x-ARTS: ADDI-DATA Realtime Slave System

Real-time Ethernet systems for the field: precise, robust and reliable

The real-time component plays an important role in distributed control and regulation tasks. That's why ADDI-DATA has developed a new product family of real-time Ethernet systems: x-ARTS. These robust systems are designed for measurement, control and automation applications with various real-time requirements.

YOUR BENEFITS

- Precise, fast, robust, reliable
- Hot-plug enabled
- Long-term availability of the product

High level of protection

The x-ARTS are available for EtherCAT (EC-ARTS), ProfiNet (PN-ARTS) and VARAN (V-ARTS). They are particularly suited for use in the field, where interferences are an everyday event. In order to assure reliable operation, many protective mechanisms are built-in.

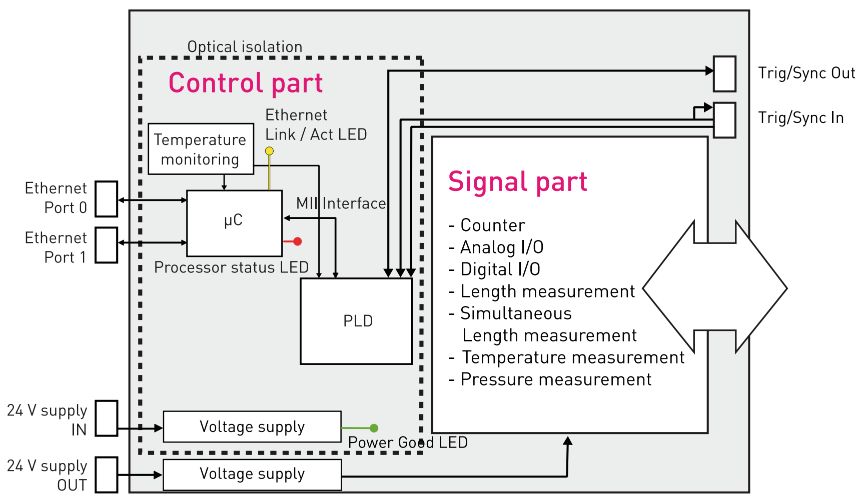
- Protective circuits such as optical isolation, etc.
- Robust metal housing
- IP 65 degree of protection
- Extended temperature range from -40 °C to +85 °C (oper. temperature)

The x-ARTS stand for quality and reliability. Like all other ADDI-DATA products, they are available for years. So for you, they make an all-around safe investment.

The optimal solution

The real-time Ethernet systems from ADDI-DATA in many respects make an optimal choice for measurement and automation tasks. They are characterised by highly precise inputs. While the bus is clocking time, they are able to measure more quickly and to buffer these values. Moreover, the measurement can be started independent of the bus, since by the use of the 24 V trigger input, the x-ARTS may be combined with hardware that is not connected to the bus. For example, a light barrier can serve as a trigger signal.

In addition, several systems or signals can be synchronised with one another using the synchro line, all in a period of less than 1 μs. The x-ARTS can also tie together signals from various external devices, such as encoders and analog inputs, and in this way acquire values faster than the bus cycle. This increases the efficiency of your application. Various diagnosis possibilities, retrievable via Ethernet, can be set to work in the real-time Ethernet systems from ADDI-DATA.



The x-ARTS consist of a signal part and a control part with optical isolation.
The real-time connection can be accomplished through EtherCAT, ProfiNet or VARAN. Real-time Ethernet can be used looped-through or as a point-to-point connection.

* Preliminary product information

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ADDI-DATA® SPIRIT OF EXCELLENCE

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ETHERCAT

EtherCAT is appropriate for both hard and soft real-time requirements. It makes possible a large variety of topologies, such as lines, trees, rings, stars and combinations of these. Switches are thus made superfluous. In order to optimise the speed, processing the frame begins immediately, even if the frame still has not been entirely received. Sending follows the same principle. In order to assure precise synchronisation, even for widely separated network participants, the master clock is always compared to the slave clocks.

EC-ARTS-Systeme

The EC-ARTS are slave systems that are entirely compatible with EtherCAT. Programming of the systems is done through SDO (Service Data Objects).

Available functions

EC-ARTS-AI-16: Analog inputs (16-bit),
Further systems in preparation: Temperature (RTD/TC, 24-bit), pressure (24-bit)

Examples of EC-ARTS applications

Various signals are acquired or output in a test bench in the automobile industry. In order to reduce cable complexity, distributed systems are used. The acquisition runs in real time in order to regulate precisely.
Advantage of EC-ARTS: can be mounted directly on the machine, precise data acquisition

PROFINET

ProfiNet supports both standard Ethernet and real-time connections. It is based on the provider-consumer model, which envisages granting equal rights to the network participants. This model stands in contrast to the standard master-slave process. Not only are process data transferred via ProfiNet, but functions such as web server, e-mail and FTP data transfer are also supported.
Basically, ProfiNet is divided into two function classes: ProfiNet CBA and ProfiNet IO. These are in turn broken down into three "performance classes". Classes RT and IRT are relevant to real-time requirements. RT is used for real-time I/O data traffic in automation technology. IRT is an asynchronous real-time communication that was developed especially for motion control applications.

PN-ARTS systems

The PN-ARTS systems from ADDI-DATA are suitable for the RT and IRT performance classes. That means that transfer rates of less than 1 ms (IRT) to 10 ms (RT) can be supported, depending on requirements.

Available functions

PN-ARTS-AI-16: Analog inputs (16-bit),
Further systems in preparation: Temperature (RTD/TC, 24-bit), pressure (24-bit)

Examples of PN-ARTS applications

Profi-Net is very well suited to support PLCs. Since it was in part developed by Siemens, the interaction of a PLC and ProfiNet devices is quite smooth. In this way, the PN-ARTS real-time systems can take on tasks that must be completed within a defined time period. They thus relieve the load on the PLCs.

VARAN

VARAN – Versatile Automation Random Access Network

The VARAN bus was completed as a hardware solution and developed for hard real-time requirements. It is characterised by high speed, short cycle times and minimal synchronicity jitters. The possibility of asynchronous access is unique. The information exchange consists of simple memory write/read commands. The bus manager coordinates the entire data traffic in order to avoid collisions. Data packets can be repeated within a cycle up until receipt of a valid back confirmation.
The VARAN bus can also transport standard Ethernet frames.

V-ARTS systems

The V-ARTS are slave systems that are completely compatible with VARAN. They are connected with the master by a point-to-point connection and can send 10 data packets per analog input.

Available functions

V-ARTS-AI-16: Analog inputs (16-bit),
Further systems in preparation: Temperature (RTD/TC, 24-bit), pressure (24-bit)

Examples of V-ARTS applications

V-ARTS are, for example, perfectly suited for hydraulic testing in the aviation sector. They assure that all measured values (100 kHz) are acquired and the data is safely transferred while the interplay with the control runs without interruption.