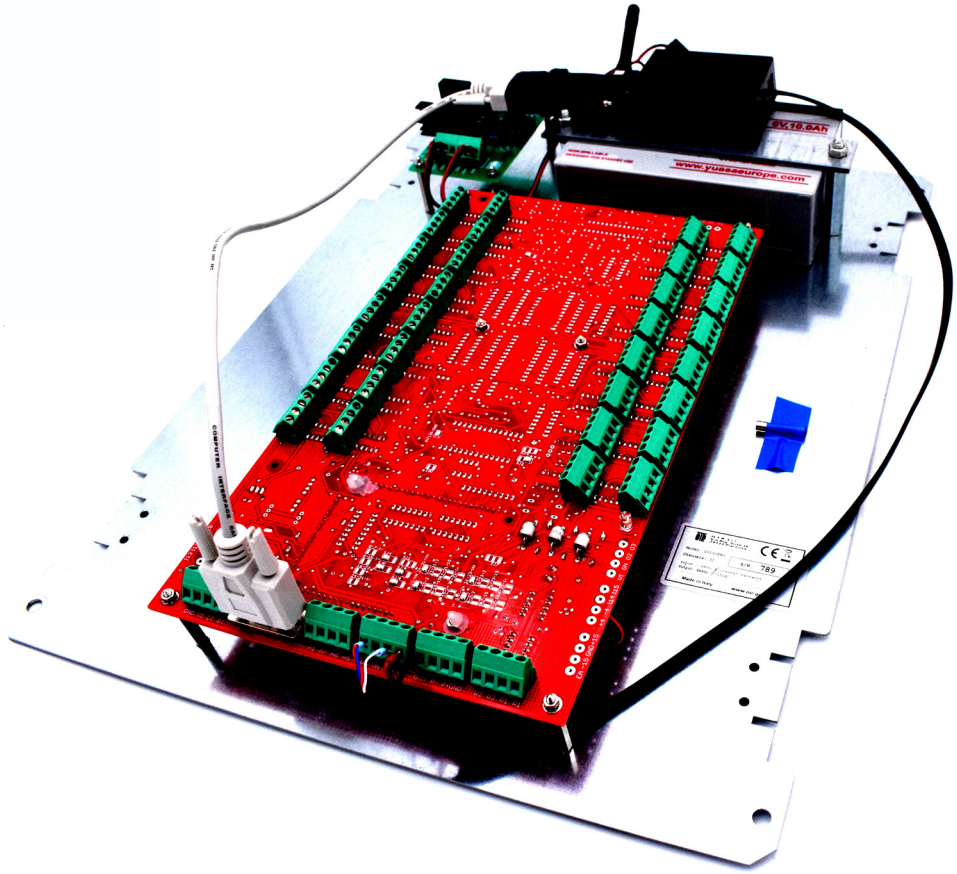

Datalogger D3200PRO

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Numero 019b
Rev. 02 del 07/07/2022

STRUMENTI E MISURE GEOTECNICHE
E STRUTTURALI

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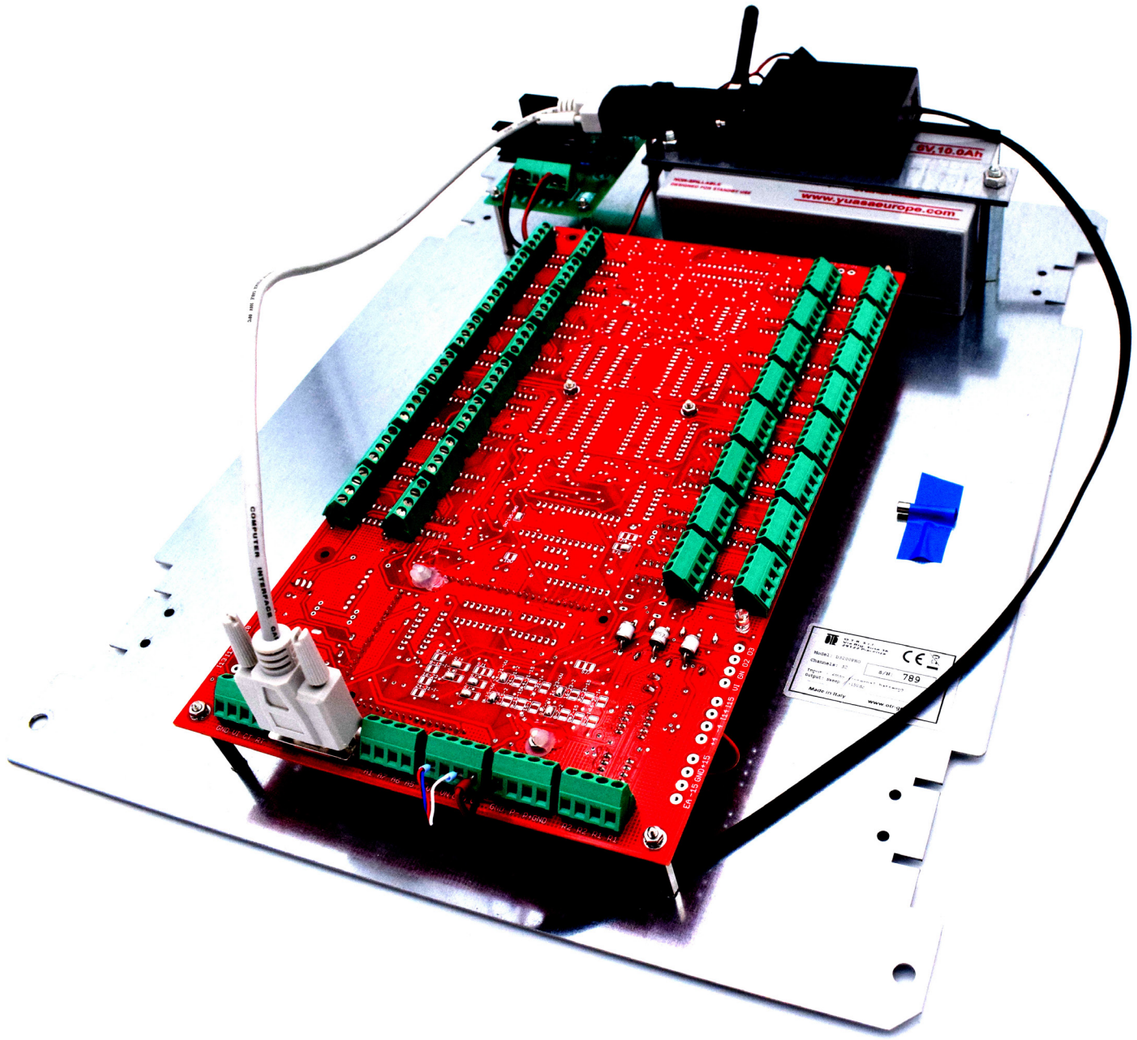
Datalogger D3200PRO



WARNINGS

The instrument should be used only for the application for which it was built and designed, OTR disclaims any responsibility for improper use of the instrumentation.

Use only the power supply and cables provided;

Do not use the datalogger in the presence of potentially explosive gases;

Do not connect the datalogger to instrumentation placed in waters where electrical leakage is occurring;

Use protective gloves when using the measuring cable. Avoid handling the cable quickly without gloves.

Furthermore

- Do not open the instrument: contact the manufacturer for any repairs;
- Keep out of the reach of children;
- Do not make instrument connections with wet or damp hands;
- When charging, do not connect the datalogger to the probe or personal computer via USB;
- Clean the instrument and its cable with alcohol or water; Do not use acetone or aggressive liquids for plastics or labels;

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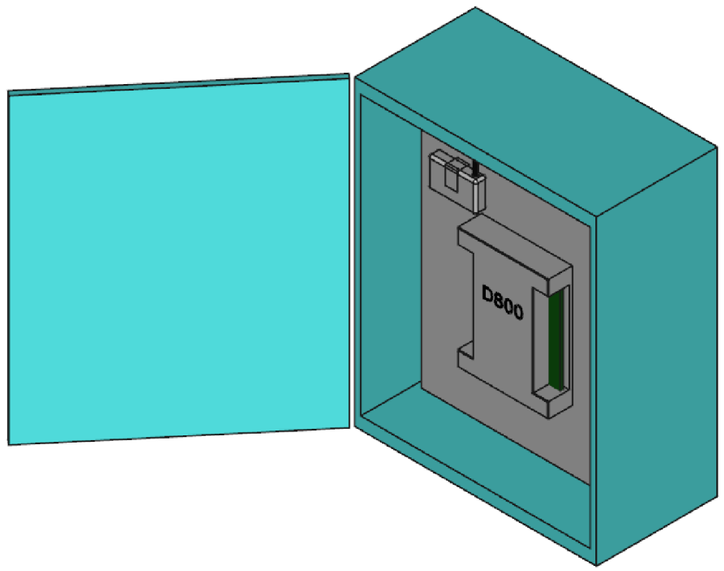
Application

The 32 channel Dataloggers in the D3200PRO series are suitable for monitoring in Geotechnical, Structural and Environmental fields with mV or mA output sensors.

