

EngyCal RS33

Steam calculator

Steam calculator for recording steam mass and energy flow for saturated or superheated steam



More information and current pricing:

www.ie.endress.com/RS33

Benefits:

- Compensation of differential pressure flow measurement
- Calculation according to international water steam tables
- Electronic matching of the temperature sensor (sensor-transmitter matching) with the arithmetic unit enables highly accurate temperature measurement
- Detailed data logging of current and counter values and of error messages, off-limit conditions and changes to operating parameters
- Standard models are suitable for connecting and supplying all common flow transmitters, temperature sensors and pressure sensors
- Remote readout via Ethernet and fieldbuses
- Deficit counter for transparency in case of error or alarm

Specs at a glance

- **Input** 1x Puls/Analog for flow 2x RTD/Analog for temperature and pressure Loop power supply 24V DC (+/-16%)
- **Output** 1x 4...20mA 2x digital (Open Collector)
- **Display** 160 x 80 Dot-Matrix LCD with white backlit colour change in case of alarm event active display area 70 x 34 mm
- **Calculations** IAPWS-IF97

Field of application: The steam calculator EngyCal RS33 is used to record steam mass and energy flow of saturated and superheated steam. The calculation is based on the measured process variables volume flow, temperature and/or pressure. The EngyCal RS33 uses the standard IAPWS IF97 to calculate the mass and energy flow of steam. The density

and enthalpy of the steam are calculated from the input variables pressure and temperature.

Features and specifications

Energy & Application Manager	Measuring principle
	Energy manager
	Measuring principle
	Energy manager
	Function
	Monitoring and billing of energy in saturated and superheated steam applications (steam heat flow, heat difference. Typical applications can be found in food & beverage industry, chemical industry, pharmaceutical industry, power plants, building automation and skid builders.
	Calculations
	IAPWS-IF97
	Number of applications
	Not defined
Data storage	
yes	
Calculation standards	
IAPWS-97	
Communication	
web server USB Ethernet Modbus RTU/TCP Slave M-Bus	
Power supply	
Not defined	

Energy & Application Manager

Loop power supply

Low voltage power supply:
100 bis 230 V AC (-15% / +10%)
Small voltage power supply:
24 V DC (-50% / +75%)
24 V AC ($\pm 50\%$)

Protection class

IP65

Input

1x Puls/Analog for flow
2x RTD/Analog for temperature and pressure
Loop power supply 24V DC (+/-16%)

Output

1x 4...20mA
2x digital (Open Collector)

Dimensions (WxHxD)

144 x 144 x 103.1 mm (5.67" x 5.67" x 4.06")

Operation

3 button on site or via FieldCare
read out of historical / logged data via Field Data Manager Software
(SQL database and visualization interface)
selectable language

Display

160 x 80 Dot-Matrix LCD with white backlit
colour change in case of alarm event
active display area 70 x 34 mm

Energy & Application Manager Software functions

Calculated Values:

Energy, volume, density, enthalpy, DP-Flow

Counters:

volume, mass, energy, counter in case of failure

Optional:

tariff 1, tariff 2 or seperated heating energy, cooling energy, bilance energy

Certificates

CE

CSA GP

MID 004

OIML R75

Thermal Energy Measurement Measuring principle

Energy manager

Function

Monitoring and billing of energy in saturated and superheated steam applications (steam heat flow, heat difference; typical applications can be found in food & beverage industry, chemical industry, pharmaceutical industry, power plants, building automation and skid builders

Certification

CE, UL listed, CSA GP

Input

1x Puls/Analog for flow,

2x RTD/Analog for temperature and pressure,

Loop power supply 24V DC (+/-16%)

Output

1x 4...20mA,

2x digital (Open Collector)

Thermal Energy Measurement **Relay output**2x

Auxiliary power supply

Low voltage power supply: 100 bis 230 V AC (-15% / +10%); Small voltage power supply: 24 V DC (-50% / +75%), 24 V AC ($\pm 50\%$)

Dimensions (wxhxd)

144 x 144 x 103.1 mm
(5.67" x 5.67" x 4.06")

Software

Calculated Values:

Energy, volume, density, enthalpy, DP-Flow;

Counters: volume, mass, energy, counter in case of failure

Optional: tariff 1, tariff 2 or seperated heating energy, cooling energy, balance energy

Operation

3 button on site or via FieldCare; read out of historical / logged data via Field Data Manager Software (SQL database and visualization interface), selectable language

Display

160 x 80 Dot-Matrix LCD with white backlit, colour change in case of alarm event, active display area 70 x 34 mm

Others

electronic temperature sensor matching via CvD coefficients, logbook measured values, custody transfer logbook, event logbook, limit monitoring

CalculationsIAPWS-IF97

More information www.ie.endress.com/RS33