

VRM API v2 Documentation

This document provides an brief overview of available endpoints and their parameters. The API is a basic REST API. The API accepts JSON as request body (not form data, just plain JSON). Use something like Postman to fiddle around with it.

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1. # Introduction

To be able to authenticate to the Victron VRM API it is required you have an active account (the same account can be used as you would normally use for the VRM-dashboard). To login you need a valid **email address** and **password**. When the credentials are valid, a web-token will be generated which will then be required for subsequent calls to the api. If the token expires, an error message will be returned, which therefore means you have to request a new token with the original login-credentials.

2. # Base URL

The base URL of the API is:

```
https://vrmapi.victronenergy.com/v2/
```

3. # Design considerations

There are two use cases that you could have in mind when implementing a system that calls this API:

1. To build your own front-end; that uses our database & API as a backend.
2. To replicate the data into your own backend.

The API is not suitable for that last use case; and there is no support offered for such implementations by us either. One of the issues is that you can never know what data you have replicated, and what data not yet. Combined with the backlogging function in the GX devices this means that you'll have to *continuously* query quite far into the past in order to really make sure to have data replicated. We might some day design a proper replication function; but at the moment there are no such plans and also we will not offer support of such setups; unless the involved directly commercial value is extremely high.

If you really do want to host the data; we recommend to implement your own data transmission system on the GX device. Or change the URL of the existing data-transmission system on the GX device to your own URL. Note that this will (obviously) break all the advanced features such as Remote Firmware updates, Remote Support, Remote Console, and-so-forth.

4. <#> Rate limiting and error 429

If you receive HTTP error 429 - Too many requests, it means that you have exceeded rate limiter limits.

5. <#> Authentication endpoints

The authentication endpoints include the only endpoints in the API for which no authorization header is required to access them.

5.1. <#> Login

5.1.1. <#> Username and password

POST <https://vrmapi.victronenergy.com/v2/auth/login>

```
{
  "username": "john@example.com",
  "password": "secret-passw0rd"
}
```

Or, if a SMS authentication token is required:

```
{
  "username": "john@example.com",
  "password": "secret-passw0rd",
  "sms_token": "12345678"
}
```

When logging in a token is issued which may be used to authorize further requests by including it in the "X- Authorization" request header as follows:

```
X- Authorization: Bearer {token}
```

5.1.2. <#> Access token

When using personal access tokens ([access tokens](#)), you have a token that can authenticate against the VRM API without the need of requesting a bearer token. Authentication with such an access token can be done as following:

```
X-Authorization: Token <your-personal-access-token>
```

5.2. # Login as demo

GET `https://vrmapi.victronenergy.com/v2/auth/loginAsDemo` Issues an token for accessing the API as the VRM demo user (userid: 22). The demo user has limited access (not all endpoints work for the demo login, e.g. diagnostics is not working) to a few demo installations.

5.3. # Logout

POST `https://vrmapi.victronenergy.com/v2/auth/logout` Accessing this endpoint with a token set in the Authorization header will blacklist the token at the server side for further use.

6. # Installation endpoints

All installation endpoints are parametrized with an installation id in the URL. In the following examples, 1039 will be used as an example installation id. Authentication is required before accessing these endpoints, see the "Authentication endpoints" section.

6.1. # About installation timezones

Installation endpoints all work with unix timestamps as parameters, so they are in UTC. If you want to correct the results based on the timezone of the installation, obtain the timezone of the installation by calling:

`https://vrmapi.victronenergy.com/v2/users/{idUser}/installations` (detailed description below)

The response has a field **"timezone": "Africa/Addis_Ababa"**. This indicates that the timezone in which the installation is located. Use this data to display the unix timestamps in the correct timezone.

6.2. # Get all installations/sites of a given user

(Restricted) admins can retrieve installations of all users, dealers can only retrieve installations for the users that are linked to them, normal users can only retrieve their own installations/sites.

NOTE: As a normal user, you cannot retrieve information about the demo installations from the demo user.

Endpoint: `https://vrmapi.victronenergy.com/v2/users/{idUser}/installations`

Method: **GET**

The response will be something like this for for example:

`https://vrmapi.victronenergy.com/v2/users/3/installations`

```
{
  "success": true,
  "records": [
    {
      "idSite": 100,
      "name": "Test installation",
      "idUser": 1001,
      "pvMax": 12258,

```

```
"reports_enabled": false,
"accessLevel": 1,
"timezone": "UTC",
"owner": true,
"geofence": false,
"geofenceEnabled": false,
"device_icon": "solar"
}
]
}
```

If you add an `extended=1` parameter to this endpoint, more data which is used on the installation overview of VRM is returned. It does not return all installation data, see the *Retrieve diagnostic data / all current installation data* call for that.

Endpoint: `https://vrmapi.victronenergy.com/v2/users/{idUser}/installations?extended=1`

Method: `GET`

The response will be something like this for example:

`https://vrmapi.victronenergy.com/v2/users/3/installations?extended=1`

```
{
  "success": true,
  "records": [
    {
      "idSite": 100,
      "name": "Test installation",
      "idUser": 1001,
      "pvMax": 12258,
      "accessLevel": 1,
      "timezone": "UTC",
      "owner": true,
      "geofence": false,
      "geofenceEnabled": false,
      "device_icon": "solar",
      "alarm": false,
      "last_timestamp": 1472217903,
      "tags": [
        {
          "idTag": 41,
          "name": "ok"
        }
      ],
      "timezone_offset": 7200,
      "extended": [
        {
          "idDataAttribute": 4,
          "code": "lt",
          "description": "Latitude",
          "formatWithUnit": "%.5F LAT",
          "rawValue": "52.7237",
          "textValue": null,
          "formattedValue": "52.72370 LAT"
        }
      ],
    }
  ]
}
```

```
"idDataAttribute": 5,
"code": "lg",
"description": "Longitude",
"formatWithUnit": "%.5F LNG",
"rawValue": "7.0896",
"textValue": null,
"formattedValue": "7.08960 LNG"
},
{
  "idDataAttribute": 135,
  "code": "g2",
  "description": "Grid L2",
  "formatWithUnit": "%.0F W",
  "rawValue": "0",
  "textValue": null,
  "formattedValue": "0 W"
},
{
  "idDataAttribute": 136,
  "code": "g3",
  "description": "Grid L3",
  "formatWithUnit": "%.0F W",
  "rawValue": "0",
  "textValue": null,
  "formattedValue": "0 W"
},
{
  "idDataAttribute": 143,
  "code": "bv",
  "description": "Battery Voltage (System)",
  "formatWithUnit": "%.2F V",
  "rawValue": "54.12",
  "textValue": null,
  "formattedValue": "54.12 V"
},
{
  "idDataAttribute": 144,
  "code": "bs",
  "description": "Battery State of Charge (System)",
  "formatWithUnit": "%.1F %",
  "rawValue": "76",
  "textValue": null,
  "formattedValue": "76.0 %"
},
{
  "idDataAttribute": 147,
  "code": "bc",
  "description": "Battery Current (System)",
  "formatWithUnit": "%.2F A",
  "rawValue": "17.9",
  "textValue": null,
  "formattedValue": "17.90 A"
},
{
  "idDataAttribute": 215,
  "code": "bst",
  "description": "Battery state",
  "formatWithUnit": "%s",
```

```
"rawValue": null,
"textValue": "charging",
"formattedValue": "charging"
},
{
  "rawValue": 8,
  "formatWithUnit": "%.0F W",
  "code": "consumption",
  "description": "Consumption",
  "textValue": null,
  "idDataAttribute": null,
  "formattedValue": "8 W"
},
{
  "rawValue": 0,
  "formatWithUnit": "%.0F W",
  "code": "solar_yield",
  "description": "Solar_yield",
  "textValue": null,
  "idDataAttribute": null,
  "formattedValue": "0 W"
},
{
  "rawValue": 49.0818,
  "formatWithUnit": "%.0F W",
  "code": "from_to_grid",
  "description": "From_to_grid",
  "textValue": null,
  "idDataAttribute": null,
  "formattedValue": "49 W"
},
{
  "rawValue": 0,
  "formatWithUnit": "",
  "code": "generator",
  "description": "Generator",
  "textValue": null,
  "idDataAttribute": null,
  "formattedValue": ""
},
{
  "rawValue": 0,
  "formatWithUnit": "",
  "code": "ac_in",
  "description": "Ac_in",
  "textValue": null,
  "idDataAttribute": null,
  "formattedValue": ""
},
{
  "rawValue": 0,
  "formatWithUnit": "",
  "code": "ac_out",
  "description": "Ac_out",
  "textValue": null,
  "idDataAttribute": null,
  "formattedValue": ""
}
}
```

```
    ],  
    "current_time": "11:25"  
  },  
}  
]  
}
```

6.3. # Retrieve connected devices (e.g. to get device instance)

Endpoint: `https://vrmapi.victronenergy.com/v2/installations/{idSite}/system-overview`

Sample response:

```
{  
  "success":true,  
  "records":{  
    "devices":[  
      {  
        "name":"Gateway",  
        "productCode":"","  
        "productName":"Venus GX",  
        "firmwareVersion":"v2.09",  
        "lastConnection":1505459195,  
        "class":"device-gateway",  
        "loggingInterval":60,  
        "lastPowerUpOrRestart":1504551552  
      },  
      {  
        "name":"Temperature sensor",  
        "productCode":"","  
        "productName":"a162",  
        "lastConnection":1505459195,  
        "class":null,  
        "instance":23  
      }  
    ],  
    "unconfigured_devices":false  
  }  
}
```

6.4. # Retrieve diagnostic data / all current installation data

This endpoint can be used to retrieve all most recent logged data for a given installation. It can only be accessed if the current logged in user has Full access to the specified installation. Endpoint:

`https://vrmapi.victronenergy.com/v2/installations/{idSite}/diagnostics?count=1000`

Parameters:

- count: specifies the maximum number of returned records

Sample response:

```

{
  "success": true,
  "records": [
    {
      "idSite": 1495,
      "timestamp": 1497056046,
      "Device": "Gateway",
      "instance": 0,
      "idDataAttribute": 1,
      "description": "gatewayID",
      "formatWithUnit": "%s",
      "dbusServiceType": null,
      "dbusPath": null,
      "formattedValue": "Venus",
      "dataAttributeEnumValues": [
        {
          "nameEnum": "VGR, VGR2 or VER",
          "valueEnum": 0
        },
        {
          "nameEnum": "Venus",
          "valueEnum": 1
        },
        {
          "nameEnum": "Venus",
          "valueEnum": 2
        }
      ],
      "id": 1
    }
  ],
  "num_records": 1
}

```

6.4.1. # Retrieving energy readings

For retrieving increment type data, such as Energy readings.

Device type	Data type	Description	Code
Gateway	float	Network traffic tx	tx
Gateway	float	Network traffic rx	rx
Battery Monitor	float	Discharged Energy delta	dH21
Battery Monitor	float	Charged Energy delta	dH22
Solar Charger	float	User yield delta	dYU
System overview	float	Grid to battery	Gb
System overview	float	Grid to consumers	Gc
System overview	float	PV to battery	Pb
System overview	float	Gas	Gu
System overview	float	PV to grid	Pg

System overview	float	PV to consumers	Pc
System overview	float	Battery to consumers	Bc
System overview	float	Battery to grid	Bg
System overview	float	Genset to consumers	gc
System overview	float	Genset to battery	gb
System overview	float	Water heating	dW
System overview	float	Air heating	dA
System overview	float	Time off	To
System overview	float	Time generator	Tgs
System overview	float	Time grid	Tg
System overview	float	Time inverting	Ti
PV Inverter	float	Energy delta	dpE
Grid meter	float	Grid Energy from net delta	dgb
Grid meter	float	Grid Energy to net delta	dgs
DC meter	float	Energy - delta	ddE

6.4.2. # Retrieving measurement data over a time range

We distinguish between a few types of data. For each type, examples and available endpoints are listed.

6.4.3. # Graph measurements

Graphs are returned as series of floats, representing data points which can be plotted directly to a line graph.

`GET https://vrmapi.victronenergy.com/v2/installations/1039/widgets/Graph?attributeCodes[]=IV1&attributeCodes[]=IV2&attributeCodes[]=IV3` Returns graph data points for the AC input voltage phase 1-3 for the default instance for the last day.

