

# Circuit breakers and switch-disconnectors

## NT06 to NT16

PB106365A49.eps



### Common characteristics

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

### Basic switchgear

#### Circuit-breaker as per IEC 60947-2

Rated current (A)	<b>In</b>	at 40 °C/50 °C <sup>(1)</sup>
Rating of 4th pole (A)		
Sensor ratings (A)		
<b>Type of circuit breaker</b>		
Ultimate breaking capacity (kA rms) V AC 50/60 Hz	<b>Icu</b>	220/415 V 440 V 525 V 690 V
Rated service breaking capacity (kA rms)	<b>Ics</b>	% Icu
<b>Utilisation category</b>		
Rated short-time withstand current (kA rms) V AC 50/60 Hz	<b>Icw</b>	0.5 s 1 s 3 s
<b>Integrated instantaneous protection (kA peak ±10 %)</b>		
Rated making capacity (kA peak) V AC 50/60 Hz	<b>Icm</b>	220/415 V 440 V 525 V 690 V
Break time (ms) between tripping order and arc extinction		
Closing time (ms)		

#### Circuit-breaker as per NEMA AB1

Breaking capacity (kA) V AC 50/60 Hz		240 V 480 V 600 V
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#### Switch-disconnector as per IEC 60947-3 and Annex A

##### Type of switch-disconnector

Rated making capacity (kA peak) <b>AC23A/AC3 category</b> V AC 50/60 Hz	<b>Icm</b>	220 V 440 V 525/690 V
Rated short-time withstand current (kA rms) <b>AC23A/AC3 category</b> V AC 50/60 Hz	<b>Icw</b>	0.5 s 1 s 3 s
Ultimate breaking capacity Icu (kA rms) with an external protection relay Maximum time delay: 350 ms		690 V

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

Service life	Mechanical	without maintenance	
C/O cycles x 1000			
<b>Type of circuit breaker</b>			
<b>Rated current</b>			<b>In (A)</b>
C/O cycles x 1000	Electrical	without maintenance	440 V <sup>(4)</sup>
			690 V
<b>Type of circuit breaker or switch-disconnector</b>			
<b>Rated operational current</b>			<b>Ie (A)</b> <b>AC23A</b>
C/O cycles x 1000	Electrical	without maintenance	440 V <sup>(4)</sup>
			690V
<b>Type of circuit breaker or switch-disconnector</b>			
<b>Rated operational current</b>			<b>Ie (A)</b> <b>AC3 <sup>(5)</sup></b>
Motor power			380/415 V (kW) 440 V (kW)
C/O cycles x 1000	Electrical	without maintenance	440 V <sup>(4)</sup>
			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) SELLIM system.

(4) Available for 480 V NEMA.

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

# Circuit breakers and switch-disconnectors

## NT06 to NT16

### Sensor selection

Sensor rating (A)	250 <sup>(1)</sup>	400	630	800	1000	1250	1600
Ir threshold setting(A)	100 to 250	160 to 400	250 to 630	320 to 800	400 to 1000	500 to 1250	640 to 1600

(1) For circuit-breaker NT02, please consult us.

NT06			NT08			NT10			NT12		NT16	
630			800			1000			1250		1600	
630			800			1000			1250		1600	
400 to 630			400 to 800			400 to 1000			630 to 1250		800 to 1600	
<b>H1</b>	<b>H2</b>	<b>L1</b> <sup>(2)</sup>							<b>H1</b>	<b>H2</b>		
42	50	150							42	50		
42	50	130							42	50		
42	42	100							42	42		
42	42	25							42	42		
100 %									100 %			
<b>B</b>	<b>B</b>	<b>A</b>							<b>B</b>	<b>B</b>		
42	36	10							42	36		
42	36	-							42	36		
24	20	-							24	20		
-	90	10 x In <sup>(3)</sup>							-	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			
<b>HA</b>									<b>HA</b>			
75									75			
75									75			
75									75			
36									36			
36									36			
20									20			
36									36			
12.5												
<b>H1</b>	<b>H2</b>	<b>L1</b>	<b>H1</b>	<b>H2</b>	<b>L1</b>	<b>H1</b>	<b>H2</b>	<b>L1</b>	<b>H1</b>	<b>H2</b>	<b>H1</b>	<b>H2</b>
<b>630</b>			<b>800</b>			<b>1000</b>			<b>1250</b>			
6	6	3	6	6	3	6	6	3	6	6	3	3
3	3	2	3	3	2	3	3	2	3	3	1	1
<b>H1/H2/HA</b>												
<b>630</b>			<b>800</b>			<b>1000</b>			<b>1250</b>			<b>1600</b>
6			6			6			6			3
3			3			3			3			1
<b>H1/H2/HA</b>												
<b>500</b>			<b>630</b>			<b>800</b>			<b>1000</b>			<b>1000</b>
≤ 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 NW63

