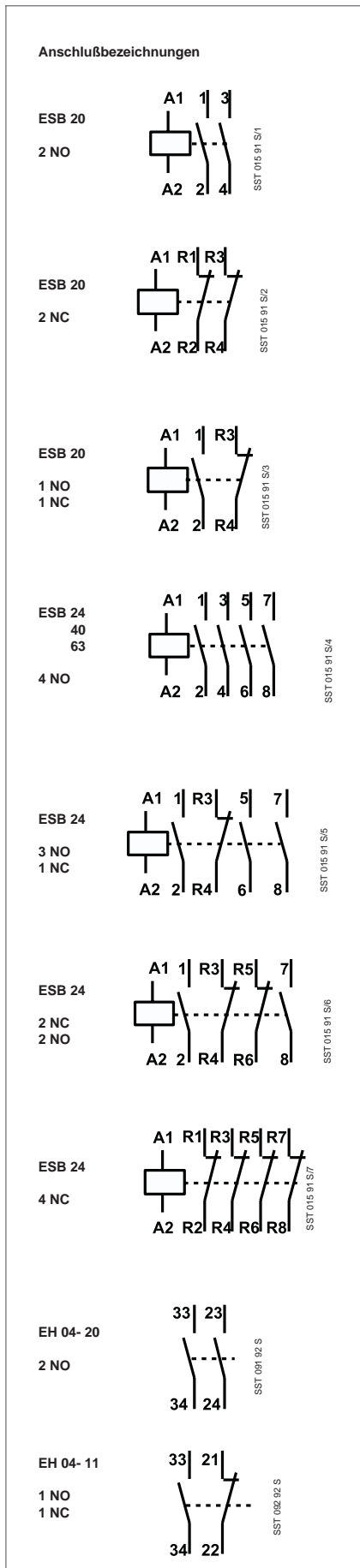


# Installation contactors ESB..

## Ordering details

## Accessories

IEC 947-4-1  
EN 60 947-4-1  
IEC 1095  
EN 61 095



Contactor type Contact complement ②	Rated operating voltage ①		Order code Product No.	bbn 40 13614 EAN	Price 1 St. DM	Weight 1 piece kg	Pack. unit piece						
	50 Hz	60 Hz											
ESB 20-20 2 NO	12 V	14 V	GH E321 1102 R 1004	08427 0 08420 1 08421 8 08422 5 08423 2 08425 6 08424 9 08426 3		0.2	10						
	24 V	27 ... 28 V	GH E321 1102 R 0001										
	42 V	48 V	GH E321 1102 R 0002										
	48 V	55 V	GH E321 1102 R 0003										
	110 V	125 ... 127 V	GH E321 1102 R 0004										
	230 V	255 V	GH E321 1102 R 0006										
	231... 244 V	268 ... 283 V	GH E321 1102 R 0005										
	400 V	–	GH E321 1102 R 0007										
	ESB 20-02 2 NC	12 V	14 V					GH E321 1202 R 1004	08517 8 08430 0 08431 7 08518 5 08432 4 08433 1 08519 2 08520 8		0.2	10	
		24 V	27 ... 28 V					GH E321 1202 R 0001					
42 V		48 V	GH E321 1202 R 0002										
48 V		55 V	GH E321 1202 R 0003										
110 V		125 ... 127 V	GH E321 1202 R 0004										
230 V		255 V	GH E321 1202 R 0006										
231... 244 V		268 ... 283 V	GH E321 1202 R0005										
400 V		–	GH E321 1202 R0007										
ESB 20-11 1 NO 1 NC		12 V	14 V	GH E321 1302 R 1004	08515 4 08435 5 08436 2 08514 7 08437 9 08439 3 08438 6 08516 1		0.2	10					
		24 V	27 ... 28 V	GH E321 1302 R 0001									
	42 V	48 V	GH E321 1302 R 0002										
	48 V	55 V	GH E321 1302 R 0003										
	110 V	125 ... 127 V	GH E321 1302 R 0004										
	230 V	255 V	GH E321 1302 R 0006										
	231... 244 V	268 ... 283 V	GH E321 1302 R 0005										
	400 V	–	GH E321 1302 R 0007										
	ESB 24-40 4 NO	12 V	AC 40 ... 450 Hz or DC	GH E329 1102 R 1004					08447 8 08441 6 08442 3 08546 8 08443 0 GH E329 1102 R 0006 08445 4 08446 1		0.28	5	
		24 V		GH E329 1102 R 0001									
42 V		GH E329 1102 R 0002											
48 V		GH E329 1102 R 0003											
110 ... 120 V		GH E329 1102 R 0004											
230 ... 240 V		GH E329 1102 R 0006											
400 ... 415 V		GH E329 1102 R 0007											
ESB 24-04 4 NC		12 V		AC 40 ... 450 Hz or DC	GH E329 1202 R 1004	08456 0 08451 5 08452 2 08548 2 08453 9 GH E329 1202 R 0006 08454 6 08455 3		0.28					5
		24 V			GH E329 1202 R 0001								
		42 V			GH E329 1202 R 0002								
	48 V	GH E329 1202 R 0003											
