

T92 Series Two-pole Power Relay

- 30/40/50A switching capability
- Designed to control compressor loads to 3.5 tons, 110LRA / 25.3FLA
- Meets requirements of UL 508 and UL 873 spacings - 8mm through air, 9.5mm over surface
- Meets requirements of VDE 8mm spacing, 4kV dielectric coil-to-contact
- Meets requirements of UL Class F construction
- UL approved for 600VAC switching (1.5HP)
- Screw terminal version (consult factory for availability, ratings)
- Anti-explosive version available (Meets EN 60079-15)
- WG version available (Meets EN 60335-1)



Typical applications

HVAC, residential / commercial appliances, industrial controls, charging

Approvals

UL E22575; CSA LR48471; VDE 40019600; TUV R 50083843 0008; TUV 15090924 002; TUV 15090883 001

Technical data of approved types on request.

Contact Data

| Type | T92 | T92H |
|---|--|---------------|
| Contact arrangement | 2 form A (NO) 2 form C (CO) | 2 form A (NO) |
| Rated voltage | 277VAC | |
| Max. switching voltage | 600VAC | |
| Rated current | 30A/40A NO; 3A NC | 50A NO |
| Overload current* | 60A NO; 4.5A NC | 75A NO |
| Contact material | Ag Alloy | |
| Min. recommended contact load | 500mA (NO), 12VAC or 5VDC 100mA (NC), 12VAC or 5VDC | |
| Frequency of operation, with load | 360 cycles per hour | |
| Operate/release time max., including bounce | 25/25ms | |
| Initial contact resistance | < 100 mΩ at 6VDC 1A | |

*Note: Minimum electrical endurance 50 cycles

Contact ratings¹⁾ (T92H Type)

| UL508 | Load | Cycles |
|-------|------------------------------|-------------------|
| NO | 50A, 277VAC, resistive, 85°C | 6x10 ³ |

Note: Coil voltage 12-48VDC covered in UL approval

Contact ratings¹⁾ (T92 Type)

| UL508 | Type | Load | Cycles |
|-------|------|---------------------------------------|---------------------|
| AgCdO | | | |
| NO | | 40A, 277VAC, resistive | 6x10 ³ |
| NO | | 30A, 277VAC, resistive (DC coil only) | 250x10 ³ |
| NO | | 30A, 277VAC, resistive (AC coil only) | 100x10 ³ |
| NO | | 10A, 600VAC, resistive | 250x10 ³ |
| NO | | 1HP, 120VAC | 100x10 ³ |
| NO | | 3HP, 240VAC | 1x10 ³ |
| NO | | 1.5HP, 480 or 600VAC | 100x10 ³ |
| NO | | 110LRA/25.3FLA, 240VAC | 100x10 ³ |
| NO | | 7.3A, 240VAC, pilot duty | 100x10 ³ |
| NO | | 20A, 28VDC, resistive | 100x10 ³ |
| NO | | TV10, 120VAC | 25x10 ³ |
| NC | | 3A, 277VAC | 100x10 ³ |
| NC | | 2A, 480VAC, general purpose | 100x10 ³ |
| NC | | 1A, 600VAC | 100x10 ³ |

Contact ratings¹⁾ (T92 Type) (continued)

| Type | Load | Cycles |
|--|---|---------------------|
| AgSnOInO | | |
| NO | 40A, 240VAC, resistive 85°C | 50x10 ³ |
| NO | 30A, 277VAC, resistive (DC coil only) | 250x10 ³ |
| NO | 30A, 277VAC, resistive (AC coil only) | 100x10 ³ |
| NO | 20A, 506VAC, resistive | 100x10 ³ |
| NO | 1.5HP, 120VAC, 2 pole making/breaking (Fig.1) | 100x10 ³ |
| NO | 3HP, 240VAC, 3 phase (DC coil only) | 100x10 ³ |
| NO | 3HP, 480VAC, 3 phase (DC coil only) | 100x10 ³ |
| NO | 2HP, 600VAC, 3 phase (DC coil only) | 100x10 ³ |
| Special Ag Alloy X (Cd Free), wash tight | | |
| NO | 30A, 250VAC, resistive | 100x10 ³ |
| NO | 30A, 400VAC, resistive | 100x10 ³ |
| NO | 20A, 480VAC, resistive | 100x10 ³ |

