












Unibis™ - Compact miniature circuit breakers **A**

- A.34 Benefits
 A.36 **Series EC 91E NR** - Miniature circuit breakers 1P+N - 4.5 kA
 A.37 **Series EC 91 NR** - Miniature circuit breakers 6 kA
 A.38 **Series EC 911** - Miniature circuit breakers 1P+1P - 6 kA
 A.40 **Series EC 90E** - Miniature circuit breakers 4.5 kA
 A.42 **Series EC 90** - Miniature circuit breakers 6 kA
 A.44 **Series DA 41N** - Miniature circuit breakers 1P+N - 4.5 kA
 A.45 **Series CA UN** - Unibis™ Interface auxiliary
 A.46 Technical data
 A.39 Dimensions

Quick overview

Page no.	Series	Applications	Poles	Add-on devices	Tripping curve	Rating current (A)	Short-circuit capacity (kA)	
A.36	EC 91E NR	 	1+N (1 mod.)	yes	B-C	2 - 40	4.5	6
A.37	EC 91 NR	 	1+N (1 mod.)	yes	B-C	2 - 40	6	10 ⁽¹⁾
A.38	EC 911	 	1P+1P (1 mod.)	yes	B-C	2+2 - 20+20	6	6
A.40	EC 90E	 	2, 3, 4	yes	B-C	6 - 32	4.5	6
A.42	EC 90	 	2	yes	B-C	2 - 40	6	10 ⁽²⁾
			3, 4	yes	B-C	2 - 32	6	6
A.44	DA 41N		1+N (1 mod.)	yes	C	6 - 40	4.5	



B: 3-5 In
 C: 5-10 In

EN/IEC 60898-1 
 EN/IEC 60947-2 

(1) 8000 for 32 and 40A
 (2) At U_n = 240V_{ac}

Benefits of the compact Unibis™ MCBs

- 2 circuits in 1 module
- Unibis™: the solution for space problems

Unibis™ MCBs are one of the latest introductions in the AEG MCBs range and are developed to reduce the size of the distribution board to the minimum. The performances are upgraded to 10kA.



1P+1P
in
1 mod.

1P+N⁽¹⁾
in
1 mod.

2P
in
1 mod.

3P
in
2 mod.

4P
in
2 mod.

- ✓ Brandnew design:
2P in 1 module,
3P and 4P in 2 modules
- ✓ Complete range: from 4.5–6–10kA⁽²⁾,
2–40 Amps, B and C curves
- ✓ 100% compatible with all AEG
MCBs auxiliaries and accessories
- ✓ 100% Series E90 quality and reliability
- ✓ VDE certified

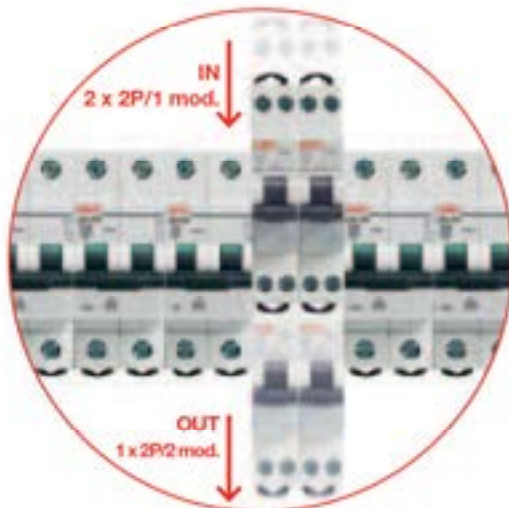
3 performances
up to 10kA



(1) Neutral left or right available
(2) 1P+N and 2P according IEC 60749-2

Saving up to 50% space in distribution boards!

Replacing standard
MCBs by compact
Unibis™ MCBs



Quality and reliability guaranteed

Unibis™

	<p>High performance clips To fix the MCB to the DIN-rail.</p>		<p>High performance torque Up to 3Nm.</p>
<p>Easy to replace Double clips make it easy to replace the MCBs, especially when a busbar is installed.</p>		<p>Userfriendly All screws are on the same level to work fast and easy.</p>	
	<p>Green or red flag on toggle with isolation applications Correct information about the real position. Minimum 5mm distance between open contacts is ensured.</p>		<p>Part of the family Unibis™ MCBs fit perfectly in the AEG MCBs range.</p>
<p>Safety terminals IP20 The capacity of Unibis™ terminals has been doubled. Connection possibilities: (2 x 4mm²) or (1 x 4mm²) + (1 x 6mm²).</p>		<p>Full functionality A small auxiliary contact is the interface to the complete functionality of the AEG MCBs auxiliaries and accessories.</p>	



Compact MCBs Unibis™

Series EC 91E NR

EN/IEC 60898-1	4500
	3
EN/IEC 60947-2	6kA

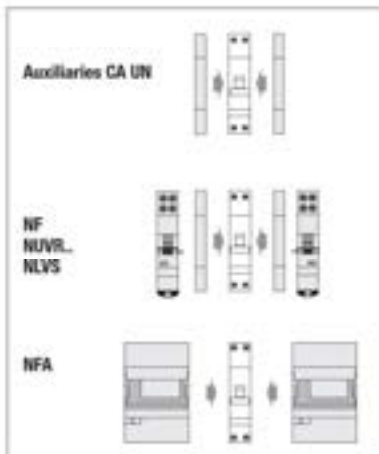
Applications



Approvals / Marking



Add-on devices



When coupling an add-on device (remote release NF, undervoltage trip NUVRL, panel-board switch NLVS) to the MCB, a CA UN auxiliary has to be coupled first as interface. Not needed with remote drive NFA.

