5. EC Directives and CE Marking

5.1. EC Directives

EC directives are established by European Commission to require safety uniformity for all products which are brought into European markets. The governments of EU member countries are required to revise their domestic laws and ordinances so as to be consistent with EC directives. The products of Fuji Electric FA components & systems Co., Ltd., are subject to the following three directives:

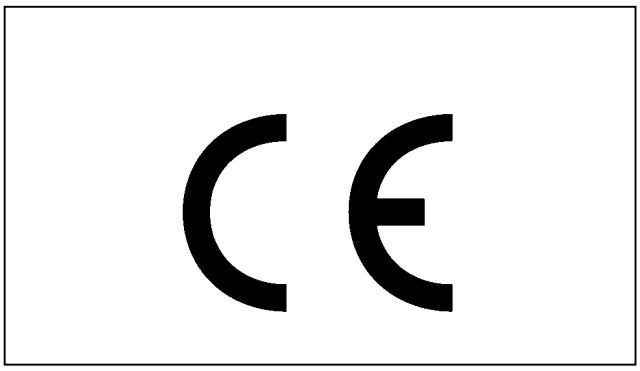
Machinery Directive
EMC (Electro-Magnetic Compatibility) Directive
Low Voltage Directive

Machinery Directive, EMC Directive and Low Voltage Directive stipulate the safety standards of machines, electro-magnetic compatibility, and the electrical safety of equipment which are operated at 50 to 1000 V AC or 75 to 1500 V DC, respectively.

5.2. CE Marking

CE marking is stuck on the products which have cleared the mandatory safety requirements stipulated in EC directives. For details, refer to CE (Conformité Européenne) Marking Directive. When the EC Directive takes effect, it will actually be impossible to export or sell the products covered by this directive in the EU area without a CE marking. (CE-marked products can freely be marketed in the EU area.) For products to receive CE marking, they must satisfy the following items:

- Must satisfy the mandatory safety requirements of all related directives.
  For general specifications, etc., which are not stipulated in these directives, they must conform to EN standards (see the next paragraph).
- Must prepare and keep Technical Documentation and Declaration of Conformity.



5.3. EN Standards

Unified standards in the EU area. Product application requirements are published in the EC Official Journal. It shows the concrete standards for satisfying mandatory safety requirements of EC directives, and when conforming to EN standards, products are judged as satisfying the mandatory safety requirements of EC directives. The actual items are almost the same as those of corresponding ISO/IEC standards and established by CEN (Comité Européen de Normalisation) or CENELEC (Comité Européen de Normalisation Électrotechnique).
However, because many items of EN Standards are now under review, to ISO or IEC conformity is required to when there is no corresponding items in the EN Standards.

5.4. Conformity Evaluation Modules

Conformity Evaluation Modules show the procedure for evaluating whether products conform to each directive of mandatory safety requirements of EC directives. There are 8 modules (A to H). Modules are used independently or in combination to evaluate the content of design or production systems. Application of these modules differs according to the directive contents.

Table 1 Conformity evaluation modules for each directive

EC directive	Application of conformity evaluation modules
Machinery Directive	A (Non-dangerous machines)
	Aa (Machines of comparatively high risk* and for which applicable EN standards exist)
	B+C (Machines of comparatively high risk* and for which no applicable EN standards exist)
EMC Directive	A (EN Standard-conforming equipment)
	Aa (Equipment to which EN Standards are not applied or for which no applicable EN standards exist)
	B+C (Long-distance communication system, Radio transmitter)
Low Voltage Directive	A

* Refer to Annex IV of Machinery Directive.

Note: For some machinery and equipment which are highly dangerous to the human body, approval for quality control system is required.

In this guide, the detailed procedures of modules A to C which are shown in Table 1 are explained.

(1) Module A (In-house products management)

This is called "self certification because the manufacturer or its authorized representative in the EU area (here in after called "manufacturer") ensures conformity to EC directive by itself. The manufacturer prepares and keeps a Declaration of Conformity and Technical Documentation [*1] and sticks CE marking on products. Details of module A are shown in Table 2.

Table 2 Details of module A

		Manufacturer	Authorized representative in EU area	Vendor in EU area	Remarks
Declaration of Conformity	Prepare	○		-	
	Keep	○		○*	For 10 years or more after product manufacturing has ceased
Technical Documentation	Prepare	○	-	○	
	Keep	○		○*	For 10 years or more after product manufacturing has ceased
CE marking	Stick	○		-	

* Only when neither manufacturer nor its authorized representative has office in EU area

For module Aa, the following 2 items are added to the requirements of module A.

① EC-approved inspection agency [*2] performs several product tests.

② EC-approved inspection agency performs conformity assessments of final products at random.

[*1] Technical document under Machinery Directive: Technical File
Technical document under EMC Directive: Technical Construction File
Technical document under Low Voltage Directive: Technical Documentation

[*2] EC-approved inspection agency is the organization which performs EC Directive Conformity Assessment and which is made public by EC Official Journal.
Notified body: Issues EU Type Test Certificate.
Competent body: Executes conformity assessment or certification only for specific directive such as EMC Directive, and issues technical report or certificate related to Technical Documentation.

(2) Module B (EC Type Test)

Manufacturer prepares the application for EC-type testing and technical documentation, and submits the applicable product to the Notified Body, which executes the product test (EC-type test). The manufacturer must keep the EC-type test certificate and the technical documentation. Module B is applied in combination with modules C to F. Details are shown in Table 3.

Table 3 Details of module B

		Manufacturer	Authorized representative in EU area	EC-approved inspection agency	Remarks
Application for EC-type test	Prepare	○		-	Including technical documentation
Technical Documentation	Prepare	○	-	-	
	Keep	-		○	For 10 years or more after product manufacturing has ceased
EC-type test certificate	Stick	○		○	
	Keep	○		○	For 10 years or more after product manufacturing has ceased

(3) Module C (Conformity to type)

Manufacturer assures and declares the conformity of applicable product to the types which have obtained EC-type testing certificate as well as their conformity to EC directives. The manufacturer also prepares and keeps Declaration of Conformity and sticks CE marking on products.

Module C is applied in combination with Module B. Details are shown in Table 4.

Table 4 Details of module C

		Manufacturer	Authorized representative in EU area	Vendor in EU area	Remarks
Declaration of Conformity	Prepare	○		-	
	Keep	○		○*	For 10 years or more after product manufacturing has ceased
CE marking	Stick	○		-	

* Only when neither manufacturer nor its authorized representative has office in EU area

5.5. Items to be described in Declaration of Conformity and Technical Documentation

As explained above, in order to stick the CE marking on products, it is necessary to prepare and keep a Declaration of Conformity which declares that said products conform to applicable directives and include the related Technical Documentation. What to describe in these documents differ from that of directives.

It is mandatory to keep the Declaration of Conformity and Technical Documentation for at least 10 years after product manufacturing has ceased.

(1) Declaration of Conformity

The items to be written in Declaration of Conformity are shown in Table 5. The necessity of each item differs with directive. For details, refer to individual directives.

Table 5 Items to be written in Declaration of Conformity

Item	Machinery	EMC	Low Voltage
Name and address of manufacturer and its representative in EU area	⊙	⊙	⊙
Name and description of product	⊙	⊙	⊙
All related articles to which products conform	⊙	⊙	-
Name and address of EC-approved inspection agency and EC-type testing certificate	○	○	-
Name and address of EC-approved inspection agency to which Technical Documentation is submitted	○	-	-
Name and address of EC-approved inspection agency which executed inspection	○	○	-
Description of conforming standards	○	○	⊙
Domestic technical standards and specifications used	○	○	○
Name and post of the personnel who are authorized to sign for the manufacturer or its representative	⊙	⊙	⊙
Last two digits of the year in which the CE marking was stuck on products	-	-	⊙

Note: ⊙:Mandatory ○: Necessary when applicable - : Unnecessary

(2) Technical Documentation

The items to be written in Technical Documentation are shown in Table 6. The necessity of each item differs according to the directive. For details, refer to individual directives.

