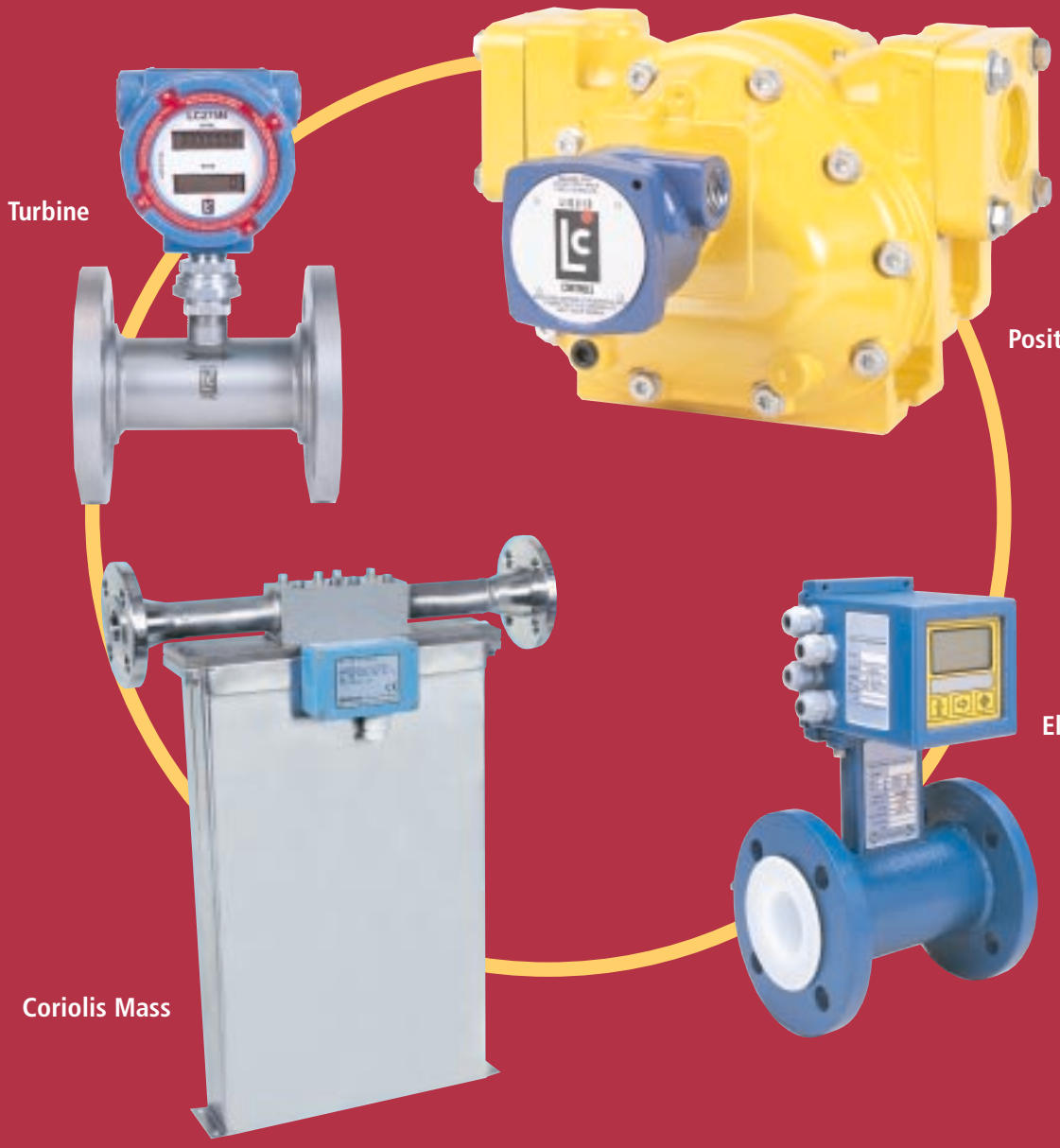
A world leader in flow measurement offering high performance, field proven technologies.

