



Fronius Solar API V1

EN

Operating Instructions

System monitoring



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1 Introduction

The Fronius Solar API is a means for third parties to obtain data from various Fronius devices (inverters, Sensor-Cards, StringControls) in a defined format through a central facility which acts as a proxy (e.g. Fronius Datalogger Web or Fronius Solar.web).

Currently, the only way to interact with this API is by making a HTTP request to a specific CGI. The URLs for the particular requests and the devices supporting them are listed at the beginning of each request description. The API is versioned, meaning that multiple versions of this API may be available on the same device. The URLs in this document always point to the version of the API which this document describes. The highest supported version on the device can be queried. See 2.4.1 for details.


In order to check your product for compatibility with this version of the API specification, please see the separate document provided for this purpose.

The API divides roughly into realtime and archive requests: Realtime requests will obtain the data directly from the devices and can therefore only be used when the devices are not in standby or unavailable in any other manner. Archive requests will use the data stored in a central logging facility to obtain the results and are of course not subjected to the former limitation.

2 General Considerations

2.1 Output Formats

Currently, the only output format supported is JSON, a lightweight data interchange format. It is easy to read and write for both humans and machines and it offers some advantages over XML, like basic typing and a leaner structure.

 It is strongly recommended to use appropriate frameworks or tools to parse json objects properly

2.2 Fronius GEN24

2.2.1 Client Generation using OAS

We provide an OpenAPI interface specification ¹ file for GEN24 inverters to support client generation in multiple languages.

Download the file here: <https://www.fronius.com/QR-link/0025>.

To display the spec you can use <https://editor.swagger.io>, for proper client generation please use <https://openapi-generator.tech>.

2.2.2 Inverter to inverter communication

Collecting data from multiple inverters in the same network is not supported by so called system requests on GEN24 devices. To gather the information please invoke ident requests on all GEN24 inverters interested by you.

2.3 Data Types

2.3.1 Numeric Types

JSON only knows one kind of numeric type, which can represent both floating point and integer values. It is however possible to specify a type in JSON description, but it is always in the hands of the interpreting system into which datatype a numeric node is converted.

Which range a certain numeric node actually can have is often determined by the device providing the value, and may also vary depending on the type of device (e.g. "UAC" can be an integer value on older inverters, but a floating point value on newer ones).

This means we cannot reliably specify value ranges for all requests. So it is the responsibility of the API user

¹<https://swagger.io/specification>

to determine whether a value fits into a certain datatype in his language of choice. What we can do is to specify whether a certain value is a floating point value (marked as "number") or an integer value (marked as "integer"), where "integer" must not be interpreted as the datatype "int" like available in C/C++, it just means it is a value without decimal places. For these specifications, please refer to the sections discussing the respective request.

Examples

number 1, -2, 0, 4, 4.0, 0.001, -10.002,

integer 1, -2, 0, 4, -10

unsigned integer 1, 0, 4, 10

unsigned number 1, 0, 4, 10, 0.001, 14.1234


2.3.2 Date/Time

Information on date/time is always (and can only be) represented by a string. The format for these strings inside this API has been defined as follows.

- Strings which include information on both date and time are always in RFC3339 format with time zone offset or Zulu marker.
See Section 5.6 of RFC3339
Example 1: 2011-10-20T10:23:17+02:00 (UTC+2)
Example 2: 2011-10-20T08:23:17Z (UTC)
- Strings which only include information on the date are of the format yyyy-MM-dd.
- Strings which only include information on the time are of the format hh:mm:ss.
- If no information on the time zone is given, any date/time specification is considered to be in local time of the PV system.

2.4 Requests

Currently, the only request protocol supported is HTTP.

 Use HTTP-GET requests to query data from Solar API

2.4.1 Querying of API version

The highest supported version on the device can be queried using the URL
/solar_api/GetAPIVersion.cgi.

Listing 1: Object structure of GetAPIVersion response

```
object {  
  
    # Numeric version of the API.  
    # all Datamanager and Hybridmanager support only APIVersion 1  
    unsigned integer APIVersion;  
  
    # URL under which the CGIs for the requests can be reached.  
    string BaseURL;  
  
    # Compatibility version of current implementation (except GetPowerFlowRealtimeData)  
    # THIS FIELD IS AVAILABLE AND MANDATORY SINCE  
    #   Datamanager 3.9.1-x  
    #   Hybridmanager 1.7.1-x  
    # FORMAT: MAJOR.MINOR-BUILD  
    #   Major: compatibility range (something big changed)  
    #   Minor: feature range (new features added)  
    #   Build: bugfix revision (only bugfixes applied)
```

```
string CompatibilityRange;
}
```

Listing 2: Example: Complete response for GetAPIVersion request

```
{
  "APIVersion" : 1,
  "BaseURL" : "/solar_api/v1/",
  "CompatibilityRange" : "1.5-9"
}
```

2.4.2 Addressing of devices

A specific device is identified by the string parameter *DeviceId*.

For Fronius Solar Net devices this string shall contain the numeric address of the targeted device.

Future generations of Fronius devices may also use non numerical addresses, so this API is designed to allow for both.

2.5 Responses

The response will always be a valid JSON string ready to be evaluated by standard libraries.

If the response is delivered through HTTP, the Content-Type Header shall be either `text/javascript` or `application/json`.

All JSON structures are described using *Orderly JSON*, a textual format for describing JSON data. Please refer to the online documentation on <https://github.com/lloyd/orderly/> for details.

Note that the definitions of some response bodies are not totally accurate, because there's no (known) way to express nodes named after values/channels (e.g. objects which are named "PAC" or "Power"). But each description is accompanied by an example which should clear up any uncertainty.

The contents of the response object will vary depending on the preceding request but it always contains a common response header and a request body.

Listing 3: Object structure of valid response

```
object {
  object Head: {}*;
  object Body: {}*;
}
```

Listing 4: Example: Complete response for GetInverterRealtimeData request on non hybrid system

```
{
  "Body" : {
    "Data" : {
      "DAY_ENERGY" : {
        "Unit" : "Wh",
        "Value" : 16390
      },
      "DeviceStatus" : {
        "ErrorCode" : 0,
        "LEDColour" : 2,
        "LEDState" : 0,
        "MgmtTimerRemainingTime" : -1,
        "StateToReset" : false,
        "StatusCode" : 7
      },
      "FAC" : {
        "Unit" : "Hz",
        "Value" : 49.990000000000002
      },
      "IAC" : {
```



```

        "Unit" : "A",
        "Value" : 17.890000000000001
    },
    "IDC" : {
        "Unit" : "A",
        "Value" : 6.7400000000000002
    },
    "PAC" : {
        "Unit" : "W",
        "Value" : 4097
    },
    "TOTAL_ENERGY" : {
        "Unit" : "Wh",
        "Value" : 8612942
    },
    "UAC" : {
        "Unit" : "V",
        "Value" : 229.90000000000001
    },
    "UDC" : {
        "Unit" : "V",
        "Value" : 674
    },
    "YEAR_ENERGY" : {
        "Unit" : "Wh",
        "Value" : 775271
    }
}
},
"Head" : {
    "RequestArguments" : {
        "DataCollection" : "CommonInverterData",
        "DeviceClass" : "Inverter",
        "DeviceId" : "1",
        "Scope" : "Device"
    },
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2018-03-01T12:49:42+01:00"
}
}
}

```

2.5.1 Availability

A request is listed as "Available" if the response http code differs to 404 (not found). It does not relay to technical compatibility nor functionality.

2.5.2 Common Response Header

The common response header (CRH) is present in every response. It indicates, among other things, whether the request has been successful and the body of the response is valid.

Listing 5: Object Structure of Common Response Header

```

object {
    # Repetition of the parameters which produced this response.
    object {
        # Filled with properties named like the given parameters.
    }* RequestArguments;

    # Information about the response.
    object {

```

```

# Indicates if the request went OK or gives a hint about what went wrong.
# 0 means OK, any other value means something went wrong (e.g. Device not available,
# invalid params, no data in logflash for given time, ...).
integer Code;

# Error message, may be empty.
string Reason;

# Error message to be displayed to the user, may be empty.
string UserMessage;

} Status;

# RFC3339 timestamp in localtime of the datalogger.
# This is the time the request was answered - NOT the time when the data
# was queried from the device.
string Timestamp;

};

```

| Value | Status | Description |
|-------|--------------------|---|
| 0 | OKAY | Request successfully finished, Data are valid |
| 1 | NotImplemented | The request or a part of the request is not implemented yet |
| 2 | Uninitialized | Instance of APIRequest created, but not yet configured |
| 3 | Initialized | Request is configured and ready to be sent |
| 4 | Running | Request is currently being processed (waiting for response) |
| 5 | Timeout | Response was not received within desired time |
| 6 | Argument Error | Invalid arguments/combination of arguments or missing arguments |
| 7 | LNRequestError | Something went wrong during sending/receiving of LN-message |
| 8 | LNRequestTimeout | LN-request timed out |
| 9 | LNParseError | Something went wrong during parsing of successfully received LN-message |
| 10 | ConfigIOError | Something went wrong while reading settings from local config |
| 11 | NotSupported | The operation/feature or whatever is not supported |
| 12 | DeviceNotAvailable | The device is not available |
| 255 | UnknownError | undefined runtime error |

Table 1: Error Code Table

2.5.3 Request Body

The request body contains the actual data produced by the request and is therefore different for each request. The object structures of the various response bodies will be detailed later in the description of the respective API request.

2.6 Timeout

Up to 2 realtime requests are allowed to be performed in parallel with keeping a timeout of 4 seconds between two consecutive calls.

Archive requests are not allowed to be performed in parallel and need to keep a timeout of 120 seconds between two consecutive calls.

3 Enable/Disable

The Solar API's enable/disable feature is available on GEN24 only.

The configuration to enable or disable the Solar API can be found in the WebUI under *Communication - Solar API* (1).

If the Solar API is disabled, a Solar API request will return with a 404-HTTP-error and the message "Solar API

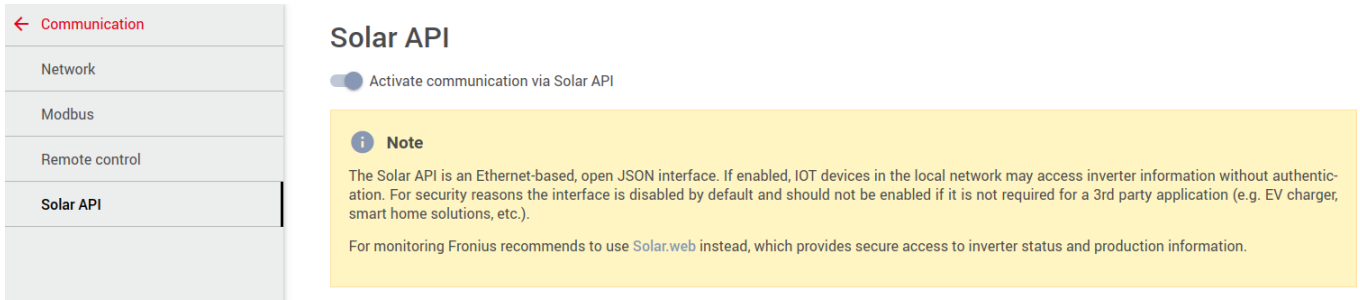


Figure 1: Solar API activation/deactivation

disabled by customer config” will be displayed.

Default enable/disable behaviour:

- For new devices with a bundle version of 1.14.1 or higher the Solar API is deactivated per default.
- For existing devices which are updated, the Solar API remains enabled.
- If a factory reset is performed with existing devices running a bundle version of 1.14.1 or higher, the Solar API will be deactivated per default as well.

4 Realtime Requests

These requests will be provided where direct access to the realtime data of the devices is possible. This is currently the case for the Fronius Datalogger Web and the Fronius Datamanager.

In order to eliminate the need to specify each wanted value separately when making a request or querying each value separately, so called "Data Collections" were defined.

The values in these collections are gathered from one or more Fronius Solar Net messages and supplied to the user in a single response to a certain request.

It may be the case that more values are queried from the device than the user is interested in, but the overhead caused by these superfluous values should be negligible compared to the advantages this strategy provides for the user.

If a device cannot provide some values of a DataCollection (e.g. because they are not implemented on the device) then those values are omitted from the response.

4.1 GetInverterRealtimeData request

This request does not care about the configured visibility of single inverters. All inverters are reported.

4.1.1 Availability

| Platform | Since version |
|--------------------|-----------------------------------|
| Fronius Hybrid | Not all DataCollections supported |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | Not all DataCollections supported |

4.1.2 Collection availability

| DataCollection | supported on | |
|------------------------|------------------------|---------------------------|
| | Fronius Hybrid Systems | Fronius GEN24 |
| CumulationInverterData | Yes | Yes |
| CommonInverterData | Yes | Yes |
| 3PInverterData | Yes | Only on 3 phase inverters |
| MinMaxInverterData | NO | NO |

4.1.3 URL for HTTP requests

/solar_api/v1/GetInverterRealtimeData.cgi

4.1.4 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|----------------|--------|--|---|
| Scope | String | "Device" "System" | Query specific device(s) or whole system (uses collection "CumulationInverterData") |
| Deviceld | String | <i>Solar Net</i> : 0 ...99 | <i>Only needed for Scope "Device"</i> Which inverter to query. |
| DataCollection | String | "CumulationInverterData" "CommonInverterData" "3PInverterData" "MinMaxInverterData" | <i>Only needed for Scope "Device"</i> Selects the collection of data that should be queried from the device. See 4.1.5 for details. |

4.1.5 Data Collections

CumulationInverterData Values which are cumulated to generate a system overview.

| Value name | specific data type | Description |
|--------------|--------------------|---|
| PAC | integer | AC power (negative value for consuming power) |
| DAY_ENERGY | unsigned number | AC Energy generated on current day Non Hybrid: May be imprecise GEN24: will always report null |
| YEAR_ENERGY | unsigned number | AC Energy generated in current year Non Hybrid: May be imprecise GEN24: will always report null |
| TOTAL_ENERGY | unsigned number | AC Energy generated overall Non Hybrid: May be imprecise GEN24: supported since 1.14 |
| DeviceStatus | object | Status information about inverter |

CommonInverterData Values which are provided by all types of Fronius inverters.

| Value name | specific data type | Description |
|--------------|--------------------|---|
| PAC | integer | AC power (negative value for consuming power) |
| SAC | unsigned integer | AC power (absolute) <i>Currently not implemented because not handled correctly by all inverters.</i> |
| IAC | unsigned number | AC current (absolute, accumulated over all lines) |
| UAC | unsigned number | AC voltage |
| FAC | unsigned number | AC frequency |
| IDC | unsigned number | DC current |
| UDC | unsigned number | DC voltage |
| DAY_ENERGY | unsigned number | AC Energy generated on current day Non Hybrid: May be imprecise GEN24: will always report null |
| YEAR_ENERGY | unsigned number | AC Energy generated in current year Non Hybrid: May be imprecise GEN24: will always report null |
| TOTAL_ENERGY | unsigned number | AC Energy generated overall Non Hybrid: May be imprecise GEN24: supported since 1.14 |
| DeviceStatus | object | Status information about inverter |

3PInverterData Values which are provided by 3phase Fronius inverters.

| Value name | specific data type | Description |
|-----------------------|--------------------|--|
| IAC_L1 | unsigned number | AC current Phase 1 (absolute) |
| IAC_L2 | unsigned number | AC current Phase 2 (absolute) |
| IAC_L3 | unsigned number | AC current Phase 3 (absolute) |
| UAC_L1 | unsigned number | AC voltage Phase 1 |
| UAC_L2 | unsigned number | AC voltage Phase 2 |
| UAC_L3 | unsigned number | AC voltage Phase 3 |
| T_AMBIENT | integer | Ambient temperature <i>Most inverter like GEN24 do not provide it. Only provided by CL, XL and IG500/400.</i> |
| ROTATION_SPEED_FAN_FL | unsigned integer | Rotation speed of front left fan |
| ROTATION_SPEED_FAN_FR | unsigned integer | Rotation speed of front right fan |
| ROTATION_SPEED_FAN_BL | unsigned integer | Rotation speed of back left fan |
| ROTATION_SPEED_FAN_BR | unsigned integer | Rotation speed of back right fan |

MinMaxInverterData Minimum- and Maximum-values of various inverter values.

| Value name | specific data type | Description |
|--------------|--------------------|------------------------------------|
| DAY_PMAX | unsigned integer | Maximum AC power of current day |
| DAY_UACMAX | number | Maximum AC voltage of current day |
| DAY_UACMIN | number | Minimum AC voltage of current day |
| DAY_UDCMAX | number | Maximum DC voltage of current day |
| YEAR_PMAX | unsigned integer | Maximum AC power of current year |
| YEAR_UACMAX | number | Maximum AC voltage of current year |
| YEAR_UACMIN | number | Minimum AC voltage of current year |
| YEAR_UDCMAX | number | Maximum DC voltage of current year |
| TOTAL_PMAX | unsigned integer | Maximum AC power of current year |
| TOTAL_UACMAX | number | Maximum AC voltage overall |
| TOTAL_UACMIN | number | Minimum AC voltage overall |
| TOTAL_UDCMAX | number | Maximum DC voltage overall |

4.1.6 Object structure of request body (Scope "Device")

Listing 6: Object structure of request body for GetInverterRealtimeData request (Scope "Device")

```
object {
# Collection of named value-unit pairs according to selected DataCollection.
# Members of Data object are named according to the value they represent (e.g. "PAC").
  object {
    # Value-Unit pair.
    object {
      # Unscaled value.
      # value name based specific data type
      <specific data type> Value;

      # Base unit of the value, never contains any prefixes.
      string Unit;
    } __VALUE_NAME__;
  } * Data;
};
```

4.1.7 Example of request body (Scope "Device")

Listing 7: Reply body for GetInverterRealtimeData scope="Device" and collection="CommonInverterData"

```
{
  "Body" : {
```

```

"Data" : {
  "DAY_ENERGY" : {
    "Unit" : "Wh",
    "Value" : 1393.2
  },
  "DeviceStatus" : {
    "ErrorCode" : 0,
    "LEDColour" : 2,
    "LEDState" : 0,
    "MgmtTimerRemainingTime" : -1,
    "StateToReset" : false,
    "StatusCode" : 7
  },
  "FAC" : {
    "Unit" : "Hz",
    "Value" : 49.969999999999999
  },
  "IAC" : {
    "Unit" : "A",
    "Value" : 0.35999999999999999
  },
  "IDC" : {
    "Unit" : "A",
    "Value" : 0.32000000000000001
  },
  "PAC" : {
    "Unit" : "W",
    "Value" : 84
  },
  "TOTAL_ENERGY" : {
    "Unit" : "Wh",
    "Value" : 1734796.1200000001
  },
  "UAC" : {
    "Unit" : "V",
    "Value" : 232.40000000000001
  },
  "UDC" : {
    "Unit" : "V",
    "Value" : 399.89999999999998
  },
  "YEAR_ENERGY" : {
    "Unit" : "Wh",
    "Value" : 322593.5
  }
}
},
"Head" : {
  "RequestArguments" : {
    "DataCollection" : "CommonInverterData",
    "DeviceClass" : "Inverter",
    "DeviceId" : "1",
    "Scope" : "Device"
  },
  "Status" : {
    "Code" : 0,
    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2019-06-12T15:31:03+02:00"
}
}

