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КОМПОНЕНТ	ОПИСАНИЕ
sf4d-dc12v	panasonic electric works, electromechanical relay 4pst-no/4pst-nc 6a 12vdc 288ohm through hole
sf4d-dc24v	panasonic electric works, electromechanical relay 4pst-no/4pst-nc 6a 24vdc 1.152kohm through hole
sf4d12d	panasonic industrial
sf4d18d	panasonic industrial
sf4d24d	panasonic industrial
sf4d36d	panasonic industrial
sf4d48d	panasonic industrial
sf4d5d	panasonic industrial
sf4d60d	panasonic industrial
sf4d-dc12v	panasonic industrial devices, general purpose relays 6a 12v 4forma/4formb pcb
sf4d-dc21v	panasonic industrial devices, general purpose relays polarized powerrelay 4 form a 4 form b
sf4d-dc24v	panasonic industrial devices, general purpose relays 6a 24v 2forma/2formb pcb
sf4d-dc48v	panasonic industrial devices, general purpose relays polarized powerrelay 4 form a 4 form b
sf4d-dc5v	panasonic industrial devices, general purpose relays polarized powerrelay 4 form a 4 form b
sf4d-dc60v	panasonic industrial devices, general purpose relays polarized powerrelay 4 form a 4 form b
sf4d12d	miscellaneous
sf4d12d	panasonic
sf4d24d	panasonic
sf4d24d	miscellaneous
sf4d5d	miscellaneous
sf4d12d	реш, / м.опт: 501-9999 шт. опт: от 10000 шт.
sf4d24d	реш, / м.опт: 501-9999 шт. опт: от 10000 шт.
sf4d24d	panasonic electric works, / м.опт: 20-39 шт. опт: от 40 шт.
dcn4-sf4domron	automation and safety, flat cable connector plug. мин.: 2шт.
sf4d-dc12v	panasonic electric works, relay safety 8pst 6a 12v. мин.: 2шт.
sf4d-dc24v	panasonic electric works, relay safety 8pst 6a 24v. мин.: 2шт.
sf4d-dc24v	panasonic, general purpose relays 6a 24v 2forma/2formb pcb. мин.: 1шт.
sf4d-dc5v	panasonic electric works, relay safety 8pst 6a 5v. мин.: 2шт.
sf4d-dc12v	panasonic
sf4d-dc24v	panasonic
dcn4-sf4domron	automation and safety, flat cable connector plug
sf4d-dc12v	panasonic electric works, relay safety 8pst 6a 12v
sf4d-dc24v	panasonic electric works, relay safety 8pst 6a 24v
sf4d-dc48v	
sf4d-dc5v	
sf4d-dc12v	panasonic (matsushita electric industrial)
sf4d-dc48v	panasonic (matsushita electric industrial)
sf4d-dc5v	panasonic (matsushita electric industrial)
sf4-d-12	panasonic electronic components, реле безопасности, 4pst-но, 4pst-nc, 12 в dc, 6 а, серия sf4d, сквозное отверстие, пайка
sf4-d-24	panasonic electronic components, реле безопасности, 4pst-но, 4pst-nc, 24 в dc, 6 а, серия sf4d, сквозное отверстие, пайка
sf4d-dc12v	panasonic electronic components, relay, safety, 4pst-2но, 2nc, 250vac, 6a
sf4d-dc12v	panasonic electronic components, реле: электромагнитное; spst-но x4 + spst-nc x4; уобмотки:12вdc
sf4d-dc24v	panasonic electronic components, реле: электромагнитное; spst-но x4 + spst-nc x4; уобмотки:24вdc
sf4d-dc24v	panasonic electronic components, relay, safety, 4pst-2но, 2nc, 250vac, 6a
sf4d-dc24v	panasonic electronic components, relay, sfty, 4pst-но 4pst-n
sf4d-dc48v	panasonic electronic components, relay, 4pst-но/nc, 6a, 48dc
sf4d-dc48v	panasonic electronic components, реле безопасности, 4pst-но, 4pst-nc, 48 в dc, 6 а, sf series, сквозное отверстие, пайка
sf4d-dc5v	panasonic electronic components, реле безопасности, 4pst-но, 4pst-nc, 5 в dc, 6 а, sf series, сквозное отверстие, пайка
sf4-d-12 /panasonic electric works/ моq> 5	panasonic electric works
sf4-d-24 /panasonic electric works/ моq> 25	panasonic electric works

sf4d-dc12v /panasonic electric works/ моq> 10 panasonic electric works
sf4d-dc12v /panasonic/ моq>25 panasonic
sf4d-dc24v /panasonic electric works/ моq> 25 panasonic electric works
sf4d-dc24v /panasonic/ моq>25 panasonic
sf4d-dc24v /panasonic/ цена от 1 шт panasonic
sf4d-dc48v /panasonic electric works/ моq> 25 panasonic electric works
sf4d12d /pew/ моq>10000 pew
sf4d18d /pew/ моq>10000 pew
sf4d24d /panasonic electric works/ моq>20 panasonic electric works
sf4d24d /pew/ моq>10000 pew
sf4d36d /pew/ моq>10000 pew
sf4d48d /pew/ моq>10000 pew
sf4d5d /pew/ моq>10000 pew
sf4d60d /pew/ моq>10000 pew
sf4-d-24 panasonic
sf4-dc18v panasonic
sf4-dc24v panasonic
sf4-dc12v panasonic
sf4-dc18v panasonic
sf4-dc24v panasonic
sf4-dc48v panasonic
sf4-dc5v panasonic
sf4d12 panasonic
sf4d12d panasonic
sf4d24 panasonic
sf4d24d panasonic
sf4d24d nais
sf4d48d nais
sf4d5 panasonic
sf4d60d panasonic
dcn4-sf4domron automation and safety, модульные соединители / соединители ethernet devicenet flat cable connector
dcn4-sf4domron automation and safety, flat cable connector plug
sf4d-dc12v panasonic electric works, relay safety 8pst 6a 12v
sf4d-dc12v panasonic industrial devices, реле общего назначения 6a 12v 4forma/4formb pcb
sf4d-dc21v panasonic electric works, sf4d (4a4b)
sf4d-dc21v panasonic industrial devices, реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc24v panasonic electric works, relay safety 8pst 6a 24v
sf4d-dc24v panasonic industrial devices, реле общего назначения 6a 24v 2forma/2formb pcb
sf4d-dc48v panasonic electric works, relay safety 8pst 6a 48v
sf4d-dc48v panasonic industrial devices, реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc5v panasonic electric works, relay safety 8pst 6a 5v
sf4d-dc5v panasonic industrial devices, реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc60v panasonic electric works, relay safety 8pst 6a 60v
sf4d-dc60v panasonic industrial devices, реле защиты polarized powerrelay 4 form a 4 form b
ats015015005-sf-4d ats [advanced thermal solutions, inc.], 15.00 15.00 5.00 bga heat sink (high aspect ratio ext.) straight fi
dcn4-sf4d omron [omron electronics llc], модульные соединители / соединители ethernet devicenet flat cable connector
matsf4d12d panasonic electric works, safety-relay, 4-form-a, 4-form-b, single side stable, tht
matsf4d24d panasonic electric works, safety-relay, 4-form-a, 4-form-b, single side stable, tht
rot156sf4dt502e1 vishay [vishay siliconix], precision rotative transducers, conductive plastic, servo mountin
rot156sf4du502e1 vishay [vishay siliconix], precision rotative transducers, conductive plastic, servo mountin
sf4-d-12 panasonic electric works, relay, safety, 4pst-no, nc, 250vac, 6a; contact configuration:4pst-no, 4pst-nc; coil voltage:12vdc; contact current:6a; product range:sf4d series; relay mounting:through hole; relay terminals:solder;
sf4-d-24 panasonic electric works, relay, safety, 4pst-no, nc, 250vac, 6a; contact configuration:4pst-no, 4pst-nc; coil voltage:24vdc; contact current:6a; product range:sf4d series; relay mounting:through hole; relay terminals:solder;
sf4-dc12v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc18v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc21v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc24v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc36v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc48v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc5v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc60v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc9v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4d-12v panasonic, sf4d-dc12v miniature electromagnetic relays
sf4d-24v panasonic, sf4d-dc24v miniature electromagnetic relays
sf4d-48v panasonic, sf4d-dc48v miniature electromagnetic relays
sf4d-dc12v nais [nais(matsushita electric works)], реле общего назначения 6a 12v 4forma/4formb pcb
sf4d-dc21v panasonic electric works, реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc24v nais [nais(matsushita electric works)], реле общего назначения 6a 24v 2forma/2formb pcb
sf4d-dc48v nais [nais(matsushita electric works)], реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc5v nais [nais(matsushita electric works)], реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc60v nais [nais(matsushita electric works)], реле защиты polarized powerrelay 4 form a 4 form b
sf4d12d panasonic, sicherheits-relais 4wechsler 12v print
sf4d18d panasonic, sicherheits-relais 4wechsler 18v print
sf4d21d panasonic, matsf4d21d
sf4d24d panasonic, sicherheits-relais 4wechsler 24v print
sf4d36d panasonic, electromechanical relay 4pst-no/4pst-nc 6a 36vdc 2592ohm through hole
sf4d48d panasonic, sicherheits-relais 4wechsler 48v print

