

AC Cable Sizing for Sungrow Single-Phase Hybrid Inverters

Disclaimer

The material in this document has been prepared by Sungrow Australia Group Pty. Ltd. ABN 76 168 258 679 and is intended as a guideline to assist solar installers for troubleshooting. It is not a statement or advice on any of the Electrical or Solar Industry standards or guidelines. Please observe all OH&S regulations when working on Sungrow equipment.

Applicability:

SH5.0RS, SH6.0RS, SH10RS

When calculating the size of AC supply cable to the above inverters, the following must be taken into account as they will both flow through the AC supply cable:

- The maximum load on the backup circuits
- The maximum charging current when in 'Forced Charge' mode

The following example relates to the specifications of the SH5.0RS. Please refer to the appropriate data sheet for the inverter you are installing.

The diagram and table below shows the maximum possible currents that will flow in the backup circuits and the battery charge circuits, and therefore through the AC cable.

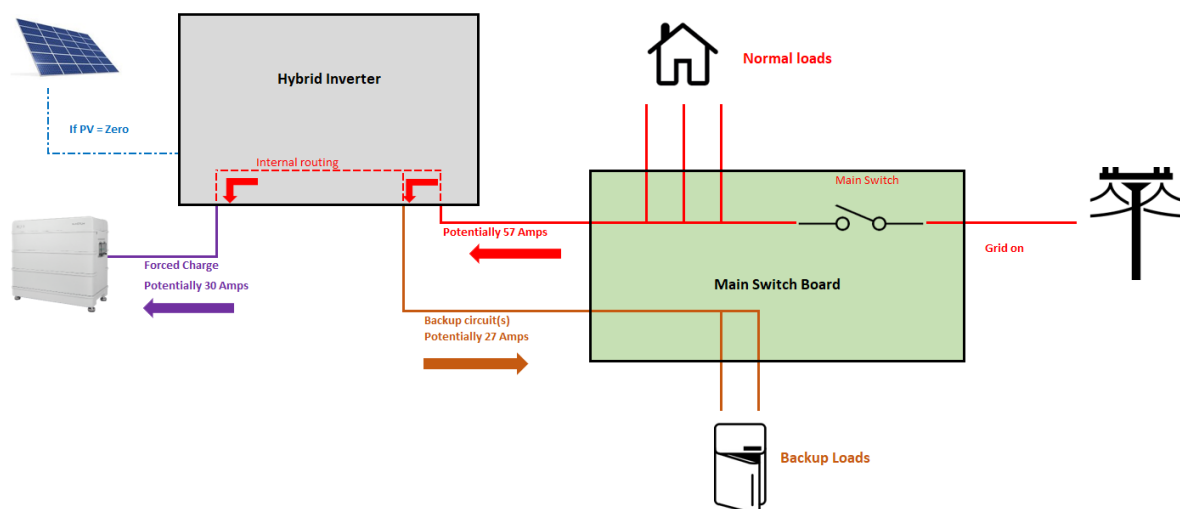


Diagram 1 – Current flow and path through the inverter.

In the above scenario, it is possible for the full current load on the backup circuits, PLUS the forced charging of battery to be on at the same time, without any PV energy i.e at night.

In other words, it is entirely possible for up to 57.3 Amps to flow through the AC supply cable.

Type designation	SH5.0RS	SH6.0RS
Input (DC)		
Recommended max. PV input power	12000 Wp	13000 Wp
Max. PV input voltage		600 V
Min. operating PV voltage / Start-up input voltage		40 V / 50 V
Rated PV input voltage		360 V
MPP voltage range		40V – 560 V
No. of independent MPP inputs		2
No. of PV strings per MPPT		1/1
Max. PV input current		32 A (16 A / 16 A)
Max. DC short-circuit current		40 A (20 A / 20 A)
Max. current for input connector		20A
Battery Data		
Battery type		Li-ion battery
Battery voltage		80V – 460V
Max charge / discharge current		30A / 30A
Max charge / discharge power		6600W
Input / Output (AC)		
Max. AC power from grid	12000 VA	13000 VA
Rated AC output power	4999 W	6000 W
Max. AC output apparent power	4999 VA	6000 VA
Rated AC output apparent power	4999 VA	6000 VA
Rated AC output current (at 230V)	21.7 A	26.1 A
Max. AC output current	22.7 A	27.3 A
Rated AC voltage		230 V
AC voltage range		154 V – 276 V
Rated grid frequency		50 Hz / 60 Hz
Grid frequency range		45 – 55 Hz / 55 – 65 Hz
Harmonic (THD)		<3 % (of rated power)
Power factor at rated power / Adjustable power factor		>0.99 at default value at rated power
Feed-in phases / connection phases		1 / 1
Backup Data (on-grid mode)		
Rated output power for backup load		6000 W
Rated output current for backup load		27.3 A
Backup Data (off-grid mode)		
Rated voltage		230V (L-N)

Table 1 – Current ratings from the data sheet SH5.0RS and SH6.0RS

As can be seen from the above, the two maximum currents together would be 57.3 Amps. This means that the AC cable must be rated at or above 57.3 Amps. Please refer to AS/NZS3000 for maximum current carrying capacities, and taking into consideration the cable type, length or cable run, and enclosure etc.

Please also consult the standards in relation to cable protection as this is a ‘MULTI-MODE’ inverter.

If the issue persists after following above procedures, please take photos testing on site and contact Sungrow Service Department on 1800 786 476 or email to service@sungrowpower.com.au, Monday- Friday 9am - 5pm (AEDT).