

# Supercal 5 I

## Multifunctional Calculator



### Application

The Supercal 5 I is Sontex's next-generation calculator, succeeding the well-known Supercal 531.

This new series is characterised by state-of-the-art multi-functional technologies, is based on a user-friendly modular concept and fully meets customer specific needs as simplified system integration, tariff and data logger functions, universal data transfer and connection to system processors.

Because the design of the Supercal 5 I aim at a high degree of flexibility while keeping future standards in mind, it is ideally suited as a heat or cooling meter, as well as a combined heat/cooling meter. Its volume input can be combined with mechanical, magnetic-flow, ultrasonic or fluidic oscillators flow sensors. The additional pulse inputs allow the connection of hot or cold water, gas, oil, and electricity meters.

Thanks to its extensive range of options for data communication, as well as its flexibility for collecting and recording dynamic plant data, the Supercal 5 I also lend itself well to applications in district heating networks and industry installations.



Datasheet | Supercal 5 I

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## Innovations

- Optimisation of the housing for easier installation
- NFC technology for simplified and user-friendly configuration using Superprog Android.
- Large illuminated dot-matrix display (128 × 64) for improved navigation
- 2 LEDs indicate, in real time, the status of the calculator
- Fully customisable tariff and data logger functions
- Display menu position customizable by Superprog Windows Software
- Lifespan of 6 + 1 years without additional power supply module
- Expanded data storage for enhanced monitoring

## Features

- Calculator for heat meters, cooling meters or combined heat/cooling meters
- Battery or mains powered for increased flexibility
- Exchangeable upper part (MET) while wiring remains in place
- Modules can be retrofitted or replaced at any time without affecting the approval
- Self-recognition of optional modules
- Native M-Bus interface according to EN 1434-3
- Optical interface according to IEC 62056-21:2002
- 2- or 4-wire temperature sensors without any configuration
- 2 pulse/state inputs and 2 pulse/state open drain outputs
- User-friendly menu navigation

## Optional Power Supply Modules

One plug and play power supply module can be retrofitted, either Ex Works or on site, or replaced at any time without affecting the approval of the calculator. The calculator recognises automatically the following types of power supplies:

- Lithium D battery 3,6 V
- Mains 24 VDC / 24 VAC (range 12 to 42 VDC / 12 to 36 VAC)
- 230 VAC - 50/60 Hz (range 90 VAC to 240 VAC)

## Optional Modules

Up to two plug and play modules can be retrofitted, either Ex Works or on site, or replaced at any time without affecting the approval of the calculator. The calculator recognises automatically the following types of modules:

- Analog Output Module (0..20 mA, 4..20 mA, 0(2)..10 VDC)
- Input Module (state/pulse)
- Output Module (state/pulse)
- M-Bus Module
- BACnet/Modbus Module

## Data Logger

The calculator's data logger is fully customisable and allows the following recordings:

- Up to 4 individual historic registers for recording energy, volume, input values

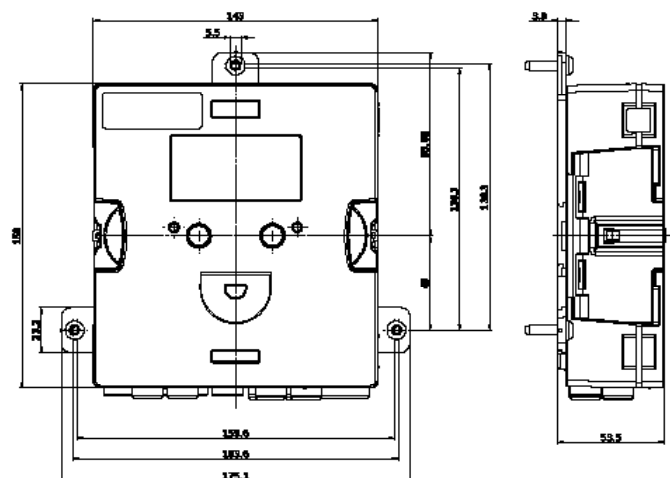
- Average values
- Peak values
- Event log

The only limitation is given by the available memory, which is 10 kB. Each value takes 4 bytes of storage except the maximum values and the event log values that take 8 bytes. Therefore, up to 2'175 values can be recorded.

## Optional Radio Communication

- Bidirectional SONTEx radio communication
  - Frequency: 433.82 MHz
  - Communication: Bidirectional
  - Protocol: Radian 0
  - Encryption: AES-128
  - Broadcasting performance: 10 mW (10 dbm)
- Unidirectional wM-Bus communication
  - Frequency: 868.95 MHz
  - Communication: Unidirectional
  - Protocol: Wireless M-Bus according EN 13757-4
  - Encryption: AES-128
  - Broadcasting interval: Standard 120 sec. (Mode T1/C1, encryption mode 5/7)
  - Broadcasting performance: 25 mW (14 dbm)
- LoRaWAN
  - Frequency: 868.95 MHz - EU868, normed by ETSI (EN300.220)
  - Communication: Bidirectional
  - Protocol: Radian – EN60870-5 (M-Bus)
  - Encryption: AES-128
  - Broadcasting performance: 25 mW (14dBm)
  - Cycle: Standard every 2 hours

