

VIVAVIS

DECODING THE FUTURE

Sturdy and Powerful



ACOS 750

The Scalable Automation and Telecontrol Device for Every Challenge

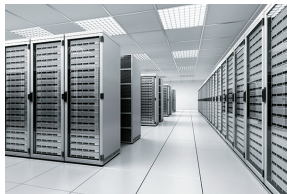
A Powerful Allrounder in the ACOS 7 Series

VIVAVIS automation and telecontrol technology of the ACOS 7 series offers high-performance devices and systems, especially for the utilities sector. The focus is on easy and efficient engineering and on investment security. All devices from the ACOS 7 series meet the highest security requirements according to the BDEW white paper.



Station Automation Systems

- Consistent solutions based on IEC 61850
- Suitable for all voltage levels
- Suitable for upgrades of secondary equipment in existing installations



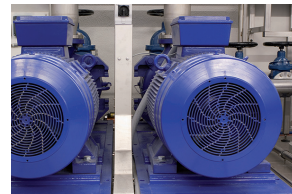
Computer Centres / Site Networks

- Versatile redundancy concepts
- Automation of substitute network strategies



Gas Transportation Network

- Multi-user management for interregional telecontrol network structures
- Scalable CPU for powerful performance of central nodes and gateways



Reservoir Management

- Data traffic between stations
- Local process automation



Sturdy and Powerful

High Degree of IT Security and Flexibility

Technical Concept

ACOS 750 is a modular system with multi-processor capability, consisting of a module rack, power supply, CPUs and connected communication, interface and process I/O modules.

Installation of system components is type-dependent and can be done through connection to the module rack. As an option, process I/O modules can be connected in a decentralized manner via copper or FO cables. For this purpose, system modules based on standard Ethernet and solutions via FO cable are available.

This makes ACOS 750 **easily configurable, scalable and expandable**.

Communication

Thanks to its manifold possibilities of data transmission, ACOS 750 is an **universally applicable automation and telecontrol device**. ACOS 750 uses telecontrol protocols according to **IEC 60870-5-101/103/104, IEC 61850-8-1 and DNP3**.

Additionally, the standard field bus protocols **Modbus RTU/TCP and Profibus DPV0** are supported. ACOS 750 is also capable of communicating via proprietary protocols such as **3964R/RK512, SPA-Bus and TG80x**.

You can decide for yourself which data transmission mode you want to use: For instance, public and private (mobile) radio networks (2/4G, CDMA450) or DSL.

For further information, please refer to the functional descriptions.

Sturdy and Powerful

What makes ACOS 750 so reliable?

- Redundant power supply modules
- Redundant central processing units (CPUs)
- Standard I/O modules for control voltages up to 220V DC / 230V AC
- Rapid processing of process signals and time stamps (1 ms)
- Ultra-high IT security standards



Automation and Telecontrol

ACOS 750 unites **powerful automation and sturdy telecontrol features** in one single RTU. Tasks that used to be implemented separately by means of PLCs and an autarkic RTU can now be solved **in one system**.



The integrated PLC functionality on a CODESYS® V3 basis enables users to implement complex automation and programming tasks according to IEC 61131-3.

Parameterization and Diagnostics

ACOS ET enables easy and user-oriented engineering for VIVAVIS telecontrol and automation systems:

- Intuitive operation and operator guidance via wizard
- Project administration in single-user and multi-user projects
- Graphic device engineering
- Set-up of communication links via a graphic network plan
- Certificate management
- Device parameterization via microSD card, either locally or via remote transmission
- Comprehensive diagnostic features
- Data traffic analysis for IEC 60870-5-101/-104 links
- Data import/export via MS EXCEL® CSV files

