Ratio ELECTRIC

DEDICATED SOLUTIONS
FOR POWER DISTRIBUTION
AND MONITORING
IN DATA CENTERS

Ratio Electric develops, produces and sells electrical power connection and distribution systems. Our company is based in Holland and active throughout Europe. During half a century we gathered a huge amount of experience that is used to meet the latest demands in our markets. Doing so we built up a tradition in innovation with state of the art, reliable and affordable products. These products are delivered to OEM's or distributed by specialized wholesale companies, covering the following areas:

Industry and Office

We are an industry leading supplier of power cords, cord sets, power strips, power plugs, power connectors and other components. On request we also develop custom made power connections with required approvals.

E-Mobility

Ratio Electric provides high quality AC connection and charging systems for electric and plug-in hybrid electric vehicles. All these products, like charge stations, cables and components comply with the latest European standards.

Marine

Our Shore Power connection system is the marine standard all over Europe. The MP16/32 boat inlets and cables are stylish and safe. Every marine product is practically designed and able to withstand the rigors of life at sea.
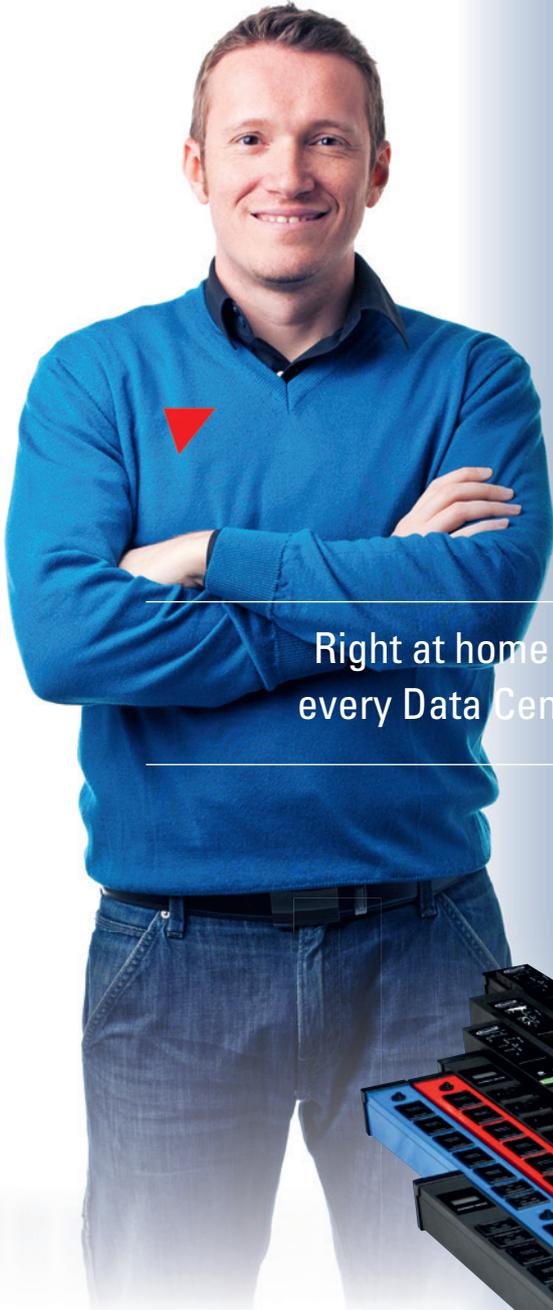
ICT

We are well up in Data centers. Ratio Electric modular solutions for power distribution and power management in 19" racks can be found all over Europe. Our complete range of Power Distribution Units (PDU's) and power cords will normally suit your needs. When required we also produce custom made specific versions in small quantities.

We put all our energy
in building durable products that
enable you to save energy

With a growing use of cloud services and a vast increase in big data the amount of data centers is growing explosively. Rely on Ratio Electric. IT Power Distribution with experience.

Information Technology plays an increasingly important and critical role for all sorts of commercial and non-profit organisations. A large amount of IT-services are offered online. This requires a higher performance demand for availability and continuity. While not only the market for Datacenters is growing fast, the technology used in the Data centers is also developing accordingly. Cooling in particular requires a lot of electrical power. Measuring and controlling this power on rack (and even on server) level is required.

With the new Powertek series Ratio Electric will allow Datacenters to fully manage rack power and reduce energy.

Proven products

Over 20 years of experience in development, design, production and sales of power distribution for the IT market.

We supply dedicated solutions for Power distribution in Data centers.

From basic outlet strips to IP controlled Powertek series

All our products guarantee an optimal quality and price performance.

