

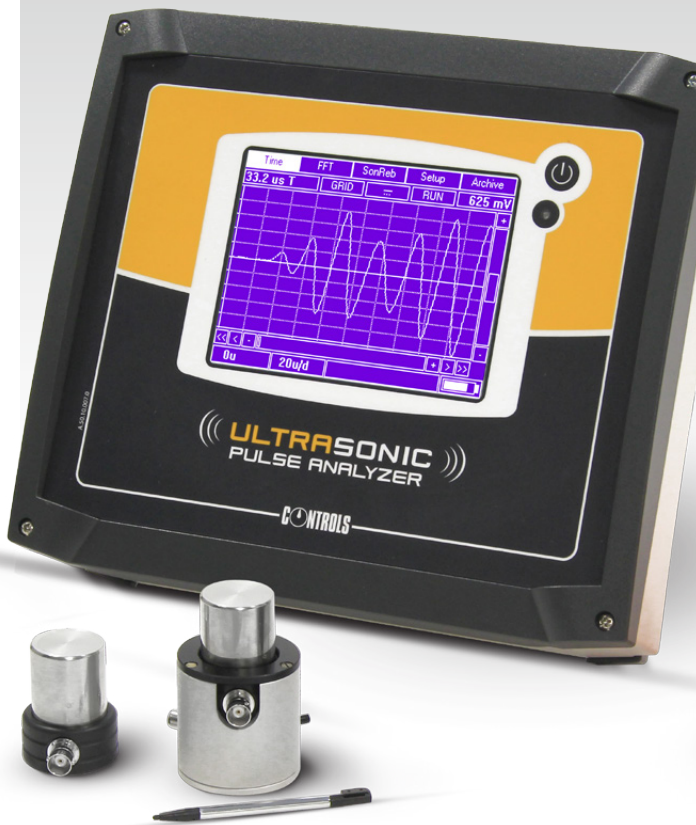
Ultrasonic pulse analyzer

ULTRASONIC PULSE ANALYZER

- Digital scope, 2 MHz sampling rate, 12 bit resolution
- Advanced picking algorithm providing the real arriving time of the pulse
- Signal processing by FFT method (Fast Fourier Transform)
- Assessment of concrete strength with combined method Ultrasonic velocity/Rebound index (SonReb)
- 7 selectable pre-amplifier gains (impulse amplitude)
- Transmitter pulse 2500 V
- Transit time up to 16 ms with 0.1 μ s resolution
- Slot for memory card to save data (2 GB=30000 tests)
- 6" Multifunctional touch screen display

This is just one of more than 4.000 products manufactured by CONTROLS, the global leader Testing Equipment for the construction industry in three business areas:

- Concrete and cements;
- Asphalt and bituminous mixtures;
- Soil and rocks.



Standards EN 12504-4 | ASTM C597

The PULSONIC is used for measuring the velocity of ultrasonic pulses through a concrete section providing informations on cracks, voids, strength, and giving quick estimates of dynamic modulus of elasticity on site or in the laboratory. It can also be used for estimating times for formwork striking. The pulse velocity can be combined with the rebound hammer value for the strength evaluation of concrete.

The unit includes an excel spreadsheet for the acquisition of the waveform on the PC for further elaborations.

Main applications

- Standard UPV measurement with incorporated oscilloscope. Conforming to EN 12504-4 and ASTM C597. Also suitable for determining the Dynamic Modulus of Elasticity. The meter features a very accurate measurement of the transit time.
- Measurement of the Attenuation of the Transmitted Energy. Very often the transit time only is not enough to identify disomogeneities and little damages as for example microcracking of concrete which are, on the contrary, well located with this technique by properly processing the acquired waveforms.

- Frequency Spectrum Analysis by FFT Method (Fast Fourier Transform-Algorithm). For determining the natural frequency of the ultrasonic pulse transmitted through the material. This determination is suitable for the examination of the pulse path and gives indications about possible cavities, delaminations, multi-layer elements or other similar dishomogeneities.
- Concrete Strength Evaluation combining the Rebound number and the UPV transit time. It is possible to use our digital test hammer to obtain the avarage value of rebound number. This value can be insert in the dedicated menu of UPV tester combining a typical surface measurement with the deeper UPV transit time in order to obtain a more reliable and extended information.
- Other applications. To identify and evaluate Crack depth, Honey combing, Injection quality.

