

# SMA SYSTEM SOLUTIONS

for the VDEcode of practice and the German Renewable Energy Act (EEG 2012) · As of December 2012

## Performance Class

### Plant power up to 3.68 kVA

VDE-AR-N 4105

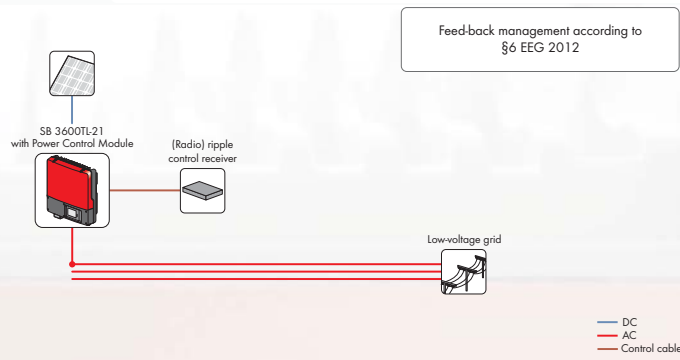
- Active power reduction in case of overfrequency (starting with 50.2 Hz with characteristic curve)

German Renewable Energy Act (EEG 2012)

- Simplified feed-in management (remote controlled reduction of the feed-in power by the grid operator in case of grid overload)
- or
- Active power feed-in limitation at the grid connection point to 70 percent of installed power

## Example A

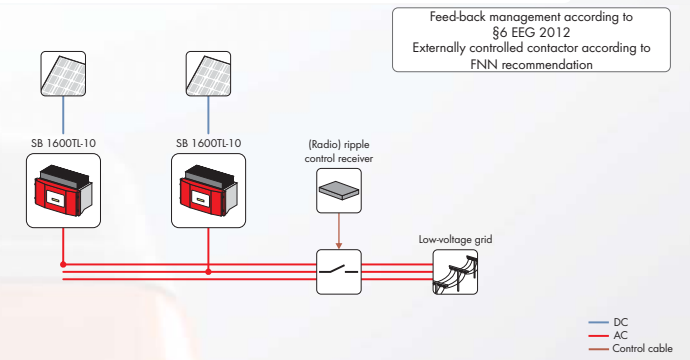
Alternatively, feed-in management according §6 EEG 2012 or general limitation of active power feed-in at the grid connection point to 70% of installed power



- Compatible products:**
- SB 1200/1700/2500/3000
  - SB 1300/1600/2100TL-10
  - SB 2000/2500/3000HF-30
  - SB 2500/3000TLST-21\*
  - SB 3300-11
  - SB 3000/3600TL-21\*
- \*compatible with the Power Control Module

## Example B

Feed-back management according to §6 EEG 2012  
Externally controlled contactor according to FNN recommendation



- Compatible products:**
- Power Control Module
  - Power Reducer Box
  - Sunny WebBox
  - Sunny WebBox mit Bluetooth
  - Sunny Home Manager

### Plant power greater than 3.68 kVA up to 13.8 kVA

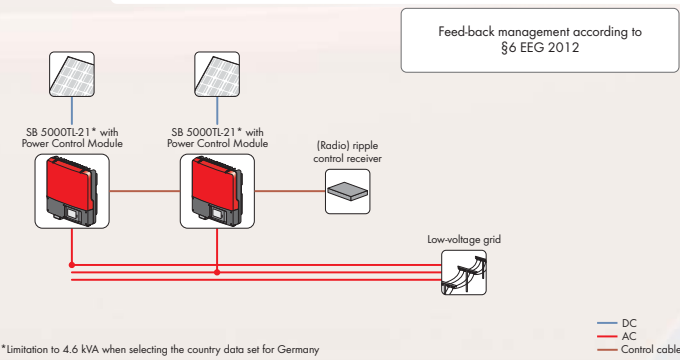
VDE-AR-N 4105

- Active power reduction in case of overfrequency (starting with 50.2 Hz with characteristic curve)
- $\sum S_{Emax} \leq 4.6$  kVA per phase
- Reactive power provision ( $\cos(\phi)$  of 0.95<sub>underscriced</sub> up to 0.95<sub>overscriced</sub>)

