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JUMO dTRANS T02 Programmable 4-wire Transmitter (Smart Transmitter)

with isolation of the standard signal
 for mounting on DIN rail 35mm x 7.5mm to EN 60715

Brief description

The JUMO dTRANS T02 transmitters incorporate a microprocessor for digital signal processing. Input and output are electrically isolated. They can be mounted on a DIN rail, the electrical connection is by screw terminals for stranded or solid wire up to 2.5mm² conductor cross-section.

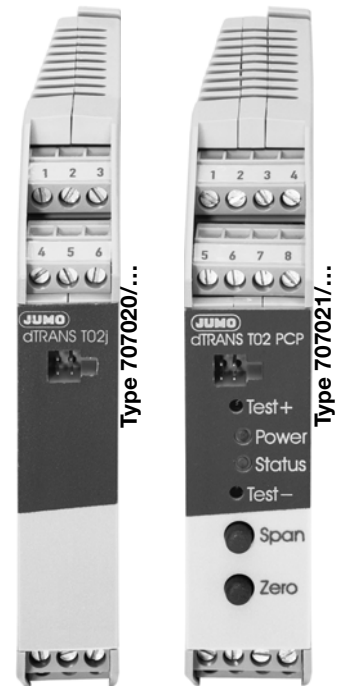
Depending on the type, the 0/4 — 20mA or 0/2 — 10V output signal is available either linearized (linear with temperature) or inverted (option). The transmitters can be programmed via the PC setup program, which is supplied as an accessory (sensor type, range, output action, fine calibration, custom linearization).

On types 707021/... and 707022/... it is possible to additionally program the limits of the limit comparators, and the frequency output.

Current and voltage outputs are available directly on terminals. No hardware alterations are required.

Overview of function

| | dTRANS T02j (junior) Type 707020/... | dTRANS T02 PCP Type 707021/... | dTRANS T02 LCD Type 707022/... | dTRANS T02 EX Type 707025/... |
|---------------|---|--|--|--|
| Housing width | 17.5mm | 22.5mm | 22.5mm | 22.5mm |
| Display | none | 2 LEDs | 2 LEDs and LCD display | 2 LEDs |
| Keys | none | 2 keys | 3 keys | 2 keys |
| Supply | 24V DC | 20 — 53V AC/DC 110 — 240V AC | 20 — 53V AC/DC 110 — 240V AC | 230V AC 20 — 53V AC/DC |
| Inputs | thermocouple, resistance thermometer (restricted), potentiometer, voltage (≤100mV), current with ext. shunt | thermocouple, resistance thermometer, resistance transmitter, potentiometer, voltage (up to ±10V), current (up to ±20mA) | thermocouple, resistance thermometer, resistance transmitter, potentiometer, voltage (up to ±10V), current (up to ±20mA) | thermocouple, resistance thermometer, resistance transmitter, potentiometer, voltage (up to ±10V), current (up to ±20mA) |
| Outputs | 0/4 — 20mA, 0 — 10V | 0/4 — 20mA, 0/2 — 10V, 2 open-collector | 0/4 — 20mA, 0/2 — 10V, 2 open-collector | 0/4 — 20mA, 0/2 — 10V |
| Internal | linearization, customized linearization | linearization, customized linearization, 2 limit comparators or 1 limit comparator and 1 frequency output | linearization, customized linearization, 2 limit comparators or 1 limit comparator and 1 frequency output | linearization, customized linearization 2 limit comparators (indication only via the power and status LEDs) |
| Operation | fine calibration via setup program | fine calibration and limits via instrument keys and setup program | fine calibration and limits via instrument keys and setup program | fine calibration via instrument keys and setup program |



