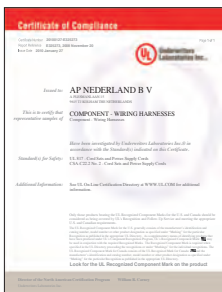




- Custom solutions alongside standard range
- Innovation, reliability and service are OEC's core values
- OEC is part of Dool Industries, a family owned company established in 1975
- Operating from Groningen, The Netherlands

OEC power solutions is developing manufactory according to several international quality standards.



ISO 9001 Quality management

The ISO 9001 provides guidance and tools for companies and organizations who want to ensure that their products and services meet customer's requirements, and that quality is consistently improved.

ISO 14001 Environmental management

The ISO 14001 provides practical tools to identify and control our environmental impact and constantly improve our environmental performance.

UL 508A Industrial control panels

UL 508A is the standard for the construction of Industrial Control Panels. It gives guidelines to panel builders on various issues like proper component selection, wiring methods and calculation of short circuit current ratings.

UL 817 Wiring harnesses

UL817 is the standard for the construction of wiring harnesses.

CSA

The CSA standard registered marks shows that a product has been independently tested and certified to meet recognized standards for safety or performance.

MET

MET is the service leader for product safety approvals. MET is the preferred one-stop-shop for EMC, environmental, and safety testing and certification.

Intertek

Intertek helps companies increase the value of their products, processes and assets and meet end users' expectations for quality and safety.



The Digital Ampere provides a detailed overview of the exact use of power in your environment: ICT, industry, office or healthcare. Providers of ICT data centers have increasingly expressed a desire to charge customers for their specific use of power, implying a widespread need for the appropriate tools to make such desires feasible. This need can easily be fulfilled by the OEC digital Ampere (Ampère measurement meter), developed by OEC Power Solutions. This Ampere provides actual and accurate measurement of power consumption with a capacity ranging from 0 to 16A or from 0 to 32A.

The OEC Digital Ampere is available in a Basic and an Advanced version.

- Alarm consists of a red backlight flashing once a second
- Touch screen controlled
- Backlight automatically switches off after 10 minutes
- Ampere is both horizontally or vertically readable

Product features

	Basic Ampere	Advanced Ampere
Amperage measurement (RMS)	✓	✓
Temperature measurement	✓	✓
Alarm indication	✓	✓
LCD display with backlight	✓	✓
Settings		
Alarm at minimum amperage		✓
Alarm at maximum amperage		✓
Alarm at maximum temperature (by a setting of 80°C the temperature alarm is off)		✓
Adjustable intensity of backlight		✓



Technical Specifications

Size

- Overall size: 50x50 mm
- Display size: 37x27 mm

Display

- Display colours blue (standard), red (alarm)
- Adjustable backlight on use
- 3 digit display with digital point

Measurement

- Ampère
- Peak usage
- True RMS
- Temperature

Power usage

- Standby < 0.5 watt

Alarm

- Range max. 16A or 32A
- Alarm minimum / maximum current in Amps
- Alarm maximum temperature
- I max. 16A or 32A
- Temperature ambient max. 40 °C

Accuracy

- Class-1



In different situations an analogue Ampere is preferred over a digital Ampere. Therefore this "Old-timer" remains in our product range, as a suitable alternative depending on the circumstances.

The analogue Ampere provides actual load and measurement of power consumption and is available in a 16A and 32A version. The module can be mounted into the PDU both horizontally and vertically.

- Actual load measurement
- Available in a 16A and 32A
- Horizontally and vertically mounted



Technical Specifications

- Size: 50mm x 50mm
- Accuracy: class-2
- Display mounting: 90° en 180°
- Norms: CEI 51, CEI 414
- Housing: Ip 20
- Temperature range: -25 °C to +55 °C





The OEC GATEWAY with SNMP V3 can connect all OEC PDU's in your datacenter / server room by RS485 or by the AP bus circuit / daisy chain system. The user-friendly embedded IP Web interface ensures full control over the system. OEC can also provide OEC Manager software for controlling multiple PDU installations, and by providing a MIB file OEC data can be read and used by third party management packages as well.

