



# Innovative monitoring of your data center with ***DIRIS Digiware***



# Why should you implement power monitoring within your data center ?

Improving the energy efficiency of your data center allows you to get an accurate understanding of how much energy is entering through the mains of the facility and how much is being consumed by the various equipments.

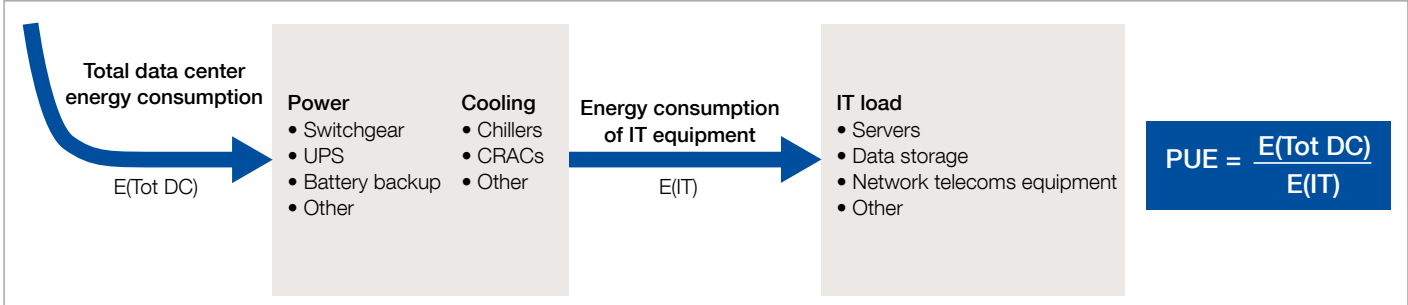
Energy metering can be implemented to give the breakdown of consumptions throughout a data center which will help identify where savings can be made in order to reduce monthly utility bills for the data center.

**75 %**  
of the data center's operating costs are due to electricity and particularly to the consumption of IT equipment

Cooling can represent up to  
**40 %**  
of the total energy used to operate any data center

## The Power Usage Effectiveness (PUE) to track and measure the Energy Efficiency of your data center

The PUE is the industry-accepted energy efficiency metric, defined in the ISO/IEC 30134-2: 2016 standard Information Technology – Data centers – Key performance indicators - Part 2, as the ratio of the total power consumption of the data center and the power consumption of IT equipments.



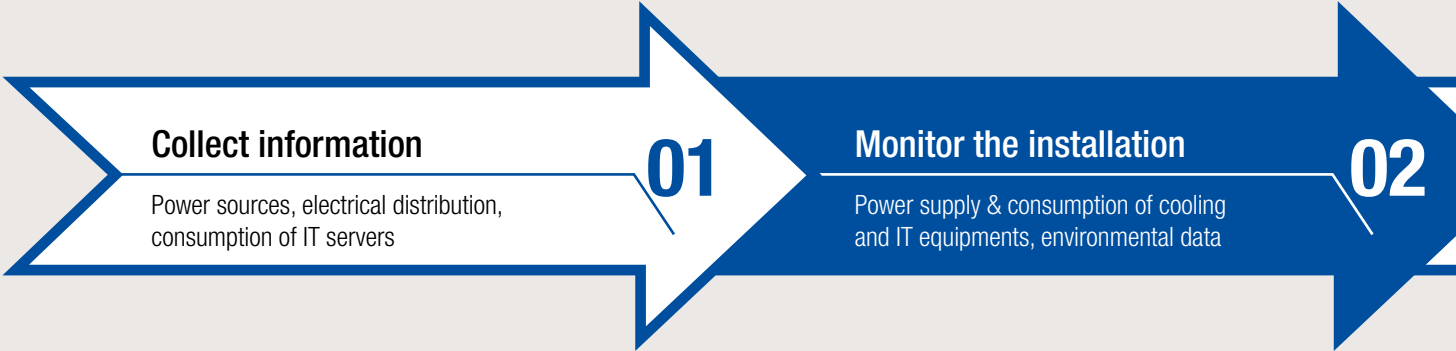
The closer to 1 the PUE is the more efficient the data center. This means that most of the power is used to support IT servers. PUE evolution has to be correlated to other data (Power quality, environmental information etc.). For instance, a lower PUE in the winter is considered as normal as the season's low temperatures. The measurement of PUE by area or application must be done as close to the final IT loads as possible in order to help understand where efforts need to be made and where to prioritize.

