

MOTOR PROTECTIVE CIRCUIT BREAKERS

WML

Overview



- 1 - WML18 Motor Protective Circuit Breaker (screw terminal)
- 2 - Side mounting auxiliary contact block WACBSL (screw terminal)

- 3 - Insulated enclosure
- 4 - Cover for insulated enclosure WPE66

Selection Table



WML Thermomagnetic Motor Protective Circuit Breaker - Overload and Short-Circuit Protection


Reference values for selecting protection of three-phase electric motors 60 Hz - 4 poles			Rated current In (A)	Overload release setting In (A)	Instantaneous magnetic trip 15x In Im (A)	Screw terminal		Weight kg
220-240 V cv / kW	380-415 V cv / kW	440-480 V cv / kW				Reference	Ref.No.	
-	-	-	0.16	0.1...0.16	2.4	WML18-3-C016	W605078	0.28
-	-	-	0.25	0.16...0.25	3.75	WML18-3-C025	W605079	
-	-	0.16 / 0.12	0.4	0.25...0.4	6	WML18-3-C004	W605080	
-	0.16 / 0.12	0.25 / 0.18	0.63	0.4...0.63	9.45	WML18-3-C063	W605081	
0.16 / 0.12	0.33 / 0.25	0.33 / 0.25	1	0.63...1	15	WML18-3-U001	W605082	
0.33 / 0.25	0.5 / 0.37	1 / 0.75	1.6	1...1.6	24	WML18-3-D016	W605083	
0.5 / 0.37	1 / 0.75	1.5 / 1.1	2.5	1.6...2.5	37.5	WML18-3-D025	W605084	
1 / 0.75	2 / 1.5	2 / 1.5	4	2.5...4	60	WML18-3-U004	W605085	
1.5 / 1.1	3 / 2.2	4 / 3	6.3	4...6.3	94.5	WML18-3-D063	W605086	
3 / 2.2	6 / 4.5	7.5 / 5.5	10	6.3...10	150	WML18-3-U010	W605087	
5 / 3.7	10 / 7.5	12.5 / 9.2	16	10...16	240	WML18-3-U016	W605088	
6 / 4.5	10 / 7.5	12.5 / 9.2	18	12...18	270	WML18-3-U018	W605089	

WMLi Magnetic Motor Protective Circuit Breaker - Short Circuit Protection




Reference values for selecting protection of three-phase electric motors 60 Hz - 4 poles			Rated current In (A)	Instantaneous magnetic trip 15x In Im (A)	Screw terminal		Weight kg
220-240 V cv / kW	380-415 V cv / kW	440-480 V cv / kW			Referenc	Ref.No.	
-	-	-	0.16	2.4	WML18i-3-C016	W605090	0.28
-	-	-	0.25	3.75	WML18i-3-C025	W605091	
-	-	0.16 / 0.12	0.4	6	WML18i-3-C004	W605092	
-	0.16 / 0.12	0.25 / 0.18	0.63	9.45	WML18i-3-C063	W605093	
0.16 / 0.12	0.33 / 0.25	0.33 / 0.25	1	15	WML18i-3-U001	W605094	
0.33 / 0.25	0.5 / 0.37	1 / 0.75	1.6	24	WML18i-3-D016	W605095	
0.5 / 0.37	1 / 0.75	1.5 / 1.1	2.5	37.5	WML18i-3-D025	W605096	
1 / 0.75	2 / 1.5	2 / 1.5	4	60	WML18i-3-U004	W605097	
1.5 / 1.1	3 / 2.2	4 / 3	6.3	94.5	WML18i-3-D063	W605098	
3 / 2.2	6 / 4.5	7.5 / 5.5	10	150	WML18i-3-U010	W605099	
5 / 3.7	10 / 7.5	12.5 / 9.2	16	240	WML18i-3-U016	W605100	
6 / 4.5	10 / 7.5	12.5 / 9.2	18	270	WML18i-3-U018	W605101	

