

GeckoR2-Manual

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1. Summary

The GeckoR2 user manual includes information about

- installation and setup
- common use
- instrument details

2. Terms and definitions

| Term/ Abbreviation | Beschreibung |
|--------------------|--------------------------|
| MBW | Mutter & Bless Wettingen |
| | |

3. Revisions

| Version | Modification | Date/ Editor |
|---------|---------------------------------|--------------------|
| 0.13 | Channel corrections added | 11.06.2020 M. Russ |
| 0.12 | MiniTerm/ScriptNRun added | 05.06.2020 M. Russ |
| 0.11 | Instrument Keysight34461A added | 04.06.2020 M. Russ |
| 0.10 | Instrument HP3458A added | 14.05.2020 M. Russ |
| 0.9 | Instrument Mensor CPG2500 added | 07.04.2020 M. Russ |
| 0.8 | New error code added | 06.04.2020 M. Russ |
| 0.7 | MBW Simulator added | 20.03.2020 M. Russ |
| 0.6 | REST API/ Vaisala DMT1xx | 13.03.2020 M. Russ |
| 0.1 | Initial revision | 28.02.2019 M. Russ |

4. Installation and setup

4.1. Download

Official download page: <http://www.mbw.ch/downloads/GeckoR2.zip>

4.2. Installation

4.3. Setup

5. Common use

5.1. Instrument connection

5.1.1. Serial communication

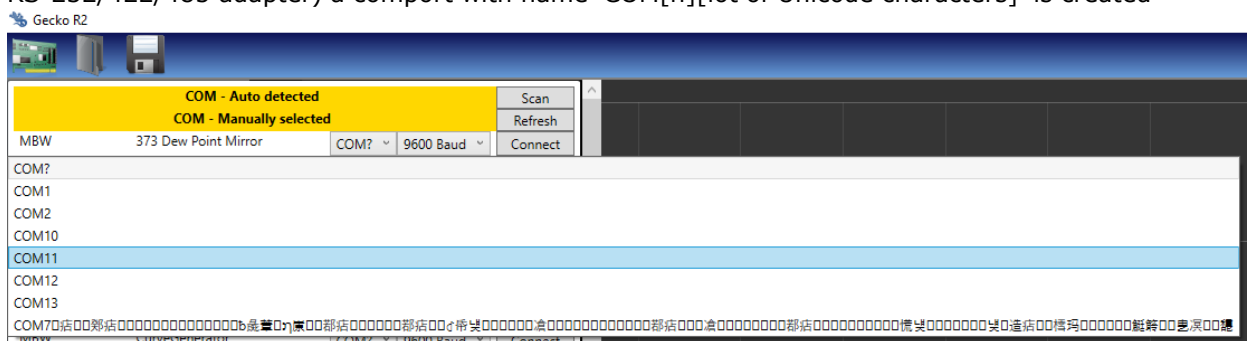
Scanner

To scan automatically all the serial ports at startup set `.\settings\GeckoFeatureSettings.xml` - parameter(s)

```
<EnableScanAtStartup>true</EnableScanAtStartup>
<EnableSerialComScan>true</EnableSerialComScan>
```

Known issues

- If an instrument is connected with an USB cable using RS232 communication a COM port is created (see windows → system → device manager). The name of the COM port is defined by the installed USB to RS232 driver. Some erroneous drivers (like Silicon Labs CP210x which is used for ADAM-4561 RS-232/422/485 adapter) a comport with name 'COM[n][lot of Unicode characters]' is created



The name of the comport could be corrected by changing the registry
 Computer\HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\SERIALCOMM

→ Change COM7[invisible characters] to COM7 and store entry

But after a reconnect of the instrument cable the erroneous portname is back again. Because of this do the following workaround:

Make sure the `.\settings\GeckoFeatureSettings.xml` parameters are set:

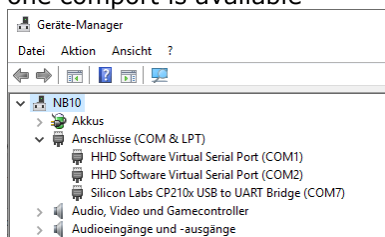
```
<SerialPortCommon>
  <!-- Default: true (remove every char after: \0) -->
  <PortNamesSimpleCleaning>true</PortNamesSimpleCleaning>
  <!-- Default: "" / For COM[n] use: "(COM\d*)" -->
  <PortNamesRegexCleaning></PortNamesRegexCleaning>
</SerialPortCommon>
```

PortNamesSimpleCleaning: If the portname looks like "COM[n]\0..." the Gecko software removes all the invalid characters after COM[n]

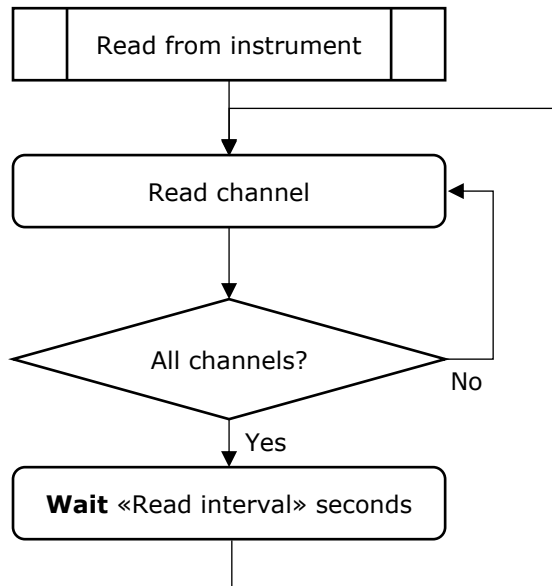
PortNamesRegexCleaning: If the portname looks like "COM[n]abcde..." the Gecko software uses the string which matches the given regex. For example:

Portname: COM7eim,cpaoihfal.kwe'
 Regex: (COM\d*)
 Cleaned portname: COM7

- Older versions of Gecko (later than 28.02.2019) crash if no comport is installed. Make sure at least one comport is available



5.2. Instrument "reading interval"



Use the parameter "Read interval" (Gecko main settings) to change the sampling interval. A higher value of "Read interval" means a decrease of the communication traffic as well.

Caution

Please consider the absolute sampling duration is the calculation of:

$$\text{Duration} = \text{Duration}_{\text{ReadAllChannels}} + \text{ReadInterval}$$

- For an instrument reading with latency ≈ 0 seconds:
Duration \approx ReadInterval
- For an instrument reading with latency $\gg 0$ seconds:
Duration = Duration_{ReadAllChannels} + ReadInterval

Example with the combination of two different instruments:

- Temperature measurement MBW T12 (reading latency of approx. 4.5s)
- Dewpoint mirror MBW 473 (low latency)

If the average and deviation calculation mode is "num of samples = 200" and "ReadInterval = 1s" the:

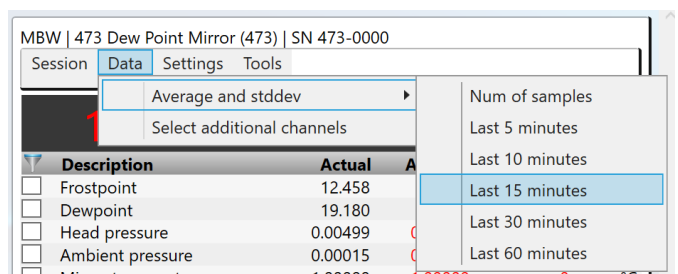
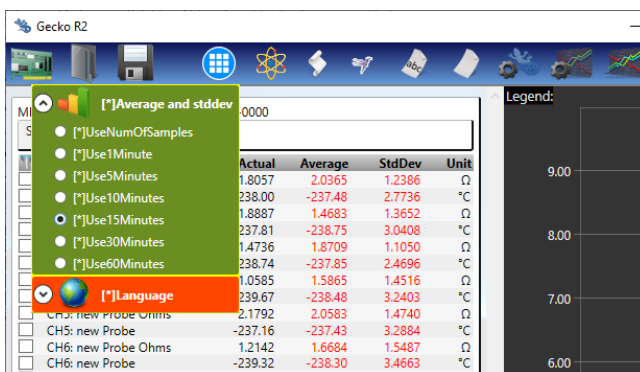
- T12 uses data over $200 * (4.5s + 1s) = 1100s = 18.3min$
- 473 uses data over $200 * (0.5 + 1s) = 300s = 5min$

Conclusion:

A reasonable comparison of the average and deviation values can only been done if the data of the two instruments were stable during a period of min 18.3 minutes

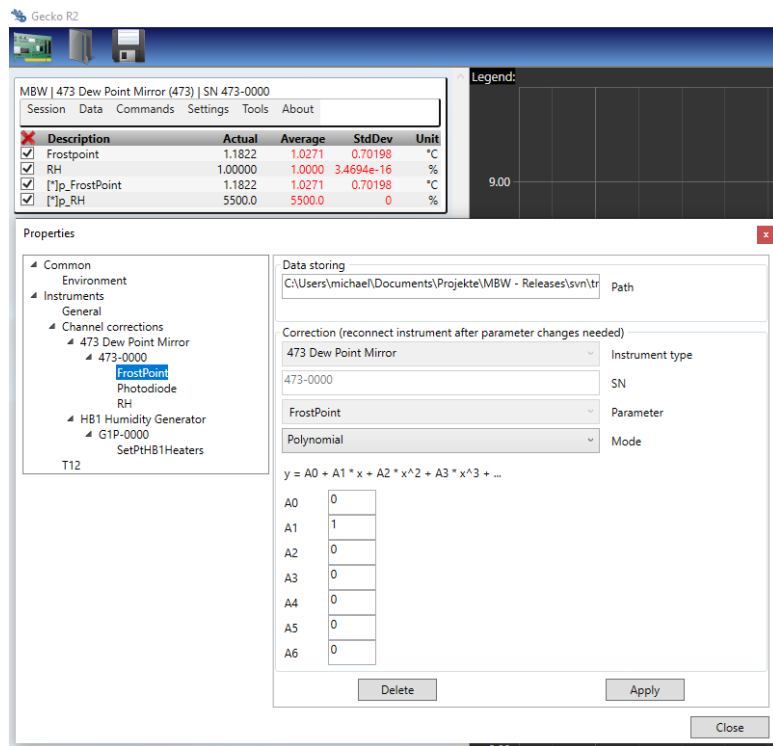
Better solution:

Instead of using the average calculation mode "num of samples" use the option "Last [x] minutes"



5.3. Settings

5.3.1. Channel corrections



Use channel corrections to lay a polynomial function over a channel:

- 1) Select instrument type
- 2) Enter exact serial number
- 3) Select a parameter (channel)
- 4) Only the mode 'polynomial' is supported (at the moment)
- 5) Enter coefficients

Important:

After adding or editing a channel correction (re-)connect the according instrument!

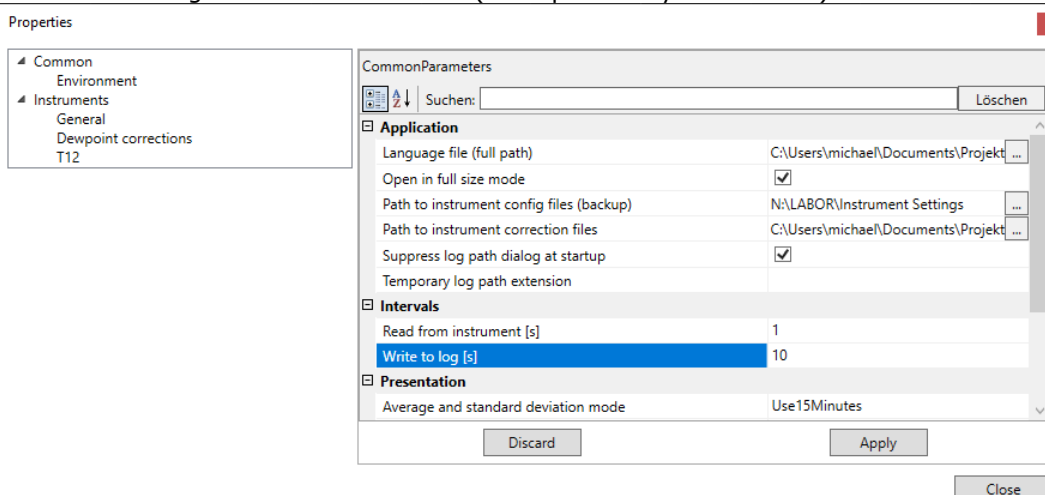
5.4. Datalog

All the log files are written into the folder
 .\datalog\GeckoR2_[yyyymmdd]-[hhmmss] → Timestamp of Gecko start

SteadyState.txt
 [TODO]

5.5. Standard log

The standard log is written time based (Example: Every 10 seconds)



AllInstruments.txt

The data of all the connected instruments is written into this file. Format:
 Common ; Instrument1-Channel1 ; Instrument1-Channel[n] ; ... ; Instrument[x]-Channel[1]; Instrument[x]-Channel[n]

T12-0000.txt

The data of one connected instrument is written into this file. Format:
 Common ; Instrument1-Channel1 ; Instrument1-Channel[n]

5.5.1. Fast log

Fast log means a log line is written as soon as all channel data is read from the instrument. The log files are written into the folder
.\datalog\GeckoR2_[yyyymmdd]-[hhmmss]\ EveryFullRecord → Timestamp of Gecko start

[Model]_[SerialNumber].txt

Common ; Instrument1-Channel1 ; Instrument1-Channel[n]

To activate fast log set the following parameter in .\settings\GeckoFeatureSettings.xml:

```
<ExtendedSettings>
  <Logging>
    <!-- ... -->
    <DataLogEveryFullRecord>true</DataLogEveryFullRecord>
  </Logging>
</ExtendedSettings>
```

This parameter has an effect for every connected instrument. For example if 3 instruments are connected 3 log files are written.

