



GE Power Controls

Ed. 02

New Air Circuit Breakers 400 - 4000A



M-PACT

Unelec  **Equipment**

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M-PACT



Air circuit breakers 400A-4000A

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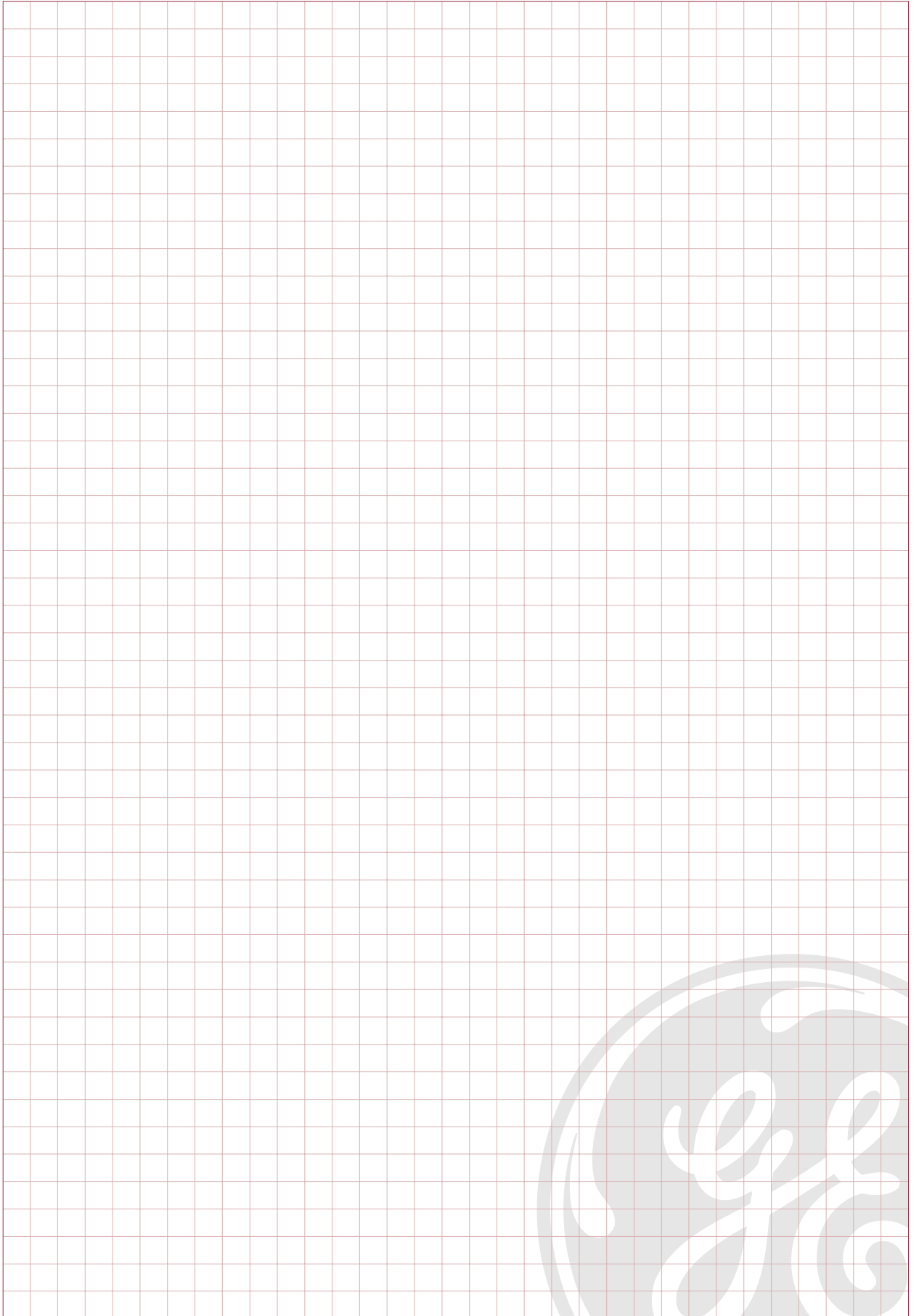
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Notes





Rated from 400 to 4000A the M-PACT circuit breaker has been designed to meet the most stringent demands in fault detection and safe interruption thereof.

Available in 2 frame sizes:

- frame size 1 ranging from 400 to 2500A
- frame size 2 ranging from 800 to 4000A

The range has been developed to be aesthetically and technically co-ordinated with other protective devices within the GE Power Controls industrial product ranges.

The breaker range has a common height and depth and is available in both fixed pattern and drawout versions which can be manually or electrically operated. Designed to offer multiple mains connection options it also comes with a wide range of easy-to-install accessories.

Specification

M-PACT air circuit breakers comply with the following specifications for Low Voltage Switchgear:

- IEC 947-1
- IEC 947-2
- IEC 947-3
- BS EN 60947-2
- VDE 0660 Part 101 and Part 107
- Utilisation category B

Approvals

ASTA / KEMA & LOVAG certification in accordance with IEC 947-2/ BS EN 60947-2.

3 performance ranges*

S – 50 kA (Icu)

N – 65 kA (Icu)

H – 80 kA (Icu)

*Ratings shown at 500V AC

2 compact frame sizes

Frame size 1 - 400 to 2500A

Frame size 2 - 800 to 4000A

Fixed pattern and withdrawable versions

3 or 4 pole configuration

Front and rear access connections (horizontal / vertical)

Devices provided with or without protection relay

Manual or electrical operation

Common height and depth dimensions

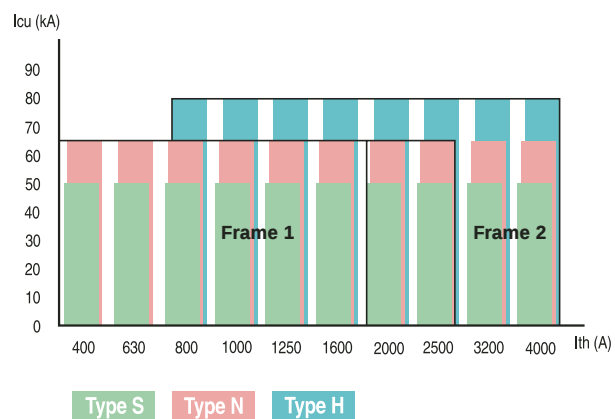
Built-in safety features e.g. safety shutters

Wide range of protection settings offering full selectivity

Combinations of earth fault protection

Easy-to-install accessories, common to entire range

Simple and efficient servicing on site



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Fixed circuit breaker

All M-PACT fixed pattern air circuit breakers incorporate a stored energy mechanism. The spring can be charged either manually or electrically via a motor operator that is automatically activated after the closing operation.

IP43 front panel and door escutcheon seals are standard features with IP20 protected secondary isolating contacts. For enhanced protection, an optional IP54 door panel is also available.



- Trip-free operating mechanism
- Positive 'ON/OFF' contact indication
- Mechanical/electrical anti-pumping device
- Charging spring status indication (optional)
- Ergonomic manual spring charging handle
- Field-mountable range of accessories
- Auxiliary switches 5 NO and 3 NC, 10A 250V (standard)
- Mechanical Trip Alarm switch (1NO) (optional)
- Padlockable push-button cover
- Mechanical cable interlocking (optional)
- Termination: rear, horizontal or front access (optional)
- Electrical clearances according to IEC 947-2
- Front access of secondary terminals for simple connection

Installation

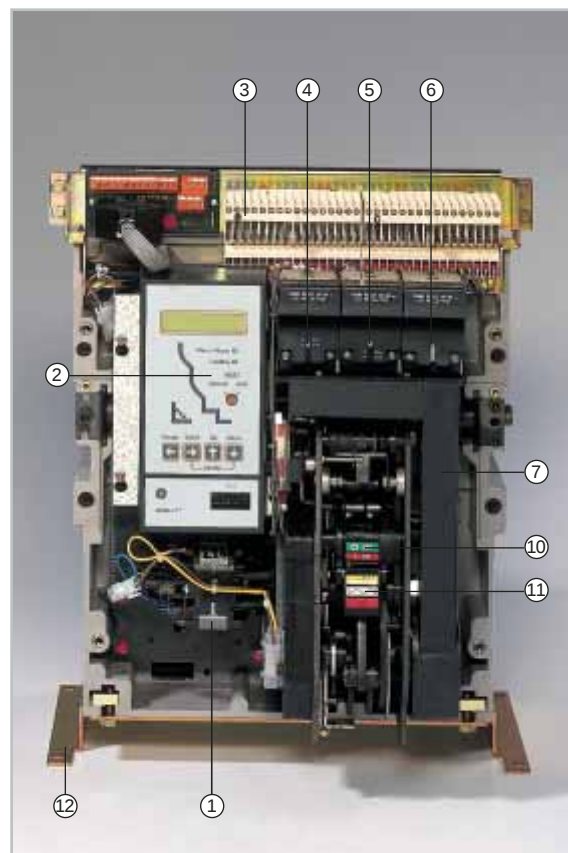
Fixed pattern M-PACT can be fastened into any suitable switchboard or cubicle arrangement using four M8 bolts.

Clearance is only required above the unit for the removal and inspection of the arc chutes (see dimensional drawings for mounting details and recommended clearance distances).

An earthing point is provided on either side of the circuit breaker.

Power Supply

All stated short circuit ratings are certified with incoming supply connection made to either upper or lower terminals.



1. Motorised spring charging unit (optional)
2. M-PRO Protection Relay (optional)
3. Secondary contacts
4. Shunt trip (optional)
5. Closing coil (optional)
6. Undervoltage release (optional)
7. Manual charging handle
8. ON/OFF push-buttons*
9. Push-button padlockable covers*
10. Positive contact indication
11. Charging spring status indication
12. Mounting plate

Withdrawable circuit breaker

Pre-mounted into a self-contained 'cassette', this versatile circuit breaker can be inserted or withdrawn via sliding rails using a racking drive mechanism controlled by a racking handle.

It provides three set positions:

Disconnected / Test / Connected.

Any attempt to withdraw the unit whilst in service will automatically trip the breaker, either by the racking position safety mechanism or by the insertion of the racking handle. It can be racked to the disconnected position with the cubicle door closed or open.



- Insulated shutters to isolate the main contact zone
- Front access padlocking for safety shutters
- Secure padlocking in the "Disconnect" position
- Clearly visible operational position indication
- Carriage position switch (optional)
- Termination: Flat copper palms (standard) with captive M10 fixing nuts
- 'T' terminal adaptors for horizontal/vertical connection (optional)
- Front access connections (optional)
- Automatic disconnect of secondary circuits
- Lifting lugs for ease of removing the circuit breaker from the cassette
- Front access of secondary terminals for simple connection
- Cassette side mounting fixing parts (optional)

Installation

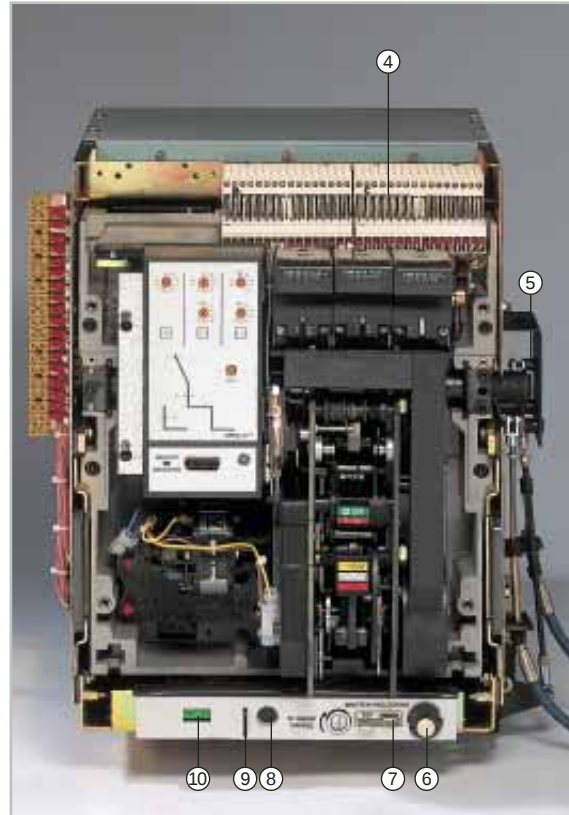
Circuit breakers are delivered pre-mounted in the cassette (standard)

Versatile fixing arrangements allow mounting onto any switchboard or cubicle using four M8 bolts (see dimensional drawings for mounting details and recommended clearance distances)

Earthing point situated on the right hand side of cassette (front view)

Power Supply

All stated short circuit ratings are certified with incoming supply connection made to either upper or lower terminals.



1. Carriage position switch (optional)*
2. Extension rail*
3. Earthed steel safety shutter*
4. Secondary terminals
5. 2 way cable interlock mechanism (optional)
6. Racking handle (storage)
7. Padlocking for safety shutters
8. Insertion hole for racking handle
9. Padlocking in the DISCONNECTED position
10. Operational position indication
11. Key interlock (optional)*

* Features not visible in picture

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Characteristics

Performance Data

Characteristic	Symbol	Units		400	630	800	1000
Rated current (40°C)	In	A					
Endurance (number of operating cycles)							
Mechanical (with maintenance)				20000	20000	20000	20000
Mechanical (without maintenance)				10000	10000	10000	10000
Electrical (at rated current)				5000	5000	5000	5000
Rated service voltage (50/60 Hz)	Ue	V		690	690	690	690
Rated insulation voltage (50/60 Hz)	Ui	V		1000	1000	1000	1000
Rated impulse withstand voltage	Uimp	V		8000	8000	8000	8000
Number of poles				3 & 4	3 & 4	3 & 4	3 & 4
Rating of 4th pole				100%	100%	100%	100%
ACB type				S	N	S	N
Frame size				1	1	1	1
Rated ultimate short-circuit breaking capacity	Icu	kA (rms)	220V	50	65	50	65
			415V	50	65	50	65
			500V	50	65	50	65
			600V	50	50	50	50
			690V	40	40	40	40
Rated service short-circuit breaking capacity	Ics	kA (rms)	220V	50	65	50	65
			415V	50	65	50	65
			500V	50	65	50	65
			600V	50	50	50	50
			690V	40	40	40	40
Rated short time withstand current							
1 second	Icw	kA (rms)		50	65	50	65
3 seconds	Icw	kA (rms)		40	50	40	50
Rated short-circuit making capacity	Icm	kA (peak)	415V	143	143	143	143
			500V	143	143	143	143
			600V	143	105	143	105
			690V	84	84	84	84
Power dissipation at In (Fixed breaker)		Watts		16	11	39	27
Power dissipation at In (Withdrawable)		Watts		33	22	75	53

Design and specifications are subject to changes without notice.

Selectivity

The following table shows the conditions to satisfy full selectivity between **UP-STREAM** and **DOWN-STREAM** devices.

Up-stream: M-PACT

Down-stream: M-PACT

ST delay 50 ms minimum between up-stream and down-stream ACB Multiplication coefficient between LT-ratings $\geq 1,56$

		Down-stream									
		400	800	1000	1250	1600	2000	2500	3200	4000	
Up-stream	400	-	-	-	-	-	-	-	-	-	-
	800	Full	-	-	-	-	-	-	-	-	-
	1000	Full	-	-	-	-	-	-	-	-	-
	1250	Full	Full	-	-	-	-	-	-	-	-
	1600	Full	Full	Full	-	-	-	-	-	-	-
	2000	Full	Full	Full	Full	-	-	-	-	-	-
	2500	Full	Full	Full	Full	Full	-	-	-	-	-
	3200	Full	Full	Full	Full	Full	Full	-	-	-	-
	4000	Full	Full	Full	Full	Full	Full	Full	-	-	-

Up-stream: M-PACT

Down-stream: RECORD or SPECTRA*

ST delay 50 ms minimum on M-PACT

Multiplication coefficient between LT ratings

*Record and Spectra are GE Power Controls

Moulded Case Circuit Breakers.

Down-stream		LT coefficient
Spectra	All ratings	2
Record	$\leq 250A$	2
	$250A \leq 500A$	2,5
	$500A \leq 1250A$	3

Temperature Deratings

Free Air⁽¹⁾

The M-PACT ACBs may operate at higher ambient temperatures than 40°C in certain installation conditions. In this case the current rating in Amperes should be reduced as indicated below.

Ambient temperature	Current Rating (A)							
	800	1000	1250	1600	2000	2500	3200	4000
50°C	800	1000	1250	1600	2000	2450	3200	3727
60°C	800	1000	1250	1445	2000	2232	3200	3367
65°C	800	1000	1250	1364	2000	2092	3019	3175
70°C	800	1000	1250	1280	1970	1970	2831	2978

The figures specified apply to withdrawable ACB's with flat face vertical copper connections

(1) Protection degree IP00. For use in enclosures with interior temperatures of 40°C to 70°C the relevant IP values can be applied.

1250			1600			2000			2500			3200			4000		
20000			20000			20000			20000			20000			20000		
10000			10000			10000			10000			10000			10000		
5000			5000			5000			5000			5000			5000		
690			690			690			690			690			690		
1000			1000			1000			1000			1000			1000		
8000			8000			8000			8000			8000			8000		
3 & 4 100%			3 & 4 100%			3 & 4 100%			3 & 4 100%			3 & 4 100%			3 & 4 100%		
S	N	H	S	N	H	S	N	H	S	N	H	S	N	H	S	N	H
1	1	2	1	1	2	1	1	2	1	1	2	2	2	2	2	2	2
50	65	80	50	65	80	50	65	80	50	65	80	50	65	80	50	65	80
50	65	80	50	65	80	50	65	80	50	65	80	50	65	80	50	65	80
50	65	80	50	65	80	50	65	80	50	65	80	50	65	80	50	65	80
50	50	65	50	50	65	50	50	65	50	50	65	50	50	65	50	50	65
40	40	60	40	40	60	40	40	60	40	40	60	40	40	60	40	40	60
50	65	80	50	65	80	50	65	80	50	65	80	50	65	80	50	65	80
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50	65	80	50	65	80	50	65	80	50	65	80	50	65	80	50	65	80
40	50	50	40	50	50	40	50	50	40	50	50	40	50	50	40	50	50
143	143	176	143	143	176	143	143	176	143	143	176	143	143	176	143	143	176
143	143	176	143	143	176	143	143	176	143	143	176	143	143	176	143	143	176
105	105	143	143	105	143	143	105	143	143	105	143	143	105	143	143	105	143
84	84	105	84	84	105	84	84	105	84	84	105	84	84	105	84	84	105
175	105	60	287	196	98	224	224	163	351	351	255	418	418	418	571	571	571
351	211	128	574	392	209	490	490	347	765	765	542	888	888	888	1224	1224	1224

Rated Short-Circuit Capacity

In accordance with IEC 947-2 at 415V

Breaker Range	Rating (A)	Type	Icu	Ics	Icw (1 sec.)
S	400 to 1600	Fixed or Withdrawable	50kA	50kA	50kA
N	400 to 4000	Fixed or Withdrawable	65kA	65kA	65kA
H	800 to 4000	Fixed or Withdrawable	80kA	80kA	80kA

Dimensions in mm

Frame Size	Rating (A)	Poles	Type	Height ⁽¹⁾	Width	Depth ⁽²⁾
1	400 to 2500	3	Withdrawable	440	329	390
			Fixed	430	322	328
		4	Withdrawable	440	429	390
			Fixed	430	422	328
2	800 to 3200	3	Withdrawable	440	419	390
			Fixed	430	412	328
		4	Withdrawable	440	549	390
			Fixed	430	542	328
2	4000	3	Withdrawable	440	419	482
			Fixed	430	412	328
		4	Withdrawable	440	549	482
			Fixed	430	542	328

(1) Height is from mounting surface to highest part of the ACB

(2) Depth is from the cubicle door to the back terminals

Weights (kg)

		S range		N range		H range	
		3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
Fixed pattern ACB	Frame						
	400 to 1600A	1	36	44	39	49	-
	2000 & 2500A	1	43	54	43	54	-
	800 to 3200A	2	53	68	53	68	53
	4000A	2	53	68	53	68	53
Withdrawable ACB	Frame						
	400 to 1600A	1	63	77	68	84	-
	2000 & 2500A	1	72	90	72	90	-
	800 to 3200A	2	90	117	90	117	90
	4000A	2	111	144	111	144	111
Cassette only	Frame						
	400 to 1600A	1	27	33	29	36	-
	2000 & 2500A	1	29	36	29	36	-
	800 to 3200A	2	37	49	37	49	37
	4000A	2	58	76	58	76	58

Recommended Minimum Copper Size

In accordance with IEC 947-2

Rating (A)	Copper / phase
400	2 x 50 x 5
630	2 x 50 x 5
800	2 x 50 x 5
1000	2 x 60 x 5
1250	2 x 100 x 5
1600	2 x 100 x 5
2000	3 x 100 x 5
2500	4 x 100 x 5
3200	4 x 100 x 10
4000	4 x 100 x 10 + 1 x 100 x 5

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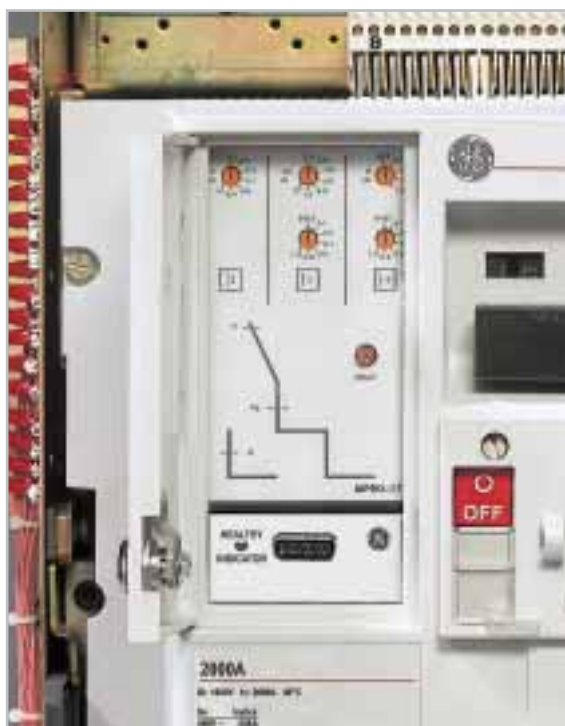
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M-PRO Microprocessor Protection Relays

M-PRO17, M-PRO20, M-PRO30 and M-PRO40 are the dedicated protection and management units for the M-PACT air circuit breakers and have been developed to meet the most stringent demands of modern circuit protection.

Designed with the full benefit of advanced microprocessor technology, the M-PRO protection and management units offer a comprehensive menu of overload, short circuit and earth fault protection to satisfy the most enhanced client requirements.



The protection and management system incorporates the following components:

- Electronic protection relay
- Power current transformers
- Measuring system (Rogowski coil)

The components are separately mounted into the M-PACT air circuit breaker. Current transformers power the electronic protection relay and the measured signal is generated by the Rogowski coils on the main phases. The M-PRO circuitry senses TRUE RMS current with immunity to system disturbances. On request, the M-PRO protection relay can be permanently powered by an auxiliary power unit. When the circuit breaker is closed the current transformers ensure energising power for the protection unit.

Depending on the selected type the M-PRO protection relays offer the following features:

- Overload protection
- Short circuit protection
- Earth fault protection
- I^2t cropping
- Neutral protection
- Thermal memory
- Communication
- Trip history and indication
- Manual or automatic reset
- Watch dog in case of microprocessor malfunction
- Plant Associated Memory Module (PAMM)
- Outputs
- Programmable inputs
- Load monitoring, Pre-trip alarm/Load shedding



Long time protection

M-PRO17: Curve speed fixed to class 20 (480 sec at 1.5 Ir, 20 sec at 7.2 Ir) in accordance with IEC 947-4.1

M-PRO20-40: Curve speed adjustable and meets the requirements of IEC 947-4.1 (class 40). Choice between the curve characteristics in accordance with IEC 255:

- Standard inverse
- Very inverse
- Extremely inverse general/motor (default)
- HV fuse compatible for transformer-fed circuits involving discrimination with primary side high voltage fuses

The operating time of each type can vary in 16 increments, from curve speed 1 (shortest time) to curve speed 16 (longest time).

Short time protection

Maximum operating time is 80ms from initiation of the fault to contacts part. Operating time of the I^2t cropping on M-PRO20-40 is fixed at 0.1 times the selected long time characteristic.

Making Current Release (MCR)

Instantaneously trips the M-PACT air circuit breaker should an attempt be made to close onto a short-circuit fault current greater than the detected making capacity of 50kA. This trip becomes inoperative once the circuit breaker has been closed.

High Set Instantaneous Short Circuit (HSISC)

Provides immediate protection against high value short circuit currents by tripping the circuit breaker. HSISC pickup level is factory set depending on M-PACT air circuit breaker performance.

Earth Fault Protection

Three types of earth fault protection are available:

- Unrestricted (UEF) - protects downstream cables and equipment
- Restricted (REF) - protects upstream cables and equipment forming the main supply to the breaker
- Standby (SEF) - provides general back-up protection against earth faults affecting upstream or downstream cables and equipment

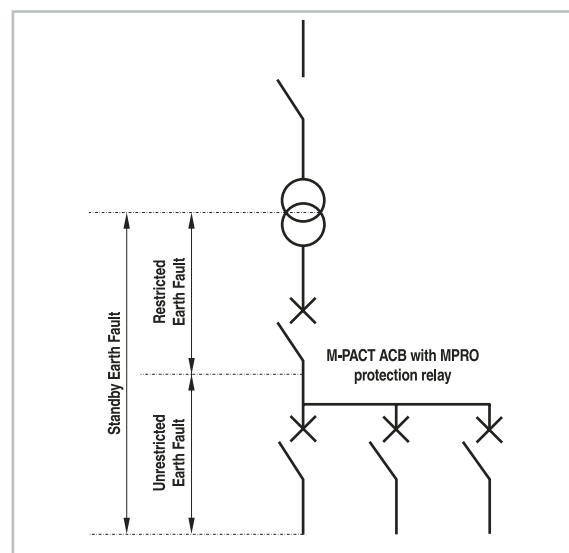
M-PRO17: Unrestricted protection only

M-PRO30-40: Any combinations of two or three types of protection can be factory pre-set

Earth fault curve cropping: available for unrestricted or stand-by earth fault options. This feature enables the user to vary the tripping time in accordance with the prospective earth fault detected.

A 'Cropping Factor' may be selected which is a multiple of the chosen earth fault pick-up current. This selects the desired level of current at which the fixed time delay becomes effective.

Earth fault protection zone diagram



Neutral pole protection

M-PRO17: Factory-set to 50% or 100%

M-PRO20-40: Customer selectable between 'OFF', 50% and 100%.

Thermal memory

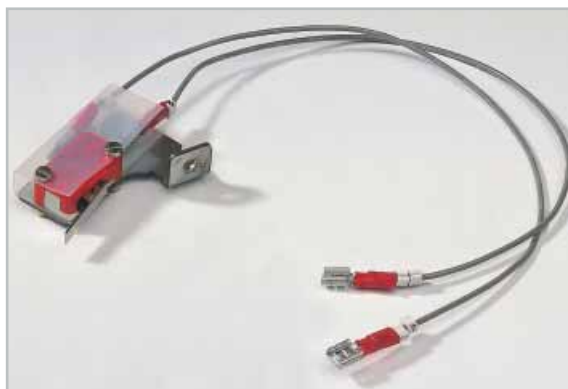
To protect against unacceptable recurring or cyclic overloads the M-PRO will track and memorise the thermal effects of load current while the breaker is on line. Tripping will be initiated when the cumulative thermal effect of cyclic overloading reaches a predetermined level.

M-PRO20: Adjustable time constants (**auxiliary power supply mandatory**)

M-PRO30-40: Adjustable time constants (**auxiliary power supply included**)

Trip alarm switch

M-PRO17-40: this 1NO switch is operated by the protection management unit trip mechanism when the M-PRO has initiated a trip. Tripping is indicated until the reset button on the M-PRO is pressed. In



case of automatic reset an impulse will be generated

RESET Function

M-PRO17: manual reset function only

M-PRO20-40: manual or auto reset function

Plant Associated Memory Module

M-PRO20-40 includes a plant associated memory module (PAMM), fitted remote from the protection unit that stores the M-PRO settings. This feature reduces set-up time by down loading the original data if the M-PRO is replaced or the moving portion of the ACB is changed. The new unit will not require re-configuration while ensuring error-free replacement and maintenance.

Adjustment method of setting

M-PRO17: Front panel rotary switches

M-PRO20-40: Front panel keypad, LCD display

Inputs

M-PRO30 & 40 are provided with four opto-coupled remote inputs to initiate alarm signals or tripping of the circuit breaker in response to signals indicating a change in the state of devices remotely positioned in the system.

The supply voltage of the remote inputs are 24/48V DC (M-PRO 30L or M-PRO 40L) and 110/250V AC or



110/130V DC (M-PRO 30H or M-PRO 40H).

Outputs

M-PRO30 & 40 are provided with four relay outputs to permit remote indication of changes in the state of the circuit breaker and its protection, e.g. M-PRO initiated trip / watchdog alarm / breaker main contact maintenance alarm / remote fault / pre-trip alarm/load monitoring.

This facility may also be used to transmit a remote trip signal to a High Voltage circuit breaker.

An external power supply is required to permit remote output facilities.

Load Monitoring

M-PRO30-40 offers two alternative facilities of monitoring the load, pre-alarm or load shedding.

Pre-trip alarm: This alarm will provide a warning when the current measured is above 1.1x Ir and the thermal content is above 60% thus indicating that a trip is likely to occur.

Load shedding: Load shedding will have two user configurable current levels, the level which shedding will start, and the level at which shedding will stop (**auxiliary power supply mandatory**).

Communication

M-PRO40: By means of a RS485 4-wire serial link using a MODBUS protocol, M-PRO protection units can be linked for remote communication to provide a complete system management and control. Communication occurs in both directions.

Remote switching – each unit can be remotely opened and closed

Remote adjustment – user settings and inputs may be altered by remote command

Monitoring – ammeters, load monitoring, operations counter, existing faults, trip history

M-PRO Microprocessor Protection Relays - Specifications

M-PRO	17	20	30		40	
			L	H	L	H
Long Time Protection						
• Pickup adjustable from 0.4 to 1.0x In in steps of 0.1	●					
• Pickup adjustable from 0.4 to 1.0x In in steps of 0.01		●	●	●	●	●
Long Time Characteristic						
• To IEC 947-4 Class 40 (& IEC 255, 80 combinations)		●	●	●	●	●
• To IEC 947-4, Class 20	●					
Short Time Protection						
• 2, 3, 4, 6, 8, 10, 12x Ir	●					
• 1.5, 2, 3, 4, 6, 8, 10, 12x Ir		●	●	●	●	●
Short Time Delay						
• Instantaneous, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0s.	●					
• Instantaneous to 1.0s in 0.1 steps		●	●	●	●	●
Short Time I²t Cropping						
• 0.1 times selected long time		●	●	●	●	●
• Pick-up, 1.5, 2, 3, 4, 6, 8, 10 and 12 x Ir		●	●	●	●	●
Neutral Protection	○(1)	○	●	●	●	●
Earth fault protection						
• Unrestricted (UEF)	○(1)		●	●	●	●
• Restricted (REF)			○	○	●	●
• Standby (SEF)			○	○	●	●
• Earth fault pickup, OFF, 0.4 to 1.0x In, 0.2 In steps	○		●	●	●	●
• Earth fault pickup, OFF, 0.1 to 1.0x In, 0.01 In steps			●	●	●	●
• Time delay, Instantaneous to 1.0 sec, 0.1 steps	○		●	●	●	●
• Earth fault cropping, 1 (OFF), 1.5, 2, 2.5, 3, 4, 5 and 6	○		●	●	●	●
Thermal Memory						
• Fixed to at time constant of 20 minutes	●(5)					
• Adjustable time constants, inst., 10, 20, 30, 45, 60, 120, 180 minutes		●(5)	●	●	●	●
Trip Indication						
• Healthy Unit LED	●	●	●	●	●	●
• Warning / Alarm LED		●	●	●	●	●
• Discrete LED's for each fault type		●	●	●	●	●
• Fault codes (via Communications unit)			○(2)	○(2)	●	●
Output Relays						
• Load Monitoring			●	●	●	●
• Trip Initiated			●	●		
• HV Inter trip (linked to REF)			○(3)	○(3)	●	●
• Remote ACB switching (Open / Close via Comms. Unit)			○(2)	○(2)	●	●
Communications MODBUS protocol			○	○	●	●
Trip Reset						
• Manual (push button)	●	●	●	●	●	●
• Automatic		●	●	●	●	●
Other Optional Features						
• Trip Alarm Contacts (mechanical C/O)	○	○	○	○	○	○
• Watchdog / Watchdog disable		○	○	○	○	○
• Auxiliary Power Unit		○	●	●	●	●
• Ammeter		●	●	●	●	●
• Operations counter		●	●	●	●	●
• Trip History (previous 16 trips)		●	●	●	●	●
• Main Contact Maintenance Indication			○(4)	○(4)		
Inputs (Programmable)						
• 24 - 48V DC			●		●	
• 110-130V DC or 110-250V AC				●		●
PAMM (Plant Associated Memory Module)						
• Small connector	●					
• Large connector		●	●	●	●	●
Test Connector						
• 15 way D-type	●					
• 16 way DIL heater		●	●	●	●	●

(1) Only UEF or Neutral protection option (not both)

(2) Standard feature when communications option is specified

(3) Standard feature when Restricted Earth Fault option is specified

(4) Feature not available if communications option is specified

(5) Auxiliary power unit required

● Standard feature
○ Optional feature

L = low voltage inputs
H = higher voltage inputs

Unelec Equipment

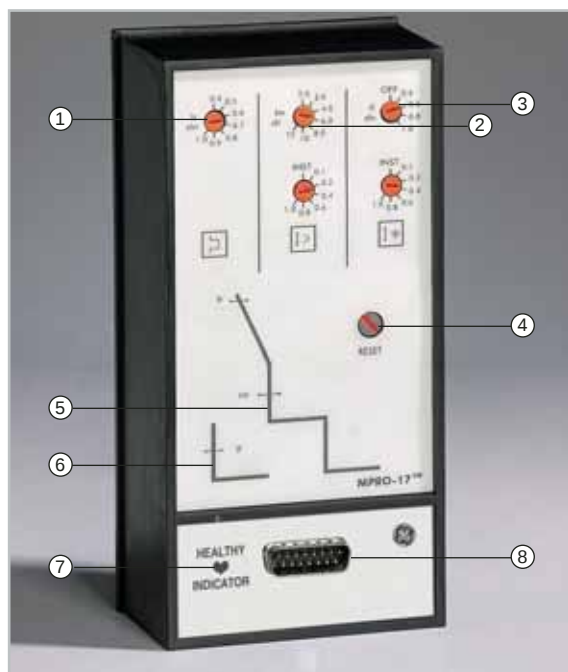
www.unelec-equipment.com

Tel: +1 319 244 84 69 UeeS Co. Tel: +1 650 466 86 39

Info@unelec-equipment.com



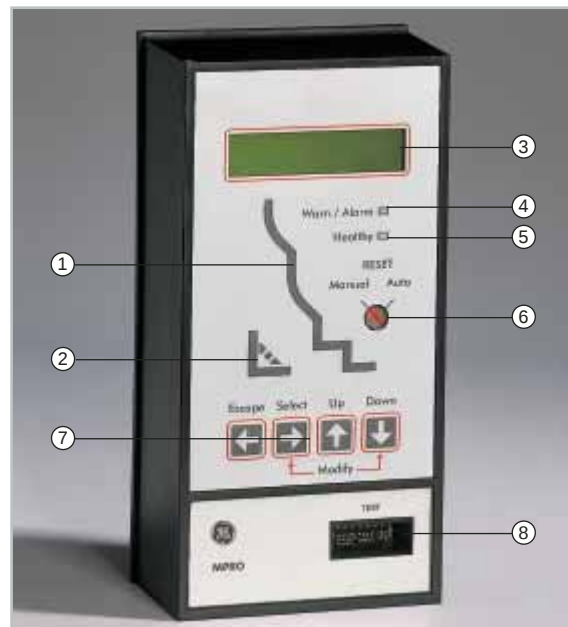
M-PRO17 Microprocessor Protection Relay



M-PRO17 shown with UEF

1. Overload rotary setting switch
2. Short circuit and time delay rotary setting switches
3. Earth fault and time delay rotary setting switches
4. Selectable manual reset button
5. Overload and short circuit protection curve symbol
6. Earth fault protection curve symbol
7. Healthy LED
8. Multi-pin socket for test box and/or portable power box

M-PRO20-40 Microprocessor Protection Relays



1. Overload/short circuit protection curve incorporating 7 red LEDs; indication of fault type
2. Earth fault protection curve incorporating 2 red LEDs for fault indication
3. LCD 2-line display for clear indication of menus, settings, recorded information
4. Warn/Alarm LED
5. Healthy LED
6. Selectable Manual-/Automatic-reset button
7. Four button tactile key pad
8. Multi-pin socket for test box and/or portable power box

Plug-in Portable Test Unit (PTU)



MPRO17 test box shown above

Specially designed for reliable testing of the MCR and HSISC protection systems on each phase, by means of tertiary injection. The test unit is also used to prove both overcurrent and earth fault pick-up levels. Can also be employed to test for tripping in order to verify efficient microprocessor operation. The test unit incorporates a set of rechargeable batteries and includes a charger unit as standard.