Modular design throughout the whole range allow custom design as well as production of small-scale series.

Right at home in every Data Center
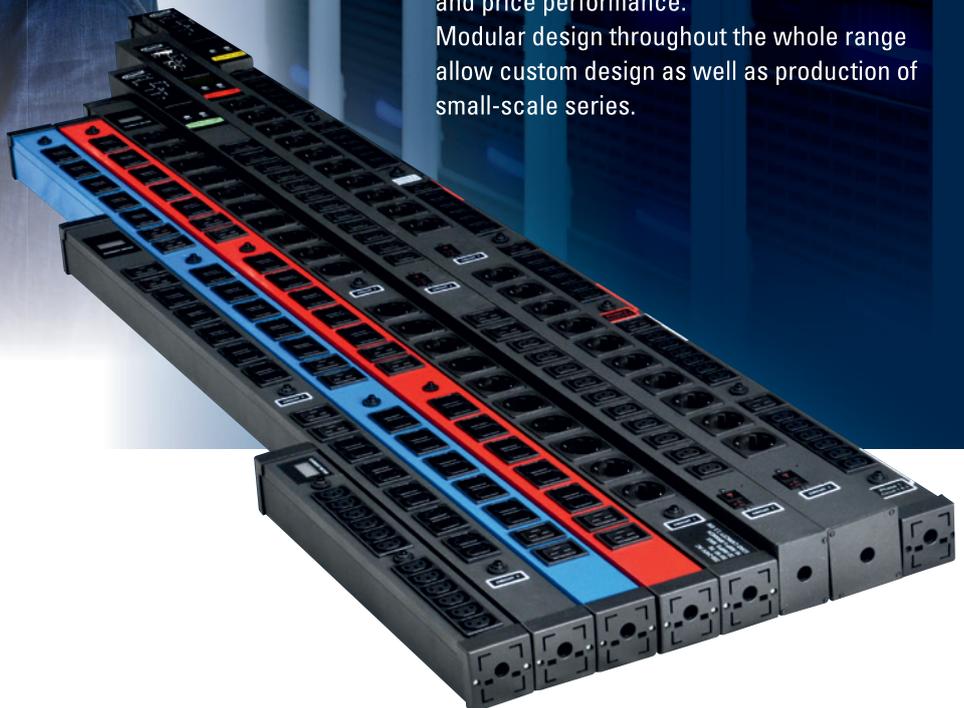
Ratio Electric PDU's (Power Distribution units) are power strips or housings for use in data racks. PDU's can be configured in both 16A and 32A, in single phase and three phase systems. The PDU's can be mounted both horizontally (19") in 1U or 2U height or vertically (0U). PDU's can be without any meter or control function (basic PDU). Local metered or remotely and local monitored and managed (Powertek series).

Housing:
For the Basic series we use an aluminium extrusion housing, grey or black anodised. The vertical Pro series and Powertek housings are produced with extra strong aluminium extrusion. Standard black coloured. All horizontal series are manufactured in a black powder coated steel. Other coloured PDU casings upon request.

Outlets:
C13, C13 Lock, C19, C19 Lock, Schuko, UTE (Pin-Earth), Denmark, UK, GST.

Overload protection:
Circuit breakers are used to split each 32A Phase in two groups of 16A. For economic protection thermal fuses can be used. For high-end protection the magnetic-hydraulic breakers are the best option.

Input Power cords:
All types from country specific plugs like Schuko to IEC60309 industrial plugs are available as input source. Halogen free, flame retardant and low smoke cable on request.

Mounting:
Vertical and horizontal rack mount form factors are available to suit the physical rack mount environmental in cabinets.

PDU PRODUCT RANGE

|	Circuit breakers	Local inlet Power monitoring	Remote inlet Power monitoring	Outlet Power monitoring	Outlet Switching	Environmental monitoring	Setup, alarms, acces, security
Basic PDU	✔						
Metered PDU	✔	✔					
PIM Per inlet monitored PDU	✔	✔	✔			✔	✔
POM Per outlet monitored PDU	✔	✔	✔	✔		✔	✔
POMS Per outlet monitored & switched PDU's	✔	✔	✔	✔	✔	✔	✔
Automatic transfer switch		✔			✔	✔	
By pass switch					✔		

PDU Selection
Ratio Electric PDUs increase the availability, efficiency and manageability of equipment in Data centers and other high-density IT environments. A wide selection of vertical (0U) and horizontal (1U, 2U or 3U) models are available, divided into categories shown in table above.

Ratio Electric increases the efficiency of your Data Center equipment

Ratio ELECTRIC

Basic PDU's provide an easy solution where reliable power distribution for equipment racks and other data center applications is required. These PDU's can provide both power distribution and circuit protection.

