



**The new concept in bargraph technology
from International Instruments, "the Meter People"**

Series 9203

Size: 1.80 x 9.5 in. (45.7 x 241.3)

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INTERNATIONAL
INSTRUMENTS

Q-Series Bargraphs from , “the meter people”

Note: Bargraphs on this
page are shown full size

Series 9201

Size: 4.84 in. sq. (122.9 sq.)



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The Q-Series represents the latest advance in bargraph technology.

The military "Q-1" bargraphs — the need for which led to the development of this unique family of instruments — are designed and constructed in accordance with an exacting set of military specs. They are the only bargraph on the market *specifically* designed to meet MIL-STD 461C, Class A-4. They meet the EMI requirements!

In addition to noise-free circuitry, military Q-1 Bargraphs provide the same mechanical specs as the meters you have been using. They literally "fill the same holes" as the analog units in your instrument panel.

Complete range of models.

Q-Series Bargraphs are available in a family of models, offering a range of instruments that allows you to take full advantage of noise-free circuitry if your application calls for it, but does not oblige you to buy more performance than you actually need.

Q-1 Bargraphs are specifically engineered for military applications and customarily incorporate noise-free design. **Q-2 Bargraphs** are offered primarily for commercial and industrial applications and, generally speaking, can be ordered in either conventional or noise-free design. **Q-3 Bargraphs** are specifically provided for the nuclear market and are, accordingly, seismic approved and available with either conventional or noise-free circuitry. (Table in Selection Guide at right indicates standard models available in noise-free design. Note that *any* **ii** Q-Series Bargraph *can* be obtained with noise-free circuitry on special order.)

STEPbySTEP SELECTION GUIDE

1 Pin down your application. Basically "Q"s come in 3 different types.

TYPE

Q-1 *

FOR MILITARY APPLICATIONS

TYPE

Q-2

FOR COMMERCIAL APPLICATIONS

TYPE

Q-3 **

FOR NUCLEAR APPLICATIONS

2 Decide whether your application calls for noise-free circuit design. †

Just about any **ii** bargraph
can be produced with **ii**'s

EXCLUSIVE NOISE-FREE CIRCUITRY

(Note that in chart yellow means noise-free.)

3 Make your selection from the chart below.

And...remember...chart shows **ii**'s standard Bargraphs only. If your needs go off the chart, call us and tell us about it. We can produce "special" models specifically designed for your application.

Standard Series No.	Q-1	Q-2		Q-3	
	MILITARY APPLICATIONS (Note all instruments have noise-free circuitry)	Conventional circuitry	Noise-Free circuitry	Conventional circuitry	Noise-Free circuitry
9004		X	X††	X	X††
9204	X		X††		X
9003		X	X††	X	X††
9201	X		X††		
9200	X		X††		X
9203	X		X††		X

* Military units use Mil. Spec. components and are priced accordingly.

** Nuclear units have been seismically approved and, generally speaking, can come in either conventional or noise-free circuitry.

† The most cost effective Q-2 units will use conventional circuit design and components. Since "noise-free" units use a proprietary display and circuitry even in commercial (non-military) applications, they will be more costly than conventional designs.

†† Available...but minor redesign may be required.

**MIL SPECS MET OR EXCEEDED
BY SERIES Q-1 INSTRUMENTS**

EMI MIL-STD-461C, Class A-4
DRIP-PROOF* MIL-STD-108
SALT SPRAY MIL-STD-202, Method 101
SHOCK MIL-S-901C, Grade A, Class 1
VIBRATION MIL-STD-167-1, Type 1

*Certain models only. Consult factory.

**Phone (203) 481-5721 or Fax (203) 481-8937
(See Back Cover for further detail.)**

REPLACEMENT GUIDE

4 1/2-inch Round Switchboard Instruments

Analog
Yokagawa (GE) AM/DB40
Weschler/Westinghouse

Solid State Bargraph
Dixson BEW51, BWO51
Weschler/Bowmar BG241



**Series
9003
SOLID STATE
BARGRAPH**

6-inch Edgewise Switchboard Instruments

Analog
Int'l Instruments (Sigma) 1151/1251
Yokagawa (GE) 180
Weschler/Westinghouse VX252
A&M Instruments (Weston)
Crompton

Solid State Bargraph
Dixson BB101/202
Weschler/Bowmar BG/BH252 BI1251



**Series
9004
SOLID STATE
BARGRAPH**

DC INPUT DATA (All Q-Series Bargraphs)

(For AC Data consult factory)

Input Impedance

Current input: 300mV maximum drop

Voltage input: Below 40V—25,000 ohm/V min.
40V and up—1 megohm

Thermocouple input: 100,000 ohm/min. for 10mV input.

