

**LAUNCH**

**Sensorsimulator and tester**

**X-431 S2-2 Sensorbox**



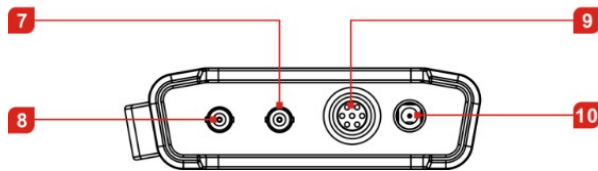
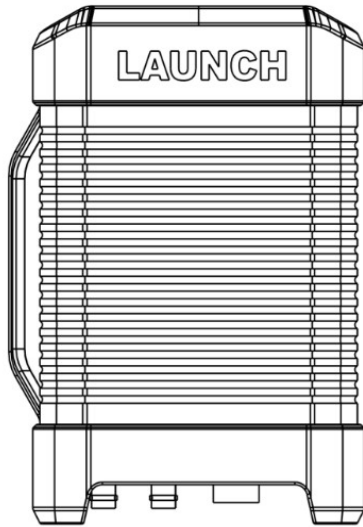
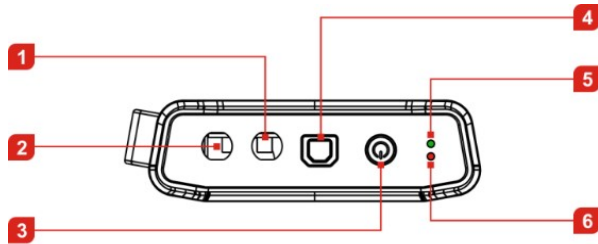
# Introduction

- S2-2 Sensorbox is specially developed for diagnosing/simulating sensor faults. It mainly includes “Sensor”, “ Actuator”, “Defined/Drawn”, “Timing Waveform“ and “ multimeter”.
- Sensor: Is used to simulate the input signals of the automobile electronic control system, and the automobile computer adjusts the running state of the engine according to these parameters.
- Actuator: Is used to simulate the output control signal of automobile electronic control system, so as to judge the working conditions of automobile actuators such as idle motor, EGR solenoid valve, etc.
- Multimeter: Through this function, users can test voltage, resistance, and capacitance.
- The module cannot be used separately, it only works as accessory for LAUNCH X-431 EURO TAB2 diagnostic tools.

# Introduction



# Introduction



1	COM	Multimeter common
2	V/ $\Omega$ /C	Multimeter measuring terminal
3	Power button	Press this button to start up and shut down.
4	USB interface	connected to the diagnostic device
5	Battery status indicator(green)	If the green lamp is steady on, the battery electric quantity is normal. If the green lamp is flashing at an intermediate speed, the electric quantity is low (regardless of whether the red lamp flashes). If the green lamp is flashing at a low speed, charging is in progress.
6	Battery status indicator(red)	If the red lamp is steady on, the diagnostic tool is connected. If the red lamp is flashing, the diagnostic tool is disconnected. It will enter the charging status only when the red lamp is flashing. The green lamp is flashing at a low speed during charging (if the electric quantity is full, it will stay on).
7	CH2	Channel 2
8	CH1	Channel 1
9	7-pin interface	Used to connect 7-pin interface (to six 4mm safety banana head lines) to measure the actuator. When measuring the actuator, it is necessary to connect the module to the car
10	Power interface	Power the module through the battery clamps cable.

# Technical Parameters

## Sensor module:

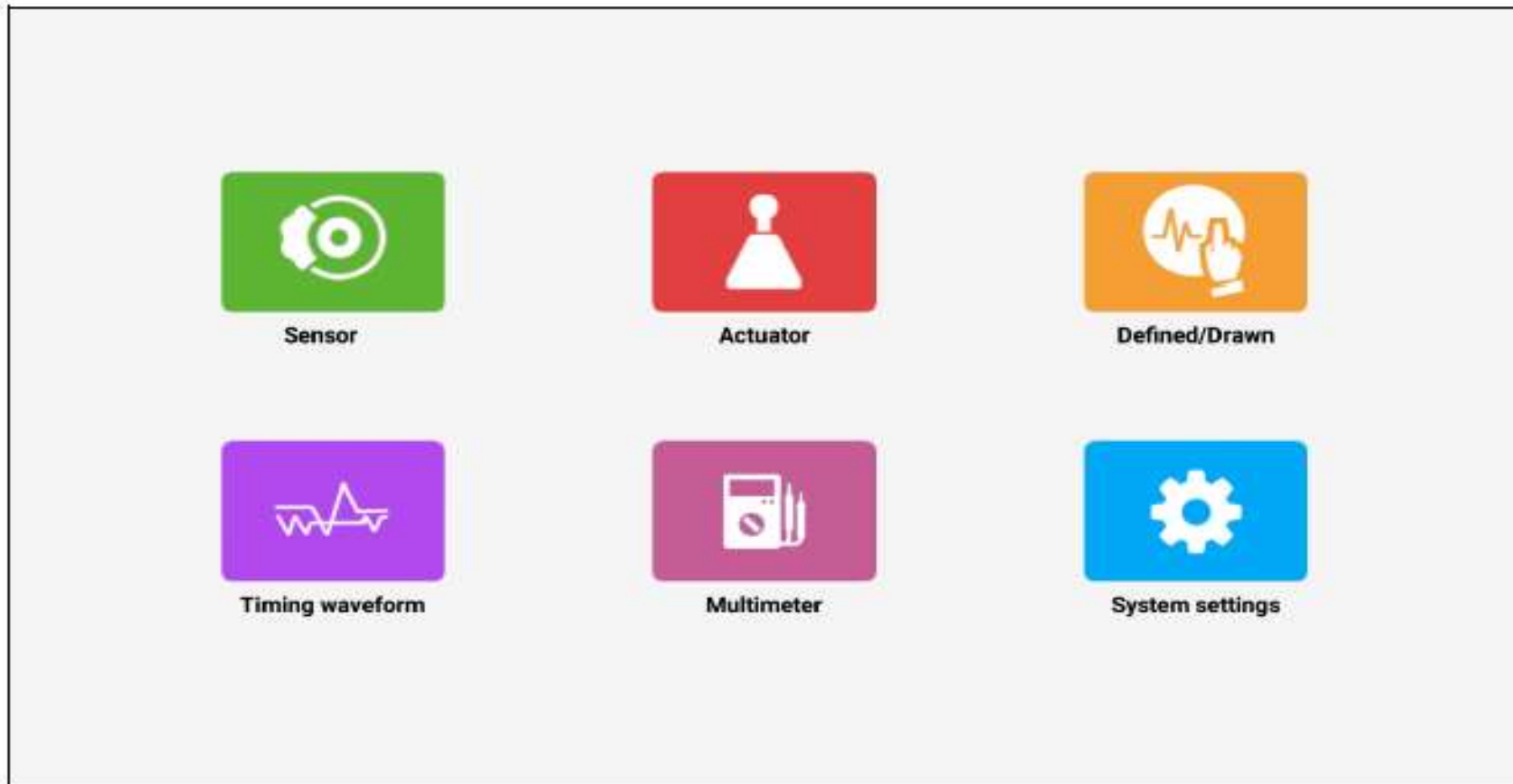
Parameter	Range
Number of channels	2
Precision	1 %
Amplitude range	0 – 20 V
Max output current	20 mA
Predefined frequency range	0 – 20 kHz
Square wave signal pulse frequency	0 – 15 kHz
Square wave signal duty cycle	0 – 100 %
Power supply	Simulator sensor output/max current 20mA (output is powered by battery)
	Drive solenoid, ignition coil/output current 2A (external power supply)
USB	USB2.0 Type B (with charging and power supply function/5V)
DC voltage simulation	Support
Fixed frequency simulation	Support
Predefined waveform simulation	Support
Hand-drawn waveform simulation	Support
Signal generator interface	2
External power supply port	1
Solenoid interface	1
Multimeter interface	2
Working temperature	0 ° C – 50 ° C
Storage temperature	-30 ° C – 70 ° C

# Technical Parameters

## Multimeter

Parameter	Range
DC voltage	0 V – 700 V
AC voltage	0 V – 700 V
Resistance	0 $\Omega$ – 40 M $\Omega$
Capacitance	0 F – 100 $\mu$ F (maximum 30 s measurement time)
Diode	0 V – 1,5 V
Continuity detection	Sounds below 30 $\Omega$

# Main menu



# Sensor types

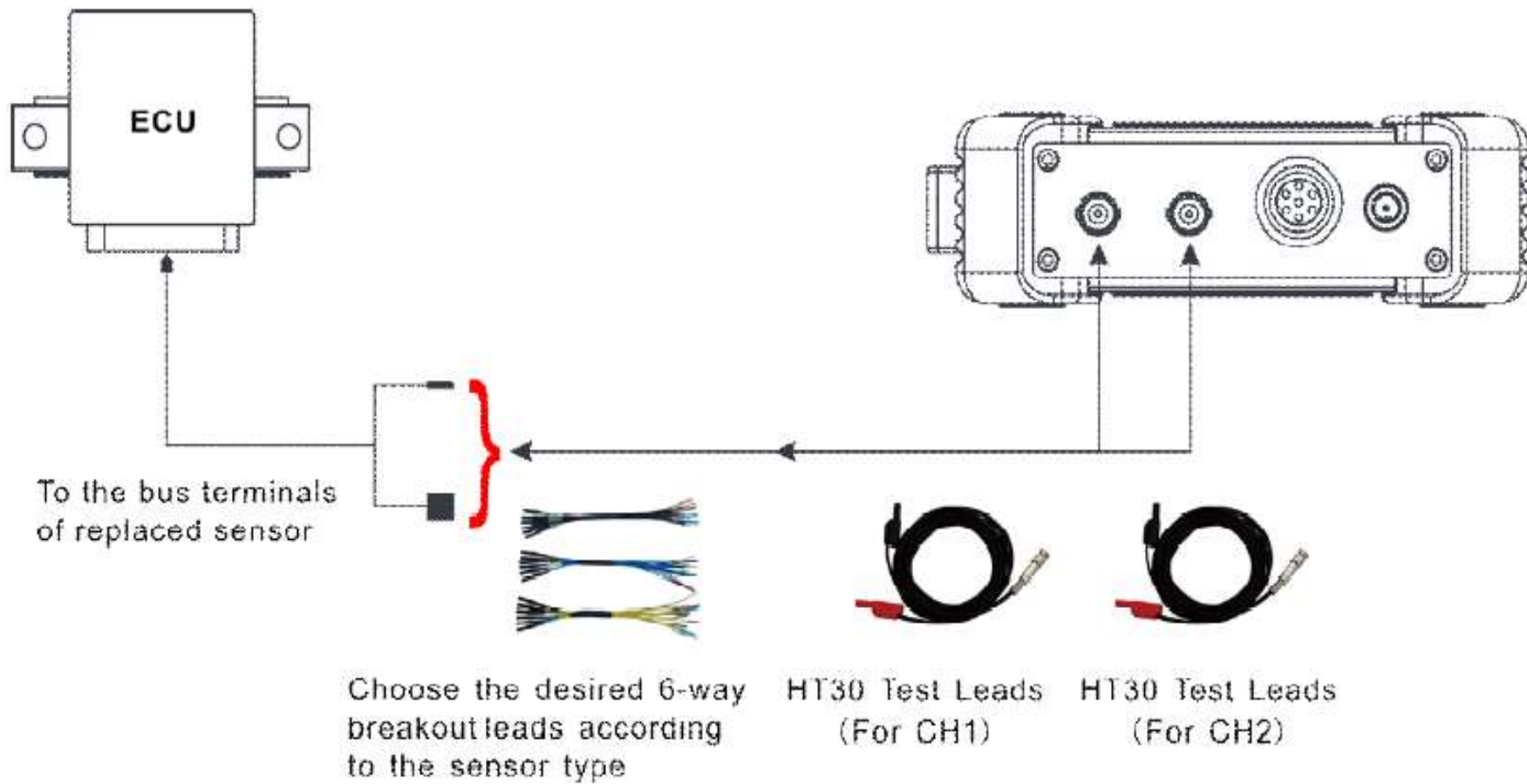


The screenshot shows a mobile application interface with a blue header bar containing a back arrow, the title 'Sensor', and a red USB icon. Below the header is a list of sensor types, organized into three categories indicated by a grey sidebar on the left:

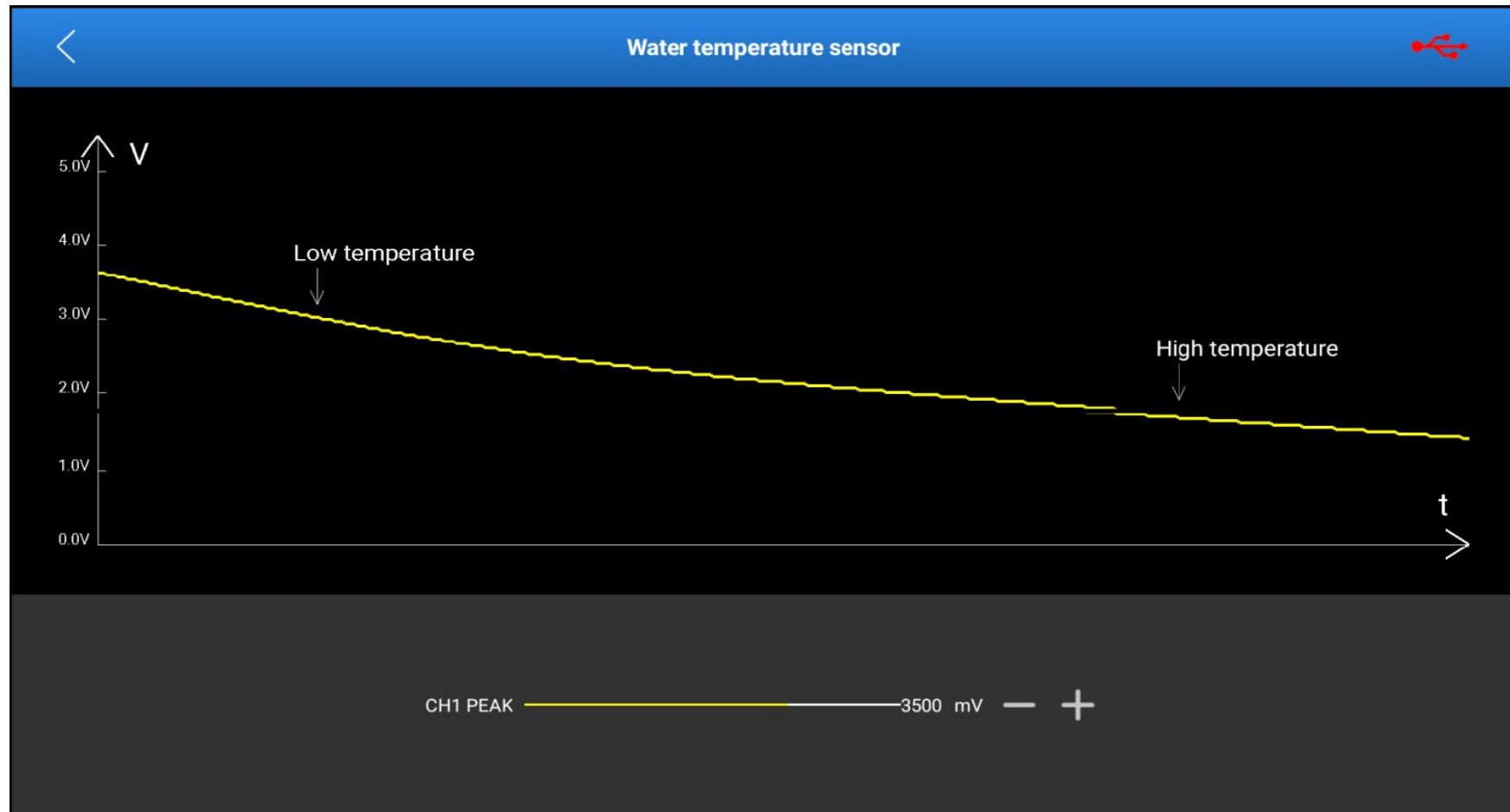
- ①.DC**: Water temperature sensor
- ②.AC**: Intake temperature and pressure sensor
- ③.Frequency modulation PFM**:
  - Intake pressure sensor
  - Throttle position sensor*
  - Accelerator pedal position sensor
  - Air flow sensor
  - Zirconia type oxygen sensor
  - Titanium dioxide type oxygen sensor



# How to connect



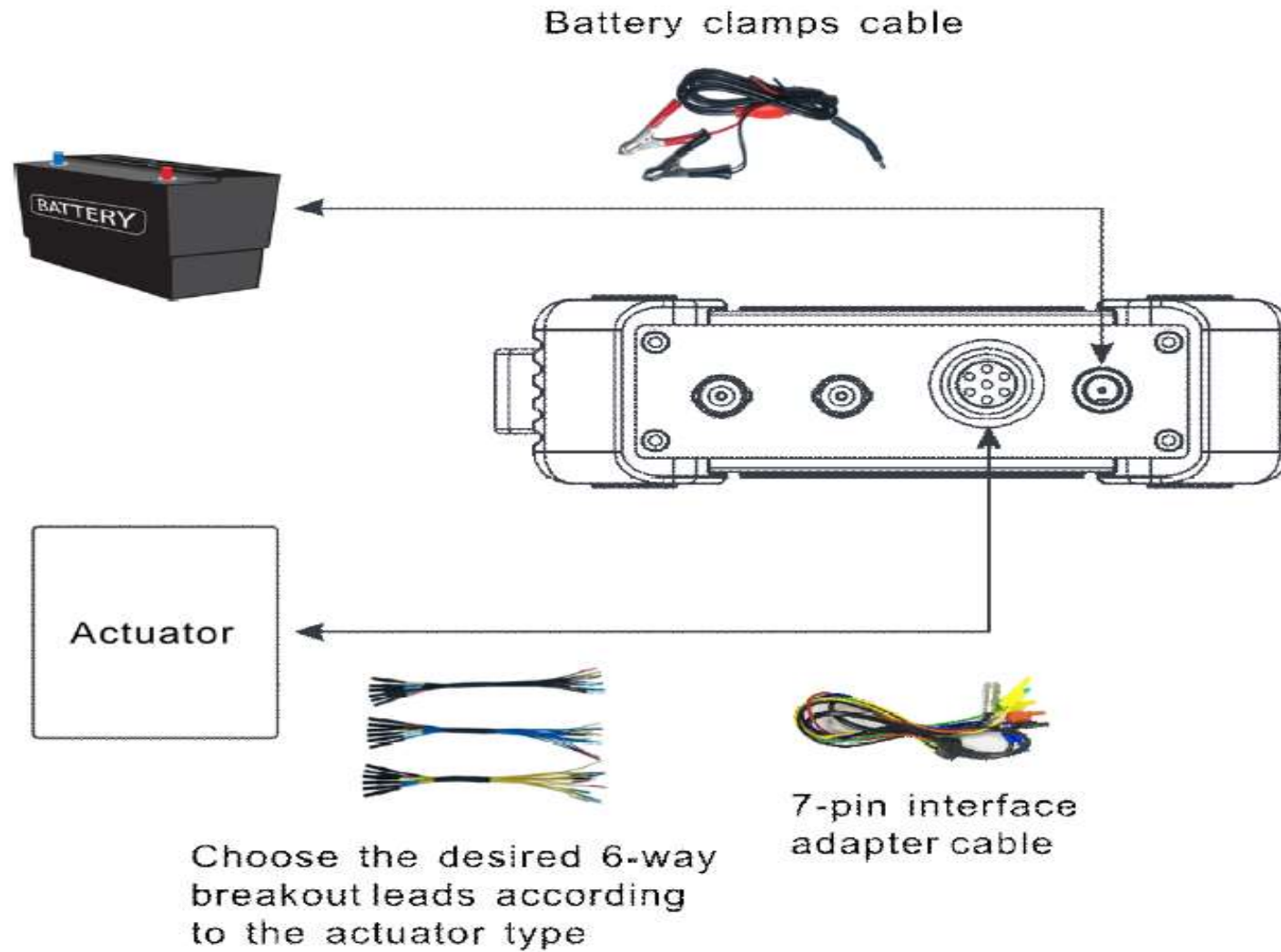
# Adjustment interface



# Actuator types

Actuator
Independent ignition module (COP)
Idle speed motor
EGR valve
Carbon can solenoid valve
Turbocharged solenoid valve
Fuel spray nozzle
VVT solenoid valve
Electronic throttle valve assembly, air conditioning fan

# How to connect



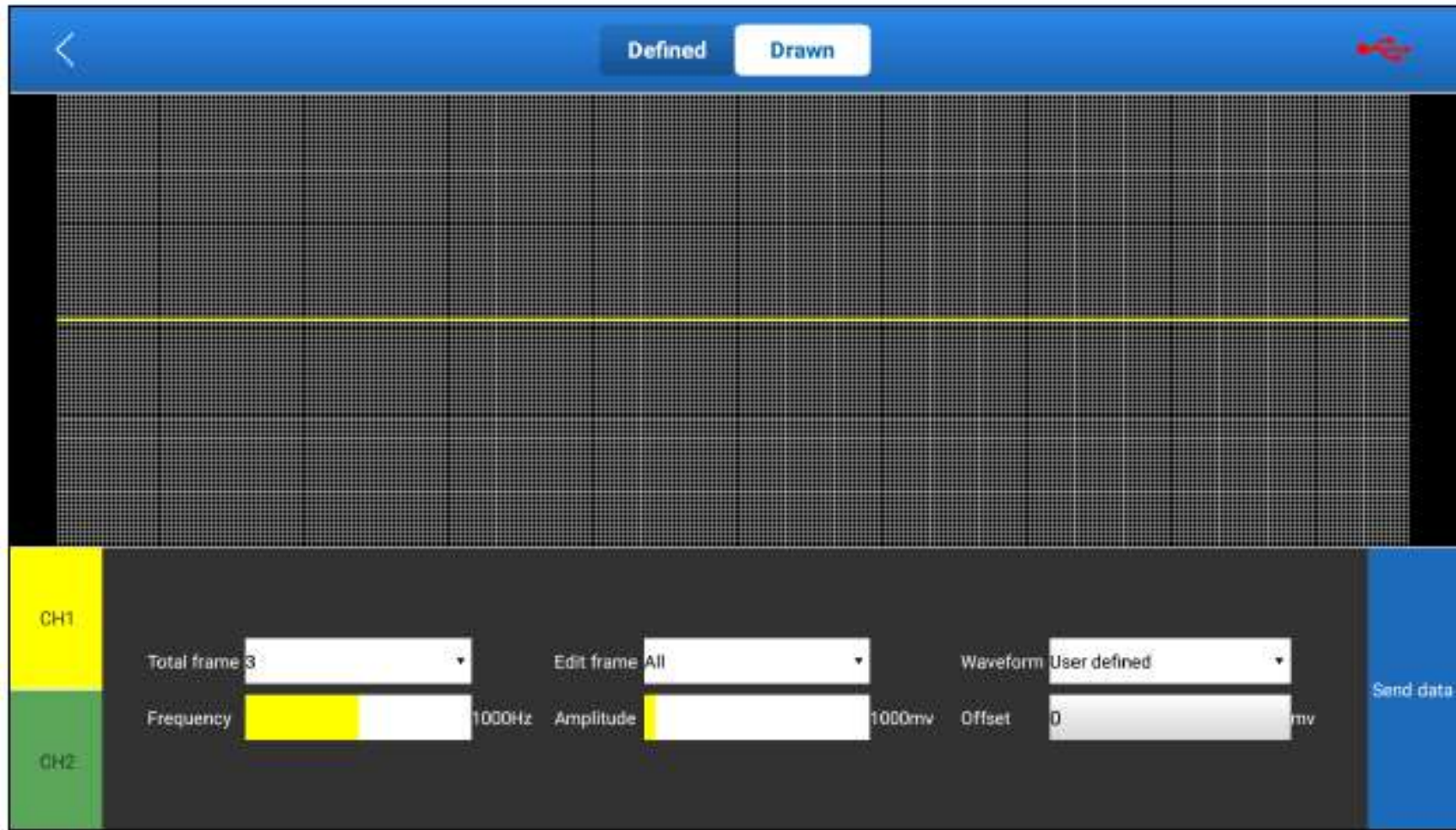
# Defined / Drawn

The screenshot shows a software interface for defining and drawing waveforms. At the top, there are two tabs: "Defined" (selected) and "Drawn". Below the tabs, there are two columns for Channel 1 (CH1) and Channel 2 (CH2). Each channel has a "Waveform" dropdown menu set to "Sinusoidal wave". Below the waveform menu, there are four input fields: "Frequency" (1000 Hz), "Amplitude" (1000 mV), "Offset" (0 mV), and "Phase" (0). Below these fields are two sliders: "Duty cycle" (set to 50%) and "Phase" (set to 0). At the bottom of each channel, there is a waveform preview. To the right of the channels, there are two circular gauges. The top gauge is labeled "CH1 FREQ" and shows a value of 1000 Hz. The bottom gauge is labeled "CH1 PEAK" and shows a value of 1000 mV. Below the gauges, there is a "Signal sync" button. At the top right of the interface, there is a USB icon.

# Defined

- Waveform: There are 9 waveforms to choose; Forward sine wave, reverse sine wave, forward square wave, reverse square wave, medium voltage, straight line, high / low voltage straight line, triangle wave, and trapezoidal wave.
- Frequency: Set the frequency of the selected waveform.
- Amplitude: Set the amplitude of the selected waveform.
- Offset: Set the offset of the selected waveform.
- Phase: Set the phase of the selected waveform.
- Duty cycle: Set the duty cycle of the selected waveform.
- Signal sync: Can cause CH1 and CH2 to output signals at the same time.

# Hand-drawn

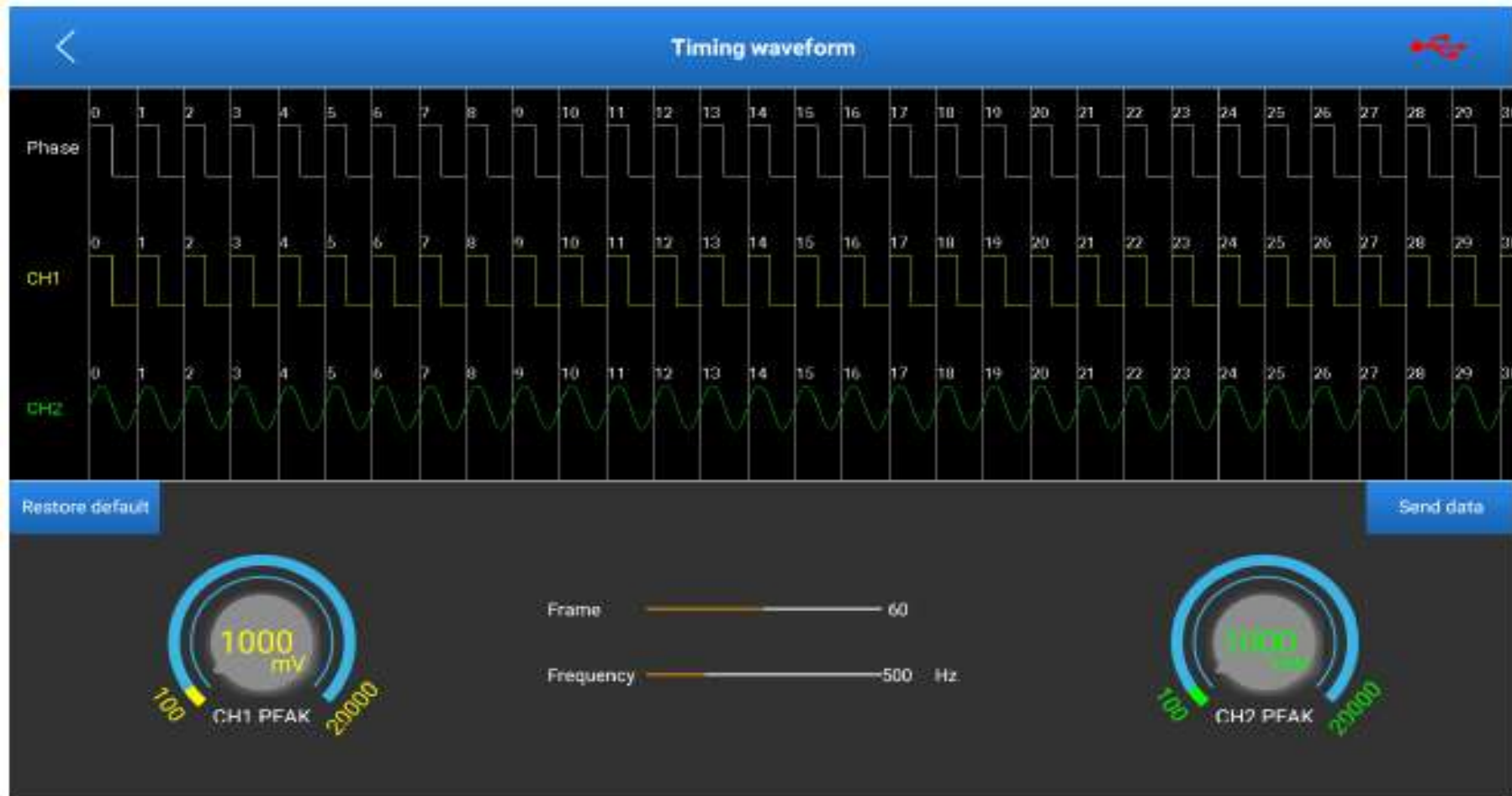


# Hand-drawn

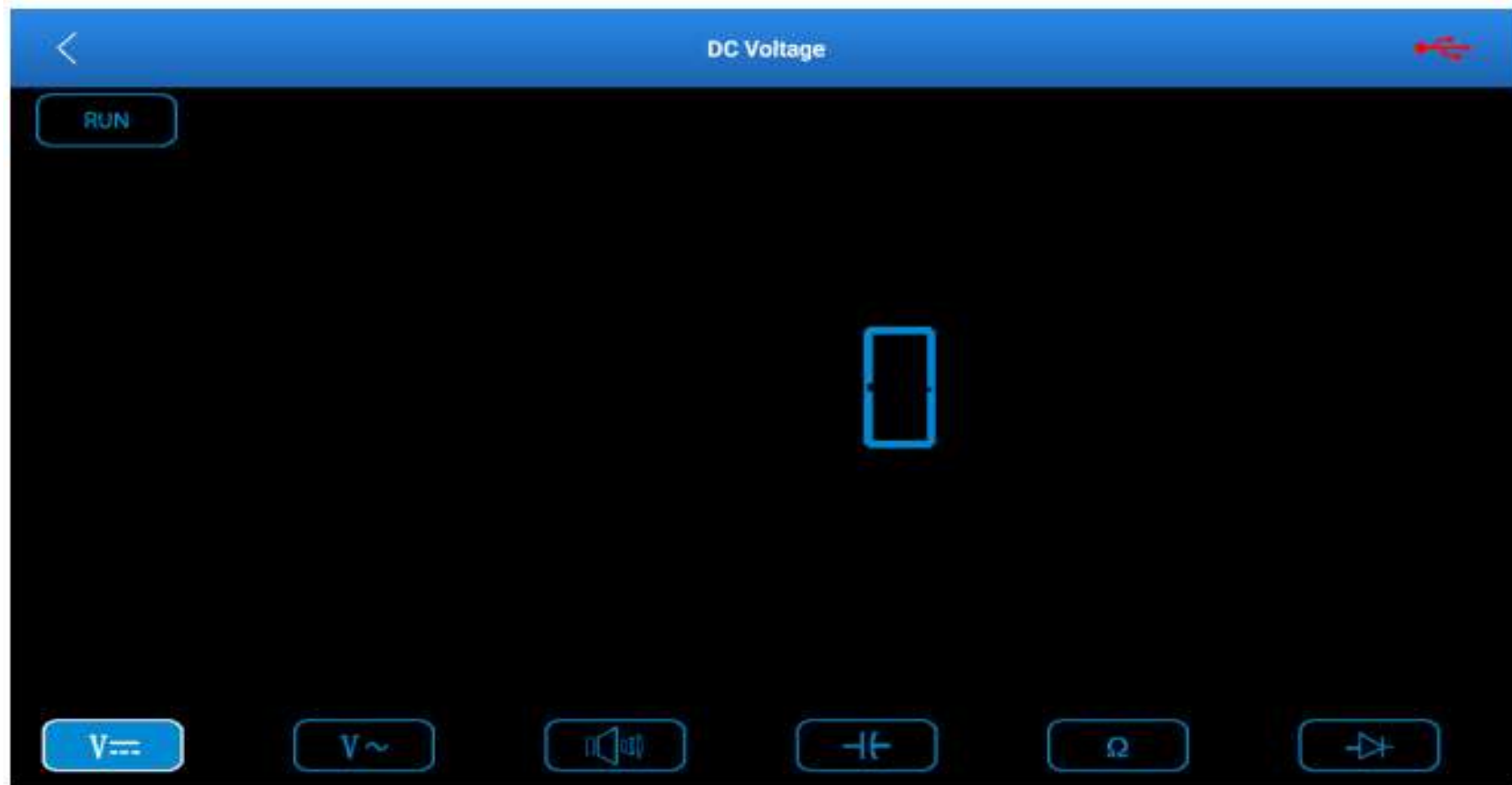
- Total frame: 1-3 (optional). Indicate the total number of output points
- Generally, one waveform is composed of 100 points. The values 1-3 indicate that you can select 100, 200, or 300 points to form a waveform.
- Edit frame: You can edit a single frame or edit all
- Waveform: You can select a preset waveform and place it in the hand-drawing area
- Frequency: Frequency of a single frame (for 3-frame output, the total frequency is the set frequency/3)
- Amplitude: Amplitude of the output waveform
- Offset: Offset of the output waveform



# Timing Waveform



# Multimeter



# Accessory list



## HT30 test leads

A kind of special line used to connect sensors and test various types of signals



## 7-pin interface adapter cable

Used to connect the sensor module and actuator to test the actuator



## Battery clamps cable

Used to connect the sensor module to the car battery only using the Actuator module



## USB Cable

Connects the Sensor module to the diagnostic tool

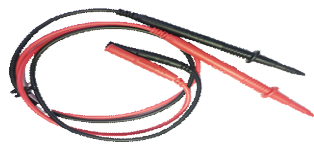
# Accessory list



**6-way breakout lead**  
is available in 3 joint sizes:  
1.0mm, 1.6mm, 2.8mm



**Back Probe Pins Suite**  
Used for piercing the insulation  
of wires to allow for automotive  
electrical measurements without  
causing damage to the wires.



**Multimeter test pen**  
(black + red)



**Power adaptor**

# Order Info

<b>Product Name:</b>	X-431 S2-2 Sensorbox
<b>Article Number:</b>	LE-S2-2-301180847
<b>List Price:</b>	399,00 € + VAT
<b>Package Information:</b>	Size: 422 x 123 x 354 mm Weight: 4,5 kg

# Thank you!



Diagtools LTD  
Pernavas 43A, Riga, Latvia



tel. +37129416069, +37167704152



[diagtools@diagtools.lv](mailto:diagtools@diagtools.lv)  
[www.diagtools.lv](http://www.diagtools.lv)