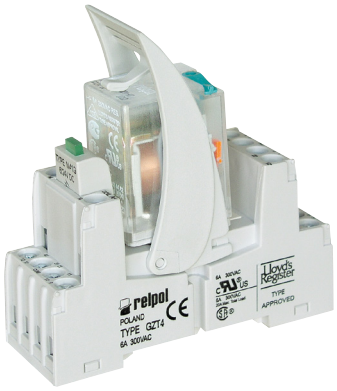
Control & Timing Relays

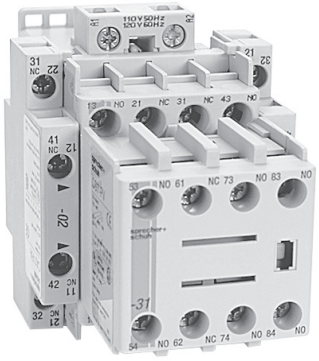
Relpol General Purpose Plug-In Relays

GEFRAN Solid State Relays



CS7 Industrial Control Relays

Reliable, general purpose relays for heavy duty applications



The base four pole CS7 relay can be expanded up to twelve poles with the addition of front and side mount auxiliaries

CS7 Industrial Control Relays share the same design as our modern CA7 contactor range. They are compact and designed for heavy duty industrial control applications where reliability and versatility are essential.

Introducing Three CS7 Models for any Control Application

The standard CS7 relay utilizes x-stamped contact technology that reliably switches typical control circuits up to 10A (AC-15). For master relay circuits requiring higher amp capacity, the CS7-M Master Relay is designed for control circuits up to 15A (AC-15).

For applications requiring low energy switching such as PLC's or other electronic circuits, the CS7-B relay with bifurcated contacts is designed for 20 million operations down to a signal level of 5V @ 3mA.

The bifurcated H-bridge design divides each movable gold contact into two sections at the tip of the spanner which provides a higher degree of reliability for low signal applications.

Auxiliary components provide a range of options

CS7 auxiliary components convert the basic four pole relay into a:

- 5, 6, 7, 8, 9, 10, 11 or 12 pole relay
- 4, 5, 6, 7 or 8 pole latched relay
- 4, 5, 6, 7 or 8 pole relay with two pneumatic time delay contacts
- Mechanically latched 4, 5, 6, 7 or 8 pole relay
- Also available are top mounted bifurcated auxiliary contacts which operate down to 5V @ 3mA.

Since the CS7 uses the same auxiliary components as our CA7 contactors, inventory is reduced and selection of components is simplified with this modular system.

Mechanically linked contacts for safety

CS7 control relays are perfect for fail-safe control circuits. An interlock contact design, which maintains minimum 0.3mm clearance, prevents the NC contact from reclosing if the NO contact is welded when in operation. This feature not only includes the base contact poles, but extends to the front and/or side mounted auxiliary contacts. This is a requirement in safety circuits and is backed by SUVA-PRO certification.

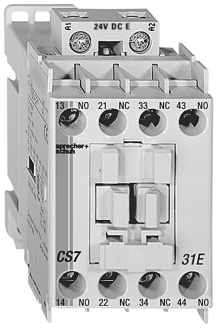
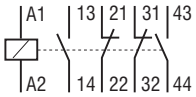
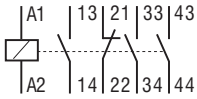
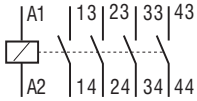
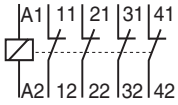
Maximum convenience and safety

CS7 relays are designed for fast and trouble free installation and maintenance. All components are modular and snap-on without the use of tools. The relays are DIN-rail mountable so they can be installed, moved or replaced quickly. All terminals are “captive” and are shipped in the open position, saving you an operation. The entire line is UL Listed, CSA Certified and CE marked and offers finger and back of hand protection to the strictest international standards.

Effortless installation

CS7 relays are DIN-rail mountable for instant installation and modification. Fittings are also included for base mounting. All terminals are clearly marked and ready for installation with either manual or power screwdrivers. A complete identification system is also available using self-adhesive labels, paper tags or plastic clip-on tags.

Series CS7 Standard Control Relays - 4 Pole ❶❹

CS7 Relay	Contact Arrangement and Numbering	Contacts ❶		AC Operation	Electronic DC ❺
		NO	NC	Catalog Number	Catalog Number
 CS7-31E		2	2	**CS7-22E-✱**	**CS7E-22E-✱**
		3	1	**CS7-31E-✱**	**CS7E-31E-✱**
		4	0	**CS7-40E-✱**	**CS7E-40E-✱**
		0	4	**CS7-04E-✱**	**CS7E-04E-✱**

Contact Ratings *(Per UL508/NEMA A600 & P600)*

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	10
P600	125DC ❷ 250DC ❷ 301-600DC ❷	1.1A/138VA 0.55A/138VA 0.2A/138VA	1.1A/138VA 0.55A/138VA 0.2A/138VA	5

Other UL Ratings

Maximum Voltage **600 volts AC or DC**

General Purpose Amps

CS7	25 amps
Auxiliaries (@ 40°C)	10 amps
Auxiliaries (@ 60°C)	6 amps

AC Coil Codes ❸

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
277	**240V**	**277V**
415	**400-415V**	**~**
480	**440V**	**480V**
600	**550V**	**600V**

DC Coil Codes ❺

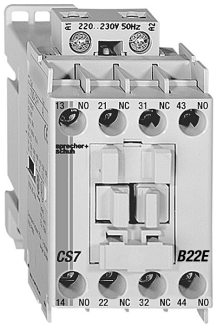
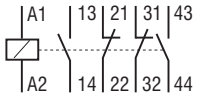
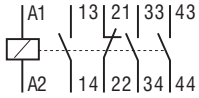
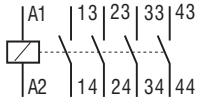
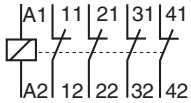
DC Coil Codes	Voltage
12E	**12V**
24E	**24V**
36E ❻	36-48V
48E ❻	48-72V
110E ❻	110-125V
220E ❻	220-250V

Ordering Instructions

Specify Catalog Number	
Replace (✱) with Coil Code	**See Coil Codes on this page**

❶ Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
❷ DC rating for CS7 base control relay.
❸ Other voltages available, see page G1:12.
❹ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles.
❺ CS7E electronic coils are not interchangeable with non-electronic DC or AC coils.
❻ Not applicable with Electronic Timer accessories (CRZ_7).

Series CS7-B Control Relays - 4 Pole, Bifurcated Contacts for Lower Level Signals ❶❹

CS7-B Relay	Contact Arrangement and Numbering	Contacts ❶		AC Operation	Electronic DC ❺
		NO	NC	Catalog Number	Catalog Number
 CS7-B22E		2	2	CS7-B22E-✱	CS7E-B22E-✱
		3	1	CS7-B31E-✱	CS7E-B31E-✱
		4	0	CS7-B40E-✱	CS7E-B40E-✱
		0	4	CS7-B04E-✱	CS7E-B04E-✱

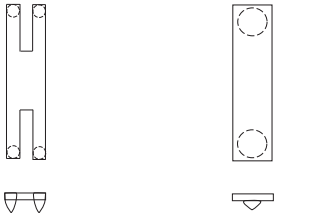
Contact Ratings *(Per UL508/NEMA A600 & Q600)*

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	10
Q600	125DC ❷ 250DC ❷ 301-600DC ❷	0.55A/69VA 0.27A/69VA 0.1A/69VA	0.55A/69VA 0.27A/69VA 0.1A/69VA	2.5

CS7-B Bifurcated Control Relay

- Gold plated bifurcated contacts for low level switching application, min 5V, 3mA
- Maximum voltage 600V AC or DC
- General purpose amps - 10 amps
- Positively guided/mechanically-linked main contacts

Principle moving contact designs:



CS7-B Bifurcated Contacts | **CS7 Standard Contacts**

AC Coil Codes ❸

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
120	110V	120V

DC Coil Codes ❺

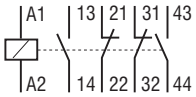
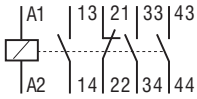
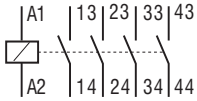
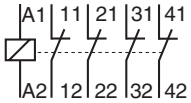
DC Coil Codes	Voltage
12E	12V
24E	24V
36E ❻	36-48V
48E ❻	48-72V
110E ❻	110-125V
220E ❻	220-250V

Ordering Instructions

Specify Catalog Number	
Replace (✱) with Coil Code	See Coil Codes on this page

❶ Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
❷ DC rating for CS7-B base control relay.
❸ Other AC voltages available, see page G1:12.
❹ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles.
❺ CS7E electronic coils are not interchangeable with non-electronic DC or AC coils.
❻ Not applicable with Electronic Timer accessories (CRZ_7).

Series CS7 Master Control Relays - 4 Pole ❶❹

CS7-M Relay	Contact Arrangement and Numbering	Contacts ❶ NO	Contacts ❶ NC	AC Operation Catalog Number	Electronic DC ❺ Catalog Number
 CS7-M22E	 A1 13 21 31 43 / A2 14 22 32 44	2	2	**CS7-M22E-✱**	**CS7E-M22E-✱**
	 A1 13 21 33 43 / A2 14 22 34 44	3	1	**CS7-M31E-✱**	**CS7E-M31E-✱**
	 A1 13 23 33 43 / A2 14 24 34 44	4	0	**CS7-M40E-✱**	**CS7E-M40E-✱**
	 A1 11 21 31 41 / A2 12 22 32 42	0	4	**CS7-M04E-✱**	**CS7E-M04E-✱**

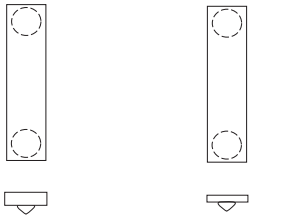
Contact Ratings *(Per UL508/NEMA A600 & P600)*

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	20
P600	125DC ❷ 250DC ❷ 301-600DC ❷	1.1A/138VA 0.55A/138VA 0.2A/138VA	1.1A/138VA 0.55A/138VA 0.2A/138VA	5

CS7-M Master Control Relays

- Excellent replacement for heavy duty NEMA master relay users.
- Maximum voltage 600V AC or DC
- General purpose rating 30 amps (2X A600 for CS7-M Base Relay)

Principle moving contact designs:



CS7-M Contacts For Master Control Relay | **CS7 Standard Contacts**

AC Coil Codes ❸

AC Coil Code	Voltage Range 50 Hz	Voltage Range 60 Hz
120	**110V**	**120V**

DC Coil Codes ❺

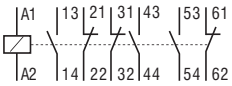
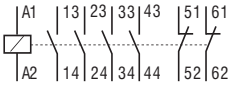
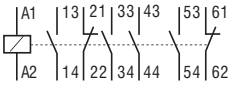
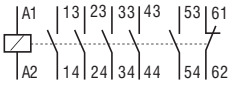
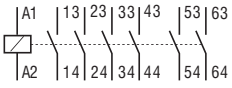
DC Coil Codes	Voltage
12E	**12V**
24E	**24V**
36E ❼	36-48V
48E ❼	48-72V
110E ❼	110-125V
220E ❼	220-250V

Ordering Instructions

Specify Catalog Number	
Replace (✱) with Coil Code	**See Coil Codes on this page**

❶ Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
❷ DC rating for CS7-M base control relay.
❸ Other AC voltages available, see page G1:12.
❹ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles.
❺ CS7E electronic coils are not interchangeable with non-electronic DC or AC coils.
❼ Not applicable with Electronic Timer accessories (CRZ_7).

CS7 Complete Assemblies - 6 Pole, AC Control ❶❺

CS7 Relay	Contact Arrangement and Numbering	Contacts ❶		AC Operation
		NO	NC	Catalog Number
 CS7-33Y		3	3	**CS7-33Y-✱**
		4	2	**CS7-42E-✱**
		4	2	**CS7-42Y-✱**
		5	1	**CS7-51E-✱**
		6	0	**CS7-60E-✱**

AC Coil Codes ❹

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
277	**240V**	**277V**
415	**400-415V**	**~**
480	**440V**	**480V**
600	**550V**	**600V**

Contact Ratings *(Per UL508/NEMA A600, P600 & Q600)*

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	10
P600	125DC ❷ 250DC ❷ 301-600DC ❷	1.1A/138VA 0.55A/138VA 0.2A/138VA	1.1A/138VA 0.55A/138VA 0.2A/138VA	5
Q600	125DC ❸ 250DC ❸ 301-600DC ❸	0.55A/69VA 0.27A/69VA 0.1A/69VA	0.55A/69VA 0.27A/69VA 0.1A/69VA	2.5

Other UL Ratings

Maximum Voltage

600 volts AC or DC

General Purpose Amps

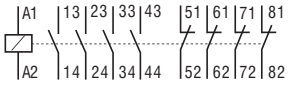
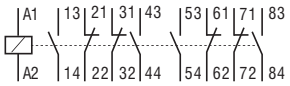
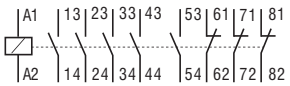
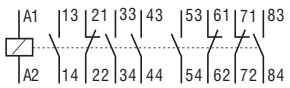
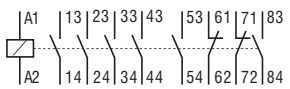
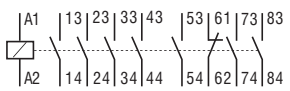
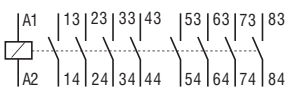
CS7	25 A
Aux. (@40°C)	10 A
Aux. (@60°C)	6 A

Ordering Instructions

Specify Catalog Number	
Replace (✱) with Coil Code	See Coil Codes on this page

❶ Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
❷ DC rating for CS7 base control relay.
❸ DC rating for CS7 auxiliary blocks.
❹ Other voltages available, see page G1:12.
❺ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles and auxiliaries.

CS7 Complete Assemblies - 8 Pole, AC Control ❶❺

CS7 Relay	Contact Arrangement and Numbering	Contacts ❶		AC Operation
		NO	NC	Catalog Number
 CS7-44E	 A1 13 23 33 43 51 61 71 81 / A2 14 24 34 44 52 62 72 82	4	4	**CS7-44E-✱**
	 A1 13 21 31 43 53 61 71 83 / A2 14 22 32 44 54 62 72 84	4	4	**CS7-44Y-✱**
	 A1 13 23 33 43 53 61 71 81 / A2 14 24 34 44 54 62 72 82	5	3	**CS7-53E-✱**
	 A1 13 21 33 43 53 61 71 83 / A2 14 22 34 44 54 62 72 84	5	3	**CS7-53Y-✱**
	 A1 13 23 33 43 53 61 71 83 / A2 14 24 34 44 54 62 72 84	6	2	**CS7-62E-✱**
	 A1 13 23 33 43 53 61 73 83 / A2 14 24 34 44 54 62 74 84	7	1	**CS7-71E-✱**
	 A1 13 23 33 43 53 63 73 83 / A2 14 24 34 44 54 64 74 84	8	0	**CS7-80E-✱**

AC Coil Codes ❹

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
277	**240V**	**277V**
415	**400-415V**	**~**
480	**440V**	**480V**
600	**550V**	**600V**

Contact Ratings *(Per UL508/NEMA A600, P600 & Q600)*

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	10
P600	125DC ❷ 250DC ❷ 301-600DC ❷	1.1A/138VA 0.55A/138VA 0.2A/138VA	1.1A/138VA 0.55A/138VA 0.2A/138VA	5
Q600	125DC ❸ 250DC ❸ 301-600DC ❸	0.55A/69VA 0.27A/69VA 0.1A/69VA	0.55A/69VA 0.27A/69VA 0.1A/69VA	2.5

Other UL Ratings

Maximum Voltage

600 volts AC or DC

General Purpose Amps

CS7	25 A
Aux. (@40°C)	10 A
Aux. (@60°C)	6 A

Ordering Instructions

Specify Catalog Number	
Replace (✱) with Coil Code	See Coil Codes on this page

❶ Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.

❷ DC rating for CS7 base control relay.

❸ DC rating for CS7 auxiliary blocks.

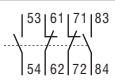
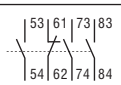
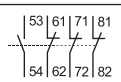
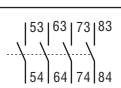
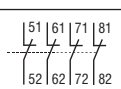
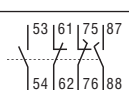
❹ Other voltages available, see page G1:12.

❺ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles and auxiliaries.

Side Mount Auxiliary Contact Blocks (1 & 2 Pole) ❶❷

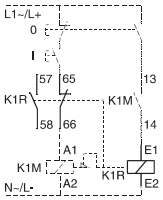
Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Standard Contacts Catalog Number
 1-pole (typical)  2-pole (typical)	**Auxiliary Contact Blocks for Side Mounting ❶❷** • 1 and 2-pole • Two way numbering for right or left mounting on the contactor • Snap-on design - mounts without tools • Electronic compatible contacts 17V, 10mA • Late break / early make (L) available • Mirror contact performance to control relay poles	0	1		CS7 all	**CA7-PA-01**
		1	0		CS7 all	**CA7-PA-10**
		0	2		CS7 all	**CA7-PA-02**
		1	1		CS7 all	**CA7-PA-11**
		2	0		CS7 all	**CA7-PA-20**
		1L	1L		CS7 all	**CA7-PA-L11**

Top Mount Auxiliary Contact Blocks (2 & 4 Pole) ❷

Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Standard Contacts Catalog Number	Bifurcated Contacts Catalog Number
 *2-pole (typical)*  *4-pole (typical)*	**Auxiliary Contact Blocks for Top Mounting ❷** • 2 and 4 pole • Snap-on design - mounts without tools • Electronic compatible standard contacts down to 17V, 5mA, bifurcated version 5V, 3mA • Mechanically linked between N.O. and N.C. poles and to the control relay poles (excluding L types). • Several terminal numbering choices even for models with equal function • Late break / early make (L) available	0	2		CS7 all	**CS7-PV-02**	**CS7-PVB-02**
		1	1		CS7 all	**CS7-PV-11**	**CS7-PVB-11**
		2	0		CS7 all	**CS7-PV-20**	**CS7-PVB-20**
		2	2		CS7 all	**CS7-PV-22**	**CS7-PVB-22**
		3	1		CS7 all	**CS7-PV-31**	**CS7-PVB-31**
		1	3		CS7 all	**CS7-PV-13**	**CS7-PVB-13**
		4	0		CS7 all	**CS7-PV-40**	**CS7-PVB-40**
		0	4		CS7 all	**CS7-PV-04**	**CS7-PVB-04**
		1+1L	1+1L		CS7 all	**CS7-PV-L22**	***Not Available***

❶ Side mounted auxiliaries may be field installed to increase the number of available poles. Please note that terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
❷ See page G1:14 for maximum number of auxiliaries to be mounted.

Control Modules

Module	Description	For use with...	Connection Diagrams	Catalog Number
	**Mechanical Latch** Following relay latching, the relay coil is immediately de-energized by the NC auxiliary contact (65-66). • Electrical or manual release • 1 NO + 1 NC auxiliary switch • Suitable for all CS7 relays	CS7 all		**CV7-11-✱** *Replace ✱ with coil code below* *(See Application Note)*

CV7 Mechanical Latch Coil Codes ❶❷❸❹

Coil Code	Application Range			Latch & Contactor Coil Rating
	50 Hz	60 Hz	VDC	
24Z	**24 VAC**	**24 VAC**	**12 VDC**	24V 50/60 Hz
48Z	**48 VAC**	**48 VAC**	**24 VDC**	48V 50/60 Hz
110	**100 VAC**	**110 VAC**	**48 or 60VDC**	110V50/110V60
120	**110 VAC**	**120 VAC**	**~**	110V50/120V60
220W	**~**	**208...240 VAC**	**~**	208...240V60
240Z	**240 VAC**	**240 VAC**	**125 VDC**	240V 50/60 Hz
400Z	**400 VAC**	**400 VAC**	**220 VDC**	400V 50/60 Hz
415	**400...415 VAC**	**~**	**~**	400...415 V50 Hz

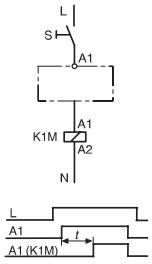
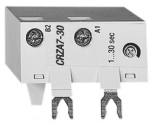
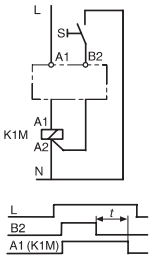
APPLICATION NOTE:

The CV7 Mechanical Latch for CS7 Control Relay may be used for both AC and DC applications; however when using DC control circuit the user must apply the following rules for coil selection of the control relay and latch combination:

- The CS7E control relay uses an electronic DC coil and the CV7 latch coil code should be chosen from the table on the left. (i.e.: 24V DC control circuit select CS7E with code 24E and CV7 latch uses a 48Z AC coil code).

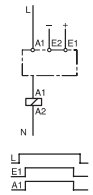
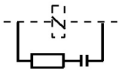
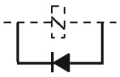
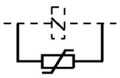
❶ Other voltages available. Contact your Sprecher + Schuh representative.
❷ CV7 must be wired for momentary impulse operation only.
❸ Command duration 0.03...15 seconds.
❹ Coil operating limits on CV7-11 match those of the relay it is being used with.

Control Modules

Module	Description	For use with...	Connection Diagrams	Function	Catalog Number
	**Pneumatic Timing Module –** The contacts in the Pneumatic Timing Element switch after the delay time. The contacts on the relay continue to operate without delay. • Continuous adjustment range	CS7 all ❶		ON-Delay .3...30s 1.8...180s	**CZE7-30** **CZE7-180**
				OFF-Delay 0.3...30s 1.8...180s	**CZA7-30** **CZA7-180**
	**Electronic Timing Module – ❷ ON-Delay** The relay is energized at the end of the delay time.	CS7 with 110...240V, 50/60Hz or 110...250V DC		110...240V 50/60Hz 110...250V DC 0.1...3s 1...30s 10...180s	**CRZE7-3-110/240** **CRZE7-30-110/240** **CRZE7-180-110/240**
		CS7 with 24...48V DC		24...48V DC 0.1...3s 1...30s 10...180s	**CRZE7-3-24/48VDC** **CRZE7-30-24/48VDC** **CRZE7-180-24/48VDC**
	**Electronic Timing Module – ❷ OFF-Delay** After interruption of the control signal, the relay is de-energized at the end of the delay time.	CS7 with 24V, 50/60Hz		110...240V 50/60Hz 0.3...3s 1...30s 10...180s	**CRZA7-3-110/240** **CRZA7-30-110/240** **CRZA7-180-110/240**
		CS7 with 110...240V, 50/60Hz		24V AC 50/60Hz 0.3...3s 1...30s 10...180s	**CRZA7-3-24VAC** **CRZA7-30-24VAC** **CRZA7-180-24VAC**

❶ Cannot be used with side-mounted auxiliary contacts on CS7 relays with DC coils.
❷ CRZ_7 timing modules are not compatible to electronic DC coils at 36V DC and larger

Control Modules *(continued)*

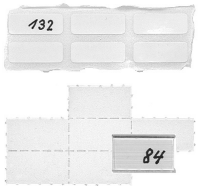
Module	Description	For use with...	Connection Diagrams	Function		Catalog Number
				Input	Output	
	**Electronic Interface –** Interface between the DC control signal from a PLC and the AC operating mechanism of the relay. • Requires no additional surge suppression for the coils • Switching capacity 200VA • Suitable for all CS7 relays	CS7 all (with AC control)		24V DC 18...30V DC 48V DC	110... 240V AC	**CRI7E-24** **CRI7E-12** **CRI7E-48** *Indicates special order*
	**Surge Suppressors -** Limits coil switching transients. • Plug-in, coil mounted • Suitable for all CS7 contactors	CS7 all (with AC control)		RC Module - AC Control (50/60Hz) 24...48V 110...280V 380...480V		**CRC7-48** **CRC7-280** **CRC7-480**
		CS7C (with conventional DC control)		Diode Module - DC Control 12-250VDC		**CRD7-250** ❶
		CS7 all (with AC control) CS7C (with conventional DC control)		Varistor Module - AC/DC Control 12...55VAC/ 12...77VDC 56...136VAC/ 78...180VDC 137...277VAC/ 181...350VDC 278...575VAC		**CRV7-55** ❶ **CRV7-136** ❶ **CRV7-277** ❶ **CRV7-575** ❶

Assembly Components

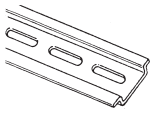
Component	Description	For Use With...	Pkg. Qty.	Catalog Number
	**Spade Connectors -** Dual stab for coil terminals (0.250 inch)	All CS7	**20**	**CA7-SC2**

Other Common Accessories

Protective Covers - See Section A



Marking Systems - like Label Sheets, Marker Tags and Carrier Tags See Section A



DIN-rail – See Section N

❶ Electronic DC Control Relays (CS7E) include internal surge protection and do not require additional external surge protection.

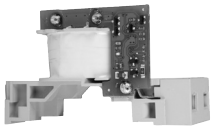
Renewal Coils - AC ❶

AC Control Voltages			AC Coil Codes ❶	Electronic AC Coils
50 Hz	60 Hz	50/60 Hz		Cat. No.
				CA7-
~	~	24V	**24Z**	**TA855**
110V	120V	~	**120**	**TA473**
115V	127V	~	**127**	**TA424**
~	208V...240V	~	**220W**	**TA296**
~	~	230V	**230Z**	**TA851**
240V	277V	~	**277**	**TA480**
400V...415V	~	~	**415**	**TA457**
440V	480V	~	**480**	**TA475**
550V	600V	~	**600**	**TA476**

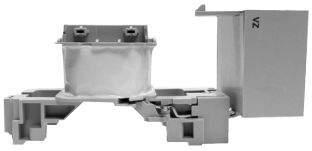
CS7 AC coil (typical)

Renewal Coils - Electronic DC ❷

DC Control Voltages	DC Coil Codes ❶	Electronic DC Coils
		Cat. No.
		CA7-
12V	**12E**	**TC708E**
24V	**24E**	**TC714E**
36-48V	**36E**	**TC719E**
48-72V	**48E**	**TC724E**
110-125V	**110E**	**TC733E**
220-250V	**220E**	**TC747E**



12V & 24V Electronic DC coil ❷



36V...220V Electronic DC coil with Back Pack ❷

❶ Coil Codes in bold letters indicate coils that are standard stocked items.
❷ Electronic DC Coils are not interchangeable with non-electronic DC or AC coils.

