

The Icare® tonometer is ideal for measuring intraocular pressure. It is based on a measuring principle, in which a very light probe is used to make momentary contact with the cornea.

Requiring no drops, neither specialized skills for its use the quick and painless Icare® tonometry has an important role in IOP screening programs of masses.

The measurement is barely noticed by the patient and therefore suitable even for non-compliant patients, such as children and dementia patients.

The easy usage without anesthesia and dynamic patient flow obtained by the Icare® tonometer make it a very important instrument for ophthalmologists, optometrists, general practitioners, occupational health care and other medical personnel.

### Technical information

**Type:** TAO1i. The device conforms to CE regulations.  
**Dimensions:** 13 – 32 mm (W) \* 45 – 80 mm (H) \* 230 mm (L).  
**Weight:** 155 g (without batteries), 250 g (4 x AA batteries).  
**Power supply:** 4 x AA batteries.  
**Measurement range:** 7-50 mmHg.  
**Display range:** 0-99 mmHg  
 (IOP estimation beyond the measuring range).  
**Accuracy**  
 (95% tolerance interval relative to manometry):  
 ±1.2 mmHg (≤20 mmHg).  
**Repeatability** (coefficient of variation): <8%.  
**Accuracy of display:** 1.  
**Display unit:** Millimeter mercury (mmHg). There are no electrical connections from the tonometer to the patient. The device has B-type electric shock protection.  
**Storage/transportation environment:**  
 Temperature +5 to +40 °C.  
 Rel. humidity 10 to 80% (without condensation).

### Probe facts

Single use disposable tonometer probe.  
**Medically approved probe material:**  
 Valox 312C (PBT - Polybutylene Terephthalate)  
 Tested for biocompatibility according to ISO 10993.  
**Weight:** 26.5 mg.  
 (Sterilized using gamma radiation to achieve the Sterility Assurance Level (SAL) of <math>10^{-6}</math>. Currently sterilized probes available only on US Market due to FDA regulations. On other markets sterilized probes available on request.)

### Spare parts and supplies

Single-use probes  
 Probe base replacement kit

### Rebound technology

In rebound tonometry, a very light (26.5 mg) and slow moving probe is used to make momentary contact with the cornea and the motion parameters of the probe are analyzed. When the probe makes contact with cornea of the eye, the deceleration of the probe depends on the intraocular pressure. The higher the IOP, the faster the probe decelerates. Also the contact time during the impact is shorter at high IOPs and longer at low IOPs. Motion parameters are measured indirectly by the coil sensor system utilizing induction of the moving magnetic probe. The total kinetic energy of the probe is very low, approximately one micro Joule, and only a small fraction of the energy is absorbed in the eye.

### Performance data

The performance data is obtained from a clinical studies, performed according to American National Standard ANSI Z80.10-2003 and International Standard ISO 8612.2 for tonometers. The mean paired difference and standard deviation (Goldmann-Icare) were -0.4 mmHg and 3.4 mmHg.



### Certifications & Approvals

CE approved 2003  
 ISO 13485 certified 2005  
 TÜV Nord CERT GmbH is a TÜV CERT certification body  
 US FDA approved 2007 (510(k)-number K063873)  
 Chinese SFDA approved 2008  
 Japan Shonin approved 2004

Complies with:  
 Medical Device Directive 93/42/EEC  
 Canadian Medical Device Regulations

### Study references

CLINICAL COMPARISON OF THE ICARE TONOMETER AND GOLDMANN APPLANATION TONOMETRY

"The Icare Instrument was easy to use and was able to obtain rapid and consistent readings with minimal training. It was tolerated well by patients with no use of topical anesthetic."

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REPRODUCIBILITY AND TOLERABILITY OF THE ICARE REBOUND TONOMETER IN SCHOOL CHILDREN

"Measurement of intraocular pressure (IOP) with the rebound tonometer (RBT) is a highly reproducible method in schoolchildren showing high intraobserver and interobserver correlation and it seems to be very comfortable when performing IOP measurements in schoolchildren without an anesthetic."

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