Table 6 Items to be written in Technical Documentation

Item	Machinery	EMC	Low Voltage
General description of product	⊙	○	⊙
General drawing of product and control circuit diagram	⊙	-	⊙
Corresponding drawings, charts and instruction manual	⊙	-	⊙
List of completely or partially applied standards	⊙	-	⊙
Solutions employed to satisfy requirements	⊙	○	○
Result of executed design calculation and inspection	⊙	-	⊙
Testing report	⊙	○	⊙
Certificate of EC-type testing issued from EC-approved inspection agency	○	○	-

Note: ⊙:Mandatory ○: Necessary when applicable - : Unnecessary

5.6. Response to EC Directives for each equipment

5.6.1 Power Receiving/Distribution/Control equipment for general use

(1) Response to Machinery Directive

① Power receiving/distribution/control equipment for general use are out of the scope of CE marking, but when incorporated in a machine, the machine becomes the object of CE marking.

② Fuji Electric's response to EN60204-1, basic safety standards for machinery, is shown in Table 6-1

Table 6-1 Response to Machinery Directive (Power Receiving/Distribution/Control equipment for general use)

Item	Requirement		Response of Fuji Electric
Selection of equipment	4.2	Electrical components and devices shall be suitable for their intended use e.g. industrial (heavy, light), commercial, leisure, domestic, and shall comply with the relevant European Standards where such exist. In the absence of European Standards, compliance shall be to available International Standards.	EN (IEC) conforming products are prepared [*1]
Power circuit breaker	5.3.2	A circuit-breaker in accordance with EN 60947-2 suitable for isolation.	MCCBs and ELCBs are both conforming
	5.3.3	Have an external operating handle.	MCCBs and ELCBs meet this by Vari-depth handle
Protection against electric shock	6.2	Live parts which are likely to be touched when resetting or adjusting devices intended for such operations while the equipment is still connected shall be protected against direct contact to at least IP2X or IPXXB.	Terminal covers are prepared as standard. IP2X protection is ensured by use of these covers.
Emergency stop device	10.7.2	Functional aspects of emergency stop equipment are given in EN 418.	Equipment with a forcible contact breaking mechanism are prepared (Push- lock, turn-reset pushbutton switch)
	10.7.3	The contacts of manually operated emergency stop devices shall ensure positive opening operation (see EN 60947-5-1).	
	EN418	Contact separation shall be realized directly as a result of the specified motion of a switch starter, by means of an inelastic material (which, for example, does not depend on a spring)[*3]	
Control function in case of failure	9.4	Where failures or disturbances in the electrical equipment can cause a hazardous condition or cause damage to the machine or to the work in progress, appropriate measures shall be taken to minimize the probability of such hazards occurring.	Positively driven contact [*2] incorporated magnetic contactors and auxiliary relays have been prepared.
	9.4.2.2	Provisions for redundancy. By providing partial or complete redundancy it is possible to minimize the probability that one single failure in the electrical circuit can give rise to a hazard. (Safety circuit is turned off if a single relay failed ;at each ON/OFF cycle of machine, whether the relay works normally is checked; restarting is disabled if a relay has failed, etc.)	
Color	10.2.1	Distinguish push-buttons by specified color code. The color RED shall be used for emergency stop actuators.	Pushbutton switches of specified colors are prepared as standard.
Rotary control devices	10.5	Devices having a rotational member, such as potentiometers and selector switches, shall be mounted in such a way as to prevent rotation of the stationary member. Friction alone shall not be sufficient.	Command switches are equipped with a lock ring.
Degrees of protection	12.3	The control equipment enclosure shall properly protect the equipment from intrusion of solid foreign matter or liquids. The grade of protection shall be IP54 or higher.[*3] (This clause is applicable to the handle protruding from enclosure.)	Standard command switches conform to this clause. For MCCBs and ELCBs, Vari-depth handle is used to meet this item.

[*1] For the conformity of standards, see Conforming Products List.

[*2] Positively Driven Contact is
- Magnetic contactor: No contact whose auxiliary Nc contact has 0.5 mm or more contact separation in the case that welding has occurred on the main contact
- Auxiliary contactor: No contact whose Nc contact has 0.5 mm or more contact separation in the case welding has occurred on a contact

Fuji Electric's Positively Driven Contact conforms to ZH1/457,or the German safety standard for press machines, and is TÜV approved. For the types which incorporate Positively Driven Contact, see the Conforming Products List.

[*3] Summary of EN Standard. Refer to the EN Standard documents for the details.

(2) Response to EMC Directive

① Power receiving/distribution/control equipment for general use are out of the scope of CE marking, but when incorporated into a machine, the machine becomes subject to CE marking.

② Unit products shown in Table 6-2 conform to emission-and immunity-related standards in an industrial environment. For details, see "EN (IEC) Conforming Products List".

③ For final products in which conforming equipment are incorporated, be sure to check whether they also conform to EMC Directives.

Some of the EMC Directive-conforming equipment are special-order items.
For details, contact the nearest Fuji Electric FA components & Systems office or agency.

(3) Response to Low Voltage Directive

① Power receiving/distribution/control equipment for general use are subject to CE marking.

② Unit products shown in Table 6-2 conform to applicable standards (for details, see "EN (IEC) Conforming Products List").

Table 6-2 Response to EMC and Low Voltage Directives

(Power Receiving/Distribution/Control equipment for general use)

		Low Voltage Directive	**EMC Directive**	
		Conforming to	**Conforming to**	**Remarks**
Magnetic contactors Thermal overload relays	SC-N1/SE-N4/SE SC-N5 - N16 SB-5N -11N	EN60947-4-1	EN50081-2 EN50082-2	
	Other than above		-	
Auxiliary relays		EN60947-5-1	-	
Solid-state contactors		IEC60158-2	EN50081-2 EN50082-2	Conforming when external filter is used
Command switches Pilot lights		EN60947-5-1	-	
Molded-case circuit breakers		EN60947-2	-	
Earth leakage circuit breakers		EN60947-2 (Appendix. B)	EN50081-2 EN50082-2	
Rotary switches		IEC60132-6	-	
Terminal blocks		EN60947-7-1	-	
Control relays		IEC60255-1-00 IEC60255-0-20	-	
Timers		DIN VDE0435	EN50081-2 EN50082-2	
Limit switches		EN60947-5-1 Chapter 1	-	
Proximity switches * Photoelectric switches		-	EN50081-2 EN50082-2	PH4 needs an external filter (ZGB 2202-01U from TDK) to conform to these standards
Circuit protectors		EN60934	-	

* Not applicable to low-voltage directive since the range is 10 to 30 VDC.

■ Contactors and Starters

● AC operated magnetic contactors

Type		Specification				EN/IEC/ others	TÜV license No.	CE marking
Magnetic contactor	Combined thermal overload relay	3-phase squirrel-cage motor capacity (AC3)*1		Continuous current [A]	Auxiliary contact arrangement			
		220-240V AC	380-440V AC					
SC-03	TR-0N/3,TK-0N	2.5kW 11A	4kW 9A	20	1NO, 1NC	EN60947-4-1 IEC60947-4-1	R9151511	Done (on nameplate)
SC-0		3.5kW 13A	5.5kW 12A					
SC-05					2NO, 1NO+1NC, 2NC		R9151512	
SC-4-0	TR-5-1N/3,TK-5-1N	4.5kW 18A	7.5kW 16A	25	1NO, 1NC		R9151513	
SC-4-1		5.5kW 22A	11kW 22A	32				
SC-5-1					2NO, 1NO+1NC, 2NC		R9151514	
SC-N1	TR-N2/3,TK-N2	7.5kW 32A	15kW 32A	50	2NO+2NC (Can be extended up to 4NO+4NC)		R9950397	Done (on nameplate)
SC-N2		11kW 40A	18.5kW 40A	60				
SC-N2S	TR-N3/3,TK-N3	15kW 50A	22kW 50A	80				
SC-N3		18.5kW 65A	30kW 65A	100				
SC-N4	TR-N5/3,TK-N5	22kW 80A	40kW 80A	135				Done (on nameplate)
SC-N5		30kW 105A	55kW 105A	150				
SC-N6	TR-N6/3,TK-N6	37kW 125A	60kW 125A					
SC-N7	TR-N7/3,TK-N7	45kW 150A	75kW 150A	200				
SC-N8	TR-N8/3,TK-N8	55kW 180A	90kW 180A	260			R9950561	
SC-N10	TR-N10/3,TK-N10	65kW 220A	110kW 220A					
SC-N11	TR-N12/3,TK-N12	90kW 300A	160kW 300A	350				
SC-N12		120kW 400A	220kW 400A	450				
SC-N14	TR-N14/3,T-N14	180kW 600A	315kW 600A	660				Applying for certification

Note 1: SC-03Y to SC-5-1Y will also be CE-marked.
*1 Rated values conforming to IEC standards.

