

MCB INS1H

Data Sheet V1.0



The SEP INS1H in a miniature circuit breaker is a high performance MCB suitable for domestic, utility as well as industrial applications. The INS1H design is based on the SEP PRO range of products and is therefore easy to combine together. The extended range of busbars is also available to connect the items together.

The INS1H has a breaking capacity of 15/25kA, is available in a range of current up to 63A (in just 4 modules width) and in characteristics B, C or D.

INS1H miniature circuit breaker

CE

UK
CA

CB

KEMA
EUR

RoHS

INS1H is a MCB compliant to product standard IEC/EN 60898 and with the following main technical features

- Breaking capacity 15kA (60898-1) 1-63A
- Breaking capacity 25kA (60947-2) 1-32A
- Breaking capacity 20kA (60947-2) 40-63A
- Rated current up to 63A
- 1p, 1p+n, 2p, 3p, 3p+n, 4p
- Characteristics B, C, D

Application benefits

- Supply possible from top and bottom
- Pin and fork type busbar connection (above and below) up to 30mm² and cable connection up to 50mm² cables.
- Terminal cover with sealing possibility for operator safety
- Locking possibility for the handle in off position by attribute
- Family feeling in the SEP Pro range modular components

MCB INS1H

Technical Data



Type			INS1H
Standards			IEC/EN 60898-1
Certification			CE, UKCA, CB, KEMA KEUR
Country of origin			CN
RoHS Compliance Status			Compliant, No Exemption
Number of poles			1p, 2p, 3p, 4p, 1p+n, 3p+n
Tripping characteristics			B, C, D
Rated current	I_n	A	$1 \leq I_n \leq 63A$
Rated voltage	U_e	V	230/415
Min. operating voltage		V	12
Max. operating voltage		V	264/440
Insulation voltage	U_i	V	500 V AC
Overvoltage category			III
Pollution degree			2
Rated frequency		Hz	50 - 60
Rated breaking capacity acc. to IEC/EN 60898	I_{cu}	A	15.000
Rated breaking capacity acc. to IEC/EN 60947-2 (only referring to short circuit test)	Ultimate I_{cu}	kA	25kA (1-32A) / 20kA (40-63A)
	Service I_{cs}	kA	12.5kA (1-32A) / 10kA (40-63A)
Tripping characteristics acc. To IEC/EN 60947-2			4x I_n , 8x I_n , 12x I_n
Category acc. to IEC/EN 60947-2			A
Rated impulse withstand voltage (1.2/50)	U_{imp}	kV	6
Dielectric test voltage at ind. freq. for 1 min.		kV	4 kV (50 / 60Hz, 1 min.)
Thermomagnetic release – characteristics			
B: $3 I_n \leq I_n \leq 5 I_n$			■
C: $5 I_n \leq I_n \leq 10 I_n$			■
D: $10 I_n \leq I_n \leq 20 I_n$			■
Energy limiting class acc. to EN 60898-1			3
Mechanical features	Housing		Insulation group I - II, RAL 7035
	Toggle		Insulation group II, RAL 5017
	Contact position indication		Green / Red window
	Electrical life	operations	10.000
	Mechanical life	operations	20.000
	Protection degree acc. to EN 60529	housing	IP4X
		terminals	IP2X
	Shock resistance acc. to IEC/EN 60068-2-27		25g – 2 shocks - 13ms
	Vibration resistance acc. to IEC/EN 60068-2-6		0.35 mm or 5 g - 20 cycles at 5...150...5 Hz
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30	°C/RH	28 cycles with 55°C/90-96% and 25°C/95-100%
Reference temperature for setting of thermal element			30
Ambient temperature (with daily average $\leq +35$ °C)			-25... +55
Storage temperature			-40... +70

* IEC/EN 60947-2 certificate and test-report are not available at present, the use of these values is the responsibility of the user

