

192-300306N1
03.03.2021

GVI

Mobile Inverter

Configuration Tool Quick Start Guide



ENGINEERING YOUR SUCCESS.

Non-warranty clause

We checked the contents of this publication for compliance with the associated hardware and software. We cannot, however, 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.

Production site:

Germany

Parker Hannifin Manufacturing Germany GmbH & Co. KG
Electromechanical & Drives Division Europe [EMDE]
Robert-Bosch-Strasse 22
77656 Offenburg (Germany)
Tel.: + 49 (0781) 509-0
Fax: + 49 (0781) 509-98176
Internet: www.parker.com/eme <http://www.parker.com/eme>
E-mail: EM-Motion@parker.com <mailto:EM-Motion@parker.com>

Certified according to ISO 9001:2015

Parker Hannifin Manufacturing Germany GmbH & Co KG - Sitz: Bielefeld - Amtsgericht: Bielefeld HRA 15699
Partner liable to unlimited extent: Parker Hannifin GmbH, Sitz Bielefeld, Amtsgericht Bielefeld HRB 35489
Geschäftsführung der PARKER Hannifin GmbH: Dr.-Ing. Hans-Jürgen Haas, Kees Veraart, Chairman of the board: Dr.-Ing. Gerd Scheffel

Table of Contents

	Non-warranty clause	2
	Production site:	2
1	Introduction	4
1.1	About this document	4
1.1.1	Definitions	4
1.1.2	This revision	4
1.1.3	Scope	4
1.1.4	Warning, caution and information notices	5
1.1.5	Related documents	5
2	Quick Start Guide	6
3	Clone Wizard	7
4	Install Firmware Wizard	8
5	New Project View	9
6	Project View	10
7	Edit, Monitor and Graph Parameters using SDO Protocol	11
8	CANOpen Master Simulation using PDO protocol	12
9	Fast Transient Oscilloscope	13

1 Introduction

1.1 About this document

1.1.1 Definitions

In this documentation the product Global Vehicle Inverter is referred to as “The motor controller” or GVI.

GVI is a family of motor controllers for use in systems with 24-650 DC (nominal) supply and power levels from 4,4 to 398 kVA. GVI frame sizes C, D, E are referred to as Low Voltage (LV) devices, frame sizes G and H are considered as High Voltage (HV) Devices. The GVI is suitable for most electric vehicle applications.

1.1.2 This revision

This revision replaces all previous revisions of this document. Parker has made every effort to ensure that this document is complete and accurate at the time of printing. In accordance with our policy of continuous product improvement, all data in this document is subject to change or correction without prior notice.

1.1.3 Scope

The Parker GVI Config Tool is a simple to use application for setting up your Parker GVI/ GVM for both expert and non- expert users alike.

For the non-expert user it provides 2 simple Wizards for cloning inverters and installing new firmware versions.

For the expert user it provides a project based approach where online monitoring, graphing and other diagnostic features can be deployed to optimize the Parker GVM performance.

The tool supports several CAN USB adapters and communicates with the inverter using the CANOpen communication protocol. For normal parameter reading and writing the tool uses SDOs or Service Data Objects. A CANOpen Master Simulation mode is also available and uses the PDOs or Process Data Objects with faster read/write operations.

1.1.4 Warning, caution and information notices

Special attention must be paid to the information presented in warning, caution and information notices when they appear in this manual. Definitions of caution, warning and information notices are shown below:



WARNING

This section describes the risk of the hazard, for example High voltage - risk of personnel injury

A Warning informs the user of a hazard or potential hazard that could result in serious or fatal injury and damage to the equipment if the precautions or instructions given in the warning notice are not observed/followed.



CAUTION

This section describes the risk of the hazard, for example Risk of damage to equipment

A Caution informs the user of a hazard or potential hazard that could result in damage to the equipment if the precautions or instructions given in the caution notice are not observed/followed.



NOTE

A note contains supplemental information or references to supplemental information on a topic.

1.1.5 Related documents

For more information about the inverter, see the following related documents.

