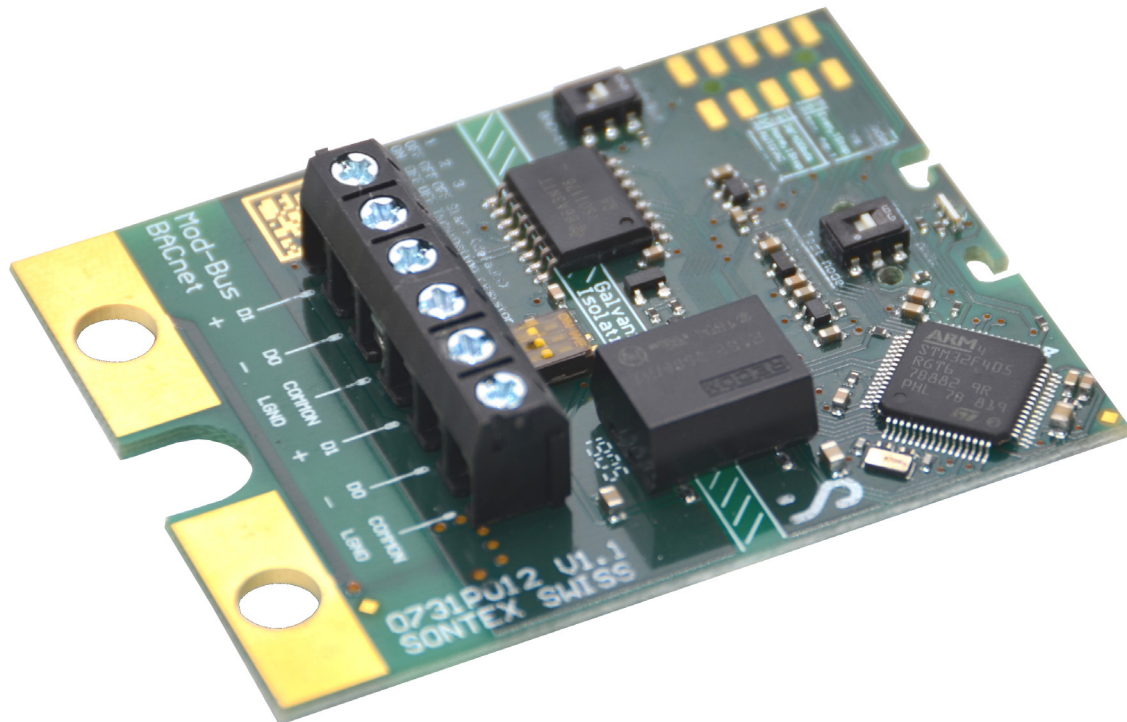


# BACnet / Modbus Module

Retrofittable BACnet / Modbus Module for the Supercal 5 Calculator



# Retrofitable BACnet / Modbus Module

## Application

The optional communication module BACnet/ModBus enables the Supercal 5 calculator to communicate via BACnet/ModBus system.

This allows to readout metrological data from the heat meter and transfer then via BACnet or ModBus to a billing management system.

### BACnet Application

BACnet is a communication protocol for the exchange of information for optimum building automation between devices from different manufacturers.

The BACnet MS/TP module is used with the Supercal 5. The module is suitable for various applications; in public and commercial buildings, but also in residential buildings where intelligent building automation is required.

### Modbus Application

Modbus is a communication protocol that enables intelligent products from various industries and manufacturers to exchange information to a billing management system.

The Modbus EIA-485 module is used with the Supercal 5 to transfer data over a Modbus network. The module is suitable for various applications: In public and commercial buildings, but also in residential buildings where intelligent building automation is required

## Features

- This module combines BACnet and Modbus functions
- Switch between BACnet and Modbus
- Switch between Normal and Test Mode

### BACnet MS / TP Module

- Compatible with ASHARE 135 and ISO 16484-5
- Compliant with BACnet Device Profile B-ASC
- Transmission speed up to 115'200 bits/sec
- Supports multiple reads and writes
- RS-485 galvanically isolated from the module

### BACnet Functions

The BACnet MS/TP module communicates over the network via RS-485 and can be addressed as master/slave or as slave. Current data, accumulated data, temperatures or errors are transmitted to the BACnet Controller module via the BACnet MS/TP module.

### Modbus Module

- Compatible mit PI-MBUS-300 Rev. J – Modicon Modbus Protocol Reference Guide (June 1996).
- Compatible with MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b.
- Compatible mit Modbus over Serial Line Specification and Implementation Guide V1.02 (December 20, 2006).
- Transmission speed up to 115'200 bits/sec.
- Supports multiple write and read.

- RS-485 galvanically isolated from the module (2 cables, half duplex mode).
- The RS-485 transmission mode supports RTU or ASCII

## Modbus Functions

The Modbus module communicates over the network via RS-485 (RTU or ASCII) and can be addressed as a slave.

Current data, accumulated data, monthly values, temperatures or errors are transferred to the Modbus controller module via the Modbus module.

## Installation

**In combination with a BACnet/Modbus module, the Supercal 5 requires mains supply.**

To mount the BACnet/ModBus Module module, the upper part must be removed. This requires the removal of the user seals. The installation must be carried out by an authorised person. Electric's basic protection must be ensured via the house installation.

The wiring must be carried out according to the wiring diagram in the datasheet. Secure the cables with the strain relief. Pull the cables through the cable sleeves of the Supercal 5. We recommend twisting the connections and providing them with cable lugs. This prevents the danger of short circuits.

We recommend the following cables for the signal line: U72 1x4x0.8mm<sup>2</sup> or U72M 1x4x0.6m<sup>2</sup>.

