GUDE

Product Catalogue 2019

The new headquarters of GUDE Systems GmbH moved to in April 2019

Koel, April 2019

Dear customer,

you hold our new product catalogue for the year 2019 in your hands, a year full of changes at GUDE: The increasingly international nature of our business activities means that the company will operate under the new name **GUDE Systems GmbH** from April on. The company headquarters will be relocated to larger and more modern premises - just 10 minutes from Cologne-Bonn Airport. Above all, we are pleased to be able to present a wealth of product developments and innovations this year:

- The makeover of the compact power distribution unit for one load output:
  Expert Power Control 1104 and **1105**.
- The new family of versatile LAN sensors: **Expert Sensor Box 7213** and **7214 Series**.
- The enhanced **Expert PDU Energy 8311 Series** with up to 20 load outputs and residual current metering (RCM).
- The vertically mounted 8-fold power strip **Expert Power Control 8314** and **8316**.
  It has been revised and is now available with and without energy measurement per load output.
- For professional environmental monitoring, additional sensors are available as optional accessories, in particular cable sensors with calibrated temperature range: **Sensors 7104-2, 7105-2** and **7106-2**

One more thing... Our successful range of power distributors for 19-inch cabinets receives technically improved successors with either IEC or safety socket connections. In addition to IPv6, SSL, SNMPv3, Telnet and Modbus TCP support, **Expert Power Control 8021, 8031** and **8041** provide overvoltage protection and residual current measurement.

As you can see, the continued success of our products in the market is an incentive for us not to let up with our efforts. Rather, it is our goal to convince not only new customers, but also our growing number of satisfied customers over and over again from our products.

Yours sincerely

Dr.-Ing. Michael Gude
GUDE Systems GmbH

Branch example: Control of AV and media technology

Controlling media technology remotely, keeping an eye on energy consumption or increasing the reliability of critical applications: GUDE's IP socket strips and monitoring solutions offer the right answers to industry-specific questions.

GUDE has earned an excellent reputation, especially in the industry of media technology and AV planners. The high-quality and flexible products offer reliable solutions to the needs of demanding professional users.

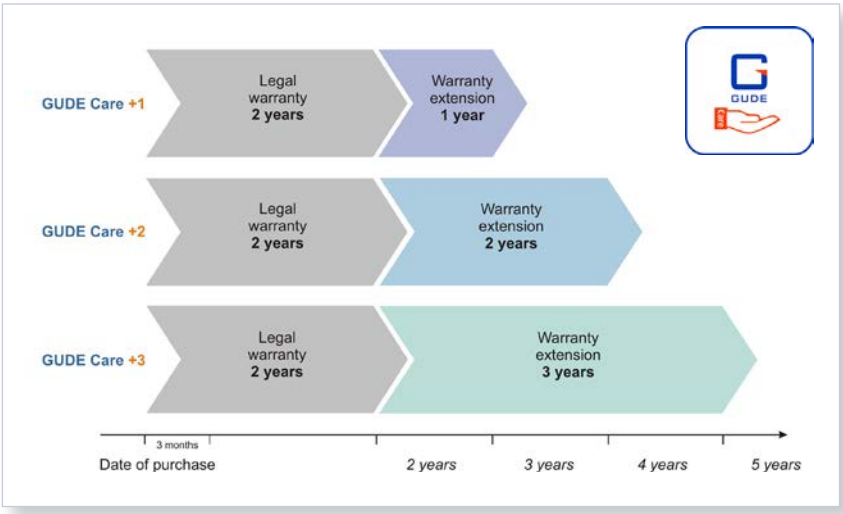
In conference rooms, the installed IT and media technology places high expectations in terms of usability, extensibility and reliability

These questions address industry-typical challenges such as:

- How can entire infrastructures be taken off the grid in order to conserve resources and technology?
- How can the power distribution and supply of connected devices be safely and easily controlled?
- How to ensure that the installed IT components are compatible with the controlling AV software (for example from Crestron, Extron, Barco, Neets etc.)?
- How can redundancy in the power supply and environmental monitoring in the installation ensure that critical system conditions are detected early and avoided?

Against this background, AV installations with the power distribution units and monitoring systems from GUDE can be meaningfully extended.

Play it safe: Warranty extension with GUDE Care



GUDE Care extends the warranty coverage of the devices to up to 5 years

In order to meet the expectations for quality and longevity of GUDE products, an extension of the legal warranty can be concluded for each device: **GUDE Care** can be ordered for a period of 1, 2 or 3 years (GUDE Care +1, +2 or +3). The statutory warranty of 2 years is extended to 3, 4 or 5 years.

Legend of symbols

Switchable Power Port

Power outlets IEC C13 (max. 10 A)

Power outlets IEC C13-Lock (max. 10 A)

Power outlets IEC C19(max. 16 A)

Power outlets safety socket (max. 16 A)

Switching relay output

Signal input

Transfer Switch

Network interface

RS232 interface

USB interface

Dual Circuit

Operation with AC and DC power supply possible

Power supply by Power-over-Ethernet

Programmable turn-on/turn-off sequence

Current metering

Metering of electrical dimensions

Energy meter

Energy meter per port

Hotswap drawer

Residual current monitor

Overvoltage protection

Integrated GSM module

Interface for external sensors

Temperature sensor

Relative humidity sensor

Smoke detector

Leakage sensor

Air pressure sensor

Manageable by iOS/Android app **Gude Control**

The number underneath the symobl reveals the feature quantity per device, e.g. 24 signal inputs:

Table of Contents

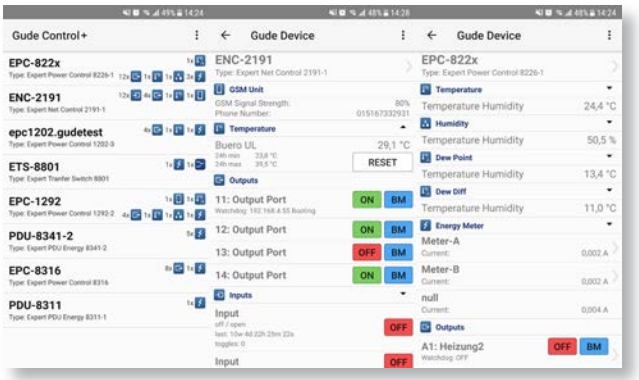
It's the Software, stupid.

GUDE Control Panel: The browser-based control center for GUDE-Products

Without reliable and easy-to-use controls, hardware products can not play to their full potential. The available software often has a key function for the user. Users can therefore choose between different control options for GUDE products.

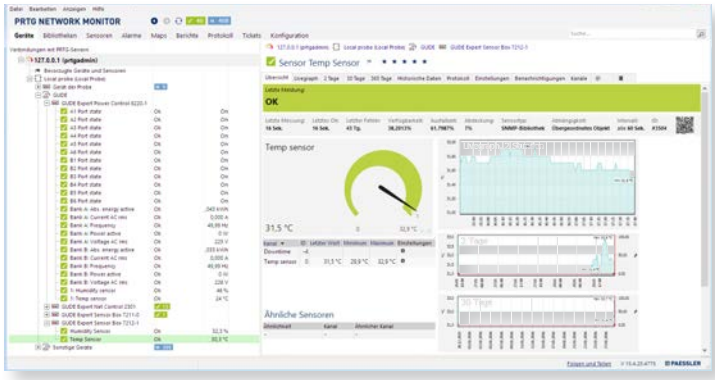
The configuration and control of the network-capable devices is possible in addition to the local access via the web-based **GUDE Control Panel**. This software interface provides easy and location-independent setup, management and monitoring of the device. This ensures secure communication and authentication thanks to appropriate protocol support.

The use of **Gude Control** is recommended for direct access on the move. With this app, all relevant status information of the products can be called up. Control key metrics of your server or rack environment from your portable devices. In particular, consumers connected to switchable PDUs can be switched remotely using **Gude Control**. The app is available for free from the iTunes Store and Google Play Shop.



Gude Control App: Access on the go from mobile devices

Network Monitoring Software allows you to control your equipment with one central application: A clear and graphed program interface supports you in keeping an eye on your network performance. Hereby you have all relevant key data of your server and rack environment at hand. As a rule the software solutions available on the market offer a broad range of features being essential for a sustainable ITC management: E.g. display of energy consumption and sensor values, status of inputs and outputs including watchdogs as well as notifications and automated reports for set thresholds.



Network monitoring software gives you a quick overview of the GUDE devices in your network (example: PRTG network monitor, libraries available on request)

Deployment of Network Monitoring Software makes it possible to monitor Power Distribution Units and Remote I/O Systems of GUDE in real-time. Due to the collected data, system failures are avoided and down-times are minimized. Compatible solutions are for example GFI, HP-OpenView, Incinga, MRTG, Nagios, OpManager, Power IQ, PRTG, Tivoli or WhatsUpGold.

Expert Power Control – the Switched & Metered Power Distribution Units

Desktop and rack mounting

The devices of **Expert Power Control** family offer a broad range of features making them perfectly suitable for optimizing and enhancing your IT infrastructure. The Switched Power Distribution Units are tailored for mounting in server and switching cabinets (rack) and in more compact bodies for deployment in offices and conference rooms (desktop).

Enhancement of energy efficiency

Unit- and outlet-metered

Besides single- or multi-phase power distribution, customers can choose between port granularities of up to 24 switchable outlets as well as different connector types. Metering of energy and consumption are integrated into most devices. Total current metering allows for load estimation and planning of appliance upgrades in cabinets. Users have the choice between unit- or outlet-metered devices depending on application requirements. A variety of electrical dimensions is covered, e.g. voltage, frequency, active/apparent/reactive power, power factor and phase angle.

Environment monitoring

Integrated sensor interfaces allow environment monitoring regarding temperature, relative humidity and air pressure. For this purpose, plug-and-play sensors are optionally available in order to enable a swift infrastructure upgrade.

Prevention of critical system conditions

Network connectivity, watchdog functionality and user-defined alarms for sensor and power consumption thresholds allow flexible and advanced remote monitoring and controlling. Many of the **Expert Power Control** devices make event-based switching procedures possible. System conditions are regulated through these digital control loops by triggering power-up or cutoff of connected consumers in realtime. No additional hardware or software is required.

Future-proof support of network standards

All PDUs are designed for configuration and operation via network, just a plain web browser is sufficient. Web server, SNMP and Syslog are integrated in all devices. In addition, all new applicances of **Expert Power Control** family support IPv6, SSL, SNMPv3, Radius, Modbus TCP as well as Telnet and herewith comply to current security standards.

GSM feature

As a distinct feature, **Expert Power Control 1292** and **8090** dispose of an integrated GSM module, allowing remote control from locations without Internet access or in case of network failure.

High-inrush relays

The **Expert Power Control** line is characterized by sturdy housings and significant manufacture. 19 inch devices dispose of solid steel cases. Customers benefit from highly luminous LED lights, good readable displays and ease of operation – remote and on-site. Premium high-inrush relays assure continuity of operations: these relays can cope temporarily with very high start-up peaks while switching.

made in Germany

All products and their software (including firmware) are developed, manufactured and tested in Germany under high quality standards. Free software updates and technical support as well as continuous product development are integral part of all devices.