sf4d5d panasonic, sicherheits-relais 4wechsler 5v print
sf4d60d panasonic, sicherheits-relais 4wechsler 60v print
sf4d9d panasonic, electromechanical relay 4pst-no/4pst-nc 6a 9vdc 162ohm through hole
sf4dc60v glenair
sot-163-asf4d/asf4dno
ssf4dg gulfsemi [gulf semiconductor], ultrafast efficient glass passivated rectifier voltage: 800v current: 4.0
sf4d-24v panasonic sf4d-dc24v - реле: электромагнитное; spst-no x4 + spst-nc x4; уобмотки:24вdc
sot-163-asf4d/asf4dno, транзисторы
ats015015005-sf-4d ats [advanced thermal solutions, inc.], 15.00 15.00 5.00 bga heat sink (high aspect ratio ext.) straight fi
dcn4-sf4d omron [omron electronics llc], general-purpose peripheral device
dcn4-sf4d-nd omron automation and safety, flat cable connector plug
matsf4d12d panasonic electric works, safety-relay, 4-form-a, 4-form-b, single side stable, tht
matsf4d24d panasonic electric works, safety-relay, 4-form-a, 4-form-b, single side stable, tht
rot156sf4dt502e1 vishay [vishay siliconix], precision rotative transducers, conductive plastic, servo mountin
rot156sf4du502e1 vishay [vishay siliconix], precision rotative transducers, conductive plastic, servo mountin
sf4-d-12 panasonic electric works, relay, forced contact, 4pco, 12vdc; coil voltage vac nom:-; coil voltage vdc nom:12v; coil resistance:288ohm; contact current
max:6a; contact voltage ac nom:250v; contact voltage dc nom:24v; contact c
sf4-d-24 panasonic electric works, relay, forced contact, 4pco, 24vdc; coil voltage vac nom:-; coil voltage vdc nom:24v; coil resistance:1.152kohm; contact
current max:6a; contact voltage ac nom:250v; contact voltage dc nom:24v; contac
sf4-dc12v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc18v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc21v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc24v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc36v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc48v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc5v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc60v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4-dc9v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operatio
sf4d-12v panasonic, sf4d-dc12v miniature electromagnetic relays
sf4d-24v panasonic, sf4d-dc24v miniature electromagnetic relays
sf4d-48v panasonic, sf4d-dc48v miniature electromagnetic relays
sf4d-dc12v nais [nais(matsushita electric works)], реле общего назначения 6a 12v 4форма/4formb pcb
sf4d-dc21v panasonic industrial devices, реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc21v-nd panasonic electric works, sf4d (4a4b)
sf4d-dc24v
sf4d-dc24v nais [nais(matsushita electric works)], реле общего назначения 6a 24v 2форма/2formb pcb
sf4d-dc48v nais [nais(matsushita electric works)], реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc5v nais [nais(matsushita electric works)], реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc60v nais [nais(matsushita electric works)], реле защиты polarized powerrelay 4 form a 4 form b
sf4d-dc60v-nd panasonic electric works, relay safety 8pst 6a 60v
sf4d12d panasonic, sicherheits-relais 4wechsler 12v print
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sf4d18d panasonic, sicherheits-relais 4wechsler 18v print
sf4d24d panasonic, sicherheits-relais 4wechsler 24v print
sf4d48d panasonic, sicherheits-relais 4wechsler 48v print
sf4d5d panasonic, sicherheits-relais 4wechsler 5v print
sf4d60d panasonic, sicherheits-relais 4wechsler 60v print
sf4dc60v glenair
sot-163-asf4d/asf4dno
ssf4dg gulfsemi [gulf semiconductor], ultrafast efficient glass passivated rectifier voltage: 800v current: 4.0
matsf4d12d
matsf4d24d
sf4-dc24v
sf4-dc48v
sf4-dc5v
sf4-dc12v
sf4-dc24v
sf4-dc48v
sf4d-dc5v
sf4d-dc60v
sf4d12d
sf4d18d
sf4d24d
sf4d48d
sf4d5d
sf4d60d
sf4dc60v
sf4d18d nais, реле
sf4d12 panasonic/matsushita electric industrial
sf4d12d panasonic/matsushita electric industrial
sf4d24 panasonic/matsushita electric industrial
sf4d24d panasonic/matsushita electric industrial
sf4d60d panasonic/matsushita electric industrial
sf4ddc12v panasonic/matsushita electric industrial
sf4ddc24v panasonic/matsushita electric industrial
sf4ddc48v panasonic/matsushita electric industrial
sf4ddc5v panasonic/matsushita electric industrial
sf4ddc60v panasonic/matsushita electric industrial
sf4-d-24 panasonic, relay, safety, 4pst-no, nc, 250vac, 6a relay sf4d 24v 4no/nc f.o.c
sf4-dc12v panasonic

