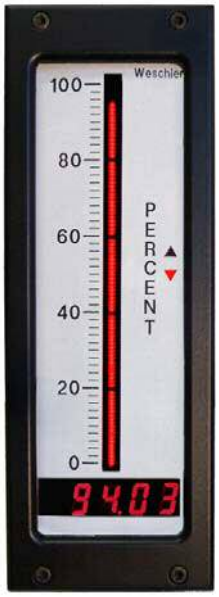
BarGraph 2 Series

High Reliability Digital Bargraph Meters

BG2-252

BV2-5A



BW2-1316

BF2-6402

- *Designed for use in nuclear power plants and other severe environments*
- *High intensity LED display with separately adjustable bar & digit brightness*
- *RS-232, RS-485, Ethernet & USB communication options*
- *Linearization tables for normalizing non-linear signals*
- *Differential inputs and programmable signal averaging*
- *Bar separately scaled & configurable for normal, expanded scale, dual slope & point representations*
- *Wide power supply options with minimum 3kV isolation*
- *Four high-capacity relays configurable for hysteresis, failsafe & delayed operation*
- *Dual analog retransmit outputs, selectable volts or mA*
- *Pluggable, screw anchored terminal connections*

The Weschler BarGraph 2 Series High Reliability Digital BarGraphs are intended for use in applications where accurate and reliable measurement of a process value is of paramount importance. This series is designed to meet or exceed all national nuclear standards for environmental temperature and humidity extremes, seismic shock, EMI/RFI, HMI and system software V&V.

The BG2 is built for use in nuclear power plant (NPP) control rooms and other locations where physical and electrical environmental extremes may be found. The BV2-5A, BW2-1316 and BF2-6402 are housed in steel enclosures. The BG2-252 and BH2-252 use a high-impact, UV stabilized polycarbonate housing. Due to the self-shielded internal construction, no additional case shielding is required.

The BG2 Series features a five digit numeric display, that indicates to 99999 in the positive excursion and 19999 in the negative excursion. Character colors are blue, green, amber and red.

The 101 segment bar provides 1% resolution. A unique programming capability allows for fine control of set point annunciator visibility. In addition, the bar display can be configured to indicate with a single moving point, which simulates a pointer, or in standard expanded bar mode. It can also be configured in dual-slope or bipolar modes. The bar can be populated with LED's in a single color (red, green, amber, blue), or in several different colors to provide a fixed banded mode of high color purity and brightness.

Up to four setpoint relays are available for control or alarms. These high current outputs can be programmed for either high or low action, with adjustable hysteresis, mode and delay. Red setpoint annunciators are provided when relays are specified. The trend indication option adds two red trend arrows to the front panel.

BG2-252 & BH2-252 meters are configured through the three front panel buttons. Front panel programming on the BW2-1316, BV2-5A and BF2-6400 is done with a plug-in programming module (EPM). For enhanced security, the front panel programming buttons can be disabled by configuring a setting requiring the installation of a jumper on the rear panel. When a communication option is ordered, the BG2 meters are also configurable through the RS-232, RS-485, Ethernet or USB port. Modbus and ASCII protocols are provided. With available setup software, configuration files can be created off-line and stored for uploading at a later time.

Made in USA

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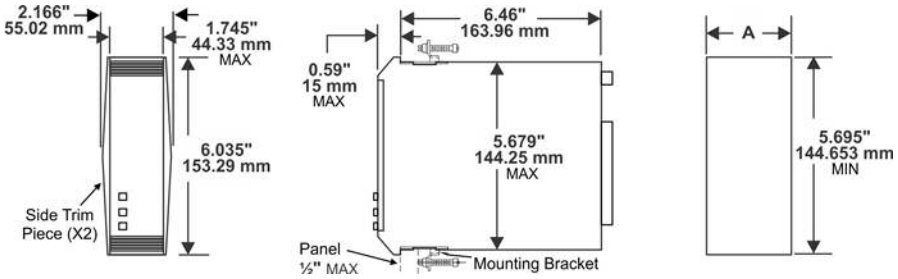
BarGraph 2 Digital Bargraph Meters