PLA416-8RC14
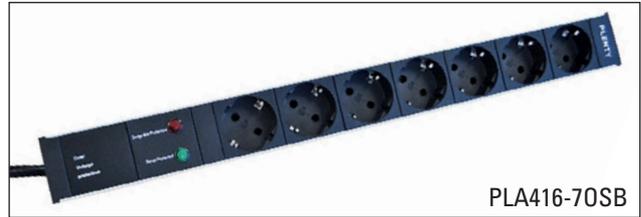
PLA416-7OSB
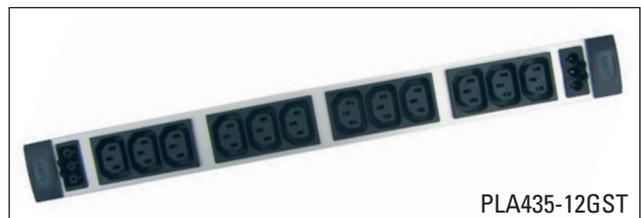
SINGLE PHASE 16A/250V SCHUKO OUTLETS

Housing:
Aluminium,1U.
Standard Power cord length 3m.
Including universal mounting brackets for Horizontal (19") and Vertical mounting (0U).

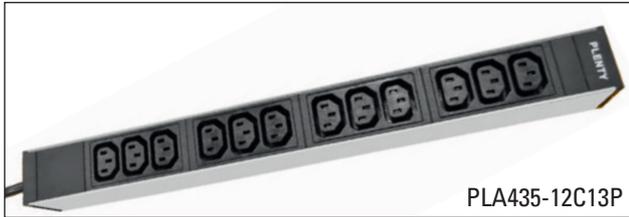| P/N	Rating	Input Plug	outlets	Mounting	extra info
PLA206-4	16A	Schuko	4x Schuko	206 mm	
PLA290-6	16A	Schuko	6x Schuko	290 mm	
PLA416-6	16A	Schuko	6x Schuko	19"	
PLA416-8LED	16A	Schuko	8x Schuko	19"	LED indication
PLA416-8S	16A	Schuko	8x Schuko	19"	Lighted Switch
PLA416-8RC14	10A	C14	8x Schuko	19"	Red outlets, 10A Fuse
PLA416-9	16A	Schuko	9x Schuko	19"	
PLA416-6Z6	6A	Schuko	6x Schuko	19"	MCB 6A, type C
PLA416-16Z6	16A	Schuko	6x Schuko	19"	MCB 16A, type C
PLA416-7OSB	16A	Schuko	7x Schuko	19"	Overvoltage Protection
PLA416-9-3CEE	16A	CEE 2P+E	9x Schuko	19"	
PLA584-12	16A	Schuko	12x Schuko	584 mm (0U)	
PLA870-19	16A	Schuko	19x Schuko	870 mm (0U)	

PLA416-8KW

PLA435-12GST

SINGLE PHASE 16A/250V WITHOUT POWERCORD

Housing:
Aluminium,1U.
No Power cord.
Including universal mounting brackets for Horizontal (19") and Vertical mounting (0U).

P/N	Rating	Inlet	outlets	Mounting	extra info
PLA416-8KW	16A	-	8x Schuko	19"	Cable Gland PG13
PLA435-12C13KW	16A	-	12x C13	19"	Cable Gland PG13
PLA435-8GST	16A	GST	8x Schuko	19"	GST outlet
PLA435-6-4GST	16A	GST	4x Schuko + 6x C13	19"	GST outlet
PLA435-12GST	16A	GST	12x C13	19"	GST outlet

PLA435-12C13P

PLA435-8 Lock

SINGLE PHASE 16A/250V C13/C19 OUTLETS

Housing:
Aluminium,1U.
Including universal
mounting brackets for
horizontal (19") and
vertical mounting (0U).
Standard power cord
length 3m.

P/N	Rating	Input Plug	outlets	Mounting
PLA435-12C13P	16A	Schuko	12x C13	19"
PLA435-8-3P	16A	Schuko	8x C13 + 3x C19	19"
PLA435-8 Lock	16A	Schuko	8x C13 Lock	19"

PLH1700-20R

PRO SERIES HOUSING

Housing:
Vertical (0U) in
aluminium 72 x 72mm
(black anodized).
Horizontal (19") in steel
(black powder coating) .
Rating:
16/32A, single &
3 phase. 32A feed is
split in two groups of
16A. Each group with
16A Thermal Circuit
Protection.
Standard power cord
length 3m.

