

# CALEC ST II

ENERGY CALCULATOR

**DIEHL**  
Metering



## APPLICATION

CALEC ST II is a high-precision calculator designed to meet European standards, it measures heating and cooling energy. It can be used in heating or combined mode. Easy to program on-site, CALEC ST II enables the utility to monitor and optimize its metering remotely. It can be directly connected to a Centralized Technical Management unit, to provide large quantities of instant or saved parameters.

## FEATURES

- ▶ MID approved
- ▶ Combined measuring heating/cooling option
- ▶ GLYCOL tables integration in option
- ▶ Approved temperature measuring range: 0 to +200°C
- ▶ Approved temperature difference 1 to 190K according to EN 1434-4
- ▶ Extended main voltage ranges available (100-240 VAC, 12-36 VAC, 12-42 VDC)
- ▶ Integrated 3.6VDC and 24VDC flow sensor (main power supply)
- ▶ Pt100 4 wires or Pt500 2 wires temperature sensors
- ▶ Modular version: up to 3 analog outputs, up to 2 communication interfaces freely combinable: M-Bus, Modbus, BACnet, N2Open, KNX or LON (certified LonMark 3.4)
- ▶ 2 pulse outputs also usable as auxiliary meter inputs
- ▶ Optical or wired M-Bus interface
- ▶ Data backup

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### GENERAL

CALEC ST II	
Application	Heating - heating/cooling
Approval	EN 1434; MID 2014/32/EU; CH-MI004-14020 (for heating application)
Protection class	IP 54
Main power supply	100-240VAC 50/60Hz max. 15 VA /12-42 VDC or 12-36 VAC max. 1 VA (according EN1434)
Main pulse input	For NAMUR with potential-free contact (reed relay) or Solid State Relay: Open-circuit voltage: 8V / short-circuit current: 8mA / Switching level: <1.5mA, >2.1mA / Min. OFF (t off): 20Hz 20ms / Min. ON (t on): 20Hz 3ms / Min. OFF (t off): 200Hz 2ms / Min. ON (t on): 200Hz 300µs
Pulse value	l/pulse 1, 10, 100, 1,000 (depending on size of flow sensor)
Installation	On the forward or return pipe (factory settings)
Temperature sensors	Pt 100 4 wires or Pt 500 2 wires
Calculation cycle	1 s
Back up battery realtime clock	3.6V lithium battery

### BASIC FEATURES

CALEC ST II	
Ambient class	EN 1434 Class C
Electromagnetic compatibility (EMC)	2014/30/EU
Ambient temperature	°C +5 ... +55
Storage temperature	°C 0 ... +60
Standard interface	Optical M-Bus interface
Optional interfaces	Modular version: up to 3 analog outputs. Up to 2 communication interfaces freely combinable: M-Bus, Modbus, BACnet, N2Open, KNX or LON
Data memory protection	In EEPROM > 10 years

### DISPLAY

CALEC ST II	
Display indication	LCD, 8-digit
Units	KWh, MWh, MJ, GJ, KBtu, MBtu, m <sup>3</sup> , USGal
Total values	99,999,999 - 9,999,999.9 - 999,999.99 - 99,999.999
Values displayed	Energy - Power - Volume - Flowrate - Temperature

### INTERFACE

CALEC ST II	
Main pulse input #1 (10/11)	For NAMUR with potential-free contact (reed relay) or Solid State Relay
Switchable pulse input and output (100/101): output #1 (default option) / input #2	OUTPUT (default option): max. 48VDC / 100mA / Pulse freq. max.: 4Hz. INPUT: Open-circuit voltage: 8V / Freq. max.: 200Hz
Switchable pulse input and output (102/103): output #2 (default option) / input #3	OUTPUT (default option): max. 48VDC / 100mA / Pulse freq. max.: 4Hz. INPUT: Open-circuit voltage: 8V / Freq. max.: 20Hz
M-Bus interface	Conforming to EN 13757 / 2,400 bauds
Modbus RTU	RS485 / 19,200 Bauds / parity even
LON interface	LON TP-FT 10, certified to LON MARK® 3.4.
BACnet MS/TP	RS485 / ID:431
N2Open	RS485 / 9,600 Bauds
KNX	TP1 type (KNX certification) / 9,600 bauds / max. admissible power: 10 mA
Analog outputs	Up to 3 analog outputs: 4 ... 20mA or 0 ... 20mA / Supply voltage: 6 ... 24VDC / Electrical insulation: max. 48VDC
Optical interface	Conforming to IEC 870-5 / M-Bus protocol

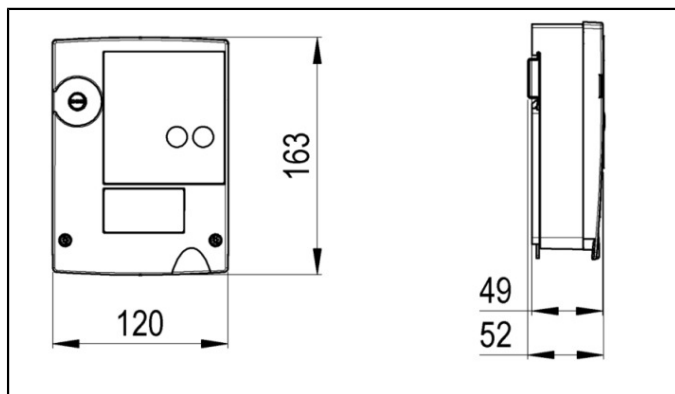
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### TEMPERATURE INPUT

CALEC ST II	
Approved temperature range	°C 0 ... +200 (heat carrier: water)
Temperature range	°C -40 ... +180 (special heat carrier)
Approved heating delta temperature range	3 ... 190K, 1 ... 190K according to EN1434-3
Delta temperature range	0 ... 190K

### DIMENSIONS



Dimensions in mm