Product Catalog

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Introduction

EUROS is a real-time operating system developed specifically for embedded systems. EUROS is not restricted to a certain domain of applications but is designed as a general pupose real-time operating system. Because of its low-footprint design it is especially suited for 16 bit CPU systems; however, migration to more powerful 32 bit systems is possible because of support for a number of these architectures. On all 16 bit and 32 bit architectures the same programming interface and the same functionality is provided.

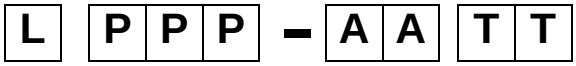
The following tables show which toolsets, CPUs and standard boards are currently supported by EUROS. EUROS is not restricted to these boards; support for additional standard boards as well as customer-specific boards is added when requested. Adapting EUROS to additional CPUs of a previously supported CPU family is usually possible with little effort. Porting EUROS to other CPU architectures or toolsets of other manufacturers is possible as well.

More tables list all software products that are available as add-ons for EUROS. We can not guarantee that these products run on all customer-specific board layouts. Please ask for compatibility with other boards. Additional drivers can be developed when requested.

This catalog is a brief overview and does not contain technical specifications of individual products. Please ask for datasheets of specific products.

1 Order numbers

EUROS order numbers consist of four parts:



L	License type, L-No. (one digit). Depending on the product several license types are possible:	
	1	hardware
	2	EUROS Software Development License
	3	EUROS Software Run-Time License
	4	EUROS Tool License; tools runs on Windows 98/ME/NT/2000/XP
	5	Miscellaneous Services
PPP	Product number (three digits). Each product has a unique product number independent from the architecture of the target system. The values are listed in the tables in chapter 6.	

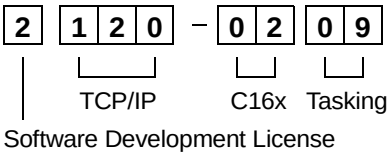
For EUROS Software Developmennt Licenses and EUROS Software Run-Time Lincenses the remaining parts of the product number are used as followed:

AA	Architecture number (two digits). This part selects the architecture of the target system for which a product is ordered. Possible values are listed in chapter 2.
TT	Toolset vendor number (two digits). This number selects the toolset which is used to build the applications for the target system. Possible values are listed in chapter 5.

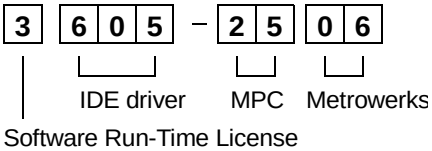
For all other license types the value of these parts is 0.

Examples:

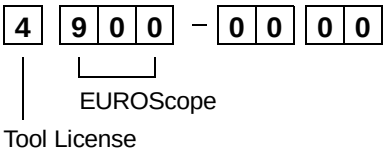
Software Development License of TCP/IP for Infineon C16x and Tasking tool-chain:



Software Run-Time License of IDE driver for PowerPC and Metrowerks tool-chain.:



Tool License of EUROScope:



2 Supported CPU architectures

The following table contains all architectures currently supported by EUROS. For some processors of a CPU architecture minor additional adaptations are required. Processors with available adaptation are listed in the column “CPUs”.

Porting EUROS to unlisted CPU architectures or adaptations to unlisted processors of a supported CPU architecture are possible on demand.

The numbers in column “Arch.-No.” are required to specify the CPU architecture of the target system for an ordered product.

CPU architecture	Arch.-No.	CPUs
ARM	21	ARM: ARMulator[1] Atmel: AT91M40400 etc., AT91M43, AT91M63, AT91M42800, AT91M55800A, AT91SAM7A2 Cirrus Logic: EP93xx DualCore: DCIC9907 Europe Technologies: ET-AUT019A (easyCAN4F), ET-AUT040A (easyCAN4HE) Hynix: GMS30C7201, HMS30C7202 Intel: StrongARM, XScale PXA2xx MAZ: P2001 Micronas: PUC303xA NETsilicon: NET+ARM (NETA-12, NETA-15, NETA-40) OKI: ML674000, ML674001, ML674002, ML674003, ML675001, ML675002, ML675003 Philips: LPC2000 series Samsung: S5N8947, S5N8946, S3C4510, S3C4530, KS32C50100 Sharp: LH7A404 Telechips: TCC76x
Altera	29	Nios II/e, Nios II/s, Nios II/f
Freescale 68k	24	68360, 68332
Freescale 68HC12	07	
Freescale Coldfire v2[2]	28	MCF5282, MCF5485
Fujitsu F16LX	01	90543, 90546
Fujitsu FR	22	91360, 91109

