

Complete list of SimBioSys™ Input parameters

Input Parameter Name	Description
[Cl-]i	intracellular chloride concentration
[Cl-]o	extracellular chloride concentration
[K+]i	intracellular potassium concentration
[K+]o	extracellular potassium concentration
[Na+]i	intracellular sodium concentration
[Na+]o	extracellular sodium concentration
Actin Length	Thin-Filament Length
Age	
Agonist – log [EC50]	Receptor Agonist EC50
Agonist -log [Concentration]	Receptor Agonist Concentration
Airway Contractility	
Airway Diameter	Effective Diameter of Trachea and Larynx
Airway Length	Length of Upper Airway (trachea, larynx)
Altitude	
Amount of Solute	Solute Mass
Antagonist - log [Concentration]	Receptor Antagonist Concentration
Antagonist – log[EC50]	Receptor Antagonist EC50
Antagonist Type	
Aortic Resistance	
Aortic leak	Aortic Valve Leak Conductance
Aortic Valve Jet	Aortic Valve Jet Resistance
Autonomic Decay Time	
Basal HR	Basal Heart Rate (before autonomic input)
Basal Perfusion Log SD	Log Standard Deviation of Pulmonary Blood Flow (Basal Value)
Body Weight	
BP Set Point	Set Point for Mean Arterial Pressure

Capacitance	Membrane Capacitance
Capillary Permeability	
Chest Elastance	Global Chest Wall Elastance
Chest Min Volume	Global Chest Wall Minimum Volume
Chest Pressure Offset	Global Chest Wall Offset
Chest Stiffness	Global Chest Wall Stiffness
Creatinine Excretion	Total Creatinine Production Rate
Critical ER	Critical Extraction Ration (50
Crossbridge Number	Number of Crossbridges per half-sarcomere
CvCO2	Mixed Venous Carbon Dioxide Content
Dead Space, Airway	Anatomic Dead Space
Diffusion Constant	
Diffusion Time	
Dosing Inerval Divisor	
Dosing Interval Divisor	
Drug Time Multiplier	
Dry Weight	
Endotracheal Tube Diameter	
ETT Leak	Endotracheal Tube Leak Conductance
Exponent	Receptor DRC Steepness
FIO2	Oxygen Fraction in Inspired air
GF Conductance	Glomerular Filtration Conductance
Height	
Helium-Nitrogen Balance	Inspired Helium Fraction
HP Conduction Probability	Fration of His Purkinje Impulses Conducted
Infusion Rate Multiplier	
Inspiratory Flow Rate	
Inspiratory Pressure	
Inspiratory Pressure Limit	

L Pleural Bleed Cond.	
L Pneumothorax Vol.	
LA Functional Fx	LA Functional Fraction
Lactate Production	Lactate Production rate
LLL Basal Airway Conductance	
Lower Airway Conductance	Airway Conductance of Lower Airways
LUL Basal Airway Conductance	
Lung Closing Volume	Global Basal Volume
Lung Collagen Amt	Collagen in lung
Lung Elastin Amount	Amount of Elastin in Lung
Lung Membrane Diffusing Capacity	
Lung Recruitment Volume	Lung Critical Collapse Volume
Lung Surfactant	Surfactant Amount
LV Curvature	
LV Functional Fx	Left Ventricle Functional fraction
Max Urine Osms	Maximal Osmolality achievable in Urine
Membrane Diffusion Constant	
Membrane Thickness	
Membrane-Water Partition Coefficient	
Mitral leak	Mitral Valve Leak Conductance
Mitral Resistance	
Myosin Length	Thick Filament length
Nerve Temperature	Experimental Temperature for Action Potential Studies
O2 Demand, Basal	
O2 Demand, Muscle	
PA Compliance	Pulmonary Artery Compliance
PA Impedance	Characteristic Impedance of the Pulmonary Artery
PA VO	Pulmonary Arterial Unstressed Volume
Pacemaker	Electronic Pacemaker State

