Z20K11xM OneshuntFoc Release Notes

Supports all Z20K11xM devices

1 Overview

The One Shunt FOC control demo utilizes Z20K11x's rich peripheral resources, realize the pmsm sensorless control based on the FOC algorithm. The rotor angle and speed are estimated from Flux observer. Current sample method is one shunt sample way.All the arithmetical operations are based on fixed point number format(Q15).

Contents

1 Overview 1
2 FOC Demo Introduce 2
3 New in this release 2
4 List of Changes 3
5 Version Tracking 4

2 FOC Demo Introduce

Docs folder contains:

• Z20K11XM_OneshuntFoc_Demo_ReleaseNotes.pdf

Focus on the files:

App > pmsm.c: source code and header files for the motor application;

App > user_coeff.h: head file related motor control coefficients ;

App > user_pmsm.h: head file related motor parameters;

Hal> hal_cfg.c: source code file related HW configuration;

Hal> hal_cfg.c: head file related HW configuration;

IARProject folder contains:

Z20K11xM_OneshuntFoc series IAR Project.

Application:

Debug can be operated with below variables:

Live Watch

Expression	Value
ctrlObj.state	CTRL_State_Idle
ctrlObj.startMotor	0
estObj.ElecFreq	0
ctrlObj.freqRef	0

ctrlObj.state: Motor control status.

ctrlObj.startMotor: 0 stop; 1 run (run order can be set only in Idle status).

estObj.ElecFreq: observer feedback frequency value.

ctrlObj.freqRef: setup frequency value.

3 New in this release

Main features:

- Fixed point operations
- Foc sensorless control
- Speed and current loop
- Flux observers
- One shunt sensor
- SVPWM type
- PWM phase shift
- PWM duty cycle limit
- Calculation optimization

4 List of Changes

4.1 Changes

This is the new release files.

Features	Issue
	•
	•
	•
	•
	•
	•

5 Version Tracking

Data	Version	Comments
2023/03/08	Demo	Only Demo for one shunt foc.

How to Reach Us:

Home Page:

zhixin-semi.com/

Information in this document is provided solely to enable system and software implementers to use Zhixin products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits based on the information in this document. Zhixin reserves the right to make changes without further notice to any products herein.

Zhixin makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does Zhixin assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. “Typical” parameters that may be provided in Zhixin data sheets and/or specifications can and do vary in different applications, and actual performance may vary over time. All operating parameters, including “typicals,” must be validated for each customer application by customer's technical experts. Zhixin does not convey any license under its patent rights nor the rights of others. Zhixin sells products pursuant to standard terms and conditions of sale, which can be found at the following address: http://www.zhixin-semi.com/

Document Number: Z20K11xM-RN

Revision Demo, Mar, 2023