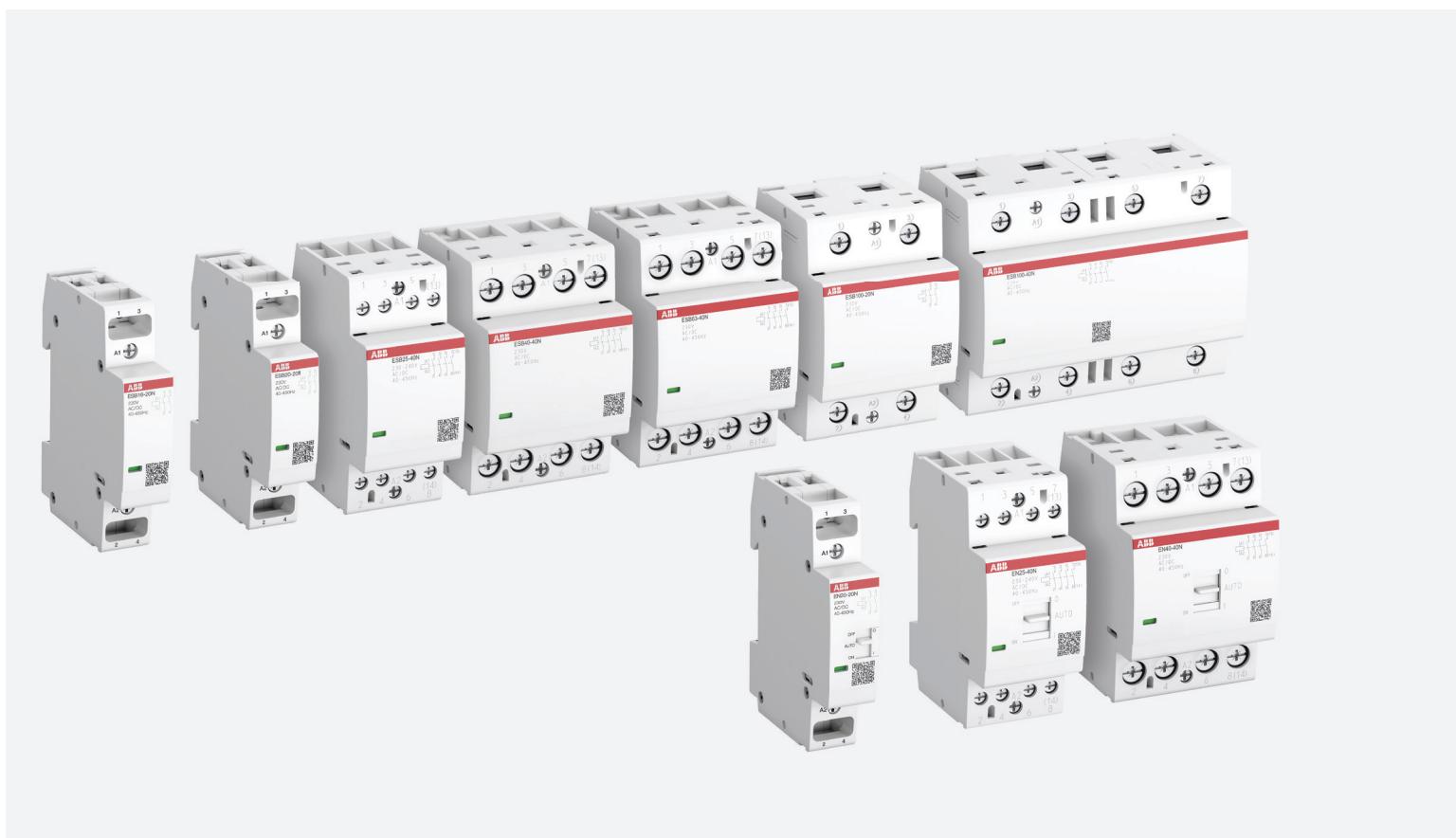


## CATALOG

# Installation contactors

## Modular DIN rail components



- Quiet and reliable in every application with hum-free AC/DC coils
- Tool-free accessories
- Wide range from 16 to 100 A
- Single- and multipackaging available

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**Available in a wide range from 16 to 100 A and featuring tool-free accessories, ABB's installation contactors are widely used for switching and controlling lighting, heating, ventilation, EV charging stations, motors and pumps. Quiet and reliable with hum-free AC/DC coils, the all-new installation contactors offer peace of mind in noise-sensitive applications.**

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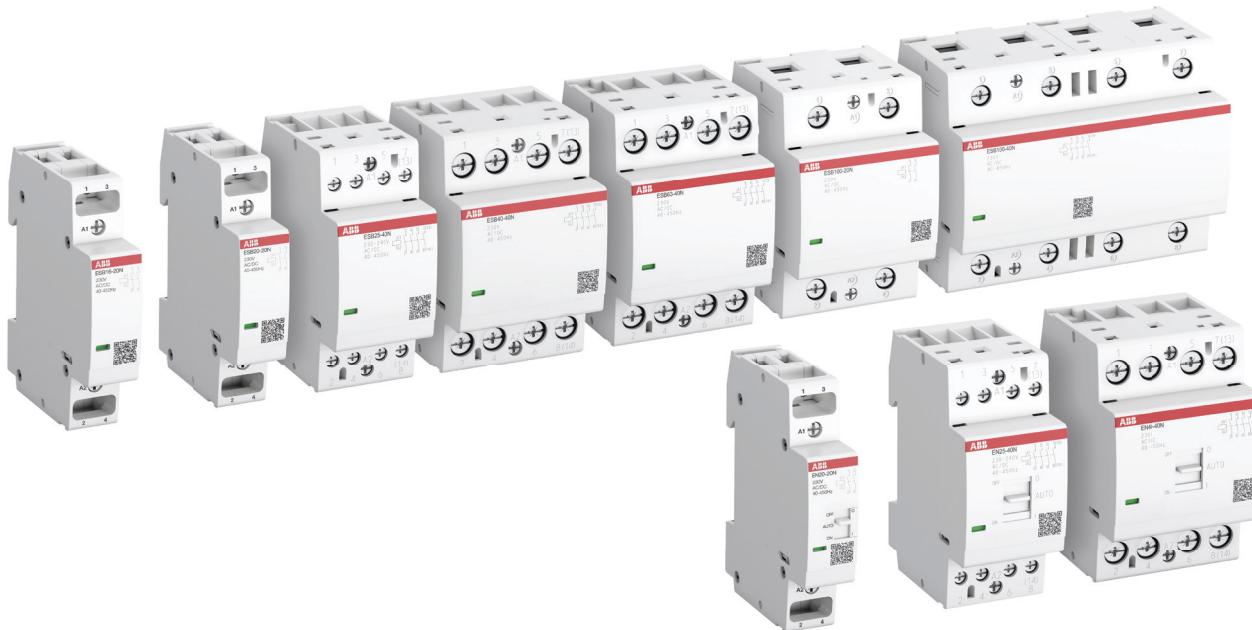
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## Installation contactors

A wide range of contactors take noise reduction to new levels



ABB's hum-free installation contactor designs now offer a wider range of ratings from 16 A to 100 A. Widely used in buildings for switching and controlling lighting, heating, ventilation, EV charging stations, motor and pumps, the installation contactors take noise reduction to a new level. With an innovative AC / DC coil design that eliminates hum, a broad selection of common accessories as well as manual and automatic versions, installation contactors offer peace of mind in noise-sensitive applications.



**Optimum interface**

### Quiet and reliable in every application

ABB's hum-free contactors feature innovative AC / DC coils. The range covers ratings from 16 A to 100 A and offers accessories to suit customer requirements in every application. An integrated indicator makes diagnostics quicker and provides reliable information about the contactor's status at a glance.



**Easy to install**

### Simple solution that saves time

Reduce installation time and stock levels, with a universal auxiliary contact block that can be attached to the contactors by hand. Installation contactors fit easily with ABB's System Pro M compact range, making them fully compatible with other modular DIN-rail components.



**Global availability**

### Whatever you need, wherever you need it

Installation contactors are available in single and multi-packs to meet different customer needs and to optimize warehousing space. Every ABB product enjoys expert local support worldwide to make communication easier and delivery faster.

