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Reference(s) : **see relative tables**

Megatiker M4
electronic circuit breakers

CONTENTS

1. USE

Megatiker platform, for premium segment, is able to cover extended ranges in terms of breaking capacities and rated currents, make protection suitable for different levels of power involved in installations. Megatiker platform provide easy assembly procedures during the phase of installation and mounting of accessories, suitable for professional use.

2. RANGE

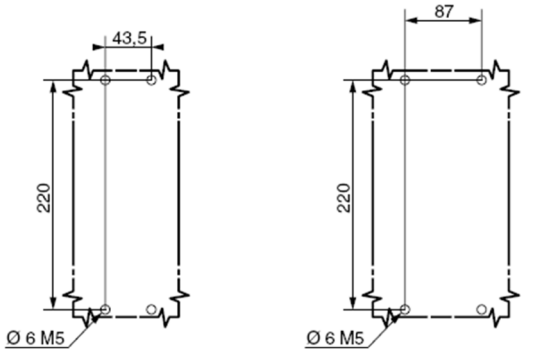
	Li		Lsi		Lsi + measure	
	36kA		36kA		36kA	
I_n(A)	3P	4P	3P	4P	3P	4P
250	T743F250EB	T744F250EB	T743F250E	T744F250E	T743F250M	T744F250M
320	T743F320EB	T744F320EB	T743F320E	T744F320E	T743F320M	T744F320M
400	T743F400EB	T744F400EB	T743F400E	T744F400E	T743F400M	T744F400M
500	T743F500EB	T744F500EB	T743F500E	T744F500E	T743F500M	T744F500M
630	T743F630EB	T744F630EB	T743F630E	T744F630E	T743F630M	T744F630M
	50kA		50kA		50kA	
I_n(A)	3P	4P	3P	4P	3P	4P
250	T743N250EB	T744N250EB	T743N250E	T744N250E	T743N250M	T744N250M
320	T743N320EB	T744N320EB	T743N320E	T744N320E	T743N320M	T744N320M
400	T743N400EB	T744N400EB	T743N400E	T744N400E	T743N400M	T744N400M
500	T743N500EB	T744N500EB	T743N500E	T744N500E	T743N500M	T744N500M
630	T743N630EB	T744N630EB	T743N630E	T744N630E	T743N630M	T744N630M
	70kA		70kA		70kA	
I_n(A)	3P	4P	3P	4P	3P	4P
250	T743H250EB	T744H250EB	T743H250E	T744H250E	T743H250M	T744H250M
320	T743H320EB	T744H320EB	T743H320E	T744H320E	T743H320M	T744H320M
400	T743H400EB	T744H400EB	T743H400E	T744H400E	T743H400M	T744H400M
500	T743H500EB	T744H500EB	T743H500E	T744H500E	T743H500M	T744H500M
630	T743H630EB	T744H630EB	T743H630E	T744H630E	T743H630M	T744H630M
	100kA		100kA		100kA	
I_n(A)	3P	4P	3P	4P	3P	4P
250	T743L250EB	T744L250EB	T743L250E	T744L250E	T743L250M	T744L250M
320	T743L320EB	T744L320EB	T743L320E	T744L320E	T743L320M	T744L320M
400	T743L400EB	T744L400EB	T743L400E	T744L400E	T743L400M	T744L400M
500	T743L500EB	T744L500EB	T743L500E	T744L500E	T743L500M	T744L500M
630	T743L630EB	T744L630EB	T743L630E	T744L630E	T743L630M	T744L630M

	Lsig		Lsig+ measure	
	36kA		36kA	
I_n(A)	3P	4P	3P	4P
250	T743F250T	T744F250T	T743F250MT	T744F250MT
320	T743F320T	T744F320T	T743F320MT	T744F320MT
400	T743F400T	T744F400T	T743F400MT	T744F400MT
500	T743F500T	T744F500T	T743F500MT	T744F500MT
630	T743F630T	T744F630T	T743F630MT	T744F630MT
	50kA		50kA	
I_n(A)	3P	4P	3P	4P
250	T743N250T	T744N250T	T743N250MT	T744N250MT
320	T743N320T	T744N320T	T743N320MT	T744N320MT
400	T743N400T	T744N400T	T743N400MT	T744N400MT
500	T743N500T	T744N500T	T743N500MT	T744N500MT
630	T743N630T	T744N630T	T743N630MT	T744N630MT
	70kA		70kA	
I_n(A)	3P	4P	3P	4P
250	T743H250T	T744H250T	T743H250MT	T744H250MT
320	T743H320T	T744H320T	T743H320MT	T744H320MT
400	T743H400T	T744H400T	T743H400MT	T744H400MT
500	T743H500T	T744H500T	T743H500MT	T744H500MT
630	T743H630T	T744H630T	T743H630MT	T744H630MT
	100kA		100kA	
I_n(A)	3P	4P	3P	4P
250	T743L250T	T744L250T	T743L250MT	T744L250MT
320	T743L320T	T744L320T	T743L320MT	T744L320MT
400	T743L400T	T744L400T	T743L400MT	T744L400MT
500	T743L500T	T744L500T	T743L500MT	T744L500MT
630	T743L630T	T744L630T	T743L630MT	T744L630MT

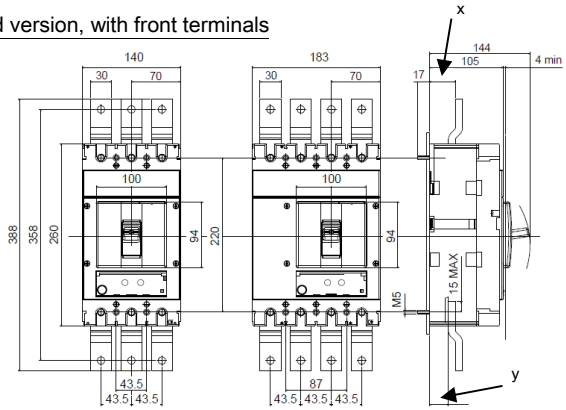
3. DIMENSIONS AND WEIGHTS

3.1 Dimensions

Implantation

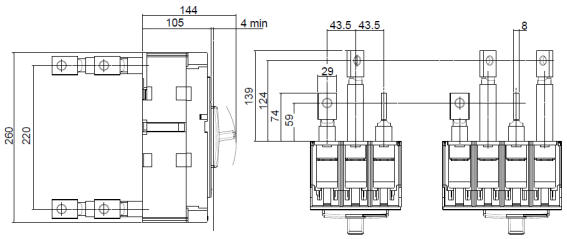


Fixed version, with front terminals

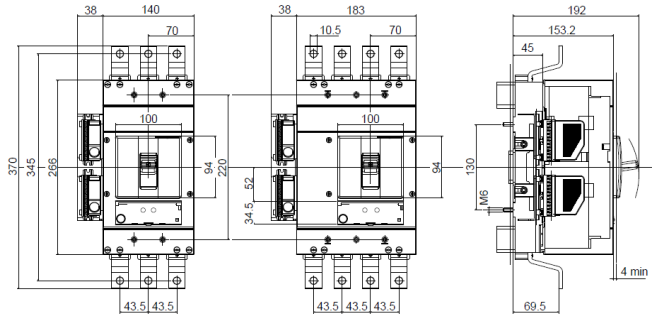


	I_n < 400	I_n ≥ 500 A
x	37	39
y	27	29

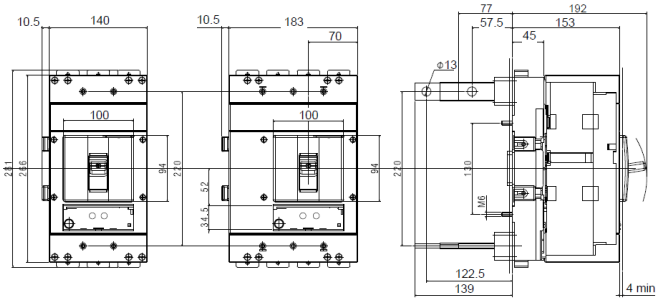
Fixed version, with flat rear terminal



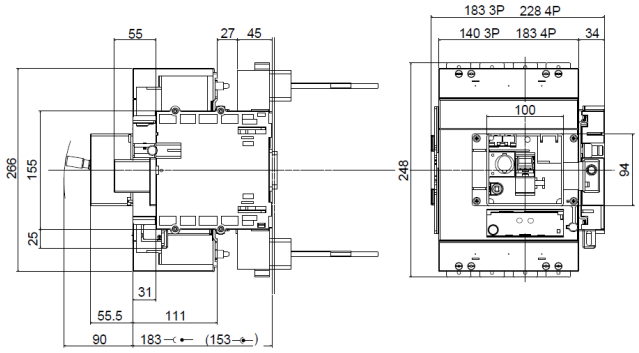
Plug-in version, with cage terminals



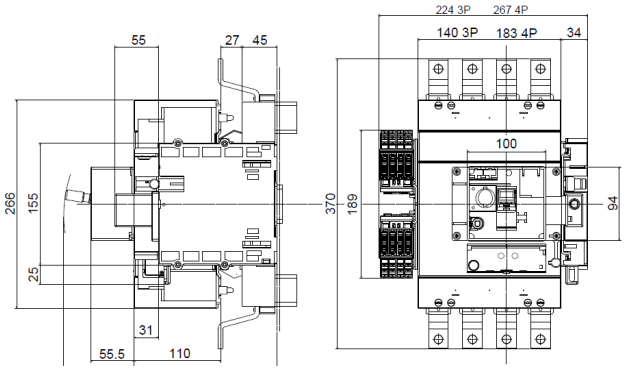
Plug-in version, without front terminals



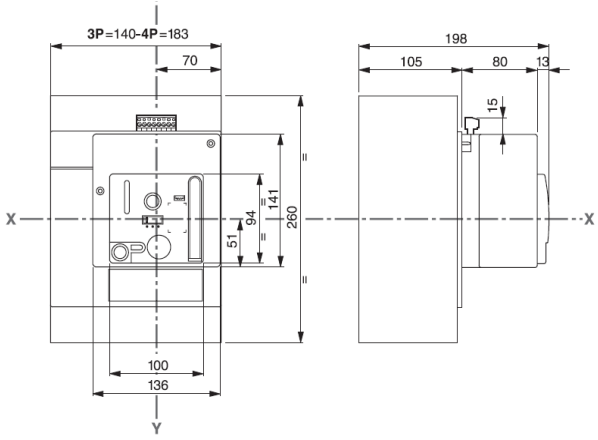
Draw-out version, flat rear terminals



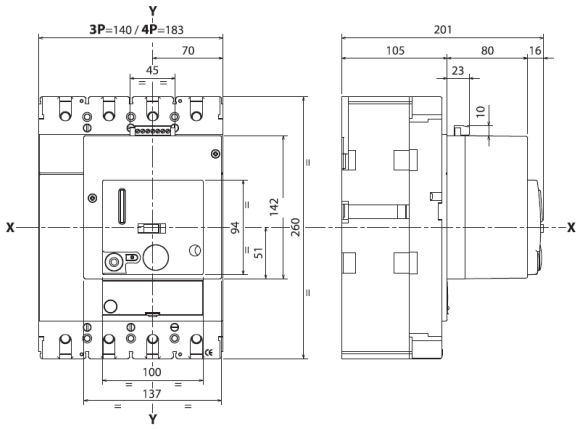
Draw-out version with sliding auxiliary contacts



Motor operator for synchronized operations (energy storage type)



