

Fronius Solar API V1



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 2.3.1 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.

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 matter.

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.

2.2 Data Types

2.2.1 Numeric Types

JSON only knows one kind of numeric types, 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 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.

2.2.2 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.

2.3 Requests

Currently, the only request protocol supported is HTTP.

2.3.1 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.  
    number APIVersion;  
  
    # URL under which the CGIs for the requests can be reached.  
    string BaseURL;  
  
}
```

Listing 2: Example: Complete response for GetAPIVersion request

```
{  
    "APIVersion" : 1,  
    "BaseURL" : "/solar_api/v1/"  
}
```

2.3.2 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.

2.4 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 *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

```
{  
    "Head": {  
        "RequestArguments": {
```

```

        "Scope": "Device",
        "DeviceId": "0",
        "DataCollection": "CommonInverterData"
    },
    "Status": {
        "Code": 0,
        "Reason": "",
        "UserMessage": ""
    },
    "Timestamp": "2011-10-20T10:09:14+02:00"
},
"Body": {
    "Data" : {
        "DAY_ENERGY" : {
            "Value" : 8000,
            "Unit" : "Wh"
        },
        "FAC" : {
            "Value" : 50,
            "Unit" : "Hz"
        },
        "IAC" : {
            "Value" : 14.54,
            "Unit" : "A"
        },
        "IDC" : {
            "Value" : 8.2,
            "Unit" : "A"
        },
        "PAC" : {
            "Value" : 3373,
            "Unit" : "W"
        },
        "SAC" : {
            "Value" : 3413,
            "Unit" : "VA"
        },
        "TOTAL_ENERGY" : {
            "Value" : 45000,
            "Unit" : "Wh"
        },
        "UAC" : {
            "Value" : 232,
            "Unit" : "V"
        },
        "UDC" : {
            "Value" : 426,
            "Unit" : "V"
        },
        "YEAR_ENERGY" : {
            "Value" : 44000,
            "Unit" : "Wh"
        },
        "DeviceStatus" : {
            "DeviceState" : 7,
            "MgmtTimerRemainingTime" : -1,
            "ErrorCode" : 0,
            "LEDColor" : 2,
            "LEDState" : 0,
            "StateToReset" : false
        }
    }
}
}

```

2.4.1 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;  
  
};
```

2.4.2 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.

3 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.

3.1 *GetInverterRealtimeData* request

3.1.1 URL for HTTP requests

/solar_api/v1/GetInverterRealtimeData.cgi

3.1.2 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 ... 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 3.1.3 for details.

3.1.3 Data Collections

CumulationInverterData Values which are cumulated to generate a system overview.

Value name	JSON type	Description
PAC	unsigned integer	AC power
DAY_ENERGY	unsigned integer	Energy generated on current day
YEAR_ENERGY	unsigned integer	Energy generated in current year
TOTAL_ENERGY	unsigned integer	Energy generated overall
DeviceStatus	object	Status information about inverter

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

Value name	JSON type	Description
PAC	unsigned integer	AC power
SAC	unsigned integer	AC power <i>Currently not implemented because not handled correctly by all inverters.</i>
IAC	floating point	AC current
UAC	floating point	AC voltage
FAC	floating point	AC frequency
IDC	floating point	DC current
UDC	floating point	DC voltage
DAY_ENERGY	unsigned integer	Energy generated on current day
YEAR_ENERGY	unsigned integer	Energy generated in current year
TOTAL_ENERGY	unsigned integer	Energy generated overall
DeviceStatus	object	Status information about inverter

