



Catalog

Modular DIN rail components

Installation contactors

Power and productivity
for a better world™





Installation contactors

Benefits and features	2
Overview	3

Ordering details

ESB installation contactors	
ESB20	4
ESB24	5
ESB40	6
ESB63	7
EN installation contactors with manual switch	
EN20	8
EN24	9
EN40	10

Technical data	11
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Lamp load table	14
------------------------	-----------

Main accessories	
Ordering details	15

Installation contactors

Benefits and features

Introduction

ABB offers a complete range of equipment for controlling, remote switching and protecting electrical installations in buildings as hotels, hospitals, shopping centers, office centers and domestic applications.

ESB and EN installation contactors are designed to match the Modular DIN rail components (MDRC) for common use in dedicated panels providing high safety and finger protection.

The range

The ESB range includes 4 ratings from 20 A to 63 A with 2 to 4-pole version. The EN contactor range offers 3 types from 20 A to 40 A with an additional manual switch in front.

Flexible use for many application

ESB20 ... ESB63 can be used for DIN rail as well as for industrial applications:

- Resistive loads such as electric heaters, water heaters, etc
- Motors, pumps
- Lamp switching and controls (building installation)

High comfort due to hum-free operation

The installation contactor types ESB24 ... ESB63 / EN24 ... EN40 operate free from vibration, thanks to their DC coil technology. This feature has high value in building installations where hum-free and silent operations are important for people's farewell.

High protection against overvoltages and current peaks

- Built-in surge protection for ESB24 ... ESB63
- ABB tested lamp table provides secure planning

Approvals available

Certificates for CE, CCC, UL/CSA, GOST, as well as household or ship approvals available. Other approvals on request.

Compact and optimized design

Installation contactors with MDRC design have a very compact size. A powerful ESB63, max. operating current 63 A fits in a small enclosure with only 60 mm depth.

Cost savings

- Low power consumption of DC coils (ESB24, ESB40, ESB63)
- Better logistics, because AC/DC coil supply requires less variants
- Significantly reduced space compared to industrial contactors

High availability and safety of EN types

EN types have the same features and benefits as ESB contactors, but also have a special hand operating function. This provides customers with the following features:

- Manual control in case of failure is always available
- Easier and faster commissioning
- Time savings on maintenance and testing of equipment



Installation contactors

Overview



Remote controlled	ESB20	ESB24	ESB40	ESB63
Remote and manually controlled	EN20	EN24	EN40	-
Width in number of modular spacings	1	2	3	3
Coil types	AC operated	AC / DC operated	AC / DC operated	AC / DC operated
Rated operational voltage U_e	250 V AC	220 V DC, 400 V AC	220 V DC, 400 V AC	220 V DC, 400 V AC
AC-1 / AC-7a utilization category for air temperature near the contactor $\leq 55\text{ °C}$				
Rated operational current I_e AC-1 / AC-7a	20 A	24 A	40 A	63 A
Rated operational power AC-1	230 V - 1 phase	4 kW	5.3 kW	8.8 kW
	400 V - 3 phases	-	16 kW	26 kW
AC-3 / AC-7b utilization category for air temperature close to contactor $\leq 55\text{ °C}$				
Rated operational current I_e AC-3 / AC-7b	230 V - 1 phase	9 A	9 A	22 A
	400 V - 3 phases	-	9 A	22 A
Rated operational power AC-3	230 V - 1 phase	1.1 kW	2.2 kW	5.5 kW
	400 V - 3 phases	-	4 kW	11 kW

Accessories

	Auxiliary contact blocks	2 NO	-	EH04-20
		1 NO + 1 NC	-	EH04-11
	Distant piece	-	-	ESB-DIS
	Covers	-	ESB-PLK24 ESB-SPK24	ESB-PLK40/63 ESB-SPK40/63

ESB20 installation contactors

20 A AC-1 / AC-7a

AC operated



ESB20

1SBC103007F0014

Description

The ESB20 installation contactors are used for the control of single phase loads up to 20 A. They operate with an AC coil. Various N.O. and N.C. contacts combinations are available.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage ¹⁾		Type	Order code	Pkg qty	Weight (1 pc)
		50 Hz V	60 Hz V				
	1	12	14	ESB20-20 12V 50Hz / 14V 60Hz	GHE3211102R1004	10	0.200
		24	28	ESB20-20 24V 50Hz / 28V 60Hz	GHE3211102R0001	10	0.200
		110	125 ... 127	ESB20-20 110V 50Hz / 125-127V 60Hz	GHE3211102R0004	10	0.200
		230	264	ESB20-20 230V 50Hz / 264V 60Hz	GHE3211102R0006	10	0.200
	1	12	15	ESB20-02 12V 50Hz / 14V 60Hz	GHE3211202R1004	10	0.200
		24	28	ESB20-02 24V 50Hz / 28V 60Hz	GHE3211202R0001	10	0.200
		110	125 ... 127	ESB20-02 110V 50Hz / 125-127V 60Hz	GHE3211202R0004	10	0.200
		230	264	ESB20-02 230V 50Hz / 264V 60Hz	GHE3211202R0006	10	0.200
	1	12	15	ESB20-11 12V 50Hz / 14V 60Hz	GHE3211302R1004	10	0.200
		24	28	ESB20-11 24V 50Hz / 28V 60Hz	GHE3211302R0001	10	0.200
		110	125 ... 127	ESB20-11 110V 50Hz / 125-127V 60Hz	GHE3211302R0004	10	0.200
		230	264	ESB20-11 230V 50Hz / 264V 60Hz	GHE3211302R0006	10	0.200

¹⁾ Other control voltages see voltage code table.

