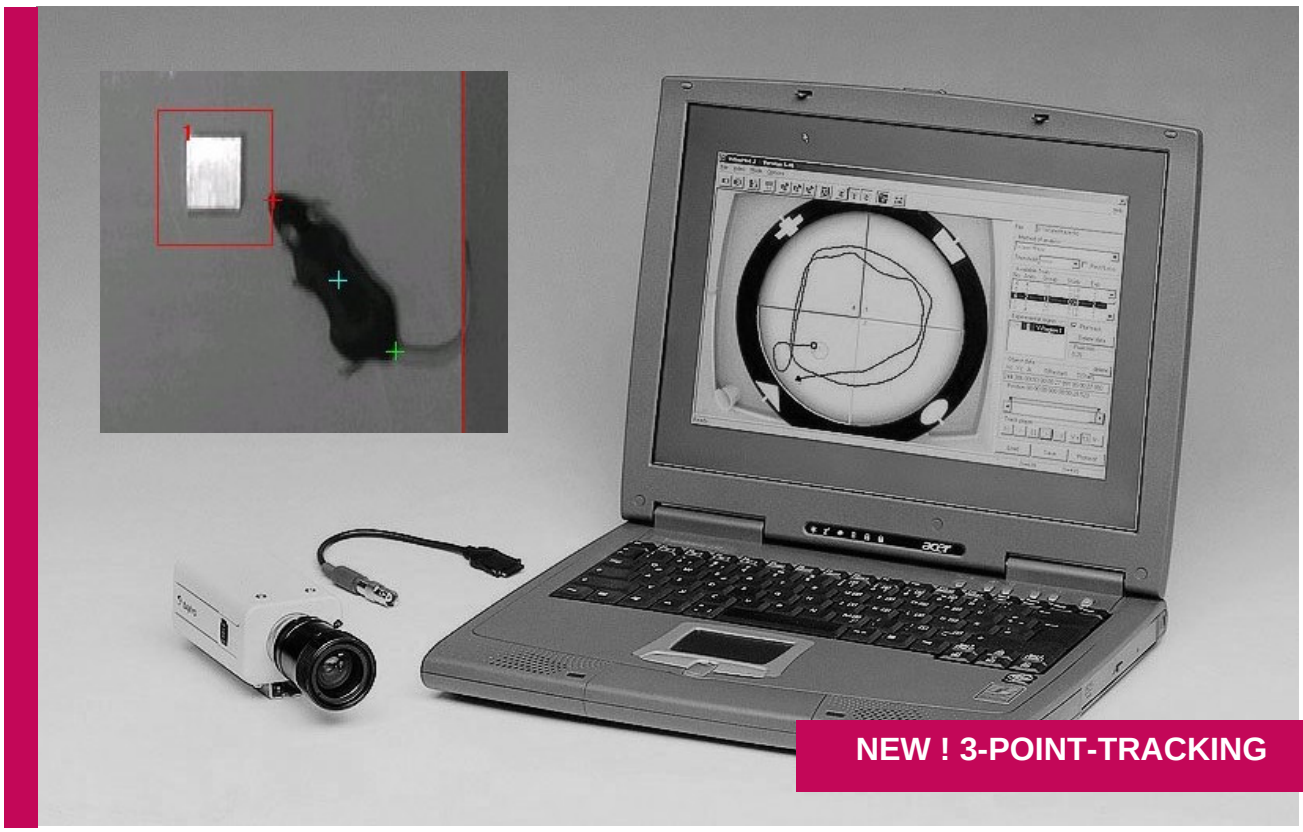
Product Overview

Sophisticated Life Science Research Instrumentation



TSE VideoMot2

Video Analysis of Animal Behavior

www.TSE-Systems.com

-specifications subject to change without notice-

TSE VideoMot2

VideoMot2 is a versatile video tracking system for automatically recording and analyzing animal activity and behavior.

The basic system consists of

- the **TSE VideoMot2 software** *for Windows,*
- the **TSE framegrabber interface** and
- the **TSE VideoMot2 computer platform.**

The system operates on an IBM-compatible computer or laptop under **Windows98/2000/XP**. A sample rate of up to **25/33 Hz** can be achieved.

The VideoMot2 framegrabber interface is available

- as a PCI slot interface or
- as a PCMCIA interface for notebook operation.

