Introduction to 155x series ECO switches

March 5th 2012 SPD-SH/Zhou Jun

ECO Switch

Background

By actuating the switch of office and household appliances it is in the majority of cases not possible to disconnect the device completely. The appliances are in a standby or sleep mode with energy loss still. This means for example in Germany about 22 billion KWh per year loss according to the German ECO government department.

The regulation 1275-2008-EC for the ECO design requirements of the power consumption for electronic office and household appliances within the standby and OFF state requires the observation of following limit values.

Mode	Description	From July 1st 2010	From July 1st 2013
OFF	Not function, but connected to the net power, the display “OFF” means “OFF”	<1 Watt	<0.5 Watt
Standby	Device is connected to the net power and waits for reactivation, shows the information or the ON state	<2 Watt	<1 Watt

Marquardt reacted and anticipated for the regulation of the European Union by offering suitable solutions with different variations of ECO switch. The Marquardt designed ECO switches provides to shut-off the appliances completely in conditions that meet the turn off.

Terms

AOS: Auto-Off Switch

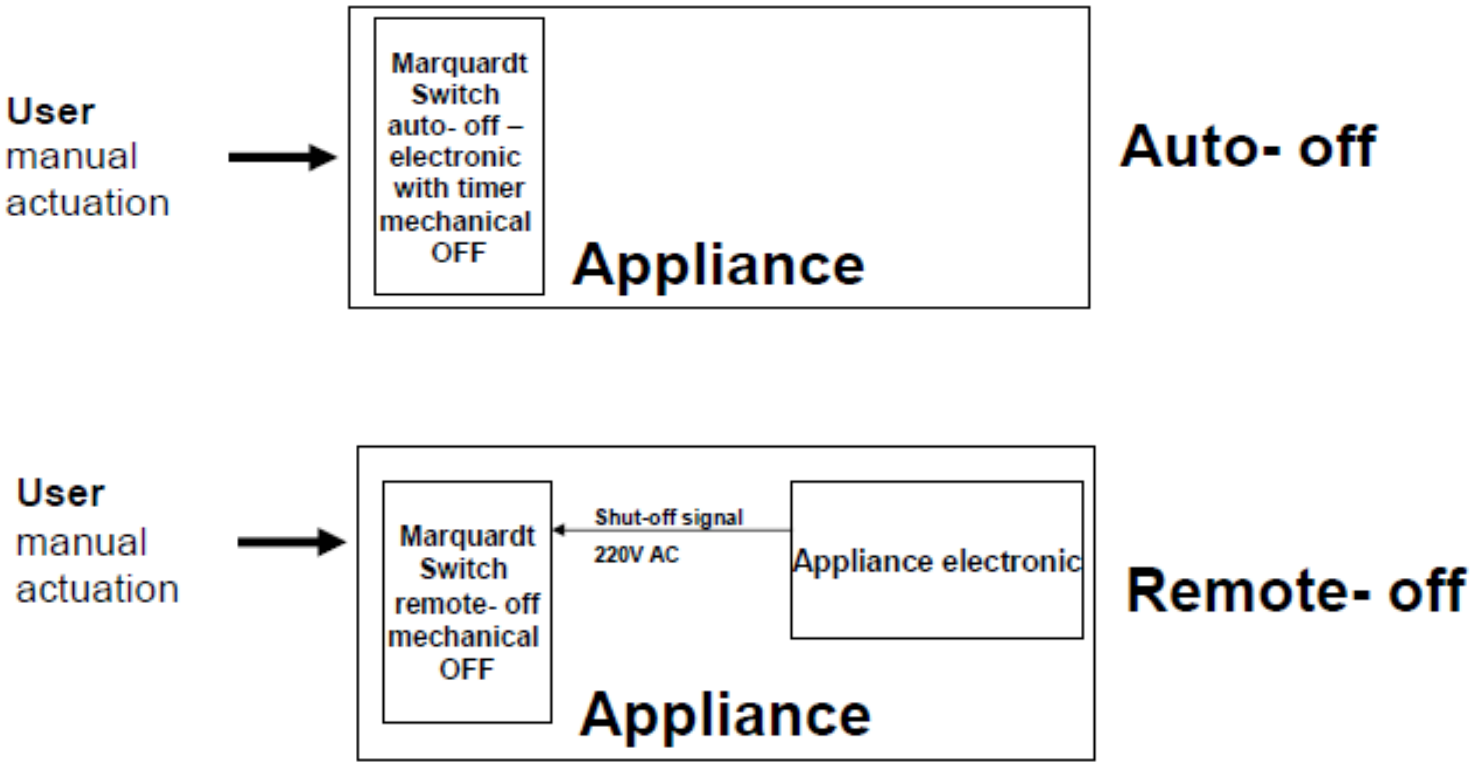
AOS version is with integrated electronic works standalone and use an internal signal to shut-off the switch after a defined time.

