SCHALTBAU
Connect Contact Control

3

Contactors

C137, C163, C164, C165 series

Single pole contactors for battery voltages

Catalogue B60.en

More information
schaltbau.com

C137, C163, C164, C165 – Contactors for battery voltages

With its proven line of C137, C163, C164 and C165 series contactors Schaltbau offers a scalable solution for handling direct current loads in the range of 40 A to 220 A for the most common coil voltages up to 120 V.

When utilizing a contactor its coil is powered by a battery and a magnetic field is generated around its armature by the direct current voltage coming from the battery. That is why Schaltbau battery contactors feature extra wide coil tolerance. They have double-break contacts, are compact in size, economical in price, and known for their reliability.

Version »C« are single-pole NO contactors with magnetic blowout, whereas version »H« are single-pole change-over contactors which feature an additional, electrically seperated contact element. This extra normally closed contact is, however, without blowout magnets and not designed to make and break current.

Bistable versions: C163 Series contactors are also available with magnetic latching. The change towards one of the two bistable positions of the main contact is operated by a pulse of 100 msec. duration. The coil consumes no power except for the short pulse necessary to close and reopen the main contact, see also catalogue B164.en.

Features

- Rugged, compact design
- Four different sizes
- Double breaking main contacts
- Extra wide coil tolerance for industrial and railway applications in accordance with VDE and UIC standards

Applications

- General purpose motor control contactor
- Starting lift/lower controls as well as speed and directional controls of industrial trucks
- Heater and air conditioning control of electric locomotives and multiple units
- Battery powered electric functions in passenger coaches
- Deep discharge protection for batteries of uninterruptible power supplies (UPS)

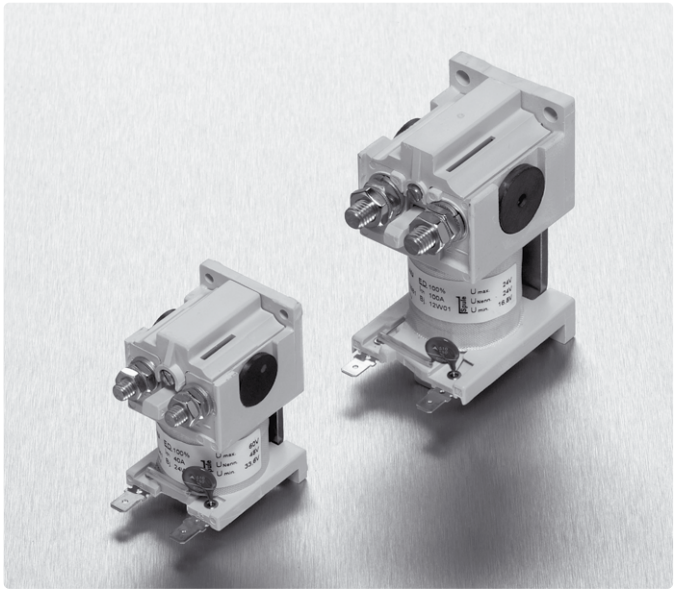
Standards

Meet requirements for industrial applications to:

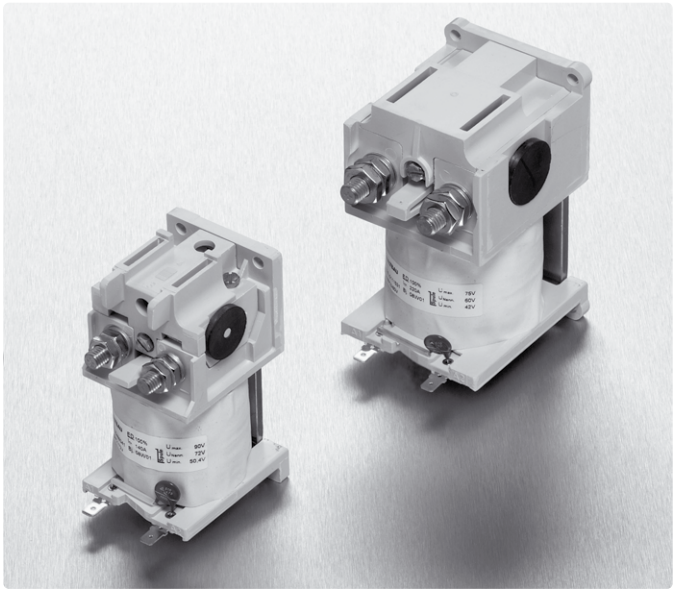
- **IEC 60947-1** Low-voltage switchgear and controlgear – Part 1: General rules
- **IEC 60947-4-1** Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor starters – Electromechanical contactors and motor starters.
- **DIN EN 1175-1** Safety of industrial trucks – Electrical requirements – Part 1: General requirements for battery powered trucks

Meet requirements for railway applications to:

- **IEC 60077-1** Railway applications – Electric equipment for rolling stock - Part 1: General service conditions and general rules.
- **IEC 60077-2** Railway applications – Electric equipment for rolling stock - Part 2: Electrotechnical components; General rules



C137 and C163 Series contactors



C164 and C165 Series contactors

Subject to change

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Ordering code

C137, C163, C164, C165 series

• C137 series

Example: **C137 C/ 24EV-V1**

Series

C137	Single pole contactor

Contact configuration

C	SPST NO *1
H	SPDT *2

Coil voltage

24 / 36 / 48 / 72 / 80 / 110 V DC

Coil tolerance

R	–30 % … +10 % U_s for industrial applications
E	–30 % … +25 % U_s for railway applications

Coil suppression

X	w/o for industrial applications
V	varistor for railway applications

Aux. contacts, Configuration and number of

[–]	w/o
V1	microswitch, SPDT *3, 1x

Stock items:

SPST NO contactors	
C137 C/ 24RX	C137 C/ 24EV
C137 C/ 48RX	C137 C/ 36EV
C137 C/ 80RX	C137 C/ 48EV
	C137 C/ 72EV
	C137 C/110EV

SPDT contactors	
C137 H/ 24RX	C137 H/ 24EV
C137 H/ 80RX	C137 H/110EV

• C163 series

Example: **C163 C/ 24EV-R1**

Series

C163	Single pole contactor

Contact configuration

C	SPST NO *1
H	SPDT *2

Coil voltage

24 / 36 / 48 / 72 / 80 / 110 V DC

Coil tolerance

R	–30 % … +10 % U_s for industrial applications
E	–30 % … +25 % U_s for railway applications

Coil suppression

X	w/o for industrial applications
V	varistor for railway applications

Aux. contacts, Configuration and number of

[–]	w/o
R1	S840, SPDT *3, 1x

Stock items:

SPST NO contactors	
C163 C/ 24RX	C163 C/ 24EV
C163 C/ 48RX	C163 C/ 36EV
C163 C/ 80RX	C163 C/ 48EV
	C163 C/ 72EV
	C163 C/110EV

SPDT contactors	
C163 H/ 24RX	

• C164 series

Example: **C164 C/ 24EV-R1**

Series

C164	Single pole contactor

Contact configuration

C	SPST NO *1
H	SPDT *2

Coil voltage

24 / 36 / 48 / 72 / 80 / 110 V DC

Coil tolerance

R	–30 % … +10 % U_s for industrial applications
E	–30 % … +25 % U_s for railway applications

Coil suppression

X	w/o for industrial applications
V	varistor for railway applications

Aux. contacts, Configuration and number of

[–]	w/o
R1	S840, SPDT *3, 1x

Stock items:

SPST NO contactors	
C164 C/ 24RX	C164 C/ 24EV
C164 C/ 48RX	C164 C/ 48EV
C164 C/ 80RX	C164 C/ 72EV
	C164 C/110EV

SPDT contactors	
C164 H/ 24RX	
C164 H/ 48RX	
C164 H/ 80RX	

• C165 series [only for spare parts requirements / no new projects]

Example: **C165 C/ 24EV-R1**

Series

C165	Single pole contactor

Contact configuration

C	SPST NO *1
H	SPDT *2

Coil voltage

24 / 36 / 48 / 72 / 80 / 110 V DC

Coil tolerance

R	–30 % … +10 % U_s for industrial applications
E	–30 % … +25 % U_s at 55° C for railway applications (–30 % … +15 % U_s at 70° C)

Coil suppression

X	w/o for industrial applications
V	varistor for railway applications

Aux. contacts, Configuration and number of

[–]	w/o
R1	S840, SPDT *3, 1x

Stock items:

SPST NO contactors	
C165 C/ 24RX	C165 C/ 24EV
C165 C/ 48RX	C165 C/ 48EV
C165 C/ 80RX	C165 C/ 72EV
	C165 C/110EV

SPDT contactors	
C165 H/ 24RX	

Note:
Presented in this catalogue are only stock items which can be supplied in short delivery time. Types for AC operation are available on special order: AC variants on request, version then: B = normally open contact without blowout; G = changeover contact without blowout.

Special variants:
If you need a special variant feel free to contact us. Maybe the type of contactor you are looking for is among our many special designs. If not, we can also supply customized designs. In this case, however, minumum order quantities apply.

**1 Version C are NO contactors fitted with permanent magnets. The normally open (make) contact is designed to make and break current like an open style power relay.*

**2 Version H changeover contactors feature electrically separated potential carrying make and break contacts. Please note that here only the normally open (make) contact is capable of switching current loads, whereas the normally closed (break) contact is designed to carry current but not to make and break current.*

**3 One microswitch max., with silver plated contacts*

Specifications for industrial applications

C137, C163, C164, C165 series

Series		C137 x/ xxRx-xx	C163 x/ xxRx-xx	C164 x/ xxRx-xx	[C165 x/ xxRx-xx]**
Type of voltage **Main contacts, Number of, Configuration**		DC, AC *1 1x SPST-NO or 1x SPDT *2			
General electrical ratings of main circuit to IEC 60947					
Nominal voltage U_n		110 V			
Rated insulation voltage U_i		150 V			
Rated impulse withstand voltage U_{imp}		2.5 kV			
Pollution degree Overvoltage category		PD3 OV3			
Conventional thermal current I_{th}		50 A	100 A	140 A	220 A
Making capacity, resistive	T = 1 ms	600 A	800 A	1,000 A	2,000 A
Breaking capacity, T < 1 ms	NO CO*2	200 A @ 80 V DC 100 A @ 80 V DC	300 A @ 80 V DC 200 A @ 80 V DC	500 A @ 80 V DC 300 A @ 80 V DC	1,500 A @ 80 V DC 800 A @ 80 V DC
Rated short-time withstand current I_{cw}		800 A @ 100 ms	1,000 A @ 100 ms	1,500 A @ 100 ms	2,500 A @ 100 ms
switch-off, no reversing		only in one direction			
Main contacts					
Contact material	NO NC	$AgSnO_2$ AgNi	$AgSnO_2$ AgNi	$AgSnO_2$ AgNi	$AgSnO_2$ AgNi
Main terminals / tightening torque		M6 / 3 Nm max.	M8 / 6 Nm max.	M8 / 6 Nm max.	M10 / 10 Nm max.
Auxiliary contacts					
Number of / Configuration		1x SPDT	1x Snap-action switch S840 (SPDT)		
Switching capacities	T = 0 ms	2.5 A @ 24 V DC 1.0 A @ 48 V DC 0.5 A @ 80 V DC		2.5 A @ 24 V DC 1.0 A @ 48 V DC 0.5 A @ 80 V DC	
Terminals, Flat tabs		2.0 x 0.5 mm		6.3 x 0.8 mm	
Magnetic drive					
Coil voltage U_s		24 V ... 110 V DC	24 V ... 110 V DC	24 V ... 110 V DC	24 V ... 110 V DC
Coil tolerance		–30 % ... +10 % U_s	–30 % ... +10 % U_s	–30 % ... +10 % U_s	–30 % ... +10 % U_s
Coil power dissipation at U_s @ T_a = 20 °C		12 W	18 W	20 W	27 W
Coil suppression		---	---	---	---
Coil terminals	Flat tabs	6.3 x 0.8 mm	6.3 x 0.8 mm	6.3 x 0.8 mm	6.3 x 0.8 mm
Degree of protection		IP00			
Mechanical endurance	operating cycles	NO > 3m NC > 2m	> 3m	> 3m	> 3m
Electrical endurance	operating cycles	> 100,000 (U_n, I_{th}, T < 1 ms, cycle ≤ 6/min)			
Vibration / Shock	EN 61373	Class B, Cat. 1: 5 ... 150 Hz / 5 g (30 msec., half sinus)			
Mounting position		Horizontal: contact studs must point upwards Vertical: plasma exits must point upwards			
Temperature	Ambient temperature T_a Storage temperature	-25 °C … +50 °C -40 °C … +85 °C			
Weight		220 g ... 250 g	550 g ... 680 g	960 g ... 1,050 g	1,900 g ... 2,150 g

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** *Only for spare parts requirements / no new projects*
*1 *Types for AC applications available on special order: Replace version C with B (= NO contactor without blowout); and version H with G (= changeover contactor without blowout), see ordering code on page 3*
*2 *Changeover contactor: Here only the normally open (make) contact is capable of switching current loads, whereas the normally closed (break) contact is not designed to make and break current.*

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Specifications for railway applications

