8. Additional equipment and accessories.

The device initially has a factory calibration entered into non-volatile memory. The relevant information is displayed in the lower information line of the screen. The calibration plane corresponds to the port (1) of the device, intended for connecting the devices under test and the load (TEST PORT). To increase measurement accuracy when using optional adapters and cables, a full one-port calibration must be performed using a set of calibration standards, purchased separately.

ID. 1817 N-MF06 50 Ohm SOL (Short/Open/Load) Calibration Kit with “N” connectors.

ID. 1795 SMA-MF06 50 Ohm SOL (Short/Open/Load) Calibration Kit with SMA Connectors

A complete guide for setting up, calibrating, taking measurements, operating the device and updating the device firmware is available on the websites www.arinst.net and www.kroksw.com.

7. Warranty

The manufacturer guarantees that this product meets the specifications specified in this document. The warranty period is 12 months from the date of purchase. During this period, the manufacturer provides a free warranty service.

The warranty does not cover the following cases:

- the warranty period of the product has expired from the date of sale;
- there are no documents confirming the date and fact of purchase of the product;
- the product intended for personal needs was used for commercial activities, as well as for other purposes that do not correspond to its intended purpose;
- violations of the rules and operating conditions set out in the Operating instructions and other documentation provided to the Buyer complete with the product;
- if there are traces of unskilled repairs or attempts to open the Product outside an authorized service center, as well as due to unauthorized interference with the software;
- damage (deficiencies) of the Goods caused by the impact of virus programs, interference with the software, or the use of third-party software (non-original);
- the defect is caused by force majeure (for example, an earthquake, fire, lightning strike, instability in the electrical network), accidents, deliberate or careless actions of the consumer or third parties;
- mechanical damage (cracks, chips, holes) arising after the transfer of the product to the Buyer;
- damage caused by exposure to moisture, high or low temperatures, corrosion, oxidation, ingress of foreign objects, substances, liquids, insects into the product;
- the defect occurred due to the supply of a signal or voltage or current exceeding the permissible values for this Product to the input connectors, terminals, housing;
- the defect is caused by natural wear of the Product (for example, but not limited to: natural wear of connectors due to frequent connection/disconnection of adapters).

Warranty obligations apply only to defects caused by the fault of the manufacturer. Warranty service is performed by the manufacturer or an authorized service center.

Date of sale_____Seller_____

(date, month, year) (store name or stamp)

I have read the instructions and operating rules _____

(Buyer's signature)

1818

Kroks Plus LLC
394005, Voronezh, Moskovsky pr. 133-263
+7 (473) 290-00-99
info@kroks.ru
www.kroks.ru

Portable vector network analyser ARINST VR-23-6200

Manual. Passport products.

1. Purpose.

Portable single-port vector network analyzer ARINST VR 23-6200 (Vector Reflectometer) is designed to measure the matching characteristics of passive and active radio devices[1] (antennas, cables, filters, attenuators, amplifiers, etc.). The device allows you to measure the parameters of the complex reflection coefficient, standing wave ratio (VSWR), impedance, admittance, phase, loss and distance to a fault in the cable.

The device is intended for amateur radio use, as it is not a professional measuring instrument. The presence of a built-in battery allows measurements in laboratory and field conditions.

When purchasing a reflectometer, check its completeness. Attention! After purchasing the device, claims for incompleteness are not accepted!

The devices under test must allow the possibility of applying a stimulating signal from the reflectometer to the port under test. The reflectometer manufacturer is not responsible for the failure of devices that do not allow a stimulating signal to be sent to the port under test.

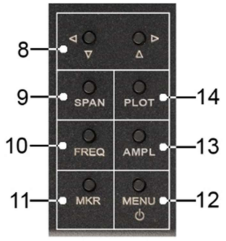
2. Contents of delivery.

Name	Qty
Vector network analyser ARINST VR-23-6200	1
Cable for charging the device battery mini-USB(male) - USB2.0(male)	1
Manual	1
Package	1

Due to the constant improvement of the device and software, the manufacturer reserves the right to make changes to its technical characteristics and completeness.

3. Device structure.

1. Port for connecting devices under test and load TEST PORT
2. Housing
3. Color resistive screen 3.2”
4. Block of control buttons
5. Connector for data transfer and battery charging device USB type B
6. Connector for data transfer and battery charging mini-USB
7. CHARGE battery charging indicator



Control buttons

8. Buttons for moving markers, changing the frequency, amplitude, scanning range.
9. "SPAN" - switching buttons (8) to the mode of changing the scanning range at a constant central frequency (expanding and narrowing the range).
10. "FREQ" - switching buttons (8) to the mode of changing the center frequency without changing the scanning range (range shift left-right).
11. "MKR" - switching the marker number and setting the button mode (8) to move the marker along the frequency.
12. "MENU" - exit to the main menu. Turning the device on and off when pressed and held for more than 2 seconds.
13. "AMPL" - switching buttons (8) to the mode of changing the reference level when displaying some graphs.
14. "PLOT" - switching the buttons (8) to the mode of switching the displayed graphs. Quick exit from any menu item to the chart display.

