NEVONEX

NEVONEX installation guide

Version 1.07

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Contents

1 Preface

This guide is intended for anyone who installs or services NEVONEX.

The guide provides an overview of the components required for the installation process, which will be particularly relevant to installers. It also provides a detailed description of the steps to be carried out when preparing, installing, and commissioning NEVONEX.

2 Overview of components

2.1 NEVONEX Box

The NEVONEX Box is the central control unit of NEVONEX on agricultural machines (tractor or implement). The required Digital Services are installed and executed on the NEVONEX Box. The NEVONEX Box establishes the data connection to the NEVONEX Cloud via mobile communication and is operated from a tablet via Wi-Fi.

There are several NEVONEX Boxes with various performance classes, which can be selected depending on the performance requirements of the selected Digital Service.

Rexroth RCU (model name: RCU4 3X/10)
(RAM 1 GB; single core 800 MHz)

Figure 1: NEVONEX Box (as of November 2021)

A further NEVONEX Box (mid-level segment) will also be available soon. For a detailed overview of the currently available NEVONEX Boxes, possible restrictions, and information on ordering, see Partner portal – Components.

2.2 Wiring harness

The wiring harness connects the NEVONEX Box to existing or additional interfaces that are required for the respective Digital Services. Such interfaces may include ISOBUS, vehicle CAN (J1939 or OBD2), the serial interface (RS232, D-SUB9 for GPS), and other I/O interfaces (analog sensors).

There are two variants for the NEVONEX wiring harness:

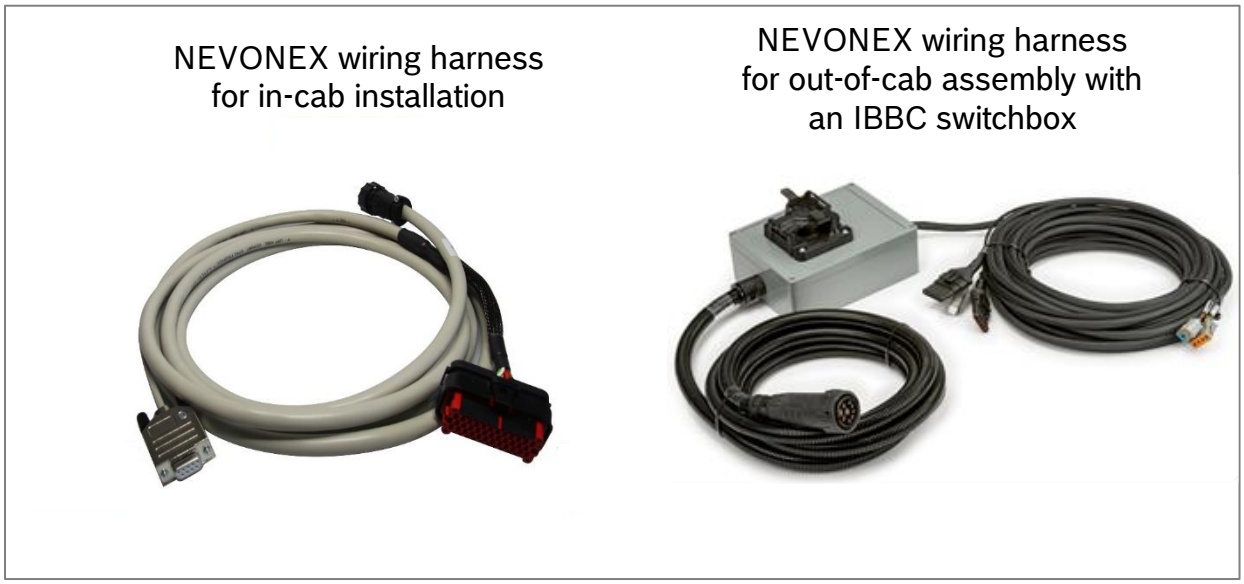

Figure 2: NEVONEX wiring harnesses

For a detailed overview of the currently available NEVONEX wiring harnesses, see Partner portal – Components.

2.3 Additional components for Digital Services

Some Digital Services require specific additional components such as sensors. These additional components are listed in the description of the respective Digital Service. Specific components or general sensor types are specified, as required. If the selected Digital Service requires additional components to be installed in special positions or locations, this is also specified. For an overview of the various Digital Services, see Partner portal – Digital Services.