Pacemaker Current	Current injected into heart for each pacemaker pulse
Pacemaker Rate	Rate of an Artificial Ventricular Pacemaker
PAO2	
Parasymp HR Response	Parasymp HR Response Parameter
PCO2	Tonometer PCO2
PEEP	Positive End-Expiratory Pressure
Pericard. Bleed Cond	Conductance of Hemorrhage into Pericardium
Pericardial Capapcity	
Pericardial Infusion	Pericardial Infusion State
Pericardial Stiffness	Pericardial Stiffness (inverse ml)
Periton. Bleed Cond.	Conductance of Hemorrhage into Peritoneum
Permeability Time	
Plasma [Fibrinogen]	
Plasma Viscosity	
PO2	Tonometer PO2
Pulmonary Vein Compliance	Pulmonary Central Venous Compliance
Pulmonary Venule Basal Compliance	Basal Pulmonary Peripheral Venous Compliance (ml/Torr)
Pulmonic Curvature	
Pulmonic Resistance	
Pumonary Vein Basal Compliance	Basal Pulmonary Central Venous Compliance
Pumonary Venule Compliance	Pulmonary Peripheral Venous Compliance
Pumonic Leak	Pulmonic Valve Leak Conductance
R Pleural Bleed Cond	Right Pleural Hemorrhage Conductance
RA Curvature	Right Atrial Curvature Control
RA Functional Fx	RA Functional Fraction
Renal Afferent Fx	Fraction of Renal Arterial Resistance in Afferent Arterioles
Renal R	Renal Arterial Resistance, Actual
RLL Basal Airway Conductance	
RML Basal Airway Conductance	

RQ	Respiratory Quotient (dimensionless)
RUL Basal Airway Conductance	
RV Curvature	
RV Functional Fx	Right Ventricular Functional Fraction
Sarcomere Start length	Initial (pre-excitation) starting length of sarcomere
Sex	
Shunt, Anatomic	Anatomic Shunt (percent of total cardiac output)
Solute Concentration Side 1	
Solute Concentration Side 2	
Stimulation Current	
Stimulus Duration	
Symp BP Gain	Gain for Sympathetic BP response
Sympath HR Response	Sympath HR Response Parameter
Target Ventilation	
Temperature	Body Temperature
Tidal Volume, Ventilator	Tidal Volume of a Ventilator-Driven breath
Tricuspid Curvature	Tricuspid Valve-Pressure Curvature
Tricuspid Leak	Tricuspid Valve Leak Conductance
Tricuspid Resistance	
Urea Production	Systemic Urea Production Rate
Vant Hoff Q10	
Ventilator Rate	
VR Obstructed	Venous Return is Obstructed
Water Surface Tension	Surface Tension of Water

Complete list of SimBioSys™ Output parameters

Output Parameter Name	Description
[H]a	Arterial Hydrogen Ion Concentration
[H]v	Venous Hydrogen Ion Concentration
A-a PO2 Diff.	Alveolar -Arterial PO2 Difference
Afferent Limb	
Airway	
Alpha 1 Occupancy	Alpha 1 Receptor Occupancy
Alpha 1 Transmission	Alpha 1 Transmission - fraction of normal (1.0)
Alpha 2 Occupancy	Alpha 2 Receptor Occupancy
Alpha 2 Transmission	Alpha 2 Transmission-- fraction of normal (1.0)
Alveolar Fluid	
Alveolar Fluid Volume	
Alveolar Gases	
Anesthetic Activity	
Aortic Pressure - Diastolic	
Aortic Pressure – Mean	
Aortic Pressure – Systolic	
Aortic Pressure -Diastolic	
Arterial Blood	
Arterial Contractility	Degree of Contraction of Arterioles
Arterial pH	Arterial Blood pH
Arterial Pressure - Systolic	
Arterial Pressure - Diastolic	
Arterial Pressure – Diastolic	
Arterial Pressure – Mean	
Arterial Pressure – Systolic	
Arterial Pressure- Mean	

