

## CANopen Analyzer



! This preliminary information is not guarantee of device characteristics or performance.  
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# 1. Features & System Requirements

## FNC CANOPEN ANALYZER



### Environment

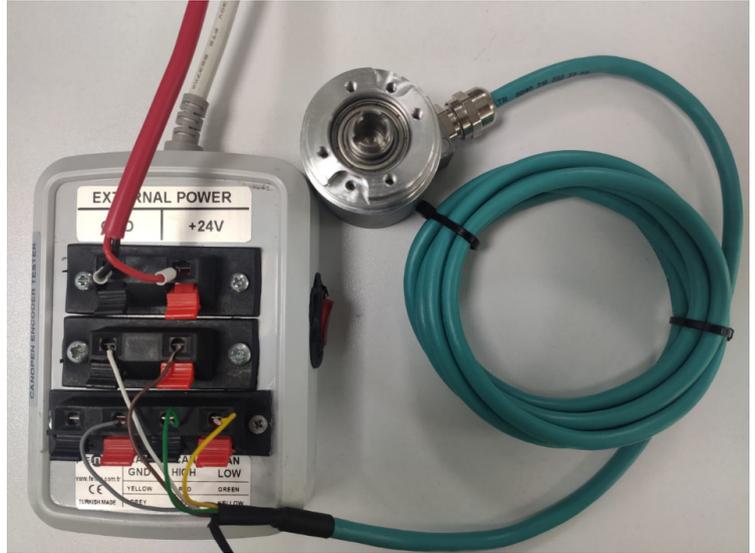
Operating temperature	-40° to +85°C
Temperature for storage and transport	-40° to +100°C
Relative humidity	15 to 90%, not condensing
Ingress protection	IP20

### Electrical

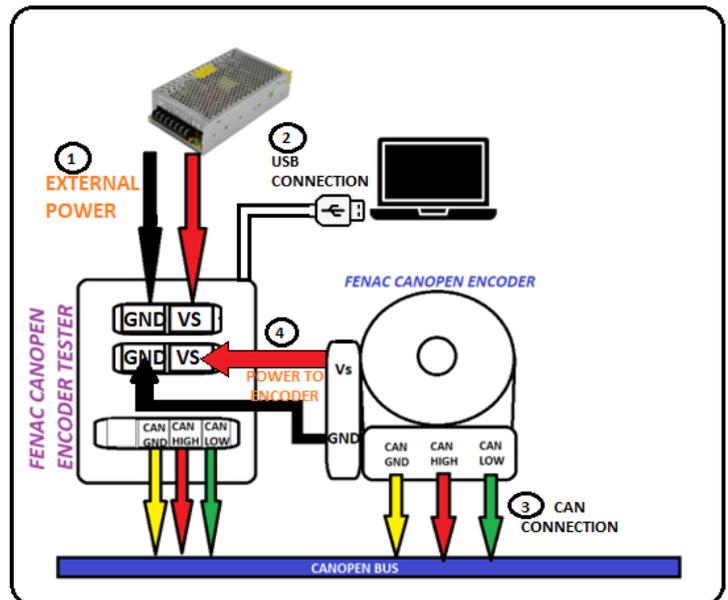
Voltage supply	Encoder specific $V_{\min}$ (for selected encoder) to $V_{\max}$ (for selected encoder)
Time stamp resolution	approx. 42 $\mu$ sec

## 2. Connection

As in the image, a connection must be established between the encoder, encoder tester and the computer where the application is installed.



1. Connect an external 24V power supply to the FENAC CANOPEN ENCODER TESTER.
2. Connect the usb cable of CANOPEN ENCODER TESTER to the computer where the application is installed.
3. Connect the CAN cables of the encoder to the CANOPEN ENCODER TESTER as given in Table 1 below.
4. Connect the encoder power supply cables as given in Table 2.



**Table 1**

Connection (CAN Wiring)	Color
CAN GND	Gray 
CAN HIGH	Green 
CAN LOW	Yellow 

**Table 2**

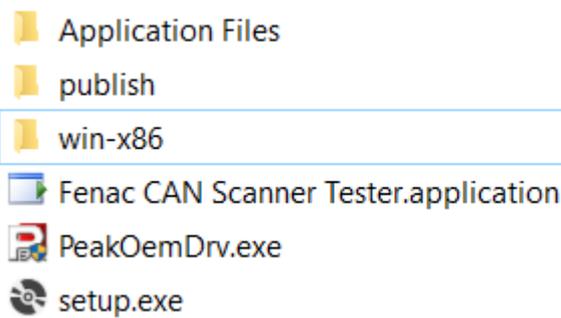
Connection (Encoder Supply)	Color
Vs	Brown 
GND	White 

### 3. Program Installation

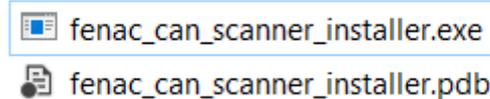
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CANOPEN Encoder Scanner Tester can be used to test Fenac brand encoders with CANOPEN output.