Technical Information

			Standard Control Relay CS7	Front Mounted Standard Auxiliary Contacts	Bifurcated Control Relay CS7-B	Front Mounted Bifurcated Auxiliary Contacts	Master Relay CS7-M	Side Mounted Contacts
Electrical Contact Ratings - NEMA			A600, P600	A600, Q600			2x A600, P600	A600, Q600
Min. Contact Rating			17V, 10 mA	17V, 5 mA	8V, 5 mA	5V, 3 mA		17V, 10 mA
Contact Ratings - IEC AC-15 (solenoids, contactors) rated voltage IEC 60947-5-1		24V	10 A	6 A	3 A	3 A	15 A	6 A
		48V	10 A	6 A	3 A	3 A	15 A	6 A
		120V	10 A	6 A	3 A	3 A	15 A	6 A
		240V	10 A	5 A	3 A	3 A	15 A	5 A
		400V	6 A	3 A	2 A	2 A	7.5 A	3 A
		480V/500V	2.5 A	1.6 A	1.2 A	1.2 A	5 A	1.6 A
		600V	1 A	1 A	0.7 A	0.7 A	2 A	1 A
		690V	1 A	1 A	0.7 A	0.7 A	2 A	1 A
AC-12 (Control of resistive loads) IEC 60947-5-1	**40 ºC**	I_{th}	20 A	10 A	10 A	10 A	20 A	10 A
		230V	8 kW					
		400V	14 kW					
		690V	24 kW					
	60 ºC	I_{th}	20 A	6 A	6 A	6 A	20 A	6 A
		230V	8 kW					
		400V	14 kW					
		690V	24 kW					
DC-12 Switching DC Loads $^{L}/_{R}$ < 1 ms, Resistive Loads IEC 60947-5-1		24V	15 A	10 A	6 A	6 A	20 A	6 A
		48V	10 A	9 A	3.2 A	3.2 A	20 A	3.2 A
		110V	6 A	3.5 A	1.0 A	1.0 A	8 A	1.0 A
		220V	1.0 A	0.7 A	0.5 A	0.5 A	1.5 A	0.5 A
		440V	0.4 A	0.2 A	0.2 A	0.2 A	0.4 A	0.2 A
DC-13 IEC 60947-5-1, Solenoids and contactors		24V	5 A	5 A	2.5 A	2.5 A	5 A	5 A
		48V	3 A	3 A	1.5 A	1.5 A	3 A	2.5 A
		110V	1.2 A	1.2 A	0.6 A	0.6 A	1.2 A	0.68 A
		220V	0.6 A	0.6 A	0.3 A	0.3 A	0.6 A	0.32 A
		440V	0.3 A	0.15 A	0.15 A	0.15 A	0.3 A	0.15 A

Mechanically Linked Contacts ❷

Location of welded NO contacts	State of NC contacts if NO contact welds			
	Main	Front mount auxiliary	Left side auxiliary	Right side auxiliary
Main	Open	Open ❶	Open ❸	Open ❸
Front auxiliary	Open	Open ❶	Open ❸	Open ❸
Left side aux.	Open	Open ❶	Open ❸	Open ❸
Right side aux.	Open	Open ❶	Open ❸	Open ❸

DC Switching Ratings for CS7 Main Poles in Series (Resistive Load at 60 ºC)

	1 pole	2 poles	3 poles
24/48 V	25/20 A	25 A	25 A
125 V	6 A	25 A	25 A
220 V	1.5 A	8 A	25 A
440 V	0.4 A	1 A	3 A

				CS7 Relays	Front Mount Auxiliaries & Pneumatic Timer Contacts
Mechanical					
Mechanical Life			[Mil]	15	5
Electrical Life AC-15 (240V, 3A) AC Operations			[Mil]	1.5	1.5	1.5
Shipping Weight AC - CS7			[kg]	0.39	
			[lbs]	0.86	
DC - CS7E			[kg]	0.41	
			[lbs]	0.90	
Terminal Cross-Sections Terminal Type					
Terminal Size per IEC 947-1				2 x A4	2 x A4
	Flexible with Wire End Ferrule	1 Cond.	[mm²]	1...4	0.5...2.5
		2 Cond.	[mm²]	1...4	0.75...2.5
	Solid/Stranded	1 Cond.	[mm2]	1.5...6	0.5...2.5
		2 Cond.	[mm2]	1.5...6	0.75...2.5
Max. Wire Size per UL/CSA			[AWG]	16...10	18...14
Tightening Torque			[Nm]	1.5...2.0	1...1.5
			[lb-in]	13.3...17.7	8.9...13.3

Standards Compliance

UL 508
CSA C22.2 NO. 14
EN/IEC 60947-1, -5-1
Meets the material restrictions for European Directive 2002/95/EC - EU-RoHS.

Certifications

cULus Listed (File No. E33916, Guide NKCR/NKCR7)
CE Marked

❶ If the accessory is a Pneumatic Timer or latch, there is no positive guidance; the accessory contacts are independent.
❷ Defined in IEC 947-5-1 annex L. Mechanically linked is a relationship between contacts of opposite types (i.e., NO and NC).
❸ Side mounted auxiliary contacts provide "mirror contact" performance with main poles only.

Technical Information

Rated Insulation Voltage U_i	
IEC	690V
UL; CSA	600V
Rated Impulse Strength U_{imp}	6 kV
High Test Voltage	
1 minute (per IEC 947-4)	2500V
Rated Voltage U_e	
AC	115, 230, 400, 500, 690V
DC	24, 48, 110, 220, 440V
Rated Frequency	50/60 Hz, DC
Ambient Temperature	
Storage	–55...+80°C (–67...176°F)
Operation at nominal current	–25...+60°C (–13...140°F)
Conditioned 15% current reduction	
after AC-1 at > 60°C	–25...+70°C (–13...158°F)

Corrosion Resistance	humid-alternating climate, cyclic, per IEC 68-2-30 and DIN 50 016, 56 cycles
Altitude	2000m above main sea level, per IEC 947-4
Type of Protection	
IP 2X (IEC 60529 and DIN 40050)	in connected state
Finger Protection	safe from touch by fingers and back of hand per VDE 0106, Part 100
Shock Protection	
IEC 68-2: Half Sinusoidal shock 11ms	30G (in 3 directions)
Vibration Resistance	
IEC 68-2: static >2G in normal position	no malfunction <5G

Coil Data - AC Control Circuit

Operating Voltage Range	Pickup	[x U_s]	0.85...1.1
	Dropout	[x U_s]	0.3...0.6
Coil Consumption	Inrush	[VA]	75
	Seal	[VA/W]	9.5/2.7
Operating Times	Pickup Time	[ms]	15...30
	Dropout Time	[ms]	10...60

Latch Attachment Release, CV7-11

Coil Consumption	AC	[VA/W]	45 /40
	DC	[W]	25
Contact Signal Duration		[min/max]	0.03...15s

Timing Attachment, CRZE7, CRZA7

Reset Time		
at min. time setting	[ms]	10
at max. time setting	[ms]	70
Repeat Accuracy		± 10%

Coil Data - Electronic DC

Voltage Range

Voltage Code	Nominal Voltage US [V DC]	Ratings [xU_s]
12E	12	0.7...1.25
24E	24	0.7...1.25
36E	36...48	0.7...1.25
48E	48...72	0.8...1.25
110E	110...125	0.7...1.12❹
220E	220...250	0.8...1.1

Coil Consumption & Operating Times ❸

Average/Peak Pickup [W]	Hold-in [W]	Dropout Voltage [xU_s]	Pickup [ms]	Dropout [ms]
10/17	1.7	0.3...0.4	20...50	20...50
10/17	1.7			
10/17	1.7...1.9			
10/17	1.7...1.9	0.3...0.4	20...50	23...33
12/19	2.0...2.1			
14/22	2.7...3.0			

Control Relays Maximum Auxiliary Contacts

CS7 (AC and DC electronic coils, vertical mounting, 60º C	CS7(E)-40E	CS7(E)-31E	CS7(E)-22E	CS7(E)-04E
Maximum N.O. Side Auxiliaries	2	2	4	2
Maximum N.C. Side Auxiliaries	4	4 ❶	4 ❶	2
Maximum N.O. Front Auxiliaries	4	4	4	4
Maximum N.C. Front Auxiliaries	4	4 ❷	2	0
Maximum N.O. Front + Side Auxiliaries	6	6	8	6
Maximum N.C. Front + Side Auxiliaries	7	5	5	2
Maximum N.O. + N.C. Front + Side Auxiliaries	8	8	8	6

❶ With no front auxiliary contacts installed. Otherwise 3 N.C. maximum.
❷ With no side mount auxiliary contacts installed. Otherwise 3 N.C. maximum.
❸ The hold-in demand of the CS7E is very low but the pick-up demand is approximately 1 ampere at 24 VDC. When sizing (dimensioning) a power supply for applications involving parallel switched contactors then multiply the peak demand by the number of contactors to be simultaneously switched and add to the hold-in demand of all other control circuit burdens, including other contactors, pilot devices, solenoids, etc.
❹ At 110VDC, coil code 110E has an operating range of 0.7...1.25 xUs

Utilization Category Table from EN 947-5-1

Verification of Making and Breaking Capacities of Switching Elements Under Normal Conditions Corresponding to the Utilization Categories ❶

Utilization Category	Normal Condition of Use								
	Make ❷			Break ❷			Number & Rate of Making & Breaking Operations		
	I / I_e	U / U_e	COS Ψ	I / I_e	U / U_e	COS Ψ	No. of operating cycles ❸	Operating cycles per minute	ON time(s) ❺
AC-12 ❻	1	1	0.9	1	1	0.9	6050	6	0.05
AC-13 ❻	2	1	0.65	1	1	0.65	6050	6	0.05
AC-14 ❻	6	1	0.3	1	1	0.3	6050	6	0.05
AC-15 ❻	10	1	0.3	1	1	0.3	6050	6	0.05
DC			$T_{0.95}$			$T_{0.95}$			
DC-12	1	1	1ms	1	1	1ms	6050	6	0.05 ❺
DC-13	1	1	6 x P ❹	1	1	6 x P ❹	6050	6	0.05 ❺
DC-14 ❻	10	1	15ms	1	1	15ms	6050	6	0.05 ❺

I_e Rated operational current $P=U_eI_e$ steady-state power consumption (W)

U_e Rated operational voltage. Current to be made or broken.

$T_{0.95}$ Time to reach 95% of the steady-state current (ms) UVoltage before make

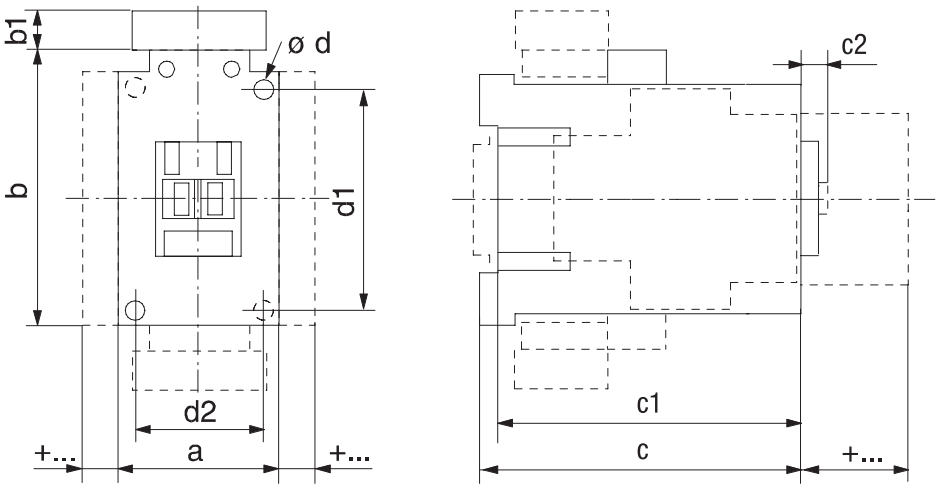
NEMA Ratings and Test Values for AC *(50 and 60Hz)* and DC Control Circuits Contacts

Designation ❼	Utilization Category	Therm. Continuous Test Current (A)	Maximum Current								VA	
			120V		240V		480V		600V			
AC			Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A150	AC-15	10	60	6.00	~	~	~	~	~	~	7200	720
A300	AC-15	10	60	6.00	30	3.00	~	~	~	~	7200	720
A600	AC-15	10	60	6.00	30	3.00	15	1.50	12	1.20	7200	720
B150	AC-15	5	30	3.00	~	~	~	~	~	~	3600	360
B300	AC-15	5	30	3.00	15	1.50	~	~	~	~	3600	360
B600	AC-15	5	30	3.00	15	1..50	7.5	0.75	6	0.60	3600	360
C150	AC-15	2.5	15	1.50	~	~	~	~	~	~	1800	180
C300	AC-15	2.5	15	1.50	7.5	0.75	~	~	~	~	1800	180
C600	AC-15	2.5	15	1.50	7.5	0.75	3.75	0.375	3	0.30	1800	180
D150	AC-14	1.0	3.60	0.60	~	~	~	~	~	~	432	72
D300	AC-14	1.0	3.60	0.60	1.8	0.30	~	~	~	~	432	72
E150	AC-14	0.5	1.80	0.30	~	~	~	~	~	~	216	36
2 x A300	AC-15	20	120	12	60	6.00	~	~	~	~	14400	1440
2 x A600	AC-15	20	120	12	60	6.00	30	3.00	24	2.40	14400	1440
DC			5...28V		125V		250V		301...600V		Make or Break at 300V or less [VA]	
N150	DC-13	10	10		2.2		~		~		275	
N300	DC-13	10	10		2.2		1.1		~		275	
N600	DC-13	10	10		2.2		1.1		0.40		275	
P150	DC-13	5.0	5.0		1.1		~		~		138	
P300	DC-13	5.0	5.0		1.1		0.55		~		138	
P600	DC-13	5.0	5.0		1.1		0.55		0.20		138	
Q300	DC-13	2.5	2.5		0.55		0.27		0.11		69	
Q600	DC-13	2.5	2.5		0.55		0.27		0.11		69	
2 x P600	DC-13	10	102.2		2.2		1.1		0.40		275	

❶ See sub-clause 8.3.3.5.2
❷ For tolerances on test quantities, see sub-clause 8.3.2.2
❸ The first 50 operating cycles shall be run at U/Ue=1.1 with the loads set at Ue
❹ The value "6 x P" results from an empirical relationship which is found to represent most DC magnetic loads to an upper limit of P = 50W, i.e. 6 x P = 300ms.
❺ The ON time shall be at least equal to T0.95
❻ Where the break current differs from the make current value, the ON time refers to the make current value after which the current is reduced to break current value for a suitable period e.g., 0.05 s.
❼ This is the NEMA Contact Rating Designation, where the letter stands for the conventional thermal current and identifies AC or DC: e.g., B = 5A AC. The number that follows is the rated insulation voltage.

Series CS7 Industrial Control Relays (AC and Electronic DC)

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

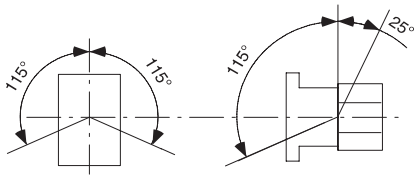


Catalog Number	Coil Code	a	b	b1	c	c1	c2	d	d1	d2
CS7 (AC)	All	45 (1-25/32)	81 (3-3/16)	~	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-25/64)
CS7 (Electronic DC)	12E...24E	45 (1-25/32)	81 (3-3/16)	~	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)
	36E...220E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)

Relays & Accessories (+...)

Relays with...		Dim. [mm]	Dim. [inches]
auxiliary contact block for front mounting	2-, or 4-pole	c/c1 + 39	c/c1 + 1-37/64
auxiliary contact block for side mounting	1-, or 2-pole	a + 9	a + 23/64
pneumatic timing module		c/c1 + 58	c/c1 + 2-23/64
electronic timing module	on coil terminal side	b + 24	b + 15/16
mechanical latch		c/c1 + 61	c/c1 + 2-31/64
interface module	on coil terminal side	b + 9	b + 23/64
surge suppressor	on coil terminal side	b + 3	b + 1/8
Labeling with...	label sheet	+ 0	+ 0
	marking tag sheet with clear cover	+ 0	+ 0
	marking tag adapter for V7 Terminals	+ 5.5	+ 7/32

Mounting Position



AC & Electronic DC control relays

❶ 2 mounting holes.

CS8 Industrial Control Relays

The miniature relay system with big advantages

CS8 front mount auxiliaries are positive guidance

Despite increasing complexity, control systems and installations must become increasingly compact. And the CS8 Miniature Relay System packs maximum performance into minimum space.

Small but rugged

Sprecher + Schuh has subjected this relay series to monitored endurance tests that demonstrate their ruggedness. Under normal duty, CS8 contacts have an electrical life of 700,000 operations, while the AC magnet system has a mechanical life of 15,000,000 operations.

The coil is designed for absolute undervoltage reliability. Undervoltages that do not cause the contactor to close can be withstood indefinitely without damage.

The body of the device is sturdy as well. The front housing, containing the phase partitions and screwdriver guides, is manufactured in one piece. Front and rear housing are then joint fitted together.

Superior Contact Reliability

The standard CS8 base relay and auxiliary contacts are bifurcated H-bridge design which divides each movable contact into two sections at the tip of the spanner which provides a higher degree of reliability for low signal applications. Perfect fit for PLC and other electronic circuits operate at signals as low as 15V @ 2mA.

Mechanically linked contacts for safety

The CS8 control relay are the perfect choice for fail-safe control circuits to meet mechanically linked performance per IEC 60947-4-1. Mechanically linked is an interlock contact design that maintains minimum 0.5mm clearance which prevents the NC contact from reclosing if the NO contact is welded when in operation. This feature applies to CS8 base relays with AC & DC coils; base relays and add-on auxiliaries for DC coils only.

Accessories require no additional panel space

The entire CS8 system is logically engineered. Auxiliary contact blocks are modular and snap-on without increasing the CS8's original width of 45mm. Also, due to its sideways switching movement, the basic relay has the same low profile whether an AC or DC operating magnet is used. This permits the use of enclosures with shallow mounting depths. Once the CS8 is installed, all auxiliary contact blocks can be snapped on or removed without changing any existing wiring.

Auxiliary components provide flexibility

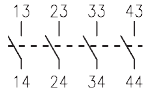
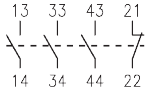
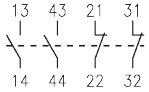
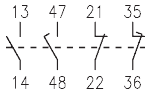
CS8 auxiliary components allow you to convert the basic four pole relay up to an 8 pole relay.

Effortless installation

CS8 relays are DIN-rail mountable for instant installation and modification. Fittings are also included for base mounting. All terminals are clearly marked and shipped in the open position for installation with either manual or power screwdrivers. Using self-adhesive labels, or plastic clip-on tags.

The entire line is cULus Listed and CE Certified and offers finger and back of hand protection to the strictest international standards.

CS8 Complete Assemblies - 4 Pole

CS8 Relay	Contact Arrangement and Numbering	Contacts NO	Contacts NC	AC Operation Catalog Number	DC Operation Catalog Number
		4	0	CS8-40E-✱	CS8C-40E-✱
		3	1	CS8-31Z-✱	CS8C-31Z-✱
		2	2	CS8-22Z-✱	CS8C-22Z-✱
		1+ 1EM	1+ 1LB	CS8-L22Z-✱	CS8C-L22Z-✱

Contact Ratings *(Per UL508/NEMA B600 & Q600)* ❸

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
B600	120AC 240AC 480AC 600AC	30A/3600VA 15A/3600VA 7.5A/3600VA 6A/3600VA	3.0A/360VA 1.5A/360VA 0.75A/360VA 0.60A/360VA	10
Q600	125DC 250DC 301-600DC	0.55A/69VA 0.27A/69VA 0.1A/69VA	0.55A/69VA 0.27A/69VA 0.1A/69VA	2.5

Mechanical Link

- Base relay meets IEC 60947-5-1.
See page G2:4 for additional information.

AC Coil Codes ❶

AC Coil Code	Voltage Range 50 Hz	Voltage Range 60 Hz
12	12V	12V
24Z	24V	24V
48Z	48V	48V
120	110V	120V
208	200V-220V	208V-220V
240	240V	240V
380 ❹	Use Coil Code 400	
400 ❹	400V	400V
480	440V	480V
575 ❺	Use Coil Code 600	
600 ❺	525V	600V

DC Coil Codes ❶

DC Coil Code	Voltage
12D	12V
24D	24V ❷
110D	110V
125D	125V
220D	220V

Ordering Instructions

Specify Catalog Number	
Replace (□) with Coil Code	See Coil Codes on this page

❶ The coil codes shown are for the most commonly stocked items. Contact your Sprecher + Schuh representative to determine if other voltages are on-hand or can be specially ordered in quantity.

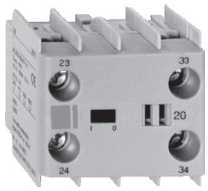
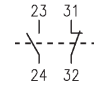
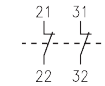
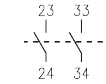
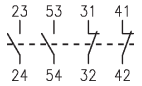
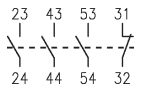
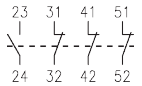
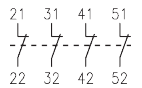
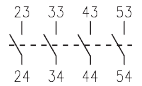
❷ Integrated diode surge suppressor coils available. Order coil code **24DD.** For example CS8C-22Z-**24D** becomes CS8C-22Z-**24DD.** List price adder applies.

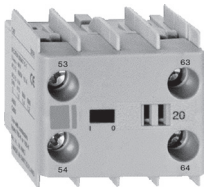
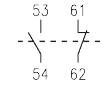
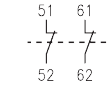
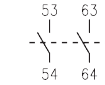
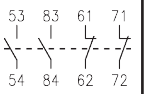
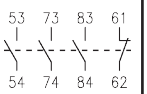
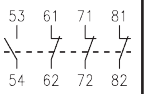
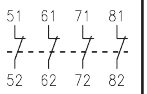
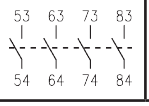
❸ Contacts are bifurcated (H-bridge) with a minimum current rating of 2mA @ 15V.

❹ The European Community has agreed that 400V is the nominal voltage in lieu of 380V. Use this code when 380V is required.

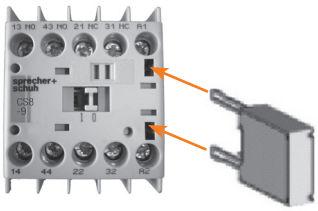
❺ Use this code for 575V applications.

Auxiliary Contact Blocks (2 & 4 Pole) ❶❸

Auxiliary Contact Blocks	NO	NC	Contact Arrangement	Catalog Number
 2-Pole	1	1		CA8-P11
	0	2		CA8-P02
	2	0		CA8-P20
Typical auxiliary contact block	2	2		CA8-P22
	3	1		CA8-P31
	1	3		CA8-P13
	0	4		CA8-P04
 4-Pole	4	0		CA8-P40

Auxiliary Contact Blocks	NO	NC	Contact Arrangement	Catalog Number
 2-Pole	1	1		CS8-P11E
	0	2		CS8-P02E
	2	0		CS8-P20E
Typical auxiliary contact block	2	2		CS8-P22Z
	3	1		CS8-P31Z
	1	3		CS8-P13E
	0	4		CS8-P04E
 4-Pole	4	0		CS8-P40E

Miscellaneous Accessories

Accessory	Description	Catalog Number
	**Surge Suppressor CR__8 -** for limiting voltage spikes when switching off coil. Coil itself provides sufficient limitation at voltages over 240V.	
	RC Link (Type CRC8...) for AC Control	
	24-48VAC	**CRC8-50**
	110-280VAC	**CRC8-280**
	380-480VAC	**CRC8-480**
	Diode Link (Type CRD8...) for DC Control ❷	
	12-250VDC (diode)	**CRD8-250**
	Varistor Link (Type CRV8...) for AC/DC Control	
	12-55VAC/12-77VDC	**CRV8-55**
	56-136VAC/78-180VDC	**CRV8-136**
	137-277VAC/181-250VDC	**CRV8-277**

❶ Auxiliary contact ratings per UL 508/NEMA (B600/Q600). Contacts are bifurcated (H-bridge) with a minimum current rating of 15V@2mA.

❷ CS8 relays with 24 VDC coils can be special ordered with integrated diodes (built-in) rather than applying CRD8 to the coil terminals.

❸ Base relay with add-on auxiliaries meet mechanically linked IEC 60947-5-1 for CS8 DC coil versions only. See page G2:4 for additional information.

Technical Information

				CS8	Auxiliary Contacts
Electrical					
Contact Ratings — NEMA				B600, Q600	B600, Q600
Contact Ratings — IEC					
AC-15 (solenoids, contactors)		24...120V	[A]	3	3
at rated voltage		230...240V	[A]	2	2
IEC 947, EN 60947		400V	[A]	1.2	1.2
NEMA B600		480...500V	[A]	1	1
		600...690V	[A}	0.6	0.6
AC-12 (Rated thermal current)					
Ambient Temperature 40°C	I_{th}	24...690V	[A]	10	10
Ambient Temperature 60°C	I_{th}	24...240V	[A]	6	6
Low Level Signal Switching					
Contact design				H-bridge bifurcated	H-bridge bifurcated
Minimum switching recommendation				15V 2mA	15V 2mA
Short Circuit Protection					
Coordination Type 2 acc. IEC 947-5-1		Fuse gG	[A]	10	10
Switching DC-13 (Q600)					
1 pole		24V	[A]	2.3	2.3
		48V	[A]	1	1
		110V	[A]	0.55	0.55
		125V	[A]	0.55	0.55
		220V	[A]	0.27	0.27
		250V	[A]	0.27	0.27
		400V	[A]	0.15	0.15
		440V	[A]	0.15	0.15
		600V	[A]	0.1	0.1
Load Carrying Capacity according to UL/CSA					
Rated voltage		AC	[V]	max. 600	max. 600
		DC	[V]	max. 600	max. 600
Continuous rating (40ºC)		AC	[A]	10	10
Switching Capacity		AC	[A]	B600	B600
		DC	[A]	Q600	Q600
Continuous rating (general purpose)		300V	[V]	5	5
		600V	[V]	10	10
Resistance and Power Dissipation					
Main current circuit resistance, 1 pole			[mΩ]	6.5	6.5
Power dissipation I_{th}, 4 poles			[W]	2.6	2.6
Total Power dissipation					
I_{th}	AC control, warm		[W]	4.4	4.4
	DC control, warm		[W]	5.2	5.2

Mechanically Linked Contacts and Mirror Contact Performance

Type	Coil	Add-on Auxiliary Contact	Conforms to IEC	Status
CS8	AC or DC	None	60947-5-1	Mechanically linked within the base relay
	DC	Yes	60947-5-1	Mechanically linked within the base relay and with add-on auxiliary contacts
	AC	Yes	~	Mechanically linked within the base relay only

Definitions

- Mechanically linked contacts (IEC 60947-5-1 Annex L):
- N.C. Auxiliary Contact will not re-close if a N.O. power pole welds.
- N.O. Power Pole or Auxiliary Contact will not close if N.C. contact welds.
- The term "Positive Guided" contacts is the same as mechanically linked.