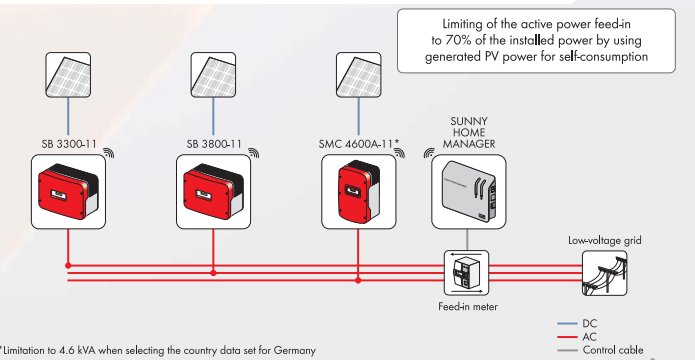
German Renewable Energy Act (EEG 2012)

- Simplified feed-in management (option allowing distribution grid operator to remotely reduce the feed-in power)
- or
- General limitation of active power feed-in at the grid connection point to 70 percent of installed power
- Plants over 10 kWp: a maximum of 90 percent of the annually generated kWh is compensated (effective as of January 1, 2014)

Alternatively, feed-in management according §6 EEG 2012 or general limitation of active power feed-in at the grid connection point to 70% of installed power



- Compatible products:**
- SB 3300/3800-11
  - SB 3000/3600/4000/5000TL-21\*
  - SB 2500/3000TLST-21\*
  - SMC 4600A-11
- \*Limitation to 4.6 kVA when selecting the country data set for Germany
- \*compatible with the Power Control Module



- Compatible products:**
- STP 5000/6000/7000/8000/9000TL-20\*
  - STP 10000/12000TL-10\*
  - Power Control Module
  - Power Reducer Box
  - Sunny WebBox
  - Sunny WebBox mit Bluetooth
  - Sunny Home Manager
- \*Limitation to 4.6 kVA when selecting the country data set for Germany

### Plant power greater than 13.8 kVA up to 30 kVA

VDE-AR-N 4105

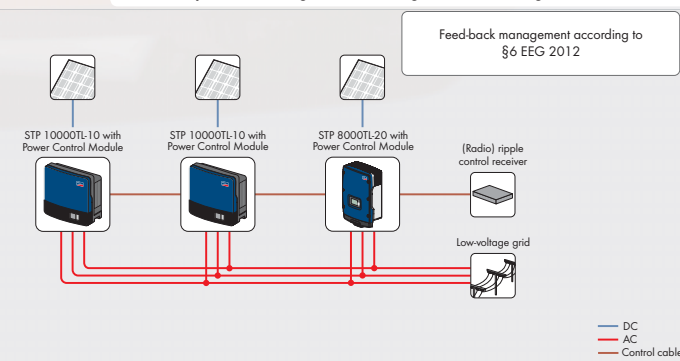
- Active power reduction in case of overfrequency (starting with 50.2 Hz with characteristic curve)
- Use of three-phase inverters or communicative coupling of three one-phase devices for power exceeding 4.6 kVA per phase.
- Reactive power provision ( $\cos(\phi)$  of 0.90<sub>underscriced</sub> up to 0.90<sub>overscriced</sub>)

### Plant power greater than 13.8 kWp up to 30 kWp

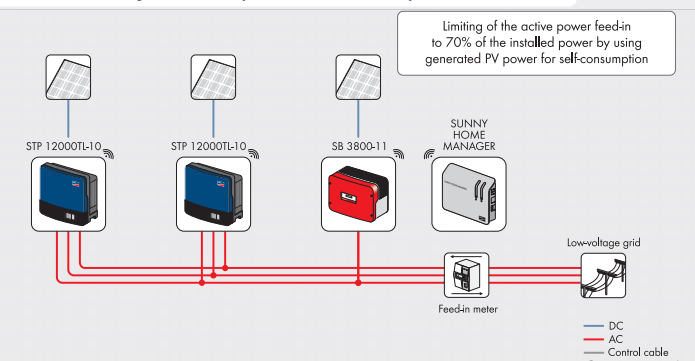
German Renewable Energy Act (EEG 2012)

- Simplified feed-in management (option allowing distribution grid operator to remotely reduce the feed-in power)
- or
- General limitation of active power feed-in at the grid connection point to 70 percent of installed power
- A maximum of 90 percent of the annually generated kWh is compensated (effective as of January 1, 2014)