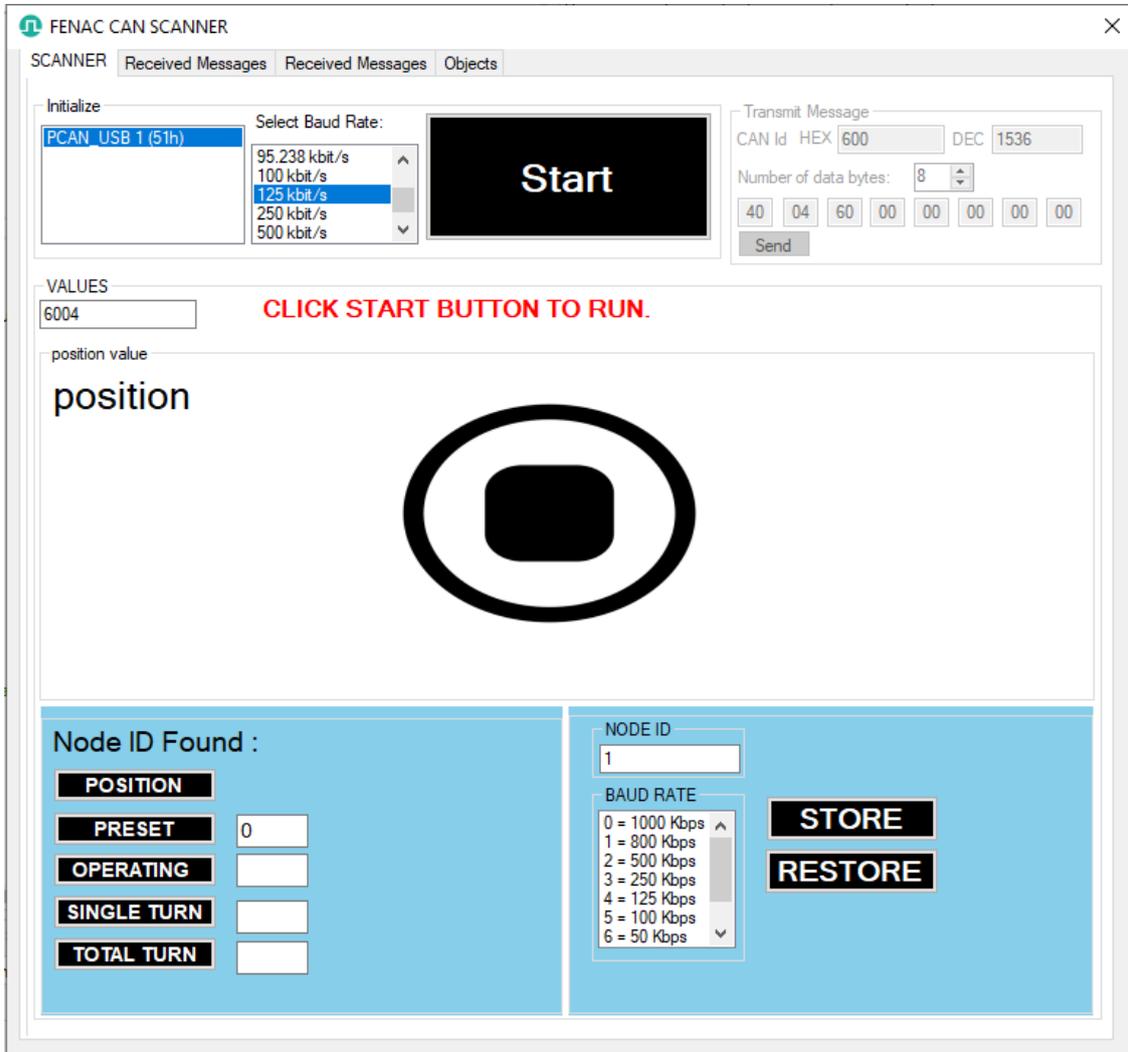
1. The USB cable of the device must be connected to a computer with windows operating system.
2. Open the win-x86 folder from the file you downloaded from the Fenac website.