C137, C163, C164, C165 series

Series		C137 x/ xxEx-xx	C163 x/ xxEx-xx	C164 x/ xxEx-xx	[C165 x/ xxEx-xx]**
Type of voltage **Main contacts, Number of, Configuration**		DC, AC *1 1x SPST-NO or 1x SPDT *2			
General electrical ratings of main circuit to IEC 60077					
Nominal voltage U_n		120 V			
Rated insulation voltage U_i		150 V			
Rated impulse withstand voltage U_{imp}		2,5 kV			
Pollution degree Overvoltage category		PD3 OV3			
Conventional thermal current I_{th}	NO NC *2	40 A 40 A	80 A 60 A	140 A 140 A	220 A 220 A
Making capacity, resistive	T = 1 ms	400 A	600 A	800 A	1.500 A
Breaking capacity, T < 1 ms	NO CO*2	150 A @ 80 V DC 60 A @ 80 V DC	250 A @ 80 V DC 150 A @ 80 V DC	400 A @ 80 V DC 250 A @ 80 V DC	1,500 A @ 80 V DC 800 A @ 80 V DC
Rated short-time withstand current I_{cw}		700 A @ 100 ms	800 A @ 100 ms	1,000 A @ 100 ms	2,000 A @ 100 ms
switch-off, no reversing		only in one direction			
Main contacts					
Contact material	NO NC	$AgSnO_2$ AgNi	$AgSnO_2$ AgNi	$AgSnO_2$ AgNi	$AgSnO_2$ AgNi
Main terminals / tightening torque		M6 / 3 Nm max.	M8 / 6 Nm max.	M8 / 6 Nm max.	M10 / 10 Nm max.
Auxiliary contacts					
Number of / Configuration		1x SPDT	1x Snap-action switch S840 (SPDT)		
Switching capacities	T = 0 ms	2.5 A @ 24 V DC 1.0 A @ 48 V DC 0.5 A @ 80 V DC		2.5 A @ 24 V DC 1.0 A @ 48 V DC 0.5 A @ 80 V DC	
Terminals, Flat tabs		2.0 x 0.5 mm		6.3 x 0.8 mm	
Magnetic drive					
Coil voltage U_s		24 V ... 110 V DC	24 V ... 110 V DC	24 V ... 110 V DC	24 V ... 110 V DC
Coil tolerance		–30 % ... +25 % U_s	–30 % ... +25 % U_s	–30 % ... +25 % U_s	–30 % ... +25 % U_s*3
Coil power dissipation at U_s @ T_a = 20 °C		8 W	12 W	12 W	23 W
Coil suppression		Varistor	Varistor	Varistor	Varistor
Coil terminals	Flat tabs	6.3 x 0.8 mm	6.3 x 0.8 mm	6.3 x 0.8 mm	6.3 x 0.8 mm
Degree of protection		IP00			
Mechanical endurance	operating cycles	NO > 3m NC > 2m	> 3m	> 3m	> 3m
Electrical endurance	operating cycles	> 100,000 (U_n, I_{th}, T < 1 ms, cycle ≤ 6/min)			
Vibration / Shock	EN 61373	Class B, Cat. 1: 5 ... 150 Hz / 5 g (30 msec., half sinus)			
Mounting position		Horizontal: contact studs must point upwards Vertical: plasma exits must point upwards			
Temperature	Ambient temperature T_a Storage temperature	-25 °C … +70 °C -40 °C … +85 °C			
Weight		220 g ... 250 g	550 g ... 680 g	960 g ... 1,050 g	1,900 g ... 2,150 g

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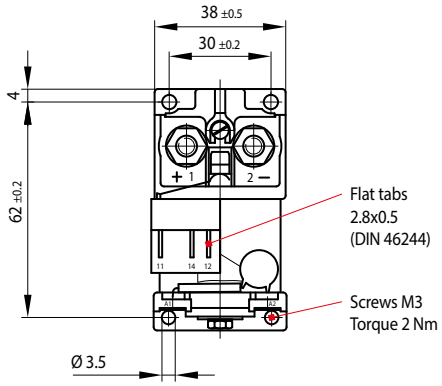
** *Only for spare parts requirements / no new projects*
*1 *Types for AC applications available on special order: Replace version C with B (= NO contactor without blowout); and version H with G (= changeover contactor without blowout), see ordering code on page 3.*
*2 *Changeover contactor: Here only the normally open (make) contact is capable of switching current loads, whereas the normally closed (break) contact is not designed to make and break current.*
*3 *at -25°C ... +55°C*

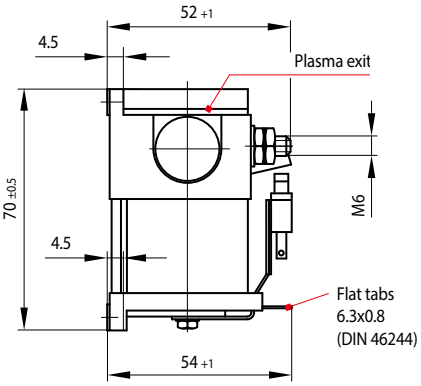
Subject to change

C137 SPST-NO or SPDT contactor

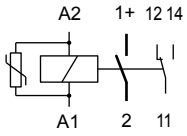
C137 series

- **Device outline: C137 Series SPST-NO contactor**



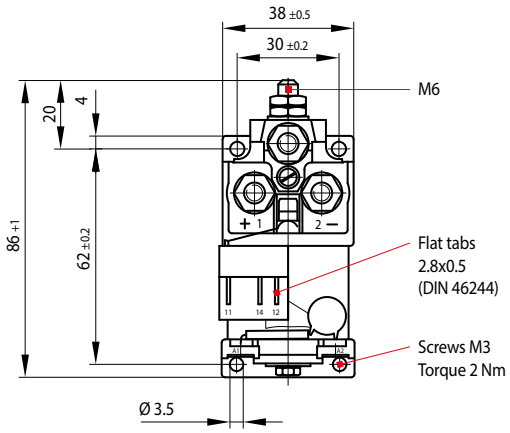


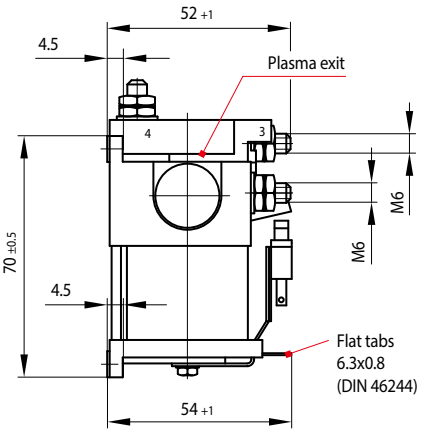
- **Circuit diagram**



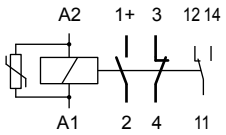
Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

- **Device outline: C137 Series SPDT contactor**





- **Circuit diagram**



Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

HK-C137 Auxiliary contact

C137 series

- **Auxiliary contact assembly HK-C137**

- **Mounting:**

C137 Series contactors can be retrofitted with an auxiliary contact. Loosen the M4 hex screw a little that connects the yoke to the magnet core. Slide slotted mounting bracket of auxiliary contact assembly under screw head. Push yoke against housing and retighten screw.

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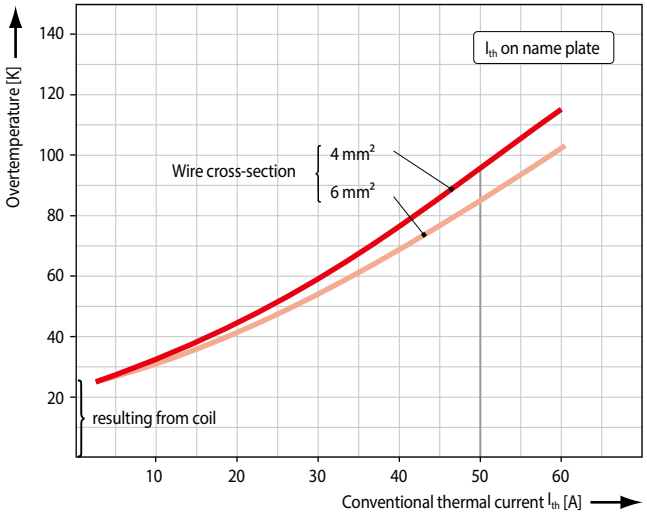
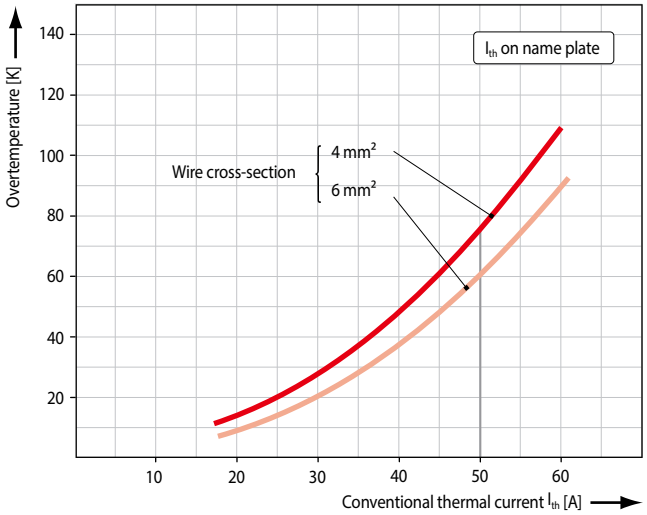
Characteristic curves Contact performance