MCB INS1H

Technical Data



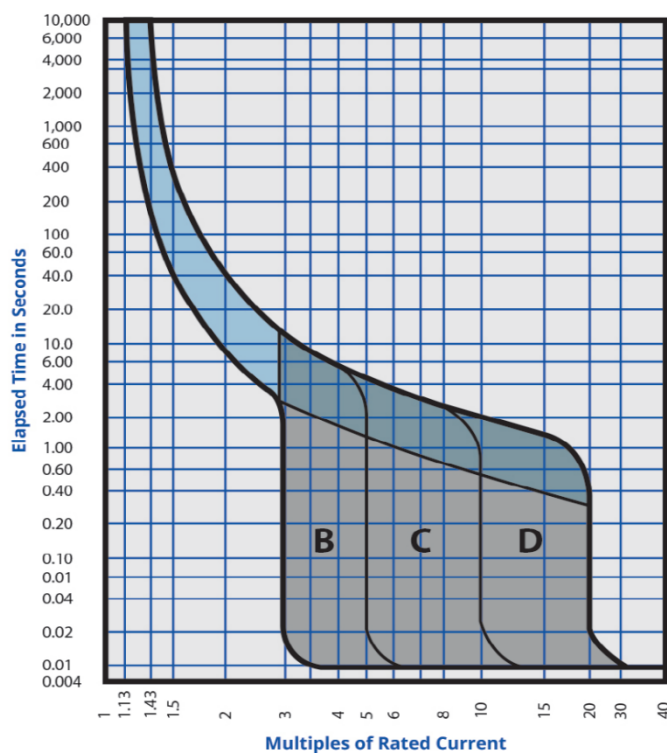
Type				INS1H			
Installation	Terminal type	bottom / top		Twin-purpose terminal (lift / open-mouthed)			
	Terminal size for cables	bottom / top	mm²	50/35			
	Terminal size for PIN busbar	bottom / top	mm²	10/16/30			
	Terminal size for FORK busbar	bottom / top	mm²	M6 - 10/16/30			
	Solid /stranded wiring			1x 1.5mm² - 50mm² 2 x 1.5mm² - 25mm² *			
	Flexible wires with or without ferrules			1x 1.5mm² - 35mm² 2 x 1.5mm² - 16mm² *			
	Tightening torque	bottom / top		2.5 Nm			
	Stripping length of the cable			10mm			
	Mounting			on DIN rail EN 60715 (35mm) by means of mounting clip			
	Mounting position			Any			
	Supply from			Top / bottom terminals			
				1p	2p (1p+n)	3p	4p (3p+n)
Packing	Dimensions	Height	mm	86			
		Width	mm	18	36	54	72
		Depth	mm	77			
	Weight		kg	0.126	0.252	0.378	0.504
	Packing A	QTY	pcs	12	6	4	3
		Dimensions (H x W x D)	mm	225 x 95 x 85			
		Weight	kg	1.6			
	Packing B (x A)	QTY	pcs	120	60	40	30
		Dimensions (H x W x D)	mm	510 x 240 x 190			
		Weight	kg	16			
	CN-code			85362010			
	Combination with auxiliary elements	Auxiliary contact			Yes		
Alarm contact			NA				
Shunt trip			NA				
Auxiliary contact for bottom fitting			NA				
Undervoltage release			NA				
Overvoltage release			NA				
Motor operating device			NA				

* Check local installation rules, this type of connection is not advised. Special add-on terminals are available.

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Tripping Characteristics



Performance in altitude*

Elevation [m]	2000	3000	4000	5000	6000
Rated current [A]	1 x In	0,95 x In	0,92 x In	0,90 x In	0,88 x In
Rated voltage [V]	1 x Un	0,85 x Un	0,75 x Un	0,65 x Un	0,55 x Un

* the MCB is designed for standard level operations, performance information on higher altitude is not available

Influence of adjacent devices

Number of devices	1	2-3	4-5	6-9	≥10
Correction factor	1	0,9	0,8	0,7	0,6

These values are provided by recommendation IEC 61439-1 and standards EN 61439-1. In order to avoid having to use these coefficients there must be good ventilation and the devices must be kept apart using the spacing element article number 2119000010 (0.5 module).