	110 ... 120 V	GH E329 1202 R 0004											
	230 ... 240 V	GH E329 1202 R 0006											
	400 ... 415 V	GH E329 1202 R0007											
	ESB 24-22 2 NO 2 NC	12 V	AC 40 ... 450 Hz or DC		GH E329 1302 R 1004				08463 8 08458 4 08459 1 08552 9 08460 7 GH E329 1302 R 0006 08461 4 08525 3		0.28	5	
		24 V			GH E329 1302 R 0001								
		42 V			GH E329 1302 R 0002								
48 V		GH E329 1302 R 0003											
110 ... 120 V		GH E329 1302 R 0004											
230 ... 240 V		GH E329 1302 R 0006											
400 ... 415 V		GH E329 1302 R0007											
ESB 24-31 3 NO 1 NC		12 V		AC 40 ... 450 Hz or DC	GH E329 1602 R 1004	08472 0 08467 6 08468 3 08555 0 08469 0 08470 6 08471 3		0.28					5
		24 V			GH E329 1602 R 0001								
		42 V			GH E329 1602 R 0002								
	48 V	GH E329 1602 R 0003											
	110 ... 120 V	GH E329 1602 R 0004											
	230 ... 240 V	GH E329 1602 R 0006											
	400 ... 415 V	GH E329 1602 R 0007											
	ESB 24-13 1 NO 3 NC	12 V	AC 40 ... 450 Hz or DC		GH E329 1702 R 1004				21825 5 21478 3 21820 0 21821 7 21822 4 GH E329 1702 R 0006 21823 1 21824 8		0.28	5	
		24 V			GH E329 1702 R 0001								
		42 V			GH E329 1702 R 0002								
48 V		GH E329 1702 R 0003											
110 ... 120 V		GH E329 1702 R 0004											
230 ... 240 V		GH E329 1702 R 0006											
400 ... 415 V		GH E329 1702 R0007											
ESB 40-40 4 NO ③		24 V		AC 40 ... 450 Hz. or DC	GH E349 1102 R 0001	08482 9 08483 0 08559 8 08484 3 08486 7 08529 1 08530 7 08560 4		0.45					3
		42 V			GH E349 1102 R 0002								
		48 V			GH E349 1102 R 0003								
	110 V	GH E349 1102 R 0004											
	230 V	GH E349 1102 R 0006											
	240 V	GH E349 1102 R 0005											
	400 V	GH E349 1102 R 0007											
	415 V	GH E349 1102 R 0008											
	ESB 63-40 4 NO ③	24 V	AC 40 ... 450 Hz or DC		GH E369 1102 R 0001				08493 5 08494 2 12725 0 08495 9 08497 3 08535 2 08498 0 12726 7		0.45	3	
		42 V			GH E369 1102 R 0002								
48 V		GH E369 1102 R 0003											
110 V		GH E369 1102 R 0004											
230 V		GH E369 1102 R 0006											
240 V		GH E369 1102 R 0005											
400 V		GH E369 1102 R 0007											
415 V		GH E369 1102 R 0008											

① Other voltages on request.

② "Day/night" installation contactors, Type EN 20, EN24, EN 40 on request.

③ Only delivery from ABB-Control France. 1 or 2 NC up to max. 30 A (AC-1) possible.

