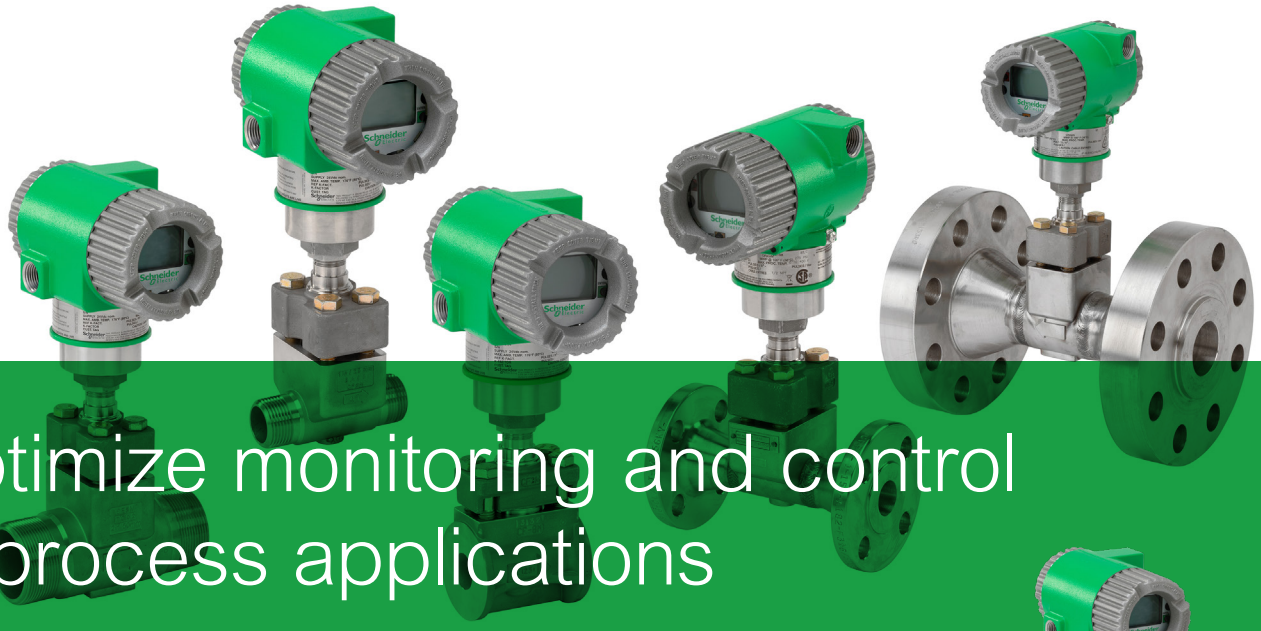
EcoStruxure™
Innovation At Every Level



# Optimize monitoring and control of process applications

## 84C Vortex Flowmeter

### Unique features

Model 84C flanged, wafer, threaded (NPT), and sanitary vortex flowmeters are robust and reliable additions to the Schneider Electric™ line of intelligent, high-performance vortex flowmeters. The flowmeters are available with 4 to 20 mA, HART 7, modbus, and pulse outputs. All models, except the sanitary version, can be ordered with an optional integrated platinum RTD temperature sensor. This enables support for multiple measurements and temperature-compensated mass flow measurement for steam and user-defined liquids.

The 84C series sets a benchmark for industry standards. It delivers the accuracy needed for totalizing and batching, the reliability required for utility metering of fluids in process industries, and the precision for fuel, air, steam, or gas metering in high-use energy applications. In addition, it ensures the stability and repeatability essential for process control.

### Benefits

- Delivers better reliability and lower maintenance costs with no moving parts than a mechanical meter.
- Provides exceptional flowmeter reliability through DirectSense™ technology, backed by a lifetime sensor warranty.
- Supports HART and modbus communication protocols.
- Enables easy replacement with threaded (NPT) body styles in 1- and 2-inch sizes for turbine, magnetic flow, and orifice meters.
- Handles demanding conditions with high-pressure NPT designs rated up to Class 1500 (1 inch) and Class 900 (2 inch).
- Streamlines upstream Oil & Gas applications with a configuration personality offering tailored engineering units, specialized features, and simplified menus.
- Optimizes steam flow applications with a specialized configuration personality for streamlined features and fluid selection.
- Reduces power consumption, allowing use in solar-powered systems.
- Expands measurement capabilities with a produced water metering (PVM) option..

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# Oil & Gas separator applications

## 84C Vortex Flowmeter

### Key capabilities

The only separator production meter that offers:

- Continuous flow measurement without gas under-carry errors
- Maintenance-free operation with no moving parts
- High-flow cut-off and SCADA alarm for early detection of sticking dump valves
- Enhanced safety through integrated alarm and shutoff functions
- Lowest total cost of ownership
- Convenient local readout
- Flexible power options with a 10/24 VDC low-power version
- Low-power operation

### DirectSense technology for improved performance and reliability

DirectSense technology measures pressure pulses directly from vortex shedding, eliminating losses caused by mechanical linkages. With a field-proven design, extremely durable construction, no moving parts, and no k-factor shift, it delivers consistently higher performance and reliability.

