

K-Factor Scalers

Models B220-880, B220-881, B220-882 and B220-885

DESCRIPTION

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 digital 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.

FEATURES

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

OPERATING PRINCIPLE

Fluid moving through a turbine flow meter causes the rotor to rotate in relation to the flow rate. The rotation of the rotor blades cuts through the magnetic field generated by the magnetic pick-up which in turn generates a frequency output signal that is directly proportional to the speed of the rotor.

The signal produced is received by the K-Factor Scaler input amplifier, which has an input sensitivity of 30 mV p-p to 30 V p-p. The signal is then sent to an onboard microcontroller, which acts as a divisor with a range of 1...999,999,999.

The divisor (K-factor) is user adjustable and set by programming it into the board. The microcontroller handles the dividing process by counting the input pulses and comparing it to the programmed K-factors. Once the count equals this value, an output pulse occurs for a selectable time period and the counting starts over.

MODELS

Badger Meter offers two versions of the K-Factor Scaler:

- Switch-selectable (Models B220-880, B220-881 or B220-882)
- 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 1*.

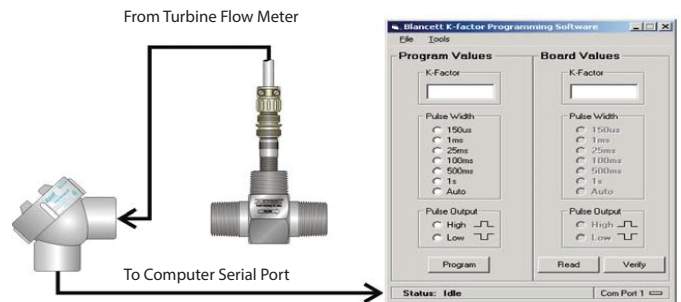


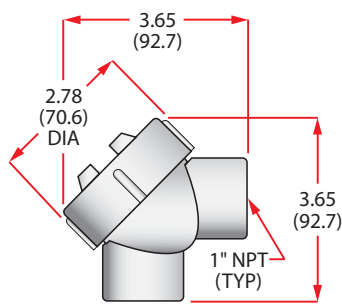
Figure 1: Programmable k-factor scaler and software

Models	B220-880 B220-881 B220-882	B220-885
K-Factor Storage	Yes	Yes
No. of Digits	8	9
Range	1...99,999,999	1...999,999,999
K-Factor Entry	Rotary switch	Electronic input

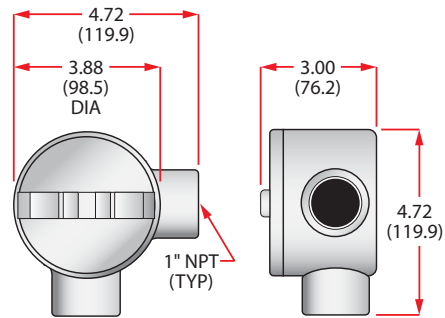
SPECIFICATIONS

External Power	Input voltage	8.5...30V DC (diode protected)
	Maximum current draw	18 mA (using internal resistor @ 30V DC input)
Environmental	Operating temperature	-22...158° F (-30...70° C)
	Altitude	2000 m
	Use	Indoor/outdoor
Inputs (Magnetic Pickup)	Humidity	0...90% non-condensing
	Frequency range	0...4000 Hz
	Trigger sensitivity	30 mV p-p...30V p-p
Output Signal	Max voltage	30V DC
	Max power	0.25 W
Pulse Output (using internal pullup resistor)	Maximum current	8 mA
	VH =	Power input voltage 0.7V DC
	VL =	Less than 0.4V @ maximum input power
	Internal pullup resistor	3.6 kΩ (enabled/disabled by jumper)
Pulse Output (using external pullup resistor)	Maximum current	100 mA
	VH =	Input voltage to external pullup resistor
	VL =	$[VH / (\text{selected resistor value} + 47 \Omega)] \times 47 \Omega$
	Pulse length	150 μs, 1 ms, 25 ms, 100 ms, 500 ms, 1 s, or auto mode
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, G; and Class III
	Models B220-880, B220-881 and B220-882	Appleton GR conduit outlet boxes GRL100-A, GRLB100-A and GRT100-A, CSA approved Class I, Div 1, Groups B, C, D; Class II, Groups E, F, G; and Class III
Certifications	CSA Ordinary location	CAN/CSA-C22.2 No. 61010-1-12, UL Std. No. 61010-1 (3rd Edition)
	Pollution Degree 2, Overvoltage Category I	

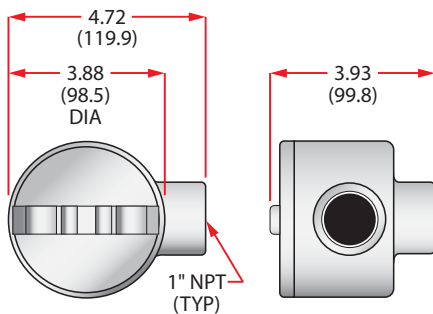
DIMENSIONS



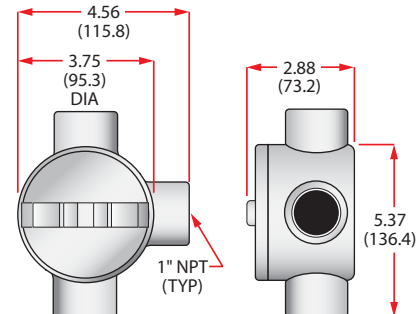
Model B220-885



Model B220-880



Model B220-881



Model B220-882

Control. Manage. Optimize.

BLANCETT is a registered trademark of Badger Meter, Inc. Other trademarks appearing in this document are the property of their respective entities. Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists. © 2017 Badger Meter, Inc. All rights reserved.

www.badgermeter.com

The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400
 México | Badger Meter de las Américas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882
 Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787
 Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtlinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0
 Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
 Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
 Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836
 China | Badger Meter | 7-1202 | 99 Hangzhong Road | Minhang District | Shanghai | China 201101 | +86-21-5763 5412
 Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11