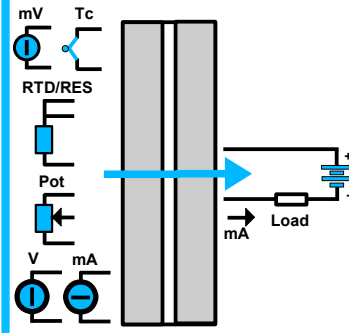




FEATURES

- Universal configurable input for: mV, Tc, RTD, Res, Potentiometer, V and mA
- Configurable current output from 4 to 20 mA
- Configurable by Dip-switches or by Personal Computer by cable CVPROG
- High accuracy
- On-field reconfigurable
- Galvanic isolation at 1500 Vac
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



GENERAL DESCRIPTION

The universal isolated transmitter DAT4535 is able to measure and linearise voltage, current and resistance signals, potentiometers and the standard thermocouples and RTDs with, if required, the cold junction compensation and the wires compensation. In function of programming, the measured values are converted and transmitted on the 4÷20 mA current loop. The device guarantees high accuracy and performances stability both versus time and temperature. The programming is made by the dip-switch located in the window on the side of the enclosure. By means of dip-switches it is possible to select the input type and range without recalibrate the device. Moreover, by Personal Computer and the cable CVPROG the user can program all of the device's parameters for his own necessity. **The terminals of the current signal on input side must be only connected to active current loop.** The 1500 Vac galvanic isolation eliminates the effects of all ground loops eventually existing and allows the use of the transmitter in heavy environmental conditions found in industrial applications. It is housed in a plastic enclosure of 12.5 mm thickness suitable for DIN rail mounting in compliance with EN-50022 and EN-50035 standards.

USER INSTRUCTIONS

The transmitter DAT 4535 must be powered by a direct voltage between 7 to 32 V and applied to the terminals P(+V) and O (-V) or to the terminals N(+V) and M (-V). The 4÷20 mA output signal is measurable in the power loop as shown in the section "Output/Power supply connections"; Rload is the input impedance of instruments on the current loop; to obtain a correct measure, the value of Rload will be calculated as function of the power supply value (see section "Technical specification – Load characteristic"). The input connections must be made as shown in the section "Input connections". To configure and install the transmitter refer to sections "Programming", "Configuration by dip-switches", "Dip-switches configuration tables" and "Installation Instructions".

TECHNICAL SPECIFICATIONS (Typical @ 25 °C and in nominal conditions)

