

HD778-TCAL

PC CONTROLLED POWER GENERATOR FOR TRANSMITTERS FOR K, J, T, N THERMOCOUPLES FOR PYRANOMETERS AND CONVERTERS/AMPLIFIERS

HD778-TCAL is a power generator in the $-60\text{mV} \dots +60\text{mV}$ range, specifically developed to be configured in the HD778TR1, HD978TR1, HD978TR2 transmitters' functioning range for temperature thermocouples and for the signal converters/amplifiers HD978TR3 and HD978TR4. The device should be connected to an RS232C PC's serial port and is provided with dedicated software that guides the user during configuration of the transmitter. The same software allows the already configured transmitters to be checked, generating a controlled voltage corresponding to a set temperature or solar radiation value.

The supported thermocouples are **K, J, T** and **N**.

DELTALOG7 Setup

To install the program, insert the Cd-Rom in its drive, select Start – Run – Digit D:\start.exe (“D” indicates the Cd-Rom drive) and press OK.

Follow the on-screen instructions. During the setup procedure, the software licence agreement will be viewed: click ACCEPT to accept the agreement terms and continue with the setup operation. To add the program icon on your desktop, select “Shortcut on desktop” at the end of the setup.

On the same Cd-Rom there is a copy of the manual in PDF format, which can be read using Acrobat Reader® (this program can be downloaded free of charge from www.adobe.com/acrobat/ site).

Uninstall DELTALOG7

When setting-up DeltaLog7 software, the “Uninstall DeltaLog7” command will be created in the DeltaOhm folder. Run it to uninstall the program and all of its components.

Connection and starting the program

Connect the tool to the PC's first available serial port and then start the DeltaLog7 application by double clicking on the PC's desktop icon.

In the first screen select one of the two operating modes for the HD778-TCAL:

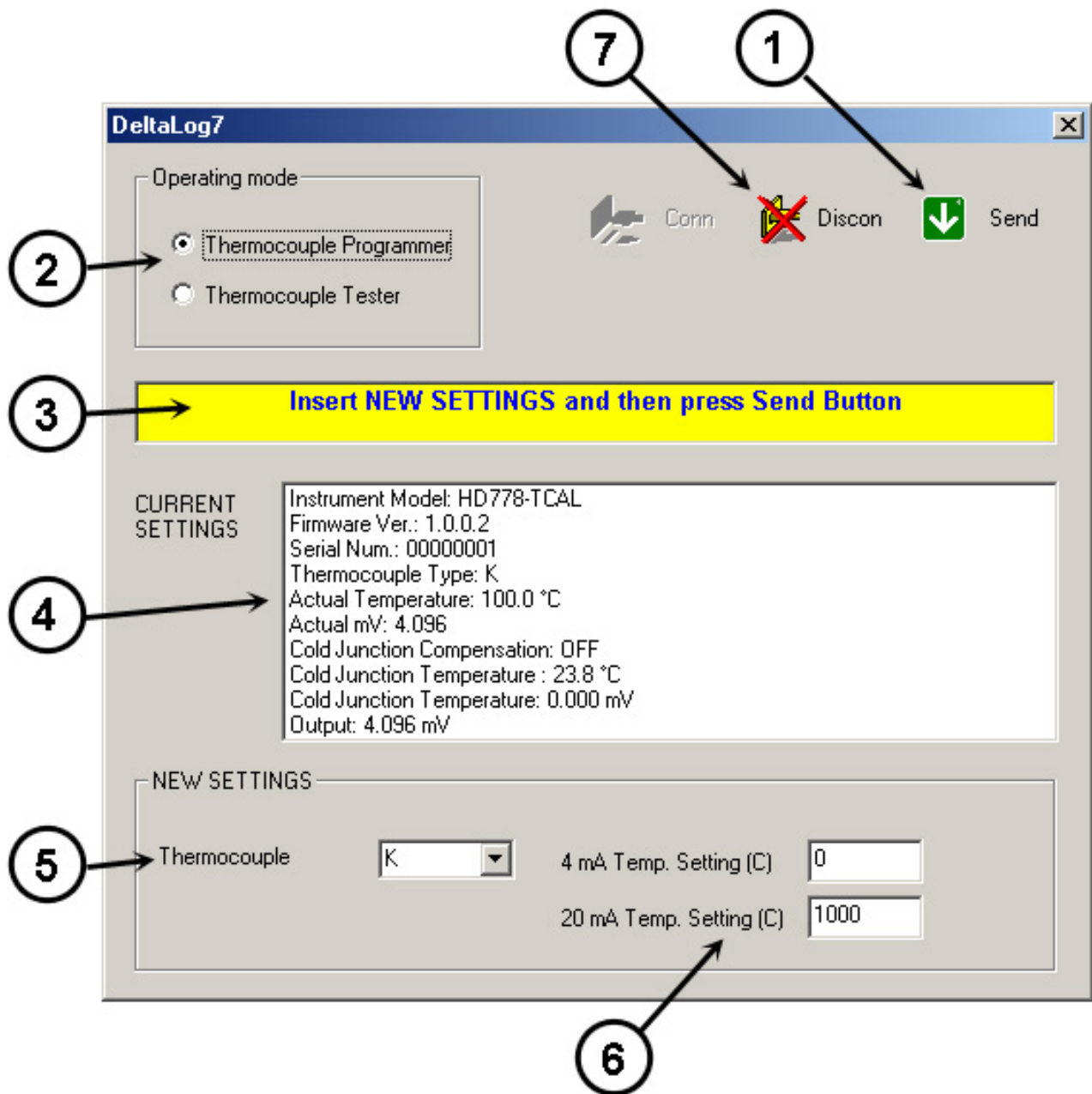
- “Thermocouple” in order to program the working range and the functioning check of transmitters for thermocouples.
- “Pyranometer” in order to program and check the transmitters HD978TR3 and HD978TR4 used together with pyranometers.
- "mV simulator" in order to program and check the transmitters HD978TR3 and HD978TR4 used as signal converters/amplifiers.

