

Low voltage electrical distribution

Masterpact NT and NW NAVY

LV power circuit breakers
and switch-disconnectors

Catalogue
2009





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

Today, Schneider Electric continues to innovate with the NAVY version of Masterpact made up of the following products:

- > Masterpact NT NAVY
- > Masterpact NW NAVY

The design of this NAVY version is based on the outstanding features developed for the industrial version including:

- > the breaking principle
- > modular design using composite materials.

Schneider Electric has added anti-shock and anti-vibration systems to these circuit breakers to meet the severe requirements of naval applications.

Masterpact NT and NW NAVY devices 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.

Masterpact NAVY, levels of performance



High shock and vibration resistance certified by inspection organisations (Veritas, Lloyd's)

Mechanical shocks

Masterpact NAVY devices are guaranteed to withstand mechanical shocks:

➤ 18 g - 11 ms - 1/2 sine shock pulse.

Tests are carried out in compliance with standard IEC 60068-2-7.

They are carried out in 3 directions, with the circuit breaker open and closed.

Vibrations

Masterpact NAVY devices are guaranteed to withstand electromagnetic or mechanical vibrations:

➤ 5 to 22 Hz: ± 1 mm displacement amplitude

➤ 5 to 60 Hz: 2 g acceleration.

Tests are carried out in compliance with standard IEC 60068-2-6.

They are carried out in 3 directions, with the circuit breaker open and closed.

Four performance levels

N1: for standard applications with low short-circuit levels.

H1: for vessels with high short-circuit levels or installations with two parallel-connected transformers.

H2: high-performance circuit breaker for very high short-circuits.

L1: current-limiting circuit breaker (Masterpact NT NAVY only).

Intended for the protection of cable-type feeders.

Also used to protect a limited-performance switchboard when the transformer power rating is increased.



Integration in a communication network

Masterpact NAVY 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 (only NW NAVY)

The switch-disconnectors are derived directly from the circuit breakers and offer the same features and performance levels.

2 frame sizes, 2 families

The range of power circuit breakers includes two families:

- > Masterpact NT NAVY, the world's smallest true power circuit breaker, with ratings from 630 to 1600 A
- > Masterpact NW NAVY from 800 to 4000 A.

Masterpact NT NAVY 630 to 1600 A



DB108086A

L1 150 kA									
H2 50 kA									
H1 42 kA									
	NT	NT	NT	NT	NT				
	06	08	10	12	16				

Masterpact NW NAVY 800 to 4000 A



DB105805A

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

Optimised volumes

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The smallest circuit breaker in the world

Masterpact NT NAVY 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.

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Practical installation solutions

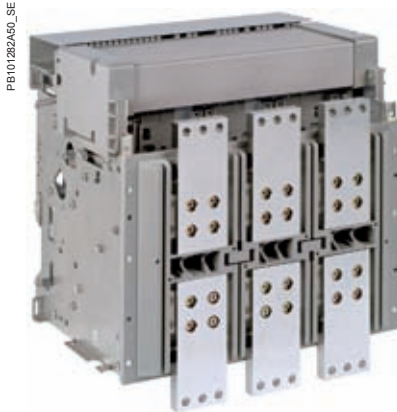
The range improves upon all the installation solutions which have already made Masterpact NAVY a success. It has been designed to standardise switchboards, optimise volumes and simplify installation:

- > 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 NAVY circuit breakers are all the same size, the same as the old M08 to 32 range.

Ease of installation



Front connection of a drawout Masterpact NW NAVY.

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

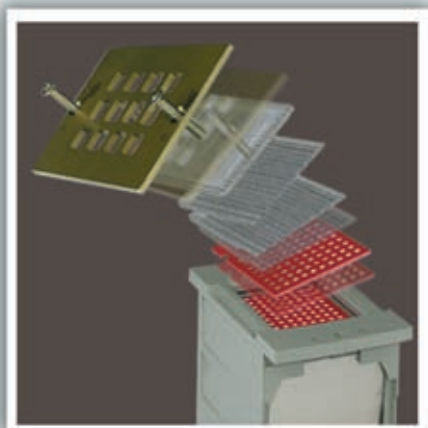
- > a single connection layout for Masterpact NT NAVY
- > two connection layouts for Masterpact NW NAVY:
 - one from 800 to 3200 A
 - one for 4000 A
- > identical connection terminals from 800 to 4000 A (Masterpact NW NAVY)
- > front connection requires little space because the connectors do not increase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



Vertical and horizontal rear connection of a drawout Masterpact NW NAVY.

Innovation

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Filtered breaking.

Greater dependability... Filtered breaking



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



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). 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 Masterpact NAVY 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.



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Navigation buttons on a Micrologic P control unit.

... backed by incomparable security

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.

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 NAVY 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 NAVY 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.

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schneider-electric.com

This international site allows you to access all the Schneider Electric products in just 2 clicks via comprehensive range data-sheets, with direct links to:

- complete library: technical documents, catalogs, FAQs, brochures...
- selection guides from the e-catalog.
- product discovery sites and their Flash animations.

You will also find illustrated overviews, news to which you can subscribe, the list of country contacts...



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.



Presentation

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This chapter describes all the functions offered by Masterpact NT and NW devices. The two product families have identical functions implemented using the same or different components depending on the case.

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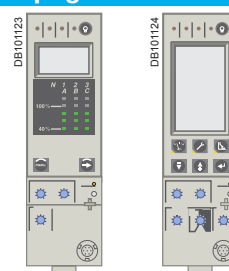


Circuit breakers and switch-disconnectors page A-5

- Ratings:
 - Masterpact NT NAVY 630 to 1600 A
 - Masterpact NW NAVY 800 to 4000 A
- Circuit breakers type N1, H1, H2, L1
- Switch-disconnectors type HA (only NW NAVY)
- 3 poles
- Drawout versions
- Protection derating.

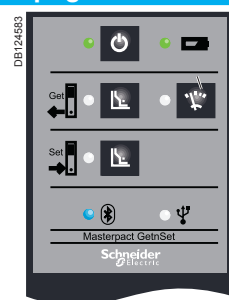
Micrologic control units page A-10

- Ammeter A**
 - 2.0 basic protection
 - 5.0 selective protection
- Power meter P**
 - 5.0 selective protection
- Harmonic meter H**
 - 5.0 H selective protection
 - Setting options (long-time rating plug):
 - low setting 0.4 to 0.8 x Ir
 - high setting 0.8 to 1 x Ir
 - without long-time protection
 - External power-supply module
 - Battery module.



Portable data acquisition page A-22

- Masterpact and GetnSet.

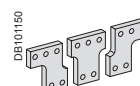
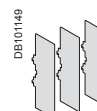
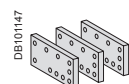
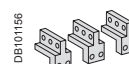


Communication page A-24

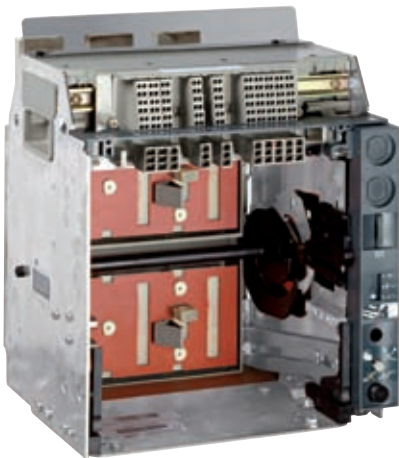
- COM option in Masterpact NAVY
- Masterpact NAVY in a communication network.

Connections page A-28

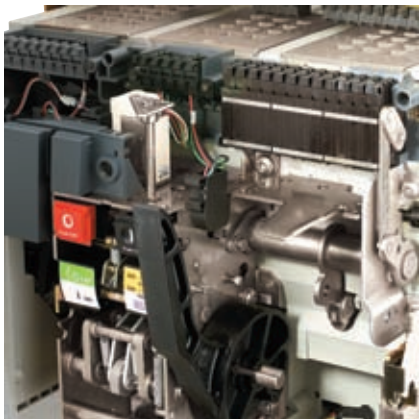
- Rear connection (horizontal or vertical)
- Front connection
- Mixed connections
- Optional accessories
 - bare-cable connectors and connector shields
 - terminal shields
 - vertical-connection adapters
 - cable-lug adapters
 - interphase barriers
 - spreaders
 - safety shutters, shutter locking blocks.



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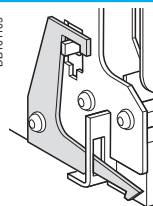


Locking

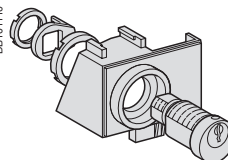
page A-31

- Pushbutton locking by padlockable transparent cover
- OFF-position locking by padlock or keylock
- Chassis locking in disconnected position by keylock
- Chassis locking in connected, disconnected and test positions
- Racking interlock (inhibits racking with door open).

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DB101110

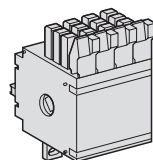


Indication contacts

page A-33

- Standard or low-level contacts:
 - ON/OFF indication OF
 - "fault trip" indication SDE
 - carriage switches for connected CE disconnected CD and test CT positions.

DB101112



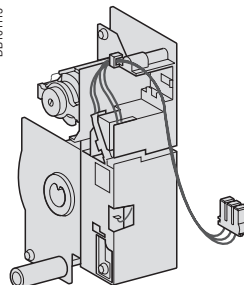
OF contact.

Remote operation

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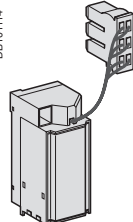
- Remote ON/OFF:
 - gear motor MCH
 - XF closing or MX opening voltage releases
 - PF ready-to-close contact
 - options: RAR automatic remote reset
 - BPFE electrical closing pushbutton
- Remote tripping function:
 - MN voltage release
 - standard
 - adjustable or non-adjustable delay
 - or second MX voltage release.

DB101113



Gear motor.

DB101114



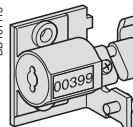
MX, XF and MN voltage releases.

Accessories

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- Auxiliary terminal shield CB
- Operation counter CDM
- Escutcheon CDP
- Transparent cover for escutcheon CP
- Escutcheon blanking plate OP.

DB101115



Circuit breakers and switch-disconnectors

NT06 to NT16 NAVY and NW08 to NW40 NAVY

NT and NW NAVY selection criteria

	Masterpact NT NAVY			Masterpact NW NAVY		
	NAVY applications			NAVY applications		
	NT06 to NT16 H1	NT06 to NT16 H2	NT06 to NT10 L1	NW08 to NW16 N1	NW08 to NW40 H1	NW08 to NW40 H2
Type of application	Standard applications with low short-circuit currents	Applications with medium-level short-circuit currents	Limiting circuit breaker for protection of cable-type feeders or upgraded transformer ratings	Standard applications with low short-circuit currents	Circuit breaker for industrial sites with high short-circuit currents	High-performance circuit breaker for heavy industry with high short-circuit currents
Icu/Ics at 440 V	42 kA	50 kA	130 kA	42 kA	65 kA	100 kA
Icu/Ics at 1000 V	-	-	-	-	-	-
Icu/Ics at 500 V DC L/R < 15 ms	-	-	-	-	-	-
Drawout	D	D	D	D	D	D
Switch-disconnector version	No	No	No	Yes	Yes	Yes
Front connection	Yes	Yes	Yes	Yes	Yes up to 3200 A	Yes up to 3200 A
Rear connection	Yes	Yes	Yes	Yes	Yes	Yes
Type of Micrologic control unit	A, P, H	A, P, H	A, P, H	A, P, H	A, P, H	A, P, H

Masterpact NT06 to NT16 NAVY installation characteristics

Circuit breaker		NT06, NT08, NT10			NT12, NT16	
Type		H1	H2	L1	H1	H2
Connection						
Drawout	FC	■	■	■	■	■
	RC	■	■	■	■	■
Dimensions (mm) H x W x D						
Drawout	3P	322 x 288 x 277				
Weight (kg) (approximate)						
Drawout	3P	30				

Masterpact NW08 to NW40 NAVY installation characteristics

Circuit breaker		NW08, NW10, NW12, NW16			NW20		NW25, NW32, NW40	
Type		N1	H1	H2	H1	H2	H1	H2
Connection								
Drawout	FC	■	■	■	■	■	■ ⁽¹⁾	■ ⁽¹⁾
	RC	■	■	■	■	■	■	■
Dimensions (mm) H x W x D								
Drawout	3P	439 x 441 x 395						
Weight (kg) (approximate)								
Drawout	3P	90						

⁽¹⁾ Except 4000 A.

Circuit breakers and switch-disconnectors

NT06 to NT16 NAVY

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Common characteristics

Number of poles	3
Rated insulation voltage (V)	Ui 1000
Impulse withstand voltage (kV)	Uimp 12
Rated operational voltage (V AC 50/60 Hz)	Ue 690
Suitability for isolation	IEC 60947-2 
Degree of pollution	IEC 60664-1 3

Circuit-breaker characteristics as per IEC 60947-2

Rated current (A)	In	at 40 °C/50 °C ⁽¹⁾
Sensor ratings (A)		
Type of circuit breaker		
Ultimate breaking capacity (kA rms) V AC 50/60 Hz	Icu	220/415 V 440 V 525 V 690 V
Rated service breaking capacity (kA rms)	Ics	% Icu
Utilisation category		
Rated short-time withstand current (kA rms) V AC 50/60 Hz	Icw	0.5 s 1 s 3 s
Integrated instantaneous protection (kA peak ±10 %)		
Rated making capacity (kA peak) V AC 50/60 Hz	Icm	220/415 V 440 V 525 V 690 V
Break time (ms) between tripping order and arc extinction		
Closing time (ms)		

Circuit-breaker characteristics as per NEMA AB1

Breaking capacity (kA) V AC 50/60 Hz	240 V 480 V 600 V
---	-------------------------

Mechanical and electrical durability as per IEC 60947-2/3 at In/Ie

Service life	Mechanical	without maintenance	
C/O cycles x 1000			
Type of circuit breaker			
Rated current		In (A)	
C/O cycles x 1000	Electrical	without maintenance	440 V ⁽⁴⁾
IEC 60947-2			690 V
Type of circuit breaker			
Rated operational current		Ie (A)	AC23A
C/O cycles x 1000	Electrical	without maintenance	440 V ⁽⁴⁾
IEC 60947-3			690V
Type of circuit breaker			
Rated operational current		Ie (A)	AC3 ⁽⁵⁾
Motor power			380/415 V (kW) 440 V (kW)
C/O cycles x 1000	Electrical	without maintenance	440 V ⁽⁴⁾
IEC 60947-3 Annex M/IEC 60947-4-1			690 V

⁽¹⁾ 50 °C: rear vertical connected. Refer to temperature derating tables for other connection types.

⁽²⁾ See the current-limiting curves in the "additional characteristics" section.

⁽³⁾ SELIM system.

⁽⁴⁾ Available for 480 V NEMA.

⁽⁵⁾ Suitable for motor control (direct-on-line starting).

Sensor selection

Sensor rating (A)	400	630	800	1000	1250	1600
Ir threshold setting(A)	160 to 400	250 to 630	320 to 800	400 to 1000	500 to 1250	640 to 1600

NT06			NT08			NT10			NT12		NT16
630			800			1000			1250		1600
400 to 630			400 to 800			400 to 1000			630 to 1250		800 to 1600
H1	H2	L1 ⁽²⁾							H1	H2	
42	50	150							42	50	
42	50	130							42	50	
42	42	100							42	42	
42	42	25							42	42	
100 %									100 %		
B	B	A							B	B	
42	36	10							42	36	
42	36	-							42	36	
24	20	-							24	20	
-	90	10 x In ⁽³⁾							-	90	
88	105	330							88	105	
88	105	286							88	105	
88	88	220							88	88	
88	88	52							88	88	
25	25	9							25	25	
< 50									< 50		
42	50	150							42	50	
42	50	100							42	50	
42	42	25							42	42	
12,5											
H1	H2	L1	H1	H2	L1	H1	H2	L1	H1/H2	H1/H2	
630			800			1000			1250		1600
6	6	3	6	6	3	6	6	3	6	3	
3	3	2	3	3	2	3	3	2	3	1	
H1/H2											
630			800			1000			1250		1600
6			6			6			6	6	
3			3			3			3	3	
H1/H2											
500			630			800			1000		1000
≤ 250			250 to 335			335 to 450			450 to 560		450 to 560
≤ 300			300 to 400			400 to 500			500 to 630		500 to 630
6											
-											

Circuit breakers and switch-disconnectors

NW08 to NW40 NAVY

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Common characteristics

Number of poles	3
Rated insulation voltage (V)	Ui 1000
Impulse withstand voltage (kV)	Uimp 12
Rated operational voltage (V AC 50/60 Hz)	Ue 690
Suitability for isolation	IEC 60947-2 
Degree of pollution	IEC 60664-1 4 (1000 V) / 3 (1250 V)

Circuit-breaker characteristics as per IEC 60947-2

Rated current (A)	at 40 °C / 50 °C ⁽¹⁾
Sensor ratings (A)	

Type of circuit breaker

Ultimate breaking capacity (kA rms) V AC 50/60 Hz	Icu	220/415/440 V 525 V 690 V
Rated service breaking capacity (kA rms)	Ics	% Icu
Utilisation category		
Rated short-time withstand current (kA rms) V AC 50/60 Hz	Icw	1 s 3 s
Integrated instantaneous protection (kA peak ±10 %)		
Rated making capacity (kA peak) V AC 50/60 Hz	Icm	220/415/440 V 525 V 690 V

Break time (ms) between tripping order and arc extinction

Closing time (ms)

Circuit-breaker characteristics as per NEMA AB1

Breaking capacity (kA)	240/480 V
V AC 50/60 Hz	600 V

Unprotected circuit-breaker characteristics:

Tripping by shunt trip as per IEC 60947-2

Type of circuit breaker		
Ultimate breaking capacity (kA rms) V AC 50/60 Hz	Icu	220...690 V
Rated service breaking capacity (kA rms)	Ics	% Icu
Rated short-time withstand current (kA rms)	Icw	1 s 3 s

Overload and short-circuit protection

External protection relay: short-circuit protection, maximum delay: 350 ms ⁽²⁾

Rated making capacity (kA peak) V AC 50/60 Hz	Icm	220...690 V
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Switch-disconnector characteristics as per IEC 60947-3 and Annex A

Type of switch-disconnector		
Rated making capacity (kA peak) AC23A/AC3 category V AC 50/60 Hz	Icm	220...690 V
Rated short-time withstand current (kA rms) AC23A/AC3 category V AC 50/60 Hz	Icw	1 s 3 s

Mechanical and electrical durability as per IEC 60947-2/3 at In/Ie

Service life	Mechanical	with maintenance	
C/O cycles x 1000		without maintenance	
Type of circuit breaker			
Rated current		In (A)	
C/O cycles x 1000	Electrical	without maintenance	440 V ⁽³⁾
IEC 60947-2			690 V
Type of circuit breaker or switch-disconnector			
Rated operational current		Ie (A)	AC23A
C/O cycles x 1000	Electrical	without maintenance	440 V ⁽³⁾
IEC 60947-3			690 V
Type of circuit breaker or switch-disconnector			
Rated operational current		Ie (A)	AC3 ⁽⁴⁾
Motor power			380/415 V (kW) 440 V ⁽³⁾ (kW) 690 V (kW)
C/O cycles x 1000	Electrical	without maintenance	440/690 V ⁽³⁾
IEC 60947-3 Annex M/IEC 60947-4-1			

⁽¹⁾ 50 °C: rear vertical connected. Refer to temperature derating tables for other connection types.

⁽²⁾ External protection must comply with permissible thermal constraints of the circuit breaker (please consult us). No fault-trip indication by the SDE or the reset button.

⁽³⁾ Available for 480 V NEMA.

⁽⁴⁾ Suitable for motor control (direct-on-line starting).

Sensor selection

Sensor rating (A)	400	630	800	1000	1250	1600	2000	2500	3200	4000
Ir threshold setting(A)	160 to 400	250 to 630	320 to 800	400 to 1000	500 to 1250	630 to 1600	800 to 2000	1000 to 2500	1250 to 3200	1600 to 4000

	NW08	NW10	NW12	NW16	NW20	NW25	NW32	NW40
	800	1000	1250	1600	2000	2500	3200	4000
	400 to 800	400 to 1000	630 to 1250	800 to 1600	1000 to 2000	1250 to 2500	1600 to 3200	2000 to 4000
	N1	H1	H2		H1 H2	H1 H2		
	42	65	100		65 100	65 100		
	42	65	85		65 85	65 85		
	42	65	85		65 85	65 85		
	100 %				100 %	100 %		
	B				B	B		
	42	65	85		65 85	65 85		
	22	36	50		36 75	65 75		
	-	-	190		- 190	- 190		
	88	143	220		143 220	143 220		
	88	143	187		143 187	143 187		
	88	143	187		143 187	143 187		
	25	25	25		25 25	25 25		
	< 70				< 70	< 70		

	42	65	100	65	100	65	100
	42	65	85	65	85	65	85

HA	HA	HA
50	50	55
100 %	100 %	100 %
50	50	55
36	36	55
-	-	-
105	105	121

NW08/NW10/NW12	NW16	NW20	NW25/NW32/NW40
HA	HA	HA	HA
105	105	105	121
-	-	-	-
50	50	50	55
36	36	36	55

	25				20	
	12,5				10	
	N1/H1/H2				H1/H2	
	800/1000/1250/1600				2000	2500/3200/4000
	10				8	5
	10				6	2.5
	H1/H2/HA				H1/H2/HA	
	800/1000/1250/1600				2000	2500/3200/4000
	10				8	5
	10				6	2.5
	H1/H2/HA				H1/H2/HA	
	800	1000	1250	1600	2000	
	335 to 450	450 to 560	560 to 670	670 to 900	900 to 1150	
	400 to 500	500 to 630	500 to 800	800 to 1000	1000 to 1300	
	≤ 800	800 to 1000	1000 to 1250	1250 to 1600	1600 to 2000	
	6					

All Masterpact NAVY circuit breakers are equipped with a Micrologic control unit.

Control units are designed to protect Power circuits and loads. Alarms may be programmed for remote indications.

Measurements of current, voltage, frequency, power and power quality optimise continuity of service and energy management.

Dependability

Integration of protection functions in an ASIC electronic component used in all Micrologic control units guarantees a high degree of reliability and immunity to conducted or radiated disturbances.

On Micrologic A, P and H control units, advanced functions are managed by an independent microprocessor.

Accessories

Certain functions require the addition of Micrologic control unit accessories, described on page A-20.

The rules governing the various possible combinations can be found in the electronic catalogue (E-catalogue) accessible via the Products menu of the www.schneider-electric.com web site.

Micrologic name codes

2.0 A
X Y Z

X: type of protection

- 2 for basic protection
- 5 for selective protection.

Y: control-unit generation

Identification of the control-unit generation.

"0" signifies the first generation.

Z: type of measurement

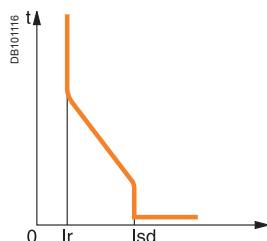
- A for "ammeter"
- P for "power meter"
- H for "harmonic meter".

PB100772A-32



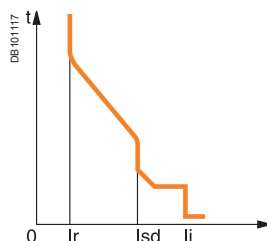
Current protection

Micrologic 2: basic protection



Protection:
long time
+ instantaneous

Micrologic 5: basic protection



Protection:
long time
+ short time
+ instantaneous

Measurements and programmable protection

A: ammeter

- I_1 , I_2 , I_3 , I_N , $I_{\text{earth-fault}}$, $I_{\text{earth-leakage}}$ and maximeter for these measurements
- Fault indications
- Settings in amperes and in seconds.

P: A + power meter + programmable protection

- Measurements of V, A, W, VAR, VA, Wh, VARh, VAh, Hz, V_{peak} , A_{peak} , power factor and maximeters and minimeters
- IDMTL long-time protection, minimum and maximum voltage and frequency, voltage and current imbalance, phase sequence, reverse power
- Load shedding and reconnection depending on power or current
- Measurements of interrupted currents, differentiated fault indications, maintenance indications, event histories and time-stamping, etc.

H: P + harmonics

- Power quality: fundamentals, distortion, amplitude and phase of harmonics up to the 31st order
- Waveform capture after fault, alarm or on request
- Enhanced alarm programming: thresholds and actions.

2.0 A



5.0 A



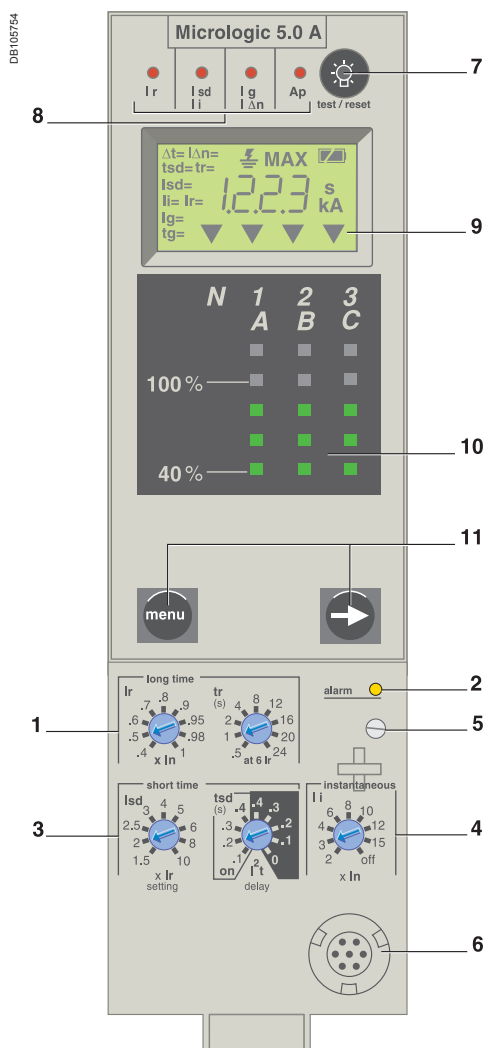
5.0 P



5.0 H



Micrologic A control units protect power circuits.
They also offer measurements, display, communication
and current maximeters



- 1 Long-time current setting and tripping delay.
- 2 Overload signal (LED) at $1.125 I_r$.
- 3 Short-time pick-up and tripping delay.
- 4 Instantaneous pick-up.
- 5 Long-time rating plug screw.
- 6 Test connector.
- 7 Lamp test, reset and battery test.
- 8 Indication of tripping cause.
- 9 Digital display.
- 10 Three-phase bargraph and ammeter.
- 11 Navigation buttons.

“Ammeter” measurements

Micrologic A control units measure the true rms value of currents.

They provide continuous current measurements from 0.2 to $20 I_n$ and are accurate to within 1.5% (including the sensors).

A digital LCD screen continuously displays the most heavily loaded phase (I_{max}) or displays the I_1 , I_2 , I_3 , I_N , I_g , I_{An} , stored-current (maximeter) and setting values by successively pressing the navigation button.

The optional external power supply makes it possible to display currents $< 20 \% I_n$. Below $0.05 I_n$, measurements are not significant. Between 0.05 and $0.2 I_n$, accuracy is to within $0.5\% I_n + 1.5\%$ of the reading.

Communication option

In conjunction with the COM communication option, the control unit transmits the following:

- setting values
- all “ammeter” measurements
- tripping causes
- maximeter reset.

Protection settings

Protection thresholds and delays are set using the adjustment dials.

The selected values are momentarily displayed in amperes and in seconds.

Overload protection

True rms long-time protection.

Thermal memory: thermal image before and after tripping.

Setting accuracy may be enhanced by limiting the setting range using a different long-time rating plug.

The long-time rating plug “OFF” enables to cancel the overload protection.

Short-circuit protection

Short-time (rms) and instantaneous protection.

Selection of I^2t type (ON or OFF) for short-time delay.

Zone selective interlocking (ZSI)

A ZSI terminal block may be used to interconnect a number of control units to provide total discrimination for short-time and earth-fault protection, without a delay before tripping.

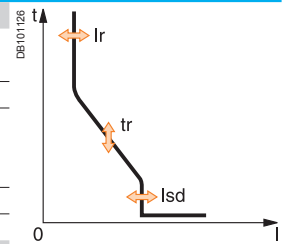
Note: Micrologic A control units come with a transparent lead-seal cover as standard.



Protection

Micrologic 2.0 A

Long time											
Current setting (A)	$I_r = I_n \times \dots$		0.4	0.5	0.6	0.7	0.8	0.9	0.95	0.98	1
Tripping between 1.05 and 1.20 x I_r			Other ranges or disable by changing long-time rating plug								
Time setting		t_r (s)	0.5	1	2	4	8	12	16	20	24
Time delay (s)	Accuracy: 0 to -30 %	1.5 x I_r	12.5	25	50	100	200	300	400	500	600
	Accuracy: 0 to -20 %	6 x I_r	0.7 ⁽¹⁾	1	2	4	8	12	16	20	24
	Accuracy: 0 to -20 %	7.2 x I_r	0.7 ⁽²⁾	0.69	1.38	2.7	5.5	8.3	11	13.8	16.6
Thermal memory			20 minutes before and after tripping								
(1) 0 to -40 % - (2) 0 to -60 %											
Instantaneous											
Pick-up (A)	$I_{sd} = I_r \times \dots$		1.5	2	2.5	3	4	5	6	8	10
Accuracy: ± 10 %											
Time delay			Max resettable time: 20 ms Max break time: 80 ms								



Ammeter

Micrologic 2.0 A

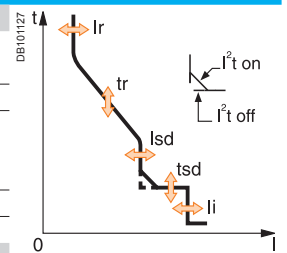
Continuous current measurements					
Display from 20 to 200 % of I_n		I_1	I_2	I_3	I_n
Accuracy: 1.5 % (including sensors)		No auxiliary source (where $I > 20$ % I_n)			
Maximeters		I_1 max	I_2 max	I_3 max	I_n max



Protection

Micrologic 5.0 A

Long time			Micrologic 5.0 / 6.0 / 7.0 A									
Current setting (A)	$I_r = I_n \times \dots$		0.4	0.5	0.6	0.7	0.8	0.9	0.95	0.98	1	
Tripping between 1.05 and 1.20 x I_r			Other ranges or disable by changing long-time rating plug									
Time setting		tr (s)	0.5	1	2	4	8	12	16	20	24	
Time delay (s)	Accuracy: 0 to -30 %	1.5 x I_r	12.5	25	50	100	200	300	400	500	600	
	Accuracy: 0 to -20 %	6 x I_r	0.7 ⁽¹⁾	1	2	4	8	12	16	20	24	
	Accuracy: 0 to -20 %	7.2 x I_r	0.7 ⁽²⁾	0.69	1.38	2.7	5.5	8.3	11	13.8	16.6	
Thermal memory			20 minutes before and after tripping									
(1) 0 to -40 % - (2) 0 to -60 %												
Short time												
Pick-up (A)	$I_{sd} = I_r \times \dots$		1.5	2	2.5	3	4	5	6	8	10	
Accuracy: ± 10 %												
Time setting tsd (s)	Settings	I ² t Off	0	0.1	0.2	0.3	0.4					
		I ² t On	-	0.1	0.2	0.3	0.4					
Time delay (ms) at 10 x I_r	tsd (max resettable time)		20	80	140	230	350					
(I ² t Off or I ² t On)	tsd (max break time)		80	140	200	320	500					
Instantaneous												
Pick-up (A)	$I_i = I_n \times \dots$		2	3	4	6	8	10	12	15	off	
Accuracy: ± 10 %												
Time delay			Max resettable time: 20 ms Max break time: 50 ms									



Ammeter

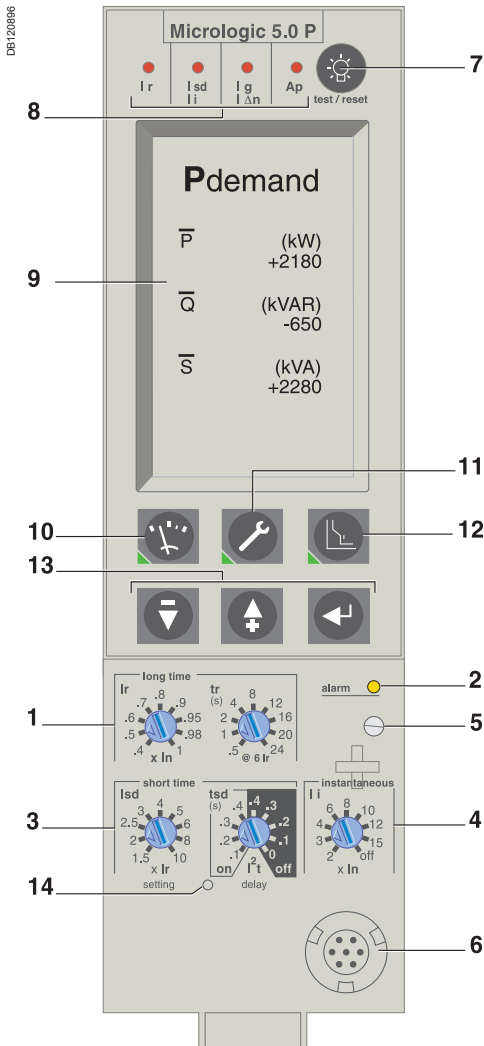
Micrologic 5.0 A

Continuous current measurements							
Display from 20 to 200 % of I_n		I_1	I_2	I_3	I_n	I_g	$I_{\Delta n}$
Accuracy: 1.5 % (including sensors)		No auxiliary source (where $I > 20$ % I_n)					
Maximeters		I_1 max	I_2 max	I_3 max	I_n max	I_g max	$I_{\Delta n}$ max

Note: All current-based protection functions require no auxiliary source.

The test / reset button resets maximeters, clears the tripping indication and tests the battery.

Micrologic P control units include all the functions offered by Micrologic A.
In addition, they measure voltages and calculate power and energy values.



- 1 Long-time current setting and tripping delay.
- 2 Overload signal (LED).
- 3 Short-time pick-up and tripping delay.
- 4 Instantaneous pick-up.
- 5 Long-time rating plug screw.
- 6 Test connector.
- 7 Lamp + battery test and indications reset.
- 8 Indication of tripping cause.
- 9 High-resolution screen.
- 10 Measurement display.
- 11 Maintenance indicators.
- 12 Protection settings.
- 13 Navigation buttons.
- 14 Hole for settings lockout pin on cover.

Protection.....



Protection settings

The adjustable protection functions are identical to those of Micrologic A overloads, short-circuits.

Fine adjustment

Within the range determined by the adjustment dial, fine adjustment of thresholds (to within one ampere) and time delays (to within one second) is possible on the keypad or remotely using the COM option.

IDMTL (Inverse Definite Minimum Time lag) setting

Coordination with fuse-type or medium-voltage protection systems is optimised by adjusting the slope of the overload-protection curve. This setting also ensures better operation of this protection function with certain loads.

Programmable alarms and other protection

Depending on the thresholds and time delays set using the keypad or remotely using the COM option, the Micrologic P control unit monitors currents and voltage, power, frequency and the phase sequence. Each threshold overrun is signalled remotely via the COM option. Each threshold overrun may be combined with tripping (protection).

Load shedding and reconnection

Load shedding and reconnection parameters may be set according to the power or the current flowing through the circuit breaker. Load shedding is carried out by a supervisor via the COM option.

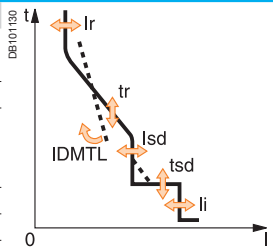
Communication option (COM)

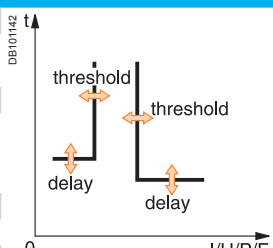
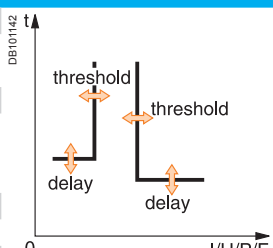
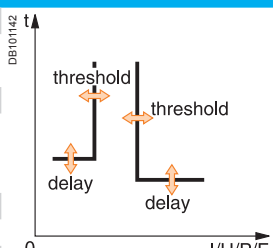
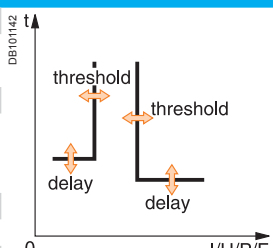
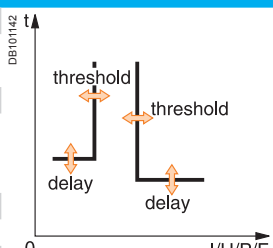
The communication option may be used to:

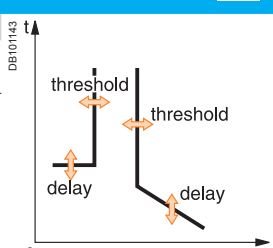
- remotely read and set parameters for the protection functions
- transmit all the calculated indicators and measurements
- signal the causes of tripping and alarms
- consult the history files and the maintenance-indicator register
- maximeter reset.

An event log and a maintenance register, stored in control-unit memory but not available locally, may be accessed in addition via the COM option.

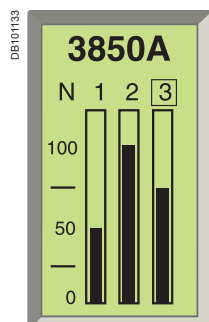
Note: Micrologic P control units come with a non-transparent lead-seal cover as standard.

Protection			Micrologic 5.0										
Long time (rms)			Micrologic 5.0 P										
Current setting (A)	$I_r = I_n \times \dots$		0.4	0.5	0.6	0.7	0.8	0.9	0.95	0.98	1		
Tripping between 1.05 and 1.20 x I_r			Other ranges or disable by changing long-time rating plug										
Time setting		t_r (s)	0.5	1	2	4	8	12	16	20	24		
Time delay (s)	Accuracy: 0 to -30 %	1.5 x I_r	12.5	25	50	100	200	300	400	500	600		
	Accuracy: 0 to -20 %	6 x I_r	0.7 ⁽¹⁾	1	2	4	8	12	16	20	24		
	Accuracy: 0 to -20 %	7.2 x I_r	0.7 ⁽²⁾	0.69	1.38	2.7	5.5	8.3	11	13.8	16.6		
IDMTL setting	Curve slope		SIT	VIT	EIT	HVFuse	DT						
Thermal memory			20 minutes before and after tripping										
(1) 0 to -40 % - (2) 0 to -60 %													
Short time (rms)													
Pick-up (A)	$I_{sd} = I_r \times \dots$		1.5	2	2.5	3	4	5	6	8	10		
Accuracy: ± 10 %													
Time setting t_{sd} (s)	Settings	I^2t Off	0	0.1	0.2	0.3	0.4						
		I^2t On	-	0.1	0.2	0.3	0.4						
Time delay (ms) at 10 I_r (I^2t Off or I^2t On)	t_{sd} (max resettable time)		20	80	140	230	350						
	t_{sd} (max break time)		80	140	200	320	500						
Instantaneous													
Pick-up (A)	$I_i = I_n \times \dots$		2	3	4	6	8	10	12	15	off		
Accuracy: ± 10 %													
Time delay			Max resettable time: 20 ms Max break time: 50 ms										

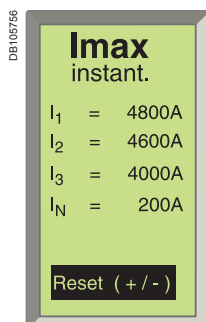
Alarms and other protection			Micrologic 5.0 P											
Current			Threshold		Delay									
Current unbalance	$I_{unbalance}$		0.05 to 0.6 leverage		1 to 40 s									
Maximum average current	I_{max} demand : I_1, I_2, I_3, I_N		0.2 I_n to I_n		15 to 1500 s									
Voltage														
Voltage unbalance	$U_{unbalance}$		2 to 30 % x $U_{average}$		1 to 40 s									
Minimum voltage	U_{min}		100 to U_{max}		1.2 to 10 s									
Maximum voltage ⁽³⁾	U_{max}		U_{min} to 1200		1.2 to 10 s									
Power														
Reverse power	rP		5 to 500 kW		0.2 to 20 s									
Frequency														
Minimum frequency	F_{min}		45 to F_{max}		1.2 to 5 s									
Maximum frequency	F_{max}		F_{min} to 440 Hz		1.2 to 5 s									
Phase sequence														
Sequense (alarm)	$\Delta\emptyset$		$\emptyset 1/2/3$ or $\emptyset 1/3/2$		0.3 s									

Load shedding and reconnection			Micrologic 5.0 P											
Measured value			Threshold		Delay									
Current	I		0.5 to 1 I_r per phases		20 % t_r to 80 % t_r									
Power	P		200 kW to 10 MW		10 to 3600 s									
(3) For 690 V applications, a step-down transformer must be used if the voltage exceeds the nominal value of 690 V by more than 10 %.														

