

ACOS 7 Series

Automation and Telecontrol Technology

Scalable and a Secure Investment: The ACOS 7 Series

With the ACOS 750 automation and telecontrol device, IDS offers a high-performance system for the most exacting requirements. The system is modular in design, and can be scaled to fit. For this purpose, wide-area power packs, powerful CPU modules and a broad range of I/O modules are available, which can be set up in both a central and decentralised arrangement on the basis of Ether-CAT® technology. The profile is further enhanced by extensive communications solutions and an integrated PLC based on CoDeSys® V3

The series also includes the small telecontrol devices ACOS 710 and ACOS 720. These units can also be scaled to suit requirements and feature a wide range of communication options and an integrated I/O level, which can be expanded as required to include, at the higher end, an integrated CoDeSys® V3 PLC for small automation tasks.



ACOS 710 and 720

The small ACOS 710 and ACOS 720 telecontrol devices can be integrated in existing control system environments without problem, and therefore offer defined, low-cost solutions such as are particularly in demand in the fields of decentralised energy production - photovoltaics, combined heat and power plants (CHP), biogas - and for increasing the degree of automation of low to medium-voltage networks.

A wide range of data acquisition and transmission possibilities ensures that these devices are universal. The option of an integrated GSM/GPRS solution is especially suitable for connecting systems easily without an existing communications infrastructure

ACOS 710

The small ACOS 710 telecontrol device is an entry-level unit with a fixed range of functions and features:

- Plastic housing for mounting directly on TS35 carrier rail
- 2 serial RS232 interfaces
- 1 network interface

- Optional integrated quad-band GSM/GPRS modem
- Extensive communication applications for telecontrol and fieldbus protocols
- microSD card
- Integrated I/O level with 4 digital inputs, 4 digital outputs, 2 analog inputs and 1 analog output
- Power supply 24 V DC or 230 V AC



ACOS 710



ACOS 720

The ACOS 720 additionally features an integrated CoDeSys® V3-based PLC for small automation tasks, and can be extended by additional I/O modules:

- Programmable in accordance with IEC 61131-3
- Expansion by up to 8 compact I/O modules
- Power supply 24 V DC



ACOS 720 with additional I/O modules

ACOS 750

The ACOS 750 is a modular, multiprocessor-capable system, comprising the subrack, power supply unit/power pack, central processor modules and connected communications, interface and process I/O modules.

The modules are connected by means of an EtherCAT® bus system. Depending on type, the system components are accommodated in the subrack, or connected via an interface to the subrack. As an option, the connection of the process I/O modules can be decentralised. Standard Ethernet-based system modules and fibre-optic versions are available for this purpose. In this way, the ACOS 750 can be planned, scaled and expanded with ease.

- Subrack for mounting directly on TS35 carrier rail
- Redundancy-capable power supply modules
- Central processor modules
- Standard I/O modules in a sturdy metal housing
- Compact modules in a plastic housing
- Standard I/O modules for control voltages up to 220 V DC / 230 V AC
- Standard measuring system incl. voltage quality monitoring as per EN 50160
- Can be expanded to include central and decentralised standard and compact modules

Automation and Telecontrol

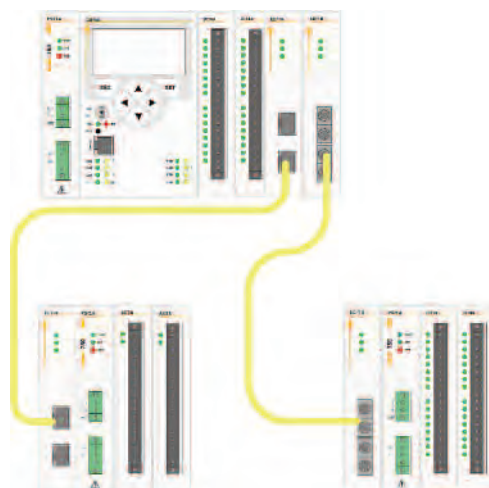
The ACOS 750 combines high-performance automation and robust telecontrol technology in a single unit. Tasks that previously had to be performed separately in a programmable logic controller (PLC) and stand-alone telecontrol device can now be accomplished with just one system. The integrated CoDeSys® V3-based PLC enables complex automation tasks to be executed and programming to take place in accordance with IEC 61131-3.



