High Breaking Capacity Miniature Circuit Breakers

Hti Plus, Technical Manual

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T1. Line Protection

T1.1. Definitions related to MCB's

MCB= Miniature Circuit Breakers

Short-circuit (making and breaking) capacity

Alternating component of the prospective current, expressed by its r.m.s. value, which the circuit breaker is designed to make, to carry for its opening time and to break under specified conditions.

Ultimate or rated short-circuit breaking capacity (Icn - EN 60898-1)

A breaking capacity for which the prescribed conditions, according to a specified test sequence do not include the capability of the MCB to carry 0.96 times its rated current for the conventional time.

Ultimate short-circuit breaking capacity (Icu - EN 60947-2)

A breaking capacity for which the prescribed conditions, according to a specified test sequence do not include the capability of the MCB to carry its rated current for the conventional time.

Service short-circuit breaking capacity (Ics - EN 60898)

A breaking capacity for which the prescribed conditions according to a specified test sequence include the capability of the MCB to carry 0.96 times its rated current for the conventional time.

Service short-circuit breaking capacity (Ics - EN 60947-2)

A breaking capacity for which the prescribed conditions according to a specified test sequence include the capability of the MCB to carry its rated current for the conventional time.

Prospective current

The current that would flow in the circuit, if each main current path of the MCB were replaced by a conductor of negligible impedance.

Open position

The position in which the predetermined clearance between open contacts in the main circuit of the MCB is secured.

Closed position

The position in which the predetermined continuity of the main circuit of the MCB is secured.

Rated insulation voltage Ui

The rated insulation voltage is the voltage to which dielectric checks and creepage distances refer. The maximum rated operational voltage must not exceed its rated insulation voltage.

Rated impulse withstand voltage Uimp

Peak of a withstand voltage of a specified form and polarity with which the circuit can be loaded under specified test conditions without a breakdown and to which clearances relate. The rated impulse withstand voltage must be equal to or greater than the values of the withstand over-voltages (transient overvoltages) which occur in the System in which the device is used.

Backup protection (IEC 60947-1, definition 2.5.24)

Assignment of two overcurrent protective devices in series, where the protective device, generally but not necessarily on the supply side, effects the overcurrent protection with or without the assistance of the other protective device and prevents excessive stress on the latter

Total selectivity (IEC 60947-2, definition 2.17.2)

Overcurrent discrimination where, in the presence of two overcurrent protective devices in series, the protective device on the load side effects the protection without causing the other protective device to operate

Partial selectivity (IEC 60947-2, definition 2.17.3)

Overcurrent discrimination where, in the presence of two overcurrent protective devices in series, the protective device on the load side effects the protection up to a given level of overcurrent, without causing the other protective device to operate

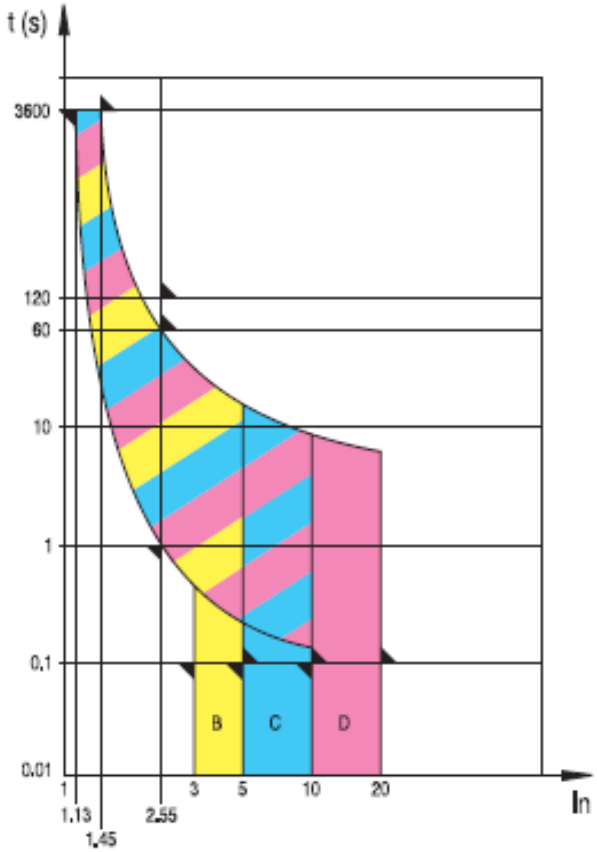
T1.2. Characteristics and tripping characteristics of Hti+50, Hti+36, hti+25 and Hti+16 series

Miniature Circuit Breakers are intended for the protection of wiring installations against both overloads and short-circuits in domestic or commercial wiring installations where operation is possible by uninstructed people.

Tripping characteristic B: Thermal tripping 1.13 ...1.3 x In Electromagnetic tripping 3 ... 5 x In AC Reference temperature 30°C.
As circuit breaker for electric circuits feeding consumers that do not generate any current peaks, or only mild ones (boilers, electric heaters, cooking stoves).

Tripping characteristic C: Thermal tripping 1.13 ...1.3 x In Electromagnetic tripping 5 ...10 x In AC Reference temperature 30°C.
As "standard" MCB for electric circuits feeding consumers that generate current peaks normal within inductive devices (fluorescent tubes, electric discharge lamps) as well as for circuits within sockets in commercially used systems/plants.

Tripping characteristic D: Thermal tripping 1.13 ... 1.3 x In Electromagnetic tripping 10 ... 20 x In AC Reference temperature 30°C.
As main circuit breaker for electric circuits feeding consumers that generate extremely high current peaks (transformers, capacitor banks).
As main circuit breaker connected upstream of other circuit breakers (reference overcurrent circuit breaker).



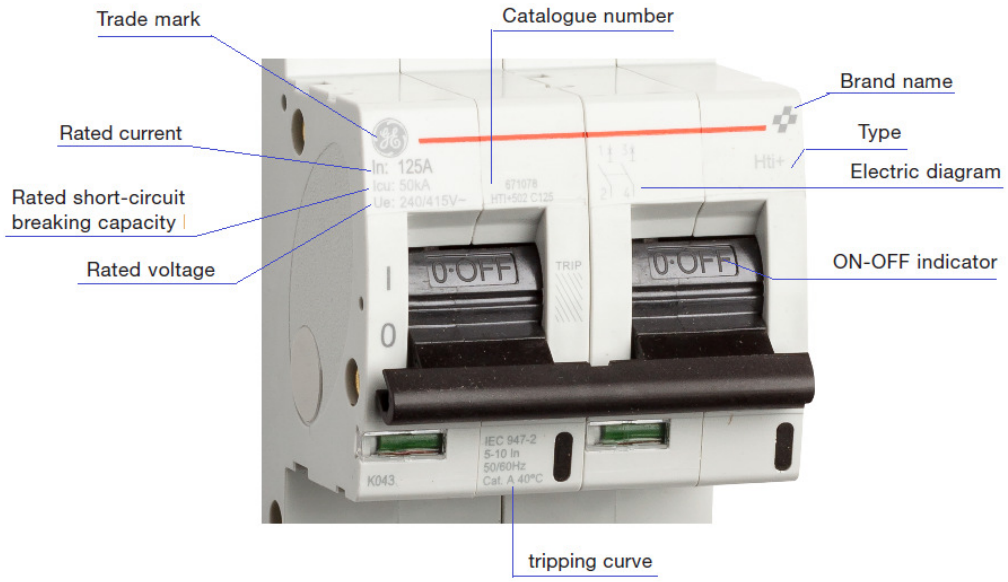
Multiple of the rated current In

Tripping behavior compliant to 60898-1

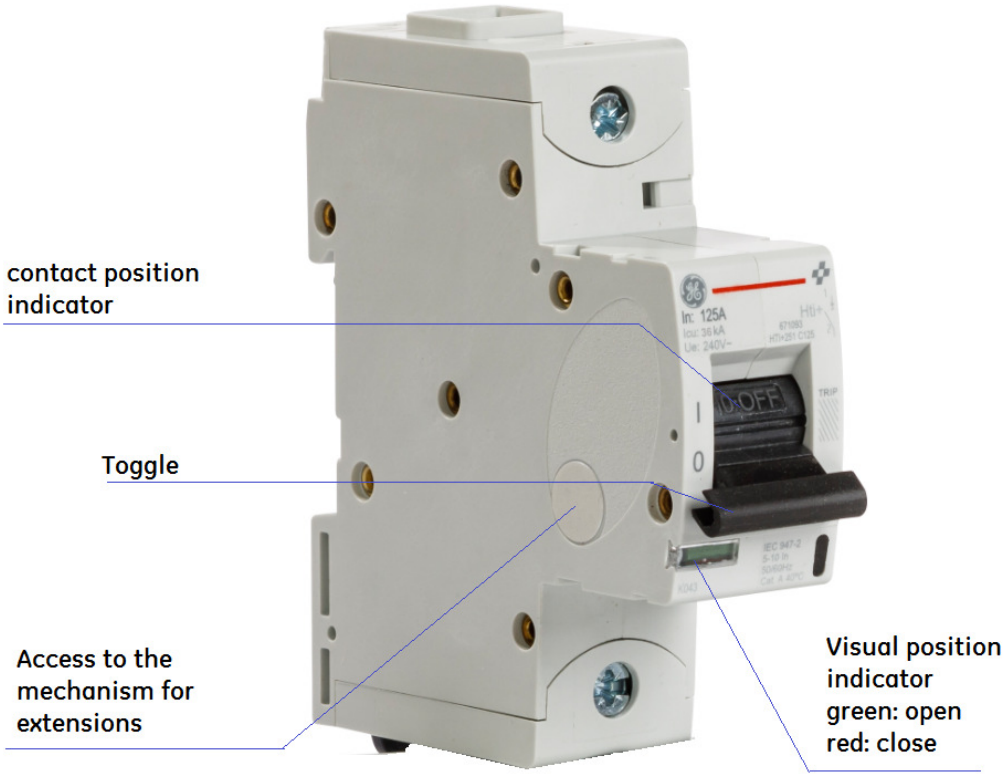
Tripping characteristic and current ratings		Thermal release test current			Magnetic release test current		
		small test current: I1	Large test current: I2	tripping time	No tripping	Tripping	tripping time
B	80-125	1.13 In		>1h	3 In		> 0.1 s
			1.45 In	<1h		5 In	<0.1 s
C	80-125	1.13 In		>1h	5 In		> 0.1 s
			1.45 In	<1h		10 In	<0.1 s
D	80-125	1.13 In		>1h	10 In		> 0.1 s
			1.45 In	<1h		20 In	<0.1 s

T1.3. Information on the product according to EN 60898

Example: 2P MCB C characteristic 125A (Hti+502C125)



Use of MCBs


contact position indicator
Toggle
Access to the mechanism for extensions
Visual position indicator green: open red: close
In: 125A
OFF
I
0

T1.4. Main features

A modular switch concept is responsible for the excellent operating characteristics of GE's Hti+ High Performance MCBs. This is based upon a double arc chamber system per pole. The outstanding properties:

- Large selection of characteristics B, C, D
- up to 125A rated current In
- 50kA rated ultimate short-circuit breaking capacity Icu
- 75% service short-circuit breaking capacity Ics
- 690VAC rated insulation voltage Ui (AC type)
- 250VDC rated insulation voltage Ui per pole (DC type)
- Convincing: Excellent selectivity properties thanks to an I2t value of 100 000 A2s at 125A
- Safe: outstanding back-up protection thanks to a total breaking time of around 2.5ms
- Compact: thanks to a very high density of energy
- Flexible: accessories are fitted by the customer
- Optimum: the new Hti+50 is the perfect supplement to the existing ElfaPlus/RedLine low-voltage range

Play it safe: display the operational state

The mechanical drive of the Hti+ high performance MCB is equipped with a trip-free release. It therefore switches independent of the actuating force or speed on the actuating lever. The trip position display thereby always reliably displays the exact position of the moving contact.
The trip position provides additional trip detection allowing you to easily find the reason for the cut-off. Because the switch lever moves to the middle position in case of thermal or magnetic tripping, the user sees at a glance that this is an error state and can then initiate suitable measures.

Reliable: the disconnector properties
In OFF position (0 position), the Hti+ high performance MCB guarantees safe electrical isolation of the circuit compliant to IEC 60947-2.

Flexible: the installation
The Hti+ high performance MCB can be directly mounted onto any position on the DIN mounting rail without any impairment to its characteristics. Because the pole dimensions are identical for all rated currents, installation in switching systems is simplified.

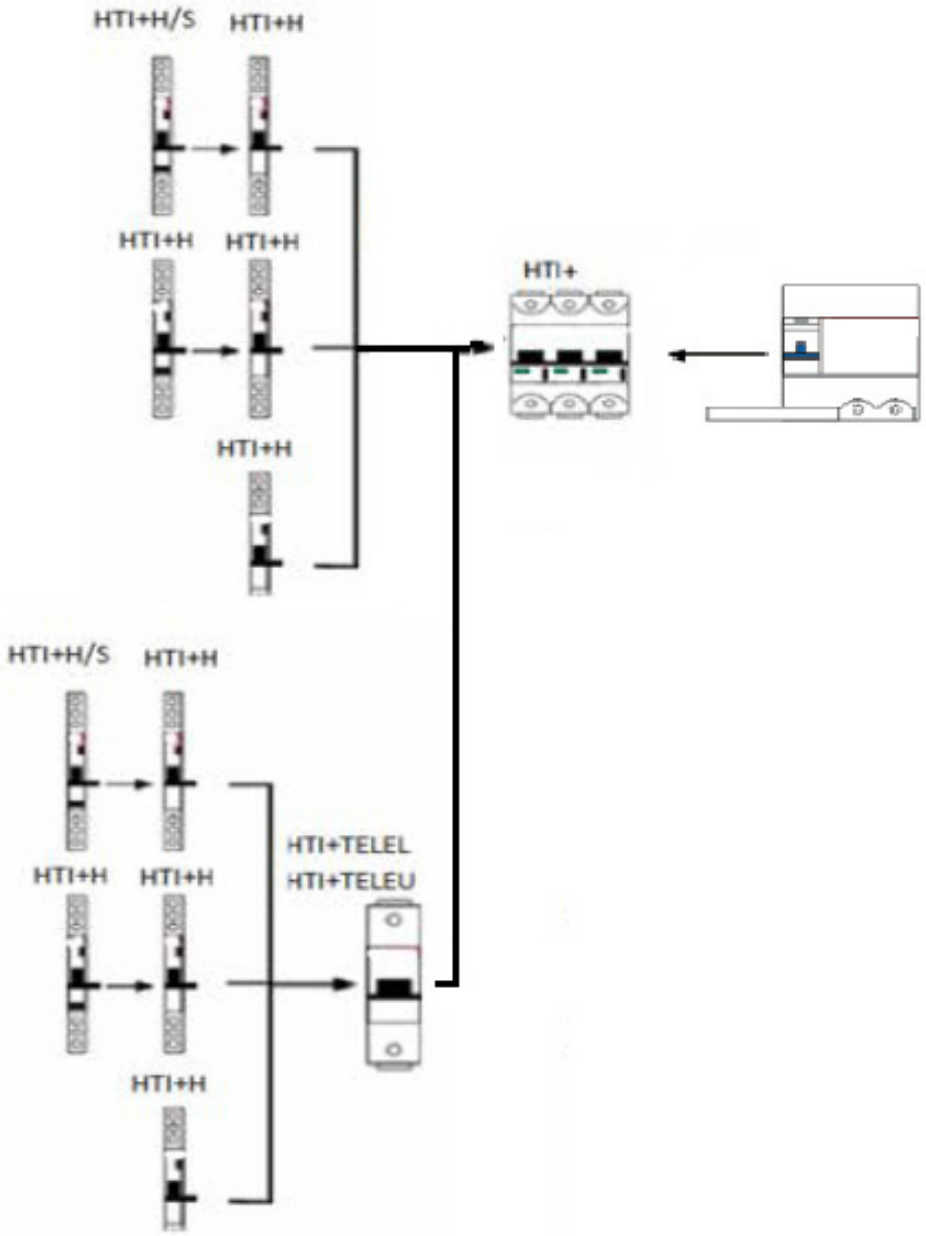
The Hti+ can be installed in different ways:

- Together with other breakers in the same DIN rail horizontally or vertically
- As an individual breaker in a single fixed compartment where the breaker is switched on/off with a rotary handle from the door, and the breaker is mounted on the wall of the panel
- As an individual breaker in a single withdrawable module, when requirements for high availability in the installation are a must

Unique: conformity with standards and quality assurance
Both miniature circuit-breakers of the Hti+ series and the accessories correspond to the international EN/IEC 60898-1 and IEC 60947-2 standards. Certification of conformity with the aforementioned product standards and guidelines is undertaken by a member of the IECEE.

ACCESS TO THE MECHANISM FOR EXTENSIONS

Connection of the extensions. It is possible to couple any auxiliary contact, shunt trip, under voltage release on the left-hand side or add on RCD on the right hand side, following the stack-on below configuration of the extensions

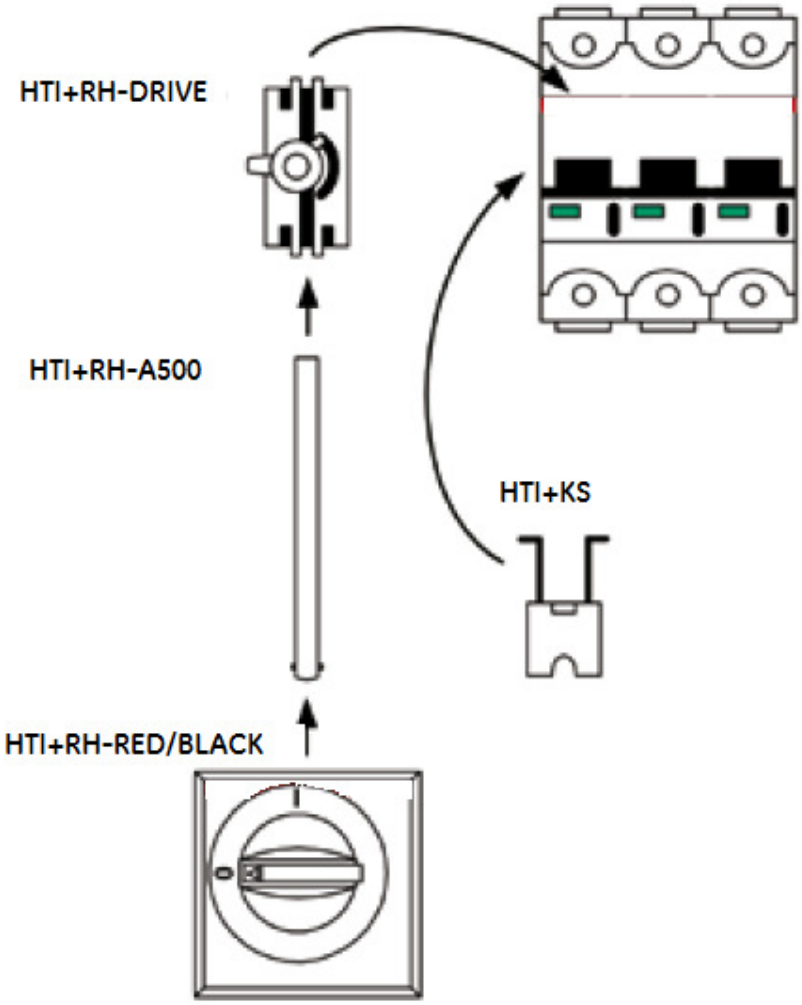


CONNECTION OF ACCESSORIES.