RS 485 (standard) / AP Bus protocol

RS485 is the most versatile communication standard in the standard series defined by the EIA. The AP bus is a very simple yet elegant serial (2 wire) bus using the 'Manchester protocol'. Wiring of both RS485 and AP bus is done with normal CAT5/6 cables.

SNMP V3

SNMP V3 provides important security features;

- Confidentiality - Encryption of packets to prevent snooping by an unauthorized source.
- Integrity - Message integrity to ensure that a packet has not been tampered with in transit including an optional packet replay protection mechanism.
- Authentication to verify that the message is from a valid source.

USB

This USB connection can be used for updating the Gateway software and logging activities.



Technical Specifications

- 1x Ethernet, 1x USB and 10x RJ45 connectors
- Voltage: 230V + 10% - 15% (50-60Hz)
- Humidity: 10-80%
- Temperature: 0-40 °C
- Housing Ip20
- Flammability rating: Vo
- RS 485 protocol (recommendation: cable length max 500m, max 256 PDU's)
- AP Bus protocol
- Dimensions BLACKBOX: 59mm x 59mm x 440mm (19" rack PDU)
- Data storage in indelible memory
- Green! Low energy consumption <0,75Watt/hr



The OEC communication module gives IP access to the connected PDU. The user-friendly embedded IP Web interface ensures full control over the PDU locally or remotely. Single PDUs or groups of PDUs can be managed by an OEC Gateway. The COM-Module can also be managed by OEC Manager software or by third party packages.

RS485 (standard) / AP Bus protocol

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SNMP V3

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- Confidentiality - Encryption of packets to prevent snooping by an unauthorized source.
- Integrity - Message integrity to ensure that a packet has not been tampered with in transit including an optional packet replay protection mechanism.
- Authentication to verify that the message is from a valid source.

USB

This USB connection can be used for different external sensors and can also be used for updating the COM-module software and logging activities.



Technical Specifications



- 1x Ethernet, 1x USB and 2x RJ45 connectors
 - Voltage: 230V + 10% - 15% (50-60Hz)
 - Humidity: 10-80%
 - Temperature: 0-40 °C
 - Housing Ip20
 - Flammability rating: V0
 - RS 485 / AP bus protocol
 - Dimensions COM-module: 50mm x 100mm
 - Data storage in indelible memory
 - Green! Low energy consumption <0,75Watt/hr
- Norms and standards
- EN61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use
 - EN 61000-6-2: Immunity for industrial environments



OEC power strips, with their modular construction and customizable design are an efficient, long-lasting power distribution solution for ICT use. OEC PDUs are available with a wide range of features, such as power measurement; switching per port; digital ammeters as well and remote reporting and management via various protocols. OEC also offers a kWh metering module which displays the consumption of a PDU or socket over time both on the PDU display and remotely. OEC PDUs are designed and built accordance with the most stringent quality standards.

OEC continuously develops new and innovative modules to ensure that OEC PDUs remain in step with or ahead of existing systems technology. A unique feature of OEC powerstrips is that they can be upgraded at any time to incorporate OEC's latest product developments, ensuring that an OEC PDU installation will always stay up-to date.

OEC offers various software options for managing powerstrips. Ranging from a basic package for reading and controlling the PDUs with a database, to a comprehensive package for monitoring and controlling the entire data centre in which OEC PDUs can be seamlessly integrated.

- Flexible, robust, long-lasting: allows for retrofit upgrading to new technology
- OEC software offers options for monitoring and building up history
- Wide choice of dimensions: 19 inch PDUs up to any desired size as well as 0 HE units
- Analogue to digital, local to remote measurement



CM-Module

The CM Module provides IP access (embedded web interface) and full control of your PDU and thus over your installed equipment. The encrypted data transfer with SNMPv3 ensures the highest security and safety level available today. On bus system level RS485 or AP bus can be used. We provide accompanying OEC Manager software or, when preferred, third party packages can be used. The module is designed for low energy consumption.



1 phase kWh meter

The 1 phase kWh meter can be used with or without display. The AP bus system makes it easy to communicate with the PDU and in combination with the CM module IP access is used for managing the PDUs. The modular design provides for great flexibility in the configuration of your custom made PDU.



