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Introduction

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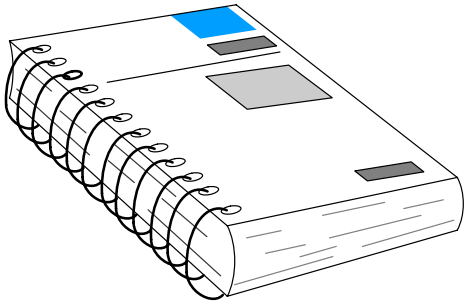
Manual Overview

Overview of this Manual

This manual describes the installation and operation of the H2–PBC Profibus Slave Base Controller. You will find the necessary information for installing and configuring the module for use on a Profibus network.



Supplemental Manuals

The following manuals are essential to the proper use of your H2 Profibus Slave Base Controller.

- *DL205 Installation and I/O Manual* part number **D2–INST–M**
- The PLC/PC software manual
- The PROFIBUS software (if separate) manual
- The PROFIBUS networks manual

Who Should Read this Manual

If you have a working knowledge of the PROFIBUS network, the PROFIBUS software and PLC or PC which you are using, this manual will help you configure and install your H2–PBC Profibus Slave Base Controller.

Technical Support

We strive to make our manuals the best in the industry and rely on your feedback in reaching our goal. If you cannot find the solution to your particular application, or, if for any reason you need additional technical assistance, please call us at

770–844–4200.

Our technical support team is glad to work with you in answering your questions. They are available **weekdays from 9:00 a.m. to 6:00 p.m. Eastern Time**. We also encourage you to visit our website where you can find technical and nontechnical information about our products and our company.

www.automationdirect.com

Symbols Used

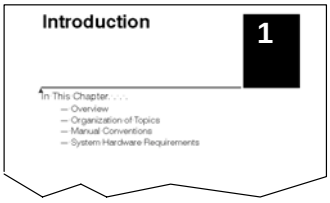
The “light bulb” icon in the left-hand margin indicates a **tip** or **shortcut**.

The “note pad” icon in the left–hand margin indicates a **special note**.

The “exclamation mark” icon in the left-hand margin indicates a **warning** or **caution**. These are very important because the information may help you prevent serious personal injury or equipment damage.

Key Topics for Each Chapter

The beginning of each chapter will list the key topics that can be found in that chapter.



Introduction to Profibus

Profibus (Process Field Bus) is a vendor–independent, open field bus standard that is supported by leading manufacturers of automation products. A host of certified Profibus products are available, offering an array of products including sensors, motor drives and starters, PLCs, remote I/O systems, etc.

PROFIBUS Concepts

Here are some Profibus concepts that you may find helpful.

- Profibus offers three types of profiles.
  - Process Automation (PA)
  - Fieldbus Message Specification (FMS) communication profile
  - Decentralized Periphery (DP)
- Profibus – DP is the most frequently used communication profile.
  - The H2–PBC is a DP slave
  - Master and slave devices, max. 126 stations on one bus
    - Connection oriented communication
    - Transmission rate up to 12 Mbps
  - Peer–to–peer (user data communication) or multicast (control commands)
  - Cyclic master–slave user data communication
  - Control commands allow synchronization of I/O
- Methods for diagnostic and error detection are built into the system

PROFIBUS International

PROFIBUS International (PI) maintains the PROFIBUS standard and provides certification to EN 50170 and IEC 61158 standards for devices. The main purpose of certification is to provide users with the assurance that devices from different manufactures will work in the same network. Certification is issued by the PROFIBUS Certification Centre in Karlsruhe, Germany.

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PROFIBUS Trade Organization

The PROFIBUS Trade Organization (PTO) is a member of PROFIBUS International. For more detailed information about Profibus, visit the PTO website where technical descriptions and Profibus specifications are available.

PROFIBUS Trade Organization
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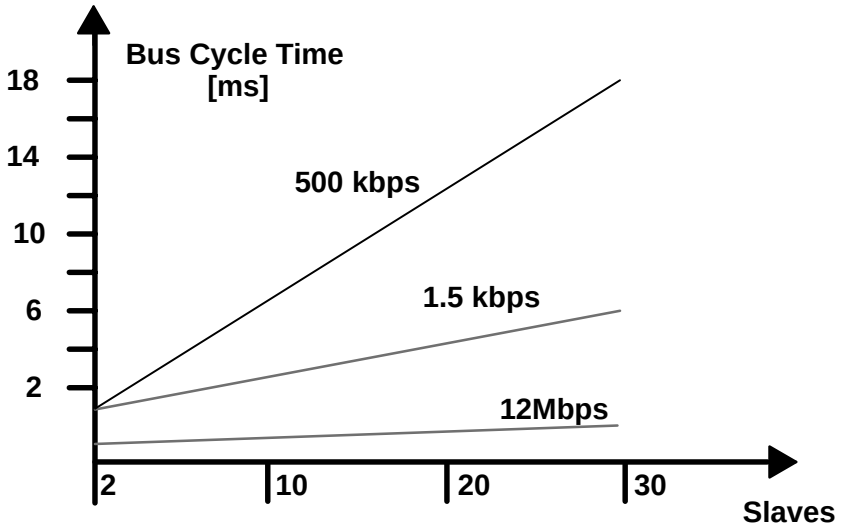
Their website is: **www.profibus.com**

DP Communication Profile

The DP Communication Profile is designed for efficient data excahnge at the field level. The central automation devices, such as PLC/PC or process control systems, communicate through a fast serial connection with distributed field devices which can be I/O, drives and valves, as well as measuring transducers. Data exchange with the distributed devices is mainly cyclic.

The master controller cyclically reads the input information from the slaves and cyclically writes the output information to the slaves. The bus cycle time should be shorter than the program cycle time of the central automation system, which for many applications is approximately 10 msec. In addition to cyclic user data transmission, DP provides powerful functions for diagnostics and commissioning. Data communication is monitored by monitoring functions on both the master and slave side.

DP requires only about 1 msec at 12 Mbit/sec for the transmission of 512 bits of input data and 512 bits of output data distributed over 32 stations. The chart below shows the typical time, depending on number of stations and transmission speed. Transmitting the input and output data in a single message cycle with DP, results in a significant increase in speed compared to FMS.



Bus cycle time of a DP mono–master system.

For a more complete description and specification of the Profibus DP communication profile. visit the Profibus Trade Organization web site, **www.profibus.com.**

Mini Glossary

Below is a small glossary of terms used in this manual.

Mono–Master — Only one Profibus master active on the bus during operation of the bus system of which the H2–PBC is a slave. This can be either a PLC module or a card in your PC.

Multi–Master — Several Profibus masters are connected to one bus. These masters represent either independent subsystems or additional configuration and diagnostic devices.

Slave — a peripheral device (I/O devices, drives, HMI, valves, measuring transducers) which collects input information and sends output information to the peripherals. The H2–PBC is a slave which is also referred to as a controller in a Profibus I/O sub–system.

Segment — One bus structure with a maximum of 32 stations (master or slaves) or nodes. A maximum of 9 segments is possible with the use of repeaters.

Station — A node. Can be a master or a slave.

Repeater — An RS485 device that amplifies data signals on bus lines and is the link between individual bus segments. Used to increase the number of nodes or to extend the cable lingth between two nodes.

Node Address — The unique device address on a Profibus network. There are a maximum of 126 (0–126). The master is usually node 0.

Token — The bus access right which is assigned to each master within a precisely defined timeframe.