

Compact NS from 80 to 3200 A

**LV circuit breakers  
and switch-disconnectors**

Catalogue  
**2008**



Merlin Gerin  
Square D  
Telemecanique

**Schneider**  
 **Electric**



046751-13

Compact NS80 A.



PB101045-15

Compact NS100 to 250 A.



PB101044-19

Compact NS400 to 630 A.



DB112529

Compact NS630 to 1600 A.



E45178F-60

Compact NS1600 to 3200 A.

## **Compact NS, setting the standard, once again...**

*The launch of Merlin Gerin Compact NS in 1994 revolutionised the world of moulded-case circuit breakers. Innovative, flexible and attractive, Compact NS rapidly set the standard in its field.*

*Today, Schneider Electric continues to innovate, extending the Compact NS range to high power ratings to offer a comprehensive and consistent range from 80 to 3200 A.*

*Equipped with the new generation of Micrologic control units, Compact NS630b to 1600 circuit breakers now offer built-in power and energy metering in addition to electrical measurement and analysis functions.*

*The communications option makes it possible to control power consumption, simplify maintenance and improve operating comfort.*

*A wide range of optimised auxiliaries and accessories is also available to meet the needs of even more applications.*

## **Compact NS, simply a step ahead...**

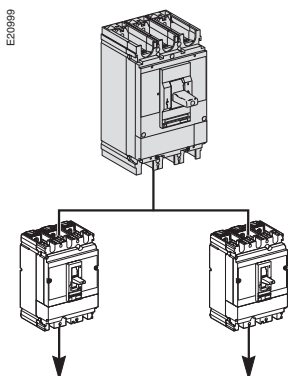
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# Compact NS, even more applications...

## Protection of LV distribution systems page A-4



Protection for:

- distribution systems supplied by transformers
- distribution systems supplied by engine generator sets
- long cables in IT and TN systems.

Installation :

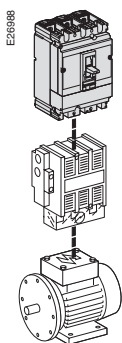
- in power switchboards
- on DIN rails (see page A-40)

Special applications:

- single-phase and two-phase systems (see page A-26)
- 1000 V distribution systems (see page A-28)
- 400 Hz distribution systems (see page A-30)
- DC systems (see page A-32).

All circuit breakers in the Compact NS range offer positive contact indication and are suitable for isolation in compliance with standards IEC 60947-1 and 2.

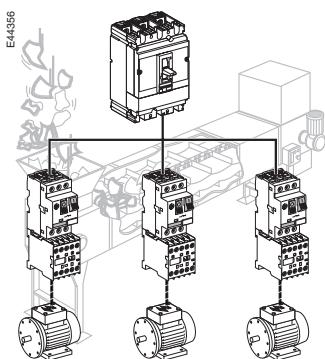
## Protection of motor feeders page A-42



When combined with a motor starter, Compact NS circuit breakers protect the cables and the starter against short-circuits. Equipped with an electronic trip unit, Compact NS circuit breakers also protect the cables, starter and motor against overloads.

The exceptional current-limiting capacity of Compact NS circuit breakers automatically ensures type-2 coordination with the motor starter, in compliance with standard IEC 60947-4-1.

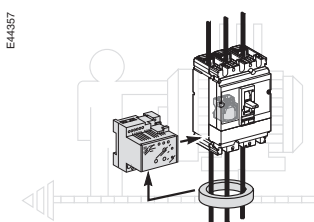
## Protection of machines page A-50



The different circuit-breaker versions in the Compact NS range are designed to meet the specific requirements of machines:

- compliance with international standards IEC 60947-2 and UL 508 / CSA 22-2 No. 14
- compliance with U.S. standard UL 489
- protection against overloads and short-circuits
- positive contact indication
- installation in universal and functional enclosures.

## Earth-leakage protection page A-54

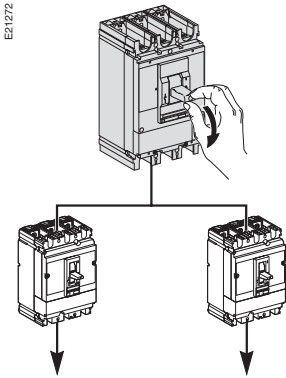


Additional earth-leakage protection protects life and property against the risks of faulty insulation in the installation. Depending on the circuit breaker, earth-leakage protection is provided by:

- adding a Vigi module to the circuit breaker
- using a specific Micrologic control unit
- using a Vigirex relay and separate toroids.