VDE

| | | |
|----------------------------|------------------------|---------------------|
| AgCdO, flange mount relays | | |
| NO | 20A, 400VAC | 100x10 ³ |
| NC | 3A, 400VAC | 30x10 ³ |
| CO | 20A NO / 3A NC, 400VAC | 30x10 ³ |
| AgCdO, PC mount relays | | |
| NO | 30A, 400VAC | 100x10 ³ |
| NC | 3A, 400VAC | 30x10 ³ |
| CO | 30A NO / 3A NC, 400VAC | 30x10 ³ |

Anti-explosion, sealed type

| | | |
|----|------------------|---------------------|
| NO | 30A 250VAC, 25°C | 100x10 ³ |
|----|------------------|---------------------|

Anti-explosion, break device

| | | |
|----|------------|---------------------|
| NO | 15A 480VAC | 100x10 ³ |
|----|------------|---------------------|

ARI 780-86 Endurance Test (section 6.6):

HVAC Definite Purpose Contactor Standard

Normally Open Contacts

Single Phase/Two Pole (Both poles together switching a single load)
110 LRA, 25.3 FLA, 200K operations (DC Coil)

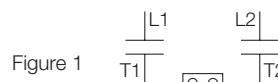


Figure 1

Single Phase Per Pole (Single load per pole)

110 LRA, 18 FLA, 200K operations (DC Coil).
60 LRA, 14 FLA, 200K operations (AC Coil).

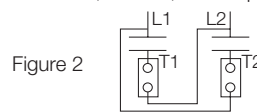


Figure 2

¹⁾ Contact ratings at 25°C (unless otherwise noted) with relay properly vented. FLA, LRA ratings are compatible with 3.5 ton compressor applications.

Mechanical endurance

| | |
|------|-------------------------|
| T92 | 10x10 ⁶ ops. |
| T92H | 1x10 ⁶ ops. |

T92 Series Two-pole Power Relay (Continued)

Coil Data

| | |
|-------------------------------------|---------------------------|
| Coil voltage range | 5 to 110VDC; 12 to 240VAC |
| Max. coil power | 1.7W; 4.0VA |
| Max. coil temperature | 155°C |
| Coil insulation system according UL | Class F |

Coil versions, DC coil (D type)

| Coil code | Rated voltage ²⁾ VDC | Operate voltage ³⁾ VDC | Release voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power W |
|-----------|------------------------------------|--------------------------------------|------------------------|--------------------------------------|-----------------------|
| 5 | 5 | 3.75 | 0.6 | 14.9 | |
| 6 | 6 | 4.5 | 0.6 | 22 | |
| 9 | 9 | 6.75 | 0.9 | 48 | |
| 12 | 12 | 9 | 1.2 | 86 | |
| 18 | 18 | 13.5 | 1.8 | 197 | 1.7W/ |
| 22 | 22 | 16.5 | 2.2 | 294 | Min. 0.41W |
| 24 | 24 | 18 | 2.4 | 350 | hold |
| 36 | 36 | 27 | 3.6 | 767 | |
| 48 | 48 | 36 | 4.8 | 1390 | |
| 110 | 110 | 82.5 | 11 | 7255 | |
| 120 | 120 | 90 | 12 | 8514 | |

2) For T92H type, after the energization time of 100ms with rated voltage, the coil requires a reduction of the coil voltage to 50% of rated voltage.

3) For Anti-explosion sealed type, the operate voltage is 80% of the rated coil voltage.

