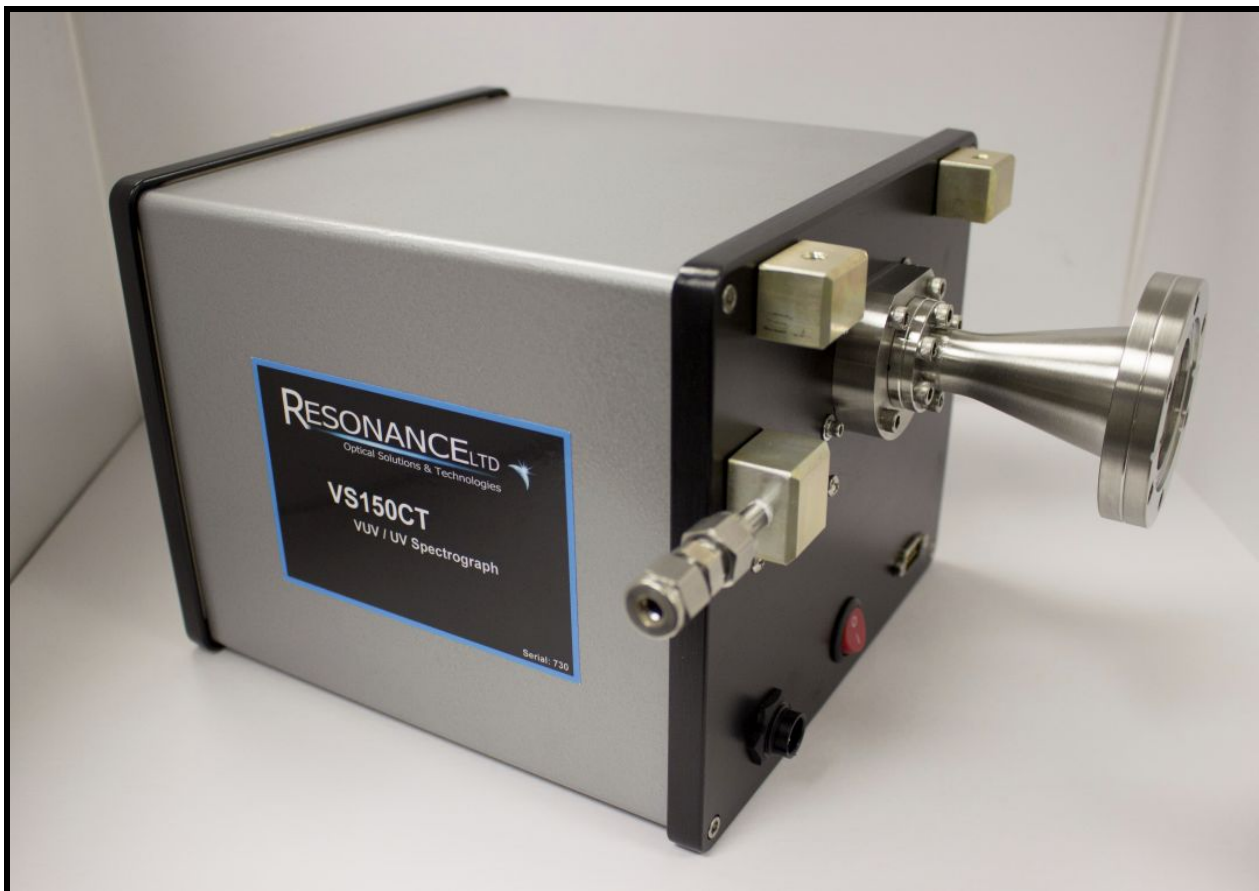


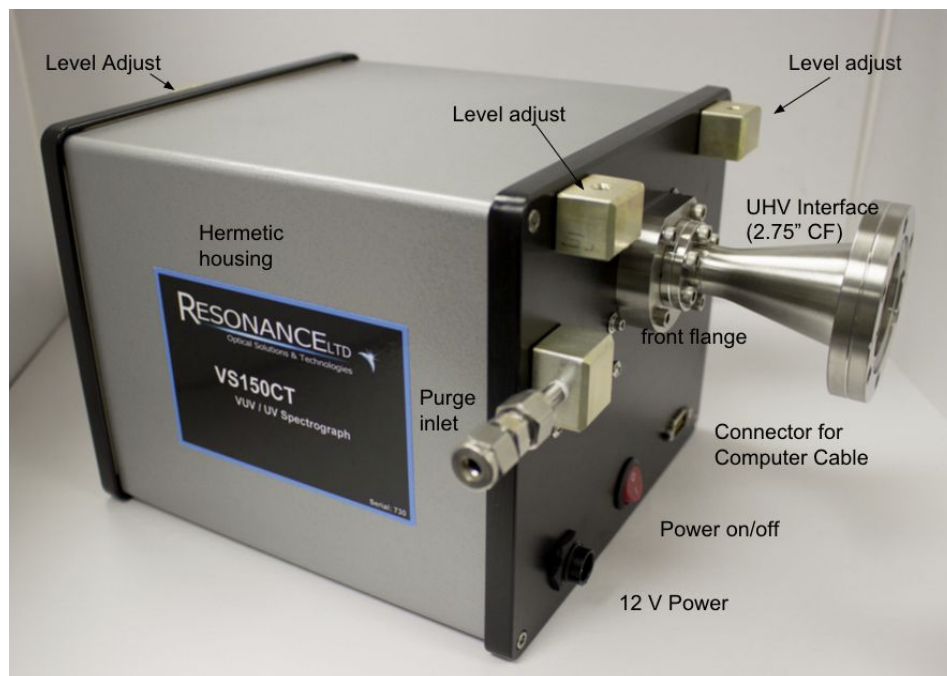
VS150CT VUV to NIR Mini Spectrograph

The VS150CT is a Compact Czerny Turner spectrograph with excellent speed, spectral range and spectral resolution with software control of slit size, input f#, order sorting filters, grating angle and dark exposures. For VUV operation the spectrograph has a UHV window and laminar flow purge system, which allows operation down to the window short wavelength cut-off (112 nm for MgF₂). The spectrograph employs interchangeable gratings and can interface to a UHV chamber or used on a benchtop in any orientation at the end of a 5-meter cable. Accessories include a built-in spectral calibration lamp, a multi-spectral flat-light source and low-cost accessories such as telescopes, vacuum adapters, flow controllers.





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| Focal Length (input and output) 152.4 MM |
| Available Gratings 1200 g/mm (110 to 950 NM), 2880 g/mm (110 to 340 NM) |
| Wavelength Resolution (25 micron slit) 0.25 NM 1200 g/mm 0.9 NM 2880 NM |
| Software selectable slit size 25, 50, 100, 200 and 400 microns |
| Software selectable dark shutter to facilitate dark subtraction |
| Software selectable order masks with short wave cutoffs at 160, 300 and 600 NM |
| Software selection of spectral range with multi-step cam |
| Software selection input f # from f/5.2 to f/10.4 for optimizing resolution and controlling exposure |
| Standard Detector CCD with 2048 pixels with radiation resistant-VUV/UV phosphor |
| Leveling screws allow alignment to beamline or other light source |
| Software includes complete Graphical User Interface for control of 4 servos and acquisition/storage/display of spectra. |
| Laptop cables vacuum interface software provided along with spectrograph so system can be operated in VUV right out of the box |
| UHV flange with MgF2 window |
| Laminar flow He purge for VUV operation |
| Volume/mass with UHV flange <0.3 cubic feet <7 liters |





