

# NETIO

Networked power sockets

## **Wireless power socket applications 2019/2020**

[www.netio-products.com](http://www.netio-products.com)

# PRODUCTS

# NETIO

Networked power sockets



NETIO 4 / 4All



PowerBox 3Px



NETIO PowerPDU 4C  
NETIO PowerPDU 4PS



PowerCable family 101x



PowerDIN 4PZ

# ABOUT NETIO PRODUCTS A.S.

The NETIO products company is a Czech producer of networked power sockets (can be controlled over LAN & WiFi or IQRF).

Main focus is professionals & business usage (**B2B**).  
A typical user is a SI (System Integrator), uses NETIO 4x (NETIO 4 / 4All / 4C) or PowerCables in various industrial projects.

- Network infrastructure
- IoT / Industry 4.0
- Wind power plants, Digital signage
- Audio / Video multimedia, ..



# NETWORKED POWER SOCKETS

*Devices to measure energy consumption and switch ON / OFF the power socket over the network.*

# NETIO

Networked power sockets



# Why is good to have Open API - 13 protocols?

Logos included in the collage:

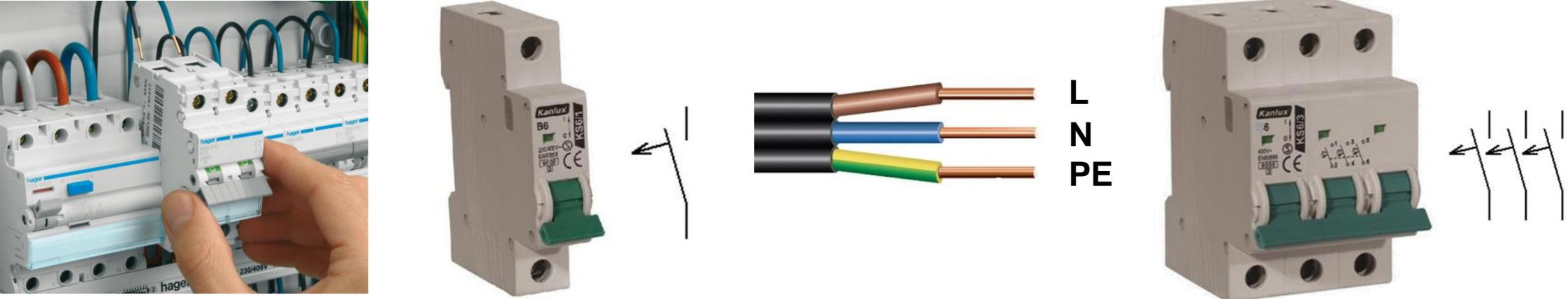
- amazon web services
- Microsoft Azure
- IBM Watson
- Google Cloud
- mySCADA
- Reliance Industrial SCADA/HMI system
- jSCADA
- ABB
- UNIVERSAL ROBOTS
- PROMOTIC
- Wonderware
- Hms
- SIEMENS
- MicroSCADA Pro 10 000 systems around the world
- open SCADA
- CACTI Nagios
- EVENTSENTRY
- ManageEngine OpManager
- Kaseya
- PRTG Network Monitor
- demotz
- ZABBIX
- IPSWITCH WhatsUpGold IT MANAGEMENT MADE SIMPLE
- solarwinds
- LOXONE
- SAP
- RaspberryPi
- labgrid
- Domoticz control at your fingertips.
- CRESTRON
- cue Extron
- openHAB empowering the smart home
- AMX by HARMAN

Protocols shown in panels:

- MQTT
- Modbus/TCP
- SNMPv3
- JSON HTTP(s)
- XML HTTP(s)
- Telnet

# Why networked PowerSockets?

- 230V for **Electrician / Electrical engineering** people:



- 230V for **IT** people:

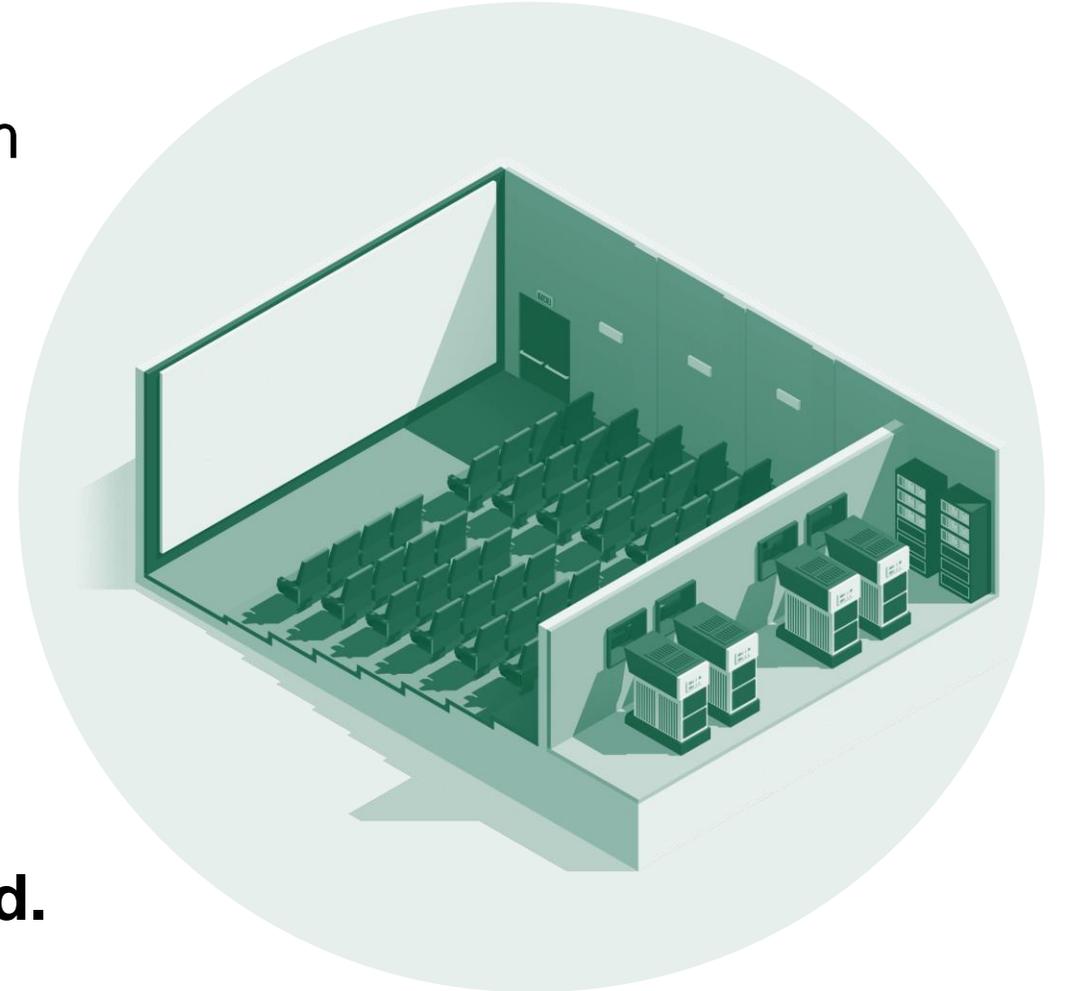


## Use case: Movie theaters (kino)

The audio system in a cinema viewing room of a multiplex consumes electricity even when no film is being shown and no music is playing.

The customer uses NETIO 4 to disconnect individual parts of the audio system. When there is no show, there is no need to power the audio system.

**Approximately 38% of electricity is saved.**



# Use case: Electrical water boilers in France

Hotel park of independent villas.

- Each house has its own water heating electric boiler.
- Every boiler was originally **switched On for 200 days** from year.
- Average usage of the villa was around 100 days. = 50% of energy was wasted.
- 18m<sup>3</sup> of water is heated every day for nothing!
- HiBou project is switching 230V power for each boiler only when the villa is occupied.



## Use case: Advertising kiosks / Vending machines



NETIO power sockets with a timer function switch ON or OFF an advertising booth or various vending machines at appropriate times.