The following instruments can be acquired:
- Electric piezometers
- Surface clinometers
- Crackmeters and joint gauges
- Temperature sensors
- Conductivity meters.



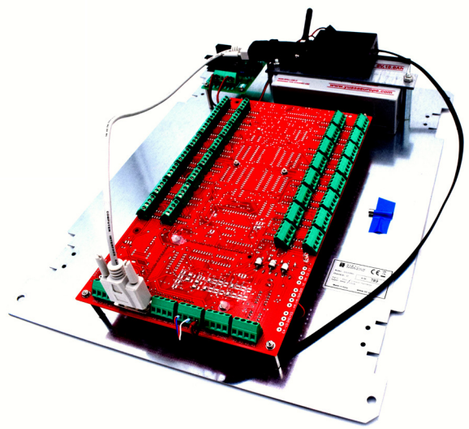
Model and Identification

Each Datalogger has nameplates bearing:

- Serial number with associated calibration report;
- Model indication;
- Indication of power supply;
- Input/Output

Technical Specification

Inputs	0-2V 4-20 mA
Outputs	+15V , 2.048 Vref
Power Supply	6V dc



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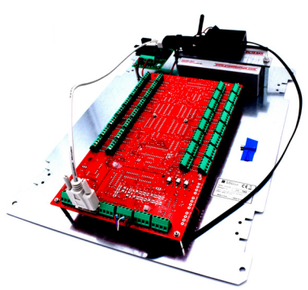
Connecting sensors

Vibrating rope version
Refer to the figure contained on page 11 to connect the vibrating rope sensors. The figure represents the datalogger's multiplexer board.
Before connecting the sensors to the datalogger, it is a good idea to previously check that they are working and properly wired upstream. For this it would be useful to have a handy hand reader with you to check the transducers before final wiring.

Connect the first vibrating cord sensor into the white-colored quadruple terminal indicated by CH0. The first (from the top) screw terminal should be connected to the positive pole of the sensor coil (COIL+) normally indicated with the color RED. The second terminal should be connected to the negative (COIL -) pole of the coil normally indicated with the color BLACK.
The OG3200PRO datalogger is capable of reading sensors with resonance frequency above 501 Hz. The universal sweep requires no software setting, and the data output is directly in Hz or Hz squared. For use with self-oscillating or different frequency sensors, consult OTR directly.
Terminals 3 and 4 should be connected to the thermistor associated with the sensor (normally color 3 to GREEN and 4 to WHITE).

The standard of thermistors read by the OG3200PRO datalogger is NTC 3Kohm. If the thermistor is not of this type wire it and then proceed with the software to read and record in Ohms. From these derive the data in degrees using the corresponding formulas for the NTC or PTC sensors used.
Repeat the operation with the next sensors, taking care to connect the quad clamps sequentially one after the other (if an empty quad terminal is left between two wired with sensors it too will be unnecessarily read and recorded).
Check that the screw terminals are tight and that the wires are not shorted.
After all sensors are wired, proceed with a continuous measurement to check that the whole operation was successful.



mV or 4-20mA version
To connect sensors with mV or 4-20 mA output, refer to the figure contained on page 24. The figure represents the datalogger's multiplexer board.

Before connecting the sensors to the datalogger, it is a good idea to previously check that they are working and properly wired upstream. For this it would be useful to have a handy hand reader with you to check the transducers before final wiring.
To connect sensors with mV output, locate the sensor power cable and connect it to the first slot (from the top) of the quad terminal. Wire the sensor ground (GND) wire to the second slot and finally the signal wire to the third slot. If the sensor is biaxial (ex: inclinometer) connect its second output to the third slot of the next quad terminal, taking care to return the power supply to the latter (so a loop must be made between the first slot of the quad terminal ex: X and the first slot of the next quad terminal ex: Y). In this way, the biaxial sensor is properly connected and powered. Check that the black 4-20 mA selection jumper is disconnected. The voltages read by the datalogger range from - 4,000 to + 4,000 Vdc. Higher or lower values will be reported as Full Scale and will not be read correctly.
To connect sensors with two-wire 4-20 mA output, locate the power cable (LOOP+) and the signal cable (LOOP-). Wire the LOOP+ cable to the first slot of the quad terminal and the LOOP- cable to the third. Check that the black 4-20 mA selection jumper is connected.

For connecting sensors with 4-20 mA three-wire output, locate the power cable (LOOP+), signal cable (LOOP-) and ground cable (GND). Wire the LOOP+ cable to the first slot of the quad terminal, the GND cable to the second and finally the LOOP- cable to the third. Check that the black 4-20 mA selection jumper is connected.
Check that the screw terminals are tight and that the wires are not shorted.
After all the sensors have been wired, proceed with a continuous measurement to check that the whole operation was successful.

For sensors with mV output, it is essential that the 100-ohm load resistor be disconnected by removing the black jumper. Incorrect use of this jumper results in unexpected low signal values
For sensors with mA output, it is essential that the 100 Ohm load resistor is connected by inserting the corresponding black jumper. Incorrect use of this jumper results in full-scale values. Correct use gives values of 0.400 volts for 4 mA and 2,000 volts for 20 mA found between slot 2 and slot 3 of the corresponding quad terminal.
The datalogger is capable in all cases of reading currents between - 40,000 and + 40,000 mA, and the instructions for 4-20 mA sensors also apply to 0-20 mA sensors.

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Data Mood

The screen allows access to the datalogger's clock parameters and acquisition enablement.
The Read Date and Write Date buttons allow the user to update the date entered in the datalogger on the screen and to edit the date within it if necessary, respectively. Editing is done by selecting the relevant data boxes and then pressing the write button.
At the bottom is a check that indicates whether the datalogger is enabled for conversion or not. If the check is selected the datalogger acquires at each conversion time starting when the program is closed or the cable is disconnected. If the check is not selected the datalogger is in stand-by and does not acquire. Its consumption in this state is about 200 µA.

Timers

With these options you set the acquisition times of the datalogger. Times below one minute cannot be set, and if channel scanning exceeds this time it is automatically delayed. For the version with GSM the acquisition times cannot be less than 10 minutes.

Also in the screen is the setting of pre-start times that control how long the datalogger waits before taking a sensor reading. For the vibrating string version, the preignition time is meaningless.

Channel Managing

In this screen you can manage the quantity of channels connected to the datalogger. The two buttons Read and Write are used to control these parameters. For each MUX, 0 to 16 active channels can be set. When changing these values, the software asks for confirmation because the memory is reset if the channel configuration is changed. This is necessary for internal dislocation of data in the datalogger. Therefore, before adding or removing channels remember to download the data.
If the value of channels is set to 0 the corresponding MUX is ignored and the memory possibility is increased as follows:
1 MUX 4000 data
2 MUX 2000 data
3 or 4 MUX 1000 data
The Clear Data Memory button allows the datalogger's memory buffer to be completely cleared.
The Reset Datalogger Completely button, on the other hand, allows the datalogger to be returned to its first power-up state. However, this operation results in the loss of all data and also all configurations and should only be used if strictly necessary.

Properties of sensors

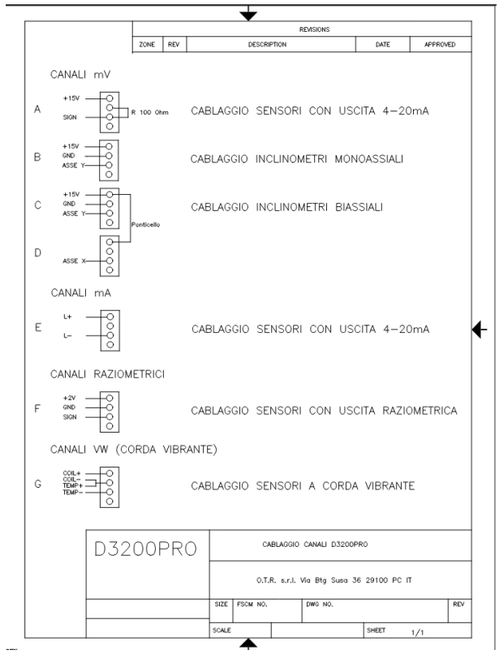
mV/mA version
The properties of the various sensors are accessed with the appropriate button.
Each sensor is identified by a number ranging from 0 to 15 and its MUX number ranging from 0 to 3.
For each sensor, a name and four numeric configuration parameters can be set, allowing for a given output in any physical format.

