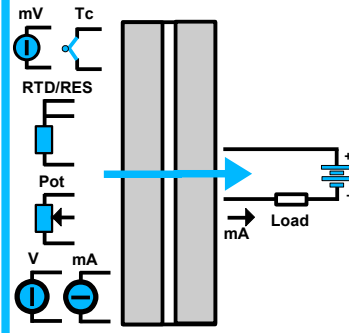


FEATURES

- Universal configurable input for: mV, Tc, RTD, Res, Potentiometer, V and mA
- Configurable current output from 4 to 20 mA
- Configurable by dip-switch or PC
- 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 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.

The DAT 4535 is in compliance with the Directive 2004/108/EC on the Electromagnetic Compatibility.

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	± 0.1 % f.s.	Supply voltage	7 .. 32 Vdc	Tc, mV	± 0.05 % f.s.	Reverse polarity protection	60 Vdc max
TC (CJC int./ext.)				Input impedance				Load characteristic - Rload (maximum load value on current loop per power supply value)			
J	-200°C	1200°C	100°C	TC, mV	>= 10 MΩ						
K	-200°C	1300°C	100°C	Volt	>= 1 MΩ						
S	0°C	1750°C	400°C	mA	~22 Ω	ISOLATION					
R	0°C	1750°C	400°C	RTD excitation current				Input – Power supply/Out 1500 Vac, 50 Hz, 1 min.			
B	0°C	1850°C	400°C	RTD,Res 400 uA				TEMPERATURE & HUMIDITY			
E	-200°C	1000°C	100°C	Line resistance influence (1)				Operative Temperature -20°C .. +70°C			
T	-200°C	400°C	100°C	TC, mV <=0.8 uV/Ohm				Storage Temperature -40°C.. +85°C			
N	-200°C	1300°C	100°C	RTD 3 wires 0.05%/Ω (50Ω max balanced)				Humidity (not condensed) 0 .. 90 %			
Voltage				Thermal drift (1)				HOUSING			
mV	-100 mV	+90 mV	5 mV	Full Scale ± 0.01% / °C				Material Self extinguish plastic			
mV	-100 mV	+200 mV	10 mV	CJC ± 0.01% / °C				Mounting on DIN rail in compliance with EN-50022 and EN-50035			
mV	-100 mV	+800 mV	20 mV	CJC Comp. ± 0.5°C				Weight about 90 g.			
Volt	-10 V	10 V	1 V	OUTPUT				EMC (for industrial environments)			
RTD (2, 3, 4 wires)				Output type				Immunity EN 61000-6-2			
Pt100	-200°C	850°C	50°C	Current	4 mA	20 mA	4 mA	Emission EN 61000-6-4			
Pt1000	-85°C	185°C	30°C	Output calibration							
Ni100	-60°C	180°C	50°C	Current ± 7 uA							
Ni1000	-60°C	150°C	30°C	Burn-out values							
RES. (2, 3, 4 wires)				Max. output value 21.8 mA							
0 Ω	0 Ω	500 Ω	50 Ω	Min. output value 2.4 mA							
0 Ω	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 %	0 %	100 %	10 %								
Current											
0 mA	0 mA	20 mA	1 mA								
Input calibration (1)											
mV, TC	> of ±0.1% f.s. or ±12 uV										
RTD	> of ±0.1% f.s. or ±0.2°C										
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										

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

PROGRAMMING

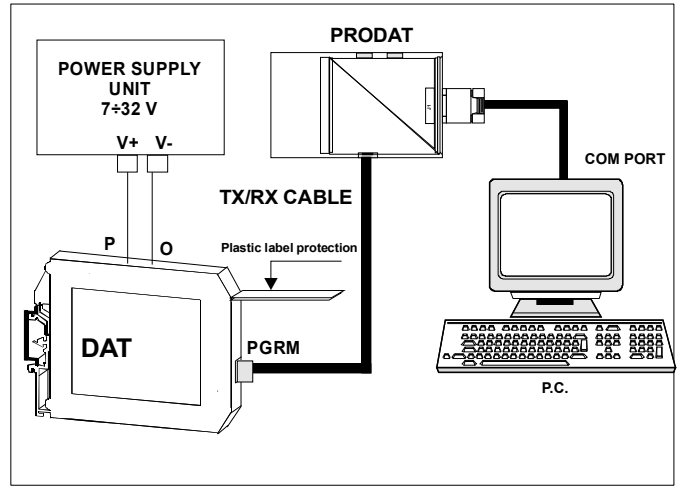
CONFIGURATION BY PC

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.