Dimensioning, mounting instructions C137 series

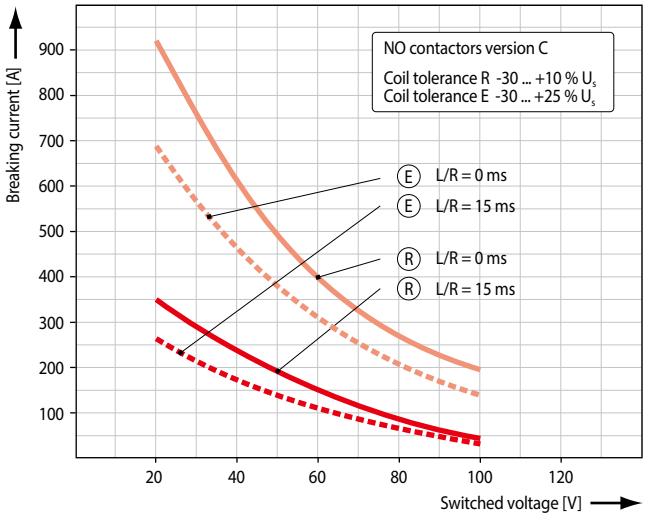
• Continuously rated, normally open contact



• Continuously rated, normally closed contact



• Max. breaking capacity DC of NO contact for coil tolerance R and E



Note:

- *The maximum breaking capacity is the value of prospective current at a stated DC voltage which can be ruptured by the contactor where the ensuing arc upon contact separation is still being quenched. For actual operation the current rating of the contactor should, therefore, be limited to 20 % ... 60 % of its maximum breaking capacity.*
- *Please note that for double throw contactors, in addition to the foregoing limitations, the switch off load of the normally open contact must be further reduced by 30 % to 50 %.*

• Guide to permissible current rating

Short-time duty	SPST-NO		SPDT			
			NO contact		NC contact	
Coil tolerance*	R	E	R	E	R	E
6 sec	250 A	180 A	250 A	180 A	200 A	140 A
1 min	120 A	90 A	120 A	90 A	110 A	75 A
3 min	100 A	70 A	100 A	70 A	90 A	60 A
5 min	80 A	60 A	80 A	60 A	70 A	50 A
10 min	70 A	50 A	70 A	50 A	60 A	---

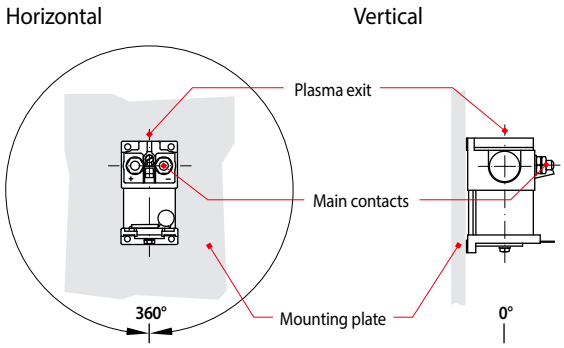
Above current ratings refer to wire cross-section 6 mm²

** Coil voltage tolerance* **R:** *–30 % ... +10 % U_s* **E:** *–30 % ... +25 % U_s*

Note:

- *The thermal current rating for continuous duty is dependent on the upper limiting temperature of the contact elements which must not exceed 150°C. Wire gauge, ambient temperature, duty and operating cycles, contamination of contacts and contact wear are all factors that influence the surface temperature rise of the contact studs. All the above current ratings should, therefore, be considered as a guide only.*
- *The way you mount the contactor has no less an impact on the rise of temperature and the insulation of the switching device. So please observe the clearance between live or earthed parts and comply with the safety regulations of the applicable standards. No liability will be accepted by Schaltbau in any circumstances for indirect damage resulting from clearances not being observed, devices not mounted properly, or products tampered with in any way.*

• Possible mounting orientations



Mounting positions:

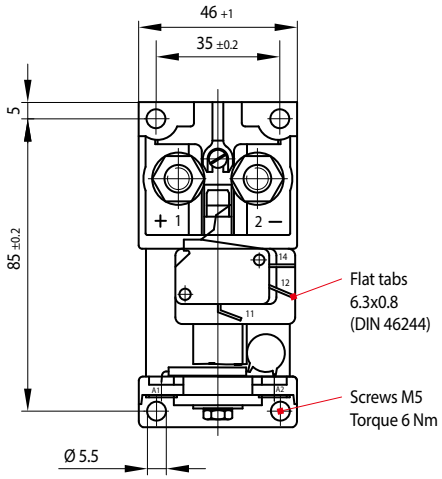
- *Horizontal: contact studs must point upwards or*
- *Vertical: plasma exits must point upwards*

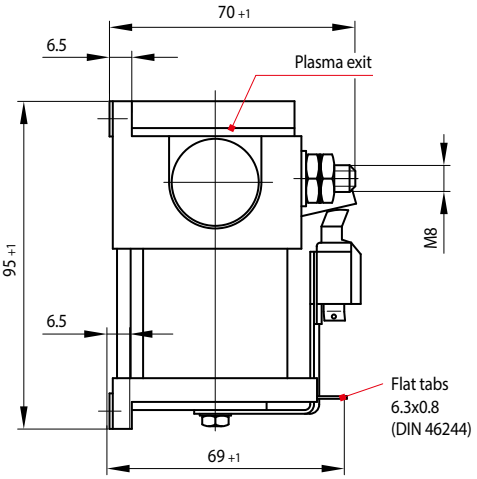
Subject to change

C163 SPST-NO or SPDT contactor

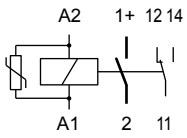
C163 series

- **Device outline: C163 Series SPST-NO contactor**



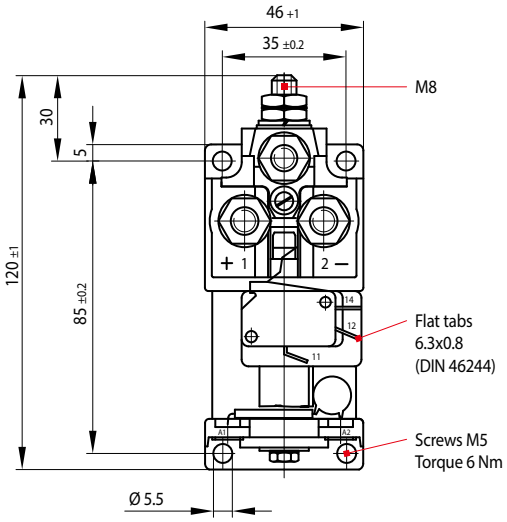


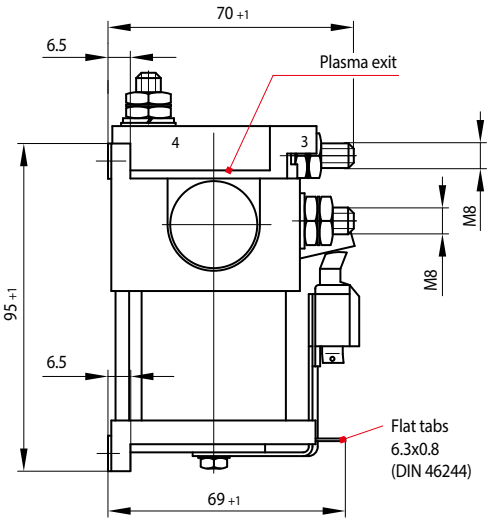
- **Circuit diagram**



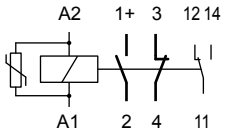
Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

- **Device outline: C163 Series SPDT contactor**





- **Circuit diagram**



Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

HK-C163 Auxiliary contact

C163 series

- **Auxiliary contact assembly HK-C163**

- **Mounting:**

C163 Series contactors can be retrofitted with an auxiliary contact. Loosen the M5 hex screw a little that connects the yoke to the magnet core. Slide slotted mounting bracket of auxiliary contact assembly under screw head. Push yoke against housing and retighten screw.

