PROFIBUS Technology

Products

ASICs

Interface modules

Development packages
PROFIBUS concept

PROFIBUS DP/FMS

ASPC2

SPC4

RS 485, FIBER OPTIC

SPC3

SPC3

SPC3

LSPM2

Repeater/OLM
PROFIBUS ASICs

Master

Intelligent Slave

Simple Slave

ASPC2

SPC3  12 MBaud
       RS 485

DPC31

SPC41

LSPM2

SPM2

SIM 11  31.25 kBaud
       IEC 1158-2
Single Chips

- Maximum Transmission Rate 12 MBaud
- Complete Processing of DP Protocol
- No processor required
- Data Volume:
  - LSPM 2: 32 Bit I/O, 8 Bit Diagnosis
  - SPM 2: 64 Bit I/O, 16 Bit Diagnosis

MQFB, 80 Pin, 2cm²
PQFB, 120 Pin, 10cm²
Complete DP Slave block

- Clock Generator
- Shift / EEPROM register Interface
- Parameter Assignment Inputs
- Watchdog
- Transmitter Receiver
- Port A
- Port B
- Port C
- Port D
- Port E

4 x 8-bit Ports available

TXD
RXD
I/O
I/O
I/O
I/O
I/O
Diagnosis
Diagnosis
Function L-/SPM2

- Watchdog Timer integrated
- Automatic baudrate generator
- EEPROM interface for station address, Ident number
- Shift register interface
- I / O Interface
- Parameterization ports
- Diagnostic data is specified
- LSPM2/ SPM2 supports all mandatory and optional services for slave solutions
intelligent ASICs

**ASPC2**
Application Master

<table>
<thead>
<tr>
<th>PROFIBUS DP</th>
<th>PROFIBUS FMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layer 2</td>
<td></td>
</tr>
<tr>
<td>PROFIBUS Part 1</td>
<td></td>
</tr>
</tbody>
</table>

**SPC 3**
Application Slave

**SPC 41**
Application Slave

**DPC 31**
Application Slave

<table>
<thead>
<tr>
<th>PROFIBUS DP</th>
<th>PROFIBUS FMS</th>
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<td>PROFIBUS Part 1</td>
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</table>

**PROFIBUS**

RS 485 (max. 12MBaud)

**SIM 11**

**PROFIBUS** (intrinsic safety)

IEC 1158-2 (31.25 KBaud)

Hardware

Software
### intelligent ASICs

<table>
<thead>
<tr>
<th></th>
<th>SPC3</th>
<th>SPC41</th>
<th>DPC31</th>
<th>ASPC2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Transmission Rate [Mbaud]</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Transm. Medium</td>
<td>RS 485</td>
<td>RS485 / IEC 1158-2 (with SIM 11)</td>
<td>RS 485</td>
<td></td>
</tr>
<tr>
<td>Protocol</td>
<td>DP (DPV1)</td>
<td>DP/FMS/PA</td>
<td>DP/DPV1</td>
<td>DP/DPV1/FMS</td>
</tr>
<tr>
<td>Message Buffer [kByte]</td>
<td>1.5</td>
<td>1.5</td>
<td>6</td>
<td>1,000 external</td>
</tr>
<tr>
<td>Housing</td>
<td>PQFP, 44 Pin</td>
<td>PQFP, 44 Pin</td>
<td>PQFP, 100 Pin</td>
<td>MQFP, 100 Pin</td>
</tr>
</tbody>
</table>
SPC3 ASIC

- Up to 244 byte of data
- Automatic search of baudrate
- 9.6kBd-12MBd
- 3 buffers for each: input & output data; 1 for PRM; 2 for CFG & DIAG
- Firmware available
- 1.5 kByte internal RAM
- DP slave protocol integrated
- Interface to:
  - Intel (8032, 80x86)
  - Motorola (HC11/16/916)
  - Siemens (80166/80167)
DPC31 ASIC

- up to 244 byte of data
- automatic search of baudrate
- 9.6kBd-12MBd
- DP slave protocol integrated
- interface to:
  - Intel (8032, 80x86)
  - Motorola (HC11/16/916)
  - Siemens (C166)

3 buffers for each:
- input & output data
- 2 for PRM, CFG & DIAG

firmware available
DPC31 ASIC

- Integrated 8031 core
- 31.25kBd synchronous
- Standard interface for memory expansion
- 6 kByte internal RAM
- Up to 40 bits I/O
- Complete DPV1 firmware includes
- Synchronous serial interface
- 100 pin PQFP housing

