FEC920 (Thermal Energy Calculator)

Overview

The Siemens FEC920 Thermal Energy Calculator system is a dual channel measurement system, designed to measure the energy consumed in hot water heating and/or chilled water cooling systems for revenue grade thermal energy measurement.
The dual channel measurement allows for two independent thermal energy measurements providing local indication as well as the ability to connect to any building management system (BMS)

Benefits

- Measures energy rate and total consumption with highest accuracy available
- BTU / Energy meter complies to OIML R75 Class 4 and EN1434 Standards.
- Flow Measurement input from multiple technologies allowing the best flow measurement for the applciation
- Temperature transmitter input allows for the best selection of temperature elements for the application.
- Power source for 2 wire temperature transmitters built in
- 2 Analog and 2 relay outputs available

Application

FEC920 is ideally suited to thermal energy applications, including:

- Chilled water sub-metering
- Hot water sub-metering
- Condenser water
- Ethylene Glycol/Water
- Thermal storage
- Lake source cooling

Design

FEC920 offers a NEMA 4X (IP65) enclosure suitable for wall mounting

Function

- The Thermal Energy Calculator provides the following measurements at the local display:
  Volumetric flow rate, Differential temperature, Heat energy rate, Heat energy total, Cooling energy rate, and Cooling energy total.

  The measured variables are also available to a Building Management System via digital communications. The Heat energy rate and Cooling energy rate are available via analog outputs.
- 4-20 mA inputs from Flow meter and Temp sensors
- Frequency input from single or dual pick up turbine meters
- Output options:
  (2) Analog and (2) Relay outputs
- Digital communication options:
  BACnet IP server (Std), Modbus TCP/IP server, EtherNet/IP client/server
- BTU/energy measurement system provides local storage via 50 MB onboard flash memory, that can be retrieved via Ethernet or USB connection to PC
- FEC 920 is configurable through the display screen or by use of the available iTools software.
- Web based server feature which allows for remote monitoring of the FEC920 via a PC
- Graphical Color screen display in Wall Mount Enclosure

Technical specifications

Input - Specify Separately	
Flow meter	4-20 mAdc (1 or 2 channel), Frequency 0-20 kHz, 30v maximum, p to p (1 or 2 channel)
Temperature	4-20 mAdc (1 or 2 channel), Matched Pair for billing application

Output	
Standard outputs	• Analog 4-20 mA (2) (500 Ω maximum) • Relay output Max 1A at 230V RMS +/- 15%; Min: 5mA @ 5V Maximum current through terminals: 1A
Communication	• BACnet IP server (Std), Modbus TCP/IP server, EtherNet/IP client/server

Rated operation conditions	
Degree of protection	Wall mount enclosure: IP65 (NEMA 4X)
Ambient temperature	
• Operating	0 … +55 °C (+32 … +130 °F)
• Storage	-20 … +70 °C (-4 … +158 °F)
Humidity	
• Operating	5% to 85% RH non condensing
• Storage	5% to 85% RH non condensing

Power supply	100...230 V AC, 50 ... 60 Hz, or 2 4 V D C

Indication and operation	
Data logger memory	50 MB onboard flash memory,that can be retrieved via Ethernet or USB connection to PC based Energy Review software provided with every FEC920
Display	Graphical Color screen

Factory Standard Settings (*)	Flow input, the default 4-20 mA analog input is 0-100 GPM, Temperature inputs the default 4-20 mA input is 32-220 F. The energy meter calculates the energy rate and energy total. For heating, the default rate is KBTU/ hr and the default total is MBTU. For Cooling, they are RT/hr (Refrigeration Ton per hour) and hRT (hecto-RT). If Ethylene Glycol/Water has been selected, factory configuration will be required for any % other than the default 30%.

(*) Custom input scaling is available at time of manufacture and is also configurable through the display screen or iTools at time of start-up.

