

TECHNICAL NOTE

IPC400 Pumping Package

Gas analysis applications involving gas pressures too high for direct exposure to the quadrupole sensor require a pressure converter to reduce the pressure and keep the sensor at high vacuum. With a pressure converter, the quadrupole sensor may be used for high-pressure applications such as sputtering, vacuum furnace analysis, analysis of laser gas, and other applications when the process pressure is $>1E-4$ Torr (mbar).

Pressure converters use orifices and/or capillaries to reduce the partial pressure of each gas mixture component by a fixed proportion without mass discrimination. An orifice, a small disk with a defined hole, acts as a conductance limitation when both the volume and the high vacuum pump speed are constant, and hence determines the pressure at the quadrupole sensor. Orifices are available in several sizes to cover various pressure ranges.

SEVERAL INLET OPTIONS

The IPC400 modular line of pumping packages extend the sampling range of INFICON Transpector Gas Analysis Systems. These dry pumping packages are small, lightweight and portable. Combined with any standard open ion source Transpector RGA, they can sample any process from two atmospheres to high vacuum. Inlet options for the IPC400 include:

- **Single or Dual Inlets:** These inlets allow sampling via orifice(s) with approximately one decade of sampling range per orifice. Standard orifices are 10 mTorr, 100 mTorr, 1 Torr, 10 Torr, 100 Torr.
- **Dual Inlets with High Pressure Bypass:** To improve response time during high pressure sampling, a high pressure bypass can be used to pull the sample to the RGA.
- **IPC2A:** It has the full conductance of a wide open valve for UHV sampling and a single orifice for high pressure sampling.
- **Atmospheric Sampler:** The capillary sampler uses two stages (a capillary and an orifice) to reduce the pressure from atmosphere to high vacuum where the RGA can analyze the sample.

FACILITIES FOR INSTALLATION

The following facilities are required for operating the IPC400:

- One standard power outlet (the IPC400 can operate on either 100/120 VAC or 220/240 VAC).

- 70-110 psig (5.8-8.6 bar) of compressed air for valve operation (not required for manual inlets).
- Exhaust for the dry diaphragm backing pump (not required if non-aggressive gases).

Additional connections for the IPC400:

- Process connection depends on the inlet chosen: KF25, KF40, or CF40 for the dual inlets, 1/4" MVCR for the single inlet, 1/16" OD capillary for the atmospheric inlet.
- Cables to connect the IPC400 Controller to the RGA and the pumping system (included). Available lengths of 1, 3, 5 or 9 meters.
- Foreline hose to connect the compound pump to the diaphragm backing pump (included). Available lengths of 1, 3, 5, or 9 meters
- RS232 or RS485 communication cable between the RGA and control computer (RS232 cable included).

Note: For the atmospheric inlet, short cables (~50 cms) and a support frame are included. For non-atmospheric inlets, a support kit is included.