- In addition a CCD camera is required. This camera is equipped with a zoom lens of suitable focal length. Up to **6 cameras** can be connected to one computer. This allows to pre-configure different setups individually – you can then switch to the setup where the next experiment is to be started with a mouse-click.

- Individual video sources can even be combined with **multiplexer** devices if the arenas are to be observed with their own cameras but are to be evaluated simultaneously (high-throughput measurement).

- Data acquisition can be performed online during the „live“ experiment using the camera signal as video source.

- Alternatively the experiments can first be recorded on tape or DVD if an optional video recorder, DV or DVD recorder is integrated into the system and analyzed subsequently (“offline”).

- The video source is displayed **on the computer monitor** during data acquisition.

----- NEW -- Digital file analysis ---- NEW ----

It is now also possible to read in digital video files (MPEG or AVI format). This feature is not only time-saving but makes you also independent from your experimental setup.

- We can provide you with all necessary system components incl. the appropriate test cages, such as Water Maze pools and platforms, Elevated Plus Mazes or O-Mazes, Open Field arenas, Radial Mazes, Barnes Mazes and more….(some arenas are listed in the appendix)

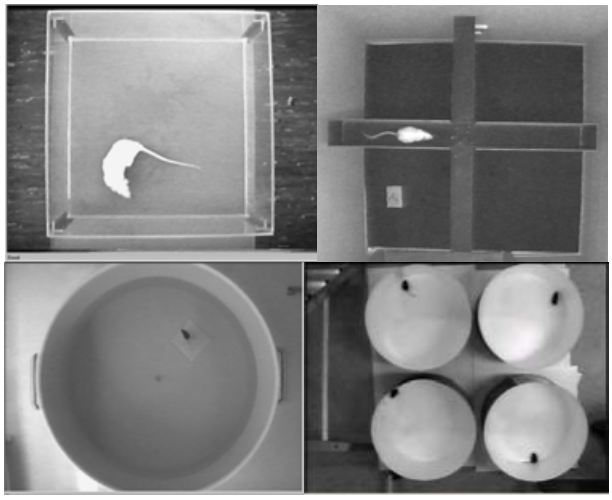
◆ B&W VideoMot2

In the **black &white configuration** a black & white video source ist used. We recommend a low-light-sensitive black & white camera that can also be operated under dim-red light conditions or even in complete darkness – additional infra-red illumination is required then.

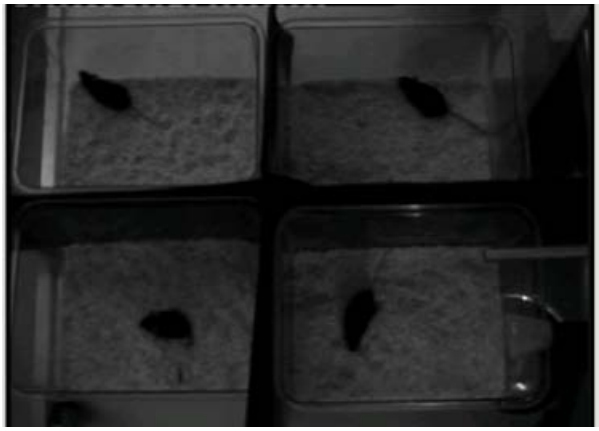
Arenas

Animals can be observed in all sorts of environments, including:

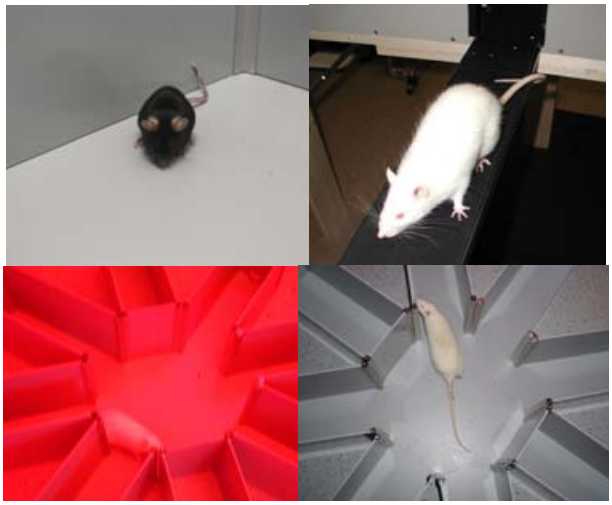
- Open Field
- Hole-Board Cages
- Water Maze, Y-Maze, T-Maze and Radial Maze
- Elevated Plus Maze & O-Maze
- User-Defined Mazes
- Place Preference cages
- Home cages



- Several arenas can be observed simultaneously with one camera. There is no limit for the number of arenas to be observed!

