

e2v

VQ11 Combustible Gas Detector Elements

To be read in conjunction with "Introduction to Pellistor Gas Sensors" and Pellistor Application Notes 1, 2, 3, 4, 6 and 7.

INTRODUCTION

The VQ11 consists of two matched elements which are used for the detection of combustible gases in air. They are not suitable for the detection of methane in air at concentrations below the lower explosive limit.

The elements are designed especially for use in situations where they are liable to be exposed to high concentrations of flammable gas, up to 100%. The VQ11 remains substantially unchanged, even after long periods of exposure to high concentrations, although it is advisable to check the zero calibration after each such exposure.

The VQ11 is also useful for the detection of combustible vapours containing halogens, or when small amounts of non-flammable halogenated hydrocarbons are present. The graph on page 2 shows the response of VQ11 to 20% LEL hexane in air containing up to 2% of Freon-12.

There is no interference from water vapour or carbon dioxide unless the concentrations are high enough to affect the flammability of the gas mixture. Using the recommended bridge circuit below and the mounting arrangement shown on page 3, the minimum sensitivity is 30 mV/1% n-butane.

GENERAL DATA

Electrical

The information given below relates to the VQ11 operating in the recommended circuit shown.

Operation (see note 1)	continuous
Bridge supply	2.0 ± 0.1 V
Bridge power consumption	0.75 W max
Minimum sensitivity (see note 2)	30 mV/1% n-butane
Linearity	linear up to 1.5% n-butane
Response time to register 0.5% in a 1% concentration (see notes 2 and 3)	3 seconds

Mechanical

Mounting	see page 3
Outline	see page 3
Shock test	250 g, 5 blows in each plane
Vibration test	20 g, 24 cycles from 100 to 3200 Hz

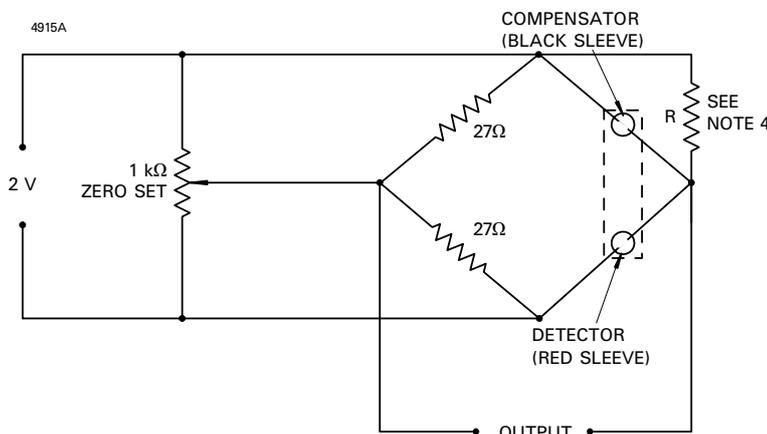
MARKING

Each element is identified by a unique serial number written on the can of both the detector and compensator. The serial number is written in red on the detector and black on the compensator. In addition, the detector carries a red circular label on the base identifying the device type.

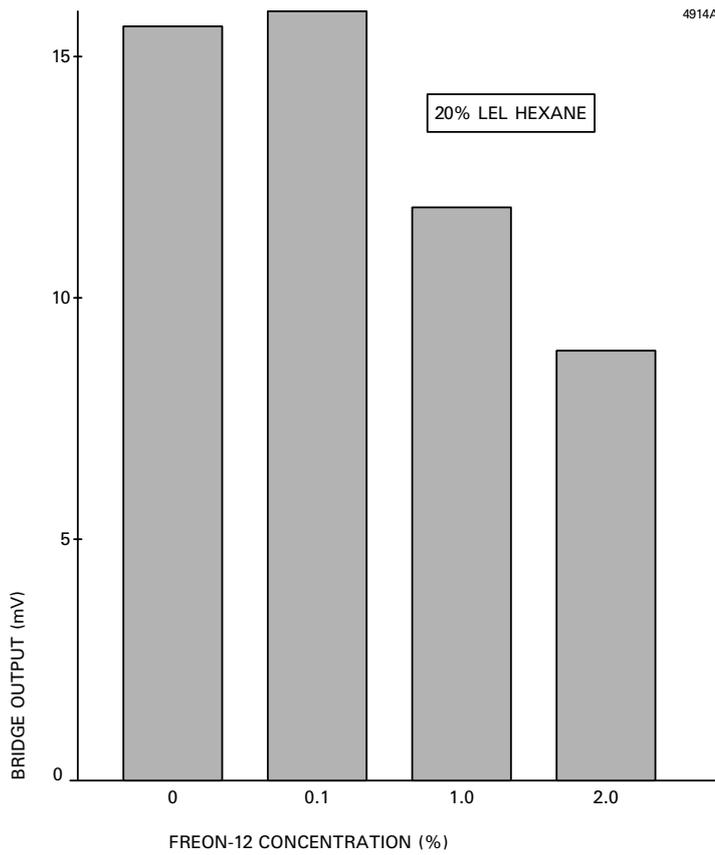
NOTES

1. Operation may be under either direct flow or diffusion conditions in appropriate mountings (see page 3).
2. With open-circuit conditions at the bridge output.
3. The response time is a function of the type of mounting used.
4. The elements are supplied as a matched pair with a trimming resistor R of the correct value which is between 39 and 120 Ω. The trimming resistor is to be connected across the compensator element as shown below.

