Technical Information

Compatibility of SMA Devices

Sunny Boy / Sunny Boy Smart Energy / Sunny Tripower / Sunny Tripower Smart Energy / Sunny Highpower / SMA eCharger / SMA EV Charger

1 Validity

This document is valid for the following SMA products:

Product	Type
Sunny Boy 1.5 / 2.0 / 2.5 / 3.0 / 3.6 / 4.0 / 5.0 / 6.0	SB1.5-1VL-40 / SB2.0-1VL-40 / SB2.5-1VL-40
	SB3.0-1AV-41 / SB3.6-1AV-41 / SB4.0-1AV-41 / SB5.0-1AV-41 / SB6.0-1AV-41
Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0	SBS2.5-10 / SBS3.7-10 / SBS 5.0-10 / SBS6.0-10
Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9	SBSE3.6-50 / SBSE4.0-50 / SBSE5.0-50 / SBSE6.0-50 / SBSE8.0-50 / SBSE9.9-50
Sunny Tripower Smart Energy 5.0 / 6.0 / 8.0 / 10.0	STP5.0-3SE-40 / STP6.0-3SE-40 / STP8.0-3SE-40 / STP10.0-3SE-40
Sunny Tripower 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0	STP3.0-3AV-40 / STP4.0-3AV-40 / STP5.0-3AV-40 / STP6.0-3AV-40 / STP8.0-3AV-40 / STP10.0-3AV-40
Sunny Tripower X 12 / 15 / 20 / 25	STP 12-50 / STP 15-50 / STP 20-50 / STP 25-50
Sunny Tripower CORE1	STP 50-40 / STP 50-41
Sunny Tripower CORE2	STP 110-60
Sunny Tripower 125	STP 125-70
Sunny Tripower Storage X	STPS30-20 / STPS 50-20
Sunny Highpower PEAK3	SHP100-21
Sunny Island 4.4M / 6.0H / 8.0H	SI4.4M-13 / SI6.0H-13 / SI8.0H-13
SMA eCharger	EVC22-3AC-20
SMA EV Charger	EVC7.4-1AV-10 / EVC22-3AC-10
SMA EV Charger Business	EVCB-LB-3AC-10 / EVCB-3AC-10 / EVCB-LB-3AC-EC-10 / EVCB-3AC-EC-10
SMA Data Manager M	EDMM-10 EDMM-20
SMA Data Manager L	EDML-10
Sunny Home Manager 2.0	HM-20
SMA Energy Meter	EMETER-20
SMA Energy Meter CT	EM-1CT63A-21 EM-3CT63A-21

2 Information on Compatibility

In systems with multiple products, their compatibility with each other must be observed. In some cases, the maximum system power, for example, may be limited by the System Manager/the main device.

In addition, use the information from the valid operating manuals.

3 Compatibility of Main Devices

3.1 Overview Matrix on the Compatibility of System Managers

This matrix allows an overview of the compatibility of System Managers/main devices with each other. Detailed information and dependencies can be found in the following sections.

	Main devices/System Manager			
	HM-20	**EDMM-10**	**EDMM-20**	**EDML-10**
Subordinate devices				
Sunny Boy 1.5 / 2.0 / 2.5	✓	✓	✓	-
Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0	✓	✓	✓	-
Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0	✓	Restricted	✓	-
Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9	✓	-	Restricted	-
Sunny Tripower 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0	✓	✓	✓	-
Sunny Tripower X 12 / 15 / 20 / 25	✓	Restricted	✓	✓
Sunny Tripower CORE1	✓	✓	✓	✓
Sunny Tripower CORE2	-	✓	✓	✓
Sunny Tripower 125	-	Restricted	✓	-
Sunny Tripower Storage X	-	-	Restricted	✓
Sunny Tripower Smart Energy 5.0 / 6.0 / 8.0 / 10.0	✓	-	Restricted	-
Sunny Island 4.4M / 6.0H / 8.0H	✓	Restricted	-	-
Sunny Highpower PEAK3	-	✓	✓	✓
SMA eCharger	Restricted	-	Restricted	-
SMA EV Charger	✓	-	Restricted	-
SMA EV Charger Business	-	Restricted	-	-
Data Manager M	-	✓	✓	✓
Data Manager L	-	✓	✓	✓