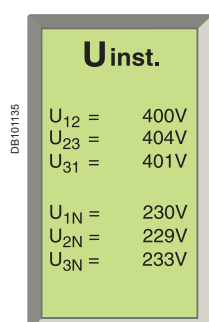
Note: all current-based protection functions require no auxiliary source.
Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.



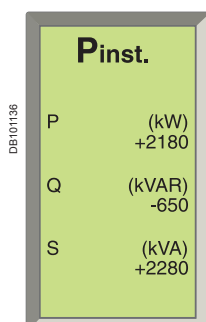
Default display.



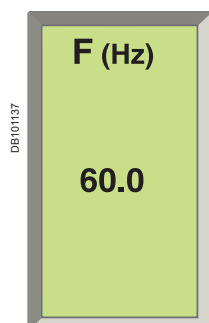
Display of a maximum current.



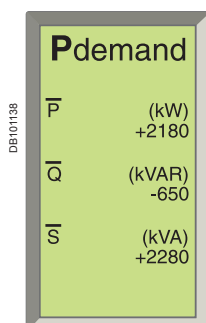
Display of a voltage.



Display of a power.



Display of a frequency.



Display of a demand power.



Power View software.

Measurements

The Micrologic P control unit calculates in real time all the electrical values (V, A, W, VAR, VA, Wh, VARh, VAh, Hz), power factors and $\cos \phi$ factors.

The Micrologic P control unit also calculates demand current and demand power over an adjustable time period. Each measurement is associated with a minimeter and a maximeter.

In the event of tripping on a fault, the interrupted current is stored. The optional external power supply makes it possible to display the value with the circuit breaker open or not supplied.

Instantaneous values

The value displayed on the screen is refreshed every second.

Minimum and maximum values of measurements are stored in memory (minimeters and maximeters).minimètres).

Currents

I rms	A	1	2	3
I max rms	A	1	2	3

Voltages

U rms	V	12	23	31
V rms	V	1N	2N	3N
U average rms	V	(U12 + U23 + U31) / 3		
U unbalance	%			

Power, energy

P active, Q reactive, S apparent	W, Var, VA	Totals
E active, E reactive, E apparent	Wh, VARh, VAh	Totals consumed - supplied Totals consumed Totals supplied
Power factor	PF	Total

Frequencies

F	Hz
---	----

Demand metering

The demand is calculated over a fixed or sliding time window that may be programmed from 5 to 60 minutes. According to the contract signed with the power supplier, an indicator associated with a load shedding function makes it possible to avoid or minimise the costs of overrunning the subscribed power. Maximum demand values are systematically stored and time stamped (maximeter).

Currents

I demand	A	1	2	3
I max demand	A	1	2	3

Power

P, Q, S demand	W, Var, VA	Totals
P, Q, S max demand	W, Var, VA	Totals

Minimeters and maximeters

Only the current and power maximeters may be displayed on the screen.

Time-stamping

Time-stamping is activated as soon as time is set manually or by a supervisor. No external power supply module is required (max. drift of 1 hour per year).

Reset

An individual reset, via the keypad or remotely, acts on alarms, minimum and maximum data, peak values, the counters and the indicators.

Additional measurements accessible with the COM option

Some measured or calculated values are only accessible with the COM communication option:

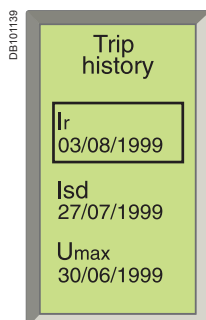
- $I_{\text{peak}} / \sqrt{2}$, $(I_1 + I_2 + I_3) / 3$, I unbalance
- load level in % Ir
- total power factor.

The maximeters and minimeters are available only via the COM option for use with a supervisor.

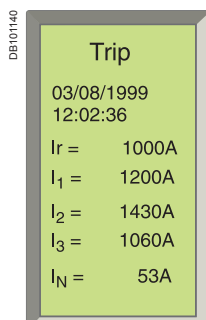
Additional info

Accuracy of measurements (including sensors):

- voltage (V) 0.5 %
- current (A) 1.5 %
- frequency (Hz) 0.1 %
- power (W) and energy (Wh) 2 %.



Display of a tripping history.



Display after tripping.

Histories and maintenance indicators

The last ten trips and alarms are recorded in two separate history files that may be displayed on the screen:

- tripping history:
 - ☐ type of fault
 - ☐ date and time
 - ☐ values measured at the time of tripping (interrupted current, etc.)
- alarm history:
 - ☐ type of alarm
 - ☐ date and time
 - ☐ values measured at the time of the alarm.

All the other events are recorded in a third history file which is only accessible through the communication network.

- Event log history (only accessible through the communication network)
 - ☐ modifications to settings and parameters
 - ☐ counter resets
 - ☐ system faults:
 - ☐ fallback position
 - ☐ thermal self-protection
 - ☐ loss of time
 - ☐ overrun of wear indicators
 - ☐ test-kit connections
 - ☐ etc.

Note:

All the events are time stamped: time-stamping is activated as soon as time is set manually or by a supervisor. No external power supply module is required (max. drift of 1 hour per year).

Maintenance indicators (with COM option)

A number of maintenance indicators may be called up on the screen to better plan for device maintenance:

- contact wear
- operation counter:
 - ☐ cumulative total
 - ☐ total since last reset.

Additional maintenance indicators are also available through the COM network, and can be used as an aid in troubleshooting:

- highest current measured
- number of test-kit connections
- number of trips in operating mode and in test mode.

Additional technical characteristics

Safety

Measurement functions are independent of the protection functions. The high-accuracy measurement module operates independently of the protection module.

Simplicity and multi-language

Navigation from one display to another is intuitive. The six buttons on the keypad provide access to the menus and easy selection of values. When the setting cover is closed, the keypad may no longer be used to access the protection settings, but still provides access to the displays for measurements, histories, indicators, etc.

Micrologic is also multi-language, including the following languages: English, Spanish, Portuguese, Russian, Chinese, French, German...

Intelligent measurement

Measurement-calculation mode:

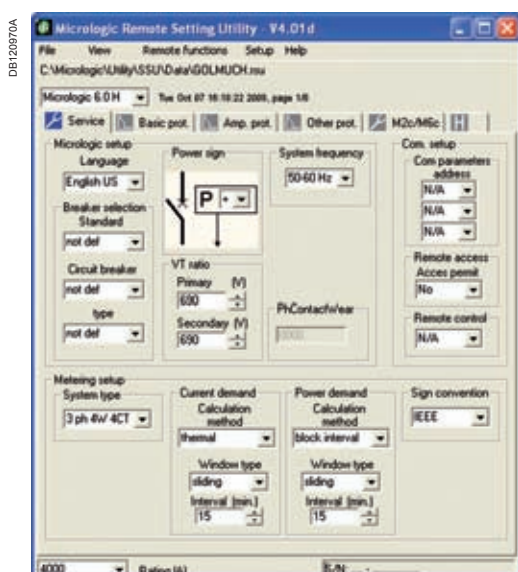
- energies are calculated on the basis of the instantaneous power values, in two manners:
 - ☐ the traditional mode where only positive (consumed) energies are considered
 - ☐ the signed mode where the positive (consumed) and negative (supplied) energies are considered separately
- measurement functions implement the new "zero blind time" concept which consists in continuously measuring signals at a high sampling rate. The traditional "blind window" used to process samples no longer exists. This method ensures accurate energy calculations even for highly variable loads (welding machines, robots, etc.).

Always powered

All current-based protection functions require no auxiliary source. Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.

Stored information

The fine setting adjustments, the last 100 events and the maintenance register remain in the control-unit memory even when power is lost.



RSU configuration screen for a Micrologic.

Micrologic H control units include all the functions offered by Micrologic P. Integrating significantly enhanced calculation and memory functions, the Micrologic H control unit offers in-depth analysis of power quality and detailed event diagnostics. It is intended for operation with a supervisor.

In addition to the Micrologic P functions, the Micrologic H control unit offers:

- in-depth analysis of power quality including calculation of harmonics and the fundamentals
- diagnostics aid and event analysis through waveform capture
- enhanced alarm programming to analyse and track down a disturbance on the AC power system.

Measurements

The Micrologic H control unit offers all the measurements carried out by Micrologic P, with in addition:

- phase by phase measurements of:
 - power, energy
 - power factors
- calculation of:
 - current and voltage total harmonic distortion (THD)
 - current, voltage and power fundamentals
 - current and voltage harmonics up to the 31st order.

Instantaneous values displayed on the screen

Currents					
I rms	A	1	2	3	
I max rms	A	1	2	3	
Voltages					
U rms	V	12	23	31	
V rms	V	1N	2N	3N	
U average rms	V	(U12 + U23 + U31) / 3			
U unbalance	%				
Power, energy					
P active, Q reactive, S apparent	W, Var, VA	Totals	1	2	3
E active, E reactive, E apparent	Wh, VARh, VAh	Totals consumed - supplied Totals consumed Totals supplied			
Power factor	PF	Total	1	2	3
Frequencies					
F	Hz				
Power-quality indicators					
Total fundamentals		U I P Q S			
THD	%	U I			
U and I harmonics	Amplitude	3	5	7	9 11 13

Harmonics 3, 5, 7, 9, 11 and 13, monitored by electrical utilities, are displayed on the screen.

Demand measurements

Similar to the Micrologic P control unit, the demand values are calculated over a fixed or sliding time window that may be set from 5 to 60 minutes.

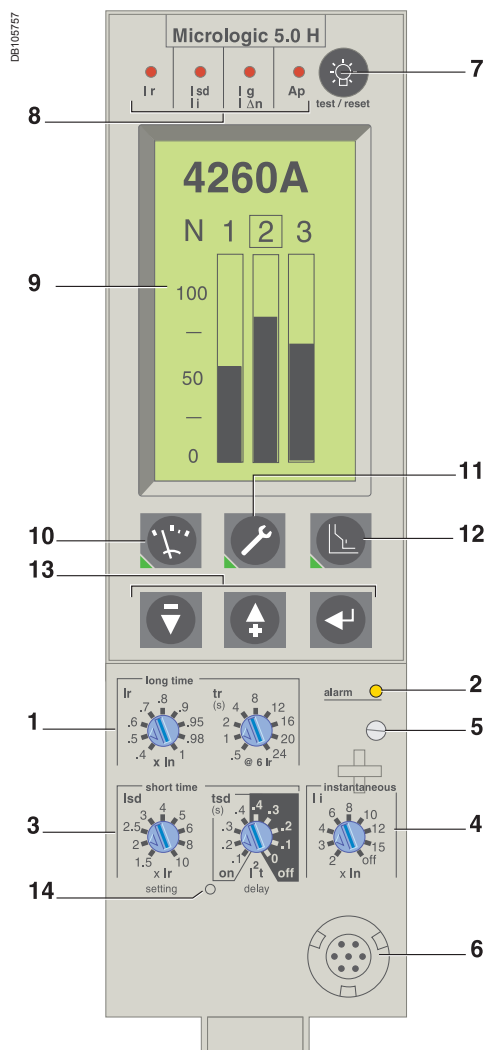
Currents				
I demand	A	1	2	3
I max demand	A	1	2	3
Power				
P, Q, S demand	W, Var, VA	Totals		
P, Q, S max demand	W, Var, VA	Totals		

Maximeters

Only the current maximeters may be displayed on the screen.

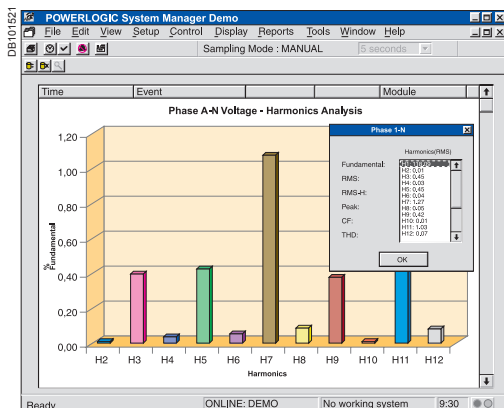
Histories and maintenance indicators

These functions are identical to those of the Micrologic P.

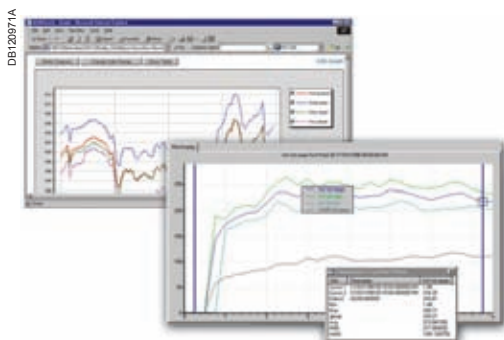


- 1 Long-time current setting and tripping delay.
- 2 Overload signal (LED).
- 3 Short-time pick-up and tripping delay.
- 4 Instantaneous pick-up.
- 5 Long-time rating plug screw.
- 6 Test connector.
- 7 Lamp + battery test and indications reset.
- 8 Indication of tripping cause.
- 9 High-resolution screen.
- 10 Measurement display.
- 11 Maintenance indicators.
- 12 Protection settings.
- 13 Navigation buttons.
- 14 Hole for settings lockout pin on cover.

Note: Micrologic H control units come with a non-transparent lead-seal cover as standard.



Display of harmonics up to 12 th order.



Log.

With the communication option

Additional measurements, maximeters and minimeters

Certain measured or calculated values are only accessible with the COM communication option:

- $I_{\text{peak}} / \sqrt{2} (I_1 + I_2 + I_3) / 3$, $I_{\text{unbalance}}$
- load level in % I_r
- power factor (total and per phase)
- voltage and current THD
- K factors of currents and average K factor
- crest factors of currents and voltages
- all the fundamentals per phase
- fundamental current and voltage phase displacement
- distortion power and distortion factor phase by phase
- amplitude and displacement of current and voltage harmonics 3 to 31.

The maximeters and minimeters are available only via the COM option for use with a supervisor.

Waveform capture

The Micrologic H control unit stores the last 4 cycles of each instantaneous current or voltage measurement. On request or automatically on programmed events, the control unit stores the waveforms. The waveforms may be displayed in the form of oscillograms by a supervisor via the COM option. Definition is 64 points per cycle.

Pre-defined analogue alarms (1 to 53)

Each alarm can be compared to user-set high and low thresholds. Overrun of a threshold generates an alarm. An alarm or combinations of alarms can be linked to programmable action such as selective recording of measurements in a log, waveform capture, etc.

Event log and maintenance registers

The Micrologic H offers the same event log and maintenance register functions as the Micrologic P. In addition, it produces a log of the minimums and maximums for each "real-time" value.

Additional technical characteristics

Setting the display language

System messages may be displayed in six different languages. The desired language is selected via the keypad.

Protection functions

All current-based protection functions require no auxiliary source. Voltage-based protection functions are connected to AC power via a voltage measurement input built into the circuit breaker.

Measurement functions

Measurement functions are independent of the protection functions.

The high-accuracy measurement module operates independently of the protection module, while remaining synchronised with protection events.

Measurement-calculation mode

An analogue calculation function dedicated to measurements enhances the accuracy of harmonic calculations and the power-quality indicators. The Micrologic H control unit calculates electrical magnitudes using $1.5 \times \ln$ dynamics ($20 \times \ln$ for Micrologic P).

Measurement functions implement the new "zero blind time" concept

Energies are calculated on the basis of the instantaneous power values, in the traditional and signed modes.

Harmonic components are calculated using the discrete Fourier transform (DFT).

Accuracy of measurements (including sensors)

- voltage (V) 0.5 %
- current (A) 1.5 %
- frequency (Hz) 0.1 %
- power (W) and energy (Wh) 2 %
- total harmonic distortion 1 %.

Stored information

The fine-setting adjustments, the last 100 events and the maintenance register remain in the control-unit memory even when power is lost.

Time-stamping

Time-stamping is activated as soon as time is set manually or by a supervisor no external power supply module is required (max. drift of 1 hour per year).

Reset

An individual reset, via the keypad or remotely, acts on alarms, minimum and maximum data, peak values, the counters and the indicators.



External sensors

Voltage measurement inputs

Voltage measurement inputs are required for power measurements (Micrologic P or H). As standard, the control unit is supplied by internal voltage measurement inputs placed downstream of the pole for voltages between 220 and 690 V AC. On request, it is possible to replace the internal voltage measurement inputs by an external voltage input (PTE option) which enables the control unit to draw power directly from the distribution system upstream of the circuit breaker. An 3 m cable with ferrite comes with this PTE option.

Long-time rating plug

Four interchangeable plugs may be used to limit the long-time threshold setting range for higher accuracy.

The time delay settings indicated on the plugs are for an overload of 6 Ir.

As standard, control units are equipped with the 0.4 to 1 plug.

Setting ranges

Standard	$I_r = I_n \times \dots$	0.4	0.5	0.6	0.7	0.8	0.9	0.95	0.98	1
Low-setting option	$I_r = I_n \times \dots$	0.4	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.8
High-setting option	$I_r = I_n \times \dots$	0.80	0.82	0.85	0.88	0.90	0.92	0.95	0.98	1
Off plug	No long-time protection ($I_r = I_n$ for lsd setting)									

Important: long-time rating plugs must always be removed before carrying out insulation or dielectric withstand tests.

External 24 V DC power-supply module

The external power-supply module makes it possible to use the display even if the circuit breaker is open or not supplied (for the exact conditions of use, see the "electrical diagrams" part of this catalogue).

This module powers both the control unit (100 mA).

If the COM communication option is used, the communication bus requires its own 24 V DC power supply, independent with respect to that of the Micrologic control unit. With the Micrologic A control unit, this module makes it possible to display currents of less than 20 % of I_n .

With the Micrologic P and H, it can be used to display fault currents after tripping.

Characteristics

- Power supply:
 - 110/130, 200/240, 380/415 V AC (+ 10 % - 15 %)
 - 24/30, 48/60, 100/125 V DC (+20 % -20 %)
- output voltage: 24 V DC $\pm$ 5%, 200 mA.
- Ripple < 1 %
- Dielectric withstand : 3.5 kV rms between input/output, for 1 minute
- Overvoltage category: as per IEC 60947-1 cat. 4.

Battery module

The battery module maintains display operation and communication with the supervisor if the power supply to the Micrologic control unit is interrupted. It is installed in series between the Micrologic control unit and the AD module.

Characteristics

- Battery run-time: 4 hours (approximately)
- Mounted on vertical backplate or symmetrical rail.

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Lead-seal cover.

Spare parts

Lead-seal covers

A lead-seal cover controls access to the adjustment dials.

When the cover is closed:

- it is impossible to modify settings using the keypad unless the settings lockout pin on the cover is removed
- the test connector remains accessible
- the test button for the earth-fault and earth-leakage protection function remains accessible.

Characteristics

- Transparent cover for basic Micrologic and Micrologic A control units
- Non-transparent cover for Micrologic P and H control units.

Spare battery

A battery supplies power to the LEDs identifying the tripping causes. Battery service life is approximately ten years.

A test button on the front of the control unit is used to check the battery condition.

The battery may be replaced on site when discharged.

Test equipment

Hand-held test kit

The hand-held mini test kit may be used to:

- check operation of the control unit and the tripping and pole-opening system by sending a signal simulating a short-circuit
- supply power to the control units for settings via the keypad when the circuit-breaker is open (Micrologic P and H control units).

Power source: standard LR6-AA battery.

Full function test kit

The test kit can be used alone or with a supporting personal computer.

The test kit without PC may be used to check:

- the mechanical operation of the circuit breaker
- the electrical continuity of the connection between the circuit breaker and the control unit
- operation of the control unit:
 - ☐ display of settings
 - ☐ automatic and manual tests on protection functions
 - ☐ test on the zone-selective interlocking (ZSI) function
 - ☐ inhibition of the earth-fault protection
 - ☐ inhibition of the thermal memory.

The test kit with PC offers in addition:

- the test report (software available on request).

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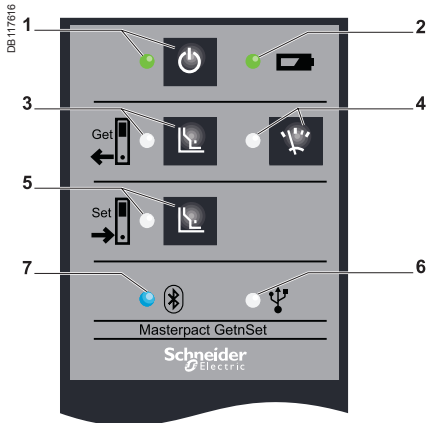
Portable test kit.

GetnSet is a portable data acquisition and storage accessory that connects directly to the Micrologic control units of Masterpack circuit breakers to read important electrical installation operating data and Masterpack protection settings. This information is stored in the GetnSet internal memory and can be transferred to a PC via USB or Bluetooth for monitoring and analysis.

Overview of Masterpack GetnSet functions

GetnSet⁽¹⁾ is a portable data acquisition and storage device that works like a USB drive, letting users manually transfer data to and from a Masterpack circuit breaker or PC. GetnSet can download operating data from Masterpack and download or upload settings. Downloadable operating data include measurements, the last 3 trip history records and contact wear status. Accessible settings include protection thresholds, external relay assignment modes and pre-defined alarm configurations if applicable.

(1) See page F-2 for catalogue numbers.



- 1 On/Off
- 2 batterie indicator
- 3 Download settings
- 4 Download operating parameters
- 5 Upload settings
- 6 USB indicator
- 7 Bluetooth indicator

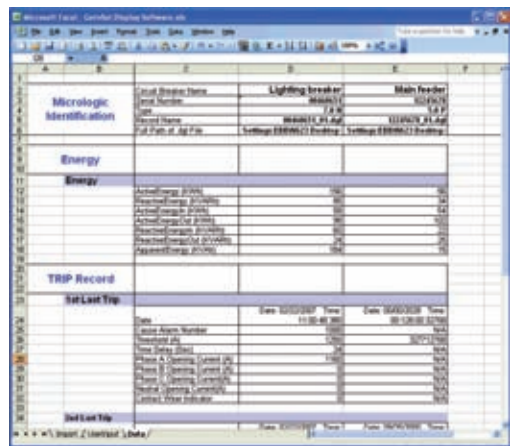
Operating data functions

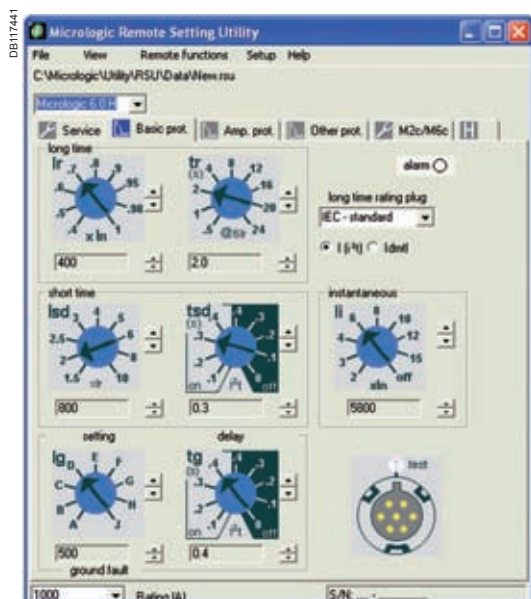
Electrical installation information such as energy measurements and contact wear status is increasingly important to help reduce operating expenses and increase the availability of electrical power. Such data is often available from devices within the installation, but needs to be gathered and aggregated to allow analysis and determine effective improvement actions. With GetnSet, this operating data can be easily read and stored as .dgl files in the internal memory. It can then be transferred to a PC via a USB or Bluetooth link and imported in an Excel spreadsheet. The provided Excel spreadsheet can be used to display the operating data from several breakers in order to:

- analyse changes in parameters such as energy, power factor and contact wear
- compare the values of parameters between circuit breakers
- create graphics and reports using standard Excel tools

GetnSet data accessible in the Excel spreadsheet

Type of data	Micrologic		
Current	A	P	H
Energy, voltages, frequency, power, power factor		P	H
Power quality: fundamental, harmonics			H
Trip history		P	H
Contact wear		P	H





Protection setting functions

GetnSet can also be used to back up circuit breaker settings and restore them on the same device or, under certain conditions, copy them to any Masterpact circuit breaker equipped with the same type of Micrologic control unit. This concerns only advanced settings, as other parameters must be set manually using the dials on the Micrologic control unit.

- When commissioning the installation, safeguard the configuration parameters of your electrical distribution system by creating a back-up of circuit breaker settings so that they can be restored at any time.

- The settings read by GetnSet can be transferred to a PC and are compatible with RSU software (Remote Setting Utility). Protection configurations can also be created on a PC using this software, copied to GetnSet's internal memory and uploaded to a Masterpact circuit breaker with a compatible Micrologic trip unit and dial settings.

Operating procedure

The procedure includes several steps.

- Plug GetnSet into the receptacle on the front of the Micrologic control unit of a Masterpact circuit breaker.
- On the keypad, select the type of data (operating data or settings) and the transfer direction (download or upload). This operation can be done as many times as required for the entire set of Masterpact circuit breakers.
- Downloaded data is transferred to the GetnSet internal memory and a file is created for each Masterpact device (either an .rsu file for settings or a .dgl file for operating data).
- Data can be transferred between GetnSet and a PC via a USB or Bluetooth connection.
- Operating data can be imported in an Excel spreadsheet and protection settings can be read with RSU (remote setting utility) software.

Features

- Battery-powered to power a Micrologic control unit even if the breaker has been opened or tripped. This battery provides power for an average of 1 hour of use, enough for more than 100 download operations.
- Can be used on Masterpact circuit breakers equipped or not equipped with a Modbus "device" communication module.
- Portable, standalone accessory eliminating the need for a PC to connect to a Masterpact circuit breaker.
- No driver or software required for GetnSet connection to a PC.
- Can be used with many circuit breakers, one after the other.
- Embedded memory sized to hold data from more than 5000 circuit breakers.
- Supplied with its battery, a cable for connection to Micrologic trip units, a USB cable for connection to a PC and a battery charger.

Compatibility

- Micrologic control units A, P, H
- PC with USB port or Bluetooth link and Excel software

Technical characteristics

Charger power supply	100 – 240 V; ~1A; 50 – 60 Hz
Charger power consumption	Max 100 W
Battery	3.3 V DC; 9mAh; Li-Ion
Operating temperature	-20 to +60 °C
GetnSet dimensions	95 x 60 x 35 mm

The COM option is required for integration of the circuit breaker or switch-disconnector in a supervision system.

Masterpact NAVY uses the Modbus communications protocol for full compatibility with the supervision systems.

An external gateway is available for communication on other networks:

- Ion Enterprise (power management system)
- Ethernet gateway (MPS100/EGX)
- Ethernet
- Profibus

Eco COM is limited to the transmission of metering data and does not allow the control of the circuit breaker.

The COM option is made up of a "device" communication module, installed behind the Micrologic control unit and supplied with its set of sensors (OF, SDE, PF and CH micro-contacts) and its kit for connection to XF and MX communicating voltage release a "chassis" communication module supplied separately with its set of sensors (CE, CD and CT contacts).

Status indication by the COM option is independent of the device indication contacts. These contacts remain available for conventional uses.

Modbus "Device" communication module

This module is independent of the control unit. It receives and transmits information on the communication network. An infra-red link transmits data between the control unit and the communication module.

Consumption: 30 mA, 24 V.

Modbus "chassis" communication module

This module is independent of the control unit. With Modbus "chassis" communication module, this module makes it possible to address the chassis and to maintain the address when the circuit breaker is in the disconnected position.

Consumption: 30 mA, 24 V.

XF and MX1 communicating voltage releases

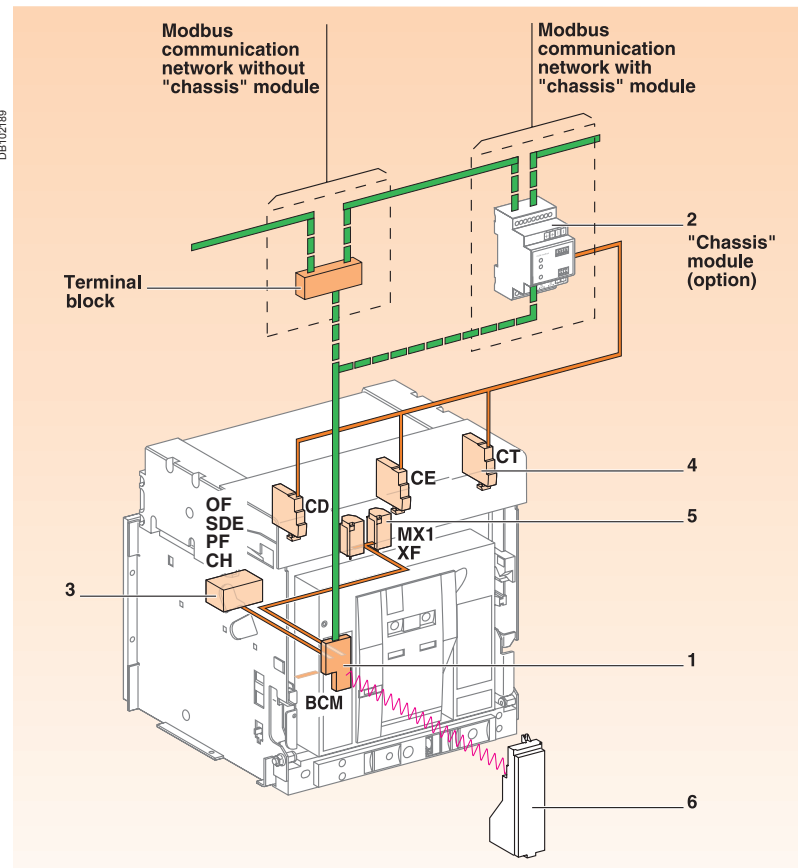
The XF and MX1 communicating voltage releases are equipped for connection to the "device" communication module.

The remote-tripping function (second MX2 or MN) are independent of the communication option. They are not equipped for connection to the "device" communication module.



Modbus "device" communication module.

Modbus "chassis" communication module.



- 1 "Device" communication module.
- 2 "Chassis" communication module (option).
- 3 OF, SDE, PF and CH communicating "device" sensors.
- 4 CE, CD and CT communicating "chassis" sensors.
- 5 MX1 and XF communicating release.
- 6 Control unit.

— : Hard wire.
— : Communication bus.

Overview of functions

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The Masterpact NAVY circuit breakers and switch-disconnectors are compatible with the Modbus COM option.

The COM option may be used to:

- identify the device
- indicate status conditions
- control the device.

Depending on the different types of Micrologic (A, P, H) control units, the COM option also offers:

- setting of the protection and alarms functions
- analysis of the AC-power parameters for operating-assistance and maintenance purposes.

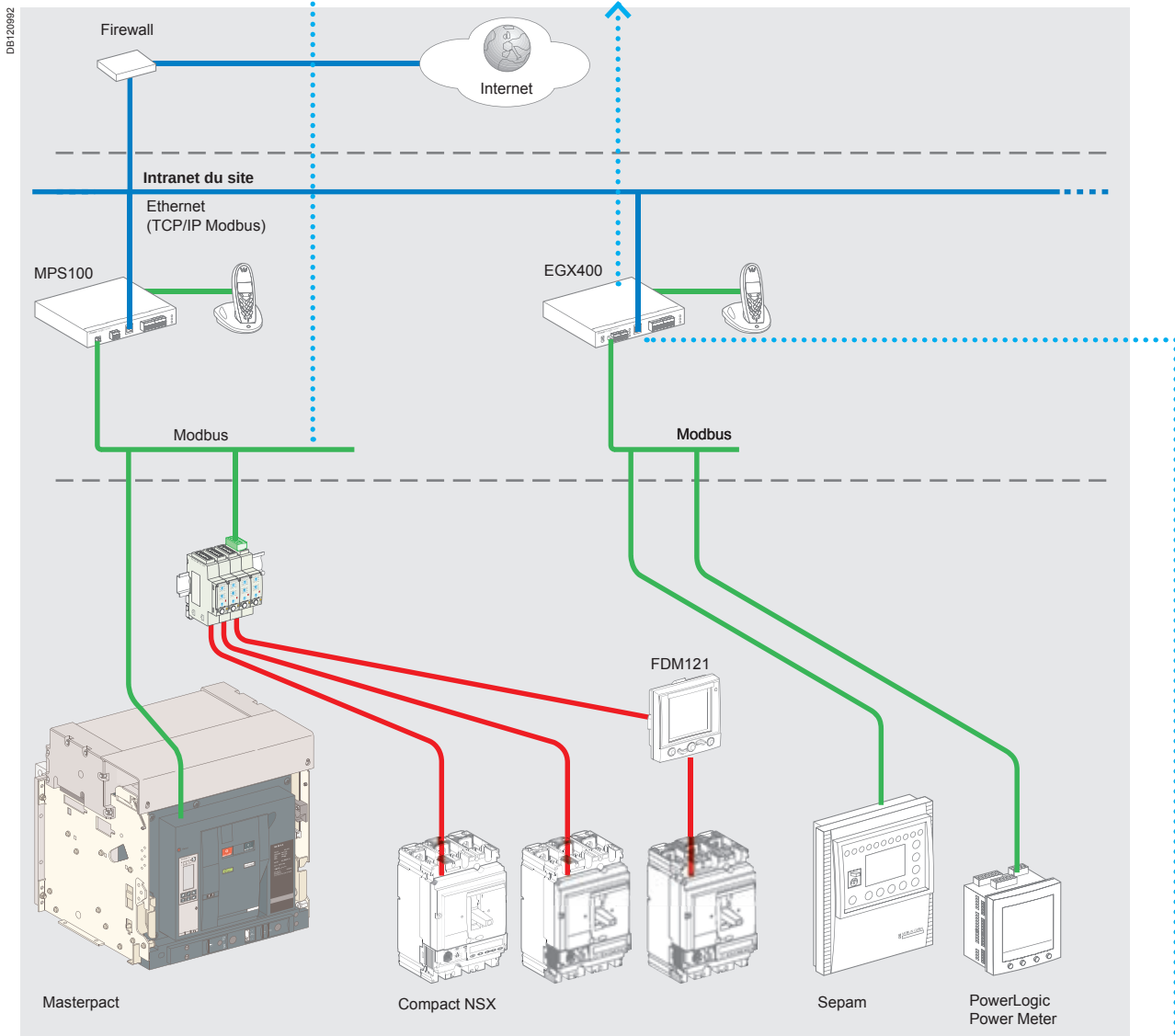
	Switch-disconnector with communication bus Modbus	Circuit breaker with communication bus Modbus
Device identification		
Address	■	A P H
Rating	-	A P H
Type of device	-	P H
Type of control unit	-	A P H
Type of long-time rating plug	-	A P H
Status indications		
ON/OFF OF	■	A P H
Spring charged CH	■	A P H
Ready to close PF	(1)	A P H
Fault-trip SDE	■	A P H
Connected/disconnected/ test position CE/CD/CT	■	A P H
Controls		
ON/OFF MX/XF	■	A P H
Spring charging	-	
Reset of the mechanical indicator	-	
Protections and alarms settings		
Reading of protections settings		A P H
Writing of fine settings in the range imposed by the adjustment dials		P H
Reading/writing of alarms (load shedding and reconnect, etc.)		P H
Reading/writing of custom alarms		H
Operating and maintenance aids		
Measurement		
Current		A P H
Voltages, frequency, power, etc.		P H
Power quality: fundamental, harmonics		H
Programming of demand metering		P H
Fault readings		
Type of fault		A P H
Interrupted current		P H
Waveform capture		
On faults		H
On demand or programmed		H
Histories and logs		
Trip history		P H
Alarm history		P H
Event logs		P H
Indicators		
Counter operation		A P H
Contact wear		P H
Maintenance register		P H

Note: see the description of the Micrologic control units for further details on protection and alarms, measurements, waveform capture, histories, logs and maintenance indicators.

(1) With Modbus it is possible to monitor the PF status please use the instruction bulletin COMBT32AK at page 51/Register 661 documentation.

Modbus

- Modbus is the most widely used communication protocol in industrial networks.
- Masterpact, Compact NSX, PowerLogic and Sepam products all operate with this protocol. A Modbus network is generally implemented on an LV or MV switchboard scale.



Web page.

Gateway

A Modbus TCP gateway can be used to connect the Modbus network to ethernet. The gateway has the two main functions:

- access to the company intranet (Ethernet) by converting Modbus frames to the TCP/IP Modbus protocol,
 - optional web-page server for the information from the devices.
- Examples include MPS100, EGX400 and EGX100.

MPS100

- Plug and play device. It comes loaded with a web-page application for graphic display of currents and voltages and viewing of circuit-breaker status and power and energy values.

To use the application, simply declare the Modbus addresses of the connected slaves. Automatically recognised devices include all Masterpact and Compact NSX Micrologic trip units and the PM500/700/800 and PM9c power monitoring units.

- Can be used for automatic alarm notification via a messaging server available on the site intranet or via mobile phones (e-mail converted into SMS).
- Can be used for logging of data that can be automatically sent as e-mail attachments, e.g. a weekly consumption report.

Modbus bus

The Modbus (RS 485) system is an open bus on which communicating Modbus devices (Masterpact NAVY with Modbus COM, Sepam, Vigilohm...) are installed. All types of PLCs and microcomputers may be connected to the bus.

Addresses

The Modbus parameters (address, baud rate, parity) are entered using the keypad on the Micrologic A, P or H. For a switch-disconnector, it is necessary to use the RSU (Remote Setting Utility) Micrologic utility.

The software layer of the Modbus protocol can manage up to 255 addresses (1 to 255).

The "device" communication module comprises three addresses linked to:

- circuit-breaker manager
- measurement manager
- protection manager

The "chassis" communication module comprises one address linked to the chassis manager.

The division of the system into four managers secures data exchange with the supervision system and the circuit-breaker actuators.

The manager addresses are automatically derived from the circuit-breaker address @xx entered via the Micrologic control unit (the default address is 47).

Logic addresses

@ xx	Circuit-breaker manager	(1 to 47)
@ xx + 50	Chassis manager	(51 to 97)
@ xx + 200	Measurement managers	(201 to 247)
@ xx + 100	Protection manager	(101 to 147)

Number of devices

The maximum number of devices that may be connected to the Modbus bus depends on the type of device (Masterpact NAVY with Modbus COM, PM500, Sepam, Vigilohm, etc.), the baud rate (19200 is recommended), the volume of data exchanged and the desired response time. The RS485 physical layer offers up to 32 connection points on the bus (1 master, 31 slaves).

A fixed device requires only one connection point (communication module on the device).

A drawout device uses two connection points (communication modules on the device and on the chassis).

The number must never exceed 15 drawout devices.

Length of bus

The maximum recommended length for the Modbus bus is 1200 meters.

Bus power source

A 24 V DC power supply is required (less than 20 % ripple, insulation class II).