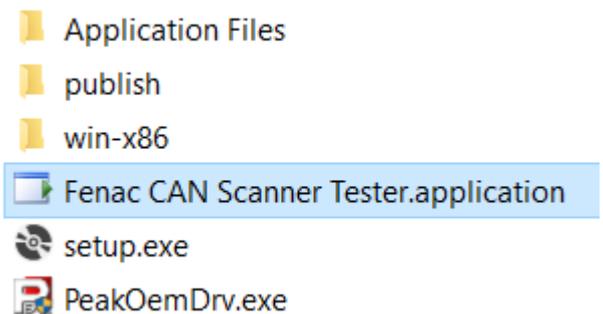
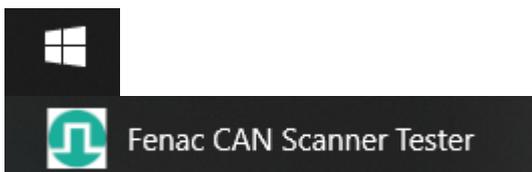
3. Click and open the “fenac\_can\_scanner\_installer.exe” program under the Win-x86 folder. And do all necessary installation processes.



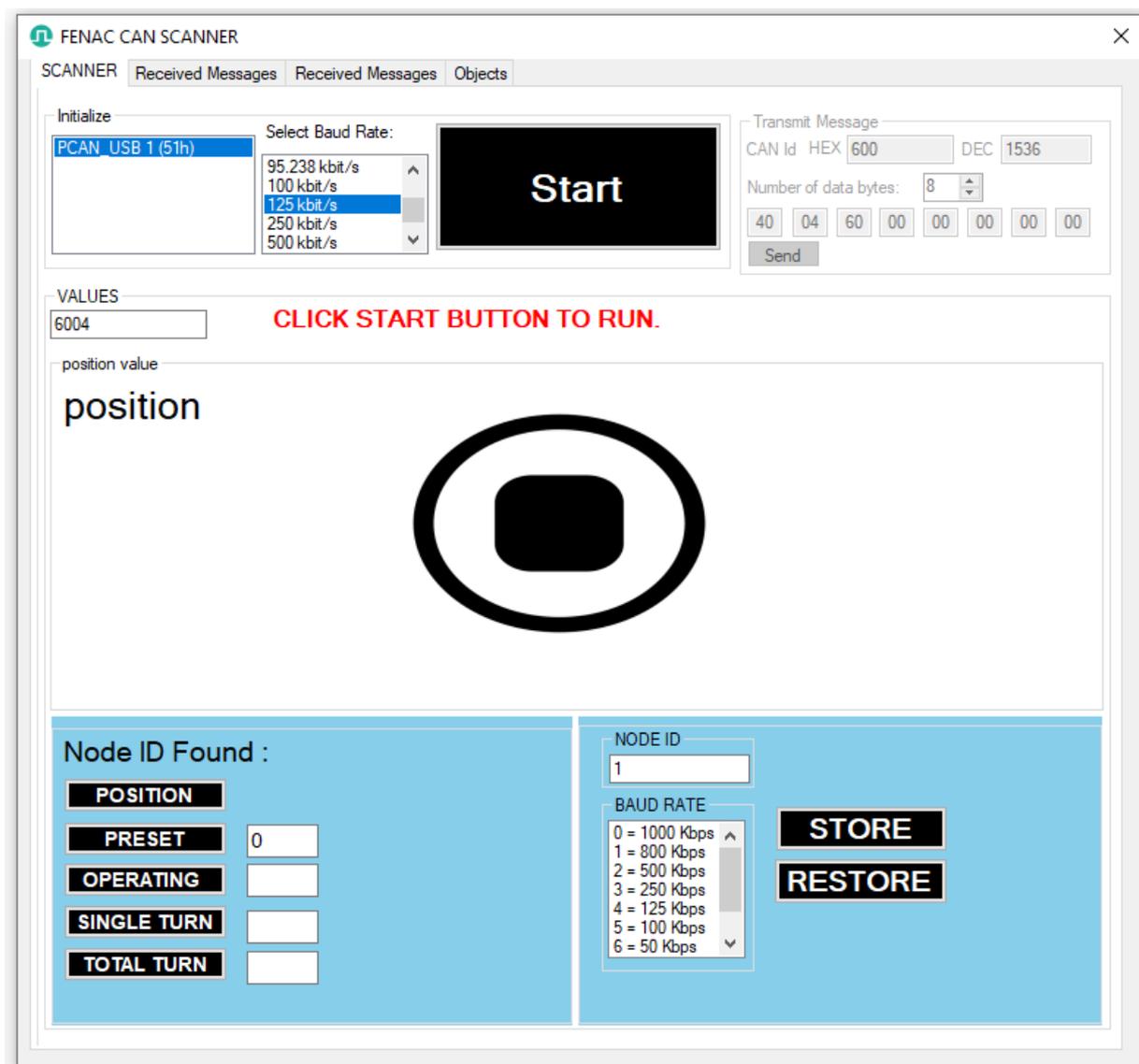
4. After all the installations are done, “**FENAC CAN SCANNER**” application will start automatically as shown in the image.



