Royal Silver Rail

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VMEbus technology applications

AcQ InduCom, The Netherlands, supplies 6U VMEbus boards and systems to ALSTOM for use on modern trains, locomotives, buses, trolleys, and trams. ALSTOM is a global railway equipment and system supplier based in France. The XE-MPR5 VMEbus board from AcQ InduCom is used for train and train set control to control opening and closing of doors, switching lights on and off, operating the brakes, and controlling drive carriages. The train (master) driver receives operational and failure reports on displays and by lamp signals on the control panel. The XE-MPR6 VMEbus board is specialized to control traction drives through complex power electronics for driving and electrical braking. It is also used for some diagnostic tasks. The XE-MPR7 VMEbus board is optimized for diagnostic use onboard a moving train. Operating and error conditions are shown on a color display and stored in flash memory for later diagnosis on computers in the railway depot.

In 2005, Her Royal Highness Queen Beatrix of The Netherlands celebrated the 25th anniversary (Silver Jubilee) of her crowning. For that occasion the *Silver Rail* train set was specially prepared to tour the country. With a total of nine wagons, various aspects of life and history of the country were displayed, such as human rights, sports, music, daily work, and so on. As the train moved between cities and towns, young people between 15 and 20 years of age could ride on the train for free and take part in activities on the train and during lengthy stays in various places. The VMEbus boards from AcQ InduCom, which were installed in this special train, made sure this was a safe and comfortable drive through The Netherlands. VMEbus boards and M-Module mezzanines are used in many different train-related applications (see Figure 1, courtesy AcQ InduCom).

Elsewhere in Europe, DLR, Germany, the German center for air and space

Figure 1

research, is using a VMEbus system in an airborne LIght Detection And Ranging (LIDAR) system called *ALEX* (Aerosol Lidar EXperiment). The modified 10-seater aircraft has a range of approximately 2,000 miles at a ceiling of about 45,000 feet. The aircraft has three windows (two up and one down) covered with high-optical quality glass. Typical applications are to study Polar Stratospheric Clouds (PSCs), smog situations, planetary boundary layers, aerosol distribution, and related phenomena. This VMEbus-based LIDAR system operates on three wavelengths between 300 nm and 1,000 nm simultaneously. Therefore, it can detect and quantify particles, liquids, gaseous substances, and aerosols. Experiments were also done in conjunction with NASA. The computing power of the SPARC-based VMEbus system allows for data recording simultaneously from six channels at 12-bit accuracy at a digitization rate of 30 MHz. The color-coded plots are displayed in real time, and the operator can recall the x, y, z position of interesting features such as a cloud or aerosol layers.

VMEbus products

ELTEC Elektronik AG, Germany, and PHYTEC Messtechnik GmbH, Germany, have announced their joint support for standardizing real-time Linux. They are founding members of the Open Source Automation Development Lab (OSADL). This association is similar to the OSDL. The emphasis of the OSADL is on automation (the letter *A* in the acronym) and on real-time applications. This is in contrast to several proprietary real-time, nonautomation Linux offerings.

The readers of *Embedded Computing Europe* magazine voted for the product highlights in 2005. In the category of SBC, the MVME3100 VMEbus SBC with 2eSST protocol from Motorola and the SVME/DMV-183 dual processor VMEbus SBC from Curtiss-Wright Controls Embedded Computing were voted first and second respectively.

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