## Installation contactors

Features and benefits



### Hum-free operation

With an innovative AC / DC design that eliminates hum, the range meets the needs of applications demanding silent operation, for example hotel rooms and residential buildings.



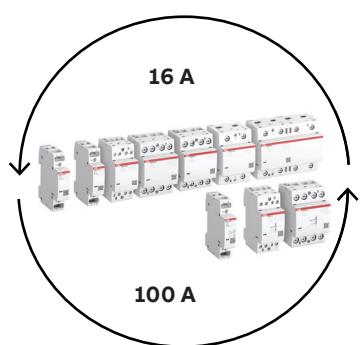
### Single and multiple packaging

The right packaging for your needs- our products are available in a choice of different packaging and delivery quantities. This allows you to warehouse according to your needs and save up to 50% on your inventory.



### Wide application range

The ESB installation contactors range meets both the industrial standard IEC 60947-4-1 and the household standard IEC 61095 as well as pollution degree class 3. Due to multiple certification and inherent robustness, the contactors can be used in 10% more applications in both residential and industrial settings.



### Comprehensive solution

ABB's ESB and EN installation contactors range offers a complete solution from 16 A to 100 A, offering an answer to all customer needs from a single supplier.

**With 16 A, 25 A and 100 A versions, tender specifications can be met with competitive pricing.**

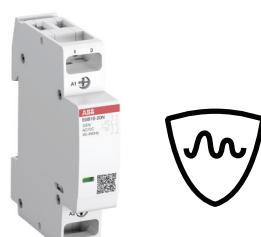
## Installation contactors

Features and benefits



### Save up to 15% space with group mounting

ESB16..N, ESB/EN20..N and ESB100..N can be group mounted. There is no need for a distance piece in between contactors, saving both valuable space in cabinets and money.



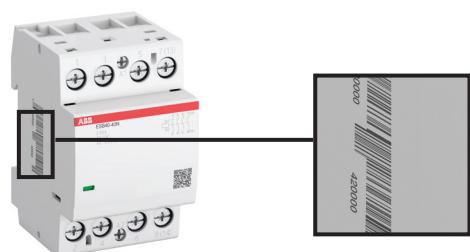
### Built-in protective circuit

Protect the contactor without additional space-demanding components against remote lightning strikes and overvoltages.



### Design in accordance with System Pro M

Contactors and accessories are designed according to System pro M range and ABB's modular DIN-rail components and fit in dedicated panels.



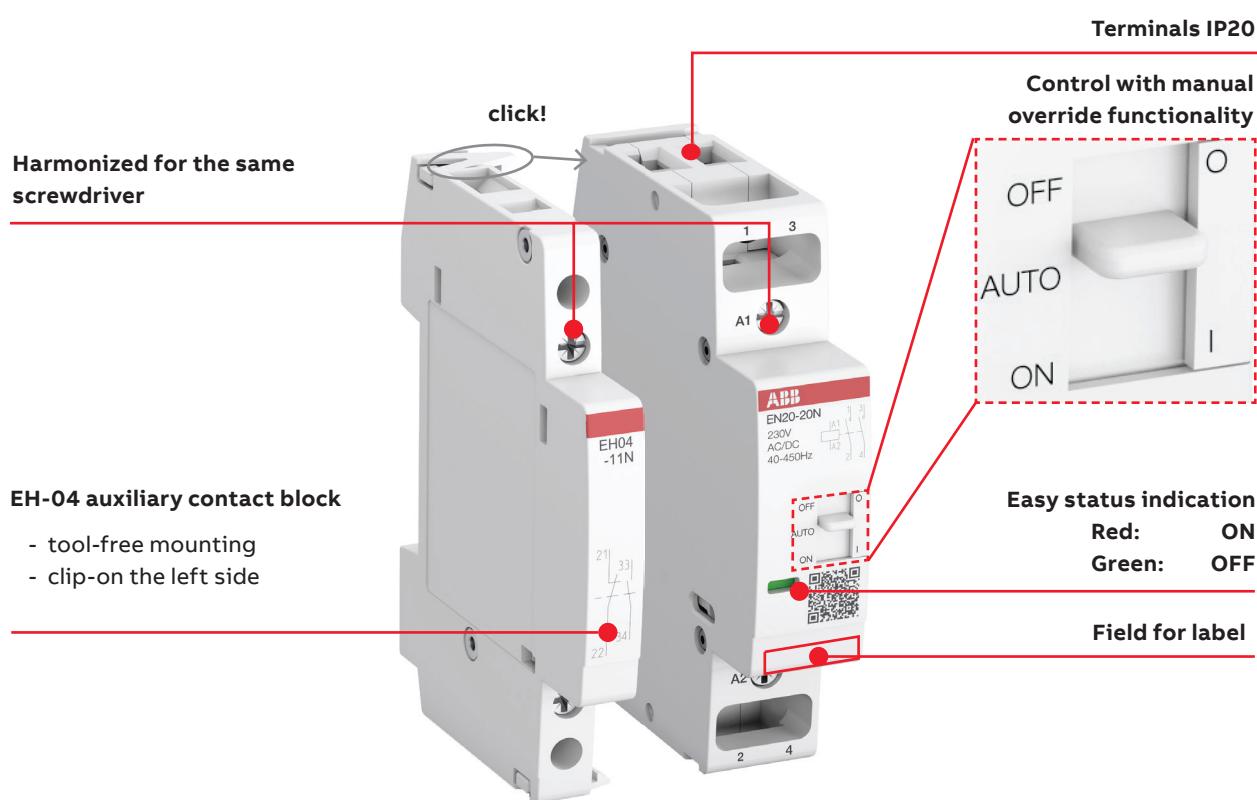
### EAN-code for an easy identification

Just scan the EAN-code printed on the side of the devices and save up to 80% time identifying the product in your system. This way, handling and identifying your products in warehouse and cashier system is easy.

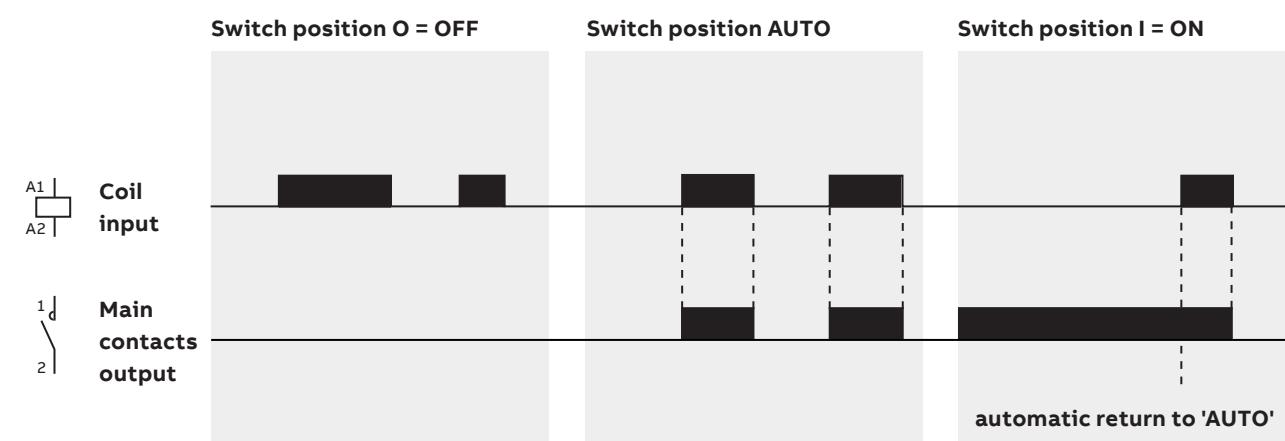
## Installation contactors

Easy installation and maintenance

ABB's installation contactors come with many features that make installation and maintenance easier. The mechanical Indicator with green and red color for status indication ensures a quick diagnostic of the system. Also, some specialty types feature a manual override functionality with a toggle switch to control independently from control source. Accessories can be mounted tool-free on the contactor, for example auxiliaries, space holders as well as security and safety covers.



