INCLIS 30 | DH Borehole Deviation Probes

The Solgeo INCLIS DH inclinometer borehole probe system allows to perform a 3D borehole deviation survey. The probe is internally equipped with 3 magneto metric and 3 accelerometer sensors .

The accelerometer realizes the reading of the inclination angle and of the rotation relative to the gravitational field measured, while the magnetometer realizes the reading of the azimuth angle relative to the Earth's magnetic field measured.

The probe is connected to the control unit on the surface through power cable and data transmission, with a standard length of 60 m and optional up to 200 m.

In case of iron casing boreholes , the system should be utilised with aluminium rods that drive the probe inside the borehole. The INCLIS DH probe can be connected to a PC through the USB data transfer. Sonclino software offered allows immediate visualization of results in both graphical and numeric form of orientation parameter required.

In addition, a wireless cable drum can be optionally opted for wherein the data can be observed on a wireless tablet PC.

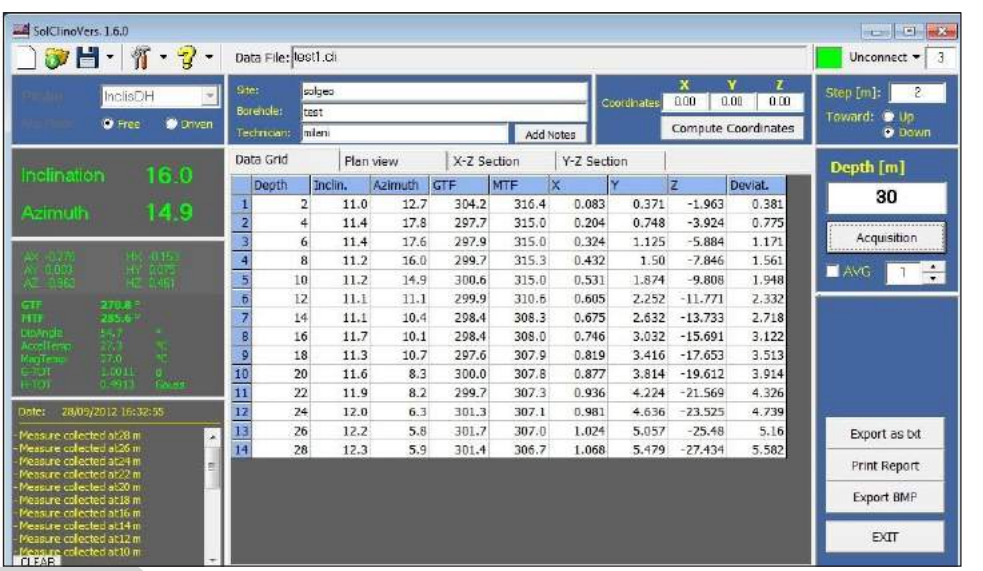

Illustration 1: User interface of the SolClino program

*** illustration of probe with centralizer**

Range of use:

The Inclis DH probe can be used in holes with metal casing or not, with any inclination and direction in space and minimum internal diameter of 45 mm.

- Inclination : 360 °
- Orientation : 360 °
- Hole diameter : from 40 mm to 140 mm with fixed or adjustable cantering
- Hole type: uncoated, coated with nonmagnetic pipe, metal coated.
- Hole depth: with standard cable 60m, up to 500m with optional cables

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The measurement execution is made with the free probe lowered into the hole, without the use of oriented rods.

For sub-horizontal or upwards inclined holes, it is necessary the use of the support rods and a set of rods in pvc expandable by threading, in order to push the probe into the hole.

Generally product supply includes :

- N. 1 Inclinometer probe (sensor form)
- N. 1 Extension 60 cm
- N. 1 Cable drum of 60 m
- N. 1 Connection cable with unit roll
- N. 1 Box interface with PC
- N. 1 USB A-B cable
- N. 2 Fixed Centering in Teflon
- N. 1 SolClino Software License

Optional items to be considered :

- Variable centering device ranging from 45 to 140 mm. Suggested as Mandatory.
- In case of metal (iron/steel) cased boreholes, it is important to select option of aluminium rods (provided in 2m segmented lengths). Number of rods to be opted for is based on depth of borehole.
- Furthermore, options are available of oriented and non-oriented aluminium rods.
- Support guide rods
- Set of PVC Rods (not oriented)
- Tripod arrangement for lowering the borehole probe

SolGeo S.r.l. Italy. SolGeo S.r.l. is a manufacturer of technological instruments for geophysics investigation & monitoring of structures & soils. Instruments are manufactured at Seriate, Italy.