Auxiliary Power Unit (APU)



Available to be fitted within the circuit breaker cubicle, an APU ensures that M-PRO receives independent and continuous power at all times. The APU accepts any input supply voltage between 24V and 264V DC or 95V and 265V AC. Maximum input current is 0.5 A. 1m length cable (twisted pair) should be used to connect auxiliary supply and MPRO protection relay.

Plug-in Portable Power Box (PPB)



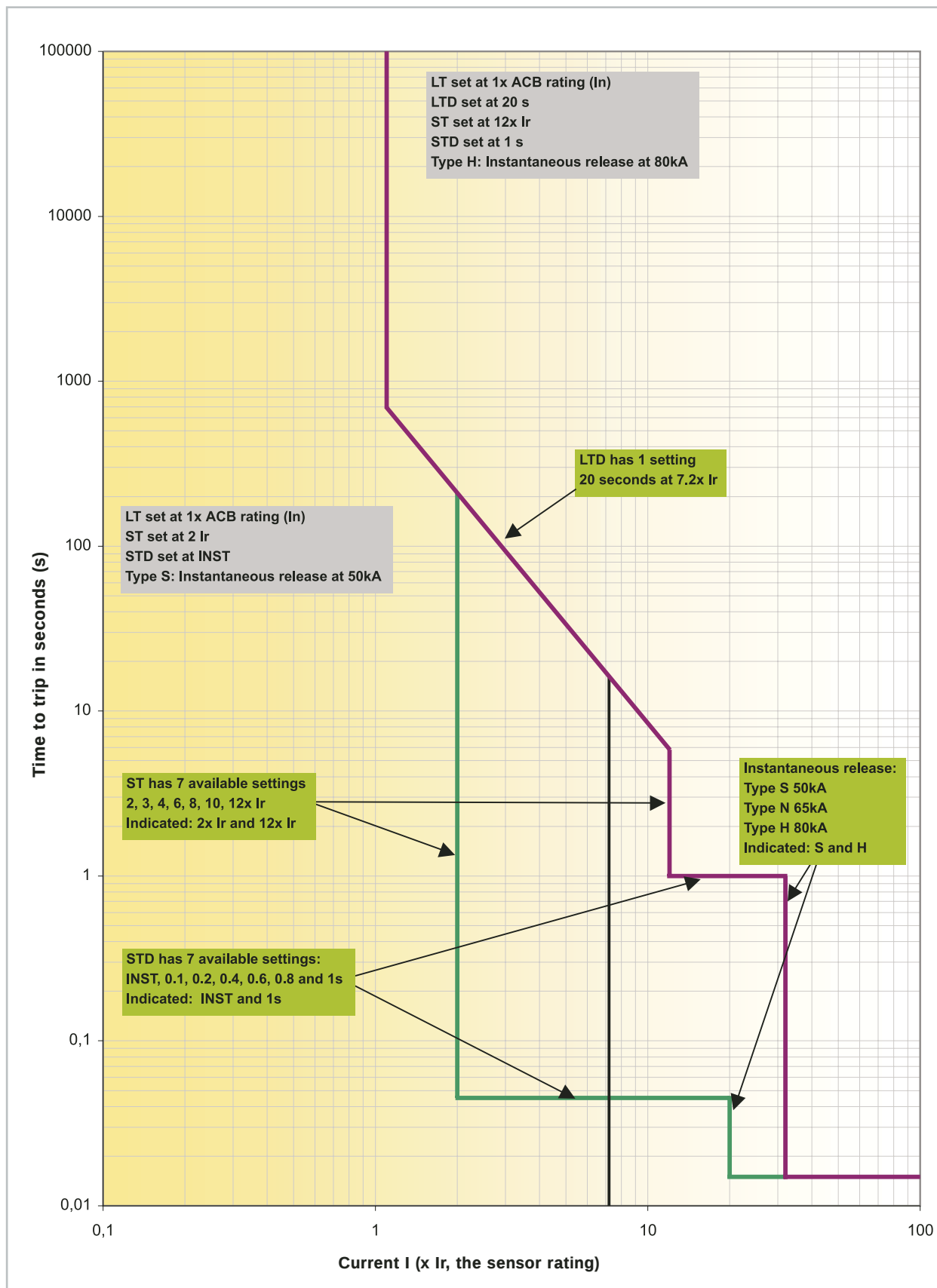
Applicable for M-PRO20-40

Adjustments to protection settings and curve selection can be achieved when the circuit breaker is open and there is no permanent auxiliary power source available.

Power is provided by 3 x 9V PP3 size non rechargeable batteries.

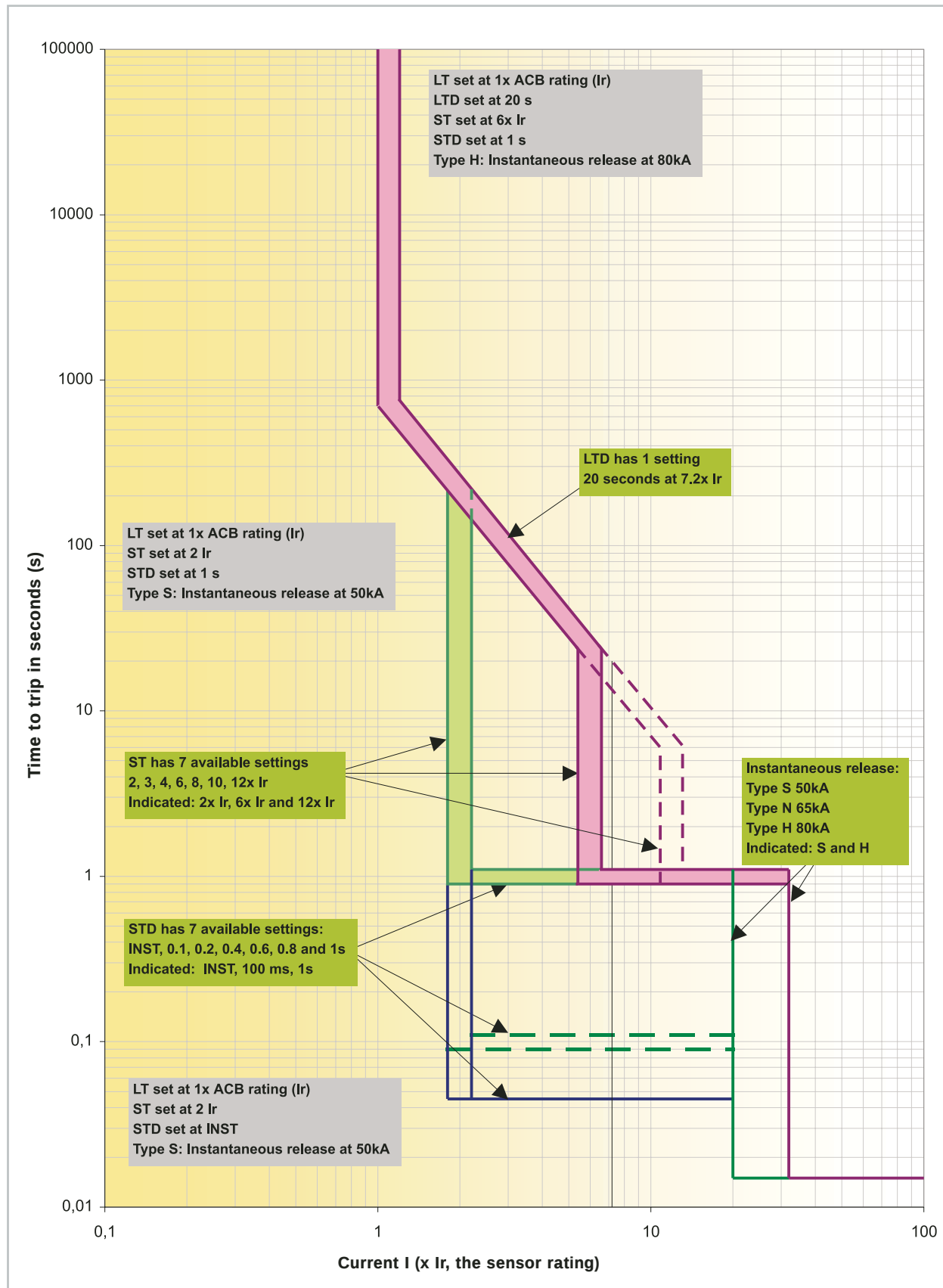
Trip Curves

M-PRO 17



Trip Curves

M-PRO 17

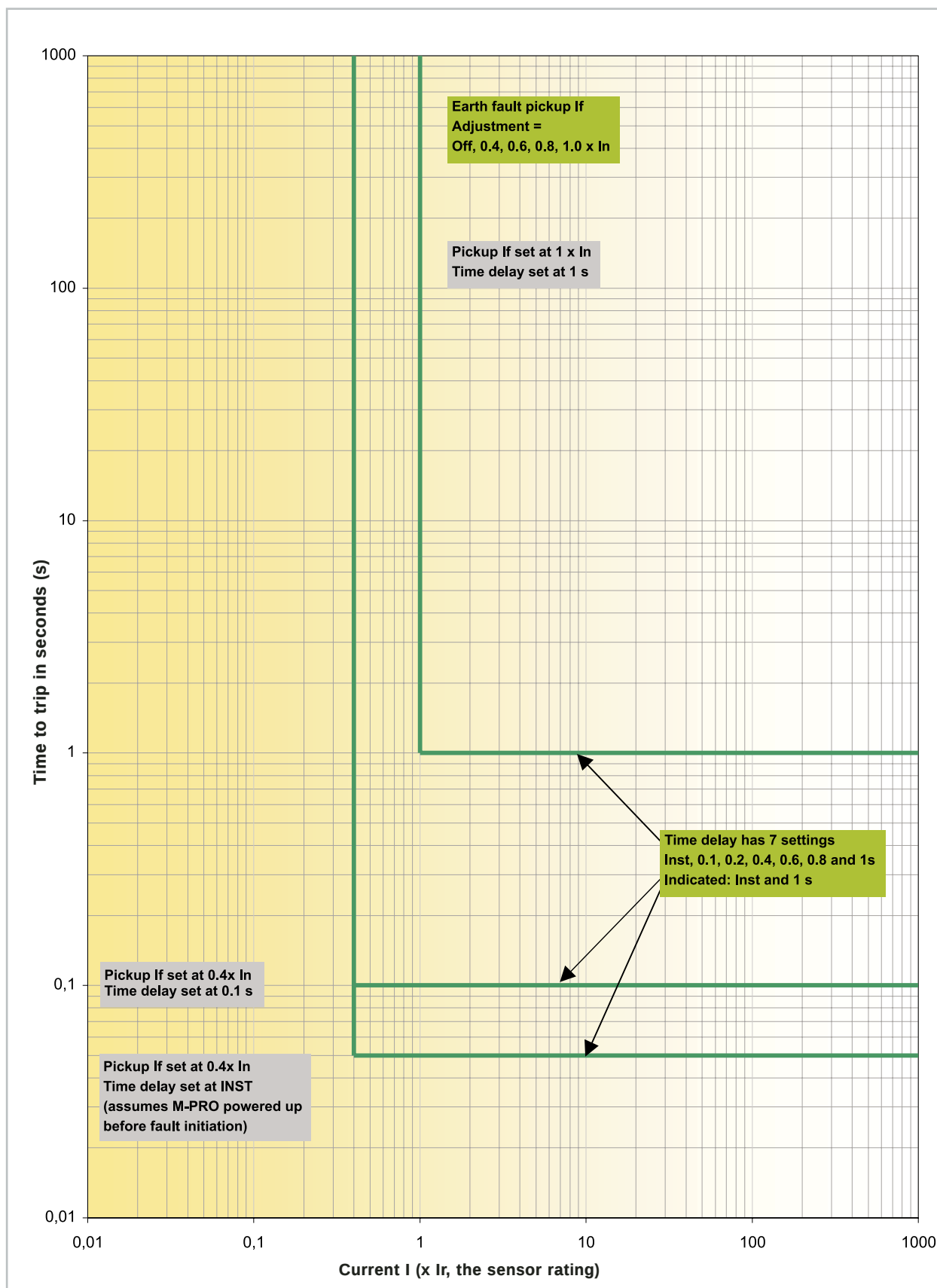


Earth Fault Protection Curves

M-PRO 17

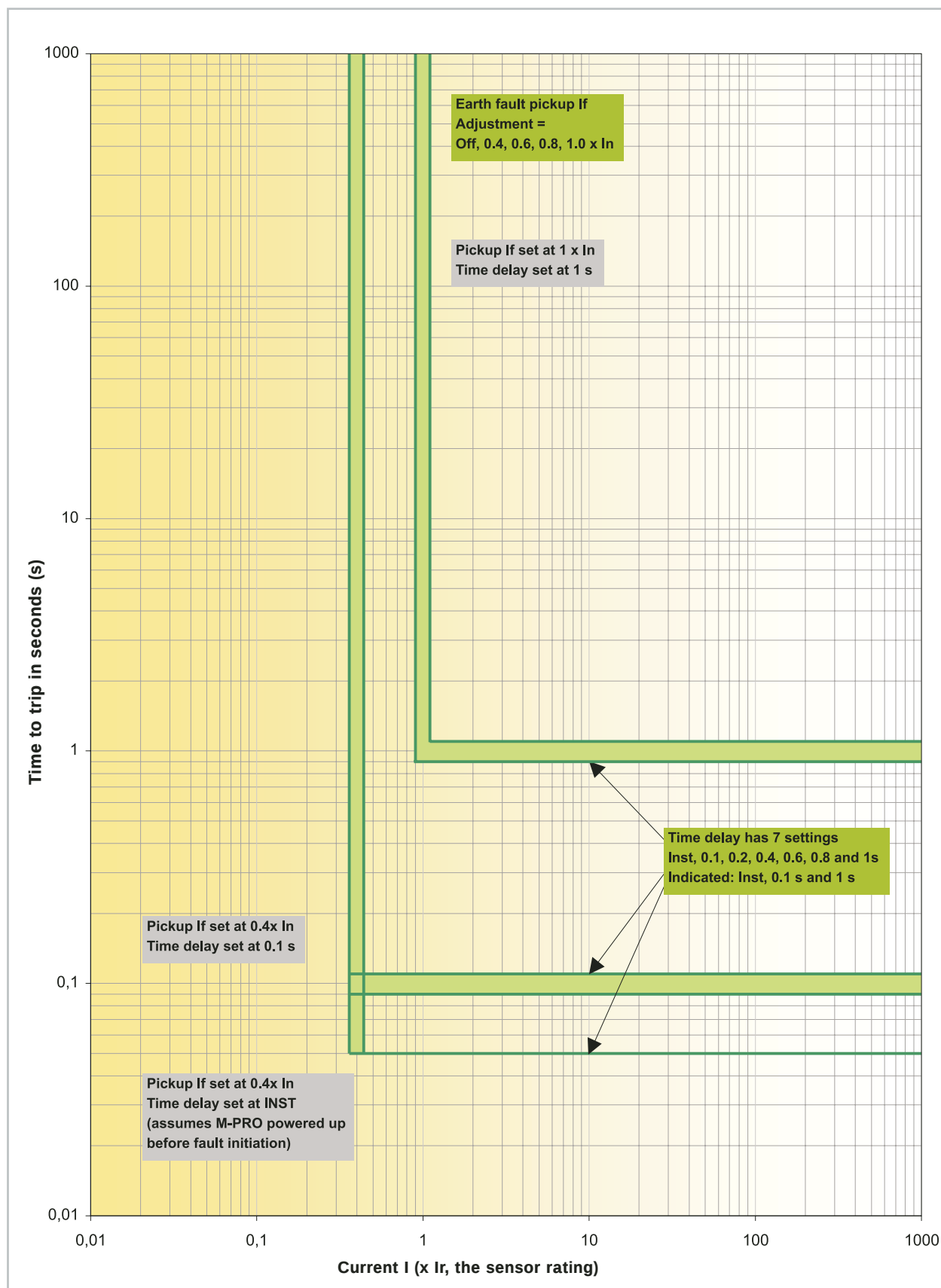
Waar komt deze tekst?

LT set at 1 x ACB rating (Ir)



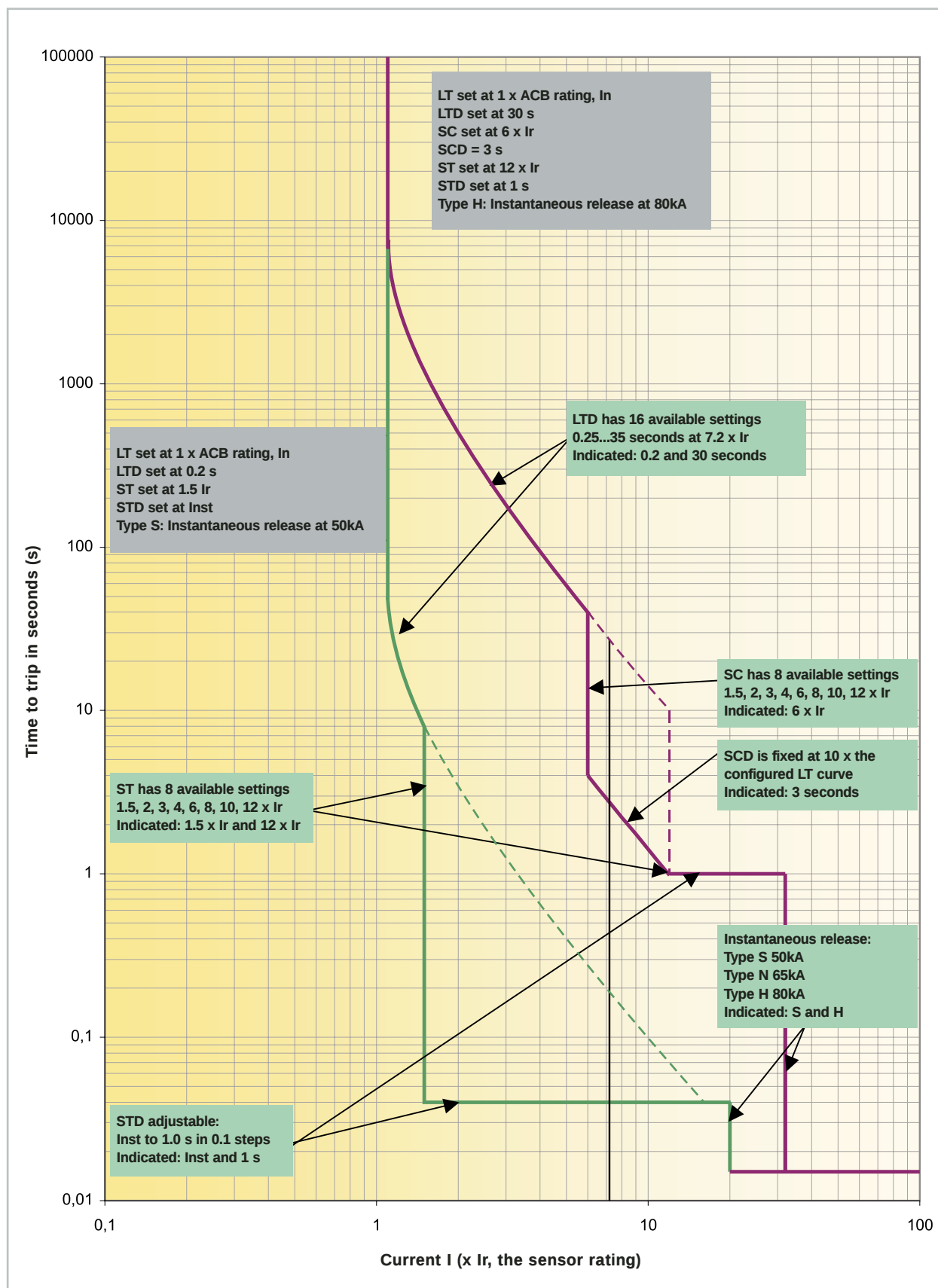
Earth Fault Protection Curves

M-PRO 17



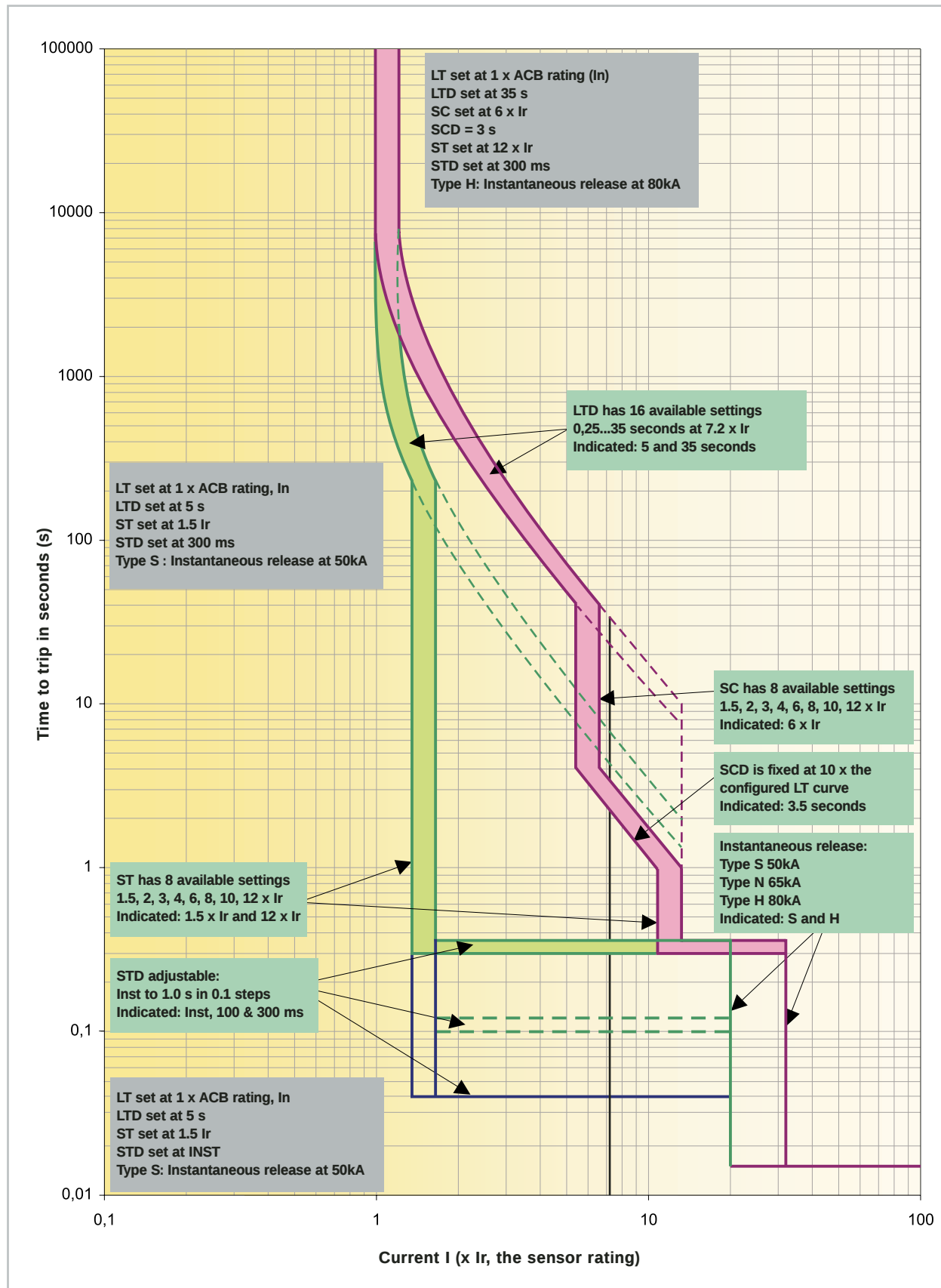
Trip Curves

M-PRO 20/30/40



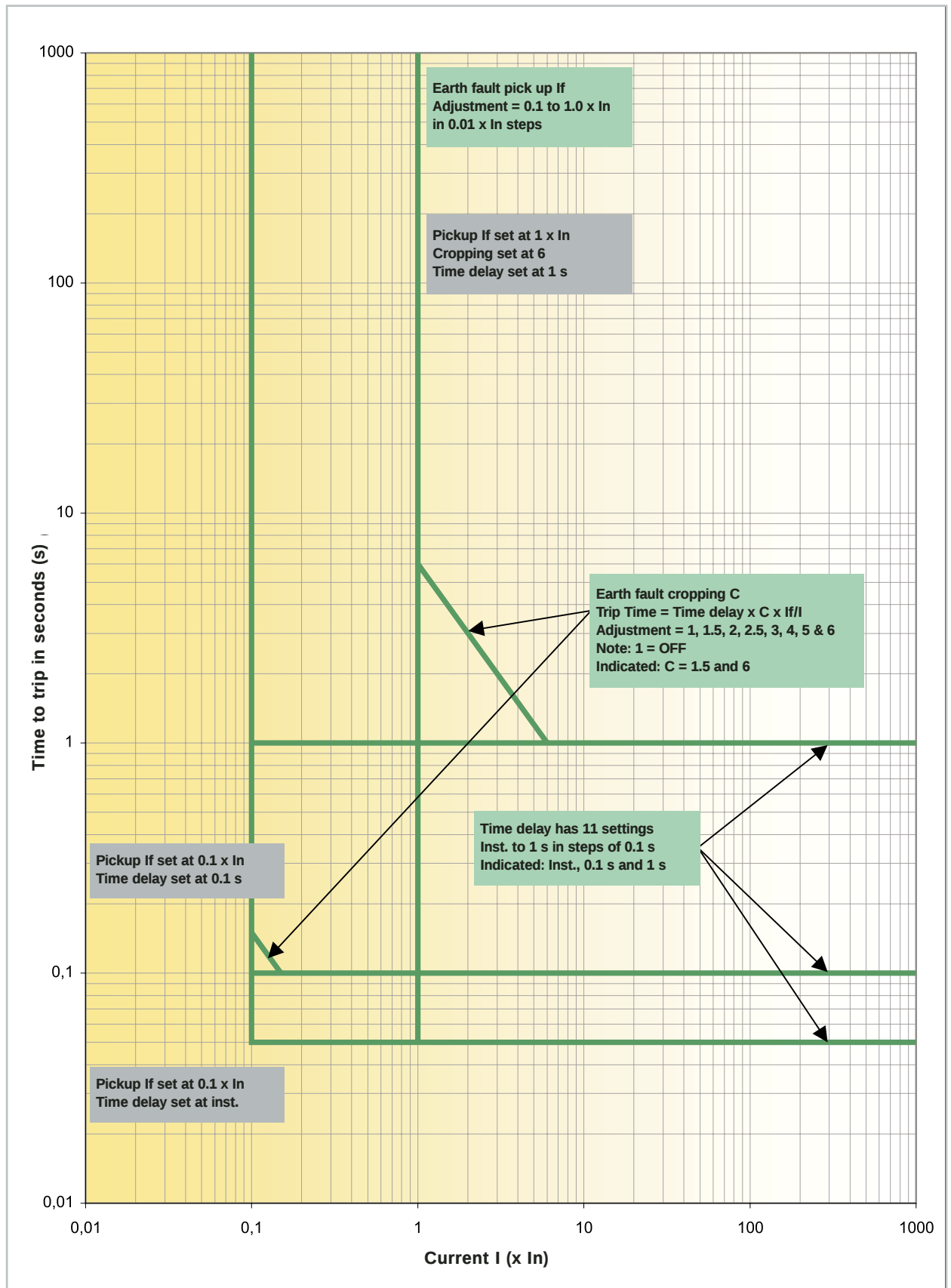
Trip Curves

M-PRO 20/30/40



Earth Fault Protection Curves

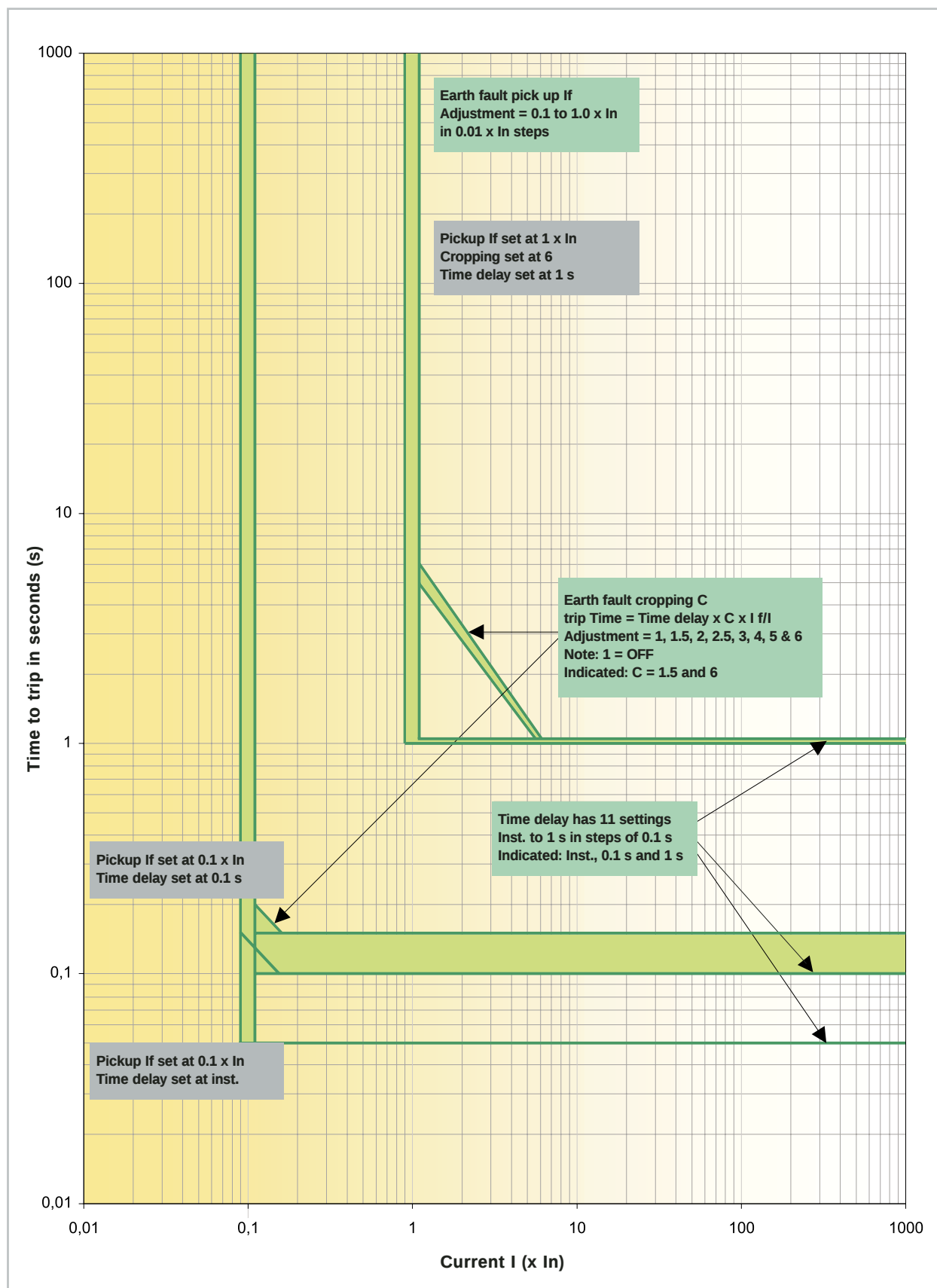
M-PRO 30/40



Earth Fault Protection Curves

M-PRO 30/40

(tolerance bands shown)



M-PACT Accessories

A wide range of optional accessories have been developed that are compatible with all M-PACT air circuit breakers, regardless of nominal rating or frame size. Each one incorporates 'easy-fit' design features for quick installation, either in the factory or by the user on site.

Motorised spring charging unit



The unique motor/gearbox unit is specially designed to operate with the full range of M-PACT breakers. It is easily fitted with just two bolts. In the event of circuit breaker closure, this unit will automatically recharge the spring in readiness for instant reclosure should the need arise. High speed recharging ensures that the springs are fully charged within approximately three seconds following a release. As an optional feature, a "springs charged" contact is available for the motor unit.

Circuit breaker closing coil



The closing coil is an easy-to-fit, clip-on unit, with simple plug-in connectors. This permits either local or remote release of the spring charged closing mechanism by electrical operation. An additional anti-pumping safety feature also ensures that the electrical closing signal must be released

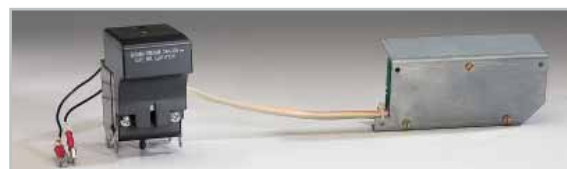
before further closure is attempted, and a cut-off is instigated should a closing signal be maintained. Because each coil operates within a wide voltage range, the number of individually rated coils required is drastically reduced.

Shunt trip



Energisation, locally or remote, will instantaneously activate the circuit breaker mechanism, ensuring rapid disconnection of the main contacts. In addition, a series connected auxiliary switch ensures automatic isolation whenever the circuit breaker is open. Shunt trip releases also have a wide operational voltage range, and they include the same easy-fit, clip-on/plug-in connectors as the closing coil above.

Undervoltage release



Instantaneously releases the circuit breaker trip mechanism should the supply voltage dip below the pre-set value. Simple to install, these devices have the same easy-fit features as previously described.

Note: This is a 'no-volt/no-close device. The circuit breaker cannot be closed (manually or electrically) unless the undervoltage release coil is energised.

Time delay undervoltage release

Similar to the above, but this electronic device prevents nuisance tripping of the circuit breaker if circuit interruption is not desirable when supply voltage drop is only transient. Fixed time delay 3 sec $\pm$ 1sec.

Auxiliary trip combination

The M-PACT circuit breaker can be equipped with the following auxiliary trips or releases
 1 x Shunt trip + 1 x Closing coil +
 1 x Undervoltage release or 1 time delay
 Undervoltage release

Auxiliary switches

The M-PACT circuit breaker is equipped with 5 NO and 3 NC auxiliary switches as standard. Maximum number of contacts is 8, for alternative configurations please contact for availability.

Mechanical operation counter



Easily fitted, this useful accessory may be specified for use with either manual or motor charged M-PACT circuit breakers. It is clearly visible through the front panel, and the counter provides an accurate record of the cumulative number of complete breaker closing operations.

Key interlock facility



Castell key interlock version shown above

Ready-to-fit interlocking devices such as Castell, Ronis, Profalux and Fortress, for installation between separate circuit breakers, available in kit form. This valuable safeguard ensures that a circuit breaker cannot be closed unless the dedicated key has been inserted and secured within the lock.

Note: Lock and key are not supplied by GE Power Controls. Please order separately from your local supplier.

Lock and key types

Castell: Type FS1 lock with key type FK4 key, 45° clockwise rotation to trap the key, 7/8"x3/8" square spindle.

Ronis: Type 1104B lock with standard key, 1/4" turn rotation to trap the key, compulsory spindle size.

Profalux: Type B20D4Y lock with key type S1 (without cam), 1/4" turn rotation to trap the key, compulsory spindle size.

Fortress: Type H31/LH lock with flip cap and standard key, 45° clockwise rotation to trap the key, 7/8"x3/8" square spindle.

Cassette main terminal adaptors



Type 'N', 65kA, rear connection shown above

Combinations of rear and front access connections possible for entire range. Tested and approved from 50 to 80kA.



