2009 FRC Controller

Frequently Asked Questions – NON-TECHNICAL

General

Q ***Why change controllers?***

A While there are many reasons to change the FRC controller, the most important was the desire of *FIRST* to upgrade performance to allow teams better control and increased system and software features. This will better enable teams to raise the bar for their robot's capabilities and empower the Game Design Committee to develop even more challenging and creative games.

Q ***What is the new FRC Controller?***

A The new FRC Control system consists of a number of components. The system is based around National Instruments' (NI) Compact RIO, also know as the cRIO. In addition, there is a Power Distribution Board, the breakout boards to provide *FIRST* standard interconnections and 802.11 wireless access points.

Q ***Why did FIRST choose NI?***

A National Instruments has a long partnership with *FIRST* and shared vision of improving science and technology education for the K-12 space. Once *FIRST* decided to investigate offering a next generation control system, National Instruments became involved and was selected.

Q ***Why did FIRST leave IFI?***

A *FIRST* is not 'leaving' IFI, but the opportunities presented by the control system from National Instruments were so compelling we felt it best for *FIRST* community to make that change. IFI has been a valuable supplier to *FIRST* for many years, a relationship that may continue.

Q ***What is National Instruments' past involvement with FIRST?***

A National Instruments is an international sponsor of the *FIRST* LEGO League (FLL) and annually sponsors the regional Central Texas FLL tournament. Additionally, NI sponsors many Austin, Texas *FIRST* Robotics Competition (FRC) high schools teams and is an official supplier to FRC by providing National Instruments LabVIEW graphical programming software for the past three years.

Q ***How long has NI had a robotics platform?***

A NI provides general-purpose tools, hardware and software, for scientists and engineers, which have been used in the robotics applications for more than 20 years. In 2003, NI introduced the CompactRIO embedded control platform that enables more sophisticated robotic applications. In conjunction with LabVIEW graphical programming, many customers including the DARPA Urban Challenge and lead researchers at the Virginia Tech RoMeLa Robotics and Mechanisms Laboratory have leveraged this powerful combination of hardware and software to create cutting edge robotics solutions.

Support

Q ***Our team sponsors a "post season" competition. Will there be a different system when we borrow a FIRST Field?***

A The Field Management System will be updated to accommodate and capitalized on the new control system

Q ***Where can I go for help? What will I do when there is a problem at competition?***

A That would depend on the assistance needed. There is planned support from NI for the cRIO platform and LabVIEW (website and help forum). There are also plans for WPI to host a central website for WPILib and C code which will be open sourced allowing teams to contribute and provide a central repository. *FIRST* is working on an external source for training and system introduction materials. If you have a problem at competition you will rely on the same sources you always have, such as mentors, other teams, websites and forums.

Q ***What do I do when I need repairs? Are spares available during competition?***

A There will be spares as normally supplied at competitions. Repairs and replacement policies are being developed.

Q ***How will teams receive training on using the new control system?***

A *FIRST* and NI will be working to provide the proper training to all teams through several different avenues. During the 2008 Championship, NI will run training sessions for teams and be available at their booth to answer questions. This same training will be shared on the web for teams not at the event. Following Championship, we will continue to develop and distribute training materials to support the setup and use of the control system in preparation for the 2009 season. This training will be distributed through the web and live workshops.

Logistics

Q ***When will the new controller be available for teams?***

A *FIRST* is continuing to work out the logistics of the exact availability date, but it will be no later than kickoff for the 2009 season, and we are working hard to make it available earlier.

Q ***I have heard that cRIO is very expensive. Will this change raise the entry cost for teams?***

A No. Due to the investments being made by NI and our suppliers, *FIRST* will provide teams with a more powerful control system without raising the cost to compete. Because there are many factors that determine the final price of the kit of parts, the exact entry price has not been determined yet.

Q ***How can a buy an additional controller? How much will it cost?***

A Teams will be able to purchase one additional control system each year at a heavily reduced price. The exact details are still being finalized.

Q ***Will I get a new controller in each year's kit?***

A Because of the ruggedness of CompactRIO, teams will be able to reuse their controller in competition years beyond 2009. However *FIRST* may decide to introduce new cRIO modules to the system and other restrictions or allowances may be made specific to future year game designs.