| INPUT | | | | Linearity (1) | | POWER SUPPLY | |
|------------------------------|---------|---------|-----------|--------------------------------------|---|--|-------------|
| Input type | Min | Max | Min. Span | Tc, RTD, Pot | mV, V, mA | Supply voltage | 7 .. 32 Vdc |
| TC (CJC int./ext.) | | | | mV, V, mA | ± 0.1 % f.s. ± 0.05 % f.s. | Reverse polarity protection | 60 Vdc max |
| J | -200°C | 1200°C | 100°C | Input impedance | | Load characteristic - Rload (maximum load value on current loop per power supply value) | |
| K | -200°C | 1300°C | 100°C | TC, mV | >= 10 MΩ | | |
| S | 0°C | 1750°C | 400°C | Volt | >= 1 MΩ | | |
| R | 0°C | 1750°C | 400°C | mA | ~22 Ω | | |
| B | 0°C | 1850°C | 400°C | RTD excitation current | | | |
| E | -200°C | 1000°C | 100°C | RTD, Res | 400 uA | ISOLATION | |
| T | -200°C | 400°C | 100°C | Line resistance influence (1) | | Input – Power supply/Out 1500 Vac, 50 Hz, 1 min. | |
| N | -200°C | 1300°C | 100°C | TC, mV | <= 0.8 uV/Ohm | ENVIRONMENTAL CONDITIONS | |
| Voltage | | | | RTD 3 wires | 0.05%/Ω (50Ω max balanced) | Operative Temperature -40°C .. +85°C | |
| mV | -100 mV | +90 mV | 5 mV | RTD 4 wires | 0.005%/Ω (100Ω max balanced) | Storage Temperature -40°C .. +85°C | |
| mV | -100 mV | +200 mV | 10 mV | Thermal drift (1) | | Humidity (not condensed) 0 .. 90 % | |
| mV | -100 mV | +800 mV | 20 mV | Full Scale | ± 0.01% / °C | Maximum Altitude 2000 m | |
| Volt | -10 V | 10 V | 1 V | CJC | ± 0.01% / °C | Installation Indoor | |
| RTD (2, 3, 4 wires) | | | | CJC Comp. | ± 0.5°C | Category of installation II | |
| Pt100 | -200°C | 850°C | 50°C | OUTPUT | | Pollution Degree 2 | |
| Pt1000 | -85°C | 185°C | 30°C | Output type | Min | Max | Min. span |
| Ni100 | -60°C | 180°C | 50°C | Current | 4 mA | 20 mA | 4 mA |
| Ni1000 | -60°C | 150°C | 30°C | Output calibration | Current ± 7 uA | | |
| RES. (2, 3, 4 wires) | | | | Burn-out values | Max. output value 21.8 mA | | |
| | 0 Ω | 500 Ω | 50 Ω | Min. output value | 2.4 mA | | |
| | 0 Ω | 2000 Ω | 50 Ω | Response time (10÷ 90%) | about 400 ms | | |
| Pot. (Rnom.< 50KΩ) | | | | Delay on output | Programmable from 0 to 30 sec. | | |
| | 0 % | 100 % | 10 % | Input calibration (1) | mV, TC > of ±0.1% f.s. or ±12 uV | | |
| Current | | | | RTD | > of ±0.1% f.s. or ±0.2°C | | |
| | 0 mA | 20 mA | 1 mA | Res. | > of ±0.1% f.s. or ±0.15 Ω | | |
| | | | | Potentiometer | ± 0.05 % f.s. | | |
| | | | | Volt | > of ±0.1% f.s. or ± 2 mV | | |
| | | | | mA | > of ±0.1% f.s. or ± 6 uA | | |
| | | | | | MECHANICAL SPECIFICATIONS | | |
| | | | | | Material Self-extinguish plastic | | |
| | | | | | IP Code IP20 | | |
| | | | | | Wiring wires with diameter 0.8÷2.1 mm ² /AWG 14-18 | | |
| | | | | | Tightening Torque 0.8 N m | | |
| | | | | | Mounting in compliance with DIN rail standard EN-50022 and EN-50035 | | |
| | | | | | Weight about 90 g. | | |
| | | | | | EMC (for industrial environments) | | |
| | | | | | Immunity EN 61000-6-2 | | |
| | | | | | Emission EN 61000-6-4 | | |

(1) referred to input Span (difference between max. and min. values)

PROGRAMMING

CONFIGURATION BY PC

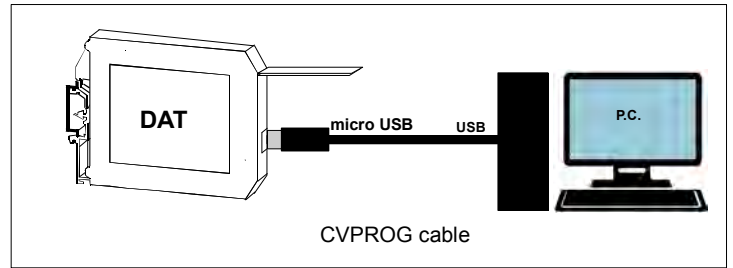
Notice: before to execute the next operations, check that the drivers of the cable CVPROG in use have been previously installed in the Personal Computer.

By software DATESOFT from version 2.7 it is possible to:

- set the default programming of the device;
- program the options not available with the dip-switch;
(burn-out level, CJC offset, trip alarm settings, delay on output, etc...);
- read, in real time, the input and output measures;
- follow the dip-switches configuration wizard.