Accessories


Side Mounting Auxiliary Contact Block - WACBSL

For use with	Illustrative picture	Auxiliary contacts		Reference	Ref.No.	Weight kg
		NO	NC			
WML18		1	1	WACBSL-11	W605102	0.045
		-	2	WACBSL-02	W605103	
		2	-	WACBSL-20	W605104	

Insulated Enclosures - WPE

For use with	Illustrative picture	Description	Terminals	Handle color	Reference	Code	Weight kg
WML18		<ul style="list-style-type: none"> - Empty plastic enclosure; - Degree of protection IP41; - 2 inputs/outputs PG16 for cable glands on top/bottom, and 2 inputs/outputs ØM20 in the back; - Allows installing: WML + WACBSL/ Lamps PL; - Color: cover (gray RAL 7035) and base (black RAL 7021). 	-	-	WPE41	W605105	0.41
			Ground	-	WPE41G1	W605106	0.41
			Ground and Neutral	-	WPE41GN	W605107	0.41
		<ul style="list-style-type: none"> - Empty plastic enclosure; - Degree of protection IP66; - 2 inputs/outputs PG16 for cable glands on top/bottom, and 2 inputs/outputs ØM20 in the back; - Allows installing: WML + WACBSL/ Lamp PL; - Color: cover (gray RAL 7035) and base (black RAL 7021).. 	-	-	WPE66	W605108	0.41
			Ground	-	WPE66G	W605109	0.41
			Ground and Neutral	-	WPE66GN	W605110	0.41
		- Allows raising the degree of protection of the insulated enclosure PE41 (IP41) to IP66.	-	-	WKIT66PE	W605111	0.16

Push-In-Lugs - WPLMP

For use with	Illustrative picture	Description	Reference	Code	Weight kg
WML18		For direct assembly of motor protective circuit breaker into a surface with screws	WPLMP	W605112	0.005

Technical Data

Models		WML18	WML18i
Maximum rated current I_{max} (I_e)		18 A	18 A
Number of poles		3	
Short-circuit release		15 x I_e máx.	
Rated operational voltage U_e		690 V ¹⁾	
Rated frequency		50/60 Hz	
Rated insulation voltage U_i		690 V	
Rated impulse withstand voltage U_{imp}		6 kV	
Use category	IEC/EN 60947-2 (circuit breaker)	A	
	IEC/EN 60947-4-1 (motor starter)	AC-3	
Tripping test		Yes	
Overload protection		Yes	No
Phase failure sensitivity (IEC/EN 60947-4-1)		Yes	No
Tripping indication		No	
Tripping class (IEC/EN 60947-4-1)		10	-
Maximum operation per hour	Operations/hour	15	
Altitude (m)		2,000	
Degree of protection (IEC/EN 60529)		IP20	
Mechanical life	Number of operations	100,000	
Electrical life	Number of operations	100,000	
Permissible ambient temperature			
Transport and storage		-50...+80 °C	
Operation ²⁾		-20...+70 °C	
Temperature compensation (IEC/EN 60947-4-1)		-20...+60 °C	-
Power dissipation per circuit breaker			
Maximum rated currents I_n	≤4 A	7 W	
	≤10 A	8 W	
	≤12 A ³⁾	10 W	
	≤16 A	14 W	
	≤18 A	12 W	
Resistance to impact (IEC/EN 60068-2-27)		15 g	
Standards			
IEC/EN 60947-1		Yes	
IEC/EN 60947-2		Yes	
IEC/EN 60947-4-1		Yes	
Connection			
Terminal type		Screws Phillips (N° 2)	
Tightening torque	N.m	1.2...1.7	
	lb.in	11...16	
Dimensions			
Width (mm)		45	
Height (mm)		97	
Depth (mm)		77	

Technical Data

Altitudes - Correction Factors

Up to an altitude of 2,000 m above sea level, the WML motor protective circuit breakers do not undergo any changes in their performance.

As the altitude increases, the atmospheric properties vary in terms of dielectric withstand and pressure.