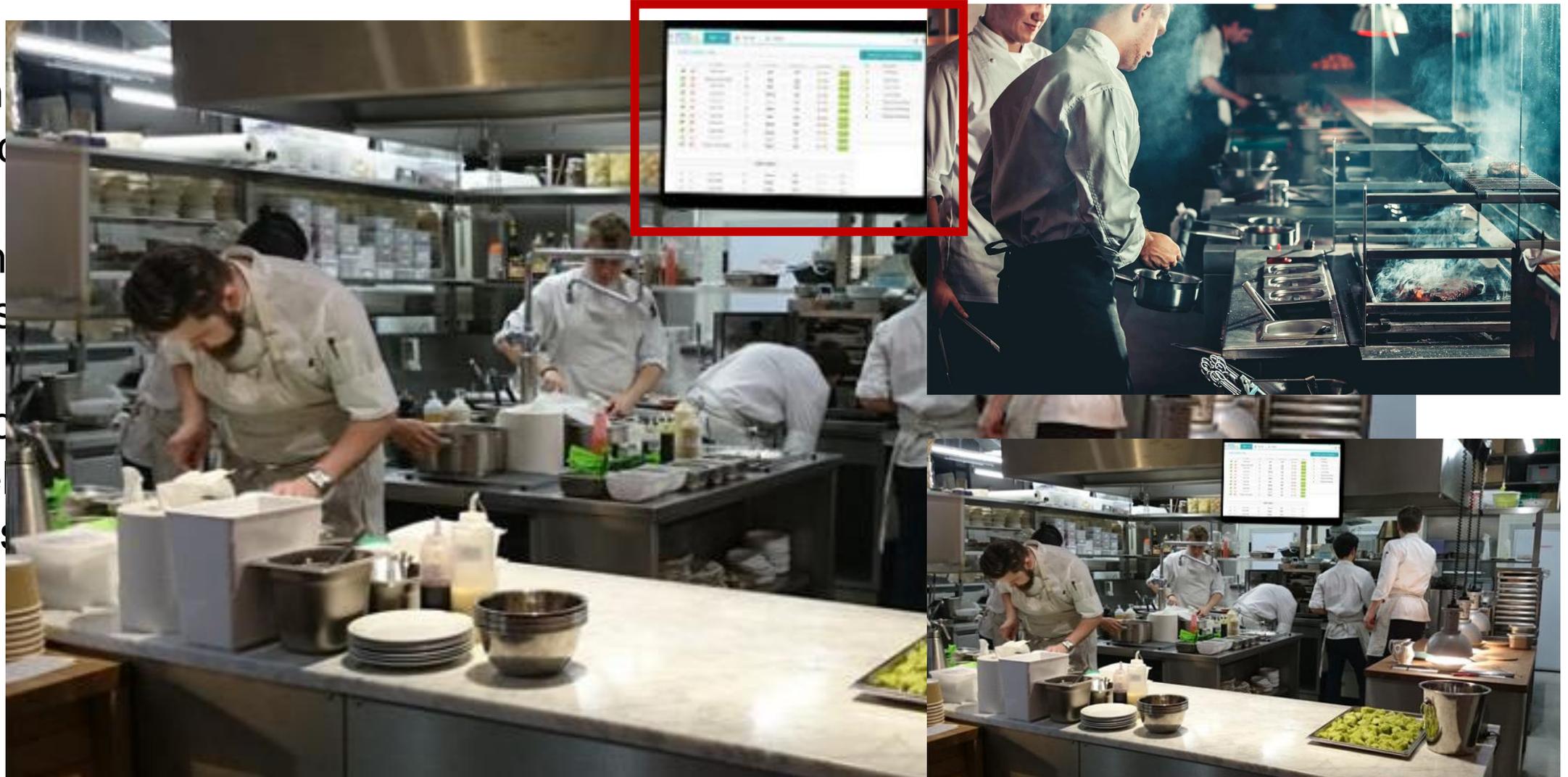
Why to do it?

- To have possibility restart it remotely.
- save electricity (30% of time)

# Use case: Shared Kitchen

Event  
service

- Shared  
resources
- Multiple  
hosts  
customers



## Use case: Freezers in hospitals

There are thousands freezers in one hospital.

- Each one should be monitored for case of the failure and biological material inside will be damaged.
- Electrical power alert you about the coming soon problem before the trouble happened.
- Power consumption of freezers can be from 15€ / year up to 50-60€ / year.
- But facility manager have there hundreds of them and don't know whis one of them should be replaced by new one..



# Use case: Shared Laboratories

You can analyze equipment usage by its power consumption..

Simple WiFi / IQRF power socket with metering will provide you usage charts..



## Usage case: Smart IT infrastructure

NETIO 4 allows you to restart devices remotely.

The **IP WatchDog** function allows to automatically reset the power to a switch, router, or microwave link when ping not received. (Internet connection failure).

NETIO 4 **save energy** by deactivating power for non-used devices, or during office closed time.



# PowerCable xxx device types



**NETIO**  
Networked power sockets

# NETIO PowerCable xxx 101x

- ▶ Industrial
- ▶ **IT (REST)**
- ▶ Cloud MQTT
- ▶ IQRF
- ▶ OEM



PowerCable **Modbus** 101F



PowerCable **REST** 101J



PowerCable **MQTT** 101G



PowerCable **IQRF** 901E

### PowerCable OEM

WiFi controlled power socket for by NETIO products  
Energy metering (kWh, A, W, V, Hz, TPF)  
Product for your OEM projects

## PowerCable xxx 101x

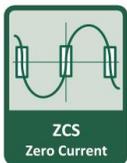
CH = 101J	DE = 101F
C13 = 101S	FR = 101E
US = 101B	UK = 101G

# PowerCable IQRF

IQRF controlled power socket by NETIO products

Energy metering (kWh, A, V, W, HZ, TPF)