Technical data for type 707020

Input for thermocouple

| Designation | Range limits | Range | Accuracy ¹ |
|-------------------------|---|-----------------|-----------------------|
| Fe-Con L DIN 43710 | -200 to +900°C | -200 to +900°C | 0.25% |
| Fe-Con J EN 60584 | -210 to +1200°C | -200 to +1200°C | 0.25% |
| Cu-Con U DIN 43710 | -200 to +600°C | -200 to +600°C | 0.25% |
| Cu-Con T EN 60584 | -270 to +400°C | -200 to +400°C | 0.25% |
| NiCr-Ni K EN 60584 | -270 to +1372°C | -150 to +1372°C | 0.25% |
| NiCr-Con E EN 60584 | -270 to +1000°C | -200 to +1000°C | 0.25% |
| NiCrSi-NiSi N EN 60584 | -270 to +1300°C | -100 to +1300°C | 0.25% |
| Pt10Rh-Pt S EN 60584 | -50 to +1768°C | -50 to +1768°C | 0.25% |
| Pt13Rh-Pt R EN 60584 | -50 to +1768°C | -50 to +1768°C | 0.25% |
| Pt30Rh-Pt6Rh B EN 60584 | 0 – 1820°C | 400 – 1820°C | 0.25% |
| MoRe5-MoRe41 | 0 – 2000°C | 500 – 2000°C | 0.25% |
| W3Re-W25Re D | 0 – 2495°C | 500 – 2495°C | 0.25% |
| W5Re-W26Re C | 0 – 2320°C | 500 – 2320°C | 0.25% |
| Shortest span | Type L, J, U, T, K, E, N: 50°C Type S, R, B: 500°C Type MoRe5-MoRe41: 500°C Type D, C: 500°C | | |
| Range start/end | freely programmable range limits | | |
| Cold junction | Pt100 internal or external cold junction (0 – 80°C is adjustable) | | |
| Cold junction accuracy | ± 1°C | | |
| Sampling rate | > 1 measurement per second | | |
| Input filter | 1st order digital filter; filter constant adjustable from 0 to 125sec | | |
| Special features | also programmable in °F; input isolated from output | | |

¹ The accuracy refers to the maximum range span.

For small ranges, as well as for short spans, the linearization accuracy is reduced.

Input for resistance thermometer

| Designation | Range limits | Range | Accuracy |
|--|--|----------------------------------|------------------|
| Pt 100 EN 60751 | -200 to +850°C | -100 to +200°C -200 to +850°C | ±0.4°C ±0.8°C |
| Pt 100 JIS | -200 to +649°C | -100 to +200°C -200 to +649°C | ±0.4°C ±0.8°C |
| Pt 500 DIN | -200 to +250°C | -100 to +200°C -200 to +250°C | ±0.4°C ±0.8°C |
| Pt 1000 DIN | -200 to +250°C | -100 to +200°C -200 to +250°C | ±0.4°C ±0.8°C |
| Ni 100 | -60 to +180°C | -60 to +180°C | ±0.8°C |
| Ni 500, Ni 1000 | -60 to +150°C | -60 to +150°C | ±0.8°C |
| Connection circuit | 2-, 3- or 4-wire | | |
| Shortest span | 20°C | | |
| Range start/end | freely programmable range limits | | |
| Sensor lead resistance - for 3-, 4-wire connection - for 2-wire connection | ≤ 11Ω per conductor meas. resistance + ≤ 22Ω internal lead resistance | | |
| Sensor current | < 0.6mA | | |
| Sampling rate | > 1 measurement per second | | |
| Input filter | 1st order digital filter; filter constant adjustable from 0 to 125sec | | |
| Special features | also programmable in °F; input isolated from output | | |

Input for potentiometer

| Range | Accuracy |
|--|---|
| up to 400Ω up to 2000Ω | ±500mΩ ±1Ω |
| Connection circuit | 2-, 3- or 4-wire circuit |
| Shortest span | 6Ω |
| Resistance values | freely programmable within the limits in 0.1Ω steps |
| Sensor lead resistance - for 3-, 4-wire connection - for 2-wire connection | ≤ 11Ω per conductor meas. resistance + ≤22Ω internal lead resistance |
| Sampling rate | > 1 measurement per second |
| Input filter | 1st order digital filter; filter constant adjustable from 0 to 125sec |
| Special features | also programmable in °F; input isolated from output |

Input for DC voltage, DC current

| Range | Accuracy | Input resistance |
|-----------------|---|-------------------------|
| 0 – 100mV | ±150μV | R _{IN} > 10 MΩ |
| Shortest span | 5mV | |
| Range start/end | freely programmable within the limits (up to 999mV in 0.1mV steps, above 1V in 1mV steps) | |
| Sampling rate | > 1 measurement per second | |
| Input filter | 1st order digital filter; filter constant adjustable from 0 to 125sec | |
| Current input | The current input can only be implemented in conjunction with an external shunt (not included in delivery). Example: a 5Ω shunt results in 0 – 20mA current input, with a programmed voltage range of 0 – 100mV. The accuracy corresponds to the voltage input plus the inaccuracy of the shunt. | |

