

G5 Web API (REST)

for the G5 Product Family

V1.4



© 2010- 2024Regatron AG

This document is protected by copyright.

All rights, including translation, re-printing, and duplication of this manual or parts of it, are reserved. No part of this document is allowed to be reproduced or processed using electronic systems, copied or distributed in any form (by photocopying, microfilming, or any other process), also not for educational purposes, without the written approval of Regatron AG.

This information in this documentation corresponds to the development situation at the time of going to print and is therefore not of a binding nature. Regatron AG reserves the right to make changes at any time for technical progress or product improvement, without stating the reasons. In general, we refer to the applicable issue of our “Terms of delivery”.

Overview of versions		
Operating instructions / programming handbook	Version	1.4
Web API	Version	V 1.10.0 or higher

All information is subject to technical changes without prior notice.

Content

Content	3
1. Overview	4
1.1. Content	4
1.2. Proxy Server Request Limit	4
1.3. END USER LICENSE AGREEMENT (EULA)	4
1.4. Open Source Software	5
2. Swagger Documentation	6
2.1. Preparation:	6
2.2. Work with the swagger documentation	7
2.2.1. Overview	7
2.2.2. Send REST calls	8
2.3. Offline Mode	9
3. Value Access	10
4. Firmware update	11
5. Change log	12

1. Overview

The REST API can be used to access and control the G5 device programmatically. It does not substitute the G5.Control or the G5.HMI, but offers some methods to automate certain operations.

The main configuration and error analysis can only be done with the G5.Control software.

1.1. Content

This document provides a guideline on how to access the G5 REST API.

It does not explain all the methods that the API exposes. To get a complete method and class description of the API, please refer to the Swagger documentation

1.2. Proxy Server Request Limit

The REST backend is hosted behind a proxy server. This server limits the number of requests to 40/s. If the number of requests exceeds this limit, the server will respond with an HTTP Error Code 503.

1.3. END USER LICENSE AGREEMENT (EULA)

LICENSE

REGATRON AG, Rorschach distributes the software G5 WebAPI, to support the development of electrical devices.

DISCLAIMER OF WARRANTY

The software is provided on an "AS IS" basis, without warranty of any kind, including without limitation the warranties of merchantability, fitness for a particular purpose and non-infringement. The entire risk as to the quality and performance of the Software is borne by you. Should the Software prove defective, you and not REGATRON AG, Rorschach assume the entire cost of any service and repair. In addition, the security mechanisms implemented by REGATRON AG, Rorschach software have inherent limitations, and you must determine that the Software sufficiently meets your requirements. This disclaimer of warranty constitutes an essential part of the agreement.

SOME JURISDICTIONS DO NOT ALLOW EXCLUSIONS OF AN IMPLIED WARRANTY, SO THIS DISCLAIMER MAY NOT APPLY TO YOU AND YOU MAY HAVE OTHER LEGAL RIGHTS THAT VARY BY JURISDICTION.

SCOPE OF GRANT

You may:

- use the Software on one or more computers
- use the PC-based part of the software G5 Web API on a network, provided that each power supply that the software accesses has a valid Regatron AG license
- copy the Software for archival purposes, provided any copy must contain all of the original Software's proprietary notices.
- permit other individuals to use the Software except under the terms listed above

You may not:

- modify, translate, reverse engineer, decompile, disassemble (except to the extent applicable laws specifically prohibit such restriction), or create derivative works based on the Software - rent, lease, grant a security interest in, or otherwise transfer rights to the Software
- remove any proprietary notices or labels on the Software

You must:

- keep the copyright notices of all embedded parts with any copy of the software

TITLE

Title, ownership rights, and intellectual property rights in the Software shall remain at REGATRON AG, Rorschach and/or its suppliers. The Software is protected by copyright laws and treaties. Title and related rights in the content accessed through the Software are the property of the applicable content owner and may be protected by applicable law. This License gives you no rights to such content.

The user holds the rights to all scripting programs written by the user. Especially for all effects resulting from executing such scripts, the exclusion of liability (see below) applies.