Reference number	Document	Description
1	GVI Object Dictionary	The document is available from Parker as an HTML file
2	Hardware Installation Manual for GVI-C D E	Parker Reference 192-300300N2
3	Hardware Installation Manual for GVI-G-H	Parker Reference 192-300302N2
4	GVI Configuration Manual	Parker Reference 192-300303N2

Table 1 References

2 Quick Start Guide

Select a CANUSB adapter

On start-up choose your installed adapter

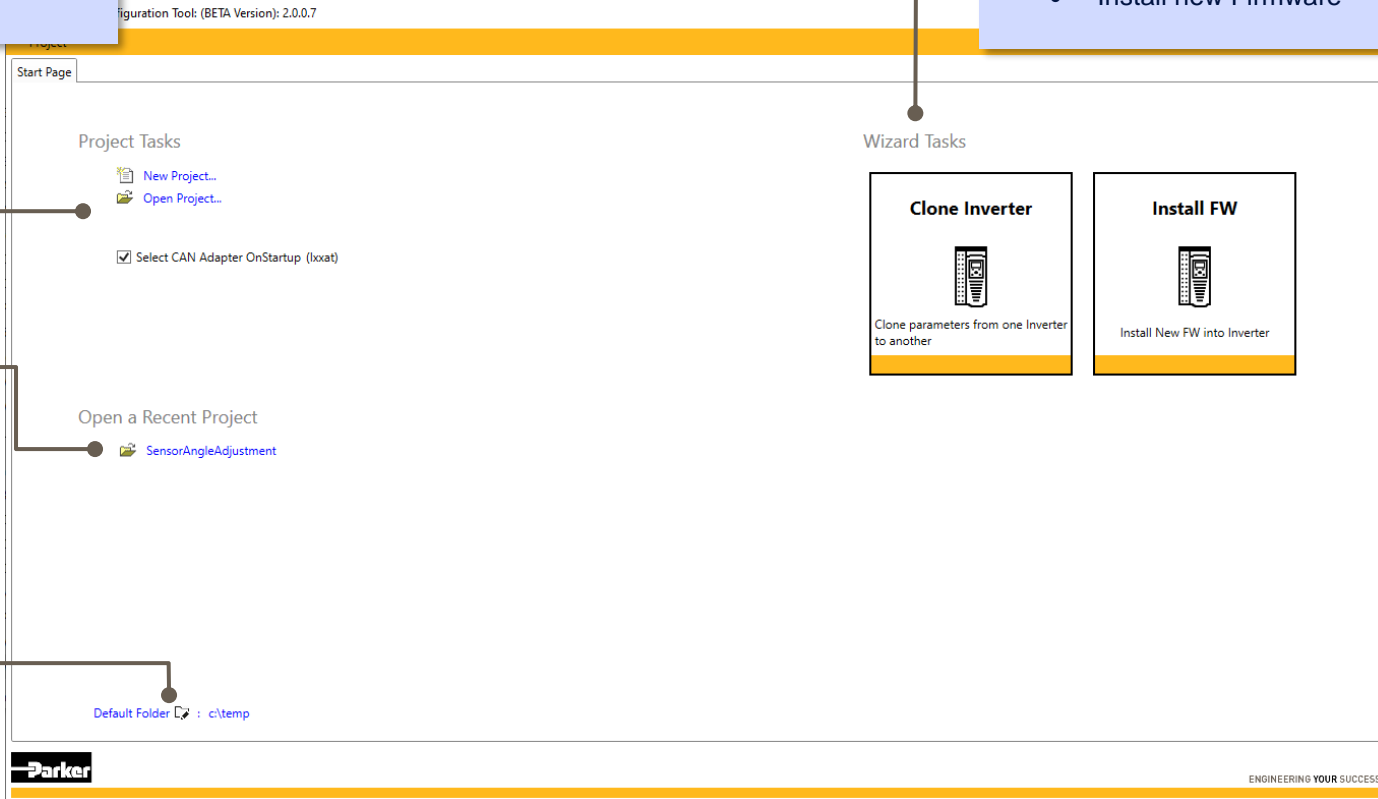


Supported CANUSB adapters

- IXXAT PCAN-USB IPEH-002021
- Kvaser Leaf Lite/Pro v2

Project Tasks

Use a project to edit, monitor, graph, diagnose and commission your GVI



Simple Wizard Tasks

- Clone a known good GVI
- Install new Firmware

Recent Projects

Quickly access your recent projects