5.6. Error codes

| Error | Part(s) | Description |
|-------|---------------------|---|
| -992 | Several instruments | Measurement value not supported |
| -993 | Several instruments | Error in calculated channel (Example: No reference channel defined) |
| -994 | Several instruments | Instrument disconnected |
| -995 | Several instruments | Probe disconnected |
| -996 | Several instruments | Invalid measurement value detected (out of range or corrupt) |
| -997 | Several instruments | Instrument correction: Exception in polynomial calculation |
| -998 | Several instruments | Read from instrument error or calculation error cause of invalid value(s) |
| -999 | Several instruments | Read from instrument error or calculation error cause of invalid value(s) |
| | | |
| | | |
| | | |
| | | |

7. REST API

GeckoR2 REST API support since 2020/03/01. Used library: <https://servicestack.net/>

7.1. Activation

To activate the REST API edit the parameters in the file .\settings\GeckoFeatureSettings.xml

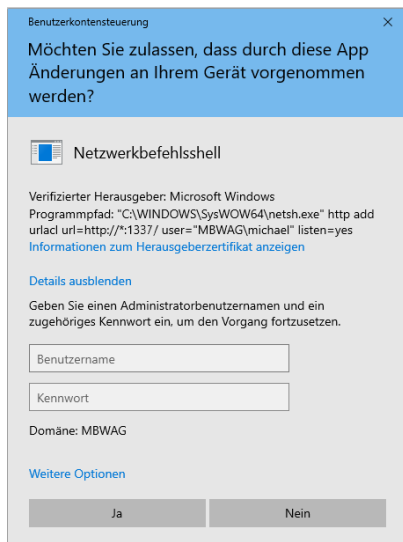
Parameters

EnableAPI: [true|false]

URL: [hostname] (example: http://localhost:1337)

```
<CommonSettings>
  <Feature>
    <!-- ... -->
    <API>
      <EnableAPI>true</EnableAPI>
      <!-- https://stackoverflow.com/questions/25246223/running-servicestack-self-hosted-application-without-administrative-privileges -->
      <URL>http://localhost:1337</URL>
      <!-- <URL>http://192.168.56.1:1337</URL> -->
      <!-- The following works but admin permission is needed to start Gecko software -->
      <!-- <URL>http://*:1337</URL> -->
    </API>
  </Feature>
</CommonSettings>
```

7.2. User rights



If the API is activated The Gecko software starts a webserver (the webserver is shutdown as soon as the Gecko software is closed). Depending on the url (hostname) the Gecko software needs admin privilege to run (and shutdown) the webserver (windows netsh call). If logged in user has no admin privilege and admin privilege is needed the following dialog is shown:

No admin privilege is needed if:

The host protocol is http

The hostname you use can only be localhost

You use a port number higher than 1024

So for example these hosts can be created without administrative privileges:

```
http://localhost:8000
http://localhost:8080
http://localhost:1050 ... etc.
```

Admin privilege is needed if:

Hostnames using wildcards, domains other than localhost, ports lower than 1024 or https require admin rights, unless a rule has been granted using netsh on Windows, or httpcfg on mono platforms.

```
http://localhost:80
http://+:8080
http://*:8080
http://domain.com:8080
http://domain.com:80
https://localhost:8080
https://stackoverflow.com/questions/25246223/running-servicestack-self-hosted-application-without-administrative-privileges
```

7.2.1. Troubleshooting

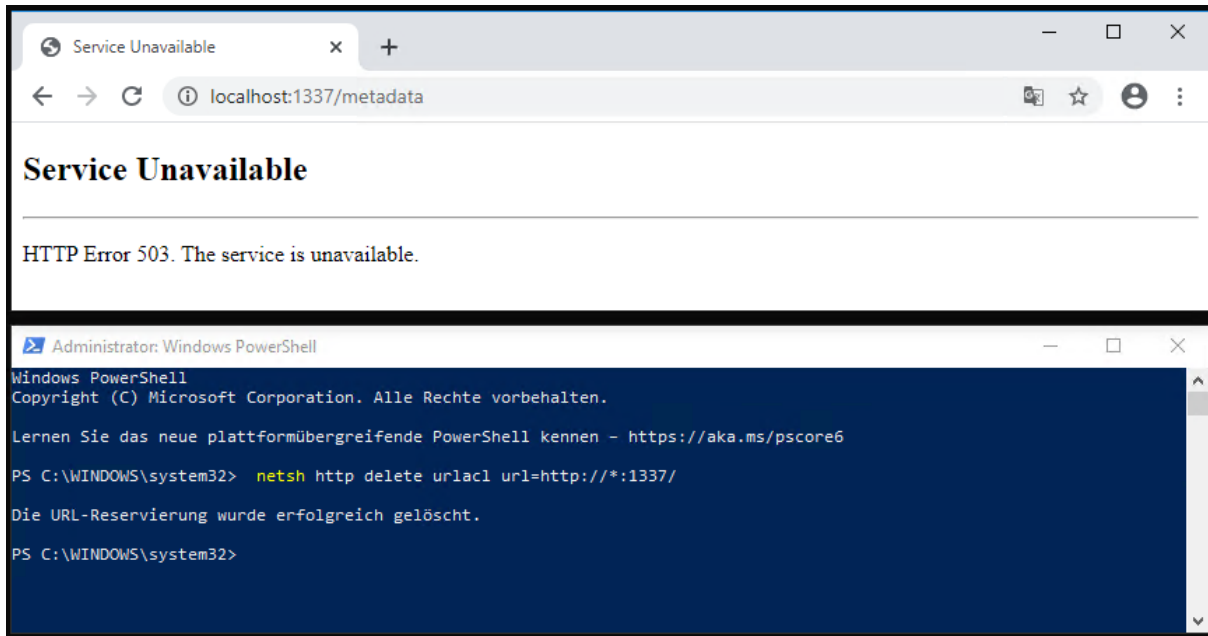
Service Unavailable

In rare situations we saw that the server is started but is not correctly responding.

- Closing the Gecko application
- Deleting registered hostname
- Restarting the Gecko application

did not help.

In such a case please logout the user or reboot windows.



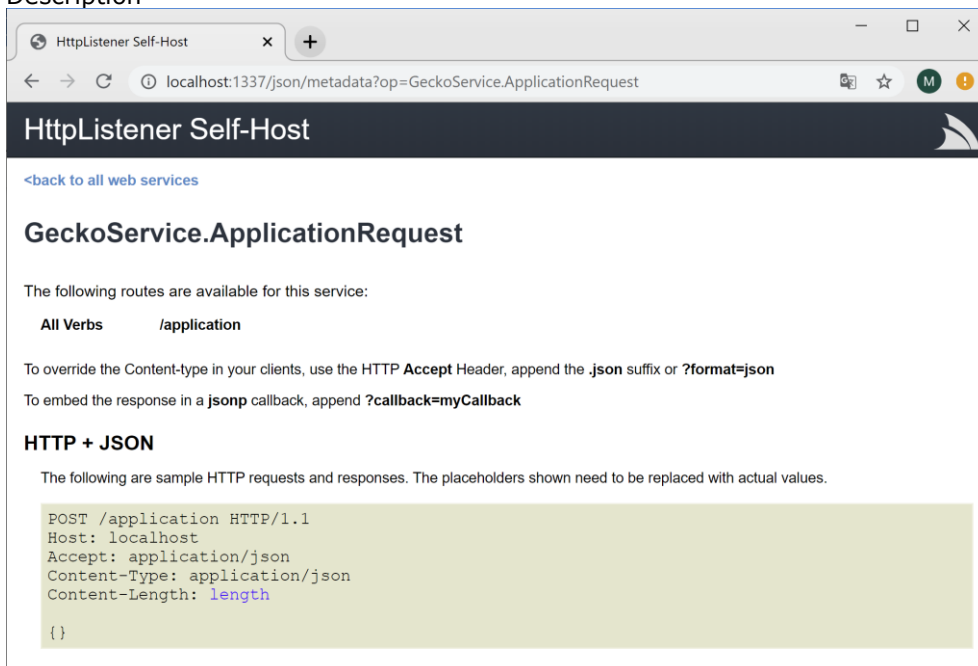
7.3. Communication

Several interfaces and languages are supported. See <https://docs.servicestack.net/csharp-client> for details.

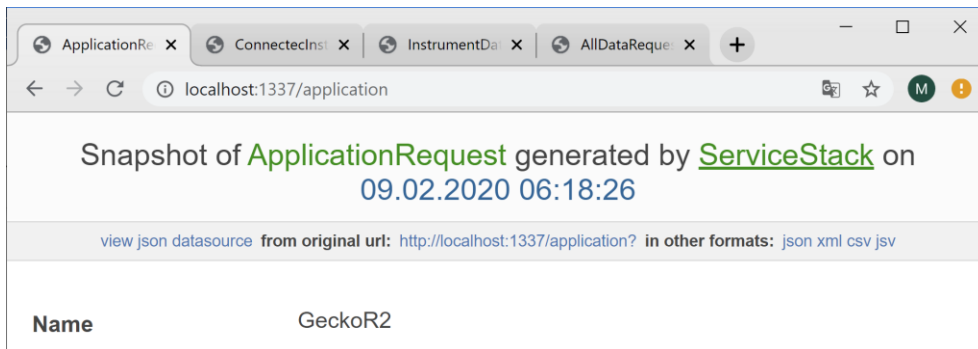
7.4. Commands

7.4.1. Application

Description



Example



Response

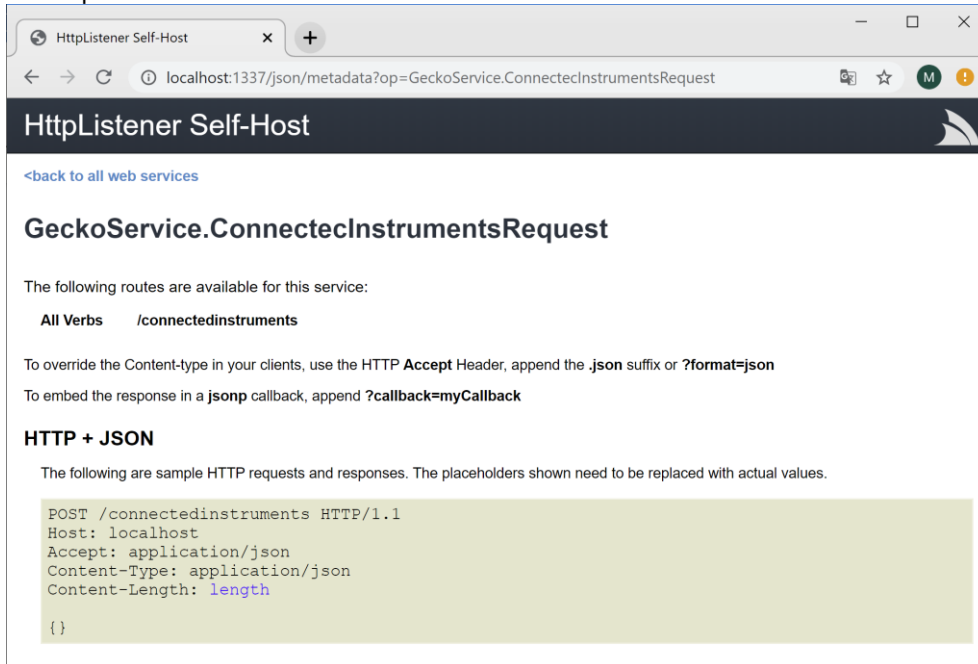
```
public class ApplicationResponse
{
    public string Name { get; set; }
}
```

JSON (use extension: ?format=json)

```
{
  "Name": "GeckoR2"
}
```

7.4.2. ConnectedInstruments

Description



HttpListener Self-Host

[<back to all web services](#)

GeckoService.ConnectecInstrumentsRequest

The following routes are available for this service:

All Verbs **/connectedinstruments**

To override the Content-type in your clients, use the HTTP **Accept** Header, append the **.json** suffix or **?format=json**

To embed the response in a **jsonp** callback, append **?callback=myCallback**

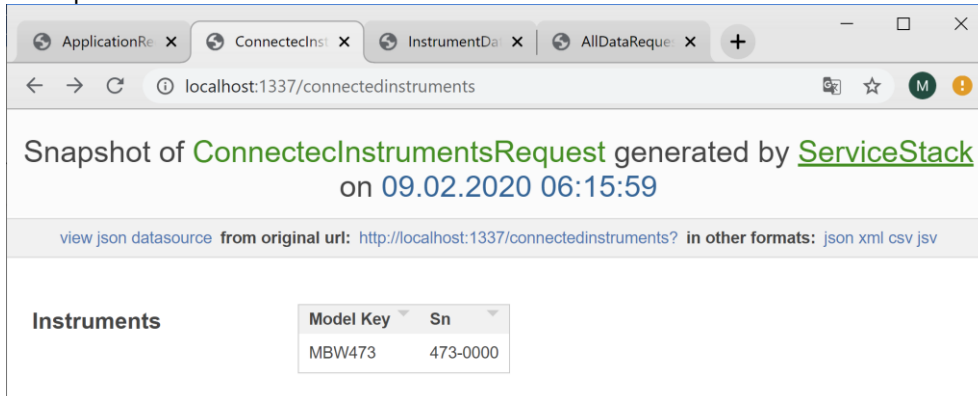
HTTP + JSON

The following are sample HTTP requests and responses. The placeholders shown need to be replaced with actual values.

```
POST /connectedinstruments HTTP/1.1
Host: localhost
Accept: application/json
Content-Type: application/json
Content-Length: length

{}
```

Example



Snapshot of **ConnectecInstrumentsRequest** generated by **ServiceStack** on **09.02.2020 06:15:59**

[view json datasource](#) from original url: <http://localhost:1337/connectedinstruments?> in other formats: [json](#) [xml](#) [csv](#) [jsv](#)

| Instruments | Model Key | Sn |
|-------------|-----------|----------|
| | MBW473 | 473-0000 |