`GET https://vrmapi.victronenergy.com/v2/installations/1039/widgets/Graph?attributeCodes[]=VS&instance=255&start=1451606400&end=1452815999` Returns graph data points for the starter battery voltage for instance 255 for the first 14 days of the year 2016.

All available data attributes

Device type	Data type	Description	Code
Gateway	enum	gatewayID	d
Gateway	string	Fw Version	v
Gateway	string	Fw Build date	build
Gateway	string	Productid	mi
Gateway	string	MachineName	mn
Gateway	string	Machine serial number	ms
Gateway	enum	Remote support	rss

Gateway	float	Remote support port	rs
Gateway	string	Remote support IP and port	rslpPort
Gateway	enum	Capabilities	cp
Gateway	enum	Boot type	w
Gateway	enum	Auto update	au
Gateway	enum	Update to	ut
Gateway	enum	Update status	us
Gateway	string	Local ip address	ip
Gateway	string	Remote ip address	ipr
Gateway	float	Free space rootfs	fr
Gateway	float	Free space data	fd
Gateway	float	load avg 1m	la1
Gateway	float	load avg 5m	la2
Gateway	float	load avg 10m	la3
Gateway	enum	VRM Log mode	vl
Gateway	float	VRM Log time offset	TO
Gateway	float	VRM Log interval	sl
Gateway	enum	VRM Log ram disk mode	rdm
Gateway	enum	VRM buffer mount state	vb
Gateway	enum	User access level	al
Gateway	enum	Modbus TCP service	mb
Gateway	enum	Oceanvolt motor drive service	od
Gateway	enum	Oceanvolt battery service	ov
Gateway	enum	MQTT service	mq
Gateway	enum	MQTT Local (https)	mql
Gateway	enum	MQTT Local (http)	mqli
Gateway	enum	Two way communication	tw
Gateway	enum	Demo modus on/off	dm
Gateway	string	Time zone	tz
Gateway	enum	ESS battery life state	H4bs
Gateway	enum	DVCC	bol
Gateway	float	ESS battery life SOC limit	H4as
Gateway	float	ESS Minimum SOC (unless grid fails)	H4ms
Gateway	enum	ESS Scheduled Charging	sca
Gateway	enum	VNC Local	Vl
Gateway	enum	VNC Internet	Vi

Gateway	float	Remote VNC port	Vp
Gateway	string	Battery monitor setting	sb
Gateway	string	Active battery service	abs
Gateway	enum	Synchronize VE.Bus SOC	sv
Gateway	enum	Has DC system	shd
Gateway	enum	Modem present	mPr
Gateway	enum	AC Input 1	si1
Gateway	enum	AC Input 2	si2
Gateway	enum	Has AC out system	shao
Gateway	string	Modem last reboot date time	mRd
Gateway	string	Network status	mS
Gateway	string	Network name	mN
Gateway	float	Signal strength	mSt
Gateway	enum	Roaming allowed	mRA
Gateway	enum	Sim-card present	mSimPr
Gateway	string	Sim pin required	mSimPi
Gateway	string	Modem reset reason	mRs
Gateway	float	Latitude	lt
Gateway	float	Longitude	lg
Gateway	float	Course	lc
Gateway	float	Speed	ls
Gateway	enum	Hung processes	hp
Gateway	enum	Zombie processes	zp
Gateway	enum	Data partition status	dps
Gateway	enum	Relay 1 state	cRelay
Gateway	enum	Generator run reason	gaRC
VE.Bus System	enum	Phase rotation	ePR
VE.Bus System	float	Network error count - unit 1	q0
VE.Bus System	float	Network error count - unit 2	q1
VE.Bus System	float	Network error count - unit 3	q2
VE.Bus System	float	Network error count - unit 4	q3
VE.Bus System	float	Network error count - unit 5	q4
VE.Bus System	float	Network error count - unit 6	q5
VE.Bus System	float	Network error count - unit 7	q6
VE.Bus System	float	Network error count - unit 8	q7
VE.Bus System	float	Network error count - unit 9	q8

VE.Bus System	float	Network error count - unit 10	q9
VE.Bus System	float	Network error count - unit 11	q10
VE.Bus System	float	Network error count - unit 12	q11
VE.Bus System	string	mk2 version	vmk2
VE.Bus System	string	Mk2 product name	pmk2
VE.Bus System	string	VE.Bus device	vt
VE.Bus System	string	VE.Bus firmware version	vw
VE.Bus System	string	VE.Bus product id	vvp
VE.Bus System	enum	VE.Bus ShortIDs	vid
VE.Bus System	string	VE.Bus connection	vmc
VE.Bus System	float	Input voltage phase 1	IV1
VE.Bus System	float	Input voltage phase 2	IV2
VE.Bus System	float	Input voltage phase 3	IV3
VE.Bus System	float	Input current phase 1	I11
VE.Bus System	float	Input current phase 2	I12
VE.Bus System	float	Input current phase 3	I13
VE.Bus System	float	Input frequency 1	IF1
VE.Bus System	float	Input frequency 2	IF2
VE.Bus System	float	Input frequency 3	IF3
VE.Bus System	float	Input power 1	IP1
VE.Bus System	float	Input power 2	IP2
VE.Bus System	float	Input power 3	IP3
VE.Bus System	float	Output voltage phase 1	OV1
VE.Bus System	float	Output voltage phase 2	OV2
VE.Bus System	float	Output voltage phase 3	OV3
VE.Bus System	float	Output current phase 1	O11
VE.Bus System	float	Output current phase 2	O12
VE.Bus System	float	Output current phase 3	O13
VE.Bus System	float	Output frequency	OF
VE.Bus System	float	Output power 1	OP1
VE.Bus System	float	Output power 2	OP2
VE.Bus System	float	Output power 3	OP3
VE.Bus System	float	Voltage	CV
VE.Bus System	float	Current	CI
VE.Bus System	float	Battery temperature	CT
VE.Bus System	float	Phase count	PC