Application Guide



LIQUID CONTROLS
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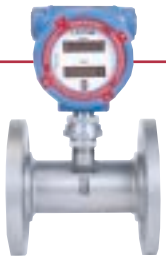
IDEX

LC Metering Solutions






- **Positive Displacement (PD), Electromagnetic (mag) and Turbine meters** are liquid and gas flow measurement devices that measure in VOLUMETRIC units, such as gallons, litres, etc. These meters are ideal for wide ranging applications in industry and commerce, including custody transfer, rate of flow control, batch processing, and blending.

- **Coriolis Mass flow meters** are liquid and gas flow measurement devices that measure in MASS units, such as pounds, kilograms, tons, etc. These meters are ideal for wide ranging applications in many industries where measurement of the product and/or formula is based on weight. Process control, dosing (i.e., additive injection), filling machines, multi-phase liquid and gas measurement, crude oil production and highly corrosive applications are ideal for this technology.

- With LC's full line of PD, Mag, Turbine and Mass flow meters, customers can be given a true application driven solution for almost any metering requirement without sacrificing the quality, accuracy, reliability, and lowest total cost over time that LC customers have come to expect.

- **NOW LET'S TAKE A CLOSER LOOK AT *"SIMPLY THE BEST"* APPLICATION FOR EACH METER TECHNOLOGY.**

Meter Choice by Application Characteristic

LC METER TYPE \ APPLICATION	CLEAR-LOW VISCOSITY (30 SSU or less)	HIGH VISCOSITY	GRAVITY FLOW MEASUREMENT	VARIABLE TEMPERATURE, PRESSURE and/or VISCOSITY CONDITIONS	CONDUCTIVE	NON-CONDUCTIVE	CORROSIVE	GASES	LIQUID SWEETENERS, VEGETABLE OIL & OTHER EDIBLE PRODUCTS	3A DAIRY PRODUCTS	CLEAN-IN PLACE	PRESSURE EXTREMES	TEMPERATURE EXTREMES	SUSPENDED SOLIDS	NON-ABRASIVE SLURRIES	ABRASIVE SLURRIES	BATCH PROCESSING	MECHANICAL OUTPUT AVAILABLE - NO ELECTRICAL POWER REQUIRED
PD	A	A	A	A	A	A	B	D	A	D	D	B	B	B	B	C	A	A
MASS	A	C	D	B	A	A	A	B	B	A	B	A	A	A	A	B	B	D
MAG	A	A	B	B	A	D	B	D	C	A	A	B	A	A	A	A	C	D
TURBINE	A	D	B	D	A	A	B	A	D	D	C	A	A	D	D	D	C	C

A: Excellent meter choice for application
B: Good meter choice for application
C: Fair meter choice for application
D: Do not use meter

LC Positive Displacement Meters

LC Positive Displacement

Exceptionally accurate when using LC's unique positive displacement metering principle, even under variable operating conditions (changes in temperature, pressure and viscosity). Provides the energy efficient and functional performance desired from an economical volumetric measuring instrument. Available with traditional mechanical seal or environmentally safe magnetic driven pulse output device.

Typically used for measuring petroleum products, LPG, agricultural chemicals and fertilizers, general industrial liquids ranging from solvents to grease or plastics to concrete add mixtures. Liquids that vary in viscosity with changes in temperature, multiple products of different viscosities or simply highly viscous liquids up to 1,500,000 SSU (325,000 CPS) or more can be accurately measured.

Features:

- High accuracy and repeatability
- Low maintenance, no material-to-material contact in measuring chamber
- Low pressure loss, a true gravity flow meter
- Choice of aluminum, cast iron, brass, and stainless steel materials of construction
- Self-contained operation without electrical power or signal conditioning (for units equipped with mechanical registers, printers or presets); no special piping requirements
- Electronic output and registration equipment where enhanced accuracy and electronic communications are needed
- Weights & Measures approval (world-wide) for custody transfer with mechanical or electronic registration system meeting API standards
- Electronic accessories designed and approved to Class 1 Div. 2 standards

LC Mass Flow Meters

LC Mass

Extremely accurate for variable density liquids, multi-phase liquids and gases requiring direct measurement of mass flow.