- Auxiliary contacts CA ● pg. A.15
- Auxiliary contacts ● pg. A.24
- Other auxiliaries ● pg. A.24

- Busbars ● pg. C.10
- Dimensions ● pg. A.39

Performance

Thermal setting (In)	(A)	2-40
Rated voltage AC (Un)	(V)	230
Minimum operating voltage U _{Bmin}	(V)	12
Tripping characteristics		B-C
Selectivity class		3
Mechanical/electrical endurance		20000/10000 ⁽¹⁾
Tropicalisation acc. to EN/IEC 60068-2		55°C at 95% RH
Terminal capacity flexible/rigid cable	(mm ²)	10-16 ⁽²⁾
Poles		1P+N (1 mod)
Weight	(g)	125

Short-circuit capacity

Acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1P+N	230	4.5

Acc. to EN/IEC 60947-2

Poles	V	I _{cu} (kA)
1P+N	230	6

Attention: do not use on IT net configuration

Series EC 91E NR - 4.5kA - characteristics B-C

In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	EC91E B06NR	692876	EC91E C06NR	692858	12
10	EC91E B10NR	692877	EC91E C10NR	692859	12
16	EC91E B16NR	692878	EC91E C16NR	692860	12
20	EC91E B20NR	692879	EC91E C20NR	692861	12
25	EC91E B25NR	692880	EC91E C25NR	692862	12
32	EC91E B32NR	692881	EC91E C32NR	692863	12

(1) 8000 for 32 and 40A

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)



Compact MCBs Unibis™

Series EC 91 NR

EN/IEC 60898-1

6000

3

EN/IEC 60947-2

10kA

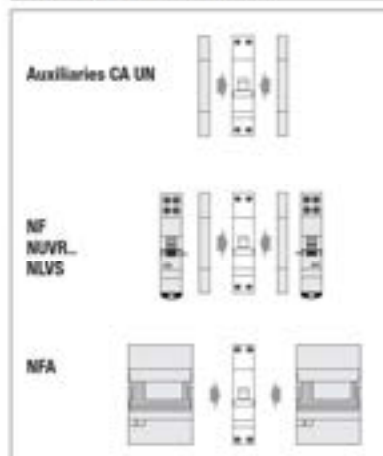
Applications



Approvals / Marking



Add-on devices



When coupling an add-on device (remote release NF, undervoltage trip NUVRL, panel-board switch NLVS) to the MCB, a CA UN auxiliary has to be coupled first as interface. Not needed with remote drive NFA.

Auxiliary contacts CA ● pg. A.45
Auxiliary contacts ● pg. A.24
Other auxiliaries ● pg. A.24

Busbars ● pg. C.10
Dimensions ● pg. A.39

Performance

Thermal setting (In)	(A)	2-40
Rated voltage AC (Un)	(V)	230
Minimum operating voltage U _{Bmin}	(V)	12
Tripping characteristics		B-C
Selectivity class		3
Mechanical/electrical endurance		20000/10000 ⁽¹⁾
Tropicalisation acc. to EN/IEC 60068-2		55°C at 95% RH
Terminal capacity flexible/rigid cable	(mm ²)	10-16 ⁽²⁾
Poles		1P+N (1 mod)
Weight	(g)	125

Short-circuit capacity

Acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1P+N	230	6

Acc. to EN/IEC 60947-2

Poles	V	I _{cu} (kA)
1P+N	230	10

Attention: do not use on IT net configuration

Series EC 91 NR - 6kA - characteristics B-C

In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2	EC91 B02NR	692883	EC91 C02NR	692885	12
4	EC91 B04NR	692884	EC91 C04NR	692886	12
6	EC91 B06NR	692885	EC91 C06NR	692887	12
10	EC91 B10NR	692886	EC91 C10NR	692888	12
13	EC91 B13NR	692887	EC91 C13NR	692889	12
16	EC91 B16NR	692888	EC91 C16NR	692890	12
20	EC91 B20NR	692889	EC91 C20NR	692891	12
25	EC91 B25NR	692890	EC91 C25NR	692892	12
32	EC91 B32NR	692891	EC91 C32NR	692893	12
40	EC91 B40NR	692892	EC91 C40NR	692894	12

(1) 8000 for 32 and 40A

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)



Compact MCBs Unibis™

Two independent circuits in one module!

