



SMA DATA MANAGER M / SMA DATA MANAGER M Lite **Storage of active power limitation and reactive power setpoint**

Functional Description and Configuration

(valid from firmware version 1.14.08.R)

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1 Functions

1.1 Functional Principle

VDE AR-N 4110:2018-11 requires that external setpoints for active power limitation can be recorded and stored for 18 months.

The Data Manager M / Data Manager M Lite can record external default. These setpoints can be stored for the required 18-month period. To meet the requirement, there are 4 options that can be used individually or in combination:

- Save active power limitation setpoints locally on the Data Manager
- Download minute mean values in CSV format from Sunny Portal powered by ennexOS (Analysis Pro)
- Activate notifications in Sunny Portal powered by ennexOS (for grid management services in general and for curtailment)
- Export system data as XML files to an external FTP server

A prerequisite for the use of these functions is a grid management service intervention of at least 5 minutes duration.

2 Configuration

2.1 Save active power limitation setpoints locally on the Data Manager

All active power limitation setpoints can be recorded and stored in the Data Manager. These are all setpoints to the Modbus registers for active power limitation of the grid operator or a direct seller (also SMA SPOT). The function is disabled by default and can be enabled via the user interface.

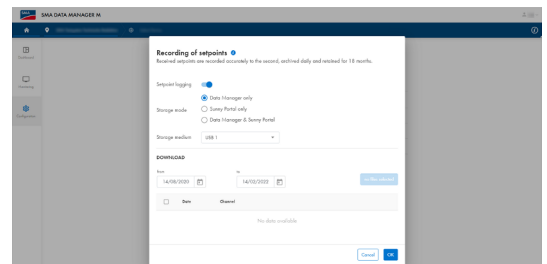
To use this function, a USB flash drive must be used. Only then can all received setpoints be stored. To download all active power limitation setpoints stored in Sunny Portal, a request must be made to SMA Service. The serial number of the Data Manager must be available for this. Minute mean values can be downloaded at any time as a CSV file from Sunny Portal (see Section 2.2, page 5).

Requirements:

- ☐ The USB flash drive must have a maximum storage capacity of 32 GB and must be formatted in the FAT32 file system.
- ☐ The USB flash drive must have enough free space. There must not be a directory with the name "Update" on the USB flash drive.
- ☐ The USB flash drive must be plugged into the communication device for the entire duration of the recording. The USB flash drive is identified as "USB1".

Procedure:

1. Log into the user interface of the Data Manager.
2. Select the menu item **Grid management service** in the menu **Configuration**.
3. Select the button **Configuration and activation** in the **Recording of setpoints** row.
4. To activate and set the function where setpoints are to be stored, activate the **[Setpoint logging]** switch.
5. Choose where to store setpoints:



- **Only for Data Managers:** Setpoints are stored on the USB flash drive on the Data Manager.
 - **Only for Sunny Portal:** Setpoints are sent to Sunny Portal 1 time per day and then deleted from the USB flash drive on the Data Manager.
 - **Data Manager & Sunny Portal:** Setpoints are sent to Sunny Portal 1 time per day and are also stored on the USB flash drive on the Data Manager.
6. To download recorded data, select the data and click **[Download]** to confirm.
 7. Click **[Ok]** to confirm.

2.2 Download minute averages from Sunny Portal

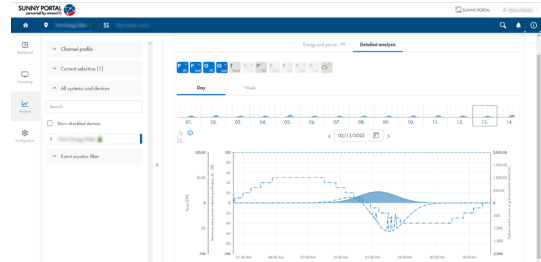
A Data Manager cyclically sends its measuring data to Sunny Portal, provided that the use of Sunny Portal is configured and a corresponding system exists in Sunny Portal. The data is aggregated in the Data Manager to minute averages and transmitted to Sunny Portal every 5 minutes, 15 minutes or 4 hours (depending on the profile used in Sunny Portal). Sunny Portal generates 5-minute and 15-minute averages from this data. The standard transmission interval of 5 minutes ("high") is required for the use of the documentation of the grid operator intervention.

