CLAIMS:

1. A respiratory device configured to deliver a respiratory therapy to a patient using an unsealed respiratory interface, the device comprising:

a controller, wherein the controller is configured to:

receive data of a parameter of a flow of gases of the respiratory device while the device is in use with an unsealed user interface, the parameter indicative of the patient's respiration,

determine a device minute ventilation or a parameter indicative of device minute ventilation, and

provide an indication of minute ventilation of a user.

2. The respiratory device according to Claim 1, wherein the controller is further configured to process the data of the parameter of the flow of gases to remove noise.

3. The respiratory device according to Claim 2, wherein the controller is configured to remove noise relating to the effect of a motor on the parameter of the flow of gases.

4. The respiratory device according to Claim 3, wherein the controller is configured to receive data regarding a motor speed, and the parameter of the flow of gases is discarded if the motor speed is below a pre-set threshold.

5. The respiratory device according to any one of Claims 1-3, wherein the controller is configured to discard the parameter of the flow of gases if the controller determines the parameter of the flow of gases is of insufficient quality.

6. The respiratory device according to Claim 5, wherein the parameter of the flow of gases is of insufficient quality because it includes large transient peaks.

7. The respiratory device according to any one of Claims 1-6, wherein determining a device minute ventilation comprises fitting a plurality of splines to the data of the parameter of the flow of gases, wherein the plurality of splines are fit using the least squares criterion and the device minute ventilation is determined by integrating along the plurality of splines.

8. The respiratory device according to any one of Claims 1-6, wherein determining a device minute ventilation comprises determining the integral of the absolute value of the first term of a line fitted to the data of the parameter of the flow of gases.

9. The respiratory device according to any one of Claims 1-6, wherein determining a device minute ventilation comprises determining the integral of the absolute value of a line fitted to the data of the parameter of the flow of gases, divided by a time range.

10. The respiratory device according to any one of Claims 1-6, wherein determining a device minute ventilation comprises an average of absolute values of a line fitted to the data of the parameter of the flow of gases across a range of time-points within a time range.

11. The respiratory device according to any one of Claims 1-10, wherein the controller is configured to compute a normalized device minute ventilation based on the device minute ventilation.

12. The respiratory device according to Claim 11, wherein the controller is configured to calculate a noise correction factor correlated to the normalized device minute ventilation.

13. The respiratory device according to Claims 12, wherein the controller is configured to calculate a corrected device minute ventilation by relating the normalized device minute ventilation and the noise correction factor with the device minute ventilation.

14. The respiratory device according to any one of Claims 1-13, wherein the device minute ventilation is converted to a nasal minute ventilation.

15. The respiratory device according to Claim 14, wherein the device minute ventilation is converted to a nasal minute ventilation using a scalar calibration constant.

16. The respiratory device according to any one of Claims 1-15, wherein the controller is further configured to monitor at least one of the nasal minute ventilation, nasal minute ventilation rate of change, and nasal minute ventilation trends.

17. The respiratory device according to any one of Claims 1-16, wherein the respiratory device further comprises a display, wherein the display is configured to display data relating to the nasal minute ventilation.

18. The respiratory device according to any one of Claims 1-16, wherein the respiratory device further comprises a display, wherein the display is configured to display data relating to the nasal minute ventilation rate of change.

19. The respiratory device according to any one of Claims 1-16, wherein the respiratory device further comprises a display, wherein the display is configured to display data relating to the nasal minute ventilation trends.

20. The respiratory device according to any one of Claims 1-19, wherein the respiratory device is configured to trigger an alarm or notification when the nasal minute ventilation exceeds or falls below a preset threshold.

21. The respiratory device according to any one of Claims 1-19, wherein the respiratory device is configured to trigger an alarm or notification when the nasal minute ventilation rate exceeds or falls below a preset threshold.

22. The respiratory device according to any one of Claims 1-19, wherein the respiratory device is configured to trigger an alarm or notification when the nasal minute ventilation trends exceeds or falls below a preset threshold.