Response

```
public class ConnectedInstrumentResponse
{
    public List<InstrumentInfo> Instruments { get; set; }
}

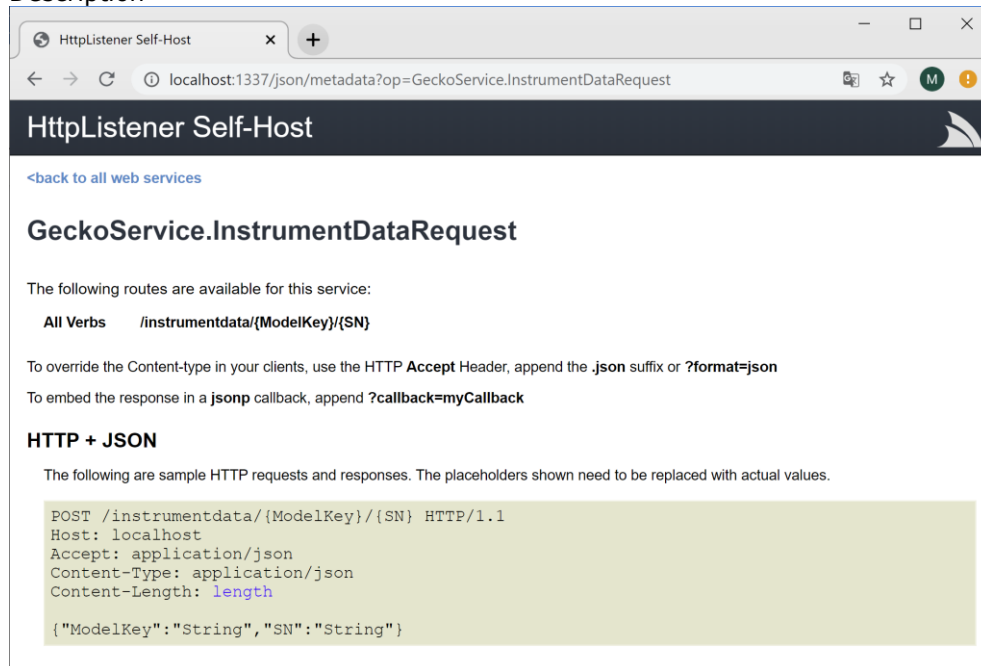
public class InstrumentInfo
{
    public string ModelKey { get; set; }
    public string SN { get; set; }
    public override string ToString()
    {
        return $"{ModelKey} {SN}";
    }
}
```

JSON (use extension: ?format=json)

```
{
  "Instruments": [
    {
      "ModelKey": "MBW473",
      "SN": "473-0000"
    }
  ]
}
```

7.4.3. InstrumentData

Description



HttpListener Self-Host

[<back to all web services](#)

GeckoService.InstrumentDataRequest

The following routes are available for this service:

All Verbs `/instrumentdata/{ModelKey}/{SN}`

To override the Content-type in your clients, use the HTTP **Accept** Header, append the `.json` suffix or `?format=json`

To embed the response in a **jsonp** callback, append `?callback=myCallback`

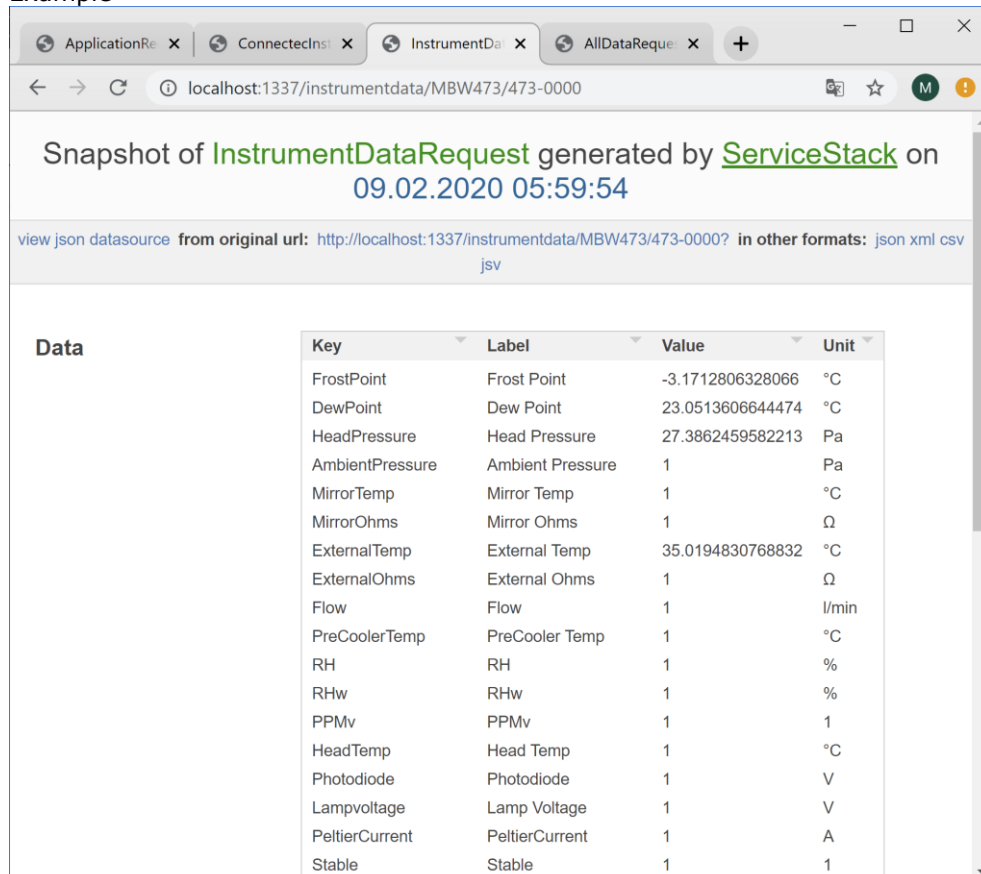
HTTP + JSON

The following are sample HTTP requests and responses. The placeholders shown need to be replaced with actual values.

```
POST /instrumentdata/{ModelKey}/{SN} HTTP/1.1
Host: localhost
Accept: application/json
Content-Type: application/json
Content-Length: length

{"ModelKey":"String","SN":"String"}
```

Example



Snapshot of **InstrumentDataRequest** generated by **ServiceStack** on **09.02.2020 05:59:54**

[view json datasource](#) from original url: <http://localhost:1337/instrumentdata/MBW473/473-0000> in other formats: [json](#) [xml](#) [csv](#) [jsv](#)

| Data | Key | Label | Value | Unit |
|------|-----------------|------------------|------------------|-------|
| | FrostPoint | Frost Point | -3.1712806328066 | °C |
| | DewPoint | Dew Point | 23.0513606644474 | °C |
| | HeadPressure | Head Pressure | 27.3862459582213 | Pa |
| | AmbientPressure | Ambient Pressure | 1 | Pa |
| | MirrorTemp | Mirror Temp | 1 | °C |
| | MirrorOhms | Mirror Ohms | 1 | Ω |
| | ExternalTemp | External Temp | 35.0194830768832 | °C |
| | ExternalOhms | External Ohms | 1 | Ω |
| | Flow | Flow | 1 | l/min |
| | PreCoolerTemp | PreCooler Temp | 1 | °C |
| | RH | RH | 1 | % |
| | RHw | RHw | 1 | % |
| | PPMv | PPMv | 1 | 1 |
| | HeadTemp | Head Temp | 1 | °C |
| | Photodiode | Photodiode | 1 | V |
| | Lampvoltage | Lamp Voltage | 1 | V |
| | PeltierCurrent | Peltier Current | 1 | A |
| | Stable | Stable | 1 | 1 |

Response

```

public class InstrumentDataResponse
{
    public List<ChannelDataInfo> Data { get; set; }
}

public class ChannelDataInfo
{
    public string Key { get; set; }
    public string Label { get; set; }
    public double Value { get; set; }
    public string Unit { get; set; }
    public override string ToString()
    {
        return $"{Key} {Label} {Value} {Unit}";
    }
}

```

JSON (use extension: ?format=json)

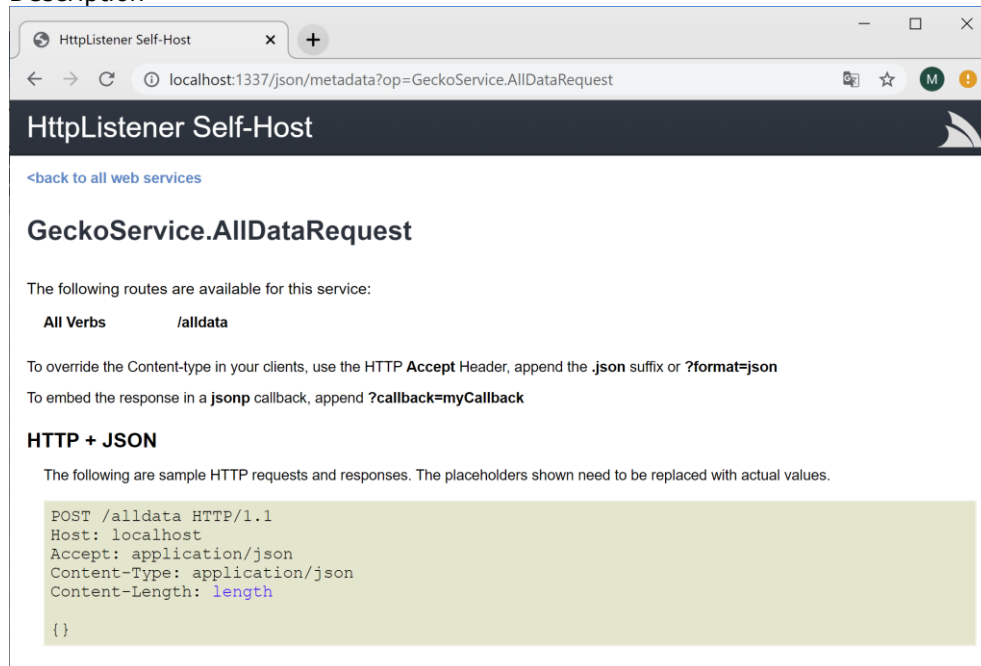
```

{
  "Data": [
    {
      "Key": "FrostPoint",
      "Label": "Frost Point",
      "Value": -3.1712806328066,
      "Unit": "°C"
    },
    {
      "Key": "DewPoint",
      "Label": "Dew Point",
      "Value": 23.0513606644474,
      "Unit": "°C"
    },
    {
      "Key": "HeadPressure",
      "Label": "Head Pressure",
      "Value": 27.3862459582213,
      "Unit": "Pa"
    },
    ...
  ]
}

```

7.4.4. AllData

Description



HttpListener Self-Host

[<back to all web services](#)

GeckoService.AllDataRequest

The following routes are available for this service:

All Verbs **/alldata**

To override the Content-type in your clients, use the HTTP **Accept** Header, append the **.json** suffix or **?format=json**

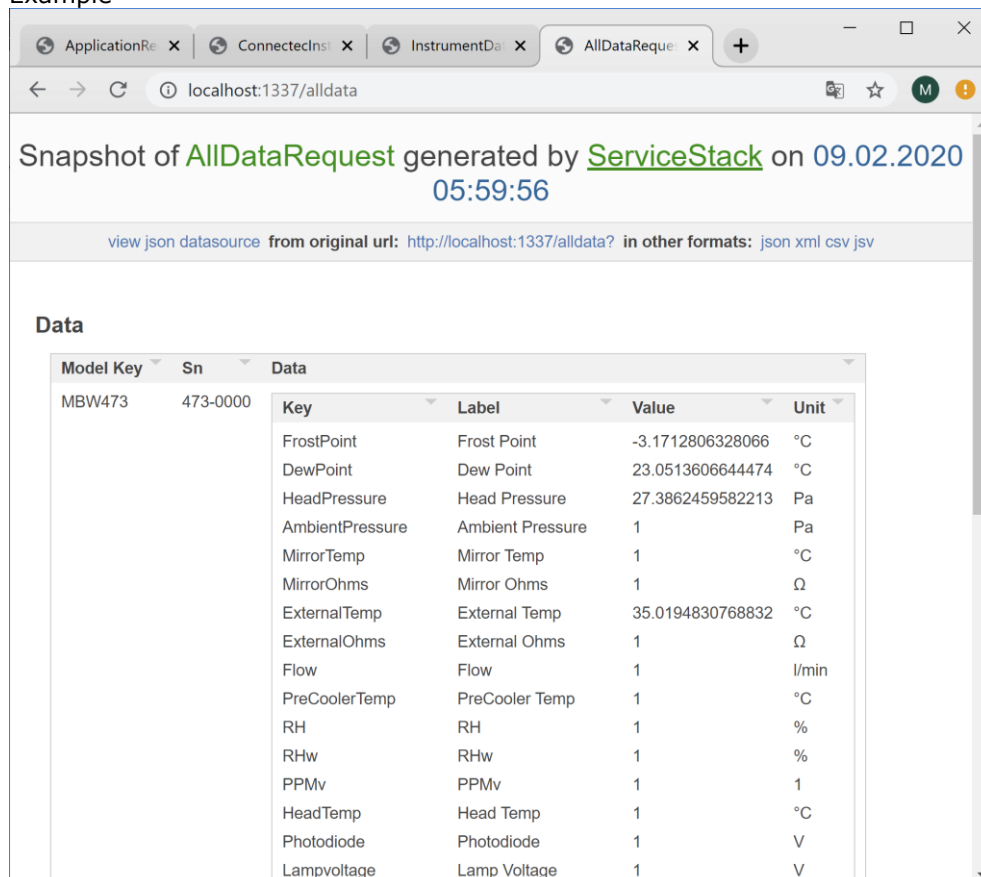
To embed the response in a **jsonp** callback, append **?callback=myCallback**

HTTP + JSON

The following are sample HTTP requests and responses. The placeholders shown need to be replaced with actual values.

```
POST /alldata HTTP/1.1
Host: localhost
Accept: application/json
Content-Type: application/json
Content-Length: length
{ }
```

Example



Snapshot of **AllDataRequest** generated by **ServiceStack** on **09.02.2020 05:59:56**