Measurement circuit monitoring

| | Resistance thermometer | Thermocouple |
|---|--|---|
| Underrange | linear drop to 3.8mA or 0mA (as per NAMUR recommendation 43) | |
| Ovrange | linear rise to 20.5mA (as per NAMUR recommendation 43) | |
| Probe short-circuit / Probe/lead break | 0mA or ≥ 21.0mA (configurable) | 0mA or ≥ 21.0mA (configurable) ¹ |

¹ Probe short-circuit recognition is not possible for thermocouple

Analog outputs

| | Current output |
|--------------------------|--|
| Output signal | proportional DC current 0 – 20mA or 4 – 20mA programmable |
| Transfer characteristic | linear with temperature inversion of the output signal |
| Max. burden | 750Ω |
| Burden error | ≤ ± 0.02% / 100Ω |
| 1st order digital filter | 0 – 125sec configurable |
| Step response 0 – 100 % | < 2sec (with filter constant 0sec) |
| Switch-on delay | 5sec (correct measurement after connecting the supply voltage) |
| | Voltage output |
| Output range | 0 – 10V |
| Accuracy | ± 5mV |
| Linearity error | ± 2mV |
| Load resistance | ≥ 2kΩ |
| Load error | ± 15mV |
| Ripple | ± 1% referred to 10V, 0 – 90kHz |

Custom linearization

| | |
|------------------------------|---------|
| Number of calibration points | 40 max. |
| Interpolation | linear |

Electrical data

| | |
|--|--|
| Supply voltage | 24V DC +10%/-15% |
| Power consumption | 1W |
| Supply voltage error | $\leq \pm 0.01\%$ per V deviation from 24V |
| Test voltage | to DIN 61010, Part 1 510V/50Hz, 1min |
| Isolation - between input and output - between input and mains supply - between output and mains supply - between input and setup plug | 50V 50V 50V no isolation between input and setup plug |

Technical data type 707021/..., type 707022/... and type 707025/...**Input for thermocouple**

| Designation | Range limits | Range | Accuracy ¹ |
|-------------------------|---|-----------------|-----------------------|
| Fe-Con L DIN 43710 | -200 to +900°C | -200 to +900°C | 0.1% above -150°C |
| Fe-Con J EN 60584 | -210 to +1200°C | -200 to +1200°C | 0.1% above -100°C |
| Cu-Con U DIN 43710 | -200 to +600°C | -200 to +600°C | 0.1% above -100°C |
| Cu-Con T EN 60584 | -270 to +400°C | -200 to +400°C | 0.1% above -100°C |
| NiCr-Ni K EN 60584 | -270 to +1372°C | -200 to +1372°C | 0.1% above -60°C |
| NiCr-Con E EN 60584 | -270 to +1000°C | -200 to +1000°C | 0.1% above -60°C |
| NiCrSi-NiSi N EN 60584 | -270 to +1300°C | -100 to +1300°C | 0.1% above -80°C |
| Pt10Rh-Pt S EN 60584 | -50 to +1768°C | -50 to +1768°C | 0.15% above 0°C |
| Pt13Rh-Pt R EN 60584 | -50 to +1768°C | -50 to +1768°C | 0.15% above 0°C |
| Pt30Rh-Pt6Rh B EN 60584 | 0 – 1820°C | 400 – 1820°C | 0.15% above 400°C |
| W3Re-W25Re D | 0 – 2495°C | 500 – 2495°C | 0.15% above 500°C |
| W5Re-W26Re C | 0 – 2320°C | 500 – 2320°C | 0.15% above 500°C |
| Shortest span | Type L, J, U, T, K, E, N: 100°C; type S, R, B, D, C: 500°C | | |
| Range start/end | freely programmable within the limits in 0.1°C steps | | |
| Cold junction | Pt100 internal or external cold junction (adjustable from 0 to 100°C) | | |
| Cold junction accuracy | $\pm 1^\circ\text{C}$ | | |
| Sampling rate | $\leq 100\text{msec}$ | | |
| Special features | also programmable in °F; input isolated from output | | |

¹ The accuracy refers to the maximum range span.

For small ranges, as well as for short spans, the linearization accuracy is reduced.

