Back-up table for residual current devices with fuses

Un: 230/400V TT and TN earthing systems												
	Upstream	Fuses, type gG										
Downstream	In(A)	2-13	16	20	25	35	40	50	63	80	100	125
		Combined breaking capacity (kA)										
iDPNN Vigi (Clario) & iDPNN Vigi	1	100	-	-	-	-	-	-	-	-	-	-
iDPNN Vigi (Clario) & iDPNN Vigi	2	100	100	100	100	-	-	-	-	-	-	-
iDPNN Vigi (Clario) & iDPNN Vigi	3-4	100	100	100	100	-	-	-	-	10	-	-
iDPNN Vigi (Clario) & iDPNN Vigi	6-13	100	100	100	100	100	100	100	25	16	-	-
iDPNN Vigi (Clario) & iDPNN Vigi	16-20	100	100	100	100	100	100	100	100	25	-	-
iDPNN Vigi (Clario) & iDPNN Vigi	25-40	100	100	100	100	100	100	100	100	100	-	-
DCPN Vigi	6-32	100	100	100	100	100	100	100	35	35	35	35
ID 2 & 4-pole	16-40	100	100	100	100	80	80	30	30	16	10	-
ID 2 & 4-pole	63-100	100	100	100	100	80	80	30	30	16	10	5

The fuse can be placed either upstream or downstream of the residual current device. If it is placed downstream the connection between the residual current device and the fuse must be installed so that a short-circuit or earth fault can be ruled out.

Please note that the RCCB's have to be protected against overload situation.

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www.lk.dk

07- 2014

Overview of the earth leakage protection product range

Selection guide

Type			Residual current circuit breakers				Add-on residual current devices					Residual current devices RCBO
			iID		RCCB-ID 125 A	RCCB-ID type B	Vigi iC60			Vigi C120	Vigi NG125	DiCV40N
			PB104497-35		62074_SE-35	PB101616_SE-35	PB104466-40			PB107924-40	056946N_SE-35	PB104341B-35
Standards			IEC/EN 61008		IEC/EN 61008-1 and VDE 0664	IEC/EN 61008 and VDE 0664	IEC/EN 61009			IEC/EN 61009	IEC/EN 61009	IEC/EN 61009
Voltage (V)	Ue		110/230	230/400	230/400	230/400	110/230	230/400	400/415	230/400	230/400	230
Number of poles		1P+N	–	–	–	–	–	–	–	–	–	b
		2P	b	b	b	–	b	b	b	b	b	–
		3P	–	–	–	–	–	b	–	b	b	–
		4P	b	b	b	b	–	b	–	b	b	–
Type		AC	–	b	b	–	b	b	–	b	b	b
		A	b	b	b	–	b	b	b	b	b	–
		SI	–	b	b	–	–	b	–	b	b	b
		B	–	–	–	b	–	–	–	–	–	–
Impulse voltage (kV)	Uimp		6	6	4	4	6	6	6	6	8	4
Insulation voltage (V)	Ui		500	500	400	400	500	500	500	500	690	400
Current rating (A)	In		63	16 to 100	125	25 to 125	25-40-63	25-40-63	63	10-125	63-125	4 to 40
Frequency (Hz)			50	50	50	50	50/60	50/60	50/60	50/60	50/60	50/60
Rated breaking capacity (A)	Icn		–	–	–	–	–	–	–	–	–	6000
Rated conditional short-circuit current	Inc		10000	10000	10000	10000	–	–	–	–	–	–
Rated residual breaking and making capacity (A)	(IΔm)		1500	1500	1250	10 In (500 A min.)	–	–	–	–	–	6000
Sensitivity (mA)	(IΔn)	10	–	b	–	–	–	b	–	–	–	–
		30	b	b	b	b	b	b	b	b	b	b
		100	–	b	b	–	–	b	–	–	–	–
		300	–	b	b	b	b	b	–	b	b	b
		500	–	b	b	b	–	b	–	b	b	–
		1000	–	–	–	–	–	–	–	–	b	–
		3000	–	–	–	–	–	–	–	–	b	–
		300 s	–	b	b	b	–	b	–	b	b	–
		500 s	–	b	–	–	–	b	–	b	b	–
		1000 s	–	–	–	–	–	b	–	b	b	–
		3000 s	–	–	–	–	–	–	–	–	b	–
Electrical characteristics												
Curves		B	–		–	–	Depending on circuit breaker used			Depending on circuit breaker used	Depending on circuit breaker used	b
		C	–		–	–						b
		D	–		–	–						–
		L	–		–	–						–
		K	–		–	–						–
		MA	–		–	–						–
For more details, see module			CA902002		CM902001	CM902002	CA902005			CA902016	CM902008	CA902014
Accessories			CA907000, CA907001		CM902001	CM902002	CA907000, CA907001			CA907012, CA907013	CM907004, CM907006	A907013, CA907012
Auxiliaries			CA907000, CA907002		CM902001	CM902002	CA907000, CA907002			CA907008, CA907013	CM907004, CM907005	A907013, CA907008

Inc: rated conditional short-circuit current
Value of the alternating component of the prospective current that a residual current circuit breaker protected by an appropriate short-circuit protective device (SCPD) mounted in series can withstand in specified conditions of use.

IΔc: rated residual short-circuit current
Value of the alternating component of the prospective residual current that a residual current circuit breaker protected by an appropriate short-circuit protective device (SCPD) mounted in series can withstand in specified conditions of use.

Im: rated making and breaking capacity
Value of the alternating component of the prospective current that a residual current circuit breaker is capable of establishing or interrupting in specified conditions of use.

IΔm: rated making and breaking capacity
Value of the alternating component of the prospective residual current that a residual current circuit breaker is capable of establishing and withstanding during its opening time and interrupting in specified conditions of use and behaviour.

SCPD
Short-circuit protective device (a fuse in the case of our markings): this is the max. fuse that can be used to resist the value Inc = IΔc.

Protection
Earth leakage protection
www.schneider-electric.com

Overview of the earth leakage protection product range (cont.)

Protection
Earth leakage protection
iID double terminals residual current circuit breakers (A type)

DB106619 DB123865 DB123854

Country approval pictograms

KEMA KEUR approval, only for 2P/4P 25 A to 63 A catalogue numbers.

IEC/EN 61008-1

PB107413-40

PB107414-40

- The iID double tunnel terminals residual current circuit breakers provide:
- protection of persons against electric shock by direct contact (⩽ 30 mA),
- protection of persons against electric shock by indirect contact (⩾ 100 mA),
- protection of installations against the risk of fire (300 mA or 500 mA).

Catalogue numbers

iID double terminals residual current circuit breakers

Type			A									Width in 9 mm module
Product			iID									
Auxiliaries			Can accept auxiliaries, module CA907002									
2P		Sensitivity	10 mA	30 mA	30 mA Type G	100 mA	100 mA S	100 mA Type G	300 mA	300 mA S	500 mA	
DB122476 N 1 / N 2	Rating	16 A	A9Z20216	-	-	-	-	-	-	-	-	4
		25 A	A9Z20225	A9Z21225	-	-	-	-	A9Z24225	-	-	
		40 A	-	A9Z21240	A9Z81240	A9Z22240	-	A9Z82240	A9Z24240	A9Z25240	-	
		63 A	-	A9Z21263	A9Z81263	A9Z22263	-	-	A9Z24263	A9Z25263	-	
		80 A		A9Z21280	-	A9Z22280	-	-	A9Z24280	A9Z25280	-	
		100 A	-	A9Z21291	-	A9Z22291	-	-	A9Z24291	A9Z25291	-	
4P		Sensitivity	10 mA	30 mA	30 mA Type G	100 mA	100 mA S	100 mA Type G	300 mA	300 mA S	500 mA	
DB122477 N 1 3 5 / N 2 4 6	Rating	25 A	-	A9Z21425	-	-	-	-	A9Z24425	-	A9Z26425	8
		40 A	-	A9Z21440	-	A9Z22440	-	-	A9Z24440	A9Z25440	A9Z26440	
		63 A	-	A9Z21463	-	A9Z22463	-	-	A9Z24463	A9Z25463	A9Z26463	
		80 A	-	A9Z21480	A9Z81480	A9Z22480	-	-	A9Z24480	A9Z25480	A9Z26480	
		100 A	-	A9Z21491	A9Z81491	A9Z22491	-	A9Z82491	A9Z24491	A9Z25491	A9Z26491	
4P Type THV		Sensitivity	10 mA	30 mA	30 mA Type G	100 mA	100 mA S	100 mA Type G	300 mA	300 mA S	500 mA	
DB122477 N 1 3 5 / N 2 4 6	Rating	40 A	-	A9Z81440	A9Z91440	A9Z82440	A9Z83440	A9Z92440	-	-	-	8
		63 A	-	A9Z81463	A9Z91463	A9Z82463	A9Z83463	A9Z92463	-	-	-	
Voltage rating (Ue)		2P	230 - 240 V									
		4P	400 - 415 V									
Operating frequency			50/60 Hz									
Accessories			Module CA907000 and CA907001									

Protection
Earth leakage protection
iID double terminals residual current circuit breakers (SI type)

DB106619 DB123865 DB123854

Country approval pictograms

KEMA KEUR approval, only for 2P/4P 25 A to 63 A catalogue numbers.

