



IC-Meter
Indoor Climate

IC-Meter Indoor climate and energy Services and products

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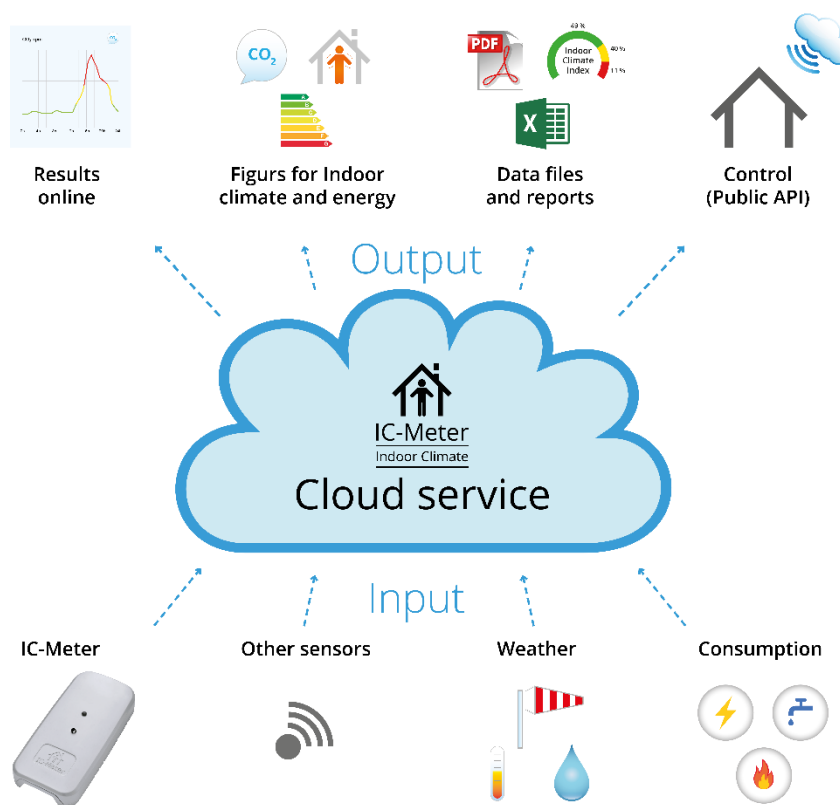
IC-Meter Cloud® – Indoor climate and energy

IC-Meter is a comprehensive concept that provides information for visualization and management of the property's indoor climate and energy consumption, based on an advanced Cloud service IC-Meter Cloud® – the building's 'Black Box'.

IC-Meter Cloud® analyzes and documents the actual indoor climate and energy consumption and builds up a model of energy consumption as a function of indoor climate, local weather and energy consumption. IC-Meter Cloud® is based on input from professional measuring boxes and relevant remote-read data sources, a.o.t. weather data and consumption (heat, electricity and water).

IC-Meter Cloud® is operated via a user-friendly Web application, which you log on via PC, Smartphone or Tablet.

IC-Meter Cloud® is based on open data standards and all data belong to the customer, who can exchange data with their own and external IT systems and CTS systems via open APIs. This means that the customer is free to choose IT systems and partners. Data is stored in Data Warehouse with encryption via 128-bit encryption key.



IC-Meter is mainly used in apartment buildings, office buildings and teaching rooms.







Examples of use:

- Continuous reporting of indoor climate and activity level, with e.g. weekly and monthly reports
- Collection, analysis and visualization of data from remote-read heat, electricity and water meters with e.g. KPIs, monthly reporting and calculated energy label based on actual measurements
- Commissioning - analyzes of indoor climate and energy before and after renovation
- Billing for indoor climate comfort in apartment buildings – based on measured indoor climate
- Advanced control of the building's ventilation based on indoor climate, weather data and activity level - ensures good and documented indoor climate with a minimum of air change and energy loss

IC-Meter Cloud[®] - Modules

IC-Meter Cloud[®] is operated via a user-friendly Web application with screen display of key figures, graphs and several extraction options, including finished pdf reports, Excel / csv data files and open API.

You start by subscribing to IC-Meter Cloud Basic © which contains all the basic functions. Then you can buy special modules for e.g. demand-controlled ventilation or billing for indoor climate comfort.