AOS-I: Auto-Off Switch with Current detecting function than AOS switch.

ROS: Remote-Off Switch

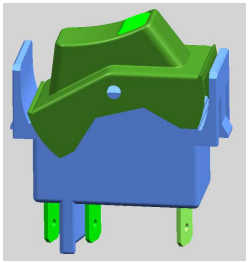
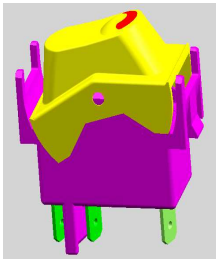
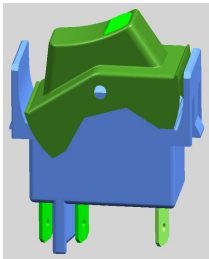
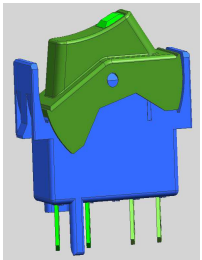
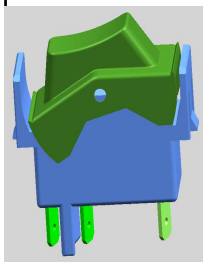
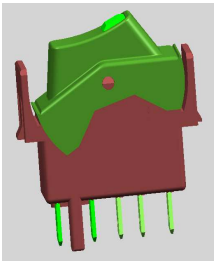
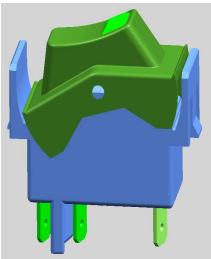
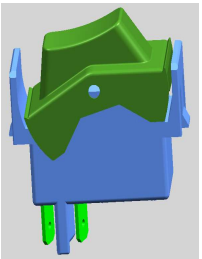
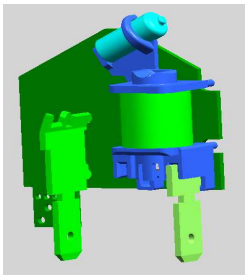
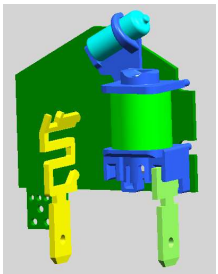
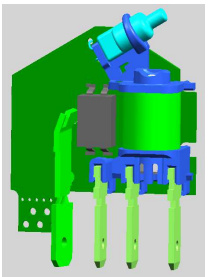
ROS version does not have an internal electronic and gets the signal from the appliance electronic to shut-off the appliance.

ECO Switch



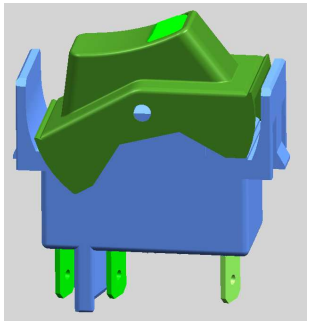
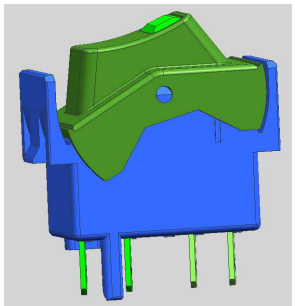
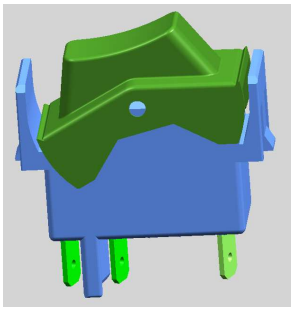
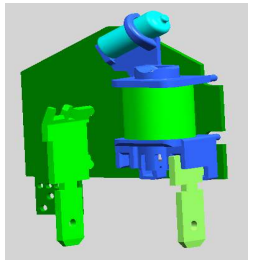
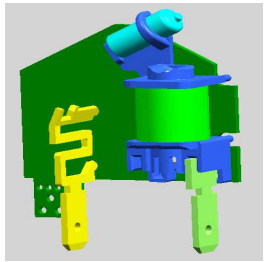
Versions