Technical Information

Mechanical

			CS8 Relays
Mechanical Life		[Mil. Op]	15
Electrical Life			
AC-15 (240V, 2A) AC Operations		[Mil. Op]	0.7
Weight	AC control	[kg/lbs]	0.16 (0.35)
	DC control	[kg/lbs]	0.2 (0.44)

Terminations -
Main contacts and Auxiliary contacts

Terminal Type			Combination Screw Head: Cross, Slotted, Pozidrive
 Fine stranded w/ ferrule	1 wire	[mm²]	0.75...2.5
	2 wires	[mm²]	0.75...2.5
 Solid or coarse stranded	1 wire	[mm²]	1...4
	2 wires	[mm²]	1...2.5 + 1...4
Max. Wire Size ❶		[AWG]	18...12
Tightening Torque		[Nm]	1.2
		[lb-in]	10.6

Control Circuit

Operating Voltage			
AC 50/60 Hz	Pickup	[x U_s]	0.85...1.1
	Dropout	[x U_s]	0.2...0.75
DC	Pickup	[x U_s]	0.8...1.1
		[x U_s]	9,12,24,110V DC: 0.7...1.25
with protection circuit	Dropout	[x U_s]	0.1...0.75
Coil Consumption			
AC 50/60 Hz	Inrush	[VA/W]	35/32
	Seal	[VA/W]	5/1.8
DC	Inrush/Seal	[W]	cold 3.0, warm 2.6
Operating Times			
AC- 50/60 Hz	Pickup Time	[ms]	15...40
	Dropout Time	[ms]	15...33
With RC module	Pickup Time	[ms]	15...28
DC	Pickup Time	[ms]	18...40
	Dropout Time	[ms]	6...12
With Integ. diode	Pickup Time	[ms]	8...12
With External diode	Pickup Time	[ms]	35...50

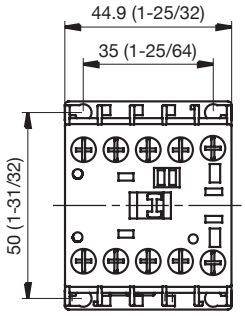
General

		CS8 Relays
Rated Voltage Withstand *U*		
IEC		690V
UL; CSA		600V
Rated Impulse Strength U_{imp}		6 kV
Rated Voltage U_e		
AC	[V]	24, 48, 120, 230, 400, 500, 600, 690
DC	[V]	24, 48, 110, 220, 440V
Rated Frequency		AC 50/60 Hz, DC
Ambient Temperature		
Storage		–55...+80°C (–67...176°F)
Operation at nominal current		–25...+60°C (–13...140°F)
At 85% rated operation current		–25...+70ºC (–13... 158ºF)
Resistance to Climatic Change		40º C (104º F), 95% relative humidity, 56 days
		23º C (73.4 º F), 83%/40 ºC (104 ºF), 93%, 56 cycles
Altitude		2000m M.S.L., per IEC 60947-4-1
Type of Protection		IP2X
Standards		IEC/EN 60947-1, -5-1, -5-4; UL 508; CSA 22.2. No. 14
Approvals UL File E33916		CE cULus

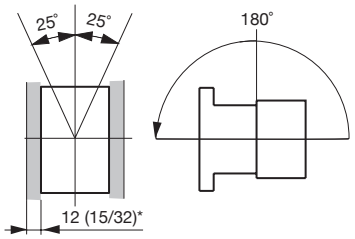
❶ Pozidrive No.2 / Blade No.3 screw

Series CS8 Industrial Control Relays

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

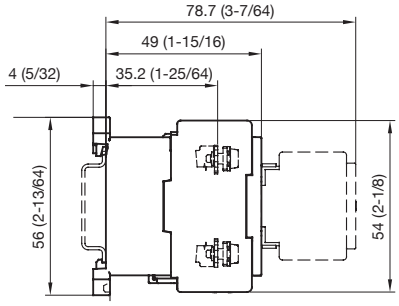


Mounting Position with Accessories



* Minimum distance to grounded parts or walls

Contactor with...		Dim. [mm]	Dim. [inches]
with aux. contact block		78.7	3.1
with timer	on contactor	81.7	3.25
	at side of contactor	66.9	2.63
with neutral terminal	at side of contactor	64.9	2.56
with nameplate		51	2



With front mount auxiliary

RZ7-FS & RZ7-FE Electronic Timing Relays

Precision economical DIN-rail mounted timing relays

The RZ7-FS multifunction Electronic Timing Relay

The RZ7-FE multifunction Electronic Timing Relay

Features

- Each relay is equipped with LEDs that indicate supply of power and output status conditions.
- Finger and back of hand protection to IP40.
- Terminals are captive and supplied in the open position.
- RZ7's can be surface mounted, rail mounted, or mounted directly on our family of CA7/CS7 devices.
- RZ7 relays can be mounted in any-plane.
- Terminals, setting knob and LED's are all accessible from the front of the unit.
- RZ7 Timing Relays are very compact

RZ7-FS

RZ7-FS timing relays are accurate to within 0.2 percent of the setting value. In addition, RZ7-FS relays function reliably -15% to +10% of rated voltage. RZ7-FS precision electronic timing relays offer 14 different output functions applicable to all types of industrial control. In addition to standard ON-Delay and OFF-Delay relays, the series also includes many special functions such as a true OFF-Delay that operates without supply voltage. Various timing ranges from 0.05 seconds to 300 hours are available.

RZ7-FS timing relays operate with multiple supply voltages ranging from 24-48VDC or 24-240VAC (some other voltages are available on multi-function and special function timers) The standard RZ7-FS is supplied with one single pole double throw (SPDT) contact within a compact case only 22.5mm wide. If more contacts are required, several relays are available that provide two separate, electrically isolated SPDT contacts within the same narrow footprint.

RZ7-FE

RZ7-FE electronic timing relays offer eight popular output functions in an economical package. This series is especially designed for applications where a high quality, yet basic timing relay is required. Timing formats include ON delay, OFF-delay, Wye-Delta and five other choices. All models are multi-time relays, meaning that various time ranges (from 0.05 seconds to 100 hours) can be selected from the face of the relay.

RZ7-FE timing relays operate with multiple supply voltages ranging from 24-48VDC or 24-240VAC (12-240VAC or DC on 2-pole multi-function). Universal voltage capability means smaller inventories and more flexibility. The RZ7-FE series has one single pole double throw (SPDT) contact. This series has several technical advantages such as shorter impulse duration requirements and a faster recovery time.

Overview

RZ7-FS

RZ7-FE

Type	DIN Rail Timer	DIN Rail Timer
Features	• Only 22.5 mm wide • 5A contact rating • Multifunction or single function • Wye-delta timing function • True OFF-Delay timing function	• Only 17.5 mm wide • 5 A contact rating • Multifunction or single function • Wye-Delta timing function
Control Outputs	SPDT or DPDT	SPDT
Operation Modes	A ON-Delay A+ Accumulative ON-Delay B OFF-Delay with Auxiliary Voltage C ON-Delay and OFF-Delay, Symmetrical D Impulse-ON E Impulse-OFF with Auxiliary Voltage F Flasher, Starting with ON FG Flasher, Starting with ON or OFF G Flasher Starting with OFF I Fixed Impulse with Adjustable Time Delay K One Shot with B1 L Pulse Former M Adjustable Impulse with Fixed Time Delay Q OFF-Delay without Auxiliary Voltage T ON/OFF-Function Y Wye-Delta Timing Relay Y1 Wye-Delta Change-over with Impulse Function	A ON-Delay B OFF-Delay D One shot E Fleeting OFF-Delay F Flasher, Repeat cycle-pulse G Flasher, Repeat Cycle Starting with Pause L Pulse converter, Pulse Former Y Wye-Delta Timing Relay
Time Range	0.05 s...300 hr	0.05 s...100 hr
Supply Voltage	24V...48V DC 24V...240V AC 380...440V AC	24...48V DC 24...240V AC 12...240V AC/DC
Contact Rating at 120V AC	5 A	5 A
Certifications	cULus, CE, UKCA, C-tick	cULus, CE, UKCA, C-tick
Mounting	DIN Rail or panel mount	DIN Rail or panel mount

RZ7-FS Timing Relays

Single Function

Operating Mode	Contact Output	Timing Range ❶	Input Voltage	Catalog Number
ON-Delay	(SPDT) 1 C/O	0.05 s...300 hr	24...48V DC 24...240V AC, 50/60 Hz	**RZ7-FSA6UU23**
	(DPDT) 2 C/O			**RZ7-FSA7UU23**
OFF-Delay	(SPDT) 1 C/O			**RZ7-FSB6UU23**
	(DPDT) 2 C/O			**RZ7-FSB7UU23**
One Shot w/B1	(SPDT) 1 C/O			**RZ7-FSK6UU23**

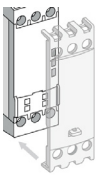
Multi-Function This device allows the flexibility of selecting the appropriate timing function.

Operating Mode	Contact Output	Timing Range ❶	Input Voltage	Catalog Number
Multi-function timing relays 10 Single-functions: A, A+, B, C, T, D, E, FG, L, and Y1 See function diagrams for further description.	(SPDT) 1 C/O	0.05 s...300 hr	24...48V DC 24...240V AC 50/60 Hz	**RZ7-FSM6UU23**
	(DPDT) 2 C/O			**RZ7-FSM7UU23**
			380...440V AC	**RZ7-FSM7UA40**
Multi-function timing relays 7 Single-functions: A, T, D, I, M, F, and G See function diagrams for further description.	(DPDT) 2 C/O		24...48V DC 24...240V AC 50/60 Hz	**RZ7-FSM8UU23**

Special Function

Operating Mode	Contact Output	Timing Range ❷	Input Voltage	Catalog Number
OFF-Delay without supply voltage	(SPDT) 1 C/O	0.05 s...10 min	24...240V DC 24...240V AC 50/60 Hz	**RZ7-FSQ6QU18**
	(DPDT) 2 C/O			**RZ7-FSQ7QU18**
Wye-Delta timing relay	2 C/O		24...48V DC 24...240V AC 50/60 Hz	**RZ7-FSY7UU23**
			380...440V AC	**RZ7-FSY7UA40**

Accessories

Accessory	Description	Catalog Number
	**Panel Mounting Adapter**	**RZ7-FSPMA**
	**Transparent Cover**	**RZ7 -FSTC**
IMPORTANT	Versatile Mounting: The RZ7-FS timing relay can be panel or DIN rail mounted. For best long-term performance, allow at least 10 mm (.04 in.) of space on each side of the relay for proper ventilation when operating in temperatures above 40 °C (104 °F).	

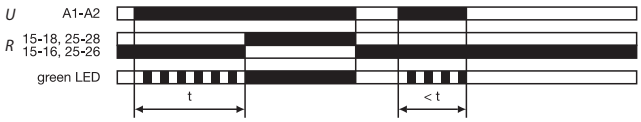
RZ7-FS High Performance Timing Relay

- Adjustable function and timing range timing relays
- DIN Rail mounted without cost of socket
- 22.5 mm wide multi-function or single functions
- Available as SPDT or DPDT contact output, 5A
- Timing Ranges From 0.05s...300 hr
- Coil Surge Protection

❶ Ten selectable timing ranges: 0.05...1 s, 0.15...3 s, 0.5...10 s, 1.5...30 s, 5...100 s, 15...300 s, 1.5...30 min,15...300 min, 1.5...30 hr, 15...300 hr
❷ This time range is selectable in seven smaller ranges: 0.05 s...1 s, 0.15...3 s, 0.15 s...10 s, 1.5 s...30 s, 5 ...100 s, 15...300 s, 0.5...10 min

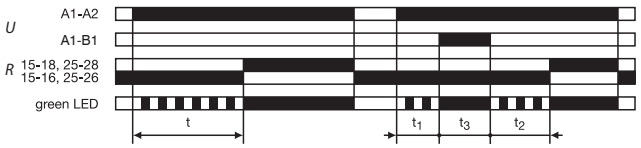
Function Diagrams - RZ7-FS Relays

(A) ON-Delay



t = adjusted time delay

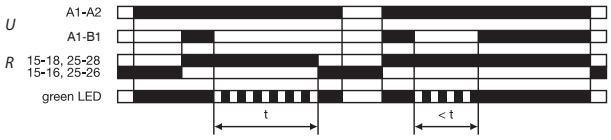
(A+) Accumulative ON-Delay



t = adjusted time delay

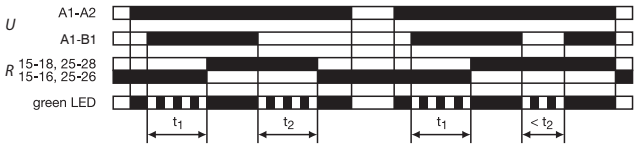
$t_1 + t_2 = t$
t_3 = pause timing

(B) OFF-Delay with Auxiliary Voltage



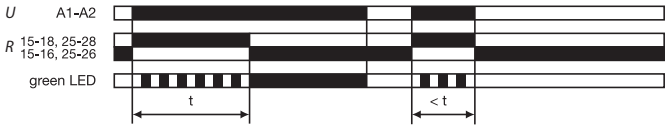
t = adjusted time delay

(C) ON-Delay and OFF-delay, Symmetrical



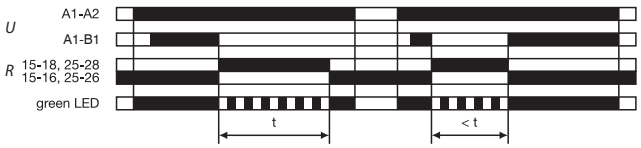
t_1 = adjusted ON-delay
t_2 = adjusted OFF-delay
$t_1 = t_2$

(D) Impulse-ON



t = adjusted pulse time

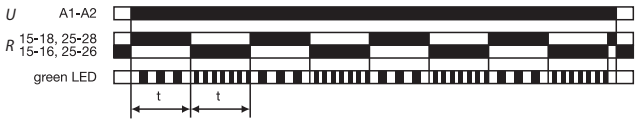
(E) Impulse-OFF with Auxiliary Voltage



t = adjusted pulse time

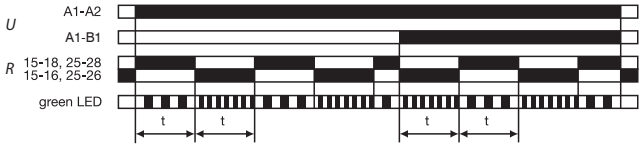
❶ For timing control, a voltage other than the supply voltage can also be used.

(F) Flasher, Starting with ON



t = adjusted flashing time

(FG) Flasher, Starting with ON or OFF

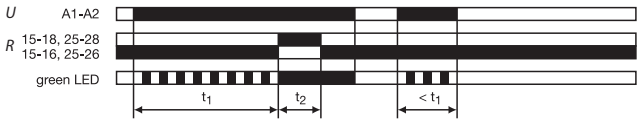


t = adjusted flashing time

(G) Flasher, Starting with OFF

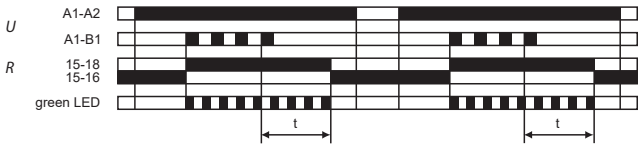
t = adjusted flashing time

(I) Fixed Impulse with Adjustable Time Delay

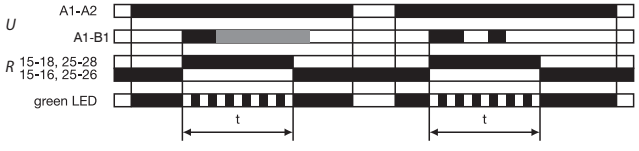


t_1 = adjusted time delay
t_2 = pulse time fixed 500 ms

(K) One Shot with B1



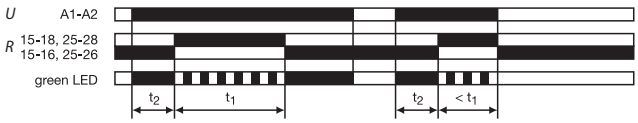
(L) Pulse Former



t = adjusted pulse time

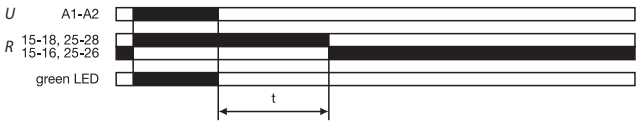
Function Diagrams - RZ7-FS Relays - Continued

(M) Adjustable Impulse with Fixed Time Delay



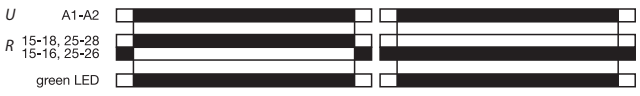
t_1 = adjusted pulse time
t_2 = time delay fixed 500 ms

(Q) OFF-Delay without Auxiliary Voltage

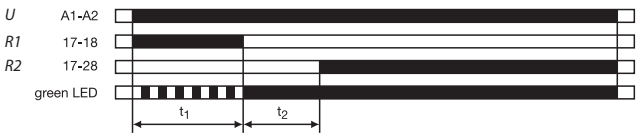


t = adjusted time delay

(T) ON/OFF-Function

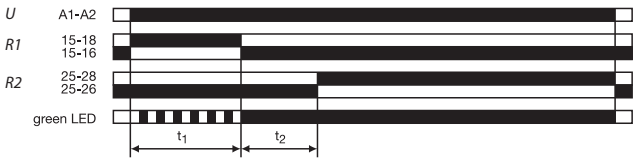


(Y) Wye-Delta Change-over



t_1 = adjusted starting time
t_2 = transition time (50 ms)

(Y1) Wye-Delta Change-over with Impulse Function



t_1 = adjusted starting time
t_2 = transition time (50 ms)

Legend

- U - green LED: ⎍ control supply voltage applied / ⎍⎍ timing
- R - yellow LED: ⎍ output relay energized

RZ7-FE Timing Relays

Single-Function This device offers you one specific timing function.

Time Range	Contact Output	Timing Range ❶	Input Voltage	Catalog Number
ON-Delay	SPDT (1 C/O)	0.05 s...100 hr	24V...48V DC 24...240V AC 50/60 Hz	**RZ7-FEA6TU23**
OFF-Delay				**RZ7-FEB6TU23**
One Shot				**RZ7-FED6TU23**
Flasher (repeat cycle starting with pulse)				**RZ7-FEF6TU23**

Multi-Function This device offers you the flexibility of selecting one of 7 single timing functions.

Operating Mode	Contact Output	Timing Range ❶	Input Voltage	Catalog Number
Multi-function timing relays 7 Single-functions: A, B, D, E, F, G, and L See function diagrams for further description.	SPDT (1 C/O)	0.05 s...100 hr	24...48V DC 24...240V AC 50/60 Hz	**RZ7-FEM6TU23**
	DPDT (2 C/O)		12...240V AC/DC	**RZ7-FEM6TZ12**

Special Functions This device offers you one specific timing function.

Operating Mode	Contact Output	Timing Range ❷	Input Voltage	Catalog Number
Wye-Delta	2 N.O. with 1 Common	0.15 s...10 min	24V...48V DC 24...240V AC 50/60 Hz	**RZ7-FEY6QU23**

Accessories

Accessory	Description	Catalog Number
	**Panel Mounting Adapter**	**RZ7-FSPMA**
IMPORTANT	Versatile Mounting: The RZ7-FE timing relay can be panel or DIN rail mounted. For best long-term performance, allow at least 10 mm (.04 in.) of space on each side of the relay for proper ventilation when operating in temperatures above 40 °C (104 °F).	

RZ7-FE Economy Timing Relay

- Adjustable function and timing range timing relays
- DIN Rail mounted without cost of socket
- 17.5 mm wide, multi-function or single function
- SPDT contact output, 5 A
- Timing ranges from 0.05 s...100 hr
- Coil Surge Protection

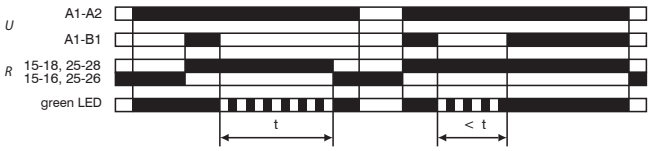
❶ Time ranges: 0.05...1 s, 0.5...10 s, 5...100 s, 0.5...10 min, 5...100 min, 0.5...10 h, 5...100 h
❷ Time ranges: 0.05...1 s, 0.5...10 s, 5...100 s, 0.5...10 min

Function Diagrams - RZ7-FE Relays

(A) ON-Delay

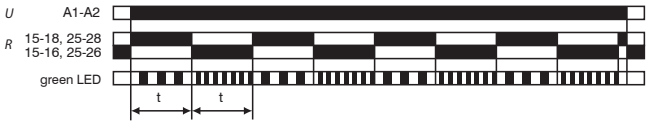
t = adjusted time delay

(B) OFF-Delay



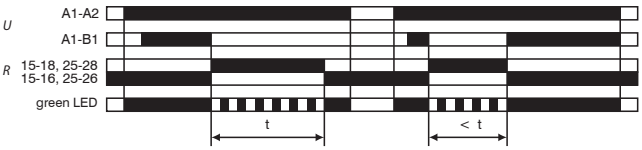
(D) One Shot [Impulse On]

(F) Flasher [Repeat Cycle Starting with Pulse]

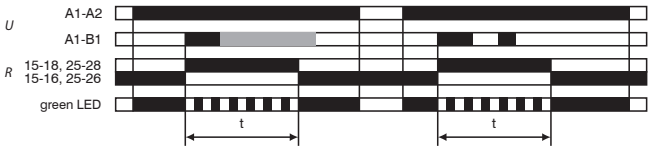


t = adjusted flashing time

(E) Fleeting OFF-Delay [Impulse Off]

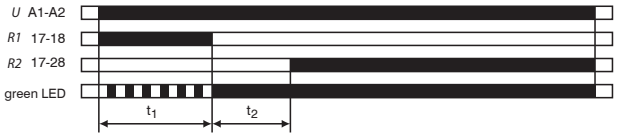


(L) Pulse Converter [Pulse Former]



t = adjusted flashing time

(Y) Wye-Delta Timing Relay



t_1 = adjusted starting time
t_2 = transition time 50 ms

(G) Flasher [Repeat Cycle Starting with Pause]

t = adjusted flashing time

Legend

- U - green LED: ⌐¬ control supply voltage applied / ⌐¬⌐¬ timing
- R - yellow LED: ⌐¬ output relay energized

General Data	RZ7-FS Relays ❶	RZ7-FE Relays ❶
Insulation Characteristics	2 kVAC/50 Hz test voltage according to VDE 0435 and 4 kV 1.2/50 µs surge voltage according to IEC 60947-1 between all inputs and outputs	
EMC/Interference Immunity	Performance of following requirements: Surge capacity of the supply voltage according to IEC 61000-4-5: 2 kV Burst according to IEC 1000-4-4: 6 kV 6/50 ns ESD discharge according to IEC 61000- 4-2: Contact 6 kV, air 8 kV	The following requirements are fulfilled: Surge capacity of the supply voltage according to IEC 61000-4-5: Level 4 Burst according to IEC 61000-4-4: Level 3 ESD discharge according to IEC 61000-4-2: Level 3
EMC/Emission	Electromagnetic fields according to EN 55 022: class B	
Safe Isolation	According to VDE 106, part 101	
Relative Humidity	25... 85%	
Vibration Resistance, operating	1 G	
Vibration Resistance, nonoperating	4 G	
Shock Resistance, operating	7 G	
Shock Resistance, nonoperating	50 G	
Weight	100g	60g
Ambient Temperature, operating	–25...+60 °C	
Ambient Temperature, nonoperating	–40...+85 °C	
Control Terminals	Tightening torque (0.6...0.8 Nm) 1 x 0.5...4.0 mm² or 2 X0.5...2.5 mm² (solid) 1 x 18...14 AWG or 2 x 18...16 AWG (stranded) Finger protection according to EN 50274	Tightening torque (0.5...0.8 Nm) 1 x 0.5...4.0 mm² or 2 X0.5...2.5 mm² (solid) 1 x 18...14 AWG or 2 x 18...16 AWG (stranded) Finger protection according to EN 50274
Panel Mounting	Front mounting; For snap-on mounting on 35 mm DIN Rail or screw fixing by panel mounting adapter and 2 screws (M4 type)	
Certifications	cULus Listed (File No. E14840, Guide NKCR/NKCR7), CE Marked, UKCA, C-tick	
Standards	EN/IEC 60947-1 EN/IEC 60947-5-1 UL 508 CAN/CSA C22.2 No.14	IEC/EN 63000 IEC 61812-1 UL 508 CAN/CSA C22.2 No.14

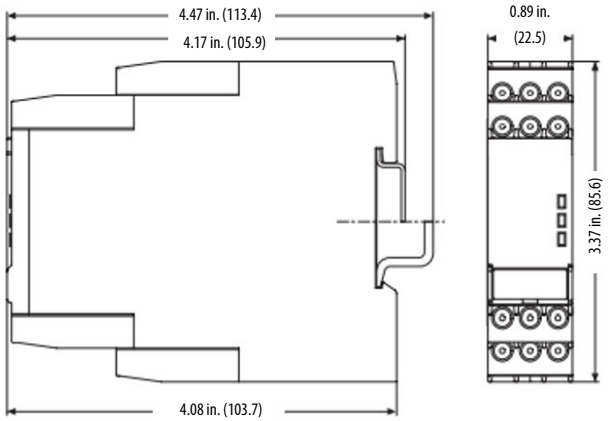
❶ Time Characteristics (according to VDE 0435, Part 2021)

Specifications		RS7-FS Relays ❶	RS7-FE Relays ❶
Setting Accuracy		±6% of full scale	±10% of full scale
Repeatability		±0.2% of the setting values	±0.5% of setting (typical)
Tolerance		Voltage: ±0.004%/V Temperature: ±0.035%/°C	Voltage: ±0.001%/%ΔU Temperature: ±0.025%/°C
Supply			
Supply Voltages		24...48V DC and 24...240V AC, 50/60 Hz (multi voltage)	24...48V DC and 24...240V AC, 50/60 Hz
Voltage Tolerance		–15%/+10% AC/DC	
Power Consumption		Max 16 VA	max 3.5 VA
Time Energized		100%	
Reset Time		<80 ms	50 ms
Cable Length (Supply Voltage Control)		Max. 50 m	
Pulse Control (B1)			
Pulse Duration		≥20 ms	
Input Voltage		Supply voltage range	
Input Current		1 mA	
Cable Length		Max. 50 m	
Outputs			
Contact Type		2 Form C - DPDT contacts, 1 Form C – SPDT contacts	1 Form C – SPDT contact
Dielectric Withstand Voltage	Contact-to-coil	6000V	4000V
Switching Capacity	Power	500V AC	3600 VA (Make) 360 VA (Break)
	According to IEC 947-5-1		4 A /230V AC (resistive load, AC-12)
		3 A/230V AC (inductive load, AC 15)	0.2 A/230V AC (inductive load, AC 15)
		2 A/24V DC (inductive load, DC 13)	1 A/24V DC (inductive load, DC 13)
	According to UL 508:	1.5 A/250V AC (B300) - 3 A/120V AC (B300)	NEMA B300 - 5 A/300V AC
Short circuit protective device		N/C 6 A, N/O 10 A (Fast Blow Fuse)	
Life	Mechanical	30 million operations	
	Electrical	100,000 operations at AC12, 230V, 4 A	min 100,000 operations
State Indicator		2 LED, combination signal	

❶ Time Characteristics (according to VDE 0435, Part 2021)

Series RZ7-FS Timing Relays

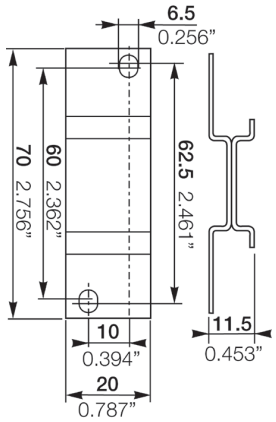
Dimensions are in inches (millimeters).
Dimensions not intended for manufacturing purposes.



