



Spiral Indicator



STRUMENTI E MISURE GEOTECNICHE
E STRUTTURALI



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Spiral Indicator



WARNINGS



This instrument must be utilized only for the application it has been designed for, OTR declines all responsibility for any improper use.



Do not put the instrument in flammable liquids or potentially explosive gases.



Do not use the instrument in water where an electric dissipation is in progress.



Do not connect the instrument to the readout unit with wet hands;



Use protective gloves.

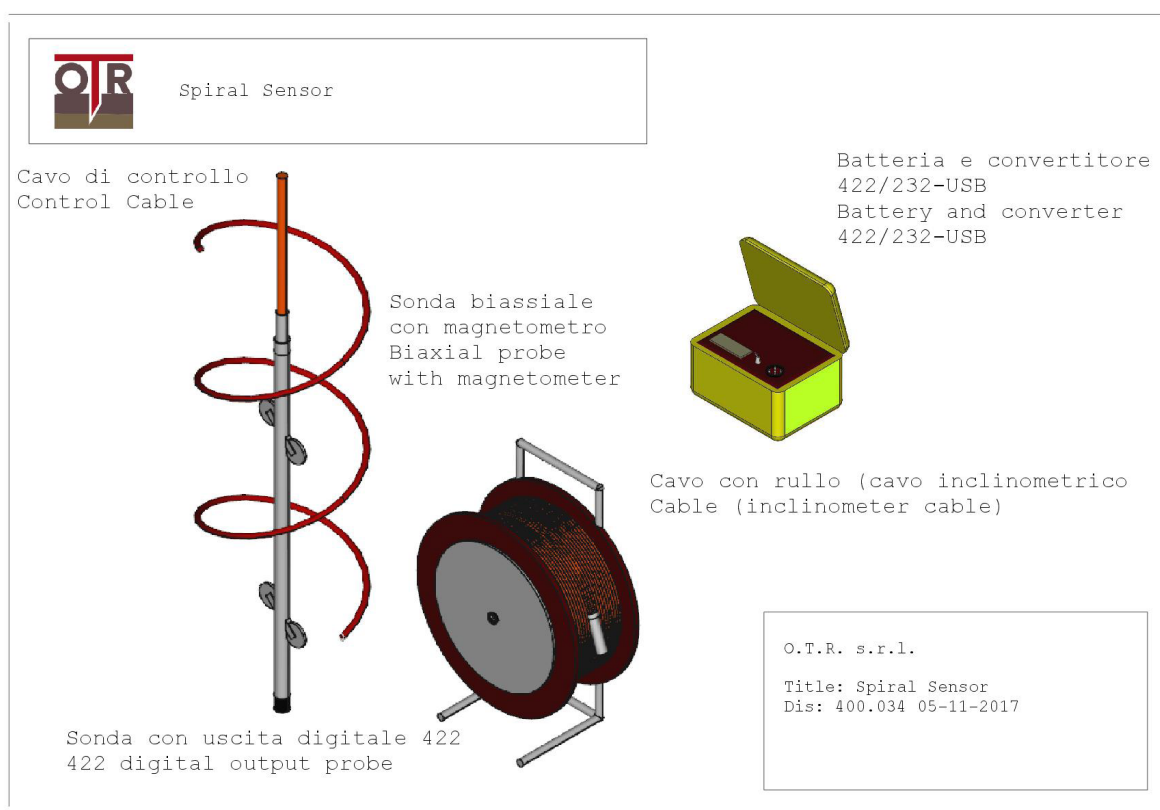
Furthermore

- Do not open the instrument, contact the manufacturer for checks and repairs;
- Keep out of reach of children;
- Clean the instrument and its cable with alcohol or water, do not use acetone or aggressive liquids for plastics or labels;
- Use surge arresters for installations with unprotected cables longer than 30 meters.

Application

The spiral probe controls the orientation of the inclinometer. If the piping is not perfectly installed, the orientation of the probe inside the inclinometer casing can vary. This could cause inaccuracy in data reduction.

The Spiral Indicator monitors and measures the variation of the direction of the probe (torsion tube inclinometer). The actual azimuth position can be obtained at very step and can be used to process data.



Identification

Spiral indicator is identified by:

- Serial number associated with a calibration test;
- Model;
- Full scale;
- Input/Output.

