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SITRANS FUE950 energy calculator

Overview

SITRANS FUE950 is a universal thermal energy calculator, which meets the requirements EN 1434 and has the MID approval for heat metering.

SITRANS FUE950 has been developed for the SITRANS FUS380/FUE380 and alternatively MAG 5000/6000. SITRANS FUE950 is modular in construction and can by order be fitted with optional modules depending on the application. SITRANS FUE950 can be used for flow rates up to 9 999.9 m^3/h.

Benefits

Basic functions

- Prepared for heating, cooling measurement
- Approval for MID for heat metering
- High-accuracy thermal energy metering, meets EN1434 class 2 requirements
- Measured temperature range -10 … +190 °C (+14 … +374 °F)
- Instantaneous values for energy/volume flow
- Battery or mains powered
- Lithium battery with lifetime typical 12 years (depending on selected functionality up to 16 years)
- Optical data interface
- Real date and time
- Storage of volume and energy data

Additional functions

- Individual tariff functions
- Leak detection function
- Advanced functions for cooling/heating applications or the combination
- 24 months memory
- Data logger function
- Expandable add-on plug and play output modules
- Communication over M-Bus or RS 232
- Power save mode

Add-on modules

Expandable functionality with 2 separate plug and play add-on modules

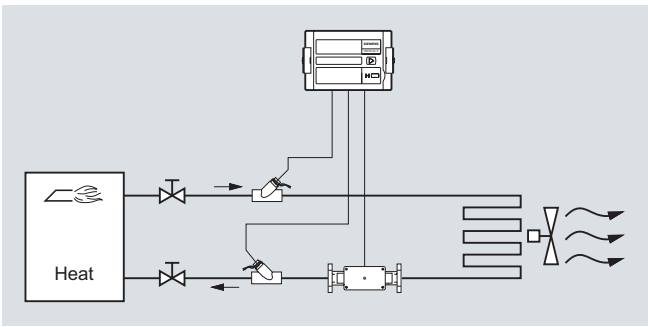
- Plug-in module with 2 extra pulse inputs
- Plug-in module with pulse outputs for accumulated energy and volume or alarm signal
- Plug-in module with combination of input and output pulses
- Plug-in module for M-Bus communication
- Plug-in module for RS 232 communication

Application

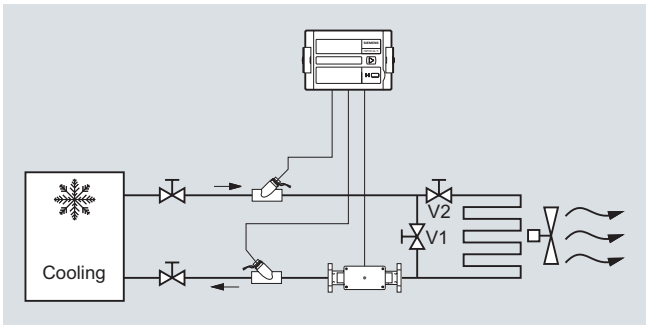
The SITRANS FUE950 is able to handle 3 kinds of applications, means energy calculation in:

- District heating applications
- Chilled water applications
- Combined cooling/heating applications

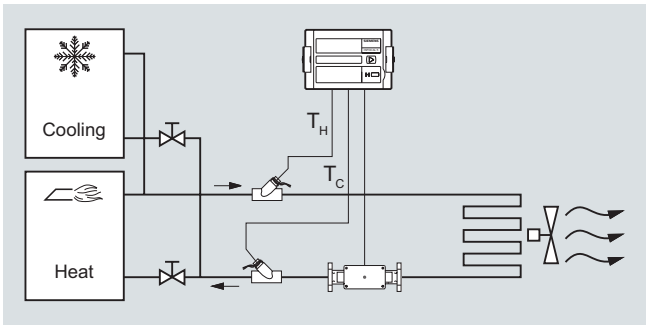
Energy metering in heating, hot water applications (code "A" and "B")



Energy metering in cooling, chilled water applications (code "C" and "D")



Energy metering in combined cooling/heating applications (code "E" and "F")



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SITRANS FUE950 energy calculator

Design

SITRANS FUE950 has an easy-read 7-digit LCD display with associated pictograms for the various functions. As the display has been made for several applications, there will be figures/symbols which are not used for normal district heating applications.

SITRANS FUE950 has a SIMPLE OPERATION push button and provides user-friendly control of various the display menu loops. The display will always be configured for the application chosen, and for the selected display settings. In normal operation menu loop, the display will show cumulative current energy values.