The reference formula is as follows:

$$\text{Out} = \left(\left(\frac{\text{In - Z\_V}}{\text{F\_V - Z\_V}}\right) \times (\text{F\_F - Z\_F})\right) + \text{Z\_F}$$

Out = output value
In = input value in tenths of millivolts
Z_V = zero in tenths of millivolts
F_V = Full scale in tenths of millivolts
F_F = Full scale in physical units
Z_F = Zero physical units
Actually, the formula is very simple and does not require any special calculations. It is sufficient to take two points on the characteristic curve of the sensor and proceed as follows:

Wiring



4-20 mA potentiometric transducer -100 mm

The transducer has an output of 4 mA at 0 mm and 20 mA at 100 mm therefore:

At 4 mA the Zero value in tenths of millivolts corresponds to 4000 and at 20 mA the Full scale value in tenths of millivolts corresponds to 20000.

The four values are then:

Zero_Volts = 4000
Fs_Volts = 20000
Zero_Physical = 0
Fs_Physical = 100
The output is thus in mm. If you want to have it in cm simply put
Fs_Physical = 10

Inclinometer with output +/- 2 volts around 2.5 volts and FS=+/- 30°

The transducer has a nominal zero at 2.5 V corresponding to 25000 tenths of a millivolt.
Zero_Volt = 25000
The value indicated by the transducer at this position is nominally 0°
Zero_Physical = 0
At full scale, the transducer has an output of 4.5 volts corresponding to 45000 tenths of a millivolt.
Fs_Volt=45000
At this position the inclination is equal to +30°
Fs_Physical = 30
Here are found the four parameters for having an output in degrees (of course the software also leaves a reasonable number of floating-point digits).

Piezometric transducer 4-20mA 20m water

Il trasduttore ha un'uscita di 4 mA a 0 m e quindi di 20 mA a 20 m:

A 4 mA il valore di zero in decimi di millivolt corrisponde a 4000 e a 20 mA il valore di fondo scala in decimi di millivolt corrisponde a 20000.
I quattro valori sono quindi:
Zero_Volts = 4000
Fs_Volts = 20000
Zero_Fisico = 0
Fs_Fisico = 20
L'uscita è quindi in m. Se si desidera averla in cm basta mettere
Fs_Fisico = 2000

Barometer with output in volts

The transducer in example has an output of 0.1V at 15KPa and 2.35V at 115KPa:

At 15Kpa the value in tenths of mV is therefore 1000 while at 115Kpa it is 23500.

The four values are therefore:
Zero_Volt = 1000
Fs_Volt = 23500
Zero_Physical = 15
Fs_Physical = 115
The output is thus in KPa.

Example of data file

The data downloaded from the datalogger are easy to interpret and collect all information regarding the sensors and their properties.
If immediate visualization of the data is desired, simply select the 'Create Table ' option before downloading.
An example file of the ASCII file created is shown.
The file shows the date of download the various sensor information and the data neatly separated by commas.

Importing data into Microsoft Excel

Open Microsoft Excel.
Open the file created by D3200PRO as a text file (.TXT).
Start importing from the row where the data begins.
Select the data as comma delimited.
Finish the import.

DATA ACQ.: 06/01/2005 17.55.37,Numero Canali Attivi: 3 ,Numero Dati per Canale: 234

CANALE: 00 Y 25000 45000 0 2000
CANALE: 01 X 25000 45000 0 2000
CANALE: 02 T 5000 10000 0 50

05/01/2005 14.01.26 ,-710.8 ,228.8 ,17.96
05/01/2005 14.03.48 ,-711.8 ,228.4 ,17.56
05/01/2005 14.05.48 ,-712.0 ,228.4 ,17.26
05/01/2005 14.07.48 ,-711.4 ,229.4 ,16.94
05/01/2005 14.09.48 ,-711.2 ,229.4 ,16.72
05/01/2005 14.11.48 ,-711.0 ,229.6 ,16.48
05/01/2005 14.13.48 ,-710.8 ,230.0 ,16.26
05/01/2005 14.15.48 ,-711.6 ,229.4 ,16.04
05/01/2005 14.17.48 ,-711.0 ,229.8 ,15.84
05/01/2005 14.19.48 ,-712.0 ,229.6 ,15.64
05/01/2005 14.21.48 ,-711.8 ,229.8 ,15.48
05/01/2005 14.23.48 ,-711.6 ,230.0 ,15.32
05/01/2005 14.25.48 ,-711.2 ,230.4 ,15.24
05/01/2005 14.27.48 ,-711.8 ,230.0 ,15.12
05/01/2005 14.29.48 ,-711.4 ,230.6 ,15.04
05/01/2005 14.31.48 ,-712.0 ,230.2 ,14.92
05/01/2005 14.33.48 ,-711.6 ,230.8 ,14.86
05/01/2005 14.35.48 ,-711.4 ,230.8 ,14.78
05/01/2005 14.37.48 ,-712.0 ,230.4 ,14.68
05/01/2005 14.39.48 ,-711.8 ,231.0 ,14.6
05/01/2005 14.41.48 ,-712.2 ,230.4 ,14.5
05/01/2005 14.43.48 ,-711.8 ,231.2 ,14.44
05/01/2005 14.45.48 ,-712.2 ,231.0 ,14.38
05/01/2005 14.47.48 ,-712.2 ,230.8 ,14.3
05/01/2005 14.49.48 ,-712.0 ,231.4 ,14.24
05/01/2005 14.51.48 ,-712.2 ,230.8 ,14.16
05/01/2005 14.53.48 ,-711.4 ,231.4 ,14.08
05/01/2005 14.55.48 ,-712.2 ,230.8 ,14.0
05/01/2005 14.57.48 ,-712.4 ,231.0 ,13.92
05/01/2005 14.59.48 ,-712.0 ,230.8 ,13.88
05/01/2005 15.01.48 ,-712.4 ,231.0 ,13.8
05/01/2005 15.03.48 ,-712.2 ,231.0 ,13.76

Calculation of Battery Autonomy

The standby consumption of the data logger is about 200 µA.
The consumption in full use (during measurement) is around 100 mA.
Approximately the acquisition time per channel can be considered 4 sec to which should be added a time of 10 sec at each power-up.
Starting from these two data, it is possible with simple calculations to reasonably calculate the expected battery life.
Example calculation:
Conditions: 15 A/h flashlight batteries, 4 acquisitions per day, 16 sensors connected

Daily consumption:

$$200\,\mu A \times 24 + 4 \times 100\,mA \times \left(\frac{16 \times 4}{3600} + \frac{10}{3600}\right)$$

$$0.0048\ A + 0.0082\ A = 0.00130\ A \quad \text{giorno}$$

Duration $= \left(\frac{15}{0.0130}\right)$ =1154 Days

Even dividing the result by a safety factor of 3 gives a range of about 1 year.
Conditions: 15 A/h flashlight batteries, 96 acquisitions per day, 2 sensors connected

Daily consumption:

$$200\,\mu A \times 24 + 96 \times 100 mA \times \left(\frac{2 \times 4}{3600} + \frac{10}{3600}\right)$$

0.0048 A + 0.048 = 0.0528 Daily

Duration $= \left(\frac{15}{0.0528}\right)$ =284 Days

Even dividing the result by a safety factor of 3 gives a range of about 3 months.

Battery Datalogger phone module

If the datalogger supplied has the telephone module, a solar panel or battery charger is also provided. The phone consumes approximately 30 mA and the battery/panel system is sized according to the area and conditions of use.

If sizing is correct and external factors (snow on the panel, leaves etc. etc.) do not intervene, however, the life of rechargeable batteries should be considered to be about a couple of years due to aging factors and loss of storage capacity.

Where possible and reasonably safe, it is advisable to use solar panels and rechargeable batteries that isolate the datalogger in every way from unwanted external disturbances.

Battery Replacement

Replacing Flashlight Batteries

Use model LR20 SIZE D alkaline flashlight batteries. Be careful that the batteries do not release acid.

