

SEASTREAM™

Seastream FloCalculator™

Integrated Flow Metering Solution For Subsea Applications

Efficient well production requires reliable and accurate well data. Information from secondary production processes is of increasing importance. Accurate flow measurement for gas lift and injection rates have a significant impact on final production. In gas condensate fields, accurate inhibitor measurement is a cost effective tool in prevention of hydrates.

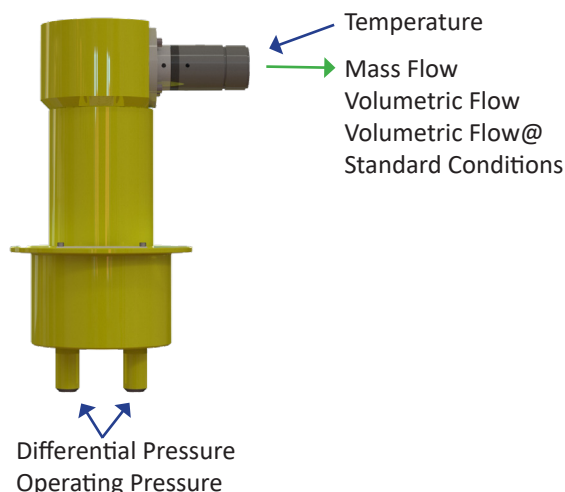
The patented Seastream FloCalculator is built into the SPFM, providing a direct flow measurement output of unrivalled accuracy, whilst removing the programming complexity and expense from the Controls System.

Modes of Operation

Accurate flow measurement requires the following variables; Differential Pressure (DP), Pressure (P) and Temperature (T). Flow rates are then calculated to the ISO 5167 standard. The FloCalculator is located within the existing Seastream hardware which produces the DP and P variables. Process temperature can be fed in from a network master manually, can be read directly from an external sensor, or an integral temperature measurement option is available for the Seastream product.

Customization

Mass Flow, Actual Volume Flow and Standard Volume Flow rates are provided in conjunction with process variable outputs. The Seastream FloCalculator offers a high level of customization, with advanced setup parameters such as temperature correction method, actual fluid density method, polynomial coefficients and meter calibration data all configurable with off the shelf communication software.



Applications

- ✓ Gas Lift, Gas / Water / WAG or Inhibitor Injection

Key Benefits

- ✓ Supports Seastream Venturi, & LoFlo
- ✓ Flow Algorithms to ISO 5167
- ✓ Integrated Discharge Coefficient Curve
- ✓ Selectable Temperature Correction
- ✓ Configurable Composition Polynomials
- ✓ Synchronized Flow & Process Variables Outputs
- ✓ Available Communication Interfaces:
CANopen (SIIS Level 2)
RS 485 MODBUS
- ✓ CANopen 'In-Field' Upgradeable via Bootloader
- ✓ Compliant with API Standard 17F V.4
- ✓ Simulator Available for SCM Testing

Seastream FloCalculator

Standard Specifications

Physical

- Operating temperature range -30°C to +80°C
- Operating voltage 16.4VDC - 32VDC
- In-rush current < 200mA for 20ms
- Power consumption < 1W over operating voltage range

Supported Meter Types

- Venturi
- LoFlo
- Flow Calibrated Meters: up to 20-point Reynolds number vs. Discharge coefficient data table storage

Supported Temperature Corrections

- Joule-Thomson Enthalpic Approximation
- Isentropic method

Alarm Indications

- Calibration data absent
- Convergence limit exceeded
- Unsaved parameters
- DP / P / T range limit exceeded
- Flow calculation error
- Communications error
- HART network status indications

Transmitter Output

- CANopen, SIIS Level-2 compliant
- RS-485 MODBUS

Configurable Fluid Property Polynominals

- Fluid density
- Joule-Thomson
- Gas molecular weight
- Isentropic exponent
- Viscosity
- Gas compressibility

Configurable Output Units

- Differential Pressure
- Pressure
- Temperature
- Density
- Length
- Viscosity
- Mass flow
- Actual volume flow
- Standard volume flow

CANopen Standards Supported

- BS EN 50325-4 (2002) CANopen
- CiA DSP 301 application & communication layer
- BCiA DSP 302-2 network management
- CiA DSP 302-3 program download
- CiA DSP 305 layer setting services (LSS)
- CiA 443 SIIS Level-2
- SIIS-recommended practice for Level 2

Modbus Standards Supported

- Modbus Standard CPI-MBUS-300 Rev J



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