sf4-dc5v panasonic
sf4d-dc5v panasonic, 20 weeks lead time electromechanical relay 5vdc 50ohm 6a 4pst-no/4pst-nc (53.3x33x16.5)mm tht safety relay pcb prot...
sf4d12d panasonic, safety relay, polarized, monostable safety relay with forcibly guided contacts. мин.заказ=20
sf4d24d panasonic, electromechanical relay 4pst-no/4pst-nc 6a 24vdc 1.152kohm through hole safety relay, polarized, monostable safety r...
sf4d36d panasonic, electromechanical relay 36vdc 2.592kohm 4pst-no/4pst-nc ((53.3mm 33mm 16.5mm)) tht safety relay. мин.заказ=20 elect...
sf4d5d panasonic, electromechanical relay 4pst-no/4pst-nc 6a 5vdc 50ohm through hole safety relay, polarized, monostable safety relay ...
ats015015005-sf-4d ats [advanced thermal solutions, inc.], 15.00 x 15.00 x 5.00 mm bga heat sink (high aspect ratio ext.) straight fin
dcn4-sf4domron [omron electronics llc], general-purpose peripheral devices
dcn4-sf4d-nd omron automation and safety, flat cable connector plug
matsf4d12d panasonic electric works, safety-relay, 4-form-a, 4-form-b, single side stable, tht
matsf4d24d panasonic electric works, safety-relay, 4-form-a, 4-form-b, single side stable, tht
rot156sf4dt502e1 vishay [vishay siliconix], precision rotative transducers, conductive plastic, servo mounting
rot156sf4du502e1 vishay [vishay siliconix], precision rotative transducers, conductive plastic, servo mounting
sf4-d-12 panasonic electric works, relay, forced contact, 4pco, 12vdc; coil voltage vac nom:-; coil voltage vdc nom:12v; coil resistance:288ohm; contact current
max:6a; contact voltage ac nom:250v; contact voltage dc nom:24v; contact c
sf4-d-24 panasonic electric works, relay, forced contact, 4pco, 24vdc; coil voltage vac nom:-; coil voltage vdc nom:24v; coil resistance:1.152kohm; contact
current max:6a; contact voltage ac nom:250v; contact voltage dc nom:24v; contac
sf4-dc12vnais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operation
sf4-dc18vnais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operation
sf4-dc21vnais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operation
sf4-dc24vpanasonic electric works, relay safety pc mnt 8pst 6a 24v серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @ напряжение: 6a @
250vac · тип катушки: стандарт · ток соленоида: 20.8ma · напряжение соленоида: 24vdc · контроль входного напряжения (макс): 14.4 vdc
sf4-dc36vnais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operation
sf4-dc48vglenair
sf4-dc5v panasonic electric works, relay safety pc mnt 8pst 6a 5vdc серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @ напряжение: 6a @
250vac · тип катушки: стандарт · ток соленоида: 100ma · напряжение соленоида: 5vdc · контроль входного напряжения (макс): 3.75 vdc ·
sf4-dc60vnais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operation
sf4-dc9v nais [nais(matsushita electric works)], polarised, monostable safety relay with (mechanical linked) forced contacts operation
sf4d-12v panasonic, sf4d-dc12v miniature electromagnetic relays
sf4d-24v panasonic, sf4d-dc24v miniature electromagnetic relays
sf4d-48v panasonic, sf4d-dc48v miniature electromagnetic relays
sf4d-dc12v panasonic electric works, relay safety 6a 12vdc pcmnt 8pst серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @
напряжение: 6a @ 250vac · тип катушки: стандарт · ток соленоида: 41.7ma · напряжение соленоида: 12vdc · контроль входного напряжения (макс): 9
vdc ·

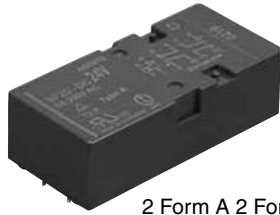
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sf4d-dc21v panasonic industrial devices, реле общего назначения polarized powerrelay 4 form a 4 form b
sf4d-dc21v-nd panasonic electric works, sf4d (4a4b)
sf4d-dc24v
sf4d-dc24v panasonic electric works, relay safety 6a 24vdc pcmnt 8pst серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @
напряжение: 6a @ 250vac · тип катушки: стандарт · ток соленоида: 20.8ma · напряжение соленоида: 24vdc · контроль входного напряжения (макс): 14.4
vdc
sf4d-dc48v panasonic electric works, relay safety 6a 48vdc pcb серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @ напряжение: 6a
@ 250vac · тип катушки: стандарт · ток соленоида: 10.4ma · напряжение соленоида: 48vdc · контроль входного напряжения (макс): 36 vdc · контро
sf4d-dc5vpanasonic electric works, relay safety 8pst 6a 5vdc pcb серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @ напряжение: 6a @
250vac · тип катушки: стандарт · ток соленоида: 100ma · напряжение соленоида: 5vdc · контроль входного напряжения (макс): 3.75 vdc · ко
sf4d-dc60v panasonic electric works, relay safety 6a 60vdc pcb серия: sf · тип реле: safety · каналы: 8pst (4 form a, 4 form b) · ток @ напряжение: 6a
@ 250vac · тип катушки: стандарт · ток соленоида: 8.3ma · напряжения соленоида: 60vdc · контроль входного напряжения (макс): 45 vdc · контрол
sf4d-dc60v-nd panasonic electric works, relay safety 8pst 6a 60v
sf4d12d panasonic, sicherheits-relais 4wechsler 12v print
sf4d18d panasonic, sicherheits-relais 4wechsler 18v print
sf4d24d panasonic, sicherheits-relais 4wechsler 24v print
sf4d48d panasonic, sicherheits-relais 4wechsler 48v print
sf4d5d panasonic, sicherheits-relais 4wechsler 5v print
sf4d60d panasonic, sicherheits-relais 4wechsler 60v print
sf4dc60v glenair
sot-163-asf4d/asf4dno
ssf4dg gulfsemi [gulf semiconductor], ultrafast efficient glass passivated rectifier voltage: 50 to 800v current: 4.0a



**Flat type safety relays
(double contact)**

SF RELAYS
Double contact type



2 Form A 2 Form B



4 Form A 4 Form B

RoHS compliant

FEATURES

1. High contact reliability

High contact reliability is achieved through the use of a double contact.

2. Forced operation contacts

N.O. and N.C. side contacts are connected through a card so that one interacts with the other in movement. In case of a contact welding, the other keeps a min. 0.5mm .020inch contact gap.

3. Independent operation contacts (4 Form A 4 Form B)

There are 4 points of forced operation contacts. Each pair of contacts is free from the main armature and is independent from each other. So if a N.O. pair of contacts are welded, the other 3 N.O. contacts are not effected (operate properly) That enables to plan a circuit to detect welding or go back to the beginning condition.

4. Separated chamber structure

N.O. and N.C. side contacts are put in each own space surrounded with a card and a body-separater. That prevents short circuit between contacts, which is caused by their springs welding or damaged.

5. High breakdown voltage

High breakdown voltage 2,500 Vrms between contacts and coil.

6. High sensitivity

Realizes thin shape and high sensitivity (500 mW nominal operating power) by utilizing high-efficiency polarized magnetic circuit with 4-gap balanced armature.

7. Complies with safety standards

Standard products are UL, CSA, TÜV and SEV certified. Conform to European standards. TÜV certified. Complies with SUVA European standard.

