**Completeness of Set**

|  |  |  |
| --- | --- | --- |
| **No.** | **Name** | **Qn-ty** |
| 1 | «Live Sinus 5» Generator |  |
| 2 | **«Live Sinus 5BT» Generator** |  |
| 3 | **Coupling cable with USB or RCA connector (for capacitive coil)** |  |
| 4 | **Power-supply source** |  |
| 5 | **Static - field indicator** |  |
| 6 | **Capacitive tore-coil** |  |
| 7 | Universal flat coil (2 in 1: capacitive and static in the same coil box ), plywood |  |
| 8 | Universal flat coil (2 in 1: capacitive and static in the same coil box), plastic |  |
| 9 | **Step-up adapter + cable ( high-voltage, static coil)** |  |
| 10 | Capacitive flat coil |  |
| 11 |  |  |
| 12 |  |  |
| The Producer’s warranty on all components of the set is 1 year from the date of sale. The Producer will reserve the right to modify the product design so that its usefulness is not worsened.  **Packer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | |

|  |  |
| --- | --- |
| **Producer**  SE businessman Stepanov Alexander Nikolaevich  TIN 773700254948  **Contacts:** website: [live-sinus.com](http://live-sinus.com/) tel:+79854664610 e-mail: [info@live-sinus.com](mailto:info@live-sinus.com) | **Vendor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Date of sale\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

# Multifunctional Wave-Form Generator "LiveSinus 5"/"LiveSinus 5BT"for resonant loads (Tesla/Mishin and other coils), manufactured in conformity with Specs. 27.90.40-001-0125556713-2018

**Generator Outward Appearance**



Fig.1 Generator Front Plate

****

Fig.2Connectors

1 – 3 light-emitting diodes of modes indication (LED)  
2 – Control button of turn-off timer and waveform changeover switch  
3 – ON-OFF button and selection of signal strength level  
4 – Coils connector  
5 – Power connector  
6 – Mini USB for computer connection.

**Generator Off-Line Operation (without external application)**

|  |
| --- |
| **In this Section all explanations as regards “default settings “ are Producer-specified, unless otherwise stated expressly.**  *The off-line mode of operation is fully self-sufficient/* Unless only some additional functional is required.  (either for tests or when advised by trustworthy people), finer settings and on-going monitoring of generator operating parameters , (that are not displayed on the front plate) – only in this case one is advised to connect an external application (as described in another Section, and for now, - just off-line mode of operation).  The generator is turned on by a short-time pressing of the red «POWER» button on the instrument front plate (a short audible beep is heard), therewith, the generator automatically seeks for the resonant frequency of the connected coil, then the generator measures coil electrical q-factor. This process is indicated by **frequent synchronous** blinking of all light-emitting diodes (LEDs) on the generator front plate. **At this moment one is advised to avoid placing the field indicator on the coil, touching it and, generally, to keep the coil away from any metal objects as far as possible**.  The termination of this process (resonance determined , coil q-factor measured successfully) and go-over to the standard generation mode is signaled by the generator’s cease of **frequent** synchronous blinking of light-emitting diodes and by the third single short-time audible signal (the second signal indicates resonance success). Now light indication is effected by one/three light-emitting diodes – depending on the fact what settings (timer and signal strength) were used during instrument previous switching-on. In case no resonant frequency is found – automatic switching- off takes place (change-over to stand-by mode). The lock-in range of resonant frequency (limited by default in the settings) is from 150 to 350 kHz.  **Setting the Time-Out Timer**  A short-time, periodic pressing of the «**Timer**» button causes circular switching of the values: [**15 min.**– **30 min.**– **45 min.**– **15 min.**–**«all the time»…].** The timer reading «**all the time**» is indicated by synchronous, infrequent blinking (for sinus) or continuous glowing (for meander) of all three light-emitting diodes on the generator front plate. After a parameter change the timer each time restarts its cycle again.  **Power Setting on Coil**  After the generator is turned on and gone over to resonant frequency one can assign the required power from the three specified values: [**50 % – 100 % – 200 %]**, (taken here for 100 % is the 141 mA-current, RMS of the standard-type engineer generator of frequencies), for which purpose it is necessary to periodically press the «POWER» button for short moments of time. In this case the indicating LED will circularly glow its colors: **green** (50 %) – **оrange** (100 %) – **red** (200 %) – **green** (50 %) and so on  **Setting the Waveform**  When in the operating mode, one can select the waveform (sine/meander). To switch over it is necessary to press and hold in this position the «TIMER» button for no less than 5 sec. The switch-over will be accompanied by a short-time audible signal and LED indication change on the generator front plate: blinking at about 1 Hz-frequency – sine, non-stop glowing- meander.  **Switching off** is done by pressing and holding in this position the «POWER» button for no less than 2 sec – the instrument will go over to the stand-by mode. The instrument may also be switched off automatically:  а) on expiry of the timer-set period of time;  b) in case the controller fails to find the resonant frequency, (for instance, in case of bad electrical connection to the coil or in case the q-factor of the coil is exceptionally low).  **Saving Automatically Last Switching-On Parameters**  After any parameters change by means of the buttons on generator front plate, in 20 seconds there will be written the new values of (power, timer and waveform) in the microcontroller EEPROM memory. The same occurs, when the generator is switched off by pressing and holding in this position the «POWER» button for no less than 2 sec. (if the actual parameters differ from those saved previously). When switched on subsequently, the generator will run with these parameters exactly.  **Reset of Parameters Settings to Those of Producer-specified «default»**  After up-dating the controller weaving or in order for the settings to be brought back to the initial ones (in case the settings were changed by means of an external application) it is advisable to make a general reset of the generator for which purpose it is necessary to press and hold in this position the «POWER» button for no less than 8 sec (till the second series of short-time audible signals are heard). This may be done in the working as well as in stand-by modes of generator operation. |