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Derating in temperature *INS1H*

Max operating current depending on the ambient temperature (daily average $\leq +35\text{ }^{\circ}\text{C}$)

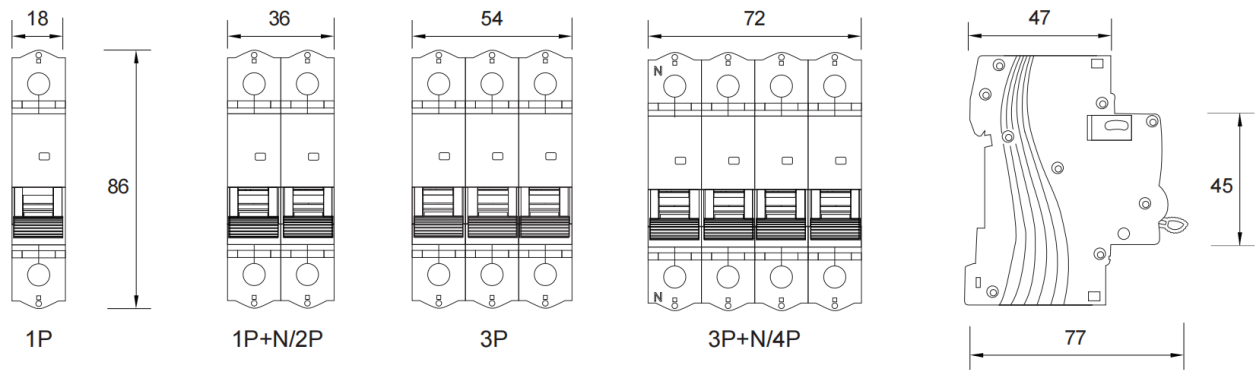
In [A]	Ambient temperature [°C]										
	-25	-15	-5	10	30	40	45	55	60	65	70
1	1,2	1,17	1,13	1,08	1	0,95	0,93	0,88	0,85	0,82	0,8
2	2,35	2,29	2,23	2,13	2	1,93	1,89	1,82	1,78	1,73	1,67
3	3,52	3,43	3,34	3,2	3	2,88	2,82	2,70	2,64	2,56	2,48
4	4,75	4,62	4,49	4,29	4	3,85	3,77	3,61	3,53	3,42	3,32
6	7,59	7,32	7,10	6,62	6	5,64	5,48	5,28	4,99	4,84	4,70
8	10,00	9,70	9,30	8,70	8	7,53	7,3	6,79	6,51	6,31	6,13
10	11,75	11,45	11,14	10,67	10	9,65	9,47	9,09	8,90	8,63	8,37
13	16,29	15,74	15,17	14,29	13	12,24	11,86	11,04	10,59	10,27	9,96
16	19,30	18,74	18,17	17,27	16	15,32	14,97	14,25	13,87	13,45	13,05
20	24,09	23,40	22,69	21,58	20	19,16	18,73	17,82	17,32	16,80	16,30
25	29,36	28,62	27,86	26,67	25	24,12	23,67	22,74	22,25	21,58	20,94
32	38,93	37,76	36,56	34,68	32	30,57	29,83	28,28	27,48	26,66	25,86
40	47,81	46,48	45,13	43,00	40	38,41	37,59	35,89	35,01	33,96	32,94
50	61,42	58,50	57,26	54,50	50	47,50	46,55	44,25	43,36	42,06	40,80
63	79,10	75,70	82,78	68,41	63	60,16	58,96	56,37	55,35	53,69	52,08

Power loss INS1H

In [A]	1p	2p	3p	4p	1p+n	3p+n
1	1,45	2,90	4,35	5,8	2,18	5,07
2	1,52	3,04	4,56	6,08	2,28	5,32
3	1,57	3,14	4,71	6,28	2,36	5,50
4	1,78	3,56	5,34	7,12	2,67	6,23
6	0,94	1,88	2,82	3,76	1,41	3,29
8	1,81	3,62	5,43	7,24	2,72	6,34
10	1,09	2,18	3,27	4,36	1,63	3,81
13	2,77	5,54	8,31	11,08	4,16	9,70
16	1,84	3,68	5,52	7,36	2,67	6,44
20	2,12	4,24	6,36	8,48	3,18	7,42
25	2,85	5,70	8,55	11,40	4,28	9,98
32	4,54	9,08	13,62	18,16	6,82	15,90
40	5,12	10,24	15,36	20,48	7,68	17,92
50	5,32	10,64	15,96	21,28	7,98	18,62
63	7,05	14,10	21,15	28,20	10,57	24,67