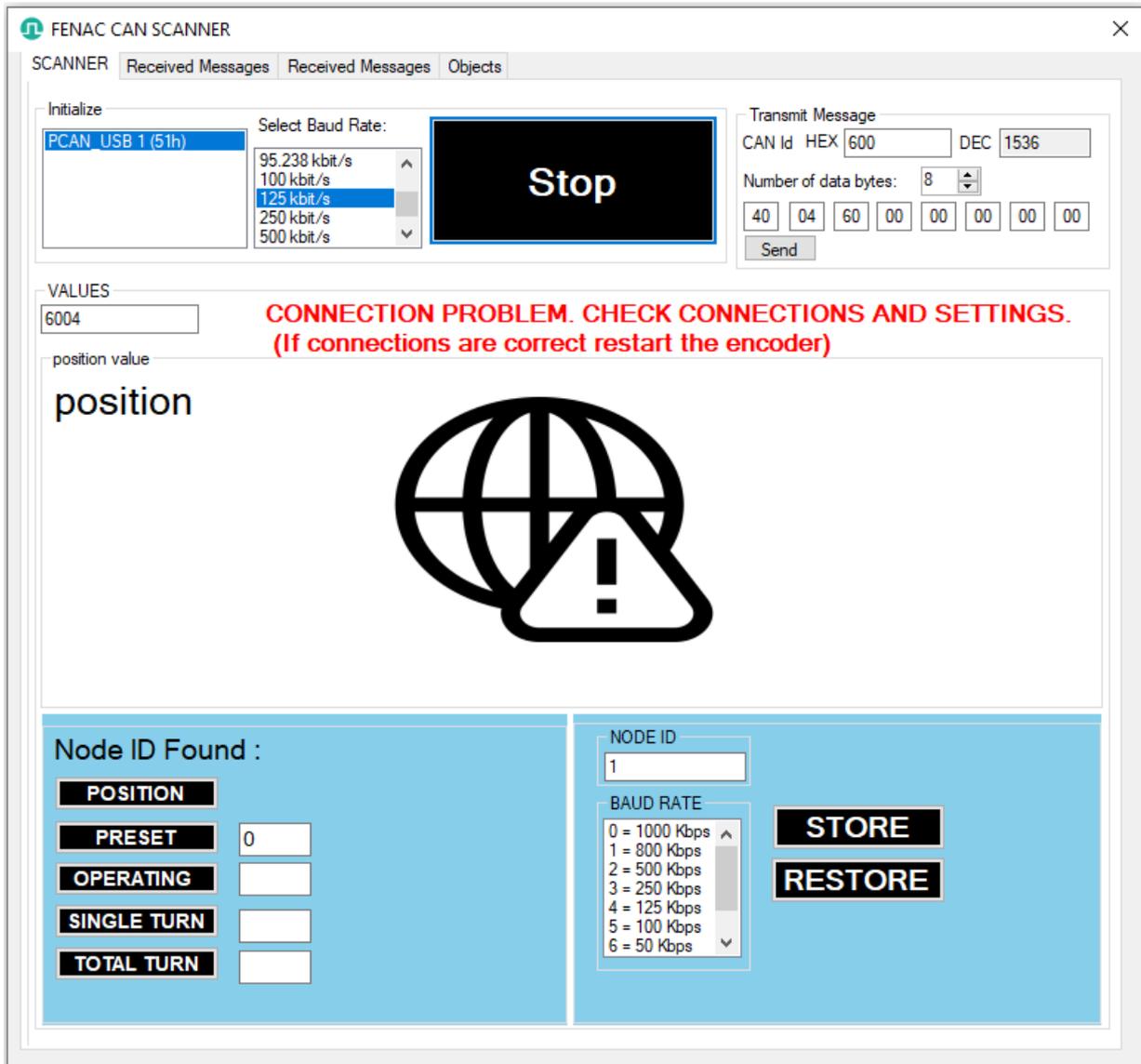
5. When you want to open the application again, it can be found by searching for FENAC CAN SCANNER from the start menu or “setup.exe” in the downloaded folder can be run.