DPA sensors standards compatible



- Industrial
- IT (REST)
- Cloud MQTT
- ▶ IQRF
- OEM



# IQRF

- LPWAN
- 868MHz
- Modules
- Reliability
- Ecosystem
- Devices
- Community



## Clouds & Services



HTTPS / MQTT  
JSON format

## Gateways

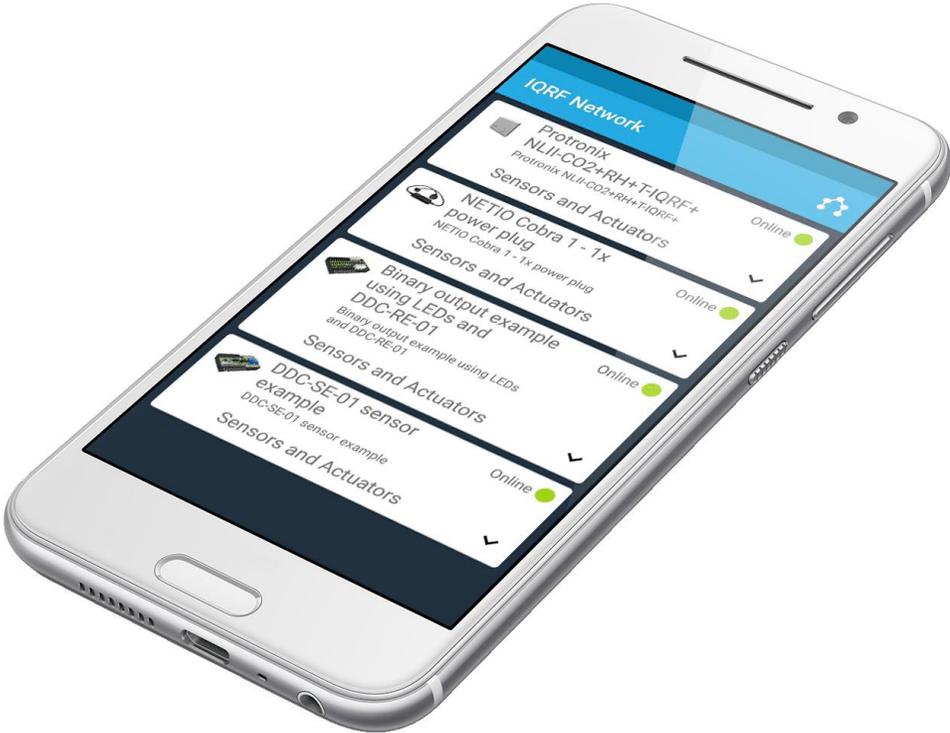


IQRF DPA

## End Devices



# Gateway to IQRF network



Data to send

NADR    PNUM    PCMD    HWPID

0001 H    5E H    40 H    0003 H    55.AA.00.0A.01.01.2E.

Auto Repeat    10 x 100ms

Terminal Log

View:  Auto Scroll    Separator:  Horizontal     Vertical     Data Displaying

Line	Time	Rx/Tx	Length	Data HEX
1	18:04:39.903	Tx	13	01.00.5E.40.03.00.55.AA.00.0A.01.00.2D.
2	18:04:39.935	Rx	11	01.00.5E.40.03.00.FF.37.01.08.01.
3	18:04:40.192	Rx	14	01.00.5E.C0.03.00.00.3C.55.AA.00.05.00.27.

```
{
  "mType": "iqrFBinaryoutput_SetOutput",
  "data": {
    "msgId": "1,",
    "req": {
      "nAdr": 1,
      "param": {
        "binOuts": [
          {
            "index": 0,
            "state": true
          }
        ]
      }
    }
  },
  "returnVerbose": false
}
```



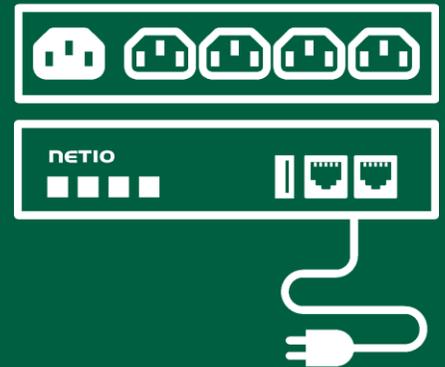
# IQRF gateway APIs



The image displays three overlapping browser windows showing the IQRF Gateway web interface. The first window shows the MQTT interface configuration page with a sidebar menu and a form for instance configuration. The second window shows the IBM Cloud connection wizard with a sidebar menu and a form for organization and device details. The third window shows the 'Send JSON request' API endpoint with a sidebar menu and a form for sending a JSON request.



# PowerCable xxx & PowerPDU 4C are industrial products



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# What is the INDUSTRIAL DEVICE



- 1) **Technical support** + documentation & manuals
- 2) **Opened API** (one or more documented protocols)
- 3) **Protocol compatibility** (today even tomorrow)
- 4) We provide **2 Years warranty** as standard + extension is available
- 5) Simple **FW upgrade** over the web (web fw archive)
- 6) No output click-click pulse during the FW upgrade / device reboot (**IOC** in NETIO)
- 7) **Temperature range -20 to 65°C** (B2C devices are certified for 25°C only...)
- 8) Defined **precision** of values measurement (PowerCable <1%)
- 9) **ZCS** – **Reliability** in switching / no harming connected device