Series EC 911

EN/IEC 60898-1

6000
3

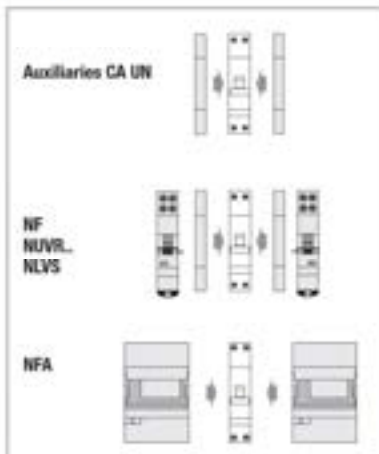
Applications



Approval / Marking



Add-on devices



When coupling an add-on device (remote release NF, undervoltage trip NUVRL, panel-board switch NLVS) to the MCB, a CA UN auxiliary has to be coupled first as interface. Not needed with remote drive NFA.

- Auxiliary contacts CA ● pg. A.15
- Auxiliary contacts ● pg. A.24
- Other auxiliaries ● pg. A.24

- Busbars ● pg. C.10
- Dimensions ● pg. A.39

Performance

Thermal setting (In)	(A) 2-40
Rated voltage AC (Un)	(V) 240 ⁽¹⁾
Minimum operating voltage U _{0min}	(V) 12
Tripping characteristics	B-C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽²⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable (mm ²)	10-16 ⁽³⁾
Poles	1P+1P (1 mod)
Weight	(g) 125

Short-circuit capacity

Acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1+1	240	6

Series EC 911 - 6kA - characteristics B-C

In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2	EC 911 B02B02	692581	EC 911 C02C02	692591	12
4	EC 911 B04B04	692582	EC 911 C04C04	692592	12
6	EC 911 B06B06	692583	EC 911 C06C06	692593	12
10	EC 911 B10B10	692584	EC 911 C10C10	692594	12
13	EC 911 B13B13	692585	EC 911 C13C13	692595	12
16	EC 911 B16B16	692586	EC 911 C16C16	692596	12
20	EC 911 B20B20	692587	EC 911 C20C20	692597	12

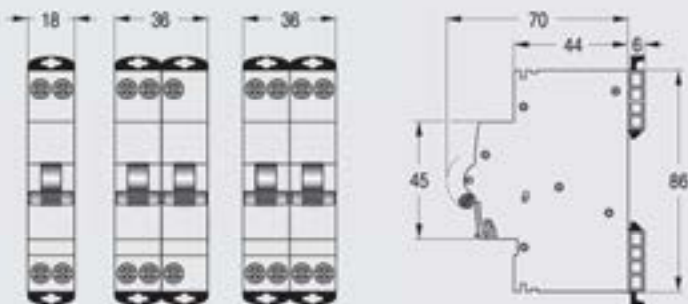
(1) Single phase supply or same phase in 3Ph supply

(2) 8000 for 32 and 40A

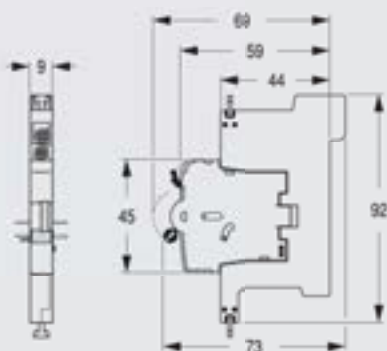
(3) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

Dimensional drawings

Miniature Circuit Breakers - Series EC 91E NR, EC 91 NR, EC 911 + EC 90



Auxiliary interface - Series CA UN





Compact MCBs Unibis™

Series EC 90E

EN/IEC 60898-1	4500
	3
EN/IEC 60947-2	6kA

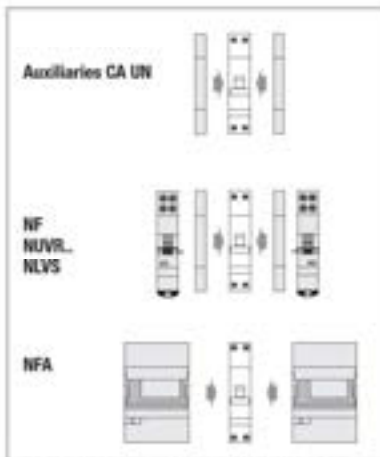
Applications



Approvals / Marking



Add-on devices



When coupling an add-on device (remote release NF, undervoltage trip NUVRL, panel-board switch NLVS) to the MCB, a CA UN auxiliary has to be coupled first as interface. Not needed with remote drive NFA.