TERMINATION

The license will terminate automatically if you fail to comply with the limitations described herein. On termination, you must destroy all copies of the Software.

EXPORT CONTROLS

None of the Software or underlying information or technology may be downloaded or otherwise exported or reexported (i) into (or to a national or resident of) Cuba, Iraq, Libya, North Korea, Iran, Syria, or any other country to which Switzerland has embargoed goods. Any exceptions must be negotiated with Regatron AG. By downloading or using the Software, you are agreeing to the foregoing and you are representing and warranting that you are not located in, under the control of, or a national or resident of any such country or on any such list.

LIMITATION OF LIABILITY. UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, TORT, CONTRACT, OR OTHERWISE, SHALL REGATRON AG, Rorschach OR ITS SUPPLIERS OR RESELLERS BE LIABLE TO YOU OR ANY OTHER PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. FURTHERMORE, SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS LIMITATION AND EXCLUSION MAY NOT APPLY TO YOU.

HIGH RISK ACTIVITIES

The Software is not fault-tolerant and is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of the Software could lead directly to death, personal injury, or severe physical or environmental damage ("High Risk Activities"). REGATRON AG, Rorschach and its suppliers specifically disclaim any express or implied warranty of fitness for High Risk Activities.

MISCELLANEOUS

If the copy of the Software you received was accompanied by a printed or other form of "hard-copy" End User License Agreement whose terms vary from this Agreement, then the hard-copy End User License Agreement governs your use of the Software. This Agreement represents the complete agreement concerning this license and may amended only by writing executed by both parties. If any provision of this Agreement is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This Agreement shall be governed by the laws of Switzerland. The application of the United Nations Convention of Contracts for the International Sale of Goods is expressly excluded.

1.4. Open Source Software

The G5.HMI module on which the REST API service is running uses open-source software. For further information contact support@regatron.com.

2. Swagger Documentation

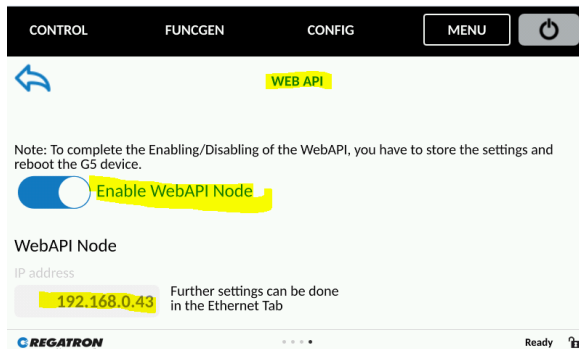
The API is documented by using the swagger component. To see all the available REST calls, open a browser and type:

<IP Address>/swagger

The port number is optional (80 default).

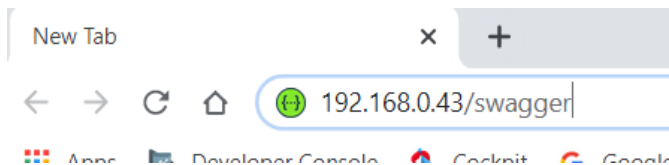
2.1. Preparation:

1. Ensure, that the G5 device with a built-in HMI module is connected to the same network as your device.
2. Ensure that the Web API is enabled.



3. Based on the example above, type:

192.168.0.43/swagger



2.2. Work with the swagger documentation

2.2.1. Overview

Once you loaded the HTML swagger documentation you see the different modules grouped by a topic:

ConfigLoadProtectErrors
ConfigLoadProtectWarnings
ConfigReferenceValueSettings
ConfigSensing
Control
DeviceInfo
FuncGen
Maintenance
Settings
System

At the bottom, you find the definition of all the datatypes / JSON structs that you need for the calls

System

Schemas

RestResponseObjectOfSingle >

RestResponseObjectOfBoolean >

RestResponseObjectOfQuadrantMode >

QuadrantMode >

2.2.2. Send REST calls

You can not only read the definitions of the REST API, but you can also send REST calls directly. By expanding the modules and pressing the “try it out” button you can send REST calls to the device you are connected.