```

Listing 8: Reply body for GetInverterRealtimeData scope="Device" and collection="3PInverterData" on Symo Hybrid

```
{
```

```

"Body" : {
  "Data" : {
    "IAC_L1" : {
      "Unit" : "A",
      "Value" : 0.080000000000000002
    },
    "IAC_L2" : {
      "Unit" : "A",
      "Value" : 0.040000000000000001
    },
    "IAC_L3" : {
      "Unit" : "A",
      "Value" : 0.080000000000000002
    },
    "UAC_L1" : {
      "Unit" : "V",
      "Value" : 233.90000000000001
    },
    "UAC_L2" : {
      "Unit" : "V",
      "Value" : 233
    },
    "UAC_L3" : {
      "Unit" : "V",
      "Value" : 230.69999999999999
    }
  }
},
"Head" : {
  "RequestArguments" : {
    "DataCollection" : "3PInverterData",
    "DeviceClass" : "Inverter",
    "DeviceId" : "1",
    "Scope" : "Device"
  },
  "Status" : {
    "Code" : 0,
    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2021-05-19T09:49:39+02:00"
}
}

```

Listing 9: Reply body for GetInverterRealtimeData scope="Device" and collection="3PInverterData" on GEN24 Symo

```

{
  "Body" : {
    "Data" : {
      "IAC_L1" : {
        "Unit" : "A",
        "Value" : 0.39000001549720764
      },
      "IAC_L2" : {
        "Unit" : "A",
        "Value" : 0.38900002837181091
      },
      "IAC_L3" : {
        "Unit" : "A",
        "Value" : 0.3970000147819519
      },
      "UAC_L1" : {
        "Unit" : "V",
        "Value" : 233.10000610351562
      },
      "UAC_L2" : {

```

```

        "Unit" : "V",
        "Value" : 234.5
    },
    "UAC_L3" : {
        "Unit" : "V",
        "Value" : 230.71844482421875
    }
}
},
"Head" : {
    "RequestArguments" : {
        "DataCollection" : "3PInverterData",
        "DeviceClass" : "Inverter",
        "DeviceId" : "1",
        "Scope" : "Device"
    },
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2021-01-19T11:04:36+00:00"
}
}
}

```

Listing 10: Reply body for GetInverterRealtimeData scope="Device" and collection="CommonInverterData" on GEN24 Symo

```

{
    "Body" : {
        "Data" : {
            "DeviceStatus" : {
                "InverterState" : "Running"
            },
            "FAC" : {
                "Unit" : "Hz",
                "Value" : 49.974002838134766
            },
            "IAC" : {
                "Unit" : "A",
                "Value" : 1.5640000402927399
            },
            "IAC_L1" : {
                "Unit" : "A",
                "Value" : 0.3880000114440918
            },
            "IAC_L2" : {
                "Unit" : "A",
                "Value" : 0.38600000739097595
            },
            "IAC_L3" : {
                "Unit" : "A",
                "Value" : 0.39500001072883606
            },
            "IDC" : {
                "Unit" : "A",
                "Value" : 0.66413545608520508
            },
            "PAC" : {
                "Unit" : "W",
                "Value" : 270.0
            },
            "SAC" : {
                "Unit" : "VA",
                "Value" : 274.0
            },
            "UAC" : {

```



```

        "Unit" : "V",
        "Value" : 234.60000101725259
    },
    "UAC_L1" : {
        "Unit" : "V",
        "Value" : 233.19999694824219
    },
    "UAC_L2" : {
        "Unit" : "V",
        "Value" : 234.5
    },
    "UDC" : {
        "Unit" : "V",
        "Value" : 449.9998779296875
    },
    "UDC_3" : {
        "Unit" : "V",
        "Value" : 409.69140625
    }
}
},
"Head" : {
    "RequestArguments" : {
        "DataCollection" : "CommonInverterData",
        "DeviceClass" : "Inverter",
        "DeviceId" : "1",
        "Scope" : "Device"
    },
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-08-28T05:52:49+00:00"
}
}
}

```

Listing 11: Reply body for GetInverterRealtimeData scope="Device" and collection="CumulationInverterData" on GEN24 Primo

```

{
    "Body" : {
        "Data" : {
            "DeviceStatus:" : {
                "InverterState" : "Running"
            },
            "PAC" : {
                "Unit" : "W",
                "Value" : 8.4296154682294417e+252
            }
        }
    },
    "Head" : {
        "RequestArguments" : {
            "DataCollection" : "CumulationInverterData",
            "DeviceClass" : "Inverter",
            "DeviceId" : "1",
            "Scope" : "Device"
        },
        "Status" : {
            "Code" : 0,
            "Reason" : "",
            "UserMessage" : ""
        },
        "Timestamp" : "2019-08-28T05:59:13+00:00"
    }
}
}

```

4.1.8 Object structure of request body (Scope "System")

Listing 12: Object structure of request body for GetInverterRealtimeData request (Scope "System")

```
object {  
# Collection of named object(s) containing values per device and metadata.  
# Members of Data object are named according to the value they represent (e.g. "PAC").  
  object {  
# Value-Unit pair.  
    object {  
# Base unit of the value, never contains any prefixes.  
      string Unit;  
# Unscaled values per device.  
# Property name is the DeviceId to which the value belongs.  
      object {  
        <specific data type> 1; # value from device with index 1.  
        <specific data type> 2; # value from device with index 2.  
        # .. and so on.  
      }* Values;  
    } __VALUE_NAME__;  
  }* Data;  
};
```

4.1.9 Example of request body (Scope "System")

Listing 13: Example of request body for GetInverterRealtimeData request (Scope "System")

```
{  
  "Body" : {  
    "Data" : {  
      "DAY_ENERGY" : {  
        "Unit" : "Wh",  
        "Values" : {  
          "1" : 1393,  
          "2" : 1618,  
          "3" : 1695,  
          "55" : 1698  
        }  
      },  
      "PAC" : {  
        "Unit" : "W",  
        "Values" : {  
          "1" : 84,  
          "2" : 109,  
          "3" : 109,  
          "55" : 108  
        }  
      },  
      "TOTAL_ENERGY" : {  
        "Unit" : "Wh",  
        "Values" : {  
          "1" : 1734796,  
          "2" : 3026782,  
          "3" : 3160499,  
          "55" : 3275219  
        }  
      }  
    },  
  },  
};
```

```

        "YEAR_ENERGY" : {
            "Unit" : "Wh",
            "Values" : {
                "1" : 322593,
                "2" : 385172,
                "3" : 399904,
                "55" : 403993
            }
        }
    },
    "Head" : {
        "RequestArguments" : {
            "DeviceClass" : "Inverter",
            "Scope" : "System"
        },
        "Status" : {
            "Code" : 0,
            "Reason" : "",
            "UserMessage" : ""
        },
        "Timestamp" : "2019-06-12T15:31:04+02:00"
    }
}

```

Listing 14: Example of request body for GetInverterRealtimeData request (Scope "System") on GEN24

```

{
  "Body" : {
    "Data" : {
      "PAC" : {
        "Unit" : "W",
        "Value" : {
          "1" : 271.0
        }
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Inverter",
      "Scope" : "System"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-08-28T05:28:12+00:00"
  }
}

```

4.2 GetSensorRealtimeData request

This request provides data for all channels of a single Fronius Sensor Card. Inactive channels and channels with damaged sensors are not included in the response.

4.2.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | ALWAYS |

☞ This API is useless on Fronius Hybrid systems which are unable to get connected to sensor cards anyway.

☞ API is available but returns an error on GEN24.

4.2.2 URL for HTTP requests

/solar_api/v1/GetSensorRealtimeData.cgi

4.2.3 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|----------------|--------|---------------------------------------|---|
| Scope | String | "Device" "System" | Query specific device(s) or whole system |
| Deviceld | String | <i>Solar Net</i> : 0 ...9 | Which card to query. |
| DataCollection | String | "NowSensorData" "MinMaxSensorData" | Selects the collection of data that should be queried from the device. See 4.2.4 for details. |

4.2.4 Data Collections

NowSensorData The presently measured values of every active channel.

MinMaxSensorData The minimum and maximum values for every time period (day, month, year, total) of every channel.

Some channels do not have a minimum value because it would always be zero. For these channels, the minimum value is not included.

4.2.5 Object structure of request body (DataCollection "NowSensorData")

Listing 15: Object structure of request body for GetSensorRealtimeData request (DataCollection "NowSensorData")

```
object {  
  
    # Collection of named object(s) containing values per channel and metadata.  
    # Members of Data object are named according to the channel index they represent (e.g.  
    # "0").  
    object {  
  
        # Value-Unit pair.  
        object {  
  
            # Value for the channel.  
            number Value;  
  
            # Base unit of the value, never contains any prefixes.  
            string Unit;  
  
        } __CHANNEL_INDEX__;  
  
    }* Data;  
  
};
```

4.2.6 Example of request body (DataCollection "NowSensorData")

Listing 16: Example of request body for GetSensorRealtimeData request (DataCollection "NowSensorData")

```
{
  "Body" : {
    "Data" : {
      "0" : {
        "Unit" : "°C",
        "Value" : -9
      },
      "1" : {
        "Unit" : "°C",
        "Value" : 24
      },
      "2" : {
        "Unit" : "W/m2",
        "Value" : 589
      },
      "4" : {
        "Unit" : "KWh/m2",
        "Value" : 0
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DataCollection" : "NowSensorData",
      "DeviceClass" : "SensorCard",
      "DeviceId" : "1",
      "Scope" : "Device"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2018-03-01T13:25:34+01:00"
  }
}
```

4.2.7 Object structure of request body (DataCollection "MinMaxSensorData")

Listing 17: Object structure of request body for GetSensorRealtimeData request (DataCollection "MinMaxSensorData")

```
object {
  # Collection of named object(s) containing min/max values per channel and metadata.
  # Members of Data object are named according to the channel index they represent (e.g.
  # "0").
  object {
    # Object representing one channel.
    object {
      # Whether this channel is currently active.
      boolean SensorActive;

      # Object representing min/max values of current day.
      object {
        # Maximum value with unit.
        object {
          number Value;
          string Unit;
        } Max;

        # Minimum value with unit.

```

```

        # This object is only present in temperature channels (channel# 0 and 1)
        # as other channels do not have minimum values.
        object {
            number Value;
            string Unit;
        } Min;
    } Day;

    # Object representing min/max values of current month.
    object {
        object {
            number Value;
            string Unit;
        } Max;
        object {
            number Value;
            string Unit;
        } Min;
    } Month;

    # Object representing min/max values of current year.
    object {
        object {
            number Value;
            string Unit;
        } Max;
        object {
            number Value;
            string Unit;
        } Min;
    } Year;

    # Object representing total min/max values.
    object {
        object {
            number Value;
            string Unit;
        } Max;
        object {
            number Value;
            string Unit;
        } Min;
    } Total;

} __CHANNEL_INDEX__;

}* Data;

};

```

4.2.8 Example of request body (DataCollection "MinMaxSensorData")

Listing 18: Example of request body for GetSensorRealtimeData request (DataCollection "MinMaxSensorData")

```

{
  "Body" : {
    "Data" : {
      "0" : {
        "Day" : {
          "Max" : {
            "Unit" : "°C",
            "Value" : 66
          },
          "Min" : {
            "Unit" : "°C",
            "Value" : 46
          }
        }
      }
    }
  }
}

```

```

    }
  },
  "Month" : {
    "Max" : {
      "Unit" : "°C",
      "Value" : 85
    },
    "Min" : {
      "Unit" : "°C",
      "Value" : 0
    }
  },
  "SensorActive" : true,
  "Total" : {
    "Max" : {
      "Unit" : "°C",
      "Value" : 85
    },
    "Min" : {
      "Unit" : "°C",
      "Value" : -35
    }
  },
  "Year" : {
    "Max" : {
      "Unit" : "°C",
      "Value" : 85
    },
    "Min" : {
      "Unit" : "°C",
      "Value" : 0
    }
  }
},
"1" : {
  "Day" : {
    "Max" : {
      "Unit" : "°C",
      "Value" : 27
    },
    "Min" : {
      "Unit" : "°C",
      "Value" : 27
    }
  },
  "Month" : {
    "Max" : {
      "Unit" : "°C",
      "Value" : 77
    },
    "Min" : {
      "Unit" : "°C",
      "Value" : 27
    }
  },
  "SensorActive" : true,
  "Total" : {
    "Max" : {
      "Unit" : "°C",
      "Value" : 187
    },
    "Min" : {
      "Unit" : "°C",
      "Value" : -35
    }
  },
  "Year" : {

```

```

        "Max" : {
            "Unit" : "°C",
            "Value" : 77
        },
        "Min" : {
            "Unit" : "°C",
            "Value" : 27
        }
    }
},
"2" : {
    "Day" : {
        "Max" : {
            "Unit" : "W/m2",
            "Value" : 0
        }
    },
    "Month" : {
        "Max" : {
            "Unit" : "W/m2",
            "Value" : 159
        }
    },
    "SensorActive" : true,
    "Total" : {
        "Max" : {
            "Unit" : "W/m2",
            "Value" : 10036
        }
    },
    "Year" : {
        "Max" : {
            "Unit" : "W/m2",
            "Value" : 159
        }
    }
},
"3" : {
    "Day" : {
        "Max" : {
            "Unit" : "Hz",
            "Value" : 0
        }
    },
    "Month" : {
        "Max" : {
            "Unit" : "Hz",
            "Value" : 0
        }
    },
    "SensorActive" : false,
    "Total" : {
        "Max" : {
            "Unit" : "Hz",
            "Value" : 2975
        }
    },
    "Year" : {
        "Max" : {
            "Unit" : "Hz",
            "Value" : 0
        }
    }
},
"4" : {
    "Day" : {
        "Max" : {

```



```

        "Unit" : "Hz",
        "Value" : 0
    }
},
"Month" : {
    "Max" : {
        "Unit" : "Hz",
        "Value" : 0
    }
},
"SensorActive" : false,
"Total" : {
    "Max" : {
        "Unit" : "Hz",
        "Value" : 2982
    }
},
"Year" : {
    "Max" : {
        "Unit" : "Hz",
        "Value" : 0
    }
}
},
"5" : {
    "Day" : {
        "Max" : {
            "Unit" : "A",
            "Value" : 0
        }
    },
    "Month" : {
        "Max" : {
            "Unit" : "A",
            "Value" : 0
        }
    },
    "SensorActive" : true,
    "Total" : {
        "Max" : {
            "Unit" : "A",
            "Value" : 36934
        }
    },
    "Year" : {
        "Max" : {
            "Unit" : "A",
            "Value" : 0
        }
    }
}
}
},
"Head": {
    "RequestArguments": {
        "DataCollection": "MinMaxSensorData",
        "DeviceClass": "SensorCard",
        "DeviceId": "1",
        "Scope": "Device"
    },
    "Status": {
        "Code": 0,
        "Reason": "",
        "UserMessage": ""
    },
    "Timestamp": "2018-03-01T13:25:34+01:00"
}
}

```

```
}
```

4.3 GetStringRealtimeData request

4.3.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | ALWAYS |

☞ This API is useless on Fronius Hybrid systems which are unable to get connected to string controls anyway.

☞ String Control does not exist for GEN24

4.3.2 URL for HTTP requests

/solar_api/v1/GetStringRealtimeData.cgi

4.3.3 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|----------------|--------|---|--|
| Scope | String | "Device" "System" | Query specific device or whole system |
| DeviceId | String | <i>Solar Net</i> : 0 ...199 | Which device to query. |
| DataCollection | String | "NowStringControlData" "LastErrorStringControlData" "CurrentSumStringControlData" | Selects the collection of data that should be queried from the device. See 4.3.5 for details. |
| TimePeriod | String | "Day" "Year" "Total" | <i>Only needed for Collection "CurrentSumStringControlData"</i> For which time period the current sums should be requested. |

4.3.4 Collection availability

| DataCollection | supported on | | |
|-----------------------------|--------------|---------|-------|
| | Non Hybrid | Hybrid | GEN24 |
| NowStringControlData | YES | useless | YES |
| LastErrorStringControlData | YES | useless | NO |
| CurrentSumStringControlData | YES | useless | NO |

4.3.5 Data Collections

NowStringControlData The presently measured currents of every channels.

LastErrorStringControlData Information about the last error which triggered a service message.

CurrentSumStringControlData Current sums of all channels for a selected time period (day, year or total).

4.3.6 Object structure of request body (DataCollection "NowStringControlData" and "CurrentSumStringControlData")

Listing 19: Object structure of request body for GetStringRealtimeData request (DataCollection "NowStringControlData" and "CurrentSumStringControlData")

```
object {
```

```

# Collection of named object(s) containing values per channel and metadata.
# Members of Data object are named according to the channel index they represent (e.g.
  "0").
object {

  # Value-Unit pair.
  object {

    # Value for the channel.
    number Value;

    # Base unit of the value, never contains any prefixes.
    string Unit;

  } __CHANNEL_INDEX__;

}* Data;

};

```

4.3.7 Example of request body (DataCollection "CurrentSumStringControlData")

Listing 20: Example of request body for GetStringRealtimeData request (DataCollection "CurrentSumStringControlData")

```

{
  "Body" : {
    "Data" : {
      "1" : {
        "Unit" : "Ah",
        "Value" : 0
      },
      "2" : {
        "Unit" : "Ah",
        "Value" : 0
      },
      "3" : {
        "Unit" : "Ah",
        "Value" : 0
      },
      "4" : {
        "Unit" : "Ah",
        "Value" : 0
      },
      "5" : {
        "Unit" : "Ah",
        "Value" : 0
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DataCollection" : "CurrentSumStringControlData",
      "DeviceClass" : "StringControl",
      "DeviceId" : "8",
      "Scope" : "Device",
      "TimePeriod" : "Day"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-13T15:06:54+02:00"
  }
}

```

Listing 21: Reply body for GetStringRealtimeData DataCollection="NowStringControlData" on GEN24

```
{
  "Body" : {
    "Data" : {}
  },
  "Head" : {
    "RequestArguments" : {
      "DataCollection" : "NowStringControlData",
      "DeviceClass" : "StringControl",
      "Scope" : "System"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-08-28T07:20:58+00:00"
  }
}
```

4.3.8 Object structure of request body (DataCollection "LastErrorStringControlData")

Listing 22: Object structure of request body for GetStringRealtimeData request (DataCollection "LastErrorStringControlData")

```
object {
  object {
    # Timestamp when the error was detected.
    string TimeOfError;

    # Average value of all channels
    # at the time the error was detected.
    object {
      number Value;

      # Base unit of the value, never contains any prefixes.
      string Unit;
    } StringAverage;

    # Contains information about every channel
    # at the time the error was detected.
    object {
      # Object representing one channel.
      object {
        # Deviation from string average.
        object {
          number Value;

          # Base unit of the value, never contains any prefixes.
          string Unit;
        } Deviation;

        # Current sum
        object {
          number Value;

          # Base unit of the value, never contains any prefixes.

