Electronic Diagnostic Device

Technical User's Guide

Version 2.0

Products:

- TARZ27
- TARRZ27-TFT
- TARZ27S



Warnings and Safety Terms

- **Users should follow the safety and warnings written below.**
- **The electronic card to be tested must not be energized.**
- **It should be ensured that the capacitors on the electronic card to be tested are discharged. No measurement should be made without discharge.**
- **It should never be wiped with a wet cloth.**
- **ESD wristbands must be worn during testing.**
- **Do not go beyond the operating conditions written in the technical specifications of the device.**
- **Do not touch the device with wet hands.**
- **Clean the device with a dry cloth while the system is not in operation.**
- **Do not operate above or below the voltage range specified in the technical specifications of the device.**

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1 – Introduction

1. General Description

Electronic Diagnostic Device is an electronic measuring device that extracts the impedance curves of the components on the electronic board without energizing the device to be tested. It displays voltage and current graphics in computer software. Each component has a unique impedance curve and when this impedance curve is broken, the component does not work. These measurements are not shown by the measuring instruments which are widely used in the market (Multimeter). Two electronic cards or components can be compared via the A and B channels of the device. If the user wishes, it is possible to record the solid electronic card or component via computer software and test the recorded electronic card or component via the recording without the need for the channel B. There are three models, TARTZ27, TARZ27-TFT and TARZ27S. All three model devices operate with a computer program. At the same time, the TARZ27-TFT model can perform measurement without the need for a computer. You can find the technical specifications of the devices on the technical specifications page.

2) Fields of Application

Thanks to the multi-functional volt stages and frequency range, all electronic card malfunctions can be eliminated. To give an example of application fields in the market:

- Combi boiler motherboards
- Air conditioner motherboards
- Computer motherboards
- Mobile phone motherboards
- Television and stereo motherboards
- ECU (autobrain)
- DGS automatic transmission cards
- Ship Electronics
- Aircraft Electronics
- Industrial electronic motherboards
- Electronic production facilities
- Businesses that perform electronic repairs

2 – Technical Specifications

The technical specifications of the TARZ27 TARZ27S and TARZ27-TFT devices are listed in Table 2.1.

Table2.1: Technical Specifications of TARZ27, TARZ27S and TARZ27-TFT Devices

Device	TARZ27	TARZ27-TFT	TARZ27S
Voltage Ranges	10,15,20,50 Volts	10,15,20,50 Volts	10,15,20,50 Volts
Frequency Levels	90HZ,200HZ,500HZ and 1KHZ	90HZ,200HZ,500HZ and 1KHZ	50Hz,70Hz,90Hz,115Hz,155Hz180Hz, 210Hz,260Hz,338Hz,390Hz,447Hz, 520Hz,615Hz,781Hz,850Hz,1kHz, 1.55kHz,2kHz,2.6kHz,3kHz
Display	None	5” Color TFT LCD	None
Device Check	Computer software or front panel	Computer software or front panel	Computer software
Computer Connection	USB 2.0	USB 2.0	USB 2.0
Warranty	1 Years	1 Years	1 Years
Power	110-230 VAC 50-60HZ	110-230 VAC 50-60HZ	110-230 VAC 50-60HZ
Scanning Mode	Automatic or Manual	Automatic or Manual	Automatic or Manual
Measurement Channels	A,B,A+B,ALT	A,B,A+B,ALT	A,B,A+B,ALT
Dimensions	350 x 288 x 115mm	350 x 288 x 115mm	350 x 288 x 115mm
Weight	3.650kg	3.650kg	3.650kg
Short Circuit Detection Feature	_____	_____	Yes

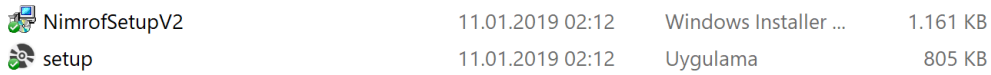
3 – Installation

3.1 Minimum Operating System Requirements

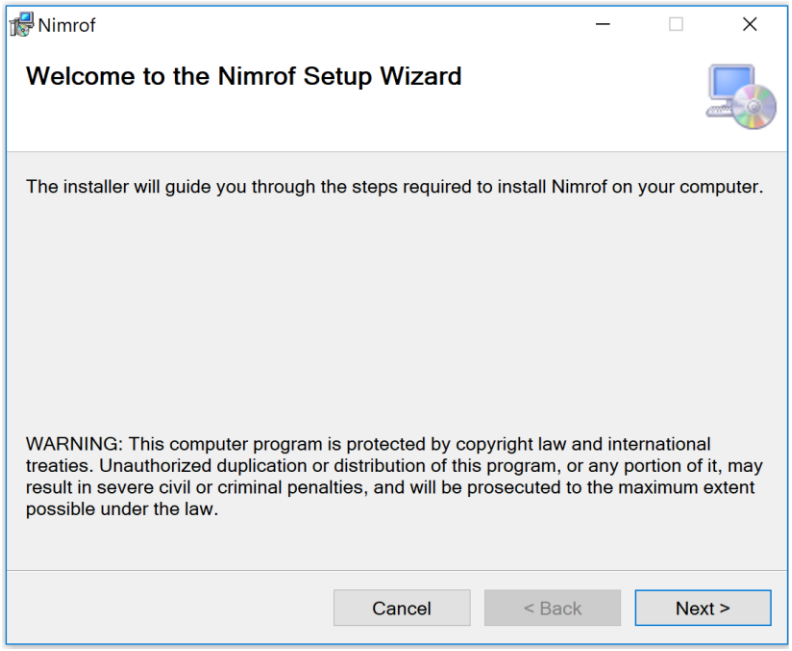
- 2GHz or higher CPU
- Microsoft Windows
- 4GB of RAM
- USB 2.0 Port

