Blancett®
Turbine Flow Meters

Badger Meter

# Blancett®
# Turbine flow meters

Rugged, accurate and reliable.

Every drop counts.

# Contents


**Blancett® turbine meters** 2

Blancett® turbine meters overview 3

Blancett® turbine meters overview 4

Blancett® flow monitors overview 5

Blancett® accessories overview 6

**Blancett® model 1100** 7

Blancett® 1100 standard flow meters with B111109 magnetic pickup 8

Blancett® 1100 standard flow meters without magnetic pickup 10

Blancett® 1100 standard flow meters – BSPP end connections with B111109 magnetic pickup 12

Blancett® 1100 explosion proof flow meters – for hazardous locations without magnetic pickup 12

Blancett® 1100 standard flow meters – 316 SS DIN flange connections with B111109 magnetic pickup 14

Blancett® 1100 standard flow meters – 304 SS flange connections with B111109 magnetic pickup 15

Blancett® 1100 explosion proof flow meters – 304 SS flange connections without magnetic pickup 17

Blancett® 1100 nickel bindery flow meters – for aggressive applications with B111109 magnetic pickup 19

Blancett® CS-1100 flow meters – for cement slurries with B111109 magnetic pickup 20

**Blancett® model 1200** 21

Blancett® 1200 turbine flow meters for highly corrosive environments – with B111117 RF pickup and preamplifier 22

Blancett® 1200 turbine flow meters – without magnetic pickup 23

**Blancett® model 1500** 24

Blancett® 1500 turbine flow meters – with B111113 magnetic pickup 25

**Blancett® QuikSert® turbine flow meters – Liquids** 26

Blancett® QuikSert® turbine flow meter – with B111109 magnetic pickup 27

Blancett® QuikSert® explosion proof flow meter for hazardous locations – without magnetic pickup 28

Blancett® QuikSert® turbine flow meter for cement slurries – with B111109 magnetic pickup 30

**Blancett® QuikSert® turbine flow meters – Gas** 31

Blancett® QuikSert® Gas – without pickup 32

**FloClean 3-A sanitary turbine meters** 33

FloClean B16D 3-A sanitary turbine flow meters (no hub) 34

FloClean B16D 3-A sanitary turbine flow meters (with hub) 35

**Blancett® model 1750 – Positive displacement gear flow meters** 37

Model 1750 - Positive displacement gear flow meters – Aluminum housing, 85 °C (185 °F) maximum fluid temperature 38

Model 1750 - Positive displacement gear flow meters – 303 stainless steel housing, 205 °C (400 °F) maximum fluid temperature 38

**Flow monitors** 40

B2900 / B3000 / E110 flow monitors for the Blancett® series 40

**Blancett® flow monitor B2900** 41

B2900 flow monitor, loop powered/4-20 mA and battery powered 42

**Blancett® flow monitor B3000** 43

B3000 flow monitor, loop powered/4-20 mA and battery powered 45

**Accessories** 47

K-factor scalers 47

Frequency converter 49

Intelligent frequency converter (analog) 50

Preamplifier (digital) 50

Magnetic pickups 50

Cable and connector options 51

Cable and connector options 51

Cable and connector options 51

Cable and connector options 51

Cable and connector options 52

Cable and connector options 52

Bushing reducer 52

Explosion proof kit (hazardous location) 52

**Pressure drop vs flow rate** 53

1100 Series 53

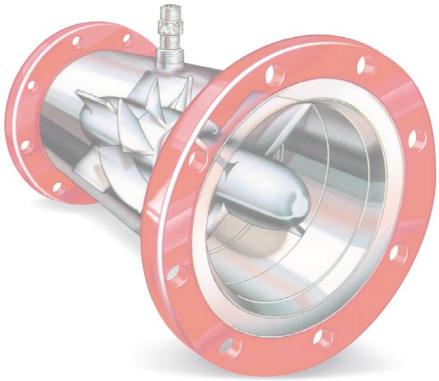
**Appendix** 54

Example 5 point calibration protocol for liquid flow meters 54

Example 5 point calibration protocol for gas flow meters 55

# Turbine meters

Turbine meters are best suited for low viscosity fluids and also gases.



## Measuring principle

Turbine meters are indirect volumetric meters. When the fluid passes through, a rotor is activated and the movement is then either electronically or mechanically transmitted.

# Blancett® turbine meters

- Petrochemical
- Oil and Gas
- Food and Beverage
- Semiconductor
- Irrigation
- Chemical
- Industrial
- Refining

## Rugged meters for harsh environments, high corrosive media or for food and pharmaceutical industry - accurate and reliable

Badger Meter offers the Blancett® family of turbine flow meters to measure everything from water in hydraulic fracturing and mining operations, to gases and liquids from wellheads to sanitary environments. Our turbine meters deliver accurate and reliable flow measurements for both liquid and gas applications. Blancett® turbine meters are also cost-effective and easy to repair. Both complete meters and repair kits receive a five-point NIST traceable calibration at the factory. Additional calibrations are available to achieve a higher accuracy rating or to custom-calibrated for a specific viscosity. The B1500 meters receive a 10-point NIST traceable calibration. To satisfy your flow metering needs, Badger Meter provides a full line of cost effective flow monitors to fit a variety of application demands including hazardous area locations, pulse and network communications and a variety of mounting options. The flow monitors are designed to be used with Blancett® flow meters, but can also be used with almost any flow meter producing a low amplitude AC output. The Blancett® family is offered with an assortment of accessories that deliver output signals to suit the inputs required by data acquisition or control systems. Available accessories include turbine meter pickups, K-factor scaler, frequency-to-analog transmitters, frequency-to-square wave transmitters and displays.

# Blancett® turbine meters overview

| Type | 1100 | 1200 | 1500 |
|---|---|---|---|
| **Medium** | for fluids | for fluids | for fluids |
| **Material** | Housing: 316 stainless steel<br>Rotor: CD4MCU stainless steel<br>Bearings: 316 stainless steel<br>Rotor shaft: Tungsten carbide | Housing: 303 stainless steel<br>Rotor: CD4MCU stainless steel<br>Bearings: 440 stainless steel<br>Rotor support & shaft: 303 stainless steel | Housing: 316 stainless steel<br>Rotor: 17-4 stainless steel<br>Bearings: Ceramic<br>Rotor shaft: 316 stainless steel |
| **Measuring range** | 2,3 – 19.000 l/min | 0,95 – 95 l/min | 0,95 - 947 l/min |
| **Size** | ½“ to 10“ | ¼“, ½“, ¾“ | ¼" to 2" |
| **Flow accuracy** | ±1 % of reading for ⅞“ and larger meters<br>±1 % of reading over the upper 70 % of the measuring range for ⅜", ½“ and ¾“ meters | ±1 % of reading | ±0,5 % of reading<br>±0,25 % of reading monitor and linearization |
| **Repeatability** | ±0,1 % | ±0,1 % | ±0,02 % |
| **Calibration** | Water (NIST traceable calibration);<br>other media upon request | Water (NIST traceable calibration);<br>other media upon request | Solvent (NIST traceable calibration)<br>10-point calibration |
| **Pressure ratings*** | 345 bar max. | 276 bar max. | 408 bar max. |
| **Operating temperature** | -101 °C to +177 °C (standard)<br>-268 °C to +232 °C<br>(with high temperature pickup B220111) | -101 °C to +162 °C | -65 °C to +148 °C |
| **End connections** | NPT, BSP, Victaulic®, Flange, Hose Barbed or Grayloc® | NPT | NPT<br>Flange |
| **Certifications** | CSA Class I Div 1, Groups C & D; Class II Div 1, Groups E, F & G: intrinsically safe<br>CSA Class I Div 1 Groups C, D; complies to UL 1203 and CSA 22.2 N° 30<br>Met Labs File No. E112860<br>(for explosion proof models only) | – | – |

* End connection dependent

# Blancett® turbine meters overview

| Type | FloClean | QuikSert® | |
|---|---|---|---|
| **Medium** | for fluids | for fluids | for gases |
| **Material** | Housing: 316 L stainless steel<br>Bearings: CD4MCU stainless steel, nickel plated<br>Standard bearings: Nickel bindery, tungsten carbide<br>Bearing shaft: Nickel bindery, tungsten carbide | Housing: 316 L stainless steel<br>Rotor: CD4MCU stainless steel<br>Bearings: Tungsten carbide<br>Rotor shaft: Tungsten carbide | Housing: 316 L stainless steel<br>Rotor: 410/304 stainless steel<br>Bearings: Tungsten carbide |
| **Measuring range** | 2,5 – 1.500 l/min | 2,3 – 19.000 l/min | 7 – 350 ACFM / 12 - 583 $m^3$/h |
| **Size** | ¾“ to 2 ½“ | ³/8“ to 10“ | 2“ |
| **Flow accuracy** | ±1 % of reading | ±1 % of reading for ⅞“ and larger meters<br>±1 % of reading over the upper 70 % of the measuring range for ⅜“, ½“ and ¾“ meters | ±1 % of reading with monitor or flow transmitter |
| **Repeatability** | ±0,1 % | ±0,1 % | ±0,5 % |
| **Calibration** | Water (NIST traceable calibration) | Water (NIST traceable calibration); other media upon request | Air (NIST traceable calibration) |
| **Operating pressure** | 69 bar | Depending of the chosen flange connections up to 255 bar | Vacuum 15.3 mPa max. |
| **Operating temperature** | -101 °C to +149 °C | -101 °C to +177 °C | -40 °C to +165 °C |
| **End connections** | Sanitary Tri-Clamp® | Wafer-style ASME/ANSI B16.5 – 1996 | Wafer-style ASME/ANSI B16.5 – 1996 |
| **Certifications** | 3-A sanitary standard | For explosion proof models only: Class I Div 1 Groups C, D; Complies to UL 1203 and CSA 22.2 N°. 30; Met Labs File N° E112860 | Class I Div 1, Groups C, D; Complies to UL 913 and CSA 22.2 N° 157-92 |

# Blancett® flow monitors overview

| Type | B2900 | B3000 | E110 |
|---|---|---|---|
| **Power supply** | 3,6 V lithium battery<br>or 4 - 20 mA loop-powered | 3,6 V lithium battery<br>4 – 20 mA loop-powered<br>Solar-powered | 9 – 27 V DC + sensor supply<br>3,6 V lithium battery |
| **Mounting possibilities** | Meter mounted1<br>Remote mount<br>Swivel mount | Meter mounted1<br>Remote mount<br>Swivel mount<br>Explosion proof, remote mount2 | Meter mounted1<br>Remote mount |
| **Outputs** | 4 – 20 mA<br>Pulse output<br>Modbus RTU<br>Open collector | 4 – 20 mA<br>Pulse output<br>Modbus RTU over RS 485 (B30 Advanced) | 4 – 20 mA (NPN)<br>Passive transistor output |
| **Certifications** | | B30 Advanced/Base/Solar:<br>Class I, Division 1, Groups C. D<br>Class II, Division 1, Groups E, F, G<br>Class III for USA and Canada<br>Corresponds to UL 913 and CSA C22.2 n° 157-92.<br><br>B30 explosion proof Advanced/Base:<br>Class I, Division 1, Groups B, C, D<br>Class II, Division 1, Groups E, F, G<br>Class III for USA and Canada complies with UL 1203 and CSA C22.2 n° 30-M1986.<br><br>B30 explosion proof Advanced/Base:<br>ATEX II 2 G Ex d IIC T4 Gb and<br>ATEX II D Ex tb IIC T125 °C Db | ATEX<br>Gas: Ⓔx II 2G Ex d IIC T6 Gb<br>Dust: Ⓔx II 2D tb IIIC T85 °C Db<br><br>IECEx<br>Gas: Ex d IIC T6 Gb<br>Dust: Ex tb IIIC T85°C Db<br><br>FM & CSA C-US<br>Class I, Div. 1, Groups A, B, C, D.<br>Class II/III, Div. 1, Groups E, F, G<br>Class I, Zone 1, AEx d IIc T6 Gb,<br>Zone 21, AEx tb IIIC T85°C Db. |
| **Enclosure rating** | NEMA 4X (IP 66) | NEMA 4X (IP 66) | NEMA 4X, NEMA 7,<br>NEMA 9 (IP 66, IP67) |

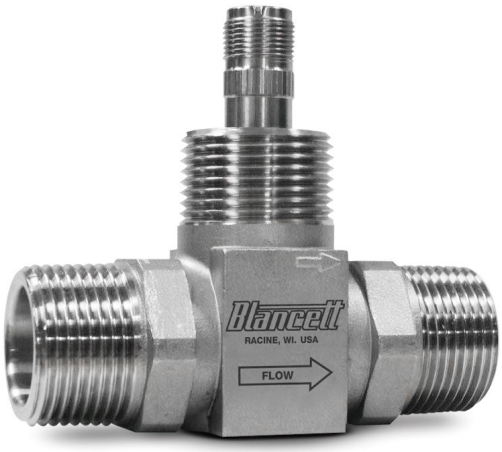
[1] Bushing reducer required for ½" hub turbine meters to mount accessories on meter (see "Table 46" on page 52)
[2] Explosion proof kit for explosion proof system required (see "Table 47" on page 52)

# Blancett® accessories overview

| Type | K-factor scaler | Canister style intelligent converter[1] | | Conduit elbow style intelligent converter | |
|---|---|---|---|---|---|
| **Description** | The Blancett® K-factor scaler converts the output of a Blancett® turbine flow meter, or other low-level frequency output, into a scaled square wave output signal which then translates into the desired units of measure. | The active sensor is designed for use with turbine meters, the sensor measures and calculates the flow rate to produce an analog current or voltage output representative of the meter's flow rate.<br>• Converts turbine pulse output into linearized analog output<br>• Choice of 4 to 20 mA or 0 to 5 V DC | | | |
| **Power** | External power<br>Input voltage: 8.5 - 30 V DC<br>Maximum current draw: 18 mA<br>(using internal resistor @ 30 V DC input) | F to I / Frequency to current<br>B220-950<br>10–30 V DC | F to V / Frequency to voltage<br>B220-951<br>10–26 V DC | F to I / Frequency to current<br>B220-873<br>10–30 V DC | F to V / Frequency to voltage<br>B220-874<br>10–26 V DC |
| **Inputs (magnetic pickup)** | Frequency range: 0–4000 Hz | Frequency: 0–3500 Hz<br>Frequency measurement accuracy: ±0,1% | | Frequency: 0–3500 Hz<br>Frequency measurement accuracy: ±1% | |
| **Output** | Max. voltage: 30 V DC<br>Max. power: 0,25 W | Analog output:<br>4–20 mA | Analog output:<br>0–5 V DC | Analog output:<br>4–20 mA | Analog output:<br>0–5 V DC |
| **Environmental** | Operating temperature: -30 °C to +70 °C | Operating temperature: -30 °C to +70 °C | | Operating temperature: -30 °C to +70 °C | |
| **Certifications** | Model B220-885:<br>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<br>Models B220-880, B220-881, B220-882:<br>Appleton GR conduit outlet box GRL100-A and GRLB100A, CSA approved Class I, Div 1, Groups B, C, D; Class II, Groups E, F, G; and Class III | | | 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 | |
| **Programming kit** | Part number: B220-900<br>(for use with K-factor scaler B220-885) | B220-953 | | B220-954 | |

[1] Includes magnetic pickup.

# Blancett® model 1100




- Broad flow range and mechanical process connections
- Wide variety
- Simple installation

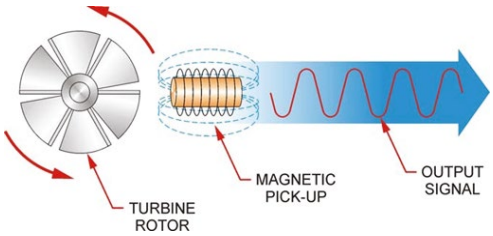



Illustration of electrical signal generated by rotor movement

## Blancett® 1100 standard turbine flow meters

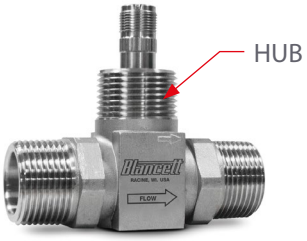
Model 1100 turbine flow meter withstands the demands of the most rigorous flow measurement applications. Designed to maintain accuracy and mechanical integrity, its rugged 316 stainless steel construction ensures a long service life in severe operating environments.

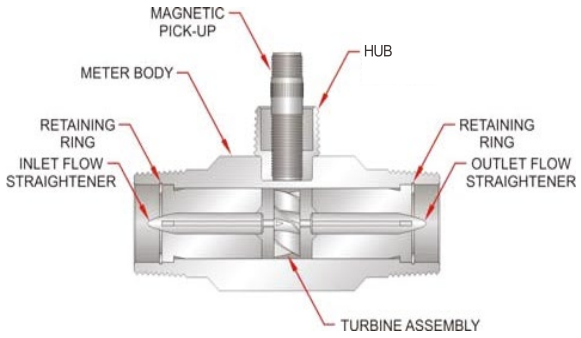
It meets a wide range of measurement requirements and integrates electronically with the Blancett® flow monitors, K-factor scaler or the F to I/F to V intelligent converters. Originally developed for the secondary oil recovery market, the model 1100 is an ideal meter for nearly all liquid flow measurement on or off the oilfield. All meters will be provided with a 5-point calibration certificate, standard calibrated with water (1.0 S.G.) or optionally with oil (0.876 S.G.)

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body | 316 stainless steel |
| | Rotor | CD4MCU stainless steel |
| | Rotor support | 316 stainless steel journal bearings |
| | Rotor shaft | Tungsten carbide |
| Turndown ratio | 10:1 | |
| Flow accuracy | ±1 % of reading for ⅞" and larger meters | |
| | ±1 % of reading over the upper 70 % of the measuring range for ⅜", ½" and ¾" meter size | |
| Repeatability | ±0,1 % | |
| Calibration | Water (NIST traceable calibration)* | |
| Turbine temperature | -101 °C to +177 °C (-150 °F to +350 °F)<br>-101 °C to +165 °C (-150 °F to +330 °F) with magnetic pickup (B111109)<br>-268 °C to +232 °C (-450 °F to +450 °F) with high temperature pickup (B220111) | |
| Certifications | CSA Class I Div 1, Groups C & D \| Class II Div 1, Groups E, F & G: intrinsically safe | |
| | CSA Clas I Div 1 Groups C,D; complies to UL 1203 and CSA 22.2 No. 30 | |
| | Met Labs File No. E112860 (for explosion proof models only) | |

*"Example 5 point calibration protocol for liquid flow meters" on page 54




# Blancett® 1100 standard flow meters with B111109 magnetic pickup

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | Flow rate | | K-factor[2] | | Strainer mesh | Meter weight (kg) | End to end length |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | gal/min | l/min | pulses/gal | pulses/liter | | | |
| B110-375-½ | ⅜" | ½" NPT | ½" male NPT | 345 bar (5000 psi) | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 0,5 | 76,2 mm (3") |
| B110-500-½ | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 0,5 | 76,2 mm (3") |
| B110-750-½ | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 0,5 | 76,2 mm (3") |
| B110-375 | ⅜" | 1" NPT | 1" male NPT | | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 0,9 | 101,6 mm (4") |
| B110-500 | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 0,9 | 101,6 mm (4") |
| B110-750 | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 0,9 | 101,6 mm (4") |
| B110-875 | ⅞" | | | | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 60 | 0,9 | 101,6 mm (4") |
| B111-110 | 1" | | | | 5 - 50 | 18,9 - 189,2 | 870 | 229 | 40 | 0,9 | 101,6 mm (4") |
| B111-115 | 1½" | | 1½" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 2,3 | 152,4 mm (6") |
| B111-121 | 1½" | | 2" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 2,7 | 152,4 mm (6") |
| B311-066 | 2" | | 2" Grooved end | | 15 -180 | 56,8 - 681,4 | 330 | 87 | 20 | 6,4 | 152,4 mm (6") |
| B111-120 | 2" | | 2" female NPT | | 40 - 400 | 151,4 - 1514,2 | 52 | 13 | 20 | 2,7 | 245 mm (10") |
| B311-004 | 3" | | 3" male NPT | 55 bar (800 psi) | 60 - 600 | 227,2 - 2271,2 | 57 | 15 | 10 | 6,8 | 317,5 mm (12,5") |
| B111-130 | 3" | | 3" Grooved end | | 60 - 600 | 227,2 - 2271,2 | 57 | 15 | 10 | 6,8 | 317,5 mm (12,5") |
| B311-084 | 4" | | 4" male NPT | | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,6 | 10 | 9,1 | 304,8 mm (12") |
| B111-140 | 4" | | 4" Grooved end | | 100 - 1200 | 378 - 4542 | 29 | 7,6 | 10 | 9,1 | 304,8 mm (12") |
| B311-085 | 6" | | 6" male NPT | | 200 - 2500 | 757 - 9463,5 | 7 | 1,8 | 4 | 21 | 304,8 mm (12") |
| B111-160 | 6" | | 6" Grooved end | | 200 - 2500 | 757 - 9463,5 | 7 | 1,8 | 4 | 21 | 304,8 mm (12") |
| B111-180 | 8" | | 8" Grooved end | | 350 - 3500 | 1326,5 - 13249 | 3 | 0,8 | 4 | 25,4 | 304,8 mm (12") |
| B111-200 | 10" | | 10" Grooved end | | 500 - 5000 | 1892,7 - 18927 | 1,6 | 0,4 | 4 | 36,3 | 304,8 mm (12") |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles
[2] All K-factors are approximate

*Table 1*

## Configuration examples

The Blancett® family is offered with an assortment of accessories that deliver output signals to suit the inputs required by data acquisition or control systems. Available accessories include monitors, turbine meter pickups, frequency-to-analog transmitters and frequency-to-square wave transmitters.