```

```

        string Unit;

        } Sum;

    } __CHANNEL_INDEX__;

} * Channels;

} Data;
}

```

4.3.9 Example of request body (DataCollection "LastErrorStringControlData")

Listing 23: Example of request body for GetStringRealtimeData request (DataCollection "LastErrorStringControlData")

```

{
  "Body" : {
    "Data" : {
      "Channels" : {
        "1" : {
          "Deviation" : {
            "Unit" : "%",
            "Value" : 5.7000000000000002
          },
          "Sum" : {
            "Unit" : "Ah",
            "Value" : 0.84999999999999998
          }
        },
        "2" : {
          "Deviation" : {
            "Unit" : "%",
            "Value" : -12.6
          },
          "Sum" : {
            "Unit" : "Ah",
            "Value" : 0.69999999999999996
          }
        },
        "3" : {
          "Deviation" : {
            "Unit" : "%",
            "Value" : 7.0999999999999996
          },
          "Sum" : {
            "Unit" : "Ah",
            "Value" : 0.85999999999999999
          }
        },
        "4" : {
          "Deviation" : {
            "Unit" : "%",
            "Value" : 0
          },
          "Sum" : {
            "Unit" : "Ah",
            "Value" : 0
          }
        },
        "5" : {
          "Deviation" : {
            "Unit" : "%",
            "Value" : 0
          },
          "Sum" : {

```

```

        "Unit" : "Ah",
        "Value" : 0
    }
},
"StringAverage" : {
    "Unit" : "Ah",
    "Value" : 0.81000000000000005
},
"TimeOfError" : "2010-10-23T09:32:00+02:00"
}
},
"Head" : {
    "RequestArguments" : {
        "DataCollection" : "LastErrorStringControlData",
        "DeviceClass" : "StringControl",
        "DeviceId" : "8",
        "Scope" : "Device"
    },
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-06-13T15:06:56+02:00"
}
}
}

```

4.3.10 Object structure of request body (DataCollection "NowStringControlData")

Listing 24: Object structure of request body for GetStringRealtimeData request (DataCollection "NowStringControlData")

```

object {
    object {
        # Object representing one channel.
        object {

            number Value;

            # Base unit of the value, never contains any prefixes.
            string Unit;

        } __CHANNEL_INDEX__;
    } Data;
}

```

4.3.11 Example of request body (DataCollection "NowStringControlData")

Listing 25: Example of request body for GetStringRealtimeData request (DataCollection "NowStringControlData")

```

{
    "Body" : {
        "Data" : {
            "1" : {
                "Unit" : "A",
                "Value" : 0
            },
            "2" : {
                "Unit" : "A",
                "Value" : 0
            },
            "3" : {
                "Unit" : "A",

```

```

        "Value" : 0
    },
    "4" : {
        "Unit" : "A",
        "Value" : 0
    },
    "5" : {
        "Unit" : "A",
        "Value" : 0
    }
}
},
"Head" : {
    "RequestArguments" : {
        "DataCollection" : "NowStringControlData",
        "DeviceClass" : "StringControl",
        "DeviceId" : "8",
        "Scope" : "Device"
    },
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-06-13T15:06:57+02:00"
}
}
}

```

4.4 GetLoggerInfo request

This request provides information about the logging device which provides this API.

4.4.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | ALWAYS |

 API is available but returns an error on GEN24.

4.4.2 URL for HTTP requests

/solar_api/v1/GetLoggerInfo.cgi

4.4.3 Object structure of request body

Listing 26: Object structure of request body for GetLoggerInfo request

```

object {
    object {
        # Unique ID of the logging device.
        string UniqueID;

        # String identifying the exact product type.
        # examples: "fronius-hybrid" or "fronius-datamanager-card"
        string ProductID;

        # String identifying the exact hardware platform.
        string PlatformID;

        # Hardware version of the logging device.
    }
}

```

```

string HWVersion;

# Software version of the logging device. (Major.Minor.Revision-Build)
string SWVersion;

# Name of city/country which the user
# selected as time zone.
string TimezoneLocation/[a-zA-Z]+|/;

# Name of the selected time zone.
# May be empty if information not available.
string TimezoneName/[a-zA-Z]+|/;

# UTC offset in seconds east of UTC,
# including adjustments for daylight saving.
integer UTCOffset;

# Default language set on the logging device
# as a two letter abbreviation (e.g. "en").
# NOTE: This attribute will be REMOVED soon
string DefaultLanguage;

# Grid supply tariff
# This field is mandatory only for all Fronius Hybrid inverter
# and Fronius Non Hybrid since 3.3.3-1
number DeliveryFactor;

# The cash factor set on the logging device,
# NOT the factor set on the inverters.
number CashFactor;

# Currency of cash factor set on the logging device,
# NOT the currency set on the inverters.
string CashCurrency;

# The CO2 factor set on the logging device,
# NOT the factor set on the inverters.
number CO2Factor;

# Unit of CO2 factor set on the logging device,
# NOT the unit set on the inverters.
string CO2Unit;

} LoggerInfo;

};

```

 Item "DefaultLanguage" will be removed soon

4.4.4 Example of request body

Listing 27: Example of request body for GetLoggerInfo request

```

{
  "Body" : {
    "LoggerInfo" : {
      "CO2Factor" : 0.52999997138977051,
      "CO2Unit" : "kg",
      "CashCurrency" : "EUR",
      "CashFactor" : 0.11999999731779099,
      "DefaultLanguage" : "en",
      "DeliveryFactor" : 0.25,
      "HWVersion" : "2.4D",
      "PlatformID" : "wilma",
      "ProductID" : "fronius-datamanager-card",

```



```

        "SWVersion" : "3.14.1-2",
        "TimezoneLocation" : "Paris",
        "TimezoneName" : "CEST",
        "UTCOffset" : 7200,
        "UniqueID" : "240.107620"
    }
},
"Head" : {
    "RequestArguments" : {},
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:31:06+02:00"
}
}
}

```

4.5 GetLoggerLEDInfo request

This request provides information about the LED states and colors on the device which provides this API.

4.5.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | ALWAYS |

 API is available but returns an error on GEN24.

4.5.2 URL for HTTP requests

/solar_api/v1/GetLoggerLEDInfo.cgi

4.5.3 Object structure of request body

Listing 28: Object structure of request body for GetLoggerLEDInfo request

```

object {
    object {
        # State of one LED.
        object {
            # Color ("red", "green" or "none").
            string Color;

            # State ("on", "off", "blinking" or "alternating").
            string State;
        } __LED_NAME__ ;
    } * Data;
};

```

4.5.4 Example of request body

Listing 29: Example of request body for GetLoggerLEDInfo request

```
{
  "Body" : {
    "Data" : {
      "PowerLED" : {
        "Color" : "green",
        "State" : "on"
      },
      "SolarNetLED" : {
        "Color" : "green",
        "State" : "on"
      },
      "SolarWebLED" : {
        "Color" : "green",
        "State" : "on"
      },
      "WLANLED" : {
        "Color" : "red",
        "State" : "on"
      }
    }
  },
  "Head" : {
    "RequestArguments" : {},
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:31:07+02:00"
  }
}
```

4.6 GetInverterInfo request

This request provides information about all inverters that are currently being monitored by the logging device. So this means that inverters which are currently not online are also reported by this request, provided these inverters have been seen by the logging device within the last 24 hours.

If information about devices currently online is needed, the *GetActiveDeviceInfo* request should be used. This request also provides information about device classes other than inverters.

4.6.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | ALWAYS |

4.6.2 URL for HTTP requests

/solar_api/v1/GetInverterInfo.cgi

4.6.3 Object structure of request body

Listing 30: Object structure of request body for GetInverterInfo request

```
object {
  # Collection of objects with infos about one inverter,
  # mapped by inverter index.
  object {
```

```

# Info about a single inverter.
# Name of object is the inverter index.
object {

    # Device type of the inverter.
    # GEN24 inverter will always report device type 1.
    integer DT;

    # PV power connected to this inverter (in watts).
    # If none defined, default power for this DT is used.
    # Will provide dc power values since GEN24 version 1.13.5.
    integer PVPower;

    # Custom name of the inverter, assigned by the customer.
    # Provided since 1.18.1-0 on Symo Hybrid
    # Will contain html encoded strings on Datamanager and Symo Hybrid
    # Will contain plain utf-8 text on GEN24
    string CustomName;

    # Whether the device shall be displayed in visualizations according
    # to customer settings. (0 do not show; 1 show)
    # visualization settings.
    unsigned integer Show;

    # Unique ID of the inverter (e.g. serial number).
    string UniqueID;

    # Error code that is currently present on inverter.
    # A value of -1 means that there is no valid error code.
    integer ErrorCode;

    # Status code reflecting the operational state of the inverter.
    # Supported since 1.13.5 on GEN24, older versions report a numeric string here.
    integer StatusCode;

    # Status string reflecting the operational state of the inverter.
    # Only provided for GEN24 since version 1.13.5
    string InverterState;

} __INVERTER_INDEX__;

}* Data;

};

```

4.6.4 Example of request body

Listing 31: Example of request body for GetInverterInfo request

```

{
  "Body" : {
    "Data" : {
      "1" : {
        "CustomName" : "
          &#80;&#114;&#105;&#109;&#111;&#32;&#56;&#46;&#50;&#45;&#49;&#32;&#40;",
        "DT" : 102,
        "ErrorCode" : 0,
        "PVPower" : 500,
        "Show" : 1,
        "StatusCode" : 7,
        "UniqueID" : "38183"
      },
      "2" : {
        "CustomName" : "
          &#80;&#114;&#105;&#109;&#111;&#32;&#53;&#46;&#48;&#45;&#49;&#32;&#50;&#48;"
      },
    },
  },
}

```

```

        "DT" : 86,
        "ErrorCode" : 0,
        "PVPower" : 500,
        "Show" : 1,
        "StatusCode" : 7,
        "UniqueID" : "16777215"
    },
    "3" : {
        "CustomName" : "
            &#71;&#97;&#108;&#118;&#111;&#32;&#51;&#46;&#49;&#45;&#49;&#32;&#50;&#48;" ,
        "DT" : 106,
        "ErrorCode" : 0,
        "PVPower" : 500,
        "Show" : 1,
        "StatusCode" : 7,
        "UniqueID" : "7262"
    },
    "55" : {
        "CustomName" : "
            &#71;&#97;&#108;&#118;&#111;&#32;&#51;&#46;&#48;&#45;&#49;&#32;&#40;&#53;" ,
        "DT" : 224,
        "ErrorCode" : 0,
        "PVPower" : 500,
        "Show" : 1,
        "StatusCode" : 7,
        "UniqueID" : "100372"
    }
}
},
"Head" : {
    "RequestArguments" : {},
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:31:02+02:00"
}
}
}

```

Listing 32: Reply body for GetInverterInfo on GEN24

```

{
    "Body" : {
        "Data" : {
            "1" : {
                "CustomName" : "tr-3pn-01",
                "DT" : 1,
                "PVPower" : 0,
                "Show" : 1,
                "StatusCode" : "Running",
                "UniqueID" : "2930100987160033"
            }
        }
    },
    "Head" : {
        "RequestArguments" : {},
        "Status" : {
            "Code" : 0,
            "Reason" : "",
            "UserMessage" : ""
        },
        "Timestamp" : "2019-08-28T07:47:43+00:00"
    }
}
}

```

4.6.5 Meaning of numerical status codes

The `StatusCode` Field is only reported as numerical value. The meaning of the numbers is shown in the table below.

| Value | Description | provided by | |
|-------|-------------|-------------------------------|-------|
| | | Datamanager and Hybridmanager | GEN24 |
| 0 - 6 | Startup | YES | Yes |
| 7 | Running | YES | Yes |
| 8 | Standby | YES | Yes |
| 9 | Bootloading | YES | No |
| 10 | Error | YES | Yes |
| 11 | Idle | No | Yes |
| 12 | Ready | No | Yes |
| 13 | Sleeping | No | Yes |
| 255 | Unknown | No | Yes |
| | INVALID | No | Yes |

4.7 GetActiveDeviceInfo request

This request provides information about which devices are currently online.

4.7.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | ALWAYS |
| Fronius GEN24 | ALWAYS |

4.7.2 URL for HTTP requests

/solar_api/v1/GetActiveDeviceInfo.cgi

4.7.3 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|-------------|--------|--|--|
| DeviceClass | String | "Inverter" "Storage" "Ohmpilot" ³ "SensorCard" ⁴ "StringControl" ⁴ "Meter" ² "System" ² | Which kind of device class to search for active devices. Uses different response format |

2 3 4

4.7.4 DeviceClass is not System

Listing 33: Object structure of request body for GetActiveDeviceInfo request

```
object {
  # Collection of objects with infos about one inverter,
  # mapped by inverter index.
  object {
    # Info about a single device.
    # Name of object is the device index.
    object {
      # Mandatory Device type of the device.
```

²Supported since version 3.3.4-5

³Supported since version 3.6.1-3

⁴Not listed and provided on GEN24

```

# (Only for Inverter, SensorCard or StringControl; others have -1)
integer DT;

# Optional attribute: serialnumber
# usually supported by new Inverters, OhmPilots, Batteries and Smart Meters
string Serial;

# Channel listing for Sensor Cards
array {
    string;
} ChannelNames;

} __DEVICE_INDEX__;

}* Data;

};

```

Listing 34: Example of request body for GetActiveDeviceInfo Inverter request

```

{
  "Body" : {
    "Data" : {
      "1" : {
        "DT" : 102,
        "Serial": "27135399"
      },
      "2" : {
        "DT" : 86
      },
      "3" : {
        "DT" : 106
      },
      "55" : {
        "DT" : 224
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Inverter"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:30:57+02:00"
  }
}

```

Listing 35: Example of request body for GetActiveDeviceInfo SensorCard request

```

{
  "Body" : {
    "Data" : {
      "1" : {
        "ChannelNames" : [
          "Temperature_1",
          "Temperature_2",
          "Irradiation",
          "Digital_1",
          "Digital_2",
          "Current"
        ],
        "DT" : 254
      }
    }
  }
}

```

```

    "2" : {
      "ChannelNames" : [
        "Temperature_1",
        "Temperature_2",
        "Irradiation",
        "Digital_1",
        "Digital_2",
        "Current"
      ],
      "DT" : 254
    }
  ],
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "SensorCard"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2018-03-01T14:41:12+01:00"
  }
}

```

Listing 36: Reply body for GetActiveDeviceInfo deviceclass=Inverter on GEN24

```

{
  "Body" : {
    "Data" : {
      "1" : {
        "DT" : 1,
        "Serial" : "29091000975090007"
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Inverter"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-08-28T09:02:48+00:00"
  }
}

```

 The item 'DT' is not valid for Inverters on GEN24

4.7.5 DeviceClass is System

Listing 37: Object structure of request body for GetActiveDeviceInfo request

```

object {
  # Collection of objects with infos about one inverter,
  # mapped by inverter index.
  object {
    #name of DeviceClass
    object {

```

```

# Info about a single device.
# Name of object is the device index.
object {

    # Device type only for Inverter, SensorCard or StringControl. others have -1
    integer DT;

    # Optional attribute: serialnumber
    string Serial;

    # This object only exists for SensorCard device class
    array { string } ChannelNames;

} __DEVICE_INDEX__;

} __DEVICE_CLASS__;

}* Data;

};

```

Listing 38: Example of request body for GetActiveDeviceInfo request on non hybrid inverter systems

```

{
  "Body" : {
    "Data" : {
      "Inverter" : {
        "1" : {
          "DT" : 102,
          "Serial" : "27135399"
        },
        "2" : {
          "DT" : 86
        },
        "3" : {
          "DT" : 106
        },
        "55" : {
          "DT" : 224
        }
      },
      "Meter" : {
        "0" : {
          "DT" : -1,
          "Serial" : "16420055"
        },
        "2" : {
          "DT" : -1,
          "Serial" : "475619"
        },
        "3" : {
          "DT" : -1,
          "Serial" : "17362721"
        }
      },
      "Ohmpilot" : {
        "0" : {
          "DT" : -1,
          "Serial" : "12345678"
        }
      },
      "SensorCard" : {
        "1" : {
          "ChannelNames" : [
            "Temperature_1",
            "Temperature_2",
            "Irradiation",

```



```

        "Digital_1",
        "Digital_2",
        "Current"
    ],
    "DT" : 254
  }
},
"Storage" : {},
"StringControl" : {
  "3" : {
    "DT" : 253
  }
}
},
"Head" : {
  "RequestArguments" : {
    "DeviceClass" : "System"
  },
  "Status" : {
    "Code" : 0,
    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2019-06-12T15:30:59+02:00"
}
}
}

```

Listing 39: Example of request body for GetActiveDeviceInfo request on hybrid inverter systems

```

{
  "Body" : {
    "Data" : {
      "Inverter" : {
        "1" : {
          "DT" : 99
        }
      },
      "Meter" : {
        "0" : {
          "DT" : -1,
          "Serial" : "16250161"
        }
      },
      "Ohmpilot" : {},
      "SensorCard" : {},
      "Storage" : {
        "0" : {
          "DT" : -1,
          "Serial" : "26175063"
        }
      },
      "StringControl" : {}
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "System"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:30:59+02:00"
  }
}
}

```

Listing 40: Reply body for GetActiveDeviceInfo deviceclass=Inverter on GEN24

```
{
  "Body" : {
    "Data" : {
      "1" : {
        "DT" : 1,
        "Serial" : "29091000975090007"
      },
      "Meter" : {
        "0" : {
          "DT" : -1,
          "Serial" : "18142251"
        }
      },
      "Ohmpilot" : {
        "0" : {
          "DT" : -1,
          "Serial" : "28136344"
        }
      },
      "Storage" : {}
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "System"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-08-28T08:59:41+00:00"
  }
}
```

 The item 'DT' is not valid for Inverters on GEN24

4.8 GetMeterRealtimeData request

This request provides detailed information about Meter devices. Inactive channels are not included in the response and may vary depending on used metering device and software version. Take care about permanently or temporary missing channels when processing this response.