6. When the program is opened, since most of the Fenac brand canopen encoders has 125 kbit/s baudrate are installed in the factory settings, the application automatically runs at 125kbit/s. If the “Fenac CanOpen Scanner Tester” hardware is connected and there is no connection problem, the application interface will be as in the image below.



7. When the CanOpen encoder device's connection is not made correctly or the encoder's power supply is not made correctly, **“Connection problem. Check connections and settings”** warning is given and the icon  indicating a problem with the connection appears on the screen. In this case, after connecting the Can High, Can Low, Can GND cables correctly, various baud rates should be tried to ensure that the correct communication speed is selected. **(Baud Rate setting is made in Initilize->Select Baud Rate.)** **If communication still does not occur after these operations, cut off the power of the device and give it again.**



The screenshot shows the FENAC CAN SCANNER software interface. The window title is "FENAC CAN SCANNER". The interface is divided into several sections:

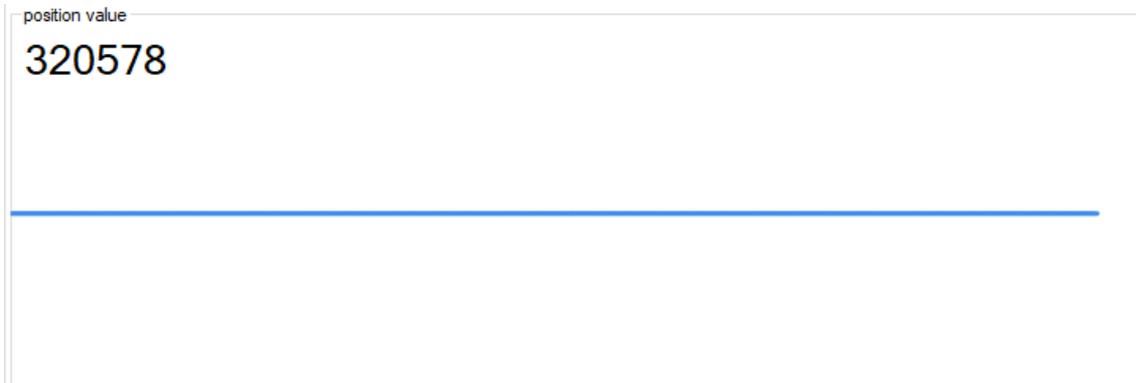
- Initialize:** A dropdown menu shows "PCAN\_USB 1 (51h)". A "Select Baud Rate:" dropdown is open, showing options: 95.238 kbit/s, 100 kbit/s, 125 kbit/s (selected), 250 kbit/s, and 500 kbit/s. A large black button with the word "Stop" in white is visible.
- Transmit Message:** Fields for "CAN Id HEX" (600) and "DEC" (1536). A "Number of data bytes:" field is set to 8. Below are eight input boxes for data bytes: 40, 04, 60, 00, 00, 00, 00, 00. A "Send" button is at the bottom.
- VALUES:** A text box contains "6004". Below it, the text "position value" is followed by the word "position".
- Warning Message:** A red text message reads: "CONNECTION PROBLEM. CHECK CONNECTIONS AND SETTINGS. (If connections are correct restart the encoder)". Below this message is a large warning icon: a globe with a red exclamation mark inside a triangle.
- Node ID Found:** A section with a blue background containing several buttons: "POSITION", "PRESET" (with a value of 0), "OPERATING", "SINGLE TURN", and "TOTAL TURN".
- Node ID and Baud Rate:** A "NODE ID" field contains the value "1". Below it, a "BAUD RATE" dropdown menu is open, showing options: 0 = 1000 Kbps, 1 = 800 Kbps, 2 = 500 Kbps, 3 = 250 Kbps, 4 = 125 Kbps, 5 = 100 Kbps, and 6 = 50 Kbps. To the right of this section are two buttons: "STORE" and "RESTORE".

8. When all connections are made correctly, when the encoder power is cut and reconnected, the position data starts to flow as in the image.

The screenshot displays the FENAC CAN SCANNER software interface. At the top, there are tabs for "SCANNER", "Received Messages", "Received Messages", and "Objects". The "Initialize" section shows "PCAN\_USB 1 (51h)" selected, a baud rate dropdown menu with "125 kbit/s" selected, and a large black "Stop" button. The "Transmit Message" section includes fields for "CAN Id HEX" (601), "DEC" (1537), "Number of data bytes" (8), and a "Send" button. Below this, the "VALUES" section shows "6004" and the text "PROGRAM IS RUNNING SUCCESFULLY". A graph labeled "position value" shows a blue line that oscillates between approximately 320000 and 321000 before settling at a constant value of 320578. The bottom section is divided into two panels. The left panel, titled "Node ID Found : 1", contains buttons for "POSITION" (320578), "PRESET" (0), "OPERATING", "SINGLE TURN", and "TOTAL TURN". The right panel, titled "NODE ID" (1), contains a "BAUD RATE" dropdown menu with options from 1000 Kbps to 50 Kbps, and buttons for "STORE" and "RESTORE".

