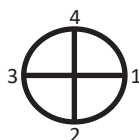
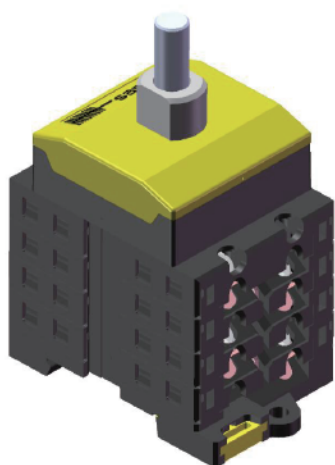




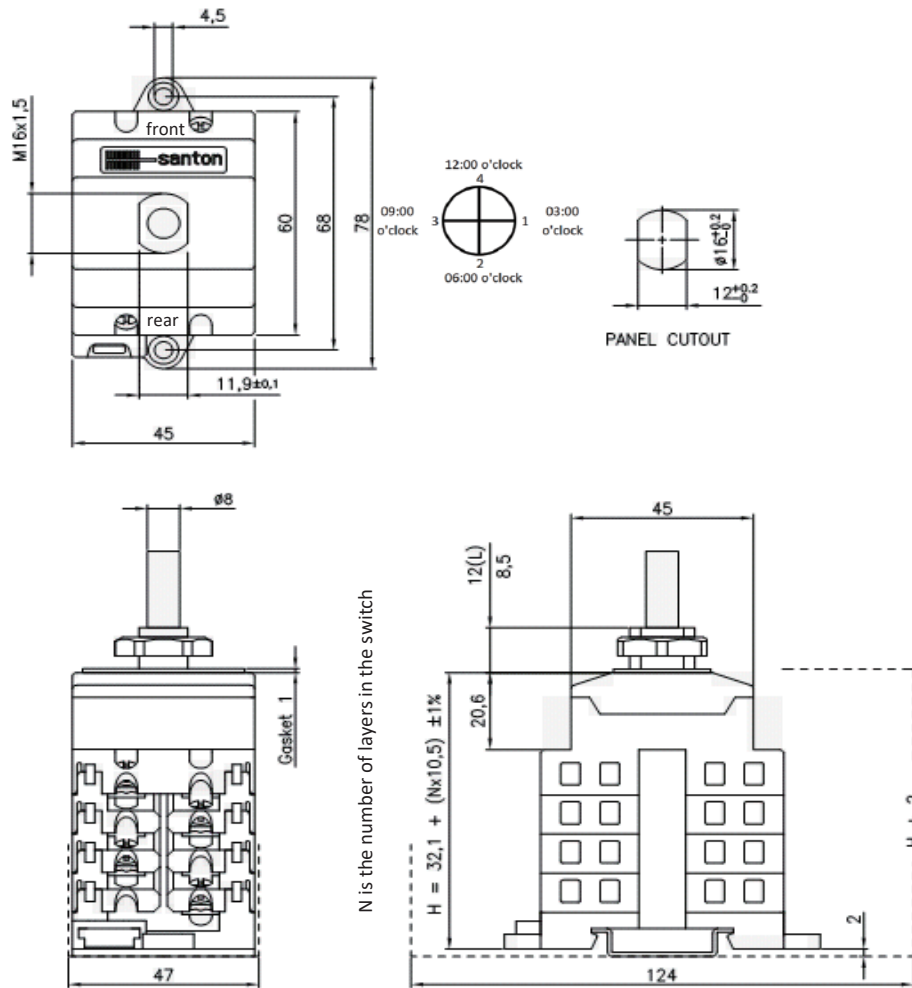


Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
5	13			14			X		X
		11			12	X		X	
4			Empty						
3	-1			-1			X		X
2		+1			+1		X		X
1			Empty						

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue	1000	V dc
rated operational current (DC poles)	Ie	16	A dc
rated operational voltage (second rating DC poles, if requested)	Ue	850	V dc
rated operational current (second rating DC poles, if requested)	Ie	20	A dc
rated operational voltage (third rating DC poles, if requested)	Ue	800	V dc
rated operational current (third rating DC poles, if requested)	Ie	25	A dc
rated operational voltage (fourth rating DC poles, if requested)	Ue	650	V dc
rated operational current (fourth rating DC poles, if requested)	Ie	32	A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles	2		
utilization category DC	DC-21B		
actuator	motor		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp	8	kV
insulation voltage	Ui	1000	V
rated thermal current uninterrupted duty	Iu	25	A
rated short-time withstand current (1s)	Icw	750	A
rated short-circuit making capacity	Icm	1,4	kA
rated conditional short-circuit current		5	kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}	124 x 47 x 84,6		mm
* see the drawing for the height of the switch. The number of layers N is:	5		
knob operation force	max.	1,4	Nm
tightening torque terminal screws M4 , min. - max.	1,5	1,7	Nm
tightening torque panel mounting nut, min. - max.	2,0	2,5	Nm
tightening torque M3 screw in the standard black knob, min. - max.	0,5	0,7	Nm
ambient temperature allowed between	- 25 to + 70		°C
storage temperature allowed between	- 40 to + 80		°C
maximum relative humidity, without condensation at 20 °C	90		%
pollution degree	2		
IP rating terminals	IP20		
IP rating gland of the shaft in case of single hole panel mounting	IP65		
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9	mm ²		
auxiliary contact(s), AC15	one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight	254		g
accessories:	-		



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
 - Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
 - By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values				Unit
Rated operational current (DC poles)	le	16	20	25	32	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2,5	4	4	6	mm ²
max power dissipation	P	0,5	0,8	1,2	1,9	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

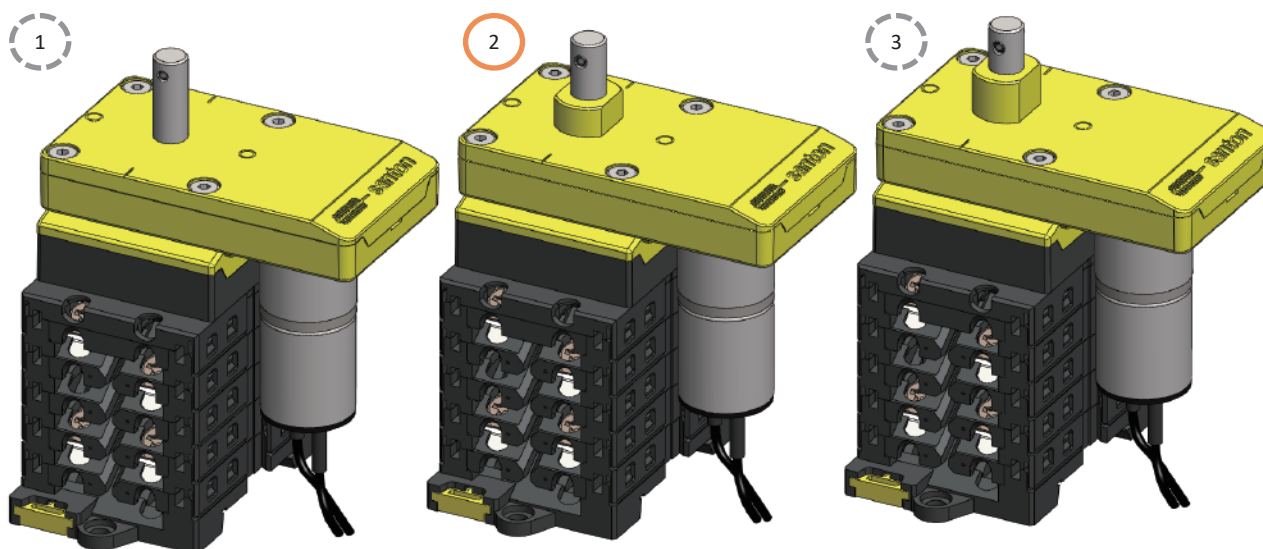
Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible

*² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Technical data - Motor		Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)		Ue	24	V dc
rated operational current		Ie	0,3	A dc
No load current		I	0,08	V dc
No load speed		V	9,2	rpm
Rated load current		I	0,15	A dc
Rated load speed		V	7,5	rpm
Stall current		I	0,8	A dc
max power dissipation (at stall)		P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)			
IP rating solder lips	IP00			
IP rating solder lips	IP00			
Technical data - Motor driven switch		Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))			
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr			
Accessoires	(1)	IP 65 gasket		
	(2) & (3)	IP 65 gasket & M16 Nut		
ambient temperature allowed between				- 25 to + 70 °C
storage temperature allowed between				- 40 to + 80 °C
maximum relative humidity, without condensation at 20°C				90 %
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3				10000 cycles
according to factory test (on & off) at room temperature (20°C)				10000 cycles
Mounting method(s)	Dimensions		X	
Bottom mounting or Panel mounting (four holes)	(1)			0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)			8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)			12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

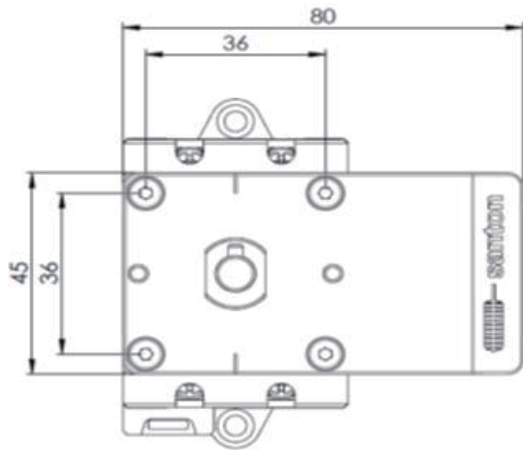
The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

- **Do not** force the manual operation with more than 1.5Nm.
- **Do not** block the manual operation during motor movement. This will damage the motor.

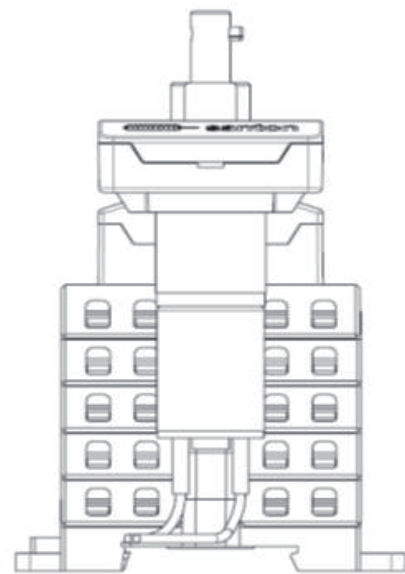
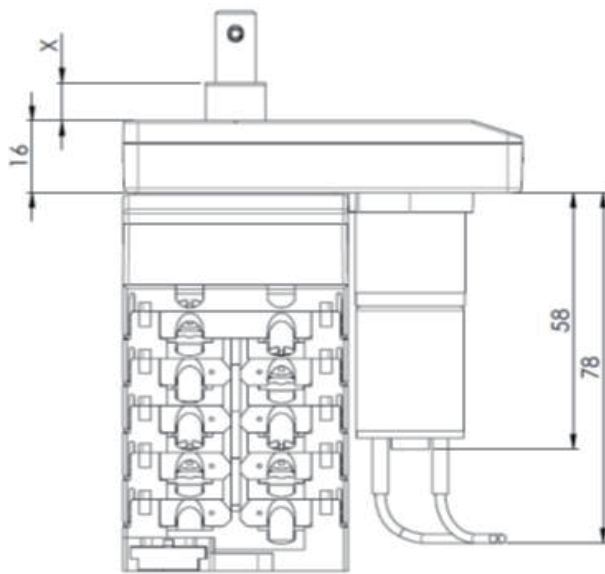
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

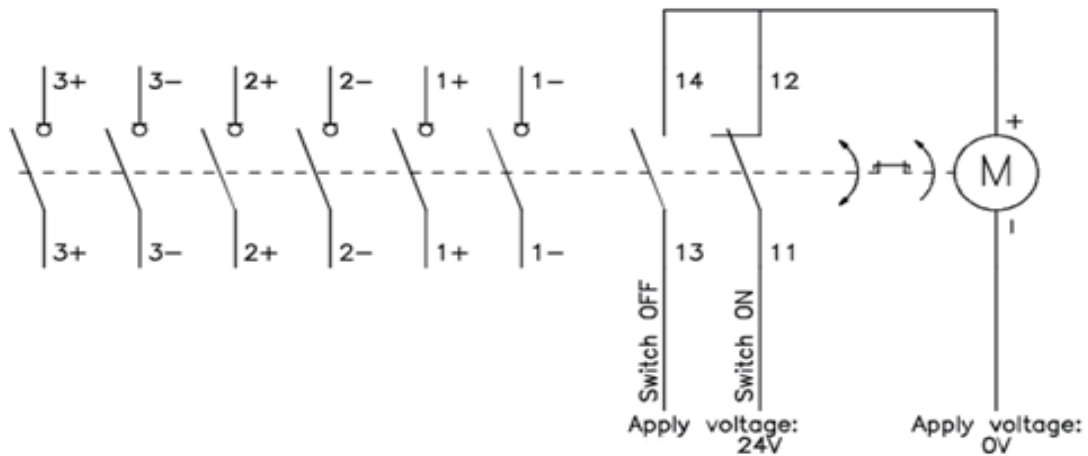
Dimensioning



Panel mounted switches - Panel cut out

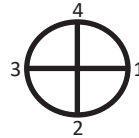
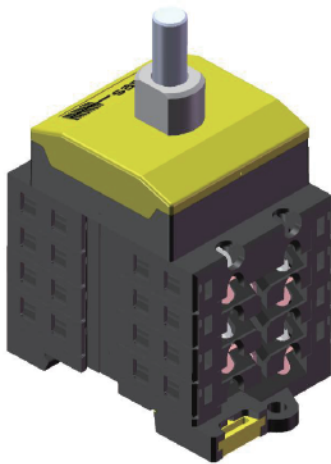