Press the “Connection” button to connect.



If the message "*Instrument not detected*" is displayed, press the connection key again. The following paragraphs describe the window which appears as a result of the choice made.

Using HD778-TCAL as a programmer of transmitters for thermocouples



Select the following option: ② "Operating Mode = Thermocouple Programmer".

The yellow dialog box ③ reports the operations to be performed, while dialog box number ④ describes the current settings. This latter dialog box is updated every 15 seconds.

The type of thermocouple set on the transmitter to be programmed can be selected in menu ⑤, and in dialog box ⑥ the temperature values must be entered in the text boxes, in degrees Celsius, corresponding to the top (4mA) and the bottom of the scale (20mA). Please notice that the scale can also be inverse, in other words, the temperature value for 4mA can be higher than for 20mA.

Once the settings are complete, press the "Send" ① button in order to start the programming process. From this moment onwards the DeltaLog7 software guides the operator through how to perform all the operations by illustrating them all in sequence.

Note: As requested by the programming procedure for transmitters for thermocouples series HD778TR1, HD978TR1 and HD978TR2, the cold coupling compensation is disabled, which means that the temperature of the cold coupling is supposed to be equal to 0°C.

Using HD778-TCAL as a tester of transmitters for thermocouples

Select the operating mode ② "Operating Mode = Thermocouple Tester". Now HD778-TCAL works as an mV generator and it can be used to test the correct functioning of the thermocouple devices.

The type of thermocouple (**K**, **J**, **T** or **N**) and the temperature in degrees Celsius must be set.

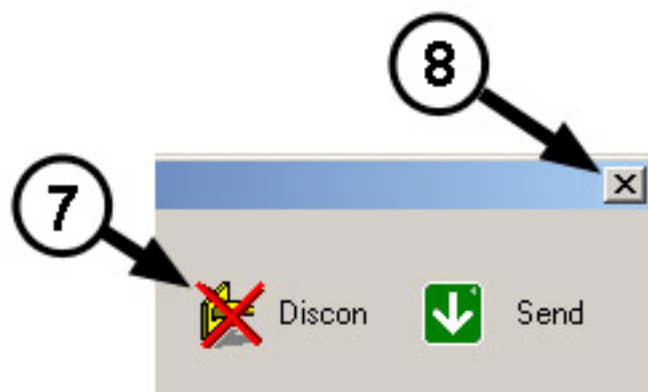


In this case the cold coupling compensation is enabled and the temperature is that measured by the HD778-TCAL internal sensor.