TYPICAL APPLICATIONS

1. Industrial equipment such as presses and machine tools
2. Elevators and other kinds of hoisting mechanisms, conveyor equipment.

ORDERING INFORMATION

SF D -

Contact arrangement
2: 2 Form A 2 Form B
4: 4 Form A 4 Form B

Nominal coil voltage
DC 5, 12, 24, 48, 60V

Note: Certified by UL, CSA, TÜV and SEV

TYPES

Contact arrangement	Nominal coil voltage	Part No.
2 Form A 2 Form B	5V DC	SF2D-DC5V
	12V DC	SF2D-DC12V
	24V DC	SF2D-DC24V
	48V DC	SF2D-DC48V
	60V DC	SF2D-DC60V
4 Form A 4 Form B	5V DC	SF4D-DC5V
	12V DC	SF4D-DC12V
	24V DC	SF4D-DC24V
	48V DC	SF4D-DC48V
	60V DC	SF4D-DC60V

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

SF Double contact type

RATING

1. Coil data

Contact arrangement	Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal coil current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power (at 20°C 68°F)	Max. applied voltage (at 20°C 68°F)
2 Form A 2 Form B	5V DC	75%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	100mA	50Ω	500mW	120%V of nominal voltage
	12V DC			41.7mA	288Ω		
	24V DC			20.8mA	1,152Ω		
	48V DC			10.4mA	4,608Ω		
4 Form A 4 Form B	60V DC	75%V or less of nominal voltage (Initial)	15%V or more of nominal voltage (Initial)	8.3mA	7,200Ω	500mW	
	5V DC			100mA	50Ω		
	12V DC			41.7mA	288Ω		
	24V DC			20.8mA	1,152Ω		
	48V DC			10.4mA	4,608Ω		
	60V DC			8.3mA	7,200Ω		

2. Specifications

Characteristics	Item	Specifications	
Contact	Arrangement	2 Form A 2 Form B 4 Form A 4 Form B	
	Contact resistance (Initial)	Max. 30 mΩ (By voltage drop 6 V DC 1A)	
	Contact material	Au-flashed AgSnO ₂ type	
Rating	Nominal switching capacity (resistive load)	6A 250V AC, 6A 30V DC	
	Max. switching power (resistive load)	1,500VA 180W	
	Max. switching voltage	440V AC, 30V DC	
	Max. switching current	6A	
	Nominal operating power	500mW	
	Min. switching capacity (Reference value)*1	100mA 5V DC	
Electrical characteristics	Insulation resistance (Initial)	Min. 1,000MΩ (at 500V DC) Measurement at same location as "Breakdown voltage" section.	
	Breakdown voltage (Initial)	Between open contacts	1,300 Vrms for 1min. (Detection current: 10mA)
		Between contact sets	2,500 Vrms for 1min. (Detection current: 10mA)
		Between contact and coil	2,500 Vrms for 1min. (Detection current: 10mA)
	Temperature rise (coil) (at 20° 68°F)	Max. 45°C 113°F (By resistive method, nominal voltage applied to the coil; contact carrying current: 6A)	
	Operate time	Max. 30ms (Nominal voltage applied to the coil, excluding contact bounce time.)	
Release time	Max. 15ms (Nominal voltage applied to the coil, excluding contact bounce time.) (without diode)		
Mechanical characteristics	Shock resistance	Functional	Min. 294 m/s ² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs)
		Destructive	Min. 980 m/s ² (Half-wave pulse of sine wave: 6 ms)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 2 mm (Detection time: 10μs)
		Destructive	10 to 55 Hz at double amplitude of 2 mm
Expected life	Mechanical	Min. 10 ⁷ (at 180 times/min.)	
	Electrical	Min. 10 ⁵ (at 20 times/min.)	
Conditions	Conditions for operation, transport and storage*2	Ambient temperature: -40°C to +70°C -40°F to +158°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)	
	Max. Operating speed	180 times/min.	
Unit weight		Approx. 38g 1.34oz Approx. 47g 1.66oz	

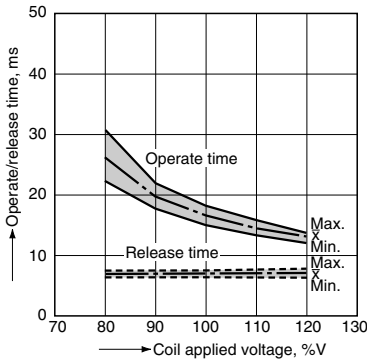
Notes: *1. This value can change due to the switching frequency, environmental conditions and desired reliability level, therefore it is recommended to check this with the actual load.

*2. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

REFERENCE DATA

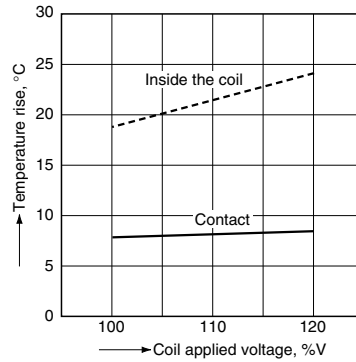
1. Operate/release time (without diode)

Tested sample: SF2D-DC24V (2 Form A 2 Form B)
Quantity: n = 20



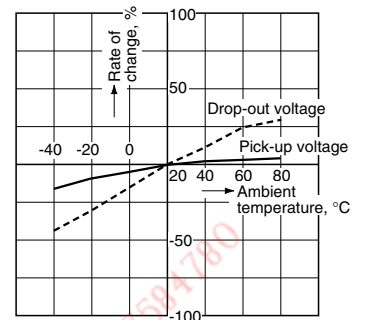
2. Temperature rise

Tested sample: SF4D-DC24V (4 Form A 4 Form B)
Quantity: n = 6
Coil applied voltage: 100%V, 120%V
Contact carry current: 6A



3. Ambient temperature characteristics

Tested sample: SF4D-DC24V (4 Form A 4 Form B)
Quantity: n = 6



DIMENSIONS (mm inch)

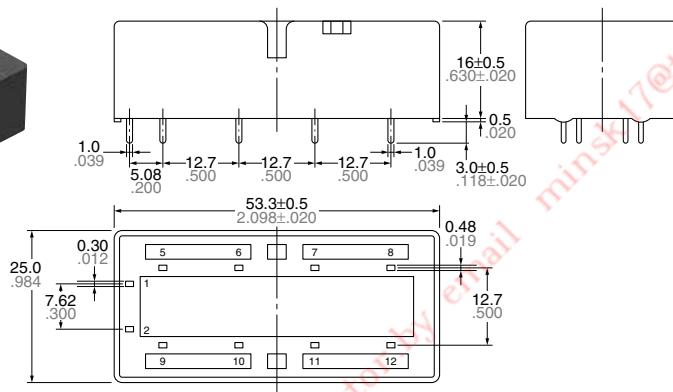
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

1. 2 Form A 2 Form B

CAD Data

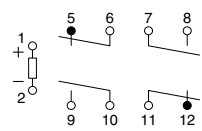


External dimensions

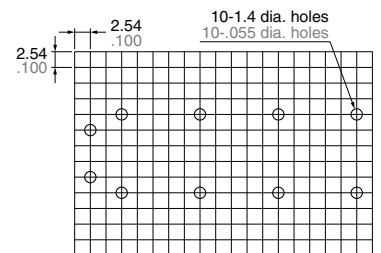


General tolerance: $\pm 0.3 \pm 0.12$

Schematic (Bottom view)