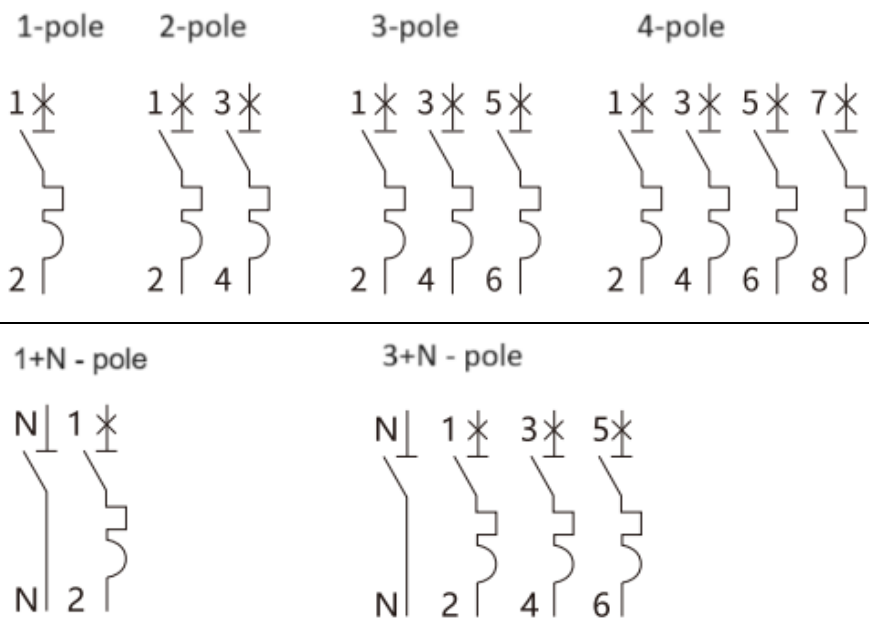
MCB INS1H
Technical Data

Overall dimensions
All measurements in mm



INS1H (dimensions)

Connection diagram



MCB INS1H

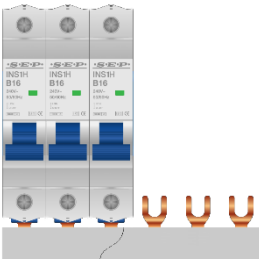
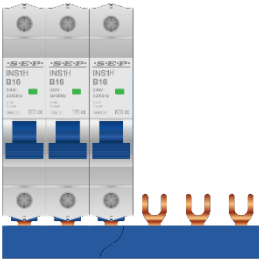
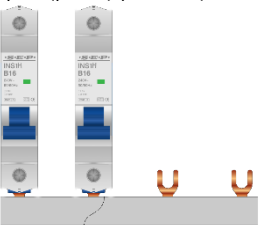
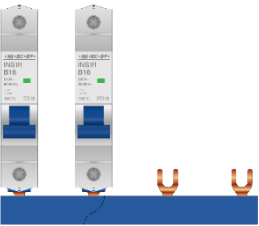
Order codes

