

04.11.2024

## GVI Gen 1

### Mobile Inverter

*Application Note: How to convert a GVI Gen1 project file from FW C03x04 to FW C04x01*



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## Non-warranty clause

We checked the contents of this publication for compliance with the associated hardware and software. We can, however, not exclude discrepancies and do therefore not accept any liability for the exact compliance. The information in this publication is regularly checked, necessary corrections will be part of the subsequent publications.

English Master created.

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# Table of Contents

## Contents

	Non-warranty clause.....	2
	Production site: .....	2
1	Introduction .....	4
1.1	About this document.....	4
2	Procedure .....	4
2.1	Identifying the firmware version on the GVI inverter.....	5
2.2	Converting the project file from FW C03x04 to FW C04x01 .....	7
2.3	Additional differences on the J1939 identifiers and CAN ports.....	12

# 1 Introduction

## 1.1 About this document

The purpose of this document is to describe how to convert the GVI Gen1 project file from the older firmware version C03x04 to the newer firmware version C04x01.

Note: The firmware files, including update EDS files, are available on request from Parker.  
Please contact: [EMPD.MobileSystemsTech@support.parker.com](mailto:EMPD.MobileSystemsTech@support.parker.com)

## 2 Procedure

For the converting of the GVI Gen1 project file from the older firmware version **C03x04** to the newer firmware version **C04x01**, it is necessary to have a GVI inverter with the installed new firmware version **C04x01**. If the firmware version on the GVI inverter is not known, the procedure described in the chapter “2.1 Identifying the firmware version on the GVI inverter” can be used for identifying the installed firmware version. To install the new firmware version **C04x01** on the inverter, please follow the procedure described in the document “Application Note: How to change the firmware version of GVI Gen 1”.

For the converting of the project file, it is necessary to import the Object Dictionary of the new firmware version **C04x01** in the project file, which needs to be converted. After connecting with the GVI inverter which has a new firmware version, the project file will be converted to the new firmware version. Due to the fact, that there are some differences in the parameters in the firmware versions **C03x04** and **C04x01**, the values of the following parameters need to be changed manually:

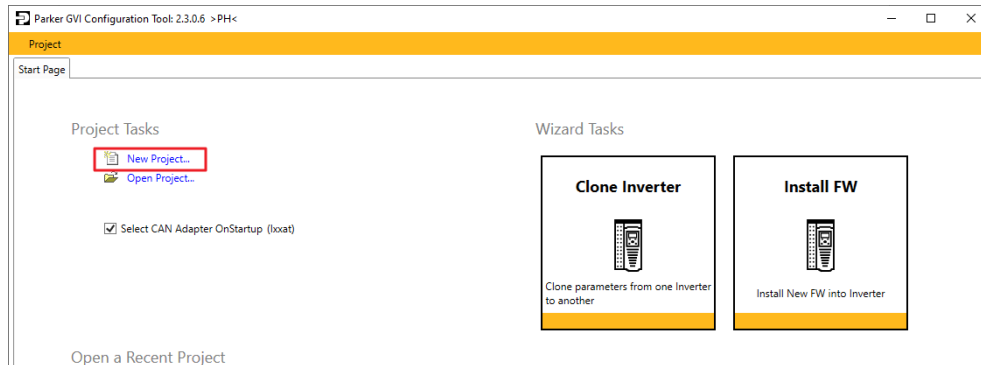
1. **0x2700:04, CommandMessage2TimeoutMs,**
2. **0x2700:05, LimitMessageTimeoutMs,**
3. **0x2700:06, SourceAddressTx,**
4. **0x2700:07, SourceAddressRx,**
5. **0x2072:14, DecouplingMode,**
6. **0x2073:53, MinDeltaStatorAngleForFluxCalc.**

The complete procedure of converting the project file is described in the chapter “2.2 Converting the project file from FW C03x04 to FW C04x01”.