- Auxiliary contacts CA ● pg. A.15
- Auxiliary contacts ● pg. A.24
- Other auxiliaries ● pg. A.24

- Busbars ● pg. C.10
- Dimensions ● pg. A.39

Performance

Thermal setting (In)	(A) 2-40 ⁽¹⁾
Rated voltage AC (Un)	(V) 240/415
Minimum operating voltage U _{Bmin}	(V) 12
Tripping characteristics	B-C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽²⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable	(mm ²) 10-16 ⁽³⁾
Poles	2, 3, 4
Weight	(g) 160

(1) 8000 for 32 and 40A

Short-circuit capacity

Acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
2P	415	4.5
3P	415	4.5
4P	415	4.5

Acc. to EN/IEC 60947-2

Poles	V	I _{cu} (kA)
2P	240	6
3P	415	6
4P	415	6

(1) 32A, 3P & 4P in progress

(2) 8000 for 32 and 40A

(3) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

EC 90E- 4.5kA - characteristics B-C



2P
1 mod.



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	EC 92 E B06	692975	EC 92 E C06	692894	12
10	EC 92 E B10	692976	EC 92 E C10	692895	12
16	EC 92 E B16	692977	EC 92 E C16	692896	12
20	EC 92 E B20	692978	EC 92 E C20	692897	12
25	EC 92 E B25	692979	EC 92 E C25	692898	12
32	EC 92 E B32	692980	EC 92 E C32	692899	12



3P(1)
1 mod.



6	EC 93 E B06	692984 ⁽¹⁾	EC 93 E C06	692903 ⁽¹⁾	6
10	EC 93 E B10	692985 ⁽¹⁾	EC 93 E C10	692904 ⁽¹⁾	6
16	EC 93 E B16	692986 ⁽¹⁾	EC 93 E C16	692905 ⁽¹⁾	6
20	EC 93 E B20	692987 ⁽¹⁾	EC 93 E C20	692906 ⁽¹⁾	6
25	EC 93 E B25	692988 ⁽¹⁾	EC 93 E C25	692907 ⁽¹⁾	6
32	EC 93 E B32	692989 ⁽¹⁾	EC 93 E C32	692908 ⁽¹⁾	6



4P
2 mod.



6	EC 94 E B06	692993	EC 94 E C06	692912	6
10	EC 94 E B10	692994	EC 94 E C10	692913	6
16	EC 94 E B16	692995	EC 94 E C16	692914	6
20	EC 94 E B20	692996	EC 94 E C20	692915	6
25	EC 94 E B25	692997	EC 94 E C25	692916	6
32 ⁽²⁾	EC 94 E B32	692998	EC 94 E C32	692917	6

(1) The auxiliary contact CA UN must be placed only on the left side of the 3P MCBs



Compact MCBs Unibis™

Series EC 90

EN/IEC 60898-1

6000

3

EN/IEC 60947-2

10kA⁽¹⁾

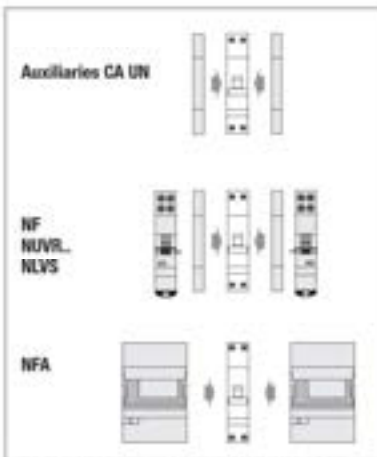
Applications



Approvals / Marking



Add-on devices



When coupling an add-on device (remote release NF, undervoltage trip NUVRL, panel-board switch NLVS) to the MCB, a CA UN auxiliary has to be coupled first as interface. Not needed with remote drive NFA.

Auxiliary contacts CA ● pg. A.15
 Auxiliary contacts ● pg. A.24
 Other auxiliaries ● pg. A.24

Busbars ● pg. C.10
 Dimensions ● pg. A.39

Performance

Thermal setting (In)	(A) 2-40 ⁽²⁾
Rated voltage AC (Un)	(V) 240/415
Minimum operating voltage U _{Bmin}	(V) 12
Tripping characteristics	B-C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽³⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable (mm ²)	10-16 ⁽⁴⁾
Poles	2, 3, 4
Weight	(g) 160

(1) 8000 for 32 and 40A

Short-circuit capacity

Acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
2P	415	6
3P	415	6
4P	415	6

Acc. to EN/IEC 60947-2

Poles	V	I _{cu} (kA)
2P	240	10
2P	415	6
3P	415	6
4P	415	6

(1) 6kA at 115V

(2) 32A, 3P & 4P

(3) 8000 for 32 and 40A

(4) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

EC 90- 6kA - characteristics B-C



2P
1 mod.



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2	EC 92 B02	693000	EC 92 C02	692919	12
4	EC 92 B04	693001	EC 92 C04	692920	12
6	EC 92 B06	693002	EC 92 C06	692921	12
10	EC 92 B10	693003	EC 92 C10	692922	12
16	EC 92 B16	693004	EC 92 C16	692923	12
20	EC 92 B20	693005	EC 92 C20	692924	12
25	EC 92 B25	693006	EC 92 C25	692925	12
32	EC 92 B32	693007	EC 92 C32	692926	12
40	EC 92 B40	693008	EC 92 C40	692927	12



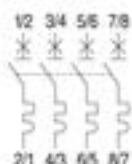
3P(1)
1 mod.



