

# Solar Micro Inverter Development Kit TEXAS INSTRUMENTS

(ACTIVE) TMDSSOLARUINVKIT

## Description

This development kit implements a complete grid-tied solar micro inverter based around TI's C2000 Piccolo™ TMS320F28035 microcontroller (MCU).

The Solar Micro Inverter Development Kit introduces designers to a fully-suitable MCU for solar micro inverter applications, and guides users seamlessly through the design process and application challenges.

Users can evaluate the design initially through a simple graphical interface without the need to dive into code development. When ready to explore in further depth, detailed theory-based documentation guides users step-by-step through the software and hardware implementation by incrementally building from open loop to closed loop operation of the solar micro inverter.



**To learn more about this development kit before purchasing, download controlSUITE, C2000's software portal, at [ti.com/controlsuite](http://ti.com/controlsuite). It is completely free and allows users to browse the associated documentation, software, and hardware for this development kit.**

## Features

- Implements control of an active clamp fly-back DC/DC converter with secondary voltage multiplier, MPPT and a grid-tied DC/AC inverter, comprising the power conversion stages of the solar micro inverter.
- Supports panel voltages of 28 to 45V at input as well as universal power output at up to 280W for 220VAC and up to 140W for 110VAC, making it suitable for the diverse requirements of worldwide solar markets.
- 93 percent peak efficiency and less than four percent total harmonic distortion (THD) provide more power output per solar panel, reducing detrimental heat dissipation and increasing system longevity.
- The C2000 Piccolo F28035 MCU serves as a high-performance controller for the complete micro inverter system, executing high-frequency control loops for the DC/DC and DC/AC power stages.
- Single MCU system implementation offers design simplicity and reduced system cost.
- The C2000 Piccolo F28035 MCU operates the inverter at a high PWM frequency, 100 KHz, to reduce harmonic distortion and lower passive component costs.
- Integrated features of the C2000 Piccolo F28035 MCU enable efficient control of each power stage: 4.6 MSPS 12-bit ADC, low latency C28x real-time processing core and feature-packed, 150 ps high-resolution PWM modules.
- Complete software source code, hardware design files and detailed documentation allow designers to see and understand exactly how the design was implemented, creating the foundation to begin their own unique solar power implementations.
- Solar and digital power software libraries provide code-optimized building blocks to implement a variety of power topologies and algorithms such as MPPT and Software Phase Locked Loops (PLL), perfect for designing customized solar inverter solutions.

## What's Included

- TMDSCNCD28035ISO Piccolo™ controlCARD
- Solar Micro Inverter baseboard
- External Power Supplies
- USB cable
- AC Power Cable