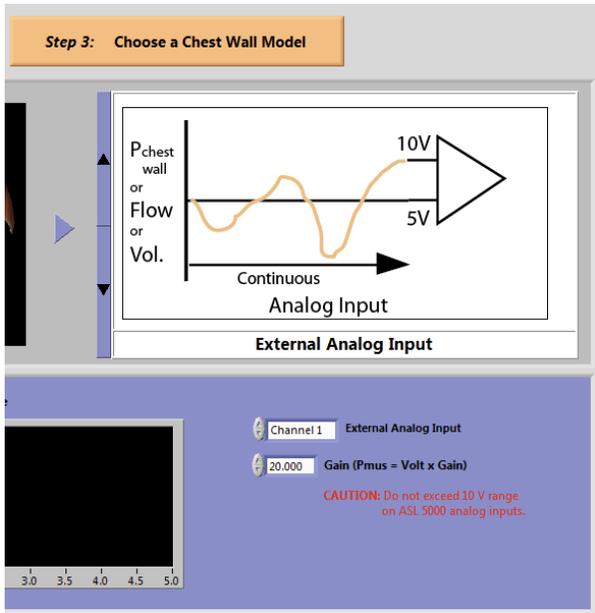


Using the External Analog Input as Pmus / Flow / Volume / Profiles

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| Introduction | <p>It is possible to use the analog inputs provided on the ASL 5000 for generating breath profiles (both in patient modeling and flow/volume pump mode) instead of digitally formatted muscle pressure / flow / volume profiles (driver profiles)</p> |
| Data rate specifications for analog input when used for driver profiles | <p>Internally, the ASL 5000 Analog/Digital converter uses different sample rates for different signals</p> <ul style="list-style-type: none"> 1024 Hz - primary control analog input (channel 1) 512 Hz - secondary analog input (channel 2) 256 Hz - oxygen sensor 128 Hz - gas temperature 64 Hz - cylinder wall temperature 32 Hz - barometric pressure <p>The choice of which of the two available analog channels is used for control input is made in the simulation editor "Chest Wall Model" page (see next page). For the purpose of controlling a model, the update of 1024 Hz is relevant.</p> <p>NOTE: The update rate of analog data to the host PC is different. A complete scan of the analog inputs (all channels) is sent once every sixteen position updates (512 Hz). That makes for an analog update on the host of 32 Hz.</p> |
| Electrical specifications | <p>0 to 10 V, differential input 2.44 mV, 16 bit A/D (13 bit transmitted to host) Overvoltage protection up to 30 V (inputs are not opto-isolated)</p> <p>When used for driver profiles, neutral point at 5.00 V (to accommodate positive and negative flows when driving flow profiles)</p> <p>Gain adjustable in "Chest Wall Model" of the Simulation Editor</p> |

| <p>Pinout on ASL</p> | <p>Analog input, 4-pin Hypertronics connector</p> <table border="1"> <thead> <tr> <th>Pin no.</th> <th>Cable color</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>red</td> <td>+ Analog1 in</td> </tr> <tr> <td>2</td> <td>black</td> <td>- Analog1 in</td> </tr> <tr> <td>3</td> <td>white</td> <td>+ Analog2 in</td> </tr> <tr> <td>4</td> <td>green</td> <td>- Analog2 in</td> </tr> </tbody> </table> | Pin no. | Cable color | Function | 1 | red | + Analog1 in | 2 | black | - Analog1 in | 3 | white | + Analog2 in | 4 | green | - Analog2 in |
|-----------------------------|--|--------------|-------------|----------|---|-----|--------------|---|-------|--------------|---|-------|--------------|---|-------|--------------|
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| 1 | red | + Analog1 in | | | | | | | | | | | | | | |
| 2 | black | - Analog1 in | | | | | | | | | | | | | | |
| 3 | white | + Analog2 in | | | | | | | | | | | | | | |
| 4 | green | - Analog2 in | | | | | | | | | | | | | | |
| <p>Usage</p> | <p>Analog Input mode is always invoked within the context of a regular patient model parameter file (vr3-file).</p> <p>In the Simulation Editor (Chest Wall Model page), select the Analog Input option:</p>  <p>Select the Channel that you plan to use for your control input (the other channel is then still available for auxiliary analog signals you might want to record).</p> <p>The Gain factor should be set carefully, since it is referring to different physical units, depending on which type of profile is being generated from the analog input (Pmus, Flow, Volume).</p> <p>NOTE: Since there is no breath cycle period parameter for this type of model, the "Number of breaths using this file"-parameter in a script (set in Step 1 in the Editor) becomes meaningless which suggests that this type of vr3_file should be used by itself in a script</p> | | | | | | | | | | | | | | | |