2	EC 93 B02	693009 ⁽¹⁾	EC 93 C02	692928 ⁽¹⁾	6
4	EC 93 B04	693010 ⁽¹⁾	EC 93 C04	692929 ⁽¹⁾	6
6	EC 93 B06	693011 ⁽¹⁾	EC 93 C06	692930 ⁽¹⁾	6
10	EC 93 B10	693012 ⁽¹⁾	EC 93 C10	692931 ⁽¹⁾	6
16	EC 93 B16	693013 ⁽¹⁾	EC 93 C16	692932 ⁽¹⁾	6
20	EC 93 B20	693014 ⁽¹⁾	EC 93 C20	692933 ⁽¹⁾	6
25	EC 93 B25	693015 ⁽¹⁾	EC 93 C25	692934 ⁽¹⁾	6
32 ⁽²⁾	EC 93 B32	693016 ⁽¹⁾	EC 93 C32	692935 ⁽¹⁾	6



4P
2 mod.



2	EC 94 B02	693018	EC 94 C02	692937	6
4	EC 94 B04	693019	EC 94 C04	692938	6
6	EC 94 B06	693020	EC 94 C06	692939	6
10	EC 94 B10	693021	EC 94 C10	692940	6
16	EC 94 B16	693022	EC 94 C16	692941	6
20	EC 94 B20	693023	EC 94 C20	692942	6
25	EC 94 B25	693024	EC 94 C25	692943	6
32	EC 94 B32	693025	EC 94 C32	692944	6

(1) The auxiliary contact CA UN must be placed only on the left side of the 3P MCBs



Compact MCBs Unibis™

Series DA 41 N

EN/IEC 60898-1

4500
3

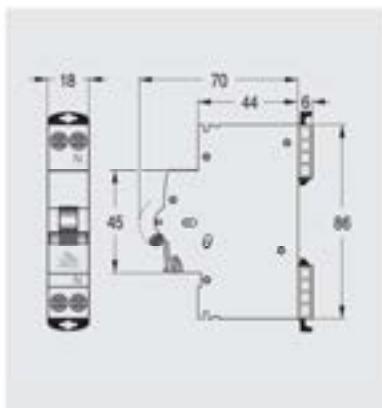
Applications



Approval / Marking



Dimensional drawings



Busbars ● pg. C.10

Performance

Thermal setting (In)	(A) 2-40
Rated voltage AC (Un)	(V) 230
Minimum operating voltage U _{Bmin}	(V) 12
Tripping characteristics	C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽¹⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable (mm ²)	10-16 ⁽²⁾
Poles	1P+N (1 mod)
Weight	(g) 125

Short-circuit capacity

Acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1P+N	230	4.5

Series DA 41 N- 4.5kA - characteristics B-C

Poles	In (A)	C		Pack.
		Cat. No.	Ref. No.	
1P + N 1 mod.	6	DA 41 N C06	693079	12
	10	DA 41 N C10	693080	12
	16	DA 41 N C16	693081	12
1/2 N	20	DA 41 N C20	693082	12
	25	DA 41 N C25	693083	12
	32	DA 41 N C32	693084	12
	Diagram			

(1) 8000 for 32 and 40A

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)



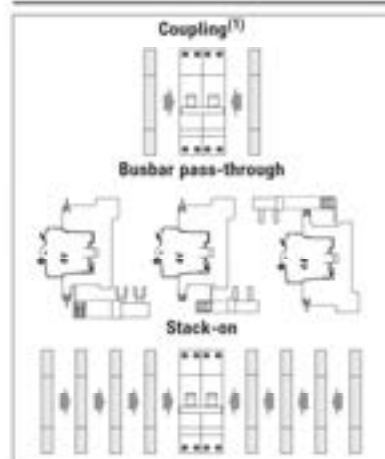
Applications



Approvals / Marking



Add-on devices



(1) 3P Series EC MCBs accept CA UN only on the left side

Auxiliary

Series CA UN - Series EC Interface EN/IEC 62019

- Especially designed for MCBs Series EC, however also valid for all modular protection devices: MCBs and RCBOs up to 63 A, RCCBs up to 100A and mains disconnect switches type ASTER (ASTM).
- Can be coupled on both sides of MCBs⁽¹⁾ and modular switches type ASTM.
- Version with golden contacts, available for low current as well as low voltage applications.
- Stack-on left or right up to 4 CA UN units.
- Permits the pass-through of busbars, pin & fork, top and bottom, just changing the position of the base of the auxiliaries.

Performance

Change-over contacts	1
Rated current (In)	(A) 5
Rated voltage AC (Un)	(V) 240
Electrical endurance	10000
Terminal capacity flexible/rigid cable	(mm ²) 2.5
Weight	(g) 70
Torque	(Nm) 0.8

Application

The auxiliary contact CA UN has a double function:

1. The standard function as auxiliary monitoring contact for which it has been developed.
2. The interface function, which allows the use of all auxiliaries in combination with the Series EC MCB range.

