

CS1 Industrial Control Relays

Control &
Timing Relays

CS1 Rugged, modular relays
from 2 to 16 amps

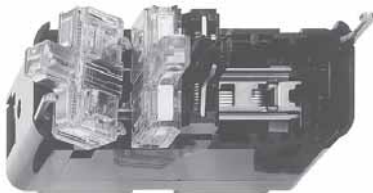
Sprecher + Schuh CS1 Industrial Control Relays allow you to mix and match 2, 10 or 16 amp contact elements into one rugged “plug-in” type relay of up to six poles. The CS1 has heavy duty rated contacts for AC operation, and pilot duty rated contacts for AC and DC operation. The relays are modularly designed and can be used for a broad number of industrial applications.



Easy assembly and maintenance

CS1 relays are made up of two parts. The relay itself contains the contact elements, coil and operating mechanism. The connection socket contains the terminals. Installation is completed by attaching the relay to the connection socket with two clips.

Control relays can be changed as quickly as it takes to release the fastening clips. Since connections are not disturbed on the base, they cannot be crossed.



2 Amp Contacts: Available as N.O. or N.C. for switching magnetic devices. Early-make and late-break contacts are available for overlapping functions, as well as gold plated contacts for switching “dry” circuits.

10 Amp Contacts: Available as N.O. or N.C. for higher switching capacities. When mounted in the No. 1 and No. 2 positions, 10A N.O. and N.C. contacts are force-operated. This prevents the N.O. contact from closing if the N.C. contact is welded.

16 Amp Contacts: Available as N.O. for high switching capacities and long life (not UL Listed).

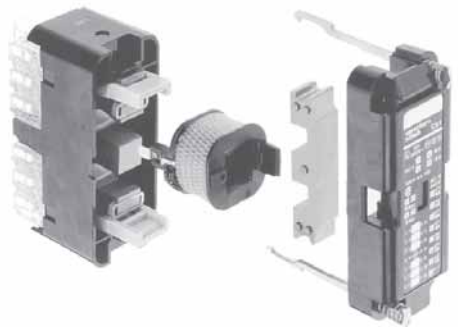
All contacts are double breaking and sealed against dust and foreign matter. Blank contact elements are also available for filling unused spaces within the relay (required).

Arbitrary contact arrangement provides total flexibility

Arrangement of the contacts within the CS1 can be selected by the customer and fitted by the wireman on site. Eleven different contact elements are available in three different amp ratings:

Operating Mechanism

All parts of the operating mechanism are easily accessible for coil and contact changeout or inspection. Two spring-loaded hooks hold the device together, ensuring vibration-proof latching of the control relay onto the socket base. The CS1 operating mechanism is extremely rugged and has been tested for 25 million mechanical operations and up to 25,000 operations per hour.

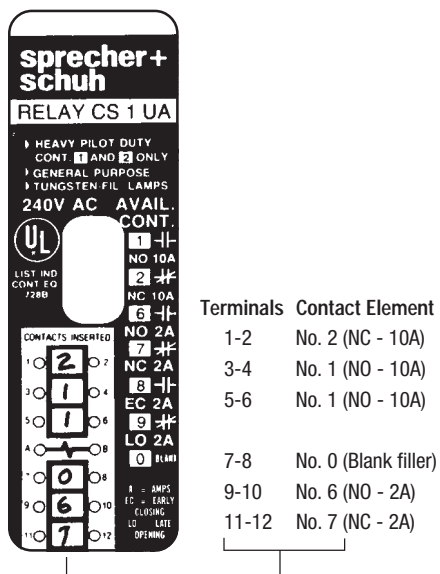


Convenient wiring and testing

Only the connection socket needs to be available for wiring. Continuity checks on the completely wired installation can be made at the socket. The terminal test lugs are also accessible when the control relay is in place. Relays and contacts separately inserted can be operated manually. Since all poles are disconnected when it is unplugged, the control relay can be used as a reliable security plug.