[view json datasource](#) from original url: <http://localhost:1337/alldata?> in other formats: [json](#) [xml](#) [csv](#) [jsv](#)

Data

| Model Key | Sn | Data | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|------------------|--|-------|-------|-------|------|------------|-------------|------------------|----|----------|-----------|------------------|----|--------------|---------------|------------------|----|-----------------|------------------|---|----|------------|-------------|---|----|------------|-------------|---|---|--------------|---------------|------------------|----|--------------|---------------|---|---|------|------|---|-------|---------------|----------------|---|----|----|----|---|---|-----|-----|---|---|------|------|---|---|----------|-----------|---|----|------------|------------|---|---|-------------|--------------|---|---|
| MBW473 | 473-0000 | <table border="1"> <thead> <tr> <th>Key</th> <th>Label</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>FrostPoint</td><td>Frost Point</td><td>-3.1712806328066</td><td>°C</td></tr> <tr><td>DewPoint</td><td>Dew Point</td><td>23.0513606644474</td><td>°C</td></tr> <tr><td>HeadPressure</td><td>Head Pressure</td><td>27.3862459582213</td><td>Pa</td></tr> <tr><td>AmbientPressure</td><td>Ambient Pressure</td><td>1</td><td>Pa</td></tr> <tr><td>MirrorTemp</td><td>Mirror Temp</td><td>1</td><td>°C</td></tr> <tr><td>MirrorOhms</td><td>Mirror Ohms</td><td>1</td><td>Ω</td></tr> <tr><td>ExternalTemp</td><td>External Temp</td><td>35.0194830768832</td><td>°C</td></tr> <tr><td>ExternalOhms</td><td>External Ohms</td><td>1</td><td>Ω</td></tr> <tr><td>Flow</td><td>Flow</td><td>1</td><td>l/min</td></tr> <tr><td>PreCoolerTemp</td><td>PreCooler Temp</td><td>1</td><td>°C</td></tr> <tr><td>RH</td><td>RH</td><td>1</td><td>%</td></tr> <tr><td>RHw</td><td>RHw</td><td>1</td><td>%</td></tr> <tr><td>PPMv</td><td>PPMv</td><td>1</td><td>1</td></tr> <tr><td>HeadTemp</td><td>Head Temp</td><td>1</td><td>°C</td></tr> <tr><td>Photodiode</td><td>Photodiode</td><td>1</td><td>V</td></tr> <tr><td>Lampvoltage</td><td>Lamp Voltage</td><td>1</td><td>V</td></tr> </tbody> </table> | Key | Label | Value | Unit | FrostPoint | Frost Point | -3.1712806328066 | °C | DewPoint | Dew Point | 23.0513606644474 | °C | HeadPressure | Head Pressure | 27.3862459582213 | Pa | AmbientPressure | Ambient Pressure | 1 | Pa | MirrorTemp | Mirror Temp | 1 | °C | MirrorOhms | Mirror Ohms | 1 | Ω | ExternalTemp | External Temp | 35.0194830768832 | °C | ExternalOhms | External Ohms | 1 | Ω | Flow | Flow | 1 | l/min | PreCoolerTemp | PreCooler Temp | 1 | °C | RH | RH | 1 | % | RHw | RHw | 1 | % | PPMv | PPMv | 1 | 1 | HeadTemp | Head Temp | 1 | °C | Photodiode | Photodiode | 1 | V | Lampvoltage | Lamp Voltage | 1 | V |
| Key | Label | Value | Unit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FrostPoint | Frost Point | -3.1712806328066 | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DewPoint | Dew Point | 23.0513606644474 | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HeadPressure | Head Pressure | 27.3862459582213 | Pa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AmbientPressure | Ambient Pressure | 1 | Pa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MirrorTemp | Mirror Temp | 1 | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MirrorOhms | Mirror Ohms | 1 | Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ExternalTemp | External Temp | 35.0194830768832 | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ExternalOhms | External Ohms | 1 | Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flow | Flow | 1 | l/min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PreCoolerTemp | PreCooler Temp | 1 | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RH | RH | 1 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RHw | RHw | 1 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PPMv | PPMv | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HeadTemp | Head Temp | 1 | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Photodiode | Photodiode | 1 | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lampvoltage | Lamp Voltage | 1 | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Response

```

public class AllDataResponse
{
    public List<InstrumentDataInfo> Data { get; set; }
}

public class InstrumentDataInfo
{
    public string ModelKey { get; set; }
    public string SN { get; set; }
    public List<ChannelDataInfo> Data { get; set; }
    public override string ToString()
    {
        return $"{ModelKey} {SN}";
    }
}

public class ChannelDataInfo
{
    public string Key { get; set; }
    public string Label { get; set; }
    public double Value { get; set; }
    public string Unit { get; set; }
    public override string ToString()
    {
        return $"{Key} {Label} {Value} {Unit}";
    }
}

```

JSON (use extension: ?format=json)

```

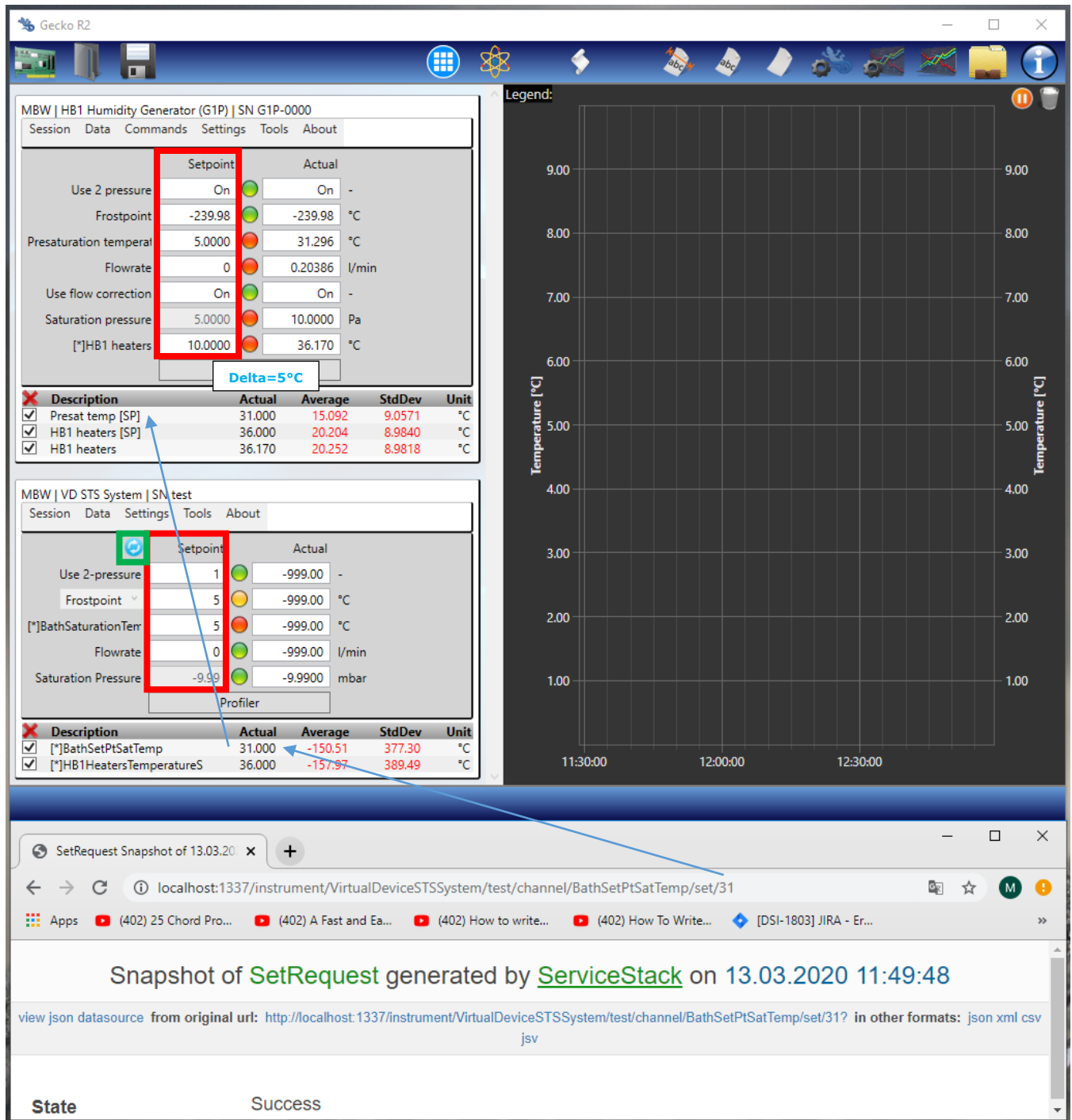
{
  "Data": [
    {
      "ModelKey": "MBW473",
      "SN": "473-0000",
      "Data": [
        {
          "Key": "FrostPoint",
          "Label": "Frost Point",
          "Value": -3.1712806328066,
          "Unit": "°C"
        },
        {
          "Key": "DewPoint",
          "Label": "Dew Point",
          "Value": 23.0513606644474,
          "Unit": "°C"
        },
        {
          "Key": "HeadPressure",
          "Label": "Head Pressure",
          "Value": 27.3862459582213,
          "Unit": "Pa"
        },
        ...
      ]
    },
    ...
  ]
}

```


7.5. Example

Instruments:

- HB1
- Virtual instrument STS System (Offset 'HB1 heaters' – bath = 5°C)



Fields are not automatically updated if setpoint has changed by REST API



Press 'refresh' button reload data

8. Instrument details

8.1. Bronkhorst

8.1.1. ELFlow

8.1.1.1. Communication

By default the Bronkhorst ELFlow uses:

- 38400 baud
- No parity
- 8 databits
- 1 stopbit

The following commands have been tested...

Notes

- For param types 'float' use the [online hexstring to float converter](#)
- Command termination '[\r\n]' is not needed if GeckoR2 MiniTerm is used

| | |
|--|--|
| Sensor type ProcessNr 0x1 (= d1) ParamType 0x0 (= char) ParamIndex 0 ParamNumber (FBnr) 0xE (= d14) TX :0680040100010E[\r\n] Examples: RX :05800201 0083 | Serial ProcessNr 0x71 (= d113) ParamType string ParamIndex 0 ParamNumber (FBnr) 3 TX :0780047163716300[\r\n] Examples: RX :108002716300 4D31373230303830314300 -> ... |
| bhtmodel number ProcessNr 0x71 (= d113) ParamType string ParamIndex 0 ParamNumber (FBnr) 2 TX :0703047162716200[\r\n] Examples: RX :190302716200462D313131422D... ...324B302D4141442D30302D5600 | Capacity ProcessNr 0x1 (= d1) ParamType 0x40 (= long = float) ParamIndex 0 ParamNumber (FBnr) 0xD (= d13) TX :0680040140014D[\r\n] Examples: RX :0880020140 40000000 -> 2 l/min RX :0880020140 40A00000 -> 5 l/min RX :0880020140 41200000 -> 10 l/min |
| Capacity unit ProcessNr 0x1 (= d1) ParamType string[7] ParamIndex 0 ParamNumber (FBnr): d31 TX :078004017F017F07[\r\n] Examples: RX :0C8002017F07 6C6E2F6D696E20 -> l/min | Temperature ProcessNr 0x21 (= d33) ParamType 0x40 (= long = float) ParamIndex 0 ParamNumber (FBnr) 7 TX :06800421402147[\r\n] Examples: RX :0880022140 41C9E627 -> 2.52373790740966796875E1 |
| fmeasure (l/min: @ 0°C and 1.013bar = 1 atm = 14.69 psi) ProcessNr 0x21 (= d33) ParamType 0x40 (= long = float) ParamIndex 0 ParamNumber (FBnr) 0 TX :06800421402140[\r\n] Examples: RX :0880022140 3F7A55B9 -> 9.77870523929595947265625E-1 RX :0880022140 3F56118A -> 8.3620512485504150390625E-1 RX :0880022140 3F146039 -> 5.79593241214752197265625E-1 RX :0880022140 3EB6499A -> 3.56030285358428955078125E-1 | Measure (result in percent, value max: 32000) ProcessNr 0x1 (= d1) ParamType 0x20 (= integer) ParamIndex 1 ParamNumber (FBnr) 1 TX :06800401200120[\r\n] Examples: (0x7D00 = 32000 = 100%) RX :0680020120 0734 -> 1844 -> 5.7625 % RX :0680020120 04DE -> 1246 -> 3.89375 % |

8.2. Fluke

8.2.1. 7011 – Temperature bath

8.2.1.1. Setup

The temperature bath is only working with a max baudrate of 2400. If the Gecko instrument scanner cannot detect the bath try to connect the bath manually with baudrate 2400.

Some default bath parameters don't work in combination with the Gecko communication. If you work with a new version of Gecko the software sets these parameters automatically. Otherwise please make sure the the following parameters are set correctly:

| Command | Options | Command to set | Command to request |
|---|---------------------------|----------------|--------------------|
| Sample (send measure interval in seconds) | 0 polling 1 – 4000 | sa=0 | sa |
| Duplex (echoes the command) | h half f full | du=h | du |
| Unit (physical unit) | c Celsius f Fahrenheit | u=c | u |

8.2.2. 8558A – Multimeter

[Fluke 8558A](#)

[Remote Programmers](#)

8.2.2.1. Communication

Use USB cable to communicate with Gecko software.

By default the Fluke 8558A has deactivated communication ports. To activate follow the steps:

Prepare the Product for USBTMC-USB488 Remote Control

To prepare the Product for USBTMC-USB488 remote control:

1. Push **INST SETUP** and then select **Remote Settings**.
2. Use **▲** and **▼** to highlight the **Active Port** row.
3. Select **F3** (USB).
4. Connect a USB cable between the Product and controlling PC. A message may appear on the PC that states that a driver is being installed.
5. Check that the Product has been detected, right click on the Windows Start Icon and select **Device Manager**.
There should be an item labelled **USB Test and Measurement Devices** and under that, an item called **USB Test and Measurement Device (IVI)**.
6. Close the Device Manager on the PC.