4.8.1 Availability

| Platform | Since version |
|--------------------|-----------------|
| Fronius Hybrid | ALWAYS |
| Fronius Non Hybrid | 3.3.4-8 |
| Fronius GEN24 | planned in 1.13 |

4.8.2 URL for HTTP requests

/solar_api/v1/GetMeterRealtimeData.cgi

4.8.3 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|-----------|--------|----------------------|-------------------------------|
| Scope | String | "System" "Device" | Mandatory |
| Deviceld | String | 0..65535 | Mandatory on non system scope |

4.8.4 Devicetypes and provided channels

| Group | Fronius Smart Meter | | | | | | Fronius Smart Meter UL | | | | | Generic |
|---------------------------------------|--|--|-----------------|-----------|----------|----------|------------------------|---------------|--|---------------|---------------|--------------------------|
| | 63A-3 | 63A-1 | 50kA-3 | TS 100A-1 | TS 65A-3 | TS 5kA-3 | WNC-3D-240-MB | WNC-3D-480-MB | WND-3D-240-MB | WND-3D-480-MB | WND-3Y-600-MB | |
| Model | 63A-3 | 63A-1 | 50kA-3 | TS 100A-1 | TS 65A-3 | TS 5kA-3 | WNC-3D-240-MB | WNC-3D-480-MB | WND-3D-240-MB | WND-3D-480-MB | WND-3Y-600-MB | SunsSpec Meter |
| Compatibility | hw=0 and sw=2.7 hw=1 and (sw=2.9 or sw=3.0) | hw=1 and sw is 3.00, 3.01, 3.03 or 3.04) | hw=0 and sw=1.9 | sw=1 | sw=1 | sw=1 | sw=26 | sw=26 | hw=16 and sw is 21 or 22 hw=17 and sw is 29 or 30 | | | model=307 or model=70307 |
| Channel | provided (m...andatory, -...never, o...optional) | | | | | | | | | | | |
| Details / Manufacturer | m | m | m | m | m | m | m | m | m | m | m | o |
| Details / Model | m | m | m | m | m | m | m | m | m | m | m | o |
| Details / Serial | m | m | m | m | m | m | m | m | m | m | m | o |
| Current_AC_Phase_1 | m | m | m | m | m | m | m | m | m | m | m | o |
| Current_AC_Phase_2 | m | - | m | - | m | m | o | o | o | o | o | o |
| Current_AC_Phase_3 | m | - | m | - | m | m | o | o | o | o | o | o |
| Current_AC_Sum | - | m | - | m | m | m | m | m | m | m | m | o |
| Enable | m | m | m | m | m | m | m | m | m | m | m | m |
| EnergyReactive_VArAC_Phase_1_Consumed | - | m | - | - | - | - | - | - | - | - | - | - |
| EnergyReactive_VArAC_Phase_1_Produced | - | m | - | - | - | - | - | - | - | - | - | - |
| EnergyReactive_VArAC_Sum_Consumed | m | m | m | m | m | m | - | - | - | - | - | - |
| EnergyReactive_VArAC_Sum_Produced | m | m | m | m | m | m | - | - | - | - | - | - |
| EnergyReal_WAC_Minus_Absolute | m | m | m | m | m | m | m | m | m | m | m | m |
| EnergyReal_WAC_Phase_1_Consumed | - | m | - | - | - | - | m | m | m | m | m | o |
| EnergyReal_WAC_Phase_1_Produced | - | m | - | - | - | - | m | m | m | m | m | o |
| EnergyReal_WAC_Phase_2_Consumed | - | - | - | - | - | - | o | o | o | o | o | o |
| EnergyReal_WAC_Phase_2_Produced | - | - | - | - | - | - | o | o | o | o | o | o |
| EnergyReal_WAC_Phase_3_Consumed | - | - | - | - | - | - | o | o | o | o | o | o |
| EnergyReal_WAC_Phase_3_Produced | - | - | - | - | - | - | o | o | o | o | o | o |
| EnergyReal_WAC_Plus_Absolute | m | m | m | m | m | m | m | m | m | m | m | m |
| EnergyReal_WAC_Sum_Consumed | m | m | m | m | m | m | m | m | m | m | m | m |
| EnergyReal_WAC_Sum_Produced | m | m | m | m | m | m | m | m | m | m | m | m |
| Frequency_Phase_Average | m | m | m | m | m | m | m | m | m | m | m | m |
| Meter_Location_Current | m | m | m | m | m | m | m | m | m | m | m | m |
| PowerApparent_S_Phase_1 | m | m | m | m | m | m | m | m | m | m | m | o |
| PowerApparent_S_Phase_2 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerApparent_S_Phase_3 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerApparent_S_Sum | m | m | m | m | m | m | m | m | m | m | m | m |
| PowerFactor_Phase_1 | m | m | m | m | m | m | m | m | m | m | m | o |
| PowerFactor_Phase_2 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerFactor_Phase_3 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerFactor_Sum | m | m | m | m | m | m | m | m | m | m | m | m |
| PowerReactive_Q_Phase_1 | m | m | m | m | m | m | m | m | m | m | m | o |
| PowerReactive_Q_Phase_2 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerReactive_Q_Phase_3 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerReactive_Q_Sum | m | m | m | m | m | m | m | m | m | m | m | m |

| Group | Fronius Smart Meter | | | | | | Fronius Smart Meter UL | | | | | Generic |
|----------------------------|---------------------|--------------|--------------|--------------|--------------|--------------|------------------------|---------------|---------------|---------------|---------------|------------------|
| | 63A-3 | 63A-1 | 50KA-3 | TS 100A-1 | TS 65A-3 | TS 5kA-3 | WNC-3D-240-MB | WNC-3D-480-MB | WND-3D-240-MB | WND-3D-480-MB | WND-3Y-600-MB | |
| Model | 63A-3 | 63A-1 | 50KA-3 | TS 100A-1 | TS 65A-3 | TS 5kA-3 | WNC-3D-240-MB | WNC-3D-480-MB | WND-3D-240-MB | WND-3D-480-MB | WND-3Y-600-MB | SunsSpec Meter |
| Article Number | 43,0001,1473 | 43,0001,1477 | 43,0001,1478 | 43,0001,0045 | 43,0001,0044 | 43,0001,0046 | | | 43,0001,3529 | 43,0001,3530 | 43,0001,3552 | device dependent |
| PowerReal_P_Phase_1 | m | m | m | m | m | m | m | m | m | m | m | o |
| PowerReal_P_Phase_2 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerReal_P_Phase_3 | m | - | m | - | m | m | o | o | o | o | o | o |
| PowerReal_P_Sum | m | m | m | m | m | m | m | m | m | m | m | m |
| TimeStamp | m | m | m | m | m | m | m | m | m | m | m | m |
| Visible | m | m | m | m | m | m | m | m | m | m | m | m |
| Voltage_AC_PhaseToPhase_12 | m | - | m | - | m | m | o | o | o | o | o | o |
| Voltage_AC_PhaseToPhase_23 | m | - | m | - | m | m | o | o | o | o | o | o |
| Voltage_AC_PhaseToPhase_31 | m | - | m | - | m | m | o | o | o | o | o | o |
| Voltage_AC_Phase_1 | m | m | m | m | m | m | m | m | m | m | m | o |
| Voltage_AC_Phase_2 | m | - | m | - | m | m | o | o | o | o | o | o |
| Voltage_AC_Phase_3 | m | - | m | - | m | m | o | o | o | o | o | o |
| Voltage_AC_Phase_Average | - | - | - | - | - | - | m | m | m | m | m | o |

Some values are optional since meter is able to operate on one or three phases.

4.8.5 Channel Descriptions

| Name | Description |
|--|--|
| Enable | 1...enabled, 0...disabled |
| Visible | 1...use values, 0...incomplete or outdated values |
| Current_AC_Phase_* | absolute values for 63A-3,63A-1 and 50KA-3 only UL and TS meter provide directions feedin negative(-); consumption positive(+) |
| Meter_Location_Current | 0...grid interconnection point (primary meter) 1...load (primary meter) 3...external generator (secondary meters)(multiple) 256-511 subloads (secondary meters)(unique) |
| EnergyReactive_VArAC_Phase_*_Consumed/Produced EnergyReactive_VArAC_Sum_Consumed/Produced | meter specific view |
| EnergyReal_WAC_Plus/Minus_Absolute | system specific view |
| EnergyReal_WAC_Phase_*_Consumed/Produced EnergyReal_WAC_Sum_Consumed/Produced | meter specific view |

The values EnergyReal_WAC_Sum_Produced and EnergyReal_WAC_Sum_Consumed represent the values for the Smart Meter itself. The values EnergyReal_WAC_Minus_Absolute and EnergyReal_WAC_Plus_Absolute represent the values for Solar.web. Now it depends where the Smart Meter is installed (Feed-In-Point or Consumption-Path), so that either EnergyReal_WAC_Minus_Absolute is the same as EnergyReal_WAC_Sum_Produced or EnergyReal_WAC_Sum_Consumed.

4.8.6 Meter Location Dependend Directions (primary meter)

| | | |
|---|---|--|
| Meter_Location_Current | 0 feed in | 1 consumption path |
| PowerReal_P_Sum (+ positive) | consuming from grid | producing power |
| PowerReal_P_Sum (- negative) | feeding in to grid | normal consumption |
| EnergyReal_WAC_Plus_Absolute (absolute counter) | import from grid EnergyReal_WAC_Phase_*_Consumed | producing power * EnergyReal_WAC_Phase_*_Produced |
| EnergyReal_WAC_Minus_Absolute (absolute counter) | export to grid EnergyReal_WAC_Phase_*_Produced | consumption EnergyReal_WAC_Phase_*_Consumed |

* May occur when other power generation is located in load path and producing more power than load can consume.

4.8.7 Meter Location Dependend Directions (secondary meter)

| | | |
|---|--|--|
| Meter_Location_Current | 3 ext. generator | 256-511 subloads |
| PowerReal_P_Sum (+ positive) | generation | load is producing power |
| PowerReal_P_Sum (- negative) | consumption | normal consumption |
| EnergyReal_WAC_Plus_Absolute (absolute counter) | generation EnergyReal_WAC_Phase_*_Produced | producing power * EnergyReal_WAC_Phase_*_Produced |
| EnergyReal_WAC_Minus_Absolute (absolute counter) | consumption EnergyReal_WAC_Phase_*_Consumed | consumption EnergyReal_WAC_Phase_*_Consumed |

* May occur when other power generation is located in load path and producing more power than load can consume.

4.8.8 System-Request

Listing 41: Object structure of response body for GetMeterRealtimeData request

```
# Collection of objects with infos about multiple Meters,
# mapped by serial number.
object {

    #list of single device objects
    object {

        #optional detailed information about device
        #supported since:
        #   Fronius Symo Hybrid      : with version greater than or equal to 1.1.2-14
        #   Non Fronius Symo Hybrid : with version greater than or equal to 3.3.6-14
        object {
            string Serial;

            string Model;

            string Manufacturer;

        } Details;

        #channels of device (textual name and value)
        number * __CHANNEL_NAME__;

    } * DeviceId;

} Data ;
```

Listing 42: Reply body for GetMeterRealtimeData System request

```
{
  "Body" : {
    "Data" : {
      "0" : {
        "Current_AC_Phase_1" : 0.7419999999999999,
        "Current_AC_Phase_2" : 0.6320000000000001,

```

```

"Current_AC_Phase_3" : 0.6540000000000003,
"Details" : {
  "Manufacturer" : "Fronius",
  "Model" : "Smart_Meter_63A",
  "Serial" : "15160189"
},
"Enable" : 1,
"EnergyReactive_VArAC_Sum_Consumed" : 9156420,
"EnergyReactive_VArAC_Sum_Produced" : 87894450,
"EnergyReal_WAC_Minus_Absolute" : 1642802,
"EnergyReal_WAC_Plus_Absolute" : 19838697,
"EnergyReal_WAC_Sum_Consumed" : 19838697,
"EnergyReal_WAC_Sum_Produced" : 1642802,
"Frequency_Phase_Average" : 50,
"Meter_Location_Current" : 0,
"PowerApparent_S_Phase_1" : 172.36660000000001,
"PowerApparent_S_Phase_2" : 147.00319999999999,
"PowerApparent_S_Phase_3" : 152.57820000000001,
"PowerApparent_S_Sum" : 31,
"PowerFactor_Phase_1" : 0,
"PowerFactor_Phase_2" : 0.9799999999999998,
"PowerFactor_Phase_3" : 1,
"PowerFactor_Sum" : 0.8199999999999995,
"PowerReactive_Q_Phase_1" : 12.550000000000001,
"PowerReactive_Q_Phase_2" : 5.8099999999999996,
"PowerReactive_Q_Phase_3" : 0,
"PowerReactive_Q_Sum" : 18.359999999999999,
"PowerReal_P_Phase_1" : 0,
"PowerReal_P_Phase_2" : -40.560000000000002,
"PowerReal_P_Phase_3" : 15.029999999999999,
"PowerReal_P_Sum" : -25.530000000000001,
"TimeStamp" : 1561364909,
"Visible" : 1,
"Voltage_AC_PhaseToPhase_12" : 402.60000000000002,
"Voltage_AC_PhaseToPhase_23" : 403.5,
"Voltage_AC_PhaseToPhase_31" : 403.19999999999999,
"Voltage_AC_Phase_1" : 232.30000000000001,
"Voltage_AC_Phase_2" : 232.59999999999999,
"Voltage_AC_Phase_3" : 233.30000000000001
},
"1" : {
"Current_AC_Phase_1" : -0.58310449123382568,
"Current_AC_Phase_2" : -0.67854827642440796,
"Current_AC_Phase_3" : -0.7008516788482666,
"Current_AC_Sum" : -1.9625044465065002,
"Details" : {
  "Manufacturer" : "Fronius",
  "Model" : "CCS_WattNode_WNC-3D-480-MB",
  "Serial" : "186477"
},
"Enable" : 1,
"EnergyReal_WAC_Minus_Absolute" : 7336854,
"EnergyReal_WAC_Phase_1_Consumed" : 1320806,
"EnergyReal_WAC_Phase_1_Produced" : 1933071,
"EnergyReal_WAC_Phase_2_Consumed" : 158238,
"EnergyReal_WAC_Phase_2_Produced" : 3043466,
"EnergyReal_WAC_Phase_3_Consumed" : 179872,
"EnergyReal_WAC_Phase_3_Produced" : 2912264,
"EnergyReal_WAC_Plus_Absolute" : 1106969,
"EnergyReal_WAC_Sum_Consumed" : 1106969,
"EnergyReal_WAC_Sum_Produced" : 7336854,
"Frequency_Phase_Average" : 50.116844177246094,
"Meter_Location_Current" : 256,
"PowerApparent_S_Phase_1" : 135.04127502441406,
"PowerApparent_S_Phase_2" : 160.43267822265625,
"PowerApparent_S_Phase_3" : 163.04228210449219,
"PowerApparent_S_Sum" : 458.5162353515625,

```

```

"PowerFactor_Phase_1" : 1,
"PowerFactor_Phase_2" : 1,
"PowerFactor_Phase_3" : 1,
"PowerFactor_Sum" : 1,
"PowerReactive_Q_Phase_1" : 0,
"PowerReactive_Q_Phase_2" : 0,
"PowerReactive_Q_Phase_3" : 0,
"PowerReactive_Q_Sum" : 0,
"PowerReal_P_Phase_1" : -135.04127502441406,
"PowerReal_P_Phase_2" : -160.43267822265625,
"PowerReal_P_Phase_3" : -163.04228210449219,
"PowerReal_P_Sum" : -458.5162353515625,
"TimeStamp" : 1561364987,
"Visible" : 1,
"Voltage_AC_PhaseToPhase_12" : 405.32907104492188,
"Voltage_AC_PhaseToPhase_23" : 406.23068237304688,
"Voltage_AC_PhaseToPhase_31" : 402.03070068359375,
"Voltage_AC_Phase_1" : 231.59017944335938,
"Voltage_AC_Phase_2" : 236.43516540527344,
"Voltage_AC_Phase_3" : 232.63450622558594,
"Voltage_AC_Phase_Average" : 233.55328369140625
},
"2" : {
  "Current_AC_Phase_1" : 0.578999999999999996,
  "Current_AC_Sum" : 0.578999999999999996,
  "Details" : {
    "Manufacturer" : "Fronius",
    "Model" : "Smart_Meter_63A-1",
    "Serial" : "15160009"
  },
  "Enable" : 1,
  "EnergyReactive_VArAC_Phase_1_Consumed" : 260,
  "EnergyReactive_VArAC_Phase_1_Produced" : 8261790,
  "EnergyReactive_VArAC_Sum_Consumed" : 260,
  "EnergyReactive_VArAC_Sum_Produced" : 8261790,
  "EnergyReal_WAC_Minus_Absolute" : 0,
  "EnergyReal_WAC_Phase_1_Consumed" : 5670793,
  "EnergyReal_WAC_Phase_1_Produced" : 0,
  "EnergyReal_WAC_Plus_Absolute" : 5670793,
  "EnergyReal_WAC_Sum_Consumed" : 5670793,
  "EnergyReal_WAC_Sum_Produced" : 0,
  "Frequency_Phase_Average" : 50,
  "Meter_Location_Current" : 257,
  "PowerApparent_S_Phase_1" : 135.19,
  "PowerApparent_S_Sum" : 135.19,
  "PowerFactor_Phase_1" : 0.969999999999999997,
  "PowerFactor_Sum" : 0.969999999999999997,
  "PowerReactive_Q_Phase_1" : -22.6299999999999999,
  "PowerReactive_Q_Sum" : -22.6299999999999999,
  "PowerReal_P_Phase_1" : 132.0999999999999999,
  "PowerReal_P_Sum" : 132.0999999999999999,
  "TimeStamp" : 1561365038,
  "Visible" : 1,
  "Voltage_AC_Phase_1" : 233.5
},
"3" : {
  "Details" : {
    "Manufacturer" : "Fronius",
    "Model" : "SO_Meter_at_inverter_40",
    "Serial" : "n.a."
  },
  "Enable" : 1,
  "Meter_Location_Current" : 258,
  "TimeStamp" : 1560942897,
  "EnergyReal_WAC_Minus_Relative" : 0,
  "EnergyReal_WAC_Plus_Relative" : 0,
  "PowerReal_P_Sum" : 0,