Coil versions, AC coil (A type)

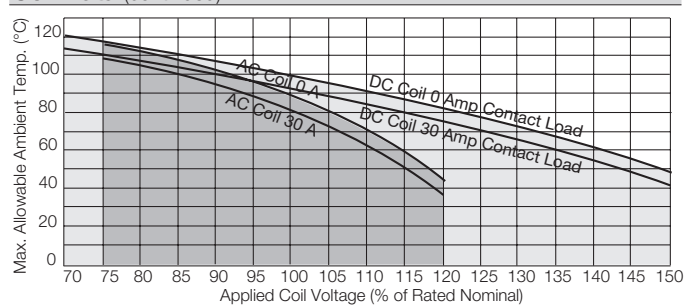
| Coil code | Rated voltage VAC | Frequency Hz | Operate voltage VAC, 60Hz | Release voltage VAC, 60Hz | Coil resistance $\Omega \pm 10\%$ | Rated coil power VA |
|-----------|----------------------|-----------------|------------------------------|------------------------------|--------------------------------------|------------------------|
| 12 | 12 | 60 | 9.6 | 1.2 | 9.1 | 4 |
| 24 | 24 | 60 | 19.2 | 2.4 | 36.6 | 4 |
| 110 | 110 | 60 | 88 | 11 | 793 | 4 |
| 120 | 110/120 | 50/60 | 96 | 12 | 950 | 4 |
| 208 | 208 | 60 | 166.4 | 20.8 | 2841 | 4 |
| 240 | 220/240 | 50/60 | 192 | 24 | 3800 | 4 |
| 277 | 250/277 | 50/60 | 221.6 | 27.7 | 5485 | 4 |

Coil versions, AC coil (F type)

| Coil code | Rated voltage VAC | Frequency Hz | Operate voltage VAC, 60Hz | Release voltage VAC, 60Hz | Coil resistance $\Omega \pm 10\%$ | Rated coil power VA |
|-----------|----------------------|-----------------|------------------------------|------------------------------|--------------------------------------|------------------------|
| 12 | 12 | 50 | 9.6 | 1.2 | 11.2 | 3.5 |
| 24 | 24 | 50 | 19.2 | 2.4 | 44.4 | 3.5 |
| 48 | 48 | 50 | 38.4 | 4.8 | 179.2 | 3.5 |
| 240 | 240 | 50 | 192 | 24 | 4355 | 3.5 |

All figures are given for coil without preenergization, at ambient temperature +23°C. For A type, 110V/120V, 50/60Hz. Signify 50Hz Operation at Nominal 110V, 60 Hz Operation at Nominal 120V.

Coil Data (continued)



Note: This chart only apply for T92 standard type. For coil data of T92 Anti-explosion sealed type and T92H type, please contact TE engineering.

Insulation Data

| | |
|---|------------------------------|
| Initial dielectric strength | 1500V _{rms} |
| between open contacts | 4000V _{rms} |
| between contact and coil | 2000V _{rms} |
| between adjacent contact | |
| Initial surge withstand voltage | 8kV |
| between contact and coil | |
| Initial insulation resistance (@500VDC) | 1x10 ⁹ Ω |
| between insulated elements | |
| Clearance/creepage | 8mm clearance/9.5mm creepage |
| between contact and coil | |