PC board pattern (Bottom view)



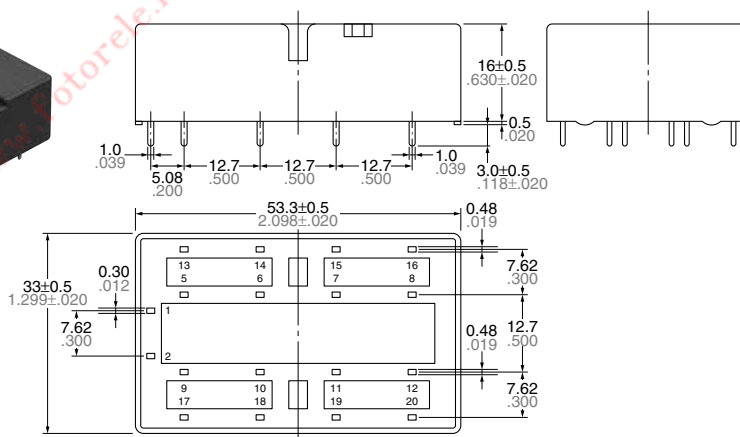
Tolerance: $\pm 0.1 \pm 0.004$

2. 4 Form A 4 Form B

CAD Data

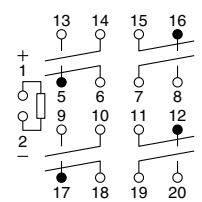


External dimensions

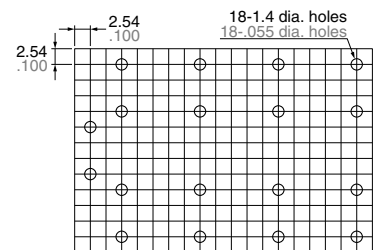


General tolerance: $\pm 0.3 \pm 0.12$

Schematic (Bottom view)



PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm 0.004$

SAFETY STANDARDS

UL/C-UL (Recognized)		TÜV (Certified)		SEV	
File No.	Contact rating	File No.	Rating	File No.	Contact rating
E120782*	6A 250V AC 6A 24V DC	968 EZ 116.03/10 (SF2D) 968 EZ 116.02/09 (SF4D)	3A 24V DC 6A 250V AC	12.0520	6A 24V DC 6A 250V AC

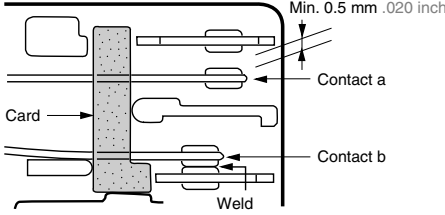
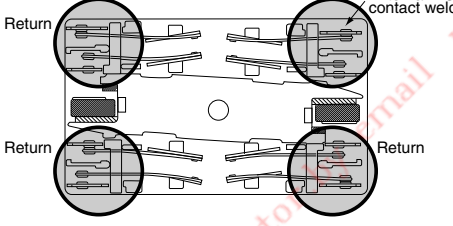
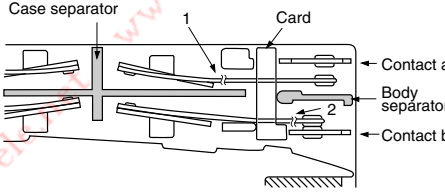
* CSA standard: Certified by C-UL

SAFETY STRUCTURE OF SF RELAYS

This SF relay design ensures that subsequent operations shut down and can automatically return to a safe state when the SF relay suffers overloading and other circuit abnormalities

(unforeseen externally caused circuit or device breakdowns, end of life incidents, and noise, surge, and environmental influences) owing to contact welding, spring fusion or, in the worst-case

scenario, relay breakdown (coil rupture, faulty operation, faulty return, and fatigue and breakage of the operating spring and return spring), and even in the event of end of life.

	Structure	Operation
1. Forced operation method (2 Form A 2 Form B, 4 Form A 4 Form B types)	 <p>The two contacts "a" and "b" are coupled with the same card. The operation of each contact is regulated by the movement of the other contact.</p>	<p>Even when one contact is welded closed, the other maintains a gap of greater than 0.5 mm .020 inch.</p> <p>In the diagram on the left, the lower contact "b" have welded but the upper contact "a" maintain at a gap of greater than 0.5 mm .020 inch. Subsequent contact movement is suspended and the weld can be detected</p>
2. Independent operation method (4 Form A 4 Form B type)	 <p>None of four contacts are held in position by the armature. Even though one of the external N.O. contacts has welded, the other three contacts have returned owing to the de-energizing of the coil.</p>	<p>Enables design of safety circuits that allow weld detection and return at an early stage.</p> <p>As shown at the top right of the diagram on the left, if the external N.O. contact welds, a 0.5 mm .020 inch gap is maintained. Each of the other contacts returns to N.O. because the coil is no longer energized.</p>
3. Separate chamber method (2 Form A 2 Form B, 4 Form A 4 Form B types)	 <p>In independent chambers, the contacts "a" and "b" are kept apart by a body/case separator or by the card itself.</p>	<p>Prevents shorting and fusing of springs and spring failure owing to short-circuit current.</p> <p>As shown on the diagram on the left, even if the operating springs numbered 1 and 2 there is no shorting between "a" and "b" contacts.</p>
4. 2 Form A 2 Form B contact 4 Form A 4 Form B contact	Structure with independent COM contact of 2 Form A 2 Form B and 4 Form A 4 Form B contacts.	Independent COM enables differing pole circuit configurations. This makes it possible to design various kinds of control circuits and safety circuits.

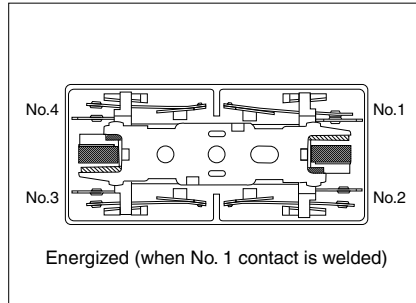
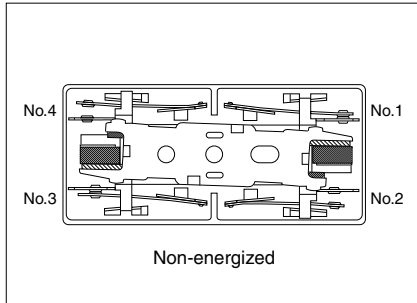
THE OPERATION OF SF RELAYS (when contacts are welded)

SF relays work to maintain a normal operating state even when the contact welding occur by overloading or short-circuit currents. It is easy to make weld detection circuits and safety circuits in the design to ensure safety even if contacts weld.