The below tables indicate the available coil voltages and corresponding digits for order codes. When placing an order, please give the order code. Select a standard contactor from ordering details. Change the coil voltage code in the order code according to the table below.

Example: ESB20-20 and coil 20 V 50 Hz, the order code is GHE3211102R1005

Type

ESB - 20 - 20

N.O. N.C.

N.O. N.C.

Main contacts

Contactor type

AC operated

AC operated

Order code

GHE3211102R 1 00 5

AC coil code

	50 Hz	60 Hz
1	12 V	14 V
1	20 V	24 V
0	24 V	28 V
1	36 V	42 V
0	42 V	48 V
0	48 V	55 V
2	95 V	110 V
2	100 V	120 V
0	110 V	125 ... 127 V
3	125 ... 127 V	150 V
3	190 V	220 V
4	210 V	240 V
0	230 V	264 V
0	240 V	278 V
4	330 V	380 V
0	400 V	

Main dimensions mm, inches

ESB20

For EN20: only coil 0...1 and 0...6 are available

2CDC222001F0014

ESB24 installation contactors

24 A AC-1 / AC-7a

AC / DC operated



ESB24

2CDC221005F0010

Description

The ESB24 installation contactors are used for the control of single and three-phases loads up to 24 A. Due to their DC solenoid actuator, the ESB24 can be connected to AC or DC voltages. This provides the following benefits:

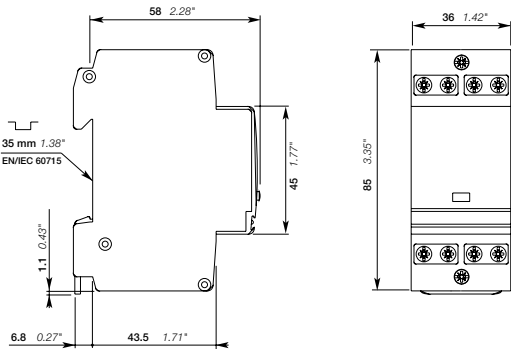
Hum-free operation, low power consumption, integrated high overvoltage protection. Various N.O. and N.C. contacts combinations available.

Main accessories: Auxiliary contact blocks EH04.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage	Type	Order code	Pkg qty	Weight (1 pc)
		V AC/DC			pcs	kg
	2	12	ESB24-40-12AC/DC	GHE3291102R1004	5	0.245
		24	ESB24-40-24AC/DC	GHE3291102R0001	5	0.245
		42	ESB24-40-42AC/DC	GHE3291102R0002	5	0.245
		48	ESB24-40-48AC/DC	GHE3291102R0003	5	0.245
		110	ESB24-40-110AC/DC	GHE3291102R0004	5	0.240
		230	ESB24-40-230AC/DC	GHE3291102R0006	5	0.235
	2	400	ESB24-40-400AC/DC	GHE3291102R0007	5	0.235
		12	ESB24-04-12AC/DC	GHE3291202R1004	5	0.245
		24	ESB24-04-24AC/DC	GHE3291202R0001	5	0.245
		42	ESB24-04-42AC/DC	GHE3291202R0002	5	0.245
		48	ESB24-04-48AC/DC	GHE3291202R0003	5	0.245
		110	ESB24-04-110AC/DC	GHE3291202R0004	5	0.240
	2	230	ESB24-04-230AC/DC	GHE3291202R0006	5	0.235
		400	ESB24-04-400AC/DC	GHE3291202R0007	5	0.235
		12	ESB24-22-12AC/DC	GHE3291302R1004	5	0.245
		24	ESB24-22-24AC/DC	GHE3291302R0001	5	0.245
		42	ESB24-22-42AC/DC	GHE3291302R0002	5	0.245
		48	ESB24-22-48AC/DC	GHE3291302R0003	5	0.245
	2	110	ESB24-22-110AC/DC	GHE3291302R0004	5	0.240
		230	ESB24-22-230AC/DC	GHE3291302R0006	5	0.235
		400	ESB24-22-400AC/DC	GHE3291302R0007	5	0.235
		12	ESB24-31-12AC/DC	GHE3291602R1004	5	0.245
		24	ESB24-31-24AC/DC	GHE3291602R0001	5	0.245
		42	ESB24-31-42AC/DC	GHE3291602R0002	5	0.245
	2	48	ESB24-31-48AC/DC	GHE3291602R0003	5	0.245
		110	ESB24-31-110AC/DC	GHE3291602R0004	5	0.240
		230	ESB24-31-230AC/DC	GHE3291602R0006	5	0.235
		400	ESB24-31-400AC/DC	GHE3291602R0007	5	0.235
		12	ESB24-13-12AC/DC	GHE3291702R1004	5	0.245
		24	ESB24-13-24AC/DC	GHE3291702R0001	5	0.245
	2	42	ESB24-13-42AC/DC	GHE3291702R0002	5	0.245
		48	ESB24-13-48AC/DC	GHE3291702R0003	5	0.245
		110	ESB24-13-110AC/DC	GHE3291702R0004	5	0.240
		230	ESB24-13-230AC/DC	GHE3291702R0006	5	0.235
		400	ESB24-13-400AC/DC	GHE3291702R0007	5	0.235