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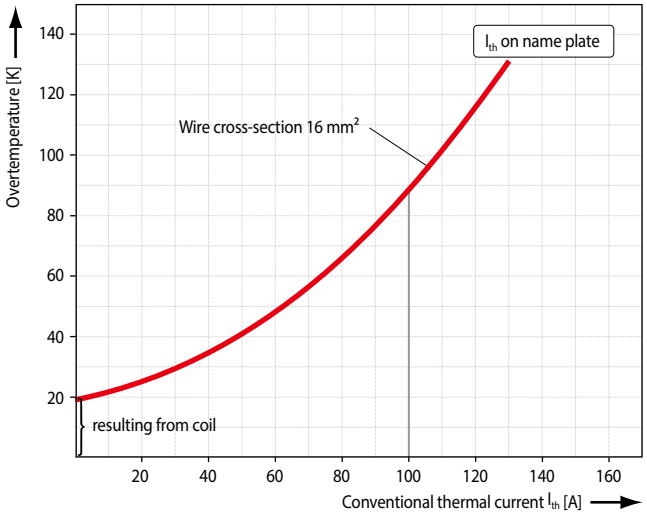
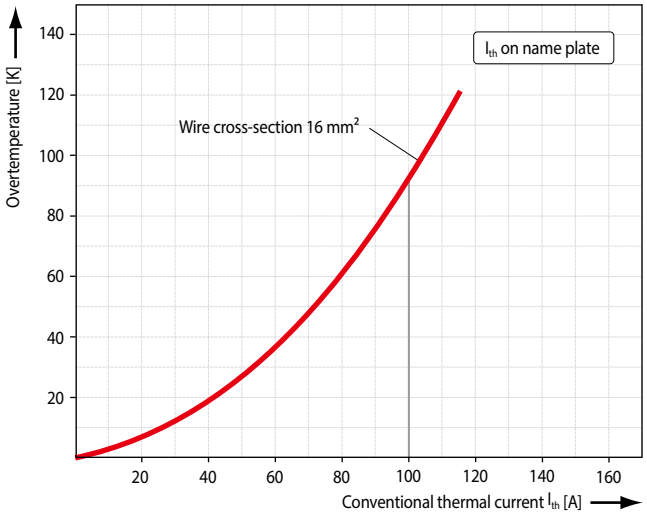
Characteristic curves Contact performance

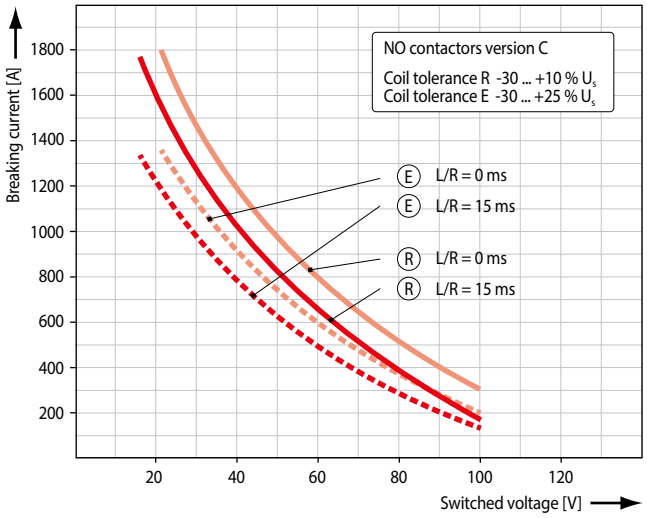
Continuously rated, normally open contact



Continuously rated, normally closed contact



Max. breaking capacity DC of NO contact for coil tolerance R and E



Note:

- *The maximum breaking capacity is the value of prospective current at a stated DC voltage which can be ruptured by the contactor where the ensuing arc upon contact separation is still being quenched. For actual operation the current rating of the contactor should, therefore, be limited to 20 % ... 60 % of its maximum breaking capacity.*
- *Please note that for double throw contactors, in addition to the foregoing limitations, the switch off load of the normally open contact must be further reduced by 30 % to 50 %.*

Subject to change / Dimensions in mm

Dimensioning, mounting instructions C163 series

Guide to permissible current rating

Short-time duty	SPST-NO		SPDT			
			NO contact		NC contact	
Coil tolerance*	R	E	R	E	R	E
6 sec	450 A	340 A	450 A	340 A	250 A	180 A
1 min	200 A	150 A	200 A	150 A	150 A	110 A
3 min	150 A	115 A	150 A	115 A	125 A	90 A
5 min	130 A	100 A	130 A	100 A	115 A	80 A
10 min	110 A	---	110 A	---	105 A	70 A

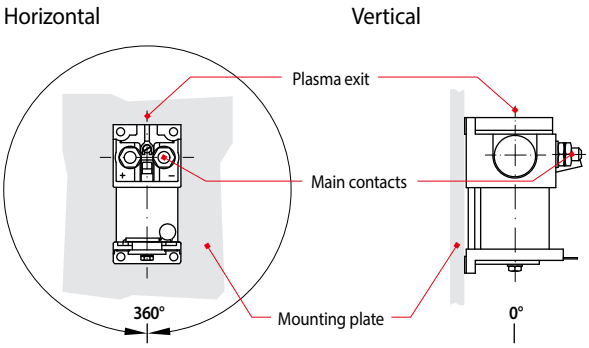
Above current ratings refer to wire cross-section 16 mm²

** Coil voltage tolerance* ***R:*** *–30 % ... +10 % U_s*
E: *–30 % ... +25 % U_s*

Note:

- *The thermal current rating for continuous duty is dependent on the upper limiting temperature of the contact elements which must not exceed 150°C. Wire gauge, ambient temperature, duty and operating cycles, contamination of contacts and contact wear are all factors that influence the surface temperature rise of the contact studs. All the above current ratings should, therefore, be considered as a guide only.*
- *The way you mount the contactor has no less an impact on the rise of temperature and the insulation of the switching device. So please observe the clearance between live or earthed parts and comply with the safety regulations of the applicable standards. No liability will be accepted by Schaltbau in any circumstances for indirect damage resulting from clearances not being observed, devices not mounted properly, or products tampered with in any way.*

Possible mounting orientations



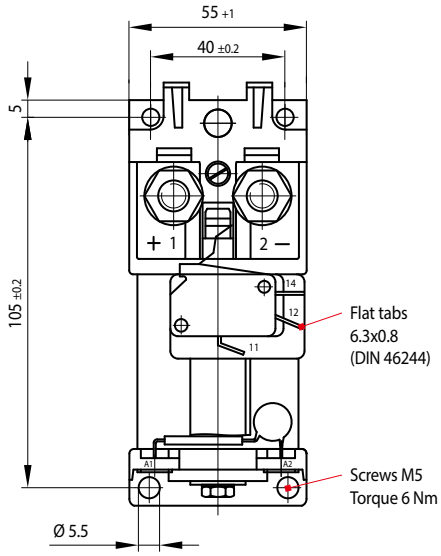
Mounting positions:

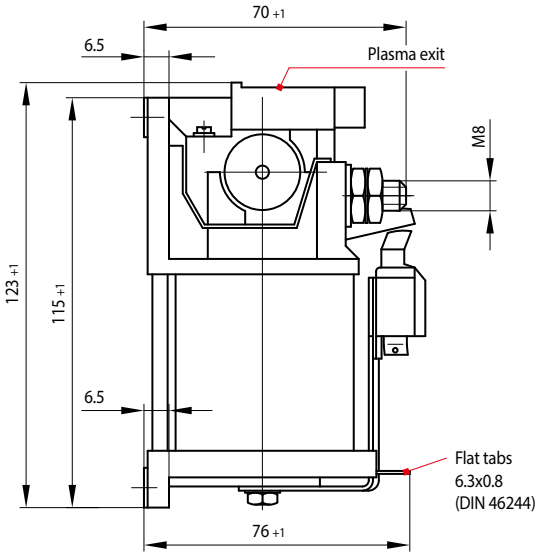
- *Horizontal: contact studs must point upwards or*
- *Vertical: plasma exits must point upwards*

C164 SPST-NO or SPDT contactor

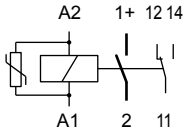
C164 series

- **Device outline: C164 Series SPST-NO contactor**



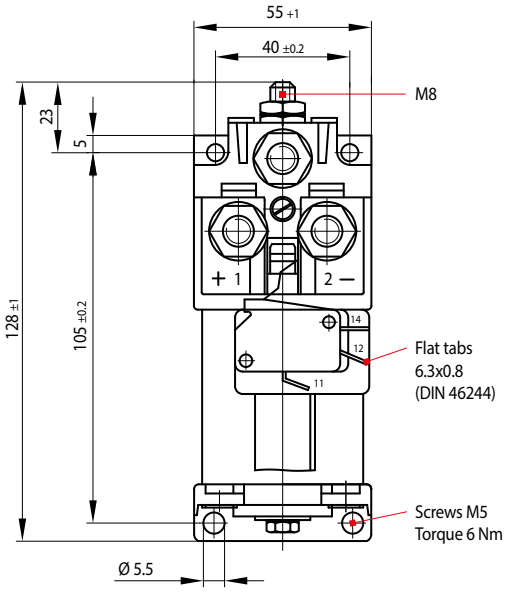


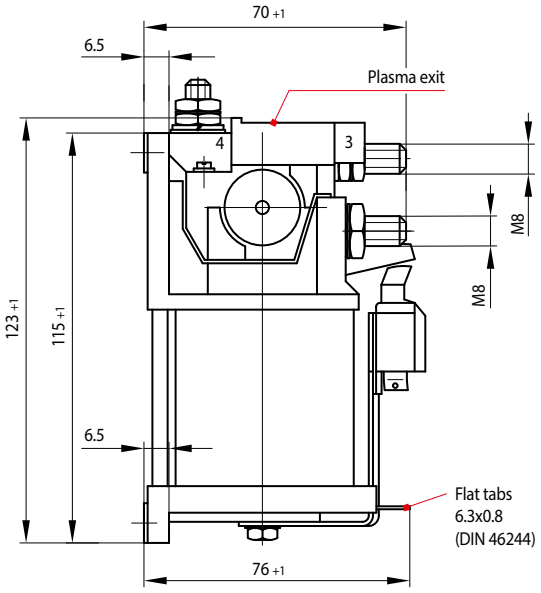
- **Circuit diagram**



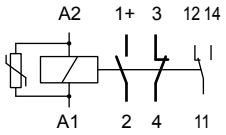
Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

- **Device outline: C164 Series SPDT contactor**





- **Circuit diagram**



Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

HK-C164 Auxiliary contact

C164 series

- **Auxiliary contact assembly HK-C164**

- **Mounting:**

C164 Series contactors can be retrofitted with an auxiliary contact. Loosen the M5 hex screw a little that connects the yoke to the magnet core. Slide slotted mounting bracket of auxiliary contact assembly under screw head. Push yoke against housing and retighten screw.

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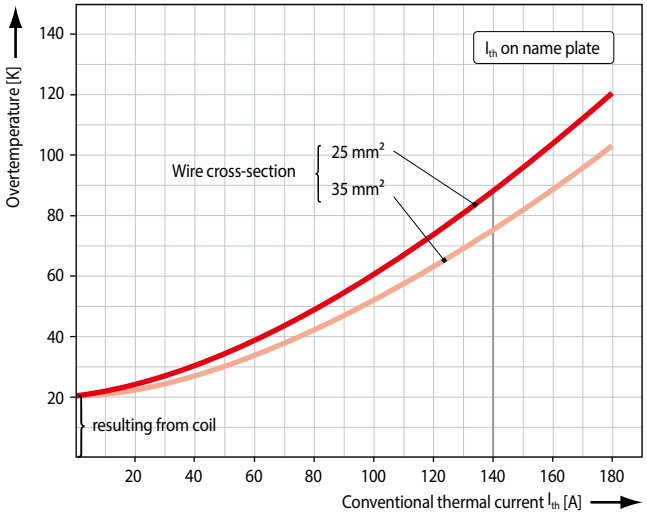
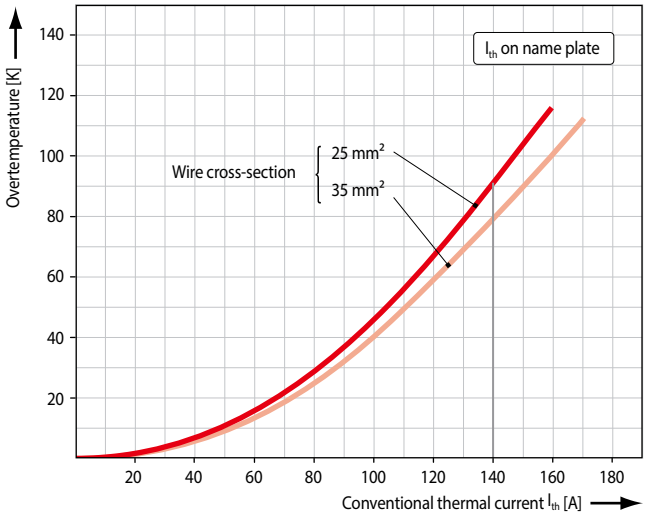
Characteristic curves Contact performance

Dimensioning, mounting instructions C164 series

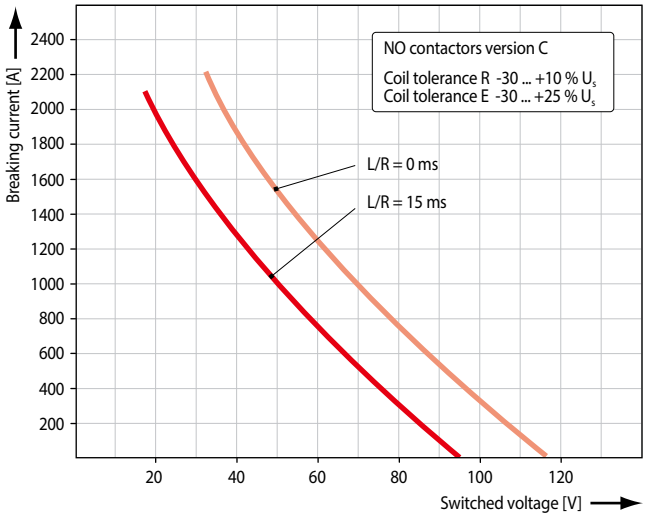
• Continuously rated, normally open contact