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

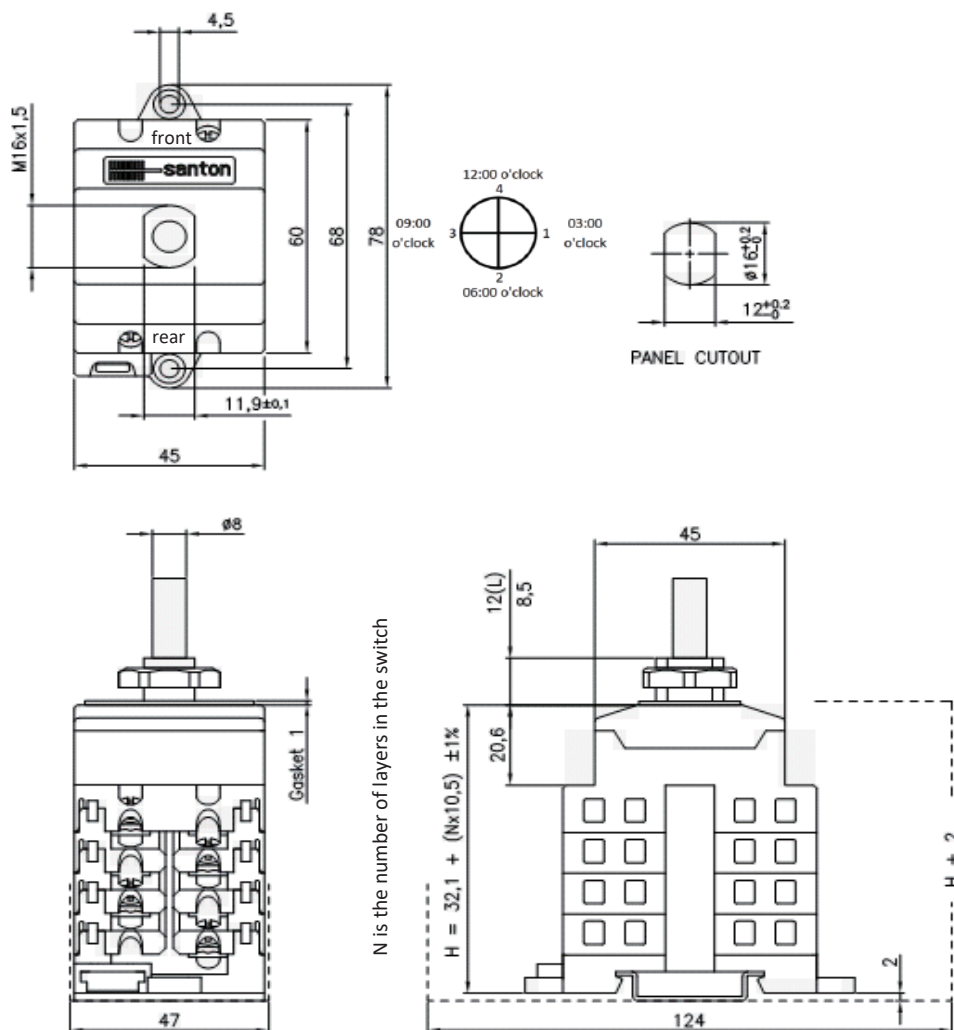
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
7	+2			+2			X		X
6		-2			-2		X		X
5	-1			-1			X		X
4		+1			+1		X		X
3			Empty						
2	13			14			X		X
		11			12	X		X	
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue	1000	V dc
rated operational current (DC poles)	Ie	16	A dc
rated operational voltage (second rating DC poles, if requested)	Ue	850	V dc
rated operational current (second rating DC poles, if requested)	Ie	20	A dc
rated operational voltage (third rating DC poles, if requested)	Ue	800	V dc
rated operational current (third rating DC poles, if requested)	Ie	25	A dc
rated operational voltage (fourth rating DC poles, if requested)	Ue	650	V dc
rated operational current (fourth rating DC poles, if requested)	Ie	32	A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles	4		
utilization category DC	DC-21B		
actuator	motor driven switch with black knob [Q3A]		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp	8	kV
insulation voltage	Ui	1000	V
rated thermal current uninterrupted duty	Iu	25	A
rated short-time withstand current (1s)	Icw	750	A
rated short-circuit making capacity	Icm	1,4	kA
rated conditional short-circuit current		5	kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}	124 x 47 x 105,6		mm
* see the drawing for the height of the switch. The number of layers N is:	7		
knob operation force	max.	1,4	Nm
tightening torque terminal screws M4 , min. - max.	1,5	1,7	Nm
tightening torque panel mounting nut, min. - max.	2,0	2,5	Nm
tightening torque M3 screw in the standard black knob, min. - max.	0,5	0,7	Nm
ambient temperature allowed between	- 25 to + 70		°C
storage temperature allowed between	- 40 to + 80		°C
maximum relative humidity, without condensation at 20 °C	90		%
pollution degree	2		
IP rating terminals	IP20		
IP rating gland of the shaft in case of single hole panel mounting	IP65		
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9	mm ²		
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight	315		g
accessories:	-		



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
 - Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
 - By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values				Unit
Rated operational current (DC poles)	le	16	20	25	32	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2,5	4	4	6	mm ²
max power dissipation	P	1,0	1,5	2,4	3,9	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

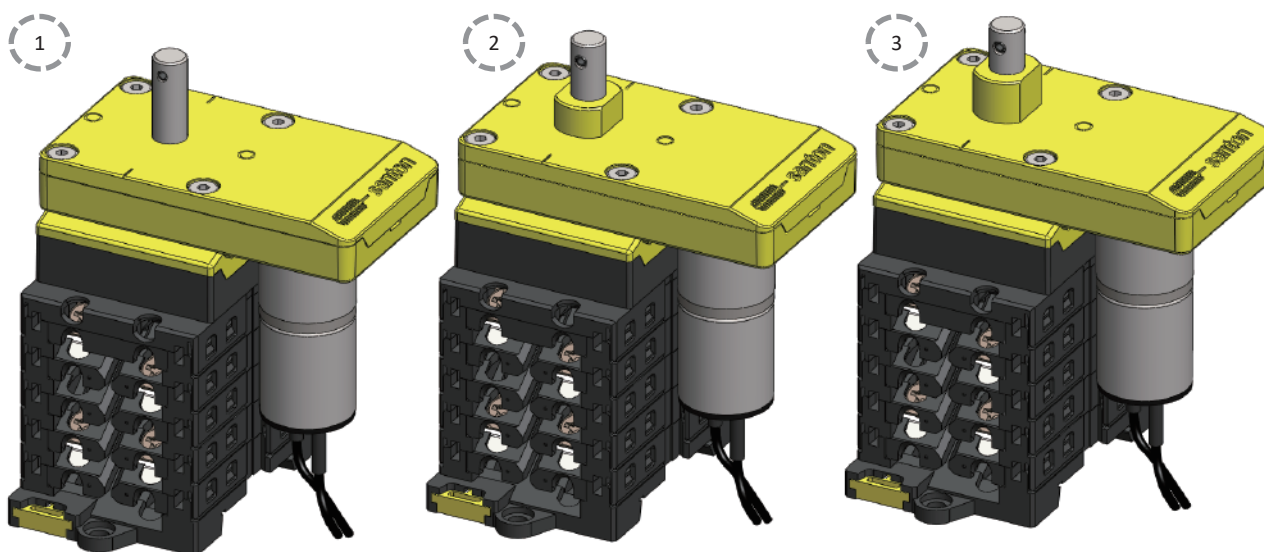
Registered Spade Tongue Terminals

Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible
 *² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Technical data - Motor		Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)		Ue	24	V dc
rated operational current		Ie	0,3	A dc
No load current		I	0,08	V dc
No load speed		V	9,2	rpm
Rated load current		I	0,15	A dc
Rated load speed		V	7,5	rpm
Stall current		I	0,8	A dc
max power dissipation (at stall)		P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)			
IP rating solder lips	IP00			
IP rating solder lips	IP00			
Technical data - Motor driven switch		Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))			
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr			
Accessoires	(1)	IP 65 gasket		
	(2) & (3)	IP 65 gasket & M16 Nut		
ambient temperature allowed between				- 25 to + 70 °C
storage temperature allowed between				- 40 to + 80 °C
maximum relative humidity, without condensation at 20°C				90 %
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3				10000 cycles
according to factory test (on & off) at room temperature (20°C)				10000 cycles
Mounting method(s)	Dimensions		X	
Bottom mounting or Panel mounting (four holes)	(1)			0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)			8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)			12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

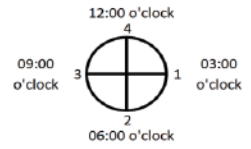
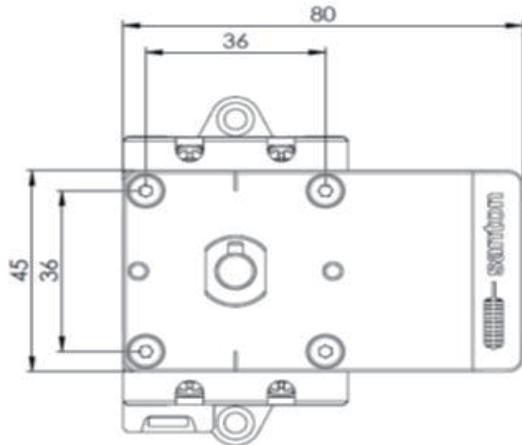
The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

- **Do not** force the manual operation with more than 1.5Nm.
- **Do not** block the manual operation during motor movement. This will damage the motor.

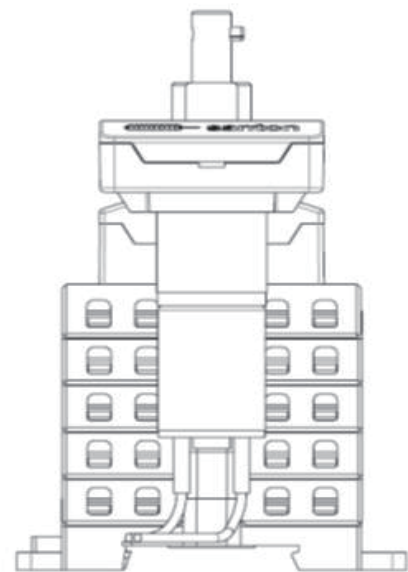
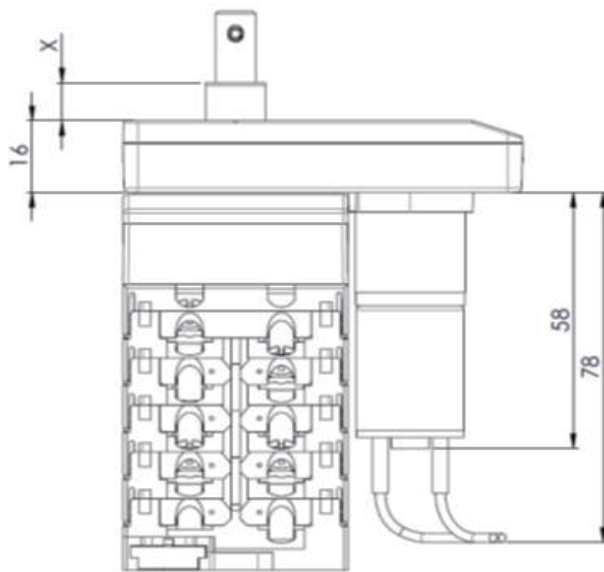
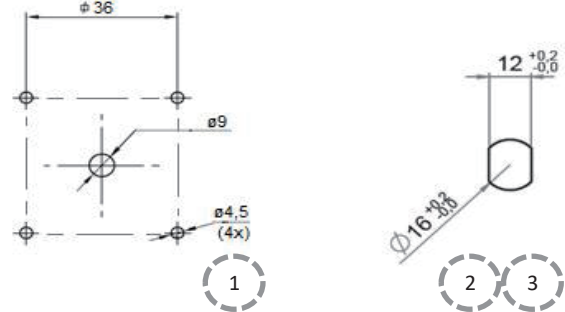
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

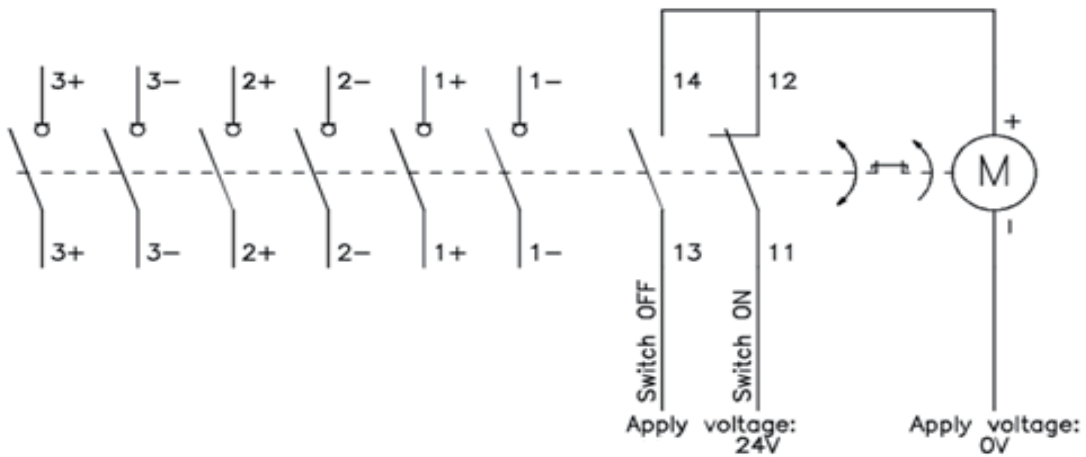
Dimensioning



Panel mounted switches - Panel cut out

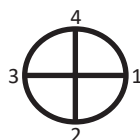
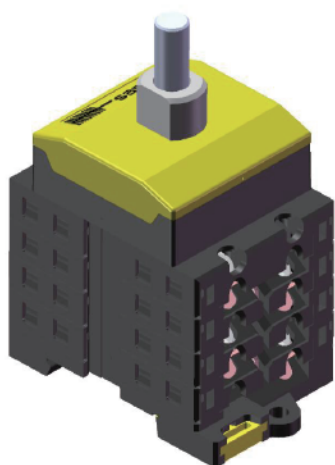