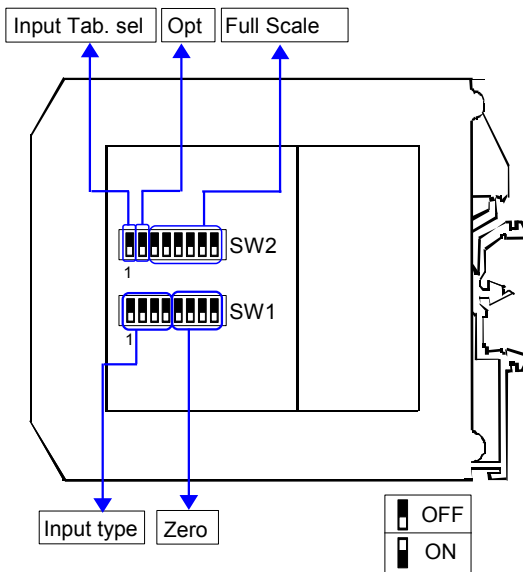
To configure the device follow the next steps:

- 1) Open the protection plastic label on the front of the device.
- 2) Connect the two plugs of cable CVPROG to the Personal Computer (USB plug) and to the device (uUSB plug).
- 3) Run the software DATESOFT
- 4) Select the COM port in use and click on "Open COM".
- 5) Click on the icon "Program".
- 6) Set the programming data.
- 7) Click on the icon "Write" to send the programming data to the device.



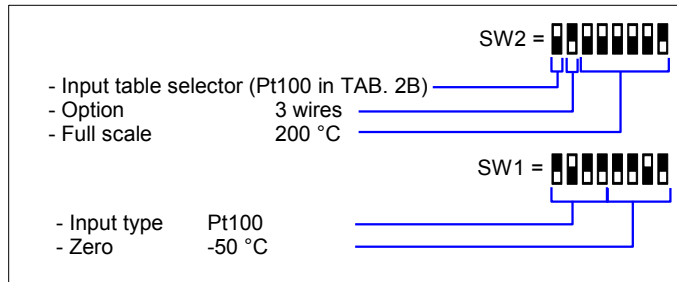
For information about DATESOFT refer to the software's user guide.

CONFIGURATION BY DIP-SWITCHES



- 1) Open the suitable door on the side of the device.
- 2) Set the input table selector by the dip-switch SW2 [1] (see TAB.1)
- 3) Set the input type by the dip-switches SW1 [1..4] (see TAB.2A and TAB.2B)
- 4) Set, if foreseen, the option by dip-switch SW2 [2] (see TAB.3)
- 5) Set the minimum value of the input scale (Zero) by dip-switches SW1 [5..8] (see TAB.4)*
- 6) Set the full scale value by dip-switches SW2 [3..8]*

Ex of configuration Pt100 3 wires -50 ÷ 200 °C:



NOTE:

- It is also possible to set the dip-switches using the wizard of the configuration software following the procedure described in the section "Configuration by PC" until the step 6 and clicking on icon "Switch".

DIP-SWITCH CONFIGURATION TABLES

TAB.1 – Input table selection

| SW2 | TABLE |
|-----|----------------------------|
| 1 | TAB. 2A (mV, Volt, mA, TC) |
| 2 | TAB. 2B (Res, RTD, Pot.) |

TAB.2A – Input type selection

| SW1 | SW1 | |
|---------|---------|---------|
| 1 2 3 4 | 1 2 3 4 | |
| 0 0 0 0 | 0 0 0 0 | EPROM * |
| 0 0 0 0 | 0 0 0 0 | Tc J |
| 0 0 0 0 | 0 0 0 0 | Tc K |
| 0 0 0 0 | 0 0 0 0 | Tc R |
| 0 0 0 0 | 0 0 0 0 | Tc S |
| 0 0 0 0 | 0 0 0 0 | Tc T |
| 0 0 0 0 | 0 0 0 0 | Tc B |
| 0 0 0 0 | 0 0 0 0 | Tc E |
| 0 0 0 0 | 0 0 0 0 | Tc N |