	Main devices/System Manager			
	HM-20	EDMM-10	EDMM-20	EDML-10
Subordinate devices				
SMA PV inverter via SMA Data (RS485)	-	✓	✓	Restricted
Inverter Manager with Sunny Tripower Storage 60	-	Restricted	Restricted	Restricted

	System Manager		
	SBSExx-50	STPxx-50	STPSxx-20
Subordinate devices			
Sunny Boy 1.5 / 2.0 / 2.5	✓	✓	✓
Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0	✓	✓	✓
Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0	-	✓	-
Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9	Restricted	✓	-
Sunny Tripower 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0	-	-	-
Sunny Tripower X 12 / 15 / 20 / 25	✓	Restricted	✓
Sunny Tripower CORE1	✓	✓	✓
Sunny Tripower CORE2	-	-	-
Sunny Tripower 125	-	-	✓
Sunny Tripower Storage X	-	✓	Restricted
Sunny Tripower Smart Energy 5.0 / 6.0 / 8.0 / 10.0	-	-	-
Sunny Island 4.4M / 6.0H / 8.0H	-	✓	-
Sunny Highpower PEAK3	-	Restricted	Restricted
SMA eCharger	-	-	-
SMA EV Charger	-	-	-
SMA EV Charger Business	-	Restricted	Restricted

	System Manager		
	SBSExx-50	STPxx-50	STPSxx-20
Subordinate devices			
Data Manager M	-	-	-
Data Manager L	-	-	-
SMA PV inverter via SMA Data (RS485)	-	-	-
Inverter Manager with Sunny Tripower Storage 60	-	-	-

3.2 Sunny Home Manager 2.0 as Main Device

In systems with a Sunny Home Manager 2.0, this always has to be configured as a main device.[1)] The following SMA devices are compatible and can be added to the system as subordinate devices:

- Sunny Boy 1.5 / 2.0 / 2.5
- Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0
- Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0
- Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9
- Sunny Tripower 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0
- Sunny Tripower X 12 / 15 / 20 / 25
- Sunny Tripower CORE1
- Sunny Tripower Smart Energy 5.0 / 6.0 / 8.0 / 10.0
- Sunny Island 4.4M / 6.0H / 8.0H
- SMA eCharger
  - Additionally, the SMA eCharger must be configured during commissioning as System Manager. Observe the instructions in the respective operating manual.
- SMA EV Charger

The following devices are also compatible:

- Third-party PV inverters via energy meter
  - Please also note that in systems in which a Sunny Tripower Smart Energy is installed, third-party PV inverters via energy meter are not compatible.
- Loads or generators via energy meter
- Loads or generators via relay (e.g. multi-function relay of an SMA inverter)
  - Relay via external I/O system (e.g. Moxa)
- Loads or generators via smart home control device, SEMP or EEBus interface

3.3 Sunny Boy Smart Energy as System Manager

In systems with a Sunny Boy Smart Energy, this can be configured as System Manager. The following devices are compatible and can be added to the system as subordinate devices:

- Sunny Boy 1.5 / 2.0 / 2.5
- Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0

[1)] When the Sunny Home Manager 2.0 is to be used as energy meter, it can be configured as a subordinate device.

- Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9
  - In systems with several Sunny Boy Smart Energy, other devices can be configured as subordinate inverters.
- Sunny Tripower X 12 / 15 / 20 / 25
- Sunny Tripower CORE1

The following devices are also compatible:

- Third-party PV inverters via energy meter
- Third-party PV inverters via Modbus TCP and Modbus RTU
- Third-party PV inverters via Modbus Sunspec
  - Active control is only possible via model 123, provided there are no batteries present in the system. Functionality is not tested and a slower control speed is to be expected.
- Loads or generators via energy meter
- Loads or generators via relay (e.g. multi-function relay of an SMA inverter)
  - Relays via integrated or, optionally, via external I/O systems (e.g. by Moxa)
- Sensors via subordinate SMA inverters
- Sensors via Modbus RTU