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

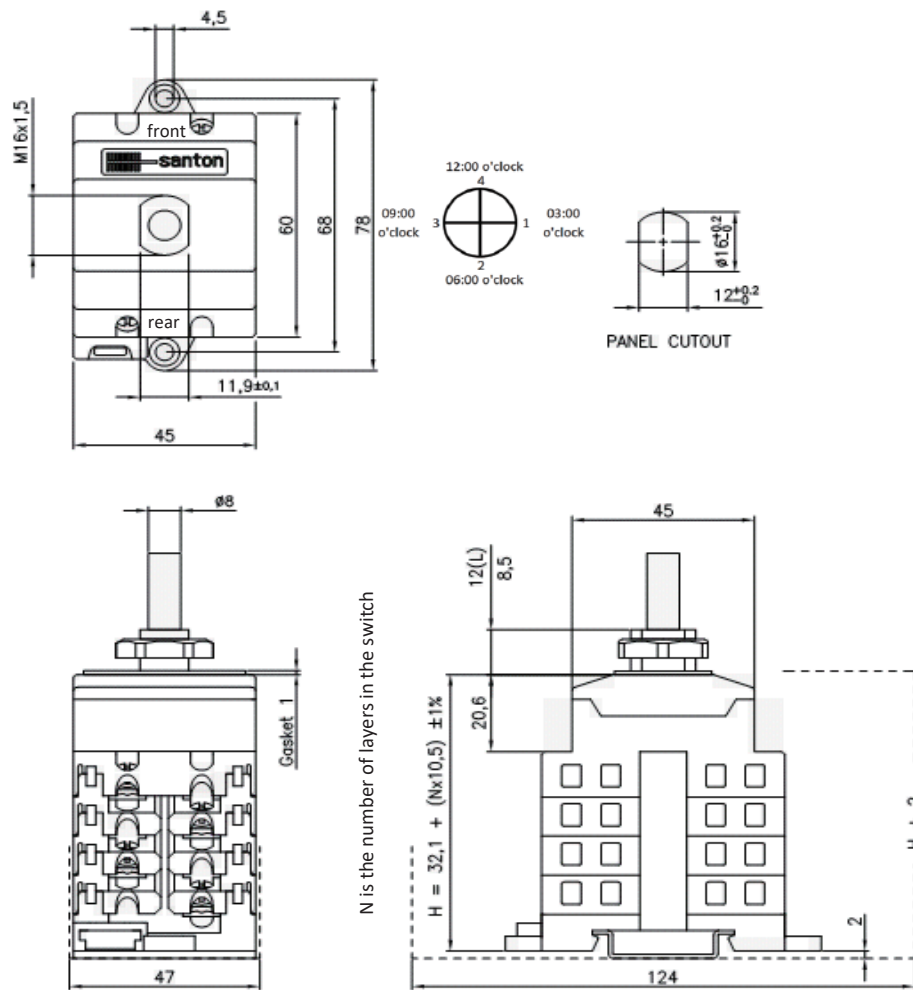
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
9	-3			-3			X		X
8		+3			+3		X		X
7	+2			+2			X		X
6		-2			-2		X		X
5	-1			-1			X		X
4		+1			+1		X		X
3			Empty						
2	13			14			X		X
		11			12	X		X	
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue		1000 V dc
rated operational current (DC poles)	Ie		16 A dc
rated operational voltage (second rating DC poles, if requested)	Ue		850 V dc
rated operational current (second rating DC poles, if requested)	Ie		20 A dc
rated operational voltage (third rating DC poles, if requested)	Ue		800 V dc
rated operational current (third rating DC poles, if requested)	Ie		25 A dc
rated operational voltage (fourth rating DC poles, if requested)	Ue		650 V dc
rated operational current (fourth rating DC poles, if requested)	Ie		32 A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles	6		
utilization category DC	DC-21B		
actuator	motor driven switch with black knob [Q3A]		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp		8 kV
insulation voltage	Ui		1000 V
rated thermal current uninterrupted duty	Iu		25 A
rated short-time withstand current (1s)	Icw		750 A
rated short-circuit making capacity	Icm		1,4 kA
rated conditional short-circuit current			5 kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}			124 x 47 x 126,6 mm
* see the drawing for the height of the switch. The number of layers N is:	5		
knob operation force		max.	1,4 Nm
tightening torque terminal screws M4 , min. - max.		1,5	1,7 Nm
tightening torque panel mounting nut, min. - max.		2,0	2,5 Nm
tightening torque M3 screw in the standard black knob, min. - max.		0,5	0,7 Nm
ambient temperature allowed between			- 25 to + 70 °C
storage temperature allowed between			- 40 to + 80 °C
maximum relative humidity, without condensation at 20 °C			90 %
pollution degree	2		
IP rating terminals	IP20		
IP rating gland of the shaft in case of single hole panel mounting	IP65		
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9	mm2		
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight			384 g
accessories:	-		



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
 - Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
 - By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values				Unit
Rated operational current (DC poles)	le	16	20	25	32	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2,5	4	4	6	mm ²
max power dissipation	P	1,5	2,3	3,6	5,8	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

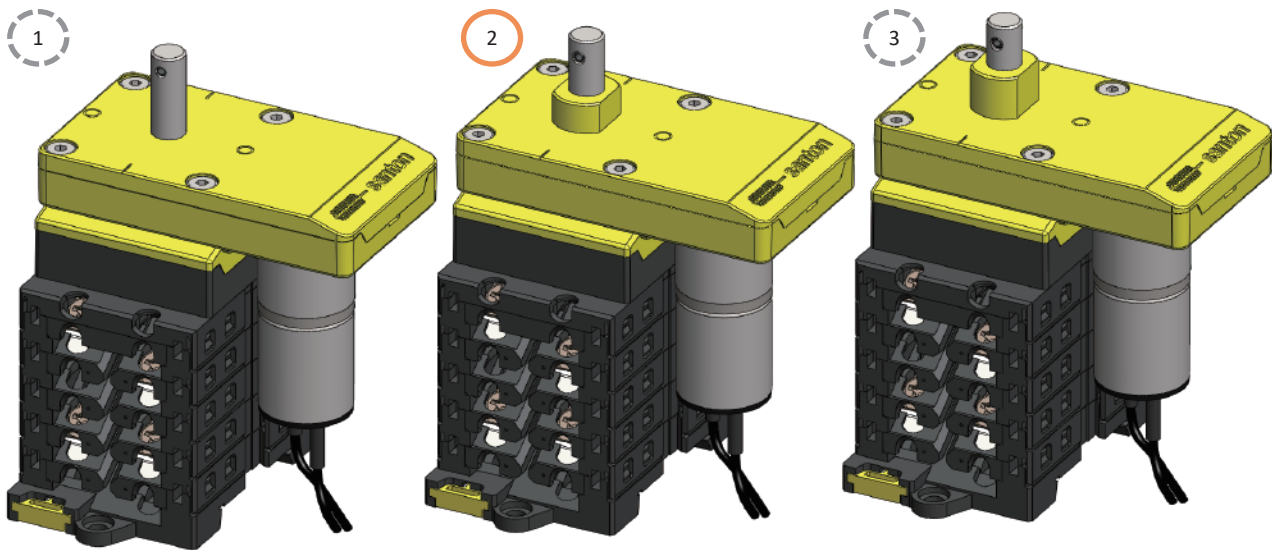
Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible

*² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Technical data - Motor		Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)		Ue	24	V dc
rated operational current		Ie	0,3	A dc
No load current		I	0,08	V dc
No load speed		V	9,2	rpm
Rated load current		I	0,15	A dc
Rated load speed		V	7,5	rpm
Stall current		I	0,8	A dc
max power dissipation (at stall)		P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)			
IP rating solder lips	IP00			
IP rating solder lips	IP00			
Technical data - Motor driven switch		Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))			
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr			
Accessoires	(1)	IP 65 gasket		
	(2) & (3)	IP 65 gasket & M16 Nut		
ambient temperature allowed between				- 25 to + 70 °C
storage temperature allowed between				- 40 to + 80 °C
maximum relative humidity, without condensation at 20°C				90 %
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3				10000 cycles
according to factory test (on & off) at room temperature (20°C)				10000 cycles
Mounting method(s)	Dimensions		X	
Bottom mounting or Panel mounting (four holes)	(1)			0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)			8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)			12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

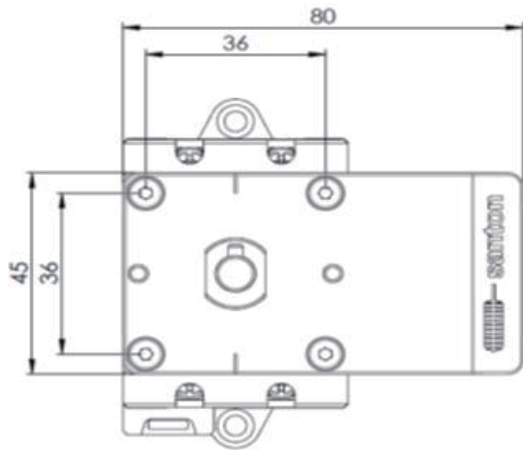
The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

- **Do not** force the manual operation with more than 1.5Nm.
- **Do not** block the manual operation during motor movement. This will damage the motor.

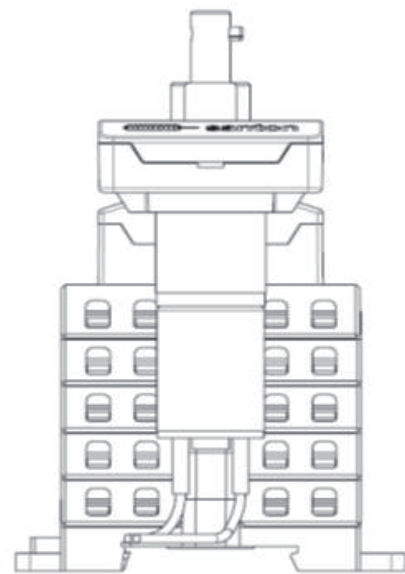
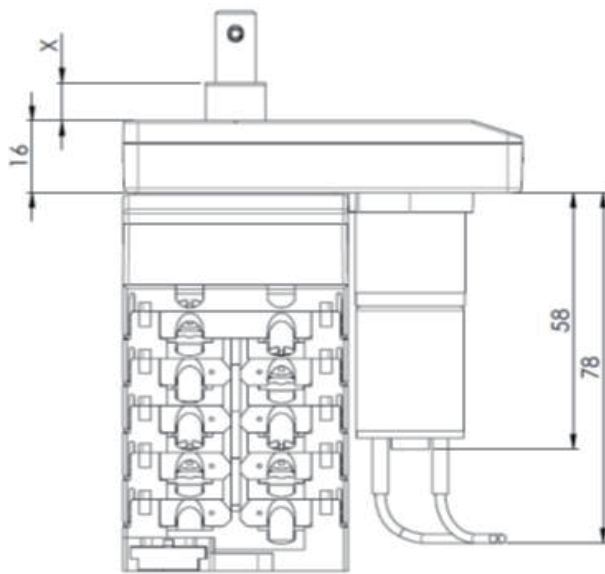
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

