Redes Industriales PROFIBus, PROFINet y AS-i

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***Abstract*—The following content have the purpose of demonstrate the differentiation between three protocols of networks which in industry are of sum importance in order to establish communication for accomplish specific tasks demanded by de user**

Keywords—Protocols, network, industry, PROFIBus, PROFINet, AS-i

I. Introduction

This content depicts three different network protocols: PROFIBus, PROFINet, AS-I; those oversee connections from a network which is designed in order to satisfy the user necessities. Protocols are requested to communicate devices from a network, specifically those devices involve actuators, sensors and controllers; the external information is processed, turning it into binary signals and being transmitted by cables of communication ending on a CPU system where the data collected will manipulate the devices installed in order to accomplish the demanded tasks by the user.

II. Process field network

PROFINet is a SIEMENS network that allows the engineer design with liberty due to the open Ethernet standard, this protocol involve wide vary of connectivity and flexible network topology, even is permitted to design a network based on cloud service to protect and enquire information used for variety of services.

A. Standard of protocol

PROFINet works with an open standard communication of industrial Ethernet, TCP/IP and IT, associated with PROFIBus International IEC 61784-2; this standard can communicate PROFIBus and PROFINet protocols in the same network, the principal reason to use this network protocol in the industry is the easily modulation of Inputs and Outputs the mechanism implemented to exchange data with controllers and devices in real time.

B. Communication PROFINet

- Standard TCP/IP: Properly for parametrization, transmission of audio and video and transference of system data TI from superior level.
- Real Time: Delay length of communication is a response range from 1 to 10 milliseconds properly for I&O, movement control and high-performance needs
- Isochronous Real Time: High precise synchronization for movement control and appropriated cycle speed for feedback control.
- PROFINet/CBA: associated with automation applied on industrial environment
- PROFINet/DCP: Principle focused on small or medium applications which do not dispose for a DHCP server.
- PROFINet/IO: Communication with decentralized peripheries.
- PROFINet/MRP: Principal goal is for redundant media on ring topology, it restructures the network in case of emergency.
- PROFINet/MRRT: Provides solution for redundant media.
- PROFINet/PTCP: Precision time control based on link layer in order to synchronize the same time/clock for PLC.
- PROFINet/RT: Data transfer in real time
- PROFINet/IRT: Isochronous data transfer in real time.

C. Seccurity

The production plant is protected against attacks particularly from the outside, by means of a multi-layer perimeter (firewalls, among other things). In addition, further safeguarding within the plant is possible by dividing the network into zones. Furthermore, a security component test ensures the ability of the PROFINet components to withstand overloading in a defined scope. This concept is supplemented by organizational measures in the production plant within the framework of a security management system.

- Protection against proceeds previously created in the architecture.
- Prevent non-authorized access
- Certified and probed devices of security.

D. Perks of PROFINet

- Power, flexibility and expansion opportunities

- Integrated diagnostics, optimal system availability, fastest transfer velocity.
- Protection against errors, properly incident management, security measures in network infrastructure, selective deactivation of services, modify current passwords.

E. Applications

TABLE I.

Numeration	Topic	Description
1	Movement Control	The ability to control in real time depending on the application of the drive and greater determinism using bandwidth and programming
2	Decentralized field devices	Rapid interchange between the I / O and the controller, and diagnostic possibilities are greatly improved
3	Real Time Communication	Ideal for complex tasks such like movement control
4	Distributed Intelligence	Distributed automation structures: consistent modularization and easy communication between machines

[a] PROFINet Application table. (*Table footnote*)

Fig. 1. Examples of PROFINet's application. (*figure caption*)

III. Prepare Your Paper Before Styling

A. Abbreviations and Acronyms

B. Units

C. Equations

D. Some Common Mistakes

IV. Using the Template

A. Figures and Tables

a) .

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To have non-visible rules on your frame, use the MSWord "Format" pull-down menu, select Text Box > Colors and Lines to choose No Fill and No Line.

TABLE II. Table Type Styles

Table Head	Table Column Head		
	Table column subhead	*Subhead*	*Subhead*
copy	More table copy[a]		

[b] Sample of a Table footnote. (*Table footnote*)

Fig. 2. Example of a figure caption. (*figure caption*)

Acknowledgment *(Heading 5)*

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Conclusions

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