The hti+KS padlock device safely prevents unintentional switching on and off. Additional to this, the rotary drive for 2–4 pole devices can be delivered for assembly on the switching field door.

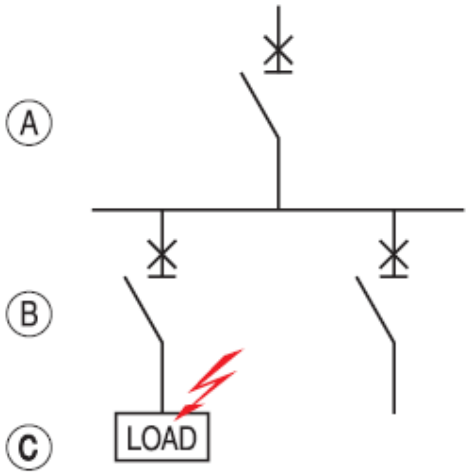
The rotary drive on the switching field door is comprised of the following three components:

- Drive
- Axle (500 mm)
- Rotary door handle (Red or Black)



T1.5 Selectivity

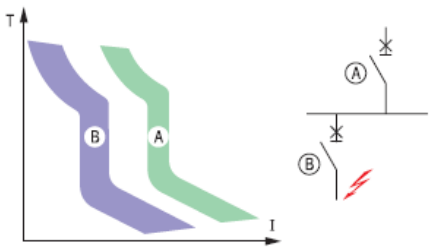
An installation with some protective devices in series (a protective device must be placed at the point where a reduction of the cross-sectional area of the conductors or another change causes modification in the characteristics of the installation) is considered as selective when, in the event of short-circuit, the installation is interrupted only by the device which is immediately upstream of the fault point. Selectivity is ensured when the characteristic time/current of the upstream MCB (A) is above the characteristic time /current of the downstream MCB (B). Selectivity may be total or partial.

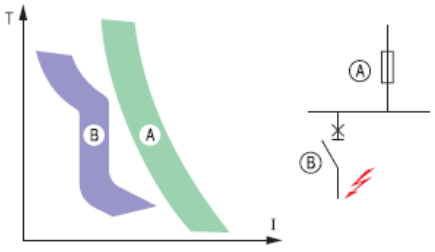


Total selectivity

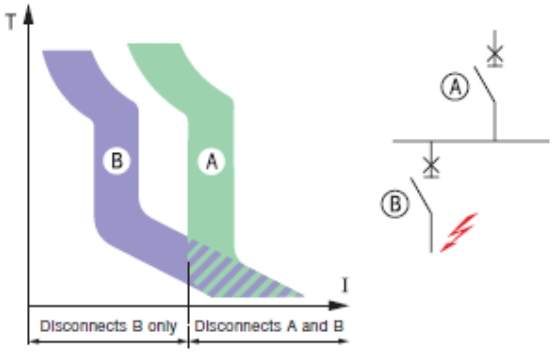
Selectivity is total in the event of a short-circuit fault and only disconnects the protective device B immediately upstream of the fault point.

The let-through energy (I2t) of the downstream protective device shall be lower than the one of the upstream protective device.





Partial selectivity: Selectivity is partial when the disconnection of the protective device (A) is ensured only up to a certain level of the current.



Selectivity tables between ***ElfaPlus-RedLine-Hti-Hti+ C curve*** Upstream/ ***Unibis platform B&C curve*** Downstream

		Upstream ElfaPlus Hti Hti +																							
		Curve C																							
Unibis Platform	In	EP60-EP100-EP250-G60..-G100-Gt25								Hti			Hti+16			Hti+25			Hti+36			Hti+50		
		10A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A
	2A																							
	3A																							
	4A																							
Curve B	6A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	1,2	1,7	3,0	1,2	1,7	3,0	1,2	1,7	3,0	1,2	1,7	3,0
EPCN45	10A			0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6
EPCN60	16A					0,23	0,27	0,35	0,45	4,0	T	T	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5
DP 60 DPC60	20A						0,27	0,35	0,45	4,0	T	T		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
DP100 DPC100(	25A						0,27	0,35	0,45	3,5	1,5	1,5		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
DMCE60NS (2)	32A							0,35	0,45	3,5	1,5	1,5		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
DICE60NS (2)	40A										1,5	1,5		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5

		Upstream ElfaPlus Hti Hti +																							
		Curve C																							
Unibis Platform	In	EP60-EP100-EP250-G60..-G100-Gt25								Hti			Hti+16			Hti+25			Hti+36			Hti+50		
		10A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A
Curve C	2A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	3A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	3,0	9,0	T	3,0	9,0	T	3,0	9,0	T	3,0	9,0	T
EPCN45	4A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	2,0	3,3	7,2	2,0	3,3	7,2	2,0	3,3	7,2	2,0	3,3	7,2
EPCN60	6A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	4,5	T	T	1,0	1,8	3,0	1,0	1,8	3,0	1,0	1,8	3,0	1,0	1,8	3,0
DP60 DPC60	10A			0,15	0,18	0,23	0,27	0,35	0,45	4,5	T	T	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6
DP100 DPC100	16A					0,23	0,27	0,35	0,45	2,0	5,0	5,0	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5
DMCE60NS (2)	20A						0,27	0,35	0,45	2,0	5,0	5,0		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
DICE60NS (2)	25A						0,27	0,35	0,45	1,5	4,5	4,5		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
	32A							0,35	0,45	1,5	2,3	2,3		1,0	1,3		1,0	1,3		1,0	1,3		1,0	1,3
	40A								0,45		2,3	2,3		1,0	1,3		1,0	1,3		1,0	1,3		1,0	1,3

Selectivity tables between ***ElfaPlus-RedLine-Hti-Hti+ C curve*** Upstream/ ***ElfaPlus-RedLine B&C curve*** Downstream

		Upstream ElfaPlus Hti Hti +																							
		Curve C																							
Downstream		EP60-EP100-EP250-G60.-G100-Gt25								Hti			Hti+16			Hti+25			Hti+36			Hti+50		
ElfaPlus	In	10A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A
	0.5A																							
	1A																							
	2A																							
	3A																							
	4A																							
Curve B	6A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	1,2	1,7	3,0	1,2	1,7	3,0	1,2	1,7	3,0	1,2	1,7	3,0
	10A			0,15	0,18	0,23	0,27	0,35	0,45	6,0	T	T	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6
	16A					0,23	0,27	0,35	0,45	4,0	6,0	6,0	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5
EP60-G60	20A						0,27	0,35	0,45	4,0	6,0	6,0		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
EP100-G100	25A						0,27	0,35	0,45	3,5	6,0	6,0		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
EP250-Gt25	32A						0,27	0,35	0,45	3,5	6,0	6,0		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
	40A									1,6	5,0	5,0		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
	50A														1,2			1,2			1,2			1,2
	63A														1,1			1,1			1,1			1,1

		Upstream ElfaPlus Hti Hti +																							
		Curve C																							
		EP60-EP100-EP250-G60.-G100-Gt25								Hti			Hti+16			Hti+25			Hti+36			Hti+50		
Downstream	In	10A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A	80A	100A	125A
Curve C	0.5A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EP30-G30	3A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	9,0	T	T	3,0	9,0	T	3,0	9,0	T	3,0	9,0	T	3,0	9,0	T
EP45-G45	4A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	9,0	6,0	6,0	2,0	3,3	7,2	2,0	3,3	7,2	2,0	3,3	7,2	2,0	3,3	7,2
EP60-G60	6A	0,07	0,10	0,15	0,18	0,23	0,27	0,35	0,45	4,5	6,0	6,0	1,0	1,8	3,0	1,0	1,8	3,0	1,0	1,8	3,0	1,0	1,8	3,0
EP100-G100	10A			0,15	0,18	0,23	0,27	0,35	0,45	4,5	6,0	6,0	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6	0,9	1,2	1,6
EP250-Gt25	16A					0,23	0,27	0,35	0,45	2,0	5,0	5,0	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5	0,9	1,1	1,5
	20A						0,27	0,35	0,45	2,0	5,0	5,0		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
	25A						0,27	0,35	0,45	1,5	4,5	4,5		1,1	1,5		1,1	1,5		1,1	1,5		1,1	1,5
	32A							0,35	0,45	1,5	2,3	2,3		1,0	1,3		1,0	1,3		1,0	1,3		1,0	1,3
	40A								0,45		2,3	2,3		1,0	1,3		1,0	1,3		1,0	1,3		1,0	1,3
	50A														1,2			1,2			1,2			1,2
	63A														1,1			1,1			1,1			1,1

(1) Icc limited to 10 kA for DP100, DPC100
(2) Up to 32A
T = Total : selective untill the Icu of the downstream device

Selectivity tables between ***Mccbs Record Plus*** Upstream/ ***ElfaPlus-RedLine-hti-Hti+-S90 mcbs B&C curve, Surion, Record Plus*** Downstream v01

Upstream		FE160N, H & L LTM					FE160N, H & L LTMD			FE160N, H & L SMR1			FE250V LTM			FE250N, H & L LTMD				FE250N, H & L SMR1		
In (A)		63A	80A	100A	125A	160A	100A	125A	160A	63A	125A	160A	160A	200A	250A	125A	160A	200A	250A	125A	160A	250A
Downstream		Selectivity limit *																				
ElfaPlus/Red Line	<=20A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC30	25A	1.2kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G30, EP30	32A	1.2kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	40A	--	3kA	4kA	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC45	25A	1.2kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G45, EP45	32A	1.2kA	3kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	40A	--	3kA	4kA	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC60 & DME60	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	32A	1.2kA	3kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40A	--	3kA	4kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DM60 & DMT60	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DM100 & DMT100	32A	1.2kA	3kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DP(A)60	40A	--	3kA	4kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	50A	--	--	1.5kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	--	1.5kA	2kA	2kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G60 / GT10/EP60	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DP(A)100, DPC100	32A	1.2kA	3kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DME100	40A	--	3kA	4kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	50A	--	1.2kA	1.5kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	--	1.5kA	2kA	2kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G100	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GT25	32A	1.2kA	3kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	40A	--	3kA	4kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EP100	50A	--	--	1.5kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
EP250	63A	--	--	1.5kA	2kA	2kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
Series Hti	80A	--	--	1.5kA	2kA	2kA	--	T	T	--	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
C curve	100A	--	--	--	--	2kA	--	--	T	--	--	T	1.9kA	2.5kA	3kA	--	T	T	T	--	T	T
	125A	--	--	--	--	--	--	--	--	--	--	--	--	--	3kA	--	T	T	T	--	T	T
Series Hti+	80A	--	--	--	--	--	--	--	2kA	--	--	2kA	--	--	--	--	--	T	T	--	--	T
C curve	100A	--	--	--	--	--	--	--	2kA	--	--	2kA	--	--	--	--	--	T	T	--	--	T
	125A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	T	--	--	T
Series S90	<=40A	--	1.2kA	1.5kA	1.9kA	1.9kA	T	T	T	T	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
	50A	--	--	1.5kA	1.9kA	1.9kA	T	T	T	--	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
	63A	--	--	--	1.9kA	1.9kA	--	T	T	--	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
	80A	--	--	--	--	1.9kA	--	--	T	--	T	T	1.9kA	2.5kA	3kA	--	T	T	T	T	T	T
	100A	--	--	--	--	--	--	--	--	--	--	T	1.9kA	2.5kA	3kA	--	--	T	T	--	T	T
Surion	<=20A	6kA	6kA	10kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1BS &	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1MS	32A	1.2kA	3kA	6kA	10kA	10kA	T	T	T	T	T	T	10kA	T	T	T	T	T	T	T	T	T
GPS2BS &	40A	--	--	4kA	6kA	6kA	T	T	T	T	T	T	6kA	10kA	T	T	T	T	T	T	T	T
GPS2MS	50A	--	--	1.6kA	6kA	6kA	T	T	T	--	T	T	6kA	6kA	10kA	T	T	T	T	T	T	T
	63A	--	--	--	2kA	2kA	--	T	T	--	T	T	2kA	6kA	6kA	T	T	T	T	T	T	T
Surion	<=20A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1BH &	25A	15kA	15kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1MH	32A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2BH &	40A	--	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2MH	50A	--	--	6kA	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	--	--	T	T	--	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
Record Plus™	<=40A	--	0.8kA	1kA	1.2kA	1.6kA	T	T	T	T	T	T	1.6kA	2kA	2.5kA	T	T	T	T	T	T	T
FD160E	50A	--	--	1kA	1.2kA	1.6kA	T	T	T	--	T	T	1.6kA	2kA	2.5kA	T	T	T	T	T	T	T
LTM/MO/GTM	63A	--	--	--	1.2kA	1.6kA	T	T	T	--	T	T	1.6kA	2kA	2.5kA	T	T	T	T	T	T	T
	80A	--	--	--	1.2kA	1.6kA	--	T	T	--	--	T	1.6kA	2kA	2.5kA	--	T	T	T	T	T	T
	100A	--	--	--	--	1.6kA	--	--	T	--	--	T	1.6kA	2kA	2.5kA	--	--	T	T	--	T	T
	125A	--	--	--	--	--	--	--	--	--	--	--	--	2kA	2.5kA	--	--	T	T	--	--	T
	160A	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5kA	--	--	--	T	--	--	T
Record Plus™	<=40A	0.6kA	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	36kA	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
FD160S, N , H & L	50A	--	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
LTMD	63A	--	--	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	80A	--	--	--	1.2kA	1.6kA	--	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	100A	--	--	--	--	1.6kA	--	--	30kA	--	--	36kA	1.6kA	2kA	2.5kA	--	42kA	42kA	42kA	--	50kA	50kA
	125A	--	--	--	--	--	--	--	--	--	--	--	--	2kA	2.5kA	--	--	42kA	42kA	--	--	50kA
	160A	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5kA	--	--	--	42kA	--	--	50kA
Record Plus™	<=40A	0.6kA	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	36kA	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
FE160 N, H & L	50A	--	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
LTM/MO/GTM	63A	--	--	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	80A	--	--	--	1.2kA	1.6kA	--	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	100A	--	--	--	--	1.6kA	--	--	30kA	--	--	36kA	1.6kA	2kA	2.5kA	--	42kA	42kA	42kA	--	50kA	50kA
	125A	--	--	--	--	--	--	--	--	--	--	--	--	2kA	2.5kA	--	--	42kA	42kA	--	--	50kA
	160A	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5kA	--	--	--	42kA	--	--	50kA

* Where T is mentioned Selectivity is full up until the Icu of the downstream device

Selectivity tables between ***Mccbs Record Plus*** Upstream/ ***ElfaPlus-RedLine-hti-Hti+-S90 mcbs B&C curve, Surion, Record Plus*** Downstream v02

Upstream		FE160N, H & L LTM					FE160N, H & L LTMD			FE160N, H & L SMR1			FE250V LTM			FE250N, H & L LTMD				FE250N, H & L SMR1		
In (A)		63A	80A	100A	125A	160A	100A	125A	160A	63A	125A	160A	160A	200A	250A	125A	160A	200A	250A	125A	160A	250A
Downstream		Selectivity limit *																				
ElfaPlus/Red Line	<=20A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC30	25A	1.2kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G30, EP30	32A	1.2kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	40A	--	3kA	4kA	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC45	25A	1.2kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G45, EP45	32A	1.2kA	3kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	40A	--	3kA	4kA	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC60 & DME60	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	32A	1.2kA	3kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	40A	--	3kA	4kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DM60 & DMT60	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DM100 & DMT100	32A	1.2kA	3kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DP(A)60	40A	--	3kA	4kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	50A	--	--	1.5kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	--	1.5kA	2kA	2kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G60 / GT10/EP60	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DP(A)100, DPC100	32A	1.2kA	3kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DME100	40A	--	3kA	4kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	50A	--	1.2kA	1.5kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	--	1.5kA	2kA	2kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
ElfaPlus/Red Line	<=20A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G100	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GT25	32A	1.2kA	3kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	40A	--	3kA	4kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EP100	50A	--	--	1.5kA	6kA	6kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
EP250	63A	--	--	1.5kA	2kA	2kA	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
Series Hti	80A	--	--	1.5kA	2kA	2kA	--	T	T	--	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
C curve	100A	--	--	--	--	2kA	--	--	T	--	--	T	1.9kA	2.5kA	3kA	--	T	T	T	--	T	T
	125A	--	--	--	--	--	--	--	--	--	--	--	--	--	3kA	--	T	T	T	--	T	T
Series Hti+	80A	--	--	--	--	--	--	--	2kA	--	--	2kA	--	--	--	--	--	T	T	--	--	T
C curve	100A	--	--	--	--	--	--	--	2kA	--	--	2kA	--	--	--	--	--	T	T	--	--	T
	125A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	T	--	--	T
Series S90	<=40A	--	1.2kA	1.5kA	1.9kA	1.9kA	T	T	T	T	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
	50A	--	--	1.5kA	1.9kA	1.9kA	T	T	T	--	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
	63A	--	--	--	1.9kA	1.9kA	--	T	T	--	T	T	1.9kA	2.5kA	3kA	T	T	T	T	T	T	T
	80A	--	--	--	--	1.9kA	--	--	T	--	T	T	1.9kA	2.5kA	3kA	--	T	T	T	T	T	T
	100A	--	--	--	--	--	--	--	--	--	--	T	1.9kA	2.5kA	3kA	--	--	T	T	--	T	T
Surion	<=20A	6kA	6kA	10kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1BS &	25A	1.2kA	6kA	6kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1MS	32A	1.2kA	3kA	6kA	10kA	10kA	T	T	T	T	T	T	10kA	T	T	T	T	T	T	T	T	T
GPS2BS &	40A	--	--	4kA	6kA	6kA	T	T	T	T	T	T	6kA	10kA	T	T	T	T	T	T	T	T
GPS2MS	50A	--	--	1.6kA	6kA	6kA	T	T	T	--	T	T	6kA	6kA	10kA	T	T	T	T	T	T	T
	63A	--	--	--	2kA	2kA	--	T	T	--	T	T	2kA	6kA	6kA	T	T	T	T	T	T	T
Surion	<=20A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1BH &	25A	15kA	15kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1MH	32A	6kA	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2BH &	40A	--	6kA	8kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2MH	50A	--	--	6kA	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	--	--	T	T	--	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
Record Plus™	<=40A	--	0.8kA	1kA	1.2kA	1.6kA	T	T	T	T	T	T	1.6kA	2kA	2.5kA	T	T	T	T	T	T	T
FD160E	50A	--	--	1kA	1.2kA	1.6kA	T	T	T	--	T	T	1.6kA	2kA	2.5kA	T	T	T	T	T	T	T
LTM/MO/GTM	63A	--	--	--	1.2kA	1.6kA	T	T	T	--	T	T	1.6kA	2kA	2.5kA	T	T	T	T	T	T	T
	80A	--	--	--	1.2kA	1.6kA	--	T	T	--	--	T	1.6kA	2kA	2.5kA	--	T	T	T	T	T	T
	100A	--	--	--	--	1.6kA	--	--	T	--	--	T	1.6kA	2kA	2.5kA	--	--	T	T	--	T	T
	125A	--	--	--	--	--	--	--	--	--	--	--	--	2kA	2.5kA	--	--	T	T	--	--	T
	160A	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5kA	--	--	--	T	--	--	T
Record Plus™	<=40A	0.6kA	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	36kA	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
FD160S, N , H & L	50A	--	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
LTMD	63A	--	--	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	80A	--	--	--	1.2kA	1.6kA	--	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	100A	--	--	--	--	1.6kA	--	--	30kA	--	--	36kA	1.6kA	2kA	2.5kA	--	42kA	42kA	42kA	--	50kA	50kA
	125A	--	--	--	--	--	--	--	--	--	--	--	--	2kA	2.5kA	--	--	42kA	42kA	--	--	50kA
	160A	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5kA	--	--	--	42kA	--	--	50kA
Record Plus™	<=40A	0.6kA	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	36kA	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
FE160 N, H & L	50A	--	0.8kA	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
LTM/MO/GTM	63A	--	--	1kA	1.2kA	1.6kA	30kA	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	80A	--	--	--	1.2kA	1.6kA	--	30kA	30kA	--	36kA	36kA	1.6kA	2kA	2.5kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA
	100A	--	--	--	--	1.6kA	--	--	30kA	--	--	36kA	1.6kA	2kA	2.5kA	--	42kA	42kA	42kA	--	50kA	50kA
	125A	--	--	--	--	--	--	--	--	--	--	--	--	2kA	2.5kA	--	--	42kA	42kA	--	--	50kA
	160A	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5kA	--	--	--	42kA	--	--	50kA