PB106362/A65.eps



PB106362/A65.eps



### Common characteristics

Number of poles	3/4		
Rated insulation voltage (V)	<b>Ui</b>	1000	1250 for H10, HA10
Impulse withstand voltage (kV)	<b>Uimp</b>	12	12
Rated operational voltage (V AC 50/60 Hz)	<b>Ue</b>	690	1150 for H10, HA10
Suitability for isolation	IEC 60947-2		
Degree of pollution	IEC 60664-1	4 (1000 V) / 3 (1250 V)	

### Basic circuit-breaker

#### Circuit-breaker as per IEC 60947-2

Rated current (A)	at 40 °C / 50 °C <sup>(1)</sup>		
Rating of 4th pole (A)			
Sensor ratings (A)			

#### Type of circuit breaker

Ultimate breaking capacity (kA rms) V AC 50/60 Hz	<b>Icu</b>	220/415/440 V 525 V 690 V 1150 V
Rated service breaking capacity (kA rms)	<b>Ics</b>	% Icu

Utilisation category		
Rated short-time withstand current (kA rms) V AC 50/60 Hz	<b>Icw</b>	1 s 3 s

Integrated instantaneous protection (kA peak ±10 %)		
Rated making capacity (kA peak) V AC 50/60 Hz	<b>Icm</b>	220/415/440 V 525 V 690 V 1150 V

Break time (ms) between tripping order and arc extinction

Closing time (ms)

#### Circuit-breaker as per NEMA AB1

Breaking capacity (kA) V AC 50/60 Hz	240/480 V 600 V
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### Unprotected circuit-breaker

#### Tripping by shunt trip as per IEC 60947-2

#### Type of circuit breaker

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

Overload and short-circuit protection

External protection relay: short-circuit protection, maximum delay: 350 ms <sup>(4)</sup>

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

#### Type of switch-disconnector

Rated making capacity (kA peak) <b>AC23A/AC3 category</b> V AC 50/60 Hz	<b>Icm</b>	220...690 V 1150 V
Rated short-time withstand current (kA rms) <b>AC23A/AC3 category</b> V AC 50/60 Hz	<b>Icw</b>	1 s 3 s

### Earthing switch

Latching capacity (kA peak)	135
Rating short time withstand (kA rms)	<b>Icw</b> 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		<b>In (A)</b>	
C/O cycles x 1000	Electrical	without maintenance	440 V <sup>(5)</sup>
IEC 60947-2			690 V 1150 V

#### Type of circuit breaker or switch-disconnector

Rated operational current		<b>Ie (A)</b>	<b>AC23A</b>
C/O cycles x 1000	Electrical	without maintenance	440 V <sup>(5)</sup>
IEC 60947-3			690 V

#### Type of circuit breaker or switch-disconnector

Rated operational current		<b>Ie (A)</b>	<b>AC3 <sup>(6)</sup></b>
Motor power			380/415 V (kW) 440 V <sup>(6)</sup> (kW) 690 V (kW)

C/O cycles x 1000	Electrical	without maintenance	440/690 V <sup>(5)</sup>
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) See the current-limiting curves in the "additional characteristics" section.

(3) Equipped with a trip unit with a making current of 90 kA peak.

(4) 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.

(5) Available for 480 V NEMA.

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

(7) The use of NW08 to NW20 H1 in IT systems is limited to 500 V network voltage.