Example: to couple the undervoltage release NUVR to a Series EC MCB, the CA UN H 672977 has to be added in between the MCB and the NUVR as interface.

The auxiliary contacts are units to be added on to protection devices. They allow information to be monitored from a distance about the protection devices.

Auxiliary contact CA UN H (function H)

Provides the status of the protection device, OPEN/CLOSED.

Signal or auxiliary contact CA UN S/H (function S/H)

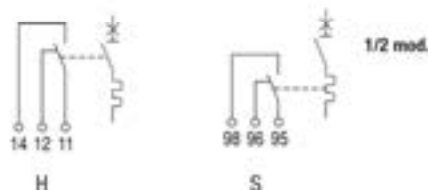
This auxiliary can act as an auxiliary contact (function H) or as a signal contact (function S).

The user can change the function at the moment of installation.

Used as signal contact (function S) it provides the information about the automatic tripping of the protection devices: overload or short-circuit for MCBs, earth leakage tripping for RCDs.

- The device has a test button on the front to simulate the function (acting as a function H or S)
- Reset button for the contacts (function S)
- Tripping signal on the front (function S)

Series CA UN - interface auxiliary contact



Function	Cat. No.	Ref. No.	Pack.
H	CA UN H	672977	1/40
S/H	CA UN S/H	672978	1/40

Technical data of compact MCBs - Unibis™

Series			EC 91E NR	EC 91 NR
Standards			EN/IEC 60898-1	EN/IEC 60898-1
Tripping characteristics			B,C	B,C
Nominal current (In)			2-40	2-40
Calibration temperature (°C)			30	30
Number of poles (# mod)			1+N (1 mod)	1+N (1 mod)
Neutral pole protected			-	-
Nominal voltage Un AC			230	230
	1P+N	(V)	-	-
	1P+1P	(V)	-	-
	2P	(V)	-	-
	3P	(V)	-	-
	4P	(V)	-	-
Nominal voltage Un DC			-	-
	2P	(V=)	-	-
Frequency			50/60	50/60
		(Hz)	Thresh. magn. + 40%	Thresh. magn. + 40%
		in DC	Thresh. magn. + 50%	Thresh. magn. + 50%
		for 400 Hz		
Maximum service voltage Ub max (V)			250	250
Minimum service voltage Ub min (V)			12	12
Selectivity class (EN 60898-1)			3	3
Rated insulation voltage			500	500
	Pollution degree 2	(V)	400	400
	Pollution degree 3	(V)	6	6
Impulse withstand test voltage (kV)			1000	1000
Insulation resistance (MΩ)			2.5	2.5
Dielectric rigidity (kV)			3	3
Vibration resistance in x,y,z direction (IEC 77/16.3) (g)			10000 ⁽²⁾	10000 ⁽²⁾
Endurance			20000	20000
	Electrical at Un,In	# op.	A	A
	Mechanical	# op.	any	any
Utilisation category (EN 60947-2)			yes	yes
Mounting position: vertical/horizontal			IP20/IP40	IP20/IP40
Incoming top or bottom			V2	V2
Protection degree (outside/inside enclosure with door)			+55°C/95%RH	+55°C/95%RH
Selfextinguish degree (acc. UL 94)			-25/+55	-25/+55
Tropicalisation (acc. EN 60068-2/DIN 40046)			-55/+55	-55/+55
Operating temperature (°C)			1/16 ⁽³⁾	1/16 ⁽³⁾
Storage temperature (°C)			1/10 ⁽³⁾	1/10 ⁽³⁾
Terminal capacity			1/16 ⁽³⁾	1/16 ⁽³⁾
	Rigid cable min/max (top)	(mm ²)	1/10 ⁽³⁾	1/10 ⁽³⁾
	Flexible cable min/max (top)	(mm ²)	1/16 ⁽³⁾	1/16 ⁽³⁾
	Rigid cable min/max (bottom)	(mm ²)	1/10 ⁽³⁾	1/10 ⁽³⁾
	Flexible cable min/max (bottom)	(mm ²)	3	3
	Torque	(Nm)	yes	yes
Add-on devices			yes ⁽⁴⁾	yes ⁽⁴⁾
	Auxiliary contacts		yes ⁽⁴⁾	yes ⁽⁴⁾
	Under voltage trip NUVR		yes ⁽⁴⁾	yes ⁽⁴⁾
	Remote release NF		yes ⁽⁴⁾	yes ⁽⁴⁾
	Panelboard switch NLVS		yes	yes
	Remote drive NFA		yes/yes	yes/yes
Busbar systems			no/no	no/no
	Pin (top/bottom)		yes	yes
	Fork (top/bottom)		18	18
Accessories			125	125
Width per mod. (mm)			12	12
Weight per mod. (gr)			KEMA, IMQ	VDE, KEMA, IMO
Package # mod.			yes	yes
Approvals			A.36	A.37
CE-marking				
Page				