3.4 Sunny Tripower X as system manager

In systems with a Sunny Tripower X, this can be configured as System Manager. The following devices are compatible and can be added to the system as subordinate devices:

- Sunny Boy 1.5 / 2.0 / 2.5
- Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0
- Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0
- Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9
- Sunny Tripower X 12 / 15 / 20 / 25
  - In systems with several Sunny Tripower X, other devices can be configured as subordinate inverters.
- Sunny Tripower CORE1
- Sunny Tripower Storage X
- SMA EV Charger Business
  - For monitoring only
- Sunny Highpower PEAK3
  - Only with a single Sunny Highpower PEAK3 (SHP100-20 / SHP100-21) in the system
- Sunny Island 4.4M / 6.0H / 8.0H

The following devices are also compatible:

- Third-party PV inverters via energy meter
- Third-party PV inverters via Modbus TCP
  - In this case, monitoring with a Modbus profile created by yourself is possible. Please take the technical information into account "SunSpec Modbus ®-interface - ennexOS".
- Third-party PV inverters via Modbus Sunspec
  - Active control is only possible via model 123, provided there are no batteries present in the system. Functionality is not tested and a slower control speed is to be expected.
- Loads or generators via energy meter

- Loads or generators via relay (e.g. multi-function relay of an SMA inverter)
  - Relays via integrated or, optionally, via external I/O systems (e.g. by Moxa)
- Sensors via subordinate SMA inverters
- Sensors via optional SMA Sensor Module

3.5 Sunny Tripower Storage X as System Manager

In systems with a Sunny Tripower Storage X, this can be configured as System Manager. The following devices are compatible and can be added to the system as subordinate devices:

- Sunny Boy 1.5 / 2.0 / 2.5
- Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0
- Sunny Tripower X 12 / 15 / 20 / 25
- Sunny Tripower CORE1
- Sunny Tripower Storage X
  - In systems with several Sunny Tripower X, other devices can be configured as subordinate inverters.
- Sunny Tripower 125
- SMA EV Charger Business
  - For monitoring only
- Sunny Highpower PEAK3
  - Approved for VDE AR-N 4110, and not for VDE AR-N 4105

The following devices are also compatible:

- Third-party PV inverters via energy meter
- Third-party PV inverters via Modbus TCP
- Third-party PV inverters via Modbus Sunspec
  - Active control is only possible via model 123, provided there are no batteries present in the system. Functionality is not tested and a slower control speed is to be expected.
- Loads or generators via energy meter
- Sensors via subordinate SMA inverters
- Sensors via optional SMA I/O Module

3.6 Data Manager M as System Manager

In systems with a Data Manager M (EDMM-10), this can be configured as System Manager. The following devices are compatible and can be added to the system as subordinate devices:

- Sunny Boy 1.5 / 2.0 / 2.5
- Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0
- Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0
  - The Data Manager M can only be used for monitoring here. The battery inverter handles the energy management.
- Sunny Tripower 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0
- Sunny Tripower X 12 / 15 / 20 / 25
- Sunny Tripower CORE1
- Sunny Tripower CORE2
- Sunny Tripower 125

  - From firmware version ≥ 2.5.0.R
- Sunny Tripower Storage X
  - From firmware version ≥ 2.5.0.R
- Sunny Island 4.4M / 6.0H / 8.0H
  - The Data Manager M can only be used for monitoring here. The battery inverter handles the energy management.
- Sunny Highpower PEAK3
- SMA EV Charger Business
  - For monitoring only
- Data Manager M
- Data Manager L
- SMA PV inverter via SMA Data (RS485)
- Inverter Manager with Sunny Tripower Storage 60
  - For monitoring only

The following devices are also compatible:

- Third-party PV inverters via energy meter
- Third-party PV inverters via Modbus TCP and Modbus RTU
- Third-party PV inverters via Modbus Sunspec
  - Active control is only possible via model 123, provided there are no batteries present in the system. Functionality is not tested and a slower control speed is to be expected.
- Loads or generators via energy meter
- Sensors via subordinate SMA inverters
- Sensors via Modbus RTU

