

# Energy measurements

for local and district heating / cooling



## Comprehensive range of products and system solutions to meet all needs:

- Low start-up values, high measurement dynamics and accuracy
- Covers extended temperature range, including cooling systems
- Recalibration without interrupting processes possible
- Problem-free integration into data recording systems thanks to a wide range of communications options
- Minimisation of your total lifecycle costs, our focus is on „Total Cost of Ownership“

# Calibration and services

INTEGRA Metering is an authorised, recognised certification point for Switzerland and Germany and maintains an independent, pan-European accredited calibration station for heat, water and oil volumes in accordance with ISO/IE 17025. INTEGRA Metering has one of the few cold water test beds which are able to test volume measurement parts up to a nominal diameter of 250 mm and a maximum flow rate of 1200 m<sup>3</sup>/h. The performance range includes the following areas:

## ISO/IEC 17025 standard

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- Neutral calibration by independent head of SCS077 calibration station
- All meters can be adjusted and calibrated by INTEGRA Metering
- The benefits of the calibration lab are clear: expertise, flexibility and short delivery times

## Repairs

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After repairs/adjustments at major measuring stations, INTEGRA Metering recommends SCS calibration if specific calibration is not required. Your benefits:

- Known measurement results
- Quality control (calibration)

## Calibration

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Metering points relevant for billing must be recalibrated periodically after the calibration period has expired (calibration periods according to national regulations). Recalibration is always preceded by a legally prescribed revision or repair. Your benefit:

- Fair distribution of costs
- Sustainable use of meter fleet and protection of investment
- Fulfilment of the legal requirements

## Classification inspection

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Certified measurement calibration for international type classifications in the energy metering sector.

- You know that the device complies with the statutory service life and the defined tolerances.
- You have the peace of mind that the meter complies with the required measurement accuracy throughout the calibration validity period defined.

## Heating and cooling meter set-up

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Expert set-up with approval protocol. The benefits to you

- Set-up in accordance with statutory regulations
- Official approval protocol



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# From generation to distribution



## Central readout and data communication

### AMBUS® II WEBLOG 250 and AMBUS® II CMe3100

Data centres with integrated web server for the local consolidation and display of metered values from electricity, gas, water and energy meters. Standard interfaces for connection to higher-level energy data management systems.

## 1 Heat generation and main distribution

### CALEC® ST III and AMFLO® SONIC DryX-II

The AMFLO® SONIC DryX-II ultrasonic flowmeter provides an integrated solution in conjunction with the CALEC® ST III energy calculator. The modular system is based on three components which can be replaced at any time without compromising measurement accuracy. The components are a measurement tube, sensor system with measurement electronics and a calculator with temperature sensors. For recalibration, only the sensor systems and electronics need to be checked, the measurement tube remains in the system.

Features:

- Measurement independent of water quality and magnetite deposits
- No inlet and outlet sections required
- Approved in accordance with EN 1434 Class 2, measurement dynamic 1:250
- Hot sensor swapping
- Recalibration without interrupting the process
- High measurement accuracy and dynamics
- Minimum pressure loss
- Pulse outputs, analogue outputs and communications interfaces can be fitted on modular basis | can be used universally

### AMFLO® SONIC UFA-280

Ultrasonic flow sensor UFA 280 for combination with calculators for heat and cold flow measurements.

The applications are flow measurements in the areas of heating and cooling, in combination with our CALEC® ST III calculators also for bidirectional energy or volume measurements.

Features:

- 2 track ultrasonic measuring principle
- Nominal sizes DN 50 - DN 1200
- Nominal flow Qp up to 18000 m<sup>3</sup>/h
- Media temperature 2-120 °C (150 °C & 200 °C)
- Nominal pressure up to PN 40
- Measuring accuracy ±0.5%

Your benefits:

- Wear-free, since there are no moving parts
- High measuring accuracy
- Compact or separate design
- Battery or mains operation

## 2 Heat distribution

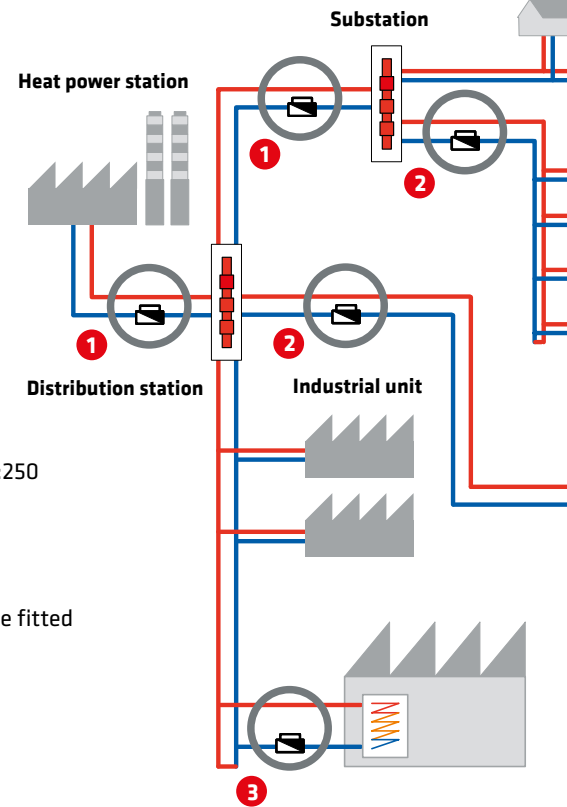
### CALEC® ST III mit RUBIN® WPD FS

The mechanical flow transmitters from the RUBIN family operate according to the Woltman principle and, together with the CALEC® ST III energy calculator, are especially suitable for larger energy quantities and flow rates in distribution circuits and substations. Versions for networks with high temperature and pressure rating are also available.