3.2 Software Installation

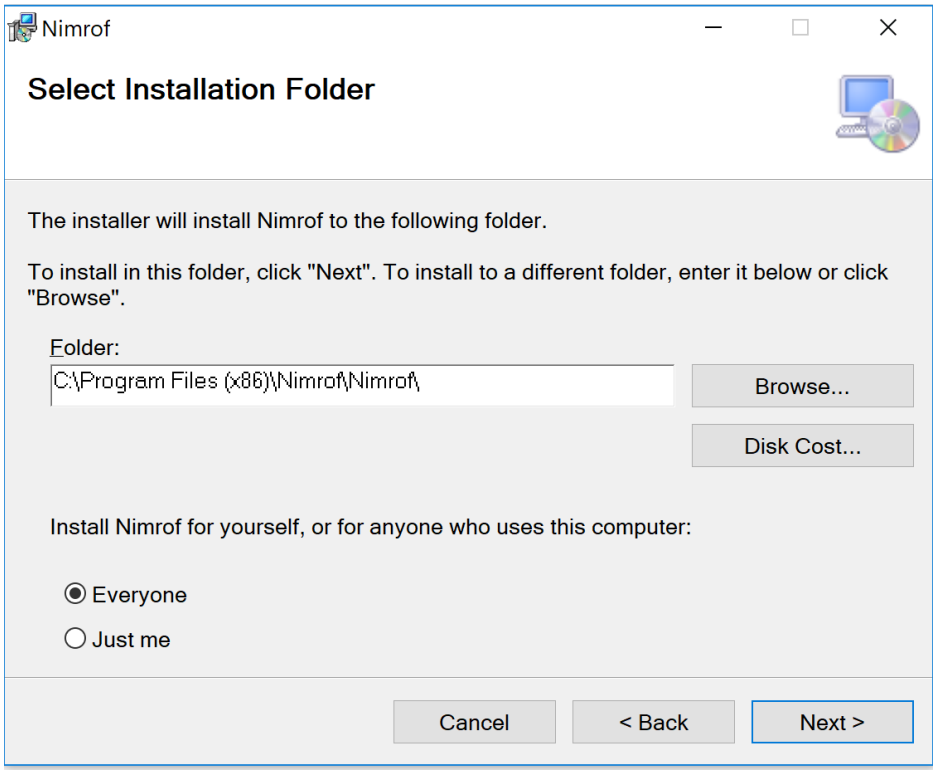
- Run the setup file



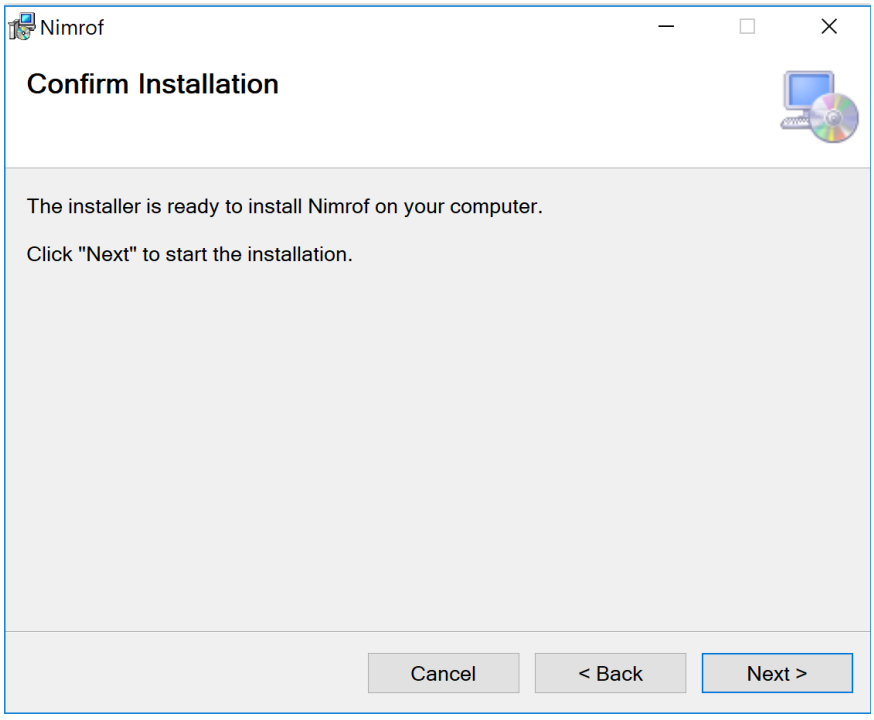
- Click Next button.



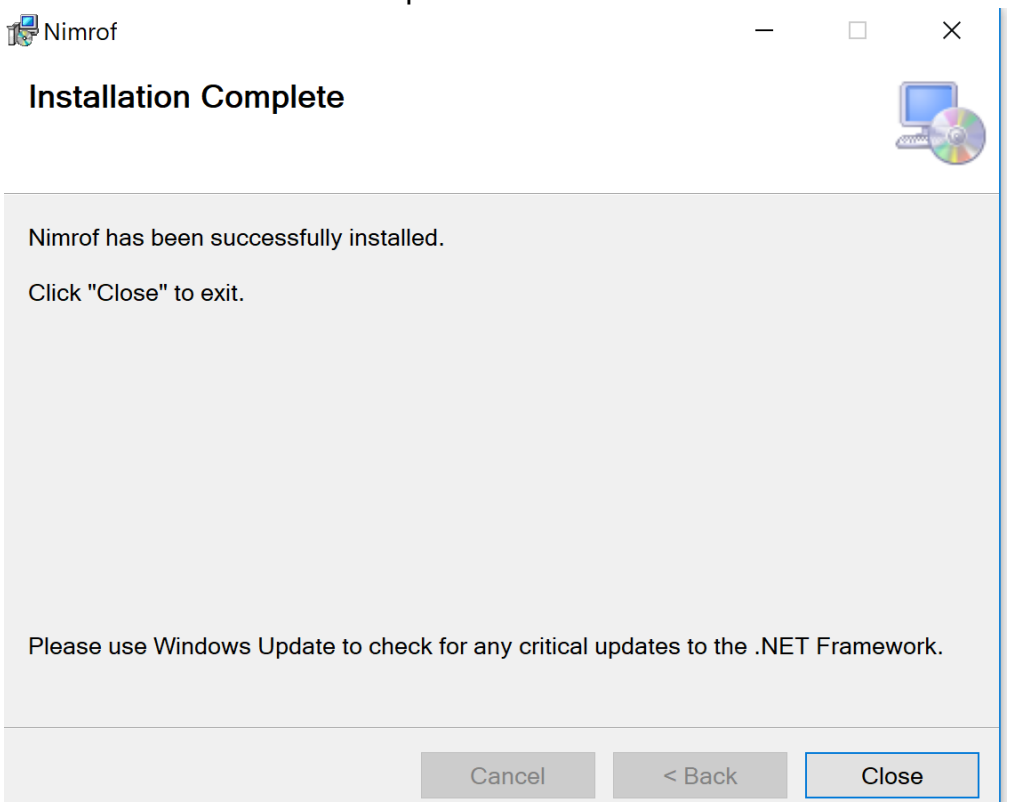
- While the settings are like this, click the NEXT button again.



