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 average 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.
### 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.

#### Technical specifications

- The Ultrasonic Pulse Analyzer features a portable sturdy case, a large 6” backlit 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, Sonfile)
  - 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

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal frequency (kHz approx.)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>58-E0046/30</td>
<td>24</td>
<td>Dia. 50x75</td>
</tr>
<tr>
<td>58-E0046/33</td>
<td>150</td>
<td>Dia. 25x54</td>
</tr>
<tr>
<td>58-E0046/5</td>
<td>54</td>
<td>Dia. 750x82 (exponential profile)</td>
</tr>
</tbody>
</table>

### 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

### 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

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Exponential profile probes (58-E0046/5, 2 pcs)
SonReb analysis - Assessment of concrete strength with combined method Ultrasonic velocity (with 58-E4900) / Rebound index (with 58-C0181/DGT)

Time menu for acquisition, display and storage of waves received

Excel spreadsheet for downloading the waveform into the PC

FFT menu for displaying Fast Fourier Transform of the signal

SETUP menu to set operative parameters

CALIBRATION menu

SonReb menu to evaluate the concrete strength combining the ultrasonic and concrete hammer measurements
CONTROLS S.R.L. is certified ISO 9001:2008

In line with its continual program of product research and development, CONTROLS S.R.L. reserves the right to alter specifications to equipment at any time.