## 4. Testing

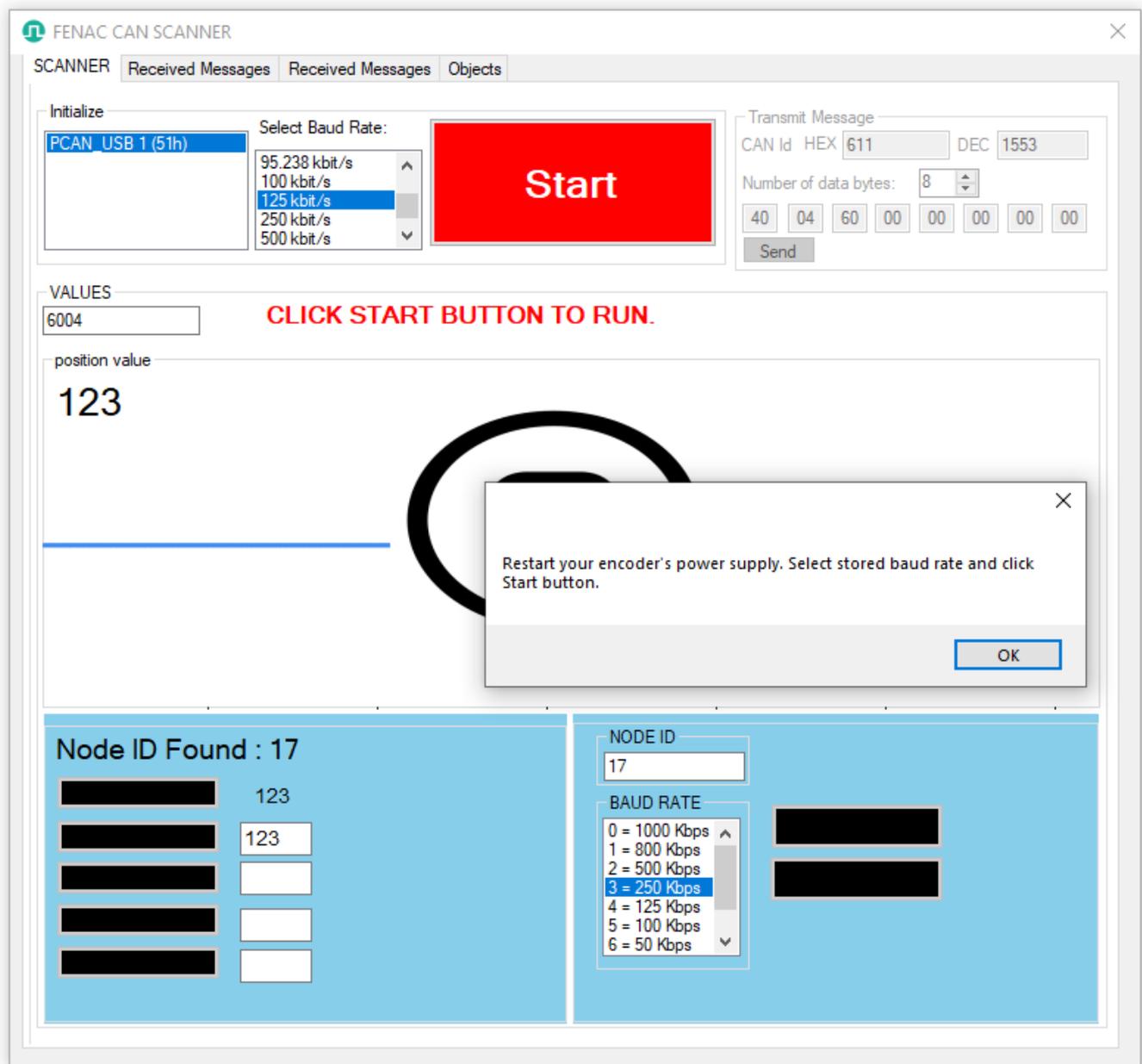
1. After the connection is established, the position values begin to flow.



2. By clicking the Preset button, the position value is set to 0. If a value other than 0 is entered, preset operation is performed according to this new value entered. (The value of 123 is set as preset in the image below.)