IEC/EN 61008-1

PB107413-40

PB107414-40

- The iID double tunnel terminals residual current circuit breakers provide:
  - protection of persons against electric shock by direct contact (≤ 30 mA),
  - protection of persons against electric shock by indirect contact (≥ 100 mA),
  - protection of installations against the risk of fire (300 mA).

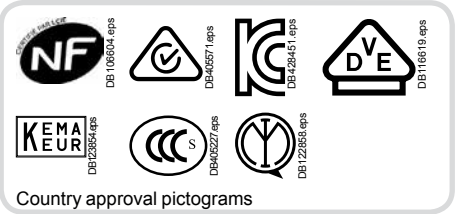
The **SI** type provides increased immunity from electrical interference and polluted or corrosive environments.

Catalogue numbers

iID double terminals residual current circuit breakers

Type			SI					Width in 9 mm module
Product			iID					
Auxiliaries			Can accept auxiliaries, module CA907002					
2P		Sensitivity	10 mA	30 mA	100 mA	100 mA S	300 mA S	
DB122476	Rating	25 A	A9Z30225	A9Z31225	-	-	-	4
		40 A	-	A9Z31240	A9Z32240	-	A9Z35240	
		63 A	-	A9Z31263	A9Z32263	-	A9Z35263	
		80 A		A9Z31280	A9Z32280	-	A9Z35280	
		100 A		A9Z31291	A9Z32291	-	A9Z35291	
4P		Sensitivity	10 mA	30 mA	100 mA	100 mA S	300 mA S	
DB122477	Rating	25 A	-	A9Z31425	-	-	-	8
		40 A	-	A9Z31440	A9Z32440	-	A9Z35440	
		63 A	-	A9Z31463	A9Z32463	-	A9Z35463	
		80 A	-	A9Z31480	A9Z32480	-	A9Z35480	
		100 A	-	A9Z31491	A9Z32491	-	A9Z35491	
4P Type THV		Sensitivity	10 mA	30 mA	100 mA	100 mA S	300 mA S	
DB122477	Rating	40 A	-	-	-	A9Z93440	A9Z95440	8
		63 A	-	-	-	A9Z93463	A9Z95463	
Voltage rating (Ue)		2P	230 - 240 V					
		4P	400 - 415 V					
Operating frequency			50/60 Hz					
Accessoires			Module CA907000 and CA907001					

Acti9 iID B-SI type residual current circuit breakers (RCCB)


Country approval pictograms

IEC/EN 61008-2-1
IEC/EN 62423
IEC 61543
VDE 0664

As per the above standards:
- The Acti9 iID B-SI type residual current circuit breakers provide:
  - protection of persons against electric shock by direct contact (30 mA),
  - protection of persons against electric shock by indirect contact (≥ 300 mA),
  - protection of installations against the risk of fire (300 mA or 500 mA).

B-SI type
The Acti9 iID B-SI type residual current circuit breakers provide:
- protection in the event of a continuous earth fault current on networks generated by:
  - controllers and variable speed drives,
  - battery chargers and inverters, such as used in photovoltaic application,
  - backed-up power supplies.
- They include protection against earth fault currents:
  - sinusoidal AC residual currents (AC type),
  - pulsed DC residual currents (A type),
  - multi frequency residual current (F type).
- The use of Acti9 iID B-SI type residual current circuit breaker can be made mandatory, according to standards applicable in country.
- For applications using 3-poles drives, such as:
  - crane,
  - lift,
  - HVAC,
  - pumping system.

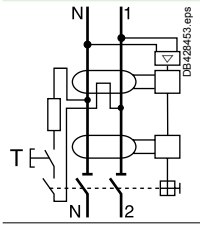
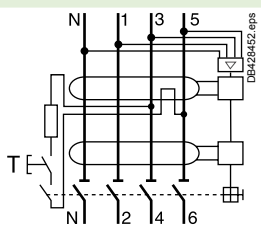
B type is needed.

For more information, see earth leakage protection guide CA908066E.

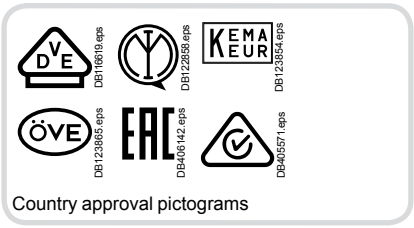
- The Acti9 iID B-SI type works optimally with the variable speed drives manufactured by Schneider Electric, even with a long cable length between motor and variable speed drive (up to 50 m).
- **SI** technology is embedded in Acti9 iID B-SI type residual current circuit breaker, providing increased immunity from electrical interference and polluted environments.
- The Acti9 iID B-SI type is compatible with Schneider Electric AC and A types wired in parallel or in series in the installation, following coordination tables (refer to earth leakage protection guide CA908066E).

Catalog numbers

Acti9 iID B-SI type residual current circuit breakers

Type			B-SI				Width in 9 mm module
2P		**Sensitivity**	**30 mA**	**300 mA**	**300 mA S**	**500 mA**	
	Rating	25 A	**A9Z61225**	**A9Z64225**	-	-	**8**
		40 A	**A9Z61240**	**A9Z64240**	-	-	
		63 A	**A9Z61263**	**A9Z64263**	-	-	
Voltage rating (Ue)			230 V				
Operating frequency			50 Hz				
4P		**Sensitivity**	**30 mA**	**300 mA**	**300 mA S**	**500 mA**	
	Rating	25 A	**A9Z61425**	**A9Z64425**	-	-	8
		40 A	**A9Z61440**	**A9Z64440**	**A9Z65440**	**A9Z66440**	
		63 A	**A9Z61463**	**A9Z64463**	**A9Z65463**	**A9Z66463**	
		80 A	**A9Z61480**	**A9Z64480**	**A9Z65480**	**A9Z66480**	
Voltage rating (Ue)			400 V				
Operating frequency			50 Hz				

Protection,
Earth leakage protection
Acti9 iCV40N residual current devices RCBO
6000 A


Country approval pictograms

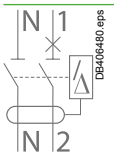
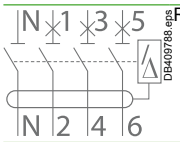
CEI/EN 61009-2-1

As per the above standard:
The residual current devices offers the following functions of earth leakage protection and circuit protection.
- ■ Earth leakage protection:
- □ protection of persons against electric shock by direct contact (≤ 30 mA),
- □ protection of persons against electric shock by indirect contact (300 mA),
- □ protection of installations against the risk of fire (300 mA).
- ■ Circuit protection:
- □ circuit protection against short-circuit currents,
- □ circuit protection against overload currents,
- □ disconnection.

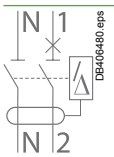
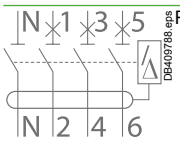
A-SI type
The A-SI type provides increased immunity from electrical interference and polluted or corrosive environments.

Catalog numbers

Acti9 iCV40N RCBO - B curve

Type		A			Width in 9-mm modules
Auxiliaries		Catalog module CA907002			
1P+N	Sensitivity	10 mA	30 mA	100 mA	
	Rating 6 A	-	A9DG3606	-	4
	10 A	A9DGA610	A9DG3610	-	
	13 A	-	A9DG3613	-	
	16 A	A9DGA616	A9DG3616	-	
	20 A	-	-	-	
	25 A	-	-	-	
	32 A	-	-	A9DGB632	
	40 A	-	-	A9DGB640	
3P+N	Sensitivity	10 mA		100 mA	
	Rating 10 A	-	A9DG3710	-	10
	13 A	-	A9DG3713	-	
	16 A	-	A9DG3716	-	
Accessories		Catalog modules CA907001 and CA907015			
Comb busbars		Catalog module CA907026			
PowerTag energy sensors		Catalog modules CA907029 and CA908058			

