

# 5S Breaker Offering

## Introduction

5SP and 5SY Supplementary Protectors are single and multi-pole thermal / magnetic overcurrent protection devices that are intended for general industrial use. They are UL Recognized (File No. E116386) in accordance with UL 1077, "Supplementary Protectors for Use in Electrical Equipment" and Certified to Canadian Standards (CSA 22.2 No. 2352). They are provided with a manual means for opening the circuit and they are not ambient compensated.

## Features

- Thermal magnetic protection
- High interrupting rating / rated switching capacity –
- UL 1077: up to 14,000 maximum RMS symmetrical amps AC
- ( $I_{cn}$ ) to IEC 60 898-1: up to 10,000 A AC
- ( $I_{cu}$ ) to IEC 60 947-2: up to 15,000 A AC
- Can be used for "field wiring" applications:
- 5SP4: AWG 14 to AWG 2, Copper (Cu) only
- 5SY: AWG 14 to AWG 4, Copper (Cu) only
- Calibration base:
  - UL: 25°C (77°F)
  - IEC: 30°C (86°F)
- Meets trip characteristics: A, B, C, D
- Rated voltage
- UL 1077
  - 277 VAC (1- & 1+N-pole)
  - 480 VAC (multi-poles)
- EN 60 898 and EN 60947-2
  - VAC/DC: 24 minimum
  - VDC/pole: 60 maximum
  - VAC: 440 maximum
- Available with: 1-, 1+N-, 2-, 3-, 3+N- and 4-poles
- Available from: 0.3 to 80 Amps (depending on the device selected)
- Visible indicator for ON and OFF/Trip
- Touch protection to EN 50274-1
- Standard DIN rail mounting
- Identical wire screw connections on line and load side
- CFC and silicone free

## Certifications And Standards

- UL recognized and certified to Canadian Standards (File E116386)
- UL 1077
- CSA 22.2 No. 235
- CE
- EN 60 898, IEC/EN 60 947-2

## Catalog Number Structure

5SY4 1 10 7

### Frame Style

- 5SY4 – 10 kA, standard frame
- 5SY5 – 10 kA, universal current
- 5SY6 – 6 kA, standard frame
- 5SY7 – 15 kA, standard frame
- 5SY8 – 25 kA, standard frame
- 5SP4 – 10 kA, high current

### Poles

- 1 – 1 Pole
- 5 – 1 Pole + Neutral
- 2 – 2 Pole
- 3 – 3 Pole
- 6 – 3 Pole + Neutral
- 4 – 4 Pole

### Code Rated current ( $I_n$ )

14	–	0.3
05	–	0.5
01	–	1
15	–	1.6
02	–	2
03	–	3
04	–	4
11	–	5
06	–	6
08	–	8
10	–	10
13	–	13
18	–	15
16	–	16
20	–	20
25	–	25
30	–	30
32	–	32
35	–	35
40	–	40
45	–	45
50	–	50
60	–	60
63	–	63
80	–	80
91	–	100
92	–	125

### Trip Curve (Characteristic)

- 5 – Trip curve A, Magnetic trip point 2 to 3  $I_n$ , 1.13 to 1.45 breaker rating
- 6 – Trip curve B, Magnetic trip point 3 to 5  $I_n$ , 1.13 to 1.45 breaker rating
- 7 – Trip curve C, Magnetic trip point 5 to 10  $I_n$ , 1.13 to 1.45 breaker rating
- 6 – Trip curve D, Magnetic trip point 10 to 20  $I_n$ , 1.13 to 1.45 breaker rating

