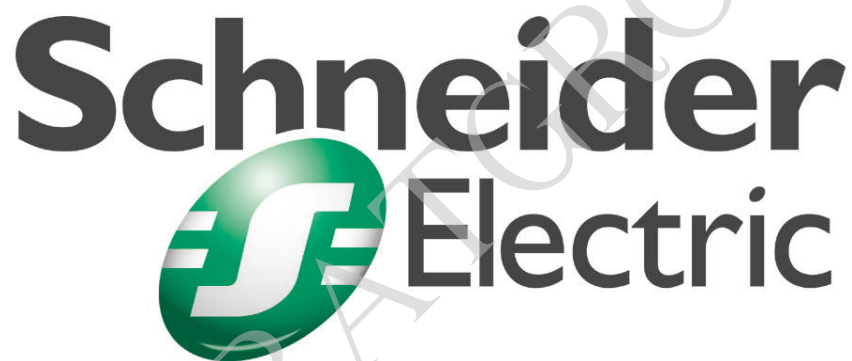


# DATA SHEET



## NS MCCB



DB105167

**Merlin Gerin**

**Compact**

**NS160 H**

Ui 750 V Uimp 8 kV

Ue (V)	Icu (kA)
220/240 ~	100
380/415 ~	70
440 ~	65
500 ~	50
525 ~	35
660/690 ~	10
250 =	85

Ics = 100% Icu

50/60Hz cat A

IEC / EN 60947-2  
AS UNE CEIBS UTE VDE NEMA

Standardised characteristics indicated on the rating plate:

Ui: rated insulation voltage  
 Uimp: rated impulse withstand voltage  
 Icu: ultimate breaking capacity, for various values of the rated operational voltage Ue  
 utilisation category  
 Icw: rated short-time withstand current  
 Ics: service breaking capacity  
 In: rated current  
 suitable for isolation

**Compliance with standards**

Compact NS circuit breakers and auxiliaries comply with the following:

- international recommendations:
    - IEC 60947-1 - general rules
    - IEC 60947-2 - circuit breakers
    - IEC 60947-3 - switches, disconnectors, switch-disconnectors, etc.
    - IEC 60947-4 - contactors and motor starters
    - IEC 60947-5.1 and following - control circuit devices and switching elements; automatic control components
  - European (EN 60947-1 and EN 60947-2) and the corresponding national standards:
    - France NF
    - Germany VDE
    - U.K. BS
    - Australia AS
    - Italy CEI
  - the specifications of the marine classification companies (Veritas, Lloyd's Register of Shipping, Det Norske Veritas, etc.)
  - French standard NF C 79-130 and the recommendations issued by the CNOMO organisation for the protection of machine tools.
- For U.S. UL, Canadian CSA, Mexican NOM and Japanese JIS standards, please consult us.

**Pollution degree**

Compact NS circuit breakers are certified for operation in pollution-degree 3 environments as defined by IEC standard 60947 (industrial environments).

**Tropicalisation**

Compact NS circuit breakers have successfully passed the tests prescribed by the following standards for extreme atmospheric conditions:

- IEC 60068-2-1 - dry cold (-55 °C)
- IEC 60068-2-2 - dry heat (+85 °C)
- IEC 60068-2-30 - damp heat (95 % relative humidity at 55 °C)
- IEC 60068-2-52 - salt mist (severity level 2).

**Environmental protection**

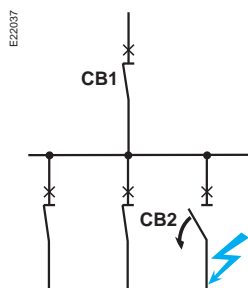
Compact NS circuit breakers take into account important concerns for environmental protection. Most components are recyclable and the parts of Compact NS630b to NS3200 circuit breakers are marked as specified in applicable standards.

**Ambient temperature**

- Compact NS circuit breakers may be used between -25 °C and +70 °C. For temperatures higher than 40 °C (65 °C for circuit breakers used to protect motor feeders), devices must be derated as indicated in the documentation.
- circuit-breakers should be put into service under normal ambient operating-temperature conditions. Exceptionally, the circuit breaker may be put into service when the ambient temperature is between -35 °C and -25 °C. the permissible storage-temperature range for Compact NS circuit breakers in the original packing is -50 °C (1) to +85 °C.

**Discrimination**

As standard, the Compact NS range ensures discrimination between two circuit breakers positioned in series in an installation.



(1) -40 °C for Micrologic control units with an LCD screen.



**Positive contact indication**

All Compact NS circuit breakers are suitable for isolation as defined in IEC standard 60947-2:

- the isolation position corresponds to the O (OFF) position
  - the operating handle cannot indicate the "OFF" position unless the contacts are effectively open
  - padlocks may not be installed unless the contacts are open.
- Installation of a rotary handle or a motor mechanism does not alter the reliability of the position-indication system.
- The isolation function is certified by tests guaranteeing:
- the mechanical reliability of the position indication system
  - the absence of leakage currents
  - overvoltage withstand capacity between upstream and downstream connections.