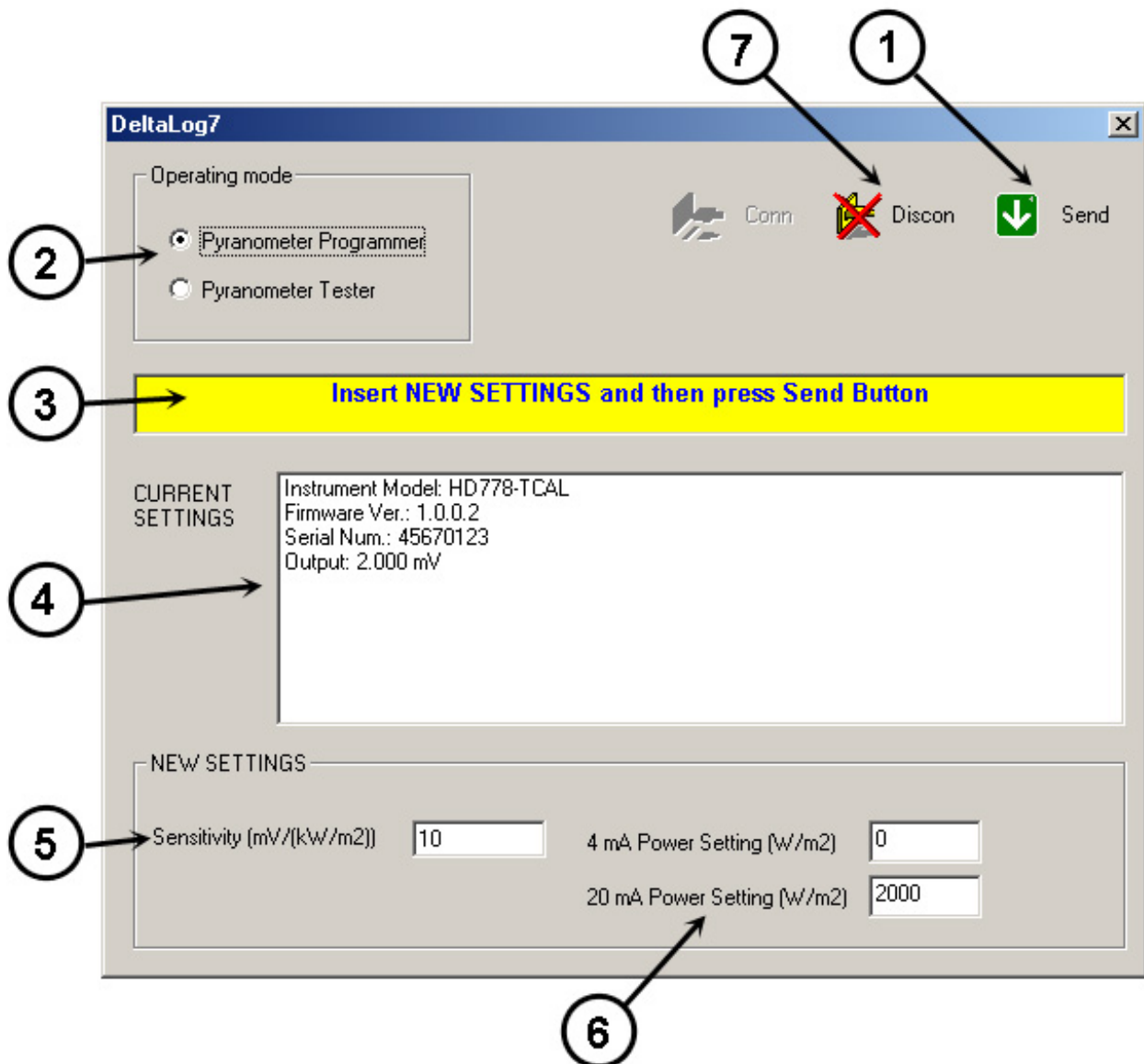
To send a new value, press the Send ① button.

