REDEKOP™

ECU SERVICE TOOL

MANUAL

CG051-01_R1

REDEKOP™

ECU
Service Tool

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1 Getting Started

The Serial Service Tool is an easy-to-use program to manage firmware updates and configuration for Redekop ECUs. It is designed for use with the RP1700 Serial Service Tool adapter.

The Serial Service Tool has the following features:

- Connected ECU information is displayed, such as hardware version, serial number, and installed firmware version.
- ECU Firmware can be updated and verified.
- Single-Click process for bulk update of multiple ECUs.
- Installed features, settings, and calibrations can be kept or reset to default configuration when updating firmware.
- Hour meters for Chopper and Seed Control Unit can be kept or reset to zero when updating firmware.
- Alarm history can be kept or cleared when updating firmware.
- Installed features, settings, and calibrations can be edited and saved to the ECU.
- Hour meters can be edited and saved to the ECU.
- A complete factory reset can be performed to return the ECU to its default state.
- For updating hours on an Android Tablet based installation, a reset key can be generated.
- Upload and Manage Update Packages on Android Tablet.

1.1 Software Installation

To use the ECU Service Tool, the Service Tool application must be installed on a compatible Windows PC:

System Requirements

- **OS**: Windows 10 / Windows 11
- **Processor**: 1 Ghz
- **Memory**: 512 MB
- **Minimum Disk Space**: 4.5 GB
- **.NET Framework 4.8**

Internet Access

Internet access is required to install (and update) the Service Tool application. After installation is complete, internet access is not required to use the Service Tool except to update the application and obtain new firmware versions.

Security Warning

Since the application was developed without certain security features, Windows may warn that the publisher of the application cannot be verified. This is normal, and the application is safe to run, as long as it was downloaded from the link shown on this page.

Please contact Redekop support with any questions or concerns.

To Install Application

1. Download Service Tool application on a compatible Windows PC:
    a. Go to **https://redekopmfg.com/ecu-tool**.
    b. Click **Install**.
2. Locate and open the downloaded **ServiceTool.application** file.
3. If prompted by a Security Warning, read the warning and click **Install** (See Note above).
4. After the application has finished installing, Windows may show another warning. At the Windows protected your PC screen, read the warning and click **More Info** and then **Run anyway** (See Note above).
5. The Service Tool application icon will be available in the **Start Menu**, under the **Redekop Manufacturing** folder.

To Update Application

1. The Service Tool application automatically checks for updates and new firmware versions on startup, as long as the PC is connected to the internet.
2. If a new version is detected, it will be downloaded automatically and installed.

Application Updates

It is recommended to run the Service Tool application periodically while connected to the internet to check for updated firmware.

1.2 Serial Tool Basics

The Serial Service Tool consists of:

- USB Serial COM Port Adapter
- Reset Button
- Auto-Mode Switch
- Power Light
- Transmit and Receive Lights
- ECU Connector
- USB Connector

The Service Tool application must be installed to use the adapter. See Software Installation.

1.3 Basic Operation

When connected to the ECU, the Service Tool adapter provides power to the ECU and places it in *Programming mode*, which is used to update and verify the installed firmware. In case the ECU has entered Run mode instead, a reset button is provided to restart the ECU and enter *Programming mode*.

In *Auto-Mode*, the Service Tool automatically powers the ECU on and off as needed to access the different operating modes. The **Auto-Mode Switch** can be used to disable this feature; however the ECU will need to be reset manually if needed with the **Reset Button**.

1.4 ECU Modes

The ECU has three operating modes:

- **Run Mode**: This is the normal operating mode of the ECU. In this mode, the Power LED on the ECU will turn on once the ECU has started up, and the CAN LED indicates communication activity with the connected ISOBUS display or Android Tablet.
- **Programming Mode**: This is a special mode which is used to read and write the firmware to the ECU. It is activated using the Service Tool adapter. None of the ECU LEDs turn on in this mode.
- **Memory Mode**: This mode is used to read and edit the saved configuration of the ECU, as well as hour meters and alarm history. It can only be entered from *Programming mode*. The ECU Power LED will blink slowly in this mode.

