VIVAVIS

DECODING THE FUTURE

ACOS 730

The Smart compact SCADA device from VIVAVIS

Compact and adaptable
Due to the increasing integration of decentralized energy resources and advances in digitization, the one key trait grid operators need to demonstrate is flexibility. There are numerous approaches for optimizing grids and getting equipped for the future.

With the ACOS 730, VIVAVIS have a product onto the market that is flexible and suitable for small control and telecommunication tasks.

The new ACOS 730 SCADA device is not just the latest member of the ACOS 7 product family, but also one of the smallest controllers currently on the market.

The ACOS 730 in use –
The device can be a smart grid controller in a substation, an advanced control box, or anything in between
The ACOS 730 was specially developed for smaller SCADA applications, e.g. as a smart grid controller for the intelligent control of substations, for controlling street lighting, or as a supervisory control unit in piped media systems.

During the digitization trend that is part of the energy transition, the ACOS 730 can come into its own as an advanced control box for larger generating plants. It is worth bearing in mind that from 2020 at the latest, grid operators will only be able to influence the grid via the Smart Meter Gateway (SMGW). Control boxes will be connected via the Controllable Local System (CLS) of the SMGW.

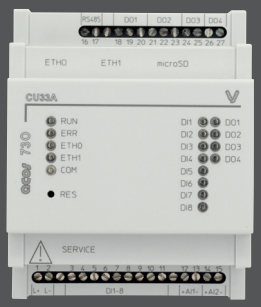
Technical Design
With a housing that conforms to DIN 43880, the device can be directly installed in distribution boards. A central unit features two network interfaces, a serial RS485 interface, eight digital inputs, four digital outputs, and two analog inputs. In addition, further I/O modules or an output measurement system can be added to the device.

What‘s more, communication modules for 2/4G M2M applications and an additional serial RS232 interface will be available, furthermore the LoRa® modem CM31A for communication in a LoRa® network and a serial interface module (SI31A). High dielectric strength and an extended temperature range from -20 to +70°C make the device especially rugged.

Configuration and Diagnosis
Configuration and diagnosis is simple, fast and reliable, thanks to the object-based engineering interface:

- Parameter data are securely stored on a microSD card
- Optional: Logic functions to IEC 61131-3
- Plug & play function for additional I/O modules
- User-friendly setup of wireless M2M applications
- Data traffic recording
- Firmware update feature for efficient patch management

Small but multilingual
The following communication protocols enable you to integrate the ACOS 730 easily into existing SCADA networks and simultaneously use it as a protocol converter: IEC 60870-5-104 and IEC60870-5-101, Modbus RTU and Modbus TCP.



IT Security
To ensure essential IT security, features have been implemented that conform to the Requirements for Secure Control and Telecommunication Systems in the BDEW white paper:

- Secure access for configuration and maintenance
- Integrity testing of device configuration
- Authentication via username and password
- Support for various user roles and authorizations
- Dynamic firewall
- Encrypted transmission to IEC 62351-3 (TLS) or IPsec using certificate-based authentication
- Port authentication IEEE 802.1X
- Logging based on syslog

Use in substations
There are approximately 600,000 substations in Germany. However, not many of them are monitored. At the same time, the number of decentralized energy sources is continually growing. This is where the ACOS 730 plays its part, ensuring the correct voltage band in the low-voltage grid, for example, and compliance with load flows.

The remote transmission of short-circuit indicators (incorporated via Modbus RTU) and status information from local grid transformers can also be achieved with the ACOS 730.

The automation of switching elements delivers additional benefits in terms of fast supply restoration. The device‘s compact size is also an advantage, for most plants offer little space for additional technology.

Use in street lighting
Germany has approximately 9.1 million street lamps. These account for around one third of municipal energy costs. To reduce this figure, as well as replacing conventional lighting with LEDs, it makes particular sense to use smart control.

Here, too, the ACOS 730 comes into its own: for replacing ripple control receivers with smart SCADA technology, for example, or for efficient, targeted control (centrally or localized) using time algorithms or brightness sensors.

Use in piped media
In piped media networks, the ACOS 730 supplements the VIVAVIS ACOS 750 SCADA device, among others, used primarily in medium to large applications.

Here, the ACOS 730 is integrated in the engineering setup of its big sister, with no loss of convenience or functionality.

Use in advanced control boxes
The ACOS 730 is also ideally suited to use as an advanced control box for generating plants and controllable loads.

If grid operators wish to operate an EEG (Renewable Energy Sources Act) compliant plant in future, they will require a control box as part of the smart measuring system. The ACOS 730 does more than simply replace the traditional ripple control receiver – it enables useful feed and load management for decentralized energy sources (e.g. solar PV, CHP) and consumers (storage heating, refrigeration units, power-to-gas).

