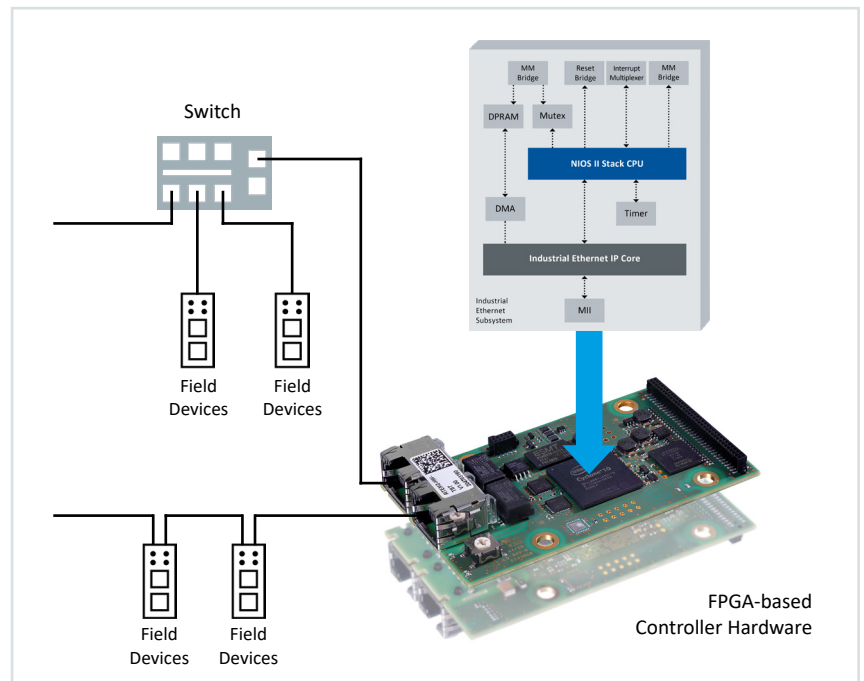
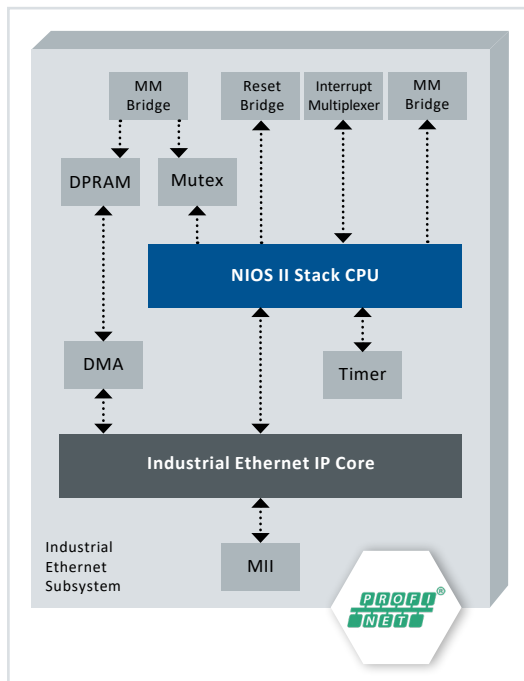


PROFINET Controller for Intel FPGA

Integration of PROFINET into Industrial Controllers using Intel FPGA

- Easy-to-integrate PROFINET Controller subsystem for FPGAs
- Suitable for factory automation, process control and safety applications
- Cyber security features included



Easy-to-integrate PROFINET Controller subsystem for FPGAs

- Subsystem includes an optimized Industrial Ethernet switch IP core and a CPU IP core running the PROFINET controller protocol stack
- No porting of the PROFINET stack required – just load the prepared executable
- Memory interface with comprehensive API library for the controller application
- Verified with official PROFINET test bundle of PI organization

Suitable for factory automation, process control and safety applications

- Fast operation by cut-through-switching and DMA transfer of i/o data
- Support of Fast Startup, Simple Device Replacement and System Redundancy
- Support of PA Profile devices and of Dynamic Reconfiguration
- Subsystem can serve as Black Channel for PROFI-safe applications

Cyber security features included

- Switch IP core with integrated firewall functions
- Netload Class III
- Tested with Achilles

PROFINET Controller for Intel FPGA

Technical Data

IP Core configuration	<ul style="list-style-type: none">▪ Switch IP Core with 2 external ports and 1 internal port▪ 1 Nios II IP core for processing the protocol▪ DPRAM interface to application processor (FPGA-internal or external)
Supported FPGA families	Cyclone III, Cyclone IV GX, Cyclone IV E, Cyclone V, Cyclone V SoC, Cyclone 10 LP, MAX 10
Switch Clock	125 MHz
Functionality	<ul style="list-style-type: none">▪ PROFINET Controller according to specification V2.4, Conformance Class B▪ Netload Class III▪ Fast Startup▪ Simple device replacement▪ LLDP▪ MRP▪ SNMP support▪ Dynamic Reconfiguration (Configuration in Run)▪ I/O data consistency for up to 1440 bytes
Optional Functionality	<ul style="list-style-type: none">▪ additional PROFINET Device functionality▪ PROFINET Controller according to specification V2.4, Conformance Class C (IRT)▪ MRPD▪ System redundancy (S2)
Capacity	<p>Configurable parameters:</p> <ul style="list-style-type: none">▪ Number of PROFINET devices per controller instance: recommended max. 127▪ Number of ARs per controller instance: max 255▪ Number of SR-ARs per controller instance: max 255▪ Number of modules/submodules per AR: no limit, 8 kBytes I/O data per device▪ Number of IOCRs per AR: default 4▪ Number of IOCRs per controller instance: max 1024▪ Total size of I/O data per controller instance: up to 1024 x 1440 bytes▪ Size of record data item: max. 8 kBytes for one record <p>Memory requirements:</p> <ul style="list-style-type: none">▪ Recommended RAM size (code + data): 32 Mbytes
Performance	<ul style="list-style-type: none">▪ Shortest allowed cycle time: 250 μs▪ Number of IOCRs at 1 ms cycle time: limited only by 100% Ethernet bandwidth

Scope of Delivery

IP / Logic	<ul style="list-style-type: none">▪ Complete PROFINET Controller subsystem▪ Supplementary IP cores▪ Sample application FPGA design
Software	<ul style="list-style-type: none">▪ Loadable protocol software including eCos operating system▪ API library

Order Numbers

Please contact us for details	PROFINET Controller for Intel FPGAs We are happy to discuss your particular requirements and adequate licensing options with you.
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Additional Products and Services

Please contact us for details	RTEM2 – PROFINET Controller communication board. Network Interface Module for PROFINET controllers
SIA-YY-012501	Integration workshop for implementing PROFINET controller based on Intel FPGAs
SIA-YY-012503	Integration support provided by e-mail or phone

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