Input for resistance thermometer

| Designation | Connection circuit | Range limits | Range | Accuracy |
|-----------------|--------------------|----------------|----------------|-------------------------|
| Pt 100 EN 60751 | 2/3-wire | -200 to +850°C | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 2/3-wire | | -200 to +850°C | $\pm 0.8^\circ\text{C}$ |
| | 4-wire | | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 4-wire | | -200 to +850°C | $\pm 0.5^\circ\text{C}$ |
| Pt 100 JIS | 2/3-wire | -200 to +649°C | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 2/3-wire | | -200 to +649°C | $\pm 0.8^\circ\text{C}$ |
| | 4-wire | | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 4-wire | | -200 to +649°C | $\pm 0.5^\circ\text{C}$ |
| Pt 500 DIN | 2/3-wire | -200 to +850°C | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 2/3-wire | | -200 to +850°C | $\pm 0.8^\circ\text{C}$ |
| | 4-wire | | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 4-wire | | -200 to +850°C | $\pm 0.5^\circ\text{C}$ |
| Pt 1000 DIN | 2/3-wire | -200 to +850°C | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 2/3-wire | | -200 to +850°C | $\pm 0.8^\circ\text{C}$ |
| | 4-wire | | -100 to +200°C | $\pm 0.4^\circ\text{C}$ |
| | 4-wire | | -200 to +850°C | $\pm 0.5^\circ\text{C}$ |
| Ni 100 | 2/3-wire | -60 to +180°C | -60 to +180°C | $\pm 0.8^\circ\text{C}$ |
| | 4-wire | | -60 to +180°C | $\pm 0.5^\circ\text{C}$ |

| Designation | Connection circuit | Range limits | Range | Accuracy |
|------------------------|---|---------------|--------------------------------|------------------|
| Ni 500, Ni 1000 | 2/3-wire 4-wire | -60 to +150°C | -60 to +150°C -60 to +150°C | ±0.8°C ±0.5°C |
| Connection circuit | 2-, 3- or 4-wire circuit | | | |
| Shortest span | 15°C | | | |
| Range start/end | freely programmable within the limits in 0.1°C steps | | | |
| Sensor lead resistance | ≤ 30Ω per conductor (for 3- and 4-wire circuit) ≤ 15Ω per conductor (for 2-wire circuit) | | | |
| Sensor current | < 0.6mA | | | |
| Sampling rate | ≤ 100msec | | | |
| Input filter | 2nd order digital filter; filter constant adjustable from 0 to 20.0sec | | | |

Input for resistance transmitter and potentiometer

| Range | Accuracy |
|------------------------|--|
| up to 200Ω | ±300mΩ |
| up to 400Ω | ±600mΩ |
| up to 800Ω | ±1Ω |
| up to 2000Ω | ±2Ω |
| up to 3900Ω | ±3Ω |
| Connection circuit | resistance transmitter: 3-wire potentiometer: 2-, 3- or 4-wire |
| Shortest span | 6Ω |
| Resistance values | freely programmable within the limits in 0.1Ω steps |
| Sensor lead resistance | ≤ 30Ω per conductor for 4-wire circuit ≤ 15Ω per conductor for 2- and 3-wire circuit up to 200Ω range: ≤ 10Ω per conductor for 2- and 3-wire circuit |
| Sampling rate | ≤ 100msec |
| Input filter | 2nd order digital filter; filter constant adjustable from 0 to 20.0sec |

Input for DC voltage, DC current

| Range | Accuracy | Input resistance |
|--|--|---|
| -25 to +75mV 0 to 100mV | ±100μV ±100μV | R _{IN} > 10 MΩ R _{IN} > 10 MΩ |
| -100 to +100mV 0 to 200mV | ±150μV ±150μV | R _{IN} > 10 MΩ R _{IN} > 10 MΩ |
| -500 to +500mV 0 to 1V | ±1mV ±1mV | R _{IN} > 10 MΩ R _{IN} > 10 MΩ |
| -1 to +1V -5 to +5V | ±2mV ±10mV | R _{IN} > 10 MΩ R _{IN} > 0.5 MΩ |
| 0 to 10V -10 to +10V | ±10mV ±15mV | R _{IN} > 0.5 MΩ R _{IN} > 0.5 MΩ |
| Shortest span | 5mV | |
| Range start/end | freely programmable within the limits (up to 999mV in 0.1mV steps, above 1V in 1mV steps) | |
| 4 to 20mA 0 to 20mA -20 to +20mA | ±20μA ±20μA ±40μA | burden voltage ≤ 2.6V burden voltage ≤ 2.6V burden voltage ≤ 2.6V |
| Shortest span | 0.5mA | |
| Range start/end | freely programmable within the limits in 0.1mA steps | |
| Sampling rate | ≤ 100msec | |
| Input filter | 2nd order digital filter; filter constant adjustable from 0 to 20.0sec | |