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

Value name	JSON type	Description
IAC.L1	floating point	AC current Phase 1
IAC.L2	floating point	AC current Phase 2
IAC.L3	floating point	AC current Phase 3
UAC.L1	floating point	AC voltage Phase 1
UAC.L2	floating point	AC voltage Phase 2
UAC.L3	floating point	AC voltage Phase 3
T_AMBIENT	signed integer	Ambient temperature
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	JSON type	Description
DAY_PMAX	unsigned integer	Maximum AC power of current day
DAY_UACMAX	floating point	Maximum AC voltage of current day
DAY_UACMIN	floating point	Minimum AC voltage of current day
DAY_UDCMAX	floating point	Maximum DC voltage of current day
YEAR_PMAX	unsigned integer	Maximum AC power of current year
YEAR_UACMAX	floating point	Maximum AC voltage of current year
YEAR_UACMIN	floating point	Minimum AC voltage of current year
YEAR_UDCMAX	floating point	Maximum DC voltage of current year
TOTAL_PMAX	unsigned integer	Maximum AC power of current year
TOTAL_UACMAX	floating point	Maximum AC voltage overall
TOTAL_UACMIN	floating point	Minimum AC voltage overall
TOTAL_UDCMAX	floating point	Maximum DC voltage overall

3.1.4 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.
      number Value;

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

3.1.5 Example of request body (Scope "Device")

Listing 7: Example of request body for GetInverterRealtimeData request (Scope "Device")

```
// GetInverterRealtimeData.cgi?Scope=Device&DeviceId=0&DataCollection=CommonInverterData
{
  "Data" : {
    "DAY_ENERGY" : {
      "Value" : 8000,
      "Unit" : "Wh"
    },
    "FAC" : {
      "Value" : 50,
      "Unit" : "Hz"
    },
    "IAC" : {
      "Value" : 14.54,
      "Unit" : "A"
    },
    "IDC" : {
      "Value" : 8.2,
      "Unit" : "A"
    },
    "PAC" : {
      "Value" : 3373,
```

```

        "Unit" : "W"
    },
    "SAC" : {
        "Value" : 3413,
        "Unit" : "VA"
    },
    "TOTAL_ENERGY" : {
        "Value" : 45000,
        "Unit" : "Wh"
    },
    "UAC" : {
        "Value" : 232,
        "Unit" : "V"
    },
    "UDC" : {
        "Value" : 426,
        "Unit" : "V"
    },
    "YEAR_ENERGY" : {
        "Value" : 44000,
        "Unit" : "Wh"
    },
    "DeviceStatus" : {
        "StatusCode" : 7,
        "MgmtTimerRemainingTime" : -1,
        "ErrorCode" : 0,
        "LEDColor" : 2,
        "LEDState" : 0,
        "StateToReset" : false
    }
}
}
}

```

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

Listing 8: 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 {
                number 1; # value from device with index 1.
                number 2; # value from device with index 2.
                # .. and so on.
            }* Values;
        } __VALUE_NAME__;
    }* Data;
};

```

3.1.7 Example of request body (Scope "System")

Listing 9: Example of request body for GetInverterRealtimeData request (Scope "System")

```
// GetInverterRealtimeData.cgi?Scope=System

{
  "Data" : {
    "PAC" : {
      "Unit" : "W",
      "Values" : {
        "0" : 4330,
        "1" : 3721
      }
    },
    "DAY_ENERGY" : {
      "Unit" : "Wh",
      "Values" : {
        "0" : 6366,
        "1" : 6000
      }
    },
    "YEAR_ENERGY" : {
      "Unit" : "Wh",
      "Values" : {
        "0" : 1041607,
        "1" : 42000
      }
    },
    "TOTAL_ENERGY" : {
      "Unit" : "Wh",
      "Values" : {
        "0" : 3551131,
        "1" : 43000
      }
    }
  }
}
```

3.2 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.

3.2.1 URL for HTTP requests

/solar_api/v1/GetSensorRealtimeData.cgi

3.2.2 Parameters

Parameter	Type	Range/Values/Pattern	Description
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 3.2.3 for details.

3.2.3 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.

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

Listing 10: 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;  
  
};
```

