



Data logger as IoT device with an integrated cloud connection

Limitless communication capabilities

The requirements placed on modern data acquisition systems are diverse. On the one hand, they need to be reliable and flexibly adaptable to applications. On the other, good communication capabilities and flexible connectivity are expected. Access to the measurement data should also be possible from different types of devices including mobile equipment. The Expert Logger hardware and ProfiSignal software from Delphin are able to fully fulfil such requirements.

Measurement and analysis software needs to be intuitive to use while offering all the functions necessary for monitoring and analysis. Applications range from measuring at test stands through to the remote monitoring of machines and systems. For example, machine manufacturers want to be able to access their machines, wherever they are located in the world, during the installation, and warranty periods and also later for customer service purposes.

Precision and high-resolution measurement data acquisition

The Expert Logger series have 16 to 46 analog inputs and are ideal for stand-alone data acquisition from any sensor signal, no matter whether voltage, current, Pt100 or thermocouples are to be measured. The universal inputs are easily switchable via software. Sensor connection is performed using plug-in screw terminals. Configuration takes place using an easy to understand configuration program. The configuration settings remain stored within the Expert Logger even when disconnected from the power supply. Configurations can be read out, archived and edited off-line. Time resolution for the analog inputs extends to millisecond levels. For even greater time resolutions, the Expert Transient device is available. This device can be used for processing signals down to the microsecond level in fault analysis applications.

All Expert Logger devices are equipped with an internal data storage capability. This means that if the connection to the cloud fails, no data will be lost. Monitoring functions can also be performed independently within the device. Measurement data and threshold value violations can be forwarded to subsystems and alarms issued via email or used to switch digital outputs.

Communication capability at field level

Analysis of machinery, systems and test stands often makes sense only when all the relevant data can be recorded time-synchronised in one system. This generally means that in addition to sensor signals, additional third-party systems and black boxes need to be integrated into the measurement data acquisition system. The Expert Logger device represents the centralised data collection point required here. Control systems can be coupled via a range of fieldbus interfaces such as Profibus, Modbus RTU and TCP, and CAN. Many applications have components that can exchange data via serial interfaces. This sometimes requires interpretation of proprietary ASCII protocols, a function provided by every Expert Logger device. ASCII drivers have already been developed to link power measuring units, scales and concentration measurement systems. Expert Logger devices utilise real-time clocks which can be synchronised with a time server or GPS to enable all measurement data to be recorded with a precise time stamp.

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Diverse connections to the cloud

Connecting an Expert Logger to the cloud is possible for a range of application scenarios. In online applications, users can use an internet-connected PC to access current and historical measurement data and portray it in trend diagrams. In off-line applications, the device regularly pushes the data memory onto a cloud drive. Users can then access the measurement data from the cloud and evaluate it off-line using the Profisignal software. In online applications, the DataService software, which creates the connection to the Expert Logger devices, is run on a server in the cloud. Connection to the cloud takes place wirelessly via LTE or LAN/WLAN and secured using VPN. Necessary services such as user authentication is provided by the standard Expert Logger. The DataService saves the measurement data to a database on the cloud server, and provides ProfiSignal trend diagrams with both online and historical measurement data. To set up such a solution requires the rental of a client server to enable running of the DataService. Such services can be acquired inexpensively from well-known cloud server providers. Off-line applications require only cloud-based server storage. The Expert Logger is connected to the internet via LTE or LAN/ WLAN and transfers its off-line measurement data using FTP, CIFS or NFS. When required, transfer to the server can also be made via a VPN. Users can download files from the cloud server and evaluate data off-line using ProfiSignal. The Expert Logger device is equipped with a USB and LAN interface for direct connection to a PC. WLAN also optional.

Easy evaluation and analysis

The ProfiSignal software is available for the secure and easy recording of all measurement data. It is designed for both small and large numbers of channels and is very easy to use for evaluation purposes. The tool offers an extensive range of diagram types. In connection with ProfiSignal, a diverse range of additional alarm and monitoring functions are available. The tool processes large data volumes and is equipped with a diverse range of interfaces.

Standard with OPC UA

All Expert Logger devices are optionally available with OPC-UA Client/Server interfaces and are therefore equipped for the open exchange of measurement data at field level and also for the requirements of Industry 4.0. Measurement data and threshold violations can be immediately transmitted to subsystems via OPC UA. The OPC UA interface also offers data exchange to PLC and process control systems. Such functions from a modern system of data acquisition, in combination with OPC UA, mean users gain not only flexibility but are also equipped to meet future requirements. With sensors and sub-systems increasingly being equipped with OPC UA, users of Delphin systems can look forward to easier future connectivity at both field and cloud levels.

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