Switch unit with 8-way IEC switch

Switch unit with LED indicators for 8 different outlets, max. 16A. Four outlets/sockets can be installed on the left and right of the switch unit (the photo only shows a part of the unit). LEDs indicate whether the outlets are on or off.



3 phase kWh meter

The 3 phase kWh meter with touch screen allows for full control over your PDU and has very low energy consumption. It has the possibility of A total overview of kWh / Amps / V / Hz / Power factor / Reactive power is possible. The meter can be used as standalone or in a daisy chain. The modular design provides for great flexibility in the configuration of your custom made PDU.



Circuit breaker

The fuses prevent damage to equipment and facilities in critical circuits. The fuses are defined by the maximum current and characteristic (A-B-C-D).



Digital ammeter

The digital ammeter can be operated with a touch screen. After setting the required lower and upper limits and optionally a maximum temperature, the digital ammeter will trigger an alarm when the load passes these values.



Switching per outlet

The OEC Switching module with LED indicators for 3 different outlets, max 16A. It uses Bi-stable relays so that no energy is used after switching. The modular design provides for great flexibility in the configuration of your custom made PDU



Power socket according to national specifications

We offer the possibility of installing various power sockets in the OEC PDUs, complying with national specifications of countries both inside and outside Europe.



GST 18/3 connections

The OEC PDU can be extended with GST 18/3 chassis components and plugs. Installed in the front, back, top or bottom: the choice is yours. Chassis components and plugs are available in male and female versions..





OEC 3 phase kWh-meters with touch screen

The 3-phase kWh-meters offers accurate power information with Class 1 accuracy and a total overview of kWh, A, V, Hz, and VARh. The user-friendly touch screen provides clear and concise immediate information. Used in combination with the accessible OEC COM-module every PDU can be managed and controlled both locally or remotely.

Advantages

- 1,2 and 3 phase separate measuring
- Total overview of kWh/ A/V/Hz/kVAh and power factor
- True RMS
- Optional Interactive touch screen
- Accessible By OEC Manager or third party packages
- Class 1 accuracy

Norms and standards

- EN61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use
- EN 61000-6-2: Immunity for industrial environments



Technical Specifications

- Measuring method: With Coil
- Nominal Voltage: 230 V AC / 400 V AC
- Max Ampere: 32A
- Display option: LCD touchscreen with colour Backlight
- Internal data bus: RS-485
- Dimensions one kWh module: 100mm x 50 mm*
- Data storage in indelible memory
- kWh Accuracy: Class 1
- Energy Consumption 3ph kWh meter: 1,5 Watt
- Flammability rating: V0

* 3phase kWh module is combined with a CM module: 100mm x 50 m. There can be three 3phase kWh meters hooked to one CM module.



OEC kWh 1 phase meter

The digital 1 phase kWh meter is specifically designed for use in datacenters and large ICT environments. The digital kWh meter includes a bus system and a connection for an external temperature sensor. We provide 16A and 32A versions and the meter is also available without display.

Features

- kWh accuracy class 3
- The Amp reader has 3 digits to show reading at 1 decimal accuracy when the power factor is 0,9.
- Equiped with an on board temperature sensor.
- Elegant serial (2 wire) AP bus protocol

