

LV power circuit breakers
and switch-disconnectors
Masterpact NT and NW

Catalogue

2004



The Guiding System, the new way to create your electrical installations

A comprehensive offer of products with consistent design

The Guiding System is first and foremost a Merlin Gerin product offer covering all electrical distribution needs. However, what makes all the difference is that these products have been designed to operate together: mechanical and electrical compatibility, interoperability, modularity, communication. Thus the electrical installation is both optimised and more efficient: better continuity of supply, enhanced safety for people and equipment, guaranteed upgradeability, effective monitoring and control.

Tools to simplify design and implementation

With the Guiding System, you have a comprehensive range of tools - the Guiding Tools - that will help you increase your product knowledge and product utilisation. Of course this is in compliance with current standards and procedures. These tools include technical booklets and guides, design aid software, training courses, etc. and are regularly updated.

The Guiding System, combined with the know-how and creativity, allows optimised, reliable, open-ended and standard compliant installations

For a genuine partnership with you

Because each electrical installation is unique, there is no standard solution. With the Guiding System, the variety of combinations allows for genuine customisation solutions. You can create and implement electrical installations to meet your creative requirements and design knowledge. You and Merlin Gerin's Guiding System form a genuine partnership.

For more details on the Guiding System, consult www.merlin-gerin.com

A consistent design of offers from Medium Voltage to Ultra terminal

All Merlin Gerin offers are designed according to electrical, mechanical and communication consistency rules.

The products express this consistency by their overall design and shared ergonomics.



Discrimination guarantees co-ordination between the operating characteristics of serial-connected circuit-breakers. Should a fault occurs downstream, only the circuit-breaker placed immediately upstream from the fault will trip.



The temperature rise tests performed in the laboratory guarantee safety and durability of installations.



Prefabricated and tested solutions, upstream and downstream from the device complying with the IEC 60439-1 switchboard standard.



Direct connection of the Canalis KT busbar trunking on the Masterpact 3200 A circuit-breaker.

Transparent Ready

Thanks to the use of standard Web technologies, you can offer your customers intelligent Merlin Gerin switchboards allowing easy access to information: follow-up of currents, voltages, powers, consumption history, etc.

Electrical consistency:

Each product complies with or enhances system performance at co-ordination level: breaking capacity, I_{sc} , temperature rise, etc. for more safety, continuity of supply (discrimination) or economic optimisation (cascading).

The leading edge technologies employed in Merlin Gerin's Guiding System ensure high performance levels in discrimination and cascading of protection devices, electrodynamic withstand of switches and current distributors, heat loss of devices, distribution blocks and enclosures.

Likewise, inter-product ElectroMagnetic Compatibility (EMC) is guaranteed.

Mechanical consistency:

Each product adopts dimensional standards simplifying and optimising its use within the system.

It shares the same accessories and auxiliaries and complies with global ergonomic choices (utilisation mode, operating mode, setting and configuration devices, tools, etc.) making its installation and operation within the system a simpler process.

Communication consistency:

Each product complies with global choices in terms of communication protocols (Modbus, Ethernet, etc.) for simplified integration in the management, supervision and monitoring systems.

Guiding Tools
for more efficient design
and implementation
of your installations.

Guiding Tools allow optimised use
of the Guiding System offers. They simplify life and
increase productivity.

SM6

Medium voltage switchboard system from 1 to 36 kV



Satia

Ultra compact ML/LV substation from 250 to 630 kVA



Masterpact

Protection switchgear from 100 to 6300 A



Trihal

MV/LV dry cast resin transformer from 160 to 5000 kVA

Evolis

MV vacuum switchgear and components from 1 to 24 kV.

The Technical guide

These technical guides help you comply with installation standards and rules i.e.: The electrical installation guide, the protection guide, the switchboard implementation guide, the technical booklets and the co-ordination tables all form genuine reference tools for the design of high-performance electrical installations. For example, the LV protection co-ordination guide - discrimination and cascading - optimises choice of protection and connection devices while also increasing markedly continuity of supply in the installations.



CAD software and tools

The CAD software and tools enhance productivity and safety. They help you create your installations by simplifying product choice through easy browsing in the Guiding System offers. Last but not least, they optimise use of our products while also complying with standards and proper procedures.



Compact

Protection switchgear system
from 100 to 630 A



Multi 9

Modular protection switchgear
system up to 125 A



Prisma Plus

Functional system for electrical
distribution switchboards
up to 3200 A



Pragma

Enclosures for
distribution
switchboards
up to 160 A

Canalis

Prefabricated Busbar
Trunking
from 25 to 4000 A

PowerLogic

Power
management

Training

Training allows you to acquire the Merlin Gerin expertise (installation design, work with power on, etc.) for increased efficiency and a guarantee of improved customer service.

