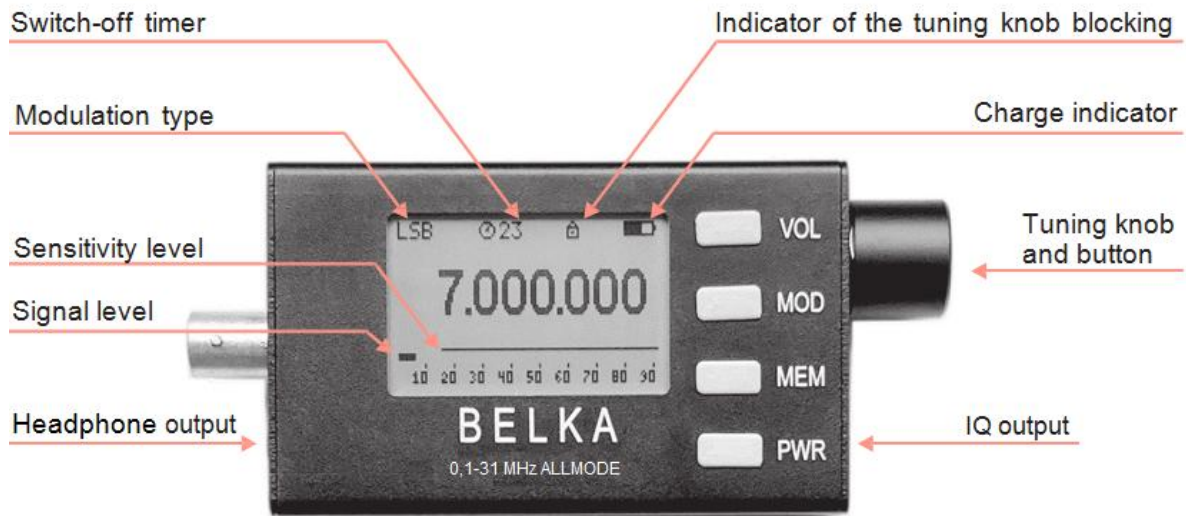


Shortwave Receiver "Belka"

User Manual



Specifications

- Operating frequency range - 0.1 - 31 MHz;
- Modulation modes - CW, SSB, AM, NFM;
- Sensitivity MDS: -138 dBm;
- In the high cutoff it is possible to adjust the audio bandpass from 2 to 4 kHz. In the low cutoff - from 50 to 300 Hz. In CW mode the frequency band is about 400 Hz with regulated pitch from 500 Hz to 1 kHz.
- Input circuits of the radio receiver operate best with telescopic antenna of approximately 80 cm length;
- Memory - 36 cells;
- Frequency step - 10, 20, 50, 100Hz, 1, 5, 9, 50kHz;
- Powerful audio amplifier, designed to work with an external speaker with an impedance of 8 Ohm or more;
- External power supply of the receiver and charging of the built-in battery - via Micro-USB connector from the power source with a voltage of 5-5.5V;
- Current consumption ~ 85mA. Battery charging current is 700mA;
- Operating time - 10-15 hours in the version with built-in speaker and up to 28 hours in the version without speaker;
- IQ output for viewing panorama on PC;
- Case dimensions 85x50x20 mm. Weight 125 grams.

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Switching the power on: Press and hold "PWR" within 2 seconds.

Switching the power off: Press and hold "PWR" within 2 seconds or press shortly "PWR", and then "MOD".

! Receiver has also VLC enable mode. To turn on the receiver in this mode press and hold the tuning knob then press "PWR". This ON method may be used to avoid accidental switching on of the receiver while carrying it in a bag or pocket.

Tuning knob works not only as a frequency adjusting knob. It may also function as a button when pressing it.

Tune step selection: Press the tuning knob and choose the tune step by rotating the tuning knob. Press the tuning knob again to save the selected tuning step.

Quick tuning: Press and hold the tuning knob at the pressed position while rotating the tuning knob. In this case if the tune step is 10-100 Hz, the tuning of the receiver is carried out with 10 kHz step. If the tune step is 1-50 kHz, then the tuning will be carried out with 200 kHz step.

To save current frequency, modulation type and sensitivity level to the memory cell: Press "MEM", and choose the desired memory cell by rotating the tuning knob. Press "MEM".

To load frequency, modulation type and sensitivity level from the memory cell: Press "MEM", and choose the desired memory cell by rotating the tuning knob. Press "VOL" or tuning knob.

To listen to memory cells: Press the "MEM" button, then press the "PWR" button to listen. Press "PWR" to turn off the memory cell listening mode.

Modulation type selection: Press "MOD" and choose the desired modulation type by rotating the tuning knob. Press the tuning knob or press "MOD" twice in CW mode/press "MOD" three times in other modes.

- **CWU***, **LSB**, **USB**, **NFM** - operating modes.
- **AM1** - amplitude modulation with envelope detector.
- **AM2** - amplitude modulation with pseudosynchronous detector.