3.7 Data Manager M as System Manager

In systems with a Data Manager M (EDMM-20), this can be configured as System Manager. The following devices are compatible and can be added to the system as subordinate devices:

- Sunny Boy 1.5 / 2.0 / 2.5
- Sunny Boy 3.0 / 3.6 / 4.0 / 5.0 / 6.0
- Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9
  - The Data Manager M can only be used for monitoring here.
- Sunny Boy Storage 2.5 / 3.7 / 5.0 / 6.0
- Sunny Tripower 3.0 / 4.0 / 5.0 / 6.0 / 8.0 / 10.0
- Sunny Tripower Smart Energy
  - From firmware version ≥ 2.0.38.R (Data Manager M) and from firmware version ≥ 03.06.09.R (Sunny Tripower Smart Energy)
- Sunny Tripower X 12 / 15 / 20 / 25
- Sunny Tripower CORE1
- Sunny Tripower CORE2
- Sunny Tripower 125
- Sunny Tripower Storage X
  - From firmware version ≥ 2.5.0.R

- Sunny Highpower PEAK3
- SMA eCharger
  - Additionally, the SMA eCharger must be configured during commissioning as System Manager. Observe the instructions in the respective operating manual.
- SMA EV Charger Business
  - For monitoring only
- Data Manager M
- Data Manager L
- SMA PV inverter via SMA Data (RS485)
- Inverter Manager with Sunny Tripower Storage 60
  - For monitoring only

The following devices are also compatible:

- Third-party PV inverters via energy meter
- Third-party PV inverters via Modbus TCP and Modbus RTU
- Third-party PV inverters via Modbus Sunspec
  - Active control is only possible via model 123, provided there are no batteries present in the system. Functionality is not tested and a slower control speed is to be expected.
- Loads or generators via energy meter
- Sensors via subordinate SMA inverters
- Sensors via Modbus RTU

3.8 Data Manager L as System Manager

In systems with a Data Manager L, this can be configured as System Manager. The following devices are compatible and can be added to the system as subordinate devices:

- Sunny Tripower X 12 / 15 / 20 / 25
- Sunny Tripower CORE1
- Sunny Tripower CORE2
- Sunny Tripower Storage X
- Sunny Highpower PEAK3
- Data Manager M
- Data Manager L
- SMA PV inverter via SMA Data (RS485 with RS232-RS485-converter)
  - With SMA Com Gateway or subordinate Data Manager M
- Inverter Manager with Sunny Tripower Storage 60
  - For monitoring only

The following devices are also compatible:

- Third-party PV inverters via energy meter
- Third-party PV inverters via Modbus TCP and Modbus RTU (with RS232-RS485-converter)
- Third-party PV inverters via Modbus Sunspec
  - Active control is only possible via model 123, provided there are no batteries present in the system. Functionality is not tested and a slower control speed is to be expected.

- Loads or generators via energy meter
- Sensors via subordinate SMA inverters

4 Compatibility of Energy Meters

4.1 Overview Matrix on the Compatibility of Energy Meters

This matrix allows an overview of the compatibility of SMA energy meters in systems with System Managers/main devices. Detailed information and dependencies can be found in the following sections.

	Subordinate devices		
	SMA Energy Meter	**SMA Commercial Energy Meter**	**SMA Energy Meter CT**
Main devices/System Manager			
Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9	✓	-	✓
Sunny Tripower X 12 / 15 / 20 / 25	✓	✓	✓
Sunny Tripower Storage X	-	✓	-
Sunny Home Manager 2.0	✓	-	✓
Data Manager M	✓	✓	✓
Data Manager L	✓	✓	✓

4.2 Systems with SMA Energy Meter

The following devices are compatible as main devices in systems with SMA Energy Meter:

- Sunny Home Manager 2.0
  - Additional Sunny Home Managers in the system can be used as energy meters.
- Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9
- Sunny Tripower X 12 / 15 / 20 / 25
- Data Manager M
- Data Manager L