# Control Circuit Protection Supplementary Protection

## 5SY and 5SP Supplementary Protectors



		5SY4 <sup>②</sup>	5SY5 <sup>②</sup>	5SP4 <sup>②</sup>
<b>Technical Data</b>				
<b>Standards</b>		EN 60898; EN 60947-2; UL 1077; CSA C22.2 No. 235	EN 60898; EN 60947-2	EN 60898; EN 60947-2; UL 1077; CSA C22.2 No. 235
<b>Certifications</b>		CE; cURus, UL File No. E116386	Not UL/CSA Rated	CE; cURus, UL File No. E106582
<b>Tripping Characteristic</b>		A, B, C, D	B, C	B, C, D
<b>Number Of Poles</b>		1, 1+N, 2, 3, 3+N, 4	1, 2	1, 2, 3, 4
<b>Operating Voltage</b> - EN 60898, EN 60947-2 - UL 1077 and CSA C22.2 No. 2352	Min. V AC/DC Max. V DC/pole Max. V AC Max. V AC V DC/pole	24 60 <sup>①</sup> 440 480 -	220 440 - -	60 <sup>①</sup> 440 480 60
<b>Interrupting Rating</b> - I <sub>cn</sub> to IEC/EN 60898-1 - I <sub>cn</sub> to IEC/EN 60898-2 - UL 1077 and CSA C22.2 No. 235 AC: Max. RMS Symmetrical	kA AC kA AC 120/240, 240 V: kA AC 240 V: kA AC 277 V: kA AC 480 V: kA AC	10 - 14 7.5 5 5	10 10 Not UL Rated	10 - 14 7.5 5 5
<b>Touch protection to EN 50274-1</b>		Yes	Yes	Yes
<b>Degree of protection to EN 60529</b>		IP20, with connected conductors	IP20, with connected conductors	IP20, with connected conductors
<b>CFC and Silicone Free</b>		Yes	Yes	Yes
<b>Mounting</b> - Snap-on mounting - Standard mounting rail and mounting		Yes -	Yes -	- Yes
<b>Device depth</b>	mm	70	70	70
<b>Terminals</b> - Tunnel terminals at both ends - Combined terminals at both ends - Terminal, solid, stranded or finely stranded with end sleeve - Terminal tightening torque	mm <sup>2</sup> lb. in. Nm	- Yes 0.75 to 25 22 to 26 2.5 to 3	- Yes 0.75 to 25 22 to 26 2.5 to 3	Yes - 0.75 to 25 22 to 31 2.5 to 3.5
<b>Conductor cross sections</b> - Solid and stranded - Finely stranded, with end sleeve	mm <sup>2</sup> mm <sup>2</sup> AWG	0.75 to 35 0.75 to 25 14 to 4	0.75 to 35 0.75 to 25 14 to 4	0.75 to 50 0.75 to 35 14 to 2
<b>Calibration Base</b>	°C	30 (EN 60898)	30 (EN 60898)	30 (EN 60898)
<b>Average Service Life, With Rated Load</b>	Operations	20,000	20,000 (above 40A: 10,000)	20,000
<b>Ambient Operating Temperature</b>	°C	-25 to 45, occasionally +55, max. 95% humidity	-25 to 45, occasionally +55, max. 95% humidity	-25 to 45, occasionally +55, max. 95% humidity
<b>Storage Temperature</b>	°C	-40 to +75	-40 to +75	-40 to +75
<b>Resistance to vibration to IEC 600068-2-6</b>	m/s <sup>2</sup>	60 at 10 Hz to 150 Hz	60 at 10 Hz to 150 Hz	60 at 10 Hz to 150 Hz

① The operating voltage 60 V DC/pole takes into account a battery charging voltage with peak value of 72 V.

② 50 °C Calibration.

