Siemens SITRANS FU E950

Thermal Energy Calculator

Siemens SITRANS FU E950 combines a flowmeter pulse signal with hot- and cold-line temperatures to calculate thermal energy. The modular calculator supports configured heating, cooling or combined heating/cooling applications with water.

VOLUME INPUT

Flowmeter pulses, matched to IN0

TEMPERATURE PAIR

Hot and cold Pt100 / Pt500 setup

ENERGY ACCOUNT

Volume, delta temperature and thermal coefficient

Manufacturer family designation	SITRANS FUE950
Measuring function	Thermal energy calculation
Standard measuring medium	Water
Application configurations	Heating, cooling or combined heating/cooling; order dependent
Energy calculation	Volume x (hot temperature - cold temperature) x thermal coefficient
Typical measuring accuracy	+/- (0.5 + 3 K / temperature difference) % of measured value
Measured temperature range	-20 to +190 C
Approved heating range	0-180 C; requires corresponding approved configuration
Approved cooling range	0-105 C; requires corresponding approved configuration
Heating differential range	3-177 K; starts at 0.1 K

CONFIGURATION IS NOT IDENTIFIED BY THE FAMILY NAME

The requested designation is retained. The 7ME3480 order code selects supply, sensor setup, pulse scale, pipe position, modules and approval marking; no unprovided configuration is assigned.

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Cooling differential range	3-102 K
Temperature measurement cut-off	0.125 K
Temperature display resolution	0.1 K for hot, cold and difference values
Temperature conversion	16-bit digital resolution
Sensor configurations	Pt100 or Pt500; 2-wire or 4-wire, order dependent
Sensor wire detection	Automatic 2-wire / 4-wire detection
Temperature sensor cable limit	Up to 10 m under the stated EN 1434 / MID conditions
Display	8-digit LCD with function symbols
Display operation	Single push button; six numbered menu loops
Energy calculation interval	At least once every 2 s; low-pulse operation also uses an 8 s value
Hot-line identity	TH: terminals 1/5 and 6/2 according to wire arrangement
Cold-line identity	TC: terminals 3/7 and 8/4 according to wire arrangement

AUTO-DETECTION

Automatic wire-count detection does not identify an incorrectly selected Pt100/Pt500 setup.

APPROVAL BOUNDARY

Measured -20 to +190 C capability does not expand the approved heating or cooling range.

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Enclosure protection	IP54
Mounting	Wall or panel
Catalog ambient range	5-55 C
Storage temperature	-25 to +70 C
Relative ambient humidity	Less than 93%
Standard flow input	IN0: terminal 10 (+ pulse), terminal 11 (ground)
Flow pulse scale options	1-1000 L/pulse or 1-100 gal/pulse; exact scale is order dependent
Flow input pulse timing	ON >=3 ms; OFF >=2 ms
Flow input internal voltage	3.6 V DC
Flow input cable limit	10 m; shielded cable recommended
Installation position	Hot or cold line as selected by order code
Expansion ports	Two; configuration depends on installed modules
Heating A / B	A: flowmeter in cold return; B: hot forward
Cooling C / D	C: cold forward; D: hot return
Combined E / F	E: forward; F: return, named relative to heating

The label and display identify the selected installation place. Do not move the flowmeter by assuming that return always means cold in every application.

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Main display loop	Energy, volume, flow rate and temperature
Heating/cooling tariff loop	Loop 5 additionally active for combined configuration
History memory	24 periods: months, weeks or days
Data logger	440 records; default interval 24 hours
Selectable logging intervals	5, 6, 10, 12, 15, 20, 30 or 60 min; 24 h
Event memory capacity	Up to 127 entries
Data retention	Non-volatile EEPROM
Accounting-date memories	Two independently programmable dates
Optical readout interface	ZVEI / IrDA with M-Bus protocol; 300 or 2400 baud

5-minute logging	440 records / 36.6 hours
15-minute logging	440 records / 110 hours
1-hour logging	440 records / 18.3 days
Default 24-hour logging	440 records / 440 days

SEPARATE MEMORIES

The 24-period history, 440-record logger, two accounting-date memories and up-to-127-entry event memory are different records. Changing one logging interval does not redefine all retention functions.