## Control and isolation

page A-56



A switch-disconnector version of Compact NS circuit breakers exists for circuit control and isolation.  
All the additional functions may be combined with the basic switch-disconnector function, including:

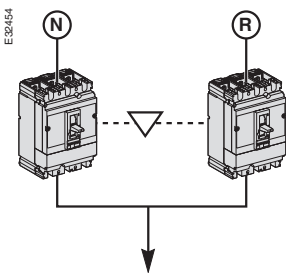
- earth-leakage protection
- motor mechanism
- ammeter, etc.

For information on other switch-disconnector ranges, see the Interpact (offering positive contact indication and visible break) and Fupact (fuse switch) catalogues.

## Source-changeover systems

page A-66

(see also the "Source-changeover systems" catalogue)



To ensure a continuous supply of power, some electrical installations are connected to two power sources:

- a normal source
- a replacement source on hand to supply the installation when the normal source is not available.

A mechanical and/or electrical interlocking system between two Interpact, Compact or Masterpact devices avoids all risk of parallel connection of the sources during switching.

A source-changeover system can be:

- manual with mechanical interlocking between the devices
- remote operated when an electrical interlocking function is added
- automatic when a controller is added to manage switching from one source to the other on the basis of external parameters.

## UL 489 applications

Compact NS circuit breakers also meet the requirements of applications governed by standard UL 489 (see the corresponding catalogue).

# ...a solution for all installation configurations

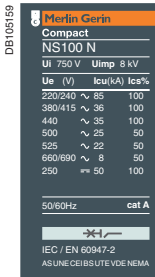
The Compact NS range now covers all ratings from 80 to 3200 A:

- Compact NS80 to 1600 A, fixed, withdrawable, front or rear connections, manual or electrical operation.
- Compact NS1600 to 3200 A, fixed, front connection, manual operation.

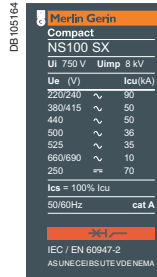
## Compact NS100 to 630

Breaking capacity Icu at 415 V

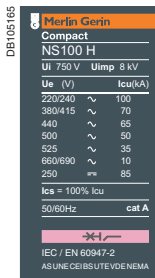
DB101838	L 150 kA					
	H 70 kA					
	SX 50 kA					
	N 50 kA					
	N 36 kA					
		NS100	NS160	NS250	NS400	NS630



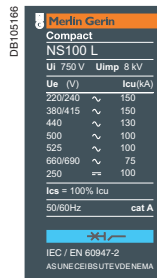
**N:** standard breaking capacity.



**SX:** reinforced breaking capacity.



**H:** high breaking capacity.



**L:** very high breaking capacity.

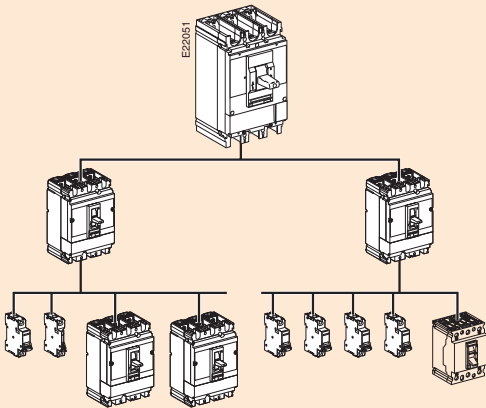
The rating plates on the front panel of each device indicate the breaking capacity (N, SX, H or L).

## Compact NS630b to 1600

Breaking capacity Icu at 415 V

DB107663	LB 200 kA					
	L 150 kA					
	H 70 kA					
	N 50 kA					
		NS630b	NS800	NS1000	NS1250	NS1600

## Total discrimination as standard



Discrimination between Compact NS circuit breakers is total for all types of faults (overloads, high or low short-circuits) and whatever the type of trip unit used with the circuit breaker.

## Compact NS1600b to 3200

Breaking capacity Icu at 415 V

E49551	H 85 kA					
	N 70 kA					
		NS1600b	NS2000	NS2500	NS3200	



PB101050\_24

Manual Compact NS250 with thermal-magnetic trip unit



047213

Compact NS250 with motor mechanism

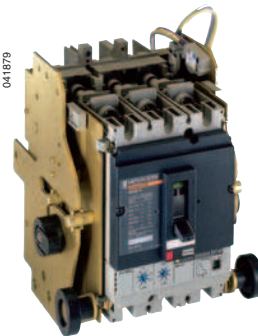


Plug-in Compact NS250 on base



PB101044\_28

Compact NS400 with electronic trip unit



041879

Withdrawable Compact NS250 on chassis



DB112530

Manually operated Compact NS800



E45163

Electrically operated Compact NS800



E45178R-63

Compact NS2000 (manually operated only)

## ...simplified installation

Compact circuit breakers make it possible to standardise switchboards for faster installation and fewer errors. All type L (150 kA) and LB (200 kA) Compact circuit breakers are housed in the same case as the type N and type H models with the same ratings. Compact circuit breakers up to 1600 A can be easily installed side-by-side in a minimum amount of space.