Main dimensions mm, inches



2CDC22005F0014

ESB24

ESB40 installation contactors

40 A AC-1 / AC-7a

AC / DC operated



ESB40

2CDC221003R0010

Description

The ESB40 installation contactors are used for the control of single and three-phases loads up to 40 A. Due to their DC solenoid actuator, the ESB40 can be connected to AC or DC voltages. This provides the following benefits:

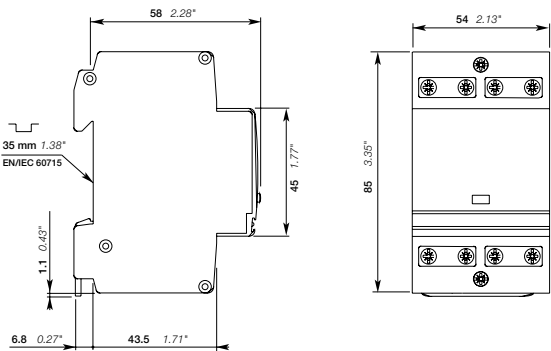
Hum-free operating system, no vibration, silent in operation, low power consumption, integrated high overvoltage protection. You can choose between a various N.O. and N.C. contacts combinations.

Main accessories: Auxiliary contact blocks EH04.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage V AC/DC	Type	Order code	Pkg qty	Weight (1 pc)
					pcs	kg
	3	12	ESB40-40-12AC/DC	GHE3491102R1004	3	0.405
		24	ESB40-40-24AC/DC	GHE3491102R0001	3	0.405
		42	ESB40-40-42AC/DC	GHE3491102R0002	3	0.405
		48	ESB40-40-48AC/DC	GHE3491102R0003	3	0.405
		110	ESB40-40-110AC/DC	GHE3491102R0004	3	0.405
		230	ESB40-40-230AC/DC	GHE3491102R0006	3	0.405
		400	ESB40-40-400AC/DC	GHE3491102R0007	3	0.400
	3	24	ESB40-22-24AC/DC	GHE3491302R0001	3	0.405
		230	ESB40-22-230AC/DC	GHE3491302R0006	3	0.405
	3	24	ESB40-31-24AC/DC	GHE3491602R0001	3	0.405
		230	ESB40-31-230AC/DC	GHE3491602R0006	3	0.405
	3	24	ESB40-30-24AC/DC	GHE3491502R0001	3	0.385
		230	ESB40-30-230AC/DC	GHE3491502R0006	3	0.385
		400	ESB40-30-400AC/DC	GHE3491502R0007	3	0.385
	3	24	ESB40-20-24AC/DC	GHE3491402R0001	3	0.370
		230	ESB40-20-230AC/DC	GHE3491402R0006	3	0.370

Main dimensions mm, inches



ESB40

2CDC222003R0014

ESB63 installation contactors

63 A AC-1 / AC-7a

AC / DC operated



ESB63

2CDC221002F0010

Description

The ESB63 installation contactors are used for the control of single and three-phases loads up to 63 A. Due to their DC solenoid actuator, the ESB63 can be connected to AC or DC voltages. This provides the following benefits:

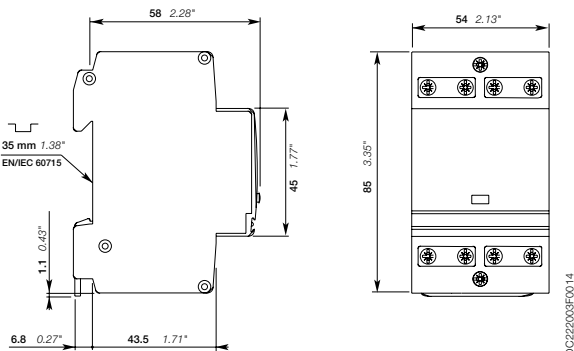
Hum-free operating system, no vibration, silent in operation, low power consumption, integrated high overvoltage protection. You can choose between a various N.O. and N.C. contacts combinations.