Motor operator for general purpose operations (direct action type)



3.2 Weights

Configuration	Weights (Kg)			
	3P		4P	
	$I_n \leq 400A$	$I_n \geq 500A$	$I_n \leq 400A$	$I_n \geq 500A$
Circuit breaker (fixed version)	5.80	6.20	7.30	7.80
Plug-in (with front terminals)*	3.35	3.35	4.29	4.29
Plug-in (with rear terminals)*	3.55	3.55	4.79	4.79
Draw-out *	2.3	2.3	5.5	5.5
** to add to fixed version*				

4. OVERVIEW

4.1 Supplied with:

- fixing screws (4 for 3P and 4P)
- screws for connections (6 for 3P and 8 for 4P)
- phase insulators (2 for 3P and 3 for 4P)

5. ELECTRICAL CONNECTIONS

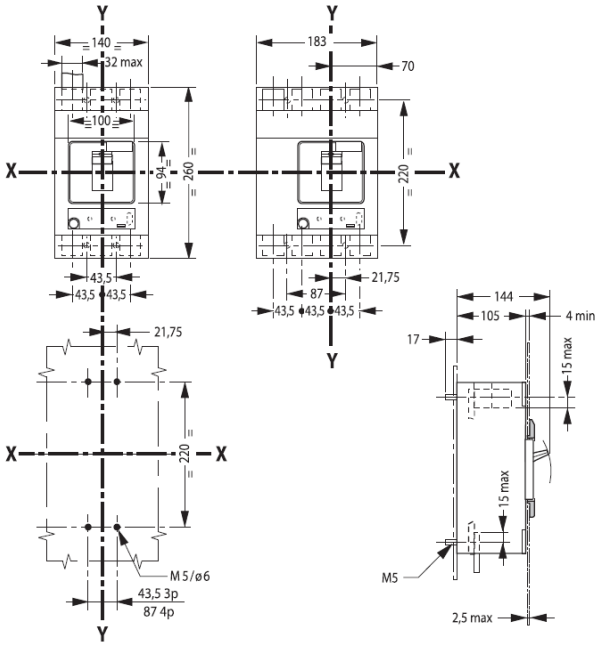
5.1 Mounting possibilities

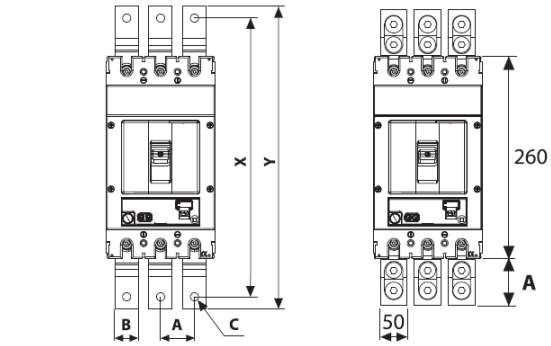
On plate:

- Vertical
- Horizontal
- Supply invertor type

5.2 Mounting

(see instruction sheet for detailed mounting procedures)

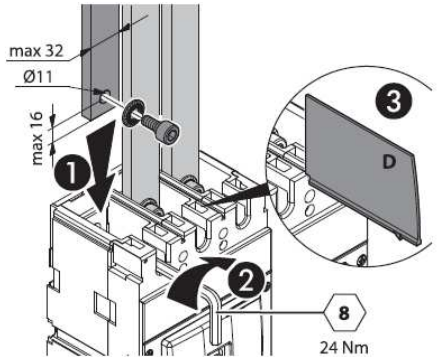


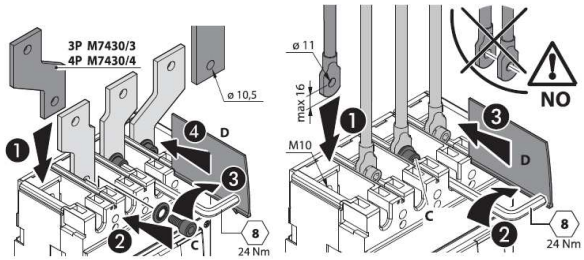


	A	B	C	X	Y
	43,5	30	10,5	358	388
	70	40	10,5	358	388

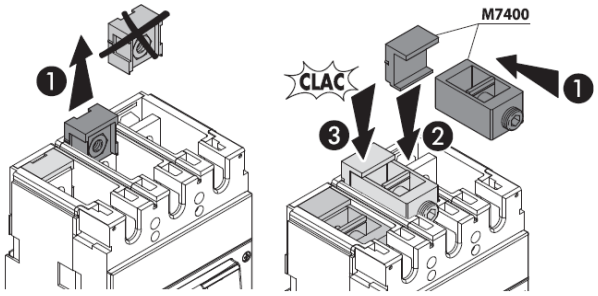
A	1,5	60,5

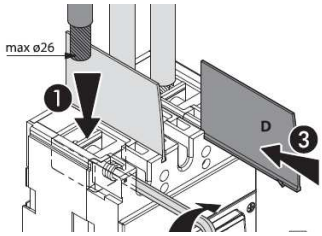
Busbars/cable lugs:

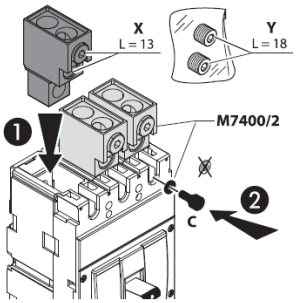


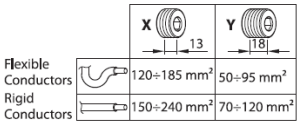


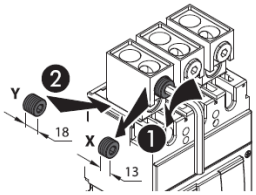
Cables:

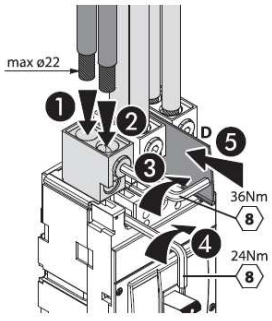












6. ELECTRICAL AND MECHANICAL CHARACTERISTICS

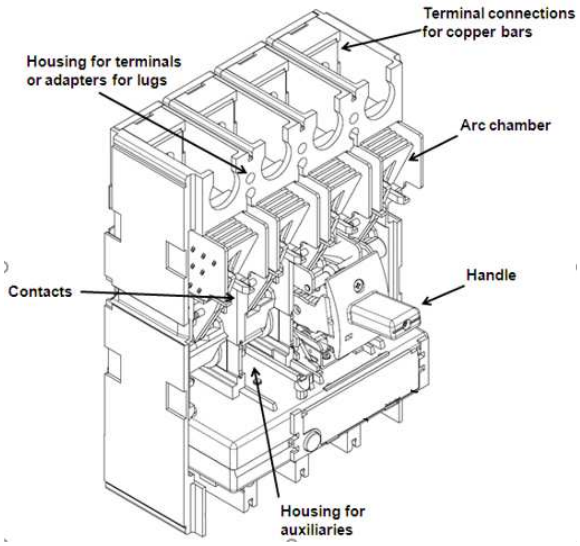
Circuit breaker

Circuit Breaker	Megatiker M4 ELE F/N/H/L (36kA, 50kA, 70kA, 100kA)
Rated current (A)	250, 320, 400, 500, 630
Poles	3 - 4
Pole pitch (mm)	42
Rated insulation voltage (50/60Hz) U_i (V)	800
Rated operating voltage (50/60Hz) U_e (V)	690
Rated impulse withstand current U_{imp}	8
Rated frequency (Hz)	50 - 60
Operating temperature (°C)	-25 ÷ 70
Mechanical endurance (cycles)	20000
Mechanical endurance with motor control	10000
Electrical endurance at I_n (cycles)	4000
Electrical endurance at 0.5 I_n (cycles)	8000
Utilization category	B ($I_n \leq 400A$); A ($I_n \geq 500A$)
Suitable for isolation	Yes
Type of protection	Electronic
Electronic trip Li	Yes
Electronic trip Lsi	Yes
Electronic trip Lsig	Yes
Thermal adjustment I_r	(0.4 ÷1) x I_n
Magnetic adjustment I_{sd} (A)	(1.5 ÷ 10) x I_r
Neutral protection for 4P (%I_{th} of phase pole)	0 - 50 - 100 - 150 - 200
Dimensions (W x H x D) (mm)	140 x 260 x 105 (3P) 183 x 260 x 105 (4P)
Maximum weight for fixed version (kg)	6.20 (3P) 7.80 (4P)

The maximum admissible (absolute) temperature is 125°C (for detail, see IEC 60947-1 and 60947-2)

Megatiker product line has the possibility to supply both in "direct" and "reverse" feed.
If "direct", the word "LINE" needs to be marked on supply terminals (normally the top ones), as well as "LOAD" has to be written on the output terminals to be connected to the load (normally the bottom ones).
If "reverse", any indications about LINE / LOAD are NOT expected on the product.

6.1 Main parts constituting the circuit breaker



6.2 Breaking capacity (kA)

		Breaking capacity (kA) & I_{cs}			
		3P-4P			
	U_e/I_{cu} (I_{cu} letter)	36kA (F)	50kA (N)	70kA (H)	100kA (L)
IEC 60947-2	220/240 V AC	70	100	105	150
	380/415 V AC	36	50	70	100
	440/460 V AC	30	40	60	70
	480/500 V AC	25	30	40	50
	480/550 V AC	20	22	25	28
	600 V AC	20	22	25	28
	690V AC	14	18	20	22
	I_{cs}(% I_{cu})	100	100	100	70
	Rated making capacity under short circuit I_{cm}				
	I_{cm} (kA) at 415V	76.5	105	154	220
NEMA AB-1	220/240 V AC	70	100	105	150
	480/500 V AC	25	30	40	50
	690 V AC	14	18	20	22

6.3 Rated current (I_n) at 40°C / 50°C

	Phases limit trip current			
	thermal (I_r)		magnetic (I_i)	
I_n (A)	0.4 x I_n	1 x I_n	1.5 x I_r	10 x I_r
250	100	250	375	2500
320	128	320	480	3200
400	160	400	600	4000
500	200	500	750	5000
630	252	630	945	6300

** For neutral adjustment, as explained in technical sheet, please consider the values ratios 100% on set currents.*

6.3 Load operations

Force on handle	In ≤ 400A	In ≥ 500A
Opening operation (N)	80	130
Closing operation (N)	180	210
Restore operation (N)	145	200

6.4 Electrodynamic forces

The table below shows an indication of suggested distances to keep between the breaker and the first fixing point of the conductor and bars in order to reduce the effects of the electrodynamic stresses that may be created during a short circuit. In the realization of anchorage system it is recommend the use of isolators suitable for the type of conductor used and the operating voltage.

I_{cc} (kA)	Maximum Distance (mm)
36	350
50	300
70	250
100	200

According to conductor type and bar system (except Legrand bar kits), the choice of the distance to keep is to be calibrated by the installer. Also installer must take into account the weight of the conductors so that this does not affect the electrical junction between the conductor itself and the connection point.

