International
IOR Rectifier

January 15, 2003 Rev 2.1

IRACS201

Single Axis Servo Drive Design Platform

Accelerator™ System Manual

Features

- **Low cost complete AC servo drive design platform**
- **Low cost FPGA (Spartan2) based closed loop torque and velocity control**
- **Simple design with IR motion chipset (IR2137 gate drive HVIC and IR2175 current sensing HVIC)**
- **230V/1.5kW maximum output power with 600V/30A standard ECONO-PIM2 IGBT module**
- **High bandwidth torque loop response**
- **Flexible drive configuration (PMAC or induction motor)**
- **Scalable output power rating (500W/1kW/1.5kW)**
- **Quadrature encoder or Resolver interface**
- **Low cost A/D interface with multiplexer**
- **Loss minimization Space Vector PWM**
- **ServoDesigher tool for easy operation**
- **RS232C/RS422 and fast SPI interface (standard)**
- **Built-in trace buffer memory for diagnostics and monitor function**
- **SynQnet™ for multi-axis expansion (optional)**
- **Parallel interface for microcontroller expansion or debug port**
- **Over-current and ground fault protection**
- **Over-voltage / Under-voltage protection**
- **Dynamic Braking control with brake IGBT/FWD**
- **Discrete I/Os (START/STOP/FAULT/FLTCLR/SYNC/DIR/PWMEN)**
- **Configuration data retention at power up/down**

Description

IRACS201 is a complete servo drive design platform for AC servo drive applications up to 1.5kW. The system contains complete hardware and preloaded object code for the FPGA, and the GUI (graphic user interface) software. Complete hardware schematics and B/Ms are provided so that user can adapt design into specific needs. IRACO201 downloadable object code is also available for volume usage of IRACS201 design. User can evaluate high performance servo drive with a specific motor, and tailor the drive design

Product Summary

Current loop bandwidth (-3dB)	5 kHz(typ)
Speed loop bandwidth (adjustable)	400 Hz(typ)
PWM carrier frequency	100 kHz max
Hardware current loop execution time	4 usec
Improved low speed regulation by 1/T algorithm	
Continuous output current	3/6/8 Arms(.5/1/1.5kW)
Overload output current	8/16/22 Arms(.5/1/1.5kW)
Maximum modulation index	1.2
Loss reduction SVPWM	33% switching loss
Max SPI comm. speed	6 MHz
Master/Slave SPI configuration	
Max RS232C speed	57.6 kbps
Optional RTS/CTS control for RS232C	
Trace buffer memory	8 kbyte
Configuration data EEPROM	128 byte