3 Detailed description of the installation process

To successfully integrate the machine and the agricultural farm into NEVONEX, the following process should be carried out. For further information to the installation process, see Partner portal – Downloads.

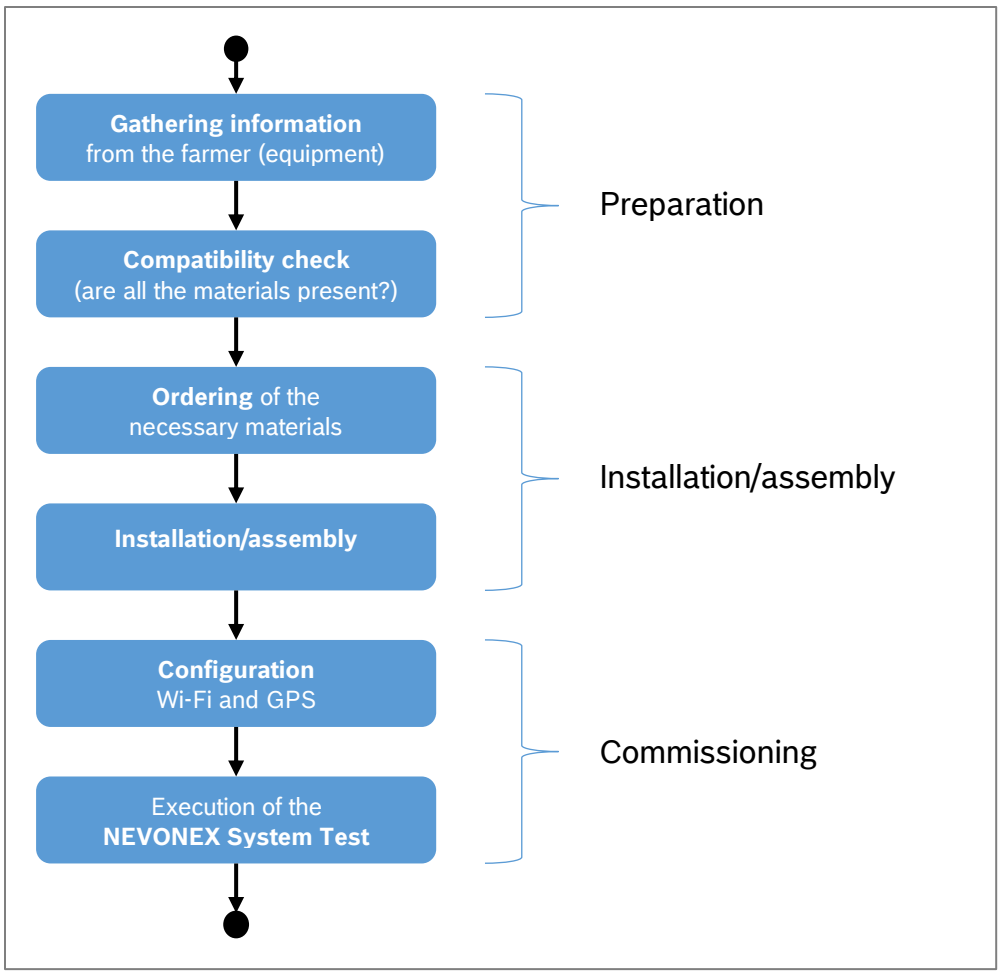

Figure 3: Installation and commissioning sequence

3.1 Gathering information

Procedure

- Gather information from the farmer. The ready-made "Question catalog machine" can be used for this step, see Partner portal – Downloads.

Result

- All questions from the question catalog have been answered.

3.2 Compatibility check

Procedure

- Determine the requirements for the Digital Service selected in the requirements list, see Partner portal – Digital Services.
- If it is a first installation (i.e., there is no NEVONEX Box on the machine yet), it is necessary to check whether the Digital Services are compatible with the machine. This compatibility check is described in detail at Partner portal – Downloads.

Result

- If compatibility is confirmed, the selected Digital Service can be used on the machine. If this is not the case and retrofitting would not be productive, the installation must be terminated.

3.3 Ordering the necessary materials

Procedure

- Determine whether the NEVONEX Box is to be installed in the tractor cab (in-cab assembly) or on the implement (out-of-cab assembly).
- Determine the necessary components:
  - Which NEVONEX Box? → Depending on the requirements of the Digital Service
  - Which wiring harness? → Installation location: in-cab or out-of-cab
  - Is the in-cab ISOBUS connection occupied? → a Y-cable is perhaps necessary
  - Which specific additional components? → Depending on the requirements of the Digital Service

Result

- The order for necessary components is placed with the hardware partners see Partner portal – Components.