Acti9 iCV40N RCBO - C curve

Type		A				A-SI		Width in 9-mm modules
Auxiliaries		Catalog module CA907002						
1P+N	Sensitivity	10 mA	30 mA	100 mA	300 mA	30 mA	300 mA	
	Rating 6 A	-	A9DC3606	-	-	A9DF3606	A9DF7606	4
	10 A	A9DCA610	A9DC3610	-	A9DC7610	A9DF3610	A9DF7610	
	13 A	-	A9DC3613	-	A9DC7613	A9DF3613		
	13 A type G	-	A9DCG613	-	-	-	-	
	16 A	A9DCA616	A9DC3616	-	A9DC7616	A9DF3616	A9DF7616	
	20 A	-	A9DC3620	-		A9DF3620	A9DF7620	
	25 A	-	A9DC3625	-		A9DF3625	A9DF7625	
	32 A	-	A9DC3632	A9DCB632		A9DF3632	A9DF7632	
	40 A	-	A9DC3640	A9DCB640		A9DF3640	A9DF7640	
3P+N	Sensitivity	10 mA	30 mA	100 mA	300 mA	30 mA	300 mA	
	Rating 10 A	-	A9DC3710	-	A9DC7710	A9DF3710	-	10
	13 A	-	A9DC3713	-	-	A9DF3713	-	
	16 A	-	A9DC3716	-	A9DC7716	A9DF3716	-	
	20 A	-	A9DC3720	-	-	A9DF3720	-	
	25 A	-	A9DC3725	-	-	A9DF3725	-	
	32 A	-	A9DC3732	-	-	A9DF3732	-	
	40 A	-	A9DC3740	-	-	A9DF3740	-	
Accessories		Catalog modules CA907001 and CA907015						
Comb busbars		Catalog module CA907026						
PowerTag energy sensors		Catalog modules CA907029 and CA908058						

Acti9 iCV40H residual current devices RCBO
10000 A

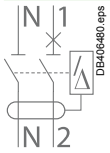
Country approval pictograms

CEI/EN 61009-2-1

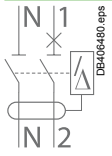
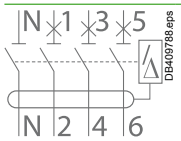
As per the above standard:
The residual current devices offers the following functions of earth leakage protection and circuit protection.
- ■ Earth leakage protection:
- □ protection of persons against electric shock by direct contact (30 mA),
- □ protection of persons against electric shock by indirect contact (300 mA),
- □ protection of installations against the risk of fire (300 mA).
- ■ Circuit protection:
- □ circuit protection against short-circuit currents,
- □ circuit protection against overload currents,
- □ disconnection.

A-SI type
The A-SI type provides increased immunity from electrical interference and polluted or corrosive environments.

Catalog numbers

Acti9 iCV40H RCBO - B curve				
Type			**A**	**Width in 9-mm modules**
Auxiliaries			**Catalog module CA907002**	
1P+N		**Sensitivity**	**30 mA**	
	Rating	6 A	**A9DG4606**	4
		10 A	**A9DG4610**	
		16 A	**A9DG4616**	
		20 A	**A9DG4620**	
		25 A	**A9DG4625**	
		32 A	**A9DG4632**	
Accessories			**Catalog modules CA907001 and CA907015**	
Comb busbars			**Catalog module CA907026**	
PowerTag energy sensors			**Catalog modules CA907029 and CA908058**	

Catalog numbers

Acti9 iCV40H RCBO - C curve						
Type			**A**		**A-SI**		**Width in 9-mm modules**
Auxiliaries			**Catalog module CA907002**				
1P+N		**Sensitivity**	**30 mA**	**300 mA**	**30 mA**	**300 mA**	
	Rating	6 A	**A9DC4606**	**A9DC8606**	**A9DF4606**	**A9DF8606**	4
		10 A	**A9DC4610**	**A9DC8610**	**A9DF4610**	**A9DF8610**	
		16 A	**A9DC4616**	**A9DC8616**	**A9DF4616**	**A9DF8616**	
		20 A	**A9DC4620**	**A9DC8620**	**A9DF4620**	**A9DF8620**	
		25 A	**A9DC4625**	**A9DC8625**	**A9DF4625**	**A9DF8625**	
		32 A	**A9DC4632**	**A9DC8632**	**A9DF4632**	**A9DF8632**	
3P+N		**Sensitivity**	**30 mA**	**300 mA**	**30 mA**	**300 mA**	
	Rating	6 A	**A9DC4706**	-	-	-	10
		10 A	**A9DC4710**	-	-	-	
		13 A	**A9DC4713**	-	-	-	
		16 A	**A9DC4716**	-	-	-	
		20 A	**A9DC4720**	-	-	-	
		25 A	**A9DC4725**	-	-	-	
		32 A	**A9DC4732**	-	-	-	
Accessories			**Catalog modules CA907001 and CA907015**				
Comb busbars			**Catalog module CA907026**				
PowerTag energy sensors			**Catalog modules CA907029 and CA908058**				

Protection of distribution systems
ComPact NSXm MicroLogic Vigi 4.1 trip unit
with integrated earth leakage protection

ComPact NSXm circuit breakers up to 160 A can be ordered with Micologic Vigi 4.1 trip unit with performance levels E/B/F/N/H.
They provide:
■ standard protection of distribution cables
■ earth leakage protection
■ indication of:
□ overload alarming (via LEDs and via SDx module)
□ overload tripping (via the SDx module)
□ earth leakage alarming (via the SDx module)
□ earth leakage tripping (via front face screen and the SDx module).

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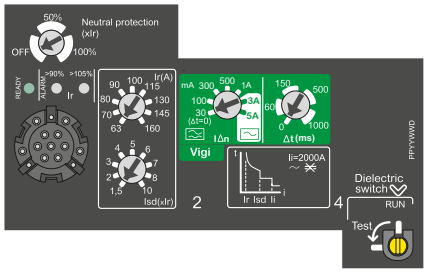

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ComPact NSXm MicroLogic Vgi 4.1.

MicroLogic Vigi 4.1

Circuit breakers equipped with MicroLogic Vigi 4.1 trip units can be used to protect distribution systems supplied by transformers.

Short-circuit and overload protection

Settings are made using the adjustment dials.

Overloads: Long time protection (Ir)

Inverse time protection against overloads with a wide range adjustable current pick-up Ir set using a dial and a non-adjustable time delay tr.

Short-circuits: Short-time protection with fixed time delay (Isd)

Protection with an adjustable pick-up Isd. Tripping takes place after a very short delay used to allow selectivity with the downstream device.

Short-circuits: Non-adjustable instantaneous protection

Instantaneous short-circuit protection with a fixed pick-up.

Neutral protection

■ On 3-pole circuit breakers, neutral protection is not possible.
■ On 4-pole circuit breakers, neutral protection may be set using a three-position switch:
□ OFF: neutral unprotected
□ 50 % [1]: neutral protection at half the value of the phase pick-up, i.e. 0.5 x Ir
□ 100 %: neutral fully protected at Ir.

Earth leakage protection

Protection with an adjustable leakage level (IΔn) with an adjustable delay (Δt).

Compliance with standards

■ IEC 60947-2, annex B.
■ IEC 60755, class A, immunity to DC components up to 6 mA.
■ Operation down to -25 °C as per VDE 664.

Power supply

It is self-powered internally and therefore does not require any external source. It's still working even when supplied by only two phases.

Sensitivity IΔn (A)

■ Type A: 30mA - 100mA - 300mA - 500mA - 1A.
■ Type AC: 30mA - 100mA - 300mA - 1A - 3A - 5A.

Intentional delay Δt (ms)

0 - 60 [2] - 150 [2] - 500 [2] - 1000 [2].

Operated voltage

200...440 V AC - 50/60 Hz.

Operating safety

The earth leakage protection is a user safety device. It must be tested at regular intervals (every 6 months) via test button.

[1] On 100A and 160A circuit breakers only.
[2] If the sensitivity is set to 30 mA, there is no time delay, whatever the time-delay setting.

Note: all the trip units have a transparent lead-sealable cover that protects access to the adjustment dials.

Protection of distribution systems
ComPact NSXm MicroLogic Vigi 4.1 trip unit
with integratedd earth leakage protection

Indications

Front indications

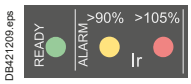
- Green “Ready” LED: flashes slowly when the circuit breaker is ready to trip in the event of an overload or short-circuit fault.
- Orange overload pre-alarm LED: steady on when I > 90 % Ir.
- Red overload LED: steady on when I > 105 % Ir.
- Screen that indicate an earth leakage fault trip - reset when product is powered.

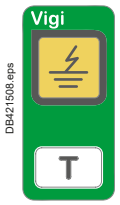
Alarming and fault differentiation

A side module SDx can be installed to provide alarming and fault differenciation:

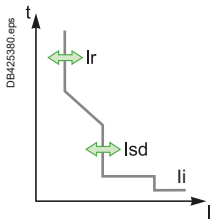
- overload alarm (I > 105 % Ir)
- overload trip indication
- earth leakage alarm (IΔn > 80 % threshold)
- earth leakage trip indication.

This module receives the signal from the MicroLogic electronic trip unit via an optical link and makes it available on the terminal block through NO/NC dry contacts.
The signal is cleared when the circuit breaker is restarted.
For description, see page C-11.