Therefore, for altitudes above 2,000 m, current and voltage correction factors must be applied according to the table on the right:

1 CONTACTOR


Altitude (above sea level) - h	Rated operational voltage U_e	Current correction factor L_u
$h \leq 2,000$ m	690 V	$1 \times I_n$
$2,000 < h \leq 3,000$ m	550 V	$0.96 \times I_n$
$3,000 < h \leq 4,000$ m	480 V	$0.93 \times I_n$
$4,000 < h \leq 5,000$ m	420 V	$0.90 \times I_n$

Notes: 1) 500 V with plastic enclosures.

2) Reduce current for temperatures exceeding +60 °C (87% for 70 °C).

3) Only available with spring terminal.

Main Terminal Capacity

Models	Type	Number of conductors	Cross-section
WML18	Rigid or flexible cable	 1 or 2	$1 \dots 4 \text{ mm}^2$ 18...12 AWG

Auxiliary Contact Block

References	WACBSL			
For use with	WML18, WML18i			
Rated insulation voltage U	690 V			
Utilization category	24 V ac	230 V ac	400 V ac	690 V ac
AC-15	6 A	6 A	3 A	1 A
AC-12	10 A	10 A	10 A	10 A
DC-13	24 V dc	110 V dc	220 V dc	440 V dc
	2 A	0.5 A	0.25 A	0.1 A
Terminal type	Flat			
Screw type	Phillips (N° 2)			
Tightening torque	1 N.m (8.8 lb.in)			
Solid conductor	1 or 2 x (0.5...1.5 mm) ²			
Flexible conductor	1 or 2 x (0.75...2.5 mm) ²			
Cable without terminal ¹⁾	1 or 2 x (18...14 AWG)			
Backup fuses gL/gG	10 A			

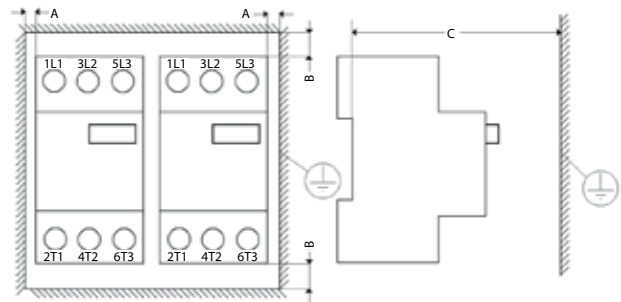
Note: 1) Mandatory use.



Mounting Configurations

Live or grounded parts distance to the circuit breaker				
Model	U _e	Minimum distance between the circuit breaker and live or grounded parts (mm)		
		B	C	A
WML18	Up to 690 V	20	75	9

The motor protective circuit breaker can be mounted in any position, but according to IEC/EN 60447 standard, the "On - I" indicator must be to the right or up.



Breaking Capacity (IEC/EN 60947-2)

WML18

Models	Maximum current (A)	220-230 V ac			380-415 V ac		
		I _{cu}	I _{cs}	Max. fuse (gL/gG) ¹⁾	I _{cu}	I _{cs}	Max. fuse (gL/gG) ¹⁾
		kA	kA	A	kA	kA	A
WML18	0.16	80	80	-	65	65	-
	0.25	80	80	-	65	65	-
	0.4	80	80	-	65	65	-
	0.63	80	80	-	65	65	-
	1	80	80	-	65	65	-
	1.6	80	80	-	65	65	-
	2.5	80	80	-	65	65	-
	4	80	80	-	65	65	-
	6.3	80	80	-	65	65	-
	10	80	80	-	50	10	80
16	80	80	-	10	5	80	
18	80	80	-	10	5	80	

- No backup fuses required.

1) In cases where prospective short-circuit current > I_{cu} backup fuses are required.