P/N	Rating	Input Plug	outlets	Mounting	extra info
PLP1051	32A /230V	CEE2P+E	12x Schuko	19"/1U	2x 16A Fused groups
PLH1700-20R	32A/230V	CEE 2P+E	20x Schuko	0U	each outlet fused 16A
PLH1130-16-4	32A /230V	CEE 2P+E	16x C13 + 4x C19	0U	2x 16A Fused groups

The metered PDU's with local input current meter allow network engineers to utilize the PDU's True RMS power monitor to precisely measure the current (in A) that the IT devices are drawing from the power circuit. When new servers and devices are added, the impact on the cumulative power consumption can be observed immediately. Thus allowing the engineer to load each circuit to its maximum capacity without the danger of overloading causing possible failure.

PLA416-9PM

SINGLE PHASE 16A/250V

Housing:
Aluminium,1U. Power cord 3m. with Schuko plug. Including universal mounting brackets for horizontal (19") and vertical mounting (0U).

P/N	Rating	Input Plug	outlets	Mounting
PLA416-6PM	16A/230V	Schuko	6x Schuko	19"
PLA416-9PM	16A/230V	Schuko	9x C13	19"

PLH SERIES

PRO SERIES HOUSING

Housing:
Vertical (0U) in aluminium 72 x 72mm (black anodized). Horizontal (19") in steel (black powder coating).
**Rating:**
16/32A, single & 3 phase. 32A feed is split in two groups of 16A. Each group with 16A Thermal Circuit Protection. Standard power cord length 3m.

P/N	Rating	Input Plug	outlets	Mounting	extra info
PLH1182-12CM	16A/230V	Schuko	12xSchuko	0U	current meter
PLH1182-24CM	16A/230V	Schuko	24xC13	0U	current meter

Ratio ELECTRIC

Powertek PDU's offers real-time remote power monitoring of current (amps), voltage power (kVA, kW) and energy consumption (kWh) with a high grade of accuracy that enables you to track, trend, analyse and utilise all your available power. Powertek PDU's also allow you to remotely switch outlets seperately for control and remote reboot. This enables you to have full control over your data rack. Power monitoring and switching can be combined.
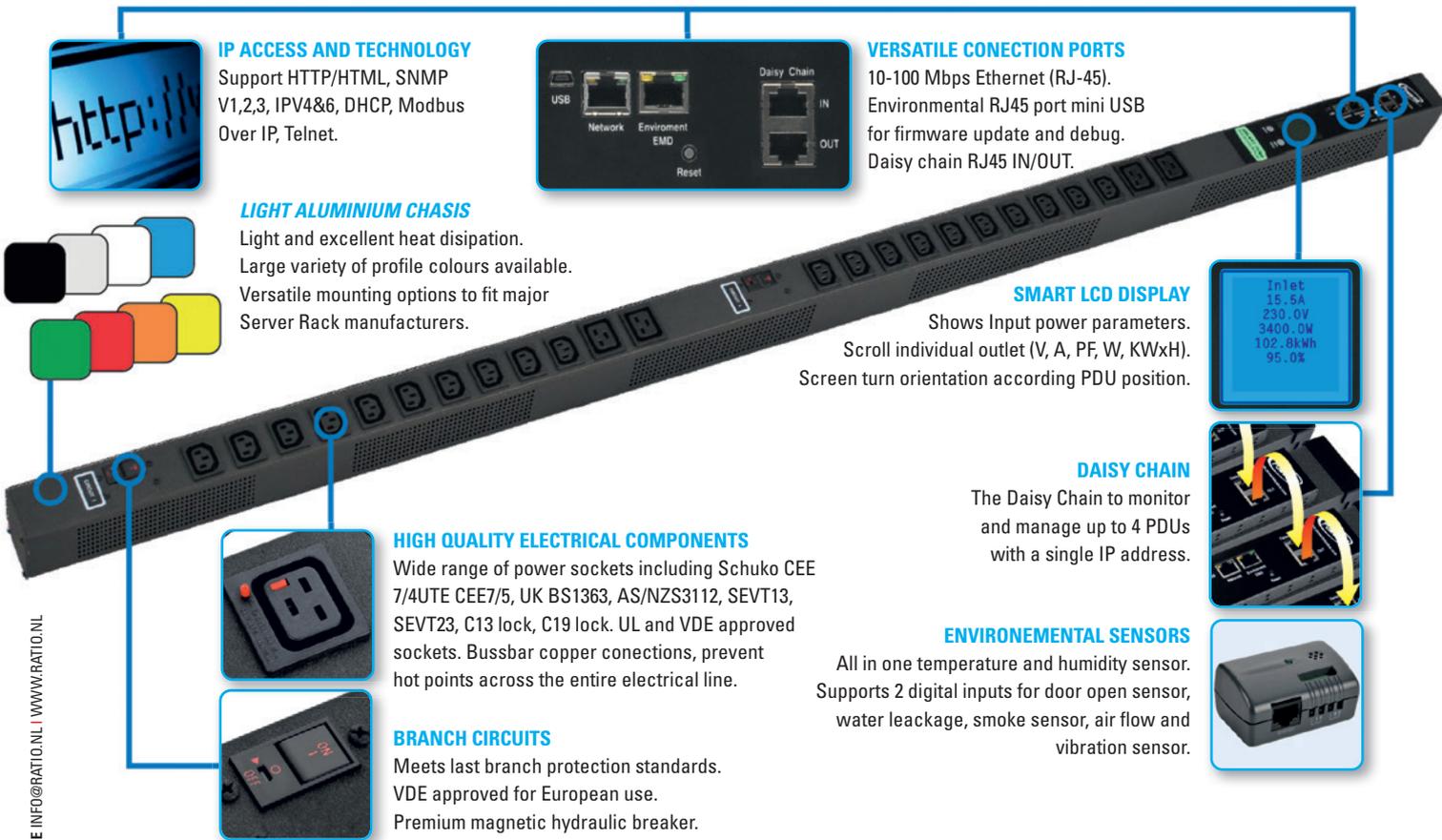
IP ACCESS AND TECHNOLOGY
Support HTTP/HTML, SNMP V1,2,3, IPV4&6, DHCP, Modbus Over IP, Telnet.