Type 'N', 1600A, 65kA, front access connection shown above

To simplify main busbar or cable termination, M-Pact provides a full range for rear and/or front access connection.

Bolt-on adaptor kits can be fitted easily to suit either horizontal or vertical connections.

Cable/busbar earthing device



All 'M-PACT' circuit breakers can be fitted with an earthing device. It has a short circuit fault capacity equal to the I_{CW} rating of the breaker. This permits either the feeder cables or the busbar to be safely held at earthed potential and locked during system maintenance operations.

Carriage position switch



Available as an optional device for mounting within the base of the cassette, this switch provides six single pole changeover contacts for local or remote electrical indication of the circuit breaker status:

Connected, Test and Disconnected

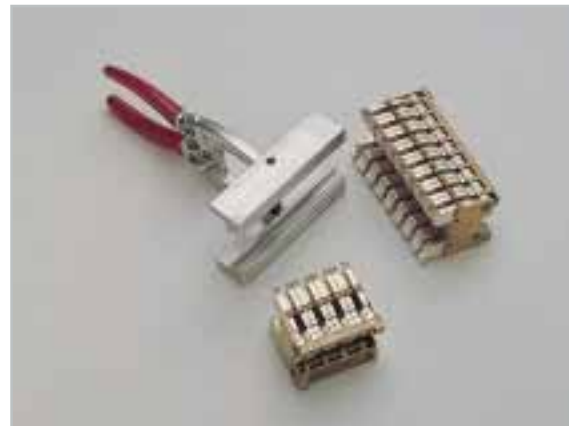
The **Disconnected** position is indicated only when minimum isolating distances between contacts on both the main and auxiliary circuits have been achieved.

This option is in addition to the mechanical indicators which are fitted as standard.

When installed, the carriage switch is IP2X protected and includes wiring to a terminal block located on the left-hand side of the cassette.

Note: The carriage position switch is an option only suitable for withdrawable circuit breakers.

Cluster contacts



These are the main isolating contacts which are fitted to the rear terminals on the moving portion of the withdrawable unit.

As part of standard inspection and maintenance procedures, cluster contacts have been designed to be easily and quickly removed and replaced using universal cluster pliers.

2/3 way cable / rod mechanical interlocks



Cable interlocking version shown above

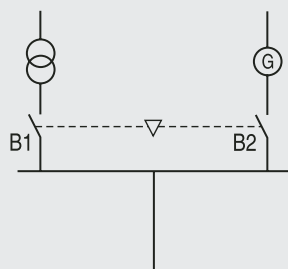
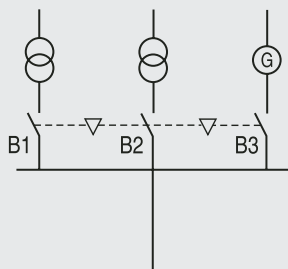
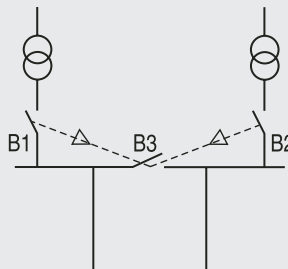
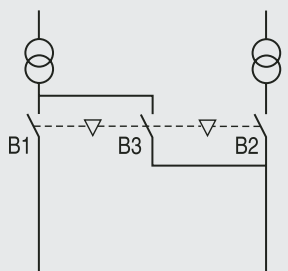
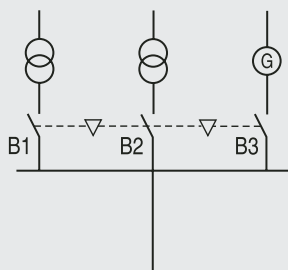
Available for fixed and withdrawable circuit breakers these units enable the direct interlocking of M-PACT circuit breakers, either mounted side-by-side or stacked. The interlocking mechanisms are connected by a specially designed cable or rod in a '1 from 3' OR '2 from 3' configuration, and any mix of current ratings / pole configurations can be accommodated.

Standard cable lengths available: 1.0, 1.6, 2.0, 2.5, 3.0, 3.5 and 4.0 metres.

(Please contact our technical customer service department if longer length is required.)

Interlocks

Mechanical interlocks can be fitted to the following electrical systems and can link 2 and/or 3 circuit breakers. Any nominal rating, frame size, number of poles or type (fixed pattern or withdrawable) can be interlocked.

Typical circuit	Interlock configuration	Possible combinations																								
	Type A 1 from 2 way interlock 2 cable configuration Interlocking between 2 circuit breakers. 1 normal power supply 1 generator (emergency) supply	<table><tr><th>B1</th><th>B2</th></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td></tr></table> Circuit breaker B1 can only close if B2 is open Circuit breaker B2 can only close if B1 is open	B1	B2	0	0	1	0	0	1																
B1	B2																									
0	0																									
1	0																									
0	1																									
	Type B 1 from 3 way interlock 6 cable configuration Interlocking between 3 circuit breakers. 3 power supplies (generator or transformers) feeding the same busbar but parallel operation is prevented.	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr></table> Only 1 from 3 breakers can be closed	B1	B2	B3	0	0	0	1	0	0	0	1	0	0	0	1									
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	1	0																								
0	0	1																								
	Type C 2 from 3 way interlock 6 cable configuration Interlocking between 3 circuit breakers. 2 bus sections can be powered by a single transformer (bus coupler closed) or by both transformers (bus coupler open).	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr></table> Any 2 from 3 breakers can be closed Any 1 from 3 breakers can be closed 2 breakers must be closed to prevent the 3rd breaker from closing	B1	B2	B3	0	0	0	1	0	0	0	0	1	0	1	0	1	1	0	0	1	1	1	0	1
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	0	1																								
0	1	0																								
1	1	0																								
0	1	1																								
1	0	1																								
	Type D 1 from 3 way interlock variant 4 cable configuration (2 cables for bus coupler) Interlocking between 3 circuit breakers. 2 normal power supplies not set in parallel 1 power supply may assist the priority circuit	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr></table> Circuit breaker B1 and/or B3 can be closed only if B2 is open Circuit breaker B2 can only be closed if B1 & B2 are both open	B1	B2	B3	0	0	0	1	0	0	0	0	1	1	0	1	0	1	0						
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	0	1																								
1	0	1																								
0	1	0																								
	Type E 2 from 3 way 'specific' interlock 4 cable configuration Interlocking between 3 circuit breakers. 2 normal power supply can be set in parallel 1 generator (emergency) supply	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr></table> Circuit breakers B1 and/or B2 can be closed only if B3 is open Circuit breaker B3 can only be closed if B1 & B2 are both open	B1	B2	B3	0	0	0	1	0	0	0	1	0	1	1	0	0	0	1						
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	1	0																								
1	1	0																								
0	0	1																								

Circuit breaker insertion interlock



By incorporating this optional security interlock device into a system, it prevents the inadvertent insertion of an incorrectly rated withdrawable circuit breaker into a cassette.

Cassette interlock



Available for withdrawable circuit breakers only, this sophisticated interlock system secures the circuit breaker in the disconnected position by means of a Ronis or Profalux key. When the key is removed, the safety shutters are automatically locked in position, thus preventing access to the contacts and also ensuring that the racking mechanism is not operable. For lock and key details refer to key interlock facility section (p. A.23)



Sealed door panel escutcheon

An optional IP54 complete front door panel is available should a higher degree of protection be necessary.

Circuit breaker handling truck

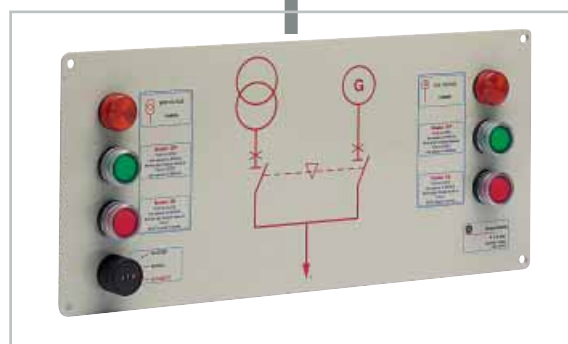
Specifically designed for use with the M-PACT range, this dedicated handling truck is a useful accessory when faced with the task of inserting or removing the circuit breaker from its panel, or when transporting

the unit should it be outside its cassette. Installers will also find it particularly valuable for top-tier mounted circuit breakers. **Note: Users who already possess a 'Titan' handling truck for the original M-PACT circuit breaker can now obtain a conversion kit.**



Automatic Transfer Switches (A.T.S.)

The ATS ensures the continuity of electric supply to an installation with minimum interruption by making an automatic transfer from the normal supply to emergency source. The emergency source can be either a transformer or generator supply and the M-PACT air circuit breakers are governed automatically by the transfer controller, which selects the available source.



Accessories Performance Data

Device	Operating Voltage (V)		Operating range	Power consumption (Watts max.)	Rating (Amps resistive)
	AC	DC			
Auxiliary & carriage switch	250		-	-	10
		125	-	-	5
		250	-	-	0.25
Motor operator	220 - 250	220 - 250			-
	110 - 127	110 - 127			-
		42 - 48	0.85 to 1.1 times rated voltage	350	-
Closing coil		24 - 36			-
	220 - 250	220 - 250			-
	110 - 130	110 - 130			-
Shunt trip		40 - 48	0.85 to 1.1 times rated voltage	410	-
		24 - 30			-
	220 - 250	220 - 250			-
Instantaneous Undervoltage release	110 - 130	110 - 130			-
		40 - 48	0.70 to 1.1 times rated voltage	410	-
		24 - 30			-
Auxiliary power unit	380 - 440	110 - 130	-		-
	220 - 250	42 - 48	-	400	-
	110 - 130	24 - 30	-		-
Auxiliary power unit	95 - 265	24 - 264	-	12	-

Specify on the order

1. Device	☐ Type S (50kA)	☐ Type N (65kA)	☐ Type H (80kA)
2. Rating	☐ 400A	☐ 800A	☐ 1250A
	☐ 630A	☐ 1000A	☐ 1600A
	☐ 2000A	☐ 3200A	☐ 4000A
	☐ Frame size 1 (400 to 2500A)	☐ Frame size 2 (800 to 4000A)	
3. Number of poles	☐ 3-pole	☐ 4-pole Neutral Left	☐ 4-pole Neutral Right
4. System	☐ 3 phase 3 wire	☐ 3 phase 4 wire	
5. Frequency	☐ 50 Hz	☐ 60 Hz	
6. Type	Top connection		Bottom connection
	☐ Fixed	☐ Front or ☐ Rear	☐ Front or ☐ Rear
	☐ Withdrawable	☐ Front or ☐ Rear	☐ Front or ☐ Rear
	☐ Moving portion only		
	☐ Cassette only	☐ Front or ☐ Rear	☐ Front or ☐ Rear
	☐ Side Mounting Details		
7. Protection	☐ non automatic	☐ M-PRO 17	☐ M-PRO 30L
		☐ M-PRO 20	☐ M-PRO 30H
			☐ M-PRO 40H
			☐ M-PRO 40L
M-PRO Language	☐ English	☐ French	☐ Italian
	☐ Dutch	☐ Spanish	☐ Portuguese
	☐ German		
8. Earth Fault options	☐ Unrestricted (UEF)	☐ Restricted (REF)	☐ Stand-by (SEF)
9. Neutral protection	☐ Not required	☐ 50% rated	☐ 100% rated
10. M-PRO options	☐ Ammeter	☐ Portable test unit	
	☐ Operations counter	☐ Portable power box	
	☐ Mechanical Trip alarm Switch (1n/o)	☐ Auxiliary power unit	
	☐ Communications	☐ No trip (alarm only) watchdog	
	☐ Main Contact Maintenance Alarm		
11. Drive mechanism	☐ manually operated	☐ motor operated (MOP)	☐ springs charged contact
12. Releases	☐ Closing coil (CC)	☐ Shunt trip (ST)	☐ Undervoltage (UV)
			☐ Undervoltage Time delayed (UVTD)
13. Control voltage		MOP	CC
		ST	UV
			UVTD
	24/30V DC	☐	☐
	48V DC	☐	☐
	110/130V DC	☐	☐
	110/130V AC	☐	☐
	220/250V DC	☐	☐
	220/250V AC	☐	☐
	380/440V AC	☐	☐
14. Auxiliaries	☐ Carriage switch - Factory fitted	☐ Carriage switch - Loose kit	
15. Interlocks	☐ Castell Key interlock	☐ Door interlock (left hand)	
	☐ Ronis Key interlock	☐ Door interlock (right hand)	
	☐ Profalux Key interlock	☐ Circuit breaker mis-insertion interlock	
	☐ Ronis Cassette Key interlock		
	☐ Profalux Cassette Key interlock		
Cable Interlock	☐ 2 way (Type A only)	☐ 1 from 3 way Type ☐ B ☐ D	☐ 2 from 3 way Type ☐ C ☐ E
	Cable Length required (in centimeters)		
	☐ 100 ☐ 160 ☐ 200 ☐ 250 ☐ 300 ☐ 350 ☐ 400 ☐ Other (please specify below)		
Rod Interlock	☐ 2 way (Type A only)	☐ 1 from 3 way Type ☐ B ☐ D	☐ 2 from 3 way Type ☐ C ☐ E
	Rod Length required (in centimeters)		
	☐ 100 ☐ 160 ☐ 200 ☐ 250 ☐ 300 ☐ 350 ☐ 400 ☐ Other (please specify below)		
16. Miscellaneous	☐ Mechanical Operations Counter	☐ ACB Lifting truck	
	☐ IP54 door panel - withdrawable type	☐ Titan Truck adaptor kit	
	☐ IP54 door panel - fixed pattern		
17. Operations Manual	☐ Please specify preferred language for text		
18. Documents	☐ Certificate of Conformity	☐ Test Certification	
19. Special requirements (PLEASE SPECIFY ANY IMPORTANT INSTRUCTIONS)			

Technical overview A

Order codes B

- B.0 Specify on the order
- B.2 Air Circuit Breaker - TYPE S - 50kA - Non-auto
- B.4 Air Circuit Breaker - TYPE S - 50kA - Automatic
- B.6 Air Circuit Breaker - TYPE N - 65kA - Non-auto
- B.8 Air Circuit Breaker - TYPE N - 65kA - Automatic
- B.10 Air Circuit Breaker - TYPE H - 80kA - Non-auto
- B.12 Air Circuit Breaker - TYPE H - 80kA - Automatic
- B.14 M-PRO Protection
- B.15 M-PRO Electrical Accessories
- B.16 M-PRO Mechanical Accessories
- B.17 M-PRO Spare parts

Wiring diagrams
Dimensional drawings C

Numerical index X

Unelec  **Equipment**

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Info@unelec-equipment.com



Air Circuit Breaker - TYPE S - 50kA - Non-auto

Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches. Withdrawable pattern – basic circuit breaker and cassette with flat copper terminals rear connected.

Fixed pattern – basic circuit breaker with rear terminals horizontal.

Withdrawable and Fixed Pattern



Frame size	Rating (A)	Poles	Position of the neutral	Withdrawable		Fixed Pattern	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400	3		MS31W04	405103	MS31F04	405133
		4	Left	MS4L1W04	405102	MS4L1F04	405132
1	630	4	Right	MS4R1W04	405316	MS4R1F04	405366
		3		MS31W06	405105	MS31F06	405135
1	800	4	Left	MS4L1W06	405104	MS4L1F06	405134
		4	Right	MS4R1W06	405318	MS4R1F06	405368
1	1000	3		MS31W08	405107	MS31F08	405137
		4	Left	MS4L1W08	405106	MS4L1F08	405136
1	1250	4	Right	MS4R1W08	405320	MS4R1F08	405370
		3		MS31W10	405109	MS31F10	405139
1	1600	4	Left	MS4L1W10	405108	MS4L1F10	405138
		4	Right	MS4R1W10	405322	MS4R1F10	405372
1	2000	3		MS31W12	405111	MS31F12	405141
		4	Left	MS4L1W12	405110	MS4L1F12	405140
1	2500	4	Right	MS4R1W12	405324	MS4R1F12	405374
		3		MS31W16	405113	MS31F16	405143
1	3200	4	Left	MS4L1W16	405112	MS4L1F16	405142
		4	Right	MS4R1W16	405326	MS4R1F16	405376
1	4000	3		MS31W20	405115	MS31F20	405145
		4	Left	MS4L1W20	405114	MS4L1F20	405144
1	5000	4	Right	MS4R1W20	405328	MS4R1F20	405378
		3		MS31W25	405117	MS31F25	405147
1	6300	4	Left	MS4L1W25	405116	MS4L1F25	405146
		4	Right	MS4R1W25	405330	MS4R1F25	405381
2	2000	3		MS32W20	405119	MS32F20	405149
		4	Left	MS4L2W20	405118	MS4L2F20	405148
2	2500	4	Right	MS4R2W20	405332	MS4R2F20	405384
		3		MS32W25	405121	MS32F25	405151
2	3200	4	Left	MS4L2W25	405120	MS4L2F25	405150
		4	Right	MS4R2W25	405334	MS4R2F25	405387
2	4000	3		MS32W32	405123	MS32F32	405153
		4	Left	MS4L2W32	405122	MS4L2F32	405152
2	5000	4	Right	MS4R2W32	405336	MS4R2F32	405391
		3		MS4L2W40	405124	MS32F40	405155
2	6300	4	Left	MS4L2W40	405125	MS4L2F40	405154
		4	Right	MS4R2W40	405338	MS4R2F40	405393

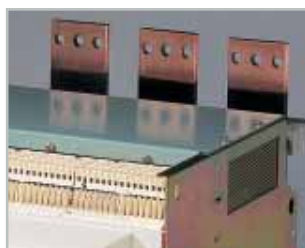
Installation: Units rated < 1600A have reduced copper section.
Refer to engineered drawings in section D.

Rear Connections



Frame size	Rating (A)	Poles	Withdrawable or Cassettes				Fixed Pattern			
			Cat. No.	Ref. No.	Type	Pack	Cat. No.	Ref. No.	Type	Pack
1	400 to 1600	3	RT1HOR	403680	Horizontal	6	RT1SVFIX	405603	Vertical	6
		4	RT1HOR	403680	Horizontal	8	RT1SVFIX	405603	Vertical	8
1	400 to 1600	3	RT1VER	403681	Vertical	6	-	-	-	-
		4	RT1VER	403681	Vertical	8	-	-	-	-
1	2000 & 2500	3	RT1UNI	405600	Universal	6	RT1SNVFIX	405609	Vertical	6
		4	RT1UNI	405600	Universal	8	RT1SNVFIX	405609	Vertical	8
2	800 to 3200	3	RT2UNI	405601	Universal	6	RT2SNHVFIX	405621	Vertical	6
		4	RT2UNI	405601	Universal	8	RT2SNHVFIX	405621	Vertical	8
2	4000	3	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	6
		4	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	8

Front Access Connections



Frame size	Rating (A)	Poles	Withdrawable			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31WS16T	405921	FA31WS16B	406021
		4	FA41WS16T	405922	FA41WS16B	406022
1	2000 to 2500	3	FA31WS25T	405923	FA31WS25B	406023
		4	FA41WS25T	405924	FA41WS25B	406024
2	800 to 3200	3	FA32WS32T	405925	FA32WS32B	406025
		4	FA42WS32T	405926	FA42WS32B	406026
2	4000	3	FA32WS40T	405927	FA32WS40B	406027
		4	FA42WS40T	405928	FA42WS40B	406028

Front Access Connections



Frame size	Rating (A)	Poles	Fixed pattern			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31FS16T	405933	FA31FS16B	406033
		4	FA41FS16T	405934	FA41FS16B	406034
1	2000 to 2500	3	FA31FS25T	405935	FA31FS25B	406035
		4	FA41FS25T	405936	FA41FS25B	406036
2	800 to 3200	3	FA32FS32T	405937	FA32FS32B	406037
		4	FA42FS32T	405938	FA42FS32B	406038
2	4000	3	FA32FS40T	405939	FA32FS40B	406039
		4	FA42FS40T	405940	FA42FS40B	406040

Cassette only



Basic cassette with flat copper terminals rear connected.

Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
1	400 to 1600	3	MS31C16	405341
		4	MS41C16	405340
1	2000 to 2500	3	MS31C25	405343
		4	MS41C25	405342
2	800 to 3200	3	MS32C32	405355
		4	MS42C32	405354
2	4000	3	MS32C40	405365
		4	MS42C40	405364

Moving Portion only



Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches and cluster contacts.

Frame size	Rating (A)	Poles	Position of the neutral	Cat. No.	Ref. No.
1	400	3		MS31M04	405803
		4	Left	MS41M04	405804
		4	Right	MS4R1M04	405524
1	630	3		MS31M06	405805
		4	Left	MS41M06	405806
		4	Right	MS4R1M06	405526
1	800	3		MS31M08	405807
		4	Left	MS41M08	405808
		4	Right	MS4R1M08	405528
1	1000	3		MS31M10	405809
		4	Left	MS41M10	405810
		4	Right	MS4R1M10	405542
1	1250	3		MS31M12	405811
		4	Left	MS41M12	405812
		4	Right	MS4R1M12	405548
1	1600	3		MS31M16	405813
		4	Left	MS41M16	405814
		4	Right	MS4R1M16	405582
1	2000	3		MS31M20	405815
		4	Left	MS41M20	405816
		4	Right	MS4R1M20	405584
1	2500	3		MS31M25	405817
		4	Left	MS41M25	405818
		4	Right	MS4R1M25	405586
2	2000	3		MS32M20	405819
		4	Left	MS42M20	405820
		4	Right	MS4R2M20	405588
2	2500	3		MS32M25	405821
		4	Left	MS42M25	405822
		4	Right	MS4R2M25	405590
2	3200	3		MS32M32	405823
		4	Left	MS42M32	405824
		4	Right	MS4R2M32	405592
2	4000	3		MS32M40	405825
		4	Left	MS42M40	405826
		4	Right	MS4R2M40	405594

Earthing Device

See page B.7 (bottom)

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Air Circuit Breaker - TYPE S - 50kA - Automatic

Basic circuit breaker manually operated automatic (with protection), 5 NO and 3 NC auxiliary switches. Withdrawable pattern - basic circuit breaker and cassette with flat copper terminals rear connected. Fixed Pattern - basic circuit breaker with rear terminals horizontal.

Withdrawable and Fixed Pattern



Frame size	Rating (A)	Poles	Position of the neutral	Withdrawable		Fixed Pattern	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400	3		MS31W04-A	406177	MS31F04-A	405217
		4	Left	MS4L1W04-A	406178	MS4L1F04-A	405216
1	630	4	Right	MS4R1W04-A	406260	MS4R1F04-A	405186
		3		MS31W06-A	406179	MS31F06-A	405219
1	800	4	Left	MS4L1W06-A	406180	MS4L1F06-A	405218
		4	Right	MS4R1W06-A	406262	MS4R1F06-A	405278
1	1000	3		MS31W08-A	406181	MS31F08-A	405239
		4	Left	MS4L1W08-A	406182	MS4L1F08-A	405238
1	1250	4	Right	MS4R1W08-A	406264	MS4R1F08-A	405296
		3		MS31W10-A	406183	MS31F10-A	405241
1	1600	4	Left	MS4L1W10-A	406184	MS4L1F10-A	405240
		4	Right	MS4R1W10-A	406266	MS4R1F10-A	405298
1	2000	3		MS31W12-A	406185	MS31F12-A	405247
		4	Left	MS4L1W12-A	406186	MS4L1F12-A	405246
1	2500	4	Right	MS4R1W12-A	406268	MS4R1F12-A	405390
		3		MS31W16-A	406185	MS31F16-A	405249
1	3200	4	Left	MS4L1W16-A	406188	MS4L1F16-A	405248
		4	Right	MS4R1W16-A	406270	MS4R1F16-A	405392
1	4000	3		MS31W20-A	406189	MS31F20-A	405251
		4	Left	MS4L1W20-A	406190	MS4L1F20-A	405250
1	5000	4	Right	MS4R1W20-A	406272	MS4R1F20-A	405404
		3		MS31W25-A	406191	MS31F25-A	405253
1	6300	4	Left	MS4L1W25-A	406192	MS4L1F25-A	405252
		4	Right	MS4R1W25-A	406274	MS4R1F25-A	405682
2	2000	3		MS32W20-A	406193	MS32F20-A	405255
		4	Left	MS4L2W20-A	406194	MS4L2F20-A	405254
2	2500	4	Right	MS4R2W20-A	406276	MS4R2F20-A	405712
		3		MS32W25-A	406195	MS32F25-A	405269
2	3200	4	Left	MS4L2W25-A	406196	MS4L2F25-A	405268
		4	Right	MS4R2W25-A	406278	MS4R2F25-A	405722
2	4000	3		MS32W32-A	406197	MS32F32-A	405271
		4	Left	MS4L2W32-A	406198	MS4L2F32-A	405270
2	5000	4	Right	MS4R2W32-A	406280	MS4R2F32-A	405748
		3		MS32W40-A	406199	MS32F40-A	405277
2	6300	4	Left	MS4L2W40-A	406200	MS4L2F40-A	405276
		4	Right	MS4R2W40-A	406282	MS4R2F40-A	405786

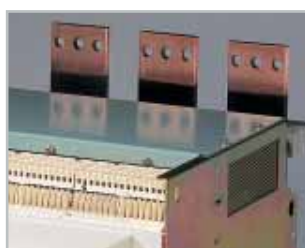
Installation: Units rated <1600A have reduced copper section.
Refer to engineered drawings in section D

Rear Connections



Frame size	Rating (A)	Poles	Withdrawable or Cassettes				Fixed Pattern			
			Cat. No.	Ref. No.	Type	Pack	Cat. No.	Ref. No.	Type	Pack
1	400 to 1600	3	RT1HOR	403680	Horizontal	6	RT1SVFIX	405603	Vertical	6
		4	RT1HOR	403680	Horizontal	8	RT1SVFIX	405603	Vertical	8
1	400 to 1600	3	RT1VER	403681	Vertical	6	-	-	-	-
		4	RT1VER	403681	Vertical	8	-	-	-	-
1	2000 & 2500	3	RT1UNI	405600	Universal	6	RT1SNVFIX	405609	Vertical	6
		4	RT1UNI	405600	Universal	8	RT1SNVFIX	405609	Vertical	8
2	800 to 3200	3	RT2UNI	405601	Universal	6	RT2SNHVFIX	405621	Vertical	6
		4	RT2UNI	405601	Universal	8	RT2SNHVFIX	405621	Vertical	8
2	4000	3	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	6
		4	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	8

Front Access Connections



Frame size	Rating (A)	Poles	Withdrawable			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31WS16T	405921	FA31WS16B	406021
		4	FA41WS16T	405922	FA41WS16B	406022
1	2000 to 2500	3	FA31WS25T	405923	FA31WS25B	406023
		4	FA41WS25T	405924	FA41WS25B	406024
2	800 to 3200	3	FA32WS32T	405925	FA32WS32B	406025
		4	FA42WS32T	405926	FA42WS32B	406026
2	4000	3	FA32WS40T	405927	FA32WS40B	406027
		4	FA42WS40T	405928	FA42WS40B	406028

Front Access Connections



Frame size	Rating (A)	Poles	Fixed pattern			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31FS16T	405933	FA31FS16B	406033
		4	FA41FS16T	405934	FA41FS16B	406034
1	2000 to 2500	3	FA31FS25T	405935	FA31FS25B	406035
		4	FA41FS25T	405936	FA41FS25B	406036
2	800 to 3200	3	FA32FS32T	405937	FA32FS32B	406037
		4	FA42FS32T	405938	FA42FS32B	406038
2	4000	3	FA32FS40T	405939	FA32FS40B	406039
		4	FA42FS40T	405940	FA42FS40B	406040

Cassette only



Basic cassette with flat copper terminals rear connected.

Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
1	400 to 1600	3	MS31C16	405341
		4	MS41C16	405340
1	2000 to 2500	3	MS31C25	405343
		4	MS41C25	405342
2	800 to 3200	3	MS32C32	405355
		4	MS42C32	405354
2	4000	3	MS32C40	405365
		4	MS42C40	405364

Moving Portion only



Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches and cluster contacts.

Frame size	Rating (A)	Poles	Position of the neutral	Cat. No.	Ref. No.
1	400	3		MS31M04-A	405905
		4	Left	MS4L1M04-A	405906
		4	Right	MS4R1M04-A	406162
1	630	3		MS31M06-A	405907
		4	Left	MS4L1M06-A	405908
		4	Right	MS4R1M06-A	406164
1	800	3		MS31M08-A	405909
		4	Left	MS4L1M08-A	405910
		4	Right	MS4R1M08-A	406166
1	1000	3		MS31M10-A	405911
		4	Left	MS4L1M10-A	405912
		4	Right	MS4R1M10-A	406168
1	1250	3		MS31M12-A	405913
		4	Left	MS4L1M12-A	405914
		4	Right	MS4R1M12-A	406170
1	1600	3		MS31M16-A	405915
		4	Left	MS4L1M16-A	405916
		4	Right	MS4R1M16-A	406172
1	2000	3		MS31M20-A	405995
		4	Left	MS4L1M20-A	405918
		4	Right	MS4R1M20-A	406174
1	2500	3		MS31M25-A	405919
		4	Left	MS4L1M25-A	405920
		4	Right	MS4R1M25-A	406176
2	2000	3		MS32M20-A	405929
		4	Left	MS4L2M20-A	405930
		4	Right	MS4R2M20-A	406208
2	2500	3		MS32M25-A	405931
		4	Left	MS4L2M25-A	405932
		4	Right	MS4R2M25-A	406214
2	3200	3		MS32M32-A	405941
		4	Left	MS4L2M32-A	405942
		4	Right	MS4R2M32-A	406216
2	4000	3		MS32M40-A	405943
		4	Left	MS4L2M40-A	405944
		4	Right	MS4R2M40-A	406218

Earthing Device

See page B.7 (bottom)

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Air Circuit Breaker - TYPE N - 65kA - Non-auto

Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches.

Withdrawable pattern – basic circuit breaker and cassette with flat copper terminals rear connected.

Fixed pattern – basic circuit breaker with rear terminals horizontal.

Withdrawable and Fixed Pattern



Frame size	Rating (A)	Poles	Position of the neutral	Withdrawable		Fixed Pattern	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400	3		MN31W04	405163	MN31F04	405193
		4	Left	MN4L1W04	405162	MN4L1F04	405192
1	630	3	Right	MN4R1W04	405430	MN4R1F04	405470
		4	Left	MN31W06	405165	MN31F06	405195
1	800	3	Right	MN4R1W06	405432	MN4R1F06	405472
		4	Left	MN31W08	405167	MN31F08	405197
1	1000	3	Right	MN4R1W08	405434	MN4R1F08	405474
		4	Left	MN31W10	405169	MN31F10	405199
1	1250	3	Right	MN4R1W10	405436	MN4R1F10	405476
		4	Left	MN31W12	405171	MN31F12	405201
1	1600	3	Right	MN4R1W12	405438	MN4R1F12	405478
		4	Left	MN31W16	405173	MN31F16	405203
1	2000	3	Right	MN4R1W16	405456	MN4R1F16	405480
		4	Left	MN31W20	405175	MN31F20	405205
1	2500	3	Right	MN4R1W20	405458	MN4R1F20	405482
		4	Left	MN31W25	405177	MN31F25	405207
2	2000	3	Right	MN4R1W25	405460	MN4R1F25	405484
		4	Left	MN32W20	405179	MN32F20	405209
2	2500	3	Right	MN4R2W20	405462	MN4R2F20	405486
		4	Left	MN32W25	405181	MN32F25	405211
2	3200	3	Right	MN4R2W25	405464	MN4R2F25	405488
		4	Left	MN32W32	405183	MN32F32	405213
2	4000	3	Right	MN4R2W32	405466	MN4R2F32	405490
		4	Left	MN32W40	405185	MN32F40	405215
		3	Right	MN4R2W40	405184	MN4R2F40	405214
		4	Right	MN4R2W40	405468	MN4R2F40	405492

Rear Connections



Frame size	Rating (A)	Poles	Withdrawable or Cassettes				Fixed Pattern			
			Cat. No.	Ref. No.	Type	Pack	Cat. No.	Ref. No.	Type	Pack
1	400 to 2500	3	RT1UNI	405600	Universal	6	RT1SNVFIX	405609	Vertical	6
		4	RT1UNI	405600	Universal	8	RT1SNVFIX	405609	Vertical	8
2	800 to 3200	3	RT2UNI	405601	Universal	6	RT2SNHVFIX	405621	Vertical	6
		4	RT2UNI	405601	Universal	8	RT2SNHVFIX	405621	Vertical	8
2	4000	3	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	6
		4	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	8

Front Access Connections



Frame size	Rating (A)	Poles	Withdrawable			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31WN16T	405945	FA31WN16B	406045
		4	FA41WN16T	405946	FA41WN16B	406046
1	2000 to 2500	3	FA31WN25T	405947	FA31WN25B	406047
		4	FA41WN25T	405948	FA41WN25B	406048
2	800 to 3200	3	FA32WN32T	405949	FA32WN32B	406049
		4	FA42WN32T	405950	FA42WN32B	406050
2	4000	3	FA32WN40T	405951	FA32WN40B	406051
		4	FA42WN40T	405952	FA42WN40B	406052

Front Access Connections



Frame size	Rating (A)	Poles	Fixed pattern			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31FN16T	405957	FA31FN16B	405557
		4	FA41FN16T	405958	FA41FN16B	405558
1	2000 to 2500	3	FA31FN25T	405959	FA31FN25B	405559
		4	FA41FN25T	405960	FA41FN25B	405560
2	800 to 3200	3	FA32FN32T	405961	FA32FN32B	405561
		4	FA42FN32T	405962	FA42FN32B	405562
2	4000	3	FA32FN40T	405963	FA32FN40B	405563
		4	FA42FN40T	405964	FA42FN40B	405564

Cassette only



Basic cassette with flat copper terminals rear connected.

Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
1	400 to 2500	3	MN31C25	405345
		4	MN41C25	405344
2	800 to 3200	3	MN32C32	405347
		4	MN42C32	405346
2	4000	3	MN32C40	405349
		4	MN42C40	405348

Moving Portion only



Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches and cluster contacts.

Frame size	Rating (A)	Poles	Position of the neutral	Cat. No.	Ref. No.
1	400	3		MN31M04	405833
		4	Left	MN41M04	405834
1	630	4	Right	MN4R1M04	405596
		3		MN31M06	405835
1	800	4	Left	MN41M06	405836
		4	Right	MN4R1M06	405598
1	1000	3		MN31M08	405837
		4	Left	MN41M08	405838
1	1250	4	Right	MN4R1M08	405602
		3		MN31M10	405839
1	1600	4	Left	MN41M10	405840
		4	Right	MN4R1M10	405604
1	2000	3		MN31M12	405841
		4	Left	MN41M12	405842
1	2500	4	Right	MN4R1M12	405622
		3		MN31M16	405843
1	3200	4	Left	MN41M16	405844
		4	Right	MN4R1M16	405624
1	4000	3		MN31M20	405845
		4	Left	MN41M20	405846
1	5000	4	Right	MN4R1M20	405626
		3		MN31M25	405847
1	6300	4	Left	MN41M25	405848
		4	Right	MN4R1M25	405628
2	8000	3		MN32M20	405849
		4	Left	MN42M20	405850
2	10000	4	Right	MN4R2M20	405630
		3		MN32M25	405851
2	12500	4	Left	MN42M25	405852
		4	Right	MN4R2M25	405632
2	16000	3		MN32M32	405853
		4	Left	MN42M32	405854
2	20000	4	Right	MN4R2M32	405634
		3		MN32M40	405855
2	25000	4	Left	MN42M40	405856
		4	Right	MN4R2M40	405636

Earthing Device



Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
1	400 to 1600	3	EDF13P16	405661
		4	EDF14P16	405660
1	2000 to 2500	3	EDF13P25	405663
		4	EDF14P25	405662
2	3200 to 4000	3	EDF23P40	405665
		4	EDF24P40	405664

Air Circuit Breaker - TYPE N - 65kA - Automatic

Basic circuit breaker manually operated automatic (with protection), 5 NO and 3 NC auxiliary switches.

Withdrawable pattern - basic circuit breaker and cassette with flat copper terminals rear connected.

Fixed Pattern - basic circuit breaker with rear terminals horizontal.

