

ABB Catalogue System pro M compact® | June 2015

# E290 Product range

## Mechanical Latching and Installation Relays



# E290 Product range

## Mechanical Latching and Installation Relays

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# General information

## Latching and Installation Relays

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# General information

## Latching Relays

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### E290 Latching Relays

Latching relays are electromagnetically operated devices. They can be used to realise a simple, energy-saving and efficient lighting control system.

These devices are mainly used in private houses, factory premises and commercial and public buildings as well as in industrial plants. As a rule, latching relays controlled by means of impulse buttons are installed where it is necessary for lighting to be operated from at least three different places.

Each time a command is initiated (by means of an impulse button), an electrical pulse is applied to the coil of the latching relay. The coil in the device is briefly energised and activated. That short pulse to the coil leads to the mechanical latch of the internal main contacts.

The internal switching mechanism enables us to achieve a safe and reliable interlock (in the same way as a ballpoint pen). Each pulse that is sent to the magnetic coil system switches the device back to its previous position where it is held mechanically until the next control pulse is received.

Therefore the result of a command initiated by means of an external button (e.g. in the corridor) always depends on the current state of the controlled latching relay. If it is switched on, then the next pulse will result in it being switched off (switching sequence: 0-1-0-1-0 -...).

Mechanical latching relays are also referred to as "bi-stable relays". That is because they have two mechanically stable contact positions (on or off). In case of a power failure, the last switch position is guaranteed to be held mechanically.

This technology enables to reduce the electrical power loss and current consumption of devices considerably. The extremely low level of switching noise means that latching relays are also suitable for use in public buildings and hotels as well as in private households.

The on/off position can be identified by means of the easily visible and clearly labelled switch lever. Activation can be tested manually by operating the switch lever. The switch position is held mechanically and clearly indicated.

# General information

## Installation Relays



### E297 Installation Relays

Installation relays are electromagnetically operated miniature contactors in the standard DIN width of 18 mm. A reliable control system can be designed using these installation relays.

They are used mainly in industrial plants but also in commercial and public buildings. As a rule, installation relays operated by means of a control switch (maintained contact) are installed where it is necessary to operate lighting, an air-conditioning system, a fan or suchlike.

Installation relays are also referred to as monostable switching relays or 2-pole miniature contactors.

The term "monostable" means that an on command has to be sent to the coil by means of a control switch (maintained operation) in order to excite the magnetic coil. The coil armature attracts and closes or opens the main contacts. The device remains in the on position for as long as the control voltage is applied to the coil.

If the voltage flow to the coil is interrupted, the installation relay always returns to the neutral position (off position). Installation relays and the accessories are available in different versions in order to easily satisfy the various market requirements.

Their optimal switching capacity also makes them suitable for use in industrial environments and in situations where it is necessary to ensure control over more powerful consumers (such as e.g. multiple lighting systems).

Using an optimized coil (low power loss = lower operating temperature) ensures a clean and safe operation in the electrical distribution board.

The low level of switching noise and the practically hum-free magnetic system mean that they are also suitable for use in public buildings and in private houses.

The current switch position is clearly indicated by the switch lever. The installation relay can be proofed manually for test purposes by operating this switch lever (i.e. without activating the magnetic coil). As soon as the switch lever is released, the relay returns to the neutral position.





# Applications

## Latching and Installation Relays

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# Applications

## Latching Relays

In an office building, supermarket or other large building complex, latching relays can be used to achieve a flexible, modern and reliable lighting control system for the whole site.

### 2 Application for an E290 Latching Relay:

Each time the impulse button is operated, an electrical pulse is applied to the latching relay that results in a change to the switching state. This state is held mechanically until the next pulse is received.

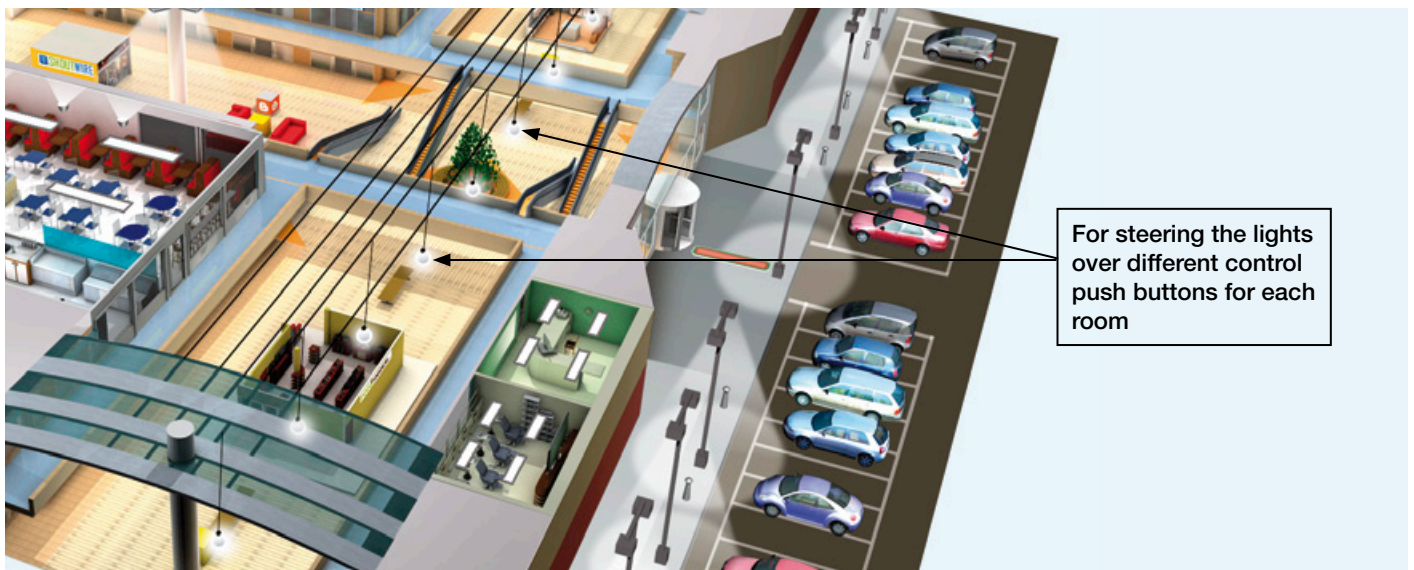
Switching sequence:

**OFF – ON – OFF – ON**

The main application for a latching relay is to simply switch various independent lighting areas on and off. Switching from „on“ to „off“ is carried out by means of a short impulse.

As the device coil of the latching relay is only excited by a pulse for a short time during switching, no additional holding energy is required. The contact position (on/off) is held by means of a mechanical interlock until the next pulse command is sent. In the event of a power failure, the current switch position will always be held. This technology considerably helps to reduce the temperature rise and current consumption of devices operated by magnetic coils, thus saving on unnecessary energy costs.

### Example of use within a commercial building



# Applications

## Latching Relays

### Application for an E290 Latching Relay in conjunction with an E293/X or E294 Central On-Off Control Module:

The interior lighting controlled by means of various impulse buttons can also be operated from a central control point by snapping on a central on-off control module onto the left side of the E290 latching relay.

Switching sequence:

**Local** ==> OFF – ON

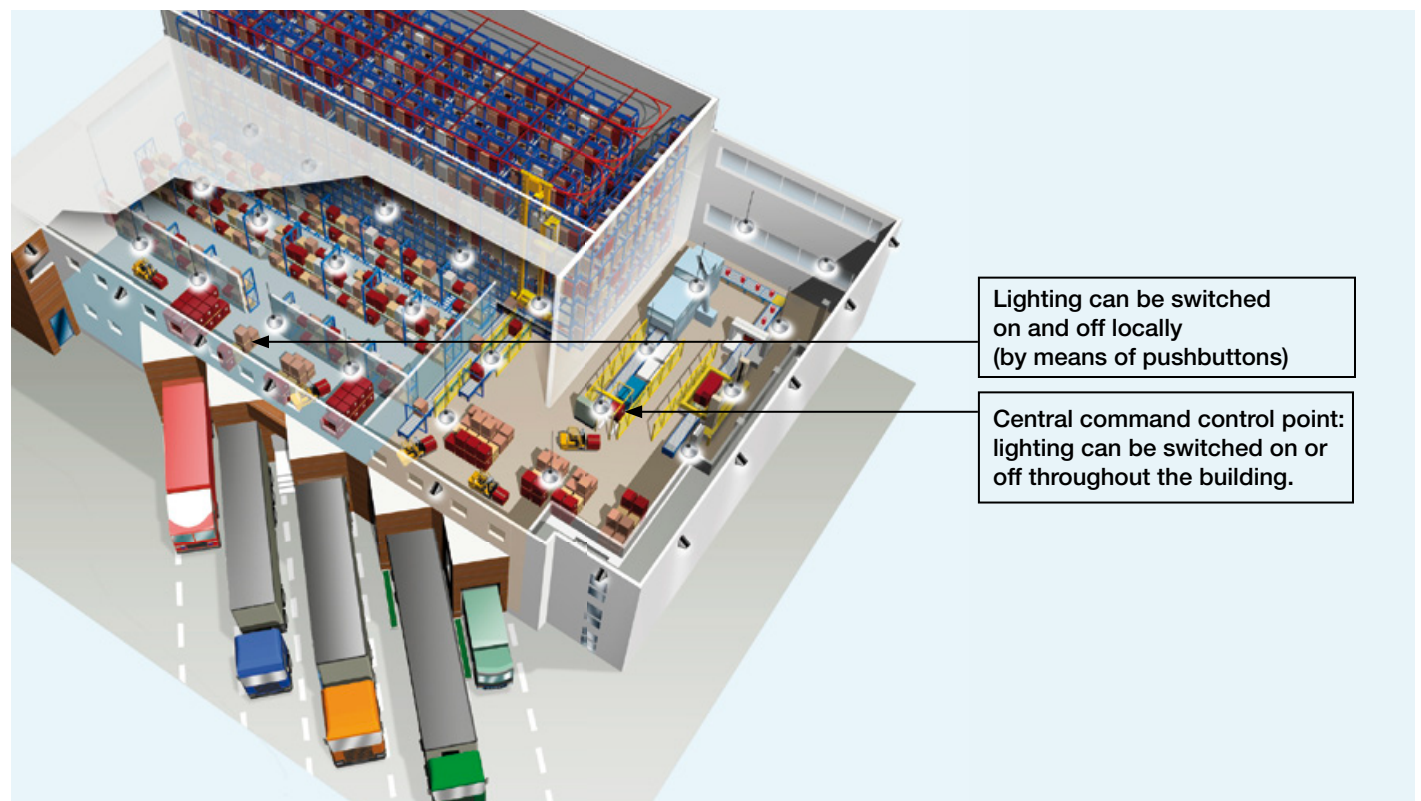
**Central** ==> OFF – ON

(the central command is the superordinate command)

The combination of a Main device plus central on-off control module can be used to switch multiple lights on and off at the same time without any dependence on the current switch position of the devices. The actual switch position of the various devices (on/off) can be indicated by snapping an auxiliary contact (attachable on the right side) to the control center.

Another possibility would be the combination of an E290 with an E294 central on-off control module for various control voltages. This combination enables for example the cooperation with a PLC (programmable logic controller). Any number of different logical activations in respect of latching relays can be recorded and visualised.