6.5 Power losses per pole under I_n

	Power losses per pole (W)									
	I_n (A)									
	250		320		400		500		630	
	Phase	Neutral	Phase	Neutral	Phase	Neutral	Phase	Neutral	Phase	Neutral
Cage terminals	7.5	7.5	12.3	12.3	19.2	19.2	22.1	22.1	35.0	35.0
Lugs	7.5	7.5	12.3	12.3	19.2	19.2	22.1	22.1	35.0	35.0
External lugs	8.2	8.2	13.5	13.5	21.1	21.1	25.1	25.1	39.8	39.8
Spreaders	9.0	9.0	14.7	14.7	22.9	22.9	26.7	26.7	42.3	42.3
Rear terminals	8.7	8.7	14.2	14.2	22.3	22.3	26.9	26.9	42.7	42.7
Plugin version	15.0	15.0	24.7	24.7	38.5	38.5	52.3	52.3	83.0	83.0
Circuit breaker + RCD	10.6	10.6	17.4	17.4	27.2	27.2	34.6	34.6	54.9	54.9

Note: power loss in the table above are referred and measured as described in the standard IEC 60947-2 (Annex G) for circuit-breakers. Values in the table are referred to a single phase.

6.6 DERATINGS

6.6.1 Temperature

Rated current and his adjustment has to be considered relating to a rise or fall of ambient temperature and to a different version or installation conditions. The table below indicates the maximum long-time (LT) protection setting depending on the ambient temperature.

	Temperature Ta (°C)		
I_n (A)	up to 50	60	70
250	250	250	250
320	320	320	320
400	400	360	340
500	500	500	500
630	630	567	536

For derating temperature with other configurations, see table A.

6.6.2 Specific condition use

Climatic conditions

according to IEC/EN 60947-1 Annex Q, Cat. F subject to temperature, humidity, vibration, shock and salt mist.

Electromagnetic disturbances (EMC)

for Megatiker M4 circuit breakers, according to
IEC/EN 60947-2 Annex F

Pollution degree

for Megatiker M4 circuit breakers, degree 3, according to
IEC/EN 60947-2

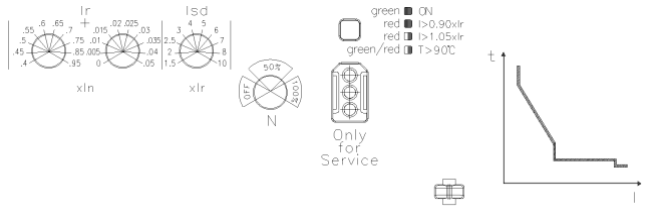
6.6.3 Altitude

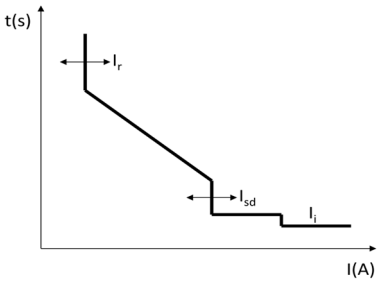
Altitude derating for Megatiker M4

Altitude (m)	2000	3000	4000	5000
U_e (V)	690	590	520	460
I_n (A) (T_a = 40°C/50°C)	1 x I_n	0.98 x I_n	0.93 x I_n	0.9 x I_n

7. ELECTRONIC PROTECTION UNIT

7.1 Version Li – Adjustment of I_r, I_{sd}



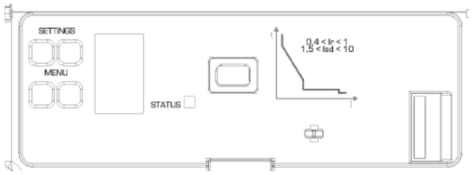


Long delay protection against overloads with an adjustable threshold bases on the RMS value of the current:
- I_r = 0.4 ÷ 1 I_n (steps 1A)

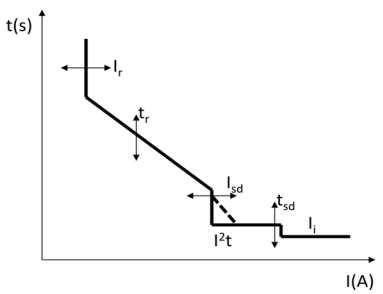
Short delay protection against short-circuits with an adjustable I_{sd} threshold:
- I_{sd} = 1.5 - 2 – 2.5 - 3 - 4 - 5 - 6 – 7 - 8 – 9 – 10 x I_r (11 steps)

Instantaneous protection with fixed threshold:
- 500A I_i = 15kA,
- 630,800A I_i = 15kA,
- 1000A I_i = 15kA,
- 1250A I_i= 15kA,
- 1600A I_i= 20kA

7.2 Version Lsi– Adjustment of I_r, T_r, I_{sd}, T_{sd}



LCD display with adjustment buttons, battery case and USB port.

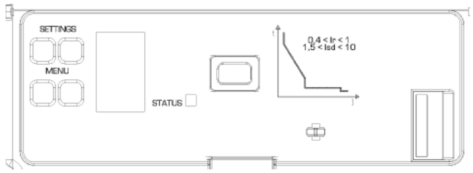


Long delay protection against overloads with an adjustable threshold bases on the RMS value of the current:
- I_r = 0.4 ÷ 1 I_n (steps 1A)
- T_r =3 - 30s (3 – 5 – 10 – 15 – 20 – 25 – 30) (7 steps)

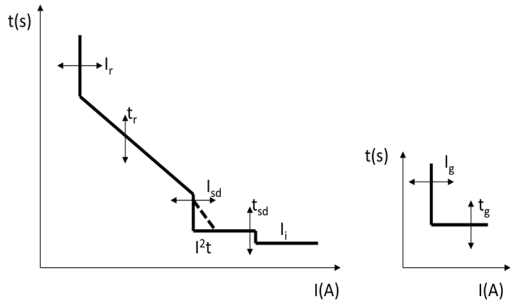
Short delay protection against short-circuits with an adjustable I_{sd} threshold:
- I_{sd} = 1.5 - 2 – 2.5 - 3 - 4 - 5 - 6 – 7 - 8 – 9 – 10 x I_r (11 steps)
- T_{sd} = 0 – 100 – 200 - 300 – 400 - 500 ms (I = K)
- T_{sd} = 0 – 100 – 200 – 300 – 400 - 500 ms (I^2t = K)

Instantaneous protection with fixed threshold:
- 500A I_i = 15kA,
- 630,800A I_i = 15kA,
- 1000A I_i = 15kA,
- 1250A I_i= 15kA,
- 1600A I_i= 20kA

7.3 Version Lsig - Adjustment of I_r, T_r, I_{sd}, T_{sd}, I_g, T_g



LCD display with adjustment buttons, battery case and USB port.



Long delay protection against overloads with an adjustable threshold bases on the RMS value of the current:
- I_r = 0.4 ÷ 1 I_n (steps 1A)
- T_r =3 - 30s (3 – 5 – 10 – 15 – 20 – 25 – 30) (7 steps)

Short delay protection against short-circuits with an adjustable I_{sd} threshold :
- I_{sd} = 1.5 - 2 – 2.5 - 3 - 4 - 5 - 6 – 7 - 8 – 9 – 10 x I_r (11 steps)
- T_{sd} = 0 – 100 – 200 - 300 – 400 – 500 ms (I = K)
- T_{sd} = 0 – 100 – 200 – 300 – 400 – 500 ms (I^2t = K)

Instantaneous protection with fixed threshold:
- 500A I_i = 15kA,
- 630,800A I_i = 15kA,
- 1000A I_i = 15kA,
- 1250A I_i= 15kA,
- 1600A I_i= 20kA

Measure of ground fault:
- I_g : 0.2 – 0.3 – 0.4 – 0.5 – 0.6 – 0.7 – 0.8 – 0.9 – 1 x I_n (9 steps) and OFF
- T_g : 0.1 – 0.2 – 0.3 – 0.4 – 0.5 – 1 s

Together with above protections, activated in case of electric faults, the trip unit also integrates self-protection for:

- Over temperature : in case the internal temperature of protection unit exceed 95°C;
- Auto diagnostics: in case embedded watchdog circuit detects internal malfunctions, which could compromise the correct working of microcontroller.

General remarks on protection unit

The protection units Li/Lsi/Lsig are normally supplied by the internal current transformers (CTs).

When the current flowing through the circuit breaker is greater than 12% of the maximum power (20% of In for single phase load), the internal current supply ensures all operation of the protection unit, included LED status, display indications(*) and diagnostic functions (e.g. trip test).

(*)Display backlight and integrated measure (if available) are instead guaranteed starting from 20% of the maximum power (35% of In for single phase load), in absence of any other supply. In any case the external power supply is strongly recommended for the correct working of measurement, as well as RS485 communication.

To ensure the same performance when the load is less than 12% of the maximum power (20% of In for single phase load) to grant complete functions, one of the following optional power supplies can be used:

- (*)external Auxiliary power supplier or, alternatively, Modbus communication interface.
- (*)power supply temporarily connected to frontal USB socket, connected to a 5V DC power bank or PC.
- (**)power supply temporarily connected to frontal Service port, connected to specific adapter for PC (Legrand use only)

(*) available only for S2/Sg versions

(**) available only for S1 versions

In the electronic unit protection type S2/Sg, an energy metering central unit, if available, is integrated.

The possible parameters that can be measured are listed in the following table:

Measured	UNIT	DESCRIPTION
I_1	A	L1 realtime measured value
I_2	A	L2 realtime measured value
I_3	A	L3 realtime measured value
I_N (4P)	A	N realtime measured value
I_G	A	G realtime measured value
U_{12} U_{23} U_{31} (3P)	V	Phase to Phase Voltage
V_{12} V_{23} V_{31} (4P)	V	Voltage
Freq.	Hz	Frequency
P_{Tot}	kW	Active Power
Q_{Tot}	kvar	Reactive Power
PF		Power Factor

In the electronic unit protection type Lsi/Lsig, an energy metering central unit, if available, is integrated.

The possible parameters that can be measured are listed in the following table:

Measured	UNIT	DESCRIPTION
I_1	A	L1 realtime measured value
I_2	A	L2 realtime measured value
I_3	A	L3 realtime measured value
I_N (4P)	A	N realtime measured value
I_G	A	G realtime measured value
U_{12} U_{23} U_{31} (3P)	V	Phase to Phase Voltage
V_{12} V_{23} V_{31} (4P)	V	Voltage
Freq.	Hz	Frequency
P_{Tot}	kW	Active Power
Q_{Tot}	kvar	Reactive Power
PF		Power Factor
E_p ↓	kWh	Consumed active energy
E_p ↑	kWh	Returned active energy
E_q ↓	kvar h	Consumed reactive energy
E_q ↑	Kvar h	Returned reactive energy
$THDU_{12}/THDU_{23}/THDU_{31}$ (3P)	%	Chained Voltage THD
$THDV_{1N}/THDV_{2N}/THDV_{3N}$ (4P)	%	Voltage THD
$THDI_1/THDI_2/THDI_3/THDI_N$	%	Current THD
MEM	A - °C	Cause of the last intervention and its value

Function performance class according to IEC 61557-12

Function symbol	Performance class	Measurement range					Other complementary characteristics				
		DPX³ 630A					I_{max} PMD				
I_n		**250A**	**320A**	**400A**	**500A**	**630A**	**250A**	**320A**	**400A**	**500A**	**630A**
P	2	0.3kW	0.3kW	0.3kW	0.3kW	0.3kW	300A	380A	480A	600A	750A
		360kW	460kW	580kW	720kW	900kW	I_b=250A, U_n=400V, f_n=50Hz				
QA, Q_v	2	0.6kvar	0.6kvar	0.6kvar	0.6kvar	0.6kvar	300A	380A	480A	600A	750A
		360kvar	460kvar	580kvar	720kvar	900kvar	I_b=250A, U_n=400V, f_n=50Hz				
E_a	2	0...999 GW/h					300A	380A	480A	600A	750A
							I_b=250A, U_n=400V, f_n=50Hz				
ErA, E_{rV}	2	0...999 GW/h					300A	380A	480A	600A	750A
							I_b=250A, U_n=400V, f_n=50Hz				
f	0.02	50...60 Hz					-				
I	2	12.5A	12.5A	12.5A	12.5A	12.5A	300A	380A	480A	600A	750A
		300A	380A	480A	600A	750A	I_b=250A, U_n=400V, f_n=50Hz				
I_N	2	12.5A	12.5A	12.5A	12.5A	12.5A	300A	380A	480A	600A	750A
		300A	380A	480A	600A	750A	I_b=250A, U_n=400V, f_n=50Hz				
U	0.05	88...690V					-				
P_{FA}	0.05	-					300A	380A	480A	600A	750A
							I_b=250A, U_n=400V, f_n=50Hz				
THDu	5	110...690V					-				
THD_I	5	250A	250A	250A	250A	250A	-				
		250A	320A	400A	500A	630A					

8. CONFORMITY

Megatiker range of product concerning circuit-breakers and switch-disconnectors exceed compliance with the IEC/EN standard 60947-2 and 60947-3 respectively. Certification available by IECEE CB-scheme or LOVAG Compliance scheme.