### 5 frame sizes from 80 to 3200 A



80 A



100 to 250 A



400 to 630 A



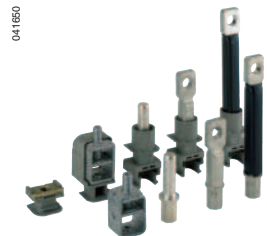
630 to 1600 A



1600 to 3200 A

### Many connection possibilities

Numerous connection possibilities, including front and rear connections for bare cables, cable lugs or bars, as well as plug-in or withdrawable versions, are available using accessories that can be rapidly added to the circuit breaker.

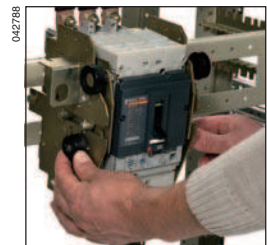


Connection parts for Compact NS

### Plug-in and withdrawable versions

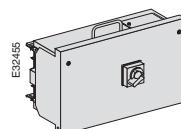
Plug-in and withdrawable versions for:

- fast removal or insertion of the circuit breaker without exposure to live parts
- standby outgoing circuits ready for wiring and circuit breaker installation at a later date
- visible break possibility.



### Busways

Compact NS circuit breakers up to 630 A can be installed in tap-off units of the Telemecanique Canalis range of busbar trunking.





## ...optimised protection and accurate measurements

Each Compact NS circuit breaker provides different types of protection, depending on the trip unit or control unit selected.

Additional measurement and indication functions are available:

- on Compact NS100 to 630, by adding an electrical auxiliary to the circuit breaker

- on Compact NS630b to 3200, depending on the Micrologic control unit selected.

### Compact NS100 to 630

On Compact NS100 to NS250 circuit breakers, the thermal-magnetic and electronic trip units are interchangeable and may be rapidly fitted to the circuit breakers. It is therefore easy to change the protection of a given circuit following a modification in an installation.

On Compact NS400 and NS630 circuit breakers, the electronic trip units are interchangeable, plug-in modules. The STR53UE trip unit offers a large number of protection settings:

**standard:**

- specific indication of the different types of faults (overloads, short-circuits, etc.)

**optional:**

- built-in ammeter
- earth-fault protection
- communication: transmission of all information concerning circuit-breaker operation to an electrical distribution control, monitoring and automation system (see page A-72).



Compact NS250



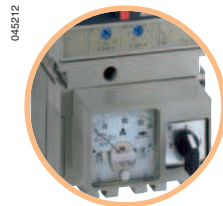
TM thermal-magnetic trip unit



Voltage presence indication module



STR electronic trip unit



Ammeter module

### Compact NS630b to 3200

Compact NS630b to 3200 circuit breakers are equipped with Micrologic control units that are interchangeable on site.

Micrologic 2.0 and 2.0 A control units offer standard protection. Micrologic 5.0, 5.0 A and 5.0 P control units offer selective protection that can be completed by earth-fault protection on Micrologic 6.0 A/6.0 P and earth-leakage protection on Micrologic 7.0 A/7.0 P control units.

Micrologic A control units continuously display the current flowing ( $I_1$ ,  $I_2$ ,  $I_3$ ,  $I_g$ ,  $I_{\Delta n}$ ) and can measure maximum currents ( $I_{max}$ ) with an accuracy of 1.5 %.

Micrologic P control units calculate all electrical values (V, A, W, Var, VA, Wh, VARh, VAh, Hz), power factors and  $\cos \varphi$  values in real time.