Backed by a lifetime sensor warranty, DirectSense technology provides additional benefits such as:

- Increased measurement sensitivity for wider rangeability
- Greater immunity to pipe vibration
- High reliability supported by a lifetime sensor warranty
- A replaceable sensor that requires no recalibration

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# Custom produced water features

Available custom features are designed to improve the accuracy and reliability of liquid measurement on gas/liquid separators. This customized set of features is available with ECEP CO190018. Using a patented software solution, the flowmeter can detect when gas passes the dump valve during a liquid dump cycle. This custom "heartbeat" feature is patented under U.S.

Liquids Measurement Integrity Free gas break-out and gas carry-under caused by sticking dump valves or level control issues commonly cause errors in flow measurements.

Using Schneider Electric's patented high-flow cut-off and alarm capability, these common problems are eliminated by only measuring flow when rates are within a range that indicated liquid flow.The PVM Vortex supports liquid measurement integrity by:

- Detecting free gas break-out, gas carry-under, and level-control issues
- Generating a low-frequency pulse that alerts operators when issues occur
- Allowing the RTU to shut in a well if gas flow continues for more than a preset amount of time

### Production Vortex Meter (PVM)

| vs Corolis | |
|---|---|
| Much lower power consumption | No maintenance |
| Much lower cost | Ease of start up and commissioning |
| gas carry-under | |
| **vs Turbine Meter** | |
| Durability-solids | No pick up or rotator to replace |
| Gravel OK | Ability to measure gas carry-under |
| Low maintenance cost | Improved measurement accuracy |
| No moving parts | |
| **vs Electromagnetic Meter** | |
| Much lower power consumption | Gas carry-under alarm |
| Lower cost | |

## Time-in service meter

84C flowmeters offer a time-in service feature::

- **Primary time** represents thenumber of days the transmitter has been powered
- **User-managed time** represents the number of days the flowmeter has been powered up since the last **user-managed time** reset

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# Temperature-Compensated Mass Flow of User-Defined Liquids

The 84C flowmeter provides algorithms for temperature compensated mass flow of any user-defined liquids when configured with Mutilvariable selection T. It is a high-accuracy mass flowmeter for liquids at a fraction of the cost of other mass flow technologies.

## Optional integral process temperature measurement:

The optional integrated Class A, 1000 Ω platinum RTD temperature sensor enables temperature compensation for the density of saturated and superheated steam as well as user-defined fluids. This option is available with flanged, wafer, and NPT body styles.

- The temperature measurement is provided as an output and provides:
- Mass flow rate accuracy of ±1.4% for saturated and super-heated steam[1]
- Process temperature accuracy of ±0.56°C (±1°F)
- High accuracy with an optional 1,000 ohm, 4-wire platinum RTD (for flowmeters with Multivariable selection T only)
- Compensation for the mass flow of saturated and
- superheated steam based on ASME steam tables2
- Robust and reliable mass and energy
- measurements for saturated steam
- Built-in steam calculations for superheated steam
- with use of external pressure
- A low-cost alternative to Coriolis flowmeters for liquids
- Only one process penetration for volumetric and temperature measurements, reducing the risk of potential leakage points
- DirectSense sensor with flexible tuning
- Available with 316 SS or high-nickel alloy materials
- Multiple end connections and pressure ratings available

## Temperature Compensated Mass Flow of Steam

When configured with the Multivariable “T” selection, the Model 84C vortex flowmeter provides process temperature measurement through the optional integral temperature sensor. Using calculations based on ASME steam tables[3], the Model 84C offers an excellent solution for mass flow measurement of saturated steam.

In addition, Multivariable Model 84C vortex flowmeters allow remote input of live pressure readings via HART or modbus communication. These pressure readings, combined with the measured process temperature, allow compensation for superheated steam mass flow calculations based on ASME steam tables[3].

The 84C flowmeter provides algorithms for temperature-compensated mass flow of any user-defined liquid when configured with the Multivariable “T” selection. It also delivers high-accuracy liquid mass flow measurement at a fraction of the cost of other mass flow technologies.

# Sanitary applications

- Suited for food, dairy, and pharmaceutical industries. It's capable of measuring difficult fluids such as slurries. It can also be configured, for example, to measure liquid flow in batch processes without including inert gas after the batch, ensuring accurate liquid-only measurement.
- Designed for in-line cleaning (CIP) with various cleaning solutions, air purging, or saturated steam (SIP) at temperatures up to 177 °C (350 °F)
- Built with a crevice-free design and no moving parts, providing improved reliability and durability
- Filled with NEOBEE® M-20 sensor fluid (0.262 $cm^3$ / 0.016 $in^3$), approved under 21 CFR 172.856 as a direct food additive and under 21 CFR 174.5 as an indirect food additive
- Equipped with DirectSense technology for exceptional flowmeter reliability, backed by a lifetime sensor warranty
- Supports HART and modbus communication protocols
- Constructed with process-wetted parts in 316 SS and 316L SS, finished to 25-microinch sanitary standards
- Offered in sanitary body styles in 2- and 3-inch (DN50 and DN80) sizes
- Supplied with a remotely mounted electronics housing
- Available with multiple end connections for 3-A compliance. For users not requiring 3-A compliance, a Class 150 RF flange end connection is also offered
- Offers a low-power option for solar-powered applications