# Installation contactors ESB..

## Technical data

IEC 947-4-1  
EN 60 947-4-1  
IEC 1095  
EN 61 095



ESB 20

SST 040 94 R



ESB 24

SST 041 94 R



ESB 40/ESB 63

SST 035 94 R



ESB 24 + EH 04

SST 038 94 R



EN 24

SST 038 95

### Rated operating currents and power ratings

AC-1 / AC-7a	ESB 20	ESB 24	ESB 40	ESB 63
Rated operating current I <sub>e</sub> (NO)	20 A	24 A	40 A	63 A
Rated operating current I <sub>e</sub> (NC)	20 A	24 A	30 A	30 A
2 current paths connected in parallel permit a 1.6-fold increase in rated operating current I <sub>e</sub> .				
Rated operating power (NO)				
230 V single-phase	4.0 kW	5.3 kW	8.8 kW	13.8 kW
230 V 3-phase	–	9.0 kW	15.2 kW	24.0 kW
400 V 3-phase	–	16.0 kW	26.0 kW	41.0 kW
<b>AC-3/AC-7b Switching motors</b>				
Rated operating current I <sub>e</sub> (NO)	9 A	9 A	22 A	30 A
Rated operating current I <sub>e</sub> (NC)	9 A	6 A		
Rated operating power (NO)				
230 V single-phase	1.3 kW	1.3 kW	3.7 kW	5.0 kW
230 V 3-phase	–	2.2 kW	5.5 kW	8.0 kW
400 V 3-phase	–	4.0 kW	11.0 kW	15.0 kW

### DC-1/DC-3 Switching DC with NO contacts (NO)

Type	Rated operating voltage U <sub>e</sub>	DC-1 (L/R ≤ 1 ms)			DC-3 (L/R ≤ 2 ms)		
		1 current path	2 current paths in series	3 current paths in series	1 current path	2 current paths in series	3 current paths in series
<b>ESB 24</b>	24 V DC	24.0 A	24.0 A	24.0 A	16.0 A	24.0 A	24.0 A
	48 V DC	21.0 A	24.0 A	24.0 A	8.0 A	18.0 A	24.0 A
	60 V DC	17.0 A	24.0 A	24.0 A	4.0 A	14.0 A	24.0 A
	110 V DC	7.0 A	16.0 A	24.0 A	1.6 A	6.5 A	16.0 A
	220 V DC	0.9 A	4.5 A	13.0 A	0.2 A	1.0 A	4.0 A
<b>ESB 40</b>	24 V DC	40.0 A	40.0 A	40.0 A	19.0 A	40.0 A	40.0 A
	48 V DC	23.0 A	40.0 A	40.0 A	10.0 A	20.0 A	40.0 A
	60 V DC	18.0 A	32.0 A	40.0 A	5.0 A	16.0 A	34.0 A
	110 V DC	8.0 A	17.0 A	30.0 A	1.8 A	7.0 A	18.0 A
	220 V DC	1.0 A	5.0 A	15.0 A	0.3 A	1.1 A	4.5 A
<b>ESB 63</b>	24 V DC	50.0 A	63.0 A	63.0 A	21.0 A	44.0 A	63.0 A
	48 V DC	25.0 A	43.0 A	63.0 A	11.0 A	22.0 A	47.0 A
	60 V DC	20.0 A	35.0 A	60.0 A	5.5 A	18.0 A	38.0 A
	110 V DC	9.0 A	19.0 A	33.0 A	2.0 A	8.0 A	21.0 A
	220 V DC	1.1 A	5.5 A	17.0 A	0.3 A	1.2 A	5.0 A

### DC-1/DC-3 Switching DC with NC contacts (NC)

Type	Rated operating voltage U <sub>e</sub>	DC-1 (L/R ≤ 1 ms)			DC-3 (L/R ≤ 2 ms)		
		1 current path	2 current paths in series	3 current paths in series	1 current path	2 current paths in series	3 current paths in series
<b>ESB 24</b>	24 V DC	14.5 A	24.0 A	24.0 A	6.3 A	11.0 A	19.0 A
	48 V DC	7.5 A	12.5 A	22.0 A	3.1 A	5.4 A	9.4 A
	60 V DC	4.5 A	10.0 A	17.5 A	2.0 A	4.3 A	7.5 A
	110 V DC	1.6 A	4.4 A	9.5 A	0.7 A	1.9 A	4.1 A
	220 V DC	0.2 A	1.4 A	3.8 A	0.1 A	0.6 A	1.6 A

