**Communication Principle**

The Grid-Connect-Box is always supplied with an all-pole disconnection function. The all-pole disconnection function must be deactivated on the Grid-Connect-Box if, according to the technical connection conditions of the grid operator and the locally applicable standards and directives, all-pole disconnection is not permitted.

**Line conductor**

- Utility Grid
- Sunny Portal
- SMA Data Manager M
- PV Inverter
- Switch/Hub
- MC Box with Grid-Connect-Box

**Neutral conductor**

- Generator
- Loads

**Grounding conductor**

- Generator
- Loads

**Control and measurement signal cable**

- Generator
- Loads

**Data cable**

- Generator
- Loads

**Data cable for internal communication of clusters**

- Generator
- Loads

**Data cable for multicluster communication**

- Generator
- Loads

**WAN Speedwire Terminator**

- Generator
- Loads

**Comment:**

- Extension cluster circuitry: see page 2
- Bridge
- DigIn and BatVoltage

**Installation - Circuitry Overview**

**Multicluster-Box 12.3-20**

**SCHEMATIC DIAGRAM FOR MULTICLUSTER-BOX**

- Grid-Connect-Box
- PV Plant
- Generator
- Loads

**Legend**

- DC cable length max. 20 m
- AC cable length max. 25 m
- Extension circuit by adding Multicluster
- Control signals
- Communication line
- Power line
- Signal cable
- Multicluster circuit
- Multicluster signal cable
- Data cable
- Generator
- Loads
- Sunny Island
- Outputs
- Inputs
- N C
- N O
If the utility grid is connected directly to the Multicluster Box as the external energy source instead of the electricity generator, the locally applicable standards and directives must be adhered to. Furthermore, the utility grid must be connected to the generator input of the Multicluster Box in this case. When connecting the utility grid directly to the Multicluster Box, proceed as described below for the generator.

Optional for Gen-Grid

**UTILITY GRID**

**GRID CONNECT BOX**

If the utility grid is connected directly to the Multicluster Box as the external energy source instead of the electricity generator, the locally applicable standards and directives must be adhered to. Furthermore, the utility grid must be connected to the generator input of the Multicluster Box in this case. When connecting the utility grid directly to the Multicluster Box, proceed as described below for the generator.

If the Multicluster Box is installed without GridConnect Box, the following jumper wires must be set:
- Terminals X110:1 and X110:2
- Terminals X111:6 and X111:7

**Legend**

- Line conductor
- Neutral conductor
- Data cable for internal communication of the clusters
- Grounding conductor
- Data cable for multicluster communication
- DC+ cable
- DC− cable
- Speedwire
- Battery temperature sensor
- Terminator
- Sunny Island
- Battery fuse
- Battery

**Comment:**
- Bridge DigIn- and BatVtg- on the master of the main cluster.
- Data cable length max. 30 m

*1 Ground the Multicluster system at the grid-connection point in accordance with the local standards and directives.
*2 If a generator is used, ground the multicluster system at the generator.
*3 If no lithium-ion batteries are connected, the terminator must be plugged in.