### Monitor

| Mounting | Hub size | Turbine with magnetic pickup[1] | Bushing reducer | Cable[2] | Monitor[3] |
|---|---|---|---|---|---|
| Meter mounted display | ½" NPT | B110-375-½ | B220056 or B220057 | - | B30AM-CS |
| Meter mounted display | 1" NPT | B111-110 | not required | - | B30AM-CS |
| Remote mounted display (with cable) | not required | B111-110 | not required | B220-220 or B220-221 | B30AR-CS |

[1] Turbine with magnetic pickup: see *"Table 1" on page 8*
[2] Cable: see *"Table 40" on page 51*
[3] Monitor: see *"Table 33" on page 45*

### K-factor scaler

| Mounting | Hub size | Turbine with magnetic pickup[1] | Bushing reducer | K-factor scaler[2] | Programming software[3] |
|---|---|---|---|---|---|
| Meter mounted | ½" NPT | B110-375-½ | B220056 or B220057 | B220-885 | B220-900 |
| Meter mounted | 1" NPT | B111-110 | not required | B220-885 | B220-900 |

[1] Turbine with magnetic pickup: see *"Table 1" on page 8*
[2] K-factor scaler: see *"Table 36" on page 48*
[3] Software: see *"Table 36" on page 48*

### F to I intelligent converter

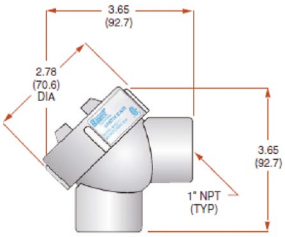
| Mounting | Hub size | Turbine with magnetic pickup[1] | Bushing reducer | F to I intelligent converter[2] | Programming kit[3] |
|---|---|---|---|---|---|
| Meter mounted | ½" NPT | B110-375-½ | B220056 or B220057 | B220-873 | B220-954 |
| Meter mounted | 1" NPT | B111-110 | not required | B220-873 | B220-954 |

[1] Turbine with magnetic pickup: see *"Table 1" on page 8*
[2] F to I converter: see *"Table 37" on page 50*
[3] Programming kit: see *"Table 37" on page 50*

### F to V intelligent converter

| Mounting | Hub size | Turbine with magnetic pickup[1] | Bushing reducer | F to V intelligent converter[2] | Programming kit[3] |
|---|---|---|---|---|---|
| Meter mounted | ½" NPT | B110-375-½ | B220056 or B220057 | B220-874 | B220-954 |
| Meter mounted | 1" NPT | B111-110 | not required | B220-874 | B220-954 |

[1] Turbine with magnetic pickup: see *"Table 1" on page 8*
[2] F to V converter: see *"Table 37" on page 50*
[3] Programming kit: see *"Table 37" on page 50*




Conduit elbow style
Model B220-873 & B220-874

# Blancett® 1100 standard flow meters without magnetic pickup

| Part number1 | Meter size | Hub size | End connection | Maximum pressure | Flow rate | | K-factor2 | | Strainer mesh | End to end lenght |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | gal/min | l/min | pulses/gal | pulses/liter | | |
| B112-375-½ | ⅜" | ½" NPT | ½" male NPT | 345 bar (5000 psi) | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 76,2 mm (3") |
| B112-500-½ | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 76,2 mm (3") |
| B112-750-½ | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 76,2 mm (3") |
| B112-375 | ⅜" | 1" NPT | 1" male NPT | | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 101,6 mm (4") |
| B112-500 | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 101,6 mm (4") |
| B112-750 | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 101,6 mm (4") |
| B112-875 | ⅞" | | | | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 60 | 101,6 mm (4") |
| B112-110 | 1" | | | | 5 - 50 | 18,9 - 189,2 | 870 | 229 | 40 | 101,6 mm (4") |
| B112-115 | 1½" | | 1½" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 152,4 mm (6") |
| B112-121 | 1½" | | 2" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 152,4 mm (6") |
| B112-120 | 2" | | 2" female NPT | | 40 - 400 | 151,4 - 1514,2 | 52 | 13 | 20 | 245 mm (10") |
| B112-130 | 3" | | 3" Grooved end | 55 bar (800 psi) | 60 - 600 | 227,2 - 2271,2 | 57 | 15 | 10 | 317,5 mm (12,5") |
| B112-140 | 4" | | 4" Grooved end | | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,6 | 10 | 304,8 mm (12") |
| B112-160 | 6" | | 6" Grooved end | | 200 - 2500 | 757- 9463,5 | 7 | 1,8 | 4 | 304,8 mm (12") |
| B112-180 | 8" | | 8" Grooved end | | 350 - 3500 | 1326,5 - 13249 | 3 | 0,8 | 4 | 304,8 mm (12") |
| B112-200 | 10" | | 10" Grooved end | | 500 - 5000 | 1892,7 - 18927 | 1,6 | 0,4 | 4 | 304,8 mm (12") |

[1] Requires purchase of separate pickup, see *"Table 3" on page 10* for available options.
[2] All K-factors are approximate.

*Table 2*

## Model 1100 pickup options

| Part number | Magnetic pickup | Temperature range |
|---|---|---|
| B111109 | Standard | -101 °C to +165 °C (-150 °F to +330 °F) |
| B111126 | ATEX Ex II 1G; EEx ia IIC T5 | -50 °C to +120 °C (-58 °F to +248 °F) |
| B220111 | High temperature | -268 °C to +232 °C (-450 °F to +450 °F) |
| B220210 | With preamplifier | -29 °C to +71 °C (-20 °F to +160 °F) |
| B220243 | Intrinsically safe, FM rated | -40 °C to +121°C (-40 °F to +250 °F) |

*Table 3*

# Configuration examples

## Monitor

| Mounting | Hub size | Turbine without pickup[1] | Magnetic pickup[2] | Bushing reducer | Cable[3] | Monitor[4] |
|---|---|---|---|---|---|---|
| Meter mounted display | ½" NPT | B112-375-½ | B111109 | B220056 or B220057 | - | B30AM-CS |
| Meter mounted display | 1" NPT | B112-375 | B111109 | - | - | B30AM-CS |
| Remote mounted display (with cable) | not required | B112-375-½ | B111109 | - | B220-220 or B220-221 | B30AR-CS |

[1] Turbine example: see *"Table 2" on page 10*
[2] Pickup: see *"Table 3" on page 10*
[3] Cables: see *"Table 40" on page 51*
[4] Monitor: see *"Table 33" on page 45*

## F to I intelligent converter

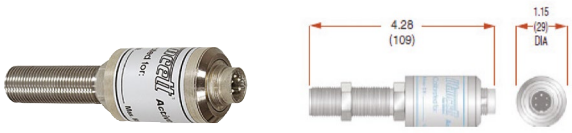
| Mounting | Hub size | Turbine without pickup[1] | Bushing reducer | F to I intelligent converter[2] | Programming kit[3] | Cable[4] |
|---|---|---|---|---|---|---|
| Meter mounted | ½" NPT | B112-375-½ | not required | B220-950 (includes magnetic pickup) | B220-953 | B220952-6 |
| Meter mounted | 1" NPT | B112-110 | not required | B220-950 (includes magnetic pickup) | B220-953 | B220952-6 |

[1] Turbine example: see "Table 2" on page 10
[2] F to I converter: see *"Table 37" on page 50*
[3] Programming kit: see *"Table 37" on page 50*
[4] Cables: see*"Table 43" on page 51*

## F to V intelligent converter

| Mounting | Hub size | Turbine[1] without pickup | Bushing reducer | F to V intelligent converter[2] | Programming kit[3] | Cable[4] |
|---|---|---|---|---|---|---|
| Meter mounted | ½" NPT | B112-375-½ | not required | B220-951 (includes magnetic pickup) | B220-953 | B220952-6 |
| Meter mounted | 1" NPT | B112-110 | not required | B220-951 (includes magnetic pickup) | B220-953 | B220952-6 |

[1] Turbine example: see "Table 2" on page 10
[2] F to V converter: see *"Table 37" on page 50*
[3] Programming kit: see *"Table 37" on page 50*
[4] Cables: see*"Table 43" on page 51*

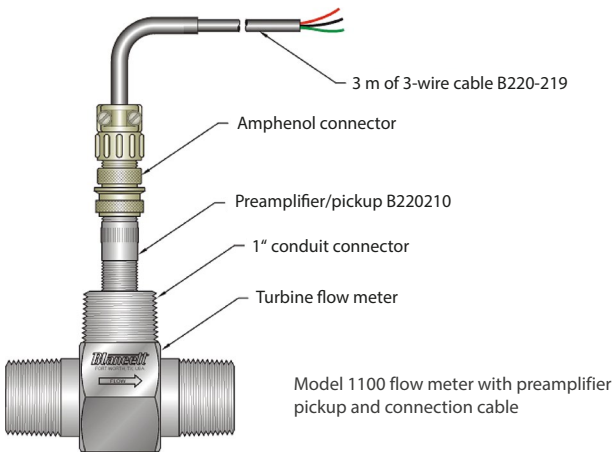



Canister style
Model B220-950 & B220-951

## Preamplifier (square wave output)

| Turbine without pickup[1] | Magnetic pickup with preamplifier[2] | Cable[3] |
|---|---|---|
| B112-375 | B220210 | B220-219 |

[1] Turbine example: see *"Table 2" on page 10*
[2] Pickup: see *"Table 3" on page 10*
[3] Cables: see*"Table 41" on page 51*




Model 1100 flow meter with preamplifier pickup and connection cable

# Blancett® 1100 standard flow meters – BSPP end connections with B111109 magnetic pickup

Blancett® 1100

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | Flow rate | | K-factor[2] | | Strainer mesh | End to end lenght |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | gal/min | l/min | pulses/gal | pulses/liter | | |
| B114-375-½ | ⅜" | ½" NPT | ½" male BSP | 345 bar (5000 psi) | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 76,2 mm (3") |
| B114-500-½ | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 76,2 mm (3") |
| B114-750-½ | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 76,2 mm (3") |
| B114-375 | ⅜" | 1" NPT | 1" male BSP | | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 101,6 mm (4") |
| B114-500 | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 101,6 mm (4") |
| B114-750 | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 101,6 mm (4") |
| B114-875 | ⅞" | | | | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 60 | 101,6 mm (4") |
| B114-110 | 1" | | | | 5 - 50 | 18,9 - 189,2 | 870 | 229 | 40 | 101,6 mm (4") |
| B114-115 | 1½" | | 1½" male BSP | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 152,4 mm (6") |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles.
[2] All K-factors are approximate.

*Table 4*

# Blancett® 1100 explosion proof flow meters – for hazardous locations without magnetic pickup

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | Flow rate | | K-factor[2] | | Strainer mesh | End to end lenght |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | gal/min | l/min | pulses/gal | pulses/liter | | |
| B110C-375-½ | ⅜" | ½" NPT | ½" male NPT | 345 bar (5000 psi) | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 76,2 mm (3") |
| B110C-500-½ | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 76,2 mm (3") |
| B110C-750-½ | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 76,2 mm (3") |
| B110C-375 | ⅜" | 1" NPT | 1" male NPT | | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 60 | 101,6 mm (4") |
| B110C-500 | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 60 | 101,6 mm (4") |
| B110C-750 | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 | 60 | 101,6 mm (4") |
| B110C-875 | ⅞" | | | | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 60 | 101,6 mm (4") |
| B111C-110 | 1" | | | | 5 - 50 | 18,9 - 189,2 | 870 | 229 | 40 | 101,6 mm (4") |
| B111C-115 | 1½" | | 1½" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 152,4 mm (6") |
| B111C-121 | 1½" | | 2" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 20 | 152,4 mm (6") |
| B111C-120 | 2" | | 2" female NPT | | 40 - 400 | 151,4 - 1514,2 | 52 | 13 | 20 | 245 mm (10") |
| B111C-130 | 3" | | 3" Grooved end | 55 bar (800 psi) | 60 - 600 | 227,2 - 2271,2 | 57 | 15 | 10 | 317,5 mm (12,5") |
| B111C-140 | 4" | | 4" Grooved end | | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,6 | 10 | 304,8 mm (12") |
| B111C-160 | 6" | | 6" Grooved end | | 200 - 2500 | 757- 9463,5 | 7 | 1,8 | 4 | 304,8 mm (12") |
| B111C-180 | 8" | | 8" Grooved end | | 350 - 3500 | 1326,5 - 13249 | 3 | 0,8 | 4 | 304,8 mm (12") |
| B111C-200 | 10" | | 10" Grooved end | | 500 - 5000 | 1892,7 - 18927 | 1,6 | 0,4 | 4 | 304,8 mm (12") |

Certifications: CSA Class I Div 1, Groups C & D; Class II Div 1, Groups E, F & G: intrinsically safe; CSA Class I Div 1 Groups C, D; complies to UL 1203 and CSA 22.2 N° 30; Met Labs File No. E112860

*Table 5*

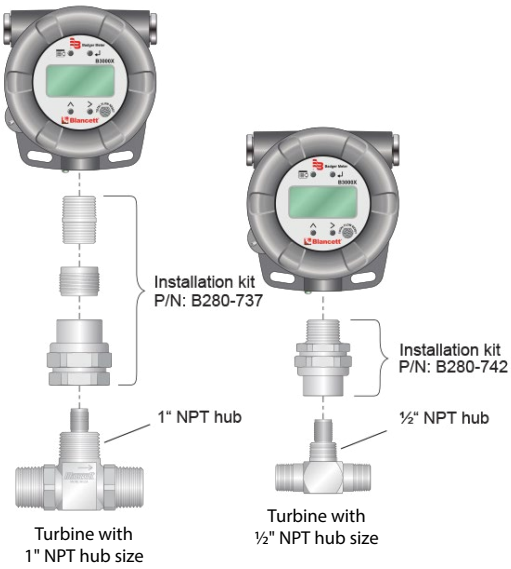
[1] Requires purchase of seperate pickup (options can be found in "Table 6" on page 12)
[2] All K-factors are approximate.

## Model 1100 explosion proof meters – pickup options

| Part number | Magnetic pickup | Temperature range |
|---|---|---|
| B111109 | Standard | -101 °C to +165 °C (-150 °F to +330 °F) |
| B111126 | ATEX Ex II 1G; EEx ia IIC T5 | -50 °C to +120 °C (-58 °F to +248 °F) |
| B220243 | Intrinsically safe, FM rated | -40 °C to +121 °C (-40°F to +250 °F) |

*Table 6*

## Configuration examples




### For hazardous location – Explosion proof

| Hub size | Turbine (no pickup)[1] | Magnetic pickup[2] | Explosion proof meter mount kit | Explosion proof monitor[3] |
|---|---|---|---|---|
| ½" NPT | B110C-375-½ | B111109 | B280-742 | B30XR-CS |
| 1" NPT | B111C-110 | B111109 | B280-737 | B30XR-CS |

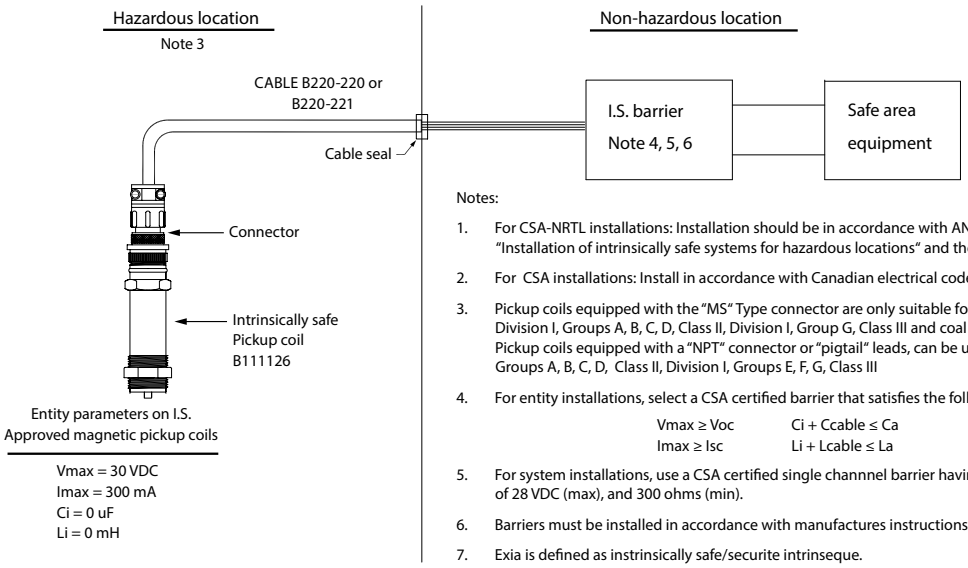
[1] Turbine example: see *"Table 5" on page 12*
[2] Pickup: see *"Table 6" on page 12*
[3] Monitor: see *"Table 33" on page 45;* Certifications: see *on page 44*

### For hazardous location – Intrinsically safe

| Hub size | Turbine without pickup | Magnetic pickup[2] | Cable | In non hazardous location | Explosion proof monitor[3] |
|---|---|---|---|---|---|
| ½" NPT | B110C-375-½ | B111126 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |
| 1" NPT | B111C-110 | B111126 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |
| ½" NPT | B110C-375-½ | B220243 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |
| 1" NPT | B111C-110 | B220243 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |

[1] Turbine example: see *"Table 5" on page 12*
[2] Pickup: see *"Table 6" on page 12*
[3] Monitor: see *"Table 33" on page 45;* Certifications: see *on page 44*
I.S. barrier not available

### Wiring example for B111126




Notes:

1. For CSA-NRTL installations: Installation should be in accordance with ANSI/ISA RP12.6 "Installation of intrinsically safe systems for hazardous locations" and the national electiric code (ANSI/NFPA 70).
2. For CSA installations: Install in accordance with Canadian electrical code Part I.
3. Pickup coils equipped with the "MS" Type connector are only suitable for hazardous locations Class I, Division I, Groups A, B, C, D, Class II, Division I, Group G, Class III and coal dust
   Pickup coils equipped with a "NPT" connector or "pigtail" leads, can be used in hazardous locations Class I, Division I, Groups A, B, C, D, Class II, Division I, Groups E, F, G, Class III
4. For entity installations, select a CSA certified barrier that satisfies the following:

   $V_{max} \geq V_{oc}$ $\quad C_i + C_{cable} \leq C_a$
   $I_{max} \geq I_{sc}$ $\quad L_i + L_{cable} \leq L_a$

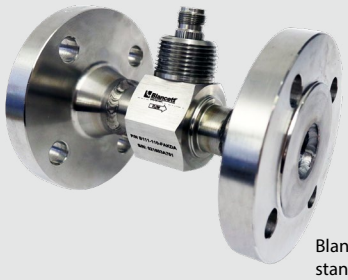
5. For system installations, use a CSA certified single channnel barrier having the parameters of 28 VDC (max), and 300 ohms (min).
6. Barriers must be installed in accordance with manufactures instructions.
7. Exia is defined as instrinsically safe/securite intrinseque.

### ATEX

| Hub size | Turbine without pickup[1] | Magnetic pickup[2] | Bushing reducer | ATEX monitor[2] |
|---|---|---|---|---|
| ½" NPT | B110C-375-½ | B111126 | B220056 or B220057 | E110 |
| 1" NPT | B111C-110 | B111126 | not required | E110 |

[1] Turbine example: see *"Table 5" on page 12*
[2] Pickup: see *"Table 6" on page 12*
[3] Monitor: see *"Table 35" on page 46*; Certifications: see *on page 40*

# Blancett® 1100 standard flow meters – 316 SS DIN flange connections with B111109 magnetic pickup



Blancett® 1100 standard flow meters-316 SS DIN flange connections

**B xxx-xxx-F**

Insert flow meter part number

Flange size

| | |
|---|---|
| A | 1″ |
| B | 1 ½″ |
| C | 2″ |
| D | 3″ |

Flange rating

| | |
|---|---|
| K | PN40 |

Flange type

| | |
|---|---|
| D | DIN flange |

**A**

Refer to the chart on the left to select the part number for a model 1100 DIN with flange connections.

| Part number1 | Meter size | End connection | Maximum pressure | Flow rate | | K-factor2 | |
|---|---|---|---|---|---|---|---|
| | | | | gal/min | l/min | pulses/gal | pulses/liter |
| B111-110-FAKDA | 1" | DIN25 PN40 | 40 bar (580 psi) | 5 - 50 | 18,9 - 189,2 | 870 | 229 |
| B111-115-FBKDA | 1½" | DIN40 PN40 | | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111-121-FCKDA | 2" LF | DIN40 PN40 | | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111-120-FCKDA | 2" | DIN50 PN40 | | 40 - 400 | 151,4 - 1514,2 | 52 | 13 |
| B111-130-FDKDA | 3" | DIN80 PN40 | | 60 - 600 | 227,2 - 2271,2 | 57 | 15 |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles

[2] All K-factors are approximate.

