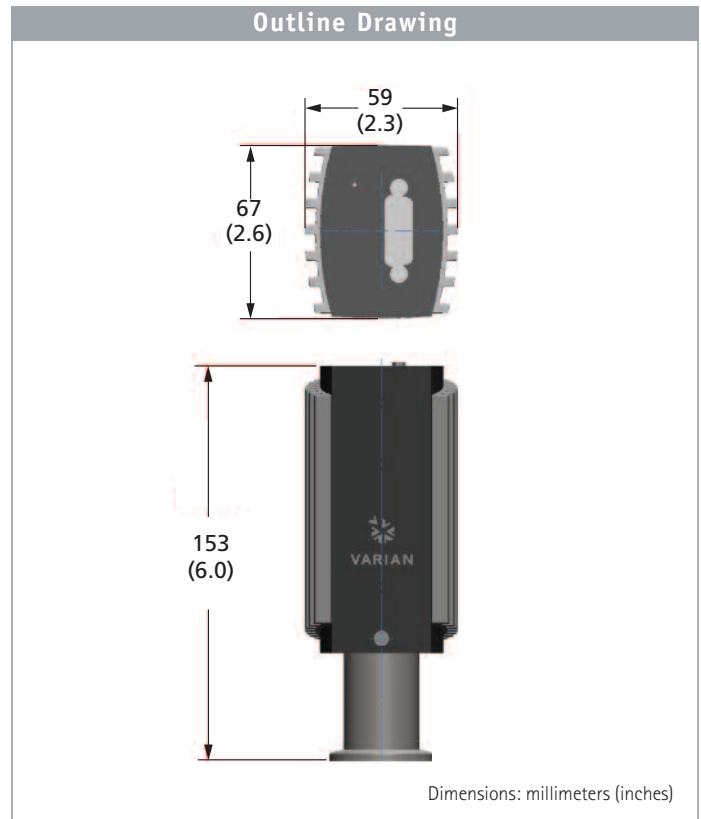


# FRG-720/FRG-730



The Varian FRG-720 and FRG-730 combine Varian's Pirani and Bayard-Alpert sensor into a single compact design that provides measuring capability from  $5 \times 10^{-10}$  mbar to atmosphere ( $3.8 \times 10^{-10}$  Torr to atmosphere). Combining these two technologies into a single unit reduces complexity and integration challenges while protecting the Bayard-Alpert sensor from premature burnout.

## Applications

- Wide range from industrial coating and semiconductor processing to research and laboratory environments
- General vacuum measurement and control in the low to ultra-high vacuum range

| Features  | Benefits  |
|---|---|
| Combination gauge – Bayard-Alpert and Pirani    | Wide measurement range from $5 \times 10^{-10}$ mbar to atmosphere  |
| Pirani interlock                                | Protects Bayard-Alpert sensor from premature burnout and contamination effects from high pressure operation |
| Long-life yttrium oxide coated iridium filament | Rugged design for a wide range of applications  |
| Set point control                               | Utilize pressure readings to perform critical operations  |
| LCD display option                              | Monitor pressure readings easily  |
| Profibus communication option                   | Ease of network integration   |