4.3 Systems with SMA Energy Meter CT

The following devices are compatible as main devices in systems with SMA Energy Meter CT:

- Sunny Home Manager 2.0
  - Additional Sunny Home Managers in the system can be used as energy meters.
- Sunny Boy Smart Energy 3.6 / 4.0 / 5.0 / 6.0 / 8.0 / 9.9
- Sunny Tripower X 12 / 15 / 20 / 25
- Data Manager M
- Data Manager L

4.4 Systems with SMA Commercial Energy Meter

The following devices are compatible as main devices in systems with SMA Commercial Energy Meter:

- Sunny Tripower X
- Sunny Tripower Storage X

- Data Manager M
- Data Manager L

5 Maximum Power and Number of Devices in Systems

5.1 Overview Matrix on Power and Number of Devices in PV Systems

This matrix allows an overview of the number of devices in systems with System Managers/main devices. Detailed information and dependencies can be found in the following sections.

	Main devices/System Manager				
	HM-20 in Sunny Portal Classic	**HM-20 in Sunny Portal powered by ennexOS**	**EDMM-10**	**EDMM-20**	**EDML-10**
Power					
Maximum PV array power	-	-	2.5 MVA	2.5 MVA	-
Number of supported Devices					
Total incl. System Manager and energy meter	24	26	50	50	200
Of which maximum number of PV inverters	24	24	20	50	200
Of which maximum number of battery or hybrid inverters	1	1	50	50	200
Of which maximum number of energy meters	1	5	50	50	200
Of which maximum number of charging stations	3	3	50	50	-
Of which a maximum number of actively controlled loads	12	12	-	-	-

	Main devices/System Manager		
	SBSExx-50	**STPxx-50**	**STPSxx-20**
Power			
Maximum PV array power	135 kVA	135 kVA	-

	Main devices/System Manager		
	SBSExx-50	STPxx-50	STPSxx-20
Number of supported Devices			
Total incl. System Manager	6	6	11
Of which maximum number of PV inverters	4	5	9
Of which maximum number of battery or hybrid inverters	3	-	10
Of which maximum number of energy meters	5	5	10
Of which maximum number of charging stations	4	3	9
Of which a maximum number of actively controlled loads	-	-	-

5.2 System Components in Systems with Sunny Home Manager 2.0 as Main Device

All components that exchange data with the Sunny Home Manager are considered devices. Only a certain number of devices can be added to the system.

In systems that are located in the Sunny Portal powered by ennexOS, the following applies:

- Number of supported devices including System Manager and energy meter: 26
  - Of which a maximum of 24 PV inverters
  - Of which a maximum of 1 battery or hybrid inverter
  - Of which a maximum of 5 energy meters
  - Of which a maximum of 3 charging stations
  - Of which a maximum of 12 actively controlled loads

In systems that are located in the Sunny Portal Classic, the following applies:

- Number of supported devices including System Manager and consumption meter (radio-controlled sockets): 24
  - Of which a maximum of 24 PV inverters
  - Of which a maximum of 1 battery or hybrid inverter
  - Of which a maximum of 1 energy meter for measurement at the point of interconnection or as generation meter of the PV inverter in addition to the integrated energy meters of the Sunny Home Manager
  - Of which a maximum of 3 charging stations
  - Of which a maximum of 12 actively controlled loads

5.3 System Components in Systems with Sunny Boy Smart Energy as System Manager

Only a certain number of devices can be added to the system.

- Maximum PV array power: 135 kVA
- Number of supported devices including System Manager: 6
  - Of which a maximum of 4 PV inverters
  - Of which a maximum of 3 battery or hybrid inverters
  - Of these a maximum of 5 energy meters, of which a maximum of 1 energy meter should be used for dynamic control and/or energy management at the point of interconnection
  - Of which a maximum of 4 charging stations

5.4 System Components in Systems with Sunny Tripower X as System Manager

Only a certain number of devices can be added to the system.

