MotoRater

Data Sheet	
Purpose	Kinematic Analysis of: • Ground walking/running • Ladder skilled walking • Wading • Swimming • Beam walk
Animal Species	Rat, mouse, guinea pig, hamster
Dimensions	
Length x Width x Height	220 X 70 x 145 cm / 86.6 x 27.5 x 57.1 in. (303030-RM)
Weight	Ca. 150 kg / 430 lb (303030-RM)
Locomotor Distance	170 cm / 67 in.(303030-RM)
Installation Conditions	
Environmental Conditions	• Temperature 22±3 °C • Max. Humidity 55±10 % non-condensing • Heat emission during operation 0.74 KW • Operating noise 40 dBA • Solid, level support • Protect from direct sunlight and heat sources • Place in dust-protected, closed room • Water supply and sink or drainage system should be in the lab to set up swimming experiments. • Pump is supplied by TSE.
Electrical Connection	100/240V, 50/60 Hz
PC Requirements	PC provided
Interfaces	USB 2.0 USB 3.0 - Ethernet LAN connection
Optics Camera Link	
Camera System	Color high speed
Camera Position	Stationary camera, mounted at the bottom, constant focus on runway
Recording System	Manual
Max. Duration of Recording	250 sec

Frames/sec	Up to 175
Frame Resolution (Pixel)	Manually adjustable through camera settings
Image Position	Ventral and lateral (right & left) side of testing animal
Tracking Systems	Any point of the body can be outlined as region of interest, including tail, hip, knee, iliac crest, toes, or footprints
Behavioral Reinforcement	Home cage and/or water but natural behavioral pattern
Parameters & Data Details	
Measurement Parameters	

Parameters of Locomotor Activity

Parameter	Measure	Horizontal Ladder	Walking	Wading	Swimming
General locomotor function					
Velocity of locomotion	m s^{-1}	+	+	+	+
Trunk instability	s, cm	+	+	+	+
Body height, body angle	cm, degrees	+	++	++	+
Duration of tail or abdominal dragging	s	+	+	+	-
Base of support (distance between paws)	cm	+	++	+	+
Forelimb activity, swimming	no.FL strokes per run	-	-	-	++
Tail position	cm, s^{-1}, cm s^{-1}	+	+	+	++
Basic & skilled limb movement					
Correct stepping, paw placement	% plantar or functional steps	++	+	+	-
Step or swim cycle duration	s	+	+	+	+
Linear displacement	cm	+	++	++	+
Angular displacement	degrees	+	+	++	+
Velocity or acceleration of displacement	cm s^{-1}, radian s^{-1}, cm s^{-2}, radian s^{-2}	+	+	+	++
Toe clearance (paw dragging)	% steps with paw dragging	+	++	++	-
Paw position and rotation	cm degrees	+	++	+	+
FL-HL coordination					
Placement of fore- and hindpaws	% identical rungs targeted	++	-	-	-
Ratio of FL and HL cycle duration	s s^{-1}	+	++	+	-
Phase dispersion, footfall diagram	% deviation	+	+	+	-
Left-right coordination					
Ratio of left and right limb cycle duration	s s^{-1}	+	+	+	+
Phase dispersion, footfall or phase diagr.	% deviation	+	++	+	++
Timing of muscle activity (EMG rec.)	s	+	+	+	++
Infralimb coordination					
Timing of joint excursions	s	+	+	+	+
Limb motion patterns	cm, degrees	+	+	+	++
Timing of muscle activity (EMG rec.)	s	+	+	+	++
Tail-HL coordination					
Timing of hindlimb exc. in relation to tail	s	+	+	+	++
Intratail coordination					
Timing of motion of different tail segments	s	-	-	-	+

(-)paremeter not applicable or measureable; (+) param. measurable; (++) recommended outcome parameter. HL, hindlimb; FL, forelimb; EMG, Electromyogram. Specifications subject to change without notice.

Data handling	- Selection - Export - Smoothing

**Specifications subject to change without notice. Please enquire for details*