



Skalar.pro DR

Skalar.pro for DIN-rail

Skalar.pro DR connects your CHP or other types of plants in accordance with German law (EEG) and your meters to IDSpecto, Efficio or your control technology. Skalar.pro DR standardizes different plant types by means of particular drivers on site and communicates via remote connection secured with VPN; the device is thus able to realize most different use cases from monitoring plants and local area substations to virtual power plants. In addition, Skalar.pro DR also covers classic metering applications by means of regular reading and provision of data delivered by connected electricity, gas, heat or water meters.

Remote communication uses either mobile services or DSL networks with encrypted VPN connections that correspond with latest recommendations given by German authorities (BSI).

Flexible in DIN-rail

Thanks to the standardized DIN-rail casing and its small dimensions, you can easily retrofit existing plants and meter cabinets with Skalar.pro DR. The device offers manifold interface options such as Modbus RTU and Modbus TCP for connection to cogeneration plants (for example in accordance with German EEG) and meters.

With Skalar.pro DR you are able to use DIN-rail mounting and benefit from well-known features provided by the Skalar.pro family such as automated firmware updates via NTP synchronization or decentralized logic and alarm functions offered by pro.online and pro.monitor.

Possible use cases:

- Least Cost Metering
- monitoring of plants by means of voltage and current figures
- monitoring of heating systems, pumps or sensors
- monitoring of power units
- monitoring of minimum and maximum values as well as thresholds
- monitoring of local area substations and power quality of low voltage grid
- and much more

In detail

- 6TE DIN-rail casing
- available with mobile service or ETHN
- complies with all requirements for All-IP
- routing feature
- Open VPN and IPsec possible
- Modbus RTU and Modbus TCP
- data formats supported from ABL to CSV
- regulation and monitoring with pro.online and pro.monitor

General

Housing

Material:	moulded insulation case for DIN-rail mounting in accordance with DIN EN 50022
Dimensions:	L x W x H = 108 x 90 x 61 mm
Flammability:	V0, classified in accordance with UL94

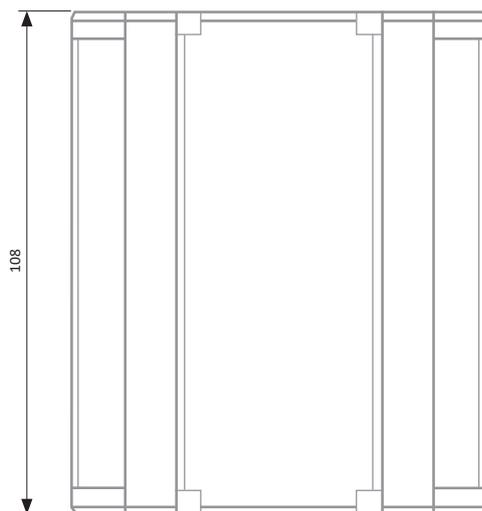
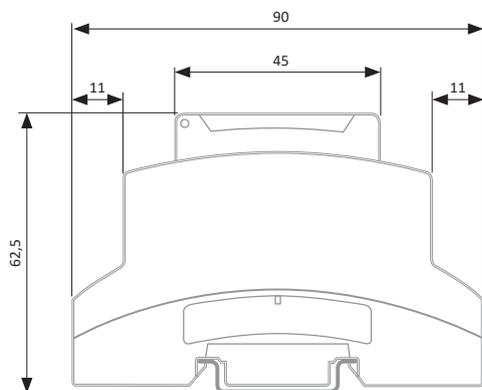
Operation and storage conditions

Protection class:	II (protective insulation)
Degree of protection:	IP30 in accordance with IEC 60529 (VDE 0470-1)
Pollution degree:	2 in accordance with IEC 60950-1
Overvoltage category:	III
Storage temperature:	- 40 °C... + 70 °C
Operating temperature:	- 25 °C... + 55 °C
Relative humidity range:	10 % - 95 %, non-condensing
Site of operation:	up to 2000m above sea level

Voltage supply

Nominal voltage:	230 V AC +/- 10 %, in compliance with EN 50160
Nominal frequency:	50 Hz +/- 15 %
Maximum power input:	8.8 W
Surge immunity:	4 kV