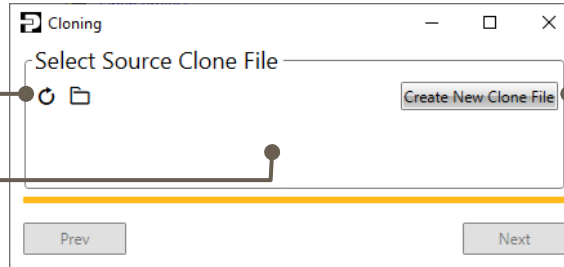
Default Folder

Set the folder where you wish to create and save projects

3 Clone Wizard

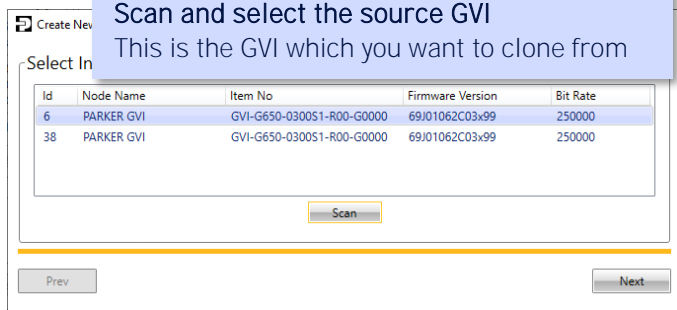
Refresh/Clone File Folder
Refresh available clone files and open folder

No clone files listed yet?
Create a clone file

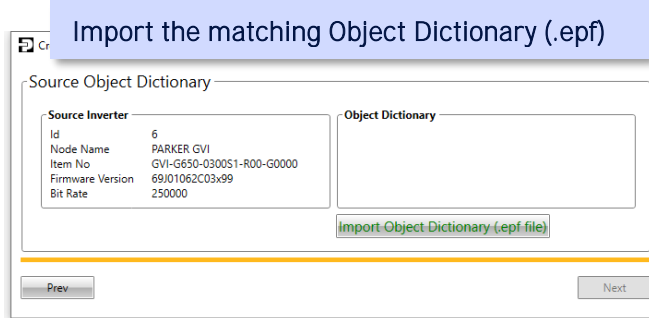


Create New Clone File
Use this button to create a new clone file

Create a Clone File from a source GVI

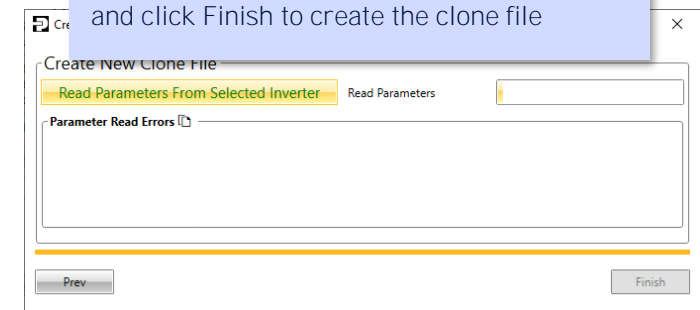


Scan and select the source GVI
This is the GVI which you want to clone from

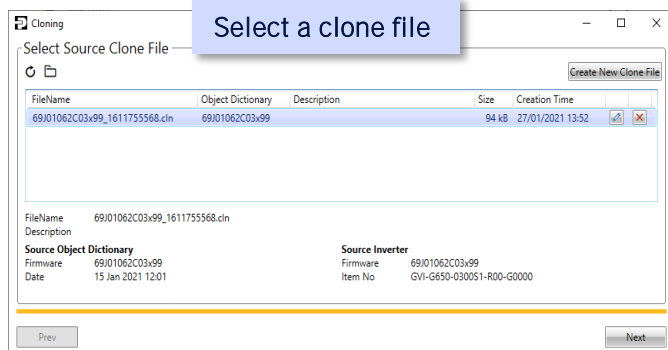


Import the matching Object Dictionary (.epf)

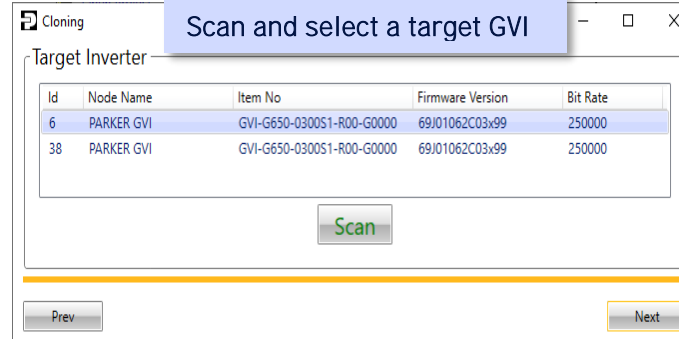
Read your GVI values
Click Read Parameters to read the GVI values and click Finish to create the clone file