If the Test Mode is selected, connection parameters for Modbus should be the setup as follow:

- 19'200 bds
- Parity : Even
- 1 Stop
- RTU
- ADR=1

If the Test Mode is selected, connection parameters for BACnet should be the setup as follow:

- 38'400 bds
- Parity : None
- 1 Stop
- AUTOMAC
- Device ID= 1234567

Setup the three position DIP switch for the **bus termination** for each module

Pos 1	Pos 2	Pos 3	
OFF	OFF	OFF	No Line Terminating resistor LT and no Bias resistor, only a polarisation with 2x 47 kΩ (default)
ON	OFF	OFF	Line Terminating resistor: LT = 120 Ω + 1nF
OFF	ON	ON	Bias resistors (2x510 Ω) without termination (120 Ω)
ON	ON	ON	Bias resistors (2x510 Ω) with LT termination (120 Ω + 1 nF)

### BACnet Addressing

- The BACnet MS/TP module communicates over the network via RS-485 and can be addressed as master/slave or as slave.
- Current data, accumulated data, temperatures or errors are transmitted to the BACnet Controller module via the BACnet MS/TP module.
- The BACnet module can be addressed as master/slave in the MAC address range from 1 to 127. The MAC address 255 is used for Broadcast.
- The MAC address must be unique for all connected devices on the same RS485 network segment.
- By default, the BACnet MS/TP module is addressed with MAC address corresponding to the last 2 digits of Supercal 5 serial number (automatic addressing AutoMAC). If the two last digits of the serial number are equal to 00 than the MAC address will be set to 100.
- The MAC address of the module can be changed with the Superprog Windows.
- The device number (DIN = Device Instance Number) of the module consists of a unique ID number generated by the microcontroller of the BACnet module. This address can also be read with the program Superprog Windows.

### Modbus Addressing

- The Modbus module distinguishes between master and slave devices.
- The Modbus module can be addressed as a slave in the address range from 1 to 247. The MAC address 0 is used as broadcast.
- **The Modbus module address is 1 by default, the transmission mode is RTU.**
- The Modbus address of the module can be changed with the Superprog or with the corresponding M-Bus command.

### Operating

Superprog Windows supports the initial setup of the module and its customization.

Further information on the operation of the software and installation is stored under the path "Help", "User manual" and "Help", "Error description".

The Supercal 5 automatically detects the inserted optional communication modules. There is no additional step required to set it up.

**Please note that module-specific settings can only be made in combination with a calculator. All parameters are stored in the calculator. You can make adjustments to the module configuration at any time using the Superprog software.**

### LED functions:

- Red and violet are reserved for booting process
- Only red is reserved for errors.
- For ModBus: yellow data reception and green data transmission.
- For BACnet: cyan data reception and blue data transmission.

### Safety references

In order to minimize dangers from electrostatic discharges, before you touch the printed circuit board, you should touch a grounded part (e.g. a heating pipe). When connecting, you

should pay attention to the correct order of the connecting cable. The wires are not exchangeable. The mounting is to be made considering the enclosed installation instruction.

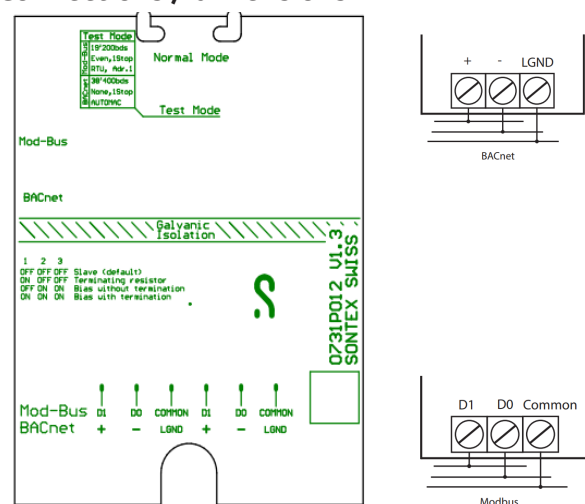
### Operation maintenance

Calibration relevant safety seal as well as the user seals may not be damaged or removed. Otherwise the warranty of the equipment is void. User seals may only be removed by authorized persons for service purposes and to be afterwards renewed

### Technical Data

General	
Operating temperature	5° to 55°C
Storage temperature	-10° to 55°C (dry environment)
Transmission & network technology	
Bus communication	Twisted pair RS-485
RS-485 cable connection Modbus	Terminal D1, D0 and common (2 x 3 pins)
RS-485 cable connection BACnet	Terminal +, - and LGND (2 x 3 pins)
Bus termination	By three position DIP switch or an external resistor
Modbus parity	Odd / Even / None
BACnet parity	None
BACnet supplier N°	SONTEX ID: 717
Compound layer	According to MS/TP Master/ Slave
Data protocol	According to BACnet MS/TP Master/Slave
BACnet device profil	B-ASC
Transmission speed BACnet	OFF, 9600, 19200, 57600, 76800, 115200, Auto Baud, <b>default 38400 bits/sec</b>
Transmission speed Modbus	OFF, 1200, 2400, 9600, 38400, 57600, 115'200, Auto Baud, <b>default 19200 bits/sec</b>

### Connections / dimensions



Dimension 50 x 66.2 mm

**CE Conformity**

according to Directive MID 2014/32/EU  
according to RED 2014/53/EU

**Technical Support**

For technical support, please contact your local Sontex agent or Sontex SA directly.

**Sontex Hotline**

support@sontex.ch, +41 32 488 30 04

Specifications are subject to change without notice.