Compact NS800



Micrologic 2.0, 5.0



Micrologic 2.0 A, 5.0 A, 6.0 A, 7.0 A



5.0 P, 6.0 P, 7.0 P

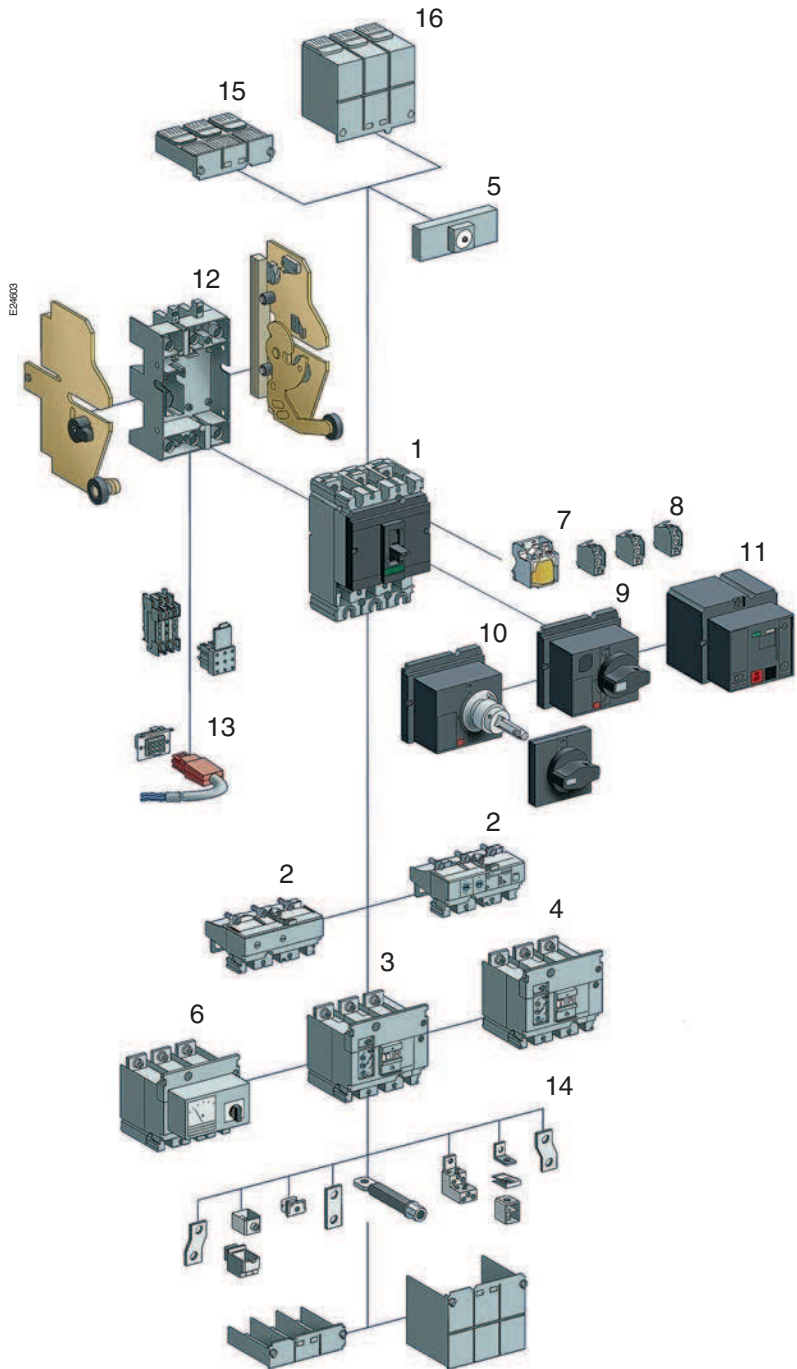
...an optimised range

**A complete system of add-on modules for Compact NS:**

Fewer catalogue numbers means immediate availability of parts for all solutions.

Trip units, control units, auxiliaries and installation and connection accessories are the same for a given frame size and often for a number of frame sizes (e.g. auxiliary contacts, MN and MX voltage releases, etc.):

- Compact NS800 to NSA160
- Compact NS100 to NS250
- Compact NS400 to NS630
- Compact NS630b to 1600
- Compact 1600b to 3200.