3.2.5 Example of request body (DataCollection "NowSensorData")

Listing 11: Example of request body for GetSensorRealtimeData request (DataCollection "NowSensorData")

```
// GetSensorRealtimeData.cgi?Scope=Device&DeviceId=1&DataCollection=NowSensorData  
  
{  
    "Data" : {  
        "0" : {  
            "Value" : -9,  
            "Unit" : "\u00B0C"  
        },  
        "1" : {  
            "Value" : 24,  
            "Unit" : "\u00B0C"  
        },  
        "2" : {  
            "Value" : 589,  
            "Unit" : "W/m\u00B2"  
        },  
        "4" : {  
            "Value" : 0,  
            "Unit" : "kWh/m\u00B2"  
        }  
    }  
}
```

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

Listing 12: 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 Max {
                number Value;
                string Unit;
            };

            # 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 Min {
                number Value;
                string Unit;
            };
        } Day;

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

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

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

    } __CHANNEL_INDEX__;

}* Data;

};

```

3.2.7 Example of request body (DataCollection "MinMaxSensorData")

Listing 13: Example of request body for GetSensorRealtimeData request (DataCollection "MinMaxSensorData")

```
// GetSensorRealtimeData.cgi?Scope=Device&DeviceId=1&DataCollection=MinMaxSensorData

{
  "Data" : {
    "0" : {
      "SensorActive" : true,
      "Day" : {
        "Max" : {
          "Value" : 7,
          "Unit" : "\u00B0C"
        },
        "Min" : {
          "Value" : -1,
          "Unit" : "\u00B0C"
        }
      },
      "Month" : {
        "Max" : {
          "Value" : 15,
          "Unit" : "\u00B0C"
        },
        "Min" : {
          "Value" : -9,
          "Unit" : "\u00B0C"
        }
      },
      "Year" : {
        "Max" : {
          "Value" : 35,
          "Unit" : "\u00B0C"
        },
        "Min" : {
          "Value" : -12,
          "Unit" : "\u00B0C"
        }
      },
      "Total" : {
        "Max" : {
          "Value" : 37,
          "Unit" : "\u00B0C"
        },
        "Min" : {
          "Value" : -15,
          "Unit" : "\u00B0C"
        }
      }
    },
    "1" : {
      "SensorActive" : true,
      "Day" : {
        "Max" : {
          "Value" : 7,
          "Unit" : "\u00B0C"
        },
        "Min" : {
          "Value" : -2,
          "Unit" : "\u00B0C"
        }
      },
      "Month" : {
        "Max" : {
          "Value" : 9,
          "Unit" : "\u00B0C"
        }
      }
    }
  }
}
```

```

    },
    "Min" : {
      "Value" : -8,
      "Unit" : "\u00B0C"
    }
  },
  "Year" : {
    "Max" : {
      "Value" : 27,
      "Unit" : "\u00B0C"
    },
    "Min" : {
      "Value" : -11,
      "Unit" : "\u00B0C"
    }
  },
  "Total" : {
    "Max" : {
      "Value" : 31,
      "Unit" : "\u00B0C"
    },
    "Min" : {
      "Value" : -14,
      "Unit" : "\u00B0C"
    }
  }
},
"2" : {
  "SensorActive" : false,
  "Day" : {
    "Max" : {
      "Value" : 593,
      "Unit" : "W\m\u00B2"
    }
  },
  "Month" : {
    "Max" : {
      "Value" : 785,
      "Unit" : "W\m\u00B2"
    }
  },
  "Year" : {
    "Max" : {
      "Value" : 923,
      "Unit" : "W\m\u00B2"
    }
  },
  "Total" : {
    "Max" : {
      "Value" : 932,
      "Unit" : "W\m\u00B2"
    }
  }
},
"3" : {
  "SensorActive" : true,
  "Day" : {
    "Max" : {
      "Value" : 5,
      "Unit" : "km\h"
    }
  },
  "Month" : {
    "Max" : {
      "Value" : 22,
      "Unit" : "km\h"
    }
  }
}

```