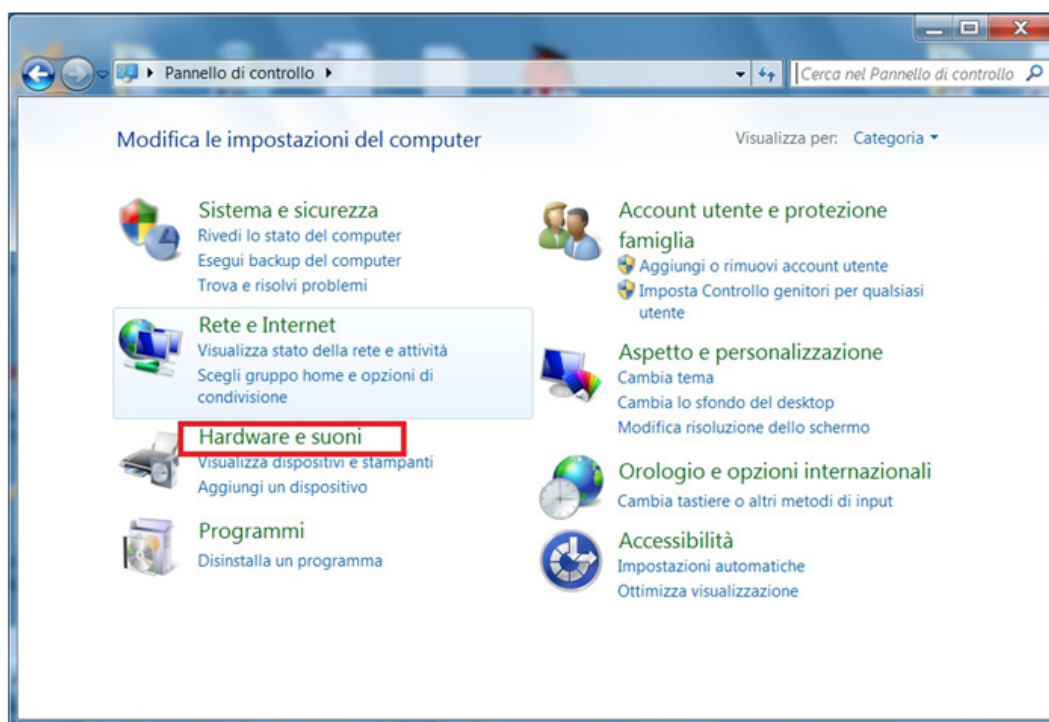
Technical Specification

Material	Stainless steel
Full scale rotation	0-360°
Full scale inclinations	±60°
Output	RS485
External diameter	30 mm



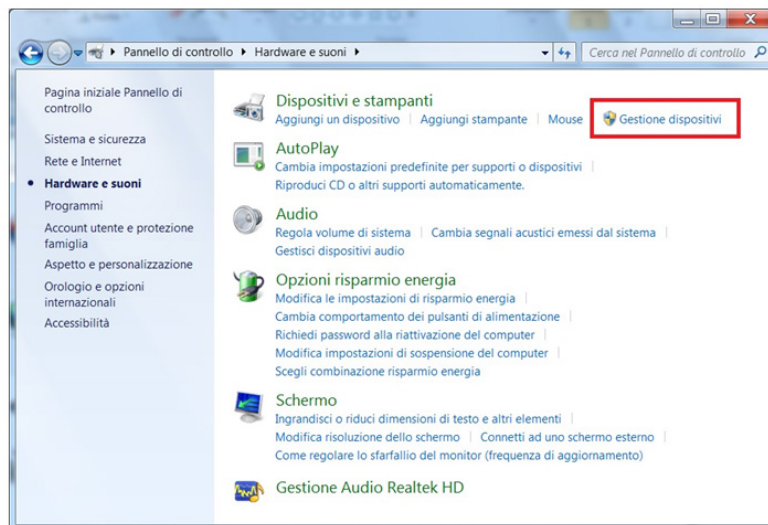
Software OG390 for spiral sensor allows to connect to spiral sensor to acquire and record spiral datas and related inclination data.

USB Driver installation

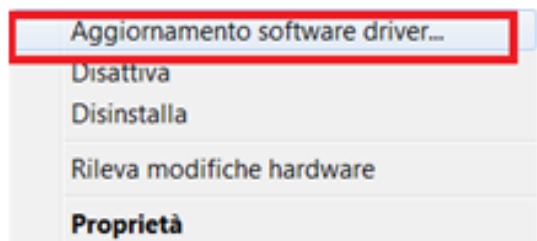
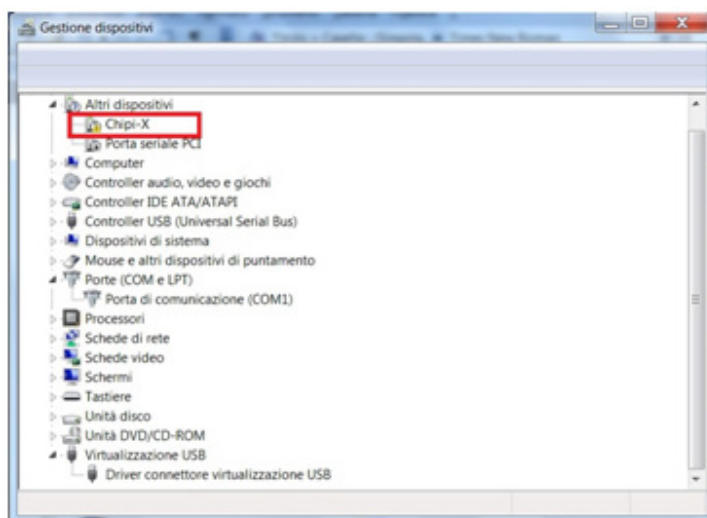


- 1) Connect the equipped USB-232 adapter to personal computer;
- 2) Install the driver. USB adapter needs two steps to be installed, proceed as indicated :

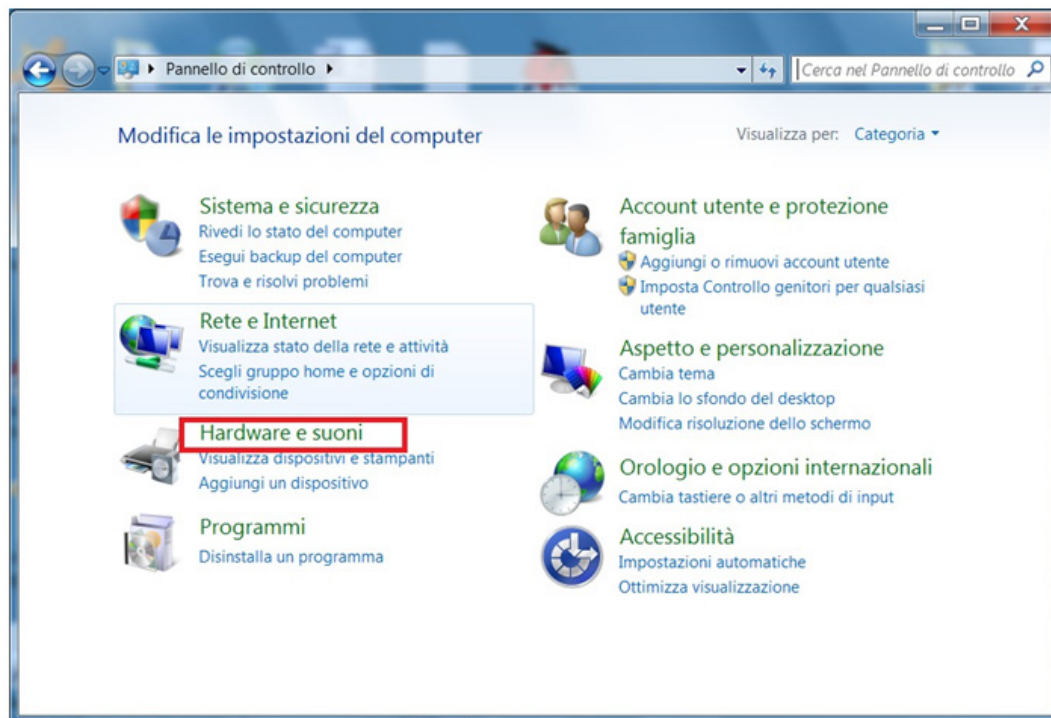
Find the adaptor in "Gestione dispositivi":