Short-circuit capacity of compact MCBs

Series			EC 91E NR	EC 91 NR
Short-circuit capacity AC			(kA)	(kA)
EN/IEC 60898-1 <i>I_{cn}</i>			4.5	6
	1P+N	230 V	-	-
	1P+1P	230 V	-	-
	2P	400 V	-	-
	3P	400 V	-	-
	4P	400 V	-	-
EN 60947-2 <i>I_{cu}</i>			6	10
	1P+N	230 V	-	-
	1P+1P	230 V	-	-
	2P	230 V	-	-
	2P	415 V	-	-
	3P	415 V	-	-
	4P	415 V	-	-
Short-circuit capacity DC				
EN 60947-2 <i>I_{cu}</i>			-	-
	2P	96 V=		

EC 911	EC 90E	EC 90	DA 41N
EN/IEC 60898-1	EN/IEC 60898-1	EN/IEC 60898-1	EN/IEC 60898-1
B,C	B,C	B,C	C
2-20	6-32 ⁽¹⁾	2-40 ⁽¹⁾	2-40
30	30	30	30
1P+1P (1 mod)	2 (1 mod), 3&4 (2 mod)	2 (1 mod), 3&4 (2 mod)	1+N (1 mod)
-	-	-	-
230 ⁽⁵⁾	-	-	230
-	400	400	-
-	400	400	-
-	400	400	-
-	96	96	-
50/60	50/60	50/60	50/60
Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%
Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%
250/440	250/440	250/440	250
12	12	12	12
3	3	3	3
500	500	500	500
400	400	400	400
6	6	6	6
1000	10000	10000	1000
2.5	2.5	2.5	2.5
3	3	3	3
10000 ⁽²⁾	10000 ⁽²⁾	10000 ⁽²⁾	10000 ⁽²⁾
20000	20000	20000	20000
A	A	A	A
any	any	any	any
yes	yes	yes	yes
IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40
V2	V2	V2	V2
+55°C/95%RH	+55°C/95%RH	-55°C/95%RH	+55°C/95%RH
-25/+55	-25/+55	-25/+55	-25/+55
-55/+55	-55/+55	-55/+55	-55/+55
1/16 ⁽³⁾	1/16 ⁽³⁾	1/16 ⁽³⁾	1/16 ⁽³⁾
1/10 ⁽³⁾	1/10 ⁽³⁾	1/10 ⁽³⁾	1/10 ⁽³⁾
1/16 ⁽³⁾	1/16 ⁽³⁾	1/16 ⁽³⁾	1/16 ⁽³⁾
1/10 ⁽³⁾	1/10 ⁽³⁾	1/10 ⁽³⁾	1/10 ⁽³⁾
3	3	3	3
yes	yes	yes	no
yes ⁽⁴⁾	yes ⁽⁴⁾	yes ⁽⁴⁾	no
yes ⁽⁴⁾	yes ⁽⁴⁾	yes ⁽⁴⁾	no
yes ⁽⁴⁾	yes ⁽⁴⁾	yes ⁽⁴⁾	no
yes	yes	yes	no
yes/yes	yes/yes	yes/yes	yes/yes
no/no	no/no	no/no	no/no
yes	yes	yes	yes
18	18/36	18/36	18
160	160/320	160/320	125
12/6	12/6	12/6	12
VDE, IMO	IMO, NF	VDE, IMO, NF, CEBC	IMO, KEMA
yes	yes	yes	yes
A.39	A.40	A.42	A.44

EC 911	EC 90E	EC 90	DA 41N
(kA)	(kA)	(kA)	(kA)
-	-	-	4.5
6	-	-	-
-	4.5	6	-
-	4.5	6	-
-	4.5	6	-
-	-	-	-
6	-	-	-
-	-	10	-
-	6	6	-
-	6	6	-
-	6	6	-
-	4.5	6	-

(1) 32A, 3P & 4P
(2) 8000 for 32 and 40 A

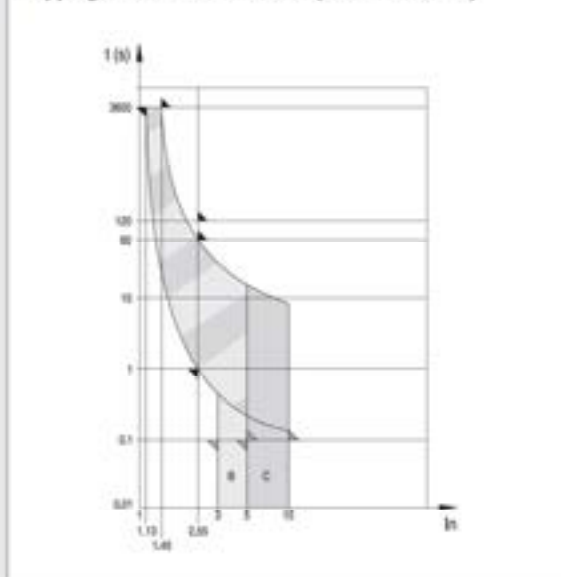
(3) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)
(4) Requires CA auxiliary contact as interface

(5) Single phase supply or same phase in 3Ph supply

Characteristics according to IEC/EN 60898-1

Miniature Circuit Breakers (MCBs) 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 curves (EN/IEC 60898-1)



Magnetic release

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The standard distinguishes two different types, following the current for instantaneous release: type B and C.