CPU architecture	Arch.-No.	CPUs
Infineon C16x	02	Infineon: C161, C163, C164, C165, C167, M2/SDA6000 STMicroelectronics: ST10F167, ST10F168
Infineon TriCore	27	(under development)
Infineon XC16x	06	XC161, XC164, XC167
Intel 80x86 16-Bit	03	Intel 80186 compatible
Intel 80x86 32-Bit	23	Intel 80386 compatible AMD Elan series
MIPS	30	AMD Au1200
Mitsubishi M16C	04	M16C6x
Mitsubishi M32C	05	(projected)
NEC V850	26	V850/SA1, V850/MA1
PowerPC	25	MPC55x, MPC56x, MPC82x, MPC86x, MPC5200

1. Simulator, component of ARM development tools
2. in preparation

3 Supported standard boards

Some minor adaptations has to be done for each board to run EUROS. These include initialization code for the board and configuration data for device drivers.

EUROS currently supports the following standard CPU boards:

CPU architecture	Board name	CPU	Manufacturer
ARM	Development Board PID7T	ARM7TDMI	ARM Ltd.
	ARMulator	configurable	ARM Ltd.
	AT91EB01	AT91M40400	Atmel
	AT91EB40	AT91R40807	Atmel
	AT91EB40A	AT91R40008	Atmel
	AT91EB55	AT91M55800A	Atmel
	AT91EB63	AT91M63200	Atmel
	Auckland	Sharp LH7A404	Garz & Fricke
	NET+Works	NET+ARM-40	NETsilicon
	NET+ARM	NET+ARM-12	ESE
	WIB/GP	NET+ARM-15/40	ESE
	GMS30C7201 Reference Design Board	Hynix GMS30C7201	Hynix
	HMS30C7203 Reference Design Board	Hynix GMS30C7202	Hynix
	Future Unit	Hynix HMS30C7202	Kurz Elektronik GmbH
	Flexible Mainboard	Cirrus Logic EP93xx	Kurz Elektronik GmbH
	LPEC	MAZ P2001	MAZ Brandenburg
	DCIC9907 Evaluation Board	DualCore DCIC9907	Trenz Electronic
	PNP/1110	StronARM SA-1110	SSV Embedded Systems
	ML674000 Eval.	OKI ML674000	Memec Design
	ML674k CPU-Board	OKI ML674003	OKI
	ML675k CPU-Board	OKI ML675003	OKI
	EVM-CAN (ET-AUT026A)	ET-AUT019A	Europe Technologies
	ET-AUT045A	ET-AUT040A	Europe Technologies
	phyCORE-LPC2294	Philips LPC2294	Phytec
	TCC760 Demo Board	TCC760	Telechips

CPU architecture	Board name	CPU	Manufacturer
Altera Nios II	Stratix 1S10	Nios II/x	Altera
Freescale 68k			
Freescale 68HC12			
Freescale Cold-fire v2 ff.			
Fujitsu F16LX	DIMM line DLF543B0	MB90543	Graf-Syteco
Fujitsu FR	91360 starter kit	MB91360	Fujitsu
	StarterKit 91100 with Memory Option Board	MB91109	Fujitsu
Infineon C16x/ ST10	easyUTAH	C165UTAH	Infineon
	Forth167	C167CR	FS Forth Systeme
	STart168	ST10F168	FS Forth Systeme
	KIT-132-X	C165	Phytec
	KIT-140	C165	Phytec
	KitCON-167	C167CR	Phytec
	MiniModul167	C167CR	Phytec
	phyCore-167 HS/E	C167CS/CR	Phytec
	TQM165UTAH	C165UTAH	TQ-Components
	TQM167C	C167CR	TQ-Components
	TQM167U	C167CR	TQ-Components
	TQM167UE	C167CR	TQ-Components
Infineon TriCore			
Infineon XC16x	XC16Board	XC161CJ	Infineon
	phyCoreXC161	XC161	Phytec
	phyCore-XC167	XC167CI	Phytec
Intel 80x86 16-Bit	Standard-PC	80x86	all
	Net186	80186ES	AMD

CPU architecture	Board name	CPU	Manufacturer
Intel 80x86 32-Bit	Standard-PC	>80386	all
	DIL/NetPC	Elan SC410-33	SSV Embedded Systems
	MOPS/386A	ALi M6117C (386 SX comp.)	Kontron
	MOPS/586	Am5x86-133	Kontron
	ETX-VE4	VIA Eden VE4000	Kontron
Mitsubishi M16C			
NEC V850	startWARE V850	V850/SA1	NEC Corporation
PowerPC	EVB555	MPC555	ETAS
	phyCORE-MPC565	MPC565	Phytec
	ec555	MPC555	Würz Elektronik
	TQM823	MPC823	TQ-Components
	TQM860	MPC860	TQ-Components
	MPC860FADS	MPC860	Motorola
	PM520	MPC5200	MicroSys

4 EUROS-Eval-Kits

The EUROS Embedded Systems GmbH offers in cooperation with Phytec ready-to-use EUROS-Eval-Kits. These Kits allows extensive tests under real conditions of EUROS, EUROScope and EUROSkit on the desired processor architecture.