# Circuit breakers and switch-disconnectors NW08 to NW63

Sensor selection													
Sensor rating (A)	250 <sup>(1)</sup>	400	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
Ir threshold setting(A)	100 to 250	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	2000 to 5000	2500 to 6300

(1) For circuit-breaker NW02, please consult us.

NW08	NW10	NW12	NW16		NW20					NW25	NW32	NW40		NW40b	NW50	NW63
800	1000	1250	1600		2000					2500	3200	4000		4000	5000	6300
800	1000	1250	1600		2000					2500	3200	4000		4000	5000	6300
400 to 800	400 to 1000	630 to 1250	800 to 1600		1000 to 2000					1250 to 2500	1600 to 3200	2000 to 4000		2000 to 4000	2500 to 5000	3200 to 6300
<b>N1</b>	<b>H1<sup>(7)</sup></b>	<b>H2</b>	<b>L1<sup>(2)</sup></b>	<b>H10</b>	<b>H1<sup>(7)</sup></b>	<b>H2</b>	<b>H3</b>	<b>L1<sup>(2)</sup></b>	<b>H10</b>	<b>H1</b>	<b>H2</b>	<b>H3</b>	<b>H10</b>	<b>H1</b>	<b>H2</b>	
42	65	100	150	-	65	100	150	150	-	65	100	150	-	100	150	
42	65	85	130	-	65	85	130	130	-	65	85	130	-	100	130	
42	65	85	100	-	65	85	100	100	-	65	85	100	-	100	100	
-	-	-	-	50	-	-	-	-	50	-	-	-	50	-	-	
100 %					100 %					100 %				100 %		
<b>B</b>					<b>B</b>					<b>B</b>				<b>B</b>		
42	65	85	30	50	65	85	65	30	50	65	85	65	50	100	100	
22	36	50	30	50	36	75	65	30	50	65	75	65	50	100	100	
-	-	190	80	-	-	190	150	80	-	-	190	150	-	-	270	
88	143	220	330	-	143	220	330	330	-	143	220	330	-	220	330	
88	143	187	286	-	143	187	286	286	-	143	187	286	-	220	286	
88	143	187	220	-	143	187	220	220	-	143	187	220	-	220	220	
-	-	-	-	105	-	-	-	-	105	-	-	-	105	-	-	
25	25	25	10	25	25	25	25	10	25	25	25	25	25	25	25	
< 70					< 70					< 70				< 80		

42	65	100	150	-	65	100	150	150	-	65	100	150	-	100	150	
42	65	85	100	-	65	85	100	100	-	65	85	100	-	100	100	

	<b>HA</b>	<b>HF<sup>(3)</sup></b>		<b>HA</b>	<b>HF<sup>(3)</sup></b>		<b>HA</b>	<b>HF<sup>(3)</sup></b>		<b>HA</b>
	50	85		50	85		55	85		85
	100 %			100 %			100 %			100 %
	50	85		50	85		55	85		85
	36	50		36	75		55	75		85
	-	-		-	-		-	-		-
	105	187		105	187		121	187		187

NW08/NW10/NW12/NW16				NW20				NW25/NW32/NW40			NW40b/NW50/NW63
<b>NA</b>	<b>HA</b>	<b>HF</b>	<b>HA10</b>	<b>HA</b>	<b>HF</b>	<b>HA10</b>	<b>HA</b>	<b>HF</b>	<b>HA10</b>	<b>HA</b>	
88	105	187	-	105	187	-	121	187	-	187	
-	-	-	105	-	-	105	-	-	105	-	
42	50	85	50	50	85	50	55	85	50	85	
-	36	50	50	36	75	50	55	75	50	85	

