



Strong team for fault analysis

Transient data recorder and software for up to 100 synchronous channels

The increasing rate of automation in plant, machinery and equipment means that detecting faults and malfunctions can quickly become a costly issue. Delphin's Expert Transient data recorder helps to simplify fault finding and analysis. The device combines measurement, analysis and communications technology and is supplied together with the ProfiSignal Go software. The devices are easy for users to configure and deploy for their measurement requirements.

Expert Transient is suitable not only for analysing fast, transient and sporadic signals but also for periodic continuous processes. Fault diagnostics require the synchronous acquisition of multiple channels to enable a precise analysis of chronological processes. The device can be equipped with 8 or 16 fast analog inputs with sampling rates of up to 50 kHz per channel to deliver fast and accurate results. High measurement precision is achieved through 24-bit resolution. To avoid process interference, each channel is galvanically isolated from each other, from the interfaces and from the power supply. Grounds loops and short circuits are then effectively prevented. The device's extendibility means that large numbers of channels are easy to accommodate – by up to 100 synchronous digital inputs and slow measurement channels such as temperature measurement.

Independent operation and extensive storage options

Independent operation, without the need for PC/laptop support, is possible due to device having a powerful FPGA. This not only performs measurement tasks but also signal processing, online analysis and monitoring as well as recording all measurement and analysis data. Included here is the computation of effective and peak values, online FFTs and harmonic analysis. For storing measurement data and fault events, industrial-grade storage memories of up to 16 GB are available. Users can store data in a ring buffer as well as recording fault-triggered events along with pre and post histories. For large volumes of data, Expert Transient also has the option of saving data directly to a NAS drive. The NAS drive is easy to connect to the device via a network cable. Expert Transient also has an option to store measurement data to any drive via FTP upload. An internal realtime clock enables the time-synchronized acquisition of all measurement data. This is especially useful when measurement data is being acquired at different points, different locations and by different devices – and absolute time synchronization is required to analyse and evaluate it. To achieve synchronization, the devices are equipped with the highly accurate precision time protocol (PTP). When the devices are not networked, synchronization of the internal realtime clock is still possible by connecting a GPS receiver via the serial ports. Following a power failure, the device restarts independently and continues to acquire and monitor data with no user intervention required. An integrated touch display provides an overview of the configuration data, statuses and measurement data.

Delphin Technology AG

Data from different sources

The devices are equipped with Profibus-DP interfaces, ModBus-TCP and RTU protocols, CAN-Raw and user-programmable interfaces. These are used – for example, in fault diagnostics – to obtain process data from PLC systems and to perform synchronized acquisition and recording with external measurement data. All data acquired via the interfaces are re-computed and re-scaled into actual units and quantities. Expert Transient can also be supplied with optional UMTS/LTE and WLAN modules. A remote access option is available for field applications and those located at customer sites. Devices can then be accessed without having to be connected to the customer's network.

Useful software tools

The ProfiSignal Go software is included with the Expert Transient. Users then have a powerful all round tool to enable the easy evaluation of measurement data acquired by the device. ProfiSignal is measurement and analysis software for hands-on users. It is suitable for both one-off tasks and fault diagnostics as well as long-term acquisition procedures. Set-up is straight forward and logical. Just a few steps are required for users to go from sensor connection to data recording and portrayal in easy to read trend graphs.

A range of evaluation options

To analyse measurement data, ProfiSignal provides $y(t)$ and $y(x)$ as well as logic diagrams. These give users a clear portrayal of analog and digital signals. Just a few mouse clicks are required to zoom in on a specific event to view, at μ s-resolution, analog data and the digital statuses of switch events. To portray faster transient signals in online mode, an oscilloscope diagram is available. All diagrams can be simultaneously used and re-used. In principle ProfiSignal does not differentiate between online and offline data. Trends and fast events can be observed online. At the same time users can access historical measurement data and evaluate any anomalies recorded. This takes place without online recording being interrupted. Current and historical data can be processed at any time by the user. A patented storage algorithm enables the lightening fast portrayal of measurement data from periods spanning days, hours or μ -seconds.

Statistical evaluations can be run at the press of a button. Measurement data can be exported for further processing and analysis using software such as Excel or Diadem. Diagrams are easy to label and exported as vector-based graphics for inclusion in reports. The software is rounded off by many extra functions such as alarms and monitoring and channels for calculating, controlling and simulation. ProfiSignal Basic and Klicks are also suitable for laboratory tasks and test stand automation. They enable the simple and fast generation of automated procedures, interfaces for operation and monitoring, and input templates for recipes and parameters.

Summary

Expert Transient in combination with the ProfiSignal software provides a powerful tool for users involved in servicing and maintenance, plant and machinery start-ups and for laboratory and test stand applications. The software is also Office compatible. Intuitive operation means measurement tasks are quickly performed without any costly familiarization delays or training requirements.