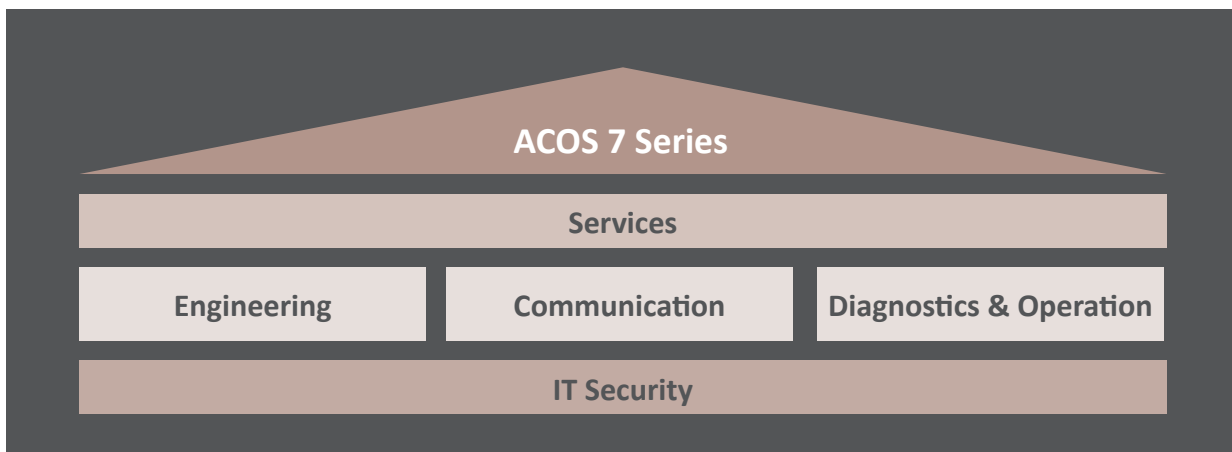
Example: Station Automation Systems

Based on the modular ACOS 750 system, it is possible to build up highly flexible station automation systems on IEC 61850 basis for **low-, medium-, high- or extra-high voltages**.

Standard measuring system modules and command output modules enable the direct connection of transducers, the synchronization of supply networks and controlling switch drives without intermediate transducers or coupling relays.

Complex automation tasks can be solved using predefined functions, including switchgear interlocking, switching sequences, transformer and earth coil control, emergency power supply control and emulation of the busbar voltage.

Interaction with the **VIVAVIS HIGH-LEIT SCADA system** creates additional benefits as regards consistency and efficiency. In the event of migrations, data models can be easily exported and synchronized.



IT Security

In accordance to the BDEW white paper, ACOS 750 – like the complete ACOS 7 series – features numerous IT security functions. The three pillars of telecontrol security are:

1. **Secure Engineering with ACOS ET:** for instance by means of different user roles and rights, local or central authentication (e.g. via Windows Active Directory) and encryption of project data
2. **Secure Communication:** for instance, through encryption of data transmission via network-based telecontrol protocols, OpenVPN or IPsec based on certificate-based authentication or preshared keys, end-to-end encryption according to IEC 62351-3, integrated firewall
3. **Secure Diagnostics and Logging:** for instance, by means of device diagnostics via ACOS ET or via integrated web server with different user roles and rights, establishment of suitable zones or segmentation by means of VLANs, recording of security-relevant events based on Syslog, polling of information via SNMPv3

Redundancy Concepts

To make sure that your systems and installations can still be monitored and controlled in the event of failures, we have developed various redundancy concepts for ACOS 750 to be prepared for all kinds of eventualities:

- Redundant central gateways
- Redundant central processing units (CPUs)
- Redundant communication pathways
- Redundant power supply



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ACOS 730 compact RTU?
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ACOS 750 - Technical Data

ACOS 750 - Central Processor Units

| | CU73A | CU73B | CU74B | CU74D |
|--|---|-----------|--|----------------------------|
| Processor | PowerPC MPC8313 | | ARM Cortex-A9 Dual Core | ARM Cortex-A9 Quad Core |
| Memory | 256 MB DDR2 RAM, 512 MB data/application flash | | 1 GB DDR3L RAM, 1 GB data/application flash | |
| microSD card (accessory) | max. 8 GB | | max. 32 GB | |
| System time | via buffered real-time clock, min. back-up time: 7 days | | | |
| Logic functions according to IEC 61131-3 | CODESYS® V3, 1.5 MB program memory 128 kB MRAM for remanent variables | | | |
| Visualization OP07A | no | | yes | |
| Service and parameterization interface | 1x miniUSB 2.0 Type B (device) | | | |
| Communication interfaces | | | | |
| • RS232/V.24 | 1 | 2 | 1 | 1 |
| • RS485, 2-/4 wire | 1 | - | 1 | 1 |
| • Ethernet 10/100 Base-TX | 1 | 1 | 2 | 1 |
| • Ethernet 1000 Base-TX | - | - | - | 1 |
| Max. additional modules | 6 | 64 | 64 | 128 |
| Dimensions in mm (HxDxW) | 127 x 100 x 26 | | | 127 x 100 x 52 |
| Product No. | 160050804 | 160050798 | 160050850 | 160050868 |