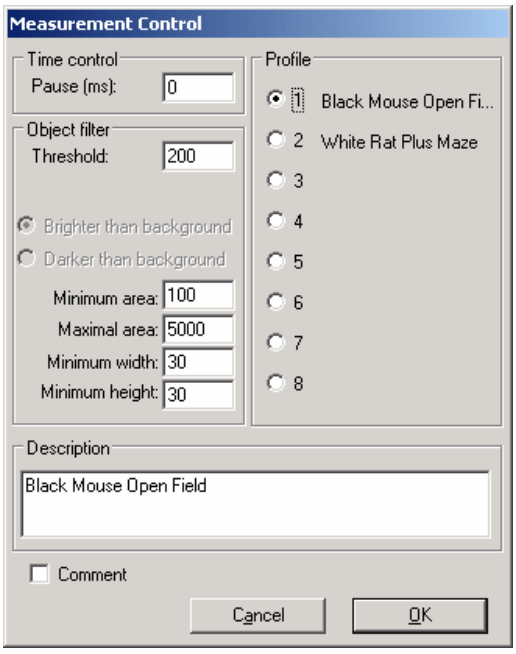


Animal detection

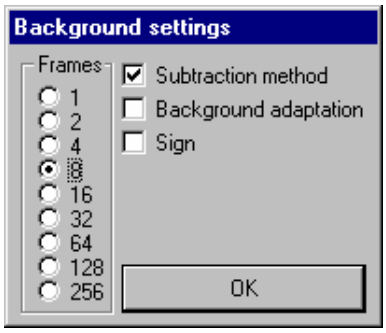


- Both dark and bright animals can be monitored provided there is sufficient contrast between animal and arena. Whenever there is no visible contrast IR illumination can be used to provide contrast that is visible for the camera only – this is done in combination with IR translucent arena material.

- Animals to be identified are characterized by so-called object filters which include an adjustable contrast threshold value as well as size filters. Individual detection parameter configurations can be predefined for use in future experiments.



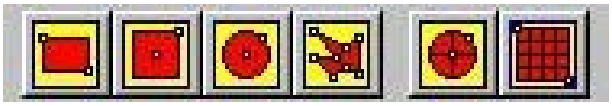
- An integrated background correction that can be adapted to your individual requirements makes the system suitable for almost any laboratory setups.



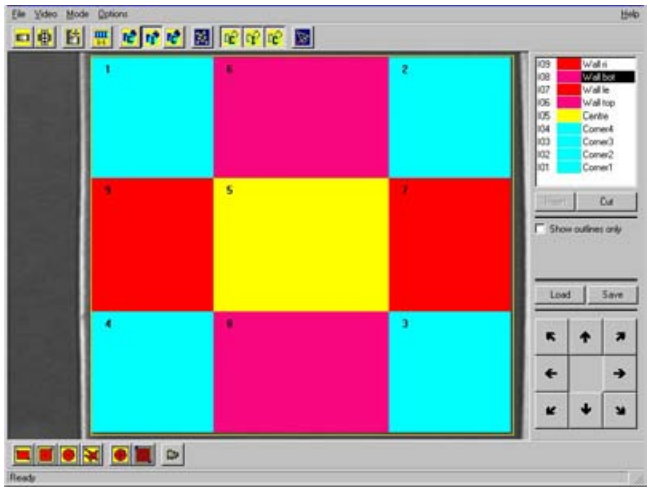
- The resolution of the tracks can be changed by decreasing/increasing the sampling rate of data acquisition if required.