## 2.1 Identifying the firmware version on the GVI inverter

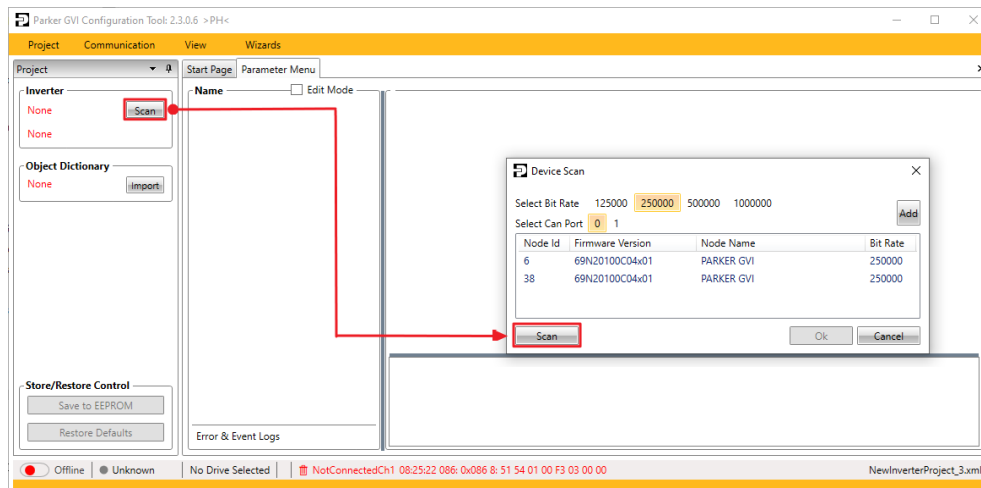
To identify the installed firmware version on the GVI inverter, it is necessary to scan the device and read the firmware version on it. To do so please follow the next steps.

1. In the GVI Config Tool, on the **Start Page**, select **New Project**.

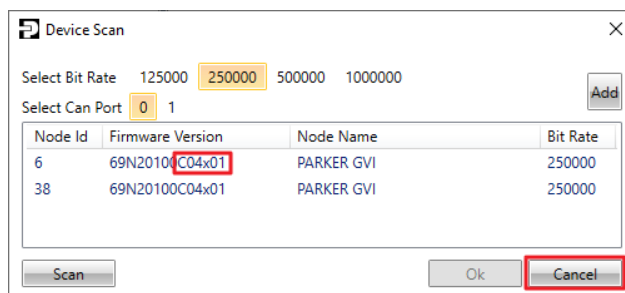


*Note: When using the GVI HV with the firmware version C04x01, the J1939 Main Port needs to be used. The CANopen AUX Port will be used only for the firmware change, and not for the communication with the GVI.*

2. In the **Project/Inverter** section, select **Scan** to open the **Device Scan** window and **Scan** the network.

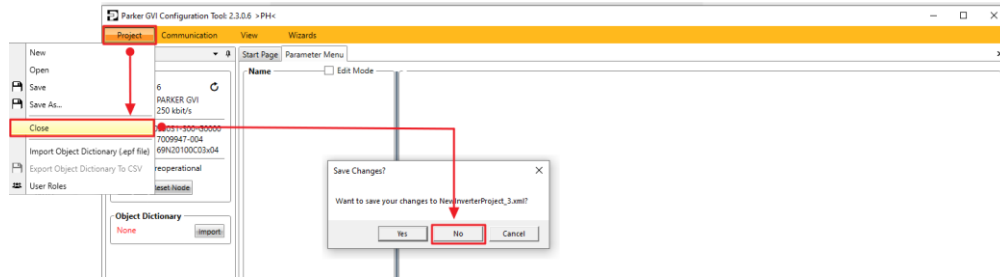


3. The last 6 characters of the GVI software number in the column **Firmware Version** represent the installed firmware version on the device. In this example, the installed firmware version is the new one, **C04x01**. Close the **Device Scan** window by selecting **Cancel**.



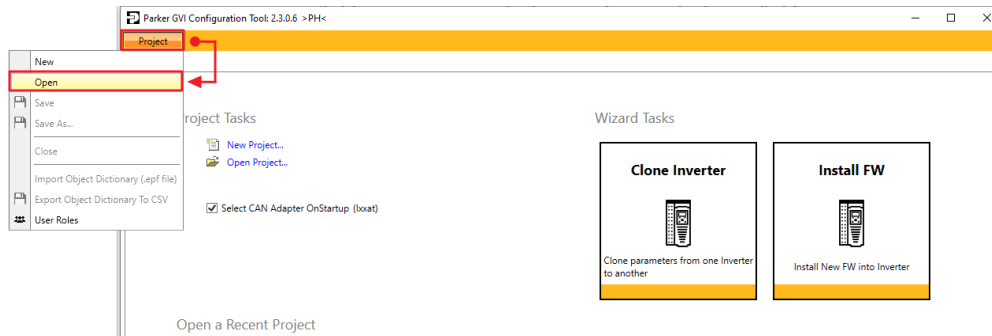
*Note: To install the new firmware version C04x01 on the inverter, please follow the procedure described in the document "Application Note: How to change the firmware version of GVI Gen1".*