All Kits include:

- EUROS (evaluation version): full functional range, only runtime on target is limited to approximately 30 minutes.
- EUROScope (temporary license)
- EUROStrace (temporary license)
- EUROSkit (temporary license)
- Toolset: either free tools from GNU or evaluation versions of commercial tools

The following EUROS-Eval-Kits are currently available:

Architecture	Name	Configuration
ARM	EUROS phyCORE-LPC2294	Prozessor: Philips LPC2294, 60 MHz 1 MB RAM, 2 MB Flash, 2 x CAN, 2 x UART, 10/100 Mbit/s Ethernet (SMSC LAN91C111) JTAG adapter optional: graphical display
Infineon C16x	EUROS phyCORE-C167	Prozessor: Infineon C167CS, 20 MHz 1 MB RAM, 2 MB Flash, 2 x CAN, 2 x UART, 10 MBit/s Ethernet (CS8900) optional: graphical display
Infineon XC16x	EUROS phyCORE-XC167	Prozessor: Infineon XC167CS, 20-40 MHz 512 KB RAM, 1 MB Flash, 2 x CAN, 2 x UART, 10 MBit/s Ethernet (CS8900), OCDS adapter optional: graphical display
PowerPC	EUROS phyCORE-MPC565	Prozessor: MPC565, 40/56 MHz 2 MB RAM, 2 MB Flash, 2 x CAN, 2 x UART, 10 Mbit/s Ethernet (CS8900), BDM interface
	EUROS phyCORE-MPC555	Prozessor: MPC555, 40 MHz 512 MB RAM, 1 MB Flash, 2 x CAN, 2 x UART, BDM interface

5 Supported Toolsets

The EUROS delivery doesn't contain any tools for compiling, linking and locating an application. Instead, tools from other vendors are supported which are specialized in these tools. The following table lists all vendors whose tools are currently supported for several CPU architectures.

The toolset numbers are required to specify the toolset vendor used for building the applications with an ordered product.

Tool	Toolset number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
ARM[1]	01	SDT 2.51 ADS 1.x															
Assembler, C Compiler, Linker		X															
Debugger (via JTAG)		X															
Fujitsu	03			3.2 3.6	3.2 3.6												
Assembler, C Compiler, Linker				X	X												
Debugger (ROM monitor or emulator)				X	X												
IAR	04											1.35c					
Assembler, C Compiler, Linker												X					
Keil[1]	05					4 - 6		4 - 6									
Assembler, C Compiler, Linker						X		X									
Metrowerks CodeWarrior[1]	06	1.1											X			6.0	
Assembler, C Compiler, Linker		X											X			X	
Debugger (via BDM)													X			X	
EUROS object viewer plug-in for CodeWarrior																X	
Mitsubishi	07																
Debugger (via Emulator)												6.0					

Tool	Toolset number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
SDS Diab-Data	08												X				
Assembler, C Compiler, Linker													X				
Debugger													X				
Altium/Tasking[1]	09					7.5 - 8.5	2.2	7.5 - 8.5					9.1				
Assembler, C Compiler, Linker						X		X					X				
C++-Compiler																	
GNU	10																
Assembler, C-Compiler, Linker		X	X							X	X		X	X	X	X	X
C++-Compiler		X	X							X	X		X	X	X	X	X
Cosmic	11																
Assembler, C-Compiler, Linker														X			

1. Official Distributor.

6 EUROS System Software

EUROS can be individually extended by numerous components and device drivers. Most components and device drivers are available for all supported CPU architectures. Some are only available for particular CPU architectures, e.g. device drivers for internal peripherals. The following tables gives an overview of components and device drives and their availability for individual CPU architectures. Additional components and device drivers are always under development and are also developed on demand.

The following products can be ordered with license type “Software Development License” and “Software Run-Time License”. Please place the code of the requested license type in front of the product number when ordering (see also chapter 1).

The product numbers are required for ordering.