The integrator has an IP54 plastic housing is designed for wall or panel mounting. The housing comes with prepared rubber gaskets cable entries for fast and easy installation.

Operation menu loop structure

The FUE950 display has six menu loops and the menus are numbered in the display from 1 to 6. Some display menus consist of two values (to maximum seven) that are shown alternately at 4-second intervals.

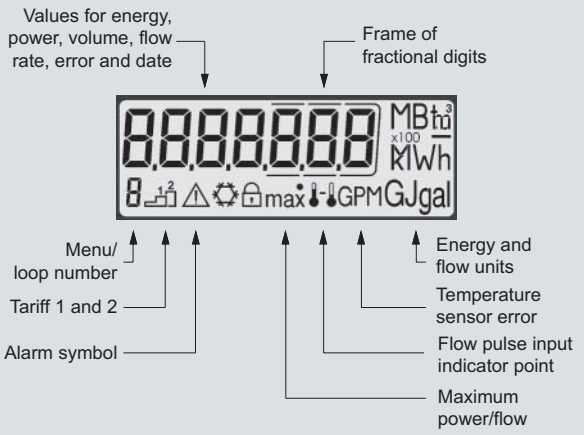
The main menu loop no. 1 with the current data, e.g. for energy, volume, flow rate and temperature, is programmed as default setting.

In the standard setting the menu loop no. 5 (tariff menu loop) is not activated.

Displays and output pulses

Units: MWh, kWh, GJ, Gcal, MBtu, m^3, m^3/h, °C; all decimal points are statically.

The places after the decimal point of displayed values are indicated by the selected pulse input value and flow rate. The display unit and the last fractional digit are typical used for the pulse outputs.



Function

Technical principle

Calculation of energy is based on the following formula:

Energy = Volume x (T_{Hot} - T_{Cold}) x K_{factor} (T_i)

Volume: Volume [m^3] of a given amount of volume pulses

T_{Hot}: Measured temperature in the hot line

T_{Cold}: Measured temperature in the cold line

K_{factor} (T_i): Thermal coefficient of media enthalpy and heat content

The energy calculation is made by a counter and depends on temperature difference, pulse input frequency and legal requirements.

The calculator always carries out at least one energy calculation every 2 sec. If the connected flowmeter has not sent enough pulses the energy calculation and flow indication is also based on the 2 sec. value.

Monthly memory

The FUE950 has a history memory of 24 months. The following values are stored monthly in the EEPORM on the programmed day of 1…31 (via software tool).

- Date/Time
- Energy
- Tariff energy 1
- Tariff energy 2
- Tariff definition 1
- Tariff definition 2
- Pulse counter input 1
- Operation hours
- Volume
- Error day counter
- Maximum monthly flow rate
- Maximum monthly power
- Date of maximum monthly flow rate
- Date of maximum monthly power
- Pulse counter input 2

Data logger memory (LOG)

The LOG of the calculator is stored every 24 hours with all cumulative values in the EEPROM. The storage frequency can be selected from various storage intervals (5, 6, 10, 12, 15, 20, 30, 60 minutes or the default setting of 24 hours). The data which are stored in the LOG could be read out with a software tool and can be used for evaluations.

Extract of possible LOG settings

Storage interval	Values	Number of data records	Recording period
5 minutes	• Error status • Ooverload time temperature • Ooverload time flow rate • Forward temperature • Return temperature • Date and time • Energy • Tariff energy 1 • Tariff energy 2 • Tariff definition 1 • Tariff definition 2 • Volume • Error day counter	440	36.6 hours
15 minutes		440	110 hours
1 hour		440	18.3 days
24 hours (default setting)		440	440 days

Maximal Values

The integrator creates max. values for power and flow rate based on consumption time, which are stored in the EEPROM. The integration intervals are adjustable to 6, 15, 30 or 60 minutes and 24h. Default setting is 60 minutes.

Tariff/Accounting date function

The calculator includes two independent memories in which the accumulated energy at two programmable tariff dates are stored.

- Last accounting date
- Last but one accounting date

Values stored

- Energy
- Volume
- Tariff counter 1
- Tariff counter 2
- Pulse counter 1
- Pulse counter 2
- Date

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SITRANS FUE950 energy calculator

The integrator offers two optional tariff memories for monitoring plant load states. Here it concerns threshold value tariffs. Extensive tariff conditions make it possible to adapt the calculator individually to the required customer-specific applications.

Both tariffs are separately configurable and independent from each other. Energy or time can be measured alternatively per tariff register dependent on the tariff mode adjusted in each case.

With the "time triggered tariff function" (type "Z") the switch-on time and the switch-off time are adjustable independent from each other for each day of the week in steps of 15 minutes.