4. In the **Menu Bar/Project** select **Close** to close the program. Don't save the project, by selecting **No**.

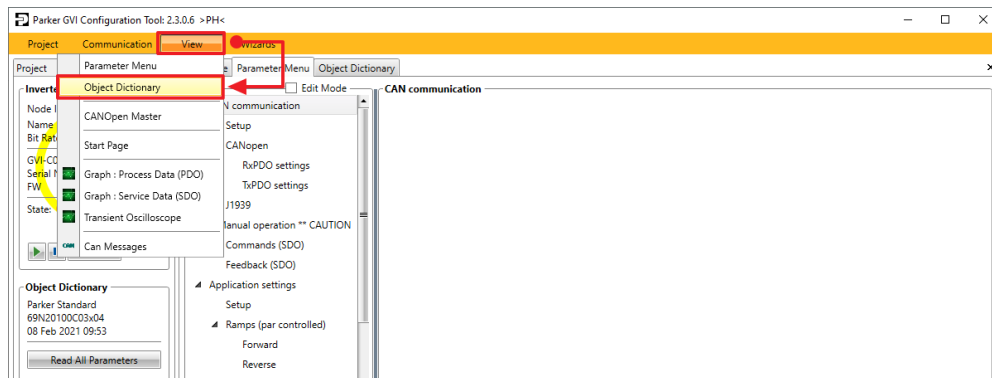


## 2.2 Converting the project file from FW C03x04 to FW C04x01

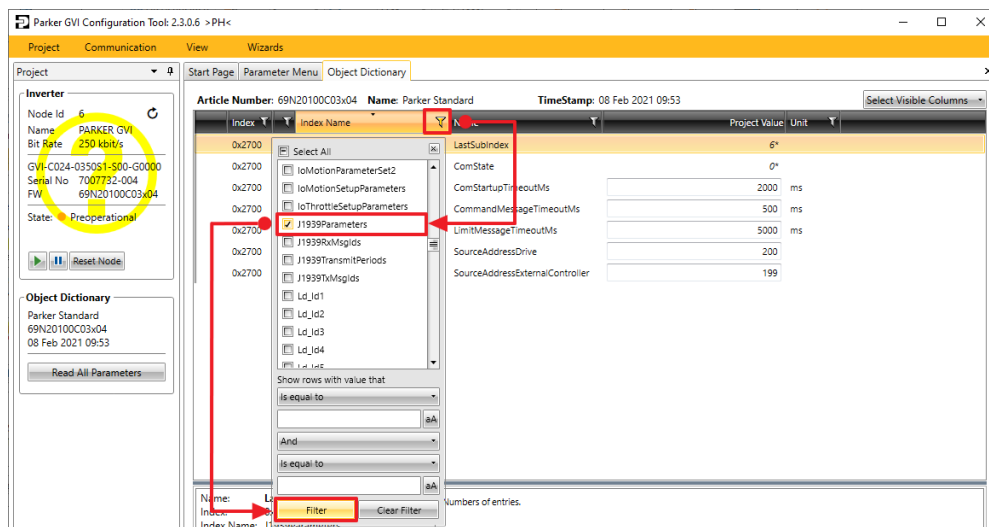
1. Select **Open Project** on the **Start Page** or select **Open** from the **Menu Bar/Project** and choose the older project file with the firmware version **C03x04** that needs to be converted to the new firmware version **C04x01**.