**Generator Basic Parameters**

|  |
| --- |
| * Method of generation: DDS (Direct Digital Synthesizers) or Direct Digital Synthesis);   generated signal waveforms are sine, meander, triangle  operating frequencies range (sine) is from 10 kHz to 1 MHz.   * Maximum load current (at supply voltage of 24 V) is   700 mA (RMS or root-mean square value) or, which is the same, 1960 mA (peak-to-peak);  (when in off-line mode, 3 power levels are accessible on the load of (50, 100, 200 %, taken for 100 % is the 141 mA-current, RMS of a standard-type industrial generator), in the external application these levels may be readjusted as required.   * Maximum voltage at the generator output (at supply voltage of 24 V) is   7 V (RMS or root-mean square value) or, which is the same, 19.6 V (peak-to-peak).   * Automatic adjustment modes:   **AUTO** mode:  а) continuous automatic adjustment to resonant frequency (as to the maximum load current),  b)continuous automatic adjustment of the given current through the load;  **PROFI** mode (semiautomatic): periodic automatic adjustment of the frequency and current after a User- specified time interval (30 sec – by default);  **ENGINEER** mode: automatic adjustment as to frequency is OFF, as to current – depending on the option selected.   * Dual-mode timer:   а) turn-off time count (4 specified values when in off-line mode, unrestricted – from external application); b) switching-on periodically after a specified interval of time (accessible from external application, with adjustment to generator off-line operation included).   * Phase shift (for instance, at the load respective of the current): any value within ±90° (during AUTO mode the phase shift is not adjusted, by default it is 0° all the time). * Modulation of basic carrier frequency:   **AM** – amplitude modulation: а) envelope form: sine, meander, triangle; b) AM percentage: 0 – 100 %; c) envelope frequency: 0.1 Hz – 1.000 Hz;  **FM** – frequency modulation (sweeping): а) modulating wave form: sine, meander, triangle; b) FM range: 0.1 kHz – 1.000 kHz; c) FM frequency (rate): 0.1 Hz – 1.000 Hz.  AM and FM modulations are independent of each other and may be applied separately and simultaneously as well.   * Communication:   Bluetooth (optionally) – for communication with an external application, using a smartphone or graphic tablet;  USB mini port – for communication with an external, PC-based application and/or for updating the microcontroller weaving;  XLR plug (to the body) – for load connection;  DS–025B (front plate-mounted power socket) 2.1 х 5.5 mm – for connection of a power-supply source.   * Power supply: 12–24 V stabilized or unstabilized DC voltage, **the recommended supply voltage is 18-20 V**. * Weight and overall dimensions: 400gг, (l\*w\*h), 130х93х39 mm. |
|  |