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Why is the H1 bus speed 31.25kbps, not something different, suitable for closed loop digital

control?

The H1 bus speed is not suitable for automated machinery control and is good for closed loop control within the automation process. In automation process cycle is working with a period of 0.25 to 1.0 seconds and only 50 transactions are available. Unscheduled messages have more transactions than a single bus segment. Bus speed of 31.25kbps was chosen as a binary fraction with 1MHz oscillated crystal with the division of 32.

Is the digital signal susceptible to noise? If so, how can it be reduced?

Digital signal is suitable for noise, but not that hard as an analogue signal. The fieldbus pair uses twisted cable that are balanced above the ground. They are shielded. These features help in level of induced signals reduction. Low levels of interferences doesn't have any accuracy effect on digital transmission.

Can you reuse the 4-20 mA wiring of an existing plant? What is/are the criteria?

4-20 mA wiring can be reused for an existing plant. The cable need to have good qualities such as low impedance and ground shielding. The system can struggle with susceptible noise pick-up. Variable speed drives without special shielding can cause different problems. The other criteria is to successfully land old existing plant close to new one, because it takes a lot of time.

How can multiple variables be measured using a single fieldbus instrument?

The designer sets an amount of sensors, as he want. Different data can be calculated from this sensors. Each derived data is shown by Analog Input Block, and fieldbus reads through this process. To avoid errors or efficient messages it is recommended to mix those data in one data array.

How can a fieldbus system be implanted in an existing HART system?

Only fieldbus systems allow to use HART systems. HART system uses 4-20 mA standard signal for analogue data transmission. It add additional signal to analogue. The main advantage HART over the analogue signal is simultaneous transmission. HART systems has improved resolution, remote diagnostics, and set-up configuration. Fieldbus technology simplifies maintains and adds an extra intelligence.

What is the point of removing several layers of the OSI 7-layer system to make it simplified for FF?

Several layers of OSI system are considered with the area of network, where connections are connected and disconnected. Services that present data packet loss and carried in multiple formats are not needed. This layers can be changed or simplified to a better version. Functions that are not supported in protocol stack can be included with layers, which are better implemented.

What kind of redundancy is possible for fieldbus system?

High-speed Ethernet bus redundancy is possible for fieldbus system. The redundancy protocol stack go with the device and makes a copy of internal microprocessor. Device measurements can be vital, so it's better to make a copy of device and connect it with different fieldbus segment.

Can separately-powered and bus-powered devices be mixed on the same segment of an H1 bus in an Intrinsically Safe (IS) system?

Separately-powered and bus-powered devices can be mixed on the same segment. The separately-powered devices need to use different safety methods such as explosion-proof. It's also needed to provide point protection for IS connections.

What is the difference between a sensor bus and a fieldbus? Can control instruments (transmitter or control valve) be placed on a sensor bus?

Sensor bus main idea is to transfer a variable that represents a data or valve positioning. A fieldbus is created for the goal of transferring a bunch of bonded information. In a word of bunch we estimate data structures that have more than one variable and functions. Transmitters or control valves can be installed on both busses. Full fieldbus usually have this devices used when more complex functions for diagnose or control are needed.

Using the table below fill in comparisons of HART and FF

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