*Carrier frequency of signal in **CW** mode is displayed the same way as in **USB** mode

Tune step and passbands for each modulation type (**CW**, **LSB/USB**, **AM1/AM2**, **NFM**) are loaded to the memory cell separately.

Selecting the central frequency (pitch) of the telegraph filter in CW mode: Press "MOD" twice, then choose the central frequency of the telegraph filter by rotating the tuning knob. Press the tuning knob or "MOD".

Selecting the high cutoff in other modes: Press "MOD" twice, then choose the desired frequency by rotating the tuning knob. Press the tuning knob or "MOD" twice.

Selecting the low cutoff in other modes: Press "MOD" three times, then choose the desired frequency by rotating the tuning knob. Press the tuning knob or "MOD".

Adjusting the volume: Press "VOL", then rotate the tuning knob to adjust the volume. Radio receiver will automatically switch to the main screen 5 seconds after rotating the tuning knob. Press the tuning knob or "VOL" twice for immediate return to the main screen.

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Adjusting the sensitivity: Press "VOL" twice, then adjust the sensitivity by rotating the tuning knob. Radio receiver will automatically switch to the main screen 5 seconds after rotating the tuning knob. Press the tuning knob or "VOL" for immediate return to the main screen.

! At some frequencies, especially in the medium and long wave bands (below 1.5 MHz), the display may create additional interference with radio reception. Turn off the display to eliminate interference from it.

Switching off the display: Press and hold "MOD" within 2 seconds. The display will be switched off.

Switching off the tuning knob: Press and hold "VOL" within 2 seconds. Lock indicator will appear at the top of the screen.

! When the tuning knob is switched off, switching on and off the display is carried out by pressing "MOD".

Switching on the display and the tuning knob: Press "PWR", "MEM" or "VOL".

Settings menu: Press shortly "PWR", then choose the desired menu item by rotating the tuning knob. Press the tuning knob or "PWR" to enter the selected item.

Menu items

tmr: Switch-off timer. Choose time when the radio receiver will be automatically switched off. When choosing "off" the radio receiver will not be switched off automatically. Timer starts again after restart of the radio receiver.

blt: Backlight- 3 modes:

- "off" - backlight is always off.
- "tch" - backlight is switched on by pressing buttons or rotating the tuning knob. Backlight is switched off automatically after 12 seconds.
- "on" - backlight is always on.

ONm: Switching on method - 3 modes:

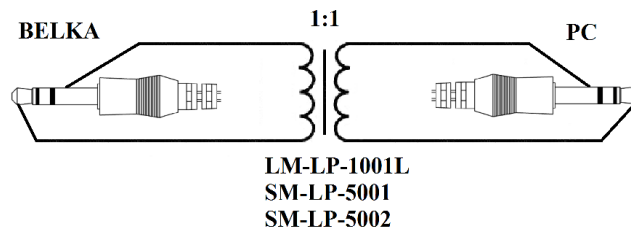
- "imm" - receiver will be switched on immediately when pressing "PWR".
- "del" - receiver will be switched on when pressing and holding "PWR".
- "vlc" - press and hold the tuning knob then press "PWR" to switch on the receiver. This ON method may be used to avoid accidental switching on of the receiver while carrying it in a bag or pocket.

Choose the desired value or menu item by rotating the tuning knob. Enter the desired value by pressing the tuning knob or "PWR". Press the tuning knob or "PWR" to return to the main screen.

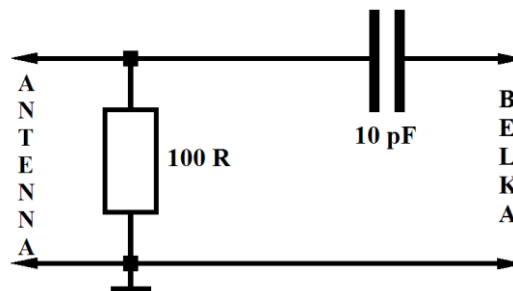
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RECOMMENDATIONS

- While working on telescopic antenna you may ensure higher sensitivity by connecting 1m **counterpoise** (headphones or loudspeaker wire). In the version with built-in speaker you may use charger wire for this purpose.
- **IQ output** can be used to view panorama on a PC. Connect IQ output of the receiver to the line input of the PC sound card with a shielded stereo cable and use the appropriate software (for example HSDR, PowerSDR, CubicSDR, CW Skimmer)
- To **connect the receiver to a PC** or an external power amplifier, you should use an isolation transformer, such as BOURNS LM-LP-1001L, SM-LP-5001/5002.



- For matching of the high-impedance receiver input with a 50 (75) Ohm antenna use the scheme:



• ! Do not connect receiver to an external antenna while the transmitter is operating near it, or before or during thunderstorms.

- Use Mini-jack plug 3,5 mm to connect the headphones or loudspeaker with 8 Ohm or more resistance. Use headphones or loudspeaker **only with Stereo Mini-jack plug**.

! Use of Mono Mini-jack plug may cause audio amplifier short circuit and the receiver's damage.

To connect headphones or loudspeaker to the Mini-jack plug use the scheme:

