INSTRUCTIONS FOR USE

TOF-Controller

Test bench for ToFscan and sensors

Instructions for use
TOF-Controller
Last Update 2019/04/29
Ref: TOF-CTRL-IFU-RevC-EN

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Description

The TOF-Controller is a test bench designed for testing the ToFscan main unit and all its sensors.

It has two separated functions:

1. ToFscan control:
    a. Electric Stimulation control
    b. Sensor communication control

2. Sensor cable control (TOF-S2, TOF-ES, TOF-PS, TOF-FS)
    a. Electrode cable integrity
    b. Sensor sensibility

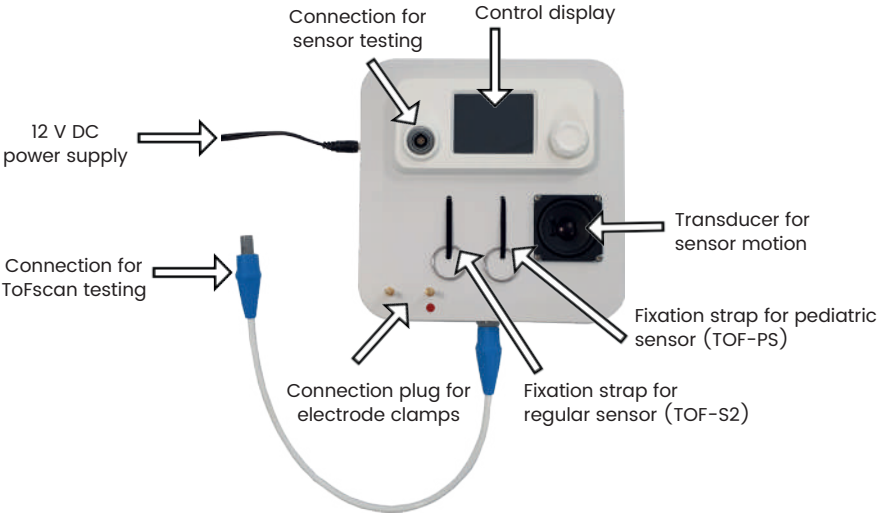


Fig1: TOF-Controller

Note:
The transducer for sensor motion simulates the patient's movement.
The connection plugs for the electrodes clamp simulate the patient's skin impedance.
The red dotted plug indicates how to connect the electrode clamps.

The TOF-Controller is delivered with:
- Its power supply
- A double ended LEMO connector cable
- A naked pediatric splint (to test the eyebrow sensor)

Periodic control of the TOF-Controller

In order to maintain initial performance, the TOF-Controller has to be check every year by IDMED.

Related documents

The operator should be able to use the ToFscan itself. Please refer to the user manual of the ToFscan.

Sensors cable control

1. Connect the 12V DC power supply.
2. Connect the sensor to the TOF-Controller.
3. Connect the electrode clamps: red clamp to the red dotted mark plug and the black clamp to the other plug.
4. Install the sensor. See below how to install each type of sensor.
5. Select the "SENSOR" mode.
6. Push and hold the button to start the test.

TOF-S2 sensor control

For the adult thumb sensor (TOF-S2), the head of the sensor should touch the transducer center. Use the strap the furthest from the transducer to maintain the splint.

TOF-PS sensor control

For the pediatric thumb sensor (TOF-PS) use the strap the closest from the transducer to maintain the sensor.

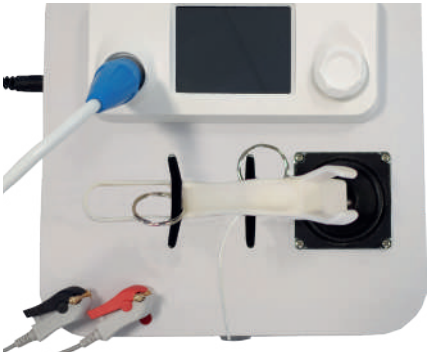
TOF-FS sensor control

For the foot sensor (TOF-FS) put the sensor directly on the transducer center.

TOF-ES sensor control

For the eyebrow sensor (TOF-ES), use the naked pediatric splint to maintain it. Use the strap the closest from the transducer to maintain the splint. Position the eyebrow sensor inside the pediatric splint.

