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Technical Product Notes

AC-Coupled Integration and Export Control with the NV7600 Hybrid Inverter

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Introduction

The NeoVolta NV7600 hybrid inverter is designed to support both direct DC-coupled solar and AC-coupled solar configurations. To ensure safe, reliable operation and compliance with grid requirements, installers must follow the defined limits and control methods for AC-coupled systems. This Technical Product Note outlines the maximum allowable AC-coupled capacity, operational modes, and recommended installation practices.

Maximum Allowable AC-coupled Capacity

The maximum AC-coupled solar capacity supported by the NV7600 is:

8,360 W or 34.8 A (AC output current)

It is the installer's responsibility to ensure that the AC-coupled system connected to the NV7600 does not exceed this limit.

Grid-Connected Operation

When operating in Grid-Connected mode:

- The NV7600 passes AC-coupled solar power directly to the grid through the internal AC-bus.
- Any battery charging requirements are supplied from the AC-bus, drawing from the AC-coupled solar, if available.
- When sufficient generation is available, any backup loads connected to the NV7600 AC-bus are powered directly by the AC-coupled solar.
- If DC solar is also connected, the NV7600 will dynamically limit DC-solar output to ensure that the combined AC and DC contribution does not exceed the inverter's maximum AC grid export rating.

Oversized AC-Coupled Systems

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Technical Product Notes

If the installed AC-coupled solar system is larger than 8,360 W, the installer must choose one of the following options:

1. Parallel Installation – Add a second NV7600 inverter to distribute the AC-coupled load.
2. Export Limiting – Program the AC-coupled solar inverter with an appropriate export limit to stay within the NV7600's allowable capacity.

*Note: The NV7600 can also be programmed to export limit its AC output to the grid.

Be aware if any export limit is programmed for the NV7600, the AC-coupled solar system needs to match and be programmed with the same export limit.

These approaches maintain system stability and prevent overloading the NV7600 or violating grid export rules.

Off-Grid Operation (Utility is offline)

When operating in Off-Grid mode:

- The AC-coupled solar system is not passed directly to the grid (no grid is present).
- Instead, the NV7600 manages the AC-coupled solar inverter using a simple ON/OFF control function. This control function can be achieved by opening the relay at the AC-coupled solar connection port or frequency shift the reference Hz at the AC-coupled port from 60Hz to 62Hz.
- This control is based on the programmed battery state of charge (SOC), ensuring that the battery is protected from overcharging or excessive discharge.

Note About Third-Party Inverters

The NV7600 does not support any communication protocol with third-party AC-coupled inverters. Consequently, the NV7600 cannot issue commands to curtail or modulate the AC power output of the AC-coupled inverter. Any required power-limiting or export-control settings must be configured directly within the AC-coupled inverter's control interface.

Conclusion

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Technical Product Notes

The NeoVolta NV7600 hybrid inverter provides flexible integration for both DC and AC solar sources while ensuring safe export control in Grid-Connected and Off-Grid scenarios. By observing the 8,360W / 34.8A AC-coupled limit and applying the appropriate configuration strategies, installers can maximize system performance, extend equipment life, and maintain compliance with grid standards.

Version	Revision Date	Brief Description of Change
V1.0	12/16/2025	Document numbering updated from NV-TN-0008 to TN-NV7600-004. Updated formatting.