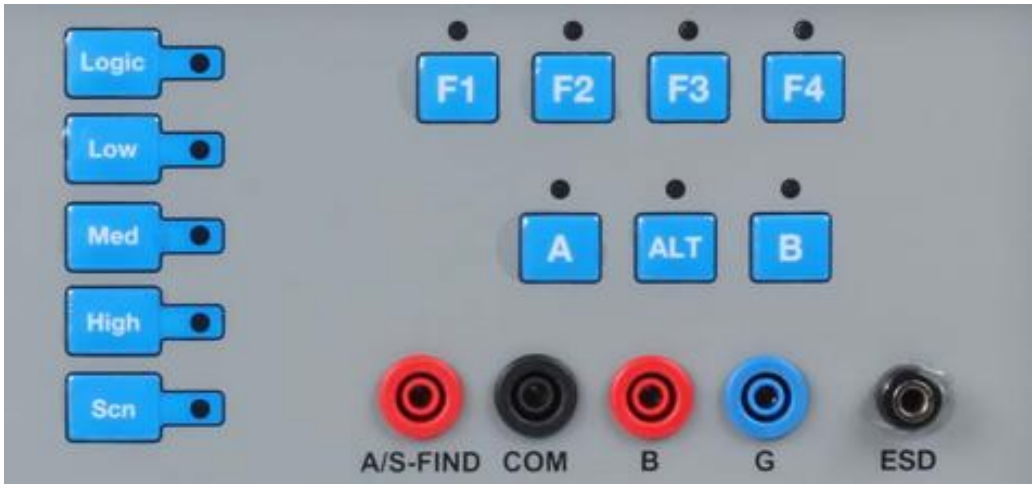
- When you click the Next button again, the installation will start.



- You can exit by clicking the Close button. “Nimrof Home”, “Nimrof P2P” exe will be created on the desktop.



3.3 Device Menu



Low :	**15V**	**F1 : 90Hz**
Logic:	**10V**	**F2: 200Hz**
Med :	**20V**	**F3 : 500Hz**
High :	**50V**	**F4 : 1kHz**

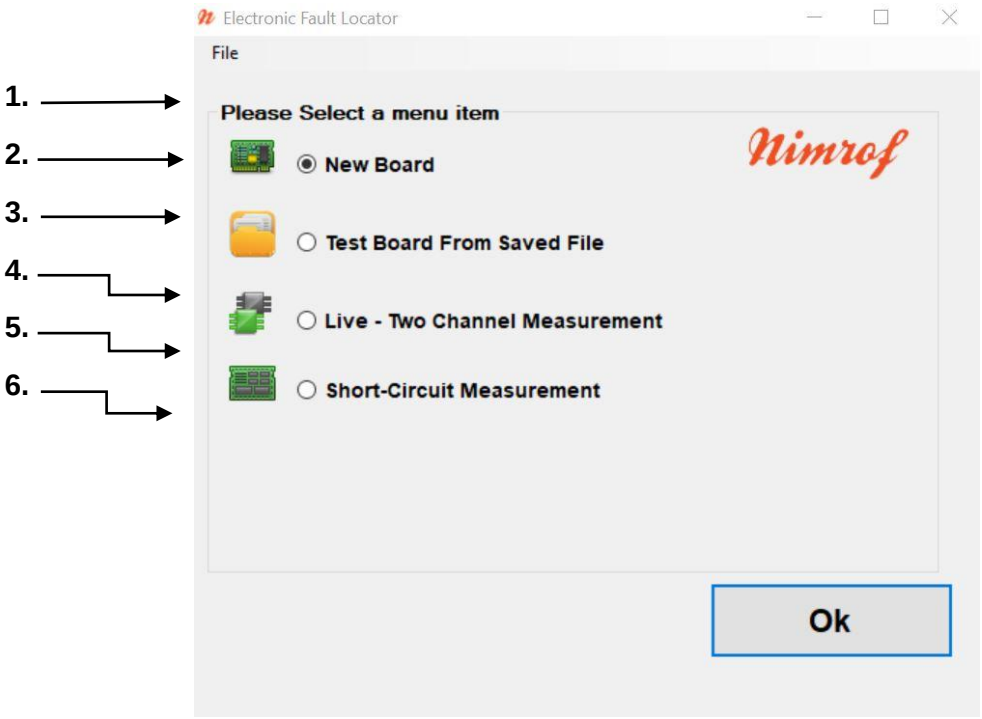
- **A : Measuring Probe A**
- **ALT : GND (The part to be connected to the GND of the faulty card)**
- **B: Measuring Probe B**
- **ESD: Electro Static Discharge Place**
- **G: Trigger Input**

3.4 Product Contents

- **TARZ27 TARZ27S or TARZ27-TFT Device**
- **1 x USB Cable**
- **1 Power cable**
- **two red, one black measuring probe**
- **CD or USB stick with software and user manuals**

4 – Computer software

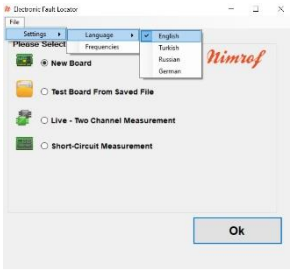
4.1 Main Interface



1. **It is the new registration tab.**
2. **It is the saved card measurement tab.**
3. **It is the Quick card measurement tab.**
4. **It is the Solid and Faulty electronic card comparison measurement tab.**
5. **It is the Remote Solid and faulty card comparison measurement tab**
6. **It is the Short Circuit Measurement tab (valid for S series Devices).**

4.2 Language Options

You can change the language options in the File/Settings/Language tab.