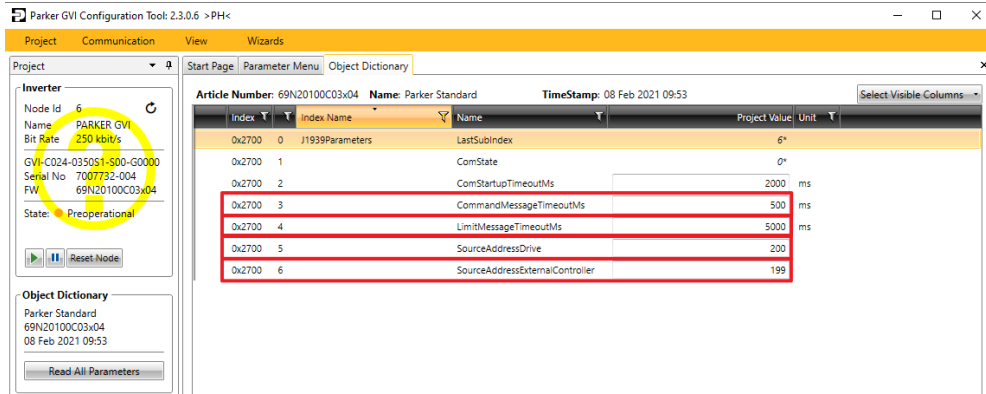
2. In the **Menu Bar/View** select **Object Dictionary** to open the Object Dictionary.



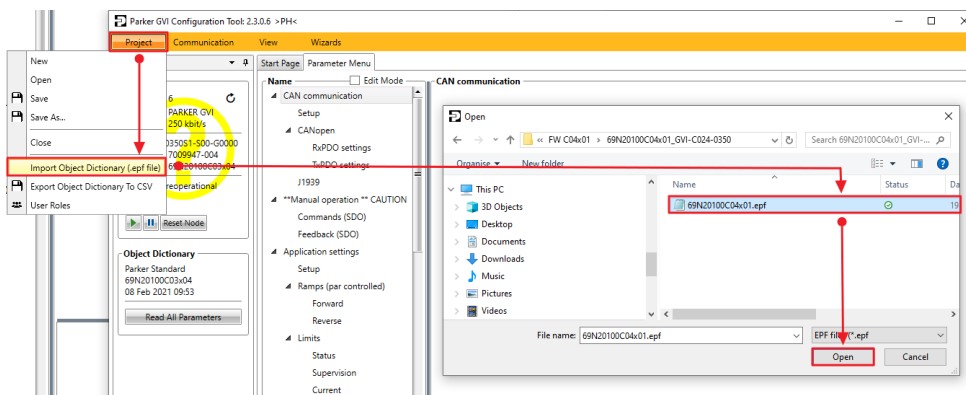
3. In the Object Dictionary window, select the **Filter Icon** in the column **Index Name**, then select the Index Name **J1939 Parameters**, and select **Filter** to filter all the parameters in the Object Dictionary with the index name **J1939 Parameters**.



- Note the values of the parameters **0x2700:03 CommandMessageTimeoutMs**, **0x2700:04 LimitMessageTimeoutMs**, **0x2700:05 SourceAddressDrive** and **0x2700:06 SourceAddressExternalController**. These values need to be changed manually in the Object Dictionary in the firmware version **C04x01**.

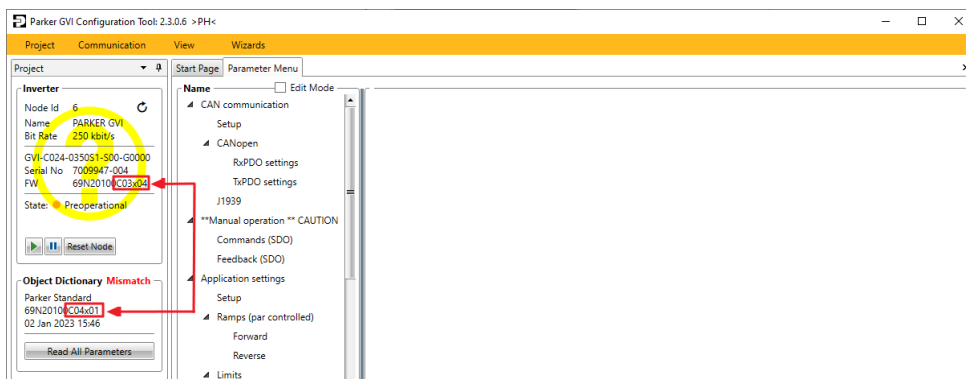


- In the **Menu Bar/Project** select **Import Object Dictionary (.epf file)** and browse the Object Dictionary with the firmware version **C04x01**.