Switched & Metered IP Power Distributions

Article Number	1105-1 1105-2	1202-1 1202-2 1202-3	1292-1 1292-2 1292-3	8021-1	8031-1 8031-2 8031-3	8041-1 8041-2	8221-1 8226-1	8314-1 8314-2	8316-1 8316-2
Mounting Type	new			new	new	new		new	
Desktop	●	●	●						
19 inch, 1 RU				●	●	●	●		
Rack vertical, 0 RU								●	●
Current									
Total current (A)	16 / 10	16	16	16	16	16	2 x 16	16	16
Current per port (A)	16 / 10	16	16	10	10/10/16	10	10	16 / 10	16 / 10
Overvoltage protection		●	●	●	●	●	●		
Power Inputs									
IEC C14 (max. 10 A)	- / 1								
Safety socket type F, CEE 7/4, max. 16 A	1 / -	1 / - / -	1 / - / -						
Safety socket type E, CEE 7/6, max. 16 A		- / 1 / -	- / 1 / -						
Safety socket type J, SEV 1011, max. 10 A		- / - / 1	- / - / 1						
IEC C20, max. 16 A				1	1	1	2	1	1
Power Connectors									
IEC C13 (max. 10 A)	- / 1			4	8 / - / -	12 / -	2 x 6	- / 8	- / 8
IEC Lock C13, max. 10 A					- / 8 / -	- / 12			
Safety socket type F, CEE 7/3, max. 16 A	1 / -	4 / - / -	4 / - / -		- / - / 8			8 / -	8 / -
Safety socket type E, CEE 7/5, max. 16 A		- / 4 / -	- / 4 / -						
Safety socket type J, SEV 1011, max. 10 A		- / - / 4	- / - / 4						
Technical Features									
Metering of divers electrical dimensions*		●	●	●	●	●	●	●	●
Metering per outlet							- / ●		●
Energy meters (kWh)		2	2	2	2	2	2 x 2 14 x 2	2	8 x 2
Fehlerstromüberwachung				●	●	●			
GSM module			●						
Event-based switching		●	●	●	●	●	●	●	●
Timetable-based switching				●	●	●			
Sensor interfaces	1	1	1	2	2	2	2	2	2
Digits display (number of digits)		1 (3)	1 (3)	1 (4)	1 (4)	1 (4)	2 (4)	1 (3)	1 (3)
Internal alarm beeper		●	●	●	●	●	●		
Integrated webserver	●	●	●	●	●	●	●	●	●
RS232 connector				●	●	●	●	●	●
Watchdogs	1	4	4	4	4	4	12	8	8
E-mail	●	●	●	●	●	●	●	●	●
DHCP, SNMPv1/v2c/v3, Syslog	●	●	●	●	●	●	●	●	●
IPv6, SSL, Telnet, Radius, Modbus TCP	●	●	●	●	●	●	●	●	●
Manageable by Gude Control app	●	●	●	●	●	●	●	●	●

* Total current per bank/phase, current (A), voltage (V), phase angle (°), power factor, frequency (Hz), active power (W), apparent power (VA), reactive power (VAR)

Expert Power Control 1105 Series

1 or 1

Switched and Metered PDU with integrated current metering and monitoring with safety socket or IEC port

new

Expert Power Control 1105-1

Expert Power Control 1105-2

Features

- 1 Power Port switchable directly on the device, via HTTPS and command line tool
- Adjustable status and Power-up delay (0...9999 seconds) after power blackout
- Programmable turn-on/turn-off sequence
- Metering of energy, current, power factor, phase angle, frequency, voltage and active / apparent / reactive power
- 2 energy meters, one meter continuously, the other resettable
- 1-channel watchdog, a watchdog (ICMP/TCP) can be assigned for Power Port
- Interface for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Port switching possible by configured sensor thresholds
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, E-Mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP support
- Configuration and control via Telnet possible
- Access control via IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption, typ. 1.5 W
- Developed and manufactured in Germany

Electrical Connections

- Power supply
  Safety socket type F (CEE 7/4), max. 16 A (**1105-1**)
  IEC C14, max. 10 A (**1105-2**)
- Power Port
  Safety socket type F (CEE 7/3), max. 16 A (**1105-1**)
  IEC C13, max. 10 A (**1105-2**)
- Ethernet connector RJ45 (10/100 Mbit/s)
- Sensor input (RJ45) for optional sensors

Technical Details

- LxHxD: 12 x 6.5 x 9.5 cm
- Weight: ca. 0.3 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

Order code	Product	Feature	Operating Voltage	Maximum Current
1105-1	Expert Power Control 1105-1	Safety socket connector type F, energy metering	230 V	16 A
1105-2	Expert Power Control 1105-2	IEC connector, energy metering	230 V	10 A
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C, cable ca. 2.3 m		
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m		
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m		
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m		
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2				
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C		
7202	Temp., Humidity Sensor 7202	DepbyBox case with RJ45 socket, -20°C to +80°C, 0-90% humidity		
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m, (for 1105-2)		

Expert Power Control 1202 / 1292 Series (GSM)

4-fold switched PDU with integrated current metering and monitoring and with GSM connectivity (1292)

- ☑ IPv6
- ☑ HTTPS
- ☑ SSL
- ☑ SNMPv3
- ☑ Telnet
- ☑ Modbus TCP

Highlights at a glance

- 4 Power Ports
- Event-based switching
- Energy metering
- Overvoltage protection
- 3 connector versions

Features

- 4 Power Ports individually switchable directly on the device, via HTTPS and SNMP
- Case allows mounting in 19 inch racks
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Simultaneous power-up of multiple Power Ports prevented by latency time of 1 second
- Programmable turn-on/turn-off sequence
- Metering of energy, current, power factor, phase angle, frequency, voltage and active/apparent/reactive power
- 2 energy meters, one meters continuously, the other energy meter is resettable
- A clearly visible LED display on the device reveals total current, IP address, sensor data and error reports
- 4-channel watchdog, an individual watchdog (ICMP/TCP) can be assigned for each Power Port
- Interface for optional sensors for environmental monitoring (temperature and humidity)
- Port switching possible by configured sensor thresholds
- Internal beeper for acoustic alarm for set sensor thresholds
- Integrated overvoltage protection prevents damage of device and of connected consumers (L-N 10 kA), status retrievable over network
- Dedicated high-inrush relays avoid welding of relay contacts at start-up peaks
- Firmware update via Ethernet during operation
- Comfortable configuration by web browser, Windows or Linux tool
- IPv6 ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP protocol supported
- Configuration and control via Telnet
- IP Access Control List
- Secure login over SSL
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption, typ. 5 W
- Developed and manufactured in Germany

Electrical Connections

- Power supply safety socket type F, CEE 7/4 connector, max. 16 A, cable length: ca. 3 m
- 4 Power Ports safety sockets type F, CEE 7/3, max. 16 A
- Alternative connections Type E for France/Belgium and type J for Switzerland
- Ethernet connector RJ45 (10/100 Mbit/s)
- Mini-DIN connector for optional sensor
- Connector for GSM antenna, **GSM Rod Antenna 0560** included in delivery (**1292**)
- Slot for SIM card (**1292**)

Technical Details

- LxHxD: 48.4 x 4.6 x 7.4 cm
- Weight: ca. 1 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

with GSM

GSM Features of **Expert Power Control 1292 Series**

- Quadband GSM module
- Control via voicecall, SMS and Datacall
- GSM user access for all ports configurable
- FreeCall: Predefined action upon toll-free incoming call from a specific number
- GSM rod antenna included in delivery
- For pre-paid and post-paid SIM cards (SIM card not included)

Lateral connectors of **Expert Power Control 1292**

Order code	Product	Feature	Operating Voltage	Max. Current
1202-1	Expert Power Control 1202-1	Safety socket connector Type F (Germany)	230 V	16 A
1202-2	Expert Power Control 1202-2	Safety socket connector Type E (France/Belgium)	230 V	16 A
1202-3	Expert Power Control 1202-3	Safety socket connector Type J (Switzerland), automatic cut-out as per SEV1011:2009/A1:2012	230 V	10 A
1292-1	Expert Power Control 1292-1	Safety socket connector Type F (Germany), integrated GSM module, GSM antenna incl. in delivery (cable length: 2 m)	230 V	16 A
1292-2	Expert Power Control 1292-2	Safety socket connector Type E (France/Belgium), integrated GSM module, GSM antenna incl. in delivery (cable length: 2 m)	230 V	16 A
1292-3	Expert Power Control 1292-3	Safety socket connector Type J (Switzerland), automatic cut-out as per SEV1011:2009/A1:2012, integrated GSM module, GSM antenna incl. in delivery (cable length: 2 m)	230 V	10 A
7001	Temperature Sensor 7001	Cable sensor with splash-proof sensor head (IP64), Mini-DIN connector, -20°C to +80°C, cable ca. 2.3 m		
7002	Temp.-, Humidity Sensor 7002	Cable sensor, Mini-DIN connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m		
0520	GSM Rod Antenna 0520	Magnetic mount rod antenna with cable and SMA plug, cable ca. 5.5 m		
0560	GSM Rod Antenna 0560	Rod antenna with SMA plug (included in delivery)		

Switchable IP Power Sockets for all needs: New **Expert Power Control Series**

new

From conference rooms to data centers: **Expert Power Control 8021**, **8031** and **8041 Series**

Example of **Expert Power Control 8031-3** in a conference room

Triple Play of the new Expert Power Control Series

1 Green Building

With the new IP switching sockets, the power consumption of the installation can be effectively reduced: The collective switching off of consumers, even in standby mode, as well as the integrated energy meters help to ensure a sustainable operation of the infrastructure. In addition, the user receives warnings when fault currents occur. This allows preventive maintenance even before downtime.

2 „Reboot is always good"

The PDUs have 4, 8 or 12 load outlets on the rear (IEC C13 or safety socket). This allows connected devices to be switched off and on in the event of a fault. This is especially possible via media controls and DCIM solutions. Defined thresholds ensure that event-based switching can be initiated. Furthermore, the devices can be controlled on schedule due to integrated timer functions.

3 Environment monitoring

Two integrated sensor interfaces for optional available sensors enable to monitor environment temperature, humidity and air pressure. Due to real-time surveillance and early overload and threshold alarms, critical system conditions and down-times can be avoided. Thanks to plug-and-play sensors, startup operation with **Expert Power Control Series** is quickly done.

Electrical Connections

- Power supply IEC C20, max. 16 A, 230 V
- Power Ports: 4, 8 or 12 IEC C13 (Lock), max. 10 A or 8 safety socket type F, max. 16 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- Serial interface RS232 (Sub-D 9-pin)
- 2 RJ45 interfaces for optional sensors

Technical Details

- Dimensions: 19 inch, 1 rack unit
- LxHxD: 43.9 x 4.4 x 17.8 cm (without brackets)
- Weight: ca. 2.2 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

4-, 8- or 12-fold switched PDU for reduction of power consumption, for remote control and for environment monitoring

Residual current metering
Overvoltage protection type 3

Features

- Up to 12 Power Ports individually switchable directly on the device, via HTTPS, SNMP, command line tool and RS232 serial interface
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Latency time of 1 second prevents simultaneous power-up of multiple Power Ports
- Programmable timetables and turn-on/turn-off sequences
- 2 energy meters: one meter continuously, the other resettable
- Metering of energy, current, power factor, phase angle, frequency, voltage and active / apparent / reactive power
- Residual current metering type A
- A clearly visible LED display for total current, IP address, sensor data and error reports
- An individual watchdog (ICMP/TCP) can be assigned for each Power Port
- Integrated overvoltage protection (SPD) type 3 prevents damage of device and of connected consumers (L-N, L/N-PE), status retrievable over network
- 2 interfaces for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Event-based port switching possible by set sensor thresholds
- Internal beeper for acoustic alarm for set sensor thresholds
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Telnet, Radius and Modbus TCP support
- Access control via IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption
- Developed and manufactured in Germany

Expert Power Control 8031-3: 8 safety sockets requiring just one rack unit

Expert Power Control 8041-2: IEC Lock sockets prevent accidental disconnecting of IEC cables

Order Code	Product (in Q2/2019)	Rear connectors	Shared Features
8021-1	Expert Power Control 8021-1	4 x IEC C13	Operating voltage: 230 V , max.: 16 A
8031-1	Expert Power Control 8031-1	8 x IEC C13	Unit metered
8031-2	Expert Power Control 8031-2	8 x IEC C13 Lock	Residual current metering type A
8031-3	Expert Power Control 8031-3	8 x safety socket type F (DE)	Overvoltage protection (SPD) type 3
8041-1	Expert Power Control 8041-1	12 x IEC C13	2 sensor ports with RJ45 socket
8041-2	Expert Power Control 8041-2	12 x IEC C13 Lock	HTTPS, SSL, IPv6, SNMPv3, Telnet, Radius, Modbus TCP

Order Code	Product	Feature
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C, cable ca. 2.3 m
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m
7105 *	Temp./Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m
7106 *	Temp./Humidity/Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2		
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m
0807	Cable Holder 0807	13 fixation bridges for load cables at the rear side (not for 8031-3)

Expert Power Control 8221-1 / 8226-1

12-fold switched PDU with integrated current metering and monitoring

Dual-Circuit
Outlet-metered (8226)

Front and rear side of **Expert Power Control 8221-1** and **Expert Power Control 8226-1**

Features

- 12 Power Ports individually switchable directly on the device, via HTTPS, SNMP, command line tool and RS232 serial interface
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Latency time of 1 second prevents simultaneous power-up of multiple Power Ports
- Paired switching of outlets possible, e.g. output 1 of bank 1 simultaneously with output 1 of bank 2
- Programmable turn-on/turn-off sequence
- 2 energy meters per bank and for **8226-1** also per load outlet; one meter continuously, the other resettable
- Metering of energy, current, power factor, phase angle, frequency, voltage and active / apparent / reactive power
- A clearly visible LED display per bank for total current, IP address, sensor data and error reports
- 12-channel watchdog, an individual watchdog (ICMP/TCP) can be assigned for each Power Port
- 2 independent power inputs of 230 V for the same or different phases
- Integrated overvoltage protection prevents damage of device and of connected consumers (L-N 10 kA), status retrievable over network
- 2 interfaces for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Event-based port switching possible by set sensor thresholds
- Internal beeper for acoustic alarm for sensor thresholds
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Telnet, Radius and Modbus TCP support
- Access control via IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption, typ. 5 W/ 7 W (**8221-1** / **8226-1**)
- Developed and manufactured in Germany