## Miniature Circuit Breakers

### 5SY and 5SP Miniature Circuit Breakers

#### Introduction

#### Technical specifications

		5SY6	5SY4	5SY5	5SY7	5SY8	5SP4
<b>Standards</b>		EN 60898-1	EN 60898-1	EN 60898-2	EN 60898-1	EN 60947-2	EN 60898-1
<b>Approvals</b>		<a href="http://www.siemens.com/lowvoltage/certificates">www.siemens.com/lowvoltage/certificates</a>					
<b>Rated voltage <math>U_n</math></b>	V AC V DC	230/400 --	230/400 --	230/400 220/440/ 880 <sup>5)</sup>	230/400 --	230/400 --	230/400 --
<b>Operational voltage</b>							
Acc. to EN 60898-1/-2 and EN 60947-2	Min. V AC/DC/pole	24	24	24	24	24	24
	Max. V DC/pole	72 <sup>4)</sup>	72 <sup>4)</sup>	250	72 <sup>4)</sup>	72 <sup>4)</sup>	72
Acc. to UL 1077 and CSA C22.2 No.235	Max. V AC	250/440	250/440	250/440	250/440	250/440	250/440
	Max. V DC	480/277	480/277	--	480/277	480/277	480/277
Max. V DC		60	60 <sup>6)</sup>	--	60 <sup>6)</sup>	60 <sup>6)</sup>	60
<b>Breaking capacity<sup>1)</sup></b>							
• $I_{cn}$ acc. to IEC/EN 60898-1	kA AC	6	10	10	15	--	10
• $I_{cn}$ acc. to IEC/EN 60898-2	kA DC	10	10	10	15	--	10
• $I_{cu}$ acc. to IEC/EN 60947-2	kA AC	30 ... 10 <sup>1)</sup>	35 ... 10 <sup>1)</sup>	35 ... 10 <sup>1)</sup>	50 ... 15 <sup>1)</sup>	70 ... 20 <sup>1)</sup>	10
	kA DC	15	15	15	15	15	15
• Acc. to UL1077 and CSA C22.2 No.235	kA AC	5	5	--	5	5	5
<b>Insulation coordination</b>							
• Rated insulation voltage	V AC V DC/pole	250/440 --	--	250	--	--	--
<b>Pollution degree for overvoltage category</b>		3/III <sup>3)</sup>					
<b>Touch protection</b>	Acc. to EN 50274	Yes					
<b>Handle end position, sealable</b>		Yes					
<b>Degree of protection</b>	Acc. to EN 60529	IP20 with connected conductors, IP40 in the area of the handle with distribution cover					
<b>CFC and silicone-free</b>		Yes					
<b>Mounting</b>							
• Snap-on fixing system		Yes					--
• Standard mounting rail and screw fixing		--					Yes
<b>Terminals</b>	± screw (Pozidriv)	2					
• Tunnel terminals at both ends		--					Yes
• Combined terminals at both ends		Yes					--
• Terminal tightening torque	Nm	2.5 ... 3					2.5 ... 3.5
	lbs/in.	22 ... 26					22 ... 31
<b>Conductor cross-sections</b>							
• Solid and stranded	mm <sup>2</sup>	0.75 ... 35					4 ... 50
• Finely stranded, with end sleeve	mm <sup>2</sup>	0.75 ... 25					1.5 ... 35
• AWG conductors (Cu 60/75 °C $I_n \leq 40$ A; 60 °C $I_n > 40$ A)	AWG	14 ... 4					14 ... 2
<b>Mains connection</b>							
• AC		Any					
• DC		Any		<sup>2)</sup>	Any		
<b>Mounting position</b>		Any					
<b>Endurance</b>							
On average, with rated load	Actuations	20000					
	Actuations	10000 for 5SY5 at 40 A, 50 A and 63 A					
<b>Ambient temperature</b>	°C	-25 ... +55, max. 95 % humidity					
<b>Storage temperature</b>	°C	-40 ... +75					
<b>Resistance to climate</b>	Acc. to IEC 60068-2-30	6 cycles					
<b>Shock</b>	Acc. to IEC 60068-2-27	m/s <sup>2</sup> 150 at 11 ms half-sine					
<b>Resistance to vibrations</b>	Acc. to IEC 60068-2-6	m/s <sup>2</sup> 50 at 25 ... 150 Hz and 60 at 35 Hz (4 sec)					

<sup>1)</sup> For further information, see Configuration Manual "Miniature Circuit Breakers" at: [www.siemens.com/lowvoltage/manuals](http://www.siemens.com/lowvoltage/manuals).

<sup>2)</sup> Ensure compliance with the specified polarity when connecting DC.

<sup>3)</sup> 5SY54.. 4-pole, degree of pollution 2 at overvoltage category III.

<sup>4)</sup> Exempt: C/D 0.3 A ... 0.5 A

<sup>5)</sup> 5SY54.. 4-pole 880 V is not a standardized voltage acc. to EN 60898-1, suitable for max. 1000 V DC, if the four poles are connected in series.

<sup>6)</sup> Valid for 1-pole switching devices only.