Data plate provides foolproof identification

Six small fields are provided on the relay's data plate for identification of the contacts. The numbers are taken from those stamped on the side of each contact element. Example:



The same number (2-1-1-0-6-7) is marked on the corresponding connection socket. This identification system makes installation and maintenance a simple procedure and guarantees that every relay is placed in its matching socket.

Available Contact Elements

Designation	Description
CS1-0	Blank Filler
CS1-1	N.O. (10 Amp)
CS1-2	N.C. (10 Amp)
CS1-5*	N.O. (16 Amp)
CS1-6	N.O. (2 Amp)
CS1-6G	N.O. (2 Amp) Gold Plated
CS1-7	N.C. (2 Amp)
CS1-7G	N.C. (2 Amp) Gold Plated
CS1-8	N.O. (2 Amp) Early Make
CS1-8G	N.O. (2 Amp) Early Make/Gold Plated
CS1-9	N.C. (2 Amp) Late Break
CS1-9G	N.C. (2 Amp) Late Break/Gold Plated

* Not UL Listed

Selecting the right CS1 contact element

Before choosing a contact element for your application, the following factors should be taken into account: the continuous current rating, life expectancy, switching frequency and contact reliability.

With extra low voltages, and especially where control relays are used in highly concentrated interconnected circuits, contact reliability becomes an important consideration. Although reliability is high for single contacts, it changes in magnitude because of voltage, current, frequency of operation, total number of single contact operations, pollution, atmospheric conditions and contact material.

In terms of contact reliability, one 2 amp contact element is better than two 10 amp or 16 amp contacts connected in parallel. In broad terms, contact reliability increases with the square of the voltage.

With regard to contact life, oversizing through the use of 10 amp or 16 amp contacts is meaningless if the use of 2 amp contact elements affords sufficient working life and reliability.

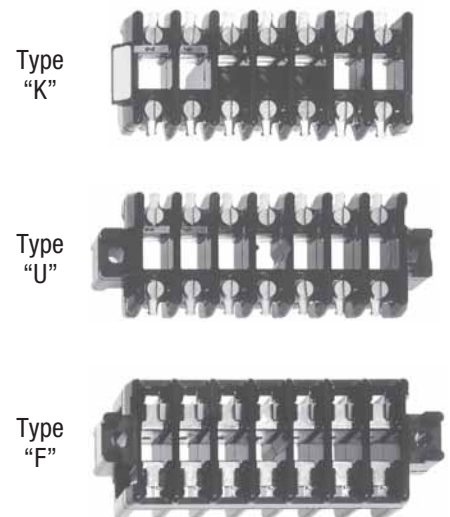
Under normal industrial conditions at 240 volts AC, a 2 amp contact element will have only one switching failure in 10¹¹ operations as compared to 10⁸ operations with the 10 amp and 16 amp contact elements.

Choose from three different sockets

Type K: DIN-rail mounted, equipped with standard screw terminals. Comes with self-adhesive identification labels that mount on the built-in holder.

Type U: Designed for panel mounting and is reversible for maximum flexibility.

Type F: Also designed for panel mounting and features spade connectors for plug-in wiring. It is also reversible.



Complete Assemblies - Includes operating mechanism and coil, socket base and contact elements
(No. 1, No. 2 and or blank element)

