

THE **P-NET** FIELDBUS

Communication between individual units of a distributed system of intelligent sensors and actuators, field and central controllers etc, requires a high performance, but economic, fieldbus. P-NET is the only fieldbus which has large scale implementations on a worldwide basis, and possesses the following characteristics:

HIGH SPEED

- Data rate of 76800 baud (cost / performance optimum).
- Extremely efficient protocol for all bus transactions.

MULTI-MASTER CAPABILITY

- Up to 32 masters on 1 bus segment.
- Simplified arbitration procedure (hardware token passing), is 10-100 times more efficient than software arbitration.

MULTI-NETWORK CAPABILITY

- Any number of P-NET fieldbuses can be networked using Controller Gateways (standard units) without further software expense.

NOISE IMMUNITY

- Electrical isolation between bus and electronics.
- Screened cable.
- Check-sum for data security.

ECONOMY

- Based on the RS485 standard, therefore uses standard components.
- Single chip 8-bit microprocessors provide necessary performance.
- 2-wire ring connection up to 1200 m long, dramatically reduces wiring costs.
- Up to 125 devices on 1 bus segment.

HIGH LEVEL LANGUAGE SUPPORT

- Standard Pascal with extension for multitasking and P-NET, reduce software expenditure.
- Full support of all functions, including Multi-net capability, by means of the Process-Pascal compiler.

IMPLEMENTATION EFFICIENCY

Compared to conventional wiring, P-NET offers demonstrated advantages when applied to industrial processes, which result in simplification of

- Planning and installation
- Maintenance
- Future expansion of industrial applications

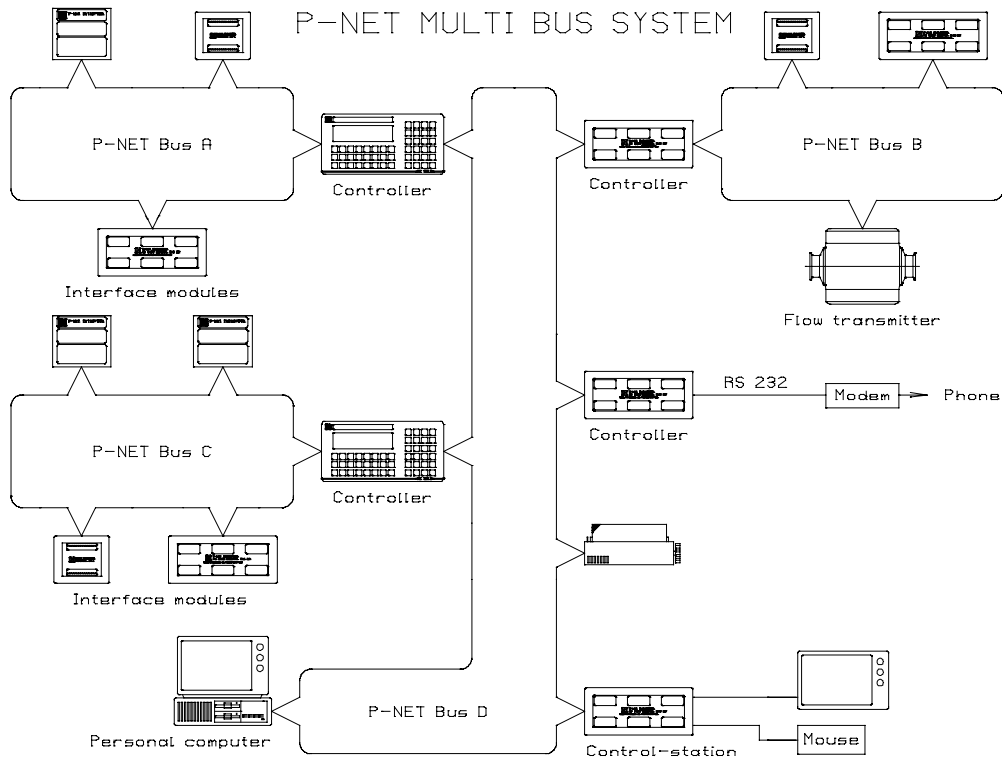
DIAGNOSTIC CONTROL

The use of intelligent P-NET sensors and actuators offers new diagnostic capabilities. Apart from the usual measure values and status data, the bus enables a bidirectional exchange of additional information concerning limit values, actuator positioning, fault signals and internal system data. This provides new opportunities for efficient control of maintenance and system security.

P-NET USER ORGANIZATION

The International P-NET User Organization has nearly 50 members worldwide. Some of the objects of the organization are

- to disseminate global knowledge of P-NET
- future development of the standard
- specify conformance test for products
- exchange info among the members



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SPECIFICATIONS

Data transmission

- Asynchronous transmission
- Data in NRZ code
- 76800 bits/sec.
- 1 start bit, 8 data bit, 1 addr/data bit,
- 1 stop bit for each byte in the frame
- Check-sum for data security.

Capabilities

- Up to 125 devices at each bus
- Multi-master, up to 32 at each bus
- Multi-network
- ISO OSI 7 layers reference model
- High level language support

Data types

- Simple: boolean, byte, char, word, integer, longinteger, real, longreal, timer.
- Complex: array, string, record, buffer.

Electrical specification:

Bus structure

A physical ring without termination.

Medium

Shielded twisted pair cable with minimum .22 mm² area conductors and characteristic impedance of 100-120 ohm.

Bus length

max 1200 m (EIA RS 485).

Integrated transceiver

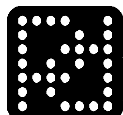
SN 75176A (TI).

Installation

The bus cable is connected from field device to field device, forming a physical ring.

Produced by:

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PROCES-DATA A/S

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