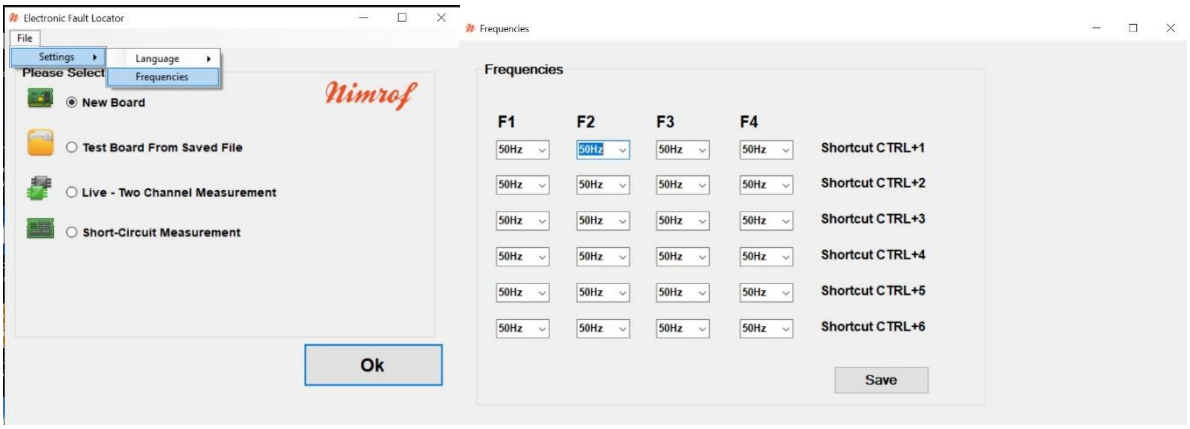


4.3 Calibration

When the computer software is first installed, the calibration information of the device is loaded into the computer software by clicking CTRL+K

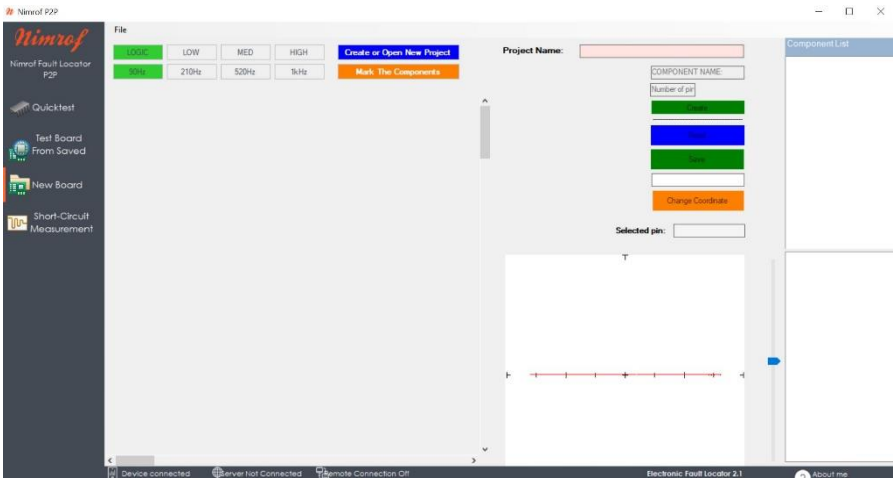
4.4 Frequencies

he user selects the desired frequencies from the Frequencies section and can see the frequencies he/she has set on the screen by clicking CTRL+1, CTRL+2…. CTRL+5 keys (Shortcut CTRL+1) during the measurement (This feature is only valid for S series devices).

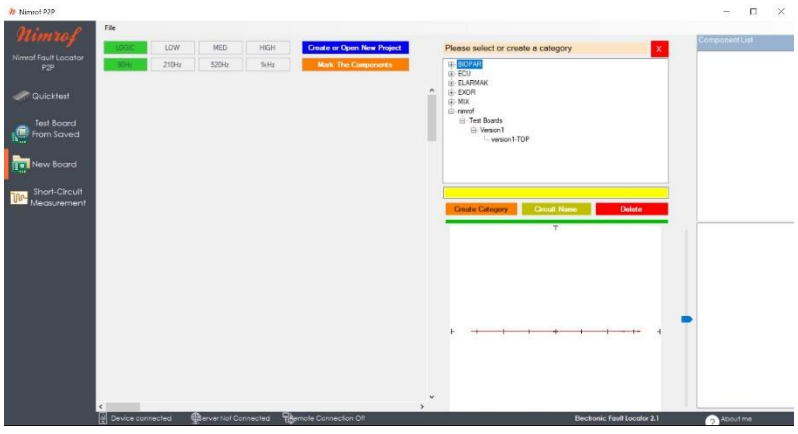


5 – New Card Registration

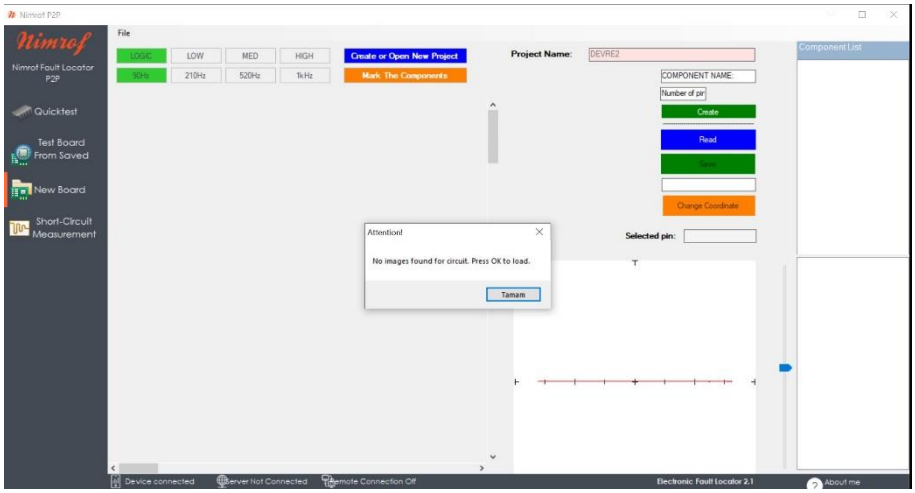
- **When the new card tab is clicked, the “Create or Open New Project” button is clicked on the page below. This part is used to create a new electronic card record or to make changes on a previously saved circuit.**



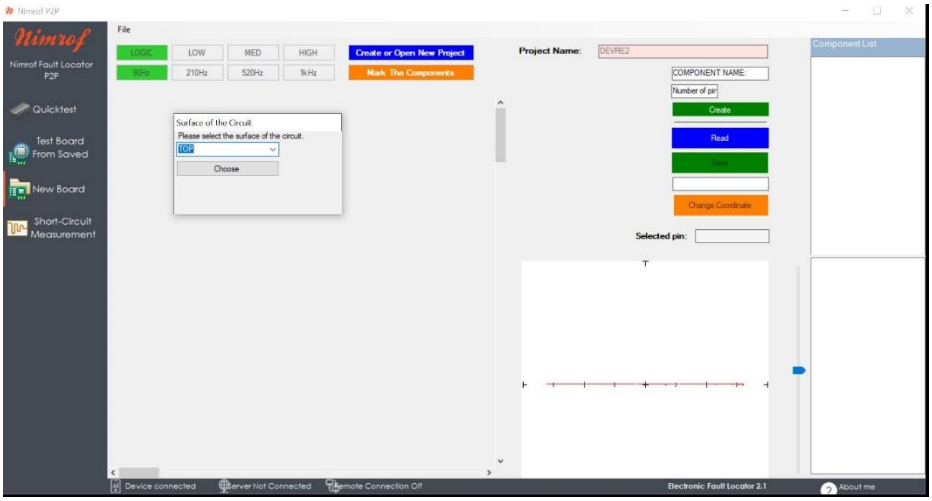
- Clicking on “Create or Open a New Project” opens a page on the right. If you are using this section for the first time, this section will be empty. A project named category, brand, model and circuit has been created as an example below. As you can see, in order to create a circuit file, you must enter the category, brand, model and circuit name of the electronic card you will enter. After this log is created, the next step is taken by double-clicking the circuit name with the mouse or clicking the save and exit button.