Closing the DeltaLog7 application

When the operations are complete, press the "Disconnect" ⑦ button and exit the application with the CLOSE ⑧ button.



Using HD778-TCAL as a programmer of transmitters for pyranometers



Select the following option: "Operating Mode = Pyranometer Programmer" ②.

The dialog box number ④ describes the current settings. This dialog box is updated every 15 seconds.

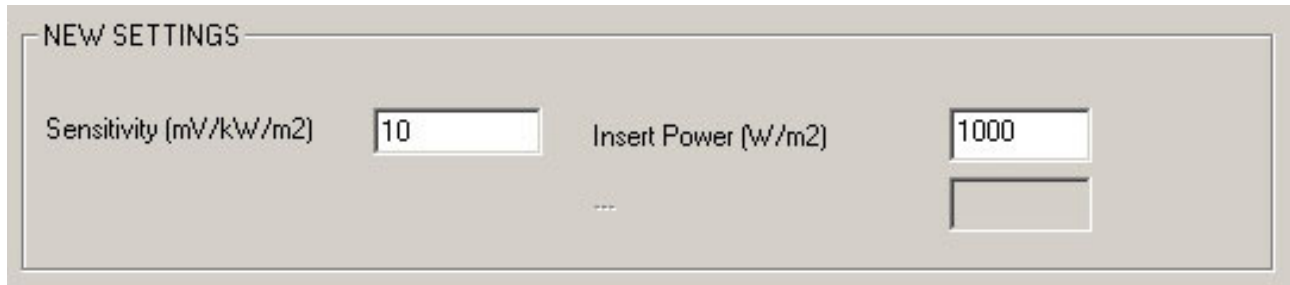
The actual sensitivity of the pyranometer connected to the transmitter (from 5 to 40 mV/(kW/m2)) can be set in menu ⑤, and in dialog box ⑥ the solar radiation values in W/m2, corresponding to the top (4mA) and the bottom of the scale (20mA) must be entered in the text boxes. Please notice that the scale can also be inverse, in other words, the radiation value for 4mA can be higher than for 20mA.

Once the settings are complete, press the "Send" ① button in order to start the programming process. From this moment onwards the DeltaLog7 software guides the operator through how to perform all the operations by illustrating them all in sequence.

Using 'HD778-TCAL as a tester of transmitters for HD978TR3 pyranometers

Select the operating mode ② "Operating Mode = Pyranometer Tester". Now HD778-TCAL works as an mV generator and it can be used to test the correct functioning of transmitters for HD978TR3 pyranometers.

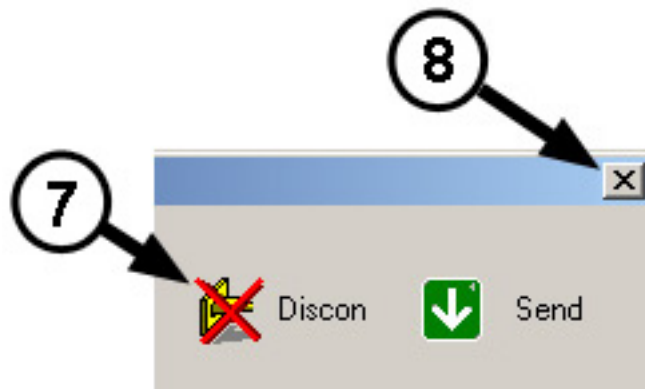
It is necessary to set the actual sensitivity values of the pyranometer connected to the transmitter (from 5 to 40 mV/(kW/m²)) and the solar radiation values in W/m².



To send a new value, press the Send ① button.