Analog outputs

| Current output | |
|--|---|
| Output range | proportional DC current 0 – 20mA or 4 – 20mA programmable |
| Accuracy | ± 0.015mA |
| Linearity error | ± 0.005mA |
| Max. burden | 750Ω |
| Burden error | ± 0.01 mA |
| Ripple | ± 1% referred to 20mA, 0 – 90kHz; above 90kHz: tested to EN 50081 |
| Output current on probe break, over/underrange | 0mA or 22mA (programmable) |
| Voltage output | |
| Output range | 0 – 10V or 2 – 10V |
| Accuracy | ± 5mV |
| Linearity error | ± 2mV |
| Load resistance | ≥ 2kΩ |
| Burden error | ± 15mV |
| Ripple | ± 1% referred to 10V, 0 – 90kHz |
| Output voltage on probe break, over/underrange | 0V or 11V (programmable) |

Digital outputs (only for types 707021/... and 707022/...)

| 2 open-collector outputs | |
|--------------------------------------|--|
| Output 1 | lk7 or lk8 or fault output |
| Output 2 | lk7 or lk8 or frequency output |
| Function lk7 | |
| Function lk8 | |
| Switching capacity of open-collector | 35V, 100mA |
| Voltage drop | in switched condition ≤ 1.2V |
| Short-circuit strength | not available |
| Frequency output | |
| Function | the frequency output produces the latest measurement as a frequency; the frequency at range start/end is programmable |
| Smallest / highest frequency | 10Hz / 1000Hz |
| Error output | |
| Activation | due to probe break, over/underrange and internal errors (Pt100 of cold junction faulty, EEPROM does not respond) |

Customized linearization

| | |
|-----------------------------|-----------------------------------|
| Interpolation: linear | max. 41 calibration points |
| Interpolation: square-law | max. 53 calibration points |
| Interpolation: cube-law | max. 61 calibration points |
| Input of calibration points | through setup program (accessory) |

Electrical data

| | |
|---|--|
| Supply voltage - types 707021/... and 707022/... - type 707025/... | 20 – 53V AC/DC, 48 – 63Hz or 110 – 240V AC +10/-15%, 48 – 63Hz 230V AC ±10%, 48 – 63Hz or 20 – 53V AC/DC, 48 – 63Hz |
| Power consumption | max. 5VA |
| Test voltage - between input or output and supply - with AC supply - with AC/DC supply - between input and output | to DIN 61010, Part 1 2.3kV/50Hz, 1 min 510V/50Hz, 1 min 510V/50Hz, 1 min |
| Isolation - between input and output - between input and mains supply - between output and mains supply - between output and setup plug | 50V 250V 250V no isolation between output and setup plug |



Version 707025/... (Ex)

| Marking | II (1) G [Ex ia Ga] IIC II (1) D [Ex ia IIIC Da] | | | | | | | | | | | | | | |
|--|---|--------|-------|--|-----|-----|-----|----------------|-------|-------|-------|----------------|--------|--------|-------|
| Ambient temperature range | -10 to +60°C | | | | | | | | | | | | | | |
| Supply circuit (terminals L1(L+), N(L-) and PE) Max. safe voltage | 230V AC ±10%, 48 – 63Hz or 20 – 53V AC/DC, 48 – 63Hz U _m = 253V | | | | | | | | | | | | | | |
| Output circuit (terminals 9(+) and 10(-)) Max. safe voltage | 0 – 20mA U _m = 253V | | | | | | | | | | | | | | |
| Output circuit (terminals 11(-) and 12(+)) Max. safe voltage | 0 – 10V U _m = 253V | | | | | | | | | | | | | | |
| Setup circuit Max. safe voltage | 5V TTL level U _m = 253V | | | | | | | | | | | | | | |
| Sensor circuit (terminals 1 through 5) type of protection Intrinsic Safety Ex ia IIC or Ex ia IIIC Maximum values: | U ₀ = 6.0V I ₀ = 18.9mA P ₀ = 28.4mW linear characteristic L _i negligibly low C _i negligibly low | | | | | | | | | | | | | | |
| For relationship between explosion group and the external reactances reference is made to the table: | <table border="1"> <thead> <tr> <th></th> <th>IIC</th> <th>IIB</th> <th>IIA</th> </tr> </thead> <tbody> <tr> <td>L_o</td> <td>20 mH</td> <td>20 mH</td> <td>20 mH</td> </tr> <tr> <td>C_o</td> <td>1.3 µF</td> <td>7.1 µF</td> <td>10 µF</td> </tr> </tbody> </table> | | | | IIC | IIB | IIA | L _o | 20 mH | 20 mH | 20 mH | C _o | 1.3 µF | 7.1 µF | 10 µF |
| | IIC | IIB | IIA | | | | | | | | | | | | |
| L _o | 20 mH | 20 mH | 20 mH | | | | | | | | | | | | |
| C _o | 1.3 µF | 7.1 µF | 10 µF | | | | | | | | | | | | |