TAB.2B – Input type selection

| SW1 | SW1 | |
|---------|---------|------------|
| 1 2 3 4 | 1 2 3 4 | |
| 0 0 0 0 | 0 0 0 0 | Res. 2KΩ |
| 0 0 0 0 | 0 0 0 0 | Res. 500Ω |
| 0 0 0 0 | 0 0 0 0 | Pt100 |
| 0 0 0 0 | 0 0 0 0 | Ni100 |
| 0 0 0 0 | 0 0 0 0 | Pt 1K |
| 0 0 0 0 | 0 0 0 0 | Ni 1K |
| 0 0 0 0 | 0 0 0 0 | Pot. <500Ω |
| 0 0 0 0 | 0 0 0 0 | Pot. <50KΩ |

TAB.3 - Option

| SW2 | CJC | RTD/RES |
|-----|----------|-----------|
| 2 | External | 3 wires |
| 3 | Internal | 2/4 wires |

NOTES:

* To set the input range refer to the TAB.4 (next pages) referred to the input type selected by TAB.1, TAB.2A and TAB.2B.

* If the dip-switches SW1 [1..4] and SW2 [1] are all set in the position 0 ("EPROM"), the device will follow the configuration programmed by PC (input type and range, output range and options).

* If the dip-switches SW1 [5..8] and SW2 [3..8] are all set in the position 0 ("Default"), the device will follow the input scale programmed by PC for the input type selected by the dip-switches SW1[1..4] and SW2[1].

* If the dip-switch SW2 [2] is set in the ON position and is in progress a measure by Resistance or RTD 2 wires sensor, it is necessary to connect the terminal I to the terminal L and the terminal G to the terminal H.

TAB.4a – mV, Tc Input scale settings

| Zero | | Full Scale | | | |
|-------------------|---------|-----------------------|-----------------------|-----------------------|-----------------------|
| SW1 5 6 7 8 °C | | SW2 3 4 5 6 7 8 °C | SW2 3 4 5 6 7 8 °C | SW2 3 4 5 6 7 8 °C | SW2 3 4 5 6 7 8 °C |
| Default | Default | 75 | 225 | 700 | |
| -200 | 0 | 80 | 250 | 750 | |
| -100 | 5 | 85 | 255 | 800 | |
| -80 | 10 | 90 | 275 | 850 | |
| -60 | 15 | 95 | 300 | 900 | |
| -50 | 20 | 100 | 325 | 950 | |
| -40 | 25 | 110 | 350 | 1000 | |
| -30 | 30 | 120 | 375 | 1100 | |
| -20 | 35 | 130 | 400 | 1200 | |
| -10 | 40 | 140 | 425 | 1300 | |
| 0 | 45 | 150 | 450 | 1400 | |
| 10 | 50 | 160 | 475 | 1500 | |
| 20 | 55 | 170 | 500 | 1600 | |
| 50 | 60 | 180 | 550 | 1750 | |
| 100 | 65 | 190 | 600 | 1800 | |
| 150 | 70 | 200 | 650 | 1850 | |

TAB.4b – Pt100, Pt1K, Ni100, Ni1K Input scale settings

| Zero | | Full Scale | | | |
|-------------------|---------|-----------------------|-----------------------|-----------------------|-----------------------|
| SW1 5 6 7 8 °C | | SW2 3 4 5 6 7 8 °C | SW2 3 4 5 6 7 8 °C | SW2 3 4 5 6 7 8 °C | SW2 3 4 5 6 7 8 °C |
| Default | Default | 75 | 210 | 370 | |
| -200 | 0 | 80 | 220 | 380 | |
| -150 | 5 | 85 | 230 | 390 | |
| -100 | 10 | 90 | 240 | 400 | |
| -50 | 15 | 95 | 250 | 425 | |
| -40 | 20 | 100 | 260 | 450 | |
| -30 | 25 | 110 | 270 | 475 | |
| -20 | 30 | 120 | 280 | 500 | |
| -10 | 35 | 130 | 290 | 525 | |
| 0 | 40 | 140 | 300 | 550 | |
| 5 | 45 | 150 | 310 | 600 | |
| 10 | 50 | 160 | 320 | 650 | |
| 20 | 55 | 170 | 330 | 700 | |
| 30 | 60 | 180 | 340 | 750 | |
| 50 | 65 | 190 | 350 | 800 | |
| 100 | 70 | 200 | 360 | 850 | |