The training catalogue includes beginner's courses in electrical distribution, knowledge of MV and LV switchgear, operation and maintenance of installations, design of LV installations to give but a few examples.





The original Masterpact has set a new standard for power circuit breakers around the world.

Over the years, other major manufacturers have tried to keep up by developing products incorporating Masterpact's most innovative features, including the breaking principle, modular design and the use of composite materials.

Today, Schneider Electric continues to innovate with the new Merlin Gerin Masterpact NT and NW ranges.

In addition to the traditional features of power circuit breakers (withdrawability, discrimination and low maintenance), Masterpact now offers built-in communications and metering functions, all in optimised frame sizes.

Masterpact NT and NW incorporate the latest technology to enhance both performance and safety. Easy to install, with user-friendly, intuitive operation and environment-friendly design, they are, quite simply, circuit breakers of their time.

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New Masterpact, *new levels of performance*

Five performance levels



N1 - for standard applications with low short-circuit levels.
H1 - for industrial sites with high short-circuit levels or installations with two parallel-connected transformers.

H2 - high-performance for heavy industry where very high short-circuits can occur.

H3 - for incoming devices supplying critical applications requiring both high performance and a high level of discrimination.

L1 - for high current-limiting capability and a discrimination level (37 kA) as yet unequalled by any other circuit breaker of its type; intended for the protection of cable-type feeders or to raise the performance level of a switchboard when the transformer power rating is increased.



Integration in a communications network

Masterpact can be integrated in a general supervision system to optimise installation operation and maintenance. The communication architecture is open, and may be upgraded for interfacing with any protocol.

Switch-disconnector versions

The switch-disconnectors are derived directly from the circuit breakers and offer the same features and performance levels. They are available in HA, NA and HF versions, depending on the models. The HF version includes instantaneous protection to prevent closing on a short-circuit. Once closed, the switch-disconnectors are unprotected and behave like ordinary switches. They are often used for busbar coupling.

Special applications

■ 1000 V AC:

□ Masterpact NW H10 circuit breakers and switch-disconnectors, 800 to 4000 A, 3P or 4P, drawout version and H10 circuit breaker performance level

■ DC:

□ Masterpact NW DC circuit breakers and switch-disconnectors, 1000 to 4000 A, fixed and drawout versions and N and H circuit breaker performance levels (see special DC catalogue no. ART10886)

■ right-hand neutral:

□ Masterpact NT630 to 1600 A and NW800 to 6300 A circuit breakers and switch-disconnectors, 4P, fixed and drawout versions and H1 and H2 circuit breaker performance levels

■ industrial environments with high concentrations of sulphur compounds (standard IEC 721-3-3):

□ Masterpact NW800 to 4000 A circuit breakers with corrosion protection, drawout version and H2 circuit breaker performance level

■ installation earthing:

□ Masterpact NW earthing switch, compatible with NW800 to 4000 A, 3P or 4P, drawout version with N1, H1, NA and HA performance levels.



3 frame sizes, 2 families

The new range of power circuit breakers includes two families:

- Masterpact NT, the world's smallest true power circuit breaker, with ratings from 800 to 1600 A
- Masterpact NW, in two frame sizes, one from 800 to 4000 A and the other from 4000 A to 6300 A.

Masterpact NT

800 to 1600 A



L1 150 kA	NT 08	NT 10	NT 12	NT 16					
H2 50 kA									
H1 42 kA									

Masterpact NW

800 to 4000 A



L1 150 kA	NW 08	NW 10	NW 12	NW 16	NW 20	NW 25	NW 32	NW 40
H3 150 kA								
H2 100 kA								
H1 65 kA								
N1 42 kA								

4000 to 6300 A



H2 150 kA	NW 40b	NW 50	NW 63					
H1 100 kA								

Optimised volumes

The smallest circuit breaker in the world

Masterpact NT innovates by offering all the performance of a power circuit breaker in an extremely small volume. The 70 mm pole pitch means a three-pole drawout circuit breaker can be installed in a switchboard section 400 mm wide and 400 mm deep.