Zone definition

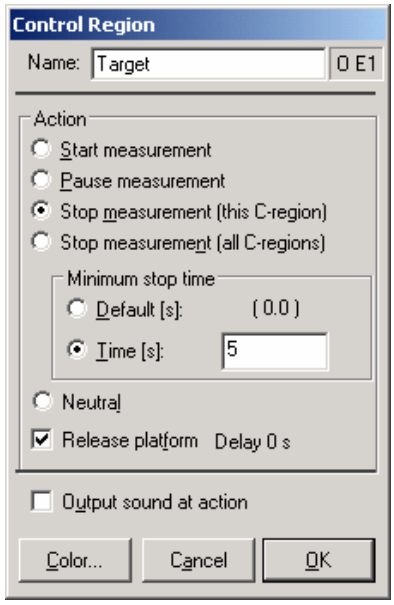
- Animals are identified in so-called experimental regions that are drawn by the user on the PC monitor. Inside these regions user-defined zones of interests can be generated to perform zone studies. The number of zones, their shape and position depend on the individual experiment.



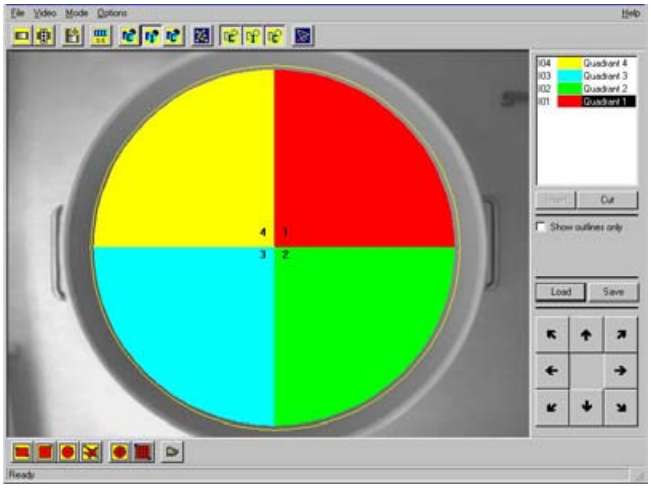
- A variety of tools is available in order to generate any desired shape.



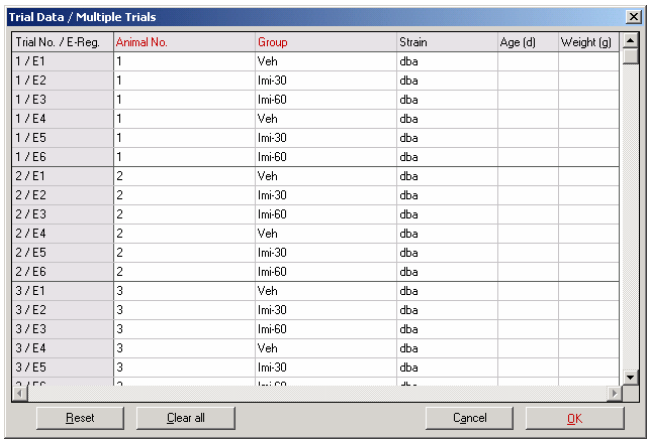
- Regions are individually marked with a name and a color. Coordinates and grid functions facilitate zone generation.
- Regions can be used to control data acquisition. Stop regions will end data acquisition. An example is the water maze where the animal is supposed to locate a hidden platform. If this target is defined as “stop zone” the trial is ended as soon as the animal climbs onto the platform.



- Regions can also act as start or pause zones in order to adapt data acquisition to the user´s requirements.
- TTL outputs can be triggered when the animal has entered a specific region, such as rising an Atlantis platform after the animal has spent a user-defined time period above the submerged platform.



- Zones can be saved as files for future experiments to guarantee reproducible experimental conditions.
- A variety of entry fields is available allowing to characterize the animal and the experiment. These data are later output in the protocol.
- For series of experiments all data can be easily pre-defined. Data can also be copied from a standard Excel sheet into the VideoMot2 entry window.

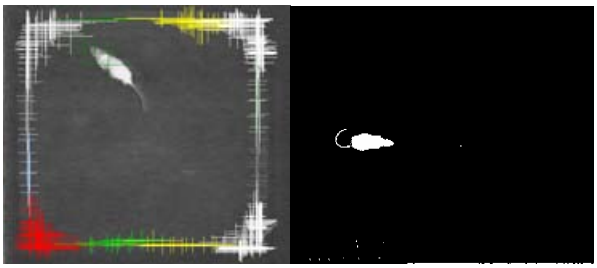


Starting an experiment

- Due to the modular design of the software all steps necessary to perform an experiment can be started and stopped independent from each other.
- An experiment can be started with a single key on the computer keyboard. Alternatively a remote switch can be used to start and stop data acquisition at a distance from the PC. Start can also be triggered using start zones.