Marks as CCC (China), EAC (Eurasian Federation) or different local certification are available.

DMX³ are in conformity with the Lloyds Shipping Register, RINA and Bureau Veritas Marine.

DMX³ respect the European Directives REACh, RoHS, RAEE and Product Environment Product (PEP Ecopassport) are available.

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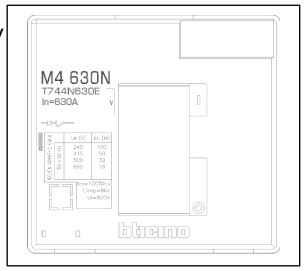
For specific information, please contact Legrand support.

8.1 Marking

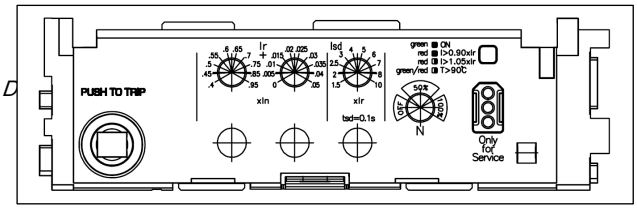
Product (borh circuit breakers anc switch disconnectors) are provided with labelling in full conformity to the referred standard and directives requirements by laser or sticker labels as:

Product laser label on front

- -Manufacturer responsible
- -Denomination, type product, code
- -Standard conformity
- -Standard characteristics declared
- -coloured identification of I_{cu} at 415V



Knobs version (S1 type)



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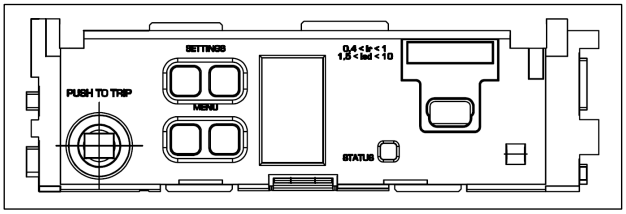
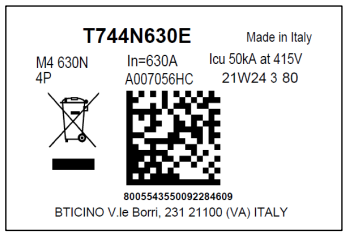


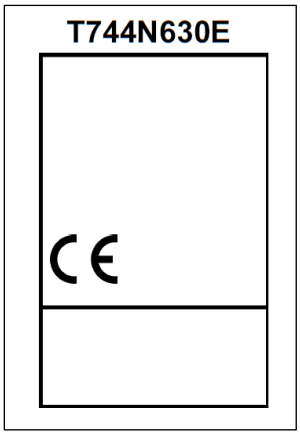
Product sticker label on side

- -Manufacturer responsible
- -Denomination and type product
- -Standard conformity
- -Mark/Licence (if any)
- -Directive requirements
- -bar code identification product
- -Manufacturing Country



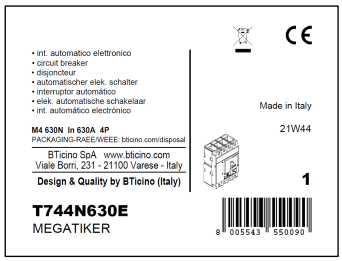
Mark sticker label on side

- -Product code
- -Mark/Licence (if any)
- -Country deviation, if any



Packaging sticker label

- -Manufacturer responsible
- -Denomination and type product
- -Standard conformity
- -Mark/Licence (if any)
- -Directive requirements
- -bar code identification product



9. EQUIPMENTS AND ACCESSORIES

9.1 Earth leakage modules

Earth leakage characteristics for Megatiker M4		
	Standard	with Led
Type	A - S	A - S
Uninterrupted nominal current I_u (A)	up to 630	up to 630
Rated isolated voltage U_i (V AC)	500	500
Rated operating voltage U_e (V AC) (50-60Hz)	500	500
Operating voltage (V AC) (50-60Hz)	230 ÷ 500	110 ÷ 500
Nominal frequency (Hz)	50 - 60	50 - 60
Operating temperature (°C)	-25 ÷ 70	-25 ÷ 70
Trip	electronic	electronic
Earth leakage time adjustments (s)	0 - 0.3 - 1 - 3	0 - 0.3 - 1 - 3
Earth leakage breaking capacity I_{dm} (% I_{cu})	60	60
Earth leakage protection adjustments $I_{\Delta n}$ (A)	0.03 ÷ 3	0.03 ÷ 3
Side-by-side mounting	no	no
Underneath mounting	yes	yes
50% Earth fault detection contact I_{dn}	no	yes
Clip on rail DIN 35	no	no
Dimensions (W x H x D) (mm) for 4P	183 x 152 x 105	183 x 152 x 106

(Power losses, see par. 5.4)

Standard

I_n <= 400A 4P ref. T7082/400

I_n = 500A-630A 4P ref .T7092/630

LED version

I_n <= 400A 4P ref. T7081/400

I_n = 500A-630A 4P ref. T7091/630

9.2 Releases (for Megatiker M4 and M5)

- shunt releases with voltage:

24 Vac and dc ref. M7C024
48 Vac and dc ref. M7C048
110÷130 Vac and dc ref. M7C110
220÷250 Vac and dc ref. M7C230
380÷440 Vac and dc ref. M7C400

Shunt releases electrical characteristics	
Rated voltage (U_c)	**Both ac and dc: 24V/48V/110÷130V/220÷250V/380÷440V**
Voltage range (%U_c)	**70 ÷ 110**
Intervention time (ms)	**≤ 50**
Power consumption (W/VA)	**300**
Minimum opening time (ms)	**50 ms**
Insulation voltage (kV)	**2,5**

- undervoltage releases with voltage:

24 V dc ref. M7T024C
24 V ac ref. M7T024
48 V dc ref. M7T048C
110 - 125 V ac ref. M7T110
220 - 240 V ac ref. M7T230
380 - 415 V ac ref. M7T400

Undervoltage relases electrical characteristics	
Rated voltage (U_c)	**ac: 24V/110÷125V/220÷240V/380÷415V dc: 24V/48V**
Voltage range (%U_c)	**85 ÷ 110**
Minimum opening time (ms)	**50**
Power consumption (W/VA)	**1.6 / 5**

- time-lag undervoltage releases (800 ms)

Time-lag modules with voltage:

24 V ac/dc ref. M7000E/024
230 V ac ref. M7000MR/230
400 V ac ref. M7000MR/400

Universal Release ref. M7TMEV
(to be equipped with a time-lag module *M7000MR/230/400*)

9.3 Auxiliary contacts (for Megatiker M4 and M5)

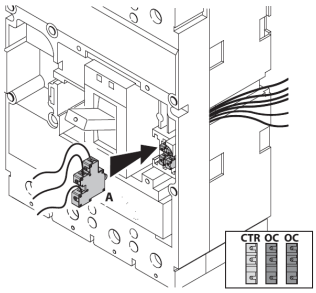
Changeover switch 3A – 250 VAC ref. M7X01

To show the state of the contacts or opening of the Megatiker / Megaswitch on a fault:

- Auxiliary contact (standard) **OC**
- Fault signal **CTR**

Auxiliary contact electrica characteristics		
Rated voltage (V_n)	**V (ac or dc)**	24 to 250
Intensity (A)	**24 V dc**	5
	48 V dc	1.7
	110 V dc	0.5
	230 V dc	0.25
	110 V ac	4
	230/250 V ac	3

Configurations:
M4/MS4 → 2 auxiliary contacts + 1 fault signal + 1 release



To get more information on auxiliary mounting procedures, please refer to product instruction sheet.

9.4 Universal keylocks

These keylocks must be used for all the accessories that can be locked:

- rotary handle
- motor operator
- plug-in mechanism
- draw-out mechanism

For each of these, a specific accessory (indicated in the specific section of this datasheet) must be added in order to get the complete locking kits for the specific application.

- 1 lock + 1 flat key with random mapping ref. M7K01
- 1 lock + 1 flat key with fixed mapping (EL43525) ref. M7K02
- 1 lock + 1 flat key with fixed mapping (EL43363) ref. M7K03
- 1 lock + 1 star key with random mapping ref. M7K04

9.5 Rotary handles

Direct on Megatiker (with auxiliary option)

- Standard (black) ref. M7447
- For emergency use (red / yellow) adapting on standard handle ref. M7R14

Vari-depth handle IP55 (with auxiliary option)

- Standard (black) ref. T7449
- For emergency use (red / yellow) adapting on standard handle ref. T7449E

Locking accessories (for vary-depth handle with auxiliary option)

- Key lock accessory for vari-depth rotary handle ref. M7R17

Ref. M7R17 must be used with universal keylocks to get the complete locking kit for rotary handle

9.6 Motor operators (front operated)

For general purpose operations (direct action type):

- 230 V ac ref. M74D230

For synchronized operations (energy storage type):

- 24 V ac and dc ref. M7475P/024
- 48 V ac and dc ref. M7475P/048
- 110 V ac ref. M7475P/110*
- 230 V ac ref. M7475P/230 *

*DC versione by request

	M74D230		M7475P/024-048-110-230	
Type	Direct drive		Energy storage	
Rated operating voltage (U_e) - AC	230V AC 50-60 Hz		24 - 48 - 230	
Rated operating voltage (U_e) - DC	230V AC 50-60 Hz		24 - 48 - 230	
Voltage range (%Uc)	85÷110		85÷110	
	Opening	Closing	Opening	Closing
Pick-up consumption (W / VA)	240	200	300	300
Hold consumption (W / A)	80	120	300	300
Operating time / complete electric operation (ms)	450	550	2000	100
Operating time / main contacts change position (ms)	270	550	n/a	n/a
Mechanical endurance (O-C cycles) @I_n = 630A	10000		n/a	
Electrical endurance (O-C cycles) @I_n = 630A	4000		4000	
Cycles / minutes	up to 8 automatic open/close operations in a row		10	4

Locking accessories

- Key lock accessory for motor operator ref. M7M406

Ref. M7M406 must be used with universal keylocks to get the complete locking kit for motor operator