A screenshot of a CANopen control interface. At the top, the text "position value" is followed by the number "123". A horizontal blue line is drawn across the middle of the display area. Below the display area, there are two main control panels. The left panel is titled "Node ID Found : 1" and contains five buttons: "POSITION" (with value 123), "PRESET" (with value 123), "OPERATING", "SINGLE TURN", and "TOTAL TURN". The right panel contains a "NODE ID" input field with the value "1", a "BAUD RATE" dropdown menu with options: 0 = 1000 Kbps, 1 = 800 Kbps, 2 = 500 Kbps, 3 = 250 Kbps, 4 = 125 Kbps, 5 = 100 Kbps, and 6 = 50 Kbps. Below the dropdown menu are two buttons: "STORE" and "RESTORE".

3. NODE ID and Baud Rate values are changed and saved by pressing the STORE button. (In our example, Node ID is 17 and Baud Rate is 250 Kbps.) **“Restart your encoder’s power supply. Select stored baud rate and click Start button.”** warning appears on the screen.



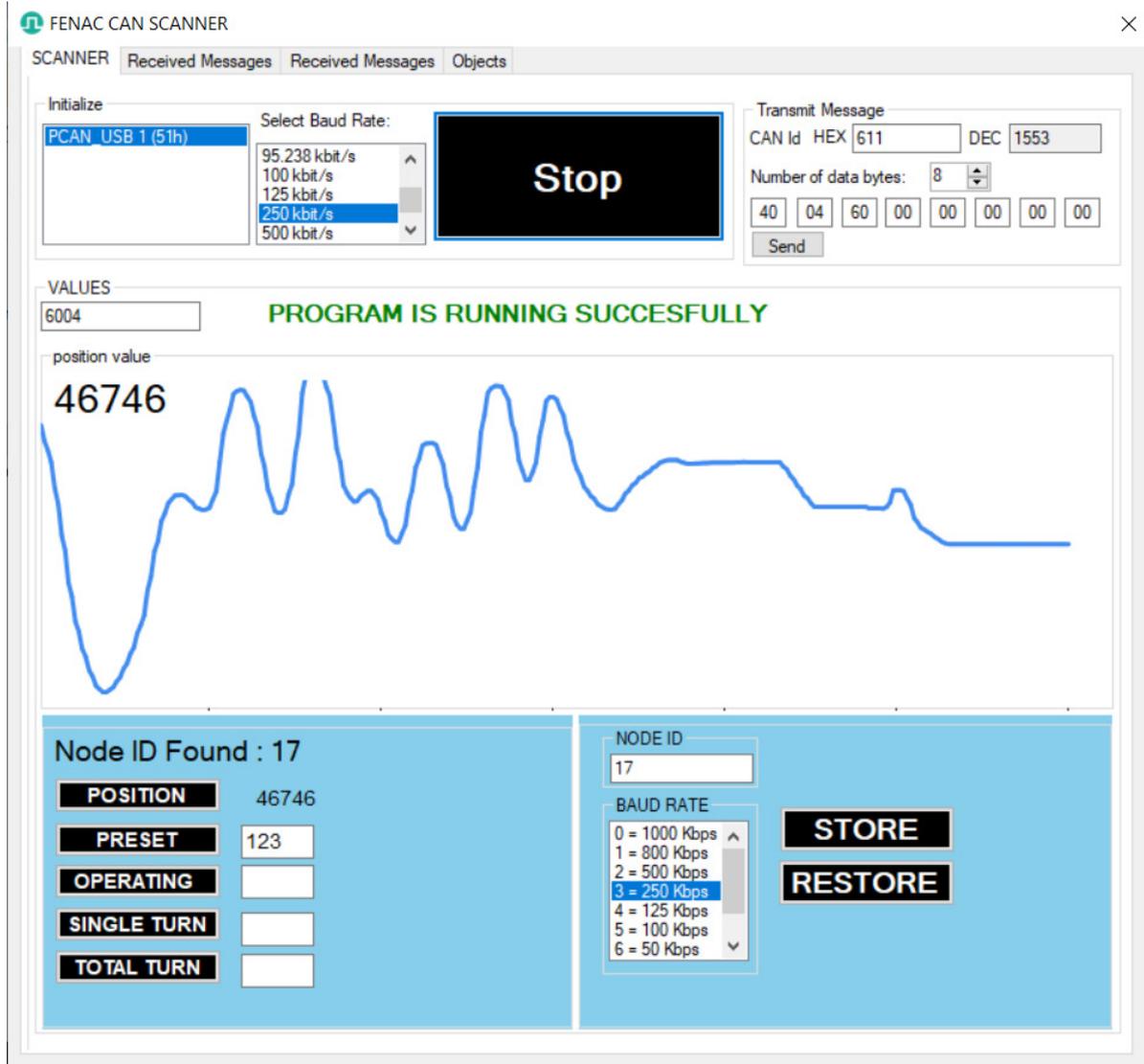
The screenshot shows the FENAC CAN SCANNER software interface. The main window has tabs for SCANNER, Received Messages, Received Messages, and Objects. The SCANNER tab is active, showing an Initialize section with a dropdown menu for PCAN USB 1 (51h) and a Select Baud Rate dropdown menu with options: 95.238 kbit/s, 100 kbit/s, 125 kbit/s, 250 kbit/s, and 500 kbit/s. A large red Start button is visible. To the right, there is a Transmit Message section with fields for CAN Id HEX (611), DEC (1553), and Number of data bytes (8), along with a Send button.