Communication interface

The Modbus bus may be connected to the central processing device in any of three manners:

- direct link to a PLC. The communication interface is not required if the PLC is equipped with a Modbus port
- direct link to a computer. The Modbus (RS485) / Serial port (RS232) communication interface is required
- connection to a TCP/IP (Ethernet) network. The Modbus (RS485) / TCP/IP (Ethernet) communication interface is required.

Software

To make use of the information provided by the communicating devices, software with a Modbus driver must be used.

Micrologic utilities

This is a set of software that may be used with a PC to:

- display the variables (I, U, P, E, etc.) with the RDU (Remote Display Utility)
- read/write the settings with the RSU (Remote Setting Utility)
- remotely control (ON / OFF) the device with the RCU (Remote Control Utility).

Micrologic utilities are available upon request

SMS (System Manager Software)

SMS is a software to monitor LV and/or MV electrical energy.

The SMS family includes a software range depending on the application and function, from single product monitoring to the management of a multiple building:

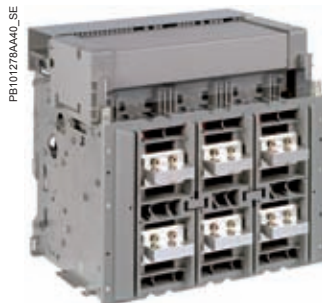
- Power Meter and Circuit Monitor units
- LV devices
- Sepam units.

Three types of connection are available:

- vertical or horizontal rear connection
- front connection
- mixed connection.

Rear connection

Horizontal

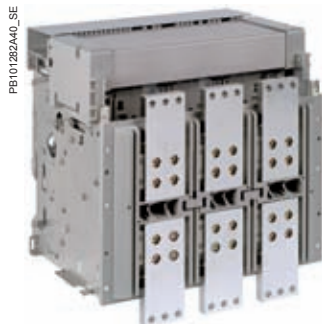


Vertical



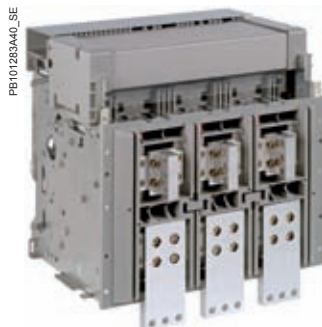
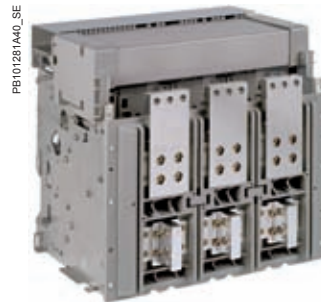
Simply turn a horizontal rear connector 90° to make it a vertical connector.

Front connection



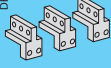
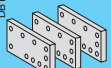
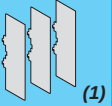
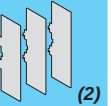
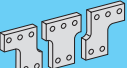
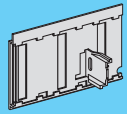
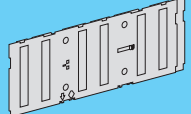
Front connection is available up to 3200 A.

Mixed connection



Note: Masterpact NAVY circuit breakers can be connected indifferently with bare-copper, tinned-copper and tinned-aluminium conductors, requiring no particular treatment.

Accessories

Type of accessory	Masterpact NT06 to NT16 NAVY		Masterpact NW08 to NW40 NAVY	
	Drawout Front connection	Rear connection	Drawout Front connection	Rear connection
Vertical connection adapters	DB101156 			
Cable lug adapters	DB101147 			
Interphase barriers		DB101143  (1)		DB101143  (2)
Spreaders	DB101150 			
Safety shutters with padlocking	DB101152  standard		DB101153  standard	

(1) Mandatory for voltages > 500 V.

(2) Except for an NW40 equipped for horizontal rear connection.

DB10806A



Vertical-connection adapters (option)

Mounted on front-connected chassis, the adapters facilitate connection to a set of vertical busbars.

DB10807A



Cable-lug adapters (option)

Cable-lug adapters are used in conjunction with vertical-connection adapters. They can be used to connect a number of cables fitted with lugs.

To ensure adequate mechanical strength, the connectors must be secured together via spacers (catalogue number 07251).

PB104350A33



Interphase barriers (option)

These barriers are flexible insulated partitions used to reinforce isolation of connection points in installations with busbars, whether insulated or not.

For Masterpact NT/NW NAVY devices, they are installed vertically between rear connection terminals. They are mandatory for NT NAVY devices at voltages > 500 V.

DB10808A



Spreaders (option)

Mounted on the front or rear connectors, spreaders are used to increase the distance between bars in certain installation configurations.

PB104354A48



Safety shutters Vo (standard)

Mounted on the chassis, the safety shutters automatically block access to the disconnecting contact cluster when the device is in the disconnected or test positions (degree of protection IP 20). When the device is removed from its chassis, no live parts are accessible.

The shutter-locking system is made up of a moving block that can be padlocked (padlock not supplied). The block:

- prevents connection of the device
- locks the shutters in the closed position.

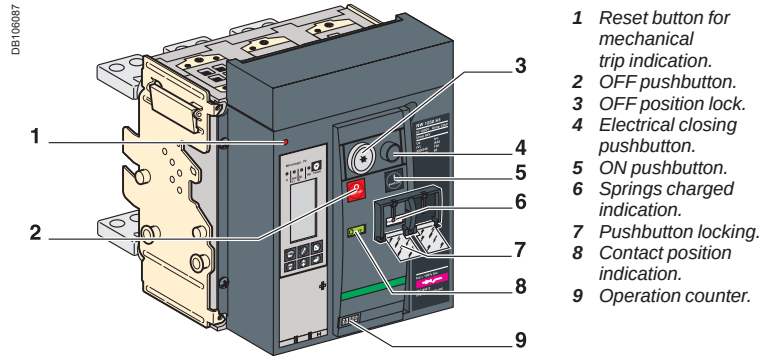
For Masterpact NW08 to NW40 NAVY

A support at the back of the chassis is used to store the blocks when they are not used:

- 2 blocks for NW08 to NW40 NAVY.

Locking

On the device



Access to pushbuttons protected by transparent cover.



Pushbutton locking using a padlock.



OFF position locking using a padlock.



OFF position locking using a keylock.

Pushbutton locking VBP

The transparent cover blocks access to the pushbuttons used to open and close the device.

It is possible to independently lock the opening button and the closing button.

The locking device is often combined with a remote operating mechanism.

The pushbuttons may be locked using either:

- three padlocks (not supplied)
- lead seal
- two screws.

Device locking in the OFF position

By padlocks (VCPO option) - By keylocks (VSP0 option)

The circuit breaker is locked in the OFF position by physically maintaining the opening pushbutton pressed down:

- using padlocks (one to three padlocks, not supplied)
- using keylocks (one or two different keylocks, supplied).

Keys may be removed only when locking is effective (Profalux or Ronis type locks).

The keylocks are available in any of the following configurations:

- one keylock
- one keylock mounted on the device + one identical keylock supplied separately for interlocking with another device
- two different key locks for double locking.

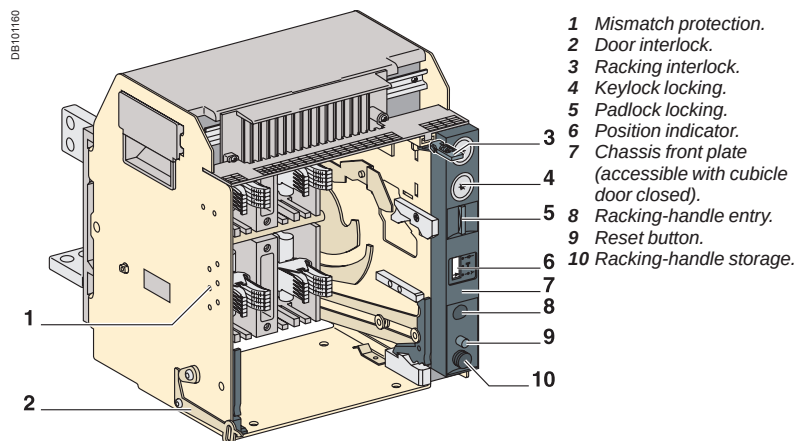
Profalux and Ronis keylocks are compatible with each other.

A locking kit (without locks) is available for installation of one or two keylocks (Ronis, Profalux, Kirk or Castell).

Accessory-compatibility

For Masterpact NT NAVY: 3 padlocks or 1 keylock.

For Masterpact NW NAVY: 3 padlocks and/or 2 keylocks.



"Disconnected" position locking by padlocks.



"Disconnected" position locking by keylocks.



Racking interlock.

"Disconnected" position locking

By padlocks (standard) or keylocks (VSPD option)

Mounted on the chassis and accessible with the door closed, these devices lock the circuit breaker in the "disconnected" position in two manners:

- using padlocks (standard), up to three padlocks (not supplied)
- using keylocks (optional), one or two different keylocks are available.

Profalux and Ronis keylocks are available in different options:

- one keylock
- two different keylocks for double locking
- one (or two) keylocks mounted on the device + one (or two) identical keylocks supplied separately for interlocking with another device.

A locking kit (without locks) is available for installation of one or two keylocks (Ronis, Profalux, Kirk or Castell).

"Connected", "disconnected" and "test" position locking

The "connected", "disconnected" and "test" positions are shown by an indicator and are mechanically indexed. The exact position is obtained when the racking handle blocks. A release button is used to free it.

As standard, the circuit breaker can be locked only in "disconnected" position.

On request, the locking system may be modified to lock the circuit breaker in any of the three positions: "connected", "disconnected" or "test".

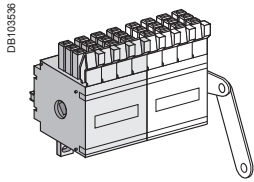
Racking interlock VPOC

This device prevents insertion of the racking handle when the cubicle door is open.

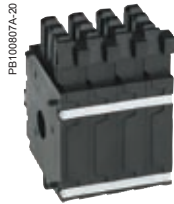
Indication contacts

Indication contacts are available:

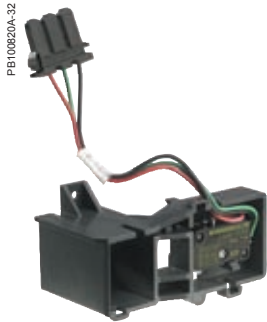
- in the standard version for relay applications
- in a low-level version for control of PLCs and electronic circuits.



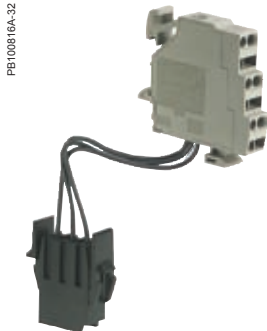
ON/OFF indication contacts (OF) (microswitch type).



ON/OFF indication contacts (OF) (rotary type).



Additional "fault-trip" indication contacts (SDE).



Combined contacts.

ON/OFF indication contacts (OF)

Two types of contacts indicate the ON or OFF position of the circuit breaker:

- microswitch type changeover contacts for Masterpact NT NAVY
- rotary type changeover contacts directly driven by the mechanism for Masterpact NW NAVY. These contacts trip when the minimum isolation distance between the main circuit-breaker contacts is reached.

OF			NT NAVY	NW NAVY
Supplied as standard			4	4
Maximum number			4	8
Breaking capacity (A) p.f.: 0.3 AC12/DC12	Standard	Minimum load: 100 mA/24 V		
		V AC	240/380	6
			480	6
			690	6
		V DC	24/48	2,5
			125	0,5
			250	0,3
	Low-level	Minimum load: 2 mA/15 V		
		V AC	24/48	5
			240	5
			380	5
		V DC	24/48	5/2.5
			125	0.5
			250	0.3

(1) Standard contacts: 10 A; optional contacts: 6 A.

"Fault-trip" indication contacts SDE

Circuit-breaker tripping due to a fault is signalled by:

- a red mechanical fault indicator (reset)
- one changeover contact SDE.

Following tripping, the mechanical indicator must be reset before the circuit breaker may be closed. One SDE is supplied as standard. An optimal SDE may be added. This latter is incompatible with the electrical reset after fault-trip option (Res).

SDE			NT/NW NAVY
Supplied as standard			1
Maximum number			2
Breaking capacity (A) p.f.: 0.3 AC12/DC12	Standard	Minimum load: 100 mA/24 V	
		V AC	240/380
			480
			690
		V DC	24/48
			125
			250
	Low-level	Minimum load: 2 mA/15 V	
		V AC	24/48
			240
			380
		V DC	24/48
			125
			250

Combined "connected/closed" contacts (EF)

The contact combines the "device connected" and the "device closed" information to produce the "circuit closed" information. Supplied as an option for Masterpact NW NAVY, it is mounted in place of the connector of an additional OF contact.

EF			NW NAVY
Maximum number			4
Breaking capacity (A) p.f.: 0.3 AC12/DC12	Standard	Minimum load: 100 mA/24 V	
		V AC	240/380
			480
			690
		V DC	24/48
			125
			250
	Low-level	Minimum load: 2 mA/15 V	
		V AC	24/48
			240
			380
		V DC	24/48
			125
			250

PE100817A-32



CCE, CD and CT "connected/disconnected/test" position carriage switches.

"Connected", "disconnected" and "test" position carriage switches

Three series of optional auxiliary contacts are available for the chassis:

- changeover contacts to indicate the "connected" position CE
- changeover contacts to indicate the "disconnected" position CD. This position is indicated when the required clearance for isolation of the power and auxiliary circuits is reached
- changeover contacts to indicate the "test" position CT. In this position, the power circuits are disconnected and the auxiliary circuits are connected.

Additional actuators

A set of additional actuators may be installed on the chassis to change the functions of the carriage switches.

		NT NAVY			NW NAVY		
Contacts		CE/CD/CT			CE/CD/CT		
Maximum number	Standard with additional actuators	3	2	1	3	3	3
					9	0	0
					6	3	0
					6	0	3
Breaking capacity (A) p.f.: 0.3 AC12/DC12	Standard	Minimum load: 100 mA/24 V					
		V AC	240	8		8	
			380	8		8	
			480	8		8	
			690	6		6	
	V DC	24/48	2.5		2.5		
		125	0.8		0.8		
		250	0.3		0.3		
	Low-level	Minimum load: 2 mA/15 V					
		V AC	24/48	5		5	
			240	5		5	
			380	5		5	
		V DC	24/48	2.5		2.5	
			125	0.8		0.8	
			250	0.3		0.3	

Remote operation

Remote ON / OFF

Two solutions are available for remote operation of Masterpact NAVY devices:

- a point-to-point solution
- a bus solution with the COM communication option.



Note: an opening order always takes priority over a closing order.

If opening and closing orders occur simultaneously, the mechanism discharges without any movement of the main contacts. The circuit breaker remains in the open position (OFF).

In the event of maintained opening and closing orders, the standard mechanism provides an anti-pumping function by blocking the main contacts in open position.

Anti-pumping function. After fault tripping or intentional opening using the manual or electrical controls, the closing order must first be discontinued, then reactivated to close the circuit breaker.

When the automatic reset after fault trip (RAR) option is installed, to avoid pumping following a fault trip, the automatic control system must take into account the information supplied by the circuit breaker before issuing a new closing order or blocking the circuit breaker in the open position (information on the type of fault, e.g. overload, short-time fault, earth fault, earth leakage, short-circuit, etc.).

Note: MX1 communicating releases are of the impulse type only and cannot be used to lock a circuit breaker in OFF position. For locking in OFF position, use the remote tripping function (MX2 or MN).

When MX1 or XF communicating releases are used, the third wire (C3, A3) must be connected even if the communication module is not installed. When the control voltage (C3-C1 or A3-A1) is applied to the MX1 or XF releases, it is necessary to wait 1.5 seconds before issuing an order. Consequently, it is advised to use standard MX1 or XF releases for applications such as source-changeover systems.

The remote ON / OFF function is used to remotely open and close the circuit breaker. It is made up of:

- an electric motor MCH equipped with a "springs charged" limit switch contact CH
- two voltage releases:
 - a closing release XF
 - an opening release MX1.

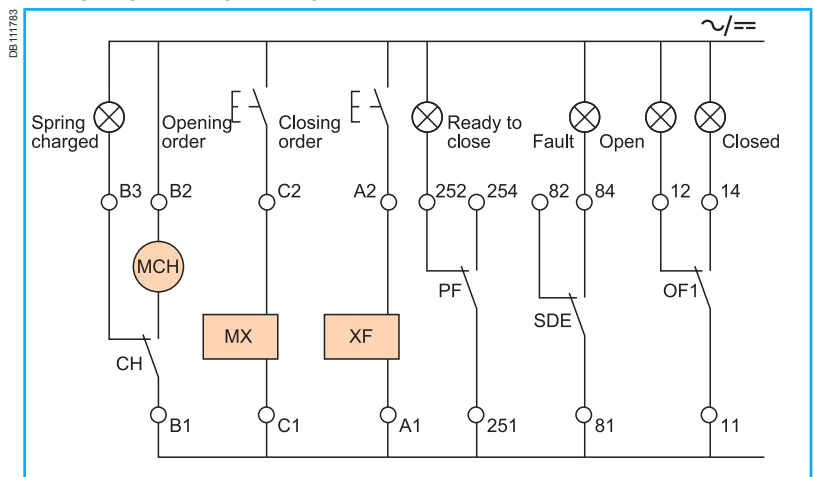
Optionally, other functions may be added:

- a "ready to close" contact PF
- an electrical closing pushbutton BPFE
- remote RES following a fault.

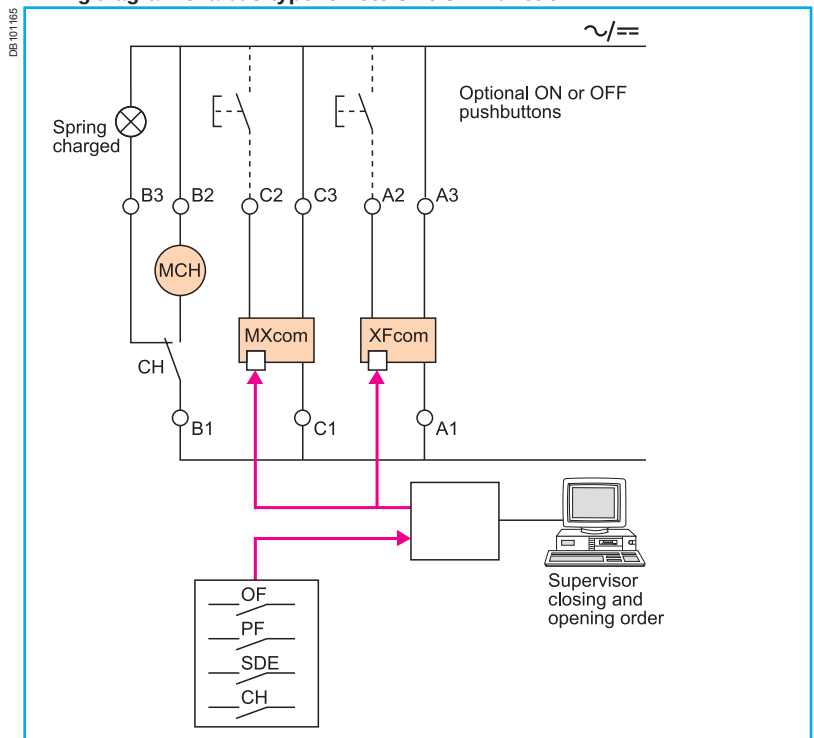
A remote-operation function is generally combined with:

- device ON / OFF indication OF
- "fault-trip" indication SDE.

Wiring diagram of a point-to-point remote ON / OFF function



Wiring diagram of a bus-type remote ON / OFF function



PB100797A-23



Electric motor (MCH) for Masterpact NT NAVY.

PB100809A-32



Electric motor (MCH) for Masterpact NW NAVY.

Electric motor MCH

The electric motor automatically charges and recharges the spring mechanism when the circuit breaker is closed. Instantaneous reclosing of the breaker is thus possible following opening. The spring-mechanism charging handle is used only as a backup if auxiliary power is absent.

The electric motor (MCH) is equipped as standard with a limit switch contact (CH) that signals the "charged" position of the mechanism (springs charged).

Characteristics

Power supply	V AC 50/60 Hz	100/130 - 200/240 - 250/277 (NW only) - 380/415 - 400/440
Operating threshold		0.85 to 1.1 Un
Consumption (VA or W)		180
Motor overcurrent		2 to 3 In for 0.1 s
Charging time		maximum 3 s for Masterpact NT NAVY maximum 4 s for Masterpact NW NAVY
Operating frequency		maximum 3 cycles per minute
CH contact		10 A at 240 V

Voltage releases XF and MX1

Their supply can be maintained or automatically disconnected.

Closing release XF

The XF release remotely closes the circuit breaker if the spring mechanism is charged.

Opening release MX1

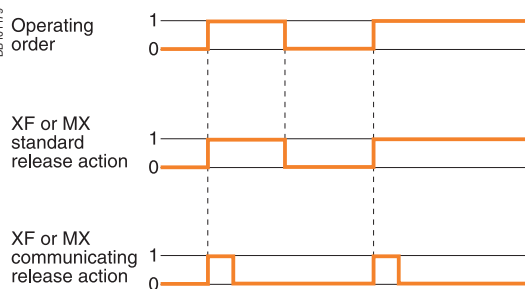
The MX release instantaneously opens the circuit breaker when energised. It locks the circuit breaker in OFF position if the order is maintained (except for MX1 "communicating" releases).

Note: whether the operating order is maintained or automatically disconnected (pulse-type), XF or MX1 "communicating" releases ("bus" solution with "COM" communication option) always have an impulse-type action (see diagram).

Characteristics

	XF	MX1
Power supply	V AC 50/60 Hz	115 - 220 - 380/440
Operating threshold	0.85 to 1.1 Un	0.7 to 1.1 Un
Consumption (VA or W)	Hold: 4.5 Pick-up: 200 (200 ms)	Hold: 4.5 Pick-up: 200 (200 ms)
Circuit-breaker response time at Un	55 ms ±10 (Masterpact NT NAVY) 70 ms ±10 (NW ≤ 4000A) 80 ms ±10 (NW > 4000A)	50 ms ±10

DB101179



PB100809A-16



XF and MX voltage releases.

PB100819A-16



"Ready to close" contacts (PF).

"Ready to close" contact PF

The "ready to close" position of the circuit breaker is indicated by a mechanical indicator and a PF changeover contact. This signal indicates that all the following are valid:

- the circuit breaker is in the OFF position
- the spring mechanism is charged
- a maintained opening order is not present:
- MX1 energised
- fault trip
- remote tripping (MX2 or MN)
- device not completely racked in
- device locked in OFF position
- device interlocked with a second device.

Characteristics

		NT/NW NAVY
Maximum number		1
Breaking capacity (A)	Standard	Minimum load: 100 mA/24 V
p.f.: 0.3	V AC	240/380
AC12/DC12		480
		690
	V DC	24/48
		125
		250
	Low-level	Minimum load: 2 mA/15 V
	V AC	24/48
		240
		380
	V DC	24/48
		125
		250



Electrical closing pushbutton (BPFE).

Electrical closing pushbutton BPFE

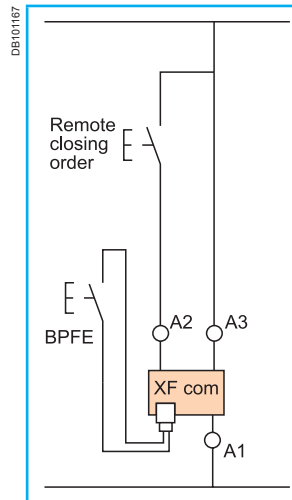
Located on the front panel, this pushbutton carries out electrical closing of the circuit breaker. It is generally associated with the transparent cover that protects access to the closing pushbutton.

Electrical closing via the BPFE pushbutton takes into account all the safety functions that are part of the control/monitoring system of the installation.

The BPFE connects to the closing release (XF com) in place of the COM module.

The COM module is incompatible with this option.

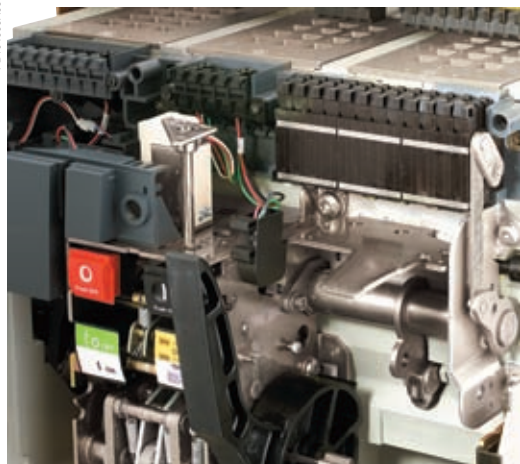
Different types of voltage exist and the XF electromagnet is compulsory if the BPFE option is selected.



Automatic reset after fault trip RAR

Following tripping, a reset of the mechanical indicator (reset button) is no longer required to enable circuit-breaker closing. The mechanical (reset button) and electrical SDE indications remain in fault position until the reset button is pressed. The use of XF closing release is compulsory with this option.

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PB100809A-16



MX or MN voltage release.

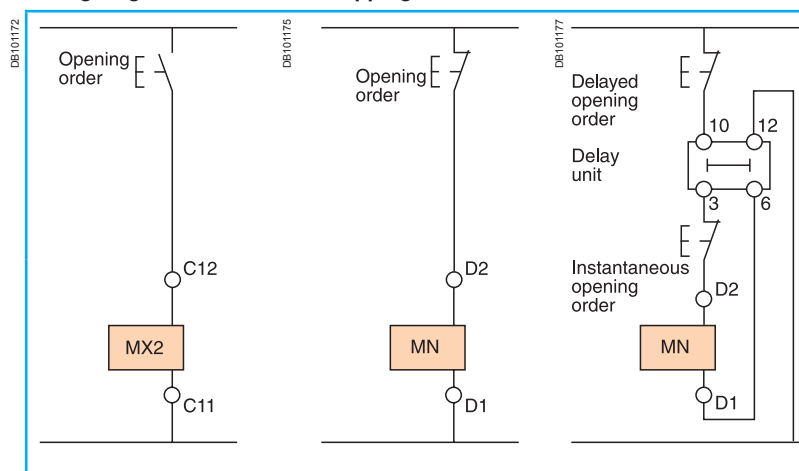
This function opens the circuit breaker via an electrical order. It is made up of:

- a shunt release MX2
- or an undervoltage release MN
- or a delayed undervoltage release (MN + delay unit).

These releases (MX2 or MN) cannot be operated by the communication bus.

The delay unit, installed outside the circuit breaker, may be disabled by an emergency OFF button to obtain instantaneous opening of the circuit breaker.

Wiring diagram for the remote-tripping function



Voltage releases MX2

When energised, the MX2 voltage release instantaneously opens the circuit breaker. A continuous supply of power to the second MX2 locks the circuit breaker in the OFF position.

Characteristics

Power supply	V AC 50/60Hz	115 - 220 - 380/440
Operating threshold		0.7 to 1.1 Un
Permanent locking function		0.85 to 1.1 Un
Consumption (VA or W)	Pick-up: 200 (80 ms)	Hold: 4.5
Circuit-breaker response time at Un	50 ms ±10	

Instantaneous voltage releases MN

The MN release instantaneously opens the circuit breaker when its supply voltage drops to a value between 35 % and 70 % of its rated voltage. If there is no supply on the release, it is impossible to close the circuit breaker, either manually or electrically. Any attempt to close the circuit breaker has no effect on the main contacts. Circuit-breaker closing is enabled again when the supply voltage of the release returns to 85 % of its rated value.

Characteristics

Power supply	V AC 50/60 Hz	100/130 - 200/250 - 380/480
Operating threshold	Opening	0.35 to 0.7 Un
	Closing	0.85 Un
Consumption (VA or W)	Pick-up: 200 (200 ms)	Hold: 4.5
MN consumption with delay unit (VA or W)	Pick-up: 200 (200 ms)	Hold: 4.5
Circuit-breaker response time at Un	40 ms ±5 for NT	
	90 ms ±5 for NW	

MN delay units

To eliminate circuit-breaker nuisance tripping during short voltage dips, operation of the MN release can be delayed. This function is achieved by adding an external delay unit in the MN voltage-release circuit. Two versions are available, adjustable and non-adjustable.

Characteristics

Power supply	Non-adjustable	100/130 - 200/250
V AC 50-60 Hz /DC	Adjustable	100/130 - 200/250 - 380/480
Operating threshold	Opening	0.35 to 0.7 Un
	Closing	0.85 Un
Delay unit consumption	Pick-up: 200 (200 ms)	Hold: 4.5
Circuit-breaker response time at Un	Non-adjustable	0.25 s
	Adjustable	0.5 s - 0.9 s - 1.5 s - 3 s

Accessories

PB104740



Auxiliary terminal shield CB

Optional equipment mounted on the chassis, the shield prevents access to the terminal block of the electrical auxiliaries.

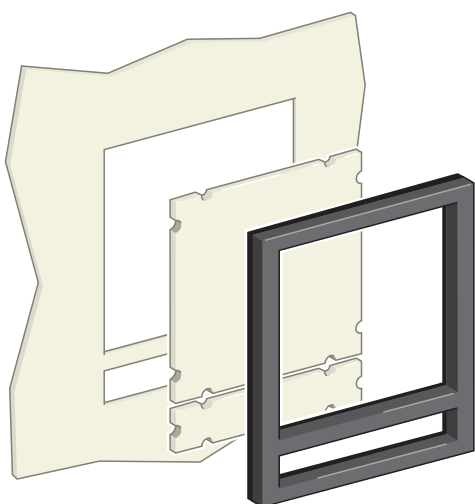
PB104982A32



Operation counter CDM

The operation counter sums the number of operating cycles and is visible on the front panel. It is compatible with manual and electrical control functions.

DB101173



Escutcheon CDP

Optional equipment mounted on the door of the cubicle, the escutcheon increases the degree of protection to IP 40 (circuit breaker installed free standing: IP30).

Blanking plate OP for escutcheon

Used with the escutcheon, this option closes off the door cut-out of a cubicle not yet equipped with a device.

Transparent cover CCP for escutcheon

Optional equipment mounted on the escutcheon, the cover is hinged and secured by a screw. It increases the degree of protection to IP54, IK10.

Escutcheon CDP with blanking plate.

PB100776A-42



Transparent cover CCP for escutcheon.

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This international site allows you to access all the Schneider Electric products in just 2 clicks via comprehensive range data-sheets, with direct links to:

- complete library: technical documents, catalogs, FAQs, brochures...
- selection guides from the e-catalog.
- product discovery sites and their Flash animations.

You will also find illustrated overviews, news to which you can subscribe, the list of country contacts...



CAD software and tools

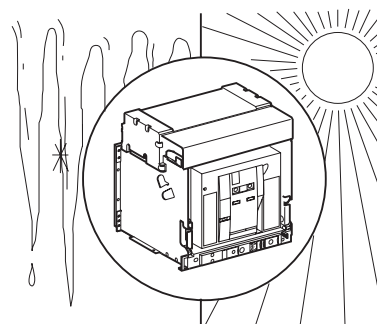
The CAD software and tools enhance productivity and safety. They help you create your installations by simplifying product choice through easy browsing in the Schneider Electric offers.

Last but not least, they optimise use of our products while also complying with standards and proper procedures.



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DB101422



Ambient temperature

Masterpact NAVY devices can operate under the following temperature conditions:

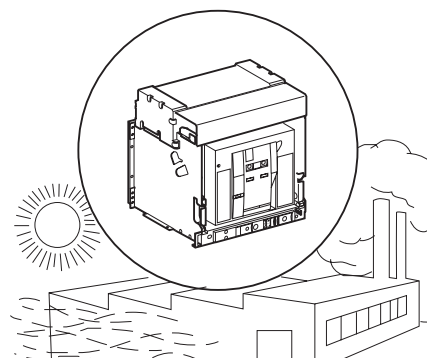
- the electrical and mechanical characteristics are stipulated for an ambient temperature of -5 °C to +70 °C

- circuit-breaker closing is guaranteed down to -35 °C.

Storage conditions are as follows:

- -40 °C to +85 °C for a Masterpact NAVY device without its control unit
- -25 °C to +85 °C for the control unit.

DB101423



Extreme atmospheric conditions

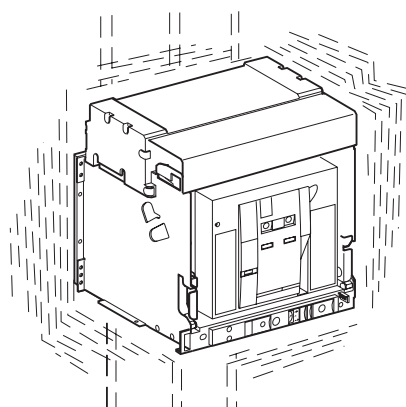
Masterpact NAVY devices have successfully passed the tests defined by the following standards for extreme atmospheric conditions:

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

Masterpact NAVY devices can operate in the industrial environments defined by standard IEC 947 (pollution degree up to 4).

It is nonetheless advised to check that the devices are installed in suitably cooled switchboards without excessive dust.

DB101424



Vibrations

Masterpact NAVY devices are guaranteed to withstand electromagnetic or mechanical vibrations:

- 5 to 22 Hz: ± 1 mm displacement amplitude
- 5 to 60 Hz: 2 g acceleration.

Tests are carried out in compliance with standard IEC 60068-2-6.

They are carried out in 3 directions, with the circuit breaker open and closed.

Mechanical shocks

Masterpact NAVY devices are guaranteed to withstand mechanical shocks:

- 15 g - 11 ms - 1/2 sine shock pulse under the following conditions:
 - required clearance maintained between open main contacts
 - no opening or closing of auxiliary contacts exceeding 3 ms.
- 18 g - 11 ms - 1/2 sine shock pulse under the following conditions:
 - required clearance maintained between open main contacts.

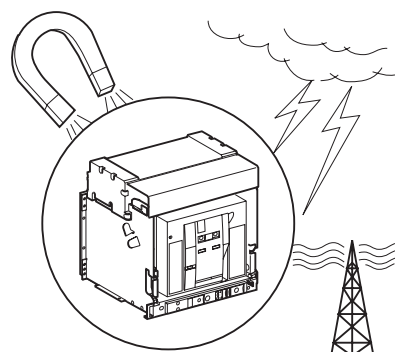
Tests are carried out in compliance with standard IEC 60068-2-7.

They are carried out in 3 directions, with the circuit breaker open and closed.

List and trim

- Masterpact Navy devices have passed tests for operation under $\pm 45^\circ$ list and trim conditions.

DB101425



Electromagnetic disturbances

Masterpact NAVY devices are protected against:

- overvoltages caused by devices that generate electromagnetic disturbances
- overvoltages caused by atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system)
- devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- electrostatic discharges produced by users.

Masterpact NAVY devices have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:

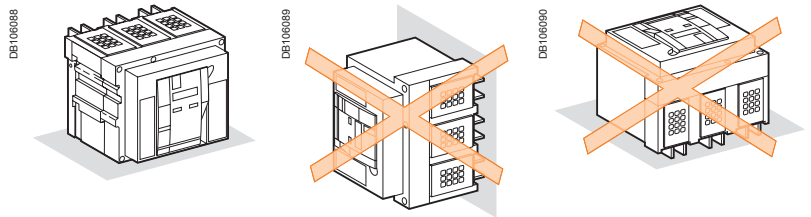
- IEC 60947-2, appendix F
- IEC 60947-2, appendix B (trip units with earth-leakage function).

The above tests guarantee that:

- no nuisance tripping occurs
- tripping times are respected.

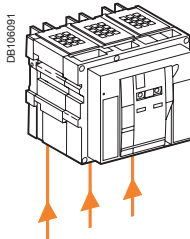
Installation in switchboard

Possible positions



Power supply

Masterpact NAVY devices can be supplied either from the top or from the bottom without reduction in performance, in order to facilitate connection when installed in a switchboard.

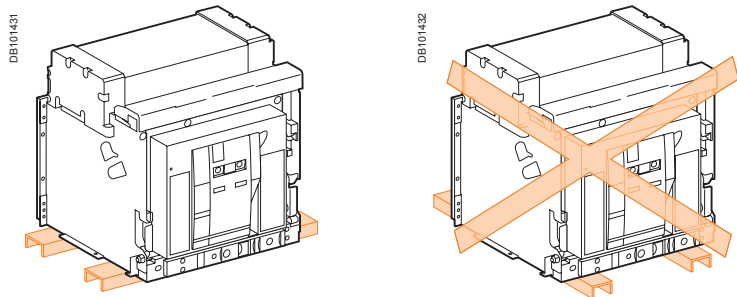


Mounting the circuit-breaker

It is important to distribute the weight of the device uniformly over a rigid mounting surface such as rails or a base plate.

This mounting plane should be perfectly flat (tolerance on support flatness: 2 mm). This eliminates any risk of deformation which could interfere with correct operation of the circuit breaker.

Masterpact NAVY devices can also be mounted on a vertical plane using the special brackets.

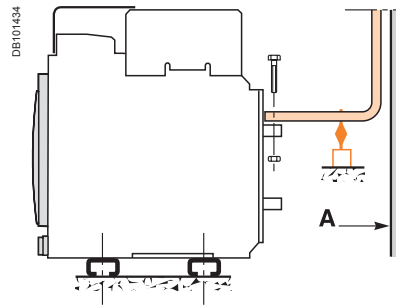


Mounting on rails.

Partitions

Sufficient openings must be provided in partitions to ensure good air circulation around the circuit breaker; Any partition between upstream and downstream connections of the device must be made of non-magnetic material.

For high currents, of 2500 A and upwards, the metal supports or barriers in the immediate vicinity of a conductor must be made of non-magnetic material **A**. Metal barriers through which a conductor passes must not form a magnetic loop.

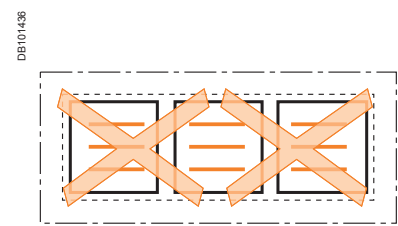
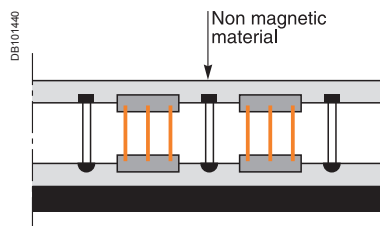


A : non magnetic material.



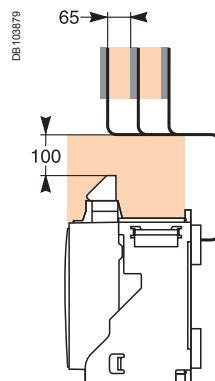
Busbars (NT NAVY, NW NAVY)

The mechanical connection must exclude the possibility of formation of a magnetic loop around a conductor.



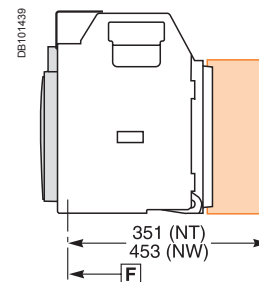
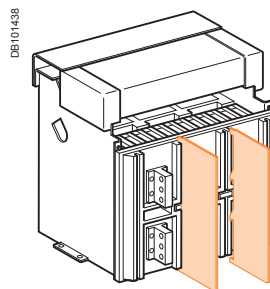
Busbars (NT NAVY)

For live busbars installed immediately above the circuit breaker (respecting the 100 mm safety clearance), the distance between bars must be 65 mm minimum.



Interphase barrier

If the insulation distance between phases is not sufficient (≤ 14 mm), it is advised to install phase barriers (taking into account the safety clearances). Mandatory for a Masterpact NAVY NT > 500 V.



Control wiring

Wiring of voltage releases

During pick-up, the power consumed is approximately 150 to 200 VA. For low control voltages (12, 24, 48 V), maximum cable lengths are imposed by the voltage and the cross-sectional area of cables.