Norms and standards

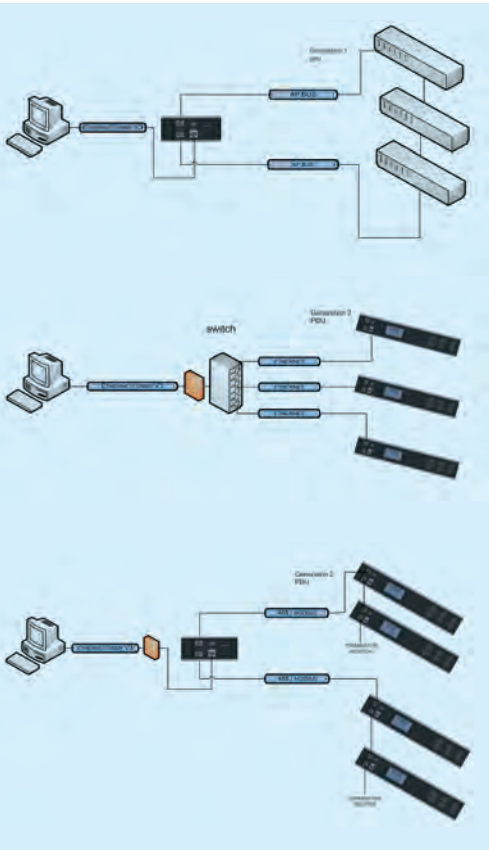
- EN60950 LVD data processing devices norm
- EN6100-6-1 / EN61000-6-3 EMC generic standard/immunity for light industrial environment emission norm
- EN61000-3-2 harmonics
- EN61000-3-3 flicker



Technical Specifications

- Measuring method: With shunt
- Nominal Voltage: 230 V AC
- Max Ampere: 16A or 32A
- Display: led digits
- Data bus: AP bus
- Dimensions: 150mm x 50 mm
- Data storage in indelible memory
- kWh Accuracy: Class 3
- Energy Consumption: 5 Watt
- For indication use only
- Temperature measurement: 10°C to 80°C
- Flammability rating: V0





OEC Products can be managed and read by OEC Manager Software which includes a Web-based (IP) interface and supports discrete multiple users with their own individual authorization levels.

OEC designs and manufactures many types of intelligent power solutions for IT environments. OEC's modular approach makes it possible to provide customized products which exactly match user's requirements, thereby increasing the flexibility and efficiency of power usage in a datacenter or other server area. OEC Manager is specially developed to provide datacenter managers, facility managers and operational staff with exactly the right tools and functions to fulfill their role within the IT organization. The software measures kWh and Amps (at circuit, branch, PDU or socket level) as well as temperature. Switching per outlet is also possible. OEC Manager runs on a local server and communicates by making use of SNMP V 3, thus ensuring the highest data transfer safety level available today. For SNMP users OEC Manager also provides a MIB file for third party software use. Data can be exported to .xls(x) or .csv file, ensuring that users can store, report and analyse results in whatever way they choose. OEC Manager is designed in co-operation with professional users to be as lean and effective as possible and its resulting stability and safety makes it a package that you can rely on!

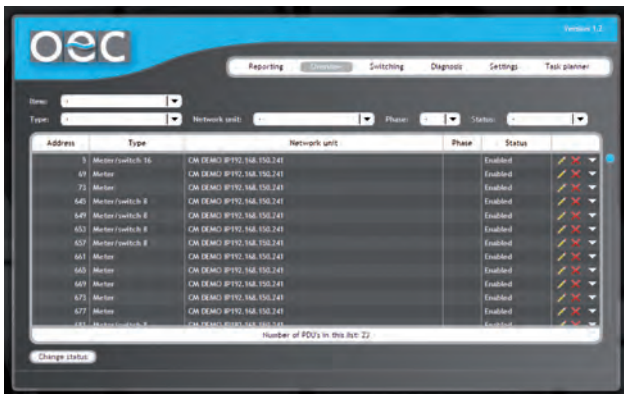


Advantages

- All basic functionalities within reach
- User friendly, developed by and for experts
- Reporting power data easy
- Several authorization levels
- Discovery scan function

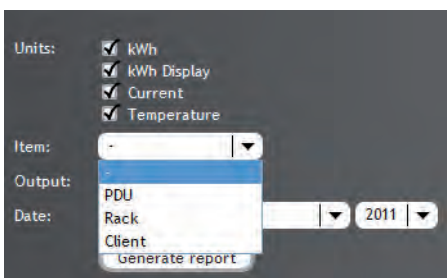
Graphical User Interface (GUI)

The main window shows features such as reporting, overview, switching, diagnosis, option setting and task planning, as shown on the picture below.