### Operation mode EN-versions



## Installation contactors

Overview contactors

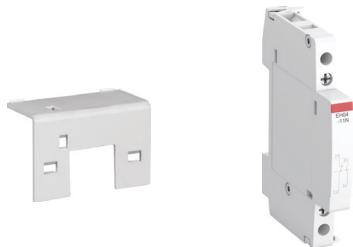


Type	ESB16..N EN20..N	ESB20..N EN25..N	ESB25..N EN25..N	ESB40..N EN40..N	ESB63..N	ESB100..N
AC-1/AC-7a (A)	16	20	25	40	63	100
<b>Modular Width</b>	1	1	2	3	3	3/6
<b>Accessories</b>						
Auxiliary contact blocks	2 NO 1 NO + 1 NC	EH04-20N EH04-11N	EH04-20N EH04-11N	EH04-20N EH04-11N	EH04-20N EH04-11N	EH04-20N EH04-11N
Distance piece	up to 40 °C  between 40 °C and 55 °C 	-	-	-	-	-
Covers	-	-	ESB-PLK24	ESB-PLK40/63	ESB-PLK40/63	-

\*If several contactors are mounted adjacently and the duty 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 ≤ 40 °C.

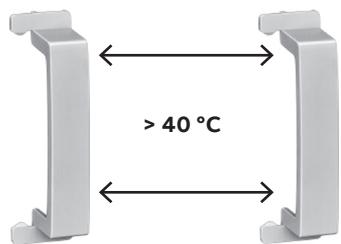
## Installation contactors

Overview accessories



### Tool-free accessories

Speed up installation and maintenance time by mounting accessories tool-free to the contactor. Auxiliaries, security safety covers and space holders are easily and quickly installed.



### Distance pieces

If the ambient temperature in your control cabinet exceeds 40 °C and the duty time is longer than an hour, you need to use a distance piece between each second contactor for the ESB25..N to ESB63..N.



### Sealing covers

Protect the security of your employees/customers' installation with sealing covers. They are available in different sizes and can be clipped on easily.

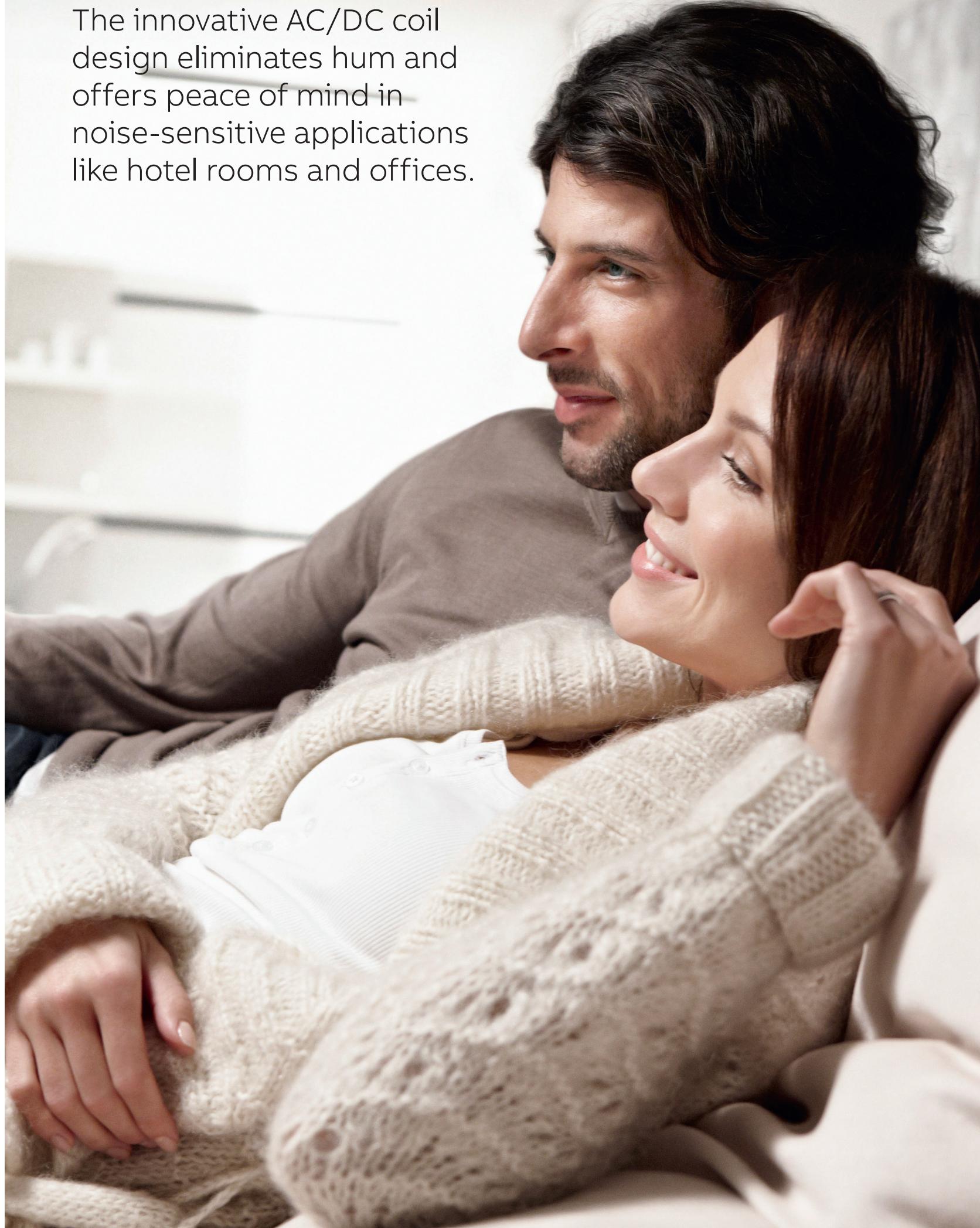


### Auxiliary contact blocks

ABB's new range of auxiliary contact blocks are mounted on the left side of the contactors. Simply clip them on - no tools required! Valuable inventory space can be saved with the new auxiliary contact block which is designed to fit all contactors of the range.

---

The innovative AC/DC coil design eliminates hum and offers peace of mind in noise-sensitive applications like hotel rooms and offices.



## ESB16..N installation contactors

Ordering details 16 A, AC-1 /AC-7a, AC/DC operated



ESB16..N

ISBC101521V0000

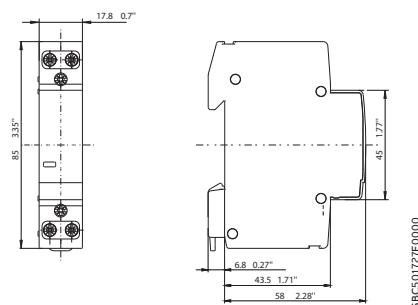
The ESB16..N installation contactors are used to control single-phase loads up to 16 A and can be operated by AC or DC voltages. These contactors are made for use in household applications as well as in industrial environment.

ESB16..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage <sup>(1)</sup>	Type	Order code	Pkg qty	Weight (1 pc.)
		V AC/DC				kg
<b>Single packaging</b>						
	1	24	ESB16-20N-01	1SBE111111R0120	1	0.14
		230	ESB16-20N-06	1SBE111111R0620	1	0.14
	1	24	ESB16-02N-01	1SBE111111R0102	1	0.14
		230	ESB16-02N-06	1SBE111111R0602	1	0.14
	1	24	ESB16-11N-01	1SBE111111R0111	1	0.14
		230	ESB16-11N-06	1SBE111111R0611	1	0.14
<b>Multiple packaging</b>						
	1	24	ESB16-20N-01	1SBE111111M0120	12	0.14
		230	ESB16-20N-06	1SBE111111M0620	12	0.14
	1	24	ESB16-02N-01	1SBE111111M0102	12	0.14
		230	ESB16-02N-06	1SBE111111M0602	12	0.14
	1	24	ESB16-11N-01	1SBE111111M0111	12	0.14
		230	ESB16-11N-06	1SBE111111M0611	12	0.14

<sup>(1)</sup> Other control voltages: see voltage code table and contact ABB for availability of products.