* Where T is mentioned Selectivity is full up until the Icu of the downstream device

Selectivity tables between ***Mccbs Record Plus*** Upstream/ ***ElfaPlus-RedLine-hti-Hti+-S90 mcbs B&C curve, Surion, Record Plus*** Downstream v03

Upstream / In (A) / Downstream		FE160N, H & L SMR1			FE250N, H & L LTMD				FE250N, H & L SMR1			FG400N, H & L SMR1 & 2			FG630N, H & L SMR1 & 2		
		63A	125A	160A	125A	160A	200A	250A	125A	160A	250A	250A	350A	400A	400A	500A	630A
		Selectivity limit *															
ElfaPlus/Red Line	< =16A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EPC30, 45 , 60	20A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
G/EP 30, 45, 60 & 100	25A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GT/EP 25	32A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DME60, DM/DP 60 & DMT60	40A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
DM/DP100, DMT100 & DME100	50A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
B/C curve	63A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Series Hti	80A	--	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
C curve	100A	--	--	T	--	T	T	T	--	T	T	T	T	T	T	T	T
	125A	--	--	--	--	--	T	T	--	T	T	T	T	T	T	T	T
Series Hti+	80A	--	--	--	--	--	T	T	--	--	T	T	T	T	T	T	T
C curve	100A	--	--	--	--	--	T	T	--	--	T	T	T	T	T	T	T
	125A	--	--	--	--	--	T	T	--	--	T	T	T	T	T	T	T
Series S90	<=40A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	50A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	63A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	80A	--	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	100A	--	--	T	--	--	T	T	--	T	T	--	T	T	--	T	T
Surion	<= 25A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1BS &	32A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1MS	40A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2BS &	50A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2MS	63A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Surion	<= 25A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1BH &	32A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS1MH	40A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2BH &	50A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
GPS2MH	63A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Record Plus™	<=40A	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
FD160E	50A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
LTM	63A	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	80A	--	--	T	--	T	T	T	T	T	T	T	T	T	T	T	T
	100A	--	--	T	--	--	T	T	--	T	T	T	T	T	T	T	T
	125A	--	--	--	--	--	T	T	--	--	T	T	T	T	T	T	T
	160A	--	--	--	--	--	--	T	--	--	T	T	T	T	T	T	T
Record Plus™	<=40A	36kA	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
FD160S, N, H & L	50A	--	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
LTMD/MO/GTM	63A	--	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
	80A	--	--	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
	100A	--	--	36kA	--	42kA	42kA	42kA	--	50kA	50kA	T	T	T	T	T	T
	125A	--	--	--	--	--	42kA	42kA	--	--	50kA	T	T	T	T	T	T
	160A	--	--	--	--	--	--	42kA	--	--	50kA	T	T	T	T	T	T
Record Plus™	<=40A	36kA	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
FE160 N, H & L	50A	--	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
LTM/MO/GTM	63A	--	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
	80A	--	36kA	36kA	42kA	42kA	42kA	42kA	50kA	50kA	50kA	T	T	T	T	T	T
	100A	--	--	36kA	--	42kA	42kA	42kA	--	50kA	50kA	T	T	T	T	T	T
	125A	--	--	--	--	--	42kA	42kA	--	--	50kA	T	T	T	T	T	T
	160A	--	--	--	--	--	--	42kA	--	--	50kA	T	T	T	T	T	T
Record Plus™	<=40A	0.8kA	1.8kA	2.2kA	1.3kA	1.6kA	2.5kA	2.5kA	1.8kA	2.2kA	3.5kA	T	T	T	T	T	T
FE160 N, H & L	63A	--	1.8kA	2.2kA	1.3kA	1.6kA	2.5kA	2.5kA	1.8kA	2.2kA	3.5kA	T	T	T	T	T	T
LTMD/SMR1	80A	--	1.8kA	2.2kA	1.3kA	1.6kA	2.5kA	2.5kA	1.8kA	2.2kA	3.5kA	T	T	T	T	T	T
	100A	--	--	2.2kA	--	1.6kA	2.5kA	2.5kA	--	2.2kA	3.5kA	T	T	T	T	T	T
	125A	--	--	--	--	--	2.5kA	2.5kA	--	--	3.5kA	T	T	T	T	T	T
	160A	--	--	--	--	--	--	2.5kA	--	--	3.5kA	T	T	T	T	T	T
Record Plus™	125A	--	--	--	--	--	--	--	--	--	--	3.5kA	10kA	15kA	T	T	T
FE250 N, H & L	160A	--	--	--	--	--	--	--	--	--	--	3.5kA	10kA	15kA	T	T	T
LTMD/SMR1	200A	--	--	--	--	--	--	--	--	--	--	--	10kA	15kA	T	T	T
	250A	--	--	--	--	--	--	--	--	--	--	--	10kA	15kA	T	T	T
Record Plus™																	
FG400 N, H & L	250A	--	--	--	--	--	--	--	--	--	--	--	5kA	6kA	5kA	7kA	7kA
SMR1 & SMR2	350 - 400A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7kA

* Where T is mentioned Selectivity is full up untilthe Icu of the downstream device

Selectivity tables between ***Mccbs Record Plus*** Upstream/ ***ElfaPlus-RedLine-hti-Hti+-S90 mcbs B&C curve, Surion, Record Plus*** Downstream v04

Upstream	**In (A)**	**FK800N, H & L SMR1**	**FK1250N, H & L SMR1**		**FK1600N & H SMR1**	
Downstream		**800A**	**1000A**	**1250A**	**1600A**	
		Selectivity limit *				
ElfaPlus/Red Line						
EPC30, 45, 60 & 101N - G30, 45, 60 & 100 - GT 10 & 25 - DME60, DM60, DMT60, DM100, DMT100 & DME100 B/C curve	**ALL**	T	T	T	T	T
ElfaPlus/Red Line						
Series HTI with Curve & Series S90	**ALL**	T	T	T	T	T
Serie Hti+	**ALL**	T	T	T	T	T
Surion						
GPS1BS, GPS1MS, GPS2BS, GPS2MS GPS1BH, GPS1MH, GPS2BH & GPS2MH	**ALL**	T	T	T	T	T
Record Plus™						
FD160E, S N & L types LTM/LTMD/MO/GTM Trip Units	**ALL**	T	T	T	T	T
Record Plus™						
FE160 N, H & L types LTM/LTMD/MO/GTM/SMR1 Trip Units	**ALL**	T	T	T	T	T
Record Plus™						
FE250 V, N, H & L types LTM/LTMD/MO/GTM/SMR1 Trip Units	**ALL**	T	T	T	T	T
Record Plus™						
FG400 N, H & L types SMR1/SMR2 Trip Units	**ALL**	T	T	T	T	T
Record Plus™						
FG630 N, H & L types SMR1/SMR2 Trip Units	400A	T	T	T	T	T
	500A	15kA	T	T	T	T
	630A	15kA	T	T	T	T
Record Plus™						
FK800 N, H & L types LTM/MO/SMR1e, s & g Trip Units	800A	--	--	25kA	T	T
Record Plus™						
FK1250 N, H & L types	1000A	--	--	--	T	T
LTM/MO/SMR1e, s & g Trip Units	1250A	--	--	--	25kA	25kA

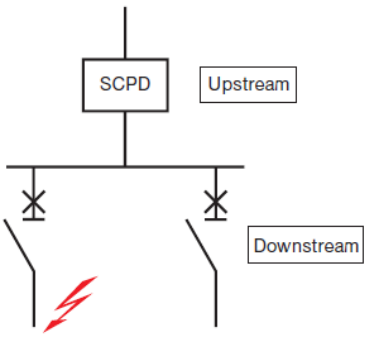
* Where T is mentioned Selectivity is full up untilthe Icu of the downstream device

T1.6. Association (Back-up protection)

Association consists the use of an MCB with lower breaking capacity than the presumed one at the place of its installation. If another protective device installed upstream is co-ordinated so that the energy let-through by these two devices does not exceed that which can be withstood without damage by the device placed downstream and the conductor protected by these devices.

In the event of short-circuit, both protective devices will disconnect, therefore the selectivity between them is considered as partial.

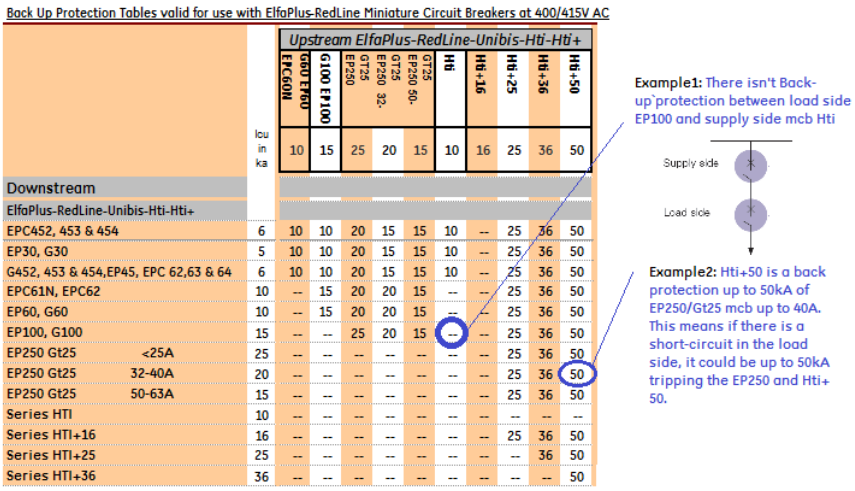
Association reduces the cost of the installation in case of high short-circuit currents. To obtain association between a breaker and a protective device, several conditions linked to the components characteristic must be fullfilled. Those have been defined by calculation and testing.



The following tables provide the value (in kA, referring to the breaking capacity) for which the back-up protection among the combination of selected circuit breakers is verified. The tables cover the possible combinations between Mcbs and Mccbs of Industrial Solutions breakers.

Consulting the back-up table

These tables provide the value (in kA) for which the back-up protection is ensured between a given combination of circuit breakers. The tables cover possible combinations between the Record Plus, ElfaPlus, Redline, Unibis, Hti, Hti+ and S90 mcbs.



Back Up Protection Tables valid for use with ElfaPlus-RedLine Miniature Circuit Breakers at 400/415V AC

		Upstream ElfaPlus-RedLine-Unibis-Hti-Hti+									
		G60 EP60 EPC60N	G100 EP100	EP250 GT25	EP250 32- GT25	EP250 50- GT25	Hti	Hti+16	Hti+25	Hti+36	Hti+50
	Icu in ka	10	15	25	20	15	10	16	25	36	50
Downstream											
ElfaPlus-RedLine-Unibis-Hti-Hti+											
EPC452, 453 & 454	6	10	10	20	15	15	10	--	25	36	50
EP30, G30	5	10	10	20	15	15	10	--	25	36	50
G452, 453 & 454,EP45, EPC 62,63 & 64	6	10	10	20	15	15	10	--	25	36	50
EPC61N, EPC62	10	--	15	20	20	15	--	--	25	36	50
EP60, G60	10	--	15	20	20	15	--	--	25	36	50
EP100, G100	15	--	--	25	20	15	--	--	25	36	50
EP250 Gt25 <25A	25	--	--	--	--	--	--	--	25	36	50
EP250 Gt25 32-40A	20	--	--	--	--	--	--	--	25	36	50
EP250 Gt25 50-63A	15	--	--	--	--	--	--	--	25	36	50
Series HTI	10	--	--	--	--	--	--	--	--	--	--
Series HTI+16	16	--	--	--	--	--	--	--	25	36	50
Series HTI+25	25	--	--	--	--	--	--	--	--	36	50
Series HTI+36	36	--	--	--	--	--	--	--	--	--	50

BACK-UP tables between ElfaPlus-RedLine-Unibis-Hti-**Hti+** Upstream/Downstream

Back Up Protection Tables valid for use with ElfaPlus-RedLine Miniature Circuit Breakers at 400/415V AC

		Upstream ElfaPlus-RedLine-Unibis-Hti-Hti+									
		G60 EP60 EPC60N	G100 EP100	EP250 GT25	EP250 32- GT25	EP250 50- GT25	Hti	Hti+16	Hti+25	Hti+36	Hti+50
	Icu in ka	10	15	25	20	15	10	16	25	36	50
Downstream											
ElfaPlus-RedLine-Unibis-Hti-Hti+											
EPC452, 453 & 454	6	10	10	20	15	15	10	--	25	36	50
EP30, G30	5	10	10	20	15	15	10	--	25	36	50
G452, 453 & 454,EP45, EPC 62,63 & 64	6	10	10	20	15	15	10	--	25	36	50
EPC61N, EPC62	10	--	15	20	20	15	--	--	25	36	50
EP60, G60	10	--	15	20	20	15	--	--	25	36	50
EP100, G100	15	--	--	25	20	15	--	--	25	36	50
EP250 Gt25 <25A	25	--	--	--	--	--	--	--	25	36	50
EP250 Gt25 32-40A	20	--	--	--	--	--	--	--	25	36	50
EP250 Gt25 50-63A	15	--	--	--	--	--	--	--	25	36	50
Series HTI	10	--	--	--	--	--	--	--	--	--	--
Series HTI+16	16	--	--	--	--	--	--	--	25	36	50
Series HTI+25	25	--	--	--	--	--	--	--	--	36	50
Series HTI+36	36	--	--	--	--	--	--	--	--	--	50

BACK-UP tables between Record Plus Upstream and ElfaPlus-RedLine-Unibis-Hti-**Hti**+-S90-RecordPlus Downstream

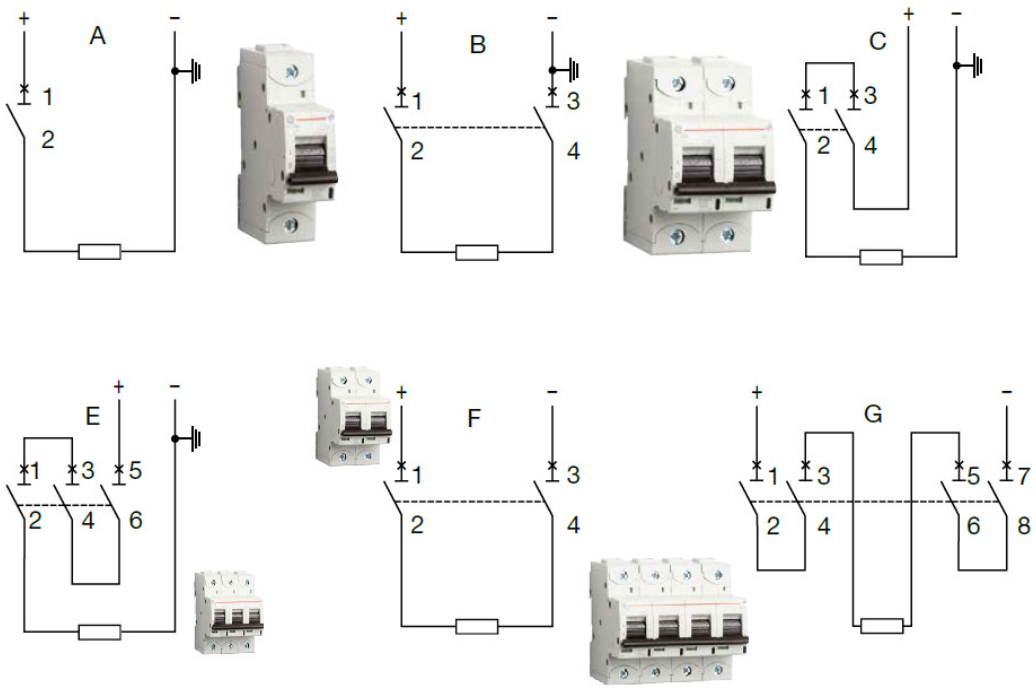
Back Up Protection Tables valid for use with Record Plus Moulded Case Circuit Breakers at 400/415V AC

		Upstream Record Plus™ type																											
		FD160C	FD160E	FD160S	FD160N	FD160H	FD160L	FE160N	FE160H	FE160L	FE250V	FE250N	FE250H	FE250L	FG400N	FG400H	FG400L	FG630N	FG630H	FG630L	FK800N	FK800H	FK800L	FK1250N	FK1250H	FK1250L	FK1600N	FK1600H
	Icu in	18	25	36	50	80	150	50	80	150	36	50	80	150	50	80	150	50	80	150	50	80	150	50	80	150	50	80
Downstream																												
ElfaPlus/Red line/Unibis/Hti/Hti+																												
EPC30	3	15	18	22	25	30	36	25	30	36	18	22	25	30	12	12	12	10	10	10	--	--	--	--	--	--	--	--
EPC452, 453 & 454	6	15	18	22	25	30	36	25	30	36	18	22	25	30	12	12	12	10	10	10	--	--	--	--	--	--	--	--
EPC 62,63 & 64	6	16	20	23	25	34	40	28	34	40	20	25	30	32	15	15	15	10	10	10	--	--	--	--	--	--	--	--
G32, 33 & 34	3	15	18	22	25	30	36	25	30	36	18	22	25	30	12	12	12	10	10	10	--	--	--	--	--	--	--	--
G452, 453 & 454, EP30, EP45	5-6	15	18	22	25	30	36	25	30	36	18	22	25	30	12	12	12	10	10	10	--	--	--	--	--	--	--	--
G60 / GT10, EPC61N, EPC62, EP60	10	18	25	30	36	42	50	36	42	50	25	30	36	36	22	22	22	16	16	16	--	--	--	--	--	--	--	--
G100, EP100	15	18	25	30	36	42	50	36	42	50	25	30	36	36	22	22	22	16	16	16								
EP250, GT25 <=25A	25	--	--	30	36	42	50	36	42	50	--	36	42	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EP250, GT25 32 & 40A	20	--	--	30	36	42	50	36	42	50	--	36	42	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EP250, GT25 50 & 63A	15	18	25	30	36	42	50	36	42	50	25	30	36	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Series HTI	10	15	18	25	30	36	42	30	36	42	18	30	36	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Series HTI+16	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Series HTI+25	25	--	--	36	40	40	40	40	40	40	36	40	40	40	40	40	40	40	40	40	--	--	--	--	--	--	--	--
Series HTI+36	36	--	--	--	50	50	100	50	50	100	--	50	80	100	50	80	100	50	80	100	--	--	--	--	--	--	--	--
Series HTI+50	50	--	--	--	--	80	150	--	80	150	--	-	80	150	--	80	150	--	80	150	--	--	--	--	--	--	--	--
Series S90	15	18	25	30	36	42	50	36	42	50	25	36	42	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Record Plus																												
FD160C	18	--	22	25	30	36	42	30	36	42	22	30	36	42	30	36	42	30	36	42	--	--	--	--	--	--	--	--
FD160E	25	--	--	30	36	42	50	36	42	50	--	36	42	50	36	42	50	36	42	50	--	--	--	--	--	--	--	--
FD160S	36	--	--	--	42	50	65	42	50	65	--	42	50	65	42	50	65	42	50	65	--	--	--	--	--	--	--	--
FD160N	50	--	--	--	--	80	150	--	80	150	--	--	80	150	--	80	150	--	80	150	--	80	100	--	80	100	--	80
FD160H	80	--	--	--	--	--	150	--	--	150	--	--	--	150	--	--	150	--	--	150	--	--	100	--	--	100	--	--
FE160N	50	--	--	--	--	--	--	--	80	150	--	--	80	150	--	80	150	--	80	150	--	80	100	--	80	100	--	80
FE160H	80	--	--	--	--	--	--	--	--	150	--	--	--	150	--	--	150	--	--	150	--	--	100	--	--	100	--	--
FE250N	50	--	--	--	--	--	--	--	--	--	--	--	80	150	--	80	150	--	80	150	--	80	100	--	80	100	--	80
FE250H	80	--	--	--	--	--	--	--	--	--	--	--	--	150	--	--	150	--	--	150	--	--	100	--	--	100	--	--
FG400N	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	150	--	80	150	--	80	100	--	80	100	--	80
FG400H	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	150	--	--	150	--	--	100	--	--	100	--	--
FG630N	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	150	--	80	100	--	80	100	--	80
FG630H	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	150	--	--	100	--	--	100	--	--
FK800N	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	100	--	80	100	--	80
FK800H	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	--	100	--	--
FK1250N	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	100	--	80	100	--	80
FK1250H	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	--	100	--	--

T1.7. Use in DC

MCB's designed to be used in alternating current can be also used in installations in direct current.

