

Blancett®

Flow Meters



K-Factor Scaler

Frequency Divider

- Scales turbine meter output to desired engineering units
- Amplifies turbine meter pulse output
- Converts frequency outputs into recognizable units for PLCs and other devices
- Switch-selectable or programmable versions available
- CSA approved



1-800-235-1638 ■ www.blancett.com

Introduction

The Blancett K-Factor Scaler converts a low level frequency output (such as that from a Blancett turbine flow meter) into a scaled square wave output signal. This adjustable frequency divider converts or scales the turbine meter output into units of measurement needed for a particular application and recognized by almost any data collection device. The k-factor scaler provides an amplified signal, even when a frequency conversion is not required. The signal is more immune to electrical noise and capable of transmission over longer distances than a raw turbine meter output.

Operating Principle

What is a k-factor? Every turbine flow meter has a unique k-factor, or ratio of input pulses per unit of flow. As the turbine rotates within the flow meter an electronic pulse is created each time a turbine blade passes the face of the magnet. The total number of pulses equivalent to one unit of flow is the k-factor. For a Blancett turbine meter, the k-factor is the number of pulses equivalent to 1 gallon, and every flow meter is labeled with its unique k-factor. Because this k-factor applies only to gallons, the k-factor scaler is a low-cost and convenient way to convert the turbine output into a different frequency, representing a different unit of measure. See Figure 1.

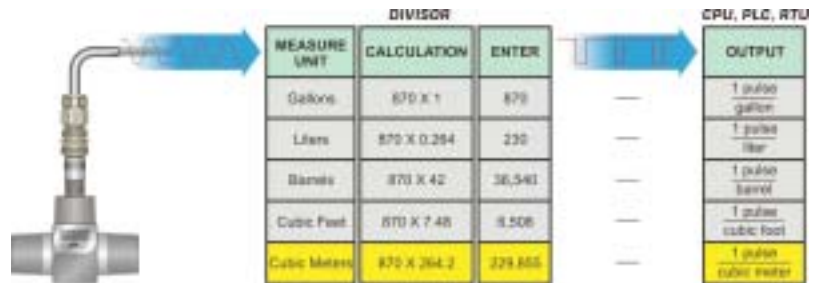
Example: (Highlighted in yellow)

- A. Blancett turbine flow meter has a k-factor of 870, but PLC is configured for one pulse per cubic meter
- B. Enter 229855 into k-factor scaler
- C. Now, the frequency output of the meter has been converted to correspond with cubic meters instead of gallons, and the square wave output is compatible with the PLC.

Note: Divisors for other units of measure are based on volumetric conversions and are provided in the operating manual. For signal amplification only, set the k-factor scaler to 1.



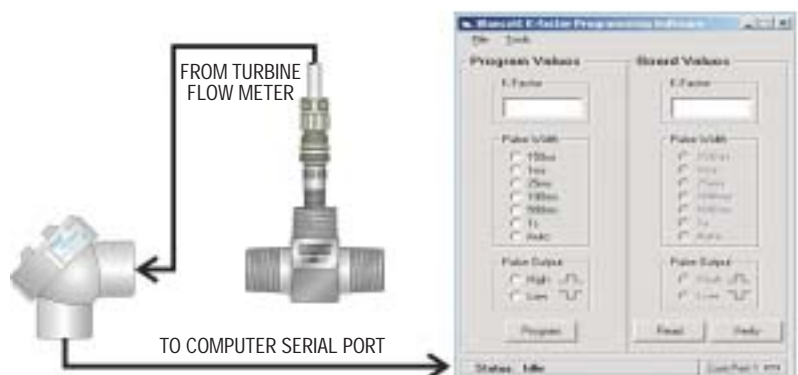
Figure 1- Sample k-factor scaler computation



Models

Blancett offers two versions of the k-factor scaler: switch-selectable (Model B220-880 or B220-881) and programmable (Model B220-885). The switch-selectable version has a set of eight rotary switches within the enclosure. The rightmost switch represents the least significant digit of the k-factor number – for example, if the desired k-factor is 4572, the switches will be set to 00004572. The programmable version comes pre-calibrated from the factory when ordered with a Blancett Series 1100 turbine flow meter. In addition, it may be easily configured by the end-user through the use of a Windows®-based software utility kit (Model B220-900) that includes a PC serial port interface cable. See Figure 2.