9.7 Mechanical accessories

- Padlock (for locking in "OPEN" position) ref. M7045
- Insulated shields (phase insulators) ref. M7295
- Sealable terminal shields:
  - Set of 2 (for 3P) ref. M7475
  - Set of 3 (for 4P) ref. M7476
- Terminal covers to guarantee IP20:
  - Set of 2 (for 3P) ref. M7C11
  - Set of 3 (for 4P) ref. M7C12

9.8 Connection accessories

Cage terminals

- Set of 4 terminals for cables 300 mm² max (rigid) or 240 mm² max (flexible) Cu/Al ref. M7400
- Set of 4 high-capacity terminals for cables 2x240 mm² max (rigid) or 2x185 mm² max (flexible) Cu/Al ref. M7400/2

Extended front terminals

- Set of 4 ref. M7430

Spreaders *(incoming or outcoming):*

- Set of 2 (for 3P) ref. M7430/3
- Set of 3 (for 4P) ref. M7430/4

Rear terminals *(incoming or outcoming):*
(used to convert the fixed version with front terminals into the fixed version with rear terminals)

- for 3P ref. M7450/P
- for 4P ref. M7451/P

Cage terminal use specifications

Megatiker M4							
Type of cage terminal	***Cable standard suggested cross section (mm²)****			***Dimensions limits of cable for cage terminals***			
	In (A)	Cu	Al	MIN cross section (mm²)		MAX cross section (mm²)	
				Flexible	Rigid	Flexible	Rigid
Standard	250	120	185	6	4	240	300
	320	185	\				
	400	240	\				
	500	\	\				
	630	\	\				
High capacity	250	120	185	70	35	185	240
	320	185	2x120				
	400	240	2x150				
	500	2x150	2x240				
	630	2x185	\				

* The suggested cross section are in compliance with standard IEC60947-1 (ed.6 2020/04) and IEC60947-2 (ed.5.1 2019/07)

9.9 Plug-in version

(A plug-in is a Megatiker fitted with special terminals and mounted on a plug-in base)

Special terminals for plug-in / draw-out base
(for incoming and outcoming terminals)

- Set of 6 terminals (3P) *ref.* M7B11
- Set of 8 terminals (4P) *ref.* M7B12

Bases
(accept DPX³/DPX³-I fitted with special terminals)

- Front terminal mounting base for 3P ref. M7B13
- Front terminal mounting base for 4P ref. M7B14
- Flat rear terminal mounting base for 3P ref. M7B15
- Flat rear terminal mounting base for 4P ref. M7B16

Bases for breakers with mounted earth leakage module

- Front terminal mounting base for 4P ref. M7B17
- Flat rear terminal mounting base for 4P ref. M7B18

Accessories
- Set of 2 extractor handle ref. M7B19
- Set of connectors (24-pin) ref. M7B20

9.10 Draw-out version

A Megatiker draw-out version is a plug-in fitted with a "Débro-lift" mechanism which can be used to withdraw the Megatiker while keeping it on its base)

"Debro-lift" mechanism
(supplied with a rigid slide and handle for drawing-out)

- For base only (3P) ref. M7B22
- For base only (4P) ref. M7B23
- For base with earth leakage module (4P) ref. M7B24

Keylock for "Debro-lift" mechanism
- One key for Megatiker only

(enable locking in draw - out position)

- Key lock accessory for draw-out (frontal masks for motor operator or rotary handle) ref. M7B40
- Key lock accessory for draw-out ref. M7B38

Ref. M7B40 *and* M7B38 *must be used with universal keylocks to get the complete locking kit for draw-out version*

Accessories for "Debro-lift" mechanism
- Signalling contact (plugged-in / draw-out) ref. MT7910N
- Handle for drawing - out ref. MT7412

Auxiliary contacts
- Automatic auxiliary contacts for draw-out version ref. M7B21

(up to 2 contacts by Megatiker)

Plate for transfer switches *(factory assembled)*
(A transfer switch plate is composed of one plate with interlock for 2 devices)

- Plate for breaker or trip-free switch fixed version ref. M7197N

9.11 Specific accessories for electronic version

Auxiliary power supply

- For supplying electronic units *ref.* M7ALIM

Is used to supply Megatiker electronic circuit breakers Lsi/Lsig with / without earth leakage module and with / without energy metering central unit.
It is mandatory in case of electronic breakers with integrated measure and not interconnected in a supervision system (MODBUS network not requested) to correctly manage the measure functions
Technical characteristics:
- Input voltage: 24V ad/dc (+/- 10%)
- Enclosure: 2 DIN modules
- Output: up to 250mA (to supply many circuit breakers according to the following table):
-

M7ALIM	DPX³ 250 / 250HP / 630 / 1600	[mA]
I_{out} MAX = 250 mA	Electronic/Electronic + RCD (S2/Sg)	50
	Electronic/Electronic + RCD with power metering (S2/Sg)	62.5
	Electronic/Electronic + RCD (S10)	70
	Electronic/Electronic + RCD with power metering (S10)	83

According to single absorptions, it can be possible to connect more than one breaker

MODBUS communication

- RS485 MODBUS communication interface *ref. M7COM*

Is used for sharing on MODBUS network all information managed by Megatiker electronic circuit breakers Lsi/Lsig with / without earth leakage module and with / without energy metering central unit.

Technical characteristics:
- USB local PC connection
- Input voltage: 24V ad/dc (+/- 10%)
- Enclosure: 1 DIN modules
- MODBUS address configuration / transmission mode / transmission speed by physic configurators
- Output relay (220V – 0,2A): to signal tripped position

Consumption: 90mA

It is possible to connect only one breaker to the interface.

In case of use of MODBUS interface M7COM, the external power supply module M7ALIM is not necessary because the external power is already provided by the MODBUS module

- **Megatiker electronic interface - EMS DIN**
- For connecting electronic Megatiker (M3 250, M4, M5) to an EMS communication network. All the informations managed by circuit breaker's electronic card will be shared on the EMS network
  Dimension: 1 module
  Power supply: with EMS CX³ power supply module F80BA
  Address can be modified and set locally by DIP switches or remotely with the help of the EMS configurator software

ref. M7EMS

Bluetooth communication key

USB key for BLE communication with electronic Megatiker S10 (M3 250, M4, M5) to configure, monitor and manage it remotely through App Connection port USB on front of the circuit breaker

ref. MPXX02

EnerUp + Project App for smartphone and tablet available on Apple Store and Google Play Configuration, monitoring and management software (PCS) available for download via e-catalogue (does not require the use of Bluetooth communication key Ref. MPXX02)

Modular power supply

- 230 V± - 27 V⎓ - 0.6 A (2 modules) ref. BT-E49

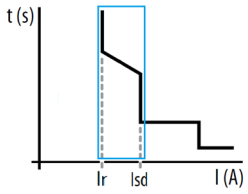
Touch screen

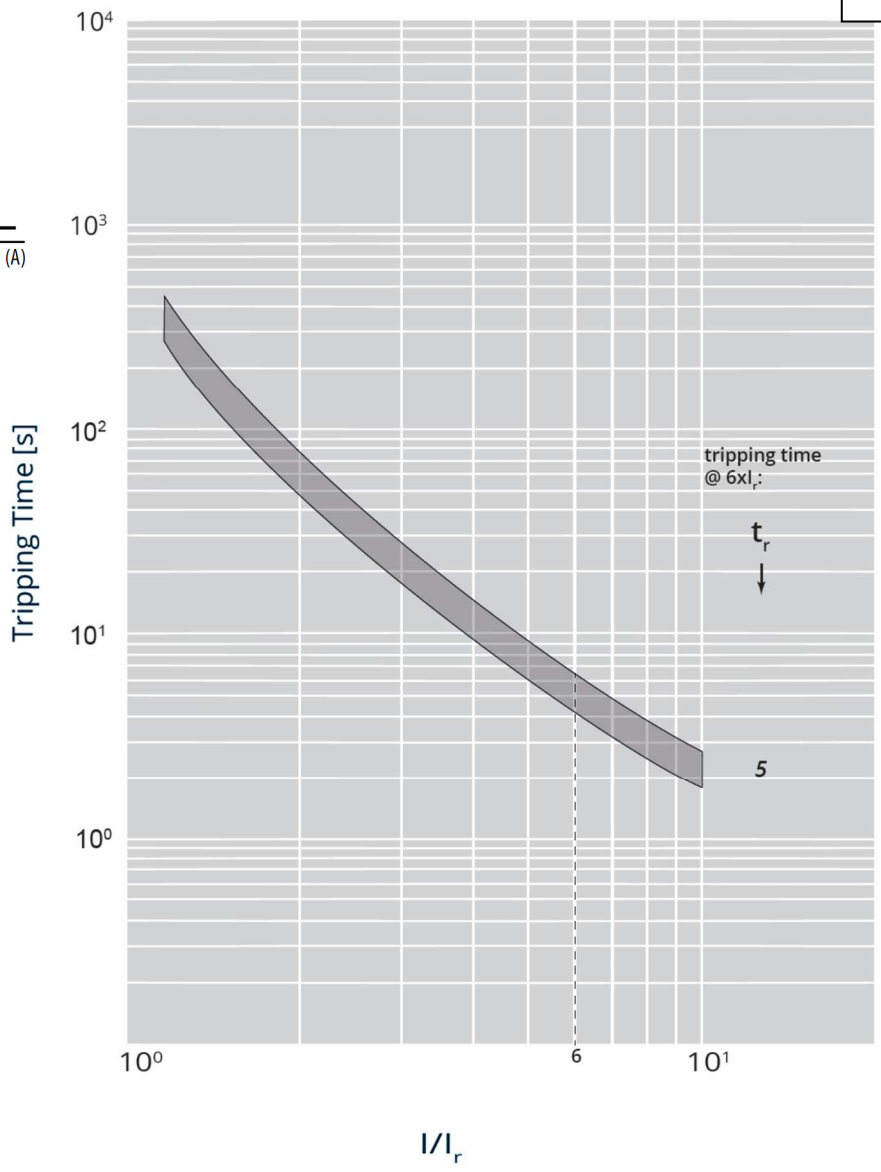
- To show data collected by protection devices. It can manage up to 8 devices *ref. PM1TS*

10. CURVES

10.1 Tripping curve (for SLi version) [1/3]

Update: 02/07/2018



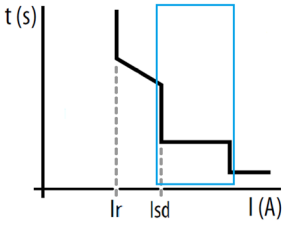


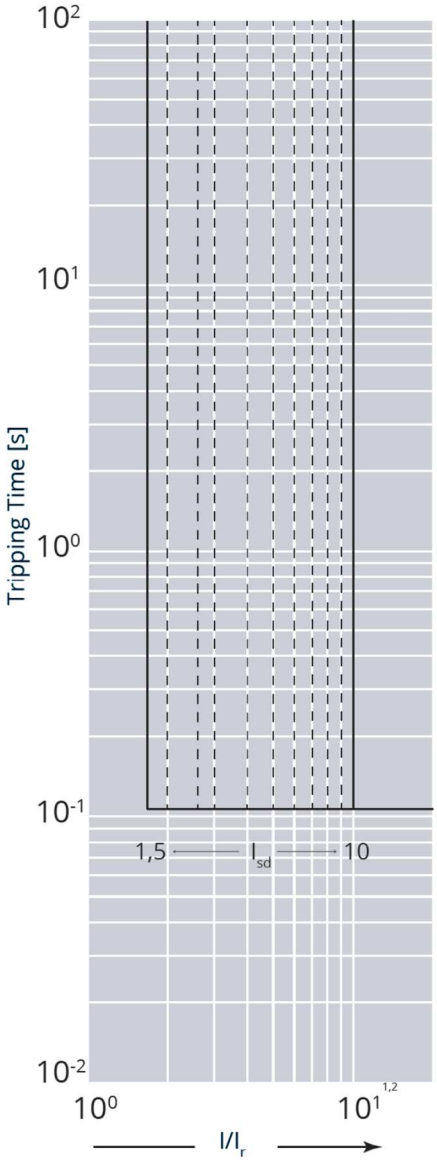
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
————	long time trip curve
- - - - - - - - - - - -	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.1.2 Tripping curve (for Li version) [2/3]