ESB16..N

Dimensions mm, inches

ISBC01727F0000

## ESB20..N installation contactors

Ordering details 20 A, AC-1 /AC-7a, AC/DC operated



1SBC101552V0000

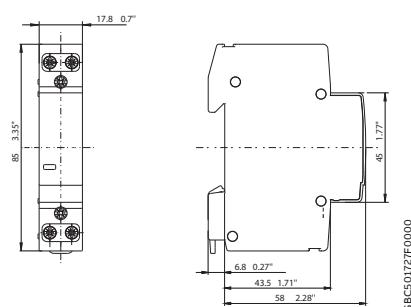
The ESB20..N installation contactors are used to control single-phase loads up to 20 A and can be operated by AC or DC voltages. These contactors are made for use in household applications as well as in industrial environment.

ESB20..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage <sup>(1)</sup>	Type	Order code	Pkg qty	Weight (1 pc.)
				V AC/DC	kg	
<b>Single packaging</b>						
		1	24	ESB20-20N-01	1SBE121111R0120	1 0.14
			230	ESB20-20N-06	1SBE121111R0620	1 0.14
		1	24	ESB20-02N-01	1SBE121111R0102	1 0.14
			230	ESB20-02N-06	1SBE121111R0602	1 0.14
		1	24	ESB20-11N-01	1SBE121111R0111	1 0.14
			230	ESB20-11N-06	1SBE121111R0611	1 0.14
<b>Multiple packaging</b>						
		1	24	ESB20-20N-01	1SBE121111M0120	12 0.14
			230	ESB20-20N-06	1SBE121111M0620	12 0.14
		1	24	ESB20-02N-01	1SBE121111M0102	12 0.14
			230	ESB20-02N-06	1SBE121111M0602	12 0.14
		1	24	ESB20-11N-01	1SBE121111M0111	12 0.14
			230	ESB20-11N-06	1SBE121111M0611	12 0.14

<sup>(1)</sup> Other control voltages: see voltage code table and contact ABB for availability of products.



ESB20..N

Dimensions mm, inches

## ESB25..N installation contactors

Ordering details 25 A, AC-1/AC-7a, AC/DC operated



ESB25..N

2CDC220107v0017

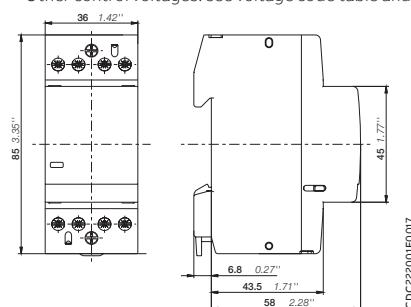
The ESB25..N installation contactors are used to control single and three-phases loads up to 25 A and can be operated by AC or DC voltages. These contactors are made for use in household applications as well as in industrial environment.

ESB25..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage <sup>(1)</sup> V AC/DC	Type	Order code	Pkg qty	Weight (1 pc.)
<b>Single packaging</b>						
	2	24	ESB25-40N-01	1SAE231111R0140	1	0.245
		230 ... 240	ESB25-40N-06	1SAE231111R0640	1	0.235
	2	24	ESB25-04N-01	1SAE231111R0104	1	0.245
		230 ... 240	ESB25-04N-06	1SAE231111R0604	1	0.235
	2	24	ESB25-22N-01	1SAE231111R0122	1	0.245
		230 ... 240	ESB25-22N-06	1SAE231111R0622	1	0.235
	2	24	ESB25-31N-01	1SAE231111R0131	1	0.245
		230 ... 240	ESB25-31N-06	1SAE231111R0631	1	0.235
	2	24	ESB25-13N-01	1SAE231111R0113	1	0.245
		230 ... 240	ESB25-13N-06	1SAE231111R0613	1	0.235
<b>Multiple packaging</b>						
	2	24	ESB25-40N-01	1SAE231111M0140	6	0.245
		230 ... 240	ESB25-40N-06	1SAE231111M0640	6	0.235
	2	24	ESB25-04N-01	1SAE231111M0104	6	0.245
		230 ... 240	ESB25-04N-06	1SAE231111M0604	6	0.235
	2	24	ESB25-22N-01	1SAE231111M0122	6	0.245
		230 ... 240	ESB25-22N-06	1SAE231111M0622	6	0.235
	2	24	ESB25-31N-01	1SAE231111M0131	6	0.245
		230 ... 240	ESB25-31N-06	1SAE231111M0631	6	0.235
	2	24	ESB25-13N-01	1SAE231111M0113	6	0.245
		230 ... 240	ESB25-13N-06	1SAE231111M0613	6	0.235

<sup>(1)</sup> Other control voltages: see voltage code table and contact ABB for availability of products.



ESB25..N

Dimensions mm, inches

2CDC220107v0017

## ESB40..N installation contactors

Ordering details 40 A, AC-1/AC-7a, AC/DC operated



ESB40..N

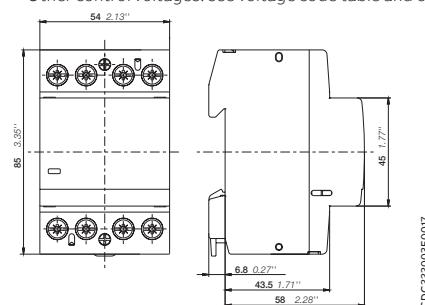
The ESB40..N installation contactors are used to control single and three-phases loads up to 40 A and can be operated by AC or DC voltages. These contactors are made for use in household applications as well as in industrial environment.

ESB40..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage <sup>(1)</sup> V AC/DC	Type	Order code	Pkg qty	Weight (1 pc.)
<b>Single packaging</b>						
	3	24	ESB40-40N-01	1SAE341111R0140	1	0.405
		230	ESB40-40N-06	1SAE341111R0640	1	0.405
	3	24	ESB40-22N-01	1SAE341111R0122	1	0.405
		230	ESB40-22N-06	1SAE341111R0622	1	0.405
	3	24	ESB40-31N-01	1SAE341111R0131	1	0.405
		230	ESB40-31N-06	1SAE341111R0631	1	0.405
	3	24	ESB40-30N-01	1SAE341111R0130	1	0.385
		230	ESB40-30N-06	1SAE341111R0630	1	0.385
	3	24	ESB40-20N-01	1SAE341111R0120	1	0.370
		230	ESB40-20N-06	1SAE341111R0620	1	0.370
<b>Multiple packaging</b>						
	3	24	ESB40-40N-01	1SAE341111M0140	4	0.405
		230	ESB40-40N-06	1SAE341111M0640	4	0.405
	3	24	ESB40-22N-01	1SAE341111M0122	4	0.405
		230	ESB40-22N-06	1SAE341111M0622	4	0.405
	3	24	ESB40-31N-01	1SAE341111M0131	4	0.405
		230	ESB40-31N-06	1SAE341111M0631	4	0.405
	3	24	ESB40-30N-01	1SAE341111M0130	4	0.385
		230	ESB40-30N-06	1SAE341111M0630	4	0.385
	3	24	ESB40-20N-01	1SAE341111M0120	4	0.370
		230	ESB40-20N-06	1SAE341111M0620	4	0.370

<sup>(1)</sup> Other control voltages: see voltage code table and contact ABB for availability of products.



ESB40..N

Dimensions mm, inches

2CDC222003F0017

## ESB63..N installation contactors

Ordering details 63 A, AC-1/AC-7a, AC/DC operated



ESB63..N

2CDC221009Y0017

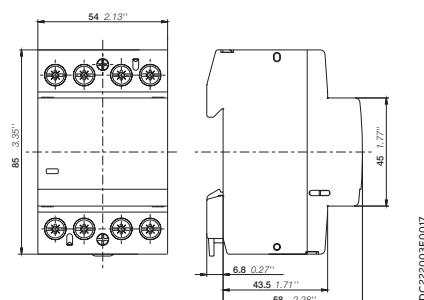
The ESB63..N installation contactors are used to control single and three-phases loads up to 63 A and can be operated by AC or DC voltages. These contactors are made for use in household applications as well as in industrial environment.