60 Hz  
50 Hz

25						20						10		
12.5						10						5		
<b>N1/H1/H2</b>	<b>L1</b>	<b>H10</b>				<b>H1/H2</b>	<b>H3</b>	<b>L1</b>	<b>H10</b>	<b>H1/H2</b>	<b>H3</b>	<b>H10</b>	<b>H1</b>	<b>H2</b>
<b>800/1000/1250/1600</b>				<b>2000</b>				<b>2500/3200/4000</b>				<b>4000b/5000/6300</b>		
10	3	-				8	2	3	-	5	1.25	-	1.5	1.5
10	3	-				6	2	3	-	2.5	1.25	-	1.5	1.5
-	-	0.5				-	-	-	0.5	-	-	0.5	-	-
<b>H1/H2/NA/HA/HF</b>				<b>H1/H2/H3/HA/HF</b>				<b>H1/H2/H3/HA/HF</b>				<b>H1/H2/HA</b>		
<b>800/1000/1250/1600</b>				<b>2000</b>				<b>2500/3200/4000</b>				<b>4000b/5000/6300</b>		
10						8						1.5		
10						6						1.5		
<b>H1/H2/NA/HA/HF</b>				<b>H1/H2/H3/HA/HF</b>										
<b>800</b>				<b>1000</b>				<b>1250</b>				<b>1600</b>		
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 Compact NS and Masterpact circuit breakers are equipped with a Micrologic control unit that can be changed on site.

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, E, 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 catalogues LVPED211021EN and LVPED208008EN.

The rules governing the various possible combinations can be found in the documentation accessible via the Products and services menu of the [www.schneider-electric.com](http://www.schneider-electric.com) web site.

### Micrologic name codes

**2.0 E**  
X Y Z

#### X: type of protection

- 2 for basic protection
- 5 for selective protection
- 6 for selective + earth-fault protection
- 7 for selective + earth-leakage protection.

#### Y: control-unit generation

Identification of the control-unit generation. "0" signifies the first generation.

#### Z: type of measurement

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

PB104994.eps

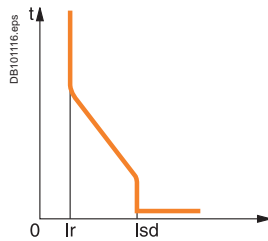


PB106351A32.eps



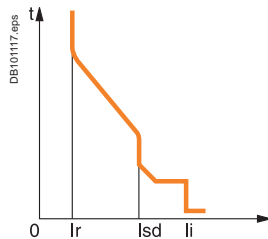
### Current protection

#### Micrologic 2: basic protection



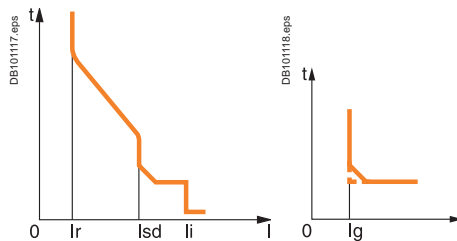
**Protection:**  
long time  
+ instantaneous

#### Micrologic 5: selective protection



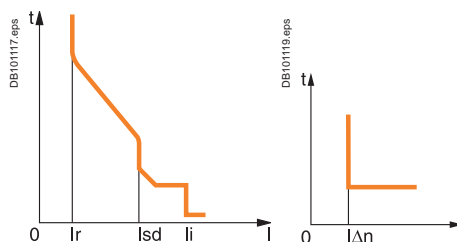
**Protection:**  
long time  
+ short time  
+ instantaneous

#### Micrologic 6: selective + earth-fault protection



**Protection:**  
long time  
+ short time  
+ instantaneous  
+ earth fault

#### Micrologic 7: selective + earth-leakage protection



**Protection:**  
long time  
+ short time  
+ instantaneous  
+ earth leakage up to 3200A

### Measurements and programmable protection

#### A: ammeter

- I<sub>1</sub>, I<sub>2</sub>, I<sub>3</sub>, N, earth-fault, earth-leakage and maximeter for these measurements
- fault indications
- settings in amperes and in seconds.

#### E: Energy

- incorporates all the rms measurements of Micrologic A, plus voltage, power factor, power and energy metering measurements.
- calculates the current demand value
- "Quickview" function for the automatic cyclical display of the most useful values (as standard or by selection).

#### P: A + power meter + programmable protection

- measurements of V, A, W, VAR, VA, Wh, VARh, VAh, Hz, V<sub>peak</sub>, A<sub>peak</sub>, 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



2.0 E



5.0 A



5.0 E



5.0 P



5.0 H



6.0 A



6.0 E



6.0 P



6.0 H



7.0 A



7.0 P



7.0 H



# DC circuit breakers characteristics

## Masterpact NW10 to NW40 DC

PB104917.eps



PB104428-42SE.eps



NW10DC 4P.