Recommended maximum cable lengths (meter).

		12 V		24 V		48 V	
		2,5 mm ²	1,5 mm ²	2,5 mm ²	1,5 mm ²	2,5 mm ²	1,5 mm ²
MN	U source 100 %	—	—	58	35	280	165
	U source 85 %	—	—	16	10	75	45
MX-XF	U source 100 %	21	12	115	70	550	330
	U source 85 %	10	6	75	44	350	210

Note: the indicated length is that of each of the two wires.

24 V DC power-supply module

External 24 V DC power-supply module for Micrologic (F1-, F2+)

- Do not connect the positive terminal (F2+) to earth
- The negative terminal (F1-) can be connected to earth, except in IT systems
- A number of Micrologic control units can be connected to the same 24 V DC power supply (the consumption of a Micrologic control unit is approximately 100 mA)
- Do not connect any devices other than a Micrologic control unit
- The maximum length for each conductor is ten metres. For greater distances, it is advised to twist the supply wires together
- The 24 V DC supply wires must cross the power cables perpendicularly. If this is difficult, it is advised to twist the supply wires together
- The technical characteristics of the external 24 V DC power-supply module for Micrologic control units are indicated on page A-20.

Communication bus

- Do not connect the positive terminal (E1) to earth
- The negative terminal (E2) can be connected to earth
- A number of "device" or "chassis" communication modules can be connected to the same 24 V DC power supply (the consumption of each module is approximately 30 mA)
- The 24 V DC (E1, E2) power supply for the communication bus must be separate from the external 24 V DC power-supply module for Micrologic control units (F1-, F2+).

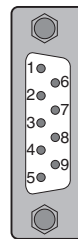
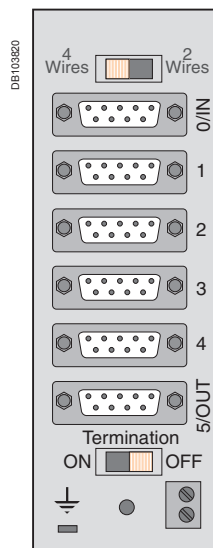
E1	E2	E3	E4	E5	E6
+	-	A/Tx ⁻	B/Tx ⁺	A'/Rx ⁻	B'/Rx ⁺

To create a two-wire Modbus communication bus, simply connect Tx⁻ with Rx⁻ and Tx⁺ with Rx⁺.

To connect a Modbus slave (Micrologic) to a Modbus master (PLC), connect:

the slave Tx⁻ to the master Rx⁻ the slave Rx⁻ to the master Tx⁻
the slave Tx⁺ to the master Rx⁺ the slave Rx⁺ to the master Tx⁺.

RS 485 Modbus junction block



Pins	Signal	Color
1	0 V	Black
2	24 V	Red
3	NC	
4	B' / Rx ⁺	Blue
5	B / Tx ⁺	Yellow
6	0 V	Black
7	24 V	Red
8	A' / Rx ⁻	White
9	A / Tx ⁻	Brown

Wiring of ZSI: it is recommended to use twisted shielded cable. The shield must be connected to earth at both ends.

Cables connections

If cables are used for the power connections, make sure that they do not apply excessive mechanical forces to the circuit breaker terminals.

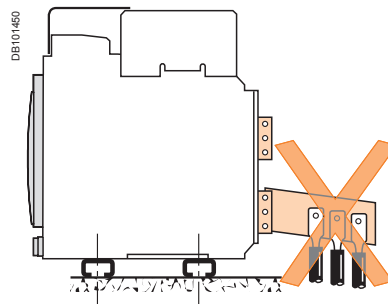
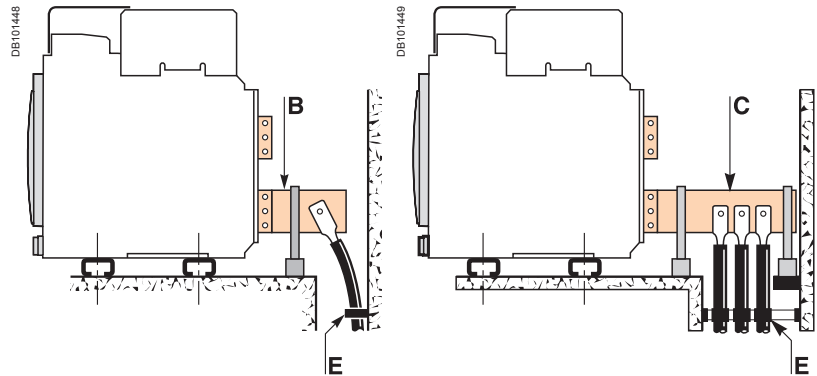
For this, make the connections as follows:

- extend the circuit breaker terminals using short bars designed and installed according to the recommendations for bar-type power connections:

- for a single cable, use solution **B** opposite
- for multiple cables, use solution **C** opposite

- in all cases, follow the general rules for connections to busbars:

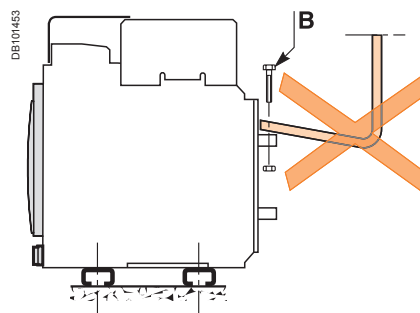
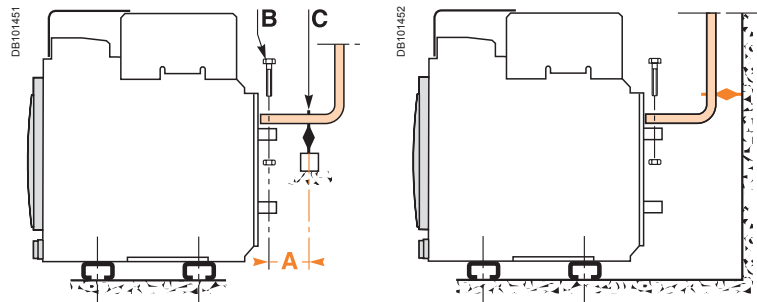
- position the cable lugs before inserting the bolts
- the cables should firmly secured to the framework **E**.



Busbars connections

The busbars should be suitably adjusted to ensure that the connection points are positioned on the terminals before the bolts are inserted **B**.

The connections are held by the support which is solidly fixed to the framework of the switchboard, such that the circuit breaker terminals do not have to support its weight **C**. (This support should be placed close to the terminals).

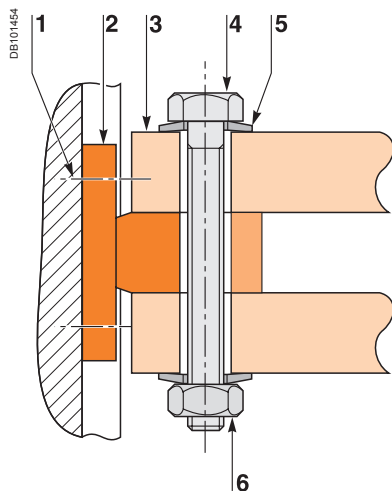


Electrodynamic stresses

The first busbar support or spacer shall be situated within a maximum distance from the connection point of the breaker (see table below). This distance must be respected so that the connection can withstand the electrodynamic stresses between phases in the event of a short circuit.

Maximum distance A between busbar to circuit breaker connection and the first busbar support or spacer with respect to the value of the prospective short-circuit current.

Isc (kA)	30	50	65	80	100	150
Distance A (mm)	350	300	250	150	150	150



- 1 Terminal screw factory-tightened to 16 Nm (NW), 13 Nm (NT).
- 2 Breaker terminal.
- 3 Busbar.
- 4 Bolt.
- 5 Washer.
- 6 Nut.

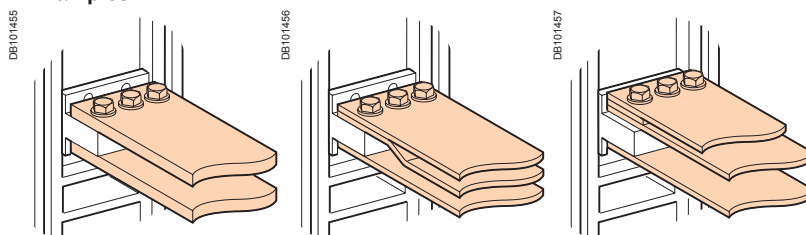
Clamping

Correct clamping of busbars depends amongst other things, on the tightening torques used for the nuts and bolts. Over-tightening may have the same consequences as under-tightening.

For connecting busbars (Cu ETP-NFA51-100) to the circuit breaker, the tightening torques to be used are shown in the table below.

These values are for use with copper busbars and steel nuts and bolts, class 8.8. The same torques can be used with AGS-T52 quality aluminium bars (French standard NFA 02-104 or American National Standard H-35-1).

Examples

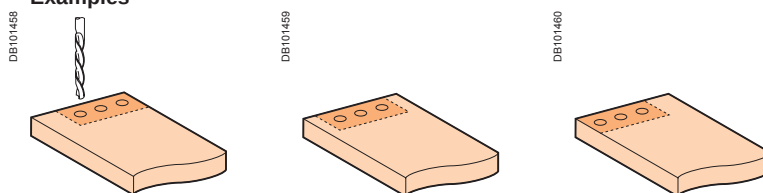


Tightening torques

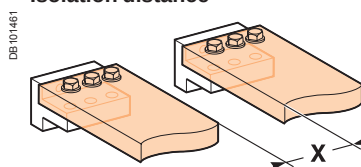
Ø (mm) Nominal	Ø (mm) Drilling	Tightening torques (Nm) with grower or flat washers	Tightening torques (Nm) with contact or corrugatec washers
10	11	37.5	50

Busbar drilling

Examples



Isolation distance

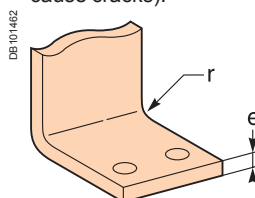


Dimensions (mm)

Ui	X min
600 V	8 mm

Busbar bending

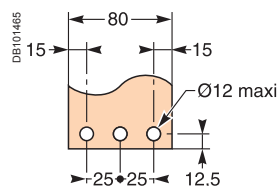
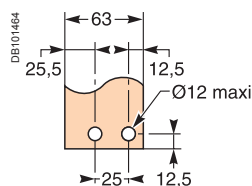
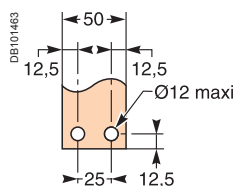
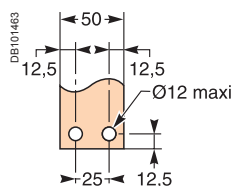
When bending busbars maintain the radius indicated below (a smaller radius would cause cracks).



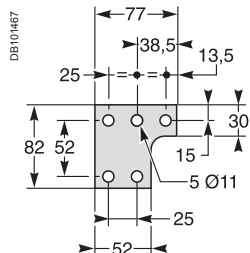
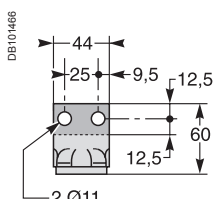
Dimensions (mm)

e	Radius of curvature r Min	Recommended
5	5	7.5
10	15	18 to 20

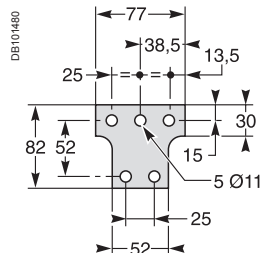
Rear connection



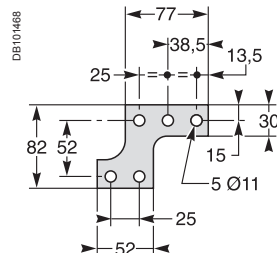
Middle left or middle right spreader for 4P



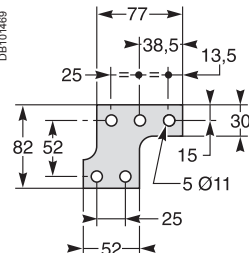
Middle spreader for 3P



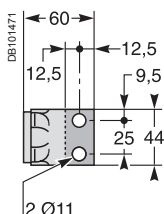
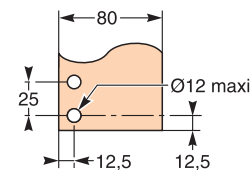
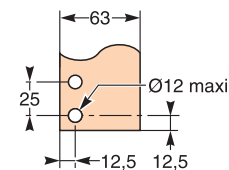
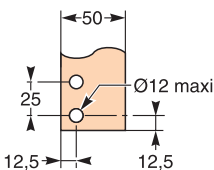
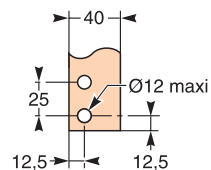
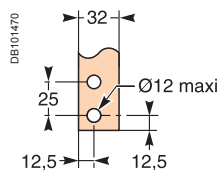
Left or right spreader for 4P



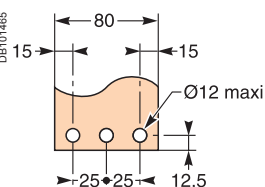
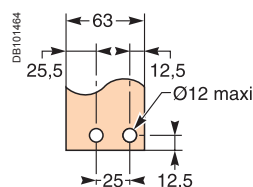
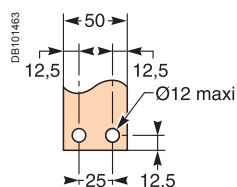
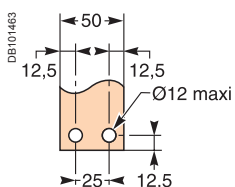
Left or right spreader for 3P



Vertical rear connection

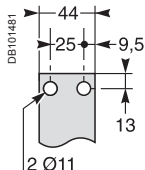


Front connection

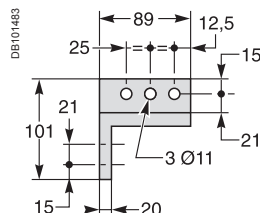
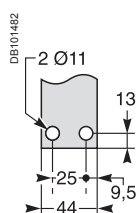


Front connection via vertical connection adapters

Top connection

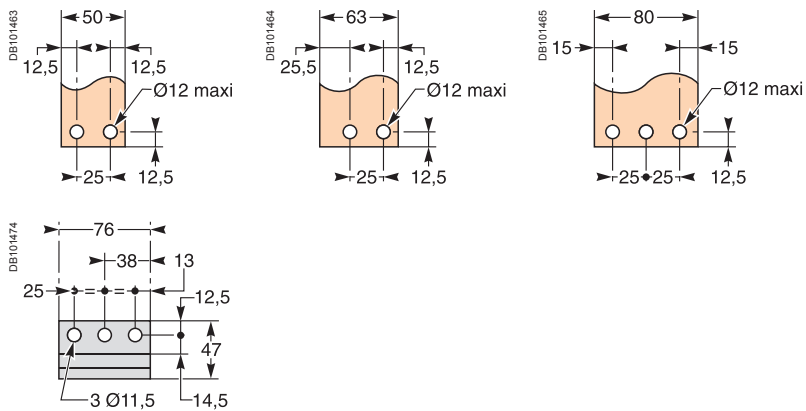


Bottom connection

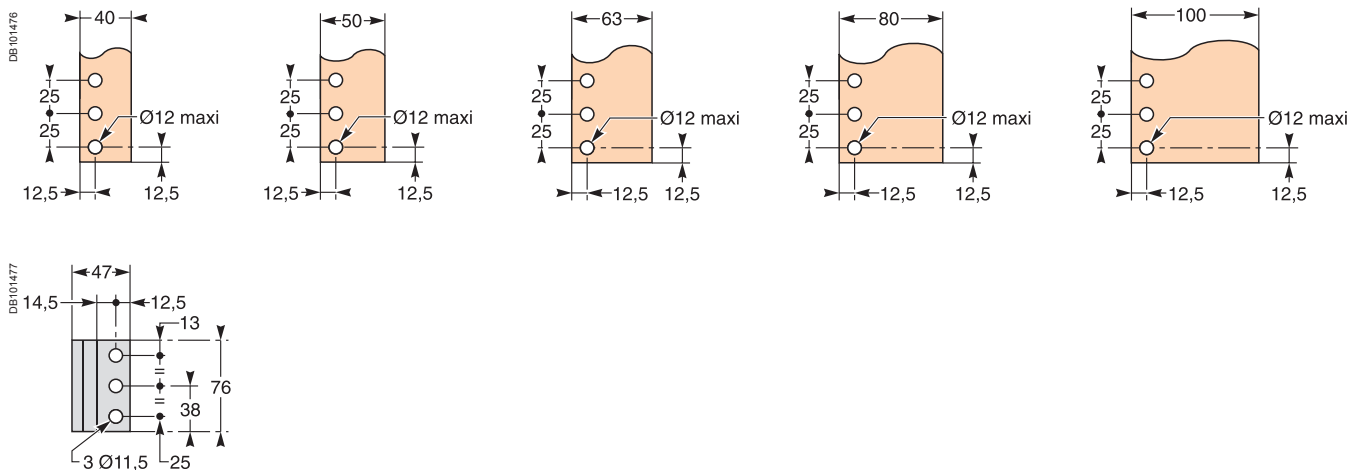


Masterpact NW08 to NW40 NAVY

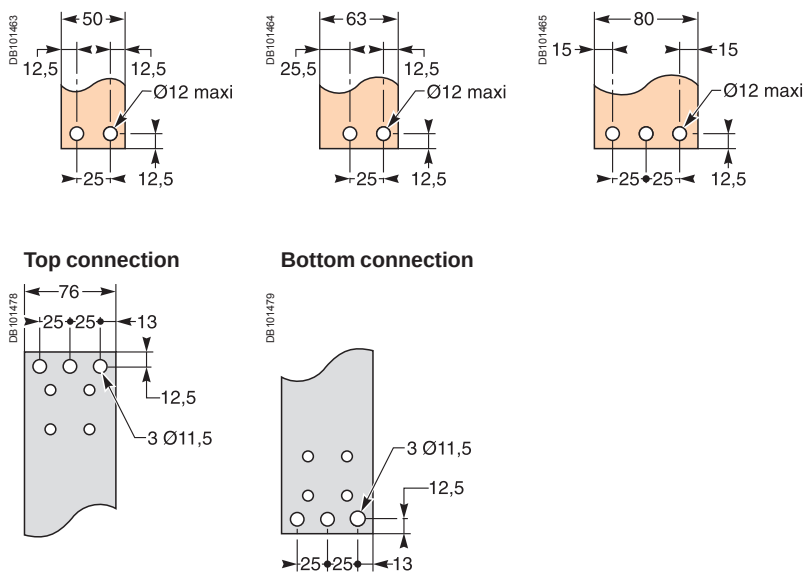
Horizontal rear connection NW08 to NW32 NAVY



Vertical rear connection NW08 to NW32 NAVY



Front connection NW08 to NW32 NAVY

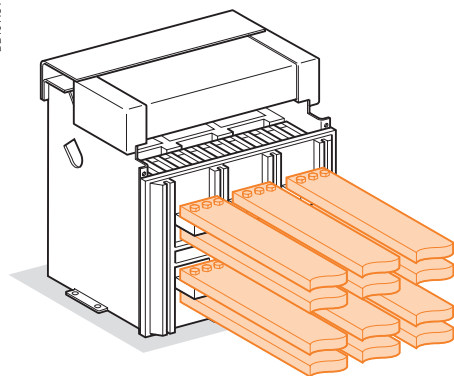


Basis of tables:

- maximum permissible busbars temperature: 100 °C
- T_i : temperature around the circuit breaker and its connection
- busbar material is unpainted copper.

Front or rear horizontal connection

DB101484



Masterpact NAVY	Maximum service current	Ti : 40 °C No. of 5 mm thick bars	No. of 10 mm thick bars	Ti : 50 °C No. of 5 mm thick bars	No. of 10 mm thick bars	Ti : 60 °C No. of 5 mm thick bars	No. of 10 mm thick bars	Ti : 70 °C No. of 5 mm thick bars	No. of 10 mm thick bars
NT06 NAVY	630	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10
NT08 or NW08 NAVY	800	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.63 x 10	2b.50 x 5	1b.63 x 10
NT10 or NW10 NAVY	1000	3b.50 x 5	1b.63 x 10	3b.50 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
NT12 or NW12 NAVY	1250	3b.50 x 5	2b.40 x 10	3b.50 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
		2b.80 x 5	2b.40 x 10	2b.80 x 5					
NT16 or NW16 NAVY	1400	3b.63 x 5	2b.40 x 10	3b.63 x 5	2b.50 x 10	3b.80 x 5	2b.63 x 10	3b.80 x 5	2b.63 x 10
NT16 or NW16 NAVY	1600	3b.80 x 5	2b.63 x 10	3b.80 x 5	2b.63 x 10	3b.80 x 5	3b.50 x 10	3b.80 x 5	3b.50 x 10
NW20 NAVY	1800	3b.80 x 5	2b.63 x 10	3b.80 x 5	2b.63 x 10	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10
NW20 NAVY	2000	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10	3b.100 x 5	3b.63 x 10	3b.100 x 5	3b.63 x 10
NW25 NAVY	2200	4b.100 x 5	2b.80 x 10	4b.100 x 5	2b.80 x 10	4b.100 x 5	2b.100 x 10	5b.80 x 5	2b.100 x 10
NW25 NAVY	2500	4b.100 x 5	2b.100 x 10	4b.100 x 5	2b.100 x 10	4b.100 x 5	3b.80 x 10	4b.100 x 5	3b.80 x 10
NW32 NAVY	2800	4b.100 x 5	3b.80 x 10	4b.100 x 5	3b.80 x 10	5b.100 x 5	3b.100 x 10	5b.100 x 5	3b.100 x 10
NW32 NAVY	3000	5b.100 x 5	3b.80 x 10	6b.100 x 5	3b.100 x 10	8b.100 x 5	4b.80 x 10	6b.100 x 5	4b.80 x 10
NW32 NAVY	3200	6b.100 x 5	3b.100 x 10	8b.100 x 5	3b.100 x 10		4b.100 x 10		4b.100 x 10
NW40 NAVY	3800		4b.100 x 10		5b.100 x 10		5b.100 x 10		5b.100 x 10

With Masterpact NT NAVY, it is recommended to use 50 mm wideness bars (see "Recommended busbars drilling").

Example

Conditions:

- drawout version
- horizontal busbars
- T_i : 50 °C
- service current: 1800 A.

Solution:

For $T_i = 50$ °C, use an NW20 NAVY which can be connected with three 80 x 5 mm bars or two 63 x 10 mm bars.

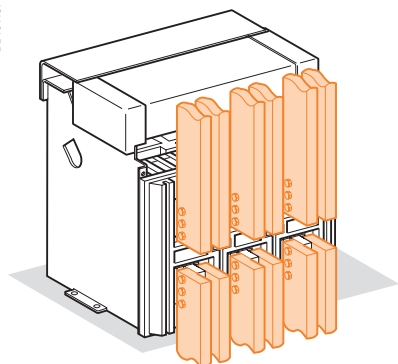
Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Basis of tables:

- maximum permissible busbars temperature: 100 °C
- T_i : temperature around the circuit breaker and its connection
- busbar material is unpainted copper.

Rear vertical connection

DB10487



Masterpact NAVY	Maximum service current	Ti : 40 °C		Ti : 50 °C		Ti : 60 °C		Ti : 70 °C	
		No. of 5 mm thick bars	No. of 10 mm thick bars	No. of 5 mm thick bars	No. of 10 mm thick bars	No. of 5 mm thick bars	No. of 10 mm thick bars	No. of 5 mm thick bars	No. of 10 mm thick bars
NT06 NAVY	630	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10
NT08 or NW08 NAVY	800	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10
NT10 or NW10 NAVY	1000	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.63 x 5	1b.63 x 10	2b.63 x 5	1b.63 x 10
NT12 or NW12 NAVY	1250	2b.63 x 5	1b.63 x 10	3b.50 x 5	2b.40 x 10	3b.50 x 5	2b.40 x 10	3b.63 x 5	2b.40 x 10
NT16 or NW16 NAVY	1400	2b.80 x 5	1b.80 x 10	2b.80 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
NT16 or NW16 NAVY	1600	3b.63 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10	3b.80 x 5	2b.63 x 10	3b.80 x 5	2b.63 x 10
NW20 NAVY	1800	2b.100 x 5	1b.80 x 10	2b.100 x 5	2b.50 x 10	3b.80 x 5	2b.63 x 10	3b.80 x 5	2b.63 x 10
NW20 NAVY	2000	3b.100 x 5	2b.63 x 10	3b.100 x 5	2b.63 x 10	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10
NW25 NAVY	2200	3b.100 x 5	2b.63 x 10	3b.100 x 5	2b.63 x 10	3b.100 x 5	2b.80 x 10	4b.100 x 5	2b.100 x 10
NW25 NAVY	2500	4b.100 x 5	2b.80 x 10	4b.100 x 5	2b.80 x 10	4b.100 x 5	3b.80 x 10	4b.100 x 5	3b.80 x 10
NW32 NAVY	2800	4b.100 x 5	2b.100 x 10	4b.100 x 5	2b.100 x 10	4b.100 x 5	3b.80 x 10	4b.125 x 5	3b.80 x 10
NW32 NAVY	3000	5b.100 x 5	3b.80 x 10	6b.100 x 5	3b.100 x 10	5b.100 x 5	4b.80 x 10	5b.125 x 5	4b.80 x 10
NW32 NAVY	3200	6b.100 x 5	3b.100 x 10	6b.100 x 5	3b.100 x 10		4b.100 x 10		4b.100 x 10
NW40 NAVY	3800		4b.100 x 10		4b.100 x 10		4b.100 x 10		4b.100 x 10

Example

Conditions:

- drawout version
- vertical connections
- T_i : 40 °C
- service current: 1100 A.

Solution :

For $T_i = 40$ °C use an NT12 NAVY or NW12 NAVY which can be connected with two 63 x 5 mm bars or with one 63 x 10 mm bar.

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Temperature derating Power dissipation and input / output resistance

Temperature derating

The table below indicates the maximum current rating, for each connection type, as a function of T_i around the circuit breaker and the busbars.
Circuit breakers with mixed connections have the same derating as horizontally connected breakers.
For T_i greater than 70 °C, consult us.
 T_i : temperature around the circuit breaker and its connection.

Version	Drawout													
	Front or rear horizontal							Rear vertical						
Connection														
Temp. T_i	40	45	50	55	60	65	70	40	45	50	55	60	65	70
NT06 NAVY H1/H2/L1	630							630						
NT08 NAVY H1/H2/L1	800							800						
NT10 NAVY H1/H2/L1	1000							1000					990	850
NT12 NAVY H1/H2	1250							1250						
NT16 NAVY H1/H2	1600		1520	1480	1430	1380	1330	1600		1560	1510	1450	1400	1250
NW08 NAVY N/H/L	800							800						
NW10 NAVY N/H/L	1000							1000						
NW12 NAVY N/H/L	1250							1250						
NW16 NAVY N/H/L	1600						1500	1600						
NW20 NAVY H1/H2/H3	2000			1980	1890	1790	1690	2000						1750
NW25 NAVY H1/H2/H3	2500					2400	2300	2500						
NW32 NAVY H1/H2/H3	3200		3100	3000	2900	2800	2700	3200						3150
NW40 NAVY H1/H2/H3	4000		3900	3750	3650	3500	3350	4000			3850	3700	3550	3450

Power dissipation and input / output resistance

Total power dissipation is the value measured at I_N , 50/60 Hz, for a 3 pole or 4 pole breaker (values above the power $P = 3RI^2$).
The resistance between input / output is the value measured per pole (cold state).

Version	Drawout	
	Power dissipation (Watts)	Input/output resistance (μohm)
NT06 NAVY H1/H2/L1	55/115 (H1/L1)	38/72
NT08 NAVY H1/H2/L1	90/140 (H1/L1)	38/72
NT10 NAVY H1/H2/L1	150/230 (H1/L1)	38/72
NT12 NAVY H1/H2	250	36
NT16 NAVY H1/H2	460	36
NW08 NAVY N1	137	42
NW08 NAVY H	100	30
NW10 NAVY N1	220	42
NW10 NAVY H	150	30
NW12 NAVY N1	330	42
NW12 NAVY H	230	27
NW16 NAVY N1	480	37
NW16 NAVY H	390	27
NW20 NAVY H	470	27
NW25 NAVY H1/H2	600	19
NW32 NAVY H1/H2	670	13
NW40 NAVY H1/H2	900	11

Derating in switchboards

Factors affecting switchboard design

The temperature around the circuit breaker and its connections:

This is used to define the type of circuit breaker to be used and its connection arrangement.

Vents at the top and bottom of the cubicles:

Vents considerably reduce the temperature inside the switchboard, but must be designed so as to respect the degree of protection provided by the enclosure. For weatherproof heavy-duty cubicles, a forced ventilation system may be required.

The heat dissipated by the devices installed in the switchboard:

This is the heat dissipated by the circuit breakers under normal conditions (service current).

The size of the enclosure:

This determines the volume for cooling calculations.

Switchboard installation mode:

Free-standing, against a wall, etc.

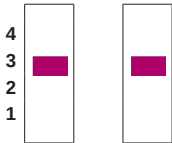
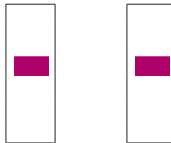
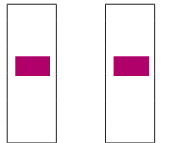
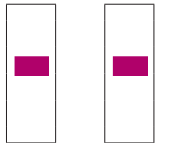
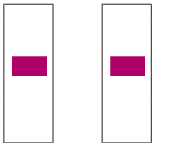
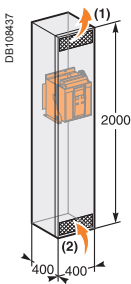
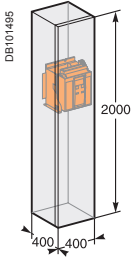
Horizontal partitions:

Partitions can obstruct air circulation within the enclosure.

Basis of tables

- Switchboard dimensions
- Number of circuit-breakers installed
- Type of breaker connections
- Drawout versions
- Ambient temperature outside of the switchboard: T_a (IEC 60439-1).

Masterpact NT06-16 NAVY H1/H2/L1 (switchboard 2000 x 400 x 400) - area of outlet vents: 150 cm²

Type	NT06 NAVY H1/H2/L1	NT08 NAVY H1/H2/L1	NT10 NAVY H1/H2/L1	NT12 NAVY H1/H2	NT16 NAVY H1/H2
Switchboard composition					
Connection type					
Busbar dimensions (mm)	2b. 40 x 5	2b. 50 x 5	3b. 63 x 5	3b. 63 x 5 3b. 50 x 5	3b. 80 x 5 3b. 63 x 5
Ventilated switchboard (→ IP31)					
$T_a = 35^\circ\text{C}$	4 3 630 630 2 1	4 3 800 800 2 1	H1/L1 4 3 1000/1000 1000/1000 2 1	H1/L1 4 3 1250 1250 2 1	4 3 1400 1520 2 1
$T_a = 45^\circ\text{C}$	4 3 630 630 2 1	4 3 800 800 2 1	4 3 1000/950 1000/1000 2 1	4 3 1250 1250 2 1	4 3 1330 1440 2 1
$T_a = 55^\circ\text{C}$	4 3 630 630 2 1	4 3 800 800 2 1	4 3 1000/890 1000/960 2 1	4 3 1200 1250 2 1	4 3 1250 1340 2 1
Non ventilated switchboard (→ IP54)					
$T_a = 35^\circ\text{C}$	4 3 630 630 2 1	4 3 800 800 2 1	4 3 1000/960 1000/1000 2 1	4 3 1250 1250 2 1	4 3 1330 1400 2 1
$T_a = 45^\circ\text{C}$	4 3 630 630 2 1	4 3 800 800 2 1	4 3 1000/910 1000/980 2 1	4 3 1220 1250 2 1	4 3 1260 1330 2 1
$T_a = 55^\circ\text{C}$	4 3 630 630 2 1	4 3 800 800 2 1	4 3 1000/860 1000/930 2 1	4 3 1150 1230 2 1	4 3 1200 1260 2 1

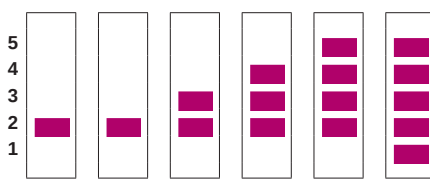
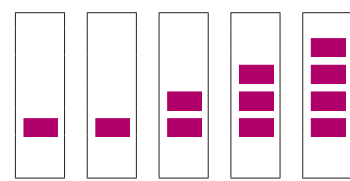
(1) Area of outlet vents: 150 cm².

(2) Area of inlet vents: 150 cm².

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.

Masterpact NAVY NT06-08 H1/H2/L1 (switchboard 2300 x 1100 x 500) - area of outlet vents: 300 cm²

Type	NT06 NAVY H1/H2/L1						NT08 NAVY H1/H2/L1				
Switchboard composition											
Connection type											
Busbar dimensions (mm)	2b. 40 x 5						2b. 50 x 5				

DB108444

Ventilated switchboard (→ IP31)

2300

300 600 200

500

(1) (1)

(2) (2)

$T_a = 35\text{ °C}$

5				630	630							800	
4				630	630	630						800	800
3				630	630	630	630				800	800	800
2	630	630	630	630	630	630			800	800	800	800	800
1													

$T_a = 45\text{ °C}$

5				630	630							800	
4				630	630	630						800	800
3				630	630	630	630				800	800	800
2	630	630	630	630	630	630			800	800	800	800	800
1													

$T_a = 55\text{ °C}$

5				630	630							800	
4				630	630	630						800	800
3				630	630	630	630				800	800	800
2	630	630	630	630	630	630			800	800	800	800	800
1													

(1) Area of outlet vents: 300 cm².

(2) Area of inlet vents: 300 cm².


Non ventilated switchboard
 (→ IP54)

$T_a = 35\text{ °C}$	5				630	630							800	
	4				630	630	630						800	800
	3				630	630	630	630				800	800	800
	2	630	630	630	630	630	630	630		800	800	800	800	800
	1													
$T_a = 45\text{ °C}$	5				630	630							800	
	4				630	630	630						800	800
	3				630	630	630	630				800	800	800
	2	630	630	630	630	630	630	630		800	800	800	800	800
	1													
$T_a = 55\text{ °C}$	5				630	630							800	
	4				630	630	630						800	800
	3				630	630	630	630				800	800	800
	2	630	630	630	630	630	630	630		800	800	800	800	800
	1													

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.

Masterpact NAVY NT10-16 H1/H2/L1 (switchboard 2300 x 1100 x 500) - area of outlet vents: 300 cm²

Type	NT10 NAVY H1/H2/L1				NT12 NAVY H1/H2				NT16 NAVY H1/H2			
Switchboard composition												
Connection type												
Busbar dimensions (mm)	3b. 63 x 5				3b. 63 x 5				3b. 80 x 5			
	2b. 63 x 5				3b. 50 x 5				3b. 63 x 5			
Ventilated switchboard (→ IP31)	5 H1/L1	H1/L1	H1/L1	H1/L1								
$T_a = 35\text{ °C}$	4	1000/1000			1250							
	3	1000/1000 1000/1000			1250 1250 1250 1250 1500							
	2	1000/1000	1000/1000	1000/1000	1000/1000	1250	1250	1250	1250	1460	1600	1550
	1											
$T_a = 45\text{ °C}$	5											
	4	1000/1000			1250							
	3	1000/1000 1000/1000			1250 1250 1250 1250 1420							
	2	1000/960	1000/1000	1000/1000	1000/1000	1250	1250	1250	1250	1400	1500	1480
$T_a = 55\text{ °C}$	5											
	4	1000/920			1250							
	3	1000/950 1000/930			1250 1250 1250 1250 1330							
	2	1000/900	1000/1000	1000/970	1000/950	1250	1250	1250	1250	1300	1400	1370
Non ventilated switchboard (→ IP54)	5											
	4	1000/950			1250							
	3	1000/1000 1000/960			1250 1250 1250 1250 1370							
	2	1000/1000	1000/1000	1000/1000	1000/970	1250	1250	1250	1250	1400	1500	1400
$T_a = 35\text{ °C}$	5											
	4	1000/900			1180							
	3	1000/950 1000/910			1250 1190 1300							
	2	1000/950	1000/1000	1000/960	1000/930	1250	1250	1250	1220	1350	1430	1320
$T_a = 45\text{ °C}$	5											
	4	1000/850			1120							
	3	1000/900 1000/860			1200 1130 1210							
	2	1000/880	1000/970	1000/910	1000/870	1210	1250	1210	1150	1250	1350	1250
$T_a = 55\text{ °C}$	5											
	4	1000/850			1120							
	3	1000/900 1000/860			1200 1130 1210							
	2	1000/880	1000/970	1000/910	1000/870	1210	1250	1210	1150	1250	1350	1250

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.

Masterpact NW08-10 NAVY N/H (switchboard 2300 x 800 x 900) - area of outlet vents: 350 cm²

Type	NW08 NAVY N/H					NW10 NAVY N/H			
Switchboard composition									
Connection type									
Busbar dimensions (mm)	2b. 50 x 5					3b. 63 x 5 2b. 63 x 5			
Ventilated switchboard (→ IP31)									
 (1) Area of outlet vents: 350 cm ² . (2) Area of inlet vents: 350 cm ² .	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
$T_a = 35\text{ °C}$	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
$T_a = 45\text{ °C}$	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
$T_a = 55\text{ °C}$	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
Non ventilated switchboard (→ IP54)									
	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
$T_a = 35\text{ °C}$	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
$T_a = 45\text{ °C}$	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000
$T_a = 55\text{ °C}$	4				800				
	3				800	800			1000
	2				800	800	800		1000
	1	800	800	800	800	800		1000	1000
	1	800	800	800	800	800	1000	1000	1000

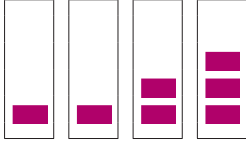
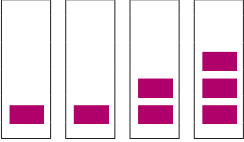
(1) Area of outlet vents: 350 cm².

(2) Area of inlet vents: 350 cm².

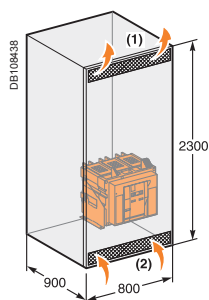
Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.

Masterpact NW12-16 NAVY N/H (switchboard 2300 x 800 x 900) - area of outlet vents: 350 cm²

Type	NW12 NAVY N1				NW12 NAVY H				NW16 NAVY N1			NW16 NAVY H		
Switchboard composition														
Connection type														
Busbar dimensions (mm)	3b. 63 x 5 3b. 50 x 5				3b. 63 x 5 3b. 50 x 5				3b. 80 x 5 3b. 63 x 5			3b. 80 x 5 3b. 63 x 5		

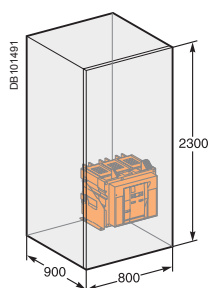
Ventilated switchboard (→ IP31)



$T_a = 35\text{ °C}$	4													
	3			1250				1250						
	2			1250	1250			1250	1250			1600		1600
	1	1250	1250	1250	1250		1250	1250	1250	1250	1550	1600	1600	1600
$T_a = 45\text{ °C}$	4													
	3			1250				1250						
	2			1250	1250			1250	1250			1500		1600
	1	1250	1250	1250	1250		1250	1250	1250	1250	1470	1600	1600	1600
$T_a = 55\text{ °C}$	4													
	3			1250				1250						
	2			1250	1250			1250	1250			1380		1470
	1	1250	1250	1250	1250		1250	1250	1250	1250	1380	1500	1500	1520

- (1) Area of outlet vents: 350 cm².
(2) Area of inlet vents: 350 cm².