Click on the right mouse key and select "Aggiornamento software driver":

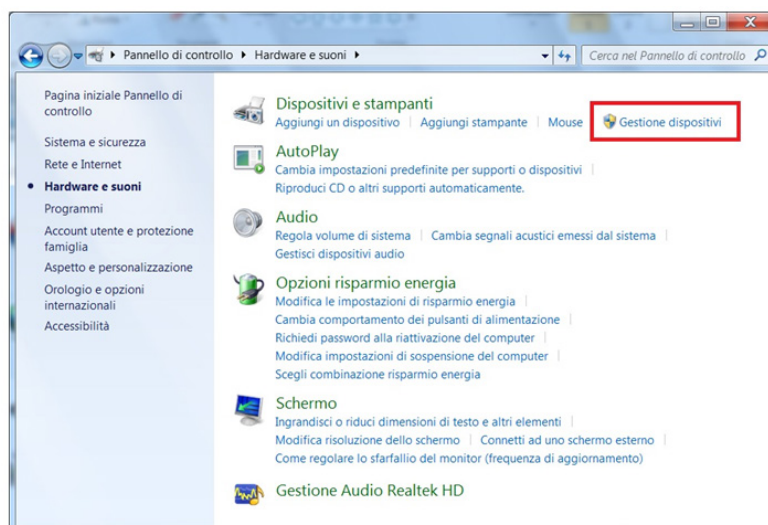


USB Driver installation

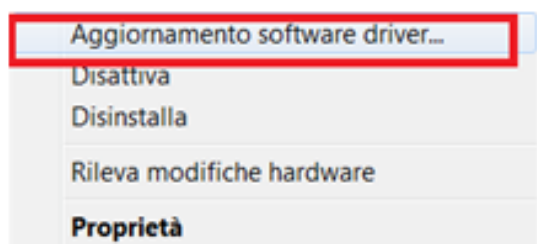
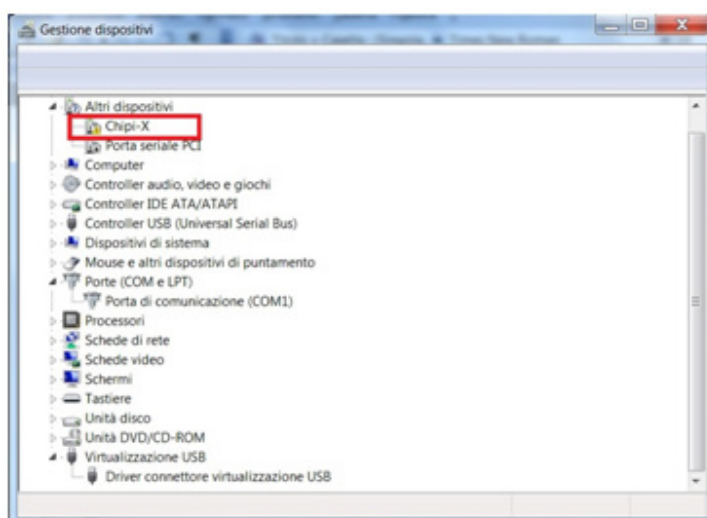


- 1) Connect the equipped USB-232 adapter to personal computer;
- 2) Install the driver. USB adapter needs two steps to be installed, proceed as indicated :

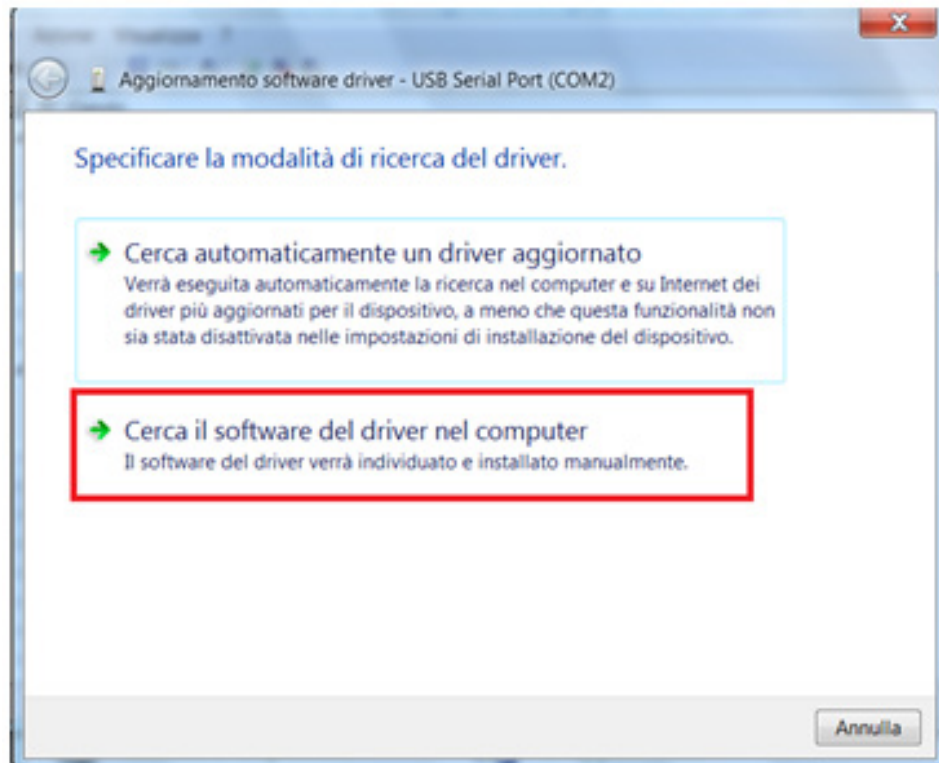
Find the adaptor in "Gestione dispositivi":