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Optional function modules	2 pulse inputs; 2 pulse outputs; combined 2 inputs / 1 output
Optional communication modules	M-Bus, RS232 or RS485 using M-Bus protocol
Optional current module	2 passive 4-20 mA outputs; occupies both ports
Current module external supply	10-30 V DC
Current module maximum load	800 ohm
Current alarm values	3.5 mA or 22.6 mA programmable; default 3.5 mA
Supply choices	3.6 V D-cell; 230 V AC module; 24 V AC module; verify installed option
230 V AC module operating range	195-253 V AC, 50/60 Hz
24 V AC module operating range	12-30 V AC
Typical D-cell life	10 years without add-on modules at ambient <=40 C
Mains backup behavior	Readings, clock and communications maintained; measuring functions stopped

ONE COMMUNICATION + ONE FUNCTION

The normal expansion arrangement permits one communication module and one function module, except the current module which occupies both ports.

BACKUP DOES NOT METER

During mains backup, readings, clock and communications continue. Measurement has stopped; prove it resumes after supply restoration.

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Why must the flowmeter pulse value match FUE950 IN0?

Every incoming pulse represents the configured volume. A mismatch between the flowmeter output and IN0 scales the recorded volume incorrectly and therefore affects calculated energy. Compare both settings, rather than only checking that pulses arrive.

Does the family name tell me whether the flowmeter belongs in the hot or cold pipe?

No. The application and installation-position fields of the order code select the pipe. Heating codes A/B and cooling codes C/D use different arrangements; combined heating/cooling uses E/F. Retain the position shown on the device label and display.

Can a two-wire temperature pair be replaced without checking the sensor setup?

Wire count alone is not enough. The calculator accepts configured Pt100 or Pt500 sensors and detects 2-wire or 4-wire connections automatically. The sensor type, paired hot/cold identities and approval conditions must still match the installed setup.

Why can no second expansion module be fitted beside the 4-20 mA module?

The dual passive-current module is connected through port 1 but occupies both expansion ports. Its channels normally represent power and flow, and require an external 10-30 V DC supply. It is not a spare-port configuration.

What continues working when a mains-powered calculator switches to its backup battery?

Displayed values, date and time remain updated and communication remains available. Measurement stops, including flow measurement. Backup operation must not be described as uninterrupted energy metering.

Why does combined heating/cooling show an additional display loop?

The combined configuration activates tariff loop 5 in addition to the preconfigured main data loop. The display menus follow the ordered application and selected settings, so symbols or loops are not proof that all optional modules are fitted.

How does changing the logging interval affect retained history?

The logger holds 440 records. The catalog examples give 36.6 hours at 5-minute intervals, 110 hours at 15 minutes, 18.3 days at one hour and 440 days at the default 24-hour interval. The separate 24-period history memory is a different function.

Can FUE950 be paired indiscriminately with any SITRANS flowmeter?

No. The 2022 integration list identifies FUS380/FUE380, MAG 5000/6000 and FST020 arrangements. It explicitly excludes the FX and FC product groups and supports only some clamp-on products. Pulse scale and the approved application must also match.

ALARM AND RETAINED DATA

The display indicates a recorded error with an alarm symbol. The event memory records temperature faults, swapped hot/cold sensors, low battery, supply failure and communication or checksum warnings. The non-volatile EEPROM retains relevant values and parameters. Distinguish a stored total from present live measurement before accepting a restored installation.

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01 / CONNECTION CHECK

Match the flowmeter output pulse value to the calculator IN0 setting.

02 / CONNECTION CHECK

Retain the configured hot- or cold-line position of the flowmeter.

03 / CONNECTION CHECK

Identify hot and cold sensor pairs before connecting temperature terminals.

04 / CONNECTION CHECK

Use the selected Pt100 or Pt500 setup with its 2-wire or 4-wire connection.

05 / CONNECTION CHECK

Verify the fitted power module; battery, 230 V AC and 24 V AC are alternatives.

06 / CONNECTION CHECK

Keep the flow-input cable within 10 m and preserve its shielding arrangement.

07 / CONNECTION CHECK

Allow both ports for the current-output module; do not add another module beside it.

08 / CONNECTION CHECK

Confirm live measurement after power restoration; mains backup does not continue measuring.

MANUFACTURER SOURCE

SITRANS FUE950 energy calculator - Siemens FI 01 catalog

FI 01 2021, update September 2022; catalog pages 3/311-3/319

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