

► Kontron Solutions@Work

We create digital brains for a more intelligent world

ThinkIO in action:

► Special Applications

Specialists of GCTC (Yu. A. Gagarin Russian State Scientific-Research and Test Centre of Cosmonaut Training) and RTSoft close corporation used ThinkIO controllers in development of a simulator mobile computing system (MCS) for International space station (ISS) crew prelaunch training.

The simulator includes various working places depending on crew prelaunch training plan: two Neptune-M astronaut consoles, an astronaut working place to work through manual control of a Soyuz-TM guided transport spacecraft (GTS) on different stages of flight, an astronaut working place to work with instrumentation of landing and living modules, an instructor working place.

MCS hardware includes 5 workstations, an object interfacing unit (OIU) with more than 100 data input channel and 60 data output channels to connect Neptune-M astronaut console and manual control handles, during ISS crew prelaunch training in full scope.

Simulator MCS was developed using modern industrial hardware of Kontron holding — CompactPCI modules integrated into 19" crate. Distributed simulator OIU is based on ThinkIO controller and WAGO I/O system and provides connection of Neptune-M astronaut conso-



le, handles for manual control of GTS on the approach stage, instrumentation and equipment of landing module cabin dummy and living module cabin dummy, connected to simulator MCS through the ThinkIO's Ethernet port. All the main connections between standalone components of the simulator are implemented using only two twisted pairs of the Ethernet network. The following requirements were taken into account when choosing software for simulator OIU: provision for operation of distributed OIU consisting of three or more nodes and a possibility to connect real on-board computers of Soyuz-TM GTS via OIU. The CoDeSys software package was chosen as system software for OIU, that provided for development of distributed scalable OIU, which met all the requirements. CoDeSys Gateway Server collects I/O data

streams from all ThinkIO controllers (via ThinkIO's Ethernet ports). Shared I/O data exchange between CoDeSys and programs of the simulator's on-board systems is carried out using OPC protocol through interaction of CoDeSys OPC server and OPC client inside the training environment of the prelaunch training simulator.

Increased requirements to MCS reliability are the results of prelaunch training site remoteness from repair facilities of GCTC, tight schedule of training execution, mechanical stresses during transportation on board of a plane or a vehicle.

Developed mobile computing system meets all the specific requirements to operation, is scalable and reliable.

About Kontron

Kontron is a worldwide leading manufacturer of Embedded Computer Technology and robust mobile solutions. They supply leading OEMs, system integrators and application providers in the most varied market segments such as data and telecommunication, automation technology, metrology and control engineering, transportation, gaming and entertainment, medical and military technology, as well as aeronautical engineering and energy. Our objective is to enable customers to significantly reduce their time-to-market and to provide them with clear competitive advantages with products such as high-performance open computer platforms and systems, single board computers, HMIs and mobile, rugged computers. Kontron employs over 2,300 employees worldwide, with production plants in Europe, North America and the Asia-Pacific region. The company is listed in the German TecDAX 30 under stock exchange code "KBC". Kontron is a member of the Intel® Communications Alliance and therefore receives early access to leading Intel technologies and preferential engineering support. For more detailed information on Kontron, please visit the company website: www.kontron.com

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