6.1 Basic components

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Microkernel	100	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Process-Manager		X	X	X	X	X		X	X	X	X	X	X		X	X	X
C-Library[1]		X	X	X	X	X		X	X	X	X	X	X		X	X	X

1. Locale functions currently not supported.

6.2 Components for loading modules

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Dynamic Linking (import-library mechanism)	300	X		X	X	X		X	X	X		X	X		X	X	
Binary-Loader[1]	305	X		X	X	X		X	X	X		X	X		X	X	
ELF-Loader[1]	306	X								X						X	

1. Can only be used with dynamic linking component.

6.3 Network products

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
TCP/IP (UDP, BootP)[1]	120	X	X	X	X	X		X	X	X	X	X	X		X	X	X
SMTP (client)[2]	121	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Web server[2]	122	X	X	X	X	X		X	X	X	X	X	X		X	X	X
SNMP (agent)[2]	123	X	X	X	X	X		X	X	X	X	X	X		X	X	X
FTP server for FMS2[2]	125	X	X	X	X	X		X	X	X	X	X	X		X	X	X
DHCP-Client[2]	126	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Telnet server[2]	127	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Ethernet/IP[2]	128	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Modbus/TCP[2]	129	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
PPP[2 3]	550	X	X	X	X	X		X	X	X	X	X	X		X	X	X
PPP over ISDN[2 4]	551	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Ethernet drivers[2]																	
CS8900[5]	555	X	X	X	X	X		X	X	X	X	X	X		X	X	X
SMC9000[5]	556	X	X	X	X	X		X	X	X	X	X	X		X	X	X
CPM-SCC	557															X	
EPIC100	558									X							
AMD PCNET	559								X	X							
AMD PCNET (PCI-Version)	560									X							
Samsung S5N8946/7[5]	561	X															
NET+ARM[5]	562	X															
3Com 3C90x[5]	563									X							
MAZ P2001[5]	564	X															

Name	Product number	CPU architecture														
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Davicom DM9102A	565									X							
Intel i8255x	566									X							
Cirrus Logic EP93xx[5]	567	X															
Freescale MPC5200 FEC[5]	568															X	
Freescale TSEC[5]	569															X	
DualCore DCIC9907 Ethernet[5]	570	X															
SMSC LAN911x[5]	574	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X

1. Requires an Ethernet driver or PPP combined with a serial driver.
2. Can only be used with the TCP/IP component.
3. Requires a serial driver with link capability.
4. Requires ISDN component
5. Supports Multicasting

6.4 File system products

Name	Product number	CPU architecture														
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
FMS2 (FAT12, FAT16, FAT32)[1 2]	141	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Block drivers[3]																	
IDE driver	605	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Floppy-Disk driver	606	X	X	X	X	X		X	X	X	X	X	X		X	X	
RAM-Disk driver	607	X	X	X	X	X		X	X	X	X	X	X		X	X	X
FTL (Flash Translation Layer)	600	X	X	X	X	X		X	X	X	X	X	X		X	X	X
DiskOnChip 2000	608	X	X	X	X	X		X	X	X	X	X	X		X	X	
MMC[4]	601	X	X	X	X	X		X	X	X	X	X	X		X	X	X

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Atmel Dataflash[4]	602	X	X	X	X	X		X	X	X	X	X	X		X	X	X
MMC Hynix HMS30C7202	609	X															

1. Requires at least one block driver.
2. File system services can also be used via C library functions.
3. Drivers can be used directly or via the FMS.
4. Requires SPI driver with link capability.

6.5 Graphics products

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Graphics library[1]	160	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Generic graphic chip initializations are available:																	
Cirrus Logic EP9312		X															
Epson SED 1335				X	X	X		X					X				
Epson SED 1354				X	X	X		X					X				
Epson S1D13705		X		X	X	X	X	X		X		X	X	X	X	X	
Hynix GMS30C7201		X															
Hynix HMS30C7202		X															
Mitsubishi M66271FP				X	X	X		X					X				
Sharp LH7A404		X															
Toshiba T6963C				X	X	X		X					X				

1. Requires a board dependent initialization of the graphic chip. One existing gerneric graphic chip initialization is included.