Alternatively, feed-in management according §6 EEG 2012 or general limitation of active power feed-in at the grid connection point to 70% of installed power



- Compatible products:**
- SB 3300/3800-11
  - SB 3000/3600/4000/5000TL-21\*
  - SB 2500/3000TLST-21\*
  - SMC 4600/5000/6000A-11
  - SMC 7000HV-11
  - SMC 9000/10000/11000TLRP-10
- \*compatible with the Power Control Module



- Compatible products:**
- STP 5000/6000/7000/8000/9000TL-20\*
  - STP 10000/12000/15000/17000TL-10\*
  - STP 15000/20000TLE-10\*
  - STP 15000/20000TLEE-10\*
  - Power Control Module
  - Power Reducer Box
  - Sunny WebBox
  - Sunny WebBox mit Bluetooth
  - Sunny Home Manager

### Plant power greater than 30 kVA up to 100 kVA

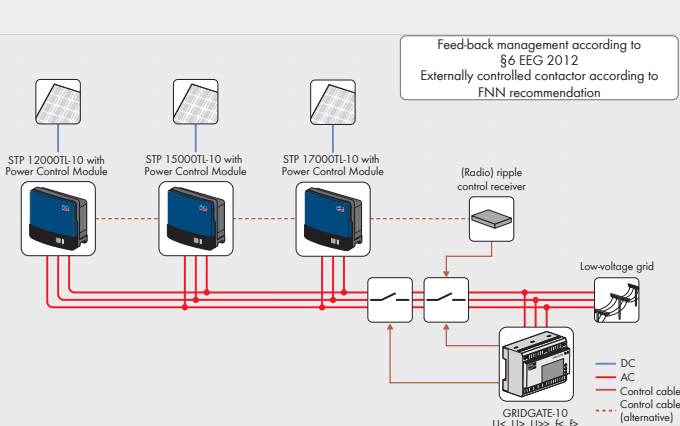
VDE-AR-N 4105

- Active power reduction in case of overfrequency (starting with 50.2 Hz with characteristic curve)
- Use of three-phase inverters or communicative coupling of three one-phase devices for power exceeding 4.6 kVA per phase.
- Reactive power provision ( $\cos(\phi)$  of 0.90<sub>underscriced</sub> up to 0.90<sub>overscriced</sub>)
- An external fail-safe central grid and plant protection system
- There is no longer a prescribed disconnection point that must be accessible at all times

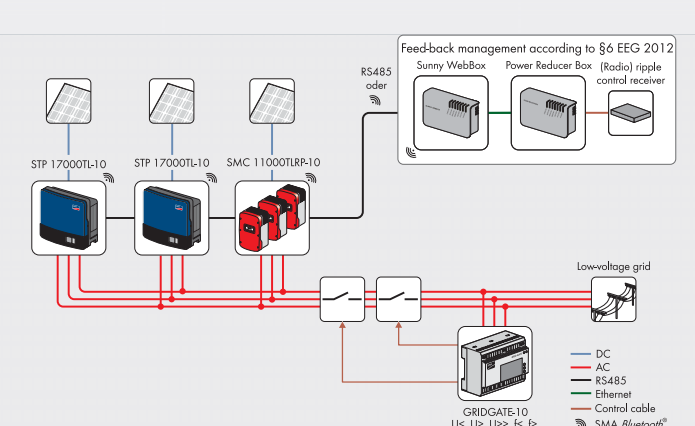
### Plant power greater than 30 kWp up to 100 kWp

German Renewable Energy Act (EEG 2012)

- Simplified feed-in management (option allowing distribution grid operator to remotely reduce the feed-in power)
- Plants that were commissioned after December 31, 2008 must be retrofit accordingly by the end of 2013
- A maximum of 90 percent of the annually generated kWh is compensated (effective as of January 1, 2014)



- Compatible products:**
- SB 3300/3800-11
  - SB 3000/3600/4000/5000TL-21\*
  - SB 2500/3000TLST-21\*
  - SMC 4600/5000/6000A-11
  - SMC 7000HV-11
  - SMC 9000/10000/11000TLRP-10
- \*compatible with the Power Control Module



