

# 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		--					
<b>Terminals</b>	± screw (Pozidriv)	2					
• Tunnel terminals at both ends		--					
• Combined terminals at both ends		Yes					
• Terminal tightening torque	Nm lbs/in.	2.5 ... 3 22 ... 26					
<b>Conductor cross-sections</b>							
• Solid and stranded	mm <sup>2</sup>	0.75 ... 35					
• Finely stranded, with end sleeve	mm <sup>2</sup>	0.75 ... 25					
• AWG conductors (Cu 60/75 °C $I_n \leq 40$ A; 60 °C $I_n > 40$ A)	AWG	14 ... 4					
<b>Mains connection</b>							
• AC		Any					
• DC		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

#### 5SY4, 10000 A

10000 3		$I_n$	Mounting width MW <sup>1)</sup>	DT	Characteristic C			Characteristic D			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				
<b>Miniature circuit breakers 10000 A</b>														
<b>3P, 400 V AC</b>														
		0.3	3		5SY4314-7		002	5SY4314-8		1	1 unit	002	0.481	
		0.5			5SY4305-7		002	5SY4305-8		1	1 unit	002	0.484	
		1			5SY4301-7		002	5SY4301-8		1	1 unit	002	0.454	
		1.6			5SY4315-7		002	5SY4315-8		1	1 unit	002	0.474	
		2			5SY4302-7		002	5SY4302-8		1	1 unit	002	0.449	
		3			5SY4303-7		002	5SY4303-8		1	1 unit	002	0.467	
		4			5SY4304-7		002	5SY4304-8		1	1 unit	002	0.437	
		5			5SY4311-7		002	--						
		6			5SY4306-7		002	5SY4306-8		1	1 unit	002	0.465	
		8			5SY4308-7		002	5SY4308-8		1	1 unit	002	0.443	
		10			5SY4310-7	▶	002	5SY4310-8		1	1 unit	002	0.449	
		13			5SY4313-7		002	5SY4313-8		1	1 unit	002	0.450	
		15			5SY4318-7		002	--						
		16			5SY4316-7	▶	002	5SY4316-8		1	1/4 units	002	0.449	
		20			5SY4320-7		002	5SY4320-8		1	1 unit	002	0.469	
		25			5SY4325-7		002	5SY4325-8		1	1 unit	002	0.467	
		30			5SY4330-7		002	--						
	32			5SY4332-7	▶	002	5SY4332-8		1	1 unit	002	0.478		
	35			5SY4335-7		002	--							
	40			5SY4340-7		002	5SY4340-8		1	1 unit	002	0.482		
	45			5SY4345-7		002	--							
	50			5SY4350-7		002	5SY4350-8		1	1 unit	002	0.480		
	60			5SY4360-7		002	--							
	63			5SY4363-7		002	5SY4363-8		1	1 unit	002	0.484		
	80			5SY4380-7		002	--							
<b>3P+N, 400 V AC</b>														
		0.3	4		5SY4614-7		002	5SY4614-8		1	1 unit	002	0.634	
		0.5			5SY4605-7		002	5SY4605-8		1	1 unit	002	0.660	
		1			5SY4601-7		002	5SY4601-8		1	1 unit	002	0.636	
		1.6			5SY4615-7		002	5SY4615-8		1	1 unit	002	0.621	
		2			5SY4602-7		002	5SY4602-8		1	1 unit	002	0.608	
		3			5SY4603-7		002	5SY4603-8		1	1 unit	002	0.619	
		4			5SY4604-7		002	5SY4604-8		1	1 unit	002	0.587	
		6			5SY4606-7		002	5SY4606-8		1	1 unit	002	0.617	
		8			5SY4608-7		002	5SY4608-8		1	1 unit	002	0.595	
		10			5SY4610-7		002	5SY4610-8		1	1 unit	002	0.599	
		13			5SY4613-7		002	5SY4613-8		1	1 unit	002	0.600	
		16			5SY4616-7		002	5SY4616-8		1	1 unit	002	0.597	
		20			5SY4620-7		002	5SY4620-8		1	1 unit	002	0.622	
	25			5SY4625-7		002	5SY4625-8		1	1 unit	002	0.629		
	32			5SY4632-7		002	5SY4632-8		1	1 unit	002	0.642		
	40			5SY4640-7		002	5SY4640-8		1	1 unit	002	0.645		
	50			5SY4650-7		002	5SY4650-8		1	1 unit	002	0.623		
	63			5SY4663-7		002	5SY4663-8		1	1 unit	002	0.661		
	80			5SY4680-7		002	--							
<b>4P, 400 V AC</b>														
		0.3	4		5SY4414-7		002	5SY4414-8		1	1 unit	002	0.632	
		0.5			5SY4405-7		002	5SY4405-8		1	1 unit	002	0.633	
		1			5SY4401-7		002	5SY4401-8		1	1 unit	002	0.632	
		1.6			5SY4415-7		002	5SY4415-8		1	1 unit	002	0.623	
		2			5SY4402-7		002	5SY4402-8		1	1 unit	002	0.631	
		3			5SY4403-7		002	5SY4403-8		1	1 unit	002	0.660	
		4			5SY4404-7		002	5SY4404-8		1	1 unit	002	0.610	
		6			5SY4406-7		002	5SY4406-8		1	1 unit	002	0.605	
		8			5SY4408-7		002	5SY4408-8		1	1 unit	002	0.594	
		10			5SY4410-7		002	5SY4410-8		1	1 unit	002	0.601	
		13			5SY4413-7		002	5SY4413-8		1	1 unit	002	0.598	
		16			5SY4416-7		002	5SY4416-8		1	1 unit	002	0.598	
		20			5SY4420-7		002	5SY4420-8		1	1 unit	002	0.627	
	25			5SY4425-7		002	5SY4425-8		1	1 unit	002	0.620		
	32			5SY4432-7		002	5SY4432-8		1	1 unit	002	0.612		
	40			5SY4440-7		002	5SY4440-8		1	1 unit	002	0.634		
	50			5SY4450-7		002	5SY4450-8		1	1 unit	002	0.637		
	63			5SY4463-7		002	5SY4463-8		1	1 unit	002	0.647		
	80			5SY4480-7		002	--							

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