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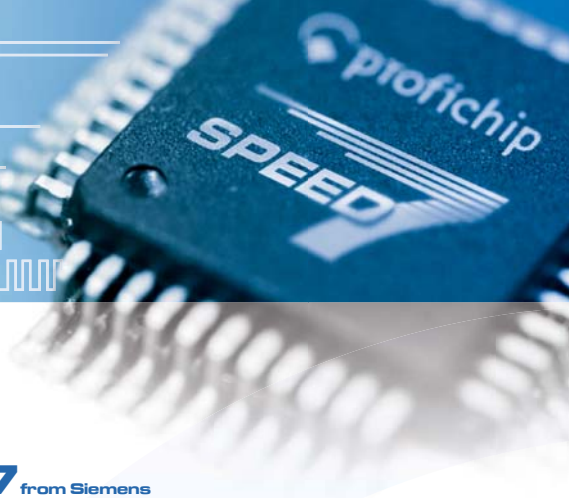


Embedded PLC module for STEP7 from Siemens

SODIMM-PLC 7001

Powerful, tiny and easy-to-use these are the attributes of profichip's SODIMM-PLC module. Equipped with a rich set of direct IO and communication features, programmable in Step7 from Siemens and up to 512kB of PLC user memory this module is the ideal extension to various types of applications where fast, deterministic and reliable hardware PLC control in a small form factor is required. Board Controllers, HMIs and a broad range of machinery can benefit from new control capabilities and direct IO- and communication functions. Supporting a very popular programming language, a well-known tool chain and extensive maintenance features will further increase the market acceptance and success of the final product.

I/O Functions

The SODIMM-PLC module is build around profichip's PLC 7001 chip. Based on the core of the PLC 7000 which has been in use for almost four years in over 10.000 applications worldwide, the PLC 7001 offers extended IO features with up to 32 digital inputs and 24 digital outputs directly on-chip. The IO interface is configurable to provide high level user functions like numerous hardware counter modes.
16 digital inputs can be employed with on-chip alarm functionality which results in low latency and fast response times upon critical system conditions and provides the capability to capture time critical events very accurately. The build-in Real-Time-Clock which can be buffered by an external battery allows precise timestamping and clock synchronized control tasks. SSI interface for rotary encoders, 4-channel Pulse-Width-Modulation and Stepper-Motor-Control are to be supported in future firmware updates.
If more than 56 digital I/O bits or analog functions are needed a serial I/O bus is provided which can be operated with up to 32 peripheral modules compatible with System 200V from VIPA.