● DC operated magnetic contactors

Type		Specification				EN/IEC/ others	TÜV license No.	CE marking
Magnetic contactor	Combined thermal overload relay	3-phase squirrel-cage motor capacity (AC3)		Continuous current [A]	Auxiliary contact arrangement			
		220-240V AC	380-440V AC					
SC-03/G	TR-0N/3,TK-0N	2.5kW 11A	4kW 9A	20	1NO, 1NC	EN60947-4-1 Conforming to IEC60947-4-1	R9151532	Done (on nameplate)
SC-0/G		3.5kW 13A	5.5kW 12A					
SC-05/G					2NO, 1NO+1NC, 2NC		R9151531	
SC-4-0/G	TR-5-1N/3,TK-5-1N	4.5kW 18A	7.5kW 16A	25	1NO, 1NC		R9051276	
SC-4-1/G		5.5kW 22A	11kW 22A	32				
SC-5-1/G					2NO, 1NO+1NC, 2NC		R915533	
SC-N1/G	TR-N2/3,TK-N2	7.5kW 32A	15kW 32A	50	2NO+2NC (Can be extended up to 4NO+4NC)		R9950696	Done (on nameplate)
SC-N2/G		11kW 40A	18.5kW 40A	60				
SC-N2S/G	TR-N3/3,TK-N3	15kW 50A	22kW 50A	80				
SC-N3/G		18.5kW 65A	30kW 65A	100				

● Magnetic contactors (reversing type)

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	3-phase squirrel-cage motor capacity (AC3)		Continuous current [A]	Auxiliary contact arrangement			
	220-240V AC	380-440V AC					
SC-03RM	2.5kW 11A	4kW 9A	20	1NC×2 *1	EN60947-4-1 Conforming to IEC60947-4-1	-	Done (on nameplate)
SC-0RM	3.5kW 13A	5.5kW 12A	20	1NC×2 *1			
SC-05RM	3.5kW 13A	5.5kW 12A	20	(1NO+1NC)×2, 2NC×2			
SC-4-0RM	4.5kW 18A	7.5kW 16A	25	1NC×2 *1			
SC-4-1RM	5.5kW 22A	11kW 22A	32	1NC×2 *1			
SC-5-1RM	5.5kW 22A	11kW 22A	32	(1NO+1NC)×2, 2NC×2, (2NO+2NC)×2			
SC-N1RM	7.5kW 32A	15kW 32A	50	(2NO+2NC)×2	EN60947-4-1 Conforming to IEC60947-4-1	-	Done (on nameplate)
SC-N2RM	11kW 40A	18.5kW 40A	60	(2NO+2NC)×2			
SC-N2SRM	15kW 50A	22kW 50A	80	(2NO+2NC)×2			
SC-N3RM	18.5kW 65A	30kW 65A	100	(2NO+2NC)×2			
SC-N4RM	22kW 80A	40kW 80A	135	(2NO+2NC)×2			
SC-N5RM	30kW 105A	55kW 105A	150	(2NO+2NC)×2			
SC-N6RM	37kW 125A	60kW 125A	150	(2NO+2NC)×2			
SC-N7RM	45kW 150A	75kW 150A	200	(2NO+2NC)×2			
SC-N8RM	55kW 180A	90kW 180A	260	(2NO+2NC)×2			
SC-N10RM	65kW 220A	110kW 220A	260	(2NO+2NC)×2			
SC-N11RM	90kW 300A	160kW 300A	350	(2NO+2NC)×2			
SC-N12RM	120kW 400A	220kW 400A	450	(2NO+2NC)×2			
SC-N14RM	180kW 600A	315kW 600A	660	(2NO+2NC)×2			

*1 1NO×2 auxiliary contact is also available, which, however, is not electrically interlocked. To use this, provide electrical interlock by external operation circuit.

● Magnetic starters (with 3 heat elements and thermal overload relay)

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	3-phase squirrel-cage motor capacity (AC3)		Continuous current [A]	Auxiliary contact arrangement			
	220-240V AC	380-440V AC					
SW-03/3H	2.5kW 11A	4kW 9A	20	1NO, 1NC	EN60947-4-1 Conforming to IEC60947-4-1	R9151511	Done (on nameplate)
SW-0/3H	3.5kW 13A	5.5kW 12A					
SW-05/3H				2NO, 1NO+1NC, 2NC		R9151512	
SW-4-0/3H	4.5kW 18A	7.5kW 16A	25	1NO, 1NC		R9151513	
SW-4-1/3H	5.5kW 22A	11kW 22A	32				
SW-5-1/3H				2NO, 1NO+1NC, 2NC		R9151514	
SW-N1/3H	7.5kW 32A	15kW 32A	50	2NO+2NC (Can be extended up to 4NO+4NC) *1	EN60947-4-1 Conforming to IEC60947-4-1	R9950397	Done (on nameplate)
SW-N2/3H	11kW 40A	18.5kW 40A	60				
SW-N2S/3H	15kW 50A	22kW 50A	80				
SW-N3/3H	18.5kW 65A	30kW 65A	100				
SW-N4/3H	22kW 80A	40kW 80A	135				
SW-N5/3H	30kW 105A	55kW 105A	150				
SW-N6/3H	37kW 125A	60kW 125A					
SW-N7/3H	45kW 150A	75kW 150A	200				
SW-N8/3H	55kW 180A	90kW 180A	260			R9950561	
SW-N10/3H	65kW 220A	110kW 220A	260				
SW-N11/3H	90kW 300A	160kW 300A	350				
SW-N12/3H	120kW 400A	220kW 400A	450				
SW-N14/3H	180kW 600A	315kW 600A	660				Applying for certification

Notes 1: The CE mark is also indicated on the product with 2E thermal overload relay (SW-03/2E to N14/2E).
2: The CE mark is also indicated on the quick terminal (SW-03Y/3H to 5-1Y/3H).

*1 The TÜV license is obtained in combination with magnetic contactor and thermal overload relay.