```

```

    "Visible" : 1
  },
  "4": {
    "Current_AC_Phase_1": 0,
    "Current_AC_Phase_2": 0,
    "Current_AC_Phase_3": 0,
    "Current_AC_Sum": 0,
    "Details": {
      "Manufacturer": "Fronius",
      "Model": "CCS_WattNode_WND-3Y-600-MB",
      "Serial": "475619"
    },
    "Enable": 1,
    "EnergyReal_WAC_Minus_Absolute": 3321,
    "EnergyReal_WAC_Phase_1_Consumed": 3321,
    "EnergyReal_WAC_Phase_1_Produced": 10996,
    "EnergyReal_WAC_Phase_2_Consumed": 0,
    "EnergyReal_WAC_Phase_2_Produced": 0,
    "EnergyReal_WAC_Phase_3_Consumed": 0,
    "EnergyReal_WAC_Phase_3_Produced": 14,
    "EnergyReal_WAC_Plus_Absolute": 11010,
    "EnergyReal_WAC_Sum_Consumed": 3321,
    "EnergyReal_WAC_Sum_Produced": 11010,
    "Frequency_Phase_Average": 49.9833869934082,
    "Meter_Location_Current": 259,
    "PowerApparent_S_Phase_1": 0,
    "PowerApparent_S_Phase_2": 0,
    "PowerApparent_S_Phase_3": 0,
    "PowerApparent_S_Sum": 0,
    "PowerFactor_Phase_1": 1,
    "PowerFactor_Phase_2": 1,
    "PowerFactor_Phase_3": 1,
    "PowerFactor_Sum": 1,
    "PowerReactive_Q_Phase_1": 0,
    "PowerReactive_Q_Phase_2": 0,
    "PowerReactive_Q_Phase_3": 0,
    "PowerReactive_Q_Sum": 0,
    "PowerReal_P_Phase_1": 0,
    "PowerReal_P_Phase_2": 0,
    "PowerReal_P_Phase_3": 0,
    "PowerReal_P_Sum": 0,
    "TimeStamp": 1519911921,
    "Visible": 1,
    "Voltage_AC_PhaseToPhase_12": 238.15383911132812,
    "Voltage_AC_PhaseToPhase_23": 0,
    "Voltage_AC_PhaseToPhase_31": 232.91676330566406,
    "Voltage_AC_Phase_1": 404.52679443359375,
    "Voltage_AC_Phase_2": 231.70884704589844,
    "Voltage_AC_Phase_3": 232.72479248046875,
    "Voltage_AC_Phase_Average": 289.6534729003906
  },
  "5": {
    "Current_AC_Phase_1": 0,
    "Current_AC_Phase_2": 0,
    "Current_AC_Phase_3": 0,
    "Details": {
      "Manufacturer": "Fronius",
      "Model": "Smart_Meter_50kA-3",
      "Serial": "17362721"
    },
    "Enable": 1,
    "EnergyReactive_VArAC_Sum_Consumed": 34,
    "EnergyReactive_VArAC_Sum_Produced": 174,
    "EnergyReal_WAC_Minus_Absolute": 3940,
    "EnergyReal_WAC_Plus_Absolute": 434,
    "EnergyReal_WAC_Sum_Consumed": 3940,
    "EnergyReal_WAC_Sum_Produced": 434,

```



```

    "Frequency_Phase_Average": 49.900000743567944,
    "Meter_Location_Current": 3,
    "PowerApparent_S_Phase_1": 0,
    "PowerApparent_S_Phase_2": 0,
    "PowerApparent_S_Phase_3": 0,
    "PowerApparent_S_Sum": 0,
    "PowerFactor_Phase_1": 0.9999999776482582,
    "PowerFactor_Phase_2": 0.9999999776482582,
    "PowerFactor_Phase_3": 0.9999999776482582,
    "PowerFactor_Sum": 0.9999999776482582,
    "PowerReactive_Q_Phase_1": 0,
    "PowerReactive_Q_Phase_2": 0,
    "PowerReactive_Q_Phase_3": 0,
    "PowerReactive_Q_Sum": 0,
    "PowerReal_P_Phase_1": 0,
    "PowerReal_P_Phase_2": 0,
    "PowerReal_P_Phase_3": 0,
    "PowerReal_P_Sum": 0,
    "TimeStamp": 1519911921,
    "Visible": 1,
    "Voltage_AC_PhaseToPhase_12": 404.90001923171803,
    "Voltage_AC_PhaseToPhase_23": 404.50001921271905,
    "Voltage_AC_PhaseToPhase_31": 404.4000192079693,
    "Voltage_AC_Phase_1": 233.70001110015437,
    "Voltage_AC_Phase_2": 233.80001110490412,
    "Voltage_AC_Phase_3": 233.3000110811554
  }
}
},
"Head" : {
  "RequestArguments" : {
    "DeviceClass" : "Meter",
    "Scope" : "System"
  },
  "Status" : {
    "Code" : 0,
    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2019-06-24T10:31:54+02:00"
}
}
}

```

Examples for GEN24 are identical.

4.8.9 Device-Request

Listing 43: Object structure of response body for GetMeterRealtimeData request

```

# object with detailed informations about one Meter,
object {
  object {
    string Serial;

    string Model;

    string Manufacturer;
  } Details;

  #channels of device (textual name and value)
  number * __CHANNEL_NAME__;
} Data ;

```

Listing 44: Reply body for GetMeterRealtimeData Device request

```

{
  "Body" : {
    "Data" : {
      "Current_AC_Phase_1" : 0.6189999999999999,
      "Current_AC_Phase_2" : 0.6879999999999994,
      "Current_AC_Phase_3" : 0.55100000000000005,
      "Details" : {
        "Manufacturer" : "Fronius",
        "Model" : "Smart_Meter_63A",
        "Serial" : "15480258"
      },
      "Enable" : 1,
      "EnergyReactive_VArAC_Sum_Consumed" : 2183700,
      "EnergyReactive_VArAC_Sum_Produced" : 47100,
      "EnergyReal_WAC_Minus_Absolute" : 4075753,
      "EnergyReal_WAC_Plus_Absolute" : 941840,
      "EnergyReal_WAC_Sum_Consumed" : 941840,
      "EnergyReal_WAC_Sum_Produced" : 4075753,
      "Frequency_Phase_Average" : 50,
      "Meter_Location_Current" : 0,
      "PowerApparent_S_Phase_1" : 143.9794,
      "PowerApparent_S_Phase_2" : 159.5472,
      "PowerApparent_S_Phase_3" : 127.44630000000002,
      "PowerApparent_S_Sum" : 211.36000000000001,
      "PowerFactor_Phase_1" : 0.9799999999999998,
      "PowerFactor_Phase_2" : 1,
      "PowerFactor_Phase_3" : 1,
      "PowerFactor_Sum" : 1,
      "PowerReactive_Q_Phase_1" : 9.9000000000000004,
      "PowerReactive_Q_Phase_2" : 0,
      "PowerReactive_Q_Phase_3" : 4.7999999999999998,
      "PowerReactive_Q_Sum" : 14.699999999999999,
      "PowerReal_P_Phase_1" : -75,
      "PowerReal_P_Phase_2" : -74.28000000000001,
      "PowerReal_P_Phase_3" : -62.079999999999998,
      "PowerReal_P_Sum" : -211.36000000000001,
      "TimeStamp" : 1560430330,
      "Visible" : 1,
      "Voltage_AC_PhaseToPhase_12" : 402.30000000000001,
      "Voltage_AC_PhaseToPhase_23" : 401.10000000000002,
      "Voltage_AC_PhaseToPhase_31" : 401.69999999999999,
      "Voltage_AC_Phase_1" : 232.59999999999999,
      "Voltage_AC_Phase_2" : 231.90000000000001,
      "Voltage_AC_Phase_3" : 231.30000000000001
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Meter",
      "DeviceId" : "0",
      "Scope" : "Device"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-13T14:52:10+02:00"
  }
}

```

Examples for GEN24 are identical.

4.9 *GetStorageRealtimeData* request

This request provides detailed information about batteries. Inactive channels are not included in the response and may vary depended on battery used and software version. Take care about permanently or temporary missing

channels when processing this response.

4.9.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | 1.1.2-13 |
| Fronius Non Hybrid | NOT AVAILABLE |
| Fronius GEN24 | 1.13 |

4.9.2 3rd Party Batteries


will be displayed since HybridManager version 1.13.1-x and Solar API Version 1.5-17. Older versions reported an error:

Listing 45: Former response body for GetStorageRealtimeData request using BYD Box

```
{
  "Body" : {
    "Data" : {}
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Storage",
      "DeviceId" : "0",
      "Scope" : "Device"
    },
    "Status" : {
      "Code" : 255,
      "Reason" : "battery_type 'BYD' is not supported",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-03T17:01:01+02:00"
  }
}
```

4.9.3 Supported

| manufacturer | model | versions |
|--------------|-----------------------|--|
| Fronius | Fronius Solar Battery | bms sw 0x18XX |
| BYD | BYD Battery-Box HV | protocol 0x0 - 0x1ffff |
| LG-Chem | Resu H | dcdc sw 0x5046 - 0x50ff dcdc sw 0x7046 - 0x70ff |

 If storage version is incompatible, it will be operative and an inconsistency warning will be shown to update the storage if possible.

4.9.4 URL for HTTP requests

/solar_api/v1/GetStorageRealtimeData.cgi

4.9.5 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|-----------|--------|----------------------|-------------------------------|
| Scope | String | "System" "Device" | Mandatory |
| Devid | String | 0..65535 | Mandatory on non system scope |

4.9.6 Reference to manual

Reference to Fronius Energy Package and 3rd Party support can be found here:

<https://www.fronius.com/~/downloads/Solar%20Energy/Operating%20Instructions/42%2C0426%2C0222%2CEN.pdf>

4.9.7 Channel Descriptions

Table 3: Channel and description for control section

| Name of channel | Description | Available | | |
|------------------------|---|-----------------------|----------------|---------|
| | | Fronius Solar Battery | LG Chem Resu H | BYD Box |
| Details / Manufacturer | name of manufacturer | always | always | always |
| Details / Model | model of battery | always | always | always |
| Details / Serial | unique identification serial | always | always | always |
| TimeStamp | last timestamp data has been refreshed | always | always | always |
| Enable | device is managed (1.0) or disconnected (0.0) | always | always | always |
| StateOfCharge_Relative | relative charged capacity in % | always | always | always |
| Capacity_Maximum | current max capacity | always | always | always |
| DesignedCapacity | max designed capacity | always | always | always |
| Current_DC | battery output current (+ charging) | always | always | always |
| Voltage_DC | battery output voltage | always | always | always |
| Temperature_Cell | temperature in degree celsius | always | always | always |

Table 4: Channel and description for module section (only Solar Battery provides module informations)

| Name of channel | Description | Available | | |
|--------------------------|-------------------|-----------------------|----------------|---------|
| | | Fronius Solar Battery | LG Chem Resu H | BYD Box |
| Details / Manufacturer | manufacturer | always | - | - |
| Details / Model | model identifier | always | - | - |
| Details / Serial | unique identifier | always | - | - |
| Capacity_Maximum | | always | - | - |
| Current_DC | | always | - | - |
| CycleCount_BatteryCell | | always | - | - |
| DesignedCapacity | | always | - | - |
| Enable | | always | - | - |
| StateOfCharge_Relative | | always | - | - |
| Status_BatteryCell | | always | - | - |
| Temperature_Cell | | always | - | - |
| Temperature_Cell_Maximum | | always | - | - |
| Temperature_Cell_Minimum | | always | - | - |
| TimeStamp | | always | - | - |
| Voltage_DC | | always | - | - |
| Voltage_DC_Maximum_Cell | | always | - | - |
| Voltage_DC_Minimum_Cell | | always | - | - |

4.9.8 System-Request

Listing 46: Object structure of response body for GetStorageRealtimeData request

```
# object with detailed informations about one Battery
object {
  object {
    object {
      object {
        # serial number of battery
        string Serial;
      }
    }
  }
}
```

Table 2: Channel and value description

| Name of channel | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--|--------------|-------------|-----------------|----------|-----------------|------------|-----------------|-----------|-----------------|---------------|-----------------|------------------|-----------------|------------------|-----------------|--------------|-----------------|----------------|-----------------|----------|-----------------|------------------|-----------------|---------------------|-----------------|---------------------|-----------------|------------------------|-----------------|----------------|-----------------|----------------|-----------------|----------|
| Status_BatteryCell | <p>Fronius Solar Battery at section Modules</p> <p>Previous and current state of a battery cell. One Byte printed in hexadecimal. 0xYX (Y: Current status, X: Previous status) Meaning of numerical status codes:</p> <table border="1"> <thead> <tr> <th>Status value</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>0₁₆</td><td>RESERVED</td></tr> <tr><td>1₁₆</td><td>Pre Charge</td></tr> <tr><td>2₁₆</td><td>Initial</td></tr> <tr><td>3₁₆</td><td>Normal Charge</td></tr> <tr><td>4₁₆</td><td>Charge Terminate</td></tr> <tr><td>5₁₆</td><td>Normal Discharge</td></tr> <tr><td>6₁₆</td><td>Over Voltage</td></tr> <tr><td>7₁₆</td><td>Over Discharge</td></tr> <tr><td>8₁₆</td><td>RESERVED</td></tr> <tr><td>9₁₆</td><td>Over Temp Charge</td></tr> <tr><td>A₁₆</td><td>Over Current Charge</td></tr> <tr><td>B₁₆</td><td>Over Temp Discharge</td></tr> <tr><td>C₁₆</td><td>Over Current Discharge</td></tr> <tr><td>D₁₆</td><td>Cell Unbalance</td></tr> <tr><td>E₁₆</td><td>Charge Suspend</td></tr> <tr><td>F₁₆</td><td>RESERVED</td></tr> </tbody> </table> | Status value | Description | 0 ₁₆ | RESERVED | 1 ₁₆ | Pre Charge | 2 ₁₆ | Initial | 3 ₁₆ | Normal Charge | 4 ₁₆ | Charge Terminate | 5 ₁₆ | Normal Discharge | 6 ₁₆ | Over Voltage | 7 ₁₆ | Over Discharge | 8 ₁₆ | RESERVED | 9 ₁₆ | Over Temp Charge | A ₁₆ | Over Current Charge | B ₁₆ | Over Temp Discharge | C ₁₆ | Over Current Discharge | D ₁₆ | Cell Unbalance | E ₁₆ | Charge Suspend | F ₁₆ | RESERVED |
| Status value | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 ₁₆ | RESERVED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 ₁₆ | Pre Charge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 ₁₆ | Initial | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 ₁₆ | Normal Charge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 ₁₆ | Charge Terminate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 ₁₆ | Normal Discharge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 ₁₆ | Over Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 ₁₆ | Over Discharge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 ₁₆ | RESERVED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 ₁₆ | Over Temp Charge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A ₁₆ | Over Current Charge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B ₁₆ | Over Temp Discharge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C ₁₆ | Over Current Discharge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D ₁₆ | Cell Unbalance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E ₁₆ | Charge Suspend | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F ₁₆ | RESERVED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Status_BatteryCell | <p>for LG-Chem Resu H at section Controller</p> <table border="1"> <thead> <tr> <th>Status value</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>STANDBY</td></tr> <tr><td>3</td><td>ENABLED</td></tr> <tr><td>5</td><td>FAULTED</td></tr> <tr><td>10</td><td>SLEEP</td></tr> </tbody> </table> | Status value | Description | 1 | STANDBY | 3 | ENABLED | 5 | FAULTED | 10 | SLEEP | | | | | | | | | | | | | | | | | | | | | | | | |
| Status value | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | STANDBY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ENABLED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | FAULTED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | SLEEP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Status_BatteryCell | <p>for BYD Box at section Controller</p> <table border="1"> <thead> <tr> <th>Status value</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>0</td><td>STANDBY</td></tr> <tr><td>1</td><td>INACTIVE</td></tr> <tr><td>2</td><td>DARKSTART</td></tr> <tr><td>3</td><td>ACTIVE</td></tr> <tr><td>4</td><td>FAULT</td></tr> <tr><td>5</td><td>UPDATING</td></tr> </tbody> </table> | Status value | Description | 0 | STANDBY | 1 | INACTIVE | 2 | DARKSTART | 3 | ACTIVE | 4 | FAULT | 5 | UPDATING | | | | | | | | | | | | | | | | | | | | |
| Status value | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | STANDBY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | INACTIVE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | DARKSTART | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ACTIVE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | FAULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | UPDATING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

```

# device type identifier
string Model;

# Solar battery manufacturer changed from "Fronius International" to "Fronius"
# Solar API Version      : 1.5-16
# Fronius Symo Hybrid    : 1.12.1-3
string Manufacturer;
} Details;

#channels of device (textual name and value)
number * __CHANNEL_NAME__;

} Controller;

array {

object {
string Serial;

string Model;

string Manufacturer;
} Details;

#channels of device (textual name and value)
number * __CHANNEL_NAME__;

} * Modules;

} * DeviceId; // 0...65535

} Data ;

```

Manufacturer has been updated at version HM-1.12.1-X from "Fronius International" to "Fronius"

Listing 47: Reply body for GetStorageRealtimeData System request (Solar Battery)

```

{
  "Body" : {
    "Data" : {
      "0" : {
        "Controller" : {
          "Capacity_Maximum" : 7200,
          "Current_DC" : 1.1200000000000001,
          "DesignedCapacity" : 7200,
          "Details" : {
            "Manufacturer" : "Fronius",
            "Model" : "Fronius_Solar_Battery",
            "Serial" : "26175063"
          },
          "Enable" : 1,
          "StateOfCharge_Relative" : 55,
          "Temperature_Cell" : 26.150000000000034,
          "TimeStamp" : 1560346272,
          "Voltage_DC" : 318.80000000000001,
          "Voltage_DC_Maximum_Cell" : 3.3290000000000002,
          "Voltage_DC_Minimum_Cell" : 3.3159999999999998
        },
        "Modules" : [
          {
            "Capacity_Maximum" : 1200,
            "Current_DC" : 1.1100000000000001,
            "CycleCount_BatteryCell" : 255,
            "DesignedCapacity" : 1200,
            "Details" : {
              "Manufacturer" : "Sony",
              "Model" : "unknown",

```

```

    "Serial" : "S012002885□"
  },
  "Enable" : 1,
  "StateOfCharge_Relative" : 55,
  "Status_BatteryCell" : 53,
  "Temperature_Cell" : 27.25,
  "Temperature_Cell_Maximum" : 27.75,
  "Temperature_Cell_Minimum" : 26.950000000000045,
  "TimeStamp" : 1560346263,
  "Voltage_DC" : 53.142000000000003,
  "Voltage_DC_Maximum_Cell" : 3.3239999999999998,
  "Voltage_DC_Minimum_Cell" : 3.3140000000000001
},
{
  "Capacity_Maximum" : 1200,
  "Current_DC" : 1.1200000000000001,
  "CycleCount_BatteryCell" : 257,
  "DesignedCapacity" : 1200,
  "Details" : {
    "Manufacturer" : "Sony",
    "Model" : "unknown",
    "Serial" : "S012002843□"
  },
  "Enable" : 1,
  "StateOfCharge_Relative" : 55,
  "Status_BatteryCell" : 53,
  "Temperature_Cell" : 26.650000000000034,
  "Temperature_Cell_Maximum" : 27.150000000000034,
  "Temperature_Cell_Minimum" : 26.350000000000023,
  "TimeStamp" : 1560346263,
  "Voltage_DC" : 53.137,
  "Voltage_DC_Maximum_Cell" : 3.3279999999999998,
  "Voltage_DC_Minimum_Cell" : 3.3159999999999998
},
{
  "Capacity_Maximum" : 1200,
  "Current_DC" : 1.1299999999999999,
  "CycleCount_BatteryCell" : 257,
  "DesignedCapacity" : 1200,
  "Details" : {
    "Manufacturer" : "Sony",
    "Model" : "unknown",
    "Serial" : "S012002844□"
  },
  "Enable" : 1,
  "StateOfCharge_Relative" : 55,
  "Status_BatteryCell" : 53,
  "Temperature_Cell" : 26.450000000000045,
  "Temperature_Cell_Maximum" : 27.050000000000011,
  "Temperature_Cell_Minimum" : 26.25,
  "TimeStamp" : 1560346263,
  "Voltage_DC" : 53.164000000000001,
  "Voltage_DC_Maximum_Cell" : 3.3290000000000002,
  "Voltage_DC_Minimum_Cell" : 3.319
},
{
  "Capacity_Maximum" : 1200,
  "Current_DC" : 1.1299999999999999,
  "CycleCount_BatteryCell" : 254,
  "DesignedCapacity" : 1200,
  "Details" : {
    "Manufacturer" : "Sony",
    "Model" : "unknown",
    "Serial" : "S012002838□"
  },
  "Enable" : 1,
  "StateOfCharge_Relative" : 55,