Approvals/marks of conformity

| Mark of conformity | Testing laboratory | Certificates / certification numbers | Test basis | valid for |
|---|--------------------|--------------------------------------|-------------------------------------|-----------------|
| II (1) G [Ex ia Ga] IIC II (1) D [Ex ia IIIC Da] | PTB | PTB 01 ATEX 2149 | EN 60079-0:2009 EN 60079-11:2012 | Type 707025/... |

For all types

Electrical data

| | |
|--|---|
| Electrical safety | to EN 61010 |
| Electromagnetic compatibility (EMC) - interference emission - immunity to interference | EN 61326-1 Class B to industrial requirements |

Environmental influences

| | |
|-----------------------------------|---|
| Ambient/storage temperature range | -10 to +60 °C / -10 to +70 °C |
| Temperature error | $\leq \pm 0.005\%$ per °C deviation from 22 °C ¹ |
| Climatic conditions | < 75 % rel. humidity, no condensation |

¹ All specifications refer to the range-end value 20 mA

Housing

| | |
|--------------------|--|
| Material | polyamide (PA 6.6) |
| IP protection | IP20 (EN 60529) |
| Screw connection | screw terminal 0.2 – 2.5 mm ² |
| Mounting | on 35 mm x 7.5 mm DIN rail to EN 60715 |
| Operating position | upright |
| Weight | approx. 50 g |

Setup interface

The setup interface is used for configuring the transmitter from a PC. Connection is via the PC interface with a TTL/RS232 converter (or an USB/TTL converter) and adapter.

| Configurable parameters | | |
|---|---|--|
| TAG number (6 characters on type 707020/..., for all the others: 10 characters) | Sensor type | Connection circuit (2-/3-/4-wire) |
| External and internal cold junction | Customized linearization | Range limits |
| Selection of type lk7 or lk8 (not on type 707020/...) | Input of limit (not on type 707020/...) | Input of differential (upper and lower) (not on type 707020/...) |
| Output signal rising/falling (inversion) | Digital filter | Response to probe break/short-circuit |
| Recalibration (fine calibration) | Lead resistance for 2-wire circuit | |

Fine calibration

Fine correction means correction of the output signal. The signal can be corrected in the range $\pm 5\%$ of the 20 mA end value.

Fine calibration is performed using the setup program.

On type 707021/..., type 707022/... and 707025/... fine calibration can also be carried out from the instrument keys.