Overview

230V 50/60Hz Versions							
AOS	AOS (BSH)	AOS-I	ROS + Light	ROS No light	ROS low voltage pulse	Standard +Light	Standard No Light
							
			NO PCB	NO PCB		NO PCB	NO PCB
1550.1940	1550.1941	1550.1942	1550.1950	1551.1950	1550.XXX	1550.1902	1551.1902

Versions

Overview

110V 50/60Hz Versions			
AOS	AOS-I	ROS + Light	ROS No Light
			
		NO PCB	NO PCB
1550.XXXX	1550.XXXX	1550.XXXX	1551.XXXX

ECO Switch

Typical application

AOS	AOS-I	ROS	Standard switch
Filter caffee machines	Irons with steam tank Coffee-machines for espresso	Automatic coffee machines (like in the tea kitchen)	Without PCB and Coil (Standard rocker switch)
 	 	 	For the cheap version of all mentioned devices Water dispenser, running machine, electro-mobile, etc. too many.

ECO Switch

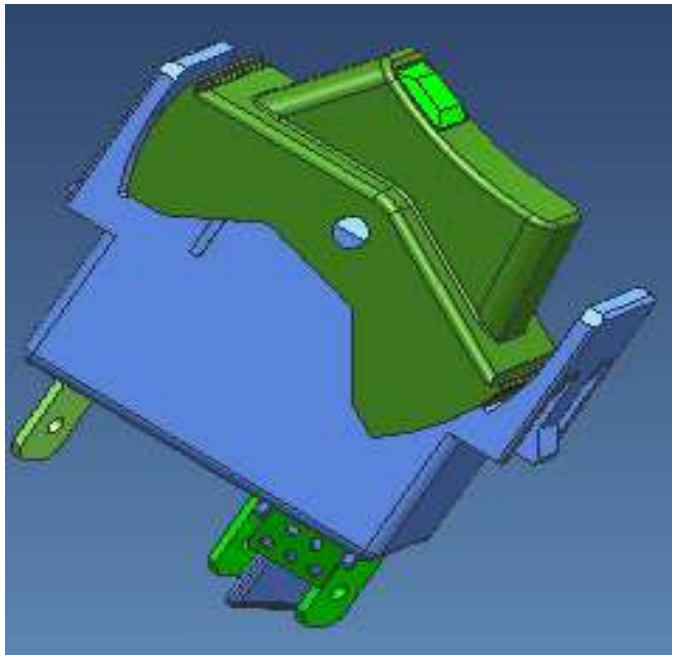
Products

Basic Technical Features

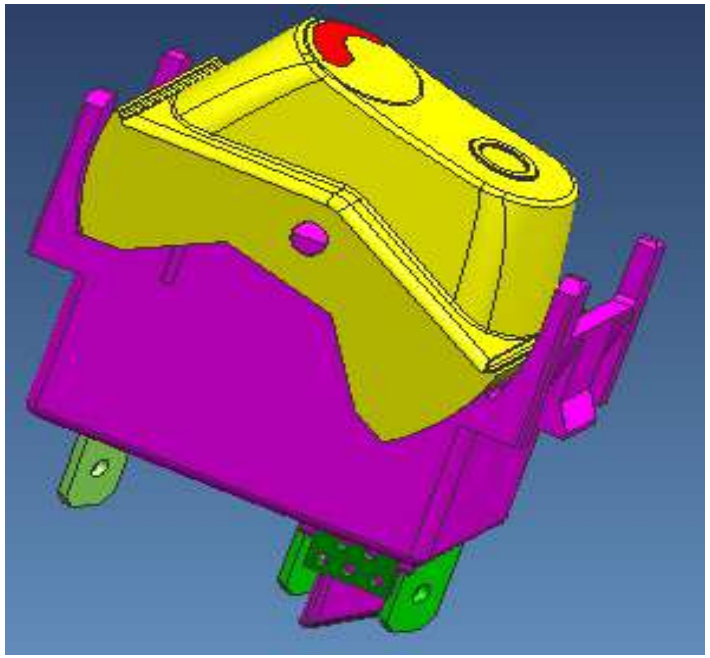
- Size : (39.5 ± 0.5mm)x(18.0 ± 0.5mm)x(43.0 ± 0.5mm) small compact size
- Contact Rating Capacity: 10 (4)/250VAC,16(8)/110VAC
- Ambient Temperature Rating: 0℃~85℃
- Electrical Durability >50,000 cycles
- Mechanical Durability > 100,000 cycles
- IP 40 (protect Φ1.00mm or even more bigger solid particles, no water protect)
- According to ENEC 60335 (European Normal Electrical Certification)
- UL 61058-1 approval
- Flammability: UL 94V-0
- RoHS compliant
- Switch off time programmable in production (4s~71 h)
- Customized Rocker possible
- Illuminated and non-illuminated variants