1) 2 Form A 2 Form B type

Form "b" Contact Weld

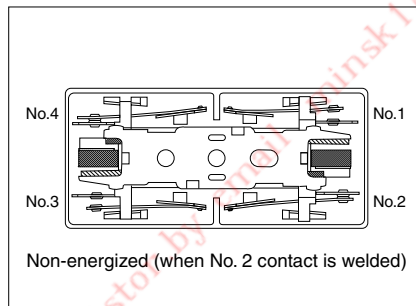
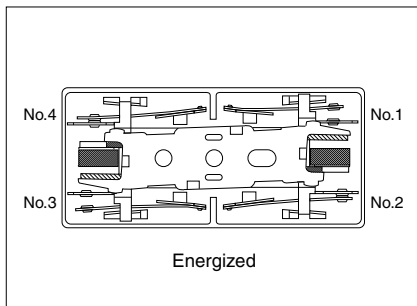
If the form "b" contact (No. 1 and 3) welds, the armature becomes non-operational, the contact gaps at the three form "a" contacts are maintained at greater than 0.5 mm .020 inch. Reliable isolation is thus ensured.



Example: If the No. 1 contact welds
Each of the three form "a" contacts (No. 2 and 4) maintain a gap of greater than 0.5 mm .020 inch.

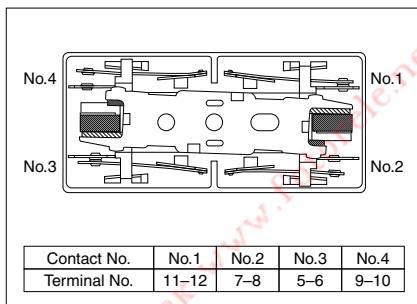
Form "a" Contact Weld

When the form "a" contacts (No. 2 or 4) weld, the armature remains in a non-returned state and the contact gap at the two form "b" contact is maintained at greater than 0.5 mm .020 inch. Reliable isolation is thus ensured.



Example: If the No. 2 contact welds.
The two form "b" contact (No. 1 or 3) maintains a gap of greater than 0.5 mm .020 inch.

Contact Operation Table



The table below shows the state of the other contacts when the current through the welded form "a" contact is 0 V and the rated voltage is applied through the form "b" contact.

		State of other contacts			
		1	2	3	4
Welded terminal No.	1		>0.5	>0.5	>0.5
	2	>0.5		>0.5	
	3	>0.5	>0.5		>0.5
	4	>0.5		>0.5	

>0.5: contact gap is kept at min. 0.5 mm .020 inch
Empty cells: either closed or open

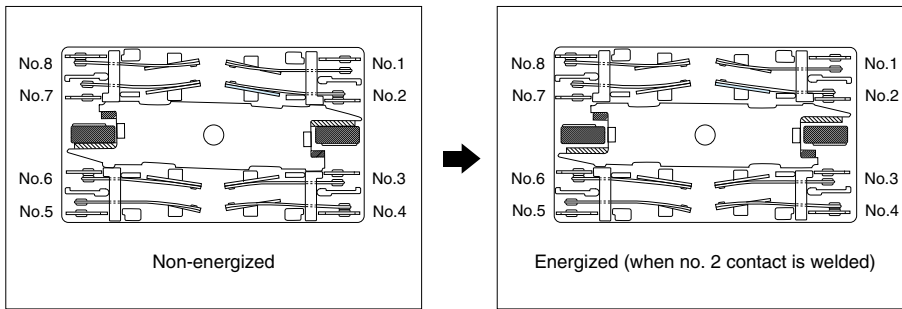
* Contact gaps are shown at the initial state.
If the contacts change state owing to loading/breaking it is necessary to check the actual loading.

SF Double contact type

2) 4 Form A 4 Form B type

Internal Contacts Weld

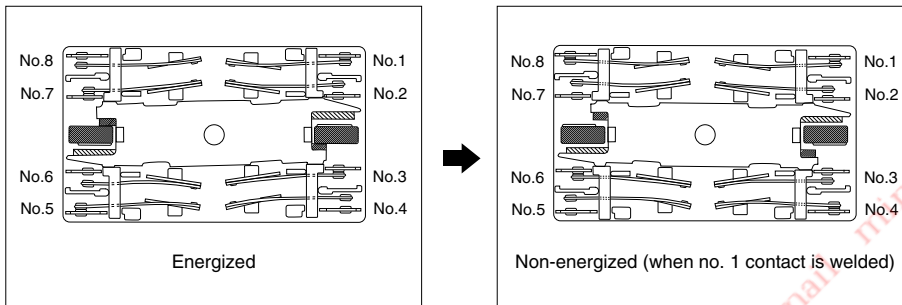
When internal contacts (No. 2, No. 3, No. 6 or No. 7) are welded, the armature becomes non-operational and the four form "a" contact gaps are maintained at 0.5 mm .020inch or greater. Reliable cut-off is thus ensured.



Example: If the No. 2 contact welds. Each of the four form "a" contacts (No. 1, 3, 5, and 7) maintains a gap of greater than 0.5 mm .020 inch.

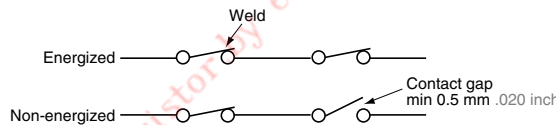
External Contacts Weld

When external contacts (No. 1, No. 4, No. 5 or No. 8) are welded, gaps of 0.5 mm .020inch and greater are maintained between adjacent contacts and other contacts operate normally by the coil being non-energized.

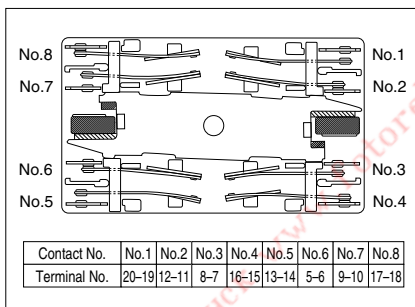


Example 1: If the No. 1 contact welds. The adjacent No. 2 contact maintains a gap of greater than 0.5 mm .020 inch. The other contacts, because the coil is not energized, return to their normal return state; each of form "a" contacts (No. 3, 5, and 7) maintains a contact gap of greater than 0.5 mm .020 inch; each of the form "b" contacts (No. 4, 6, and 8) return to a closed state.

Example 2:
If external connections are made in series. Even if one of the contacts welds, the other contacts operate independently and the contact gaps are maintained at greater than 0.5 mm .020 inch.



Contact Operation Table



The table below shows the state of the other contacts when the current through the welded form "a" contact is 0 V and the rated voltage is applied through the form "b" contact.

Contact No.	State of other contacts							
	1	2	3	4	5	6	7	8
1		>0.5	>0.5	≠	>0.5	≠	>0.5	≠
2	>0.5		>0.5		>0.5		>0.5	
3		>0.5		>0.5		>0.5		>0.5
4	≠	>0.5	>0.5		≠	>0.5	≠	>0.5
5	>0.5	≠	>0.5	≠		>0.5	>0.5	≠
6	>0.5		>0.5		>0.5		>0.5	
7		>0.5		>0.5		>0.5		>0.5
8	>0.5	>0.5	≠	>0.5	≠	>0.5	>0.5	

>0.5: contact gap is kept at min. 0.5 mm .020 inch
≠: contact closed
Empty cells: either closed or open

* Contact gaps are shown at the initial state. If the contacts change state owing to loading/breaking it is necessary to check the actual loading.