TAB.4c – Resistance < 2KOhm Input scale settings

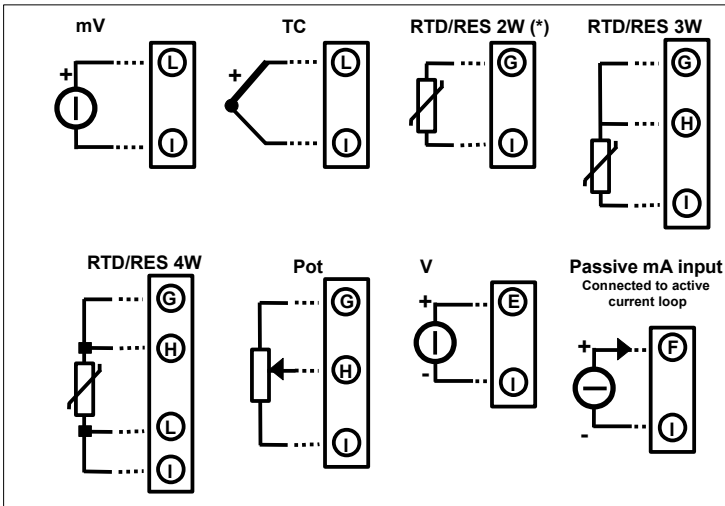
| Zero | | Full Scale | | | |
|------------------|---------|----------------------|----------------------|----------------------|----------------------|
| SW1 5 6 7 8 Ω | | SW2 3 4 5 6 7 8 Ω | SW2 3 4 5 6 7 8 Ω | SW2 3 4 5 6 7 8 Ω | SW2 3 4 5 6 7 8 Ω |
| Default | Default | 800 | 1150 | 1600 | |
| 0 | 500 | 820 | 1175 | 1650 | |
| 150 | 520 | 840 | 1200 | 1700 | |
| 200 | 540 | 860 | 1225 | 1750 | |
| 250 | 560 | 880 | 1250 | 1800 | |
| 300 | 580 | 900 | 1275 | 1850 | |
| 350 | 600 | 920 | 1300 | 1900 | |
| 400 | 620 | 940 | 1325 | 1950 | |
| 450 | 640 | 960 | 1350 | 2000 | |
| 500 | 660 | 980 | 1375 | 2000 | |
| 550 | 680 | 1000 | 1400 | 2000 | |
| 600 | 700 | 1025 | 1425 | 2000 | |
| 650 | 720 | 1050 | 1450 | 2000 | |
| 700 | 740 | 1075 | 1475 | 2000 | |
| 750 | 760 | 1100 | 1500 | 2000 | |
| 800 | 780 | 1125 | 1550 | 2000 | |

TAB.4g – Volt Input scale settings

| Zero | | Full Scale | | SW2 | | SW2 | | SW2 | |
|---------|------|-------------|------|-------------|------|-------------|------|-------------|------|
| SW1 | Volt | SW2 | Volt | SW2 | Volt | SW2 | Volt | SW2 | Volt |
| 5 6 7 8 | | 3 4 5 6 7 8 | | 3 4 5 6 7 8 | | 3 4 5 6 7 8 | | 3 4 5 6 7 8 | |
| Default | | Default | | 3.4 | | 6.6 | | 9.8 | |
| 0 | | 0.5 | | 3.6 | | 6.8 | | 10 | |
| 1.5 | | 0.6 | | 3.8 | | 7 | | 10 | |
| 2 | | 0.8 | | 4 | | 7.2 | | 10 | |
| 2.5 | | 1 | | 4.2 | | 7.4 | | 10 | |
| 3 | | 1.2 | | 4.4 | | 7.6 | | 10 | |
| 3.5 | | 1.4 | | 4.6 | | 7.8 | | 10 | |
| 4 | | 1.6 | | 4.8 | | 8 | | 10 | |
| 4.5 | | 1.8 | | 5 | | 8.2 | | 10 | |
| 5 | | 2 | | 5.2 | | 8.4 | | 10 | |
| 5.5 | | 2.2 | | 5.4 | | 8.6 | | 10 | |
| 6 | | 2.4 | | 5.6 | | 8.8 | | 10 | |
| 6.5 | | 2.6 | | 5.8 | | 9 | | 10 | |
| 7 | | 2.8 | | 6 | | 9.2 | | 10 | |
| 7.5 | | 3 | | 6.2 | | 9.4 | | 10 | |
| 8 | | 3.2 | | 6.4 | | 9.6 | | 10 | |