23. The respiratory device according to any one of Claims 1-22, wherein the respiratory device comprises a patient interface, wherein the patient interface comprises a nasal cannula.

24. The respiratory device according to any one of Claims 1-23, wherein the respiratory device is configured to deliver a nasal high flow therapy.

25. The respiratory device according to any one of Claims 1-24 further comprising a humidifier configured to humidify the gases flow to the patient.

~~26. A respiratory device configured to deliver a respiratory therapy to a patient using an unsealed respiratory interface, the device configured to provide information related to the patient's breathing, the device comprising:~~

~~a controller, wherein the controller is configured to:~~

~~receive data of a parameter of a flow of gases of the respiratory device, the parameter indicative of the patient's respiration, and~~

~~determine a patient peak inspiratory flow.~~

~~27. The respiratory device according to Claim 26, wherein the controller is configured to determine a device minute ventilation.~~

~~28. The respiratory device according to Claim 27, wherein the patient peak inspiratory flow is based on the device minute ventilation.~~

~~29. The respiratory device according to any one of Claims 26-28, wherein the controller is further configured to process the data of the parameter of the flow of gases to remove noise.~~

~~30. The respiratory device according to Claim 29, wherein the controller is configured to remove noise relating to the effect of a motor on the parameter of the flow of gases.~~

~~31. The respiratory device according to Claim 30, wherein the controller is configured to receive data regarding a motor speed, and the parameter of the flow of gases is discarded if the motor speed is below a pre-set threshold.~~

~~32. The respiratory device according to any one of Claims 26-31, wherein the controller is configured to discard the parameter of the flow of gases if the controller determines the parameter of the flow of gases is of insufficient quality.~~

~~33. The respiratory device according to Claim 32, wherein the parameter of the flow of gases is of insufficient quality because it includes large transient peaks.~~

~~34. The respiratory device according to any one of Claims 27-33, wherein determining the device minute ventilation comprises fitting a plurality of splines to the data of the parameter of the flow of gases, wherein the plurality of splines are fit using the least squares criterion and the device minute ventilation is determined by integrating along the plurality of splines.~~

~~35. The respiratory device according to any one of Claims 27-34, wherein determining the device minute ventilation comprises determining the integral of the absolute value of the first term of a line fitted to the data of the parameter of the flow of gases.~~

~~36. The respiratory device according to any one of Claims 27-35, wherein determining the device minute ventilation comprises the integral of the absolute value of a line fitted to the data of the parameter of the flow of gases, divided by a time range.~~

~~37. The respiratory device according to any one of Claims 27-36, wherein determining the device minute ventilation comprises an average of absolute values of a line fitted to the data of the parameter of the flow of gases across a range of time-points within a time range.~~

~~38. The respiratory device according to any one of Claims 26-37, wherein the controller is configured to compute a normalized device minute ventilation based on the device minute ventilation.~~

~~39. The respiratory device according to Claim 38, wherein the controller is configured to calculate a noise correction factor correlated to the normalized device minute ventilation.~~

~~40. The respiratory device according to Claim 39, wherein the controller is configured to calculate a corrected device minute ventilation by relating the normalized device minute ventilation and the noise correction factor with the device minute ventilation.~~

~~41. The respiratory device according to any one of Claims 27-40, wherein the controller is further configured to convert the device minute ventilation to a nasal minute ventilation~~

~~42. The respiratory device according to Claim 41, wherein the device minute ventilation is converted to a nasal minute ventilation using a scalar calibration constant.~~

~~43. The respiratory device according to Claim 42, wherein the scalar calibration constant is determined by inputting patient interface parameters related to the nasal cannula or current flow rate.~~

~~44. The respiratory device according to Claim 43, wherein the scalar calibration constant is determined by inputting at least one of the cannula type, patient size, and naris diameter.~~