6.6 IrDA

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
IrDA (IrCOMM)[1]	180	X	X	X	X	X		X	X	X	X	X	X		X	X	X
IrDA-Treiber[2]																	
IR8250 (ACE8250 compatible)	516	X	X	X	X	X		X	X	X	X	X	X		X	X	X
TIR 2000	515	X	X	X	X	X		X	X	X	X	X	X		X	X	X
IrDA driver for Hynix GMS30C7201	761	X															

1. Requires a serial driver with IrDA interface.
2. Drivers can only be used with the IrDA component.

6.7 Data communications products

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Profibus-Master (Siemens COM-201)	181									X							
Profibus-Slave (Siemens SPC3)	680	X	X	X	X	X		X	X	X	X	X	X		X	X	X
AS-i PC2 (Fa. Bihl + Wiedemann)	681									X							
Arcnet (SMC 200x)	682	X	X	X	X	X		X	X	X	X	X	X		X	X	X
3964R protocol[1]	675	X	X	X	X	X		X	X	X	X	X	X		X	X	X
IEEE 1394 (Firewire)[2]	182					X											
ISDN stack[3]	183	X	X	X	X	X		X	X	X	X	X	X		X	X	X
ISDN port driver for IPAC PSB 2115[4]	685	X	X	X	X	X		X	X	X	X	X	X		X	X	
USBD driver for Hynix HMS30C7202	683	X															
USB driver for Infineon C165UTAH	684					X											

1. Requires a serial driver with link capability.
2. In cooperation with the University of Ulm; please ask for details.
3. Requires an ISDN port driver.
4. Can only be used with the ISDN stack component.

6.8 CAN products

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
CANopen[1 2]	403	X	3	3	3	X	3	X	3	3	3	3	3	3	3	X	
CANopen[1 2]	404	X	3	3	3	X	3	X	3	3	3	3	3	3	3	X	
DeviceNet[4]	402	X	3	3	3	X	3	X	3	3	3	3	3	3	3	3	
CAN drivers																	
Intel I82527[5]	575	X	X	X	X	X		X	X	X	X	X	X		X	X	X
internal CAN controller Fujitsu F16LX	576			X													
internal CAN controller Fujitsu FR	577				X												
internal CAN controller C16x[5]	578					X											
internal TouCAN module of MPC555[5]	579															X	
internal CAN module of HMS30C7202[5]	581	X															
internal TwinCAN module of XC16x[5]	582							X									
Infineon 82C900 (TwinCAN)[5]	583	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OKI ML9620[5]	584	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
internal CAN module of MPC5200[5]	585															X	
internal CAN module of LPC2000 series[5]	586	X															

1. Requires CAN driver with CANopen interface.
2. Adaptation of CANopen stack from Fa. IXXAT.
3. On request.
4. Adaptation of DeviceNet stack from Fa. IXXAT.
5. Driver also supports CANopen interface.

6.9 SoftSPS

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
OpenPCS[1]	401					X											

1. Adaptation of the SoftSPS development system of Infoteam.

6.10 Serial drivers

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
ACE8250 (and compatible)[1]	500	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Philips SCC2691[1]	501	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Philips SCC2692	502	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Philips SCC8530[1]	503	X	X	X	X	X		X	X	X	X	X	X		X	X	X
int. ser. channel (UART0) Fujitsu F16LX[1]	504			X													
int. ser. channel (UART1) Fujitsu F16LX[1]	505			X													
internal serial channel Fujitsu FR[1]	506				X												
internal serial channel C16x[1]	507					X											
internal serial channel Mitsubishi M16C[1]	508											X					
TPU-UART[1]	509												X				
QSM-SCC[1]	510												X			X	
CPM-SMC[1]	511												X			X	
internal serial channel Atmel AT91[1]	512	X															
internal serial channel NET+ARM[1]	513	X															

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
internal serial channel Micronas PUC[1]	514	X															
Philips SCN2661	517									X							
internal serial channel XC16x[1]	517							X									
internal serial channels Cirrus Logic EP93xx[1]	519	X															
PSC-UART[1]	520															X	
internal serial channel Atmel AT91SAM7A2[1]	521	X															
Altera UART Core with Avalon Interface[1]	522		X														

1. Driver is link capable.

6.11 SPI drivers

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
internal SPI channel ARM PrimeCell[1]	624	X															
internal SSC channel (SPI) C16x (Master)[1]	625					X											
internal SPI channel Atmel AT91[1]	626	X															
internal SPI channel Hynix GMS30C7201	627	X															
internal SPI channel of QSM modules[1]	628															X	
internal SSC channel (SPI) XC16x (Master)[1]	628							X								X	

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Altera SPI Core with Avalon Interface[1]	630		X														

1. Driver contains link interface for MMC

6.12 I²C drivers

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
I²C for general purpose I/O pins (master mode)	650	X	X	X	X	X		X	X	X	X	X	X		X	X	X
internal I²C channel Fujitsu (master mode)	651			X	X												
internal I²C channel M16C (master mode)[1]	652											X					