### Masterpact DC circuit breaker

Poles coupling version	C or D (3 poles) E (4 poles)
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#### Electrical characteristics as per IEC 60947-1/ 60947-2 and EN 60947-1 / 60947-2

Rated current at 40 °C / 50 °C <sup>(1)</sup>	<b>I<sub>n</sub></b>	(A)
Rated insulation voltage	<b>U<sub>i</sub></b>	(V)
Rated impulse withstand voltage	<b>U<sub>imp</sub></b>	(kV peak)
Rated operational voltage	<b>U<sub>e</sub></b>	(V DC)

#### Type of circuit breaker

Ultimate breaking capacity	L/R = 5 ms	<b>I<sub>cu</sub></b>	(kA)	V DC	500
					750
					900
	L/R = 15 ms	<b>I<sub>cu</sub></b>			500
					750
					900
	L/R = 30 ms	<b>I<sub>cu</sub></b>			500
					750
					900

Service breaking capacity	<b>I<sub>cs</sub></b>	% I <sub>cu</sub>
Rated making capacity	<b>I<sub>cm</sub></b>	% I <sub>cu</sub>
Short-time withstand current	<b>I<sub>cw</sub></b>	1 s

Utilisation category

Breaking time (ms)

Making time (ms)

Suitability for isolation

Pollution degree (as per IEC 60664-1)

#### Protection against overcurrents (see trip-unit table page A-40)

Trip units	Built-in
Protection	Overloads Short-circuits

#### Durability

(O/C cycles)	Mechanical	With maintenance	
		Without maintenance	
	Electrical	Without maintenance	500 V DC 900 V DC

#### Indication and control auxiliaries

Auxiliary contacts

Voltage release	MX shunt release MN undervoltage release
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#### Characteristics of switch-disconnectors as per IEC 60947-3 and EN 60947-3

#### Type of switch-disconnector

Rated making capacity	<b>I<sub>cm</sub></b>	(kA)
Rated short-time withstand current	<b>I<sub>cw</sub></b>	(kA) 1 s

#### Installation and connections

Connection	Drawout	3P	RC	Horizontal
		4P		Vertical
	Fixed	3P	RC	Horizontal
		4P		Vertical

#### Dimensions and weight

Dimensions H x W x D (mm) connected in series	Drawout	3P
		4P
	Fixed	3P
		4P
Weight (kg) connected in series (approximate values)	Drawout	3P
		4P
	Fixed	3P
		4P

<sup>(1)</sup> 50 °C - see the derating table for the NW40 DC.

# DC circuit breakers characteristics

## Masterpact NW10 to NW40 DC

NW10 DC		NW20 DC		NW40 DC	
■		■		■	
■		■		■	
1000		2000		4000	
1000		1000		1000	
12		12		12	
500/900		500/900		500/900	
<b>N</b>	<b>H</b>	<b>N</b>	<b>H</b>	<b>N</b>	<b>H</b>
85	100	85	100	85	100
-	85	-	85	-	85
-	85	-	85	-	85
35	85	35	85	35	85
-	50	-	50	-	50
-	35	-	35	-	35
25	50	25	50	25	50
-	50	-	50	-	50
-	25	-	25	-	25
100 %					
100 %					
50	85	50	85	50	85
B					
30 to 75					
< 70					
■	■	■	■	■	■
4					
■	■	■	■	■	■
-	-	-	-	-	-
■	■	■	■	■	■
20000					
10000					
8500		5000		2000	
-	2000	-	2000	-	1000
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
	<b>HA</b>		<b>HA</b>		<b>HA</b>
-	85	-	85	-	85
-	85	-	85	-	85
■	■	■	■	-	-
■	■	■	■	■	■
■	■	■	■	-	-
■	■	■	■	■	■
439 x 441 x 494				439 x 441 x 594	
439 x 556 x 494				439 x 556 x 594	
352 x 422 x 427				352 x 422 x 527	
352 x 537 x 427				352 x 537 x 527	
90 to 116					
125 to 146					
60 to 86					
85 to 106					