LIGHT ALUMINIUM CHASIS
Light and excellent heat disipation. Large variety of profile colours available. Versatile mounting options to fit major Server Rack manufacturers.

HIGH QUALITY ELECTRICAL COMPONENTS
Wide range of power sockets including Schuko CEE 7/4UTE CEE7/5, UK BS1363, AS/NZS3112, SEVT13, SEVT23, C13 lock, C19 lock. UL and VDE approved sockets. Bussbar copper conections, prevent hot points across the entire electrical line.

BRANCH CIRCUITS
Meets last branch protection standards. VDE approved for European use. Premium magnetic hydraulic breaker.

VERSATILE CONECTION PORTS
10-100 Mbps Ethernet (RJ-45). Environmental RJ45 port mini USB for firmware update and debug. Daisy chain RJ45 IN/OUT.

SMART LCD DISPLAY
Shows Input power parameters. Scroll individual outlet (V, A, PF, W, KWxH). Screen turn orientation according PDU position.
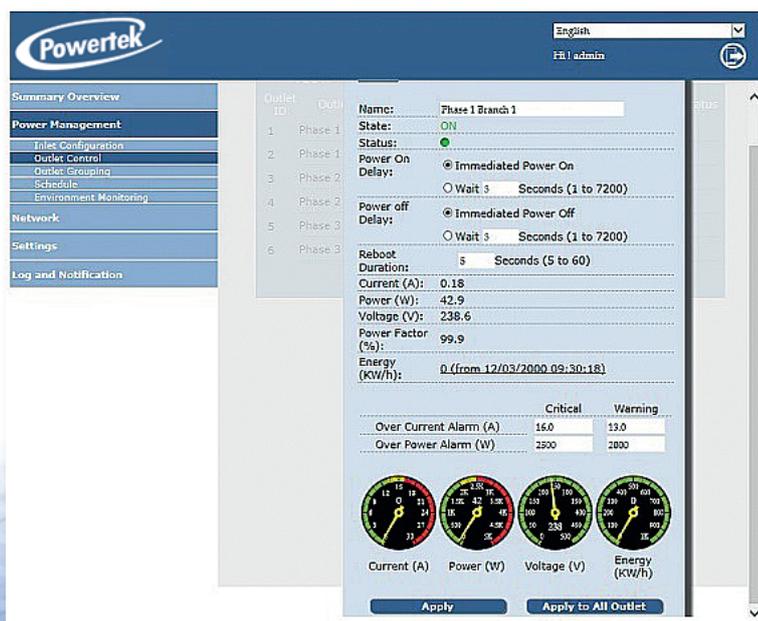
DAISY CHAIN
The Daisy Chain to monitor and manage up to 4 PDUs with a single IP address.

ENVIRONEMENTAL SENSORS
All in one temperature and humidity sensor. Supports 2 digital inputs for door open sensor, water leackage, smoke sensor, air flow and vibration sensor.

