"Multibort" – the Chipset for Distributed Signal Processing and control with SpaceWire Interconnections

Long Paper

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The article presents the chipset "Multibort" for distributed architectures with SpaceWire interconnections for signal processing and control that is produced by the company "ELVEES" (Moscow). The chipset includes the high-performance multicore (RISC and DSP cores) processors MC24R with embedded SpaceWire links, the control processor MCT01 with embedded SpaceWire links, the 16-port SpaceWire routing switch MCK01, the 4-channel SpaceWire bridge for PCI bus and Memory access bus. Chips are produced in 0,25 un technology. Used in these chips IP-blocks of SpaceWire link controllers (NICs) run with rates up to 400 Mbit/s and implement extended version of the SpaceWire standard with Interrupt/IntAknowledge codes support. Chips architecture and characteristics are presented. The SpaceWire routing switch MCK01 has an embedded RISC-core for advanced distributed monitoring and administration of SpaceWire interconnection networks. The control processor MCT01 has a powerful RISC core with FPU, embedded ADCs and a set of serial and parallel interfaces. SpaceWire NICs are supported by drivers in Linux that run on the chips.
Examples of distributed computer systems, which are based on the Multibort chips, illustrate scalable reference structures for distributed signal processing and real-time control systems with SpaceWire interconnections.