1.4.1 Programming Mode

While in *Programming mode*, the Service Tool adapter can directly access and manipulate the *program* memory on the ECU. The Service Tool can read and write to any part of the program memory, such as:

- ECU Serial Number
- Installed Firmware and Version
- Bootloader
- Other Boot Information

The *Bootloader* is a special component of firmware that manages the operation mode of the ECU.

In *Programming mode*, there are three commands available:

- **Write** - The current firmware on the connected ECU is erased and the target firmware is written to the device. After the write is complete, the configuration is either reset or updated according to the selected settings.

- **Verify** - The current firmware is read from the program memory and compared to the selected firmware version included with the tool. This is useful to determine if the firmware has become corrupted on the ECU.

- **Bulk** - Allows the user to program and configure ECUs in a loop, performing the same operations as the Write command. After the Write command has completed, a new ECU can be connected, and the process automatically resumes until cancelled by the user.

1.4.2 Memory Mode

Memory mode is automatically entered when required by the Service Tool to complete one or more of the supported commands.

Memory mode is only supported on Bootloader v03 and later.

While in *Memory mode*, the Service Tool adapter can access and manipulate the *configuration* memory on the ECU. This includes items other than the ECU firmware, such as:

- Installed Features

- Settings

- Calibrations

- Chopper and SCU Hour Meters

- Alarm History

In *Memory mode*, there are several commands available:

- **Edit** - Reads the currently installed features, settings, and calibrations from the ECU, as well as current values of the Chopper and SCU hour meters and allows for manual configuration prior to ECU installation. This can be used to transfer hours from one ECU to another in the event of an exchange, for example.

- **Reset** - This command selectively resets the currently installed features, settings, and calibrations to the default values, resets Chopper and SCU hour meters to zero, or clears the alarm history.

- **Factory Reset** - This command completely resets the ECU to the factory default values, including installed features, settings, calibrations, hour meters, and alarm history.

2 How to...

- **Determining Correct Port**
- **Connecting to ECU**
- **Upgrading ECU Firmware**
- **Verifying ECU Firmware**
- **Bulk Upgrading Multiple ECUs**
- **Resetting ECU Configuration**
- **Editing ECU Configuration**
- **Updating Android Tablet App**
- **Factory Initializing Android Tablet**

2.1 Determining Correct Port

less than 1 minute to read

To establish a connection to the ECU, the correct communication port must be selected using the **Port** dropdown.

To Determine the Correct Port:

1. Disconnect the **Service Tool** adapter USB cable from the PC.
2. Click the **Port** dropdown menu and take note of the available ports.
3. Click an empty area to close the **Port** dropdown menu.
4. Reconnect the **Service Tool** adapter USB to the PC.
5. Click the **Port** dropdown menu. By **process of elimination**, locate the newly added port and select it.

2.2 Connecting to ECU

To work with the Service Tool, you first need to establish a connection with an ECU. For most operations, if an error occurs, the ECU will automatically disconnect, and it may be necessary to connect again to continue.

Important

For installed ECUs, be sure to disconnect both connectors from the ECU prior to connecting the Service Tool.

To connect the Service Tool to an ECU:

1. If ECU is installed on machine, disconnect **both connectors** on the ECU.
2. Connect the Service Tool adapter to your PC via the USB connector.
3. Plug the Service Tool adapter into the ECU.
4. In the **Serial Port** section, choose the correct **Port**.
5. Press the **Connect** button.
6. When the connection is successful, the ECU Version, Serial Number, and Firmware Version will be displayed.

Troubleshooting

If the ECU fails to connect, try one of the following before connecting again:

- Press and hold the **Reset button** on the Service Tool adapter for **2 seconds** and release to reset the ECU.
- If more than one **Port** is available, try a different port. See Determining Correct Port.

2.3 Upgrading ECU Firmware

Upgrading ECU firmware using the Service Tool adapter is fast and easy.

To upgrade ECU firmware:

1. Prior to upgrade, take note of installed features, any customized settings, and hour meter values.

2. Establish a connection to the ECU. See Connecting to ECU.

3. Select a firmware to write to the ECU by either:
   - Selecting a firmware version from the **Target Firmware** dropdown.
   - If instructed by Redekop technical support, selecting a **Custom File**.