VE.Bus System	enum	Active input	AI
VE.Bus System	float	Active input current limit	AILIM
VE.Bus System	enum	Auxiliary output active	AA
VE.Bus System	float	LEDs (?)	LD
VE.Bus System	float	LEDs Blinking (?)	LDB
VE.Bus System	float	VE.Bus state of charge	VSOC
VE.Bus System	float	VE.Bus hidden SOC	VSH
VE.Bus System	enum	VE.Bus state	S
VE.Bus System	enum	VE.Bus Error	ERR
VE.Bus System	enum	Switch Position	s
VE.Bus System	enum	Disable PV inverter	dPV
VE.Bus System	enum	Temperature	eT
VE.Bus System	enum	Low battery	eL
VE.Bus System	enum	Overload	eO
VE.Bus System	enum	Temperatur sensor alarm	eTS
VE.Bus System	float	Hub4 power setpoint phase 1	aps1
VE.Bus System	float	Hub4 power setpoint phase 2	aps2
VE.Bus System	float	Hub4 power setpoint phase 3	aps3
VE.Bus System	enum	Voltage sensor alarm	eVS
VE.Bus System	enum	Hub4 low state of charge	H4LS
VE.Bus System	enum	Hub4 sustain	H4S
VE.Bus System	float	Charge voltage setpoint	Hcsp
VE.Bus System	float	Energy ACIn1 to Inverter	t1
VE.Bus System	float	Energy ACIn2 to Inverter	t2
VE.Bus System	float	Energy ACIn1 to AcOut	t3
VE.Bus System	float	Energy ACIn2 to AcOut	t4
VE.Bus System	float	Energy Inverter to ACIn1	t5
VE.Bus System	float	Energy Inverter to ACIn2	t6
VE.Bus System	float	Energy ACOut to ACIn1	t7
VE.Bus System	float	Energy ACOut to ACIn2	t8
VE.Bus System	float	Inverter To ACOut	t9
VE.Bus System	float	ACOut to Inverter	t10
VE.Bus System	string	Device 0 assistant list	asT0
VE.Bus System	string	Device 1 assistant list	asT1
VE.Bus System	string	Device 2 assistant list	asT2
VE.Bus System	string	Device 3 assistant list	asT3

VE.Bus System	string	Device 4 assistant list	asT4
VE.Bus System	string	Device 5 assistant list	asT5
VE.Bus System	string	Device 6 assistant list	asT6
VE.Bus System	string	Device 7 assistant list	asT7
VE.Bus System	string	Device 8 assistant list	asT8
VE.Bus System	string	Device 9 assistant list	asT9
VE.Bus System	string	Device 10 assistant list	asT10
VE.Bus System	string	Device 11 assistant list	asT11
VE.Bus System	string	Device 12 assistant list	asT12
VE.Bus System	string	Device 13 assistant list	asT13
VE.Bus System	string	Device 14 assistant list	asT14
VE.Bus System	enum	VE.Bus BMS allows battery to be charged	vbc
VE.Bus System	enum	VE.Bus BMS allows battery to be discharged	vbd
VE.Bus System	enum	VE.Bus BMS is expected	vbx
VE.Bus System	enum	VE.Bus BMS error	vbe
VE.Bus System	enum	High DC Ripple	eR
VE.Bus System	enum	Temperature L1	eT1
VE.Bus System	enum	Low battery L1	eL1
VE.Bus System	enum	Overload L1	eO1
VE.Bus System	enum	High DC Ripple L1	eR1
VE.Bus System	enum	Temperature L2	eT2
VE.Bus System	enum	Low battery L2	eL2
VE.Bus System	enum	Overload L2	eO2
VE.Bus System	enum	High DC Ripple L2	eR2
VE.Bus System	enum	Temperature L3	eT3
VE.Bus System	enum	Low battery L3	eL3
VE.Bus System	enum	Overload L3	eO3
VE.Bus System	enum	High DC Ripple L3	eR3
VE.Bus System	string	Error 11 report - unit 1	e0
VE.Bus System	string	Error 11 id - unit 1	c0
VE.Bus System	string	Error 11 report - unit 11	e10
VE.Bus System	string	Error 11 id - unit 11	c10
VE.Bus System	string	Error 11 report - unit 12	e11
VE.Bus System	string	Error 11 id - unit 12	c11
VE.Bus System	string	Error 11 report - unit 13	e12
VE.Bus System	string	Error 11 id - unit 13	c12

VE.Bus System	string	Error 11 report - unit 14	e13
VE.Bus System	string	Error 11 id - unit 14	c13
VE.Bus System	string	Error 11 report - unit 15	e14
VE.Bus System	string	Error 11 id - unit 15	c14
VE.Bus System	string	Error 11 report - unit 16	e15
VE.Bus System	string	Error 11 id - unit 16	c15
VE.Bus System	string	Error 11 report - unit 17	e16
VE.Bus System	string	Error 11 id - unit 17	c16
VE.Bus System	string	Error 11 report - unit 18	e17
VE.Bus System	string	Error 11 id - unit 18	c17
VE.Bus System	string	Error 11 report - unit 2	e1
VE.Bus System	string	Error 11 id - unit 2	c1
VE.Bus System	string	Error 11 report - unit 3	e2
VE.Bus System	string	Error 11 id - unit 3	c2
VE.Bus System	string	Error 11 report - unit 4	e3
VE.Bus System	string	Error 11 id - unit 4	c3
VE.Bus System	string	Error 11 report - unit 5	e4
VE.Bus System	string	Error 11 id - unit 5	c4
VE.Bus System	string	Error 11 report - unit 6	e5
VE.Bus System	string	Error 11 id - unit 6	c5
VE.Bus System	string	Error 11 report - unit 7	e6
VE.Bus System	string	Error 11 id - unit 7	c6
VE.Bus System	string	Error 11 report - unit 8	e7
VE.Bus System	string	Error 11 id - unit 8	c7
VE.Bus System	string	Error 11 report - unit 9	e8
VE.Bus System	string	Error 11 id - unit 9	c8
VE.Bus System	string	Error 11 report - unit 10	e9
VE.Bus System	string	Error 11 id - unit 10	c9
VE.Bus System	enum	Charge state	vcs
Battery Monitor	float	Capacity	ca
Battery Monitor	float	Minimum cell temperature	mcT
Battery Monitor	float	Maximum cell temperature	McT
Battery Monitor	string	Model	BM
Battery Monitor	string	Firmware version	BV
Battery Monitor	string	Serial Number	BSN
Battery Monitor	float	Voltage	V