ESB63..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage <sup>(1)</sup> V AC/DC	Type	Order code	Pkg qty	Weight (1 pc.)
<b>Single packaging</b>						
	3	24	ESB63-40N-01	1SAE351111R0140	1	0.405
		230	ESB63-40N-06	1SAE351111R0640	1	0.405
	3	230	ESB63-31N-06	1SAE351111R0631	1	0.405
	3	230	ESB63-30N-06	1SAE351111R0630	1	0.385
	3	24	ESB63-20N-01	1SAE351111R0120	1	0.37
		230	ESB63-20N-06	1SAE351111R0620	1	0.37
<b>Multiple packaging</b>						
	3	24	ESB63-40N-01	1SAE351111M0140	4	0.405
		230	ESB63-40N-06	1SAE351111M0640	4	0.405
	3	230	ESB63-31N-06	1SAE351111M0631	4	0.405
	3	230	ESB63-30N-06	1SAE351111M0630	4	0.385
	3	24	ESB63-20N-01	1SAE351111M0120	4	0.37
		230	ESB63-20N-06	1SAE351111M0620	4	0.37

<sup>(1)</sup> Other control voltages: see voltage code table and contact ABB for availability of products.



ESB63..N

Dimensions mm, inches

## ESB100..N installation contactors

Ordering details 100 A, AC-1/AC-7a, AC/DC operated



ESB100-20N

2CDC221010V0017



ESB100-40N

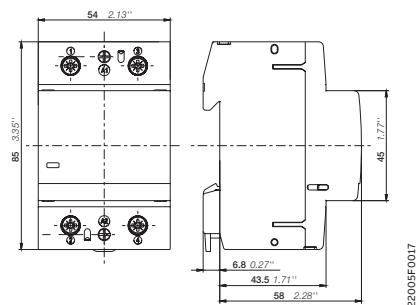
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The ESB100..N installation contactors are used to control single and three-phases loads up to 100 A and can be operated by AC or DC voltages. These contactors are made for use in household applications as well as in industrial environment.

ESB100..N series is providing the following benefits:

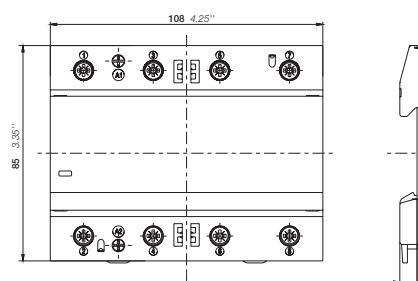
- Hum-free operation, low power consumption and integrated overvoltage protection.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage V AC/DC	Type	Order code	Pkg qty	Weight (1 pc.) kg
<b>Single packaging</b>						
A1	1   3   5   7   (13)	6	24	ESB100-40N-01 1SAE661111R0140	1	0.810
A2	2   4   6   8   (14)		230	ESB100-40N-06 1SAE661111R0640	1	0.810
A1	1   3	3	24	ESB100-20N-01 1SAE361111R0120	1	0.405
A2	2   4		230	ESB100-20N-06 1SAE361111R0620	1	0.405
<b>Multiple packaging</b>						
A1	1   3	3	24	ESB100-20N-01 1SAE361111M0120	2	0.405
A2	2   4		230	ESB100-20N-06 1SAE361111M0620	2	0.405



ESB100-20N

2CDC22005F0017



ESB100-40N

2CDC22006F0017

Dimensions mm, inches

## EN20..N installation contactors - manually/automatic operated

Ordering details 20 A, AC-1/AC-7a, AC/DC operated



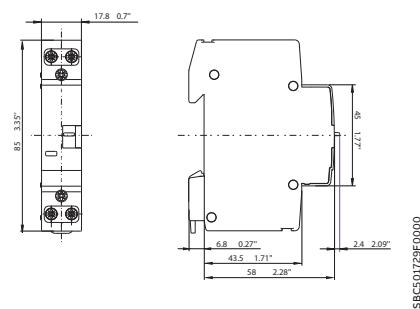
EN20..N

The EN20..N installation contactors are used to control single-phase loads up to 20 A and can be operated by AC or DC voltages. They have a built-in toggle switch to be operated manually or automatically. These contactors are made for use in household applications as well as in industrial environment.

EN20..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection and manual override.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage	Type	Order code	Pkg qty	Weight (1 pc.)
		V AC/DC				kg
<b>Single packaging</b>						
A1	1	24	EN20-20N-01	1SBE122111R0120	1	0.14
		230	EN20-20N-06	1SBE122111R0620	1	0.14
<b>Multiple packaging</b>						
A1	1	24	EN20-20N-01	1SBE122111M0120	12	0.14
		230	EN20-20N-06	1SBE122111M0620	12	0.14



EN20..N

Dimensions mm, inches

## EN25..N installation contactors - manually/automatic operated

Ordering details 25 A, AC-1/AC-7a, AC/DC operated



EN25..N

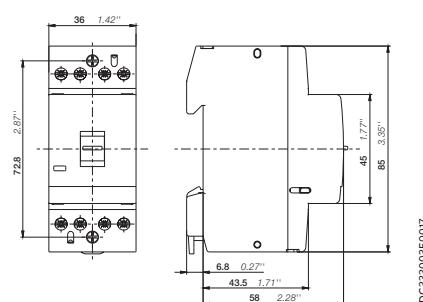
2CDC221003V0017

The EN25..N installation contactors are used to control single- and three-phase loads up to 25 A and can be operated by AC or DC voltages. They have a built-in toggle switch to be operated manually or automatically. These contactors are made for use in household applications as well as in industrial environment.

EN25..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection and manual override.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage V AC/DC	Type	Order code	Pkg qty	Weight (1 pc.) kg
<b>Single packaging</b>						
	2	24	EN25-40N-01	1SAE232111R0140	1	0.250
		230 ... 240	EN25-40N-06	1SAE232111R0640	1	0.240
	2	24	EN25-31N-01	1SAE232111R0131	1	0.250
		230 ... 240	EN25-31N-06	1SAE232111R0631	1	0.240
	2	230 ... 240	EN25-30N-06	1SAE232111R0630	1	0.235
<b>Multiple packaging</b>						
	2	24	EN25-40N-01	1SAE232111M0140	6	0.250
		230 ... 240	EN25-40N-06	1SAE232111M0640	6	0.240
	2	24	EN25-31N-01	1SAE232111M0131	6	0.250
		230 ... 240	EN25-31N-06	1SAE232111M0631	6	0.240
	2	230 ... 240	EN25-30N-06	1SAE232111M0630	6	0.235



EN25..N

Dimensions mm, inches

2CDC222002F0017

## EN40..N installation contactors - manually/automatic operated

Ordering details 40 A, AC-1/AC-7a, AC/DC operated



EN40..N

2CDC22004F0017

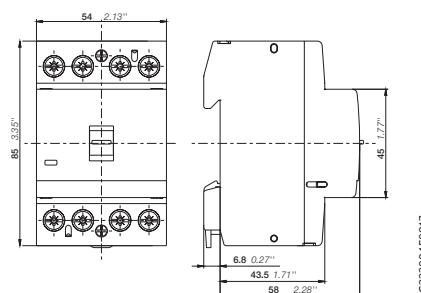
The EN40..N installation contactors are used to control single- and three-phase loads up to 40 A and can be operated by AC or DC voltages. They have a built-in toggle switch to be operated manually or automatically. These contactors are made for use in household applications as well as in industrial environment.

EN40..N series is providing the following benefits:

- Hum-free operation, low power consumption and integrated overvoltage protection and manual override.
- Various contact combinations and accessories are available.

Main contacts	Width in number of modular spacings	Rated control circuit voltage <sup>(1)</sup>	Type	Order code	Pkg qty	Weight (1 pc.)
		V AC/DC				kg
<b>Single packaging</b>						
	3	24	EN40-40N-01	1SAE342111R0140	1	0.410
		230	EN40-40N-06	1SAE342111R0640	1	0.410
	3	24	EN40-31N-01	1SAE342111R0131	1	0.410
		230	EN40-31N-06	1SAE342111R0631	1	0.410
	3	230	EN40-30N-06	1SAE342111R0630	1	0.410
	3	230	EN40-20N-06	1SAE342111R0620	1	0.375
<b>Multiple packaging</b>						
	3	24	EN40-40N-01	1SAE342111M0140	4	0.410
		230	EN40-40N-06	1SAE342111M0640	4	0.410
	3	24	EN40-31N-01	1SAE342111M0131	4	0.410
		230	EN40-31N-06	1SAE342111M0631	4	0.410
	3	230	EN40-30N-06	1SAE342111M0630	4	0.410
	3	230	EN40-20N-06	1SAE342111M0620	4	0.375

<sup>(1)</sup> Other control voltages: see voltage code table and contact ABB for availability of products.