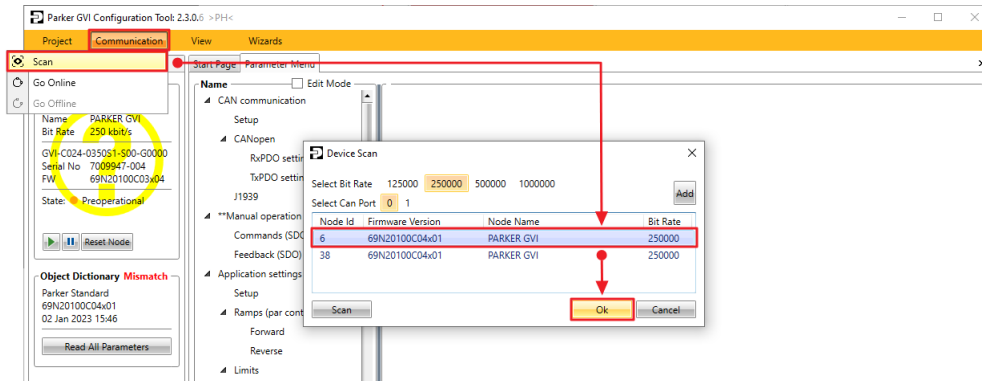


*Note: The name of the firmware file (.epf file) is related to the type of the GVI inverter and firmware version. For the different GVI types, the firmware file will be different, but for all of them the last letters represent the firmware version. For the used GVI in this example **GVI-C024-0350**, the name of the Object Dictionary will be **69N20100C04x01** for the firmware version **C04x01**.*

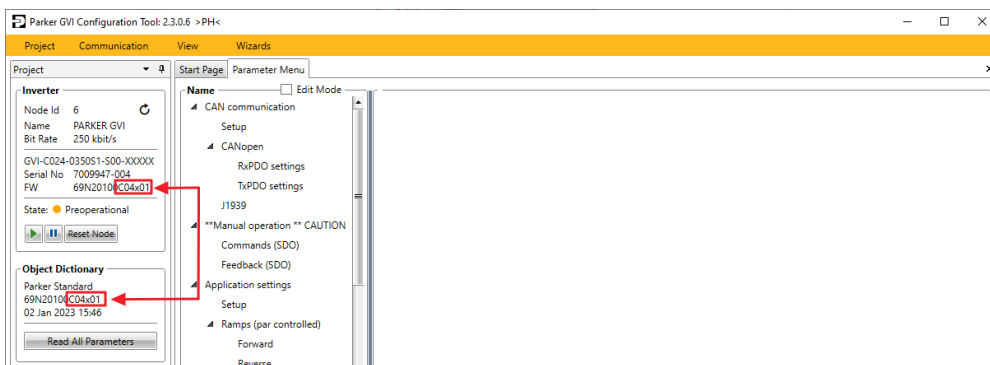
- After importing the Object Dictionary, due to the different firmware version of the imported Object Dictionary (**C04x01**) and the original firmware version of the project file (**C03x04**), the message **Mismatch** will occur in the **Project/Object Dictionary**. The message can be ignored in this step.



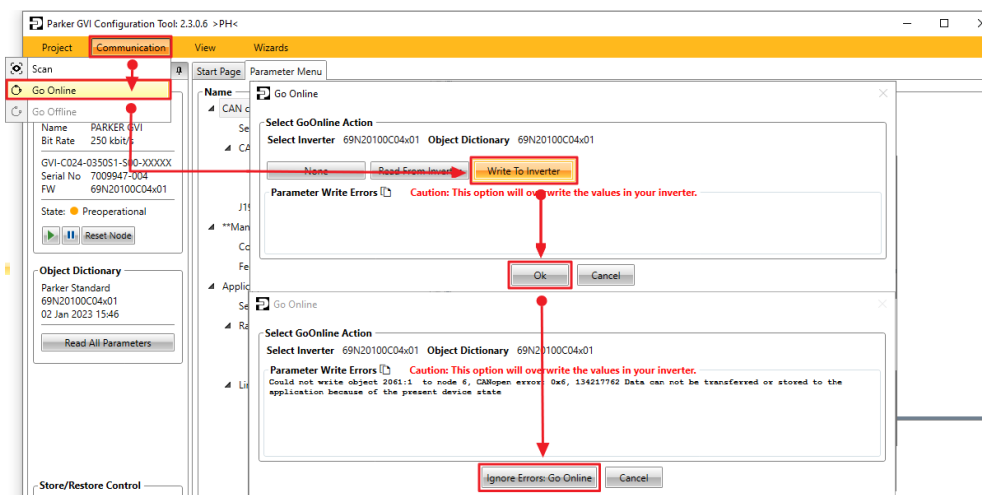
- In the **Menu Bar/Communication** select **Scan** and chose the GVI inverter by selecting it and click **Ok**. To be able to convert the project file to the new firmware version **C04x01**, the selected GVI inverter needs to have the new firmware version **C04x01**.