Part of the Hti+ range is an interesting choice for DC applications up to 125 V DC per pole. Hti+50, Hti+36 and Hti+25: can work up to 125 V DC on each pole



Graphic	Short-circuit between ouput terminals	Contact to ground between output terminals and negative
A	125 V DC	125 V DC
B	250 V DC	125 V DC
C	250 V DC	250 V DC
D	125 V DC	125 V DC
E	375 V DC	375 V DC
F	250 V DC	125 V DC (double failure)
G	500 V DC	125 V DC (double failure)

Short-Circuit capacities in DC

Hti+ 25

According to EN/IEC 60947-2 - DC		
Poles	**Vdc**	**Icu (kA)**
1P	125	10
2P	250	10
3P	375	10
4P	500	10

Ics = 10kA

Hti+ 36

According to EN/IEC 60947-2 - DC		
Poles	**Vdc**	**Icu (kA)**
1P	125	20
2P	250	20
3P	375	20
4P	500	20

Ics = 20kA

Hti+ 50

According to EN/IEC 60947-2 - DC		
Poles	**Vdc**	**Icu (kA)**
1P	125	30
3P	250	30
3P	375	30
4P	500	30

Ics = 30kA

T1.8. Power losses

Typical internal resistances and power losses at 25 °C ambient temperature (per pole)

Hti+25, Hti+36 and Hti+50

Rated Current In (A)	Internal resistnace Ri (mOhm)	Power Loss Pv (W)
80	1	6.4
100	0.8	8
125	0.6	9.4

Hti+16

Rated Current In (A)	Internal resistnace Ri (mOhm)	Power Loss Pv (W)
80	1	6.4
100	0.8	8
125	0.7	10.9

T1.9. Influence of ambient air temperature on the rated current

Derating of load capability of Hti+. The table refers to the product standard IEC 60947-2. These values are only valid if the mounting conditions are similar to the IEC 60947-2. The rated value of the current of the Hti+ refers to a calibration temperature of 30 °C for characteristics B, C and D.

Max. operating current depending on the ambient temperature of S800 with characteristic B, C, D.

B,C,D Characteristics	Ambient Temperature (°C)																				
In (A)	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
80	96.1	94.7	93.2	91.7	90.3	88.8	87.3	85.9	84.4	82.9	81.5	80	78.5	77.1	75.6	74.1	72.7	71.2	69.7	68.3	66.8
100	120.2	118.4	116.5	114.7	112.8	111	109.2	107.3	105.5	103.7	101.8	100	98.2	96.3	94.5	92.7	90.8	89	87.2	85.3	83.5
125	150.2	147.9	145.6	143.4	141.1	138.8	136.5	134.2	131.9	129.6	127.3	125	122.7	120.4	118.1	115.8	113.5	111.2	108.9	106.7	104.4

T1.10. Influence of elevation above sea level

Up to 2000 meters above sea level, the rated characteristics of the Hti+ high performance MCB remain unchanged. With increasing height, the properties of the atmosphere change regarding composition, dielectricity, the cooling capacity and the pressure. Thus for altitudes over 2000m below values are valid.

Elevation	m	2000	3000	4000	5000
Rated impulse withstand voltage Uimp	kV	8	6	6	6
Rated operational voltage Ue	V	690	600	540	470
Max. rated current In	A	1xIn	0.96xIn	0.93xIn	0.9xIn

T1.11. Fire protection according to NF F 16-101 and 102 (EN45545-2)

The Hti+25, Hti+36 and Hti+50 high performance MCBs provides standard compliance to the requirements of Standard prEN45545-2 (Railway applications–Fire Protection on railway vehicles-Part 2: Requirements for fire behavior of materials and components).
This standard is based on the French standard NF F 16-101/ NF F 16-102 and makes new requirements of the fire Behavior of the materials used. The main focus of attention with relation to fire protection is on the following:
–Flame spread
–Rate of heat release
–Smoke development
–Toxicity
The Hti+25, Hti+36 and Hti+50 high performance automatic meets the following classification compliant to NF F 16-101 and NF F 16-102: I3F2 and HL3 Level according EN45545-2.

GE
Industrial Solutions

CERTIFICATE

We, *GE Industrial Solutions group*
acting through its affiliate
GE Industrial Belgium - Nieuwevaart 51 - B-9000 Gent - Belgium

declare that the product/equipment:

Trade mark: *GE*
Product group: *Circuit Breakers*
Series: *Hti+50 ; Hti+36 ; Hti+25*

provided that it is installed, maintained and used in the application for which it is made, with respect of the "professional practices", relevant installation standards and manufacturers instructions,

is classified as Hazard Level HL3 for requirement set R26 according EN 45545-2:2013

Mostoles, 27 September 2017
(place and date)

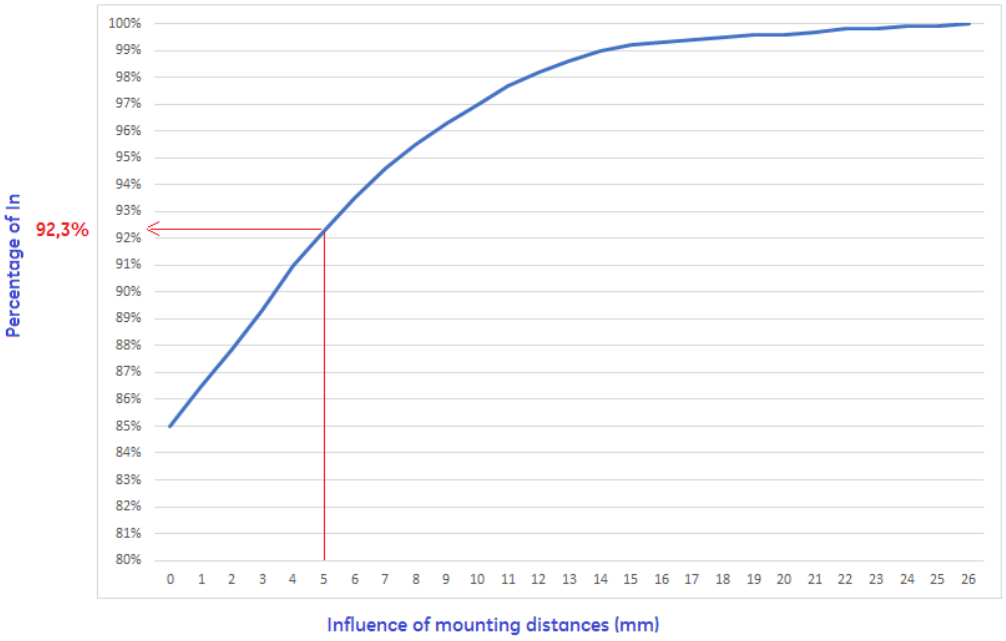
Josep Pijoan
Systems Engineering Leader
(name, function and signature of the authorized person)

T1.12. Influence of mounting distances between devices

Multiply the rated current referring to your max. occurrent termperature with the factor of "influence of mounting distances"

Example: 2 x Hti+252C100 at T= 35 °C with 10 mm distance

B,C,D Characteristics	Ambient Temperature (°C)																				
In (A)	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
80	96.1	94.7	93.2	91.7	90.3	88.8	87.3	85.9	84.4	82.9	81.5	80	78.5	77.1	75.6	74.1	72.7	71.2	69.7	68.3	66.8
100	120.2	118.4	116.5	114.7	112.8	111	109.2	107.3	105.5	103.7	101.8	100	98.2	96.3	94.5	92.7	90.8	89	87.2	85.3	83.5
125	150.2	147.9	145.6	143.4	141.1	138.8	136.5	134.2	131.9	129.6	127.3	125	122.7	120.4	118.1	115.8	113.5	111.2	108.9	106.7	104.4

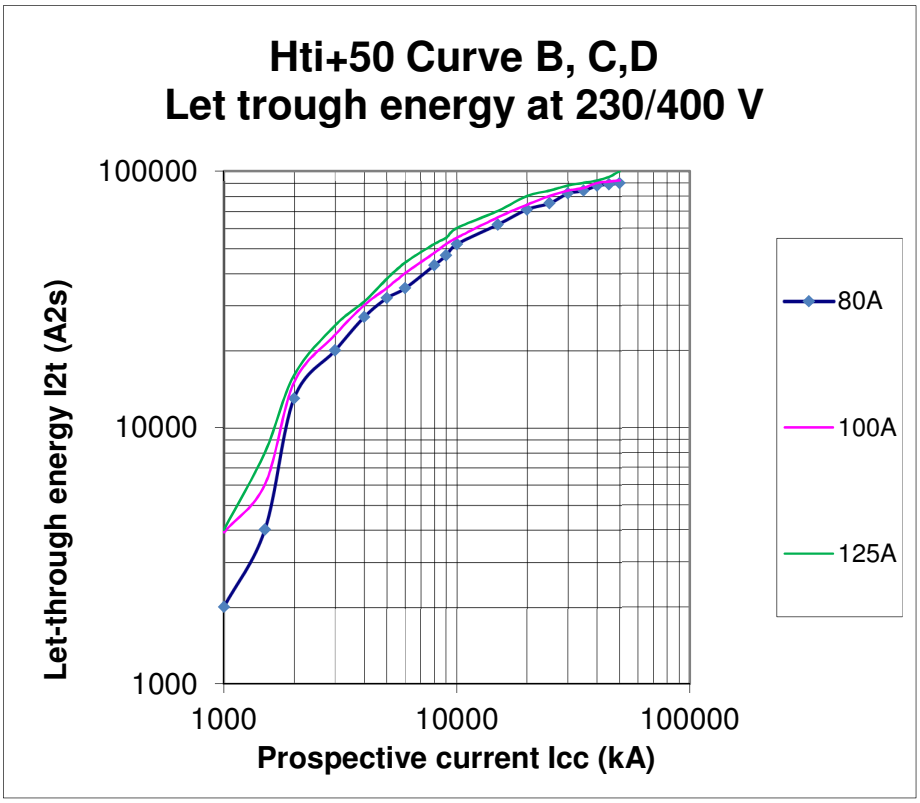


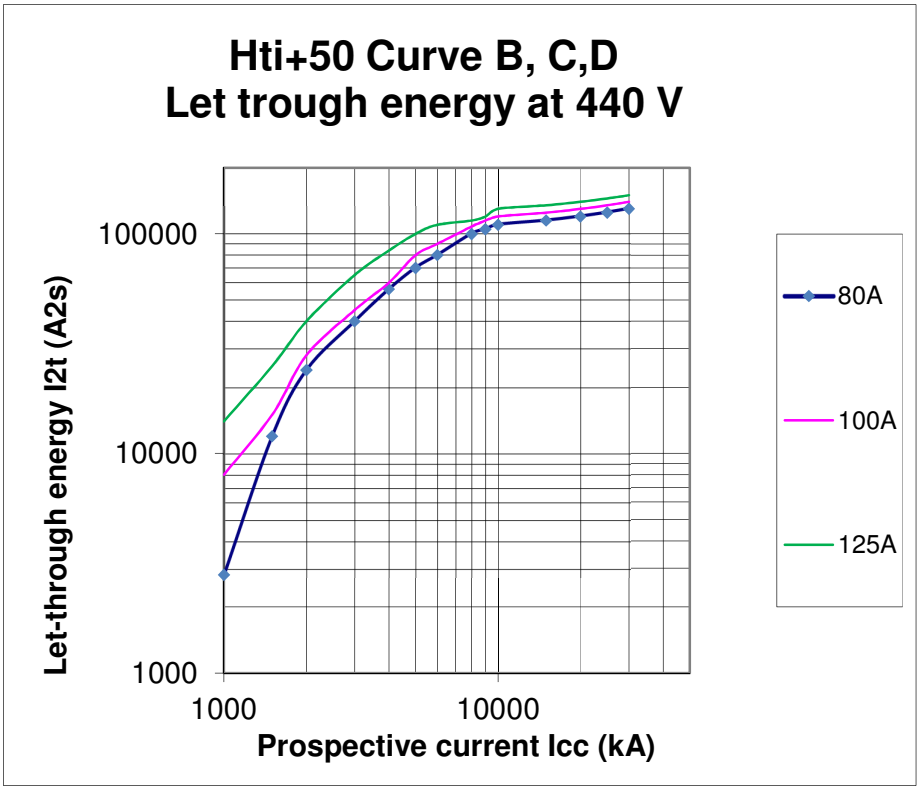
In = 98,2 A x 92.3 % = 90,64 A

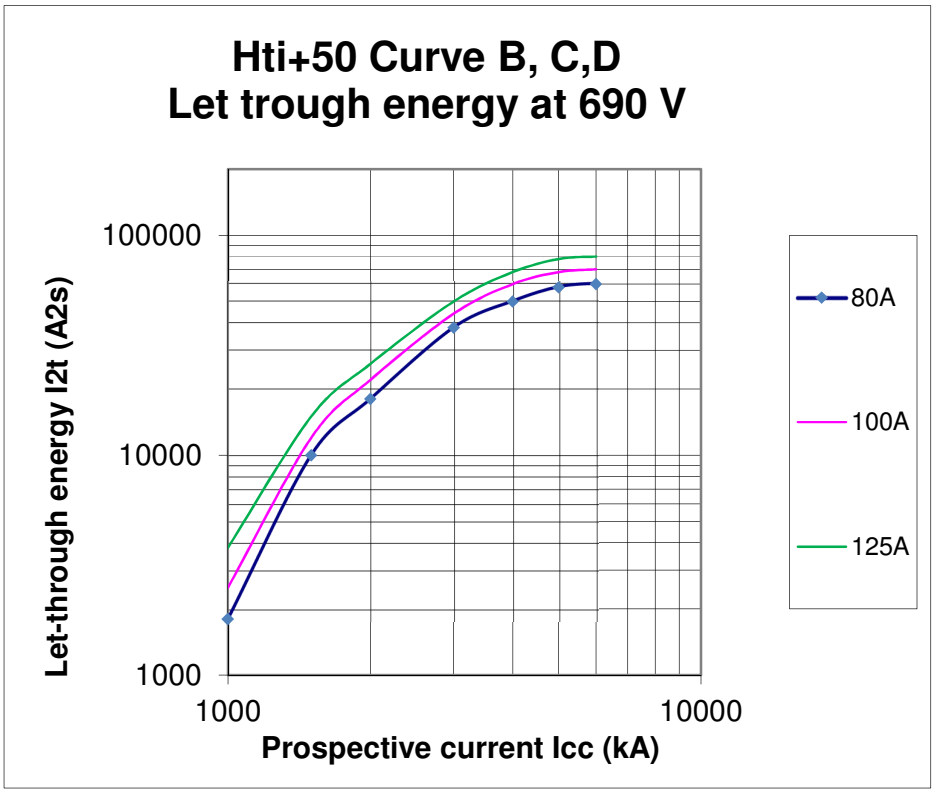
Further influencing factors, which can lead to a reduction of the maximum operating current, are:
– Shortening the cable length compared to IEC 60947-1 / -2
–Reducing the cable cross section compared to IEC 60947-1 / -2
– Accumulation of cables

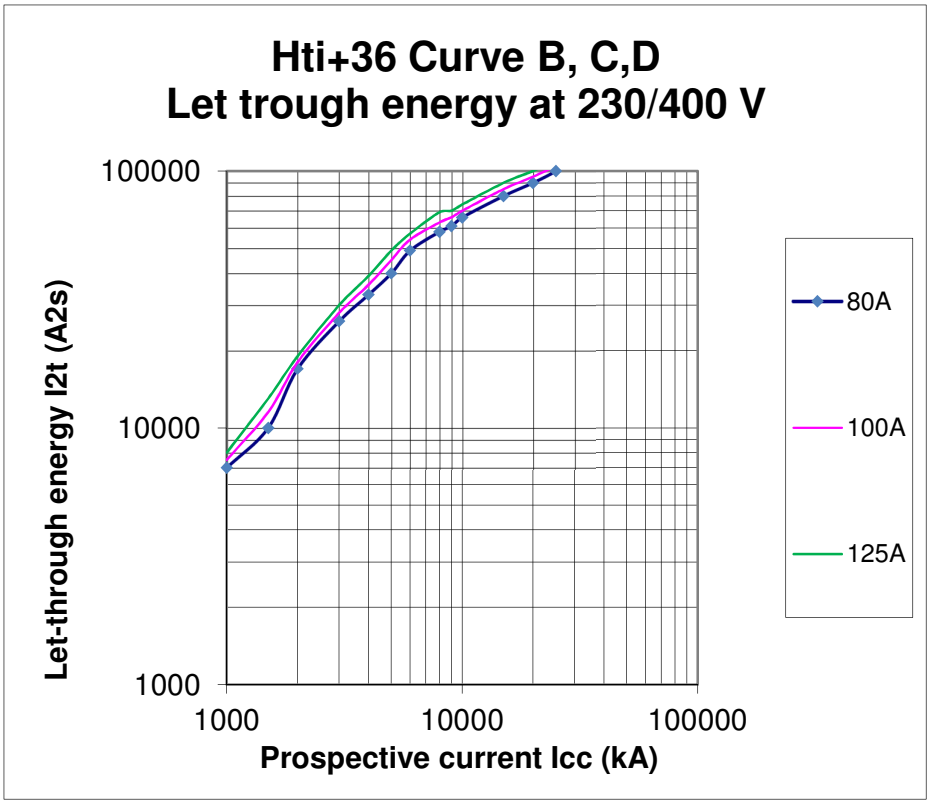
T1.13. Limitation curves let-through energy I2t