The running experiment

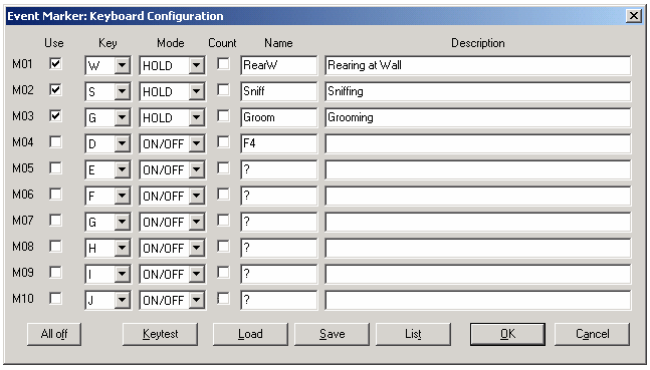
- During the running experiment the user can switch between the live video source and the processed image. This helps to optimize the object filter settings for future experiments.
- In the standard measuring mode the center of gravity of the animal is identified.



----- NEW – 3-Point Detection ---- NEW ----

It is now also possible to track the **head**, the **rear end** as well as the **center of gravity** of the animal at the same time. This so-called **3-point-detection** allows to precisely monitor when the animal is exploring a specific object with its nose.

- During tracking the user can use the built-in keyboard event recorder in order to record any behavioral event that cannot be identified automatically (such as rearing, feeding, stretching or grooming).



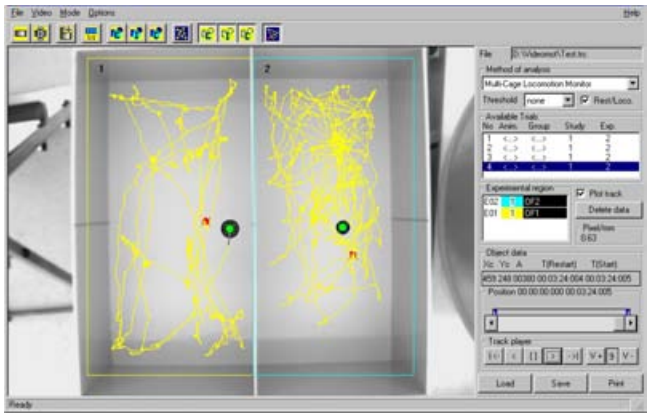
- Up to 10 event keys can be predefined; 3 different modes are available for exclusive and non-exclusive events. The current status of each event key is shown as a colored square below the online image.

Series of experiments

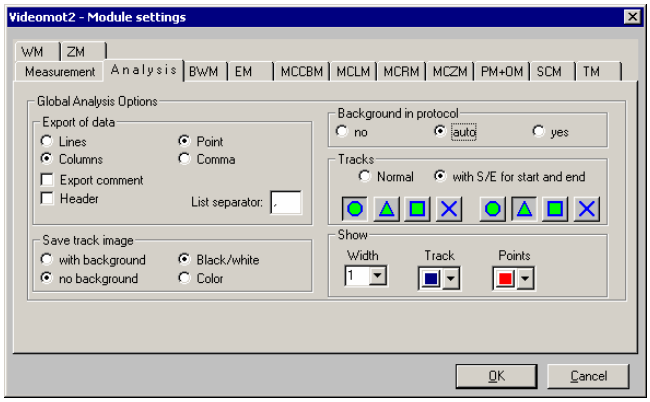
- Series of experiments can be performed one after the other and stored in a single file. All calculated parameters of all trials can then exported into one export file in order to facilitate further data analysis with statistical packages.

Data analysis

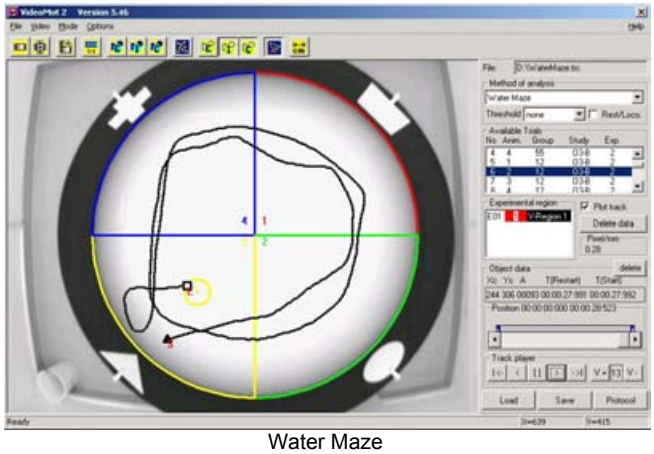
- The observational data are stored on the hard disk for subsequent analysis.
- The coordinates of the identified objects allow to display the pattern of movement inside the arena. This track can be replayed at variable speed and for any time interval.



