



## EMBEDDED PLC

# PROCONOS® 3.3

## VxWORKS INTEL

ProConOS® VxWorks Intel is a high reliability and high performance embedded PLC.

ProConOS® VxWorks Intel creates a powerful PLC together with an Intel based hardware and a running VxWorks. Even a standard industrial PC with VxWorks does meet the requirements. ProConOS® VxWorks includes the loading and execution of PLC programs and supplies the debug functionalities for programming, commissioning and maintenance of PLC controlled machines and plants.

ProConOS® has been successfully used in the automation industry for more than 10 years in multiple thousands of installations. The IEC 61131 compliant ProConOS® supports realtime multitasking by using the realtime capabilities of VxWorks, which is a leading realtime OS in the embedded industry. Highest performance is reached by execution of native machine code. In addition online changes are possible while the PLC program is running.

ProConOS® VxWorks Intel includes ready-to-use drivers for Hilscher and Phoenix Contact field bus master cards.

Extensive interfaces allow system developers to realize manufacturer specific extensions.

A full customization is possible when using the ProConOS® Developer Toolkit.

## PRODUCT DESCRIPTION

### High Performance

- The integrated compiler of ProConOS® generates native machine code to be executed.
- On an Athlon 1 GHz processor 1000 instructions are executed within 1  $\mu$ s (see more performance data on the backside).

### Realtime Behavior with Preemptive Multitasking

- ProConOS® uses the VxWorks WIND® Microkernel realtime capabilities and does support fast multitasking, interrupts and preemptive scheduling.
- By the microkernel design a minimum system overhead is reached creating a fast and deterministic response to external events.
- Preemptive scheduling of up to 16 PLC tasks
- For each PLC task a watchdog can be set for supervision. In case of a realtime violation an additional associated user program can be executed.

### Non volatile PLC data

- Cyclic writing of retain data into the VxWorks file system by calling function blocks.
- Adaptation to hardware specific NVRAM is possible

### Standard I/O Drivers

- Task synchronous I/O access by I/O image
- Intelligent field bus masters are supported (see list on the backside).
- Adaptation to specific I/O interfaces is possible

### VxWorks File System

- Access of the VxWorks file system
- A PLC typical boot behavior is achieved by storing a boot project.

### Communication , Debug and Commissioning

- Multi-client connection to several MULTIPROG® and/or OPC servers
- Breakpoints, address debug, single step, overwriting and forcing of variables, recipes
- Realtime logic analyzer
- Online Changes while the PLC is running.

## SYSTEM SPECIFICATION

|                             |   |   |                         |              |
|-----------------------------|---|---|-------------------------|--------------|
| <b>PC System</b>            | Processor                                 | Min. Pentium 90   |                         |              |
|                             | RAM                                       | Min. 8 MByte, depending on BSP  |                         |              |
|                             | Hard disk memory                          | Min. 4 MByte free   |                         |              |
|                             | Communication                             | TCP/IP and/or RS232   |                         |              |
|                             | Operating systems                         | VxWorks 5.4, VxWorks 5.5  |                         |              |
| <b>System Limits</b>        | PLC program size                          | Depends on available memory on the target, max. 16 MByte; default 390 KByte |                         |              |
|                             | PLC Data size                             | Depends on available memory on the target, max. 16 MByte                    |                         |              |
|                             | PLC Retain data                           | 128 KByte (file based)  |                         |              |
|                             | ProConOS® size                            | Total memory consumption about 420 KByte                                    |                         |              |
|                             | Tasks                                     | Max. 16   |                         |              |
|                             | I/O signals                               | Max. 64 KByte Input and 64 KByte Output signals                             |                         |              |
| <b>Field Bus Interfaces</b> |   | Supplier  | Product designation     |              |
|                             | Profibus DP                               | Hilscher  | CIF 30 PB, CIF 104 PB   |              |
|                             | INTERBUS                                  | Hilscher  | CIF 30 IBM, CIF 104 IBM |              |
|                             | CANopen                                   | Hilscher  | CIF 30 COM, CIF 104 COM |              |
|                             | DeviceNet                                 | Hilscher  | CIF 30 DNM, CIF 104 DNM |              |
|                             | INTERBUS                                  | Phoenix Contact   | IBS PC ISA SC/I-T       | No.: 2719234 |
|                             | INTERBUS                                  | Phoenix Contact   | IBS PC 104 SC-T         | No.: 2721701 |
|                             | INTERBUS                                  | Phoenix Contact   | IBS PCI SC/I-T          | No.: 2725260 |
| <b>Performance Data</b>     |   | P 233 MMX   | P III 550               | Athlon 1GHz  |
|                             | 1000 instruction lines (IL) global BOOL   | 10 $\mu$ s  | 2 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) instance BOOL | 10 $\mu$ s  | 2 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) global BYTE   | 10 $\mu$ s  | 2 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) instance BYTE | 10 $\mu$ s  | 2 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) global INT    | 12 $\mu$ s  | 6 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) instance INT  | 12 $\mu$ s  | 3 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) global DINT   | 23 $\mu$ s  | 8 $\mu$ s               | 3 $\mu$ s    |
|                             | 1000 instruction lines (IL) instance DINT | 10 $\mu$ s  | 2 $\mu$ s               | 1 $\mu$ s    |
|                             | 1000 instruction lines (IL) global REAL   | 195 $\mu$ s   | 60 $\mu$ s              | 25 $\mu$ s   |
|                             | 1000 instruction lines (IL) instance REAL | 190 $\mu$ s   | 48 $\mu$ s              | 24 $\mu$ s   |

## SCOPE OF SUPPLY

- Software on CD ROM for ProConOS® VxWorks Intel
- License agreement with softkey for one runtime license of ProConOS® VxWorks Intel
- ProConOS® Manual and ProConOS® VxWorks Manual
- ProConOS® CIF Driver Manual and ProConOS® INTERBUS-G4 Driver Manual
- Installation Guide, Application Guide and Quick Start Guide

## ORDERING INFORMATION

| Order number        | Designation                    |
|---------------------|--------------------------------|
| 1-2033-1201-500-000 | ProConOS 3.3 VxWorks 5.4/Intel |
| 1-2033-1201-501-000 | ProConOS 3.3 VxWorks 5.5/Intel |

## PRODUCT RELATED TOOLS

| Order number        | Designation                                      |
|---------------------|--|
| 1-4020-1201-101-E00 | ProConOS OPC-Server 2.0 Desktop                  |
| 1-2033-2001-500-E00 | ProConOS 3.3 Developer Toolkit VxWorks 5.4/Intel |
| 1-2033-2001-501-E00 | ProConOS 3.3 Developer Toolkit VxWorks 5.5/Intel |

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