```

    },
    "Year" : {
        "Max" : {
            "Value" : 54,
            "Unit" : "km\h"
        }
    },
    "Total" : {
        "Max" : {
            "Value" : 56,
            "Unit" : "km\h"
        }
    }
},
"4" : {
    "SensorActive" : false,
    "Day" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "Wh"
        }
    },
    "Month" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "Wh"
        }
    },
    "Year" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "Wh"
        }
    },
    "Total" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "Wh"
        }
    }
},
"5" : {
    "SensorActive" : false,
    "Day" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "mbar"
        }
    },
    "Month" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "mbar"
        }
    },
    "Year" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "mbar"
        }
    },
    "Total" : {
        "Max" : {
            "Value" : 0,
            "Unit" : "mbar"
        }
    }
}

```



```

    }
  }
}

```

3.3 GetStringRealtimeData request

3.3.1 URL for HTTP requests

/solar_api/v1/GetStringRealtimeData.cgi

3.3.2 Parameters

Parameter	Type	Range/Values/Pattern	Description
Scope	String	"Device"	Query specific device
Deviceld	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 3.3.3 for details.
TimePeriod	String	"Day" "Year" "Total"	<i>Only needed for Collection "CurrentSumStringControlData"</i> For which time period the current sums should be requested.

3.3.3 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).

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

Listing 14: 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;

};

```

3.3.5 Example of request body (DataCollection "CurrentSumStringControlData")

Listing 15: Example of request body for GetStringRealtimeData request (DataCollection "CurrentSumStringControlData")

```
// GetStringRealtimeData.cgi?Scope=Device&DeviceId=1&DataCollection=
CurrentSumStringControlData&TimePeriod=Day

{
  "1" : {
    "Value" : 59.57,
    "Unit" : "Ah"
  },
  "2" : {
    "Value" : 47.98,
    "Unit" : "Ah"
  },
  "3" : {
    "Value" : 47.6,
    "Unit" : "Ah"
  },
  "4" : {
    "Value" : 36.17,
    "Unit" : "Ah"
  },
  "5" : {
    "Value" : 47.91,
    "Unit" : "Ah"
  }
}
```

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

Listing 16: 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;
}

```

3.3.7 Example of request body (DataCollection "LastErrorStringControlData")

Listing 17: Example of request body for GetStringRealtimeData request (DataCollection "LastErrorStringControlData")

```

// GetStringRealtimeData.cgi?Scope=Device&DeviceId=1&DataCollection=
LastErrorStringControlData
{
    "TimeOfError" : "2012-03-02T23:50:00+01:00",
    "StringAverage" : {
        "Value" : 46.22,
        "Unit" : "Ah"
    },
    "Channels" : {
        "1" : {
            "Deviation" : {
                "Value" : 24.7,
                "Unit" : "%"
            },
            "Sum" : {
                "Value" : 57.66,
                "Unit" : "Ah"
            }
        },
        "2" : {
            "Deviation" : {
                "Value" : 0.3,
                "Unit" : "%"
            },
            "Sum" : {
                "Value" : 46.4,
                "Unit" : "Ah"
            }
        },
        "3" : {
            "Deviation" : {
                "Value" : -0.7,
                "Unit" : "%"
            },
            "Sum" : {
                "Value" : 45.9,
                "Unit" : "Ah"
            }
        }
    }
},
}

```

```

        "4" : {
            "Deviation" : {
                "Value" : -24.5,
                "Unit" : "%"
            },
            "Sum" : {
                "Value" : 34.87,
                "Unit" : "Ah"
            }
        },
        "5" : {
            "Deviation" : {
                "Value" : 0.1,
                "Unit" : "%"
            },
            "Sum" : {
                "Value" : 46.29,
                "Unit" : "Ah"
            }
        }
    }
}

```

3.4 GetLoggerInfo request

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

3.4.1 URL for HTTP requests

/solar_api/v1/GetLoggerInfo.cgi

3.4.2 Object structure of request body

Listing 18: Object structure of request body for GetLoggerInfo request

```

object {

    object {

        # Unique ID of the logging device.
        string UniqueID;

        # String identifying the exact product type.
        string ProductID;

        # String identifying the exact hardware platform.
        string PlatformID;

        # Hardware version of the logging device.
        string HWVersion;

        # Software version of the logging device.
        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").
string DefaultLanguage;