Update: 03/12/2018



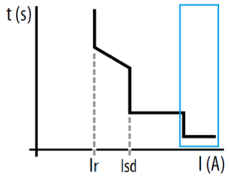


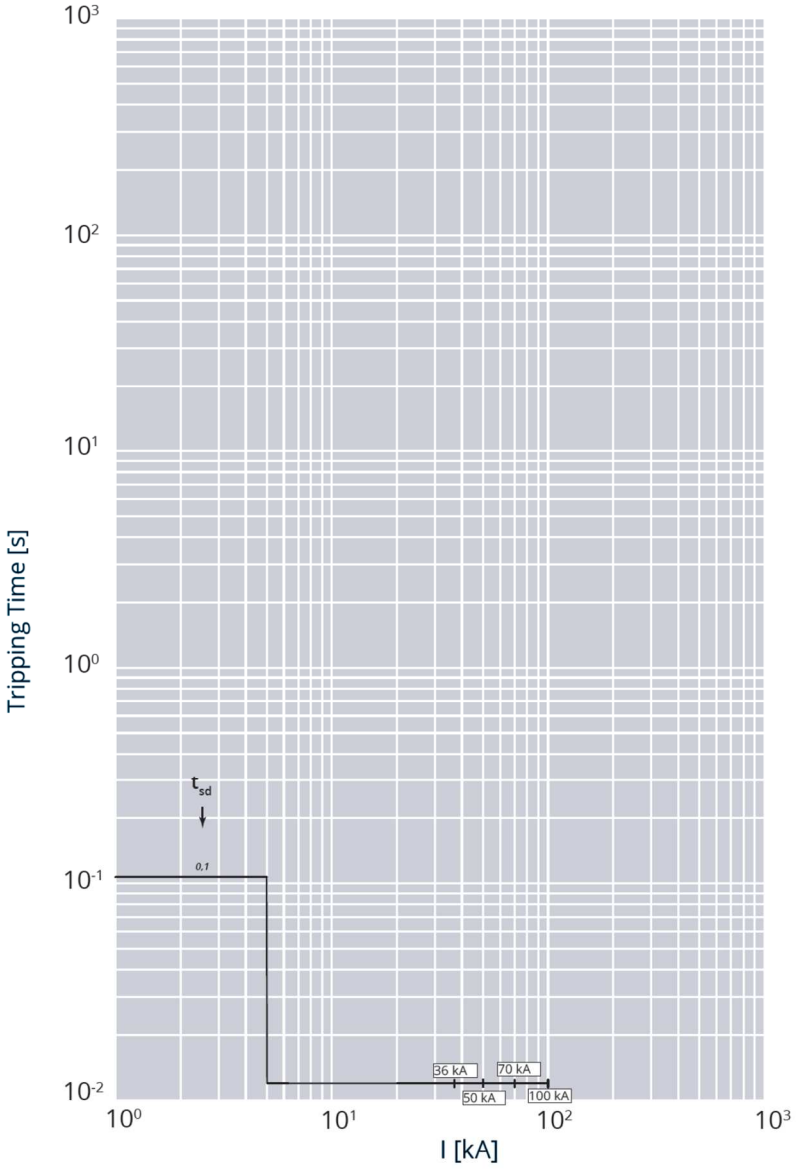
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
----------	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.1.3 Tripping curve (for Li version) [3/3]

Update: 02/07/2018





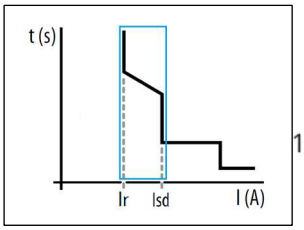
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

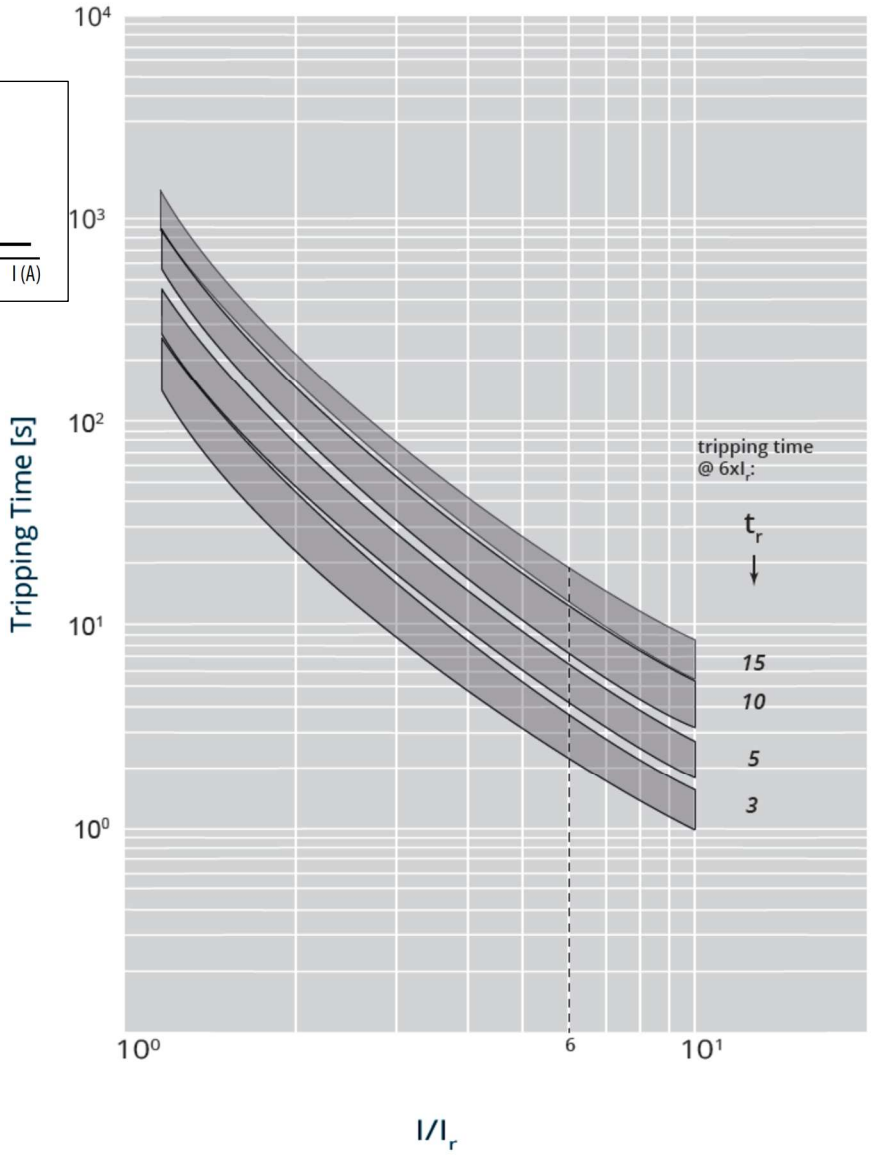
Fixed Instantaneous override I_{sf} = 5kA

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
----------	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.2.1 Tripping curve (for Lsi/Lsig version), tr = 3÷15 s [1/5]

Update: 03/12/2018



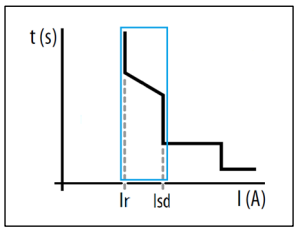


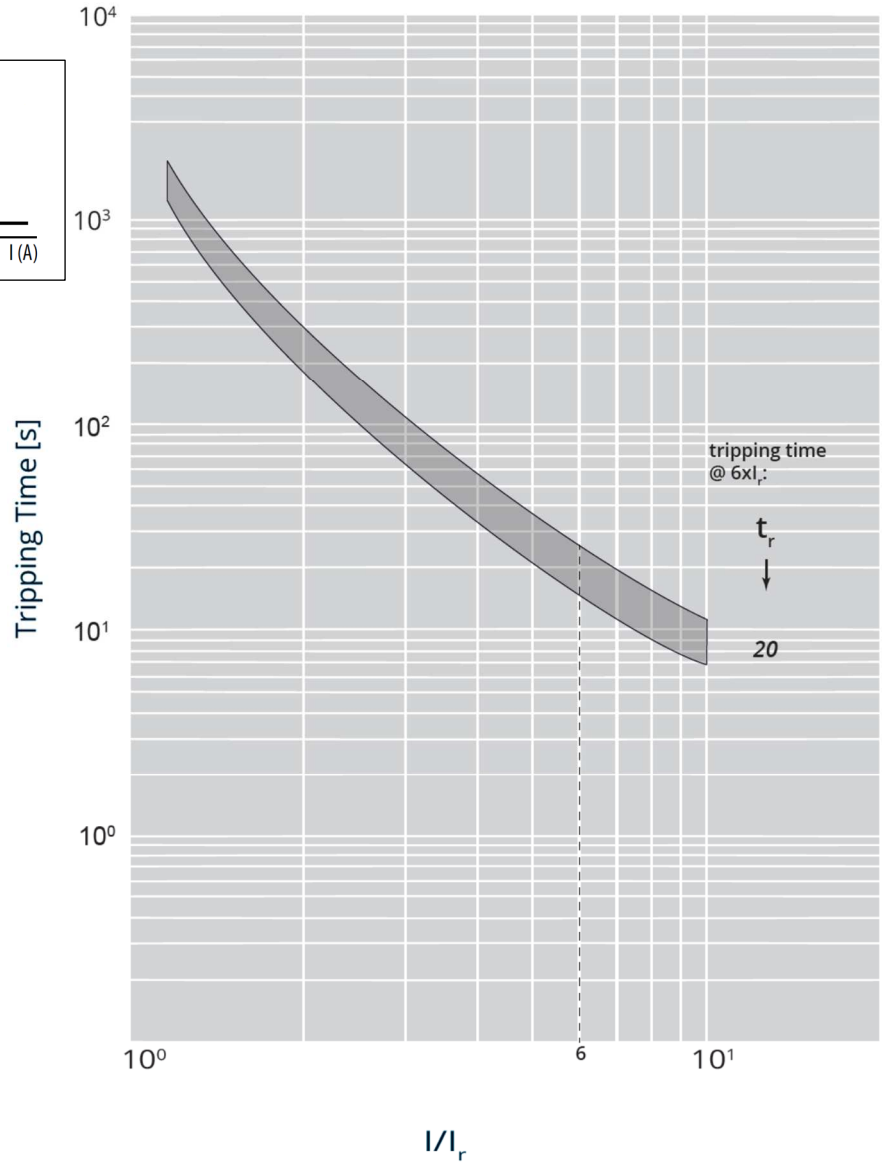
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
----------	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.2.2 Tripping curve (for Lsi/Lsig version), tr = 20 s [2/5]