*Table 7*

# Blancett® 1100 standard flow meters – 304 SS flange connections with B111109 magnetic pickup

**B xxx-xxx - F**

Insert flow meter part number

| Flange size | |
|---|---|
| A | 1″ |
| B | 1½″ |
| C | 2″ |
| D | 3″ |
| E | 4″ |
| F | 6″ |
| G | 8″ |
| H | 10″ |

| Flange rating | |
|---|---|
| A | 150# |
| B | 300# |
| C | 600# |
| D | 900# |
| E | 1500# |

| Flange type | |
|---|---|
| A | Raised Face |

**A**

Refer to the chart on the left to select the part number for a model 1100 with flange connections. As an alternative to the model 1100 flanged meters, consider the QuikSert® models.

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body | 316 stainless steel |
| | Rotor | CD4MCU stainless steel |
| | Rotor support | 316 stainless steel journal bearings |
| | Rotor shaft | Tungsten carbide |
| | Flange connections | 304 stainless steel |
| Turndown ratio | 10:1 | |
| Flow accuracy | ±1 % of reading | |
| Repeatability | ±0,1 % | |
| Calibration | Water (NIST traceable calibration) | |
| Turbine temperature | -101 °C to +177 °C (-150 °F to +350 °F)<br>-101 °C to +165 °C (-150 °F to +330 °F) with magnetic pickup (B111109)<br>-268 °C to +232 °C (-450 °F to +450 °F) with high temperature pickup (B220111) | |
| Certifications | CSA Class I Div 1, Groups C & D \| Class II Div 1, Groups E, F & G: intrinsically safe* | |
| | CSA Clas I Div 1 Groups C,D; complies to UL 1203 and CSA 22.2 No. 30 | |
| | Met Labs File No. E112860 (for explosion proof models only) | |

## Configuration examples

### Monitor

| Mounting | Turbine with magnetic pickup[1] | Cable[2] | Monitor[3] |
|---|---|---|---|
| Meter mounted display | B111-110-FAAAA | - | B30AM-CS |
| Remote mounted display (with cable) | B111-110-FAAAA | B220-220 or B220-221 | B30AR-CS |

[1] Turbine example: see *"Table 8" on page 16*
[2] Cables: see *"Table 40" on page 51*
[3] Monitor: see *"Table 33" on page 45*

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | | Flow rate | | K-factor[2] | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | psi | bar | gal/min | l/min | pulses/gal | pulses/liter |
| B111-110-FAAAA | 1" | 1" NPT | 150# RF | 270 | 18,6 | 5 - 50 | 18,9 - 189,2 | 870 | 229 |
| B111-110-FABAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-110-FACAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-110-FADAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-110-FAEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-115-FBAAA | 1½" | | 150# RF | 270 | 18,6 | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111-115-FBBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-115-FBCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-115-FBDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-115-FBEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-121-FCAAA | 2" LF | | 150# RF | 270 | 18,6 | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111-121-FCBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-121-FCCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-121-FCDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-121-FCEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-120-FCAAA | 2" | | 150# RF | 270 | 18,6 | 40 - 400 | 151,4 - 1514,2 | 52 | 13 |
| B111-120-FCBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-120-FCCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-120-FCDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-120-FCEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-130-FDAAA | 3" | | 150# RF | 270 | 18,6 | 60 - 600 | 227,2 - 2271,2 | 57 | 15 |
| B111-130-FDBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-130-FDCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-130-FDDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-130-FDEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-140-FEAAA | 4" | | 150# RF | 270 | 18,6 | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,6 |
| B111-140-FEBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-140-FECAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-140-FEDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-140-FEEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-160-FFAAA | 6" | | 150# RF | 270 | 18,6 | 200 - 2500 | 757- 9463,5 | 7 | 1,8 |
| B111-160-FFBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-160-FFCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-160-FFDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-160-FFEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-180-FGAAA | 8" | | 150# RF | 270 | 18,6 | 350 - 3500 | 1326,5 - 13249 | 3 | 0,8 |
| B111-180-FGBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-180-FGCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-180-FGDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-180-FGEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111-200-FHAAA | 10" | | 150# RF | 270 | 18,6 | 500 - 5000 | 1892,7 -18927 | 2 | 0,5 |
| B111-200-FHBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111-200-FHCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111-200-FHDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111-200-FHEAA | | | 1500# RF | 3600 | 248,2 | | | | |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles.
[2] All K-factors are approximate.

*Table 8*

# Blancett® 1100 explosion proof flow meters – 304 SS flange connections without magnetic pickup

**B xxx C -xxx - F**

Insert flow meter part number

**Flange size**

| | |
|---|---|
| A | 1″ |
| B | 1½″ |
| C | 2″ |
| D | 3″ |
| E | 4″ |
| F | 6″ |
| G | 8″ |
| H | 10″ |

**Flange rating**

| | |
|---|---|
| A | 150# |
| B | 300# |
| C | 600# |
| D | 900# |
| E | 1500# |

**Flange type**

| | |
|---|---|
| A | Raised Face |

**A**

Refer to the chart on the left to select the part number for a model 1100 with flange connections. As an alternative to the model 1100 flanged meters, consider the QuikSert® models.

## Model 1100 explosion proof pickup options

| Part number | Magnetic pickup | Temperature range |
|---|---|---|
| B111109 | Standard | -101 °C to +165 °C (-150 °F to +330 °F) |
| B111126 | ATEX Ex II 1G; EEx ia IIC T5 | -50 °C to +120 °C (-58 °F to +248 °F) |
| B220243 | Intrinsically safe, FM rated | -40 °C to +121 °C (-40 °F to +250 °F) |

*Table 9*

## Configuration examples

### For hazardous location – Explosion proof

| Mounting | Turbine[1] (no pickup) | Magnetic pickup[2] | Explosion proof meter mount kit | Explosion proof monitor[3] |
|---|---|---|---|---|
| Remote mount | B111C-140-FEAAA | B111109 | B280-737 | B30XR-CS |

[1] Turbine example: see *"Table 10" on page 18*
[2] Pickups: see *"Table 9" on page 17*
[3] Monitors: see *"Table 33" on page 45;* Certifications: see *on page 44*

### For hazardous location – Intrinsically safe

| Mounting | Turbine[1] (no pickup) | Magnetic pickup[2] | Cable[3] | In non hazardous location | Explosion proof monitor[4] |
|---|---|---|---|---|---|
| Remote mounted | B111C-140-FEAAA | B111126 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |
| Remote mounted | B111C-140-FEAAA | B220243 | B220-220 or B220-221 | I.S. barrier and display | – |

[1] Turbine example: *"Table 10" on page 18;*
[2] Pickups: see *"Table 9" on page 17*
[3] Cables: see *"Table 40" on page 51*
[4] Monitors: see *"Table 33" on page 45;* Certifications: see *on page 44*
I.S. barrier not available

### ATEX

| Mounting | Turbine (no pickup)[1] | Magnetic pickup[2] | Bushing reducer | ATEX monitor[3] |
|---|---|---|---|---|
| Meter mounted | B111C-140-FEAAA | B111126 | B220056 or B220057 | E110 |

[1] Turbine example: see *"Table 10" on page 18*
[2] Pickup: see *"Table 9" on page 17*
[3] Monitors: see *"Table 35" on page 46;* Certifications: see *on page 40*

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | | Flow rate | | K-factor[2] | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | psi | bar | gal/min | l/min | pulses/gal | pulses/liter |
| B111C-110-FAAAA | 1" | 1" NPT | 150# RF | 270 | 18,6 | 5 - 50 | 18,9 - 189,2 | 870 | 229 |
| B111C-110-FABAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-110-FACAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-110-FADAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-110-FAEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-115-FBAAA | 1½" | | 150# RF | 270 | 18,6 | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111C-115-FBBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-115-FBCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-115-FBDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-115-FBEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-121-FCAAA | 2" LF | | 150# RF | 270 | 18,6 | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111C-121-FCBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-121-FCCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-121-FCDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-121-FCEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-120-FCAAA | 2" | | 150# RF | 270 | 18,6 | 40 - 400 | 151,4 - 1514,2 | 52 | 13 |
| B111C-120-FCBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-120-FCCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-120-FCDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-120-FCEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-130-FDAAA | 3" | | 150# RF | 270 | 18,6 | 60 - 600 | 227,2 - 2271,2 | 57 | 15 |
| B111C-130-FDBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-130-FDCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-130-FDDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-130-FDEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-140-FEAAA | 4" | | 150# RF | 270 | 18,6 | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,6 |
| B111C-140-FEBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-140-FECAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-140-FEDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-140-FEEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-160-FFAAA | 6" | | 150# RF | 270 | 18,6 | 200 - 2500 | 757- 9463,5 | 7 | 1,8 |
| B111C-160-FFBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-160-FFCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-160-FFDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-160-FFEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-180-FGAAA | 8" | | 150# RF | 270 | 18,6 | 350 - 3500 | 1326,5 - 13249 | 3 | 0,8 |
| B111C-180-FGBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-180-FGCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-180-FGDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-180-FGEAA | | | 1500# RF | 3600 | 248,2 | | | | |
| B111C-200-FHAAA | 10" | | 150# RF | 270 | 18,6 | 500 - 5000 | 1892,7 -18927 | 2 | 0,5 |
| B111C-200-FHBAA | | | 300# RF | 700 | 48,2 | | | | |
| B111C-200-FHCAA | | | 600# RF | 1440 | 99,3 | | | | |
| B111C-200-FHDAA | | | 900# RF | 2160 | 148,9 | | | | |
| B111C-200-FHEAA | | | 1500# RF | 3600 | 248,2 | | | | |

Certification: CSA Class I Div 1, Groups C & D; Class II Div 1, Groups E, F & G: intrinsically safe; CSA Class I Div 1 Groups C, D; complies to UL 1203 and CSA 22.2 N° 30; Met Labs File No. E112860

*Table 10*

[1] Requires purchase of separate pickup, see *"Table 9" on page 17* for available options.
[2] All K-factors are approximate.

# Blancett® 1100 nickel bindery flow meters – for aggressive applications with B111109 magnetic pickup

## Specifications

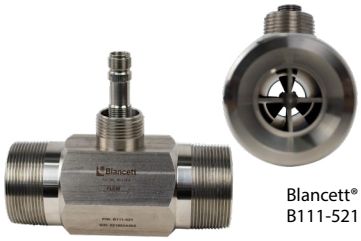
| | | |
|---|---|---|
| Materials of construction | Body | 316 stainless steel |
| | Rotor | CD4MCU stainless steel nickel plated |
| | Rotor support | Nickel bindery tungsten carbide |
| | Rotor shaft | Tungsten carbide |
| Turndown ratio | 10:1 | |
| Flow accuracy | ±1 % of reading for ⅞" and larger meters<br>±1 % of reading over the upper 70 % of the measuring range for ⅜", ½" and ¾" meter size | |
| Repeatability | ±0,1 % | |
| Calibration | Water (NIST traceable calibration) | |
| Turbine temperature | -101 °C to +177 °C (-150 °F to +350 °F)<br>-101 °C to +165 °C (-150 °F to +330 °F) with magnetic pickup (B111109)<br>-268 °C to +232 °C (-450 °F to +450 °F) with high temperature pickup (B220111) | |

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | Flow rate | | K-factor[2] | |
|---|---|---|---|---|---|---|---|---|
| | | | | | gal/min | l/min | pulses/gal | pulses/liter |
| B111-700-½ | ⅜" | ½" NPT | ½" male NPT | 345 bar (5000 psi) | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 |
| B111-701-½ | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 |
| B111-702-½ | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 |
| B111-700 | ⅜" | 1" NPT | 1" male NPT | | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 |
| B111-701 | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 |
| B111-702 | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 3300 | 870 |
| B111-703 | ⅞" | | | | 3 - 30 | 11,4 - 113,6 | 3100 | 818 |
| B111-704 | 1" | | | | 5 - 50 | 18,9 - 189,2 | 870 | 229 |
| B111-705 | 1½" | | 1½" male NPT | | 5 - 50 | 18,9 - 189,2 | 330 | 87 |
| B111-707 | 1½" | | 2" male NPT | | 15 - 180 | 56,8 - 681,4 | 330 | 87 |
| B111-706 | 2" | | 2" female NPT | | 40 - 400 | 151,4 - 1514,2 | 52 | 13 |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles.
[2] All K-factors are approximate.

*Table 11*

# Blancett® CS-1100 flow meters – for cement slurries with B111109 magnetic pickup



Blancett®
B111-521

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body | 316 stainless steel |
| | Rotor | CD4MCU stainless steel nickel plated |
| | Rotor support | Nickel bindery tungsten carbide |
| | Rotor shaft | Tungsten carbide |
| Turndown ratio | 10:1 | |
| Flow accuracy | ±4 % of reading | |
| Repeatability | ±0,1 % | |
| Calibration | Water (NIST traceable calibration) | |
| Turbine temperature | -101 °C to +177 °C (-150 °F to +350 °F)<br>-101 °C to +165 °C (-150 °F to +330 °F) with magnetic pickup (B111109)<br>-268 °C to +232 °C (-450 °F to +450 °F) with high temperature pickup (B220111) | |

| Part number[1] | Meter size | Hub size | End connection | Maximum pressure | Flow rate | | K-factor[2] | |
|---|---|---|---|---|---|---|---|---|
| | | | | | gal/min | l/min | pulses/gal | pulses/liter |
| B111-503 | ⅜" | 1" NPT | 1" male NPT | 345 bar (5000 psi) | 0,6 - 3 | 2,3 - 11,4 | 9000 | 2375 |
| B111-505 | ½" | | | | 0,75 - 7,5 | 2,8 - 28,4 | 6500 | 1715 |
| B111-507 | ¾" | | | | 2 - 15 | 7,6 - 56,8 | 1650 | 435 |
| B111-508 | ⅞" | | | | 3 - 30 | 11,4 - 113,6 | 1550 | 396 |
| B111-510 | 1" | | | | 5 - 50 | 18,9 - 189,2 | 435 | 115 |
| B111-515 | 1½" | | 1½" male NPT | | 15 - 180 | 56,8 - 681,4 | 165 | 44 |
| B111-521 | 1½" | | 2" male NPT | | 15 - 180 | 56,8 - 681,4 | 165 | 44 |
| B111-520 | 2" | | 2" female NPT | | 40 - 400 | 151,4 - 1514,2 | 26 | 6,8 |
| B111-530 | 3" | | 3" Grooved end | 55 bar (800 psi) | 60 - 600 | 227,2 - 2271,2 | 28,5 | 7,5 |
| B111-540 | 4" | | 4" Grooved end | | 100 - 1200 | 378,5 - 4542,5 | 14,5 | 3,8 |
| B111-560 | 6" | | 6" Grooved end | | 200 - 2500 | 757,0 - 9463,5 | 3,5 | 0,9 |
| B111-580 | 8" | | 8" Grooved end | | 250 - 3500 | 946,4 - 13249 | 1,5 | 0,4 |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles.
[2] All K-factors are approximate.
NOTE: Flanged fittings available upon request - consult factory for price and availability.

*Table 12*

# Blancett® model 1200

- ¼" to ¾" size available
- Simple installation

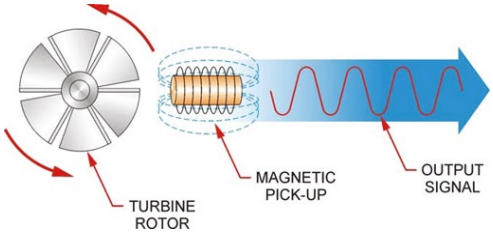



Illustration of electrical signal generated by rotor movement

## Blancett® 1200 turbine flow meter

The model 1200 turbine flow meter has been designed for high corrosive environments. Developed for use in petrochemical and process industries with liquid chemical flows, the model 1200 turbine provides accuracy and durability in aggressive industrial environments.

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body | 303 stainless steel |
| | Rotor | CD4MCU stainless steel |
| | Bearings | Two (2) type-440 stainless steel ball bearings |
| | Rotor support and shaft | 303 stainless steel |
| Operating parameters | Meter | -51 °C to +177 °C (-60 °F to +350 °F) |
| | RF pickup | -101 °C to +162 °C (-150 °F to +325 °F) |
| | Pressure | 276 bar (4000 psi) maximum |
| | Accuracy | ±1,0 % of reading |
| | Repeatability | ±0,1 % |
| | Calibration | Water (NIST traceable calibration) |
| RF preamplifier | Input signal | 1 millihenry carrier pickup |
| | Output signal | 10 V peak to peak square wave |
| Temperature | Module | -7 °C to +71 °C (-20 °F to +160 °F) |
| | Power | 7 – 30 V DC |
| | Distance specification | 15,2 m (50 ft) maximum between pickup and RF preamplifier<br>305 m (1000 ft) maximum between preamplifier and receiving unit |
| | Electrical connection | Terminal strip |
| | Housing | Epoxy encapsulated module |

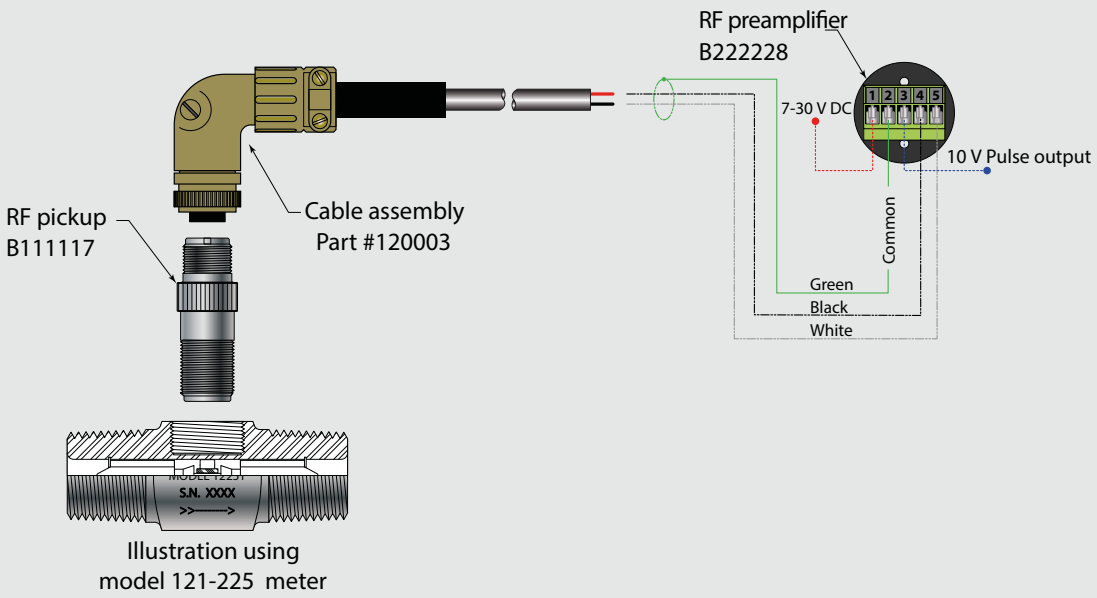
# Blancett® 1200 turbine flow meters for highly corrosive environments – with B111117 RF pickup and preamplifier

| Part number1 | Bore size | End connection | Maximum pressure | Flow rate | | K-factor2 | | Strainer mesh |
|---|---|---|---|---|---|---|---|---|
| | | | | gal/min | l/min | pulses/gal | pulses/liter | |
| B121-225 | ¼" | ½" male NPT | 276 bar (4000 psi) | 0,25 - 2,5 | 0,95 - 9,5 | 29000 - 33000 | 7651 - 8707 | 60 |
| B121-250 | ½" | ½" female NPT | | 0,75 - 7,5 | 2,84 - 28,4 | 8500 - 9500 | 2243 - 2507 | 60 |
| B121-275 | ¾" | 1" male NPT | | 2,5 - 25 | 9,5 - 94,6 | 2800 - 3000 | 739 - 792 | 60 |

[1] Includes B111117 RF pickup, 10 ft Teflon cable assembly with 90° connector B120-003 and 12/24 VDC preamplifier B222228.
[2] All K-factors are approximate.

*Table 13*

## RF Pickup B111117 with preamplifier B222228




Wiring diagram with RF pickup, cable assembly and preamplifier

| Terminal | Description | Notes |
|---|---|---|
| 1 | Power | 7–30 V DC |
| 2 | Common | Power return |
| 3 | Output signal | 10 V square wave |
| 4 | Input | RF pickup (1 millihenry) |
| 5 | Input | RF pickup (1 millihenry) |

# Blancett® 1200 turbine flow meters – without magnetic pickup

| Part number | Bore size | End connection | Maximum pressure | Flow rate | | K-factor1 | | Strainer mesh |
|---|---|---|---|---|---|---|---|---|
| | | | | gal/min | l/min | pulses/gal | pulses/liter | |
| B121227 | ¼" | ½" male NPT | 276 bar (4000 psi) | 0,25 - 2,5 | 0,95 - 9,5 | 29000 - 33000 | 7651 - 8707 | 60 |
| B121251 | ½" | ½" female NPT | | 0,75 - 7,5 | 2,84 - 28,4 | 8500 - 9500 | 2243 - 2507 | 60 |
| B121276 | ¾" | 1" male NPT | | 2,5 - 25 | 9,5 - 94,6 | 2800 - 3000 | 739 - 792 | 60 |

[1] All K-factors are approximate.