Electrical Connections

- 2 Power supplies IEC C20, max. 16 A, 230 V
- 2 x 6 Power Ports IEC C13, max. 10 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- Serial interface RS232 (Sub-D 9-pin)
- 2 RJ45 interfaces for optional sensors

Technical Details

- Dimensions: 19 inch, 1 rack unit
- LxHxD: 43.9 x 4.4 x 19.5 cm (without brackets)
- Weight: ca. 2.9 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

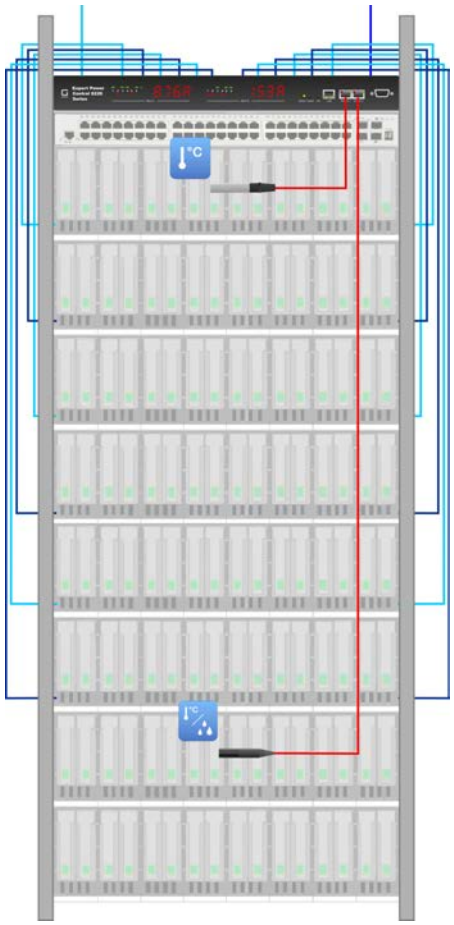
Order Code	Product	Feature	Operating Voltage	Max. Current
8221-1	Expert Power Control 8221-1	2 x 6 outlets IEC C13, energy metering per bank	230 V	2 x 16 A
8226-1	Expert Power Control 8226-1	2 x 6 outlets IEC C13, energy metering per bank and per outlet	230 V	2 x 16 A

Deployment of **Expert Power Control 8226-1** by example of a data center

The following data center scenario serves as an application example for **Expert Power Control 8226-1**: A standard 19 inch rack with 12 servers is deployed with customer critical applications running on the servers. The user's target: to implement a reliable power distribution as well as an intelligent device managment regarding capacitiy and system monitoring - all at a reasonable cost-benefit ratio.

As for the extension of the IT infrastructure, typical objectives arising are e.g.:

- Enhancement of energy efficiency
- Metering of energy consumption on rack and server level in real time
- Implementation of a reliable environment monitoring
- Prevention of down-times and of system critical conditions
- To ensure instant remote access in case of need
- Support of commonly used authentification and encryption protocols



Expert Power Control 8226-1
with two sensors in 19 inch rack

Expert Power Control 8226-1 is mounted in a free RU space of a 19 inch rack. Both IEC C20 power supplies (max. 16 A, 230 V) allow a total switching power of 7500 W for the servers. Thanks to the integrated sensor interfaces, environment monitoring is easily realized by connecting plug-and-play sensors: **Sensors 7104, 7105** and **7106** make it possible to retrieve temperature, humidity and air pressure data from different corners of the rack. Selectable threshold and reporting settings enable users to dispose of relevant monitoring data for their power supply infrastructure. Hence, appropriate actions can be taken before problems occur. Moreover integrated energy meters allow precise measuring and logging of power consumption, both on unit and on outlet level.

Order Code	Product	Feature
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C, cable ca. 2.3 m
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2		
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m
0807	Cable Holder 0807	13 fixation bridges for load cables at the rear side

Expert Power Control 8314 / 8316 Series

8 or 8

8-fold switched PDU with energy metering (unit or oulet-metered)

2

Features

- 8 Power Ports individually switchable directly on the device, via HTTPS, command line tool and RS232 serial interface
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Start-up peaks through simultaneous port switching prevented by latency time of 1 second
- Programmable turn-on/turn-of sequence
- 2 energy meters: one meter continuously, the other resettable (**8314: unit-metered**)
- 2 energy meters per power outlet, one meter continuously, the other resettable (**8316: outlet-metered**)
- Metering of energy, current, power factor, phase angle, frequency, voltage and active / apparent / reactive power
- Clearly visible LED display for total current, IP address, sensor data and error reports
- 8-channel watchdog, an individual watchdog (ICMP/TCP) can be assigned for each Power Port
- 2 interfaces for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Event-based port switching possible by set sensor thresholds (**8316**)
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP protocol supported
- Configuration and control over Telnet
- Access control via IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low power consumption
- Developed and manufactured in Germany

Electrical Connections

- Power supply IEC C20, max. 16 A
- 8 Power Ports safety socket CEE 7/3, max. 16 A or IEC C13, max. 10 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- Serial interface RS232 (Sub-D 9-pin)
- 2 sensor interfaces (RJ45) for optional sensors

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

Technical Details

- Case allows vertical mounting in 19 inch racks (0 RU), LxHxD: 69 x 6 x 7 cm (length including pivotable brackets)
- Sturdy housing made of powder-coated steel plate
- Weight: ca. 2.8 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment),

Order Code	Product	Feature	Operating Voltage	Max. Current
8314-1 new	Expert Power Control 8314-1	8 outlets safety socket CEE 7/3	230 V	16 A
8314-2 new	Expert Power Control 8314-2	8 outlets IEC C13	230 V	16 A
8316-1	Expert Power Control 8316-1	8 outlets safety socket CEE 7/3, energy metering per load outlet	230 V	16 A
8316-2	Expert Power Control 8316-2	8 outlets IEC C13, energy metering per load outlet	230 V	16 A
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C		
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m		
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m		
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m		
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2				
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C		
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity		
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m		

Switched IP Power Distributions

Article Number	1104-1 1104-2	8080 Series	8090	8210 8211	8212 8213
Mounting Type	new				
Desktop	●				
19 inch, 1 RU		●			
Rack vertical, 0 RU			●	●	●
Power Connectors					
Front connectors		●		- / ●	- / ●
Rear connectors			●	● / -	● / -
Current					
Total current (A)	16 / 10	16 / 32 / 3x16	16	16	16
Current per port (A)	16 / 10	10	10	10	10
Integrated fuses (16 A)		3			
Power Inputs					
IEC C14 (max. 10 A)	- / 1				
Safety socket type F, CEE 7/4, max. 16 A	1 / -	1 (8080)			
CEE 1-phase, max. 16 A		1 (8081)			
CEE 1-phase, max. 32 A		1 (8082)			
CEE 3-phase, max. 3 x 16 A		1 (8083)			
IEC C20, max. 16 A		1 (8084)	1	1	1
Power Outlets					
IEC C13, max. 10 A	- / 1	3 x 8	8	8	4
Safety socket type F, CEE 7/3, max. 16 A	1 / -				
Technical Features					
Metering of total current, current (A)	●	●		●	●
Event-based switching (sensor thresholds)	●				
GSM module			●		
Sensor interfaces	1		1	2	2
Digits display (number of digits)				1 (4)	1 (4)
Internal alarm beeper				●	●
RS232 connector				●	●
Integrated webserver	●	●	●	●	●
Watchdogs	1		8	8	4
E-mail	●		●	●	●
DHCP, SNMPv1/v2c, Syslog	●	●	●	●	●
IPv6, SSL, SNMPv3, Telnet, Radius, Modbus TCP	●				
Manageable by Gude control app	●			●	●

Expert Power Control 1104 Series

new

1 or 1

Switched PDUs with integrated current metering with safety socket or IEC port

Expert Power Control 1104-1

Expert Power Control 1104-2

Features

- 1 Power Port switchable directly on the device, via HTTPS and command line tool
- Adjustable status and Power-up delay (0...9999 seconds) after power blackout
- Programmable turn-on/turn-off sequence
- 1-channel watchdog, a watchdog (ICMP/TCP) can be assigned for Power Port
- Interface for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Port switching possible by configured sensor thresholds
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, E-Mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP support
- Configuration and control via Telnet possible
- Access control via IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption, typ. 1.5 W
- Developed and manufactured in Germany

Electrical Connections

- Power supply:
  Safety socket type F (CEE 7/4), max. 16 A (**1104-1**)
  IEC C14, max. 10 A (**1104-2**)
- Power Port:
  Safety socket type F (CEE 7/3), max. 16 A (**1104-1**)
  IEC C13, max. 10 A (**1104-2**)
- Ethernet connector RJ45 (10/100 Mbit/s)
- Sensor input (RJ45) for optional sensors

Technical Details

- LxHxD: 12 x 6.5 x 9.5 cm
- Weight: ca. 0.3 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

Order Code	Product	Feature	Operating Voltage	Max. Current
1104-1	Expert Power Control 1104-1	Safety socket connector type F	230 V	16 A
1104-2	Expert Power Control 1104-2	IEC connector	230 V	10 A
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C		
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m		
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m		
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m		
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2				
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C		
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity		
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m (for 1104-2)		

Expert Power Control 8080 Series

24

24-fold switched PDU with integrated current metering

Features

- 24 Power Ports individually switchable directly on the device, via HTTP and command line tool
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Latency time of 1 second prevents simultaneous power-up of multiple Power Ports
- Programmable turn-on/turn-of sequence
- Metering of total current per phase (**8083**) respectively per bank (single phase) with 8 Power Ports each
- Operation one-phase or three-phase dependent on power supply selection
- 16 A fuse per phase/bank (8 Power Ports each)
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- HTTP 1.1, DHCP, SNMPv1 (Traps), SNMPv2c (Traps), Syslog
- Access control via IP Access Control List
- Access control via optional HTTP password
- Low power consumption, typ. 8 W
- Developed and manufactured in Germany

Electrical Connections

- Power supply, cable length ca. 2 m:
  Safety socket, max. 16 A (**8080**)
  CEE, max. 16 A (**8081**)
  CEE, max. 32 A (**8082**)
  CEE, max. 3 x 16 A (**8083**)
  IEC C20, max. 16 A (**8084**)
- 24 Power Ports IEC C13, max. 10 A
- Ethernet connector RJ45 (10/100 Mbit/s)

Technical Details

- Case allows vertical mounting in 19 inch racks (0 RU), LxHxD: 156.5 x 6 x 6 cm (length including brackets)
- Sturdy housing made of powder-coated steel pla
- Weight: ca. 5.0 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Highlights at a glance

- 24 Power Ports
- Total current metering
- 5 connector types available
- Vertical mounting

Order code	Product	Feature	Operating Voltage	Max. Current
8080	Expert Power Control 8080	Power supply safety socket CEE 7/4, current metering per bank	230 V	16 A
8081	Expert Power Control 8081	Power supply CEE, 16 A, current metering per bank	230 V	16 A
8082	Expert Power Control 8082	Power supply CEE, 32 A, current metering per bank	230 V	32 A
8083	Expert Power Control 8083	Power supply CEE, 3 x 16 A, current metering per phase	230 V	3 x 16 A
8084	Expert Power Control 8084	Power supply IEC C20, current metering per bank	230 V	16 A
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length 3 m		

Expert Power Control 8090

8

8-fold switched PDU for GSM networks

with GSM

Features

- 8 Power Ports individually switchable directly on the device, via HTTP, command line tool and additionally via voicecall, SMS and Datacall
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Latency time of 1 second prevents simultaneous power-up of multiple Power Ports
- Programmable turn-on/turn-of sequence
- 8-channel watchdog, an individual watchdog (ICMP/TCP) can be assigned for each Power Port
- GSM admin and user access for all Power Ports definable
- For pre-paid and post-paid SIM cards (SIM card not included)
- Triband network
- FreeCall: Predefined action upon toll-free incoming call from a specific number
- Interface for optional sensors for environmental monitoring
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- HTTP 1.1, e-mail, DHCP
- SNMPv1 (Traps), SNMPv2c (Traps), Syslog
- Access control via IP Access Control List
- Access control via optional HTTP password
- Low power consumption, typ. 5 W
- Developed and manufactured in Germany

Electrical Connections

- Power supply IEC C20, max. 16 A
- 8 Power Ports, IEC C13, max. 10 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- RJ11 connector for optional temperature sensor
- Connector for GSM antenna, **GSM Rod Antenna 0560** included in delivery
- Slot for SIM card

Technical Details

- Dimensions: 19 inch, 1 rack unit
- LxHxD: 43.9 x 4.4 x 15.0 cm (without brackets)
- Weight: ca. 2.8 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Expert Power Control 8090
Power connectors on rear panel