Total Number Of Poles	Poles Normally Open	Poles Normally Closed	AC Operation		DC Operation	
			Catalog Number	Price	Catalog Number	Price
2	2	0	① CS1A-110000-▲-*	68	CS1C-110000-▲-*	99
	1	1	① CS1A-120000-▲-*		CS1C-120000-▲-*	
	0	2	① CS1A-220000-▲-*		CS1C-220000-▲-*	
3	3	0	① CS1A-111000-▲-*	73	CS1C-111000-▲-*	104
	2	1	① CS1A-112000-▲-*		CS1C-112000-▲-*	
	1	2	① CS1A-122000-▲-*		CS1C-122000-▲-*	
	0	3	① CS1A-222000-▲-*		CS1C-222000-▲-*	
4	4	0	① CS1A-111100-▲-*	83	CS1C-111100-▲-*	114
	3	1	① CS1A-111200-▲-*		CS1C-111200-▲-*	
	2	2	① CS1A-112200-▲-*		CS1C-112200-▲-*	
	1	3	① CS1A-122200-▲-*		CS1C-122200-▲-*	
	0	4	① CS1A-222200-▲-*		CS1C-222200-▲-*	
5	5	0	① CS1A-111110-▲-*	94	CS1C-111110-▲-*	125
	4	1	① CS1A-111120-▲-*		CS1C-111120-▲-*	
	3	2	① CS1A-111220-▲-*		CS1C-111220-▲-*	
	2	3	① CS1A-112220-▲-*		CS1C-112220-▲-*	
	1	4	① CS1A-122220-▲-*		CS1C-122220-▲-*	
	0	5	① CS1A-222220-▲-*		CS1C-222220-▲-*	
6	6	0	① CS1A-111111-▲-*	104	CS1C-111111-▲-*	135
	5	1	① CS1A-111112-▲-*		CS1C-111112-▲-*	
	4	2	① CS1A-111122-▲-*		CS1C-111122-▲-*	
	3	3	① CS1A-111222-▲-*		CS1C-111222-▲-*	
	2	4	① CS1A-112222-▲-*		CS1C-112222-▲-*	
	1	5	① CS1A-122222-▲-*		CS1C-122222-▲-*	
	0	6	① CS1A-222222-▲-*		CS1C-222222-▲-*	

Ordering Instructions

- Specify catalog number
- Replace (▲) with Socket Code
- Replace (*) with Coil Code

SOCKET CODE (▲)	Socket Codes	Description
	K	Screw socket base (rail mount)
	U	Reversible screw socket base (panel mount)
	F	Reversible plug socket base (panel mount)

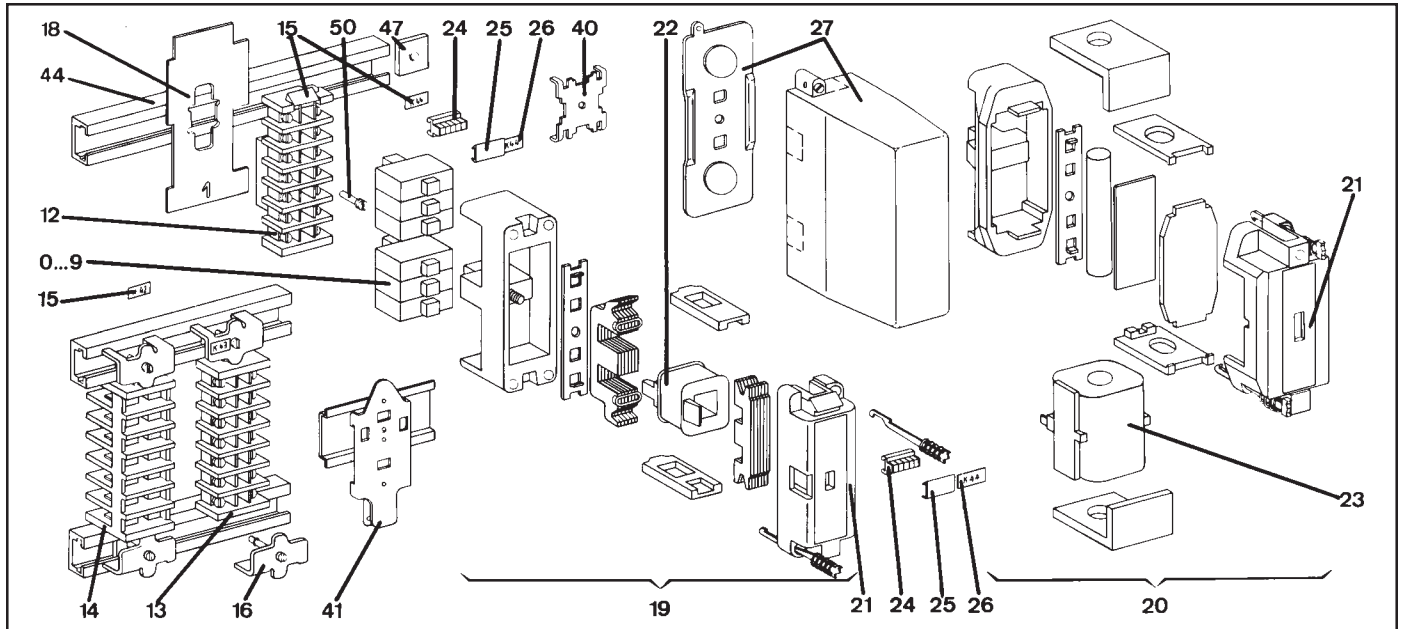
COIL CODE (*)	AC Operation			DC Operation	
	Coil Code ⑦	Volts 60Hz	Volts 50Hz	Coil Code ⑦	Volts
	24AC	24	21	24DC	24
120AC	120	110	48DC	48	
240AC	240	220	110DC	110	
277AC	277	240	220DC	220	
380AC	440	380			
480AC	480	440			
575AC	575	500			