Connection diagram

| | Type 707020/... | Type 707021/..., Type 707022/... and Type 707025/... |
|---|--|--|
| | <p>Terminal block diagram for Type 707020/... showing terminals 1-12 and L+, L-.</p> | <p>Terminal block diagrams for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-12 and L+, L-.</p> |
| Connection for | | |
| Supply see nameplate | <p>Supply connection diagram for Type 707020/... showing L+ and L- terminals.</p> | <p>Supply connection diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing L1, N, PE, (L+), and (L-) terminals.</p> |
| Analog inputs | | |
| Thermocouple | <p>Thermocouple connection diagram for Type 707020/... showing terminals 1-5.</p> | <p>Thermocouple connection diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |
| Resistance thermometer in 2-wire circuit | <p>Resistance thermometer in 2-wire circuit diagram for Type 707020/... showing terminals 1-5.</p> | <p>Resistance thermometer in 2-wire circuit diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |
| Resistance thermometer in 3-wire circuit | <p>Resistance thermometer in 3-wire circuit diagram for Type 707020/... showing terminals 1-5.</p> | <p>Resistance thermometer in 3-wire circuit diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |
| Resistance thermometer in 4-wire circuit | <p>Resistance thermometer in 4-wire circuit diagram for Type 707020/... showing terminals 1-5.</p> | <p>Resistance thermometer in 4-wire circuit diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |
| Potentiometer in 2-wire circuit | <p>Potentiometer in 2-wire circuit diagram for Type 707020/... showing terminals 1-5.</p> | <p>Potentiometer in 2-wire circuit diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |
| Potentiometer in 3-wire circuit | <p>Potentiometer in 3-wire circuit diagram for Type 707020/... showing terminals 1-5.</p> | <p>Potentiometer in 3-wire circuit diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |
| Potentiometer in 4-wire circuit | <p>Potentiometer in 4-wire circuit diagram for Type 707020/... showing terminals 1-5.</p> | <p>Potentiometer in 4-wire circuit diagram for Type 707021/..., Type 707022/..., and Type 707025/... showing terminals 1-5.</p> |

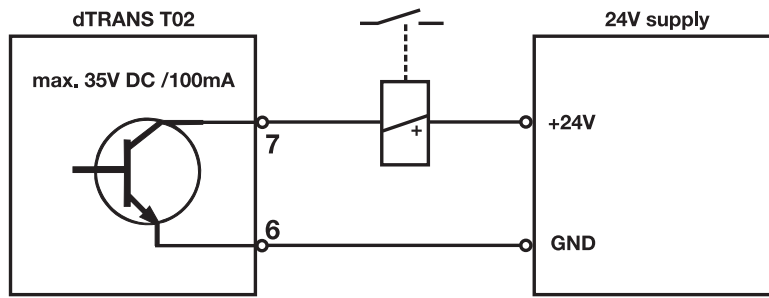
| | Type 707020/... | Type 707021/..., Type 707022/... and Type 707025/... |
|--|-----------------|--|
| Resistance transmitter in 3-wire circuit | not possible | |
| Voltage input < 1V | | |
| Voltage input ≥ 1V | not possible | |
| Current input | | |
| Analog outputs | | |
| Voltage output | | |
| Current output | | |
| Digital outputs | | |
| Open-collector output 1 | not possible | |
| Open-collector output 2 | not possible | |

¹ When using a shunt resistor, the signal leads and the shunt must be provided with a crimp connector.

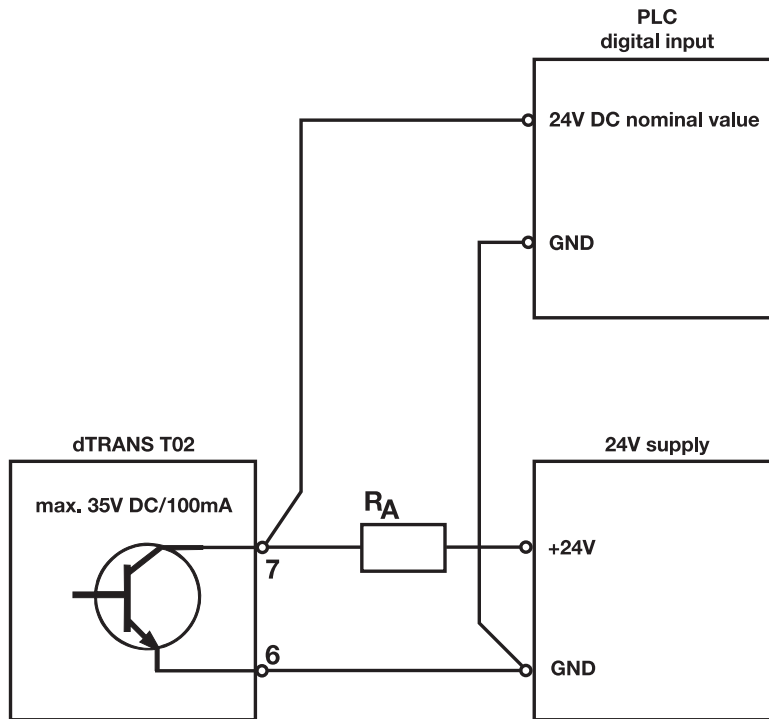
² On type 707025/... the limits are indicated only via the status and power LEDs.