Order Code	Product	Feature	Operating Voltage	Maximum Current
8090	Expert Power Control 8090	Power connectors on rear panel, integrated GSM module, GSM Antenna 0560 included in delivery	230 V	16 A
7000	Temperature Sensor 7000	Cable sensor, RJ11 connector, -20°C to +80°C, cable length ca. 2.3 m		
0520	GSM Rod Antenna 0520	Magnetic mount rod antenna with cable and SMA plug, cable length 5.5 m		
0560	GSM Rod Antenna 0560	Rod antenna with SMA plug		
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length 3 m		
0807	Cable Holder 0807	Cable holder with 13 fixation bridges for cable attachement on rear side of device		

Expert Power Control 8210 / 8211
Expert Power Control 8212 / 8213

8 / 4 2

8-fold or 4-fold switched PDU with integrated current metering

For new projects, we recommend the technically upgraded **Expert Power Control 8021**, **8031**, **8041**

Expert Power Control 8210 /8212
Power connectors on rear panel (here: 8210)

Expert Power Control 8211 und 8213
Power connectors on front panel (here: 8211)

Features

- 8 / 4 Power Ports individually switchable directly on the device, via HTTP, command line tool and RS232 serial interface
- Status and Power-up delay (0...9999 seconds) adjustable individually for each Power Port after power blackout
- Latency time of 1 second prevents simultaneous power-up of multiple Power Ports
- Programmable turn-on/turn-off sequence
- 8-/4-channel watchdog, an individual watchdog (ICMP/TCP) can be assigned for each Power Port
- Clearly visible LED display for total current (actual, peak), IP address, sensor data and error reports
- 2 interfaces for optional sensors for environmental monitoring (temperature and humidity)
- Internal beeper for acoustic alarm for set sensor thresholds
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- HTTP 1.1, e-mail, DHCP, SNMPv1 (Traps), SNMPv2c (Traps), Syslog
- Access control via IP Access Control List
- Access control via optional HTTP password
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption, typ. 5 W
- Developed and manufactured in Germany

Electrical Connections

- Power supply IEC C20, max. 16 A
- 8 / 4 Power Ports IEC C13, max. 10 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- 2 mini-DIN connectors for optional sensors or serial interface

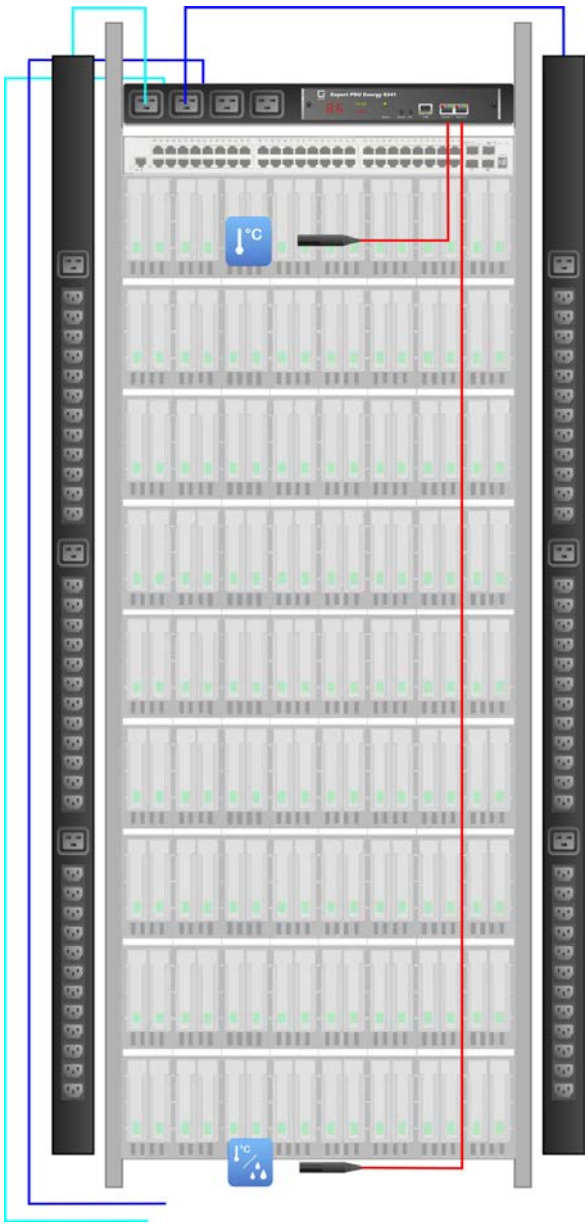
Technical Details

- Dimensions: 19 inch, 1 rack unit
- LxHxD: 43.9 x 4.4 x 12.0 cm (without brackets)
- Weight: ca. 2.2 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Order Code	Product	Feature	Operating Voltage	Max. Current
8210	Expert Power Control 8210	8 IEC C13 connectors on rear panel	230 V	16 A
8211	Expert Power Control 8211	8 IEC C13 connectors on front panel	230 V	16 A
8212	Expert Power Control 8212	4 IEC C13 connectors on rear panel	230 V	16 A
8213	Expert Power Control 8213	4 IEC C13 connectors on front panel	230 V	16 A
7001	Temperature Sensor 7001	Cable sensor with splash-proof sensor head (IP64), Mini-DIN connector, -20°C to +80°C, cable ca. 2.3 m		
7002	Temp., Humidity Sensor 7002	Cable sensor, Mini-DIN connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m		
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length 3 m		
7990	RS232 Adapter Cable 7990	Connector cable for RS232 to mini-DIN 6, length ca. 2.3 m		

Expert PDU Energy – the Inline Meter and Metered Power Distribution Units

The Inline Meter and Metered Power Distribution Units from GUDE offer a broad range of features making them perfectly suitable for optimizing ITC infrastructures especially in terms of energy efficiency. All devices are tailored for mounting in server and switching cabinets. Sturdy housings, luminous LED lights, good readable displays and ease of operation ensure high value of benefit on-site as well as remotely.



Expert PDU Energy 8341: Upstream current measurement for two power strips in 19-inch rack with sensor monitoring

Besides single- or multi-phase power distribution with up to 16 load outlets, metering of energy and consumption are integrated. All products attest to a low internal power consumption. Integrated sensor interfaces allow environment monitoring regarding temperature, relative humidity and air pressure.

Devices of **Expert PDU Energy** family dispose of a wide range of metering functionality: total current metering enabling load estimation and planning of appliance upgrades in cabinets. Precision electronics facilitate metering of energy and other electrical dimensions (e.g. reactive/apparent/active power, power factor and phase angle).

Moreover the devices are equipped with residual current monitoring: They enable real-time surveillance of potentially occurring leakage currents and hence contribute to an effective protection of your ITC performance. **Expert PDU Energy 8341** dispose of hotswap drawers allowing the replacement of the processor/power supply unit at uninterrupted power supply of connected loads.

Network connectivity and user-defined alarms for sensor and power consumption thresholds allow flexible and advanced remote monitoring and controlling.

All **Expert PDU Energy** devices are designed for configuration and operation via network. No additional software is required, just a plain web browser is sufficient. Web server, SNMP, Syslog and e-mail functionality are integrated. All power distribution units support IPv6, SSL and SNMPv3 as well as Telnet, Radius and Modbus TCP.

All products and their software including firmware are developed, manufactured and tested in Germany under high quality standards. Free software updates and technical support as well as continuous product development are integral part of GUDE products.

Inline Meter & Metered IP Power Distributions

Article Number	8311-1 8311-2	8311-13 8311-14	8311-15 8311-16	8341-1 8341-2
Article Number			new	
19 inch, 1 RU	●			●
Rack vertical, 0 RU		●	●	
Power Connectors				
Front connectors	●	●	●	●
Rear connectors				●
Current				
Total current (A)	16	16	16	4 x 16
Current per port/phase (A)	16	16	16	16
Power Inputs				
Safety socket type F, CEE 7/4, max. 16 A	1	1	1	
IEC C20, max. 16 A				4
IEC C14 (separate supply for electronic)				1
Power Outlets				
Safety socket type F, CEE 7/3, max. 16 A	7	4		
IEC C13, max. 10 A		16	16	
IEC C19, max. 16 A			4	4
Technical Features				
Total current metering per phase	●	●	●	●
Metering of divers elec. dimensions *	●	●	●	●
Energy meters (kWh)	2	2	2	4 x 2
Residual current monitor	- / ●	- / ●	- / ●	- / ●
Hotswap drawer				●
Sensor interfaces	1	1	1	2
Digits display (number of digits)	1 (LCD)	1 (LCD)	1 (LCD)	1 (3)
Internal alarm beeper				●
Integrated webserver	●	●	●	●
E-mail	●	●	●	●
DHCP, SNMPv1/v2c, Syslog	●	●	●	●
IPv6, SSL, SNMPv3, Telnet, Radius, Modbus TCP	●	●	●	●
Manageable by Gude Control app	●	●	●	

* Voltage (V), phase angle (°), power factor, frequency (Hz), active power (W), apparent power (VA), reactive power (VAR)

Expert PDU Energy 8311 Series

7 / 4 | 4 | 16

7- or 20-fold metered PDU with integrated current metering and monitoring

Expert PDU Energy 8311-1
7 outlets safety socket CEE 7/3

Expert PDU Energy 8311-13
4 outlets safety socket CEE 7/3 and 16 IEC C13

Features

- 7 or 20 load outlets on front panel
- Metering of energy, current, power factor, phase angle, frequency, voltage and active / apparent / reactive power
- 2 energy meters per phase, one meter continuously, the other resettable
- Residual current metering type A (**8311-2, -14, -16**)
- Illuminated two-line LCD display
- Interface for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Easy configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP protocol supported
- Configuration and control via Telnet
- Low internal power consumption
- Developed and manufactured in Germany

Electrical Connections

- Power supply safety socket CEE 7/4, max. 16 A)
- Load outlets: 7 x safety socket CEE 7/3 (**8311-1, -2**), 4 x safety socket CEE 7/3 and 16 x IEC C13 (**8311-13, -14**), 4 x IEC C19 and 16 x IEC C13 (**8311-15, -16**)
- Ethernet connector RJ45 (10/100 Mbit/s)
- Sensor interface (RJ45) for optional sensor

Technical Details

- 19 inch, 1 rack unit
- LxHxD (without brackets): 43.4 x 4.4 x 4.4 cm (**8311-1, -2**) 87 x 4,4 x 4,4 cm (**8311-13, -14, -15, -16**)
- Weight: 1.5 kg (**8311-1, -2**) / 2.5 kg (**8311-13, -14, -15, -16**)
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

Order Code	Product	Feature	Operating Voltage	Max. Current
8311-1	Expert PDU Energy 8311-1	Energy metering, 7 x safety socket	230 V	16 A
8311-2	Expert PDU Energy 8311-2	Energy metering, 7 x safety socket, residual current metering type A	230 V	16 A
8311-13	Expert PDU Energy 8311-13	Energy metering, 4 x safety socket, 16 x IEC C13	230 V	16 A
8311-14	Expert PDU Energy 8311-14	Energy metering, 4 x safety socket, 16 x IEC C13, residual current metering type A	230 V	16 A
8311-15 new	Expert PDU Energy 8311-15	Energy metering, 4 x IEC C19, 16 x IEC C13	230 V	16 A
8311-16 new	Expert PDU Energy 8311-16	Energy metering, 4 x IEC C19, 16 x IEC C13, residual current metering type A	230 V	16 A
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64),RJ45 connector,-20°C to +80°C,cable ca. 2.3 m		
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m		
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m		
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m		
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2				
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C		
7202	Temp./Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity		

Expert PDU Energy 8341 Series

4 2

Inline Meter with hotswap drawer and integrated current metering and monitoring for 4 single-phase mains

- ☑ IPv6
- ☑ HTTPS
- ☑ SSL
- ☑ SNMPv3
- ☑ Telnet
- ☑ Modbus TCP

Expert PDU Energy 8341: Integrated hotswap drawer allows replacing the processor unit without interruption

Features

- Hotswap drawer allows replacement of processor/power supply unit at uninterrupted power supply of connected loads
- Metering of 4 seperate phases
- For each metering of energy, current, power factor, phase angle, frequency, voltage and active/apparent/reactive power
- Metering of residual current type A per phase (**8341-2**)
- 2 energy meters per phase, one meter continuously, the other resettable
- Clearly visible LED display for total current per phase and phase status
- 2 interfaces for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, E-Mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP protocol supported
- Configuration and control via Telnet
- Adjustable brackets allow different mounting depths
- Low internal power consumption
- Developed and manufactured in Germany

Electrical Connections

- Power supply 4 x IEC C20, max. 16 A
- Load outlet 4 x IEC C19, max. 16 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- Power supply IEC C14 for seperate supply of electronic
- 2 sensor interfaces (RJ45) for optional sensors