Component Breakdown

Operation Type	Operating Mechanism ②		Socket Base ③		Contact Elements ④	
	Catalog#	Price	Catalog#	Price	Catalog#	Price
AC	CS1A-*	26	CS1-K	10	CS1-0	3
	CS1UA-*				CS1-1	8
DC	CS1C-*	57	CS1-U	10	CS1-2	8
					CS1-5⑤	13
					CS1-6	8
					CS1-6G	21
					CS1-7	8
					CS1-7G	21
					CS1-8⑤	13
					CS1-8G⑤	26
					CS1-9⑤	13
					CS1-9G⑤	26

- ① Non-UL version. For UL version, change first four characters of catalog number to CS1UA.
- ② Replace * with Coil Code (see above).
- ③ See above for descriptions.
- ④ Refer to page G33 for complete description of contact elements.
- ⑤ Not UL Listed.
- ⑥ Early-make and late-break contacts must be inserted side-by-side to ensure overlapping function.
- ⑦ Other voltages available. Please contact factory.

Replacement Parts



G
Control &
Timing Relays
CS1

Item Number	Component Description	Catalog Number	Price
Contact Elements			
0	No. 0 Blank Filler	CS1-0	3
1	No. 1 N.O. (10 Amp)	CS1-1	8
2	No. 2 N.C. (10 Amp)	CS1-2	8
5	No. 5 N.O. (16 Amp) ①	CS1-5 ①	13
6.1	No. 6 N.O. (2 Amp)	CS1-6	8
6.2	No. 6G N.O. (2 Amp) Gold Plated	CS1-6G	21
7.1	No. 7 N.C. (2 Amp)	CS1-7	8
7.2	No. 7G N.C. (2 Amp) Gold Plated	CS1-7G	21
8.1	No. 8 N.O. (2 Amp) Early Make	CS1-8 ②	13
8.2	No. 8G N.O. (2 Amp) Early Make/Gold Plated	CS1-8G ②	26
9.1	No. 9 N.C. (2 Amp) Late Break	CS1-9 ②	13
9.2	No. 9G N.C. (2 Amp) Late Break/Gold Plated	CS1-9G ②	26
Connection Socket Bases			
12	Screw Socket "K" (Includes Item 15)	CS1-K	10
13	Reversible Screw Socket "U"	CS1-U	10
14	Reversible Plug Socket "F"	CS1-F	10
15	Identification Labels (With 105 self-adhesive paper strips)	22.145.223-01	4
16	Clip (With screw for items 13 and 14)	22.113.125-01	2
18	Spacer (For item 12)	22.113.208-01	1
Operating Mechanisms With Data Plates			
19.1	CS1A Operating Mechanism (AC) With Coil	CS1A-* ②	26
19.2	CS1UA Operating Mechanism (AC) With Coil - UL Listed	CS1UA-* ②	26
20	CS1C Operating Mechanism (DC) With Coil	CS1C-* ②	57
Data Plates			
21.1	Data Plate For CS1A & CS1C	22.113.440-01	
21.2	Data Plate For CS1UA	22.113.430-01	
Coils			
22	AC Coils - Standard Control Voltages	22.113.204-* ②	16
23	DC Coils - Standard Control Voltages	22.113.224-* ②	47
24	Tag Carrier (In packets of 100) - For Marking With Clip-On Tags	22.145.201-02	65
25	Transparent Cover (In packets of 100) - For Item 26	22.145.202-01	21
26	Designation Strips (In packets of 160)	22.145.203-01	4
27	Protection Cover For CS1A	22.113.206-01	20
40	CS1 Adapter	22.113.227-01	10 (10 pieces)
41	Rafix Base Plate	22.115.642-01	8
44	Mounting Rail (Light metal) - 10 Feet Long	22.102.448-03	29
47	Clamping Nut M4	22.115.110-04	1
50	Screw M4 x 15 With Spring Washer (For item 12)	412.211.980 417.201.006	0.16