ConfigLoadProtectErrors >

ConfigLoadProtectWarnings v

GET /api/ConfigLoadProtectWarnings/Voltage/UpperLimit Returns upper voltage warning limit value [V].

PUT /api/ConfigLoadProtectWarnings/Voltage/UpperLimit /{upperLimit} Set a new value for upper voltage warning limit [V].

Parameters **Try it out**

Name	Description
upperLimit * required number(\$float) (path)	upper voltage warning limit [V]

Besides the response you can also see the details of the sent call:

PUT /api/ConfigLoadProtectWarnings/Voltage/UpperLimit /{upperLimit} Set a new value for upper voltage warning limit [V].

Parameters **Cancel**

Name	Description
upperLimit * required number(\$float) (path)	upper voltage warning limit [V]

Execute **Clear**

Responses

Curl

curl -X PUT "http://192.168.0.43:80/api/ConfigLoadProtectWarnings/Voltage/UpperLimit/50" -H "accept: application/octet-stream"

Request URL

http://192.168.0.43:80/api/ConfigLoadProtectWarnings/Voltage/UpperLimit/50

2.3. Offline Mode

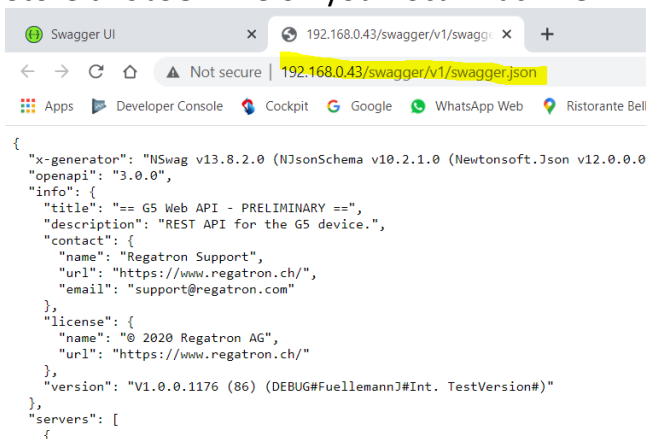
If you want to read the swagger documentation without having a connection to a G5 device you can download the swagger documentation as a JSON file and reopen it with a swagger reader.

Follow these steps:

1. Open the document as *.json file

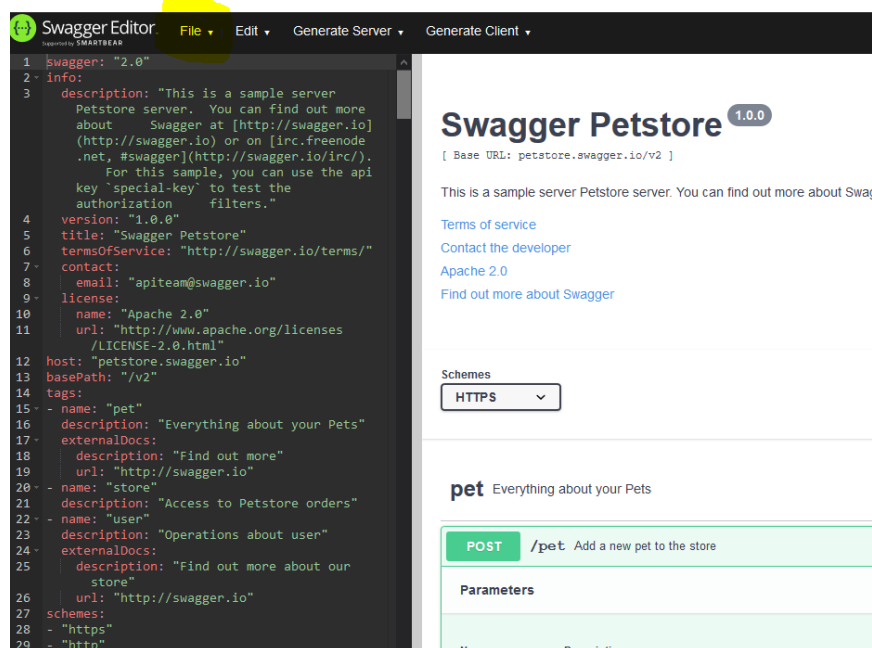


2. Store this JSON file on your local machine



3. Open this documentation in a web viewer like

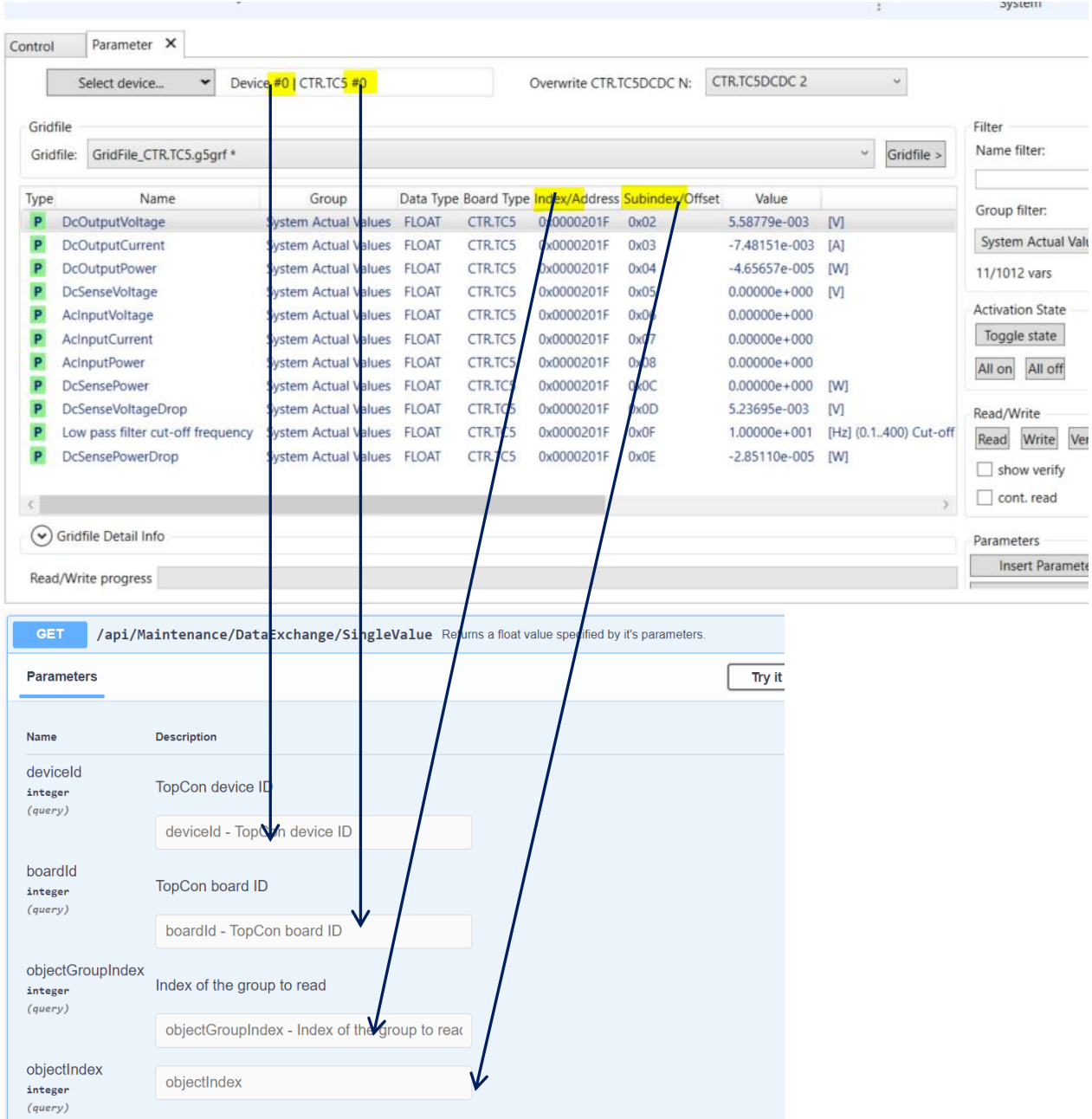
<https://editor.swagger.io/>



3. Value Access

Special to mention is the access to read and write values to the G5 device. There exists a general method to read and write values to the G5 device by identifying them with their Index and SubIndex.