If «Active Port» can not be selected make sure emulation mode is set to 'none'.

To ensure the most efficient use of the Service Request (SRQ) mechanism provided by USBTMC-USB488, first check that the RQS bit in the Status Byte is clear. To do this, perform a serial poll of the Product before you send any commands that could generate SRQ events. This only needs to be done once in your program/procedure.

Check communications can be established:

Write *IDN?

Read the response

Clear registers and read the status byte:

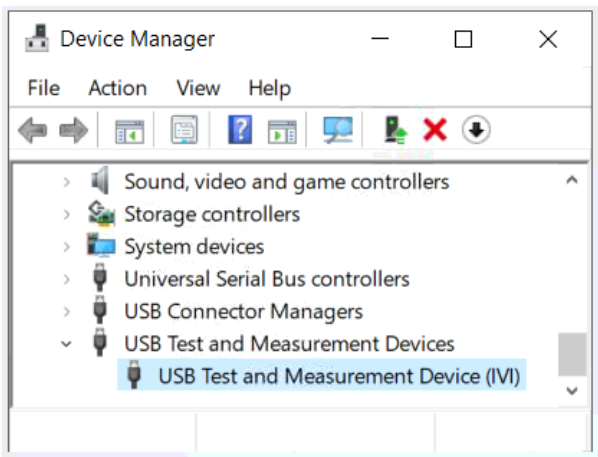
Write: *CLS;*RST

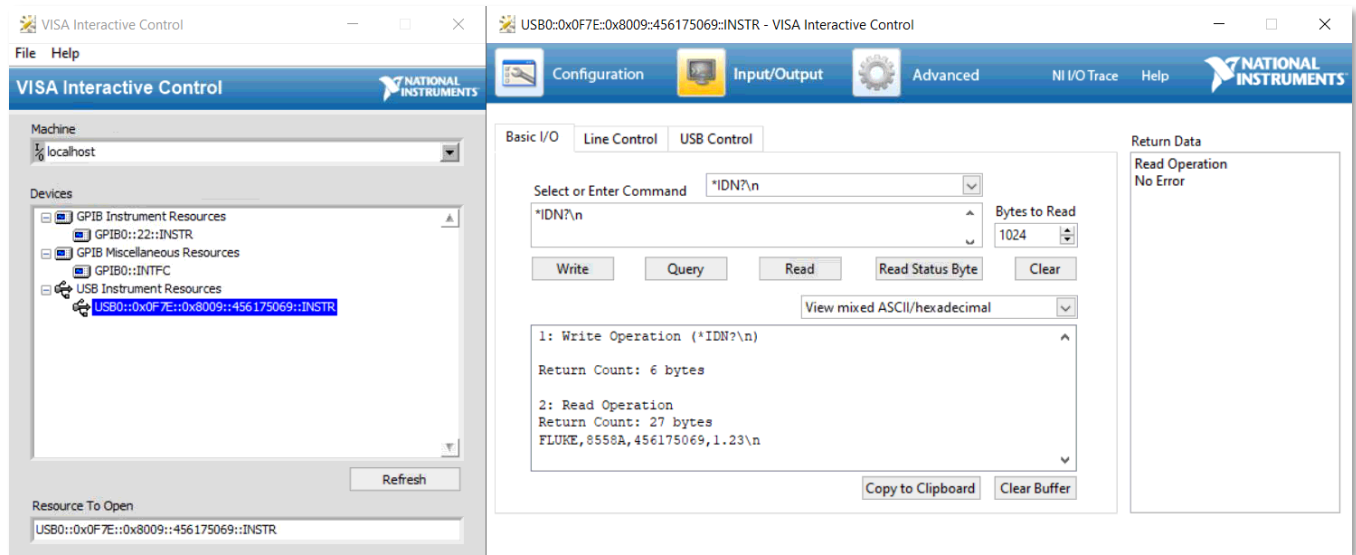
Write *ESE 0

Write *SRE 191

Read the status byte (Serial POLL)

Before you proceed, set the event and status registers as required.





USB0::0x0F7E::0x8009::456175069::INSTR

8.3. HP/Keysight

8.3.1. 34461A (Digital Multimeter)



[Manual](#)

8.3.1.1. Communication

The Gecko software supports communication over USB (Ethernet is currently not supported!).

Make sure the Keysight drivers are installed on the computer where the Gecko software is used

[Ag3446x-x86_1.1.5.0.msi](#)

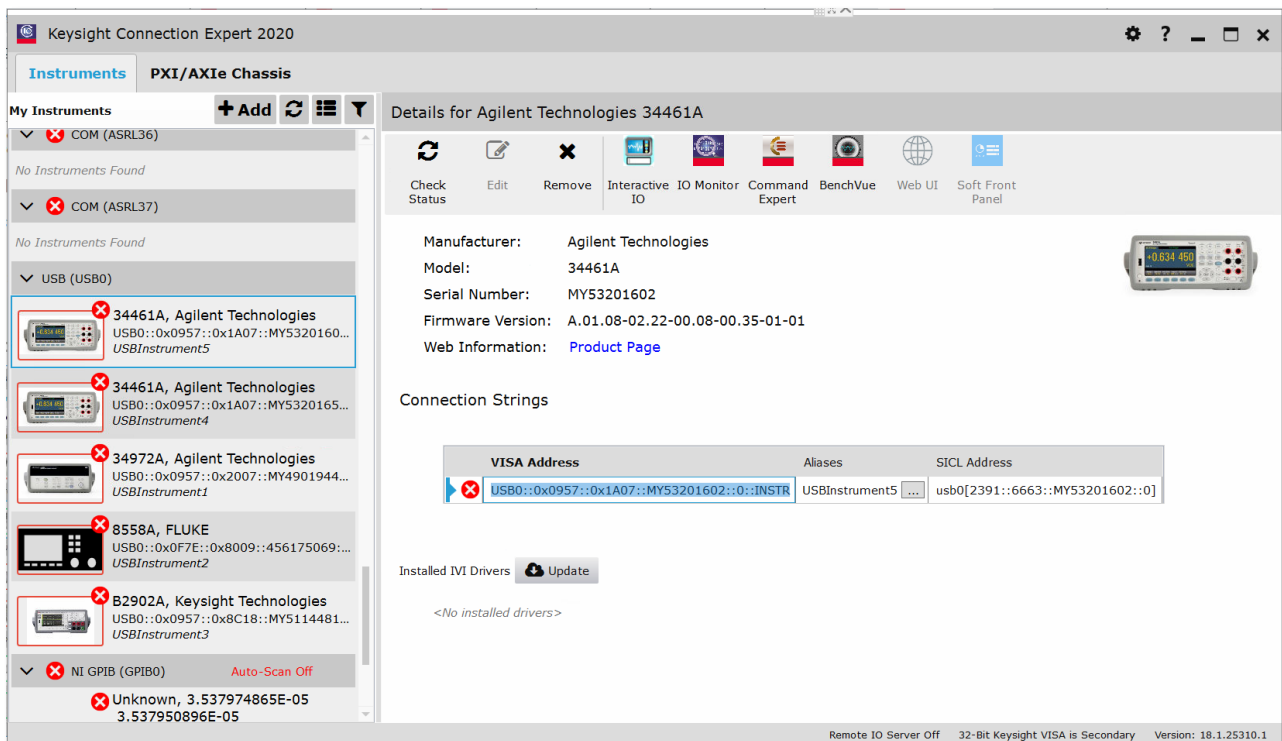
[Ag3446x-x64_1.1.5.0.msi](#)

To connect the instrument enter the whole connection string as 'serial':

Example: USB0::0x0957::0x1A07::MY53201602::0::INSTR

The connection string can be found by using the Keysight Tool

[IOLibSuite_18_1_25310.exe](#)



| Misc devices | | | |
|--------------|--------------------|--|---------|
| Keysight | Keysight34461A DMM | USB0::0x0957::0x1A07::MY53201602::0::INSTR | Connect |
| Novasina | iSens | Serial? | Connect |
| MBW | Debug device | Serial? | Connect |
| MBW | VD Calibration | Serial? | Connect |
| MBW | VD PressPressTemp | Serial? | Connect |

8.3.1.2. Instrument configuration

The Gecko software configures the instrument with the following commands:

```
// Configure for voltage measurement, using 10 V range
_driver.DCVoltage.Configure(10, 1e-3);
_driver.DCVoltage.AutoZero = Ag3446xAutoZeroEnum.Ag3446xAutoZeroOnce;

// Set reading rate to 0.02 NPLC's
_driver.DCVoltage.NPLC = 0.02;

// Set up triggering for 1000 samples from a single trigger event
_driver.Trigger.Source = Ag3446xTriggerSourceEnum.Ag3446xTriggerSourceImmediate;
_driver.Trigger.Count = 1;
_driver.Trigger.Delay = 0;
_driver.Trigger.SampleCount = 1;

// Initiate the measurement
_driver.Measurement.Initiate();
```

Reading value loop:

```
Data.SetValueInUnitMachine(Keysight34461AKey.Voltage.ToString(), value);

// Configure for a single reading, 10 Volt range
_driver.DCVoltage.Configure(10, 1e-3);

// Set 10 Power Line Cycles of integration time on the measurement
_driver.DCVoltage.NPLC = 10.0;

// Initiate the measurement
_driver.Measurement.Initiate();

// Although not necessary for quick measurements, pausing for a long measurement avoids I/O
// timeouts
// 10 NPLC at 60Hz is: 10 * 0.01667 = about 166.7 msec. Auto Zero doubles the time
_driver.System.WaitForOperationComplete(1000);
```

8.3.2. 3458A (Digital Multimeter)

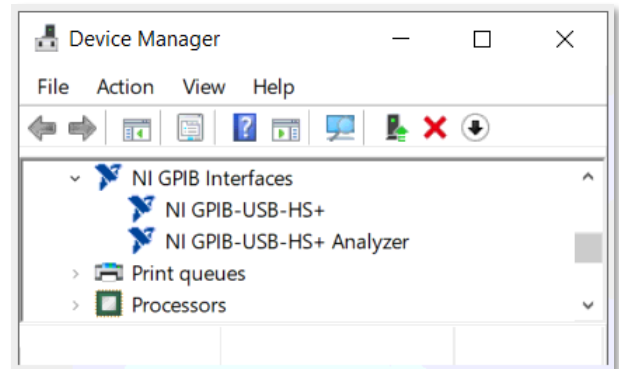


8.3.2.1. Communication

To communicate use a GPIB to USB adapter. Example «NI GPIB USB HS+»

<https://www.ni.com/de-ch/support/downloads/drivers/download.ni-488-2.html#305442>

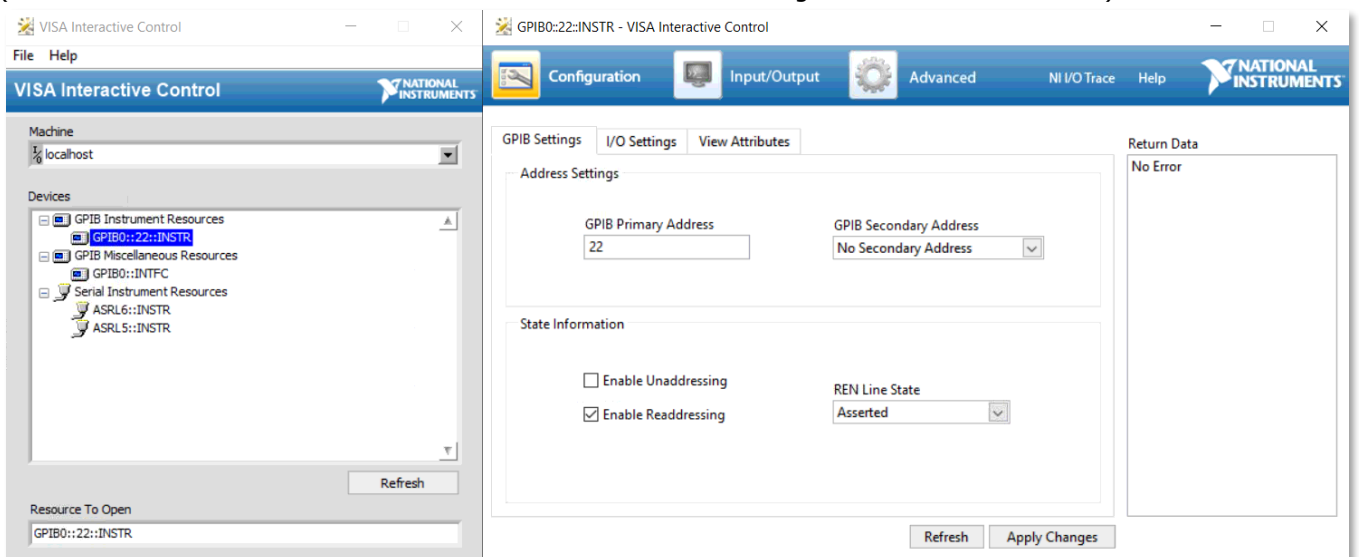
<https://www.ni.com/de-ch/support/downloads/drivers/download.ni-visa.html#329456>



The current version (may 2020) of Gecko is not able to change the instrument address. To make sure a communication works set the configuration of the GPIO to USB adapter to:

GPIB0::22::INSTR

(The Gecko software tries to communicate with the HP3458A using this instrument address)



In the Gecko software the HP3458A can be found in the chapter of the RS232 instrument but – of course – no RS232 configuration has to be done. Just press «Connect».

| | | | | |
|--------|-------------------------------|--------|-------------|---------|
| -- | -- | COM? | 9600 Baud | Connect |
| Halo | M7500-S | COM? ▾ | 9600 Baud ▾ | Connect |
| HP | HP34401A DMM | COM? ▾ | 9600 Baud ▾ | Connect |
| HP | HP3458A DMM | COM? ▾ | 9600 Baud ▾ | Connect |
| IST | HYT | COM? ▾ | 9600 Baud ▾ | Connect |
| Kambic | Temperature Bath OB-7/2 V3.15 | COM? ▾ | 9600 Baud ▾ | Connect |
| Kambic | Temperature Bath OB-7/2 V3.19 | COM? ▾ | 9600 Baud ▾ | Connect |
| Kambic | Temperature Bath OB7/2 V4.23 | COM? ▾ | 9600 Baud ▾ | Connect |