To use this function for displaying the preset data, it is necessary that the setpoints are stable and unchanged for at least 5 minutes. Otherwise, the values no longer comply with the setpoints due to averaging.

The data is analyzed using the free "Analysis Pro" function in Sunny Portal.

Procedure:

1. Log into Sunny Portal.
2. Select system.
3. Select the **Analysis Pro** menu item in the **Analysis** menu.
4. Activate the active power channels P_{AC} , P_{limit} and, if necessary, the reactive power channels Q_{AC} and Q_{limit} . Leave the default setting and do not activate any other devices in the left device selection bar.



- ☒ The course of the selected measured values is displayed in graphical form. The weekly display is recommended for export.

5. Select the **Details** button.
6. Select the **Download** button.
7. Select the storage location and confirm.

- ☒ The data are downloaded as a CSV file.

The exported CSV file contains the data of the selected week as 5-minute averages. The CSV file can be opened in a spreadsheet program (e.g. Microsoft Excel). The data is permanently available in Sunny Portal. Displaying data older than 3 months will take some time. This is signaled by an activity indicator. A CSV export of this selected data will look like in the following table. Each file also contains the master data of the system (hidden in the table):

1: Example: CSV export

Time period	Power [kW]	Maximum active power set-point [%]	Setpoint for active power limitation [%]	Reactive power set-point [%]	Maximum reactive power set-point [%]	System reactive power at point of interconnection [var]	Grid-supplied power [kW]	Grid feed-in power [kW]
10:15	24.58	65.49	65.49	-	-	0	0	23.92
10:20	52.13	45.52	45.52	89.04	89.04	0	0	52.43
10:25	90.98	14.11	14.11	99	99	0	0	72.77
10:30	79.43	65.49	65.49	100	100	0	0	70.31
10:35	66.89	23.87	23.87	97.11	97.11	0	0	64.94
10:40	77.08	65.49	65.49	5	5	0	0	70.26
10:45	88.76	14.11	14.11	99	99	0	0	73.94
10:50	69.39	14.11	14.11	99	99	0	0	66.27
10:55	56.15	14.11	14.11	99	99	0	0	63.02
11:00	73.74	14.11	14.11	99	99	0	0	66.97

2.3 Activating notifications in Sunny Portal

Based on the data that a Data Manager cyclically transmits to Sunny Portal, evaluations and resulting actions in the form of notifications can be configured as required.

The following notification types are available:

Notification	Explanation
Alarm AS 5033	The alarm informs you about grounding fault events according to the standard AS 5033.
Alarm IEC 62109-2	The alarm informs you about events regarding grounding faults, residual current and the grid disconnecting device according to the standard IEC 62109-2 / DIN EN 62109-2.
Alarm communication monitoring	The alarm informs you of communication disturbances of your communication devices.
Alarm grid management services	The alarm informs you of events relating to grid management services.
Alarm performance ratio	The alarm informs you when the performance ratio is outside the tolerance.
Alarm inverter comparison	The alarm informs you of the yield warnings of the inverter comparison.
Alarm active power limitation	The alarm informs you of active power limitations in your PV system.
Detailed report	The detailed report informs you of in-depth device data in your system and of deviations of the specific yield.
Event report	The event report informs you of all events occurring in your PV system.
Info report	The info report informs you regularly of the yields of your system.

The two notification types "Alarm grid management services" and "Alarm active power limitation" are relevant for information in the case of grid management services activity.