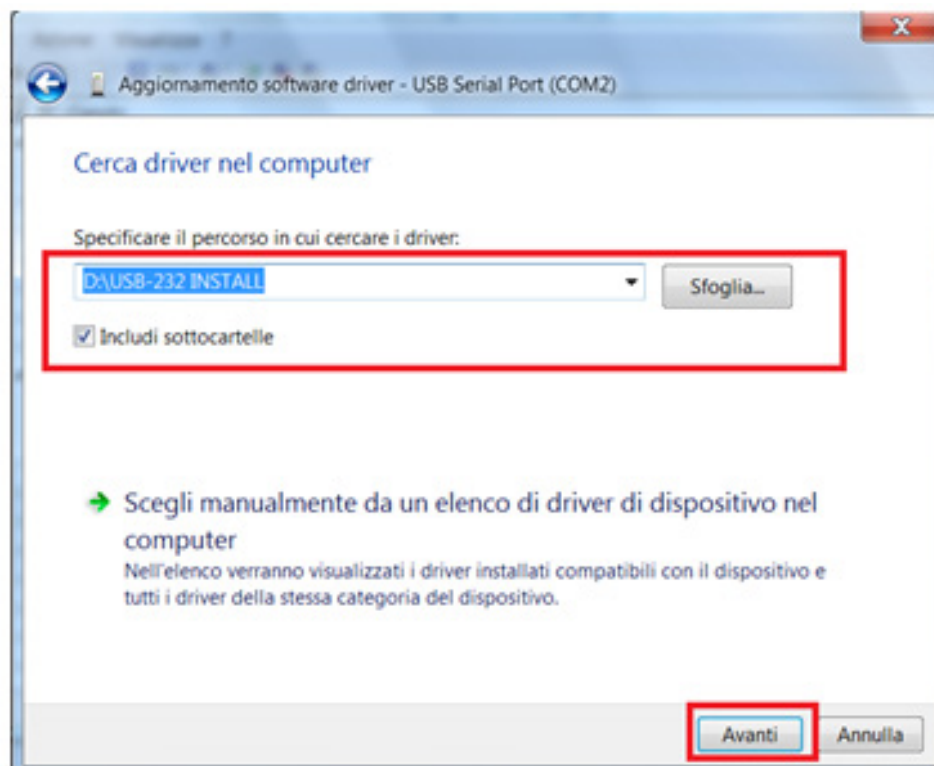
Click on the right mouse key and select "Aggiornamento software driver":



“Cercare ancora il driver nel computer”:



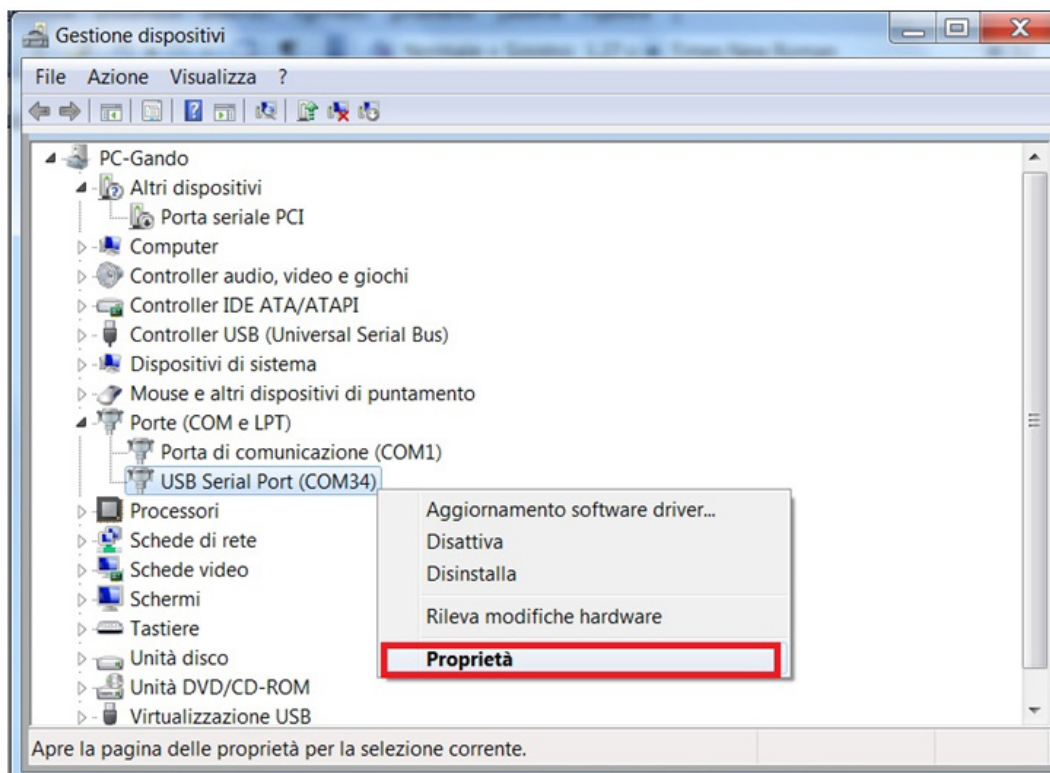
Find again the folder “USB-232 INSTALL” inside the CD and Click on “Continua”:



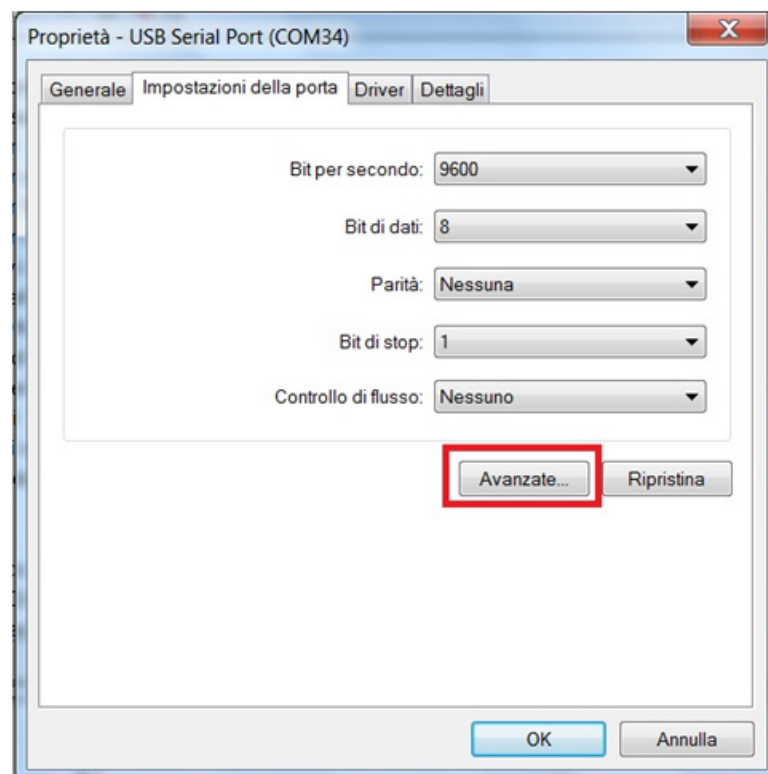
3) Check "Serial Port". Serial-USB adaptor is now installed, but serial port number may be unsuitable with the software.

Serial-USB adaptor have to be installed on a COM port between 1 and 4. Follow the procedure:

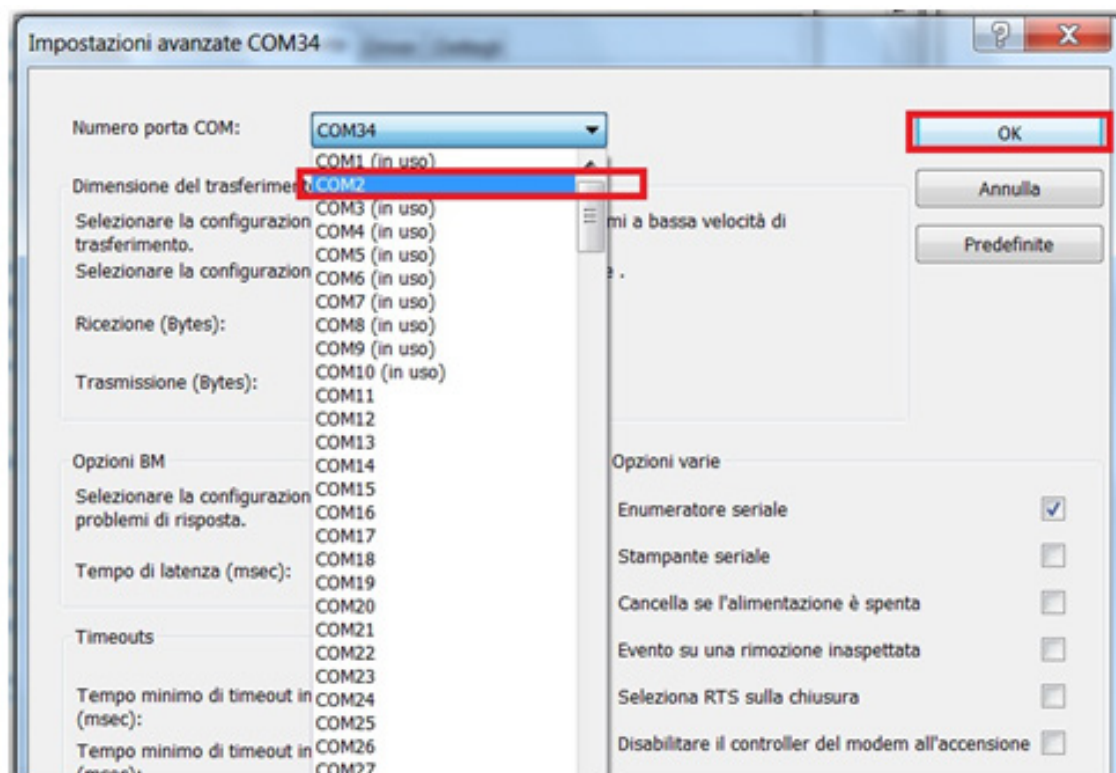
Click with the right key of the mouse on "USB Serial Port" and then "Proprietà":



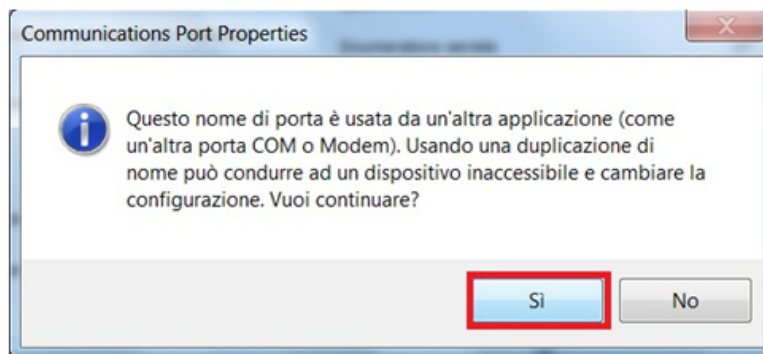
Click on "Avanzate":