Technical Details

- 19 inch, 1 rack unit
- Dimensions of device: LxHxD: 43.4 x 4.4 x 21.4 cm (without brackets)
- Dimensions of drawer: LxHxD: 21.7 x 3.3 x 10.9 cm (without handles)
- Weight including drawer: ca. 2.9 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Highlights at a glance

- Enhanced failure safety due to hotswap drawer
- Energy metering per phase
- Residual current monitor (**8341-2**)
- IPv6, SSL, SNMPv3, Telnet

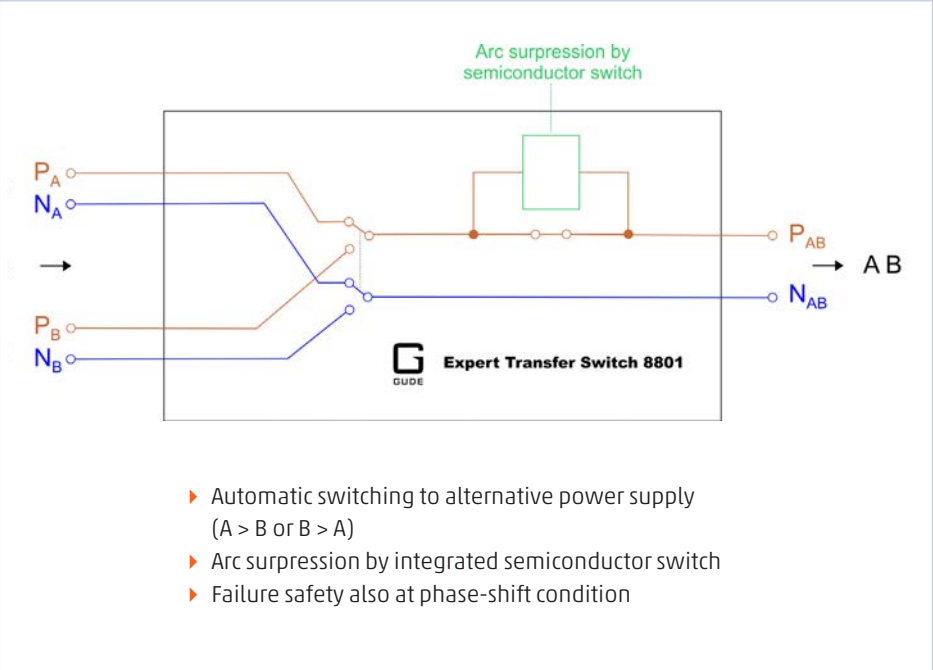
Power connectors on rear panel of **Expert PDU Energy 8341**

Order Code	Product	Feature	Max. Current
8341-1	Expert PDU Energy 8341-1	4 phases IEC C20, 4 load outlets IEC C19, hotswap drawer	4 x 16 A
8341-2	Expert PDU Energy 8341-2	4 phases IEC C20, 4 load outlets IEC C19, hotswap drawer, residual current monitoring type A	4 x 16 A
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64),RJ45 connector,-20°C to +80°C,cable ca. 2.3 m	
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m	
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m	
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa,cable ca. 2.3 m	
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2			
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C	
7202	Temp./Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity	

Expert Bypass Switch and Expert Transfer Switch - the Safety Switches

With **Expert Bypass Switch** and **Expert Transfer Switch** GUDE offers manual and automatic transfer switches that enable customers to benefit from increased availability and redundancy in existing rack installations. The devices are tailored for mounting in server and switching cabinets. Sturdy housings, luminous LED lights, good readable displays and ease of operation ensure high value of benefit on-site.

Expert Transfer Switch 8801-1 is a Automatic Transfer Switch (ATS) for switching to an alternate power supply, optionally to mains supply or UPS (uninterruptible power supply). Little transfer times, also in phase-shift condition, allow a reliable prevention of downtimes for connected IT equipment. Automatic shift-in back to the recurred power supply is seamlessly possible. It has a height of one rack unit and is powered by two IEC C20 power supplies. **Expert Transfer Switch 8801-1** enables feeding of up to seven connected consumers (6 x IEC C13, 1 x IEC C19). In addition, it allows manual switching by button push, SNMP, Telnet or web interface for purposes of power supply maintenance. In particular, data center operators will use this 19-inch device as a cost-effective way to transform single-power IT devices into dual-powered applications. In addition to minimizing downtime, it can be used to optimize energy efficiency, hardware and monitoring costs.



Functionality of **Expert Transfer Switch 8801** shown in a block diagram

Moreover **Expert Transfer Switch 8801-1** assists the user in monitoring the network installation: In addition to two integrated energy meters that detect a large number of electrical variables, the power switch disposes of residual current measurement as well as two connectors for optionally available temperature, humidity and air pressure sensors. Easy-to-read LED displays provide information about the switching status of the device and the measured energy and sensor values. In addition to the energy metering, real-time monitoring as well as timely overload and threshold alarms help to avoid system-critical conditions and downtimes. Configuration and control is possible via common security protocols: IPv6, SSL, SNMPv3, Telnet, Radius and Modbus TCP are supported.

Expert Bypass Switch 8701 is a mechanical transfer switch for replacement or maintenance of uninterruptible power supplies (UPS). By deploying the bypass switch, the connected loads do not have to be detached from mains. The appliance has a height of one rack unit and makes it possible to power up to seven consumers (6 x IEC C13, 1 x IEC C19). The manual selector switch on the front side allows the user to disconnect the UPS connected to the bypass switch from mains for maintenance purposes. A clearly visible LED display reveals switching status of **Expert Bypass Switch 8701** by showing ‚USV' (=UPS) or ‚Netz' (=net).

Transfer Switches: Power Distribution with changeover function

Article Number	8701-1	8701-2	8801-1
Mounting Type			
19 inch, 1 RU	●	●	●
Power Connectors			
Rear connectors	●	●	●
Current			
Total current (A)	10	16	16
Current per port / per phase (A)			16
Power Inputs			
IEC C14 (max. 10 A) from mains/from UPS	1 / 1		
IEC C20 (max. 16 A) from mains/from UPS		1 / 1	2 / -
Power Outlets			
IEC C13 (max. 10 A)	6	6	6
IEC C13 (max. 10 A) to USV	1		
IEC C19 (max. 16 A)	1	1	1
IEC C19 (max. 16 A) to USV		1	
Technical Features			
Manual switching to alternate power supply	●	●	●
Automatic switching to alternate power supply			●
Total current metering per phase			●
Metering of divers electrical dimensions *			●
Energy meters (kWh)			2 x 2
Residual current monitor			●
LED display indicating switching status	●	●	●
Digits display (number of digits)			1 (4)
Fuse (10 A) for IEC C19 load outlet	●		
Sensor interfaces			2
Internal alarm beeper			●
Integrated webserver			●
E-mail			●
DHCP, SNMP v1/v2c, Syslog			●
IPv6, SSL, SNMPv3, Telnet, Radius, Modbus TCP			●

* Current (A), voltage (V), phase angle (°), power factor, frequency (Hz), active power (W), apparent power (VA), reactive power (VAR)

Expert Bypass Switch 8701 Series

6

Mechanical bypass switch for uninterrupted replacement of UPS systems

Features

- Uninterrupted replacement or maintenance of UPS systems through bypass switch without shutdown of connected loads
- Available in two versions for 10 A or 16 A current (**8701-1** or **8701-2**)
- 6 load outlets IEC C13, 10 A
- 1 load outlet IEC C19, 16 A
- 10 A fuse for protection of IEC C19 outlet (**8701-1**)
- Easily operable selection switch
- Switch position „Netz“: Connected loads are operated directly with mains voltage
- Switch position „USV“: Connected loads are operated with UPS system voltage
- Clearly visible LED display for switch status
- Low internal power consumption
- Developed and manufactured in Germany

Electrical Connections

Expert Bypass Switch 8701-1 / 8701-2

- Power supply „von Netz“ IEC C14, 10 A / IEC C20, 16 A
- Output „zur USV“ IEC C13, 10 A / IEC C19, 16 A
- Input „von USV“ IEC C14, 10 A / IEC C20, 16 A
- 6 load outlets IEC C13, 10 A
- Load outlet IEC C19, 16 A

Technical Details

- 19 inch, 1 rack unit
- Dimensions of device: LxHxD: 43.4 x 4.4 x 16.5 cm (without brackets)
- Weight: ca. 2.2 kg
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Power connectors on rear panel of **Expert Bypass Switch 8701-2**

Power connectors on rear panel of **Expert Bypass Switch 8701-2**

Order code	Product	Feature	Maximum Current
8701-1	Expert Bypass Switch 8701-1	Bypass switch, 6 load outlets IEC C13, load outlet IEC C19, 10 A fuse for IEC C19 load outlet	10 A
8701-2	Expert Bypass Switch 8701-2	Bypass switch, 6 load outlets IEC C13, 1 load outlet IEC C19	16 A
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m	
0807	Cable Holder 0807	Cable holder with 13 fixation bridges for cable attachement on rear side of device	

Expert Transfer Switch 8801-1

6 2

Automatic transfer switch (ATS) for redundant power supply of network components

- IPv6
- HTTPS
- SSL
- SNMPv3
- Telnet
- Modbus TCP

Features

- Automatic transfer to alternate power supply if blackout of primary power supply occurs (A or B)
- Switches also if phase is shifted
- If primary power supply returns (A or B), automatic shift-in possible
- LED display featuring status of power supply including phase-shift
- Metering of energy, current, power factor, phase angle, frequency, voltage and active/apparent/reactive power
- 2 energy meters, one meter continuously, the other resettable
- Metering of residual current type A (RCM)
- Clearly visible LED display for total current, IP address, sensor data and error reports
- 2 interfaces for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Messages by e-mail, Syslog and SNMP traps depending on threshold values of energy and sensor metering
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP protocol supported
- Configuration and control over Telnet
- Access control via IP Access Control List
- Low power consumption
- Developed and manufactured in Germany

Electrical Connections

- 2 power supplies IEC C20, max. 16 A
- 6 load outlets IEC C13, max. 10 A
- Load outlet IEC C19, max. 16 A
- Ethernet connector RJ45 (10/100 Mbit/s)
- Galvanic isolated signal output (Sub-D 9-pin)
- 2 sensor interfaces (RJ45) for optional sensors

Technical Details

- 19 inch, 1 rack unit
- Dimensions of device: LxHxD: 43.9 x 4.4 x 19.5 cm (without brackets)
- Weight: ca. 2.5 kg
- Operating temperature: 0 - 50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Highlights at a glance

- Typical transfer time: 7-10 ms
- Residual current metering (RCM)
- Energy metering

Connectors on rear panel

Order Code	Product	Feature	Max. Current
8801-1	Expert Transfer Switch 8801-1	ATS, 6 outlets IEC C13, 1 outlet IEC C19, RCM	16 A
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64),RJ45 connector,-20°C to +80°C,cable ca. 2.3 m	
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m	
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable length ca. 2.3 m	
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m	
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2			
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C	
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity	
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length: 3 m	
0807	Cable Holder 0807	Cable holder with 13 fixation bridges for cable attachement on rear side of device	

Expert Net Control / Expert Sensor Box – the Monitoring Systems

Remot I/O systems of **Expert Net Control** Family as well as the LAN sensors of **Expert Sensor Box** Series offer a broad range of features making them perfectly suitable for surveillance and managment of network performance. These compact appliances attest to a low internal power consumption. Besides switching of the integrated potential-free relays, it is possible to retrieve sensor values, switching states and metered energy consumption.

New **Expert Sensor Box 7213** and **7214 Series** allow easy upgrading of the network installation to monitor and protect the infrastructure. In addition to the permanently integrated sensors (temperature, humidity and air pressure), the monitoring systems have two additional sensor connections for monitoring purposes. The hotplug-capable additional sensors, the compact design as well as the flexible mounting of the **Expert Sensor Box** make it easy to put it into operation. Thanks to the browser application, compatible network monitoring software (for example PRTG, Nagios or PowerIQ) and the complimentary **Gude Control** mobile device app, local and remote access is easy to implement. Redundant and thus fail-safe power supply is guaranteed depending on the model via Power-over-Ethernet or two network connections. Modern security standards are also supported by the LAN sensors (SNMPv3, SSL and IPv6 capability). Compared to the **Expert Sensor Box 7213 Series**, the **Expert Sensor Box 7214 Series** also has a switchable relay output and a signal input for I/O monitoring (Input/Output).

Example applications of Expert Sensor Box 7213/7214

- Early activation of cooling systems in case of overheating in server racks
- Optimizing heating systems
- Alerting during flooding and fire events
- Detecting failures of air conditioners or cooling systems

Monitoring technical rooms

Expert Net Control 2111 disposes of an extensive feature set allowing for remote controlling and monitoring: 4 potential-free relays, 12 passive signal inputs and 4 sensor ports are integrated in a sturdy steel housing. A variety of sensor types can be attached for surveillance purposes. 3 luminous digits and LED displays provide a quick monitoring and device status overview. The solid Remote Monitoring System (RMS) can be powered redundantly by two seperate 12 V inputs or optionally by Ethernet port in order to decrease cabling and energy expenses (PoE). In addition, **Expert Net Control 2191** has a GSM module integrated, allowing remote control from locations without Internet access or in case of network failure.