The following limit types are possible:
(This example applies to the display at 3 fractional digits after comma)

Type	Description	Limit	Limit resolution
dT	Temperature difference	1 ... 190 °C	1 °C
-dT	Negative temperature difference	1 ... 190 °C	1 °C
TR	Return temperature (low)	1 ... 190 °C	1 °C
TV	Forward temperature (high)	1 ... 190 °C	1 °C
P	Power	0,1 ... 1 MW	0,1 MW
Q	Flow	0,1 ... 30 m^3/h	100 l/h
FE	"Theoretically forward energy" with return temperature of 0 °C		
Z	"Time triggered" counting energy		
E	"External" counting energy		

Error handling and memory

Events such as changes and faults are stored in a non-volatile memory with a capacity of up to 31 entries. The following events are recorded:

- Checksum error
- Temperature measurement error
- Start and end of test mode

If SITRANS FUE950 records an error, this will be automatically indicated by a "alarm symbol" on the display.

To protect the reading data, all the relevant data are saved in a non-volatile memory (EEPROM). This memory saves the measured values, device parameters and types of error at regular intervals.

The following events are recorded:

- Temperature measurement error
- Swapped hot and cold temperature sensors
- Battery empty warning
- Power supply failure
- Communication warning
- Leak detection warning
- RAM checksum error

Outputs/Inputs/Communication

Communication interfaces:

SITRANS FUE950 is fitted with an optical infra-red send/receive port in accordance with EN1434/IEC 61107, protocol standard, EN1434/EN 60870-3 (M-Bus protocol).

A reader head with a permanent magnet (IrDA-adapter) in accordance with EN 1434 can be used for readout data or communication with the parameterization software.

2 Slots for optionally plug-in modules

The calculator features 2 slots for the plug-in modules.

One slot is for the function modules and the other for the communication modules. The following communication modules are available as options: RS 232 module, M-Bus module. The RS 232 communication module is a serial interface and permits data exchange with the calculator. For this purpose a special data cable is necessary.

The M-Bus module is a serial interface for communication with external devices (M-Bus Repeater/Centre). According the M-Bus structure a number of calculators can be connected to a control centre.

Pulse input module

Two pulse inputs are available. The pulse value and the unit is configurable for energy, water, gas or electrical meter by parameterization software. Data are separate cumulated in different registers and are also stored on the two accounting day's (Tariff registers).

Combined Pulse Input/Output module

Two pulse inputs combined with one pulse output are available on one module. The pulse inputs are configurable with value and the unit by parameterization software.

The pulse output is also programmable using the parameterization software.

Pulse output

The calculator provides levels for two optional external pulse outputs, which can be freely programmed using the parameterization software tool.

Default setting is a pulse output occurs per change in the least significant digit in the display with the unit and resolution selected by the device ordering.

Possible pulse output values

- Energy (standard setting)
- Volume (standard setting)
- Tariff energy 1
- Tariff energy 2
- Tariff condition 1, limit switch
- Tariff condition 2, limit switch
- Energy error
- Volume error
- Volume with specific resolution (0.1 l, 1.0 l, 10 l, 100 l) at 3 digits after volume comma for the display unit m^3
- Energy with specific resolution (0.1 kWh) at 3 digit after volume comma for the display unit MWh
- Leakage detection (2 flow meter channel)

Module combinations

The calculator has a group of extension modules for communication and another group of extension modules for additional functionality. These modules are available first selected within the calculator, or for retrofitting in the field.

One single function module as well as one single communication module out of following modules is selectable.

Function modules:

- Pulse input module, 2 inputs
- Pulse output module, 2 outputs
- Combined pulse module 2 inputs, 1 output

Communication modules:

- M-Bus
- RS 232

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SITRANS FUE950 energy calculator

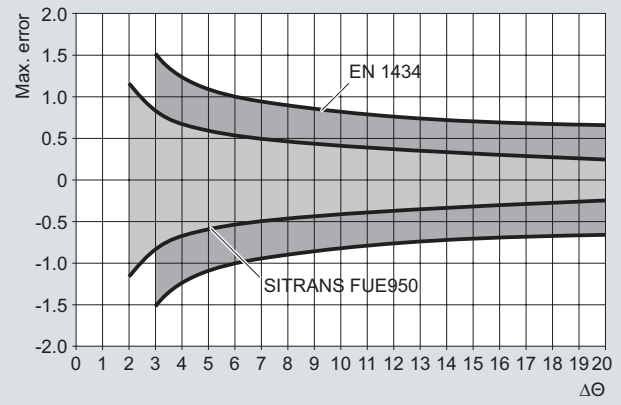
Integration

SITRANS FUE950 is a multi-purpose energy calculator which meets the requirements of EN 1434. Further, the energy calculator has been specially developed to receive volume pulses from SITRANS FUS380/FUE380 or alternatively MAG 5000/6000 transmitter.