EN40..N

Dimensions mm, inches

## Installation contactors

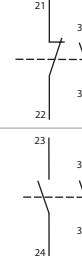
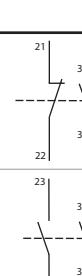
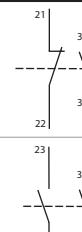
Ordering details accessories



2CDC22001V0017

EH04-20N

### Auxiliary contact blocks

Suitable for	Auxiliary contacts	Type	Order code	Pkg qty (1 pc.)	Weight kg
<b>Single packaging</b>					
ESB16..N, ESB20..N, ESB25..N, ESB40..N, ESB63..N, ESB100..N, EN20..N, EN25..N, EN40..N	 	EH04-11N EH04-20N	1SAE901901R1011 1SAE901901R1020	1 1	0.040 0.040
<b>Multiple packaging</b>					
ESB16..N, ESB20..N, ESB25..N, ESB40..N, ESB63..N, ESB100..N, EN20..N, EN25..N, EN40..N	 	EH04-11N EH04-20N	1SAE901901M1011 1SAE901901M1020	6 6	0.040 0.040

### Accessories

Suitable for	Description	Type	Order code	Pkg qty (1 pc.)	Weight kg
<b>Sealing covers</b>					
ESB25..N, EN25..N	sealing cover	ESB-PLK24	GHE3201903R0001	10	0.002
ESB40..N, ESB63..N, EN40..N	sealing cover	ESB-PLK40/63	GHE3401903R0001	10	0.003
<b>Distance piece</b>					
ESB25..N, ESB40..N, ESB63..N, EN25..N, EN40..N		ESB-DIS <sup>(1)</sup>	GHE3201902R0001	10	0.002

<sup>(1)</sup> If several contactors are mounted adjacently and the duty 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 ESB16..N, ESB/EN20..N and ESB100..N.



SST31292

ESB-PLK24



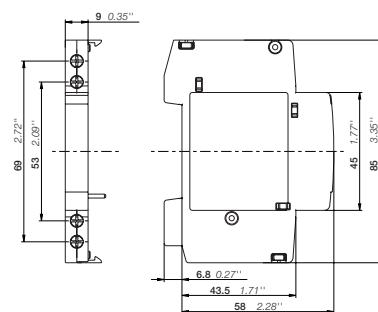
2CDC22001F0012

ESB-DIS



ISBC10303F0014

ESB-PLK40/63



EH04..N

Dimensions mm, inches

2CDC22007F0017

## Installation contactors

Technical data main circuit

### Main circuit – Utilization characteristics according to IEC/EN

Contactor type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
Standards	IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 61095					
Rated operational voltage $U_e$	220 V DC 250 V AC	220 V DC 250 V AC	220 V DC 400 V AC			
Rated frequency	DC, 50/60 Hz	DC, 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	NO NC	16 A 16 A	20 A 20 A	25 A 25 A	40 A 30 A	63 A 30 A
Rated operational power AC-1	230 V 1 phase 400 V 3 phases	3.7 kW	4.6 kW	5.8 kW	9.2 kW	14.5 kW
				17.3 kW	27.7 kW	43.6 kW
AC-3/AC-3e/AC-7b utilization category for air temperature close to contactor $\leq 55^\circ\text{C}$						
Rated operational current $I_e$ AC-3/AC-3e/AC-7b	230 V 1 phase 400 V 3 phases	6 A –	9 A –	9 A 9 A	22 A 22 A	30 A 30 A
Rated operational power AC-3/AC-3e	230 V 1 phase 400 V 3 phases	0.9 kW	1.3 kW	1.3 kW	3.7 kW	5 kW
				4 kW	11 kW	15 kW
Rated making capacity acc. to IEC 60947-4-1	10 $\times I_e$ /AC-3 13 $\times I_e$ /AC-3e	–				
Rated breaking capacity acc. to IEC 60947-4-1	8 $\times I_e$ /AC-3 8.5 $\times I_e$ /AC-3e	–				
Rated short-time withstand current $I_{cw}$ at 40 °C ambient temp. in free air, from a cold state	10 s	48 A	72 A	72 A	176 A	240 A
Power loss per pole		0.9 W	1.4 W	2 W	3 W	4.5 W
Maximum electrical switching frequency	AC-1/AC-7a AC-3/AC-7b	300 cycles/h 600 cycles/h	300 cycles/h 600 cycles/h	300 cycles/h 600 cycles/h	300 cycles/h 600 cycles/h	150 cycles/h –
Electrical durability	AC-1/AC-7a AC-3/AC-7b	150,000 cycles 150,000 cycles	150,000 cycles 150,000 cycles	130,000 cycles 500,000 cycles	150,000 cycles 150,000 cycles	100,000 cycles 240,000 cycles
Mechanical durability		1,000,000 cycles				

## Installation contactors

Technical data short circuit

### Short circuit protection with Fuses - Type 1 coordinated

Fuses type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
	230 V	230 V	400 V	400 V	400 V	400 V
gG coordinated up to 10kA	20 A	20 A	35 A	63 A	80 A	125 A

### Short circuit protection with MCBs - Type 1 coordinated

MCB	Characteristic Icu	In	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
			230 V	230 V	400 V	400 V	400 V	400 V
S200	B, C	10 kA	16 A	6 kA	6 kA	6 kA	6 kA	6 kA
			20 A	-	6 kA	6 kA	6 kA	6 kA
			25 A	-	-	6 kA	6 kA	6 kA
			40 A	-	-	-	6 kA	6 kA
			63 A	-	-	-	6 kA	6 kA
S200M	B, C	15 kA	16 A	10 kA	10 kA	10 kA	10 kA	10 kA
			20 A	-	10 kA	10 kA	10 kA	10 kA
			25 A	-	-	10 kA	10 kA	10 kA
			40 A	-	-	-	10 kA	10 kA
			63 A	-	-	-	10 kA	10 kA

### Short circuit protection with RCDs - Type 1 coordinated

RCD	Characteristic Icu	In	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
			230 V	230 V	400 V	400 V	400 V	400 V
DS201	B, C	6 kA	16 A	6 kA	6 kA	6 kA	6 kA	6 kA
			20 A	-	6 kA	6 kA	6 kA	6 kA
			25 A	-	-	6 kA	6 kA	6 kA
			40 A	-	-	-	6 kA	6 kA
			63 A	-	-	-	6 kA	6 kA
DS201M DS203NC	B, C	10 kA	16 A	10 kA	10 kA	10 kA	10 kA	10 kA
			20 A	-	10 kA	10 kA	10 kA	10 kA
			25 A	-	-	10 kA	10 kA	10 kA
			40 A	-	-	-	10 kA	10 kA
			63 A	-	-	-	10 kA	10 kA

## Installation contactors

Technical data main circuit and control circuit

### Main circuit – Utilization characteristics according to UL/CSA

Contactor type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
Standards	UL 60947-1, UL 60947-4-1					
General use rating	240 V	16 A	20 A	–	–	–
	480 V	–	–	25 A	40 A	63 A
Motor rating						100 A
Full load current	220 ... 240 V 1 phase	6.9 A	8 A	–	–	–
	220 ... 240 V 3 phases	–	–	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	0.8 hp	1 hp	–	–	–
	220 ... 240 V 3 phases	–	–	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	20 A	20 A	25 A	40 A	75 A	125 A
Fuse type 480 V/5 kA	K5	K5	K5	K5	K5	K5
Max. electrical switching frequency						
for general use	300 cycles/h	300 cycles/h	300 cycles/h	300 cycles/h	300 cycles/h	150 cycles/h
for motor use	600 cycles/h	600 cycles/h	600 cycles/h	600 cycles/h	600 cycles/h	–

### General technical data

Contactor type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
Rated insulation voltage $U_i$ acc. to IEC 60947-4-1 and VDE 0110 (Gr. C)	400 V	400 V	500 V	500 V	500 V	500 V
Rated impulse withstand voltage $U_{imp}$			ESB: 6 kV EN: 4 kV/6 kV with protection cover		6 kV	6 kV
	6 kV	EN: 6 kV				
Ambient air temperature range <sup>(1)</sup>	operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
	storage	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Maximum operating altitude permissible	2000 m	2000 m	2000 m	2000 m	2000 m	2000 m
Vibration (sinusoidal) according to IEC/EN 60068-2-6 (Fc)	1 g/3-150 Hz	1 g/3-150 Hz	1 g/3-150 Hz	1 g/3-150 Hz	1 g/3-150 Hz	
Shock (half-sine) according to IEC/EN 60947-1 Annex Q	Category E	Category E	Category E	Category E	Category E	Category E
Shock (half-sine) according to IEC/EN 60068-2-27 (Ea)	15g/11ms	15g/11ms	15g/11ms	15g/11ms	15g/11ms	15g/11ms