1. I²C operation mode of internal UART2 of M16C6x

6.13 Real-Time Clock Access Control

Name	Product number	CPU architecture															
		ARM		Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
RTC-72423	756	X	X	X	X	X		X	X	X	X	X	X		X	X	X
RTC MC146818 (e.g. standard PC)	757								X	X							
RTC of HMS30C7202	759	X															

6.14 Miscellaneous Components

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
EUROSmon[1]	190	X	X	X	X	X		X		X	X	X		X	X	X	
Flash-Library	191	X	X	X	X	X		X		X	X	X			X	X	
PC Card driver for Hynix GMS30C7201 (IDE)	184	X								X							
DCE-RPC protokol[2][3]	185	X	X	X	X	X		X	X	X	X	X	X		X	X	X
DCOM[2][4]	186	X	X	X	X	X		X	X	X	X	X	X		X	X	X
OPC server[2][5]	187	X	X	X	X	X		X	X	X	X	X	X		X	X	X
EUROSmpi	192	X	X	X	X	X		X	X	X	X	X	X		X	X	X

1. Can only be used with EUROScope or EUROSflashtools.
2. Estimated release: 3Q 2003
3. Requires TCP/IP component
4. Requires DCE-RPC component
5. Requires DCOM component

6.15 USB products

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
USB Host Software[1]	193	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Host Controller Drivers																	
OHCI[2]	686	X	X	X	X		X		X	X	X	X	X		X	X	X
Class/Device Drivers																	
USB Mass Storage[2]	610	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X

1. Requires at least one Host Controller Driver and one Class/Device Driver

2. Requires USB Host Software

6.16 Miscellaneous Drivers

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
D/A converter ME160 (Fa. Meilhaus Electronic)	750									X							
Counter ZIB1155/OPTO (Fa. ERMA)	751									X							
A/D converter PC30F (Fa. Eagle Technology)	752									X							
SPP (parallel interface; 8255 compatible chips)	753	X	X	X	X	X		X	X	X	X	X	X		X	X	X
8042 keyboard driver	762	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Keyboard driver Hynix GMS30C7201	758	X															
PS/2 keyboard driver Fujitsu F16LX	760			X													
PS/2 keyboard driver Hynix GMS30C7202	763	X															
EEPROM X24C44	755	X	X	X	X	X		X	X	X	X	X	X		X	X	X

7 EUROSmot System Software

The static real-time operating system EUROSmot offers an alternative to EUROS. It was specially designed for automotive applications. EUROSmot supports the OSEK API and the conformance classes BCC1, BCC2, ECC1 and ECC2. Applications based on EUROSmot can be easily created with the configurator also offering consistency checks and OIL support.

Name	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
EUROSmot	800	X					X	X					X	X		X	

8 Development Tools

Beside the real-time operating systems EUROS and EUROSmot stand-alone development tools are offered. These tools provide some optional extensions interacting with EUROS and EUROSmot.

These development tools can be used independently from EUROS and EUROSmot.

The following products can be ordered with license type “Software Tool License”. Please place the code of the requested license type in front of the product number when ordering (see also chapter 1).

The product numbers are required for ordering.

Tool	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
EUROScope[1]	900	X	X	X	X	X		X		X	X	X	X	X	X	X	X
EUROSflashtools[2]	950					X		X			X						
EUROSkit[1]	970	X	X	X	X	X		X		X	X	X	X	X	X	X	X
EUROScope CPU-DLLs																	
Fujitsu F16LX	921			X													
Infineon C16x	922					X											
Mitsubishi M16C	924											X					
Infineon XC16x	925							X				X					
Freescale CPU12	926													X			
ARM	931	X															
Fujitsu FR	932				X												
Intel 80x86 32-Bit	933									X							
Freescale 68k	934												X				
PowerPC	935															X	
TriCore	936																
NEC V850	937														X		
Altera Nios II	938		X												X		
MIPS	939										X				X		