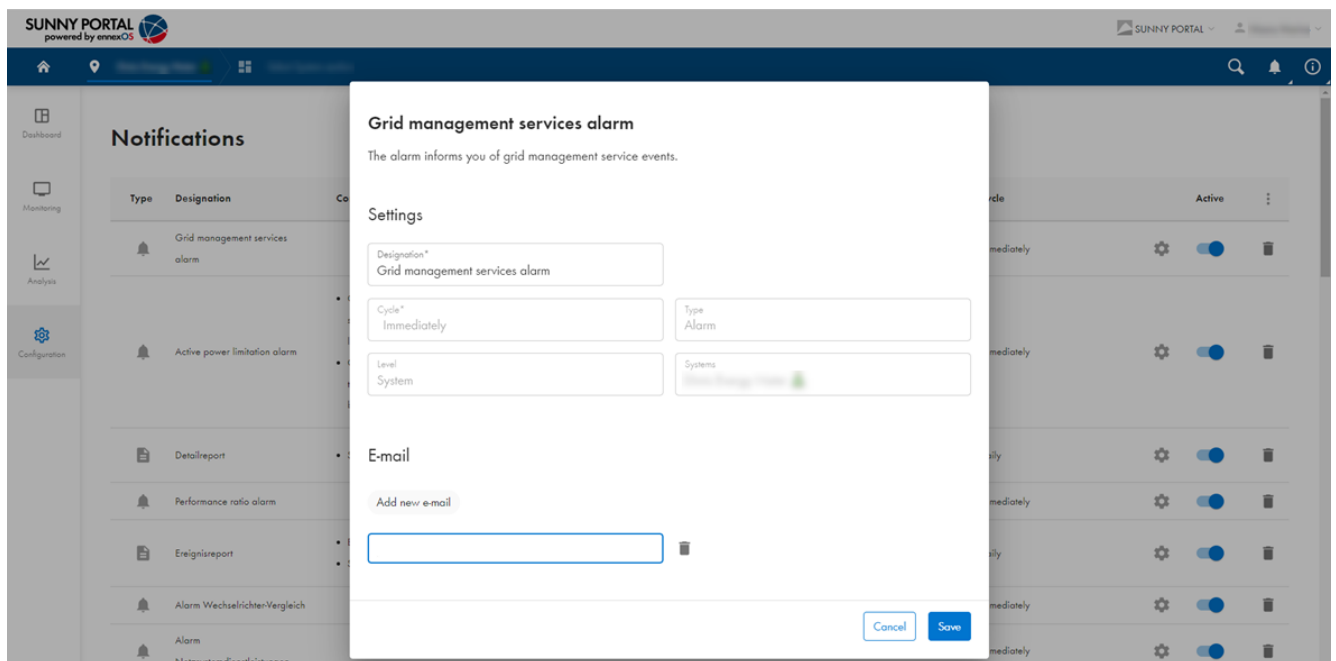


Figure 1: Configuration of "Alarm grid management services"