Select a Clone File and clone to a target GVI

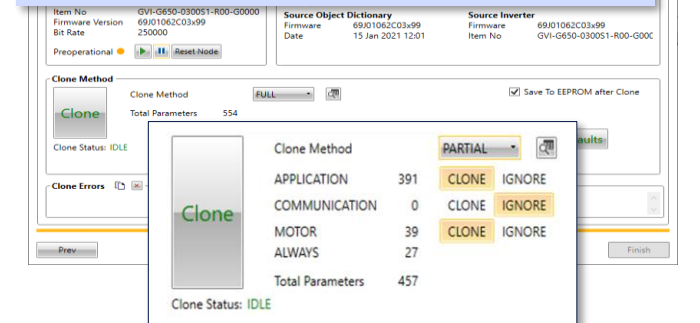


Select a clone file

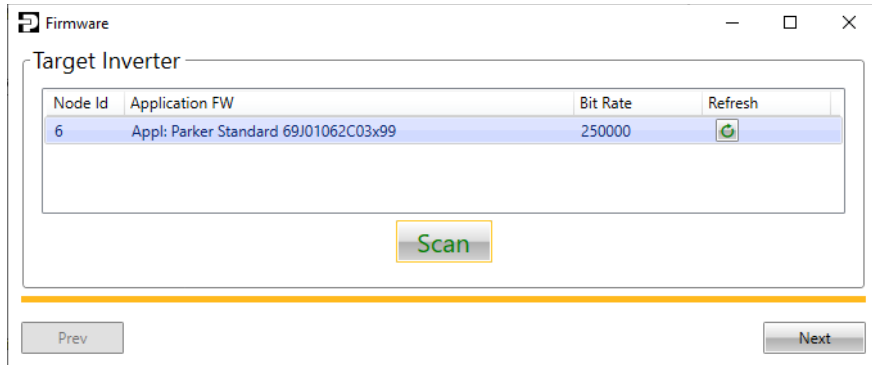


Scan and select a target GVI

Select Clone Method and Press Clone
Clone Method: Full or Partial. Use a Partial Clone to exclude Comms Parameters for example.

