

## **TopCon Series**

# **TC.P + TC.GSS**

*LabVIEW API Access*

**Regatron AG**

Feldmühlestrasse 50  
CH-9400 Rorschach  
Tel +41 71 846 67 44  
Fax +41 71 846 67 77  
[www.regatron.com](http://www.regatron.com)  
[tc.support@regatron.com](mailto:tc.support@regatron.com)

## **Getting Started**

**Version V 1.10**

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Overview of versions		
<b>Operating instructions / programming handbook</b>	Version	V 1.10
<b>TC API</b>	Version	1.0.1.387
<b>TC API</b>	Version	1.0.2.433
<b>TC API</b>	Version	1.0.3.433
<b>TC API</b>	Version	1.0.3.480
<b>TC API</b>	Version	1.1.0.542

All information is subject to technical changes without prior notice.

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## 1. Overview

The TopCon LabVIEW API can be used to access the TC.P and TC.G to perform a small set of operations.

It cannot substitute the TopControl PC Software, but offers some methods to automate certain operations.

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

### 1.1. Content

This document provides a guideline how to access the TopCon LabVIEW VI's.

### 1.2. Precondition/ Dependencies

To be able to use the TopCon LabVIEW API the TopControl software must not be installed on the system.

For more Information read the Software Manual witch you can found in the TopControl software menu -> Help.

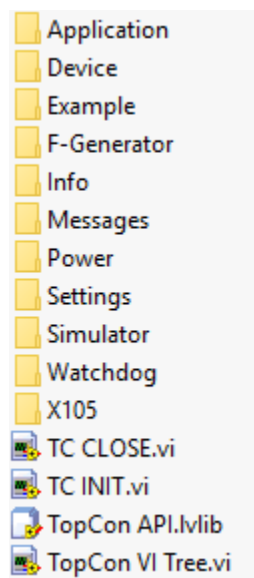
## 2. LabVIEW Access

There is a LabVIEW VI library to access the TC and GSS Devices.

5 Examples are delivered and can help to get your first LabVIEW program running.

You can get an overview with the VI tree “TopCon VI Tree.vi” in the main directory.

### 2.1. VI Files



### 2.2. API DLL

Please download the latest version of the TopCon API.

ApiBinaries -> DLL Folders

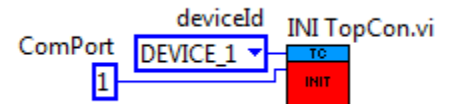
Windows 32Bit	NI LabVIEW 32Bit	x86 folder
Windows 32Bit	NI LabVIEW 64Bit	it does not work
Windows 64Bit	NI LabVIEW 32Bit	x86 folder
Windows 64Bit	NI LabVIEW 64Bit	x64 folder

## 2.3. General Recommendations

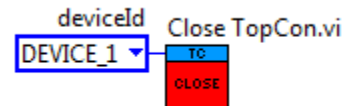
To access the API from LabVIEW, there are some points to mention.

### 2.3.1. Basic Init VI

TC INIT: Open a connection to TC with a  
COM Port or Virtual COM Port (max. 7 devices)  
Min. Firmware Version: 4.20.97 (Check in the VI)

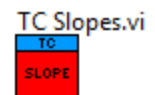


TC CLOSE: Disconnect the device



### 2.3.2. Configuration (..\Settings)

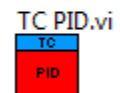
TC Slopes: Slopes Ramp Setting (Read/Write)



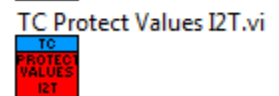
TC Protect Values: Protect Setting (Read/Write)



TC PID: PID Controller Setting (Read/Write)

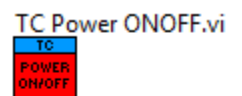


TC Protect Values I2T: I2T Protect Setting (Read/Write)

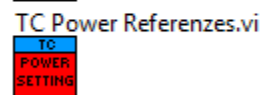


### 2.3.3. References (..\Power)

TC Power ONOFF: Voltage ON/OFF Setting (Read/Write)