POWER DISTRIBUTION AND MONITORING THROUGH POWERTEK

PDU's help to ensure you have sufficient power at the right location. Choose from:
SMART PIM
(per inlet monitoring PDU's)
SMART POM
(per outlet monitoring PDU's)
SMART POMS
(per outlet monitored and switched PDU's).

Powertek Power management solutions enable data center and facility managers to:
- Efficiently manage power resources
- Improve uptime and staff productivity
- Optimize capacity planning decisions
- Energy saving.

Ratio ELECTRIC

The SMART PIM PDU range provides highly reliable power distribution with the latest intelligent power monitoring.

It offers both a clear local LCD display and IP monitoring of the total overall power and cabinet environmental conditions. Its intuitive interface allows you to monitor Amps, Volts, Watts, power factor, kWh, temperature and humidity levels via any web browser. Or receive alarms and alerts via SNMP or e-mail when conditions exceed their pre-set thresholds.

PLH SERIES

Front view

Rear view

PLP SERIES

PER INLET MONITORED (PIM) PDU'S

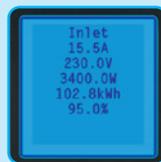| P/N	Rating(A)	Mounting	Input	output	extra info
PLP2010	16A/230V	19"2U	16A/CEE 2P + E	12x C13 Lock + 4x C19 Lock	
PLP2020	32A/230V	19"2U	32A/CEE 2P + E	12x C13 Lock + 4x C19 Lock	2x 16A Fused groups
PLH2030	16A/230V	0U	16A/CEE 2P + E	24x C13 Lock + 6x C19 Lock	
PLH2040	32A/230V	0U	32A/CEE 2P + E	24x C13 Lock + 6x C19 Lock	2x 16A Fused groups
PLH2050	16A/400V	0U	16A/CEE 4P + E	24x C13 Lock + 6x C19 Lock	
PLH2060	32A/400V	0U	32A/CEE 4P + E	24x C13 Lock + 6x C19 Lock	6x 16A Fused groups
PLH2070	32A/400V	0U	32A/CEE 4P + E	36x C13 Lock + 6x C19 Lock	6x 16A Fused groups
PLP2030	32A/230V	19" 2U	32A/CEE 2P + E	12x Schuko	2x 16A Fused groups
PLH2080	32A/230V	0U	32A/CEE 2P + E	20x Schuko	2x 16A Fused groups
PLP2090	32A/400V	19" 3U	32A/CEE4P + E (2x)	12x C19 Lock	Each outlet fused at 16A

SMART PIM | SMART PER INLET MONITORED

RACK MOUNTABLE
Includes horizontal, vertical, and toolless-mounting options.

BRANCH CIRCUIT PROTECTION
All PDUs meet the required branch circuit when power is up to 16A. Other protections like individually fused outlets are available upon demand.

SMART LCD DISPLAY
Shows Input power parameters. Scroll individual outlet (V, A, PF, W, KWxH). Screen turn orientation according to PDU position.

DAISY CHAIN
Monitor and manage up to 4 PDUs with a single IP address.

IP ACCESS AND TECHNOLOGY
Supports HTTP/HTML, SNMP V1, 2, 3, IP V4&6, DHCP, Modbus Over IP, Telnet.

ENVIRONEMENTAL SENSORS
All in one temperature and humidity sensor. Supports 2 digital inputs for door open sensor, water leackage, smoke sensor, air flow and vibration sensor.

Ratio ELECTRIC

The SMART POM PDU range provides highly reliable power distribution using the latest intelligent power monitoring. Offering both a clear local LCD display and IP monitoring of the total overall power, as well as individual outlet and cabinet environmental conditions.

Powertek series
By monitoring individual outlets and overall power this will provide a full view of the power used in the cabinet. The intuitive interface allows you to monitor Amps, Volts, Watts, power factor, kWh, temperature and humidity levels via any web browser.
Or receive alarms and alerts via SNMP or e-mail when conditions exceed their pre-set thresholds.