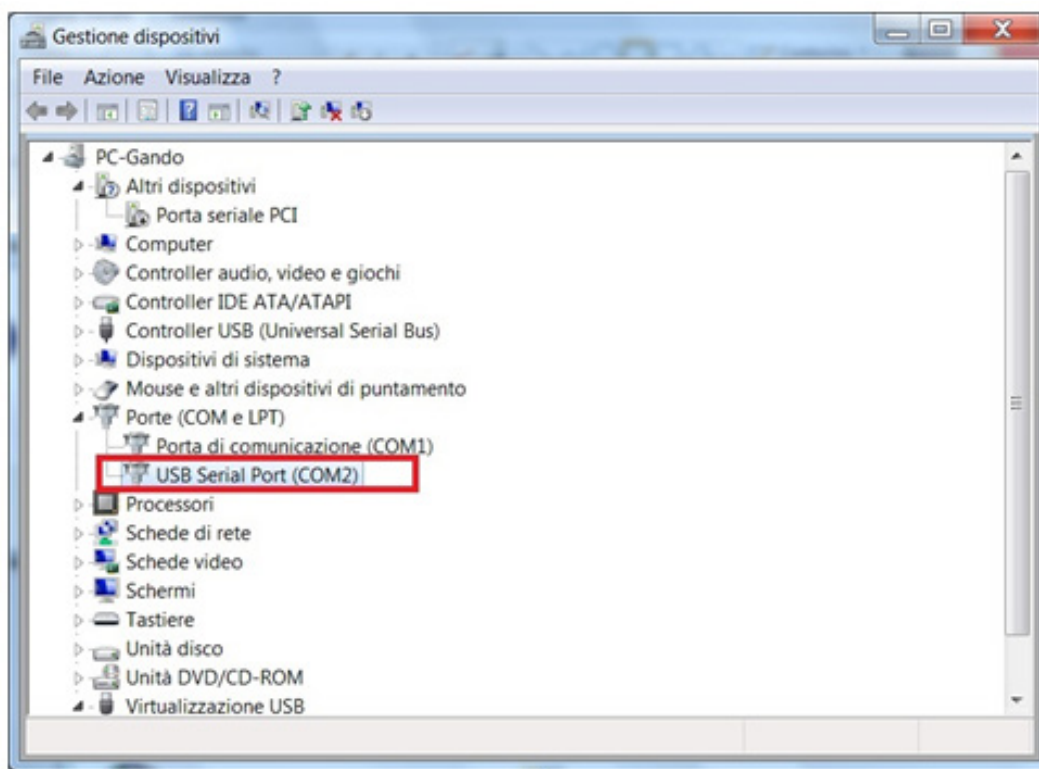
Choose a port COM between 1 e 4 And then click on OK:



Click on "Avanzate":



Check USB Serial Port is correctly Installed:



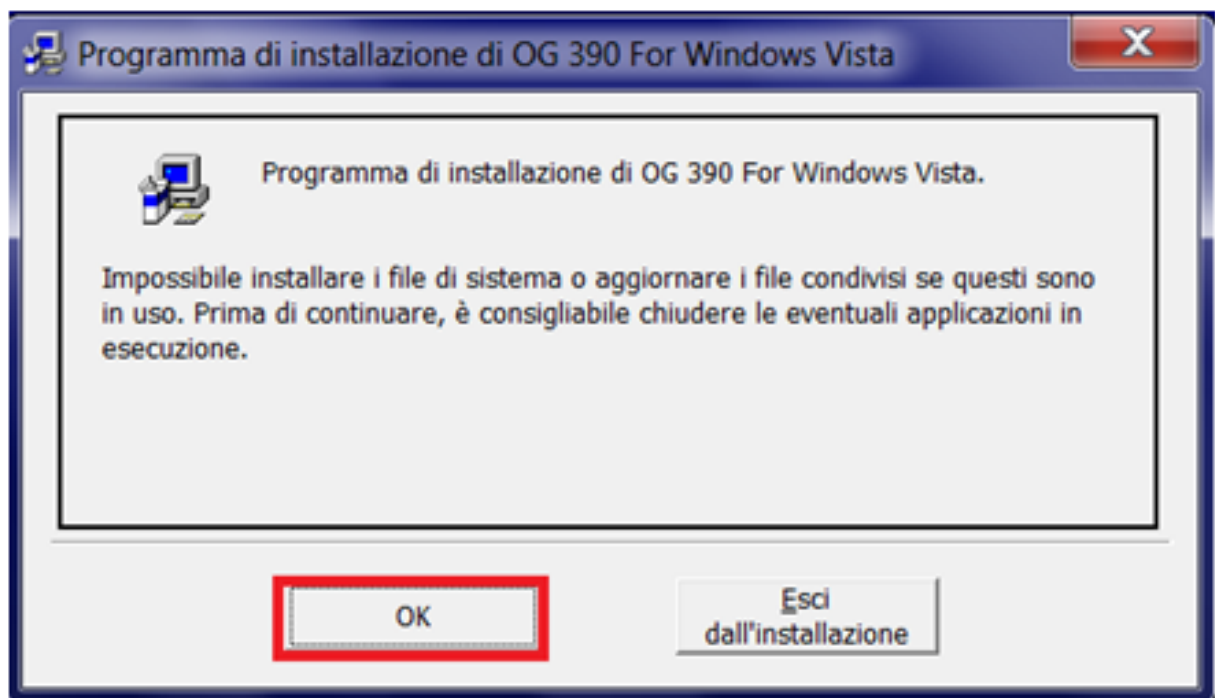
- 4) Disconnect the USB-Serial adaptor from PC, and connect again the adaptor. Now it's installed.
- 5) Instal OG390 software provided by O.T.R. to do that double click on Setup.exe. file. And proceed in the following way:

Select installation folder, specifying a real folder created by the user, not by the system (Don't choose Programmi, Program Files, and so on)