Closing the DeltaLog7 application

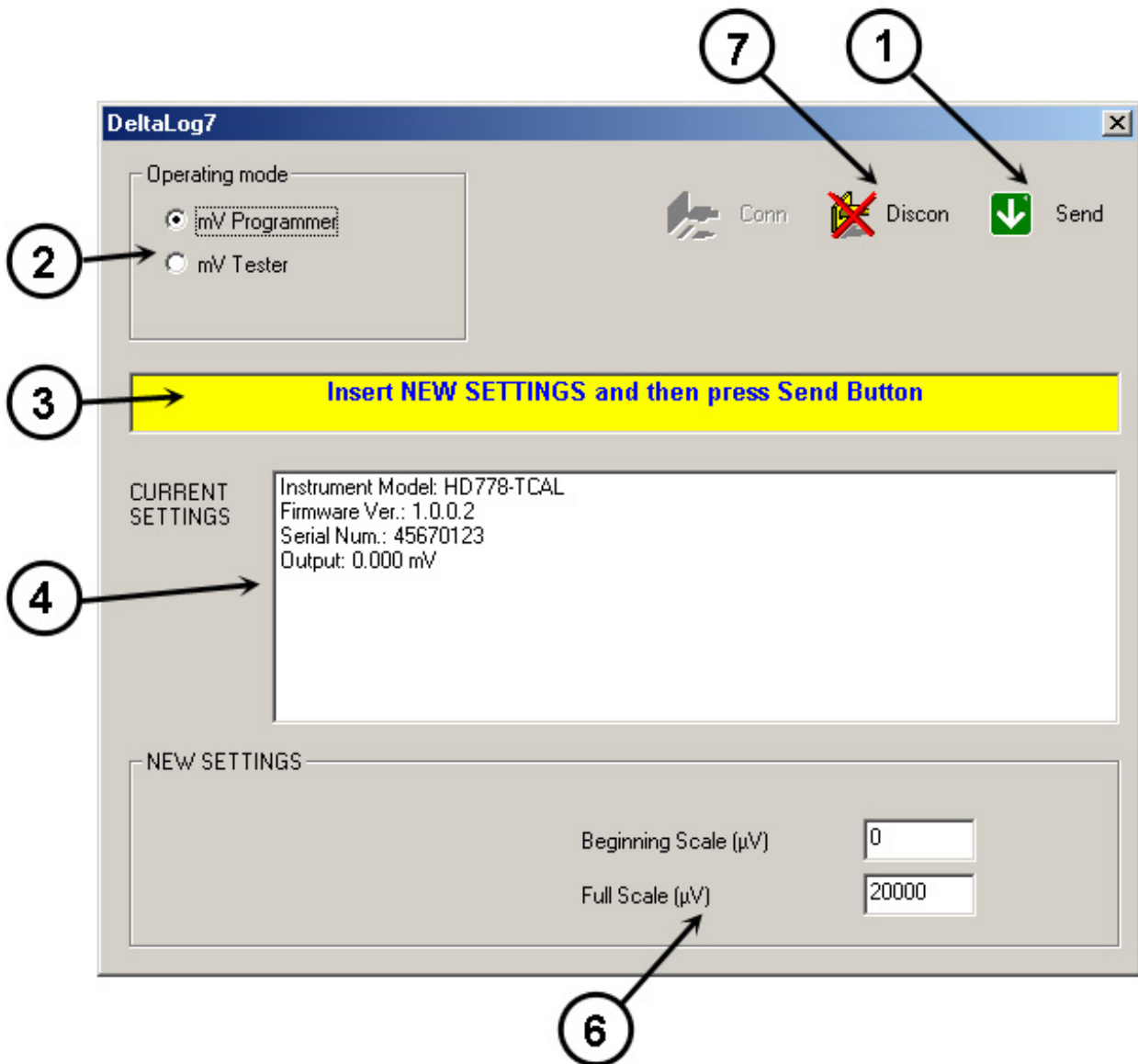
When the operations are complete, press the "Disconnect" ⑦ button and exit the application with the CLOSE ⑧ button.



Function of the Disconnect button

The ⑦ Disconnect button sets HD778-TCAL in an operating condition of low consumption. When the device is connected to the PC and is not used for at least 4 minutes, it automatically switches to this low consumption condition in order to reduce the internal battery consumption to the minimum. When the application is closed with the CLOSE ⑧ button, the device also turns off automatically.

Using HD778-TCAL as a programmer for converters/amplifiers HD978TR3 and HD978TR4



Select the option: ② "Operating Mode = mV Programmer"

The dialog box number ④ describes the current settings. This dialog box is updated every 15 seconds.