### Example of use within an industrial warehouse



# Applications

## Latching Relays

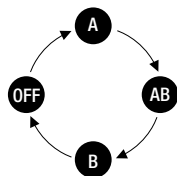
### Application using an E291S Sequential Latching Relay:

This independent special sequential latching relay switches the contact position in a preset fixed switching sequence.

2

Switching sequence:

**OFF – A – AB – B – OFF**



This preset internal switching sequence enables for example the following lighting sequence to be used. As two separate switching circuits are available, lights A, AB and B can be operated individually or together as required. If the button is pressed once or several times (pulse control), the sequential latching relay changes the contact position in the preset switching sequence. An amazingly refined interior or exterior lighting system can be realised with this user-friendly and reliable lighting control option, without any additional installation costs.

### Example of use of a Sequential Latching Relay within an exhibition space



# Applications

## Installation Relays

Because of the individual options for using the installation relays in building management systems, these devices can be used to realise a modern and reliable consumer control system.

### Application for an E297 Installation Relay:

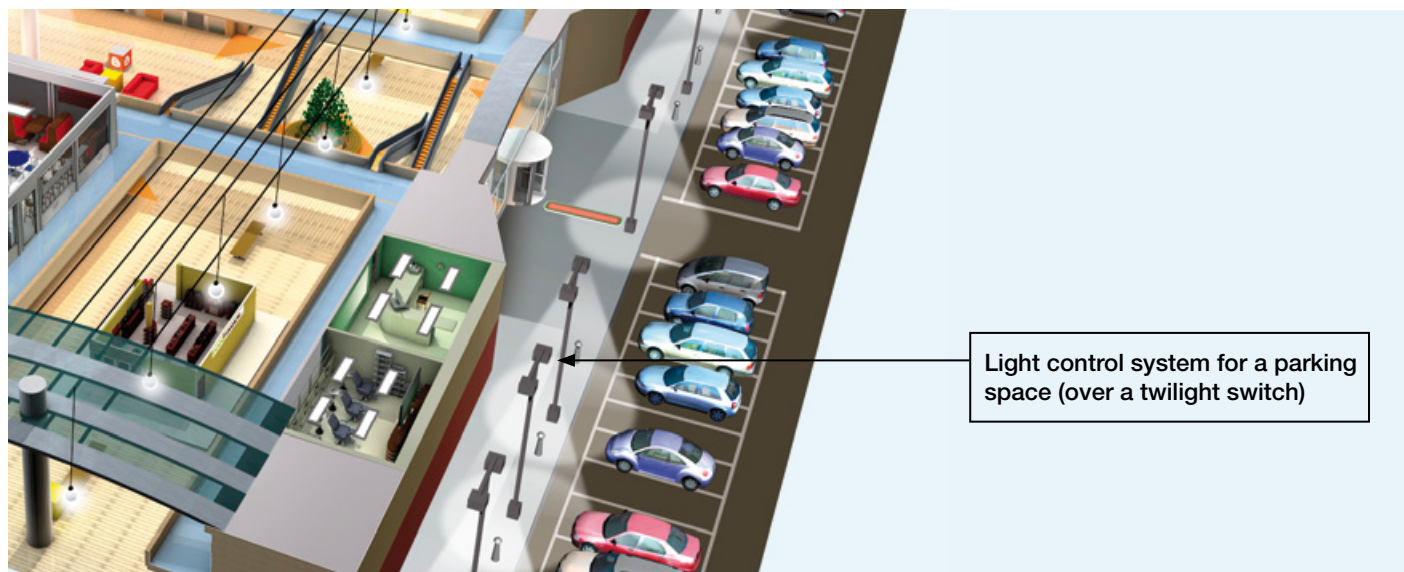
When current is applied to an installation relay, the relay coil attracts one of the main contacts and changes the contact position. The coil of an installation relay has to remain energised in order to hold the contact position. If the voltage is removed from the coil, the installation relay always returns to the off position.

Switching sequence:

**OFF – ON**

Main areas of application include exterior lighting for office buildings or supermarket car parks as well as other big installations. An extremely flexible and modern lighting control system can be created, using E297 installation relays. Activation can be carried out by means of a twilight switch or a timer but also by means of a simple on-off switch or another electrical control unit. Reliable switching of an exterior lighting system, for example, is realised by sending clear on and off control commands from an external control point. The magnetic coil has to be permanently energised in order for the installation relay to be held in the on position. The energy consumption of the installation relay is reduced to a minimum by the performance-optimised magnetic coil. The low switching noise also makes it suitable for professional use in closed inhabited areas.

### Example of use within a commercial building



Light control system for a parking space (over a twilight switch)



# Characteristics

## Latching and Installation Relays

Characteristics	
E290 Latching Relays .....	3/3
E297 Installation Relays .....	3/7



# Characteristics

## Latching Relays and accessories

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### E290 Latching Relay

This 18 mm wide DIN rail mounted device is designed for direct installation in main distribution or sub-distribution systems (mounted on 35 mm DIN mounting rails). The devices are activated by means of control pulses and guarantee energy-optimized lighting control. As a rule, installations with latching relays are used where the lighting control system can be operated from at least three points in different locations. Those latching relays are designed for a rated current of 16 A or 32 A.

Standard number of contacts:

**1 NO contact, 2 NO contacts or 1 NO contact + 1 NC contact**

The number of switching contacts can be increased by a maximum of two main contacts using a snap-on main module (E292-...-...). As a result, up to four lighting sets can be switched by a single device. A signalling and/or indicating facility can be created using the additional snap-on auxiliary contact module (E299-11).

The various standard AC/DC coil voltages complete the comprehensive and interesting product range. The additional devices can be snapped onto the latching relay on the left or right side.

**Control elements → Attachable on the left side**

**Switching elements → Attachable on the right side**

Switching sequence:

**OFF – ON – OFF – ON**

### Safety information

If more than one Latching relay installed next to each other, it is recommended to use an intermediate piece (distance). This guarantees optimal heat dissipation by the main modules. The intermediate pieces (9 or 18mm wide) can be found in the order information as types ZLS725 or ZLS726 (the use depends on the application).



### E291S Sequential Latching Relay

The sequential latching relay is an 18 mm wide device which has two NO contacts. The preset switching sequence for the main contacts enables the switching on and off, of different lighting sets to be "programmed". The E291S has an easily visible switch position display on the front.

Standard number of contacts:

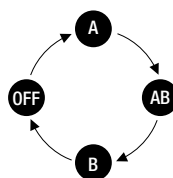
**2 NO contacts**

**Cannot be combined or attached.**

"Stand-alone" product.

Switching sequence:

**OFF – A – AB – B – OFF**



### Note:

The Sequential Latching Relay E291S will be available in 2016



# Characteristics

## Latching Relays and accessories



### E294 Central On-Off Control Module (for different control voltages)

This 18 mm wide additional control module can be snapped onto a latching relay and has a galvanically separated contact to the standard latching relay. The devices are mechanically connected. Two different control voltage potentials (e.g. AC local; DC central) can be used between the local and the central control point. The E294 central on-off control module is suitable for professional use in control circuits with various configurations. With this snap-on device a priority central command (all off/all on) can be realized.

For this type of solution, a central control module needs to be attached for each latching relay integrated in the central on-off control system. Central commands always take priority and reliably switch the mechanically connected coil of the standard latching relay on or off without any dependence on the previous switch position of the individual latching relays. By using a E294/.. central on-off control module at the main module E290, it's not possible to snap on a E292 contact module.

**Control element → Attachable on the left side**

Switching sequence:

**Central OFF – Central ON – Central OFF – Central ON**

3



### E293/X Central On-Off Control Module (same control voltage)

An additional control module (9mm wide) which easily snaps onto a latching relay, is used for the same coil control voltages. The central switching on and off of different lighting groups can be achieved quite easily using the E293/X. After the central on-off control module has been snapped on, the devices are mechanically connected. Each latching relay that is provided for a central on-off control system must be provided with an E293/X central on-off control module. Central commands always take priority and reliably switch the mechanically connected coil of the standard latching relay on or off without any dependence on the previous switch position of the individual latching relays. Same voltage potential at central and local control inputs.

**Control element → Attachable on the left side**

Switching sequence:

**Central OFF – Central ON – Central OFF – Central ON**

# Characteristics

## Latching Relays and accessories

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### E292 Main Contact Module for E290 Latching Relays

The E292 is a 9 mm wide snap-on main contact module. If required, the number of existing main contacts in the standard latching relay can be increased by a maximum of two contacts. The main contact module is available in a 16 A design (e.g. for 3-phase lighting sets).

In the case of 32 A latching relays, it is not possible to increase the number of main contacts!

Standard number of contacts:

**1 NO contact + 1 NC contact, 2 NO contacts or 1 change-over contact**

**Switching element → Attachable on the right side**



### E299-11 Auxiliary Contact

The E299-11 auxiliary contact can be used with latching relays and installation relays. The E299-11 auxiliary contact is a snap-on device that enables the individual indication or signalling of the current operating state of the main module (two integrated contacts).

Standard number of contacts:

**1 NO contact + 1 NC contact**

**Switching element → Attachable on the right side**

A maximum of two additional snap-on modules can be mounted on the right side of the main device. The additional modules (contact module and/or auxiliary contact) simply snap onto the right side of the main device. Neither additional fixing screws nor additional wiring are required in order to build the various combinations. All additional modules are also easy to remove.



### E295-PS Permanent Signal module

The E295-PS permanent signal module is an add-on module that enables the latching relay to be controlled by means of a permanent signal. After receiving the permanent signal, the latching relay changes its contact position and the coil of the main module is released by the attached permanent signal module at the same time. Without this permanent signal module, the latching relay coil would be permanently energised and valuable energy would be wasted.

When using a permanent signal module, it is not possible to operate manually over the lever on latching relay as the switch lever is covered.

This refined solution is particularly useful if the latching relay is controlled by means of a timer, a twilight switch, a motion detector or another switch with a changeover contact (e.g. a reversing switch, relay, time relay etc.)

**Control element → Attachable on the left side**

# Characteristics

## Latching Relays and accessories



### E295-GM Group Module

The E295-GM group module is an additional module that is also suitable for use in centrally controlled installations. It enables fixed groups of latching relays to be created and controlled which can be combined with the central on-off control system.

For example, various control circuits in an office building can be interconnected. As a result, groups of offices can be controlled by floor or even throughout the whole building using a central on-off control system.

The group module is not subject to any restrictions on the number of control circuits. One group module is required per control circuit.

Suitable for use with standard latching relays as well as in combinations with central contact modules.

Control element → Cannot be attached!



### E296-CP Compensator Module

The E296-CP compensator module is used when illuminated buttons (control points) are used in conjunction with latching relays. The additional module (compensator) enables a higher number of illuminated buttons (inductance) to be connected to a latching relay.

If no compensator module is installed and the glow lamp reverse current is higher than 5 mA, the latching relay may be activated unintentionally. In order to prevent this, an additional compensator must be implemented.

Control element → Cannot be attached!