**Installation in class II switchboards**

All Compact NS circuit breakers are class II front face devices. They may be installed through the door of class II switchboards (as per IEC standard 60664), without downgrading switchboard insulation. Installation requires no special operations, even when the circuit breaker is equipped with a rotary handle or a motor mechanism.

**Degree of protection**

As per standards IEC 60529 (IP degree of protection) and EN 50102 (IK degree of protection against external mechanical impacts).

**Bare circuit breaker with terminal shields**

E 18570		With toggle	IP40	IK07
E28439		With direct rotary handle standard / VDE	IP40	IK07

**Circuit breaker installed in a switchboard**

E21277		With toggle	IP40	IK07
E28440		With direct rotary handle standard / VDE MCC CNOMO	IP40 IP435 IP547	IK07
E28441		With extended rotary handle	IP55	IK08
E28442		With motor mechanism	IP40	IK07

## Compact NS circuit breakers up to 630 A



Compact NS250H



Compact NS630N

### Compact circuit breakers

Number of poles		
Control	manual	toggle
	electric	direct or extended rotary handle
Connections	fixed	front connection
		rear connection
	plug-in (on base)	front connection
		rear connection
	withdrawable (on chassis)	front connection
		rear connection

### Electrical characteristics as per IEC 60947-2 and EN 60947-2

Rated current (A)	<b>I<sub>n</sub></b>	40 °C
		65 °C
Rated insulation voltage (V)	<b>U<sub>i</sub></b>	
Rated impulse withstand voltage (kV)	<b>U<sub>imp</sub></b>	
Rated operational voltage (V)	<b>U<sub>e</sub></b>	AC 50/60 Hz
		DC

### Type of circuit breaker

Ultimate breaking capacity (kA rms)	<b>I<sub>cu</sub></b>	AC	220/240 V
		50/60 Hz	380/415 V
			440 V
			500 V
			525 V
			660/690 V

Service breaking capacity (kA rms)	<b>I<sub>cs</sub></b>	% I <sub>cu</sub>
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Suitability for isolation

Utilisation category

Durability (C-O cycles)	mechanical		
	electrical	440 V	In/2 In

### Electrical characteristics as per NEMA AB1 (H.I.C.)

Breaking capacity (kA)	240 V
	480 V
	600 V

### Electrical characteristics as per UL508

Breaking capacity (kA)	240 V
	480 V
	600 V

### Protection

Trip units		
Overload protection	long time	<b>I<sub>r</sub></b> (I <sub>n</sub> x ...)
Short-circuit protection	short time	<b>I<sub>sd</sub></b> (I <sub>r</sub> x ...)
	instantaneous	<b>I<sub>i</sub></b> (I <sub>n</sub> x ...)
Earth-fault protection		<b>I<sub>g</sub></b> (I <sub>n</sub> x ...)
Zone selective interlocking		<b>ZSI</b>
Add-on earth-leakage protection		add-on Vigi module combination with Vigirex relay

Current measurements

### Additional measurement, indication and control auxiliaries

Indication contacts	
MX shunt and MN undervoltage releases	
Voltage-presence indicator	
Current-transformer module and ammeter module	
Insulation-monitoring module	
<b>Remote communication by bus</b>	
Device-status indication	
Device remote operation	
Transmission of settings	
Indication and identification of protection devices and alarms	
Transmission of measured current values	

### Installation

Accessories	terminal extensions and spreaders
	terminal shields and interphase barriers
	escutcheons
Dimensions (mm) W x H x D	fixed, front connections 2-3P / 4P
Weight (kg)	fixed, front connections 3P / 4P

### Source changeover system (see section on source changeover systems)

Manual, remote-operated and automatic source changeover systems

(1) 2P in 3P case for type N only  
 (2) specific trip units are available for operational voltages > 525 V  
 (3) NS100N et U ≥ 500 V: I<sub>cs</sub> = 50 % I<sub>cu</sub>  
 (4) operational voltage ≤ 500 V