## Gather more data than just energy values

Data centers are hosting critical IT equipment which must be powered with no interruption. Not only must power be constantly available, **its quality must be flawless to avoid failures.**

Data center operators must use devices that are able to gather more information than basic energy readings. Just having general data is not enough to take relevant actions; power quality measurements such as harmonics, unbalance etc. should be offered to identify weak points, prevent constant deterioration of equipment and adjust maintenance operations.

Lastly, the monitoring of each individual protective device (on/off/trip) allows the user to quickly reset in the event of a trip to minimize downtime.



# Overcoming challenges in data centers



## Power availability

To guarantee the business continuity and protection of a data center's critical assets, a permanent monitoring of the health of the electrical distribution must be done along with the implementation of real-time alerts to be able to detect drifts in measurements.



## Energy efficiency

Manage IT or cooling equipments efficiently by lowering their energy consumption and adapting the power demand to what is actually needed. This can give rise to substantial cost savings. Installing power monitoring systems across multiple data halls enables staff to benchmark which hall is the most efficient and to use it as a reference.



## Capacity management

With the expansion of your data center, the use of permanent power monitoring to collect real time data instead of random measurement campaigns gives a better visibility into the data center's overall capacity. Find out where customer equipment can be added without changing the power distribution architecture due to overloaded circuits and if an upgrade of the cooling system is needed.



## Tailored billing

Branch-circuit monitoring offers the possibility to track the power usage of individual tenants down to the rack level and to charge them accordingly. Highly accurate energy and power monitoring devices are needed to ensure that customers are invoiced fairly, the standard revenue grade meters are not reliable enough to guarantee trustworthy invoicing. As power may be fluctuating after time depending on the loading of server racks, the accuracy must be guaranteed even at very low load current.



## Sustainability

By reducing the carbon footprint, one can guarantee that they are complying with responsibility guidelines by minimizing environmental impact. Promoting an environmentally friendly data center enhances its reputation and brand value which can help to earn customer loyalty.