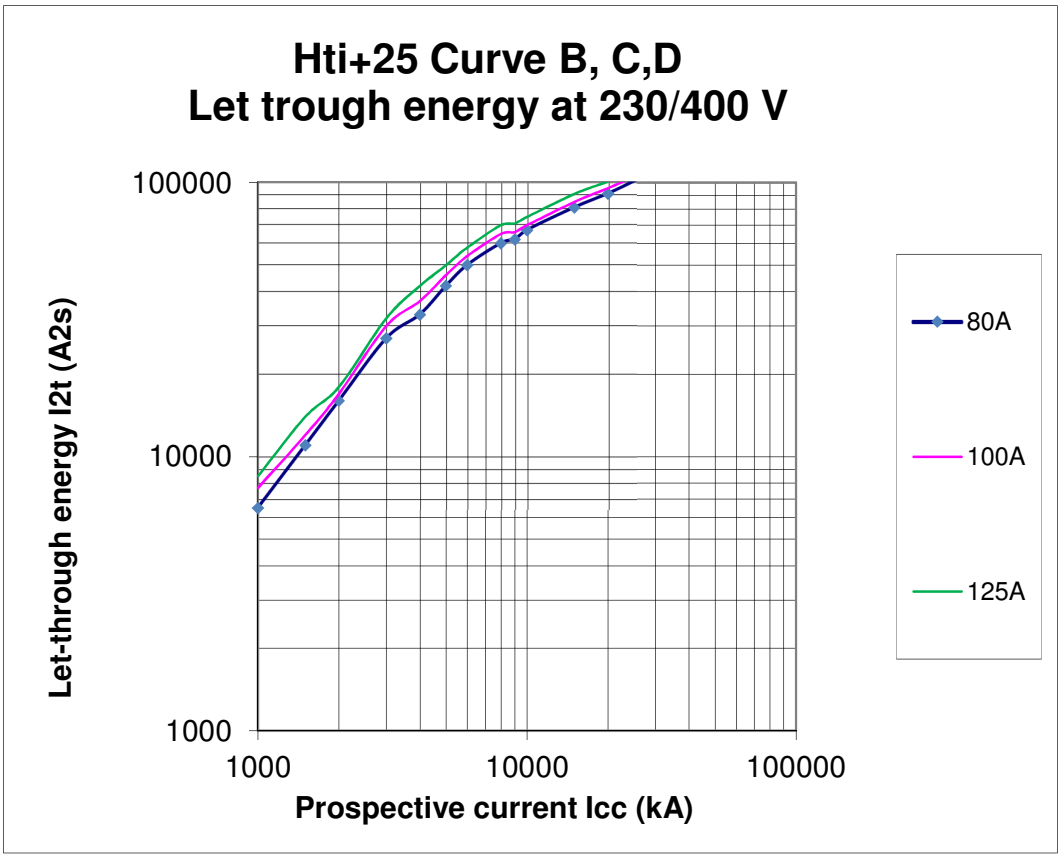
The limitation capacity of a MCB in short-circuit conditions, is its capacity to reduce the value of the let-through energy that the short-circuit would be generating.

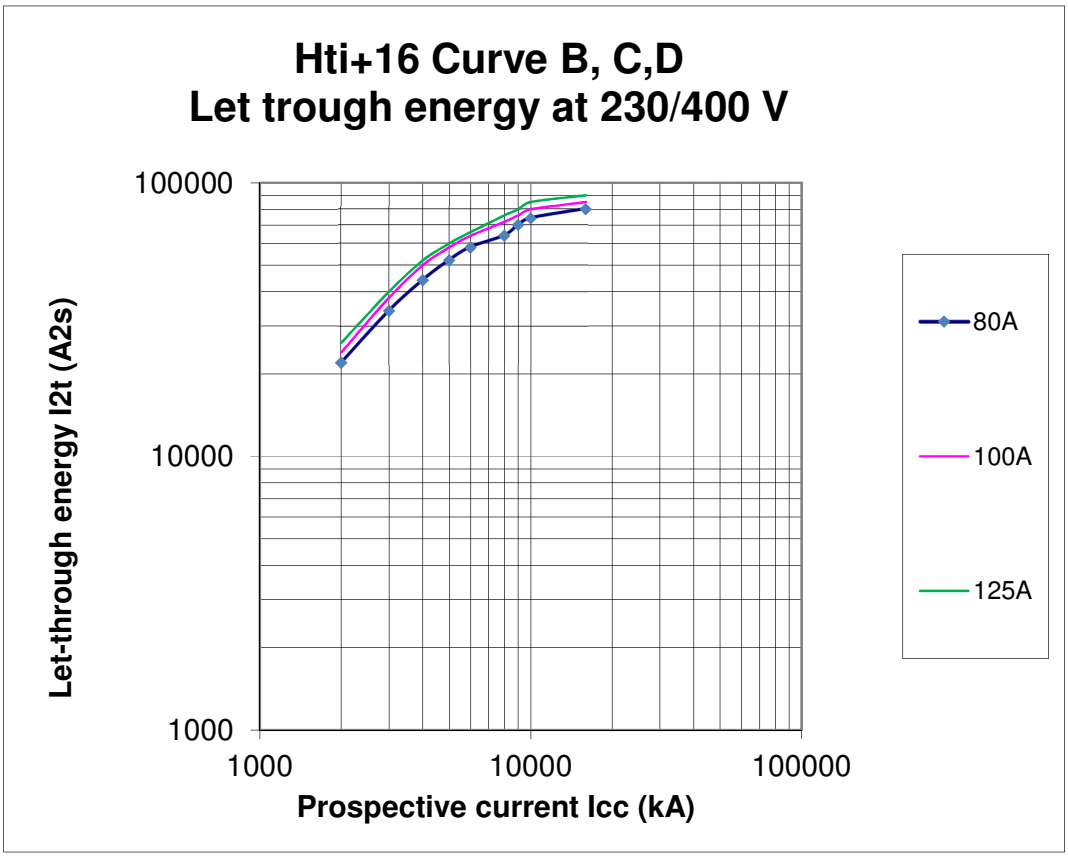

Hti+50 Curve B, C,D
Let trough energy at 230/400 V
100000
10000
1000
Let-through energy I2t (A2s)
1000
10000
100000
Prospective current Icc (kA)
80A
100A
125A


Hti+50 Curve B, C,D
Let trough energy at 440 V
100000
10000
1000
Let-through energy I2t (A2s)
1000
10000
Prospective current Icc (kA)
80A
100A
125A


Hti+50 Curve B, C,D
Let trough energy at 690 V
Let-through energy I2t (A2s)
100000
10000
1000
1000
10000
Prospective current Icc (kA)
80A
100A
125A

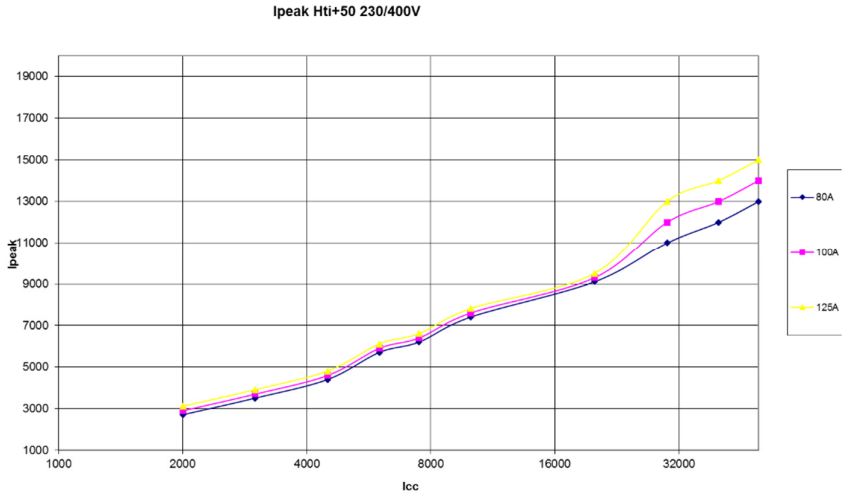

Hti+36 Curve B, C,D
Let trough energy at 230/400 V
Let-through energy I2t (A2s)
100000
10000
1000
1000
10000
100000
Prospective current Icc (kA)
80A
100A
125A

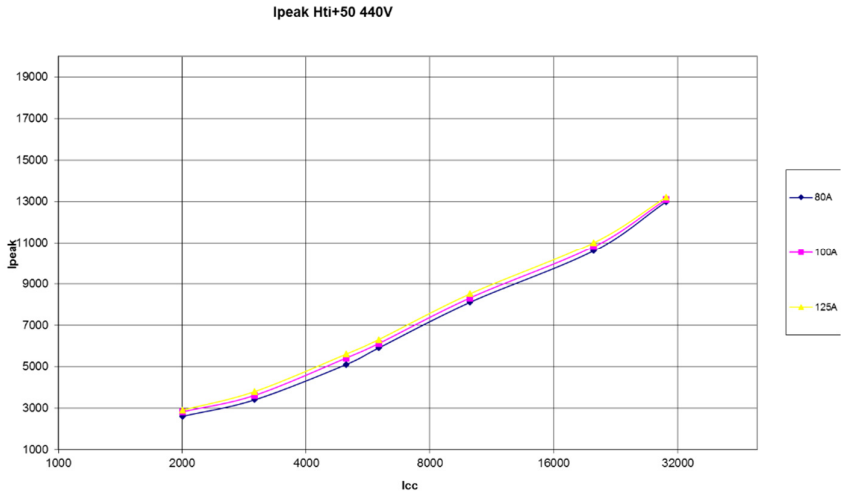

Hti+25 Curve B, C,D
Let trough energy at 230/400 V
100000
10000
1000
Let-through energy I2t (A2s)
1000
10000
100000
Prospective current Icc (kA)
80A
100A
125A

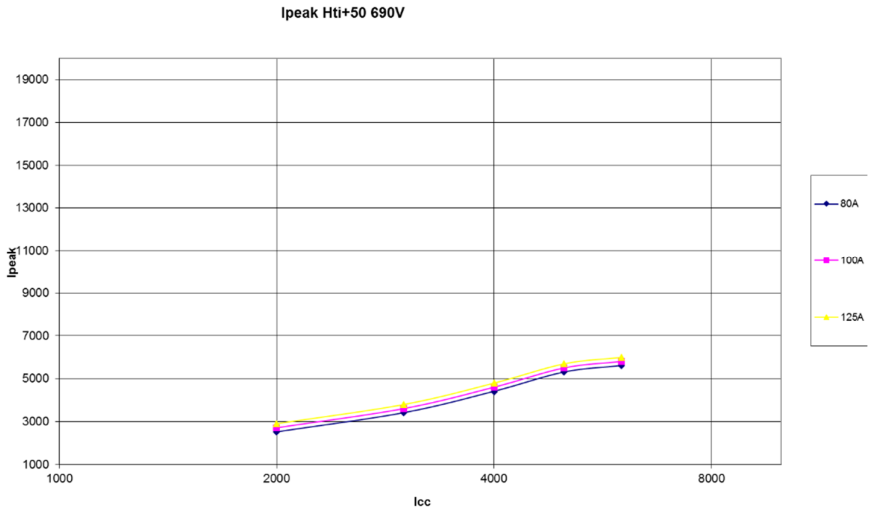

Hti+16 Curve B, C,D
Let trough energy at 230/400 V
100000
10000
1000
Let-through energy I2t (A2s)
1000
10000
100000
Prospective current Icc (kA)
80A
100A
125A

T1.14. Peak current Ip

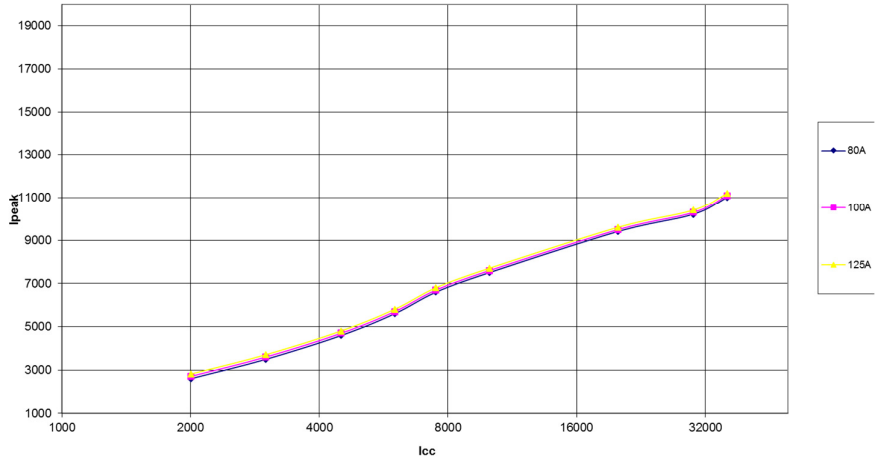
It is the value of the maximum peak of the short-circuit current limited by the MCB.



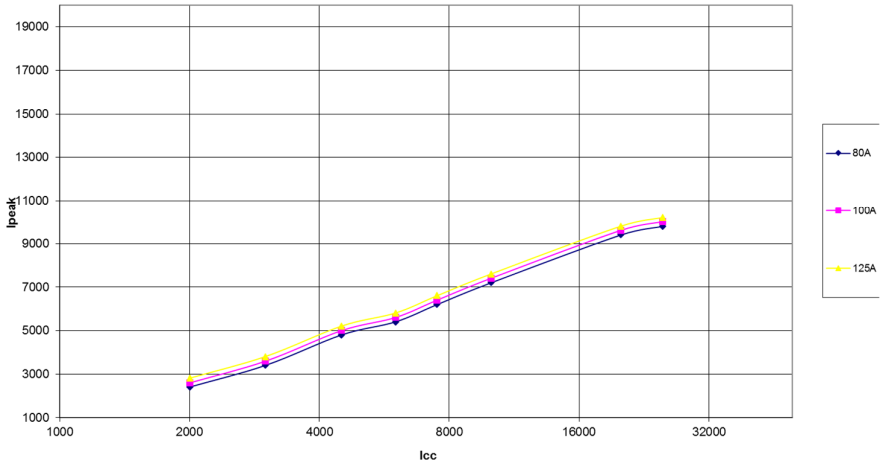




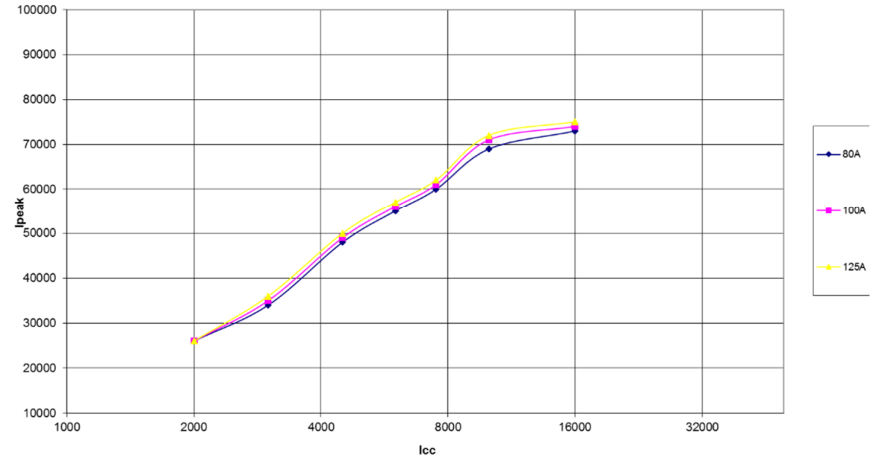
Ipeak Hti+36 230/400V



Ipeak Hti+25 230/400V



Ipeak Hti+16 230/400V



T1.15. Technical values Hti+ 50, Hti+ 36, Hti+ 25 and Hti+ 16.

Hti+50 Technical data

General Data		
Tripping characteristics		B, C, D
Standards		IEC/EN 60947-2,EN 60898-1
Poles		1 … 4
Rated current I_n	A	… 125
Rated frequency **f**	Hz	50/60
Rated insulation voltage U_i acc. to IEC/EN 60664-1	V	AC 690
Rated impulse withstand voltage U_{imp} (1.2/50 µs)	kV	8
Overvoltage category		IV
Pollution degree		3
Suitability for isolation		yes
Data acc. to IEC/EN 60898-1		
Rated operational voltage U_e	V	AC 230/400
Min. operating voltage	V	AC 12
Rated short-circuit capacity I_{cn}	kA	Char. B, C, D: 230/400V (10 … 80A) = 25 kA
Reference temperature for tripping characteristics	°C	30°C (Char. B, C, D)
Electrical and Mechanical Endurance	ops.	10… 32 A: 10 000 electrical/mechanical 40 … 100 A: 6000 electrical/4000 mechanical 125 A: 4000 electrical/6000 mechanical
Service short-circuit capacity I_{cs}	kA	Char. B, C, D: 230/400V (10 … 80 A) = 12.5 kA
Data acc. to IEC/EN 60947-2		
Rated operational voltage U_e	V	AC 400/690 DC 125 (1-pole) DC 250 (2-pole) DC 375 (3-pole) DC 500 (4-pole)
Min. operating voltage	V	AC 12
Rated ultimate short-circuit capacity I_{cu}	kA	AC 240/415 V = 50 kA AC 254/440 V = 30 kA AC 400/690 V (up to 80 A) = 6 kA AC 400/690 V (100 … 125 A) = 4.5 kA DC 125 V (1-pole) = 30 kA DC 250 V (2-pole) = 30 kA DC 375 V (3-pole) = 30 kA DC 500 V (4-pole) = 30 kA
Rated service short-circuit capacity I_{cs}	kA	AC 240/415 V = 40 kA AC 254/440 V (up to 80 A) = 22.5 kA AC 254/440 V (100 … 125 A) = 15 kA AC 400/690 V (up to 80 A) = 4 kA AC 400/690 V (100 … 125 A) = 3 kA DC 125 V (1-pole) = 30 kA DC 250 V (2-pole) = 30 kA DC 375 V (3-pole) = 30 kA DC 500 V (4-pole) = 30 kA
Reference temperature for tripping characteristics	°C	B, C, D: 30 °C
Electrical and Mechanical Endurance	ops.	6 … 32 A: 10 000 electrical/ 10000 mechanical 40 … 100 A: 6000 electrical/ 4000 mechanical 125 A: 4000 electrical/ 6000 mechanical