Until Smart Meter Gateways and the corresponding infrastructure are introduced, the device can of course be directly connected to telecontrol systems via the IEC 60870-5-104 interfaces in use today, as a no-risk investment.

ACOS 730 - Technical Data

ACOS 730 - Central Unit CU33A	
Processor	ARM Cortex-A7
System time	via buffered real-time clock, min. back-up time: 7 days
Service and parameterization interface	mini USB 2.0 type B (device)
Memory card	microSD card (max. 32 GB), SDHC
Communication interfaces	1x RS485, 2 wire, galvanically isolated 2x Ethernet 10/100 Base-TX, auto-MDI(X), auto-negotiation
Digital I/O	8 digital inputs 24 V DC 4 digital outputs 24 V DC (2x change-over, 2x make contact), 1 A
Analog I/O	2 analog inputs ±25 mA, 16 Bit
Max. number of additional I/O modules	3
Max. number of process values	128
Nominal input voltage	24 V DC (±10 %)
Power input	3 W
Housing	acc. to DIN 43880, protection class IP20
Dimensions (WxHxD)	70x90x60 mm (4HP)
Installation	on DIN rail (TS35) acc. to DIN EN 60715
Ambient conditions	-20…70 °C, rel. air humidity <95 % (without condensation), altitude 0 ... 2000 m above sea level
Product-No.	160050873

ACOS 730 - I/O-Modules		
	IO34A	IO34B
Digital I/O	12 Digital inputs 24 V DC 4 Digital outputs 24 V DC (4x make contact), 4 A	-
Analog I/O	-	4 Analog inputs ±25 mA or ±10 V 1 RTD input -200...600 °C 2 Analog outputs 0...24 mA or ±10 V
Nominal input voltage	24 V DC (±10 %)	
Power input	1.8 W	2 W
Dimensions (WxHxD)	52.5x90x60 mm (3HP)	
Product-No.	160050874	160050882

ACOS 730 - Technical Data

ACOS 730 - Measuring System MS33C	
Current	4 current inputs, TRMS, sampling frequency 8 kHz, accuracy ±0.2 % 0...1 / 5 A, overload max. 25 A (1 s), resolution 1 mA
Voltage	3 voltage inputs, TRMS, sampling frequency 8 kHz, accuracy ±0.2 % 0...100 / 230 V AC ULN, resolution 0.01 V
Frequency	45-55 Hz, accuracy ±0,1%, resolution 0.01 Hz
Calculated values	U_{LL}, reactive, active and apparent power, power factor, THD, accuracy ±0.5 %
Nominal input voltage	24 V DC (±10 %)
Power input	1.8 W
Dimensions (WxHxD)	52.5x90x60 mm (3HP)
Product-No.	160050875

ACOS 730 - 2/4G Mobile Radio Controller CM33A	
Supported LTE bands	B1/B3/B7/B8/B20
Supported GSM bands	B3/B8
SIM	mini SIM card (2FF)
Antenna connection	SMA
Nominal input voltage	24 V DC (±10 %)
Power input	3 W
Dimensions (WxHxD)	35x90x60 mm (2HP)
Product-No.	160050879

ACOS 730 - LoRa® Modem CM31A	
Frequency band	868 MHz
Antenna connection	SMA
Maximum transmit power	+14 dBm
Receiver sensitivity	-146 dBm
Integrated LoRa® Stack	Class A, Class C
Communication interface	RS232 (V24/V28)
Nominal input voltage	5 V DC
Power input	0.5 W
Dimensions (WxHxD)	17.5x90x60 mm (1HP)
Product-No.	160050908

ACOS 730 - Serial Interface Module SI31A	
Communication interface	2x RS232 (V24/V28)
Nominal input voltage	5 V DC
Power input	0.25 W
Dimensions (WxHxD)	17.5x90x60 mm (1HP)
Product-No.	160050906

ACOS 730 - Technical Data

ACOS 730 - 4G 450 MHz Mobile Radio Controller CM33B	
Supported LTE bands	B1, B3, B8, B20, B28, B31, B72 (450 MHz)
Transmission standard	Cat-M1 (Rel.14)
SIM	mini SIM card with 1,8 V
Antenna connection	SMA
Nominal input voltage	24 V DC (±10 %)
Maximum power input	3 W
Housing	acc. to DIN 43880, protection class IP20
Dimensions (WxHxD)	35x90x60 mm (2HP)
Product-No.	160051549

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