Technical specifications

Approval	MID approved in accordance with heat meter EN 1434
Approved temperature range	0 … 180 °C (32 ... 356 °F)
Absolute temperature range	-9.9 ... +189.9°C (14 ... 338 °F)
Differential temperature	3 ... 177 K (starting at 0.1 K)
Accuracy	max. ±(0.5 + 3K/ΔΘ) [%]
Flow range	Q_n (Q_p) ≤ 9 999.9 m^3/h
Power range value	0 … 999 999.9 kW
Environment class	EN 1434 class C/A

Accuracy of FUE950



User interface	
Display	7-digit LCD display with associated pictograms/symbols
Units	MWh, kWh, GJ, Gcal, MBtu, m^3, m^3/h, °C, kW
Totalizer value range	999 999.9, 99 999.99, 9 999.999
Values	Power, energy, volume, flow rate, temperatures
Push button	Single push button for the menu controlling
Optical interface IrDA interface	ZVEI optical interface with M-Bus protocol as per EN1434, connection via separate IrDA-adapter
Rated operation conditions	
Enclosure	IP54 in accordance with IEC 529
Material	
• Top	PC Lexan 141R Transparent 111
• Pipe/wall fitting	PA 6,6 GF25
• Other plastic parts	ABS Cycolac GPM500
• Gaskets	Neoprene
• Rubber cable bushings	EPDM 50
Temperature	
• Ambient	0 ... 55 °C (32 … 131 °F)
• Storage	-25 ... +70 °C (-13 … +158 °F)
Environment class	EN 1434 class C/A

Temperature input	
• Temperature range Absolute measuring range	-9.9 ... 189.9 °C (14.18 … 373.82 °F)
• Temperature difference	Start 0.1 K, min. 3 K, max. 177 K
Sensor types	Pt 100 or Pt 500 with 2-wire leads, cable length < 10 m, standard setting: Pt 500, selection by order code and shown at the device label (only Pt 500 types are available)
Sensor connection	4-wire (prepared as 2-wire)
Measurement resolution	0.1 °C (0.18 °F)
Flow input (In 0)	Volume input from an external flowmeter
Pulse value	0.1 to 10000 l/pulse, selection by order code. Will be shown at the device label (only Pt 500 types are available)
Pulse frequency	≤ 100 Hz
Flow range	Q_{max} ≤ 9 999.9 m^3/h
Pulse ON-time	≥ 4 ms
Pulse OFF-time	≥ 6 ms
Type	Active or passive pulse input
External voltage supply (active pulse input)	Max. 3.6 V DC (min. 3.0 V DC) and max up to the power supply module version, e.g. 3.0 V DC
Flowmeter installation place	Hot line or cold line ("forward or reward pipe"), selection by order code. The "inst. place" will be shown at the device label.
Slots for option modules	
Type	The calculator features 2 slots for optional plug-in modules, one slot for a function module and the other for a communication module.
Function modules	• Pulse input module, 2 inputs (In1, In2) • Pulse output module, 2 outputs (Out1, Out2) • Combination module of 2 inputs (In1, In2) and 1 output (Out1)
Communication modules	M-Bus or RS 232
Pulse output	
Type	Passive "open collector" pulse output, outputs potential isolated to each other
Pulse value	Last display digit unit/pulse, selection by order code and setting can be read via display menu, freely programmable by a software tool
Pulse frequency	≤ 4 Hz
Pulse length	typical 125 ms (100 … 150 ms)
External voltage supply	3 … 30 V DC
Current	≤ 20 mA

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SITRANS FUE950 energy calculator