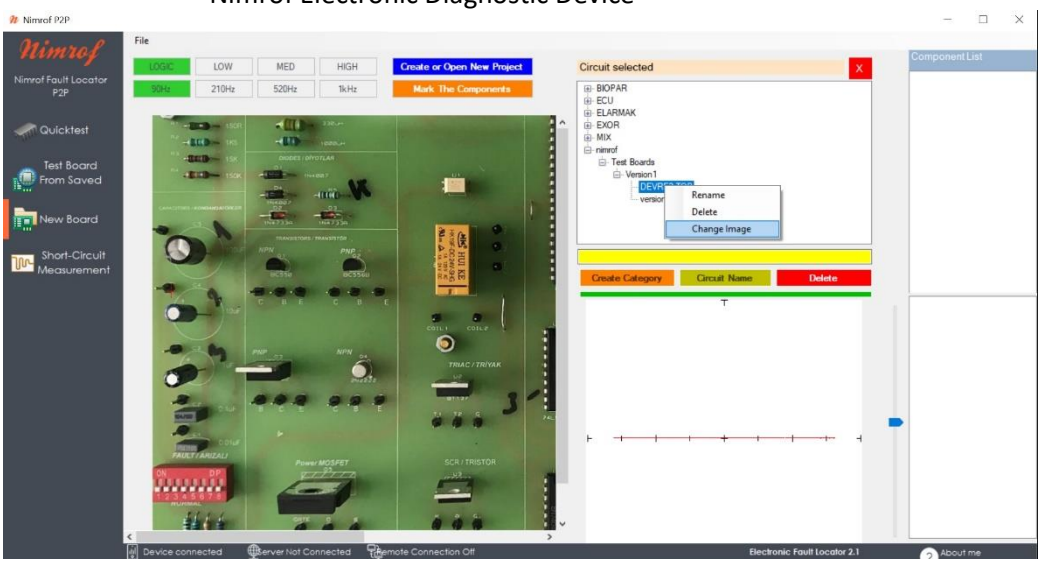
- “No registered image found for the circuit. Click Okay to install.” If you are creating the circuit for the first time, such a warning message will appear. It will ask the user for the circuit picture that he/she wants to save. After clicking the “Okay” button, you pass on to the next step.



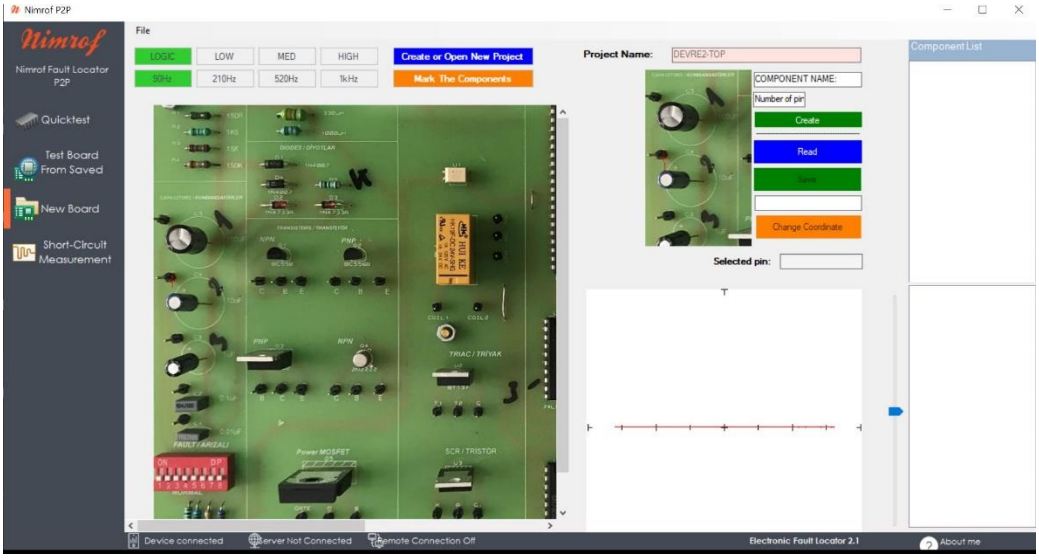
- The surface of the circuit you want to record is selected from the circuit surface section and the other stage, the circuit image, is selected.



- If the circuit is wrongly selected, the image can be changed by clicking on the “Create or Open a New Project” section again, finding the name of the circuit you created from the sub-tab of the relevant project, right-clicking with the mouse, and clicking on the “Change Image” section from the relevant tab.

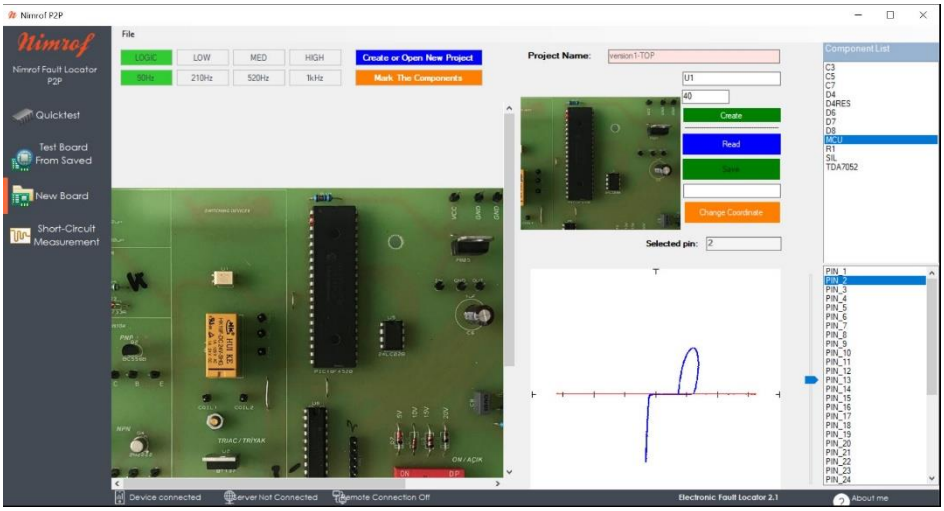


- Find the component you want to record in the picture on the left by holding down the left mouse button. Then write the name of the component you found in the “COMPONENT NAME” section. Then, write the number of pins of the material you entered in the “Number of Pins” section at the bottom and click the “Create” button.