1) If several contactors are mounted adjacently and the duty 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 ESB16..N, ESB/EN20..N and ESB100..N

### Magnet system characteristics

Contactor type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
Coil operating limits acc. to IEC/EN60947-4-1	0.85 ... 1.1 $\times U_c$ (at $\theta \leq 55^{\circ}\text{C}$ )					
Rated frequency	DC, 50/60/400 Hz					
Frequency range	DC, 40 ... 450 Hz					
Coil consumption	pull-in	50 Hz 60 Hz DC	2.5 VA 2.5 VA 2.5 W	2.5 VA 4 VA 4 W	4 VA 4.5 VA 5 W	60 VA 60 VA 70 W
	holding	50 Hz 60 Hz DC	2.5 VA 2.5 VA 2.5 W	4 VA 4 VA 4 W	4.5 VA 4.5 VA 5 W	90 VA 90 VA 100 W
						7.5 VA 7.5 VA 8.5 W

## **Installation contactors**

#### Technical data main circuit and control circuit

#### **Mounting characteristics and conditions for use**

Contactor type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
Mounting position	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					

## Main circuit - Connecting characteristics

Contactor type	ESB16..N	ESB20..N/ EN20..N	ESB25..N/ EN25..N	ESB40..N/ EN40..N	ESB63..N	ESB100..N
Connecting capacity						
 Rigid	1x 1 ... 10 mm <sup>2</sup> 2x 1 ... 4 mm <sup>2</sup>	1x 1 ... 10 mm <sup>2</sup> 2x 1 ... 4 mm <sup>2</sup>	1x 1.5 ... 10 mm <sup>2</sup> 2x 1.5 ... 4 mm <sup>2</sup>	1x 1.5 ... 25 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 1.5 ... 25 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 10 ... 50 mm <sup>2</sup>
 Flexible with ferrule	1x 1 ... 6 mm <sup>2</sup> 2x 1 ... 2.5 mm <sup>2</sup>	1x 1 ... 6 mm <sup>2</sup> 2x 1 ... 2.5 mm <sup>2</sup>	1x 1.5 ... 10 mm <sup>2</sup> 2x 1.5 ... 2.5 mm <sup>2</sup>	1x 1.5 ... 16 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 1.5 ... 16 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 10 ... 35 mm <sup>2</sup>
 Flexible with insulated ferrule	1x 1 ... 6 mm <sup>2</sup> 2x 1 ... 1.5 mm <sup>2</sup>	1x 1 ... 6 mm <sup>2</sup> 2x 1 ... 1.5 mm <sup>2</sup>	1x 1.5 ... 10 mm <sup>2</sup> 2x 1.5 mm <sup>2</sup>	1x 1.5 ... 16 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 1.5 ... 16 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 10 ... 35 mm <sup>2</sup>
 Flexible	1x 1 ... 6 mm <sup>2</sup> 2x 1 ... 4 mm <sup>2</sup>	1x 1 ... 6 mm <sup>2</sup> 2x 1 ... 4 mm <sup>2</sup>	1x 1.5 ... 10 mm <sup>2</sup> 2x 1.5 ... 4 mm <sup>2</sup>	1x 1.5 ... 16 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 1.5 ... 16 mm <sup>2</sup> 2x 1.5 ... 10 mm <sup>2</sup>	1x 10 ... 35 mm <sup>2</sup>
Stranded acc. to UL/CSA	14-8 AWG	14-8 AWG	16-8 AWG	16-4 AWG	16-4 AWG	8-0 AWG
Degree of protection	IP20	IP20	IP20	IP20	IP20	IP20
Wire stripping length	10 mm	10 mm	10 mm	13 mm	13 mm	15 mm
Tightening torque	1.2 N·m/ 11 lb.in	1.2 N·m/ 11 lb.in	1 N·m/ 9 lb.in	2.5 N·m/ 20 lb.in	2.5 N·m/ 20 lb.in	3 N·m/ 27 lb.in
Recommended screw driver	Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 2	Pozidriv 2	Pozidriv 2

## Control circuit - Connecting characteristics

## Installation contactors

Technical data auxiliary circuit

### Auxiliary circuit - Utilization characteristics according to IEC/EN

For ambient temperature  $T_u = 40^\circ\text{C}$  if not stated otherwise.

Contactor type	EH04-xxN		
Standards	IEC/EN 60947-1, IEC/EN 60947-5-1		
Rated operational voltage $U_e$	500 V AC 250 V DC		
Rated frequency	DC, 50/60 Hz		
Rated operational current $I_e$ AC-15	24 V	NO/NC	6 A/6 A
	120 V	NO/NC	6 A/6 A
	240 V	NO/NC	4 A/4 A
	415 V	NO/NC	3 A/3 A
	500 V	NO/NC	2 A/2 A
Rated operational current $I_e$ DC-13	125 V	NO/NC	0.55 A/0.55 A
	250 V	NO/NC	0.27 A/0.27 A
Minimum switching capacity	17 V/5 mA		
Short-circuit protective devices	10 A, gG type fuse		
Mechanical durability	1,000,000 cycles		
Electrical durability	AC-15	240 V/4 A	100,000 cycles
	DC-13	125 V/0.55 A	100,000 cycles
Maximum electrical switching frequency	AC-15	360 cycles/h	
	DC-13	360 cycles/h	

### General technical data

Contactor type	EH04-xxN		
Duty time	100%		
Rated impulse withstand voltage $U_{imp}$ acc. to IEC/EN 60947-1	4 kV		
Rated insulation voltage $U_i$ acc. to IEC/EN 60947-1	500 V		
Pollution category acc. to IEC/EN 60664	2		
Overshoot category acc. to IEC/EN 60664	Up to III		
Maximum operating altitude permissible	2000 m		
Ambient air temperature range	Operation	Open	-25 °C ... +55 °C
	Storage		-40 °C ... +80 °C
Vibration (sinusoidal) acc. to IEC/EN 60068-2-6 (Fc)	5 g/3-150 Hz		
Shock (half-sine) acc. to IEC/EN 60947-1 Annex Q	Category E		
Shock (half-sine) acc. to IEC/EN 60068-2-27 (Ea)	15 g/11 ms		

### Auxiliary circuit - Utilization characteristics according to UL/CSA

Contactor type	EH04-xxN		
Standards	UL 60947-1, UL 60947-5-1		
Max. operational voltage	600 V AC		
Pilot duty	A600		
Thermal continuous test current	10 A		
General use rating	600 V AC per pole		

## Installation contactors

Technical data auxiliary circuit

### Mounting characteristics and conditions for use

Contactor type	EH04-xxN		
Mounting position	Position 1	0°	Yes
	Position 2	180°	Yes
	Position 3	270°	Yes
	Position 4	90°	Yes
	Position 5	standing	Yes
	Position 6	upside down	Not allowed
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	

### Auxiliary circuit - Connecting characteristics

Contactor type	EH04-xxN	
Connecting capacity		
 Rigid	1x 1 mm <sup>2</sup> ... 4 mm <sup>2</sup>	2x 1 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
 Flexible with ferrule	1x 1 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>	
 Flexible with insulated ferrule	-	
 Flexible	1x 1 mm <sup>2</sup> ... 1x 2.5 mm <sup>2</sup>	
Stranded acc. to UL/CSA	AWG 18.... AWG 12	
Degree of protection	IP20	
Wire stripping length (upper/lower)	17 mm ( $\leq$ 1.5mm <sup>2</sup> 7 mm) / 9 mm ( $\leq$ 1.5mm <sup>2</sup> 7 mm)	
Tightening torque	0.9 N·m/ 8 lb.in	
Recommended screw driver	Pozidriv 1	