### Maximum number of illuminated buttons per main device (with 0.6 mA glow lamp)

	Latching relay		Central ON/OFF, same potential		Central ON/OFF, different potential	
	1 & 2 contacts	3 & 4 contacts	1 & 2 contacts	3 & 4 contacts	1 & 2 contacts	3 & 4 contacts
without compensator	8	9	8	10	12	10
with 1 compensator	18	22	27	20	21	20
with 2 compensators	45	38	43	48	58	48

# Characteristics

## Installation Relays and accessories

3



### E297 Installation Relay

The E297 installation relay is an electromechanical switching device controlled by means of a continuous pulse. The coils have a low level of switching noise, are optimized for low power loss and therefore ensure safe and fault-free use in various applications. Either AC or DC control voltage can be applied. The installation relay is designed for a rated current of 16 A.

Standard number of contacts:

**1 NO contact, 2 NO contacts or 1 NO contact + 1 NC contact**

In addition, the number of main contacts can be increased to four contact lines using the snap-on E298 Main contact module so that three different groups of loads can be switched and controlled safely. The various AC/DC coil voltages complete the comprehensive and interesting product range. The additional devices can be snapped onto the installation relay on the right side.

**Switching element → Attachable on the right side**

Switching sequence:

**OFF – ON – OFF – ON**

### Safety information

If more than one Latching relay installed next to each other, it is recommended to use a intermediate piece (distance). This guarantees optimal heat dissipation by the main modules. The intermediate pieces (9 or 18mm wide) can be found in the order information as types ZLS725 or ZLS726 (the use depends on the application).



### E298 Main Contact Module for E297 Installation Relays

The E298 is a (9 mm) snap-on module with integrated main contacts. As the E297 main module has a maximum of two main contacts, the number of main contacts can be increased to four contact lines using the main contact module (e.g. for 3-phase lighting sets).

Standard number of contacts:

**1 NO contact + 1 NC contact, 2 NO contacts or 1 change-over contact**

**Switching element → Attachable on the right side**

# Characteristics

## Installation Relays and accessories



### E299-11 Auxiliary Contact

The E299-11 auxiliary contact can be used with installation relays and latching relays. The E299-11 auxiliary contact is an additional snap-on device that enables the individual indication or signalling of the current operating state of the main module.

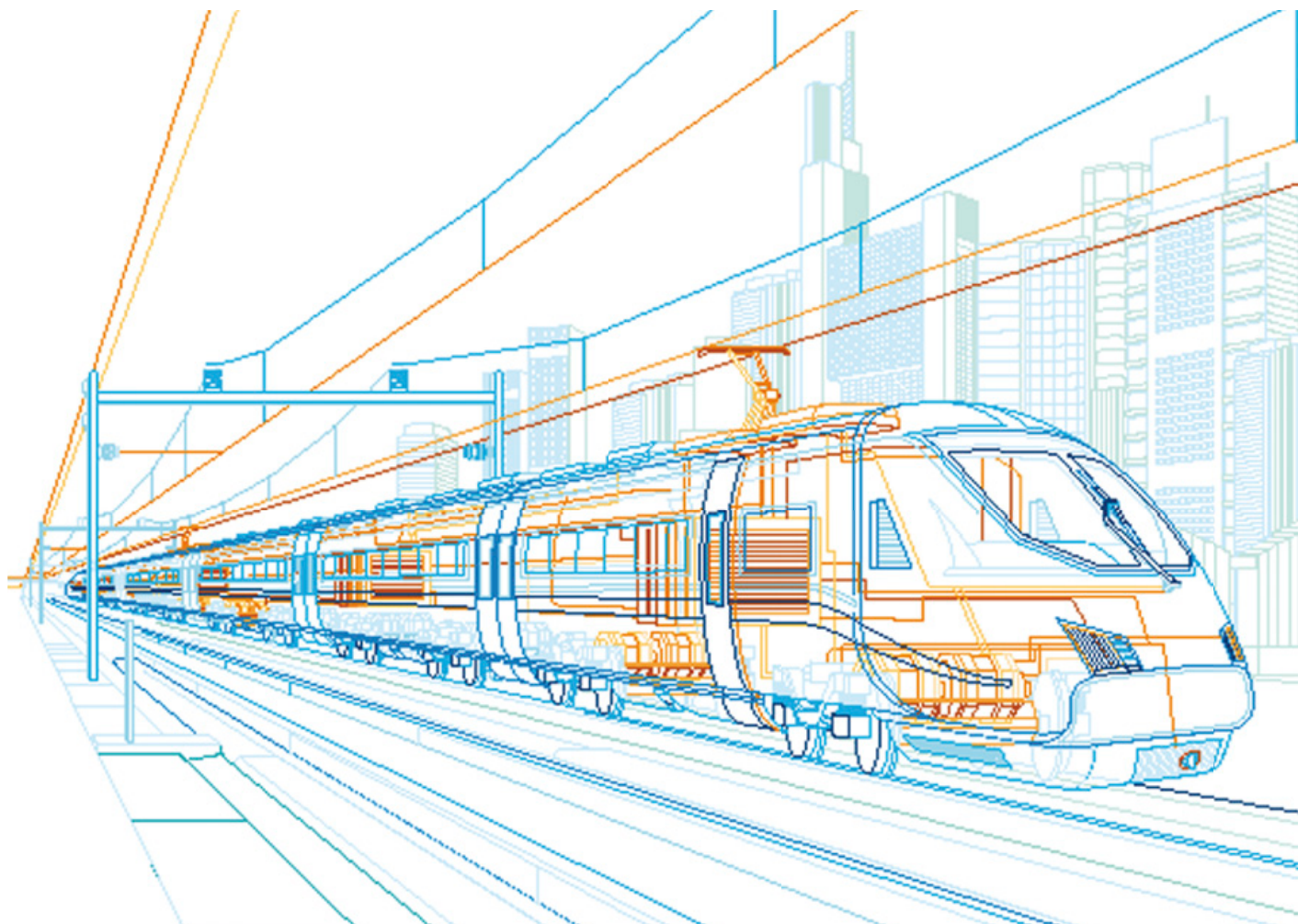
Standard number of contacts:

**1 NO contact + 1 NC contact**

**Switching element → Attachable on the right side**

A maximum of two additional snap-on modules can be mounted on the right side of the main device. The additional modules (contact module and/or auxiliary contact) simply snap onto the right side of the main device. Neither additional fixing screws nor additional wiring are required in order to complete the combination. All additional modules are also easy to remove.

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# Possible mounting variations

## Latching and Installation Relays

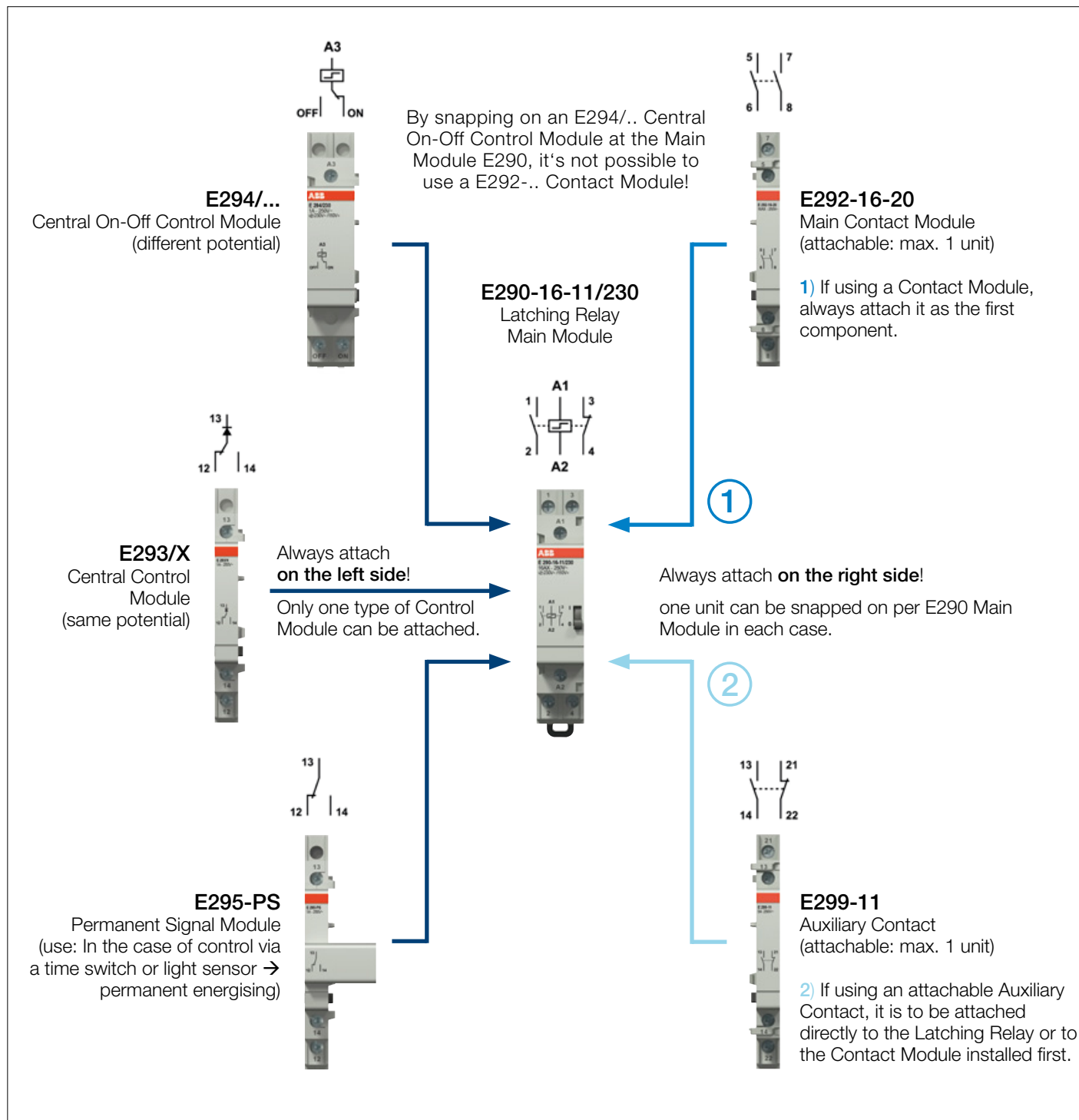
Possible mounting variations	
E290 Latching Relays	4/3
E297 Installation Relays	4/7

# Possible mounting variations

## Latching Relays

### E290 Latching Relay

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### Safety information

If more than one Latching relay installed next to each other, it is recommended to use a intermediate piece (distance). This guarantees optimal heat dissipation by the main modules. The intermediate pieces (9 or 18mm wide) can be found in the order information as types ZLS725 or ZLS726 (the use depends on the application).