Update: 02/07/2018



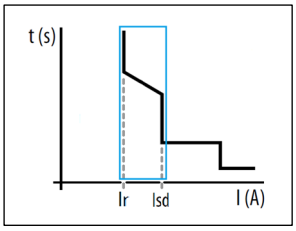


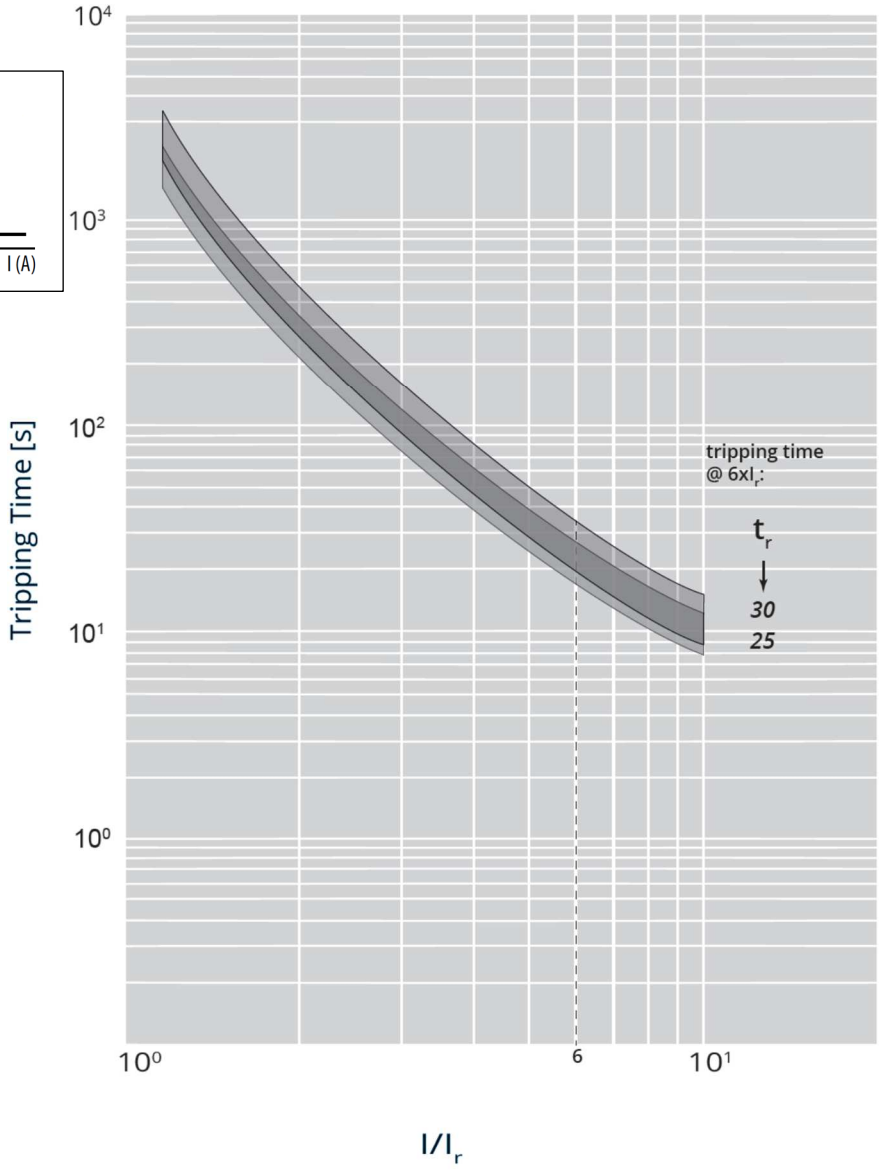
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
----------	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.2.3 Tripping curve (for Lsi/Lsig version), tr = 25÷30 s [3/5]

Update: 02/07/2018



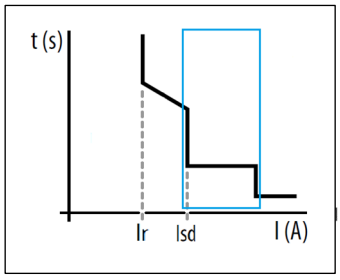


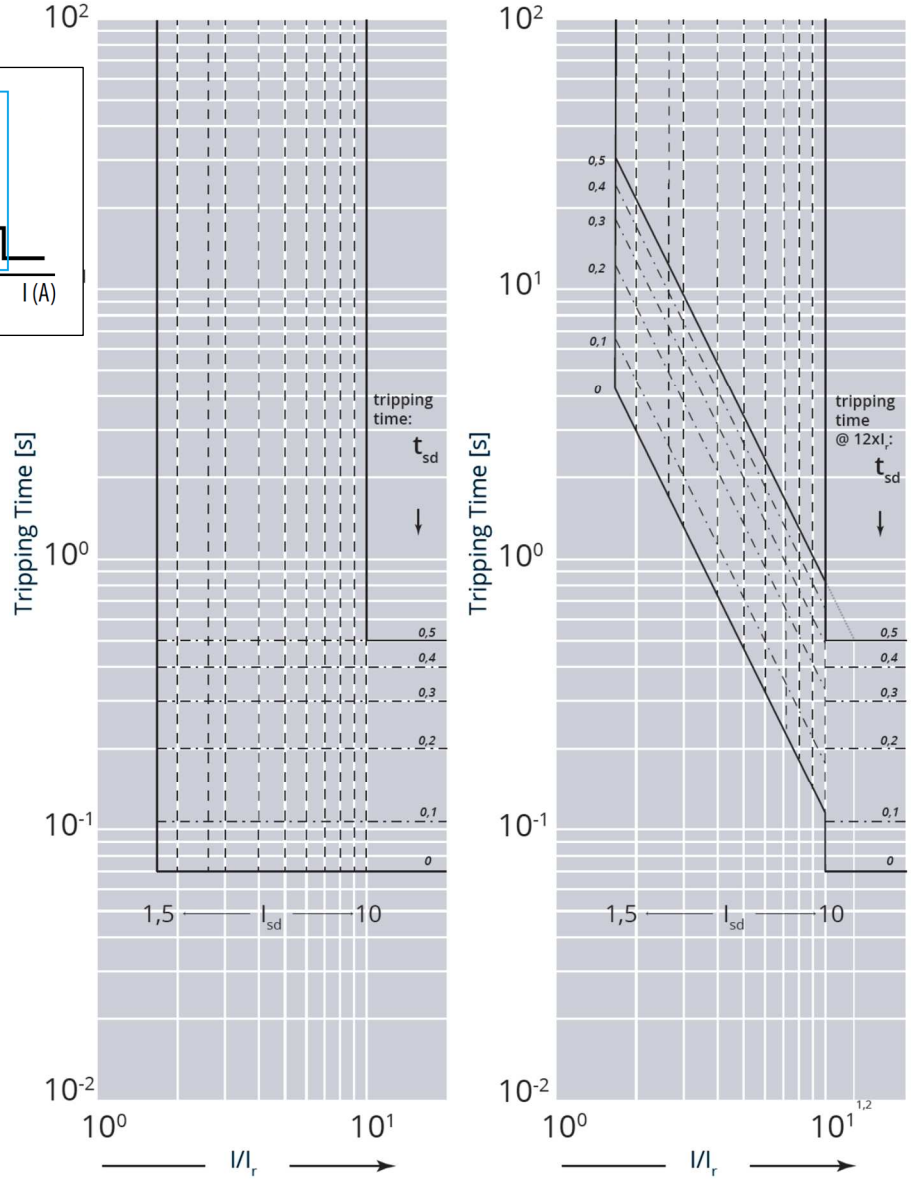
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
----------	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.2.4 Tripping curve (for Lsi/Lsig version) [4/5]

Update: 02/07/2018



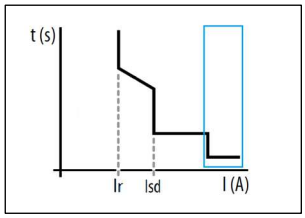


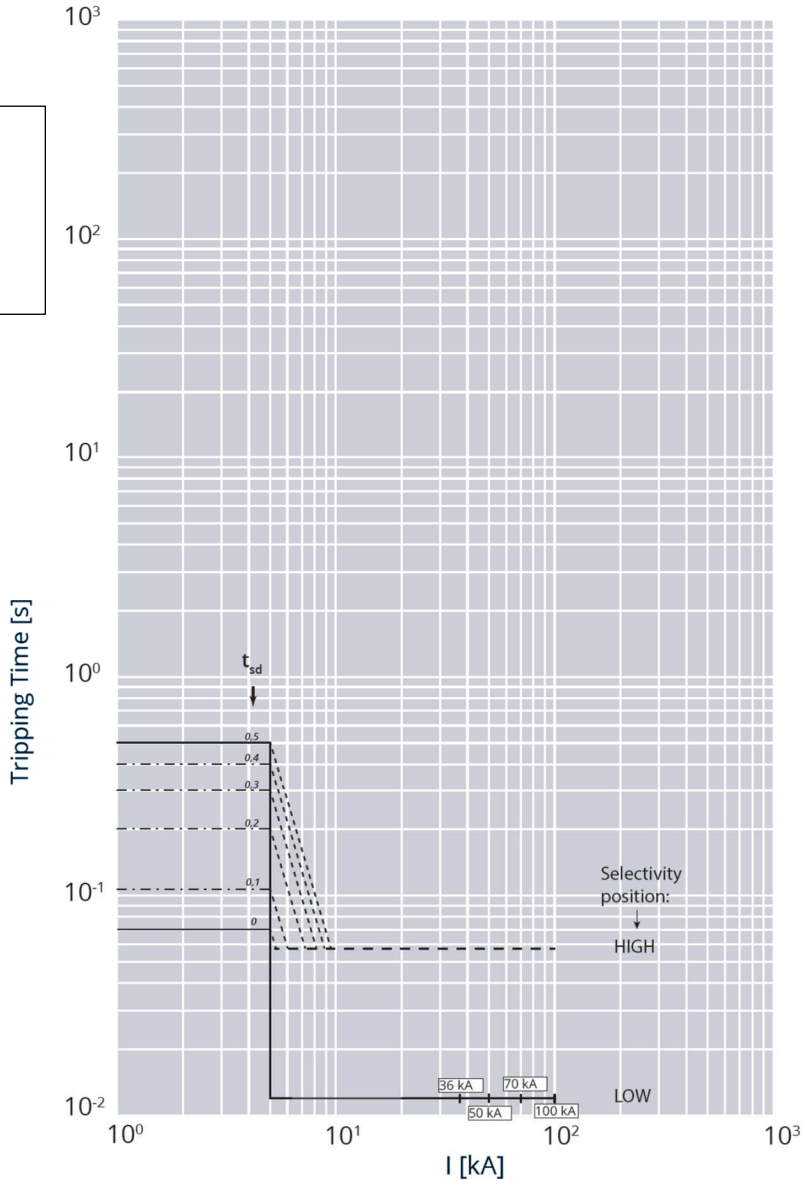
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
————	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.2.5 Tripping curve (for Lsi/Lsig version) [5/5]