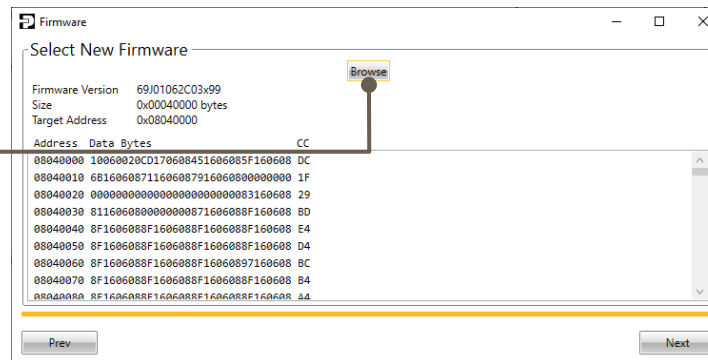


4 Install Firmware Wizard

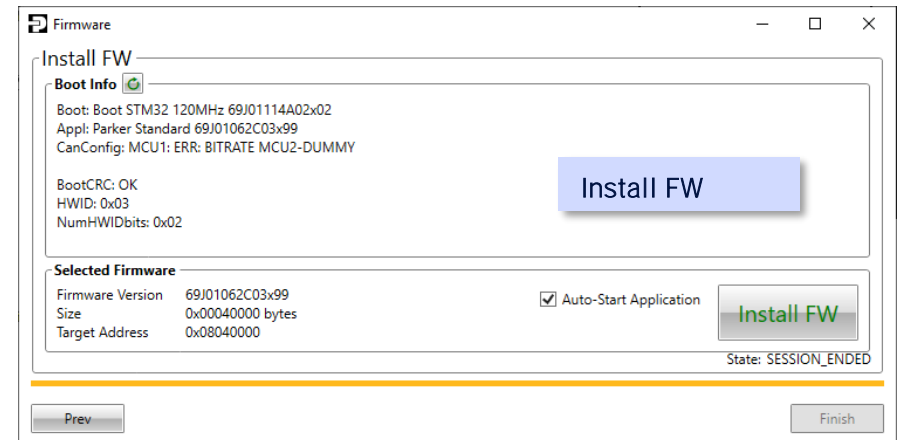


Scan and select the target GVI

Import the correct .epf file
The FW is embedded in the epf file



Confirm selected Firmware



Install FW

5 New Project View

The screenshot displays the Parker GVI Configuration Tool interface. The main window has a yellow header and a menu bar with 'Project', 'Communication', 'View', and 'Wizards'. Below the menu bar, there are tabs for 'Start Page' and 'Parameter Menu'. The main workspace shows an 'Inverter' section with 'None' selected and a 'Scan' button, and an 'Object Dictionary' section with 'None' selected and an 'Import' button. Two callout boxes provide instructions: 'Scan for GVI Scan the CAN network for your GVI' points to the 'Scan' button, and 'Object Dictionary Import a matching epf file' points to the 'Import' button. A 'Device Scan' dialog box is open, showing a table with columns 'Node Id', 'Firmware Version', 'Node Name', and 'Bit Rate'. The table contains one entry: Node Id 6, Firmware Version 69J01062C03x99, Node Name PARKER GVI, and Bit Rate 250000. Below the table is a 'Scan' progress bar and 'Scan', 'Ok', and 'Cancel' buttons. An 'Open' file dialog is also open, showing the file '69J01062C03x99.epf' selected in a folder named 'Object Dictionary (epf files)'. The file's properties are shown as Type: EPF File, Size: 1.49 MB, and Date modified: 15/01/2021 12:01. The 'File name' field is empty, and the file type is set to 'EPF files (*.epf)'. The status bar at the bottom shows 'Offline', 'Preoperational', 'No Drive Selected', and 'EMCY Messages', along with the project path 'c:\temp\NewInverterProject_44.xml*'. The title bar of the application window reads 'Parker GVI Configuration Tool: (BETA Version): 2.0.0.7'.

6 Project View

Menu Bar

Manage your project, import an Object Dictionary, Scan for a GVI, select a view and access the wizards

Selected GVI

Scan and select your GVI. A CAN connection shows the current state and more GVI information

NMT Control

Start and stop the CANOpen application imported object dictionary version

Object Dictionary

Displays the imported object dictionary version

Status Bar

Tool Online/Offline Status
When online the tool monitors and displays parameter values

CANOpen Status

Emergency Messages

When the CANbus is connected any GVI emergency messages are displayed here

Current Project

Displays the current project. Doubles as a progress bar.

Tabbed Views

- Parameter Menu
- Object Dictionary
- Graphs and Scope
- CANOpen Master

Parameter Menu View

The default view when a project is opened is a simple hierarchical view of your GVI parameters

The screenshot shows the Parker GVI Configuration Tool interface. The main window is titled "Parker GVI Configuration Tool: (BETA Version): 2.0.0.7". The interface is divided into several sections:

- Project Information:** Shows details for the selected GVI, including Node Id (6), Name (PARKER GVI), Bit Rate (250 kbit/s), and various identification numbers (GVI, Serial No, FW). It also indicates the state as "Operational" and provides a "Reset Node" button.
- Object Dictionary:** Displays the imported object dictionary version (Parker Standard 69J01062C03x99) and a "Read All Parameters" button.
- Store/Restore Control:** Includes buttons for "Save to EEPROM" and "Restore Defaults".
- Parameter Menu:** A tree view showing the hierarchy of parameters. The "RequestedInterface" parameter is selected and highlighted in yellow.
- Setup Table:** A table of parameters with their values and units. The selected parameter is shown in detail below the table.

Name	Value	Unit
0x5F04:01	250	kbit/s
0x5F04:07	1	
0x1015:00	100	ms
0x1017:00	100	ms
0x2009:01	0*	
0x2029:02	CANopen Controlled	
0x2029:03	Hardware Controlled*	
0x5F04:08	Init*	
0x2700:01	0*	
- Parameter Information:** A detailed view of the selected parameter, "RequestedInterface". It includes the Name, Index (0x2029:2), Index Name (ApplicationParameters), Type (UNSIGNED8), Unit, Min (1), Max (2), Default (APPL_STATE_CANOPEN_APP), and CloneCategory (APPLICATION). It also provides instructions on how hardware control settings affect the actual interface.
- Status Bar:** Shows the tool's online/offline status (Operational), the current project name (6 PARKER GVI), and emergency messages (Event Cleared, FrequencyAbove599Hz 12:56:45 962: 0x086 8: 00 00 01 00 40 01 13 00). The current project path is also displayed (c:\temp\NewInverterProject_44.xml).