ACOS 750 with LC display and compact modules

Station Automation

Ultra-flexible field and station units for low, medium, high and extra-high voltage can be added to the basic modular ACOS 750 system. Standard measuring system and command output modules enable the direct interfacing of transducers and switch mechanisms, without the need for intermediate transformers or coupling relays. Extensive functions such as switchgear interlocking, switching sequences, transformer and earthing coil control, emergency power control, busbar voltage simulation etc. are available for complex automation applications.



Sample configuration with decentralised periphery (TX/FX)



Communication

A diverse range of data transmission options makes units in the ACOS 7 series truly universal automation and telecontrol devices:

- IEC 60870-5-101 master*
- IEC 60870-5-101 slave
- IEC 60870-5-104 client*
- IEC 60870-5-104 server
- IEC 60870-5-103 master
- IEC 61850*
- Sending of SMS
- Modbus RTU master/slave
- Modbus TCP client
- Profibus DP[®]V0 master*
- OMRON host-link master*
- NTP time synchronisation
- PPP connections
- OpenVPN connections

At the same time, a varied array of data transmission devices such as TETRA, public and private wireless networks, DSL etc. can be used.

In addition, devices from the ACOS 7 series can transfer OpenVPN client data to an OpenVPN server via a secure internet connection.

* ACOS 750 only

Trademark Notices:

CoDeSys[®] is a registered trademark of 3S Smart Software Solutions GmbH.

EtherCAT[®] is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

PROFIBUS DP[®] is a registered trademark of Siemens AG.

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Parameterisation and Diagnosis

Parameterisation and diagnosis can be carried out with the ACOS ET engineering tool either locally via a service or network connection or remotely using the data transmission infrastructure. As an option, the parameter data can be stored on a microSD card. This enables faulty units to be replaced with no need for configuration tools.

Visualisation Solutions

The ACOS Touchview is a universal operator terminal for the on-site control of telecontrol and automation applications and for station and location visualisation. Operation is intuitive and convenient thanks to a 7" touch display plus 16 individually assignable buttons with integrated LEDs.

It is connected to the ACOS 7 devices by means of the IEC 60870-5-104 protocol. The Target Visualisation integrated in the CoDeSys[®] V3 provides another possibility for local visualisation tasks.



August 2012, Technical modifications reserved

ACOS 710/720 – Technical data

	ACOS 710	ACOS 720
Processor	PowerPC MPC8313, CPU 266 MHz, Bus 133 MHz	
Memory	128 MB DDR2 RAM, 128 MB data/application flash	
Memory expansion (accessories)	microSD card (max. 2 GB)	
Time keeping	Via buffered real-time clock, min. back-up time, 7 days	
PLC programming	-	IEC 61131-3 with CoDeSys® V3 1.5 MB program memory 128 kB MRAM for remanent variables
Service and parameterisation interface	Mini USB 2.0 type B (Device)	
Communication interfaces	2x RS232/V.24 1x Ethernet 10/100 Base-TX, auto-MDI(X), auto-negotiation 1x EtherCAT® 100 MBit Connection via RJ45 jacks	
Integrated GSM/GPRS module (optional)	Quad-Band/GPRS class 12 SIM card externally accessible SMA antenna input	
Integrated digital I/Os	4 digital inputs 24 V DC (+/- 20%), optocoupler, sharing a common potential 4 digital outputs 24 V DC (+/- 20%), transistor, sharing a common potential	
Integrated analog I/Os	2 analog inputs +/- 25 mA, 16 bits (including sign), load, 100 Ω 1 analog output +/- 20 mA, 16 bits (including sign), load < 450 Ω	
Connection of compact I/O modules	-	max. 8 modules, supply of EtherCAT®-Bus with max. 1 A/5 V DC
Voltage supply	24 V DC (± 20 %)	24 V DC (± 20 %)
Aux. Voltage output	24 V DC/100 mA, galvanically isolated	
Power input	10 W	15 W
Housing	Polycarbonate V0, degree of protection IP20	
Dimensions (WxHxD)	183x132x46 mm	206x132x68 mm
Installation	On carrier rail (TS35) acc. to DIN EN 60175	
Ambient conditions		
Storage and transport	-40...85 °C	
Operation	-20...55 °C, horizontal installation position	
Relative air humidity	95 % (without condensation)	