While **Expert Net Control 2302-1** supports current protocol standards such as IPv6, SSL, SNMPv3, Telnet, Radius and Modbus TCP, **Expert Net Control 2312-1** is equipped with consumption and energy metering. Total current metering enabling load estimation and planning of appliance upgrades in ITC infrastructures; precision electronics facilitating metering of energy and other electrical dimensions, e.g. reactive/apparent/active power, power factor and phase angle.

The RMS devices of **Expert Net Control** and **Expert Sensor Box** Family are characterized by sturdy housings and significant manufacture. All products and their software including firmware are developed, manufactured and tested in Germany under high quality standards. Free software updates and technical support as well as continuous product development are integral part of the appliances.

LAN Sensors and Remote I/O

Article Number	2111-1 2111-2	2191-1 2191-2	2302-1	2312 -1	7213-1 7213-2 7213-3	7213-11 7213-12 7213-13	7214-1 7214-2 7214-3	7214-11 7214-12 7214-13
Case Type			new		new	new	new	new
Powdered steel case	●	●			●		●	
Plastic			●	●				
DIN-rail mounting	●	●	●	●	●		●	
Technical Features								
Power-over-Ethernet	- / ●	- / ●				●		●
Power supply unit (12 V)	●	●			●	●	●	●
Connection 12 V DC by PTR multiconnectors (redundant)	2	2			1	1	2	2
Connection 230 V AC or 24 V DC by PTR multi-connectors			●					
Connection 12-24 V AC/DC by PTR multiconnectors				●				
Technische Feature								
Potential-free relay ouputs	4	4	4	3			1	1
Signal inputs	12	12	8				1	1
Metering of ... total current per output				●				
current (A)				●				
divers electrical dimensions *				●				
Energy meters (kWh)				3 x 2				
Sensor interfaces	4	4	1	1	2	2	2	2
Integrated temperature sensor					●/-/-	●/-/-	●/-/-	●/-/-
Integrated temperature/humidity sensor					-/●/-	-/●/-	-/●/-	-/●/-
Integrated temp./humidity/air pressure sensor					-/-/●	-/-/●	-/-/●	-/-/●
Digits display (number of digits)	1 (4)	1 (4)		1 (3)				
GSM module		●						
RS232 connector	●	●	●	●				
RS485 connector	●	●						
Integrated webserver	●	●	●	●	●	●	●	●
Watchdogs	4	4	4	3			1	1
E-mail	●	●	●	●	●	●	●	●
DHCP, SNMPv1/v2c, Syslog	●	●	●	●	●	●	●	●
IPv6, SSL, SNMPv3, Telnet, Radius, Modbus TCP	●	●	●		●	●	●	●
Manageable by Gude Control app	●	●	●	●	●	●	●	●

* Voltage (V), phase angle (°), power factor, frequency (Hz), active power (W), apparent power (VA), reactive power (VAR)

Expert Net Control 2111 / 2191 Series

Monitoring system with 4 relay outputs and 12 passive signal inputs and GSM connectivity (2191)

Features

- ☑ IPv6
- ☑ SNMPv3
- ☑ HTTPS
- ☑ Telnet
- ☑ SSL
- ☑ Modbus TCP

- 4 switchable, potential-free relay outputs with change-over connectors (NO and NC), high switching voltage 36 V, 3 A
- Relays dispose of high contact reliability also at very small loads
- 12 passive inputs for monitoring NO and NC devices, e.g. door contacts, smoke detectors, leakage sensors etc.
- Each signal input includes a 12 V connector for supply of NO/NC devices
- 4-channel watchdog for monitoring connected consumers (ICMP/TCP)
- 4 interfaces for optional sensors for environmental monitoring (temperature, humidity and air pressure)
- Messages by e-mail, Syslog and SNMP traps depending on threshold values of sensor metering and signal inputs
- A clearly visible LED display for total current, IP address, sensor data and error reports
- LED display for status of power supply, inputs/outputs and GSM (**2191**)
- 2 inputs for redundant power supply (12 V DC) via 2 external **Power Supply Units 7903** (one included in delivery)
- For **2111-2** and **2191-2** additional power supply by Power-over-Ethernet (PoE) possible
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP protocol supported
- Configuration and control over Telnet
- Access control via IP Access Control List
- Android and iOS app Gude Control allows access from anywhere
- Low power consumption
- Sturdy metal housing of significant manufacture
- Developed and manufactured in Germany

Terminal connectors of **Expert Net Control 2111 / 2191 Series**

Electrical Connections

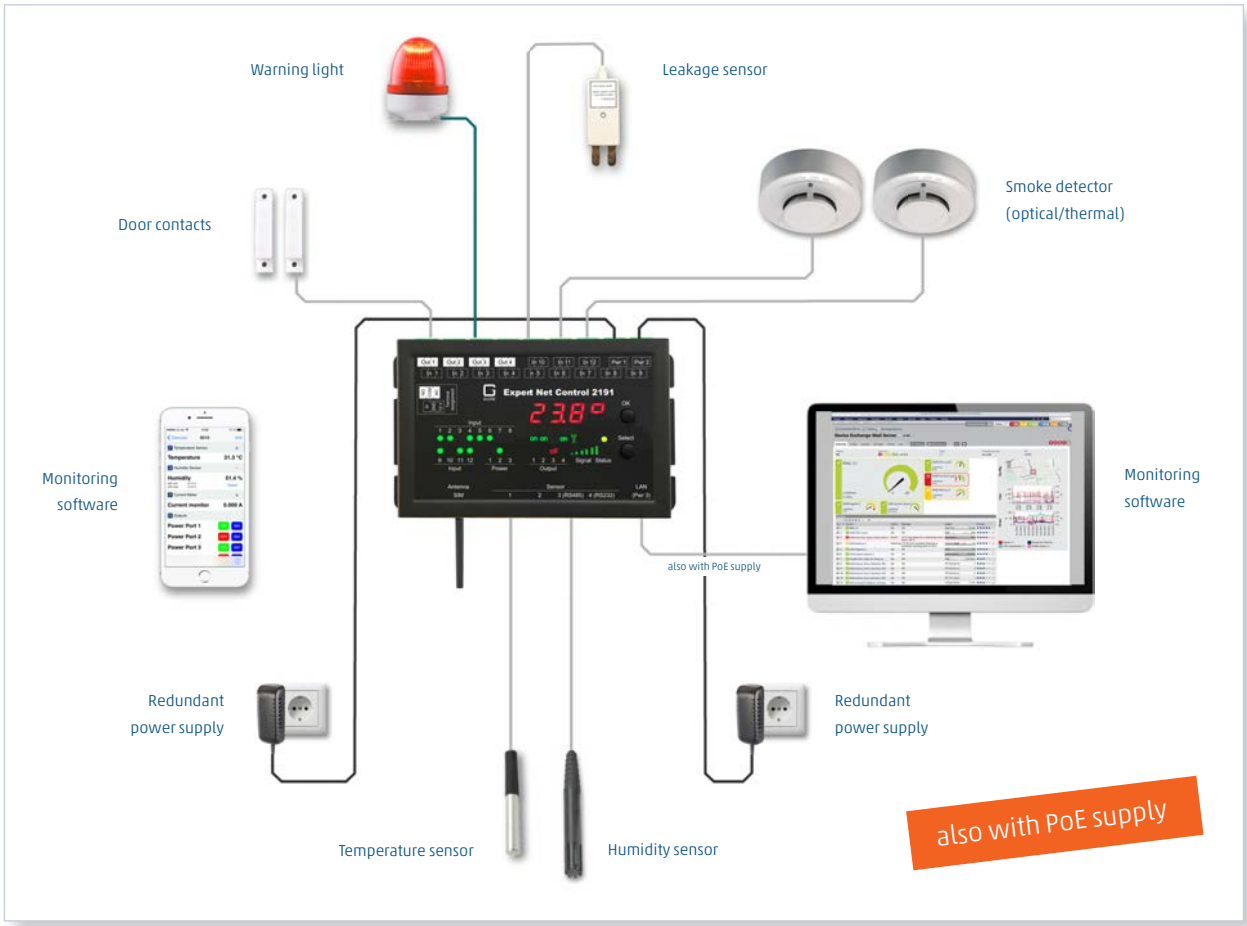
- 2 sockets for external power supply units (PTR multiconnector, 2-fold)
- 4 switchable outputs (PTR multiconnector, 3-fold)
- 12 passive signal inputs (PTR multiconnector, 3-fold)
- 4 sensor connectors RJ45 for optional sensors (temperature, humidity and air pressure) or serial interface (RS232, RS485)
- Ethernet connector RJ45 (10/100 Mbit/s), for **2111-2** and **2191-2** as additional power supply by Power-over-Ethernet (PoE)
- Connector for GSM antenna, **GSM Rod Antenna 0560** included in delivery (**2191**)
- Slot for SIM card (**2191**)

Technical Details

- Powdered steel case, LxHxD: 139 x 91 x 35 mm
- Comfortable DIN rail mounting and freely selectable device orientation by optional **Mounting Clip 0860**
- Weight: ca. 440 g
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

GSM Features of **Expert Power Control 2191 Series**

- Quadband GSM module
- Control via voicecall, SMS and Datacall
- GSM user access for all ports configurable
- FreeCall: Predefined action upon toll-free incoming call from a specific number
- GSM antenna included in delivery
- For pre-paid and post-paid SIM cards (SIM card not included)



Application scenario of **Expert Net Control 2191 Series**

Order Code	Product	Feature	Power supply
2111-1	Expert Net Control 2111-1	4 switchable outputs, 12 passive signal inputs, 4 sensor ports	Ext. power supply unit 12 V
2111-2	Expert Net Control 2111-2	4 switchable outputs, 12 passive signal inputs, 4 sensor ports	Ext. power supply unit 12 V or Power-over-Ethernet
2191-1	Expert Net Control 2191-1	4 switchable outputs, 12 passive signal inputs, 4 sensor ports, GSM module, GSM antenna enclosed in delivery	Ext. power supply unit 12 V
2191-2	Expert Net Control 2191-2	4 switchable outputs, 12 passive signal inputs, 4 sensor ports, GSM module, GSM antenna enclosed in delivery	Ext. power supply unit 12 V or Power-over-Ethernet
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C	
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m	
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m	
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m	
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2			
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C	
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity	
7311	Optical Smoke Detector 7311	Overhead installation (d=100 mm), screw terminal NO or NC	
7312	Thermal Smoke Detector 7312	Overhead installation (d=100 mm), screw terminal NO or NC	
7313	Leakage Point Sensor 7313	13 mm two-tined, detects flooding, 4-core wire (2.5 m)	
7903	Power Supply Unit 7903	12 V DC, 1 A, 2-fold PTR multiconnector, included in delivery	
7940	Comb. Signaling Device 7940	Optical/acoustic alarm device, 100 dB sound pressure, 3-core connection cable (0.4 m)	
0860	DIN Rail Mounting Clip 0860	Plastic clip for easy installation on DIN rails	
0520	GSM Rod Antenna 0520	Magnetic mount rod antenna with cable and SMA plug, cable 5.5 m	
0560	GSM Rod Antenna 0560	Rod antenna with SMA plug (included in delivery)	

Expert Net Control 2302-1

new

4 8

Remote I/O System with 4 switchable relay outputs and 8 passive signal inputs for DIN-rail mounting

Features

- 4 switchable, potential-free relay ouputs, switching voltage 230 V AC 16 A / 24 V DC, 10 A
- All relay outputs individually switchable directly on the device, via HTTPS or command line tool
- Status and Power-up delay (0...9999 seconds) adjustable individually for each output after power blackout
- Simultaneous power-up of multiple outputs prevented by latency time of 1 second
- Switching of relay outputs dependent on sensor threshold or inputs possible
- Programmable turn-on/turn-off sequence
- 4-channel watchdog to monitor connected consumers (ICMP/TCP)
- Bicoloured LEDs on front panel display status information of inputs/outputs
- 8 passive signal inputs for monitoring NO and NC devices, e.g. door contacts, smoke detectors etc.
- Interface for optional sensor for environmental monitoring (temperature, humidity and air pressure)
- Messages by e-mail, Syslog and SNMP traps depending on threshold values of sensor metering and signal input as well
- Power supply also via external **DIN rail unit 7902** possible (not included in delivery)
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- IPv6-ready
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP support
- Configuration and control via Telnet
- IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption, typ. 2 W
- Developed and manufactured in Germany