3.4 Installation/assembly

Requirements

- Ordered component(s) are delivered
- Access to necessary assembly instructions from the component manufacturer
- Specific instructions for the selected Digital Services from the Digital Service partner, see Partner portal – Digital Services.

Procedure

- **1. Activation of the NEVONEX Box at the installation partner**
  - The steps to activate the NEVONEX Box may differ for different box types. **Detailed information on this can be found in the note attached to the NEVONEX Box or in the Partner Portal - Downloads as "NEVONEX_Box_Activation_<Box>.pdf"**.

    For the Rexroth RCU, for example, activation is carried out by NEVONEX Support. The following steps are necessary for this:
    - The Device ID and IMEI of the box will be sent to NEVONEX Support via email.
    - The installation of the NEVONEX software is carried out by NEVONEX Support via mobile phone connection. To do this, the NEVONEX Box must be permanently connected to the power supply (e.g., via ISOBUS) and to the LTE antenna, until NEVONEX Support reports that the box has been activated successfully.

- After activation, the NEVONEX Box is registered in the installation partner's MyNEVONEX account and the NEVONEX System Test tool is installed, to be able to carry out a system test of the NEVONEX Box at the end of the installation, see chapter *3.6 Executing the NEVONEX System Test*.

- **2. Install the NEVONEX Box at the farmer/contractor**
  - Depending on the requirements, in-cab or out-of-cab assembly can be done.
  - If an in-cab connection is present in the tractor cab, the NEVONEX Box can be installed in the cab.
  - If there is no in-cab connection or no installation option in the tractor, the NEVONEX Box should be installed on the implement (out-of-cab).

- **3. Connect the NEVONEX wiring harness to the ISOBUS**
  - In-cab (tractor): The NEVONEX in-cab wiring harness is used for this purpose.
    - Connect the in-cab socket of the wiring harness to the in-cab ISOBUS connection on the tractor.
      Note:
      If another ISOBUS device is already connected to the in-cab port, a separate Y-cable must be used.
      If a Y-cable is used, make sure that the ISOBUS is terminated.
  - Out-of-cab (implement): The NEVONEX out-of-cab wiring harness is used for this purpose.
    - Connect the out-of-cab/IBBC connector to the IBIC socket on the tractor.
    - The ISOBUS implement is connected to the IBIC socket (switchbox) of the wiring harness.

- **4. Connect the NEVONEX wiring harness to the GPS via the serial interface (D-SUB9, NMEA 0183)**
  If the GPS only has a serial interface or the GPS data are not available on the ISOBUS, the GPS can be connected using the "Serial GPS connection (RS232)".

  If the GPS is already connected to the terminal via the serial interface and no further D-SUB connector is available, a suitable Y-cable must be used.

- **5. Connect the NEVONEX wiring harness to J1939 (vehicle CAN) (optional)**
  All modern tractors have a J1939 powertrain/vehicle CAN bus, which contains standardized signals in accordance with the SAE J1939 protocol. This connection is necessary when the Digital Service used requires corresponding signals, see Partner portal – Digital Services. A suitable wiring harness is required for the connection to the vehicle CAN.

  In order to be prepared for the requirements of future Digital Services, it may be useful to connect the vehicle CAN now, after consulting with the farmer.

  Manufacturers use different sockets to access the J1939 signals: **J1939** (see Figure 4: J1939 socket and adapter cable) and **OBD2** (see Figure 5: OBD2

socket with assignment and adapter cable). Different adapter cables are required depending on the available socket.