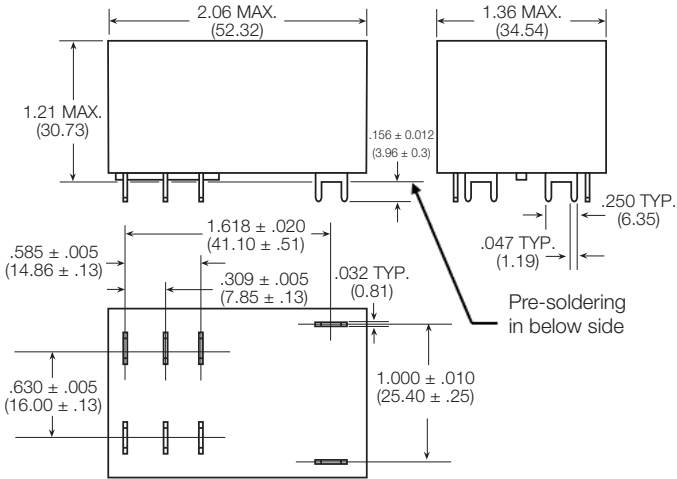
Other Data

| | |
|--------------------------------------|--|
| Material compliance: | EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customer-support/rohssupportcenter |
| Ambient temperature | |
| DC coil | -55°C to 85°C |
| AC coil | -55°C to 65°C |
| Category of environmental protection | RTI - dust protected, RTII - flux proof, RTIII - wash tight |
| IEC 61810 | |
| Vibration resistance (functional) | 1.65mm max amplitude, 10-55 Hz |
| Shock resistance (functional) | 10G for 11msec |
| Shock resistance (destructive) | 100G |
| Terminal type | PCB / Quick Connect / Screw |

T92 Series Two-pole Power Relay (Continued)

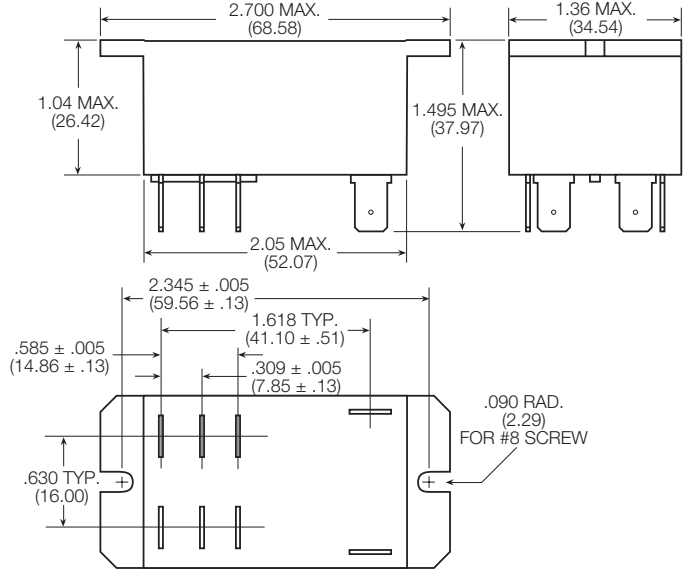
Dimensions

T92/T92H – Mounting and termination code 1

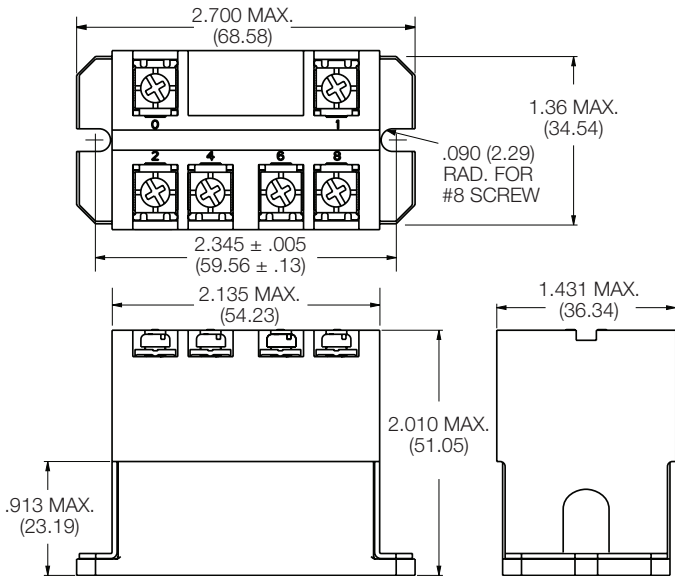


Note: Dimensions of the pins after tin soldering
a) +0.3mm for the width and the thickness
b) +1.0mm for the length