### Analyze

Identify equipment that drives up energy consumptions, losses, power capacity

03

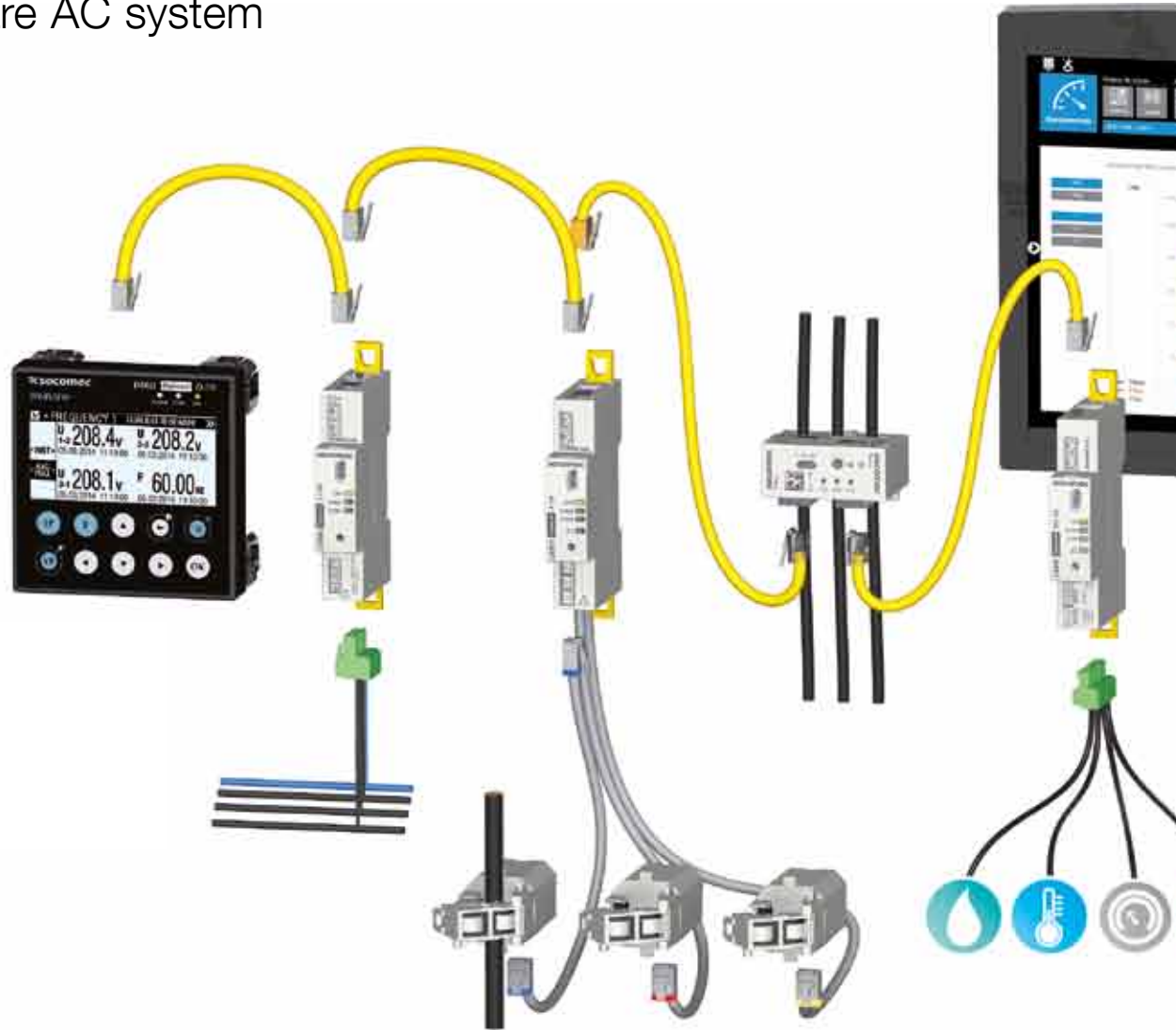
### Improve performances

Keep monitoring continuously to quantify savings due to equipment upgrade, etc.

04

# **DIRIS Digiware:** a unique solution for data center

## DIRIS Digiware AC system



## Advantages



**Easy**

Trouble-free integration into any existing DCIM or BMS software via multiple communication protocols.



**Reactive**

Real time alarms via email to alert the facility's management teams and prevent problems on any circuit before they occur.



**Secure**

Data communication via secured protocols (FTPS, SNMPv3).

# with AC or DC power distribution



DIRIS DW 143 A US

## For DC data centers



SITE 889 A

DIRIS Digiware is now available for DC power monitoring.

DIRIS Digiware DC offers a compact and powerful solution to track power usage of main and individual circuits:

- for any current rating,
- for a large number of circuits,
- for new or existing panels using solid-core or split-core current sensors.

Thanks to DIRIS Digiware voltage adaptors, the system is suitable for both legacy data centers (48 VDC) and more recent data centers operated at higher voltages (380 VDC, etc.).



GAMME 689 A



### Versatile

One multi-utility and multi-usage energy management system at all levels within the data center, from switchboards to PDUs, RPPs or Tap-off boxes.