Contactors type	Order code	Rated operating current	Rated operating current
<b>EN 24-40 24 V</b>	<b>GHE 3261 101 R0001</b>	24 A	24 V
<b>EN 24-40 230-240 V</b>	<b>GHE 3261 101 R0006</b>	24 A	230-240 V
<b>EN 24-30 230-240 V</b>	<b>GHE 3261 501 R0006</b>	24 A	230-240 V
<b>EN 24-31 24 V</b>	<b>GHE 3261 601 R0001</b>	24 A	24 V
<b>EN 24-31 230-240 V</b>	<b>GHE 3261 601 R0006</b>	24 A	230-240 V
<b>EN 40-40 230 V</b>	<b>GHE 3421 101 R0006</b>	24 A	230 V

Switching lamp loads, see Page 7.

# Installation contactors ESB..

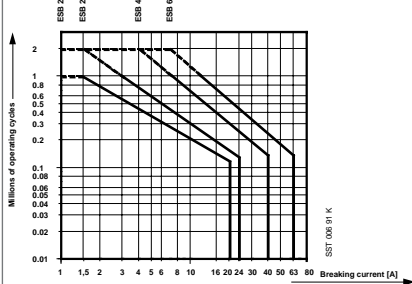
## Technical data

### of ESB.. and auxiliary switches

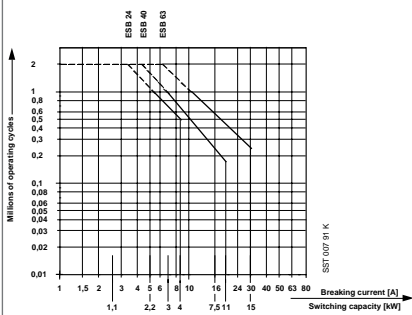
IEC 947-4-1  
EN 60 947-4-1  
IEC 1095  
EN 61 095

#### Contact member service life

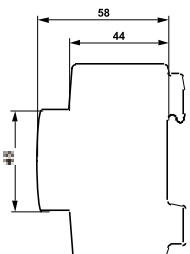
AC-1/400 V/3-phase for ESB 24, 40, 63  
AC-1/230 V/single-phase for ESB 20



AC-3/400 V/3-phase for ESB 24, 40, 63



Dimensions in mm



SST 082.91 M

Type	Overall width A
ESB 20	1 module (18.0 mm)
ESB 24	2 modules (36.0 mm)
ESB 40	3 modules (54.0 mm)
ESB 63	3 modules (54.0 mm)
EH 04	0.5 module ( 9.0 mm)

	ESB 20	ESB 24	ESB 40	ESB 63
<b>Rated insulation voltage <math>U_i</math></b>	400 V	500 V	500 V	500 V
<b>Rated operation voltage <math>U_e</math></b>	250 V	440 V	440 V	440 V
<b>Short-circuit protection</b>				
Back-up fuse, Type "gL/gG"	20 A	35 A	63 A	80 A
<b>Limiting short-time current 10 s at ambient temperature <math>\leq 40^\circ\text{C}</math>, in free air, from cold state</b>				
	72 A	72 A	176 A	240 A
<b>Ohmic loss per current path at <math>I_e</math> (AC-1, AC-7a)</b>	1.0 W	1.5 W	3.0 W	6.0 W

#### Contact member service life and max. switching frequency

<b>Service life</b>	mechanical	1 million	1 million	1 million	1 million
	electrical at AC-1 / AC-7a	150 000	150 000	150 000	150 000
	at AC-3 / AC-7b	150 000	500 000	170 000	240 000
<b>Max. switching frequency</b>					
	AC-1 / AC-7a	300 operations/hour			
	AC-3 / AC-7b	600 operations/hour			
<b>Permissible mains frequency</b>		50 ... 60 Hz			
<b>Min. making/breaking capacity</b>		17 V / 200 mA			

#### Characteristics of the solenoid system

<b>Operating range of solenoid coil</b>	85 ... 110 % der Bemessungsbetätigungsspannung $U_c$			
<b>Reliable switch-off between</b>	20 ... 75% $U_c$	10 ... 75% $U_c$		
<b>Frequency range</b>	50/60 Hz	40 ... 450 Hz AC or DC		
<b>Relative duty ED</b>	100%			