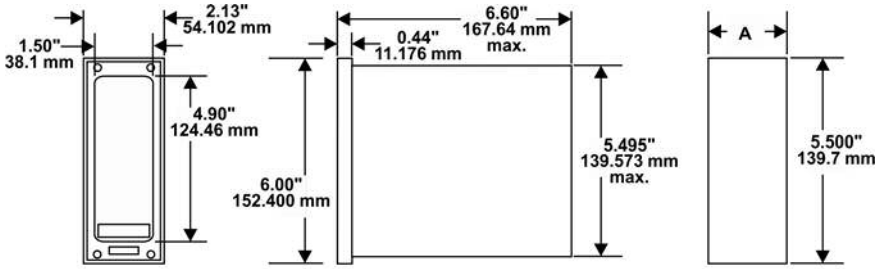
Front View **Side View** **Panel Cutout**

BG2-252
BH2-252



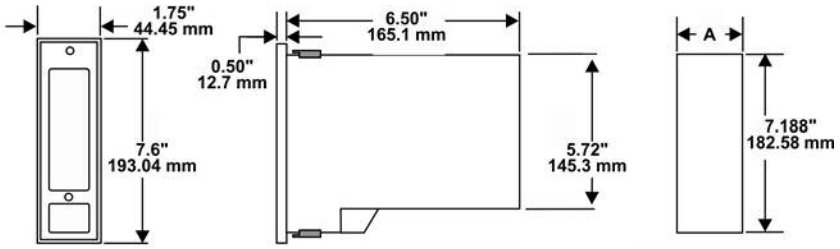
Number of Instruments	Dimension A (MIN) Inches	Millimeters
1	1.770	44.958
2	3.510	89.154
3	5.250	133.350
4	6.990	177.546

BW2-1316



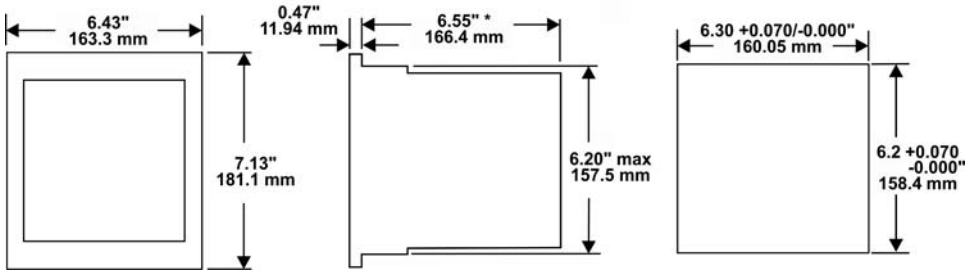
Number of Instruments	Dimension A Inches	Millimeters
1	1.875	47.625
2	3.985	102.219
3	6.115	155.321
4	8.245	209.423

BV2-5A



Number of Instruments	Dimension A Inches	Millimeters
1	1.813	46.050
2	3.563	90.500
3	5.313	134.950
4	7.000	177.800

BF2-6401
BF2-6402

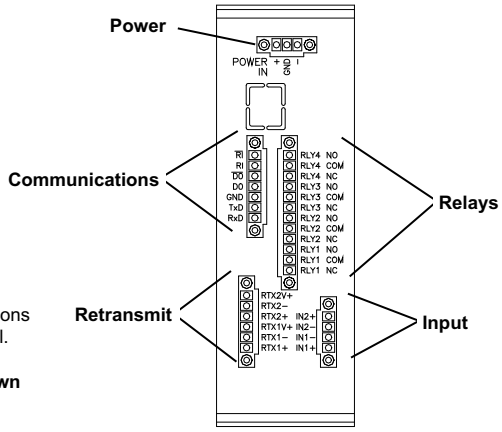


All Models:
Add 0.35" to depth
for rear connectors

Rear Panel

Connector positions vary by model.

BG2-252 shown



BarGraph 2 Specifications

Environment:

Operating Temperature:	0 to 65 °C (32 to 149 °F) except 0 to 60 °C (32 to 140 °F) for BG2-252
Storage Temperature:	-20 to 85 °C (-4 to 185 °F)
Humidity:	0 - 95% non-condensing

Power Sources:

AC	90 - 264 V, 47 - 440 Hz (12 VA) 12 V, 50 - 60 Hz (5.5 VA)
DC	100 - 300 V (35 mA) 18 - 36 V (140 mA) 36 - 72 V (70 mA) 12 V (630 mA)

Input Signals:

DC Amps	50 µA - 5 A
DC Volts	50 mV - 300 V
AC Amps rms	1 mA - 5 A
AC Volts rms	50 mV - 300 V
Type J Thermocouple	-40 to 750 °C, -346 to 1463 °F
Type K Thermocouple	-200 to 850 °C, -328 to 1562 °F
Type T Thermocouple	-200 to 350 °C, -328 to 662 °F