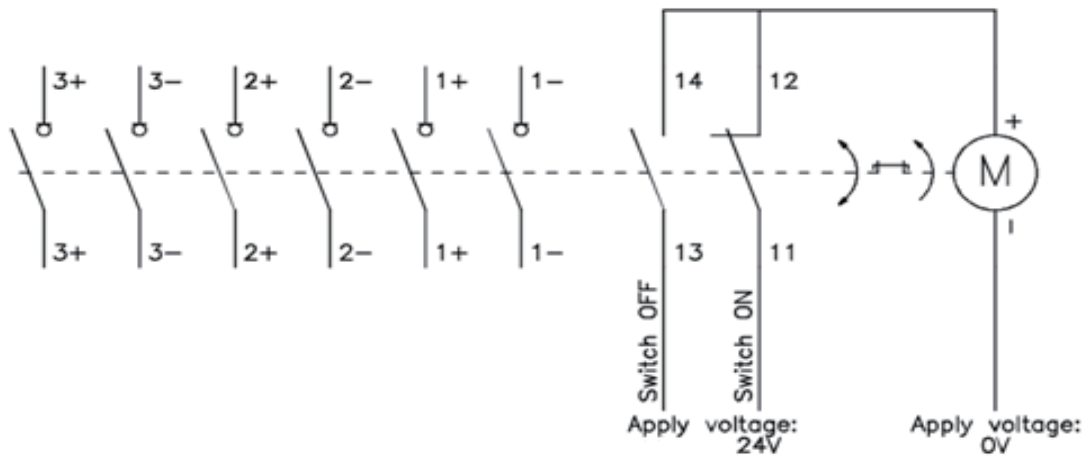
Dimensioning



Panel mounted switches-Panel cut out

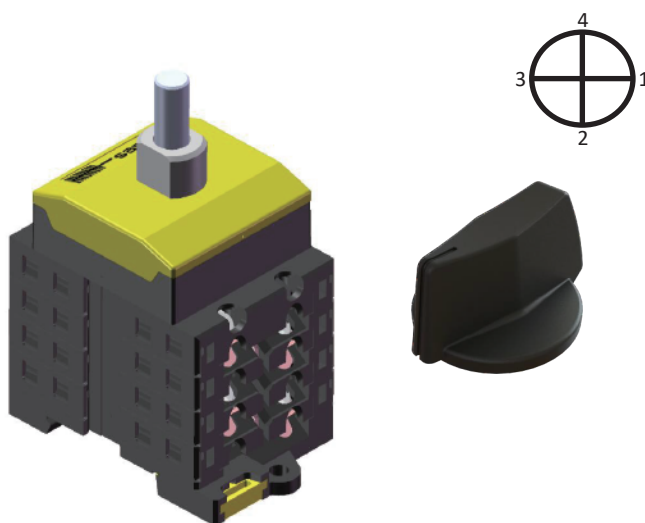


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

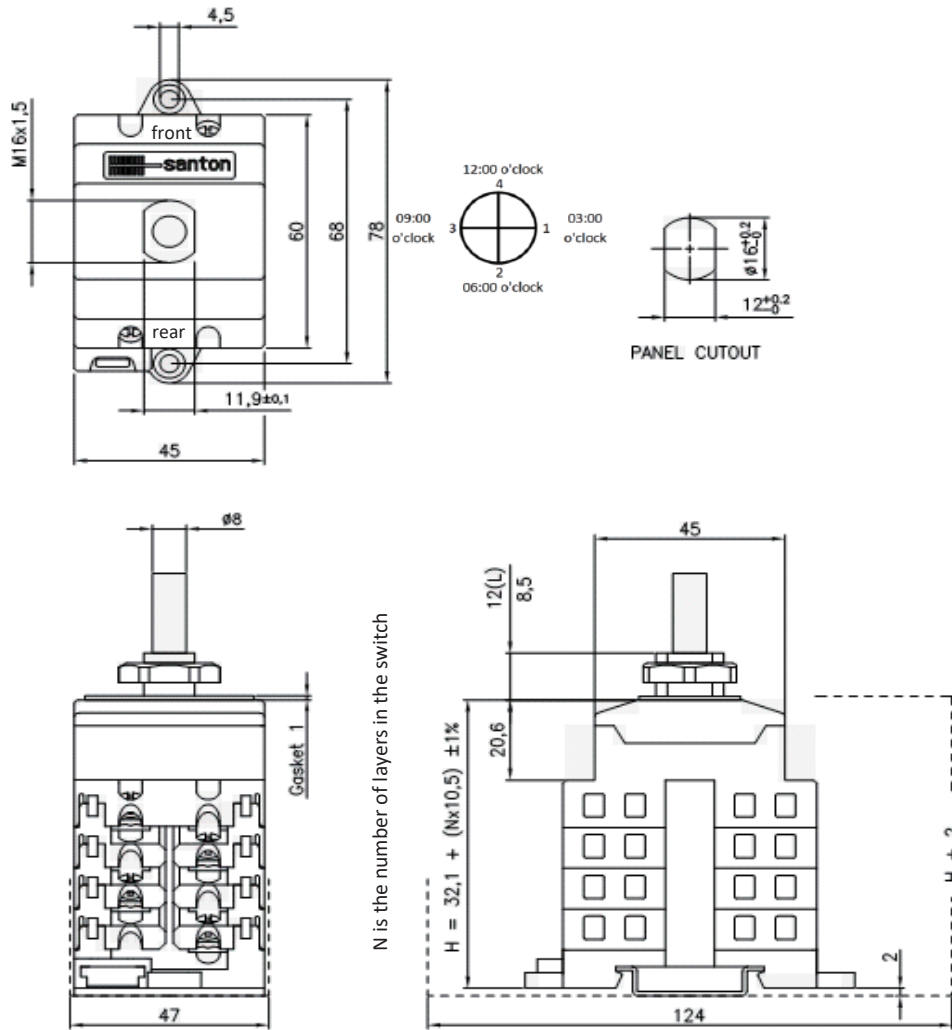
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC) fourth rating only according to IEC



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
11	13			14			X		X
		11			12	X		X	
10			Empty						
9	+4			+4			X		X
8		-4			-4		X		X
7		-3			-3		X		X
6		+3			+3		X		X
5	+2			+2			X		X
4		-2			-2		X		X
3		-1			-1		X		X
2		+1			+1		X		X
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue	1000	V dc
rated operational current (DC poles)	Ie	16	A dc
rated operational voltage (second rating DC poles, if requested)	Ue	850	V dc
rated operational current (second rating DC poles, if requested)	Ie	20	A dc
rated operational voltage (third rating DC poles, if requested)	Ue	800	V dc
rated operational current (third rating DC poles, if requested)	Ie	25	A dc
rated operational voltage (fourth rating DC poles, if requested)	Ue	650	V dc
rated operational current (fourth rating DC poles, if requested)	Ie	32	A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles	8		
utilization category DC	DC-21B		
actuator	motor		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp	8	kV
insulation voltage	Ui	1000	V
rated thermal current uninterrupted duty	Iu	25	A
rated short-time withstand current (1s)	Icw	750	A
rated short-circuit making capacity	Icm	1,4	kA
rated conditional short-circuit current		5	kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}			124 x 47 x 105,6 mm
* see the drawing for the height of the switch. The number of layers N is:			11
knob operation force		max.	1,4 Nm
tightening torque terminal screws M4 , min. - max.		1,5	1,7 Nm
tightening torque panel mounting nut, min. - max.		2,0	2,5 Nm
tightening torque M3 screw in the standard black knob, min. - max.		0,5	0,7 Nm
ambient temperature allowed between			- 25 to + 70 °C
storage temperature allowed between			- 40 to + 80 °C
maximum relative humidity, without condensation at 20 °C			90 %
pollution degree			2
IP rating terminals			IP20
IP rating gland of the shaft in case of single hole panel mounting			IP65
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9			mm ²
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight			453 g
accessories:			-
			-



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

- The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values				Unit
Rated operational current (DC poles)	le	16	20	25	32	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2,5	4	4	6	mm ²
max power dissipation	P	1,0	1,5	2,4	3,9	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

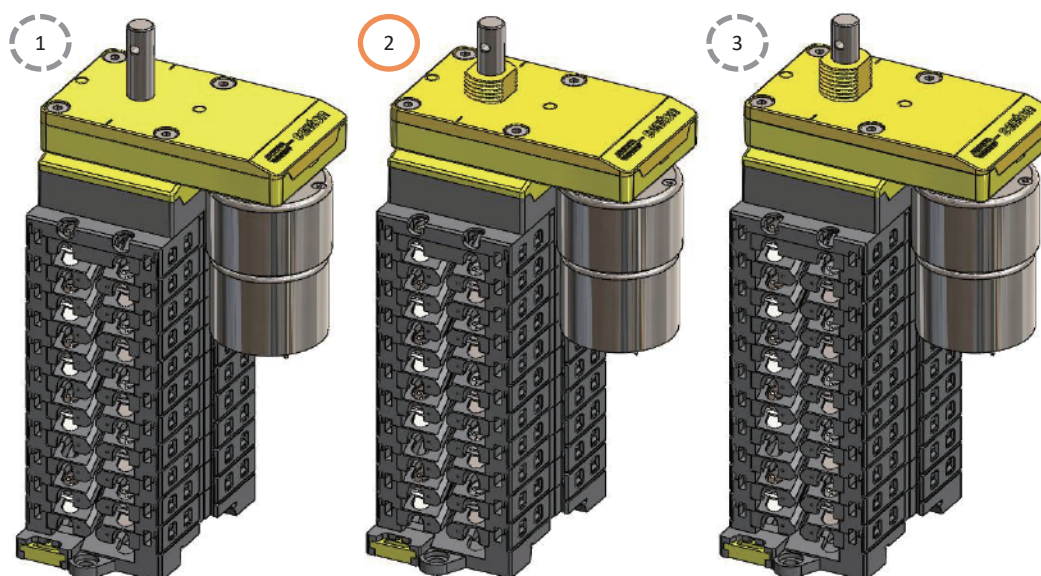
Registered Spade Tongue Terminals

Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible
 *² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Technical data - Motor	Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)	Ue	24	V dc
rated operational current	Ie	0,3	A dc
No load current	I	0,08	V dc
No load speed	V	9,2	rpm
Rated load current	I	0,15	A dc
Rated load speed	V	7,5	rpm
Stall current	I	0,8	A dc
max power dissipation (at stall)	P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)		
IP rating solder lips	IP00		
Technical data - Motor driven switch	Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
Accessoires	(1)	IP 65 gasket	
	(2) & (3)	IP 65 gasket & M16 Nut	
ambient temperature allowed between		- 25 to + 70	°C
storage temperature allowed between		- 40 to + 80	°C
maximum relative humidity, without condensation at 20°C		90	%
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3		10000	cycles
according to factory test (on & off) at room temperature (20°C)		10000	cycles
Mounting method(s)	Dimensions		X
Bottom mounting or Panel mounting (four holes)	(1)		0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)		8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)		12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

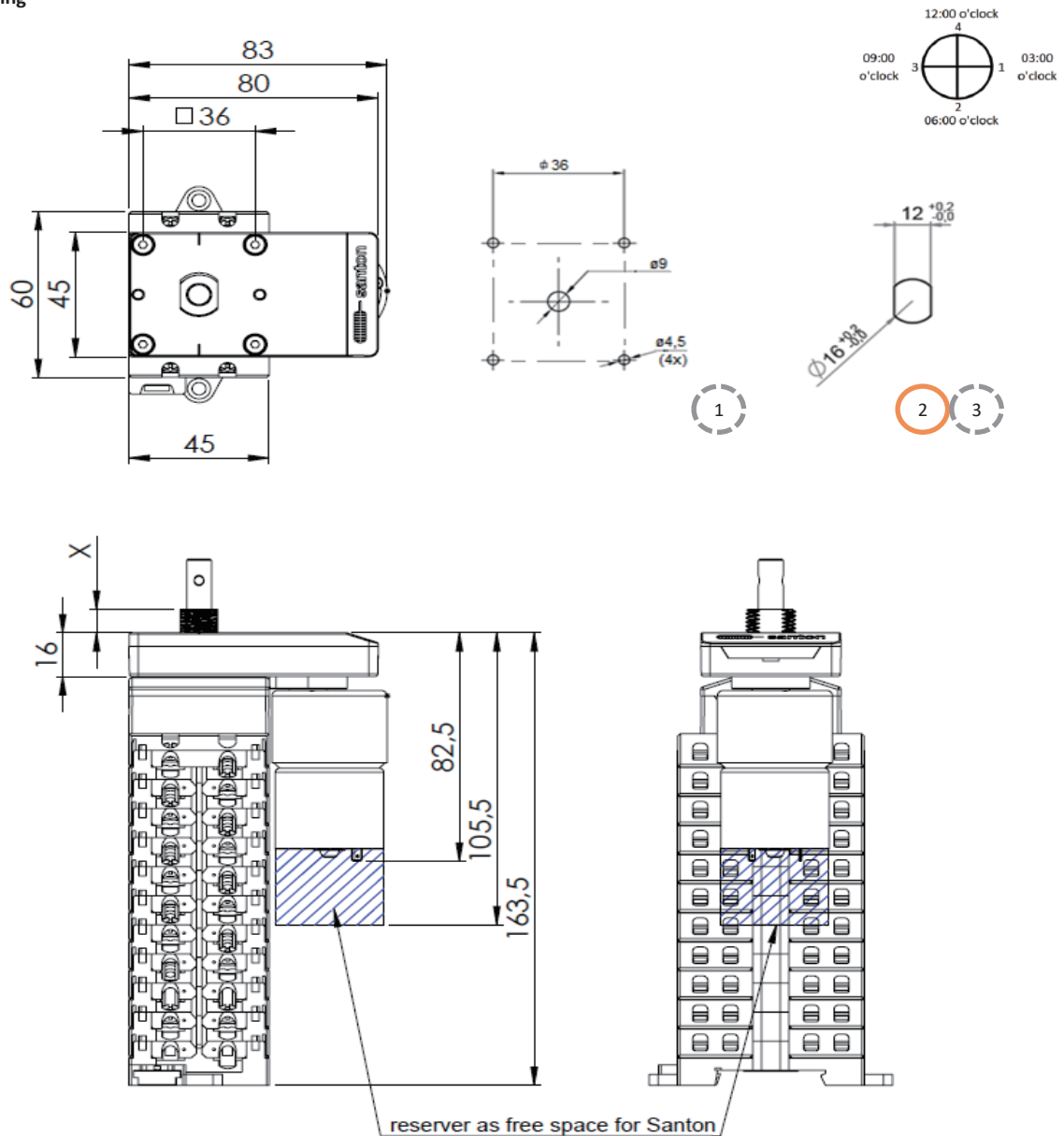
- **Do not** force the manual operation with more than 1.5Nm.

- **Do not** block the manual operation during motor movement. This will damage the motor.

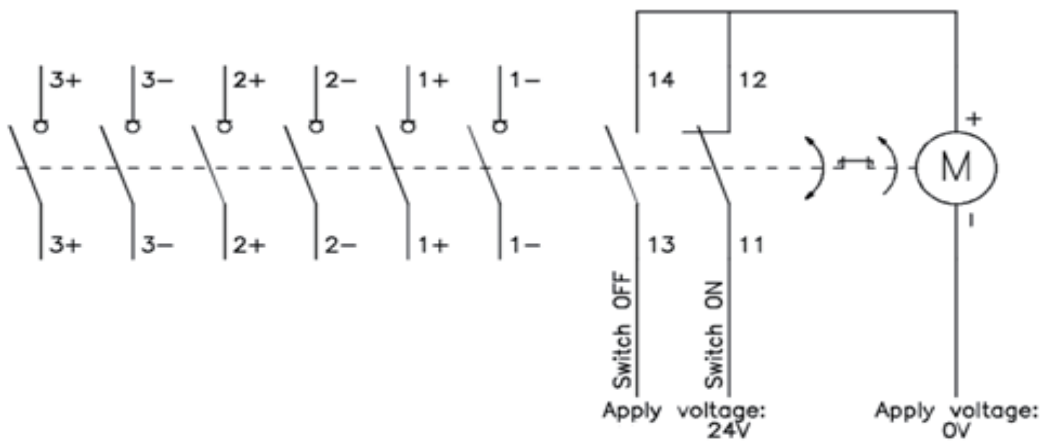
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

Dimensioning

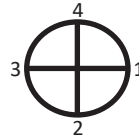
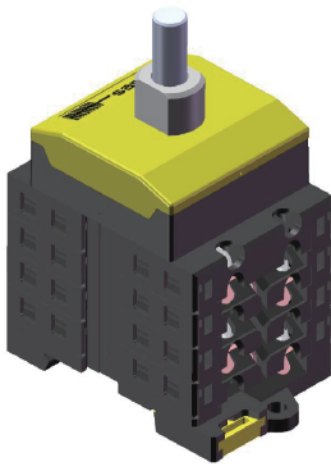