User Data Interface

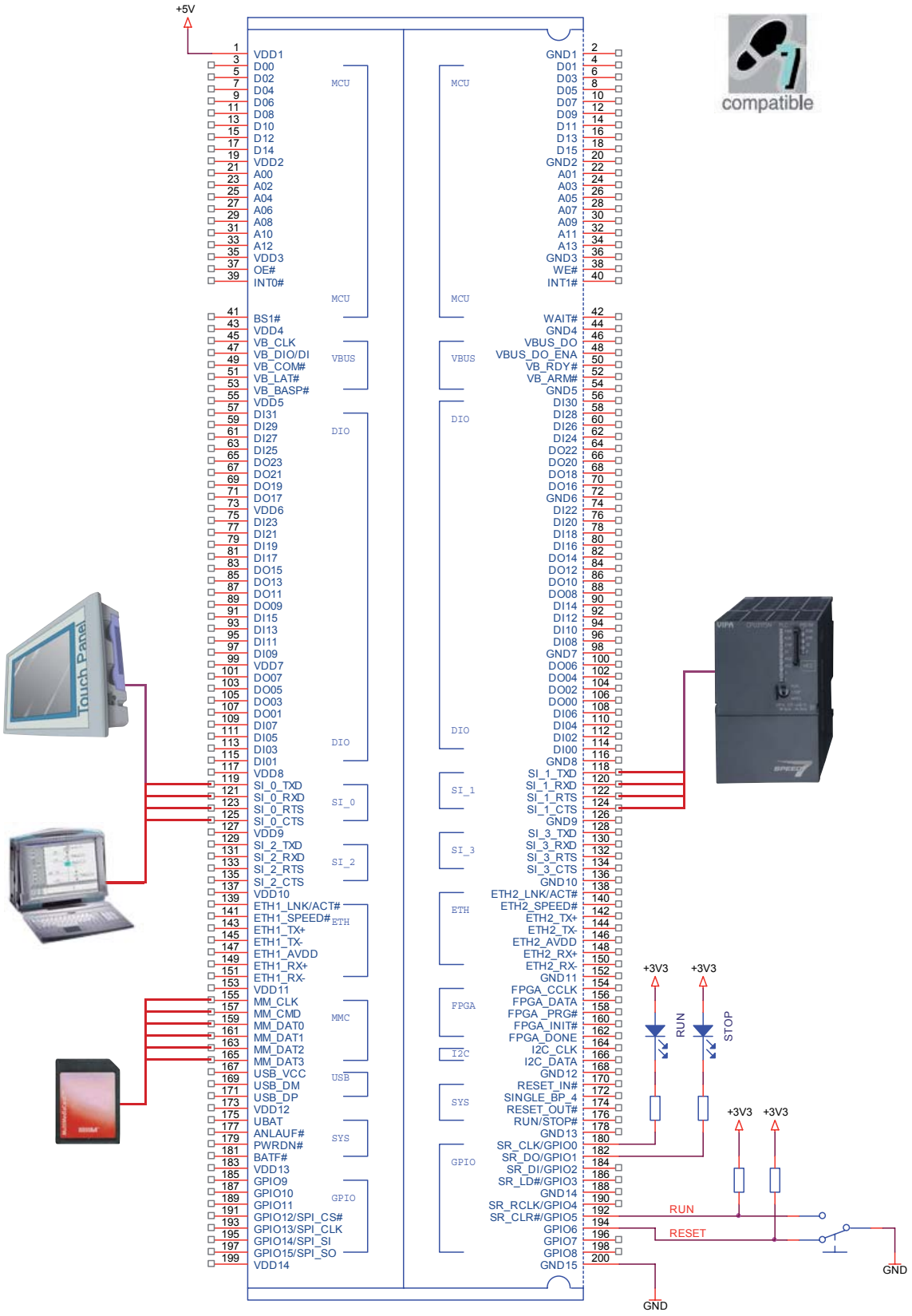
For maximum flexibility and convenient adaption the SODIMM-PLC module is equipped with a 16 bit SRAM interface to an external FPGA or Dual-Port-RAM with up to 1024 bytes address space mapped into the PLC I/O area. This interface can be used to easily share data of external communication interfaces like PROFIBUS- or CAN-Master with the integrated PLC memory as well.

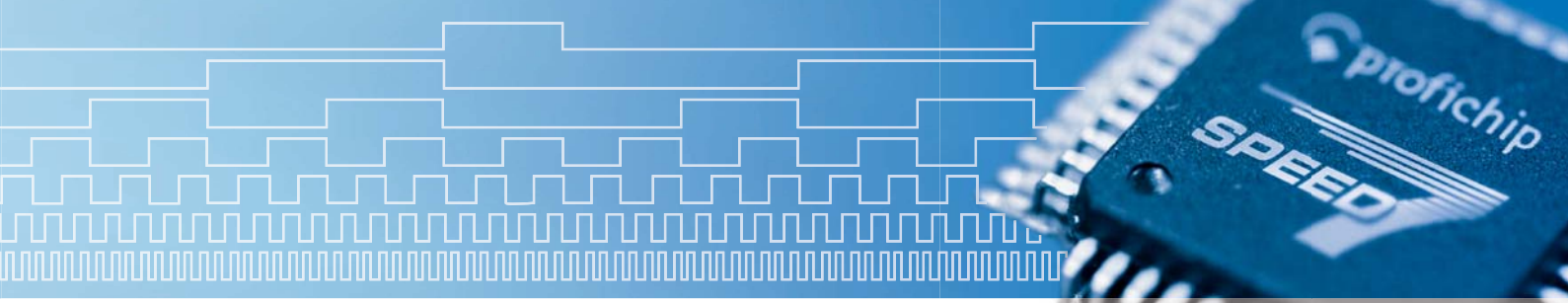
Communication Interfaces

Currently there are three serial interfaces and one Ethernet port available on the SODIMM-PLC module. The serial interfaces are dedicated to MPI communication, PROFIBUS-DP Slave interface (both supporting transmission rates up to 12 MBit/s) and a serial standard interface (e.g. for establishing a Point-To-Point (PtP) communication). The Ethernet port is restricted to PU/OP functionality like hardware configuration, PLC program download and online functions. Alternatively the MPI interface can be used for system setup, program update, debugging and online functions.

