International
IOR Rectifier

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IRMCO201

AC Servo Control FPGA Object Code
Accelerator™ Based Soft ASIC Manual

Features

- **Xilinx Spartan2-300™ based complete AC servo control solution**
- **Complete closed loop current control (Synchronously Rotating Frame Field Orientation)**
- **Closed loop configurable velocity control**
- **Direct interface to IR2175 current sensing high voltage IC**
- **Direct interface to IR213x 3-phase gate driver IC**
- **Direct Encoder interface with multiplex/non-multiplexed Hall A/B/C signals**
- **Versatile loss minimization Space Vector PWM**
- **Configurable architecture**
  - **Support AC PM motor or Induction motor**
  - **Closed loop or open loop control**
- **Asynchronous serial communication interface (RS232C, RS422, RS485)**
- **Fast SPI interface with multi-axis control capability**
- **Optional 12-bit A/D interface for hall effect current sensing**
- **±10V reference command input with 12-bit A/D interface**
- **17-bit parallel bus interface for microcontroller expansion**
- **7-bit discrete I/O for sequencing and status monitor**
- **Integrated brake IGBT control**
- **Configurable GUI (Graphic User Interface) available**
- **EXO file format**

Product Summary

Max. Sysclk	33.3 MHz
Max. PLL clock for current feedback	133.3 MHz
Closed loop current control computation time	6 usec max
Closed loop current loop bandwidth(-3dB)	5.5 kHz
Closed loop velocity loop update rate	5/10 kHz
PWM carrier frequency	16 bit/Sysclk
IR2175 Current feedback sampling latency	8.3 usec
Current feedback temp drift/offset	calibrated
Current feedback data resolution	1111 count/sysclk*4
Max encoder input frequency	4 MHz
1/T encoder counter	16 bit/1MHz
Max ASCI comm. Speed	56 Kbps
Max SPI clock	6 MHz
Target EEPROM device	XC18V02 (programmable)
	XC17V02 (one-time)

Description

IRMCO201 is an FPGA object code for a complete AC servo control system, which can be downloaded into the Xilinx Spartan2-300™ low cost FPGA. With IRMCO201, the user can readily build a high performance servo drive system without any programming effort. IRMCO201 provides an immediate solution for high performance AC servo amplifier applications. This soft ASIC is so flexible that the user can configure and optimize the system specifically to the needs of each application. With International Rectifier high voltage ICs such as IR2175 current sensing IC and IR2137 3-phase gate drive IC, IRMCO201 minimizes the analog and power electronics component count, and simplifies the design for low cost AC servo solutions.