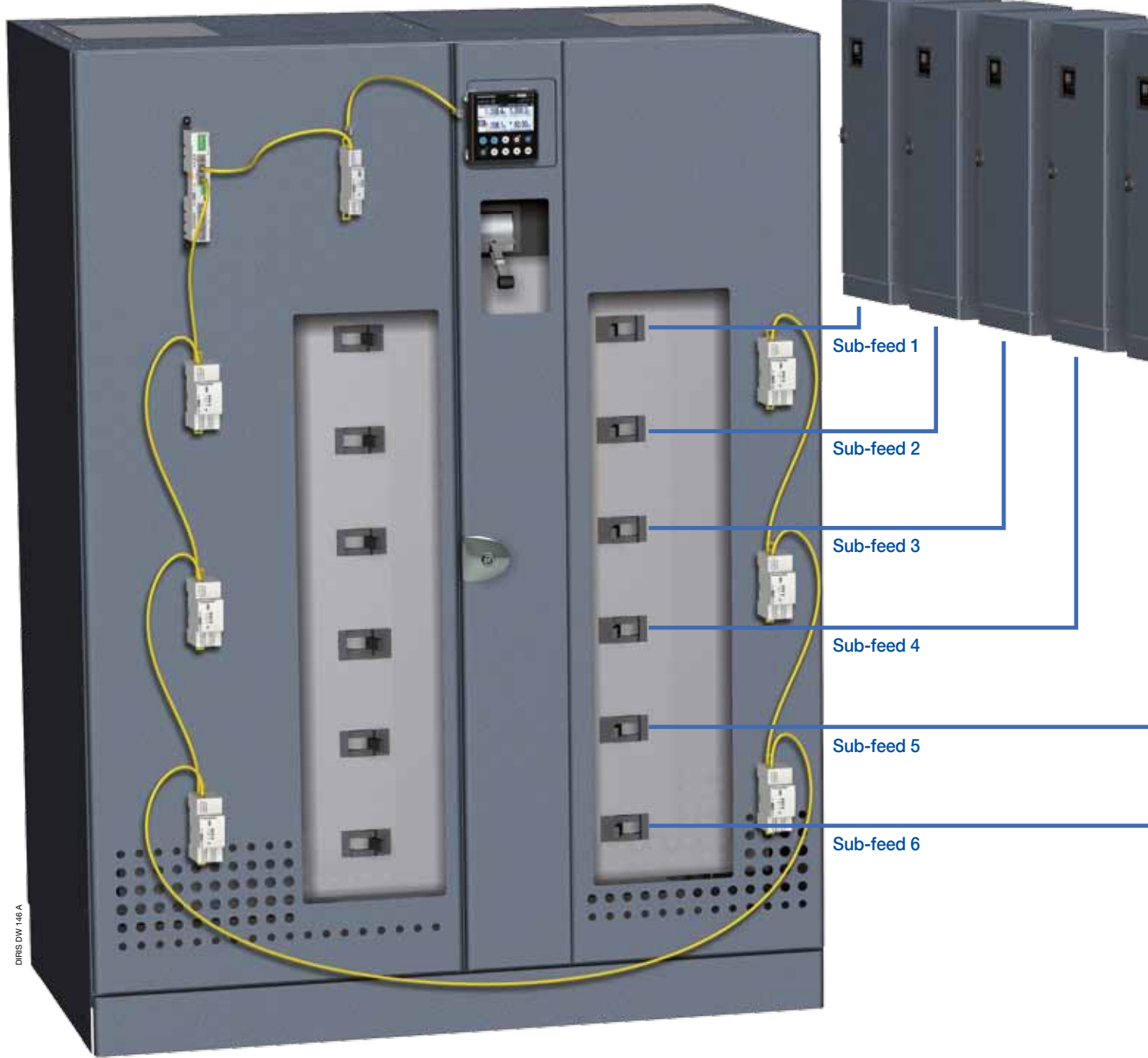
### Flexible

Minimized wiring and set-up time in case of expansion of your data center.

# Everywhere throughout your electrical distribution

## 1 Sub-feed circuit monitoring

Remote Power  
with up to 8



Power Distribution Unit (PDU)  
with up to 12 sub-feeds

## Panels (RPP) 4 circuits



### Need flexibility ?

The DIRIS Digiware system can be customized to monitor main incomers including any number of sub-feeds regardless of their current ratings: simply add the right number of DIRIS Digiware I modules.