Electrical Connections

- Terminal clamps for power supply with 230 V AC or 24 V DC
- 4 switchable outputs (terminal clamp)
- 8 passive signal inputs (terminal clamp)
- Ethernet connector RJ45 (10/100 Mbit/s)
- Sensor connector RJ45 for optional sensors or serial interface (RS232)

Technical Details

- LxHxD: 10.5 x 7 x 9 cm
- Weight: ca. 300 g
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

Order code	Product	Feature	Power supply
2302-1	Expert Net Control 2302-1	4 switchable outputs, 8 passive signal inputs, 1 sensor port	230 V AC or 24 V DC
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C, cable ca. 2.3 m	
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m	
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m	
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m	
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2			
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C	
7202	Temp./Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity	
7311	Optical Smoke Detector 7311	Overhead installation (d=100 mm), screw terminal NO or NC	
7312	Thermal Smoke Detector 7312	Overhead installation (d=100 mm), screw terminal NO or NC	
7313	Leakage Point Sensor 7313	13 mm two-tined, detects flooding, 4-core wire (2.5 m)	
7902	DIN Rail Power Supply Unit 7902	Power supply unit for DIN rail, 230 VAC / 12 VDC 1250 mA (not included in delivery)	
7940	Comb. Signaling Device 7940	Optical/acoustic alarm device, 100 dB sound pressure, 3-core connection cable (0.4 m)	

Expert Net Control 2312-1

3

Remote I/O System with 3 switchable relay outputs and energy metering for DIN-rail mounting

Features

- 3 switchable, potential-free relay ouputs, switching voltage 230 V AC 16 A
- Metering of energy, current, power factor, phase angle, frequency, voltage and active / apparent / reactive power per output
- 2 energy meters per output, one meter continuously, the other resettable
- A clearly visible LED display for total current, IP address, sensor data and error reports
- All relay outputs individually switchable directly on the device, via HTTP, command line tool and RS232 serial interface
- Status and Power-up delay (0...9999 seconds) adjustable individually for each output after power blackout
- Simultaneous power-up of multiple Power Ports prevented by latency time of 1 second
- Programmable turn-on/turn-off sequence
- 3-channel watchdog to monitor connected consumers (ICMP/TCP)
- Bicoloured LEDs on front panel display status information of relay outputs
- Interface for optional sensor for environmental monitoring (temperature and humidity)
- Power supply via external **DIN rail unit 7902** (not included in delivery)
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update via Ethernet during operation
- HTTP 1.1, e-mail, DHCP, SNMPv1 (Traps), SNMPv2c (Traps), Syslog
- Access control via IP Access Control List
- Access control via optional HTTP password
- Android and iOS app *Gude Control* allows access from anywhere
- Low power consumption, max. 3 W
- Developed and manufactured in Germany

Electrical Connections

- Terminal clamps for power supply with 12-24 V AC/DC voltage
- 3 switchable outputs (terminal clamps for phases)
- Ethernet connector RJ45 (10/100 Mbit/s)
- Mini-DIN connector for optional sensor or serial interface (RS232)

Technical Details

- LxHxD: 10.5 x 7 x 9 cm
- Weight: ca. 280 g
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Highlights at a glance

- 3 switchable relay outputs with LED display
- 3-phase metering of electrical dimensions

Order code	Product	Feature	Power supply
2312-1	Expert Net Control 2312-1	3 switchable outputs, 1 sensor or RS232 interface, 3-phase metering of electrical dimensions	External power supply unit 12-24 V AC/DC
7001	Temperature Sensor 7001	Cable sensor with splash-proof sensor head (IP64), Mini-DIN connector, -20°C to +80°C, cable ca. 2.3 m	
7002	Temp., Humidity Sensor 7002	Cable sensor, Mini-DIN connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m	
7902	DIN Rail Power Supply Unit 7902	Power supply unit for DIN rail, 230 VAC / 12 VDC 1250 mA (not included in delivery)	
7990	RS232 Adapter Cable 7990	Connector cable for RS232 to mini-DIN 6, length ca. 2.3 m	

Expert Sensor Box 7213 / 7214 Series

new

Stand-alone LAN Sensor for remote monitoring of temperature, relative humidity and air pressure

Features

- Integrated temperature sensor (**7213-1**, **-11** and **7214-1**, **-11**)
- Integrated temperature, humidity sensor (**7213-2**, **-12** and **7214-2**, **-12**)
- Integrated temperature, humidity sensor, air pressure (**7213-3**, **-13** and **7214-3**, **-13**)
- For **7213-11**, **-12**, **-13** and **7214-11**, **-12** , **-13**: Additionally to power supply over external supply unit also Power-over-Ethernet (PoE) possible
- Switchable, potential-free relay output with change-over connectors (NO and NC), high switching voltage 36 V, 3 A (*)
- Relay disposes of high contact reliability also at very small loads (*)
- Passive signal input for monitoring NO and NC devices, e.g. smoke or leakage sensors and door contacts (*)
- Switching of relay output dependent on sensor threshold and input possible (*)
- Signal input includes a 12 V connector for supply of NO/NC devices (*)
- 1-channel watchdog for monitoring connected consumers (ICMP/TCP) (*)
- 2 inputs for redundant power supply (12 V DC) by external power supply units (*)
- Messages by e-mail, Syslog and SNMP traps depending on threshold values of sensor metering and for **7214 Series** for signal input as well
- Comfortable configuration by web browser, Windows or Linux tool
- Firmware update over Ethernet during operations (without reboot of device)
- HTTP/HTTPS, e-mail (SSL, STARTTLS), DHCP, Syslog

☑ IPv6 ☑ SNMPv3
☑ HTTPS ☑ Telnet
☑ SSL ☑ Modbus TCP

- IPv6-ready
- SNMPv1, v2c, v3 (Get/Traps)
- TLS 1.0, 1.1, 1.2
- Radius and Modbus TCP support
- Configuration and control via Telnet
- IP Access Control List
- Android and iOS app *Gude Control* allows access from anywhere
- Low internal power consumption
- Sturdy metal housing of significant manufacture
- Developed and manufactured in Germany

Expert Sensor Box 7214 Series

Order code	Product	Features:	T	TH	THP	R	S	Se	Connector 12 V power supply	Power-over-Ethernet
7213-1	Expert Sensor Box 7213-1		1					2	1	
7213-2	Expert Sensor Box 7213-2			1				2	1	
7213-3	Expert Sensor Box 7213-3				1			2	1	
7213-11	Expert Sensor Box 7213-11		1					2	1	x
7213-12	Expert Sensor Box 7213-12			1				2	1	x
7213-13	Expert Sensor Box 7213-13				1			2	1	x
7214-1	Expert Sensor Box 7214-1		1			1	1	2	2	
7214-2	Expert Sensor Box 7214-2			1		1	1	2	2	
7214-3	Expert Sensor Box 7214-3				1	1	1	2	2	
7214-11	Expert Sensor Box 7214-11		1			1	1	2	2	x
7214-12	Expert Sensor Box 7214-12			1		1	1	2	2	x
7214-13	Expert Sensor Box 7214-13				1	1	1	2	2	x

T = Integrated temperature sensor
TH = Integrated temperature, humidity sensor
THP = Integrated temperature, humidity, air pressure sensor
R = Switchable relay output
S = Passive signal input
Se = Sensor interface

Electrical Connections

- Socket for external power supply unit (PTR multiconnector, 2-fold); one unit included in delivery
- Socket for additional external power supply unit (PTR multiconnector, 2-fold) (*)
- Switchable output (PTR multiconnector, 3-fold) (*)
- Passive signal input (PTR multiconnector, 3-fold) (*)
- 2 sensor connectors RJ45 for optional sensors for temperature, humidity and air pressure
- Ethernet connector RJ45 (10/100 Mbit/s) (for **7213-11**, **-12**, **-13** and **7214-11**, **-12**, **-13** also for supply by Power-over-Ethernet)

(*) Features of **Expert Sensor Box 7214 Series**

Technical Details

- Powdered steel case, LxHxD: 100 x 90 x 34 mm (including brackets, without sensor pipe)
- Plastic sensor pipe, length: 94 mm, diameter: 15 mm
- Weight: ca. 300 g
- Comfortable DIN rail mounting and freely selectable device orientation by optional **Mounting Clip 0860**
- Operating temperature device: 0-50 °C
- Operating temperature sensor pipe: -20 - 80 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)
- Measuring range air pressure: 300-1000 hPa
- Measuring accuracy:

Temperature	typical	Humidity	typical
-20 - 80 °C	±0,3 °C	0 -100 %	±3 %
5 - 60 °C	±0,2 °C	10 - 80 %	±2 %

with redundant power supply and PoE available

Expert Sensor Box 7213 Series

Topside of **Expert Sensor Box 7214 Series**:
PTR multiconnectors for relays output, signal input and redundant power supply

Order Code	Product	Feature
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C, cable ca. 2.3 m
7104 *	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable ca. 2.3 m
7105 *	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable ca. 2.3 m
7106 *	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable ca. 2.3 m
* Sensors also available with calibrated temperature range: 7104-2, 7105-2, 7106-2		
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity
7311 **	Optical Smoke Detector 7311	Overhead installation (d=100 mm), screw terminal NO or NC
7312 **	Thermal Smoke Detector 7312	Overhead installation (d=100 mm), screw terminal NO or NC
7313 **	Leakage Point Sensor 7313	13 mm two-tined, detects flooding, 4-core wire (2.5 m)
7940 **	Combined Signaling Device 7940	Optical/acoustic alarm device, 100 dB sound pressure, 3-core connection cable (0.4 m)
** compatible only to Expert Sensor Box 7214 Series		
7903	Power Supply Unit 7903	12 V DC, 1 A, 2-fold PTR multiconnector, included in delivery
0860	DIN Rail Mounting Clip 0860	Plastic clip for easy installation on DIN rails

Expert Mouse Clock / EMC Professional – the Time Receivers

Appliances of **Expert Mouse Clock** Series enable synchronisation of single clients and entire networks with the atomic radio time based on DCF77 signal from Frankfurt/Main and devices of **Expert GPS Clock** Series with time based on satellite-controlled GPS signal.

The radio time systems can be easily connected to the PC. After successful installation, devices synchronize the internal PC time permanently. Windows and Linux software are available.

Time Servers of **EMC Professional** Series deliver the current radio time of the DCF77 sender to the entire network by their integrated NTP server. In case of reception interferences, the internal temperature compensated real time clock keeps running and assures the precise time in the entire network. A browser-based control panel enables configuration by any PC in the network, independent of operating system (Windows or Linux.)

Time systems and servers of GUDE are characterized by sturdy housings and significant manufacture. Customers benefit from ease of operation and for **EMC Professional** Series from good readable displays as well. All products and their software (including firmware) are developed, manufactured and tested in Germany under high quality standards. Free software updates and technical support as well as continuous product development are integral part of GUDE products.

Diffusion of DCF77 signals and the ideal orientation for best signal receipton of **Expert Mouse Clock 0100**

DCF77 time receiver systems provide access to one of the most exact working atomic clocks in the world. It is run by the Federal Physical-Technical Institute (Physikalisch-Technische Bundesanstalt, PTB) in Braunschweig/Germany and deviates less than 1 second in 300,000 years. Time and date are broadcasted by the DCF77 longwave sender in Frankfurt/Mainflingen in Germany on a frequency of 77.5 kHz. The broadcasted time and date information is CET/CEST. The range of DCF77 is about 2000 km. The signal is received by the device antenna and transmitted via the applicable interface to the PC or network. The transmission is effected once a second or once a minute depending on configuration settings.