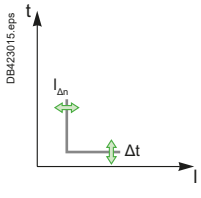




MicroLogic Vigi 4.1



Ratings (A)	In at 40 °C [1]		25	50	100	160					
Circuit breaker	ComPact NSXm		◉	◉	◉	◉					
L Long-time protection											
Pick-up (A)		Ir	value depending on trip unit rating (In) and setting on dial								
tripping between 1.05 and 1.20 Ir	In = 25 A	Ir =	10	11	12	14	16	18	20	22	25
	In = 50 A	Ir =	20	22	25	28	32	36	40	45	50
	In = 100 A	Ir =	40	45	50	56	63	70	80	90	100
	In = 160 A	Ir =	63	70	80	90	100	115	130	145	160
Time delay (s) accuracy 0 to -20%	**tr**		non-adjustable								
		1.5 x Ir	200								
		6 x Ir	8								
		7.2 x Ir	5								
Thermal memory			20 minutes before and after tripping								
S_0 Short-time protection with fixed time delay											
Pick-up (A) accuracy ±15 %	**Isd** = Ir x ...		1.5	2	3	4	5	6	7	8	10
Time delay (ms)	**tsd**		non-adjustable								
	Non-tripping time		20								
	Maximum break time		80								
I Instantaneous protection											
Pick-up (A) accuracy ±15 %	Ii non-adjustable		375	750	1500	2000					
	Non-tripping time		10 ms			5 ms					
	Maximum break time		50 ms								
R Earth leakage protection											
Sensitivity $I_{\Delta n}$ (A)	Adjustable	$I_{\Delta n}$ =	0.03	0.1	0.3	0.5	1	3	5		
	Type		A and AC					AC			
Time delay Δt (ms)	Adjustable	Δt =	0	60 [2]	150 [2]	500 [2]	1000 [2]				
	Maximum break time (ms)		< 40	< 140	< 300	< 800	< 1500				



[1] If the circuit breakers are used in high-temperature environments, the setting must take into account the thermal limitations of the circuit breaker.
[2] If the sensitivity is set to 30 mA, there is no time delay, whatever the time-delay setting.

Protection of distribution systems

ComPact NSX MicroLogic Vigi 4 trip unit with integrated earth leakage protection

The ComPact NSX range is now complemented with a new type of MicroLogic trip unit including both circuit protection and earth leakage protection. It means that the earth leakage protection, previously located within the Vigi Add-on, will be integrated within the existing size of the MicroLogic trip unit.
MicroLogic Vigi 4 is compliant with IEC 60947-2 annex B.

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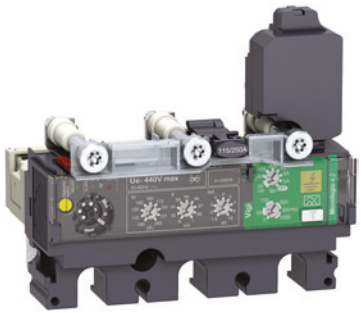

MicroLogic Vigi 4 (LS_oIR).

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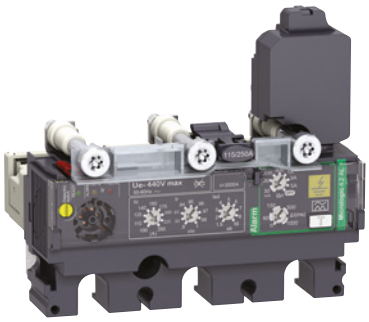


MicroLogic Vigi 4 AL (LS_oI + Earth Leakage Alarm).

MicroLogic Vigi 4

There are two versions of MicroLogic Vigi 4:
- distribution protection including Earth Leakage Protection (LS_oIR)
- distribution protection including Earth Leakage Alarm (LS_oI + Earth Leakage Alarm).

Protections

Settings are made using the rotary dial with fine adjustment capabilities.

Short circuit and overload protections

Overload: long-time protection (Ir)

Inverse time protection against overload with an adjustable current pick-up Ir set using a dial and a non-adjustable time delay tr.

Short-circuit: short-time protection with fixed time delay (Isd)

That protection is set with an adjustable pick-up Isd. The tripping takes place after a very short time used to allow selectivity with downstream devices.

Short circuit: non-adjustable instantaneous protection (with a fix pick-up)

Neutral protection

- On a 3-pole device, neutral protection is not possible
- On a 4-pole device, neutral protection may be set using the dedicated coding wheel to meet the following configurations: 4P 3D, 4P 3D + N/2 or 4P 4D (same as for MicroLogic 2).

Earth leakage protections

Adjustable leakage threshold (IΔn) and adjustable time delay threshold (Dt) by using the two dials on the green area of the trip unit.

Power supply

The trip unit is self supplied, and so does not need any external source. It works even when fed by 2 phases only.

Sensitivity IΔn (A)

- Type A: 30mA - 100mA - 300mA - 500mA - 1A - 3A - 5A (for the ratings 40 to 250A)
- Type A: 300mA - 500mA - 1A - 3A - 5A - 10A (for the ratings 400 to 570A).

Caution: "OFF" setting of IΔn is possible. It cancels the earth leakage protection, in that case, the circuit breaker with MicroLogic Vigi 4 behaves as a standard circuit breaker. That "OFF" position is located on the highest side of the coding wheel.

Intentional delay IΔt (s)

Case IΔn = 30mA: Δt 0 sec (whatever the setting)
Case IΔn > 30mA: Δt 0 – 60ms – 150ms – 500ms – 1sec (by setting)

Operated voltage

200 to 440 VAC (only) – 50/60 Hz

Operating safety

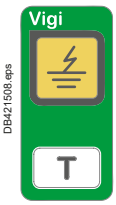
The earth leakage protection is a user safety device. It must be regularly tested using the test button (T) that simulates a real current leakage within the toroid. When IΔn is set on the OFF position, press the T will cancel any test.
As for standard circuit breaker, the circuit breaker with MicroLogic Vigi 4 can be reset after any fault by operating an OFF/ON procedure.
Specific for the circuit breaker with MicroLogic Vigi 4 Alarm (AL), after testing as well as after a real leakage fault, it can be reset by pressing more than 3 seconds the test button (T), to avoid switching OFF the device.

Protection of distribution systems
ComPact NSX MicroLogic Vigi 4 trip unit
with integrated earth leakage protection

Indications

Front indications

- Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in case of a fault.
- Orange overload pre-alarm LED: steady ON when I > 90% Ir.
- Red overload LED: steady ON when I > 105% Ir.
- Yellow Screen: indicates an earth leakage fault (reset when operating OFF/ON for the "trip" or when pressing >3sec the T button for the Alarm).

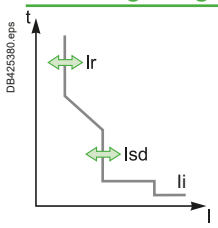


Alarming and fault differentiation

- An overload trip signal can be remotely available by installing an SDx relay module inside the circuit breaker on both "trip" and "alarm" versions.
- An earth leakage trip signal can be remotely available by installing an SDx module, only on the "trip" version.
- An earth leakage alarm signal (MicroLogic Vigi 4 AL) can be remotely available on the SDx, for the circuit breaker with MicroLogic Vigi 4 Alarm".

This module receives the signal from the MicroLogic trip unit via an optical link and makes it available on the terminal block. The signal is reset when the breaker is operated.

MicroLogic Vigi 4

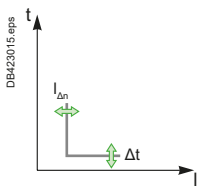


Ratings (A)	In at 40 °C [1]	40	100	160	250	400	570
Circuit breaker	ComPact NSX100	●	●				
	ComPact NSX160	●	●	●			
	ComPact NSX250	●	●	●	●		
	ComPact NSX400					●	
	ComPact NSX630					●	●

L Long-time protection											
Pick-up (A)		Io	value depending on the rating (In) and the dial setting								
tripping between	In = 40 A	Io =	18	18	20	23	25	28	32	36	40
1.05 and 1.20 Ir	In = 100 A	Io =	40	45	50	55	63	70	80	90	100
	In = 160 A	Io =	63	70	80	90	100	110	125	150	160
	In = 250 A	Io =	100	110	125	140	160	175	200	225	250
	In = 400 A	Io =	160	180	200	230	250	280	320	360	400
	In = 570 A	Io =	250	280	320	350	400	450	500	570	570
	Ir = Io x		9 fine adjustment settings from 0.9 to 1 (0.9 – 0.92 ... 0.98 - 1)								
Time delay (s)	**tr**		non-adjustable								
accuracy 0 to -20%	at	1.5 x Ir	tr = 400 s								
	at	6 x Ir	tr = 16 s								
	at	7.2 x Ir	tr = 11 s								
Thermal memory			20 minutes before and after tripping								

S_0 Short-time protection with fixed time delay										
Pick-up (A)	**Isd** = Ir x ...	1.5	2	3	4	5	6	7	8	10
accuracy ±10 %										
Time delay (ms)	**tsd**	non-adjustable								
	Non-tripping time	20								
	Maximum break time	80								

I Instantaneous protection							
Pick-up (A)	Ii non-adjustable	600	1500	2400	3000	4800	6900
accuracy ±15 %	Non-tripping time	10 ms					
	Maximum break time	50 ms					



R Earth leakage protection / Earth leakage alarm											
Sensitivity (A)	Type A, adjustable (9 positions)										
	In = 40 A	IΔn =	0.03	0.03	0.1	0.3	0.5	1	3	5	OFF
	In = 100 A	IΔn =	0.03	0.03	0.1	0.3	0.5	1	3	5	OFF
	In = 160 A	IΔn =	0.03	0.03	0.1	0.3	0.5	1	3	5	OFF
	In = 250 A	IΔn =	0.03	0.03	0.1	0.3	0.5	1	3	5	OFF
	In = 400 A	IΔn =	0.3	0.3	0.5	1	3	5	10	10	OFF
	In = 570 A	IΔn =	0.3	0.3	0.5	1	3	5	10	10	OFF
Time delay Δt (ms)	Adjustable	Δt =	0	60 [2]	150 [2]	500 [2]	1000 [2]				
	Maximum break time (ms)		<40	<140	<300	<800	<1500	ms			

[1] For the use in high temperature environment, take into account the thermal limitation of the breaker.
[2] The time delay (Δt) is mandatory and forced to "Δt = 0" when the IΔn dial is set on 30mA (0.03). The time delay has no effect when the dial IΔn is set to the "OFF" position.