Products

Main Products



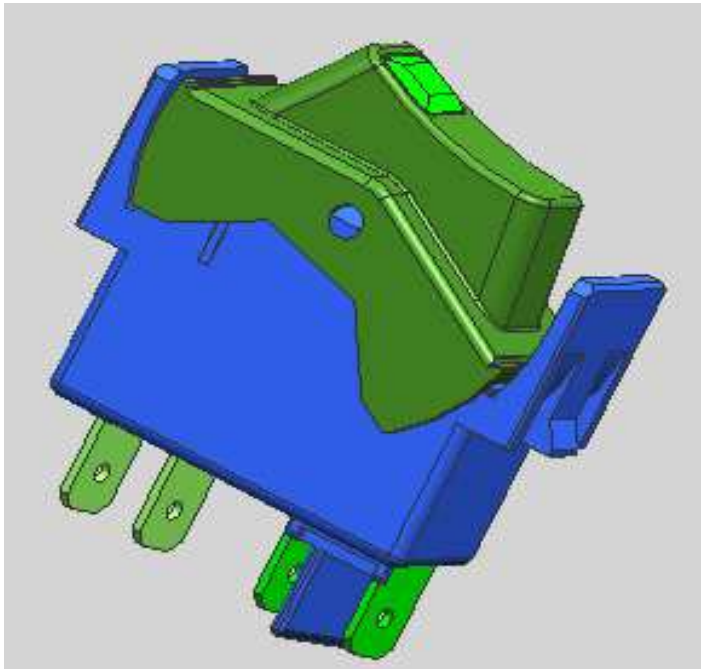
1550.1940 (AOS)
1550.1942 (AOS-I)



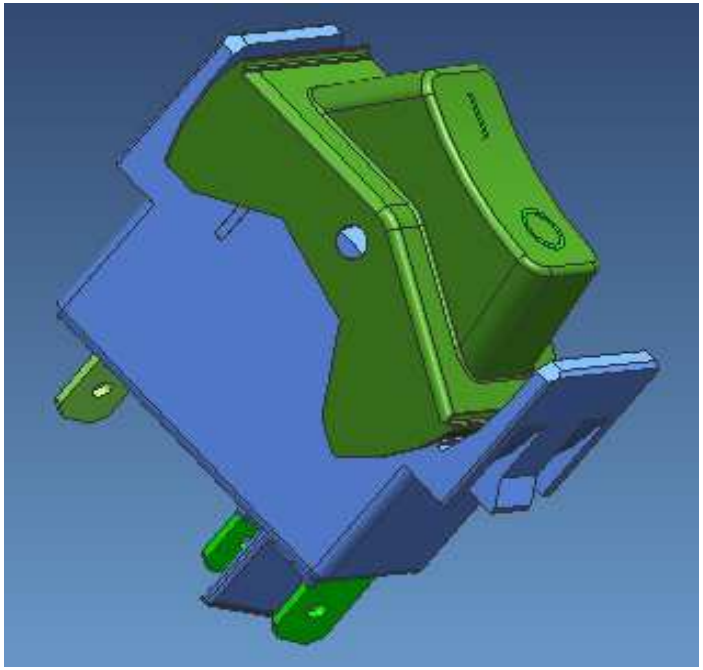
1550.1941 (AOS)

Products

Main Products



1550.1950 (ROS+ light)

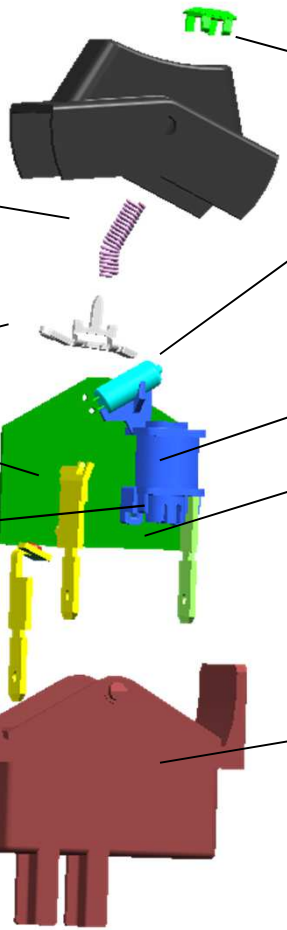


1551.1950 (ROS)