ACOS 710/720 ACOS 720

Product variants Expansion modules

ACOS 710/720 – Product variants

Product No.	Product name	Voltage supply	Options
ACOS 710			
160050793	ACOS 710 LA	24 V DC	
160050791	ACOS 710 LA/GSM	24 V DC	GSM/GPRS modem
ACOS 720			
160050789	ACOS 720 LA	24 V DC	
160050788	ACOS 720 LA/GSM	24 V DC	GSM/GPRS modem

ACOS 720 – Compact modules

Product No.	Module name	Description
I/O modules		
160050576	cDI73A	8 channel digital input, 24 V DC, filter 3 ms
160050577	cDO73A	8 channel digital output, 24 V DC, 0.5 A
160050599	cAI71A	2 channel analog input, 0...20 mA, differential input, 16 bits
160050582	cAI71B	2 channel analog input, -10...+10 V, differential input, 16 bits
160050578	cAI72A	4 channel analog input, 0...20 mA, differential input, 16 bits
160050600	cAO71A	2 channel analog output, 0...20 mA, resolution 16 bits
160050581	cAO71B	2 channel analog output, -10...+10 V, resolution 16 bits
160050579	cAO72A	4 channel analog output, 0...20 mA, resolution 16 bits
160050589	cCI70A	1 channel digital counting pulse input, 24 V DC, 100 kHz
160050590	cCI71A	2 channel digital counting pulse input, 24 V DC, 1 kHz



ACOS 750 – Technical data CPU modules

	CU78A	CU73B
Processor	PowerPC MPC8247, CPU 266 MHz, Bus 66 MHz	PowerPC MPC8313, CPU 266 MHz, Bus 133 MHz
Memory	64 MB SDRAM, 64 MB data/application flash	128 MB SDRAM, 128 MB data/application flash
Memory expansion (accessories)	-	microSD card (max. 2 GB)
Time keeping	Via buffered real-time clock, min. back-up time: 7 days	
PLC programming	IEC 61131-3 with CoDeSys® V3, 1.5 MB program memory 128 kB MRAM for remanent variables	
Service and parameterization interface	1x RS232 (RJ12)	
Communication interfaces	3x RS232/V.24 4x Ethernet (switch) 10/100 Base-TX, 1x EtherCAT® 100 MBit Connection via RJ45 jacks	2x RS232/V.24 1x Ethernet 10/100 Base-TX, Connection via RJ45 jacks
LC display	Resolution 128 x 64 pixels	-

ACOS 750 – Basic components

Product No.	Module name	Description
Standard module carriers		
160050596	SB71A	2 slots for standard modules
160050597	SB72A	4 slots for standard modules
160050598	SB73A	8 slots for standard modules
160050779	SB74A	16 slots for standard modules
Compact module carriers		
160050586	SB71B	2 slots for power supply and CPU plus integrated adapter for compact modules.
160050587	SB72B	4 slots for power supply and CPU plus integrated adapter for compact modules
160050811	SB73B	8 slots for power supply and CPU plus integrated adapter for compact modules
160050812	SB74B	16 slots for power supply and CPU plus integrated adapter for compact modules
Power supply modules		
160050572	PS7LA	Power supply module 24...60 V DC, galvanically isolated from system, parallel operation possible
160050573	PS7HA	Power supply module 110...230 V AC/DC, galvanically isolated from system, parallel operation possible
160050574	SM7SA	Power supply module 24 V DC, no galvanic isolation, no parallel operation
Central processor modules		
160050594	CU78A	LCD Controller, 4x Ethernet (switch) 10/100 Base-TX, 3x RS232/V.24
160050798	CU73B	Controller, 1x Ethernet 10/100 Base-TX, 2x RS232/V.24
Ambient conditions		Temperature -20° ... 70 °C Relative air humidity < 95 % (without condensation)