Protection of distribution systems
ComPact NSX Vigi add-on protection against insulation faults

There are two ways to add earth-leakage protection to any three or four-pole ComPact NSX100 to 630 circuit breaker equipped with a magnetic, thermal-magnetic or MicroLogic 2, 5 or 6 trip unit:
- by adding a Vigi add-on to the circuit breaker
- by using a Vigirex relay and separate toroids.

PB105113.eps

ComPact NSX Vigi add-on.

PB100436.eps

Earth-leakage relay.

PB119226.eps

Separate toroids.

Circuit breaker with Vigi add-on

- For general characteristics of circuit breakers, see pages A-6 and A-7.
- Vigi add-on. Earth-leakage protection is achieved by installing a Vigi add-on (characteristics and selection criteria on next page) directly on the circuit breaker terminals. It directly actuates the trip unit (magnetic, thermal-magnetic or MicroLogic).

Circuit breaker combined with a Vigirex relay

ComPact NSX circuit breaker + Vigirex relay

Vigirex relays may be used to add external earth-leakage protection to ComPact NSX circuit breakers. The circuit breakers must be equipped with an MN or MX voltage release. The Vigirex relays add special tripping thresholds and time delays for earth-leakage protection.
Vigirex relays are very useful when faced with major installation constraints (circuit breaker already installed and connected, limited space available, etc.).

Vigirex-relay characteristics
- Sensitivity adjustable from 30 mA to 30 A and time-delay settings (0 to 4.5 seconds).
- Closed toroids up to 630 A (30 to 300 mm in diameter), opened toroids up to 250 A (80 to 120 mm in diameter) or rectangular sensors up to 630 A.
- 50/60 Hz distribution systems.

Options
- Trip indication by a fail-safe contact.
- Pre-alarm contact and LED, etc.

Compliance with standards
- IEC 60947-2, annex M.
- IEC/EN 60755: general requirements for residual-current operated protective devices.
- IEC/EN 61000-4-2 to 4-6: immunity tests.
- CISPR 11: Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement.
- UL1053 and CSA22.2 No. 144 for RH10, RH21 and RH99 relays at supply voltages up to and including 220/240 V.

ComPact NSX Vigi add-on

Addition of the Vigi add-on does not modify circuit-breaker characteristics:
- compliance with standards
- degree of protection, class II front-face insulation
- positive contact indication
- electrical characteristics
- trip-unit characteristics
- installation and connection modes
- indication, measurement and control auxiliaries
- installation and connection accessories.

Dimensions and weights		NSX100/160/250	NSX400/630
Dimensions	3 poles	105 x 236 x 86	140 x 355 x 110
W x H x D (mm)	4 poles	140 x 236 x 86	185 x 355 x 110
Weight (kg)	3 poles	2.5	8.8
	4 poles	3.2	10.8

Compliance with standards
- IEC 60947-2, annex B.
- IEC 60755, Type A, immunity to DC components up to 6 mA.
- Operation down to -25 °C as per VDE 664.

Remote indications
Vigi add-on may be equipped with an auxiliary contact (SDV) to remotely signal tripping due to an earth fault.

Use of 4-pole Vigi add-on with a 3-pole ComPact NSX
In a 3-phase installation with an uninterrupted neutral, an accessory makes it possible to use a 4-pole Vigi add-on with connection of the neutral cable.

Power supply
Vigi add-on are self-powered internally by the distribution-system voltage and therefore do not require any external source. They continue to function even when supplied by only two phases.

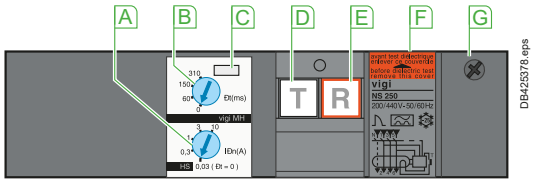
Vigi add-on selection

Type	Vigi ME	Vigi MH	Vigi MB
Number of poles	3, 4 [1]	3, 4 [1]	3, 4 [1]
NSX100	◉	◉	-
NXS160	◉	◉	-
NSX250	-	◉	-
NSX400	-	-	◉
NSX630	-	-	◉
Protection characteristics			
Sensitivity	fixed	adjustable	adjustable
IΔn (A)	0.3	0.03 - 0.3 - 1 - 3 - 10	0.3 - 1 - 3 - 10 - 30
Time delay	fixed	adjustable	adjustable
Intentional delay (ms)	< 40	0 - 60 [2] - 150 [2] - 310 [2]	0 - 60 - 150 - 310
Max. break time (ms)	< 40	< 40 < 140 < 300 < 800	< 40 < 140 < 300 < 800
Rated voltage V AC 50/60 Hz	200...440	200... 440 - 440...550	200...440 - 440...550

[1] Vigi 3P add-on may also be used on 3P circuit breakers used for two-phase protection.
[2] If the sensitivity is set to 30 mA, there is no time delay, whatever the time-delay setting.

Operating safety

The Vigi add-on is a user safety device. It must be tested at regular intervals (every 6 months) via test button.

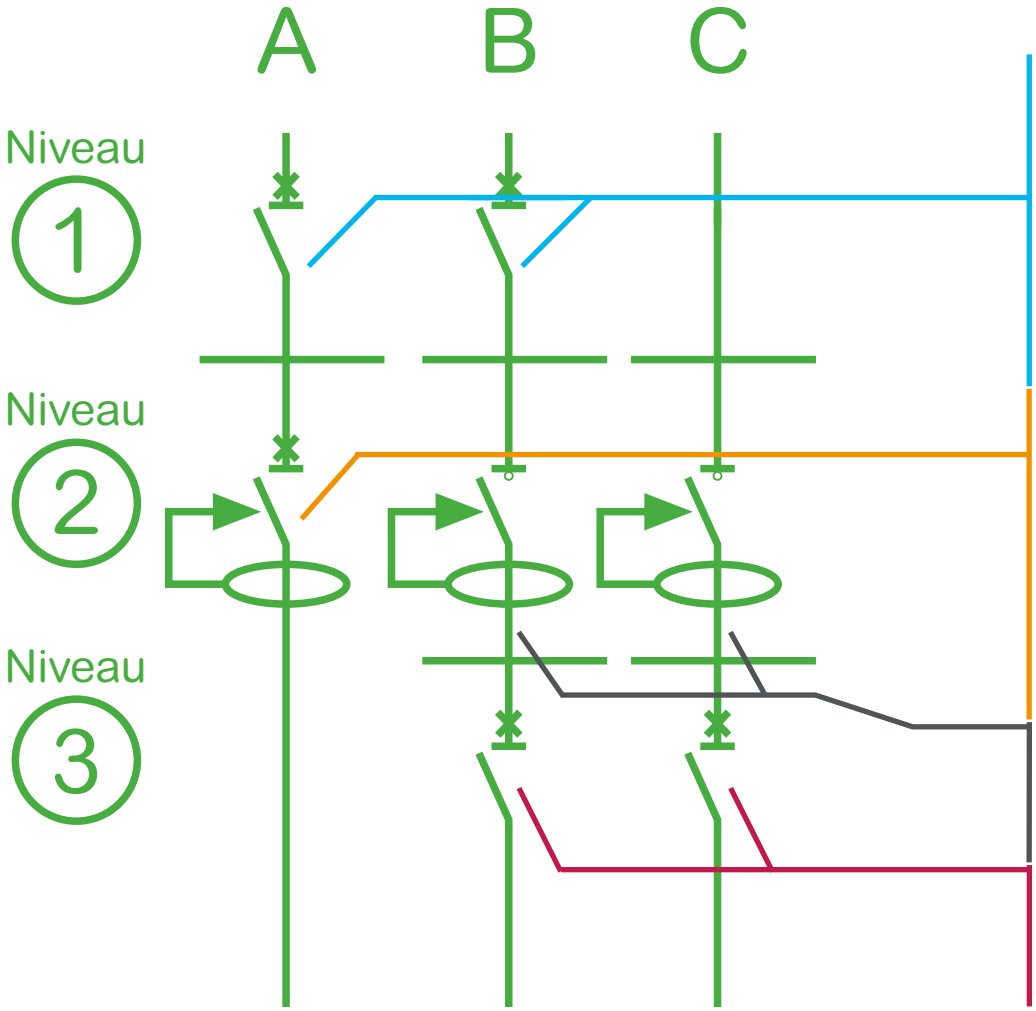


A Sensitivity setting
B Time-delay setting (for selective earth-leakage protection).
C Lead-seal fixture for controlled access to settings.
D Test button simulating an earth-fault for regular checks on the tripping function
E Reset button (reset required after earth-fault tripping).
F Rating plate
G Housing for SDV auxiliary contact.