# Wide temperature range

PowerPDU 4C = **-20 to +75°C.**

PowerCable xxx = **-10 to +65°C.**



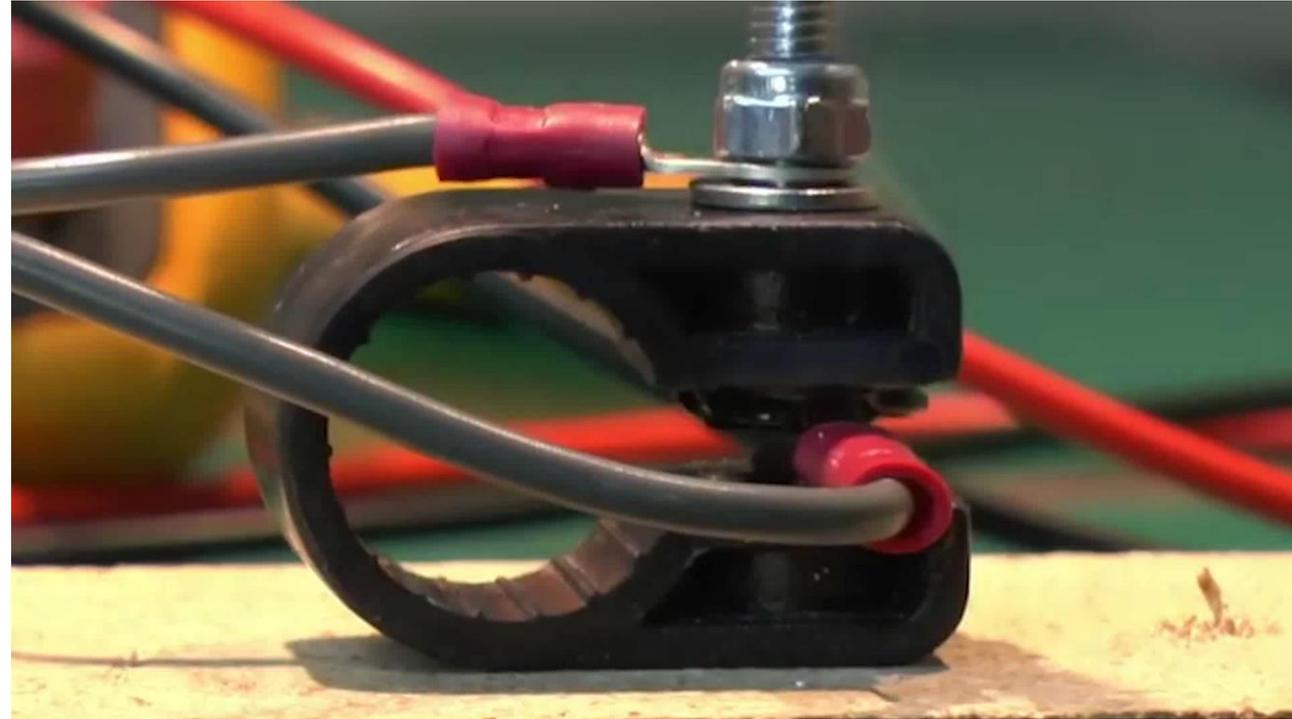
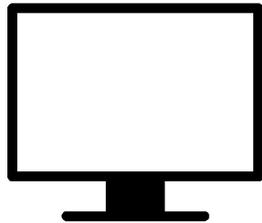
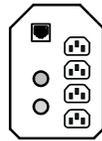
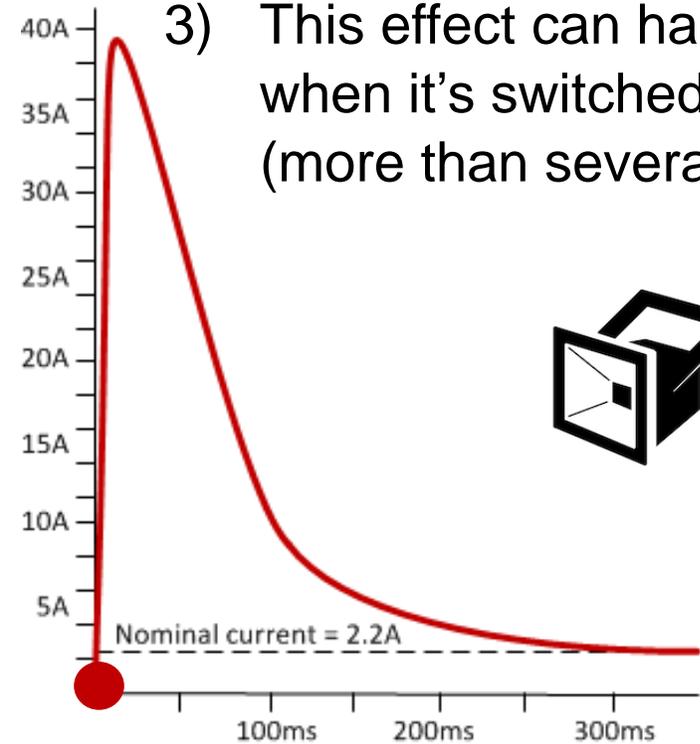
What do you think is standard consumer electronics is certified for?