NOTES

1. For cautions for use, please read "General Application Guidelines".

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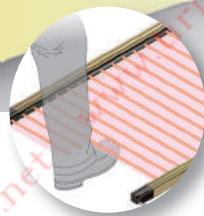
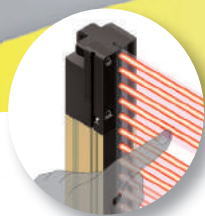
Safety light curtains from rugged to small

SF4 series

SF4B · SF4B-C · SF4C

New!
Ask for
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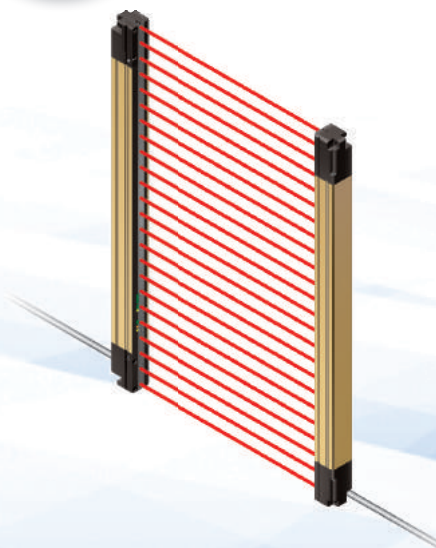
- Safety level type 4, PLe, SIL3
- Finger and hand type available
- Very fast version with down to 7ms off time
- Aluminum, aluminum/polycarbonate and polycarbonate housing available
- Operating range up to 9m
- IP67 degree of protection
- Integrated muting function



SF4C
Polycarbonate housing



SF4B(V2)
Aluminum housing

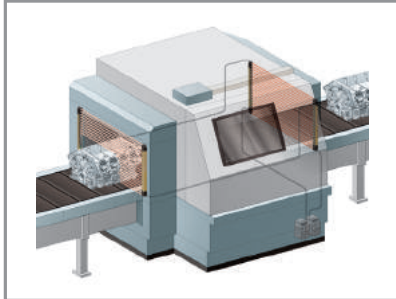


SF4B-C
Polycarbonate / Aluminum
housing

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Typical applications



Muting function for feeding machines

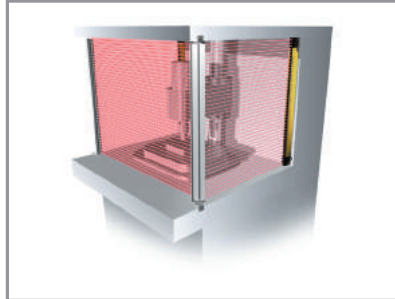
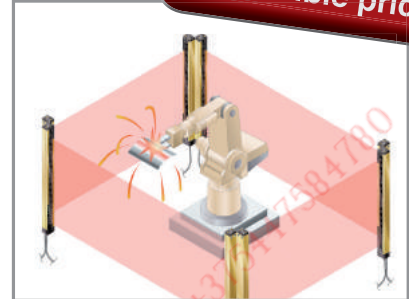


Table-top workstation



Guarding space around welding robot

Ask us about the best possible price!

Special offer request:

Aluminum housing SF4B series			Aluminum / Polycarbonate housing SF4B-C series		Polycarbonate housing SF4C series		
Finger protection	Hand protection	Protective height (mm)	Hand protection	Protective height	Finger protection	Hand protection	Protective height (mm)
SF4B-F23(V2)	SF4B-H12(V2)	230	SF4B-H12C	263	SF4C-F15	SF4C-H8	160
SF4B-F31(V2)	SF4B-H16(V2)	310	SF4B-H16C	343	SF4C-F23	SF4C-H12	240
SF4B-F39(V2)	SF4B-H20(V2)	390	SF4B-H20C	423	SF4C-F31	SF4C-H16	320
SF4B-F47(V2)	SF4B-H24(V2)	470	SF4B-H24C	503	SF4C-F39	SF4C-H20	400
SF4B-F55(V2)	SF4B-H28(V2)	550	SF4B-H28C	583	SF4C-F47	SF4C-H24	480
SF4B-F63(V2)	SF4B-H32(V2)	630	SF4B-H32C	663	SF4C-F55	SF4C-H28	560
SF4B-F71(V2)	SF4B-H36(V2)	710	SF4B-H36C	743	SF4C-F63	SF4C-H32	640
SF4B-F79(V2)	SF4B-H40(V2)	790	SF4B-H40C	823	-	-	-
SF4B-F95(V2)	SF4B-H48(V2)	950	SF4B-H48C	983	-	-	-
SF4B-F111(V2)	SF4B-H56(V2)	1100	SF4B-H56C	1143	-	-	-
SF4B-F127(V2)	-	1270	-	-	-	-	-

Options – cables	
SFBCCB3	Cabel for SF4B, 3m
SFBCCB3MU	Cabel for SF4B (muting), 3m
SFBCCB7	Cabel for SF4B, 7m
SFBCCB7MU	Cabel for SF4B (muting), 7m

Options – mounting brackets	
MSSFB1	Brackets for SF4B (4 pieces/set)
MS-SF4BC-1	Brackets for SF4B-C (4 pieces/set)
Option – control unit	
SFC13	Control unit for all SF4 light curtains

Please contact me and make me an offer for _____ pieces of _____

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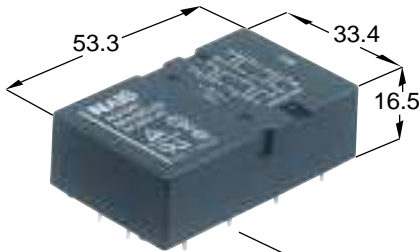
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NAIS

POLARISED, MONOSTABLE RELAY WITH FORCIBLY GUIDED CONTACTS

SF4-RELAYS



Length 3.5

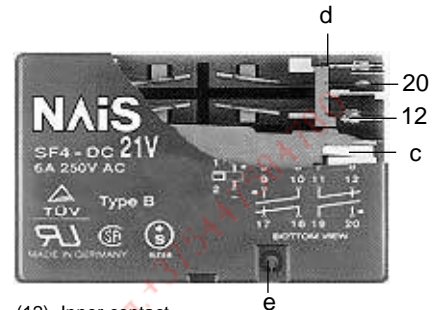
Tolerance ± 0.3
Weight approx 47 g

- Relay complying with EN 50 205, Type B
- TÜV/SEV/UL/CSA
- Overvoltage category as per IEC 60664-1 III/4kV

- Rated voltage in [V] as per IEC 60664-1 basic insulation

	Pollution degree		
	2 inside	2 outside	3 outside
Coil-Contact	400	400	250
Contact-Contact	forcibly linked pair only	250	250
	all other contacts	400	400

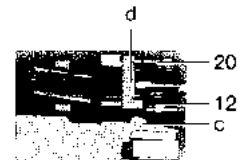
Application notes



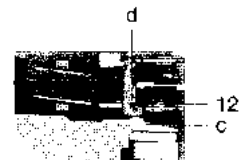
- (12) Inner contact
 - (20) Outer contact
 - (c) Rotating armature
 - (d) Actuator
 - (e) Nipple
- If required a breathing hole can be made in the cover by removing the nipple. However be aware that the degree of protection will reduce from IP67 to IP30!

Operation of forcibly guided contacts, Type B

If an outer contact should weld (20) then the forced operated inner contacts (12) driven by the operator (d) remain open. The rotating armature (c) remains free to move. The unaffected contact pairs can operate normally, (e.g. their function to make or break remains unaffected).



