

# Steam/Water Application Program

The Steam/Water Thermodynamics Application Program provides energy calculations capability to ROC300-Series Remote Operations Controllers (with FlashPAC) and FloBoss™ 407 units. The software computes the “corrected” mass flow values and archives the data on hourly and daily cycles.

ROCLINK™ Configuration Software for DOS (Version 2.2 or greater) or ROCLINK for Windows Configuration Software (Version 1.01 or greater) is required to configure the thermodynamic calculations. ROCLINK software provides a screen that displays all pertinent data, including monthly mass and energy totals.

The inputs to the system are the actual volumetric flow rate, provided by a vortex flowmeter or another linear meter, the process temperature, the process pressure, and the steam quality. Alternatively, a mass flow input (corrected) can be read directly from another device. The data from this input is archived for historical purposes just like an internally calculated mass flow. Differential pressure input is also available; contact your local sales representative for more information.

Using this program, the flow of water (chilled or hot), steam (saturated or superheated) and natural gas (orifice or turbine metered) may be measured concurrently in a ROC or FloBoss. Each flow measurement takes one of the meter runs available in the unit.

The hourly and daily averages of the process temperature and pressure, plus the mass flow and energy flow rates are available to be archived on an hourly and daily basis. The maximum and minimum values for the day are recorded for each variable archived.

To run the program, the ROC should have FlashPAC version 2.10c or greater, and the FloBoss should have firmware version 1.06 or greater.

The Steam/Water Application program and user manual are supplied on a CD-ROM.

## Specifications

### MAXIMUM METER RUNS

- ROC306/ROC312:** 3 runs
- ROC364:** 5 runs
- FloBoss 407:** 4 runs

### COMMON FLOW PARAMETERS

- Tag ID:** 10-character description.
- Meter Run ID:** 30-character description of meter run.
- Calculation Method:** International Association for the Properties of Water and Steam, International Formulation 1997 (IAPWS-IFC-97). Uses either US or metric units.
- Measurement Range:** Pressure range is 0.1 - 2395 PSIA; temperature range is 0 to 350°C (32 to 662°F).
- Meter Configuration:** Live reading or manual value:
  - Volumetric measurement from pulse, scaled analog, or HART® input.
  - Pressure from analog or HART input.
  - Temperature from analog or HART input.
  - Mass flow (optional) from analog or HART input.

### COMMON FLOW PARAMETERS (CONT'D)

- Steam Quality:** Live reading or manual value:
  - Live reading may be from analog or HART input.
  - Manual (entered) value used in automatic override when temp/pressure is above or below the saturated steam region of the ASME Steam Table.

### CALCULATION OUTPUT

- Enthalpy:** BTU/lbm (kJ/kg).
- Enthalpy Flow Rate (Energy):** Instantaneous Flow, Flow per hour, Flow per day, Energy Today, Energy Yesterday, Energy This Month, Energy Last Month. Measured in MMBTU (MJ) for steam, or in MBTU (MJ) for water.
- Mass Flow Rate:** Instantaneous, per hour, per day, Mass Today, Mass Yesterday, Mass This Month, Mass Last Month. Measured in MLb (tonnes) for steam, or in tons (tonnes) for water.
- Density:** lbm/ft<sup>3</sup> (kg/m<sup>3</sup>).
- Max/Min:** Available through history on daily basis.

**Specifications (Continued)**

ALARMS	MONITORED VALUES (CONT'D)
<p><b>Low/High Alarm:</b> Limits beyond which an alarm will be indicated.</p> <p><b>SRBX Alarm:</b> Spontaneous Report By Exception alarm call-out may be enabled.</p>	<p>Quality Input Actual Volume Rate Pressure Temperature Steam Quality Enthalpy Density Mass Flow per Hour Mass Flow per Day Mass Today Mass Yesterday Mass Current Month Mass Last Month Energy Flow per Hour Energy Flow per Day Energy Today Energy Yesterday Energy Current Month Energy Last Month</p>
<p><b>MONITORED VALUES</b></p>	
<p>Station Tag Atmospheric Pressure (Calc, Enter) Elevation Atmospheric Pressure (Calc, Enter) Low Alarm Limit High Alarm Limit Units (US, Metric) Pressure (Absolute, Gauge) Alarm Mode Alarm Code Actual Volume Input Pressure Input Temperature Input</p>	

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