SODIMM-PLC 7001	SO-313SC-2DP	max. config.
PLC Core CPU	PLC 7001	
PLC Assembler Code	MC7	
PLC Memory (Data/Code)	32kB / 32kB	256kB / 256kB
PLC Memory Extension up to	256kB / 256kB	-
System Frequency	48MHz	
Internal Cycle Time	20 nsec.	
System Interface		
User Data / Extension Port	DPR Interface (16Bit / 1024Bytes)	
On-Board I/Os	16DI / 16DO	32DI / 24DO
Alarms (e.g. OB 40)	16	
Counter (Up, Down, A/B, etc.)	3 x 32Bit	4 x 32Bit
SSI In/Out-Master	-/-	1/1
Backplane-Bus, ser. I/O-Bus	✓	
Communication Interfaces		
Ethernet 10/100 (PU/OP)	1x	
MPI	1 x 187,5kBit/s	1 x 12MBit/s
PROFIBUS-Slave, 12 MBit/s	1x	
Standard Serial	1x	
SD / MMC	1x	
PLC System Counter and Timer		
Counter	512	
Timer 10 msec.	512	
High Resolution Timer 1µsec.	max *	
IEC Timer	max *	
RTC (+ext. Battery for Backup)	✓	
Operation Conditions		
Core Supply Voltage	5,0 V	
I/O Voltage	3,3 V	
Power Consumption	2,0 W	
Temperature Range	- 25°C - + 60°C	

* limited by available memory only


+5V
compatible
Touch Panel
RUN
STOP
+3V3
RESET
GND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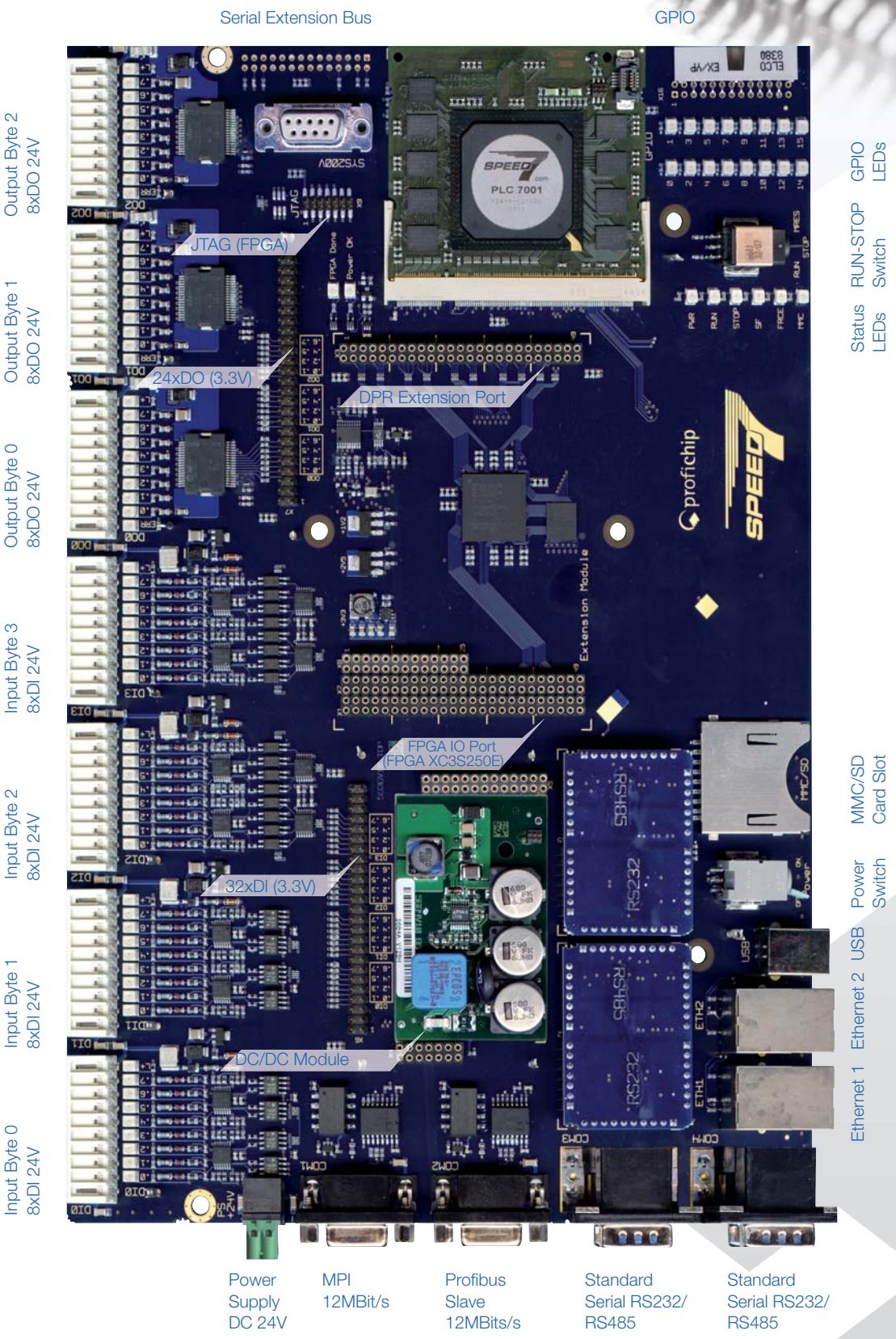
SPEED