Char.	Shortcircuit value IEC/EN 60898	Shortcircuit value IEC/EN 60947-2*	Inom							
				1p	1p+n	2p	3p	3p+n	4p	
B	15kA	25kA	1A	3111005010	3111006810	3111005460	3111005910	3111007260	3111006360	
			2A	3111005020	3111006820	3111005470	3111005920	3111007270	3111006370	
			3A	3111005030	3111006830	3111005480	3111005930	3111007280	3111006380	
			4A	3111005040	3111006840	3111005490	3111005940	3111007290	3111006390	
			6 A	3111005050	3111006850	3111005500	3111005950	3111007300	3111006400	
			8 A	3111005060	3111006860	3111005510	3111005960	3111007310	3111006410	
			10 A	3111005070	3111006870	3111005520	3111005970	3111007320	3111006420	
			13 A	3111005080	3111006880	3111005530	3111005980	3111007330	3111006430	
			16 A	3111005090	3111006890	3111005540	3111005990	3111007340	3111006440	
			20 A	3111005100	3111006900	3111005550	3111006000	3111007350	3111006450	
			25 A	3111005110	3111006910	3111005560	3111006010	3111007360	3111006460	
			32 A	3111005120	3111006920	3111005570	3111006020	3111007370	3111006470	
	15kA	20kA	40 A	3111005130	3111006930	3111005580	3111006030	3111007380	3111006480	
			50 A	3111005140	3111006940	3111005590	3111006040	3111007390	3111006490	
			63 A	3111005150	3111006950	3111005600	3111006050	3111007400	3111006500	
	C	15kA	25kA	1A	3111005160	3111006960	3111005610	3111006060	3111007410	3111006510
				2A	3111005170	3111006970	3111005620	3111006070	3111007420	3111006520
				3A	3111005180	3111006980	3111005630	3111006080	3111007430	3111006530
				4A	3111005190	3111006990	3111005640	3111006090	3111007440	3111006540
				6 A	3111005200	3111007000	3111005650	3111006100	3111007450	3111006550
				8 A	3111005210	3111007010	3111005660	3111006110	3111007460	3111006560
				10 A	3111005220	3111007020	3111005670	3111006120	3111007470	3111006570
				13 A	3111005230	3111007030	3111005680	3111006130	3111007480	3111006580
				16 A	3111005240	3111007040	3111005690	3111006140	3111007490	3111006590
20 A				3111005250	3111007050	3111005700	3111006150	3111007500	3111006600	
25 A				3111005260	3111007060	3111005710	3111006160	3111007510	3111006610	
32 A				3111005270	3111007070	3111005720	3111006170	3111007520	3111006620	
15kA		20kA	40 A	3111005280	3111007080	3111005730	3111006180	3111007530	3111006630	
			50 A	3111005290	3111007090	3111005740	3111006190	3111007540	3111006640	
			63 A	3111005300	3111007100	3111005750	3111006200	3111007550	3111006650	
D		15kA	25kA	1A	3111005310	3111007110	3111005760	3111006210	3111007560	3111006660
				2A	3111005320	3111007120	3111005770	3111006220	3111007570	3111006670
				3A	3111005330	3111007130	3111005780	3111006230	3111007580	3111006680
				4A	3111005340	3111007140	3111005790	3111006240	3111007590	3111006690
				6 A	3111005350	3111007150	3111005800	3111006250	3111007600	3111006700
				8 A	3111005360	3111007160	3111005810	3111006260	3111007610	3111006710
				10 A	3111005370	3111007170	3111005820	3111006270	3111007620	3111006720
				13 A	3111005380	3111007180	3111005830	3111006280	3111007630	3111006730
				16 A	3111005390	3111007190	3111005840	3111006290	3111007640	3111006740
	20 A			3111005400	3111007200	3111005850	3111006300	3111007650	3111006750	
	25 A			3111005410	3111007210	3111005860	3111006310	3111007660	3111006760	
	32 A			3111005420	3111007220	3111005870	3111006320	3111007670	3111006770	
	15kA	20kA	40 A	3111005430	3111007230	3111005880	3111006330	3111007680	3111006780	
			50 A	3111005440	3111007240	3111005890	3111006340	3111007690	3111006790	
			63 A	3111005450	3111007250	3111005900	3111006350	3111007700	3111006800	

* IEC/EN 60947-2 certificate and test-report are not available at present, the use of these values is the responsibility of the user