7 Edit, Monitor and Graph Parameters using SDO Protocol

View Wizards

- Parameter Menu
- Object Dictionary
- CANOpen Master

Project Communication View Wizards

- Start Page
- Parameter Menu
- Object Dictionary

Project

Inverter

Node Id 6
 Name PARKER GVI
 Bit Rate 250 kbit/s
 GVI-G650-0300S1-R00-G0000
 Serial No 7001114-002
 FW 69J01062C03x99
 State: ● Preoperational
 [Play] [Pause] [Reset Node]

Object Dictionary

Parker Standard
 69J01062C03x99
 Jan 2021 12:01

SDO Updates 25ms
 [Read All Parameters]

Graph : Service Data (SDO)

Graph : Process Data (PDO)
 Graph : Service Data (SDO)

Tool Online
 When online the tool border is green and monitoring is active

SDO Monitoring rates
 When online select the monitoring rate: 25/50/100ms or Disabled.

SDO Monitoring enable
 Green for enabled, red when disabled. (4) indicates 4 parameters being polled

Monitored GVI Values
 When online the tool monitors and displays parameter values

Change GVI Values
 For writable parameters set a new value and press the write button

SDO Graphing (typically > 100ms)
 Simple graphing of up to 8 parameters using SDO protocol.

InternalVoltageSupplies:1SV (V)
 15.01 23.97
 15.005 23.96
 15.000 23.95
 14.995 23.94
 14.990 23.93
 14.985 23.92
 14.980 23.91
 14.975 23.90
 14.970 23.89
 14.965 23.88

InternalVoltageSupplies:Bplus (V)
 23.97
 23.96
 23.95
 23.94
 23.93
 23.92
 23.91
 23.90
 23.89
 23.88

ResolverExcitationLevel (r)
 41200
 41000
 40800
 40600
 40400
 40200
 40000
 39800

14h:45m:00s.000ms 14h:45m:05s.000ms 14h:45m:10s.000ms 14h:45m:15s.000ms 14h:45m:20s.000ms 14h:45m:25s.000ms

Online Preoperational 6 PARKER GVI 69J01062C03x99 FrequencyAbove599Hz 15:38:30 742: 0x086 8: B0 80 01 00 40 01 13 00 c:\temp\NewInverterProject_44.xml*

8 CANOpen Master Simulation using PDO protocol

View | **Wizards**

- Parameter Menu
- Object Dictionary
- CANOpen Master**
- Start Page
- Graph : Process Data (PDO)
- Graph : Service Data (SDO)
- Transient Oscilloscope

Realtime RxPDO Commands
 Simulate a CANOpen master or monitor an external master.
 Auto read PDO mappings

Realtime TxPDO Feedback
 Monitor high speed TxPDO values
 Auto read PDO mappings

GVI in Operational

Command Messages (Rx PDOs) Enable Parameter Setup Groups

CAUTION : Command messages may energize the inverter and turn the motor.

16#00000009

- 00: **Switch On**
- 01: Speed Neutral Brake Ramp P
- 03: **Enable**
- 04: Regulator Set
- 05: Activate Current Boost
- 06: Speed Ramp Parameter Set
- 08: Ignore Low DC Bus
- 10: Open Drain Output 1 On
- 11: Open Drain Output 2 On
- 12: Open Drain Output 3 On
- 13: Open Drain Output 4 On
- 14: Open Drain Output 5 On
- 15: Open Drain Output 6 On

CommandAll

CommandSpeed: 0 Rpm

CommandAccelerationChange: 50 Rpm/2m:

CommandDecelerationChange: 50 Rpm/2m:

CommandTorque: 0.0 Nm

CommandAcCurrent: 5 Arms

CommandVoltage: 0.0 Vdc

Feedback Messages (Tx PDOs)

StatusAll 16#00000097

- 00: **Ready To Switch On**
- 01: **Switched On**
- 02: **Enabled**
- 03: Tripped
- 04: **Current Ability Reduced**
- 05: Current Boost Activated
- 06: Error Active
- 07: **Warning Active**
- 08: Regeneration
- 10: Open Drain Output 1 On
- 11: Open Drain Output 2 On
- 12: Open Drain Output 3 On
- 13: Open Drain Output 4 On
- 14: Open Drain Output 5 On
- 15: Open Drain Output 6 On