T92 – Mounting and termination code 2, 3 and 4



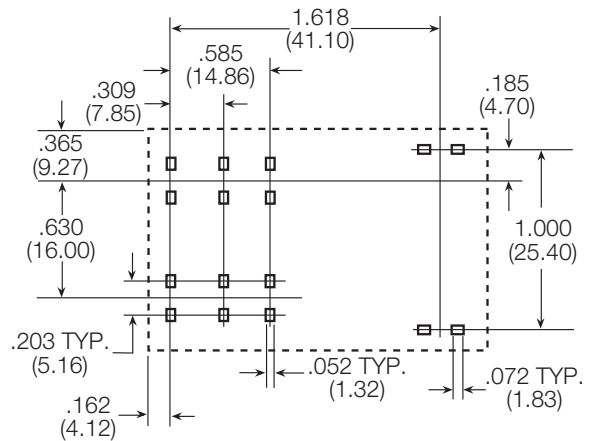
T92 – Mounting and termination code 5



PCB layout

Bottom view on pins

T92/T92H - Mounting and termination code 1



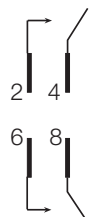
An alternate PC board layout utilizes .076 ± .003 (1.93 ± .076) diameter holes on the same center-to-center spacing shown above. Use of the rectangular holes is recommended for improved solderability.

Only necessary terminals are present on single throw models. Consequently, some holes will be unnecessary for single throw models.

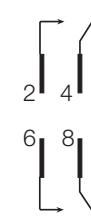
Terminal assignment

Bottom view on pins

2 form A



2 form C



T92 Series Two-pole Power Relay (Continued)

| | | | | | | | | | |
|---|--|--|-------------|----------|----------|----------|----------|----------|------------|
| Product code structure (T92H type) | | Typical product code | T92H | P | 7 | D | 1 | X | -12 |
| Type | | T92H Power relay T92 High Performance (50A) | | | | | | | |
| Enclosure | | P Dust protected plastic case S Wash-tight, tape sealed, plastic case (Mounting and termination code 1) | | | | | | | |
| Contact arrangement | | 7 2 form A (2 NO) | | | | | | | |
| Coil Input | | D DC voltage | | | | | | | |
| Mounting and termination | | 1 Printed circuit board mount; printed circuit board terminals. | | | | | | | |
| Contact material | | X Special Ag Alloy X (Cd Free) | | | | | | | |
| Coil voltage | | Coil code: please refer to coil versions table | | | | | | | |

| Product code | Enclosure | Contacts | Coil | Mounting | Contact Material | Coil | Part number |
|--------------|--------------------|----------------|------|---------------|------------------------------|-------|-------------|
| T92HP7D1X-12 | Plastic dust cover | 2 form A, 2 NO | DC | PCB terminals | Special Ag Alloy X (Cd Free) | 12VDC | 6-1423008-6 |
| T92HP7D1X-24 | | | | | | 24VDC | 6-1423008-7 |
| T92HP7D1X-48 | | | | | | 48VDC | 6-1423008-9 |

Note. This list represents the most common types and does not show all variants covered by this datasheet, other types on request.

Product code structure (T92 type)