*Table 14*

## Blancett® 1200 turbine flow meters – pickup options

| Part number | Magnetic pickup |
|---|---|
| B111117 | Standard RF pickup -101 °C to +165 °C (-150 °F to +330 °F) for 1200, CorrExx™ series only |
| B120101 | Magnetic pickup, all stainless steel, long nose for 1200, CorrExx™ series only |
| B140013 | Shielded magnetic pickup, stainless steel for 1200, CorrExx™ series only |

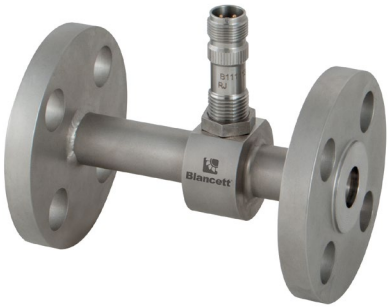
*Table 15*

## Configuration examples

| Monitor | | | | |
|---|---|---|---|---|
| Mounting | Turbine[1] | Magnetic pickup[2] | Cable[3] | Monitor[4] |
| Remote mounted display | B121227 | B120101 | B220-220 | B30AR-CS |

[1] Turbine example: see *"Table 14" on page 23*
[2] Pickup: see *"Table 15" on page 23*
[2] Cable: see *"Table 40" on page 51*
[2] Monitors: see *"Table 33" on page 45*

# Blancett® model 1500



Blancett® 1500
with meter mounted
B3000 display

- Extraordinary linearity
- High measuring accuracy
- Available in sizes from 1/4" to 2"
- Available with 10 point calibration certificate

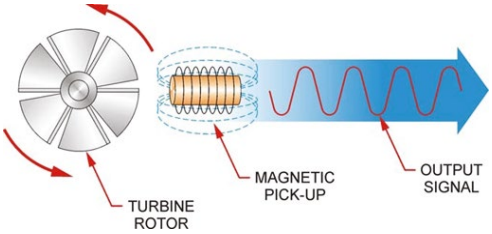



Illustration of electrical signal generated by rotor movement

## Blancett® turbine meter model 1500

Blancett® 1500 flow meters are the ideal solutions for standard clean, filtered liquid flow applications in precision industrial processes, found in the automotive, chemical/petrochemical, aerospace and general industries.
Turbine flow meters 1500 have exceptional mechanical linearity, resulting in minimizing or negating temperature induced viscosity influence. Meters come with national pipe thread (NPT) or flange process fittings, sizes up to two inches and can be ordered with a Blancett® B3000 flow monitor to accommodate the requirements of most applications and flow ranges.

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body | 316 stainless steel |
| | Shafts | 316 stainless steel |
| | Rotors | 17-4 PH stainless steel |
| | Bearing | Ceramic ball bearings |
| Operating parameters | Meter | -101 °C to +149 °C (-150 °F to +300 °F) |
| | Pickup | -101 °C to +149 °C (-150 °F to +300 °F) / B111113 |
| | Pressure | max. 408 bar |
| | Accuracy | ± 0,5 % of reading; ±0,25 % with monitor and linearisation |
| | Repeatability | ± 0,02 % of reading |
| | Response time | 2 – 3 ms (at 1.2 cSt) |
| | Calibration | Solvent (NIST traceable calibration); 10-point calibration |

# Blancett® 1500 turbine flow meters – with B111113 magnetic pickup

| Part number[1] | Bore size | End connection | Maximum pressure | | Flow rate | | K-factor[2] | | Upstream filtration |
|---|---|---|---|---|---|---|---|---|---|
| | | | psi | bar | gal/min | l/min | pulses/gal | pulses/liter | |
| B150-501-NPT | ¼" | ½" NPT | 5922 | 408 | 0,25 - 2,5 | 0,9 - 9,5 | 28800 | 7599 | 25 to 40 microns |
| B150-502-NPT | ⅜" | | 4700 | 324 | 0,50 - 5,0 | 2,8 - 28,4 | 14400 | 3799 | 25 to 40 microns |
| B150-503-NPT | ½" | | 4418 | 304 | 0,75 - 7,50 | 9,5 - 94,6 | 9600 | 2533 | 25 to 40 microns |
| B150-625-NPT | ⅝" | ¾" NPT | 4136 | 285 | 1,25 - 12,5 | 4,7 - 47,3 | 5760 | 1520 | 40 to 75 microns |
| B150-750-NPT | ¾" | | 4136 | 285 | 2,5 - 25,0 | 9,5 - 94,6 | 2800 | 739 | 40 to 75 microns |
| B150-110-NPT | 1" | 1" NPT | 4042 | 279 | 5,00 - 50,0 | 18,9 - 189,3 | 1440 | 380 | 40 to 75 microns |
| B150-125-NPT | 1 ¼" | 1-1/4" NPT | 4700 | 324 | 7,50 - 75,0 | 28,4 - 283,9 | 960 | 253 | 40 to 75 microns |
| B150-115-NPT | 1 ½" | 1-½" NPT | 4230 | 292 | 12,5 - 125 | 47,3 - 473,2 | 576 | 152 | 40 to 75 microns |
| B150-120-NPT | 2" | 2" NPT | 3666 | 253 | 25,0 - 250 | 94,6 - 946,4 | 288 | 76 | 40 to 75 microns |
| B150-501-F15 | ¼" | ½" 150# Flange | 275 | 19 | 0,25 - 2,5 | 0,9 - 9,5 | 28800 | 7599 | 25 to 40 microns |
| B150-502-F15 | ⅜" | | | | 0,50 - 5,00 | 2,8 - 28,4 | 14400 | 3799 | 25 to 40 microns |
| B150-503-F15 | ½" | | | | 0,75 - 7,50 | 9,5 - 94,6 | 9600 | 2533 | 25 to 40 microns |
| B150-625-F15 | ⅝" | | | | 1,25 - 12,5 | 4,7 - 47,3 | 5760 | 1520 | 25 to 40 microns |
| B150-750-F15 | ¾" | ¾" 150# Flange | | | 2,5 - 25,0 | 9,5 - 94,6 | 2800 | 739 | 40 to 75 microns |
| B150-110-F15 | 1" | 1" 150# Flange | | | 5,00 - 50,0 | 18,9 - 189,3 | 1440 | 380 | 40 to 75 microns |
| B150-125-F15 | 1 ¼" | 1-1/4" 150# Flange | | | 7,50 - 75,0 | 28,4 - 283,9 | 960 | 253 | 40 to 75 microns |
| B150-115-F15 | 1 ½" | 1-½" 150# Flange | | | 12,5 - 125 | 47,3 - 473,2 | 576 | 152 | 40 to 75 microns |
| B150-120-F15 | 2" | 2" 150# Flange | | | 25,0 - 250 | 94,6 - 946,4 | 288 | 76 | 40 to 75 microns |

*Table 16*

[1] Includes standard magnetic pickup part number B111113.
[2] K-factor will vary meter to meter. Refer to the calibration test report.

**NPT meter pressure rating**
1. Pressure ratings are for temperatures up to 37.8 °C (100 °F).
2. Pressure rating is calculated with an allowable stress value of 1379 bar (20,000 psi) for 316 SS per pressure piping code ASME B31.3
3. Pressure chart is displaying safe working pressure, in accordance with power piping code ASME B31.1

**Flange meter pressure rating**
1. Specifications from maximum non-shock allowable working pressure in PSIG/barg at 37.8 °C (100 °F) or less.
2. Stainless steel 316A-181 material.
3. Pressure rating in accordance with ASME B16.5 standards.

## Configuration examples

### Monitor

| Mounting | Turbine with magnetic pickup[1] | Cable | Monitor[2] |
|---|---|---|---|
| Meter mounted display | B150-110-NPT | - | B30AM-CS |
| Remote mounted display (with cable) | B150-110-NPT | B220-220 or B220-B221 | B30AR-CS |

[1] Turbine example: see *"Table 16" on page 25*
[2] Monitors: see *"Table 33" on page 45* (adapter to mount the monitor on the meter will be provided when ordering as system)
NOTE: Hazardous location not available
NOTE: Hazardous location - intrinsically safe not available (B111126 is not suitable)

### F to I intelligent converter

| Turbine with magnetic pickup[1] | F to I intelligent converter[2] | Programming kit |
|---|---|---|
| B150-501-NPT | B 220-873 | B220-954 |

[1] Turbine example: see *"Table 16" on page 25*
[2] F to I converter: see *"Table 37" on page 50*

### F to V intelligent converter

| Turbine with magnetic pickup[1] | F to V intelligent converter[2] | Programming kit |
|---|---|---|
| B150-501-NPT | B220-874 | B220-954 |

[1] Turbine example: see *"Table 16" on page 25*
[2] F to V converter: see *"Table 37" on page 50*

# Blancett® QuikSert® turbine flow meters – Liquids

- No need for mating flanges
- CSA explosion proof models available
- NIST traceable calibration
- Easy installation
- Lower maintenance costs

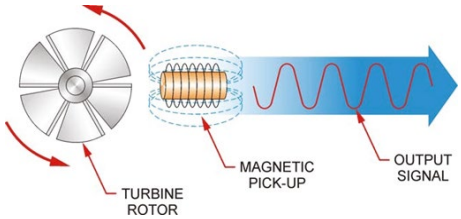



Illustration of electrical signal generated by rotor movement

## Turbine meters for harsh applications

The QuikSert® turbine flow meter's durable stainless steel body incorporates a helical turbine with tungsten carbide shaft and bearings. The meter provides an efficient, long service life and a cost effective solution for your measurement requirements. The QuikSert's compact design requires less space in the flow line, allowing easy installation and lower mechanical costs. The QuikSert® utilizes modified upstream and downstream flow straighteners for enhanced fluid dynamics. QuikSert® provides a local flow rate and volume totalization when used with a Blancett® monitor.

## Specifications

| | | |
|---|---|---|
| Materials of construction | **Body and internal wetted parts** | 316L stainless steel |
| | **Turbine** | CD4MCU stainless steel |
| | **Bearings** | Tungsten carbide |
| | **Shaft** | Tungsten carbide |
| Accuracy | ±1 % of reading for ⅞" and larger meters<br>±1 % of reading over the upper 70 % of the measuring range for ⅜", ½" and ¾" meters | |
| Repeatability | ±0,1 % | |
| Calibration | Water (NIST traceable calibration) | |
| Pressure rating | See pressure rating table below | |
| Operating temperature | -101 °C to +165 °C (-150 °F to +350 °F) with standard magnetic pickup (B111109)<br>-268 °C to +232 °C (-450 °F to +450 °F) with high-temperature pickup (B220111) | |
| End connections | Wafer-style ASME/ANSI B16.5-1996 | |
| Certifications | For explosion proof models only: Class I Div 1 Groups C,D; complies to UL 1203 and CSA 22.2 No. 30<br>Met Labs File No. E112860 | |

## Pressure rating

| Flange class (ANSI) | 150 | 300 | 600 | 900 | 1500 |
|---|---|---|---|---|---|
| Working pressure (psi) | 285 | 740 | 1480 | 2220 | 3705 |
| Working pressure (bar) | 19,6 | 51 | 102 | 153 | 255,5 |
| Working pressure (MPa) | 1,97 | 5,10 | 10,20 | 15,31 | 25,55 |
| * Test pressure (psi) | 427,5 | 1110 | 2220 | 3330 | 5557,5 |
| * Test pressure (MPa) | 2,95 | 7,65 | 15,31 | 22,98 | 38,32 |

The pressure rating of the meter is dependent upon the class of ANSI flanges between wich the meter is to be mounted. The pressure rating chart is based on Carbon steel at 37,8 °C (100 °F).
*Test pressure based on 1,5 safety factor.

# Blancett® QuikSert® turbine flow meter – with B111109 magnetic pickup

| Part number1 | Bore x line size | Hub size | Maximum pressure drop | | Flow rate | | K-factor2 | | Dimensions diameter x length | | Strainer mesh |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | psi | bar | gal/min | l/min | pulses/gal | pulses/liter | inches | mm | |
| B131-038 | ⅜" x 1" | 1" NPT | 3,75 | 0,26 | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 2 x 4 | 50,8 x 101,6 | 60 |
| B131-050 | ½" x 1" | | 6,5 | 0,45 | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 2 x 4 | 50,8 x 101,6 | 60 |
| B131-075 | ¾" x 1" | | 18 | 1,24 | 2 - 15 | 7,6 - 56,8 | 3300 | 871 | 2 x 4 | 50,8 x 101,6 | 60 |
| B131-088 | ⅞" x 1" | | 20 | 1,38 | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 2 x 4 | 50,8 x 101,6 | 60 |
| B131-100 | 1" x 1" | | 20 | 1,38 | 5 - 50 | 18,9 - 189,2 | 870 | 230 | 2 x 4 | 50,8 x 101,6 | 60 |
| B132-050 | ½" x 2" | | 12 | 0,83 | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 3,62 x 2,5 | 91,5 x 63,5 | 60 |
| B132-075 | ¾" x 2" | | 18 | 1,24 | 2 -15 | 7,6 - 56,8 | 3300 | 871 | 3,62 x 2,5 | 91,5 x 63,5 | 60 |
| B132-088 | ⅞" x 2" | | 20 | 1,38 | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 3,62 x 2,5 | 91,5 x 63,5 | 60 |
| B132-100 | 1" x 2" | | 20 | 1,38 | 5 - 50 | 18,9 - 189,2 | 870 | 230 | 3,62 x 2,5 | 91,5 x 63,5 | 40 |
| B132-150 | 1½" x 2" | | 16 | 1,10 | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 3,62 x 2,5 | 91,5 x 63,5 | 20 |
| B132-200 | 2" x 2" | | 9 | 0,62 | 40 - 400 | 151,4 - 1514,2 | 52 | 13,7 | 3,62 x 2,5 | 91,5 x 63,5 | 20 |
| B132-250 | 2" x 3" | | 10 | 0,69 | 40 - 400 | 151,4 - 1514,2 | 52 | 13,7 | 3,62 x 4,25 | 91,5 x 108 | 20 |
| B133-300 | 3" x 3" | | 10 | 0,69 | 60 - 600 | 227,2 - 2271,2 | 57 | 15 | 5 x 4,25 | 127 x 108 | 10 |
| B133-380 | 3" x 3" | | 10 | 0,69 | 80 - 800 | 302,8 - 3028,3 | 57 | 15 | 5 x 4,25 | 127 x 108 | 10 |
| B134-400 | 4" x 4" | | 10 | 0,69 | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,7 | 6,18 x 5 | 157 x 127 | 10 |
| B136-600 | 6" x 6" | | 10 | 0,69 | 200 - 2500 | 757,0 - 9463,5 | 7 | 1,8 | 8,5 x 5,75 | 216 x 146 | 4 |
| B138-800 | 8" x 8" | | 10 | 0,69 | 350 - 3500 | 1324,9 - 13249 | 3 | 0,8 | 10,62 x 6,25 | 269,7 x 159 | 4 |
| B139-900 | 10" x 10" | | 10 | 0,69 | 500 - 5000 | 1892,7 - 18927 | 1,6 | 0,4 | 12,75 x 6,75 | 323,9 x 171,5 | 4 |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles.
[2] All K-factors are approximate.

*Table 17*

## Configuration examples

### Monitor

| Mounting | Turbine with magnetic pickup[1] | Monitor[2] | Cable[3] |
|---|---|---|---|
| Meter mounted display | B131-100 | B30AM-CS | - |
| Remote mounted display (with cable) | B131-100 | B30AR-CS | B220-220 or B220-221 |

[1] Turbine example: see *"Table 17" on page 27*
[2] Monitors: see *"Table 33" on page 45*
[3] Cables: see *"Table 40" on page 51*

# Blancett® QuikSert® explosion proof flow meter for hazardous locations – without magnetic pickup

| Part number | Bore x line size | Hub size | Maximum pressure drop | | Flow rate | | K-factor[1] | | Dimensions Dia. x length | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | psi | bar | gal/min | l/min | pulses/gal | pulses/liter | inches | mm |
| B131C-038 | ⅜" × 1" | 1" NPT | 3,75 | 0,26 | 0,6 - 3 | 2,3 - 11,4 | 18000 | 4749 | 2 × 4 | 50,8 x 101,6 |
| B131C-050 | ½" × 1" | | 6,5 | 0,45 | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 2 × 4 | 50,8 x 101,6 |
| B131C-075 | ¾" × 1" | | 18 | 1,24 | 2 - 15 | 7,6 - 56,8 | 3300 | 871 | 2 × 4 | 50,8 x 101,6 |
| B131C-088 | ⅞" × 1" | | 20 | 1,38 | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 2 × 4 | 50,8 x 101,6 |
| B131C-100 | 1" × 1" | | 20 | 1,38 | 5 - 50 | 18,9 - 189,2 | 870 | 230 | 2 × 4 | 50,8 x 101,6 |
| B132C-050 | ½" × 2" | | 12 | 0,83 | 0,75 - 7,5 | 2,8 - 28,4 | 13000 | 3430 | 3,62 × 2,5 | 91,5 x 63,5 |
| B132C-075 | ¾" × 2" | | 18 | 1,24 | 2 -15 | 7,6 - 56,8 | 3300 | 871 | 3,62 × 2,5 | 91,5 x 63,5 |
| B132C-088 | ⅞" × 2" | | 20 | 1,38 | 3 - 30 | 11,4 - 113,6 | 3100 | 818 | 3,62 × 2,5 | 91,5 x 63,5 |
| B132C-100 | 1" × 2" | | 20 | 1,38 | 5 - 50 | 18,9 - 189,2 | 870 | 230 | 3,62 × 2,5 | 91,5 x 63,5 |
| B132C-150 | 1½" × 2" | | 16 | 1,10 | 15 - 180 | 56,8 - 681,4 | 330 | 87 | 3,62 × 2,5 | 91,5 x 63,5 |
| B132C-200 | 2" × 2" | | 9 | 0,62 | 40 - 400 | 151,4 - 1514,2 | 52 | 13,7 | 3,62 × 2,5 | 91,5 x 63,5 |
| B132C-250 | 2" × 3" | | 10 | 0,69 | 40 - 400 | 151,4 - 1514,2 | 52 | 13,7 | 3,62 × 4,25 | 91,5 x 108 |
| B133C-300 | 3" × 3" | | 10 | 0,69 | 60 - 600 | 227,2 - 2271,2 | 57 | 15 | 5 × 4,25 | 127 x 108 |
| B133C-380 | 3" × 3" | | 10 | 0,69 | 80 - 800 | 302,8 - 3028,3 | 57 | 15 | 5 × 4,25 | 127 x 108 |
| B134C-400 | 4" × 4" | | 10 | 0,69 | 100 - 1200 | 378,5 - 4542,5 | 29 | 7,7 | 6,18 × 5 | 157 x 127 |
| B136C-600 | 6" × 6" | | 10 | 0,69 | 200 - 2500 | 757,0 - 9463,5 | 7 | 1,8 | 8,5 × 5,75 | 216 x 146 |
| B138C-800 | 8" × 8" | | 10 | 0,69 | 350 - 3500 | 1324,9 - 13249 | 3 | 0,8 | 10,62 × 6,25 | 269,7 x 159 |
| B139C-900 | 10" × 10" | | 10 | 0,69 | 500 - 5000 | 1892,7 - 18927 | 1.6 | 0,4 | 12,75 × 6,75 | 323,9 x 171,5 |

Certifications: Class I Div 1 Groups C,D; complies to UL 1203 and CSA 22.2 No. 30; Met Labs File No. E112860

*Table 18*

[1] All K-factors are approximate.