PLH SERIES

Front view

Rear view

PLP SERIES

PER OUTLET MONITORED SMART (POM) PDU'S

P/N	Rating(A)	Mounting	Input	output	extra info
PLP3010	16A/230V	19"/2U	16A/ CEE 2P+E	12x C13 Lock + 4x C19 Lock	
PLP3020	32A/230V	19"/2U	32A/CEE 2P+E	12x C13 Lock + 4x C19 Lock	2x 16A Fused groups
PLH3030	16A/230V	0U	16A/ CEE 2P+E	24x C13 Lock + 6x C19 Lock	
PLH3040	32A/230V	0U	32A/CEE 2P+E	24x C13 Lock + 6x C19 Lock	2x 16A Fused groups
PLH3050	16A/400V	0U	16A /CEE 4P+E	24x C13 Lock + 6x C19 Lock	
PLH3060	32A/400V	0U	32A/CEE 4P+E	24x C13 Lock + 6x C19 Lock	6x 16A Fused groups
PLH3070	32A/400V	0U	32A/CEE 4P+E	36x C13 Lock + 6x C19 Lock	6x 16A Fused groups
PLP3030	32A/230V	19"/2U	32A/CEE 2P+E	12x Schuko	2x 16A Fused groups
PLH3080	32A/230V	0U	32A/CEE 2PE	20x Schuko	2x 16A Fused groups

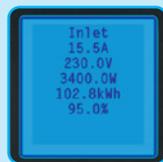## SMART POM | SMART PER OUTLET MONITORED

RACK MOUNTABLE
Includes horizontal, vertical, and toolless-mounting options.

BRANCH CIRCUIT PROTECTION
All PDUs meet the required branch circuit when power is up to 16A. Other protections like individually fused outlets are available upon demand.

SMART LCD DISPLAY
Shows Input power parameters. Scroll individual outlet (V, A, PF, W, KWxH).
Screen turn orientation according to PDU position.

DAISY CHAIN
Monitor and manage up to 4 PDUs with a single IP address.

IP ACCESS AND TECHNOLOGY
Supports HTTP/HTML, SNMP V1, 2, 3, IP V4&6, DHCP, Modbus Over IP, Telnet.

ENVIRONEMENTAL SENSORS
All in one temperature and humidity sensor. Supports 2 digital inputs for door open sensor, water leackage, smoke sensor, air flow and vibration sensor.

Ratio ELECTRIC

**The SMART POMS PDU range provides highly reliable power distribution using the latest intelligent power monitoring.
It offers maximum power monitoring and functionality, combined with the ability to switch on or off each individual outlet remotely.**

Powertek series

Offering both a clear local LCD display as well as IP monitoring of the power and cabinet environmental conditions.
Its intuitive interface allows you to monitor Amps, Volts, Watts, power factor, kWh, temperature and humidity levels via any web browser.
Or receive alarms and alerts via SNMP or e-mail when conditions exceed their pre-set thresholds.

PLH SERIES

Front view

Rear view

PLP SERIES

PER OUTLET MONITORED & SWITCHED (POMS) PDU'S

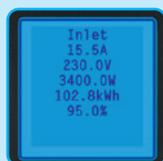| P/N	Rating(A)	Mounting	Input	output	extra info
PLP4010	16A/230V	19"/2U	16A/CEE 2P+E	12x C13 Lock + 4x C19 Lock	
PLP4020	32A/230V	19"/2U	32A/ CEE 2P+E	12x C13 Lock + 4x C19 Lock	2x 16A Fused groups
PLH4030	16A/230V	0U	16A/ CEE 2P+E	24x C13 Lock + 6x C19 Lock	
PLH4040	32A/230V	0U	32A/ CEE 2P+E	24x C13 Lock + 6x C19 Lock	2x 16A Fused groups
PLH4050	16A/400V	0U	16A/ CEE 4P+E	24x C13 Lock + 6xC19 Lock	
PLH4060	32A/400V	0U	32A/ CEE 4P+E	24x C13 Lock + 6xC19 Lock	6x 16A Fused groups
PLH4070	32A/400V	0U	32A/ CEE 4P+E	36x C13 Lock + 6x C19 Lock	6x 16A Fused groups
PLP4030	32A/230V	19"/2U	32A/ CEE 2P+E	12x Schuko	2x 16A Fused groups
PLH4080	32A/230V	0U	32A CEE 2P+E	20x Schuko	2x 16A Fused groups

SMART POM | SMART PER OUTLET MONITORED & SWITCHED

RACK MOUNTABLE
Includes horizontal, vertical, and toolless-mounting options.

BRANCH CIRCUIT PROTECTION
All PDUs meet the required branch circuit when power is up to 16A. Other protections like individually fused outlets are available upon demand.

SMART LCD DISPLAY
Shows Input power parameters. Scroll individual outlet (V, A, PF, W, KWxH). Screen turn orientation according to PDU position.

DAISY CHAIN
Monitor and manage up to 4 PDUs with a single IP address.

IP ACCESS AND TECHNOLOGY
Supports HTTP/HTML, SNMP V1, 2, 3, IP V4&6, DHCP, Modbus Over IP, Telnet.