```

```

        "Status_BatteryCell" : 53,
        "Temperature_Cell" : 26.150000000000034,
        "Temperature_Cell_Maximum" : 26.75,
        "Temperature_Cell_Minimum" : 25.75,
        "TimeStamp" : 1560346263,
        "Voltage_DC" : 53.158999999999999,
        "Voltage_DC_Maximum_Cell" : 3.3290000000000002,
        "Voltage_DC_Minimum_Cell" : 3.3180000000000001
    },
    {
        "Capacity_Maximum" : 1200,
        "Current_DC" : 1.1200000000000001,
        "CycleCount_BatteryCell" : 256,
        "DesignedCapacity" : 1200,
        "Details" : {
            "Manufacturer" : "Sony",
            "Model" : "unknown",
            "Serial" : "S012002884□"
        },
        "Enable" : 1,
        "StateOfCharge_Relative" : 55,
        "Status_BatteryCell" : 53,
        "Temperature_Cell" : 25.550000000000011,
        "Temperature_Cell_Maximum" : 26.150000000000034,
        "Temperature_Cell_Minimum" : 25.350000000000023,
        "TimeStamp" : 1560346263,
        "Voltage_DC" : 53.146000000000001,
        "Voltage_DC_Maximum_Cell" : 3.3260000000000001,
        "Voltage_DC_Minimum_Cell" : 3.3170000000000002
    },
    {
        "Capacity_Maximum" : 1200,
        "Current_DC" : 1.1200000000000001,
        "CycleCount_BatteryCell" : 255,
        "DesignedCapacity" : 1200,
        "Details" : {
            "Manufacturer" : "Sony",
            "Model" : "unknown",
            "Serial" : "S012002857□"
        },
        "Enable" : 1,
        "StateOfCharge_Relative" : 55,
        "Status_BatteryCell" : 53,
        "Temperature_Cell" : 25.25,
        "Temperature_Cell_Maximum" : 25.75,
        "Temperature_Cell_Minimum" : 24.950000000000045,
        "TimeStamp" : 1560346263,
        "Voltage_DC" : 53.156999999999996,
        "Voltage_DC_Maximum_Cell" : 3.3260000000000001,
        "Voltage_DC_Minimum_Cell" : 3.319999999999998
    }
}
]
}
},
"Head" : {
    "RequestArguments" : {
        "DeviceClass" : "Storage",
        "Scope" : "System"
    },
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:31:12+02:00"
}
}

```



```
}
```

Listing 48: Reply body for GetStorageRealtimeData System request (BYD B-Box)

```
{
  "Body" : {
    "Data" : {
      "0" : {
        "Controller" : {
          "Capacity_Maximum" : 11520,
          "Current_DC" : 0,
          "DesignedCapacity" : 11520,
          "Details" : {
            "Manufacturer" : "BYD",
            "Model" : "BYD_Battery-Box_HV",
            "Serial" : "400481708-00059"
          },
          "Enable" : 1,
          "StateOfCharge_Relative" : 4.7000000000000002,
          "Status_BatteryCell" : 3,
          "Temperature_Cell" : 23.949999999999999,
          "TimeStamp" : 1560430543,
          "Voltage_DC" : 462.60000000000002
        },
        "Modules" : []
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Storage",
      "Scope" : "System"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-13T14:55:44+02:00"
  }
}
```

4.9.9 Device-Request

Listing 49: Object structure of response body for GetStorageRealtimeData request

```
# object with detailed informations about one Battery
object {
  object {
    object {
      #serial number of Fronius Solar Battery
      string Serial;

      string Model;

      string Manufacturer;
    } Details;

    #channels of device (textual name and value)
    number * __CHANNEL_NAME__;
  } Controller;

  array {
```

```

object {
    string Serial;

    string Model;

    string Manufacturer;
} Details;

#channels of device (textual name and value)
number * __CHANNEL_NAME__;

} * Modules;

} Data ;

```

Listing 50: Reply body for GetStorageRealtimeData Device request (LG Chem Resu H)

```

{
  "Body" : {
    "Data" : {
      "Controller" : {
        "Capacity_Maximum" : 9800,
        "Current_DC" : 0.9000000000000000002,
        "DesignedCapacity" : 9800,
        "Details" : {
          "Manufacturer" : "LG-Chem",
          "Model" : "Resu_H",
          "Serial" : "1706179036"
        },
        "Enable" : 1,
        "StateOfCharge_Relative" : 56,
        "Status_BatteryCell" : 3,
        "Temperature_Cell" : 27.550000000000001,
        "TimeStamp" : 1560346267,
        "Voltage_DC" : 407.5
      },
      "Modules" : []
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "Storage",
      "DeviceId" : "0",
      "Scope" : "Device"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:31:08+02:00"
  }
}

```

4.10 GetOhmPilotRealtimeData request

This request provides detailed information about Ohmpilot. Inactive channels are not included in the response and may vary depending on hardware and software version used. Take care about permanently or temporary missing channels when processing this response.

4.10.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | 1.6.1-4 |
| Fronius Non Hybrid | 3.8.1-4 |
| Fronius GEN24 | 1.13 |

4.10.2 URL for HTTP requests

/solar_api/v1/GetOhmPilotRealtimeData.cgi

4.10.3 Parameters

| Parameter | Type | Range/Values/Pattern | Description |
|-----------|--------|----------------------|-------------------------------|
| Scope | String | "System" "Device" | Mandatory |
| DeviceId | String | 0..65535 | Mandatory on non system scope |

4.10.4 Reference to manual

<https://www.fronius.com/~/downloads/Solar%20Energy/Operating%20Instructions/42%2C0410%2C2141%2CEN.pdf>

4.10.5 System-Request

Listing 51: Object structure of response body for GetOhmPilotRealtimeData System request

```
# object with detailed informations about all Ohmpilots,
object {

  object {

    object {
      # serial number of device
      string Serial;

      # e.g. "Ohmpilot"
      string Model;

      # e.g. "Fronius"
      string Manufacturer;

      # software version
      string Software;

      # hardware version
      string Hardware;
    } Details;

    # total consumed energy [Wh]
    number EnergyReal_WAC_Sum_Consumed;

    # CodeOfState Values:
    # 0 ... up and running
    # 1 ... keep minimum temperature
    # 2 ... legionella protection
    # 3 ... critical fault
    # 4 ... fault
    # 5 ... boost mode
    number CodeOfState;

    # refer to Ohmpilot manual
    # optional field
    number CodeOfError;

    # actual power consumption [W]
    number PowerReal_PAC_Sum;

    # temperature from sensor [°C]
    number Temperature_Channel_1;

  } * Ohmpilot;
```

```
} Data ;
```

Listing 52: Reply body for GetOhmPilotRealtimeData System request

```
{
  "Body" : {
    "Data" : {
      "0" : {
        "CodeOfError" : 926,
        "CodeOfState" : 0,
        "Details" : {
          "Hardware" : "3",
          "Manufacturer" : "Fronius",
          "Model" : "Ohmpilot",
          "Serial" : "28136344",
          "Software" : "1.0.19-1"
        },
        "EnergyReal_WAC_Sum_Consumed" : 2964307,
        "PowerReal_PAC_Sum" : 0,
        "Temperature_Channel_1" : 23.899999999999999
      }
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "OhmPilot",
      "Scope" : "System"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-24T10:10:44+02:00"
  }
}
```

4.10.6 Device-Request

Listing 53: Object structure of response body for GetOhmPilotRealtimeData Device request

```
# object with detailed informations about one Ohmpilot,
object {

  object {
    # serial number of device
    string Serial;

    # e.g. "Ohmpilot"
    string Model;

    # e.g. "Fronius"
    string Manufacturer;

    # software version
    string Software;

    # hardware version
    string Hardware;
  } Details;

  # total consumed energy [Wh]
  number EnergyReal_WAC_Sum_Consumed;

  # CodeOfState Values:
  # 0 ... up and running
```

```

# 1 ... keep minimum temperature
# 2 ... legionella protection
# 3 ... critical fault
# 4 ... fault
# 5 ... boost mode
number CodeOfState;

# refer to Ohmpilot manual
# optional field
number CodeOfError;

# actual power consumption [W]
number PowerReal_PAC_Sum;

# temperature from sensor [°C]
number Temperature_Channel_1;

} Data ;

```

Listing 54: Reply body for GetOhmPilotRealtimeData Device request

```

{
  "Body" : {
    "Data" : {
      "CodeOfError" : 926,
      "CodeOfState" : 0,
      "Details" : {
        "Hardware" : "3",
        "Manufacturer" : "Fronius",
        "Model" : "Ohmpilot",
        "Serial" : "28136344",
        "Software" : "1.0.19-1"
      },
      "EnergyReal_WAC_Sum_Consumed" : 2964307,
      "PowerReal_PAC_Sum" : 0,
      "Temperature_Channel_1" : 23.899999999999999
    }
  },
  "Head" : {
    "RequestArguments" : {
      "DeviceClass" : "OhmPilot",
      "DeviceId" : "0",
      "Scope" : "Device"
    },
    "Status" : {
      "Code" : 0,
      "Reason" : "",
      "UserMessage" : ""
    },
    "Timestamp" : "2019-06-24T10:10:41+02:00"
  }
}

```

4.11 GetPowerFlowRealtimeData request

This request provides detailed information about the local energy grid. The values replied represent the current state. Because data has multiple asynchronous origins it is a matter of fact that the sum of all powers (grid, load and generate) will differ from zero.

This request does not care about the configured visibility of single inverters. All inverters are reported. Same for batteries.

4.11.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | 1.2.1-X |
| Fronius Non Hybrid | 3.3.9-X |
| Fronius GEN24 | ALWAYS |

4.11.2 Version

This request is only a gateway to internal generated data containers. Please take care about the "Version" field in the response.

| Version | Changes |
|---------|---|
| 10 | added smartloads/ohmpilot added Version field |
| 11 | added secondary meters for subloads or extra production |
| 12 | inverter nodes now provide component id |

4.11.3 URL for HTTP requests

/solar_api/v1/GetPowerFlowRealtimeData.fcgi

Please note, for performance reasons the URL extension is different to other Solar API requests.

4.11.4 Parameters

There are no parameters. Only one type of query exists.

4.11.5 Request

Listing 55: Object structure of response body for GetPowerFlowRealtimeData request

```
object {  
  
    # mandatory field  
    # implemented since Fronius Non Hybrid version 3.8.1-1  
    #                               Fronius Hybrid version 1.6.1-1  
    # describes the available fields for this request (PowerFlowVersion)  
    # Version string contains a positive integer  
    string Version;  
  
    object {  
  
        # mandatory field  
        # Mode:                               Contains:  
        # "produce-only",                       inverter only  
        # "meter", "vague-meter",             inverter and meter  
        # "bidirectional" or "ac-coupled"     inverter, meter and battery  
        string Mode;  
  
        # optional field, supported since Fronius Hybrid version 1.4.1-6  
        #                               not available on Fronius Non Hybrid  
        # true when battery is in standby  
        boolean BatteryStandby;  
  
        # optional field, supported since Fronius Hybrid version 1.3.1-0  
        #                               not available on Fronius Non Hybrid  
        # field is available if configured (false) or active (true)  
        # if not available, mandatory config is not set  
        boolean BackupMode;  
  
        # mandatory field  
        #this value is null if no meter is enabled ( + from grid, - to grid )  
        number P_Grid;  
  
        # mandatory field
```

```

#this value is null if no meter is enabled ( + generator, - consumer )
number P_Load;

# mandatory field
#this value is null if no battery is active ( - charge, + discharge )
number P_Akku;

# mandatory field
#this value is null if inverter is not running ( + production ( default ) )
number P_PV;

# mandatory field
# available since Fronius Hybrid version 1.3.1-1
# available since Fronius Non Hybrid version 3.7.1-2
# current relative self consumption in %, null if no smart meter is connected
number rel_SelfConsumption;

# mandatory field
# available since Fronius Hybrid version 1.3.1-1
# available since Fronius Non Hybrid version 3.7.1-2
# current relative autonomy in %, null if no smart meter is connected
number rel_Autonomy;

# optional field
# "load", "grid" or "unknown" (during backup power)
string Meter_Location;

# optional field
# implemented since Fronius Non Hybrid version 3.4.1-7
# this value is always null on GEN24
# AC Energy [Wh] this day, null if no inverter is connected
number E_Day;

# optional field
# implemented since Fronius Non Hybrid version 3.4.1-7
# this value is always null on GEN24
# AC Energy [Wh] this year, null if no inverter is connected
number E_Year;

# optional field
# implemented since Fronius Non Hybrid version 3.4.1-7
# implemented since Fronius GEN24 version 1.14 and null before
# AC Energy [Wh] ever since, null if no inverter is connected
number E_Total;

} Site;

object {

    object {

        # mandatory field
        # device type of inverter
        integer DT;

        # mandatory field
        # current power in Watt, null if not running (+ produce/export, - consume/
        import)
        integer P;

        # optional field
        # current state of charge in % as decimal ( 5.3% ) or integer (0 - 100%)
        unsigned number SOC;

        # mandatory field
        # implemented since Fronius Non Hybrid version 3.13.1-1
        #
        # Fronius Hybrid version 1.11.1-1

```

```

#           PowerFlowVersion 12
# component identification (8bit group, 16 bit enum)
unsigned integer CID;

# optional field
# "disabled", "normal", "service", "charge boost",
# "nearly depleted", "suspended", "calibrate",
# "grid support", "deplete recovery", "non operable (voltage)",
# "non operable (temperature)", "preheating", "startup",
# "stopped (temperature)", "battery full"
string Battery_Mode;

# optional field
# implemented since Fronius Non Hybrid version 3.7.1-1
#           Fronius Hybrid version      1.3.1-1
#           Fronius GEN24                always null
# AC Energy [Wh] this day, null if no inverter is connected
number E_Day;

# optional field
# implemented since Fronius Non Hybrid version 3.7.1-1
#           Fronius Hybrid version      1.3.1-1
#           Fronius GEN24                always null
# AC Energy [Wh] this year, null if no inverter is connected
number E_Year;

# optional field
# implemented since Fronius Non Hybrid version 3.7.1-1
#           Fronius Hybrid version      1.3.1-1
#           Fronius GEN24 version 1.14 and null before
# AC Energy [Wh] ever since, null if no inverter is connected
number E_Total;

} * DeviceId; #SolarNet ring address ("1" on hybrid systems)
              #GEN24 devices always will use DeviceId 1

} Inverters;

# optional field
# implemented since Fronius Non Hybrid version 3.8.1-1
#           Fronius Hybrid version      1.6.1-1
#           PowerFlowVersion 10
object {

# optional field
# implemented since PowerFlowVersion 10
object {

# optional field
# implemented since PowerFlowVersion 10
object {

# mandatory field
# implemented since PowerFlowVersion 10
# current power consumption in Watt
number P_AC_Total;

# mandatory field
# implemented since PowerFlowVersion 10
# operating state "normal", "min-temperature", "legionella-protection",
# "fault", "warning" or "boost"
string State;

# mandatory field
# implemented since PowerFlowVersion 10
# temperature of storage / tank in degree Celsius

```



```

        number Temperature;

    } ComponentId;

} Ohmpilots;

} Smartloads;

# optional field
# implemented since Fronius Non Hybrid version 3.12.1-1
#                               Fronius Hybrid version      1.10.1-1
#                               PowerFlowVersion 11
object {

    # implemented since PowerFlowVersion 11
    object {

        # mandatory field
        # implemented since PowerFlowVersion 11
        # current power consumption/production in Watt (direction is based on meter
        # location)
        # consumption is negative for meter location >= 256
        # production is positive for meter location 3
        number P;

        # mandatory field
        # implemented since PowerFlowVersion 11
        # meter location of the device (see end of listing for more details)
        number MLoc;

        # mandatory field
        # implemented since PowerFlowVersion 11
        # user defined name of secondary meter or
        # "<primary>" for primary meters
        string Label;

        # mandatory field
        # implemented since PowerFlowVersion 11
        # category token
        # "METER_CAT_WR"           ... Photovoltaic inverter
        # "METER_CAT_BAT"         ... AC storage unit
        # "METER_CAT_PV_BAT"      ... Photovoltaic inverter + storage unit
        # "METER_CAT_WINDMILL"    ... Wind turbine
        # "METER_CAT_BHKW"        ... Combined heat and power station (CHP)
        # "METER_CAT_ECAR"        ... Electric vehicle
        # "METER_CAT_HEATPUMP"    ... Heatpump
        # "METER_CAT_OTHERHEATING" ... Other heating system
        # "METER_CAT_PUMP"        ... Pump
        # "METER_CAT_WHITEGOODS"  ... White goods
        # "METER_CAT_CLIMATE"     ... Climate control / cooling systems
        # "METER_CAT_BUILDING"    ... Building services
        # "METER_CAT_OTHER"      ... Other
        string Category;

    } ComponentId;

} SecondaryMeters;

} Data ;

```

Reference to device type table in section 6.2.
Reference to meter location table in section 6.5.