Withdrawable and Fixed Pattern



Frame size	Rating (A)	Poles	Position of the neutral	Withdrawable		Fixed Pattern	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400	3		MN31W04-A	405351	MN31F04-A	405657
		4	Left	MN4L1W04-A	405350	MN4L1F04-A	405656
1	630	3	Right	MN4R1W04-A	405832	MN4R1F04-A	406054
		4		MN31W06-A	405353	MN31F06-A	405659
1	800	3	Left	MN4L1W06-A	405352	MN4L1F06-A	405658
		4	Right	MN4R1W06-A	405864	MN4R1F06-A	406094
1	1000	3		MN31W08-A	405361	MN31F08-A	405681
		4	Left	MN4L1W08-A	405360	MN4L1F08-A	405680
1	1250	3	Right	MN4R1W08-A	405866	MN4R1F08-A	406096
		4		MN31W10-A	405363	MN31F10-A	405721
1	1600	3	Left	MN4L1W10-A	405362	MN4L1F10-A	405720
		4	Right	MN4R1W10-A	405882	MN4R1F10-A	406098
1	2000	3		MN31W12-A	405412	MN31F12-A	405731
		4	Left	MN4L1W12-A	405410	MN4L1F12-A	405730
1	2500	3	Right	MN4R1W12-A	405902	MN4R1F12-A	406114
		4		MN31W16-A	405415	MN31F16-A	405733
1	3200	3	Left	MN4L1W16-A	405414	MN4L1F16-A	405732
		4	Right	MN4R1W16-A	405904	MN4R1F16-A	406116
1	4000	3		MN31W20-A	405417	MN31F20-A	405735
		4	Left	MN4L1W20-A	405416	MN4L1F20-A	405734
1	5000	3	Right	MN4R1W20-A	405994	MN4R1F20-A	406118
		4		MN31W25-A	405419	MN31F25-A	405737
1	6300	3	Left	MN4L1W25-A	405418	MN4L1F25-A	405736
		4	Right	MN4R1W25-A	405996	MN4R1F25-A	406120
2	2000	3		MN32W20-A	405425	MN32F20-A	405779
		4	Left	MN4L2W20-A	405424	MN4L2F20-A	405778
2	2500	3	Right	MN4R2W20-A	406020	MN4R2F20-A	406122
		4		MN32W25-A	405445	MN32F25-A	405781
2	3200	3	Left	MN4L2W25-A	405444	MN4L2F25-A	405780
		4	Right	MN4R2W25-A	406032	MN4R2F25-A	406124
2	4000	3		MN32W32-A	405453	MN32F32-A	405783
		4	Left	MN4L2W32-A	405452	MN4L2F32-A	405782
2	5000	3	Right	MN4R2W32-A	406042	MN4R2F32-A	406126
		4		MN32W40-A	405455	MN32F40-A	405785
2	6300	3	Left	MN4L2W40-A	405454	MN4L2F40-A	405784
		4	Right	MN4R2W40-A	406044	MN4R2F40-A	406128

Rear Connections



Frame size	Rating (A)	Poles	Withdrawable or Cassettes				Fixed Pattern			
			Cat. No.	Ref. No.	Type	Pack	Cat. No.	Ref. No.	Type	Pack
1	400 to 2500	3	RT1UNI	405600	Universal	6	RT1SNVFIX	405609	Vertical	6
		4	RT1UNI	405600	Universal	8	RT1SNVFIX	405609	Vertical	8
2	800 to 3200	3	RT2UNI	405601	Universal	6	RT2SNHVFIX	405621	Vertical	6
		4	RT2UNI	405601	Universal	8	RT2SNHVFIX	405621	Vertical	8
2	4000	3	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	6
		4	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	8

Front Access Connections



Frame size	Rating (A)	Poles	Withdrawable			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31WN16T	405945	FA31WN16B	406045
		4	FA41WN16T	405946	FA41WN16B	406046
1	2000 to 2500	3	FA31WN25T	405947	FA31WN25B	406047
		4	FA41WN25T	405948	FA41WN25B	406048
2	800 to 3200	3	FA32WN32T	405949	FA32WN32B	406049
		4	FA42WN32T	405950	FA42WN32B	406050
2	4000	3	FA32WN40T	405951	FA32WN40B	406051
		4	FA42WN40T	405952	FA42WN40B	406052

Front Access Connections



Frame size	Rating (A)	Poles	Fixed pattern			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	400 to 1600	3	FA31FN16T	405957	FA31FN16B	405557
		4	FA41FN16T	405958	FA41FN16B	405558
1	2000 to 2500	3	FA31FN25T	405959	FA31FN25B	405559
		4	FA41FN25T	405960	FA41FN25B	405560
2	800 to 3200	3	FA32FN32T	405961	FA32FN32B	405561
		4	FA42FS32T	405938	FA42FN32B	405562
2	4000	3	FA32FS40T	405939	FA32FN40B	405563
		4	FA42FS40T	405940	FA42FN40B	405564

Cassette only



Basic cassette with flat copper terminals rear connected.

Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
1	400 to 2500	3	MN31C25	405345
		4	MN41C25	405344
2	800 to 3200	3	MN32C32	405347
		4	MN42C32	405346
2	4000	3	MN32C40	405349
		4	MN42C40	405348

Moving Portion only



Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches and cluster contacts.

Frame size	Rating (A)	Poles	Position of the neutral	Cat. No.	Ref. No.
1	400	3		MN31M04-A	405953
		4	Left	MN41M04-A	405954
1	630	4	Right	MN4R1M04-A	406220
		3		MN31M06-A	405955
1	800	4	Left	MN41M06-A	405956
		4	Right	MN4R1M06-A	406222
1	1000	3		MN31M08-A	405965
		4	Left	MN41M08-A	405966
1	1000	4	Right	MN4R1M08-A	406224
1	1250	3		MN31M10-A	405967
		4	Left	MN41M10-A	405968
1	1250	4	Right	MN4R1M10-A	406226
1	1600	3		MN31M12-A	405969
		4	Left	MN41M12-A	405970
1	1600	4	Right	MN4R1M12-A	406228
1	2000	3		MN31M16-A	405971
		4	Left	MN41M16-A	405972
1	2000	4	Right	MN4R1M16-A	406230
1	2500	3		MN31M20-A	405977
		4	Left	MN41M20-A	405978
1	2500	4	Right	MN4R1M20-A	406232
1	2500	3		MN31M25-A	405979
		4	Left	MN41M25-A	405980
2	2000	4	Right	MN4R1M25-A	406234
		3		MN32M20-A	405981
2	2500	4	Left	MN42M20-A	405982
		4	Right	MN4R2M20-A	406236
2	3200	3		MN32M25-A	405983
		4	Left	MN42M25-A	405984
2	3200	4	Right	MN4R2M25-A	406238
2	4000	3		MN32M32-A	405989
		4	Left	MN42M32-A	405990
2	4000	4	Right	MN4R2M32-A	406240
		3		MN32M40-A	405991
2	4000	4	Left	MN42M40-A	405992
		4	Right	MN4R2M40-A	406242

Earthing Device



Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
1	400 to 1600	3	EDF13P16	405661
		4	EDF14P16	405660
1	2000 to 2500	3	EDF13P25	405663
		4	EDF14P25	405662
2	3200 to 4000	3	EDF23P40	405665
		4	EDF24P40	405664

Air Circuit Breaker - TYPE H - 80kA - Non-auto

Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches.

Withdrawable pattern – basic circuit breaker and cassette with flat copper terminals rear connected.

Fixed pattern – basic circuit breaker with rear terminals horizontal.

Withdrawable and Fixed Pattern



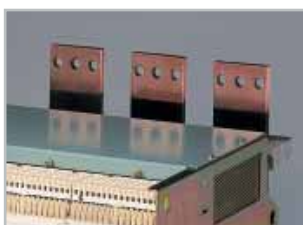
Frame size	Rating (A)	Poles	Position of the neutral	Withdrawable		Fixed Pattern	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
2	800	3		MH32W08	405227	MH32F08	405257
		4	Left	MH4L2W08	405226	MH4L2F08	405256
		4	Right	MH4R2W08	405494	MH4R2F08	405509
2	1000	3		MH32W10	405229	MH32F10	405259
		4	Left	MH4L2W10	405228	MH4L2F10	405258
		4	Right	MH4R2W10	405496	MH4R2F10	405510
2	1250	3		MH32W12	405231	MH32F12	405261
		4	Left	MH4L2W12	405230	MH4L2F12	405260
		4	Right	MH4R2W12	405498	MH4R2F12	405512
2	1600	3		MH32W16	405233	MH32F16	405263
		4	Left	MH4L2W16	405232	MH4L2F16	405262
		4	Right	MH4R2W16	405500	MH4R2F16	405514
2	2000	3		MH32W20	405235	MH32F20	405265
		4	Left	MH4L2W20	405234	MH4L2F20	405264
		4	Right	MH4R2W20	405502	MH4R2F20	405516
2	2500	3		MH32W25	405237	MH32F25	405267
		4	Left	MH4L2W25	405236	MH4L2F25	405266
		4	Right	MH4R2W25	405504	MH4R2F25	405518
2	3200	3		MH32W32	405243	MH32F32	405273
		4	Left	MH4L2W32	405242	MH4L2F32	405272
		4	Right	MH4R2W32	405506	MH4R2F32	405520
2	4000	3		MH32W40	405245	MH32F40	405275
		4	Left	MH4L2W40	405244	MH4L2F40	405274
		4	Right	MH4R2W40	405508	MH4R2F40	405522

Rear Connections



Frame size	Rating (A)	Poles	Withdrawable or Cassettes				Fixed Pattern			
			Cat. No.	Ref. No.	Type	Pack	Cat. No.	Ref. No.	Type	Pack
2	800 to 3200	3	RT2UNI	405601	Universal	6	RT2SNHVFIX	405621	Vertical	6
		4	RT2UNI	405601	Universal	8	RT2SNHVFIX	405621	Vertical	8
2	4000	3	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	6
		4	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	8

Front Access Connections



Frame size	Rating (A)	Poles	Withdrawable			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
2	800 to 3200	3	FA32WH32T	405973	FA32WH32B	405553
		4	FA42WH32T	405974	FA42WH32B	405554
2	4000	3	FA32WH40T	405975	FA32WH40B	405555
		4	FA42WH40T	405976	FA42WH40B	405556

Front Access Connections



Frame size	Rating (A)	Poles	Fixed pattern			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
2	800 to 3200	3	FA32FH32T	405985	FA32FH32B	405565
		4	FA42FH32T	405986	FA42FH32B	405566
2	4000	3	FA32FH40T	405987	FA32FH40B	405567
		4	FA42FH40T	405988	FA42FH40B	405568

Cassette only



Basic cassette with flat copper terminals rear connected.

Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
2	800 to 3200	3	MH32C32	405357
		4	MH42C32	405356
2	4000	3	MH32C40	405359
		4	MH42C40	405358

Moving Portion only



Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches and cluster contacts.

Frame size	Rating (A)	Poles	Position of the neutral	Cat. No.	Ref. No.
2	800/800	3		MH32M08	405867
		4	Left	MH4L2M08	405868
		4	Right	MH4R2M08	405638
2	1000	3		MH32M10	405869
		4	Left	MH4L2M10	405870
		4	Right	MH4R2M10	405640
2	1250	3		MH32M12	405871
		4	Left	MH4L2M12	405872
		4	Right	MH4R2M12	405642
2	1600	3		MH32M16	405873
		4	Left	MH4L2M16	405874
		4	Right	MH4R2M16	405644
2	2000	3		MH32M20	405875
		4	Left	MH4L2M20	405876
		4	Right	MH4R2M20	405646
2	2500	3		MH32M25	405877
		4	Left	MH4L2M25	405878
		4	Right	MH4R2M25	405648
2	3200	3		MH32M32	405883
		4	Left	MH4L2M32	405884
		4	Right	MH4R2M32	405650
2	4000	3		MH32M40	405885
		4	Left	MH4L2M40	405886
		4	Right	MH4R2M40	405652

Earthing Device



Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
2	800 to 4000	3	EDF23P40	405665
		4	EDF24P40	405664

Air Circuit Breaker - TYPE H - 80kA - Automatic

Basic circuit breaker manually operated, automatic (with protection), 5 NO and 3 NC auxiliary switches.

Withdrawable pattern - basic circuit breaker and cassette with flat copper terminals rear connected.

Fixed Pattern - basic circuit breaker with rear terminals horizontal.

Withdrawable and Fixed Pattern



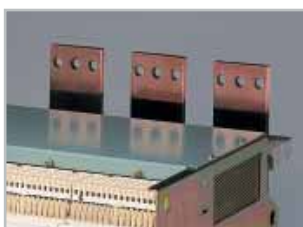
Frame size	Rating (A)	Poles	Position of the neutral	Withdrawable		Fixed Pattern	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
2	800	3		MH32W08-A	405797	MH32F08-A	405881
		4	Left	MH4L2W08-A	405796	MH4L2F08-A	405880
		4	Right	MH4R2W08-A	406130	MH4R2F08-A	406146
2	1000	3		MH32W10-A	405799	MH32F10-A	405889
		4	Left	MH4L2W10-A	405802	MH4L2F10-A	405888
		4	Right	MH4R2W10-A	406134	MH4R2F10-A	406148
2	1250	3		MH32W12-A	405801	MH32F12-A	405891
		4	Left	MH4L2W12-A	405798	MH4L2F12-A	405890
		4	Right	MH4R2W12-A	406132	MH4R2F12-A	406150
2	1600	3		MH32W16-A	405829	MH32F16-A	405893
		4	Left	MH4L2W16-A	405828	MH4L2F16-A	405892
		4	Right	MH4R2W16-A	406136	MH4R2F16-A	406152
2	2000	3		MH32W20-A	405831	MH32F20-A	405895
		4	Left	MH4L2W20-A	405830	MH4L2F20-A	405894
		4	Right	MH4R2W20-A	406138	MH4R2F20-A	406154
2	2500	3		MH32W25-A	405859	MH32F25-A	405897
		4	Left	MH4L2W25-A	405858	MH4L2F25-A	405896
		4	Right	MH4R2W25-A	406140	MH4R2F25-A	406156
2	3200	3		MH32W32-A	405861	MH32F32-A	405899
		4	Left	MH4L2W32-A	405860	MH4L2F32-A	405898
		4	Right	MH4R2W32-A	406142	MH4R2F32-A	406158
2	4000	3		MH32W40-A	405863	MH32F40-A	405901
		4	Left	MH4L2W40-A	405862	MH4L2F40-A	405900
		4	Right	MH4R2W40-A	406144	MH4R2F40-A	406160

Rear Connections



Frame size	Rating (A)	Poles	Withdrawable or Cassettes				Fixed Pattern			
			Cat. No.	Ref. No.	Type	Pack	Cat. No.	Ref. No.	Type	Pack
2	800 to 3200	3	RT2UNI	405601	Universal	6	RT2SNHVFIX	405621	Vertical	6
		4	RT2UNI	405601	Universal	8	RT2SNHVFIX	405621	Vertical	8
2	4000	3	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	6
		4	N/A	N/A	Vertical	Standard	RT2SNHVFIX	405621	Vertical	8

Front Access Connections



Frame size	Rating (A)	Poles	Withdrawable			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
2	800 to 3200	3	FA32WH32T	405973	FA32WH32B	405553
		4	FA42WH32T	405974	FA42WH32B	405554
2	4000	3	FA32WH40T	405975	FA32WH40B	405555
		4	FA42WH40T	405976	FA42WH40B	405556

Front Access Connections



Frame size	Rating (A)	Poles	Fixed pattern			
			TOP connections		BOTTOM connections	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.
2	800 to 3200	3	FA32FH32T	405985	FA32FH32B	405565
		4	FA42FH32T	405986	FA42FH32B	405566
2	4000	3	FA32FH40T	405987	FA32FH40B	405567
		4	FA42FH40T	405988	FA42FH40B	405568

Cassette only

Basic cassette with flat copper terminals rear connected.

Frame size	Rating (A)	Poles	Cat. No.	Ref. No.
2	800 to 3200	3	MH32C32	405357
		4	MH42C32	405356
2	4000	3	MH32C40	405359
		4	MH42C40	405358

Moving Portion only

Basic circuit breaker manually operated, non automatic, 5 NO and 3 NC auxiliary switches and cluster contacts.

Frame size	Rating (A)	Poles	Position of the neutral	Cat. No.	Ref. No.
2	800/800	3		MH32M08-A	405997
		4	Left	MH4L2M08-A	405998
		4	Right	MH4R2M08-A	406244
2	1000	3		MH32M10-A	405999
		4	Left	MH4L2M10-A	406000
		4	Right	MH4R2M10-A	406246
2	1250	3		MH32M12-A	406001
		4	Left	MH4L2M12-A	406002
		4	Right	MH4R2M12-A	406248
2	1600	3		MH32M16-A	406003
		4	Left	MH4L2M16-A	406004
		4	Right	MH4R2M16-A	406250
2	2000	3		MH32M20-A	406005
		4	Left	MH4L2M20-A	406006
		4	Right	MH4R2M20-A	406252
2	2500	3		MH32M25-A	406007
		4	Left	MH4L2M25-A	406008
		4	Right	MH4R2M25-A	406254
2	3200	3		MH32M32-A	406009
		4	Left	MH4L2M32-A	406010
		4	Right	MH4R2M32-A	406256
2	4000	3		MH32M40-A	406011
		4	Left	MH4L2M40-A	406012
		4	Right	MH4R2M40-A	406258

Earthing Device

Frame size	Rating (A)	Poles	Ref. No.
2	800 to 4000	3	405665
		4	405664

M-PRO Protection

M-PRO Protection Relay



Type	Cat. No.	Ref. No.
MPRO17 protection unit German Version	MPRO17-DE	406014
MPRO17 protection unit	MPRO17-ENG	406030
MPRO17 protection unit (English Version) without manual reset button	MPRO17-ENGNR	406106
MPRO17 protection unit Spanish Version	MPRO17-ES	406302
MPRO17 protection unit French Version	MPRO17-FRF	405126
MPRO17 protection unit (French Version) without manual reset button	MPRO17-FRFNR	406100
MPRO17 protection unit Italian Version	MPRO17-IT	406309
MPRO17 protection unit Dutch Version	MPRO17-NL	406316
MPRO17 O/Current Protection Relay Polish	MPRO17-PL	405697
MPRO17 O/Current Protection Relay Portuguese	MPRO17-PO	405394
MPRO20 protection unit German Version	MPRO20-DE	406015
MPRO20 protection unit	MPRO20-ENG	406031
MPRO20 protection unit (English Version) without auto/manual reset button	MPRO20-ENGNR	406107
MPRO20 protection unit Spanish Version	MPRO20-ES	406303
MPRO20 protection unit French Version	MPRO20-FRF	405127
MPRO20 protection unit (French Version) without auto/manual reset button	MPRO20-FRFNR	406101
MPRO20 protection unit Italian Version	MPRO20-IT	406310
MPRO20 protection unit Dutch Version	MPRO20-NL	406317
MPRO20 O/Current Protection Relay Polish	MPRO20-PL	405698
MPRO20 O/Current Protection Relay Portuguese	MPRO20-PO	405395
MPRO30H protection unit German Version	MPRO30H-DE	406017
MPRO30H protection unit	MPRO30H-ENG	406056
MPRO30H protection unit (English Version) without auto/manual reset button	MPRO30H-ENGNR	406109
MPRO30H protection unit Spanish Version	MPRO30H-ES	406305
MPRO30H protection unit French Version	MPRO30H-FRF	405129
MPRO30H protection unit (French Version) without auto/manual reset button	MPRO30H-FRFNR	406103
MPRO30H protection unit Italian Version	MPRO30H-IT	406312
MPRO30H protection unit Dutch Version	MPRO30H-NL	406319
MPRO30 O/Current Protection Relay Polish c/w 110-130VDC -250VAC Input	MPRO30H-PL	405700
MPRO30 O/Current Protection Relay Portuguese c/w 110-130VDC -250VAC Input	MPRO30H-PO	405397
MPRO30 H protection unit with Restricted Earth Fault only (English)	MPRO30HR	406057
MPRO30L protection unit German Version	MPRO30L-DE	406016
MPRO30L protection unit	MPRO30L-ENG	406055
MPRO30L protection unit (English Version) without auto/manual reset button	MPRO30L-ENGNR	406108
MPRO30L protection unit Spanish Version	MPRO30L-ES	406304
MPRO30L protection unit French Version	MPRO30L-FRF	405128
MPRO30L protection unit (French Version) without auto/manual reset button	MPRO30L-FRFNR	406102
MPRO30L protection unit Italian Version	MPRO30L-IT	406311
MPRO30L protection unit Dutch Version	MPRO30L-NL	406318
MPRO30 O/Current Protection Relay Polish c/w 24-48VDC Input	MPRO30L-PL	405699
MPRO30 O/Current Protection Relay Portuguese c/w 24-48VDC Input	MPRO30L-PO	405396
MPRO30 L protection unit with Restricted Earth Fault only (English)	MPRO30LR	406058
MPRO40H protection unit German Version	MPRO40H-DE	406019
MPRO40H protection unit English version with MODBUS protocol	MPRO40H-ENG	405534
MPRO40H protection unit (English Version) without auto/manual reset button	MPRO40H-ENGNR	406111
MPRO40H protection unit English version with PROFIBUS protocol	MPRO40H-ENGPRO	405188
MPRO40H protection unit Spanish Version	MPRO40H-ES	406307
MPRO40H protection unit French Version with MODBUS protocol	MPRO40H-FRF	405131
MPRO40H protection unit (French Version) without auto/manual reset button	MPRO40H-FRFNR	406105
MPRO40H protection unit French Version with PROFIBUS protocol	MPRO40H-FRFPRO	405190
MPRO40H protection unit Italian Version	MPRO40H-IT	406314
MPRO40H protection unit Dutch Version	MPRO40H-NL	406321
MPRO40 O/Current Protection Relay Polish c/w 110-130VDC -250VAC Input	MPRO40H-PL	405702
MPRO40 O/Current Protection Relay Portuguese c/w 110-130VDC -250VAC Input	MPRO40H-PO	405399
MPRO40L protection unit French Version with PROFIBUS protocol	MPRO40L-FRFPRO	405189
MPRO40L protection unit German Version	MPRO40L-DE	406018
MPRO40L protection unit English version with MODBUS protocol	MPRO40L-ENG	405530
MPRO40L protection unit (English Version) without auto/manual reset button	MPRO40L-ENGNR	406110
MPRO40L protection unit English version with PROFIBUS protocol	MPRO40L-ENGPRO	405187
MPRO40L protection unit Spanish Version	MPRO40L-ES	406306
MPRO40L protection unit French Version with MODBUS protocol	MPRO40L-FRF	405130
MPRO40L protection unit (French Version) without auto/manual reset button	MPRO40L-FRFNR	406104
MPRO40L protection unit Italian Version	MPRO40L-IT	406313
MPRO40L protection unit Dutch Version	MPRO40L-NL	406320
MPRO40 O/Current Protection Relay Polish c/w 24-48VDC Input	MPRO40L-PL	405701
MPRO40 O/Current Protection Relay Portuguese c/w 24-48VDC Input	MPRO40L-PO	405398

For Earth Fault options please specify on purchase order if system is earthed at switchboard OR at source

Technical overview ● Section A
Wiring diagrams ● Section C
Dimensional drawings ● Section C
Numerical index ● Section X

M-PRO Optional Protection⁽¹⁾



M-PRO Optional Protection	Cat. No.	Ref. No.
Neutral Protection (MPRO20/30/40 only)	MPRONTL	405539
Neutral Protection set at 100% (MPRO17)	MPRONTL100	405549
Neutral Protection set at 50% (MPRO17)	MPRONTL50	405541
Neutral Protection set at 63% (MPRO17)	MPRONTL63	405577
Restricted Earth Fault Protection	MPROREF	405537
Standby Earth Fault Protection	MPROSEF	405538
Unrestricted Earth Fault Protection (MPRO20/30/40 only)	MPROUEF	405536
Unrestricted Earth Fault Protection (MPRO17)	MPROUEF17	405529
Unrestricted Earth Fault Protection (3 phase 3 wire systems)	MPROUEF3P3W	405535

(1) Refer to M-PRO specifications on page A.11 for complete data.

For Earth Fault options please specify on purchase order if system is earthed at switchboard OR at source

M-PRO Optional Features

M-PRO Optional Features	Cat. No.	Ref. No.
Ammeter option for MPRO units	MPROAMM	405543
Auxiliary Power Unit	MPROAPU	405547
Communications facility (MODBUS protocol)	MPROCOM	405545
Communications facility (PROFIBUS protocol)	MPROCOM2	405546
Electrical operations counter	MPROEOC	405544
MPRO20 / 30 / 40 no-trip/warn only software facility	MPRONTSW	405540
Add-on Mechanical Alarm Contact (1 x N/O)	MPROMAC	405575
Portable Power Box (for MPRO20/30/40)	MPROPPB	405552
Portable Test Unit (for MPRO17 only) American power lead	PTU17 USA	405224
Portable Test Unit (for MPRO17 only) Continental Europe power lead	PTU17 Euro	405222
Portable Test Unit (for MPRO17 only) UK power lead	MPROPTU17	405550
Portable Test Unit (for MPRO20/30/40) American power lead	PTU USA	405225
Portable Test Unit (for MPRO20/30/40) Continental Europe power lead	PTU Euro	405223
Portable Test Unit (for MPRO20/30/40) UK power lead	MPROPTU	405551

Electrical Accessories



	Range	Voltage	Cat. No.	Ref. No.
Shunt Trip (ST)	24/30V	DC	ST30	405380
	48V	DC	ST48	405382
	60V	DC	ST60	405383
	110/130V	AC/DC	ST130	405386
	220/250V	AC/DC	ST250	405388
	380/440V	AC/DC	ST440	405389
Motor Operator (MOP)	24/30V	DC	MOP30	405440
	48V	DC	MOP48	405442
	60V	DC	MOP60	405443
	110/130V	AC	MOP130A	405446
	110/130V	DC	MOP130D	405917
	220/250V	AC	MOP250A	405448
Closing Coil (CC)	24/30V	DC	CC30	405420
	48V	DC	CC48	405422
	60V	DC	CC60	405423
	110/130V	AC/DC	CC130	405426
	220/250V	AC/DC	CC250	405428
Under voltage Release (UV)	24/30V	DC	UV30	405400
	48V	DC	UV48	405402
	60V	DC	UV60	405403
	110/130V	AC	UV130A	405406
	110/130V	DC	UV130D	405407
	220/250V	AC	UV250	405408
	380/440V	AC	UV440	405409
Under voltage Release Time Delayed (UVTd)	48V	DC	UVTd48	406322
	60V	DC	UVTd60	405435
	110/130V	AC	UVTd130	406326
	220/250V	AC	UVTd250	405411
	380/440V	AC	UVTd440	405413
Carriage Switch	Factory Fitted	250V	CSWFF	405580
	Loose kit Form	250V	CSWL	405581
Springs charged signal (x 1 n/o)			SCC	405450
Springs charged contact (x 1 c/o)			2WPFC	405451
Trip circuit supervision (shunt trip required)			TRIPCS	406112

Mechanical Accessories

2 way Interlocking

			Type A - 2 way interlock				Type B - 1 from 3 way interlock			
Frame size	Type	Poles	Cable		Rod		Cable		Rod	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	Withdrawable	3	2WCI3PW	406342	2WRI3PW	406346	B13WCI3PW	406350	B13WRI3PW	406354
		4	2WCI4PW	406343	2WRI4PW	406347	B13WCI4PW	406351	B13WRI4PW	406355
	Fixed	3	2WCI3PF	406340	2WRI3PF	406344	B13WCI3PF	406348	B13WRI3PF	406352
		4	2WCI4PF	406341	2WRI4PF	406345	B13WCI4PF	406349	B13WRI4PF	406353
2	Withdrawable	3	2WCIF23PW	405459	2WRIF23PW	405467	B13WCIF23PW	405475	B13WRIF23PW	405483
		4	2WCIF24PW	405461	2WRIF24PW	405469	B13WCIF24PW	405477	B13WRIF24PW	405485
	Fixed	3	2WCIF23PF	405463	2WRIF23PF	405471	B13WCIF23PF	405479	B13WRIF23PF	405487
		4	2WCIF24PF	405465	2WRIF24PF	405473	B13WCIF24PF	405481	B13WRIF24PF	405489

			Type B - 2 from 3 way interlock				Type C - 1 from 3 way interlock			
Frame size	Type	Poles	Cable		Rod		Cable		Rod	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	Withdrawable	3	B23WCI3PW	406327	B23WRIF23PW	406261	C13WCI4PW	406387	C13WRI4PW	406391
		4	B23WCI4PW	406329	B23WRIF24PW	406265	C13WCIF24PW	406271	C13WRIF24PW	406279
	Fixed	3	B23WCI3PF	406328	B23WRIF23PF	406259	C13WCI4PF	406388	C13WRI4PF	406392
		4	B23WCI4PF	406330	B23WRIF24PF	406263	C13WCIF24PF	406269	C13WRIF24PF	406277
2	Withdrawable	3	B23WCIF23PW	406253	B23WRI3PW	406331	C13WCI3PW	406385	C13WRI3PW	406389
		4	B23WCIF24PW	406257	B23WRI4PW	406333	C13WCIF23PW	406281	C13WRIF23PW	406275
	Fixed	3	B23WCIF23PF	406251	B23WRI3PF	406332	C13WCI3PF	406386	C13WRI3PF	406390
		4	B23WCIF24PF	406255	B23WRI4PF	406334	C13WCIF23PF	406267	C13WRIF23PF	406273

			Type C - 2 from 3 way interlock				Type D - 1 from 3 way interlock			
Frame size	Type	Poles	Cable		Rod		Cable		Rod	
			Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	Withdrawable	3	C23WCI3PW	406358	C23WRI3PW	406362	D13WCI3PF	406364	D13WRI3PF	406368
		4	C23WCI3PF	406356	C23WRI3PF	406360	D13WCI3PW	406366	D13WRI3PW	406370
	Fixed	3	C23WCIF23PW	405491	C23WRIF23PW	405499	D13WCIF23PF	405515	D13WRIF23PF	405523
		4	C23WCIF23PF	405495	C23WRIF23PF	405503	D13WCIF23PW	405511	D13WRIF23PW	405519
2	Withdrawable	3	C23WCI4PF	406357	C23WRI4PF	406361	D13WCI4PF	406365	D13WRI4PF	406369
		4	C23WCI4PW	406359	C23WRI4PW	406363	D13WCI4PW	406367	D13WRI4PW	406371
	Fixed	3	C23WCIF24PF	405497	C23WRIF24PF	405507	D13WCIF24PF	405517	D13WRIF24PF	405525
		4	C23WCIF24PW	405493	C23WRIF24PW	405501	D13WCIF24PW	405513	D13WRIF24PW	405521

Cable for Interlocks

Item	Cat. No.	Ref. No.
1.0 metre length Cable	100BCMCI	405531
1.6 metre length Cable	160BCMCI	405532
2.0 metre length Cable	200BCMCI	405533
2.5 metre length Cable	250BCMCI	405610
3.0 metre length Cable	300BCMCI	405611
3.5 metre length Cable	350BCMCI	405612
4.0 metre length Cable	400BCMCI	405613

Rod for Interlocks

Item	Cat. No.	Ref. No.
1.0 metre length Rod	100RODMCI	405614
1.6 metre length Rod	160RODMCI	405583
2.0 metre length Rod	200RODMCI	405585
2.5 metre length Rod	250RODMCI	405617
3.0 metre length Rod	300RODMCI	405618
3.5 metre length Rod	350RODMCI	405619
4.0 metre length Rod	400RODMCI	405620

Refer to page A.25 for interlock configurations

Interlocks

Item	Cat. No.	Ref. No.
Castell key breaker Interlock (supplied loose) ⁽¹⁾	CASLOK	405570
Fortress Key Breaker Interlock (supplied loose) ⁽¹⁾	FORLOK	405569
Profalux Key Breaker Interlock (supplied loose) ⁽¹⁾	PROLOK	405572
Profalux Key Cassete Interlock (supplied loose) ⁽¹⁾	PROCAS	405574
Ronis Key Breaker Interlock (factory fitted) ⁽²⁾	RONLKEY	406335
Ronis Key Breaker Interlock (supplied loose) ⁽²⁾	RONWKEY	406338
Ronis Key Breaker Interlock (supplied loose) ⁽¹⁾	RONLOK	405571
Ronis Key Cassete Interlock (factory fitted) ⁽²⁾	RONWKEYFF	406339
Ronis Key Cassete Interlock (supplied loose) ⁽²⁾	RONCASLD	406336
Ronis Key Cassete Interlock (supplied loose) ⁽¹⁾	RONCASNK	406337
Ronis Key Cassete Interlock (factory fitted) ⁽¹⁾	RONCAS	405573

Miscellaneous

Item	Cat. No.	Ref. No.
Operations counter	MOC	405576
Left hand door interlock	DILHS	405578
Right hand door interlock	DIRHS	405579
Mis-insertion device (factory fitted)	ACBMID	405605
Mis-insertion device (supplied loose)	ACBMIL	405505
IP54 door	IP54DOOR	405606
Lifting truck	ACBLIFT	405607
Titan truck adaptor kit (for M-pact mk1)	TITAN	405608
Electrical Test Certification	TESTCERT	406210
Certificate of Origin	CERTORIGIN	406211
Certificate of Conformity	CERTCONF	406212
Dark Grey Front Cover	DGFASCIA	405100
Light Grey Front Cover	LGFASCIA	405101
Insulated steel shutter kit F1 3P	ISSF13P	406298
Insulated steel shutter kit F1 4P	ISSF14P	406299
Insulated steel shutter kit F2 3P	ISSF23P	406300
Insulated steel shutter kit F2 4P	ISSF24P	406301
Spare or replacement racking handle	MPRACKHAN	406393

(1) Without lock and key

(2) With lock and key

Spare parts

Neutral / Earth Leg (4th) Current Transformer with mounting kit



Frame size	Rating (A)	Cat. No.	Ref. No.
1	800	ELCT8001	405683
2		ELCT8002	405713
1	1000	ELCT10001	405684
2		ELCT10002	405714
1	1250	ELCT12501	405685
2		ELCT12502	405715
1	1600	ELCT16001	405686
2		ELCT16002	405716
1	2000	ELCT20001	405687
2		ELCT20002	405717
1	2500	ELCT25001	405688
2		ELCT25002	405718
2	3200	ELCT32002	405689
2	4000	ELCT40002	405690

Neutral (4th) Rogowski Coil with mounting kit*

Frame size	Rating (A)	Cat. No.	Ref. No.
1	800	RCMK8001	405703
2		RCMK8002	405723
1	1000	RCMK10001	405704
2		RCMK10002	405724
1	1250	RCMK12501	405705
2		RCMK12502	405725
1	1600	RCMK16001	405706
2		RCMK16002	405726
1	2000	RCMK20001	405707
2		RCMK20002	405727
1	2500	RCMK25001	405708
2		RCMK25002	405728
2	3200	RCMK32002	405709
2	4000	RCMK40002	405710

* Rogowski coil provided with twisted pair of cable (max. length 2 m)

Fixed Arcing Contact

Frame size	Rating (A)	ACB Type	Per Pole	Cat. No.	Ref. No.
1	800 to 1600	S	1	FACS116	405738
1	2000 to 2500	S	1	FAC125	405742
2	3200	S	1	FAC232	405744
2	4000	S	1	FAC240	405746
1	800 to 1600	N	1	FACN116	405740
1	2000 to 2500	N	1	FAC125	405742
2	3200	N	1	FAC232	405744
2	4000	N	1	FAC240	405746
2	800 to 3200	H	1	FAC232	405744
2	4000	H	1	FAC240	405746

Moving Arcing Contact

Frame size	Rating (A)	ACB Type	Per Pole	Cat. No.	Ref. No.
1	800 to 1600	S	3	MACS116	405739
1	2000 to 2500	S	3	MAC125	405743
2	3200	S	3	MAC232	405745
2	4000	S	3	MAC240	405747
1	800 to 1600	N	4	MACN116	405741
1	2000 to 2500	N	4	MAC125	405743
2	3200	N	6	MAC232	405745
2	4000	N	6	MAC240	405747
2	800 to 3200	H	6	MAC232	405745
2	4000	H	6	MAC240	405747

Spare parts (continued)



