



JUMO TYA 432 Thyristor power switch with integrated heat sink to be snapped onto a DIN rail or for screw connection

Brief description

Thyristor power switches are required for contactless switching of alternating current consumers. A typical application is the switching of ohmic-inductive loads at a high switching frequency. This applies especially to the industrial sector in areas such as the plastic packaging industry, air conditioning and heat technology, and industrial furnace construction.

The control and power sections are galvanically isolated by optocouplers. The control signal area is compatible with the logic outputs of the JUMO controllers.

The power section operates as a zero voltage switch. As a result, switching always takes place at zero voltage, irrespective of the time when the control signal changes. This reduces grid disturbances. The input status is indicated by a green LED.

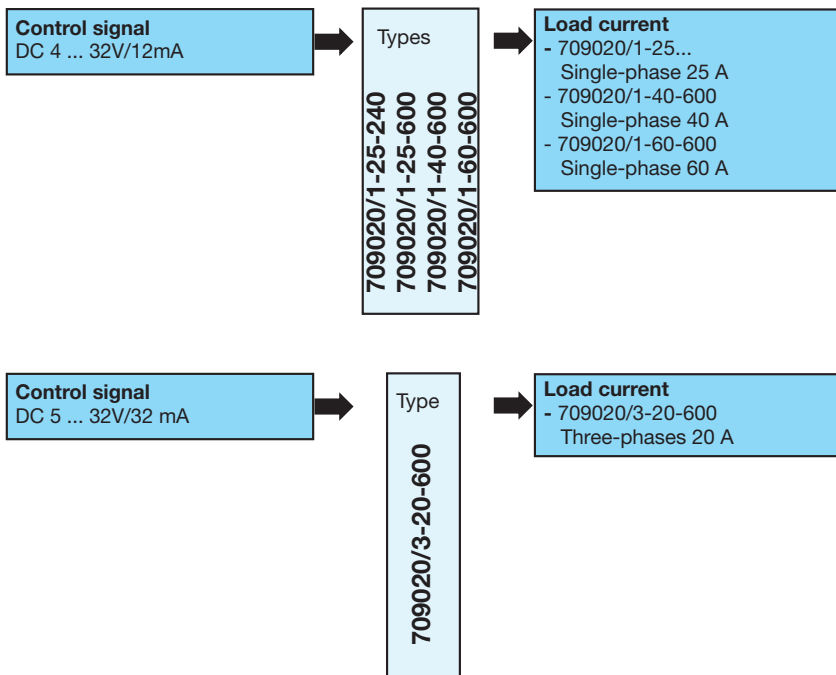


Type 709020/1-25-240
 Type 709020/1-25-600



Type 709020/1-40-600
 Type 709020/1-60-600

Block diagram



Type 709020/3-20-600

Type 709020/3-20-600

Special features

- Load currents 25, 40, 60 and 3x20 A
- Load voltages 240 V and 600 V (max.)
- Control voltage DC 4 ... 32 V
- UL, cUL approval)



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Technical data

Power section

| Type | 709020/1-25-240 709020/1-25-600 | 709020/1-40-600 | 709020/1-60-600 | 709020/3-20-600 |
|------------------------|--|--------------------------|-----------------------------|--------------------------|
| Device illustration | | | | |
| Operating voltage | AC 24...240 V | AC 42...600 V | | |
| Load current (maximum) | 25 A (at 40 °C) | 40 A (at 40 °C) | 60 A (at 40 °C) | 20 A (at 40 °C) |
| Load current (minimum) | AC 250 mA _{eff} | AC 400 mA _{eff} | | AC 250 mA |
| Load voltage | AC 24...240 V _{eff} AC 42...600 V _{eff} | | AC 42...600V _{eff} | |
| Peak blocking voltage | 1600 V _s | | 1200 V _s | |
| Leakage current | | < AC 3 mA _{eff} | | < AC 5 mA _{eff} |

Control section

| Type | 709020/1-25-240 709020/1-25-600 | 709020/1-40-600 | 709020/1-60-600 | 709020/3-20-600 |
|----------------------------|--|-----------------|------------------|-----------------|
| Control signal range | DC 4...32 V | | | DC 5...32 V |
| Status LED | If control voltage is applied, the LED constantly lights green | | | |
| Switch-on voltage | DC 3.8 V | | DC 4.8 V | |
| Switch-off voltage | DC 1 V | | | |
| Input current | 12 mA at DC 32 V | | 32 mA at DC 32 V | |
| Input current and -voltage | | | | |
| Response delay | 1 pulse period | | < 1 pulse period | |

General information

| Type | 709020/1-25-240 709020/1-25-600 | 709020/1-40-600 | 709020/1-60-600 | 709020/3-20-600 |
|--------------------------------|---|------------------|------------------|------------------|
| Operating mode | Zero point control | | | |
| Switching type | 1-pole, switched | 1-pole, switched | 1-pole, switched | 3-pole, switched |
| Galvanic isolation | Between the control and load circuit through optocouplers; insulation voltage 4 kV _{eff} | | | |
| Admissible ambient temperature | -40...+80 °C | | | -40...+70 °C |
| Admissible storage temperature | -40...+100 °C | | | |