## Blancett® QuikSert® pickup options

| Part number | Magnetic pickup | Temperature range |
|---|---|---|
| B111109 | Standard | -101 °C to +165 °C (-150 °F to +330 °F) |
| B111126 | ATEX Ex II 1G; EEx ia IIC T5 | -50 °C to +120 °C (-58 °F to +248 °F) |
| B220111 | High temperature | -268 °C to +232 °C (-450 °F to +450 °F) |
| B220210 | With preamplifier | -29 °C to +71 °C (-20 °F to +160 °F) |
| B220243 | Intrinsically safe, FM rated | -40 °C to +121 °C (-40 °F to +250 °F) |

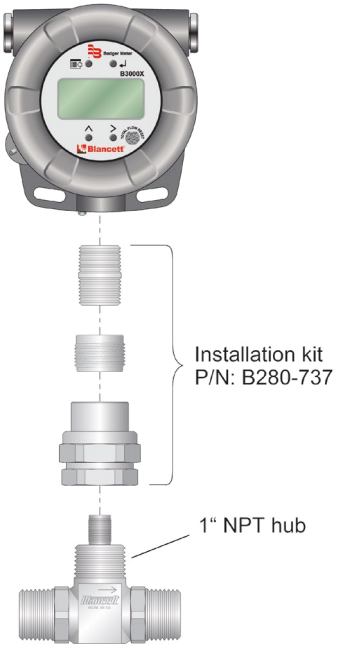
*Table 19*

## Configuration examples

### For hazardous location – Explosion proof

| Turbine (no pickup)[1] | Magnetic pickup | Explosion proof meter mount kit | Explosion proof monitor[2] |
|---|---|---|---|
| B131C-100 | B111109 | B280-737 | B30XR-CS |

[1] Turbine example: see *"Table 18" on page 28*
[2] Monitors: see *"Table 33" on page 45;* Certifications: see *on page 44*




Turbine with
1" NPT hub size

### For hazardous location – Intrinsically safe

| Turbine (no pickup)[1] | Magnetic pickup | Cable | In non hazardous location | Explosion proof monitor[2] |
|---|---|---|---|---|
| B131C-100 | B111126 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |
| B131C-100 | B220243 | B220-220 or B220-221 | I.S. barrier and display | B30XR-CS |

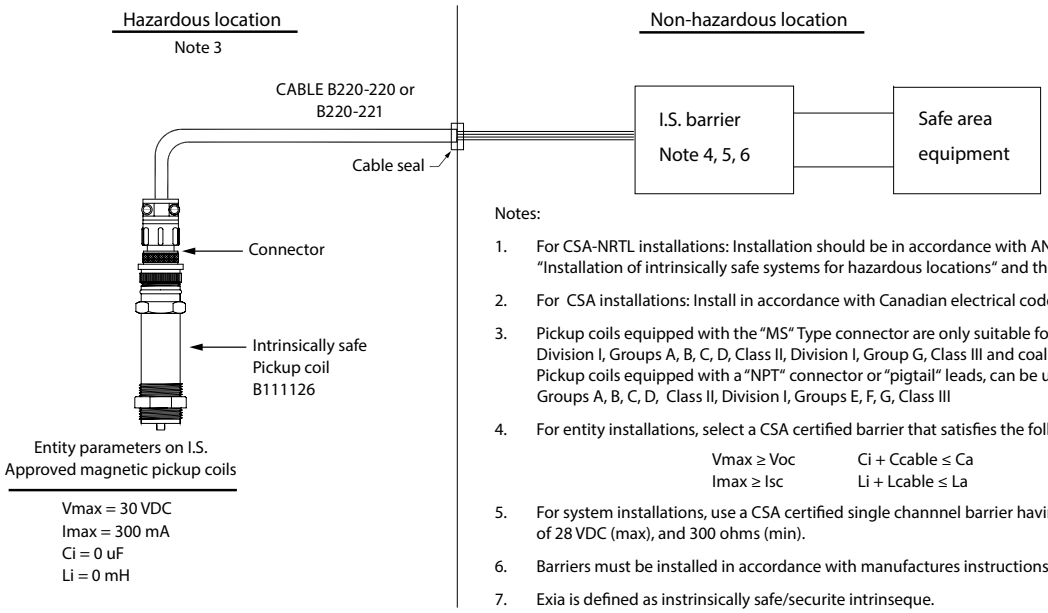
[1] Turbine example: see *"Table 18" on page 28*
[2] Monitors: see *"Table 33" on page 45;* Certifications: see *on page 44*
I.S. barrier not available

### ATEX

| Turbine (no pickup)[1] | Magnetic pickup | ATEX monitor[2] |
|---|---|---|
| B131C-100 | B111126 | E110 |

[1] Turbine example: see *"Table 18" on page 28*
[2] Monitor: see *"Table 35" on page 46;* Certifications: see *on page 40*

### Wiring example for B111126




Notes:

1. For CSA-NRTL installations: Installation should be in accordance with ANSI/ISA RP12.6 “Installation of intrinsically safe systems for hazardous locations“ and the national electiric code (ANSI/NFPA 70).
2. For CSA installations: Install in accordance with Canadian electrical code Part I.
3. Pickup coils equipped with the “MS“ Type connector are only suitable for hazardous locations Class I, Division I, Groups A, B, C, D, Class II, Division I, Group G, Class III and coal dust
   Pickup coils equipped with a “NPT“ connector or “pigtail“ leads, can be used in hazardous locations Class I, Division I, Groups A, B, C, D, Class II, Division I, Groups E, F, G, Class III
4. For entity installations, select a CSA certified barrier that satisfies the following:

   $V_{max} \geq V_{oc}$ $\quad C_i + C_{cable} \leq C_a$
   $I_{max} \geq I_{sc}$ $\quad L_i + L_{cable} \leq L_a$

5. For system installations, use a CSA certified single channnel barrier having the parameters of 28 VDC (max), and 300 ohms (min).
6. Barriers must be installed in accordance with manufactures instructions.
7. Exia is defined as instrinsically safe/securite intrinseque.

# Blancett® QuikSert® turbine flow meter for cement slurries – with B111109 magnetic pickup

| Part number1 | Bore x line size | Hub size | Maximum pressure drop | | Flow rate | | K-factor[2] | |
|---|---|---|---|---|---|---|---|---|
| | | | psi | bar | gal/min | l/min | pulses/gal | pulses/liter |
| B131-503 | ⅜" × 1" | 1" NPT | 3,75 | 0,26 | 0,6 - 3 | 2,3 - 11,4 | 9000 | 2375 |
| B131-505 | ½" × 1" | | 6,5 | 0,45 | 0,75 - 7,5 | 2,8 - 28,4 | 6500 | 1715 |
| B131-507 | ¾" × 1" | | 18 | 1,24 | 2 - 15 | 7,6 - 56,8 | 1650 | 435 |
| B131-508 | ⅞" × 1" | | 20 | 1,38 | 3 - 30 | 11,4 - 113,6 | 1550 | 409 |
| B131-510 | 1" × 1" | | 20 | 1,38 | 5 - 50 | 18,9 - 189,2 | 435 | 115 |
| B132-505 | ½" × 2" | | 12 | 0,83 | 0,75 - 7,5 | 2,8 - 28,4 | 6500 | 1715 |
| B132-507 | ¾" × 2" | | 18 | 1,24 | 2 -15 | 7,6 - 56,8 | 1650 | 435 |
| B132-508 | ⅞" × 2" | | 20 | 1,38 | 3 - 30 | 11,4 - 113,6 | 1550 | 409 |
| B132-510 | 1" × 2" | | 20 | 1,38 | 5 - 50 | 18,9 - 189,2 | 435 | 115 |
| B132-515 | 1½" × 2" | | 16 | 1,10 | 15 - 180 | 56,8 - 681,4 | 165 | 44 |
| B132-520 | 2" × 2" | | 9 | 0,62 | 40 - 400 | 151,4 - 1514,2 | 26 | 6,9 |
| B133-530 | 3" × 3" | | 10 | 0,69 | 60 - 600 | 227,2 - 2271,2 | 28,5 | 7,5 |
| B134-540 | 4" × 4" | | 10 | 0,69 | 100 - 1200 | 378,5 - 4542,5 | 14,5 | 3,8 |
| B136-560 | 6" × 6" | | 10 | 0,69 | 200 - 2500 | 757- 9463,5 | 3,5 | 0,9 |
| B138-580 | 8" × 8" | | 10 | 0,69 | 350 - 3500 | 1324,9 - 13249 | 1,5 | 0,4 |

[1] Includes standard magnetic pickup, p/n B111109, -101 °C to +165 °C (-150 °F to +330 °F), suitable for all mounting styles.
[2] All K-factors are approximate.
NOTE: Accuracy of these meters is ±4 % of rate - for cement slurries and other applications with similar levels of particulate.

*Table 20*

# Blancett® QuikSert® turbine flow meters – Gas

Suitable for:

- Flare gas
- Natural gas
- Methane
- Biogas
- Compressed gas
- Nitrogen

## Blancett® QuikSert® Gas

The Gas QuikSert® turbine flow meter provides long service life by offering a durable construction design composed of stainless steel and tungsten carbide shaft and bearings. The unique wafer style design allows for quick installation and easily fits between two ANSI flanges. Light weight, balanced rotor provides an instantaneous response to changes in flow. Gas QuikSert® is compatible with all Blancett® flow monitors, K-factor scaler and intelligent converters.

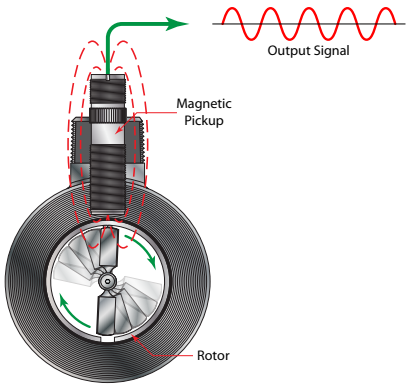



Illustration of electric signal generated by movement

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body and cartridge | 316/316 L stainless steel |
| | Rotor | 410 stainless steel |
| | Bearings | Tungsten carbide |
| | Shaft | Tungsten carbide |
| Accuracy | ±1 % of reading when integrated with a properly configured Blancett® flow monitor or signal conditioner | |
| Repeatability | ±0,5 % of reading | |
| Linearity | ±2 % of reading over the specified measuring range | |
| Calibration | Air (NIST traceable calibration) | |
| Operating temperature | -40 °C to +165 °C (-40 °F to +330 °F) | |
| End connections | Wafer-style ASME/ANSI B16.5-1996 | |
| Intrinsically safe | Class I Division 1 Groups C, D [Entity Parameters Vmax = 10 V, Imax = 3 mA,Ci = 0 µF and Li = 1.65 H with Blancett® B111113 magnetic pickup installed] for US and Canada. Complies with UL 913 and CSA 22.2 No. 157-92 | |
| Certifications | Class I Division 1 Groups C, D. complies with UL1203 and CSA C22.2 No. 30-M1986 | |

*"Example 5 point calibration protocol for gas flow meters" on page 55

# Blancett® QuikSert® Gas – without pickup

| Part number[1] | Bore x line size | Hub size | Flow rate[1] | | K-factor[2] | | Strainer mesh | End to end length |
|---|---|---|---|---|---|---|---|---|
| | | | ACFM | m³/h | pulses/ft³ | pulses/m³ | | |
| B142-20L | 2″ × 2″ | 1" NPT | 7 - 70 | 12 - 118 | 365 | 12900 | 60 | 45,7 mm (1,8") |
| B142-20M | | | 14 - 210 | 23,3 - 350 | 190 | 6710 | 60 | 45,7 mm (1,8") |
| B142-20H | | | 35 - 350 | 58,3 - 583 | 85 | 3000 | 60 | 45,7 mm (1,8") |

Certifications: Explosion proof: Class I Division 1 Groups C, D. complies with UL1203 and CSA C22.2 No. 30-M1986
Intrinsically safe: Class I Division 1 Groups C, D [Entity Parameters Vmax = 10 V, Imax = 3 mA,Ci = 0 µF and Li = 1.65 H with Blancett® B111113 magnetic pickup installed] for US and Canada. Complies with UL 913 and CSA 22.2 No. 157-92

[1] Air at 0 bar (0 psi) and 15.6 °C (60 °F)
[2] All K-factors are approximate and determined with magnetic pickup B111113

*Table 21*

## Blancett® QuikSert® Gas pickup

| Part number | Description |
|---|---|
| B111113 | Gas QuikSert® magnetic pickup -101 °C up to +149 °C (-150 °F up to +300 °F) |

*Table 22*

## Configuration examples

### Monitor

| Mounting | Turbine (no pickup)[1] | Magnetic pickup[2] | Monitor[3] | Cable[4] |
|---|---|---|---|---|
| Meter mounted display | B142-20L | B111113 | B30AM-CS | - |
| Remote mounted display (with cable) | B142-20L | B111113 | B30AR-CS | B220-220 or B220-221 |

[1] Turbine example: see *"Table 21" on page 32*
[2] Pickup: see *"Table 22" on page 32*
[3] Monitors: see *"Table 33" on page 45*
[4] Cables: see *"Table 40" on page 51*

### Monitor for hazardous location – Explosion proof

| Turbine (no pickup)[1] | Magnetic pickup[2] | Explosion proof meter mount kit | Explosion proof monitor[3] |
|---|---|---|---|
| B142-20L | B111113 | B280-737 | B30XR-CS |

[1] Turbine example: see *"Table 21" on page 32*
[2] Pickup: see *"Table 22" on page 32*
[3] Monitor: see *"Table 33" on page 45;* Certifications: see *on page 41*

### K-factor scaler

| Turbine (no pickup)[1] | Magnetic pickup[2] | K-factor scaler[3] | Programming software |
|---|---|---|---|
| B142-20L | B111113 | B220-885 | B220-900 |

[1] Turbine example: see *"Table 21" on page 32*
[2] Pickup: see *"Table 22" on page 32*
[3] K-factor scaler: see *"Table 36" on page 48*

### Intelligent converter

| | Turbine[1] | Magnetic pickup[2] | Intelligent converter[3] | Programming kit |
|---|---|---|---|---|
| **F to I intelligent converter** | B142-20L | B111113 | B220-873 | B220-954 |
| **F to V intelligent converter** | B142-20L | B111113 | B220-874 | B220-954 |

[1] Turbine example: see *"Table 21" on page 32*
[2] Pickup: see *"Table 22" on page 32*
[3] F to I and F to V converter: see *"Table 37" on page 50*

# FloClean 3-A sanitary turbine meters

- 3A sanitary standard
- Sanitary end connection
- Materials comply to FDA requirements

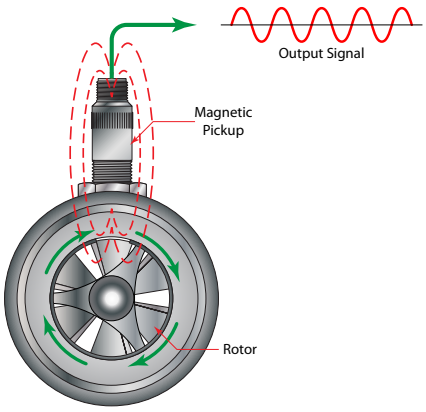



Illustration of electric signal generated by rotor movement

## FloClean with 3-A sanitary standard approval

The FloClean 3-A sanitary turbine flow meter meets 3-A sanitary standards. The meter is perfectly adapted for use in the food, beverage and pharmaceutical industries.

Combined with a Blancett® monitor, the meter provides actual flow rate and total flow rate.

## Specifications

| | | |
|---|---|---|
| Materials of construction | Body and internal wetted parts | 316L stainless steel |
| | Turbine | Nickel plated CD4MCU stainless steel |
| | Bearings | Standard - nickel bindery tungsten carbide |
| | Shaft | Nickel bindery tungsten carbide |
| Accuracy | ±1 % of reading | |
| Repeatability | ±0,1 % | |
| Calibration | Water (NIST traceable calibration) | |
| Pressure rating | 69 bar / 1.000 psi (rating based on Tri-clamp®) | |
| Operating temperature | -101 °C to +149 °C (-150 °F to +300 °F) | |
| End connections | Sanitary clamp ends | |
| Sanitary rating | Clean-out-of-place (COP); sterilize-out-of-place (SOP) | |
| Certifications | 3-A sanitary standard | |
| Magnetic pickup | Several options available | |

# FloClean B16D 3-A sanitary turbine flow meters (no hub)

FloClean (no hub)

| Part number | Clamp size x bore size | Maximum pressure[1] | Flow rate | | K-factor[2] | |
|---|---|---|---|---|---|---|
| | | | gal/min | l/min | pulses/gal | pulses/liter |
| B16D-003A- | ¾" × 3⁄8" | 69 bar (1000 psi) | 0,6 - 3 | 2,3- 11,4 | 20000 | 5277 |
| B16D-005A- | ¾" × ½" | | 0,75 - 7,5 | 3 - 30 | 13000 | 3430 |
| B16D-007A- | ¾" × ¾" | | 2 - 15 | 7,5 - 57 | 2750 | 726 |
| B16D-105A- | 1½" × ½" | | 0,75 - 7,5 | 3 - 30 | 13000 | 3430 |
| B16D-107A- | 1½" × ¾" | | 2 - 15 | 7,5 - 57 | 2750 | 726 |
| B16D-108A- | 1½" × 7⁄8" | | 3 - 30 | 11 - 110 | 2686 | 709 |
| B16D-110A- | 1½" × 1" | | 5 - 50 | 19 - 190 | 870 | 230 |
| B16D-115A- | 1½" × 1½" | | 15 - 180 | 57 - 680 | 330 | 87 |
| B16D-220A- | 2½" × 2" | | 40 - 400 | 150 - 1500 | 52 | 14 |

[1] Rating based on Tri-clamp sanitary connection
[2] All K-factors are approximate

*Table 23*

**Select pickup options from table below**

## FloClean B16D 3-A sanitary turbine flow meters (no hub) - pickup options

| Pickup selection[1] | Part number | Magnetic pickup | Description |
|---|---|---|---|
| 0BA | B161109 | NEMA 6 | NEMA 6 magnetic pickup -101 °C to +165 °C (-150 °F to +330 °F) |
| 1BA | B161210 | NEMA 6 pre-amp | NEMA 6 magnetic pickup with preamplifier -29 °C to +71 °C (-20 °F to +160 °F) |
| 2BA | B111109 | Standard pickup | Standard magnetic pickup -101 °C to +165 °C (-150 °F to +330 °F) |
| 3BA | B220210 | Magnetic pickup pre-amp | Magnetic pickup with preamplifier -29 °C to +71 °C (-20 °F to +160 °F) |
| 4BA | B220-950 | F to I converter | F to I intelligent converter, 4-20 mA output in canister (includes magnetic pickup) |
| 6BA | B220111 | High temp pickup | High temp magnetic pickup -268 °C to +232 °C (-450 °F to +450 °F) |
| 7BA | B161212 | NEMA 6 pre-amp | NEMA 6 magnetic pickup with preamplifier (less Zener) |
| 8BA | B220-951 | F to V converter | F to V intelligent converter, 0-5 VDC output in canister (includes magnetic pickup) |
| 9BA | - | No pickup | - |

[1] Including standard 5 point calibration

*Table 24*

**Ordering example:**
B16D-007A-0BA
¾" × ¾" FloClean B16D 3-A sanitary turbine flow meter (no hub) with NEMA 6 magnetic pickup B161109

## Configuration examples

### Monitor

| Mounting | Turbine with magnetic pickup[1] | Monitor[2] | Cable[3] |
|---|---|---|---|
| Remote mounted display (with cable) | B16D-003A-2BA | B30AR-CS | B220-220 or B220-221 |

[1] Turbine example: see *"Table 23" on page 34*
[2] Monitors: see *"Table 33" on page 45*
[3] Cables: see *"Table 40" on page 51*

### Intelligent converter

| | Turbine[1] | Intelligent converter[2] | Programming kit | Cable[3] |
|---|---|---|---|---|
| **F to I intelligent converter** | B16D-003A-4BA | B220-950 included | B220-953 | B220952-6 |
| **F to V intelligent converter** | B16D-003A-8BA | B220-951 included | B220-953 | B220952-6 |

[1] Turbine example: see *"Table 23" on page 34*
[2] Intelligent converter: see *"Table 37" on page 50*
[3] Cables: see *"Table 40" on page 51*

# FloClean B16D 3-A sanitary turbine flow meters (with hub)

FloClean (with hub)

| Part number | Clamp size X bore size | Hub size | Maximum pressure[1] | Flow rate | | K-factor [2] | |
|---|---|---|---|---|---|---|---|
| | | | | gal/min | l/min | pulses/gal | pulses/liter |
| B16D-003A- | ¾" × 3⁄8" | ½" NPT | 69 bar (1.000 psi) | 0,6 - 3 | 2,3 - 11,4 | 20000 | 5.277 |
| B16D-005A- | ¾" × ½" | | | 0,75 - 7,5 | 3 - 30 | 13000 | 3.430 |
| B16D-007A- | ¾" × ¾" | | | 2 - 15 | 7,5 - 57 | 2750 | 726 |
| B16D-105A- | 1½" × ½" | 1" NPT | | 0,75 - 7,5 | 3 - 30 | 13000 | 3.430 |
| B16D-107A- | 1½" × ¾" | | | 2 - 15 | 7,5 - 57 | 2750 | 726 |
| B16D-108A- | 1½" × 7⁄8" | | | 3 - 30 | 11 - 110 | 2686 | 709 |
| B16D-110A- | 1½" × 1" | | | 5 - 50 | 19 - 190 | 870 | 230 |
| B16D-115A- | 1½" × 1½" | | | 15 - 180 | 57 - 680 | 330 | 87 |
| B16D-220A- | 2½" × 2" | | | 40 - 400 | 150 - 1500 | 52 | 14 |

[1] Rating based on Tri-clamp® sanitary connection.
[2] All K-factors are approximate.