ACOS 750 - Basic components and communication

| Product No. | Name | Description |
|---------------------------------|----------|--|
| Standard module carriers | | |
| 160050597 | SB72A | 4 slots |
| 160050598 | SB73A | 8 slots |
| 160050836 | SB7A-12 | 12 slots |
| 160050779 | SB74A | 16 slots |
| 160050845 | SB7RA-16 | 16 slots, for system with redundant CPU |
| Compact module carriers | | |
| 160050586 | SB71B | 2 slots plus intergrated adapter for compact modules |
| 160050587 | SB72B | 4 slots plus intergrated adapter for compact modules |
| 160050811 | SB73B | 8 slots plus intergrated adapter for compact modules |
| Power supply modules | | |
| 160050867 | PS7HB | Power supply module 110...230 V AC/DC, galvanically isolated from sys-tem, parallel operation possible |
| 160050866 | PS7LB | Power supply module 24...60 V DC, galvanically isolated from system, parallel operation possible |
| 160050851 | PS7HD | Power supply module 110...230 V AC/DC with 24 V DC auxiliary voltage, galvanically isolated from system, parallel operation possible |
| 160050853 | SM7SB | Power supply module 24 V DC |
| Communication modules | | |
| 160050606 | SW72A | Unmanaged Ethernet-Switch, 4x Ethernet 10/100 Base-TX |
| 160050833 | SW72B | Managed Fast Ethernet-Switch, 3x Ethernet 10/100 Base-TX, 2x Ethernet 100 Base-FX (SC duplex), RSTP, MRP |
| 160050805 | CC73A | Communication controller, 2x Ethernet 10/100 Base-TX, 3x RS232/V.24 |
| 160050806 | OC73A | Communication controller, 1x Ethernet 10/100 Base-TX, 1x Ethernet 10/100 Base-FX (SC duplex), 3x RS232 optical (ST) |
| 160050879 | CM33A | Mobile radio controller 2G/4G |

ACOS 750 - Module Overview

ACOS 750 - Standard Modules

| Product No. | Name | Description |
|-----------------------------|----------|---|
| I/O modules combined | | |
| 160050837 | IO75A | 16 channel DI, 24...60 V DC / 8 channel DO, 60 V DC / 4 channel AI, ±25 mA |
| 160050870 | IO75A | 16 channel DI, 24...60 V DC / 8 channel DO, 60 V DC / 4 channel AI, ±25 mA / 1 channel AO, ±24 mA |
| 160050832 | CO75A | 16 channel CO, 24/60/110 V DC, 1-out-of-n and external circuit check 16 channel DI, 24...60 V DC |
| 160050852 | CO71A | 2 channel CO / 8 channel DI, 24...110 V DC / 2 channel DO, 24...220 V AC/DC |
| 160050871 | CO71C | 2 channel CO / 8 channel DI, 220 V DC, 1-out-of-n and external circuit check / 2 channel DO, 24...220 V AC/DC |
| Digital 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 |
| 160050770 | DI75A | 32 channel DI, 24...60 V DC |
| 160050681 | DO74A | 16 channel digital output, 220 V DC / 230 V AC |
| 160050865 | CO73B | 8 channel CO 24...220 V DC, 1-out-of-n and external circuit check, 1kVA |
| Analog I/O modules | | |
| 160050772 | AI73A | 8 channel analog input, ±25 mA, resolution 16 bits |
| 160050773 | AO72A | 4 channel analog output, ±24 mA, resolution 16 bits |
| Measurement system | | |
| 160050855 | MS72A | 4 channel current input, 1/5 A |
| 160050857 | MS72B-SC | 4 channel voltage input, 400 V, synchrocheck |
| 160050859 | MS73C-SC | 4/4 channel power input, 1/5 A, 400 V, synchrocheck |
| System modules | | |
| 160050809 | EE71A | EtherCAT® Junction, 2x OUT (2x RJ45) |
| 160050810 | EE71B | EtherCAT® Junction, Multimode FO, 2x OUT (2x SC duplex) |
| 160050776 | EC71A | EtherCAT® Coupler, ID switch, 1x IN, 1x OUT (2x RJ45) |
| 160050777 | EC71B | EtherCAT® Coupler, ID switch, Multimode FO, 1x IN, 1x OUT (2x SC duplex) |
| Ambient conditions | | Temperature -20 ° ... 70 °C Relative air humidity < 95 % (without condensation) Operating altitude 0 ... 2000 m above sea level |

ACOS 750 - Compact Modules

| Product No. | Name | Description |
|------------------------------|--------|--|
| Communication modules | | |
| 160050680 | cSI71B | Interface module, 2x RS485 |
| 160050588 | cPC70A | Profibus DPV0 controller, 1x RS485 |
| System modules | | |
| 160050591 | cER70A | EtherCAT® Bus Refresher (2 A), Input auxiliary voltage (24 V DC, max. 10 A) |
| 160050592 | cES70A | EtherCAT® Separator, Input auxiliary voltage (24 V DC, max. 10 A) |
| 160050580 | cEC71A | EtherCAT® Coupler, 1x IN, 1x OUT (2x RJ45) |
| 160050609 | cEC71B | EtherCAT® Coupler, ID switch, Multimode FO 1x IN, 1x OUT (2x SC duplex) |
| 160050593 | cEE70A | EtherCAT® Extender, 1x OUT (1x RJ45) |
| 160050610 | cEE70B | EtherCAT® Junction, multimode FO, 1x EtherCAT® OUT (1x SC duplex) |
| Umgebungsbedingungen | | Temperature 0 ° ... 55 °C Relative air humidity <95 % (without condensation) Operating altitude 0 ... 2000 m above sea level |