Smart Relays for Solar Inverters

Technically the benefits of the increased efficiency when driving relays are:

- Reduces temperature in the inverter casing
- Reduces ventilation / heat-sinking costs
- Enables the reduction of casing
- Enables system reliability improvements

Benefits for a 3 phase hypothetical 2kWp inverter system based in Munich are as follows:

- System will generate 2000kWh [1]
- HE Relay dissipation is 7.8kWh, 3.1kWh, 2.6kWh (resp. case 1,2,3)
- 424Wh saved thanks to DRV110 (Case 3 vs Case 2)
- Equivalent to 0.2% efficiency gains

0.2% efficiency gains for inverters

Texas Instruments relay drivers bring innovation for solar inverters and help accelerate payback time. This flyer looks especially at two specific Panasonic relays: ALFG and HE.

Typical system implementations for driving relays in solar inverters:
Influence of temperature on “hold power” dissipation

The key to see the benefit of driving relays with DRV110 is to look at the distribution of the relays coil temperature over one year. The below graphs give temperature distribution as a Gaussian centered on 40°C with 12°C variant (graph 1). This then needs to be combined with the power dissipation in hold mode across temperature for the different cases (graph 2) to be able to extract the yearly savings (graph 3 and 4). The graph 2 is based on TI calculations for driving Panasonic HE and ALFG relays in the different options presented on page 1.

For more information including data sheets, product selection guides, application notes on TI products please contact your TI Sales representative or see www.ti.com.


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