*Table 25*

## Select pickup options from table below

## FloClean B16D 3-A sanitary turbine flow meters (with hub) - pickup options

| Pickup selection[1] | Part number | Magnetic pickup | Description |
|---|---|---|---|
| 0AA | B161109 | NEMA 6 | NEMA 6 magnetic pickup -101 °C to +165 °C (-150 °F to +330 °F) |
| 1AA | B161210 | NEMA 6 pre-amp | NEMA 6 magnetic pickup with preamplifier -29 °C to +71 °C (-20 °F to +160 °F) |
| 2AA | B111109 | Standard pickup | Standard magnetic pickup -101 °C to +165 °C (-150 °F to +330 °F) |
| 3AA | B220210 | Magnetic pickup pre-amp | Magnetic pickup with preamplifier -29 °C to +71 °C (-20 °F to +160 °F) |
| 4AA | B220-950 | F to I converter | F to I intelligent converter, 4-20 mA output in canister (includes magnetic pickup) |
| 6AA | B220111 | High temp pickup | High temp magnetic pickup -268 °C to +232 °C (-450 °F to +450 °F) |
| 7AA | B161212 | NEMA 6 pre-amp | NEMA 6 magnetic pickup with preamplifier (less Zener) |
| 8AA | B220-951 | F to V converter | F to V intelligent converter, 0-5 VDC output in canister (includes magnetic pickup) |
| – | B111126 | ATEX approved | ATEX Ⓔx II 1G; EEx ia IIC T5, -50 – 120 °C (-58 – 248 °F) |
| 9AA | – | No pickup | – |

[1] Including standard 5 point calibration

*Table 26*

**Ordering examples:**
B16D-107A-2AA
1½" × ¾" FloClean B16D 3-A sanitary turbine flow meter (with hub) with standard magnetic pickup B111109
B16D-107A-9AA + B111126
1½" × ¾" FloClean B16D 3-A sanitary turbine flow meter (with hub) with ATEX approved magnetic pickup B111126

## Configuration examples

### Monitor

| Mounting | Hub size | Turbine with magnetic pickup[1] | Bushing reducer[2] | Monitor[1] |
|---|---|---|---|---|
| Meter mounted display | ½" NPT | B16D-005A-2AA | B220056 or B220057 | B30AM-CS |
| | 1" NPT | B16D-110A-2AA | not required | B30AM-CS |

[1] Turbine example: see *"Table 25"* and *"Table 26" on page 35*
[2] Bushing reducer: see *"Table 46" on page 52*
[3] Monitors: see *"Table 33" on page 45*

## F to I intelligent converter

| Hub size | Turbine[1] | Bushing reducer[2] | F to I intelligent converter[3] | Programming kit | Cable[4] |
|---|---|---|---|---|---|
| ½" NPT | B16D-003A-2AA (with magnetic pickup) | B220056 or B220057 | B220-873 | B220-954 | - |
| ½" NPT | B16D-003A-4AA (with F to I converter and pickup) | not required | B220-950 already included | B220-953 | B220952-6 |
| 1" NPT | B16D-108A-2AA (with magnetic pickup) | not required | B220-873 | B220-954 | - |
| 1" NPT | B16D-108A-4AA (with F to I converter and pickup) | not required | B220-950 already included | B220-953 | B220952-6 |

[1] Turbine: see *"Table 25"* and *"Table 26" on page 35*
[2] Bushing reducer: see *"Table 46" on page 52*
[3] F to I converter and Programming kit: see *"Table 37" on page 50*
[4] Cables: see *"Table 40" on page 51*

## F to V intelligent converter

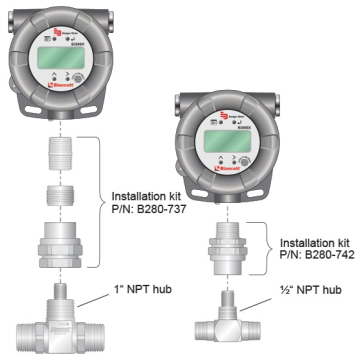
| Hub size | Turbine[1] | Bushing reducer[2] | F to V intelligent converter[3] | Programming kit | Cable[4] |
|---|---|---|---|---|---|
| ½" NPT | B16D-003A-2AA (with magnetic pickup) | B220056 or B220057 | B220-874 | B220-954 | - |
| ½" NPT | B16D-003A-8AA (with F to V converter and pickup) | not required | B220-951 already included | B220-953 | B220952-6 |
| 1" NPT | B16D-108A-2AA (with magnetic pickup) | not required | B220-874 | B220-954 | - |
| 1" NPT | B16D-108A-8AA (with F to V converter and pickup) | not required | B220-951 already included | B220-953 | B220952-6 |

[1] Turbine example: see *"Table 25"* and *"Table 26" on page 35*
[2] Bushing reducer: see *"Table 46" on page 52*
[3] F to V converter and programming kit: see *"Table 37" on page 50*
[4] Cables: see *"Table 40" on page 51*

## Monitor for hazardous locations

| | Hub size | Turbine[1] (no pickup) | Magnetic pickup[2] | Explosion proof meter mount kit | Explosion proof monitor[3] | Cable[3] |
|---|---|---|---|---|---|---|
| For hazardous location - explosion proof | ½" NPT | B16D-005A | 2AA (B111109) | B280-742 | B30XR-CS | - |
| | 1" NPT | B16D-107A | 2AA (B111109) | B280-737 | B30XR-CS | - |
| For hazardous location - Intrinsically safe | ½" NPT | B16D-005A-9AA | (B111126) | - | B30XR-CS | B220-220 or B220-221 |
| | 1" NPT | B16D-107A-9AA | (B111126) | - | B30XR-CS | B220-220 or B220-221 |
| ATEX | ½" NPT | B16D-005A-9AA | (B111126) | - | E110 | - |

[1] Turbine example: see *"Table 25" on page 35*
[2] Magnetic pickup: see *"Table 26" on page 35*
[3] Monitors: see *"Table 33" on page 45;* Certifications: see *on page 47 and "Table 35" on page 46;* Certifications: see *on page 40*
[4] Cables: see *"Table 40" on page 51*

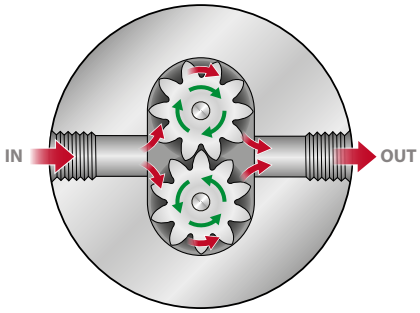



Turbine with 1" NPT hub size

Turbine with ½" NPT hub size

# Blancett® model 1750 – Positive displacement gear flow meters

- No need for additional straight run piping
- Designed for fluids with a wide range of viscosities, as well as low flow rates
- Available in high strength aluminum or stainless steel housing
- Applications: paint, grease, hydraulics, solvents, fuels




Operating principle

## Positive displacement gear flow meters

Because turbine meters are not suitable for every liquid application, Badger Meter also offers other metering technologies. Two types of adjacent liquid metering applications often associated with common turbine-metering applications are measurement of higher-viscosity liquids and liquids containing small particulates. Positive displacement and impeller meter technologies are appropriate for these applications. The B1750 is a bi-directional flow meter when using appropriate electronics.

## Specifications

| | | |
|---|---|---|
| Materials of construction | Housing | 6061-T6 aluminum or 303 stainless steel |
| | Gears | Stainless steel |
| | Bearings | Stainless steel |
| | O-Ring | Teflon® (standard), Viton® (optional) |
| Accuracy | ±0,5 % over the published flow range with fluids >100 cP; over a 10:1 turndown (from maximum flow) with fluids <30 cP | |
| Repeatability | ±0,1 % | |
| Calibration | Oil, DTE-27 at 21 °C (70 °F) | |
| Operating temperature | –29 °C to 85 °C (-20 °F to +185 °F) aluminum housing<br>–29 °C to 205 °C (-20 °F to +400 °F) stainless steel housing | |
| Connections | Female NPT: ¼", ½", ¾" or 1 ¼" (depending on meter size) | |

# Model 1750 - Positive displacement gear flow meters – Aluminum housing, 85 °C (185 °F) maximum fluid temperature

## without magnetic pickup / sensor

| Part number[1] | Seal Material | End connections | Maximum pressure | Flow rate[2] | | K-factor[3] | |
|---|---|---|---|---|---|---|---|
| | | | | gal/min | l/min | Pulses/gal | Pulses/liter |
| B175-A12 | Teflon® (standard) | ¼" Female NPT | 345 bar (5000 psi) | 0,003 - 0,8 | 0,011 - 3 | 53000 | 13984 |
| B175-A20 | | | | 0,01 - 2 | 0,04 - 7,6 | 15900 | 4195 |
| B175-A30 | | ½" Female NPT | | 0,03 - 7 | 0,11 - 26,5 | 6600 | 1741 |
| B175-A60 | | ¾" Female NPT | | 0,05 - 20 | 0,19 - 75,7 | 1800 | 475 |
| B175-A80 [4] | | 1¼" Female NPT | | 0,5 - 60 | 1,9 - 227 | 1600 [5] | 422 |
| B175-A90 [4] | | 1¼" Female NPT | | 1 - 120 | 3,8 - 454 | 800 [5] | 211 |
| B175-A12-V | Viton® | ¼" Female NPT | | 0,003 - 0,8 | 0,011 - 3 | 53000 | 13984 |
| B175-A20-V | | | | 0,01 - 2 | 0,04 - 7,6 | 15900 | 4195 |
| B175-A30-V | | ½" Female NPT | | 0,03 - 7 | 0,11 - 26,5 | 6600 | 1741 |
| B175-A60-V | | ¾" Female NPT | | 0,05 - 20 | 0,19 - 75,7 | 1800 | 475 |
| B175-A80-V [4] | | 1¼" Female NPT | | 0,5 - 60 | 1,9 - 227 | 1600 [5] | 422 |
| B175-A90-V [4] | | 1¼" Female NPT | | 1 - 120 | 3,8 - 454 | 800 [5] | 211 |

[1] Does not include pickup. Available pickup options in *"Table 29" on page 39*.
[2] Working flow range - accuracy based on a 30 cSt fluid measured over a 10:1 turndown
[3] All K-factors are approximate.
[4] 90 flange fittings required for installation, see fittings options in *"Table 30" on page 39*.
[5] Configured for quad4 sensor output.

*Table 27*

# Model 1750 - Positive displacement gear flow meters – 303 stainless steel housing, 205 °C (400 °F) maximum fluid temperature

## without magnetic pickup / sensor

| Part number[1] | Seal material | End connections | Maximum pressure | Flow rate [2] | | K-factor [3] | |
|---|---|---|---|---|---|---|---|
| | | | | gal/min | l/min | Pulses/gal | Pulses/liter |
| B175-S12 | Teflon® (standard) | ¼" Female NPT | 345 bar (5000 psi) | 0,003 - 0,8 | 0,011 - 3 | 53000 | 13984 |
| B175-S20 | | | | 0,01 - 2 | 0,04 - 7,6 | 15900 | 4195 |
| B175-S30 | | ½" Female NPT | | 0,03 - 7 | 0,11 - 26,5 | 6600 | 1741 |
| B175-S60 | | ¾" Female NPT | | 0,05 - 20 | 0,19 - 75,7 | 1800 | 475 |
| B175-S80 [4] | | 1¼" Female NPT | | 0,5 - 60 | 1,9 - 227 | 1600 [5] | 422 |
| B175-S90 [4] | | 1¼" Female NPT | | 1 - 120 | 3,8 - 454 | 800 [5] | 211 |
| B175-S12-V | Viton® | ¼" Female NPT | | 0,003 - 0,8 | 0,011 - 3 | 53000 | 13984 |
| B175-S20-V | | | | 0,01 - 2 | 0,04 - 7,6 | 15900 | 4195 |
| B175-S30-V | | ½" Female NPT | | 0,03 - 7 | 0,11 - 26,5 | 6600 | 1741 |
| B175-S60-V | | ¾" Female NPT | | 0,05 - 20 | 0,19 - 75,7 | 1800 | 475 |
| B175-S80-V [4] | | 1¼" Female NPT | | 0,5 - 60 | 1,9 - 227 | 1600 [5] | 422 |
| B175-S90-V [4] | | 1¼" Female NPT | | 1 - 120 | 3,8 - 454 | 800 [5] | 211 |

[1] Does not Include pickup - to order, see pickup options in *"Table 29" on page 39*.
[2] Working flow range - accuracy based on a 30 cSt fluid measured over a 10:1 turndown.
[3] All K-factors are approximate.
[4] 90 flange fittings required for installation, see fittings options in *"Table 30" on page 39*.
[5] Configured for quad4 sensor output.

*Table 28*

## Blancett® model 1750 - positive displacement gear flow meters - pickup / sensor options

| Part number | Description | For use with |
|---|---|---|
| B170109 | Magnetic pickup | B175-A60 & B175-S60 |
| B170110 | Pre-amp pickup | B175-A12 thru -A30 & B175-S12 thru -S30 |
| B170111 | Magnetic pickup | B175-A20 thru -A30 & B175-S20 thru -S30 |
| B170112 | Pre-amp pickup | B175-A20 thru -A30 & B175-S20 thru -S30 |
| B170180 | Quad 4 sensor | B175-A80 thru -A90 & B175-S80 thru -S90 |
| B170210* | Magnetic pickup with preamplifier | B175-A60 & B175-S60 |
| B170310 | Cable for quad 4 sensor; 10 ft. | B175-A80 thru -A90 & B175-S80 thru -S90 |
| B170311 | Connector for quad 4 cable | B175-A80 thru -A90 & B175-S80 thru -S90 |
| B175420[1] | 4-20 mA sensor in explosion proof housing | B175-A12 thru -A60 & B175-S12 thru -S60 |

* Cable for quad 4 sensor is B170310; Connector for quad 4 sensor is B170311
[1] Cable B220-219 can be used with B175420.

*Table 29*

## Blancett® model 1750 - positive displacement gear flow meters - fitting options

| Part number | Description | For use with |
|---|---|---|
| B175CSF | Carbon steel 90 flange to 1¼" NPT | B175-A80 & B175-A90 |
| B175SSF | 304 SS 90 flange to 1¼" NPT | B175-S80 & B175-S90 |

*Table 30*

## Blancett® model 1750 - positive displacement gear flow meters - display options

| Part number | Description | For use with |
|---|---|---|
| BRT30SD | Flow transmitter with local display | B175-A80 thru -A90 & B175-S80 thru -S90 |
| B29AR-CS | Display B2900 | for gear flow meters see *"Table 27"* and *"Table 28" on page 38* |
| B30AR-CS | Display B3000 | for gear flow meters see *"Table 27"* and *"Table 28" on page 38* |
| E110 | Display E110 | for gear flow meters see *"Table 27"* and *"Table 28" on page 38* |

*Table 31*

## Configuration examples

| Monitor | | | | | |
|---|---|---|---|---|---|
| Positive displacement (no pickup)[1] | Quad sensor[2] | Connector for quad sensor[3] | Cable for quad sensor[4] | Monitor[5] | Flange fittings[6] |
| B175-S90-V | B170180 | B170311 | B170310 | B29AR-CS | 2x B17555F |

[1] Positive displacement: see *"Table 28" on page 38*
[2,3,4] Quad sensor, connector and cable: see *"Table 29" on page 39*
[5] Monitor: see *"Table 32" on page 42*
[6] Fittings: see *"Table 30" on page 39*

# Flow monitors

## B2900 / B3000 / E110
## flow monitors for the Blancett® series

The flow monitors complement the Blancett® turbine meters.
They offer various mounting possibilities for flexible meter reading on site.

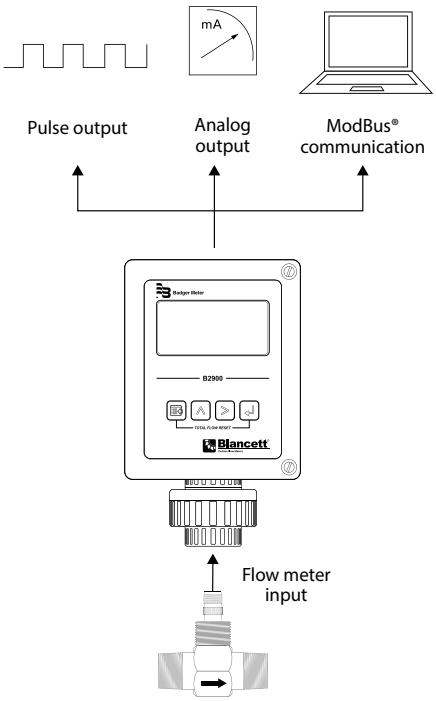
| Type | B2900 | B3000 | E110 |
|---|---|---|---|
| **Power supply** | 3,6 V lithium battery<br>or 4 - 20 mA loop-powered | 3,6 V lithium battery<br>4 – 20 mA loop-powered<br>Solar-powered | 9 – 27 V DC + sensor supply<br>3,6 V lithium battery |
| **Mounting possibilities** | Meter mounted[1]<br>Remote mount<br>Swivel mount | Meter mounted[1]<br>Remote mount<br>Swivel mount<br>Explosion proof, remote mount[2] | Meter mounted[1]<br>Remote mount |
| **Outputs** | 4 – 20 mA<br>Pulse output<br>Modbus RTU<br>Open collector | 4 – 20 mA<br>Pulse output<br>Modbus RTU over RS 485 (B30 Advanced) | 4 – 20 mA (NPN)<br>Passive transistor output |
| **Certifications** | | B30 Advanced/Base/Solar:<br>Class I, Division 1, Groups C. D<br>Class II, Division 1, Groups E, F, G<br>Class III for USA and Canada<br>Corresponds to UL 913 and CSA C22.2 n° 157-92.<br><br>B30 explosion proof Advanced/Base:<br>Class I, Division 1, Groups B, C, D Class II, Division 1, Groups E, F, G<br>Class III for USA and Canada complies with UL 1203 and CSA C22.2 n° 30-M1986.<br><br>B30 explosion proof Advanced/Base:<br>ATEX II 2 G Ex d IIC T4 Gb and ATEX II D Ex tb IIC T125 °C Db | ATEX<br>Gas: Ⓔx II 2G Ex d IIC T6 Gb<br>Dust: Ⓔx II 2D tb IIIC T85 °C Db<br><br>IECEx<br>Gas: Ex d IIC T6 Gb<br>Dust: Ex tb IIIC T85°C Db<br><br>FM & CSA C-US<br>Class I, Div. 1, Groups A, B, C, D.<br>Class II/III, Div. 1, Groups E, F, G<br>Class I, Zone 1, AEx d IIc T6 Gb,<br>Zone 21, AEx tb IIIC T85°C Db. |
| **Enclosure rating** | NEMA 4X (IP 66) | NEMA 4X (IP 66) | NEMA 4X, NEMA 7,<br>NEMA 9 (IP 66, IP67) |

[1] Bushing reducer required for ½" hub turbine meters to mount accessories on meter (see "Table 46" on page 52)
[2] Explosion proof kit for explosion proof system required (see "Table 47" on page 52)

# Blancett® flow monitor B2900

- Advanced connectivity options allow you to connect meters to your network for remote monitoring and process automation capabilities.
- Updated display and totalization options provide more flow information, including simultaneous display of rate and total as well as standard, batch and grand totals.

Blancett® B2900 flow monitor meter mount

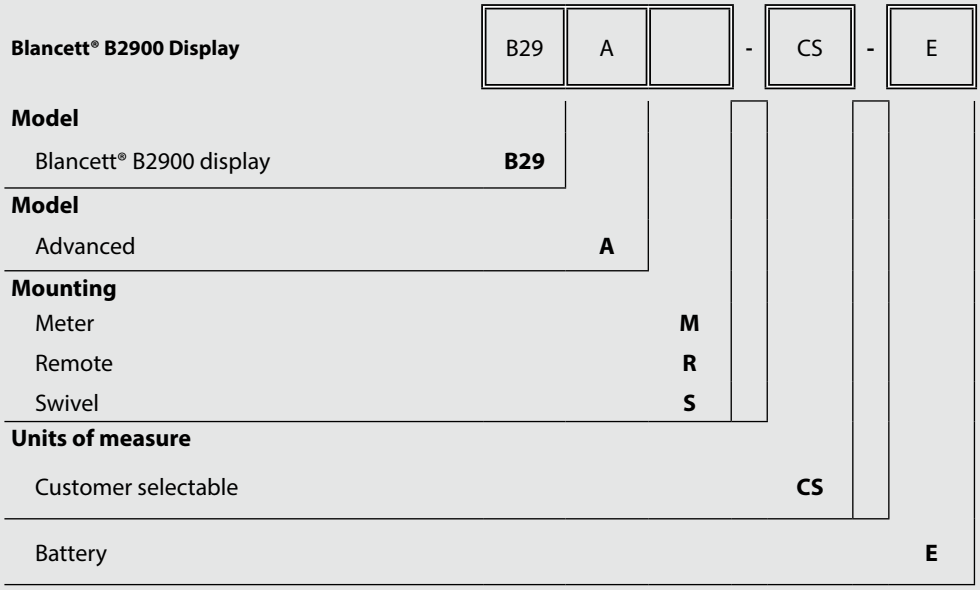



The B2900 monitor uses the frequency information to calculate flow rate and total flow. Through the use of the programming buttons, you can select rate units, total units and unit time intervals among other functions. If required, the monitor can easily be re-configured in the field. Finally, you can choose between simultaneously showing rate and total, or alternating between rate and grand total. The monitor provides advanced communication capabilities over an RS485 bus using Modbus RTU and control outputs. The B2900 can be utilized with nearly any flow sensor that outputs a low-amplitude AC signal or contact closure signal.