Listing 56: Reply body for GetPowerFlowRealtimeData on Fronius Hybrid System

```

{
  "Body" : {

```

```

>Data" : {
  "Inverters" : {
    "1" : {
      "Battery_Mode" : "normal",
      "DT" : 99,
      "E_Day" : 6758,
      "E_Total" : 7604385.5,
      "E_Year" : 1342638.25,
      "P" : 506,
      "SOC" : 55
    }
  },
  "Site" : {
    "BatteryStandby" : false,
    "E_Day" : 6758,
    "E_Total" : 7604385.5,
    "E_Year" : 1342638.2000000002,
    "Meter_Location" : "grid",
    "Mode" : "bidirectional",
    "P_Akku" : -384.70000000000005,
    "P_Grid" : -511.99000000000001,
    "P_Load" : 5.9900000000000091,
    "P_PV" : 941.60000000000002,
    "rel_Autonomy" : 100,
    "rel_SelfConsumption" : 0
  },
  "Smartloads" : {
    "Ohmpilots" : {
      "720897" : {
        "P_AC_Total" : 2635,
        "State" : "normal",
        "Temperature" : 30.7
      }
    }
  },
  "Version" : "12"
},
},
"Head" : {
  "RequestArguments" : {},
  "Status" : {
    "Code" : 0,
    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2019-06-12T15:31:07+02:00"
}
}

```

Listing 57: Reply body for GetPowerFlowRealtimeData on Fronius Non Hybrid System

```

{
  "Body" : {
    "Data" : {
      "Inverters" : {
        "1" : {
          "DT" : 102,
          "E_Day" : 1393.2000732421875,
          "E_Total" : 1734796.125,
          "E_Year" : 322593.5,
          "P" : 88
        },
        "2" : {
          "DT" : 86,
          "E_Day" : 1618.5,
          "E_Total" : 3026782,
          "E_Year" : 385172.09375,

```

```

        "P" : 104
    },
    "3" : {
        "DT" : 106,
        "E_Day" : 1695.800048828125,
        "E_Total" : 3160499.75,
        "E_Year" : 399904.09375,
        "P" : 109
    },
    "55" : {
        "DT" : 224,
        "E_Day" : 1699,
        "E_Total" : 3275219.75,
        "E_Year" : 403993.21875,
        "P" : 109
    }
},
"Site" : {
    "E_Day" : 6406.5001220703125,
    "E_Total" : 11197297.625,
    "E_Year" : 1511662.90625,
    "Meter_Location" : "unknown",
    "Mode" : "produce-only",
    "P_Akku" : null,
    "P_Grid" : null,
    "P_Load" : null,
    "P_PV" : 410,
    "rel_Autonomy" : null,
    "rel_SelfConsumption" : null
},
"Version" : "12"
}
},
"Head" : {
    "RequestArguments" : {},
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-06-12T15:31:08+02:00"
}
}
}

```

Listing 58: Reply body for GetPowerFlowRealtimeData on GEN24 Primo

```


{
    "Body" : {
        "Data" : {
            "Inverters" : {
                "1" : {
                    "Battery_Mode" : "normal",
                    "DT" : 1,
                    "P" : 501,
                    "SOC" : 30.600000381469727
                }
            },
            "Site" : {
                "BatteryStandby" : false,
                "E_Day" : null,
                "E_Total" : null,
                "E_Year" : null,
                "Meter_Location" : "grid",
                "Mode" : "bidirectional",
                "P_Akku" : -1006.1868286132812,
                "P_Grid" : -497.62,
                "P_Load" : -3.3799999999999955,
            }
        }
    }
}

```

```

        "P_PV" : 1547.739990234375,
        "rel_Autonomy" : 100.0,
        "rel_SelfConsumption" : 0.67465069860279347
    },
    "Version" : "12"
}
},
"Head" : {
    "RequestArguments" : {},
    "Status" : {
        "Code" : 0,
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2019-08-28T09:43:29+00:00"
}
}
}

```

 Energies are not provided and device types DT are invalid on GEN24

5 Archive Requests

5.1 Common

Archive requests shall be provided whenever access to historic device-data is possible and it makes sense to provide such a request.

Of course, the Datalogger Web can only provide what is stored in its internal memory and has not been overwritten by newer data yet. It can loose data, due to capacity reason. The number of days stored is dependent on the number of connected units to log. This limitation is not present for Solar.web, provided that the Datalogger has reliably uploaded the data.

Different from what is specified within the previously released drafts, there is only one CGI to access all historic data. This CGI contains detailed, summed, error and events queries.

Call is `http://<insert hostname or IP here>/solar_api/v1/GetArchiveData.cgi?<your query parameters>`

The number of parallel queries is system wide restricted to 4 clients.

5.1.1 Availability

| Platform | Since version |
|--------------------|---------------|
| Fronius Hybrid | 1.1.2-16 |
| Fronius Non Hybrid | 3.3.4-5 |
| Fronius GEN24 | NEVER |

5.1.2 ChannelId

Each channel is handled and requested by name. Most of the channels are recorded in constant cyclic intervals which can be set between 5 and 30 minutes. Only *Digital_PowerManagementRelay_Out_**, *InverterErrors*, *InverterEvents* and *Hybrid_Operating_State* are event triggered and may occur every time.

⁵

⁵ introduced in Solar API CompatibilityRange Version 1.5-10 (Datamanager 3.11.1 or Hybridmanager 1.9.1)

Table 5: Available channels

| Name | Unit |
|--|--------|
| TimeSpanInSec | sec |
| EnergyReal_WAC_Sum_Produced | Wh |
| EnergyReal_WAC_Sum_Consumed ⁵ | Wh |
| InverterEvents | struct |
| InverterErrors | struct |
| Current_DC_String_1 | 1A |
| Current_DC_String_2 | 1A |
| Voltage_DC_String_1 | 1V |
| Voltage_DC_String_2 | 1V |
| Temperature_Powerstage | deg C |
| Voltage_AC_Phase_1 | 1V |
| Voltage_AC_Phase_2 | 1V |
| Voltage_AC_Phase_3 | 1V |
| Current_AC_Phase_1 | 1A |
| Current_AC_Phase_2 | 1A |
| Current_AC_Phase_3 | 1A |
| PowerReal_PAC_Sum | 1W |
| EnergyReal_WAC_Minus_Absolute | 1Wh |
| EnergyReal_WAC_Plus_Absolute | 1Wh |
| Meter_Location_Current | 1 |
| Temperature_Channel_1 | 1 |
| Temperature_Channel_2 | 1 |
| Digital_Channel_1 | 1 |
| Digital_Channel_2 | 1 |
| Radiation | 1 |
| Digital_PowerManagementRelay_Out_1 | 1 |
| Digital_PowerManagementRelay_Out_2 | 1 |
| Digital_PowerManagementRelay_Out_3 | 1 |
| Digital_PowerManagementRelay_Out_4 | 1 |
| Hybrid_Operating_State | 1 |

5.1.3 Parameters

| | | | |
|---------------|------------|--|--|
| Scope | String | "Device" "System" | Query specific device(s) or whole system. <i>Mandatory</i> |
| SeriesType | String | "DailySum" "Detail" (default) | Resolution of the data-series. <i>Optional</i> |
| HumanReadable | BoolString | "True" (default) "False" | Unset/Set readable output. <i>Optional</i> |
| StartDate | DateString | "21.5.[20]14" "5/21/[20]14" "[20]14-5-21" "2011-10- 20T10:09:14+02:00" | <i>Mandatory</i> supplying only the date will be interpreted as local time |
| EndDate | DateString | "21.5.[20]14" "5/21/[20]14" "[20]14-5-21" "2011-10- 20T10:09:14Z" | <i>Mandatory</i> |
| Channel | String | available channels from table 5. <i>Mandatory, multiple times</i> | |
| DeviceClass | String | "Inverter" "SensorCard" "StringControl" | Which kind of device will be queried. <i>Mandatory and accepted only if Scope is not "System"</i> |
| DeviceClass | | "Meter" "Storage" "OhmPilot" | since DM 3.7.4-6 HM 1.3.1-1 since DM 3.7.4-6 HM 1.3.1-1 since DM 3.8.1-4 HM 1.6.1-4 |
| DeviceId | String | <i>Solar Net: 0 ...199</i> | <i>Only needed for Scope "Device"</i> Which device to query. This parameter can be given more than once, thus specifying a list of devices to query. |

5.1.4 Object Structure of response body

Listing 59: Object structure of request body

```

object {

  # Object with dataseries for each requested device.
  # Property names correspond to the DeviceId the series belongs to.
  object {

    # Object representing data-series of one device (may contain more than one channel).
    object {

      # Optional Nodetype if localnet node
      integer NodeType;

      # Optional Devicetype if localnet node
      integer DeviceType;

      # Starting date of the series (i.e. date of the first value in Values)
      # yyyy-MM-ddThh-mm-ss%z   "2017-05-20T00:00:00+02:00"
      string Start;

      # Starting date of the series (i.e. date of the first value in Values)
      # yyyy-MM-ddThh-mm-ss%z   "2017-05-20T23:59:59+02:00"
      string End;

      # Collection of objects representing one channel, each object containing values and
      # metadata.
      # Objects are named after the Channel they represent (e.g. "Power").
      object {

        # Object representing one channel.

```

```

object {
    # Baseunit of the channel, never contains any prefixes
    string Unit;

    # Unscaled values, offset between datapoints can be deduced through "SeriesType"
    # ATTENTION: Unavailable datapoints are included but have value null
    # NOTE: the data records are listed in alphabetical order
    # example: "3600" : 10.11 ... offset is 3600 sec and value is 10.11
    number * __OFFSET_IN_SECONDS__;

    # reference to internal used unique channel identifier
    string _comment;

} __CHANNEL_NAME__;

}* Data;

}* __DEVICE_ID__;

} Data;

};

```

5.2 Example of response body

5.2.1 Meter data

Listing 60: detailed response body for meter data

```

// /solar_api/v1/GetArchiveData.cgi?Scope=System&StartDate=1.3.2018&EndDate=1.3.2018&
Channel=TimeSpanInSec&Channel=EnergyReal_WAC_Plus_Absolute&Channel=
EnergyReal_WAC_Minus_Absolute&Channel=Meter_Location_Current
{
  "Body" :
  {
    "Data" :
    {
      "inverter/1" :
      {
        "Data" :
        {
          "TimeSpanInSec" :
          {
            "Unit" : "sec",
            "Values" :
            {
              "0" : 298, /* 0 seconds after "Start" the value was 298 */
              "10200" : 299,
              /* shorten list for readability */
              "1200" : 300,
              /* shorten list for readability */
              "12000" : 300,
              /* shorten list for readability */
              "2100" : 300,
              /* shorten list for readability */
              "900" : 299,
              "9000" : 300,
              "9300" : 299,
              "9600" : 299,
              "9900" : 300
            },
            "_comment" : "channelId=65549"
          }
        },
        "DeviceType" : 99,
        "End" : "2018-03-01T23:59:59+01:00",

```

```

    "NodeType" : 97,
    "Start" : "2018-03-01T00:00:00+01:00"
  },
  "meter:15480258" :
  {
    "Data" :
    {
      "EnergyReal_WAC_Minus_Absolute" :
      {
        "Unit" : "Wh",
        "Values" :
        {
          "0" : 744657,
          "10200" : 744657,
          "10500" : 744657,
          /* shorten list for readability */
          "9300" : 744657,
          "9600" : 744657,
          "9900" : 744657
        },
        "_comment" : "channelId=167837960"
      },
      "EnergyReal_WAC_Plus_Absolute" :
      {
        "Unit" : "Wh",
        "Values" :
        {
          "0" : 605047,
          "10200" : 605194,
          "10500" : 605198,
          "10800" : 605202,
          /* shorten list for readability */
          "9000" : 605177,
          "9300" : 605181,
          "9600" : 605185,
          "9900" : 605190
        },
        "_comment" : "channelId=167772424"
      },
      "Meter_Location_Current" :
      {
        "Unit" : "1",
        "Values" :
        {
          "0" : 0,
          "10200" : 0,
          "10500" : 0,
          "10800" : 0,
          /* shorten list for readability */
          "9600" : 0,
          "9900" : 0
        },
        "_comment" : "channelId=117050390"
      }
    },
    "End" : "2018-03-01T23:59:59+01:00",
    "Start" : "2018-03-01T00:00:00+01:00"
  }
},
"Head" :
{
  "RequestArguments" :
  {
    "Channel" :
    [
      "TimeSpanInSec",

```



```

    "EnergyReal_WAC_Plus_Absolute",
    "EnergyReal_WAC_Minus_Absolute",
    "Meter_Location_Current"
  ],
  "EndDate" : "2018-03-01T23:59:59+01:00",
  "HumanReadable" : "True",
  "Scope" : "System",
  "SeriesType" : "Detail",
  "StartDate" : "2018-03-01T00:00:00+01:00"
},
"Status" :
{
  "Code" : 0,
  "ErrorDetail" :
  {
    "Nodes" : []
  },
  "Reason" : "",
  "UserMessage" : ""
},
"Timestamp" : "2018-03-02T07:57:54+01:00"
}
}

```

5.2.2 Inverter data

Listing 61: detailed response body with multiple inverters

```

// /solar_api/v1/GetArchiveData.cgi?Scope=System&StartDate=1.3.2018&EndDate=1.3.2018&
Channel=EnergyReal_WAC_Sum_Produced&Channel=EnergyReal_WAC_Sum_Consumed

{
  "Body" :
  {
    "Data" :
    {
      "inverter/24" :
      {
        "Data" :
        {
          "EnergyReal_WAC_Sum_Produced" :
          {
            "Unit" : "Wh",
            "Values" :
            {
              "39900" : 457831.95472222223,
              "40200" : 316.86027777777775,
              "40500" : 350.18166666666667,
              "40800" : 357.11305555555555,
              "41100" : 330.606111111111109,
              /* shorten list for readability */
              "85800" : 0,
              "86100" : 0
            },
            "_comment" : "channelId=67830024"
          }
        },
        "DeviceType" : 192,
        "End" : "2018-03-01T23:59:59+01:00",
        "NodeType" : 120,
        "Start" : "2018-03-01T00:00:00+01:00"
      },
      "inverter/25" :
      {
        "Data" :

```

```

    {
      "EnergyReal_WAC_Sum_Produced" :
      {
        "Unit" : "Wh",
        "Values" :
        {
          "39900" : 319.23555555555555,
          /* shorten list for readability */
          "85200" : 0,
          "85500" : 0,
          "85800" : 0,
          "86100" : 0
        },
        "_comment" : "channelId=67830024"
      }
    },
    "DeviceType" : 192,
    "End" : "2018-03-01T23:59:59+01:00",
    "NodeType" : 121,
    "Start" : "2018-03-01T00:00:00+01:00"
  }
}
},
"Head" :
{
  "RequestArguments" :
  {
    "Channel" :
    [
      "EnergyReal_WAC_Sum_Produced",
      "EnergyReal_WAC_Sum_Consumed"
    ],
    "EndDate" : "2018-03-01T23:59:59+01:00",
    "HumanReadable" : "True",
    "Scope" : "System",
    "SeriesType" : "Detail",
    "StartDate" : "2018-03-01T00:00:00+01:00"
  },
  "Status" :
  {
    "Code" : 0,
    "ErrorDetail" :
    {
      "Nodes" : []
    },
    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2018-03-02T09:49:51+01:00"
}
}
}

```

5.2.3 Errors - Structure

Listing 62: Example of response body for inverter errors

```

// /solar_api/v1/GetArchiveData.cgi?Scope=System&StartDate=1.3.2018&EndDate=2.3.2018&
Channel=InverterErrors
{
  "Body": {
    "Data": {
      "inverter/1": {
        "Data": {
          "InverterErrors": {
            "Unit": "Object",

```

```

    "Values": {
        /* alphabetic sorted list of time offsets */
        "123180" : {
            /* 123180 seconds after "Start" */
            "flags" : [ "fatal","official" ],
            "#" : 731
        },
        "123240" : {
            "flags" : [ "fatal", "official"],
            "#" : 766
        },
        "23240" : {
            "flags" : [ "fatal", "official"],
            "#" : 482
        }
    },
    "_comment": "channelId=16646144"
},
"DeviceType": 99,
"End": "2018-03-02T23:59:59+01:00",
"NodeType": 97,
"Start": "2018-03-01T00:00:00+01:00"
}
},
"Head": {
    "RequestArguments": {
        "Channel": [
            "InverterErrors"
        ],
        "EndDate": "2018-03-02T23:59:59+01:00",
        "HumanReadable": "True",
        "Scope": "System",
        "SeriesType": "Detail",
        "StartDate": "2018-03-01T00:00:00+01:00"
    },
    "Status": {
        "Code": 0,
        "ErrorDetail": {
            "Nodes": []
        },
        "Reason": "",
        "UserMessage": ""
    },
    "Timestamp": "2018-03-02T11:32:22+01:00"
}
}
}

```

5.2.4 Events - Structure

Listing 63: Example of response body for inverter events

```

// /solar_api/v1/GetArchiveData.cgi?Scope=System&StartDate=2.3.2018&EndDate=2.3.2018&
Channel=InverterEvents
{
  "Body" :
  {
    "Data" :
    {
      "broadcast/" :
      {
        "Data" :
        {
          "InverterEvents" :
          {
            "Unit" : "Object",

```

```

    "Values" :
    {
        "42060" : /* seconds after "Start" */
        {
            "#" : 3, /* Event Code 3 */
            "attr" : /* Event Specific Data */
            {
                "Power" : "20□[%]",
                "Radient" : "255□[1]",
                "affect" : "P"
            },
            "desc" : "Power□limitation□20%", /* Event Description */
            "flags" :
            [
                "send"
            ]
        },
        "_comment" : "channelId=16711680"
    },
    "End" : "2018-03-02T23:59:59+01:00",
    "Start" : "2018-03-02T00:00:00+01:00"
}
}
},
"Head" :
{
    "RequestArguments" :
    {
        "Channel" :
        [
            "InverterEvents"
        ],
        "EndDate" : "2018-03-02T23:59:59+01:00",
        "HumanReadable" : "True",
        "Scope" : "System",
        "SeriesType" : "Detail",
        "StartDate" : "2018-03-02T00:00:00+01:00"
    },
    "Status" :
    {
        "Code" : 0,
        "ErrorDetail" :
        {
            "Nodes" : []
        },
        "Reason" : "",
        "UserMessage" : ""
    },
    "Timestamp" : "2018-03-02T11:42:50+01:00"
}
}
}

```

5.2.5 OhmPilot Energy

OhmPilot uses total energy counter!