Expert Mouse Clock 0100 / 0107

DCF77 radio time receiver with serial or USB interface for PCs

Expert Mouse Clock 0100

Expert Mouse Clock 0107

Features

- Reception of time and date based on DCF77 signal within a 2000 km radius around Frankfurt/Main
- Ideal reception through integrated antenna
- Compatible to Windows and Linux systems
- Power supply by serial or USB interface
- Developed and manufactured in Germany

Technical Details

- Plastic case, LxHxD: 78 x 22 x 37 mm
- Weight: ca. 115 g
- Cable length: ca. 2 m
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Electrical Connections

- **0100**: Connector cable for serial interface RS232 (Sub-D, 9-pin)
- **0107**: Connector cable for USB interface

Order Code	Product	Feature	Power supply
0100	Expert Mouse Clock 0100	Serial interface	by PC connection
0107	Expert Mouse Clock 0107	USB interface	by PC connection

EMC Professional 3001 / 3011

DCF77 time server with integrated radio time receiver for industrial environments

Features

- Reception of time and date based on DCF77 signal within a 2000 km radius around Frankfurt/Main
- Stand-alone NTP time server
- Battery buffered and temperature compensated real time clock
- Signal monitor
- LC display for time, date and error value
- Ideal reception through active ferrite rod **DCF77 Antenna 0220** (included in delivery)
- Switchable potential-free relay output (24 V, 0.5 A)
- Interface for optional temperature sensor (**3011**)
- Independent of OS (Ethernet, RS232)
- Firmware update via Ethernet during operation
- HTTP 1.1, DHCP, SNMPv1 (Traps), SNMPv2c (Traps), Syslog
- Access control via IP Access Control List
- Access control via optional HTTP password
- Low power consumption, typ. 3 W / 5 W (**3001** / **3011**)
- Developed and manufactured in Germany

EMC Professional 3001
Time server in solid body for table installation

EMC Professional 3011
Time server for 19 inch racks

Electrical Connections

- DC socket for external **Power Supply Unit 7905**, included in delivery (**3001**)
- Power supply IEC C14 (max. 10 A) (**3011**)
- Ethernet connector RJ45 (10/100 Mbit/s)
- Switchable output (PTR multiconnector, 2-fold)
- RJ11 interface for optional temperature sensor (**3011**)
- Serial interface RS232 (Sub-D, 9-pin)
- BNC connector for active **DCF77 Antenna 0220**

Technical Details

- LxHxD: 17 x 6.5 x 10.5 cm (**3001**)
- Weight: ca. 0.7 kg (**3001**)
- Dimensions: 19 inch, 1 rack unit (**3011**)
- LxHxD: 43.9 x 4.4 x 15.0 cm (without brackets) (**3011**)
- Weight: ca. 2.2 kg (**3011**)
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Order code	Product	Feature	Operating voltage
3001	EMC Professional 3001	DCF77 time server in desktop body	External power supply unit (12 V)
3011	EMC Professional 3011	DCF77 time server in 19 inch body, switchable output, sensor interface	230 V
0220	DCF77 Antenna 0220	Active ferrite rod antenna with BNC connector, cable length 5 m (extendable up to 100 m), included in delivery	
0134	BNC Extension Cable for active antenna	Cable length 10, 20, 30, 50, 100 m	
7000	Temperature Sensor 7000	Cable sensor, RJ11 plug, -20°C to +80°C	
7905	Power Supply Unit 7905	Power supply with plug for 2.1 mm pin, 100-240 V AC, 12 V DC, 2.5 A, cable length: 1.8 + 2.4 m, included in delivery for 3001	

Expert GPS Clock 0508 / 0509

GPS radio time receiver with serial or USB interface for PCs

Features

- Receives time and date worldwide via satellite
- 20 channel GPS receiver
- Transmission of GPS position and time information
- Connection through serial interface (**0508**)
- Connection through USB interface (**0509**)
- Works with GPS suitable navigation software (NMEA 0183, version 2.20 compatible)
- Power supply through USB interface
- Suitable for Windows and Linux systems
- Developed and manufactured in Germany

Expert GPS Clock 0509

Expert GPS Clock 0508

Electrical Connections

- 1 connector cable for serial interface RS232 (Sub-D, 9-pin) for data transmission (**0508**)
- 1 connector cable for USB interface for power supply (**0508**)
- 1 connector cable for USB interface for data transmission and power supply (**0509**)

Technical Details

- Plastic case, LxHxD: 78 x 22 x 37 mm
- Weight: ca. 130 g
- Cable length USB: ca. 2 m
- Cable length RS232: ca. 2.40 m (**0508**)
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Order code	Product	Feature	Power supply
0508	Expert GPS Clock 0508	GPS receiver, 2 connector cables for USB and RS232	through USB interface
0509	Expert GPS Clock 0509	GPS receiver, 1 connector cable for USB	through USB interface

Expert Opto Bridge - the Interface Isolators

Isolators of GUDE's **Expert Opto Bridge** Series protect serial and USB interfaces by galvanic isolation of signals and voltages from potential damages. By their electrical isolated data transmission, they assure maximum protection against disruptions, failures and damages on the interfaces and hence allow a trouble-free operation of connected devices. **Expert Opto Bridge 0404** dispose of an integrated LED, indicating the operational status of the device.

Expert Opto Bridge Series provides protection against multiple disturbances:

- Overvoltage by distant thunder strikes
- Overvoltage by static discharge
- Mass displacements by different branch circuits
- Interference voltages on ground wires by engines or similar consumers

Expert Opto Bridge 0400 / 0404

Interface isolators for RS232 and USB

Expert Opto Bridge 0400: Optical bridge for RS232

Expert Opto Bridge 0404: USB-/RS232 converter with galvanic interface isolation

Expert Opto Bridge 0400

Features

- Overvoltage protection by galvanic isolation
- Isolation voltage max. 2500 V
- Serial input voltage
  -15 V to -6 V for logical 1
  +15 V to +6 V for logical 0
- Data transfer rate up to 115.200 Baud
- Easy installation without drivers
- In addition to the data lines (receiver and transmitter lines), two handshake lines are supported in both directions
- Developed and manufactured in Germany

Electrical Connections

- Sub-D socket (25-pin) for RS232 (V.24)
- Sub-D plug (25-pin) for RS232 (V.24)
  (power supply of serial ports by attached devices)

Technical Details

- Plastic case, LxHxD: 62 x 17 x 54 mm
- Weight: ca. 45 g
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Expert Opto Bridge 0404

Features

- Overvoltage protection by galvanic isolation
- Isolation voltage max. 2500 V
- Serial input voltage
  -15 V to -6 V for logical 1
  +15 V to +6 V for logical 0
- Data transfer rate up to 115.200 Baud
- Easy installation through virtual COM port
- In addition to the data lines (receiver and transmitter lines), two handshake lines are supported in both directions (RTS/CTS)
- For Windows and Linux systems (from Kernel 2.6)
- LED status monitor for RxD, TxD
- Developed and manufactured in Germany

Electrical Connections

- Serial interface RS232 Sub-D plug (9-pin) for device connection (power supply through USB interface)
- Cable with USB-A plug for PC connection
- USB 2.0 full speed (12 Mbit/s)

Technical Details

- Plastic case, LxHxD: 77 x 24 x 42 mm
- Weight: ca. 55 g
- Cable length: ca. 40 cm
- Operating temperature: 0-50 °C
- Storage temperature: -20 - 70 °C
- Relative humidity: 0 - 95 % (non-condensing environment)

Order Code	Product	Feature	Operating Voltage
0400	Expert Opto Bridge 0400	Interface isolator serial/serial	Power supply of serial ports by attached devices
0404	Expert Opto Bridge 0404	Interface isolator USB/serial	through USB interface

Accessories: Sensors

Temperature Sensor 7000
(RJ11 plug)

Temperature Sensor 7001
(mini-DIN plug, IP64)

Temp., Humidity Sensor 7002
(mini-DIN plug)

Temperature Sensor 7101
(RJ45 plug, IP64)

Order Code	Product	Feature	Compatible to
7000	Temperature Sensor 7000	Cable sensor, RJ11 connector, -20°C to +80°C, cable length ca. 2.3 m	Expert Power Control 8090 EMC Professional 3011
7001	Temperature Sensor 7001	Cable sensor with splash-proof sensor head (IP64), Mini-DIN connector, -20°C to +80°C, cable length ca. 2.3 m	Expert Power Control 1202, 1292, Expert Net Control 2312
7002	Temp., Humidity Sensor 7002	Cable sensor, Mini-DIN connector, -20°C to +80°C, 0-90% humidity, cable length ca. 2.3 m	as for 7001
7101	Temperature Sensor 7101	Cable sensor with splash-proof sensor head (IP64), RJ45 connector, -20°C to +80°C, cable length ca. 2.3 m	Expert Power Control 1104, 1105, 8021, 8031, 8041, 8221, 8226, 8314, 8316 Expert PDU Energy 8311, 8341 Expert Transfer Switch 8801 Expert Net Control 2111, 2191, 2302 Expert Sensor Box 7213, 7214

Accessories: Sensors

Temp., Humidity, Air pressure Sensor
7104, 7105, 7106 (RJ45 plug)

Calibrated Temp., Humidity, Air pressure Sensor
7104-2, 7105-2, 7106-2 (RJ45 plug)

Temperature Sensor 7201 (RJ45 socket)
Temp., Humidity Sensor 7202

Smoke Detector 7311, 7312

Leakage Point Sensor 7313

Order Code	Product	Feature	Compatible to
7104	Temperature Sensor 7104	Cable sensor, RJ45 connector, -20°C to +80°C, cable length ca. 2.3 m	Expert Power Control 1104, 1105, 8021, 8031, 8041, 8221, 8226, 8314, 8316 Expert PDU Energy 8311, 8341 Expert Transfer Switch 8801 Expert Net Control 2111, 2191, 2302 Expert Sensor Box 7213, 7214
7105	Temp., Humidity Sensor 7105	Cable sensor, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable length ca. 2.3 m	as for 7104
7106	Temp., Humidity, Air pressure Sensor 7106	Cable sensor, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable length ca. 2.3 m	as for 7104
7104-2 new	Temperature Sensor 7104-2	Cable sensor with calibrated temperature range, RJ45 connector, -20°C to +80°C, cable length ca. 2.3 m	as for 7104
7105-2 new	Temp., Humidity Sensor 7105-2	Cable sensor with calibrated temperature range, RJ45 connector, -20°C to +80°C, 0-90% humidity, cable length ca. 2.3 m	as for 7104
7106-2 new	Temp., Humidity, Air pressure Sensor 7106-2	Cable sensor with calibrated temperature range, RJ45 connector, 20°C to +80°C, 0-90% humidity, 300-1100 hPa, cable length ca. 2.3 m	as for 7104
7201	Temperature Sensor 7201	Box case with RJ45 socket, -20°C to +80°C	as for 7104
7202	Temp., Humidity Sensor 7202	Box case with RJ45 socket, -20°C to +80°C, 0-90% humidity	as for 7104
7311	Optical Smoke Detector 7311	Overhead installation (d=100 mm), screw terminal NO or NC	Expert Net Control 2111, 2191, 2302 Expert Sensor Box 7214
7312	Thermal Smoke Detector 7312	Overhead installation (d=100 mm), screw terminal NO or NC	as for 7311
7313	Leakage Point Sensor 7313	13 mm two-tined, detects flooding, operation by 12 V, 4-core cable (2.5 m)	as for 7311

Accessories: Miscellaneous

BNC Extension Cable 0134

DCF77 Antenna 0220

GSM Rod Antenna 0520, 0560

IEC Extension Cable 0804

Cable Holder 0807

DIN Rail Mounting Clip 0860

DIN Rail Power Supply Unit 7902

Power Supply Unit 7903

Power Supply Unit 7905

Combined Signaling Device 7940

RS232 Adapter Cable 7990

GUDE Care Warranty Extension 9020

Order Code	Product	Feature	Compatible to
0134	BNC Extension Cable 0134	Cable length 10, 20, 30, 50 or 100 m	DCF77-Antenne 0220
0220	DCF77 Antenna 0220	Active ferrite rod antenna with BNC plug, cable length 5 m (extendable up to 150 m)	EMC Professional 3001, 3011
0520	GSM Rod Antenna 0520	Magnetic mount rod antenna with cable and SMA plug, cable length 5.5 m	Expert Power Control 1292, 8090 Expert Net Control 2191
0560	GSM Rod Antenna 0560	Rod antenna with SMA plug	as for 0520
0804	IEC Extension Cable 0804	Extension cable for IEC C13 to C14, length 3 m	all devices with IEC C13 outlets
0807	Cable Holder 0807	Cable holder with 13 fixation bridges for cable attachement on rear side of device	Expert Power Control 8012, 8021, 8031, 8041, 8090, 8221, 8226 Expert Bypass Switch 8701 Expert Transfer Switch 8801
0860	DIN Rail Mounting Clip 0860	Plastic clip for DIN rail installations, 2 fixation screws	Expert Net Control 2111, 2191 Expert Sensor Box 7213, 7214
7902	DIN Rail Power Supply Unit 7902	Power supply unit for DIN rail, 100-240 VAC / 12 VDC 1250 mA	Expert Net Control 2302, 2312
7903	Power Supply Unit 7903	Power supply unit with 2-fold PTR multiconnector, 12 V DC, 1 A, cable 1.5 m	Expert Net Control 2111, 2191 Expert Sensor Box 7213, 7214
7905	Power Supply Unit 7905	Power supply with plug for 2.1 mm pin, 100-240 V AC, 12 V DC, 2.5 A, cable length: 1.8 + 2.4 m	EMC Professional 3001
7940 new	Combined Signaling Device 7940	Optical and acoustic alarm device, 100 dB sound pressure, 3-core connection cable, cable 0.4 m	Expert Net Control 2111, 2191, 2302 Expert Sensor Box 7214
7990	RS232 Adapter Cable 7990	Connector cable for RS232 to mini-DIN 6, cable ca. 2.3 m	Expert Net Control 2312
9020 new	GUDE Care +1, +2, +3	Warranty extension for 1, 2 or 3 years	for all products available

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