Ascites Drained	Ascites Drainage Volume
Ascites Volume	Peritoneum Effusion Volume
AutoPEEP	
AV Nodal Conduction	
AV Nodal Conduction	
AV O2 Content Diff	Arteriovenous Oxygen Content Difference
Barometric Pressure	Atmospheric Pressure
Base Excess	Arterial Base Excess
Bdz Occupancy	Benzodiazepine Receptor Occupancy
Bdz Transmission	Benzodiazepine Receptor Transmission-- fraction of normal (1.0)
Beta 1 Occupancy	Beta 1 Receptor Occupancy
Beta 1 Transmission	Beta 1 Receptor Transmission-- fraction of normal (1.0)
Beta 2 Occupancy	Beta 2 Receptor Activity
Beta 2 Transmission	Beta 2 Receptor Transmission-- fraction of normal (1.0)
Bladder Total volume	Bladder Effusion Volume
Bladder Volume	Volume in Bladder
Blood Rheology	
Blood Viscosity	Blood Viscosity (cP)
Blood Volume	Total Cardiovascular Blood Volume
BUN	Blood Urea Nitrogen Concentration
CaCO2	Arterial Carbon Dioxide Content
CaN2	Arterial Nitrogen Content
CaO2	Arterial Oxygen Content
Cardiac Output	
Cardiac Rhythm	
Cc'O2	Ideal alveolar O2 content
Chloride Reuptake	Renal Tubular Chloride Uptake Transmission
Creatinine	Serum Creatinine Concentration
CvN2	Mixed Venous Nitrogen Content ml N2/dl Blood

CvO2	Mixed Venous Oxygen Content
CVP - min	Systematic Central Venous pressure- min
CVP -max	Systematic Central Venous pressure- max
CVP -mean	Systematic Central Venous pressure- mean
Dead Space, Alveolar	alveolar dead space (percent of ventilated alveoli)
Dead Space, Physiologic	Physiologic (Bohr) Dead Space (percent of ventilation)
Dead Space, True	True Pulmonary Dead Space (percent of ventilation)
Digoxin Level	Plasma Digoxin Concentration
DLCO	
DLCO COrr	
DLCO Corr Pct Predicted	
DLCO Corr Predicted	
DLCO Pct Predicted	
DLCO Predicted	
Drug Effect	Receptor effect
E Cl	Chloride Reversal Potential
E K	Potassium Reversal Potential
E Na	Sodium Reversal Potential
End Ex Volume	
End Exp Pleur P	
End Exp Volume	End Expiratory Lung Volume
ER O2	Oxygen Extraction Ratio (%: VO_2 / QO_2)
Exp Pause Pressure	Expiratory Pause Pressure
Extracardiac Pressure	
FEEF 25-75	
FEF 25-75	Forced Expiratory Flow between %25 and %75 of Vital Capacity
FEF 25-75 Pct Predicted	
FEF 25-75 Predicted	
FENa	Fractional Excretion of Sodium

FEV1	Forced Expiratory Flow in 1 second
FEV1 Pct Predicted	
FEV1 Predicted	Forced Expiratory Flow in 1 second, Predicted normal value
FEV1/FVC	Percent of Forced Vital Capacity in first second
FEV1/FVC Pct Predicted	
FEV1/FVC Predicted	
Fluid Input	
Fluid Output	
Flux Through Membrane	Membrane Flux
FRC	Functional Residual Capacity
FRC Pct Predicted	
FRC Predicted	Functional Residual Capacity, predicted normal value
FVC	
FVC Pct Predicted	
FVC Predicted	Forced Vital Capacity, predicted normal value
G Cl (resting)	Chloride Conductance, Resting
G K (resting	Potassium Conductance, Resting
G Na (Resting)	Sodium Conductance, Resting
Ganglionic Transmission	Ganglionic Transmission - fraction of normal (1.0)
GFR	Glomerular Filtration Rate
Glomerular Function	
Glomular Pressure	
H2 Transmission	Histamine Type 2 Receptor Transmission
H2O Vapor Pressure	Vapor Pressure of Water at Body Temperature
Heart Rate (observed)	
Hematocrit	
Hemoglobin	Hemoglobin concentration for oxygen content vs PO2 Curve
Hemoglobin	Whole Blood Hemoglobin Concentration
Hemoglobin P50	O2 Pressure for Half-Maximal Hemoglobin Saturation

