

SANTON SOLAR SWITCHES

PROVEN, TRUSTED & RELIABLE

Santon has developed, produced and maintained electromechanical switchgear, which provides safety and continuity for people and installations for almost 100 years.

Santon has always been a company with people passionate about technique and the drive to improve and to develop. Whether they're in the research and development department, marketing, sales or production, the focus on providing our clients with the best technical solutions for their needs and giving them the best service they deserve is a passion we all share.

Worldwide

Santon switchgear is used within several worldwide markets including industry, railway transport, maritime and offshore, machine building, the energy sector, defense and of course, the solar market.

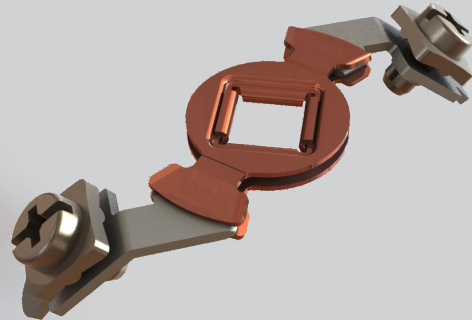
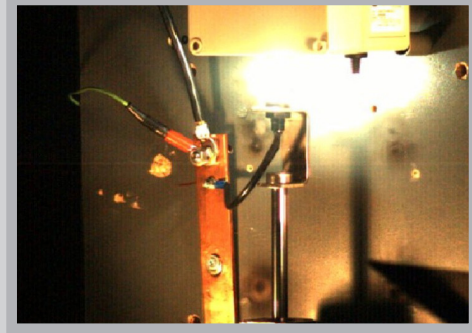
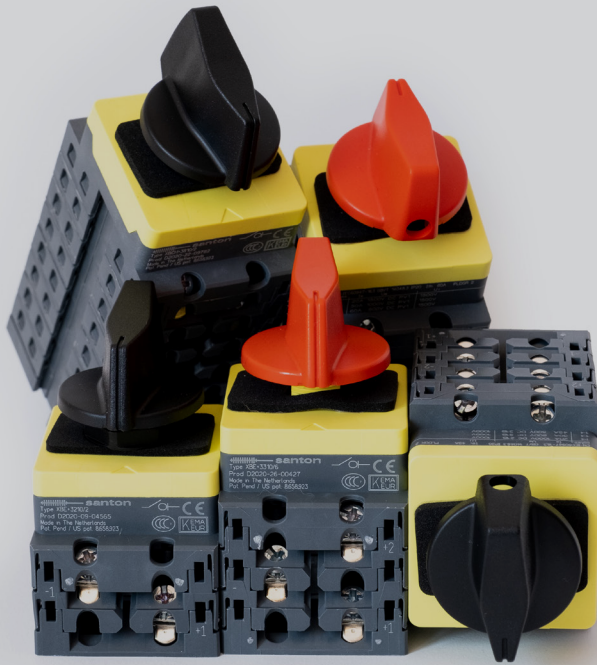
Since our switchgear has been used in these very heavy duty markets for many years, we and our clients know how durable they are and because our switchgear is used for safety purposes, this is obviously of paramount importance. Many of our clients, especially within the solar market, use our switchgear in their own OEM product and they have to be certain that they are using the best safety switches available. Santon is part of the discoverIE PLC group of companies see www.discoverieplc.com for more details

The expectations of the DC switch are increasing:

- DC disconnect switch is a human safety device, it needs to effectively operate under load when needed to keep operator safe.
- Besides static reliability, DC disconnecting can easily create arc – fire risk.

Santon is at the forefront of technology specifically developed for the renewable energy market and in particular solar energy. Meeting the demands of safe and efficient DC switching you can be sure that Santon products have been developed to meet the highest technical and commercial standards.

Our range of X type switches have become the safety component of choice for many of the largest solar inverter manufacturers whilst the DFS is an innovative solar panel shutdown solution that is compatible with all standard string inverters.



SANTON DC SWITCH PRINCIPLE

The basis of the Santon DC switch is formed by a double-bladed contact bridge which connects two terminals. The blade-shaped fixed contacts are clasped by the blades of the bridge.

The switching takes place by turning the bridge. Springs are pre-tensioned when switching with the DC mechanism. At the end of the 90° switch angle, the built-up spring force is released entirely into the second (inner) shaft of the switch (snap action). A very high switching speed of around 3 ms is realized because of this construction, which results in a very short power shut-off time, which is essential for DC switching and maximizes safety and minimizes arc

The flame arc, which occurs by switching off the DC current, is broken off as quickly as

possible, ensuring any wear resulting from the flame arc is reduced to an absolute minimum. When switching, the double surfaces of the blade rub the contact area clean. As a result, the contact resistance stays very low. Because the contact is clasped at both sides by the blade, the switch is vibration and shock proof.

Since the release of this switch a lot has changed in the world, the market and within Santon. The unique snap action mechanism principle remained.