MCB INS1H

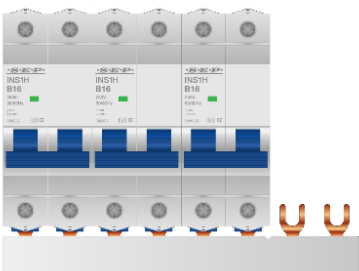
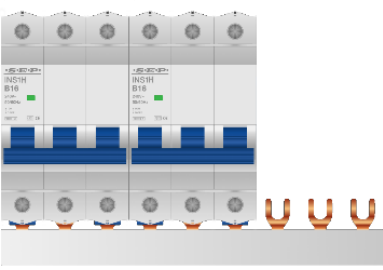
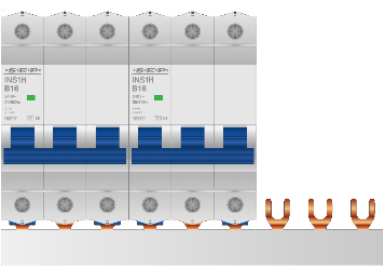
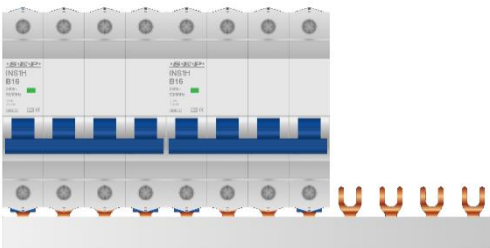
Order codes for connective rail

Busbar / connective rail type	No. devices	10mm ² (closed end - non cuttable)		16mm ² (cut to size with end- caps)	
		PIN	FORK	PIN	FORK
1 pole (phase) L-L-L ... (17.8mm) 	2x 1p	2305101002	2305111002	-	-
	3x 1p	2305101003	2305111003	-	-
	4x 1p	2305101004	2305111004	-	-
	5x 1p	2305101005	2305111005	-	-
	6x 1p	2305101006	2305111006	2306010006	2306110006
	7x 1p	2305101007	2305111007	-	-
	8x 1p	2305101008	2305111008	-	-
	9x 1p	2305101009	2305111009	2306010009	2306110009
	10x 1p	2305101010	2305111010	-	-
	11x 1p	2305101011	2305111011	-	-
	12x 1p	2305101012	2305111012	2306010012	2306110012
	13x 1p	2305101013	2305111013	-	-
	15x 1p	-	-	2306010015	2306110015
	18x 1p	-	-	2306010018	2306110018
	21x 1p	-	-	2306010021	2306110021
	24x 1p	-	-	2306010024	2306110024
	54x 1p	-	-	2306160100	2306161100
1 pole (neutral) N-N-N ... (17.8mm) 	2x 1p	2305101902	2305111902	-	-
	3x 1p	2305101903	2305111903	-	-
	4x 1p	2305101904	2305111904	-	-
	5x 1p	2305101905	2305111905	-	-
	6x 1p	2305101906	2305111906	2306019006	2306119006
	7x 1p	2305101907	2305111907	-	-
	8x 1p	2305101908	2305111908	-	-
	9x 1p	2305101909	2305111909	2306019009	2306119009
	10x 1p	2305101910	2305111910	-	-
	11x 1p	2305101911	2305111911	-	-
	12x 1p	2305101912	2305111912	2306019012	2306119012
	13x 1p	2305101913	2305111913	-	-
	15x 1p	-	-	2306019015	2306119015
	18x 1p	-	-	2306019018	2306119018
	21x 1p	-	-	2306019021	2306119021
	24x 1p	-	-	2306019024	2306119024
	54x 1p	-	-	2306160101	2306161101
1 pole (phase) L-L-L ... (35.6mm) 	2x 1p	2305171002	2305181002	-	-
	3x 1p	2305171003	2305181003	-	-
	4x 1p	2305171004	2305181004	-	-
	5x 1p	2305171005	2305181005	-	-
	6x 1p	2305171006	2305181006	2306010206	2306110206
	9x 1p	-	-	2306010209	2306110209
	12x 1p	-	-	2306010212	2306110212
	27x 1p	-	-	2306160120	2306161120
1 pole (phase) N-N-N ... (35.6mm) 	2x 1p	2305171902	2305181902	-	-
	3x 1p	2305171903	2305181903	-	-
	4x 1p	2305171904	2305181904	-	-
	5x 1p	2305171905	2305181905	-	-
	6x 1p	2305171906	2305181906	2306019206	2306119206
	9x 1p	-	-	2306019209	2306119209
	12x 1p	-	-	2306019212	2306119212
	27x 1p	-	-	2306160121	2306161121