RZ7-FS

Panel Mounting Adapter

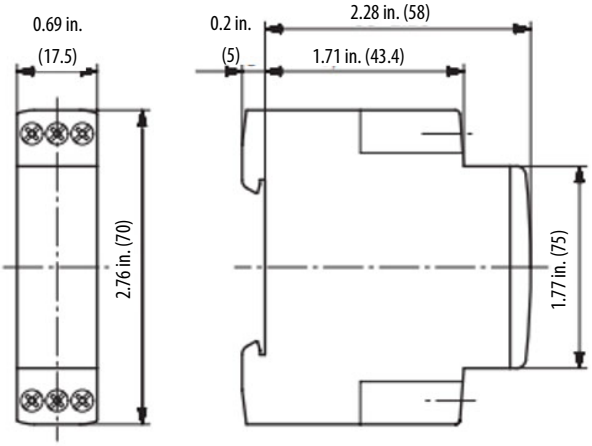
Dimensions are in inches (millimeters).
Dimensions not intended for manufacturing purposes.



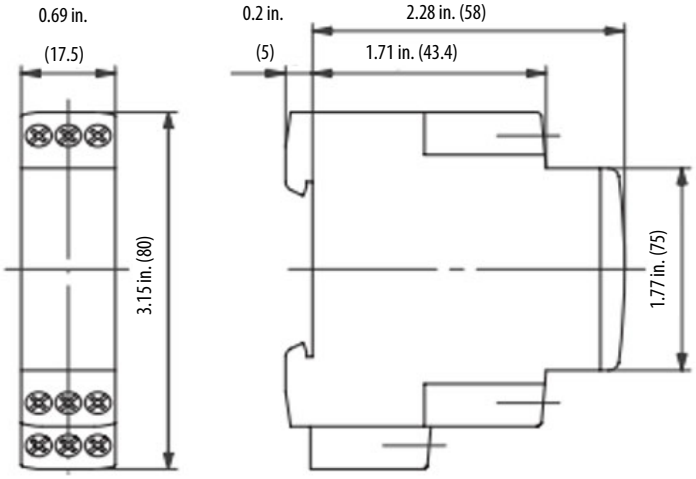
RZ7-FSPMA

Series RZ7-FE Timing Relays

Dimensions are in inches (millimeters). Dimensions not intended for manufacturing purposes.

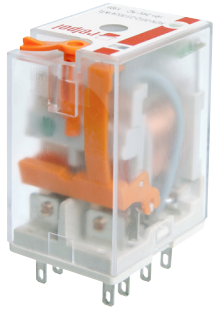


RZ7-FE with 1 c/o Contact or 2 n/o Contacts

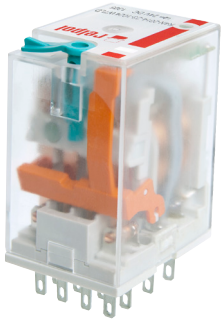


RZ7-FE with 2 c/o Contact

General Purpose Relays R2N/R4N Miniature Power Plug-in Relays



R2N Miniature Blade Type Relay



R4N Miniature Blade Type Relay

The Relpol R2N and R4N General Purpose Miniature Power Relays, typically called "miniature cube type" in the industry, offer high reliability and ruggedness without sacrificing the convenience and economy users have come to expect from relays in this size class. This line of plug-in devices is well suited to any application where a dependable low cost control relay is required.

Versatile design for any application

The R2N miniature power relay is rated at 12 amps resistive @240VAC and is available in a 2PDT (2 form-C contacts) contact arrangement. The R4N relay is rated at 6 amps resistive @240VAC and available in a 4PDT (4 form-C contacts) contact design.

The relay contact materials are cadmium-free and are made of highly reliable silver nickel (AgNi) which can perform to currents as low as 5mA@5V. For lower level signal applications, the R4N is also available with silver nickel gold plated contacts for circuits 2mA.

Each relay style is available in ten coil voltages from 6V DC to 110V DC and 6V AC to 240V AC.

Extremely rugged and reliable

The R2N and R4N relays provides long lasting high quality contact reliability even after millions of operations, due to their hard silver contacts with a mechanical life of 20 million cycles, and high contact switching capacity.

Convenient features

All R Series miniature power relay features a mechanical "flag" and a one piece "push-to--test button/latching" lever. The "push-to--test" button permits a momentary testing of the relay contacts. The "latching" lever allows the relay contacts to remain closed for longer testing periods until released back to normal.

These standard features save time and labor when troubleshooting control circuitry.

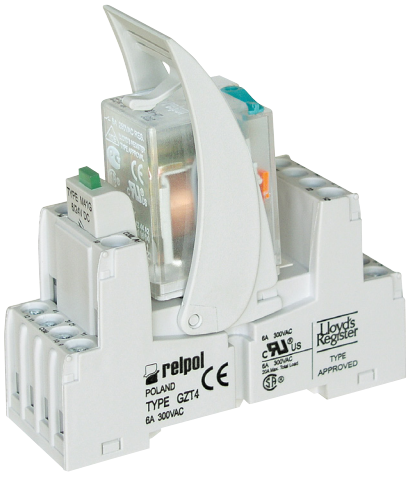
A LED position indicator that shows whether the relay is energized and that the contacts have changed over is available as standard. All relays with DC coils are bi-polar, which means polarity input can either be +/- or -/+ to energize the coil.

DIN-rail mounted relay sockets

The GZT relay sockets offer a unique look in an IEC slim design style. The sockets can be DIN-mounted or screwed directly onto the panel. The socket terminals are fully opened and pin numbers are clearly identified. The relays are easily secured and fastened to the relay sockets. For high vibration applications, optional retainer clips are available to firmly hold the relays to the socket base.

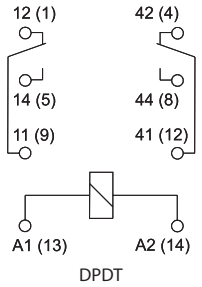
Safety Approvals

The R2N and R4N are UL recognized, CSA certified, VDE certified and CE marked which meets the requirements of all important international approval organizations, making them ideal for use in both domestic and export equipment.

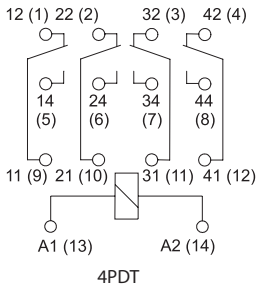


R4N relay and GZT4 socket with GZT4-0040 retainer clip

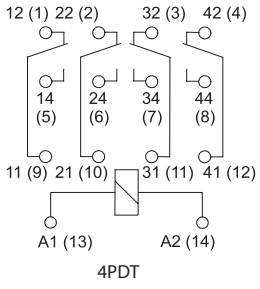
Plug-in Relays 2 Pole (Form C)- Miniature Blade Type ❶

R2N Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	12A DPDT 2 Pole (2 Form C) Single AgNi Contact **Features:** Push-to-test/ Latching Lever as standard Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 DPDT	6VDC	R2N-2012-23-1006-WTL	10
				12VDC	R2N-2012-23-1012-WTL	
				24VDC	R2N-2012-23-1024-WTL	
				48VDC	R2N-2012-23-1048-WTL	
				110VDC	R2N-2012-23-1110-WTL	
				6VAC	R2N-2012-23-5006-WTL	
				12VAC	R2N-2012-23-5012-WTL	
				24VAC	R2N-2012-23-5024-WTL	
				120VAC	R2N-2012-23-5120-WTL	
				240VAC	R2N-2012-23-5240-WTL	

Plug-in Relays 4 Pole (Form C) - Miniature Blade Type ❶

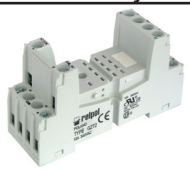
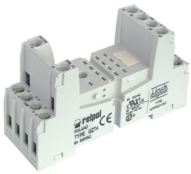
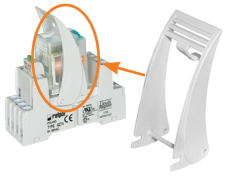
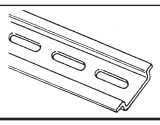
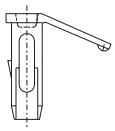
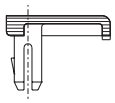
R4N Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	6A 4PDT 4 Pole (4 Form C) AgNi Contacts **Features:** Push-to-test/ Latching Lever as standard Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 4PDT	6VDC	R4N-2014-23-1006-WTL	10
				12VDC	R4N-2014-23-1012-WTL	
				24VDC	R4N-2014-23-1024-WTL	
				48VDC	R4N-2014-23-1048-WTL	
				110VDC	R4N-2014-23-1110-WTL	
				6VAC	R4N-2014-23-5006-WTL	
				12VAC	R4N-2014-23-5012-WTL	
				24VAC	R4N-2014-23-5024-WTL	
				120VAC	R4N-2014-23-5120-WTL	
				240VAC	R4N-2014-23-5240-WTL	

Plug-in Relays 4 Pole (Form C) - Miniature Blade Type, Low Level Applications ❶

R4N Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	6A 4PDT 4 Pole (4 Form C) AgNi/Au Gold Plated Contacts 2mA 5V **Features:** Push-to-test/ Latching Lever as standard Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 4PDT	6VDC	R4N-2314-23-1006-WTL	10
				12VDC	R4N-2314-23-1012-WTL	
				24VDC	R4N-2314-23-1024-WTL	
				48VDC	R4N-2314-23-1048-WTL	
				110VDC	R4N-2314-23-1110-WTL	
				6VAC	R4N-2314-23-5006-WTL	
				12VAC	R4N-2314-23-5012-WTL	
				24VAC	R4N-2314-23-5024-WTL	
				120VAC	R4N-2314-23-5120-WTL	
				240VAC	R4N-2314-23-5240-WTL	

❶ The standard features of "Push-to-test/Latching" lever can be easily removed and plugged with an accessory plug or push-to-test only button.
See installation guide and accessory plugs/push-to-test buttons on next page.

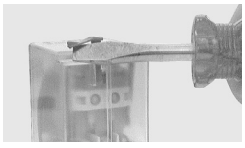
Accessories

Accessory	Description	Catalog Number	Pkg Qty
	Screw Terminal, Relpol Miniature Blade-Type Socket for R2N relays - Panel or DIN-rail mounting - 14 blade miniature socket - 12A, 300V rating cURus, CSA, CE	**GZT2**	10
	Screw Terminal, Relpol Miniature Blade-Type Socket for R4N relays - Panel or DIN-rail mounting - 14 blade miniature socket - 6A, 300V rating cURus, CSA, CE	**GZT4**	10
	Retainer clip for GZT2 & GZT4 Miniature blade relay sockets	**G41052**	25
	Retainer/retractor clip for GZT2 & GZT4 Miniature blade relay sockets	**GZT4-0040S**	10
	Description plate for GZT2 & GZT4 Miniature blade relay sockets	**GZT4-0035**	10
	DIN-rail - 2 meter lengths (6' 6") Top Hat, low profile Top Hat, high profile	**3F** **3AF**	20 12
	P-Type button (push-to-test button) ❶ See application details below. For R2N/R4N Relays with AC Coils (orange button) For R2N/R4N Relays with DC Coils (green button)	 **R4P-0001-A** **R4P-0001-D**	 100
	Relay hole plug. Plugs the hole when the T or P type inserts ❶ are removed. See installation details below. For R2N/R4N Relays with AC Coils (orange button) For R2N/R4N Relays with DC Coils (green button)	 **R4W-0003-A** **R4W-0003-D**	 100

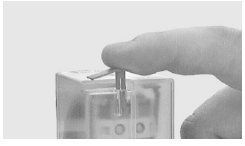
Plug & P-type button (Push-to-test) for R2N and R4N Relays

The R2N and R4N relays are equipped with a one-piece "T" insert that functions either as Push-to-test button or Latching of the relay contacts as standard. The "T" insert can be easily removed and replaced with an accessory Plug for applications that can not include these additional standard features.

The accessory P-Type button (Push-to-test) is recommended for applications that only require manual contact closure for control circuit testing. By manually pressing the P-Type button, the relay contacts change state for as long as the P-Type button is pressed. Contacts return to the initial position as soon as pressure is released from the P-Type button. This operation can be done while the coil is de-energized. The standard "T" insert can be easily removed and replaced with a P-Type button as shown.



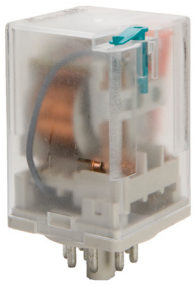
Remove the standard "T" plastic insert with a small screwdriver as shown



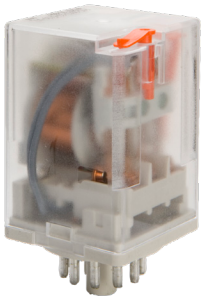
Insert the P-Type button or Plug as shown and snap down into place

❶ Minimum order quantity is one package of 100. Price each x 100 = total price.

R15 Plug-in Power Relays Tube Base Style



R15 2PDT 8-Pin Relay



R15 3PDT 11-Pin Relay

The Relpol R15 General Purpose Plug-in Power Relays offer high reliability and ruggedness in a full featured model design. This line of plug-in devices is well suited for the traditional tube base market. This is widely used in the industry where a dependable low cost control relay is required.

Designed for traditional applications

The R15 plug-in power relay is rated at 10 amps resistive @250VAC and is available in a 2PDT (2 form-C contacts) and 3PDT (3 form-C contacts) contact arrangement. The two pole and three pole relays are housed in traditional 8 pin and 11 pin designs.

The relay contact materials are cadmium-free and are made of highly reliable silver nickel (AgNi) which can perform to currents as low as 5mA@5V. The R15 relays are available in ten coil voltages from 6V DC to 110V DC and 6V AC to 240V AC.

Rugged and reliable

The R15 plug-in power relays provide long lasting high quality contact reliability even after millions of operations, due to their hard silver contacts with a mechanical life of 20 million cycles, and high contact switching capacity.

Convenient features

All R15 plug-in power relays feature a mechanical "flag" and a one piece "push-to-test button/latching" lever. The "push-to-test" button permits a momentary testing of the relay contacts. The "latching" lever allows the relay contacts to remain closed for longer testing periods until released back to normal. These standard features save time and labor when troubleshooting control circuitry.

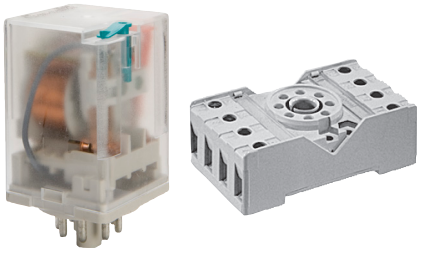
A LED position indicator shows whether the relay is energized and the contacts have changed over is available as standard.

DIN-rail mounted relay sockets

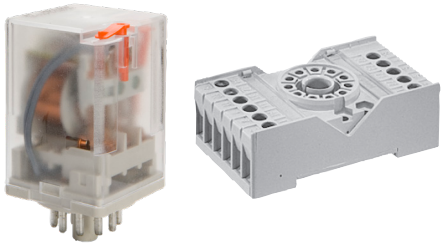
The PZ relay sockets offer a unique look in an IEC slim design style. The sockets can be DIN-mounted or screwed directly onto the panel. The socket terminals are fully opened and pin numbers are clearly identified. The relays are easily secured and fastened to the relay sockets. For high vibration applications, optional retainer clips are available to firmly hold the relays to the socket base.

Safety Approvals

The R15 plug-in power relays are UL recognized, CSA certified, VDE certified and CE marked which meets the requirements of all important international approval organizations, making them ideal for use in both domestic and export equipment.

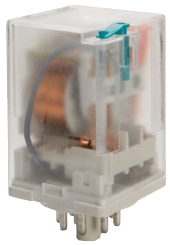
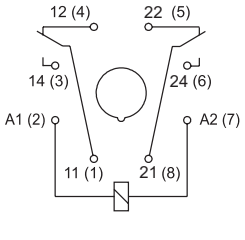


R15 2PDT relay
and PZ8 socket

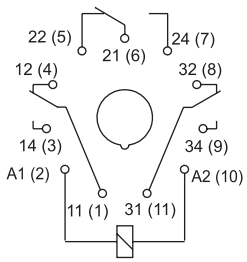


R15 3PDT relay
and PZ11 socket

Plug-in Relays 2 Pole (Form C) - Tube Base 8-Pin Type ❶

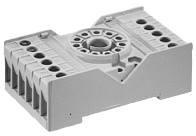
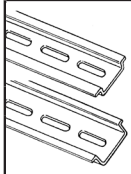
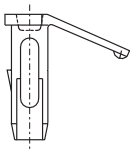
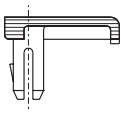
R15 Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	10A DPDT 2 Pole (2 Form C) AgNi Contacts **Features:** Push-to-test/ Latching Lever as standard Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 DPDT	6VDC	**R15-2012-23-1006-WTL**	**10**
				12VDC	**R15-2012-23-1012-WTL**	
				24VDC	**R15-2012-23-1024-WTL**	
				48VDC	**R15-2012-23-1048-WTL**	
				110VDC	**R15-2012-23-1110-WTL**	
				6VAC	**R15-2012-23-5006-WTL**	
				12VAC	**R15-2012-23-5012-WTL**	
				24VAC	**R15-2012-23-5024-WTL**	
				120VAC	**R15-2012-23-5120-WTL**	
				240VAC	**R15-2012-23-5240-WTL**	

Plug-in Relays 3 Pole (Form C) - Tube Base 11-Pin Type ❶

R15 Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	10A 3PDT 3 Pole (3 Form C) AgNi Contacts **Features:** Push-to-test/ Latching Lever as standard Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 3PDT	6VDC	**R15-2013-23-1006-WTL**	**10**
				12VDC	**R15-2013-23-1012-WTL**	
				24VDC	**R15-2013-23-1024-WTL**	
				48VDC	**R15-2013-23-1048-WTL**	
				110VDC	**R15-2013-23-1110-WTL**	
				6VAC	**R15-2013-23-5006-WTL**	
				12VAC	**R15-2013-23-5012-WTL**	
				24VAC	**R15-2013-23-5024-WTL**	
				120VAC	**R15-2013-23-5120-WTL**	
				240VAC	**R15-2013-23-5240-WTL**	

❶ The standard features of "Push-to-test/Latching" lever can be easily removed and plugged with an accessory plug or push-to-test button.
See installation guide and accessory plugs/push-to-test buttons on page G4:6.

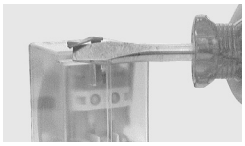
Accessories

Accessory	Description	Catalog Number	Pkg Qty
	Screw Terminal, Relpol Tube Base 8-PIN Socket for R15 relays - Panel or DIN-rail mounting - 10A, 250V rating, UR, CSA	**PZ8**	10
	Screw Terminal, Relpol Tube Base 11-PIN Socket for R15 relays - Panel or DIN-rail mounting - 10A, 250V rating, UR, CSA	**PZ11**	10
	Retainer clip for PZ8 & PZ11 tube base relay sockets	**PZ110031**	25
	DIN-rail - 2 meter lengths (6' 6") Top Hat, low profile Top Hat, high profile	**3F** **3AF**	20 12
	P-Type button (push-to-test button) ❶ See application details below. For R15 Relays with AC Coils (orange button) For R15 Relays with DC Coils (green button)	**R15-M404-A** **R15-M404-D**	100
	Relay hole plug. Plugs the hole when the T or P type inserts ❶ are removed. See installation details below. For R15 Relays with AC Coils (orange button) For R15 Relays with DC Coils (green button)	**R15-M203-A** **R15-M203-D**	100

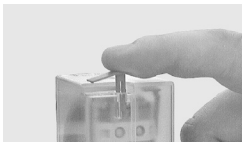
Plug & P-type button (Push-to-test) for R15 Relays

The R15 relays are equipped with a one-piece "T" insert that functions either as Push-to-test button or Latching of the relay contacts as standard. The "T" insert can be easily removed and replaced with an accessory Plug for applications that can not include these additional standard features.

The accessory P-Type button (Push-to-test) is recommended for applications that only require manual contact closure for control circuit testing. By manually pressing the P-Type button, the relay contacts change state for as long as the P-Type button is pressed. Contacts return to the initial position as soon as pressure is released from the P-Type button. This operation can be done while the coil is de-energized. The standard "T" insert can be easily removed and replaced with a P-Type button as shown.



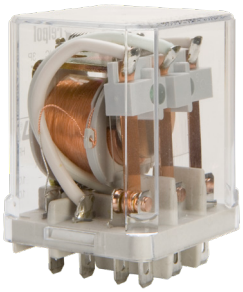
Remove the standard "T" plastic insert with a small screwdriver as shown



Insert the P-Type button or Plug as shown and snap down into place

❶ Minimum order quantity is one package of 100. Price each x 100 = total price.

RUC Plug-in Power Relays Square Base Plug-in



RUC 3PDT Blade Type relay

The Relpol RUC General Purpose Plug-in Power Relays offer high reliability and robustness in a traditional square base design. This line of plug-in devices is well suited for the traditional higher inrush current applications.

Designed for higher amps and inrush applications

The RUC plug-in power relay is rated at 15 amps resistive @250VAC and is available in a 2PDT (2 form-C contacts). It is also available in a 3PDT (3 form-C contacts) contact arrangement rated at 10 amps resistive @250VAC. These relays can handle inrush currents up to 40 amps.

The relay contact materials are made of highly reliable silver tin ($AgSnO_2$) which has a minimum switching capacity of 10mA @10V. The RUC relays are available in ten coil voltages from 6V DC to 110V DC and 6V AC to 240V AC.

Rugged and reliable

The RUC plug-in power relays provide long lasting high quality contact reliability even after millions of operations due to their hard nickel cadmium contacts, with a mechanical life of 20 million cycles, and high contact switching capacity.

Convenient features

The RUC plug-in power relay offers a LED position indicator that shows whether the relay is energized and that the contacts have changed over.

DIN-rail mounted relay sockets

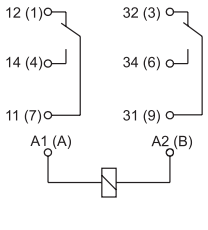
The SB11 relay sockets offer a traditional look in an IEC design. The sockets can be DIN-mounted or screwed directly onto the panel. The terminal pin numbers are clearly identified. The relays are easily secured and fastened to the relay sockets. For high vibration applications, optional retainer clips are available to firmly hold the relays to the socket base.

Safety Approvals

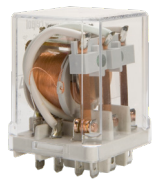
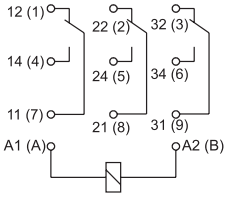
The RUC plug-in power relays are UL recognized, CSA certified and CE marked which meets the requirements of all important international approval organizations, making them ideal for use in both domestic and export equipment.

RUC 3PDT relay and SB11 socket

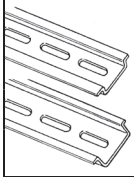
Plug-in Relays 2 Pole (Form C) - Square Base Blade Type ❶

RUC Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	15A DPDT 2 Pole (2 Form C) $AgSnO_2$ Contacts **Features:** Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 DPDT	6VDC	**RUC-3012-26-1006-L**	**10**
				12VDC	**RUC-3012-26-1012-L**	
				24VDC	**RUC-3012-26-1024-L**	
				48VDC	**RUC-3012-26-1048-L**	
				110VDC	**RUC-3012-26-1110-L**	
				6VAC	**RUC-3012-26-5006-L**	
				12VAC	**RUC-3012-26-5012-L**	
				24VAC	**RUC-3012-26-5024-L**	
				120VAC	**RUC-3012-26-5120-L**	
				240VAC	**RUC-3012-26-5240-L**	

Plug-in Relays 3 Pole (Form C) - Square Base Blade Type ❶

RUC Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	10A 3PDT 3 Pole (3 Form C) $AgSnO_2$ Contacts **Features:** Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 3PDT	6VDC	**RUC-3013-26-1006-L**	**10**
				12VDC	**RUC-3013-26-1012-L**	
				24VDC	**RUC-3013-26-1024-L**	
				48VDC	**RUC-3013-26-1048-L**	
				110VDC	**RUC-3013-26-1110-L**	
				6VAC	**RUC-3013-26-5006-L**	
				12VAC	**RUC-3013-26-5012-L**	
				24VAC	**RUC-3013-26-5024-L**	
				120VAC	**RUC-3013-26-5120-L**	
				240VAC	**RUC-3013-26-5240-L**	

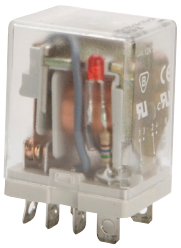
Accessories

Accessory	Description	Catalog Number	Pkg Qty
	Screw Terminal, Square Base Blade type Socket for RUC relays - Panel or DIN-rail mounting ❷ - 15A, 300VAC rating, UR, CSA	**SB11**	10
	Retainer clip for SB11 tube base relay sockets	**MBA**	25
	DIN-rail - 2 meter lengths (6' 6") Top Hat, low profile Top Hat, high profile	 **3F** **3AF**	 20 12

10

❶ Relays can be special ordered with No LED's, contact your Sprecher + Schuh representative.
❷ This product is sourced from a third party manufacturer, not Relpol.

RY2 Plug-in Power Relays Slim Square Base



RY2 2PDT Blade Type Relay

The Relpol RY2 General Purpose Plug-in Power Relay is a traditional square base blade type style designed for higher current application in a small design.

Designed for higher amp applications in a reduced size

The RY2 plug-in power relay is rated at 12 amps resistive @250VAC and is available in a 2PDT (2 form-C contacts). These relays can handle inrush currents up to 20 amps in a small packaged design.

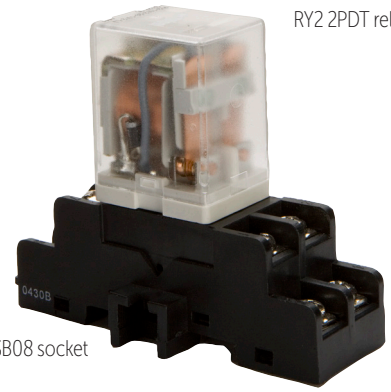
The relay contact materials are made of highly reliable silver nickel which has a minimum switching capacity of 5mA@5V. The RY2 relays are available in ten coil voltages from 6V DC to 110V DC and 6V AC to 240V AC.