Main accessories: Auxiliary contact blocks EH04.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage V AC/DC	Type	Order code	Pkg qty	Weight (1 pc)
					pcs	kg
	3	12	ESB63-40-12AC/DC	GHE3691102R1004	3	0.405
		24	ESB63-40-24AC/DC	GHE3691102R0001	3	0.405
		42	ESB63-40-42AC/DC	GHE3691102R0002	3	0.405
		48	ESB63-40-48AC/DC	GHE3691102R0003	3	0.405
		110	ESB63-40-110AC/DC	GHE3691102R0004	3	0.405
		230	ESB63-40-230AC/DC	GHE3691102R0006	3	0.405
		400	ESB63-40-400AC/DC	GHE3691102R0007	3	0.400
	3	415	ESB63-40-415AC/DC	GHE3691102R0008	3	0.405
		400	ESB63-22-400AC/DC	GHE3691302R0007	3	0.405
	3	110	ESB63-31-110AC/DC	GHE3691602R0004	3	0.405
		230	ESB63-31-230AC/DC	GHE3691602R0006	3	0.405
	3	230	ESB63-30-230AC/DC	GHE3691502R0006	3	0.385
		400	ESB63-30-400AC/DC	GHE3691502R0007	3	0.385
	3	24	ESB63-20-24AC/DC	GHE3691402R0001	3	0.370
		230	ESB63-20-230AC/DC	GHE3691402R0006	3	0.370
	3	230	ESB63-11-230AC/DC	GHE3691802R0006	3	0.370

Main dimensions mm, inches



ESB63

2CDC222003F0014

EN20 installation contactors - manually / automatic operated

20 A AC-1 / AC-7a

AC operated



1SBC103001F0014

EN20

Description

The EN20 installation contactors are used for the control of single phase loads up to 20 A. They operate with an AC coil and have a built-in toggle switch to select between three function modes. This offers many advantages as:

You can make functionnal test before installation start-up. It can be used for maintenance operation, to change lamps and test it. It provides higher safety and drop out as you can switch the application manually.

The toggle switch is also used for household application like water heating where double rate of kWh is used.

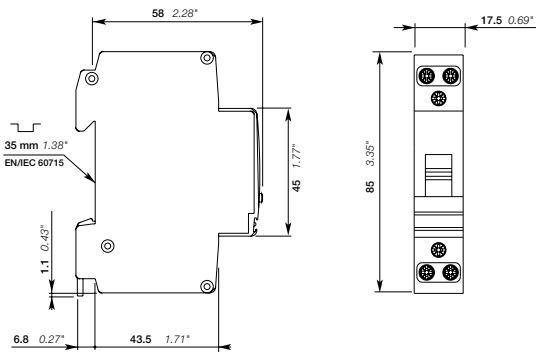
Function modes:

- OFF position,
- automatic run (normal contactor function),
- manual override with a return to AUTO the next time the coil is energized.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage		Type	Order code	Pkg qty	Weight (1 pc)
		50 Hz V	60 Hz V			pcs	kg
	1	24	28	EN20-20 24V 50Hz / 28V 60Hz	GHE3221101R0001	10	0.200
		230	-	EN20-20 230V 50Hz	GHE3221101R0006	10	0.200

Main dimensions mm, inches



ESB20

2CDC222004F0014

EN24 installation contactors - manually / automatic operated

24 A AC-1 / AC-7a

AC / DC operated



EN24

2CDC221006F0010

Description

The EN24 installation contactors are used for the control of single phase loads up to 24 A. They operate with an AC coil and have a built-in toggle switch to select between three function modes.

This offers many advantages as:

You can make functionnal test before installation start-up. It can be used for maintenance operation, to change lamps and test it. It provides higher safety and drop out as you can switch the application manually.

The toggle switch is also used for household application like water heating where double rate of kWh is used.

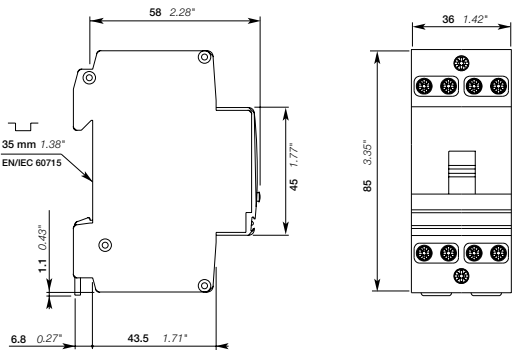
Function modes:

- OFF position,
- automatic run (normal contactor function),
- manual override with a return to AUTO the next time the coil is energized.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage	Type	Order code		Pkg qty	Weight (1 pc)
		V AC/DC				pcs	kg
	2	24	EN24-40-24AC/DC	GHE3261101R0001		5	0.250
		230	EN24-40-230AC/DC	GHE3261101R0006		5	0.240
	2	24	EN24-31-24AC/DC	GHE3261601R0001		5	0.250
		230	EN24-31-230AC/DC	GHE3261601R0006		5	0.240
	2	230	EN24-30-230AC/DC	GHE3261501R0006		5	0.235

Main dimensions mm, inches



ESB24

2CDC222006F0014

EN40 installation contactors

40 A AC-1 / AC-7a

AC / DC operated



2CDC221004F0010

EN40

Description

The EN40 installation contactors are used for the control of single phase loads up to 40 A. They operate with an AC coil and have a built-in toggle switch to select between three function modes. This offers many advantages as:

You can make functionnal test before installation start-up. It can be used for maintenance operation, to change lamps and test it. It provides higher safety and drop out as you can switch the application manually.