Non ventilated switchboard (→ IP54)



$T_a = 35\text{ °C}$	4													
	3			1240				1250						
	2			1250	1250			1250	1250			1425		1600
	1	1250	1250	1250	1250		1250	1250	1250	1250	1440	1550	1550	1600
$T_a = 45\text{ °C}$	4													
	3			1170				1250						
	2			1210	1210			1250	1250			1360		1500
	1	1200	1250	1250	1250		1250	1250	1250	1250	1360	1470	1470	1500
$T_a = 55\text{ °C}$	4													
	3			1100				1250						
	2			1140	1170			1250	1250			1280		1400
	1	1130	1200	1200	1200		1250	1250	1250	1250	1280	1380	1380	1400

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.

Masterpact NW20-40 NAVY N/H (switchboard 2300 x 800 x 900) - area of outlet vents: 350 cm²

Type	NW20 NAVY H1/H2			NW25 NAVY H1/2		NW32 NAVY H1/2		NW40 NAVY H1/2	
Switchboard composition									
Connection type									
Busbar dimensions (mm)	3b. 100 x 5			4b. 100 x 5		3b. 100 x 10		4b. 100 x 10	
Ventilated switchboard (→ IP31)									
$T_a = 35\text{ °C}$	4								
	3			2000					
	2	2000	2000	2000	2375	2500	3040	3200	3320 3700
	1								
$T_a = 45\text{ °C}$	4								
	3			2000					
	2	2000	2000	2000	2250	2380	2880	3100	3160 3500
	1								
$T_a = 55\text{ °C}$	4								
	3			2000					
	2	2000	2000	2000	2100	2250	2690	2900	2960 3280
	1								
(1) Area of outlet vents: 350 cm². (2) Area of inlet vents: 350 cm².									
Non ventilated switchboard (→ IP54)									
$T_a = 35\text{ °C}$	4								
	3			2000					
	2	2000	2000	2000	2125	2275	2650	2850	3040 3320
	1								
$T_a = 45\text{ °C}$	4								
	3			1900					
	2	1900	1960	1960	2000	2150	2550	2700	2880 3120
	1								
$T_a = 55\text{ °C}$	4								
	3			1780					
	2	1800	1920	1920	1900	2020	2370	2530	2720 2960
	1								

(1) Area of outlet vents: 350 cm².
(2) Area of inlet vents: 350 cm².

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

The values indicated for the cross-sectional area of the vents should be considered as general indications only given that the thermal performance of a switchboard with natural ventilation depends on many parameters, e.g. shape, porosity and location of vents and air flow within the switchboard.





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Training

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

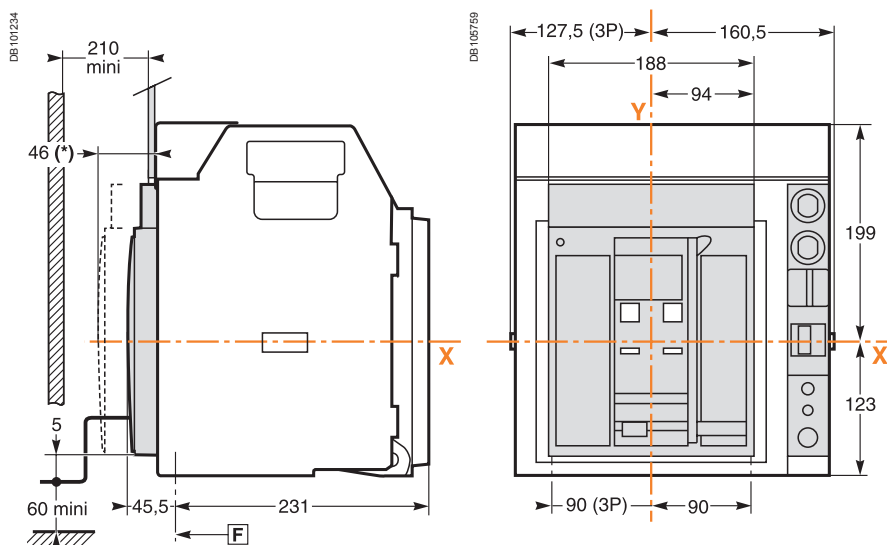
The training catalogue includes beginner's courses in electrical distribution, knowledge of MV and LV switchgear, operation and maintenance of installations, design of LV installations to give but a few examples.



<i>Presentation</i>	<i>1</i>
<i>Functions and characteristics</i>	<i>A-1</i>
<i>Installation recommendations</i>	<i>B-1</i>
NT06 to NT16 NAVY circuit breakers	C-2
Drawout device	C-2
NW08 to NW32 NAVY circuit breakers	C-6
Drawout device	C-6
NW40 NAVY circuit breakers	C-8
Drawout device	C-8
NT/NW NAVY accessories	C-10
NT/NW NAVY external modules	C-11
<i>Electrical diagrams</i>	<i>D-1</i>
<i>Additional characteristics</i>	<i>E-1</i>
<i>Catalogue numbers and order form</i>	<i>F-1</i>

NT06 to NT16 NAVY circuit breakers Drawout device

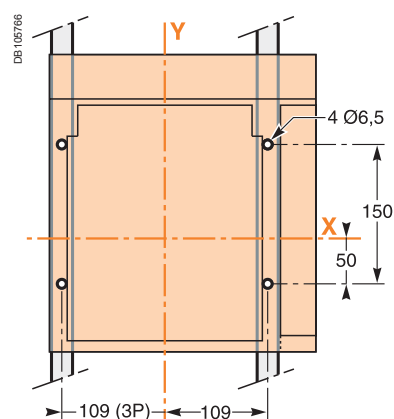
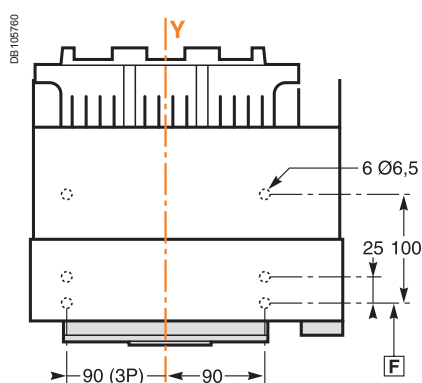
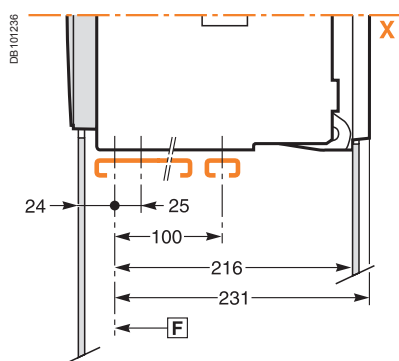
Dimensions



(*) Disconnected position.

Bottom mounting (on base plate or rails)

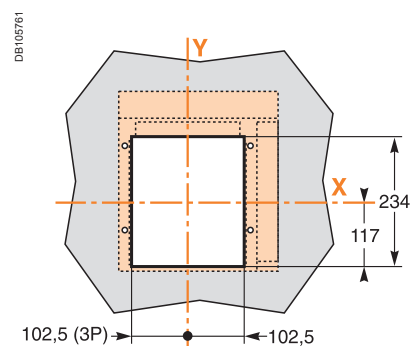
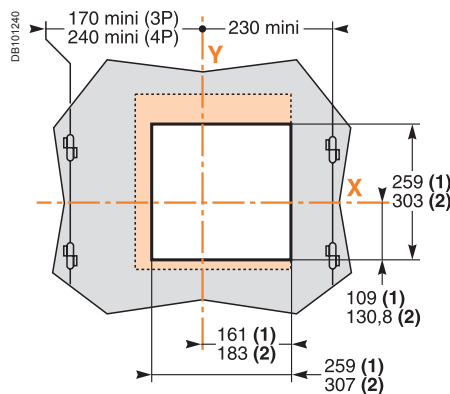
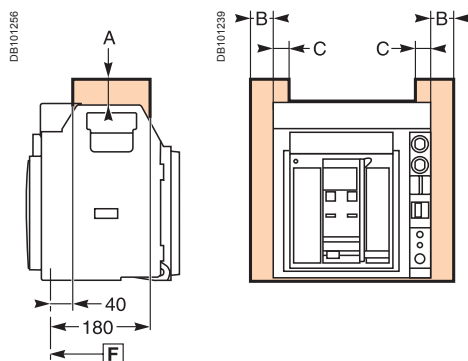
Rear mounting detail (on upright or backplate)



Safety clearances

Door cutout

Rear panel cutout



For voltages < 690 V.

	Parts		
	Insulated	Metal	Energised
A	0	0	30
B	10	10	60
C	0	0	30

F: datum.

(1) Without escutcheon.

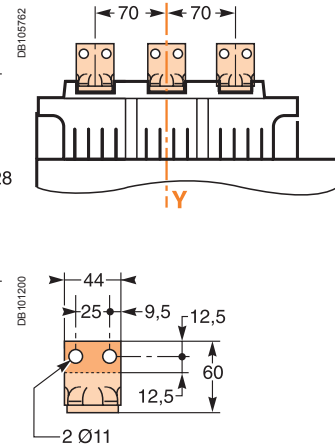
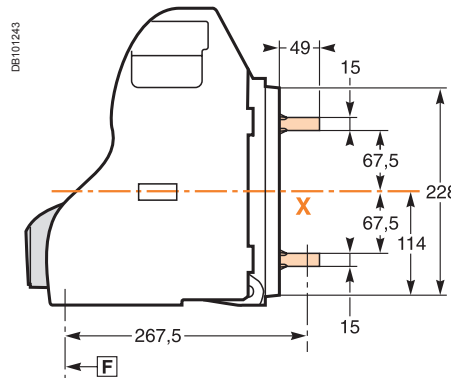
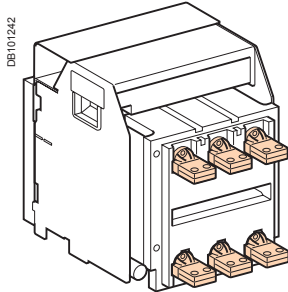
(2) With escutcheon.

Note: X and Y are the symmetry planes for a 3-pole device.

Connections

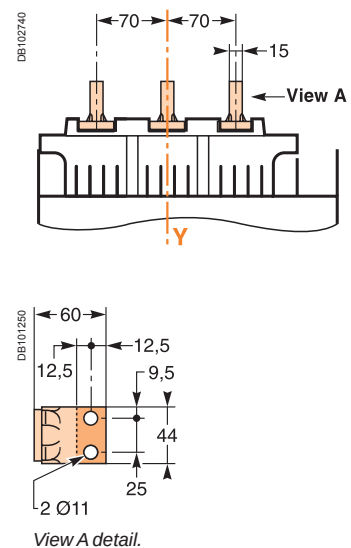
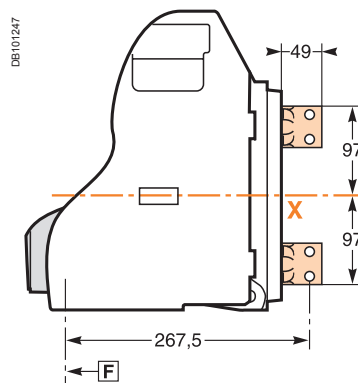
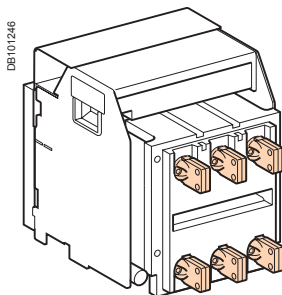
Horizontal rear connection

Detail



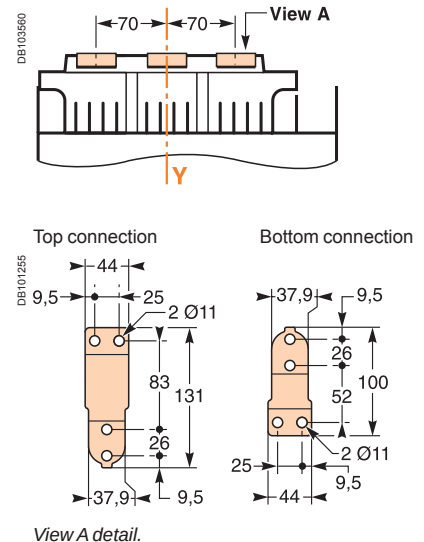
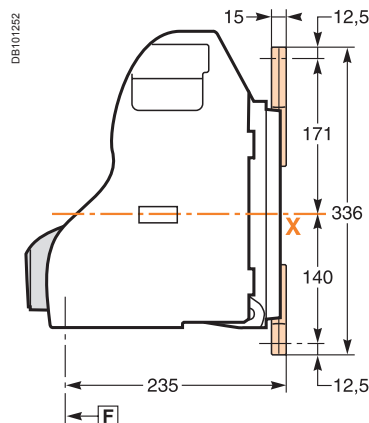
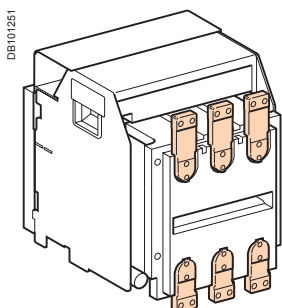
Vertical rear connection

Detail



Front connection

Detail



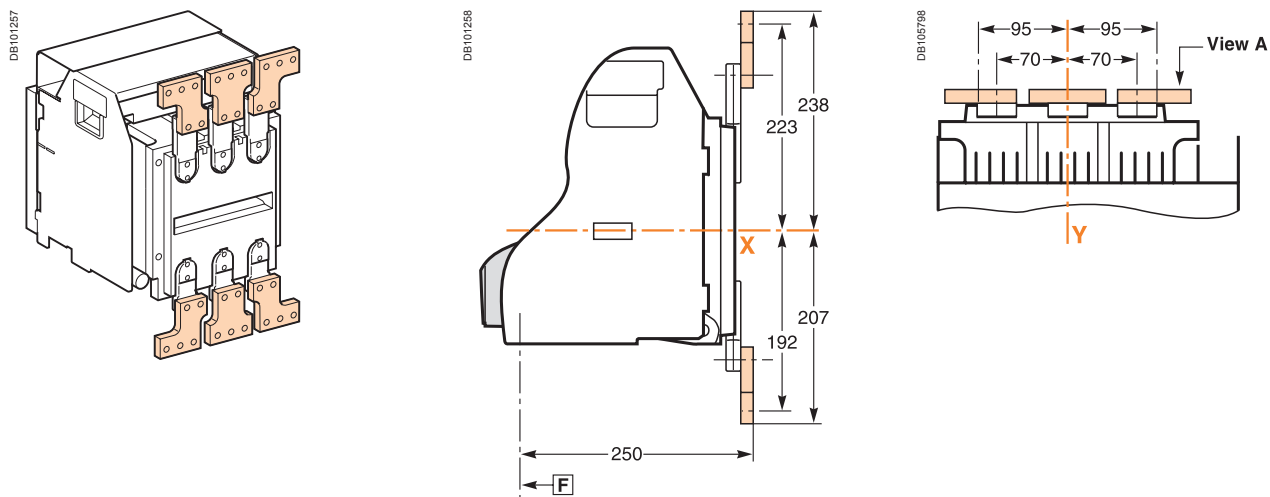
Note: recommended connection screws: **M10** class 8.8.
Tightening torque: **50 Nm** with contact washer.

NT06 to NT16 NAVY circuit breakers

Drawout device

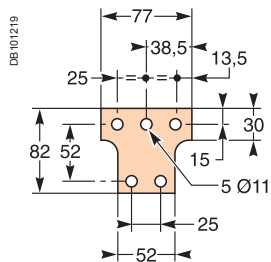
Connections

Front connection with spreaders

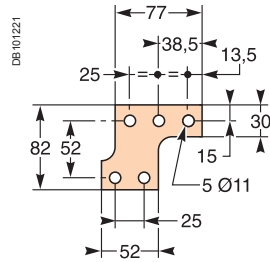


Spreader detail

Middle spreader for 3P.



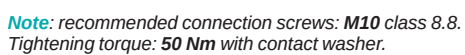
Left or right spreader for 3P.



F : datum.

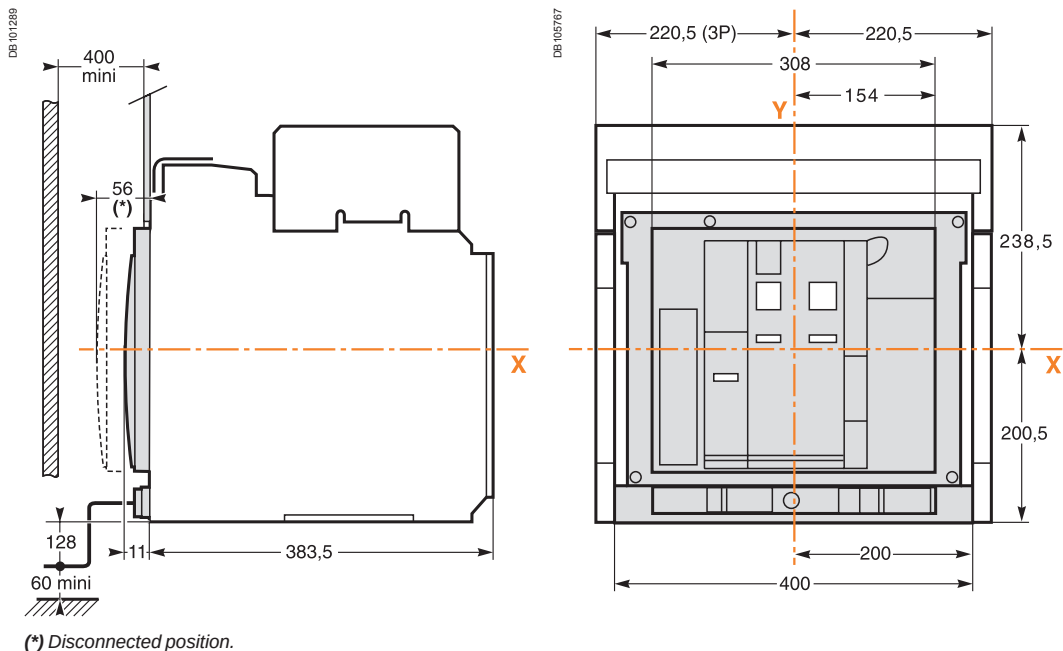
Note: X and Y are the symmetry planes for a 3-pole device.

Front connection via vertical connection adapters fitted with cable-lug adapters



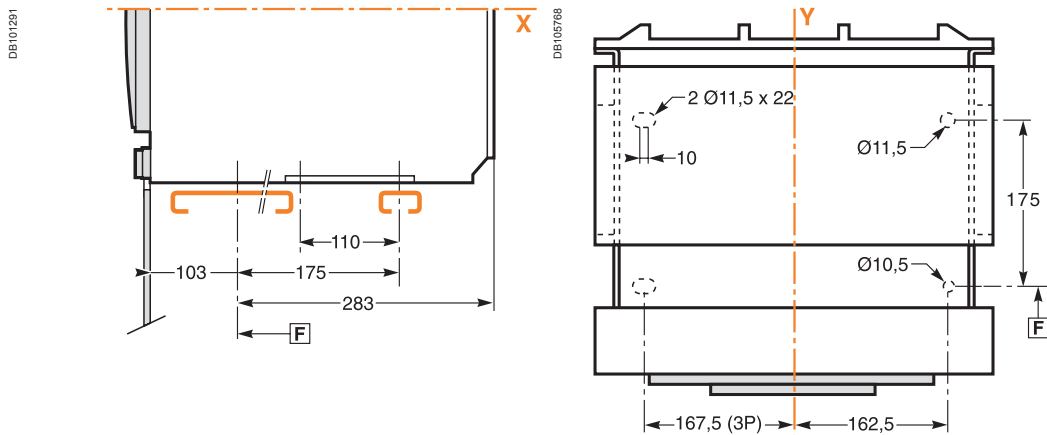
NW08 to NW32 NAVY circuit breakers Drawout device

Dimensions



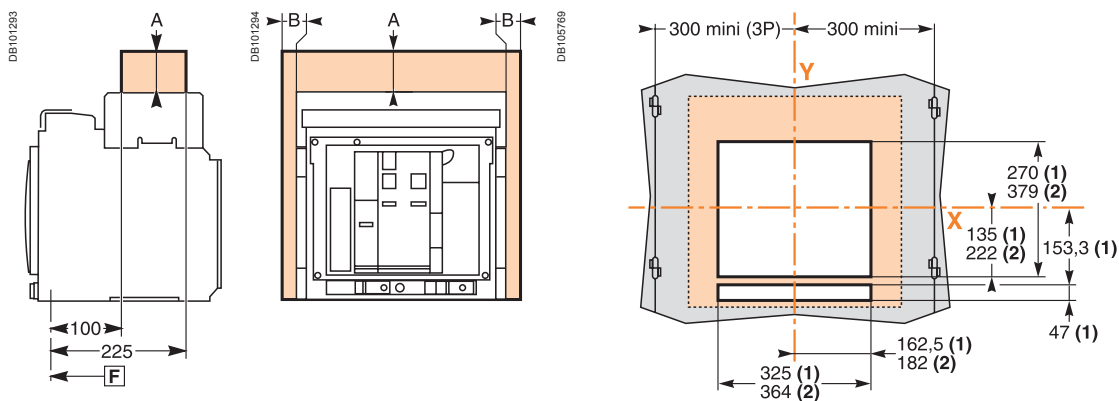
Mounting on base plate or rails

Mounting detail



Safety clearances

Door cutout



	Insulated parts	Metal parts	Energised parts
A	0	0	0
B	0	0	60

F: datum.

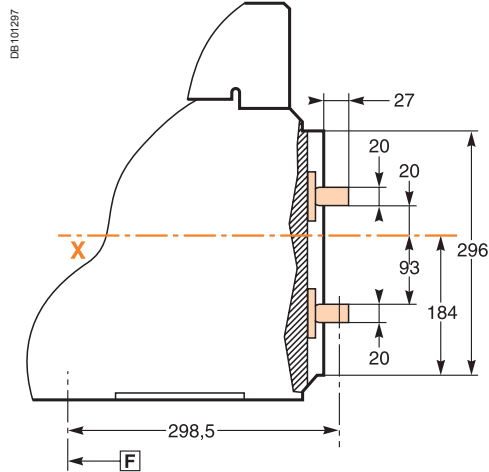
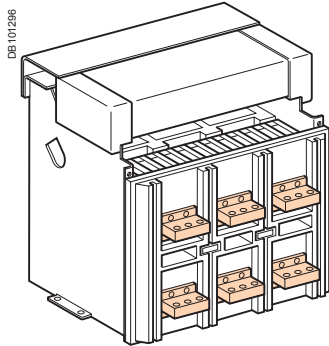
(1) Without escutcheon.

(2) With escutcheon.

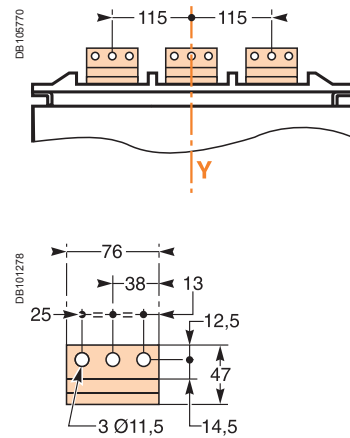
Note: X and Y are the symmetry planes for a 3-pole device.

Connections

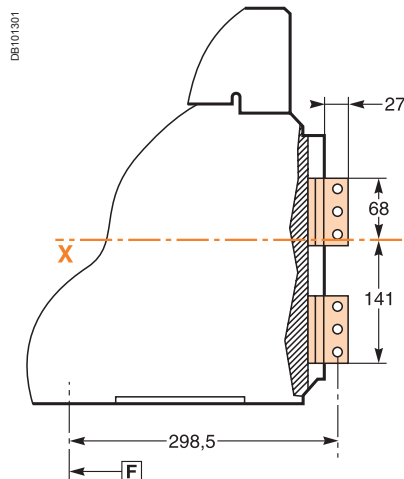
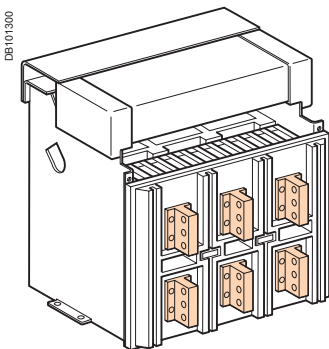
Horizontal rear connection



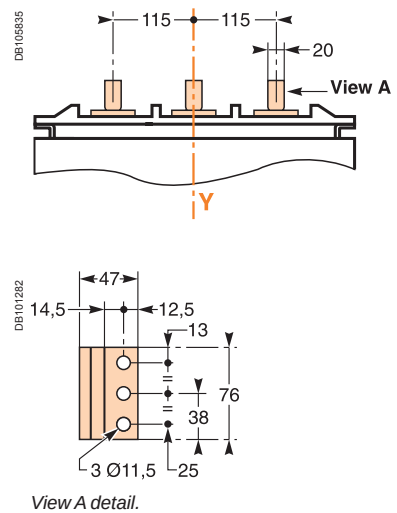
Detail



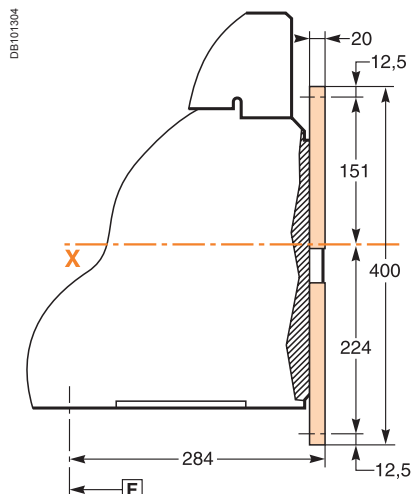
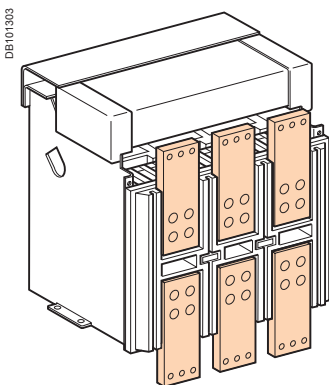
Vertical rear connection



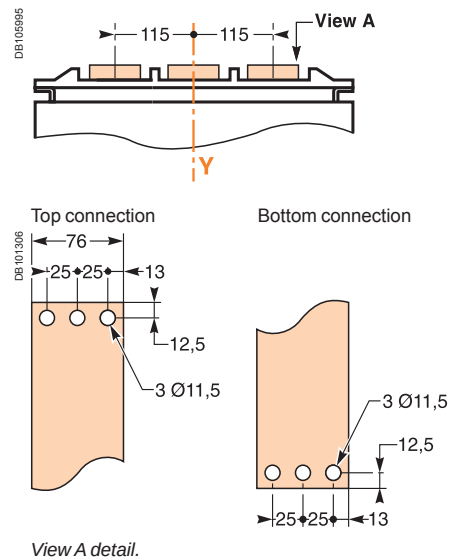
Detail



Front connection

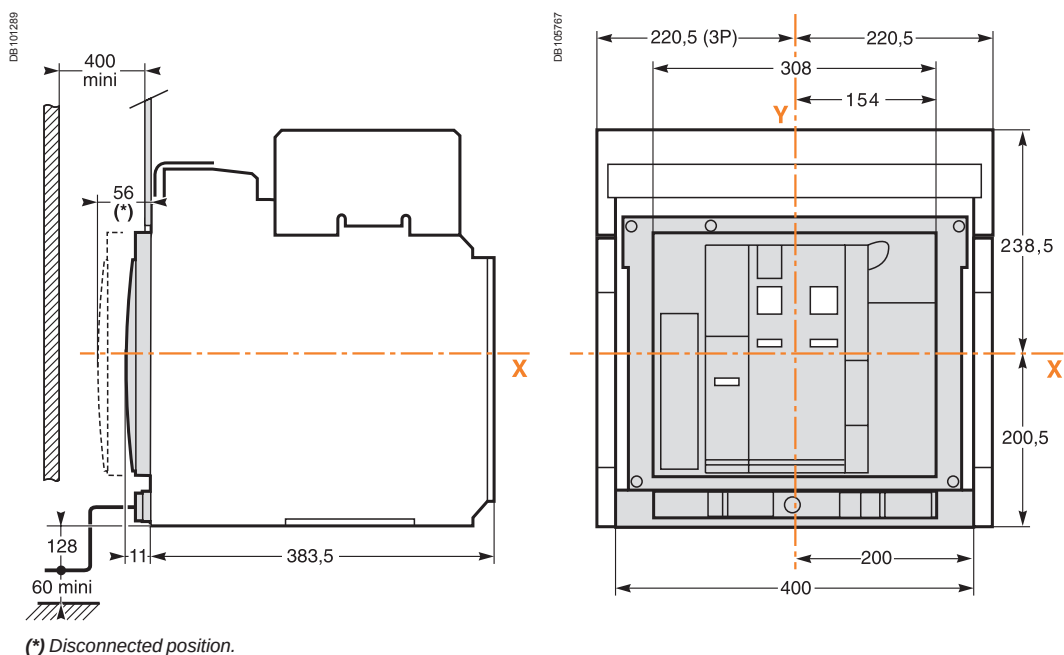


Detail



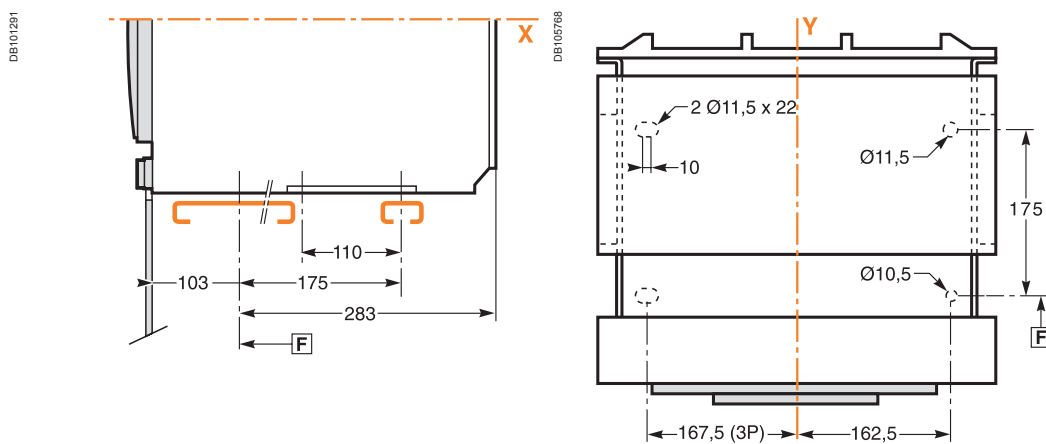
Note: recommended connection screws: **M10** class 8.8.
Tightening torque: **50 Nm** with contact washer.

Dimensions



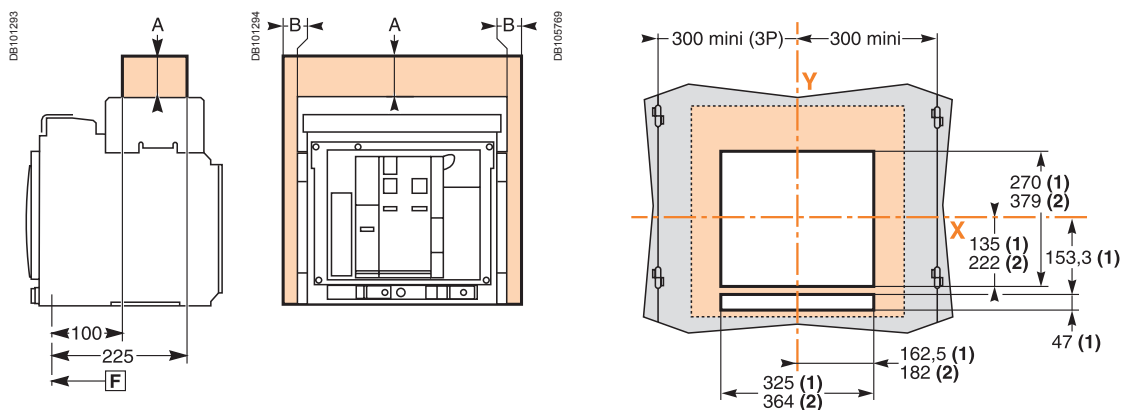
Mounting on base plate or rails

Mounting detail



Safety clearances

Door cutout



	Insulated parts	Metal parts	Energised parts
A	0	0	0
B	0	0	60

F : datum.

(1) Without escutcheon.

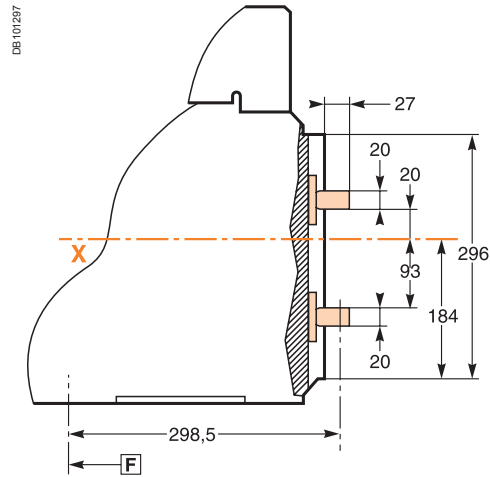
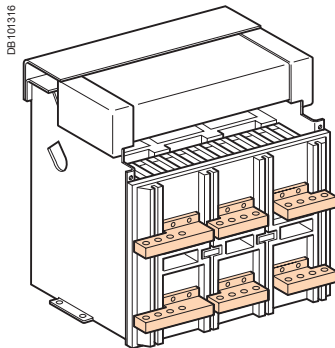
(2) With escutcheon.

Note: X and Y are the symmetry planes for a 3-pole device.

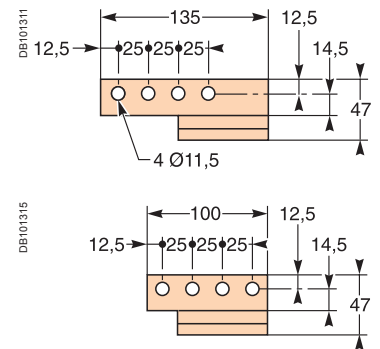
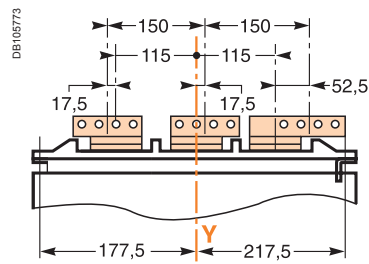
The safety clearances take into account the space required to remove the arc chutes.

Connections

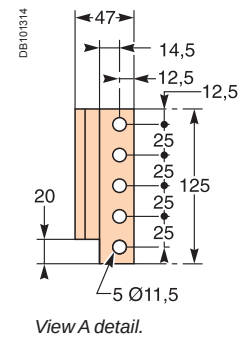
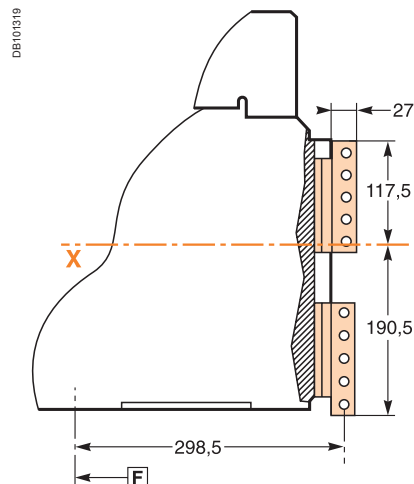
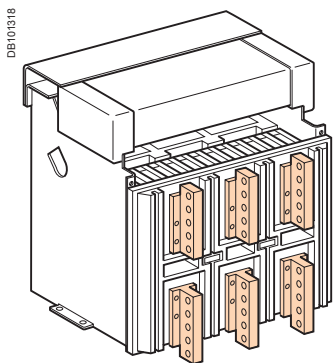
Horizontal rear connection



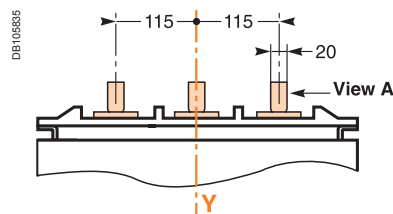
Detail



Vertical rear connection



Detail

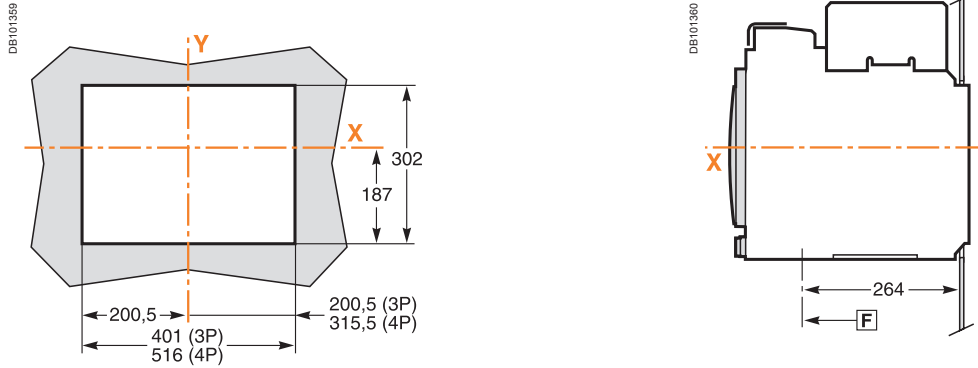


Note: recommended connection screws: **M10** class 8.8.
Tightening torque: **50 Nm** with contact washer.

Rear panel cutout (drawout devices)

NW08 to NW40 NAVY

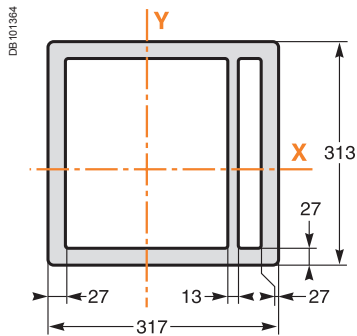
Rear view



Escutcheon

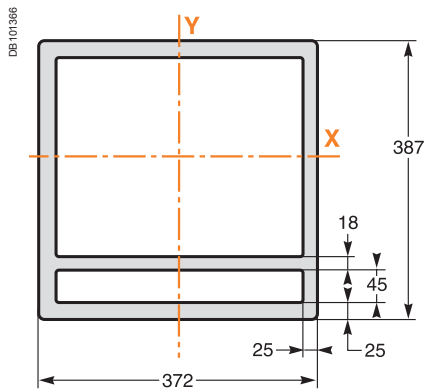
Masterpact NT NAVY

Drawout device



Masterpact NW NAVY

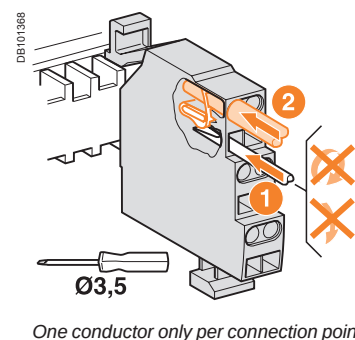
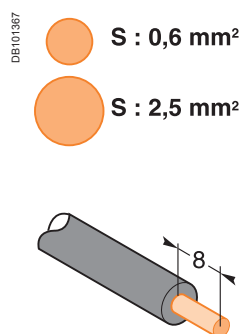
Drawout device



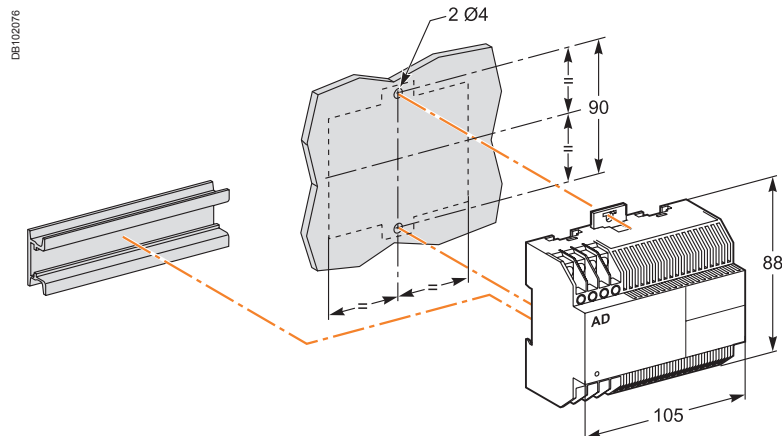
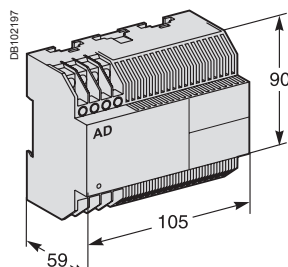
F : datum.