Mechanical Data		
Housing		Material group I, RAL 7035
Toggle		black, lockable
Classification acc. To NF F 126-101, NF F 16-102		I3, F2
Protection degree acc. to EN 60529		IP20; IP40(actuating end only)
Shock resistance acc. to IEC/EN 60068-2-31		IEC 61373 Cat. 1 Class B, 5g / 30 ms acc. To IEC 60068-27 Test Ea
Vibration resistance acc. to IEC/EN 60068-2-6		IEC 60068-2-6 Test Fc; 2 - 13.2Hz /1 mm 13.2 - 100Hz / 0.7g with load 100% x I_e
Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH	12 + 12 cycle with 55 °C/90 – 96 % and 25 °C/95 – 100 %
Environmental conditions (dry heat) acc. to IEC/EN 60068-2-2 Test B	°C/RH	16 hours 55 °C / 2 hours 70 °C with damp heat 55 %
Ambient temperature	°C	–25 … +60
Storage temperature	°C	–40 … +70
Installation		
Terminal		Failsafe cage or ringlug terminal
Connections (top/bottom) – C_4 only	mm^2	1 … 50 stranded 1 … 70 flexible
Tightening torque	Nm	3.5
	in-lbs.	31
Screwdriver		POZI 2
Mounting		EN 60715
Mounting position		any
Supply		any
Dimensions and weight		
Pole dimensions (H x L x W)	mm	82.5 x 95 x 26.5
Pole weight	g	ca. 240

Hti+36 Technical data

General Data		
Tripping characteristics		B, C, D
Standards		IEC/EN 60947-2,EN 60898-1
Poles		1 ... 4
Rated current I_n	A	... 125
Rated frequency **f**	Hz	50/60
Rated insulation voltage U_i acc. to IEC/EN 60664-1	V	AC 690
Rated impulse withstand voltage U_{imp} (1.2/50 µs)	kV	8
Overvoltage category		IV
Pollution degree		3
Suitability for isolation		yes
Data acc. to IEC/EN 60898-1		
Rated operational voltage U_e	V	AC 230/400
Min. operating voltage	V	AC 12
Rated short-circuit capacity I_{cn}	kA	AC 230/400 V (10 ... 80 A) = 20 kA
Reference temperature for tripping characteristics	°C	30 °C (Char. B, C, D)
Electrical and Mechanical Endurance	ops.	10 ... 32 A: 10 000 electrical/mechanical 40 ... 100 A: 6000 electrical/4000 mechanical 125 A: 4000 electrical/6000 mechanical
Service short-circuit capacity I_{cs}	kA	230/400 V (10 ... 80 A) = 10 kA
Data acc. to IEC/EN 60947-2		
Rated operational voltage U_e	V	AC 400/690 DC 125 (1-pole) DC 250 (2-pole) DC 375 (3-pole) DC 500 (4-pole)
Min. operating voltage	V	AC 12
Rated ultimate short-circuit capacity I_{cu}	kA	AC 240/415 V = 36 kA AC 254/440 V = 20 kA AC 400/690 V = 4.5 kA DC 125 V (1-pole) = 20 kA DC 250 V (2-pole) = 20 kA DC 375 V (3-pole) = 20 kA DC 500 V (4-pole) = 20 kA
Rated service short-circuit capacity I_{cs}	kA	AC 240/415 V = 30 kA AC 289/500 V (80 ... 125A) = 5 kA AC 400/690 V = 3 kA DC 125 V (1-pole) = 20 kA DC 250 V (2-pole) = 20 kA DC 375 V (3-pole) = 20 kA DC 500 V (4-pole) = 20 kA
Reference temperature for tripping characteristics	°C	30 °C
Electrical and Mechanical Endurance	ops.	6 ... 32 A: 10 000 electrical/mechanical 40 ... 100 A: 6000 electrical/4000 mechanical 125 A: 4000 electrical/6000 mechanical
Mechanical Data		
Housing		Material group I, RAL 7035
Toggle		black, lockable
Classification acc. To NF F 126-101, NF F 16-102		I3, F2
Protection degree acc. to EN 60529		IP20; IP40 (actuating end only)
Shock resistance acc. to IEC/EN 60068-2-30		IEC 61373 Cat. 1 Class B, 5g / 30ms acc. To IEC 60068-27 Test Ea
Vibration resistance acc. to IEC/EN 60068-2-6		IEC 60068-2-6 Test Fc: 2–13.2 Hz/1 mm 13.2–100 Hz/0.7 g with load 100% x I_n
Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH	12 + 12 cycle with 55 °C/90–96 % and 25 °C/95–100 %
Environmental conditions (dry heat) acc. to IEC/EN 60068-2-2 Test B	°C/RH	16 hours 55 °C/2 hours 70 °C with damp heat 55 %
Ambient temperature	°C	–25 ... +60
Storage temperature	°C	–40 ... +70
Installation		
Terminal		Failsafe cage or ringlug terminal
Connections (top/bottom) – C_u only	mm^2	1 ... 50 stranded 1 ... 70 flexible
Tightening torque	Nm	3.5
	in-lbs.	31
Screwdriver		POZI 2
Mounting		EN 60715
Mounting position		any
Supply		any
Dimensions and weight		
Pole dimensions (H x L x W)	mm	82.5 x 95 x 26.5
Pole weight	g	ca. 240

Hti+25 Technical data

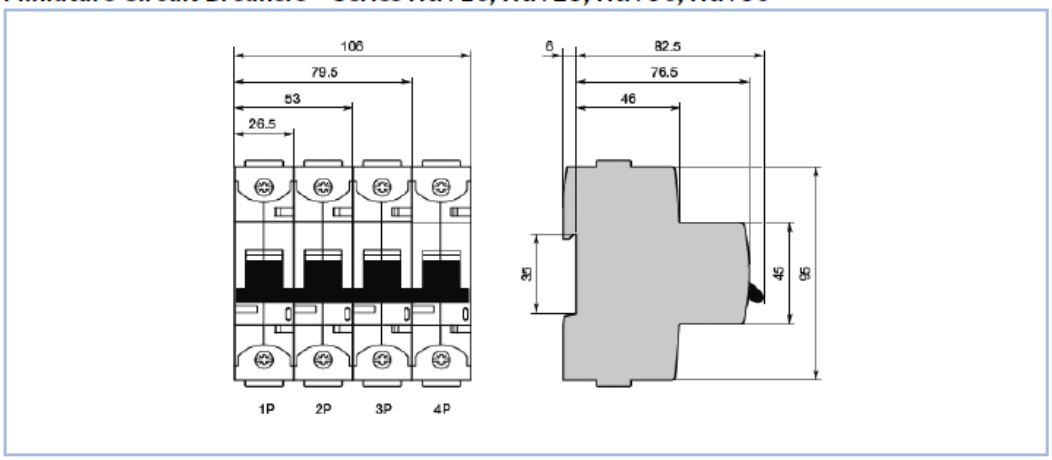
General Data		
Tripping characteristics		B, C, D
Standards		IEC/EN 60947-2, EN 60898-1
Poles		1 … 4
Rated current I_n	A	… 125
Rated frequency **f**	Hz	50/60
Rated insulation voltage U_i acc. to IEC/EN 60664-1	V	AC 500
Rated impulse withstand voltage U_{imp} (1.2/50 µs)	kV	8
Overvoltage category		IV
Pollution degree		3
Suitability for isolation		yes
Data acc. to IEC/EN 60898-1		
Rated operational voltage U_e	V	AC 230/400
Min. operating voltage	V	AC 12
Rated short-circuit capacity I_{cn}	kA	15 kA
Reference temperature for tripping characteristics	°C	30 °C (Char. B, C, D)
Electrical and Mechanical Endurance	ops.	10 … 32 A: 10 000 electrical/mechanical 40 … 100 A: 6000 electrical/4000 mechanical 125 A: 4000 electrical/6000 mechanical
Service short-circuit capacity I_{cs}	kA	Char. B, C, D: 230/400 V = 7.5 kA
Data acc. to IEC/EN 60947-2		
Rated operational voltage U_e	V	AC 254/440 DC 125 (1-pole) DC 250 (2-pole) DC 375 (3-pole) DC 500 (4-pole)
Min. operating voltage	V	AC 12
Rated ultimate short-circuit capacity I_{cu}	kA	AC 240/415 V = 25 kA AC 254/440 V = 15kA DC 125 V (1-pole) = 10 kA DC 250 V (2-pole) = 10 kA DC 375 V (3-pole) = 10 kA DC 500 V (4-pole) = 10 kA
Rated service short-circuit capacity I_{cs}	kA	AC 240/415 V = 18 kA AC 254/440 V = 10 kA DC 125 V (1-pole) = 10 kA DC 250 V (2-pole) = 10 kA DC 375 V (3-pole) = 10 kA DC 500 V (4-pole) = 10 kA
Reference temperature for tripping characteristics	°C	B, C, D: 30 °C K: 40 °C
Electrical and Mechanical Endurance	ops.	10 … 32 A: 10 000 electrical/mechanical 40 … 100 A: 6000 electrical/4000 mechanical 125 A: 4000 electrical/6000 mechanical
Mechanical Data		
Housing		Material group I, RAL 7035
Toggle		black, lockable
Classification acc. To NF F 126-101, NF F 16-102		I3, F2
Protection degree acc. to EN 60529		IP20; IP40 (actuating end only)
Shock resistance acc. to IEC/EN 60068-2-30		IEC 61373 Cat. 1 Class B, 5 g / 30 ms acc. To IEC 60068-27 Test Ea
Vibration resistance acc. to IEC/EN 60068-2-6		IEC 60068-2-6 Test Fc: 2–13.2 Hz/1 mm 13.2–100 Hz/0.7 g with load 100 % x Ie
Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH	12 + 12 cycle with 55 °C/90–96 % and 25 %/95–100 %
Environmental conditions (dry heat) acc. to IEC/EN 60068-2-2 Test B	°C/RH	16 hours 55 °C/2 hours 70 °C with damp heat 55 %
Ambient temperature	°C	-25 … +60
Storage temperature	°C	–40 … +70
Installation		
Terminal		Failsafe cage or ringlug terminal
Connections (top/bottom) – C_u only	mm^2	1 … 50 stranded 1 … 70 flexible
Tightening torque	Nm	3.5
	in-lbs.	31
Screwdriver		POZI 2
Mounting		EN 60715
Mounting position		any
Supply		any
Dimensions and weight		
Pole dimensions (H x L x W)	mm	82.5 x 95 x 26.5
Pole weight	g	ca. 240

Hti+16 Technical data

General Data		
Tripping characteristics		B, C, D
Standards		IEC/EN 60947-2, EN 60898-1
Poles		1 … 4
Rated current I_n	A	Char. B, C D, …125/Char.
Rated frequency **f**	Hz	50/60
Rated insulation voltage U_i acc. to IEC/EN 60664-1	V	AC 500
Rated impulse withstand voltage U_{imp} (1.2/50 µs)	kV	6
Overvoltage category		III
Pollution degree		3
Suitability for isolation		yes
Data acc. to EN 60898-1		
Rated operational voltage U_e	V	AC 230/400
Min. operating voltage	V	AC 12
Rated short-circuit capacity I_{cn}	kA	AC 230/400 = 10 kA
Reference temperature for tripping characteristics	°C	B, C, D: 30 °C
Electrical and Mechanical Endurance	ops.	4000
Service short-circuit capacity I_{cs}	kA	AC 230/400 = 7.5 kA
Data acc. to IEC/EN 60947-2		
Rated operational voltage U_e	V	AC 230/400
Min. operating voltage	V	AC 12
Rated ultimate short-circuit capacity I_{cu}	kA	16 kA
Rated service short-circuit capacity I_{cs}	kA	10 kA
Reference temperature for tripping characteristics	°C	B, C, D: 30 °C
Electrical and Mechanical Endurance	ops.	. 100 A: 1500 electric; 8500 mechanic/125 A: 1000 electric, 7000 mechanic
Mechanical Data		
Housing		Material group I, RAL 7035
Toggle		black, lockable
Classification acc. To NF F 126-101, NF F 16-102		
Protection degree acc. to EN 60529		IP20; IP40(actuating end only)
Shock resistance acc. to IEC/EN 60068-2-30		
Vibration resistance acc. to IEC/EN 60068-2-6		
Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH	
Environmental conditions (dry heat) acc. to IEC/EN 60068-2-2 Test B	°C/RH	
Ambient temperature	°C	–25 … +60
Storage temperature	°C	–40 … +70
Installation		
Terminal		Failsafe cage terminal
Connections (top/bottom) – C_6 only	mm²	1 … 50 stranded; 1 … 70 flexible
Tightening torque	Nm	3.5
	in-lbs.	31
Screwdriver		POZI 2
Mounting		EN 60715
Mounting position		any
Supply		any
Dimensions and weight		
Pole dimensions (H x L x W)	mm	82.5 x 95 x 26.5
Pole weight	g	ca. 240

T1.16. Dimensions

Miniature Circuit Breakers – Series Hti+16, Hti+25, Hti+36, Hti+50



T2. People Protection

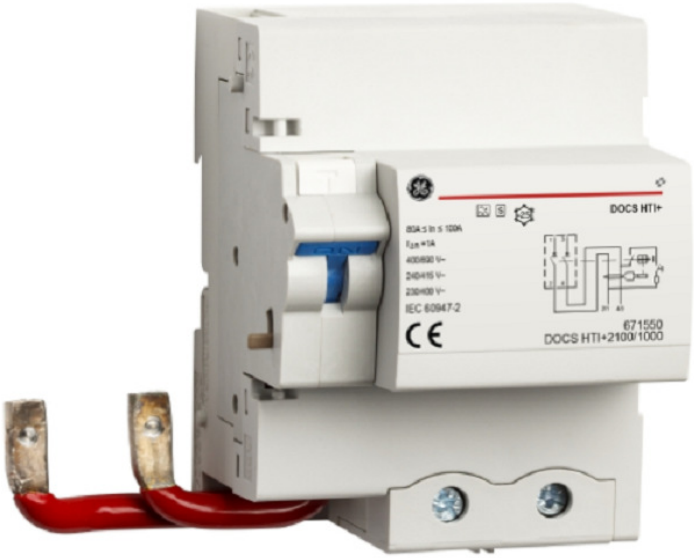
T2.1. Add on RCDs Blocks: DOCHti+

RCD blocks from the DOCHti+ family can be connected to the Hti+ high performance MCB up to 100A.

The DOCHti+ can be used both for sine-shaped AC as well as for pulsed DC fault currents (type A). Selective (Type S) devices are also available. DOCHti+ can be combined with Hti+ mcbs with a rating less than or equal to 100A.

The functionality of the switching device can be checked at any time with the test button. The DOCHti+ Series switches ensure effective protection against fire and explosion. Devices with In ≤ 30 mA guarantee the protection of persons against shock currents caused by both direct and indirect touching in addition to the obligatory safety measures prescribed by the safety and accident-prevention regulations.

The DOCHti+ blocks comply to standard: EN 60947-2 Annex B.

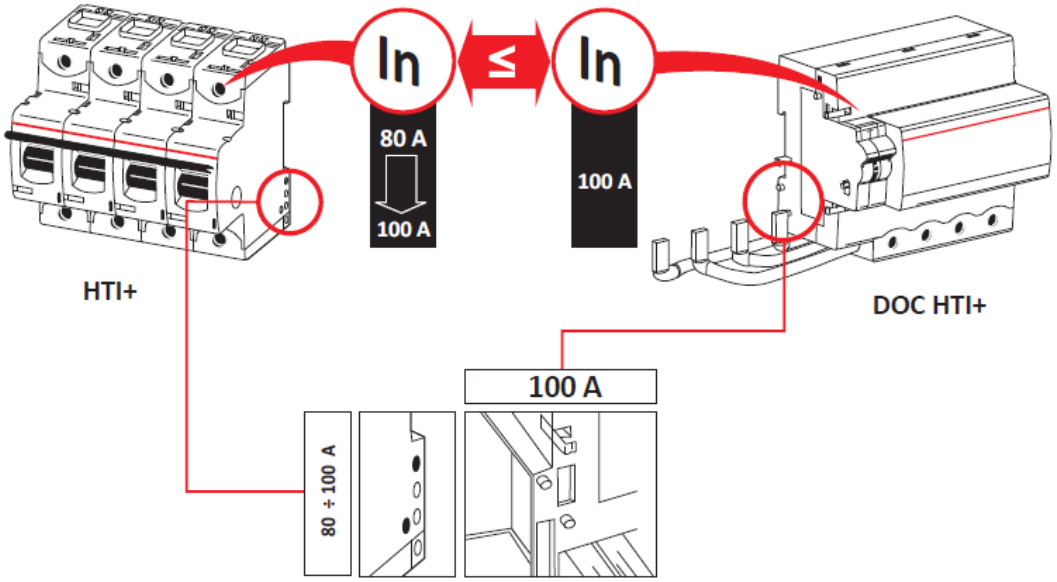


T2.2. Technical values DOCHti+

		DOCAHti+	DOCSHti+
Standard		IEC 60947-2	
Sensitivity		A	A (selective)
Rated current	A	≤ 100	
Number of poles		2P; 3P; 4P	
Rated insulation voltage U_i	V	690	
Rated operational voltage U_e	V	230/400; 240/415; 400/690	
Max. Rated operational voltage U_b max.	V	690	
Min. Rated operational voltage U_b min.	V	195	
Rated ultimate short-circuit breaking capacity I_{cu} compliant to IEC 60947-2		Depends on ultimate breaking capacity of MCB's	
Rated ultimate short-circuit breaking capacity $I_{\Delta m}$ with S800N	kA	Depends on ultimate breaking capacity of MCB's	
Rated ultimate short-circuit breaking capacity $I_{\Delta m}$ with S800S	kA	Depends on ultimate breaking capacity of MCB's	
Rated impulse withstand voltage U_{imp} Impulse (1.2/50)	kV	6	
Rated impulse withstand voltage U_{imp} (50...60Hz) x 1min	kV	2.5	
Max. operating voltage of test circuit	V	690	
Min. operating voltage of test circuit	V	195	
Electrical strength compliant to VDE	A	250	5000
Rated frequency	Hz	50/60	
Rated residual operating current $I_{\Delta n}$	A	0.03; 0.3; 0.5	0.3 0.5; 1
Switch lever		blue, can only be switched in OFF position	
Protection category, housing		IP4X (without terminal area)	
Protection category, terminal		IP2X	
Permissible operating ambient temperature	°C	–25 ... +60	
Permissible storage temperature	°C	–40 ... +70	
Strand connections	mm^2	6 ... 50	
Cable connections	mm^2	6 ... 70	
Tightening torque	Nm	3.5	
Fixed on mounting rail		EN 60715	

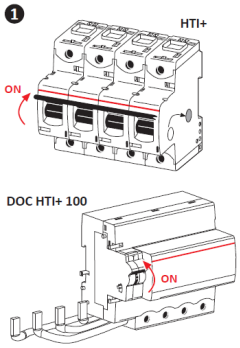
T2.3. Mounting instructions

Add on RCDs Block DOCHti+ are assembled to the left side of Hti+ family up to 100A. Lateral pins in DOC and matching holes in mcbs codes are implemented to avoid incorrect assemblies.