Cluster Contacts

Frame size	Rating (A)	ACB Type	Per Pole	Cat. No.	Ref. No.
1	800 to 1600	S	2	CLCS116	405769
1	2000 to 2500	S	2	CLC125	405771
2	3200	S	2	CLC232	405772
2	4000	S	2	CLC240	405773
1	800 to 1600	N	2	CLCN116	405770
1	2000 to 2500	N	2	CLC125	405771
2	3200	N	2	CLC232	405772
2	4000	N	2	CLC240	405773
2	800 to 3200	H	2	CLC232	405772
2	4000	H	2	CLC240	405773
Universal Cluster pliers (to remove cluster contact)				UNIPLIER	405800

Arc Chute

Frame size	Rating (A)	ABC Type	Per Pole	Cat. No.	Ref. No.
1	400 to 1600	S	1	ARC16	405787
1	<2500	S & N ⁽¹⁾	1	ARC25	405790
2	3200	S & N	1	ARC32	405791
2	3200	H	1	ARC32H	405788
2	4000	S & N	1	ARC40	405792
2	4000	H	1	ARC40H	405789

1 - for Type S (50kA) 2000 to 2500A

Cassette Side Mounting Details

Frame size	Pole	Cat. No.	Ref. No.
1	3	CSMKF13	406381
1	4	CSMKF14	406382
2	3	CSMKF23	406383
2	4	CSMKF24	406384

C.3 Wiring Diagrams

C.3 Circuit breakers

C.4 M-PRO 17 relay

C.5 M-PRO 20/30/40 relay

Dimensional drawings**Circuit Breaker - Type S - 50kA**

C.6 Horizontal, Rear Access Connection - Fixed Pattern

C.9 Rear Access Connection - Withdrawable Pattern

C.13 Front Access Connection - Withdrawable Pattern

C.15 Front Access Connection - Fixed Pattern

Circuit Breaker - Type N - 65kA

C.18 Horizontal, Rear Access Connection - Fixed Pattern

C.21 Rear Access Connection - Withdrawable Pattern

C.24 Front Access Connection - Fixed Pattern

C.25 Front Access Connection - Withdrawable Pattern

Circuit Breaker - Type H - 80kA

C.29 Horizontal, Rear Access Connection - Fixed Pattern

C.30 Rear Access Connection - Withdrawable Pattern

C.32 Front Access Connection - Fixed Pattern

C.33 Front Access Connection - Withdrawable Pattern

C.34 Adaptor Connections

C.35 Copper Connection - Front Access

C.35 IP54 Door

C.36 Door Cut-outs

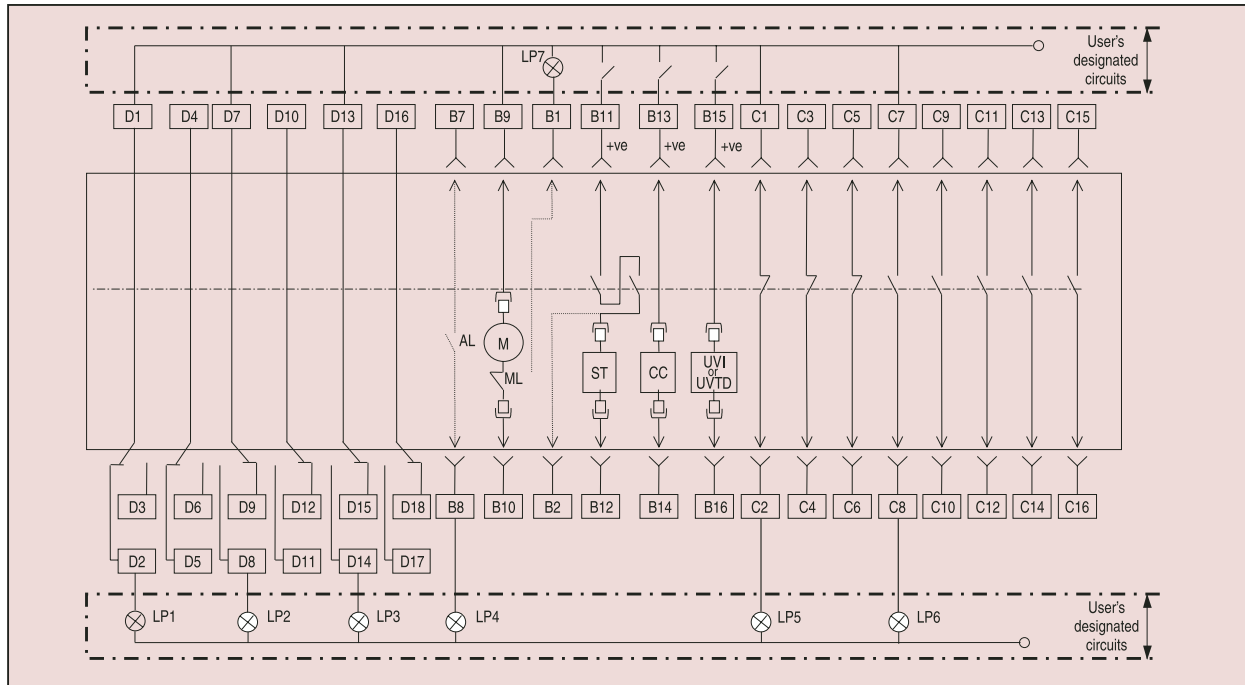
C.37 Cassette mounting details

C.38 2-Way Cable Interlocking

C.39 3-Way Cable Interlocking

Technical overview A*Order codes* B*Wiring diagrams*
Dimensional drawings C*Numerical index* X

Wiring Diagram



Terminal References

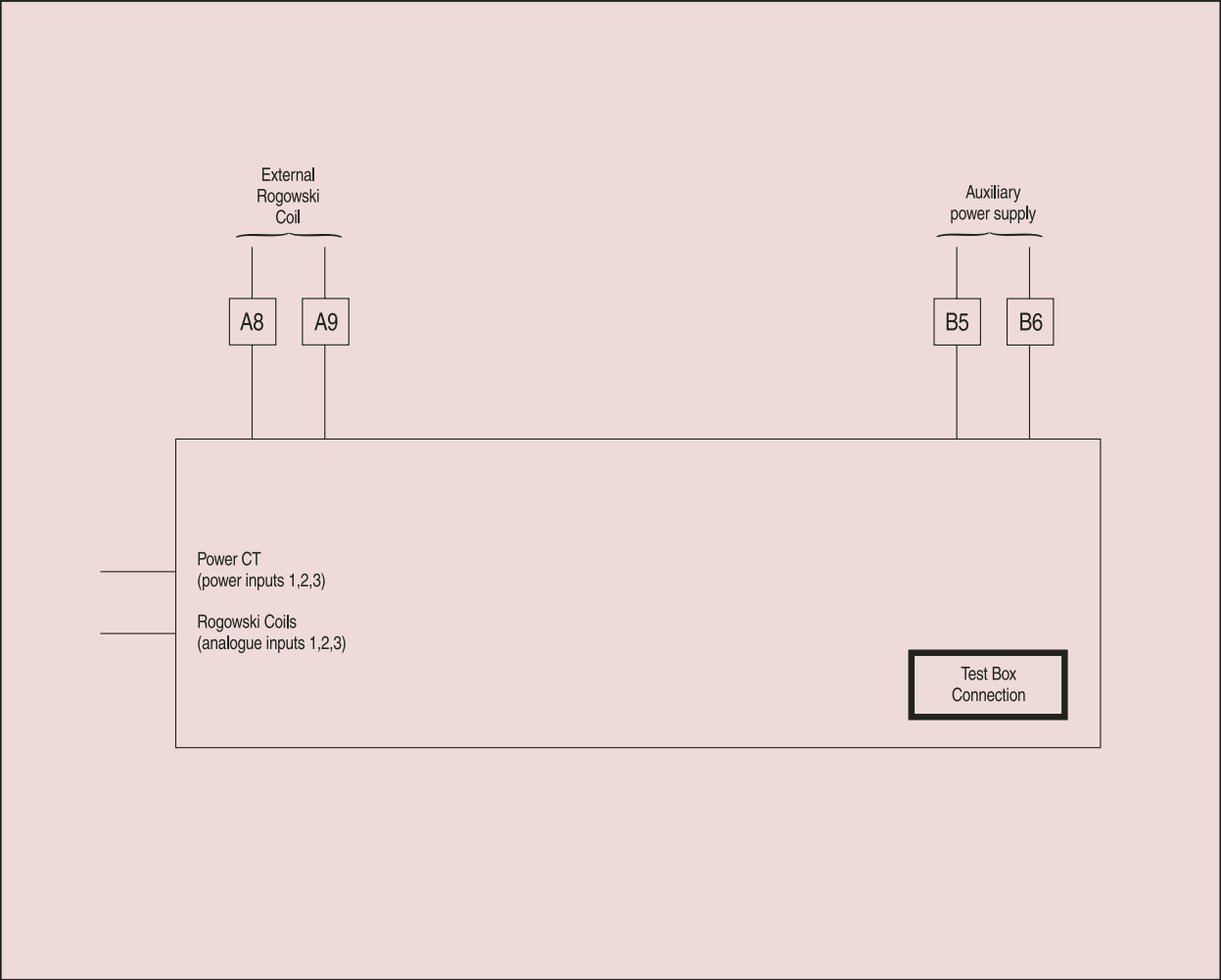
B1 to B16	Automatic disconnect L.T. blocks
C1 to C16	Automatic disconnect L.T. blocks
D1 to D6	Carriage switch blocks for disconnected position ⁽¹⁾
D7 to D12	Carriage switch blocks for test position ⁽¹⁾
D13 to D18	Carriage switch blocks for connected position ⁽¹⁾

(1) Changeover contacts can be reconfigured by user.

Key

LP1	Disconnected indication
LP2	Test indication
LP3	Connected indication
LP4	ACB tripped indication
LP5	ACB OFF indication
LP6	ACB ON indication
Optional features	
LP7	Closing springs charged indication
CC	Closing coil
UV	Undervoltage release
UVTD	Time delayed undervoltage release
AL	M-PRO trip alarm (N/O)
ML	Charging motor limit switch
M	Closing spring charging motor
ST	Shunt trip

Wiring Diagram M-PRO 17

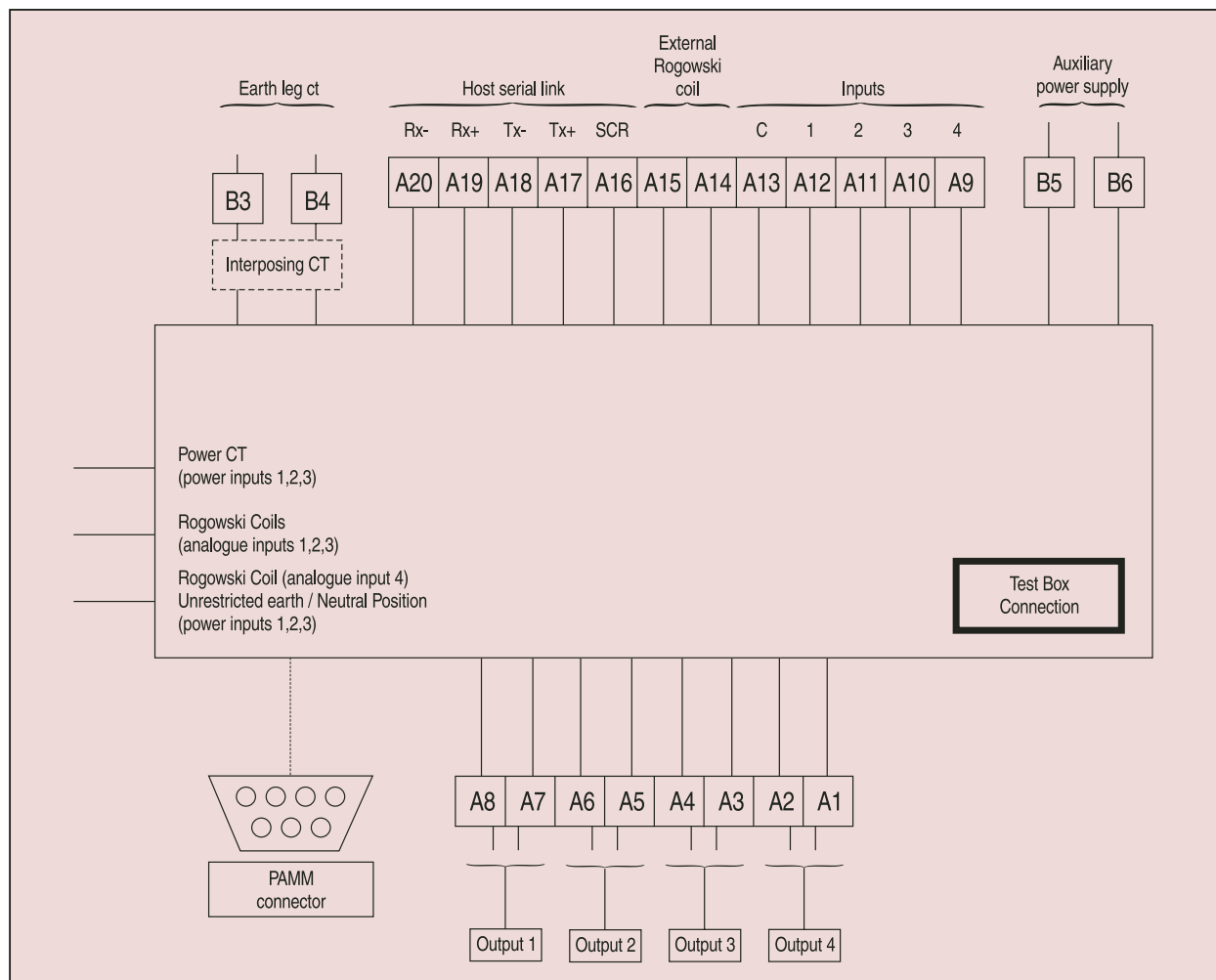


Connections for M-PRO 17

Location	Terminal	Function
LT 'A' block	A8	Remote Rogowski coil – positive for earth fault and/or neutral protection
LT 'A' block	A9	Remote Rogowski coil – negative for earth fault and/or neutral protection
LT 'B' block	B5	Auxiliary power supply input - positive
LT 'B' block	B6	Auxiliary power supply input – negative



Wiring Diagram M-PRO 20/30/40



Connections for M-PRO 20/30/40

Location	Terminal M-PRO 20	Terminal M-PRO 30	Terminal M-PRO 40	Function
PAMM	-	A1	A1	OUTPUT 4, normally open volt free contact: Operates when the REF (or SEF) element trips the ACB
PAMM	-	A2	A2	This is used to trip an upstream HV breaker.
PAMM	-	A3	A3	OUTPUT 3, normally open volt free contact: Operates when M-Pro has opened the ACB
PAMM	-	A4	A4	due to a trip condition.
PAMM	-	A5	A5	OUTPUT 2, normally open volt free contact: Load monitoring output operates if pre-trip alarm or
PAMM	-	A6	A6	load shedding limits are exceeded.
PAMM	-	A7	A7	OUTPUT 1, normally closed volt free contact, opens under the following conditions: Microprocessor
PAMM	-	A8	A8	malfunction, primary contact maintenance alarm or a digital input is active.
PAMM	-	A9	A9	Input 4
PAMM	-	A10	A10	Input 3
PAMM	-	A11	A11	Input 2
PAMM	-	A12	A12	Input 1
PAMM	-	A13	A13	Input common
PAMM	A14	A14	A14	Remote Rogowski coil – positive for earth fault and/or neutral protection
PAMM	A15	A15	A15	Remote Rogowski coil – negative for earth fault and/or neutral protection
LT 'B' block	-	B3	B3	Earth leg CT input – non polarised
LT 'B' block	-	B4	B4	
LT 'B' block	B5	B5	B5	Auxiliary power supply input – positive
LT 'B' block	B6	B6	B6	Auxiliary power supply input – negative

Fixed Pattern

Minimum space to earth metal
and for arc chute removal

182 Min
Arc chute removal

Insulated metal
or insulated sheet
(customer supplied)

100 to door

548

387

20

123

107

38

13

40

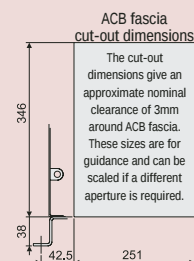
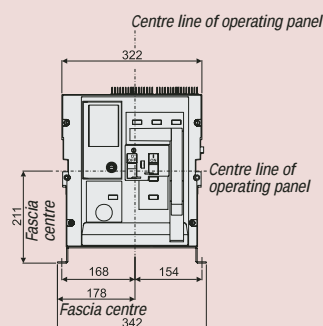
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23



Minimum space to earth metal
and for arc chute removal

182 Min

Arc chute
removal

Insulated metal
or insulated sheet
(customer supplied)

548

20

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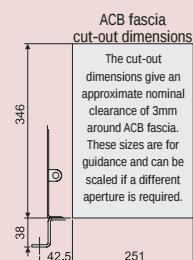
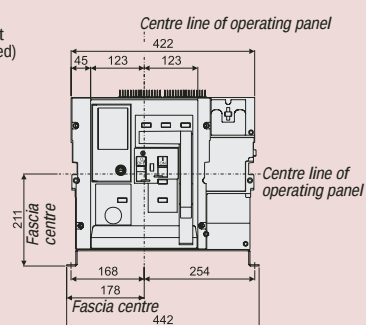
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201

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100 to door

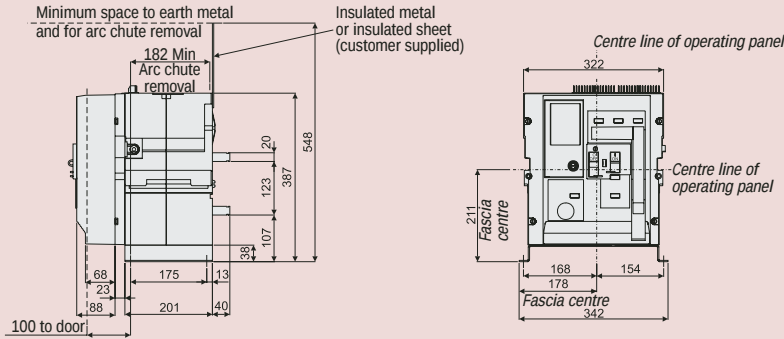
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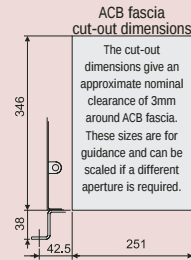
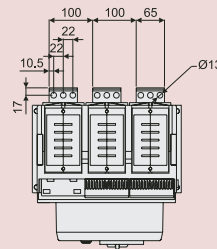
Horizontal, Rear Access Connection

Fixed Pattern

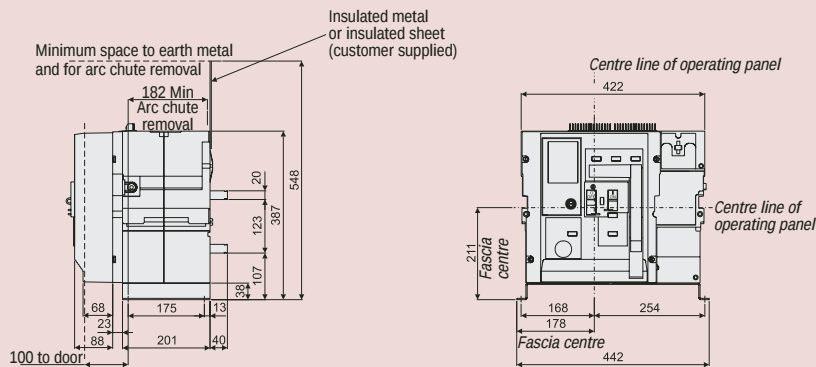
Type S - 3 pole - Frame size 1, $I_n = 2000A$ and $2500A$ (max)



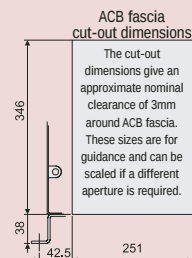
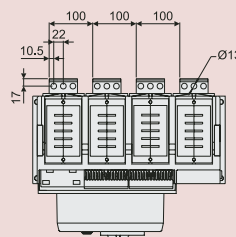
Copperwork must be supported within 200 mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



Type S - 4 pole - Frame size 1, $I_n = 2000A$ and $2500A$ (max)



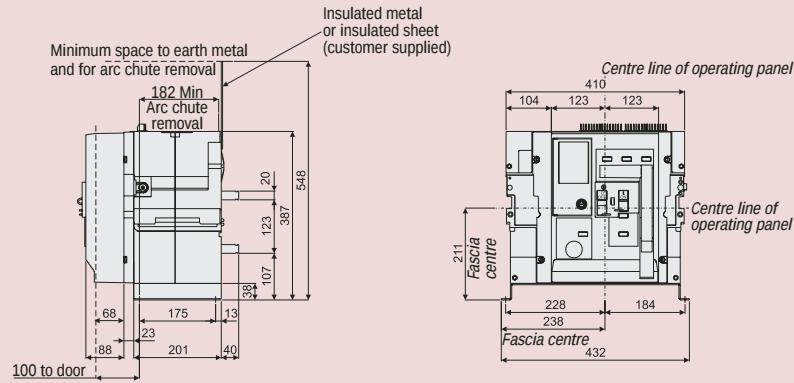
Copperwork must be supported within 200 mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



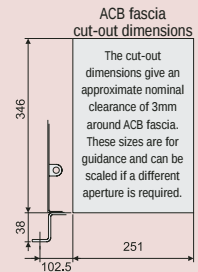
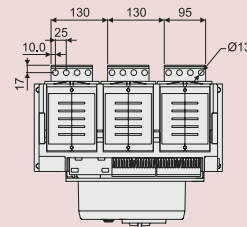
Horizontal, Rear Access Connection

Fixed Pattern

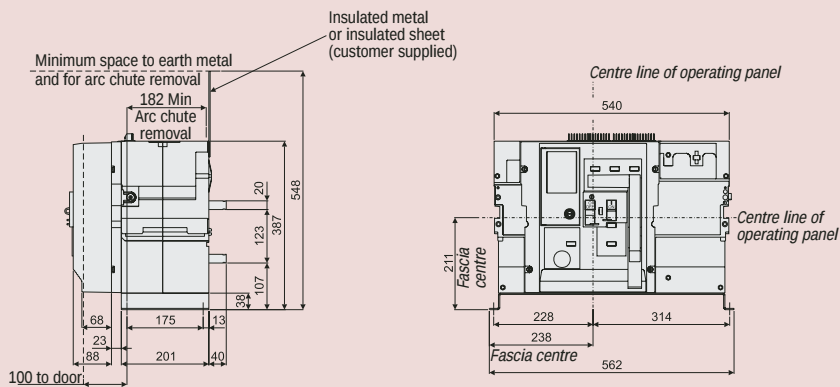
Type S - 3 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



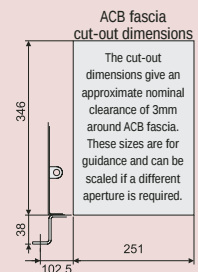
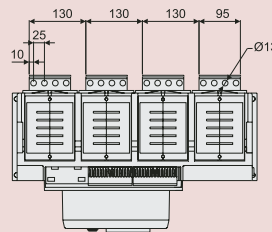
Copperwork must be supported within 200 mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



Type S - 4 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



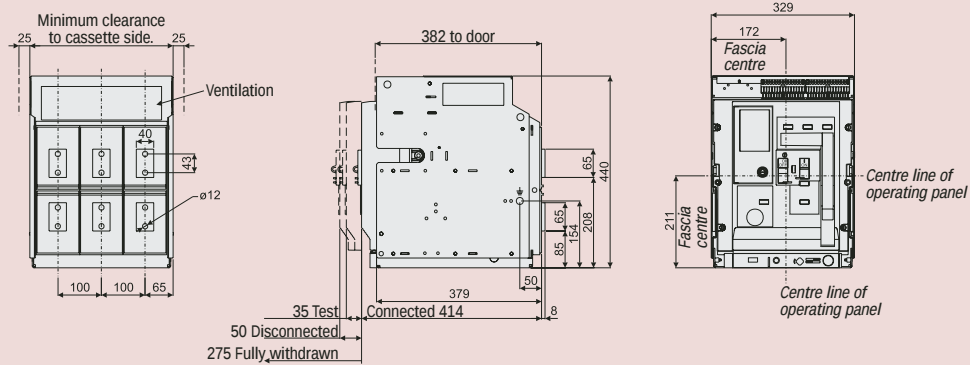
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



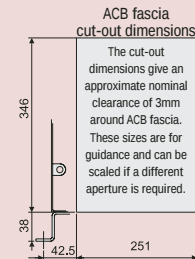
Rear Access Connection

Withdrawable Pattern

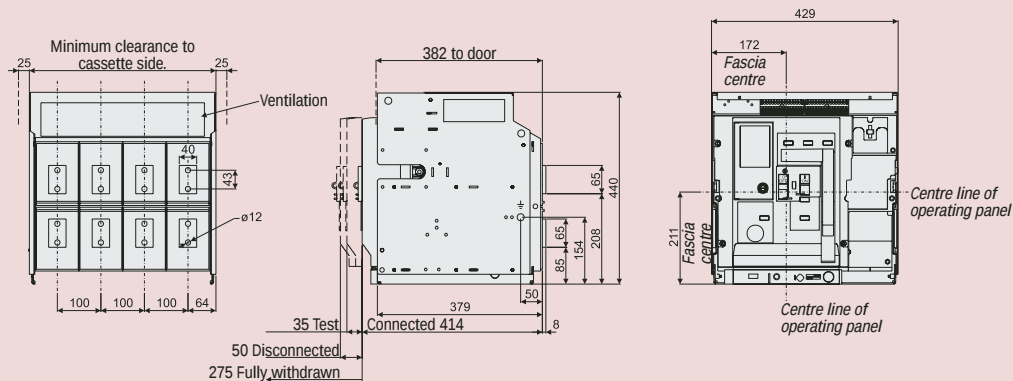
Type S - 3 pole - Frame size 1, $I_n = 400A$ to $1600A$ (max)



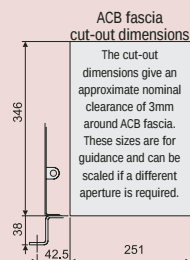
Copperwork must be supported within 200 mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.



Type S - 4 pole - Frame size 1, $I_n = 400A$ to $1600A$ (max)



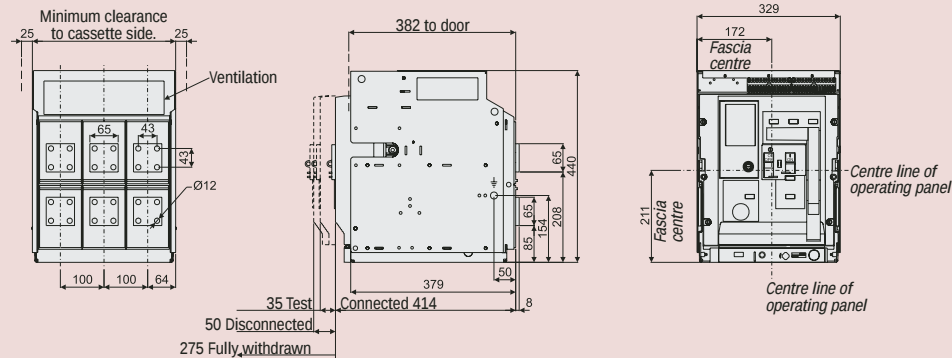
Copperwork must be supported within 200 mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.



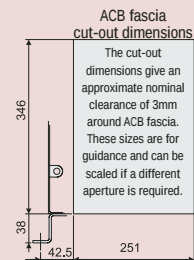
Rear Access Connection

Withdrawable Pattern

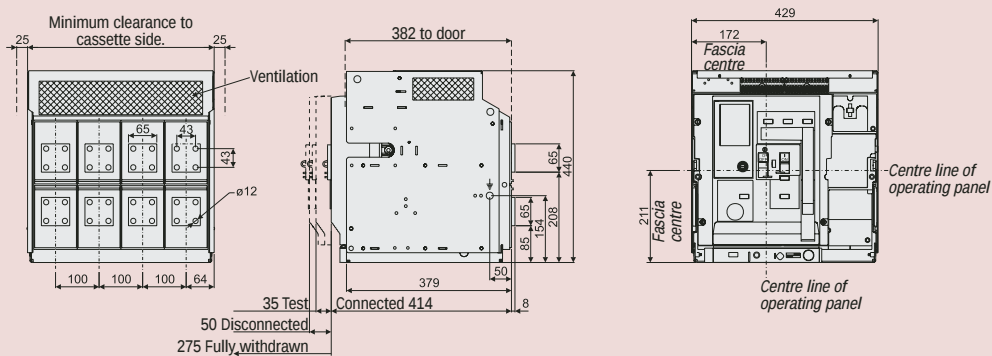
Type S - 3 pole - Frame size 1, $I_n = 2000A$ & $2500A$ (max)



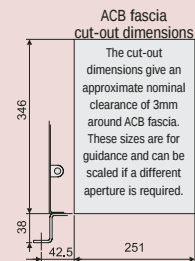
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.



Type S - 4 pole - Frame size 1, $I_n = 2000A$ & $2500A$ (max)

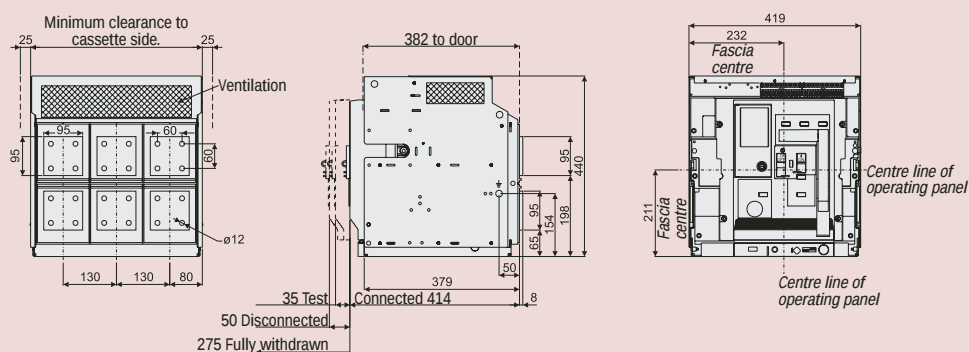


Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.

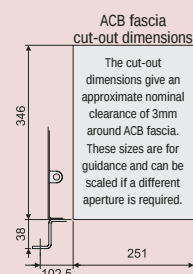


Withdrawable Pattern

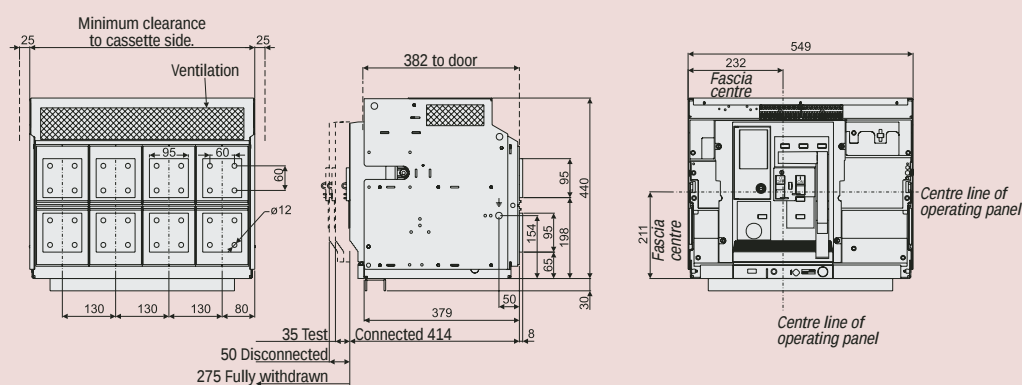
Type S - 3 pole - Frame size 2, In = 2000A to 3200A (max)



Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.



Type S - 4 pole - Frame size 2, In = 2000A to 3200A (max)

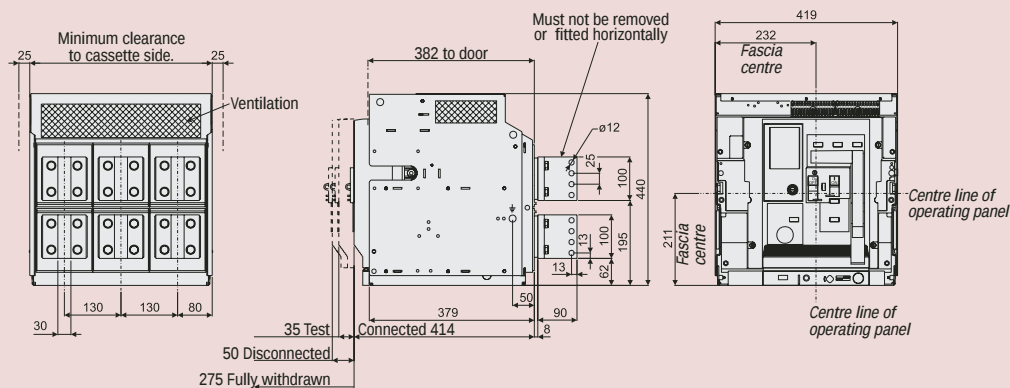


Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.