Technical specifications

- The Ultrasonic Pulse Analyzer features a portable sturdy case, a large 6" backlight touch screen display making easy and practical the use of the apparatus.

Featuring:

- 2 MHz sampling rate with 12 bit resolution
- 7 selectable pre-amplifier gains
- 8 selectable low-pass filter cut frequencies
- Advanced signal processing (Transit time, Wave shape, FFT, SonReb)
- Selectable pulse rate 1, 2, 5 per second
- Transmitter pulse 2500 V
- Transit time up to 16 ms with 0.1 µs resolution
- Slot for memory to save data
- RS 232 and USB port for real time downloading to PC
- Battery operated by internal rechargeable battery pack (7.2 Ah) up to 9 working hours before recharging

Dimensions:

- (instrument only) 264x233x83 mm
- (carrying case) 500x400x140 mm

Weight approx.:

- (instrument only) 2.6 kg
- (complete outfit) 5 kg

58-E4900

PULSONIC, Ultrasonic pulse analyzer

Accessories

Testing heads (probes)

The standard 50 kHz transmitter and receiver heads are supplied with the tester. Different heads are available with different nominal working frequency, 24 and 150 kHz which is the usual range for normal concrete: the highest (150 kHz) is indicated for homogeneous concrete, the lowest (24 kHz) for heterogeneous concrete. Model 58-E0046/5 special probes with exponential profile, are used for the identification of minute cracks, air bubbles or material with low density. Two pieces are required.

Digital concrete hammer

58-C0181/DGT

User programmable digital concrete hammer. 110-230V, 50-60Hz, 1Ph.

Concrete test hammer

58-C0181/C

Concrete test hammer type N. Aluminium body. Supplied with hard plastic carrying case. Conforming to EN 12504-2 and ASTM C805

Model	Nominal frequency (kHz approx.)	Dimensions (mm)
58-E0046/30	24	Dia. 50x75
58-E0046/33	150	Dia. 25x54
58-E0046/5	54	Dia. 7/50x82 (exponential profile)



Exponential profile probes (58-E0046/5, 2 pcs)

Spare parts

58-E4800/P

Piezoelectric head for ultrasonic tester. Nominal frequency 50 kHz, dia.30mm x 50mm. Can be used either as receiver or transmitter. Fitted with BNC connector for coaxial cable (not included).

58-E4900/P

Piezoelectric head with sampling button for ultrasonic tester series 58-E4900. Nominal frequency 50 kHz, dia.30mm x 80mm. Fitted with BNC connector for coaxial cable (not included).