Isolation:

Power Source	DC source: ±3000 V, AC source: 3000Vrms
Retransmit	±3000 V peak
Communications	±2500 V rms
Signal	
AC Amps (>1A)	±2000 V
DC	Differential

Response Time (one input)**:**

AC Signals	≤ 500 mS, to within 0.2% of final value
DC Signals	≤ 250 mS

Overload Ratings:

DC Signals	
Volts	150% of FS, or 350 V maximum
Amps	150% of FS, or 7.5 A maximum
AC Signals	
Volts	150% of FS, or 350 V rms maximum
Amps	200% of FS, or 10 A rms maximum

Displays:

Numeric	5 Character, 7 Segment Height 0.3 inch, 7.6 mm 99999 to -19999 Red, Green, Amber, or Blue color
Bar	4 inch, 101.6 mm 101 Segment, 1% Resolution Red, Green, Amber, Blue or mixed color zones

Accuracy:

Resolvable Accuracy	0.001% of full scale ±1 count
Calibrated Accuracy:	
DC Volts & Amps	±0.01% of full scale ±1 count
AC Volts & Amps	±0.10% of full scale ±1 count (50/60 Hz)
Thermocouple	±0.5°C ±1 count
Long Term Accuracy	Industrial Versions
Voltage Reference	±0.005%, ±0.00125% lifetime
Long Term Accuracy	Nuclear Versions
Voltage Reference	±0.001%, ±0.00125% lifetime

Temperature Coefficient:

DC Volts & Amps	0.003% / °C
AC Volts & Amps	0.01% / °C
Thermocouple	0.03% / °C

Set Point Relays:

Number	4 maximum
Type	SPDT, Form C
Modes	Hi, Lo, Latching Hi, Latching Lo, Failsafe
Capacity	
AC	1/8 HP 120/240 V 5 A, 240 VAC (resistive)
DC	5 A, 150 VDC

Communications:

RS-232	1200 - 57600 bits/s, 7 or 8 bit
RS-485	2 and 4 Wire 1200 - 57600 bits/s, 7 or 8 bit
USB*	Peripheral device (front panel connection)
Ethernet	10/100Base-T
Protocol	Modbus RTU/ASCII

Analog Retransmit:

Channels	Two independent channels
Signal Sources	Selectable from either channel, to follow numeric or bar display
Power Required	None (self-powered)
Output Ranges	0 - 5 VDC, 0 - 10 VDC Current Source programmable between 0 and 20 mADC
Compliance Voltage	24 VDC maximum

Warranty: 5 years

Standards Used in Design and Manufacture:

ASME NQA-1a-2009	IEEE 1023: 2004
EPRI TR-102323	IEEE 1074 2006
IEEE 603 2009	IEEE 323: 2003
IEEE 828: 2012	IEEE 344: 2004
IEEE 829: 2008	IEEE 7-4.3.2: 1993
IEEE 830: 1998	IEEE C63.38
IEEE 1008-1987 R2002	IEEE C37.90.3
IEEE 1012: 2004	IEEE C37.90.1
IEEE 1028: 2008	

*BW2-1316 & BV2-5A only

BarGraph 2 is Weschler's fourth generation digital indicator for power and process monitoring. Since we introduced our first bar-graph meter in 1989, Weschler Bargraph products have outfitted thousands of installations worldwide and accumulated millions of operating hours. Based on our proven reliability in these commercial, industrial and military applications, we confidently offer a five year warranty on the new BG2 Series.

Specifications subject to change without notice. See product manual for detailed specifications.

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BarGraph 2 Configuration Guide

PART NUMBER
(SEE BOTTOM OF PAGE FOR EXAMPLE)

Certain combinations of options are not available on all models. Call for configuration & application assistance.