- Compatible products:**
- STP 5000/6000/7000/8000/9000TL-20\*
  - STP 10000/12000/15000/17000TL-10\*
  - STP 15000/20000TLE-10\*
  - STP 15000/20000TLEE-10\*
  - Power Control Module
  - Power Reducer Box
  - Sunny WebBox
  - Sunny WebBox mit Bluetooth
  - Sunny Home Manager
  - SMA Grid Gate

### Plant power greater than 100 kVA

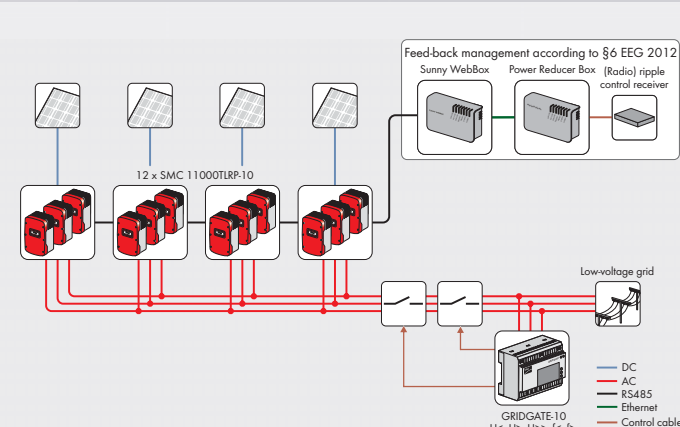
VDE-AR-N 4105

- Active power reduction in case of overfrequency (starting with 50.2 Hz with characteristic curve)
- Use of three-phase inverters or communicative coupling of three one-phase devices for power exceeding 4.6 kVA per phase.
- Reactive power provision ( $\cos(\phi)$  of 0.90<sub>underscriced</sub> up to 0.90<sub>overscriced</sub>)
- An external fail-safe central grid and plant protection system
- There is no longer a prescribed disconnection point that must be accessible at all times
- Feed-in management (option allowing the distribution grid operator to remotely reduce the feed-in power)

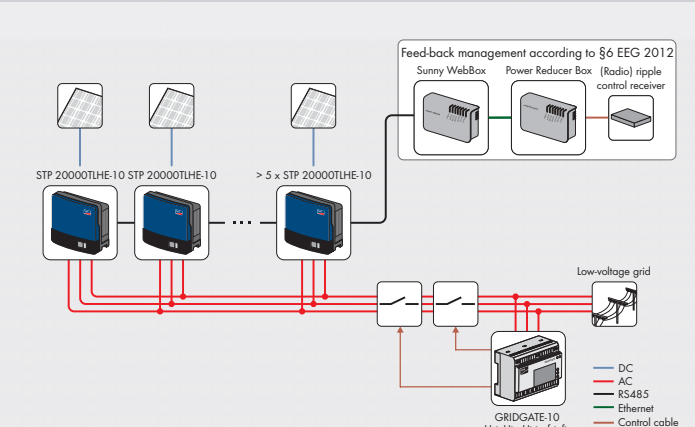
### Plant power greater than 100 kVA/kWp

German Renewable Energy Act (EEG 2012)

- Feed-in management (option allowing the distribution grid operator to remotely reduce the feed-in power and call up the actual feed-in power)
- Latest from 2012/07/01 all plants built before 2012 must satisfy these specifications
- Plants up to 1,000 kWp: a maximum of 90 percent of the annually generated kWh is compensated (effective as of January 1, 2014)



- Compatible products:**
- SB 3300/3800-11
  - SB 3000/3600/4000/5000TL-21
  - SB 2500/3000TLST-21
  - SMC 4600/5000/6000A-11
  - SMC 7000HV-11
  - SMC 9000/10000/11000TLRP-10



- Compatible products:**
- STP 5000/6000/7000/8000/9000TL-20
  - STP 10000/12000/15000/17000TL-10
  - STP 15000/20000TLE-10
  - STP 15000/20000TLEE-10
  - Power Reducer Box
  - Sunny WebBox
  - SMA Grid Gate

Visit [www.SMA.de/gridintegration](http://www.SMA.de/gridintegration) for the latest news regarding grid integration and further information