ECO Switch

Products

parts



Rocker
-new part
-different versions

Light conductor
-different versions

pressure spring
-existing part

Glow lamp
-existing part
-different versions possible

contact bride
-existing pat

Anchor and spring
-new part

terminal
-new part
- different versions

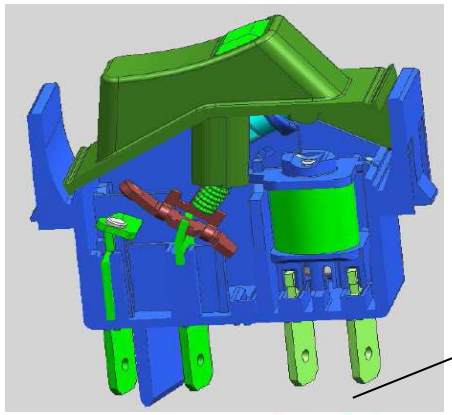
PCB
-new part
-different versions for AOS; AOS-I

Coil
-new part
-110V and 230V version

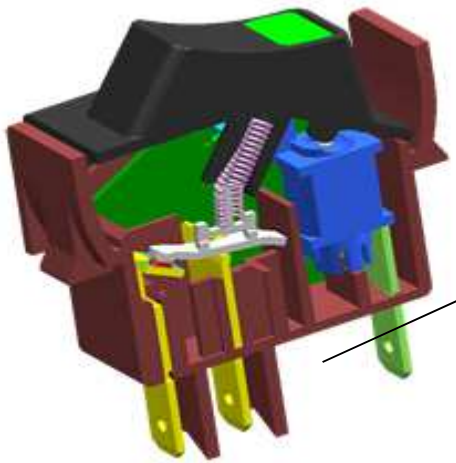
Terminal
-new part

Housing
-new part
-different versions for AOS;AOS BSH; AOS-I; ROS and Standard switch

