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FIELDBUS

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Fieldbus is an industrial network system for real-time distributed control. It is a way to connect instruments in a manufacturing plant. Fieldbus works on a network structure which typically allows daisy-chain, star, ring, branch, and tree network topologies. Previously, computers were connected using RS-232 (serial connections) by which only two devices could communicate. This would be the equivalent of the currently used 4-20 mA communication scheme which requires that each device has its own communication point at the controller level, while the fieldbus is the equivalent of the current LAN-type connections, which require only one communication point at the controller level and allow multiple (hundreds) of analog and digital points to be connected at the same time. This reduces both the length of the cable required and the number of cables required. Furthermore, since devices that communicate through fieldbus require a microprocessor, multiple points are typically provided by the same device. Some fieldbus devices now support control schemes such as PID control on the device side instead of forcing the controller to do the processing.

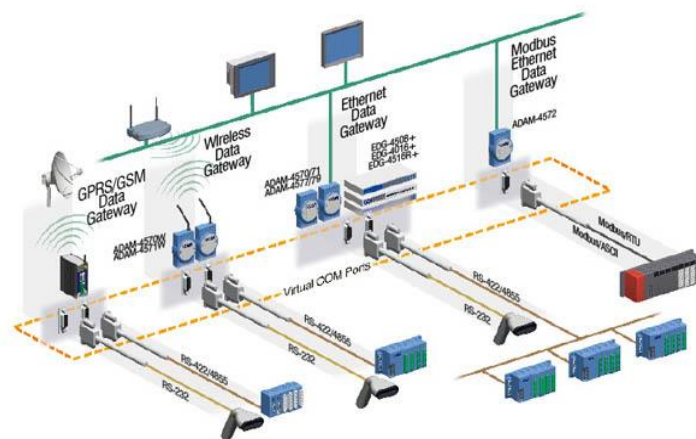


Figure 1 – Fieldbus

A complex automated industrial system — such as manufacturing assembly line — usually needs a distributed control system—an organized hierarchy of controller systems—to function. In this hierarchy, there is usually a Human Machine Interface (HMI) at the top, where an operator can monitor or operate the system. This is typically linked to a middle layer of programmable logic controllers (PLC) via a non-time-critical communications system (e.g. Ethernet). At the bottom of the control chain is the fieldbus that links the PLCs to the components that actually do the work, such as sensors, actuators, electric motors, console lights, switches, valves and contactors.

There are a wide variety of competing fieldbus standards. Some of the most widely used ones include:

- AS-Interface
- CAN
- EtherCAT
- FOUNDATION fieldbus
- Interbus
- LonWorks
- Modbus
- Profibus
- BITBUS
- CompoNet
- SafetyBUS p
- RAPIDnet

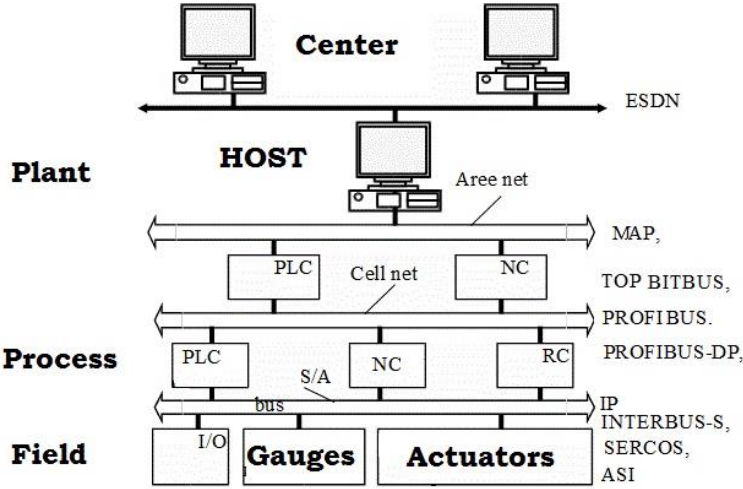


Figure 2 – Link of levels and Interfaces

Fieldbus can be used for systems which must meet safety-relevant standards like IEC 61508 or EN 954-1. Depending on the actual protocol, fieldbus can provide measures like counters, CRC's, echo, timeout, unique sender and receiver ID's or cross check. Ethernet/IP and SERCOS III both use the CIP Safety protocol,[10] Ethernet Powerlink uses openSAFETY, while FOUNDATION Fieldbus and Profibus (PROFIsafe) can address SIL 2 and SIL 3 process safety applications.