ACOS 750 – Standard modules

Product No.	Module name	Description
Communication modules		
160050606	SW72A	4-Port switch, 4x Ethernet (10/100 Base-TX)
160050805	CC73A*	Communication controller, 2x Ethernet 10/100 Base-TX, 3x RS232/V.24
160050806	OC73A*	Optical communication controller, 1x Ethernet 10/100 Base-TX, 1x Ethernet 10/100 Base-FX (SC duplex), 3x RS232 optical (ST)
I/O modules		
160050604	DI74A	16 channel digital input, 24...220 V DC
160050768	DI74B	16 channel digital input, 60...220 V DC
160050769	DI74C	16 channel digital input, 220 V DC
160050681	DO74A	16 channel digital output, 220 V DC / 230 V AC
160050683	CO73A	8 channel command output, 24...220 V DC, 1-out-of-n and external circuit check
160050772	AI73A	8 channel analog input, -25...+25 mA, resolution 16 bits
160050773	AO72A*	4 channel analog output, -25...+25 mA, resolution 16 bits
Measurement modules		
160050780	MS72A	4 channel current input module, 1/5 A
160050781	MS72B	4 channel voltage input module, 400 V, voltage quality check
160050782	MS73C	4/4 channel current/voltage input, 1/5 A, 400 V, voltage quality check
System modules		
160050809	EE71A*	Junction for 100 BASE-TX EtherCAT® nets, 2x EtherCAT® OUT (2x RJ45)
160050810	EE71B	Junction for 100 BASE-FX EtherCAT® nets, multimode LWL, 2x EtherCAT® OUT (2x SC duplex)
160050776	EC71A*	Coupler for decentralised module carriers, 100 BASE-TX, ID switch, 1x EtherCAT® IN, 1x EtherCAT® OUT (2x RJ45)
160050777	EC71B	Coupler for decentralised module carriers, 100 BASE-FX, ID switch, multimode LWL, 1x EtherCAT® IN, 1x EtherCAT® OUT (2x SC duplex)
Ambient conditions		Temperature -20 ° ... 70 °C Relative air humidity < 95 % (without condensation)

ACOS 750 – Compact modules

Product No.	Module name	Description
Communication modules		
160050607	cSI71A	Interface module, 2x RS232
160050680	cSI71B	Interface module, 2x RS485
160050588	cPC70A	Profibus DPV0 controller, 1x RS485
I/O modules		
160050576	cDI73A	8 channel digital input, 24 V DC, filter 3 ms
160050577	cDO73A	8 channel digital output, 24 V DC, 0.5 A
160050599	cAI71A	2 channel analog input, 0...20 mA, differential input, 16 bits
160050582	cAI71B	2 channel analog input, -10...+10 V, differential input, 16 bits
160050578	cAI72A	4 channel analog input, 0...20 mA, differential input, 16 bits
160050600	cAO71A	2 channel analog output, 0...20 mA, resolution 16 bits
160050581	cAO71B	2 channel analog output, -10...+10 V, resolution 16 bits
160050579	cAO72A	4 channel analog output, 0...20 mA, resolution 16 bits
160050589	cCI70A	1 channel digital counting pulse input, 24 V DC, 100 kHz
160050590	cCI71A	2 channel digital counting pulse input, 24 V DC, 1 kHz
System modules		
160050591	cER70A	EtherCAT® Refresher (5 V DC, 2 A), Input auxiliary voltage (24 V DC, max. 10 A)
160050592	cES70A	Input auxiliary voltage (24 V DC, max. 10 A)
160050580	cEC71A	Coupler for decentralised compact modules, 100 BASE-TX, 1x EtherCAT® IN, 1x EtherCAT® OUT (2x RJ45)
160050609	cEC71B	Coupler for decentralised compact modules, 100 BASE-FX, ID switch, multimode LWL, 1x EtherCAT® IN, 1x EtherCAT® OUT (2x SC duplex)
160050593	cEE70A	Extension for 100 BASE-TX EtherCAT® nets, 1x EtherCAT® OUT (1x RJ45)
160050610	cEE70B	Junction for 100 BASE-FX EtherCAT® nets, multimode LWL, 1x EtherCAT® OUT (1x SC duplex)
Ambient conditions		Temperature 0 ° ... 55 °C Relative air humidity <95 % (without condensation)

*available as of the 3rd quarter of 2012