Software's Installation

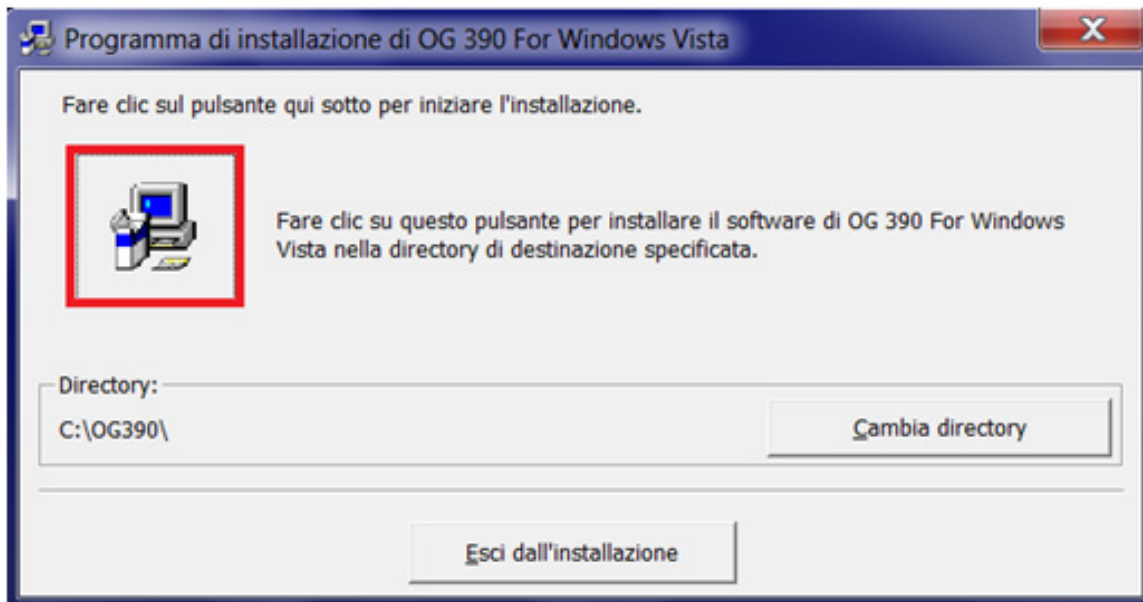
Described installing procedure in this manual is suitable for the computer having Windows 7 installed, but the software OG390 works with Windows XP and Windows Vista too.

1. Insert CD inside the computer
2. If the installation file doesn't start on his own, double Click on file setup.exe
3. Click "OK" on the new window

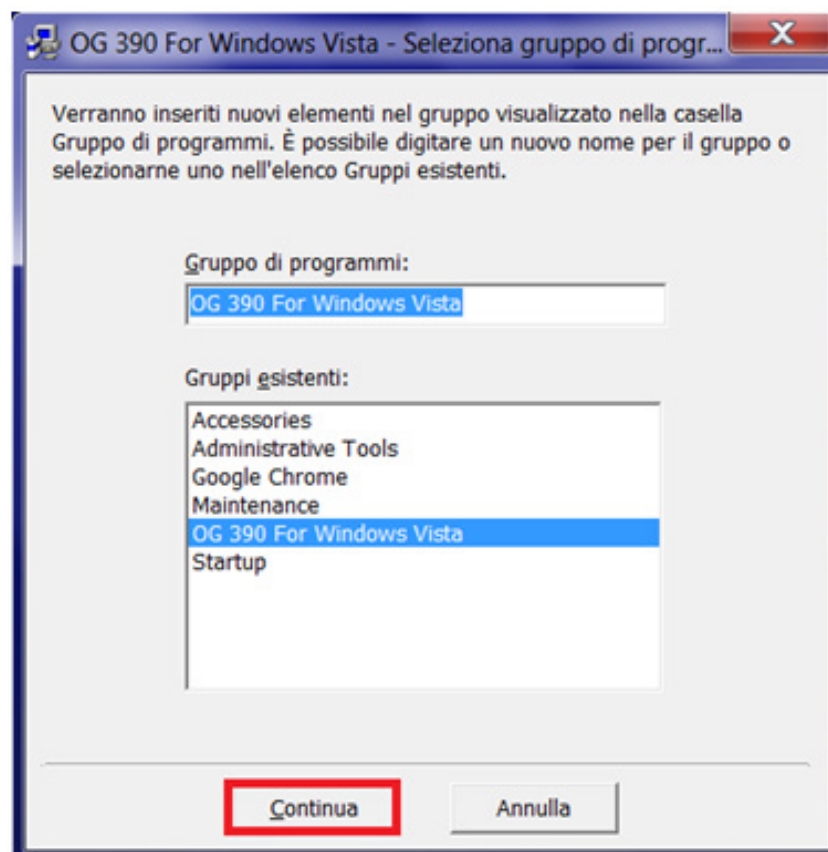


4. Click on "Cambia directory" in the next window and select the installing directory.
5. OG390 program and datalogger's files will be saved inside the directory called by this computer screen.
6. If you want to instal the program on Windows Vista or Windows 7, is highly recommended, calling manually installation directory and doesn't leave the default value suggested by PC.

Click on the installation button:



Click on "Continua" to end software installation.

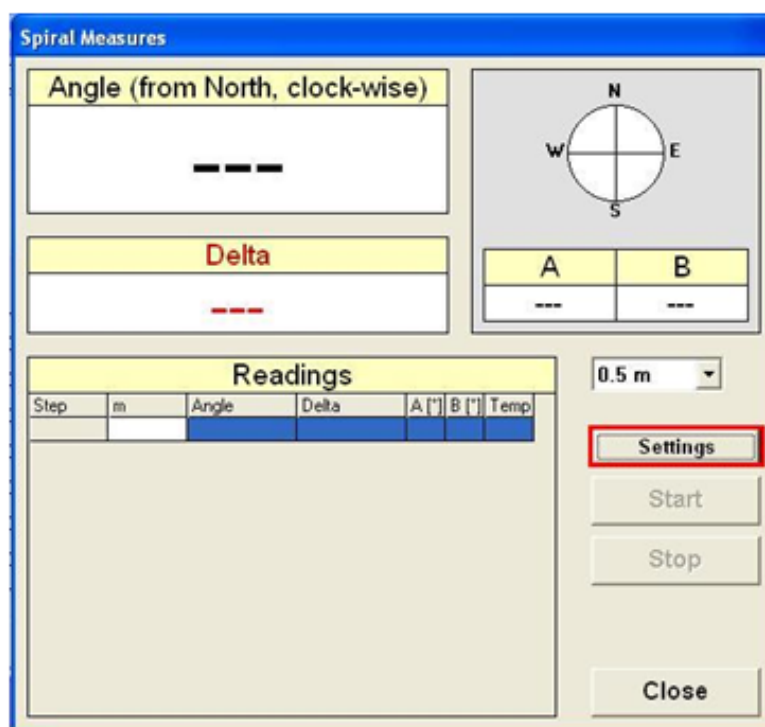


Software's Using

Starting PC screen of OG390 software for spiral indicator is the following.