4. Choose the desired **Options** for updating the ECU configuration. See Options.

5. Click the **Write** button. The **Progress bar** and **Log** show the progress of the current operation.

6. Wait for the Write command to complete. A confirmation box will appear.

7. Click the **Disconnect** button and remove the ECU.

Warning

Cancelling the **Write** command will leave the ECU unable to boot. To recover the ECU, simply restart the upgrade process.

2.4 Verifying ECU Firmware

Verification of ECU firmware can be used to identify memory corruption or other problems.

Verification normally does not need to be completed except as instructed by Redekop technical support.

To verify ECU firmware:

1. Establish a connection to the ECU. See Connecting to ECU.

2. Select a firmware to write to the ECU by either:
   - Selecting a firmware version from the **Target Firmware** dropdown.
   - If instructed by Redekop technical support, selecting a **Custom File**.

3. Click the **Verify** button. The **Progress bar** and **Log** show the progress of the current operation.

4. Wait for the Verify command to complete. A confirmation box will appear.

5. Click the **Disconnect** button and remove the ECU.

2.5 Bulk Upgrading Multiple ECUs

With Bulk Programming mode, it is possible to quickly update many ECUs in sequence.

To upgrade multiple ECUs in Bulk mode:

1. Establish a connection to the first ECU. See Connecting to ECU.

2. Select a firmware to write to the ECUs by either:
   - Selecting a firmware version from the **Target Firmware** dropdown.
   - If instructed by Redekop technical support, selecting a **Custom File**.

3. Choose the desired **Options** for updating the ECU configuration. These options will apply to all ECUs programmed in Bulk mode. See Options.

4. Click the **Bulk** button. The first Write command will begin on the first ECU. The **Progress bar** and **Log** show the progress of the current operation.

5. Wait for the Write command to complete. A message will appear in the log, prompting for the **next ECU**.

6. Un-plug the current ECU and plug in the next. The Service Tool will automatically Connect, and the process will resume.

7. When the final ECU is complete, click the **Cancel** button to exit Bulk programming mode. The Service Tool will automatically Disconnect, and the final ECU can be un-plugged.

Note

During bulk programming mode, if an ECU fails to connect after being plugged in, simply press the **Reset** switch on the Service Tool adapter for **2 seconds** and release to reset the ECU.

2.6 Resetting ECU Configuration

The ECU configuration can be reset to defaults using the Service Tool adapter.

To reset ECU configuration:

1. Establish a connection to the ECU. See Connecting to ECU.
2. From the **Reset Menu,** select **Reset Configuration, Reset Hours, Clear Alarms**, or **Factory Reset**. See Reset Commands.
3. The Service Tool places the ECU in Memory mode and resets the current configuration according to the selected command.
4. The **Progress bar** and **Log** show the progress of the reset operation.
5. Wait for the Reset command to complete. A confirmation will appear.
6. Click the **Disconnect button** and remove the ECU.

2.7 Editing ECU Configuration

The ECU configuration can be viewed and edited using the Service Tool adapter.

To edit ECU configuration:

1. Establish a connection to the ECU. See Connecting to ECU.
2. From the **Edit Menu**, select either **Edit Configuration** or **Edit Hours**. See Edit Commands.
3. The Service Tool places the ECU in Memory mode and reads the current configuration.
4. The Edit Dialog appears.
5. Edit the values as desired. Click **Save** to save the configuration to the ECU or **Cancel** to revert any changes.
6. The **Progress bar** and **Log** show the progress of the save operation.
7. Wait for the Edit command to complete. A confirmation will appear.
8. Click the **Disconnect** button and remove the ECU.

2.8 Updating Android Tablet App

The Android Tablet app can be updated using installation packages delivered with the Service Tool application.

ECU Version

The ECU firmware version **must** be matched to the installed Android Tablet app version for the system to function. Refer to the **Package** drop-down menu for the compatible ECU firmware version. Ensure ECU is updated to the required firmware version.