# Possible mounting variations

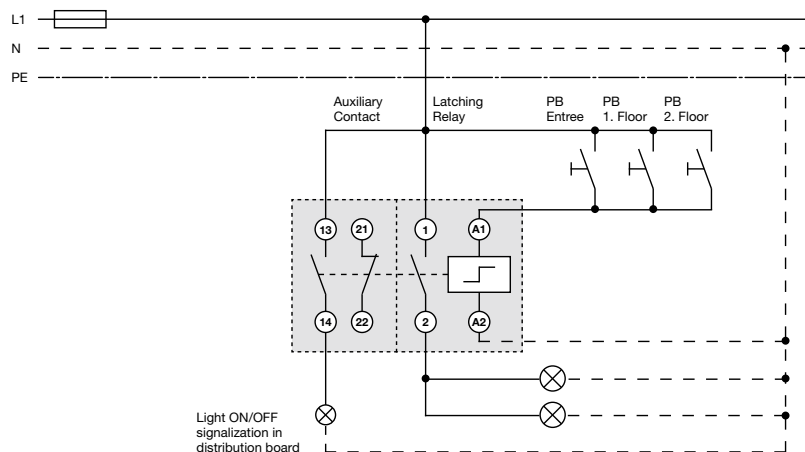
## Latching Relays

### E290-16-10 + E299-11 — Latching Relay with Auxiliary Contact

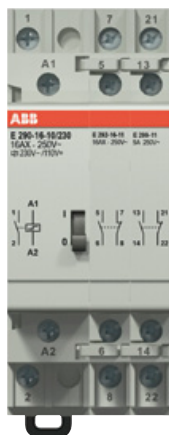


Application at a normal light control via different push buttons (PB);

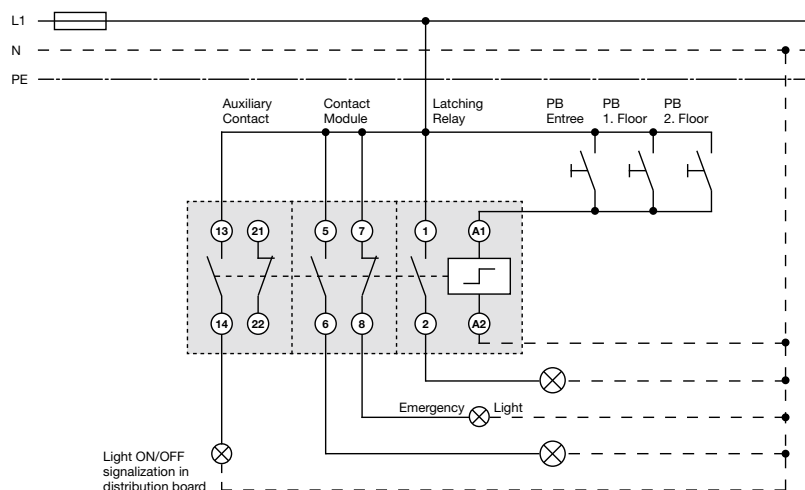
The snapped-on auxiliary contact (E299-11) displays the current switching state of the light control (ON/OFF).



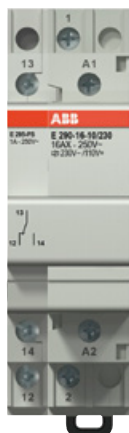
### E290-16-10 + E292-16-11 + E299-11 — Latching Relay with Auxiliary Contact



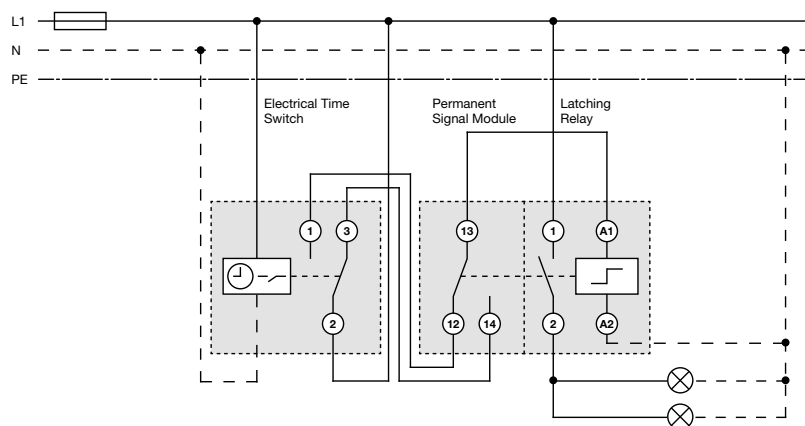
Latching Relay E290 with attached contact module E292-16-11 (additional main contact tracks) plus an auxiliary contact to externally display the switching state of the main contacts (ON/OFF).



### E290-16-10 + 295-PS — Latching Relay with permanent signal module



This combination permits control of the E290 coil via a permanent signal (e.g. directly controlled by a timer or a twilight switch). When using this accessory, manual switching at the main unit is not possible.



# Possible mounting variations

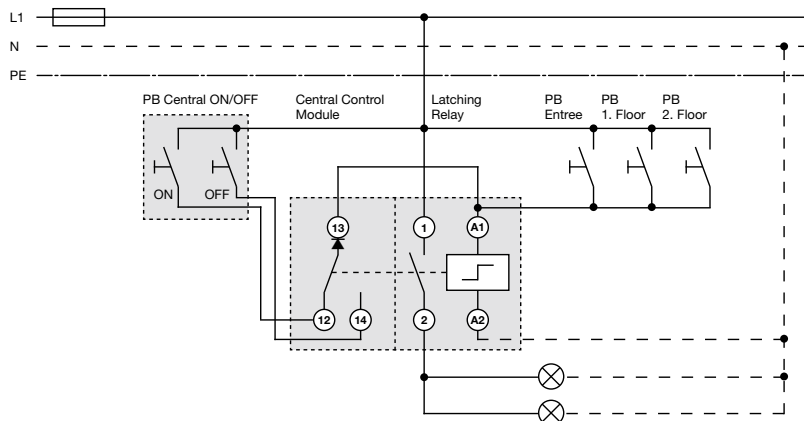
## Latching Relays

### E290-16-10 + E293/X – Latching Relay with Central Control Module

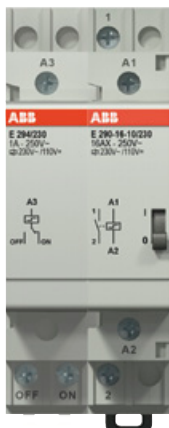


The function of a Central ON/OFF control is implemented by using the accessory E293/X. The E293/X Central ON/OFF module uses the same coil voltage potential as the main unit E290.

The light control can be either on site via the local buttons, or by the Central ON/OFF button.

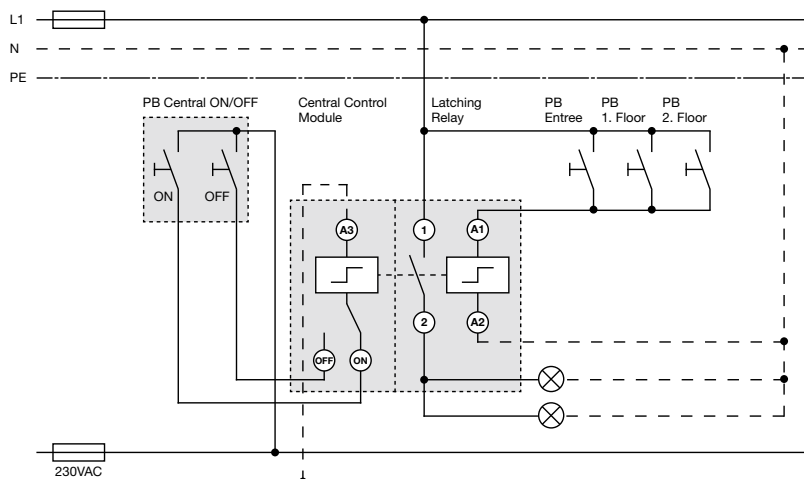


### E290-16-10 + E294/230 – Latching Relay with Central Control Module

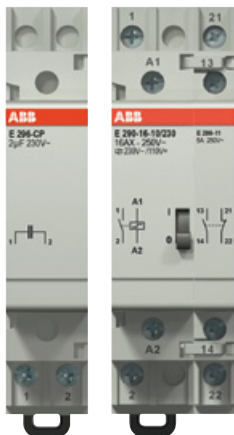


This is a second possibility to implement a Central ON/OFF control. When a E294/... accessory is snapped on, this Central ON/OFF device uses a different voltage source for coil control. The light control can be performed locally on site via the regular button.

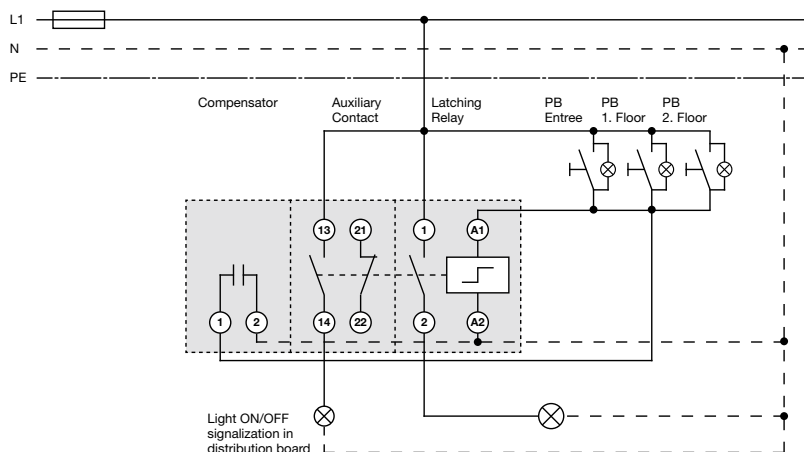
The Central ON/OFF button permits a general switching state change from a central location.



### E296CP + E290-16-10 + E299-11 – Latching Relay with Auxiliary Contact plus Compensator



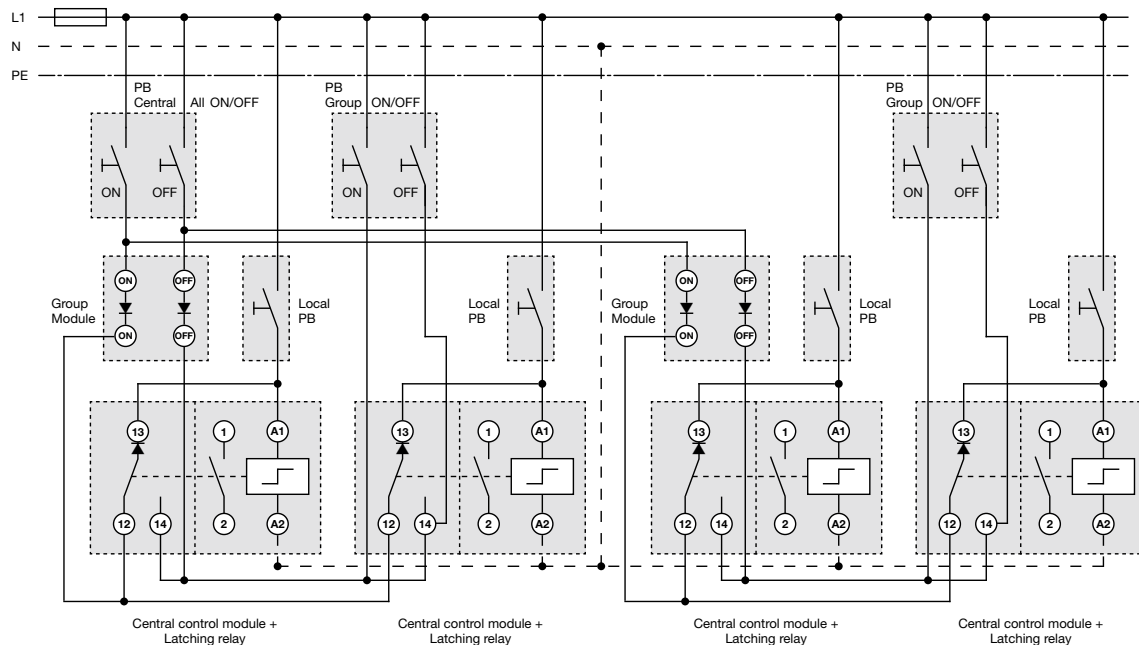
The compensator E296-CP is used every time a certain number of lit local buttons is exceeded. See table in the catalogue, page 3/6.