*** illustration of use with Tripod Stand**

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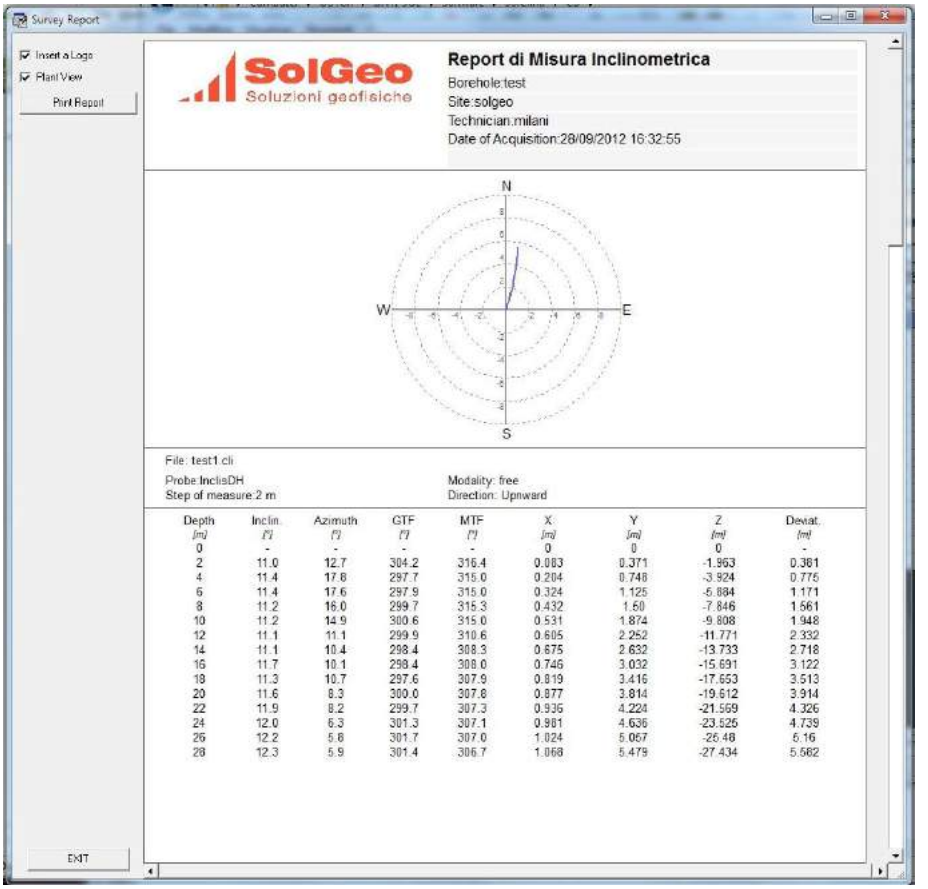
Data is acquired simply by setting initial parameters and by pressing the acquisition key. On every data acquisition the software updates the depth travelled with measuring steps defined as *Scent on Descent.

During acquisition it is possible to view the acquired data, collected in a grid of values. Refer 1 illustration 2 data displayed is :

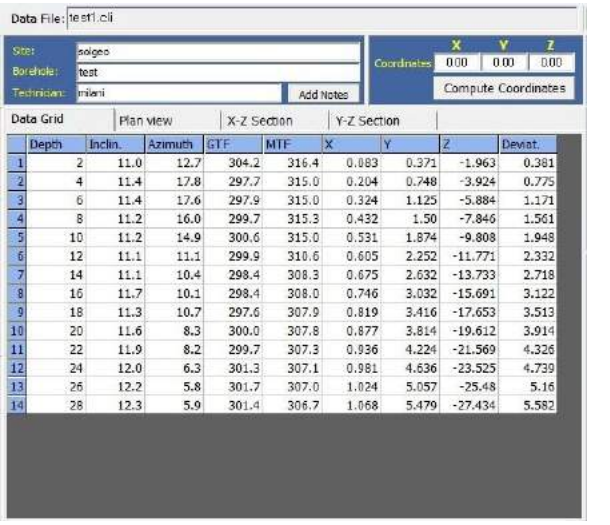
***Inclination**
***Azimuth**
***GTF :** Gravity Tool Face: probe rotation angle with respect to the gravitational field
***MTF :** Magnetic Tool Face: probe rotation angle with respect to the magnetic field
***Coordinates**
***Deviation**