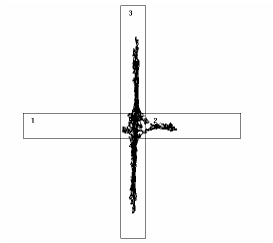
- Bitmap files of the track pattern can be generated by a mouse click (with or without background image), thus allowing easy integration in word processors or desk top publishing programs.



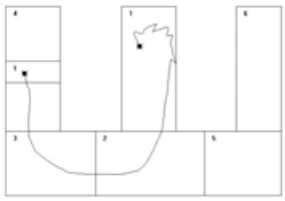
- Color and width of the track and shape of starting and end points can be defined by the user.



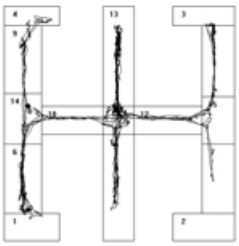
Water Maze



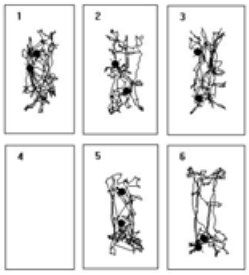
Elevated Plus Maze



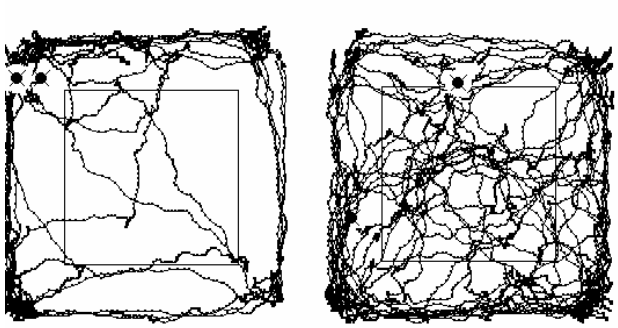
E-Maze



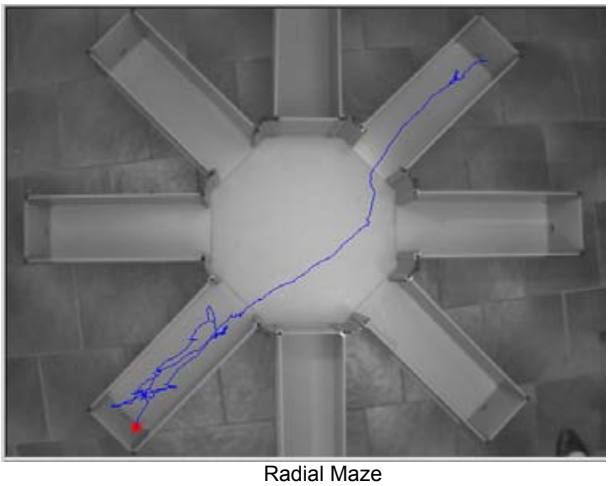
User-Defined Maze



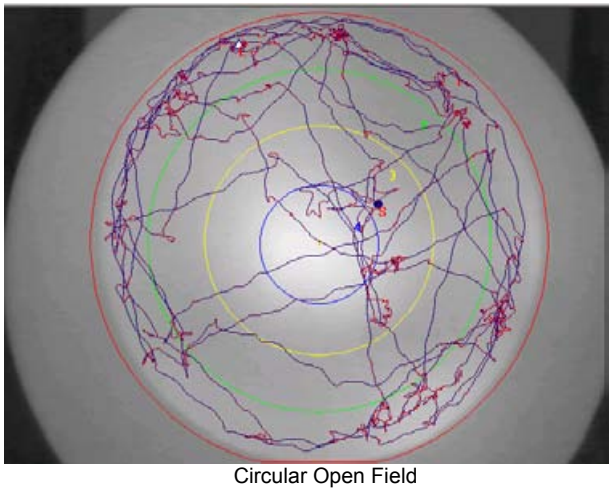
Home cages



Dual Open Field configuration



Radial Maze



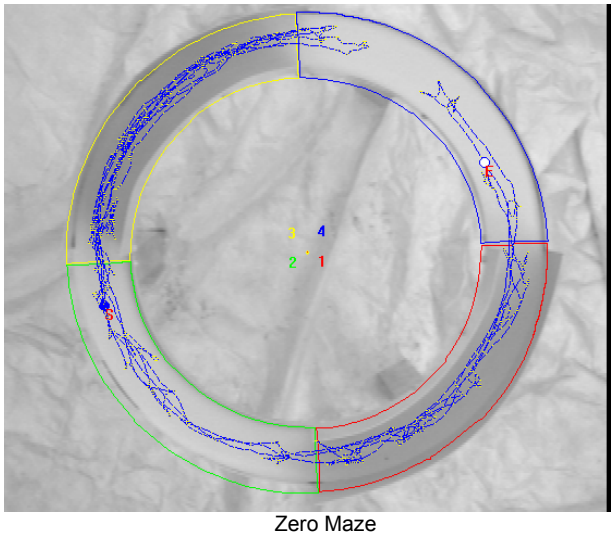
Circular Open Field

Evaluation is designed to be modular. Choose between a variety of so-called **analysis modules** – each calculating specific results parameters.

These modules come in 2 packages:

1. **Single subject version** – all modules suited to monitor one animal in one arena.

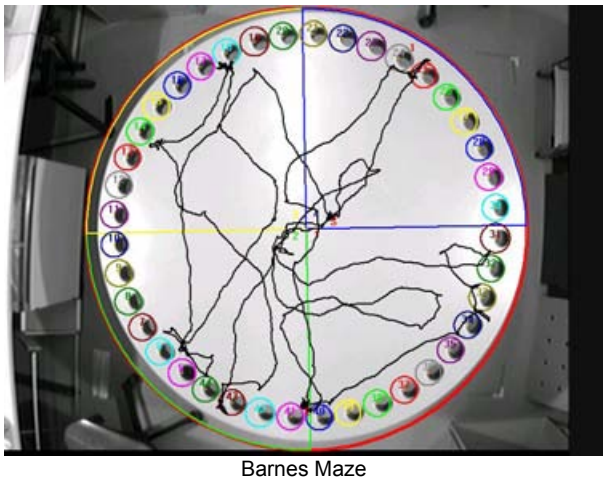
2. **Multi-subject version -** all modules suited to monitor up to 2 animals in an unlimited number of arenas.



Zero Maze

The following modules are available to date:

- Zone Monitor / Multi-Cage Zone Monitor
- Elevated Plus Maze & O-Maze Monitor
- Water Maze Monitor
- Y-Maze Continuous Alternation
- Multi-Cage Locomotion Monitor
- Multi-Cage Center/Border Monitor
- Social Contact Monitor
- Object Recognition
- Event Monitor