# Possible mounting variations

## Latching Relays

### E290-16-10 + E293/X + E295GM — Latching Relay with Central Control Module and Group Module



An example of a central ON/OFF control E290 with E293/X combined with Group Modules E295-GM; The Group Modules are integrated into the control to be structured into different light area groups. The on-site local buttons permit individual control of each Latching Relay. The Integration of the Group Modules into this control permits a distribution into two groups. Pushing the button „Group ON/OFF“ permits individual switching of each group. The general button „Central ALL ON/OFF“ can put the switching state of all E290 devices into the desired position (ON/OFF).

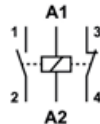
# Possible mounting variations

## Installation Relays

### E297 Installation Relay

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**E297-16-11/230**  
Installation Relay  
Main Module



**E298-16-20**  
Main Contact Module  
(attachable: max. 1 unit)

1) If using a Contact Module, always attach it as the first component.

1

Always attach **on the right side!**

1 unit can be snapped on per E297 Main Module in each case.

2



**E299-11**  
Auxiliary Contact  
(attachable: max. 1 unit)

2) If using an attachable Auxiliary Contact, it is to be attached directly to the Installation Relay or to the Contact Module installed first.

### Safety information

If more than one Latching relay installed next to each other, it is recommended to use an intermediate piece (distance). This guarantees optimal heat dissipation by the main modules. The intermediate pieces (9 or 18mm wide) can be found in the order information as types ZLS725 or ZLS726 (the use depends on the application).

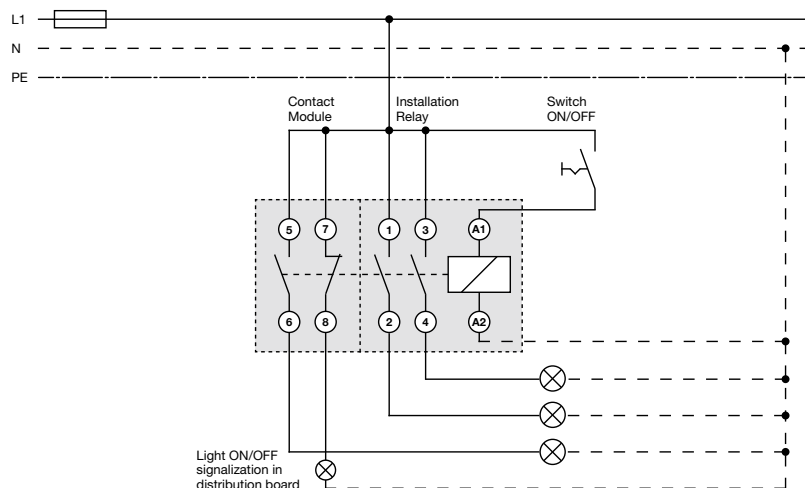
# Possible mounting variations

## Installation Relays

### E297-16-20 + E298-16-11 — Installation Relay with Contact Module



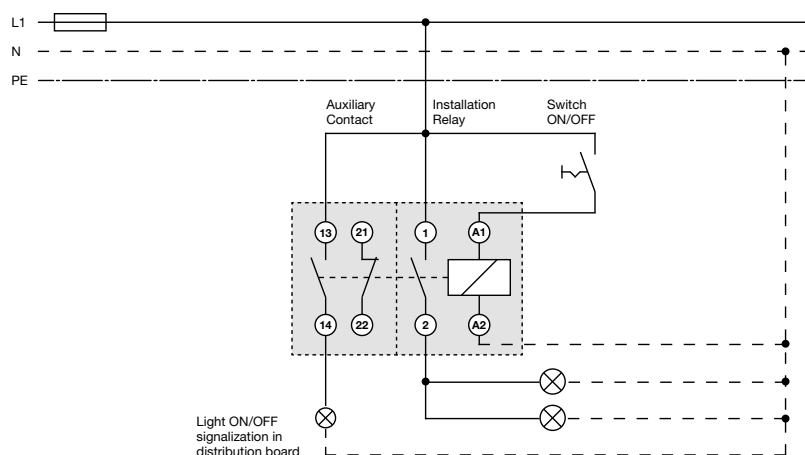
Light control via an Installation Relay E297 with connected Contact Module E298-16-11 (additional main contacts) to externally signal the switching state of the main contacts (ON/OFF).



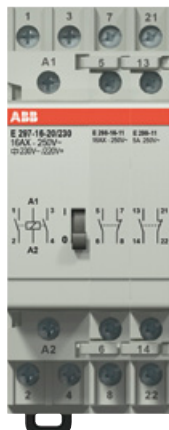
### E297-16-10 + 299-11 — Installation Relay with Auxiliary Contact



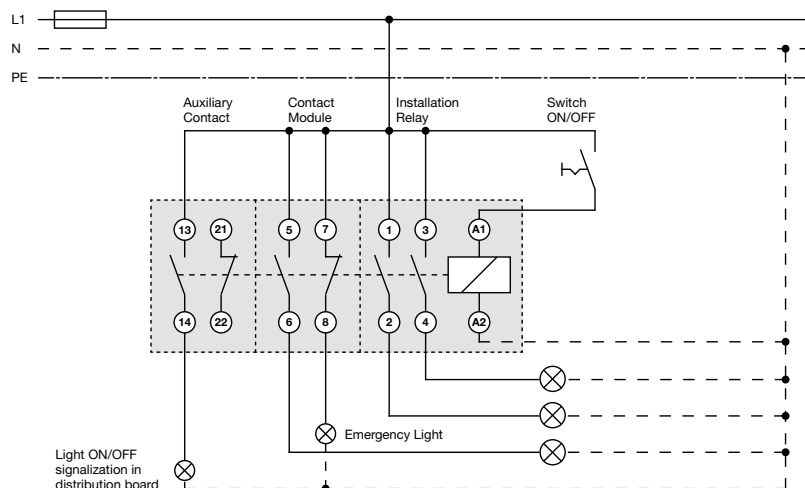
Application with a normal light control via an ON/OFF switch. The current condition indication of the light control (ON/OFF) is implemented, e.g., in the distribution board, with the help of the auxiliary contact (E299-11).



### E297-16-20 + E298-16-11 + 299-11 — Installation Relay with Contact Module and Auxiliary Contact



Combination of an installation relay E297 with an attached Contact Module E298-16-11 (additional main contacts) plus an Auxiliary Contact to clearly indicate the switching state of the main contacts (ON/OFF).





# Ordering data


## Latching and Installation Relays with accessories

Ordering data	
E290 Latching Relays	5/3
Accessories for E290 Latching Relays	5/5
E297 Installation Relays and accessories	5/6

# Ordering data

## Latching Relays

### E290 Latching Relays

Cont. config.	Rated voltage	Power loss	Width	Coil control voltage	Order data	ABB ident. no.	Bbn 7612270	Weight per unit	Pack. unit
	VAC	 W	mm	VAC/VDC	Type		EAN	kg	units
Standard devices									
Latching Relay									
Rated current = 16 A									
1NO	250	0.32	18	8VAC	E290-16-10/8	2TAZ312000R2061	939558	0.114	10
1NO	250	0.32	18	12VAC	E290-16-10/12	2TAZ312000R2051	939565	0.114	10
1NO	250	0.32	18	24VAC/12VDC	E290-16-10/24	2TAZ312000R2041	939572	0.114	10
1NO	250	0.32	18	48VAC/24VDC	E290-16-10/48	2TAZ312000R2031	939589	0.114	10
1NO	250	0.32	18	115VAC/60VDC	E290-16-10/115	2TAZ312000R2021	939596	0.114	10
1NO	250	0.32	18	230VAC/110VDC	E290-16-10/230	2TAZ312000R2011	939602	0.114	10
Rated current = 32 A									
1NO	250	1.20	18	8VAC	E290-32-10/8	2TAZ322000R2061	939619	0.114	10
1NO	250	1.20	18	12VAC	E290-32-10/12	2TAZ322000R2051	939626	0.114	10
1NO	250	1.20	18	24VAC/12VDC	E290-32-10/24	2TAZ322000R2041	939633	0.114	10
1NO	250	1.20	18	48VAC/24VDC	E290-32-10/48	2TAZ322000R2031	939640	0.114	10
1NO	250	1.20	18	115VAC/60VDC	E290-32-10/115	2TAZ322000R2021	939657	0.114	10
1NO	250	1.20	18	230VAC/110VDC	E290-32-10/230	2TAZ322000R2011	939664	0.114	10
Rated current = 16 A									
2NO	250	0.64	18	8VAC	E290-16-20/8	2TAZ312000R2062	939671	0.122	10
2NO	250	0.64	18	12VAC	E290-16-20/12	2TAZ312000R2052	939688	0.122	10
2NO	250	0.64	18	24VAC/12VDC	E290-16-20/24	2TAZ312000R2042	939695	0.122	10
2NO	250	0.64	18	48VAC/24VDC	E290-16-20/48	2TAZ312000R2032	939701	0.122	10
2NO	250	0.64	18	115VAC/60VDC	E290-16-20/115	2TAZ312000R2022	939718	0.122	10
2NO	250	0.64	18	230VAC/110VDC	E290-16-20/230	2TAZ312000R2012	939725	0.122	10
Rated current = 32 A									
2NO	250	2.40	18	8VAC	E290-32-20/8	2TAZ322000R2062	939732	0.122	10
2NO	250	2.40	18	12VAC	E290-32-20/12	2TAZ322000R2052	939749	0.122	10
2NO	250	2.40	18	24VAC/12VDC	E290-32-20/24	2TAZ322000R2042	939756	0.122	10
2NO	250	2.40	18	48VAC/24VDC	E290-32-20/48	2TAZ322000R2032	939763	0.122	10
2NO	250	2.40	18	115VAC/60VDC	E290-32-20/115	2TAZ322000R2022	939770	0.122	10
2NO	250	2.40	18	230VAC/110VDC	E290-32-20/230	2TAZ322000R2012	939787	0.122	10
Rated current = 16 A									
1NO+1NC	250	0.50	18	8VAC	E290-16-11/8	2TAZ312000R2063	939794	0.122	10
1NO+1NC	250	0.50	18	12VAC	E290-16-11/12	2TAZ312000R2053	939800	0.122	10
1NO+1NC	250	0.50	18	24VAC/12VDC	E290-16-11/24	2TAZ312000R2043	939817	0.122	10
1NO+1NC	250	0.50	18	48VAC/24VDC	E290-16-11/48	2TAZ312000R2033	939824	0.122	10
1NO+1NC	250	0.50	18	115VAC/60VDC	E290-16-11/115	2TAZ312000R2023	939831	0.122	10
1NO+1NC	250	0.50	18	230VAC/110VDC	E290-16-11/230	2TAZ312000R2013	939848	0.122	10
Rated current = 32 A									
1NO+1NC	250	1.20	18	8VAC	E290-32-11/8	2TAZ322000R2063	939855	0.122	10
1NO+1NC	250	1.20	18	12VAC	E290-32-11/12	2TAZ322000R2053	939862	0.122	10
1NO+1NC	250	1.20	18	24VAC/12VDC	E290-32-11/24	2TAZ322000R2043	939879	0.122	10
1NO+1NC	250	1.20	18	48VAC/24VDC	E290-32-11/48	2TAZ322000R2033	939886	0.122	10
1NO+1NC	250	1.20	18	115VAC/60VDC	E290-32-11/115	2TAZ322000R2023	939893	0.122	10
1NO+1NC	250	1.20	18	230VAC/110VDC	E290-32-11/230	2TAZ322000R2013	939909	0.122	10