Figure 4: J1939 socket and adapter cable

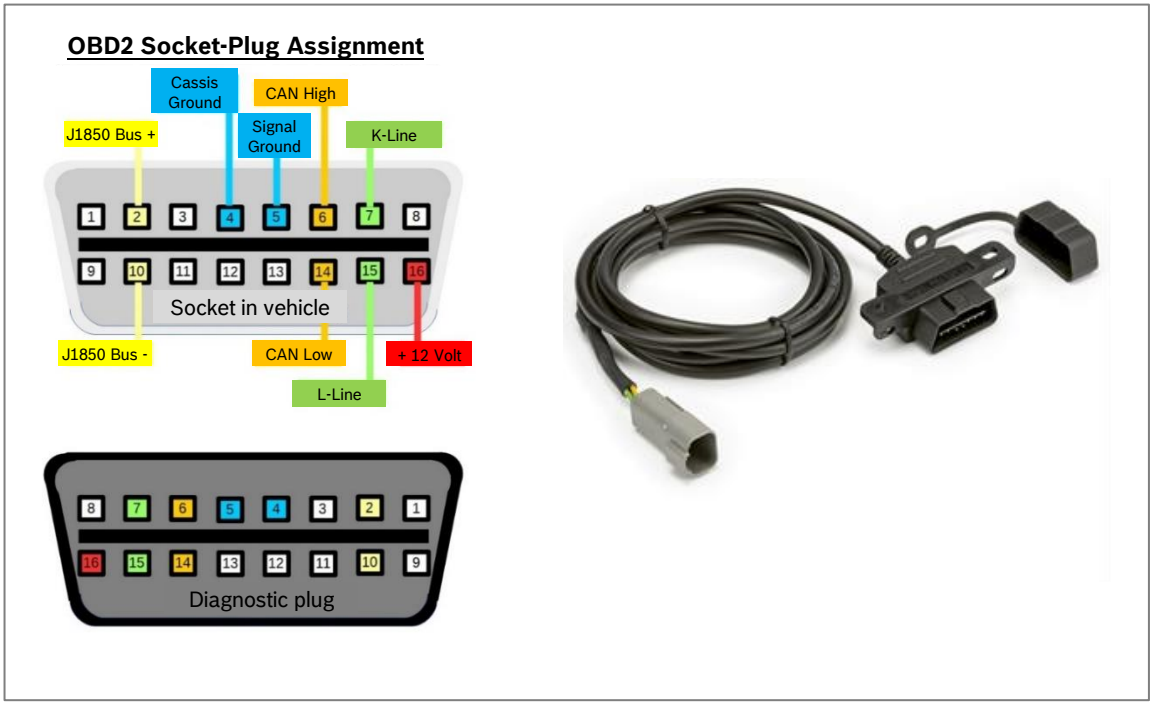

Figure 5: OBD2 socket with assignment and adapter cable

- **6. Connect the NEVONEX wiring harness to NEVONEX Box**
  The connection to the NEVONEX Box may require a corresponding adapter cable, depending on the wiring harness used.

Result

- The farmer's machine has been fitted with and connected to the NEVONEX Box.

3.5 Configuring the Wi-Fi and GPS

Requirements

- The NEVONEX Cockpit app must be installed on the tablet. The NEVONEX Cockpit app can be installed free of charge from the Apple App Store or Google Play.
- The NEVONEX Box must be connected to the ISOBUS and an ISOBUS terminal (UT) must be started.
- The tractor must be outdoors to receive GPS signals.

Procedure

- **1. Set up a Wi-Fi connection between NEVONEX Box and the NEVONEX Cockpit app**
  - After "ignition on", the NEVONEX Box boots directly and a Wi-Fi network is available.
    For the Rexroth RCU, the network name (SSID) is the registration code of the NEVONEX Box. The code is shown on the housing of the RCU below the barcode.