● Magnetic starters (reversing type, with 3 heat elements and thermal overload relay)

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	3-phase squirrel-cage motor capacity (AC3)		Continuous current [A]	Auxiliary contact arrangement			
	220-240V AC	380-440V AC					
SW-03RM/3H	2.5kW 11A	4kW 9A	20	1NC×2 *1	EN60947-4-1 Conforming to IEC60947-4-1	-	Done (on nameplate)
SW-0RM/3H	3.5kW 13A	5.5kW 12A	20	1NC×2 *1			
SW-05RM/3H	3.5kW 13A	5.5kW 12A	20	(1NO+1NC)×2, 2NC×2			
SW-4-0RM/3H	4.5kW 18A	7.5kW 16A	25	1NC×2 *1			
SW-4-1RM/3H	5.5kW 22A	11kW 22A	32	1NC×2 *1			
SW-5-1RM/3H	5.5kW 22A	11kW 22A	32	(1NO+1NC)×2, 2NC×2, (2NO+2NC)×2			
SW-N1RM/3H	7.5kW 32A	15kW 32A	50	(2NO+2NC)×2	EN60947-4-1 Conforming to IEC60947-4-1	-	Done (on nameplate)
SW-N2RM/3H	11kW 40A	18.5kW 40A	60	(2NO+2NC)×2			
SW-N2SRM/3H	15kW 50A	22kW 50A	80	(2NO+2NC)×2			
SW-N3RM/3H	18.5kW 65A	30kW 65A	100	(2NO+2NC)×2			
SW-N4RM/3H	22kW 80A	40kW 80A	135	(2NO+2NC)×2			
SW-N5RM/3H	30kW 105A	55kW 105A	150	(2NO+2NC)×2			
SW-N6RM/3H	37kW 125A	60kW 125A	150	(2NO+2NC)×2			
SW-N7RM/3H	45kW 150A	75kW 150A	200	(2NO+2NC)×2			
SW-N8RM/3H	55kW 180A	90kW 180A	260	(2NO+2NC)×2			
SW-N10RM/3H	65kW 220A	110kW 220A	260	(2NO+2NC)×2			
SW-N11RM/3H	90kW 300A	160kW 300A	350	(2NO+2NC)×2			
SW-N12RM/3H	120kW 400A	220kW 400A	450	(2NO+2NC)×2			
SW-N14RM/3H	180kW 600A	315kW 600A	660	(2NO+2NC)×2			

Note 1: The type with 2E thermal overload relay (SW-03RM/2E to N14RM/2E) will also be CE-marked.

*1 1NO×2 auxiliary contact is also available, which, however, is not electrically interlocked. To use this, provide electrical interlock by external operation circuit.

● SJ Series DC operated high-sensitivity contactors

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	3-phase squirrel-cage motor capacity (AC3) *1		Continuous current [A]	Auxiliary contact arrangement			
	220-240V AC	380-440V AC					
SJ-0G	2.2kW 8.7A	2.2kW 5A	15	1NO, 1NC	EN60947-4-1 Conforming to IEC60947-4-1	R9151519	Done (on nameplate)
SJ-06G				3NO,2NO+1NC, 1NO+2NC		-	
SJ-1SG	4.5kW 18A	4kW 9A	25	2NO, 1NO+1NC		R9351099	
SJ-0WG/N3H	2.2kW 8.7A	2.2kW 5A	15	1NO, 1NC		-	
SJ-06WG/N3H							
SJ-1SWG/3H	4.5kW 18A	4kW 9A	25	2NO, 1NO+1NC			
SJ-0WG/2E	2.2kW 8.7A	2.2kW 5A	15	1NO, 1NC			
SJ-06WG/2E							
SJ-1SWG/2E	4.5kW 18A	4kW 9A	25	2NO, 1NO+1NC			
SJ-0GRM	2.2kW 12A	2.2kW 6A	15	1NC×2			
SJ-06GRM	2.2kW 12A	2.2kW 6A	15	(2NO+1NC)×2, (1NO+2NC)×2			
SJ-1SGRM	3.7kW 18A	3.7kW 9A	25	(1NO+1NC)×2			
SJ-06GRM/L	2.2kW 12A	2.2kW 6A	15	(2NO+1NC)×2, (1NO+2NC)×2			
SJ-0WGRM/2E	2.2kW 12A	2.2kW 6A	15	1NC×2			
SJ-06WGRM/2E	2.2W 12A	2.2kW 6A	15	(2NO+1NC)×2, (1NO+2NC)×2			
SJ-1SWGRM/2E	3.7kW 18A	3.7kW 9A	25	(1NO+1NC)×2			
SJ-06WGRM/2EL	2.2kW 12A	2.2kW 6A	15	(2NO+1NC)×2, (1NO+2NC)×2			
SJ-0WGRM/3H	2.2kW 12A	2.2kW 6A	15	1NC×2			
SJ-06WGRM/3H	2.2kW 12A	2.2kW 6A	15	(2NO+1NC)×2, (1NO+2NC)×2			
SJ-1SWGRM/3H	3.7kW 18A	3.7kW 9A	25	(1NO+1NC)×2			
SJ-06WGRM/3HL	2.2kW 12A	2.2kW 6A	15	(2NO+1NC)×2, (1NO+2NC)×2			

Note 1: SJ-0G/UL to SJ-1SG/UL will also be CE-marked.

*1 Rated values conforming to IEC standards.

● Magnetic contactors (FC series)

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	3-phase squirrel-cage motor capacity (AC3)		Continuous current [A]			
	200-240V AC	380-440V AC				
FC-0UL	3kW 12A	2.5kW 6A	20	EN60947-4-1 Conforming to IEC60947-4-1	R9950193	Done (on nameplate)
FC-0TUL						
FC-0/GUL						
FC-0T/GUL						
FC-0SUL	3.5kW 15A	4.5kW 10A				
FC-0STUL						
FC-0S/GUL						
FC-0ST/GUL						
FC-1UL	5.5kW 20A	5.5kW 13A	30			
FC-1SUL	7.5kW 27A	7.5kW 18A	30			
FC-2SUL	11kW 40A	11kW 26A	45			
FC-3UL	15kW 52A	18.5kW 40A	60			
FC-4UL	18.5kW 65A	30kW 65A	80			

● Auxiliary relays and auxiliary contact block

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	Voltage	Operational current [A]	Continuous current [A]	Contact			
SH-4[*1]	200-240V AC	3	10	4-pole, 8-pole	EN60947-5-1 IEC60947-5-1 Conforming to ZH1/457	R9151523	Done (on nameplate)
SH-5				5-pole			
SH-4/G				4-pole, 8-pole			
SH-5/G				5-pole			
SZ-A40				4NO	EN60947-5-1 Conforming to IEC60947-5-1	E9150892E01	Done (on inner packing case)
SZ-A31				3NO+1NC			
SZ-A22				2NO+2NC			
SZ-A20				2NO			
SZ-A11				1NO+1NC			
SZ-A02				2NC			
SZ-AL				1NO+1NC		E9150893E01	
SZ-AR							

[*1] SH-4Y type will also be CE-marked.

● Terminal covers

Type	Model		Remarks
SZ-T1	Magnetic contactors	SC-03, 0, SH-4	- Makes it easy "to secure IP2X", a requirement of EN60204-1. - Conforms to DIN57106/VDE0106 Teil 100 and TÜV approved (see technical report No. U95478E01).
SZ-T2	Auxiliary relays	SC-05, SH-5	
SZ-T3		SC-4-0, SC-4-1	
SZ-T4		SC-5-1	
SZ-2K/TC		SC-2K, 2SK	
SZ-T22		SC-N1, N2	
SZ-T23		SC-N2S, N3	
SZ-T5	Auxiliary contact block	Front mounting block (4 contacts)	
SZ-T6		Front mounting block (2 contacts)	
SZ-T7		Side mounting block (2 contacts)	
SZ-T10	Thermal overload relays	Separate-mounting block (SZ-HB type)	
SZ-T11		Separate-mounting block (SZ-HC type)	
SZ-T12		TR-0N	
SZ-T13		TR-5-1N	
SZ-T14		TR-N2H	
SZ-T15		TR-N3H	
SZ-T16		TR-N2	
SZ-T17		TR-N3	