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact



# Ordering data

## Latching Relays

### E290 Latching Relays

Cont. config.	Rated voltage	Power loss 	Width	Coil control voltage	Order data	ABB ident. no.	Bbn 7612270	Weight per unit	Pack. unit
	VAC	W	mm	VAC/VDC	Type		EAN	kg	units

#### Standard devices

#### Sequential Latching Relay

#### Rated current = 16 A

2NO	250	0.64	18	8VAC	E291S-16-20/8	2TAZ313000R2062	939916	0.110	10
2NO	250	0.64	18	12VAC	E291S-16-20/12	2TAZ313000R2052	939923	0.110	10
2NO	250	0.64	18	24VAC/12VDC	E291S-16-20/24	2TAZ313000R2042	939930	0.110	10
2NO	250	0.64	18	230VAC/110VDC	E291S-16-20/230	2TAZ313000R2012	939947	0.110	10

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact


#### Note:

The Sequential Latching Relay E291S will be available in 2016

# Ordering data

## Accessories for Latching Relays

### Accessories for E290 Latching Relays

Cont. config.	Rated voltage	Power loss	Width	Coil control voltage	Order data	ABB ident. no.	Bbn 7612270	Weight per unit	Pack. unit
	VAC	 W	mm	VAC/VDC	Type		EAN	kg	units
Accessories and additional devices for combinations with Latching Relays									
Main Contact Module									
Rated current = 16 A									
2NO	250	0.64	9		E292-16-20	2CCA704300R0001	939480	0.045	10
1NO+1NC	250	0.32	9		E292-16-11	2CCA704301R0001	939503	0.045	10
1CO	250	0.32	9		E292-16-001	2CCA704302R0001	939527	0.045	10
Central On-Off Control Module									
			9	same control voltage	E293/X	2TAZ312004R1003	939381	0.041	10
Central On-Off Control Module (with different control voltages)									
			18	24VAC	E294/24	2TAZ312001R2043	939411	0.110	5
			18	230VAC	E294/230	2TAZ312001R2013	939442	0.110	5
Permanent Signal Module									
			18		E295-PS	2TAZ312005R1003	939459	0.041	10
Group Module									
			18		E295-GM	2TAZ310002R1000	939466	0.059	10
Compensator									
			18		E296-CP	2TAZ310003R1000	939473	0.055	10
Auxiliary Contact for Latching and Installation relays									
Rated current = 5 A									
1NO+1NC	250	0.10	9		E299-11	2CCA704340R0001	939985	0.045	10
Intermediate piece (for heating dissipation - bag contains 5 items)									
			18		ZLS725	2CCS500900R0181	100989	0.100	1 bag
			9		ZLS726	2CCS400900R0091	104703	0.070	1 bag

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact

# Ordering data

## Installation Relays and accessories

### E297 Installation Relays

Cont. config.	Rated voltage	Power loss 	Width	Coil control voltage	Order data	ABB ident. no.	Bbn 7612270	Weight per unit	Pack. unit
	VAC	W	mm	VAC/VDC	Type		EAN	kg	units

#### Standard devices

##### Installation Relay

##### Rated current = 16 A

1NO	250	0.50	18	8VAC	E297-16-10/8	2TAZ311000R2061	940004	0.113	10
1NO	250	0.50	18	12VAC	E297-16-10/12	2TAZ311000R2051	940011	0.113	10
1NO	250	0.50	18	24VAC/24VDC	E297-16-10/24	2TAZ311000R2041	940028	0.113	10
1NO	250	0.50	18	48VAC/48VDC	E297-16-10/48	2TAZ311000R2031	940035	0.113	10
1NO	250	0.50	18	115VAC/110VDC	E297-16-10/115	2TAZ311000R2021	940042	0.113	10
1NO	250	0.50	18	230VAC	E297-16-10/230	2TAZ311000R2011	940059	0.113	10

##### Rated current = 16 A

1NO+1NC	250	0.50	18	8VAC	E297-16-11/8	2TAZ311000R2063	940066	0.121	10
1NO+1NC	250	0.50	18	12VAC	E297-16-11/12	2TAZ311000R2053	940073	0.121	10
1NO+1NC	250	0.50	18	24VAC/24VDC	E297-16-11/24	2TAZ311000R2043	940080	0.121	10
1NO+1NC	250	0.50	18	48VAC/48VDC	E297-16-11/48	2TAZ311000R2033	940097	0.121	10
1NO+1NC	250	0.50	18	115VAC/110VDC	E297-16-11/115	2TAZ311000R2023	940103	0.121	10
1NO+1NC	250	0.50	18	230VAC	E297-16-11/230	2TAZ311000R2013	940110	0.121	10

##### Rated current = 16 A

2NO	250	1.00	18	8VAC	E297-16-20/8	2TAZ311000R2062	940127	0.121	10
2NO	250	1.00	18	12VAC	E297-16-20/12	2TAZ311000R2052	940134	0.121	10
2NO	250	1.00	18	24VAC/24VDC	E297-16-20/24	2TAZ311000R2042	940141	0.121	10
2NO	250	1.00	18	48VAC/48VDC	E297-16-20/48	2TAZ311000R2032	940158	0.121	10
2NO	250	1.00	18	115VAC/110VDC	E297-16-20/115	2TAZ311000R2022	940165	0.121	10
2NO	250	1.00	18	230VAC	E297-16-20/230	2TAZ311000R2012	940172	0.121	10

### Accessories for E297 Installation Relays

Cont. config.	Rated voltage	Power loss 	Width	Coil control voltage	Order data	ABB ident. no.	Bbn 7612270	Weight per unit	Pack. unit
	VAC	W	mm	VAC/VDC	Type		EAN	kg	units

#### Accessories and additional devices for combinations with Installation Relays

##### Main Contact Module 16 A

2NO	250	0.64	9		E298-16-20	2CCA704320R0001	939961	0.045	10
1NO+1NC	250	0.32	9		E298-16-11	2CCA704321R0001	939954	0.045	10
1CO	250	0.32	9		E298-16-001	2CCA704322R0001	939978	0.045	10

##### Auxiliary Contact for use with Installation and Latching Relays

1NO+1NC	250	0.10	9		E299-11	2CCA704340R0001	939985	0.045	10
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##### Intermediate piece (for heating dissipation - bag contains 5 items)

			18		ZLS725	2CCS500900R0181	100989	0.100	1 bag
			9		ZLS726	2CCS400900R0091	104703	0.070	1 bag

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact



# Technical data

## Latching and Installation Relays

Technical data	
E290 Latching Relays	6/3
E297 Installation Relays and accessories	6/6
Lamp load table for Latching and Installation Relays	6/8

# Technical data

## Latching Relays and accessories

### E290 Latching Relays

#### General

Overall depth	68 mm
Overall width	1 module (18 mm)
Colour	grey, RAL 7035
Climate resistance in accordance with	IEC 60068-2-2 (dry heat) IEC 60068-2-30 (humid heat) IEC 60068-2-1 (low temperatures)
Ambient temperature	-25 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Contact system	Double interruption
Tightening torque	1.2 - 1.5 Nm
Weight	0.122 kg
Standards	EN 60669-1; EN 60669-2-2
Approval	VDE; EAC

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#### Power circuit

Rated current $I_n$		
E290-16-.../...	16 A	----
E290-32-.../...	----	32 A
Rated voltage $U_n$	250 VAC	250 VAC
Frequency	50 Hz	50 Hz
Short circuit withstand capacity $I_{nc}$	3 kA	3 kA
Back-up fuses (gL)	max. 16 A	max. 32 A
Latching relay contact configurations for 16 A and 32 A	1NO; 2NO; 1NO + 1NC	
Additional Power contacts 16A (attachable) (not for 32 A version)	1CO; 2NO; 1NO + 1NC	
Max. DC current per contact with 24 VDC	5 A	8 A
Min. switching load	24 V; 10 mA	
Bounce time	< 3 ms	
Power loss in W per contact	0.32 W	1.2 W
Rated impulse withstand voltage $U_{imp}$	4 kV	

#### Max. lamp load

Glow lamps (20 W - 200 W)	3000 W	4000 W
Fluorescent lamps, uncorrected power factor (cos. 0.5)	1800 W	2200 W
Fluorescent lamps, corrected power factor (cos. 0.9)		
serial	3000 W	4000 W
parallel	2500 W	3200 W
single	1800 W	2200 W
double	2500 W	3200 W

(see also lamp load table)

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact

# Technical data

## Latching Relays and accessories

### E290 Latching Relays

<b>Lifetime (switching cycles)</b>	
Electrical (AC1 rated current load)	150,000
Mechanical	250,000
<b>Connector cross-sections</b>	
Connecting terminals	solid from 1 x 1 mm <sup>2</sup> to 1 x 10 mm <sup>2</sup> or 2 x 2.5 mm <sup>2</sup> flexible from 1 x 0.75 mm <sup>2</sup> to 1 x 6 mm <sup>2</sup> (Cu) with end ferrule or pin cable lug
<b>Control circuit</b>	
Rated control voltages U <sub>n</sub>	AC: 8 V; 12 V; 24 V; 48 V; 115 V; 230 V DC: – ; – ; 12 V; 24 V; 60 V; 110 V
AC/DC ratio <sup>1)</sup>	1: 0.5 (not available for 8 VAC and 12 VAC coils)
Operation limits	+/- 10% = 0.9 - 1.1 x U <sub>n</sub>
Minimum command duration	50 ms
Max. switching operations	15 x per min. at I <sub>n</sub> 16 A; 8 x per min. at I <sub>n</sub> 32 A
Switching noise	60 dB (A) (distance 1 m)
Max. number of illuminated buttons (0.6 mA)	(see table on page 3/6)
Max. glow lamp current parallel to the 230 V control buttons	5 mA

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact

<sup>1)</sup> Coil supply voltage:  
 All E290 devices can be supplied with AC or DC control voltage. The ratio of 1 : 0,5 applies, i.e. a 230 VAC coil can also be used for 110 VDC.  
 (See Ordering data)

# Technical data

## Latching Relays and accessories

### Switching components for E290

#### E292-16... Contact Module (attachable only to 16 A $I_n$ version)

Rated current $I_n$ per E292 contact	16 A
Rated voltage $U_n$	250 VAC
Frequency	50 Hz
Max. no. attachable <sup>2)</sup> (additional main contacts)	1 unit (attachable on the right side of the main module)
Contact configurations	1CO; 2NO; 1NO+1NC
Max. DC current per contact with 24 VDC	8 A
Min. switching load	24 V; 10 mA

#### E299-11 Auxiliary Contacts

Max. no. attachable <sup>2)</sup> (signalling or control contacts)	1 unit (attachable on the right side of the main module)
Number of contacts	1 NO + 1 NC
Max. current per contact with AC	5.0 A
Max. current per contact with 24 VDC	5.0 A

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### Control components for E290