Plug-in devices
The Vigi add-on can be installed on a plug-in base. Special accessories are required (see catalog number chapter).

Vejledning til valg af materiel med fejlstrømsbeskyttelse – Ik,max: 10kA

Følgende kombinationer kan benyttes:



Un: 230-240V/380-415V TT og TN systemer			
Brydere MCB / MCCB	Relæ	In	Kombination
NG125N	Termomagnetisk	10-125A	A/B/C* (≤ 63A iID)
NG125L	Termomagnetisk	10-80A	A/B/C* (≤ 80A iID)
NSXmE/B/F	Termomagnetisk	16-160A	A/B
NSX100	TM/Micrologic	16-100A	A/B
NSX160	TM/Micrologic	16-160A	A/B
NSX250	TM/Micrologic	16-250A	A/B
Kombiafbrydere RCBO	Poler	In	Kombination
iC40 + Vigi	1P+N/3P+N	2-40A	A
iC40N + Vigi	1P+N/3P+N	2-40A	A
iCV40N RCBO	1P+N/3P+N	6-40A	A
iCV40H RCBO	1P+N/3P+N	6-32A	A
iC60 RCBO	2P/4P	6-32A	A
iC60N/H/L Vigi	1P+N/3P+N	0,5-63A	A
Fejlstrømsafbrydere RCD	Poler	In	Kombination
iID - type A	2/4	25-100A	B/C*
iID - type B	2/4	25-80A	B/C*
Automatsikringer MCB	Poler	In	Kombination
iC40N	1P+N/3P+N	2-40A	B
iC60N/H/L	1+N–4P	0,5-63A	B/C* (≤ 63A iID)

Forbindelser mellem niveau 2 og 3 fra afgangsklemmer på fejlstrømsafbryder til efterfølgende automatsikringer skal oplægges således, at kortslutning og jordfejl kan anses for udelukket.

* For kombination C, kan bryderen placeres enten i niveau 1 eller 3. Er den placeret i niveau 1, behøver forbindelsen mellem niveau 1 og 2 ikke at være udført som ovennævnte.

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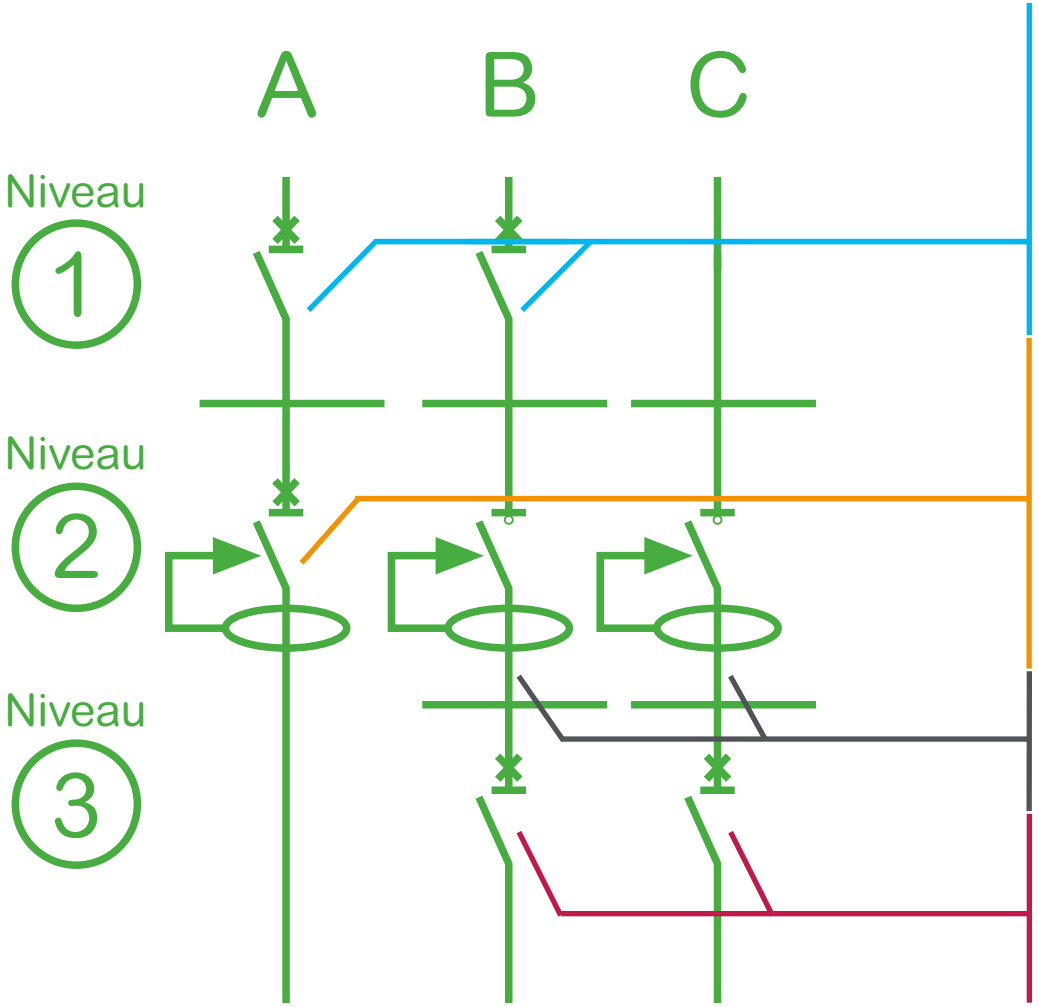
Vejledning til valg af materiel med fejlstrømsbeskyttelse – Ik,max: 16kA

Følgende kombinationer kan benyttes:



Un: 230-240V/380-415V TT og TN systemer			
Brydere MCB / MCCB	Relæ	In	Kombination
NG125N	Termomagnetisk	10-125A	A/B/C* (≤ 40A iID)
NG125L	Termomagnetisk	10-80A	A/B/C* (≤ 40A iID)
NSXmE/B/F	Termomagnetisk	16-160A	A/B
NSX100	TM/Micrologic	16-100A	A/B
NSX160	TM/Micrologic	16-160A	A/B
NSX250	TM/Micrologic	16-250A	A/B
Kombiafbrydere RCBO	Poler	In	Kombination
iC40 + Vigi	1P+N/3P+N	2-40A	A (kun med NG125L)
iC40N + Vigi	1P+N/3P+N	2-40A	A
iCV40N RCBO	1P+N/3P+N	6-40A	A
iCV40H RCBO	1P+N/3P+N	6-32A	A
iC60 RCBO	2P/4P	6-32A	A
iC60N/H/L Vigi	1P+N/3P+N	0,5-63A	A
Fejlstrømsafbrydere RCD	Poler	In	Kombination
iID - type A	2/4	25-100A	B/C*
iID - type B	2/4	25-80A	B/C*
Automatsikringer MCB	Poler	In	Kombination
iC40N	1P+N / 3P+N	2-16A	B
iC60N	1P+N / 3P+N	0,5-63A	B
iC60H/L	1P+N–4P	0,5-63A	B/C* (< 63A iID)

Forbindelser mellem niveau 2 og 3 fra afgangsklemmer på fejlstrømsafbryder til efterfølgende automatsikringer skal oplægges således, at kortslutning og jordfejl kan anses for udelukket.

* For kombination C, kan bryderen placeres enten i niveau 1 eller 3. Er den placeret i niveau 1, behøver forbindelsen mellem niveau 1 og 2 ikke at være udført som ovennævnte.