Below the Initialize section, there is a VALUES section with a text box containing 6004 and a red warning message: **CLICK START BUTTON TO RUN.** Below this, a position value of 123 is displayed.

A warning dialog box is overlaid on the screen, containing the text: **Restart your encoder’s power supply. Select stored baud rate and click Start button.** with an OK button.

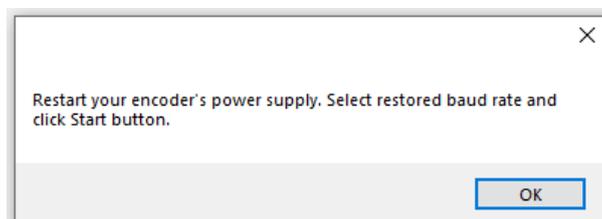
At the bottom of the interface, there are two panels. The left panel shows **Node ID Found : 17** and a list of five blacked-out entries, each with a value of 123. The right panel shows **NODE ID** (17) and **BAUD RATE** (3 = 250 Kbps) with a list of six options: 0 = 1000 Kbps, 1 = 800 Kbps, 2 = 500 Kbps, 3 = 250 Kbps, 4 = 125 Kbps, 5 = 100 Kbps, and 6 = 50 Kbps.

4. According to the warning, the power of the encoder should be cut off and given again. When the encoder is energized, 250 Kbit/s Baud Rate must be selected from the **Initialize->Select Baud Rate** section, as indicated in red text, and then the Start button must be pressed. If there is an error condition here, the device should be powered off and given again. This process should be repeated until the warning disappears. When the communication is successfully established, **“PROGRAM IS RUNNING SUCCESFULLY”** will appear on the screen as in the image. We set the Node ID to 17, and we can see this from the “Node ID Found: 17” article.



The screenshot shows the FENAC CAN SCANNER interface. At the top, there are tabs for "SCANNER", "Received Messages", "Received Messages", and "Objects". The "Initialize" section shows "PCAN\_USB1 (51h)" selected and a "Select Baud Rate" dropdown menu with "250 kbit/s" highlighted. A large "Stop" button is visible. The "Transmit Message" section shows "CAN Id HEX 611" and "DEC 1553", with "Number of data bytes" set to 8. Below this, a "VALUES" section displays "6004" and the message "PROGRAM IS RUNNING SUCCESFULLY". A graph shows "position value" with a peak of "46746". At the bottom, a "Node ID Found : 17" section shows "POSITION 46746", "PRESET 123", "OPERATING", "SINGLE TURN", and "TOTAL TURN". A "NODE ID" dropdown is set to "17", and a "BAUD RATE" dropdown is set to "3 = 250 Kbps". "STORE" and "RESTORE" buttons are also present.

5. To undo the changes we have made, the **RESTORE** button must be clicked. Afterwards, the device should be de-energized and given again. The 125 Kbit/s determined in the factory settings should be selected and the device should be started by clicking the Start button.



6. Finally, we did not mention the NODE-ID setting because the device NODE-ID scan is done automatically. However, NODE-ID 17, which was originally 1, was set and should be 1 again after RESTORE. This can be seen in the “**Node ID Found: 1**” section.

The screenshot displays a control interface with two main sections. The left section, titled "Node ID Found : 1", contains five rows of settings, each with a label in a black box and a corresponding value in a white box: POSITION (2465), PRESET (123), OPERATING (empty), SINGLE TURN (empty), and TOTAL TURN (empty). The right section contains a "NODE ID" input field with the value "1", a "BAUD RATE" dropdown menu with options 0 through 6 (0 = 1000 Kbps, 1 = 800 Kbps, 2 = 500 Kbps, 3 = 250 Kbps, 4 = 125 Kbps, 5 = 100 Kbps, 6 = 50 Kbps), and two buttons labeled "STORE" and "RESTORE".