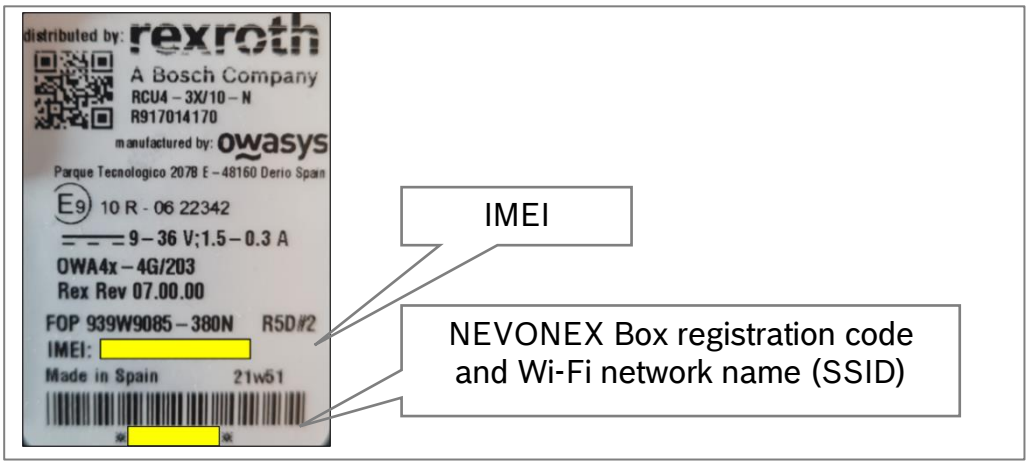

Figure 6: NEVONEX Box registration code and IMEI

  - After starting the NEVONEX Cockpit app on the tablet, the button "Please go to the Wi-Fi settings of your tablet" can be used to switch directly to the setup of the Wi-Fi connection. The Wi-Fi password is the respective IMEI of the Rexroth RCU. The IMEI is shown on the housing of the RCU (see Figure 6: NEVONEX Box registration code and IMEI).
    If the Wi-Fi connection between the tablet and the NEVONEX Box is being set up for the first time, the NEVONEX Box PIN selected in MyNEVONEX must be entered. Re-entering the PIN is only necessary if the PIN is changed or if the Cockpit app is reinstalled.
    Note:
    If the PIN is no longer known, a new PIN can be assigned in MyNEVONEX. Updating the PIN on the NEVONEX Box requires a mobile data connection to the NEVONEX Box.

- The Digital Services installed on the NEVONEX Box are displayed in the NEVONEX Cockpit app.

- **2. Set the GPS source**
  - The GPS source is currently set exclusively via the NEVONEX UT on the terminal (UT) of the tractor.
  - To launch the NEVONEX UT on the terminal, start a Digital Service that requires an ISOBUS interface or the GPS itself. The NEVONEX System Test tool (STT) can be used to do this. After the STT is started, the NEVONEX UT appears automatically as a pop-up or as a new button in the UT of the tractor.
  - The GPS source can be found under “NMEA”:
    Default setting: NMEA 2000 (GPS directly from ISOBUS).

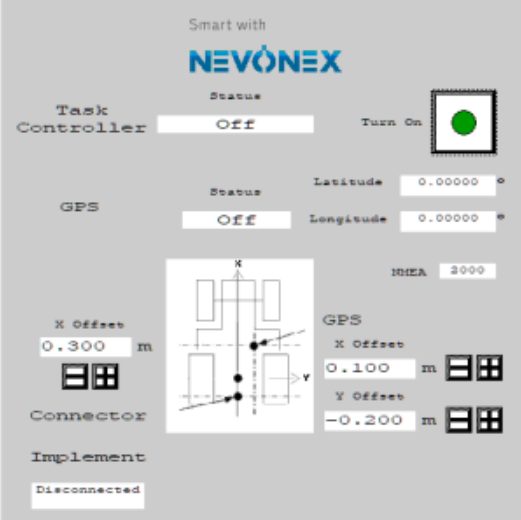

Figure 7: NEVONEX UT on the terminal

- If the GPS status is already set to "On" with the default setting (NMEA 2000), a GPS signal is already available via ISOBUS.

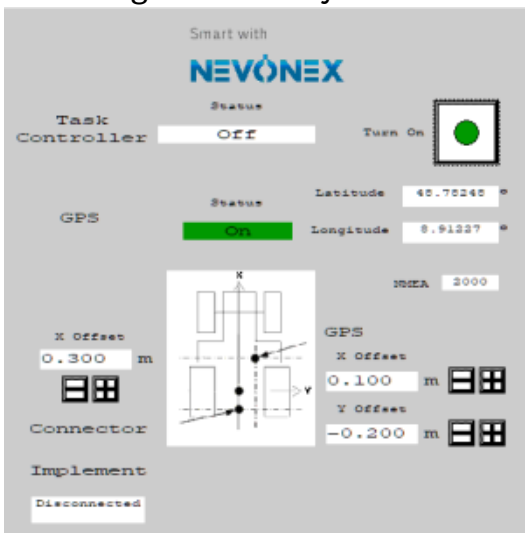

Figure 8: NEVONEX UT (GPS on)

- If the GPS status is not "On", you must change to NMEA 0183:
  Click on "2000" and change it to "0183".
  Now another "Baud" field appears. Set the baud rate of the GPS receiver here. The baud rate can be seen in the GPS settings of the terminal and copied from there.
- To be able to use the GPS coordinates correctly, enter the corresponding offset values of the GPS receiver and the connector in the NEVONEX UT.

3.6 Executing the NEVONEX System Test

Requirements

- The NEVONEX System Test tool (STT) must be installed on the NEVONEX Box.