8.3.2.2. Protocol detail

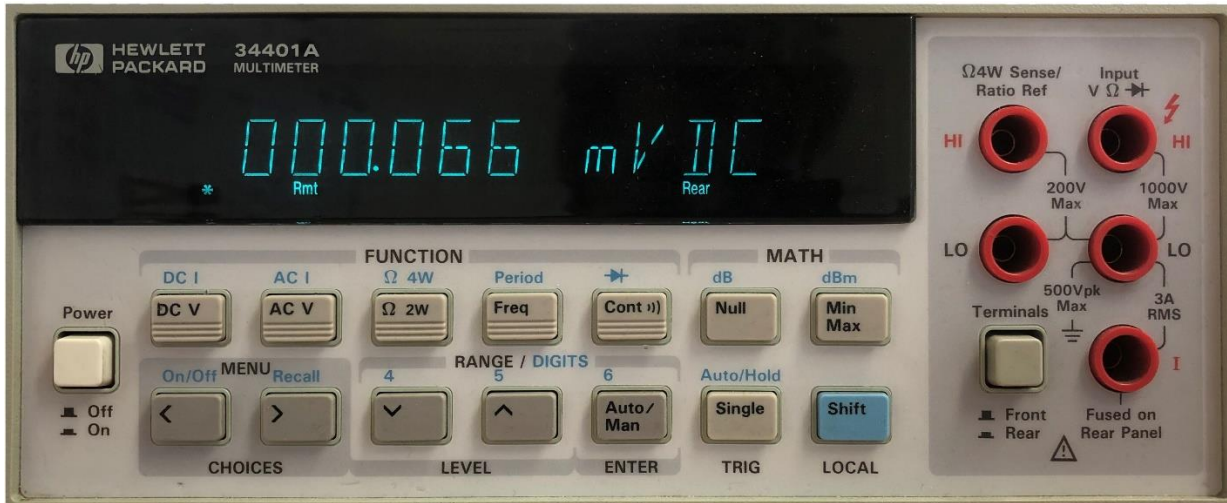
The Gecko software sends the following initialization commands to the instrument

```
Write("PRESET NORM");
Write("OFORMAT ASCII");
Write("TARM HOLD");
Write("DCI 10E-3");
Write("TRIG AUTO");
Write("NRDGS 1,AUTO"); // #1 reading per trigger, auto sample event
Write("'NPLC 1'"); // # power line cycles of integration time
```

While reading measurement values the following commands are written/read

```
Write("MEM FIFO");
Write("TARM SGL, 1");
Write("RMEM 1,1,1");
var dccStr = Read();
```

8.3.3. Parity 34401a (Digital Multimeter)



For a working communication Gecko <-> HP 34401a please make sure that instrument has the following configuration set :

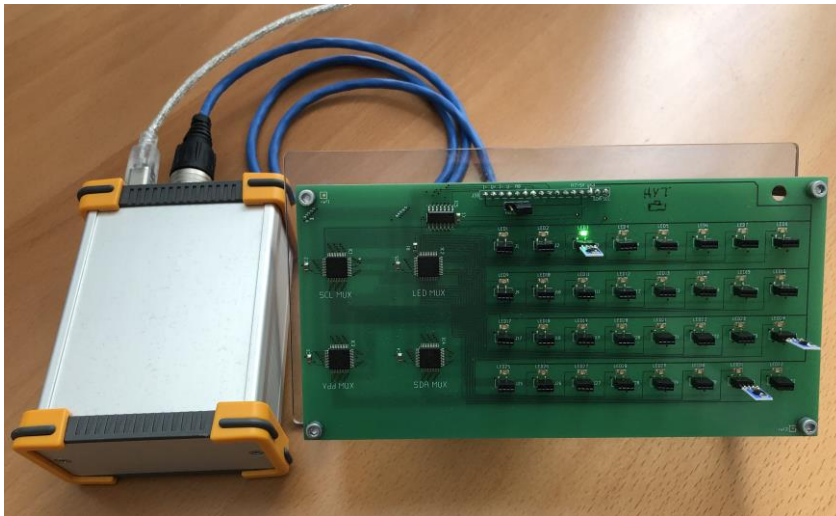
| | |
|---------------|-------|
| Communication | RS232 |
| Baud | 9600 |
| Parity | Even |
| DataBits | 7 |
| StopBits | 2 |

The Gecko software resets the instrument

- during connection
- if no data can be read from the instrument

8.4. IST

8.4.1. HYT – Digital Humidity and temperature module



The Gecko software supports communication with the 32 channel HYT adapter.

8.4.1.1. Communication

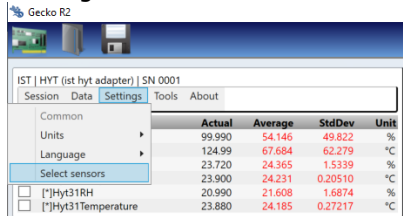
Configuration Baudrate: 9600/ Databits: 8/ Stopbit: 1/ Parity: None/ **FlowControl: DTR/DSR**

| Command | Description | Example(s) | |
|------------|---|----------------------------|-----------------------------------|
| i | Get module identification | TX: i | RX: id: ist hyt adapter |
| s | Get serial number | TX: s | RX: sn: 0001 |
| c[address] | Select a channel. First address is 33 ("!") Last address is 65 ("@"). Use ASCII symbol for address! | TX: c! TX: c5 TX: c@ | RX: - RX: - RX: - |
| m | Get measure value of selected channel | TX: m | RX: 30.86%rH - Temperature: 23.49 |

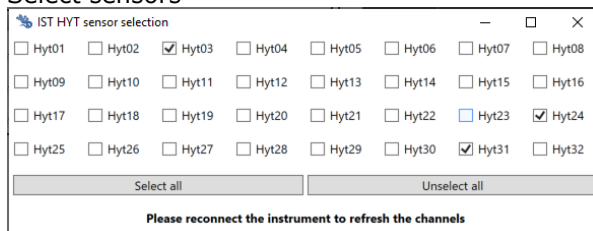
8.4.1.1.1. Setup

To select the connected sensors:

- 1) Settings → Select sensors



- 2) Select sensors



- 3) Reconnect the IST HYT adapter instrument in Gecko

8.4.1.1.2. Firmware update

- 1) Download [Arduino IDE](#)
- 2) ...todo...

Tools:

Use Arduino IDE Tools → Serial Monitor for RS232 terminal

8.5. Keller

8.5.1. PAA-33X – Pressure sensor

8.5.1.1. Setup



Because PAA pressure sensors are connected by Modbus (RS232/RS485) every sensor within one bus system needs a unit address. The (current version of) Gecko software does not support address setting.

To change the address of a sensor please download [Keller – ControlCenterSeries30](#)

[Manual](#)

To connect PAA sensors with the Gecko software please use the 'manual connect' mode (it is recommended to stop a running scan before connecting an instrument). The software checks (only!) the addresses 0 – 10 for accessible sensors. If any sensor has been found the instrument shows the pressure of the detected sensor.

If no sensor has been found please

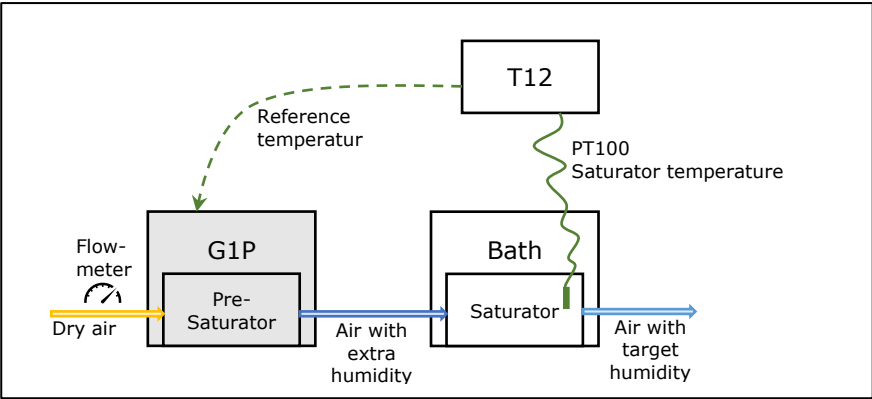
- Check the COM port (device manager)
- Address(es) of the sensor(s). Only addresses between 0 and 10 are supported
- Reconnect the instrument (Gecko connection dialog)

8.6. MBW

8.6.1. G1P - Humidity Generator

8.6.1.1. Characteristics

- Reduced G1: No internal saturator
- Instead of internal saturator an external saturator is needed



8.6.1.2. Setup

For full functionality

- select the reference channel to the external saturation temperatur (menu: Data → Select temperature reference)

8.6.1.3. Options

| Flow correction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------|-----|---|---------------|--------------------|---|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|-----|------|
| Parameters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | UseFlowCorrected | SET | 0/1 | Enable/Disable in menu: Data → "Use flow correction" Flow correction is enabled if the channel "UseFlowCorrected" is set to 1. If "UseFlowCorrected" is enabled the value of setpoint channel "FlowCorrected" is sent to the G1P else the value of the setpoint channel "Flow". | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | FlowCorrected | CALC | | Calculated flow (see Explanation) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Restrictions | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <ul style="list-style-type: none">- Flow correction works only if a (saturator) temperature reference is defined (this temperature is used as DP)- If reference temperature less than 0°C a correction factor of 1 is taken (approximation) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Explanation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>A flow set by the user controls a valve positioned before the presaturator. The flow of the output air (after presaturator and saturator) is higher than the flow of the dry air because of the additional humidity. To get the output air with the flow set by the user a correction has to be done.</p> <p>The following curve shows the flow error as function of the dewpoint.</p> <div><p>FlowError=f(Dewpoint) @ flow 1l/min</p><table><caption>Data points for FlowError=f(Dewpoint) @ flow 1l/min</caption><tr><th>Dewpoint [°C]</th><th>Flow error [l/min]</th></tr><tr><td>0</td><td>0.00</td></tr><tr><td>10</td><td>0.01</td></tr><tr><td>20</td><td>0.02</td></tr><tr><td>30</td><td>0.03</td></tr><tr><td>40</td><td>0.05</td></tr><tr><td>50</td><td>0.08</td></tr><tr><td>60</td><td>0.12</td></tr><tr><td>70</td><td>0.18</td></tr><tr><td>80</td><td>0.28</td></tr><tr><td>90</td><td>0.45</td></tr><tr><td>95</td><td>0.65</td></tr><tr><td>98</td><td>0.80</td></tr><tr><td>100</td><td>0.95</td></tr></table></div> <p>FlowNominal 1.0 l/min Pressure normal 1.013 bar</p> | | | | | Dewpoint [°C] | Flow error [l/min] | 0 | 0.00 | 10 | 0.01 | 20 | 0.02 | 30 | 0.03 | 40 | 0.05 | 50 | 0.08 | 60 | 0.12 | 70 | 0.18 | 80 | 0.28 | 90 | 0.45 | 95 | 0.65 | 98 | 0.80 | 100 | 0.95 |
| Dewpoint [°C] | Flow error [l/min] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 0.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 0.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 0.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 0.18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 0.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 0.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 95 | 0.65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 98 | 0.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 0.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| DP [°C] | SVP [bar] | SVP / Pnormal | Wet output air [l/min] | Corrected flow setpoint to get wet output air 1l/min [l/min] |
|---------|-----------|---------------|------------------------|--|
| 0 | 0.006 | 0.006 | 1.006 | 0.994 |
| 10 | 0.012 | 0.012 | 1.012 | 0.988 |
| 20 | 0.023 | 0.023 | 1.023 | 0.977 |
| 30 | 0.042 | 0.042 | 1.042 | 0.958 |
| 40 | 0.074 | 0.073 | 1.073 | 0.927 |
| 50 | 0.124 | 0.122 | 1.122 | 0.878 |
| 60 | 0.199 | 0.197 | 1.197 | 0.803 |
| 70 | 0.312 | 0.308 | 1.308 | 0.692 |
| 80 | 0.474 | 0.468 | 1.468 | 0.532 |
| 90 | 0.702 | 0.693 | 1.693 | 0.307 |
| 95 | 0.846 | 0.835 | 1.835 | 0.165 |
| 99 | 0.979 | 0.966 | 1.966 | 0.054 |

SVP (Saturation Vapour Pressure)

8.6.2. Simulator

For development reasons (for example REST API) you can use the Instrument simulator. Not all instruments are implemented – and the instruments are sending 'only' dummy data. But it is a helpful tool to implement 3rd party software without connecting any real instruments.

[InstrumentSimulator](#)

8.6.2.1. Connecting the simulator

Connect with cable

You can connect the simulator with two real RS232 cables and a 0-modem adapter.