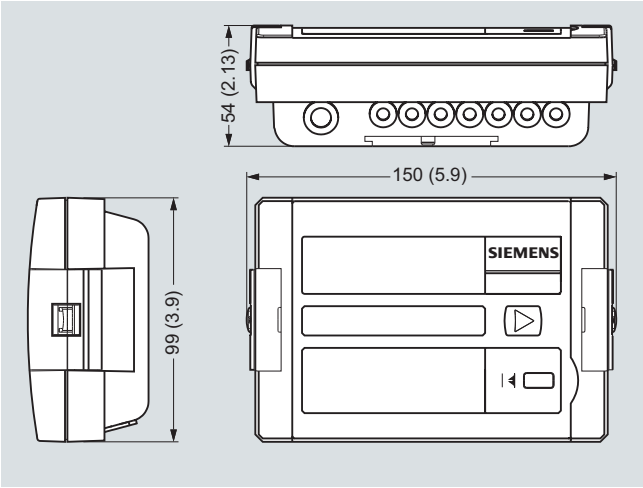
Possible pulse output selection (max. output frequency: 4 Hz)	• Energy (standard setting for 'Out1') • Volume (standard setting for 'Out2') • Tariff energy 1 • Tariff energy 2 • ariff condition 1 (limit switch) • Tariff condition 2 (limit switch) • Energy error • Volume error • Volume in m^3 with specific display resolution (or with factor 0,1, 10 or 100 thereof) • Energy with specific display resolution (or factor 0.1 thereof) • Leakage detection (2 channel)
Pulse input	
Type	Passive "open collector" pulse inputs, outputs not potential isolated to each other, data are separate cumulated in different registers and are also stored on the two accounting day's.
Pulse value	Pulse value and the unit are configurable for energy, water, gas or electrical meter by a software tool
Pulse frequency	≤ 8 Hz
Pulse length	≥ 10 ms
External voltage supply	3 … 30 V DC
Current	based on R_i = 2.2 MΩ
Cable length	< 10 m connection limit
M-Bus output	
Type	The optional M-Bus plug-in module is a serial interface for communication with external devices (M-Bus Repeater)
Protocol	M-Bus according EN1434
Connection	Open collector, 2400/300 baud, 3.6 V
RS 232 output	
Type	The optional plug-in RS232 communication module is a serial interface and permits data exchange with the calculator. For this purpose a special data cable is necessary
Protocol	M-Bus according EN1434
Connection	Open collector, 2400/300 baud, 3.6 V
Power supply	
Supply data	Internal voltage 3.0 V or 3.6 V by the battery or plug-in power supply module
Battery, 3.6 V type	3.6 V lithium D-cell, battery lifetime typically years, 16 years with independently powered flowmeter
Battery, 3.0 V type (standard):	3.0 V lithium C-cell, battery lifetime typically years, 12 years with independently powered flowmeter
230 V AC module	Plug-in module for 230 V AC +15/-30% 50/60 Hz (incl. battery backup)
24 V AC module	Plug-in module for 24 V AC (incl. battery backup)
Battery backup	Only with mains supply modules by internal 3.0 V lithium battery (type BR 2732)

Accessories/Software

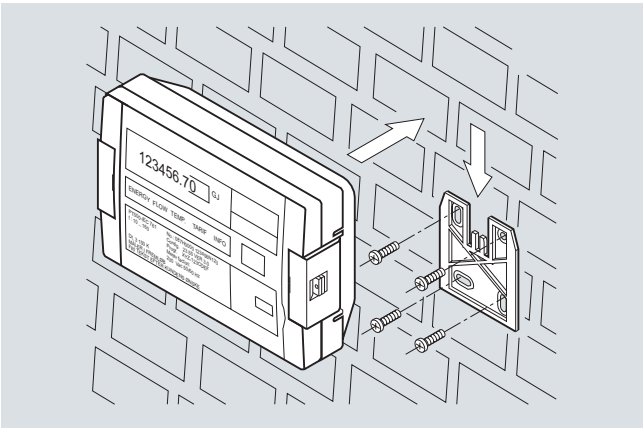
The parameterization software based on the M-Bus is a convenient tool for handling the calculator. It runs on Windows® 2000/XP and is used for: Configuration of the calculator functionality, reading out different memories, printing out calculator logs. For more details to it please contact Siemens.

A reader head with a permanent magnet in (IrDA adapter) accordance with EN 1434 can be used for programming/altering programming of readout data, configuration data, etc. The reader head can also be used to change measuring data.

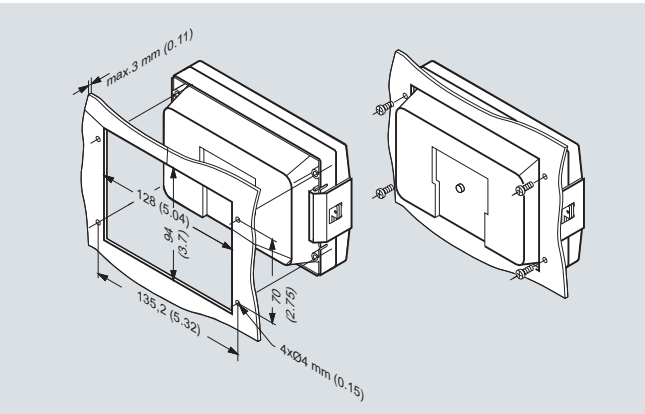
Dimensional drawings



SITRANS FUE950, dimensions in mm (inch)



Wall mounting



Panel mounting, dimensions in mm (inch)

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Technical specifications of PT500 temperature sensor pair

Application

The temperature sensor set is designed for use with the Siemens energy calculator type SITRANS FUE950 for measurement of the energy consumption in a district heating net.

