

Data import specification

File format, data transfer

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1 Document revision history

Date	Rev.	Changes	Author
2015/04/24	2.00	init	E. Heinrich
2015/08/12	2.01	Tracker added	E. Heinrich
2015/10/27	2.02	Extract abbreviations to Excel sheets	P. Haggmüller
2016/10/11	2.04	Generic events	E. Heinrich
2016/10/11	2.05	Power management events	E. Heinrich
2016/10/12	2.08	FTP as new transfer method added	E. Heinrich
2018/05/08	2.09	Genset device	E. Heinrich

2 Introduction

The meteocontrol portal mainly processes data of PV-systems. Locally installed data loggers send measurement and event data to the portal. Data is usually transferred with files in XML format. In addition, error messages of the local monitoring system can also be sent directly to the server. They will be displayed in the error log of the appropriate system.

This document describes the import interface.

Main criteria are:

- General requirements
- Transfer format
- Transfer method

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3 Terms

3.1 Data logger identification

For each data logger a globally unique identifier is needed. This could be a manually configured customer id or a serial number, in conjunction with the vendor of the data logger.

With this identifier we assign the incoming data to the configured system in the portal.

Also, if data is transferred from different sources, they all must contain the same serial number.

3.2 Devices

The device is a local component, such as a meter, inverter or stringbox, whose monitored data points are collected periodically by a data logger and transmitted to a host for long term storage and processing.

3.2.1 Supported devices:

- inverter
- meter
- meteo (weather station)
- stringbox
- battery
- tracker
- power management device

3.3 Interval for measurement data

- Standard interval for measurement data is 900 seconds. Allowed intervals are 300, 600, 900, 3600 seconds.
- Transferred measurement values are expected as interval values. Particularly the portal needs energy values as interval values. Cumulative values are only optional.
- Changes of the measuring interval are not recommended.
- Please notice: the measuring interval is not the same as the transmission interval. You can log your data with a measuring interval of 900s and transfer the data 3600s (hourly) or 86400s (daily). A transmission interval less than 15 minutes is not allowed.

3.4 Interval for event data

- Events have no intervals. Data loggers record the values to the second exactly.

3.5 Timestamp

The data points must have normalized timestamps. Timestamps shall be formatted as a subset of IETF RFC 3339. All time shall be based upon UTC/Universal time and include the "Z" marker.

Example: "2015-01-14T10:00:00Z" or "2015-01-14T10:00:00+00:00".

4 General requirements

- It is possible to transfer the same data again. Existing data will be overwritten
- It is possible to transfer the data of one single device, which is part of a system (not preferred). Preferred is one file with the data of all devices.
- To avoid redundant data import and to reduce the amount of transferred data, the data is expected as a “delta transmission”. Only logged data since the last transmission should be transferred. Example: If you plan an hourly transmission, the transferred data at 11:00 contains the data from 10:00 to 11:00. The transferred data at 12:00 contains the data from 11:00 to 12:00.

5 File Format measurement and event data

6 XML

This example contains the data of one single timestamp. For this timestamp inverter data, meteorological data, meter data or stringbox data are delivered. Only data that is provided by the monitoring system needs to be transferred. If for example no meteorological data exists, the meteo tag is not necessary, it's optional

6.1.1 Data logger node <datalogger ...>

6.1.2 Configuration node <configuration ...>

Tag/attribute	Explanation	Example	required
uuid	Data logger global unique identifier - consists of a serial string and vendor.	<uuid> <serial>SN12345678</serial> <vendor>vendor123</vendor> </uuid>	✓
name	data logger name	<name>my logger</name>	
next-scheduled-transfer	Next scheduled transfer (UTC)	<next-scheduled-transfer>2015-04-14T12:30:00Z</next-scheduled-transfer>	

6.1.3 Devices node <devices ...>

6.1.4 Device child nodes <device ... >

Tag/attribute	Explanation	Example	required
id	Reference id for measurement data node	<device id="1" type="inverter">	✓
type	device type (inverter, meter, meteo, stringbox, battery, tracker)	<device id="1" type="inverter">	✓
uid	device unique identifier	<uid>INV12345</uid>	✓
name	device name	<name>Inverter A</name>	
serial	device serial	<serial>INV11.22.33</serial>	
vendor	device vendor	<vendor>vendor 123</vendor>	
model	device model	<model></model>	
firmware	device firmware	<firmware>1.23.3</firmware>	

6.1.4.1 Datapoints <datapoints ...>

6.1.4.2 Datapoint child nodes <datapoint ...>

Tag/attribute	Explanation	Example	required
interval	measuring interval in seconds (300, 600, 900, 3600)	<datapoint interval="900" timestamp="2015-04-14T12:15:00Z">	✓
timestamp	UTC-Timestamp formatted as a subset of IETF RFC 3339	<datapoint interval="900" timestamp="2015-04-14T12:15:00Z">	✓

Note: timestamp of a "datapoint" represents the end of the interval!