NT/NW NAVY external modules

Connection of auxiliary wiring to terminal block

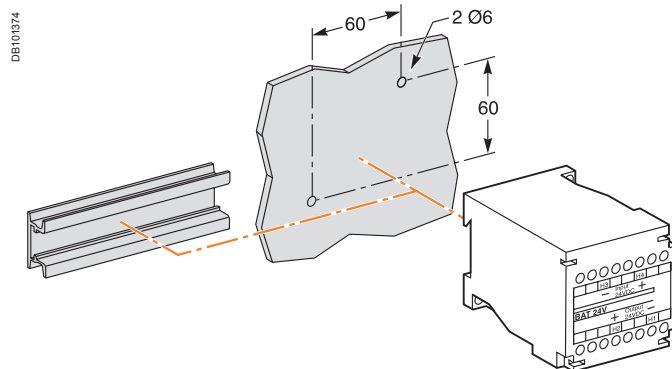
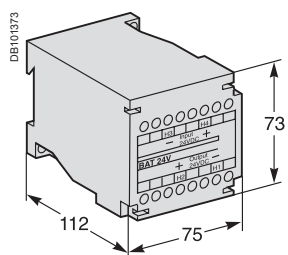


External power supply module (AD)



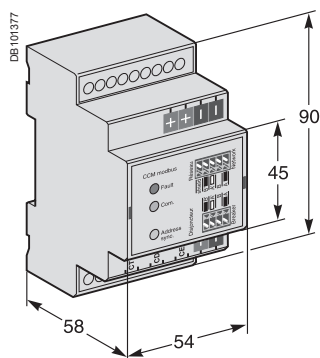
Battery module (BAT)

Mounting



“Chassis” communication module

ModBUS



schneider-electric.com

This international site allows you to access all the Schneider Electric products in just 2 clicks via comprehensive range data-sheets, with direct links to:

- complete library: technical documents, catalogs, FAQs, brochures...

- selection guides from the e-catalog.

- product discovery sites and their Flash animations.

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The electrical installation guide

According to IEC 60364

This guide, part of the Schneider Electric offer, is the essential tool to "guide" you any time in your business:

- design office, consultant
- contractor, panelbuilder
- teacher, trainer.

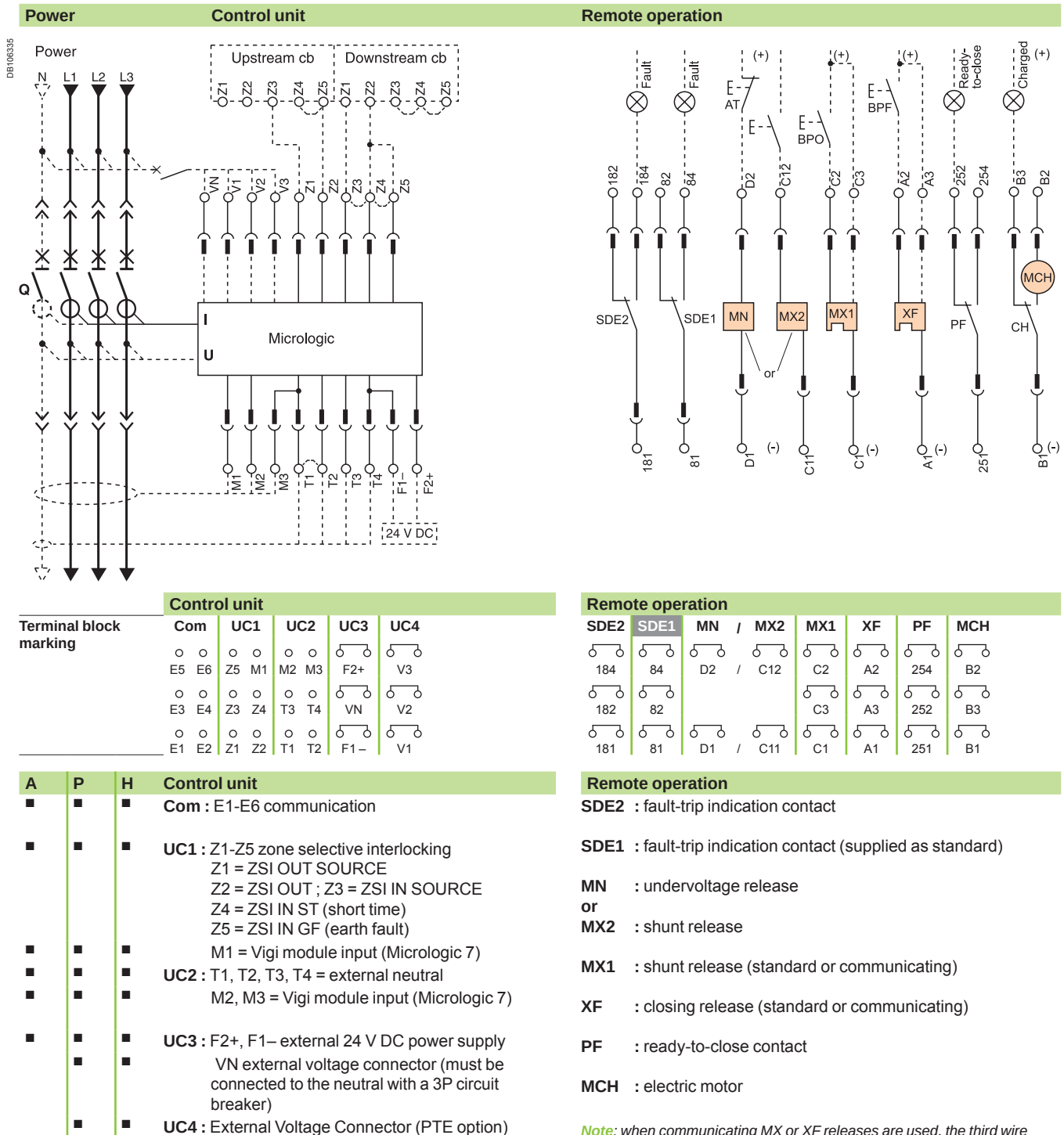
Comprehensive and concrete information on:

- all the new technical solutions
- all the components
- of an installation from a global point of view
- all the IEC standards modifications
- all the fundamental electrotechnical knowledge
- all the design stages, from medium to low voltage.

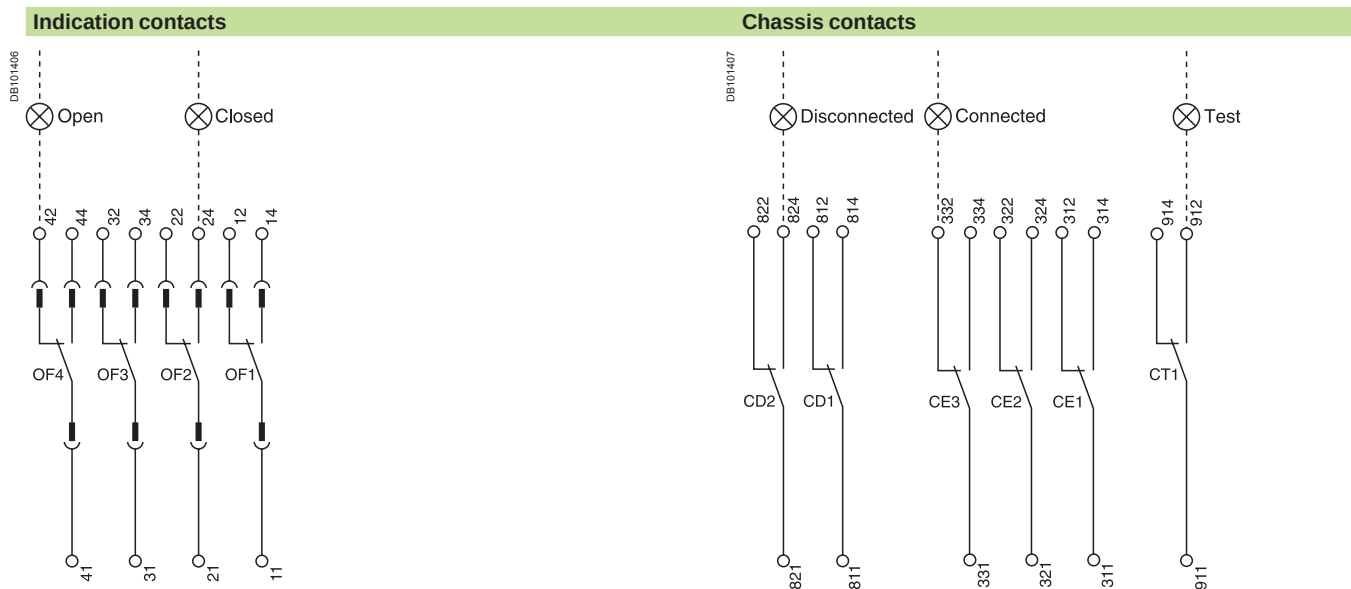


<i>Presentation</i>	<i>1</i>
<i>Functions and characteristics</i>	<i>A-1</i>
<i>Installation recommendations</i>	<i>B-1</i>
<i>Dimensions and connections</i>	<i>C-1</i>
 Masterpact NT06 to NT16 NAVY	 D-2
Drawout devices	D-2
 Masterpact NW08 to NW63 NAVY	 D-4
Drawout devices	D-4
 Masterpact NT and NW NAVY	 D-6
Communications option 24 V DCexternal power supply	D-6
Zone selective interlocking	D-8
 <i>Additional characteristics</i>	 <i>E-1</i>
<i>Catalogue numbers and order form</i>	<i>F-1</i>

The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.



A : digital ammeter.
P : A + power meter + additional protection.
H : P + harmonics.



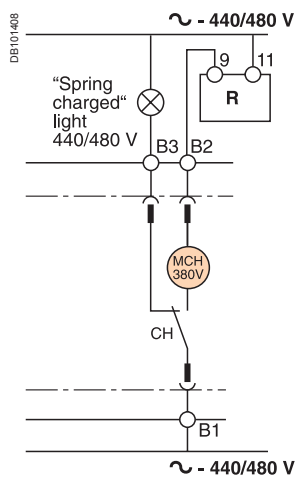
Indication contacts

OF4	OF3	OF2	OF1
44	34	24	14
42	32	22	12
41	31	21	11

Indication contacts

OF4 / OF3 / OF2 / OF1 : ON/OFF indication contacts.

(*) Spring charging motor 440/480 V AC
(380 V motor + additional resistor).



Chassis contacts

CD2	CD1	CE3	CE2	CE1	CT1
824	814	334	324	314	914
822	812	332	322	312	912
821	811	331	321	311	911

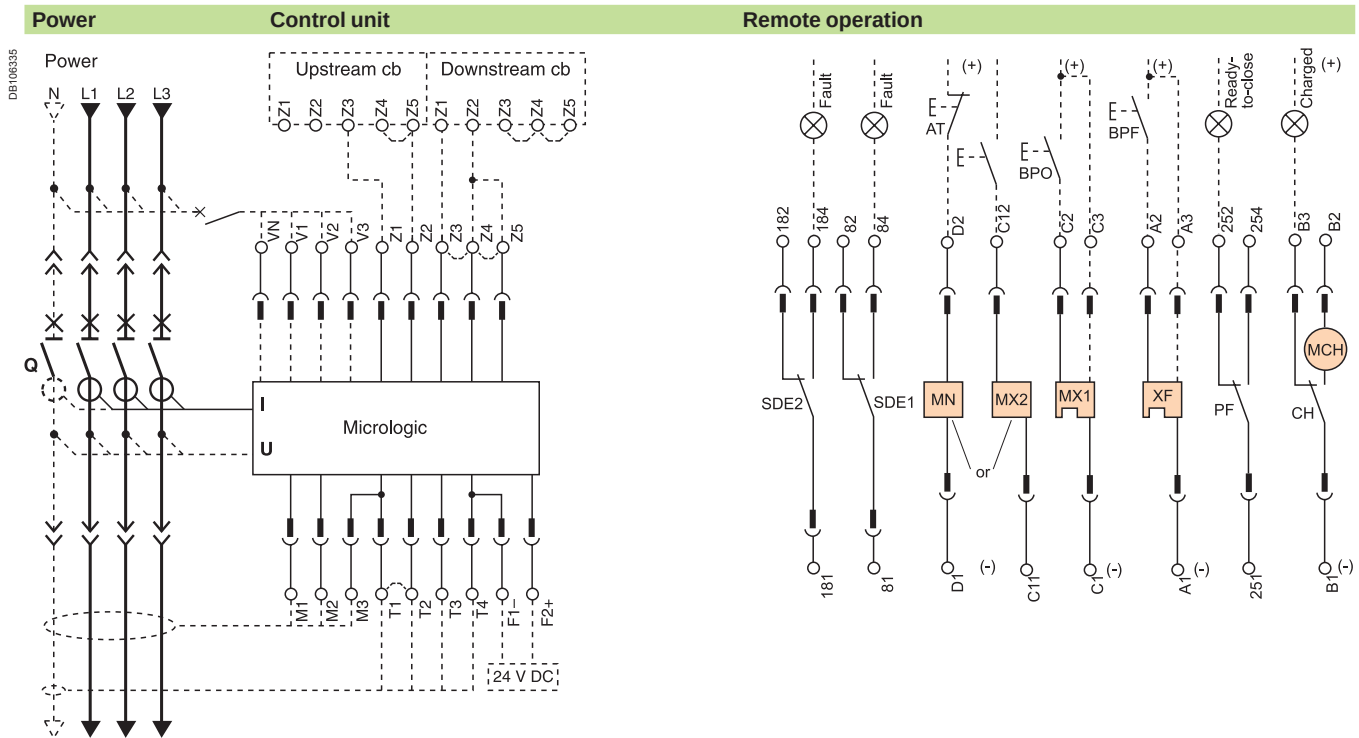
Chassis contacts

CD2 : disconnected position contacts
 CD1 : connected position contacts
 CE3 : connected position contacts
 CE2 : connected position contacts
 CE1 : connected position contacts
 CT1 : test position contacts

Key:

- drawout device only.
- SDE1, OF1, OF2, OF3, OF4 supplied as standard.
- interconnected connections
(only one wire per connection point).

The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.



Terminal block marking	Control unit									
	Com	UC1	UC2	UC3	UC4					
	o o	o o	o o	o o	o o					
E5 E6	Z5 M1	M2 M3	F2+	V3						
	o o	o o	o o	o o	o o					
E3 E4	Z3 Z4	T3 T4	VN	V2						
	o o	o o	o o	o o	o o					
E1 E2	Z1 Z2	T1 T2	F1 -	V1						

Remote operation									
SDE2	SDE1	MN	/	MX2	MX1	XF	PF	MCH	
o o	o o	o o	o o	o o	o o	o o	o o	o o	
184	84	D2	/	C12	C2	A2	254	B2	
o o	o o	o o	o o	o o	o o	o o	o o	o o	
182	82				C3	A3	252	B3	
o o	o o	o o	o o	o o	o o	o o	o o	o o	
181	81	D1	/	C11	C1	A1	251	B1	

A	P	H	Control unit
■	■	■	Com : E1-E6 communication
■	■	■	UC1 : Z1-Z5 zone selective interlocking Z1 = ZSI OUT SOURCE Z2 = ZSI OUT ; Z3 = ZSI IN SOURCE Z4 = ZSI IN ST (short time) Z5 = ZSI IN GF (earth fault) M1 = Vigi module input (Micrologic 7)
■	■	■	UC2 : T1, T2, T3, T4 = external neutral M2, M3 = Vigi module input (Micrologic 7)
■	■	■	UC3 : F2+, F1- external 24 V DC power supply VN external voltage connector (must be connected to the neutral with a 3P circuit breaker)
■	■	■	UC4 : External Voltage Connector (PTE option)

Remote operation									
SDE2 : fault-trip indication contact									
SDE1 : fault-trip indication contact (supplied as standard)									
MN : undervoltage release or MX2 : shunt release									
MX1 : shunt release (standard or communicating)									
XF : closing release (standard or communicating)									
PF : ready-to-close contact									
MCH : electric motor									

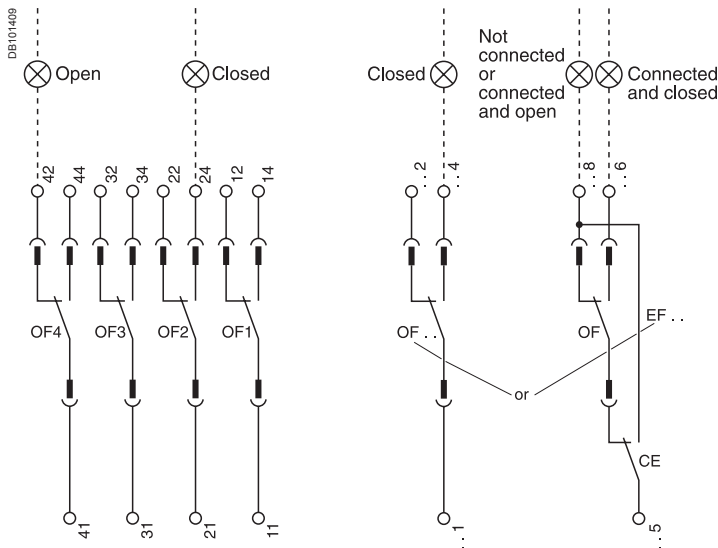
Note: when communicating MX or XF releases are used, the third wire (C3,A3) must be connected even if the communication module is not installed.

A : digital ammeter.

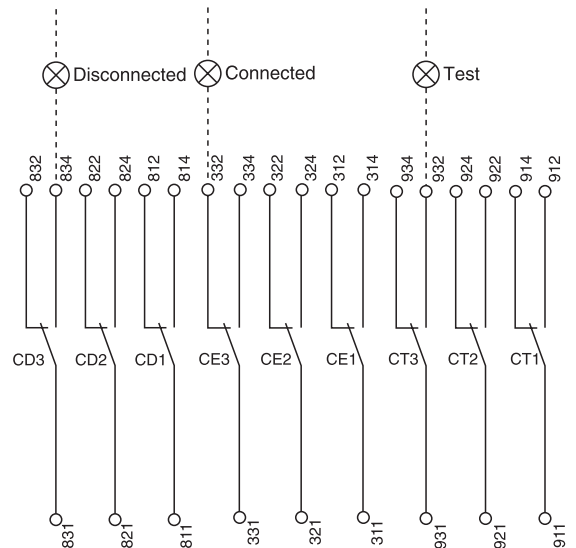
P : A + power meter + additional protection.

H : P + harmonics.

Indication contacts



Chassis contacts



Indication contacts

OF4	OF3	OF2	OF1	OF14	OF13	OF12	OF11
44	34	24	14	144	134	124	114
42	32	22	12	142	132	122	112
41	31	21	11	141	131	121	111
or				or			
EF14	EF13	EF12	EF11				
148	138	128	118				
146	136	126	116				
145	135	125	115				

Chassis contacts

CD3	CD2	CD1	CE3	CE2	CE1	CT3	CT2	CT1
834	824	814	334	324	314	934	924	914
832	822	812	332	322	312	932	922	912
831	821	811	331	321	311	931	921	911
or						or		
CE6	CE5	CE4				CE9	CE8	CE7
364	354	344				394	384	374
362	352	342				392	382	372
361	351	341				391	381	371

Indication contacts

OF4 :	ON/OFF indication contacts	OF14 or EF14	Combined "connected-deconnected" indication contacts
OF3		OF13 or EF13	
OF2		OF12 or EF12	
OF1		OF11 or EF11	

Chassis contacts

CD3	disconnected position contacts	CE3	connected position contacts	CT3	test position contacts
CD2		CE2		CT2	
CD1		CE1		CT1	
or					
CE6	connected position contacts			CE9	connected position contacts
CE5				CE8	
CE4				CE7	
or					
CD6	disconnected position contacts			CD5	
CD5				CD4	
CD4					

Key:

drawout device only.

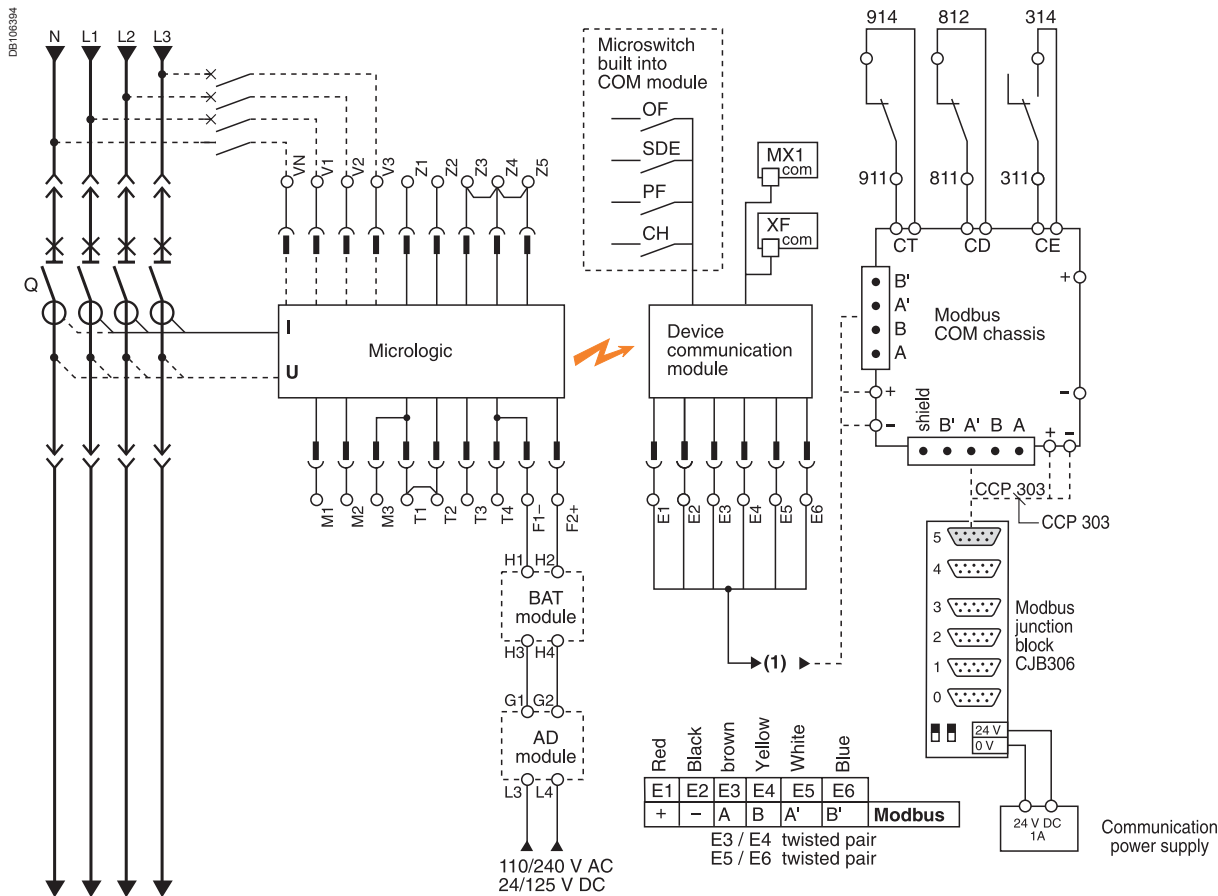
SDE1, OF1, OF2, OF3, OF4 supplied as standard.

interconnected connections (only one wire per connection point).

Masterpact NT and NW NAVY

Communications option 24 V DC external power supply

Connection of the communications option



None of the control-unit protection functions require an auxiliary source. However, the 24 V DC external power-supply (AD module) is required for certain operating configurations as indicated in the table below.

Circuit breaker	Closed	Open	
Voltage measurement inputs	Powered	Powered	Not powered
Protection function	No	No	No
Display function	No ⁽³⁾	No ⁽⁴⁾	Yes
Time-stamping function	No	No	Yes ⁽⁵⁾
Circuit-breaker status indications and control via communications bus	No	No	No
Identification, settings, operation and maintenance aids via communications bus	No ⁽³⁾	No ⁽⁴⁾	Yes

(1) Drawout device equipped with Modbus chassis COM.

(3) Except for Micrologic A control units (if current < 20 % I_n).

(4) Except for Micrologic A control units.

(5) Time setting is manual and can be carried out automatically by the supervisor via the communications bus.

The communications bus requires its own 24 V DC power source (E1, E2).

This source is not the same as the 24 V DC external power-supply module (F1-, F2+).

In case of using the 24 V DC external power supply (AD module), maximum cable length between 24 V DC (G1, G2) and the control unit (F1-, F2+) must not exceed 10 meters.

The BAT battery module, mounted in series upstream of the AD module, ensures an uninterrupted supply of power if the AD module power supply fails.

The voltage measurement inputs are standard equipment on the downstream connectors of the circuit breaker.

External connections are possible using the PTE external voltage measurement input option. With this option, the internal voltage measurement inputs are disconnected and terminals VN, V1, V2, V3 are connected only to the control unit (Micrologic P and H only). The PTE option is required for voltages less than 220 V and greater than 690 V (in which case a voltage transformer is compulsory). For three-pole devices, the system is supplied with terminal VN connected only to the control unit (Micrologic P and H).

When the PTE option is implemented, the voltage measurement input must be protected against short-circuits. Installed as close as possible to the busbars, this protection function is ensured by a P25M circuit breaker (1 A rating) with an auxiliary contact (cat. no. 21104 and 21117). This voltage measurement input is reserved exclusively for the control unit and must not ever be used to supply other circuits outside the switchboard.

Examples using the COM communications option

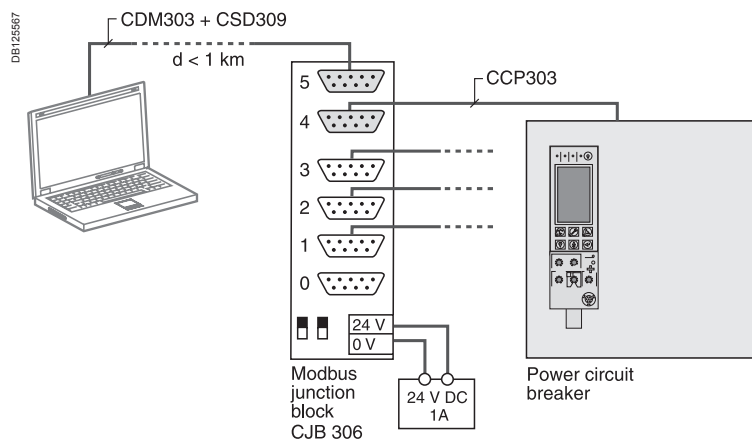
Switchboard display unit

This architecture provides remote display of the variables managed by Micrologic control units equipped with the eco COM Modbus module.

- I (Micrologic A)
- I, U, P, E (Micrologic P)
- I, U, P, E, THD (Micrologic H)

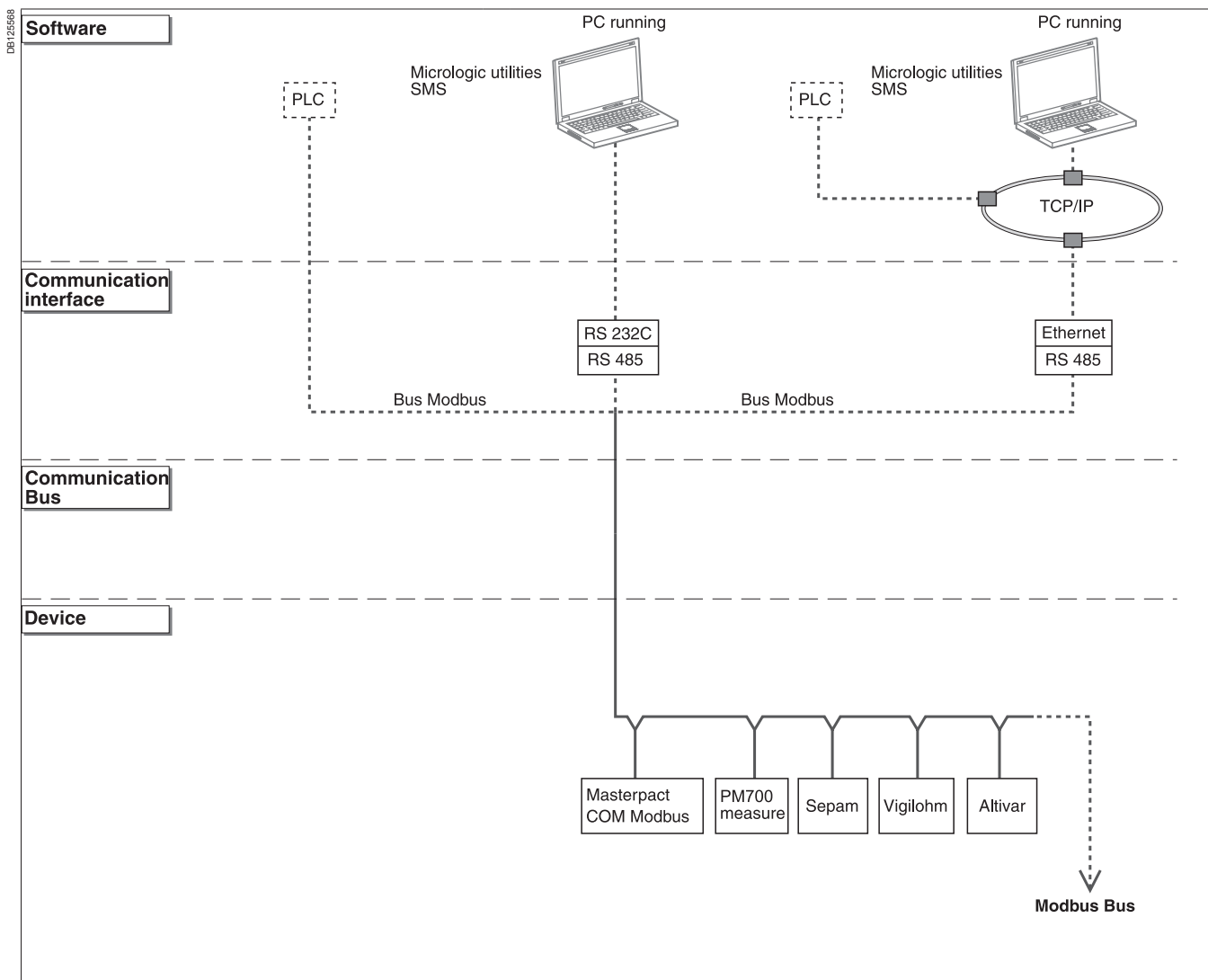
No programming is required.

For Micrologic A control unit (if current < 20 % I_n), it is recommended to use the 24 V DC external power supply (AD module).



Communicating switchboard

This configuration provides remote display and control of Masterpacts NAVY equipped with the Modbus COM module. The Digipact bus can be combined with the Modbus bus.



Zone selective interlocking

Zone-selective interlocking is used to reduce the electrodynamic forces exerted on the installation by shortening the time required to clear faults, while maintaining time discrimination between the various devices.

A pilot wire interconnects a number of circuit breakers equipped with Micrologic A/P/H control units, as illustrated in the diagram above.

The control unit detecting a fault sends a signal upstream and checks for a signal arriving from downstream. If there is a signal from downstream, the circuit breaker remains closed for the full duration of its tripping delay. If there is no signal from downstream, the circuit breaker opens immediately, regardless of the tripping-delay setting.

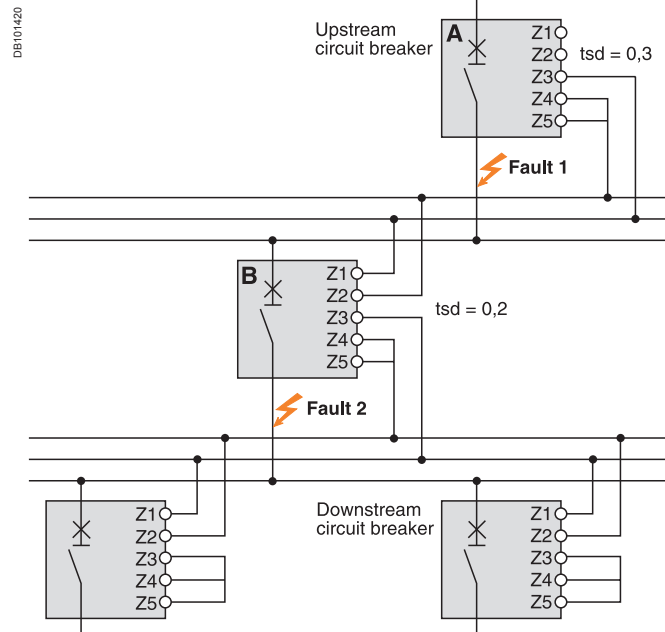
Fault 1.

Only circuit breaker A detects the fault. Because it receives no signal from downstream, it opens immediately, regardless of its tripping delay set to 0.3.

Fault 2.

Circuit breakers A and B detect the fault. Circuit breaker A receives a signal from B and remains closed for the full duration of its tripping delay set to 0.3. Circuit breaker B does not receive a signal from downstream and opens immediately, in spite of its tripping delay set to 0.2.

Note: the maximum permissible distance between two devices is 3000 m. A downstream circuit breaker can "control" up to ten upstream circuit breakers.







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The technical guide

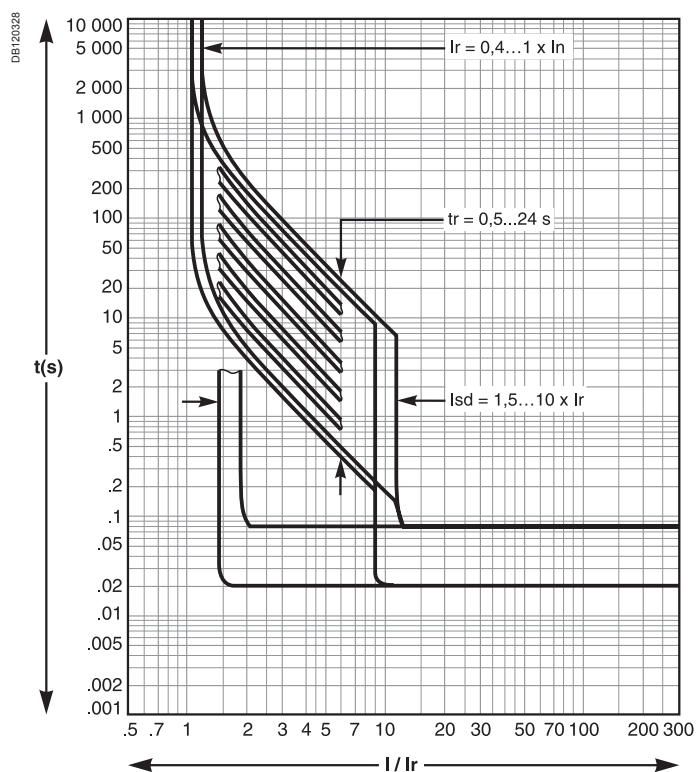
These technical guides help you comply with installation standards and rules i.e.: the electrical installation guide, the protection guide, the switchboard implementation guide, the technical booklets and the co-ordination tables all form genuine reference tools for the design of high performance electrical 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.