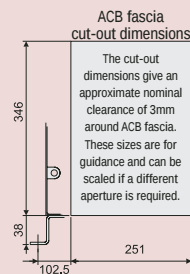
Rear Access Connection

Withdrawable Pattern

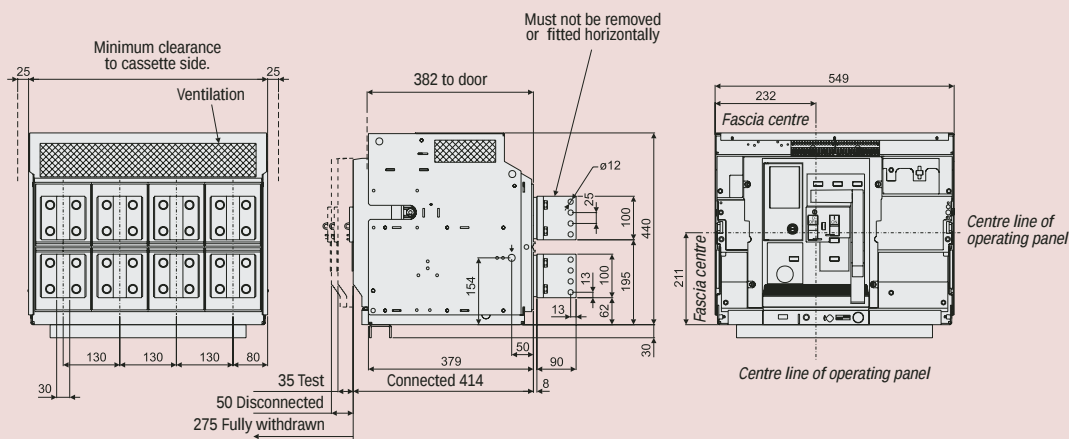
Type S - 3 pole - Frame size 2, $I_n = 4000A$ (max)



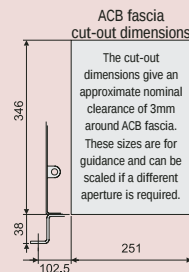
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



Type S - 4 pole - Frame size 2, $I_n = 4000A$ (max)



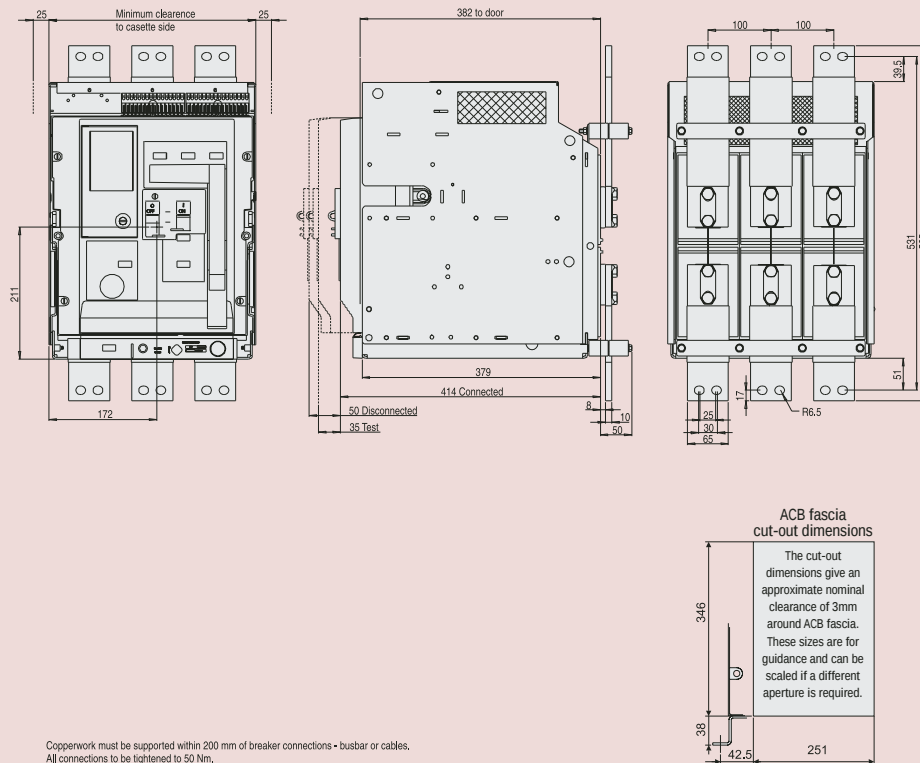
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



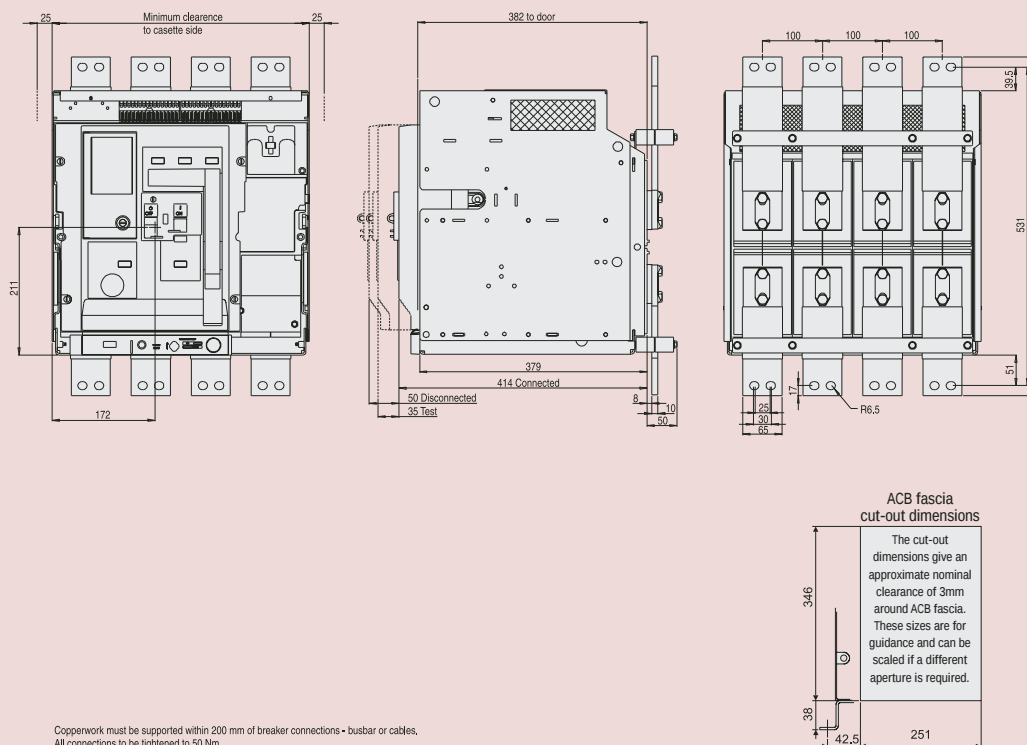
Front Access Connection

Withdrawable Pattern

Type S - 3 pole - Frame size 1, $I_n = 400A$ to 1600A (max)



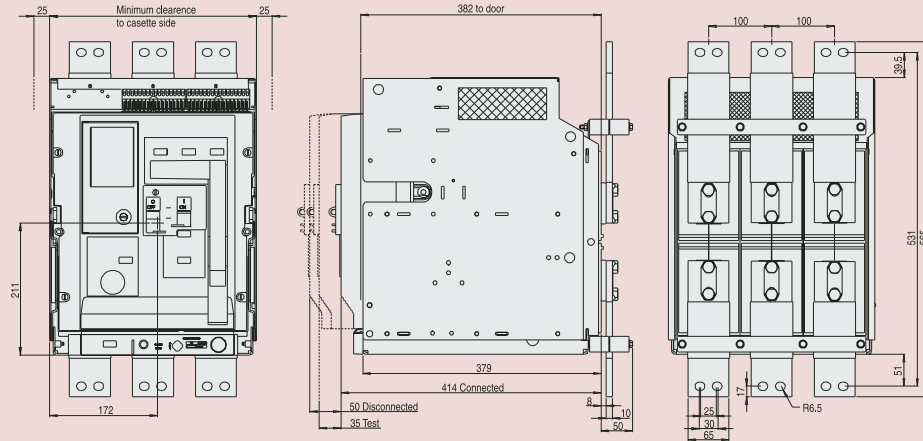
Type S - 4 pole - Frame size 1, $I_n = 400A$ to 1600A (max)



Front Access Connection

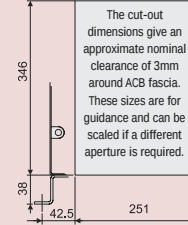
Withdrawable Pattern

Type S - 3 pole - Frame size 1, In = 2000A & 2500A (max)



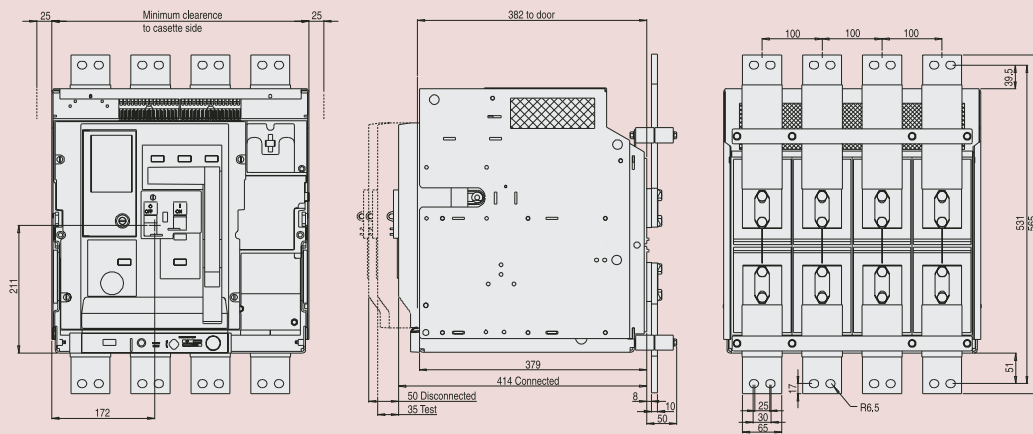
ACB fascia cut-out dimensions

The cut-out dimensions give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.



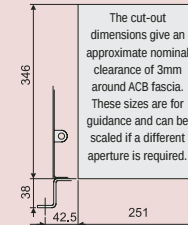
Copperwork must be supported within 200 mm of breaker connections - busbar or cables.
All connections to be tightened to 50 Nm.

Type S - 4 pole - Frame size 1, In = 2000A & 2500A (max)



ACB fascia cut-out dimensions

The cut-out dimensions give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.

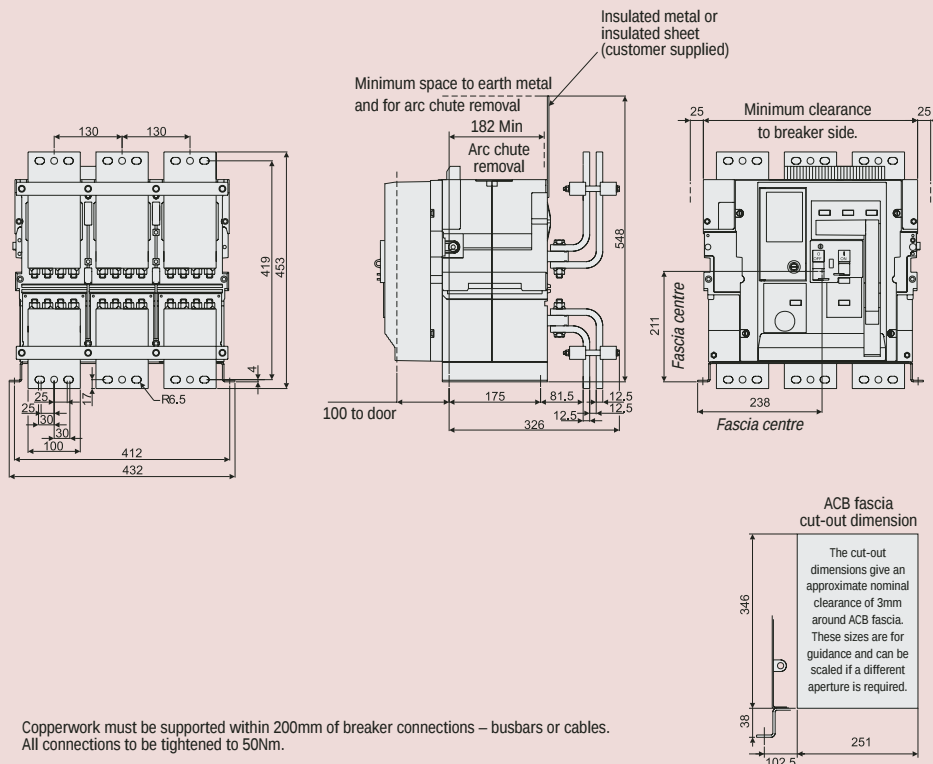


Copperwork must be supported within 200 mm of breaker connections - busbar or cables.
All connections to be tightened to 50 Nm.

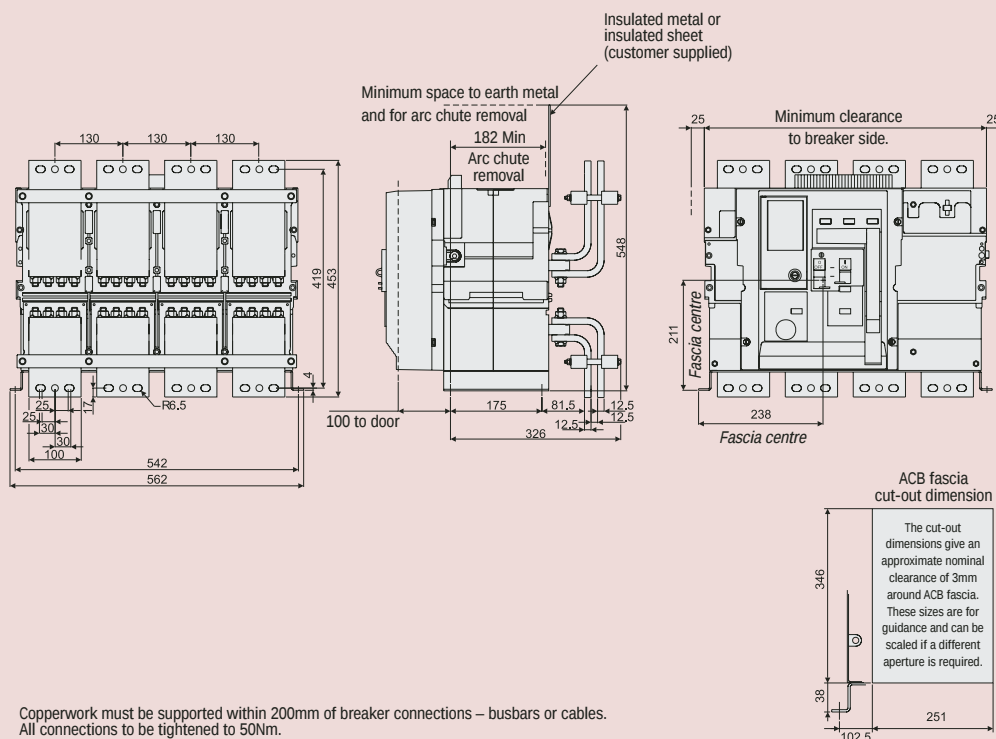
Front Access Connection

Fixed Pattern

Type S - 3 pole - Frame size 2, $I_n = 3200A$ & $4000A$ (max)



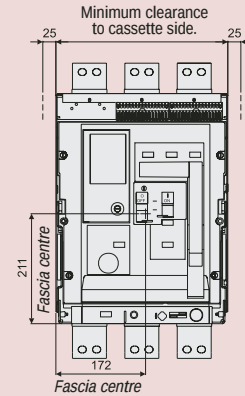
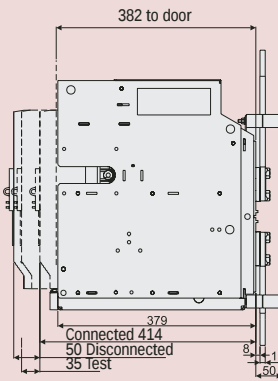
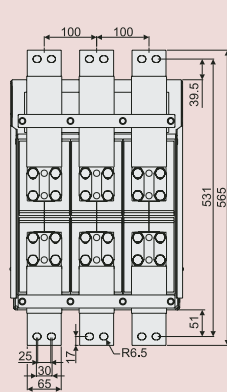
Type S - 4 pole - Frame size 2, $I_n = 3200A$ & $4000A$ (max)



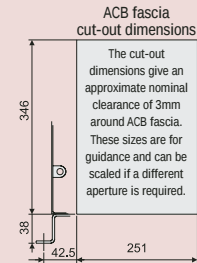
Front Access Connection

Withdrawable Pattern

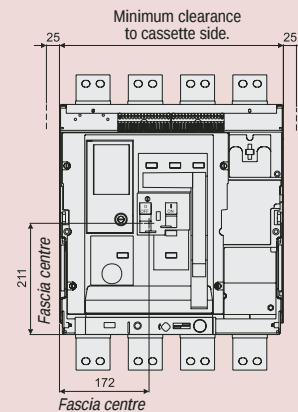
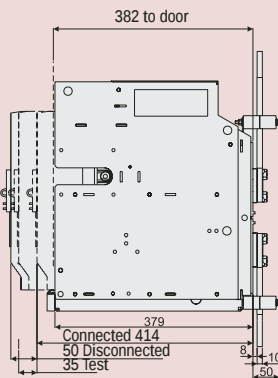
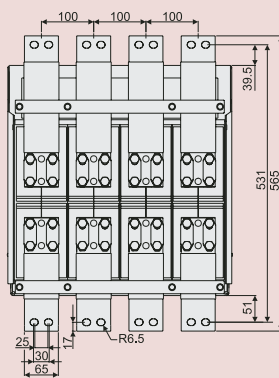
Type S - 3 pole - Frame size 1, $I_n = 400A$ to $2500A$ (max)



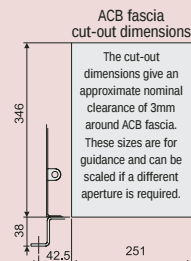
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



Type S - 4 pole - Frame size 1, $I_n = 400A$ to $2500A$ (max)



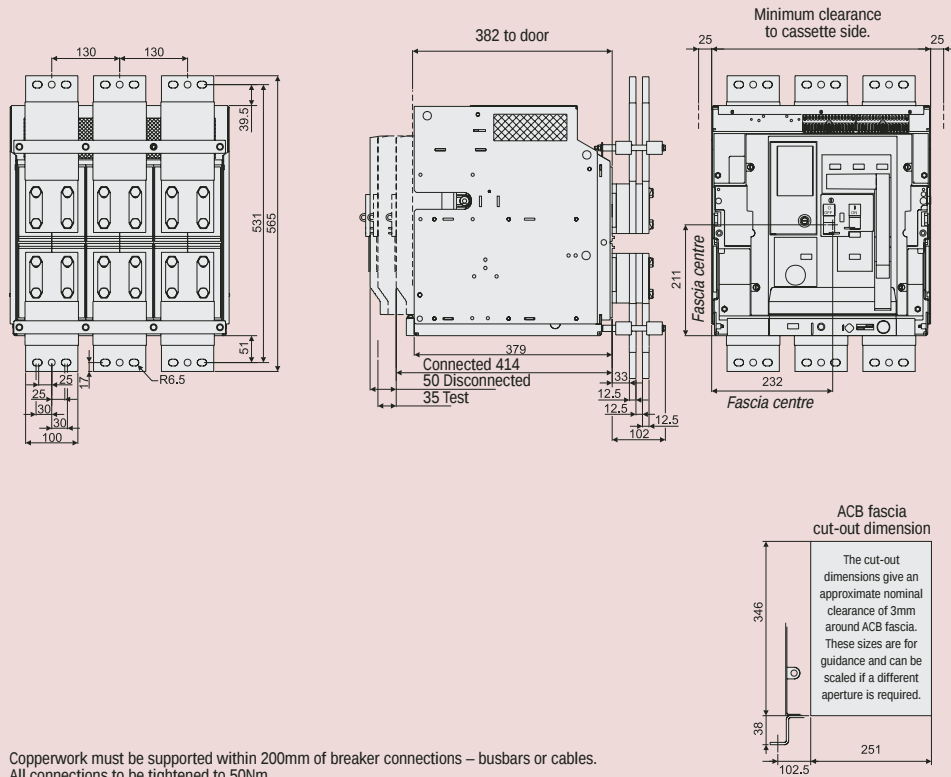
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



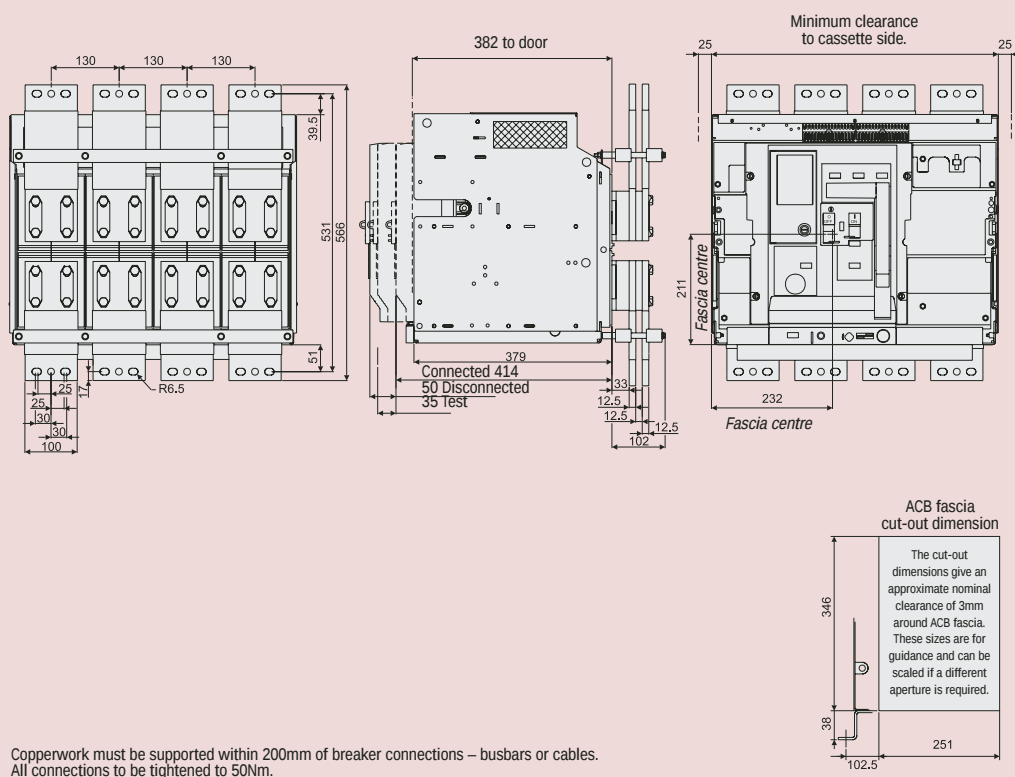
Front Access Connection

Withdrawable Pattern

Type S - 3 pole - Frame size 2, $I_n = 3200A$ & $4000A$ (max)



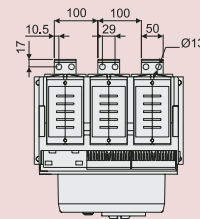
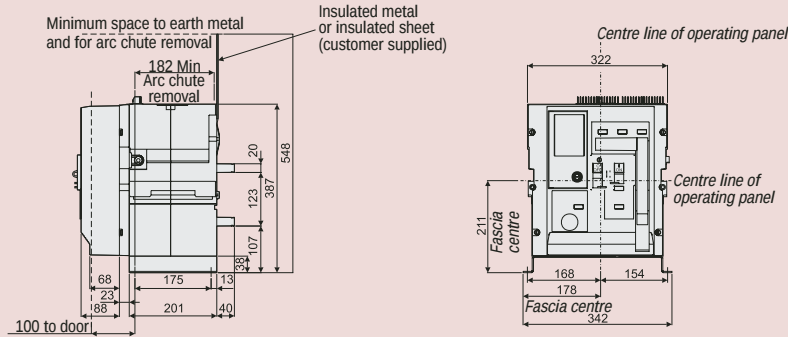
Type S - 4 pole - Frame size 2, $I_n = 3200A$ & $4000A$ (max)



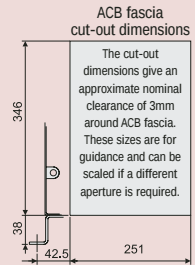
Horizontal, Rear Access Connection

Fixed Pattern

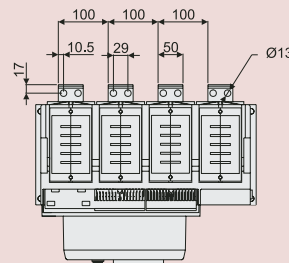
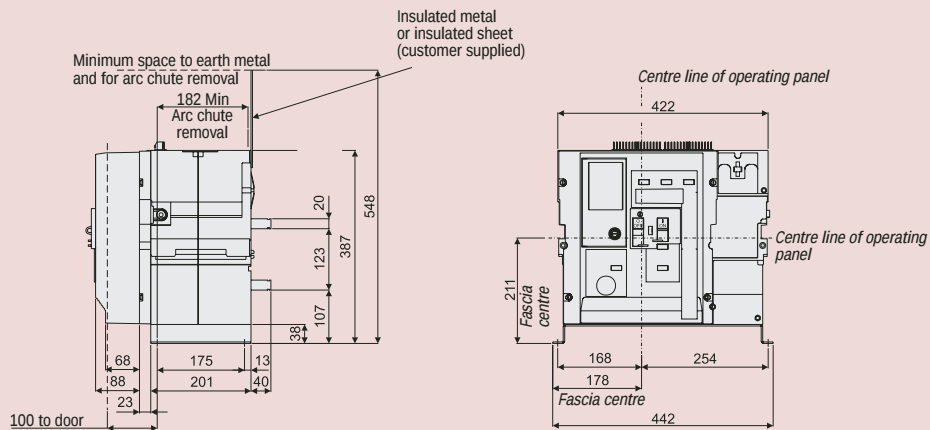
Type N - 3 pole - Frame size 1, $I_n = 400A$ to $1600A$ (max)



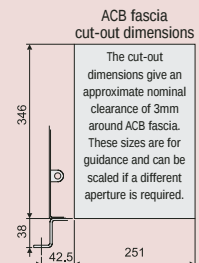
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



Type N - 4 pole - Frame size 1, $I_n = 400A$ to $1600A$ (max)



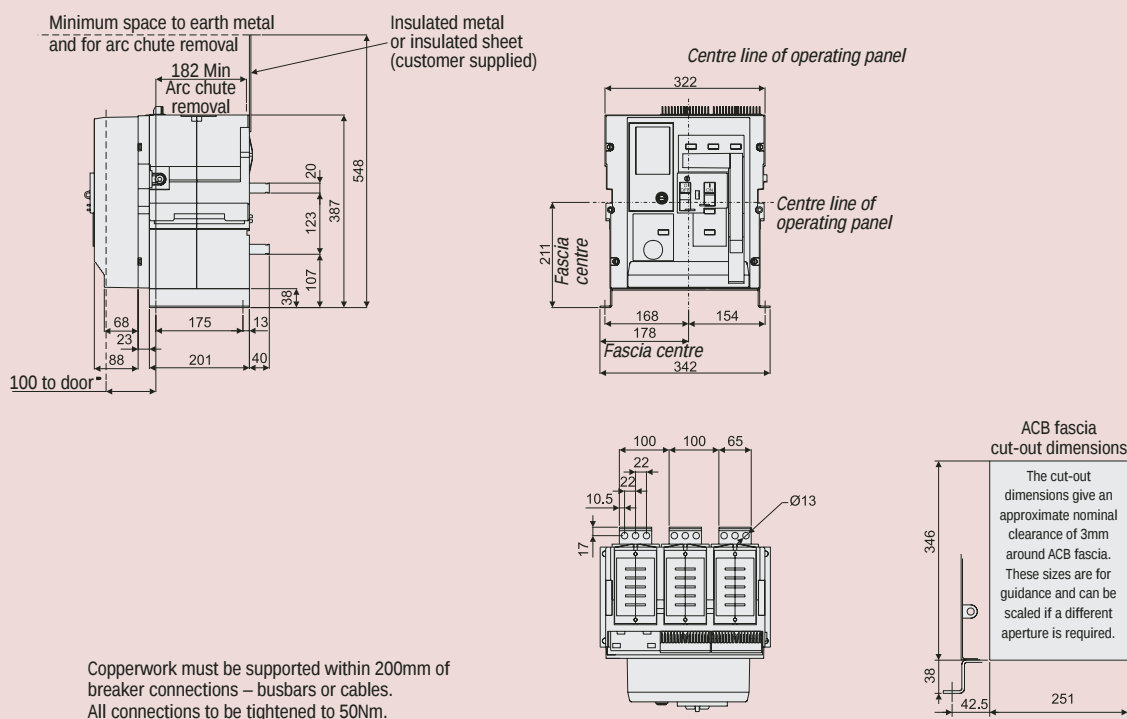
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



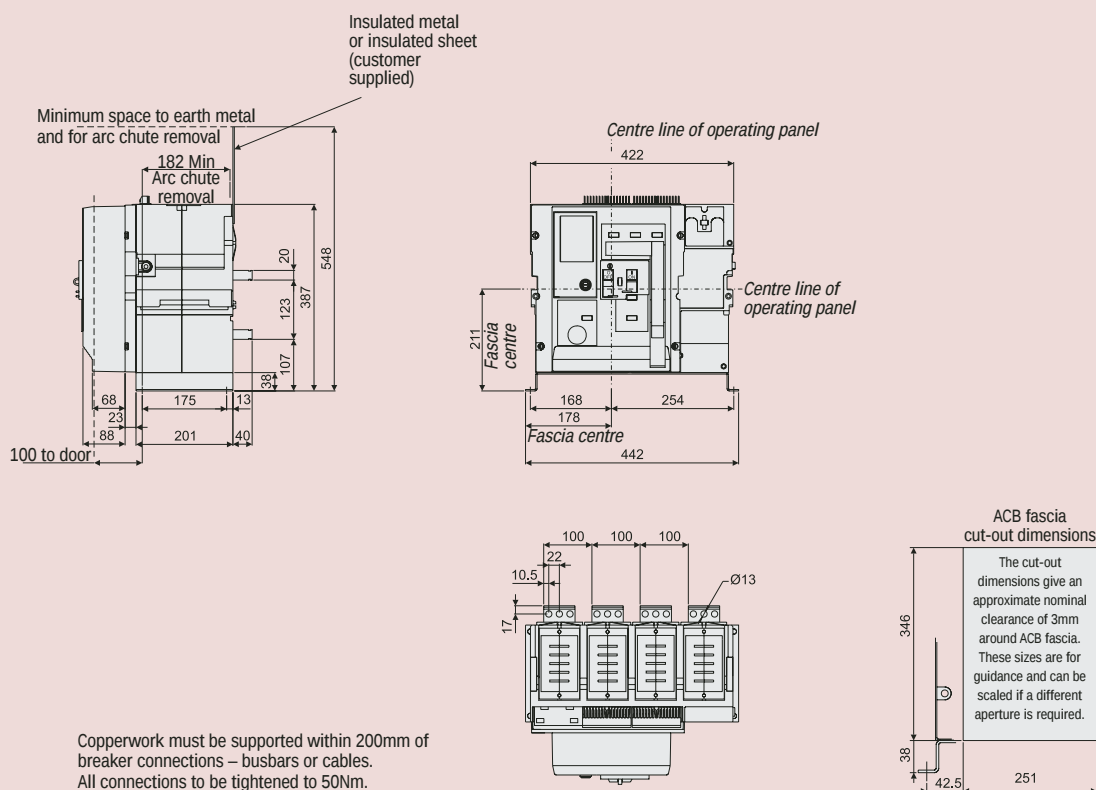
Horizontal, Rear Access Connection

Fixed Pattern

Type N - 3 pole - Frame size 1, $I_n = 2000A$ and $2500A$ (max)



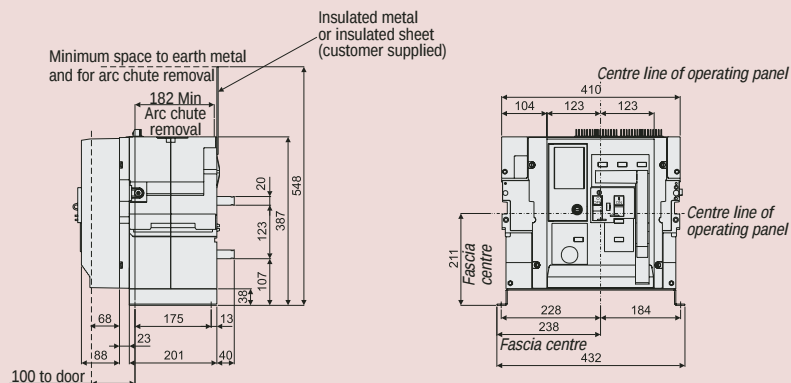
Type N - 4 pole - Frame size 1, $I_n = 2000A$ and $2500A$ (max)



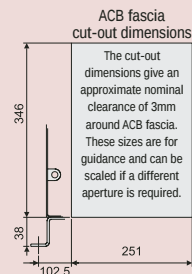
Horizontal, Rear Access Connection

Fixed Pattern

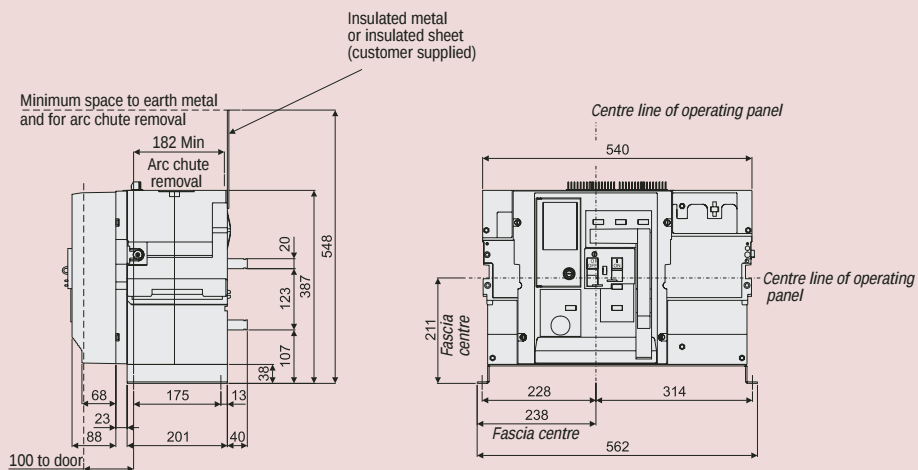
Type N - 3 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



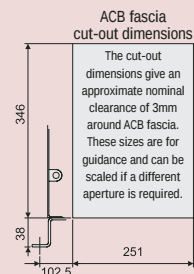
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



Type N - 4 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



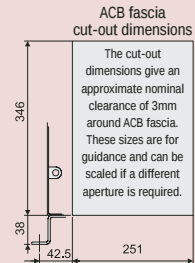
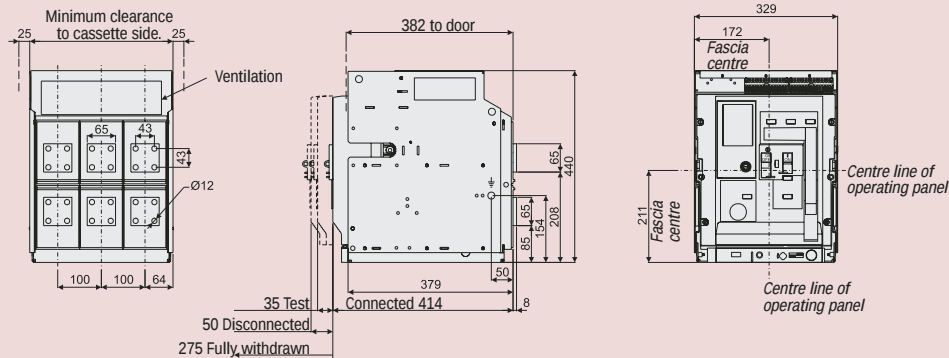
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.



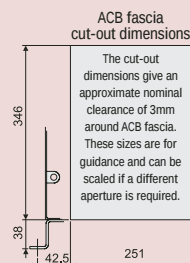
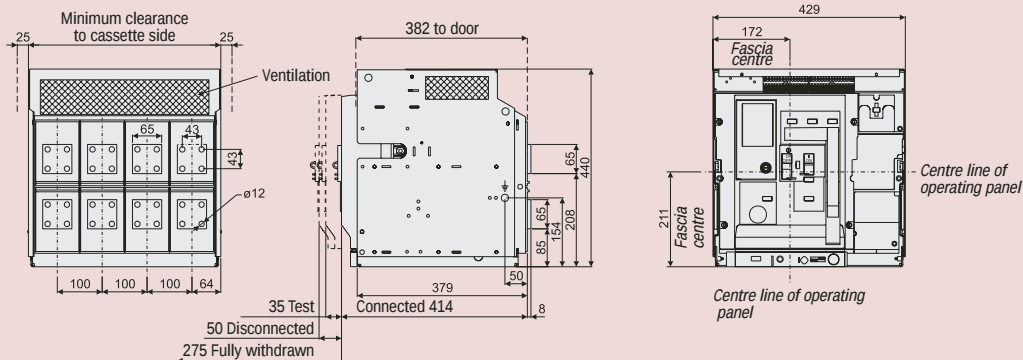
Rear Access Connection

Withdrawable Pattern

Type N - 3 pole - Frame size 1, $I_n = 400A$ to $2500A$ (max)



Type N - 4 pole - Frame size 1, $I_n = 400A$ to $2500A$ (max)



Withdrawable Pattern

Technical drawings of the 1000 Series 240V unit, showing front, side, and top views with dimensions and labels.

Front View (Left):

- Minimum clearance to cassette side: 25
- Top ventilation grille: 95 (width), 60 (height)
- Bottom ventilation grille: 60 (width), 60 (height)
- Ø12 (hole diameter)
- Bottom dimensions: 130, 130, 80

Side View (Middle):

- 382 to door
- 379
- 35 Test
- 50 Disconnected
- 275 Fully withdrawn
- Connected 414
- 8
- 95
- 198
- 440

Top View (Right):

- 232 Fascia centre
- 419
- Centre line of operating panel
- 211 Fascia centre
- Centre line of operating panel

Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.

The cut-out dimensions give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.

Technical drawings of the 414 unit showing front, side, and top views with dimensions and labels.

Front View: Shows a unit with a ventilation grille at the top. Dimensions include a minimum clearance to the cassette side of 25, a ventilation grille width of 95, a grille height of 60, and a circular feature with a diameter of $\phi 12$. The bottom section is divided into three 130mm wide sections and an 80mm wide section.

Side View: Shows the unit's profile with a depth of 382 to the door. The bottom section is divided into a 379mm wide section and a 50mm wide section. The total height is 440mm, with a 30mm base. The bottom section is divided into a 154mm wide section and a 188mm wide section. The bottom section is divided into a 154mm wide section and a 188mm wide section.

Top View: Shows the unit's top with a fascia centre line and a centre line of the operating panel. Dimensions include a fascia centre width of 232, a fascia centre height of 211, and a centre line of the operating panel width of 549.

Labels: Minimum clearance to cassette side, Ventilation, Fascia centre, Centre line of operating panel, 35 Test, 50 Disconnected, 275 Fully withdrawn, Connected 414.