6.1.4.3 device child nodes <device ...>

Tag/attribute	Explanation	Example	required
id	device id from configuration node (device reference id)	<device id="1">	✓

6.1.4.4 mv nodes <mv ...>

Tag/attribute	Explanation	Example	required
t	measurement type (abbreviation)	<mv t="P_AC" v="10.5">	✓
v	measurement value	<mv t="P_AC" v="10.5">	✓

6.1.5 Measurement values

6.1.6 Inverter data

For details please refer to: *devices/inverter.xlsx*

6.1.7 Meteorological data (meteo)

For details please refer to: *devices/meteo.xlsx*

6.1.8 Meter data

For details please refer to: *devices/meter.xlsx*

6.1.9 Stringbox data

For details please refer to: *devices/stringbox.xlsx*

6.1.10 Battery data

For details please refer to: *devices/battery.xlsx*

6.1.11 Tracker data

For details please refer to: *devices/tracker.xlsx*

6.1.12 Genset data

For details please refer to: *devices/genset.xlsx*

7 Events <events ...>

7.1 Generic event <event ...>

7.1.1 Attributes

Attributes	Explanation	Example	required
timestamp	UTC-Timestamp formatted as a subset of IETF RFC 3339	<event timestamp="2016-11-25T18:11:37Z">	✓
device-id	Device id from configuration node (device reference id). If this information is missing, it is assumed to be a global data logger event.	<event timestamp="2016-11-25T18:11:37Z" device-id="1">	

7.1.2 Tags

Tag	Explanation	Example	required
uid	unique event identifier	<uid>1435725987467</uid>	✓
code	code of the event / error	<code v="03001">	✓
state	Event state accepted values: "on", "off"	<state>on</state> <state>off</state>	✓
severity	Severity of the event accepted values: "info", "normal", "disturbance", "high", "critical"	<severity>normal</severity> <severity>critical</severity> <severity>disturbance</severity>	
priority	Priority of the event accepted values: integer between 0 and 100	<priority>78</priority>	
short-description	Short description of the event maximum length 255 characters	<short-description>Communication error</short-description>	
long-description	Full description of the event	<long-description>Communication error on device ...</long-description>	

7.2 Power Management event <powermanagement...>

7.2.1 Attributes

Attributes	Explanation	Example	required
timestamp	UTC-Timestamp formatted as a subset of IETF RFC 3339	<event timestamp ="2016-11-25T18:11:37Z">	✓
device-id	device id from configuration node (device reference id)	<event timestamp="2016-11-25T18:11:37Z" device-id ="1">	✓

7.2.2 Tags

Tag	Explanation	Example	required
p-set-perc	actual used setpoint active power only float values in percent between 0 and 100 allowed	<p-set-perc>78</p-set-perc>	✓
p-set-gridop-perc	setpoint active power by grid operator only float values in percent between 0 and 100 allowed	<p-set-gridop-perc>100</p-set-gridop-perc>	
p-set-rpc-perc	setpoint active power by RPC interface (in Germany used by Direct Market Reseller) only float values in percent between 0 and 100 allowed	<p-set-rpc-perc>78</p-set-rpc-perc>	

8 System integration (shortened)

In the portal it is necessary to at least configure the system identification.

During the system configuration, the data logger type has to be defined and the system identification has to be entered.

Testsystem

Technical Data

Info Center

Data Analysis

Monitoring

Report

Meter Management

Solar Account

Environment

Customer Area

Additional Services

Datalogger overview

Datalogger Restora...

DATA LOGGER OVERVIEW

New source of the type Import Interface V2 add

Description

Hardware serial number

Comments

After the type is selected, the data logger can be registered. This is done by entering the identification of the data logger. This can be for example a (unique) serial number.

Here you can also select how the data should be transferred, FTP or HTTP.

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Datalogger Restora...

DATA LOGGER ADMINISTRATION

To register a data logger in the system, please enter the serial number and the name of the data logger on this page.

Data logger name: my data logger

Hardware serial number: SN123456789

Data transfer via: FTP HTTP

Measuring interval: 900 s

Register new data logger

Back to overview

9 Data Transfer

The data should be transferred with the following method

- HTTP/HTTPS
- FTP

HTTP is the preferred transfer method.

9.1 HTTP / HTTPS

Simple one-way API to deliver the data files specified in this document. Currently the only supported file type is XML. To use the simple HTTP API an API-key is required. This key is provided by meteocontrol during implementation.

The data can be transferred via HTTPS.

To avoid load peaks on the server side it is required to transfer the data with a random offset from 10 seconds to 5 minutes. The offset may be constant per device.

Note: The transmission interval must not be less than 10 seconds!

Resources:

<https://mii.meteocontrol.de/v2/?apiKey=xyz>

Validation:

<https://mii.meteocontrol.de/v2-validation/>

Data format:

- The data is expected as a POST-Request
- content-type: application/xml
- encoding: UTF-8
- HTTP-Protocol: HTTP 1.1
- API-Key: [api-key provided by meteocontrol]

Return values:

The expected Result Status Code is 202.

Status	HTTP Status Code	Summary/Reason
ACCEPTED	202	The request has been accepted for processing, but the processing has not been completed
INVALID_CREDENTIALS	401	Access to system denied
INVALID_MESSAGE	400	Message is either badly formed or has invalid content or content-type
LIMIT_EXCEEDED	400	Limit of 2 MByte per Request reached
UNEXPECTED_EXCEPTION	500	Error occurred during processing
SYSTEM_MAINTENANCE	503	System is currently unavailable

9.2 FTP

There is an individual account for each data logger, no general ftp-access. The logger transfers their data in the root directory. Do not use subdirectories.

Currently the only supported file type is XML. The XML files can also be compressed as gz, zlib or bz2 format.

The name of the data file must be unique!

File name example:

20160525_121500_3412240043.xml

20160525_121500_3412240043.xml.gz

20160525_121500_3412240043.xml.zlib

20160525_121500_3412240043.xml.bz2

The files are fetched and imported from the server every 15 minutes. The system deletes the data files automatically when the data import was successful.

The ftp credentials are provided in the portal after the registration of the new data logger and the choice of transmission as FTP.