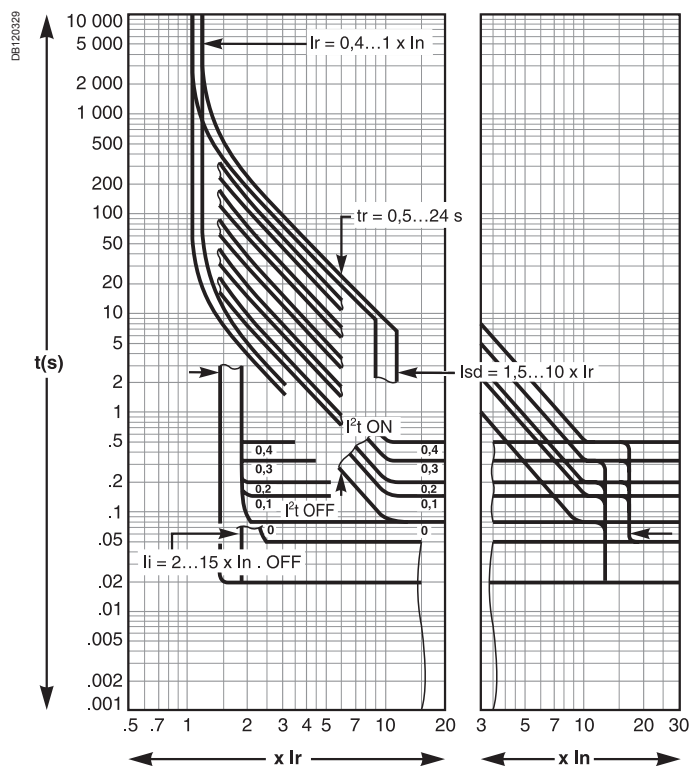
<i>Presentation</i>	<i>1</i>
<i>Functions and characteristics</i>	<i>A-1</i>
<i>Installation recommendations</i>	<i>B-1</i>
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Tripping curves	E-2
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Tripping curves

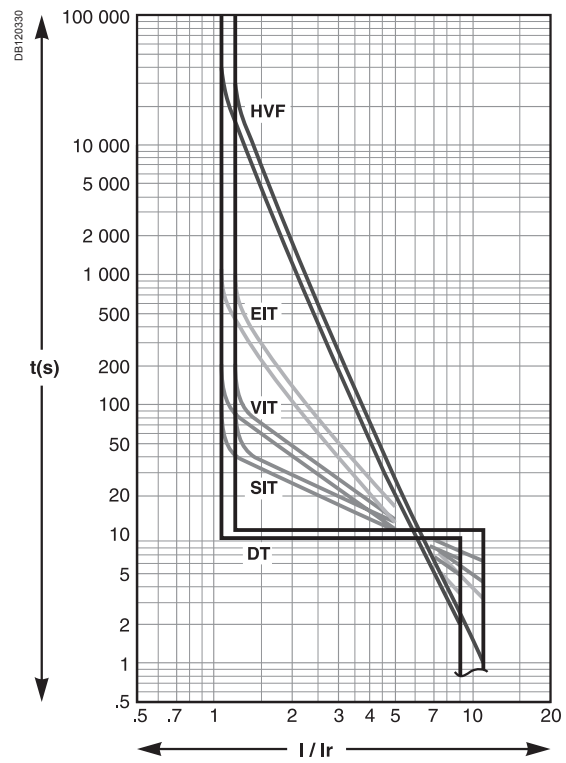
Micrologic 2.0



Micrologic 5.0



IDMTL curve (Micrologic P and H)

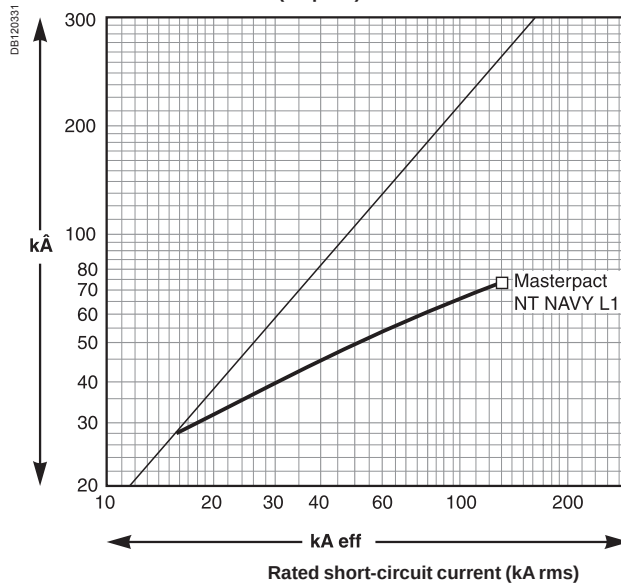


Limitation curves

Current limiting

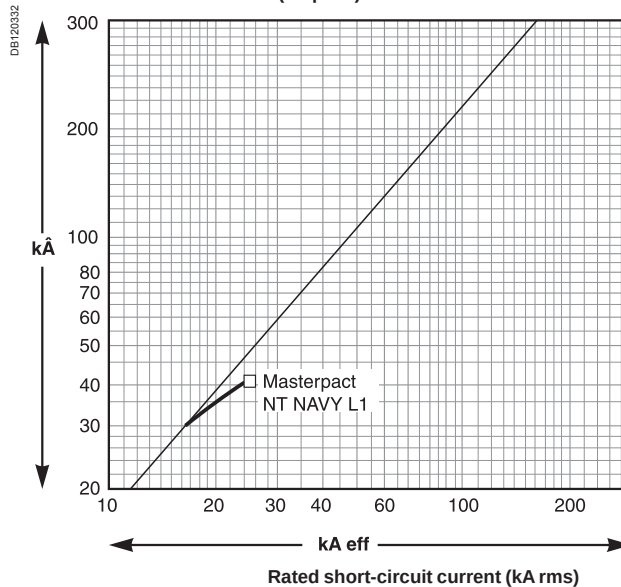
Voltage 380/415/440 V AC

Limited short-circuit current (kA peak)



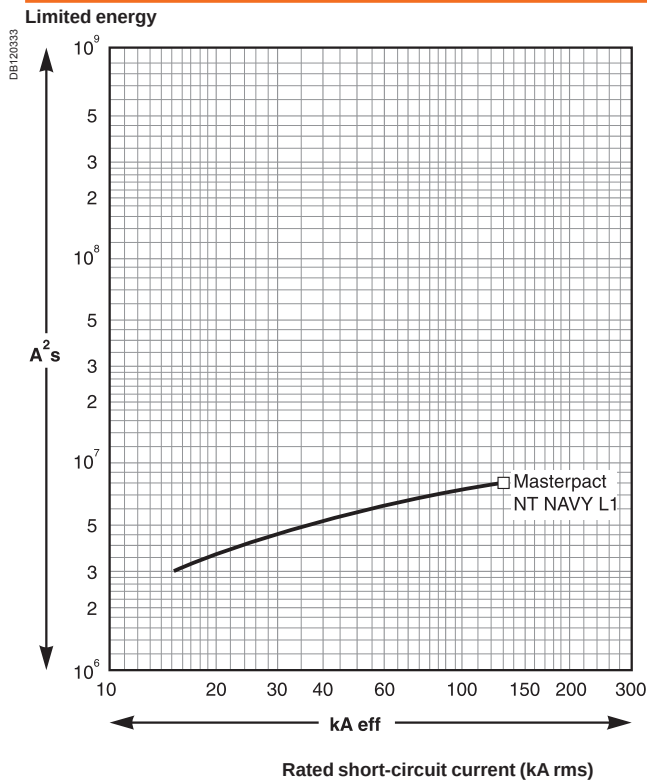
Voltage 660/690 V AC

Limited short-circuit current (kA peak)

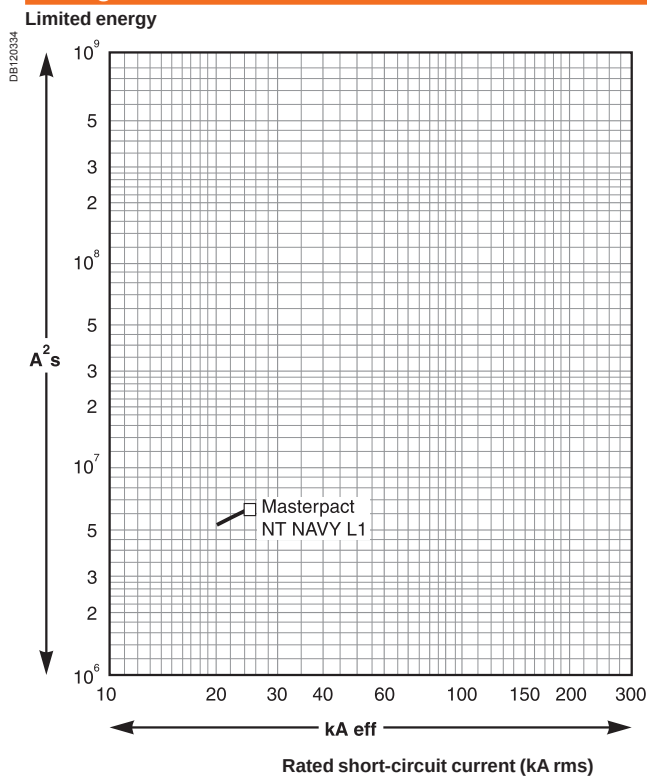


Energy limiting

Voltage 380/415/440 V AC



Voltage 660/690 V AC



DOWNSTREAM	UPSTREAM trip rating (A) adjustment I _r	NS250H/L DB TM-D			NR/NS250H/L DB STR22SE					NR/NS630H/L DB STR23SE/53UE				
		160	200	250	100	125	160	200	250	250	320	400	500	630
	I _m (kA)													
NS100H/L DB trip TM-D	16	36	T	T	T	T	T	T	T	T	T	T	T	T
	25	36	T	T	T	T	T	T	T	T	T	T	T	T
	40	36	36	36	36	36	36	36	36	T	T	T	T	T
	63	36	36	36		36	36	36	36	T	T	T	T	T
	80	3	36	36			36	36	36	T	T	T	T	T
	100	3	36	36					36	T	T	T	T	T
NS100H/L DB trip STR22SE	16	3	T	T	T	T	T	T	T	T	T	T	T	T
	25	3	T	T	T	T	T	T	T	T	T	T	T	T
	40	3	36	36	36	36	36	36	36	T	T	T	T	T
	63	3	36	36	36	36	36	36	36	T	T	T	T	T
	80	3	36	36		36	36	36	36	T	T	T	T	T
	100	3	36	36			36	36	36	T	T	T	T	T
NS250H/L DB trip TM-D	≤ 100									T	T	T	T	T
	125										T	T	T	T
	160											T	T	T
	200												T	T
	250													T
NS250H/L DB trip STR22SE	≤ 100									T	T	T	T	T
	125									T	T	T	T	T
	160									T	T	T	T	T
	200										T	T	T	T
	250											T	T	T
NS630H/L DB STR23SE STR53UE	250													
	320													
	400													
	500													
	630													
DB83 STR35SE STR55UE	320													
	400													
	500													
	630													
	800													
DBL83 STR35SE STR55UE	320													
	400													
	500													
	630													
	800													
Masterpact NT NAVY H1 Micrologic 2.0	NT06													
	NT10													
	NT12													
	NT16													
Masterpact NT NAVY H1 Micrologic 5.0	NT06													
	NT10													
	NT12													
	NT16													
Masterpact NT NAVY H2 Micrologic 2.0	NT06													
	NT10													
	NT12													
	NT16													
Masterpact NT NAVY H2 Micrologic 5.0	NT06													
	NT10													
	NT12													
	NT16													
Masterpact NT NAVY L1 Micrologic 2.0	NT06													
	NT10													
Masterpact NT NAVY L1 Micrologic 5.0	NT06													
	NT10													
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0	NW08													
	NW10													
	NW12													
	NW16													
	NW20													
	NW25													
	NW32													
	NW40													
Masterpact NW NAVY N1/H1/H2 Micrologic 5.0	NW08													
	NW10													
	NW12													
	NW16													
	NW20													
	NW25													
	NW32													
	NW40													

T Total discrimination, up to breaking capacity of the downstream circuit breaker.

DOWNSTREAM	UPSTREAM trip rating (A) adjustment Ir Im (kA)	DB83 STR35SE - STR55UE					DBL83 STR35SE - STR55UE					DBL83 STR45BE				
		400	500	630	800	1000	320	400	500	630	800	320	400	500	630	800
NS100H/L DB trip TM-D	16	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	25	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	40	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	63	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	80	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	100	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
NS100H/L DB trip STR22SE	16	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	25	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	40	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	63	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	80	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
	100	45	45	45	45	45	10	10	10	10	10	T	T	T	T	T
NS250H/L DB trip TM-D	≤ 100	45	45	45	45	45	7	7	7	7	7	T	T	T	T	T
	125	45	45	45	45	45	7	7	7	7	7	T	T	T	T	T
	160	45	45	45	45	45		7	7	7	7	T	T	T	T	T
	200		45	45	45	45			7	7	7	T	T	T	T	T
	250			45	45	45				7	7		T	T	T	T
	≤ 100	45	45	45	45	45	7	7	7	7	7	T	T	T	T	T
NS250H/L DB trip STR22SE	125	45	45	45	45	45	7	7	7	7	7	T	T	T	T	T
	160	45	45	45	45	45	7	7	7	7	7	T	T	T	T	T
	200	45	45	45	45	45	7	7	7	7	7	T	T	T	T	T
	250	45	45	45	45	45		7	7	7	7		T	T	T	T
	250						15	15	15	15	15		T	T	T	T
	320							15	15	15	15			T	T	T
NS630H/L DB STR23SE STR53UE	400								15	15	15				T	T
	500									15	15					T
	630										15	15				T
	800											15				
DB83 STR35SE STR55UE	320															
	400															
	500															
	630															
	800															
DBL83 STR35SE STR55UE	320															
	400															
	500															
	630															
	800															
Masterpact NT NAVY H1 Micrologic 2.0	NT06															
	NT10															
	NT12															
	NT16															
Masterpact NT NAVY H1 Micrologic 5.0	NT06															
	NT10															
	NT12															
	NT16															
Masterpact NT NAVY H2 Micrologic 2.0	NT06															
	NT10															
	NT12															
	NT16															
Masterpact NT NAVY L1 Micrologic 2.0	NT06															
	NT10															
Masterpact NT NAVY L1 Micrologic 5.0	NT06															
	NT10															
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0	NW08															
	NW10															
	NW12															
	NW16															
	NW20															
	NW25															
	NW32															
	NW40															
Masterpact NW N1/H1/H2 Micrologic 5.0	NW08															
	NW10															
	NW12															
	NW16															
	NW20															
	NW25															
	NW32															
	NW40															

DOWNSTREAM	UPSTREAM	Masterpact NT NAVY H1 Micrologic 2.0					Masterpact NT NAVY H1 Micrologic 5.0 - 6.0 - 7.0					Masterpact NT NAVY H1 Micrologic 5.0 - 6.0 - 7.0				
		Isd : 10 Ir					Inst 15 In					Inst OFF				
		NT06	NT08	NT10	NT12	NT16	NT06	NT08	NT10	NT12	NT16	NT06	NT08	NT10	NT12	NT16
	trip rating (A) adjustment Ir Im (kA)	630	800	1000	1250	1600	630	800	1000	1250	1600	630	800	1000	1250	1600
NS100H/L DB trip TM-D	16	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS100H/L DB trip STR22SE	100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	16	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS250H/L DB trip TM-D	80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	≤ 100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS250H/L DB trip STR22SE	200	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	≤ 100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS630H/L DB STR23SE STR53UE	200	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	500	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	630	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DB83 STR35SE STR55UE	320			10	12.5	16			15	18.7	24			T	T	T
	400			10	12.5	16			15	18.7	24			T	T	T
	500			10	12.5	16			15	18.7	24			T	T	T
	630				12.5	16				18.7	24				T	T
	800					16					24					T
DBL83 STR35SE STR55UE	320			10	12.5	16			15	18.7	24			T	T	T
	400			10	12.5	16			15	18.7	24			T	T	T
	500			10	12.5	16			15	18.7	24			T	T	T
	630				12.5	16				18.7	24				T	T
	800					16					24					T
Masterpact NT NAVY H1 Micrologic 2.0	NT06			10	12.5	16			15	18.7	24			T	T	T
	NT08				12.5	16				18.7	24				T	T
	NT10					16					24					T
	NT12															
	NT16															
Masterpact NT NAVY H1 Micrologic 5.0, 6.0, 7.0	NT06								15	18.7	24			T	T	T
	NT08									18.7	24				T	T
	NT10										24					T
	NT12															
	NT16															
Masterpact NT NAVY H2 Micrologic 2.0	NT06			10	12.5	16			15	18.7	24			T	T	T
	NT08				12.5	16				18.7	24				T	T
	NT10					16					24					T
	NT12															
	NT16															
Masterpact NT NAVY H2 Micrologic 5.0, 6.0, 7.0	NT06								15	18.7	24			T	T	T
	NT08									18.7	24				T	T
	NT10										24					T
	NT12															
	NT16															
Masterpact NT NAVY L1 Micrologic 2.0	NT06			10	12	16			15	18.7	24			T	T	T
	NT08				12	16				18.7	24				T	T
	NT10					16					24					T
Masterpact NT NAVY L1 Micrologic 5.0, 6.0, 7.0	NT06								15	18.7	24			T	T	T
	NT08									18.7	24				T	T
	NT10										24					T
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0 Micrologic 5.0	NW08															
	NW10															
	NW12															
	NW16															
	NW20															
	NW25															
	NW32															
	NW40															

DOWNSTREAM	UPSTREAM	Masterpact NT NAVY H2 Micrologic 2.0					Masterpact NT NAVY H2 Micrologic 5.0, 6.0, 7.0					Masterpact NT NAVY H2 Micrologic 5.0, 6.0, 7.0				
		Isd : 10 Ir					Inst 15 In					Inst OFF				
		NT06	NT08	NT10	NT12	NT16	NT06	NT08	NT10	NT12	NT16	NT06	NT08	NT10	NT12	NT16
	trip rating (A) adjustment Ir Im (kA)	630	800	1000	1250	1600	630	800	1000	1250	1600	630	800	1000	1250	1600
NS100H/L DB trip TM-D	16	T		T	T	T	T		T	T	T	T		T	T	T
	25	T		T	T	T	T		T	T	T	T		T	T	T
	40	T		T	T	T	T		T	T	T	T		T	T	T
	63	T		T	T	T	T		T	T	T	T		T	T	T
	80	T		T	T	T	T		T	T	T	T		T	T	T
	100	T		T	T	T	T		T	T	T	T		T	T	T
NS100H/L DB trip STR22SE	16	T		T	T	T	T		T	T	T	T		T	T	T
	25	T		T	T	T	T		T	T	T	T		T	T	T
	40	T		T	T	T	T		T	T	T	T		T	T	T
	63	T		T	T	T	T		T	T	T	T		T	T	T
	80	T		T	T	T	T		T	T	T	T		T	T	T
	100	T		T	T	T	T		T	T	T	T		T	T	T
NS250H/L DB trip TM-D	≤ 100	T		T	T	T	T		T	T	T	T		T	T	T
	125	T		T	T	T	T		T	T	T	T		T	T	T
	160	T		T	T	T	T		T	T	T	T		T	T	T
	200	T		T	T	T	T		T	T	T	T		T	T	T
	250	T		T	T	T	T		T	T	T	T		T	T	T
NS250H/L DB trip STR22SE	≤ 100	T		T	T	T	T		T	T	T	T		T	T	T
	125	T		T	T	T	T		T	T	T	T		T	T	T
	160	T		T	T	T	T		T	T	T	T		T	T	T
	200	T		T	T	T	T		T	T	T	T		T	T	T
	250	T		T	T	T	T		T	T	T	T		T	T	T
NS630H/L DB STR23SE STR53UE	250	T		T	T	T	T		T	T	T	T		T	T	T
	320	T		T	T	T	T		T	T	T	T		T	T	T
	400	T		T	T	T	T		T	T	T	T		T	T	T
	500	T		T	T	T	T		T	T	T	T		T	T	T
	630	T		T	T	T	T		T	T	T	T		T	T	T
DB83 STR35SE STR55UE	320			15	18.7	24		12	15	18.7	24			36	36	36
	400			15	18.7	24		12	15	18.7	24			36	36	36
	500			15	18.7	24		12	15	18.7	24			36	36	36
	630				18.7	24				18.7	24				36	36
	800					24					24					36
DBL83 STR35SE STR55UE	320		12	15	18.7	24		12	15	18.7	24		36	36	36	36
	400		12	15	18.7	24		12	15	18.7	24		36	36	36	36
	500			15	18.7	24			15	18.7	24			36	36	36
	630				18.7	24				18.7	24				36	36
	800					24					24					36
Masterpact NT NAVY H1 Micrologic 2.0	NT06			10	12.5	16			15	18.7	24			36	36	36
	NT08				12.5	16				18.7	24				36	36
	NT10					16					24					36
	NT12															
	NT16															
Masterpact NT NAVY H1 Micrologic 5.0, 6.0, 7.0	NT06							15	18.7	24			36	36	36	
	NT08								18.7	24				36	36	36
	NT10									24					36	36
	NT12															36
	NT16															
Masterpact NT NAVY H2 Micrologic 2.0	NT06			10	12.5	16			15	18.7	24			36	36	36
	NT08				12.5	16				18.7	24				36	36
	NT10					16					24					36
	NT12															
	NT16															
Masterpact NT NAVY H2 Micrologic 5.0, 6.0, 7.0	NT06							15	18.7	24			36	36	36	
	NT08								18.7	24				36	36	36
	NT10									24					36	36
	NT12															36
	NT16															
Masterpact NT NAVY L1 Micrologic 2.0	NT06			10	12.5	16			15	18.7	24			36	36	36
	NT08				12.5	16				18.7	24				36	36
	NT10					16					24					36
Masterpact NT NAVY L1 Micrologic 5.0, 6.0, 7.0	NT06							15	18.7	24			36	36	36	
	NT08								18.7	24				36	36	36
	NT10									24						36
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0 Micrologic 5.0	NW08															
	NW10															
	NW12															
	NW16															
	NW20															
	NW25															
	NW32															
	NW40															

DOWNSTREAM	UPSTREAM trip rating (A) adjustment Ir Im (kA)	Masterpact NT NAVY L1 Micrologic 2.0 Isd : 10 Ir			Masterpact NT NAVY L1 Micrologic 5.0 Inst 15 In			Masterpact NT NAVY L1 Micrologic 5.0 Inst off		
		NT06	NT08	NT10	NT06	NT08	NT10	NT06	NT08	NT10
		630	800	1000	630	800	1000	630	800	1000
NS100H/L DB trip TM-D	16	T	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T	T
	80	T	T	T	T	T	T	T	T	T
	100	T	T	T	T	T	T	T	T	T
NS100H/L DB trip STR22SE	16	T	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T	T
	80	T	T	T	T	T	T	T	T	T
	100	T	T	T	T	T	T	T	T	T
NS250H/L DB trip TM-D	≤ 100	T	T	T	T	T	T	T	T	T
	125	T	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T	T
	200	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T
	≤ 100	T	T	T	T	T	T	T	T	T
NS250H/L DB trip STR22SE	125	T	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T	T
	200	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T
NS630H/L DB STR23SE STR53UE	250	T	T	T	T	T	T	T	T	T
	320	T	T	T	T	T	T	T	T	T
	400	T	T	T	T	T	T	T	T	T
	500	T	T	T	T	T	T	T	T	T
	630	T	T	T	T	T	T	T	T	T
	800									
DB83 STR35SE STR55UE	320						10			10
	400						10			10
	500						10			10
	630									
	800									
	800									
DBL83 STR35SE STR55UE	320			10			10			10
	400			10			10			10
	500			10			10			10
	630									
	800									
	800									
Masterpact NT NAVY H1 Micrologic 2.0	NT06			10			10			10
	NT08									
	NT10									
	NT12									
	NT16									
	NT16									
Masterpact NT NAVY H1 Micrologic 5.0, 6.0, 7.0	NT06									10
	NT08									
	NT10									
	NT12									
	NT16									
	NT16									
Masterpact NT NAVY H2 Micrologic 2.0	NT06			10			10			10
	NT08									
	NT10									
	NT12									
	NT16									
	NT16									
Masterpact NT NAVY H2 Micrologic 5.0, 6.0, 7.0	NT06									10
	NT08									
	NT10									
	NT12									
	NT16									
	NT16									
Masterpact NT NAVY L1 Micrologic 2.0	NT06			10			10			10
	NT08									
	NT10									
	NT12									
	NT16									
	NT16									
Masterpact NT NAVY L1 Micrologic 5.0, 6.0, 7.0	NT06									10
	NT08									
	NT10									
	NT12									
	NT16									
	NT16									
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0 Micrologic 5.0	NW08									
	NW10									
	NW12									
	NW16									
	NW20									
	NW25									
	NW32									
	NW40									

DOWNSTREAM	UPSTREAM	Masterpact NW NAVY N1 - H1 - H2								Masterpact NW NAVY N1 - H1 - H2							
		Micrologic 2.0								Micrologic 5.0							
		Isd 10 Ir								Inst 15 In							
		NW08	NW10	NW12	NW16	NW20	NW25	NW32	NW40	NW08	NW10	NW12	NW16	NW20	NW25	NW32	NW40
	trip rating (A)	800	1000	1250	1600	2000	2500	3200	4000	800	1000	1250	1600	2000	2500	3200	4000
	adjust. Ir	800	1000	1250	1600	2000	2500	3200	4000	800	1000	1250	1600	2000	2500	3200	4000
	Im (kA)																
NS100H/L DB trip TM-D	16	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS100H/L DB trip STR22SE	16	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS250H/L DB trip TM-D	≤ 100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	200	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	≤ 100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS250H/L DB trip STR22SE	125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	200	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NS630H/L DB STR23SE STR53UE	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	320	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	400	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	500	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	630	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	630	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DB83 STR35SE STR55UE	320		10	12.5	16	20	25	32	40		T	T	T	T	T	T	T
	400		10	12.5	16	20	25	32	40		T	T	T	T	T	T	T
	500		10	12.5	16	20	25	32	40		T	T	T	T	T	T	T
	630			12.5	16	20	25	32	40		T	T	T	T	T	T	T
	800				16	20	25	32	40		T	T	T	T	T	T	T
	800					20	25	32	40		T	T	T	T	T	T	T
DBL83 STR35SE STR55UE	320		10	12.5	16	20	25	32	40		15	18.75	24	30	37.5	60	T
	400		10	12.5	16	20	25	32	40		15	18.75	24	30	37.5	60	T
	500		10	12.5	16	20	25	32	40		15	18.75	24	30	37.5	60	T
	630			12.5	16	20	25	32	40			18.75	24	30	37.5	60	T
	800				16	20	25	32	40				24	30	37.5	60	T
	800					20	25	32	40					30	37.5	60	T
Masterpact NT NAVY H1/H2 Micrologic 2.0	NT06		10	12	16	20	25	32	40		15	18.75	24	30	37.5	T	T
	NT08			12	16	20	25	32	40			18.75	24	30	37.5	T	T
	NT10				16	20	25	32	40				24	30	37.5	T	T
	NT12					20	25	32	40					30	37.5	T	T
	NT16						25	32	40						37.5	T	T
	NT16																
Masterpact NT NAVY H1/H2 Micrologic 5.0, 6.0, 7.0	NT06										15	18.75	24	30	37.5	T	T
	NT08											18.75	24	30	37.5	T	T
	NT10												24	30	37.5	T	T
	NT12													30	37.5	T	T
	NT16														37.5	T	T
	NT16																
Masterpact NT NAVY L1 Micrologic 2.0	NT06		10	12	16	20	26	45	T		15	18.75	24	35	65	T	T
	NT08			12	16	20	26	45	T			18.75	24	35	65	T	T
	NT10				16	20	26	45	T				24	35	65	T	T
	NT10																
	NT10																
	NT10																
Masterpact NT NAVY L1 Micrologic 5.0, 6.0, 7.0	NT06										15	18.75	24	35	65	T	T
	NT08											18.75	24	35	65	T	T
	NT10												24	35	65	T	T
	NT10																
	NT10																
	NT10																
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0	NW08			12	16	20	25	32	40			18.75	24	30	37.5	48	60
	NW10				16	20	25	32	40				24	30	37.5	48	60
	NW12					20	25	32	40					30	37.5	48	60
	NW16						25	32	40						37.5	48	60
	NW20							32	40							48	60
	NW25								40								60
Masterpact NW NAVY N1/H1/H2 Micrologic 5.0	NW32																
	NW40																
	NW08			12	16	20	25	32	40			18.75	24	30	37.5	48	60
	NW10				16	20	25	32	40				24	30	37.5	48	60
	NW12					20	25	32	40					30	37.5	48	60
	NW16						25	32	40						37.5	48	60
	NW20							32	40							48	60
	NW25								40								60
	NW32																
	NW40																
	NW40																
	NW40																

DOWNSTREAM	UPSTREAM	Masterpact NW NAVY N1 - H1 - H2							
		Micrologic 5.0 - 6.0 - 7.0							
		Inst OFF							
	trip rating (A)	NW08	NW10	NW12	NW16	NW20	NW25	NW32	NW40
	adjustment Ir	800	1000	1250	1600	2000	2500	3200	4000
	Im (kA)	800	1000	1250	1600	2000	2500	3200	4000
NS100H/L DB trip TM-D	16	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T
	80	T	T	T	T	T	T	T	T
NS100H/L DB trip STR22SE	100	T	T	T	T	T	T	T	T
	16	T	T	T	T	T	T	T	T
	25	T	T	T	T	T	T	T	T
	40	T	T	T	T	T	T	T	T
	63	T	T	T	T	T	T	T	T
NS250H/L DB trip TM-D	80	T	T	T	T	T	T	T	T
	100	T	T	T	T	T	T	T	T
	≤ 100	T	T	T	T	T	T	T	T
	125	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T
NS250H/L DB trip STR22SE	200	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T
	≤ 100	T	T	T	T	T	T	T	T
	125	T	T	T	T	T	T	T	T
	160	T	T	T	T	T	T	T	T
NS630H/L DB STR23SE STR53UE	200	T	T	T	T	T	T	T	T
	250	T	T	T	T	T	T	T	T
	500	T	T	T	T	T	T	T	T
	630	T	T	T	T	T	T	T	T
	800	T	T	T	T	T	T	T	T
DB83 STR35SE STR55UE	320		T	T	T	T	T	T	T
	400		T	T	T	T	T	T	T
	500		T	T	T	T	T	T	T
	630			T	T	T	T	T	T
	800				T	T	T	T	T
DBL83 STR35SE STR55UE	320		T	T	T	T	T	T	T
	400		T	T	T	T	T	T	T
	500		T	T	T	T	T	T	T
	630			T	T	T	T	T	T
	800				T	T	T	T	T
Masterpact NT NAVY H1 Micrologic 2.0	NT06		T	T	T	T	T	T	T
	NT08			T	T	T	T	T	T
	NT10				T	T	T	T	T
	NT12					T	T	T	T
	NT16						T	T	T
Masterpact NT NAVY H1 Micrologic 5.0, 6.0, 7.0	NT06		T	T	T	T	T	T	T
	NT08			T	T	T	T	T	T
	NT10				T	T	T	T	T
	NT12					T	T	T	T
	NT16						T	T	T
Masterpact NT NAVY L1 Micrologic 2.0	NT06		T	T	T	T	T	T	T
	NT08			T	T	T	T	T	T
	NT10				T	T	T	T	T
Masterpact NT NAVY L1 Micrologic 5.0, 6.0, 7.0	NT06		T	T	T	T	T	T	T
	NT08			T	T	T	T	T	T
	NT10				T	T	T	T	T
Masterpact NW NAVY N1/H1/H2 Micrologic 2.0	NW08			T	T	T	T	T	T
	NW10				T	T	T	T	T
	NW12					T	T	T	T
	NW16						T	T	T
	NW20							T	T
	NW25								T
	NW32								
	NW40								
Masterpact NW NAVY N1/H1/H2 Micrologic 5.0	NW08			T	T	T	T	T	T
	NW10				T	T	T	T	T
	NW12					T	T	T	T
	NW16						T	T	T
	NW20							T	T
	NW25								T
	NW32								
	NW40								



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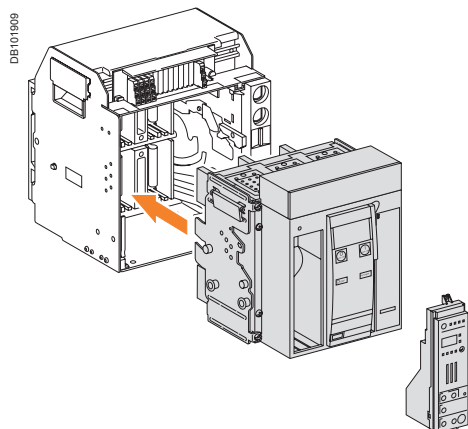
NT06 to NT16 Navy drawout circuit breakers

Circuit breakers

A Navy Masterpact drawout circuit breaker is described by 5 catalogue numbers corresponding to:

- the basic circuit breaker
- a control unit
- a chassis
- a top connection
- a bottom connection.

A communication option and various auxiliaries and accessories may also be added.



Navy basic circuit breaker

Type H1

	In (A at 40 °C)	Icu (kA for U = 220/415 V) - Ics = 100 % Icu	3P
NT06	630	42	64572
NT08	800	42	64573
NT10	1000	42	64574
NT12	1250	42	64575
NT16	1600	42	64576

Type H2

	In (A at 40 °C)	Icu (kA for U = 220/415 V) - Ics = 100 % Icu	3P
NT06	630	50	64621
NT08	800	50	64622
NT10	1000	50	64623
NT12	1250	50	64624
NT16	1600	50	64625

Type L1

	In (A at 40 °C)	Icu (kA for U = 220/415 V) - Ics = 100 % Icu	3P
NT06	630	150	64577
NT08	800	150	64578
NT10	1000	150	64579

Micrologic control unit

"Ammeter" A

Micrologic 2.0	Basic protection	65304
Micrologic 5.0	Selective protection	65305

"Power meter" P

Micrologic 5.0 P	Selective protection	47297
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"Harmonic meter" H

Micrologic 5.0 H	Selective protection	47301
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Navy chassis

For type H1/H2

	3P
630/1250 A	64581
1600 A	64582

For type L1

	3P
630/1000 A	64584

Communication option

	Chassis	+	Circuit breaker
Modbus COM	33852		47485
Eco Modbus COM module			33843

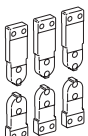
Portable data acquisition

Masterpact GetnSet product with battery and accessories	48789
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NT06 to NT16 Navy drawout circuit breakers

Connections

Chassis front connection

E46440		630/1600 A	Top	3P
			Bottom	33727
				33728

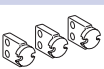
Front connection accessories

Vertical connection adapters 630/1600 A

E46426		3P (3 parts)		33642
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Chassis rear connection

Vertical connection

E46429		630/1600 A	Top	3P
			Bottom	33729
				33730

Horizontal connection

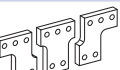
E46430		630/1600 A	Top	3P
			Bottom	33731
				33732

Rear connection accessories

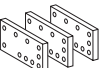
E46428		interphase barriers (3 parts)		3P
				33768

Common accessories for front and rear connection

Spreaders

E46431		800-1600 A	3P	33622
		For front and horizontal rear connection.		

Cable lug adapters 630/1600 A

E46427		3P (3 parts)		33644
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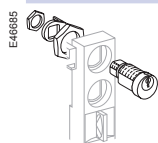
Cable lug kits

E47820		240 mm ²	3P (6 lug kit)	33013
		300 mm ²	3P (6 lug kit)	33015

Chassis locking and accessories

Chassis locking

"Disconnected" position locking



By padlocks		
	VCPO	Standard
By Profalux keylocks		
Profalux	1 lock with 1 key + adaptation kit	33773
	2 locks 1 keys + adaptation kit	33774
	2 locks 2 different keys + adaptation kit	33775
1 keylock Profalux (without adaptation kit):		
	identical key not identified combination	33173
	identical key identified 215470 combination	33174
	identical key identified 215471 combination	33175
By Ronis keylocks		
Ronis	1 lock with 1 key + adaptation kit	33776
	2 locks 1 keys + adaptation kit	33777
	2 locks 2 different keys + adaptation kit	33778
1 keylock Ronis (without adaptation kit):		
	identical key not identified combination	33189
	identical key identified EL24135 combination	33190
	identical key identified EL24153 combination	33191
	identical key identified EL24315 combination	33192
Optional disconnected/test/connected position locking		33779
Adaptation kit (without keylock):		
	adaptation kit Profalux	33769
	adaptation kit Ronis	33770
	adaptation kit Castell	33771
	adaptation kit Kirk	33772

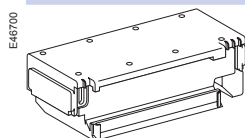
Racking interlock



Racking interlock (VPOC)	33788
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Chassis accessories

Arc chute cover



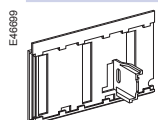
	Standard
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Auxiliary terminal shield (CB)



Terminal shield	33763
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Safety shutters as standard



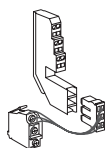
Safety shutters (VO)	Standard
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NT06 to NT16 Navy drawout circuit breakers

Indication contacts

ON/OFF indication contacts (OF)

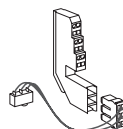
E44467



Changeover contacts (6 A - 240 V)	4 (standard)
1 low-level OF to replace 1 standard OF (4 max.)	33806

"Fault trip" indication contacts (SDE)

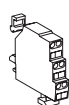
E47759



Changeover contact (5 A - 240 V)	1 (standard)
1 additional SDE (5 A - 240 V)	47430
1 additional low-level SDE	47431

Carriage switches (connected / disconnected / test position)

E46061



Changeover contacts (6 A - 240 V)	
1 connected position contact (3 max.)	33751
1 test position contact (1 max.)	33752
1 disconnected position contact (2 max.)	33753
And/or low-level changeover contacts	
1 connected position contact (3 max.)	33754
1 test position contact (1 max.)	33755
1 disconnected position contact (2 max.)	33756

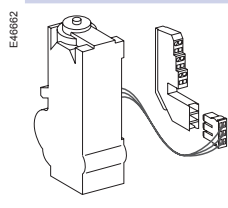
Auxiliary terminals for chassis alone

3 wire terminal (30 parts)	47071
6 wire terminal (10 parts)	47072
Jumpers (10 parts)	47900

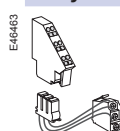
Remote operation

Remote ON/OFF

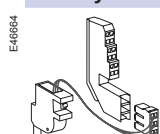
Gear motor

	AC 50/60 Hz	100/130 V	MCH
		200/240 V	47465
		277/415 V	47466
		440/480 V	47468
		440/480 V	47470
	DC	24/30 V	47460

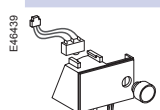
Navy instantaneous voltage release

	Standard		Closing release	Opening release
			Navy XF	Navy MX
	AC 50/60 Hz	115 V AC/DC	64587	64592
	DC	220 V AC/DC	64588	64593
		380/480 V AC	64589	64594
	Communicating		Navy XF com	Navy MX com
	AC 50/60 Hz	115 V AC/DC	64597	64602
	DC	220 V AC/DC	64598	64603
		380/480 V AC	64599	64604

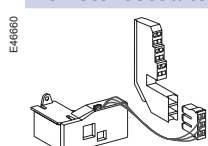
“Ready to close” contact (1 max.)

			PF
	1 changeover contact (5 A - 240 V)		47432
	1 low-level changeover contact		47433

Electrical closing pushbutton

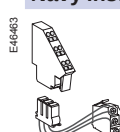
			BPFE
	1 pushbutton		47512

Remote reset after fault trip

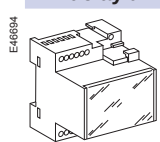
	Automatic reset		RAR
	Adaptation		47346

Remote tripping

Navy instantaneous voltage release (MN or 2nd MX)

			2nd MX	or	MN
	AC 50/60 Hz	24/30 V DC, 24 V AC			33819
	DC	100/130 V AC/DC			33821
		115 V AC/DC	64612		
		200/250 V AC/DC			33822
		220 V AC/DC	64613		
		380/480 V AC	64614		33824

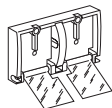
MN delay unit

			R (non-adjustable)	Rr (adjustable)
	AC 50/60 Hz	48/60 V AC/DC		33680
	DC	100/130 V AC/DC	33684	33681
		200/250 V AC/DC	33685	33682
		380/480 V AC		33683

Circuit breaker locking

Pushbutton locking device

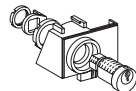
E46866



By padlocks	33897
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OFF position locking

E46701



By padlocks + BPFE support		
	VCPO	47514
By Profalux keylocks		
Profalux	1 lock with 1 key + adaptation kit	47519
	2 locks 1 keys + adaptation kit	47520
1 keylock Profalux (without adaptation kit):		
	identical key not identified combination	33173
	identical key identified 215470 combination	33174
	identical key identified 215471 combination	33175
By Ronis keylocks + BPFE support		
Ronis	1 lock with 1 key + adaptation kit	47521
	2 locks 1 keys + adaptation kit	47522
1 keylock Ronis (without adaptation kit):	identical key not identified combination	33189
	identical key identified EL24135 combination	33190
	identical key identified EL24153 combination	33191
	identical key identified EL24315 combination	33192
Adaptation kit (without keylock):		
	adaptation kit Profalux	47515
	adaptation kit Ronis	47516
	adaptation kit Kirk	47517
	adaptation kit Castell	47518

Other circuit breaker accessories

Mechanical operation counter

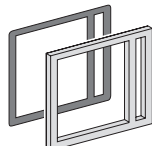
E46867



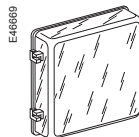
Operation counter CDM	33895
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Escutcheon and accessories

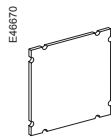
E46868



Escutcheon



Cover



Blanking plate

Escutcheon	Drawout
Transparent cover (IP54)	33859
Escutcheon blanking plate	33858

Accessories for Micrologic control units

External sensors

Voltage measurement input (for breakers supplied via bottom terminals)

E4673		Voltage measurement input	Drawout	47507

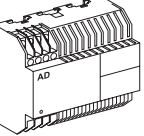
Long-time rating plug (limits setting range for higher accuracy)

E4674		Standard	0.4 to 1 x Ir	33542
		Low-setting option	0.4 to 0.8 x Ir	33543
		High-setting option	0.8 to 1 x Ir	33544
		Without long-time protection	off	33545

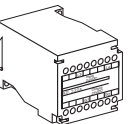
Zone Selective Interlocking option for Micrologic P and H

ZSI	Standard
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External power supply module (AD)

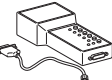
DE105360		24/30 V DC	54440
		48/60 V DC	54441
		100/125 V DC	54442
		110/130 V AC	54443
		200/240 V AC	54444
		380/415 V AC	54445

Battery module (BAT)

E4787		1 24 V battery	54446
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Test equipment

Mini test kit

E5921		Hand held test kit (HHTK)	33594
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Portable test kit

E5954		Full function test kit (FFTK)	33595
		Test report edition come from FFTK	34559
		FFTK test cable 2 pin for STR trip unit	34560
		FFTK test cable 7 pin for Micrologic trip unit	33590

Special settings

For circuit breaker derating

To be specified when ordering

Rating	NT08	NT10	NT12	NT16
400	Available	Available		
630	Available	Available	Available	
800		Available	Available	Available
1000			Available	Available
1250				Available

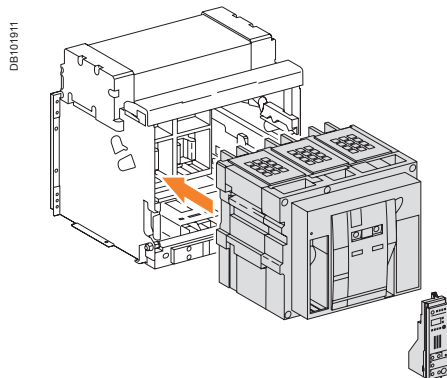
NW08 to NW40 Navy drawout circuit breakers

Circuit breakers

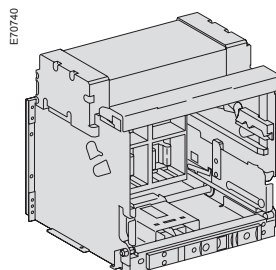
A Navy Masterpact drawout circuit breaker is described by 5 catalogue numbers corresponding to:

- the basic circuit breaker
- a control unit
- a chassis
- a top connection
- a bottom connection.