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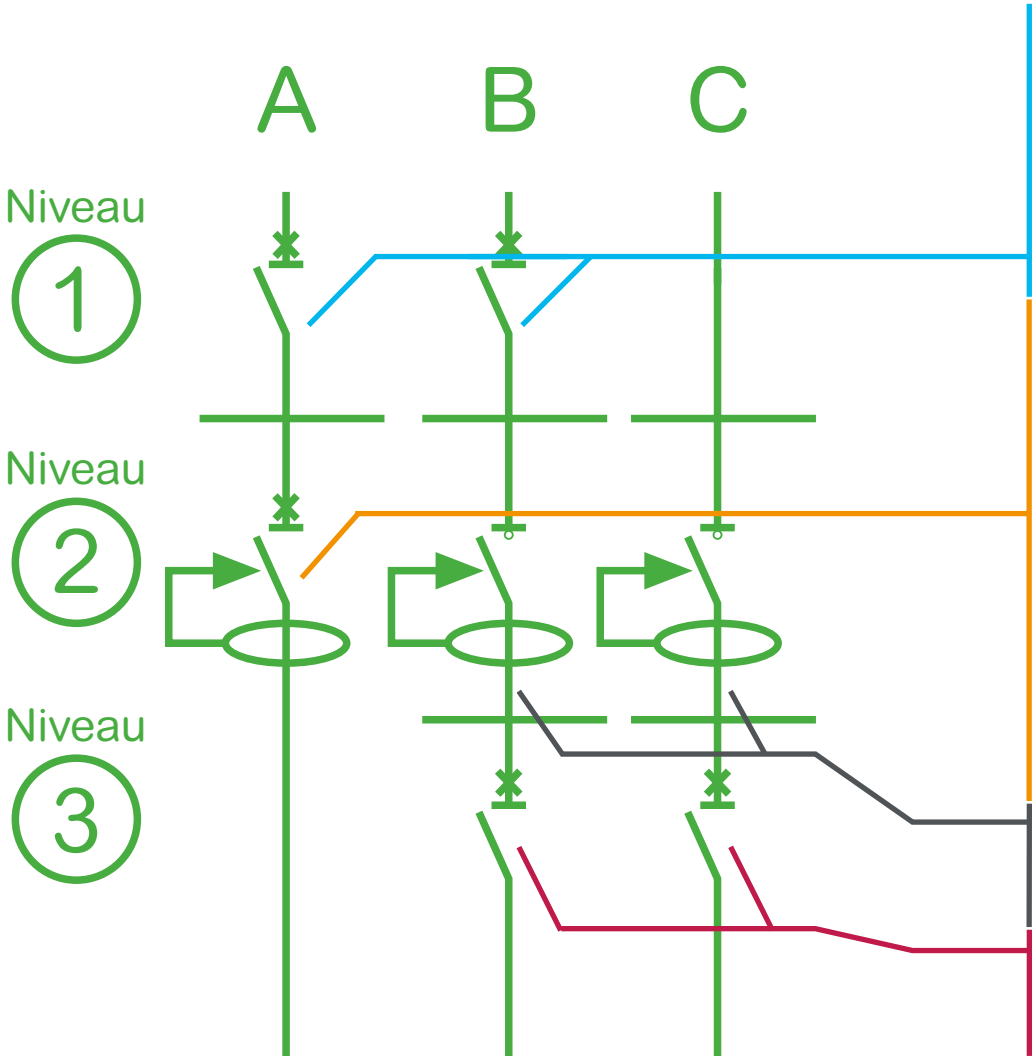
Vejledning til valg af materiel med fejlstrømsbeskyttelse – Ik,max: 20kA

Følgende kombinationer kan benyttes:



Un: 230-240V/380-415V TT og TN systemer			
Brydere MCB / MCCB	Relæ	In	Kombination
NG125N	Termomagnetisk	10-125A	A/B
NG125L	Termomagnetisk	10-80A	A/B/C * (≤ 40A iID)
NSXmB/F	Termomagnetisk	16-160A	A/B (NSXmE ikke gyldig)
NSX100	TM/Micrologic	16-100A	A/B
NSX160	TM/Micrologic	16-160A	A/B
NSX250	TM/Micrologic	16-250A	A/B
Kombiafbrydere RCBO	Poler	In	Kombination
iC40 + Vigi	1P+N/3P+N	2-40A	A (kun med NG125L)
iC40N + Vigi	1P+N/3P+N	2-16A	A
iC40N + Vigi	1P+N/3P+N	20-40A	A (kun med NG125L)
iCV40N RCBO	1P+N/3P+N	6-16A	A
iCV40N RCBO	1P+N/3P+N	20-40A	A (kun med NG125L)
iCV40H RCBO	1P+N/3P+N	6-16A	A
iCV40H RCBO	1P+N/3P+N	20-32A	A (kun med NG125L)
iC60 RCBO	2P	6-32A	A
iC60 RCBO	4P	6-20A	A
iC60 RCBO	4P	25-32A	A (ikke med NSX250)
iC60N/H/L Vigi	1P+N/3P+N	0,5-63A	A
Fejlstrømsafbrydere RCD	Poler	In	Kombination
iID - type A	2/4	25-100A	B/C*
iID - type B	2/4	25-80A	B/C*
Automatsikringer MCB	Poler	In	Kombination
iC60N/H	1P+N–4P	0,5-40A	B
iC60L	1P+N–4P	0,5-40A	B/C* (≤ 40A iID)

Forbindelser mellem niveau 2 og 3 fra afgangsklemmer på fejlstrømsafbryder til efterfølgende automatsikringer skal oplægges således, at kortslutning og jordfejl kan anses for udelukket.

* For kombination C, kan bryderen placeres enten i niveau 1 eller 3. Er den placeret i niveau 1, behøver forbindelsen mellem niveau 1 og 2 ikke at være udført som ovennævnte.

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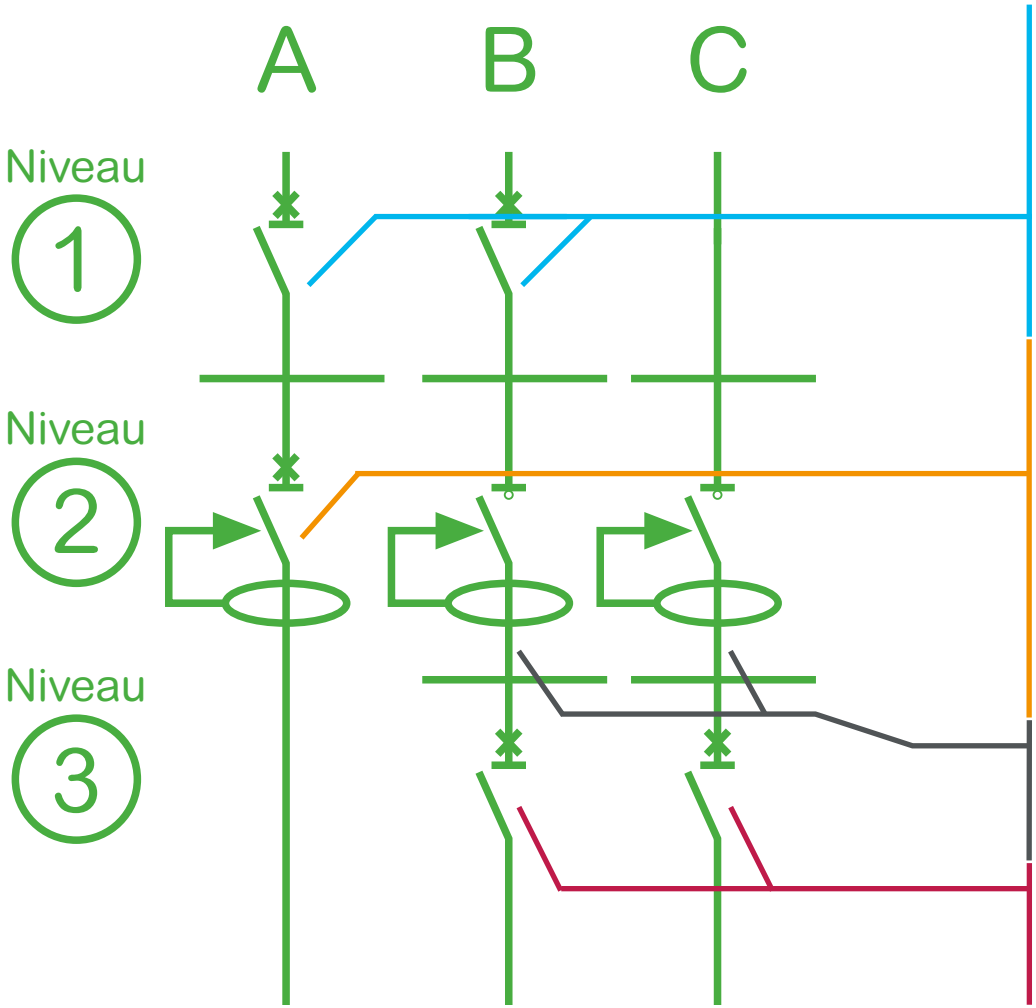
Vejledning til valg af materiel med fejlstrømsbeskyttelse – Ik,max: 25kA

Følgende kombinationer kan benyttes:



Un: 230-240V/380-415V TT og TN systemer			
Brydere MCB / MCCB	Relæ	In	Kombination
NG125N	Termomagnetisk	10-125A	A/B
NG125L	Termomagnetisk	10-80A	A/B/C*(≤ 25A iID)
NSXmB/F	Termomagnetisk	16-160A	A/B (NSXmE ikke gyldig)
NSX100	TM/Micrologic	16-100A	A/B
NSX160	TM/Micrologic	16-160A	A/B
NSX250	TM/Micrologic	16-250A	A
Kombiafbrydere RCBO	Poler	In	Kombination
iC40N + Vigi	1P+N/3P+N	2-40A	A (kun med NG125L)
iCV40N RCBO	1P+N/3P+N	6-40A	A (kun med NG125L)
iCV40H RCBO	1P+N/3P+N	6-32A	A (kun med NG125L)
iC60N Vigi	1P+N/3P+N	0,5-63A	A (ikke med NSXmB & NSX_B)
iC60/H/L Vigi	1P+N/3P+N	0,5-63A	A
iC60 RCBO	2P	6-32A	A
iC60 RCBO	4P	6-32A	A (kun med NG125N/L)
Fejlstrømsafbrydere RCD	Poler	In	Kombination
iID - type A	2/4	25-100A	B/C*
iID - type B	2/4	25-80A	B/C*
Automatsikringer MCB	Poler	In	Kombination
iC60N/H/L	1P+N–4P	0,5-40A	B
iC60L	1P+N–4P	0,5-25A	C* (≤ 25A iID)

Forbindelser mellem niveau 2 og 3 fra afgangsklemmer på fejlstrømsafbryder til efterfølgende automatsikringer skal oplægges således, at kortslutning og jordfejl kan anses for udelukket.

* For kombination C, kan bryderen placeres enten i niveau 1 eller 3. Er den placeret i niveau 1, behøver forbindelsen mellem niveau 1 og 2 ikke at være udført som ovennævnte.

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Back-up tabeller Un: 230-240V/380-415V TT og TN systemer

Kombination A Se diagram på side 1.

	Bryder ①	NG125N	NG125L	NSXmE	NSXmB/F	NS(X)100B/F/N	NS(X)160B/F/N	NS(X)250B/F/N
RCBO ②	In ②	Kombineret brydeevne via Back-up (kA)						
iC40 + Vigi	2-40A	10	20	10	10	10	10	10
iC40N + Vigi	2-16A	20	25	16	20	20	20	20
iC40N + Vigi	20-40A	16	25	16	16	16	16	16
iCV40N RCBO	6-16A	20	25	16	20	20	20	20
iCV40N RCBO	20-40A	16	25	16	16	16	16	16
iCV40H RCBO	6-16A	20	25	16	20	20	20	20
iCV40H RCBO	20-32A	16	25	16	16	16	16	16
iC60 RCBO 2P	6-32A	25	36	16	25	25	25	25
iC60 RCBO 4P	6-20A	25	25	16	20	20	20	20
iC60 RCBO 4P	25-32A	25	25	16	20	20	20	16
iC60N Vigi	0,5-63A	25	25	16	20/25	20/25/30	20/25/30	20/25/25
iC60H Vigi	0,5-63A	25	36	16	25	36	30	25
iC60L Vigi	0,5-25A	25	50	16	25	40	40	30
iC60L Vigi	32-40A	25	50	16	25	40	40	30
iC60L Vigi	50-63A	25	36	16	25	36	30	25

Kombination B Inkluderer altid iID RCD'er i niveau 2. In for disse RCD'er ligger i mellem 25 & 100A, hvis andet ikke er angivet i tabellen.

Foransiddende bryder ①	Eftersiddende bryder ③	Mærkestrøm ③	Kombineret brydeevne via Back-up (kA)
NG125N/L	iC40N	2-16A	16
NG125N/L	iC40N	20-40A	10
NSXm E/B/F	iC40N	2-16A	16
NSXm E/B/F	iC40N	20-40A	10
NS(X)100/160/250	iC40N	2-16A	16
NS(X)100/160/250	iC40N	20-40A	10
NG125N/L	iC60N/H/L	0,5-40A	25
NG125N/L	iC60N/H/L	50-63A	16
NSXm E	iC60N/H/L	0,5-63A	16
NSXm B/F	iC60N/H/L	0,5-40A	25
NSXm B/F	iC60N/H/L	50-63A	16
NS(X)100/160	iC60N/H/L	0,5-40A	25
NS(X)100/160	iC60N/H/L	50-63A	16
NS(X)250	iC60N/H/L	0,5-40A	20
NS(X)250	iC60N/H/L	50-63A	16

Kombination C Inkluderer altid iID RCD'er i niveau 2. In for disse RCD'er ligger i mellem 25 & 100A, hvis andet ikke er angivet i tabellen.

Foransiddende bryder ①	Eftersiddende bryder ③	Mærkestrøm ③	Kombineret brydeevne via Back-up (kA)
-	iC60N	0,5-63A	10
-	iC60H	0,5-63A	16
-	iC60L	0,5-63A	25(25A iID) – 20(40A iID) – 16(63A iID)
NG125N (10-63A)	-	-	16(25-40A iID) – 10(63A iID)
NG125L	-	-	25(25A iID) – 20(40A iID) – 10(63-80A iID)
NSXm B/F	-	-	5
NS(X)100/160	-	-	5

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Bemærk at belastningsstrømmen igennem fejlstrømsafbryderen ikke må være større end dens mærkestrøm.

10 - 2019

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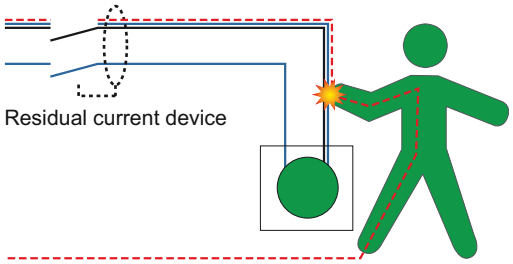
Earth leakage protection
Response time of high-sensitivity residual current devices 30 mA

All the high-sensitivity residual current devices (30 mA) in the Acti 9 range conform to the IEC/EN 61008 and IEC/EN 61009 standards. The response times defined by these standards guarantee their effectiveness in protecting people against direct contacts.



Response time

The response time of a residual current device is the time between the appearance of a dangerous leakage current and circuit power down.

Types AC, A, *Si*

Fault current (mA)		Maximum response time (ms)
IΔn/2	15 mA	No tripping
IΔn	30 mA	300 ms
2 x IΔn	60 mA	150 ms
5 x IΔn	150 mA	40 ms

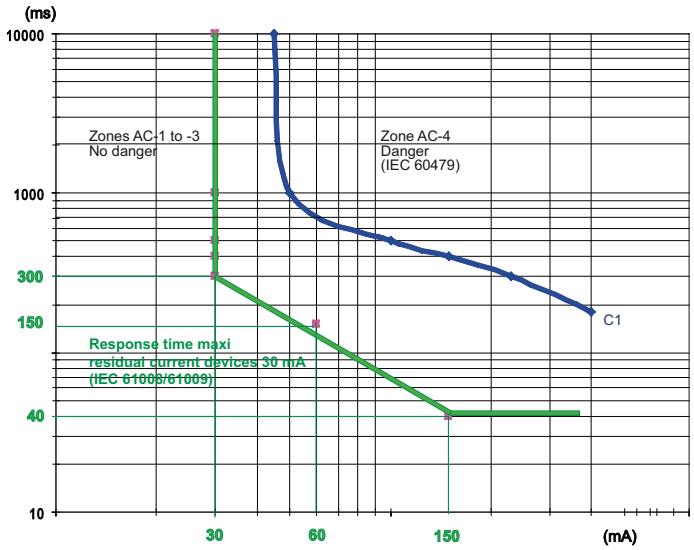
Type B, DC leakage current

Fault current (mA)		Maximum response time (ms)
IΔn/2	15 mA	No tripping
2 x IΔn	60 mA	300 ms
4 x IΔn	120 mA	150 ms
10 x IΔn	300 mA	40 ms

These response times conform to the specifications of the IEC/EN 61008, IEC/EN 61009 and IEC/EN 62423 (DC leakage current) standards.

They guarantee protection of people against direct contacts for the following reasons :

- when a person comes into direct contact with a live conductor, the current passes directly through the human body,
- this current, with the same magnitude, is detected by the residual current device.



- The IEC 60479 technical report studies the sensitivity of the human body to the electric current. Curve c1 defines for each current value the maximum time before the current causes injury to a person.
- Superimposing the two curves shows that the above response times protects the users.

Measuring the response time

If the user wishes to check the response time of his residual current devices, he should follow a specific procedure to:

- establish a leakage current of calibrated magnitude,
- measure the exact response time.

Procedure

The measuring instruments must conform to **IEC**/EN 61557-6.
Carry out the operations in the following order according to the safety instructions:

- disconnect the loads,
- install the measuring instrument downstream of the residual current device to be tested (for example on a power outlet),
- perform the measurement.