Connection example for the open-collector output

Connection of a relay

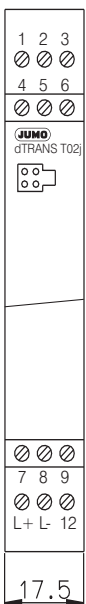


Connection of a PLC

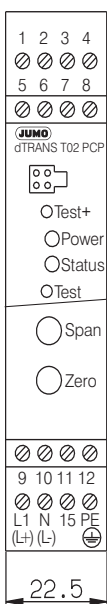


Dimensions

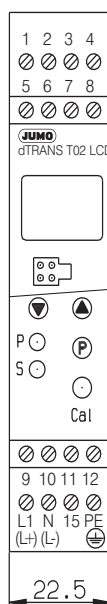
Type 707020/...



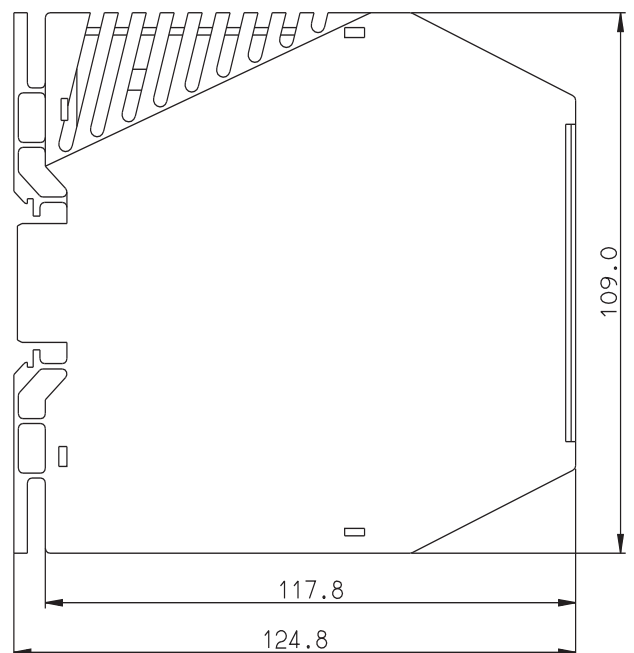
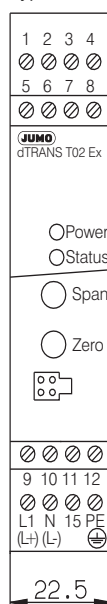
Type 707021/...



Type 707022/...






Type 707025/...



Order details: JUMO dTRANS T02
Programmable 4-wire Transmitter (Smart Transmitter)

(1) Basic version

| | | | | |
|---|---|--------|--|---|
| | | 707020 | dTRANS T02j - programmable transmitter | |
| | | 707021 | dTRANS T02 PCP - programmable transmitter | |
| | | 707022 | dTRANS T02 LCD - programmable transmitter with LCD display | |
| | | 707025 | dTRANS T02 Ex - programmable transmitter Ex protection  II (1) G [Ex ia Ga] IIC  II (1) D [Ex ia IIIC Da] |  |
| | | | (2) Input (programmable) | |
| x | x | 888 | factory-set (Pt100 DIN vl / 0 to 100°C) | |
| x | x | 999 | configuration to customer specification ¹ | |
| | | | (3) Output (proportional DC current - programmable) | |
| x | x | 888 | factory-set (0 – 20mA) | |
| x | x | 999 | configuration to customer specification (4 – 20mA or 0 – 10V or 2 – 10V) | |
| | | | (4) Supply | |
| | | 03 | 230V AC ±10%, 48 – 63Hz | x |
| | x | 22 | 20 – 53V AC/DC, 48 – 63Hz | x |
| | x | 23 | 110 – 240V AC +10/-15%, 48 – 63Hz | x |
| x | | 29 | 24V DC +10/-15% | |

Order code **(1)** **(2)** **(3)** **(4)**
 / - -
Order example 707021 / 888 - 888 - 22

¹ For configuration to customer specification, probe type and range have to be specified in plain text

Standard accessories

- 1 Operating Instructions

Accessory - Data Sheet 709700

| | Part no. |
|--|-----------------|
| - Setup program, multilingual | 00378730 |
| - PC interface with TTL/RS232 converter and adapter (socket) | 00350260 |
| - PC interface with USB/TTL converter, adapter (socket) and adapter (pins) | 00456352 |