NEW
SPC41 ASIC

- Maximum Transmission Rate 12 MBaud
- Large data volumes (up to 244 Byte)
- Fast, since time critical functions reside in hardware
- Integrated part of DP functions
- FMS support and PA support
- Simultaneously Slave to ISP 3.0 (Now Part IV of PROFIBUS)
- 10 mW power loss (when used over IEC H1)
- 8 bit fixed parallel interface
Free FDL access is supported by (used for DP-V1):

- 5 System Management Service Access Points (SAPs)
- Default- SAP
- 64 SAPs (structure specified)

Supported PROFIBUS DP services realized in HW:

- Data-Exchange
- Read-Input-Data
- Read-Output- Data
- Global-Control (Sync,Freeze, Clear-Data)

Diagnosis, parameter assignment, configuration is realized through the FLC -Software (Server Software)
The communication block SIM 11 is intended for use in fail-safe fieldbus systems with 31.25 kbit/s and there supplies the functions of a medium attachment unit for IEC H1 (identical PROFIBUS-PA) according to IEC 1158-2.

Except for the SIM 11, only few external components are needed to connect modules or field devices to a fail-safe network for PROFIBUS-PA according to the PNO Guideline.
SIM 11 in Constant Current Mode with SPC 41 without isolation
## Software

<table>
<thead>
<tr>
<th>Device</th>
<th>Protocol Description</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPC2</td>
<td>Master SW Protocol DP for 80165</td>
<td>(80 kByte)</td>
</tr>
<tr>
<td>SPC3</td>
<td>Slave SW Protocol DP</td>
<td>(6 kByte)</td>
</tr>
<tr>
<td>DPC31</td>
<td>Slave SW Protocol DP/DPV1</td>
<td>(depends on implementation)</td>
</tr>
<tr>
<td>SPC41</td>
<td>Slave SW Protocol DP, FMS, PA</td>
<td>(30 kByte)</td>
</tr>
</tbody>
</table>
Make the fastest PROFIBUS implementation possible
Requires no SMD technology by the device manufacturer
Reduces development effort
Low cost solution for getting started, and low volume units
PROFIBUS part is already complete
Proven technique
Common features:

- 5V DC power supply
- 0 to 70 °C permissible ambient temperature
- Transmission rate 12 Mbaud maximum
✓ PROFIBUS protocol handling by LSPM 2 ASIC
✓ 32 configurable inputs/outputs
✓ 8 separate diagnostics inputs
✓ connection: 2x34-pin connectors for connection to host network
✓ 10-pin connector for RS-485
✓ floating RS-485 interface for PROFIBUS-DP
✓ power consumption typ. 100 mA
✓ dimensions (W x H): 85 x 64 mm / 3.3 x 2.5 in (modular design)
PROFIBUS protocol handling by SPC 3 ASIC
CPU 80C32 microprocessor
20 MHz clock frequency
32 Kbytes SRAM user memory
32 kBytes (mirrored) or 64 kByte EPROM
the host interface is the address and data bus on the interface module
50-pin connector for connection to host network
14-pin connector for RS-232
10-pin connector for RS-485
dimensions (W x H): 86 x 76 mm / 3.3 x 2.7 in
PROFIBUS protocol handling by ASPC 2 ASIC

80C165 microprocessor

40 MHz clock frequency

2 x 128K x 8-bit RAM user memory

128K x 16-bit flash EPROM program and parameter memory

48 MHz oscillator chip for ASPC 2

16/8-bit data bus can be connected; dual-port RAM (8K x 16 bit); 64-pin connector (4 rows); optional 8/16-bit data bus connectable

high integrity data exchange via dual-port RAM

dimensions (W x H): 100 x 100 mm
Development Package

What is a development package?

- Complete package with Slaves and Master and Software
- Only prerequisite for setup is a PC-AT
- Easy start for newcomers
- Easy to understand (Plug and Play)
- Included test software can be used for each Slave
- Information about the handling with EN 50170
Development Package 4

- Consists of + SW
- Suitable for master- and slave developments in 12 Mbaud technology
- Permits setting up, configuring, running diagnostics of a complete PROFIBUS-DP network
- Includes examples for user diagnostic and parameterization
- Handling of sync and freeze mode
Services

- ASICs, DP-Modules, DP-Slave Software for SPC 3/DPC 31 and Development Package 4 can be ordered normally
- DP/FMS/PA-Slave SW for SPC 4 is offered by ITEC
- Master SW for ASPC2 available with license agreement (object code)
  - $19,500 Master SW (DP)
- Support via phone and PROFIBUS seminars at the are free of charge