RCS
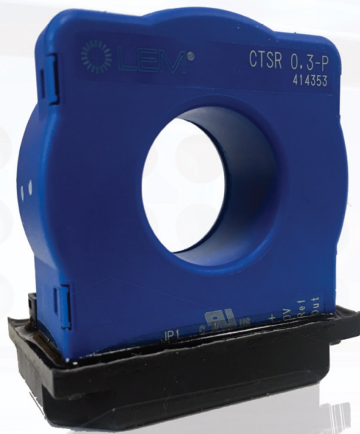
Residual Current Sensor

SUMMARY

HIGH PRECISION RC SENSOR

AC, DC AND DC PULSE
CLOSED LOOP FLUXGATE

TECHNOLOGY SELF TESTING

AUTO DEGAUSSING

Residual Current Monitoring (RCM) is a solution that in some countries is required to avoid using RCD (Residual Current Devices). RCD's can interrupt power feeds when a residual current is detected above a certain level. In datacenters such autonomous acting devices that can interfere with the power supply to the hosted equipment are not welcomed.

Residual current is a current that 'leaks' to the protective earth. This could be caused by defective equipment, but not necessarily. Many devices inside a datacenter operate a switching power supply. These usually leak a bit of energy to the protective earth, so even without failing hardware some residual current will occur. In order to discriminate a single dangerous fault from a sum of harmless smaller faults one needs to set up a network of RC-sensors and monitor permanently.

GRANULARITY

When monitoring residual current at a single location it is not possible to determine whether the measured value is a sum of many small currents or a single larger (dangerous) one. for that reason it contributes to the safety of the personnel inside a datacentre when residual currents are metered at many points.

It makes sense to have one or more RC-sensors inside each PDU. The search of an RC-fault can thus be limited to a single PDU or segment of that PDU. RC faults need to be fi xed as soon as possible as they can be dangerous for humans when they touch the faulty hardware. RC-faults could also cause fi re inside the hardware.(for example a limited short circuit, which generates not enough current to trip the overcurrent protection, but enough to cause sparks or excessive heat).
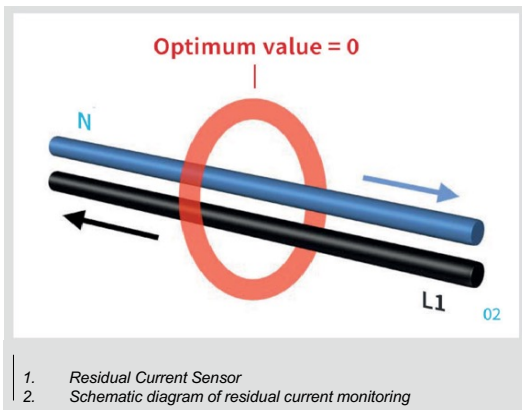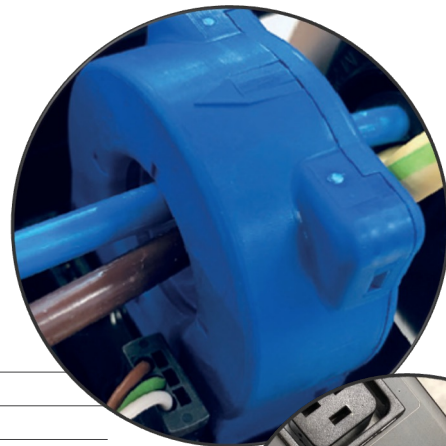
WHAT IS MEASURED?

RC-monitoring can take place in many forms. The Schleifenbauer RC-sensor offers Class B metering, thus enabling our customers to set-up an RC-monitoring system that prevents dangerous situations inside the datacenter.

TECHNICAL INFORMATION

Maximum primary current	3 x 32a (max)
technology	closed-loop fluxgate, powered by lem
metering	DC, pulsed DC and AC up to 1 kHz (true RMS)
reporting	total residual current
cumulation report	total residual current, total ac current, total dc current
self test and degauss	every 6 hours
operating temperature	0 - 60°c
height	-30 – 2000M
relative humidity	10 - 90% non condensing
ac current	5 - 500mA true RMS
dc current	5 - 500mA
total residual current	5 - 500mA
accuracy	± (15% + 5) mA (5-500mA, 0-1000 Hz) ± (2% + 2) mA (10-300mA, 50/60Hz)

Optimum value = 0

N

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1. Residual Current Sensor
2. Schematic diagram of residual current monitoring

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