

## APPLICATIONS



- Depth determination of bedrock
- Determination of elastic-dynamic properties of surface deposits
- Foundation studies
- Preliminary investigations for the realization of important works (railroads, roads, oil pipelines)
- Cost estimation for excavation (rippability conditions)
- Evaluation of elastic-dynamic modules of materials
- Downhole survey with tridimensional borehole geophone
- Microseismics

## METHODS



When the main need is to operate within often limited spaces (a courtyard between houses, a road, a small fenced plot of land, the inside of a building or even a single structure), you may need only 3 geophones, positioned at a limited distance the one from the other, to carry on "miniature" seismic refraction profiles.

Calculation of "p" and "s" waves speed with a fair approximation makes it possible, with applications of simple mathematical formula, to evaluate rigidity, incompressibility, Young module and Poisson coefficient of a material. These "elastic-dynamic" parameters (so called because calculated using seismic methods) may be related to the "static" parameters (i.e. calculated through tests of geotechnical type) which, as normally measured on laboratory samples, may not be completely representative of the behaviour of "in-situ" geological material.

## AVAILABE MODELS



- CE-3S (standard version)
- CE-3S (special version)

The civil engineers' growing interest in the refractions seismics has induced us to design a low-cost, compact system being particularly apt for small-scale investigations. Extremely easy to use, CE-3S may also be employed by non specialised operators. All operations (setting, acquisition, print and data storage) are controlled by using only four buttons (UP-DOWN-MENU-OK).



SIS-020-000 SIS-021-000



SIS-060-017-3



SIS-040-000



SIS-006-017



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**MAIN FUNCTIONS**

- Freeze (freezing of acquisition on channel)
- Enhancement with or without "preview"
- Geophone polarity inversion
- Marker for the determination of video points on the time scale
- Delay: post-trigger 0-1000 ms (in steps of 1 ms)
- Automatic trace size
- Trigger: hammer switch or starter geophone
- Automatic recording up to 74 acquisitions
- Data download to PC through serial port using dedicated PCLINK software
- Data codification in ASCII proprietor format

**TECHNICAL FEATURES**

No of channels	3
Display	LCD 128X240 pixel, background lighting
A/D converter	12 bits on 3 simultaneous channels (no multiplexed)
Data treatment	16 bits floating point
Multilingual interface	Italian, English, French, Spanish, etc.
Recording length	from 7,4 to 717 ms (standard) from 1,8 to 239 ms (special)
Internal memory	74 acquisitions
Output	RS 232
Output data format	Proprietor ASCII
Enhancement	Yes
Freeze	Yes
Preview	Yes
Gains	selectable via software
Power supply	2 x rechargeable internal 6V - 4 A/h batteries
Autonomy	more than 50 h
Operating time	0°C ÷ +60°C
Printer (optional)	Seiko DPU-414 thermal printer
Dimensions	38 x 27 x 15 cm
Weight	8 kg



**BATTERY CHARGER**



**SAMPLING INTERVALS**

	special	standard
7.8	microsec	31
15.6	microsec	62
31.2	microsec	125
62.5	microsec	250
125	microsec	500
250	microsec	1000
500	microsec	2000
1000	microsec	3000

CE-3S Data Acquisition Software

TEMPO DI CAMP. 125us  
 DELAY 1 ms  
 GUADAGNO 1 2  
 GUADAGNO 2 10  
 GUADAGNO 3 100  
 START

VISUALIZZA M1= 3 ms M2= 1 ms M3= 0 ms  
 SALVA  
 NON SALVA/ESCI  
 STAMPA  
 VISUALIZZA