## Specifications

| | | |
|---|---|---|
| Power | Battery | 3,6 V DC lithium AA-Cell (no dangerous goods) |
| | Loop | 4–20 mA, two wire |
| Inputs | Magnetic pickup | Frequency range: 1–3500 Hz |
| | | Frequency measurement accuracy: ±0,1 % |
| | | Over voltage protection: 28 V DC |
| | | Trigger sensitivity: 30 mVp-p (High) or 60 mVp-p (low) - (selected by circuit board jumper) |
| | Amplified pulse | Direct connection to amplified signal (pre-amp output from sensor) |
| Outputs | Analog 4–20 mA | |
| | Totalizing pulse | |
| | Status alarms | |
| Modbus digital communications | Modbus RTU over RS485 | |
| Certificatons | Safety: Intrinsically Safe (Class I Division 1, Groups C, D; Class II, Division 1 Groups E, F, G)<br>EMC: IEC61326-1; 2004/108/EC | |
| Measurement accuracy | 0,05 % | |
| Temperature | -30 °C to +70 °C (-22 °F to +158 °F) | |
| Materials and enclosure ratings | Polycarbonate, stainless steel, polyurethane, thermoplastic elastomer, acrylic; NEMA 4X/IP 66 meter, remote and swivel mount; NEMA/UL/CSA Type 4X (IP-66) | |

## Part number construction




# B2900 flow monitor, loop powered/4-20 mA and battery powered

| Part number | Model | Power Source | Mounting style |
|---|---|---|---|
| B29AM-CS-E | Advanced | Battery and loop | Meter mount |
| B29AR-CS-E | | | Remote mount (less cable) |
| B29AS-CS-E | | | Swivel mount |

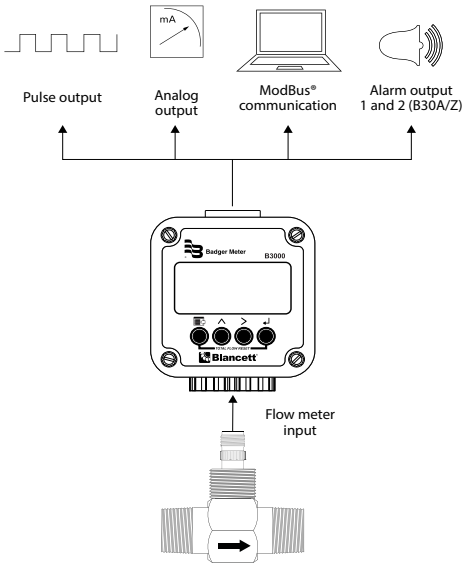
NOTE: "Advanced" models are loop-powered with 4/20mA and pulse outputs and include battery back-up power supply.
NOTE: "Advanced" units include 2 adjustable flow rate alarm and Modbus RTU digital communications over RS485.

*Table 32*

# Blancett® flow monitor B3000

- Advanced connectivity options allow you to connect meters to your network for remote monitoring and process automation capabilities.
- Updated display and totalization options provide more flow information, including simultaneous display of rate and total as well as standard, batch and grand totals.

Blancett® B3000 flow monitor swivel mount




This rugged flow monitor is ideal for harsh industrial applications. Stainless steel and tungsten carbide components ensure long life. These products are also wellsuited for industrial applications with high temperature and high pressure applications, for example in secondary oil recovery, semiconductor and chemical processing. Electronic options enable the meter to interface with most computers and PLCs.

## Specifications

| | | | |
|---|---|---|---|
| Display | Simultaneously shows rate and total; 5 x 7 dot matrix LCD, STN fluid | | |
| | B30A/B/S | 6 digit rate, 12,7 mm (0,5") numeric | |
| | | 7 digit total, 12,7 mm (0,5") numeric | |
| | | Engineering unit labels 8,6 mm (0,34" ) | |
| | B30X/Z | 6 digit rate, 9,4 mm (0,37") numeric | |
| | | 7 digit total, 13 mm (0,37" ) numeric | |
| | | Engineering unit labels 6,1 mm (0,24") | |
| | Annunciators | Alarm 1(🔔), Alarm 2 (🔔), battery level (▭), RS485 communications (COM) | |
| Power | B30A/B/X/Z | Auto switching between internal battery and external loop power; B30A/Z includes isolation between loop power and other I/O | |
| | | Battery | 3,6 V DC lithium AA-Cell (no dangerous goods) |
| | | Loop | 4–20 mA, two wire, 25 mA limit, reverse polarity protected, 7 V DC loop loss |
| | B30S | Internal battery (3,6 V DC Nicd) provides up to 30 days of power after 6–8 hours exposure of the integrated photovoltaic cell to direct sunlight. | |
| Inputs | Magnetic pickup | Frequency range | 1–3500 Hz |
| | | Frequency measurement accuracy | ±0,1 % |
| | | Over voltage protection | 28 V DC |
| | | Trigger sensitivity | 30 mVp-p (high) or 60 mVp-p (low) - (selected by circuit board jumper) |
| | Amplified pulse | Direct connection to amplified signal (pre-amp output from sensor) | |

## Specifications

| | | | |
|---|---|---|---|
| Outputs | Analog 4–20 mA | 4–20 mA, two-wire current loop; 25 mA current limit | |
| | Totalizing pulse | One pulse for each Least Significant Digit (LSD) increment of the totalizer | |
| | | Pulse type (selected by circuit board jumper) | Opto-isolated (Iso) open collector transistor; Non-isolated open drain FE |
| | | Maximum voltage | 28 V DC |
| | | Maximum current capacity | 100 mA |
| | | Maximum output frequency | 16 Hz |
| | | Pulse width | 30 mSec fixed |
| | Status alarms | B30A/Z | Open collector transistor; adjustable flow rate with programmable dead band and phase. |
| | | | Maximum voltage: 28 V DC |
| | | | Maximum current: 100 mA |
| | | | Pullup resistor: External required (2,2 k ohm min., 10 k ohm max.) |
| | | B30B/S/X | None |
| Modbus digital communications | B30A//Z | Modbus RTU over RS485, 127 addressable units / 2-wire network, 9600 baud, long integer and single precision IEEE754 formats; retrieve: flow rate, job totalizer, grand totalizer, alarm status and battery level; write: reset job totalizer, reset grand totalizer. | |
| | B30B/S/X | None | |
| Data configuration and protection | B30A/B/X/Z | Two four-digit user selectable passwords; level one password enables job total reset only, level two password enables all configuration and totalizer reset functions | |
| Certifications | Safety | B30A/B/S | Class I Division 1, Groups C, D; Class II, Division 1 Groups E, F, G; Class III for US and Canada. Complies with UL 913 and CSA C22.2 No. 157-92 |
| | | B30X/Z | Class I Division 1 Groups B, C, D; Class II, Division 1, Groups E, F, G; Class III for US and Canada. Complies with UL 1203 and CSA C22.2 No. 30-M1986<br>ATEX II 2 G Ex d IIC T4 Gb and ATEX II D Ex tb IIIC T135 °C Db<br>Complies with Directive 94/9/EC. |
| | Entity parameters | B30A/B: 4-20 mA loop: Vmax = 28 V DC; Imax = 26 mA; Ci = 0.5 µF; Li = 0 mH | |
| | | B30A/B/S: Pulse output: Vmax = 28 V DC; Imax = 100 mA; Ci = 0 µF; Li = 0 mH | |
| | | B30A/B/S: Reset input: Vmax = 5 V DC; Imax = 5 mA; Ci = 0 µF; Li = 0 mH | |
| | | B30A: RS485: Vmax = 10 V DC; Imax = 60 mA; Ci = 0 µF; Li = 0 mH | |
| | | B30A/B/S: Turbine input: Voc = 2,5 V; Isc = 1,8 mA; Ca = 1,5 µF; La = 1,65 H | |
| | EMC | 2004/108/EC | |
| Materials and enclosure ratings | B30A/B/S | Polycarbonate, stainless steel, polyurethane, thermoplastic elastomer, acrylic; NEMA 4X/IP 66 | |
| | B30X/Z | Copper free, epoxy-coated, aluminum, buna seal, NEMA 4X/IP66 | |
| Engineering units | Liquid | Gallons, liters, oil barrels (42 gallon), liquid barrels (31,5 Gallon), cubic meters, million gallons, cubic feet, million liters, acre feet | |
| | Gas | Cubic feet, thousand cubic feet, million cubic feet, standard cubic feet, actual cubic feet, normal cubic meters, actual cubic meters, liters | |
| | Rate time | Seconds, minutes, hours, days | |
| | Totalizer exponents | 0.00, 0.0, X1, x10, x100, x1000 | |
| Measurement accuracy | 0,05 % | | |
| Response time (damping) | 1–100 seconds response to a step change input, user adjustable | | |
| Environmental limits | -30 °C to 70 °C (-22 °F to 158 °F); 0–90 % humidity, non-condensing | | |

## Part number construction

| Blancett® B3000 display | B30 | | | - | CS | - | E |
|---|---|---|---|---|---|---|---|
| **Model** | | | | | | | |
| Blancett® B3000 Display | **B30** | | | | | | |
| **Model** | | | | | | | |
| Base | | **B** | | | | | |
| Advanced | | **A** | | | | | |
| Solar | | **S** | | | | | |
| Base – explosion proof* – Battery and loop powered | | **X** | | | | | |
| Advanced – explosion proof* – Battery and loop powered | | **Z** | | | | | |
| **Mounting** | | | | | | | |
| Meter | | | **M** | | | | |
| Remote | | | **R** | | | | |
| Swivel | | | **S** | | | | |
| **Units of measure** | | | | | | | |
| Customer selectable | | | | | **CS** | | |
| Battery | | | | | | | **E** |

* For hazardous locations the monitor must be installed on an explosion proof rated meter.

# B3000 flow monitor, loop powered/4-20 mA and battery powered

| Part number | Units of measure | Power source | Mounting style |
|---|---|---|---|
| B30AM-CS-E | Advanced | Battery and loop | Meter mount |
| B30AR-CS-E | | | Remote mount (less cable) |
| B30AS-CS-E | | | Swivel mount |
| B30BM-CS-E | Base | Battery and loop | Meter mount |
| B30BR-CS-E | | | Remote mount (less cable) |
| B30BS-CS-E | | | Swivel mount |
| B30SM-CS-E | Solar | Battery and solar | Meter mount |
| B30SR-CS-E | | | Remote mount (less cable) |
| B30SS-CS-E | | | Swivel mount |
| B30XR-CS-E | Base | Battery and loop | Explosion proof, remote mount (less cable) |
| B30ZR-CS-E | Advanced | Battery and loop | Explosion proof, remote mount (less cable) |

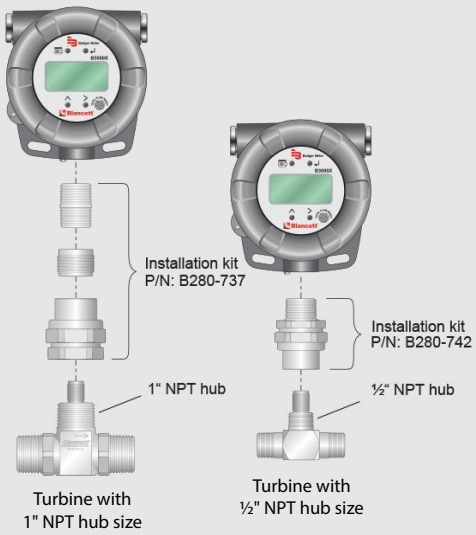
*Table 33*

Blancett® B3000 explosion proof flow monitor, explosion proof kit and 1100 series flow meter

### Explosion proof kit (hazardous location)

| Part number | Description |
|---|---|
| B280-737 | For 1" NPT Hub for remote mount display B30X or B2800XP |
| B280-742 | For ½" NPT Hub for remote mount display B30X or B2800XP |

*Table 34*



# E110 flow monitor, loop powered, 4-20 mA output, explosion proof, meter or remote mount

E110 explosion proof flow monitor for meter mount

The E110 monitor is a popular model in our range of explosion proof flow rate indicators. The monitor distinguishes itself by its quality and functionality driven European design and manufacturing.

## Specifications

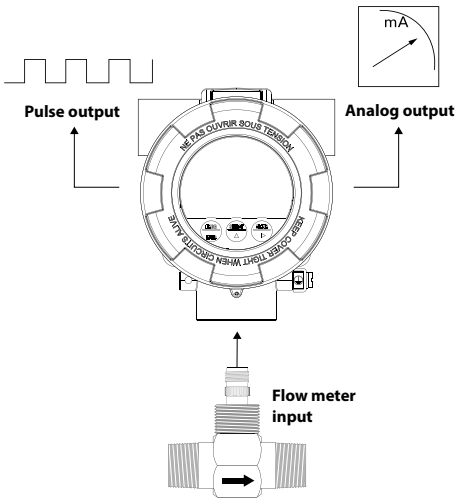
| | | |
|---|---|---|
| Display | Dimensions | Ø 2,56 × 1,77 in. (65 × 45 mm) |
| | Digits | Seven 12 mm (0,47 in) and eleven 7 mm (0,28 in) digits. Various symbols and measuring units |
| | Refresh rate | User definable: 8 times/sec – 30 sec |
| | Speedometer | To indicate the actual flow rate, the bar graph range is 0 – 100 % in 20 blocks, each block is 5 % |
| Hazardous area | CSA c-us / FM | Class I, Division 1, Grps A, B, C, D |
| | | Class II/III, Division 1, Grps E, F, G |
| | | Class I, Zone 1, AEx d IIC T6/T5 Gb |
| | | Zone 21, Aex tb IIIC T85°C/T100°C Db |
| Input | Pulse flow meter | Coil / sine wave, NPN, PNP, reed switch, NAMUR, active pulse signals 8 or 24 V DC |
| Outputs | Digital output | One passive transistor output |
| | Analog output | Loop powered, 4 – 20 mA output |
| Ambient operating temperature | -40 °C to +70 °C (-40 °F to +158 °F) | |
| Enclosure rating | NEMA 4X, NEMA 7, NEMA 8, NEMA 9, IP66, IP67 | |
| Power requirements | Battery powered 3,6 V DC Lithium (no dangerous goods) | |
| | Loop powered 11 – 27 V DC | |
| | Power supply 9 – 27 V DC | |

## Part number: E110-P-AH-CX-HAA-IB-OT-PB-PD-XD-ZB

| Code | Description | |
|---|---|---|
| P | Input signal | Pulse input: Coil, npn, pnp, namur, reed-switch |
| AH | Analog output signal | Galvanic isolated, loop powered, 4-20 mA output |
| CX | Communications | No communication |
| HAA | Enclosure | Aluminum Ex d enclosure - IP66 / IP67 drilling 2 x 3/4" NPT/1x1" NPT |
| IB | Additional input | Remote control input to reset total |
| OT | Digital output | Passive transistor output |
| PB | Additional battery supply | Lithium battery powered |
| PD | Power requirement | 9-27 V DC with sensor supply |
| XD | Hazardous area | Explosion proof according to ATEX, IECEx, FM and CSA c-us |
| ZB | Backlight | Included |

Please note: Remote version with cables is not available, needs to be supplied locally

*Table 35*



# Accessories

- Square-wave output proportional to any desired unit of measure
- Amplifies turbine meter output
- Windows®-based configuration software

## K-factor scalers

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.

### Specifications

| | | |
|---|---|---|
| External power | Input voltage | 8.5 – 30 V DC (diode protected) |
| | Maximum current draw | 18 mA (using internal resistor @ 30V DC input) |
| Inputs (magnetic pickup) | Frequency range | 0 – 4000 Hz |
| | Trigger sensitivity | 30 mV p-p – 30 V p-p |
| Output signal | Max. voltage | 30 V DC |
| | Max. power | 0,25 W |
| Pulse output (using internal pullup resistor) | Maximum current | 8 mA |
| | VH = | Power input voltage – 0,7 V DC |
| | VL = | Less then 0,4 V @ 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 /(selected resistor value + 47 Ω)] × 47 Ω |
| | Pulse length | 150 µs, 1 ms, 25 ms, 100 ms, 500 ms, 1 s, or auto mode |
| Certifications | CSA | Ordinary locations |
| | | CAN/CSA C22.2 No. 61010-1-12, UL Std. No. 61010-1 (3rd edition) |
| | Pollution degree 2 | |
| | Overvoltage category I | |
| Enclosure | Killark aluminum capped elbow Y-3. Class I, Div. 1 & 2, Groups C & D; Class II, Div. 1 & 2, Groups E, F and G; Class III | |
| Operating temperature | -30 °C to +70 °C (-22 °F to +158 °F) | |

# K-factor scaler (digital)

| Part number | Description |
|---|---|
| B220-880 | K-factor scaler, rotary switch in conduit outlet box side entry |
| B220-881 | K-factor scaler, rotary switch in conduit outlet box bottom entry |
| B220-882 | K-factor scaler, rotary switch in conduit outlet box side and bottom entry |
| B220-885 | K-factor scaler, programmable input in aluminum-capped elbow |
| B220-900 | K-factor scaler software/cable package (for use with B220-885 only) |

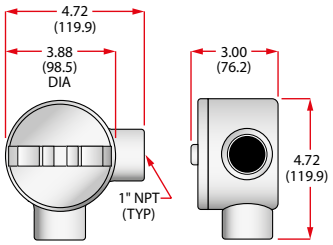
*Table 36*

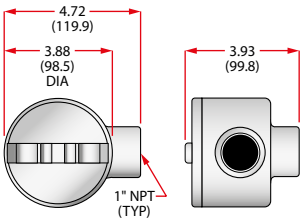
B220-880

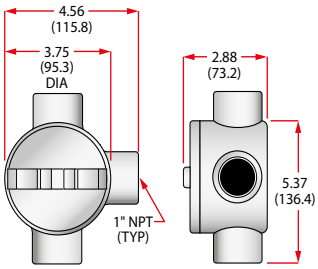
B220-881

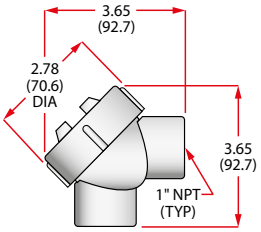
B220-882

B220-885

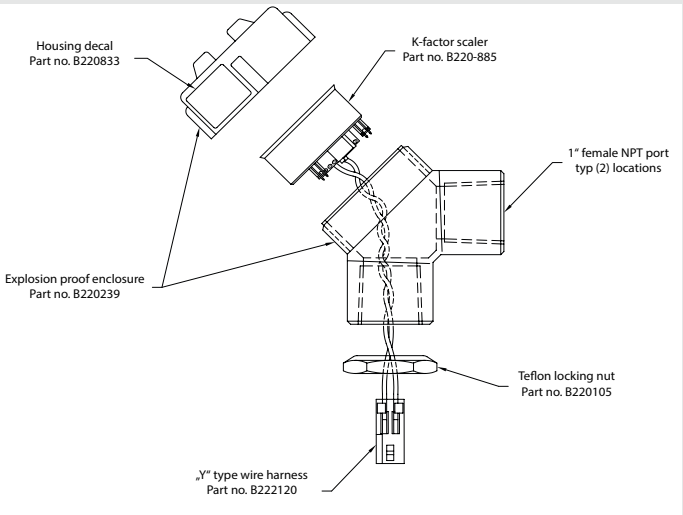


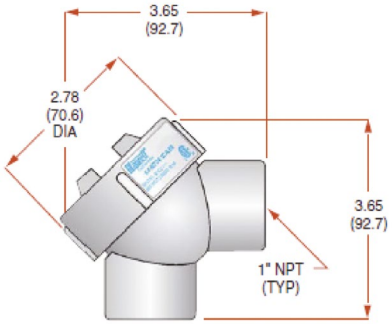




## K-factor scaler B220-885



- 4–20 mA (2-wire) or 0–5V DC (3-wire) output
- Analog signal proportional to flow rate
- Windows®-based configuration software




**Conduit elbow style**
Model B220-873 & B220-874

**Canister style**
Model B220-950 & B220-951

# Frequency converter

These microprocessor-based devices are engineered to provide an analog output directly from a Blancett® turbine flow meter. The converters measure and calculate the flow rate of a turbine flow meter and produce an analog output proportional to the flow rate.

The F to I and F to V converters with two different mounting styles are offered with either a 4–20 mA or a 0–5V DC output signal, enabling easy electronic integration.

Choose between the capped aluminum conduit elbow style (model B220-873 or B220-874) or the canister style (model B220-950 or B220-951).