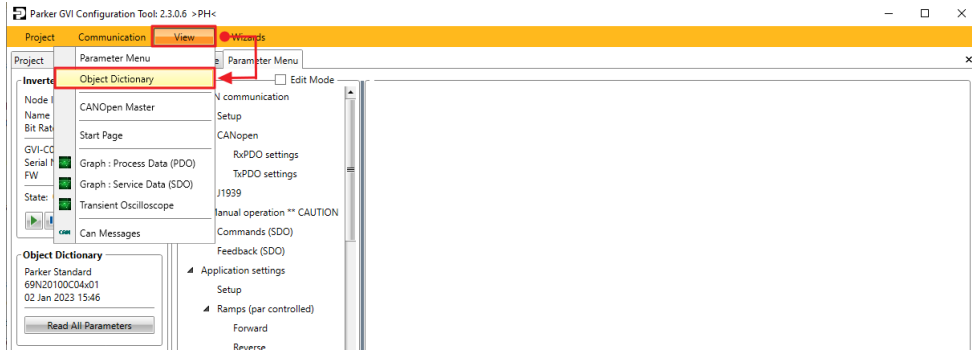
- After importing the inverter with the firmware version **C04x01** in the project, the firmware version of the drive will be same as the firmware version of Object Dictionary and the **Mismatch** message will disappear.



- In the **Menu Bar/Communication**, select **Go Online**, select **Write to Inverter**, select **Ok**, then select **Ignore Errors: Go Online** if this message comes. With this step, the parameters from the project file will be sent on the GVI inverter.



- Open the **Object Dictionary** by selecting **Menu Bar/ View** and change the value of the objects **0x2072:14 DecouplingMode** to **FLUX\_DECOUPLING\_MODE**, and the value of the object **0x2073:53 MinDeltaStatorAngleForFluxCalc** to **1638**. Select the icon **Write to Inverter** for both values.



+	0x2072	14	DecouplingMode	INDUCTANCE_DECOUPLING_MODE	FLUX_DECOUPLING_MODE				
+	0x2073	53	MinDeltaStatorAngleForFluxCalc	4000	1638				

- Additionally, the values of the **J1939 Parameters** in the Object Dictionary of the firmware version **C04x01**: **0x2700:04 CommandMessage2TimeoutMs**, **0x2700:05 LimitMessageTimeoutMs**, **0x2700:06 SourceAddressTx** and **0x2700:07 SourceAddressRx** must be changed manually with the noted values of the **J1939 Parameters** in the firmware version **C03x04** (described in the step number 4), according to the table from below. After changing the values, select the icon **Write to Inverter** for every object

J1939 Parameters in FWC03x04	copy to	J1939 Parameters in C04x01
0x2700:03, CommandMessageTimeoutMs	→	0x2700:04, CommandMessage2TimeoutMs
0x2700:04, LimitMessageTimeoutMs	→	0x2700:05, LimitMessageTimeoutMs
0x2700:05, SourceAddressDrive	→	0x2700:06, SourceAddressTx
0x2700:06, SourceAddressExternalController	→	0x2700:07, SourceAddressRx

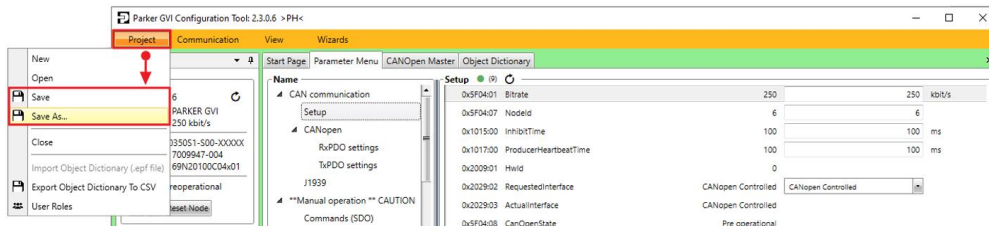
For example, the value of the parameter **0x2700:07 SourceAddressRx** in the Object Dictionary of the firmware version **C04x01** must be the same as the value of the parameter **0x2700:06 SourceAddressExternalController** in the Object Dictionary in the firmware version **C03x04**.