Practical installation solutions

The new range improves upon all the installation solutions which have already made Masterpact a success. It has been designed to standardise switchboards, optimise volumes and simplify installation:

- incoming connection to top or bottom terminals
- no safety clearance required
- connection:
 - horizontal or vertical rear connection
 - front connection with minimum extra space
 - mixed front and rear connections
- 115 mm pole pitch on all versions
- no derating up to 55 °C and 4000 A.



Optimised volumes

Up to 4000 A, Masterpact NW circuit breakers are all the same size, the same as the old M08 to 32 range.

From 4000 A to 6300 A, there is just one size, much smaller than before.



Retrofit solutions

Special connections are available to replace a fixed or drawout Masterpact M08 to 32 with a Masterpact NW, without modifying the busbars or the door cut-out.

Ease of installation

PB100737-64



Vertical front connection of a fixed Masterpact NW.

With optimised sizes, the Masterpact NT and NW ranges simplify the design of switchboards and standardise the installation of devices:

- a single connection layout for Masterpact NT
 - three connection layouts for Masterpact NW:
 - one from 800 to 3200 A
 - one for 4000 A
 - one up to 6300 A
 - identical connection terminals from 800 to 6300 A (Masterpact NW)
 - front connection requires little space because the connectors do not increase the depth of the device
- rear connection to vertical or horizontal busbars simply by turning the connectors 90°.

PB100738-64



Vertical and horizontal rear connection of a fixed Masterpact NW.

PB100739-91



Connection to busbars.

Innovation

Greater dependability...

Filtered breaking

patented

The patented new design of the arc chutes includes stainless-steel filters. The chutes absorb the energy released during breaking, thus limiting the stresses exerted on the installation. They filter and cool the gases produced, reducing effects perceptible from the outside.

Automatic unlatching

patented

The automatic unlatching of the circuit breaker operating mechanism for high short-circuits extends performance up to 150 kA. It produces ultra-fast tripping for all short-circuits higher than 37 kA (L1) and 65 kA (H3). For lower short-circuits, the system does not react so that the control unit can provide total discrimination with downstream devices.

More intelligent trip units...

Today, with the high speed of calculation, the small size of memories and advances in miniaturisation, trip units have become circuit breaker control units offering increasingly powerful functions. They accurately measure system parameters, instantly calculate values, store data, log events, signal alarms, communicate, take action, etc. The new Masterpact ranges, equipped with Micrologic control units, constitute both an extremely reliable protective device and an accurate measurement instrument.

User friendly...

Intuitive use...

Micrologic control units are equipped with a digital LCD display used in conjunction with simple navigation buttons. Users can directly access parameters and settings. Navigation between screens is intuitive and the immediate display of values greatly simplifies settings. Text is displayed in the desired language.

... backed by incomparable security

patented

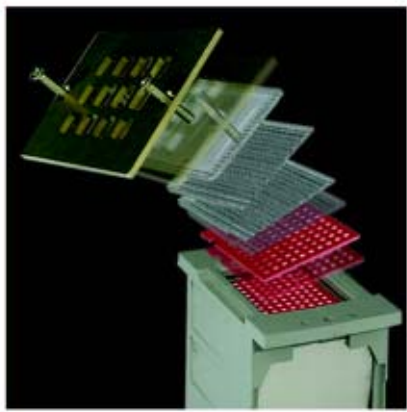
Protection functions are separate from the measurement functions and are managed by an ASIC electronic component. This independence guarantees immunity from conducted or radiated disturbances and ensures a high degree of reliability.

A patented "double setting" system for protection functions establishes:

- a maximum threshold set using the control-unit dials
- fine adjustments via the keypad or remotely. The fine adjustments for thresholds (to within one ampere) and tripping delays (to within a fraction of a second) are displayed directly on the screen.

The control unit cover can be lead-sealed to prevent uncontrolled access to the dials and protect the settings.

PB100740



Filtered breaking.

PB100739



Navigation buttons on a Micrologic P control unit.

Ready for the future

Compliance with environmental requirements

Schneider Electric fully takes into account environmental requirements, starting right from the design phase of every product through to the end of its service life:

- the materials used for Masterpact are not potentially dangerous to the environment
- the production facilities are non-polluting in compliance with the ISO 14001 standard
- filtered breaking 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.

Simple upgrading of installations

Installations change, power levels increase, new equipment is required and switchboards must be extended. Masterpact is designed to adapt to these changes:

- all control units are interchangeable
- communication with a supervision system is an option that may be added at any time
- a reserve chassis can be pre-addressed so that system parameters do not have to be modified when a drawout device is installed at a later date
- any future changes to the products will be designed to ensure continuity with the current ranges, thus simplifying installation upgrades.