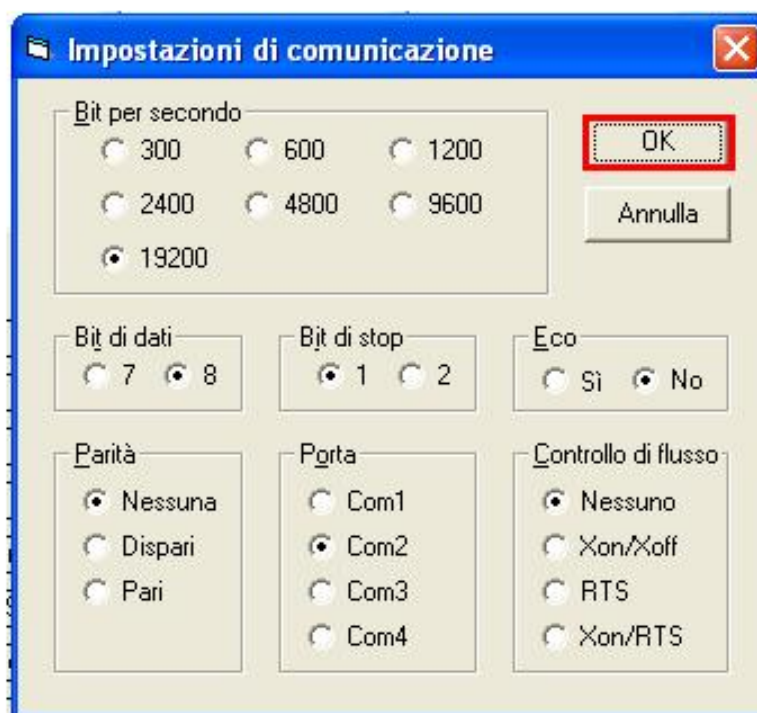
Click on "Spiralometro":

Click on "Settings" to set the communication parameter on serial port:



Click on "OK" to confirm settings.

The speed of connection should be equal to 19200bps, COM port was been selected at Driver installation.



Click on "Start" to connect to the spiral indicator:

Spiral Measures

Angle (from North, clock-wise)

Delta

Readings

Step	m	Angle	Delta	A [°]	B [°]	Temp

0.5 m

Settings

Start

Stop

Close

Software asks to choose the position of the file.txt where will be saved the acquisition datas.

The read spiral indicator's datas will be represented on PC screen.

Spiral Measures

Angle (from North, clock-wise)

338.1

Delta

Readings

Step	m	Angle	Delta	A [°]	B [°]	Temp

0.5 m

Settings

Start

Stop

Close

In the previous exemplum spiral indicator was oriented at 338.1° from North (clockwise) like you can see on the top right box.

Spiral indicator pointing position is the same with the positive extension of the A inclinometric axis (upper wheel).

A axis inclination compared to the vertical is -7.1° and compared B axis $+11.2^\circ$.

The spiralometric datas will be taken with a 0.5m acquisition space.

Press Space on the Keyboard of PC to acquire datas.

Spiral Measures

Angle (from North, clock-wise)
338.0

Delta
0.0

Readings

Step	m	Angle	Delta	A [°]	B [°]	Temp
1	00.50	338.0	0.0	-7.1	11.2	25.2
2	01.00	338.1	0.1	-7.1	11.2	25.2

0.5 m

Settings
Start
Stop
Close

"Delta" value (espresso in "°") shows up the difference from actual direction of the spiral indicator and first acquisition position.

At every acquired step "Delta" value is registered and express the difference between current angle and Step 1 ones.

If there's an error, press Esc to eliminate the last acquisition step.

Press Stop to end the datas acquisition.

Spiralometric datas Introduction

1. Acquire the spiralometric datas like it was told on the previous procedure.
2. Prepare a data sheet with the following parameters:
Place the spiral indicator data in the A0 column
Execute a differential calculation from pipe head (becarefull to the influence on the measure of the metallic cockpit and make sure that the first read have to be lined with the spiralometric correction)
Switch the datas (OG390 software WIN read the spiral in counterclockwise while output signal of the spiral indicator is measured clockwise)
3. Watch the following data sheet with eleboration datas.

Passo	Profondità	Dati <u>Spiralometrici</u>	Differenziale in senso antiorario
1	0.5	300.5	0.0
2	1.0	301.2	-0.7
3	1.5	302.2	-1.7
4	2.0	302.2	-1.7
5	2.5	303.4	-2.9
6	3.0	303.1	-2.6
7	3.5	303.5	-3.0
8	4.0	303.6	-3.1
9	4.5	304.0	-3.5
10	5.0	304.1	-3.6
11	5.5	304.5	-4.0
12	6.0	304.6	-4.1
13	6.5	304.8	-4.3
14	7.0	306.5	-6.0
15	7.5	306.8	-6.3
16	8.0	307.1	-6.6
17	8.5	307.5	-7.0
18	9.0	307.9	-7.4
19	9.5	308.1	-7.6
20	10.0	308.2	-7.7
21	10.5	308.6	-8.1

	Numeri da introdurre in OG390 WIN
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