

# Hydraulic Pump Servo Control ARM-Based Embedded Industrial Controller

Design Note #64



Large scale hydraulic systems provide the force to power industry. Controllers from Orchid Technologies extend precision control to custom applications.



*"A low cost general purpose controller is exactly what we needed. We'd talked to others, but Orchid got it right away. They provided hardware and software that addressed our needs."*

- VP Development



**ORCHID TECHNOLOGIES  
ENGINEERING & CONSULTING, INC.**

Copyright © 2010 Orchid Technologies Engineering & Consulting Inc, all rights reserved. OTEC and the Orchid Technologies logo are trade makes of Orchid Technologies engineering & consulting, Inc. All other marks are the property of their respective owners.

## ARM-Based Embedded Industrial Controller

Hydraulics is a fascinating technology. Powerful, rapid movement of physical machinery can be accomplished in the blink of an eye. Precision motion with great finesse is possible. Operator safety and reliable circuit operation are critical to the success of any hydraulics controller. Orchid was hired to design the multi-channel hydraulic machinery controller pictured below. Working closely with our client, we fashioned circuit designs which are both flexible and safe by design.

## Replace Costly PLC's

Programmable logic controllers are an expensive general purpose way to implement industrial controls – but when volume grows into the tens or hundreds of units, a custom solution makes much more sense. Custom embedded industrial controllers from Orchid can reduce the physical size and power requirements of your control electronics while also reducing unit cost, simplifying wiring interconnectivity, and improving reliability.

## Embedded ARM Processor Power

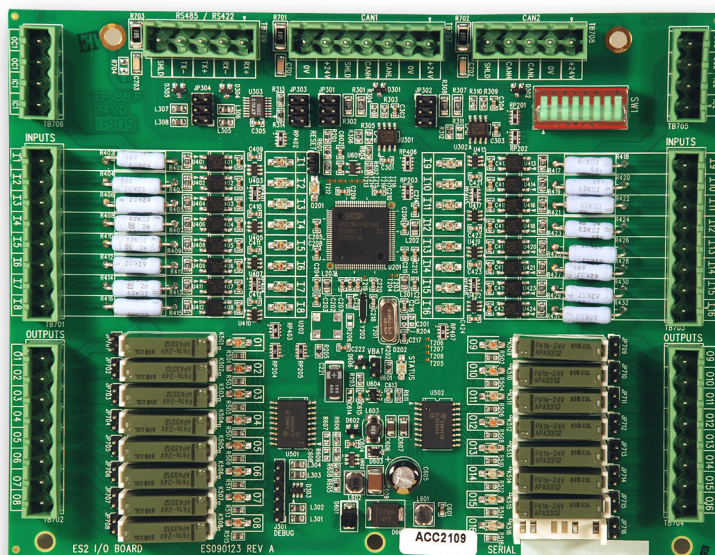
Many classes of low cost processors are available today. An ARM-based microcontroller was selected for this design. The ARM-based processor provides low power, low cost thirty-two bit computational performance. Today's ARM-based processors support a large variety of on-chip peripheral components. On chip USB, Ethernet, and CAN interfaces allow low cost connectivity to modern computer systems.

## Environmentally Tough

This custom industrial controller operates over extended conditions from -40 C to +85 degrees C; without fans. Designed for compliance with UL60950, EN60950, CSA C22.2 safety and EN61000 immunity requirements. Design Failure Mode Effects Analysis (DFMEA) techniques were used to insure fault-free operation by design.

## Orchid Technologies: ARM Based Controllers

The development of custom electronic products for our OEM clients is Orchid's entire business. The design of highly customized ARM Based controllers with rapid design cycles, demanding technical requirements, and unforgiving schedules sets us apart. Call Orchid Technologies today!



**Custom Engineering From Concept to Production**

147 Main Street, MA 01754 www.orchid-tech.com 978-461-2000 fax:978-461-2003