I/E Ratio	Rate of Inspiratory Time to Expiratory Time
ICF [Ca]	Intracellular Fluid Calcium Concentration
ICF [Cl]	Intracellular Fluid Chloride Concentration
ICF [K]	Intracellular Fluid Potassium Concentration
ICF [Mg]	Intracellular Fluid Magnesium Concentration
ICF [Na]	Intracellular Fluid Sodium Concentration
ICF [Protein]	Intracellular Fluid Protein Concentration
ICF Phosphate	
ICF Volume	Intracellular Fluid Volume
Input/Output	Fluids I/O
ISF [Ca]	Interstitial Fluid Calcium Concentration
ISF [Cl]	Interstitial Fluid Chloride Concentration
ISF [K]	Interstitial Fluid Potassium Concentration
ISF [Mg]	Interstitial Fluid Magnesium Concentration
ISF [Na]	Interstitial Fluid Sodium Concentration
ISF [PO4]	Interstitial Fluid Phosphate Concentration
ISF [Protein]	Interstitial Fluid Protein Concentration
ISF Glucose	Interstitial Fluid Glucose Concentration
ISF Lactate	Interstitial Fluid Lactate Concentration
ISF Volume	Interstitial Fluid Volume
Jugular Pressure - mean	Jugular Vein Pressure - mean value in cycle
Jugular Pressure – min	Jugular Vein Pressure - min value in cycle
Jugular Pressure- max	Jugular Vein Pressure - max value in cycle
L pLeural Drainage	
LA Contractility	
LA Diastolic	Left Arterial Diastolic Pressure
LA EDV	left Arterial End-Diastolic Volume
LA pressure - Mean	mean left atrial pressure
LA Systolic	Left Atrial systolic pressure

Left Pleural Effusion	LHT Effusion Volume
Lidocaine level	
Lung ISF Volume	Lung Interstitial Fluid Volume
LV Contractility	
LV EDP	Left Ventricular End-Diastolic Pressure
LV EDV	Left Ventricular End-Diastolic Volume
LV Ejection Fraction	
LV ESP	Left Ventricular End-Systolic Pressure
LV ESV	Left Ventricular End-Systolic Volume
LV Pressure – Diastolic	
LV Pressure - Mean	
LV Pressure - Systolic	
LV Pressure -Diastolic	
LV Pressure- Systolic	
Maximum Force	Maximum developed force of last contraction
Min Pleural Pressure	
Minute Ventilation	
Muscarinic Occupancy	Muscarinic Receptor Occupancy
Muscarinic Transmission	Muscarinic Receptor Transmission - Fraction of normal (1.0)
NIF	Negative Inspiratory Force
NMJ Transmission	NMJ Transmission -- fraction of normal (1.0)
O2 Demand, Total	
Oncotic Pressure	Plasma Oncotic P
Opiate Activity	Opiate Receptor Activity
Opiate Transmission	Opiate Receptor Activity - Fraction of Normal (1.0)
PA Contractility	Pulmonary Artery Vascular Contractility
PA Pressure – Diastolic	
PA Pressure – Mean	
PA Pressure - Systolic	

PA Resistance	
PA Wedge Pressure	
PAO2	
PaCO2	Arterial Carbon Dioxide Partial Pressure
PaO2	Ideal alveolar PO2
Parasympathetic Tone	Parasympathetic Tone (0..1)
Peak Pao	Peak Airway Pressure
PEF	Positive Expiratory Force
PEFR	
PEFR Pct Predicted	Peak Expiratory Flow, predicted normal value
PEFR Predicted	Peak Expiratory Flow, predicted normal value
Perfusion Log SD	Log Standard Deviation of Pulmonary Blood Flow
Pericardial Effusion	Pericardial Effusion Volume
Pericardial Pressure – Mean	Mean Pericardial pressure
Peritoneal Fluid Hct	Hematocrit in Peritoneal Effusion
PIO2	Inspired PO2
Plasma Lactate	Serum Lactate Concentration
Plasma Lactate	
Plasma Protein	
Plasma SID	Plasma Strong Ion Difference
Plasma Volume	
Pleural Pressure- Mean	Mean Intra-Pleural Pressure
Pms	Mean Systematic Pressure
Ppl at FRC	Pleural Pressure at Functional Residual Capacity
PR Interval	Atrioventricular Delay (between P wave and QRS complex)
Protein Anions	
Pulm Vein Peri Pressure	
Pulse Pressure	
PvCO2	Mixed venous carbon Dioxide Partial Pressure