## Specifications

| Intelligent frequency converver | | F to I<br>Frequency-to-current<br>Models B220-873 & B220-950 | F to V<br>Frequency-to-voltage<br>Models B220-874 & B220-951 |
|---|---|---|---|
| Inputs | Frequency | Magnetic pickup | Magnetic pickup |
| | | 0–3500 Hz | 0–3500 Hz |
| | Trigger sensitivity | 30 mV p-p | 30 mV p-p |
| | Frequency measurement accuracy | ±0,1 % (B220-873);<br>±1 % (B220-950) | ±0,1 % (B220-874);<br>±1 % (B220-951) |
| Analog output | Resolution | 4–20 mA current loop | 0–5 V DC |
| | | 1 : 4000 | 1 : 4000 |
| | Temperature drift | 50 ppm/°C (max) | 50 ppm/°C (max) |
| Environmental | Ambient temperature | -30 °C to +70 °C (-22 °F to +158 °F) | -30 up to 70 °C (-22 up to 158 °F) |
| | Humidity | 0–90 %, non-condensing | 0–90 %, non-condensing |
| Power | | 10–30 V DC supply<br>Loop-powered | 10–26 V DC supply |

# Intelligent frequency converter (analog)

| Part number | Description |
|---|---|
| B220-873 | F to I intelligent converter, 4-20 mA output in aluminum-capped elbow |
| B220-874 | F to V intelligent converter, 0-5 VDC output in aluminum-capped elbow |
| B220-950 | F to I intelligent converter, 4-20 mA output in canister (includes magnetic pickup) |
| B220-951 | F to V intelligent converter, 0-5 VDC output in canister (includes magnetic pickup) |
| B220-954 | F to I / F to V programming kit for B220-873 and B220-874 |
| B220-953 | F to I / F to V programming kit for B220-950 and B220-951 |

NOTE: B220-873, B220-874 require magnetic pickup B111109

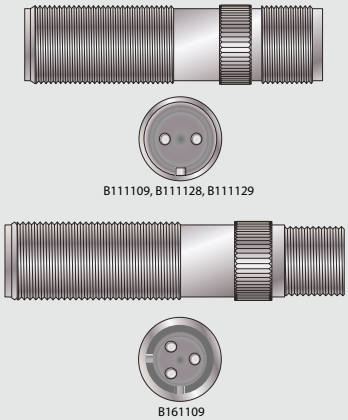
*Table 37*

# Preamplifier (digital)

| Part number | Description |
|---|---|
| B220-290 | Preamplifier, 10 V square wave output, NPN |
| B220-262 | Preamplifier, 10 V square wave output in aluminum conduit enclosure, NPN |
| B222228 | Preamplifier, RF; 12/24 VDC for 1200, CorrExx™ series only |

*Table 38*

# Magnetic pickups




The Blancett® pickup is a magnetic pickup used with turbine flow meters to sense movement of the rotor blade within the flow meter body. The pickup is available in two connections: a two-pin connection, or a three-pin sealed stainless steel face connection for sanitary applications. The contents of the pickup are sealed in a rugged stainless steel housing that can be used with a variety of threaded turbine flow meters.

| Part number | Description |
|---|---|
| B110125 | Jam nut for all magnetic pickups (except B111117, B140013 and B120101) |
| B111109 | Standard magnetic pickup -101 °C to +165 °C (-150 °F to +330 °F) |
| B111112 | T2 magnetic pickup, 12" leads +107 °C (+225 °F) |
| B111113 | Gas QuikSert® magnetic pickup -101 °C to +149 °C (-150 °F to +300 °F) |
| B111117 | Standard RF pickup -101 °C to +165 °C (-150 °F to +330 °F) for 1200, CorrExx™ series only |
| B111126 | Magnetic pickup, ATEX approved (european hazardous area) |
| B111127 | Magnetic pickup, length 3", -101 °C to +165 °C (-150 °F to +330 °F) |
| B111128 | Magnetic pickup, length 4", -101 °C to +165 °C (-150 °F to +330 °F) |
| B120101 | Magnetic pickup, all stainless steel, long nose for 1200, CorrExx™ series only |
| B140013 | Shielded magnetic pickup, stainless steel for 1200, CorrExx™ series only |
| B161109 | NEMA 6 magnetic pickup -101 °C to +165 °C (-150 °F to +330 °F) |
| B161210 | NEMA 6 magnetic pickup with preamplifier -29 °C to +71 °C (-20 °F to +160 °F) |
| B161211 | Magnetic pickup, open collector-open emitter |
| B161212 | NEMA 6 magnetic pickup with preamplifier (less Zener) |
| B220111 | High temp magnetic pickup -268 °C to +232 °C (-450 °F to +450 °F) |
| B220210 | Magnetic pickup with preamplifier -29 °C to +71 °C (-20 °F to +160 °F) |
| B220243 | Intrinsically safe magnetic pickup, FM rated -40 °C to +121 °C (-40 °F to +250 °F) |

*Table 39*

# Cable and connector options

**Used with magnetic pickups B111109, B111113, B111117, B111127, B111128, B120101, B140013 and B220243**

| Part number | Description |
|---|---|
| B220-220 | Cable assembly; 3 m with 2 pin 90 °Connector |
| B220-221 | Cable assembly; 3 m with 2 pin straight connector |
| B220-221-X | Cable assembly; 3 m with 2 pin straight connector & stripped leads |
| B220-221-XLC | Cable assembly; 3 m with 2 pin straight connector, hub protector, & stripped leads |
| B220-218 | Cable assembly; 3 m with 2 pin straight connector and hub protector |
| B222-124 | Connector assembly; 2 pin Amphenol, 90° |
| B222-126 | Connector assembly; 2 pin amphenol, straight |
| B220229 | Cable; 2-wire, 22 GA standard, additional footage |
| Extra cable | For cable assembly with added length, specify footage after standard part number (example: 15 feet = 4,5 m = B220-220-15) |

*Table 40*

# Cable and connector options

**Used with magnetic pickup with preamplifier B220210**

| Part number | Description |
|---|---|
| B220-219 | Cable assembly; 3 m with 3 pin connector |
| B220-217 | Cable assembly; 3 m with 3 pin and hub protector |
| B222-127 | Connector assembly; 3 pin amphenol |
| B002203 | Cable; 3-wire 18 gauge, additional footage |

*Table 41*

# Cable and connector options

**Used with high temperature magnetic pickup B220111**

| Part number | Description |
|---|---|
| B220-090 | Cable assembly; 3 m high temp cable with 2 pin straight connector |
| B120-003 | Cable assembly; 3 m Teflon® with 90 °Connector |
| B220087 | Cable; high temp 2-wire Teflon® |

*Table 42*

# Cable and connector options

**Used with active pickups B220-950 and B220-951**

| Part number | Description |
|---|---|
| B220952-6 | Cable assembly; 1,8 m with 5 pin straight connector |
| B220952-15 | Cable assembly; 4,5 m with 5 pin straight connector |

*Table 43*

# Cable and connector options

**Used with NEMA 6 pickups B161109 and B161210**

| Part number | Description |
|---|---|
| B160206 | Cable assembly; 1,8 m with NEMA 6, 3 pin 90° connector for sanitary applications |
| B160212 | Cable assembly; 3,6 m with NEMA 6, 3 pin 90° connector for sanitary applications |
| B160220 | Cable assembly; 6 m with NEMA 6, 3 pin 90° connector for sanitary applications |
| B160224 | Cable assembly; 7,3 m with NEMA 6, 3 pin 90° connector for sanitary applications |
| B160240 | Cable assembly; 12 m with NEMA 6, 3 pin 90° connector for sanitary applications |
| B160250 | Cable assembly; 15 m with NEMA 6, 3 pin 90° connector for sanitary applications |

*Table 44*

# Cable and connector options

**Used with magnetic pickups B161211 and B170210**

| Part number | Description |
|---|---|
| B160512 | Cable assembly; 3,6 m with NEMA 6P, 5 pin 90° connector |
| B160520 | Cable assembly; 6 m shielded with NEMA 6, 5 pin straight connector |

*Table 45*

# Bushing reducer

| Part number | Description |
|---|---|
| B220056 | 1" x ½" NPT bushing, plastic |
| B220057 | 1" x ½" NPT bushing, metal |

*Table 46*

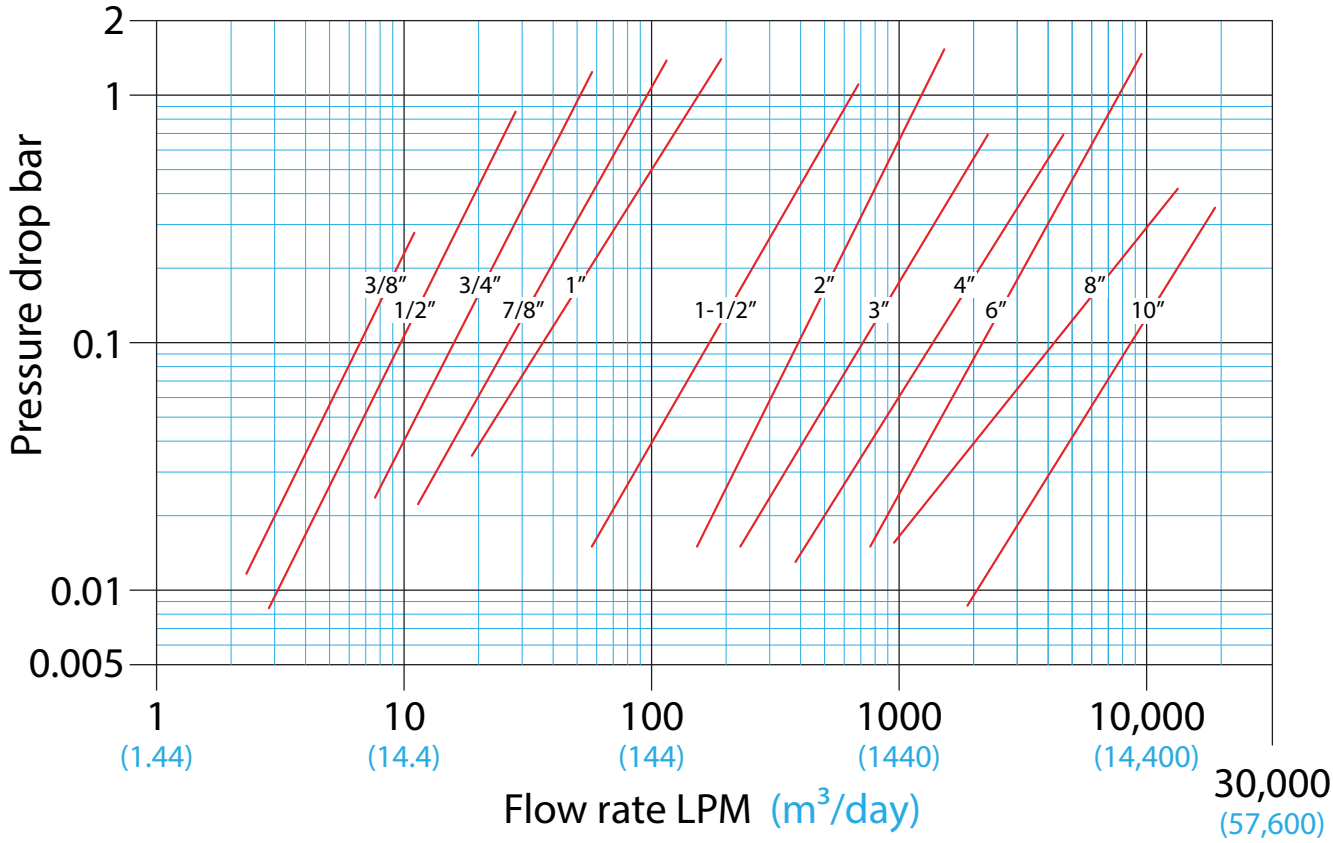
# Explosion proof kit (hazardous location)

| Part number | Description |
|---|---|
| B280-737 | For 1" NPT Hub for remote mount display B30X |
| B280-742 | For ½" NPT Hub for remote mount display B30X |

*Table 47*

# Pressure drop vs flow rate

## 1100 Series



# Appendix

## Example 5 point calibration protocol for liquid flow meters

**Badger Meter**

8635 Washington Ave
Racine, WI 53406
262-639-6770 | 800-876-3837
www.badgermeter.com

### Calibration Report

**Unit Under Test (UUT) Information:**

**Description:** 1" NPT, Turbine Flow Meter
**Model Number:** B111-110
**Serial Number:** 021501A112
**Sensor Type:** Magnetic Pickup
**Output type:** Frequency
**Minimum Flow:** 5 GPM 18.9 LPM
**Maximum Flow:** 50 GPM 189.3 LPM
**Calibration Date:** January 6, 2015
**Calibration Interval:** 12 Months
**Cal. Liquid:** Water
**Ambient Temperature:** 72.62 °F
**Ambient Humidity:** 40.14 %RH
**Linear Points:** 5

**Master Meter:**

**Std uncertainty:** ±0.25%
**Traceability No:** TFM-1956 / TFM-1958
**Model No:** Optiflux 4000 Mag Flowmeter
**Serial No:** A0928610 / A0906248
**Re-Cal Date:** 03.04.2015

**Customer Information:**

**Customer Name:** John Doe
**Customer PO:** 25391932
**Order No:** C2-050712

**UUT Calibration Data Table In GPM:**

| Flow Standard | Actual GPM | UUT Hz | UUT Temp °F | Visc. cSt | UUT F/V Hz/cSt | UUT K CYC/GAL | (Hz*60)/NK GPM | Linear COEFF. | Raw Err % Rate |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 50,07 | 733,800 | 68,60 | 0,995 | 737,654 | 879,33 | 50,05 | 1,0004 | 0,04 |
| 2 | 28,10 | 411,400 | 69,10 | 0,988 | 416,492 | 878,43 | 28,06 | 1,0014 | 0,14 |
| 2 | 15,83 | 232,700 | 69,00 | 0,989 | 235,248 | 882,00 | 15,87 | 0,9974 | -0,26 |
| 2 | 8,83 | 129,700 | 69,00 | 0,989 | 131,120 | 881,31 | 8,85 | 0,9982 | -0,18 |
| 2 | 5,04 | 73,700 | 68,90 | 0,991 | 74,402 | 877,38 | 5,03 | 1,0026 | 0,26 |

**Nominal K (NK) 879,688**

**UUT Calibration Data Table In LPM:**

| Flow Standard | Actual LPM | UUT Hz | UUT Temp °F | Visc. cSt | UUT F/V Hz/cSt | UUT K Cyc/Liter | (Hz*60)/NK LPM | Linear COEFF. | Raw Err % Rate |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 189,54 | 733,800 | 68,60 | 0,995 | 737,654 | 232,29 | 189,46 | 1,0004 | 0,04 |
| 2 | 106,37 | 411,400 | 69,10 | 0,988 | 416,492 | 232,06 | 106,22 | 1,0014 | 0,14 |
| 2 | 59,92 | 232,700 | 69,00 | 0,989 | 235,248 | 233,00 | 60,08 | 0,9974 | -0,26 |
| 2 | 33,43 | 129,700 | 69,00 | 0,989 | 131,120 | 232,82 | 33,49 | 0,9982 | -0,18 |
| 2 | 19,08 | 73,700 | 68,90 | 0,991 | 74,402 | 231,78 | 19,03 | 1,0026 | 0,26 |

**Nominal K (NK) 232,389**

| | |
|---|---|
| **Status:** | PASS |
| **Meter Accuracy (of Rate):** | ± 0.26 % |
| **Average Calib. Temperature :** | 68.9 F |
| **Average Calib. Specific Gravity :** | 1 |
| **Average Calib. Viscosity :** | 0.99 cSt |
| **Flow Direction :** | Forward |

**Calibrated By:** _____

**Certified By:** _____

Calibrations are preformed using standards traceable to the National Institute of Standards and Technology
**The equipment and calibration procedure complies with ISO 9001:2008**
**This calibration report may not be reproduced, except in full, without the written approval from Badger Meter Inc.**

QS248
Rev. B
'09/14

# Example 5 point calibration protocol for gas flow meters

**Badger Meter**

8635 Washington Ave
Racine, WI 53406
262-639-6770 | 800-876-3837
www.badgermeter.com

## Calibration Report

**Unit Under Test (UUT) Information:**

| | |
|---|---|
| **Description:** | 2" Mid-Flow Gas Turbine Flow Meter |
| **Model Number:** | B142-20M |
| **Serial Number:** | 021701A900 |
| **Sensor Type:** | Magnetic Pickup - Low Drag |
| **Output type:** | Frequency |
| **Minimum Flow:** | 14 ACFM |
| **Maximum Flow:** | 140 ACFM |
| **Calibration Date:** | January 6, 2017 |
| **Calibration Interval:** | 12 Months |
| **Cal. Fluid:** | Air |
| **Ambient Temperature:** | 74.34 °F |
| **Ambient Humidity:** | 9.22 %RH |
| **Test Points:** | 5 |

**Master Meter(s):**

**Flow Systems Sonic Nozzles**
**Uncertainty:** ±0.5%

| Standard | Serial No. |
|---|---|
| 1 | 22891 |
| 2 | 22892 |
| 3 | 22893 |
| 4 | 22894 |
| 5 | 22895 |
| 6 | 22896 |
| 7 | 22897 |

**Customer Information:**

| | |
|---|---|
| **Customer Name:** | John Doe |
| **Customer No:** | 12345 |
| **Order No:** | 54321 |

**UUT Calibration Data Table In ACFM:**

| Master | | UUT | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Standard | Flow Rate (ACFM) | Hz | UUT Temp °F | Re | UUT K CYC/ACFM | (Hz*60)/NK ACFM | Linear COEFF. | Error % Rate |
| 3 | 14.00 | 42.366 | 72.20 | 10,633 | 181.51 | 14.20 | 0.9861 | -1.41 |
| 4 | 51.80 | 155.142 | 71.67 | 39,395 | 179.70 | 52.01 | 0.9961 | -0.40 |
| 4 | 77.03 | 228.800 | 71.42 | 58,630 | 178.22 | 76.70 | 1.0043 | 0.43 |
| 5 | 102.28 | 300.838 | 71.18 | 77,912 | 176.47 | 100.84 | 1.0143 | 1.41 |
| 5 | 140.17 | 413.831 | 70.78 | 106,901 | 177.15 | 138.72 | 1.0104 | 1.03 |

**Nominal K (NK) 178.991**

| | |
|---|---|
| **Status:** | PASS |
| **Meter Accuracy (of Rate):** | ± 1.41 % |
| **Average Calib. Temperature :** | 71.5 F |
| **Average Calib. Specific Gravity :** | 1 |
| **Average Viscosity: (cP)** | 0.0182 |
| **Flow Direction :** | Forward |

**Calibrated By:** _____ **Date:** _____

**Certified By:** _____ **Date:** _____

**The meter referenced above was calibrated using standards traceable to the United States National Institute of Standards and Technology, NIST.**
**The equipment and calibration procedure (BAS-405-001) complies with ISO 9001:2008. This certification was performed by Badger Meter Inc. and conducted with AIR**
**This report may not be reproduced, except in full, without the written approval of Badger Meter Inc.**

## Customer accessibility and competence

We can help you in a timely manner to solve your measurement problems, advising you to assist in optimizing your measurement solution, technology and site location before you make a decision. An extensive distributor and service network ensures the best service worldwide.

Local representatives are a big advantage for our customers. The short distance and local language support provide efficient service. Our distributors are trained on Badger Meter products at their own facilities or in our training center. Our name assures you that our products have been manufactured with the best care and in conformity with all DIN ISO 9001:2015 directives.

### Tel. 0800 588 897 801 Service hotline free of charge within Germany

You can reach us within Germany free of charge on 0800-588 897 801.

**From outside Germany**
Phone +49-7025 9208-0

**Monday through Friday**
8.00 – 12.00 and 13.00 – 17.00 (CET)

# Product line overview

Electromagnetic flow meters
Ultrasonic flow meters
Weirs and flumes
Turbine meters
Nutating disc meters
Impeller meters
Vortex meters
Variable area flow meters
Differential pressure flow meters
Venturi tubes
Mass meters
Heat meters
Hydraulic testers
Flow calibrators
Lubrication meters
Oil management systems
Control valves
Concrete finishing products

Badger Meter


Badger Meter Europa GmbH
Nürtinger Str. 76
72639 Neuffen
Deutschland/Germany
Tel. +49-70 25-92 08-0
Fax +49-70 25-92 08-15
badger@badgermeter.de
www.badgermeter.de

For Switzerland
Badger Meter Swiss AG
Mittelholzerstr. 8
3006 Bern
Schweiz/Switzerland
Tel. +41 31 932 01 11
Fax +41 31 931 08 67
info@badgermeter.ch
www.badgermeter.ch

For the Americas (Headquarters)
Badger Meter, Inc.
P.O. Box 245036
Milwaukee, WI 53224-9536
USA
Tel. +1-414-355-04 00
Fax +1-414-355-74 99
infocentral@badgermeter.com
www.badgermeter.com

For Asia
Badger Meter Europa GmbH
Singapore Branch
80 Marine Parade Road
#19–07 Parkway Parade
Singapore 449269
Singapore
Tel. +65-63 46 48 36
Fax +65-63 46 48 37
awang@badgermeter.com

For Slovakia & Czech Republic
Badger Meter Slovakia s. r. o.
Racianska 109 / B
83102 Bratislava
Slovakia
Tel. +421-2-44 63 83 01
Fax +421-2-44 63 83 03
badgermeter@badgermeter.sk
www.badgermeter.sk

For the Middle East
Badger Meter Europe
Middle East Branch Office
Dubai Silicon Oasis
Head Quarter Building
Wing C, Office #C209
Dubai / UAE
Tel. +971-4-371 2503
Fax +971-4-371 2504
gramaswamy@
badgermeter.com

For Mexico
Badger Meter de las Americas S. A. de C. V.
Pedro Luis Ogazon #32
Col. Guadalupe Inn
Mexico, D. F. 01020
Mexico
Tel. +52-55-56 62-08 82
Fax +52-55-56 62-75 81
bmdla@badgermeter.com

For Poland, Ukraine, Belarus and the Baltic countries
Badger Meter Eastern Europe
Eastern Europe Branch Office
ul. Korfantego 6
44-193 Knurów / Poland
Tel. +48-32 236 744 7
biuro@badgermeter.com
www.badgermeter.pl



TUR_BLC_KAT_02_1907 Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change products specifications without prior notice.


Every drop counts.