In January 2006, the Fieldbus Foundation announced that TÜV Rheinland Industrie Service GmbH, Automation, Software and Information Technology, a global, independent and accredited testing agency, had granted Protocol Type Approval for its Safety Specifications. The Foundation Technical Specifications - Safety Instrumented Functions are in compliance with International Electrotechnical Commission (IEC) 61508 standard (functional safety of electrical/electronic/programmable electronic safety-related systems) requirements up to, and including, Safety Integrity Level 3 (SIL 3).

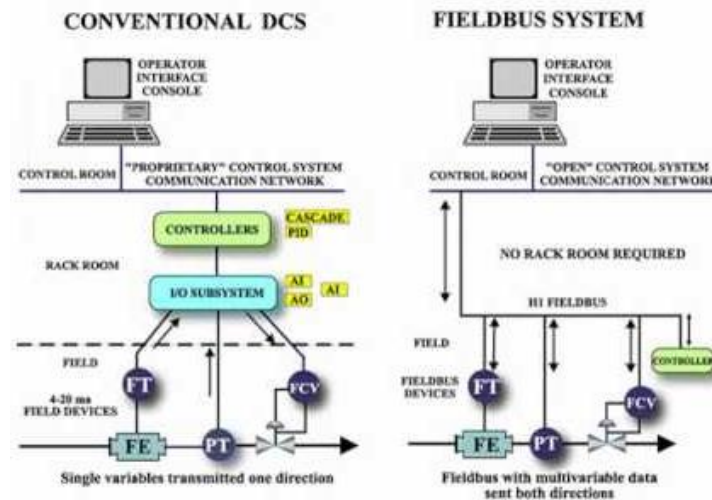


Figure 3 – Comparison systems

Fieldbus differ from conventional system the following properties:

- Special designs, providing protection against dust, vibration, shock;
- wide temperature range (typically -40 to 70 degrees);
- high strength cable insulation, connectors, fasteners;
- increased resistance to electromagnetic interference;
- possibility of redundancy to enhance reliability;
- increased reliability of data transmission;
- the ability to self-repair after a crash;
- determinism (Definitions) message delivery times;
- to operate in real time (with a small constant and known quantity of delay);
- work with long lines of communication (from hundreds of meters to several kilometers).

Advantages Fieldbus systems:

- Several times reduces the cost of the cable and its lining;
- Increasing the allowable distance to the connected sensors and actuators;
- Simplifies network management sensors and actuators;
- Simplified modification of the system when changing the type of sensors used communication protocol, adding input and output devices;
- Possible to remotely configure the sensors and carry out their diagnosis.

Disadvantages:

- The cable breaks, lost the opportunity to receive information and manage not one but multiple devices (depending on the break and the network topology remains the possibility of autonomous operation of the network segment and the control circuit).

- To improve the reliability necessary to reserve the communication channels or use a ring topology network.

Daylight fieldbus-technology promises to improve quality, lower costs and improve the efficiency of a finite system. These promises are based on the fact that the receive or transmit information encoded in digital form. Each device can function as management, maintenance and diagnostics. In particular, it may report errors that occur and to provide bootstrapping functions. This greatly increases the efficiency of the overall system and reducing its cost of maintenance. Serious price gain is obtained by conductors and installation works: analog communication technology requires that each device has its own set of wires and their own point of connection. Fieldbus eliminates the need for this, since it uses only one twisted pair wires for combining active (controllers) and passive (sensors) devices.

In addition, the overall quantitative reduction equipment makes the whole system is not only easier to use, but also the reliability by reducing potential hardware failures.

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THE IMPACT OF POP MUSIC ON THE BRITISH YOUTH

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Pop music is understood as a music genre derived from rock and roll in the 1950s, including short to medium-length songs of typical verse-chorus structure, with the application of repeated choruses, music tunes and hooks. With the diversity of genres, which includes rock and roll, rock, R&B, soul, disco, funk and a number of others [7. С. 1224], pop-music is a vast area for research.

Nowadays pop music genres are overwhelmed by self-repeating lyrics and unsophisticated music patterns. It makes many people nostalgic for the times when the world created a lot of inspiring music. In this paper we would like to focus on the development of rock music in Great Britain in the 20th century and comment on its influence on the British youth.

Rock music is the phenomenon of youth subculture that emerged in Britain and the US in the 1960s, gradually forming a new musical style. In musical terms what