* pictures are indicative – other combinations are possible

MCB INS1H

Order codes for connective rail

Busbar / connective rail type	No. devices	10mm ² (closed end - non cuttable)		16mm ² (cut to size with end- caps)	
		PIN	FORK	PIN	FORK
2 pole (phase neutral) N1-N1-N1... 12-12-12.. 	2x 2p	2305102004	2305112004	-	-
	3x 2p	2305102006	2305112006	2306020006	2306120006
	4x 2p	2305102008	2305112008	2306020008	2306120008
	5x 2p	2305102010	2305112010	2306020010	2306120010
	6x 2p	2305102012	2305112012	2306020012	2306120012
	7x 2p	2305102014	2305112014	2306020014	2306120014
	8x 2p	2305102016	2305112016	2306020016	2306120016
	9x 2p	2305102018	2305112018	2306020018	2306120018
	10x 2p	-	-	2306020020	2306120020
	11x 2p	-	-	2306020022	2306120022
	12x 2p	-	-	2306020024	2306120024
	27x 2p	-	-	2306160200	2306161200
3N pole (3 phase neutral) N1-N2-N3... 	6x 2p	2305105012	2305115012	2306050012	2306150012
	9x 2p	2305105018	2305115018	2306050018	2306150018
	12x 2p	-	-	2306050024	2306150024
	28x 2p	-	-	2306160500	2306161500
3 pole (3 phase) 123-123-123... 	2x 3p	2305103006	2305113006	2306030006	2306130006
	3x 3p	2305103009	2305113009	2306030009	2306130009
	4x 3p	2305103012	2305113012	2306030012	2306130012
	5x 3p	2305103015	2305113015	2306030015	2306130015
	6x 3p	2305103018	2305113018	2306030018	2306130018
	7x 3p	-	-	2306030021	2306130021
	8x 3p	-	-	2306030024	2306130024
	18x 3p	-	-	2306160300	2306161300
4 pole (4 phase) N123-N123... 123N-123N... 	2x 4p	2305104008	2305114008	2306040008	2306140008
	3x 4p	2305104012	2305114012	2306040012	2306140012
	4x 4p	2305104016	2305114016	2306040016	2306140016
	5x 4p	-	-	2306040020	2306140020
	6x 4p	-	-	2306040024	2306140024
	14x 4p	-	-	2306160400	2306161400
	Open mouth covers for busbar PIN	2115900010			

* pictures are indicative – other combinations are possible

MCB INS1H

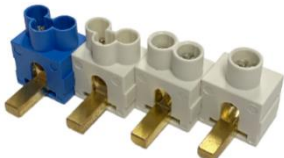
Order codes for connective rail

Busbar / connective rail type	No. devices	10mm ² (closed end - non cuttable)		16mm ² (cut to size with end- caps)	
		$\Sigma I \rightarrow 63A$ $\rightarrow 100A$		$\Sigma I \rightarrow 80A$ $\rightarrow 125A$	
		PIN	FORK	PIN	FORK
Top Combi-rail N123-N1-N2-N3-(N1)	1x4p + 3x2p	2305195310	2305195010	-	-
	1x4p + 4x2p	2305195312	2305195012	-	-
Bottom Combi-rail N123-N1-N2-N3-(N1)	1x 4p + 3x 2p	2305195110	2305195210	-	-
	1x 4p + 4x 2p	2305195112	2305195212	-	-

* pictures are indicative – other combinations are possible

MCB INS1H

Order codes accessories

Add-on terminals		PIN		FORK	
Reference image	Wire size	Grey	Blue	Grey	Blue
	1x50mm2 solid/stranded 1x35mm2 flexible	2115900060	2115900120	2115900090	2115900150
	2x25mm2 solid/stranded 2x16mm2 flexible	2115900070	2115900130	2115900100	2115900160
	3x16mm2 solid/stranded 3x10mm2 flexible	2115900080	2115900140	2115900110	2115900170

Auxiliary contact	Description	Code
Reference image		
	Auxiliary contact 1CO	3104500001

Marker – spacer	Description	Code
Reference image		
	Component Spacer 0,5mm	2119000010

Lockout	Description	Code
Reference image		
	Lockout set - complete	2115909099
	Locking devices adaptor	2115909015
	Locking device screw adaptor	2115909010
	Padlock with 2 identical keys	2115909020
	Warning tag (English)	2115909030