# Inrush Current, Electric Arc

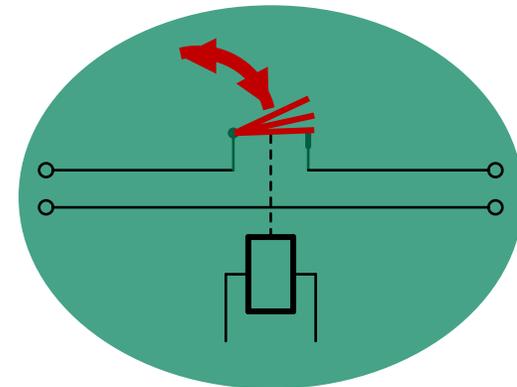
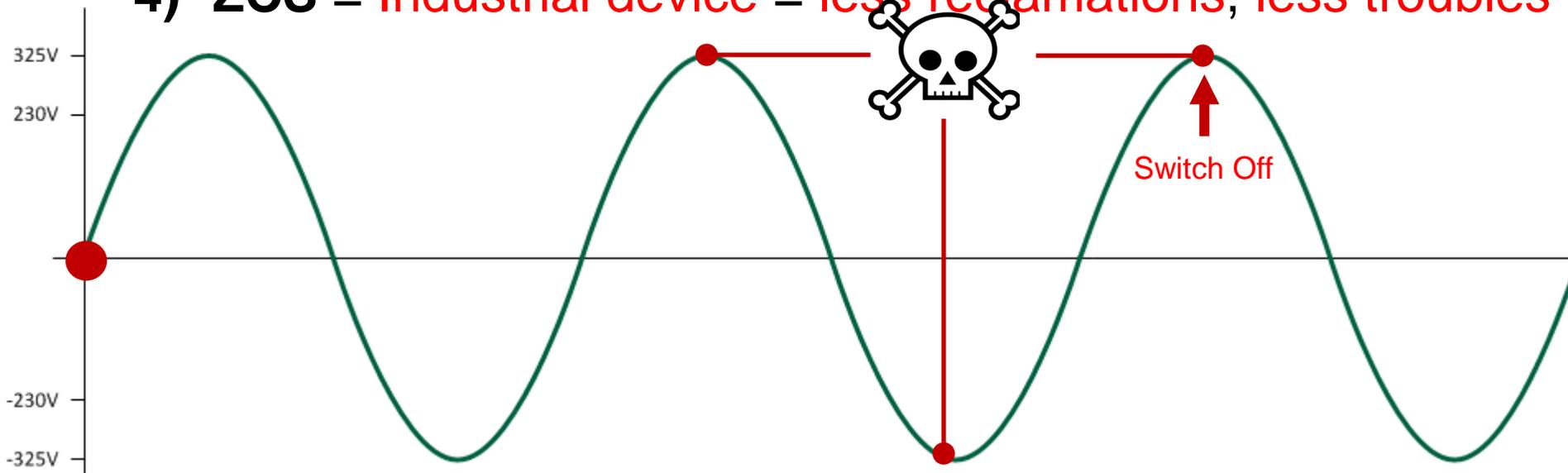
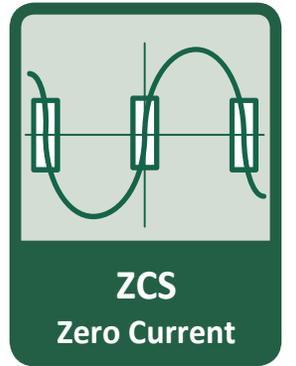
- 1) Some 230V devices (with **switched power supply** like computers) require more energy during **short time** after PowerOn (first 20 ms – 250 ms). It's called **Inrush Current**.
- 2) The **Inrush Current** and can be 10x or even **20x higher** than nominal current. 500W (2.2A / 230V) can be **40A for a short time**.

- 3) This effect can harm switching device when it's switched ON/OFF **too often** (more than several times per day).



