SWFU: SPACEWIRE INTERFACE UNIT FOR VERSATILE SENSOR INTERGRATION ON THE EXOMARS CHASSIS BREADBOARD

Session: SpaceWire Missions and Applications

Short Paper

Lee C. G.-Y., Obstei R.

von Hoerner & Sulger GmbH, Schlossplatz 8, Schwetzingen, D-68723, Germany

E-mail: lee@vh-s.de, obstei@vh-s.de

ABSTRACT

This paper describes a versatile interface unit which will allow quick integration of a distributed sensor system into a spacewire network. Each unit contains two spacewire interfaces plus an RMAP decoder and functions both a simple router and a data interface: spacewire packets are accepted by the unit and passed to the RMAP decoder only if the packets logical address matches the units node ID. Otherwise the packet is passed to the alternate interface for transmission to the next node in the chain. In this way the network is built up by daisy chaining units together.

Accepted packets are decoded using the RMAP protocol which access a generic IO bus. Various different IO peripherals may be attached to this bus as required by the system and thus the unit can act as both a gateway to other protocols such as RS232 and CAN as well as direct interface to sensors from which data is generated. As well as servicing RMAP requests, the unit may also be configured to initiate RMAP requests upon specific events – data arriving on a port or if a given spacewire time code is received. In this way resources may be free from the task of polling all the SWIFU units for data.

The current implementation of the unit is target to mixed signal FPGA technology to allow a single chip sensor solution and is being used as an integral part of the Exomars Chassis Breadboard being built by von Hoerner & Sulger GmbH.