To Update Android Tablet App:

1. Ensure Android Tablet is powered on and unlocked.

2. Connect Android Tablet to PC with the USB cable.

   If there is a pop-up on the Tablet screen, select **Allow** to allow the PC to access data on the tablet.

3. In the Service Tool application, click the **File Menu** and select **Tablet Packages**. The Android Tablet Packages dialog appears.

4. Select the correct device from the **Device** drop-down menu.
   - Click the **Rescan** button if the device is not present.

5. Select the desired Tablet app version from the **Package** drop-down menu. Make note of the required ECU firmware version.

6. Click the **Upload** button.

7. After the upload has completed, on the Tablet, open the **My Files** app.

8. In the My Files app, select **Installation Files** from the left-hand menu.

9. Locate the uploaded installation package and tap it. Select **Install**.

   If the **My Files** app is not allowed to install unknown apps, select **Settings** and enable **Allow from this source**. Repeat steps 7-9.

2.8 Factory Initializing Android Tablet

In some cases, it may be required to Factory Initialize an ECU in an Android Tablet installation.

Factory Initialization normally only needs to be performed when instructed by Redekop technical support.

To factory initialize ECU:

1. On Android Tablet, locate the **Factory Initialization** screen:
   - In the **Redekop Controller App v1.6.1,** tap the button in the top corner, tap **Service Menu**, again tap the button in the top corner, tap Factory Initialization.
   - In the **Redekop Controller App v1.8.1+,** tap the button to enter the **Settings Menu**, tap the button to enter the **Service Interval Menu**, tap the button, and tap **Initialize Time.**

2. If adjustments to the hour meters are required, adjust the **Chopper New Time** or **SCU New Time** fields as required.

3. In the Service Tool application, click the **File Menu** and select **Reset Key.** The Generate Reset Key Dialog dialog appears.

4. Copy the **ECU Serial Number, Chopper New Time, SCU New Time**, and **Reset ID** fields from the Android Tablet to the Generate Reset Key dialog.

5. Click **Generate**.

6. Type the generated **Reset Key** into the provided field in the Android Tablet.

7. Tap **Initialize** on the Android Tablet.

Note

The values entered for Chopper New Time and SCU New Time are minutes. To calculate the correct value, the hours must be multiplied by 60 and added to the minutes. For example, for **43 hours** and **12 minutes,** the calculation would be (43 * 60) + 12 = 2592.

