



EUROTHERM

CONTROLS  
PROCESS AUTOMATION  
RECORDERS

# ISO51670

APPLICATION  
MODULE

## Flow calculation for orifice plates Application Module Library

The ISO51670 application module is implemented against the ISO 5167-1:1991(E) Standard and provides the following functionality:

- Calculation and display of the mass and volume flowrates through an orifice plate
- Calculation and display of the Reynolds number
- Three different tapping types
- Calculations for gas or liquid
- Standard supervisory workstation interface
- Standard software block
- Status and alarm display
- Engineer point display
- External conditions can be used to generate additional alarms

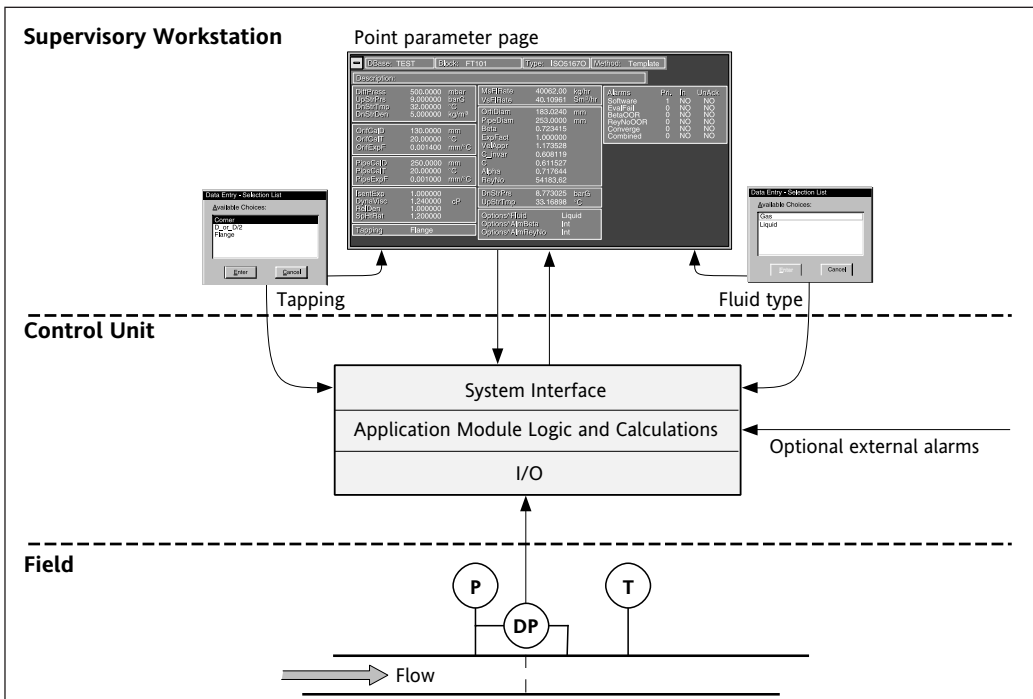
The ISO51670 application module forms part of a library of software function blocks designed to aid the implementation of flow calculation for orifice plates. Then calibration is based on SI units (barG, °C and kg/hr).

### Applications

The application module offers the functionality required to calculate mass and volume flowrates of fluids through orifice plates with either of the following tappings:

- Flange
- D or D/2
- Corner

The module processes calibration and lab data and offers intermediate values such as corrected orifice and pipe diameters.



## OUTLINE SPECIFICATION

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### I/O

Differential Pressure input  
Upstream Static Line Pressure input  
Upstream Line Temperature input  
Upstream Density input

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### Operator/Calibration Parameters

Orifice Plate Calibration Diameter and Temperature  
Orifice Plate Expansion Factor  
Pipe Calibration Diameter and Temperature  
Pipe Expansion Factor  
Isentropic Exponent  
Dynamic Viscosity  
Relative Density  
Specific Heat Ratio

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### Calculations

Mass Flowrate  
Standard Volumetric Flowrate  
Corrected Orifice Plate and Pipe Diameters  
Pressure Ratio  
Diameter Ratio  
Expansibility Factor  
Discharge Coefficient  
Reynolds Number  
Downstream Static Line Pressure  
Upstream Line Temperature

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### Alarms

Diameter Ratio out of Range (Beta)  
Reynolds Number out of Range  
Convergence Error

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