Battery Monitor	float	Starter battery voltage	VS
Battery Monitor	float	Current	I
Battery Monitor	float	Battery temperature	BT
Battery Monitor	float	Mid-point voltage of the battery bank	VM
Battery Monitor	float	Mid-point deviation of the battery bank	VMD
Battery Monitor	float	Consumed Amphours	CE
Battery Monitor	float	State of charge	SOC
Battery Monitor	float	State of health	SOH
Battery Monitor	float	Time to go	TTG
Battery Monitor	float	CVL - Charge Voltage Limit	mvc
Battery Monitor	float	DVL - Discharge Voltage Limit	mdv
Battery Monitor	float	CCL - Charge Current Limit	mcc
Battery Monitor	float	DCL - Discharge Current Limit	mdc
Battery Monitor	enum	Alarm	Alarm
Battery Monitor	enum	Low voltage alarm	AL
Battery Monitor	enum	High voltage alarm	AH
Battery Monitor	enum	Low starter-voltage alarm	ALS
Battery Monitor	enum	High starter-voltage alarm	AHS
Battery Monitor	enum	Low state-of-charge alarm	ASoc
Battery Monitor	enum	Low battery temperature alarm	ALT
Battery Monitor	enum	High battery temperature alarm	AHT
Battery Monitor	enum	Mid-voltage alarm	AM
Battery Monitor	enum	Low fused-voltage alarm	ALF
Battery Monitor	enum	High fused-voltage alarm	AHF
Battery Monitor	enum	Fuse blown alarm	AFB
Battery Monitor	enum	High internal-temperature alarm	AHIT
Battery Monitor	enum	Cell Imbalance alarm	ACI
Battery Monitor	enum	High charge current alarm	AHC
Battery Monitor	enum	High discharge current alarm	AHD
Battery Monitor	enum	High charge temperature alarm	AHCT
Battery Monitor	enum	Low charge temperature alarm	ALCT
Battery Monitor	enum	Internal error alarm	AIE
Battery Monitor	enum	Low cell voltage	ALCV
Battery Monitor	enum	Relay status	Relay
Battery Monitor	float	Deepest discharge	H1
Battery Monitor	float	Last discharge	H2

Battery Monitor	float	Average discharge	H3
Battery Monitor	float	Charge cycles	H4
Battery Monitor	float	Full discharges	H5
Battery Monitor	float	Total Ah drawn	H6
Battery Monitor	float	Minimum voltage	H7
Battery Monitor	float	Maximum voltage	H8
Battery Monitor	float	Time since last full charge	H9
Battery Monitor	float	Automatic syncs	H10
Battery Monitor	float	Low voltage alarms	H11
Battery Monitor	float	High voltage alarms	H12
Battery Monitor	float	Low starter voltage alarms	H13
Battery Monitor	float	High starter voltage alarms	H14
Battery Monitor	float	Minimum starter voltage	H15
Battery Monitor	float	Maximum starter voltage	H16
Battery Monitor	float	Low fused-voltage alarms	H17
Battery Monitor	float	High fused-voltage alarms	H18
Battery Monitor	float	Minimum fused voltage	H19
Battery Monitor	float	Maximum fused voltage	H20
Battery Monitor	float	Discharged Energy	H21
Battery Monitor	float	Charged Energy	H22
Battery Monitor	enum	State	liS
Battery Monitor	enum	Error	liE
Battery Monitor	enum	System-switch	Sw
Battery Monitor	enum	Balancing	B
Battery Monitor	float	System; number of batteries	nB
Battery Monitor	float	System; batteries parallel	BP
Battery Monitor	float	System; batteries series	BS
Battery Monitor	float	System; number of cells per battery	NrC
Battery Monitor	float	System; minimum cell voltage	mcV
Battery Monitor	float	System; maximum cell voltage	McV
Battery Monitor	float	Diagnostics; shutdowns due to error	Se
Battery Monitor	enum	Diagnostics; 1st last error	Le1
Battery Monitor	enum	Diagnostics; 2nd last error	Le2
Battery Monitor	enum	Diagnostics; 3rd last error	Le3
Battery Monitor	enum	Diagnostics; 4th last error	Le4
Battery Monitor	enum	IO; allow to charge	aCh

Battery Monitor	enum	IO; allow to discharge	aD
Battery Monitor	enum	IO; external relay	eRelay
Battery Monitor	float	History; Min cell-voltage	liH1
Battery Monitor	float	History; Max cell-voltage	liH2
IO Extender	enum	Input 1	IN1
IO Extender	enum	Input 2	IN2
IO Extender	enum	Input 3	IN3
IO Extender	float	Temperature	T1
IO Extender	enum	Output 1	OUT1
IO Extender	enum	Output 2	OUT2
Solar Charger	string	Solarcharger model	ScM
Solar Charger	string	Solar charger version	ScVt
Solar Charger	string	Solar charger serial number	ScSN
Solar Charger	float	Voltage	ScV
Solar Charger	float	Current	ScI
Solar Charger	float	Battery watts	ScW
Solar Charger	float	Battery temperature	ScT
Solar Charger	enum	Load state	SLs
Solar Charger	float	Load current	SLI
Solar Charger	enum	Charger on/off	Scs
Solar Charger	enum	Charge state	ScS
Solar Charger	float	PV voltage	PVV
Solar Charger	float	PV current	PVI
Solar Charger	float	PV power	PVP
Solar Charger	enum	MPPT State	ScMm
Solar Charger	enum	Equalization pending	EqP
Solar Charger	float	Equalization time remaining	EqT
Solar Charger	enum	Relay on the charger	SRelay
Solar Charger	enum	Alarm condition	SceA-unused
Solar Charger	enum	Low batt. voltage alarm	SceL
Solar Charger	enum	High batt. voltage alarm	SceH
Solar Charger	float	Yield today	YT
Solar Charger	float	Maximum charge power today	MCPT
Solar Charger	float	Yield yesterday	YY
Solar Charger	float	Maximum charge power yesterday	MCPY
Solar Charger	enum	Error code	ScERR