The toggle switch is also used for household application like water heating where double rate of kWh is used.

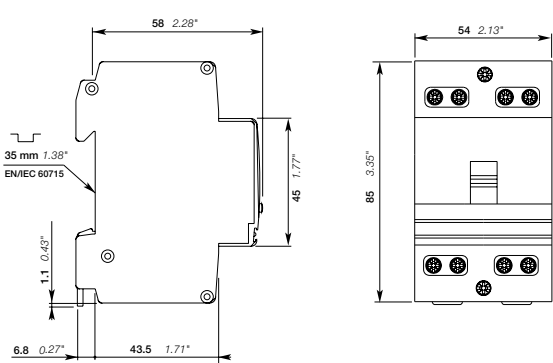
Function modes:

- OFF position,
- automatic run (normal contactor function),
- manual override with a return to AUTO the next time the coil is energized.

Ordering details

Main contacts	Width in number of modular spacings	Rated control circuit voltage	Type	Order code	Pkg qty	Weight (1 pc)
		V AC/DC			pcs	kg
	3	24	EN40-40-24AC/DC	GHE3421101R0001	3	0.410
		110	EN40-40-110AC/DC	GHE3421101R0004	3	0.410
		230	EN40-40-230AC/DC	GHE3421101R0006	3	0.410
	3	24	EN40-31-24AC/DC	GHE3421601R0001	3	0.410
		230	EN40-31-230AC/DC	GHE3421601R0006	3	0.410
	3	230	EN40-30-230AC/DC	GHE3421501R0006	3	0.390
	3	230	EN40-20-230AC/DC	GHE3421401R0006	3	0.375

Main dimensions mm, inches



EN40

2CDC222006F0014

Installation contactors

Technical data

Main circuit – Utilization characteristics according to IEC/EN

Contactor type		ESB20 / EN20	ESB24 / EN24	ESB40 / EN40	ESB63
Standards		IEC/EN 60947-1 IEC/EN 60947-4-1 IEC/EN 61095	IEC/EN 60947-1 IEC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095		
Rated operational voltage U_e		250 V AC	220 V DC 400 V AC	220 V DC 400 V AC	220 V DC 400 V AC
Rated frequency		50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
AC-1 / AC-7a utilization category for air temperature near the contactor $\leq 55^\circ\text{C}$					
Rated operational current I_e AC-1 / AC-7a		20 A	24 A	40 A	63 A
Rated operational power AC-1	230 V - 1 phase	4 kW	5.3 kW	8.8 kW	13.8 kW
	400 V - 3 phases	-	16 kW	26 kW	41 kW
AC-3 / AC-7b utilization category for air temperature close to contactor $\leq 55^\circ\text{C}$					
Rated operational current I_e AC-3 / AC-7b	230 V - 1 phase	9 A	9 A	22 A	30 A
	400 V - 3 phases	-	9 A	22 A	30 A
Rated operational power AC-3	230 V - 1 phase	1.1 kW	2.2 kW	5.5 kW	8 kW
	400 V - 3 phases	-	4 kW	11 kW	15 kW
Rated making capacity AC-3 acc. to IEC 60947-4-1		$10 \times I_e$ / AC-3	$10 \times I_e$ / AC-3	$10 \times I_e$ / AC-3	$10 \times I_e$ / AC-3
Rated breaking capacity AC-3 acc. to IEC 60947-4-1		$8 \times I_e$ / AC-3	$8 \times I_e$ / AC-3	$8 \times I_e$ / AC-3	$8 \times I_e$ / AC-3
Short-circuit protective devices	gG type fuses	20 A	35 A	63 A	80 A
Rated short-time withstand current I_{cw}	at 40°C ambient temp. in free air, from a cold state 10 s	72 A	72 A	176 A	240 A
Power loss	per pole	1 W	3 W	4 W	6 W
Maximum electrical switching frequency	AC-1 / AC-7a	300 cycles per hour	300 cycles per hour	300 cycles per hour	300 cycles per hour
	AC-3 / AC-7b	600 cycles per hour	600 cycles per hour	600 cycles per hour	600 cycles per hour
Electrical durability	AC-1 / AC-7a	150000 cycle	150000 cycle	150000 cycle	150000 cycle
	AC-3 / AC-7b	150000 cycle	500000 cycle	170000 cycle	240000 cycle
Mechanical durability		1000000 cycle	1000000 cycle	1000000 cycle	1000000 cycle

