RT 360
Networking of industrial controllers

Description

- **process control system**
- **networking of industrial controllers**
- **controller parameter setting via field bus system**
- **profibus DP field bus system**

One of the aims of process automation is to monitor and control plant or plant components centrally from a computer. This task performed by a process control system.

This experimental unit demonstrates the operation of a process control system based on a simple application. The experimental unit consists of two industrial controllers interconnected via a field bus interface (Profibus DP) and an interface card with a PC. On the PC, an OPC (**O** LE for **P** rocess **C** ontrol) server makes the controller data available to other programs under Windows for further processing. The process control software developed by GUNT on the basis of Lab-VIEW accesses the process data on the controllers and enables it to be visualised. The software also allows the controllers' parameters to be set. Various functions such as recorders and alarm logs enable a simple control room function to be simulated.

Two potentiometers permit the simulation of input signals for the controllers. The controlled variable, manipulating variable and reference variable data are delivered as standard signals at lab jacks, enabling the controllers to be integrated into real processes at any time.

Learning objectives/experiments

- function and structure of a process control system under Profibus DP
  - Profibus DP field bus system
  - OPC server function
  - master / slave assignment
  - online controller parameter setting
  - reading control variables and displaying them online
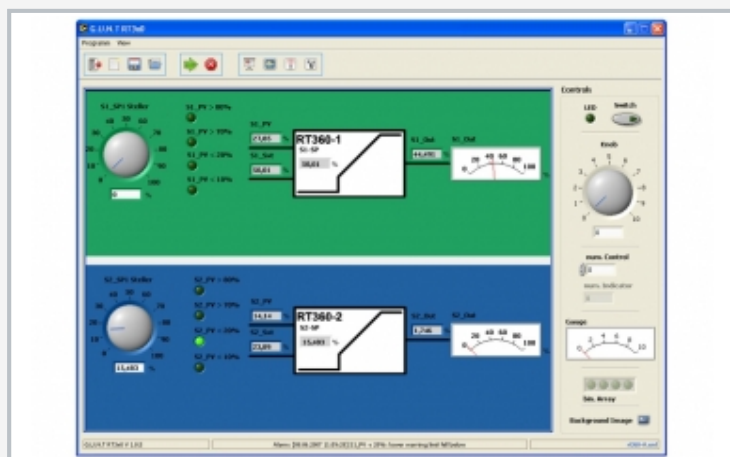 - configuring and displaying alarms

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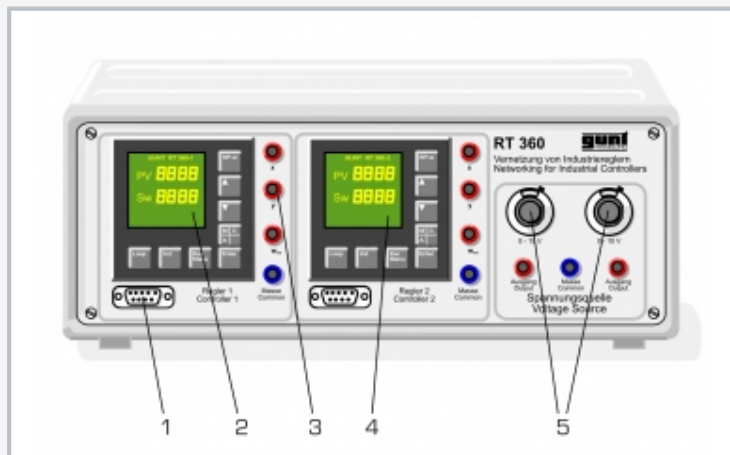
1 interface for Profibus DP, 2 controller, 3 lab jack for analogue process variables, 4 controller, 5 signal generator
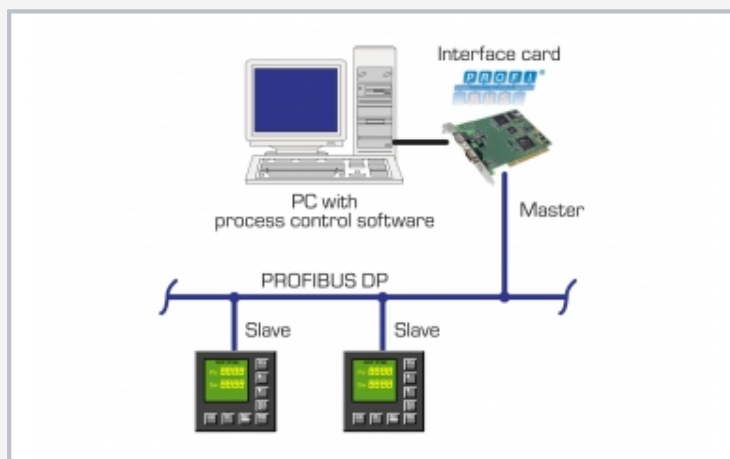
Topology of the process control system with networking over a field bus

GUNT process control software with recorder function and controller operation

Specification

[1] experimental unit for networking of industrial controllers
[2] 2 digital controllers, configurable as P, PI or PID controllers, with field bus interface
[3] 2 signal generators
[4] Profibus DP interface card for PC
[5] OPC server under Windows
[6] GUNT process control software via PCI under Windows 7, 8.1, 10
[7] all process variables accessible as analogue signals at lab jacks

Technical data

Controller
■ configurable as P, PI or PID controller
■ proportional gain X_p: 0...999,9%
■ integral action time T_n: 0...3600s
■ derivative time T_v: 0...1200s

Process variables as analogue signals: 0...10V
Signal generator: 0...10V
Connection of external instruments (e.g. oscilloscope, line recorder) via lab jacks

230V, 50Hz, 1 phase
230V, 60Hz, 1 phase
120V, 60Hz, 1 phase
UL/CSA optional
LxWxH: 480x450x150mm
Weight: approx. 10kg

Required for operation

PC with Windows

Scope of delivery

1 experimental unit
1 Profibus card
1 set of cables
1 software CD with driver software, OPC server and GUNT process control software
1 set of instructional material