Rugged and reliable

With a mechanical life of 20 million cycles, and high contact switching capacity due to their hard nickel cadmium contacts, the RY2 plug-in power relay provides long lasting high quality contact reliability even after millions of operations.

Convenient features

All RY2 plug-in power relays feature a mechanical "flag" indicator and a LED position indicator that shows whether the relay is energized and that the contacts have changed over.



RY2 2PDT relay

SB08 socket

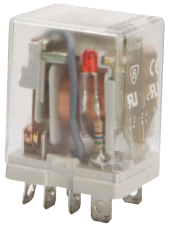
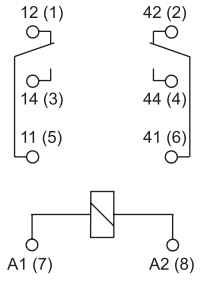
DIN-rail mounted relay sockets

The SB08 relay sockets offer a slim space savings design. The sockets can be DIN--mounted or screwed directly onto the panel. The terminal pin numbers are clearly identified. The relays are easily secured and fastened to the relay sockets. For high vibration applications, optional retainer clips are available to firmly hold the relays to the socket base.

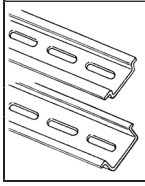
Safety Approvals

The RY2 plug-in power relays are cURus recognized and CE marked which meets the requirements of all important international approval organizations, making them ideal for use in both domestic and export equipment.

Plug-in Relays 2 Pole (Form C) - Slim Blade Type

RY2 Relay	Description	Position Indication	Diagram (pin side view)	Coil Voltage	Catalog Number	Pkg Qty
	12A DPDT 2 Pole (2 Form C) AgNi Contact **Features**: Built-in LED Bi-polar input for DC versions	Indicating Flag Electrical LED	 DPDT	6VDC	**RY2-2012-26-1006-L**	**10**
				12VDC	**RY2-2012-26-1012-L**	
				24VDC	**RY2-2012-26-1024-L**	
				48VDC	**RY2-2012-26-1048-L**	
				110VDC	**RY2-2012-26-1110-L**	
				6VAC	**RY2-2012-26-5006-L**	
				12VAC	**RY2-2012-26-5012-L**	
				24VAC	**RY2-2012-26-5024-L**	
				120VAC	**RY2-2012-26-5120-L**	
				240VAC	**RY2-2012-26-5240-L**	

Accessories

Accessory	Description	Catalog Number	Pkg Qty
	**Screw Terminal, Square Base Blade type Socket for RY2 relays** **- Panel or DIN-rail mounting ❶** **- 15A, 300VAC rating, UR, CSA**	**SB08**	10
	**Retainer clip forGZY2 tube base relay sockets**	**SP-8**	25
	**DIN-rail - 2 meter lengths (6' 6")** **Top Hat, low profile** **Top Hat, high profile**	 **3F** **3AF**	 20 12

❶ This product is sourced from a third party manufacturer, not Relpol.

Interface PCB Relays PI84/PI85

RM84 Interface PCB Relay used in PI84 complete assembly

RM85 Interface PCB Relay used in PI85 complete assembly

The Relpol PI84/PI85 Interface PCB Relays offer a unique design for high current applications. The low current input and power consumption with load capabilities of high current switching is ideal for limited input sources and panel space savings.

A full featured model in one small package

The PI84/PI85 interface PCB relays are offered as a complete package which includes the following five factory installed pieces:

1. PCB (Printed Circuit Board module)
2. Relay socket
3. LED position indicator
4. Retainer clip
5. Description plate

Low input current, high switching capabilities

The PI84 interface PCB relays is rated at 8 amps resistive @250VAC and is available in a 2PDT (2 form-C contacts). The PI85 is rated at 16 amps resistive @250VAC and is available in a SPDT (1 form-C contact). The coil power consumption is approximately 750mA AC or 480mW DC.

Both interface relay styles are available in 24V DC, 24V AC and 120V AC models.

Rugged and reliable

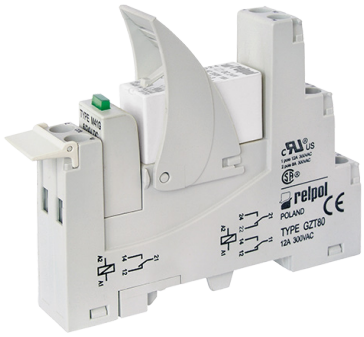
With a mechanical life of 20 million cycles, and high contact switching capacity due to their hard nickel cadmium contacts, the PI84/PI85 interface PCB relays provide long lasting high quality contact reliability even after millions of operations.

DIN-rail mounted relay sockets

The PI84/PI85 interface relay DIN-mounted sockets offer a slim space savings design. The relay socket includes a retainer clip to firmly hold the PCB relay and a description plate as standard.

Safety Approvals

The RM84 & RM85 interface PCB relays are UL recognized, CSA, VDE certified and CE marked which meets the requirements of all important international approval organizations, making them ideal for use in both domestic and export equipment.



PI84 Interface PCB Relay complete assembly

Interface PCB Relays (Form C) - 2 Pole

PI84 PCB Relay	Description	Position Indication	Coil Voltage	Catalog Number	Pkg Qty
	8A DPDT 2 Pole (2 Form C) AgNi Contacts **Includes:** PCB relay, plug-in socket, protective module, retainer clip and description plate	Electrical LED	24VDC	**PI84-024DC-M41G-TS-2012**	10
			24VAC	**PI84-024AC-M91G-TS-2012**	
			120VAC	**PI84-120AC-M93G-TS-2012**	

Interface PCB Relays (Form C) - 1 Pole

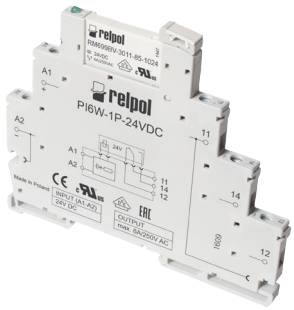
PI85 PCB Relay	Description	Position Indication	Coil Voltage	Catalog Number	Pkg Qty
	16A SPDT 1 Pole (1 Form C) AgNi Contacts **Includes:** PCB relay, plug-in socket, protective module, retainer clip and description plate	Electrical LED	24VDC	**PI85-024DC-M41G-TS-2011**	10
			24VAC	**PI85-024AC-M91G-TS-2011**	
			120VAC	**PI85-120AC-M93G-TS-2011**	

Accessories

RM84/RM85	Description	For use with...	Catalog Number	Pkg Qty
 RM85	**Replacement PCB Relay** Replacement operational relays for PI84/PI85 Interface PCB Relays	PI84-024DC-M41G	**RM84-2012-25-1024**	20
		PI84-024AC-M91G	**RM84-2012-25-5024**	
		PI84-120AC-M93G	**RM84-2012-25-5120**	
		PI85-024DC-M41G	**RM85-2011-25-1024**	20
		PI85-024AC-M91G	**RM85-2011-25-5024**	
		PI85-120AC-M93G	**RM85-2011-25-5120**	

PIR6W Slim Interface Terminal Block Relays

The Relpol PIR6W Slim Interface Terminal Block Relay is ideally compact, designed for a variety of high-density isolation and interposing applications.



PIR6W Slim Interface Relay
Complete Assembly

A full featured model in one small package

The PIR6W slim interface relays are offered as a complete package which includes the following:

- Changeover relay, rated load 6 A / 230 V (ACI)
- Interface Relay socket with built-in LED position indicator
- Description plate

Low input current, high switching capabilities

The PIR6W slim interface relay contacts are rated at 6 amps resistive @230VAC and available in SPDT (1 form - C contact). The minimum contact current capablilties are 100mA at 24V. The coil power cosumption is approximately 0.3...0.8VA AC or 0.3…0.9W DC. The PIR6W interface relays are available in 24V DC, 24V AC/DC and 120V models.

Rugged and reliable

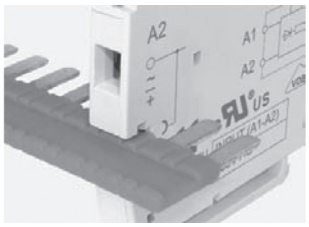
With a mechanical life of 20 million cycles, and high contact switching capacity due to their silver tin oxide ($AgSnO_2$) contacts, the PIR6W interface relays provide long lasting high quality contact reliability even after millions of operations.

DIN-rail mounted

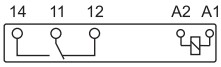
The PIR6W slim interface relays are DIN-rail mountable which can be easily installed along side other control terminal blocks for a space saving design.

Safety approvals

The PIR6W slim interface relays are cU-Rus, VDE and CE marked which meets the requirements of all important international approval organizations, making them ideal for use in both domestic and export equipment.

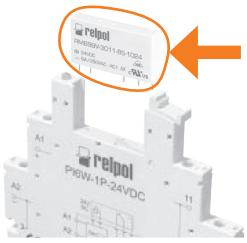


Interface Terminal Block Relays *(1 Form C) - 1 Pole* ❶

PIR6W	Specifications	Input Voltage	Catalog Number	Pkg Qty
	 **6A SPDT** 1 Pole (1 Form C) $AgSnO_2$ Includes: – Change over relay with built-in Green LED indicator	12VDC	PIR6W-1P-12VDC	10
		24VDC	**PIR6W-1P-24VDC**	
		24V AC/DC	PIR6W-1P-24VAC/DC	
		115V AC/DC	**PIR6W-1P-115VAC/DC**	

* Gray denotes special order.

Accessories

Accessory	Description	For use with...	Catalog Number	Pkg Qty
	**Interface Operational Relay** ❷ Replacement operational relays for PIR6W Interface Terminal Block Relays	PIR6W-1P-12VDC	**RM699BV-3011-85-1012**	20
		PIR6W-1P-24VDC PIR6W-1P-24VAC/DC ❸ PIR6W-1P-115VAC/DC	**RM699BV-3011-85-1024**	
	**20-Way Jumper** Can be cut to required length 36A max per 20-way Jumper Red Black Blue	PIR6W-1P...	**ZG20-1** **ZG20-2** **ZG20-3**	20
	**Replacement Description Plates** Allows user to label individual PIR6W Relays (one included with PIR6W-1P Relays)	PIR6W-1P...	**PI6W-1246**	100

❶ Other input voltages available as special order; contact your Sprecher + Schuh Representative.
❷ It should be noted that rated voltage Un of the input/operational relay coil does not always comply with the rated voltage Un of the interface relay (which is important on ordering operational relays for sockets).
❸ Previously accepted older model RM699V-3011-85-1012 12VDC replacement relay. Now supports a 24VDC relay model RM699BV-3011-85-1024.
❹ In March 2016, Relpol changed the DIN-rail fixing place location as represented in this view.

Technical Information

		R2N	R4N
Contacts			
Contact number & arrangement		DPDT	4PDT
Contact material		AgNi	AgNi, AgNi/Au 5 µm
Max. switching voltage	AC/DC	250 V / 250 V	250 V / 250 V
Min. switching voltage		5 V	5 V
Rated load	AC1	12 A / 250 V AC	6 A / 250 V AC
	AC15	3 A /120 V 1.5 A / 240 V (B300)	1.5 A /120 V 0.75 A / 240 V (C300)
	AC3	370 W (Single-phase motor)	125 W (Single-phase motor)
	DC1	12 A / 24 V DC	6 A / 24 V DC
	DC13	0.22 A / 120 V DC 0.1 A / 250 V (R300)	0.22 A / 120 V DC 0.1 A / 250 V (R300)
Min. switching current		5 mA AgNi	2 mA AgNi/Au 5 µm
Max. inrush current		24 A	12 A
Rated current		12 A	6 A
Max. breaking capacity	AC1	3 000 VA	1 500 VA
Min. breaking capacity		0,3 W AgNi	0,3 W AgNi, 0,1 W AgNi/Au 5 µm
Resistance		≤ 100 mΩ	
Max. operating frequency			
• at rated load	AC1	1 200 cycles/hour	
• no load		18 000 cycles/hour	
General data			
Operating time (typical value)			
Release time (typical value)		AC: 10 ms DC: 13 ms	
Electrical life		AC: 8 ms DC: 3 ms	
• resistive AC1		≥ 10^5 12 A, 250 V AC	≥ 10^5 6 A, 250 V AC
• cosϕ		see graphs on page G67	
Mechanical life (cycles)		≥ 2 x 10^7	
Dimensions (L x W x H)		27,5 x 21,2 x 35,6 mm	
Weight		35 g	
Ambient temperature			
• storing		-40...+85 °C	
• operating		AC: -40...+55 °C DC: -40...+70 °C	
Cover protection category		IP 40	
Shock resistance	(NO/NC)	10 g / 5 g	
Vibration resistance		5 g 10...150 Hz	
Solder bath temperature		max. 270 °C	
Soldering time		max. 5 s	
Insulation			
Insulation category		C250	B250
Insulation rated voltage		250 V AC	
Dielectric strength			
• coil - contact		2 500 V AC	
• contact - contact		1 500 V AC	
• pole - pole		2,500 V AC	2,000 V AC
Contact - coil distance			
• clearance		≥ 2,5 mm	≥ 1,6 mm
• creepage		≥ 4 mm	≥ 3,2 mm
UL/CSA Ratings			
Contact Ratings, General Purpose		10A 250V AC 12A 150V AC	6A 250VAC
DC Rating		10A 28V DC	
UL File Number		E105728	
CSA File Number		LR86957	
Standards		UL 508, CAN/CSA-C22.2 No. 14	

Technical Information

		R2N	R4N
Coil			
Rated voltage	50/60 Hz AC	6...240 V	
Contact material	DC	6...110 V	
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n	
Operating range of supply voltage		see tables below	
Rated power consumption	AC	1,6 VA	
	DC	0,9 W	

Coil Data - AC 50/60 Hz voltage version

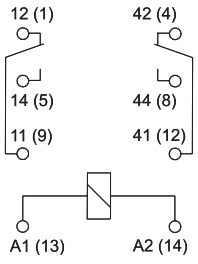
Coil Code	Rated Voltage V AC	Coil Resistence (±10%) at 20 °C	Coil Operating Range V AC	
			min. (at 20 °C)	max. (at 55 °C)
5006	6	9,8	4,8	6,6
5012	12	39,5	9,6	13,2
2024	24	158,0	19,2	26,4
5120	120	3 770,0	96,0	132,0
5240	240	16 800,0	192,0	264,0

Coil Data - DC voltage version

Coil Code	Rated Voltage V DC	Coil Resistence (±10%) at 20 °C	Coil Operating Range V DC	
			min. (at 20 °C)	max. (at 55 °C)
1006	6	40	4,8	6,6
1012	12	160	9,6	13,2
1024	24	640	19,2	26,4
1048	48	2600	38,4	52,8
1110	110	13 600	88,0	121,0

R2N Connections Diagram

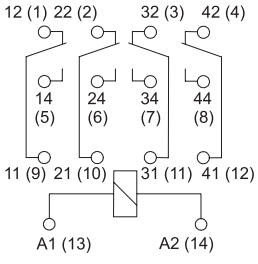
(pin side view)



DPDT

R4N-2014 Connections Diagram

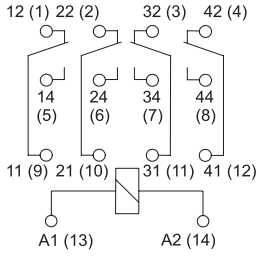
(pin side view)



4PDT

R4N-2314 Connections Diagram

(pin side view)

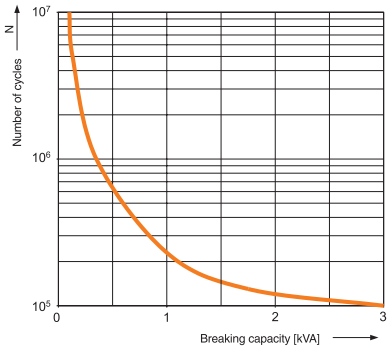


4PDT

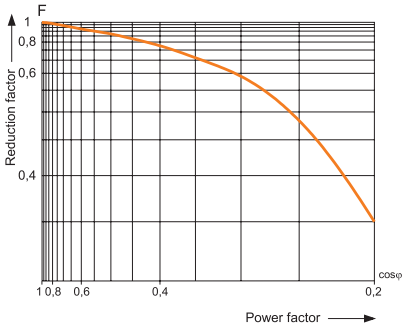
Note: Bi-polar input for DC versions

R2N

Electrical life at AC resistive load

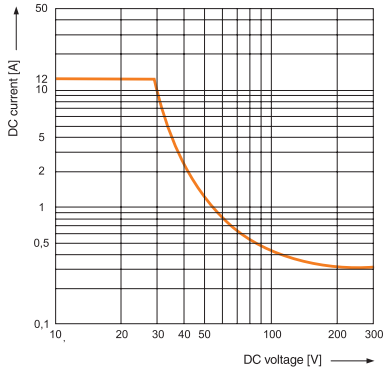


Electrical life reduction factor at AC inductive load



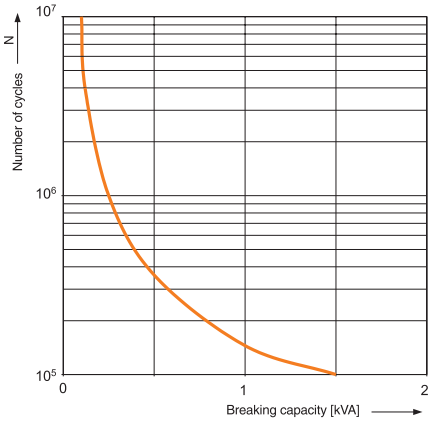
$N_{cos\varphi} = N \times F$

Maximum DC resistive load breaking capacity

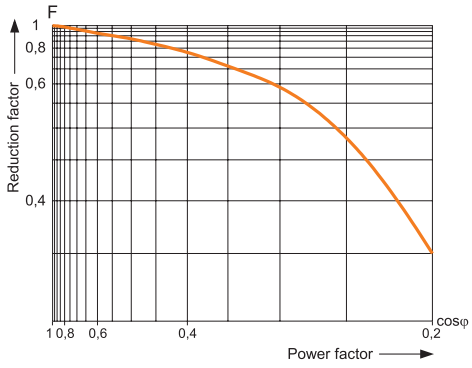


R4N

Electrical life at AC resistive load

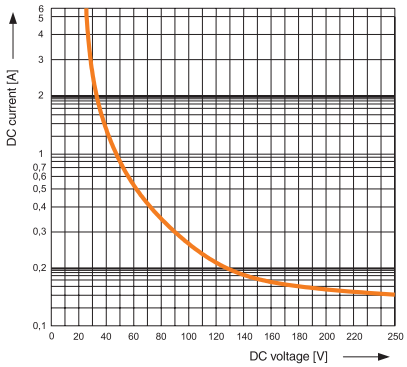


Electrical life reduction factor at AC inductive load



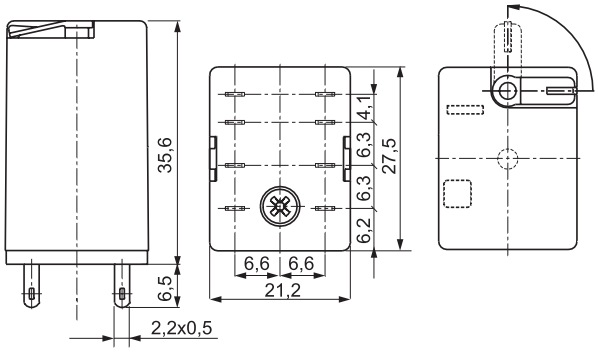
$N_{cos\varphi} = N \times F$

Maximum DC resistive load breaking capacity

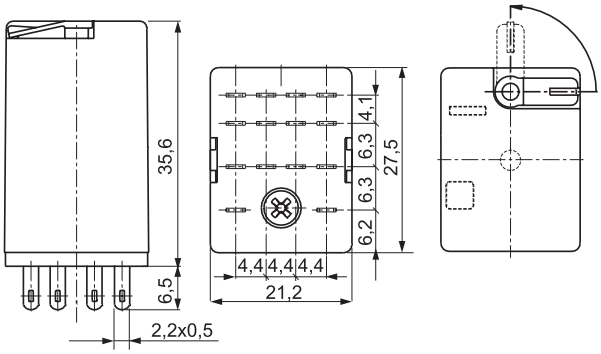


Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

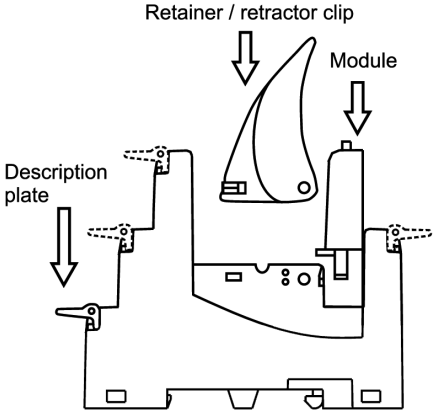
R2N Relay



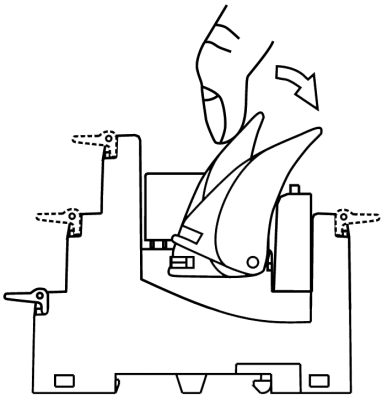
R4N Relay



Retainer/Retractor Clip GZT4-0040S



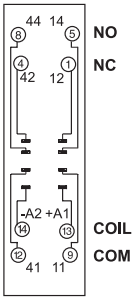
Installation of retainer / retractor clip, module and description plate



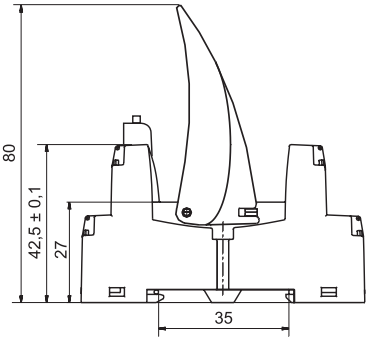
Retainer / retractor clip usage

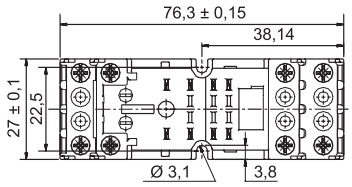
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

GZT2 Socket

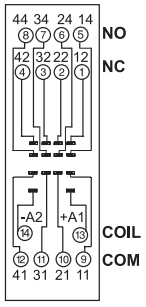


Connections diagram

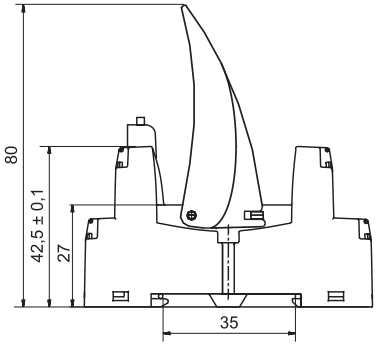


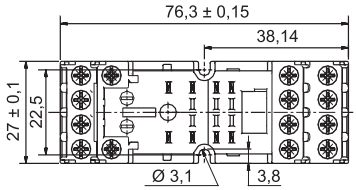


GZT4 Socket



Connections diagram





Technical Information

		R15		
Contacts				
Contact number & arrangement		DPDT, 3PDT		
Contact material		AgNi		
Max. switching voltage	AC/DC	250 V		
Min. switching voltage		5 V AgNi		
Rated load	AC1	10 A / 250 V AC		
	AC15	3 A / 120V 1.5 A / 240 V (B300)		
	AC3	370 W (single-phase motor 1/2 HP / 240 V AC UL 508)		
	DC1	10 A / 24 V DC		
	DC13	0.22 A / 250 V 0.1 A / 250 V (R300)		
Min. switching current		5 mA AgNi		
Max. inrush current		20 A		
Rated current		10 A		
Max. breaking capacity	AC1	2 500 VA		
Min. breaking capacity		0,3 W		
Resistance		≤ 100 mΩ		
Max. operating frequency				
• at rated load	AC1	1 200 cycles/hour		
• no load		12 000 cycles/hour		
General data				
Operating time (typical value)		AC: 12 ms DC: 18 ms		
Release time (typical value)		AC: 10 ms DC: 7 ms		
Electrical life				
• resistive AC1		≥ $2x10^5$ 10 A, 250 V AC		
• cosϕ		see graphs on page G76		
Mechanical life (cycles)		≥ $2 x 10^7$		
Dimensions (L x W x H)		35 x 35x 54,4 mm		
Weight		83 g		
Ambient temperature				
• storing		-40...+85 °C		
• operating		AC: -40...+55 °C DC: -40...+70 °C		
Cover protection category		IP 40		
Shock resistance	(NO/NC)	10 g		
Vibration resistance		5 g 10...150 Hz		
Solder bath temperature		max. 270 °C		
Soldering time		max. 5 s		
Insulation				
Insulation category		C250		
Insulation rated voltage		250 V AC		
Dielectric strength				
• coil - contact		2 500 V AC		
• contact - contact		1 500 V AC		
• pole - pole		2 000 V AC		
Contact - coil distance				
• clearance		≥ 3 mm		
• creepage		4,2 mm		
UL/CSA Ratings				
Contact Ratings, General Purpose		10A - 120 250V AC, 240 VAC		
Pilot Duty Ratings		B300		
Contacts	Inductive	Make	Break	HP
	120VAC	30A	3A	1/3
	240VAC	15A	1.5A	1/2
	DC		10A 28V DC	
UL File Number		E105728		
CSA File Number		LR86957		
Standards		UL 508, CAN/CSA-C22.2 No. 14		

Technical Information

	R15
Coil	
Rated voltage	AC: 6...240 V 50/60 Hz DC: 6...110 V
Must release voltage	AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage	see coil data tables below
Rated power consumption	AC: 2,8 VA 50 Hz 2,5 VA 60 Hz DC: 1,5 W

Coil Data - AC 50/60 Hz voltage version

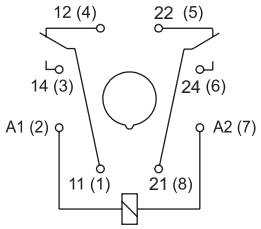
Coil Code	Rated Voltage V AC	Coil Resistence (±10%) at 20 °C Ω	Coil Operating Range V AC	
			min. (at 20 °C)	max. (at 55 °C)
5006	6	4,3	4,8	6,6
5012	12	18,5	9,6	13,2
2024	24	75,0	19,2	26,4
5120	120	1 910,0	96,0	132,0
5240	240	7 760,0	192,0	264,0

Coil Data - DC voltage version

Coil Code	Rated Voltage V DC	Coil Resistence (±10%) at 20 °C Ω	Coil Operating Range V DC	
			min. (at 20 °C)	max. (at 55 °C)
1006	6	28	4,8	6,6
1012	12	110	9,6	13,2
1024	24	430	19,2	26,4
1048	48	1 750	38,4	52,8
1110	110	9 200	88,0	121,0