Specifications

| Electrical /Optical | | | | |
|---------------------------------------|---------|-------------------|---------|-------|
| Specification | Minimum | Typical or Median | Maximum | Units |
| Focal Length | 151 | 152.4 | 153 | mm |
| Best Spectral Resolution 2880 grating | | 0.09 | | nm |
| Wavelength Range 1200 Grating | 110 | | 950 | nm |
| Wavelength Range 2880 Grating | 110 | | 340 | nm |
| Wavelength Precision | - | ± 0.2 | - | nm |
| CCD QE 110 to 400 nm | 10 | 18 | 20 | % |
| CCD QE for 400 to 930 nm | 15 | 34 | 42 | % |
| CCD QE for 930 to 1050 | 3 | 12 | 15 | % |

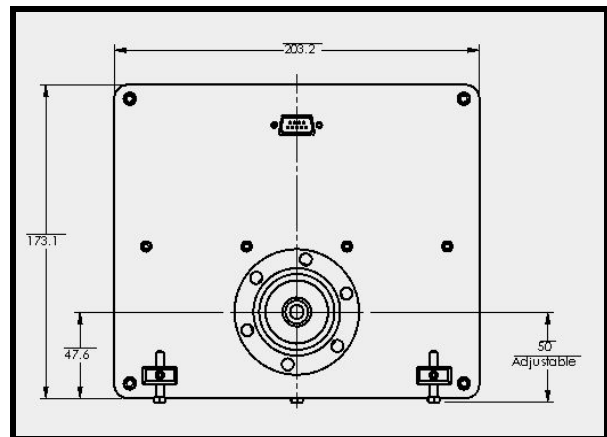
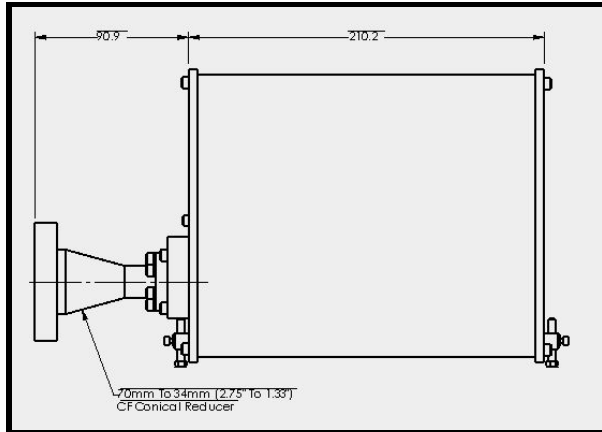
| Physical | | |
|--|---|-------------|
| Spectrograph H x W x D (see diagram below) | 166.7 (6.6) x 195.6 (7.7) x 215.9 (8.5) | mm (Inches) |
| Vacuum interface H x Dia. | 3.75 L x 2.75 dia | Inches |
| Allowance for purge connections | 2 | Inches |

| Thermal | | | | |
|---|-------|-------|------|------|
| Non-operational Temp. Range of the Spectrograph | -20 | 22 | 70 | ° C |
| Temp. Range of the vacuum flange plus window | -50 | 22 | 220 | ° C |
| Ultimate vacuum of vacuum adapter | 1e-14 | 1e-10 | 1e-9 | mbar |

| Electrical | Type | Max Power |
|-------------------------------|--------------------|-------------|
| System Power Source (USB HUB) | USB 2.0 | 5 V 500 mA |
| 12 V Servo power | 100 to 240 V AC/DC | 12 V 700 mA |



Mechanical Specifications of Spectrograph and Vacuum interface



The front 2.75-in flange can be attached to UHV chamber. Spectrograph is isolated with MgF2 window in vacuum adapter. Purge can be dry N2, Ar, or He.

The Spectrometer can be removed from a vacuum chamber without breaking vacuum. This allows bake out of the UHV chamber above the non-operational limit of the spectrometer.

| System Mass | |
|------------------|----------|
| Spectrograph | 2000 Gm. |
| Vacuum Interface | 550 Gm. |