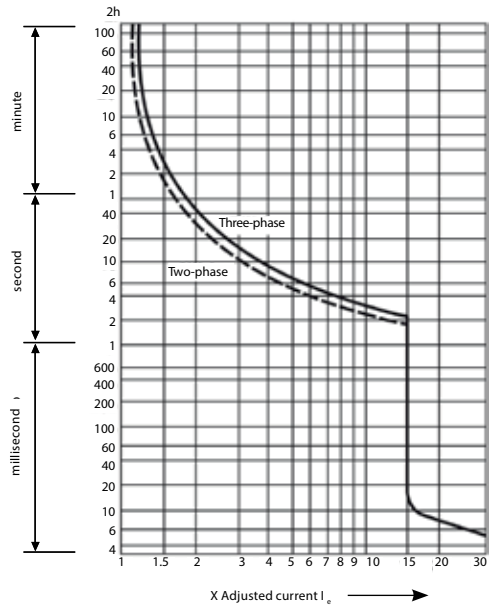
Curves

The characteristic tripping curve shows the tripping time of the motor protective circuit breaker in relation to the rated current, and averages for ambient temperature of 20 °C, starting from the cold state.

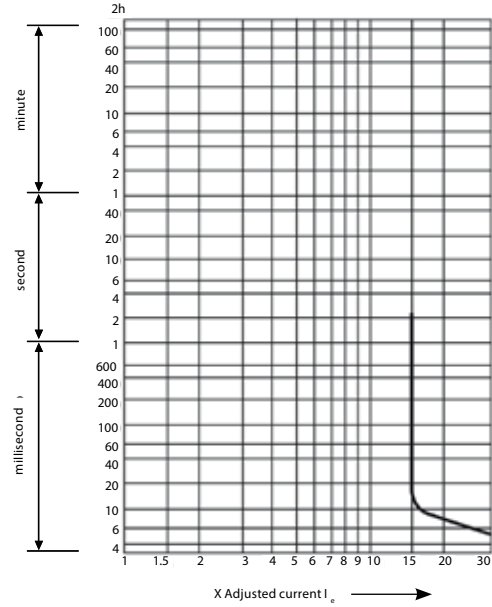
The thermal tripping time when running at the operating temperature is reduced by around 25% of the indicated values. Under normal operating conditions, all 3 circuit breaker phases must be conducting.