Measuring Function

The measuring function gives real-time and logged measurements for energy optimization and circuit protection. Current and temperature information provides data upon which datacenter staff can make well founded decisions regarding power balancing in their IT environments. Eventual use of this data can reduce the cost of server ownership. The data can be used for billing purposes. The user-friendly and interactive graphical interface shows all data historically or in real-time both easily and quickly.



Switching Function PDU

Each individual outlet (socket) can be switched on or off remotely, allowing cold reboots for maintenance purposes, or timed live (up) sessions for power effectiveness and economy. For safety reasons this function can be secured

so that it is only accessible to chosen users with the correct authentication. Individual socket status is shown graphically by virtual LEDs - green (power on) or red (power off).



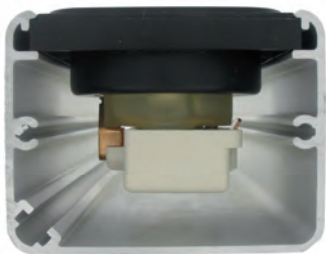
Reporting Function

OEC Manager provides reports on various levels such as per PDU, per client or per rack. Reports can be generated instantly, historically, or within a specified time and date range.

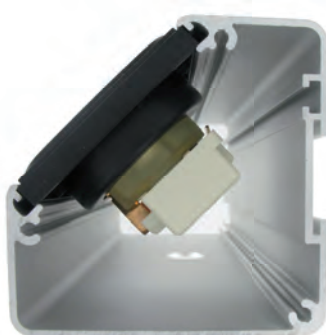
Rack	Client	Address	kWh	Date/time	kWh Display	Current (A)	Date/time	Temperature (°C)	Date/time
Rack 1.001	User 001	5	0	11-08-2011 15:13	0	0.0	11-08-2011 15:13	23	11-08-2011 15:13
Rack 1.002	User 002	69	51	11-08-2011 15:13	51	0.0	11-08-2011 15:13	22	11-08-2011 15:13
Rack 1.003	User 003	73	235	11-08-2011 15:13	235	1.8	11-08-2011 15:13	21	11-08-2011 15:13
Rack 1.004	User 004	645	71	11-08-2011 15:13	71	0.0	11-08-2011 15:13	20	11-08-2011 15:13
Rack 1.005	User 005	649	0	11-08-2011 15:13	0	0.0	11-08-2011 15:13	0	11-08-2011 15:13
Rack 1.006	User 006	684	2	11-08-2011 15:13	2	0.0	11-08-2011 15:13	20	11-08-2011 15:13
Rack 1.007	User 007	657	38	11-08-2011 15:13	38	0.0	11-08-2011 15:13	22	11-08-2011 15:13
Rack 1.008	User 008	661	0	11-08-2011 15:13	0	0.0	11-08-2011 15:13	24	11-08-2011 15:13
Rack 1.009	User 009	665	0	11-08-2011 15:13	0	0.0	11-08-2011 15:13	22	11-08-2011 15:13
Rack 1.010	User 010	669	0	11-08-2011 15:13	0	0.2	11-08-2011 15:13	22	11-08-2011 15:13
Rack 2.001	User 011	678	0	11-08-2011 15:13	0	0.0	11-08-2011 15:13	22	11-08-2011 15:13
Rack 2.002	User 012	677	0	11-08-2011 15:13	0	0.0	11-08-2011 15:13	22	11-08-2011 15:13
Rack 2.003	User 013	681	12	11-08-2011 15:13	12	0.0	11-08-2011 15:13	24	11-08-2011 15:13
Rack 2.004	User 014	685	2	11-08-2011 15:13	2	0.0	11-08-2011 15:13	25	11-08-2011 15:13
Rack 2.005	User 015	689	2	11-08-2011 15:13	2	0.0	11-08-2011 15:13	21	11-08-2011 15:13
Rack 2.006	User 016	688	45	11-08-2011 15:13	45	0.0	11-08-2011 15:13	22	11-08-2011 15:13
Rack 2.007	User 017	697	6	11-08-2011 15:13	6	0.0	11-08-2011 15:13	21	11-08-2011 15:13
Rack 2.008	User 018	701	3	11-08-2011 15:13	3	0.0	11-08-2011 15:13	22	11-08-2011 15:13