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

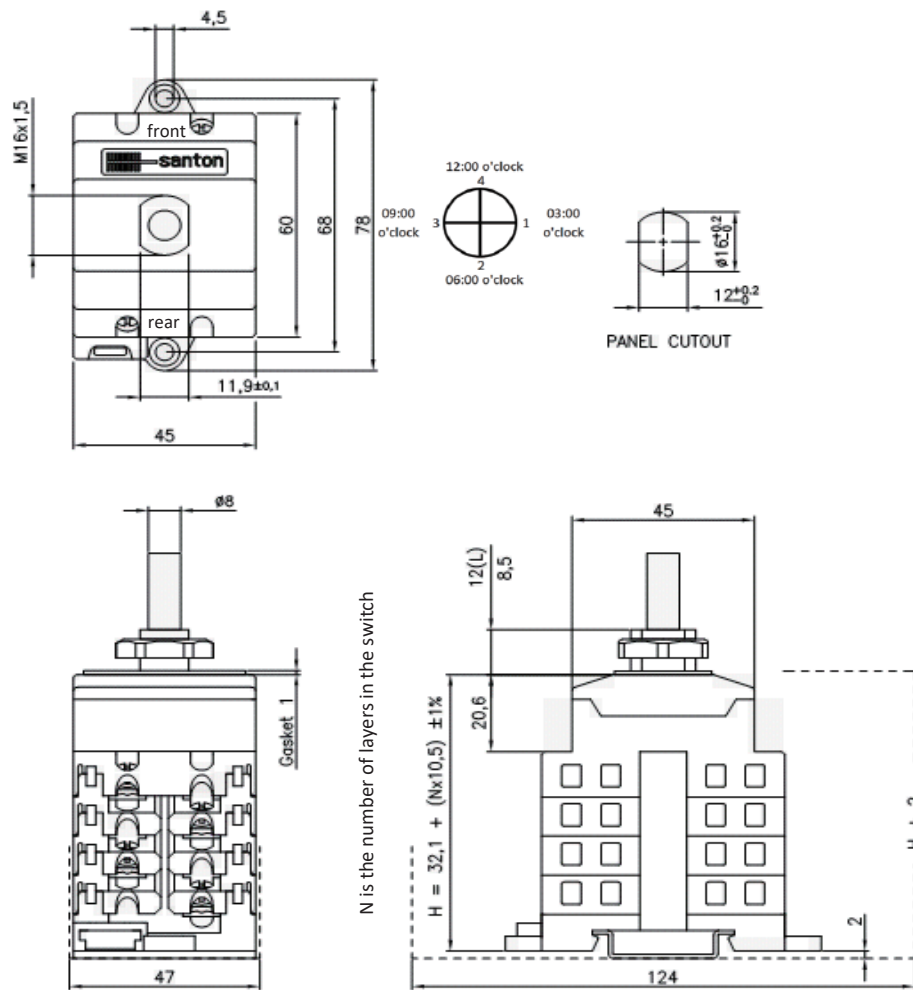
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) and CCC (CQC)



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
5	13			14			X		X
		11			12	X		X	
4			Empty						
3	-1			-1			X		X
2		+1			+1		X		X
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue		1000 V dc
rated operational current (DC poles)	Ie		50 A dc
rated operational voltage (second rating DC poles, if requested)	Ue		V dc
rated operational current (second rating DC poles, if requested)	Ie		A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles	2		
utilization category DC	DC-21B		
actuator	motor driven switch with black knob [Q3A]		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp		8 kV
insulation voltage	Ui		1000 V
rated thermal current uninterrupted duty	Iu		50 A
rated short-time withstand current (1s)	Icw		750 A
rated short-circuit making capacity	Icm		1,4 kA
rated conditional short-circuit current			5 kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}			124 x 47 x 84,6 mm
* see the drawing for the height of the switch. The number of layers N is:	Icm		5
knob operation force		max.	1,4 Nm
tightening torque terminal screws M4 , min. - max.		1,5	1,7 Nm
tightening torque panel mounting nut, min. - max.		2,0	2,5 Nm
tightening torque M3 screw in the standard black knob, min. - max.		0,5	0,7 Nm
ambient temperature allowed between			- 25 to + 70 °C
storage temperature allowed between			- 40 to + 80 °C
maximum relative humidity, without condensation at 20 °C			90 %
pollution degree	2		
IP rating terminals	IP20		
IP rating gland of the shaft in case of single hole panel mounting	IP65		
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9			mm ²
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight			254 g
accessories:	-		



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
 - Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
 - By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values	Unit
Rated operational current (DC poles)	le	50	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2x6	mm ²
max power dissipation	P	2,3	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

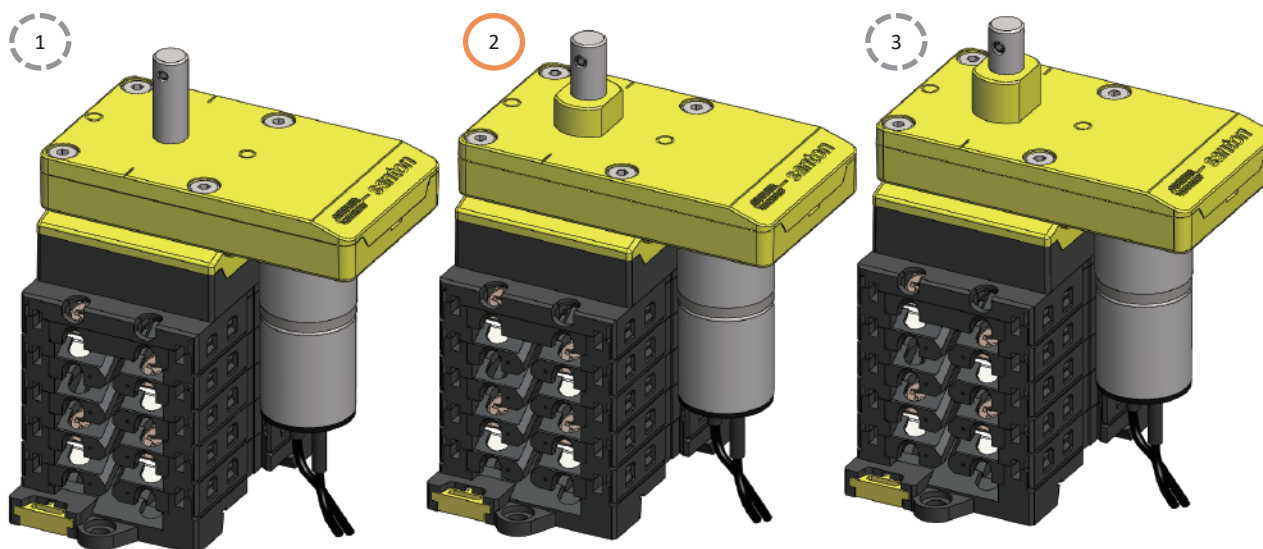
Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible

*² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
Not certified yet



Technical data - Motor		Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)		Ue	24	V dc
rated operational current		Ie	0,3	A dc
No load current		I	0,08	V dc
No load speed		V	9,2	rpm
Rated load current		I	0,15	A dc
Rated load speed		V	7,5	rpm
Stall current		I	0,8	A dc
max power dissipation (at stall)		P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)			
IP rating solder lips	IP00			
IP rating solder lips	IP00			
Technical data - Motor driven switch		Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))			
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr			
Accessoires	(1)	IP 65 gasket		
	(2) & (3)	IP 65 gasket & M16 Nut		
ambient temperature allowed between				- 25 to + 70 °C
storage temperature allowed between				- 40 to + 80 °C
maximum relative humidity, without condensation at 20°C				90 %
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3				10000 cycles
according to factory test (on & off) at room temperature (20°C)				10000 cycles
Mounting method(s)	Dimensions		X	
Bottom mounting or Panel mounting (four holes)	(1)			0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)			8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)			12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

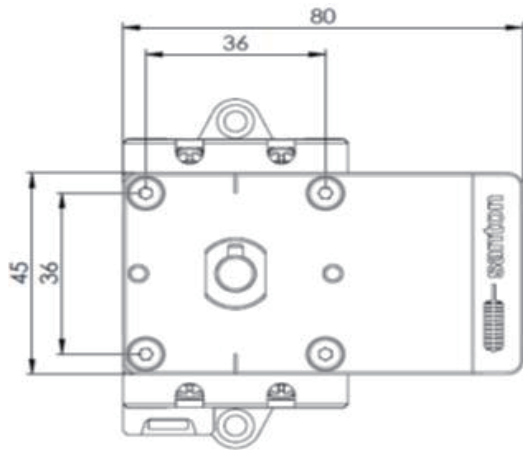
The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

- **Do not** force the manual operation with more than 1.5Nm.
- **Do not** block the manual operation during motor movement. This will damage the motor.

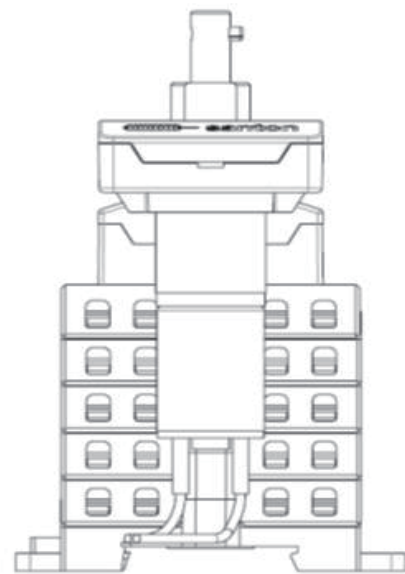
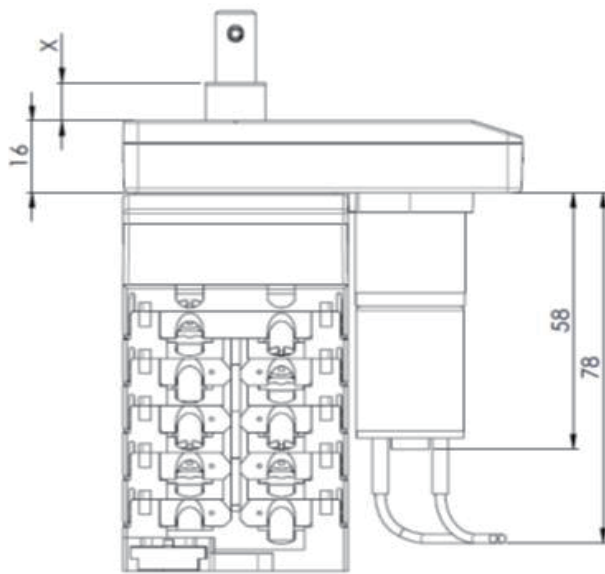
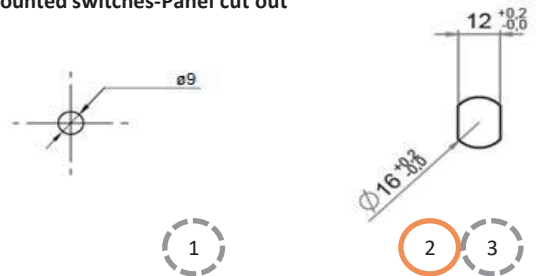
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

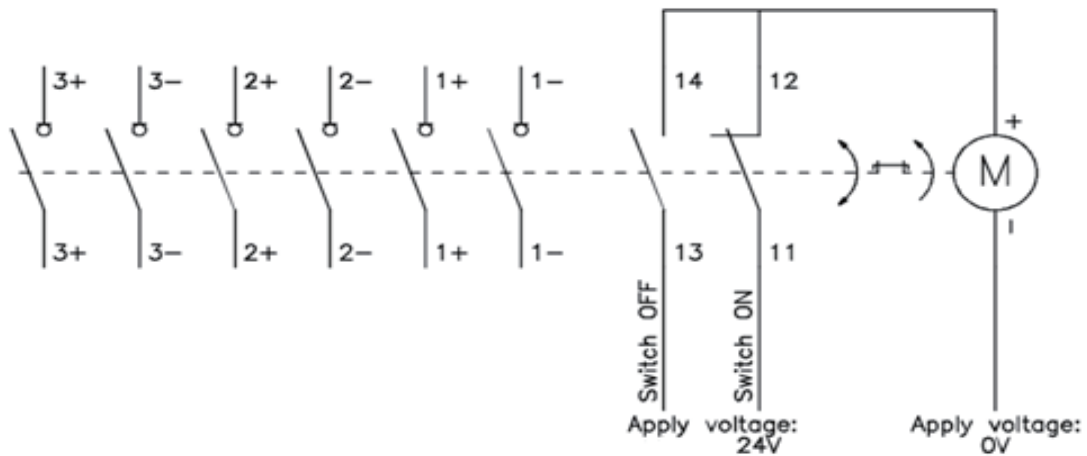
Dimensioning



Panel mounted switches-Panel cut out

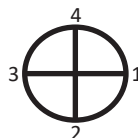
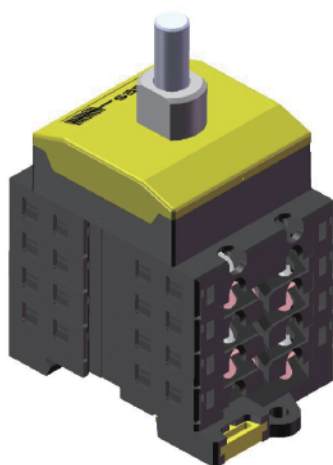


