SG110CX

DC & AC Protection Calculation

SUNGROW

Version 1.0 EN

1. Introduction

This document describes the SG110CX inverter DC input calculation and AC output calculation for protection.

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2. Calculation for DC and AC Protection

For the inverter DC side protection ,according to the standard IEC TS 62548/ IEC 60364-7-712， If each MPPT has more than 2 PV strings, each string is protected by a PV fuse

712.430.3.104 Requirement for sub-array overcurrent protection

Sub-array overcurrent protection shall be provided if more than two sub-arrays are connected in parallel.

Each MPPT of SG110CX inverter has 2 PV strings, so the inverter DC side protection is not needed

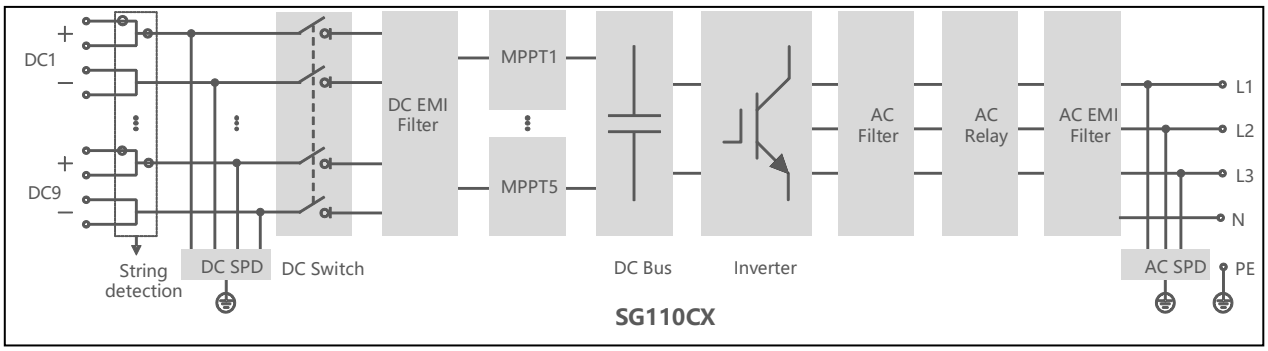

Fig.-1 Main Circuit of SG110CX

For the inverter AC side short-circuit protection and safe disconnection of the inverter, an over current protection device, e.g. circuit breaker or fuse with switching function must be used downstream of the inverter AC side

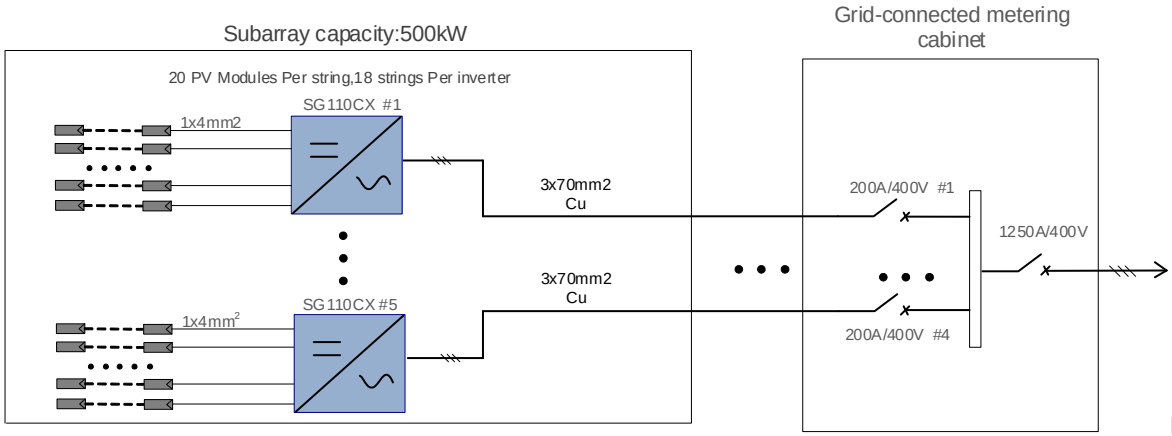

Fig.-2 Typical System Application with SG110CX

2.1 Calculation of DC Protection

Each MPPT of SG110CX inverter has 2 PV strings, so the inverter DC side protection is not needed.

2.2 Calculation of AC Protection

A suitable fuse or circuit breaker for each individual inverter output must be installed in accordance with the calculation below:

1) The rated voltage of the AC overcurrent protection device must not be less than inverter, voltage, which is 400Vac (L-L)

2) in accordance with IEC 60364-4-43

   Ib≤In≤ Iz,where Iz, the current carrying capacity of the cables to be protected. Ib is the load current

   The temperature derating characteristics of the over current protection device shall be considered

3) Icu> Max. AC short-circuit current

If the transformer capacity is 2.5MVA , the max. short-circuit currents can be as high as 50kA if the short-circuit current occurs inside a 2.5MVA transformer, which is mainly determined by the short circuit impedance, the type of cable and cable length. The interrupting capacity of the over current protection device shall be no less than the calculated max. short circuit current

3.Selection of DC and AC Overcurrent Protection Devices

3.1Selection of DC fuses

Each MPPT of SG110CX inverter has 2 PV strings, so the inverter DC side protection is not needed

3.2 Selection of AC Overcurrent Protection Device

Parameter	Specification
Maximum inverter current, IACmax	158.8A
Recommended type of time-lag fuse gL/gG (IEC 60269-1)	200 A
Recommended circuit breaker type B or C	200 A