For use in corrosive media applications requiring all wetted parts of 316Ti Stainless Steel, Hastelloy, or Tantalum. Also ideal in Net Oil Detection (NOD), Lease Automatic Custody Transfer (LACT), and other oil and gas production applications, refinery and chemical manufacturing, scientific and laboratory systems, high temperature, high pressure, high flow or extremely low flow conditions.

Models available

LC Mag Meters

LC Mag

Exceptionally accurate, economical, volumetric measurement of electrically conductive liquids (5µs/cm, minimum). Ideal for applications where the liquid must be totally purged from the line on a regular basis, has high suspended solids, or requires sanitary clean in place performance. Not suitable for petroleum-based liquids, solvents, and alcohols.

Typical applications include milk and milk by-products, yeast, whey, gravies, sauces, beer, wine, soft drinks, fruit and vegetable juices or pulps, latex paints, complete mix liquid fertilizers, water, waste water, sludge, emulsions and other severe duty applications.

Features:

- High accuracy and repeatability
- No moving parts to provide minimum maintenance and absolutely minimal pressure loss
- Meter sizes up to 80 inches plus insertion mags for hot tapping into existing piping. Also ideal for less demanding applications where space, cost or pipe size are the controlling factor
- Wide range of connections including (but not limited to) flange, wafer, sanitary clamp, and NPT threaded. Liners in Teflon, Polypropylene, and Ebonite
- Broad measurement capability from 0.005 GPM (20 cc/minute) to 500,000 GPM
- 3A approved sanitary models available
- Local or remote display and programming capability. Scaled digital output, analog output and RS-232/485 interfaces available
- NEMA 6-6P (IP67) rating, with remote converter. The sensor can be submerged up to 5 feet (IP68).

3A® Models available

Features:

- High accuracy and repeatability
- Torsion bar design to ensure low maintenance with very low fatigue stress on flow tubes
- Increased tube wall thickness to eliminate need for secondary containment around meter
- High mass dual cross bar support to reduce susceptibility to noise or external vibration
- Low flow measurement capability (0.9 cc/minute) and fast response time (100-200 milliseconds)
- High pressure ratings (up to 11,600 psi) and high temperature ratings (up to 660°F)
- 3A-approved sanitary models available
- Intrinsically safe sensor, and panel-mounted or remote-mounted transmitter designed to NEMA 4X standards with a full range of outputs, readouts, and serial interfaces

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LC Turbine Meters

LC Turbine

Exceptionally accurate linear output, economical, volumetric flow measurement for clean low viscosity liquids and gases.

Ideally suited for extreme temperature and pressure conditions, including gases (methane, natural gas, $C0_2$, CNG, etc.), cryogenics (hydrogen, oxygen, nitrogen, etc.) LPG, mercaptans, gasoline, condensate, alcohol and a host of other precision, process, rate of flow control and custody transfer applications.

Features:

- High accuracy and repeatability
- Low maintenance (no thrust bearing) and minimal pressure loss
- High pressure operation, up to 2,500-lb. ANSI
- Operation at extreme temperatures (-450°F to +1,000°F for liquids and -450°F to +750°F for gases)
- FM and CSA certified, Class I, Group B, C, & D and Class II, Group E, F, & G, NEMA 4X
- Flow ranges from 0.125 GPM (1/4") to 12,000 GPM (12")
- Available in a choice of 304, 316/316L Stainless Steel, Brass, Aluminum, Alloy 20 and Plastic, including Sanitary and Corrosive series
- Analog and/or digital output, 3 wire or 2 wire loop powered Analog Transmitters that linearly convert a frequency input to a voltage (0-5V/0-10V), current (4-20mA) output, or scaled pulse output

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Backed By Our Worldwide Reputation For Quality, Accuracy and Advanced Design.

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