To ensure an accurate measurement of the temperature difference according to MID (EN 1434) the sensors are delivered as matched pairs.

By selection with the order code the sensor pair sets can be delivered without any approvals for multiple-purpose applications.

Technical specifications

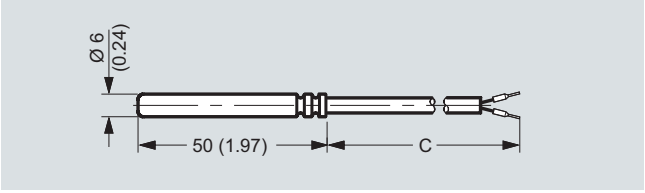
Pt500 temperature sensor pair (EN 1434)	
Measuring insert	Pt500 temperature sensor, EN 60751, tolerance class B, 2-wire
Pairing	Paired to EN1434 (10 ... 130 °C/14 ... 266 °F)
Media temperature	0...150 °C (32 ... 302 °F)
Response time $T_{0.5}$	See specification sensor pocket
Medium	Typically heating water
Pressure rating	See specification sensor pocket
Protection	IP65
Pipe material	Mat. No. 1.4303 (AISI 304 Ti)
Dimension	Ø 6 mm
Sensor length	50 m
Cable length	2, 3, 5 or 10 m ('C' at the dimensional drawing)

Brass sensor pocket				
Media temperature	0 ... 180 °C (32 ... 356 °F)			
Medium	Typically heating water			
Response time $T_{0.5}$	Typically 9 s at 0.4 m/s with pasta			
	Typically 5 s at 0.4 m/s without pasta			
Pressure rating	PN 16			
Cable length	L1 (mm)	47	92	127
	L (mm)	40	82	117
Material	Brass: CuZn 40 Pb2 (Ms 58)			

Stainless steel sensor pocket					
Media temperature	0 ... 180 °C (32 ... 356 °F)				
Medium	Typically heating water				
Response time $T_{0.5}$	Typically 13 s at 0.4 m/s with pasta				
	Typically 5 s at 0.4 m/s without pasta				
Pressure rating	PN 16				
Cable length	L1 (mm)	92	127	168	223
	L (mm)	82	117	155	210
Material	Stainless steel: Mat. No. 1.4571				

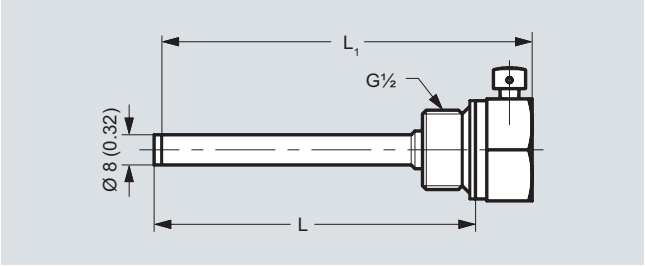
Dimensional drawings

Pt500 temperature sensor pair (EN 1434)	
Cable length	2, 3, 5 or 10 m ('C' at the dimensional drawing)



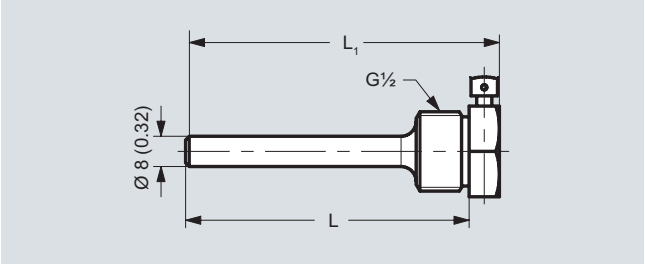
Pt 500 temperature sensor, dimensions in mm (inch)

Stainless steel sensor pocket					
cable length	L1 (mm)	92	127	168	223
	L (mm)	82	117	155	210



Sensor pocket, stainless steel, dimensions in mm (inch)

Brass sensor pocket				
cable length	L1 (mm)	47	92	127
	L (mm)	40	82	117



Sensor pocket, brass, dimensions in mm (inch)

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SITRANS FUE950 energy calculator