| | | | | | | | | | | |
|---------------------------------|--|--|------------|----------|-----------|----------|----------|----------|------------|------------|
| Product code structure | | Typical product code | T92 | S | 11 | D | 2 | 2 | -24 | -99 |
| Type | | T92 Printed circuit board / panel mount power relay T92 | | | | | | | | |
| Enclosure | | P Dust protected plastic case S Wash-tight, tape sealed, plastic case (Mounting and termination code 1) Wash-tight, glue sealed, plastic case (Mounting and termination code 1, 2 for anti-explosion version) Top sealed, not wash-tight, not tape sealed on bottom (Mounting and termination codes 2, 3 & 4) | | | | | | | | |
| Contact arrangement | | 7 2 form A (2 NO) 11 2 form C (2 CO) | | | | | | | | |
| Coil Input | | A AC voltage, 60Hz or 50/60 Hz (consult coil versions table) D DC voltage F AC voltage, 50Hz | | | | | | | | |
| Mounting and termination | | 1 Printed circuit board mount; printed circuit board terminals. 2 Panel mount via flanged cover; .250" (6.35mm) x .032" (.81mm) QC terminal 3 Panel mount via flanged cover; .187" (4.75mm) x .032" (.81mm) QC terminals for coil and .250" (6.35mm) for contacts 4 Panel mount via flanged cover, .187" (4.75mm) x .020" (.51mm) QC terminals for coil and .250" (6.35mm) for contacts. 5 Panel mount via flanged cover, M4 screws w/ captive pressure plates. Requires Enclosure P and Contact arrangement 7. | | | | | | | | |
| Contact material | | 2 AgCdO 4 AgSnOInO X Special Ag Alloy X (Cd Free) | | | | | | | | |
| Coil voltage | | Coil code: please refer to coil versions table | | | | | | | | |
| Customer code | | -99 Anti-explosion -00 WG version | | | | | | | | |

T92 Series Two-pole Power Relay (Continued)