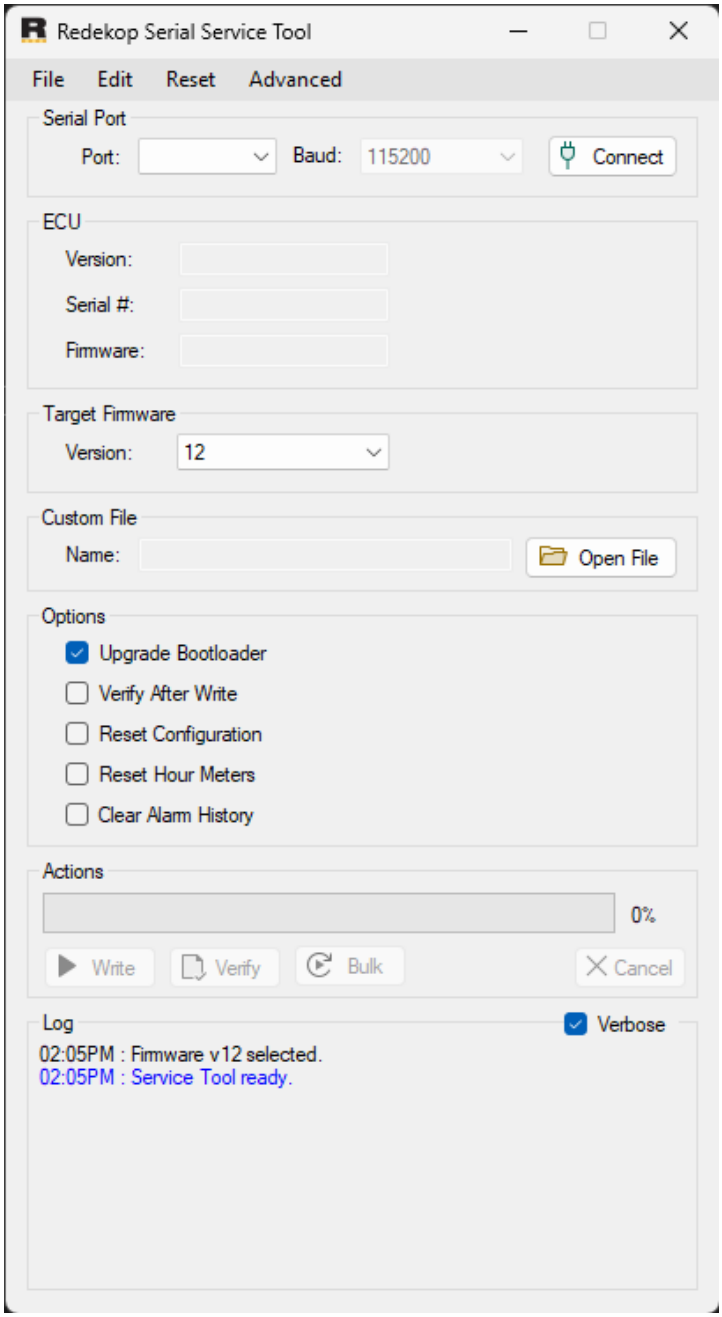
Warning

The values entered into the Generate Reset Key dialog must agree **precisely** with the values on the Factory Initialization screen on the Android Tablet. A single incorrect digit will result in the incorrect key being generated.

3 User Interface

- **Main Window**
- **Menus**
- **Options**
- **Programming Commands**
- **Edit Dialog**
- **Generate Reset Key Dialog**
- **Empty Serial Number Dialog**
- **ECU Feature Codes dialog**
- **Android Tablet Packages Dialog**

3.1 Main Window



The main Service Tool window contains the following sections, from top to bottom:

- **Menus** - See Menus.

- **Serial Port** - The Serial Port section contains the **Port** dropdown menu and the **Connect** button which are used to connect to the ECU.

- **ECU** - The ECU section displays information about the currently connected ECU, such as the ECU Version, Serial Number, and currently installed Firmware Version.

- **Target Firmware** - This section contains the list of included firmware available to install and verify on the ECU. The version selected here will be installed when the **Write** or **Bulk** commands are used, and will be verified if the **Verify** command is used.
  The latest firmware version is selected by default.

- **Custom File** - This section shows the selected custom firmware file if selected. A custom firmware file may need to be installed if instructed by Redekop technical support. Selecting a custom firmware file will override the Target Firmware selection. Likewise, selecting a Target Firmware will override the custom file selection. **Edit** and **Reset** commands are not available when using custom firmware files.

- **Options** - The options in this section allow the user to specify how the ECU is configured after updating the firmware using the **Write** or **Verify** commands. See Options.

- **Actions** - The Actions section contains the **Write, Verify**, and **Bulk** command buttons. There is also a progress display and **Cancel** button to cancel the current operation. See Programming Commands.

- **Log** - The Log displays a trace of operations executed by the Service Tool along with a time stamp. Use the **Verbose** check box to see additional details in the log.

3.2 Menus

3.2.1 File Menu

Command	Icon	Hotkey	Description
Open File		Ctrl+O	Selects a custom firmware file.
Reset Key		Ctrl+R	Opens the Generate Reset Key dialog.
Feature Codes		Ctrl+F	Opens the ECU Feature Codes dialog.
Tablet Packages		Ctrl+T	Opens the Android Tablet Packages dialog.
Quit		Ctrl+Q	Quits the application.

3.2.2 Edit Menu

Command	Icon	Hotkey	Description
Edit Configuration		Ctrl+C	Reads the installed features, settings, and calibrations from the currently connected ECU and allows for editing and saving the configuration.
Edit Hours		Ctrl+H	Reads the Chopper and SCU hour meters from the currently connected ECU and allows for editing and saving the values.