Selection and Ordering data			Order No.	Order code
Energy calculator SITRANS FUE950, Custody transfer approved			**7ME3470 -** ■■■■■ - ■■■■	■■■
Flow input setting: (The pulse input value selection must be the same as the pulse output setting of the selected flowmeter)				
Pulse input value (L/pulse)	**Flow limit Q_s (Q_{max}) in m^3/h**			
0.1	36		**1 A**	
0.25	90		**1 B**	
0.5	180		**1 C**	
1	360	(typical selection for FUS380/FUE380: DN 50 ... 65)	**2 A**	
2.5	900	(typical selection for FUS380/FUE380: DN 80 ... 125)	**2 B**	
5	1 800		**2 C**	
10	3 600	(typical selection for FUS380/FUE380: DN 150 ... 250)	**3 A**	
25	9 000		**3 B**	
50	9 999.9	(typical selection for FUS380/FUE380: DN 300 ... 400)	**3 C**	
100	9 999.9	(typical selection for FUS380/FUE380: DN 500 ... 900/1200*))	**4 A**	
250	9 999.9		**4 B**	
*) Max. flow rate up to 9 999 m^3/h				
Calculator application				
For heating, flowmeter in return pipe (cold pipe) (typical standard)			**A**	
For heating, flowmeter in forward pipe (hot pipe)			**B**	
For cooling, flowmeter in forward pipe (cold pipe)			**C**	
For cooling, flowmeter in return pipe (hot pipe)			**D**	
For combined cooling/heating, flowmeter in forward pipe (hot pipe as heating)			**E**	
For combined cooling/heating, flowmeter in return pipe (cold pipe as heating)			**F**	
Temperature input and sensor pair				
Pt 500 setting, no sensor pair included (standard)			**0**	
Pt 500 pair, 2-wire, 6 mm sensor diameter, 2 m cable			**1**	
Pt 500 pair, 2-wire, 6 mm sensor diameter, 3 m cable			**2**	
Pt 500 pair, 2-wire, 6 mm sensor diameter, 5 m cable			**3**	
Pt 500 pair, 2-wire, 6 mm sensor diameter, 10 m cable			**4**	
Pt 100 setting, no sensor pair included			**5**	
Pt 100 pair, 2-wire, 5.2 mm sensor diameter, 2 m cable			**6**	
Temperature sensor pocket sets: (for 6 mm sensor diameter)				
No pockets (standard)			**0**	
40 mm brass pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**1**	
85 mm brass pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**2**	
120 mm brass pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**3**	
85 mm steel pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**4**	
120 mm steel pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**5**	
155 mm steel pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**6**	
210 mm steel pocket for 6 mm sensor diameter (2 pcs. for the selected sensor pair above)			**7**	
Voltage supply				
Battery 3.0 V DC (C-cell) (standard)				**0**
Battery 3.6 V DC (D-cell)				**1**
Mains power module for 230 V AC supply				**2**
Mains power module for 24 V DC supply				**3**
No power supply module (power supply ordering separate)				**4**

This device is shipped with a Quick Start guide and the SITRANS F manual CD containing the complete manual library. Printed Operating Instructions are available for purchase via PMD.