<p>IC-Meter Cloud Basic[®]</p>      	<p>Server and website operation where all data is handled securely, available 24 hours a day, including:</p> <p>Administration of Buildings, Units (rooms) and IC-Meter measuring boxes</p> <ul style="list-style-type: none"> • Location, floor area etc. • Sharing data with others. Who can see what data? • Groups of Buildings (e.g. schools/offices) and Units (e.g. teaching rooms) • Operating status on measuring boxes with latest upload, signal strength, battery status etc. • Connection of additional sensors • Alarms, climate classes and calibration. <p>Screen display via PC, Smartphone or Tablet</p> <ul style="list-style-type: none"> • Indoor climate online (temp, RH-%, CO₂ and noise). Status, day, week, month, year • Local weather (from yr.no). • Use Patterns. Activity Index. When is someone present in the room? • Groups and energy zones • Free display of consumption data (heat, electricity and water) <p>Reporting</p> <ul style="list-style-type: none"> • Week and Month PDF reports • Excel/csv files • Open API for integration with other systems <p>Support and hotline</p> <ul style="list-style-type: none"> • Phone and email support as well as ongoing online software update
<p>Energy labeling</p>	<p>Energy analysis and energy labeling based on measured heat consumption as a function of differences in indoor and outdoor climate and activity</p> <ul style="list-style-type: none"> • Calculation of the building's energy label based on actual measurements • Subdivision of heat and electricity consumption for use purpose • Key figures for benchmarking versus other buildings
<p>Ventilation control</p>	<p>Cloud-based ventilation control based on data from IC-Meter measuring boxes. Indoor climate data is automatically uploaded every 5 minutes to the IC-Meter Cloud which provides control orders for ventilation systems and dampers..</p> <ul style="list-style-type: none"> • Analysis of ventilation system adjustment and efficiency • The air change is adapted to the actual needs and the individual housing • Intelligent algorithms in IC-Meter Cloud calculate air change, pollution patterns, water vapor production, behavior patterns, etc.
<p>Billing for indoor climate comfort</p>	<p>Economy-module for billing and invoicing indoor climate comfort in apartment buildings.</p> <ul style="list-style-type: none"> • Collecting the tenants via the housing administration's financial system • PDF file with monthly reports for each tenant (indoor climate and amount)

IC-Meter indoor climate measuring box for GSM

IC-Meter GSM[®]

Indoor climate measuring box, that measures temperature, humidity, CO₂, noise dB (A) and light with prof sensors.

Data is uploaded every 5. minutes to IC-Meter Cloud[®]. Subscription to IC-Meter Cloud[®] is ordered separately.

- Data is uploaded via built in GSM-module for 2G SIMcard. That makes IC-Meter independent of the building's internet. (2G SIMcard is purchased separately)
- Option to connect external sensors with Microjack
- For fixed installation a hidden power supply is recommended
- Table rack available as accessory (Item no. 9010)
- Supplied in a cardboard box with power adapter, 2-meter cable, wall bracket with plugs/screws and sticker with QR code

Placement. The box should be placed vertically and preferably wall mounted, which is the setup that provides the most accurate sound measurement. If sound measurement is carried out in the middle of the room, the measurement can be up to 6 dB (A) lower.

The ideal placement is on an interior wall 1.2 meters above the floor, min. 1.5 meters from radiators and seatings. Avoid direct sunlight.

Technical specifications:

CO₂ Sensor: Sense Air S8. Measurement range: 380 – 10.000 ppm.

Temperature and Humidity sensor: Sensirion SHT21. Measurement range: -20 – 80 °C (typ +/- 0,3 °C), 0 – 95% RH (typ +/-2% RH) (non-condensed).

Sound sensor: Invensense ADMP404. Sensitivity: 32 – 110dB (A).

GPRS: Dual band 900MHz/1800MHz. Data consumption: about 35 MB/month.

Power Consumption: 12 mA, 400 mA peak (100 mW average).

Power supply: 5V DC/2A. Box dimensions: L 14.5 cm x W 7 cm x H 2.5 cm.

1501: IC-Meter GSM[®]

IC-Meter GSM[®] - in carrying case

As 1501, but supplied in foam lined, lockable transport case with 5V DC / 2A power supply and 2-meter + 5-meter extension power cable, acrylic table stand and bracket for fixed wall mounting.

The case is suitable for IC-Meters that are moved around. It includes a 5-meter extension power cable if the IC-meter box must be placed at greater distances from the power outlet. The cable is low voltage (5V) and can be taped or hidden in a cable track along a panel.

1601: IC-Meter GSM[®] - in carrying case



IC-Meter indoor climate measuring box for LoRa

IC-Meter LoRa®

Indoor climate measuring box, that measures temperature, humidity, CO₂, noise dB (A) and light with prof sensors.

Data is uploaded every 5. minutes to IC-Meter Cloud®. Subscription to IC-Meter Cloud® is ordered separately.

- Data is uploaded via local wireless LoRa network (IC-Meter may possibly deliver LoRa network)
- Available with rechargeable battery (lifetime 3-6 md), which is charged using the supplied power supply
- For fixed installation a hidden power supply is recommended
- Table rack available as accessory (Item no. 9010)
- Supplied in a cardboard box with power adapter, 2-meter cable, wall bracket with plugs/screws and sticker with QR code

Placement. The box should be placed vertically and preferably wall mounted, which is the setup that provides the most accurate sound measurement. If sound measurement is carried out in the middle of the room, the measurement can be up to 6 dB (A) lower.

The ideal placement is on an interior wall 1.2 meters above the floor, min. 1.5 meters from radiators and seatings. Avoid direct sunlight.

Tekniske specifikationer:

CO₂ Sensor: Sense Air LP8. Measurement range: 0 – 10.000 ppm.