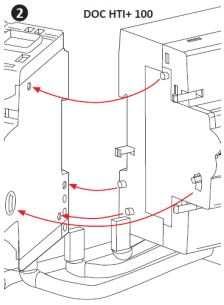


Following instruction should be follow to get a correct assemply:

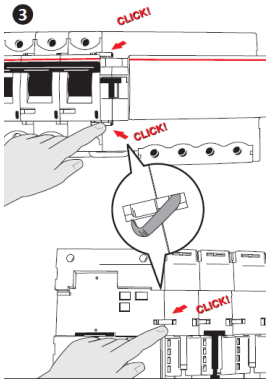
1. Put both handles in ON position



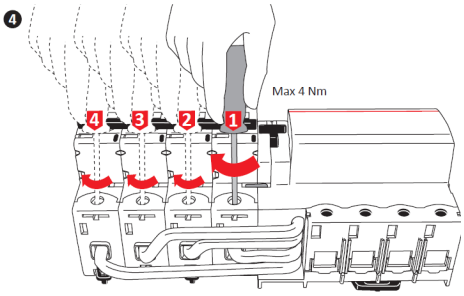
2. Proceed with lateral assembly



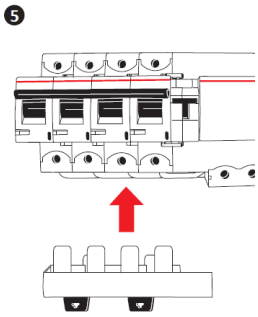
3. Connect frontal and back metal pieces



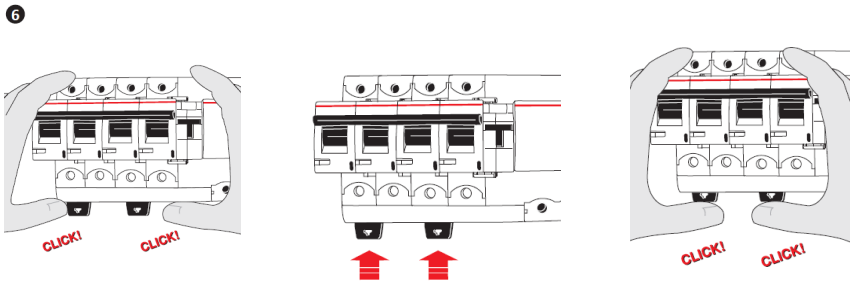
4. Screw the back side mcbs screw terminals



5. Locate the terminals shoe



6. Click it the shoe and fix the set to the DIN Rail with the easy DIN rail extraction pieces



T2.4. RCBOs

RCD blocks to be combined with high breaking capacity mcbs =125 A are assembled in the factory to ensure the nest fixation. The Hti+50DOC can be used both for sine-shaped AC as well as for pulsed DC fault currents (type A). Short-term delay (Type Ai) devices are also available for 2P, 3P and 4 Poles and B, C, and curves at 125A rating.

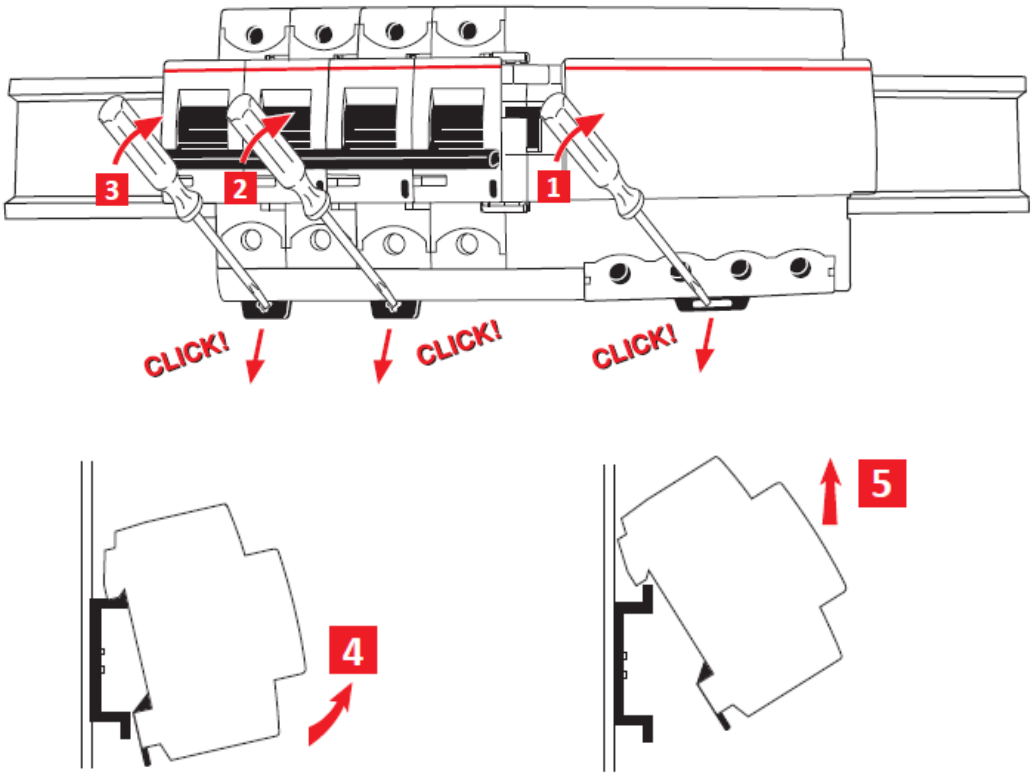
The functionality of the switching device can be checked at any time with the test button. The Hti+50DOC Series switches ensure effective protection against fire and explosion. Devices with In ≤ 30 mA guarantee the protection of persons against shock currents caused by both direct and indirect touching in addition to the obligatory safety measures prescribed by the safety and accident-prevention regulations.

The DOCHti+ blocks comply to standard: EN 60947-2 Annex B.

T2.5. Technical values Hti+50DOC

		Hti+50...A	Hti+50...Ai
Standard		IEC 60947-2	
Sensitivity		A	A (with short-term delay)
Rated current	A	125	
Number of poles		2P; 3P; 4P	
Rated insulation voltage U_i	V	690	
Rated operational voltage U_e	V	230/400; 240/415; 400/690	
Max. rated operational voltage U_b max.	V	690	
Min. rated operational voltage U_b min.	V	195	
Rated ultimate short-circuit breaking capacity Icu compliant to IEC 60947-2			
(AC) 50/60 Hz 240/450 V	kA	50	
(AC) 50/60 Hz 254/440 V	kA	30	
(AC) 50/60 Hz 289/500 V	kA	10	
(AC) 50/60 Hz 400/690 V	kA	4.5	
Rated service short-circuit breaking capacity Ics compliant to IEC 60947-2			
(AC) 50/60 Hz 240/450 V	kA	40	
(AC) 50/60 Hz 254/440 V	kA	15	
(AC) 50/60 Hz 289/500 V	kA	5	
(AC) 50/60 Hz 400/690 V	kA	3	
Rated impulse withstand voltage U_{imp} Impulse (1.2/50)	kV	6	
Rated impulse withstand voltage U_{imp} (50...60 Hz) x 1 min	kV	2.5	
Max. operating voltage of test circuit	V	690	
Min. operating voltage of test circuit	V	195	
Electrical strength compliant to VDE 0432 part 2	A	250	3000
Rated frequency	Hz	50/60	
Rated residual operating current $I_{\Delta n}$	A	0.3	0.03
Switch lever		Dacl(MCD), car b: connected in On-Off positior + blue (TCD) only in OFF position	
Protection category, housing		IP4X	
Protection category, terminal		IP2X	
Permissible operating ambient temperature	°C	–25 ... +60	
Permissible storage temperature	°C	–40 ... +70	
Strand connections	mm^2	6 ... 50	
Cable connections	mm^2	6 ... 70	
Tightening torque	Nm	3.5	
Fixed on mounting rail		EN 60715	

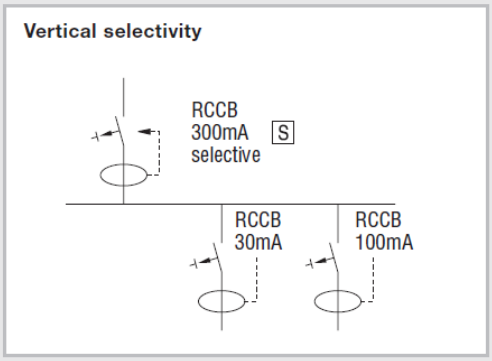
T2.6. Mounting instructions



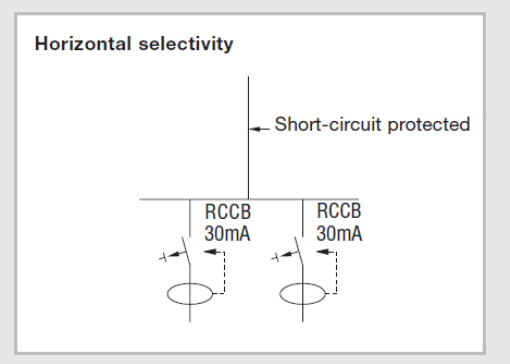
T2.7. RCDs & RCBOs: Vertical and horizontal selectivity

In an installation with RCD's installed in series we need to pay special attention to the vertical selectivity, in order to ensure that in case of earth leakage only the RCD which is immediately upstream of the fault point will operate. Selectivity is ensured when the characteristic time/current of the upstream RCD (A) is above the characteristic time /current of the downstream RCD (B). To obtain vertical selectivity we should take into consideration the following parameters: The RCD placed at the top of the installation shall be Type S. The residual operating current of the RCCB installed downstream shall have a lower residual operating current than the RCD installed upstream according to:

I△n downstream< I△n upstream/3

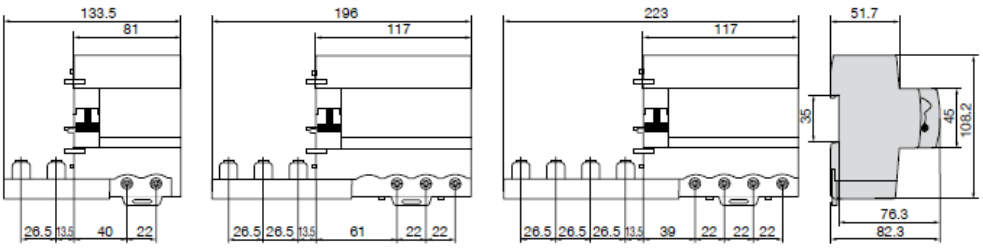


To have horizontal selectivity in an installation with RCD's we need to avoid the use of RCD's in cascading. Every single circuit of the installation shall be provided with an RCD of the appropriate residual operating current. The connection between the back-up protective device and the RCD must be short-circuit protected (Class II).

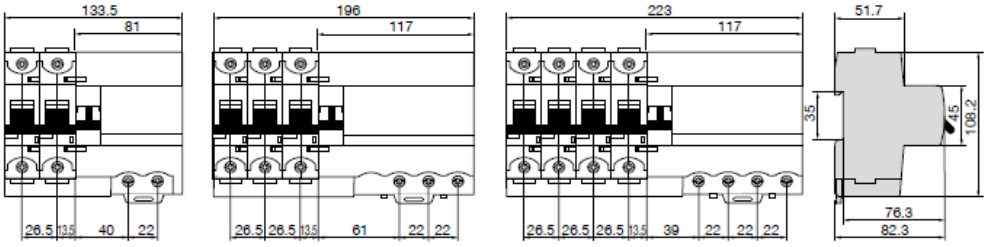


T2.8. Dimensions

Add-on RCDs for Series Hti+



Residual Current Circuit Breakers for Series Hti+ 50DOC



T3. Extensions and Accesories

T3.1. Types of extensions

Hti+ H

Auxiliary contact for external display

The Hti+ H auxiliary contact is for electrical display of the operating state of the high breaking capacity Hti+ MCB. Both changeover contacts always switch simultaneously with the live conductor contact and detect the following operating states:

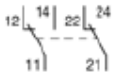
- Manual tripping
- Tripping due to thermal overload
- Tripping due to magnetic overload (short-circuit)

Mode of function of the test button

The test button is operated by a tool and allows the user to simulate the mode of function of the auxiliary contact when switched on without tripping the high breaking capacity MCB itself.

Mode of function of the two changeover contacts

- Off position of the high performance MCB contacts 11–12 and 21–22 closed
- On position of the high performance MCB contacts 11–14 und 21–24 closed



Mounting ability of the auxiliary contact

- Two Hti+ H auxiliary contacts can be mounted by the user at the left on the high breaking capacity Hti+ MCB.

Hti+ H/S

Combined auxiliary and signal contact for the external display

The hti+ H/S combined auxiliary and signal contact is used for electrical signaling of the operating state of the high performance MCB.

The H auxiliary contact always switches simultaneously with the live conductor contact and detect the following forms of tripping:

- Manual switch on/off
- Tripping due to thermal overload
- Tripping due to magnetic overload (short-circuit)
- Tripping by Shunt trip or Undervoltage

The S signal contact detects the following forms of tripping of the high performance MCB:

- Tripping due to thermal overload
- Tripping due to magnetic overload (short-circuit)
- Tripping by Shunt trip or Undervoltage

Mode of function of the test button

The test button is operated by a tool and allows the user to simulate the mode of function of the auxiliary contact when switched on without tripping the high breaking capacity MCB itself.

*Mode of function of the S **reset button***

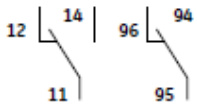
The reset button, which can be used at will, resets the H signal contact after a tripping. The high breaking capacity MCB is switched on independent of the state of the S signal contact.

Mode of function of the H changeover contact

- Off position of the high performance MCB Contact 11–12 closed
- On position of the high performance MCB Contact 11–14 closed

Mode of function of the S changeover contact

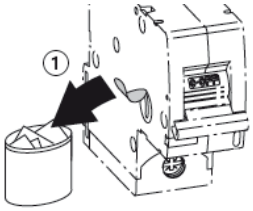
- No S tripping Contact 95–96 closed
- S tripping Contact 95–98 closed

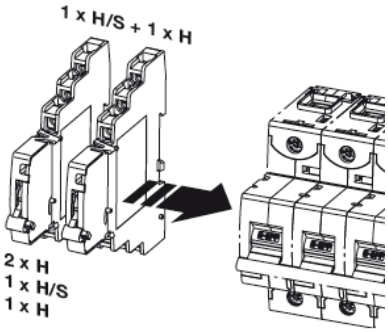


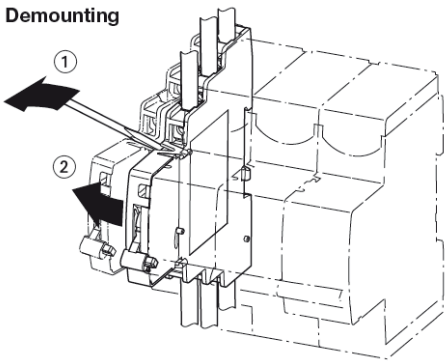
Mounting ability of the auxiliary contact H/S

- Hti+ H/S auxiliary contacts can be mounted by the user at the left on the high breaking capacity Hti+ MCB.

Mounting and Demounting instructions Hti+ H and Hti+ H/S







Hti+ Tele L

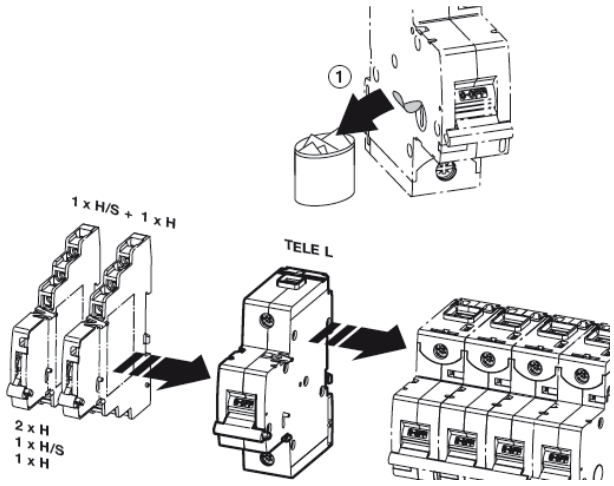
Shunt opening release

The hti+ tele L shunt opening release is for remote release of the hti +- high breaking capacity MCB using an electrical impulse. Operation of the trigger is guaranteed at a voltage between 70 % and 110 % of the rated mains voltage Un both for AC and DC.

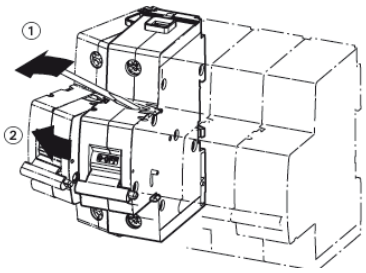
Mounting ability of the Hti+ Tele L operating current release

- The hti+ Tele L can be mounted by the user at the left side of the high performance MCB.

Mounting and Demounting instructions hti+ Tele L



Demounting



Hti+ Tele U

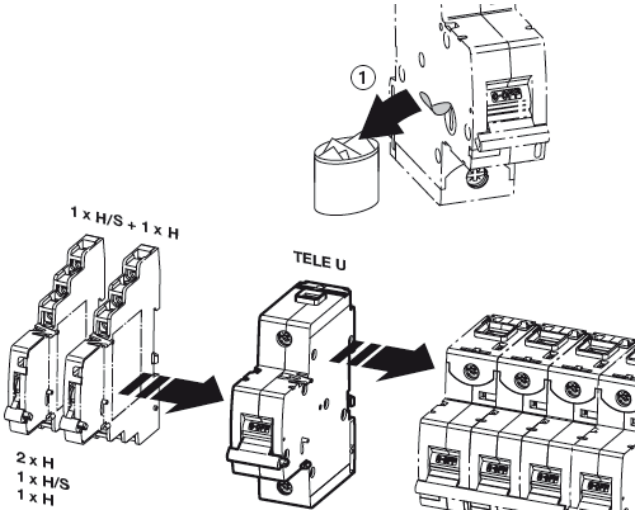
Undervoltage release

The Hti+ Tele U undervoltage release can be used as an emergency-stop cut-as by use of suitable emergency stop buttons. The undervoltage release switches the power supply to the high breaking capacity MCB off in case of a failure or if the value falls below 0.7 x Un. After tripping, the high performance MCB can be switched back on as soon as the voltage is over 0.85 x Un.

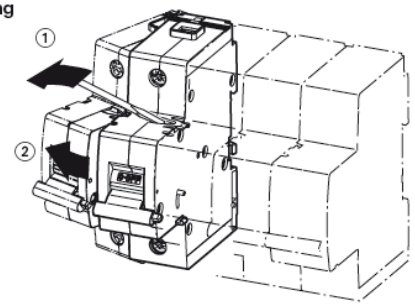
Mounting ability of the Hti+ Tele U undervoltage release

- The Hti+ Tele U can be mounted by the user at the left side of the high breaking capacity MCB.