#### E293X Central On-Off Control Module (same control voltage potential)

Max. no. attachable <sup>2)</sup>	1 unit (attachable on the left side of the main module)
Rated current $I_n$ max.	1 A
Rated voltage $U_n$	250 VAC

#### E294 Central On-Off Control Module (different control voltage potential)

Max. no. attachable <sup>2)</sup>	1 unit (attachable on the left side of the main module)
Rated current $I_n$ max.	1 A
Rated voltage $U_n$	250 VAC

#### E295-PS Permanent Signal Module

Max. no. attachable <sup>2)</sup>	1 unit (attachable on the left side of the main module)
Rated current $I_n$ max.	1 A
Rated voltage $U_n$	250 VAC

#### E295-GM Group Module

Use of group switching modules	1 unit per defined group
Rated current $I_n$ max.	1 A
Rated voltage $U_n$	250 VAC

#### E296-CP Compensator

Compensation when using illuminated buttons	Wiring parallel to the main module
Compensation	2.2 $\mu$ F
Rated voltage $U_n$	250 VAC

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact

<sup>2)</sup> See overview pages in chapter 4 on page 4/3



# Technical data

## Installation Relays

### E297 Installation Relays

#### General

Overall depth	68 mm
Overall width	1 module (18 mm)
Colour	grey, RAL 7035
Climate resistance in accordance with	IEC 60068-2-2 (dry heat) IEC 60068-2-30 (humid heat) IEC 60068-2-1 (low temperatures)
Ambient temperature	- 25 °C to + 55 °C
Storage temperature	- 40 °C to + 70 °C
Tightening torque	1.2 - 1.5 Nm
Weight	0.122 kg
Standards	EN 60669-1; EN 60669-2-2
Approval	VDE; EAC

#### Power circuit

Rated current $I_n$	16 A
Rated voltage $U_n$	250 VAC
Frequency	50-60 Hz
Short circuit withstand capacity $I_{nc}$	3 kA
Back-up fuses (gL)	max. 16 A
Installation relay contact configurations	1NO; 2NO; 1NO+1NC
Additional Power contacts 16A (attachable)	1CO; 2NO; 1NO+1NC
Max. DC current per contact with 24 VDC	8 A
Min. switching load	24 V; 10 mA
Bounce time	< 3 ms
Power loss in W per contact	0.50 W
Rated Impulse withstand voltage $U_{imp}$	4 kV

#### Max. lamp load

Glow lamps (20 W-200 W)	3000 W
Fluorescent lamps, uncorrected power factor (cos. 0.5)	1800 W
Fluorescent lamps, corrected power factor (cos. 0.9)	
serial	3000 W
parallel	2500 W
single	1800 W
double	2500 W

(see also lamp load table)

#### Lifetime (switching cycles)

Electrical (AC1 rated current load)	150,000
Mechanical	250,000

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact

# Technical data

## Installation Relays

### E297 Installation Relays

#### Application categories

Switching capacity in accordance with	
AC-1 (based on EN 60947)	16 A
AC-5b (based on EN 60947)	5 A
AC-7a (based on EN 61095)	16 A
AC-7c (based on EN 61095)	5 A

#### Connector cross-sections

Main connecting terminals	solid from 1 x 1 mm <sup>2</sup> to 1 x 10 mm <sup>2</sup> or 2 x 2.5 mm <sup>2</sup> flexible from 1 x 0.75 mm <sup>2</sup> up to 1 x 6 mm <sup>2</sup> (Cu) with end ferrule or pin cable lug
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#### Control circuit

Coil rated voltages U <sub>n</sub> AC/DC	8 VAC; 12 VAC; 24 VAC/24 VDC; 48 VAC/48 VDC; 115 VAC/110 VDC; 230 VAC
AC/DC ratio <sup>3)</sup>	1 : 1
Operation limits	+/- 10 % = 0.9 - 1.1 x U <sub>n</sub>
Switching noise	60 dB (A) (distance 1 m)
Max. switching operations	15 x per min. at I <sub>n</sub> 16 A

#### Coil power loss

	AC	DC
Pick up	< 2.8 VA	< 2.0 W
Holding	< 2.6 VA	< 1.8 W

### Switching components for E297

#### E298 Contact Module

Max. no. attachable <sup>2)</sup> (additional main contacts)	1 unit (attachable on the right side of the main module)
Rated current I <sub>n</sub> per E298 contact	16 A
Rated voltage U <sub>n</sub>	250 VAC
Frequency	50 Hz
Number of contacts	1CO; 2NO; 1NO+1NC
Max. DC current per contact with 24 VDC	5 A
Min. switching load	24 V; 10 mA

#### E299-11 Auxiliary Contacts

Max. no. attachable <sup>2)</sup> (signalling or control contacts)	1 unit (attachable on the right side of the main module)
Number of contacts	1 NO+1 NC
Max. current per contact with AC	5.0 A
Max. current per contact with 24 VDC	5.0 A

NO = normally-open contact; NC = normally-closed contact; CO = changeover contact

<sup>2)</sup> See overview of chapter 4 on 4/7

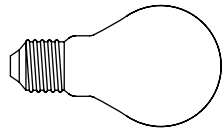
<sup>3)</sup> Coil supply voltage:

All E297 devices can be supplied with AC or DC control voltage. The ratio of 1 : 1 is to be heeded, i.e. a 48 VAC coil can also be used for 48 VDC. (See Ordering data)

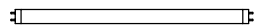
# Technical data

## Lamp load table for Latching and Installation Relays

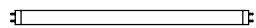
Lamp load table



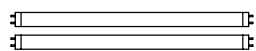
Glow lamps Power in W	Installation Relays max. number for E297 16A	Latching Relays max. number for E290	
		16A	32A
15	120	200	266
25	72	120	160
40	45	75	102
60	30	50	65
75	24	40	52
100	18	30	40
150	12	20	26
200	9	15	20
300	6	9	12
500	3	5	7



Fluorescent lamps with starter Power in W	Installation Relays max. number for E297 16A	Latching Relays max. number for E290	
		16A	32A
18	50	81	110
36	25	44	58
40	23	38	53
58	16	29	35
65	13	26	34



Fluorescent lamps with ballast Power in W	Installation Relays max. number for E297 16A	Latching Relays max. number for E290	
		16A	32A
18	17	103	132
36	13	63	81
40	12	40	77
58	10	29	35
65	7	17	28

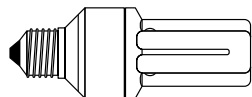


Fluorescent lamps with duo circuit Power in W	Installation Relays max. number for E297 16A	Latching Relays max. number for E290	
		16A	32A
2 x 18	50	82	110
2 x 36	25	41	55
2 x 40	23	35	50
2 x 58	16	23	30
2 x 65	13	12	23

# Technical data

## Lamp load table for Latching and Installation Relays

### Lamp load table



Energy-saving lamps Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
1 x 18	38	83	112
1 x 36	30	46	61
1 x 58	17	31	38
2 x 18	19	40	56
2 x 36	15	23	30
2 x 58	8	14	19

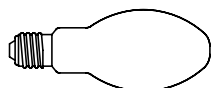


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Halogen lamps 230 V Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
55	6	27	36
90	4	16	22
135	3	11	14
185	2	8	10



High-pressure sodium-vapour lamps Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
70	10	15	18
150	5	8	10
250	3	4	6
400	2	3	4
1000	-	1	1

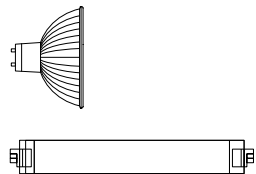


Low-pressure sodium-vapour lamps Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
55	6	29	25
90	4	16	20
135	3	11	12
185	2	4	5

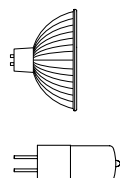
# Technical data

## Lamp load table for Latching and Installation Relays

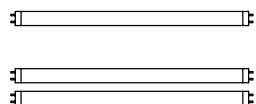
Lamp load table



High-pressure mercury-vapour lamps Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
150	12	20	27
250	7	12	16
300	6	10	13
400	4	7	10
500	3	6	8
1000	2	3	4



Low-pressure mercury-vapour lamps Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
20	72	116	160
50	29	46	64
75	20	31	42
100	15	24	32
150	10	15	21
200	7	12	16
300	5	7	10



Fluorescent lamps* Power in W	Installation Relays max. number for E297	Latching Relays max. number for E290	
	16A	16A	32A
1 x 18	38	83	112
1 x 36	30	46	61
1 x 58	17	31	38
2 x 18	19	40	56
2 x 36	15	23	30
2 x 58	8	14	19