#### Power consumption of the solenoid coil

<b>pick-up</b>	-	8.0VA, 5.0W	4.0VA, 4.0W	5.0VA, 5.0W	65 VA, 65 W
<b>holding</b>	-	3.2VA, 1.2W	4.0VA, 4.0W	5.0VA, 5.0W	4.2 VA, 4.2 W
<b>On delay</b>		$\leq 12$ ms	$\leq 40$ ms		
<b>Off delay</b>		$\leq 12$ ms	$\leq 40$ ms		

#### Permissible Ambient temperature

$-25^\circ\text{C}$  to  $+55^\circ\text{C}$

If several contactors are mounted adjacently and the On time is longer than one hour, every second contactor needs a distance piece, Type ESB-DIS (1/2 module). This is not necessary at an ambient temperature  $\leq 40^\circ\text{C}$  or on Type ESB 20.

#### Connection cross-sections

<b>Main conductor</b>	max. mm <sup>2</sup>	1 x 10 or 2 x 4	1 x 25 or 2 x 10
	min. mm <sup>2</sup>	1 x 0.5	1 x 1.5
<b>Coil mm<sup>2</sup></b>		1 x 4 or 2 x 2.5	

#### Auxiliary switch EH 04

Thermal continuous current  $I_n = 6$  A

Rated operating current  $I_e$  at AC-15 for  $U_e \leq 240$  V AC 4 A  
 $\leq 415$  V AC 3 A  
 $\leq 500$  V AC 2 A

Minimum making/breaking capacity  $\geq 17$  V /  $\geq 5$  mA

# Installation contactors ESB..

## Technical data

### Switching lamp loads

IEC 947-4-1  
EN 60 947-4-1  
IEC 1095  
EN 61 095

#### Switching lamp loads

Please note the following:

The following table shows the number of lamps which can be connected per circuit at 230 V/50 Hz.

If the specified capacitor load is exceeded, this may result in admissibly high peak inrush currents. Other factors which influence the magnitude of peak inrush currents are as follows:

- Length and cross-section of installed supply cables
- Type of electronic ballast units
- Lamp make

The following lamp load table thus contains non-binding guideline values.

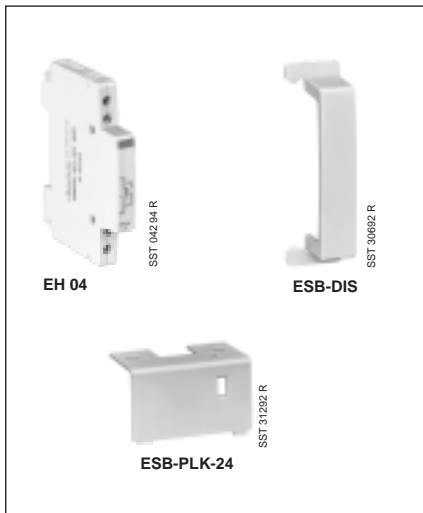
Lamp type	Lamp data		Permissible number of lamps per circuit (230 V, 50 Hz) in the case of contactor type				Capacitor load in $\mu\text{F}$
	Watt	$I_n$ A	ESB	ESB	ESB	ESB	
			20	24	40	63	
Incandescent lamps	60	0.26	21	25	54	83	
	100	0.43	13	15	32	50	
	200	0.87	7	7	16	25	
	300	1.30	4	5	11	16	
	500	2.17	3	3	6	10	
	1000	4.35	1	1	3	5	
	Fluorescent lamps, p.f. uncorrected and series p.f. correction	15	0.33	25	30	100	155
20		0.37	22	26	85	135	
40		0.43	17	20	65	105	
58		0.67	10	12	40	65	
65		0.67	10	12	40	65	
115		1.5	4	5	18	28	
140		1.5	4	5	18	28	
Lead-lag circuit	2 x 20	2 x 0.13	2 x 22	2 x 26	2 x 85	2 x 140	
	2 x 40	2 x 0.22	2 x 17	2 x 20	2 x 65	2 x 105	
	2 x 58	2 x 0.32	2 x 10	2 x 12	2 x 40	2 x 65	
	2 x 65	2 x 0.34	2 x 10	2 x 12	2 x 40	2 x 65	
	2 x 115	2 x 0.65	2 x 4	2 x 5	2 x 18	2 x 28	
	2 x 140	2 x 0.75	2 x 4	2 x 5	2 x 18	2 x 28	
	Parallel p.f. correction	15	0.11	6	8	16	67
20		0.13	6	8	16	67	4.5
40		0.22	6	8	16	67	4.5
58		0.32	4	5	10	43	7
65		0.34	4	5	10	43	7
115		0.65	1	2	4	17	18
140		0.75	1	2	4	17	18
High-pressure mercury-vapour lamps p.f. uncorrected	50	0.61	12	14	36	50	
	80	0.8	7	10	27	38	
	125	1.15	5	7	19	26	
	250	2.15	3	4	10	14	
	400	3.25	1	2	7	10	
	700	5.40	–	1	4	6	
	1000	7.5	–	1	3	4	
Parallel p.f. correction	50	0.28	4	5	10	43	7
	80	0.41	3	4	8	37	8
	125	0.65	2	3	6	26	10
	250	1.22	1	2	3	15	18
	400	1.95	–	1	3	10	25
	700	3.45	–	–	1	5	45
	1000	4.8	–	–	1	4	60
Lamps with electronic ballast units (EVG)	2000/400 V	5.45	–	1	2	3	35
	EVG für Watt		Permissible number of electronic ballast units per circuit (230 V, 50 Hz)				
	1 x 18	–	15	24	55	76	
	2 x 18	–	8	18	34	48	
	1 x 36	–	12	16	34	47	
	2 x 36	–	7	11	20	29	
	1 x 58	–	11	14	32	46	
2 x 58	–	6	8	17	24		