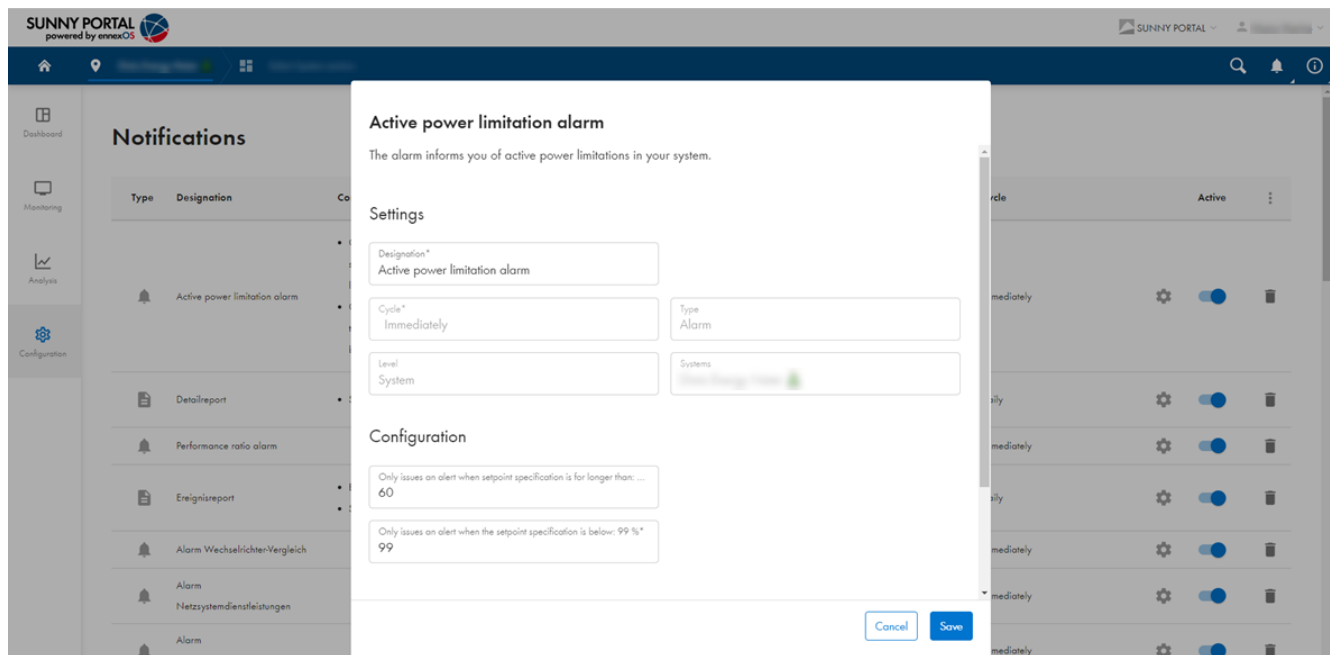




Figure 2: Configuration of "Alarm active power limitation"

Procedure:

1. Log into Sunny Portal.
2. Select system, system group or system section.
3. Select the menu **Configuration**.
4. In the context menu, select [**Notifications**].
 - ☒ The notifications already activated are shown.
5. To add a new notification, click the button .
6. To configure a notification, click the button .
7. Configure notification and confirm with [**Save**]. Note that the duration of the intervention to be reported and a power limit value (undercut) can be defined as limit parameters.

GMS activity in general is sent only when it occurs, there is no further notification. The notifications that you receive when the events occur look like this:



Alarm

Alarm "Alert Grid Management Services" for PV system "100_1000000_1000000" triggered.

The alarm informs you of events relating to grid management services.

Device	Type	Category	Event ID	Event	Time
EDMM	>	System and device control	10505	Active power limits are being sent to PV system	22/02/2022 11.28.08 AM
EDMM	>	System and device control	10506	Reactive power setpoint is sent to system	22/02/2022 11.28.09 AM

You can view the current events in the [Event monitor](#) of the PV system.

Here you get to the [Dashboard](#) of the PV system.

You can configure sending of the e-mail "Alert Grid Management Services" on the [Notifications](#) page.

This is an automatically generated e-mail. Please do not reply to this e-mail. For help and support refer to our online help or contact www.sma-service.com

If you want to unsubscribe from this notification, use the following link: [Unsubscribe notification](#).

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Figure 3: Notification "Grid management services alarm"



Alarm

Alarm "Alert Power limitation" for PV system "**100_Reference_System**" triggered.

The alarm informs you of active power limitations in your PV system.

PV system	Date	Active power limitation	Threshold (value)	Threshold (length)
100_Reference_System	17/02/2022 04.20.00 PM	60%	95%	1 min

Here you get to the [Dashboard](#) of the PV system.

You can configure sending of the e-mail Alert Power limitation on the [Notifications](#) page.

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Figure 4: Notification "Alarm active power limitation"



Solved

Alarm "Alert Power limitation" for PV system " " was canceled.

The alarm informs you of active power limitations in your PV system.

PV system	Date	Active power limitation	Threshold (value)	Threshold (length)
" "	18/02/2022 11.40.00 AM	98%	95%	1 min

Here you get to the [Dashboard](#) of the PV system.

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Figure 5: "Alarm active power limitation" notification fixed

2.4 Export system data to FTP server

The FTP Push function can be used to upload collected system data of the Data Manager to a freely selectable external FTP server. The FTP export consists of ZIP files, each containing the data as an XML file of a 5-minute interval as an average value. Three of each of these XML files are packed as a ZIP file, so each ZIP file contains a 15-minute interval.

With suitable XML evaluation programs (e.g. XMetal or own Python scripts) these files can be evaluated. For this purpose, the XML files must be searched for the following keys:

- Main key <MeanPublic>, sub key for active power limitation setpoint "WLim"
 - KEY1 = "::.Measurement.Operation.WMaxLimNom"
- Main key <MeanPublic>, sub key for reactive power setpoint "QLim"
 - KEY2 = "::.Measurement.Operation.VArMaxLimNom"

- Main key <MeanPublic>, sub key for active power setpoint "WSpt"
 - KEY3 = "::Measurement.Inverter.CurWCtlNom"
- Main key <CurrentPublic>, sub key for the source of the active power setpoint "PSrc"
 - KEY4 = "::Measurement.Operation.WMaxLimSrc"

This allows you to select, display and compress the necessary data points for archiving the grid management service interventions.

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