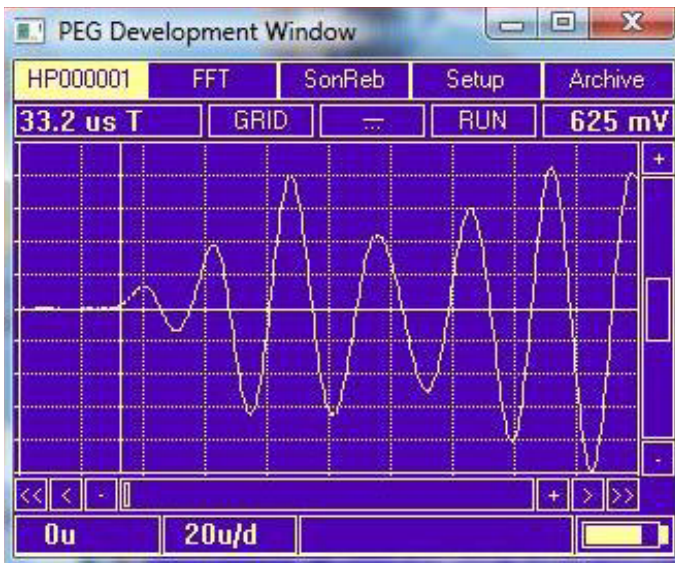
58-E0046/2

Spare 2 m cable for testing probe connection

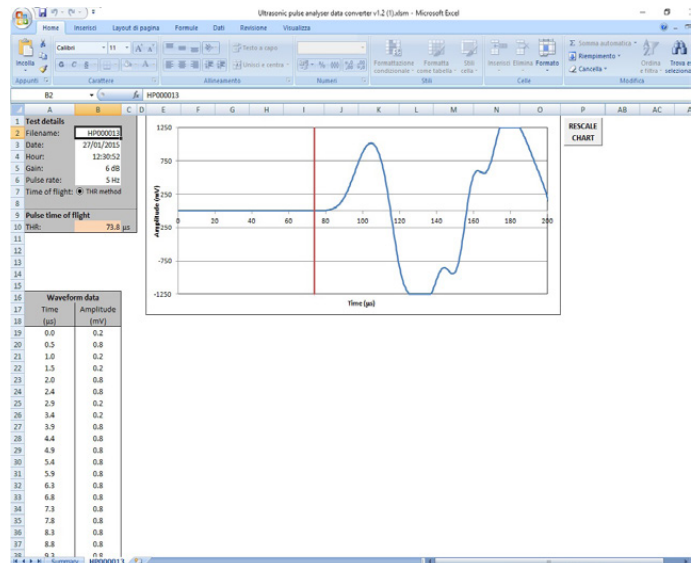
58-E0046/3

Coupling agent (contact paste), 250 cc bottle





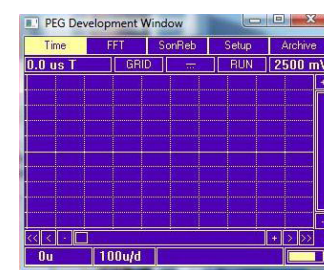
MAIN menu to acquire, show and save the received waveform



Excel spreadsheet for downloading the waveform into the PC



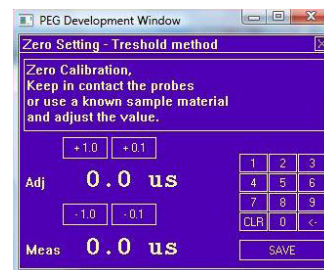
FFT menu for displaying Fast Fourier Transform of the signal



Time menu for acquisition, display and storage of waves received



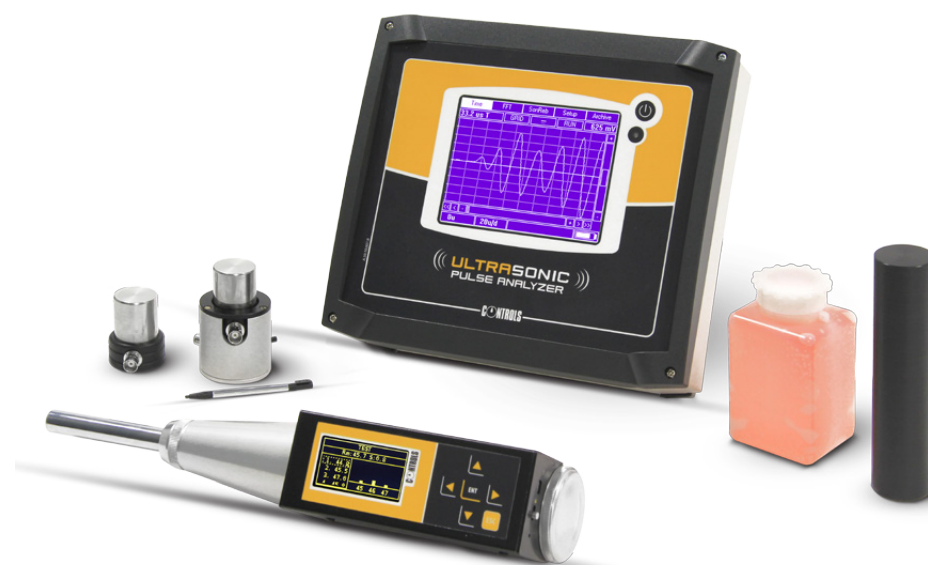
SETUP menu to set operative parameters



CALIBRATION menu



SonReb menu to evaluate the concrete strength combining the ultrasonic and concrete hammer measurements



SonReb analysis - Assessment of concrete strength with combined method Ultrasonic velocity (with S8-E4900) / Rebound index (with S8-C0181/DGT)