Tool	Product number	CPU architecture															
		ARM	Altera Nios II	Fujitsu F16LX	Fujitsu FR	Infineon C16x	Infineon TriCore	Infineon XC16x	Intel 80x86 16-Bit	Intel 80x86 32-Bit	MIPS	Mitsubishi M16C	Freescale 68k	Freescale 68HC12	NEC V850	PowerPC	Coldfire
Freescale Coldfire	940																X
EUROScope Communication Plug-Ins[3]																	
EUROSmon serial[2]	905	X	X	X	X	X		X		X	X				X	X	X
EUROSmon CAN[2]	906				X	X		X									
Abatron BDI 2000	907	X											X			X	
Macraigor OCD	908												X			X	
ARM RDI[4]	909	X															
Infineon OCDS	910					X		X									
iSYSTEM iOPEN Interface	911	X						X		X			X	X	X	X	
GDB Remote Serial Protocol	912	X	X								X						
EUROScope Plug-Ins																	
EUROSobjects	902	X	X	X	X	X		X		X	X	X	X		X	X	
EUROStrace	903	X	X	X	X	X		X		X	X	X	X		X	X	
ORTI object viewer	901	X	X	X	X	X		X		X		X	X	X	X	X	
EUROStrace for EUROSmot	904	X	X	X	X	X		X		X		X	X	X	X	X	
EUROSanalyze	913	X	X	X	5	5	5	5	5	5	X	5	5	5	5	5	
Compiler and tools																	
GNU GCC[6]	980	X								X	X				X	X	X

1. Select USB dongle (order no. 1-900-00-00) or parallel dongle (1-901-00-00) with order.
2. Requires EUROSmon on target.
3. The Plug-Ins do not include possibly required interface hardware.
4. For ARM MultiICE, ARMulator and compatible products.
5. On request.
6. Please specify architecture number, e.g. 4-980-21-10 for ARM version.

9 Software Maintenance Contract

Service	Order number
Software Maintenance	5 960-00 00

10 Miscellaneous Services and Products

Service/Product	Order number
Board adaptation	5 970-00 00
EUROSmon board adaptation	5 976-00 00
special application variant	5-978-00 00

Miscellaneous	Order number
Printed documentation	5 973-00 00

11 Product data sheets

Ethernet/IP

General description:

This component implements a minimal CIP server with Ethernet/IP encapsulation. It is intended to be a toolset for implementing a product using Ethernet/IP.

This software component does not comprise a „product“ as described in the Ethernet/IP specification. A „product“ is a complete EUROS application using this software component. Therefore, the user of this component is the licensee of Ethernet/IP, not EUROS Embedded System GmbH. It is the responsibility of the user to acquire a license and to complete the software component to a product.

A number of object classes are pre-implemented (see below). The user has the option to implement additional standard classes or vendor-specific classes and to add them to the Ethernet/IP protocol stack.

Requirements:

The following other EUROS components are required when using the Ethernet/IP component:

- Microkernel
- Process Manager
- Network component (TCP/IP)
- C library
- Ethernet port driver
- DHCP client (optional)

Restrictions:

This version of the Ethernet/IP component has the following restrictions:

- Pre-implemented classes and instances can’t be removed or replaced by the user
- Only some standard CIP services are supported
- I/O connections are unsupported
- Only a single connection for explicit messaging to the MR is supported
- There’s no CIP bridging or routing
- Ethernet/IP is the only supported encapsulation method
- The CIP interface is the only interface accessible through the TCP and UDP servers
- Only a single Ethernet interface is supported for Ethernet/IP

Pre-Implemented object classes

The following object classes, services and attributes are implemented in the library:

Identity (class ID 0x01)

There’s a single object instance of the Identity class.

The following class attributes are supported:

- 1: Revision
- 2: Maximum Instance Number

The following instance attributes are supported:

- 1: Vendor ID
- 2: Device Type
- 3: Product Code

- 4: Revision
- 5: Status
- 6: Serial Number
- 7: Product Name
- 8: State

The following class services are implemented:

- GetAttributeSingle
- GetAttributesAll
- FindNextObjectInstance

The following instance services are implemented:

- GetAttributeSingle
- SetAttributeSingle (all attributes are read-only)
- GetAttributesAll
- Reset
- FindNextObjectInstance

Message Router (class ID 0x02)

There’s a single object instance of the Message Router class.

The following class attributes are supported:

- 1: Revision
- 2: Maximum Instance Number

The following instance attributes are supported:

- 1: Class list
- 2: Maximum connections
- 3: Active connections

The following class services are implemented:

- GetAttributeSingle
- GetAttributesAll
- FindNextObjectInstance

The following instance services are implemented:

- GetAttributeSingle
- SetAttributeSingle (all attributes are read-only)
- GetAttributesAll
- Reset
- FindNextObjectInstance

Connection Manager (class ID 0x06)

There’s a single object instance of the Connection Manager class.