# 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;

};

```

3.4.3 Example of request body

Listing 19: Example of request body for GetLoggerInfo request

```

// GetLoggerInfo.cgi
{
  "LoggerInfo": {
    "UniqueID": "240.2",
    "ProductID": "fronius-datamanager-card",
    "PlatformID": "wilma",
    "HWVersion": "1.4A",
    "SWVersion": "2.0.2-7",
    "TimezoneLocation": "Amsterdam",
    "TimezoneName": "CEST",
    "UTCOffset": 7200,
    "DefaultLanguage": "de",
    "CashFactor": 0.47,
    "CashCurrency": "EUR",
    "CO2Factor": 0.53,
    "CO2Unit": "kg"
  }
}

```

3.5 GetLoggerLEDInfo request

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

3.5.1 URL for HTTP requests

/solar_api/v1/GetLoggerLEDInfo.cgi

3.5.2 Object structure of request body

Listing 20: 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" or "blinking").
    string State;

} __LED_NAME__

}* Data;

};

```

3.5.3 Example of request body

Listing 21: Example of request body for GetLoggerLEDInfo request

```

// GetLoggerLEDInfo.cgi
{
    "PowerLED" : {
        "Color" : "red",
        "State" : "blinking"
    },
    "SolarNetLED" : {
        "Color" : "green",
        "State" : "on"
    },
    "SolarWebLED" : {
        "Color" : "none",
        "State" : "off"
    },
    "WLANLED" : {
        "Color" : "green",
        "State" : "on"
    }
}

```

3.6 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.

3.6.1 URL for HTTP requests

/solar_api/v1/GetInverterInfo.cgi

3.6.2 Object structure of request body

Listing 22: 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.
    integer DT;

    # PV power connected to this inverter (in watts).
    # If none defined, default power for this DT is used.
    integer PVPower;

    # Custom name of the inverter, assigned by the customer.
    # ATTENTION: This property will not be present or empty if device does not support
    # custom names.
    string CustomName?;

    # Whether the device shall be displayed in visualizations according
    # to customer settings.
    # ATTENTION: This property may not be present if device does not support
    # visualization settings.
    number 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.
    number ErrorCode;

    # Status code reflecting the operational state of the inverter.
    number StatusCode;

} __INVERTER_INDEX__;

}* Data;

};

```

3.6.3 Example of request body

Listing 23: Example of request body for GetInverterInfo request

```

// GetInverterInfo.cgi

{
  "Data" : {
    "1" : {
      "DT" : 192,
      "PVPower": 5000,
      "CustomName": "Southwest",
      "Show": 1,
      "UniqueID": "123456",
      "ErrorCode" : 0,
      "StatusCode" : 7
    },
    "2" : {
      "DT" : 192,
      "PVPower": 5000,
      "Show": 0,
      "CustomName": "Southeast",
      "UniqueID": "234567",
      "ErrorCode" : 0,
      "StatusCode" : 7
    }
  }
}

```

```
}
```

3.6.4 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
0 - 6	Startup
7	Running
8	Standby
9	Boot loading
10	Error

3.7 GetActiveDeviceInfo request

This request provides information about which devices are currently online.

3.7.1 URL for HTTP requests

/solar_api/v1/GetActiveDeviceInfo.cgi

3.7.2 Parameters

Parameter	Type	Range/Values/Pattern	Description
DeviceClass	String	"Inverter" "SensorCard" "StringControl"	Which kind of device class to search for active devices.

3.7.3 Object structure of request body

Listing 24: 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 {  
  
      # Device type of the device.  
      integer DT;  
  
    } __DEVICE_INDEX__;  
  
  }* Data;  
  
};
```

3.7.4 Example of request body

Listing 25: Example of request body for GetActiveDeviceInfo request

```
// GetActiveDeviceInfo.cgi?DeviceClass=Inverter  
  
{  
  "Data" : {  
    "1" : {  
      "DT" : 192  
    },  
  },  
}
```



```

    "2" : {
      "DT" : 192
    }
  }
}

```

4 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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