+	0x2700	4	CommandMessage2TimeoutMs	500	ms				
+	0x2700	5	LimitMessageTimeoutMs	5000	ms				
+	0x2700	6	SourceAddressTx	200					
+	0x2700	7	SourceAddressRx	199					

*Note: After selecting the **Write to Inverter** icon, the values of the parameters will be written in the GVI inverter. Due to the minor software bug in the GVI Config Tool (version 2.3.0.6 and older), the Inverter Value of the parameters **0x2700:6 SourceAddressTx** and **0x2700:7 SourceAddressRx** will be shown as 0 in the software, but in the reality the Inverter Values will be the same as the Project Value. The software bug will be corrected in the next software version.*

Index	Index Name	Name	Inverter Value	Project Value	Unit
0x2700	0	J1939Parameters	LastSubIndex	7	
0x2700	1	ComState	CANINIT		
0x2700	2	ComStartupTimeoutMs	3000	3000	ms
0x2700	3	CommandMessageTimeoutMs	600	500	ms
0x2700	4	CommandMessage2TimeoutMs	2000	500	ms
0x2700	5	LimitMessageTimeoutMs	201	5000	ms
0x2700	6	SourceAddressTx	0	200	
0x2700	7	SourceAddressRx	0	199	

12. Select **Save to EEPROM, Power OFF/Power ON** the GVI. With this step the project file is converted from the old firmware version to the new firmware version and saved on the GVI inverter.
13. In the **Menu Bar/Project**, select **Save** or **Save As...** to save the project file with the new firmware version **C04x01**.



## 2.3 Additional differences on the J1939 identifiers and CAN ports

Changing the J1939 from peer-peer SAE to Broadcast Proprietary required moving the J1939 identifier address range from 0x0CC8C8C7 – 0x18D1C7CB to 0x0CFF28C7 – 0x18FF40CB.

J1939 Users upgrading from previous versions of firmware will be required to modify the vehicle controller software accordingly. Refer to document 192-300301N8 – GVI CAN Message database for details.

J1939	Firmware version: C03x04, GVI LV and HV inverters				All messages in the peer to peer range (PDU1)				29 bit identifiers	
GVI: HW-ID	0	1	2	3	0	1	2	3		
SA_master	199, d	199, d	199, d	199, d	199, d	199, d	199, d	199, d		
Name	CAN-ID	CAN-ID	CAN-ID	CAN-ID	PGN	PGN	PGN	PGN	transmit rate	priority
Commands1	0x0CC8C8C7	0x0CC8C9C7	0x0CC8CAC7	0x0CC8CBC7	51200	51200	51200	51200	10 ms	3
Commands2	0x0CC7C8C7	0x0CC7C9C7	0x0CC7CAC7	0x0CC7CBC7	50944	50944	50944	50944	10 ms	3
Limits	0x0CC9C8C7	0x0CC9C9C7	0x0CC9CAC7	0x0CC9CBC7	51456	51456	51456	51456	10 ms	3
SA_GVI	200, d	201, d	202, d	203, d	200, d	201, d	202, d	203, d		
Status	0x18DC7C8	0x18DC7C9	0x18DC7CA	0x18DC7CB	52480	52480	52480	52480	10 ms	6
Diagnostics1	0x18CAC7C8	0x18CAC7C9	0x18CAC7CA	0x18CAC7CB	51712	51712	51712	51712	10 ms	6
Diagnostics2	0x18CC7C8	0x18CC7C9	0x18CC7CA	0x18CC7CB	52224	52224	52224	52224	10 ms	6
Diagnostics3	0x18CF7C8	0x18CF7C9	0x18CF7CA	0x18CF7CB	52992	52992	52992	52992	100 ms	6
Events	0x18CE7C8	0x18CE7C9	0x18CE7CA	0x18CE7CB	52736	52736	52736	52736	100 ms	6