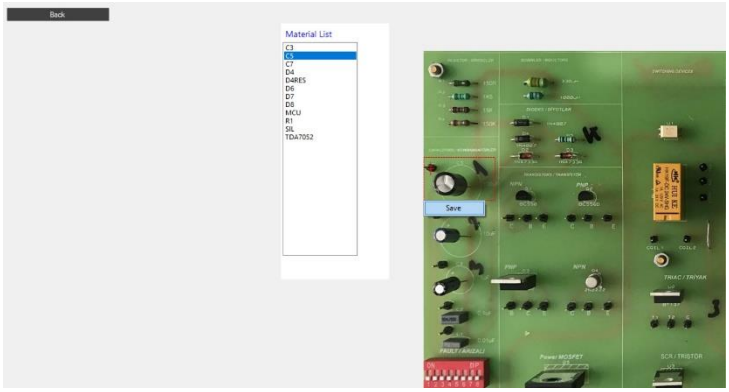
- As can be seen below, an 8-pin material named u1 has been created and this material is being measured. For the measurement of the material, the pin that will be measured from the left picture is selected first. After this step, the impedance curve of the selected pin is saved by clicking the “Save” button after pressing the “Read” button. After the recording process is finished, the system automatically switches to the other pin. When the registration process

of the materials on the electronic card is completed, the circuit elements button is clicked.



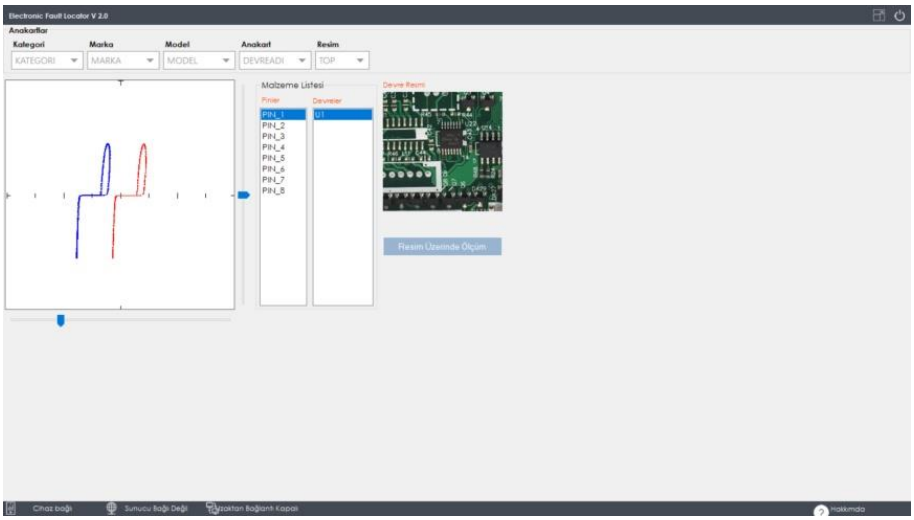
Note: The system automatically switches to the lower pin, but does not automatically select in the image. In the upper right part, there are the materials of the circuit you have created. It does not allow material registration with the same name. You can change or delete the names of incorrectly entered components. Missing or extra pins can be added as well as being deleted.

- In this part, the coordinates of the materials are marked. When the materials in the material list are clicked, the relevant material is observed with '+'. Click the "Save" button after the area of the material is marked and released by pressing the right mouse button. After clicking the "Save" button, the coordinates of the relevant material are saved.

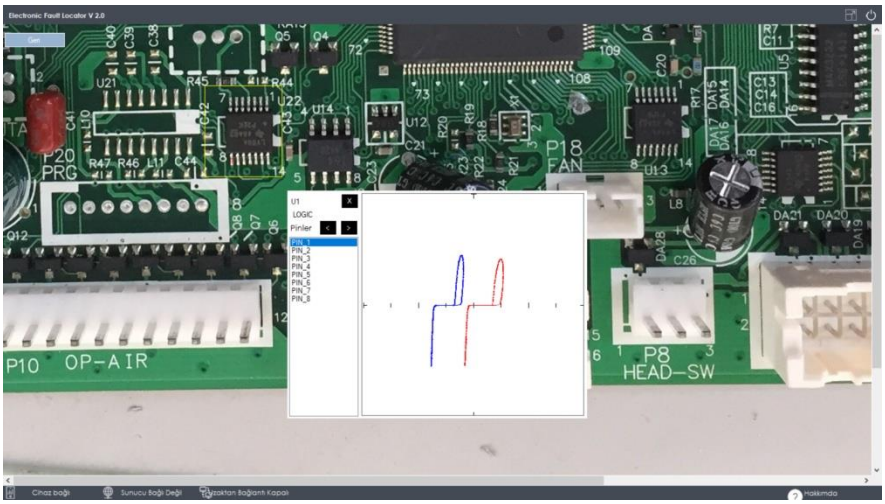


6 – Measurement from Record

After clicking on the “Measurement from Record” tab in the section opened on the first page of the computer software, the following page will open. On this page, it allows you to detect faults by accessing the impedance curves of the solid electronic card you have registered before.