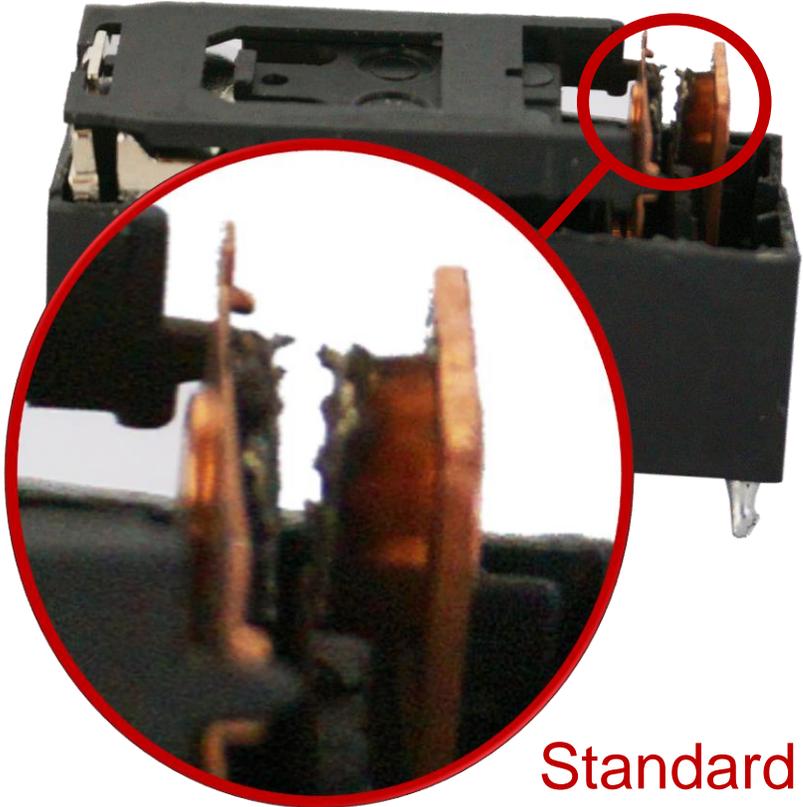
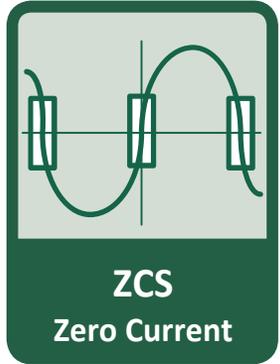
# ZCS (Zero Current Switching) is industrial feature

- 1) Relay switch power output On/Off in a very short moment when current is close to zero.
- 2) When switching often, Switch On/Off in the peak can harm electronics nearby (**EMC distortion**).
- 3) ZCS = no troubles with high **Inrush current** (current x15 for first 50 ms).
- 4) **ZCS = Industrial device = less reclamations, less troubles**

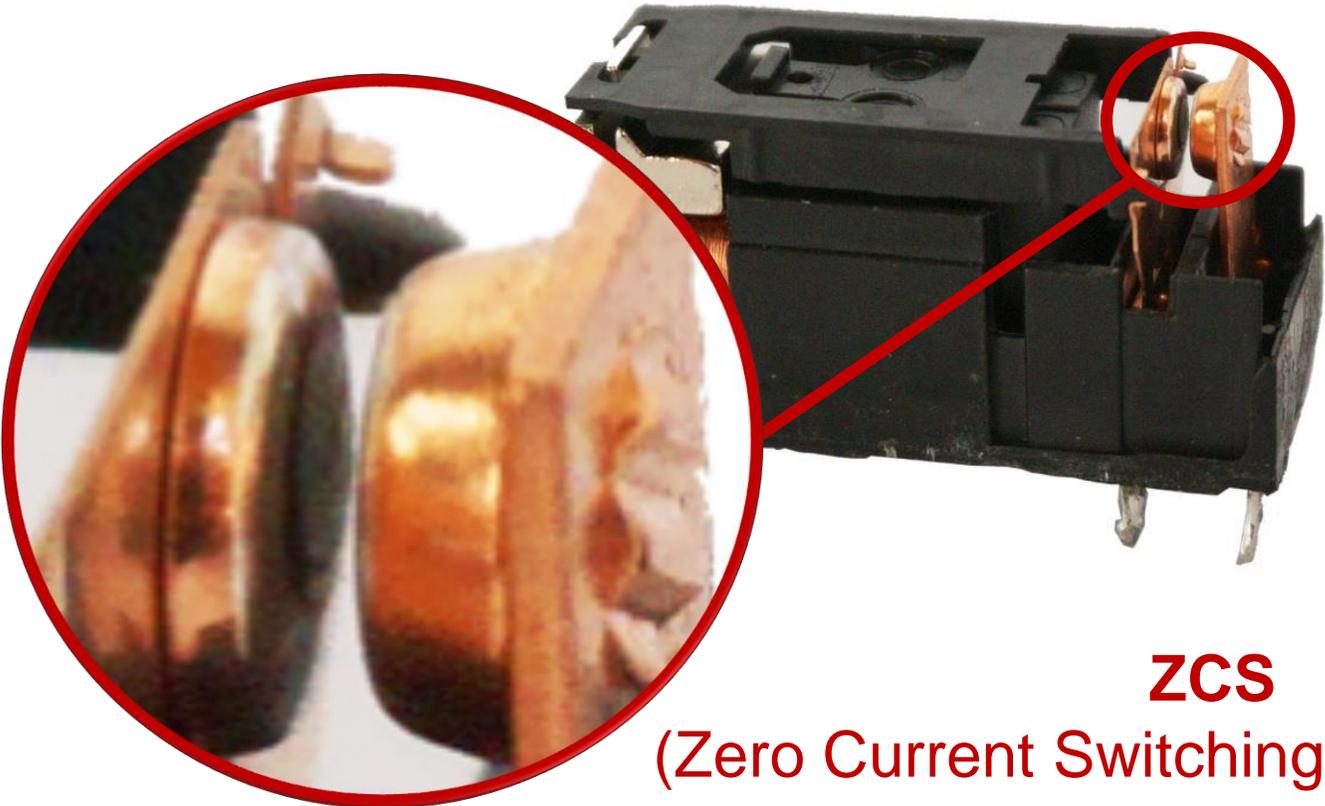


# ZCS Effect to relay contacts

Test: 3 days, 22 hours. Period: 0.2 sec On & 0.2 sec Off = 846 000 cycles.  
Connected device: AC/DC switched power adaptor **60W** (230V to 24V / 2.5 A) resistor load.