J1939	Firmware version: C03x05, GVI LV and HV inverters				All messages in the peer to peer range (PDU1)				29 bit identifiers	
GVI: HW-ID	0	1	2	3	0	1	2	3		
SA_master	199, d	199, d	199, d	199, d	199, d	199, d	199, d	199, d		
Name	CAN-ID	CAN-ID	CAN-ID	CAN-ID	PGN	PGN	PGN	PGN	transmit rate	priority
Commands1	0x0CC8C8C7	0x0CC8C9C7	0x0CC8CAC7	0x0CC8CBC7	51200	51200	51200	51200	10 ms	3
Commands2	0x0CC7C8C7	0x0CC7C9C7	0x0CC7CAC7	0x0CC7CBC7	50944	50944	50944	50944	10 ms	3
Limits	0x0CC9C8C7	0x0CC9C9C7	0x0CC9CAC7	0x0CC9CBC7	51456	51456	51456	51456	10 ms	3
SA_GVI	200, d	201, d	202, d	203, d	200, d	201, d	202, d	203, d		
Status	0x18DC7C8	0x18DC7C9	0x18DC7CA	0x18DC7CB	52480	52480	52480	52480	10 ms	6
Diagnostics1	0x18CAC7C8	0x18CAC7C9	0x18CAC7CA	0x18CAC7CB	51712	51712	51712	51712	10 ms	6
Diagnostics2	0x18CC7C8	0x18CC7C9	0x18CC7CA	0x18CC7CB	52224	52224	52224	52224	10 ms	6
Diagnostics3	0x18CF7C8	0x18CF7C9	0x18CF7CA	0x18CF7CB	52992	52992	52992	52992	100 ms	6
Events	0x18D1C7C8	0x18D1C7C9	0x18D1C7CA	0x18D1C7CB	53504	53504	53504	53504	100 ms	6

J1939	Firmware version: C04x01: GVI LV and HV inverters				All messages in the proprietary broadcast range (PDU2)				29 bit identifiers	
GVI: HW-ID	0	1	2	3	0	1	2	3		
SA_master	199, d	199, d	199, d	199, d	199, d	199, d	199, d	199, d		
Name	CAN-ID	CAN-ID	CAN-ID	CAN-ID	PGN	PGN	PGN	PGN	transmit rate	priority
Commands1	0x0CFF28C7	0x0CFF2DC7	0x0CFF32C7	0x0CFF37C7	65320	65325	65330	65335	10 ms	3
Commands2	0x0CFF29C7	0x0CFF2EC7	0x0CFF33C7	0x0CFF38C7	65321	65326	65331	65336	10 ms	3
Limits	0x0CFF2AC7	0x0CFF2FC7	0x0CFF34C7	0x0CFF39C7	65322	65327	65332	65337	10 ms	3
SA_GVI	200, d	201, d	202, d	203, d	200, d	201, d	202, d	203, d		
Status	0x18FF3CC8	0x18FF3CC9	0x18FF3CCA	0x18FF3CCB	65340	65340	65340	65340	10 ms	6
Diagnostics1	0x18FF3DC8	0x18FF3DC9	0x18FF3DCA	0x18FF3DCB	65341	65341	65341	65341	10 ms	6
Diagnostics2	0x18FF3EC8	0x18FF3EC9	0x18FF3ECA	0x18FF3ECB	65342	65342	65342	65342	10 ms	6
Diagnostics3	0x18FF3FC8	0x18FF3FC9	0x18FF3FCA	0x18FF3FCB	65343	65343	65343	65343	100 ms	6
Events	0x18FF40C8	0x18FF40C9	0x18FF40CA	0x18FF40CB	65344	65344	65344	65344	100 ms	6

On the GVI HV inverter, there are some additional differences between the firmware version C3x04 and the firmware version C04x01 in the supported functions of the CAN ports. The differences of the CAN ports are shown in the table below.

Firmware Version	C03x04	C04x01
GVI HV Inverters	Use of ports	Use of ports
J1939 MAIN Port	J1939 (command and feedback messages)	J1939 (command and feedback messages) or CANopen (NMT, SDO, PDO and EMCY)
CANopen AUX Port	CANopen (NMT, SDO, PDO and EMCY) or Firmware change	Firmware change