TYPE
A = BG2-252 (vertical)
B = BH2-252 (horizontal)
C = BW2-1316
E = BV2-5A
F = BF2-6401
G = BF2-6402 (2 channel)

SERIES
2 = Industrial
N = Nuclear

FUNCTION - Channel 1
A = DC Amps
V = DC Volts
I = AC Amps
E = AC Volts
U = Type J Thermocouple
3 = Type K Thermocouple
4 = Type T Thermocouple
5 = Type T TC, Differential

FULL SCALE - Channel 1
Code with 2 most significant digits. Minimum value=10. For intermediate value use next highest 2 digit value. Examples: Use 11 for 110, 13 for 125

FULL SCALE MULTIPLIER - Channel 1
6 = 10^{-6} (0.000 0XX)
5 = 10^{-5} (0.000 XX0)
4 = 10^{-4} (0.00X X00)
3 = 10^{-3} (0.0XX)
2 = 10^{-2} (0.XX0)
1 = 10^{-1} (X.X00)
0 = 10^{0} (XX.000)
A = 10^{1} (XX0.000)

FUNCTION - Channel 2 (BF2-6402 only)
A = DC Amps
V = DC Volts
I = AC Amps
E = AC Volts
U = Type J Thermocouple
3 = Type K Thermocouple
4 = Type T Thermocouple
5 = Type T TC, Differential
X = No second channel

FULL SCALE - Channel 2
Code with 2 most significant digits. Minimum value=10. For intermediate value use next highest 2 digit value. Examples: Use 11 for 110, 13 for 125, XX for no second channel

FULL SCALE MULTIPLIER - Channel 2
6 = 10^{-6} (0.000 0XX)
5 = 10^{-5} (0.000 XX0)
4 = 10^{-4} (0.00X X00)
3 = 10^{-3} (0.0XX)
2 = 10^{-2} (0.XX0)
1 = 10^{-1} (X.X00)
0 = 10^{0} (XX.000)
A = 10^{1} (XX0.000)
X = No second channel

BAR DISPLAY
R = Red
G = Green
A = Amber
B = Blue
M = Mixed
C = Red outer / Red inner *
D = Red outer / Green inner *
E = Red outer / Amber inner *
F = Red outer / Blue inner *
H = Green outer / Green inner *
J = Green outer / Red inner *
K = Green outer / Amber inner *
L = Green outer / Blue inner *
N = Amber outer / Amber inner *
P = Amber outer / Red inner *
Q = Amber outer / Green inner *
T = Amber outer / Blue inner *
U = Blue outer / Blue inner *
V = Blue outer / Red inner *
W = Blue outer / Green inner *
Y = Blue outer / Amber inner *
Z = Mixed / Mixed *
S = Special
* BF2-6402 only

OPTIONS [3 digits]
A = Custom artwork
C = Conformal coating on modules
E = Environmentally sealed panel front
L = Current Loop Power (24 VDC) ^
M = External programming module (EPM)
S = Special
X = None
^ single channel only

TREND
Y = Yes (all channels)
X = No

RETRANSMIT - Channel 2
Y = Yes
X = No

RETRANSMIT - Channel 1
Y = Yes
X = No

COMMUNICATIONS
1 = Isolated RS-232
2 = Isolated RS-485
3 = Isolated Ethernet
4 = USB (BW2-1316 & BV2-5A only, replaces EPM)
X = None

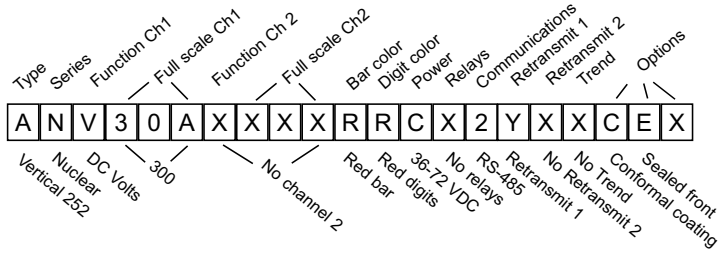
RELAYS
1 = One
2 = Two
3 = Three
4 = Four
X = None

POWER
A = 12 VDC
B = 12 VAC
C = 18-36 VDC
D = 90-264 VAC / 100-300 VDC
E = 36-72 VDC

NUMERIC DISPLAY
R = Red
G = Green
A = Amber
B = Blue
X = None
C = Red outer / Red inner *
D = Red outer / Green inner *
E = Red outer / Amber inner *
F = Red outer / Blue inner *
H = Green outer / Green inner *
J = Green outer / Red inner *
K = Green outer / Amber inner *
L = Green outer / Blue inner *
N = Amber outer / Amber inner *
P = Amber outer / Red inner *
Q = Amber outer / Green inner *
T = Amber outer / Blue inner *
U = Blue outer / Blue inner *
V = Blue outer / Red inner *
W = Blue outer / Green inner *
Y = Blue outer / Amber inner *
S = Special
* BF2-6402 only

WD-13 6/18

PART NUMBER EXAMPLE:



For more information or quotes on nuclear qualified products, email: nuclear@weschler.com