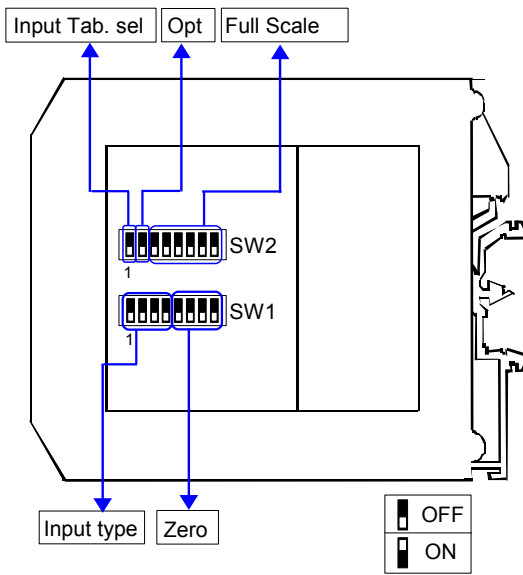
To configure the device follow the next steps:

- 1) Power-on the device.
- 2) Open the protection plastic label on the front of the device.
- 3) Connect the interface PRODAT to the PC (COM port) and to the device (PGRM connector).
- 4) Open DATESOFT.
- 5) Select the COM port in use.
- 6) Click on "Open COM".
- 7) Click on the icon "Program".
- 8) Set the programming data.
- 9) Click on the icon "Write" to send the programming data to the device.



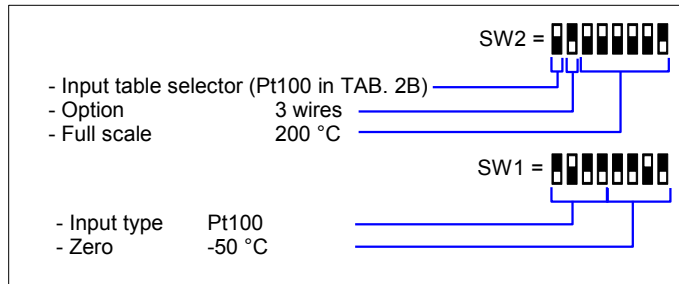
Warning: during these operations the device must always be powered and the TX/RX cable always connected.
For information about DATESOFT refer to the software's user guide.

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	90 mV
0 0 0 0	0 0 0 0	200 mV
0 0 0 0	0 0 0 0	800 mV
0 0 0 0	0 0 0 0	10 V
0 0 0 0	0 0 0 0	20 mA
0 0 0 0	0 0 0 0	-----
0 0 0 0	0 0 0 0	-----
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
0 0 0 0	0 0 0 0	-----
0 0 0 0	0 0 0 0	-----