## Installation contactors

### DC switching table

Type	Rated operational voltage	Contact	DC-1/A 1-pole	DC-3/A 1-pole
ESB16..N	24 V DC	NO	16	12
	48 V DC		12	6
	60 V DC		12	4
	110 V DC		4	1.2
	220 V DC		0.4	0.2
	24 V DC	NC	11	5
	48 V DC		6	2
	60 V DC		4	1.5
	110 V DC		1.2	0.4
	220 V DC		0.2	0.1
EN20..N	24 V DC	NO	20	15
	48 V DC		15	7
	60 V DC		15	5
	110 V DC		5	1.5
	220 V DC		0.5	0.2
	24 V DC	NC	14	6
	48 V DC		7	3
	60 V DC		4.5	2
	110 V DC		1.5	0.6
	220 V DC		0.2	0.1

Type	Rated operational voltage	Contact	DC-1/A 3 poles in series	DC-3/A 3 poles in series
ESB25..N	24 V DC	NO	24	24
	48 V DC		24	24
	60 V DC		24	24
	110 V DC		24	16
	220 V DC		13	4
	24 V DC	NC	24	19
	48 V DC		22	9.4
	60 V DC		17.5	7.5
	110 V DC		9.5	4.1
	220 V DC		3.8	1.6
EN25..N	24 V DC	NO	40	40
	48 V DC		40	40
	60 V DC		40	34
	110 V DC		30	18
	220 V DC		15	4.5
ESB40..N	24 V DC	NO	63	63
	48 V DC		63	47
	60 V DC		60	38
	110 V DC		33	21
	220 V DC		17	5
ESB100..N	24 V DC	NO	100	100
	48 V DC		100	70
	60 V DC		80	45
	110 V DC		50	25
	220 V DC		35	7

## Installation contactors

### Lamp load table

Please note that 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, at 230 V AC, for one 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.

	ESB16..N	ESB20..N EN20..N	ESB25..N EN25..N	ESB40..N EN40..N	ESB63..N	ESB100..N
Permitted compensating capacity per phase Cmax [ $\mu$ F]	45	75	100	350	500	650
Lamp types	Maximum load of the current paths during switching of electric lamps $I_e$ [A]					
Incandescent and halogen lamps	4	6	7	20	30	45
Mixing lamps without ballast	4	6	7	20	30	45
Fluorescent lamps with conventional ballast	single lamp uncompensated series compensation, duo circuit	14 2 14	18 3 18	22 3.5 22	36 10 36	56 15 56
Fluorescent lamps with electronic ballast or CFL		4	6	7	20	30
High pressure mercury-vapor lamps	single lamp without compensation single lamp with parallel compensation	7 2	9 3	11 3.5	18 10	28 15
Halogen metal-vapor lamps	single lamp without compensation single lamp with parallel compensation	7 2	9 3	11 3.5	18 10	28 15
High pressure sodium-vapor lamps	single lamp without compensation single lamp with parallel compensation	7 2	9 3	11 3.5	18 10	28 15
Low pressure sodium-vapor lamps	single lamp without compensation single lamp with parallel compensation	7 2	9 3	11 3.5	18 10	28 15
LED-lamps		4	6	7	20	30
Max. current peak for 2 mS (2 mS = 2000 $\mu$ S)		40	60	70	200	300
	ESB16..N	ESB20..N EN20..N	ESB25..N EN25..N	ESB40..N EN40..N	ESB63..N	ESB100..N

#### 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. For LED lamps, the maximum switchable peak current per phase ( $I_{peak}$ ) can also be taken into account.

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

Please see the following examples for a reliable project lamp calculation.

Fluorescent lamp with conventional ballast, uncompensated

lamp operating current  $I = 1.5$  A, voltage  $U = 230$  V

1 pole of ESB25..N can be loaded with max. 22 A,  
see lamp table =>  $22$  A/ $1.5$  A =  $14.66 \Rightarrow 14$  lamps

For Led lamps:

Example without specification of an inrush current (ESB20..N used for LED lamps):

$6$  A (=  $6000$  mA)/ $85$  mA =  $70.58 \Rightarrow 70$  lamps

Example with specification of an inrush current in the technical data sheet of the lamp/driver (ESB20..N used for LED lamps):

$I_{peak}$ :  $680$  mA for  $200$   $\mu$ s

$I_e$ :  $85$  mA

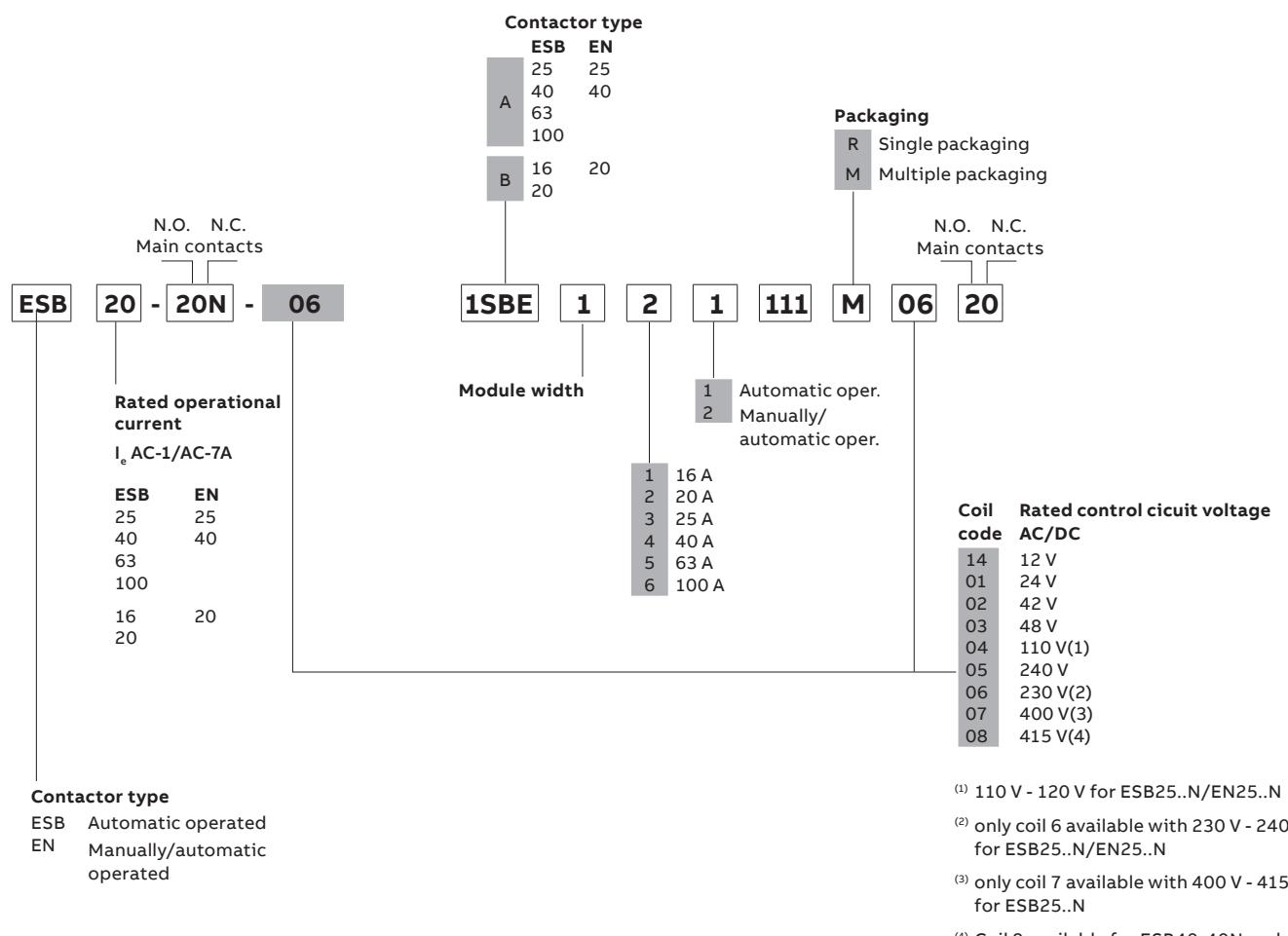
$60$  A/ $0.68$  A =  $88.23 \rightarrow 88$  lamps



new QR-Code to new application note

## Installation contactors

Voltage code table



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