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
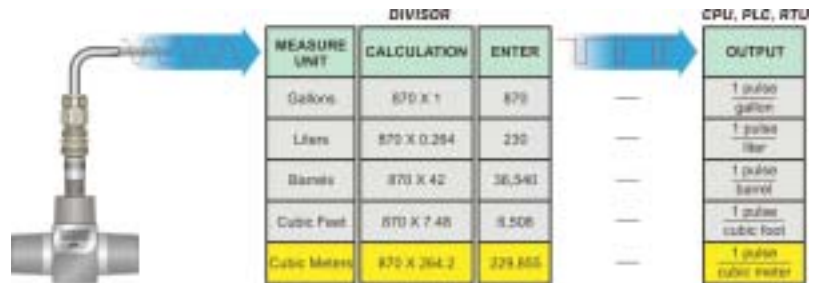
Models

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

FROM TURBINE FLOW METER
TO COMPUTER SERIAL PORT
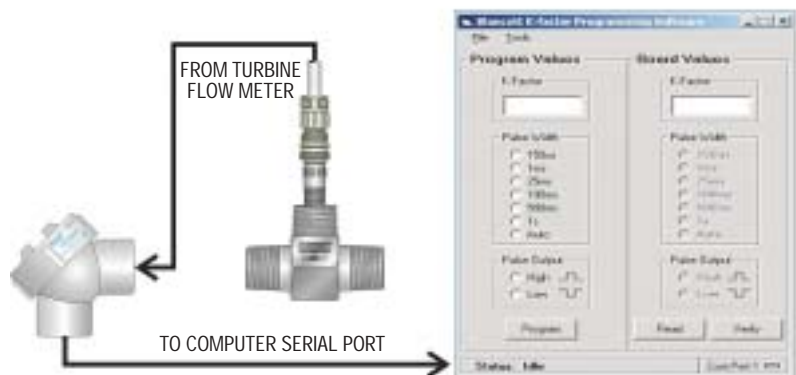
Features

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

Model B220-881

Output Signal:
Max Voltage   30 Vdc
Max Power   0.25 W
Pulse Type
   Using internal pull-up resistor V_H = Power input voltage – 0.7 Vdc
                                 V_L = Less than 0.4 V @ max input power
   Using external pull-up resistor V_H = Input voltage to external pull-up resistor
                                   $V_L = (V_H / \text{Selected resistor value} + 47\Omega) * 47\Omega$

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

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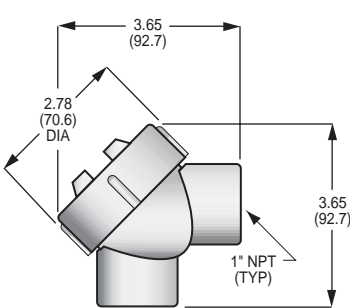Pollution Degree 2, Overvoltage Category III
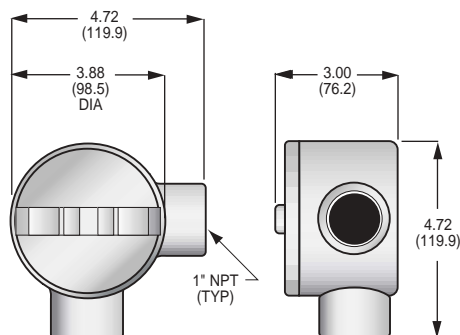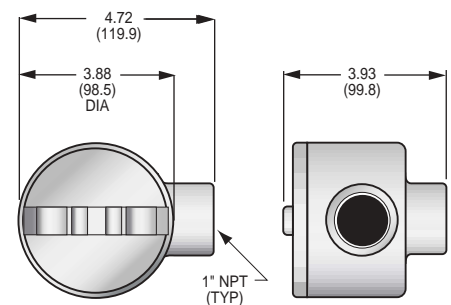

Model B220-885

Dimensions - *Inches (mm)*

Model B220-885

Model B220-880

Model B220-881

Related Blancett Products

Model 1100 In-Line Turbine Flow Meter

- Accuracy: ±1% of reading
- Repeatability: ±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
Division of Racine Federated Inc.

- 100 E. Felix Street South, Ste. 190, Fort Worth, TX 76115 U.S.A.
- Toll Free: 1-800-235-1638   Tel: 1-817-920-9998   Fax: 1-817-921-5282
- E-mail: info@blancett.com   © 2004 Blancett   Printed in USA   7/04 Form No. 4100

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