Temperature and Humidity sensor: Sensirion SHT21. Measurement range: -20 – 80 °C (typ +/- 0,3 °C), 0 – 95% RH (typ +/-2% RH) (ikke kondenserende).

Lyd sensor: Invensense ADMDP404. Følsomhed: 32 – 110dB (A).

Strømforsyning: 5V DC / 2A. Strømforbrug per år: 11 Wh (0,01 kWh).

LoRa: 868 MHz ISM Frequency Band.

Mål: H 14,5 cm x B 7 cm x D 2,5 cm

1511: IC-Meter LoRa®

1512: IC-Meter LoRa® with battery



Also available with battery.

IC-Meter LoRa® with battery – in carrying case

As 1512, but supplied in foam lined, lockable transport case with 5V DC / 2A power supply and 2-meter + 5-meter extension power cable, acrylic table stand and bracket for fixed wall mounting.

Kufferten er velegnet til målere der flyttes rundt, og indeholder derfor et 5 meter forlænger-strømkabel, hvis IC-Meter boksen skal placeres i længere afstande fra stikkontakten. Kablet er lavvoltage (5V) og kan fx tapes fast eller skjules i en kabelskinne.

1612: IC-Meter LoRa® with battery – in carrying case



IC-Meter extra equipment

Carrying case for IC-Meter

Foam-lined, lockable carrying case in aluminum

- Room for 1 or 2 IC-Meters with equipment
- Includes a 5-meter extension power cable (Item no. 9021) and acrylic stand to put on a table/shelf or wall hanging (Item no. 9010)

Outside dimensions (L x W x H): 320 x 230 x 150 mm. Weight: 1.6 kg.

9001: Carrying case for IC-Meter



Table stand for IC-Meter

Acrylic stand to put on a table/shelf or wall hanging.

Ensures that IC-Meter is in vertical position without covering the ventilation slots (requirement for the measurement accuracy). The plate can be used also separately for wall-hanging on a nail.

NOTE: Wall mounting is the setup that provides the most accurate sound measurement (If sound measurement is carried out in the middle of the room, the measurement can be up to 6 dB (A) lower).

9010: Table stand for IC-Meter



IC-Meter extra equipment

IC-Meter temperature + humidity sensor

External sensor for measuring temperature or humidity.

- Is connected to IC-Meter Mobile with the included 5-meter data cable (Item no. 9022) and configured under 'Box settings / Advanced / Extra sensors and Meters'
- Data is uploaded every 5 minutes and displayed online in the usual screen display and in data-reports

To supplement IC-Meters indoor climate measurements e.g. in ventilation ducts, refrigerators, cold outer walls or flow temperature of a heating pipe.

2010: IC-Meter temperature + humidity sensor



IC-Meter power supply 230V-5V for installation

Power supply for installation in LK Fuga® 1½ wall mounting box

- For IC-Meter GSM and LoRa
- 230V – 5V DC / 1A
- Supplied without cable

For hidden power supply of the IC-Meter box, which can be placed at longer distances from the power supply, e.g. using a 5-meter extension cable (Item no. 9021) taped or hidden in a cable rail along panels.

Dimensions: (L x W x H): 68 x 44 x 27 mm.

9100: IC-Meter power supply for installation

9021: Extension power cable, 5-meter, white



Suitable for LK FUGA® 1½ mounting boxes, that can be purchased from electrical wholesalers.



IC-Meter cables

<p>Extra power supply incl. 2-meter cable, white</p> <p>2-meter cable (USB he – Micro USB).</p> <ul style="list-style-type: none"> • 230V / 5V DC - 2A • Also included standard <p>9019: Power supply 230V / 5V 9020: 2-meter power cable, white</p>	
<p>Extension power cable, 5-meter, white</p> <p>USB he – Micro USB.</p> <p>9021: Extension power cable, 5-meter, white</p>	
<p>Data cable, 5-meter, white</p> <p>Microjack – Microjack. For uploading sensor and measurement data / control signal.</p> <p>9022: Data cable, 5-meter, white</p>	
<p>Data cable, 5-meter, white</p> <p>Microjack – USB she. For ON/OFF-control signals.</p> <p>9024: Data cable, 5-meter, white</p>	

2G Micro-SIMcard for IC-Meter GSM

Telenor 2G Micro-SIMcard

2G Mikro-SIMcard for IC-Meter GSM. IC-Meter has an agreement with Telenor to offer ordering, delivery and billing made through IC-Meter.

- Works throughout Europe (via roaming partners)
- Payment in advance for subscription + data consumption for the rest of the year. Consumption period may be extended one year at a time

The cards are without activated PIN code and only for m2m use (without talk/SMS/MMS). To avoid abuse, the usage has been restricted to the IC-Meter data consumption of approx. 35 MB/month.

9035: Telenor 2G SIMcard EUR, incl. subscription + data consumption up to 31.12.

9036: Telenor 2G SIMcard EUR, 1-year extra data consumption



Micro-SIM 2G m2m