

# **TRANS Z SOURCE FED THREE PHASE GRID CONNECTED INVERTER FOR PV APPLICATIONS**

## **Abstract**

This paper presents Model Predictive Control (MPC) of dual-mode Trans Z-source Inverters (ZSI) with capability to operate in islanded and grid-connected mode. The transition from islanded to grid-connected mode and vice versa can cause significant deviation in voltage and current due to mismatch in phase, frequency, and amplitude of voltages. The controller proposed offers seamless transition between the two modes of operations. The main predictive controller objectives are direct decoupled power control in grid-connected mode and load voltage regulation in islanded mode. The direct decoupled active and reactive power control given in this grid-connected mode enables the dual-mode ZSI to behave as a power conditioning unit for ancillary services such as reactive power compensation. The proposed controller features are simplicity, seamless transition between modes of operations, fast dynamic response, and small tracking error in steady state condition of controller objectives.