Simulator (example 473) / COM1

→ RS232 cable

→ 0-modem

→ RS232 cable

→ GeckoR2 (example 473) / COM2

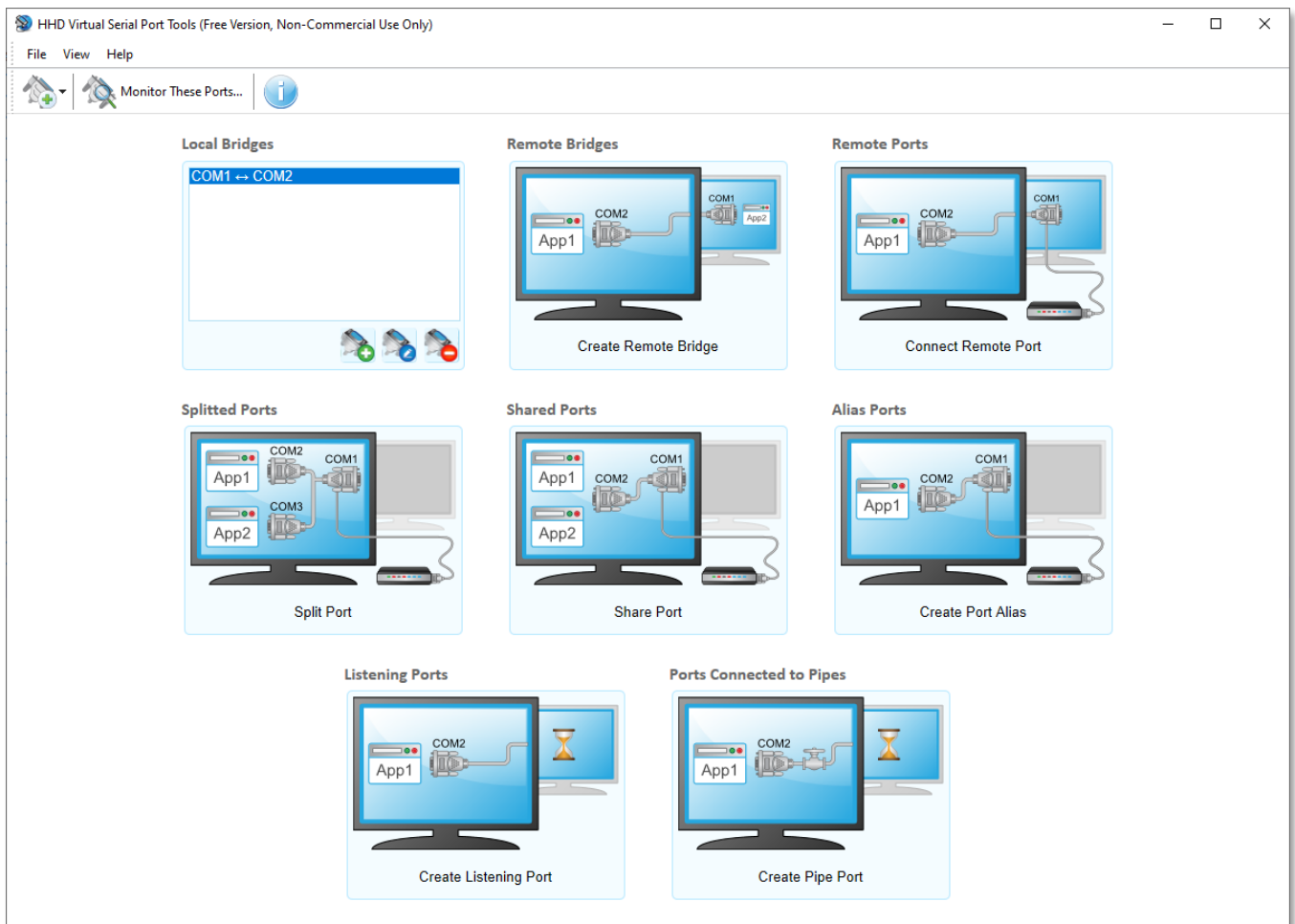
Connect with virtual com ports

The second (and more comfortable) option:

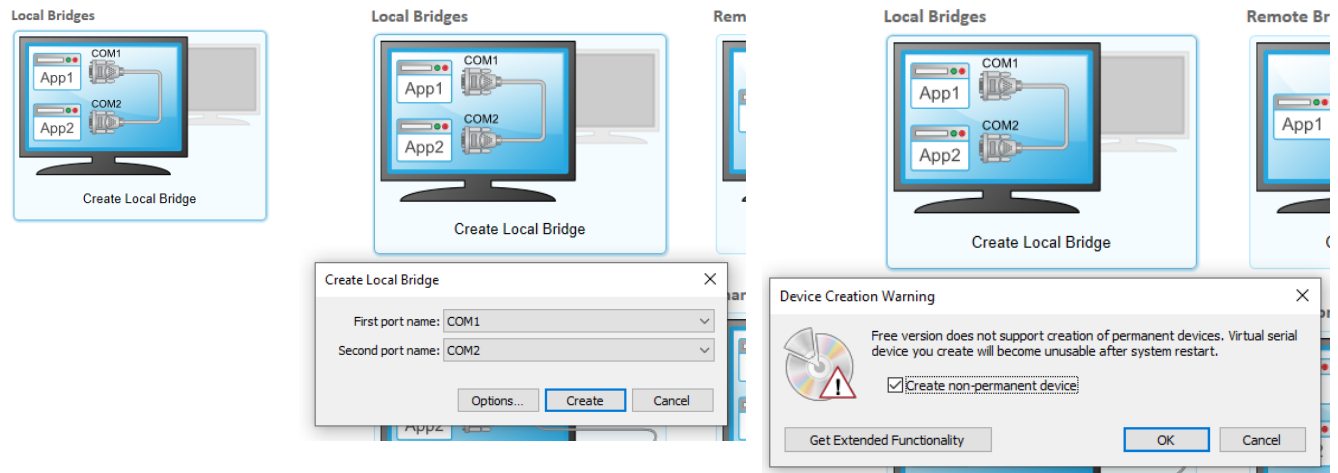
You can use a virtual serial port adapter tool like [HHD Virtual Serial Port Tools](#)

HHD Virtual Serial Port Tools can be used for free with the limitations:

- Only one 'Local Bridge'
- 'Local Bridge' is removed after every pc reboot



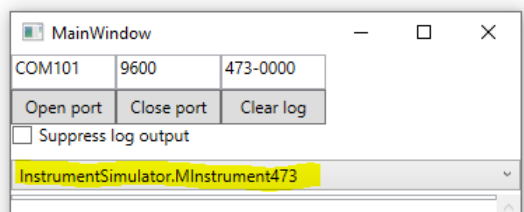
Add a local bridge:



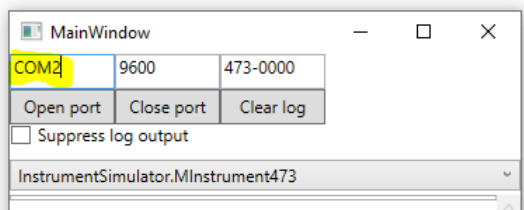
8.6.2.2. Simulator

To connect the simulator it is important to follow the following steps (in this order!)

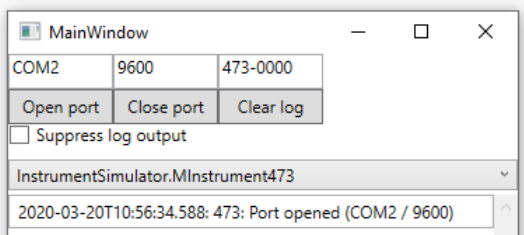
- 1) Select the instrument



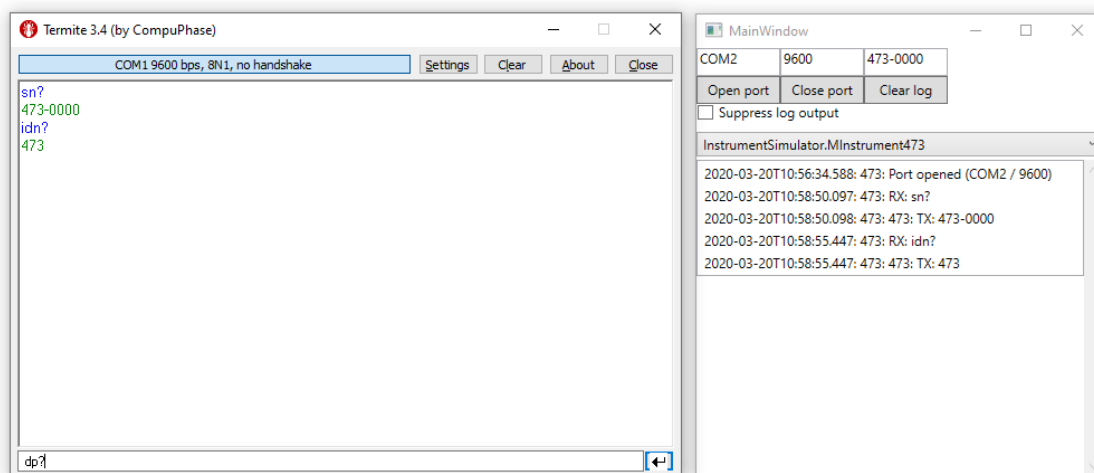
- 2) Change COM port



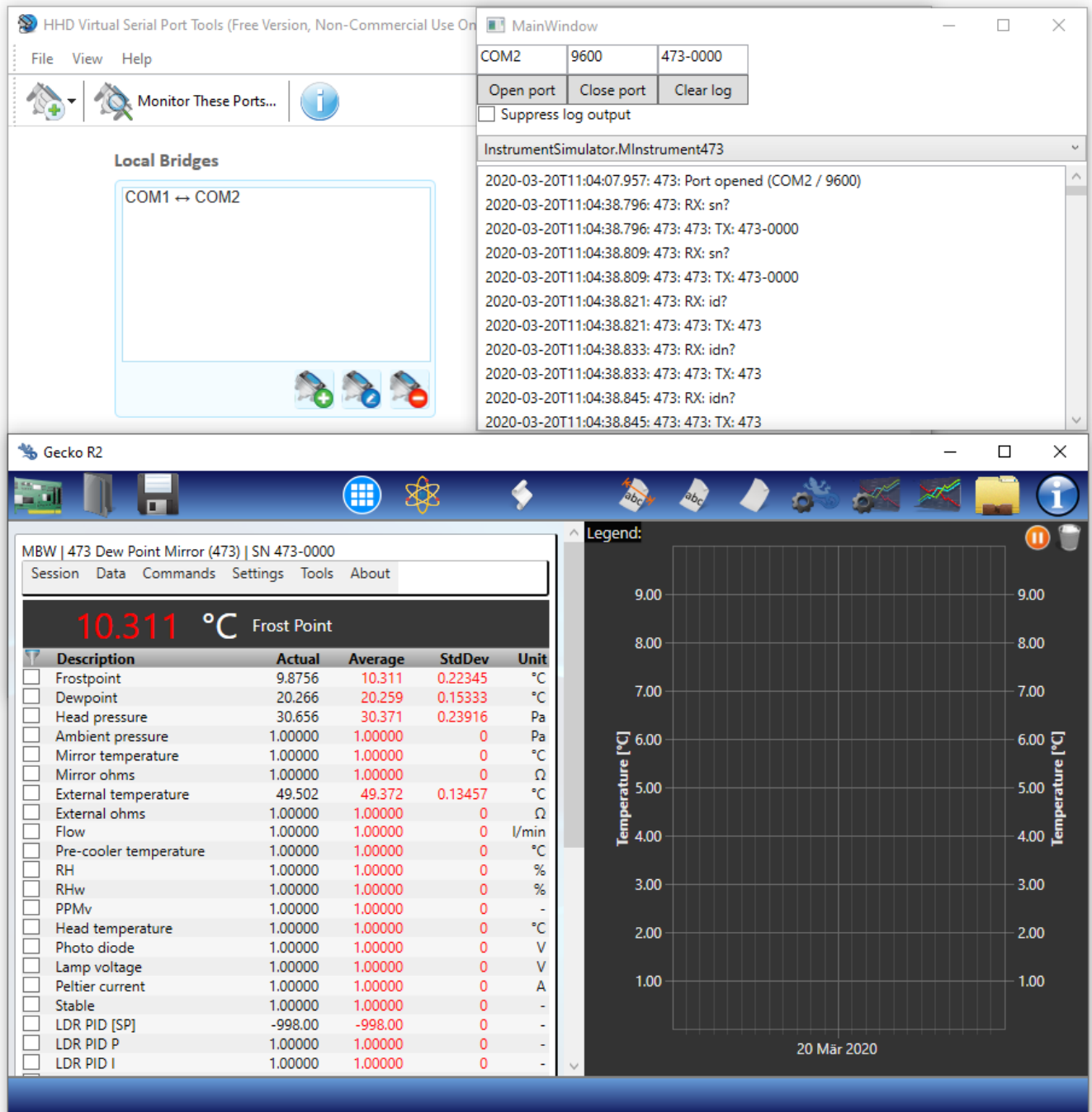
- 3) Open COM port



To test a connection you can use a simple RS232 terminal like [Termite](#)



8.6.2.3. Gecko <> Simulator



The screenshot displays two windows from the MBW calibration software. The top window, titled 'HHD Virtual Serial Port Tools (Free Version, Non-Commercial Use On...', shows a 'Local Bridges' section with 'COM1 ↔ COM2' and a log window titled 'InstrumentSimulator.MIInstrument473' containing a series of timestamped messages such as '2020-03-20T11:04:07.957: 473: Port opened (COM2 / 9600)'. The bottom window, titled 'Gecko R2', shows a data table for 'MBW | 473 Dew Point Mirror (473) | SN 473-0000' with columns for Description, Actual, Average, StdDev, and Unit. The 'Average' column for 'Frostpoint' is highlighted in red, showing a value of 10.311. To the right of the table is a graph titled 'Legend:' with a y-axis labeled 'Temperature [°C]' ranging from 1.00 to 9.00. The date '20 Mär 2020' is displayed at the bottom of the graph area.