ICB (A)	Test current	Tripping time	Applications
B	3 x In	0.1 < t < 45s (In ≤ 32A) 0.1 < t < 90s (In > 32A)	Only for resistive loads such as: - electrical heating - water heater - stoves
	5 x In	t < 0.1s	
C	5 x In	0.1 < t < 15s (In ≤ 32A) 0.1 < t < 30s (In > 32A)	Usual loads such as: - lighting - socket-outlets - small motors
	10 x In	t < 0.1s	

Thermal release

The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for specific overload values.

Reference ambient temperature is 30°C.

Test current	Tripping time
1.13 x In	t > 1h (In ≤ 63A)
	t > 2h (In > 63A)
1.45 x In	t < 1h (In ≤ 63A)
	t < 2h (In > 63A)
2.55 x In	1s < t < 60s (In ≤ 32A)
	1s < t < 120s (In > 32A)

Influence of ambient air temperature on the rated current

The maximum value of the current which can flow through an MCB depends of the nominal current of the MCB, the conductor cross-section as well as of the ambient air temperature.

The values shown in the diagram below are for devices in free air.

For devices installed with other modular devices in the same switchboard a correction factor (K) shall be applied relative to the mounting situation of the MCB, the ambient temperature and the number of main circuits in the installation (EN 60439-1):

No. of rows in enclosure	K
2 or 3	0.9
4 or 5	0.8
6 to 9	0.7
> 10	0.6

Calculation example

Within a distribution panel consisting of eight rows each 6 of 2 pole C16 with an operating ambient temperature of 45°C, which is the highest temperature at which the MCB can operate without unwanted tripping.

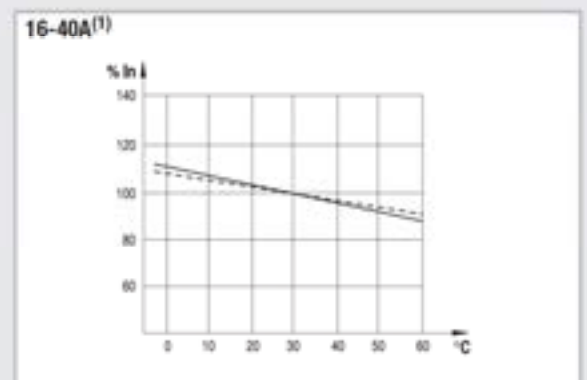
Calculation

The correction factor K=0.7, for use in an eight rows installation: 16A x 0.7 = 11.2A

As the MCB is working at 45°C, another factor shall be applied (90% = 0.9):

In at 45°C = In at 30°C x 0.9 = 11.2A x 0.9 = 10.1A

The thermal calibration of the MCBs was carried out at an ambient temperature of 30°C. Ambient temperatures different from 30°C influence the bimetal and this results in earlier or later thermal tripping.



(1) Other ratings see page A.31

Tripping current as a function of the frequency

All MCBs are designed to work at frequencies of 50-60 Hz, therefore to work at different values, consideration must be given to the variation of the tripping characteristics.

The thermal tripping does not change with variation of the frequency but the magnetic tripping values can be up to 50% higher than the ones at 50-60 Hz. For DC current magnetic tripping is 50% higher.

Tripping current variations

60Hz	100Hz	200Hz	300Hz	400Hz
1	1.1	1.2	1.4	1.5

Power losses

The power losses are calculated by measuring the voltage drop between the incoming and the outgoing terminals of the device at rated current.

Power losses per pole

In (A)	Voltage drop (V)	Energy loss Pw (W)	Resistance Z (mOhm)
2	0.55	1.1	275.00
4	0.34	1.35	84.38
6	0.25	1.52	42.22
10	0.16	1.64	16.40
16	0.13	2.1	8.20
20	0.13	2.52	6.30
25	0.12	3.1	4.96
32	0.12	3.8	3.71
40	0.11	4.46	2.79

Toggle⁽¹⁾

The toggle permits to switch the MCB ON or OFF

Printing on the toggle provides information of the real contact position.



0-OFF

Contacts in open position. Ensures a distance between contacts > 5mm in the Unibus™ range.



I-ON

Contacts in closed position. Ensures continuity in the main circuit.

(1) Not applicable for Series DA41N

Note: Series DCC has got ON-OFF indication on the shell.

Notes

A large rectangular area filled with a fine grid pattern, intended for handwritten notes. The grid consists of small squares and covers most of the page's width and height.