Solar Charger	float	User yield	YU
Tank	float	Fluid Level	FL
Tank	float	Fluid Time to Go	FTTG
Tank	string	Product ID	tP
Tank	string	Firmware version	tv
Tank	float	Tank capacity	tc
Tank	enum	Tank fluid type	tf
Tank	float	Tank level	tl
Tank	float	Tank remaining fluid	tr
Tank	enum	Tank status	ts
System overview	enum	Grid status	AgI
System overview	float	PV Power AC-tied on Generator L1	Pj
System overview	float	PV Power AC-tied on Generator L2	Pj2
System overview	float	PV Power AC-tied on Generator L3	Pj3
System overview	float	AC Consumption on Input L1	i1
System overview	float	AC Consumption on Input L2	i2
System overview	float	AC Consumption on Input L3	i3
System overview	float	AC Consumption on Output L1	o1
System overview	float	AC Consumption on Output L2	o2
System overview	float	AC Consumption on Output L3	o3
System overview	string	System type	st
System overview	enum	System state	ss
System overview	enum	AC-Input	AlS
System overview	float	Solar Yield (hourly Delta)	Pt
System overview	enum	#1 Low SOC; discharge disabled	ssls
System overview	enum	#2 BatteryLife is active	ssbl
System overview	enum	#3 Charge disabled by BMS	ssdc
System overview	enum	#4 Discharge disabled by BMS	ssdd
System overview	enum	#5 Slow charge is active	sssc
System overview	enum	#6 Charge disabled by user setting	ssuc
System overview	enum	#7 Discharge disabled by user setting	ssud
System overview	float	PV - AC-coupled on output L1	P
System overview	float	PV - AC-coupled on output L2	P2
System overview	float	PV - AC-coupled on output L3	P3
System overview	float	PV - AC-coupled on input L1	Pi
System overview	float	PV - AC-coupled on input L2	Pi2

System overview	float	PV - AC-coupled on input L3	Pi3
System overview	float	PV - DC-coupled	Pdc
System overview	float	AC Consumption L1	a1
System overview	float	AC Consumption L2	a2
System overview	float	AC Consumption L3	a3
System overview	float	Grid L1	g1
System overview	float	Grid L2	g2
System overview	float	Grid L3	g3
System overview	float	Genset L1	gs1
System overview	float	Genset L2	gs2
System overview	float	Genset L3	gs3
System overview	float	DC System	dc
System overview	float	Voltage	bv
System overview	float	Current	bc
System overview	float	VE.Bus charge current	vc
System overview	float	Battery Power	bp
System overview	float	VE.Bus charge power	vp
System overview	float	Battery State of Charge	bs
System overview	enum	Battery state	bst
System overview	float	Battery Consumed Amphours	ba
System overview	float	Battery Time to Go	bt
System overview	enum	CCGX Relay 2 state	cRelay1
System overview	enum	LG circuit breaker tripped	lgcb
PV Inverter	string	PV Inverter Model	pM
PV Inverter	enum	Fronius device type	pF
PV Inverter	string	PV Inverter Fw version	pV
PV Inverter	enum	Position	pL
PV Inverter	string	Serial	ps
PV Inverter	float	L1 Voltage	pV1
PV Inverter	float	L2 Voltage	pV2
PV Inverter	float	L3 Voltage	pV3
PV Inverter	float	L1 Current	pI1
PV Inverter	float	L2 Current	pI2
PV Inverter	float	L3 Current	pI3
PV Inverter	float	L1 Power	pP1
PV Inverter	float	L2 Power	pP2

PV Inverter	float	L3 Power	pP3
PV Inverter	float	L1 Energy	pE1
PV Inverter	float	L2 Energy	pE2
PV Inverter	float	L3 Energy	pE3
PV Inverter	enum	Status	pS
PV Inverter	float	Power Limit	pLi
PV Inverter	enum	Error	pE
BMS	string	BMS Model	liM
BMS	string	BMS Firmware version	liV
Motor drive	float	Motor RPM	mr
Motor drive	float	Motor temperature	mt
Motor drive	float	Controller DC Voltage	coV
Motor drive	float	Controller DC Current	coC
Motor drive	float	Controller DC Power	coP
Motor drive	float	Controller Temperature	coT
Charger	string	Charger model	cP
Charger	string	Charger version	cF
Charger	string	Charger serial number	cS
Charger	float	Output 1 - voltage	c0V
Charger	float	Output 1 - current	c0I
Charger	float	Output 1 - temperature	c0T
Charger	float	Output 2 - voltage	c1V
Charger	float	Output 2 - current	c1I
Charger	float	Output 3 - voltage	c2V
Charger	float	Output 3 - current	c2I
Charger	float	AC Current	cl
Charger	float	AC Power	cPo
Charger	float	AC Current limit	cll
Charger	enum	Charger on/off	cM
Charger	enum	Charge state	cSt
Charger	enum	Error	cE
Charger	enum	Relay on the charger	cR
Charger	enum	Low voltage alarm	cAl
Charger	enum	High voltage alarm	cAh
ZBM Node	string	Product Id	ZID
ZBM Node	string	Firmware version	ZFV

ZBM Node	enum	Air temperature sensor failure	AZAT
ZBM Node	enum	Battery temperature sensor failure	AZBT
ZBM Node	enum	Bromide pump failure	AZBP
ZBM Node	enum	Electric board failure	AZEB
ZBM Node	enum	High temperature alarm	AZHT
ZBM Node	enum	High voltage alarm	AZHV
ZBM Node	enum	Internal failure	AZIF
ZBM Node	enum	Leak 1 trip alarm	AZL1
ZBM Node	enum	Leak 2 trip alarm	AZL2
ZBM Node	enum	Leak sensor failure	AZLS
ZBM Node	enum	Over current alarm	AZOC
ZBM Node	enum	State of health alarm	AZSH
ZBM Node	enum	Unknown error	AZU
ZBM Node	enum	Zinc pump failure	AZZP
Heating	float	Water heater	hw
Heating	float	Air heater	ha
Heating	float	Water heater energy	hx
Heating	float	Air heater energy	hb
Grid meter	string	Grid meter model	gP
Grid meter	float	Grid L1 - Power	g1p
Grid meter	float	Grid L2 - Power	g2p
Grid meter	float	Grid L3 - Power	g3p
Grid meter	float	Grid L1 - Energy from net	g1f
Grid meter	float	Grid L2 - Energy from net	g2f
Grid meter	float	Grid L3 - Energy from net	g3f
Grid meter	float	Grid L1 - Energy to net	g1r
Grid meter	float	Grid L2 - Energy to net	g2r
Grid meter	float	Grid L3 - Energy to net	g3r
Inverter	float	Output current	iOI1
Inverter	float	Output voltage	iOV1
Inverter	float	Voltage	i0V
Inverter	enum	Inverter on/off/eco	iM
Inverter	enum	Inverter state	iST
Inverter	enum	High temperature alarm	iHT
Inverter	enum	High battery voltage alarm	iHV
Inverter	enum	High AC-Out voltage alarm	iHVA