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.4d – Resistance < 500 ohm 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	□□□□□□	125	□□□□□□	210	□□□□□□	370
□□□□	0	□□□□□□	50	□□□□□□	130	□□□□□□	220	□□□□□□	380
□□□□	10	□□□□□□	55	□□□□□□	135	□□□□□□	230	□□□□□□	390
□□□□	20	□□□□□□	60	□□□□□□	140	□□□□□□	240	□□□□□□	400
□□□□	30	□□□□□□	65	□□□□□□	145	□□□□□□	250	□□□□□□	410
□□□□	40	□□□□□□	70	□□□□□□	150	□□□□□□	260	□□□□□□	420
□□□□	50	□□□□□□	75	□□□□□□	155	□□□□□□	270	□□□□□□	430
□□□□	75	□□□□□□	80	□□□□□□	160	□□□□□□	280	□□□□□□	440
□□□□	100	□□□□□□	85	□□□□□□	165	□□□□□□	290	□□□□□□	450
□□□□	125	□□□□□□	90	□□□□□□	170	□□□□□□	300	□□□□□□	460
□□□□	150	□□□□□□	95	□□□□□□	175	□□□□□□	310	□□□□□□	470
□□□□	175	□□□□□□	100	□□□□□□	180	□□□□□□	320	□□□□□□	480
□□□□	200	□□□□□□	105	□□□□□□	185	□□□□□□	330	□□□□□□	490
□□□□	225	□□□□□□	110	□□□□□□	190	□□□□□□	340	□□□□□□	500
□□□□	250	□□□□□□	115	□□□□□□	195	□□□□□□	350	□□□□□□	500
□□□□	300	□□□□□□	120	□□□□□□	200	□□□□□□	360	□□□□□□	500

TAB.4e – Potentiometer Input scale settings

Zero		Full Scale							
SW1 5 6 7 8	%	SW2 3 4 5 6 7 8	%	SW2 3 4 5 6 7 8	%	SW2 3 4 5 6 7 8	%	SW2 3 4 5 6 7 8	%
□□□□	Default	□□□□□□	Default	□□□□□□	34	□□□□□□	66	□□□□□□	98
□□□□	0	□□□□□□	5	□□□□□□	36	□□□□□□	68	□□□□□□	100
□□□□	15	□□□□□□	6	□□□□□□	38	□□□□□□	70	□□□□□□	100
□□□□	20	□□□□□□	8	□□□□□□	40	□□□□□□	72	□□□□□□	100
□□□□	25	□□□□□□	10	□□□□□□	42	□□□□□□	74	□□□□□□	100
□□□□	30	□□□□□□	12	□□□□□□	44	□□□□□□	76	□□□□□□	100
□□□□	35	□□□□□□	14	□□□□□□	46	□□□□□□	78	□□□□□□	100
□□□□	40	□□□□□□	16	□□□□□□	48	□□□□□□	80	□□□□□□	100
□□□□	45	□□□□□□	18	□□□□□□	50	□□□□□□	82	□□□□□□	100
□□□□	50	□□□□□□	20	□□□□□□	52	□□□□□□	84	□□□□□□	100
□□□□	55	□□□□□□	22	□□□□□□	54	□□□□□□	86	□□□□□□	100
□□□□	60	□□□□□□	24	□□□□□□	56	□□□□□□	88	□□□□□□	100
□□□□	65	□□□□□□	26	□□□□□□	58	□□□□□□	90	□□□□□□	100
□□□□	70	□□□□□□	28	□□□□□□	60	□□□□□□	92	□□□□□□	100
□□□□	75	□□□□□□	30	□□□□□□	62	□□□□□□	94	□□□□□□	100
□□□□	80	□□□□□□	32	□□□□□□	64	□□□□□□	96	□□□□□□	100