Figure 2 - Programmable k-factor scaler and software
Note: Blancett turbine flow meter sold separately



Features

Models	B220-880	B220-881	B220-885
K-factor storage	✓	✓	✓
No. of Digits	8	8	9
Range	1 to 99,999,999	1 to 99,999,999	1 to 999,999,999
K-factor Entry	Rotary Switch	Rotary Switch	Electronic Input



Model B220-880

Specifications

External Power:

Input Voltage 8.5 to 30 VDC (diode protected)
 Max Current Draw 18 mA (using internal resistor @ 30 VDC input)

Operating Temperature: -22 °F (-30 °C) to 158 °F (70 °C)

Inputs:

Magnetic Pickup
 Frequency Range 0 to 4000 Hz
 Trigger Sensitivity 30 mV p-p to 30 V p-p

Output Signal:

Max Voltage 30 Vdc
 Max Power 0.25 W
 Pulse Type

Using internal pull-up resistor $V_H = \text{Power input voltage} - 0.7 \text{ Vdc}$
 $V_L = \text{Less than } 0.4 \text{ V @ max input power}$
 Using external pull-up resistor $V_H = \text{Input voltage to external pull-up resistor}$
 $V_L = (V_H / \text{Selected resistor value} + 47\Omega) \times 47\Omega$

Pulse Length: 150µs, 1ms, 25ms, 100ms, 500ms, 1s, or auto mode selectable

Internal Pull-up Resistor: Jumper disable option
 3.6K Ω

Enclosure Ratings:

Model B220-885 Killark aluminum-capped elbow – Y3 CSA approved Class I, Div 1 & 2, Groups C, D; Class II, Div 1 & 2, Groups E, F and G; and Class III

Models B220-880 & B220-881 Appleton GR conduit outlet box GRL100-A & GRLB100A, CSA approved Class I, Groups B, C & D; Class II, Groups E, F and G; & Class III

Certifications: CSA ordinary locations
 Pollution Degree 2, Overvoltage Category III

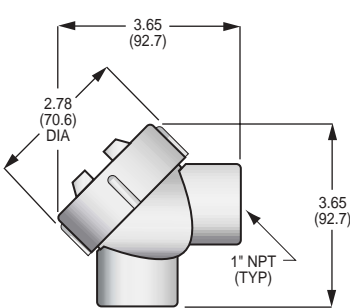


Model B220-881

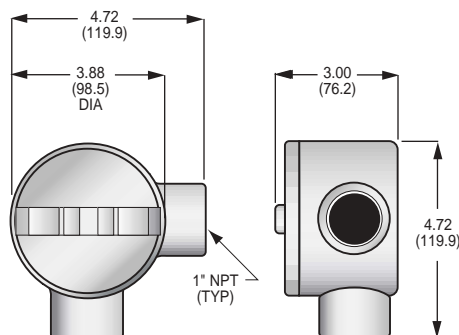


Model B220-885

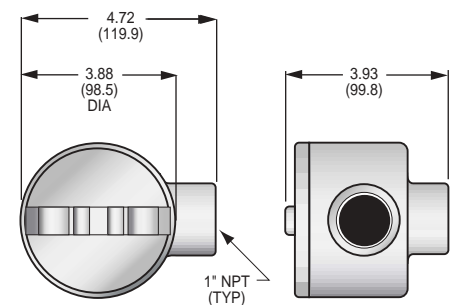
Dimensions - Inches (mm)



Model B220-885



Model B220-880



Model B220-881

Model 1100 In-Line Turbine Flow Meter

- Accuracy: $\pm 1\%$ of reading
- Repeatability: $\pm 0.1\%$
- Flow ranges from 0.6 - 3 GPM to 500 - 5,000 GPM in line sizes from 1/2" to 10"
- Rugged 316 stainless steel construction
- NIST traceable calibration certificates available



QuikSert™ In-Line Turbine Flow Meter

- Modified flow straighteners for enhanced fluid dynamics
- Body dimensions allow for installation in confined areas
- "Between the flange" design eliminates the need for mating flanges
- Flow ranges from 0.6 - 3 GPM to 500 - 5,000 GPM in line sizes from 1/2" to 10"
- NIST traceable calibration certificates available
- Optional installation kit available



B2800 Flow Monitor

- Microprocessor-based flow monitor and totalizer
- Use with Blancett turbine flow meters as well as other flow meters with a frequency output
- Battery (1.5 VDC) and loop-powered (4-20 mA) versions
- Meter, remote, panel and swivel mounting options
- Hand-held and explosion-proof models also available



Blancett

Flow Meters

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