A communication option and various auxiliaries and accessories may also be added.



Basic circuit breaker + chassis ≤ 4000 A



Chassis ≤ 4000 A

Navy basic circuit breaker

			3P
Type N1			
	In (A at 40 °C)	Icu (kA for U = 220/440 V) - Ics = 100 % Icu	
NW08	800	42	64500
NW10	1000	42	64501
NW12	1250	42	64502
NW16	1600	42	64503
Type H1			
	In (A at 40 °C)	Icu (kA for U = 220/440 V) - Ics = 100 % Icu	
NW08	800	65	64505
NW10	1000	65	64506
NW12	1250	65	64507
NW16	1600	65	64508
NW20	2000	65	64509
NW25	2500	65	64510
NW32	3200	65	64511
NW40	4000	65	64512
Type H2			
	In (A at 40 °C)	Icu (kA for U = 220/440 V) - Ics = 100 % Icu	
NW08	800	100	64523
NW10	1000	100	64524
NW12	1250	100	64525
NW16	1600	100	64526
NW20	2000	100	64527
NW25	2500	100	64528
NW32	3200	100	64529
NW40	4000	100	64530

Micrologic control unit

"Ammeter" A		
Micrologic 2.0 A	Basic protection	48358
Micrologic 5.0 A	Selective protection	48360
"Power meter" P		
Micrologic 5.0 P	Selective protection	48363
"Harmonic meter" H		
Micrologic 5.0 H	Selective protection	48366

Navy chassis

		3P
For type N1		
800/1250 A		64514
1600 A		64515
For type H1/H2		
800/1600 A		64517
2000 A		64518
2500 A		64519
3200 A		64520
4000 A		64521

Communication option

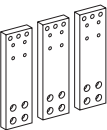
	Chassis +	Circuit breaker
Modbus COM	33852	48384
Eco Modbus COM module		48385

Portable data acquisition

Masterpact GetnSet product with battery and accessories	48789
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Chassis and connections

Chassis front connection

	800-1600 A	Top	3P
		Bottom	48415
	2000 A	Top	48418
		Bottom	48413
	2500/3200 A	Top	48414
		Bottom	48416
		Bottom	48419

Chassis rear connection

E6645

Vertical connection			3P
	800-2000 A	Top	48133
		Bottom	48138
	2500/3200 A	Top	48134
		Bottom	48139
	4000 A	Top	48135
		Bottom	48140
Horizontal connection			
	800-2000 A	Top	48143
		Bottom	48148
	2500/3200 A	Top	48144
		Bottom	48149
	4000 A	Top	48145
		Bottom	48150
Rear connection accessories			
Interphase barriers			
	3P/4P/ (3 parts)		48600

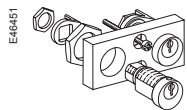
E6646

NW08 to NW40 Navy drawout circuit breakers

Chassis locking and accessories

Chassis locking

"Disconnected" position locking



By padlocks

VCPO

Standard

By Profalux keylocks

Profalux

1 lock with 1 key + adaptation kit

48568

2 locks 1 key + adaptation kit

48569

2 locks 2 different keys + adaptation kit

48570

1 keylock Profalux (without adaptation kit):

identical key not identified combination

33173

identical key identified 215470 combination

33174

identical key identified 215471 combination

33175

By Ronis keylocks

Ronis

1 lock with 1 key + adaptation kit

48572

2 locks 2 same keys + adaptation kit

48573

2 locks 2 different keys + adaptation kit

48574

1 keylock Ronis (without adaptation kit):

identical key not identified combination

33189

identical key identified EL24135 combination

33190

identical key identified EL24153 combination

33191

identical key identified EL24315 combination

33192

Optional disconnected/test/connected position locking

33779

Adaptation kit (without keylock):

adaptation kit Profalux / Ronis

48564

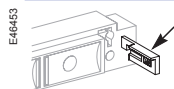
Kirk key adapter kit

48565

Castell key adapter kit

48566

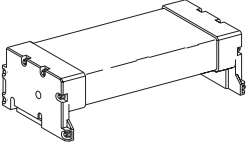
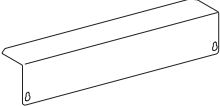
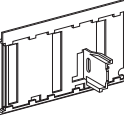
Racking interlock



1 part

48582

Chassis accessories

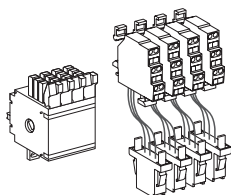
Chassis accessories			
Arc chute cover			
E46457		3P	Standard
Auxiliary terminal shield (CB)			
E46458		800/4000 A 3P	48595
Safety shutters			
E46699		Safety shutters (VO)	Standard
Shutter locking block (for replacement)			
E46460		2 parts for 800/4000 A	48591

NW08 to NW40 Navy drawout circuit breakers

Indication contacts

ON/OFF indication contacts (OF)

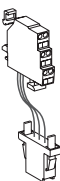
E46889



Navy block of 4 changeover contacts (6 A - 240 V)	1 block (standard)
1 additional Navy block of 4 contacts (1 max.)	64556

Combined closed / connected contacts for use with 1 auxiliary contact

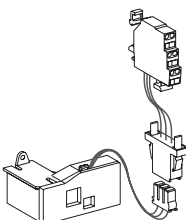
E46890



1 contact (5 A - 240 V) (8 max.)	48477
or 1 low-level contact (8 max.)	48478

"Fault trip" indication contacts (SDE)

E46891



Changeover contact (5 A - 240 V)	1 (standard)
1 additional SDE (5 A - 240 V)	48475
or 1 additional low-level SDE	48476

Carriage switches (connected / disconnected / test position)

E46861



Changeover contacts (6 A - 240 V)	
1 connected position contact (3 max.)	33751
1 test position contact (3 max.)	33752
1 disconnected position contact (3 max.)	33753
and/or low-level changeover contacts	
1 connected position contact (3 max.)	33754
1 test position contact (3 max.)	33755
1 disconnected position contact (3 max.)	33756
Actuator for additional carriage switches	48560

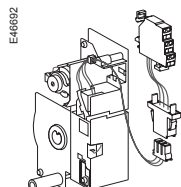
Auxiliary terminals for chassis alone

3 wire terminal (30 parts)	47898
6 wire terminal (10 parts)	47899
Jumpers (10 parts)	47900

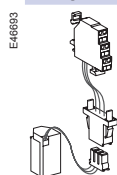
Remote operation

Remote ON/OFF

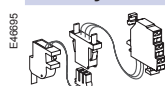
Gear motor

	AC 50/60 Hz	100/130 V	MCH
		200/240 V	48526
		250/277 V	48527
		380/415 V	48528
		440/480 V	48529
	DC	24/30 V	48530
			48521

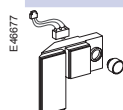
Navy instantaneous voltage releases

	Standard		Closing release	Opening release
			Navy XF	Navy MX
	AC 50/60 Hz	115 V AC/DC	64542	64547
	DC	220 V AC/DC	64543	64548
		380-480 V AC	64544	64549
	Communicating		Navy XF com	Navy MX com
	AC 50/60 Hz	115 V AC/DC	64552	64559
	DC	220 V AC/DC	64553	64560
		380/480 V AC	64554	64561

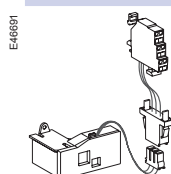
“Ready to close” contact (1 max.)

		PF
	1 changeover contact (5 A - 240 V)	48469
	1 low-level changeover contact	48470

Electrical closing pushbutton

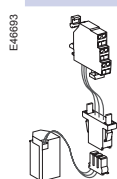
		BPFE
	1 pushbutton	48534

Remote reset after fault trip

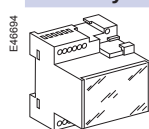
	Automatic reset	RAR
	Adaptation	47346

Remote tripping

Instantaneous voltage release

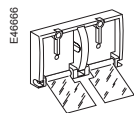
	AC 50/60 Hz	24/30 V DC, 24 V AC	2nd MX	or	MN
		100/130 V AC/DC			48501
	DC	115 V AC/DC	64569		48503
		200/250 V AC/DC			48504
		220 V AC/DC	64570		
		380/480 V AC	64571		48506

MN delay unit

	AC 50/60 Hz	48/60 V AC/DC	R (non-adjustable)	Rr (adjustable)
		100/130 V AC/DC	33684	33680
		200/250 V AC/DC	33685	33681
		380/480 V AC/DC		33682
				33683

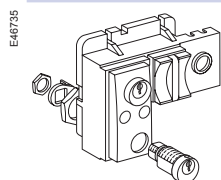
Circuit breaker locking

Pushbutton locking device



By padlocks	48536
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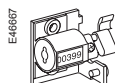
OFF position locking



By padlocks		
	VCPO	48539
By Profalux keylocks		
Profalux	1 lock with 1 key + adaptation kit	48545
	2 locks 2 same keys + adaptation kit	48546
	2 locks 2 different keys + adaptation kit	48547
1 keylock Profalux (without adaptation kit):	identical key not identified combination	33173
	identical key identified 215470 combination	33174
	identical key identified 215471 combination	33175
By Ronis keylocks		
Ronis	1 lock with 1 key + adaptation kit	48549
	2 locks 2 same keys + adaptation kit	48550
	2 locks 2 different keys + adaptation kit	48551
1 keylock Ronis (without adaptation kit):	identical key not identified combination	33189
	identical key identified EL24135 combination	33190
	identical key identified EL24153 combination	33191
	identical key identified EL24315 combination	33192
Adaptation kit (without keylock):	adaptation kit Profalux / Ronis	48541
	adaptation kit Kirk	48542
	adaptation kit Castell	48543

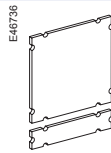
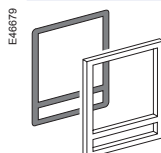
Other circuit breaker accessories

Mechanical operation counter



operation counter CDM	48535
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Escutcheon and accessories



Escutcheon

Cover

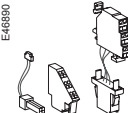
Blanking plate

	Drawout
Escutcheon	48603
Transparent cover IP54	48604
Escutcheon blanking plate	48605

Accessories for Micrologic control units

External sensors

Voltage measurement input (for breakers supplied via bottom terminals)

	Voltage measurement input	Drawout	48533

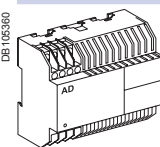
Long-time rating plug (limits setting range for higher accuracy)

	Standard	0.4 to 1 x Ir	33542
	Low-setting option	0.4 to 0.8 x Ir	33543
	High-setting option	0.8 to 1 x Ir	33544
	Without long-time protection	off	33545

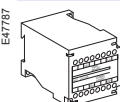
Zone Selective Interlocking option for Micrologic P and H

ZSI	Standard
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External power supply module (AD)

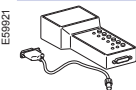
	24/30 V DC	54440
	48/60 V DC	54441
	100/125 V DC	54442
	110/130 V AC	54443
	200/240 V AC	54444
	380/415 V AC	54445

Battery module (BAT)

	1 24 V battery	54446

Test equipment

Mini test kit

	Hand held test kit (HHTK)	33594

Portable test kit

	Full function test kit (FFTK)	33595
	Test report edition come from FFTK	34559
	FFTK test cable 2 pin for STR trip unit	34560
	FFTK test cable 7 pin for Micrologic trip unit	33590

Special settings

For circuit breaker derating

To be specified when ordering

Rating	NW08	NW10	NW12	NW16	NW20	NW25	NW32
400	Available	Available					
630	Available	Available	Available				
800		Available	Available	Available			
1000			Available	Available	Available		
1250				Available		Available	
1600					Available	Available	Available
2000						Available	Available
2500							Available
Rating	NW40						
2000	Available						
2500	Available						
3200	Available						
4000							

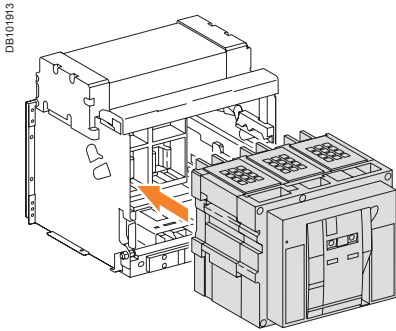
NW08 to NW40 Navy drawout switch-disconnectors

Switch-disconnectors

A Navy Masterpact drawout switch-disconnector is described by 4 catalogue numbers corresponding to:

- the basic switch-disconnector
- a chassis
- a top connection
- a bottom connection.

A communication option and various auxiliaries and accessories may also be added.



Basic switch-disconnector + chassis ≤ 4000 A

Navy basic switch-disconnector			
Type HA			3P
	In (A at 40 °C)	Icm (kA peak for U = 220/690 V)	
NW08	800	105	64532
NW10	1000	105	64533
NW12	1250	105	64534
NW16	1600	105	64535
NW20	2000	105	64536
NW25	2500	135	64537
NW32	3200	135	64538
NW40	4000	135	64539

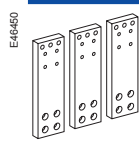
Navy chassis			
Type HA			3P
800/1600 A			64517
2000 A			64518
2500 A			64519
3200 A			64520
4000 A			64521

Communication option			
	Chassis	+	Switch-disconnector
Modbus COM	33852		48384

Auxiliaries and accessories: see [page F-8](#) and [page F-9](#).

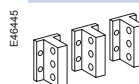
Connections

Chassis front connection

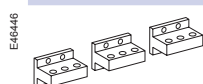
	800-1600 A	Top	3P
		Bottom	48415
	2000 A	Top	48418
		Bottom	48413
	2500/3200 A	Top	48414
		Bottom	48416
		Bottom	48419

Chassis rear connection

Vertical connection

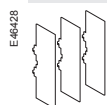
	800-2000 A	Top	3P
		Bottom	48133
	2500/3200 A	Top	48138
		Bottom	48134
	4000 A	Top	48139
		Bottom	48135
		Bottom	48140

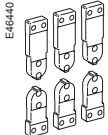
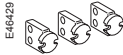
Horizontal connection

	800-2000 A	Top	3P
		Bottom	48143
	2500/3200 A	Top	48148
		Bottom	48144
	4000 A	Top	48149
		Bottom	48145
		Bottom	48150

Rear connection accessories

Interphase barriers

	3P/4P (3 parts)	48600

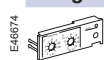
Connection			
Drawout circuit breakers			
Front connection / Replacement kit (6 parts)			
	Top and bottom	630/1600 A	33588
	Installation manual		47102
	Rear connection (vertical or horizontal mounting) / Replacement kit (3 parts)		
 		630/1600 A	33586
	Vert. mounting. Horiz. mounting. Installation manual		47102
Connection accessories			
Vertical connection adapters 630/1600 A / Replacement kit (3 parts)			
	For drawout front-connected circuit breakers		33642
	Installation manual		47102
Cable lug adapters 630/1600 A / Replacement kit (3 parts)			
	For drawout front-connected circuit breakers		33644
	Installation manual		47102
Spreaders / Replacement kit (3 parts)			
	For drawout front and rear-connected circuit breakers		33622
	Installation manual		47102
Interphase barriers / Replacement kit (3 parts)			
	For drawout front and rear-connected circuit breakers		33648
	For drawout rear-connected circuit breakers		33768
	Installation manual		47102

Nota: Installation manual must be ordered separately, it is not supply with the component.

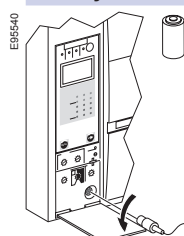
Micrologic control unit, communication option, portable data acquisition

Replacement parts for Micrologic control units

Long-time rating plug (limits setting range for higher accuracy) / 1 part

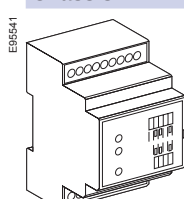
	Standard	0.4 at 1 x Ir	33542
	Low-setting option	0.4 at 0.8 x Ir	33543
	High-setting option	0.8 at 1 x Ir	33544
	Without long-time protection	off	33545

Battery + cover

	Battery (1 part)		33593
	Cover (1 part)	For Micrologic A	33592
		For Micrologic P and H	47067

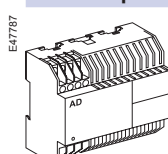
Communication option

Chassis

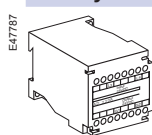
	Modbus COM		33852
	6 wires terminal drawout (1 part)		33099

Installation manual	33088
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External power supply module (AD) / 1 part

	24-30 V DC	54440
	48-60 V DC	54441
	100-125 V DC	54442
	110-130 V AC	54443
	200-240 V AC	54444
	380-415 V AC	54445

Battery module (BAT) / 1 part

	1 battery	24 V DC	54446
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Test equipments / 1 part

	Mini test kit	33594
	Portable test kit	33595
	Wiring kit or mini test kit or portable test kit	33590

Portable data acquisition

Masterpact GetnSet (*)

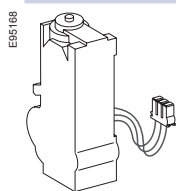
Masterpact GetnSet product with battery and accessories	48789
Spare battery for Masterpact GetnSet product	48790
Spare cable for Masterpact GetnSet product	48791

(*) Consult us.

Nota: Installation manual must be ordered separately, it is not supply with the component.

Remote operation

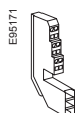
Gear motor



MCH (1 part)

AC 50/60 Hz

100-130 V	33176
200-240 V	33177
380-415 V	33179
400-440 V	33179
+ resistor	33193



Terminal block (1 part)

For drawout circuit breaker

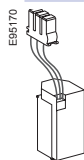
33098

Drawout.

Installation manual

47103

Closing and opening release (XF or MX)



Standard coil (1 part)

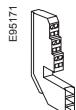
AC 50/60 Hz

115 V AC	64628
220 V AC	64629
380/440 V AC	64630

Communicating coil (1 part)

AC 50/60 Hz

115 V AC	64633
220 V AC	64634
380/440 V AC	64635



Terminal block (1 part)

For drawout circuit breaker

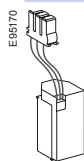
33098

Drawout.

Installation manual

47103

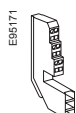
Undervoltage release MN



Undervoltage release (1 part)

AC 50/60 Hz

100-130 V AC	33670
200-250 V AC	33671
380-480 V AC	33673



Terminal block (1 part)

For drawout circuit breaker

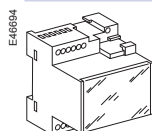
33098

Drawout.

Installation manual

47103

MN delay unit



MN delay unit (1 part)

AC 50/60 Hz

	R (non-adjustable)	Rr (adjustable)
100-130 V	33684	33681
200-250 V	33685	33682
380-480 V		33683

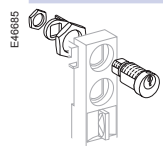
Installation manual

47103

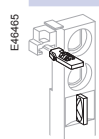
Chassis locking and accessories

Chassis locking

"Disconnected" position locking / 1 part

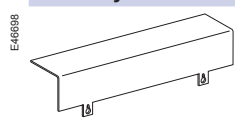
	By padlocks		Standard
	By keylocks		
	Profalux	1 lock	33773
		1 lock + 1 lock with same key profile	33774
		2 locks (different key profiles)	33775
	1 identical keylock Profalux with the same key:		
	key: random not identified combination		33173
	key: random identified 215470 combination		33174
	key: random identified 215471 combination		33175
	Ronis	1 lock	33776
		1 lock + 1 lock with same key profile	33777
		2 locks (different key profiles)	33778
	1 identical keylock Ronis with the same key :		
	key: random not identified combination		33189
	key: random identified EL24135 combination		33190
	key: random identified EL24153 combination		33191
	key: random identified EL24315 combination		33192
	Locking kit without locks for	Profalux	33769
		Ronis	33770
		Castell	33771
		Kirk	33772
	Installation manual		47104

Racking interlock / 1 part

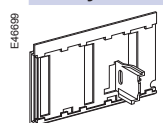
	Racking interlock (VPOC)		33788
	Installation manual		47104

Chassis accessories

Auxiliary terminal shield (CB) / 1 part

	Terminal shield		3P	33763
	Installation manual			47104

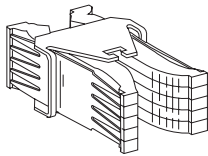
Safety shutters + locking / 1 part

	Safety shutters (VO)		3P	33765
	Installation manual			47104

Note: the locking of safety shutters is integrated.

Clusters

E995938



1 disconnecting contact cluster for chassis (see table below) 1 part 33166

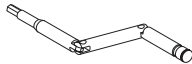
Table : number of clusters required for the different chassis models

Chassis rating (A)	Masterpact NT NAVY
630	12
800	12
1000	12
1250	12
1600	18

Note: the minimum order is 6 parts.

Racking handle / 1 part

E995961

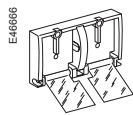


Racking handle 47098

Circuit breaker locking and accessories

Circuit breaker locking

Pushbutton locking device / 1 part

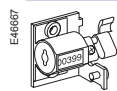
	By padlocks	33897
	Installation manual	47103

OFF position locking / 1 part

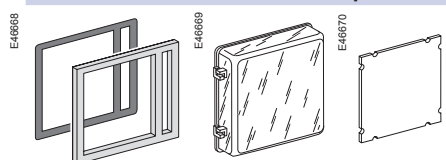
By padlocks + BPFE support		47514
By keylocks + BPFE support		
Profalux	1 lock	47519
	1 lock + 1 lock with same key profile	47520
1 identical keylock Profalux with the same key:		
	key: random not identified combination	33173
	key: random identified 215470 combination	33174
	key: random identified 215471 combination	33175
Ronis	1 lock	47521
	1 lock + 1 lock with same key profile	47522
1 identical keylock Ronis with the same key :		
	key: random not identified combination	33189
	key: random identified EL24135 combination	33190
	key: random identified EL24153 combination	33191
	key: random identified EL24315 combination	33192
Locking kit without locks for	Profalux	47515
	Ronis	47516
	Kirk	47517
	Castell	47518
Installation manual		47103

Other circuit breaker accessories

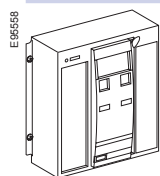
Mechanical operation counter / 1 part

	Operation counter CDM	33895
	Installation manual	47103

Escutcheon and accessories / 1 part

	Escutcheon	33857
	Transparent cover (IP54)	33859
	Escutcheon blanking plate	33858
	Installation manual	47103

Front cover / 1 part

	Front cover	47094
	Installation manual	47103

Spring charging handle / 1 part

	Spring charging handle	47092
	Installation manual	47103

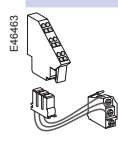
Arc chute for Masterpact NT NAVY / 1 part

	Type H1/H2	3 x	47095
	Type L1	3 x	47096
	Installation manual		47103

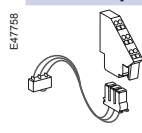
Nota: Installation manual must be ordered separately, it is not supply with the component.

Indication contacts

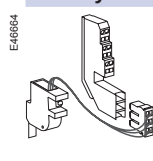
ON/OFF indication contacts (OF) / 1 part

	Changeover contacts (6 A - 240 V)	47076
	1 low-level OF to replace 1 standard OF (4 max.)	47077
	Wiring For drawout circuit breaker	33098
	Installation manual	47103

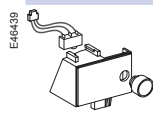
"Fault trip" indication contacts (SDE) / 1 part

	1 additional SDE (5 A - 240 V)	47078
	1 additional low-level SDE	47079
	Wiring For drawout circuit breaker	33098
	Installation manual	47103

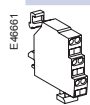
"Ready to close" contact (1 max.) / 1 part

		PF
	1 changeover contact (5 A - 240 V)	47080
	1 low-level changeover contact	47081
	Wiring For drawout circuit breaker	33098
	Installation manual	47103

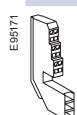
Electrical closing pushbutton / 1 part

		BPFE
	1 pushbutton	47512
	Installation manual	47103

Carriage switches (connected / disconnected / test position) / 1 part

	Changeover contacts (6A - 240 V)	
	1 connected position contact (3 max.)	33170
	1 test position contact (1 max.)	33170
	1 disconnected position contact (2 max.)	33170
	And/or low-level changeover contacts	
	1 connected position contact (3 max.)	33171
	1 test position contact (1 max.)	33171
	1 disconnected position contact (2 max.)	33171

Auxiliary terminals for chassis alone

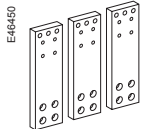
	3 wire terminal (1 part), terminal block (1 part)	33098
	Jumpers (10 parts)	47900
	Installation manual	47104

Masterpact NW NAVY Connection

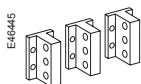
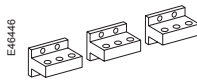
Connection

Drawout circuit breakers

Front connection / Replacement kit (3 parts)

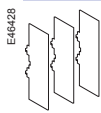
	800/1600 A	Top or bottom	47960
	2000/3200 A	Top or bottom	47962
Installation manual			47950

Rear connection (vertical or horizontal mounting) / Replacement kit (3 parts)

	800/2000 A types N1/H1/H2	Vertical	47964
	800/1600 A types H3/L1	Horizontal	47964
	2500/3200 A types H1/H2	Vertical	47966
	2000/3200 A types H3/L1	Horizontal	47966
	4000 A	Vertical	47968
		Horizontal	47970
Installation manual			47950

Connection accessories

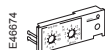
Interphase barriers / Replacement kit (3 parts)

	For drawout rear-connected circuit breaker		48600
	Installation manual		47950

Nota: Installation manual must be ordered separately, it is not supply with the component.

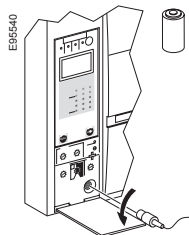
Replacement parts for Micrologic control units

Long-time rating plug (limits setting range for higher accuracy) / 1 part



Standard	0.4 at 1 x Ir	33542
Low-setting option	0.4 at 0.8 x Ir	33543
High-setting option	0.8 at 1 x Ir	33544
Without long-time protection	off	33545

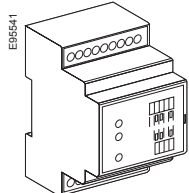
Battery + cover



Battery (1 part)		33593
Cover (1 part)	For Micrologic A	33592
	For Micrologic P and H	47067

Communication option

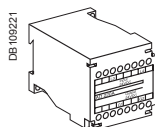
Chassis



Modbus COM		33852
6 wires terminal drawout (1 part)		47850
6 wires terminal fixed (1 part)		47075

Installation manual		33088
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External power supply module / 1 part

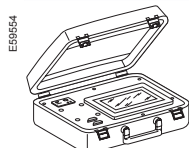


24-30 V DC	54440
48-60 V DC	54441
100-125 V DC	54442
110-130 V AC	54443
200-240 V AC	54444
380-415 V AC	54445

Battery module / 1 part

1 battery	24 V DC	54446
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Test equipments / 1 part



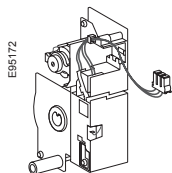
Mini test kit		33594
Portable test kit		33595
Wiring kit or mini test kit or portable test kit		33590

(*) Consult us.

Remote operation

Remote operation

Gear motor



MCH (1 part)

AC 50/60 Hz

100-130 V

47893

200-240 V

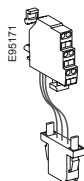
47894

380-415 V

47896

440-480 V

47897



Terminal block (1 part)

For drawout circuit breaker

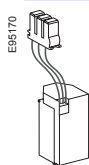
47849

Drawout.

Installation manual

47951

Closing and opening release (XF or MX)



Standard coil (1 part)

AC 50/60 Hz

115 V AC

64628

220 V AC

64629

380-480 V AC

64630

Communicating coil (1 part)

AC 50/60 Hz

115 V AC

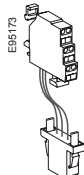
64633

220 V AC

64634

380-480 V AC

64635



Terminal block (1 part)

For drawout circuit breaker

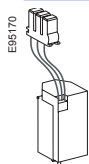
47849

Drawout.

Installation manual

47951

Undervoltage release MN



Undervoltage release (1 part)

AC 50/60 Hz

100-130 V AC

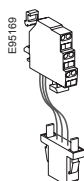
33670

200-250 V AC

33671

380-480 V AC

33673



Terminal block (1 part)

For drawout circuit breaker

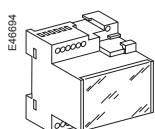
47849

Drawout.

Installation manual

47951

MN delay unit



MN delay unit (1 part)

AC 50/60 Hz

100-130 V

R (non-adjustable)

Rr (adjustable)

200-250 V

33684

33681

380-480 V

33685

33682

33683

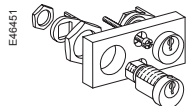
Installation manual

47951

Nota: Installation manual must be ordered separately, it is not supply with the component.

Chassis locking

"Disconnected" position locking / 1 part



By padlocks

Standard

By Profalux keylocks

Profalux

1 lock

48568

1 locks + 1 lock with same key profile

48569

2 locks (different key profiles)

48570

1 identical keylock Profalux with the same key:

key: random not identified combination

33173

key: random identified 215470 combination

33174

key: random identified 215471 combination

33175

By Ronis keylocks

Ronis

1 lock

48572

1 lock + 1 lock with same key profile

48573

2 locks (different key profiles)

48574

1 identical keylock Ronis with the same key :

key: random not identified combination

33189

key: random identified EL24135 combination

33190

key: random identified EL24153 combination

33191

key: random identified EL24315 combination

33192

Locking kit without locks for

Profalux, Ronis

48564

Kirk key adapter kit

48565

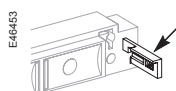
Castell key adapter kit

48566

Installation manual

47952

Racking interlock



5 parts

48582

Installation manual

47952

Chassis accessories

Auxiliary terminal shield (CB) / 1 part



800/4000 A

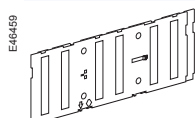
3P

48595

Installation manual

47952

Safety shutters + locking block / 1 part



800/4000 A

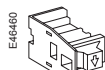
3P

48721

Installation manual

47952

Shutter locking block (for replacement) / 1 part



2 parts for 800/4000 A

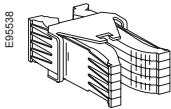
48591

Installation manual

47952

Clusters

Clusters



1 disconnecting contact cluster for chassis (see table below) (part 1)

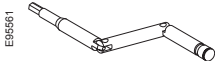
33166

Table : number of clusters required for the different chassis models

Chassis rating (A)	Masterpact NW NAVY	
	N1	H1/H2
630		
800	6	12
1000	6	12
1250	6	12
1600	12	12
2000		24
2500		24
3200		36
4000		42

Note: the minimum order is 6 parts.

Racking handle

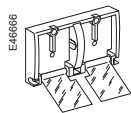


Racking handle

47944

Circuit breaker locking

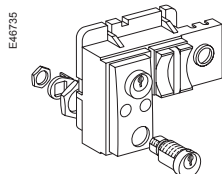
Pushbutton locking device / 1 part



By padlocks	48536
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Installation manual	47951
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OFF position locking / 1 part



By padlocks	48539
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By Profalux keylocks		
Profalux	1 lock	48545
	1 lock + 1 lock with same key profile	48546
	2 locks (different key profiles)	48547

1 identical keylock Profalux with the same key:		
	key: random not identified combination	33173
	key: random identified 215470 combination	33174
	key: random identified 215471 combination	33175

By Ronis keylocks		
Ronis	1 lock	48549
	1 lock + 1 lock with same key profile	48550
	2 locks (different key profiles)	48551

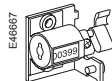
1 identical keylock Ronis with the same key :		
key: random not identified combination		33189
key: random identified EL24135 combination		33190
key: random identified EL24153 combination		33191
key: random identified EL24315 combination		33192

Locking kit without locks for	Profalux, Ronis	48541
	Kirk key adapter kit	48542
	Castell key adapter kit	48543

Installation manual	47951
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Other circuit breaker accessories

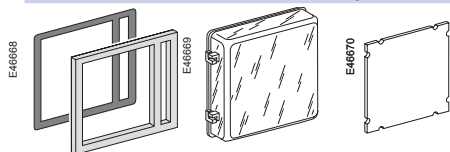
Mechanical operation counter / 1 part



Operation counter CDM	48535
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Installation manual	47951
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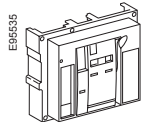
Escutcheon and accessories / 1 part



Escutcheon	48603
Transparent cover (IP 54)	48604
Escutcheon blanking plate	48605

Escutcheon	Cover	Blanking plate	Installation manual	47951
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Front cover / 1 part



Front cover	47939
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Installation manual	47951
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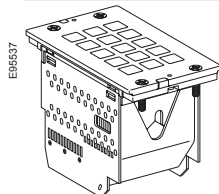
Spring charging handle / 1 part



Spring charging handle	47940
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Installation manual	47951
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Arc chute for Masterpact NW / 1 part



Type N1	3 x	47935
Type H1/H2 (NW08 to NW40 NAVY)	3 x	47935

Installation manual	47951
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Nota: Installation manual must be ordered separately, it is not supply with the component.

Indication contacts

Indication contacts

ON/OFF indication contacts (OF) / 1 parts

E46689

1 additional block of 4 contacts	64556	
Wiring	For drawout circuit breaker	47849

Installation manual	47951
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"Fault trip" indication contacts (SDE) / 1 part

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"Ready to close" contact (1 max.) / 1 part

A technical diagram of a circuit breaker assembly. It shows a main body with a handle on the left and a terminal block on the right. A label 'E46-030' is positioned to the left of the main body. The diagram illustrates the internal components and the connection points for the circuit breaker.

1 changeover contact (5 A - 240 V)	PF	47080
1 low-level changeover contact		47081
Wiring	For drawout circuit breaker	47849
Installation manual		47951

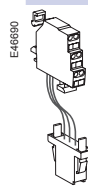
"Connected, disconnected, test position" indication contact (carriage switches) / 1 part

	Changeover contacts	6 A - 240 V	33170
	CE, CD, CT	Low-level	33171
	Installation manual		47952

Set of additional actuators for carriage switches / 1 set

1 set	48560
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Combined closed / connected contacts for use with 1 auxiliary contact / 1 part

	1 contact (5 A - 240 V)	48477
	or 1 low-level contact	48478
	Installation manual	47952

Electrical closing pushbutton / 1 part

	1 pushbutton	BPFE 48534
	Installation manual	47951

Auxiliary terminals for chassis alone

3 wire terminal (1 part)	47849
6 wire terminal (1 part)	47850
Jumpers (10 parts)	47900

Nota: Installation manual must be ordered separately, it is not supply with the component.

Masterpact NT or NW NAVY

Circuit breakers and switch-disconnectors

To indicate your choice, check the applicable square boxes ☐

and enter the appropriate information in the rectangles

Circuit breaker or switch-disconnector		Quantity
Masterpact type	NT ☐ NW ☐	
Rating	A ☐	
Sensor rating	A ☐	
Circuit breaker	N1, H1, H2, L1 ☐	
Switch-disconnector	HA ☐	
Number of poles	3 ☐	
Brand	MG ☐	
Type of equipment	Drawout with chassis ☐	
	Drawout without chassis (moving part only) ☐	
	Chassis alone ☐	

Micrologic control unit	
A - ammeter	2.0 ☐ 5.0 ☐
P - power meter	5.0 ☐
H - harmonic meter	5.0 ☐
LR - long-time rating plug	Standard 0.4 to 1 Ir ☐
	Low setting 0.4 to 0.8 Ir ☐
	High setting 0.8 to 1 Ir ☐
	LR OFF ☐

AD - external power-supply module	V ☐
BAT - battery module	☐
PTE - external voltage connector	☐

Communication	
COM module	JBus/ModBus Device ☐ Chassis ☐

Eco COM module	ModBus (for XF or MX communicating release) ☐
----------------	--

Connection	
Horizontal	Top ☐ Bottom ☐
Vertical	Top ☐ Bottom ☐
Front	Top ☐ Bottom ☐
Vertical-connection adapters	NT - FC drawout ☐
Cable-lug adapters	NT - FC drawout ☐
Interphase barriers	NT, NW drawout ☐
Spreaders	NT drawout ☐
Lugs for 240 ² or 300 ² cables	NT drawout ☐

Micrologic control unit functions:
 2.0 : basic protection (long time + inst.)
 5.0 : selective protection (long time + short time + inst.)

Indication contacts

OF - ON/OFF indication contacts			
Standard	4 OF 6 A-240 V AC (10 A-240 V AC and low-level for NW)		
Alternate	1 OF low-level for NT	Max. 4	qty
Additional	1 block of 4 OF for NW	Max. 1	qty

EF - combined "connected/closed" contacts			
	1 EF 6 A-240 V AC for NW	Max. 4	qty
	1 EF low-level for NW	Max. 4	qty

SDE - "fault-trip" indication contact			
Standard	1 SDE 6 A-240 V AC		
Additional	1 SDE 6 A-240 V AC ☐	1 SDE low level	☐

Carriage switches	Low level ☐	6 A-240 V AC	☐
CE - "connected" position	Max. 3 for NW/NT		qty
CD - "disconnected" position	Max. 3 for NW - 2 for NT		qty
CT - "test" position	Max. 3 for NW - 1 for NT		qty
AC - NW actuator for 6 CE - 3 CD - 0 CT additional carriage switches			qty

Remote operation

Remote ON/OFF	MCH - gear motor	V	☐
	XF - closing voltage release	V	☐
	MX - opening voltage release	V	☐
	PF - "ready to close" contact	Low level	☐
		6 A-240 V AC	☐
	BPFE - electrical closing pushbutton		☐
	RAR - automatic reset option		☐
Remote tripping	MN - undervoltage release	V	☐
	R - delay unit (non-adjustable)		☐
	Res - adjustable delay unit		☐
	2 nd MX - shunt release	V	☐

Locking

VBP - ON/OFF pushbutton locking (by transparent cover + padlocks)	☐
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OFF position locking:

VCPO - by padlocks			
VSPD - by keylocks	Keylock kit (w/o keylock)	Profalux ☐	Ronis ☐
	1 keylock	Profalux ☐	Ronis ☐
	2 identical keylocks, 1 key	Profalux ☐	Ronis ☐
	2 keylocks, different keys (NW)	Profalux ☐	Ronis ☐

Chassis locking in "disconnected" position:

VSPD - by keylocks	Keylock kit (w/o keylock)	Profalux ☐	Ronis ☐
		Kirk ☐	Castell ☐
	1 keylock	Profalux ☐	Ronis ☐
	2 identical keylocks, 1 key	Profalux ☐	Ronis ☐
	2 keylocks, different keys	Profalux ☐	Ronis ☐
	Optional connected/disconnected/test position lock		☐

VPOC - racking interlock	☐
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Accessories

VO - safety shutters on chassis for NT and NW	☒
CDM - mechanical operation counter NT, NW	☐
CB - auxiliary terminal shield for chassis NT, NW	☐
CDP - escutcheon NT, NW	☐
CP - transparent cover for escutcheon NT, NW	☐
OP - blanking plate for escutcheon NT, NW	☐
Test kits	Mini test kit ☐ Portable test kit ☐

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