# *Energy monitoring*

*Current measurement at PDU, rack or room level*


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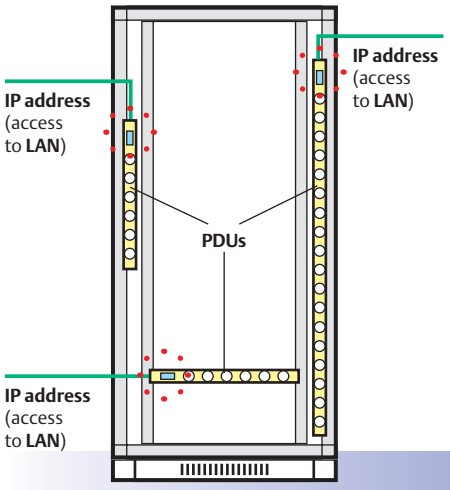
# *Knürr energy monitoring*

Reliability, availability and performance are important issues for a data center's smooth and fault-free operation. Energy monitoring is the basis here for ensuring these requirements are met at all times.
Various values can be monitored and controlled (e.g. current, voltage, effective power, apparent power, reactive power, frequency, power factor, temperature, humidity, etc.).

Values can be measured at different points in a system. Current, for example, can be measured centrally at the feed point or individually at each 'consumer'.
Knürr's solutions for effective energy monitoring range from measurements in individual socket strips through to monitoring complex customized complete solutions (individual rack or several server racks in one room).



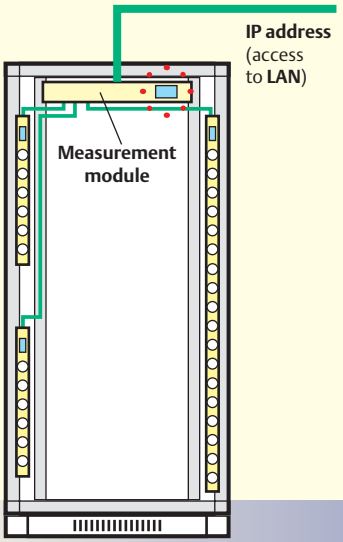

- Only one IP address required per PDU.
- The values can be read directly where the consumer is with an easy to read LCD display.
- Standardized interfaces and logs allow easy integration into standard network management systems.
- Values can be measured individually for each server right up to output level.
- Easy extensions with modularity.

**Products:**

| | |
|---|---|
| Knürr DI-STRIP M® | Basic PDU with local current measurement |
| DI-View | Adaptive measurement module |
| Knürr DI-STRIP RM® | Basic PDU with IP phase current measurement |
| Liebert MPH™ | Managed PDU with energy monitoring and control option |
| Liebert MPX™ | Adaptive PDU with numerous monitoring and control options |