~~45. The respiratory device according to Claim 44, wherein the scalar calibration constant is calculated by temporarily placing a sealed face mask over a patient's face while the patient is wearing a nasal cannula to measure at least one flow parameter of the respiratory device.~~

~~46. The respiratory device according to any one of Claims 41-45, wherein the patient peak inspiratory flow is determined by converting the nasal minute ventilation by applying a calibration constant.~~

~~47. The respiratory device according to Claim 46, wherein the calibration constant is 3.~~

~~48. The respiratory device according to Claim 46, wherein the calibration constant is 4.~~

~~49. The respiratory device according to Claim 46, wherein the calibration constant is 5.~~

~~50. The respiratory device according to Claim 46, wherein the calibration constant is 6.~~

~~51. The respiratory device according to Claim 46, wherein the calibration constant is between 3 and 6.~~

~~52. The respiratory device according to any one of Claims 26-51 wherein the controller is further configured to monitor at least the peak inspiratory flow or the rate of change of the peak inspiratory flow.~~

~~53. The respiratory according to any one of Claims 26-52, wherein the respiratory device further comprises a display, wherein the display is configured to display data relating to the peak inspiratory flow.~~

~~54. The respiratory device according to any one of Claims 26-53, wherein the respiratory device further comprises a display, wherein the display is configured to display data relating to the rate of change of the peak inspiratory flow.~~

~~55. The respiratory device according to any one of Claims 26-54, wherein the respiratory device is configured to trigger an alarm or notification when the peak inspiratory flow exceeds or falls below a preset threshold.~~

~~56. The respiratory device according to any one of Claims 26-55, wherein the respiratory device is configured to trigger an alarm or notification when the rate of change of the peak inspiratory flow exceeds or falls below a preset threshold.~~

~~57. The respiratory device according to any one of Claims 26-56, wherein the respiratory device comprises a patient interface, wherein the patient interface comprises a nasal cannula.~~

~~58. The respiratory device according to any one of Claims 26-57, wherein the respiratory device is configured to deliver a nasal high flow therapy.~~

~~59. The respiratory device according to any one of Claims 26-58 further comprising a humidifier configured to humidify the gases flow to the patient.~~

~~60. The respiratory device according to any one of Claims 1-25, wherein the controller is configured to determine a tidal volume and trigger an alarm or notification when the tidal volume falls below a preset threshold.~~

~~61. The respiratory device according to any one of Claims 26-59 wherein the controller is configured to determine a tidal volume and trigger an alarm or notification when the tidal volume falls below a preset threshold.~~

~~62.~~26. The respiratory device according to any one of Claims 1-25, wherein the controller is configured to normalize a corrected device minute ventilation using a device flow rate.

~~63.~~27. The respiratory device according to any one of Claims 26~~62~~, wherein the respiratory device further comprises a display configured to display data relating to at least one of the corrected device minute ventilation, corrected device minute ventilation rate of change, and corrected device minute ventilation trends.

~~64.~~28. The respiratory device according to any one of Claims 26~~62~~-27~~63~~, wherein the respiratory device is configured to trigger an alarm or notification when at least one of the corrected device minute ventilation exceeds or falls below a preset threshold, the corrected device minute ventilation rate of change exceeds or falls below a preset threshold, and the corrected device minute ventilation trends exceeds or falls below a preset threshold.

~~65. The respiratory device according to any one of Claims 26-59 wherein the controller is configured to normalize a corrected device minute ventilation using a device flow rate.~~

~~66. The respiratory device according to Claim 65, wherein the respiratory device further comprises a display configured to display data relating to at least one of the corrected device minute ventilation, corrected device minute ventilation rate of change, and corrected device minute ventilation trends.~~

~~67. The respiratory device according to any one of Claims 65-66, wherein the respiratory device is configured to trigger an alarm or notification when at least one of the corrected device minute ventilation exceeds or falls below a preset threshold, the corrected device minute ventilation rate of change exceeds or falls below a preset threshold, and the corrected device minute ventilation trends exceeds or falls below a preset threshold.~~