# FRG-720/FRG-730

| Technical Specifications                                      |   |  |                               |                                |                               |
|---|---|--|-------------------------------|--------------------------------|-------------------------------|
| Measurement range (Air, O <sub>2</sub> , CO, N <sub>2</sub> ) | 5 x 10 <sup>-10</sup> to 1000 mbar (3.8 x 10 <sup>-10</sup> to 760 Torr)  |  |                               |                                |                               |
| Accuracy  | 10 <sup>-8</sup> to 10 <sup>-2</sup> mbar/torr – ± 15% of reading   |  |                               |                                |                               |
| Repeatability   | 10 <sup>-8</sup> to 10 <sup>-2</sup> mbar/torr – ± 5% of reading  |  |                               |                                |                               |
| Degas   | p < 7.2 x 10 <sup>-6</sup> mbar – electron bombardment, max. 3 min  |  |                               |                                |                               |
| Pressure, maximum   | 2 bar absolute  |  |                               |                                |                               |
| Temperature   | Operation (ambient)   | Storage  | Bakeout at flange w/extension | Bakeout at flange wo/extension | Bakeout w/electronics removed |
|   | 0 to 50 °C  | -20 to +70 °C  | 150 °C                        | 80 °C                          | 150 °C                        |
| Supply voltage  | 20 to 28 VDC, 1.4 A on startup for 200 msec, 0.8 A operating  |  |                               |                                |                               |
| Output signal analog  | 0 to 10 V   |  |                               |                                |                               |
| Measurement range   | 0.774 to 10.0 V   |  |                               |                                |                               |
| Voltage vs. pressure  | 0.75 V/decade   |  |                               |                                |                               |
| Error signal  | 0.3/0.5 V   |  |                               |                                |                               |
| Minimum loaded impedance                                      | 10 kΩ   |  |                               |                                |                               |
| Communications interface                                      | RS-232C   |  |                               |                                |                               |
| Electrical connection   | D-sub, 15 pin, male   |  |                               |                                |                               |
| Maximum cable length  | 100 m (330 ft)  |  |                               |                                |                               |
| Materials exposed to vacuum                                   | Yt <sub>2</sub> O <sub>3</sub> , Ir, Pt, Mo, Cu, W, NiFe, NiCr, stainless steel, glass  |  |                               |                                |                               |
| Internal volume   | KF/CF   | 24 cm <sup>3</sup> (1.46 in <sup>3</sup> )/34 cm <sup>3</sup> (2.1 in <sup>3</sup> ) |                               |                                |                               |
| Weight  | KF/CF   | 285g/550g  |                               |                                |                               |
| Protection type   | IP30  |  |                               |                                |                               |
| Setpoint relays (1) for FRG-730                               | Range   | Relay Contact  | Hysteresis                    | Contact rating                 |                               |
|   | 1 x 10 <sup>-9</sup> to 100 mbar  | n.o., potential free   | 10 % of reading               | 30 V/0.5 A DC                  |                               |
| <b>Profibus Option</b>  |   |  |                               |                                |                               |
| Baud rates  | 9.6/19.2/93.75/187.5/500 kBaud; 1.5/12 mBaud  |  |                               |                                |                               |
| Address   | 2 switches (address 00 – 127) or network programmable   |  |                               |                                |                               |
| Digital functions   | Read pressure, select units (Torr, mbar, Pa); degas function, Pirani full scale adjust; monitor gauge status; safe state allows definition of behavior in case of error; detailed alarm and warning information |  |                               |                                |                               |
| Analog functions  | 0 to 10 V analog output pressure indication; two setpoint relays A + B  |  |                               |                                |                               |
| Setpoint relays (2)   | Range   | Relay Contact  | Hysteresis                    | Contact rating                 |                               |
|   | 1 x 10 <sup>-9</sup> to 100 mbar  | n.o., potential free   | 10 % of reading               | 60 V/0.5 A DC                  |                               |
| Connector for Profibus DP                                     | D-sub, 9 pin, female  |  |                               |                                |                               |

| Ordering Information   |              |  |           |
|--|--------------|--|-----------|
| Description  | KF25         | CF35                                   |           |
| FRG-720 Pirani/Bayard Alpert combination gauge – single filament                       | FRG720KF25   | FRG720CF35                             |           |
| with display   | FRG720KF25D  | FRG720CF35D                            |           |
| with setpoints and Profibus  | FRG720KF25SP | FRG720CF35SP                           |           |
| FRG-730 Pirani/Bayard Alpert combination gauge – dual filaments w/set pts              | FRG730KF25S  | FRG730CF35S                            |           |
| FRG-730 Pirani/Bayard Alpert combination gauge – dual filaments w/set pts. and display | FRG730KF25SD | FRG730CF35SD                           |           |
| FRG-730 Pirani/Bayard Alpert combination gauge – dual filaments w/set pts and Profibus | FRG730KF25SP | FRG730CF35SP                           |           |
| <b>Accessories</b>   |              |  |           |
| FRG-720 Replacement sensor–KF25  | FRG720KF25RS | FRG-720/730 Baffle                     | FRG720BFL |
| FRG-720 Replacement sensor–CF35  | FRG720CF35RS | FRG-720/730 Power Supply 24V DC/RS232C | FRG720PWR |
| FRG-730 (dual filaments)–KF25 Replacement sensor                                       | FRG730KF25RS | FRG-720/730 Bakeout extension, 100mm   | FRG720BKE |
| FRG-730 (dual filaments)–CF35 Replacement sensor                                       | FRG730CF35RS |  |           |