CONTACTOR

WML18

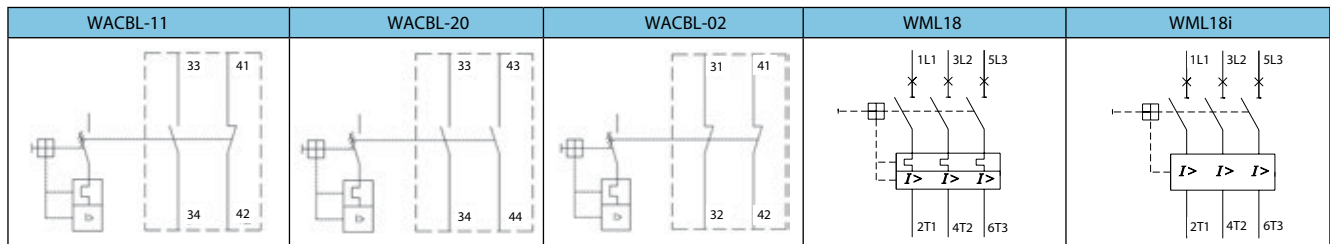


WML18i

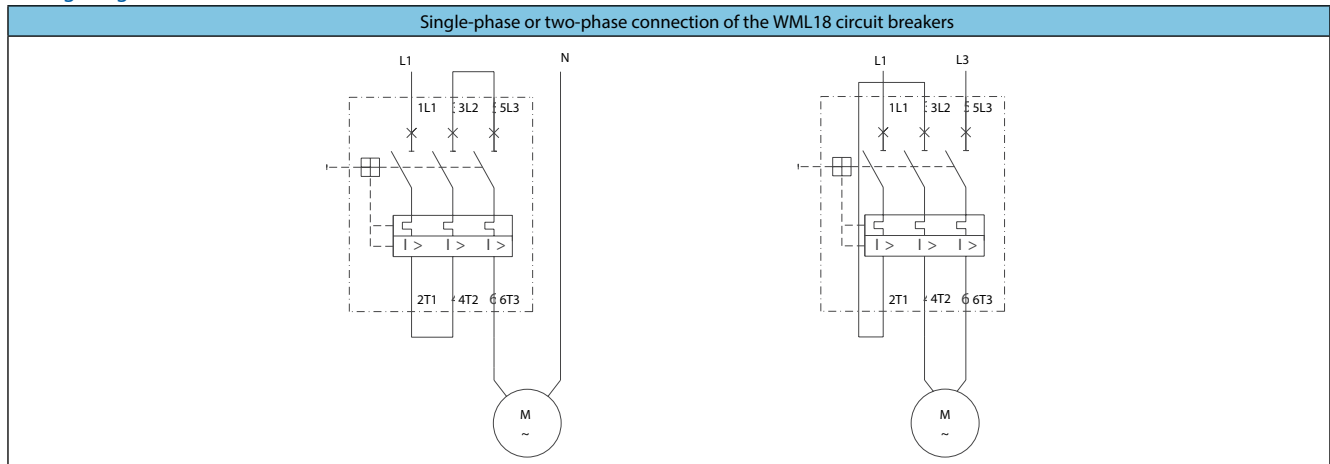


Diagrams and Typical Circuits

Diagrams

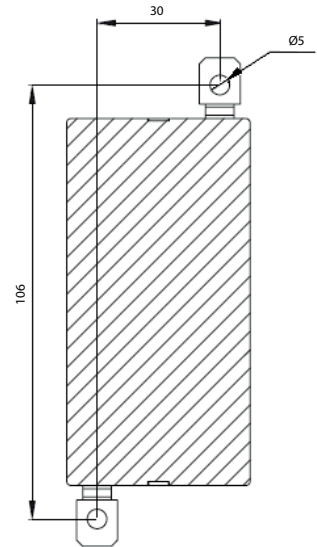
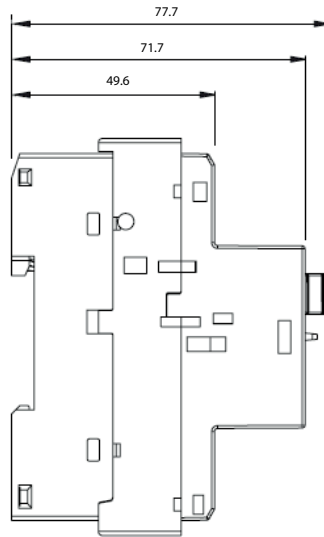
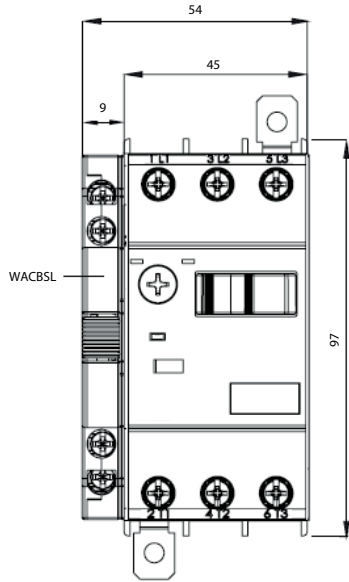


Wiring Diagram

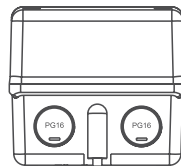
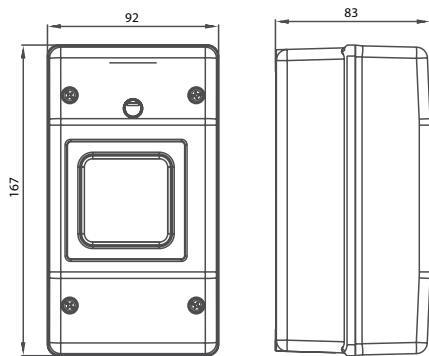


Dimensions (mm)

WML + Accessories



Insulated Enclosures WPE41/66



Mounting Position