If an inner contact should weld (12) then the movement of the rotating armature (c) is blocked via the operator (d). Open contacts of all four contact pairs remain open. This arrangement corresponds to conventional forcibly guided contact operation.



Relay characteristics are influenced by

- strong external magnetic fields
- magnetic conductive materials near the relay
- narrow top-to-top mounting (printed surface to printed surface)

Characteristics

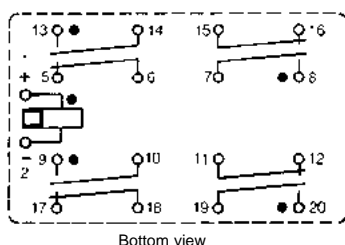
Contact configuration (a = normally open, b = normally closed)	4a 4b
Contact material	AgSnO ₂ with Au flash
Volumetric resistance (initial at 6VDC, 1A)	m
Making and breaking capacities according EN 60947-5-1: 1991, table 4 AC15/DC13 ²⁾	6A 250 V / 3A 24V
Max. switching voltage	V
Max. switching capacity, resistive load, AC/DC ¹⁾²⁾	V
Min. switching voltage/switching current	V/mA
Pick-up/nominal power consumption at 20°C	mW
Pick-up/drop-out voltage in % of nominal voltage at 20°C	%
Pick-up/drop-out/bounce time (approx. values at U _{rated})	ms
Max. switching frequency without load	Hz
Mechanical life (electrical see page 2)	Sw.ops
Permissible ambient temperature at rated power consumption	°C
Test voltage open contact/contact-contact/contact-coil	V _{rms}
Insulation resistance at 500 V DC (initial)	10 ⁹
Vibration resistance 10 – 200 Hz (10 – 55 Hz, amplitude 2 mm) ³⁾	g
Shock resistance (11 ms) ³⁾	g
Solder bath temperature (max. duration)	°C/s
Degree of protection	IP67 / IP30 ²⁾

1) at 10⁵ switching operations, ambient temperature +70°C
2) with breather hole open 3) Contact interruption <10µs

Ordering information/Coil data

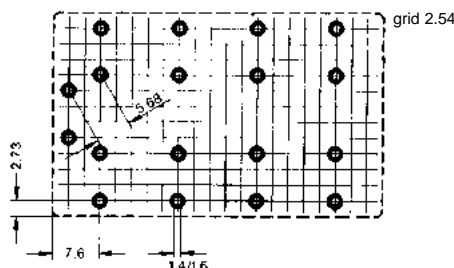
Part-number	Coil nominal voltage (V)	Pick-up voltage (V)	Drop-out voltage (V)	Coil resistance () ± 10%, 20°C	Coil inductance (mH)
SF4- 5V	5	3.75	0.75	50	47
SF4- 9V	9	6.75	1.35	162	145
SF4-12V	12	9	1.8	288	252
SF4-18V	18	13.5	2.7	648	551
SF4-21V	21	15.75	3.15	882	742
SF4-24V	24	18	3.6	1152	959
SF4-36V	36	27	5.4	2592	2097
SF4-48V	48	36	7.2	4608	3654
SF4-60V	60	45	9.0	7200	5612

Connection diagram and pcb bore hole data



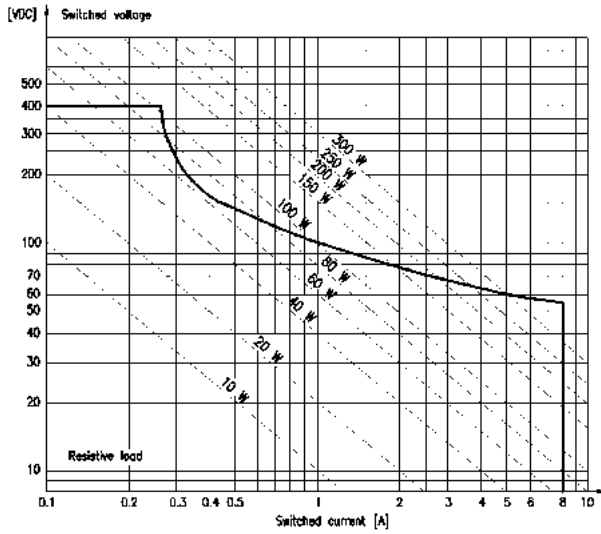
Bottom view

The contacts are shown in the deenergized condition.



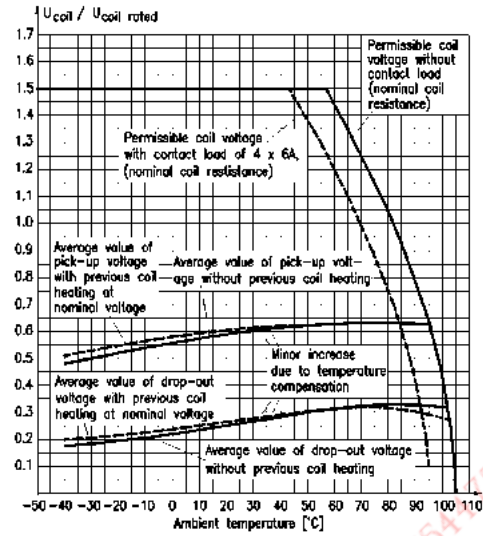
1.4-typical value for manual insertion
1.6-typical value for automatic insertion

Load limit curve



Loads in the range under the curve can be switched safely. The arc will extinguish before the opposite contact makes (important if NO (a) and NC (b) contacts are connected to dissimilar voltages).

Coil voltage characteristics



Permissible coil voltages and pick-up and drop-out characteristics at various ambient temperatures.

Electrical life

Voltage	Current	Load type	Frequency	Duty cycle	No. of contacts	No. of ops.
250 VAC	6 A	$\cos \varphi = 1$	0.20 Hz	50%	2 ⁴⁾	100 000
220 VAC	2.27 A	$\cos \varphi = 1$	0.20 Hz	50%	2 ⁵⁾	500 000 ³⁾
230 VAC	30/3 A	AC15 ⁶⁾	0.50 Hz	50%	1 ⁵⁾	200 000
220 VAC	5.10 A	$\cos \varphi = 0.60$	0.20 Hz	50%	1 ⁵⁾	100 000 ³⁾
220 VAC	4.43 A	$\cos \varphi = 0.35$	0.20 Hz	10%	1 ⁵⁾	100 000 ³⁾
220 VAC	1.45 A	$\cos \varphi = 0.35$	0.20 Hz	50%	1 ⁵⁾	300 000 ³⁾
28 VDC	8 A	resistive	0.20 Hz	50%	2 ⁴⁾	400 000
30 VDC	2 A	resistive	0.20 Hz	10%	2 ⁵⁾	1 Mio. ³⁾
24 VDC	6 A	DC 13 ⁶⁾	0.33 Hz	50%	3 ⁵⁾	50 000 ³⁾

3) Ambient temperature +70 °C 4) Breathing hole closed 5) Breathing hole open 6) EN 60 947-5-1: 1991, table C.2

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каталог, описание, технические, характеристики, datasheet, параметры, маркировка, габариты, фото

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