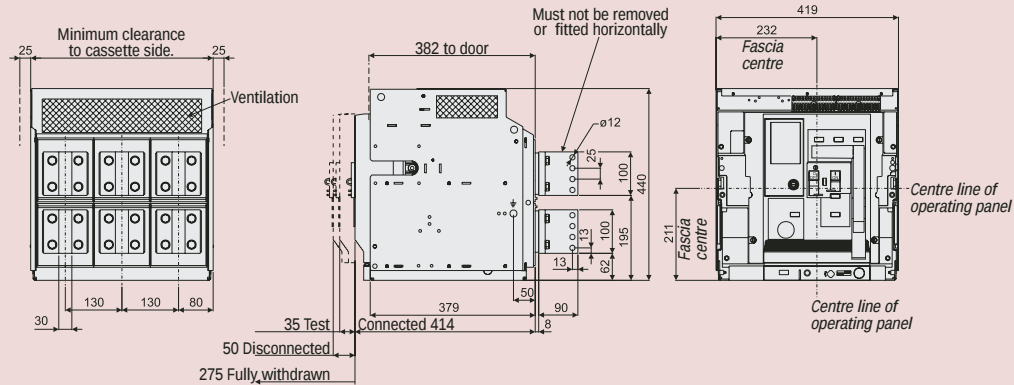
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.

The cut-out dimensions give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.

Rear Access Connection

Withdrawable Pattern

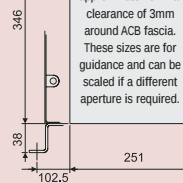
Type N - 3 pole - Frame size 2, $I_n = 4000A$ (max)



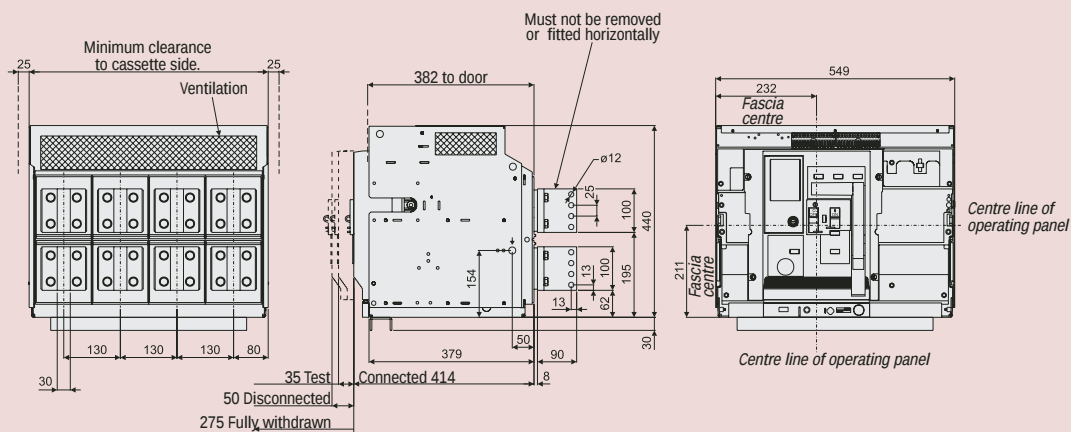
Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

ACB fascia cut-out dimensions

The cut-out dimensions give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.



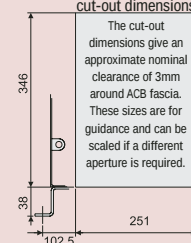
Type N - 4 pole - Frame size 2, $I_n = 4000A$ (max)



Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

ACB fascia cut-out dimensions

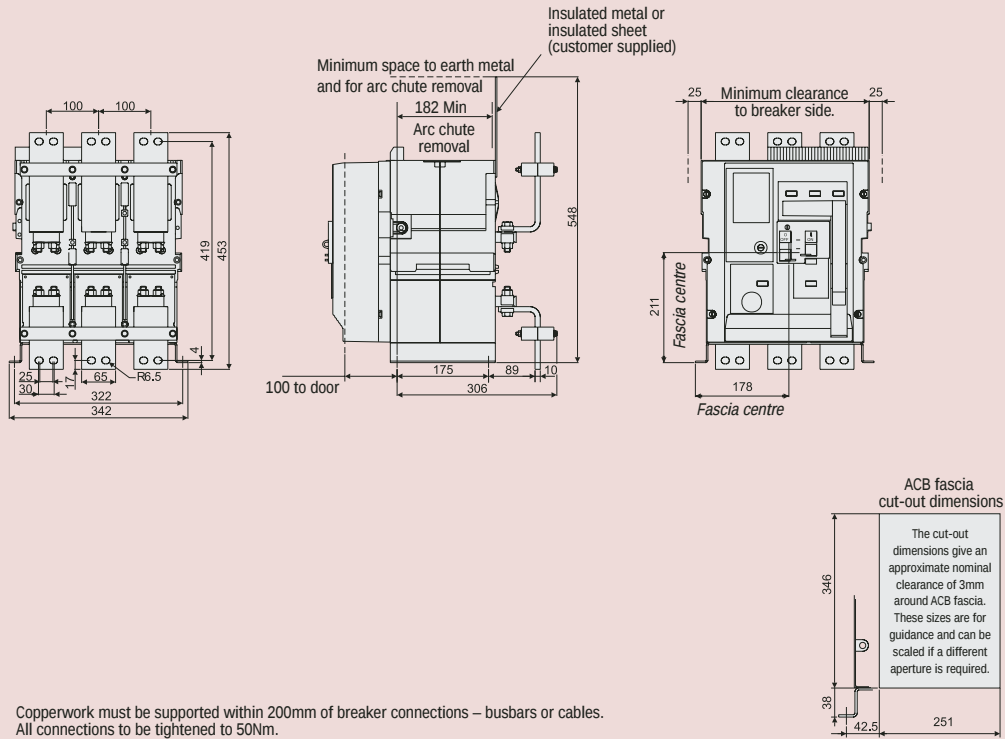
The cut-out dimensions give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.



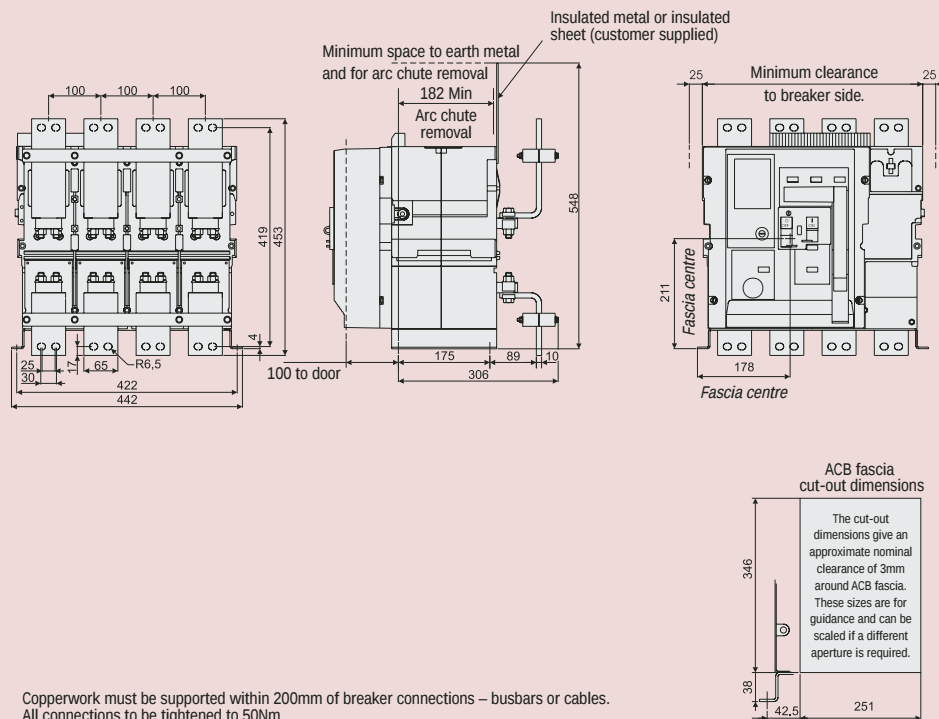
Front Access Connection

Fixed Pattern

Type N - 3 pole - Frame size 1, $I_n = 400A$ to $1600A$ (max)

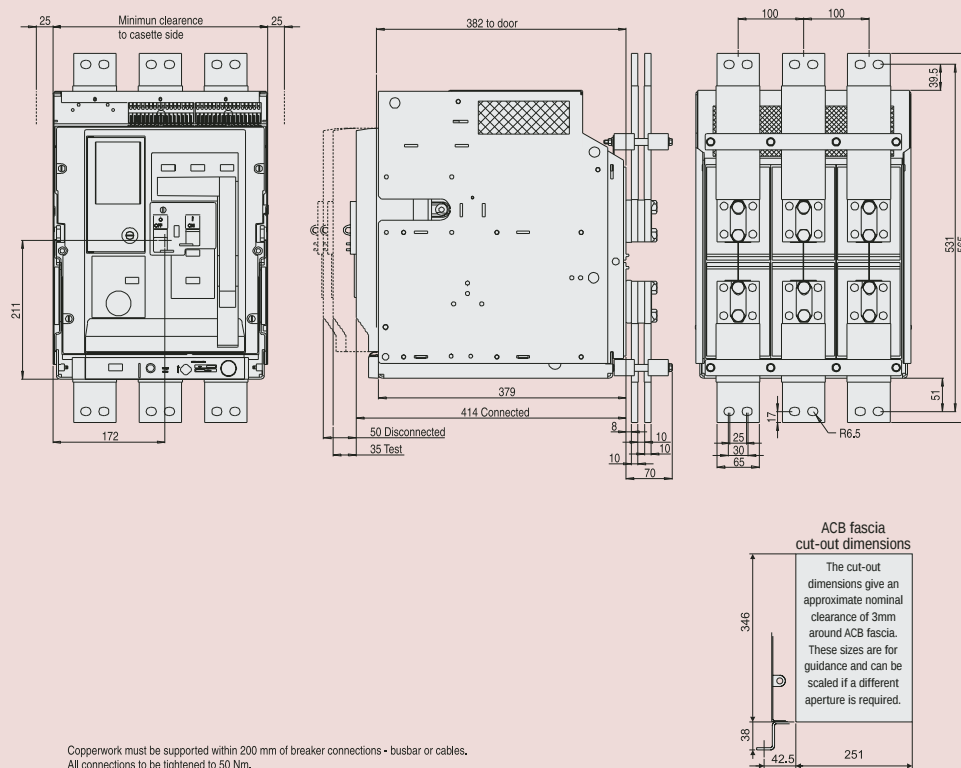


Type N - 4 pole - Frame size 1, $I_n = 400A$ to $1600A$ (max)



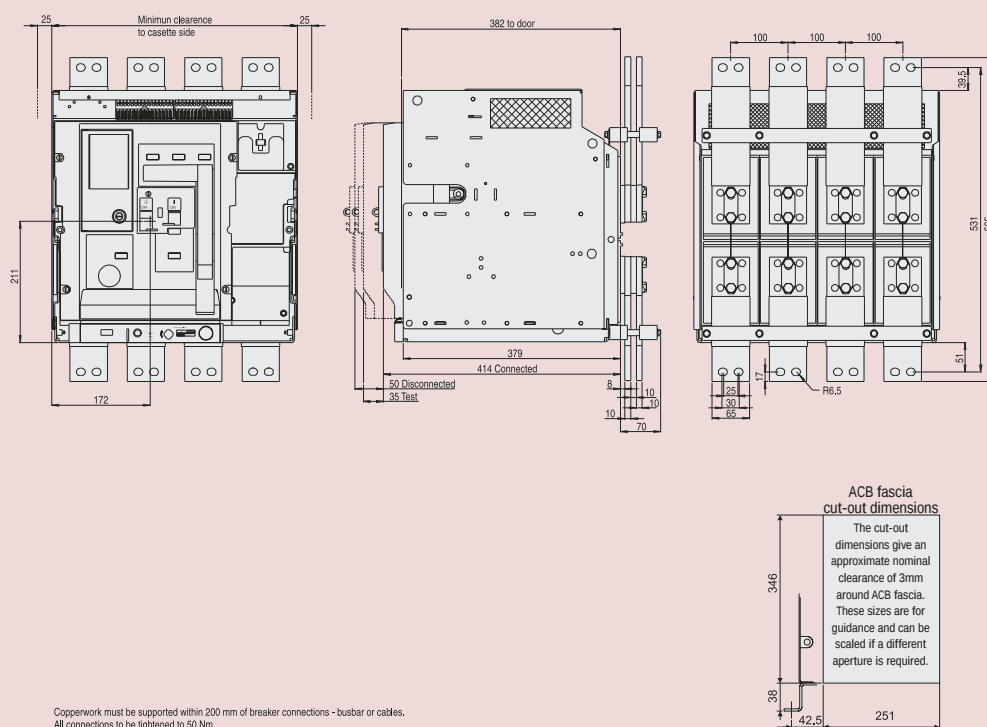
Withdrawable Pattern

Type N - 3 pole - Frame size 1, In = 2000A & 2500A (max)



Copperwork must be supported within 200 mm of breaker connections - busbar or cables.
All connections to be tightened to 50 Nm.

Type N - 4 pole - Frame size 1, In = 2000A & 2500A (max)

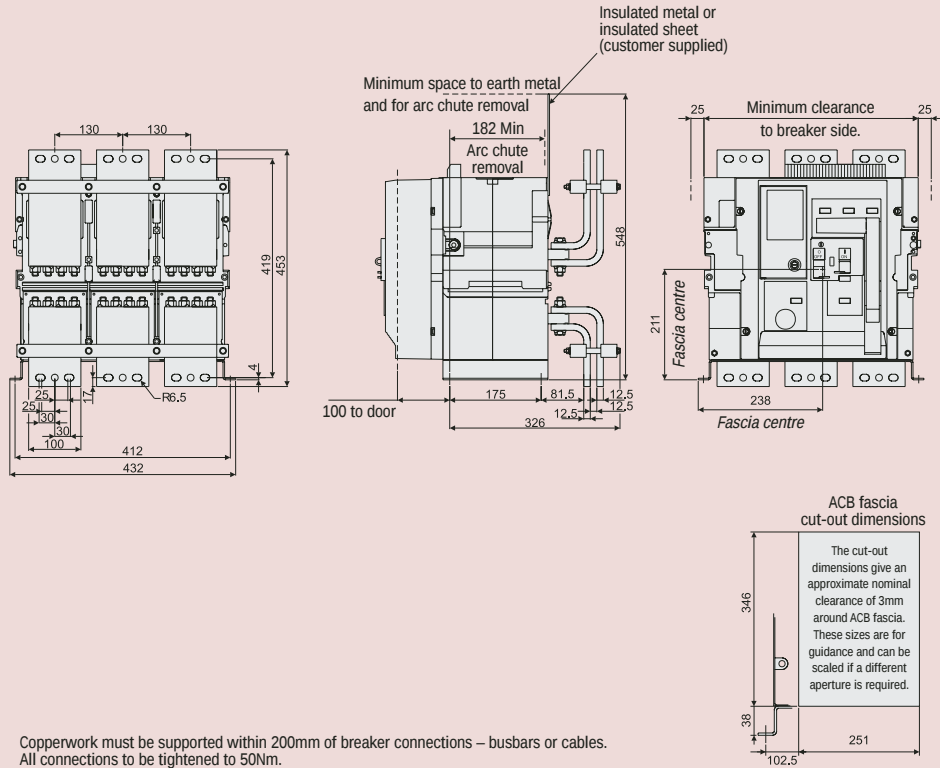


Copperwork must be supported within 200 mm of breaker connections - busbar or cables.
All connections to be tightened to 50 Nm

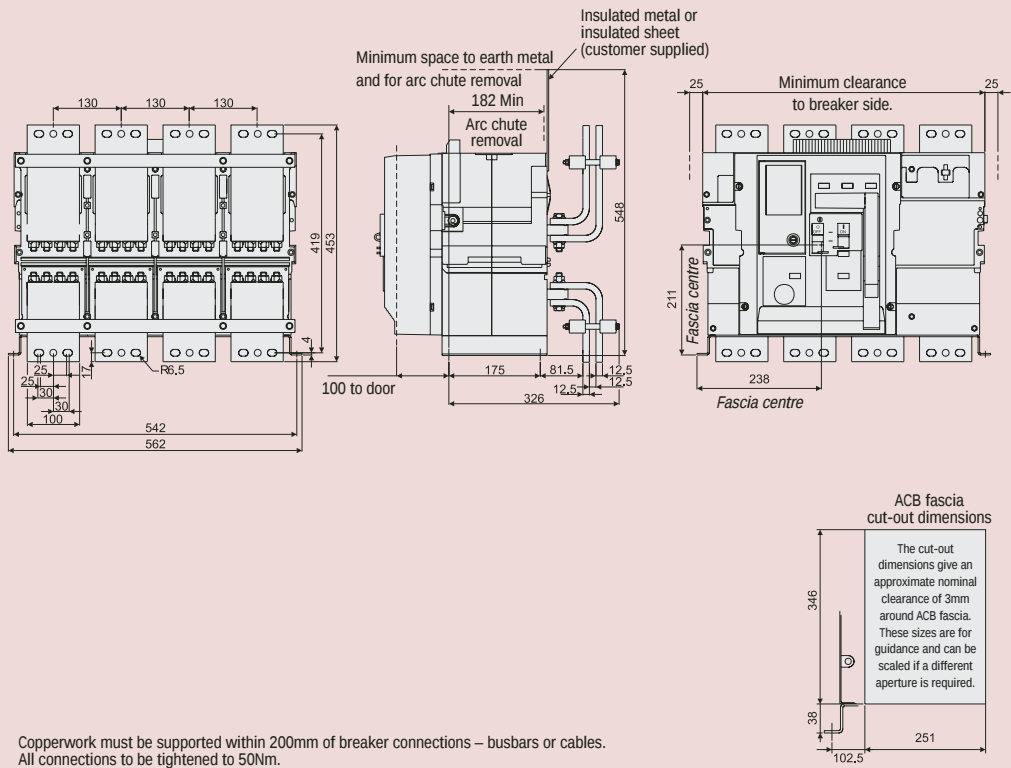
Front Access Connection

Fixed Pattern

Type N - 3 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



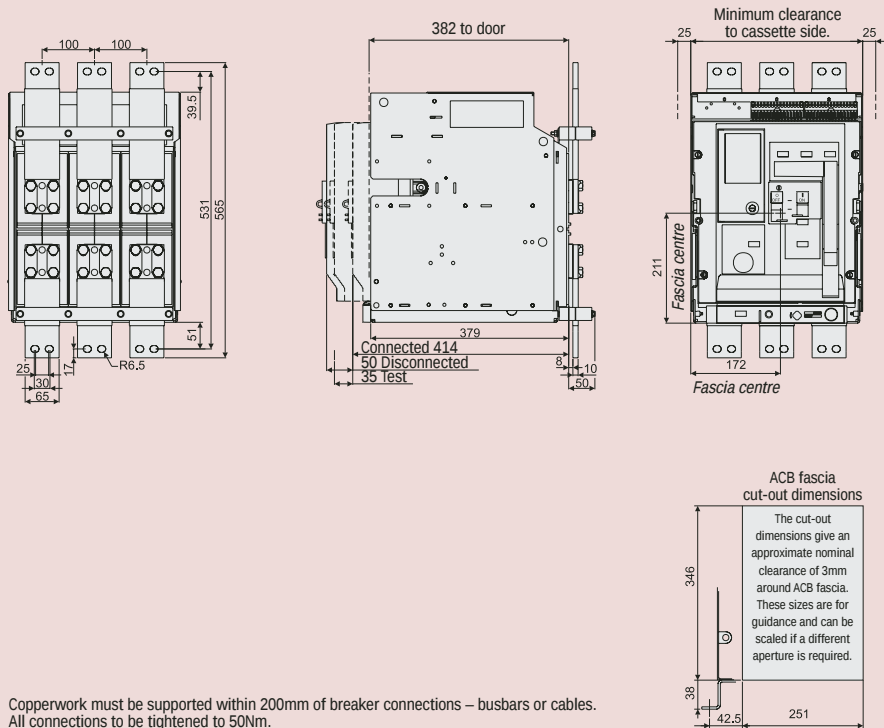
Type N - 4 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



Front Access Connection

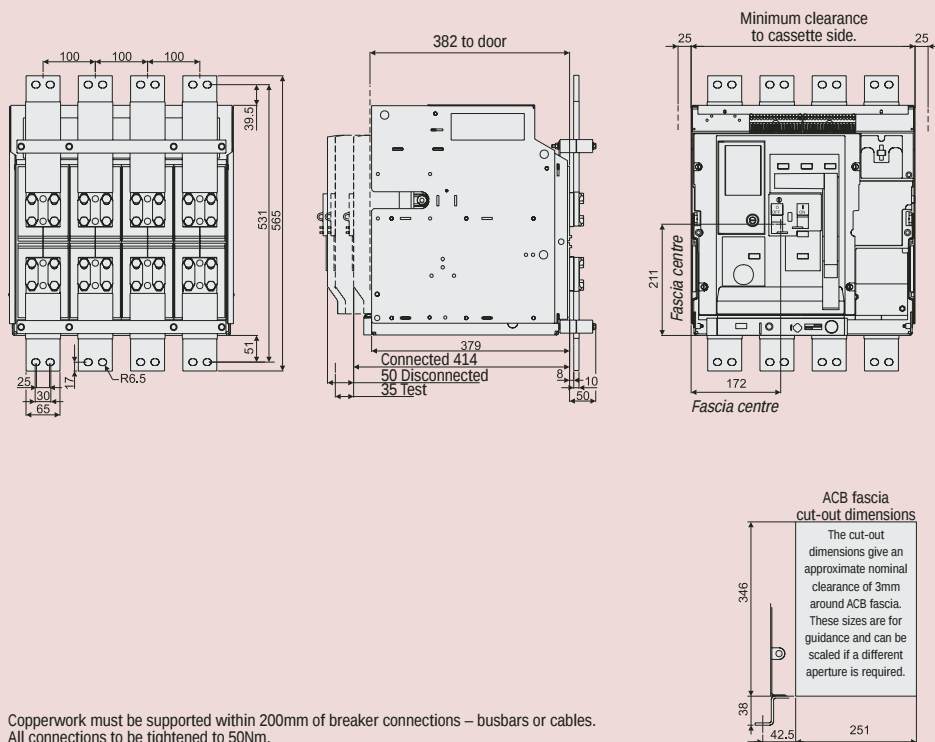
Withdrawable Pattern

Type N - 3 pole - Frame size 1, $I_n = 400A$ to 2500A (max)



Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

Type N - 4 pole - Frame size 1, $I_n = 400A$ to 2500A (max)

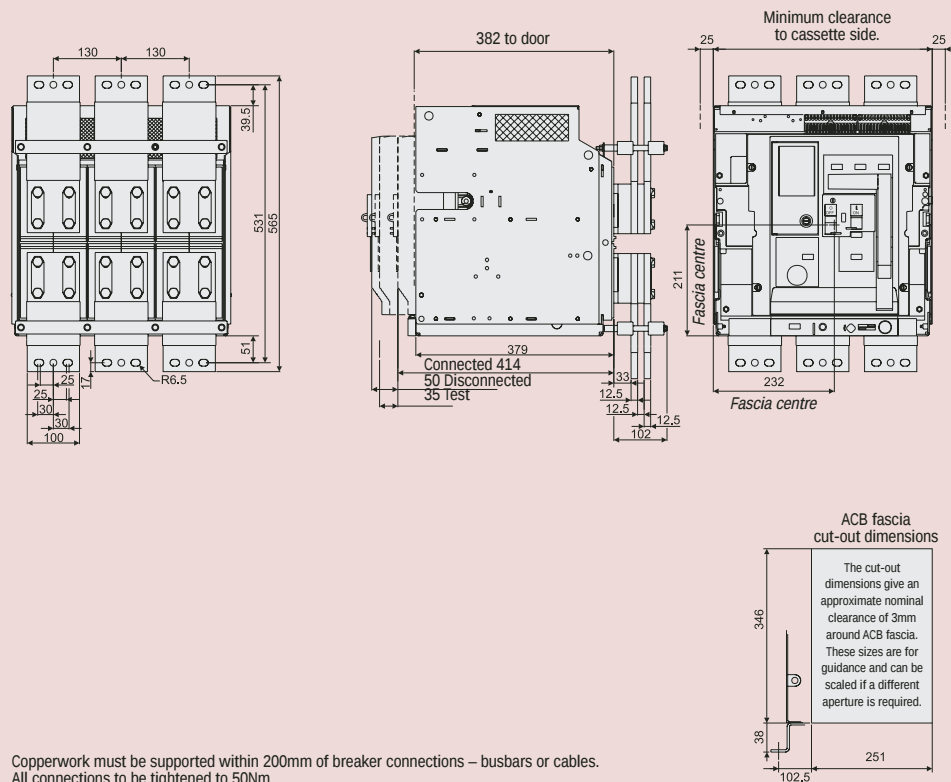


Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

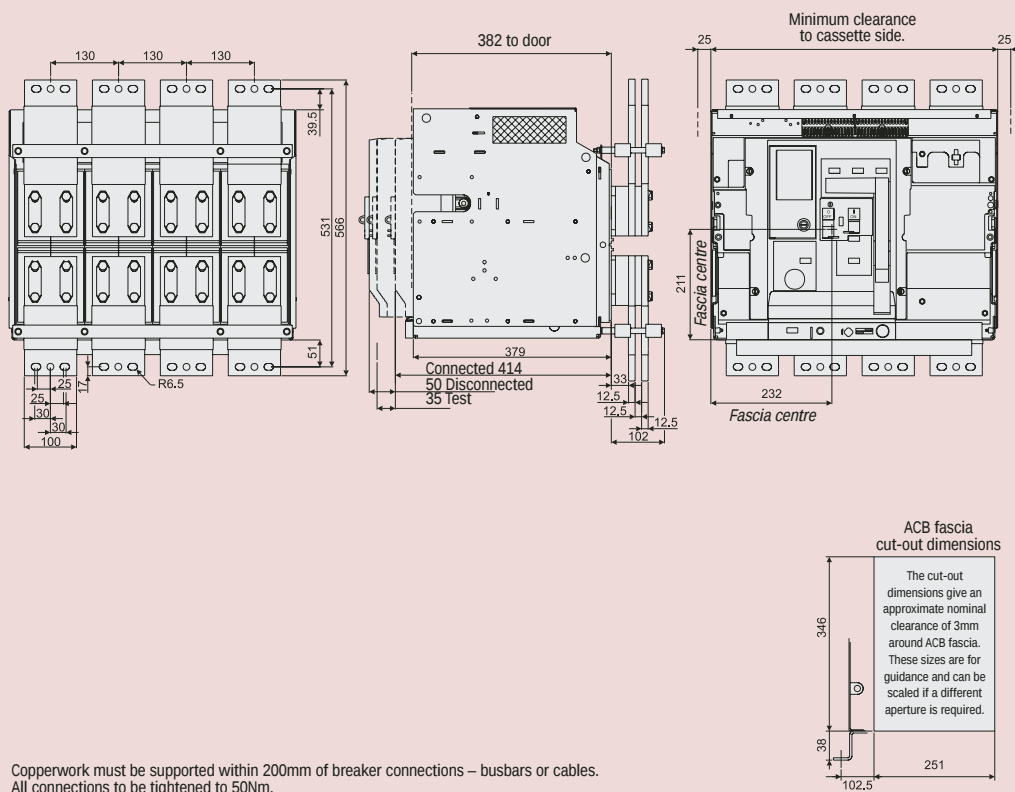
Front Access Connection

Withdrawable Pattern

Type N - 3 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



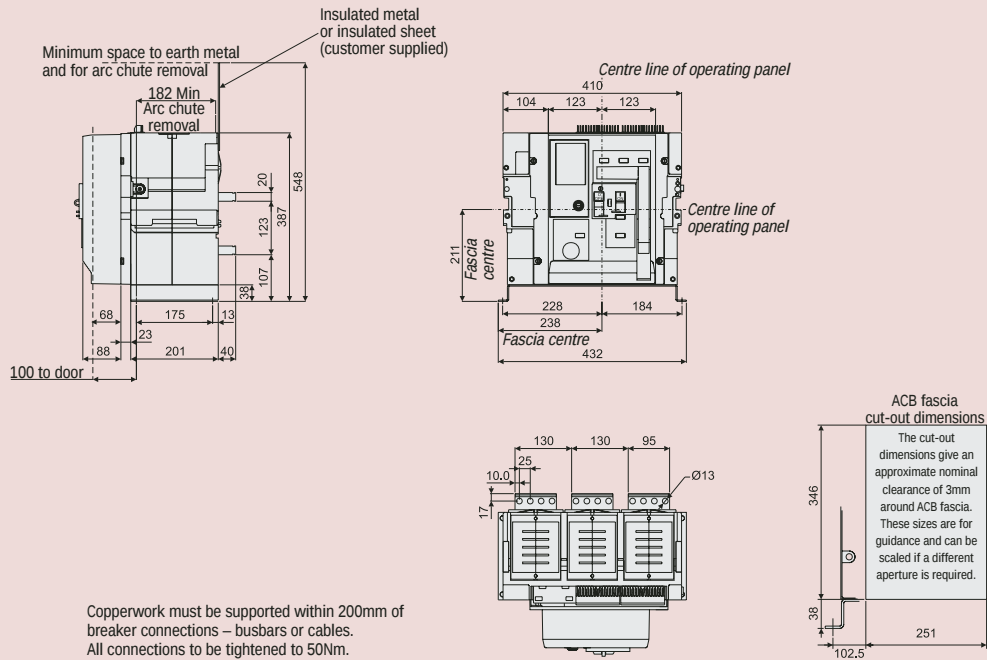
Type N - 4 pole - Frame size 2, $I_n = 2000A$ to $4000A$ (max)



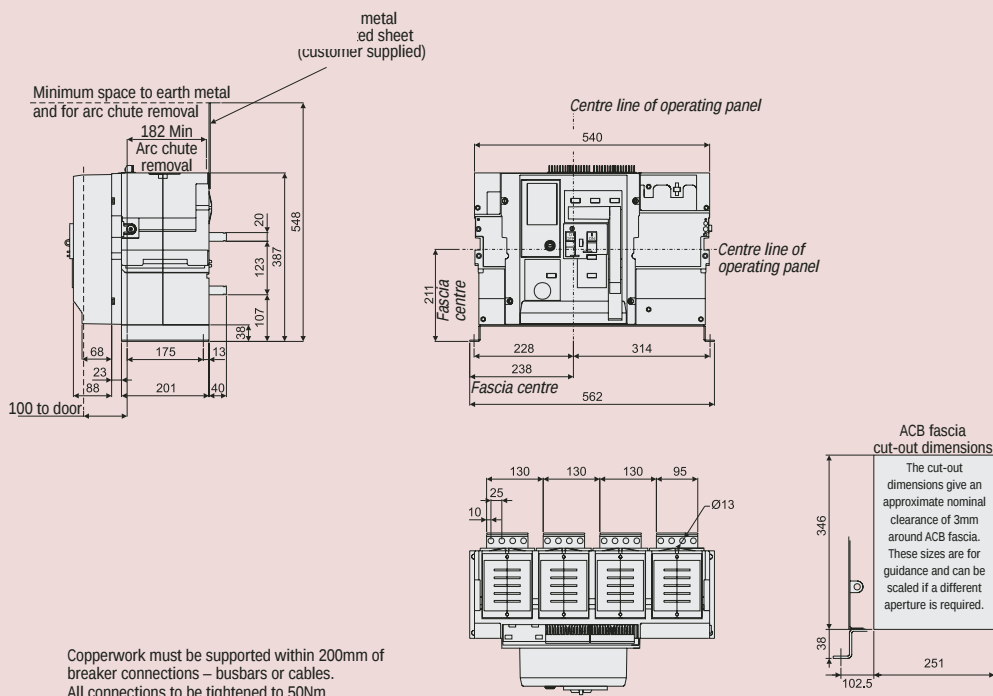
Horizontal, Rear Access Connection

Fixed Pattern

Type H - 3 pole - Frame size 2, $I_n = 800A$ to 4000A (max)



Type H - 4 pole - Frame size 2, $I_n = 800A$ to 4000A (max)



Withdrawable Pattern

Technical drawings of the E2000 unit showing front, side, and top views with dimensions and labels.

Front View (Left): Shows a unit with a minimum clearance to the cassette side of 25. The top section is labeled "Ventilation". The main body has a width of 382 to the door. The bottom section has a width of 379. The total width is 414. The bottom section is labeled "Connected 414". The bottom section has a height of 8. The bottom section has a width of 35. The bottom section has a height of 50. The bottom section has a width of 275. The bottom section has a height of 275. The bottom section has a width of 275. The bottom section has a height of 275.

Side View (Middle): Shows the unit from the side. The total height is 440. The bottom section has a height of 8. The bottom section has a width of 35. The bottom section has a height of 50. The bottom section has a width of 275. The bottom section has a height of 275.

Top View (Right): Shows the unit from the top. The total width is 419. The bottom section has a width of 379. The bottom section has a height of 8. The bottom section has a width of 35. The bottom section has a height of 50. The bottom section has a width of 275. The bottom section has a height of 275.

Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.

Technical drawings of the 414 unit showing front, side, and top views with dimensions and labels.

Front View: Shows a unit with a ventilation grille at the top. Dimensions include a minimum clearance to the cassette side of 25, a total width of 382 to the door, and a depth of 440. The unit is divided into sections with widths of 95, 60, and 80. A hole size of $\phi 12$ is indicated. The bottom section is divided into three parts: 130, 130, and 80. A 35 Test connection is shown on the right side.

Side View: Shows the unit's profile with a depth of 379. A 50 Disconnected connection is shown on the left side. A 275 Fully withdrawn connection is shown on the right side. A 30 dimension is indicated at the bottom right.

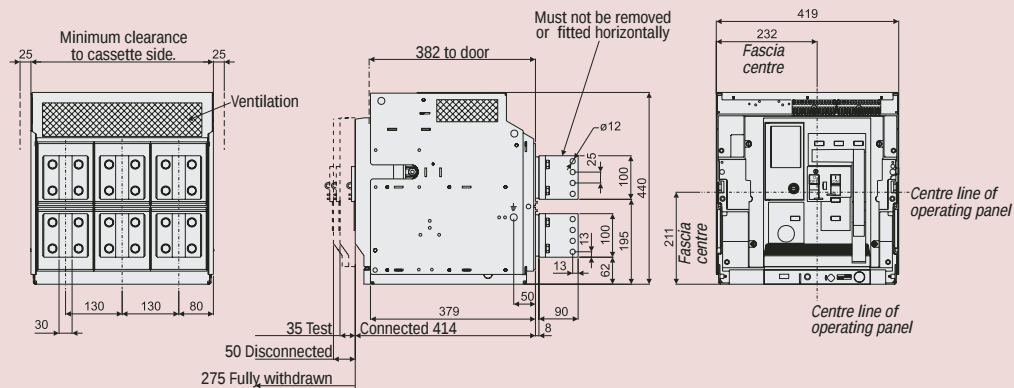
Top View: Shows the unit's top profile with a width of 549. The fascia center is marked at 232. The center line of the operating panel is marked at 211. The unit is divided into sections with widths of 152, 95, 198, and 85. A 50 dimension is indicated at the bottom right.

Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.
Captive plate behind copper terminal, tapped M10 x 1.5 6H.
Minimum insertion of screw 16mm. Maximum insertion of screw 34mm.