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

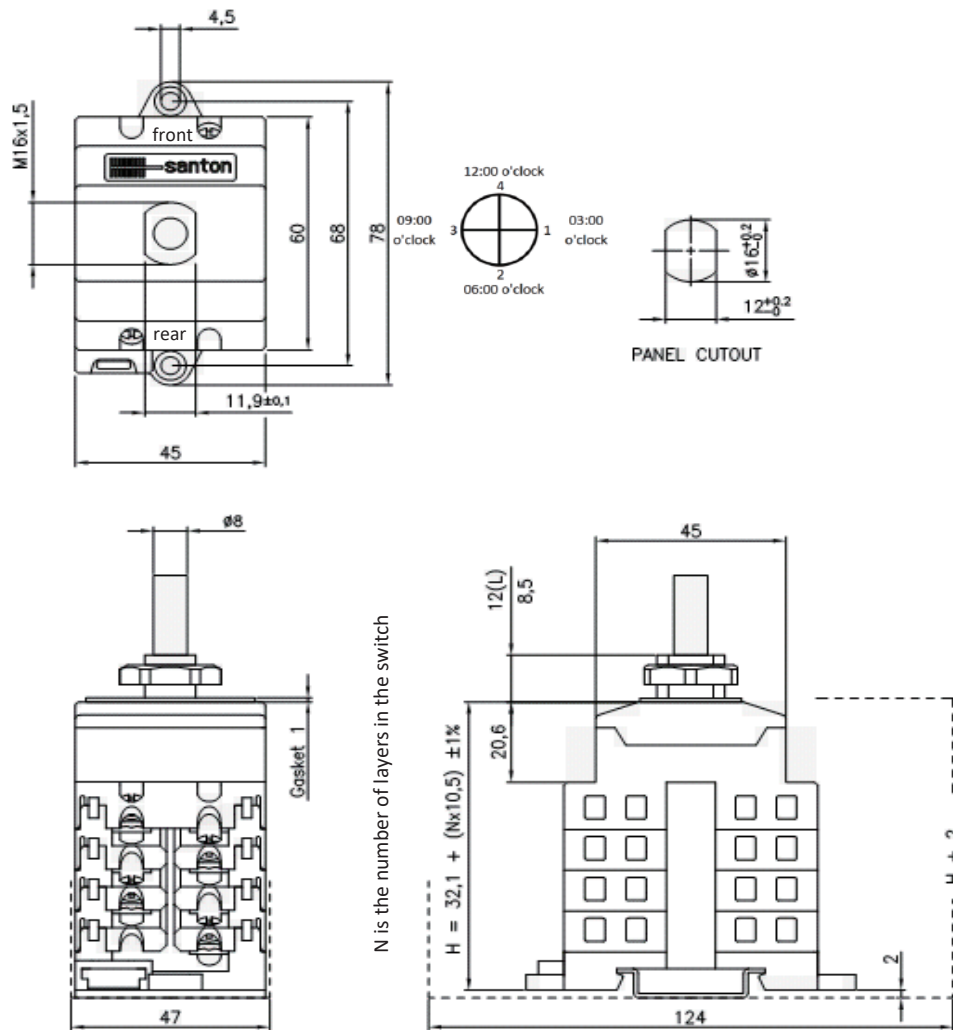
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) CCC and also IEC PV-1



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
7	13			14			X		X
		11			12	X		X	
6			Empty						
5	+2			+2			X		X
4		-2			-2		X		X
3	-1			-1			X		X
2		+1			+1		X		X
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue	1000	V dc
rated operational current (DC poles)	Ie	50	A dc
rated operational voltage (second rating DC poles, if requested)	Ue		V dc
rated operational current (second rating DC poles, if requested)	Ie		A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles		4	
utilization category DC	DC-21B and DC PV-1		
actuator	motor driven switch with black knob [Q3A]		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp	8	kV
insulation voltage	Ui	1000	V
rated thermal current uninterrupted duty	Iu	50	A
rated short-time withstand current (1s)	Icw	750	A
rated short-circuit making capacity	Icm	1,4	kA
rated conditional short-circuit current		5	kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}		124 x 47 x 105,6	mm
* see the drawing for the height of the switch. The number of layers N is:		7	
knob operation force		max. 1,4	Nm
tightening torque terminal screws M4 , min. - max.		1,5 - 1,7	Nm
tightening torque panel mounting nut, min. - max.		2,0 - 2,5	Nm
tightening torque M3 screw in the standard black knob, min. - max.		0,5 - 0,7	Nm
ambient temperature allowed between		- 25 to + 70	°C
storage temperature allowed between		- 40 to + 80	°C
maximum relative humidity, without condensation at 20 °C		90	%
pollution degree		2	
IP rating terminals		IP20	
IP rating gland of the shaft in case of single hole panel mounting		IP65	
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9			mm ²
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight		315	g
accessories:		-	



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

- The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values	Unit
Rated operational current (DC poles)	le	50	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2x6	mm ²
max power dissipation	P	4,5	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

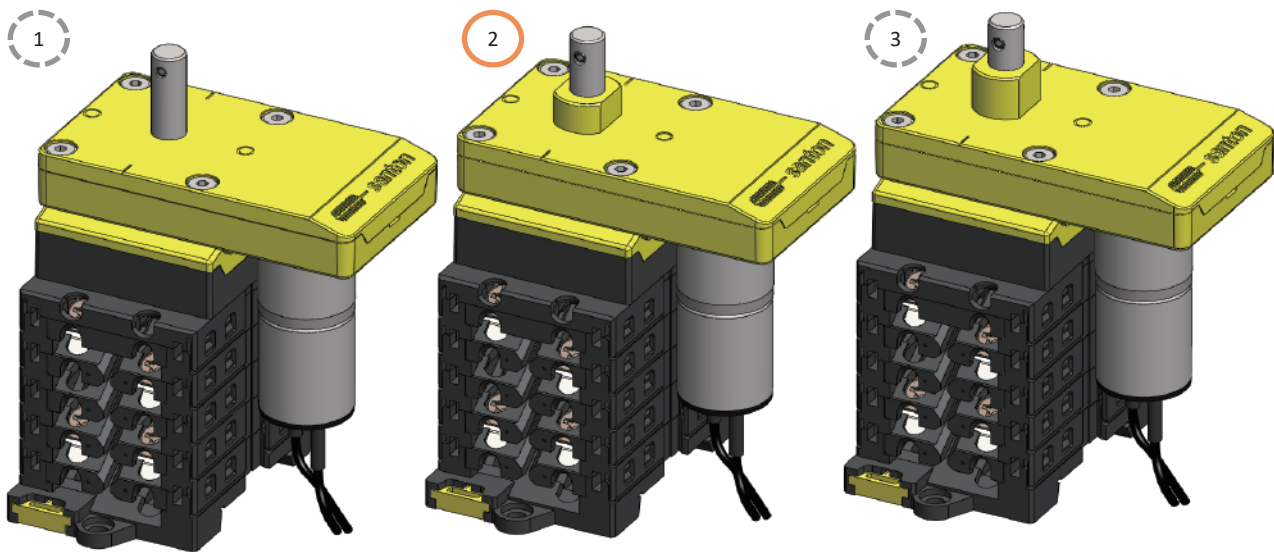
Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible

*² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
Not certified yet



Technical data - Motor		Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)		Ue	24	V dc
rated operational current		Ie	0,3	A dc
No load current		I	0,08	V dc
No load speed		V	9,2	rpm
Rated load current		I	0,15	A dc
Rated load speed		V	7,5	rpm
Stall current		I	0,8	A dc
max power dissipation (at stall)		P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)			
IP rating solder lips	IP00			
IP rating solder lips	IP00			
Technical data - Motor driven switch		Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))			
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr			
Accessoires	(1)	IP 65 gasket		
	(2) & (3)	IP 65 gasket & M16 Nut		
ambient temperature allowed between				- 25 to + 70 °C
storage temperature allowed between				- 40 to + 80 °C
maximum relative humidity, without condensation at 20°C				90 %
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3				10000 cycles
according to factory test (on & off) at room temperature (20°C)				10000 cycles
Mounting method(s)	Dimensions		X	
Bottom mounting or Panel mounting (four holes)	(1)			0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)			8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)			12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

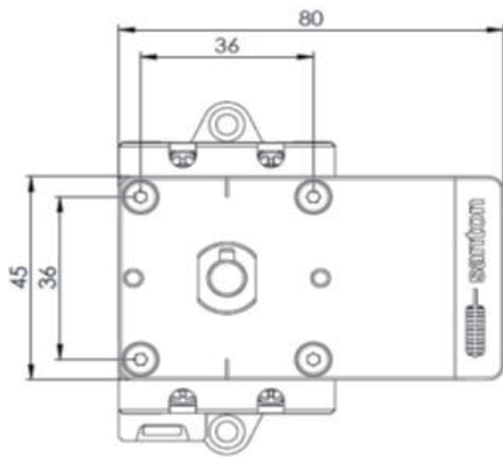
The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

- **Do not** force the manual operation with more than 1.5Nm.
- **Do not** block the manual operation during motor movement. This will damage the motor.

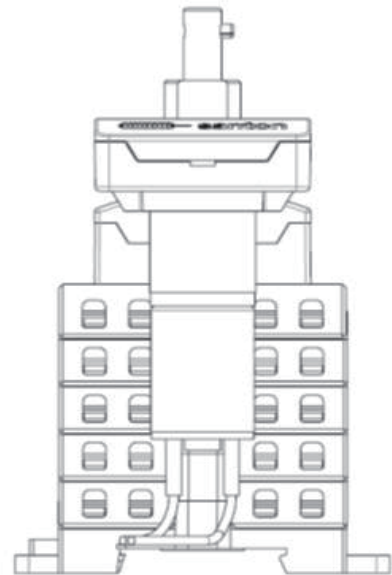
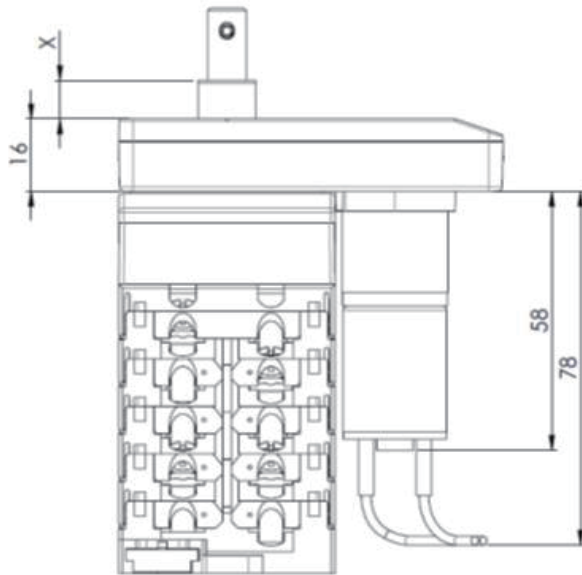
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

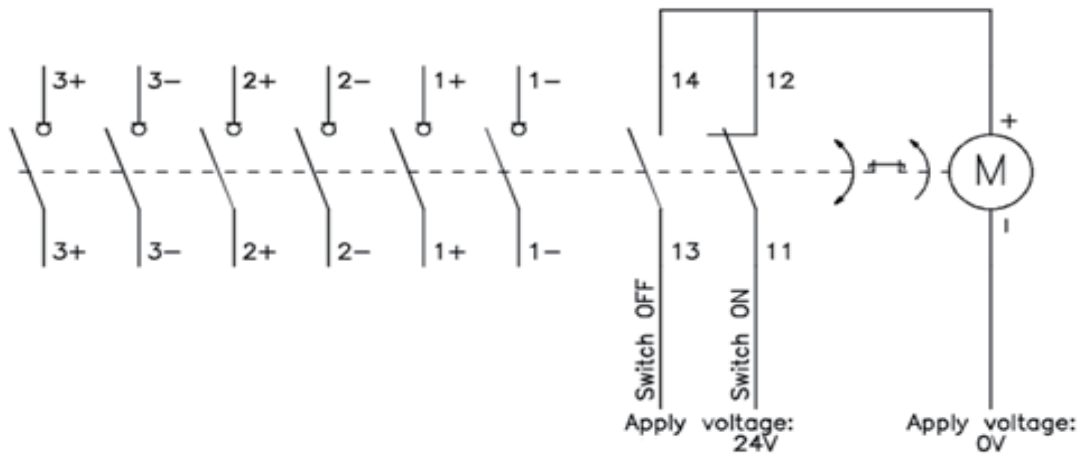
Dimensioning



Panel mounted switches - Panel cut out

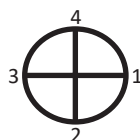
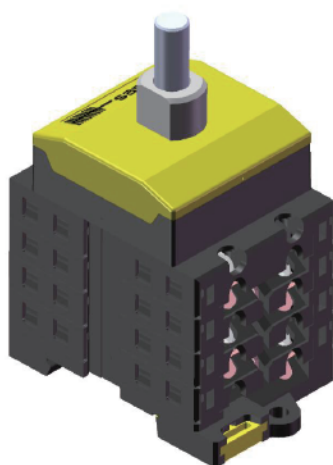


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

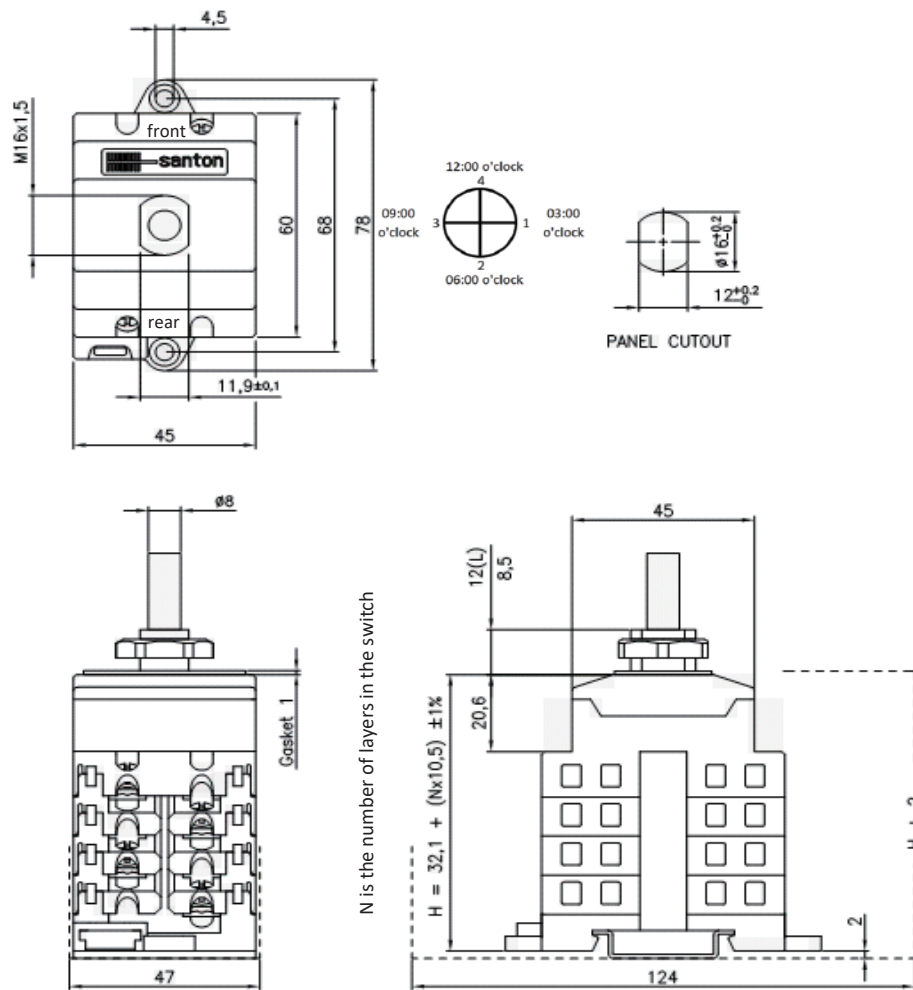
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) CCC and also IEC PV-1