Gecko R2 Data Table:

| Description | Actual | Average | StdDev | Unit |
|------------------------|---------|---------|---------|-------|
| Frostpoint | 9.8756 | 10.311 | 0.22345 | °C |
| Dewpoint | 20.266 | 20.259 | 0.15333 | °C |
| Head pressure | 30.656 | 30.371 | 0.23916 | Pa |
| Ambient pressure | 1.00000 | 1.00000 | 0 | Pa |
| Mirror temperature | 1.00000 | 1.00000 | 0 | °C |
| Mirror ohms | 1.00000 | 1.00000 | 0 | Ω |
| External temperature | 49.502 | 49.372 | 0.13457 | °C |
| External ohms | 1.00000 | 1.00000 | 0 | Ω |
| Flow | 1.00000 | 1.00000 | 0 | l/min |
| Pre-cooler temperature | 1.00000 | 1.00000 | 0 | °C |
| RH | 1.00000 | 1.00000 | 0 | % |
| RHw | 1.00000 | 1.00000 | 0 | % |
| PPMv | 1.00000 | 1.00000 | 0 | - |
| Head temperature | 1.00000 | 1.00000 | 0 | °C |
| Photo diode | 1.00000 | 1.00000 | 0 | V |
| Lamp voltage | 1.00000 | 1.00000 | 0 | V |
| Peltier current | 1.00000 | 1.00000 | 0 | A |
| Stable | 1.00000 | 1.00000 | 0 | - |
| LDR PID [SP] | -998.00 | -998.00 | 0 | - |
| LDR PID P | 1.00000 | 1.00000 | 0 | - |
| LDR PID I | 1.00000 | 1.00000 | 0 | - |

8.7. Mensor

8.7.1. CPG2500

Precision Pressure Indicator



| | |
|---------------|-----------|
| Communication | RS232 |
| Baud | 9600 |
| Parity | None |
| DataBits | 8 |
| StopBits | 1 |
| Autodetection | Available |

Communication protocol example (created with MBW Simulator and GeckoR2)

```
Id?
MENSOR,CPG2500, 12-3456,1.1.11
chan a
units hpa
chan b
units hpa
a?
E9.7182E2
b?
2.0251E3
c?
3.0411E3
```

8.8. Novasina

8.8.1. iSens



8.8.1.1. How to setup Novasina - iSens sensors


- 1) Connect USB connector -> Windows will setup an "USB Converter" (see device manager)
- 2) Open "USB Converter" settings -> Enable VCP (virtual serial port) -> Windows creates a new serial port
- 3) Enable GeckoR2 features -> FeatureSettings.xml
 - Instrument: iSens
 - Scanner: iSens
- 4) Check if the following dll's can be found in .\dll
 - ftd2xx.dll
 - iSens Novax Kommunikationsprofil.dll
 - NovaxComdll.dll
 - NovaxComDIIWrp.dll
 - Utils.dll
- 5) Start GeckoR2 (with scanning enabled) -> In the part "Virtual Instrument" a Novasina iSens instrument with a serial number is shown

8.8.1.2. Connect

Because the iSens sensor communicates 'with a DLL' and not directly with the COM port the implementation of the iSens is different. Have a look into the part 'Virtual devices'. Yes it is not a real virtual instrument but because it talks with a VCP (virtual communication port) it is handled like a virtual instrument.

Make sure the iSens exists in the FeatureSettings.xml and scanning of the instrument is enabled!

To find an iSens start a device scanning. If an instrument has been found a new line in the 'Virtual devices' is added.

 Gecko R2

| COM - Auto detected | | | | Scan |
|----------------------------|-------------------------|---------------|-------------|---------|
| COM - Manually selected | | | | Refresh |
| MBW | 373 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | 473 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | 474 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | 573 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | 973 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | 973L Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | 973SF6 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | CurveGenerator | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | DataLog | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | DP30V1 Dew Point Mirror | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | G1 Humidity Generator | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | G1P Humidity Generator | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | G2 Humidity Generator | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | Stepper Step Motor | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | T12 Thermometer | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | Temperature Bath | COM? ▾ | 9600 Baud ▾ | Connect |
| MBW | UIDAQ Analog Box | COM? ▾ | 9600 Baud ▾ | Connect |
| Fensor | HG-101 | COM? ▾ | 9600 Baud ▾ | Connect |
| Fensor | HG-201 | COM? ▾ | 9600 Baud ▾ | Connect |
| Thunder Scientific | TS 2500 | COM? ▾ | 9600 Baud ▾ | Connect |
| Vaisala | HMP9 | COM? ▾ | 9600 Baud ▾ | Connect |
| Ethernet devices | | | | |
| Virtual devices | | | | |
| Novasina | iSens | Serial? | | Connect |
| Novasina | iSens | HT--ai1807293 | | Connect |
| Running connections | | | | |
| Close | | | | |

8.9. Vaisala

8.9.1. DMT1xx



Supported instruments: DMT143, DMT152

Autodetection works (scan to find an instrument)

Use the following communication settings:

- 19200 baud
- No parity
- 8 databits
- 1 stopbit

Communication details:

ASCII communication (no modbus)

Used commands

| Description | Send | Receive (example) |
|-------------------|-------------------------|--------------------------|
| Get serial number | snum | Serial number : R5120022 |
| Get version | vers | DMT152/1.31 |
| Set format | form 3.2 Tdf " " STAT | OK |
| Set poll modus | send | 9.54 0000 |

Documentation

[DMT143](#) / [DMT152](#)

8.9.2. HMP9



To connect a HMP9 with GeckoR2 please:

- Connect manually

| | | | | |
|---------|--------------------|--------|--------------|---------|
| Vaisala | Vaisala 330 Series | COM? ▾ | 9600 Baud ▾ | Connect |
| Vaisala | HMP9 | COM7 ▾ | 19200 Baud ▾ | Connect |
| vögtlin | vögtlin Flowmeter | COM? ▾ | 9600 Baud ▾ | Connect |

- Use baudrate 19200
- Set HMP9 modbus address to 240 (0xf0)

If connection to Vaisala HMP9 fails:

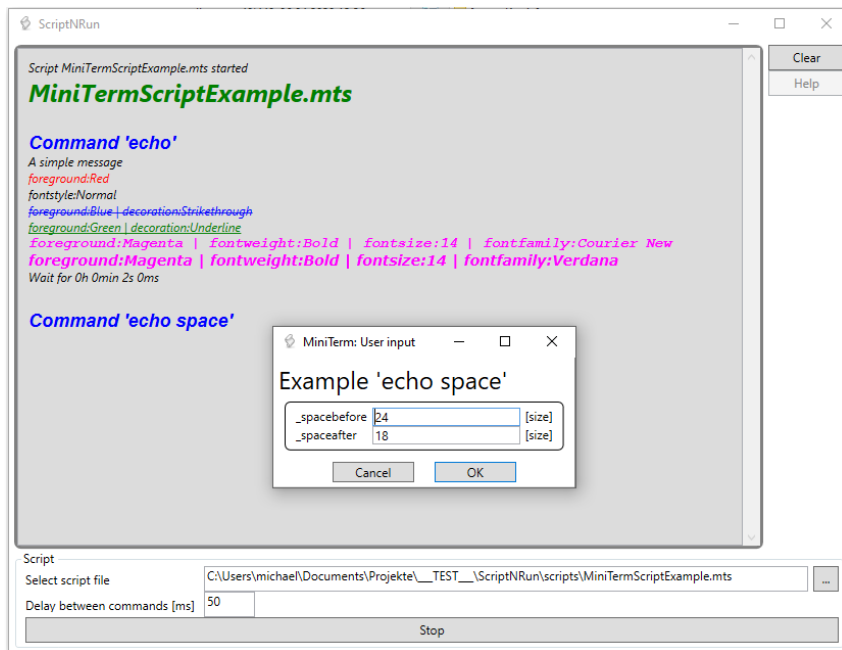
- Switch off/on green plug
- Check modbus address and buadrate with Vaisala configuration tool.

If the sensor stops measuring after about 30s and heating the sensor → switch off all the switches in HMP9 configuration

→ [VaisalaInsightSoftware](#)

9. MiniTerm /ScriptNRun

The MiniTerm is a minimal terminal to communicate with an instrument. The tool ScriptNRun is the standalone version of the MiniTerm.



9.1. Scripting

MiniTerm and ScriptNRun allow scripting so commands can be automated. To get a list of all the scripting commands open the example scripts:

- MiniTermScriptExample.mts (the main example file)
- MiniTermScriptExampleSub.mts (script that is called by MiniTermScriptExample.mts)

9.1.1. Notepad++

For easier editing select the script language MBWMiniTerm.xml → Coloring the keywords and grouping

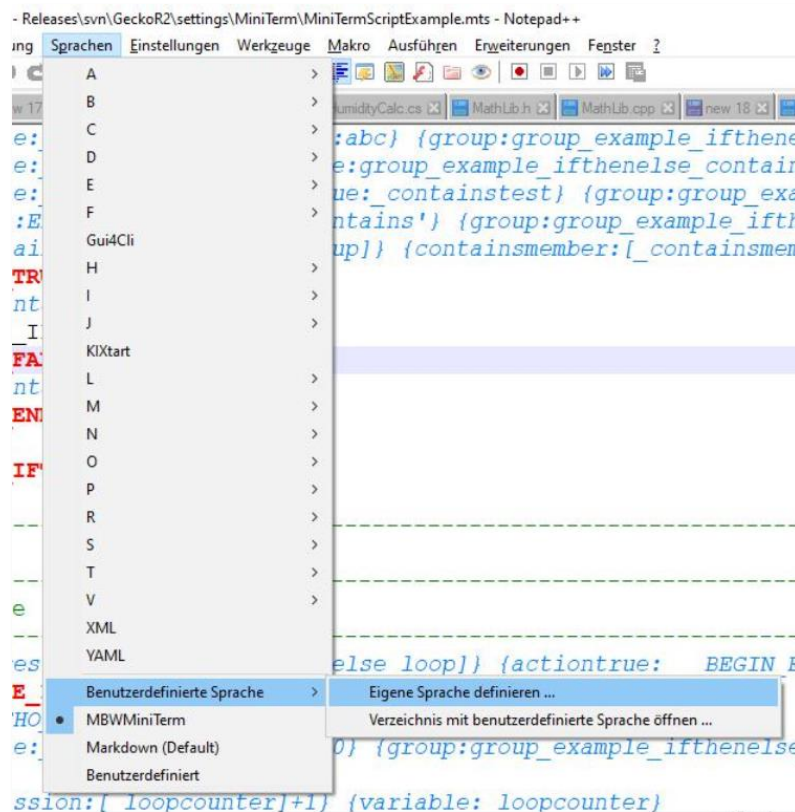
```

520  /// -----
521  /// region Example 'ifthenelse loop'
522  /// -----
523  !ifthenelse {expression:[_example_ifthenelse_loop]}
    {actiontrue:___BEGIN_EXAMPLE_IFTHENELSE_LOOP} {actionfalse:___END_EXAMPLE_IFTHENELSE_LOOP}
524  :: ___BEGIN_EXAMPLE_IFTHENELSE_LOOP
525  !echo {preset:[ECHO_TITLE2]} {content:Command 'ifthenelse loop'}
526  !setvariable {name:_loopcounter} {value:0} {group:group_example_ifthenelse_loop}
    {description:Loop counter}
527  :: ___LOOP_START
528  !calculate {expression:[_loopcounter]+1} {variable:_loopcounter}
529  !echo {content:loopcounter=[_loopcounter]}
530  !wait {msecs:500}
531  !ifthenelse {expression:[_loopcounter]<4} {actiontrue:___LOOP_START}
532  !echo {content:Loop end}
533  !wait {secs:2}
534  :: ___END_EXAMPLE_IFTHENELSE_LOOP
535  /// endregion
536  /// -----

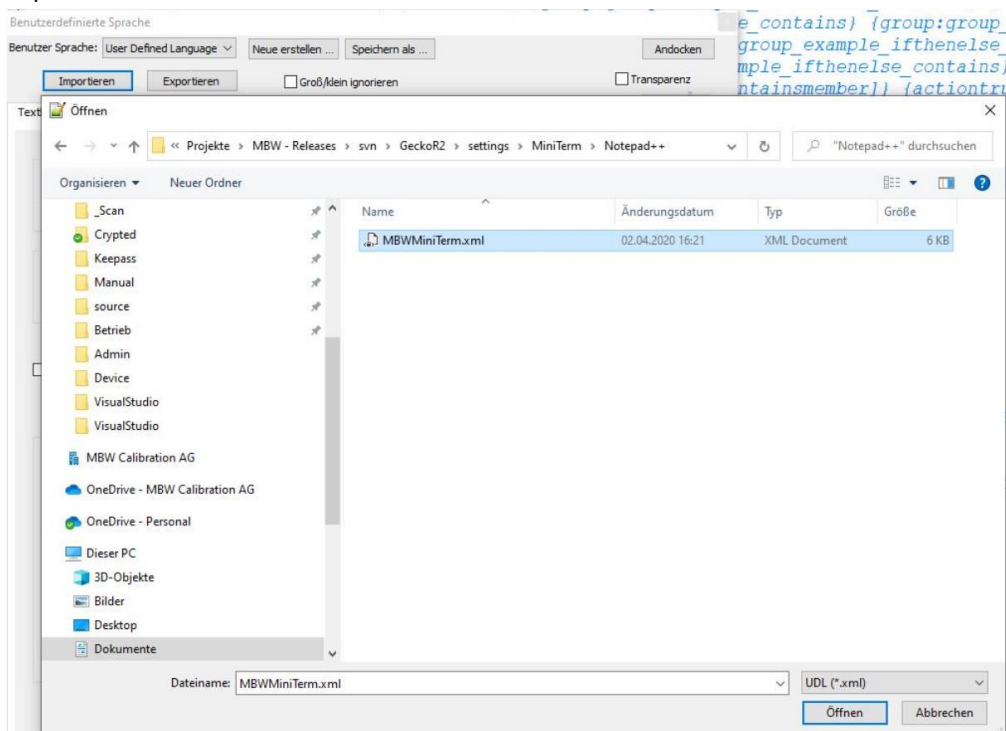
```


How to:

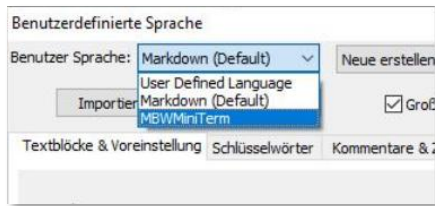
- 1) Language → Custom language → Define own language...



- 2) Import MBWMiniTerm.xml



3) Select imported language



4) Restart Notepad++

5) Now the custom language should be visible → Select MBWMiniTerm to coloring the script code

