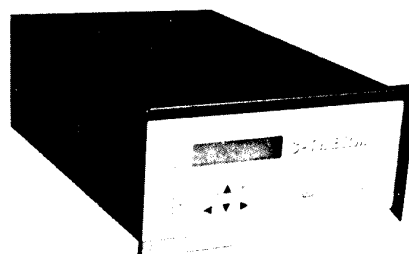


C-THERM

INTELLIGENT SIGNAL PROCESSOR FOR WARM WATER MEASUREMENT

The C-THERM intelligent signal processor is used to calculate the heat energy supplied by warm water flowing through pipeline. The software enables the heat energy to be measured in both closed heating systems and open heating systems combined with warm water supply. In the case of closed heating systems, the flow meter can be installed either in the supply line or the return line. In the case of open systems, the flow measurement and temperature measurement shall be performed in both the supply line and return line. The temperature of refill water can be entered manually or measured by means of a temperature transmitter of 4 to 20 mA signal range.



The signal processor enables measuring circuits in conformity with the Hungarian standard MSZ-09-85.0024T to be configured. Based on the signals from the sensing devices, the signal processor determines the volumetric flow, mass flow and density of the warm water and calculates the heat energy supplied. The device is suitable to calculate the heat energy used for both the heating and warm water supply; thus, it enables the sharing of costs to be calculated. The signal processor is provided with a serial data transfer line which provides the possibility of connecting the measuring circuit(s) to computer systems. Thus, the measured data can be stored and processed for the purpose of preparing balance sheets and statistics as well as displaying process diagrams.

Main features

- Three-level error check of the signals from sensing devices:
 - 1. Testing the cabling and functional ability of sensing devices
 - 2. Verifying the measuring range of sensing devices
 - 3. Verifying whether the limits set by the user are exceeded
- Reduced linearity error by means of linearization using an approximation with 4 straight sections.
- Linearized input from temperature sensing device
- 8-key operator keypad
- Dual-row 16-character alphanumeric display
- Current output adjustable between 0 and 20 mA
- Adjustable frequency- and remote counter output
- Standardized RS232 or RS485/422 serial output for computer connection
- Power supply of 230 V AC or 24 V DC

Type number

3 6 8 3 - 0 - 1 0 0 - A

	Supply
0	230 V AC
1	24 V DC

Input parameters

- Flow meter input (2 inputs can be adjusted separately)
 - Low-level input
 - Input signal level 15 mV rms to 3 V rms
 - Input waveform nearly sinusoidal
 - Input frequency range 20 Hz to 5000 Hz

High-level input	
Input signal level	4 V to 8 V
Input waveform	pulse (min 20 μ s)
Input frequency range	0.05 Hz to 5000 Hz
• Temperature sensor input (2 inputs in 3-wire system)	
Sensor type	100 Ω resistance thermometer of platinum
• Temperature transmitter input	
Input signal level	4 to 20 mA (measuring resistance: 20 ohm)
Output parameters	
• Current output	
Output current	adjustable within the range of 4 to 20 mA
Permissible load	0 to 500 Ω
Output units (selectable)	
supply line	volumetric flow, mass flow, heat flow, temperature
return line	temperature
heat supply centre	heat flow
• Frequency output	
Output type	open collector (short-circuit protected, max. 20 mA, 40 V)
Output units (selectable)	
supply line	volumetric flow, mass flow, heat flow, temperature
return line	temperature
heat supply centre	heat flow
• Remote counter output	
Output	potential-free contacts (up to 10 VA capacity)
Output units (selectable)	
supply line	totalized volume, mass, heat energy
return line	totalized mass, heat energy
heat supply centre	heat energy
• ALARM output	
Output type	open collector (short-circuit protected, max 20 mA 40 V)
Output control	on failure indication or on exceeding limit values
• Serial line output	
Output type	RS232 or RS485/422
Data transfer rate	600, 1200, 2400, 4800, 9600 bps (selectable)
Max. data transfer range	200 m/RS232, 1200 m/RS485/422

Display

The data supplied by the signal processing unit appear in menus, grouped by functions. The data once set, measured or calculated can be displayed in menus each. The associated ID, value and unit are also displayed together with the data.

Measuring errors

Error of volumetric flow calculation	$\pm 0.05\%$
Temperature measurement error	$\pm 0.2\text{ C}^\circ$
Output current error	$\pm 0.25\%$ (related to the range of 0 to 20 mA)

Other informative data

Ambient temperature range	+5 to +40 C°
Storage temperature range	-25 to +70 C°
Protection	IP 20, shock protection: class I
Dimensions	192 x 96 x 290 mm
Design	Nz-1 (MSZ 8881/3-70) normal indoor
Power dissipation	approx: 20 VA
Mass	approx. 5 kg