 μV
Receiver tuning resolution	1 Hz,
Operating set weight (operation when caring by operator)	14 kg
Internal battery supply	Yes
Vehicle power supply	10 - 32 V
AC network power supply	90 - 250 V
Continuous battery run-time for the basic configuration, min.	4 hours
Panoramic analysis and frequency saving	
Frequency range load recording time	24 hours
Registered parameters	Recording based on amplitude/ frequency/time coordinates
Rate (with 6 kHz discreteness)	1600 MHz/s
Single-channel and multi-channel automatic direction finding	
Direction finding method	Correlative interferometer
Operating frequency range	110 – 3000 MHz
Sensitivity within 110 - 3000 MHz range	1 - 6 μV/m
Instrument accuracy (RMS) within 110 - 3000 MHz range	2° - 5°
Radio channel monitoring and broadcast recording	
Continuous saving time	24 hours
Types of recorded data	Signal, time, frequency, bearing
Technical analysis, radio signal recording and postprocessing	
Frequency band width for IF signal fragment recording	2 MHz, 250 kHz, 100 kHz, 50 kHz, 25 kHz, 12 kHz, 6 kHz.

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