Replacement of Batteries with sealed lead-acid

Use 6Vdc 12Ah sealed lead acid batteries after proper and sufficient charging.

Software Conventions

Per il corretto utilizzo del software OG3200PRO devono essere controllate alcuni parametri di Windows nel pannello di controllo.

Entrare in start e successivamente in opzioni internazionali e numeri.

Il simbolo di separazione decimale deve essere “ . ” ed il simbolo di raggruppamento cifre “ ’ ”.

Se queste convenzioni non vengono rispettate il programma non riceve i dati dal datalogger in modo corretto.

Serial connection and USB adapters

The OG3200PRO datalogger uses a standard 3-wire + 1-wire RS232 serial connection for awakening from the standby state. It is therefore necessary to have a full serial. The OG3200PRO version that is not GSM-ready has a 57600,n,8,1 protocol the GSM-ready version 9600,n,8,1.

Common USB/Serial adapters are perfect for connection with the OG3200PRO datalogger. In case of using adapter, the supplied connection cable is not necessary either. The connection can be made in a direct way.

Troubleshooting

Datalogger does not connect

- Check that the selected serial is correct
- Check that the cable is properly connected
- Check the integrity of the connecting cable
- Check the status of the batteries
- Remember that the GSM version needs the appropriate check selected in the initial window.

Datalogger does not record measurements

- Check that the conversion enable check is active
- Check that there is still free memory
- Check that the datalogger's internal date and time are correct.

The measurements do not seem correct

- Check for correct wiring
- Check for the presence of moisture
- Check international settings and setting of sensor parameters
- Check the status of the batteries
- Remember that for biaxial sensors it is necessary to report + power on each quad terminal used for them.

Downloading data is difficult and time-consuming

- Check that the PC in use has no other programs running.

GSM and Solar Panel

GSM modem connection

To connect to the GSM modem, simply use the cable supplied with the phone and plug it into the appropriate connector.
Remember that for local connection it is necessary to disconnect the GSM serial socket in order not to have two devices on the same line.
The OG3200PRO with the GSM phone works at 9600 baud so for local connection you must use the 'GSM Version' option in the initial screen of the software.
Upon connection the GSM modem will start flashing in the presence of the field.
Remember to use prepaid or non-prepaid cards enabled for incoming traffic.
It is necessary that the card inserted in the GSM is unlocked i.e. with PIN request disabled.

Using the solar panel

Also supplied with the GSM version is a 10W solar panel, a 12/18 Vin, 7.2 Vout panel charger, a 6V-12 A/h sealed lead-acid battery with very high range.

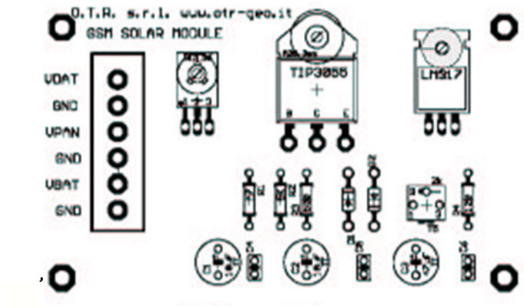
Do not use the battery charger with panels with power higher than 15W.

Do not use different panel chargers (standards are 12 Vdc Out).

Caution in full charge the charger radiator can reach up to 70°C.

Connecting the solar panel and panel charger

- Use the charge module in the following way:



VDAT:
Positive datalogger power supply (red wire)

GND:
Negative datalogger power supply (black cable)

VPAN:
Positive panel voltage (color depends on panel supplied)

GND:
Negative panel voltage (color depends on panel supplied)

VBAT:
Positive battery voltage (red wire)

GND:
Negative battery voltage (black cable)

It is also possible to plug into the VPAN/GND input the output of a stabilized 12/18 Vdc 1 Amp power supply to put the battery on charge before installation or to power the datalogger with mains voltage.

NB: In case of mains power supply, it is necessary to make sure that the power supply is professional and adequate, protected from surges, with surge filters.

Otherwise sudden surges and disturbances from the mains could make it impossible for the device to work properly.

It is also recommended not to carry out programming with the datalogger under charge with a mains power supply and a PC also connected to the mains.

If the datalogger does not have sealed lead-acid batteries (flashlight battery version without GSM), do not try to recharge the batteries.

Installation and Maintenance

Installing

The housing supplied with the datalogger has a protection rating of IP65 or IP66. The housing must be properly closed and each of its cable glands sealed with a piece of cable if not in use. If operating under special conditions (particularly humid environments, freeze-thaw cycles), additional protection is recommended to avoid condensation problems inside the housing.

Manteinence

Maintenance of the data logger is limited to a few simple rules:

- Check the condition of the battery at each data dump
- Check the internal condition of the box to prevent condensation moisture problems.

If not in use for several months, the following rules should be followed to safeguard the internal buffer battery:

- Recharge or replace the external batteries after the last measurement campaign.
- Store the datalogger with the external batteries connected in the stand-by condition.

Under this condition, the life of the buffer battery is unlimited.

The life of the internal buffer battery is unlimited under normal use but becomes 6-12 months under complete non-use. Therefore, it is recommended to store the datalogger in stand-by condition to avoid unnecessary discharge of the buffer battery.

Internal Buffer Battery Replacement

If you feel that you have not followed the previously described steps correctly after a long period of inactivity of the datalogger, it is advisable to replace the internal battery. The battery is lithium and readily available (PANASONIC model CR2330 or equivalent).

The operation LED of the datalogger to indicate the complete reset of the equipment flashes 4 times at the first power on.

This operation implies the loss of data and configuration of the datalogger.

After disassembling the plate that holds the datalogger you will easily find the battery holder. Replace the buffer battery with an equivalent one taking care not to short-circuit it in disassembly and reassembly. Take care to mount the battery with the correct polarity indicated.

The operation described above should be done by disconnecting the main batteries first.

When replacing the buffer battery with the external batteries connected, it is necessary to press with a pencil the yellow metal button "RESET" located on the rear board of the datalogger.

Technical Features

Microprocessor

Rabbit 3000

Number of measurable channels

Up to 64 channels in volts or 4-20 mA individually selectable for the volts or mA version and 64 vibrating chord channels with associated thermistors for the vibrating chord version.

Resolution

40000 measurement points on +/-4Vdc or +/-2Vdc and +/- 1 Vdc or +/- 4.5Vdc on request. 0.01 to 0.5 Hz for vibrating string version.

Sensor power supply

+15 volts or +12 volts upon request.
5.5-V sweep from 500 to 6000 Hz for the vibrating string version.

Temperature stability

<15 ppm/°C

Operating temperature

Da –20°C +55°C

Memory

256 kB buffered RAM and 256 kb flash memory

Consumption

Approximately 200uA in standby and 100mA in full operation

MUX

Sequential relays

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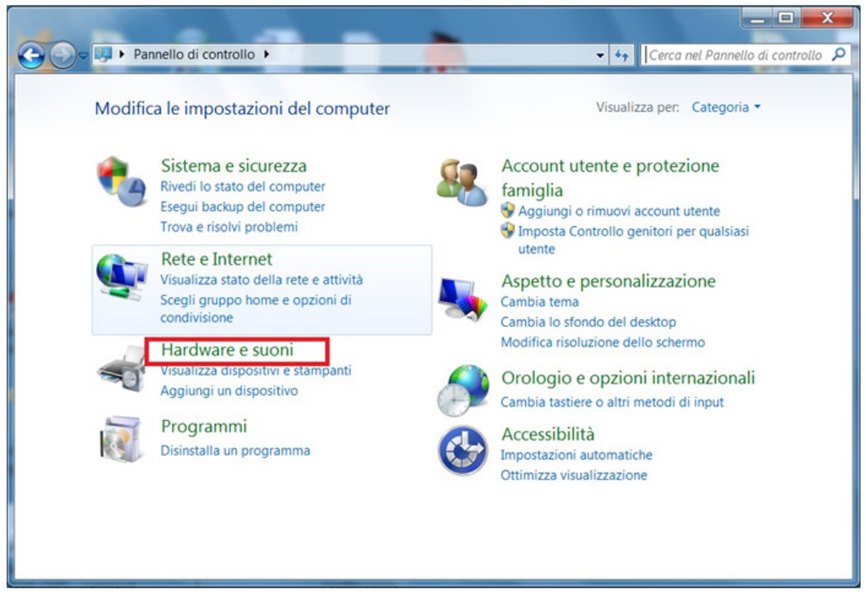
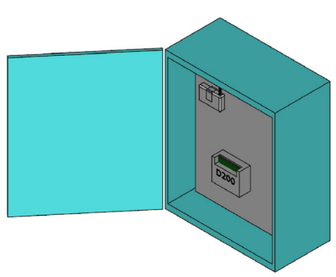
Quick Installation