Certificates and approvals	UL ULc RoHs Conforms to OIML R75 Class 4 and EN1434 Standards

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Standard MLFB for FEC920(Thermal Energy Calculator)

Selection and Ordering data — Article No. — Order code

FEC920 — 7ME3460 - 0AA1 1 0 AA 1

Transmitter Operating Voltage

100...230 V AC, 50 ... 60 Hz	1
24 V DC	2

Flow Input (Frequency Input requires Application Data Sheet)

Channel 1	Channel 2	
Analog Input	Not Required	B
Frequency Input	Not Required -	C
Analog Input	Analog Input	D
Frequency Input	Analog Input	E
Analog Input	Frequency Input	F
Frequency Input	Frequency Input	G

} Frequency requires Configuration Code (2) - Special Configuration

A

Configuration - Channel 1

Cooling Application, Flowmeter on Feed Line, Water medium	1
Cooling Application, Flowmeter on Return Line, Water medium	2
Heating Application, Flowmeter on Feed Line, Water medium	3
Heating Application, Flowmeter on Return Line, Water medium	4
Cooling Application, Flowmeter on Feed Line, Glycol/Water medium	5
Cooling Application, Flowmeter on Return Line, Glycol/Water medium	6
Heating Application, Flowmeter on Feed Line, Glycol/Water medium	7
Heating Application, Flowmeter on Return Line, Glycol/Water medium	8

Configuration - Channel 2

No Channel 2	0
Cooling Application, Flowmeter on Feed Line, Water medium	1
Cooling Application, Flowmeter on Return Line, Water medium	2
Heating Application, Flowmeter on Feed Line, Water medium	3
Heating Application, Flowmeter on Return Line, Water medium	4
Cooling Application, Flowmeter on Feed Line, Glycol/Water medium	5
Cooling Application, Flowmeter on Return Line, Glycol/Water medium	6
Heating Application, Flowmeter on Feed Line, Glycol/Water medium	7
Heating Application, Flowmeter on Return Line, Glycol/Water medium	8