TAB.4f – mA Input scale settings

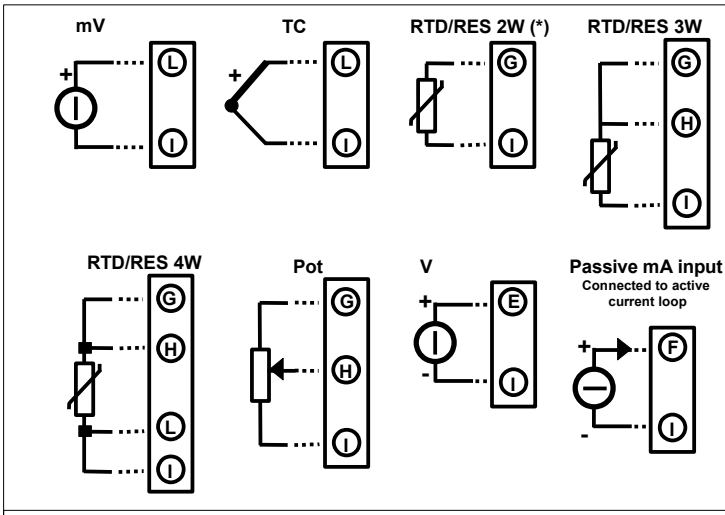
Zero		Full Scale							
SW1 5 6 7 8	mA	SW2 3 4 5 6 7 8	mA	SW2 3 4 5 6 7 8	mA	SW2 3 4 5 6 7 8	mA	SW2 3 4 5 6 7 8	mA
□□□□	Default	□□□□□□	Default	□□□□□□	8	□□□□□□	11.5	□□□□□□	16
□□□□	0	□□□□□□	5	□□□□□□	8.2	□□□□□□	11.75	□□□□□□	16.5
□□□□	1.5	□□□□□□	5.2	□□□□□□	8.4	□□□□□□	12	□□□□□□	17
□□□□	2	□□□□□□	5.4	□□□□□□	8.6	□□□□□□	12.25	□□□□□□	17.5
□□□□	2.5	□□□□□□	5.6	□□□□□□	8.8	□□□□□□	12.5	□□□□□□	18
□□□□	3	□□□□□□	5.8	□□□□□□	9	□□□□□□	12.75	□□□□□□	18.5
□□□□	3.5	□□□□□□	6	□□□□□□	9.2	□□□□□□	13	□□□□□□	19
□□□□	4	□□□□□□	6.2	□□□□□□	9.4	□□□□□□	13.25	□□□□□□	19.5
□□□□	4.5	□□□□□□	6.4	□□□□□□	9.6	□□□□□□	13.5	□□□□□□	20
□□□□	5	□□□□□□	6.6	□□□□□□	9.8	□□□□□□	13.75	□□□□□□	20
□□□□	5.5	□□□□□□	6.8	□□□□□□	10	□□□□□□	14	□□□□□□	20
□□□□	6	□□□□□□	7	□□□□□□	10.25	□□□□□□	14.25	□□□□□□	20
□□□□	6.5	□□□□□□	7.2	□□□□□□	10.5	□□□□□□	14.5	□□□□□□	20
□□□□	7	□□□□□□	7.4	□□□□□□	10.75	□□□□□□	14.75	□□□□□□	20
□□□□	7.5	□□□□□□	7.6	□□□□□□	11	□□□□□□	15	□□□□□□	20
□□□□	8	□□□□□□	7.8	□□□□□□	11.25	□□□□□□	15.5	□□□□□□	20

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	Default	6.6	Default	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

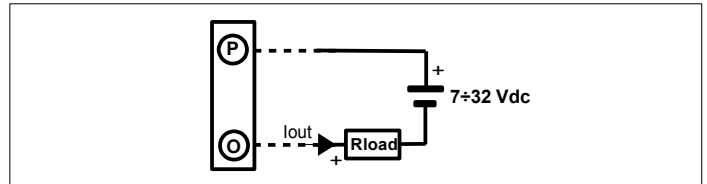
INPUT CONNECTION



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



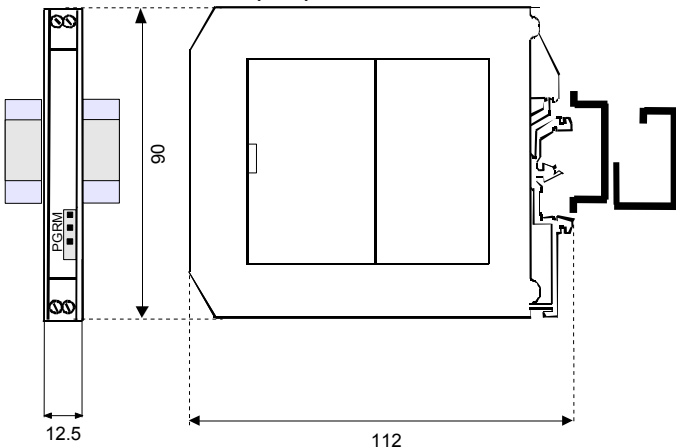
Terminal P = N; Terminal O = M

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

ISOLATION STRUCTURE



DIMENSIONS (mm) & CONNECTOR PGRM



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