PvO2	Mixed venous carbon Oxygen Partial Pressure
PVR	Pulmonary Vascular Resistance
QO2 (normalized)	Oxygen Delivery
QRS Duration	Ventricular Depolarization Time (length of QRS complex)
QT Interval	Repolarization Time (between QRS complex and T wave)
R Pleural Hematocrit	Hematocrit in Right Pleural Fluid
R Pneumothorax Vol.	Right Hemithorax Pneumothorax Volume
RA Contractility	Right Atrial Contractility
RA EDV	Right Atrial End-Diastolic Volume
RA Pressure – Diastolic	
RA Pressure – Mean	
RA Pressure - Systolic	
Raw	Airways Resistance
RBC Volume	
RBF	Renal Blood Flow Rate
Resp Rate Total	Observed Total Breaths per Minute
Respiratory Phase (Spontaneous)	Spontaneous Phase (Inspiration, Expiration, Waiting)
Respiratory Rate, Spont.	Measured Spontaneous Respiratory Rate
Respiratory Rate, Vent.	Observed Ventilator Breaths per Minute
Right Pleural Effusion	RHT Effusion Volume
RPF	Renal Plasma Flow Rate
RS Compliance	Respiratory System Compliance @ FRC
RS Compliance @ PEEP	Respiratory System Compliance @ End-Expiration
RV	Residual Lung Volume
RV Contractility	Right Ventricular Contractility
RV EDP	Right Ventricular End-Diastolic Pressure
RV EDV	Right Ventricular End-Diastolic Volume
RV Ejection Fraction	
RV ESP	Right Ventricular End-Systolic Pressure (torr)

RV ESV	Right Ventricular End-Systolic Volume (ml)
RV Pct Predicted	
RV Predicted	Residual Volume, Predicted Normal Value
RV Pressure - Mean	
RV Pressure -Diastolic	
RV Pressure –Systolic	
RVR	Resistance to Venous Return
SaO2	Arterial Oxygen Saturation
Serum [Ca]	
Serum [Cl]	
Serum [Glucose]	
Serum [K]	
Serum [Mg]	
Serum [Na]	
Serum [PO4]	
Serum Bicarbonate	
Sgaw	Specific airway conductance
Shunt, Alveolar	Alveolar shunt (percent of alveolar perfusion)
Shunt, Physiologic	Venous Admixture
Shunt, True	True Shunt (percent of total cardiac output)
SID	Strong Ion Difference
Sinus Rate	Rate for Normal Sinus Rhythm
Sodium Blockade	Sodium Channel Blockade Level
Steroid Activity	Steroid Receptor Activity
Stroke Volume	
Surface Area	Body Surface Area (Square Meters)
SVC	Vidal Capacity
SvO2	Mixed Venous Oxygen Saturation
SVR	Systemic Vascular Resistance

Sympathetic Tone	
Systemic Venular Pressure	
Target Rate	
Theophylline Level	Plasma Theophylline Concentration
Tidal Volume, Expiratory	
Tidal Volume, Inspiratory	
Tidal Volume, Target	Target Depth
TLC	Total Lung Capacity
TLC Pct Predicted	
TLC Predicted	Total Lung Capacity, predicted normal value
Total Body Water	
Tubular Function	
Urine [Cl]	
Urine [K]	
Urine [Na]	
Urine Creatinine	
Urine Glucose	
Urine Hematocrit	
Urine Output	Renal Urine Production Rate
Urine Protein	
Urine Specific Gravity	
VCO2 (normalized)	Carbon Dioxide production
VCO2 (total)	Carbon Dioxide production (total)
Venous pH	Mixed Venous Blood pH (log molar)
Ventilator Mode	
Ventricular Escape Rate	
Vm -- Resting	Membrane Potential
VO2 (normalized)	Oxygen Consumption
VO2 (total)	Oxygen Uptake (total)