R15 8-Pin Connection Diagram

(pin side view)



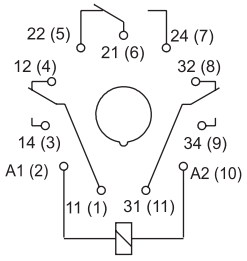
DPDT

Note:

Bi-polar input for DC versions

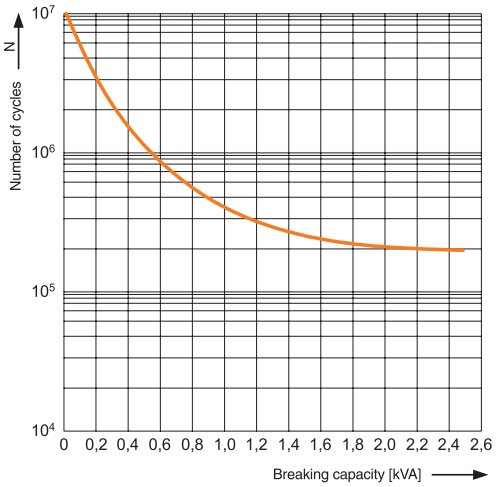
R15 11-Pin Connection Diagram

(pin side view)

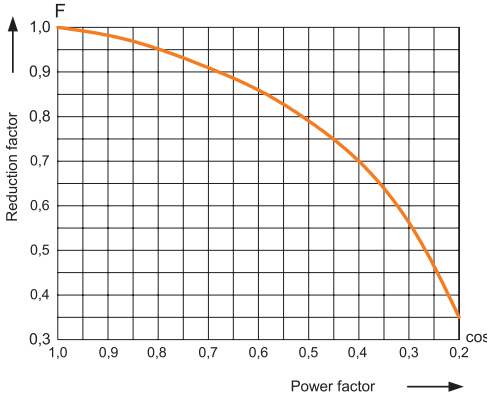


3PDT

Electric life at AC resistive load

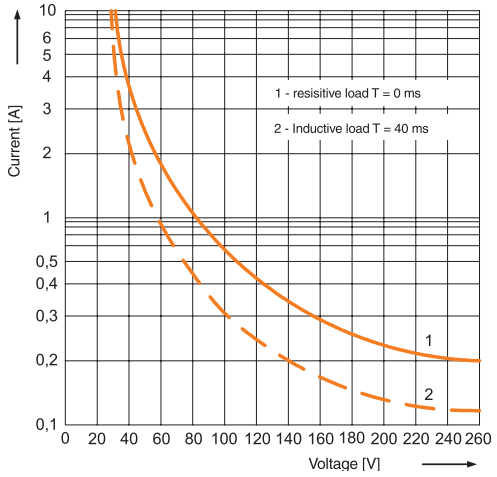


Electrical life reduction factor at AC inductive load



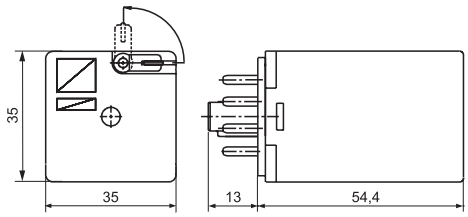
$N_{cos\varphi} = N \times F$

Max. DC load breaking capacity

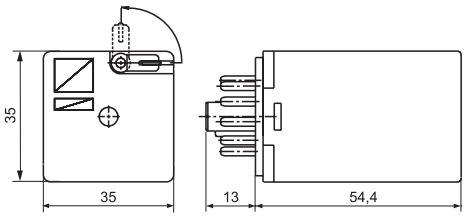


Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

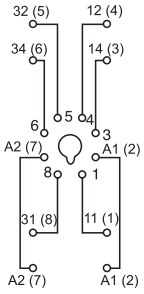
R15 2-Pole Relay



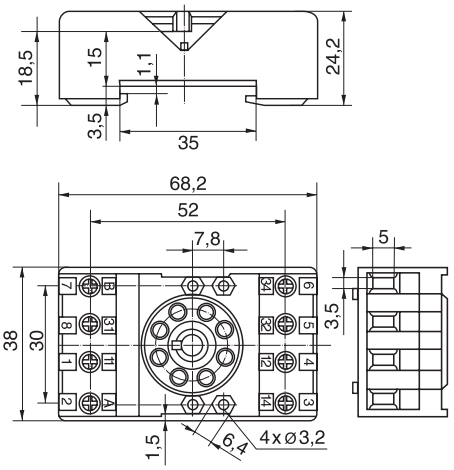
R15 3-Pole Relay



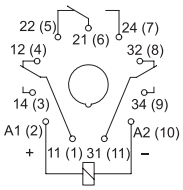
PZ8 Socket



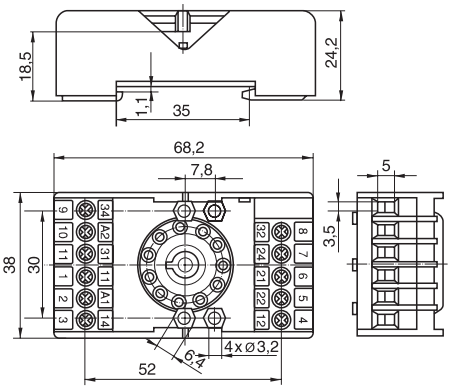
Connections diagram



PZ11 Socket



Connections diagram



Technical Information

		RUC
Contacts		
Contact number & arrangement		DPDT, 3PDT
Contact material		$AgSnO_2$
Max. switching voltage	AC/DC	250 V
Min. switching voltage		10 V
Rated load	AC1	16 A / 250 V AC
	DC1	16 A / 24 V DC
Min. switching current		10 mA
Max. inrush current		40 A
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		1 W
Resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		12 000 cycles/hour
General data		
Operating time (typical value)		AC: 12 ms DC: 12 ms
Release time (typical value)		AC: 10 ms DC: 7 ms
Electrical life		
• resistive AC1		$\geq 10^5$ 16 A, 250 V AC
• cosϕ		see graphs on page <?>
Mechanical life (cycles)		$\geq 10^7$
Dimensions (L x W x H)		38,6 x 36,1 x 45,5 mm
Weight		85 g
Ambient temperature		
• storage		-40...+85 °C
• operating	AC	-40...+55 °C 3 C/O, 3 NO / 16A
		(+70 °C 2 C/O, 2 NO / 16 A)
	DC	-40...+55 °C 3 C/O, 3 NO / 16A
		(+70 °C 3 C/O, 3 NO / 10 A; 2 C/O, 2 NO / 16 A)
Cover protection category		IP 40
Shock resistance	(NO/NC)	10 g
Vibration resistance		5 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

		RUC		
Insulation				
Insulation category		C250		
Insulation rated voltage		400 V AC		
Dielectric strength				
• coil - contact		2 500 V AC		
• contact - contact		1 500 V AC		
• contact - contact 3 mm		2 500 V AC		
• pole - pole		2 000 V AC		
Contact - coil distance				
• clearance / • creepage		≥ 6 mm / ≥ 8 mm		
UL/CSA Ratings				
Contact Ratings		DPDT	3PDT	
General Purpose Rating		10A 250 V AC 15A 250V (resistive) 15A 150 V AC	10 A 250 V AC	
Motor Load according to UL 508	2 C/O:	1/3 HP 120 V AC single-phase motor		
		1/2 HP 240 V AC single-phase motor		
	3 C/O:	1/3 HP 120 V AC single-phase		
		1/2 HP 240 V AC single-phase motor		
		1/2 HP 240 V AC three-phase motor		
Pilot Duty Ratings		B300		
Contacts	Inductive	Make	Break	HP
	120VAC	30A	3A	1/3
	240VAC	15A	1.5A	1/2
	DC	10A 28V DC		
UL File Number		E105728		
CSA File Number		LR86957		
Standards		UL 508, CAN/CSA-C22.2 No. 14		
Coil				
Rated voltage	50/60 HzAC	6...240 V		
	DC	6...110 V		
Must release voltage		AC: ≥ 0,15 U_n DC: 0,1 U_n		
Operating range of supply voltage		see coil data tables below		
Rated power consumption	AC	2,8 VA 50 Hz 2,5 VA 60 Hz		
	DC	1,5 W / 1,7 W with contact gap ≥ 3 mm		

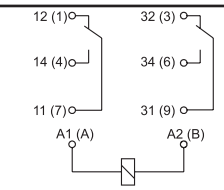
Coil Data - AC 50/60 Hz voltage version

Coil Code	Rated Voltage V AC	Coil Resistence (±10%) at 20 °C Ω	Coil Operating Range V AC	
			min. (at 20 °C)	max. (at 55 °C)
5006	6	4,3	4,8	6,6
5012	12	18,5	9,6	13,2
2024	24	75,0	19,2	26,4
5120	120	1 910	96,0	132,0
5240	240	7 760	192,0	264,0

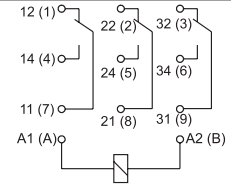
Coil Data - DC voltage version

Coil Code	Rated Voltage V DC	Coil Resistence (±10%) at 20 °C Ω	Coil Operating Range V DC	
			min. (at 20 °C)	max. (at 55 °C)
1006	6	28	4,8	6,6
1012	12	110	9,6	13,2
1024	24	430	19,2	26,4
1048	48	1 750	38,4	52,8
1110	110	9 200	88,0	121,0

RUC DPDT Connection Diagram



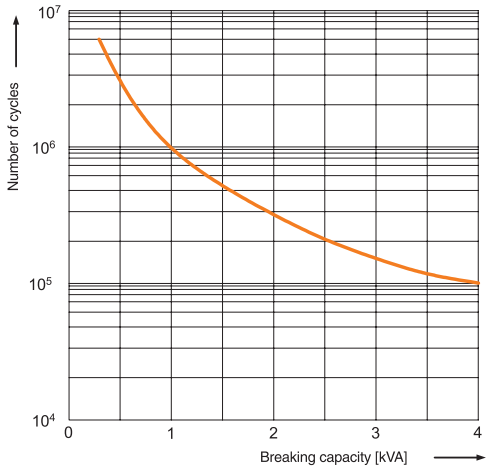
DPDT



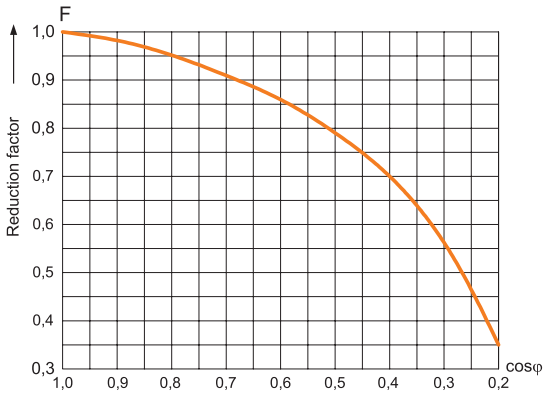
3PDT

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

Electric life at AC resistive load

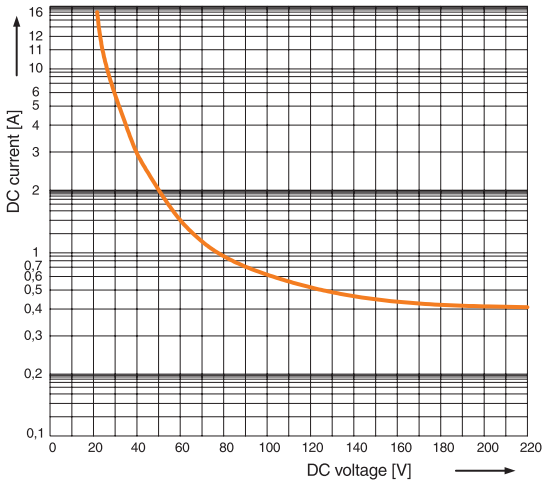


Electrical life reduction factor at AC inductive load

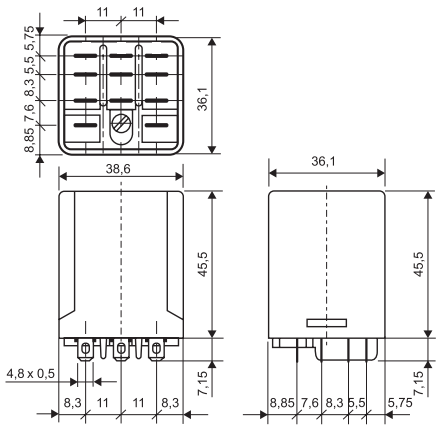


$N_{cos\varphi} = N \times F$

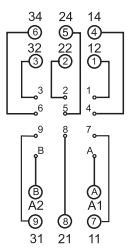
Max. DC load breaking capacity



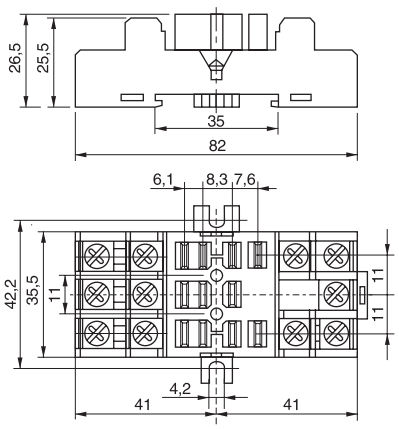
RUC Relay



SB11 Socket



Connections diagram



Technical Information

		RY2		
Contacts				
Contact number & arrangement		DPDT		
Contact material		RY2-1012 AgCdO / RY2-2012 AgNi		
Max. switching voltage	AC/DC	250 V / 250 V		
Min. switching voltage		AgCdO 10 V / AgNi 5 V		
Rated load	AC1	12 A / 250 V AC		
	DC1	12 A / 30 V DC		
Min. switching current		AgCdO 10 mA / AgNi 5 mA		
Max. inrush current		20 A		
Rated current		12 A		
Max. breaking capacity	AC1	3 000 VA		
Min. breaking capacity		1 W		
Resistance		≤ 100 mΩ		
Max. operating frequency				
• at rated load	AC1	1 200 cycles/hour		
• no load		18 000 cycles/hour		
General data				
Operating time (typical value)		15 ms		
Release time (typical value)		10 ms		
Electrical life				
• resistive AC1		≥ 10^5 12 A, 250 V AC		
• cosϕ		see graphs on page G88		
Mechanical life (cycles)		≥ 10^7		
Dimensions (L x W x H)		27,5 x 21,1 x 34,5 mm		
Weight		35 g		
Ambient temperature				
• storing		-40...+70 °C		
• operating		-40...+55 °C		
Cover protection category		IP 40		
Shock resistance	(NO/NC)	10 g		
Vibration resistance		5 g 15...150 Hz		
Solder bath temperature		max. 270 °C		
Soldering time		max. 5 s		
Insulation				
Insulation category		B250		
Insulation rated voltage		250 V AC		
Dielectric strength				
• coil - contact		2 500 V AC		
• contact - contact		1 500 V AC		
• pole - pole		2 500 V AC		
Contact - coil distance				
• clearance		≥ 2,6 mm		
• creepage		4 mm		
UL/CSA Ratings				
Contact Ratings				
General Purpose Rating		10A 250V AC		
Pilot Duty Ratings		B300		
Contacts	Inductive	Make	Break	HP
	120VAC	30A	3A	1/3
	240VAC	15A	1.5A	1/2
	DC		10A 28V DC	
UL File Number		E105728		
Standards		UL 508		

Technical Information

		RY2
Coil		
Rated voltage	50/60 Hz AC	6...240 V
	DC	6...110 V
Must release voltage		AC: ≥ 0,2 U_n DC: 0,1 U_n
Operating range of supply voltage		see coil data tables below
Rated power consumption	AC	1,6 VA
	DC	0,9 W

Coil Data - AC 50/60 Hz voltage version

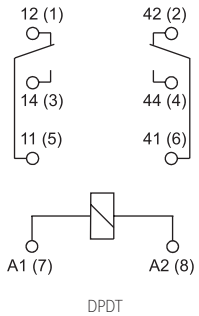
Coil Code	Rated Voltage V AC	Coil Resistence (±10%) at 20 °C Ω	Coil Operating Range V AC	
			min. (at 20 °C)	max. (at 55 °C)
5006	6	9,8	4,8	6,6
5012	12	39,5	9,6	13,2
2024	24	158,0	19,2	26,4
5120	120	3 770,0	96,0	132,0
5240	240	16 800,0	192,0	264,0

Coil Data - DC voltage version

Coil Code	Rated Voltage V DC	Coil Resistence (±10%) at 20 °C Ω	Coil Operating Range V DC	
			min. (at 20 °C)	max. (at 55 °C)
1006	6	40	4,0	5,5
1012	12	160	9,6	13,2
1024	24	640	19,2	26,4
1048	48	2 600	38,4	52,8
1110	110	13 600	88,0	121,0

RY2 Connection Diagram

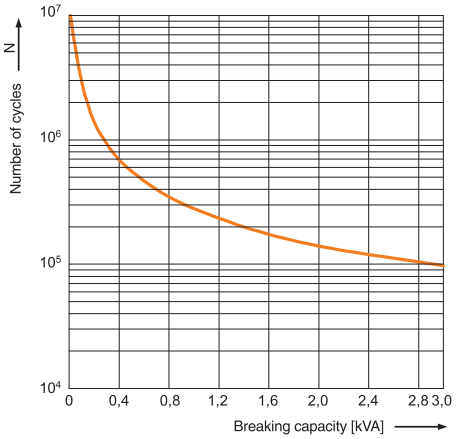
(pin side view)



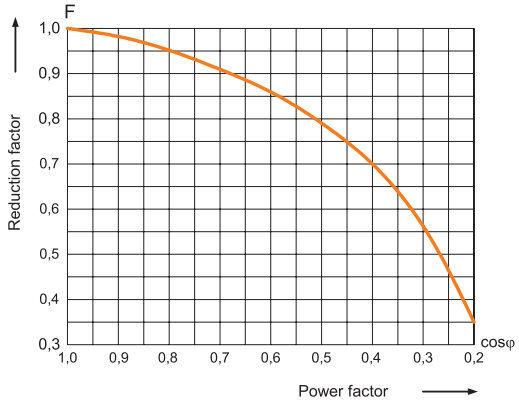
DPDT

Note: Bi-polar input for DC versions

Electric life at AC resistive load



Electrical life reduction factor at AC inductive load

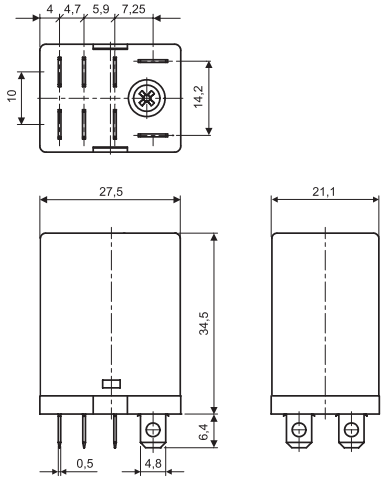


$N_{cos\varphi} = N \times F$

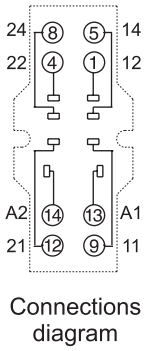
Dimensions

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

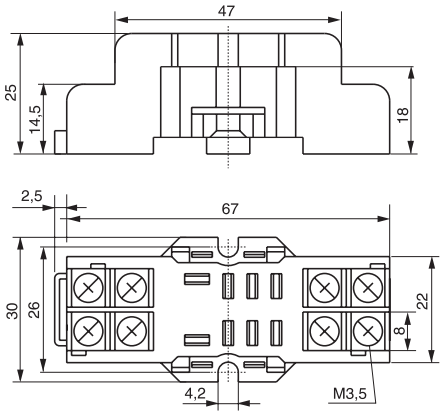
RY2 Relay



SB08 Socket



Connections diagram



Technical Information

		PI84	PI85
Contacts			
Contact number & arrangement		DPDT	SPDT
Contact material		AgNi	
Max. switching voltage	AC/DC	400 V / 300 V	
Min. switching voltage		5 V	
Rated load	AC1	8 A / 250 V AC	16 A / 250 V AC
	AC15	3 A / 120 V AC	3 A / 120 V AC
		1.5 A / 240 V AC (B300)	1.5 A / 240 V AC (B300)
	AC3	550 W (single-phase motor)	750 W (single-phase motor)
	DC1	8 A / 24 V DC	16 A / 24 V DC
	DC13	0.22 A / 120 V DC	0.22 A / 120 V DC
		0.1 A / 250 V DC (R300)	0.1 A / 250 V DC (R300)
Min. switching current		5 mA	
Max. inrush current		15 A	30 A
Rated current		8 A	16 A
Max. breaking capacity	AC1	2 000 VA	4 000 VA
Min. breaking capacity		0,3 W	
Resistance		≤ 100 mΩ	
Max. operating frequency			
• at rated load	AC1	600 cycles/hour	
• no load		172 000 cycles/hour	
General data			
Operating time (typical value)		7 ms	
Release time (typical value)		3 ms	
Electrical life			
• resistive AC1		> 10^5 8 A, 250 V AC	≥ 0.7 x 10^5 16 A, 250 V AC
• cosϕ		see graphs on page 94	
Mechanical life (cycles)		≥ 3 x 10^7	
Dimensions (L x W x H)		75,3 x 15,5 x 67 mm	
Weight		62 g	
Ambient temperature			
• storing		-40...+85 °C	
• operating		AC: -40...+70 °C DC: -40...+85 °C	
Protection category			
• cover		IP 40	
• terminals		IP 20	
Shock resistance		20 g	30 g
Vibration resistance	(NO/NC)	10 g / 5 g	
Insulation			
Insulation category		C250	
Insulation rated voltage		400 V AC	
Dielectric strength			
• coil - contact		5 000 V AC	
• contact - contact		1 000 V AC	
• pole - pole		2 500 V AC	
Contact - coil distance			
• clearance		≥ 10 mm	
• creepage		≥ 10 mm	

Technical Information

		PI84	PI85
Coil			
Rated voltage	50/60 Hz AC	24-120 V	
	DC	24V	
Must release voltage		AC: ≥ 0,15 U_n DC: 0,1 U_n	
Operating range of supply voltage		see Table 1, 2 and Fig. 4, 5	
Rated power consumption	AC	0,75 VA	
	DC	0,4...0,48 W	

Coil Data - AC 50/60 Hz voltage version

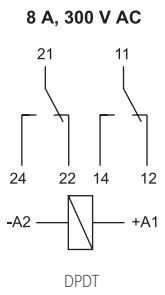
Coil Code	Rated Voltage V AC	Coil Resistence (±10%) at 20 °C	Coil Operating Range V AC	
			min. (at 20 °C)	max. (at 55 °C)
24AC	24	400	19,2	26,4
120AC	120	10 200	96,0	144,0

Coil Data - DC voltage version

Coil Code	Rated Voltage V DC	Coil Resistence (±10%) at 20 °C	Coil Operating Range V DC	
			min. (at 20 °C)	max. (at 55 °C)
24DC	24	1 440	16,8	61,2

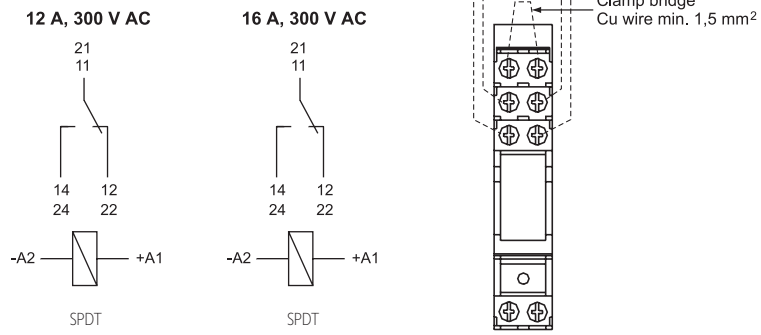
PI84 Connection Diagram

(pin side view)



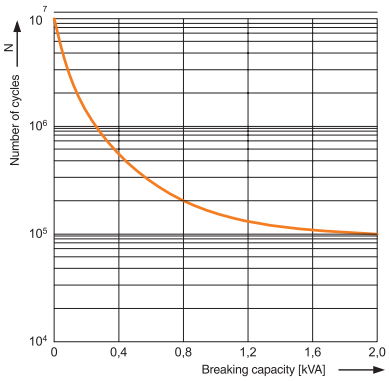
PI85 Connection Diagram

(pin side view)

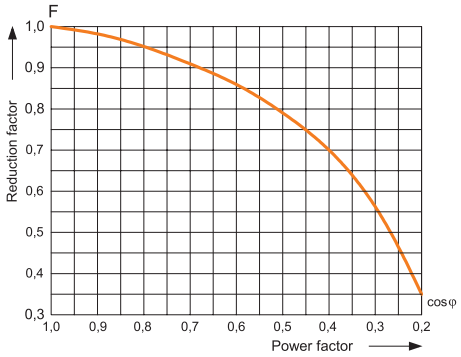


Note: Loads above 12 A require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24. Loads up to 12 A do not require bridging of common terminals (such bridges may be fixed, however)

Electrical life at AC resistive load

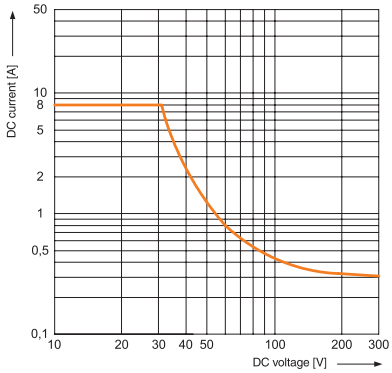


Electrical life reduction factor at AC inductive load

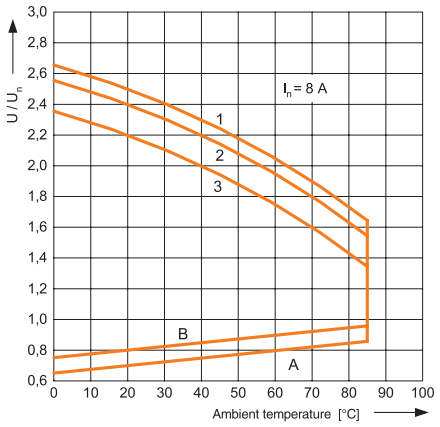


$N_{cos\varphi} = N \times F$

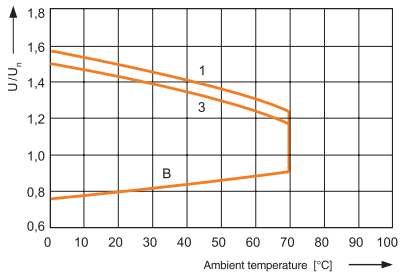
Max. DC resistive load breaking capacity