### Need an accurate measurement system ?

Class 0.5 on the full scale for the entire system including current sensors.

### Need to monitor the power quality of the distribution ?

DIRIS Digiware allows the detection of sags, swells and interruptions which is important to take relevant actions in case of power quality events on a circuit.

### Need to monitor existing panels ?

The DIRIS Digiware system is suitable for both new or existing panels thanks to the variety of current sensors offered by Socomec: TE (solid-core), TR (split-core) or TF (flexible). The use of split-core sensors enables an easy implementation of Power monitoring with no interruption of power.

### Need both local and remote visualization ?

One unique HMI part of the Digiware system centralizing measurements for the main incoming circuit, all subfeeds & branch-circuits locally and communicating them to DCIM/EMS/SCADA/BMS software solutions over multiple open protocols (MODBUS, SNMP OIDs & TRAP alarming, BACnet).

### Typical DIRIS Digiware monitoring system for MAIN + 12 sub-feeds

#### MAIN-feed circuit 2000 A

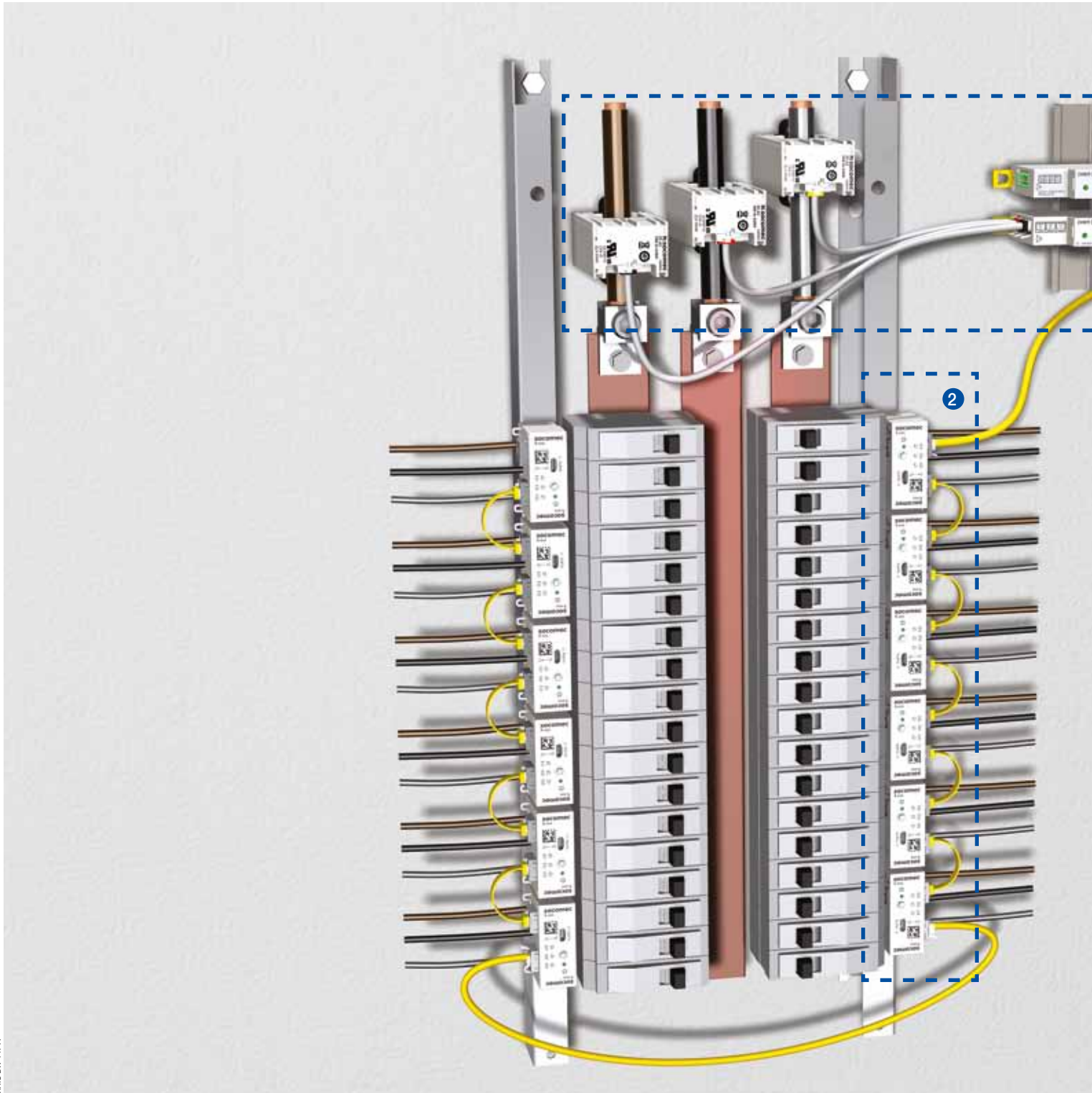
- U-30 voltage measurement module.
- I-45 current measurement modules for three-phases & neutral.
- 3 x TF-120.