The report can be printed as shown in illustration 3



Depth [m]	Inclin. [°]	Azimuth [°]	GTF [°]	MTF [°]	X [m]	Y [m]	Z [m]	Deviat. [m]
0	-	-	-	-	0	0	0	-
2	11.0	12.7	304.2	316.4	0.083	0.371	-1.963	0.381
4	11.4	17.8	297.7	315.0	0.204	0.748	-3.924	0.775
6	11.4	17.6	297.9	315.0	0.324	1.125	-5.884	1.171
8	11.2	16.0	299.7	315.3	0.432	1.50	-7.846	1.561
10	11.2	14.9	300.6	315.0	0.531	1.874	-9.808	1.948
12	11.1	11.1	299.9	310.6	0.605	2.252	-11.771	2.332
14	11.1	10.4	298.4	308.3	0.675	2.632	-13.733	2.718
16	11.7	10.1	298.4	308.0	0.746	3.032	-15.691	3.122
18	11.3	10.7	297.6	307.9	0.819	3.416	-17.653	3.513
20	11.6	8.3	300.0	307.8	0.877	3.814	-19.612	3.914
22	11.9	8.2	299.7	307.3	0.936	4.224	-21.569	4.326
24	12.0	6.3	301.3	307.1	0.981	4.636	-23.525	4.739
26	12.2	5.8	301.7	307.0	1.024	5.057	-25.48	5.16
28	12.3	5.9	301.4	306.7	1.068	5.479	-27.434	5.582

Illustration 3: Print window for Measurement Reports



	Depth	Inclin.	Azimuth	GTF	MTF	X	Y	Z	Deviat.
1	2	11.0	12.7	304.2	316.4	0.083	0.371	-1.963	0.381
2	4	11.4	17.8	297.7	315.0	0.204	0.748	-3.924	0.775
3	6	11.4	17.6	297.9	315.0	0.324	1.125	-5.884	1.171
4	8	11.2	16.0	299.7	315.3	0.432	1.50	-7.846	1.561
5	10	11.2	14.9	300.6	315.0	0.531	1.874	-9.808	1.948
6	12	11.1	11.1	299.9	310.6	0.605	2.252	-11.771	2.332
7	14	11.1	10.4	298.4	308.3	0.675	2.632	-13.733	2.718
8	16	11.7	10.1	298.4	308.0	0.746	3.032	-15.691	3.122
9	18	11.3	10.7	297.6	307.9	0.819	3.416	-17.653	3.513
10	20	11.6	8.3	300.0	307.8	0.877	3.814	-19.612	3.914
11	22	11.9	8.2	299.7	307.3	0.936	4.224	-21.569	4.326
12	24	12.0	6.3	301.3	307.1	0.981	4.636	-23.525	4.739
13	26	12.2	5.8	301.7	307.0	1.024	5.057	-25.48	5.16
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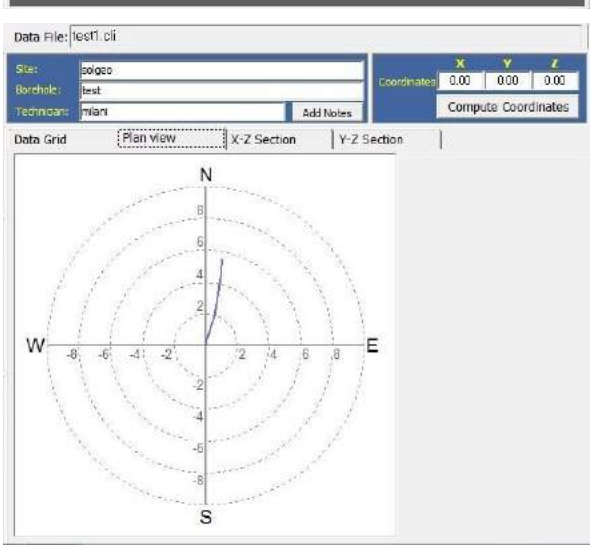

Illustration 2: Central form of window in "Data grid" ore in "Planar projection"

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Specifications :

Dimensions	2000 mm length x 30 mm diameter
Weight	4.1Kg, 20 Kg (with suitcase)
Operating temperature range	-25 to +85°C
Connector	Souriau 200 bar IP69
Enclosure material	Stainless steel
Digital output	RS422 (usb adapter provided)
Orientation range	0~180° Inclination; 0~360° azimuth
Accuracy	+/- 0.2° roll and inclination; +/- 0.5° Azimuth
Digital output rate/logging rate	Up to 5 Hz
Output models	Acceleration and magnetic field vectors; orientation angles; temperature
Non linearity	<0.1% (modello ±2g)
USB Version	
Communication	Provided USB to RS422 adapter
Application software	Running on PC with Win10 OS
Wireless Version	
Cable lenght	60 m (other length on request)
Operating temperature range	-20 to 60°C; 0 to 45°C during charge
Communication	Integrated WiFi hotspot
Led indicators	battery level, charge
Battery	3.7V Li-ion. 3600mAh
Autonomy	Up to 10 hours
Charging time	4 hours
Tablet characteristics	
Display size	Android, 8" display size

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Quality Management System
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