3.2.3 Reset Menu

Command	Icon	Hotkey	Description
Reset Configuration		Ctrl+Shift+C	Clears the installed features, settings, and calibrations and resets the configuration to factory default values.
Reset Hours		Ctrl+Shift+H	Resets the Chopper and SCU hour meters to zero, and resets any applicable service intervals on the currently connected ECU.
Clear Alarms		Ctrl+Shift+A	Clears the alarm history from the currently connected ECU.
Factory Reset		Ctrl+Shift+F	Completely resets the currently connected ECU to factory default values, including installed features, settings, calibrations, hour meters, service intervals, and alarm history.

3.2.4 Advanced Menu

Command	Icon	Hotkey	Description
Bootloader Version			Selects the bootloader version to be installed with the Write Bootloader command.
Write Bootloader		Ctrl+B	Installs the currently selected bootloader. **Note**: For use only when instructed by Redekop technical support.
Check Memory			Validates the saved ECU configuration, hour meters, and alarm history memory.
Memory Addresses			Directly edit raw memory.  **WARNING! For use only when instructed by Redekop technical support.** **Editing memory could result in lost data.**

4 Options

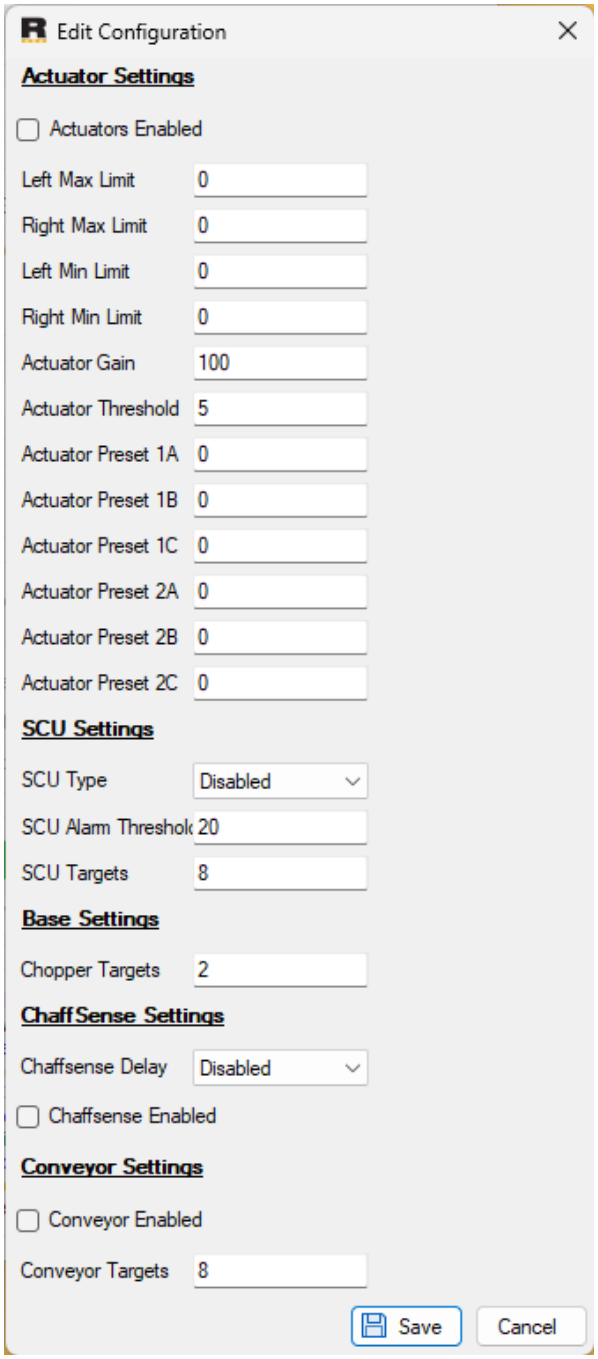
Option	Description	Default
Upgrade Bootloader	If checked, the bootloader is automatically updated when required. If unchecked, the user will be prompted to update the bootloader and allowed to cancel the operation. It is recommended to always update the bootloader to avoid memory errors when updating firmware.	Yes
Verify After Write	If checked, the Service Tool will perform a Verify command immediately after completing a Write command. This option applies to Bulk mode as well. If unchecked, verification will be skipped. Most of the time, verification isn't required unless instructed by Redekop technical support.	No
Reset Configuration	If checked, the Service Tool will reset installed features, settings, and calibrations to default values after updating firmware. This can be used when upgrading new ECUs prior to installation, or if the default values are desired when upgrading firmware. If unchecked, the Service Tool will attempt to keep installed features, settings, and calibrations if possible.	No
Reset Hour Meters	If checked, the Service Tool will reset the Chopper and SCU hour meters to zero after updating firmware. It will also reset any applicable Service Intervals. This can be used when upgrading ECUs prior to installation, or if transferring ECU to a different machine, etc. If unchecked, the current hour meter values and Service Interval values will be kept if possible.	No
Clear Alarm History	If checked, the Alarm History will be cleared after updating the firmware. If unchecked, the Alarm History will be kept if possible.	No