| Product Code | Enclosure | Contacts | Coil | Mounting | Contact Material | Coil | Part Number |
|-----------------|--------------------|----------------|------|-------------------------------|-----------------------------|---------|------------------|
| T92P7A22-24 | Plastic dust cover | 2 form A, 2 NO | AC | Panel mount + quick connect | AgCdO | 24 VAC | 6-1393211-0 |
| T92P7A22-120 | | | | | | 120 VAC | 5-1393211-7 |
| T92P7A22-240 | | | | | | 240 VAC | 6-1393211-2 |
| T92P7A22-277 | | | | | | 277 VAC | 6-1393211-3 |
| T92P7A24-240 | | | | | AgSnOInO | 240 VAC | 3-1423008-3 |
| T92P7A52-120 | | | | Panel mount + screw terminals | AgCdO | 120 VAC | 1423008-8 |
| T92P7A52-240 | | | | | | 240 VAC | 1-1423008-2 |
| T92P7D12-12 | | | DC | PCB terminals | | 12 VDC | 6-1393211-5 |
| T92P7D14-12 | | | | | | | AgSnOInO |
| T92P7D12-24 | | | | | AgCdO | 24 VDC | 6-1393211-6 |
| T92P7D22-12 | | | | Panel mount + quick connect | | 12VDC | 6-1393211-9 |
| T92P7D22-24 | | | | | | 24 VDC | 7-1393211-1 |
| T92P7D22-48 | | | | | | 48 VDC | 7-1393211-2 |
| T92P7D24-12 | | | | | AgSnOInO | 12VDC | 2-1423008-2 |
| T92P7D24-24 | | | | | | 24 VDC | 1423008-9 |
| T92P7D42-24 | | | | | AgCdO | | 7-1393211-5 |
| T92P7D52-12 | | | | Panel mount + screw terminals | | 12 VDC | 1-1423008-0 |
| T92P7D52-24 | | | | | | 24 VDC | 1423967-1 |
| T92P11A12-120 | | 2 form C, 2 CO | AC | PCB terminals | | 120 VAC | 3-1393211-8 |
| T92P11A22-12 | | | | Panel mount + quick connect | | 12 VAC | 3-1393211-9 |
| T92P11A22-24 | | | | | | 24 VAC | 4-1393211-3 |
| T92P11A22-120 | | | | | | 120 VAC | 4-1393211-0 |
| T92P11A22-240 | | | | | | 240 VAC | 4-1393211-4 |
| T92P11A22-277 | | | | | | 277 VAC | 4-1393211-6 |
| T92P11A24-240 | | | | | AgSnOInO | 240 VAC | 3-1423008-7 |
| T92P11A42-120 | | | | | AgCdO | 120VAC | 4-1393211-8 |
| T92P11D12-12 | | | DC | PCB terminals | | 12 VDC | 5-1393211-0 |
| T92P11D22-12 | | | | | Panel mount + quick connect | | |
| T92P11D22-24 | | | | | | 24 VDC | 5-1393211-4 |
| T92P11D24-12 | | | | | AgSnOInO | 12 VDC | 3-1423008-5 |
| T92P11D24-24 | | | | | | 24 VDC | 3-1423008-6 |
| T92S7A12-24 | Wash tight | 2 form A, 2 NO | AC | PCB terminals | AgCdO | 24 VAC | 9-1393211-8 |
| T92S7A12-120 | | | | | | 120 VAC | 9-1393211-7 |
| T92S7A12-240 | | | | | | 240 VAC | 9-1393211-9 |
| T92S7A22-24 | Top sealed | | | Panel mount + quick connect | | 24 VAC | 1393212-4 |
| T92S7A22-120 | | | | | | 120 VAC | 1393212-2 |
| T92S7A22-240 | | | | | | 240 VAC | 1393212-5 |
| T92S7D12-12 | Wash tight | | DC | PCB terminals | | 12 VDC | 1393212-8 |
| T92S7D12-24 | | | | | | | 24 VDC |
| T92S7D12-48 | | | | | | 48 VDC | 1-1393212-1 |
| T92S7D12-110 | | | | | | 110 VDC | 1393212-7 |
| T92S7D14-12 | | | | | AgSnOInO | 12 VDC | 1-1423008-6 |
| T92S7D14-24 | | | | | | 24 VDC | 1-1423008-8 |
| T92S7D22-12 | Top sealed | | | Panel mount + quick connect | AgCdO | 12 VDC | 1-1393212-4 |
| T92S7D22-18 | | | | | | 18 VDC | 1-1393212-5 |
| T92S7D22-24 | | | | | | 24 VDC | 1-1393212-7 |
| T92S7D22-110 | | | | | | 110 VDC | 1-1393212-3 |
| T92S11A12-24 | Wash tight | 2 form C, 2 CO | AC | PCB terminals | | 24 VAC | 8-1393211-1 |
| T92S11A12-120 | | | | | | 120 VAC | 8-1393211-0 |
| T92S11A12-240 | | | | | | 240 VAC | 8-1393211-2 |
| T92S11A22-12 | Top sealed | | | Panel mount + quick connect | | 12 VAC | 8-1393211-3 |
| T92S11A22-24 | | | | | | 24 VAC | 8-1393211-6 |
| T92S11A22-120 | | | | | | 120 VAC | 8-1393211-4 |
| T92S11A22-240 | | | | | | 240 VAC | 8-1393211-7 |
| T92S11D12-12 | Wash tight | | DC | PCB terminals | | 12 VDC | 8-1393211-9 |
| T92S11D12-24 | | | | | | | 24 VDC |
| T92S11D12-48 | | | | | | 48 VDC | 9-1393211-1 |
| T92S11D12-110 | | | | | | 110 VDC | 8-1393211-8 |
| T92S11D22-12 | Top sealed | | | Panel mount + quick connect | | 12 VDC | 9-1393211-3 |
| T92S11D22-24 | | | | | | 24 VDC | 9-1393211-4 |
| T92P7D12-12-99 | Plastic dust cover | 2 form A, 2 NO | DC | PCB terminals | AgCdO | 12VDC | 2-2071223-3 |
| T92S7D1X-12-99 | Wash tight | | | | | | Special Ag Alloy |
| T92S7D2X-12-99 | | | | Panel mount + quick connect | X (Cd Free) | 12VDC | 6-1423008-2 |
| T92S7A22-240-00 | Top Sealed(WG) | | AC | | AgCdO | 240VAC | 2-2071223-4 |
| T92S7D12-12-00 | Wash tight (WG) | | DC | PCB terminals | | 12VDC | 1-2071223-7 |

Note. This list represents the most common types and does not show all variants covered by this datasheet, other types on request.

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