

# Functiongenerator ML1643



Read the following safety precautions carefully before using the instrument to avoid personal injury or damage to the instrument and the materials that may be connected to it.

To avoid all risks, use the instrument as indicated in these instructions for use.

The instrument should only be used and checked by qualified personnel **to avoid any risk of fire or injury**.

**Use the correct voltage.** Only the mains voltage indicated by the manufacturer should be used to power the instrument.

Grounding the instrument. This instrument is earthed by the power cord. To avoid electric shock, the power cord must be earthed. Make sure the instrument is properly grounded before connecting the input or output terminals.

**Connect the measurement probes and connecting cables correctly.** Correctly connect the instrument's input and output terminals to other peripheral equipment using accessories that comply with current safety standards. Make sure that the potential difference between the terminal connected to ground, of the input or output signal, and the ground is less than 40Vdc. Do not carry the earth terminals to high voltage.

**Observe all indications relating to the terminals.** To avoid any risk of fire or electric shock, observe all indications and symbols that are marked on the instrument. Read the user manual carefully before making any connections to the instrument.

**Do not use the device without the housing.** Do not use your generator with any part of the housing removed.

**Use the correct fuse.** Use only the type of fuse specified for this product.

**Avoid contact with exposed circuits or wires.** Do not touch exposed connections or components when the device is powered on.

**Do not use the device in case of suspected faults.** If you suspect any damage to this product, have it checked immediately by qualified personnel appointed by your DEALER.

**Make sure that the instrument is operating under correct ventilation conditions.**

**Do not use the device in a humid environment.**

**Do not use the device in an explosive atmosphere.**

**Keep the surfaces of the device clean and dry.**

## Introduction

The ML1643B is a function generator capable of outputting sine, square, triangle, single pulse etc. signals.

The frequency of the output signal is between 3 Hz and 5 MHz and will be visualized using a 4 digit LED display for the Frequency and a 3 digit LEDdisplay for the amplitude.

It is possible to adjust the value of the continuous component (DC) and the duty cycle.

The device also has an amplified "POWER OUT" output and an "INPUT" input that can be used in Counter / Frequency meter mode.