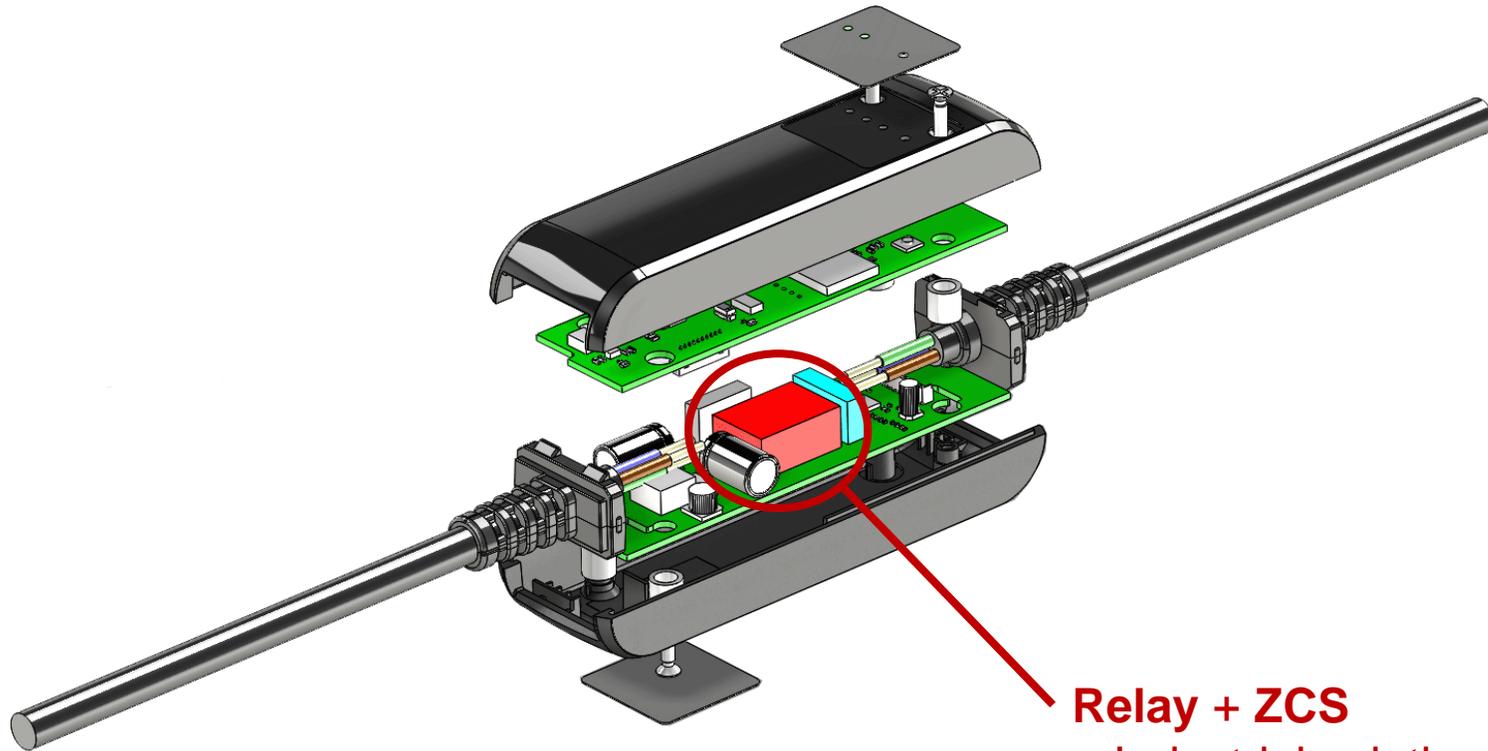
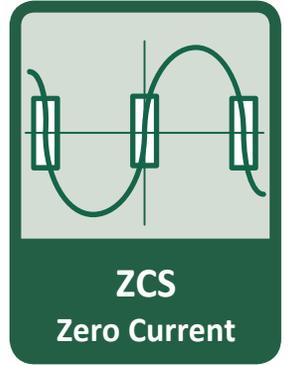
Standard solution



ZCS  
(Zero Current Switching)

# ZCS Effect

Shortly because of ZCS function even the **small relay** inside the PowerCable can be used to switching any 230V / 16A electrical device without RMA issues.



**Relay + ZCS**  
= Industrial solution



Relay



**Electrical contactor**

**THANK YOU  
FOR YOUR ATTENTION**

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