- Maximum PV array power: 135 kVA
- Number of supported devices including System Manager: 6
  - Of which a maximum of 5 PV inverters
  - Of these a maximum of 5 energy meters, of which a maximum of 1 energy meter should be used for dynamic control and/or energy management at the point of interconnection
  - Of which a maximum of 5 charging stations for monitoring purposes

5.5 System Components in Systems with Sunny Tripower Storage X as System Manager

Only a certain number of devices can be added to the system.

- Number of supported devices including System Manager: 11
  - Of which a maximum of 9 PV inverters
  - Of which a maximum of 10 battery or hybrid inverters
  - Of these a maximum of 10 energy meters, of which a maximum of 1 energy meter should be used for dynamic control and/or energy management at the point of interconnection
  - Of which a maximum of 9 charging stations for monitoring purposes

5.6 System Components in Systems with Data Manager M as System Manager

Only a certain number of devices can be added to the system. In connection with the Data Manager M (EDMM-10), the following applies:

- Maximum PV array power: 2.5 MVA
  - In control operation or for monitoring purposes only: 7.5 MVA
- Number of supported devices including System Manager: 50
  - Of which a maximum of 50 PV inverters
  - Of which a maximum of 20 PV inverters via Modbus Sunspec (e.g. Sunny Tripower CORE2)
  - Of which a maximum of 50 battery or hybrid inverters (via Modbus) for monitoring purposes The energy management is implemented by the battery inverter itself.
  - Of these a maximum of 50 energy meters, of which a maximum of 1 energy meter should be used for dynamic control and/or energy management at the point of interconnection
  - Of which a maximum of 50 charging stations for monitoring purposes

5.7 System Components in Systems with Data Manager M as System Manager

Only a certain number of devices can be added to the system. In connection with the Data Manager M (EDMM-20), the following applies:

- Maximum PV array power: 2.5 MVA
  - In control operation or for monitoring purposes only: 7.5 MVA
- Number of supported devices including System Manager: 50
  - Of which a maximum of 50 PV inverters
  - Of which a maximum of 50 battery or hybrid inverters
  - Of these a maximum of 50 energy meters, of which a maximum of 1 energy meter should be used for dynamic control and/or energy management at the point of interconnection
  - Of which a maximum of 50 charging stations

5.8 System Components in Systems with Data Manager L as System Manager

Only a certain number of devices can be added to the system.

- Number of supported devices including System Manager: 200
  - Of which a maximum of 200 PV inverters
  - Of which a maximum of 200 battery or hybrid inverters for monitoring purposes
  - Of these a maximum of 200 energy meters, of which a maximum of 1 energy meter should be used for dynamic control and/or energy management at the point of interconnection

6 System Functions

6.1 Information on the System Functions

The system functions listed in the following sections describe a selection of functions for each device. For communication products, these can be configured via the Sunny Portal. Depending on the requirements, the settings for the inverter can be made via the communication products (e.g. Sunny Home Manager 2.0 or Data Manager), Sunny Portal or the user interface of the inverter. For this, use the information from the valid operating manuals.

6.2 System Functions of the Sunny Home Manager 2.0

If the Sunny Home Manager is in the system as a main device, the following system functions are available:

- Control of the active power limitation with SMA inverters
  - No additional energy meter is necessary for this.
- $P_{AV,E}$ export limitation
- Energy management in systems with battery:
  - Increased self-consumption
  - Peak Shaving
  - Multiuse
  - Time of Use
  - Manual electricity tariffs
  - Dynamic electricity tariffs
  - Forecast-based battery charging
- Load control:
  - Enhanced load control (e.g. forecast-based load control, prioritization, configuration of time frames, self-consumption control)
- Backup/stand-alone grid capability:
  - Battery backup (for this, the Sunny Home Manager must be installed behind the active grid disconnection and can then be used for monitoring)
  - Stand-alone grid (for this, the Sunny Home Manager must be installed behind the active grid disconnection and can then be used for monitoring)

6.3 System Functions of the Sunny Boy Smart Energy

If the Sunny Boy Smart Energy is in the system as a System Manager, the following system functions are available:

- Control of the active and reactive power limitation with SMA inverters
  - An additional energy meter is necessary for this.
- $P_{AV,E}$ export limitation
- Fast stop via digital input
- Direct selling via Modbus TCP
- Energy management in systems with battery:
  - Increased self-consumption
  - Peak Shaving
  - Multiuse
  - Time of use
- Load control:
  - Limiting-value based switching of digital outputs

6.4 System Functions of the Sunny Tripower X

If the Sunny Tripower X is in the system as a System Manager, the following system functions are available:

- Control of the active and reactive power limitation with SMA inverters
  - An additional energy meter is necessary for this.
  - Via digital signals (e.g. ripple control receiver)
- $P_{AV,E}$ export limitation
- Fast stop via digital input
  - Via integrated or, optionally, via external I/O systems (e.g. Moxa)
  - Directly wired fast stop (100 ms)
- Direct selling via Modbus TCP, and in Germany, also via SMA SPOT by coneva
- Energy management in systems with battery:
  - Increased self-consumption
  - Peak Shaving
  - Multiuse
  - Time of use
- Load control:
  - Limiting-value based switching of digital outputs

6.5 System Functions of the Sunny Tripower Storage X

If the Sunny Tripower Storage X is in the system as a System Manager, the following system functions are available:

- Control of the active and reactive power limitation with SMA inverters
  - An additional energy meter is necessary for this.
- Control of the active power limitation with SMA inverters
  - Via digital signals (e.g. ripple control receiver with an external I/O system)
  - Directly wired fast stop (100 ms)
- $P_{AV,E}$ export limitation
- Fast stop via digital input
  - Via SMA I/O Module
- Direct selling via Modbus TCP, and in Germany, also via SMA SPOT by coneva
- Energy management in systems with battery:
  - Increased self-consumption
  - Peak Shaving
  - Multiuse
  - Time of use

6.6 System Functions of the Data Manager M

If the Data Manager M (EDMM-10) is in the system as a System Manager, the following system functions are available:

- Control of the active power limitation with SMA inverters
  - No additional energy meter is necessary for this.
  - Via digital signals (e.g. ripple control receiver)
- $P_{AV,E}$ export limitation

- Fast stop via digital input
  - Via integrated or, optionally, via external I/O systems (e.g. Moxa)
- Direct selling via Modbus TCP, and in Germany, also via SMA SPOT by coneva
- Energy management in systems with battery:
  - Increased self-consumption (but only for monitoring purposes as the energy management of the compatible battery inverters is implemented)
  - Peak load shaving (but for monitoring purposes only as the energy management of the compatible battery inverters is implemented)
  - Time of use
- Backup/stand-alone grid capability:
  - Battery backup (for this, the Data Manager must be installed behind the active grid disconnection and can then be used for monitoring)
  - Stand-alone grid (for this, the Data Manager must be installed behind the active grid disconnection and can then be used for monitoring)

6.7 System Functions of the Data Manager M

If the Data Manager M (EDMM-20) is in the system as a System Manager, the following system functions are available:

- Control of the active power limitation with SMA inverters
  - No additional energy meter is necessary for this.
  - Via digital signals (e.g. ripple control receiver)
  - Via analog signals
- $P_{AV,E}$ export limitation
- Fast stop via digital input
- Direct selling via Modbus TCP, and in Germany, also via SMA SPOT by coneva
- Energy management in systems with battery:
  - Increased self-consumption
  - Peak Shaving
  - Multiuse
  - Time of use
- Load control:
  - Limiting-value based switching of digital outputs
- Backup/stand-alone grid capability:
  - Battery backup (for this, the Data Manager must be installed behind the active grid disconnection and can then be used for monitoring)
  - Stand-alone grid (for this, the Data Manager must be installed behind the active grid disconnection and can then be used for monitoring)

6.8 System Functions of the Data Manager L

If the Data Manager L is in the system as System Manager, the following system functions are available:

- Control of the active power limitation with SMA inverters
  - No additional energy meter is necessary for this.
- Fast stop via digital input
  - Via integrated or, optionally, via external I/O systems (e.g. Moxa)

- Direct selling via Modbus TCP, and in Germany, also via SMA SPOT by coneva