Listing 64: detailed response body for one OhmPilot

```

// /solar_api/v1/GetArchiveData.cgi?Scope=Device&DeviceClass=OhmPilot&DeviceId=0&StartDate
=6.3.2018&EndDate=6.3.2018&Channel=EnergyReal_WAC_Sum_Consumed

{
    "Body" :
    {

```

```

"Data" :
{
  "ohmpilot:28136344" :
  {
    "Data" :
    {
      "EnergyReal_WAC_Sum_Consumed" :
      {
        "Unit" : "Wh",
        "Values" :
        {
          "0" : 858547,
          "10200" : 858547,
          "10500" : 858547,
          "10800" : 858547,
          "11100" : 858547,
          "11400" : 858547,
          "11700" : 858547,
          "1200" : 858547,
          "12000" : 858547,
          /* shorten list for readability */
          "84000" : 867084,
          "84300" : 867085,
          "84600" : 867087,
          "84900" : 867089,
          "85200" : 867091,
          "85500" : 867093,
          "85800" : 867095,
          "86100" : 867097,
          "8700" : 858547,
          "900" : 858547,
          "9000" : 858547,
          "9300" : 858547,
          "9600" : 858547,
          "9900" : 858547
        },
        "_comment" : "channelId=67895560"
      }
    },
    "End" : "2018-03-06T23:59:59+01:00",
    "Start" : "2018-03-06T00:00:00+01:00"
  }
}
},
"Head" :
{
  "RequestArguments" :
  {
    "Channel" :
    [
      "EnergyReal_WAC_Sum_Consumed"
    ],
    "DeviceClass" : "OhmPilot",
    "DeviceId" : "0",
    "EndDate" : "2018-03-06T23:59:59+01:00",
    "HumanReadable" : "True",
    "Scope" : "Device",
    "SeriesType" : "Detail",
    "StartDate" : "2018-03-06T00:00:00+01:00"
  },
  "Status" :
  {
    "Code" : 0,
    "ErrorDetail" :
    {
      "Nodes" : []
    }
  },

```

```

    "Reason" : "",
    "UserMessage" : ""
  },
  "Timestamp" : "2018-03-07T10:28:39+01:00"
}
}

```

6 Definitions and Mappings

6.1 Sunspec State Mapping

Table 6: Shows mapping between Fronius device status and SunSpec Inverter-Model states

| Fronius device state | SunSpec device state |
|----------------------|------------------------|
| not used | I_STATUS_OFF |
| not used | I_STATUS_SLEEPING |
| not used | I_STATUS_THROTTLED |
| not used | I_STATUS_SHUTTING_DOWN |
| 10 | I_STATUS_FAULT |
| 8 | I_STATUS_STANDBY |
| 7 | I_STATUS_MPPT |
| others | I_STATUS_STARTING |

6.2 Inverter Device Type List

| DeviceType | Model Name |
|------------|-------------------------------|
| 67 | Fronius Primo 15.0-1 208-240 |
| 68 | Fronius Primo 12.5-1 208-240 |
| 69 | Fronius Primo 11.4-1 208-240 |
| 70 | Fronius Primo 10.0-1 208-240 |
| 71 | Fronius Symo 15.0-3 208 |
| 72 | Fronius Eco 27.0-3-S |
| 73 | Fronius Eco 25.0-3-S |
| 75 | Fronius Primo 6.0-1 |
| 76 | Fronius Primo 5.0-1 |
| 77 | Fronius Primo 4.6-1 |
| 78 | Fronius Primo 4.0-1 |
| 79 | Fronius Primo 3.6-1 |
| 80 | Fronius Primo 3.5-1 |
| 81 | Fronius Primo 3.0-1 |
| 82 | Fronius Symo Hybrid 4.0-3-S |
| 83 | Fronius Symo Hybrid 3.0-3-S |
| 84 | Fronius IG Plus 120 V-1 |
| 85 | Fronius Primo 3.8-1 208-240 |
| 86 | Fronius Primo 5.0-1 208-240 |
| 87 | Fronius Primo 6.0-1 208-240 |
| 88 | Fronius Primo 7.6-1 208-240 |
| 89 | Fronius Symo 24.0-3 USA Dummy |
| 90 | Fronius Symo 24.0-3 480 |
| 91 | Fronius Symo 22.7-3 480 |
| 92 | Fronius Symo 20.0-3 480 |
| 93 | Fronius Symo 17.5-3 480 |
| 94 | Fronius Symo 15.0-3 480 |
| 95 | Fronius Symo 12.5-3 480 |
| 96 | Fronius Symo 10.0-3 480 |

| | |
|-----|----------------------------------|
| 97 | Fronius Symo 12.0-3 208-240 |
| 98 | Fronius Symo 10.0-3 208-240 |
| 99 | Fronius Symo Hybrid 5.0-3-S |
| 100 | Fronius Primo 8.2-1 Dummy |
| 101 | Fronius Primo 8.2-1 208-240 |
| 102 | Fronius Primo 8.2-1 |
| 103 | Fronius Agilo TL 360.0-3 |
| 104 | Fronius Agilo TL 460.0-3 |
| 105 | Fronius Symo 7.0-3-M |
| 106 | Fronius Galvo 3.1-1 208-240 |
| 107 | Fronius Galvo 2.5-1 208-240 |
| 108 | Fronius Galvo 2.0-1 208-240 |
| 109 | Fronius Galvo 1.5-1 208-240 |
| 110 | Fronius Symo 6.0-3-M |
| 111 | Fronius Symo 4.5-3-M |
| 112 | Fronius Symo 3.7-3-M |
| 113 | Fronius Symo 3.0-3-M |
| 114 | Fronius Symo 17.5-3-M |
| 115 | Fronius Symo 15.0-3-M |
| 116 | Fronius Agilo 75.0-3 Outdoor |
| 117 | Fronius Agilo 100.0-3 Outdoor |
| 118 | Fronius IG Plus 55 V-1 |
| 119 | Fronius IG Plus 55 V-2 |
| 120 | Fronius Symo 20.0-3 Dummy |
| 121 | Fronius Symo 20.0-3-M |
| 122 | Fronius Symo 5.0-3-M |
| 123 | Fronius Symo 8.2-3-M |
| 124 | Fronius Symo 6.7-3-M |
| 125 | Fronius Symo 5.5-3-M |
| 126 | Fronius Symo 4.5-3-S |
| 127 | Fronius Symo 3.7-3-S |
| 128 | Fronius IG Plus 60 V-2 |
| 129 | Fronius IG Plus 60 V-1 |
| 130 | SPR 8001F-3 EU |
| 131 | Fronius IG Plus 25 V-1 |
| 132 | Fronius IG Plus 100 V-3 |
| 133 | Fronius Agilo 100.0-3 |
| 134 | SPR 3001F-1 EU |
| 135 | Fronius IG Plus V/A 10.0-3 Delta |
| 136 | Fronius IG 50 |
| 137 | Fronius IG Plus 30 V-1 |
| 138 | SPR-11401f-1 UNI |
| 139 | SPR-12001f-3 WYE277 |
| 140 | SPR-11401f-3 Delta |
| 141 | SPR-10001f-1 UNI |
| 142 | SPR-7501f-1 UNI |
| 143 | SPR-6501f-1 UNI |
| 144 | SPR-3801f-1 UNI |
| 145 | SPR-3301f-1 UNI |
| 146 | SPR 12001F-3 EU |
| 147 | SPR 10001F-3 EU |
| 148 | SPR 8001F-2 EU |
| 149 | SPR 6501F-2 EU |
| 150 | SPR 4001F-1 EU |
| 151 | SPR 3501F-1 EU |
| 152 | Fronius CL 60.0 WYE277 Dummy |
| 153 | Fronius CL 55.5 Delta Dummy |
| 154 | Fronius CL 60.0 Dummy |
| 155 | Fronius IG Plus V 12.0-3 Dummy |

| | |
|-----|----------------------------------|
| 156 | Fronius IG Plus V 7.5-1 Dummy |
| 157 | Fronius IG Plus V 3.8-1 Dummy |
| 158 | Fronius IG Plus 150 V-3 Dummy |
| 159 | Fronius IG Plus 100 V-2 Dummy |
| 160 | Fronius IG Plus 50 V-1 Dummy |
| 161 | Fronius IG Plus V/A 12.0-3 WYE |
| 162 | Fronius IG Plus V/A 11.4-3 Delta |
| 163 | Fronius IG Plus V/A 11.4-1 UNI |
| 164 | Fronius IG Plus V/A 10.0-1 UNI |
| 165 | Fronius IG Plus V/A 7.5-1 UNI |
| 166 | Fronius IG Plus V/A 6.0-1 UNI |
| 167 | Fronius IG Plus V/A 5.0-1 UNI |
| 168 | Fronius IG Plus V/A 3.8-1 UNI |
| 169 | Fronius IG Plus V/A 3.0-1 UNI |
| 170 | Fronius IG Plus 150 V-3 |
| 171 | Fronius IG Plus 120 V-3 |
| 172 | Fronius IG Plus 100 V-2 |
| 173 | Fronius IG Plus 100 V-1 |
| 174 | Fronius IG Plus 70 V-2 |
| 175 | Fronius IG Plus 70 V-1 |
| 176 | Fronius IG Plus 50 V-1 |
| 177 | Fronius IG Plus 35 V-1 |
| 178 | SPR 11400f-3 208/240 |
| 179 | SPR 12000f-277 |
| 180 | SPR 10000f |
| 181 | SPR 10000F EU |
| 182 | Fronius CL 33.3 Delta |
| 183 | Fronius CL 44.4 Delta |
| 184 | Fronius CL 55.5 Delta |
| 185 | Fronius CL 36.0 WYE277 |
| 186 | Fronius CL 48.0 WYE277 |
| 187 | Fronius CL 60.0 WYE277 |
| 188 | Fronius CL 36.0 |
| 189 | Fronius CL 48.0 |
| 190 | Fronius IG TL 3.0 |
| 191 | Fronius IG TL 4.0 |
| 192 | Fronius IG TL 5.0 |
| 193 | Fronius IG TL 3.6 |
| 194 | Fronius IG TL Dummy |
| 195 | Fronius IG TL 4.6 |
| 196 | SPR 12000F EU |
| 197 | SPR 8000F EU |
| 198 | SPR 6500F EU |
| 199 | SPR 4000F EU |
| 200 | SPR 3300F EU |
| 201 | Fronius CL 60.0 |
| 202 | SPR 12000f |
| 203 | SPR 8000f |
| 204 | SPR 6500f |
| 205 | SPR 4000f |
| 206 | SPR 3300f |
| 207 | Fronius IG Plus 12.0-3 WYE277 |
| 208 | Fronius IG Plus 50 |
| 209 | Fronius IG Plus 100 |
| 210 | Fronius IG Plus 100 |
| 211 | Fronius IG Plus 150 |
| 212 | Fronius IG Plus 35 |
| 213 | Fronius IG Plus 70 |
| 214 | Fronius IG Plus 70 |

| | |
|-----|------------------------------|
| 215 | Fronius IG Plus 120 |
| 216 | Fronius IG Plus 3.0-1 UNI |
| 217 | Fronius IG Plus 3.8-1 UNI |
| 218 | Fronius IG Plus 5.0-1 UNI |
| 219 | Fronius IG Plus 6.0-1 UNI |
| 220 | Fronius IG Plus 7.5-1 UNI |
| 221 | Fronius IG Plus 10.0-1 UNI |
| 222 | Fronius IG Plus 11.4-1 UNI |
| 223 | Fronius IG Plus 11.4-3 Delta |
| 224 | Fronius Galvo 3.0-1 |
| 225 | Fronius Galvo 2.5-1 |
| 226 | Fronius Galvo 2.0-1 |
| 227 | Fronius IG 4500-LV |
| 228 | Fronius Galvo 1.5-1 |
| 229 | Fronius IG 2500-LV |
| 230 | Fronius Agilo 75.0-3 |
| 231 | Fronius Agilo 100.0-3 Dummy |
| 232 | Fronius Symo 10.0-3-M |
| 233 | Fronius Symo 12.5-3-M |
| 234 | Fronius IG 5100 |
| 235 | Fronius IG 4000 |
| 236 | Fronius Symo 8.2-3-M Dummy |
| 237 | Fronius IG 3000 |
| 238 | Fronius IG 2000 |
| 239 | Fronius Galvo 3.1-1 Dummy |
| 240 | Fronius IG Plus 80 V-3 |
| 241 | Fronius IG Plus 60 V-3 |
| 242 | Fronius IG Plus 55 V-3 |
| 243 | Fronius IG 60 ADV |
| 244 | Fronius IG 500 |
| 245 | Fronius IG 400 |
| 246 | Fronius IG 300 |
| 247 | Fronius Symo 3.0-3-S |
| 248 | Fronius Galvo 3.1-1 |
| 249 | Fronius IG 60 HV |
| 250 | Fronius IG 40 |
| 251 | Fronius IG 30 Dummy |
| 252 | Fronius IG 30 |
| 253 | Fronius IG 20 |
| 254 | Fronius IG 15 |

6.3 Event Table for Fronius Devices

| Event Code | Description |
|------------|---|
| 1 | System offset |
| 2 | Calibrate factor |
| 3 | Power control commands |
| 4 | Gradual Voltage dependend Power Reduction |
| 5 | Frequency Limit Change |
| 6 | Enter Backup Power Mode |
| 7 | Leave Backup Power Mode |
| 8 | Critical SOC reached within backmode |
| 9 | Component Specific StateCode |
| 10 | Calibration Suspension enabled |
| 11 | Datamanager reboot due to malfunction |

6.4 Hybrid_Operating_State

| Hybrid_Operating_State | Description |
|------------------------|---|
| 0 | disabled |
| 1 | normal |
| 2 | service |
| 3 | charge boost |
| 4 | nearly depleted |
| 5 | suspended |
| 6 | calibrate |
| 7 | grid support |
| 8 | deplete recovery |
| 9 | non operable (temperature) |
| 10 | non operable (voltage) |
| 11 | preheating |
| 12 | startup |
| 13 | until Hybrid 1.13.1: awake but non operable (temperature) since Hybrid 1.13.1: stopped (temperature) |
| 14 | battery full |

6.5 Meter Locations

| Meter Location | Description |
|----------------|--|
| 0 | Load |
| 1 | Grid |
| 2 | RESERVED |
| 3 | additional A.C. generator (generation only) |
| 4 | additional A.C. generator providing a battery (consumption and generation) |
| 5-255 | RESERVED |
| 256-511 | Sub Load |

7 Changelog

Document Version 17

- Fixed description about PowerFlow version attribute which is infact a number within a string.
- Updated details about GetInverterRealtime DataCollections at Gen24 and Symo Hybrid.
- Adding chapter explaining enabling/disabling of Solar API (3).
- Re-editing meter model descriptions at GetMeterRealtimeData. TS and UL Meter have signed current.

Document Version 16

- Timing constraints for archive requests updated (2.6).
- Update json example of request GetInverterRealtimeData and collection 3PinverterData for GEN24.
- Value T_Ambient in GetInverterRealtimeData is only supported by few devices (added listing).
- Added meter location dependend direction table for energies and powers (4.8.6)
- GEN24 Inverter will only provide total energy counters in 1.14 or later (no year and day values anymore)
- GEN24 provide swagger open api interface specification file (2.2.1)

Document Version 15

- Timing constraints for Realtime Requests added (2.6).
- Carlo Gavazzi meter devices added (4.8).

Document Version 14

- PowerFlowRealtimeData battery state 14 "battery full" added
- Flag inverter energies within realtime requests as imprecise

Document Version 13

- description for Fronius GEN24 added.
- updated and added missing json examples
- added inverter device type list in section 6.2
- PowerFlowRealtimeData provides data of secondary meters
- added GetStorageRealtime example for LG-Chem and BYD B-Box
- NOTE: manufacturer changed for Solar Battery at GetStorageRealtimeData.cgi
- PowerFlowRealtimeData battery state 13 "stopped (temperature)" added
- Inverter energy is AC related
- PowerFlowRealtimeData battery soc changed from non-decimal to decimal on demand (support both)
- PowerFlowRealtimeData introduced component identifier field CID
- added meter location table in section 6.5

Document Version 12

- never been published. Changes listed at version 13

Document Version 11

- NOTE: DefaultLanguage at GetLoggerInfo will be removed soon

Document Version 10

- note that all inverters (even invisible configured) are reported at PowerFlow and Inverter request
- fixed description about availability of rel_Autonomy and rel_SelfConsumption at PowerFlow request
- fixed missing description of BatteryStandby at PowerFlow request
- improved and fixed GetArchiveData descriptions and examples

Document Version 9

- *Battery_Mode* at PowerFlowRealtimeData got more states
- fixed GetLoggerLEDInfo.cgi example
- added meter location state "unknown" while backup power is active
- placed notification to use http-get request (refer to section 2.4)
- added Smartloads/OhmPilot node at PowerFlowRealtimeData.fcgi
- added description about PowerFlowRealtimeData versioning
- described *Status_BatteryCell* for Controller of Tesla at GetStorageRealtimeData.cgi
- added *Status_Battery* description for Tesla at GetStorageRealtimeData.cgi
- GetInverterRealtimeData PAC type changed from unsigned to signed integer
- added channel names for Sensor Card (refer to table 5)
- added description of field DeliveryFactor at GetLoggerInfo and updated example
- fixed description of GetInverterInfo: properties 'Show' and 'CustomName' have been mandatory since Version 3.0.3
- added GetOhmPilotRealtimeData.cgi
- added description of all possible Error Codes
- introduced Solar API "Compatibility Range" at GetAPIVersion.cgi
- fixed description of datatypes

| cgi | Field | old description | fixed description |
|-----------------------------|---|----------------------|---------------------------------|
| GetAPIVersion.cgi | APIVersion | number | unsigned integer |
| GetInverterInfo.cgi | Body.Data.<>... ...ErrorCode ...StatusCode Body.Data.<>.Show | number number | integer unsigned integer |
| GetInverterRealtimeData.cgi | Body.Data... ...DAY_ENERGY ...YEAR_ENERGY ...TOTAL_ENERGY | unsigned int | unsigned number |

15th September 2016

- fixed availability notes of GetInverterRealtimeData
- OhmPilot is listed too
- added battery status description
- added description for energies at GetPowerFlowRealtimeData

11th February 2016

- fixed availability of request GetPowerFlowRealtimeData

13th August 2015

- Added realtime request GetPowerFlowRealtimeData to api

10th July 2015

- Added realtime request GetStorageRealtimeData to api

1st June 2015

- Minor documentation update.
GetLoggerLedInfo.cgi added "alternating" led state (timeout of access point)
GetArchiveData.cgi revised data queries and responses

8 Frequently asked questions

- 1. The application I wrote for the Fronius Datalogger Web does not work with the Fronius Datamanager. Why is that?**
This is because we had to make some changes in the API to ensure compatibility with future devices. Specifically the *DeviceIndex* parameter is now named *DeviceId* and the request URLs have been changed to include an API version. For further details please refer to the latest version of the API specs.
- 2. Which data can I get?**
Currently only realtime data from inverters, Fronius Sensor Cards and Fronius String Controls. Also some information about the logging device itself is available.
Please refer to the API specs for further details.
- 3. Can multiple clients send requests to the API at the same time?**
Yes, but the requests may take longer to complete.
- 4. Can I use this API at the same time as other services of the Datalogger Web / DataManager?**
Yes. The datalogging, Solar.access/Solar.web connection, Webinterface, this API or any other service can be used independently from the others.
- 5. Can the API calls be password protected?**
No. The API is always accessible without authentication, regardless of the user or admin password set on the Webinterface.
- 6. The API reports more inverters than I have, why is that?**
This may be the case when the inverter number of an inverter is changed while the Fronius Datalogger Web / Fronius Datamanager is running. The logger then detects a new device but keeps the same device with the previous inverter number in the system for 24 hours. This is due to the fact that the datalogger is caching the devices for a certain time even if they are not present on the bus (e.g. to be able to display energy values during the night when the inverters are offline).
Those ghost devices will disappear 24 hours after they have been last seen by the datalogger. Alternatively, a reboot of the datalogger also clears the device cache and repopulates it with the currently present devices.

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