The following class attributes are supported:

- 1: Revision
- 2: Maximum Instance Number

The following instance attributes are supported:

- 1: Open Requests
- 2: Open Format Rejects
- 3: Open Resource Rejects

- 4: Open Other Rejects
- 5: Close Requests
- 6: Close Format Rejects
- 7: Close Other Rejects

The following class services are implemented:

- GetAttributeSingle
- GetAttributesAll
- FindNextObjectInstance

The following instance services are implemented:

- GetAttributeSingle
- SetAttributeSingle (all attributes are read-only)
- GetAttributesAll
- Reset
- FindNextObjectInstance
- Forward Open
- Forward Close

TCP/IP Interface (class ID 0xf5)

There's a single object instance of the TCP/IP Interface class.

The following class attributes are supported:

- 1: Revision
- 2: Maximum Instance Number

The following instance attributes are supported:

- 1: Status
- 2: Configuration capability
- 3: Configuration control
- 4: Physical link
- 5: Interface configuration (the default domain name is supported but ignored)
- 6: Host name

The following class services are implemented:

- GetAttributeSingle
- GetAttributesAll
- FindNextObjectInstance

The following instance services are implemented:

- GetAttributeSingle
- SetAttributeSingle
- GetAttributesAll
- Reset
- FindNextObjectInstance

Ethernet Link (class ID 0xf6)

There's a single object instance of the Ethernet Link class.

The following class attributes are supported:

- 1: Revision
- 2: Maximum Instance Number

The following instance attributes are supported:

- 1: Speed (always reported as 10)
- 2: Flags (always reported as 1)
- 3: Physical address

The following class services are implemented:

- GetAttributeSingle
- GetAttributesAll
- FindNextObjectInstance

The following instance services are implemented:

- GetAttributeSingle
- SetAttributeSingle (all attributes are read-only)
- GetAttributesAll
- Reset
- FindNextObjectInstance

Modbus/TCP

General description:

Modbus is an application layer messaging, request/reply protocol, positioned at level 7 of the OSI model, that provides client/server communication between devices connected on different types of buses or networks.

The industry's serial de facto standard since 1979, Modbus continues to enable millions of automation devices to communicate. Today, support for the simple and elegant structure of Modbus continues to grow. The Internet community can access Modbus at a reserved system port 502 on the TCP/IP stack.

This Modbus client/server implementation uses TCP/IP over Ethernet.

Supported functions:

Bit access:

- Physical discrete inputs:
  - `ReadDiscreteInputs()`
- Coils or Internal Bits:
  - `ReadCoils()`
  - `WriteSingleCoil()`
  - `WriteMultipleCoils()`

16 bits access:

- Physical input registers:
  - `ReadInputRegisters()`
- Physical output or Internal registers:
  - `ReadHoldingRegisters()`
  - `WriteSingleRegister()`
  - `WriteMultipleRegisters()`
  - `ReadWriteMultipleRegisters()`
  - `MaskWriteRegister()`
  - `ReadFIFOqueue()`

File record access:

- `ReadFileRecord()`
- `WriteFileRecord()`

Others or Encapsulated Interface Transport:

- `ReadDeviceID()`

Requirements:

The following other EUROS components are required when using the Modbus/TCP component:

- Microkernel
- Process Manager
- Network component (TCP/IP)
- Ethernet port driver

Restrictions:

This version of the Modbus/TCP component has the following restrictions:

- Only one request at a time can be made by the Modbus client and one request at a time can be processed by the Modbus server implementation.
- The CANopen General Reference Request and Response is not supported
- The functions for diagnostics are only used for Modbus over serial line and thus are not supported by this implementation.

USB Host Software

General description:

The EUROS USB host software implements all required components to use USB devices in EUROS applications.

The USB Host Software package contains general USB management code and a hub class driver.

Prerequisites:

The following EUROS components are required by the USB host software:

- EUROS Microkernel with I/O system,
- at least one USB host controller and corresponding USB host controller driver,
- at least one USB class/device driver.

Restrictions:

The number of devices, host controllers and class/device drivers is only limited by available memory and other hardware resources.

OHCI Port Driver

General description:

This port driver supports the OHCI specification 1.0a for USB host controllers.

When installing this port driver it automatically registers with the USB host software. There's no user interface except installation and removal.

Prerequisites:

The following EUROS components are required by the USB host software:

- EUROS Microkernel with I/O system,
- USB host software.

Restrictions:

-

USB Mass Storage class driver

General description:

This Resource Manager implements the USB Mass Storage device class with bulk-only interface.

When installing this Resource Manager it automatically registers with the USB host software.

Prerequisites:

The following EUROS components are required by the USB host software:

- EUROS Microkernel with I/O system,
- at least one USB host controller and corresponding USB host controller driver,
- USB host software.

Restrictions:

Currently the Resource Manager only supports LUN 0 of the mass storage device.