#### Sub-feed circuits 400 A

- 6 x I-60 module.
- 18 x current sensors (TE-45 solid core or TR-32 split core).

# Everywhere throughout your electrical distribution

## 2 Branch-circuit monitoring



DIRIS DW 147 A





The scalability of DIRIS Digiware makes it the perfect match, no matter the number of circuits you need to measure (36, 42, 72, 84-pole panelboards etc.) with an easy circuit naming for a quick and error free integration with new or existing management software solutions.

### Need more visibility ?

Branch-circuit monitoring allows data center managers to track real time total load vs. available power for a better capacity planning than intelligent rack PDU plugs. This level of granularity is also necessary to get a better insight into a data center's monthly utility bill and to invoice back individual customers at the rack level.

### Need help managing your critical loads ?

DIRIS Digiware S-Data center has pre configured threshold alarms to alert you when the current approaches a breaker's limit. This enables an easy and responsive load management to prevent unexpected failures and downtime due to circuit overloads.

### Need to monitor consumptions accurately ?

DIRIS Digiware S is the most accurate power monitoring device on the market. Contrary to most solutions, the accuracy is guaranteed over a wide current range: class 0.5 from 0.2 A up to 63 A.

### Can you guarantee the reliability of your protective devices ?

The VirtualMonitor technology provides advanced monitoring of branch circuit breakers, without use of any auxiliary contacts, by sending timestamped alerts in the event of an opening or a trip. All this without using any auxiliary contacts. Data center operators can now receive real time alerts to quickly reset their breakers if servers are no longer powered with redundancy.

### Do you wish to reduce maintenance needs ?

The AutoCorrect technology allows DIRIS Digiware S measurement modules to identify wiring errors, even off-load. This avoids the need for on-site counter visits due to non-consistent power readings.

#### Typical panelboard power monitoring system

##### 1 Main circuit 400 A

*Power quality at incoming feed level*

- U-30 voltage measurement module.
- I-35 current measurement module.
- 3 x TE-45 current sensors for accurate measurements from 3.2 A up to 756 A.

##### 2 Branch circuits

*Individual load management, energy and power monitoring*

- For a 42-pole panelboard, 14 DIRIS Digiware S modules with integrated sensors.

#### For existing panels



With Socomec's range of ITR split-core current sensors, you can retrofit any existing panel and still benefit from the VirtualMonitor and AutoCorrect technologies.

# Everywhere throughout your electrical distribution

## 3 Busway monitoring

A typical busway monitoring solution uses a standard multifunction meter on each tap-off box high above the server racks which makes local readings impossible. A standard solution also repeats the voltage measurement on each box, even though voltage is the same for the whole bus.

Socomec's approach is different:



**1** One dedicated display for the whole monitoring system. Communication and control power is centralized by the display and transmitted to all DIRIS Digiware modules through the RJ45 Digiware bus.

