Dual-loop grid-connected inverter

Is there a dual closed-loop repetitive control strategy for single-phase grid-connected inverters?
In this paper,a novel dual closed-loop repetitive control strategy based on grid current feedback is proposedfor single-phase grid-connected inverters with LCL filters. The proportional-integral inner loop is stabilized by using an inherent one-beat delay achieved by digital controller.

What is the circuit topology of a single-phase grid-connected inverter?
The main circuit topology is a single-phase grid-connected inverter with LCL filter. The repetitive dual-loop control method is adopted. The outer loop is controlled by the RC,which makes the grid-connected current ig track the sinusoidal reference iref without a steady-state error.

What is a grid connected inverter?
The grid-connected inverter,which is essentially a voltage-source inverter(VSI) with voltage input and current output,is the core of grid-connected power systems. The most important indexes for measuring the grid-connected inverter are total harmonic distortion (THD) of the grid current and the grid power factor (PF) [5,6].

How synchronous frame DQ control based double loop control for single phase inverter?
In this paper the design of synchronous frame DQ control based double loop control for single phase inverter in distributed generation system is proposed. For synchronous frame control, the orthogonal signal is generated by second order generalized integrator method.

Why is RC used in the control of grid-connected inverters?
RC has been widely used in the control of grid-connected inverters [,,,,,,,,],stand-alone inverters ,and active filters [26,27]due to its excellent tracking performance.

What control techniques are used for standalone inverter?
Various control techniques are used for standalone inverter such as repetitive control ,dead-beat control ,and discrete-time sliding-mode control. The response of repetitive control is slow and variation of load is to be continuously monitored.

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Abstract A nonlinear dual-loop H ? controller is presented in this paper synthesized with linear matrix inequality (LMI) method with primary objectives of generating switching ...

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This suggested controllers-based inner control scheme is applied for single-phase voltage-controlled inverters in grid-connected MGs. In [23], brief modelling and design of a ...

TL;DR: The proportional-resonant (PR) control method of the three-phase grid-connected inverter is proposed in this paper, where the conventional PI controller is replaced by PR controller, ...

Recently, sole-loop control strategies have been used for grid-connected converters with L or LC filters. But if the sole-loop control is directly transplanted to gridconnected ...

Grid connected inverter can attenuate high frequency harmonics effectively through an LCL filter which has potential benefits for the inverter to get higher harmonic performance with lower ...

In this article, a novel control method of the grid-connected inverter (GCI) based on the off-policy integral reinforcement learning (IRL) method is presented to solve two-stage ...

This paper has analyzed in detail the implementation principles and process of the three-phase LCL grid-tied inverter, and has adopted the dual closed-loop feedforward control ...

This paper proposes a novel bus voltage control strategy based on LADRC, taking the grid-connected DC microgrid as the backdrop and the bidirectional grid-connected inverter ...

A detailed description about the process of proposing control strategy, mathematical modeling and decoupling control of grid-connected inverter in the DQ coordinate system, and the design...

LCL filter is applied to reduce the high harmonic originated from grid-connected inverters, which could reduce value of inductance and improvement system dynamic performance. Account of ...

A nonlinear dual-loop H ? controller is presented in this paper synthesized with linear matrix inequality (LMI) method with primary objectives of generating switching signals ...

In this paper, a complete small-signal model of grid-connected inverter with voltage-current inner loop VOC is presented. Then, an adaptive virtual resistance control strategy is proposed ...

The proposed control strategy is based on the use of a phase locked loop to measure the microgrid frequency at the inverter terminals, and to facilitate regulation of the in-verter phase ...

A complete small-signal model for a multiple inverter-based microgrids with the proposed control structure is presented in order to assess system stability using eigenvalue ...

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