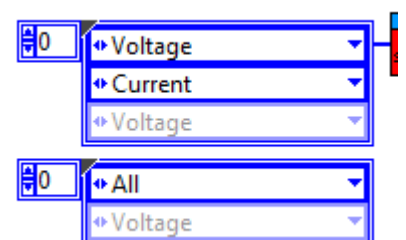
TC Power References: Preset and Limit Setting (Read/Write)



Datasource:

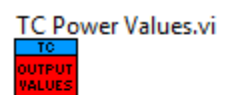
Read or Write Power Setting with Datasource

It is not necessary to write all values.

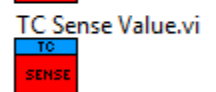


### 2.3.4. Output Values (..\Power)

TC Power Values: Output Values (Read)



TC Sense Value: Actual Sense Value (Read)



### 2.3.5. System Info (..\Info)

TC Device Info: Modul Typ, Serial Nr., Modul ID, GSS

TC Device Software Info: Firmware Versions, SW Options

TC Device Info System: Nominal Modul and Multi Modul Values

TC Power Inc: Typical Value Increment

TC Temperatur Info: IGBT,Boster, PCB,..

TC Device State: State of the TC (Warning, Error, Run)

TC Device Internal: Internal DC and Primary Current

TC GSS AC Current: AC Grid Current Values (L1,L2,L3)

TC GSS AC Voltage: AC Grid Voltage Values (L1,L2,L3)

Device Info.vi



Device Software Info.vi



Device Info System.vi



TC Power Inc.vi



Temperatur Info.vi



Device State.vi



Device Internal.vi



AC Current.vi



AC GSS.vi



### 2.3.6. Utility (..\Info)

TC Clear Error: Clear TC Modul or System

TC Store Settings: Stroe Settings to Flash

TC Device Hour Info: Operation Hours and Voltage ON Hours

TC Remote Input: Remote Settings (Read/Write)

TC Sense Settings: Sense Settings

Clear Error.vi



Store Settings.vi



Device Hour Info.vi



RemoteInput.vi



TC Sense Settings.vi



### 2.3.7. Messages (..\Messages)

TC Error Messages:

TC Warning Messages:

TC Error History:

Error Messages.vi



Warning Messages.vi



Error History.vi



### 2.3.8. Func Generator (..\F-Generator)

TC FGenerator Base: Set Basic Values for the Frequency

TC FGenerator User defined: Point Frequency Values

TC FGenerator AAP defined: Point Frequency Values



FGEN BASE ALL ▾



FGEN User ALL ▾



FGEN AAP ALL ▾



### 2.3.9. Watchdog (..\Watchdog)

TC Watchdog Enable: Set the Watchdog Enable

TC Watchdog: Watchdog time

TC Watchdog Reset: Reset the Watchdog time

TC Watchdog Enable.vi



TC Watchdog.vi



TC Watchdog Reset.vi



### 2.3.10. Low Level TC.llb (..\Info)

Get TopConRef & GetFunktionDeviceInfo: Reference for own VI

GetTopConRef.vi

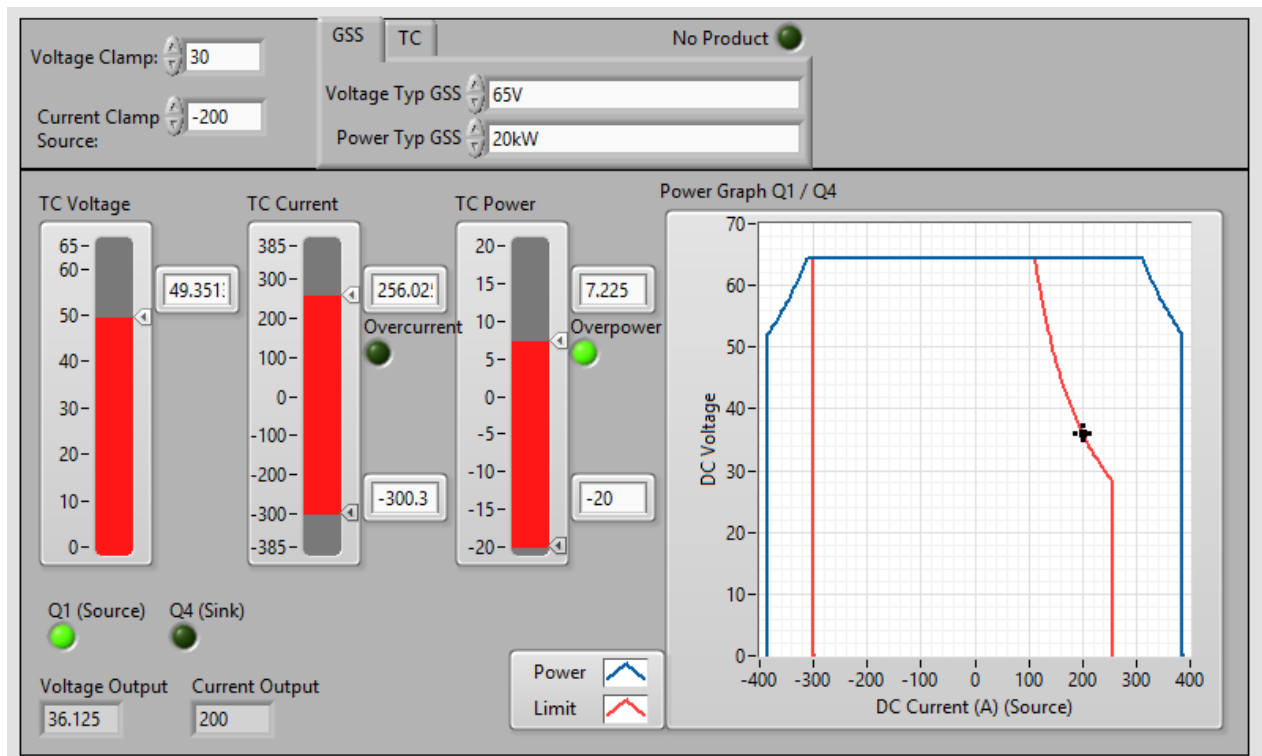


GetFunktionDeviceInfo.vi



### 2.3.11. Simulator (..\Simulator)

Simulator for the Q1 and Q4 change.



## 2.4. Examples (..\Example)

5 LabVIEW test Examples are provided to show how to access the TC API dll's.

The examples are for LabVIEW 2015 and LabVIEW 2009.

## 2.5. LabVIEW.exe.config .net Error(..\Example)

If there are problems with the API, Labview must load the old .net version. The file LabVIEW.exe.config, this must be copied into the folder with the LabVIEW.exe.

## 2.6. Application builder (..\Application\TopControl.exe)

Labview copies only the directly called DLL into the APP directory.

Please note the structure of the example.

### 3. Change log

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

Version	Date	Changes in documentation
1.00	2017-02-23	Initial documentation
1.01	2017-09-14	Update documentation (.net 2.0 -> 4.7)
1.02	2017-12-21	Update API (1.0.0.360 -> 1.0.1.387)
1.03	2018-03-15	Update API (1.0.2.433 -> latest)
1.04	2018-10-12	Update API (1.0.3.433 -> latest) (Filenames)
1.05	2019-05-22	Update API (1.0.3.480 -> latest) (Watchdog)
1.06	2020-02-07	New Frequency generator VI
1.10	2020-02-14	Update API (1.0.3.480 -> 1.1.0.542)



Address: Feldmühlestrasse 50  
CH-9400 Rorschach

WWW: [www.regatron.com](http://www.regatron.com)

Email: [tc.support@regatron.com](mailto:tc.support@regatron.com)

Tel: +41 71 846 67 44

Fax: +41 71 846 67 77