Mounting and Demounting instructions hti+ Tele L



Demounting



T3.2. Technical values

Hti + H

Utilisation categories compliant to IEC 60947-5-1		AC15 400/2 A AC15 240/6 A DC13 250/0.55 A DC13 125 V/1.1 A DC13 60 V/2 A DC13 24 V/4 A
Conventional free air thermal current I_{th}	A	6
Minimum operational current I_{min}	mA	3
Minimum operational voltage U_{min}	V	24
Rated insulation voltage U_i	V	690
Number of contacts		2
Rated impulse withstand voltage U_{imp}	kV	6
Pollution degree		3
Standard		IEC 60947-5-1 / UL 489
Contact function		Changeover contact
Connection C_u	mm^2	1 x 2.5 2 x 1.5
Tightening torque	Nm	1
AC/DC feed		any
Mounting on DIN top hat rail		EN 60715
Protection category		IP20
Permissible operating ambient temperature	°C	–25 ... +60
Storage temperature	°C	–40 ... +70
Mech. lifetime of device		6000 switching cycles
I_{cu}	A	1000
Vibration resistance		IEC 60068-2-6; EN 61373 Cat.1/Class B 5 g, 20 frequency cycle 5 ... 150 ... 5 Hz at 24 V AC/DC, 5 mA short-term interruption <10 ms

Hti+ H/S

Utilisation categories compliant to IEC 60947-5-1		AC15 400/2A AC15 240/6A DC13 250/0.55A DC13 125V/1.1A DC13 60V/2A DC13 24V/4A
Conventional free air thermal current I_{th}	A	6
Minimum operational I_{min}	mA	3
Minimum operational voltage U_{min}	V	24
Rated insulation voltage U_i	A	690
Number of contacts		2
Rated impulse withstand voltage U_{imp}	kV	6
Pollution degree		3
Standard		IEC 60947-5-1 / UL 489
Contact function		Changeover contact
Connection C_u	mm^2	1 x 2.5 2 x 1.5
Tightening torque	Nm	1
AC/DC feed		any
Mounting on DIN top hat rail		EN 60715
Protection category		IP20
Permissible operating ambient temperature	°C	–25 ... +60
Storage temperature	°C	–40 ... +70
Mech. lifetime of device		6000 switching cycles
I_{cu} mit S450E	A	1000
Vibration resistance		IEC 60068-2-6; EN 61373 Cat.1/Class B 5 g, 20 frequency cycle 5 ...150 ... 5 Hz at 24 V AC/DC, 5 mA short-term interruption <10 ms

Hti+ Tele L

		TELE L 48	TELE L 110	TELE L220
Rated operational voltage U_e	VAC/DC	48 ...130	110...250	220 ... 400
Operating range	% U_e	70 ...110		
Rated insulation voltage U_i	V	690		
Coil pull in consumption	W/VA	41.9 ... 307.3 42 ... 310*	23 ...119 20 ...105*	45 ...148.1
Rated frequency	Hz	DC; 50/60		
Pollution degree		3		
Standard		IEC 60947-2		
Connection C_u	mm^2	1 ... 25 strand 1 ... 35 cable		
Tightening torque	Nm	3.5		
AC/DC supply		any		
Mounting on DIN top hat rail		EN 60715		
Protection category		IP20 IP40 (actuating end only)		
Permissible operating ambient temperature	°C	–25 ... +60		
Storage temperature	°C	–40 ... +70		
Vibration resistance		IEC 60068-2-6; EN 61373 Cat.1/Class B		

Hti+ Tele U

		TELE U 24	TELE U 48	TELE U 220
Rated operational voltage U_e	VAC/DC	24 ... 36	48 ... 60	220 ... 250
Operating range				
open	% U_e	35 ... 70		
closed	% U_e	85		
Rated insulation voltage U_i	V	690		
Power loss of coil when attracted	W/VA	1.11 ... 1.14/1.2	1.14 ... 1.25/1.3	1.71 ... 1.91/1.9
Rated frequency	Hz	DC; 50/60		
Pollution degree		3		
Standard		IEC 60947-2.		
Connection C_u	mm^2	1 ... 25 strand 1 ... 35 cable		
Tightening torque	Nm	3.5		
AC/DC supply		any		
Mounting on DIN top hat rail		EN 60715		
Protection category		IP20 IP40 (actuating end only)		
Permissible operating ambient temperature	°C	–25 ... +60		
Storage temperature	°C	–40 ... +70		
Vibration resistance		IEC 60068-2-6; EN 61373 Cat.1/Class B		

T3.3. Type of accessories

Hti+ KS: Padlocking device

The Hti+ KS padlock device safely prevents unintentional switching on and off. Simply insert the lug of the padlock device through the borehole on the high breaking capacity Hti + MCB and lock with a padlock with lug diameter Ø 4 mm (not included in this reference). Even when the high breaking capacity MCB is secured with an padlock device against unintentional switching off, tripping remains possible in case of overload or short-circuit by the add on Rcds, shunt trip or Undervoltage devices.

HTI+ RH: ROTARY DRIVE

The rotary drive for 2–4 pole devices can be delivered for assembly on the switching field door. Switching is effortless due to the ergonomic design of the swivel lever. It is equipped with a lock for the OFF position that prevents switching on of the Hti + high breaking capacity MCB.

The slot hole of the lock can accept up to 3 padlocks with lug diameters of 7 mm (not included in the reference). Operation of the trigger and a view of the characteristics are not prevented Additionally, a rotary drive can also be supplied to switch machines; it has a red grip on a yellow background.

The rotary drive on the switching field door is comprised of the following components:

- Rotary handle Hti+RH Red and Black

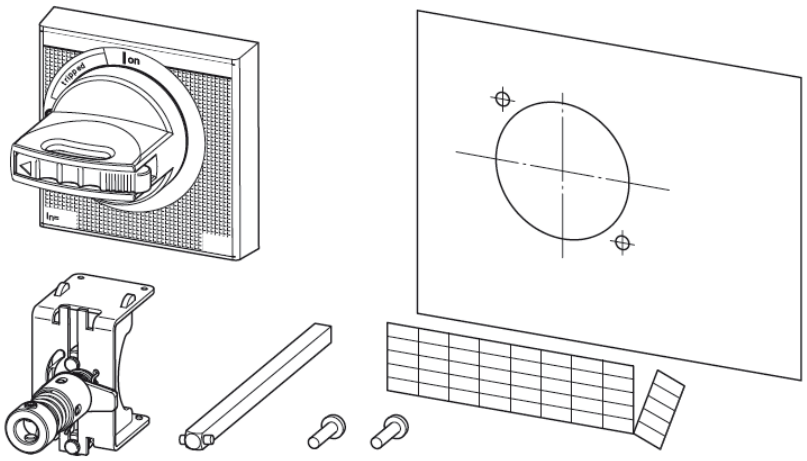
- Axle (500 mm) hti+ RH A500

- Drive for 2 and 4 poles mcbs Hti+RH DRIVE

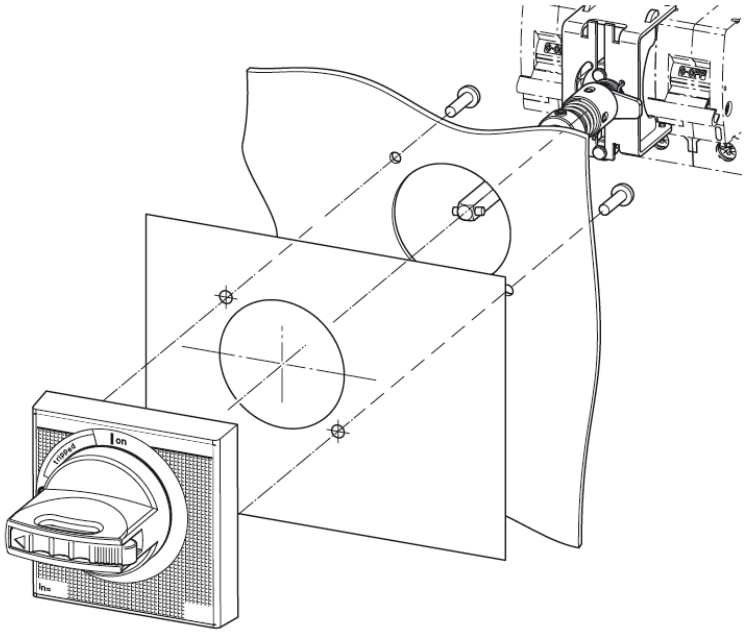
- IP54 kit for rotary handle for door mounting Hti+RH IP54

HTI+ RH: Mounting instruction

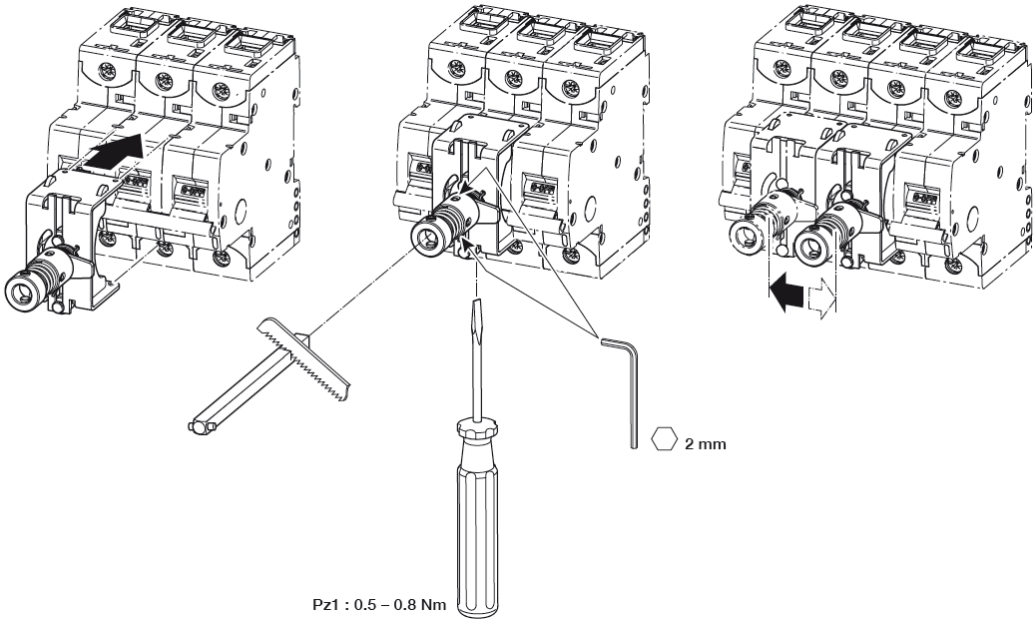
Material available:



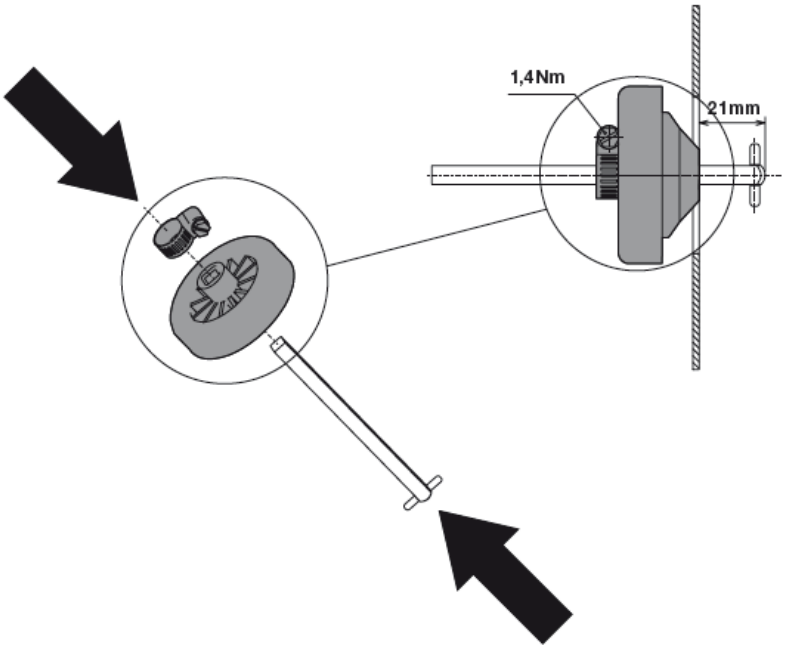
Complete view of assembly



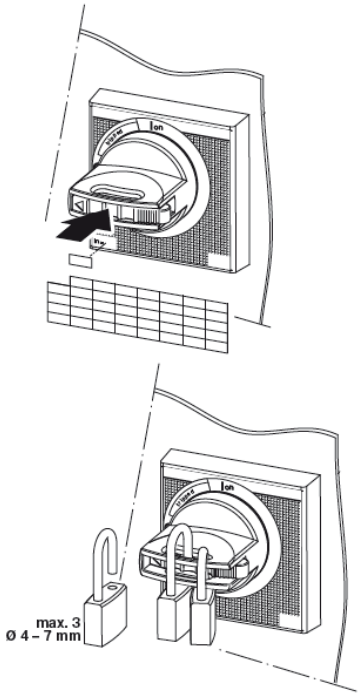
First step: Mount the DRIVE and the axel to the mcb Hti +



Second step: IP54 kit

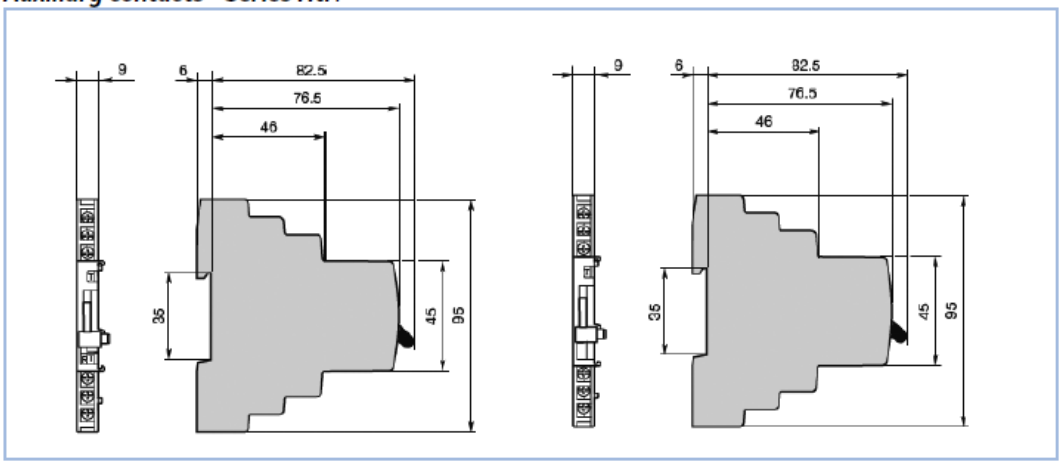


Third step: Connect the rotary handle in the door.

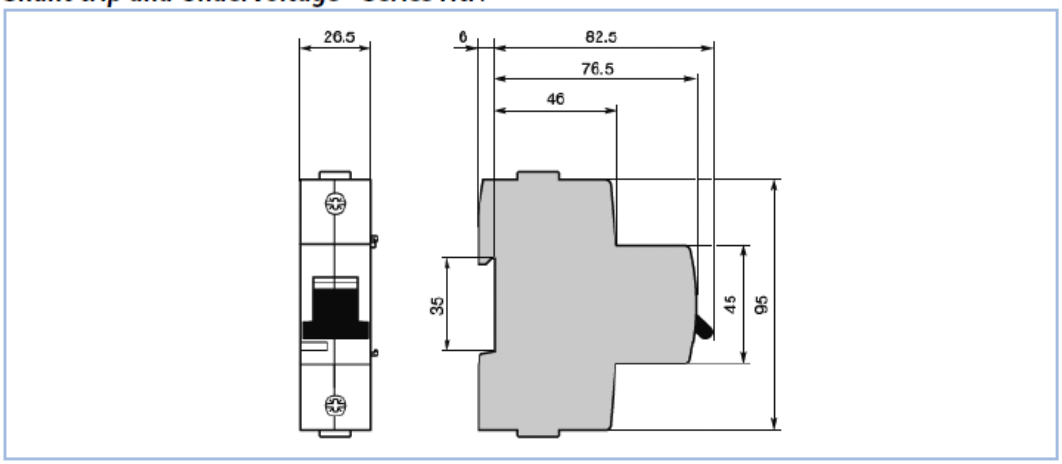


T3.4 Dimensions

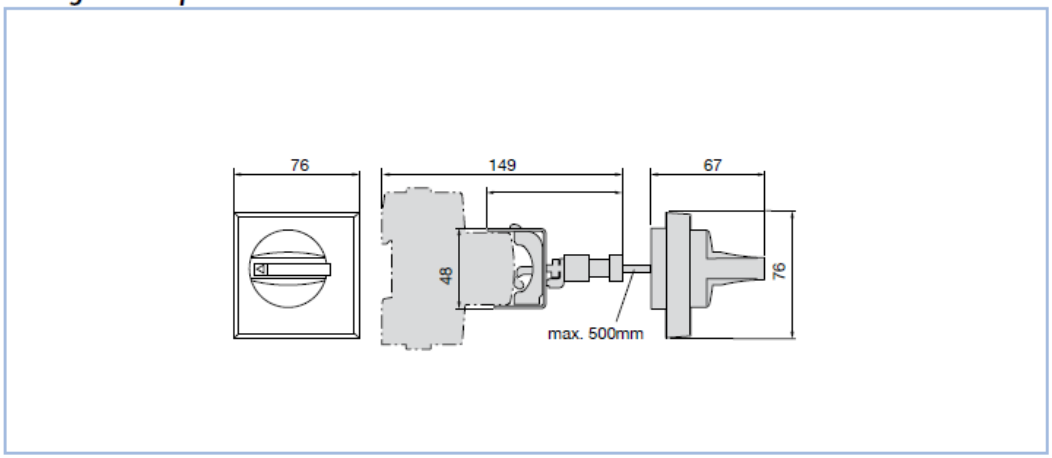
Auxiliary contacts - Series Hti+



Shunt trip and Undervoltage - Series Hti+

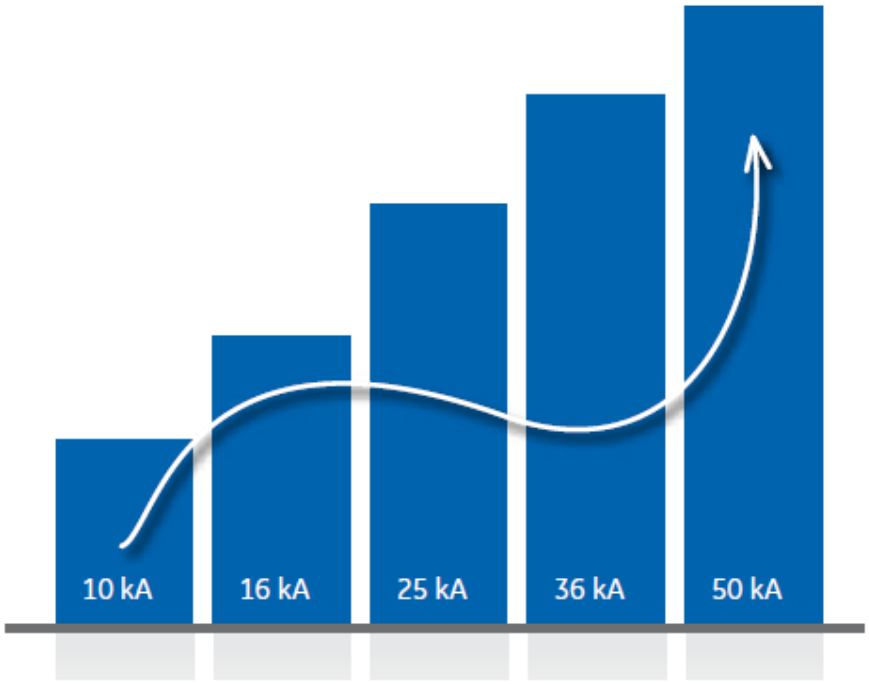


Rotary Handle for Series Hti+



For space saving.

For more power.



The Hti Plus