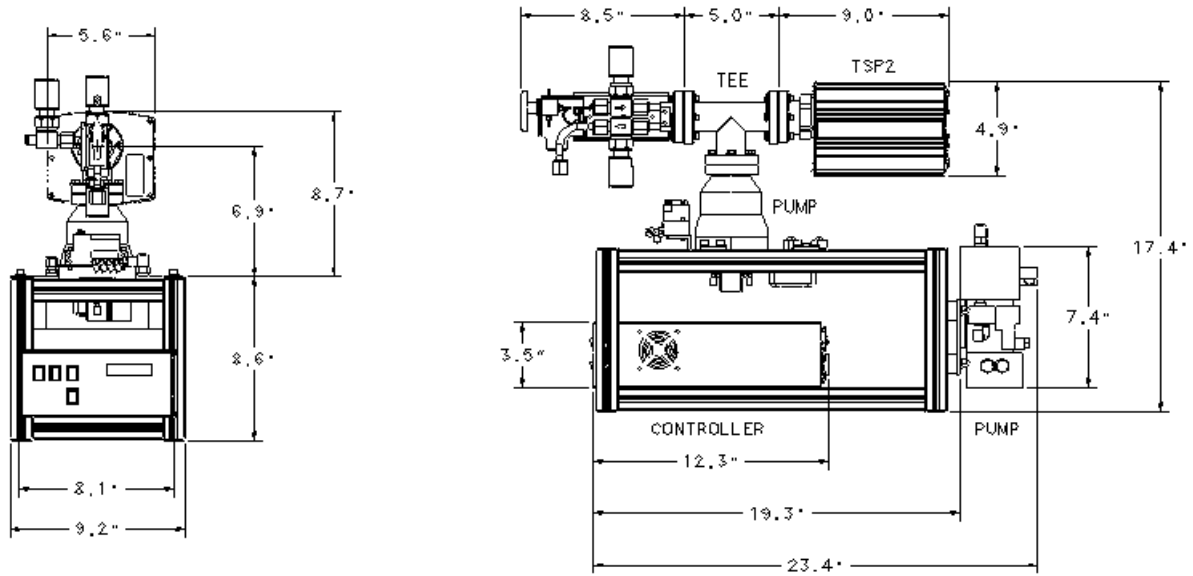
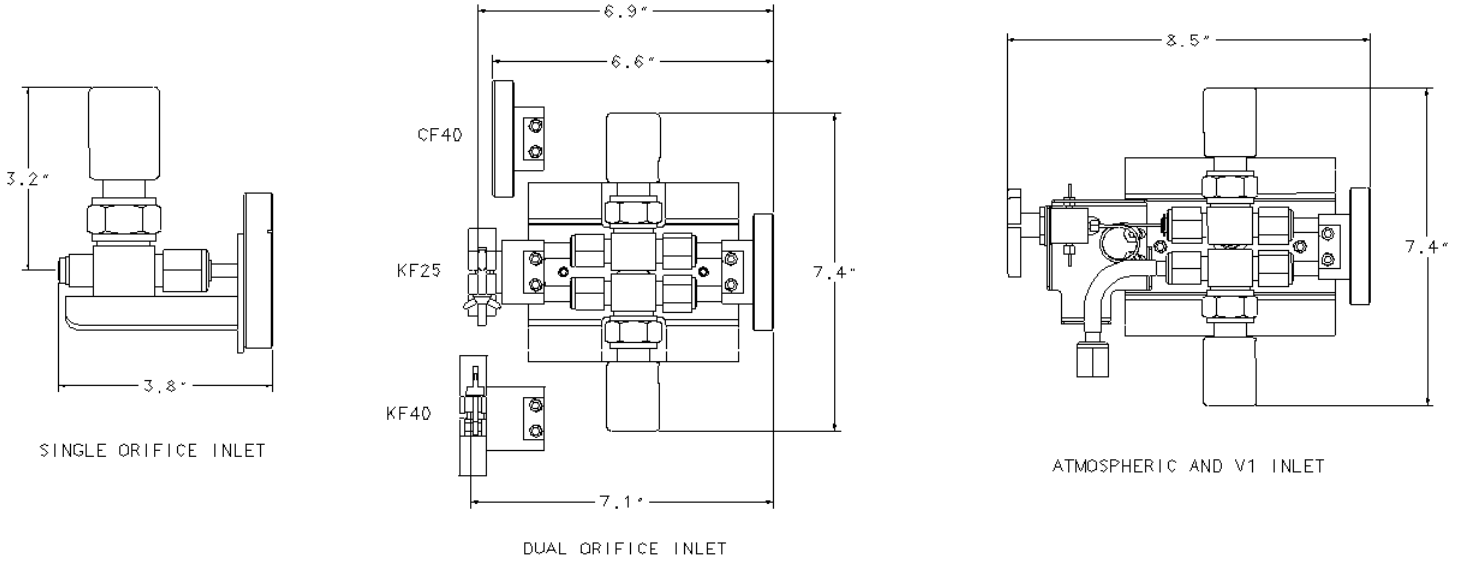
SPARE PARTS

Here are the recommended spare parts for the IPC400:

- Spare orifice(s)
- Spare capillary(ies)
- Spare diaphragms for backing pump
- Ion source kit for Transpector 2 sensor
- Filament kit for Transpector 2 sensor

The IPC400 Controller provides for valve operation and has a single start/stop button. Cleanroom compatible heaters are also operated by this controller and provide uniform heating for cleaning the vacuum surfaces as well as the RGA sensor. The IPC400 Pumping Package combined with the appropriate RGA will yield a powerful sampling system for monitoring contaminants down to as low as 10 ppm for some gases.

IPC400 PUMPING PACKAGES DIMENSIONAL INFORMATION



IPC400 SYSTEM WITH ATMOSPHERIC INLET



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