4. Specifications.

Наименование параметра	
Operating frequency range	23-6200 MHz
The frequency resolution	10 kHz
Maximum number of scan points	1000
Scanning rate	1000 points/s
The direction of the bridge, uncorrected throughout the range	>12 dB
Directivity effective[1] (after full single-port calibration)	>50 dB
The standing wave ratio at the input	<2
Phase measurement precision[1]	>1.5[0]
Magnitude measurement precision[1]	>0.25 dB
Resolution determining the distance to fault[2]	(C×VF)/2S m
The maximum length of the measured cable[3], with VF =1	3000 m
Maximum DC input voltage	25 V
Displayed graphs	■the Smith chart; ■polar chart; ■the phase of the reflection coefficient; ■magnitude; ■logarithmic magnitude; ■VSWR; ■distance-to-fault; ■cable loss.
Operating temperature range	0 … +40°C
Screen diagonal	3,2″
Screen type	touch, resistive
Screen resolution	320×20
Maximum consumed current, no more	300 mA (when charging the battery)
	1000 mA (when running on battery)
	800 mA (when operating from USB with battery charging[4])
Battery capacity	2500 mAh
Continuous battery life[5]	~2 h
Battery charge time	~6 h
Overall dimensions (L×W×H)	155×81×27 mm
Weight	0,4 kg
ID	1818

[1]The measurement is performed after the instrument has warmed up for at least five minutes with a full (short, open, load) one-port calibration. The change in the ambient temperature from the moment of calibration to the measurements should not exceed ±3 °C.

[2]Where C is the speed of light m/s; VF is the velocity factor (the ratio of the propagation velocity of an electromagnetic wave in a cable to the propagation velocity of an electromagnetic wave in a vacuum), takes a value depending on the cable from 0.1 to 1; S is the scanning frequency range in the frequency setting (Hz).

[3]Depends on the amount of attenuation in the cable and is the limit of the indication on the display.

[4]If your PC has a limit on the maximum current supplied to the USB port, charge the instrument before taking measurements without turning on the instrument during charging.

[5]At ambient temperature plus 20±5°C after the battery is fully charged.

5. Switching on the device.

Attention! The use of the device in open spaces during snowfall or rain is prohibited. If the device is brought from the street into a warm room, do not turn it on for a time sufficient for the evaporation of condensate from the device.

Make sure that the device has no external damage and that the battery is charged. Charge a discharged battery before using the device. To charge the battery, it is recommended to use a stabilized power supply with an output voltage of 5V and a current of at least 500 mA. To charge the battery while the device is operating, it is recommended to use a stabilized power supply with an output voltage of 5V and a current of at least 800 mA. When charging is completed, the CHARGE indicator (7) will turn off.

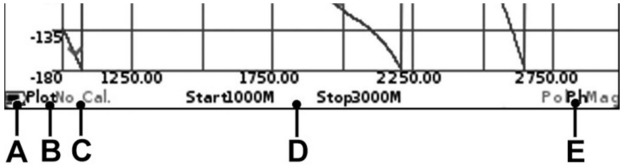
Simultaneous use of two USB ports of the device is strictly prohibited! Otherwise, the device may be damaged.

Press and hold the button (12) "MENU" for 2 seconds. The results of the device self-test will be displayed on the screen. The device will then switch to normal operation. When you turn on the device for the first time, you need to set the frequency setting, the type of graphs displayed on the screen and calibrate. User settings will be saved in the device memory, and will be set automatically on subsequent power-ups.

Attention! Match the voltage supplied to the TEST PORT with the maximum specifications of the device shown in the table.

To turn off the device, press and hold the button (12) "MENU" for 2 seconds. The instrument screen will turn off and the instrument will turn off. Each time the device is turned off, the main user settings are written to non-volatile memory, which allows you to avoid setting the device when you turn it on again.

6. Instrument Screen.



The instrument screen displays the results of frequency task scanning in the form of graphs and diagrams set by the user. The current instrument settings, scan range, type of displayed graph or chart, and other important information for the user is located on the bottom line of the screen.

Indicator A of the built-in battery status, which, depending on the battery status, can be displayed as:

- an indicator in the form of a lightning - the battery is being charged;
- indicator in the form of a battery is completely filled with white – the battery is fully charged;
- indicator in the form of a white outline of the battery – the battery is discharged, it needs to be charged;
- the device displayed a message about the critical charge level – the battery is completely discharged, the device will automatically turn off.

Indicator B displays the mode in which the navigation buttons (8) are located:

- **Plot** – the mode in which the buttons (8) switch diagrams and graphs on the device screen;
- **Span** - using buttons (8), the user can change the viewing range at a constant center frequency;
- **Freq** – buttons (8) change the initial and final frequencies without changing the width of the frequency plan (shift of the frequency plan);
- **Mkr 1 … Mkr 4** is an active marker that can be moved with the buttons (8). Switching between markers is done by pressing the button (11) "MKR";
- **Amp** – the mode in which the buttons (8) change the reference level when displaying graphs such as magnitude, logarithmic magnitude and VSWR.

Calibration type designation C:

- **No Cal** – factory calibration;
- **Cal** – calibration corresponding to the frequency setting, displayed in green;
- **Cal. Int** – calibration interpolation, displayed in orange;
- **Cal. Ext** – calibration extrapolation, displayed in red.

Frequency reference D:

- **Start** – initial frequency of the frequency setting;
- **Stop** – end frequency of the frequency command.

Type of graph displayed on the screen of the device E:

- **Smh** – polar diagram of Volpert-Smith allowing to display the complex reflection coefficient reduced to 50 Ohm impedance;
- **Pol** - polar diagram for displaying the complex reflection coefficient;
- **Ph** - a graph showing the phase of the reflection coefficient, reduced to degrees in the range -180 ... 180;
- **Mag** – a graph showing the modulus of the reflection coefficient on a linear scale;
- **LMag** - a graph showing the modulus of the reflection coefficient on a logarithmic scale (in dB);
- **SWR** - a graph showing the voltage standing wave ratio;
- **DTF** - a graph showing the distance to a fault or inhomogeneity in the cable;
- **Loss** - a graph showing cable losses.