## Dimensions



## Technical Data

|                                    |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Temperature Measurement</b>     | <ul style="list-style-type: none"> <li>Type of temperatur sensor</li> <li>Cabling</li> <li>Absolute temperature range</li> <li>Approved range</li> <li>Homologation range</li> <li>Response limit</li> <li>Temperature resolution t</li> <li>Temperature resolution <math>\Delta t</math></li> <li>Environmental class A</li> </ul> | Pt500 according to EN 60751<br>2- or 4-wires<br>– 20°C to 200°C<br>1°C to 200°C<br>3 K to 150 K<br>0,2 K<br>0,1 K<br>0.01K<br>E1/M1 |
| <b>Temperature Measuring Cycle</b> | <ul style="list-style-type: none"> <li>Battery operated</li> <li>Mains operated</li> </ul>                                                                                                                                                                                                                                          | 10s<br>3 s                                                                                                                          |
| <b>Medium Temperature</b>          | <ul style="list-style-type: none"> <li>Operation</li> <li>Storing and transport</li> </ul>                                                                                                                                                                                                                                          | 5°C to 55°C<br>–20°C to 70°C (dry environment)                                                                                      |
| <b>Display</b>                     | <ul style="list-style-type: none"> <li>Illuminated dot-matrix</li> </ul>                                                                                                                                                                                                                                                            | 128 × 64 pixels                                                                                                                     |
| <b>Display Units</b>               | <ul style="list-style-type: none"> <li>Energy</li> <li>Volume</li> <li>Additional pulse inputs</li> <li>Temperature</li> </ul>                                                                                                                                                                                                      | kWh, MWh, MJ, GJ, kBtu, MBtu, Mcal, Gcal<br>L, m³, gal (US), kgal (US), ft³<br>Energy or volume<br>°C, °F                           |
| <b>Lifespan Supply Modules</b>     | <ul style="list-style-type: none"> <li>w/o supply</li> <li>D battery</li> <li>Mains 230 VAC</li> <li>Mains 24 VAC / 24 VDC</li> </ul>                                                                                                                                                                                               | 6 + 1 years (backup for metrological part)<br>12 + 1 years<br>-<br>-                                                                |
| <b>Degree of Protection</b>        | <ul style="list-style-type: none"> <li>IP-Code</li> </ul>                                                                                                                                                                                                                                                                           | IP 65 in accordance to IEC 60529                                                                                                    |
| <b>Pulse Inputs</b>                | <b>Frequencies</b> <ul style="list-style-type: none"> <li>Without supply</li> <li>D battery</li> <li>External Mains</li> </ul> <b>Input voltage</b>                                                                                                                                                                                 | maximum 5 Hz<br>maximum 200 Hz<br>maximum 200 Hz<br>0 V to 30 V                                                                     |
| <b>Pulse Outputs</b>               | <b>Frequencies</b> <ul style="list-style-type: none"> <li>Without supply</li> <li>D battery</li> <li>External Mains</li> </ul> <b>Output voltage</b>                                                                                                                                                                                | maximum 5 Hz<br>maximum 200 Hz<br>maximum 200 Hz<br>0 V to 60 V                                                                     |
| <b>Optical Interface</b>           | <ul style="list-style-type: none"> <li>Interface</li> </ul>                                                                                                                                                                                                                                                                         | according to IEC 62056-21:2002                                                                                                      |
| <b>NFC Interface</b>               | <ul style="list-style-type: none"> <li>Interface</li> </ul>                                                                                                                                                                                                                                                                         | according to ISO/IEC 14443 Type A                                                                                                   |
| <b>M-Bus Interface</b>             | <ul style="list-style-type: none"> <li>Interface</li> <li>Baud rate</li> <li>Galvanic isolation</li> </ul>                                                                                                                                                                                                                          | according to EN 13757-2/3<br>300 to 9600 baud<br>3.75 kV                                                                            |

## Compatibility Matrix

| Fonction                                     | w/o any <sup>1</sup><br>Power Supply | D<br>Battery | Mains<br>Operated |
|----------------------------------------------|--------------------------------------|--------------|-------------------|
| LCD display                                  | ✓                                    | ✓            | ✓                 |
| Backlight (LCD display)                      |                                      |              | ✓ <sup>2</sup>    |
| NFC interface                                | ✓                                    | ✓            | ✓                 |
| Optical interface                            | ✓                                    | ✓            | ✓                 |
| M-Bus interface                              | ✓                                    | ✓            | ✓                 |
| Outputs                                      | 5 Hz                                 | 200 Hz       | 200 Hz            |
| Inputs                                       | 5 Hz                                 | 200 Hz       | 200 Hz            |
| Measurement cycle <sup>3</sup>               | Slow                                 | Fast         | Fast              |
| Energy measurement (temperatures and volume) | ✓                                    | ✓            | ✓                 |
| Supply of the flow meter                     |                                      | ✓            | ✓                 |
| Radio                                        |                                      | ✓            | ✓                 |
| Communication Modules <sup>4</sup>           | ✓                                    | ✓            | ✓                 |
| Life span (years)                            | 6+1                                  | 12+1         | <sup>5</sup>      |

<sup>1</sup> Only with backup battery.

<sup>2</sup> In case of power cut, the is no backlight.

<sup>3</sup> If SC5 is connected to Superstatic 440: Slow is between 10 second and 30 Seconds. Fast is between 3 seconds and 30 seconds. If SC5 is connected to other flow sensor: Slow is between 10 second and 120 Seconds. Fast is between 3 seconds and 120 seconds.

<sup>4</sup> M-Bus modules work always. Any other communication module requires an external main power supply.

<sup>5</sup> In the special case that Supercal 5 with an external main power supply connected to a Superstatic 440 suffers a power cut. The backup battery can keep the device working only up to 3 months.

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