## Miniature Circuit Breakers

### 5SY and 5SP Miniature Circuit Breakers

#### 5SY6, 6000 A

6000 3		$I_n$	Mounting width MW <sup>1)</sup>	DT	Characteristic B			Characteristic C			PU (UNIT, SET, M)	PS* P. unit	PG	Weight per PU approx. kg
					Article No. <a href="http://www.siemens.com/product?Article.No.">www.siemens.com/product?Article.No.</a>	Price per PU	PG DT	Article No. <a href="http://www.siemens.com/product?Article.No.">www.siemens.com/product?Article.No.</a>	Price per PU	PG DT				
<b>Miniature circuit breakers 6 000 A</b>														
<b>3P, 400 V AC</b>														
		0.3	3	--							1	1 unit	001	0.483
		0.5		--							1	1 unit	001	0.478
		1		--							1	1 unit	001	0.472
		1.6		--							1	1 unit	001	0.470
		2		--							1	1/4 units	001	0.474
		3		--							1	1 unit	001	0.463
		4		--							1	1/4 units	001	0.464
		5 <b>NEW</b>		--							1	1 unit	001	0.455
		6				5SY6306-6		001 ▶			1	1/4 units	001	0.453
		8		--							1	1 unit	001	0.458
		10				5SY6310-6		001 ▶			1	1/4 units	001	0.458
		13				5SY6313-6		001			1	1 unit	001	0.469
		15 <b>NEW</b>		--							1	1 unit	001	0.461
		16			▶	5SY6316-6		001 ▶			1	1/4 units	001	0.452
		20				5SY6320-6		001			1	1/4 units	001	0.468
	25				5SY6325-6		001			1	1/4 units	001	0.464	
	30 <b>NEW</b>		--							1	1 unit	001	0.451	
	32				5SY6332-6		001 ▶			1	1/4 units	001	0.464	
	40				5SY6340-6		001			1	1/4 units	001	0.470	
	50				5SY6350-6		001			1	1/4 units	001	0.486	
	63				5SY6363-6		001			1	1/4 units	001	0.499	
<b>3P+N, 400 V AC</b>														
		0.3	4	--							1	1 unit	001	0.631
		0.5		--							1	1 unit	001	0.636
		1		--							1	1 unit	001	0.635
		1.6		--							1	1 unit	001	0.631
		2		--							1	1 unit	001	0.642
		3		--							1	1 unit	001	0.617
		4		--							1	1 unit	001	0.616
		6				5SY6606-6		001			1	1 unit	001	0.610
		8		--							1	1 unit	001	0.607
		10				5SY6610-6		001			1	1 unit	001	0.608
		13				5SY6613-6		001			1	1/3 units	001	0.620
		16				5SY6616-6		001			1	1/3 units	001	0.612
		20				5SY6620-6		001			1	1 unit	001	0.621
		25				5SY6625-6		001			1	1 unit	001	0.623
		32				5SY6632-6		001			1	1 unit	001	0.627
	40				5SY6640-6		001			1	1 unit	001	0.625	
	50				5SY6650-6		001			1	1 unit	001	0.644	
	63				5SY6663-6		001			1	1 unit	001	0.673	
<b>4P, 400 V AC</b>														
		0.3	4	--							1	1 unit	001	0.640
		0.5		--							1	1 unit	001	0.644
		1		--							1	1 unit	001	0.626
		1.6		--							1	1 unit	001	0.621
		2		--							1	1 unit	001	0.644
		3		--							1	1 unit	001	0.623
		4		--							1	1 unit	001	0.615
		6				5SY6406-6		001			1	1 unit	001	0.606
		8		--							1	1 unit	001	0.608
		10				5SY6410-6		001			1	1/3 units	001	0.604
		13				5SY6413-6		001			1	1 unit	001	0.624
		16				5SY6416-6		001			1	1/3 units	001	0.604
		20				5SY6420-6		001			1	1/3 units	001	0.618
		25				5SY6425-6		001			1	1/3 units	001	0.619
		32				5SY6432-6		001			1	1/3 units	001	0.622
	40				5SY6440-6		001			1	1/3 units	001	0.627	
	50				5SY6450-6		001			1	1 unit	001	0.646	
	63				5SY6463-6		001			1	1/3 units	001	0.626	

<sup>1)</sup> 1 MW (modular width) = 18 mm.