• Continuously rated, normally closed contact



• Max. breaking capacity DC of NO contact for coil tolerance R and E



Note:

- *The maximum breaking capacity is the value of prospective current at a stated DC voltage which can be ruptured by the contactor where the ensuing arc upon contact separation is still being quenched. For actual operation the current rating of the contactor should, therefore, be limited to 20 % ... 60 % of its maximum breaking capacity.*
- *Please note that for double throw contactors, in addition to the foregoing limitations, the switch off load of the normally open contact must be further reduced by 30 % to 50 %.*

• Guide to permissible current rating

Short-time duty	SPST-NO		SPDT			
			NO contact		NC contact	
Coil tolerance*	R	E	R	E	R	E
6 sec	800 A	650 A	800 A	650 A	400 A	320 A
1 min	280 A	220 A	280 A	220 A	210 A	170 A
3 min	210 A	170 A	210 A	170 A	170 A	150 A
5 min	190 A	155 A	190 A	155 A	160 A	---
10 min	170 A	---	170 A	---	150 A	---

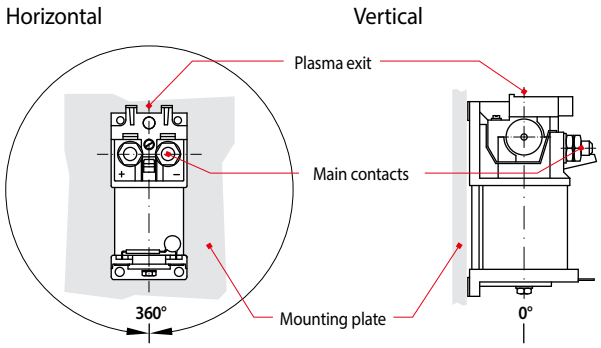
Above current ratings refer to wire cross-section 35 mm²

** Coil voltage tolerance* **R:** *–30 % ... +10 % U_s*
E: *–30 % ... +25 % U_s*

Note:

- *The thermal current rating for continuous duty is dependent on the upper limiting temperature of the contact elements which must not exceed 150°C. Wire gauge, ambient temperature, duty and operating cycles, contamination of contacts and contact wear are all factors that influence the surface temperature rise of the contact studs. All the above current ratings should, therefore, be considered as a guide only.*
- *The way you mount the contactor has no less an impact on the rise of temperature and the insulation of the switching device. So please observe the clearance between live or earthed parts and comply with the safety regulations of the applicable standards. No liability will be accepted by Schaltbau in any circumstances for indirect damage resulting from clearances not being observed, devices not mounted properly, or products tampered with in any way.*

• Possible mounting orientations



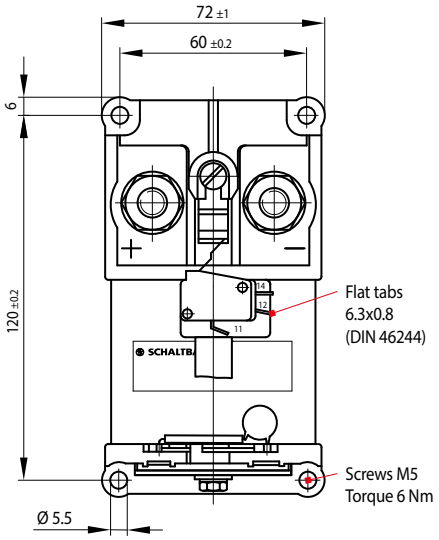
Mounting positions:

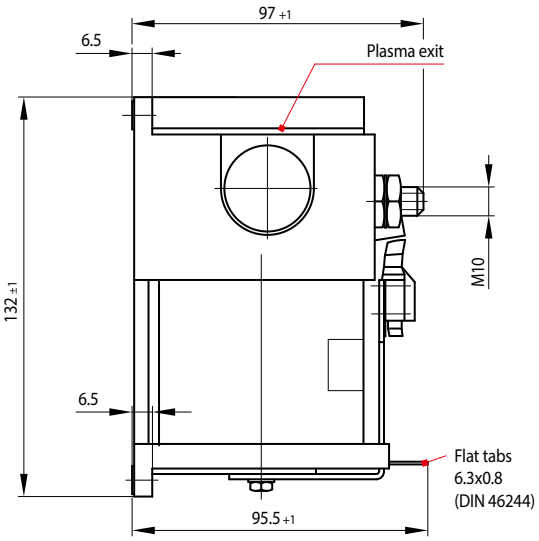
- *Horizontal: contact studs must point upwards or*
- *Vertical: plasma exits must point upwards*

Subject to change / Dimensions in mm

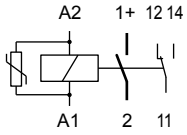
C163 SPST-NO or SPDT contactor [only for spare parts requirements / no new projects] C165 series

- **Device outline: C165 Series SPST-NO contactor**



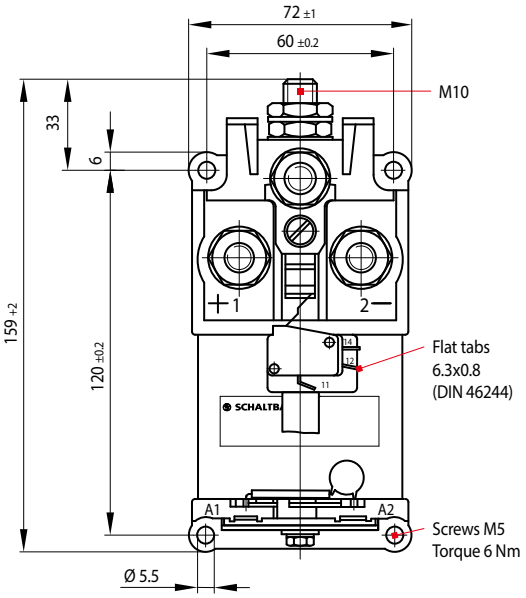


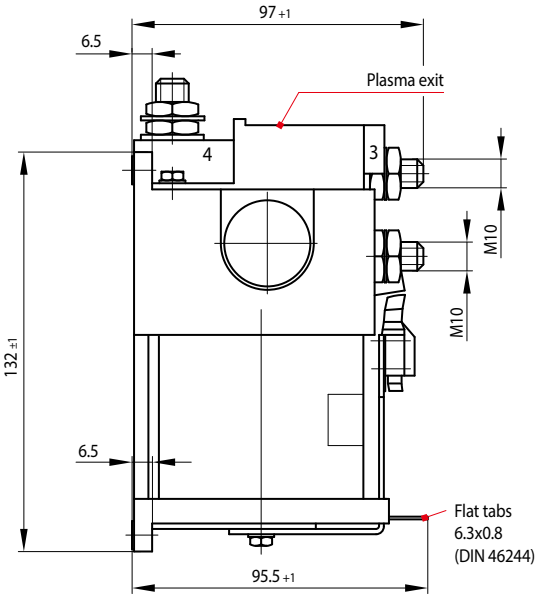
- **Circuit diagram**



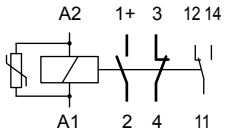
Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

- **Device outline: C165 Series SPDT contactor**





- **Circuit diagram**



Note:
Fitted with varistor and auxiliary contact, see ordering code on page 3.