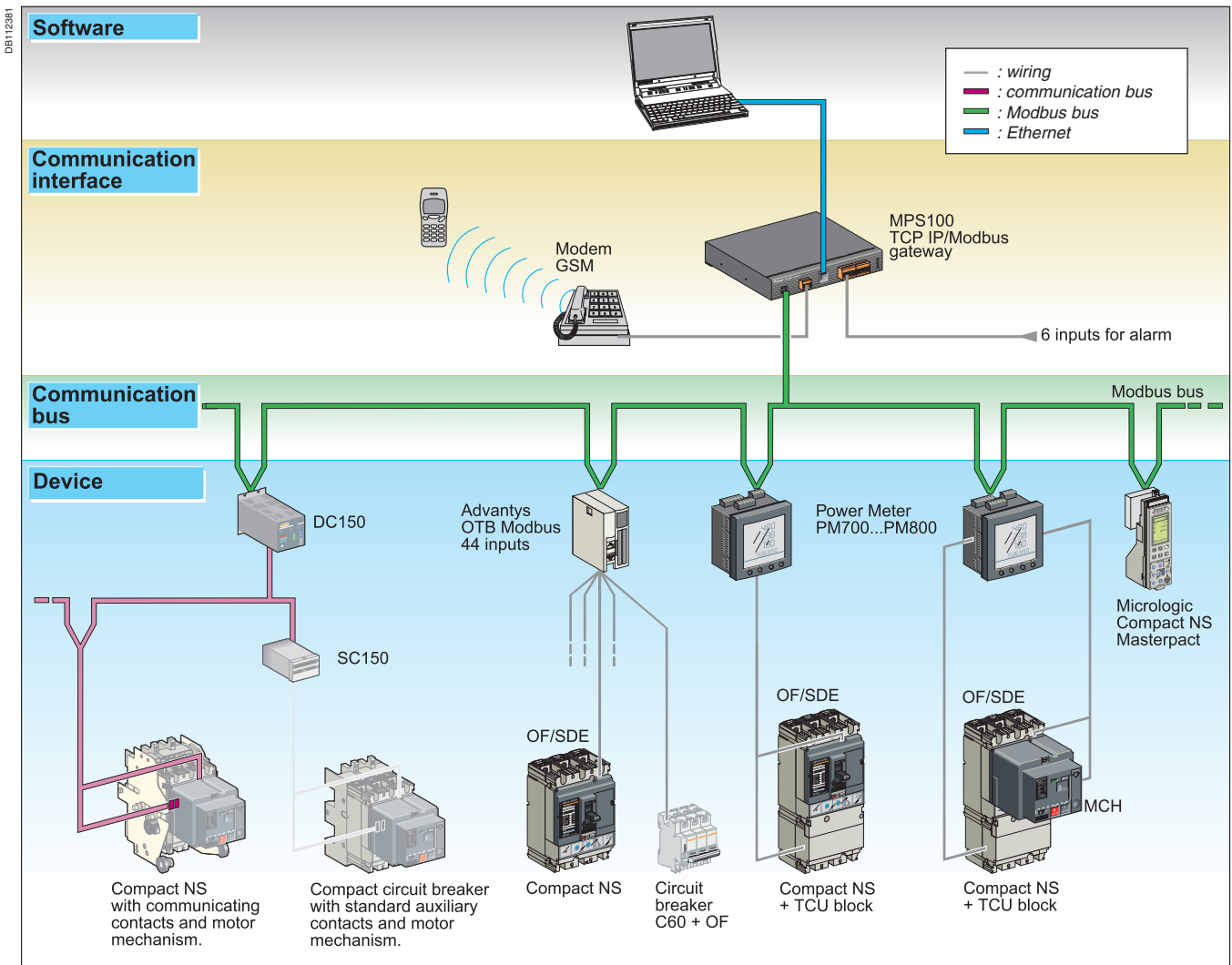
- 1 Breaking unit
- 2 Trip units or control units
- 3 Vigi earth-leakage protection module
- 4 Insulation monitoring module
- 5 Voltage presence indicator
- 6 Ammeter module
- 7 MN and MX voltage releases
- 8 Multifunction auxiliary contact
- 9 Direct rotary handle
- 10 Extended rotary handle
- 11 Motor mechanism
- 12 Plug-in base
- 13 Connection of auxiliary circuits to plug-in base or withdrawable chassis
- 14 Connection accessories
- 15 Short terminal shields
- 16 Long terminal shields

## Open communication...

For integration in supervision systems, Compact NS circuit breakers can be equipped with optional communication solutions.

For Compact NS100 to NS630, two solutions are available:

- NS100 to NS630 circuit breakers equipped with any trip unit and:
    - a TCU measurement module associated with a Power Meter to handle all measurements. In this case, an optional Power Meter input/output module can be used to display the status of the different contacts and initiate remote control functions
    - an Adventys OTB Modbus network interface module with integrated inputs/outputs. This OTB module communicates the status of all auxiliary contacts via the Modbus network
  - NS400 or NS630 circuit breakers associated with a Modbus DC150 interface and:
    - STR53UE or STR43ME electronic trip units with the communication option
    - communicating contacts
    - communicating motor mechanisms.
- Compact NS630 to NS3200 can be equipped with Micrologic control units and communication modules.



## ... and protection of the environment

Schneider Electric fully takes into account environmental requirements, starting right from the design stage of products through to the end of their service life:

- the materials used for Compact NS are not dangerous for the environment
- the production facilities are non-polluting in compliance with the ISO 14001 standard
- filtered breaking for the high ratings eliminates pollution in the switchboard
- the energy dissipated per pole is low, making energy losses insignificant
- the materials are marked to facilitate sorting for recycling at the end of product service life.