Working principle

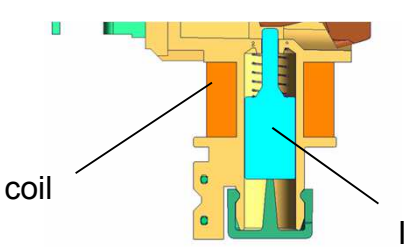


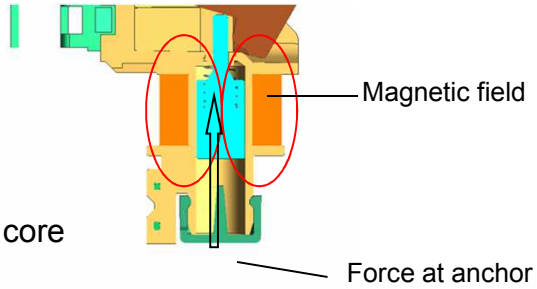
OFF state

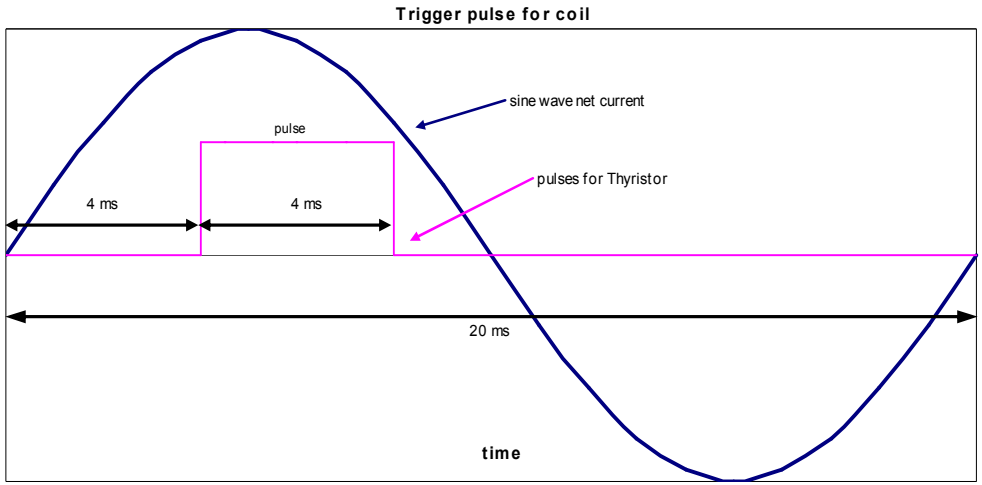


ON state

Basic principle



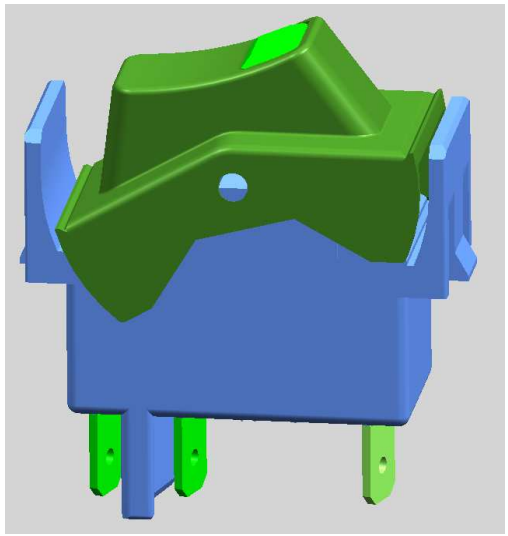


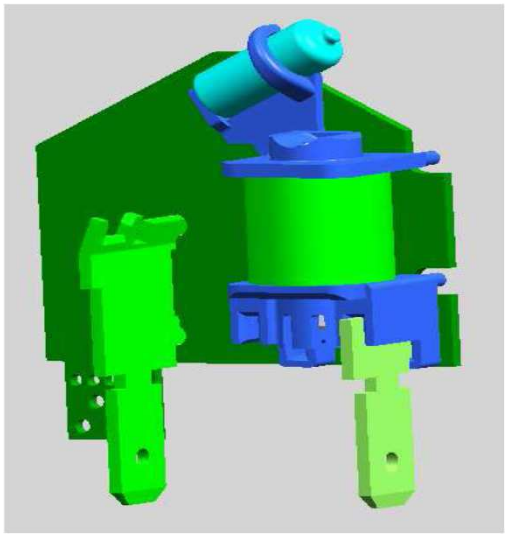


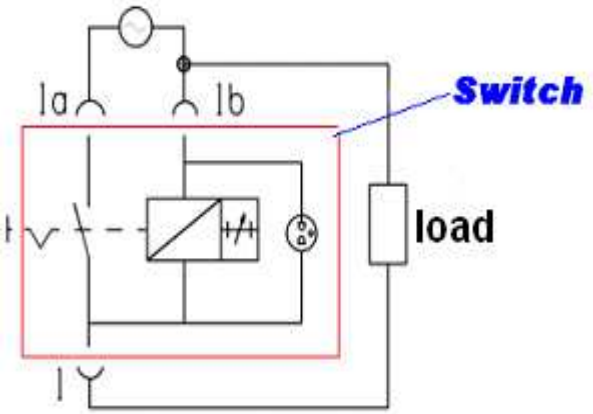
Working principle

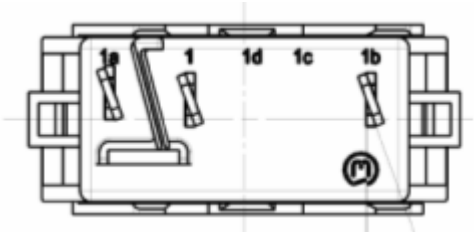
AOS Switch

After switch on the switch one timer starts. When the programmed time is count down to zero the electronic creates a short pulse to drive the coil to switch off the switch. The time will be programmed during production at EOLT (End Of the Line Test).