ENVIRONEMENTAL SENSORS
All in one temperature and humidity sensor. Supports 2 digital inputs for door open sensor, water leackage, smoke sensor, air flow and vibration sensor.

Ratio ELECTRIC

AUTOMATIC TRANSFER SWITCH (ATS)

The ATS provides redundant power for single-corded network devices. Dual input cords supply both primary and secondary power. In case the primary power source becomes unstable or fails at all the ATS will automatically switch to the secondary power source until the primary input is restored and stabilized. The ATS will only support power sources that are in phase.

Front view

Rear view

PLP1017-LOCK

P/N	rating	outlets	mounting	input
PLP1017-LOCK	16A/230V	6x C13 Lock + 1x C19 Lock	19"/1U	2x C20

BY-PASS SWITCH (EBS)

With the By-Pass (or Hot-swap) PDU you can repair or replace UPS modules without taking your network offline. This enables on duty replacement of standard plug-in UPS systems without interrupting the connected server or network loads. The dual input power cables connect this PDU with a Utility and UPS power source. A manual transfer switch controls the power source to the connected equipment between Utility and UPS.

Front view

Rear view

EBS3000-LOCK

P/N	rating	outlets	mounting	input
EBS3000-LOCK	16A/230V	6x C13 Lock + 2x C19 Lock	19"/1U	2x C20

EASY LOCK
www.wellshin.com.tw

Ratio ELECTRIC

IEC 60320 C13 Lock and C19 Lock connectors will become the standard in Data centers. Lock connectors are the best method to keep your cords locked into place and with added benefit of distinctive colours you can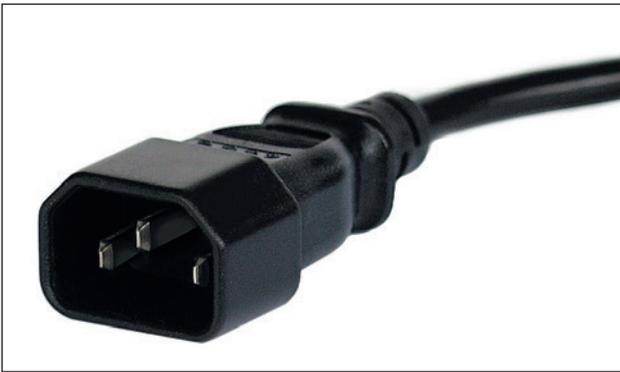 easily keep your cords organized. A vast choice of lengths and configurations are available. All types carry a TUV approval for use throughout Europe.

At PDU side, use C13 or C19 Lock outlets

At server side, use power cord with C13 or C19 Lock connector

JUMPERCORDS C14 TO C13 LOCK

These jumper cords are mainly used for servers, CPU's and network applications. Distinctive colours allow for quick and easy recognisition of all plug connections. All cords are offered with cable 3 x 1 mm² connecting all devices to 10A.

P/N	colour	length	side 1	side 2	cable	rating
1466 Lock	black	1 m	C14	13 Lock	H05VV-F 3G 1 mm²	10A/250V
1467 Lock	red	1 m	C14	C13 Lock	H05VV-F 3G 1 mm²	10A/250V
1468 Lock	blue	1 m	C14	C13 Lock	H05VV-F 3G 1mm²	10A/250V

EASY
LOCK
www.wellshin.com.tw

Ratio ELECTRIC

Ratio Electric.
Tradition in innovation with state of the art,
reliable and affordable products.

INTERNATIONAL POWER CORDS WITH C13 LOCK CONNECTOR

With cable 3 x 1,00 mm^2 they are rated at 10A. On request also available in red, blue and green.

P/N	colour	length	side 1	side 2	cable	rating
1418 Lock	black	3 m	Schuko	C13 Lock	H05VV-F3G 1,00 mm^2	10A/250V

INTERNATIONAL POWER CORDS WITH C19 LOCK CONNECTOR

Heavy duty power cords. With cable 3 x 1,50 mm^2 they are rated at 16A. On request also available in red, blue and green.

P/N	colour	length	side 1	side 2	cable	rating
1422 Lock	black	2 m	Schuko	C19 Lock	H05VV-F 3G 1,50 mm^2	16A/250V
1421 Lock	black	3 m	Schuko	C19 Lock	H05VV-F 3G 1,50 mm^2	16A/250V

Ratio
ELECTRIC

The world of Information Technology and Data storage systems is changing and developing rapidly. Therefore we would welcome your comments and ideas for any adaptations to our exciting products as well as your useful suggestions for possible new products. Please send your comments to: info@ratio.nl

Much obliged,

Hans Snaak
Managing Director
Ratio Electric

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Ratio
ELECTRIC