① Not UL Listed.

② Replace * with Coil Code (See page F4).

③ Early-make and late-break contacts must be inserted side-by-side to ensure overlapping function.

Technical Data

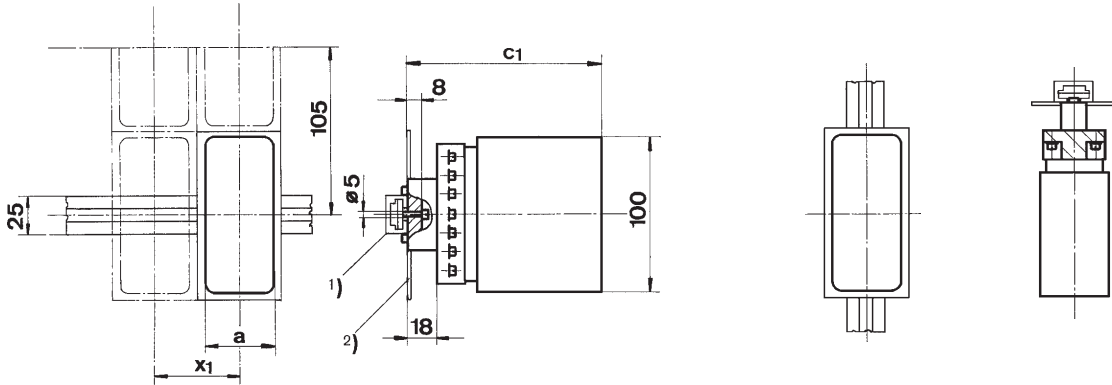
Maximum Voltage	240VAC
Maximum Continuous Current (General purpose and tungsten filament lamp load)	Contact element No. 1: 10 amp Contact element No. 2: 10 amp Contact element No. 5: 16 amp (not UL Listed) Contact element No. 6: 2 amp Contact element No. 6G: 2 amp Contact element No. 7: 2 amp Contact element No. 7G: 2 amp Contact element No. 8: 2 amp Contact element No. 8G: 2 amp Contact element No. 9: 2 amp Contact element No. 9G: 2 amp
Heavy Pilot Duty	Contact elements No. 1 & No. 2 only
Maximum Fusing	20 amp (No. 1 and 2) 25 amp (No. 5) 12 amp (No. 6 through 9)
Coil Consumption	
AC mechanism	
Pick-up	50VA/35W
Hold	7VA/2.3W
DC mechanism	
Pick-up	7W max.
Hold	7W max.
Pick-up Voltage ①	
AC mechanism	Minimum 80% rated coil voltage
DC mechanism	Minimum 80% rated coil voltage
Drop-out Voltage	
AC mechanism	20% to 70% rated coil voltage
DC mechanism	10% to 70% rated coil voltage
Maximum Permissible Control Voltage	115% rated coil voltage
Pick-up Delay Time	
AC mechanism	5 to 20 ms
DC mechanism	40 to 60 ms
Drop-out Delay Time	
AC mechanism	5 to 20 ms
DC mechanism	35 to 45 ms
Mechanical Life	
AC mechanism	25 million operations
DC mechanism	50 million operations
Permissible Frequency Of Operation	25,000 operations per hour
Test Voltage	
Phase-Phase	3000 volts
Phase-Earth	4000 volts
Rated Insulation Voltage (according to UL)	240 volts
Approvals	CE Mark