DIN-rail casing (dimensions in millimeters)



Connection

Power supply Terminals for	single-wire (rigid): 0.2 mm ² ...4 mm ² finely stranded (flexible): 0.2 mm ² ...2.5 mm ²
Serial interfaces, inputs/outputs:	0.14 up to 1.5 mm ² rigid and flexible cables
GSM antenna socket:	SMA (female)
Ethernet interfaces:	RJ45 (8P8C)

µC System

Operating system:	embedded Linux
Microprocessor:	ARM9
Program memory:	256 MB Flash
Main memory:	128 MB RAM
Data storage:	2 GB Flash

Real time clock

Accuracy:	+/- 5 ppm over complete operating temperature range
Maximum deviation:	+/- 13.4 seconds within 31 days
Power reserve:	at least 6 days, typical 16 days

Information security

Cryptography and VPN

Standard:	in accordance with technical guideline BSI TR-02102
Key lengths:	AES-128, AES-192, AES-256, RSA: 2048bit
OpenVPN and IPsec:	in accordance with basic protection measures M5.148 published by BSI

Serial interfaces

Serial interfaces #1 and #2 (optional)

Interface type:	RS232/RS485 half-duplex - type can be switched via software configuration
Signals:	RxD/+Tx+/Rx+, TxD/Tx-/Rx-, GND/screen
Baud rate:	300 - 115,200bps
Transmission formats:	7E1, 7E2, 7O1, 7O2, 7N2, 8N1, 8E1, 8O1
Length of cable in RS485(H) operation:	up to 1200 m depending on data rate and cables in use
Length of cable in RS232 operation:	up to 3 m depending on data rate and cables in use
Insulation resistance:	galvanic separation of device electronics (1 kV DC)

Network interfaces

Ethernet interfaces

Standards:	10BASE-T / 100BASE-TX in accordance with IEEE 802.3 Clause 14 and 15, auto-crossover
Maximum transmittable frame size (MTU size):	in accordance with IEEE 802.3as up to 2000 bytes

Mobile service (optional)

SIM card format:	Mini SIM card reader (25 x 15 mm) for 1.8 V and 3 V SIM cards on the right side of the housing
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Mobile service module UE910

Supported services and frequency ranges:	(product code #11 03 xx xx xx xx xx) GPRS/EDGE 850/900/1,800/1,900 MHz UMTS/HSPA+ 850/900/2100 MHz
Data rates:	GPRS Class 12, CS1-4, up to 86.5 kbps EDGE Class 12, MCS1-9, up to 236.8 kbps; UMTS up to 384 kbps HSUPA+ up to 5.76 Mbps HSDPA+ up to 42 Mbps
Reception sensitivity:	better than - 107.5 dBm

Inputs/Outputs

Signalling input

Type:	active; prepared for connection of external passive contacts
Open circuit voltage:	5 V
Short-circuit current:	5 mA
Insulation resistance:	no galvanic separation
Extraneous voltage protection:	< 500 V
Cable length:	up to 3 m

Power supply output

DCOUT#1

Type:	permanently activated power supply output, not short-circuit-proof
DC voltages:	5 V
Maximum output current:	40 mA
Insulation resistance:	galvanic separation of serial interfaces (<1 kV DC)
Cable length:	up to 3 m

Indicators

LED Operation:	green/orange/red on front of housing
Communication indicators at Ethernet ports:	link = orange, 10 / 100 Mbps = green

Conformity/Standards

Conformity:	with CE
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Guidelines

- RoHS:	2011/65/EU
- Skalar.pro with GSM module:	RED RL 2014/53/EU
- Skalar.pro without GSM module:	EMV-RL 2014/30/EU
Low voltage directive:	2014/35/EU

Applied standards

- emitted radiation in accordance with:	IEC 61000-6-3, EN 55022 Class B
- interference resistance in accordance with:	IEC 61000-6-2, IEC 61000-4-2, -3, -4, -5, -11
Product safety:	IEC 60950-1 / IEC 62368-1