Barnes Maze

The following modules are designed for observation of **one** animal in a **single** arena.

The **Zone Monitor** is a general module suited for all applications where zone studies have to be performed, e.g. Open Field, Radial Mazes or Hole-Board Tests.

Results parameters in the **Zone Monitor**:

- Time spent in each zone
- Number of visits to each zone
- Total distance travelled in each zone
- %Time spent compared to total time for each zone
- Latency to each zone (time to first visit)
- Total time, total visits and total distance
- Overall speed

Water Maze and **Elevated Plus Maze & O-Maze Monitor** are specialized zone applications adapted to the specific parameters calculated in these paradigms.

Results parameters in the **Elevated Plus Maze & O-Maze Monitor***:*

- Time spent in each arm
- No. of visits in each arm
- Distance travelled in each arm, in the centre (if available), in closed, open and all arms
- %Visits to closed/open arms
- %Time spent in closed/open arms
- Total time and total distance travelled
- Latency to open arm
- Latency to closed arm
- Latency to any arm

- Results parameters in the **Water Maze Monitor**:

- Time spent for each quadrant
- %Time spent for each quadrant
- Frequency of visits for each quadrant
- Latency for each quadrant
- Total distance travelled for each quadrant
- Time spent, %time spent in each target zone/annulus
- Latency to target zone/annulus (time to first visit)
- Total time and total distance travelled
- Mean speed