Communication

BACnet IP (std.)	1
Modbus TCP/IP	2
Ethernet IP Client/Server	3

AA

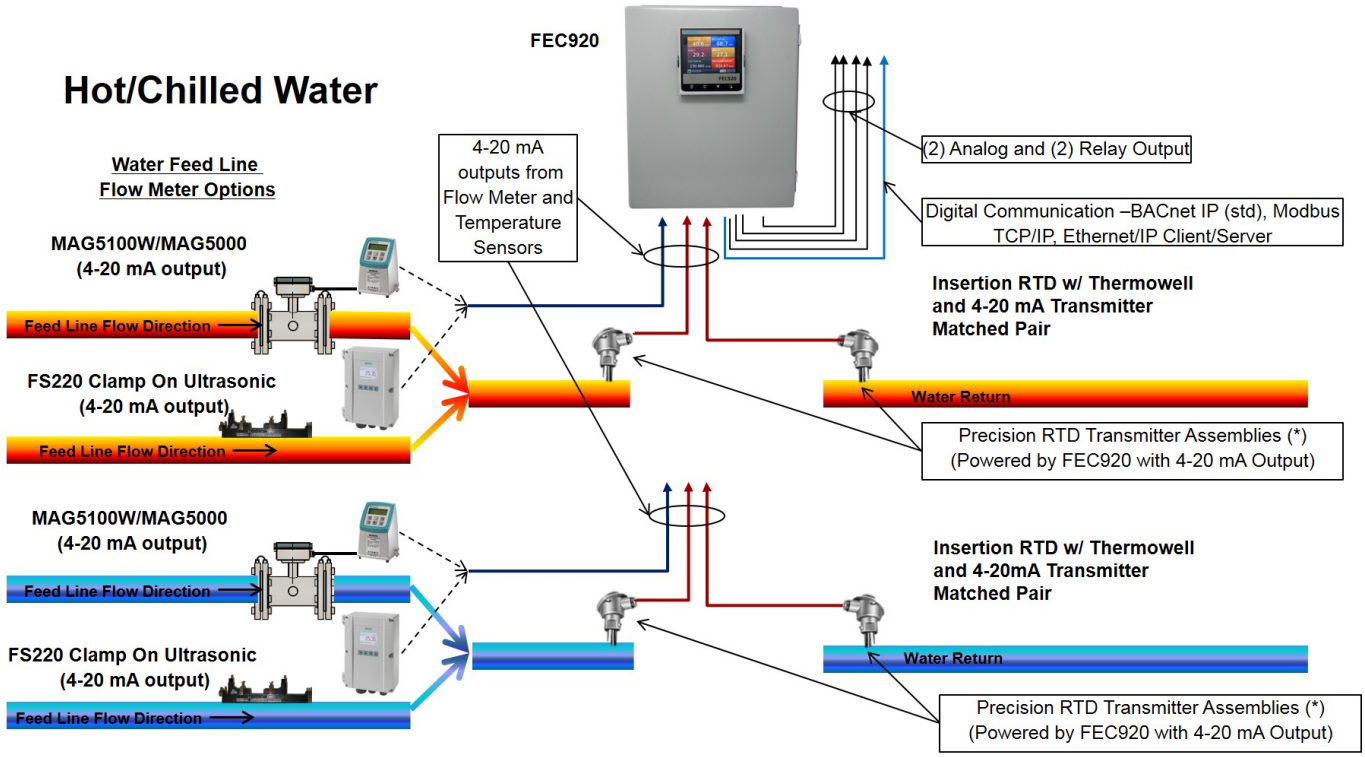
Configuration

Standard Factory Configuration: Flow input for 4-20 mA analog input of 0-100 GPM, Temperature input for 4-20 mA input of 32-220 F. Calculated values - heating KBTU/hr and total of MBTU. Cooling RT/hr (Refrigeration Ton per hour) and total of hRT (hecto-RT). If Ethylene Glycol/Water has been selected, factory configuration will be 30%.	1	
Special Configuration (Application Data Sheet must be completed and submitted as part of the purchase order) - Configuration by the factory is required for any ranges or units and/or Glycol percentage other than those listed above and/or when Frequency Flow input is required.	2	Required for Flow Input selections C,E,F or G

Options	**Part Number**
Stn. Stl. Tag plate 3” W x 1” H 3 lines of text, can fit 24 characters on top and bottom with 16 characters in the middle due to mounting holes	A6X30133262

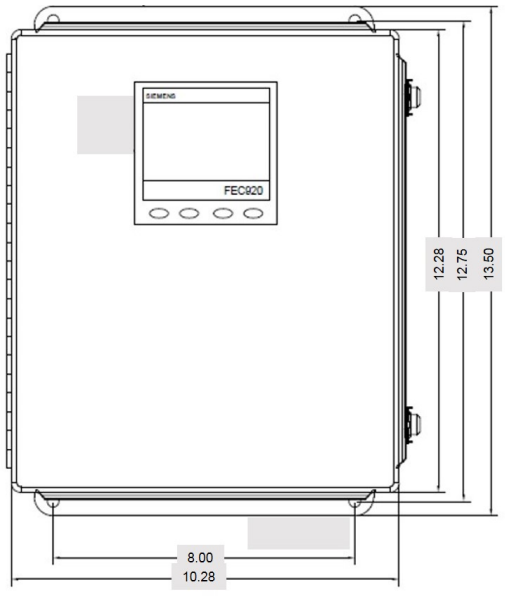
Note: Flow Meters and Temperature Sensors should be specified as separate line items

Typical Thermal Energy Calculator Application

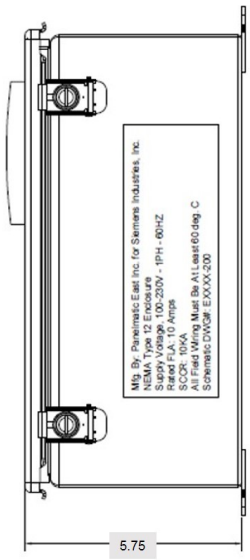


(*) Matched Pair recommended for billing applications

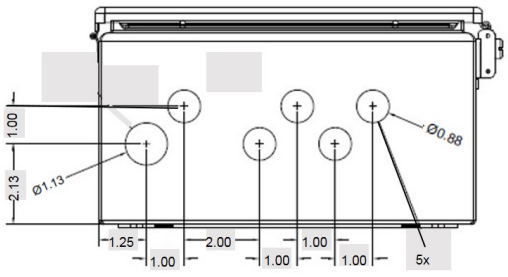
Dimensional Information



Enclosure – Front View



Enclosure – Side View



Enclosure – Bottom View

Weight: 21 lb (9.5 kg)

Dimensions in Inches