5 Programming Commands

Command	Icon	Description
Write		The Write command erases the ECU program memory, writes the selected firmware, optionally verifies the newly installed firmware, and updates the configuration memory according to the selected Options.
Verify		The Verify command reads the ECU program memory and compares it to the selected firmware. This command is normally only used when instructed by Redekop technical support.
Bulk		The Bulk command performs the Write command on multiple ECUs in a loop. After a Write command finishes, a new ECU can be connected and the process automatically resumes, continuing until the user cancels the command, ideally after programming the final ECU.

6 Edit Dialog

Use the Edit dialog box to alter ECU configuration as desired.



The Edit dialog box can be accessed by using the **Edit Configuration** or **Edit Hours** commands. See Edit Commands.

After the current configuration is read from the ECU, the Edit dialog is displayed. The fields available on the Edit dialog depend on the currently installed firmware on the ECU. Only features and settings that are supported by the currently installed firmware version are shown.

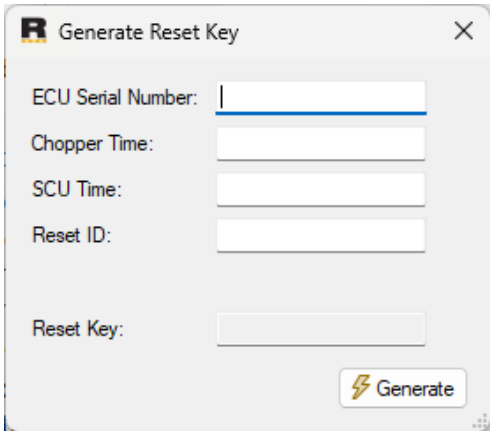
Click the **Save** button to save the configuration back to the ECU. Click the **Cancel** button to undo all changes and leave the configuration as-is.

Warning

In the case of an error reading the ECU configuration, the Edit dialog box will be populated with the default values for each field. Clicking **Cancel** will not save these default values and leave the ECU configuration as-is.

7 Generate Reset Key Dialog

Use the Generate Reset Key dialog box to generate a key when performing a Factory Initialization with an Android Tablet.



The Generate Reset Key dialog box is accessed by clicking the **File Menu** and clicking **Reset Key**. The fields in the dialog box must match the Android Tablet precisely to generate the correct reset key. See Factory Initializing Android Tablet.

7.1 Fields

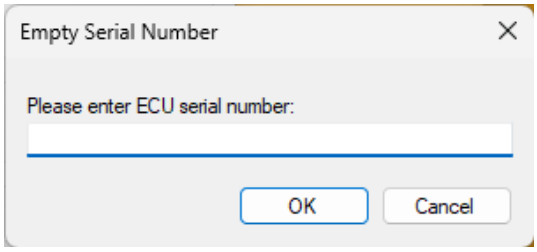
- **ECU Serial Number** - The serial number of the ECU as shown on the Android Tablet.
- **Chopper Time** - The number of minutes that the Chopper hour meter will be set to. Hours must be converted to minutes by multiplying by 60.
- **SCU Time** - The number of minutes that the SCU hour meter will be set to. Hours must be converted to minutes by multiplying by 60.
- **Reset ID** - A unique ID that is generated each time the Factory Initialization page is opened on the Android Tablet. This must be entered at the time of initialization to ensure that it is correct.

Click the **Generate** button to generate the key based on the entered fields.