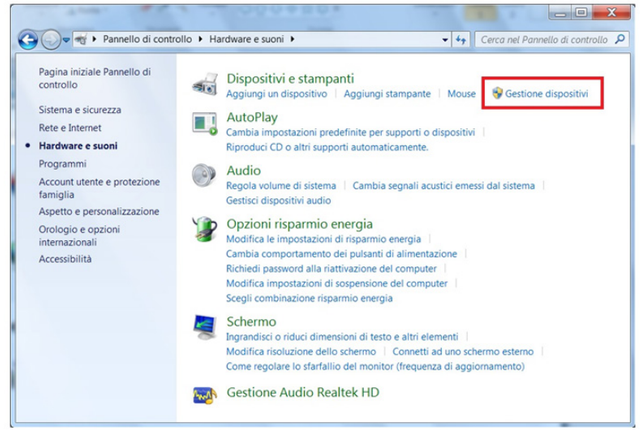


To install the software:

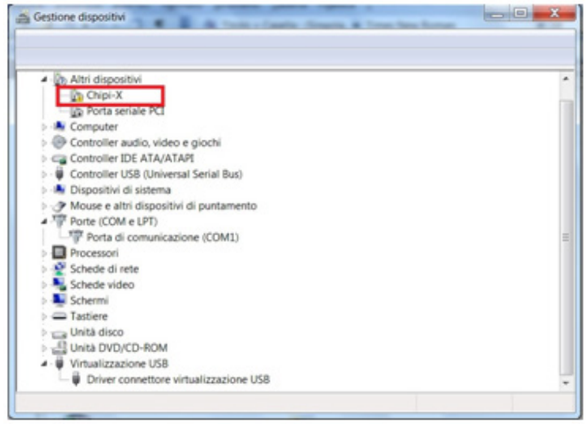
1. Insert the fuse into the fuse holder on the red cable connecting the battery to the charge controller.
2. Connect the battery. The red cable should be connected to the red terminal of the battery, and the black cable to the black terminal.
3. If the datalogger LED lights up, wait for it to turn off. As long as the datalogger LED remains lit, the datalogger cannot be made to communicate with the computer.
4. Plug the USB-Serial adapter into the PC.
5. Wait for the device drivers to install. The adapter requires the installation of two drivers. If the drivers do not install automatically, proceed as follows:



Find the adapter in Device Manager:



Right-click and select Driver Software Update:



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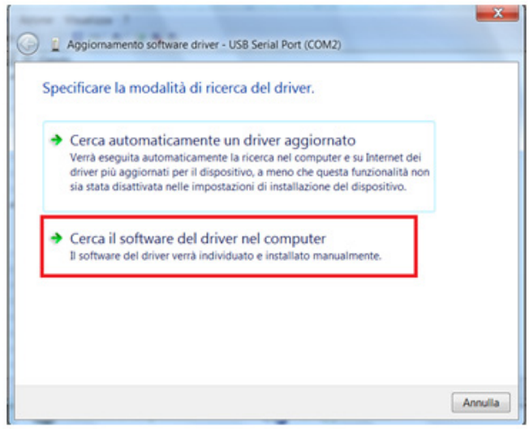
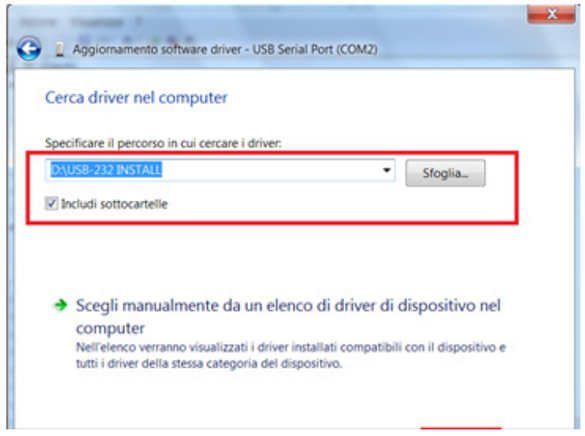
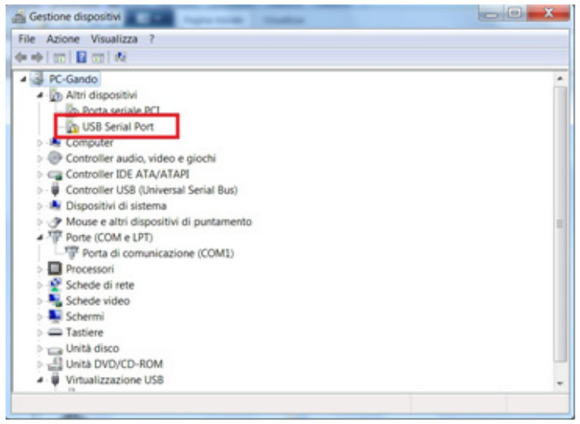
Look for the driver in the computer:



Find the USB-232 INSTALL folder contained on the CD provided by OTR and then click Continue:



Find the USB-232 INSTALL folder contained on the CD provided by OTR and then click Continue:



Right-click and choose “Update Driver Software.”

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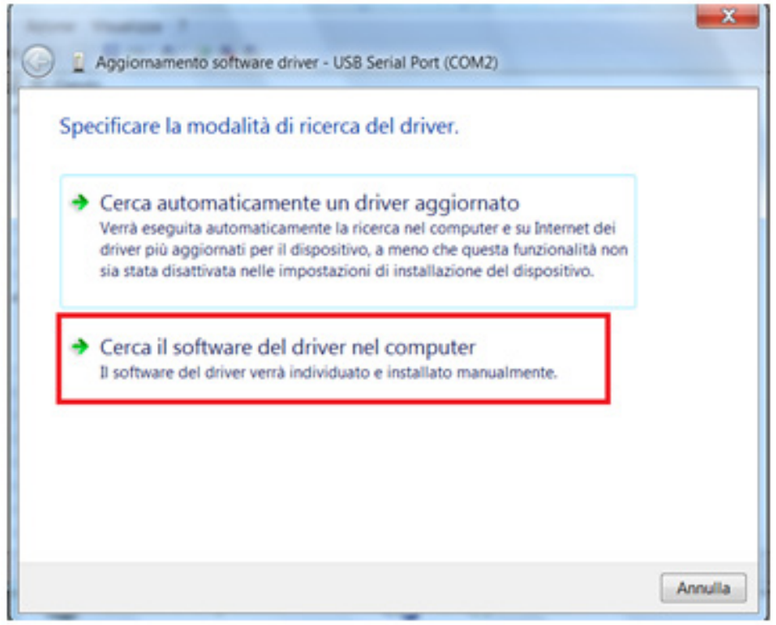
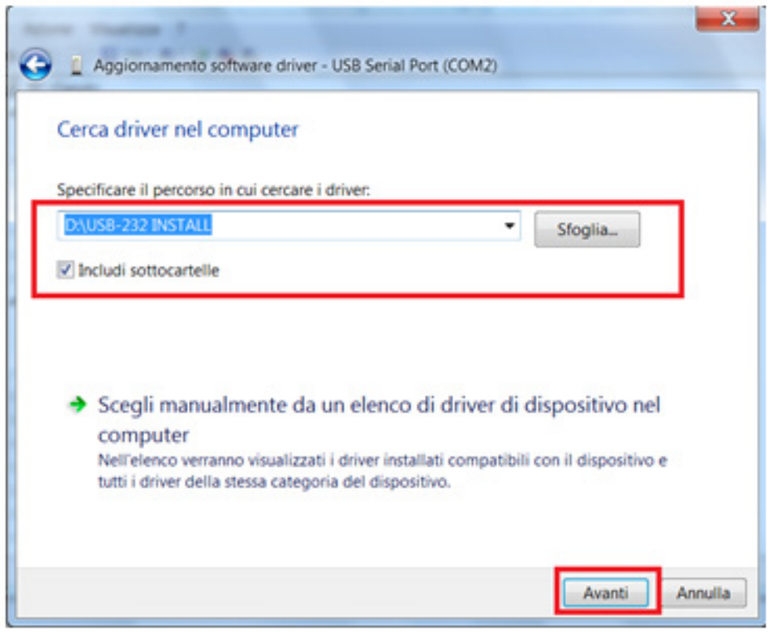
Search the computer for the driver:

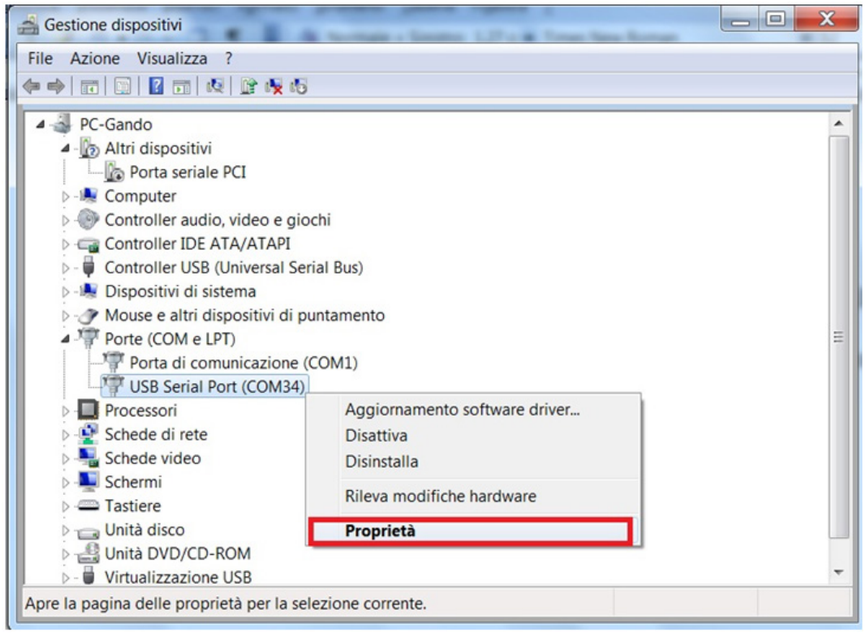


Find the USB-232 INSTALL folder on the CD again and click Continue:

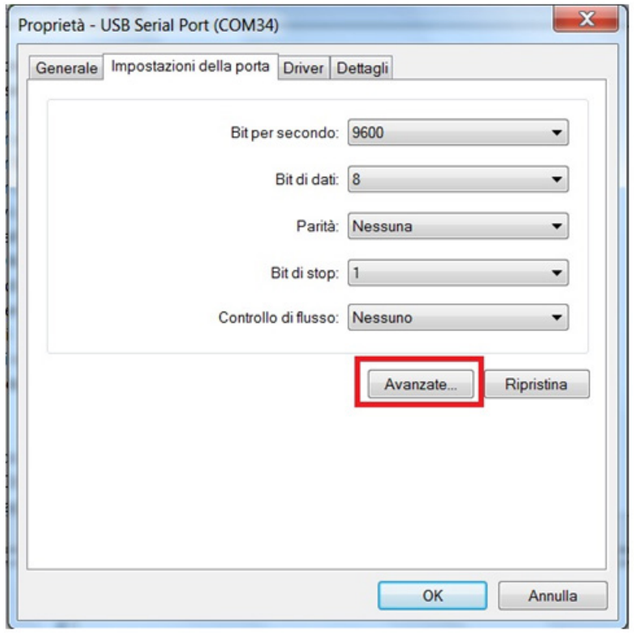


1) Check the serial port number (Serial Port). The USB-Serial adapter is now installed, but the serial port number may be inappropriate for the software.
The USB-Serial adapter must be installed on a COM port between 1 and 8. Follow the following procedure:

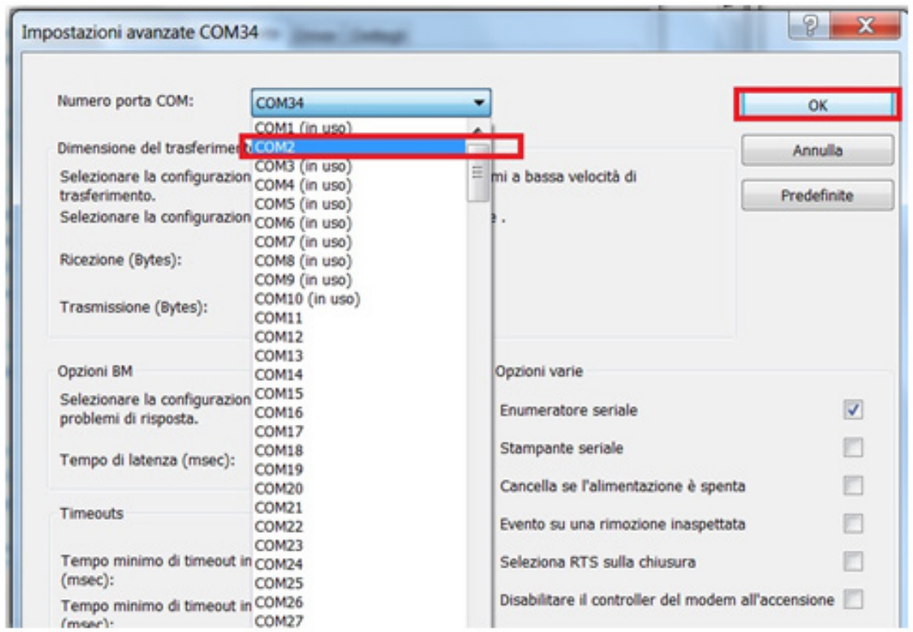
Right-click on “USB Serial Port” and then choose Properties:



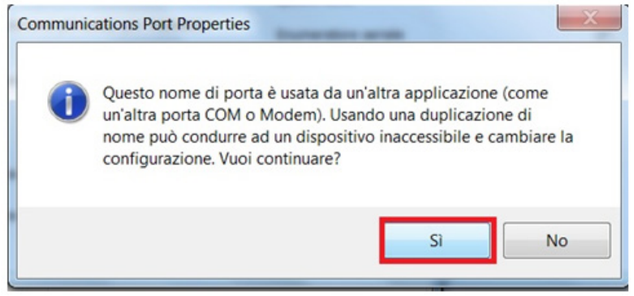
Click on Avanzate:



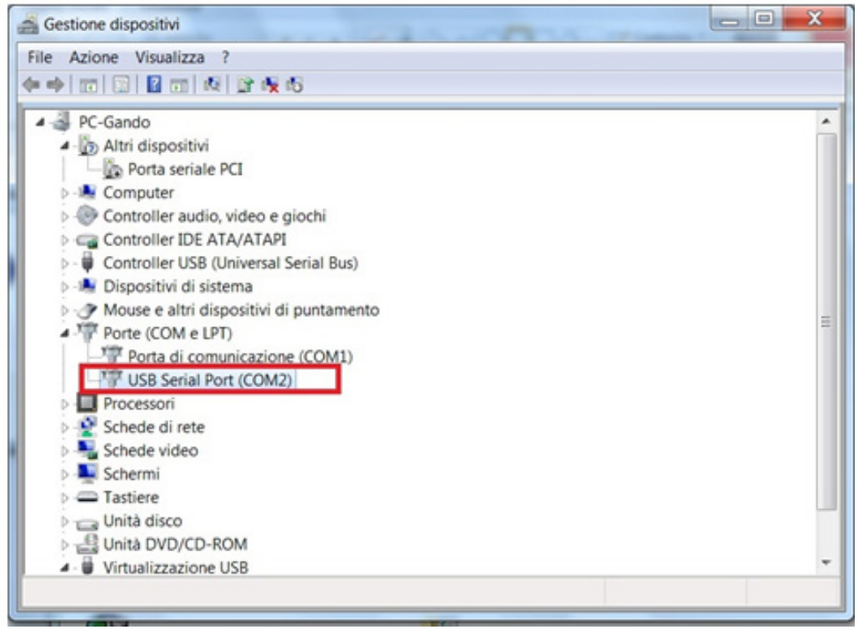
Choose a COM port between 1 and 8 and then click OK:



Click on Avanzate:



Check that USB Serial Port is properly installed:

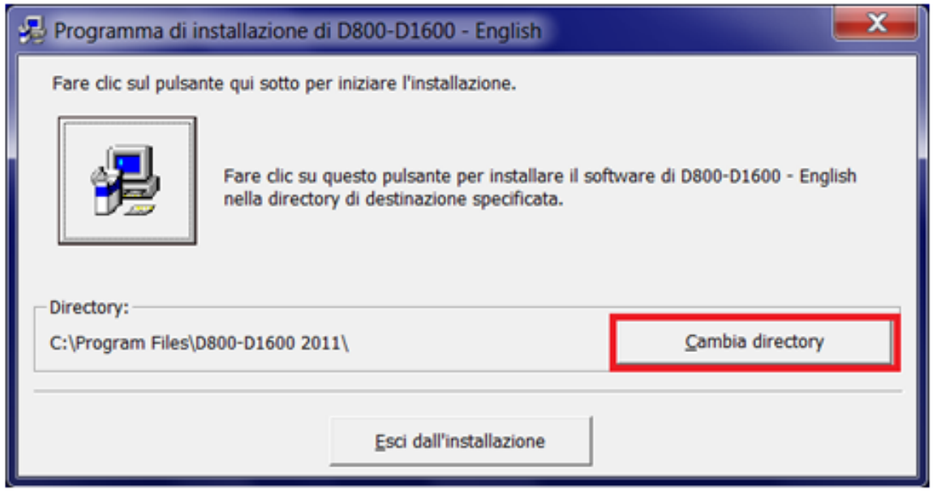


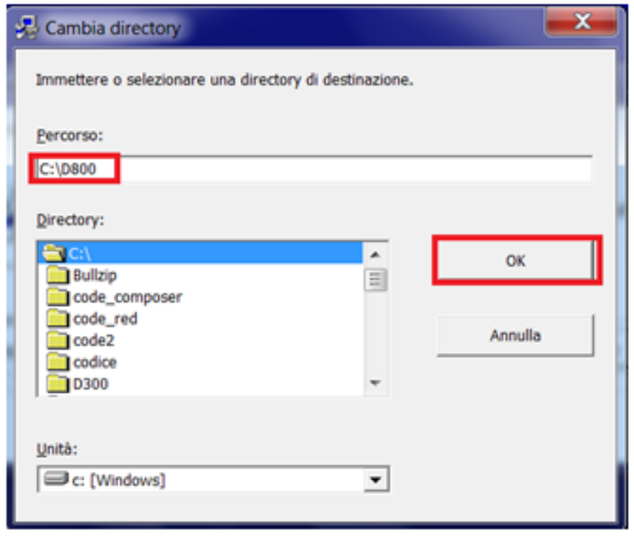
2) Disconnect the USB-Serial adapter from the PC, then reconnect it. The adapter is now properly installed.

3) Install the Datalogger software provided by O.T.R.

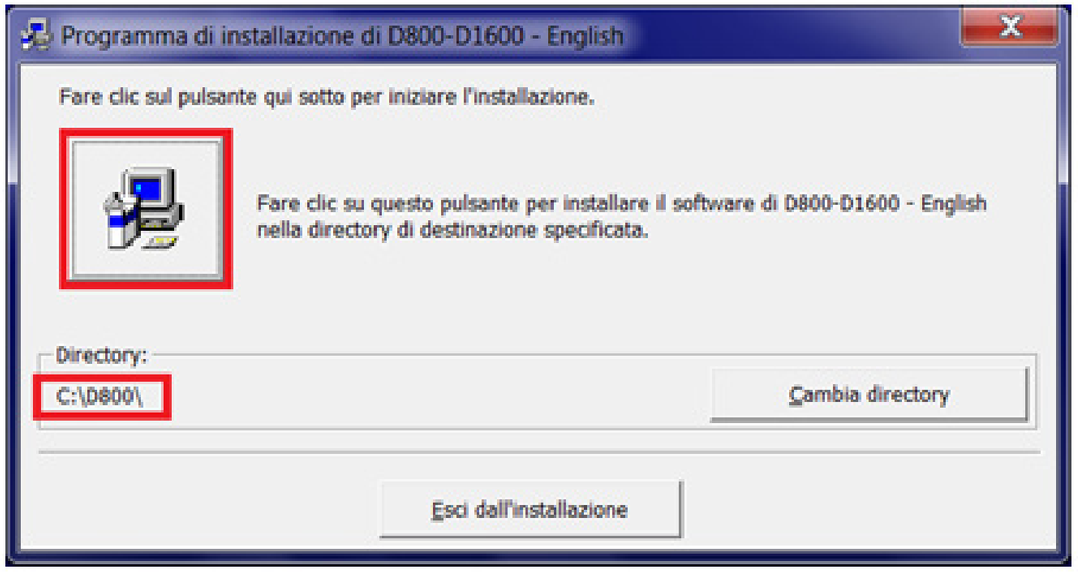
To do this, find the SETUP D800-D1600 folder on the CD and double-click on the Setup.exe file. Proceed as follows:

Select the installation folder, specifying an actual folder created by the user and not a system folder (do not choose Programs, Program Files, etc.):

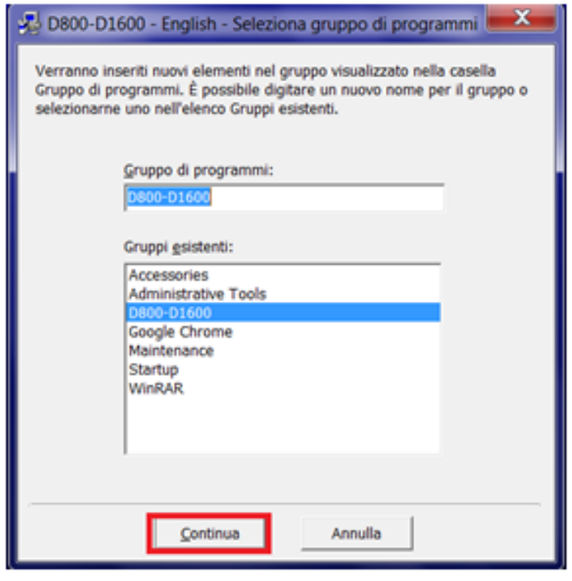




Click on the installation button in the upper left corner:



CLick on Continua:



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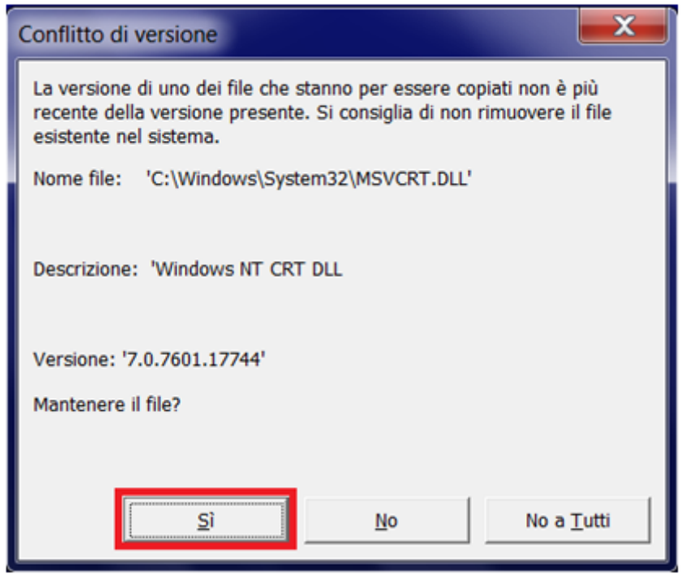
In case some of the dlls to be installed are older than those already on the PC, choose to keep the file by clicking Sì:

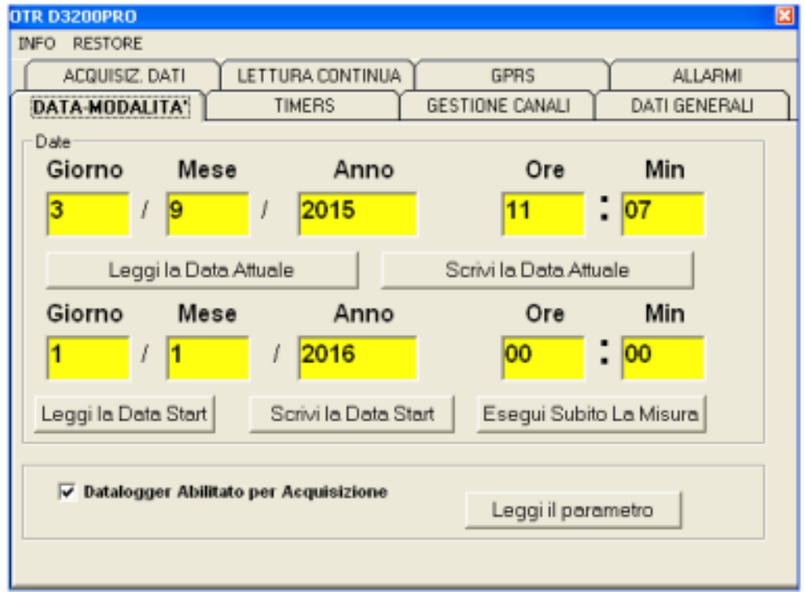


4) Connect the Datalogger to the computer. If the Datalogger LED lights up, wait for it to turn off (the LED may stay on for 2-3 minutes)
5) Open the software for D800-D1600 and press connection.