● Live-section cover

形式	Model		Remarks
SZ-JC1	Magnetic contactors	SC-03, 0, SH-4	- Conforms to DIN57106/VDE0106 Teil100 and TÜV approved (See technical report No. U95478 E01)
SZ-JC2	Auxiliary relays	SC-05, SH-5	
SZ-JC3		SC-4-0, 4-1	
SZ-JC4		SC-5-1	
SZ-N1J		SC-N1, N2	
SZ-N2SJ		SC-N2S, N3	
SZ-N4J		SC-N4, N5	
SZ-N6J		SC-N6	
SZ-N7J		SC-N7	
SZ-N8J		SC-N8, N10	
SZ-N11J		SC-N11, N12	
SZ-JW1	Magnetic contactors	SW-03, 0	
SZ-JW2		SW-05	
SZ-JW3		SW-4-0, 4-1	
SZ-JW4		SW-5-1	
SZ-WN1J		SW-N1, N2	
SZ-WN2SJ		SW-N2S, N3	
SZ-WN4J		SW-N4, N5	
SZ-WN6J		SW-N6	
SZ-WN7J		SW-N7	
SZ-WN8J		SW-N8	
SZ-WN10J		SW-N10	
SZ-WN11J		SW-N11, N12	

■ Solid-state Contactors

● 3-pole solid-state contactors

Type	Specification			EN/IEC/others	TÜV license No.	CE marking
	No. of main circuit elements	Voltage	Continuous current [A]			
SS03□	2, 3	100-240V AC	3	Conforming to IEC60947-4-2	R9351114	Done (on shipping box)
SS08□			8			
SS20□			20		J9750657	Done (on inner packing case)
SS30□			30			
SS40□			40			
SS50□			50			
SS80□			80		J970658	
SS120□			120			
SS30□H		200-480V AC	30		J9750659	
SS50□H			50			
SS80□H			80			
SS120□H			120			

Note 1: Connect the noise filter to the main terminal so that the product conforms to the EMC directive.

● Single-pole solid-state contactors

Type	Specification			EN/IEC/others	TÜV license No.	CE marking
	No. of main circuit elements	Voltage	Continuous current [A]			
SS101	1	100-240V AC	10	Conforming to IEC60947-4-2	R9351484	Done (on shipping box)
SS201			20			
SS301			30		R9351485	
SS401			40			
SS501			50			
SS701-1Z-A3			70		R9351486	Done (on inner packing case)
SS701-1Z-A4						
SS701-3Z-D3					T9451031	
SS1001-1Z-A3			100		R9351486	
SS1001-1Z-A4						
SS1001-3Z-D3					T9451031	
SS1501-1Z-A3			150		R9351487	
SS1501-1Z-A4						
SS1501-3Z-D3					T9451030	
SS2001-1Z-A3			200		R9351487	
SS2001-1Z-A4						
SS2001-3Z-D3					T9451030	
SS701H-1Z-A3		200-480V AC	70		R9351488	
SS701H-1Z-A4						
SS701H-3Z-D3					T9451029	
SS1001H-1Z-A3			100		R9351488	
SS1001H-1Z-A4						
SS1001H-3Z-D3					T9451029	
SS1501H-1Z-A3			150		R9351489	
SS1501H-1Z-A4						
SS1501H-3Z-D3					T9451034	
SS2001H-1Z-A3			200		R9351489	
SS2001H-1Z-A4						
SS2001H-3Z-D3					T9451034	

Note 1: Connect the noise filter to the main terminal so that the product conforms to the EMC directive.

■ Molded Case Circuit Breakers

Series	Type	Specification				EN/IEC/others	TÜV license No.	CE marking
		Poles	Interrupting capacity [kA] IEC60947-2 (Icu/Ics)		Continuous current [A]			
			230V AC	440V AC				
H Series	H50BA	2, 3	125/32	65/17	15,20,30,40,50		–	Done (on inner packing case, nameplate)
	H100BA	2, 3	125/32	65/17	15,20,30,40,50,60,75,100			
	H225BA	2, 3	125/32	65/17	125,150,175,200,225			
	H400B	2, 3	125/63	65/33	250,300,350,400			
	H400R	3	125/63	125/63				
	H600B	3	125/63	65/33	500,600			
	H600R	3	125/63	125/63				
	H800B	3	125/63	65/33	700,800			
	H800R	3	125/63	125/63				
EA-UL SA-UL Series	EA100BUL	2, 3	25/13	10/5	60,70,100			
	SA100BAUL	2, 3	50/25	25/13	15,20,30,40,50,60,75,100			
	SA100RAUL	2, 3	100/50	50/25	15,20,30,40,50,60,75,100			
	SA225BAUL	2, 3	50/25	25/13	125,150,175,200,225			
	SA225RAUL	2, 3	100/50	50/25	125,150,175,200,225			
	SA400BUL	2, 3	50/25	35/18	250,300,350,400			
	SA400RUL	2, 3	85/43	50/25	250,300,350,400			
	SA600RUL	3	85/43	50/25	500,600			
	SA800RUL	3	85/43	50/25	700,800			
a-TWIN E Series	EA30AC	2, 3	2.5/2	1.5/1	3,5,10,15,20,30		R2-50004300	
	EA50AC	2, 3	2.5/2	1.5/1	5,10,15,20,30,40,50			
	EA50C	2, 3	5/3	2.5/2	5,10,15,20,30,40,50			
	EA60C	2, 3	5/3	2.5/2	60			
	EA100AC	3	5/3	-	60,75,100			
	EA100C	2, 3	25/13	10/5	50,65,75,100			
a-TWIN E Series for CE	EA30AC□-CE	2, 3	2.5/2	1.5/1	3,5,10,15,20,30			
	EA50AC□-CE	2, 3	2.5/2	1.5/1	5,10,15,20,30,40,50			
	EA50C□-CE	2, 3	5/3	2.5/2	5,10,15,20,30,40,50			
	EA60C□-CE	2, 3	5/3	2.5/2	60			
	EA100AC□-CE	3	5/3	-	60,75,100			
	EA100C□-CE	2, 3	25/13	10/5	50,60,75,100			
	EA225C□-CE	2, 3	35/18	15/4	125,150,175,200,225	EN60947-2 IEC60947-2	R50033771	
	EA400C□-CE	2, 3	35/18	25/13	250,300,350,400		R50033863	
	EA600C□-CE	3	50/25	35/18	500,600		R5033825	
	EA800C□-CE	3	50/25	35/18	700,800			
a-TWIN S Series	SA30C	2, 3	5/3	2.5/2	3,5,10,15,20,30		R2-50004300	
	SA50C	2, 3	10/5	7.5/4	5,10,15,20,30,40,50			
	SA50RC	2, 3	25/13	10/5	10,15,20,30,40,50			
	SA60C	2, 3	10/5	7.5/4	60			
	SA60RC	2, 3	25/13	10/5	60			
a-TWIN S Series for CE	SA30C□-CE	2, 3	5/3	2.5/2	3,5,10,15,20,30			
	SA50C□-CE	2, 3	10/5	7.5/4	5,10,15,20,30,40,50			
	SA50RC□-CE	2, 3	25/13	10/5	10,15,20,30,40,50			
	SA60C□-CE	2, 3	10/5	7.5/4	60			
	SA60RC□-CE	2, 3	25/13	10/5	60			
	SA100C□-CE	2, 3	50/25	25/7	15,20,30		R50033737	
					40,50,60,75,100		R50033845	
	SA100RC□-CE	2, 3	100/50	50/13	15,20,30,40,50,60,75,100		–	
	SA225C□-CE	2, 3	50/25	25/7	125,150,175,200,225		R50033855	
	SA225RC□-CE	2, 3	100/50	50/13			–	
	SA400C□-CE	2, 3	50/25	35/18	250,300,350,400		R50033863	
	SA400RC□-CE	2, 3	85/43	50/25			–	
	SA600RC□-CE	3	85/43	50/25	500,600		R50033825	
	SA800RC□-CE	3	85/43	50/25	700,800			
a-TWIN EA-UL SA-UL Series	EA100CUL	2, 3	25/13	10/5	60,70,75,80,90,100		R2-50004300	
	SA50RCUL	2, 3	25/13	10/5	3,5,10,15,20,30,40,50			
	SA100CUL	2, 3	50/25	25/7	15,20,30		R50033737	
					40,50,60,70,75,80,90,100		R50033845	
	SA100RCUL	2, 3	100/50	50/13	15,20,30,40,50,60,70,75, 80,90,100		–	
	SA225CUL	2, 3	50/25	25/7	125,150,175,200,225		R50033855	
	SA225RCUL	2, 3	100/50	50/13			–	
	SA400CUL	2, 3	50/25	35/18	250,300,350,400		R50033853	
	SA400RCUL	2, 3	85/43	50/25			–	
	SA600RCUL	3	85/43	50/25	500,600		R50033825	
	SA800RCUL	3	85/43	50/25	700,800			