Serial Extension Bus
GPIO
Output Byte 2
8xDO 24V
Output Byte 1
8xDO 24V
Output Byte 0
8xDO 24V
Input Byte 3
8xDI 24V
Input Byte 2
8xDI 24V
Input Byte 1
8xDI 24V
Input Byte 0
8xDI 24V
JTAG (FPGA)
24xDO (3.3V)
DPR Extension Port
FPGA IO Port
(FPGA XC3S250E)
32xDI (3.3V)
DC/DC Module
PLC 7001
GPIO LEDs
RUN-STOP Switch
Status LEDs
MMC/SD Card Slot
Power Switch
USB
Ethernet 2
Ethernet 1
Power Supply DC 24V
MPI 12MBit/s
Profibus Slave 12MBits/s
Standard Serial RS232/ RS485
Standard Serial RS232/ RS485

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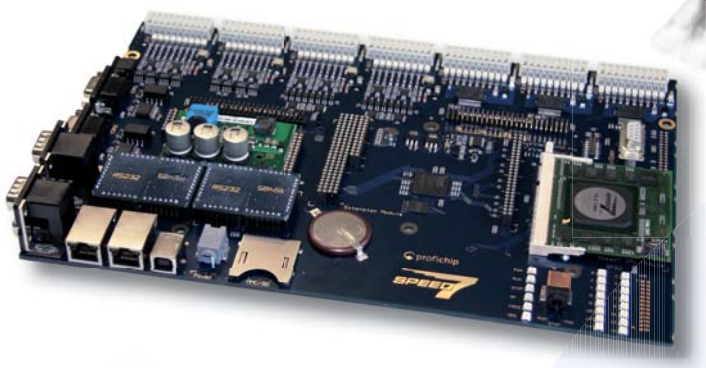

Evaluation Board for SODIMM-PLC Modules	
Sockets for SODIMM-PLC Modules	1
PLC System Interface	
Dual-Port-RAM Interface	16Bit / 1024Bytes
Digital Inputs (24V / 3,3V)	32
Digital Outputs (24V / 3,3V)	24
General Purpose I/Os	16
Backplane-Bus, serial Extension Bus	✓
Communication Interfaces	
MPI (RS485, 12MBit/s)	1
Profibus-DP Slave (RS485, 12MBit/s)	1
Ethernet 10/100 (PU/OP)	2
UART (RS485 / RS232)	2
SD / MMC Interface	1
USB	1
Miscellaneous	
FPGA for DPR / Extension Board Interface (XC3S250E)	1
JTAG Interface for FPGA Download / Debugging	1
Power Switch / Run-Stop-Reset Switch	✓/✓
LEDs DI / DO / GPIO	32/24/16
LEDs CPU / Power / FPGA	6/1/1
Plug-In Line Driver Module (RS485 / RS232)	2
Plug-In DC/DC Module	1
Backup Battery for RTC	✓
Technical Data	
Power Supply	DC 24V
I/O Voltage	24V / 3,3V
Dimensions: LxW (mm)	300 x 236

This board is the evaluation platform for profichip's SODIMM-PLC Module. All the interfaces of the PLC module can be accessed very easily in order to start right away with software implementation and test before a custom board is available. The entire kit contains all manuals and schematics to build a stand-alone PLC CPU based on the SODIMM-PLC Module or to integrate the module into an existing application.

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