Main circuit – Utilization characteristics according to UL/CSA

Contactor type		ESB20	ESB24	ESB40	ESB63
Standards		UL 60947-1, UL 60947-4-1			
General use rating	240 V	20 A	24 A	40 A	63 A
Motor rating					
Full load current	220 ... 240 V - 1 phase	8 A	9.6 A	22 A	28 A
	440 ... 480 V - 3 phases	-	7.6 A	21 A	21 A
Horse power rating	220 ... 240 V - 1 phase	1 hp	3 hp	7.5 hp	10 hp
	440 ... 480 V - 3 phases	-	5 hp	15 hp	15 hp
Short-circuit protection for contactors without thermal O/L relay - Motor protection excluded					
Fuse rating		25 A	25 A	40 A	75 A
Fuse type 480 V		-	K5	K5	K5
Max. electrical switching frequency					
for general use		300 cycles/h	300 cycles/h	300 cycles/h	300 cycles/h
for motor use		600 cycles/h	600 cycles/h	600 cycles/h	600 cycles/h

Installation contactors

Technical data

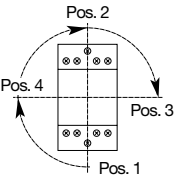
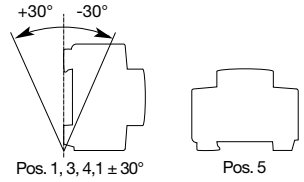
General technical data

Contactor type		ESB20 / EN20	ESB24 / EN24	ESB40 / EN40	ESB63
Rated insulation voltage U_i	acc. to IEC 60947-4-1 and VDE 0110 (Gr. C)	400 V	500 V	500 V	500 V
	acc. to UL/CSA	240 V	600 V	600 V	600 V
Rated impulse withstand voltage U_{imp}		6 kV	6 kV	6 kV	6 kV
Ambient air temperature	operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
	storage	-40 ... +80 °C	-40 ... +75 °C	-40 ... +75 °C	-40 ... +75 °C
Maximum operating altitude permissible		2000 m	2000 m	2000 m	2000 m
Resistance to shock acc. to IEC 60068-2-27		100 m/s ² (4 ms pulse)	150 m/s ² (11 ms pulse)	150 m/s ² (11 ms pulse)	150 m/s ² (11 ms pulse)

Magnet system characteristics

Contactor type		ESB20 / EN20	ESB24 / EN24	ESB40 / EN40	ESB63
Coil operating limits	acc. to IEC/EN60947-4-1	0.85 ... 1.1 x U_c (at $\theta \leq 55$ °C)	0.85 ... 1.1 x U_c (at $\theta \leq 55$ °C)	0.85 ... 1.1 x U_c (at $\theta \leq 55$ °C)	0.85 ... 1.1 x U_c (at $\theta \leq 55$ °C)
Drop-out voltage in % of U_c		approximate 20 ... 75	10 ... 75	10 ... 75	10 ... 75
Rated frequency		50 / 60 Hz	DC, 50 / 60 / 400 Hz	DC, 50 / 60 / 400 Hz	DC, 50 / 60 / 400 Hz
Frequency range		50 / 60 Hz	40 ... 450 Hz	40 ... 450 Hz	40 ... 450 Hz
Coil consumption	average holding value 50 Hz	3.2 VA	4 VA	5 VA	4.2 VA
	average pull-in value 50 Hz	8 VA	4 VA	5 VA	65 VA

Mounting characteristics and conditions for use

Contactor type		ESB20 / EN20	ESB24 / EN24	ESB40 / EN40	ESB63
Mounting position		position 1 to 4	position 1 to 5		
					
Mounting on DIN rail		TH35-15 (35 x 15 mm Mounting Rail) acc. to IEC 60715 TH35-7.5 (35 x 7.5 mm Mounting Rail) acc. to IEC 60715			

Connecting characteristics

Main circuit

Contactor type		ESB20	EN20	ESB24	EN24	ESB40	EN40	ESB63
Connecting capacity								
 Rigid	1 x	1...10 mm ²		1.5 ... 10 mm ²		1.5 ... 25 mm ²		1.5 ... 25 mm ²
	2 x	1...4 mm ²		1.5 ... 4 mm ²		1.5 ... 10 mm ²		1.5 ... 10 mm ²
 Flexible with ferrule	1 x	1...6 mm ²		1.5 ... 10 mm ²		1.5 ... 16 mm ²		1.5 ... 16 mm ²
	2 x	1...4 mm ²						
 Flexible with insulated ferrule	1 x	1...6 mm ²		1.5 ... 10 mm ²		1.5 ... 16 mm ²		1.5 ... 16 mm ²
	2 x	1...4 mm ²						
 Flexible	1 x	1...6 mm ²		1.5 ... 10 mm ²		1.5 ... 16 mm ²		1.5 ... 16 mm ²
	2 x	1...4 mm ²						
	Stranded acc. to UL/CSA	AWG 14-8	-	AWG 16-8	-	AWG 16-4	-	AWG 16-4
	Flexible acc. to UL/CSA	AWG 18-14	-	AWG 16-8	-	AWG 16-4	-	AWG 16-4
Degree of protection		IP 20		IP 20		IP 20		IP 20
Wire stripping length		7 mm		10 mm		13 mm		13 mm
Tightening torque		1.2 Nm		1 Nm		2.5 Nm		2.5 Nm
Recommended screw driver		Pozidriv 1		Pozidriv 1		Pozidriv 2		Pozidriv 2