**2** One DIRIS Digiware U module inside the master tap-off unit measures voltage parameters of the incoming supply. The voltage information is then transmitted to all slave tap-off boxes for power and energy monitoring.

**Data measured:**

- U, V,
- voltage harmonics,
- voltage unbalance,
- power quality (swells, sags, interruptions).

**3** DIRIS Digiware S modules can be fitted directly on the breakers inside each tap-off box. With its integrated current sensors, Digiware S can measure single-phase or three-phase circuits up to 63 Amps with almost no wiring required. Using the VirtualMonitor technology, the status of all breakers can be accessed remotely and in real time with no additional hardware.

**Data measured:**

- Amps, kW, kVar, kVA, PF,
- kWh, kVarh, kVAh,
- current harmonics,
- current unbalance,
- overcurrents,
- breaker status.



Accessible readings

Choose where to position your remote display for the entire power bus.



Plug & Play

Plug in/out connector for easy tap-off withdrawal with no power interruption of the monitoring system.



Compact

The compactness of Digiware S modules solves space constraints inside tap-off boxes. Our range of split core TR sensors make the integration into existing tap-off units possible without interrupting outgoing feeders.

# Going further

## Monitor environmental parameters

Ensuring proper environmental conditions such as temperature and humidity levels within a data center is crucial because it directly affects energy consumption, operation costs and the lifespan of equipment.

- Improve cooling on areas with higher needs.
- Identify wasted airflow and improve the efficiency of cooling systems.
- Humidity must be present, but only in the right proportion. Too much humidity can lead to excessive corrosion, malfunctions and can damage equipment. On the other hand, too little humidity can lead to a buildup of electrostatic discharge which can damage electronics when discharging.

## Analog input modules

By adding DIRIS Digiware IO-20 modules to your Digiware system where needed, you can keep track of temperature and humidity levels within your data halls and make sure your data center needs are accurately satisfied.



APPLI 881 A

## Analyze to undertake relevant corrective actions

### WEBVIEW-L solution

Use the WEBVIEW-L Power and environmental monitoring software directly embedded with DATALOG H80/H81 to easily track your consumptions and measurements over time, analyze improvements and where further savings can be made:

- no special skills or installation required,
- automatic detection of devices on the network,
- easy to integrate existing third-party Modbus devices,
- all energy consumption and measurement data stored for over 1 year,
- breakdown of consumptions per circuit, per area, or per usage (IT, HVAC, etc.),
- easy and secure export of measurements (FTPS),
- real time alerts and transmission via emails (SMTPS).



SOFT 083 A

# Socomec: our innovations supporting your energy performance

**1** independent manufacturer

**3,200** employees worldwide

**10** % of sales revenue dedicated to R&D

**400** experts dedicated to service provision

## Your power management expert



POWER SWITCHING



POWER MONITORING



POWER CONVERSION



EXPERT SERVICES

## The specialist for critical applications

- Control, command of LV facilities
- Safety of persons and assets
- Measurement of electrical parameters
- Energy management
- Energy quality
- Energy availability
- Energy storage
- Prevention and repairs
- Measurement and analysis
- Optimisation
- Consultancy, commissioning and training

## A worldwide presence

**8** production sites

- France (x3)
- Italy
- Tunisia
- India
- China (x2)

**27** subsidiaries

- Australia • Belgium • China • France
- Germany • India • Italy • Netherlands
- Poland • Romania • Singapore
- Slovenia • Spain • Switzerland • Thailand
- Tunisia • Turkey • UK • USA

**80** countries

where our brand is distributed

### HEAD OFFICE

#### SOCOMEK, Inc.

9 Galen Street, Suite 120  
Watertown, MA 02472  
Tel. 617 245 0447  
Fax 617 245 0437  
info.us@socomec.com

### YOUR DISTRIBUTOR / PARTNER

[www.socomec.us](http://www.socomec.us)



ENERGY  
SPECIALIST  
SINCE 1922

**socomec**  
Innovative Power Solutions