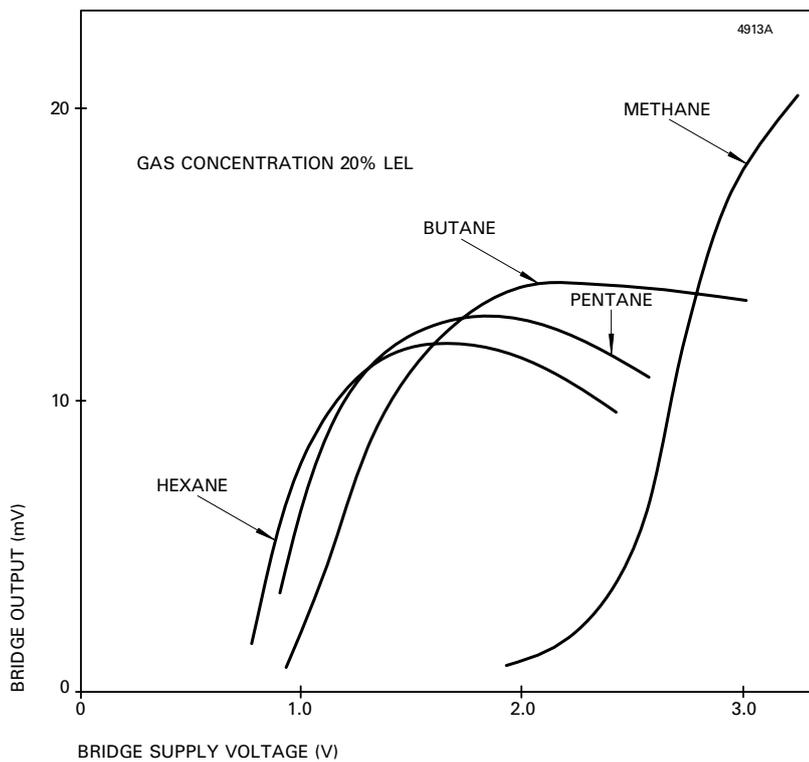
BRIDGE CIRCUIT



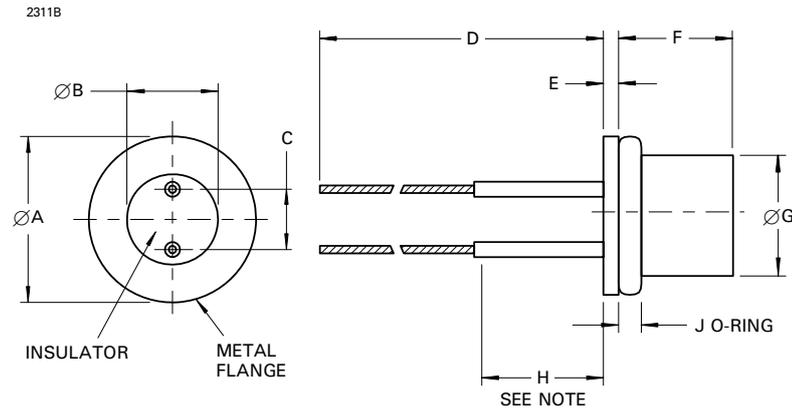
TYPICAL VARIATION OF BRIDGE OUTPUT WITH HALOGEN CONCENTRATION



TYPICAL VARIATION OF BRIDGE OUTPUT WITH SUPPLY VOLTAGE



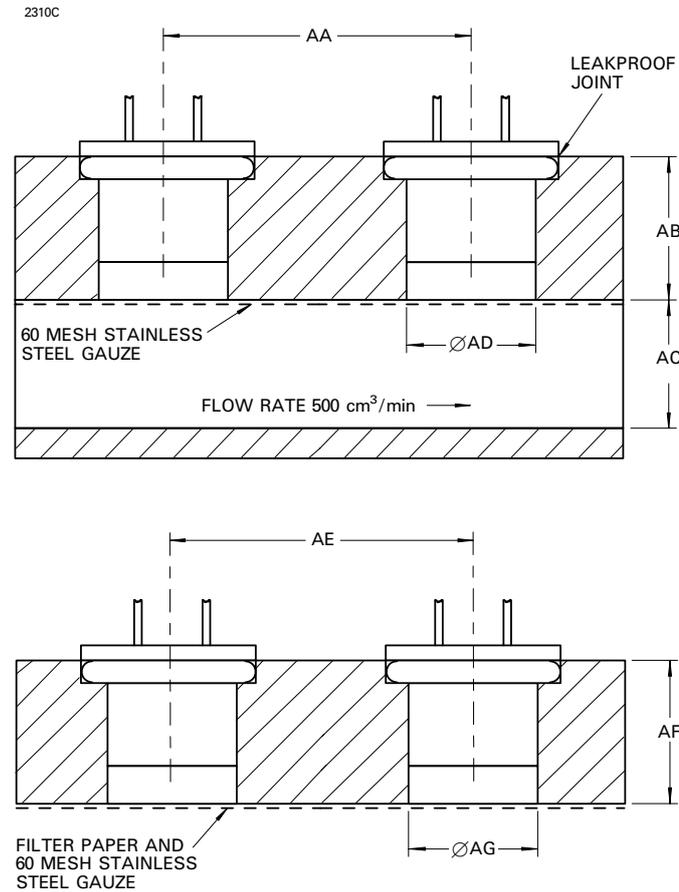
OUTLINE (All dimensions without limits are nominal)



Ref	Millimetres
A	11.05 ± 0.25
B	6.10 ± 0.25
C	3.56 ± 0.13
D	63.50 min
E	1.02
F	5.84 ± 0.51
G	8.20 max
H	9.53
J	1.52

Note No bends may be made in this length.

RECOMMENDED MOUNTING ARRANGEMENTS



Ref	Millimetres
AA	19.05 max
AB	9.53 ± 0.13
AC	8.33 ± 0.13
AD	8.20 min
AE	19.05 max
AF	9.53 ± 0.13
AG	8.20 min

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