Rear Access Connection

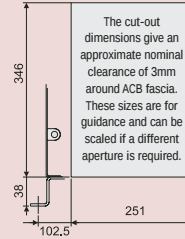
Withdrawable Pattern

Type H - 3 pole - Frame size 2, $I_n = 4000A$ (max)

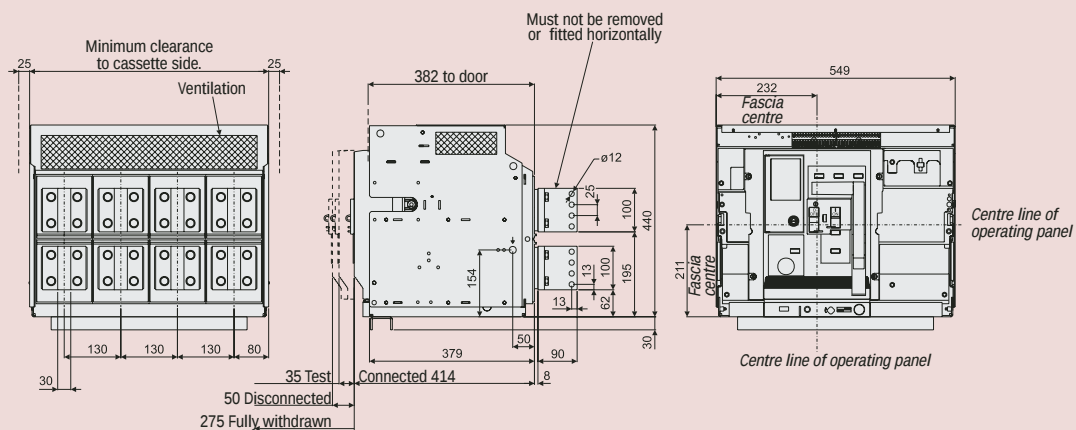


Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

ACB fascia cut-out dimensions

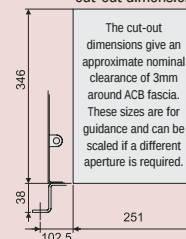


Type H - 4 pole - Frame size 2, $I_n = 4000A$ (max)



Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

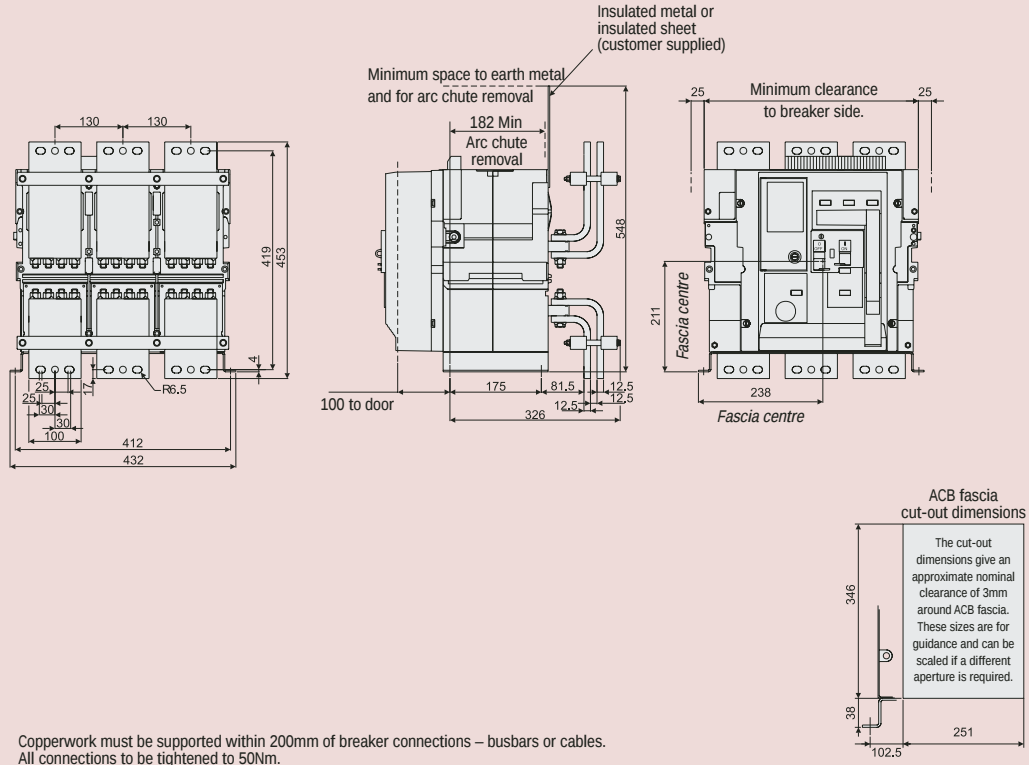
ACB fascia cut-out dimensions



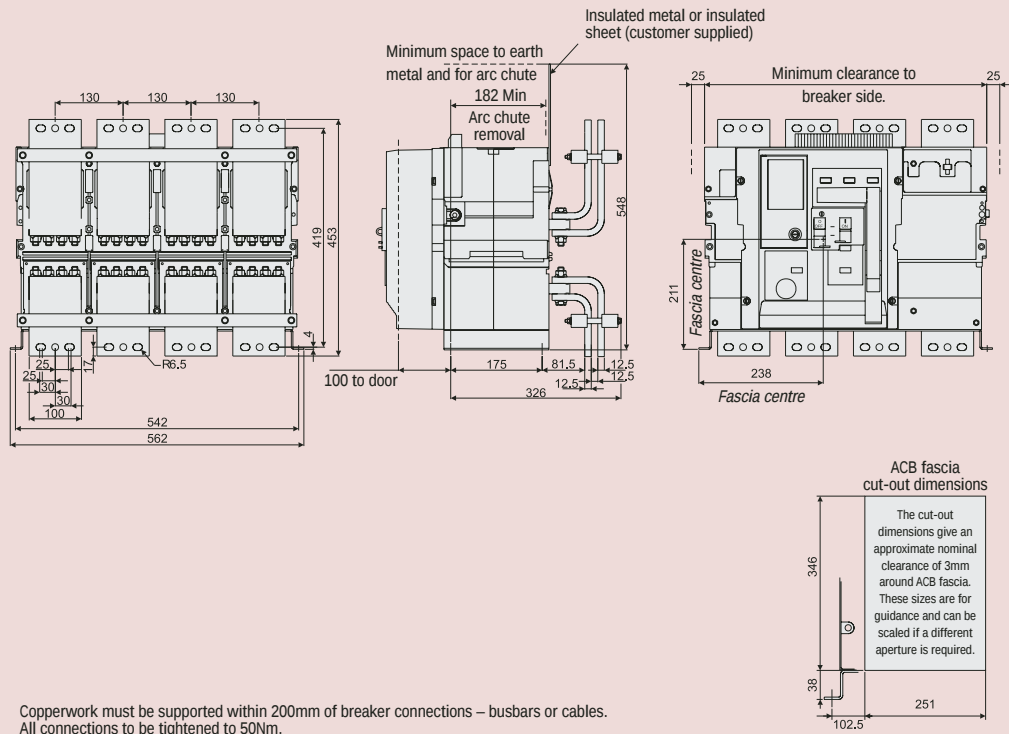
Front Access Connection

Fixed Pattern

Type H - 3 pole - Frame size 2, $I_n = 800A$ to $4000A$ (max)



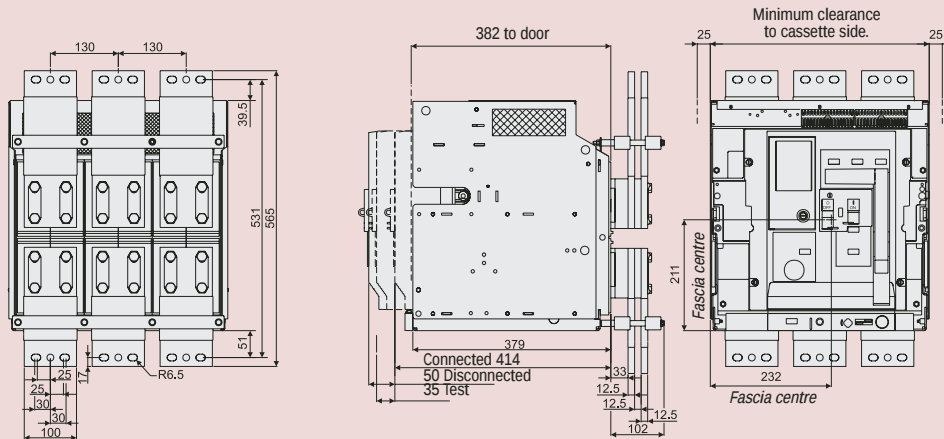
Type H - 4 pole - Frame size 2, $I_n = 800A$ to $4000A$ (max)



Front Access Connection

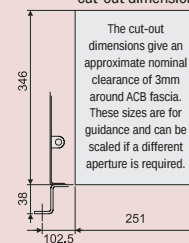
Withdrawable Pattern

Type H - 3 pole - Frame size 2, $I_n = 800A$ to 4000A (max)

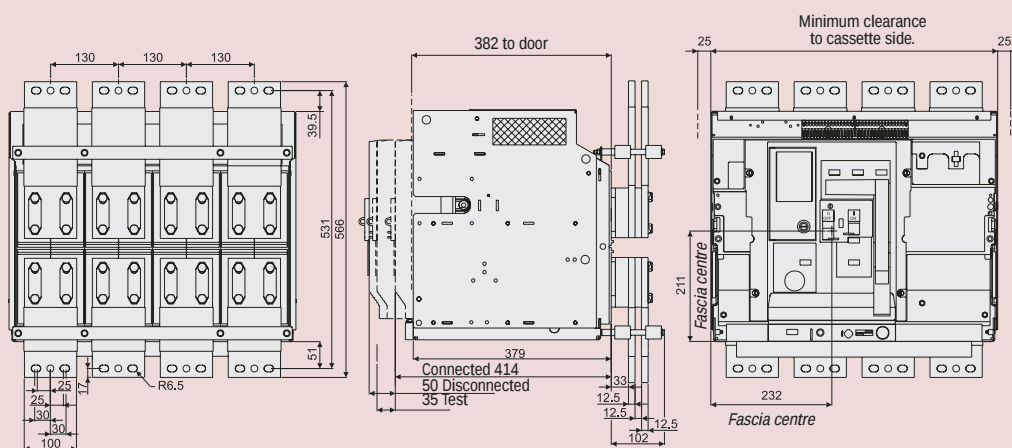


Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

ACB fascia cut-out dimensions

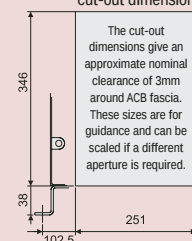


Type H - 4 pole - Frame size 2, $I_n = 800A$ to 4000A (max)



Copperwork must be supported within 200mm of breaker connections – busbars or cables.
All connections to be tightened to 50Nm.

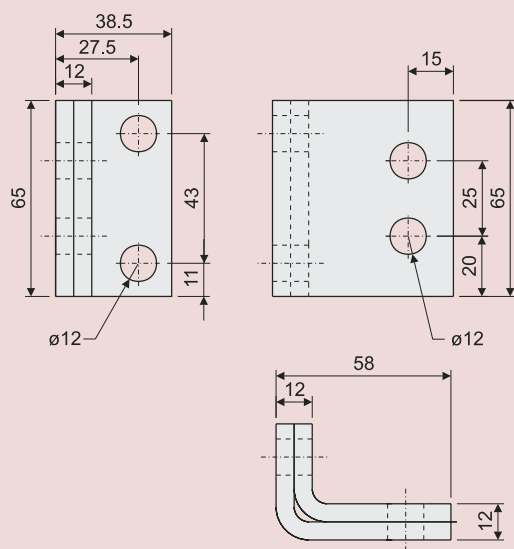
ACB fascia cut-out dimensions



Adaptor Connections (for cassette only)

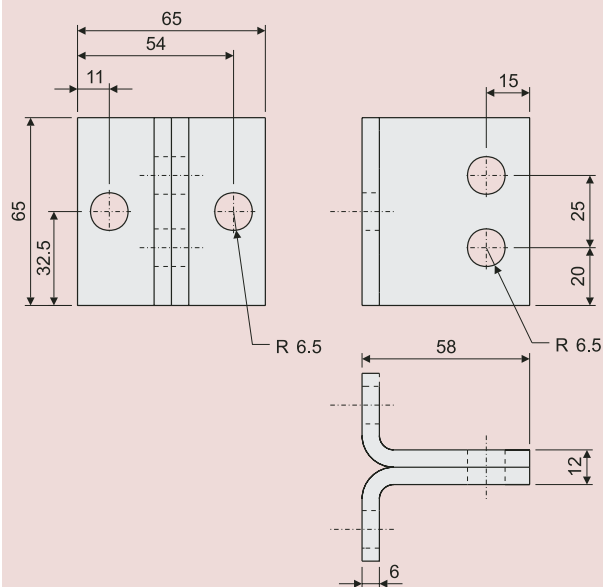
Rear Adapter Vertical Connection

Type S - Frame 1 - In = 400A to 1600A (max)



Rear Adapter Horizontal Connection

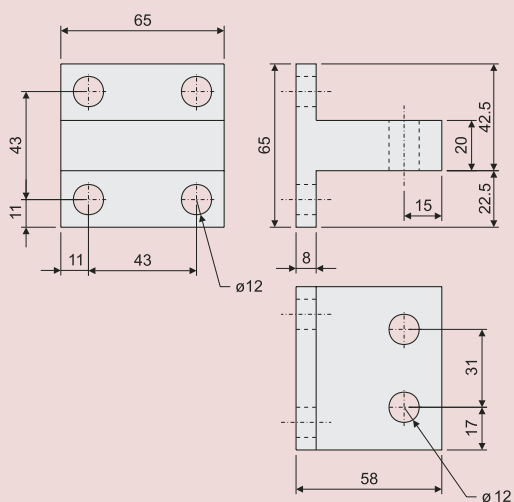
Type S - Frame 1 - In = 400A to 1600A (max)



Rear Adapter Vertical / Horizontal Connection

Type S - Frame 1 - In = 2000A & 2500A (max)

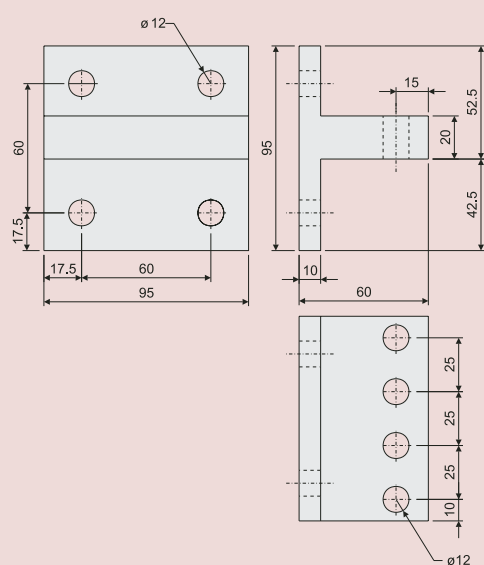
Type N - Frame 1 - In = 400A to 2500A (max)



Type S - Frame 2 - In = 2000A to 3200A (max)

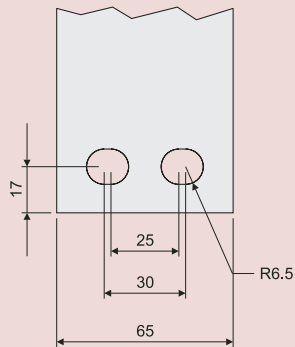
Type N - Frame 2 - In = 2000A to 3200A (max)

Type H - Frame 2 - In = 800A to 3200A (max)

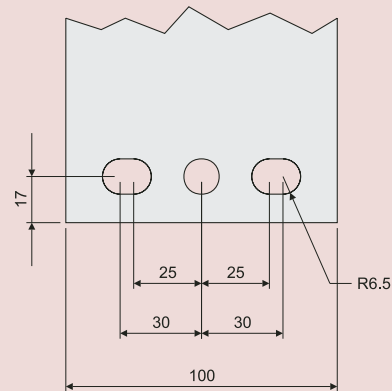


Copper Connections - Front Access (Fixed and/or Withdrawable)

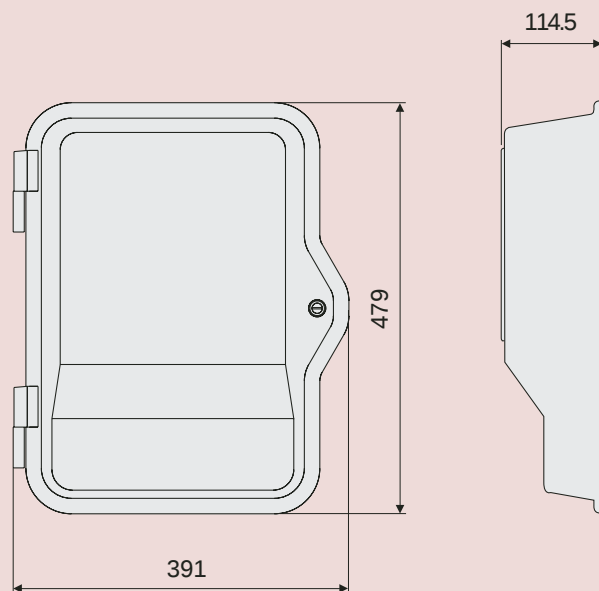
Type S - Frame 1 - In = 400A to 2500A (max)
 Type N - Frame 1 - In = 400A to 2500A (max)



Type S - Frame 2 - In = 2000A to 4000A
 Type N - Frame 2 - In = 2000A to 4000A
 Type H - Frame 2 - In = 800A to 4000A

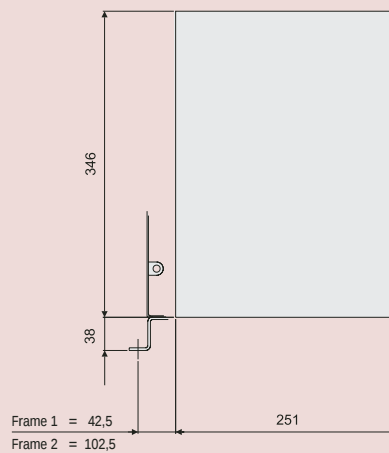


IP54 Door (Withdrawable unit only)



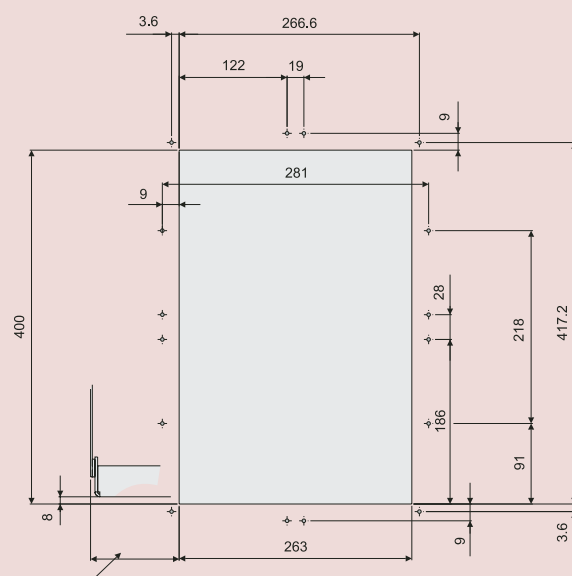
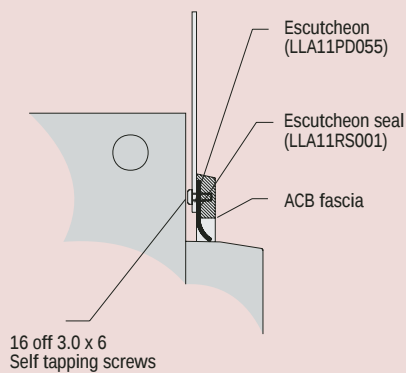
Door Cut-Outs

Fixed Pattern - Facia Cut-out



The cut-out dimensions shown above give an approximate nominal clearance of 3mm around ACB fascia. These sizes are for guidance and can be scaled if a different aperture is required.

Withdrawable Pattern - Cubicle Door/Panel



Frame 1 - Up to 2500A max. = 40
Frame 2 - Up to 4000A max. = 100

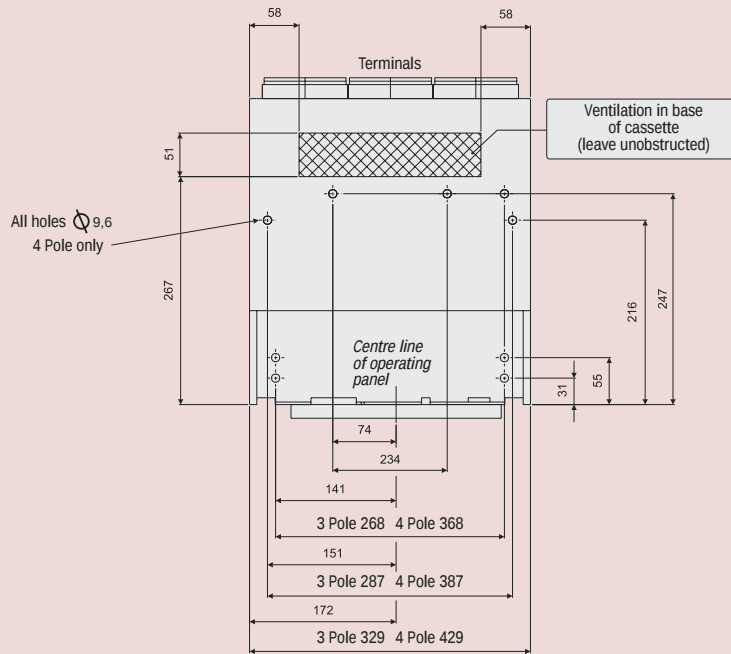
Datum for 16 off Ø 4 holes in door / panel
– bottom left hand corner of cassette
viewed from front.

Cassette

Cassette mounting details

Type S - Frame 1 - In = 400A to 2500A (max)

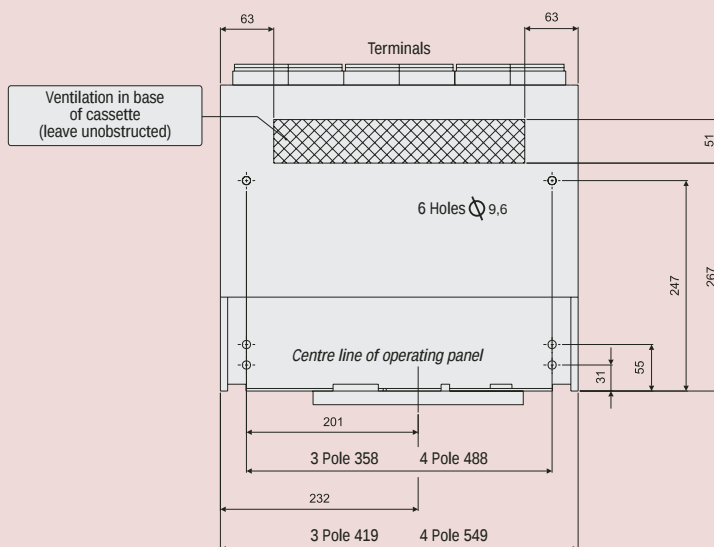
Type N - Frame 1 - In = 400A to 2500A (max)



Type S - Frame 2 - In = 2000A to 4000A

Type N - Frame 2 - In = 2000A to 4000A

Type H - Frame 2 - In = 800A to 4000A



Unelec Equipment

www.unelec-equipment.com

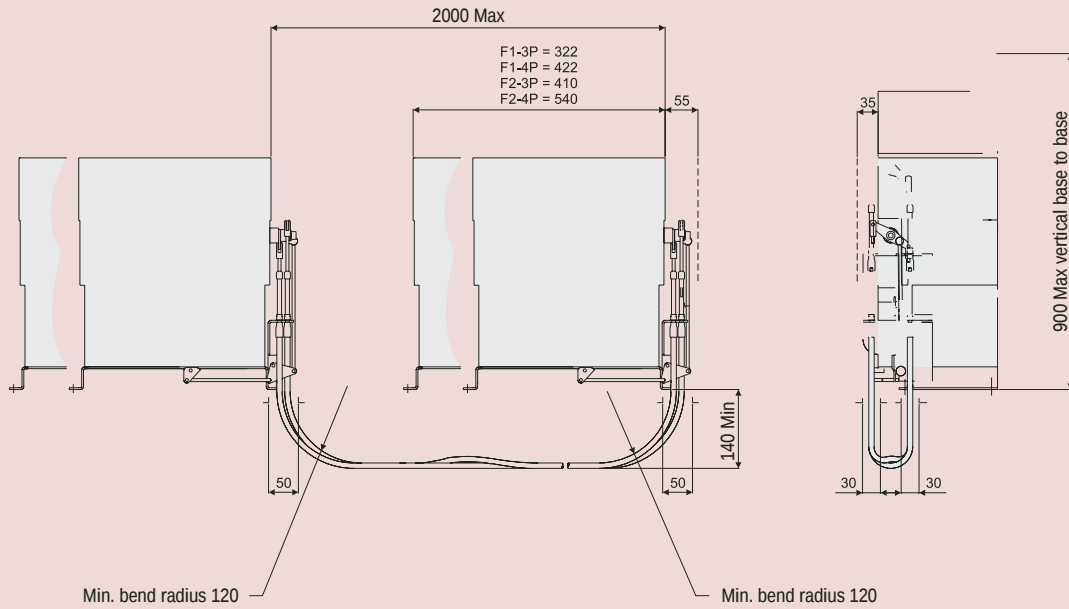
Tel: +1 319 244 84 69 **UeeS Co.** Tel: +1 650 466 86 39

Info@unelec-equipment.com

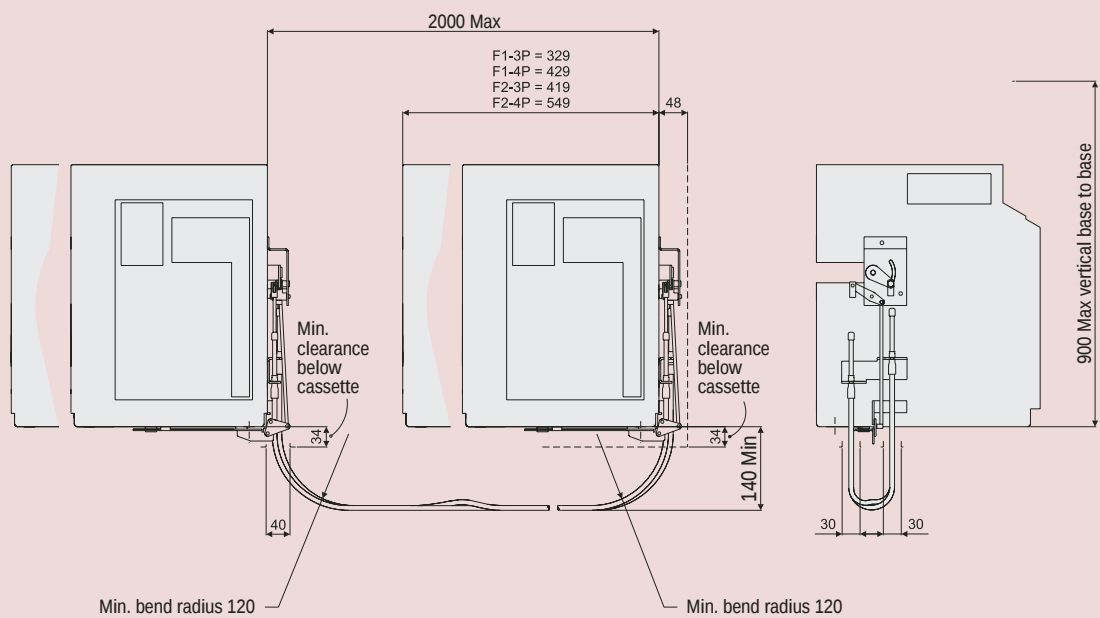


2-Way Cable Interlocking

Fixed Pattern - Front/Rear Access

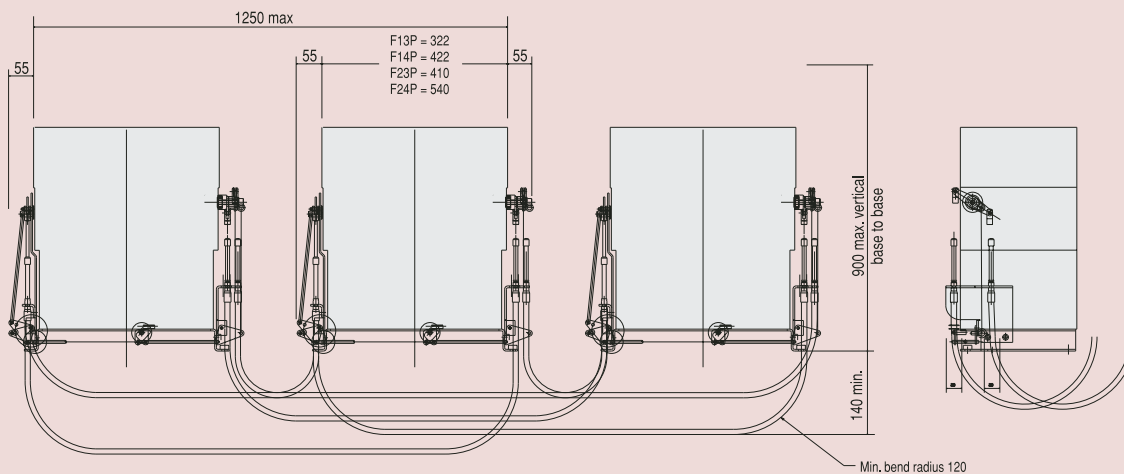


Withdrawable Pattern - Front/Rear Access

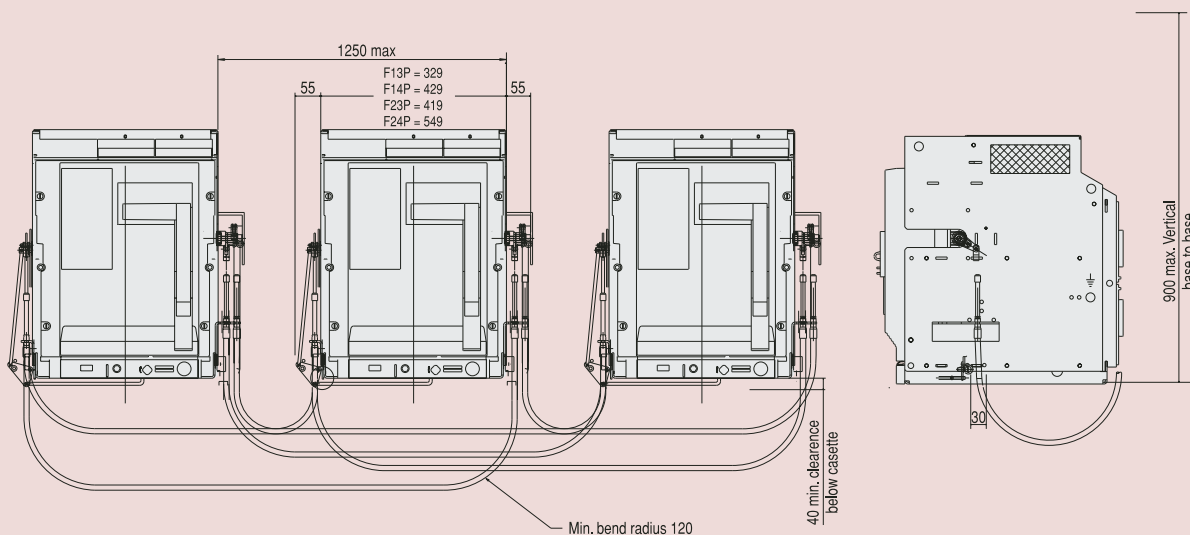


3-Way Cable Interlocking

Fixed Pattern - Front/Rear Access



Withdrawable Pattern - Front/Rear Access



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Reference number

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405105	B.2	405227	B.6	405430	B.4	405580	B.9	405809	B.3	405976	B.6
405106	B.2	405228	B.6	405432	B.4	405581	B.9	405810	B.3	405985	B.6
405107	B.2	405229	B.6	405434	B.4	405582	B.3	405811	B.3	405986	B.6
405108	B.2	405230	B.6	405436	B.4	405584	B.3	405812	B.3	405987	B.6
405109	B.2	405231	B.6	405438	B.4	405586	B.3	405813	B.3	405988	B.6
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405111	B.2	405233	B.6	405442	B.9	405590	B.3	405815	B.3	406021	B.2
405112	B.2	405234	B.6	405444	B.9	405592	B.3	405816	B.3	406022	B.2
405113	B.2	405235	B.6	405446	B.9	405594	B.3	405817	B.3	406023	B.2
405114	B.2	405236	B.6	405448	B.9	405596	B.5	405818	B.3	406024	B.2
405115	B.2	405237	B.6	405450	B.9	405598	B.5	405819	B.3	406025	B.2
405116	B.2	405242	B.6	405451	B.9	405600	B.2, B.4	405820	B.3	406026	B.2
405117	B.2	405243	B.6	405456	B.4	405601	B.2, B.4	405821	B.3	406027	B.2
405118	B.2	405244	B.6	405458	B.4	405602	B.5	405822	B.3	406028	B.2
405119	B.2	405245	B.6	405460	B.4	405604	B.5	405823	B.3	406030	B.8
405120	B.2	405256	B.6	405462	B.4	405605	B.9	405824	B.3	406031	B.8
405121	B.2	405257	B.6	405464	B.4	405606	B.9	405825	B.3	406033	B.3
405122	B.2	405258	B.6	405466	B.4	405607	B.9	405826	B.3	406034	B.3
405123	B.2	405259	B.6	405468	B.4	405608	B.9	405833	B.5	406035	B.3
405124	B.2	405260	B.6	405470	B.4	405622	B.5	405834	B.5	406036	B.3
405125	B.2	405261	B.6	405472	B.4	405624	B.5	405835	B.5	406037	B.3
405132	B.2	405262	B.6	405474	B.4	405626	B.5	405836	B.5	406038	B.3
405133	B.2	405263	B.6	405476	B.4	405628	B.5	405837	B.5	406039	B.3
405134	B.2	405264	B.6	405478	B.4	405630	B.5	405838	B.5	406040	B.3
405135	B.2	405265	B.6	405480	B.4	405632	B.5	405839	B.5	406045	B.4
405136	B.2	405266	B.6	405482	B.4	405634	B.5	405840	B.5	406046	B.4
405137	B.2	405267	B.6	405484	B.4	405636	B.5	405841	B.5	406047	B.4
405138	B.2	405272	B.6	405486	B.4	405638	B.7	405842	B.5	406048	B.4
405139	B.2	405273	B.6	405488	B.4	405640	B.7	405843	B.5	406049	B.4
405140	B.2	405274	B.6	405490	B.4	405642	B.7	405844	B.5	406050	B.4
405141	B.2	405275	B.6	405492	B.4	405644	B.7	405845	B.5	406051	B.4
405142	B.2	405316	B.2	405494	B.6	405646	B.7	405846	B.5	406052	B.4
405143	B.2	405318	B.2	405496	B.6	405648	B.7	405847	B.5	406055	B.8
405144	B.2	405320	B.2	405498	B.6	405650	B.7	405848	B.5	406056	B.8
405145	B.2	405322	B.2	405500	B.6	405652	B.7	405849	B.5	406322	B.9
405146	B.2	405324	B.2	405502	B.6	405660	B.5	405850	B.5	406326	B.9
405147	B.2	405326	B.2	405504	B.6	405661	B.5	405851	B.5	406338	B.9
405148	B.2	405328	B.2	405506	B.6	405662	B.5	405852	B.5	406340	B.9
405149	B.2	405330	B.2	405508	B.6	405663	B.5	405853	B.5	406341	B.9
405150	B.2	405332	B.2	405509	B.6	405664	B.5, B.7	405854	B.5	406342	B.9
405151	B.2	405334	B.2	405510	B.6	405665	B.5, B.7	405855	B.5	406343	B.9
405152	B.2	405336	B.2	405512	B.6	405683	B.10	405856	B.5	406344	B.9
405153	B.2	405338	B.2	405514	B.6	405684	B.10	405867	B.7	406345	B.9
405154	B.2	405340	B.3	405516	B.6	405685	B.10	405868	B.7	406346	B.9
405155	B.2	405341	B.3	405518	B.6	405686	B.10	405869	B.7	406347	B.9
405162	B.4	405342	B.3	405520	B.6	405687	B.10	405870	B.7	406348	B.9
405163	B.4	405343	B.3	405522	B.6	405688	B.10	405871	B.7	406349	B.9
405164	B.4	405344	B.5	405524	B.3	405689	B.10	405872	B.7	406350	B.9
405165	B.4	405345	B.5	405526	B.3	405690	B.10	405873	B.7	406351	B.9
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FA32WS40B	B.2	MH4L2W08	B.6	MN4L1M20	B.5	MS31F04	B.2	MS4R1M08	B.3		
FA32WS40T	B.2	MH4L2W10	B.6	MN4L1M25	B.5	MS31F06	B.2	MS4R1M10	B.3		
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FA41FN16T	B.5	MH4L2W16	B.6	MN4L1W06	B.4	MS31F10	B.2	MS4R1M16	B.3		
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