Minimum Spans

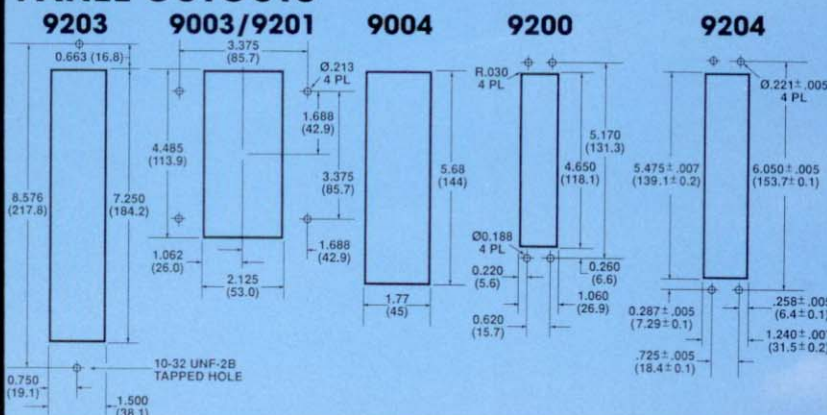
DC Voltage: 8mV Thermocouple: 8mV

DC Current: 25uA RTD or Thermistor:
3 ohm change at 5mA

Maximum Self-Contained Spans

Current: 500mADC Voltage: 300 VDC

PANEL CUTOUTS



Series 9004

Size: 1.77 x 6.05 in. (45.0 x 153.7)

(Model available in both single and dual input.

Below: two single input units, one with continuously displayed set-points.)

Series 9204

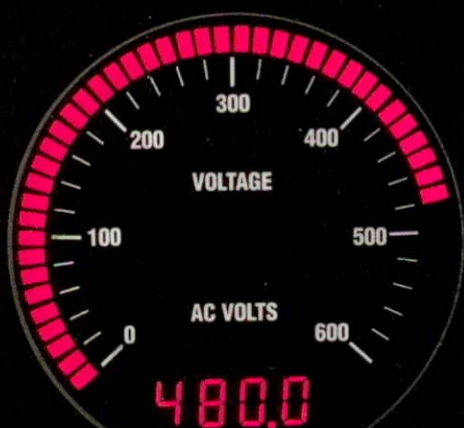
Size: 1.5 x 6.7 in.
(38.6 x 169.9)

Series 9200

Size: 1.2 x 5.8 in.
(31.0 x 146.6)

Series 9003

Size: 4.84 in. sq. (122.9 sq.)



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Note: Bargraphs on this page are shown 60% of scale

How **ii** designed the revolutionary noise-free bargraph.

It was a naval application. International Instruments had been asked to adapt its existing technology to comply with the requirements of MIL-STD-461C.

The job, in short, was to take an LED bargraph, an inherently *noisy* instrument, and recreate it with *completely noise-free circuitry*.

The problem? The **ii** design team *knew* that no combination of "band-aids" ... no hodge-podge of filters and shielding devices ... could produce a meter that *effectively and consistently and reliably* met the essential Mil Specs. We knew we had to start over ... from scratch.

And we did. The result is the "Q" series of instruments, a totally new bargraph concept that incorporates a unique circuitry and display meeting the stringent military specifications for EMI with regard to both radiation and susceptibility.

Why **ii** ?

Why not? Through the years International Instruments had solved many measurement problems and developed a wide range of instrumentation for the military.

International Instruments is a Prime Technology company. And the Prime Tech group of companies has been involved in the manufacture of precision meters throughout the years. **ii** has been studying and supplying the needs of the military for decades. It has been producing nuclear qualified analog and digital bargraphs for over 30 years.

There are literally thousands of **ii** meters, such as the 2150, 1247, 1149, 1147 and 1124, performing reliably in military applications. In the power generation field, both nuclear and fossil, many installations are effectively using 1151/1251s, 2500/2520s and existing **ii** solid state designs such as the 9270, 9270S, 9381 and 9285 bargraphs.

That's why they call **ii** "the meter people".

**Learn everything you need
to know about**

Q-1, Q-2 & Q-3 BARGRAPHS

**Further application information and
technical data immediately available**

Owing to the range of types in which Q-Series Bargraphs can be ordered, as well as the extent of the options and combinations of options available in each Q-type and each individual model, you will probably require additional data before finalizing the specific instrument called for by your application.

We suggest that you send us a detailed description of your application, input, scale data, and other pertinent information to assist in selecting the proper unit for your usage.

If you feel that one-on-one will help, please phone us. We will go over any problem with you and rush the information that will assist you in planning your application.

Phone (203) 481-5721

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A Prime Technology Company



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