① On upright base with no more than 4 N.C. contact elements. With 5 or 6 contact elements, control relay will pick-up at 90% of rated coil voltage. Direct current: maximum admissible ripple factor 50%.

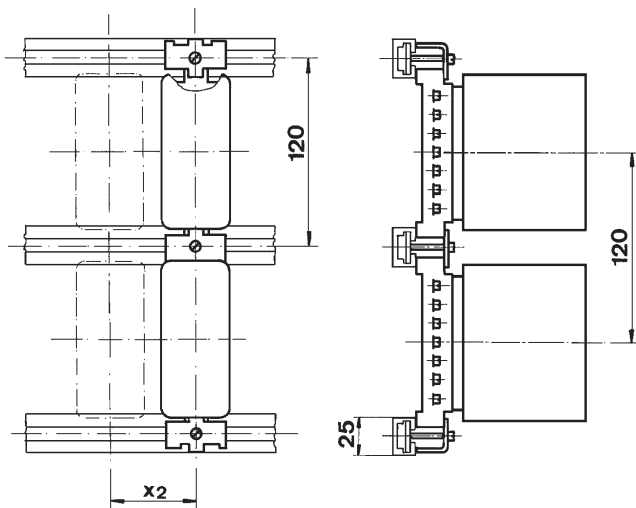
Dimensions (mm)

Socket "K" - Wiring from front

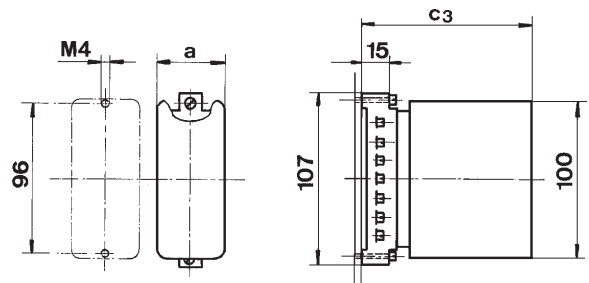
- Dimensions are in millimeters
- Dimensions not intended for manufacturing purposes