CONNECTIONS

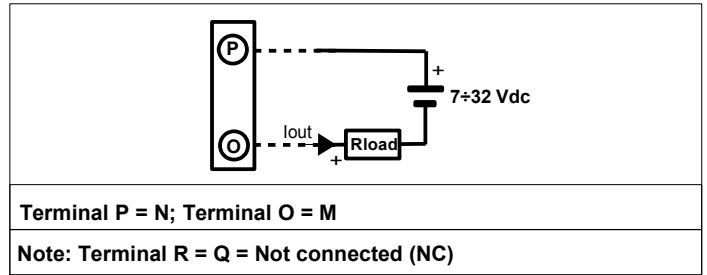
INPUT CONNECTION



Terminal I = GND INPUT

Note: if the device is programmed by dip switches for RTD / RES with 2 wires connection make a short circuit between the terminals I and L and the terminals G and H.

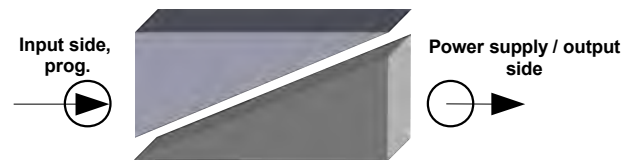
POWER SUPPLY / OUTPUT CONNECTION



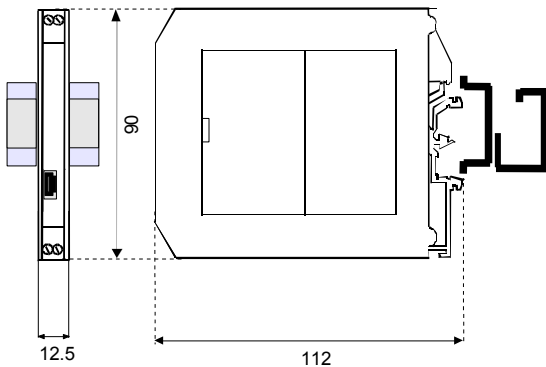
Terminal P = N; Terminal O = M

Note: Terminal R = Q = Not connected (NC)

ISOLATION STRUCTURE



DIMENSIONS (mm)



INSTALLATION INSTRUCTIONS

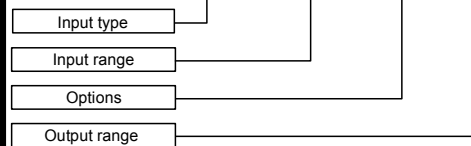
The device DAT 4535 is suitable for DIN rail mounting. It is necessary to install the device in a place without vibrations; avoid to routing conductors near power signal cables .

HOW TO ORDER

The device is provided as requested on the Customer's order. Refer to the section "Programming" to determine the input ranges. In case of the configuration is not specified, the parameters must be set by the user.

ORDER CODE EXAMPLE

DAT4535 /Pt100 /0 ÷ 200 °C /3 wires /4 ÷ 20 mA



The symbol reported on the product indicates that the product itself must not be considered as a domestic waste. It must be brought to the authorized recycle plant for the recycling of electrical and electronic waste. For more information contact the proper office in the user's city , the service for the waste treatment or the supplier from which the product has been purchased.