ActualSpeed: 1956 Rpm

RmsMotorCurrent: 1 Arms

CanSignalFilteredVoltage: 24.2 Vdc

ActTorque: 0.1 Nm

DcBusCurrent: 1 Adc

DigitalInStatus: 4096

AbilityAccelerationCurrent: 1 Arms

ActualLimitationType: High speed limitation

Graph : Process Data (PDO)

MotorMeasurements: DcBusCur: 6

TorqueCalculation: ActTorque: 2.5

orMeasurements: RmsMotorCur: 1.5

ApplicationStatus: ActualSpeed: 2000

PDO Graphing (~ 10ms)
 Simple graphing of up to 8 parameters using PDO protocol.

10h:38m:20s.000ms 10h:38m:24s.000ms 10h:38m:28s.000ms 10h:38m:32s.000ms

Online Operational 6 PARKER GVI 69N20100C03x99 Event Cleared. Pdo3Timeout 10:12:02 942: 0x086 8: 00 00 01 00 E4 04 00 00 C:\temp\Current_Regulator_Tuning.xml*

9 Fast Transient Oscilloscope

Scope Trigger
In Trigger Mode, use value on Channel 1

Capture up to 4 channels
Click panel to edit

Start/Stop Capture
Set channels and trigger then press start to capture and upload

High Speed Capture
Sampling interval to 250us

Trigger Point
Set trigger point between 10% & 90% of captured values

State: DONE

Trigger Mode: Greater Than | Trigger Value: 0 | Value Unsigned: | Pre-Trigger: 20%

Sampling Interval: 250us (1) | Capture Time: 1.02s

Current Loop Adjustment:

- 1: 0x2000:04 ApplicationCommands:CommandAcCurre Arms - Auto
- 2: 0x2096:03 SpeedRegulatorInternalVariables:SpeedRe Arms - Auto
- 3: 0x2096:01 SpeedRegulatorInternalVariables:Internal Rpm - Auto
- 4: 0x2001:02 ApplicationStatus:ActualSpeed Rpm - Auto

Read All Parameters

Store/Restore Control

Save to EEPROM | Restore Defaults

Online | Operational | 6 PARKER GVI | 69N20100C03x99 | Event Cleared. Pdo3Timeout 10:12:02 942: 0x086 8: 00 00 01 00 E4 04 00 00 | C:\temp\Current_Regulator_Tuning.xml*

Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates, Dubai

Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, St. Florian

Tel: +43 (0)7224 66201
parker.austria@parker.com

AZ – Azerbaijan, Baku

Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/NL/LU – Benelux,

Hendrik Ido Ambacht
Tel: +31 (0)541 585 000
parker.nl@parker.com

BG – Bulgaria, Sofia

Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

CH – Switzerland, Etoy

Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany

Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst

Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup

Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid

Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa

Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve

Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Piraeus

Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budaörs

Tel: +36 23 885 470
parker.hungary@parker.com

IE – Ireland, Dublin

Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IL – Israel

Tel: +39 02 45 19 21
parker.israel@parker.com

IT – Italy, Corsico (MI)

Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty

Tel: +7 7273 561 000
parker.easteurope@parker.com

NO – Norway, Asker

Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal

Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest

Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow

Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Borås

Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica

Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto

Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul

Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

UK – United Kingdom, Warwick

Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park

Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario

Tel: +1 905 693 3000

US – USA, Cleveland

Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill

Tel: +61 (0)2-9634 7777

CN – China, Shanghai

Tel: +86 21 2899 5000

HK – Hong Kong

Tel: +852 2428 8008

IN – India, Mumbai

Tel: +91 22 6513 7081-85

JP – Japan, Tokyo

Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul

Tel: +82 2 559 0400

MY – Malaysia, Shah Alam

Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington

Tel: +64 9 574 1744

SG – Singapore

Tel: +65 6887 6300

TH – Thailand, Bangkok

Tel: +662 186 7000

TW – Taiwan, Taipei

Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires

Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos

Tel: +55 800 727 5374

CL – Chile, Santiago

Tel: +56 2 623 1216

MX – Mexico, Toluca

Tel: +52 72 2275 4200

© 2019 Parker Hannifin Corporation. All rights reserved.



EMEA Product Information Centre

Free phone: 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

US Product Information Centre

Toll-free number: 1-800-27 27 537

www.parker.com

Your local authorized Parker distributor