NS125E	NS100	NS160	NS250	NS400	NS630	
3, 4	2 <sup>(1)</sup> , 3, 4	2 <sup>(1)</sup> , 3, 4	2 <sup>(1)</sup> , 3, 4	3, 4	3, 4	
■	■	■	■	■	■	
-	■	■	■	■	■	
■	■	■	■	■	■	
■	■	■	■	■	■	
-	■	■	■	■	■	
-	■	■	■	■	■	
-	■	■	■	■	■	
-	■	■	■	■	■	
125	100	160	250	400	630	
-	100	150	220	320	500	
750	750	750	750	750	750	
8	8	8	8	8	8	
500	690	690	690	690	690	
-	750	750	750	750	750	
<b>E</b>	<b>N SX H L</b>	<b>N SX H L</b>	<b>N SX H L</b>	<b>N H L</b>	<b>N H L</b>	
25	85 90 100 150	85 90 100 150	85 90 100 150	85 100 150	85 100 150	
16/10	36 50 70 150	36 50 70 150	36 50 70 150	50 70 150	50 70 150	
10	35 50 65 130	35 50 65 130	35 50 65 130	42 65 130	42 65 130	
6	25 36 50 100	30 36 50 70	30 36 50 70	30 50 100	30 50 70	
-	22 35 35 100	22 35 35 50	22 35 35 50	22 35 100	22 35 50	
-	8 10 10 75	8 10 10 20	8 10 10 20	10 <sup>(2)</sup> 20 <sup>(2)</sup> 75 <sup>(2)</sup>	10 <sup>(2)</sup> 20 <sup>(2)</sup> 35 <sup>(2)</sup>	
50 %	100 % <sup>(3)</sup>	100 %	100 %	100 %	100 % <sup>(4)</sup>	
■	■	■	■	■	■	
A	A	A	A	A	A	
10000	50000	40000	20000	15000	15000	
6000	50000	40000	20000	12000	8000	
6000	30000	20000	10000	6000	4000	
<b>E</b>	<b>N SX H L</b>	<b>N SX H L</b>	<b>N SX H L</b>	<b>N H L</b>	<b>N H L</b>	
5	85 90 100 200	85 90 100 200	85 90 100 200	85 100 200	85 100 200	
5	35 50 65 130	35 50 65 130	35 50 65 130	42 65 130	42 65 130	
-	8 20 35 50	20 20 35 50	20 20 35 50	20 35 50	20 35 50	
<b>E</b>	<b>N SX H L</b>	<b>N SX H L</b>	<b>N SX H L</b>	<b>N H L</b>	<b>N H L</b>	
-	85 85 85 -	85 85 85 -	85 85 85 -	- - -	- - -	
-	25 50 65 -	35 50 65 -	35 50 65 -	- - -	- - -	
-	10 10 10 -	10 10 10 -	18 18 18 -	- - -	- - -	
non interchangeable 12.5... 125 (A)	TM (thermal-magnetic)	STR22 (electronic)			STR23 (electronic)	STR53 (electronic)
■	■	■			■	■
-	-	■			■	■
■	■	■			■	■
■	■	■			■	■
-	-	-			-	-
-	-	-			-	-
-	-	-			-	-
-	-	-			-	-
■	■	■			■	■
■	■	■			■	■
■	■	■			■	■
105 x 161 x 86 / 140 x 161 x 86					140 x 255 x 110 / 185 x 255 x 110	
2.0 to 2.2 / 2.6 to 2.8					6.2 to 8.1	
-	■				■	

## Compact NS circuit breakers from 630 up to 3200 A



Compact NS800L



Compact NS2000H

### Compact circuit breakers

Number of poles				
Control	manual	toggle		
	electric	direct or extended rotary handle		
<b>Type of circuit breaker</b>				
Connections	fixed	front connection		
		rear connection		
		front connection with bare cables		
	withdrawable (on chassis)	front connection		
		rear connection		
<b>Electrical characteristics as per IEC 60947-2 and EN 60947-2</b>				
Rated current (A)	<b>I<sub>n</sub></b>	50 °C		
		65 °C <sup>(1)</sup>		
Rated insulation voltage (V)	<b>U<sub>i</sub></b>			
Rated impulse withstand voltage (kV)	<b>U<sub>imp</sub></b>			
Rated operational voltage (V)	<b>U<sub>e</sub></b>	AC 50/60 Hz		
<b>Type of circuit breaker</b>				
Ultimate breaking capacity (kA rms)	<b>I<sub>cu</sub></b>	AC	220/240 V	
		50/60 Hz	380/415 V	
			440 V	
			500/525 V	
			660/690 V	
Service breaking capacity (kA rms)	<b>I<sub>cs</sub></b>	Value or % I <sub>cu</sub>	manual operation	
			electrical operation	
Short-time withstand current (kA rms)	<b>I<sub>cw</sub></b>	AC 50/60 Hz	1 s	
			3 s	
Integrated instantaneous protection		kA peak ±10 %		
Suitability for isolation				
Utilisation category				
Durability (C-O cycles)	mechanical			
			electrical	440 V
				690 V
		In/2		
		In		
		In/2		
		In		
Pollution degree				
<b>Electrical characteristics as per Nema AB1</b>				
Breaking capacity at 60 Hz (kA)			240 V	
			480 V	
			600 V	
<b>Protection and measurements</b>				
Interchangeable control units				
Overload protection	long time	<b>I<sub>r</sub></b> (I <sub>n</sub> x ...)		
Short-circuit protection	short time	<b>I<sub>sd</sub></b> (I <sub>r</sub> x ...)		
	instantaneous	<b>I<sub>i</sub></b> (I <sub>n</sub> x ...)		
Ear h-fault protection		<b>I<sub>g</sub></b> (I <sub>n</sub> x ...)		
Residual ear h-leakage protection		<b>IΔn</b>		
Zone selective interlocking		<b>ZSI</b>		
Protection of the fourth pole				
Current measurements				
Power measurements				
Advanced protection				
<b>Remote communication by bus</b>				
Device-status indication				
Device remote operation				
Transmission of settings				
Indication and identification of protection devices and alarms				
Transmission of measured current values				
<b>Additional indication and control auxiliaries</b>				
Indication contacts				
Voltage releases	MX shunt release/MN undervoltage release			
<b>Installation</b>				
Accessories	terminal extensions and spreaders			
	terminal shields and interphase barriers			
	escutcheons			
Dimensions fixed devices, front connections (mm)	3P			
	4P			
Weight fixed devices, front connections (kg)	3P			
	4P			
<b>Source changeover system (see section on "source changeover systems")</b>				
Manual, remote-operated and automatic source changeover systems				

