



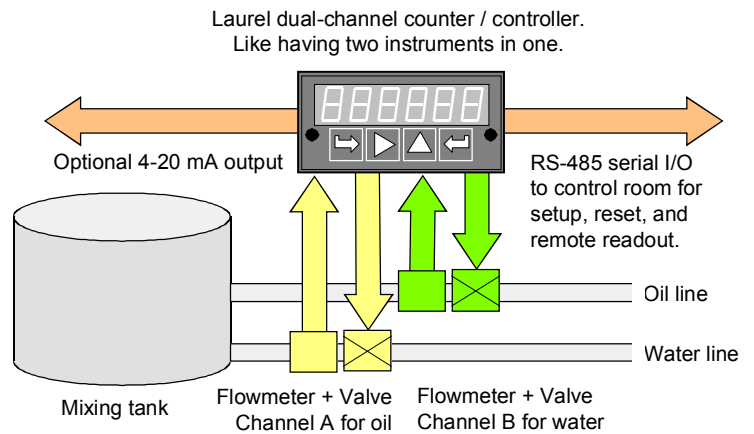
Controlling a tank filling operation with 2 liquids for a food processor

The problem: batch control with 2 liquids.

A large Midwest food processor needed a low-cost and reliable solution to accurately control the batches of oil and water pumped into mixing tanks for the manufacture of corn chips and potato chips.

The oil and water supply lines for the different tanks have different diameters and are each metered using a variety of turbine flowmeters, which require different calibrations. For each tank and type of chip, the flow of oil and water has to be cut off at a precise number of gallons by actuating the solenoid of a control valve.

Control of the entire operation is from a central control room, which is 300 feet away from the batching operations. Plant wiring is very expensive. Computers in the control room download the fill setpoints for each tank and type of chip and control the overall manufacturing operation with remote actuate and reset signals. A local digital display of oil and volume is also desired for the operators on the plant floor.



The Laurel dual-channel totalizer and ratemeter can independently scale, display and alarm two pulse input channels. All signal or alarm data can be transmitted via RS-232 or RS-485 to a control room. Setup can be done locally from the front panel or remotely from a computer.

The solution: Laurel's programmable dual-channel counter / controller

The customer selected a Laurel Model L60102FR counter. This is a dual channel programmable counter with a 6-digit red LED display, a 120V AC power supply, dual 10A contact relays for alarm or control, and an RS-485 serial interface. List price is only \$380. Please see pages 18-19 of the Laurel Panel Instrumentation Data Book.

The unit provides two independent pulse input channels, which can each be calibrated to read out volume directly in gallons, liters, or other units of measure. The dual-channel capability in effect creates two independent counters in a single 1/8-DIN panel cutout. The selection of either channel for display is at the push of a front-panel button.

Each channel accepts pulse signals from 0 Hz to 1 MHz, including those from all commercial turbine flowmeters.

A 10A relay is associated with each channel and is used to actuate the solenoid valve which initiates or stops the flow of oil or water.

The RS-485 serial I/O signal is capable of bidirectional communications at distanced up to 1 mile at data rates up to 19,200 bps. Up to 31 different counters can be individually addressed per communication line in multidrop fashion, minimizing plant wiring. The ASCII control characters for the counter are programmable, so that the counter can adapt to the existing protocol of the central equipment.

Specify a Laurel dual-channel counter when the application needs:

- High speed, six-digit accuracy.
- Control or alarm outputs with choice of control modes.
- One or two pulse input channels.
- Arithmetic functions between channels A and B, such as A+B, A-B, A*B, A/B, A/B-1.
- Rate and total simultaneously in the same meter.
- Batch control capability.
- Analog output, such as 0-10V or 4-20 mA (seldom found in other counters).
- Transducer excitation power output (standard).
- Serial communications.