Lamp type	Lamp data		Permissible number of lamps per circuit (230 V, 50 Hz) in the case of contactor type				Capacitor load in $\mu\text{F}$	
	Watt	$I_n$ A	ESB	ESB	ESB	ESB		
			20	24	40	63		
Halogen metal-vapour lamps, p.f. uncorrected	35	0.53	–	10	28	38		
	70	1	–	5	14	20		
	150	1.8	–	3	8	11		
	250	3	–	2	5	7		
	400	3.5	–	1	4	6		
	1000	9.5	–	–	1	2		
	2000	16.5	–	–	1	1		
Parallel p.f. correction	2000/3500/400 V	10.5	–	–	2	2		
		18	–	–	1	1		
		–	–	–	–	–		
	35	0.25	–	5	11	30	6	
	70	0.45	–	3	5	18	12	
	150	0.75	–	1	3	9	20	
	250	1.5	–	1	2	7	33	
400	2.5	–	1	2	6	35		
1000	5.8	–	–	–	2	95		
2000	11.5	–	–	–	1	148		
2000/3500/400 V		6.6	–	–	1	2	58	
		11.6	–	–	–	1	100	
		–	–	–	–	–		
	Low-pressure mercury-vapour lamps p.f. uncorrected	35	1.5	5	8	22	30	
		55	1.5	5	8	22	30	
		90	2.4	3	5	13	19	
		135	3.5	2	3	10	13	
150		3.3	2	3	10	14		
180		3.3	2	3	10	14		
200		2.3	3	5	14	20		
Parallel p.f. correction	35	0.31	–	1	4	15	20	
	55	0.42	–	1	4	15	20	
	90	0.63	–	1	3	10	30	
	135	0.94	–	–	2	7	45	
	150	1.0	–	–	2	8	40	
	180	1.16	–	–	2	8	40	
	200	1.32	–	1	3	12	25	
High-pressure sodium-vapour lamps p.f. uncorrected	150	1.8	–	4	15	20		
	250	3.0	–	3	9	15		
	330	3.7	–	2	8	10		
	400	4.7	–	1	6	8		
	1000	10.3	–	–	3	4		
	Parallel p.f. correction	150	0.83	–	1	3	15	20
		250	1.5	–	1	2	9	33
330		2.0	–	–	2	7	40	
400		2.4	–	–	1	6	48	
1000		6.3	–	–	–	2	106	
Transformers for halogen low-volt lamps		Transformers for		Permissible number of transformers per circuit (230 V, 50 Hz)				
		Watt						
	20		40	52	110	174		
	50		20	24	50	80		
	75		13	16	35	54		
	100		10	12	27	43		
	150		7	9	19	29		
200		5	6	14	23			
300		3	4	9	14			