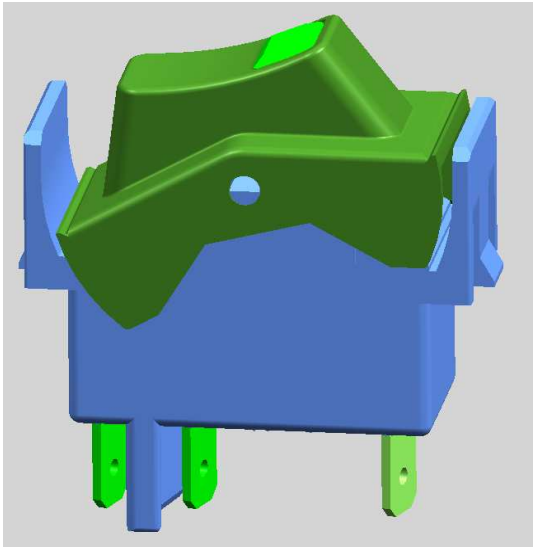


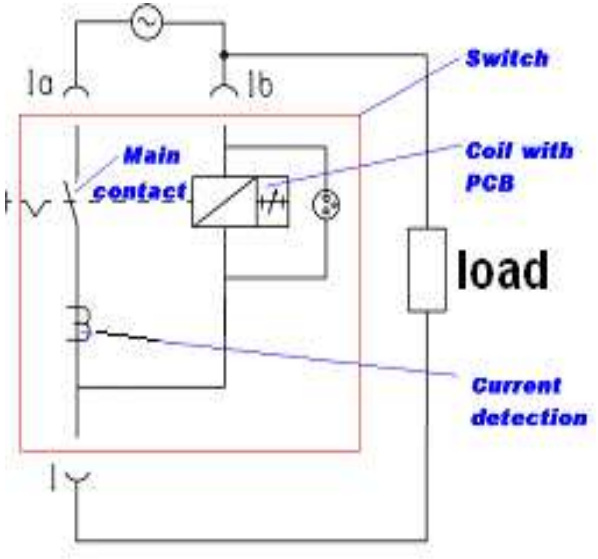


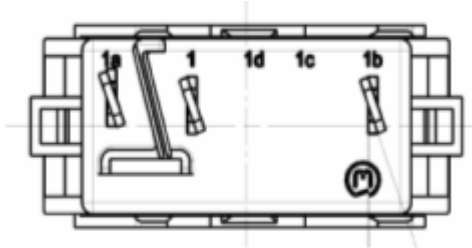
Working principle

AOS+I Switch

When the switch is switched in on position the electronic detect the current which is guided by the switch. The detection is done over the meander in the bearing of the switch. The timer will activated after the customer system goes into Stand-By mode. This type will be possible in a 230V and in a 110V version.



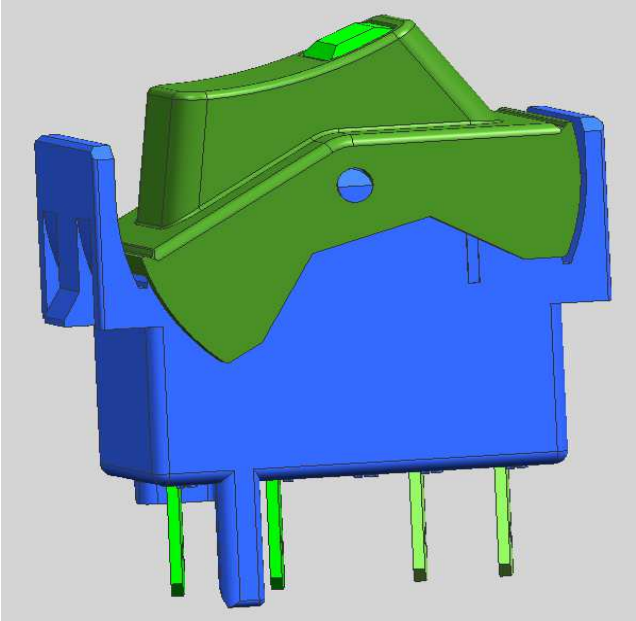


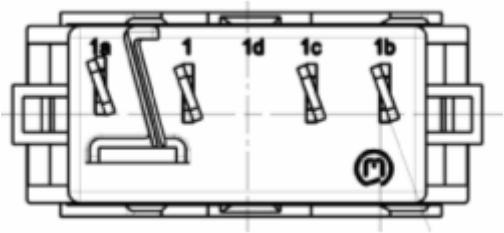


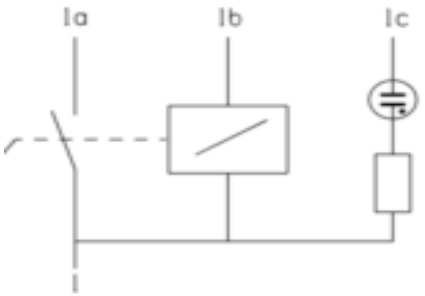
Working principle

ROS+light Switch

When the switch is switched on position , the light illuminates and it can be switched off using remote control signal.