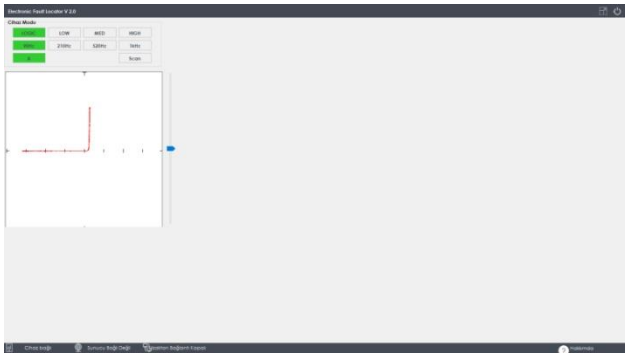


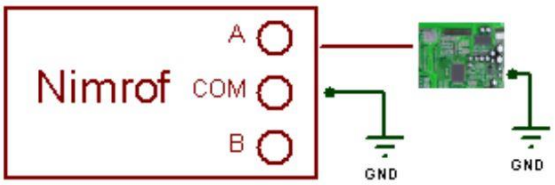
By clicking on the pins of the materials in the circuit, the impedance curves are displayed on the screen. With each click, the pin number of the relevant material will be displayed in the picture. In this way, it is shown in the image on which pin the measurement should be made. The red one is the measurement you made live, the blue one is the measurement in the record. Which voltage and frequency level you have measured and recorded before, the device will automatically switch to that mode. When you click on the “Measurement on Image” button, the relevant page below will open. On this page, you will reach the impedance curves by clicking on the material you want to measure. Registered materials are in the yellow square area mark. When you click on this sign, you can access the impedance curves of the relevant material.



7– Quick Test

After clicking the “Quick Test” tab in the section opened on the first page of the computer software, the following page will open. In this part, measurement is made with the test probe and COM probe attached to the A channel.

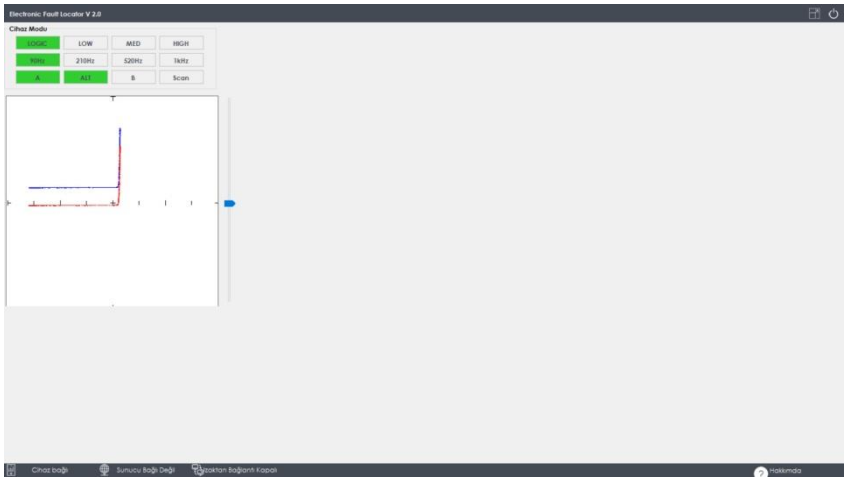


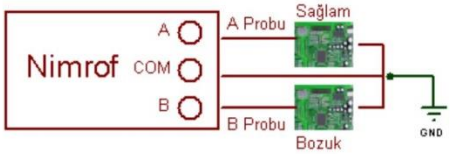


Note: Make sure that it is connected to the GND of the electronic card you are measuring and do not energize the card you are measuring.

8 – Card Comparison

After clicking the “Card Comparison” tab in the section opened on the first page of the computer software, the following page will open. In this section, two electronic card comparisons are made. After connecting the GND of the electronic cards to the “COM” input of the Electronic Diagnostic Device by combining the GND as shown below, the curves of the A and B probes can be seen on the screen by pressing the “ALT” button from the computer program. For the material to be compared, make sure that the two probes touch the pins of the same material on both cards.





9 – Short Circuit Measurement

After clicking the “Short Circuit Measurement” tab in the section opened on the first page of the computer software, the following page will open. There are analog and digital indicators on the screen. The calibration button is used to reset the analog and digital display. The pound will move to the right as it approaches the shorted material in the circuit. This feature is only available for S models.





Note:

- The maximum value of the measurement made is limited by the impedances of the probes.
- The maximum value may rise or fall when measuring probes are changed.

10 – Things to Know

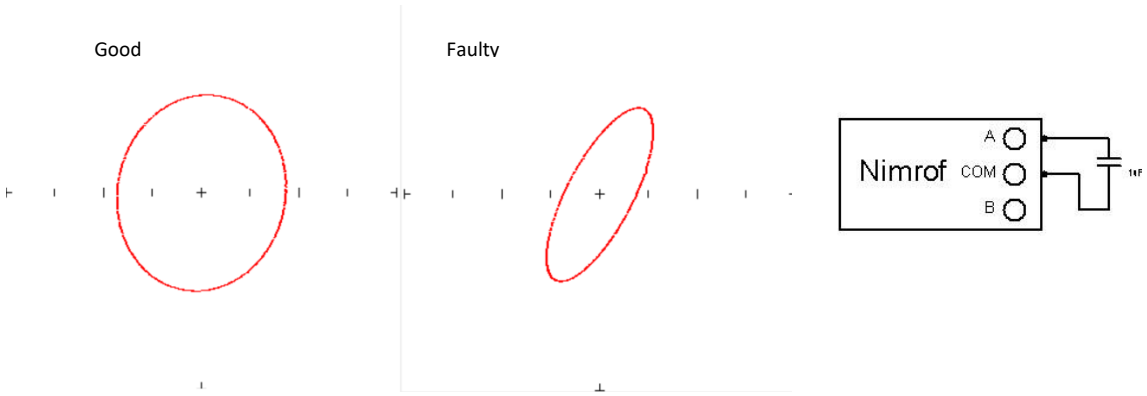
Nimrof Electronic Diagnostic Device is the most preferred device for troubleshooting without the need for electronic circuit diagram in card repair. It detects 90% of the fault detection in the electronic circuit with VI curves. The following rules must be observed in order to successfully diagnose the fault.

- Measurement or recording should be made by connecting to the COM connection of the device via the node point (GND) of the electronic card to be compared or registered.
- The electronic cards to be compared should be exactly the same.
- There should be no modification differences in the electronic cards to be compared.
- There should be no power in the electronic cards to be measured.
- It should be ensured that the capacitors in the electronic cards that have been recently removed from power are discharged.
- Materials such as power transistors, mosfet, triac, IGBT, thyristor on electronic cards should be measured separately. The VI curves of these materials may not always give correct results in the measurements made from the GND of the electronic board and the COM connection of the electronic fault detection device (In such measurements, the voltage levels must be changed on the device and observed in other cases or measured separately).
- The electronic card, which is measured or recorded, should not be touched with the skin. Otherwise, at some stages of the device, the VI curves may be confused with the human impedance.
- If the electronic card with a well-recorded record is an old used card, the lifespan of some capacitors on it may be reduced. For this reason, sometimes the capacitors of the defective card may be in a better condition than the intact board.
- Electronic diagnostic devices do not detect the software malfunctions within the processor.
- In the process of comparing two cards, if the material is removed from one of the cards, the same material must be removed from the other card in order to make a correct measurement. Otherwise, the cards will not be exactly the same.
- Comparisons can be made between these symmetrical circuits without the need for a solid electronic card on defective card that are of the same symmetrical material.