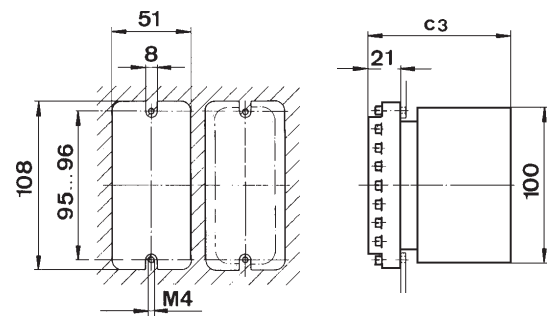
Socket "U" - Wiring from front



Socket "U" - Assembly from front



Socket "U" - Assembly from rear

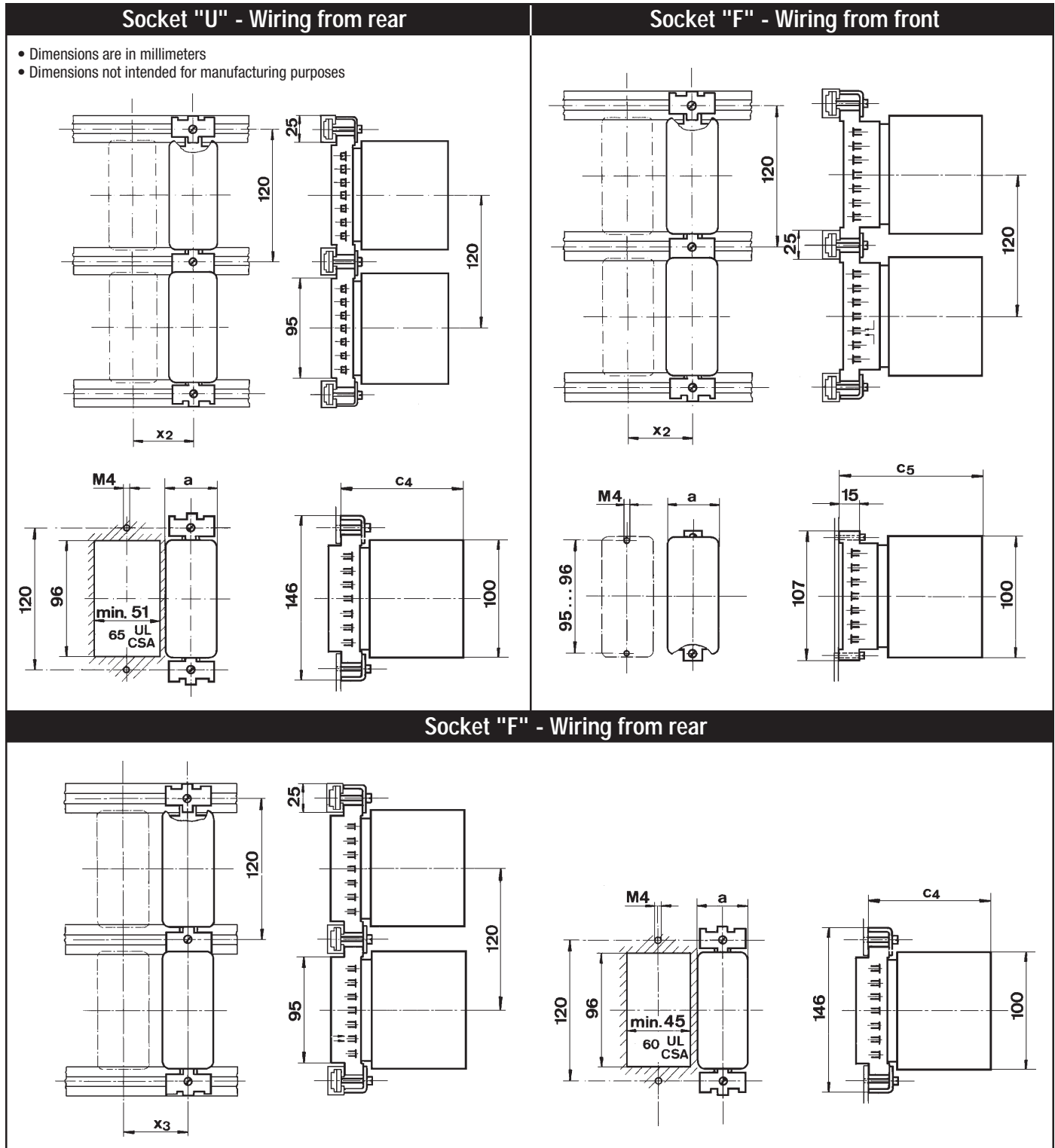


Dimensions Table (mm)

Type	a	c1	c2	c3	c4	c5	x1	x2	x3
AC	40	106	108	91.5	83	103	50/55/60	48 (min)	42 (min)
DC	45	125	127	110.5	102	122	50/55/60	48 (min)	48 (min)

- 1) Assembly onto rail 25mm wide. Use adaptor on page G33 (item 40) for 29mm and 32mm rails.
- 2) Spacer 50/55/60 mm. See page G33 item 18.

Dimensions (mm)



Dimensions Table (mm)

Type	a	c1	c2	c3	c4	c5	x1	x2	x3
AC	40	106	108	91.5	83	103	50/55/60	48 (min)	42 (min)
DC	45	125	127	110.5	102	122	50/55/60	48 (min)	48 (min)