Control circuit

Contactor type		ESB20	EN20	ESB24	EN24	ESB40	EN40	ESB63
Connecting capacity								
 Rigid	1 x	0.5 ... 4 mm ²	-	1.5 ... 25 mm ²	-	1.5 ... 25 mm ²	-	1.5 ... 25 mm ²
	2 x	0.75 ... 2.5 mm ²						
Degree of protection (all terminals)		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Stripping length		7 mm	7 mm	7 mm	7 mm	7 mm	7 mm	7 mm
Tightening torque		1.2 Nm	1.2 Nm	0.9 Nm	0.9 Nm	0.9 Nm	0.9 Nm	0.9 Nm
Recommended screw driver		Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 2	Pozidriv 2	Pozidriv 2

Installation contactors

Technical data

DC switching table

Contactor type	Rated operational voltage U_e		DC-1 ($L/R \leq 1\text{ms}$)			DC-3 ($L/R \leq 2\text{ms}$)		
			1 pole	2 poles in series	3 poles in series	1 pole	2 poles in series	3 poles in series
ESB20	24 V DC	NO contacts	20.0	20.0	-	15.0	20.0	-
	48 V DC	NO contacts	15.0	20.0	-	7.0	15.0	-
	60 V DC	NO contacts	15.0	20.0	-	5.0	10.0	-
	110 V DC	NO contacts	5.0	15.0	-	1.5	5.0	-
	220 V DC	NO contacts	0.5	5.0	-	0.2	1.5	-
ESB24	24 V DC	NO contacts	24.0	24.0	24.0	16.0	24.0	24.0
	48 V DC	NO contacts	21.0	24.0	24.0	8.0	18.0	24.0
	60 V DC	NO contacts	17.0	24.0	24.0	4.0	14.0	24.0
	110 V DC	NO contacts	7.0	16.0	24.0	1.6	6.5	16.0
	220 V DC	NO contacts	0.9	4.5	13.0	0.2	1.0	4.0
ESB40	24 V DC	NO contacts	40.0	40.0	40.0	19.0	40.0	40.0
	48 V DC	NO contacts	23.0	40.0	40.0	10.0	20.0	40.0
	60 V DC	NO contacts	18.0	32.0	40.0	5.0	16.0	34.0
	110 V DC	NO contacts	8.0	17.0	30.0	1.8	7.0	18.0
	220 V DC	NO contacts	1.0	5.0	15.0	0.3	1.1	4.5
ESB63	24 V DC	NO contacts	50.0	63.0	63.0	21.0	44.0	63.0
	48 V DC	NO contacts	25.0	43.0	63.0	11.0	22.0	47.0
	60 V DC	NO contacts	20.0	35.0	60.0	5.5	18.0	38.0
	110 V DC	NO contacts	9.0	19.0	33.0	2.0	8.0	21.0
	220 V DC	NO contacts	1.1	5.5	17.0	0.3	1.2	5.0

Contactor type	Rated operational voltage U_e		DC-1 ($L/R \leq 1\text{ms}$)			DC-3 ($L/R \leq 2\text{ms}$)		
			1 pole	2 poles in series	3 poles in series	1 pole	2 poles in series	3 poles in series
ESB20	24 V DC	NC contacts	14.0	20.0	-	6.0	10.0	-
	48 V DC	NC contacts	7.0	14.0	-	3.0	6.0	-
	60 V DC	NC contacts	4.5	10.0	-	2.0	4.0	-
	110 V DC	NC contacts	1.5	4.4	-	0.6	1.8	-
	220 V DC	NC contacts	0.2	1.5	-	0.1	0.6	-
ESB24	24 V DC	NC contacts	14.5	24.0	24.0	6.3	11.0	19.0
	48 V DC	NC contacts	7.5	12.5	22.0	3.1	5.4	9.4
	60 V DC	NC contacts	4.5	10.0	17.5	2.0	4.3	7.5
	110 V DC	NC contacts	1.6	4.4	9.5	0.7	1.9	4.1
	220 V DC	NC contacts	0.2	1.4	3.8	0.1	0.6	1.6

Installation contactors

Lamp load table

Lamp load

Please notice: Switching lamps is a capacitor load application where high inrush current peaks could occur. These are influenced by the length and cross section of the wire as well as the type of power supply unit and specifications of the lamp brand. For example long cables can increase the possible number of lamps per pole. The table shows the allowed max. current for 1 pole and considers already the startup current peaks.

The following selection table shows the current values and the maximum switchable capacitor load for compensated lamps. These two limits have to be considered in the selection of contactors.