■ Earth Leakage Circuit Breakers (IEC60947-2 conforming)

Series	Type	Specification					EN/IEC/ others	TÜV license No.	CE marking
		Poles	Interrupting capacity [kA] IEC60947-2 (Icu/Ics)		Continuous current [A]	Sensitivity current [mA]			
			230V AC	440V AC					
SG-UL Series	SG100BAUL	3	50/13	—	30,40,50,60,75,100	30,100/200/500	IEC60947-2 (Appendix. B)	—	Done (on inner packing case, nameplate)
	SG225BAUL	3	50/13	—	125,150,175,200,225	30,100/200/500			
α-TWIN E Series	EG30AC	2, 3	2.5/2	—	5,10,15,20,30	15,30,100		R2-5004303	
	EG30C	3	2.5/2	1.5/1	5,10,15,20,30	15,30,100			
	EG50AC	2, 3	2.5/2	—	5,10,15,20,30,40,50	15,30,100			
	EG50C	3	5	2.5	5,10,15,20,30,40,50	15,30,100/200			
	EG60C	3	5	2.5	60	15,30,100/200			
	EG100AC	3	5	—	60,75,100	30,100/200			
	EG100C	2	10/5	—	50,60,75,100	30,100/200			
		3	25/13	10/5	50,60,75,100	30,100/200/500			
	EG30AC□-CE	2, 3	2.5/2	—	5,10,15,20,30	15,30,100		R2-5004303	
	EG30C□-CE	3	2.5/2	1.5/1	5,10,15,20,30	15,30,100			
	EG50AC□-CE	2, 3	2.5/2	—	5,10,15,20,30,40,50	15,30,100			
	EG50C□-CE	3	5	2.5	5,10,15,20,30,40,50	15,30,100/200			
	EG60C□-CE	3	5	2.5	60	15,30,100/200			
	EG100AC□-CE	3	5	—	60,75,100	30,100/200			
	EG100C□-CE	2	10/5	—	50,60,75,100	30,100/200			
		3	25/13	10/5	50,60,75,100	30,100/200/500			
	EG225C□-CE	3	35/18	15/4	125,150,175,200,225	30,100/200/500		R2-50033866	
	EG400C□-CE	3	35/18	25/13	250,300,350,400	30,100/200/500		R2-50033874	
	EG100CUL	2	10/5	—	60,70,75,80,90,100	30,50,100/200/500		R2-5004303	
		3	25/13	10/5	60,70,75,80,90,100	30,50,100/200/500			
α-TWIN S Series	SG30C	3	5/3	2.5/2	3,5,10,15,20,30	30,100/200/500		R2-5004303	
	SG50C	3	10/5	7.5/4	5,10,15,20,30,40,50	30,100/200/500			
	SG50RC	3	25/13	10/5	10,15,20,30,40,50	30,100/200/500			
	SG60C	3	10/5	7.5/4	60	30,100/200/500			
	SG60RC	3	25/13	10/5	60	30,100/200/500			
	SG30C□-CE	3	5/3	2.5/2	3,5,10,15,20,30	30,100/200/500		R2-5004303	
	SG50C□-CE	3	10/5	7.5/4	5,10,15,20,30,40,50	30,100/200/500			
	SG50RC□-CE	3	25/13	10/5	10,15,20,30,40,50	30,100/200/500			
	SG60C□-CE	3	10/5	7.5/4	60	30,100/200/500			
	SG60RC□-CE	3	25/13	10/5	60	30,100/200/500			
	SG100C□-CE	3	50/25	25/7	15,20,30	30,100/200/500		R50033872	
					40,50,60,75,100	30,100/200/500		R50033736	
	SG100RC□-CE	3	100/50	50/13	15,20,30,40,50,60 75,100	30,100/200/500		—	
	SG225C□-CE	3	50/25	25/7	125,150,175,200,225	30,100/200/500		R5033866	
	SG225RC□-CE	3	100/50	50/13		30,100/200/500		—	
	SG400C□-CE	3	50/25	35/18	250,300,350,400	30,100/200/500		R50033874	
	SG50RCUL	3	25/13	10/5	3,5,10,15,20,30,40,50	30,50,100/200/500		R2-5004303	
	SG103CUL	3	50/13	25/7	32,40,50,60,75,100	30,100/200/500		R50033736	
	SG203CUL	3	50/13	25/7	125,150,175,200,225	30,100/200/500		R50033866	
	SG403CUL	3	50/25	35/18	250,300,350,400	30,100/200/500		R50033874	

● Vari-depth handle (V-shaped external operation handle)

Type	Applicable types		Remarks
	Molded case circuit breakers	Earth leakage-circuit breaker	
BZ-V30C-E	SA100BA,SA100RA	SG100BA,SG100RA	- Clears the requirements of EN60201-1: “have external operation handle”, “have IP54 or higher grade protective construction”, “handle be locked to OFF by padlock” and “handle operation direction conforms to IEC447”. - Those of the colors specified for emergency stops and starters use (red handle and yellow background) are also prepared. - Isolation adapted products conforming to Paragraph 7.1.6 of EN60947-1 (equipped with the function which prevents the external operating handle from being locked by a padlock when the contact in the main body is closed.) - TÜV approved and CE marking is made.
BZ-V40C-E	EA225B,SA225BA,SA225RA	EG225B,SG225BA,SG225RA	
BZ-V60C-E	EA400B,SA400B,SA400R,H400B,H400R	EG400B,SG400B,SG400R,HG400B,	
BZ-V70C-E	EA600B,EA800B,SA600R,SA800R,H600B, H600R,H800B,H800R	EG600B,EG800B,SG600R,SG800R HG600B,HG800B	
BZ6V10C	EA30AC,EA50AC,EA50C,EA60C,EA100AC, EA100C,SA30C,SA50C,SA50RC,SA60C, SA60RC	EG30AC,EG30C,EG50AC,EG50C, EG60C,EG100AC,EG100C,SG30C, SG50C,SG50RC,SG60C,SG60RC	
BZ6V30C	SA100C,SA100RC	SG100C,SG100RC	
BZ6V40C	EA225C,SA225C,SA225RC	EG225C,SG225C,SG225RC	
BZ6V60C	EA400C,SA400C,SA400RC	EG400C,SG400C,SG400RC	
BZ6V70C	EA600C,EA800C,SA600RC	EG600C,EG800C,SG600RC	

● N-shaped external operation handle

Type	Applicable types		Remarks
	Molded case circuit breakers	Earth leakage-circuit breaker	
BZ6N10CP	EA30AC,EA50AC,EA50C,EA60C,EA100AC, EA100C,SA30C,SA50C,SA50RC,SA60C, SA60RC	EG30AC,EG30C,EG50AC,EG50C, EG60C,EG100AC,EG100C,SG30C, SG50C,SG50RC,SG60C,SG60RC	- Isolation adapted products conforming to Paragraph 7.1.6 of EN60947-1 (equipped with the function which prevents the external operating handle from being locked by a padlock when the contact in the main body is closed.) - TÜV approved and CE marking is made.
BZ6N30CP	SA100C,SA100RC	SG100C,SG100RC	
BZ6N40CP	EA225C,SA225C,SA225RC	EG225C,SG225C,SG225RC	
BZ6N60CP	EA400C,SA400C,SA400RC	EG400C,SG400C,SG400RC	
BZ6N70CP	EA600C,EA800C,SA600RC	EG600C,EG800C,SG600RC	