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
9	13			14			X		X
		11			12	X		X	
8			Empty						
7	-3			-3			X		X
6		+3			+3		X		X
5	+2			+2			X		X
4		-2			-2		X		X
3	-1			-1			X		X
2		+1			+1		X		X
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue		1000 V dc
rated operational current (DC poles)	Ie		50 A dc
rated operational voltage (second rating DC poles, if requested)	Ue		V dc
rated operational current (second rating DC poles, if requested)	Ie		A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles	6		
utilization category DC	DC-21B and DC PV-1		
actuator	motor driven switch with black knob [Q3A]		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp	8	kV
insulation voltage	Ui	1000	V
rated thermal current uninterrupted duty	Iu	50	A
rated short-time withstand current (1s)	Icw	750	A
rated short-circuit making capacity	Icm	1,4	kA
rated conditional short-circuit current		5	kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}	124 x 47 x 126,6 mm		
* see the drawing for the height of the switch. The number of layers N is:	Icm	9	
knob operation force		max.	1,4 Nm
tightening torque terminal screws M4 , min. - max.		1,5	1,7 Nm
tightening torque panel mounting nut, min. - max.		2,0	2,5 Nm
tightening torque M3 screw in the standard black knob, min. - max.		0,5	0,7 Nm
ambient temperature allowed between	- 25 to + 70 °C		
storage temperature allowed between	- 40 to + 80 °C		
maximum relative humidity, without condensation at 20 °C	90 %		
pollution degree	2		
IP rating terminals	IP20		
IP rating gland of the shaft in case of single hole panel mounting	IP65		
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9	mm ²		
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight	384 g		
accessories:	-		



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
 - Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
 - By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values	Unit
Rated operational current (DC poles)	le	50	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2x6	mm ²
max power dissipation	P	2,3	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

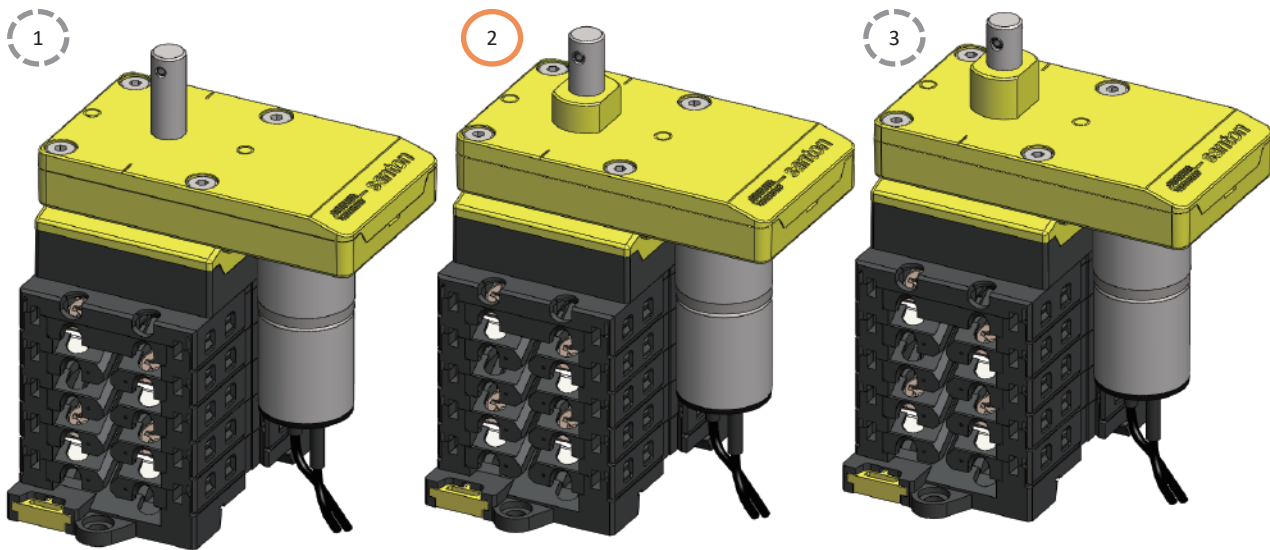
Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible

*² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
Not certified yet



Technical data - Motor		Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)		Ue	24	V dc
rated operational current		Ie	0,3	A dc
No load current		I	0,08	V dc
No load speed		V	9,2	rpm
Rated load current		I	0,15	A dc
Rated load speed		V	7,5	rpm
Stall current		I	0,8	A dc
max power dissipation (at stall)		P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)			
IP rating solder lips	IP00			
IP rating solder lips	IP00			
Technical data - Motor driven switch		Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))			
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr			
Accessoires	(1)	IP 65 gasket		
	(2) & (3)	IP 65 gasket & M16 Nut		
ambient temperature allowed between				- 25 to + 70 °C
storage temperature allowed between				- 40 to + 80 °C
maximum relative humidity, without condensation at 20°C				90 %
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3				10000 cycles
according to factory test (on & off) at room temperature (20°C)				10000 cycles
Mounting method(s)	Dimensions		X	
Bottom mounting or Panel mounting (four holes)	(1)			0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)			8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)			12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

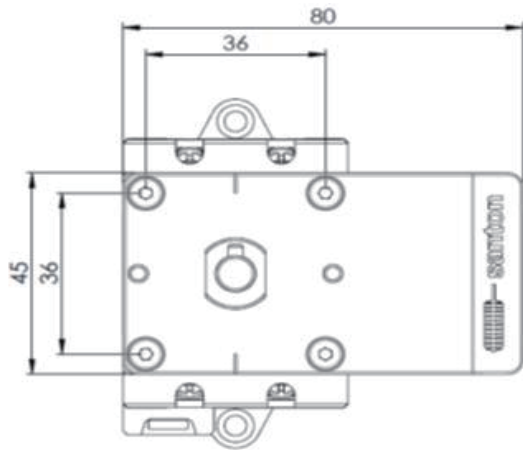
The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

- **Do not** force the manual operation with more than 1.5Nm.
- **Do not** block the manual operation during motor movement. This will damage the motor.

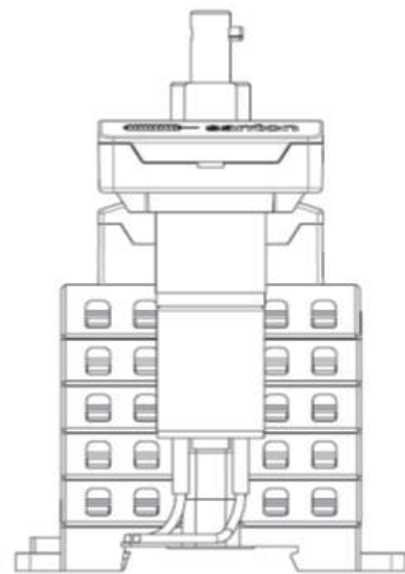
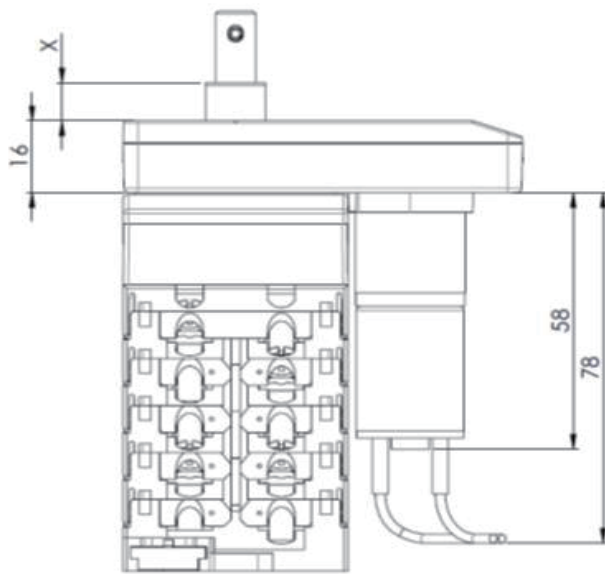
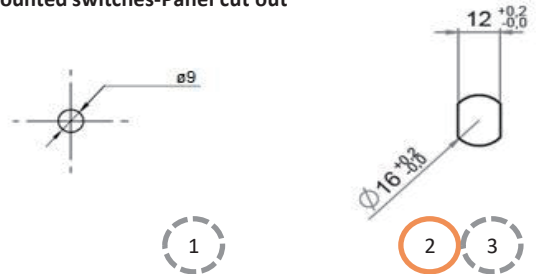
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

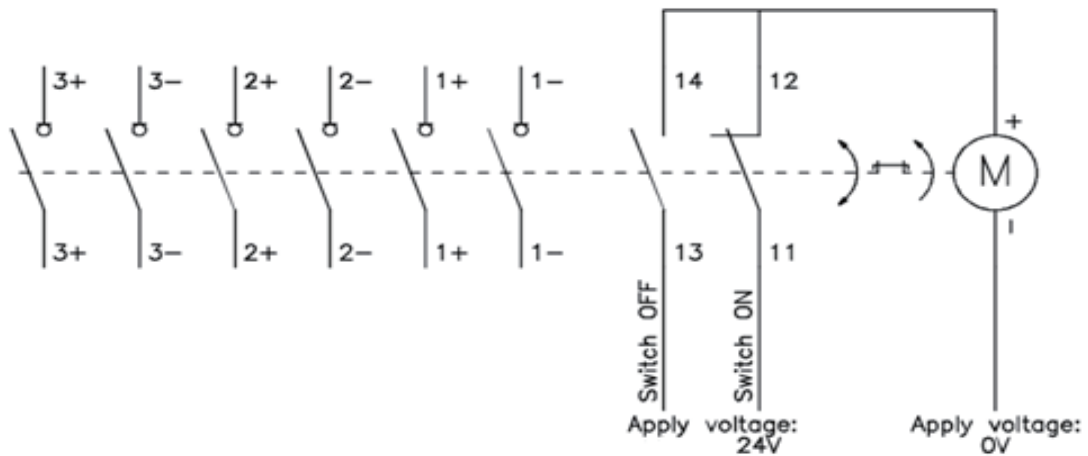
Dimensioning



Panel mounted switches-Panel cut out

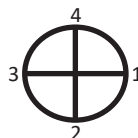
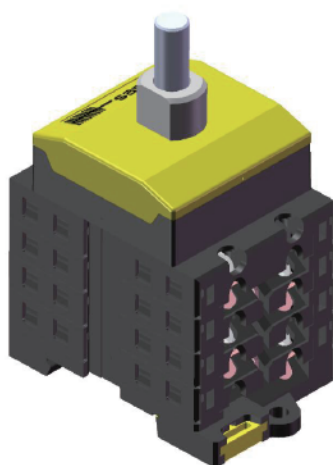


Wiring example



Dimensions, specifications and data shown are be subject to change without notice.

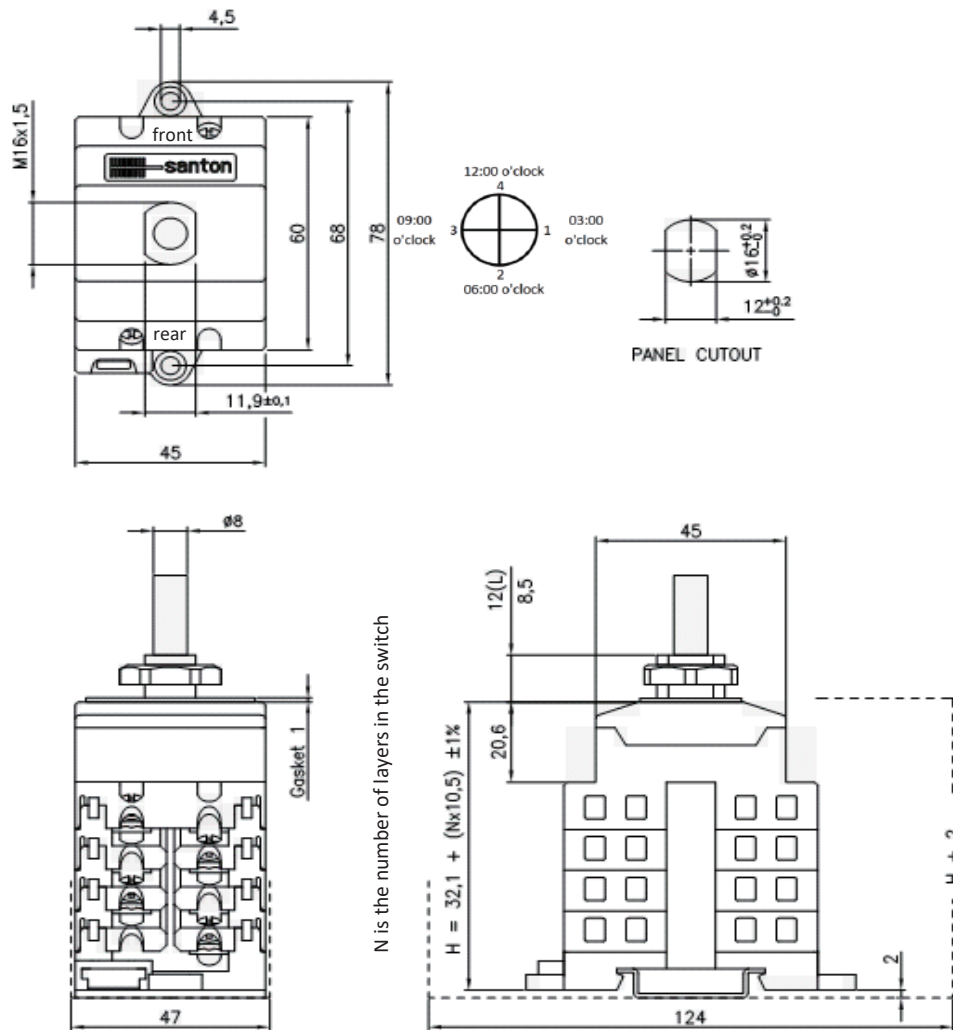
Switch disconnecter for solar application according to IEC 60947-1&3 by Dekra (KEMA) CCC and also IEC PV-1