Update: 02/07/2018





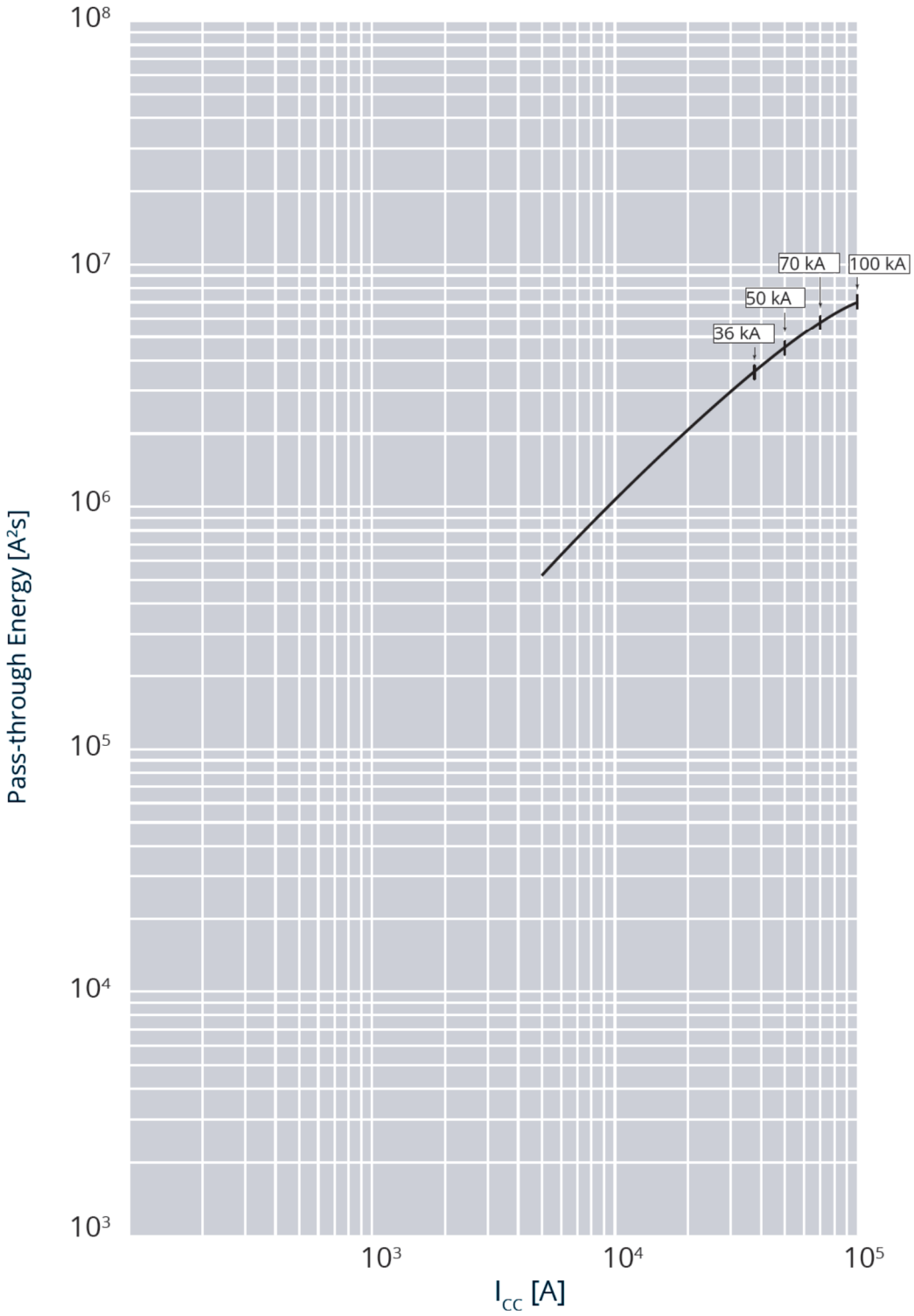
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Fixed Instantaneous override I_{sf} = 5kA

Value	Description
t	time
I	current
I_r	long time setting current
t_r	long time delay
Isd	short time setting current
tsd	short time delay
Ii	instantaneous release
Icu	rated ultimate short-circuit breaking capacity
I^2t = K	constant pass-through energy setting
t = K	constant tripping time setting
————	long time trip curve
----------	short time trip curve
Current tolerance	10% up to I_{sd}; 20% up to I_i

10.3 Pass-through specific energy characteristic curve

Update: 03/07/2018



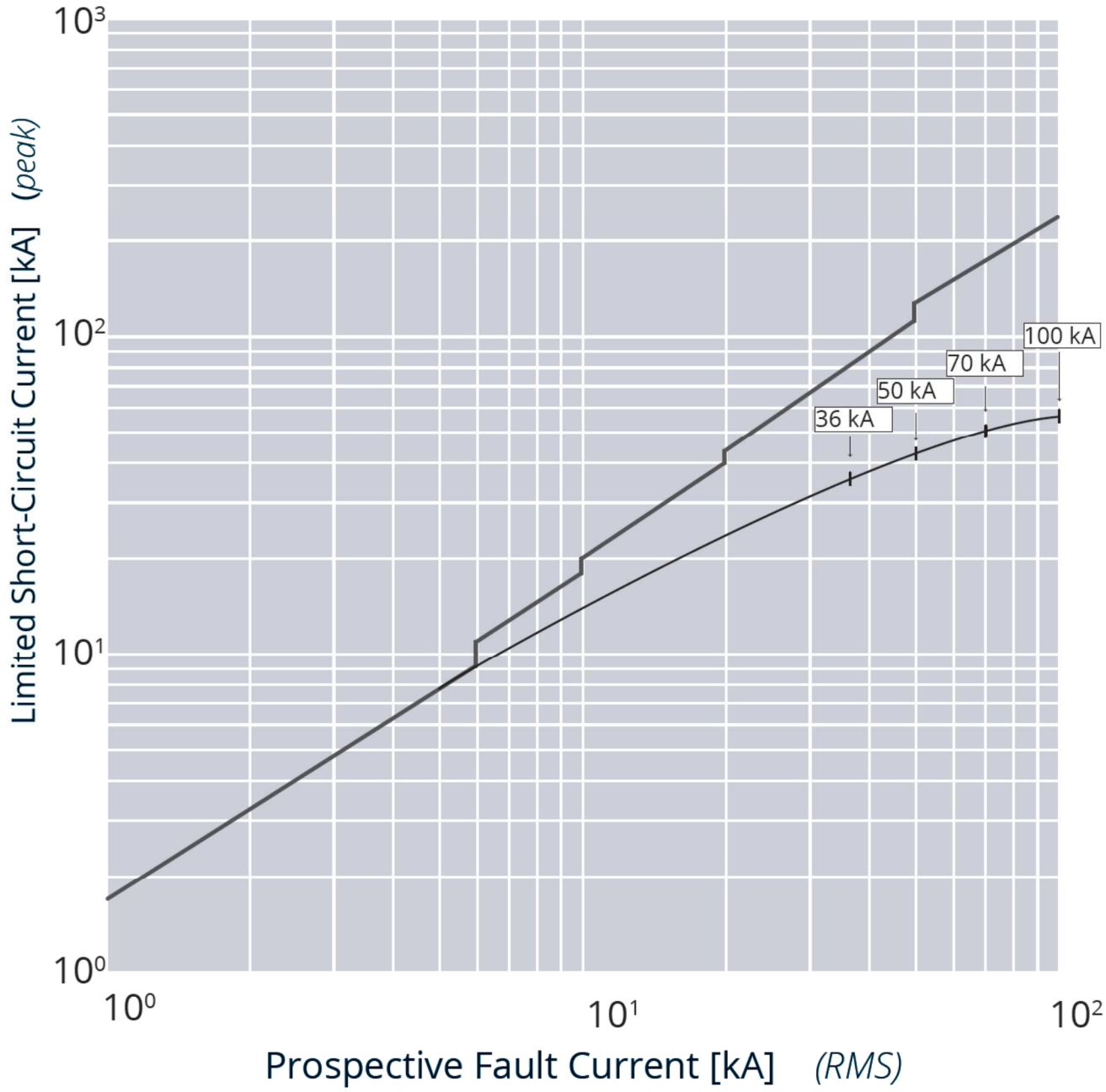
I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
I_{cc}	short circuit current
I^2t (A^2s)	pass-through specific energy

10.

Update: 02/07/2018

4 Cut-off peak current characteristic curve (kA)



I_{cu} = 36-50-70-100 kA I_{max} = 630A 3-4 P U_e = 415Vac *(IEC/EN 60947-2)*

Value	Description
I_{cc}	estimated short circuit symmetrical current (RMS value)
I_p	maximum short circuit peak current
	maximum prospective short circuit peak current corresponding at the power factor
	maximum real peak short circuit current

Reference(s) : **see relative tables**

A) Derating Temperature and configurations

		Ambient temperature									
		30 °C		40 °C		50 °C		60 °C		70 °C	
Fixed version		I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n
DPX³ 630 fixed	Cage terminals, flexible cable	630	1	630	1	630	1	599	0.95	567	0.9
	Lugs, flexible cable	630	1	630	1	630	1	567	0.9	536	0.85
	Lugs, rigid cable	630	1	630	1	630	1	599	0.95	567	0.9
	Spreaders, flexible cable	630	1	630	1	630	1	536	0.85	504	0.8
	Rear flat staggered terminals, flexible cable	630	1	630	1	630	1	567	0.9	536	0.85
DPX³ 630 fixed + RCD	Cage terminals, flexible cable + RCD	630	1	630	1	536	0.85	504	0.9	473	0.75
	Lugs, flexible cable + RCD	599	0.95	599	0.95	536	0.85	504	0.8	473	0.75
	Lugs, rigid cable + RCD	630	1	599	0.95	536	0.85	504	0.8	473	0.75
	Staggered spreaders, flexible cable + RCD	630	1	630	1	536	0.85	504	0.8	473	0.75
	Rear flat staggered terminals, flexible cable + RCD	630	1	630	1	536	0.85	504	0.8	473	0.75
Draw-out version		I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n
DPX³ 630 draw-out	Cage terminals, flexible cable	599	0.95	567	0.9	536	0.85	504	0.8	441	0.7
	Cage terminals, rigid cable	599	0.95	567	0.9	536	0.85	504	0.8	441	0.7
	Rear flat terminals, flexible cable	599	0.95	567	0.9	536	0.85	504	0.8	441	0.7
	Rear flat terminals, rigid cable	599	0.95	567	0.9	536	0.85	504	0.8	441	0.7
	Rear flat terminals, Cu bars, vertical	599	0.95	567	0.9	536	0.85	504	0.8	441	0.7
DPX³ 630 draw-out + RCD	Cage terminals, flexible cable + RCD	504	0.8	441	0.7	410	0.65	378	0.6	347	0.5
	Cage terminals, rigid cable + RCD	504	0.8	441	0.7	410	0.65	378	0.6	347	0.5
	Rear flat terminals, flexible cable + RCD	504	0.8	441	0.7	410	0.65	378	0.6	347	0.5
	Rear flat terminals, rigid cable	504	0.8	441	0.7	410	0.65	378	0.6	347	0.5
	Rear flat terminals, Cu bars, vertical + RCD	504	0.8	441	0.7	410	0.65	378	0.6	347	0.5

For further technical information, please contact Legrand technical support.

Data indicated in this document refers exclusively to test conditions according to product standards, unless otherwise indicated in the documentation.
For the different conditions of use of the product, inside electrical equipment or in any case inserted in the installation context, refer to the regulatory requirements of the equipment, local regulations and design specifications of the system.