■ Pushbuttons, Selector Switches, Pilot Lights, Buzzers

● Pushbutton, selector switches, emergency stop pushbutton switches (AR, AG, AM series)

Type	Specification					EN/IEC/ others	TÜV license No.	CE marking
	Panel cutting	Classification	Withstand voltage	Continuous current	Operational current [A]			
AR22	ø22.3	Pushbutton (illuminated)	690V AC/DC	10A	- With selector ring, selector switch (3/4/5 notches), illuminated selector switch (3 notches) Rated operatig voltage / AC-15 (coil load) / DC-13 (coil load) 24 V / 6 A / 2 A 120 V / 6 A / - 125 V / - / 0.65 A 240 V / 6 A / - 250 V / - / 0.23 A 480 V / 2.5 A / - 600 V / 2 A / - - Other than above Rated operatig voltage / AC-15 (coil load) / DC-13 (coil load) 24 V / 6 A / 4A <VG:1.5A> 120 V / 6 A / - 125 V / - / 1.3A <VG:0.3A> 240 V / 6 A <VG:3A> / - 250 V / - / 0.45A <VG:0.15A> 480 V / 2.5A <VG:-> / - 600 V / 2 A <VG:-> / -	Conforming to EN60947-5-1	R9551062	Done (on nameplate)
		Selector (illuminated)					R9551060	
AR30	ø30.5	Pushbutton (illuminated)					R9551062	
		Selector (illuminated)					R9551060	
AG28	□27.5	Pushbutton					R9551062	
		Selector					R9551060	
AM22	ø22.3	Pushbutton					R9551062	
		Selector					R9551060	
		Emergency stop pushbutton (illuminated) (With trigger action mechanism With forced opening mechanism)				Conforming to EN60947-5-1/ EN60947-5-5	R50028146 VGE, VGF R50028137	

● Pilot lights, buzzers (DR, DG, DM series)

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Panel cutting	Withstand voltage			
DR22	ø22.3	690 V AC/DC (Without transformer 300V)	Conforming to EN60947-5-1	R9551061	Done (on inner packing case and nameplate)
DR30	ø30.5				
DG28	□27.5				
DM22	ø22.3				

● Pushbutton switches, selector switches, emergency stop pushbutton switches (AH164, AH165, AH165-2, AH225, AG, AR22A, AR30A series)

Type	Specification					EN/IEC/ others	TÜV license No.	CE marking
	Panel cutting	Classification	Withstand voltage	Continuous current	Operational current [A]			
AH164	ø16.2	Pushbutton	250V AC/DC	5A	Class / 100–120V / 200–240V AC-15 / 0.3 A / 0.3 A AC-13 / 1.0 A / 0.7 A AC-12 / 1.5 A / 1.0 A Class / 24V / 100–125V DC-13 / 0.7A / 0.15 A DC-12 / 1.0 A / 0.2 A	Conforming to EN60947-5-1	R9250087	Done (on nameplate)
		Selector					R9250088	
AH165		Pushbutton					R9250087	
		Selector					R9250088	
AH165-2		Pushbutton					R9250087	
		Selector					R9250088	
AH225	ø22.3	Pushbutton					R9250087	
		Selector					R9250088	
AG225	□22.5	Pushbutton					R9250087	
		Selector					R9250088	
AR22A	ø22.3	Joy stick selector switches				Conforming to EN60947-5-1	R2050803	Done (on inner packing case and nameplate)
AR30A	ø30.5							

● Pilot lights (AH164, AH165 series)

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Panel cutting	Withstand voltage			
AH164	ø16.2	250 V AC/DC	Conforming to EN60947-5-1	R9250089	Done (on nameplate)
AH165					

● Buzzers (AH164, AH165 series)

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Panel cutting	Withstand voltage			
AH164-TX2	ø16.2	60 V AC/DC	Conforming to EN60947-5-1	J9950092	Done (on nameplate)
AH165-X					

● Lock ring

Type	Applicable type	Remarks
AHX2601	AH165-2	- Conforms to "prevent stationary part from rotating", a EN60204-1 requirement.
AHX082	AR30	
AR9Y715	AR22	

● Terminal cover

Type	Applicable type	Remarks
AHX2602	AH164, 165, 165-2	- Makes it easy "to secure IP2X", a requirement of EN60204-1.
AHX823	AH164, 165 With transformer	

Notes 1: Types AR22, AR30, AM22, DR22, DR30 and DM22: "Products with IP2X-compatible terminal (specify ZB at the end of the type)" are provided as special products.

2: The AR22VGE/AR22VGF type is provided with IP2X contact as the standard feature.

■ Circuit Protectors

Type	Internal circuit	EN/IEC/ others	TÜV license No.	CE marking
CP31		-	-	-
CP3□D				
CP3□F	Series type	Conforming to EN60934/ IEC60934	R9650230	Done (on nameplate)
CP3□T	Series type	Conforming to EN60934/ IEC60934	R9650230	Done (on nameplate)
CP3□E		-	-	-
CP3□V	Series type, Shunt type, Switch type	Conforming to EN60934/ IEC60934	R50090	-
CP2□R	Series type, Switch type	Conforming to EN60934/ IEC60934	R75124	-
CP2□H	Series type, Switch type			
CP22Q	Series type, Switch type			
CP3□P	Series type	Conforming to EN60934/ IEC60934	R9750278	Done (on nameplate)
CP3□B	Series type			

■ Super-rapid Fuses

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	Continuous current [A]	Voltage	Interrupting capacity			
CR2LS-10/UL	10	250V AC/ 350V DC	10kA (pf0.8)/ 10kA (Time constant: 2.0ms)	Conforming to EN60269-4/ IEC60269-4	J9551364	-
CR2LS-20/UL	20					
CR2LS-30/UL	30					
CR2LS-50/UL	50					
CR2LS-75/UL	75					
CR2LS-100/UL	100					
CR2L-150/UL	150					
CR2L-200/UL	200					
CR2L-260/UL	260					
CR2L-300	300					
CR2L-350/UL	350					
CR6L-50/UL	50	600V AC/ 590V DC			J9551363	
CR6L-100/UL	100					
CR6L-150/UL	150					
CR6L-200/UL	200					
CR6L-350/UL	300					

■ Cam Switches

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Continuous current [A]	Operational voltage [V]			
AK22-1M□	10	600	Conforming to EN60947-5-1 IEC60947-5-1	R9551382	-
AK22-1A□					
AK22-1C□				R9551381	
RC310-1M□					
RC310-1A□					
RC310-1L□					
RC310-1B□					
RC310-1C□					

■ Rotary Switches

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
AC09	Voltage	Operational current [A] (resistive load)	Conforming to IEC60132-6	J9551728	-
AC16	50V AC	0.05			
	5V AC	0.5			
AC32	25V DC	0.05			
	5V DC	0.25			

■ Control Relays

● Control relays

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	Voltage	Continuous current	Poles			
HH52□	240V AC	5A	2(NO+NC)	Conforming to IEC60255-1-00 IEC60255-0-20	R9251339	Done (on nameplate)
HH52□W						
HH52□U		7A				
HH53□		5A	3(NO+NC)		R9251340	
HH54□		3A	4(NO+NC)		R9251341	
HH54□W						
HH54□U		5A				
HH62□		10A	2(NO+NC)		R9251342	
HH62□W		7A				
RB10		5A	1NO		R9551729	Done (on nameplate)
RS4N		5A	4NO		R9551729	Done (on nameplate)
RS6N (-P)			6NO			
RS16 (-P)		2A	16NO			

● Sockets

Type	Applicable type	Remarks
TP58□	HH52P, 52PU, 52PW, 54-2P	• Conforms to DIN57106/VDE0106 Teil 100 and TÜV approved (see technical report No. T9251612).
TP511□	HH53P	
TP514□	HH54P, 54PU, 54PW, 52P-R	
TP68□	HH62P	

● Finger protectors

Type	Applicable type	Remarks
FX14X2	TP58X2, TP514X2	• Makes it easy “to secure IP2X”, a requirement of EN60204-1. • Conforms to DIN57106/VDE0106 Teil 100 and TÜV approved (see technical report No. T9251425).
RZ52X1	TP58X1	
RZ54X1	TP514X1	
RZ62X2	TP68X2	
RZ64X2	TP614X2	
RZ4N	RS4N, RS6N	

■ Timers

● ST7P type

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	Voltage	Continuous current	Contact arrangement	Time limit specification			
ST7P-2	240V AC	3A	Time limit 2(NO+NC)	0.5 second to 12 hours (14-rating)	Conforming to IEC60255-1-00 IEC60255-0-20* Conforming to DIN VDE0435 Teil2021 Teil120	R2-50004818	Done (on nameplate)
ST7P-4	240V AC	3A	Time limit 4(NO+NC)				

*For timers, only output section conforms to the standards.