<sup>(1)</sup> 65 °C with vertical connections. See the temperature derating tables for other types of connections.

<sup>(2)</sup> I<sub>cs</sub>: 100 % I<sub>cu</sub> for breaking capacity 440V/500V/660V  
I<sub>cs</sub>: 75 % I<sub>cu</sub> for breaking capacity 220V/380V.

<sup>(3)</sup> Except 1600b-3200.



NS630b				NS800				NS1000			NS1250		NS1600		NS1600b		NS2000		NS2500		NS3200		
3, 4				3, 4				3, 4			3, 4		3, 4		3, 4								
■				■				■			■		■		■								
■				■				■			■		■		■								
■ (except LB)				■				■			■		■		■								
N		H		L		LB		N		H		L		N		H		N		H			
■		■		■		-		■		■		■		■		■		■		■			
■		■		■		■		■		■		■		■		■		■		■			
■		■		-		-		■		■		-		-		-		-		-			
■		■		■		■		■		■		■		■		■		-		-			
■		■		■		■		■		■		■		■		■		-		-			
630		800						1000		1250		1600		1600		2000		2500		3200			
630		800						1000		1250		1510		1550		1900		2500		2970			
800								800		800		800		800									
8								8		8		8		8									
690								690		690		690		690									
N		H		L		LB		N		H		L		N		H		N		H			
50		70		150		200		50		70		150		50		70		85		125			
50		70		150		200		50		70		150		50		70		70		85			
50		65		130		200		50		65		130		50		65		65		85			
40		50		100		100		40		50		100		40		50		65		-			
30		42		-		75		30		42		-		30		42		65		-			
100 %		75 %		100 %		100 %		100 %		75 %		100 %		100 %		75 %		100 % <sup>(2)</sup>		75 %			
75 %		50 %		100 %		-		75 %		50 %		100 %		75 %		50 %		100 % <sup>(2)</sup>		75 %			
19.2		19.2		-		-		19.2		19.2		-		19.2		19.2		-		-			
-		-		-		-		-		-		-		-		-		32		32			
40		40		-		-		40		40		-		40		40		130		130			
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B		B		A		A		B		B		A		B		B		B		B			
10000								10000		10000		10000		10000		5000							
6000		6000		4000		4000		6000		6000		4000		5000		5000		3000					
5000		5000		3000		3000		5000		5000		3000		4000		2000		2000					
4000		4000		3000		3000		4000		4000		3000		3000		2000		2000					
2000		2000		2000		2000		2000		2000		2000		2000		1000		1000					
3								3		3		3		3		3							
N		H		L		LB		N		H		L		N		H		N		H			
50		65		125		200		50		65		125		50		65		85		125			
35		50		100		200		35		50		100		35		50		65		85			
25		50		-		100		25		50		-		25		50		50		-			
Micrologic 2.0		Micrologic 5.0		Micrologic 2.0 A		Micrologic 5.0 A		Micrologic 6.0 A		Micrologic 7.0 A		Micrologic 5.0 P <sup>(3)</sup>		Micrologic 6.0 P <sup>(3)</sup>		Micrologic 7.0 P <sup>(3)</sup>							
■		■		■		■		■		■		■		■		■		■		■			
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■		■		■		■		■		■		■		■		■		■		■			
327 x 210 x 147														350 x 420 x 160									
327 x 280 x 147														350 x 535 x 160									
14														24									
18														36									
■				■				■			■		■		■		■		■				