Inverter	enum	Low temperature alarm	iLT
Inverter	enum	Low battery voltage alarm	iLV
Inverter	enum	Low AC-Out voltage alarm	iVA
Inverter	enum	Overload alarm	iO
Inverter	enum	Ripple alarm	iR
Inverter	string	Firmware version	iFV
Inverter	string	Inverter model	iP
Inverter	string	Inverter serial number	iSN
Generator	float	Phase 1 voltage	G1v
Generator	float	Phase 1 current	G1c
Generator	float	Phase 1 power	G1p
Generator	float	Phase 1 frequency	G1f
Generator	float	Phase 2 voltage	G2v
Generator	float	Phase 2 current	G2c
Generator	float	Phase 2 power	G2p
Generator	float	Phase 2 frequency	G2f
Generator	float	Phase 3 voltage	G3v
Generator	float	Phase 3 current	G3c
Generator	float	Phase 3 power	G3p
Generator	float	Phase 3 frequency	G3f
Generator	float	Starter voltage	Gsv
Generator	enum	Status	GST
Generator	enum	Error	GE
Generator	enum	Auto start	Gas
Generator	float	Engine load	Gel
Generator	float	Engine speed	Ges
Generator	float	Engine operating hours	Geo
Generator	float	Engine coolant temperature	Gct
Generator	float	Engine winding temperature	Gwt
Generator	float	Engine exhaust temperature	Get
Generator	string	Generator model	GP
Generator	string	Firmware version	Gv
Generator start/stop	enum	Fisher Panda genset not detected at AC-input	gaNF
Generator start/stop	enum	Generator not detected at AC-input	gaNG
Temperature sensor	string	Product ID	tsP
Temperature sensor	string	Firmware version	tsV

Temperature sensor	float	Temperature scale factor	tsc
Temperature sensor	float	Temperature offset	tso
Temperature sensor	enum	Temperature type	tst
Temperature sensor	float	Temperature	tsT
Temperature sensor	enum	Temperature status	tsS
Gas meter	enum	ProductId	gi
Gas meter	float	Gas meter	gm
Pulse meter	string	Pulse meter product id	pmP
Pulse meter	float	Pulse meter aggregate	ma
Pulse meter	float	Pulse meter count	mc
Digital input	string	Digital input product id	diP
Digital input	enum	Digital input alarm	dia
Digital input	enum	Digital input state	dis
Digital input	float	Digital input count	dic
Digital input	enum	Digital input type	dit
DC meter	enum	Product Id	dpi
DC meter	string	Firmware version	df
DC meter	float	Voltage	dV
DC meter	float	Current	dI
DC meter	float	Power	dP
DC meter	enum	Output state	dO
DC meter	enum	Error Flags	de
DC meter	float	Energy Total	dE
Meteorological sensor	enum	Product Id	msP
Meteorological sensor	float	Solar Irradiance	msI
Meteorological sensor	float	Wind speed	msW
Meteorological sensor	float	Sensor cell temperature	msC
Meteorological sensor	float	External temperature	msT

Please note: the interval of the returned unix timestamps is determined automatically, and always starts on the unix timestamp you request. If you want consistent unix timestamps, please use rounded unix timestamps and same time range lengths. This is done to ensure speed of our data backend. In general, a larger time range means bigger intervals.

6.4.4. # State changes over a time range

State measurements are a specialized version of the normal measurement data. Instead of series of floats which can be graphed directly, these endpoints return a succession of changes between discrete states.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/widgets/VeBusState> Returns state changes for the VE.Bus State for the default instance for the last day.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/widgets/MPPTState?instance=255&start=1451606400&end=1452815999> Returns state changes for the MPPT State for instance 255 for the first 14 days of the year 2016.

The available state data endpoints are as follows:

```
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/MPPTState
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/VeBusState
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/VeBusWarningsAndAlarms
```

6.4.5. # Summary data

Summary data return a simple set of last recorded values. These endpoints thus cannot be parameterized with a unix timestamp.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/widgets/BatterySummary> Returns latest recorded values for the Battery Summary for the default instance.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/widgets/SolarChargerSummary?instance=255> Returns latest recorded values for the Solar Charger Summary for for instance 255.

The available summary endpoints are as follows:

```
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/BatterySummary
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/BMSDiagnostics
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/HistoricData
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/IOExtenderInOut
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/LithiumBMS
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/MotorSummary
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/PVInverterStatus
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/SolarChargerSummary
https://vrmapi.victronenergy.com/v2/installations/1039/widgets/Status
```

6.4.6. # Other endpoints

These endpoints return a custom data format.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/widgets/Alarm> GET
<https://vrmapi.victronenergy.com/v2/installations/1039/widgets/GPS> GET
<https://vrmapi.victronenergy.com/v2/installations/1039/widgets/HoursOfAC>

6.5. # Retrieve tags

GET <https://vrmapi.victronenergy.com/v2/installations/1039/tags> Returns all tags for the installation.

7. # Download installation data in XLS / CSV format

This endpoint can be used to retrieve base64 encoded exports of installation data. They are used on VRM when you download your data from the advanced page.

Endpoint: `https://vrmapi.victronenergy.com/v2/installations/{idSite}/data-download?start={start_unix_timestamp}&end={end_unix_timestamp}&format=csv|xls`

Method: `GET`

The response will be a base64 encoded string which you can read and save as a file (as CSV or XLSX file depending on the **format** parameter).

Parameters:

- **start**: start unix timestamp of the period you want to download data for
- **end**: end unix timestamp of the period you want to download data for
- **format**: can be csv or xls, depending on the output type you need
- **datatype**: can be log or kwh. kwh returns energy readings for the installation, where log returns all data of relevant data attributes

8. # Retrieve energy readings

8.1. # Introduction

This call allows you to request the so-called energy readings for a given installation/site for a given period and interval. To be able to access the data, you are required to have a valid and active token (see Authentication for more details).

8.2. # Get the energy readings for a given site/installation

The energy readings consist of various data attributes, which can be combined to give a total amount. The values of the different data attributes for the given period and interval are returned, and the sum of the attributes is also included in the response of the endpoint.