- **Reset Key** - The unique key that is generated to authorize the initialization and set the hour meters. After generation, it must be entered into the Android Tablet to complete initialization.

8 Empty Serial Number Dialog

Use the Empty Serial Number dialog box to program the serial number into a new ECU.

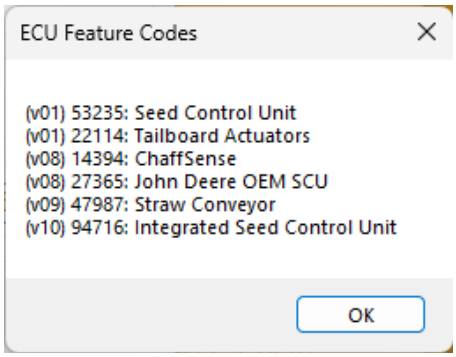


The Empty Serial Number dialog box is accessed by connecting a blank ECU and clicking **Connect**. The user will be prompted to enter the serial number of the currently connected ECU.

Click **OK** to save the entered serial number to the ECU. Click **Cancel** to leave the serial number blank (not recommended).

9 ECU Feature Codes dialog

The ECU Feature Codes dialog lists all the available feature codes for the Redekop ECU.

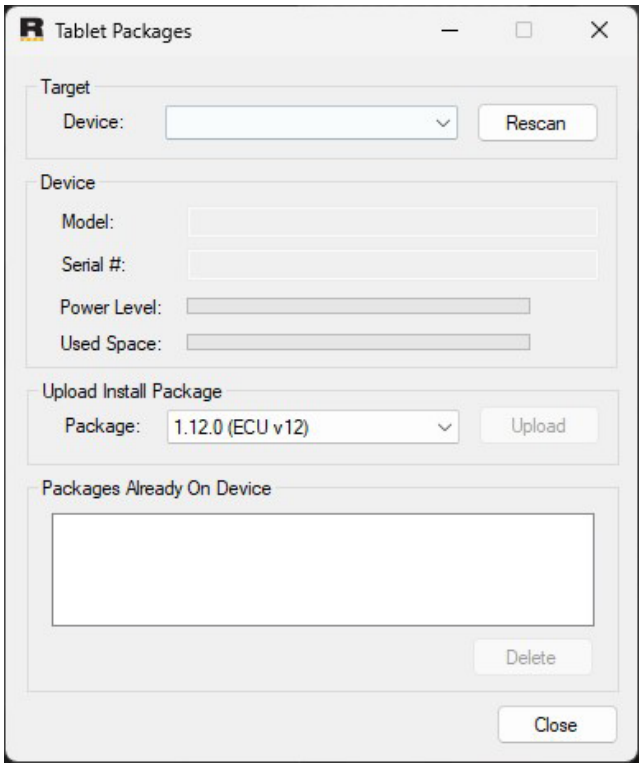


The feature codes are listed beginning with the minimum required firmware version, feature code value, and feature description. For example:

(v01) 53235: Seed Control Unit

10 Android Tablet Packages Dialog

Use the Android Tablet Packages dialog to manage installation packages on an Android Tablet.



The Android Tablet Packages dialog box is accessed by clicking the **File Menu** and clicking **Tablet Packages.** See Updating Android Tablet App.

• **Target** - Used to choose the connected device being managed. Use the **Rescan** button to update the list of available devices in the drop-down menu.

• **Device** - Shows information about the selected device, including Model, Serial Number, Battery Power Level, and Used Storage Space.

• **Upload Install Package** - Choose the desired Android Tablet app version from the drop-down menu.The required ECU firmware version is shown along with the Tablet app version. Use the **Upload** button to upload the installation package to the device selected in the Target box.

Uploading the package does not install the update. The installation must be completed on the Tablet. See Updating Android Tablet App.

Note: The ECU firmware version **must** be matched to the installed Android Tablet app version for the system to function. Ensure ECU is updated to the required firmware version.

• **Packages Already on Device** - Shows the detected installation packages that are already on the Tablet. Use the **Delete** button to remove the selected package from the Tablet.

Deleting installation packages does not remove the currently installed version of the app from the Tablet.

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