

# Hand-held devices with database access to measure either multiple spectrum transmission or sugar content of liquid samples.

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## Abstract

We present a self-powered compact hand-held device with bluetooth connectivity to access database. The devices are about a credit card size with a thickness of 12mm. One device based on multiple LED light system measures transmission of liquid samples ( $\pm 2\%$ ). The other device, based on total internal reflection, determines the sugar content of liquids ( $\pm 0.2$  Brix).

## Economical impact

These quite inexpensive devices fill the gap between the current tracking management systems and the data transfer of a high number of good quality measurements. The market of such devices can be enlarged to companies that have to measure such parameters of their products in a faster and real time way in situ.


### Brix measurement




Measurements are done in ambient light.  
 Instrument size: 90 mm x 60 x mm x 12 mm  
 Weight: 120 g

The liquid sample has to be placed on the window  
 Results displayed on a OLED screen  
 Precision  $\pm 0.2$  Brix  
 Resolution  $\pm 0.1$  Brix  
 Temperature compensated (10°C to 40°C)  
 Bluetooth data transfer  
 Li-Ion Rechargeable battery

Optical principle  
 Internal total reflection angle measurement

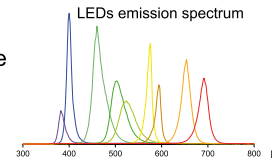


### Multiple spectrum transmission



Measurements are done in ambient light.  
 Instrument size: 100 mm x 70 x mm x 14 mm  
 Weight: 80 g

The liquid sample has to be placed in a cuvette  
 Results displayed on a OLED screen  
 Precision  $\pm 2\%$   
 Resolution Spectrum of each source  
 Bluetooth data transfer  
 Li-Ion Rechargeable battery



Optical principle  
 Home-made diffusing light sources from 383nm to 700nm based on a LED chip and two detectors