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Selection and Ordering data	Order No.	Order code
Energy calculator SITRANS FUE950, Custody transfer approved	**7ME3470 -** ■■■■■ - ■■■■	■■■
Option modules at place 1 and 2		
No module at place 1 and 2 (standard)	**A**	
Module on place 1 (communication)		
M-Bus module and no module on place 2	**B**	
RS 232 module and no module on place 2	**C**	
Module on place 2 (pulse in-/outputs)		
Pulse output, 2x output (Out1 "Energy" and Out2 "Volume") and no module on place 1	**D**	
Pulse input, 2x input (In1 and In2) and no module on place 1	**E**	
Pulse out-/input combination, 2x input and 1x output and no module on place 1	**F**	
Combination of modules on place 1 and 2		
M-Bus module (place 1) and Pulse output, 2x output (Out1 "Energy" and Out2 "Volume") (place 2)	**G**	
M-Bus module (place 1) and Pulse input, 2x input (In1 and In2) (place 2)	**H**	
M-Bus module (place 1) and Pulse out/-input combination, 2x input and 1x output (place 2)	**J**	
RS 232 module (place 1) and Pulse output, 2x output (Out1 "Energy" and Out2 "Volume") (place 2)	**K**	
RS 232 module (place 1) and Pulse input, 2x input (In1 and In2) (place 2)	**L**	
RS 232 module (place 1) and Pulse out/-input combination, 2x input and 1x output (place 2)	**M**	
Display units and shown fractional digits		
MWh & kW, m^3, m^3/h - 2 fracitonal digits	**C**	
MWh & kW, m^3, m^3/h - 1 fracitonal digit	**D**	
GJ & kW, m^3, m^3/h - 2 fracitonal digits	**H**	
GJ & kW, m^3, m^3/h - 1 fracitonal digit	**J**	
Gcal & kW, m^3, m^3/h - 2 fracitonal digits	**M**	
Gcal & kW, m^3, m^3/h - 1 fracitonal digit	**N**	
Mbtu & kW, m^3, m^3/h - 2 fracitonal digits	**Q**	
Mbtu & kW, m^3, m^3/h - 1 fracitonal digit	**R**	
*) See also at the flow input selection		
Verification/Approval		
Without type approval mark, neutral label (in English (standard))	**0**	
With MID type approval mark (only for heating, seletion "A"/"B")	**1**	
With MID approval mark and first verfication (only for heating, seletion "A"/"B")	**2**	
Further designs		
Please add "-Z" to Order No. and specify Order code		
Special settings/programming		
Settings for tariff function (specify in clear text)		**D02**
Pulse output settings (specify in clear text)		**D06**
Pulse input settings (specify in clear text)		**D08**
M-Bus address (specify in clear text)		**D12**
Cooling		
Water/glycol setting for media type "Tyfocor LS (R)" (only with neutral label, no verification and approval)		**C02**
Country/Label/Type plates/Documentation language		
English setup (standard) (no Code necessary)		
German setup		**E02**

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SITRANS FUE950 energy calculator

Ordering example

Example:

Calculator for a DN 500 FUE380 flowmeter (Q_s = 4 130 m^3/h).

- Flowmeter with Q_s = 4 130 m^3/h and 100 l/pulse output setting (7ME3410-3MC35-6ER2)
- District heating, flowmeters in return pipe (cold line)
- Pt 500 sensor pair with 10 m cables (2-wire)
- 210 mm stainless steel pockets
- 230 V AC supply
- RS 232 data output and also 2 puse outputs
- MWh as unit in the display and 1 fractional digit
- With MID approval mark and first verification

Order No. **7ME3470-4AA47-2KD2**

SITRANS FUE950 accessories and spare parts

Calculator SITRANS FUE950

Type/description	Order No.
Option modules	
Pulse input module (2 inputs)	**A5E02611742**
Pulse output module (2 outputs)	**A5E02611749**
Combination pulse in-/output module (2 inputs and 1 output)	**A5E02611751**
Data RS 232 module	**A5E02611753**
Data RS 232 module, incl. serial data cable (1.5 m, incl. serial PC-plug)	**A5E02611754**
M-Bus slave module	**A5E02611758**
Power supply	
3.0 V C-cell battery for SITRANS FUE950	**A5E02611759**
3.6 V D-cell battery for SITRANS FUE950 (16 years, by internal regulator)	**A5E02611761**
230 V AC supply module for SITRANS FUE950 (incl. internal fuse T50mA L 250 V)	**A5E02611762**
24 V AC supply module for SITRANS FUE950	**A5E02611764**
Accessories	
Infrared optical adapter for data communication via PC	**A5E02611767**
Bracket for SITRANS FUE950 wall mounting (12 pcs)	**A5E02611769**
Cable for data communication PC/D-sub 9F/3-wire	**A5E02611774**

Pocket for temperature sensors

Type/description	Order No.
Brass pocket 6 mm, G½B x 40 mm (PN 16), 1 pc.	**A5E02611778**
Brass pocket 6 mm, G½B x 85 mm (PN 16), 1 pc.	**A5E02611779**
Brass pocket 6 mm, G½B x 120 mm (PN 16), 1 pc.	**A5E02611780**
Brass pocket 6 mm, G½B x 85 mm (PN 25), 1 pc.	**A5E02611781**
Brass pocket 6 mm, G½B x 120 mm (PN 25), 1 pc.	**A5E02611783**
Brass pocket 6 mm, G½B x 155 mm (PN 25), 1 pc.	**A5E02611792**
Brass pocket 6 mm, G½B x 210 mm (PN 25), 1 pc.	**A5E02611793**

Pt500 temperature sensor pair, 2-wire, 6 mm type

Type/description	Order No.
Pt500, cable, with MID/EN-approval and verification Length:	
2 m	**A5E02611794**
3 m	**A5E02611795**
5 m	**A5E02611796**
10 m	**A5E02611798**

Please also see www.siemens.com/SITRANSFordering for practical examples of ordering.