Basically, you can perform the same actions as you would do on the parameter page by using a gridfile. The calls are described in the /Maintenance/DataExchange path.



The screenshot displays the REGATRON G5 Web API interface, specifically the 'Parameter' tab. The 'Gridfile' section shows a list of parameters with columns for Type, Name, Group, Data Type, Board Type, Index/Address, Subindex/Offset, and Value. The 'Index/Address' and 'Subindex/Offset' columns are highlighted in yellow. Arrows point from these columns to the 'Parameters' section of the REST API endpoint, which lists the following parameters:

- deviceId**: TopCon device ID (integer, query)
- boardId**: TopCon board ID (integer, query)
- objectGroupIndex**: Index of the group to read (integer, query)
- objectIndex**: objectIndex (integer, query)

The REST API endpoint is `GET /api/Maintenance/DataExchange/SingleValue`, which returns a float value specified by its parameters. The 'Parameters' section includes a 'Try it' button and a 'Read/Write' section with 'Read', 'Write', and 'Verify' buttons. The 'Read/Write' section also includes checkboxes for 'show verify' and 'cont. read'.

4. Firmware update

By using the Swagger documentation you can also perform a firmware update. Select the valid *.raucb file and execute.

POST /api/Maintenance/UpdateFirmware Upload the new Firmware file and perform the update. After the Update a reboot is done automatically.

Parameters Cancel

No parameters

Request body multipart/form-data

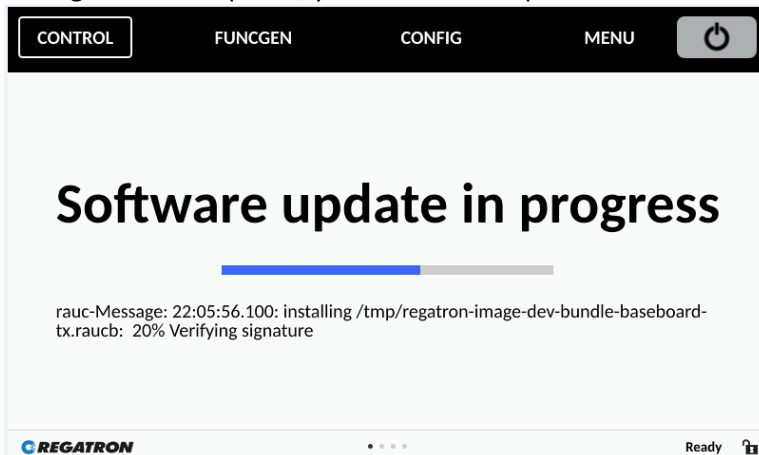
file
string(\$binary) Choose File regatron-ima...rd-tx.raucb

☐ Send empty value

Execute

The FW Update is split into two phases. In the first phase, the file is uploaded to the HMI module. In the second phase, it will be installed.

During the second phase, you will see the Update screen like this.



Note: After the update is finished, the G5.HMI device will reboot automatically!

5. Change log

This change log contains a list of changes in the previous versions of the documentation

Version	Date	Changes in documentation
1.0	2021-January-29	Initial documentation
1.1	2021-March-09	Reference new API, corrected typos
1.2	2022-February-07	Update version numbers
1.3	2023-October-20	Add a hint of request limit
1.4	2024-May-17	Format changes

This product is developed, produced, and tested according to ISO 9001 by REGATRON.

For detailed technical information, contact REGATRON or your local sales partner

REGATRON AG
Feldmuehlestrasse 50
9400 Rorschach
SWITZERLAND

REGATRON INC.
100 Overlook Center, 2nd Floor
Princeton, NJ 08540
USA

+41 71 846 67 44
support@regatron.com
www.regatron.com

support@us.regatron.com
www.us.regatron.com

All product specifications and information contained herein are subject to change without notice.

Filename: G5_REST_API_GettingStarted

Class: Project-specific use only