\*) with electronic ballasts



# Dimension drawings

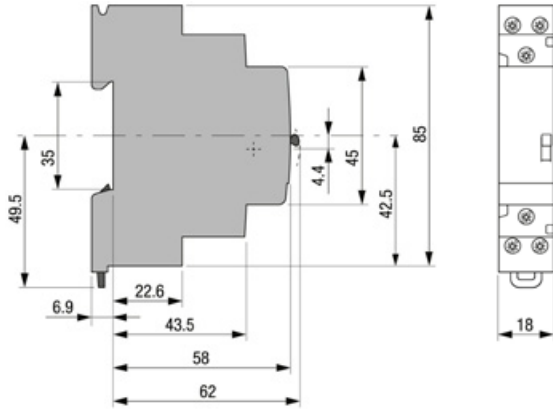
## Latching and Installation Relays

Dimension drawings	
E290 Latching Relays	7/3
E297 Installation Relays	7/5

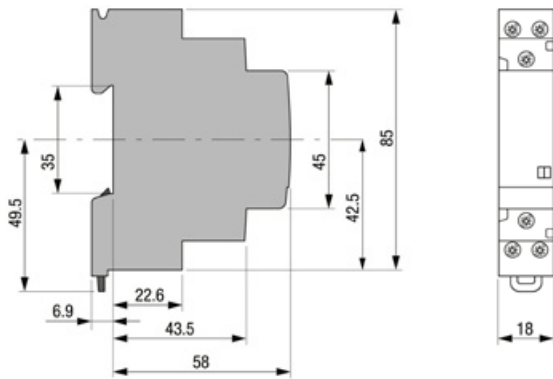
## Dimension drawings

### Latching Relays

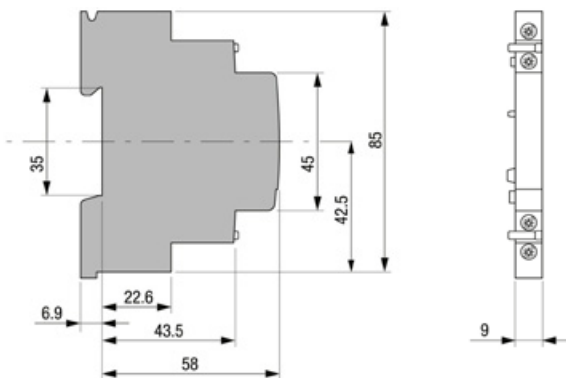
## E290 Latching Relays



## 7



## E292 Main Contact Module

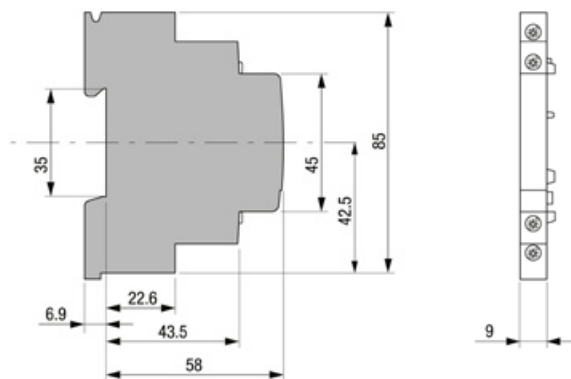




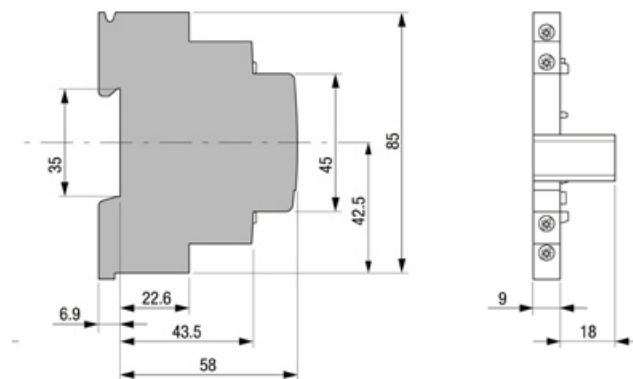
# Dimension drawings

## Accessories for Latching Relays

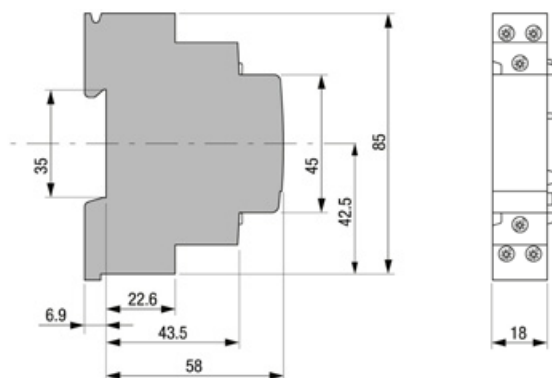
**E293/X Central On-Off Control Module**  
(for same control voltage potential)



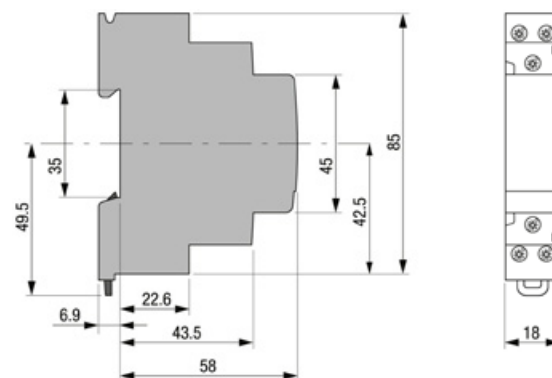
**E295-PS Permanent Signal Module**



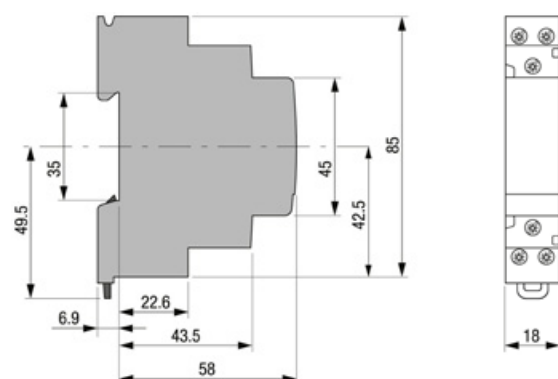
**E294 Central On-Off Control Module**  
(for different control voltage potential)



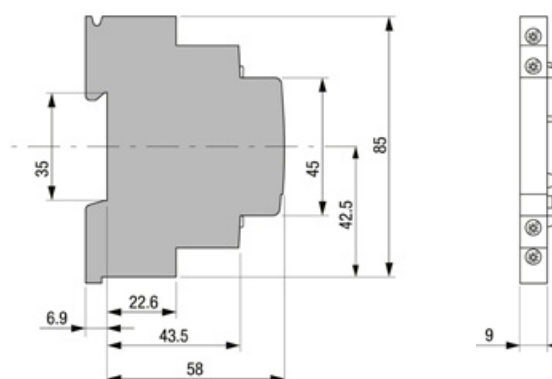
**E296-CP Compensator**



**E295-GM Group Module**



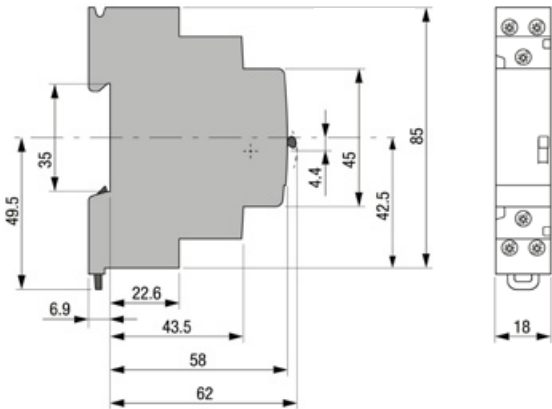
**E299-11 Auxiliary Contact**



# Dimension drawings

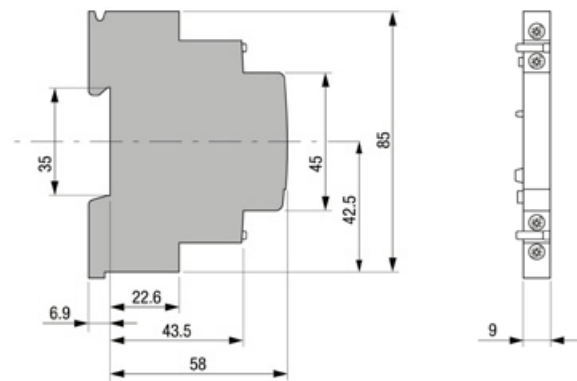
## Installation Relays

### E297 Installation Relays

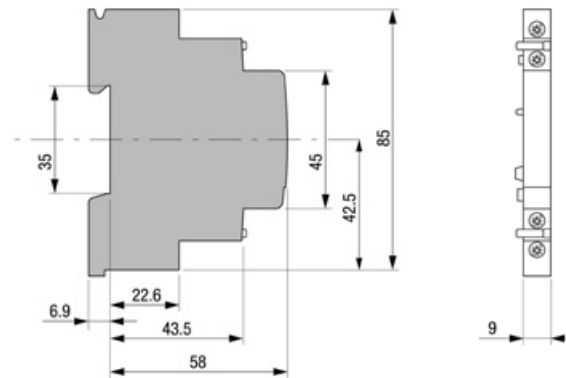


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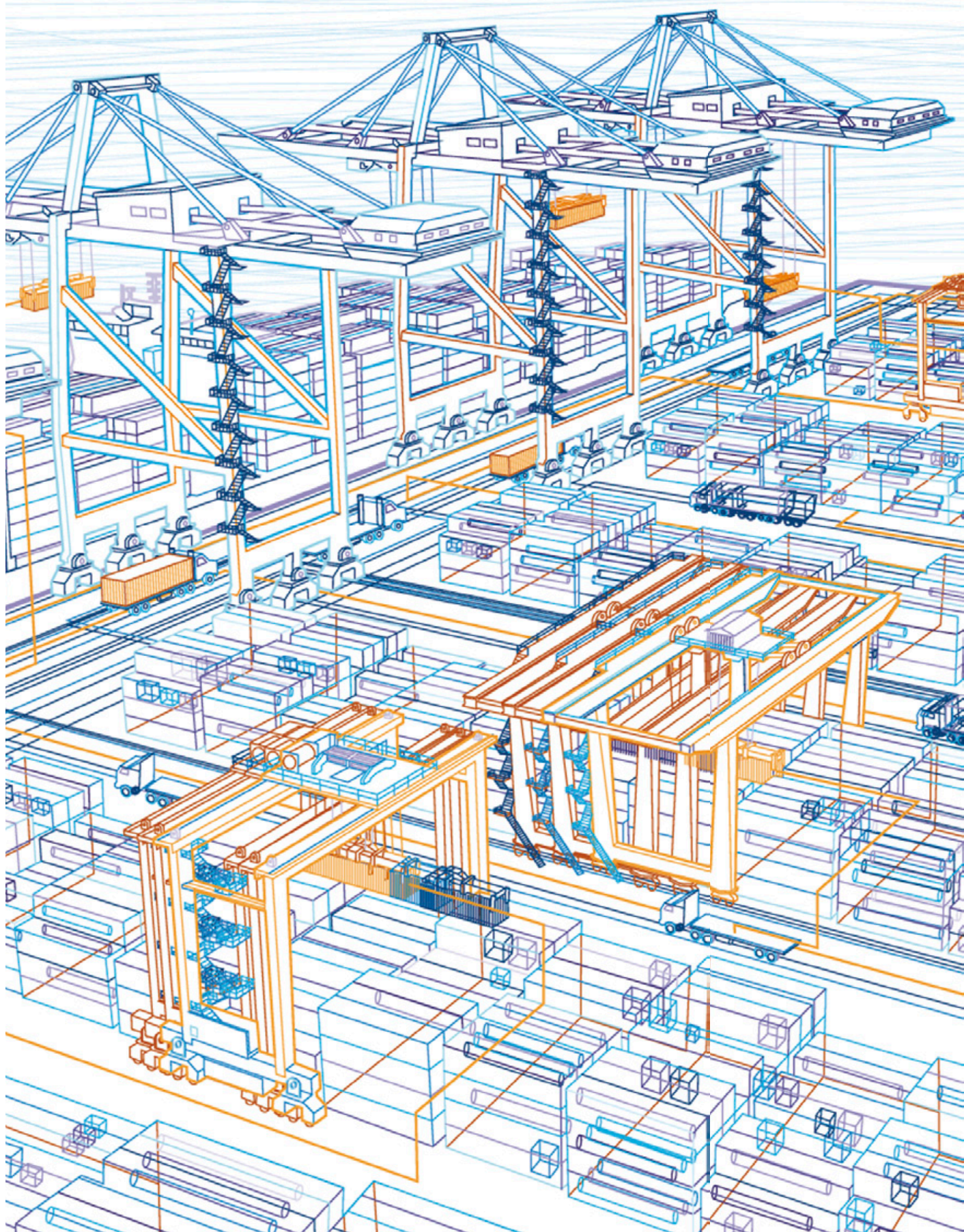
### E298 Main Contact Module



### E299-11 Auxiliary Contact






















# Approvals and standards

## Latching and Installation Relays

Approvals and standards	
E290 Latching Relays and E297 Installation Relays	8/3

# Approvals and standards

## Latching and Installation relays

	Germany	Denmark	Norway	Russia	Switzer- land	USA/CA	Poland	China	Marine classification societies		
	 VDE	 DEMKO	 NEMKO	 EAC	 ESTI	 cURus	 BBJ	 CCC	 RINA	 GL	 LR
E290 Latching Relays	■			■							
E291S Sequential Latching Relay	□			□							
E292 Main Contact Module	■			■							
E293/X Central On-Off Control Module	■			■							
294/... Central On-Off Control Module	■			■							
E295-GM Group Module	■			■							
E295-PS Permanent Signal Module	■			■							
E296-CP Compensator	■			■							
E297 Installation Relays	■			■							
E298 Main Contact Module	■			■							
E299-11 Auxiliary Contact	■			■							

- Devices are approved  
 □ in preparation: will be available in 2016



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