Usage and main commands

Write the Current Date

Read the Current Date (Datalogger clock) and change it if necessary with Write Current Date:



Read the Start Date and Write the Start Date

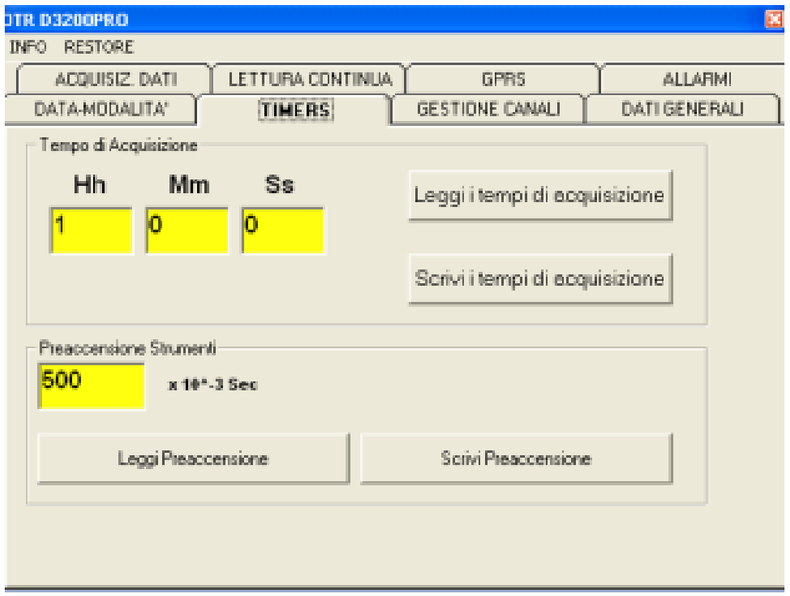
Read and change the date of the next data acquisition by clicking on Read Date Start and Write Date Start.

Perform the Measurement Now

Run Measurement Now writes a start date corresponding to a time before the current date, forcing the Datalogger to run a scan as soon as it is disconnected from the computer, or as soon as you close the software.

Datalogger Enabled for Acquisition

Set the interval between two consecutive scans by opening the TIMERS tab:



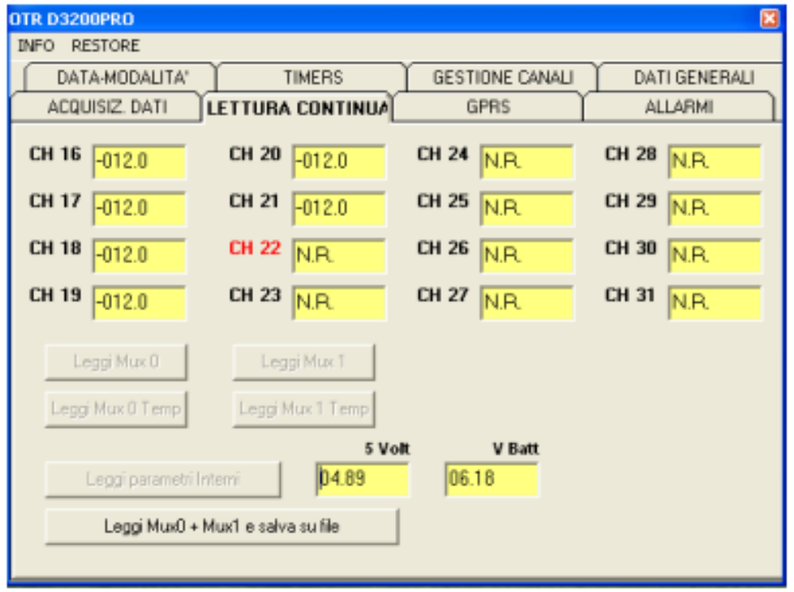
In this example, the datalogger will acquire data starting January 01, at midnight. The next acquisition will occur 1 hour later, at 01:00. Then again at 02:00 and so on. Read acquisition times reads timer. Write acquisition times writes the timer.

Read acquisition times and Write acquisition times

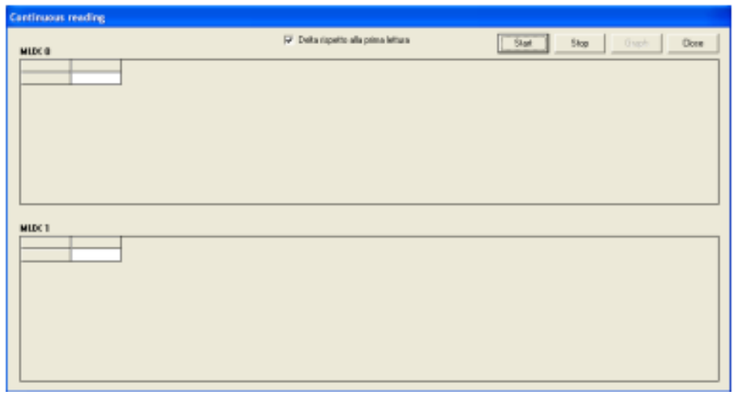
Read acquisition times reads the timer. Write acquisition times writes the timer.

Continuous Reading

To check the wiring of the sensors select the Continuous Reading tab :



Read MUX 0 takes a reading of all active channels wired to MUX 0.
The Read MUX0 Temp button, for reading temperatures, has an effect on vibrating chord channels only.
Read MUX 1 takes a reading of all active channels wired on MUX 1.
The Read MUX1 Temp button, for reading temperatures, takes effect only on channels with a
vibrating chord.
Read Internal Parameters provides the battery charge level (V Batt) on the screen.

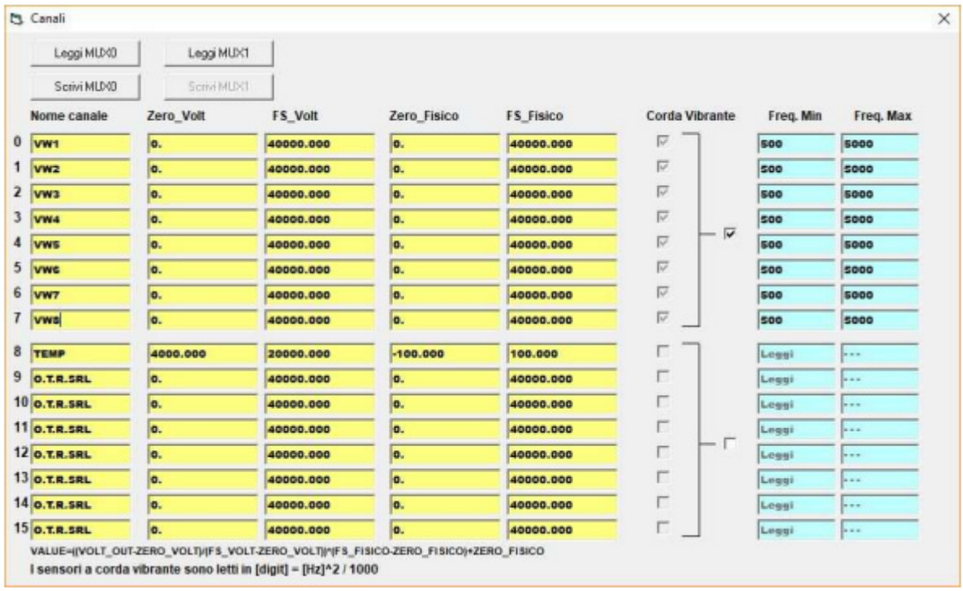


Read MUX0 + MUX1 and save to file allows you to acquire all active channels on repeat,
while simultaneously saving the data to disk and displaying them in both tabular and
graphical format on screen.

Start starts the rotational reading of channels. You will be asked in which file you want to save the
data that will be acquired. The data will appear on the screen and will be simultaneously
saved to disci.
Stop stops reading the data.
Graphs allows the data being acquired to be displayed on graph.
Delta with respect to the first reading uses the first channel scan as the zero reading.
Subsequent readings are subtracted from the zero reading.

Check parameters set by the sensor

To check the parameters set for each sensor : select the Channels tab and then click on the Sensors button :



WHEN THE BATTERY CHARGE LEVEL DROPS BELOW 5.7V, THE BATTERY MUST BE RECHARGED OR REPLACED.