

Optimizing Asset Management in Existing Plants

LB and FB Remote I/O Systems for Digitally Connecting Analog Field Devices

At a Glance

- Analog field devices can remain in use with the addition of an interface for digital communication
- Configuration and diagnostic data is available in real time for asset management
- Minimal investment and installation expense
- Based on tried-and-tested HART protocol
- For installation in Zones 1 and 2, and Division 2



The Application

For modern asset management, communication between the field and control levels must be as continuous as possible. Digital communication enables sensors in the field to send diagnostic and configuration data in addition to measured values. Almost all measuring instruments installed in process engineering plants already offer these options via the proven HART protocol. However, the additional information often remains unused because conventional methods of transmission it would be disproportionately expensive.

The Goal

Ultimately, the goal is to optimize plant availability. Plant downtime and failures must be kept to a minimum of inevitable planned interventions. Servicing and maintenance can be optimized using modern, digitally supported asset management. This optimization also benefits the instrumentation documentation and quality management. Continuous communication can also facilitate big data applications without requiring significant intervention in the installed base, since there is no need to replace high-functioning, conventional analog sensors and actuators.

The Solution

Users of LB/FB remote I/O systems benefit from all the advantages of digital communication while continuing to use analog field devices. The system digitally connects sensors and actuators with an analog interface, such as 4 mA ... 20 mA, and NAMUR sensors and valves with a control system. In addition to the measured value, LB/FB remote I/O systems also transmit all the diagnostic and configuration data of the HART-compatible field devices. This makes instrumentation transparent, both for asset management and process optimization. Concepts for preventive maintenance can be implemented without additional engineering on the control system.

LB/FB remote I/O systems are modular and can be installed in hazardous areas in the immediate vicinity of the sensors. The systems consist of a backplane, a power supply unit, I/O modules, and a gateway. The LB system is suitable for Zone 2/Div. 2 and non-hazardous areas. The FB system is available for Zone 1.

The Benefits

Field devices can be accessed directly via HART and HART/IP. Using a separate HART modem for each field device ensures high transmission speeds, meaning there are no waiting times. The HART/IP protocol can be used in parallel with PROFINET and the asset management system can access the data in parallel with the control system. Remote I/O stations installed today offer HART Over PROFIBUS to provide access to the field device data.

Pepperl+Fuchs delivers complete, ready-to-install solutions including pre-wiring, which can be tested before delivery on request.

The innovative software solutions and industrial IoT services from the Pepperl+Fuchs subsidiary Neoeption allow field devices to be seamlessly integrated into the existing IT infrastructure and be available in real time in the cloud.

Technical Features

- System with the smallest available design
- Modular design, signal mix, and bus connection can be freely selected and combined
- Largest selection of IO modules for each application
- Redundancy for power supply unit and com unit can be selected
- Emergency shutdown for AO and DO modules with SIL rating
- Freely selectable terminal technology (screw or spring terminals)
- Continuous and high-performance HART communication
- Worldwide Ex approvals (ATEX, IECEx, UL, INMETRO, EAC)
- Marine approvals