Procedure

- Start the NEVONEX System Test with the NEVONEX Cockpit app.

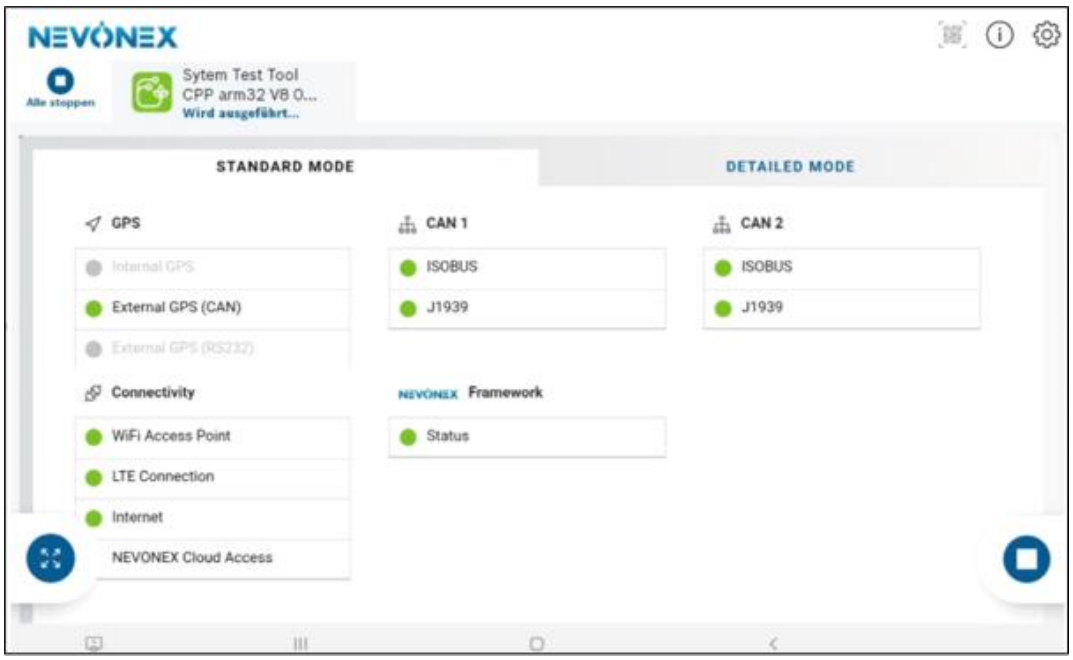

Figure 9: NEVONEX System Test

- The "STANDARD MODE" page displays the main statuses related to NEVONEX. The following color definition applies here:
  - Green: available
  - Red: not available
  - Gray: not used
- Note:
  The most common causes for the red status are errors in the wiring or an unstable GPS signal.
- The “DETAILED MODE” page displays the statuses in more detail.
- If the error cannot be detected on site, inform NEVONEX support. NEVONEX support will then be able to read out and evaluate the log files of the NEVONEX Box via the mobile data connection.

Result

- The NEVONEX System Test is completed successfully.

3.7 Completing the installation

To complete the installation of NEVONEX, uninstall the NEVONEX System Test tool and remove the NEVONEX Box in the installation partner's MyNEVONEX account, so that the farmer/contractor can register it in their own MyNEVONEX account. The farmer/contractor should enter a new NEVONEX Box PIN.

4 Partner portal

You can find the partner portal at https://partner-portal.nevonex.com/de/de/home/.

5 Annex

After NEVONEX has been commissioned, further tasks can be assigned to the installation partner.

5.1 Activating NEVONEX as task controller (TC)

Requirements

- A Digital Service (which also requires NEVONEX as a task controller) must be started in the NEVONEX Cockpit app. The NEVONEX System Test tool (STT) can also be used to do this.

Procedure

- Attempt to switch off other TC servers on the bus. If this is not possible, set the instance number one number higher (depending on the UT: TC instance, priority, or TC number).
- To activate NEVONEX as a task controller, press the green button ("Turn on") in the upper right corner of the NEVONEX UT (see Figure 7: NEVONEX UT on the terminal). The task controller status changes to "ON" and the button turns red ("Turn off").
- Make sure that TC number one (1) is selected in the primary UT for NEVONEX.
- After a few seconds, on the NEVONEX UT under "Implement" the status should change from "Disconnected" to "Connected" and then to "Fixed." This confirms that NEVONEX is acting as the TC server.

Result

- NEVONEX is successfully activated as task controller.