# Installation contactors ESB..

## Accessories, location of the connection terminals Approvals and certificates

IEC 947-4-1  
EN 60 947-4-1  
IEC 1095  
EN 61 095



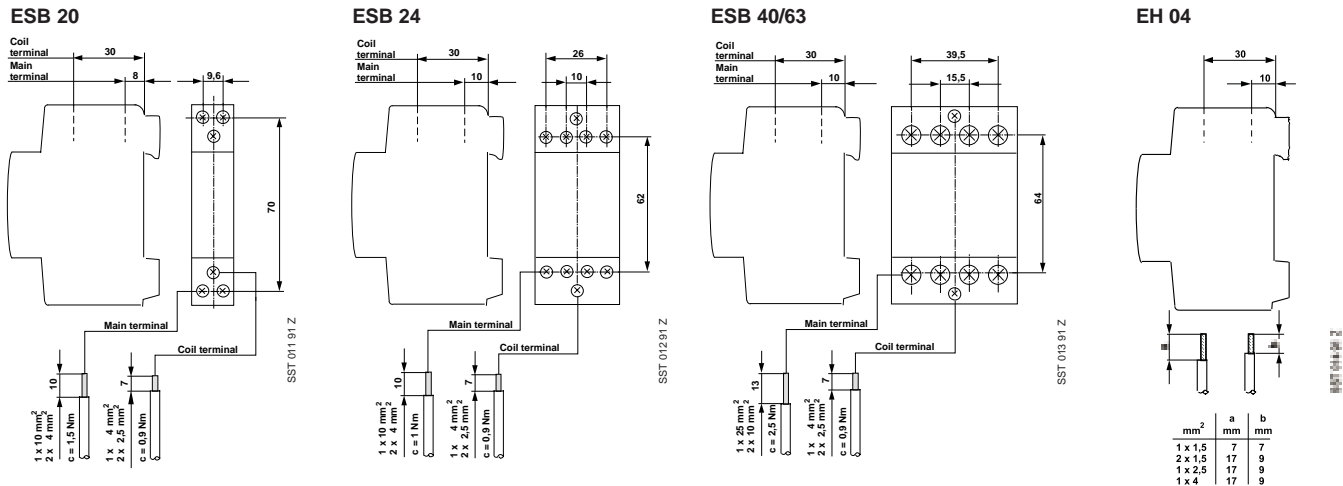
### Accessories ①

Designation	Type Abbreviation	Order code	bbn 4012233 EAN	Price per piece DM	Weight per piece kg	Pack. unit piece
Aux. switches						
2 NO	EH 04-20	GH E340 1321 R 0001	08476 8		0.023	10
1 NO + 1 NC	EH 04-11	GH E340 1321 R 0002	08477 5		0.023	10
Distance piece ②	ESB-DIS	GH E320 1902 R 0001	08521 5		0.002	10
Sealing covers	ESB-PLK 24 ESB-PLK 40/63	GH E320 1903 R 0001 GH E340 1903 R 0001	08417 1 08527 7		0.002 0.003	10 10
Time relays	ETD24	On request				
On-delayed						

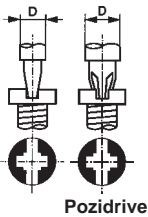
- ① Mounting onto ESB 20 not possible  
② For usage, see Page 1/120 "Permissible ambient temperature"

### Location of the connection terminals

#### Dimensions in mm



### Connection screws



	ESB 20		ESB 24		ESB 40 / 63		EH 04	
	D <sub>max.</sub>	Pozidrive Size	D <sub>max.</sub>	Pozidrive Size	D <sub>max.</sub>	Pozidrive Size	D <sub>max.</sub>	Pozidrive Size
Main connection	5	1			7.5	2	Connections	5
Coil	5	1	1	1	5	1		1

### Approvals and certificates

Device type	Zulassungen										Ships' classification societies			
	SEV	DEMKO	NEMKO	SEMKO	EL.Inspect.	CEBEC	CSA	UL	CEC	NF	BV	GL	LRS	DNV
ESB 20	■					■			●					
ESB 24		■	■	■	■	■		■	●	■	■	□	■	
ESB 40			■			■		■	●	■	■	□	■	
ESB 63			■			■		■	●	■	■	□	■	

- Devices are approved.  
□ Devices have been submitted for approval or it is planned to submit them for approval.  
● For NO contacts and control voltages 24 V and 230 V.