Contactor type	ESB20/EN20	ESB24/EN24	ESB40/EN40	ESB63
Permitted compensating capacity per phase C _{max}	75 µF	100 µF	350 µF	500 µF
Lamp types	Maximum load of the current paths during switching of electric lamps I _a (A)			
Incandescent and halogen lamps (230 V)	6	7	20	30
Mixing lamps without ballast	6	7	20	30
Fluorescent lamps with conventional ballast	single lamp uncompensated	22	36	56
	single lamp parallel compensated	3	3.5	15
	series compensation, duo circuit	9	22	36
Fluorescent lamps with electronic ballast or CFL	3	7	20	30
LED lamps	3 ¹⁾	7	20	30
High pressure mercury-vapor lamps	single lamp without compensation	9	11	18
	single lamp with parallel compensation	3	3.5	10
Halogen metal-vapor lamps	single lamp without compensation	9	11	18
	single lamp with parallel compensation	3	3.5	10
High pressure sodium-vapor lamps	single lamp without compensation	9	11	18
	single lamp with parallel compensation	3	3.5	10
Low pressure sodium-vapor lamps	single lamp without compensation	9	11	18
	single lamp with parallel compensation	3	3.5	10
Electronic ballast devices	3	7	20	30

¹⁾ Valid for max. inrush of 50 x I_a

Example for lamp load calculation

Due to many varieties of lamps and ballasts we advice to take the current load as base for reference.

The lamp table considers already the inrush peaks and other lamp parameters.

Please see the following examples for a reliable project lamp calculation

- Fluorescent lamp with conventional ballast, uncompensated
the lamp operating current I = 1.5 A, voltage U = 230 V
1 pole of ESB24 can be loaded with max. 22 A, see lamp table => 22 A / 1.5 A = 14.66 => 14 lamps
1 pole of ESB20 can be loaded with max. 9 A, see lamp table => 9 A / 1.5 A = 6 lamps

Please use the referring value in the table stated above and divide it with the current stated on the lamp. This will lead into the number of lamps which can be switched.

E.g.: ESB24 used for LED lamps: 7 A (= 7000 mA) / 85 mA = 82.23 => 82 lamps



ESB/EN installation contactors

Main accessories



EH04-20

2CDC221001R0012



ESB-PLK24

SST31202



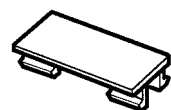
ESB-SPK40/63

2CDC221002F0014



ESB-DIS

SST30692



SZ-KZS

SK0018294

Ordering details

Suitable for	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pc)
				pcs	kg
Auxiliary contact blocks					
ESB24, ESB40, ESB63 EN24, EN40		EH04-20	GHE3401321R0001	10	0.040
		EH04-11	GHE3401321R0002	10	0.040

Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pc)
				pcs	kg
Sealing covers					
ESB24, EN24	sealing cover	ESB-PLK24	GHE3201903R0001	10	0.002
ESB40, ESB63, EN40	sealing cover	ESB-PLK40/63	GHE3401903R0001	10	0.003
ESB24, EN24	protection cover	ESB-SPK24	GHE3201903R0002	10	0.005
ESB40, ESB63, EN40	protection cover	ESB-SPK40/63	GHE3401903R0002	10	0.010
Distant piece					
ESB24, ESB40, ESB63, EN24, EN40		ESB-DIS	GHE3201902R0001	10	0.002
Labels¹⁾					
ESB20, ESB24, ESB40, ESB63, EN20, EN24, EN40	unlabelled ²⁾	SZ-KZS	GHS2101946R0004	30	0.008
	numbering 1-40	SZ-KZS/1	GHS2101946R0005	30	0.008
	numbering 2x 1-20	SZ-KZS/6	GHS2101946R0010	30	0.008
	numbering 4x 1-10	SZ-KZS/9	GHS2101946R0013	30	0.008
	numbering 4x 11-20	SZ-KZS/10	GHS2101946R0014	30	0.008
	labelled L1	SZ-KZS/11	GHS2101946R0015	30	0.008
	labelled L2	SZ-KZS/12	GHS2101946R0016	30	0.008
	labelled L3	SZ-KZS/13	GHS2101946R0017	30	0.008

¹⁾ Special labels on request: minimum quantities 50

²⁾ The unlabelled can be labelled by water-resistant and permanent marker or by means of computer-controlled labelling system (plotter).

EH04 auxiliary contact block – Utilization characteristics according to IEC/EN

Type	EH04
Rated operational voltage U_e	500 V
Conventional free air thermal current I_{th}	6
Rated frequency	50/60 Hz
Rated operational current I_e / AC-15	24 V 50/60 Hz : 6 A
	240 V 50/60 Hz : 4 A
	415 V 50/60 Hz : 3 A
	500 V 50/60 Hz : 2 A
Rated operational current DC-13	125 V : 0.55 A
	250 V : 0.27 A
Rated making capacity AC-15	10 x I_e / AC-15
Rated breaking capacity AC-15	1 x I_e / AC-15
Short-circuit protective devices	gG Type Fuses : 10 A
Minimum switching capacity	>17 V / >5 mA

EH04 not applicable for EN20 and ESB20.

Contact us

ABB STOTZ-KONTAKT GmbH

Eppelheimer Straße 82
D-69123 Heidelberg, Germany

ABB France

Low Voltage Products Division

3, rue Jean Perrin
F-69687 Chassieu cedex / France

You can find the address of your local sales organisation
on the ABB home page



<http://new.abb.com/low-voltage/products/motor-protection>



<http://www.abb.com/lowvoltage>

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