● Super-timers (MS4S type)

Type	Specification				EN/IEC/ others	TÜV license No.	CE marking
	Voltage	Contact	Operation mode arrangement	Terminals			
MS4SM	100 - 240V AC 24V AC/DC 48 - 127V DC	Time limit 2(NO+NC)	On-delay Flicker One-shot momentary action Signal off-delay	11 pins	Conforming to IEC60255-1-00 IEC60255-0-20* Conforming to DIN VDE0435 Teil2021 Teil120	R2-50007315	Done (on nameplate)
MS4SA	100 - 240V AC 24V AC/DC 48 - 127V DC		On-delay	8 pins		R2-50006667	
MS4SC	100 - 240V AC 24V AC/DC 48 - 127V DC	Time limit 1(NO+NC) + instantaneous 1(NO+NC)					
MS4SF	100 - 240V AC 24V AC/DC 48 - 127V DC	Time limit 2(NO+NC)	Off-delay			-	
MS4SF-R	100 - 240V AC 24V AC/DC 48 - 127V DC	Time limit 1(NO+NC) + instantaneous reset					
MS4SY	100 - 240V AC	Time limit 1NO (⅄output) 1NO (Δoutput) + instantaneous 1NO	Star-delta				
MS4SR		Time limit 2(NO+NC)	Repeat				
MS4SE		Time limit 1(NO+NC)	Electrically reset on-delay				

*Only output section conforms to the standards.

■ Limit Switches

● AL type

Type	Specification	EN/IEC/ others	TÜV license No.	CE marking
	Actuator			
AL-N1☐	Roller lever	Conforming to EN60947-5-1 (Chapter 1) Conforming to IEC60947-5-1 (Chapter 1)	-	Done (on inner packing case)
AL-N2☐	Adjustable roller lever			
AL-N3☐	Rod lever			
AL-P1☐	Push plunger			
AL-P2☐	Roller plunger			
AL-P3☐	Ball plunger			
AL-F1☐	Fork roller lever			
AL-S1☐	Coil spring			
AL-S2☐	Spring rod			
AL-W1☐	Wire spring			
AL-Y1☐	Side push plunger			
AL-Y2☐	Side roller plunger			
AL-Y3☐	Side ball plunger			

Note: Contact type when ☐ is 1: Snap action
1S: Snap action (seal contact block)
2: Slow action (AL-N and -P types only)
3: Overlap AL-N and -P types only)

● AL-S type

Type	Specification	EN/IEC/ others	TÜV license No.	CE marking
	Actuator			
AL-SN1☐	Roller lever	Conforming to EN60947-5-1 (Chapter 1) Conforming to IEC60947-5-1 (Chapter 1)	-	Done (on inner packing case)
AL-SN2☐	Adjustable roller lever			
AL-SN3☐	Rod lever			
AL-SN5☐	Adjustable rubber roller lever (ø40)			
AL-SP1☐	Push plunger			
AL-SP2☐	Roller plunger			
AL-SK1☐	Roller arm			
AL-SK2☐	Reverse roller arm			
AL-SS1☐	Coil spring			

Note: Contact type when ☐ is 1: Snap action
2: Slow action (AL-SP and -SK types only)
3: Overlap (AL-SP and -SK types only)

● AL1-S type

Type	Specification	EN/IEC/ others	TÜV license No.	CE marking
	Actuator			
AL1-SN11	Roller lever	Conforming to EN60947-5-1 (Chapter 1) Conforming to IEC60947-5-1 (Chapter 1)	-	Done (on inner packing case)
AL1-SN21	Adjustable roller lever			
AL1-SN31	Rod lever			
AL1-SP11	Push plunger			
AL1-SP21	Roller plunger			
AL1-SK11	Roller arm			
AL1-SK21	Reverse roller arm			
AL1-SS11	Coil spring			

● K244 type

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Roller	Operational current (Upon 200V)			
K244xp-☐	-	10A	Conforming to EN60947-5-1 (Chapter 1) Conforming to IEC60947-5-1 (Chapter 1)	-	Done (on inner packing case)
HK244g-☐	-				
WK244gR-☐	-				
K244g-☐	-				
HK244g-☐	-				
WK244g-2S	-				
K244gR☐-☐	With				
HK244gR☐-☐	With				
WK244gR☐-☐	With				
K244go-2S	-				
K244goR☐-2S	With				
K244gw-2S	-				
K244gwR-2S	With				

■ Proximity Switches

● Cylindrical oscillating proximity switches

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	Shielding	Supply voltage	Detection distance			
PE1-CS1R5☐	With	10 - 30V DC	1.5mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)
PE1-CS2☐			2mm			
PE1-CS5☐			5mm			
PE1-CS10☐			10mm			
PE1-C2☐	Without		2mm			
PE1-C5☐			5mm			
PE1-C10☐			10mm			
PE1-C20☐			20mm			

Note: For ☐
D: Output with NPN resistance
Q: Output with PNP resistance
S: 2-wire DC
Only D and Q for PE-1CS1R5 ☐

● Cylindrical oscillating proximity switches with stable operation indicator

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	Shielding	Supply voltage	Detection distance			
PE2-CS(N)2☐	With	10 - 30V DC	2mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)
PE2-CS3☐			3mm			
PE2-CS7☐			7mm			
PE2-C4☐	Without		4mm			
PE2-C8☐			8mm			
PE2-C14☐			14mm			
PE2-C24☐			24mm			

Note: For ☐
D: Output with NPN resistance
Q: Output with PNP resistance
S: 2-wire DC

● Rectangular oscillating proximity switch

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Supply voltage	Detection distance			
PE-B4☐	10 - 30V DC	4mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)
PE-B7☐		7mm			
PE-B10☐		10mm			
PE-B15D		15mm			
PE-B20☐		20mm			
PE-B30☐		30mm			
PE-B50☐		50mm			

Note: For ☐
D: NPN current output
Q: PNP current output
S: 2-wire DC

● Thin oscillating proximity switches

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	Shielding	Supply voltage	Detection distance			
PE-TS2☐	With	10 - 30V DC	2mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)
PE-T4☐	Without		4mm			

Note: For ☐
D: Output with NPN resistance
Q: Output with PNP resistance
S: 2-wire DC

● Rectangular oscillating proximity switches

Type	Specification			EN/IEC/ others	TÜV license No.	CE marking
	Output	Supply voltage	Detection distance			
PE-G4D	NPN	12/24V DC	4mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)
PE-G4Q	PNP					

● Thin oscillating proximity switches

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Supply voltage	Detection distance			
PE-U25NT	10 - 30V DC	10±2mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)

● Flat oscillating proximity switches

Type	Specification		EN/IEC/ others	TÜV license No.	CE marking
	Supply voltage	Detection distance			
PE-X3D	10 - 30V DC	3mm	Conforming to EN50081-2 EN61000-6-2	-	Done (on inner packing case)