Knürr DI-STRIP®

## Energy monitoring at socket strip level (PDU)



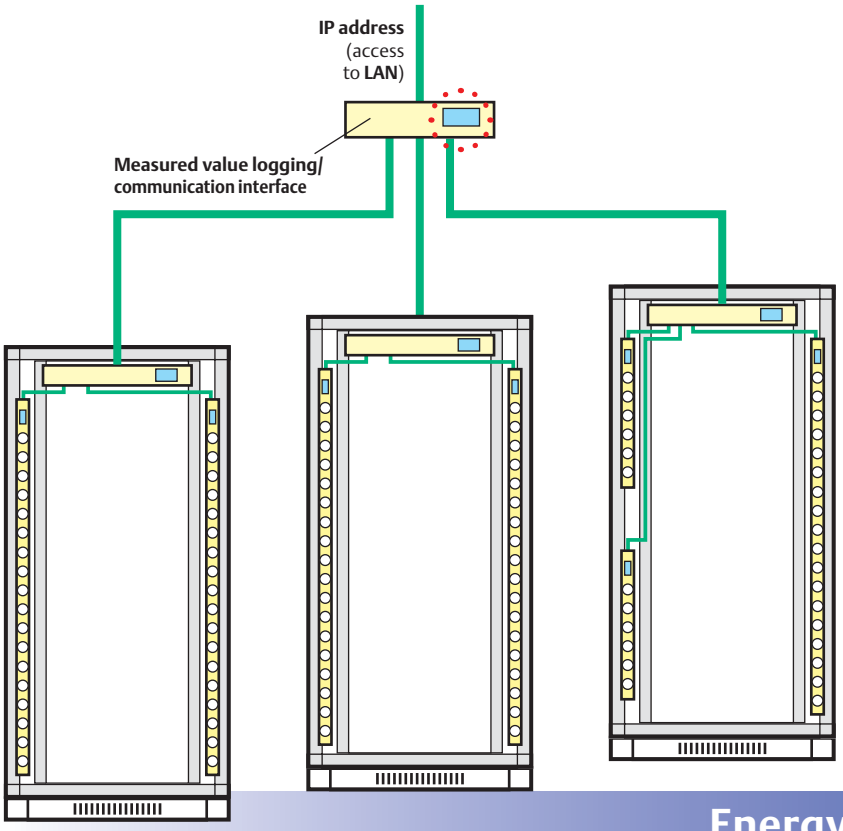

- Only one IP address required per rack.
- Optimum upgrade solution – existing power distributors can stay in the rack (e.g. basic PDUs).
- Flexible consumer connection options.
  (1-phase, 3-phase, 16A or 32A consumers)

**Products:**

| | |
|---|---|
| Knürr Distribution Boxes | Flexible use from 1 U to 3 U, ideal for project solutions |
| Liebert MPX™/MPH™ | Up to 4 MPX™/MPH™ can be interconnected on one IP address |

Liebert MPH™

## Energy monitoring at rack level




- Only one IP address required per room.
- This allows up to 75 racks to be transparently monitored.
- The room is visualized with central recording.
- Flexible consumer connection options (1ph, 3ph, 16A or 32A)
- A diverse range of customized project solutions are possible.

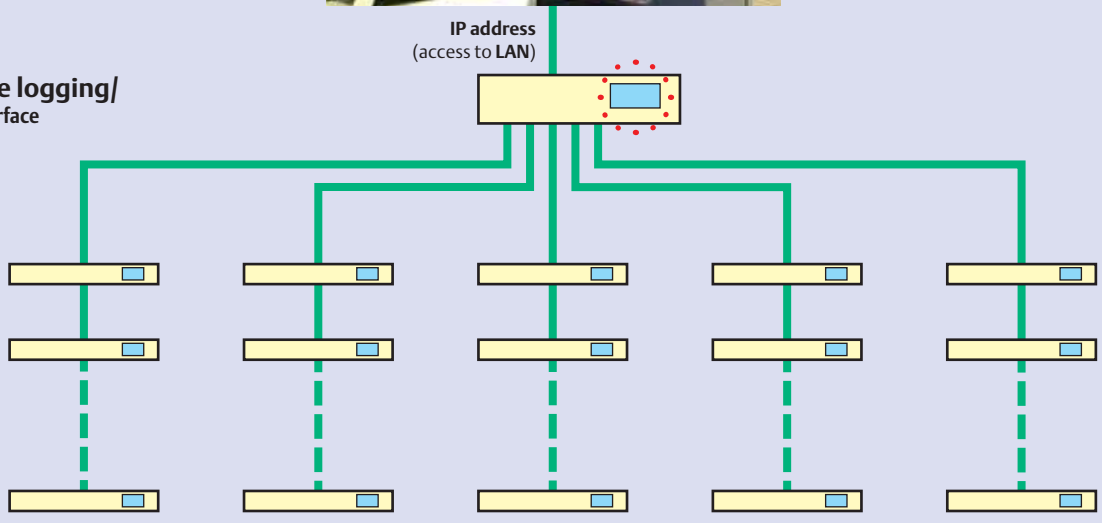
**Products:**

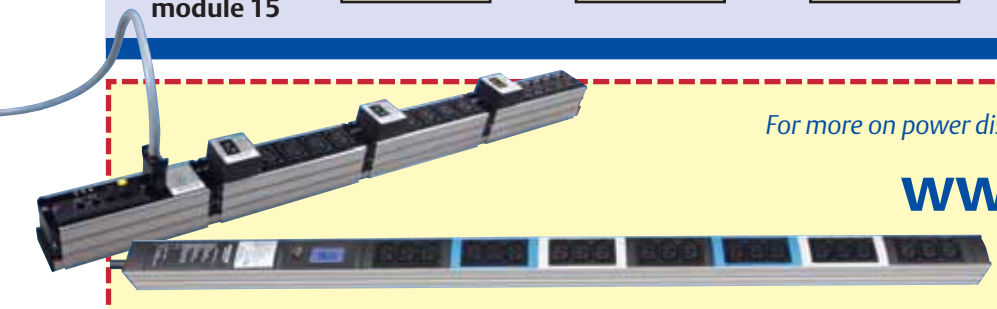
| | |
|---|---|
| Knürr PowerTrans® Rack | Power Distribution |
| Knürr Distribution Boxes | Flexible use from 1 U to 3 U, ideal for project solutions |

Sim. to picture

## Energy monitoring at room level

**Control room/workstation**
- Network Management System (NMS) Aperture Vista®
- Database



*For more on power distribution in network/server racks go to:*

**www.knuerr.com**

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