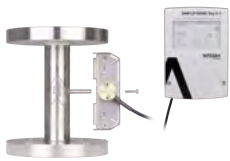
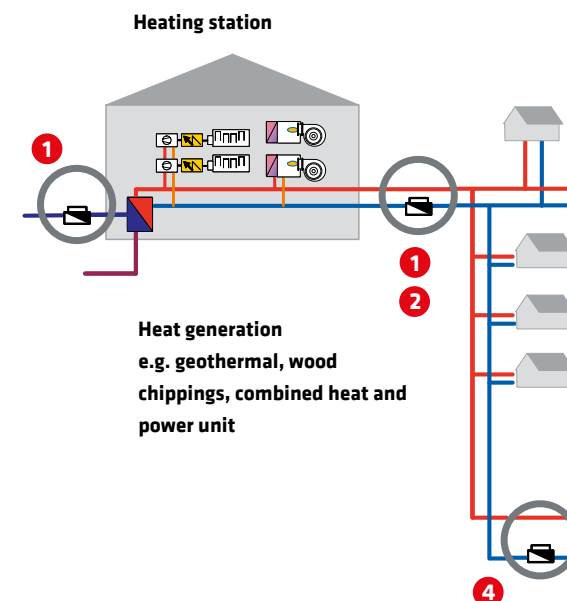
Features:

- Temperatures up to 130 °C
- Nominal pressure up to 16 bar
- Nominal flow Qp up to 600 m<sup>3</sup>/h

## Municipal heat supply



## Local heat supply



### 3 Heat transfer points at substations and buildings

#### CALEC® ST III with AMFLO® SONIC UFA-113 ultrasonic flow sensor

In conjunction with the CALEC® ST III energy calculator, the ultrasonic flow sensor provides excellent performance data at average heat outputs, especially for distribution stations and large buildings such as apartment blocks, hospitals and supermarkets.

Features:

- Measurement independent of water quality and magnetite deposits
- Wear-free, rugged measurement system
- High accuracy and long-term stability
- Minimum pressure loss
- As well as communication via M-bus, a range of other standard interfaces are available
- Real-time tariff model direct at measuring point level
- Nominal diameters DN 15 to 100



### 4 House transfer station

#### CALEC® ST III with MTH

The mechanical flowmeters in the MTH-family, work on the multijet principle and are designed specially to meet the requirements of heat supply networks and their transfer stations. Various versions of the associated energy calculators in the CALEC® ST III range are available as a function of the requirements.

Features:

- Temperatures up to 120 °C
- Nominal pressure up to 16 bar
- Nominal flow  $Q_p$  up to 15 m<sup>3</sup>/h
- No inlet and outlet sections required
- Versions also available for downpipes and riser pipes
- As well as communication via M-bus, a range of other standard interfaces are available



### 5 House transfer station

#### AMTRON® SONIC D and AMTRON® S3U

##### Compact meters for heating and cooling

For energy measuring in separate residential units, cost-effective and reliable compact heat meters are available based on static or mechanical measurement principles.

Features:

- Temperatures up to 150 °C
- Nominal flow  $Q_p$  up to 60 m<sup>3</sup>/h
- Connection to central meter reading station via M-Bus or radio
- Connection of 2 external meters possible
- Can also be used for cooling mode and combined heating/cooling mode



### MID for cold networks and low-temperature networks

#### AMFLO® MAG Smart and AMFLO® MAG Pro

In conjunction with the CALEC® energy calculator, the magnetic-inductive flow meter provides highly accurate measurement of electrically conductive coolants. For heat-transfer fluids with frost protection additives, the from water different specific heat capacity and density are automatically compensated in the CALEC® calculator throughout the whole temperature range. Can also be used for bidirectional energy measurements (heating/cooling, charging/discharging). Delivers highly accurate results even from confined fitting conditions and very small temperature differentials.

Features:

- DN15 up to 1000
- $Q_p$  12 l/h up to 28'500 m<sup>3</sup>/h
- MID conformity approval and PTB cooling approval



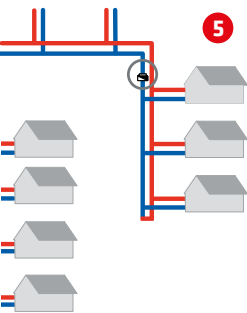
### Accessories

#### Temperature sensors

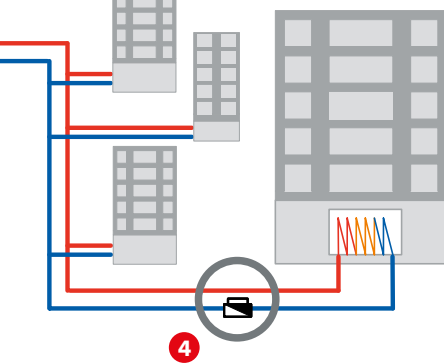
The complete range of temperature sensors calibrated in pairs, for 2- and 4-wire systems. Cable lengths up to 100 m are possible. Six different lengths are available for sensors with direct immersion or with their immersion sleeves.



Residential settlement

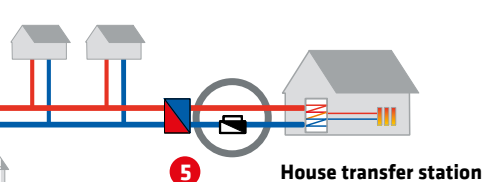


Business park



Residential areas

Heating system



Transfer station