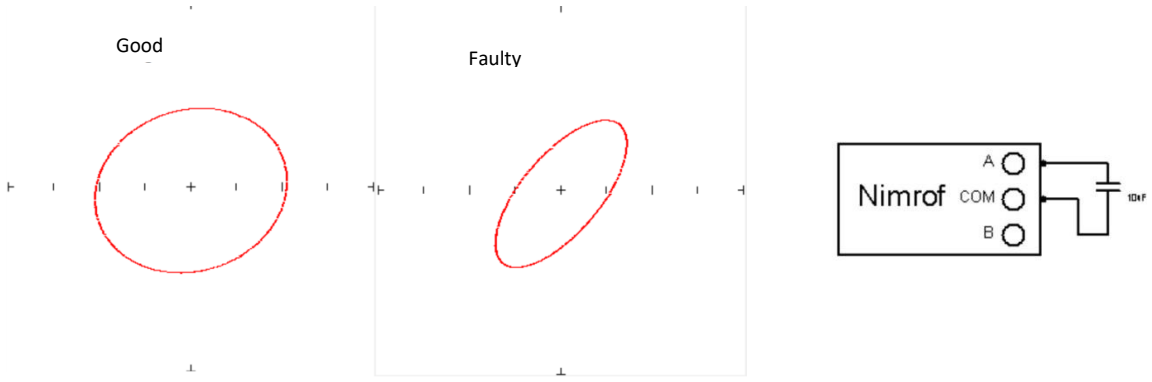
- Starting from the section where the complaint of the electronic card malfunction is found will speed up the failure detection. For example, in cases such as no image, no power supply or no communication, measuring from the fault location will facilitate the process.
- Materials such as potentiometers or jumpers on the electronic card to be detected or recorded must be in the same position.

11 – Sample Measurements

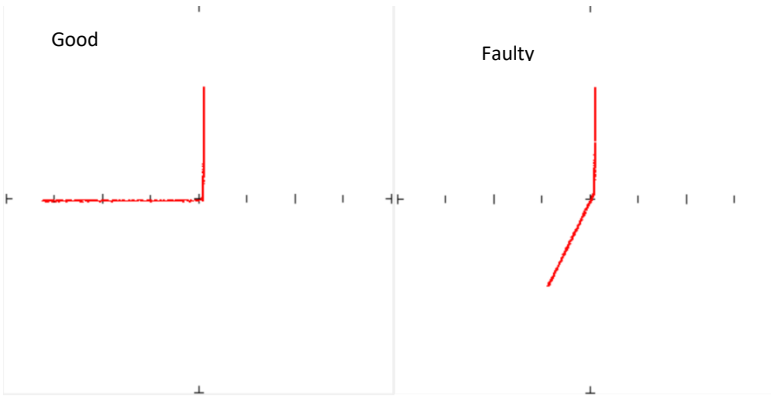
- **Measurement in 1uF LOW-F2 Mode**

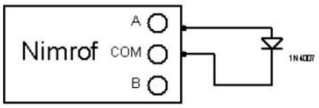


- **Measurement in 10uF LOGIC-F2 Mode**

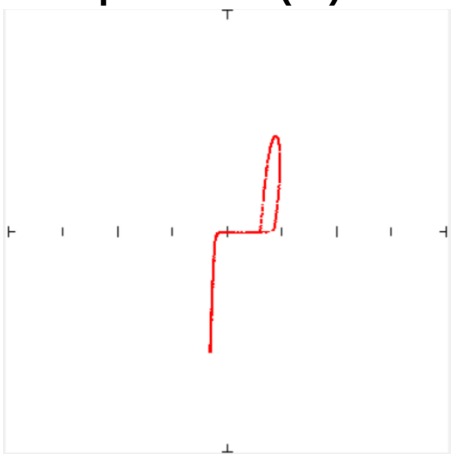


- **1n4007 MED-F1**

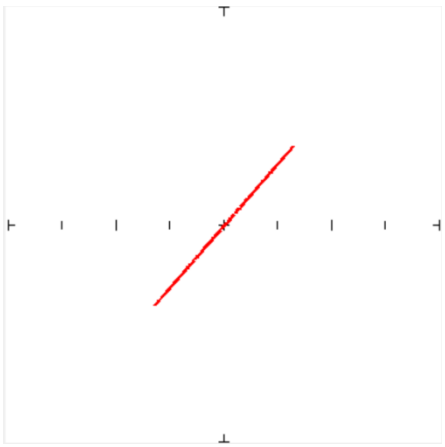


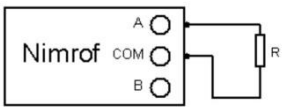


- **Microprocessor(IC) LOGIC-F1**



- **Resistance**





6 – Terms and Conditions

Nimrof are warranted for 1 (one) year starting from the delivery date of the product. The consumables (cables, USB memory or CD .) supplied with the device are not covered by the warranty. All of the goods, including all parts (against defects that may occur due to production and assembly errors and/or defective parts), are within the scope of our company's warranty. In the event that the product fails during the warranty period, due to material and workmanship or assembly errors, it will be repaired without any charge under any other name, such as labor cost, replacement part cost or any other name. The repair undertaken with this guarantee will be made by authorized services of Birrenk Bilgisayar Sistemleri LTD

The Nimrof electronic products are out of warranty in case of user error, uses not in accordance with recommended practice presented in this datasheet, internal circuits are tampered with and/or the cover is removed. Probes, cables CD or USB sticks are out of warranty. In case of malfunction of the device, please send it to Birrenk Bilgisayar Elektronik Ltd Şti or authorized distributor.

7 – Contact

Birrenk Bilgisayar Elektronik Ltd. Şti.

Address: Merkez Mahallesi - Fatih Sokak - No:29/A Avcılar / Istanbul
Phone: +90 212 509 00 63
E-Mail: info@nimrof.com
Facebook: https://www.facebook.com/nimrof
Web: www.nimrof.com
Coordinate : 40.981705, 28.723324