## Specifications

**Signals:** Sine, square, triangle, pulse, ramp, TTL.

**Frequency range:** 3 Hz to 5 MHz (6 ranges) with visualization of the value on a 4 digit LED display.

**Frequency accuracy:**  $\pm 1\%$

**Output amplitude:** 5mV to 25Vpp (open circuit) with visualization of the value on a 3 digit LED display.

**Amplified output:** 15W max.

**Output attenuation:** 20dB, 40dB.

**Offset level (DC):** linearly adjustable from + 10V to 10V with calibration position at 0VDC.

**Duty cycle:** linearly adjustable from 10% to 90% with calibration position at 50%.

**Harmonic distortion rate (THD):** 1% (from 20Hz to 20KHz in sine wave)

**Rise time:** 50ns

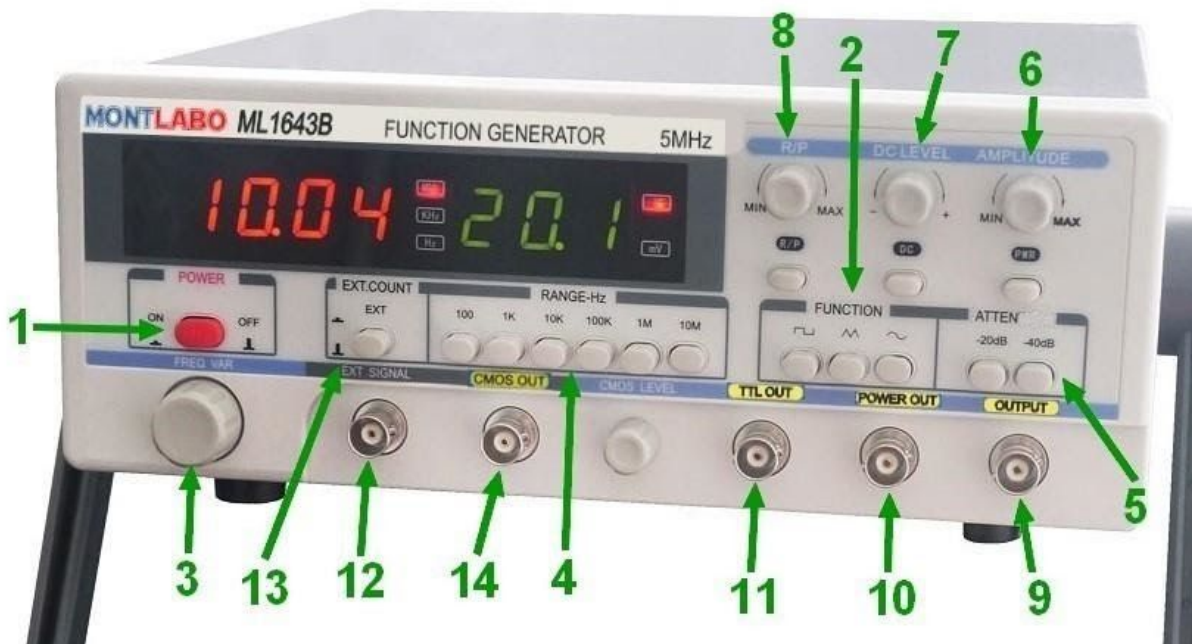
**Single Pulse:** 3Vpp (open circuit), width 5ms, Tr 25ns

**Power supply:** 230VAC  $\pm$  10%, 50Hz 60Hz

**Dimensions:** 240 (W) x 90 (H) x 280 (D)

**Weight:** about 2.5Kg

## Front face description



1. POWER : when the red button is pressed, the device is powered on.
2. FUNCTION : selects the output signal (sine, square, triangle)
3. FREQ. VAR : allows to continuously adjust the frequency value of the output signal within the selected range.
4. RANGE-Hz : selects the frequency range of the output signal.
5. ATTEN. : can attenuate the output signal by -20dB, -40dB.
6. AMPLITUDE : allows you to adjust the output voltage up to 25Vpp.
7. DC OFF SET : When the push button is pressed and the indicator light is on, the DC component can be adjusted. When the button is released and the indicator light is off, the offset voltage defaults to zero.
8. RAMP/PULSE : in Ramp or Pulse mode when the push button is pressed and the indicator light is on, the output frequency is divided by 10. The duty cycle, in ramp or square mode, can be adjusted from 10% to 90%. When the button is released, the duty cycle defaults to 50%.
9. OUTPUT : output signal
10. POWER OUT : amplified output (5W max.)
11. TTL OUT : square wave output for TTL circuits
12. INPUT : external input for using the device in Counter / Frequency counter mode.

13. EXT.COUNT : when the key is pressed, the device can be used in Counter / Frequency meter mode.
14. CMOS OUT : CMOS output adjustable with the CMOS LEVEL knob located to the right of the BNC connector.

## Use

1. Connect the power cable to the connector on the back of the device. Press the "POWER" button on the front panel to turn on the device
2. Select the frequency range by pressing the corresponding "RANGE Hz" key.
3. Select the desired waveform by pressing the corresponding "FUNCTION" button. If you want to output a pulse or a ramp, press the "PULSE / RAMP" button and adjust the pulse width or the ramp ratio.
4. If you want to attenuate the output signal, press the "ATTENUATION" button corresponding to the desired
5. Adjust the output voltage to the desired value using the "AMPLITUDE"
6. If you want to change the offset voltage, press the "DC offset" pushbutton and adjust the voltage to the desired value.

The TTL signal is available on the "TTL OUT" output.

## Precautions

1. As a priority, connect the device to the mains before starting to use it.
2. Do not reinject a voltage greater than 10V (AC + DC) on the "OUTPUT" output on the front panel, on the TTL output or on the "VCF" input.

## Accessories

The accessories supplied as standard are as follows

- 1 device number ML16 43 B
- 1 cord
- 1 user manual in french