

SPINSAW – THE SPACEWIRE NETWORK SYSTEM ADMINISTRATOR WORKSTATION

Session: SpaceWire networks and protocols

Short Paper

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ABSTRACT

An important task in SpaceWire interconnections is administration of switches network . For this task the software tool SpaceWire Network System Administrator Workstation (SpiNSAW) was built. This tool provides means for state monitoring and operating modes settings for SpaceWire switches in a SpaceWire network. SpiNSAW is an application with graphical interface working on a PC. It allows performing read and writing operations of all switch components available for software by using direct connection to a switch or by RMAP (Remote Memory Access Protocol).

The SpiNSAW can work in two different modes. One mode is suitable for users who would not like to know any details about switch internal structure. In this case the most important parameters could be set in quite a simple way: the SpaceWire switch routing table, transmission speed and link ports' state. The second mode is an extended one and requires a user to understand the functions of the routing switch components that are accessible for software. It allows monitoring the current switches state in details i.e. recognize the state of every channel, set transmission speed, determine adaptive group routing, send Time-codes and distributed interrupts, generate data packets and send them, monitor the error statistics, read/write configuration and operation mode registers of the switch. Both modes provide the means for saving current settings of every switch in the SpaceWire interconnection network to a file and for downloading them back.

To provide SpiNSAW access to the network several ways could be used. In the first one, a PC connects through COM-port to the switch, which has ability to handle special commands from COM-port (our MCK01 SpaceWire routing switch has an UART port also). The SpiNSAW generates RMAP packet according to user's instructions, and sends it to the switch which forwards it to the SpaceWire network. Another way is to use devices such a PCI-SpaceWire Bridge, SpaceWire USB brick and so on. In this case SpiNSAW generates RMAP packet and passes it to the device that is used; the device transmits it through SpaceWire channel into the SpaceWire network. Having got RMAP packet-acknowledge device's software passes it to SpiNSAW for further handling. The SpiNSAW allows to make settings for SpaceWire switches within known SpaceWire address space allocation and supports an RMAP subset.