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| | | | | |
|---|--|-------------------------|-------|-------------------------|
| Electrical connection | Via screw terminals | | | |
| Max. conductor cross section (rigid) | 2x0.5...2.5 mm ² | | | |
| Control section: | 2x2.5...6 mm ² | | | |
| Power section: | 2x2.5...6 mm ² | | | |
| Flammability class, housing | UL 94 VO | | | |
| Protection type | IP20 | | | |
| Weight | 260 g | 515 g | 970 g | 600 g |
| Frequency range | 45 to 65 Hz | | | |
| Fuse maximum load integral I ² · t (t=10 ms) | 1800 A ² · s 6600 A ² · s | 6600 A ² · s | | 1800 A ² · s |

Approvals / approval marks

| Approval mark | Test facility | Certificate / certification number | Inspection basis | Valid for |
|---------------|---------------------------|------------------------------------|------------------|-------------|
| c UL us | Underwriters Laboratories | 473841 | UL 508 | All modules |

Reduction characteristic curves

| Type | Power loss depending on the load current |
|------------------------------------|--|
| 709020/1-25-240 709020/1-25-600 | |
| 709020/1-40-600 709020/1-60-600 | |

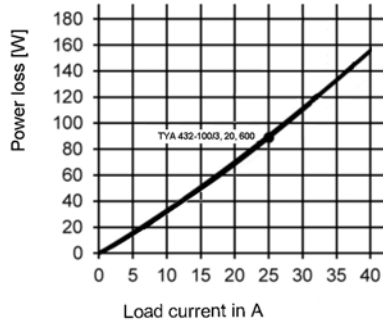
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709020/3-20-600



Dimensions

| Type | Drawing |
|------------------------------------|---------|
| 709020/1-25-240 709020/1-25-600 | |
| 709020/1-40-600 | |

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| Type | Drawing |
|------------------------|---------|
| 709020/1-60-600 | |
| 709020/3-20-600 | |

Permissible load current depending on the ambient temperature and the device distance

| Type | Drawing |
|--|---------|
| 709020/1-25-240 709020/1-25-600 | |

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| Type | Drawing |
|-----------------|--|
| 709020/1-40-600 | <p>This graph shows the load current in Amperes (A) on the y-axis (ranging from 10 to 55) against the ambient temperature in degrees Celsius (°C) on the x-axis (ranging from 0 to 80). Three data series are plotted: 0 mm (dashed line), 10 mm (solid line), and single device (dotted line). All series show a decrease in load current as temperature increases, with the 10 mm series maintaining the highest current and the 0 mm series the lowest.</p> |
| 709020/1-60-600 | <p>This graph shows the load current in Amperes (A) on the y-axis (ranging from 30 to 75) against the ambient temperature in degrees Celsius (°C) on the x-axis (ranging from 0 to 80). Three data series are plotted: 0 mm (dashed line), 10 mm (solid line), and single device (dotted line). All series show a decrease in load current as temperature increases, with the 10 mm series maintaining the highest current and the 0 mm series the lowest.</p> |
| 709020/3-20-600 | <p>This graph shows the load current in Amperes (A) on the y-axis (ranging from 0 to 30) against the ambient temperature in degrees Celsius (°C) on the x-axis (ranging from 20 to 80). Three data series are plotted: 30mm (solid line), 10mm (dashed line), and 0mm (dotted line). All series show a decrease in load current as temperature increases, with the 30mm series maintaining the highest current and the 0mm series the lowest.</p> |

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Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection, only use the installation instructions or the operating manual. The knowledge and the correct technical execution of the safety information/instructions contained in these documents are mandatory for mounting, electrical connection, startup, and for safety during operation.

Control section and power section

| Type | Switching type | Wiring |
|------------------------------------|----------------|--------|
| 709020/1-25-240 | | |
| 709020/1-25-600 709020/1-40-600 | | |
| 709020/1-60-600 | | |
| 709020/3-20-600 | | |

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Scope of delivery

- 1 thyristor power switch in the version ordered
- 1 data sheet

Order details

| | |
|-------------------------|--------------|
| (1) Basic type | |
| 709020 | TYA 432 |
| (2) Circuit type | |
| 1 | Single-phase |
| 3 | Three-phase |
| (3) Load current | |
| 20 | 20 A |
| 25 | 25 A |
| 40 | 40 A |
| 60 | 60 A |
| (4) Load voltage | |
| 240 | AC 240 V |
| 600 | AC 600 V |

Note:

Load current and load voltage cannot be combined arbitrarily. Only the stock versions are available.

Order code (1) / (2) - (3) - (4)
 / - -

Stock versions

| Order code | Part no. |
|-----------------|----------|
| 709020/1-25-240 | 00637965 |
| 709020/1-25-600 | 00638036 |
| 709020/1-40-600 | 00638037 |
| 709020/1-60-600 | 00638038 |
| 709020/3-20-600 | 00638040 |