Endpoint: `https://vrmapi.victronenergy.com/v2/installations/{installation ID}/stats?type=kwh`

Required parameters (GET):

start: Unix timestamp of the starting timestamp for which the stats should be retrieved

end: Unix timestamp of the ending timestamp for which the stats should be retrieved.

Please note: the granularity of our data is one hour, so if you want to make sure you retrieve accurate statistics, please round your start and end timestamps to closest whole hour, e.g.: `1486022639` should become: `1486022400` or `1486026000`

interval: Interval for which the stats should be grouped in. Possible values: *15mins, hours, days, weeks, months* and *years*

NOTE: At the moment of documenting the 15mins interval feature, the data is not yet stored in the database. Right now, the CCGX is sending the data on an hourly interval. One of the next firmware updates will contain the change to send, and therefore store, the data with an increased resolution, the 15 minute interval. Using the 15 minute


```

    9.1537885
  ],
  [
    1441411816000,
    4.453626
  ],
  [
    1441498216000,
    4.5079915
  ],
  [
    1441584616000,
    16.8285763
  ],
  [
    1441671016000,
    12.1123506
  ],
  [
    1441757416000,
    29.2207336
  ],
  [
    1441843816000,
    29.7107766
  ],
  [
    1441930216000,
    13.5401983
  ],
  [
    1442016616000,
    5.872294
  ]
]
},
"totals": {
  "Pb": 2.5122129,
  "Pc": 184.5783944,
  "Gb": 9.3752899,
  "Gc": 252.0008088,
  "Pg": 64.7871119,
  "Bc": 0.0182044,
  "kwh": 513.2720223
}
}

```

8.3. # Retrieving aggregated statistics

This endpoint returns the total consumption / solar stats for a given installation for four time periods, year, month week and today. You cannot specify an interval or start and end.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/overallstats> Returns aggregated statistics used in the live feed interface for the installation.

GET <https://vrmapi.victronenergy.com/v2/installations/1039/overallstats?type=<type>> Returns aggregated statistics of the specified type.

Optional parameters:

type: You can choose between two types of data to be obtained: *kwh* and *custom*. *kwh* has a predefined set of attributes that reflect energy readings. If other attributes should be obtained, use the type *custom*. See next field to specify which attributes to obtain.

attributeCodes[]: Specify which attributeCodes to retrieve. **Works only with type=custom**. Multiple codes can be sent using the format: `attributeCodes[]=Gb&attributeCodes[]=Gc`

All available energy reading attributes can be found here:

Sample response:

```
{
  "success": true,
  "records": {
    "year": {
      "totals": {
        "Gc": 2890.3096331091,
        "Pc": 444.43205584318,
        "Bc": 285.16498499073,
        "gc": false
      },
      "percentages": {
        "Gc": 80,
        "Pc": 12,
        "Bc": 8,
        "gc": 0
      }
    },
    "month": {
      "totals": {
        "Gc": 181.18626743555,
        "Pc": 109.40366000833,
        "Bc": 46.909044223721,
        "gc": false
      },
      "percentages": {
        "Gc": 54,
        "Pc": 32,
        "Bc": 14,
        "gc": 0
      }
    },
    "week": {
      "totals": {
        "Gc": 52.626889668405,
        "Pc": 20.215319919633,
        "Bc": 7.2363689020276,
        "gc": false
      },
      "percentages": {
```

```
    "Gc": 66,  
    "Pc": 25,  
    "Bc": 9,  
    "gc": 0  
  }  
},  
"today": {  
  "totals": {  
    "Gc": 5.9271823316813,  
    "Pc": 2.7864799629897,  
    "Bc": 2.0481022689492,  
    "gc": false  
  },  
  "percentages": {  
    "Gc": 55,  
    "Pc": 26,  
    "Bc": 19,  
    "gc": 0  
  }  
}  
}  
}
```

8.4. # Personal access token endpoints

Users can create personal access tokens for usage with external services like IFTT. This document describes the API for creating, revoking and listing these tokens. These tokens can be used as an alternative way of authentication against the VRM Gonzales API.

8.4.1. # Create a personal access token

Endpoint: `https://vrmapi.victronenergy.com/v2/users/{idUser}/accesstokens/create`

Method: `POST`

Payload:

```
{  
  "name": "Token #1"  
}
```

Response

```
{  
  "success": true,  
  "token": "abcd1234efab1234",  
  "idAccessToken": 123  
}
```

Response will contain the raw token . After returning there is no way of retrieving the token value again, since it is not stored plaintext in the database. Manually setting the expiry date is not yet supported.

Please note that the name of a token is unique per user, so adding a new token with an already existing name will result in an error.

8.4.2. # Get all personal access tokens of a user

To get all personal access tokens for the current user:

Endpoint: `https://vrmapi.victronenergy.com/v2/users/{idUser}/accesstokens/list`

Method: `GET`

Response will look like:

```
{
  "success": true,
  "tokens": [
    {
      "name": "Token #1",
      "idAccessToken": "50",
      "createdOn": "1508415114",
      "scope": "FULL_ACCESS",
      "expires": null
    },
    {
      "name": "Token #2",
      "idAccessToken": "51",
      "createdOn": "1508415116",
      "scope": "FULL_ACCESS",
      "expires": null
    },
    {
      "name": "Token #3",
      "idAccessToken": "52",
      "createdOn": "1508415119",
      "scope": "FULL_ACCESS",
      "expires": null
    }
  ]
}
```

Please note that the scope is currently fixed to FULL_ACCESS. More scopes will be added later. Expiry can either be a Unix Timestamp, or null (which doesn't expire)

8.4.3. # Revoke a personal access token

Endpoint: `https://vrmapi.victronenergy.com/v2/users/{idUser}/accesstokens/{idAccessToken}/revoke`

Method: `GET`

Response:

```
{
  "success": true,
  "data": {
    "removed": 3
  }
}
```

```
}  
}
```

Removed describes the amount of removed personal access tokens. {idAccessToken} can either be a `*` (wildcard), which will remove all existing personal access tokens for a user, or an identifier valid for the current user.

8.4.4. [# Using the access token](#)

The access token can be used by setting it in the *X-Authorization* header like this:

```
X-Authorization: Token {token}
```