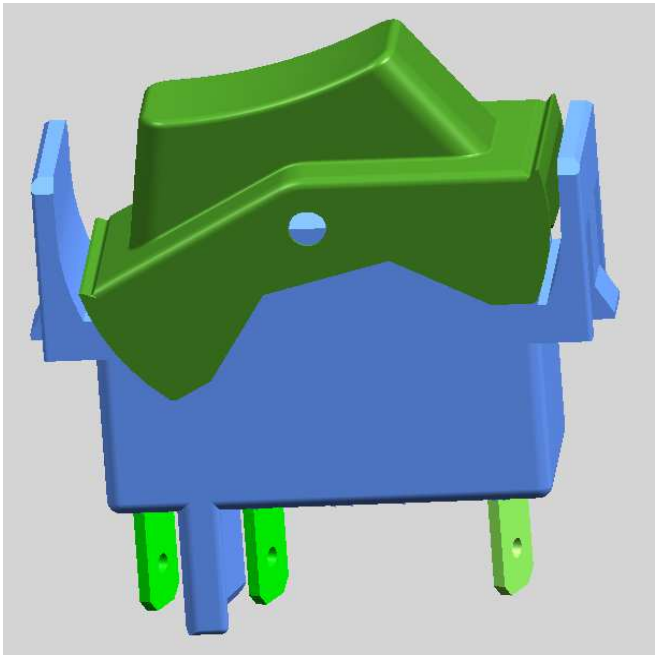


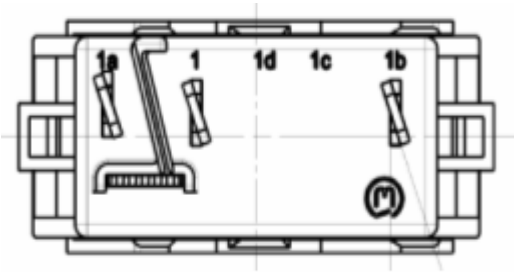


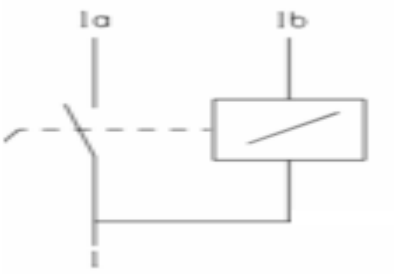
Working principle

ROS without light Switch

It just hasn’t light than the ROS+ light version.



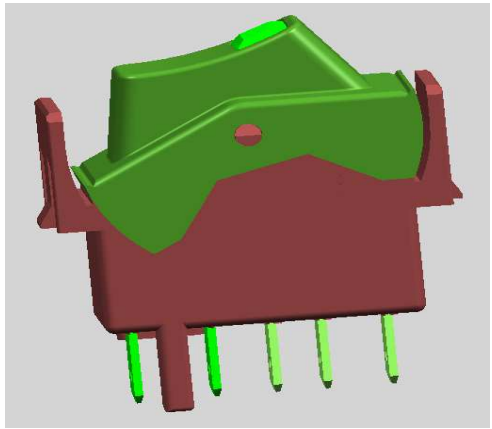


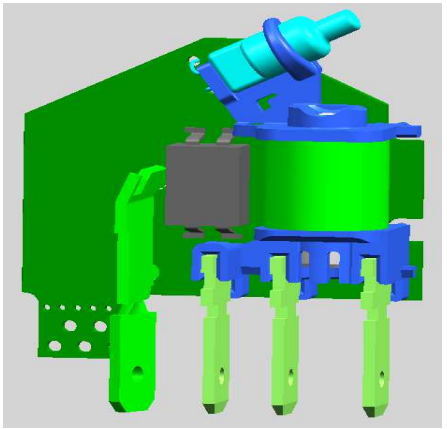


Working principle

ROS low voltage pulse

This is a special version of the ROS in which is an electronic integrated. The electronic is necessary because to drive the coil we need a 230V power but the customer just only want to give us only a 5V signal. The 5V signal triggers an opto-coupler to switch on the SCR. This coupler is necessary to separate the high voltage and the low voltage path from each other. At the moment this is a planned version.





ECO Switch

Typical advantages

- Comfortable automatic appliance shut-off, completely galvanic disconnection.
  (ECO e.g. saving per device of up to 20 EUR and in the average 100 EUR per home or 10% of the energy costs per year)
- Generally reduction of electric power consumption.
- Solution as complete standalone component. Auto-off
- Slim solution for devices with electronic. Remote-off
- Auto-off and Remote-off flexible by device type demand.
- Cost-effective solution of ECO requirement.
- For AOS the MCU control the OFF time very accurate either at 50hz or 60hz.

Q&A?