HK-C165 Auxiliary contact [only for spare parts requirements / no new projects] C165 series

- **Auxiliary contact assembly HK-C165**

- **Mounting:**

C165 Series contactors can be retrofitted with an auxiliary contact. Loosen the M5 hex screw a little that connects the yoke to the magnet core. Slide slotted mounting bracket of auxiliary contact assembly under screw head. Push yoke against housing and retighten screw.

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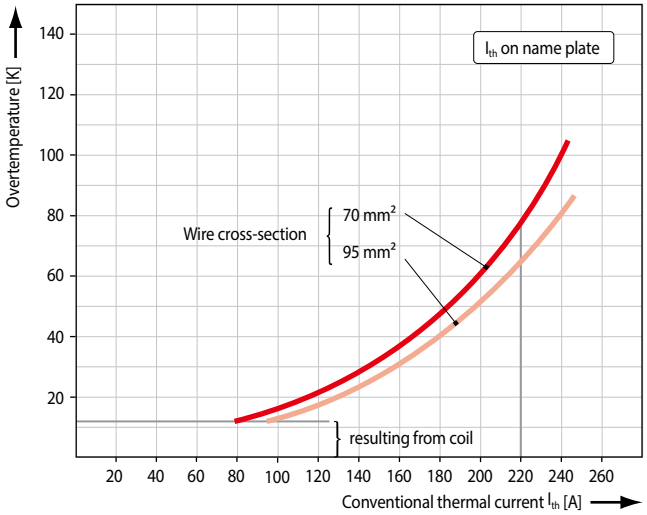
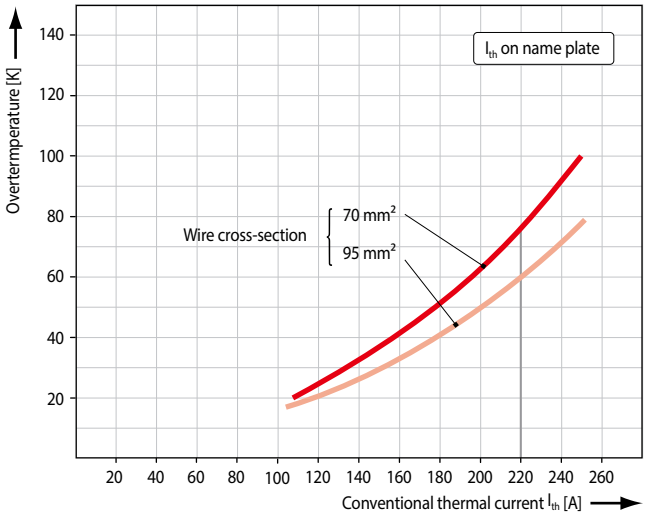
Characteristic curves Contact performance

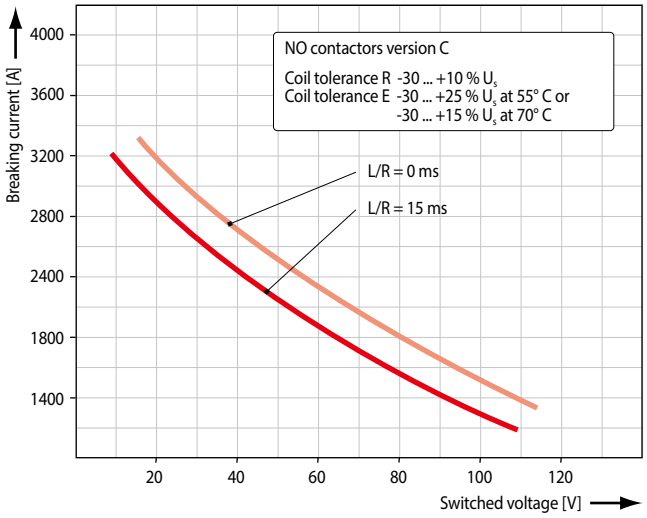
Continuously rated, normally open contact



Continuously rated, normally closed contact



Max. breaking capacity DC of NO contact for coil tolerance R and E



Note:

- *The maximum breaking capacity is the value of prospective current at a stated DC voltage which can be ruptured by the contactor where the ensuing arc upon contact separation is still being quenched. For actual operation the current rating of the contactor should, therefore, be limited to 20 % ... 60 % of its maximum breaking capacity.*
- *Please note that for double throw contactors, in addition to the foregoing limitations, the switch off load of the normally open contact must be further reduced by 30 % to 50 %.*

Dimensioning, mounting instructions C165 series

Guide to permissible current rating

Short-time duty	SPST-NO		SPDT			
			NO contact		NC contact	
Coil tolerance*	R	E	R	E	R	E
6 sec	1,500 A	1,200 A	1,500 A	1,200 A	650 A	520 A
1 min	500 A	400 A	500 A	400 A	320 A	250 A
3 min	400 A	320 A	400 A	320 A	270 A	210 A
5 min	350 A	280 A	350 A	280 A	250 A	---
10 min	300 A	240 A	300 A	240 A	230 A	---

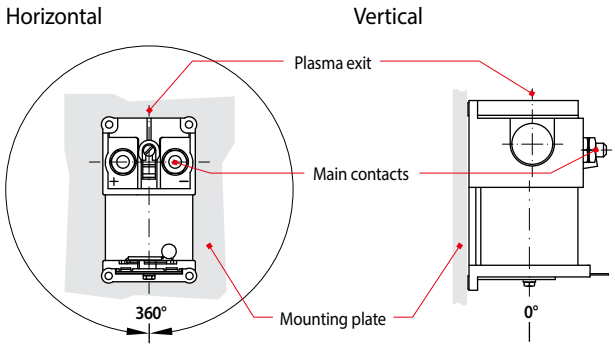
Above current ratings refer to wire cross-section 70 mm²

** Coil voltage tolerance* **R:** *–30 % ... +10 % U_s*
E: *–30 % ... +25 % U_s at 55 °C / –30 % ... +15 % U_s at 70 °C*

Note:

- *The thermal current rating for continuous duty is dependent on the upper limiting temperature of the contact elements which must not exceed 150°C. Wire gauge, ambient temperature, duty and operating cycles, contamination of contacts and contact wear are all factors that influence the surface temperature rise of the contact studs. All the above current ratings should, therefore, be considered as a guide only.*
- *The way you mount the contactor has no less an impact on the rise of temperature and the insulation of the switching device. So please observe the clearance between live or earthed parts and comply with the safety regulations of the applicable standards. No liability will be accepted by Schaltbau in any circumstances for indirect damage resulting from clearances not being observed, devices not mounted properly, or products tampered with in any way.*

Possible mounting orientations



Mounting positions:

- *Horizontal: contact studs must point upwards or*
- *Vertical: plasma exits must point upwards*

Subject to change / Dimensions in mm

Notes

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Connect Contact Control

Notes

Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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Electrical Components and Systems for Railway Engineering and Industrial Applications

Connectors

- Connectors manufactured to industry standards
- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

Snap-action switches

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Snap-action switch made of robust polyetherimide (PEI)
- Snap-action switch with two galvanically isolated contact bridges
- Special switches to suit customer requirements

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Emergency disconnect switches

- Single and multi-pole DC contactors
- High-voltage AC/DC contactors
- Contactors for battery powered vehicles and power supplies
- Contactors for railway applications
- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements

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