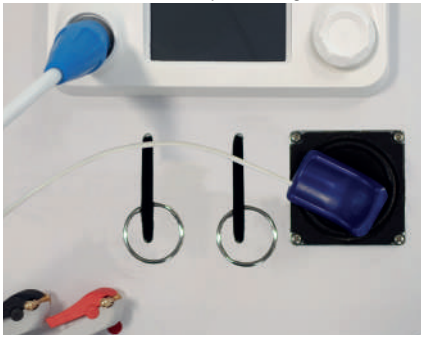
Note: The eyebrow sensor is too light to be placed directly on the transducer.



TOF-S2 positioning

TOF-PS positioning

TOF-ES positioning



TOF-FS positioning

Sensor Results

The TOF-Controller will display results as « OK » or « Fail » for the following parameters:
- Sensor link (sensor detection)
- Sensitivity of the sensor (movement detection)
- Continuity of the electrodes cable

Note:
The numeric values are only for internal use (IDMED).

Sensor results

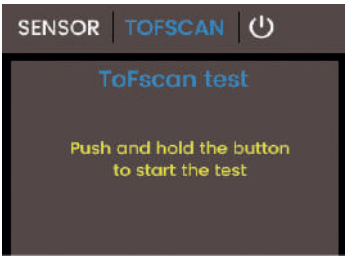
The results are normal when the TOF-Controller displays “OK” in green below each parameter.

If the TOF-Controller displays one or more results as « Fail », refer to the chart below.

Parameters tested	Possible issues
Sensor link	- LEMO connector - Sensor cable If these 2 parameters don’t have the same result, please check the position of the sensor on the TOF-Controller.
Sensor sensitivity	
Electrodes continuity	- Cable / Wire disconnected (can be a open-circuit) - Y-Housing (can be a short-circuit) - LEMO connector

ToFscan control

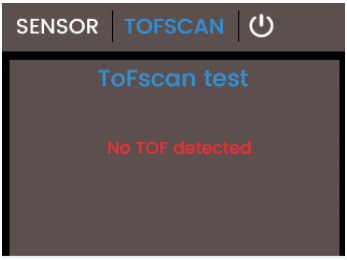
1. Connect the ToFscan to be tested to the TOF-Controller with the double ended LEMO connector cable.
2. Switch on the ToFscan unit and the TOF-Controller.
3. Set the ToFscan in the TOF mode, with 50 mA as stimulation intensity.
4. Select the ToFscan mode on the TOF-Controller user interface.



5. Start the TOF control mode and immediately start the TOF stimulation on the ToFscan unit.

TOF-Controller connected to the ToFscan

Note:
If the TOF-Controller does not detect a TOF stimulation within 10 seconds, an error message will be displayed on the screen.



When connecting the ToFscan, check if:
The sensor icon is green (sensor detection circuit OK)
The electrode icon is green (electrodes impedance measurement function OK)
If one or more icons appear in grey or red, there is an issue either on the motherboard or on the LEMO connector.

ToFscan Results

The TOF-Controller will display « OK » or « Fail » for the following parameters:
- The intensity of stimulation pulse
- The duration of each stimulation pulse
- The interval between the TOF pulses

ToFscan results

Note:
The numeric values are only for internal use (IDMED).
If you get a "Fail" result on one of the parameters, please contact IDMED for further instructions.

Battery test of the ToFscan / Charge

1. Connect the ToFscan charger to the power supply.
2. Check if the charge icon changes when you connect the power supply (charging process).

3. Check if the battery icon gets full green when the charging process is complete (may take up to 8 hours).

Additional testing

In order to complete ToFscan unit testing check if:
- You are able to go through user interface using the button (rotation left/right and push).
- You get a red flash light when you look into the optical output (wait 16s at least)
- The general appearance is good

Reports

For each test the operator should use a report form. Example of report is shown in Annex A.

Annex A

ToFscan sensor control report

Sensor identification

☐ TOF-S2 ☐ TOF-PS ☐ TOF-ES ☐ TOF-FS

Label (lot number)	

Result

Test	Ok/Fail
Sensor Link	
Sensor sensitivity	
Electrodes continuity	

Validation

Operator	
Date	
Signature	

ToFscan main unit control report

Identification

Serial Number	
Software version	

Results

Test	Ok/Fail
TOF pulse intensity	
TOF pulse duration	
TOF pulse intervals	
Sensor detection circuit	
Electrodes impedance measurement function	
Charging icon	
Full battery icon	
Button use	
Optical output red light	
General appearance	

Validation

Operator	
Date	
Signature	

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