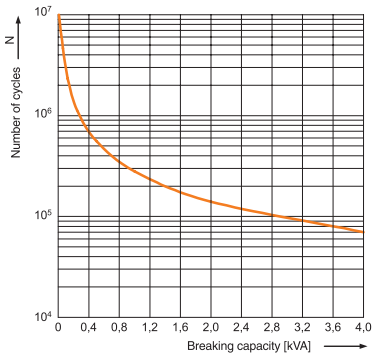
Coil operating range - DC



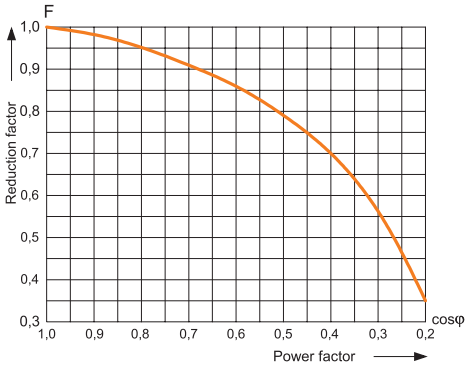
Coil operating range - AC



Electrical life at AC resistive load

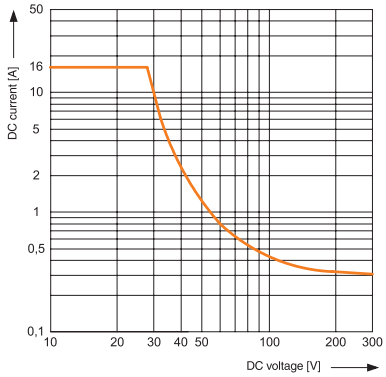


Electrical life reduction factor at AC inductive load

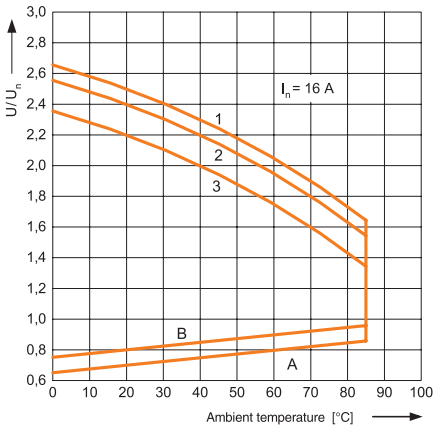


$N_{cos\varphi} = N \times F$

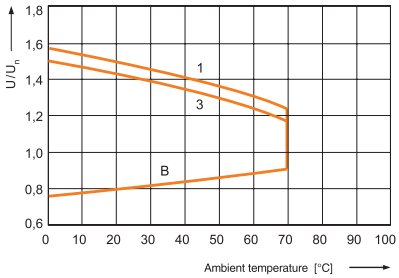
Max. DC resistive load breaking capacity



Coil operating range - DC

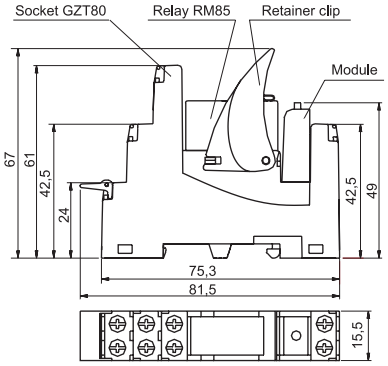


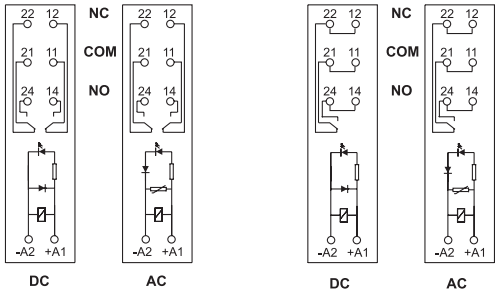
Coil operating range - AC



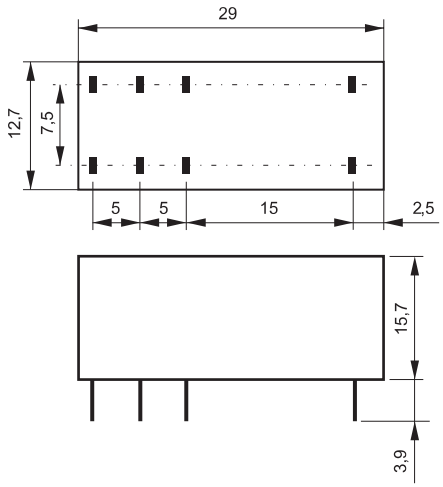
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

PI84/PI85 Interface Relay and Socket

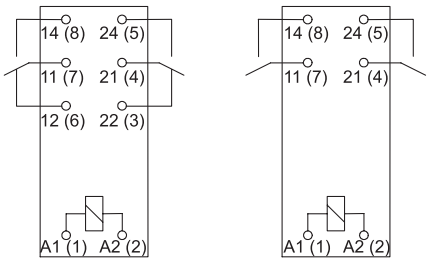




RM84/RM85 Replacement Relay



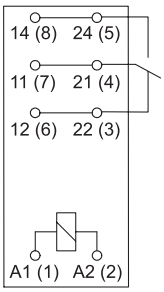
RM84



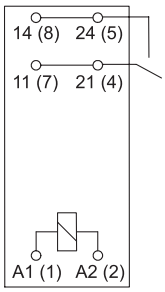
2C/O

2NO

RM85



1C/O



1NO

Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
mm	ϕ 0,6	0,5 x 0,9
Drilling hole	for relays ϕ 1,3 mm ± 0,1 for sockets ϕ 1,5 mm ± 0,1	

Contacts

Contact number & arrangement		1 C/O
Contact material		**$AgSnO_2$**
Max. switching voltage	AC/DC	$AgSnO_2$: 250 V / 400 V AC/ 125 V DC
Min. switching voltage	AC/DC	$AgSnO_2$: 10 V
Rated load	AC1	$AgSnO_2$: 6 A / 250 V AC
	DC1	$AgSnO_2$: 6 A / 24 V DC
Min. switching current		$AgSnO_2$: 100 mA / 24 V
Max. inrush current (20 ms)		$AgSnO_2$: 10 A
Rated current		6 A
Max. breaking capacity	AC1	$AgSnO_2$: 1 500 VA
Min. breaking capacity		$AgSnO_2$: 1 W
Resistance - initially		$AgSnO_2$: ≤ 100mΩ 100 mA, 24 V
Max. operating frequency		
• at rated load	AC1	360 cycles/hour
• no load		72 000 cycles/hour

Input control circuit

Rated voltage	DC	**12-24 V**
	AC/DC	**24**-**115** V AC:50/60 Hz
Must release voltage		AC:≥ 0,2 U_n
		DC:≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Must operate voltage		AC and DC: ≤ 0,8 U_n
Rated power consumption	AC/DC	0.3...2.1 VA / 0.3...1.0W
	DC	0.3 W

Insulation

Insulation RATED VOLTAGE		250 V AC (PN-EN 60664-1)
Rated surge voltage		4 000 V AC 1.2 / 50 µs
Overvoltage category		III IEC 61810-52 (PN-IEC 664-1)
Insulation pollution degree		3
Dielectric strength		
• input - output		4 000 V AC 50/60 Hz, 1 min., type of insulation: reinforced
• input - output		6 000 V 1,2 / 50 µs, surge voltage
• input - output		2 500 V AC 50/60 Hz 1 min.
• contact clearance		1 000 V AC 50/60 Hz 1 min., type of clearance: micro-disconnection
Input-Output - coil distance		
• clearance		≥ 6 mm
• creepage		≥ 8 mm

General data

Operating time (typical value)		AC: 11 ms DC: 8 ms
Release time (typical value)		AC: 15 ms DC: 10 ms
Electrical life		
• resistive AC1	360 cycles/hour	> 0,6 x 10^5 6 A, 250 V AC
• cos ø = 0,4		> 2 x 10^5 2 A, 250 V AC
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		98.5 x 6.2 x 85.5 mm
Weight		45g
Ambient temperature		
• storage		-40...+70 °C
• operating		-40...+55 °C -40...+60 °C 12,24 V DC
Protection category		IP 20, PEN-EN 60529
Environmental protection		RTI, PEN-EN 116000-3
Shock resistance		10 g
Vibration resistance		5 g 10...500 Hz

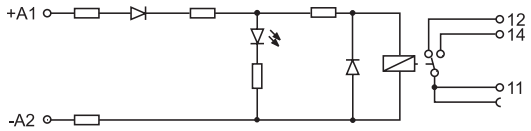
❶ Standard contact materials and coil rated voltages are marked with bold type.

Input Data

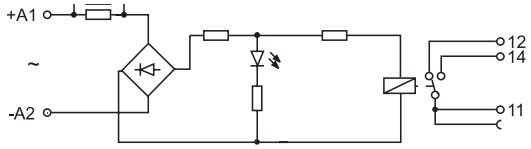
Relay code	Nominal input voltage U_n	Input power control circuit (U_n)	Input - voltage range V	
			min.	**max.**
PIR6W-1P-12VDC	12 V DC	0,3 W	9,6	14,14
PIR6W-1P-24VDC	24 V DC	0,3 W	19,2	28,0
PIR6W-1P-24VAC/DC	24 V AC/DC	0,3 VA / 0,3 W	19,2	26,4
PIR6W-1P-115VAC/DC	115 V DC	0,9 VA / 0,9 W	92,0	130,0

Connection Diagrams

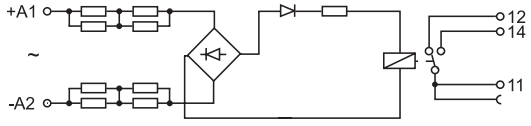
PIR6W-1P-12VDC
PIR6W-1P-24VDC



PIR6W-1P-24VAC/DC

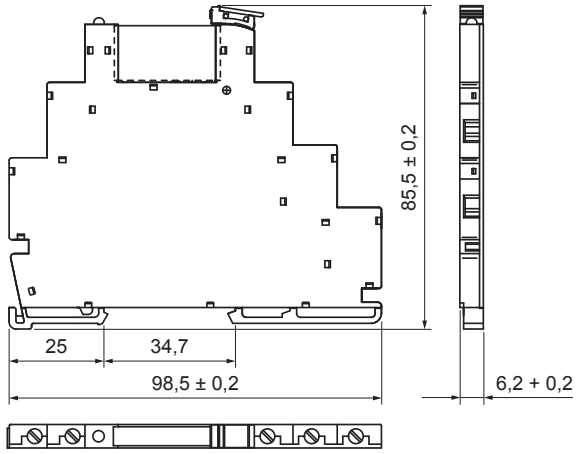


PIR6W-1P-115VAC/DC

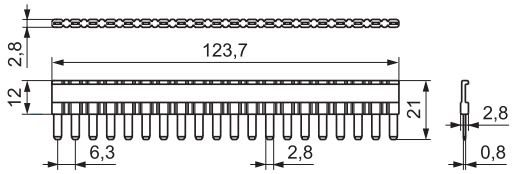


Dimensions

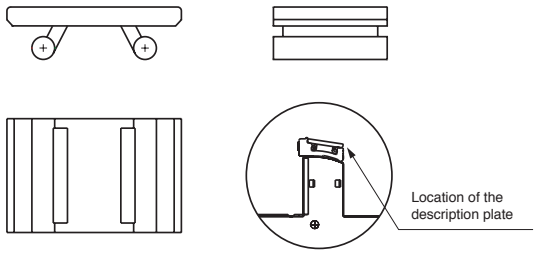
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes. ❶



Interconnection Strip ZG20



Description Plate PI6W-1246



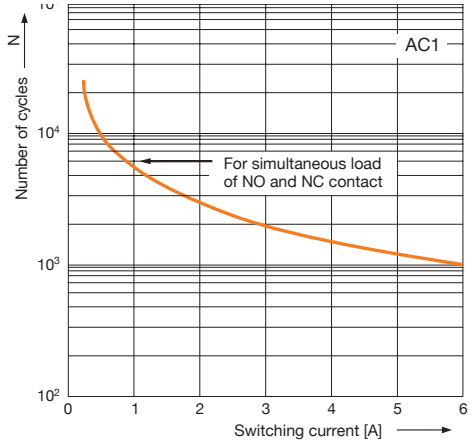
Mounting

Relays **PIR6W** are designed for 35 mm DIN rail mount, EN 50022.

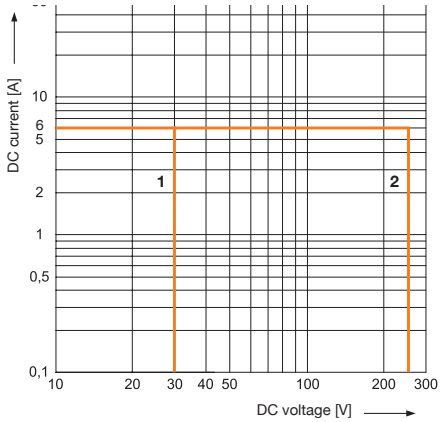
PIR6W are adapted for the co-operation with interconnection strip type **ZG20**. Interconnection strip **ZG20** allows to common bridging outputs or inputs. Maximum current rate is 36 A. Colors of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue.

❶ In March 2016, Relpol changed the DIN-rail fixing place location as represented in this view.

Electrical life at AC resistive load.
Maximum switching frequency at rated load

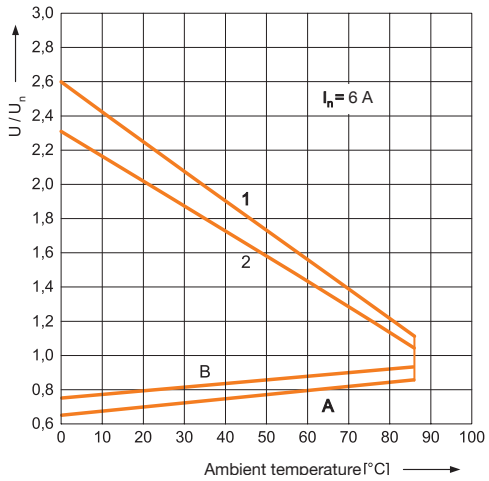


Max. DC resistive load breaking capacity



1 - resistive load DC1
2 - resistive load AC1

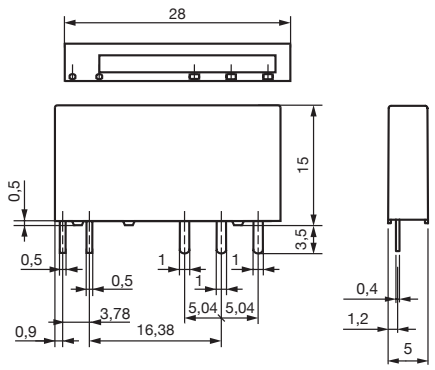
Coil Operating Range - DC



RM699 Interface Operational Relay Dimensions

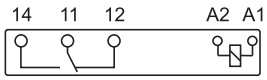
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.

vertical version (V)



RM699 Connections Diagrams (pin side view)

vertical version (V)

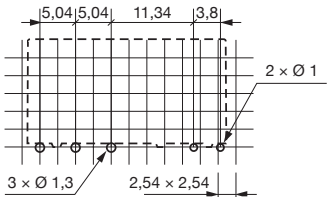


1C/O

RM699 Mounting openings raster (solder side view)

horizontal version (H)

1C/O



Description of Coil Operating Range

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 Un, at continues load of In on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

1, 2,3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

1 - no load

2 - rated load

GEFRAN

Panel Mount "Hockey Puck" Solid Sate Relays up to 90 Amps

1. Finger Safe Protection Covers
2. AC or DC Input Connections
3. AC Output Connection Models
4. LED Status Indicator
5. Internal MOV protection
6. Integrated or optional heatsinks
7. cURus, CE

Common Applications

Heating controls
Injection molding machines
Semiconductor manufacturing equipment
Glass processing
Welding controls
Food processing
Industrial & commercial ovens
Soldering machines
Medical equipment
Office machinery
Robotics

With over forty years of experience, Gefran is the world leader in the design and production of solutions for measuring, controlling, and driving industrial production processes. Gefran's know-how and experience guarantee continuity and tangible solutions. Gefran's line of solid state relays are the ideal solution for applications where high speed switching and long life are essential. In specific applications, solid state relays offer many advantages over electromechanical devices including no moving parts or contact arcing. In addition, solid state relays are directly compatible with logic components such as microprocessors and PLCs.

Broad selection for many applications

The Gefran GQ solid state relays are available in the popular single phase "hockey puck" models up to 90 amps.

Opto-isolated input limits current leakage

All Gefran solid state relays feature opto-isolated inputs where an internal LED signals a photosensitive element when output switching is to occur. This provides up to 4,000V isolation between the input voltage and the output voltage and also limits current leakage. This feature is important in certain medical, residential and industrial applications. The Gefran solid state relays also include built-in metal oxide varistor (MOV) protection to protect against internal damage to the solid state relay.

Output Circuit Features

The Gefran solid state relays feature zero voltage turn-on, which means they are designed to turn on at the next zero crossover after application of the control voltage. This limits electromagnetic interference, reducing the chance of damage to downstream equipment. A built-in MOV reduces the likelihood of damage to the relay from rapid changes in voltage (dv/dt) and transient voltages.

Many safety and convenience features

All Gefran solid state relays come standard with an LED to indicate when the relay is in an operational state. This increases safety and speeds troubleshooting. All GQ hockey puck type relays come standard with a load side cover that provides touch protection.

Approvals

The Series GQ solid state relays are cURus approved and CE marked.

Catalog Number Quick Guide

GQ- 15 - 24 - D - 1 - 4

	Nominal Current	Nominal Voltage	Control Voltage	Overvoltage	Connectors
Hockey Puck 1-Phase Panel Mount	15 15A AC 25 25A AC 50 50A AC 90 90A AC	24 230V AC 60 600V AC	D 3...32V DC A 20...260V AC	1 Internal protection	4 Two-pin screw connector, low profile enclosed

1 Pole Panel Mount Relay, 3-32V DC Control, 230V AC Output

Specifications	*15 Amp*	*25 Amp*	*50 Amp*	*90 Amp*
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
	GQ-15-24-D-1-4	GQ-25-24-D-1-4	GQ-50-24-D-1-4	GQ-90-24-D-1-4
Input				
Voltage Range	3 - 32V DC	3 - 32V DC	3 - 32V DC	3 - 32V DC
Turn-on Voltage (min.)	≥ 2.7V DC	≥ 2.7V DC	≥ 2.7V DC	≥ 2.7V DC
Turn-off Voltage (max.)	≤ 1V DC	≤ 1V DC	≤ 1V DC	≤ 1V DC
Consumption	≤ 13mA @ 32V	≤ 13mA @ 32V	≤ 13mA @ 32V	≤ 13mA @ 32V
Reverse Voltage	< 36V DC	< 36V DC	< 36V DC	< 36V DC
Output				
Amp Rating AC51	15	25	50	90
Nominal Voltage	24...230V AC	24...230V AC	24...230V AC	24...230V AC
Maximum Voltage	20...253V AC	20...253V AC	20...253V AC	20...253V AC
Zero Switching Voltage	≤ 20V	≤ 20V	≤ 20V	≤ 20V
Frequency Range	45...65 Hz	45...65 Hz	45...65 Hz	45...65 Hz
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)			

1 Pole Panel Mount Relay, 20-260V AC Control, 230V AC Output

Specifications	*15 Amp*	*25 Amp*	*50 Amp*	*90 Amp*
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
	GQ-15-24-A-1-4	GQ-25-24-A-1-4	GQ-50-24-A-1-4	GQ-90-24-A-1-4
Input				
Voltage Range	20...260V AC	20...260V AC	20...260V AC	20...260V AC
Turn-on Voltage (min.)	≥ 15V AC	≥ 15V AC	≥ 15V AC	≥ 15V AC
Turn-off Voltage (max.)	≤ 6V AC	≤ 6V AC	≤ 6V AC	≤ 6V AC
Consumption	≤ 8mA @ 260V AC	≤ 8mA @ 260V AC	≤ 8mA @ 260V AC	≤ 8mA @ 260V AC
Output				
Amp Rating AC51	15	25	50	90
Nominal Voltage	24...230V AC	24...230V AC	24...230V AC	24...230V AC
Maximum Voltage	20...253V AC	20...253V AC	20...253V AC	20...253V AC
Zero Switching Voltage	≤ 20V	≤ 20V	≤ 20V	≤ 20V
Frequency Range	45...65 Hz	45...65 Hz	45...65 Hz	45...65 Hz
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)			

1 Pole Panel Mount Relay, 3-32V DC Control, 600V AC Output

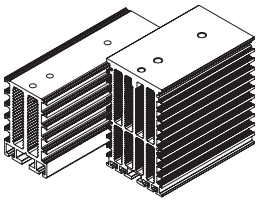
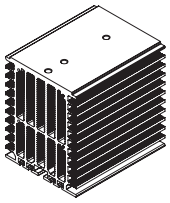
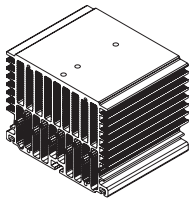
Specifications	*50 Amp*	*90 Amp*
	Catalog Number	Catalog Number
	GQ-50-60-D-1-4	GQ-90-60-D-1-4
Input		
Voltage Range	3 - 32V DC	3 - 32V DC
Turn-on Voltage (min.)	≥ 2.7V DC	≥ 2.7V DC
Turn-off Voltage (max.)	≤ 1V DC	≤ 1V DC
Consumption	≤ 13mA @ 32V	≤ 13mA @ 32V
Reverse Voltage	< 36V DC	< 36V DC
Output		
Amp Rating AC51	50	90
Nominal Voltage	48...600V AC	48...600V AC
Maximum Voltage	40...660V AC	40...660V AC
Zero Switching Voltage	≤ 40V	≤ 40V
Frequency Range	45...65 Hz	45...65 Hz
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)	

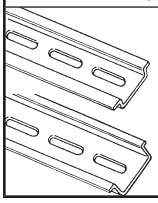
1 Pole Panel Mount Relay, 20-260V AC Control, 600V AC Output

Specifications	*50 Amp*	*90 Amp*
	Catalog Number	Catalog Number
	GQ-50-60-A-1-4	GQ-90-60-A-1-4
Input		
Voltage Range	20...260V AC	20...260V AC
Turn-on Voltage (min.)	≥ 15V AC	≥ 15V AC
Turn-off Voltage (max.)	≤ 6V AC	≤ 6V AC
Consumption	≤ 8mA @ 260V AC	≤ 8mA @ 260V AC
Output		
Amp Rating AC51	50	90
Nominal Voltage	48...600V AC	48...600V AC
Maximum Voltage	40...660V AC	40...660V AC
Zero Switching Voltage	≤ 40V	≤ 40V
Frequency Range	45...65 Hz	45...65 Hz
Dimension (mm)	58 (H) x 45 (W) x 30.5 (D), from base to top of control terminal 45 (D)	

GQ Relays are cUR (E243386). Not CSA.

Accessories

Heatsinks	Description	Catalog Number
 DIS-25GD DIS-50G	**Heatsink –** Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting. - For use with GQ 15A & 25A relays - 100 x 24 x 65mm - Thermal Resistance Rth > 2.8 K/W	**DIS-25GD**
	- For use with GQ 25A & 50A relays - 100 x 60 x 100mm - Thermal Resistance Rth > 8.3 K/W	**DIS-50G**
	**Heatsink –** Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting. - For use with GQ 50A relays - 100 x 80 x 100mm - Thermal Resistance Rth > 0.66 K/W	**DIS-60G**
	**Heatsink –** Extruded aluminum DIN-rail mount for mounting one GQ relay. Includes PAN-1 kit attachment for panel mounting. - For use with GQ 90A relays - 100 x 126 x 100mm - Thermal Resistance Rth > 0.56 K/W	**DIS-90G**
	**Kit Attachment –** Allows for panel mounting the GQ Series and DIS heat sinks. Includes 2 plastic supports, 2 screws, and 2 washers.	**PAN-1**
	**Silicone thermoconductive paste –** for coupling the GQ Relay power module to the heat sink. 100 g tube.	**SIL-1**
	**Graphite Film –** 35 x 55 mm graphite film for GQ relays. - 0.12 mm thick, 2.1 W (m*K). - 200 x 240 mm sheet with 25 adhesives	**SIL-GQ**

Accessory	Description	Catalog Number
	**DIN-rail** - 2 meter lengths (6'6") Top Hat, low profile (price per rail) Top Hat, high profile (package of 20, price per rail)	 **3F** **3AF**

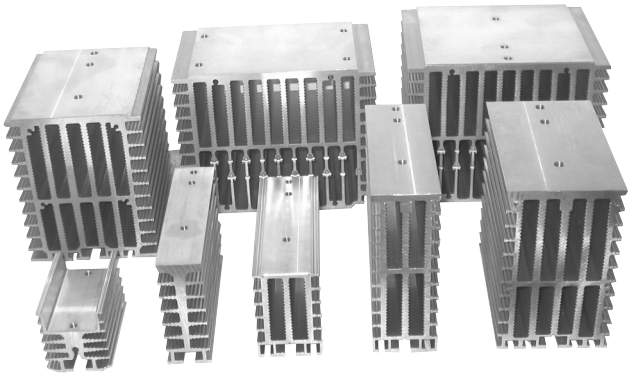
Cross Reference Series SAR/SAS to Gefran Solid State Relays

Sprecher+Schuh Catalog Number	Gefran Catalog Number
SAS Series Panel Mount	
SAS3-10-1D	GQ-15-24-D-1-4
SAS3-10-1	GQ-15-24-A-1-4
SAS3-25-1D	GQ-25-24-D-1-4
SAS3-25-1	GQ-25-24-A-1-4
SAS3-50-1D	GQ-50-24-D-1-4
SAS3-50-1	GQ-50-24-A-1-4
SAS3-75-1D	GQ-90-24-D-1-4
SAS3-75-1	GQ-90-24-A-1-4
SAS6-50-1D	GQ-50-60-D-1-4
SAS6-50-1	GQ-50-60-A-1-4
SAS6-75-1D	GQ-90-60-D-1-4
SAS6-75-1	GQ-90-60-A-1-4

* Suffix code for selected fan voltage

General Application Notes

Heatsinks



Different models of heatsinks have been designed and tested to meet size and dimension needs.

How to choose a heatsink

- Set max. air temperature inside the panelboard ($Tmax_a$)
- Set max. operating current: Imax = Inom. load + 10%
- Draw on the "graphs" $Tmax_a$, Imax points.
- Choose the smallest heatsink (starting from upwards), which point [$Tmax_a$ Imax] is in the gray working area of dissipation curves
- Respect installation distances

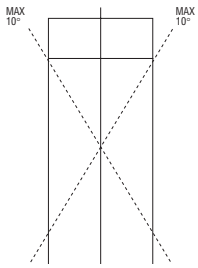
Installation

In order to obtain best reliability, it is important to install a heatsink correctly inside the panel, to reach an adequate thermal exchange between the device and the surrounding air in natural convection conditions.