We developed and introduced the X-Type switch especially for the Solar market in 2007. This switch is based on the proven snap action mechanism but because of the use of another design and material, we were able to produce the smallest switches available suitable for full automatic production.

Lead times should be as short as possible because of the unpredictable and fast growing demands for PV installations. Once demand exists, we have to be able to deliver fast. The modular design of our switches and our automatic production lines make sure we are able to meet this demand. In addition, we

work with a tracking system, as used in the automotive industry, for tracking and tracing our switches. In case something occurs, we are able to track the switches and take the proper actions, allowing us to provide our clients with the best possible service.

The quality, durability and this small design make the X-Type very suitable for usage in PV inverters. The X-Type switch has been a big success for Santon since its introduction and is used worldwide in the majority of inverters used in photovoltaic installations and has now over 12.000.000 units in use in installed global PV inverters.

Safety First

We realize our clients are not the only ones who depend on the safety of our switchgear. Our clients' clients do too. Whether our switches are used by an OEM for building an inverter or by an installer installing a solar plant, the safety and profitability of our clients partly rely on the quality of our switchgear and they therefore need our switches to be the best available. Working with high automation, skilled people and being NEN-EN-ISO 9001:2015 and IRIS ISO/TS 22163:2017 certified, guarantees our clients the best products they can buy. Internal audits are being held on a regular basis by ourselves, external auditors and our clients.

Market and customer specific solutions

Although we have automatic production lines for mass production and a complete series of standard solutions, our clients often present us with very specific demands. This is what Santon does best and what we have always done best: working together with our clients to develop the best solution for their needs. Customer specific demand can vary from a specific assembly of existing materials, but can also involve developing a special knob or mechanism. We are able to provide our clients with a very complete service and act as a true partner, with a team of engineers, designers and technicians.

One of our solutions is the Fire Fighter Safety Switch, which we specially developed for the Solar market. The main benefit of a photovoltaic installation is constant deliverance of DC current. If a fire hits a building with DC current still present this can lead to dangerous situations. Santon developed the Fire Fighter Safety Switch specifically for this purpose. The Fire Fighter Safety Switch can automatic isolate the DC current between the solar panels and the building in case the AC power is switched of in the building, which results in a safe situation for firefighters to fight the fire and eventually enter the building, without the risk of getting hurt by powered DC cables.



The main X type series available from Santon: (Other ratings available on request)
For IEC 60947-3:2008/ AMD2:2015 for cat PV 1 – PV 2 / AS 60947-2018 certified products

Switch type	XBE+	XBE+	XBHP+	XBHP+	XBC+	XBCH+
Deck per + pole	1	1	1	1	1	1
Deck per - pole	1	1	1	1	1	1
IEC 60947-3:2008/AMD2:2015	PV1		PV1		PV1	PV1
IEC 60947-3:2008/AMD2:2015		PV2		PV2		
AS50946: 2018 AZ/NZS IEC 60947.1:2015		AS		AS		
# poles max	8	8	8	8	8	8
Volt	Amp levels certified					
1500						20
1450						
1400						
1350						
1300						
1250						
1200			20	7,5		
1150						
1100	10	5				
1050						
1000	16	8	30	12,5	50	50
950						
900						
850						
800	25	12,5	40	20	60	60
750						
700						
650						
600			50	30		
550						
500	50	25				
450						
400						

For UL 508 I certified products

Switch type	XBUE	XBU	XBUEHP	XC	XC
Deck per + pole	1	1	1	1	2
Deck per - pole	1	1	1	1	1
UL 508 i	UL 508 i	UL 508 i	UL 508 i	UL 508 i	UL 508 i
# poles max	8	8	8	8	8
Volt	Amp levels certified				
1500				13	30
1450					
1400					
1350					
1300					
1250				21	
1200					
1150					
1100					
1050					
1000				30	50
950					
900					
850					
800					
750					
700					
650					
600	25	30	36		
550					

WHY USE A SANTON DC SWITCH

- Lowest resistance also in high temperature use in the market
- Certifications are done at + 70 C and – 40 C temperature to simulate real field use conditions
- Santon DC switch used over 15 years in the PV markets globally
- Used in systems up to 5.000 Meters from sealevel , on water etc
- Produced in 100 % automatic production lines to achieve highest quality standard with test report per switch produced available
- Over 12.000.000 units in use in the PV markets globally
- No patent risks as Santon switch is patented in Europe – USA – China
- Santon is the market leader in the market for inverters up to 250 kWp in size with annual shipments of around 2.000.000 DC switches to all leading string inverter OEM companies globally





Santon International

The Netherlands
Tel. +31(0)10 283 26 23
solar@santonswitchgear.com

Santon Switchgear Ltd

United Kingdom
Tel: +44(0)1633-252371
info@santonswitchgear.co.uk

Santon GmbH

Deutschland
Tel: +49(0)180/118 40 88,
solar@santonswitchgear.com