Terminals Scheme									
Layer No.	Front Side		Symbol	Rear Side		On Positions			
	Left	Right		Left	Right	1	2	3	4
11	13								
		11							
10			Empty						
9	+4								
8		-4					X		X
7	-3			+2		X		X	
6		+3			-2				
5	+2			+2			X		X
4		-2			-2		X		X
3	-1			-1			X		X
2		+1			+1		X		X
1			Empty						

Contacts are made in "X" marked position.
Symbols for interconnection: [

Technical data	Symbol	Merit	Unit
rated operational voltage (DC poles)	Ue		1000 V dc
rated operational current (DC poles)	Ie		50 A dc
rated operational voltage (second rating DC poles, if requested)	Ue		V dc
rated operational current (second rating DC poles, if requested)	Ie		A dc
method of mounting	both bottom and single hole mounting [D]		
number of DC poles			8
utilization category DC	DC-21B and DC PV-1		
actuator	motor driven switch with black knob [Q3A]		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
rated impulse withstand voltage	Uimp		8 kV
insulation voltage	Ui		1000 V
rated thermal current uninterrupted duty	Iu		50 A
rated short-time withstand current (1s)	Icw		750 A
rated short-circuit making capacity	Icm		1,4 kA
rated conditional short-circuit current			5 kA
method of operation	independent manual operation		
minimum required dimensions of enclosures L x W x H* (on DIN-rail H = +2mm) {space envelope}			124 x 47 x 147,6 mm
* see the drawing for the height of the switch. The number of layers N is:			11
knob operation force		max.	1,4 Nm
tightening torque terminal screws M4 , min. - max.		1,5	1,7 Nm
tightening torque panel mounting nut, min. - max.		2,0	2,5 Nm
tightening torque M3 screw in the standard black knob, min. - max.		0,5	0,7 Nm
ambient temperature allowed between			- 25 to + 70 °C
storage temperature allowed between			- 40 to + 80 °C
maximum relative humidity, without condensation at 20 °C			90 %
pollution degree			2
IP rating terminals			IP20
IP rating gland of the shaft in case of single hole panel mounting			IP65
rated operational voltage (AC poles)	Ue		V ac
rated operational current (AC poles)	Ie		A ac
number of AC poles (for general use)			
minimum required fine wire cross-section: IEC60947-1, table 9			mm ²
auxiliary contact(s), AC15	Both normally open and closed in one chamber, 250V, 16A: [R]		
auxiliary contact ratings			
weight			453 g
accessories:			-



Mounting instructions

In the application all ratings according to the datasheet have to be respected. After mounting, the wiring must be checked and the switch must operate smoothly. When building the switch in an enclosure, the space envelope must be respected according to the applicable standards.

Maintenance

- The X type switches are designed for a very long life but it is advised to do some simple yearly maintenance.
- Check the installation for signs of overload or overheating. The terminals may not exceed the limit of 85°C under full load.
- By operating the switch a few times (5x) the contacts will clean themselves and the switch will have a longer life.

Connection details

Description	Symbol	Values	Unit
Rated operational current (DC poles)	le	50	A dc
Required fine wire cross-section (minimal): IEC60947-1, table 9	A	2x6	mm ²
max power dissipation	P	9,0	W

The terminals, without interconnection can take copper wires up to 6 mm².
 The recommended Spade Tongue Terminals may have a maximum width of 9 mm.
 For CSA and UL applications, registered Spade Tongue Terminals must be used.
 The registration numbers are UL: E13288 and CSA: LR7189 (for instance type 165015 from Tyco).

Registered Spade Tongue Terminals

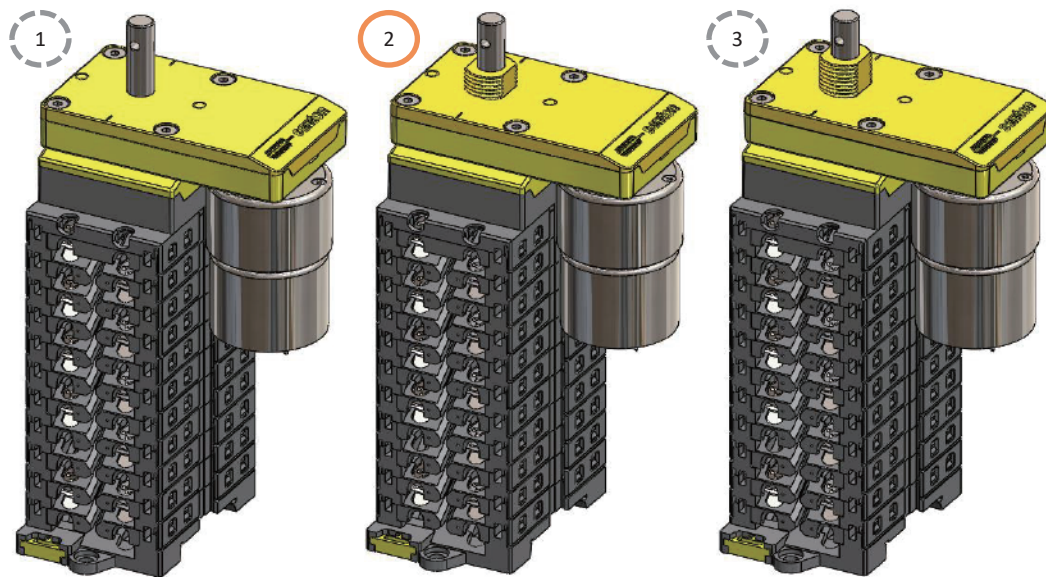
Recommend Manufacturer	Type number	Wire size (AWG)	Wire size (mm ²)	Color
JST	FVD2-YS4A	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
TE connectivity	C-165012	AWG 16 – AWG 14	1,0 – 2,5 mm ²	Blue
Vogt	3635c	AWG 16 – AWG 14	1,5 – 2,5 mm ²	Blue
TE connectivity	C-165015	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Vogt	3652c / 3653c	AWG 12 - AWG 10	3,0 - 6,0 mm ²	Yellow
Santon (JST)	52A1256.35	AWG 8 - AWG 10	10,5mm ² -16mm ² * ¹	* ²

*¹ 16mm² only with fine stranded wire or two 6mm² is also possible

*² To insulate the cable lugs, you can use the insulating spouts of the ES series from CEMBRE with the type designation ES3

Dimensions, specifications and data shown are be subject to change without notice.

Motor driven switch disconnecter for solar application
Not certified yet



Technical data - Motor	Symbol	Merit	Unit
rated operational voltage ($\pm 5\%$)	Ue	24	V dc
rated operational current	Ie	0,3	A dc
No load current	I	0,08	V dc
No load speed	V	5,3	rpm
Rated load current	I	0,2	A dc
Rated load speed	V	4,2	rpm
Stall current	I	0,8	A dc
max power dissipation (at stall)	P	19,2	W
Motor terminal type	Solder lips (supplied without wiring)		
IP rating solder lips	IP00		
Technical data - Motor driven switch	Symbol	Merit	Unit
method of operation	independent manual operation (90deg) and independent motor driven operation (clockwise (CW) or counter clockwise (CCW))		
positions	OFF at 3 hr, ON at 6 hr, OFF at 9 hr, ON at 12 hr		
Accessoires	(1)	IP 65 gasket	
	(2) & (3)	IP 65 gasket & M16 Nut	
ambient temperature allowed between		- 25 to + 70	°C
storage temperature allowed between		- 40 to + 80	°C
maximum relative humidity, without condensation at 20°C		90	%
number of mechanical operations (on & off) operated by integrated motor according to IEC60947-3		10000	cycles
according to factory test (on & off) at room temperature (20°C)		10000	cycles
Mounting method(s)	Dimensions		X
Bottom mounting or Panel mounting (four holes)	(1)		0 mm
Panel mounting (single hole), panel thickness 1-3mm	(2)		8,5 mm
Panel mounting (single hole), panel thickness 3-7mm	(3)		12 mm

Instructions for usage

The manual operation of the switch is only in 90 degree angle from each switch position.

The direction of rotation is depending the motor direction, this means motor direction clockwise will result in manual direction clockwise from 9 o'clock to 12 o'clock and from 12 o'clock back to 9 o'clock. Otherwise this means motor direction counter clockwise will result in manual direction counter clockwise from 3 o'clock to 12 o'clock and from 12 o'clock back to 3 o'clock. See also below scheme for explanation.

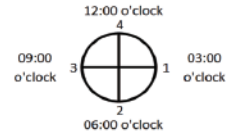
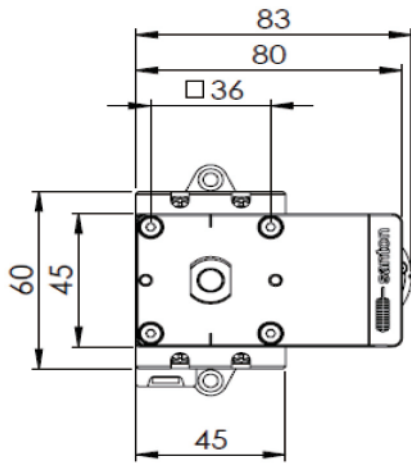
- **Do not** force the manual operation with more than 1.5Nm.

- **Do not** block the manual operation during motor movement. This will damage the motor.

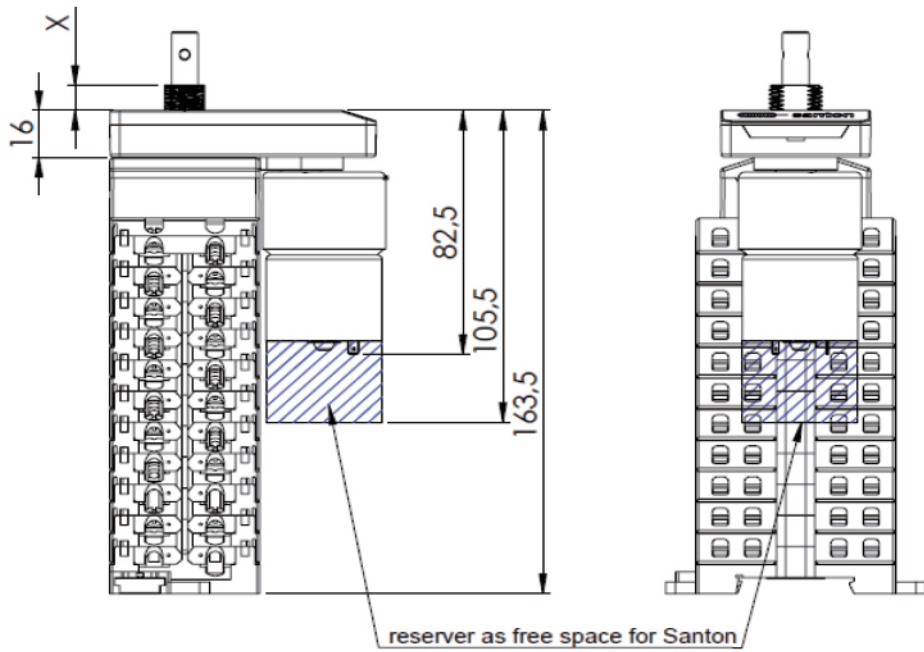
The technical details and connections for the X-type switch can be found in the datasheet/manual of the switch. The X type switch will be equipped with an Auxiliary contact that needs to be used for the motor control wiring, see wiring example.

The connections of the motor are solder lips. The + and - pole of the motor are indicated next to the solder lips.

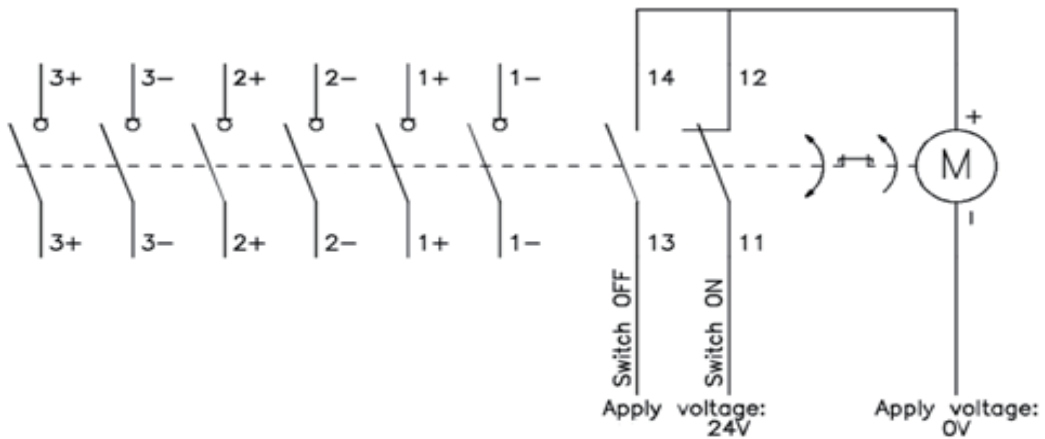
Dimensioning



Panel mounted switches - Panel cut out



Wiring example



Dimensions, specifications and data shown are be subject to change without notice.