Discovery Scan Function

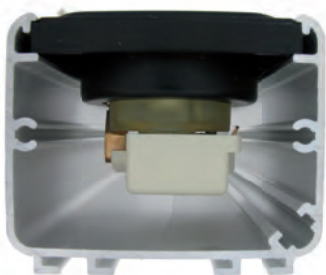
OEC Manager finds new devices immediately once they are connected onto the OEC data-bus and adds them to its database automatically. After setting attributes (such as owner, rack location and circuit phase) the devices can be set from discovered to active and will immediately run and perform its scheduled tasks, (such as read kWh, read current, read display and read temperature). If during a task any devices is not responding correctly OEC Manager will add a no response alert in the diagnosis window.



C760



C770



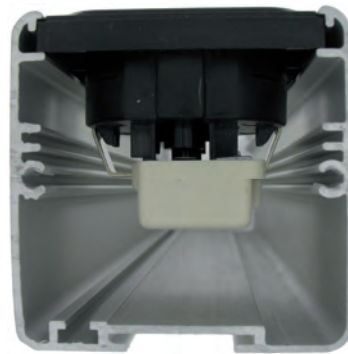
C780

OEC profiles are made of fully anodized aluminum. Two colours are available, black and blank aluminum. The use of aluminium in OEC PDUs serves as a strong and flexible basis for a large variety of applications. There are various models which fulfill specific applications in CT, Industry, Healthcare and Office environments.

Configurations

The maximum length of OEC PDUs is 5m, however the length can be adjusted accordingly to house the required sockets. The adjustable length prevents the waste of space.

- single profile
- double profile vertical
- double profile horizontal



C790



Technical Specifications

- **C760** (Metric: 59mm x 45mm) (GB & USA 2,32" x 1,77")
- **C770** (Metric: 70mm x 70mm) (GB & USA 2,76" x 2,76")
- **C780** (Metric: 59mm x 49mm) (GB & USA 2,32" x 1,93")
- **C790** (Metric: 59mm x 59mm) (GB & USA 2,32" x 2,32")
- **C800** (Metric: 59mm x 90mm) (GB & USA 2,32" x 3,54")

OEC offers great flexibility through customization in production and delivery. We provide the possibility to customize your own PDU so that it may perfectly suit your specific needs. Different sockets, cables and plugs are all variable for specific situations. Additionally, we will also check if the personal configuration meets the national legislative requirements.

Sockets

OEC sockets meet the standards for the Netherlands, Belgium, UK, Luxembourg, Germany, Austria, Sweden, Norway, Finland, Portugal, Spain, Turkey, Eastern Europe, France, Poland, Slovakia, Czech Republic, Tunisia and Morocco, Ireland, Cyprus, Malta, Singapore and Hong Kong, Denmark, Greenland, Switzerland, Liechtenstein, Australia, New Zealand, Papuan New Guinea, China and Argentina, Japan and North America.



CEE 7/4 Schuko



BE Socket



UK Socket



IEC320 C13



3x IEC320 C13



IEC320 C19



CEE 16A,
230V, 3-pole,
blue female



CEE 32A,
230V, 3-pole,
blue female



CEE 16A,
380V, 5-pole,
red female

Plugs

OEC also offers a variety of plugs that can be connected to your specification.



CEE 7/4 Schuko



UK plug



GST



CEE 16A and 32A 3-pole blue
male and female



CEE 16A 5-pole red male and female

Cable adapters

OEC also provides different cable adaptors so you can easily connect all your devices into the network. Any chosen cable length can be delivered.



CEE 7/4 Schuko –
GST female



CEE 7/4 Schuko –
IEC320 C19



CEE 7/4 Schuko –
IEC320 C13



CEE 7/4 Schuko –
CEE 16A 3-pole blue



GST male –
GST female



IEC320 C13 –
IEC320 C14



IEC320 C19 –
IEC320 C20



IEC320 C14 –
IEC320 C19



IEC320 C20 – CEE
16A 3-pole blue



UK Plug –
GST female



UK Plug – CEE 16A
3-pole blue



UK Plug –
IEC320 C13



UK Plug –
IEC320 C19