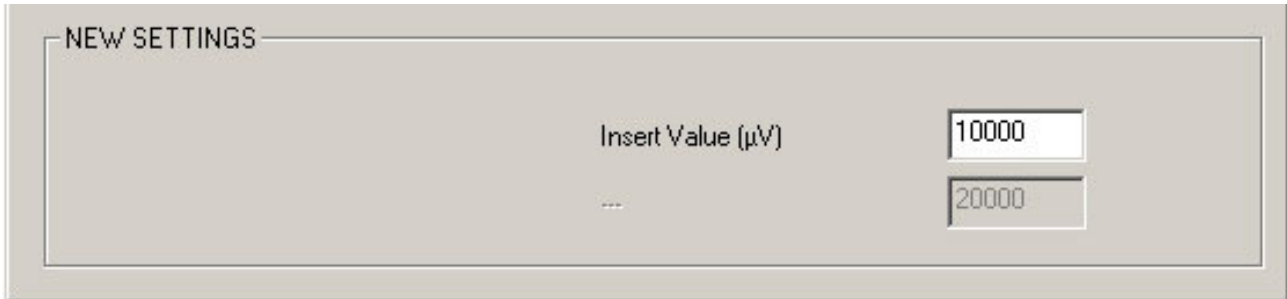
The values corresponding to the beginning of scale (4mA or 0V) and to the full scale (20mA or 10V) of the converter can be set in dialog box ⑥. Please notice that the scale can also be inverse, in other words the voltage value at 4mA (or 0V) can be higher than the one at 20mA (or 10V). The values to be set have to be in μV (1mV correspond to 1000 μV): if, for example, the value 20mV has to be set, then 20000 will be entered (20x1000=20000).

Once the settings are completed, press the "Send" ① button in order to start the programming process. From this moment onwards the DeltaLog7 software guides the operator through how to perform all the operations by illustrating them all in sequence.

Using HD778-TCAL as a tester for converters / amplifiers HD978TR3 and HD978TR4

Select the operating mode ② "Operating Mode = mV Tester". Now HD778-TCAL works as an mV generator and it can be used to test the correct functioning of converters/amplifiers with mV input HD978TR3 and HD978TR4.

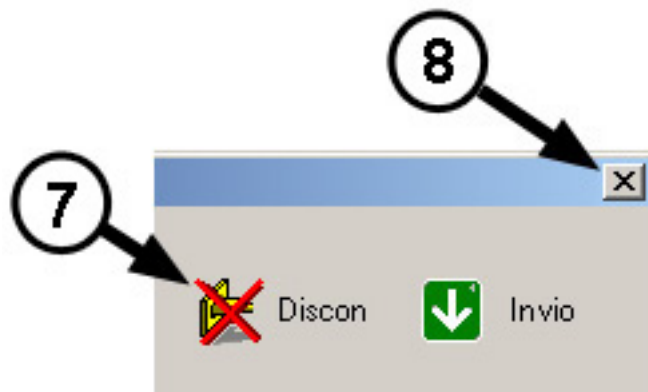
Set the voltage value to generate, expressed in μV : 1mV correspond to 1000 μV and if, for example, the value 10mV has to be set, then 10000 will be entered.



To send a new value, press the Send ① button.

Closing the DeltaLog7 application

When the operations are complete, press the "Disconnect" ⑦ button and exit the application with the CLOSE ⑧ button.



Function of the Disconnect button

The ⑦ Disconnect button sets HD778-TCAL in an operating condition of low consumption: when the device is connected to the PC and is not used for at least 4 minutes, it automatically switches to this low consumption condition in order to reduce the internal battery consumption to the minimum. When the application is closed with the CLOSE ⑧ button, the device also turns off automatically.

Technical characteristics of HD778-TCAL

INPUT	
Type	RS232C serial connection
Baudrate	9600 baud
Type of connection	Female connector SUB-D 9 poles

OUTPUT	
Voltage range	–60mV ... +60mV
Supported thermocouples	K, J, T and N
Sensitivity of pyranometers	5 ... 40 μ V/(W/m ²)

Power	Lithium battery 3.6V
Autonomy	200 hours of continuous use
Operating temperature	0 ... 60°C
Software	DeltaLog7