How to install it correctly:

Mount it vertically (max. 10° inclination from the vertical axis)

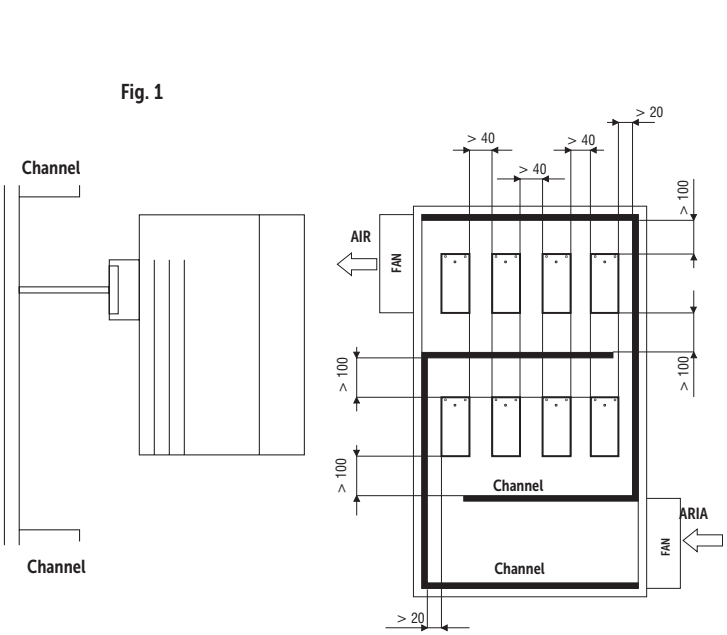
- Vertical distance between a heatsink and the panel wall: 100 mm at leas.
- Horizontal distance between a heatsink and the panel wall: 20 mm at least.
- Vertical distance between two heatsinks: 300 mm at least.
- Horizontal distance between two heatsinks: 40 mm at least.

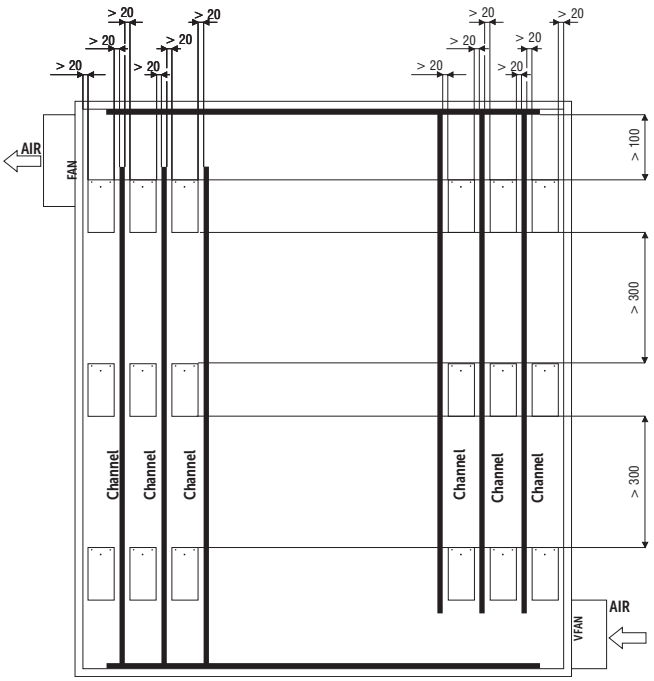


Check that cable channels do not reduce these distances; should it happen, mount the relays overhanging

from the panel, so that the air can flow vertically on the heatsink without obstables (see Fig.1).

Fig. 1



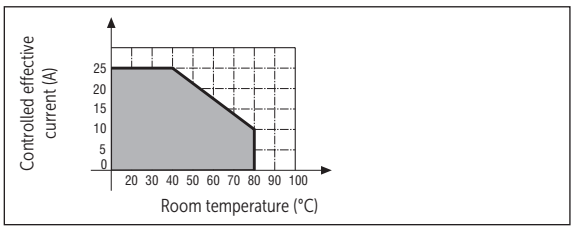


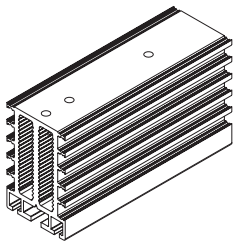
General Application Notes *(continued)*

Dissipation Curves

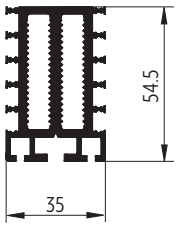
Effective current controllable based on room temperature

DIS 25GD

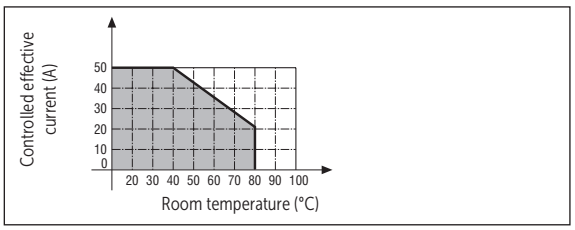


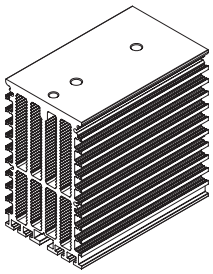


h = 100mm
R_{th} = 2.8°C/W
(*)

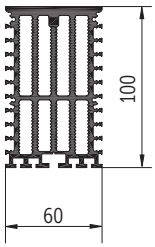


DIS 50G

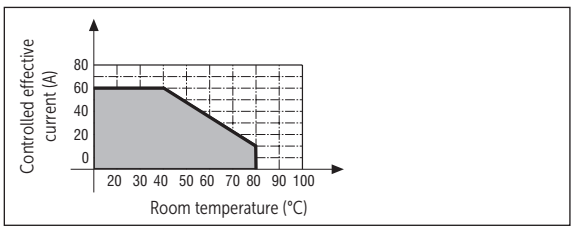


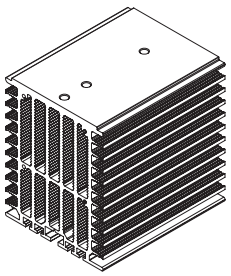


h = 100mm
R_{th} = 0.83°C/W
(*)

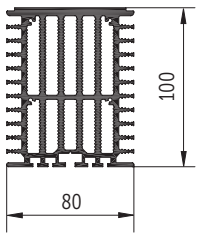


DIS 60G

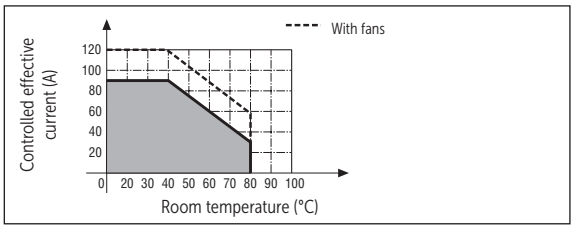


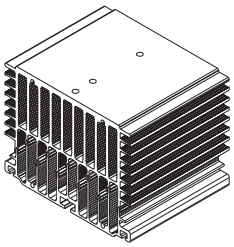


h = 100mm
R_{th} = 0.66°C/W
(*)

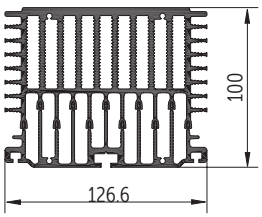


DIS 90G



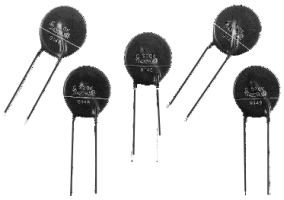


h = 100mm
R_{th} = 0.56°C/W
(*)



General Application Notes *(continued)*

Varistors (MOV)



If your application is located near inductive loads, or shares power sources with large inductive loads that are creating transients in excess of the blocking voltage of the Gefran solid state relay, then you must install a metal oxide varistor (MOV) to protect the solid state relay. It is up to the installation company to properly size the MOV to the application! Ideally, the MOV protection is near the noise generating inductive load (such as a motor, drive, or other large inductive coil) or you can place MOVs directly across the output terminals of the SSR.

Recommended MOVs from EPCOS:

Part Number	Working Voltage (V)
S20K300	120-290 V AC
S20K420	291-400 V AC
S20K510	401-500 V AC

The Gefran solid state relays include technology that dramatically reduces your need to install an external MOV except in extremely noisy environments or inductive load applications.

Fuses and Fuse Holders

These fuses ensure the maximum safety in solid state relay applications. Fuses with a very high cutoff power are used for this kind of applications. See Table 1.

Table 1.

Recommended Fuses (by others) for GQ, GTS & GTZ Relays					
Type relay	**i^2t**	**Nominal voltage**	**Size**	**Dimensions (mm)**	**Bussman Part No.**
GQ 15A	450	230 480	16A	10x38	FWC16A10F
GTS 25A GQ 25A	645 450	230 480 600	25A	10x38	FWC25A10F
GTS 40A	1010	230 480	40A	14x51	FWP40A14
GTS 50A GQ 50A	6600	230 480 600	63A	22x58	FWP63A22F
GTS 60A	6600	230 480 600	80A	22x58	FWP80A22F
GTS 75A	8000	230 480	80A	22x58	FWP80A22F
GTS 90A GQ 90A	11200	230 480 600	100A	22x58	FWP100A22F
GTS 120A	11200	230 480 600	125A	0-0-0-TN/80 100x51x30	17OM1418000-TN/80
GTZ 25A	450 645	400 480	25A	12x32	FWC25A10F
GTZ 40A	1010	480 600	40A	14x51	FWP40A14
GTZ 55A	6600	480 600	63A	22x58	FWP63A22F

(*) PF for fuseholders: LEGRAND, PFI for fuseholders: ITALWEBER

General Application Notes *(continued)*

Series GQ Installation notes

- The heat sink must be grounded.
- Power controllers are designed to assure a switching function that does not include protection of the load line or of devices connected to it. The customer must provide all necessary safety and protection devices in conformity to current electrical standards and regulations.
- Protect the solid state relay by using an appropriate heat sink (accessory). The heat sink must be sized according to room temperature and load current.

Dissipated Power Calculation

Single-phase relay

Pd GQ..15/25 = 1.45 * IRMS [W]

Pd GQ..50/90 = 1.35 * IRMS [W]

IRMS = single-phase load current

Heatsink Thermal Resistance Calculation

Rth = (90°C - max amb. T) / Pd

- where Pd = dissipated power
- Max. amb. T = max air temperature inside the electrical cabinet.

Use a heatsink with thermal resistance inferior to the calculated one (Rth).

Maximum surrounding air temperature 40°C suitable for use in pollution degree 2 or better.

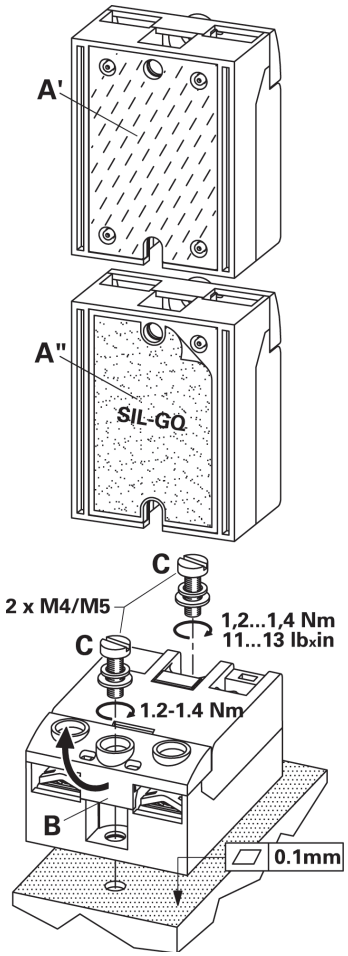
Procedure for mounting on heat sink:

The module-heat sink contact surface must have a maximum planarity error of 0.05mm. and maximum roughness of 0.02mm. The fastening holes on the heat sink must be threaded and countersunk.

Attention: spread 1 gram of thermoconductive silicone (we recommend DOW CORNING 340 HeatSink) on the dissipative metal surface of the module. The surfaces must be clean and there must be no impurities in the thermoconductive paste. As alternative it is also possible to use the graphite film SIL-GQ available as accessory.

- Alternately tighten the two fastening screws until reaching a torque of 0.4...0.6 Nm. Wait 5 minutes for any excess paste to drain.
- Alternately tighten the two fastening screws until reaching a torque of 1.2...1.4 Nm.

Installation on heatsink:



Technical Information

			GQ-15-24-...	GQ-25-24-...	GQ-50-24-...	GQ-90-24-...	GQ-50-60-...	GQ-90-60-...
Amp Rating	AC51	[A rms]	15	25	50	90	50	90
	AC53	[A rms]	3	5	15	20	15	20
Min. load current		[A rms]	0.1	0.3	0.3	0.5	0.3	0.5
Repetitive overcurrent (t = 1s)		[A rms]	≤ 35	≤ 60	≤ 125	≤ 150	≤ 125	≤ 150
Non-repetitive overcurrent (t = 20 s)		[A p]	200	300	600	1500	600	1500
Current drop at nominal voltage and frequencies		[mA rms]	≤ 8	≤ 8	≤ 8	≤ 10	≤ 8	≤ 10
I^2t for fusing (t = 1-10 ms)		[A^2s]	≤ 200	≤ 450	≤ 1,800	≤ 11,200	≤ 1,800	≤ 11,200
Critical dI/dt		[A/µs]	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100
Voltage drop at nominal current		[V rms]	≤ 1.45	≤ 1.45	≤ 1.35	≤ 1.35	≤ 1.35	≤ 1.35
Critical dV/dt off state		[V/µs]	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000
I_{th}		[A]	15	25	50	90	50	90

Input

DC Control	Voltage Range	3 - 32V DC	
	Turn-on Voltage (min.)	≥ 2.7V DC	
	Turn-off Voltage (max.)	≤ 1V DC	
	Consumption	≤ 13mA @ 32V	
	Reverse Voltage	< 36V DC	
AC Control	Voltage Range	20...260V AC/V DC	
	Turn-on Voltage (min.)	≥ 15V AC/V DC	
	Turn-off Voltage (max.)	≤ 6V AC/V DC	
	Consumption	≤ 8mA ac/cc @ 260V AC/V DC	

Output

	Nominal Voltage	24...230V AC	48...600V AC
	Maximum Voltage	20...253V AC	40...660V AC
	Non-repetitive Voltage	600Vp	1200Vp
	Zero Switching Voltage	≤ 20V	≤ 40V
	Frequency Range	45...65 Hz	45...65 Hz

Insulation

Nominal voltage	input/output	[V ac]	≥ 4000
	output/case	[V ac]	≥ 2500
Resistance	input/output	[Ω]	≥ 10^{10}
	output/case	[Ω]	≥ 10^{10}
Capacity	input/output	[pF]	≤ 8
	output/case	[pF]	≤ 100

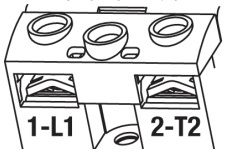
Ambient Conditions

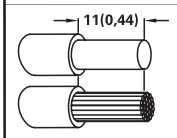
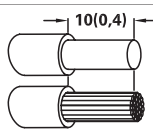
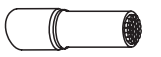
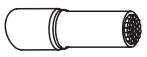
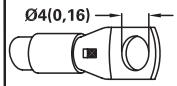
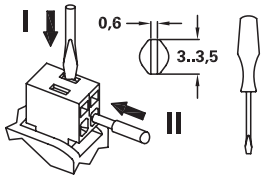
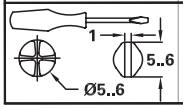
Ambient temperature	-25...+80ºC [-13...176ºF]
Storage temperature	-55...+100ºC [-67...212ºF]
Maximum relative humidity	50% at 40ºC
Maximum installation altitude	2000 m above sea level
Pollution level	3

Thermal Features

Junction temperature			≤ 125ºC [257ºF]					
Rth	junction/ambient	[K/W]	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
	junction/case	[K/W]	≤ 1.25	≤ 1.25	≤ 0.65	≤ 0.30	≤ 0.65	≤ 0.30
Heatsink			Rth = (90ºC - max amb. T / Pd) Where Pd = dissipated power Max. amb. T = max. air temperature inside the electrical cabinet Use a heatsink with thermal resistance less than the calculated Rth value					

Terminals and Leads

Terminal Type	Power Terminals	Command Terminals
		
	Screw (m4) contact area (LxP) 13 x 11 mm	screw M2.5 MORS4 (22...16 AWG)

1(L1) 2(T1)		3(A1) 4(A2)	
	1x 2,5...6 mm 2 1x 14...10 AWG 2x1,5...2,5 mm 2 2x16...14 AWG 2x 2,5...6 mm 2 2x 14...10 AWG		1x 0,2...2,5 mm 2 1x 24...14 AWG 2x 0,2...1,5 mm 2 2x 24...16 AWG
	1x 1,5...6 mm 2 1x 16...10 AWG 2x 1,5...6 mm 2 2x 16...10 AWG		1x0,25...2,5 mm 2 1x 23...14 AWG 2x0,25...1 mm 2 2x 23...18 AWG
	1x 2,5...25 mm 2 1x 14...4 AWG		
	2...2,4 Nm 18...21 lb×in		

S	GQ..15..	GQ..25..	GQ..50..	GQ..90..
	2,5 mm²	6 mm²	12 mm² (2x6)	25 mm²
	14 AWG	10 AWG	7 AWG (2x10)	4 AWG

Recommended Fuses (by others)

HIGH SPEED FUSES			
Model	**Size I²T**	**Bussman Part No.**	**Dissipated power @ In**
GQ15...	16A 150A²S	FWC16A10F 338470	3,5W
GQ25...	25A 390A²S	FWC25A10F 338474	6W
	375A²S	FWC25A14F 338130	7W
GQ50...	50A 1800A²S	FWC50A14F 338079	9W
	50A 1600A²S	FWC50A22F 338127	9,5W
GQ90...	80A 6600A²S	FWP80A22F 338199	14W
	100A 12500A²S	FWP100A22F 338478	16W

Heatsink / Thermal Resistance

Model	Gefran Heatsink (see accessories)	Thermal Resistance
GQ15... GQ25...	DIS 25GD DIS 50G	$R_{th} \geq 2,8$ K/W $R_{th} \geq 0,83$ K/W
GQ50...	DIS 50G	$R_{th} \geq 0,83$ K/W
GQ90...	DIS 90G	$R_{th} \geq 0,56$ K/W

Data relating to 40°C ambient temperature, heatsink in vertical position with 15 cm of free air above and below.

Section Cable

Model	Section
GQ15...	2.5mm² / 14 AWG
GQ25...	6mm² / 10 AWG
GQ50...	12mm² / 7 AWG
GQ90...	25mm² / 4 AWG

Minimum allowed rated section based on the rated currents of the power solid state relays, for copper leads isolated in PVC in continuous use and at room temperature of 40°C, according to standards CEI 44-5, CEI 17-11, IEC 408 pursuant to standard EN60204-1.
Power terminals in compliance with standard EN60947-1

EMC Emission

EN 61000-6-4	Emissions conducted at radiofrequency	Class A (Industrial devices)
EN 61000-6-4	Emissions irradiated at radiofrequency	Class A (Industrial devices)

The product is designed for type A environments. Use of the product in type B environments may cause undesired electromagnetic noise. In this case, the user should take appropriate steps for improvement.

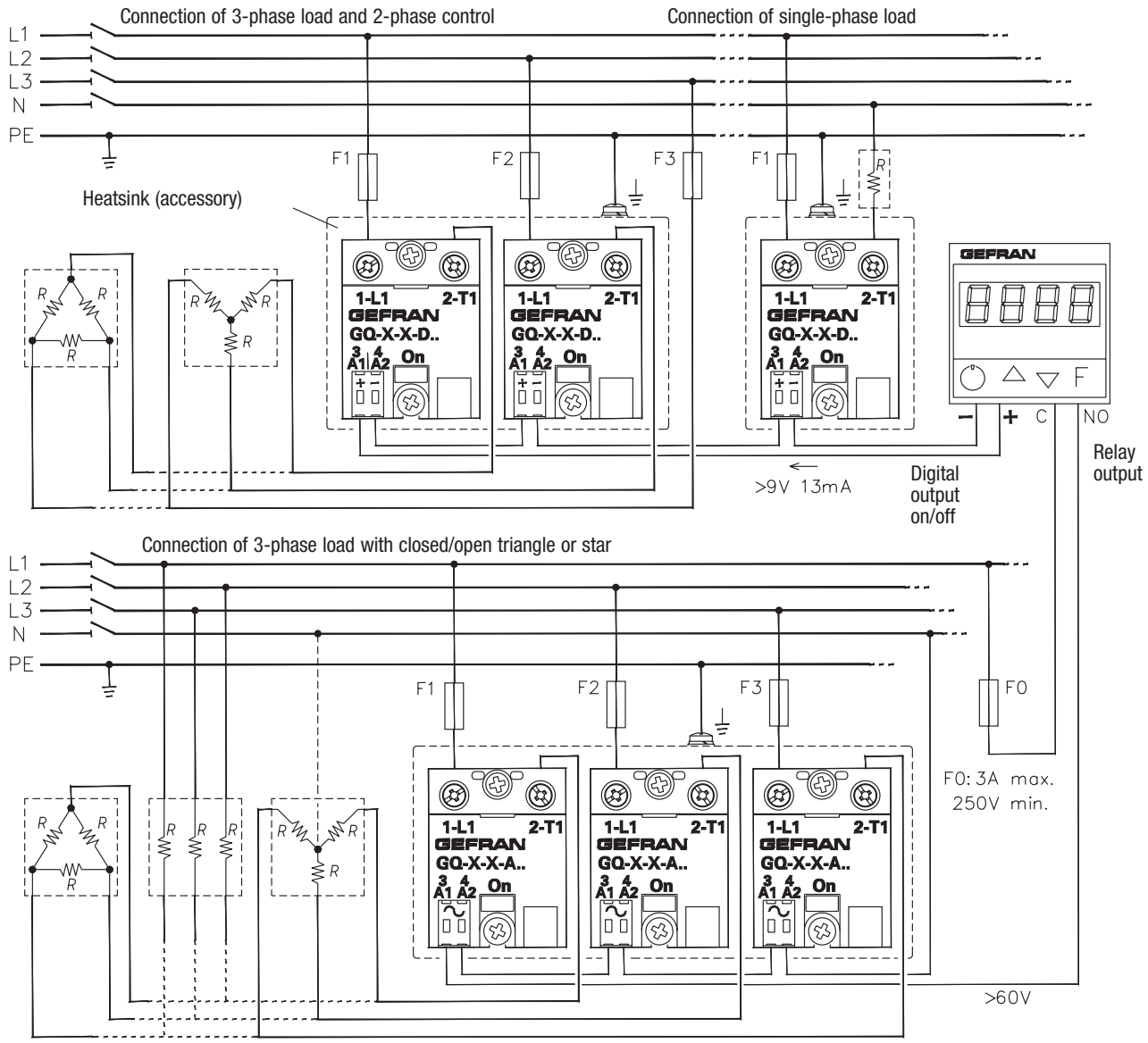
EMC Immunity

EN 61000-6-2	Immunity for industrial environments	
EN 61000-4-2	Electrostatic discharges 4kV by contact; 8 kV in air.	Performance criterion 2
EN 61000-4-6	Electromagnetic field at radiofrequency Test level 3. 0.15-80MHz	Performance criterion 1
EN 61000-4-3	Electromagnetic field at radiofrequency Test level 10V/m. 80-1000MHz	Performance criterion 1
EN 61000-4-4	Immunity to burst	Test level 2kV/100 KHz. Performance criterion 2
EN 61000-4-5	Immunity to surge	Test level: 2kV (Phase-ground); 1kV (Phase-phase). Performance criterion 2

Safety

EN 61010-1	Safety requirements

Series GQ Solid State Relays

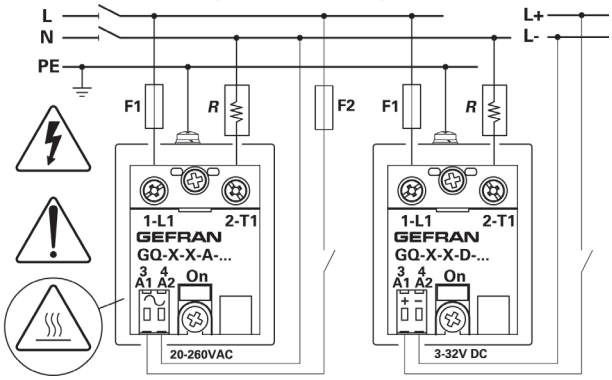


Series GQ Fuse Connections

The solid state group must be connected using proper fuses against short circuits

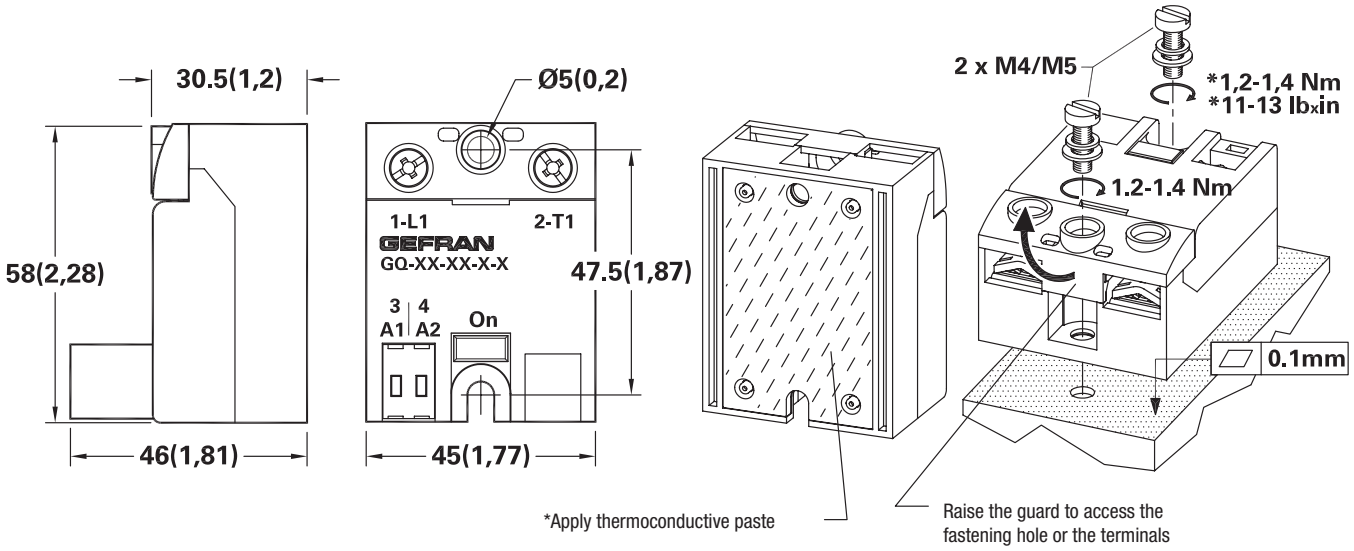
F1:		
GQ-15..	FUS-016 10 x 38	FWC 16A 10F BUSSMANN
GQ-25..	FUS-025 10 x 38	FWC 25A 10F BUSSMANN
GQ-50..	FUS-050 22 x 58	FWP 50A 22F BUSSMANN
GQ-90..	FUS-100 22 x 58	FWP100A 22F BUSSMANN

F2:		
GQ-X-X-A..	3A max 250V min.	UL Category JDYX - JDYX2



GQ Panel Mount Relays

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



(*) See installation notes