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 from water injection or gas lift rates can have a significant impact on final production. In gas condensate fields, accurate inhibitor measurement is a cost effective tool in prevention of hydrates.

The Seastream FloCalculator is built into the flow meter, 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 relevant 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, or can be read directly from an external sensor. A temperature option is available for the Seastream product.

Customization

Mass Flow, Actual Volume Flow and Standard Volume Flow rates are provided in conjunction with the standard inherent and process variable outputs. The Seastream FloCalculator offers a high level of customisation, 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 CANopen network software.

Applications

- ✓ *Gas Lift, Water or Inhibitor Injection*

Key Features

- ✓ *Supports Seastream Venturi, LoFlo & Cone Meters*
- ✓ *Mass Flow Algorithms meeting ISO 5167*
- ✓ *Integrated Calibration Curve*
- ✓ *Selectable Temperature Correction*
- ✓ *Configurable composition polynominals*
- ✓ *Synchronized flow & process variable outputs*
- ✓ *Customer specific process units*
- ✓ *'In-field' upgradeable via CAN bootloader*
- ✓ *CANopen communications (SIIS Level-2, Fault-tolerant)*
- ✓ *Approval to ISO 13628-6*
- ✓ *Simulator Available for SCM Testing*

Hackworth Industrial Park, Shildon, County Durham, UK DL4 1LH • Tel: +44 (0)1388 773065 • Fax: +44 (0)1388 774888
e-mail: sales.solartronisa@ametek.com • www.solartronisa.com
© 2012, by AMETEK, Inc. All rights reserved.

AMETEK® OIL & GAS

Seastream FloCalculator

Performance Specifications

Physical

Operating Temperature Range	-30°C to +80°C
Operating Voltage	16.4VDC – 32VDC
Inrush Current	< 200mA for 20ms
Power Consumption	< 1W over operating voltage range

Supported Meter Types

- Venturi (Cast / Machined / Welded)
- Cone Meter
- LoFlo
- Calibrated Meters: up to 20-point Reynolds number vs. Discharge coefficient data table storage

Supported Temperature Corrections

- Orifice Plate Method
- Joule-Thomson Enthalpic Approximation
- Isentropic Method
- Permanent Pressure Loss

Alarm Indications

- Calibration Data Present
- Convergence Limit Exceeded
- Unsaved parameters
- DP / P / T Range limit exceeded
- Flow Calculation Error
- CAN Fault Tolerant Error
- HART Network Status Indications

Transmitter Output

- Standard: CANopen, fault-tolerant SIIS Level-2 compliant
- Special Order: CAN High speed, Modbus over RS-485
- (Bootloader only available for CAN applications)

Configurable Fluid Property Polynominals

- Fluid Density
- Specific Heat Capacity
- Joule-Thomson
- Viscosity
- Gas Molecular Weight
- Gas Compressibility

Unit Options

Differential Pressure	mbar, Pa, kPa, MPa, bar, Psi, inH20
Pressure	bar(a), bar(g), Pa(a), Pa(g), kPa(a), kPa(g), MPa(a), MPa(g), kg/m2(a), kg/m2(g), kg/cm2(a), kg/cm2(g), Psi(a), Psi(g), inH20(a), inH20(g)
Temperature	°C, °F, Kelvin
Density	kg/m3, lb/ft3
Length	m, cm, mm, ft, in
Viscosity	cP, Pa.s
Mass Flow	kg/second, kg/hour, kg/day, lb/s, lb/h, lb/d, tonnes/h, tonnes/d, ton/d
Actual Volume Flow	am3/s, am3/h, am3/d, aft3/s, aft3/h, aft3/d, litre/s, litre/h, litre/d, gallon(UK)/s, gallon(UK)/h, gallon(UK)/d, gallon(US)/s, gallon(US)/h, gallon(US)/d
Standard Volume Flow	sm3/s, sm3/h, sm3/d, sft3/s, sft3/h, sft3/d, mmsfcd, bbl/s, bbl/h, bbl/d

CANopen Standards Supported

- BS EN 50325-4 (2002) CANopen.
- CiA DSP 301 Application & Communication Layer
- CiA DSP 302-2 Network Management
- CiA DSP 302-3 Program Download
- CiA DSP 305 Layer Setting Services (LSS)
- QA DSP 443 SIIS Level-2
- SIIS Recommended Practice for Level 2

AMETEK®
SOLARTRON ISA
Hackworth Industrial Park, Shildon, County Durham, UK DL4 1LH
Tel: +44 (0)1388 773065 ∘ Fax: +44 (0)1388 774888
e-mail: sales.solartronisa@ametek.com ∘ www.solartronisa.com

Houston Sales and Services
4903 W. Sam Houston Parkway, N., Suite A-400, Houston, TX 77041
Tel: +1 713-466-4900 ∘ Fax: +1 713-849-1924

© 2012, by AMETEK, Inc. All rights reserved.