Results parameters in the **Y-Maze Monitor**:

- Time spent in each arm
- Number of visits to each arm
- Total distance travelled in each arm
- %Time spent in each arm
- Latency to each arm (time to first visit)
- Total number of alternations
- Reentries into the same arms
- Reentries into the previous arm
- Entries into a new arm

Results parameters in the **Object Recognition Monitor**:

Parameters calculated by taking the head track point into account:

- Number of object visits
- %Number of object visits
- Total time spent visiting the objects
- %Time spent visiting each object
- Visit latency
- Mean distance from each object
- Total visits & total visit time

As well as standard zone parameters

With the following modules an unlimited number of arenas can be monitored simultaneously each housing a **single** animal:

The following parameters are output for each arena:

Multi-Cage Zone Monitor:

- Time spent in each zone
- Number of visits to each zone
- Total distance travelled in each zone
- %Time spent compared to total time for each zone
- Latency to each zone (time to first visit)
- Total time, total visits and total distance
- Overall speed

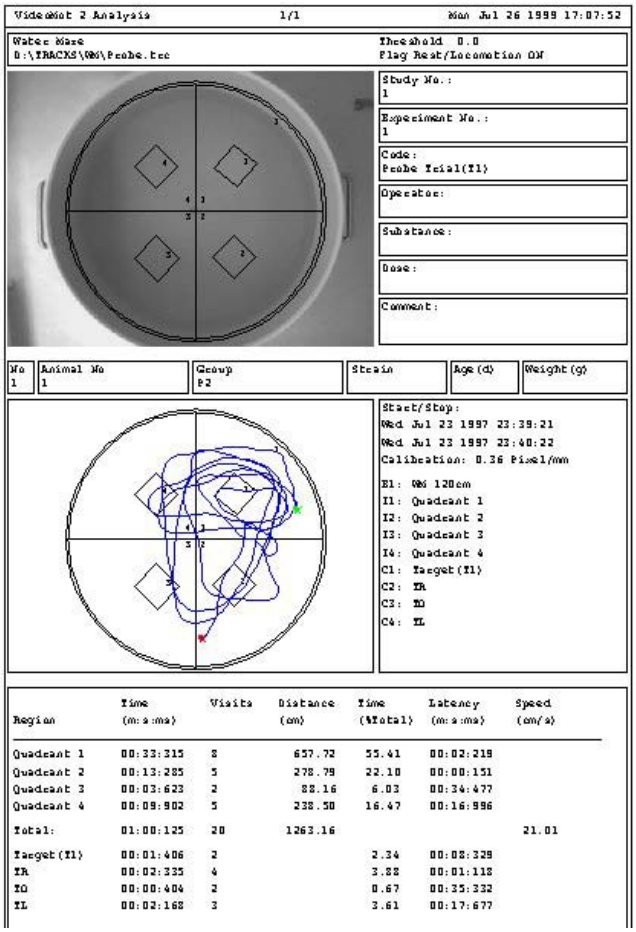
Multi-Cage Locomotion Monitor:

- Time resting / Locomotory time / Locomotory speed
- Number of stops (user defined time threshold)
- Total distance travelled during locomotory time
- Total time

Multi-Cage Center/Border Monitor:

- Time spent, number of visits in the periphery and in the center
- Distance travelled in the periphery and in the center
- Latency to visit the center
- Number of rearings*
- Time spent rearing*

** Calculated from area information or using hardware information*



In the **Event Monitor** frequency, sequence and duration of manually entered events can be evaluated. This analysis can be performed in addition to any other evaluation.

Results parameters in the **Event Monitor:**

- Frequency of occurrence
- Total time the event took place
- Latency to first occurrence
- Total time

The **Social Contact Monitor** allows the number of contacts between **2 animals** in one arena to be quantified. Several arenas are possible.

Results parameters in the **Social Contact Monitor**:

- Time spent with contact & without contact
- Number of contacts & latency to first contact
- Average distance & average contact distance
- Number of contacts in user-defined zones
- Total time

- Protocols can be displayed on the monitor and printed out. The contents of the protocol varies depending on the analysis module.
- They include the background image, the regions used, the track as well as all descriptive information.
- A results block lists the calculated parameters. Due to the internal calibration all numerical results are output in calibrated units.
- The results in the protocol can be generated over the whole trial duration. If necessary partial analysis protocols are available

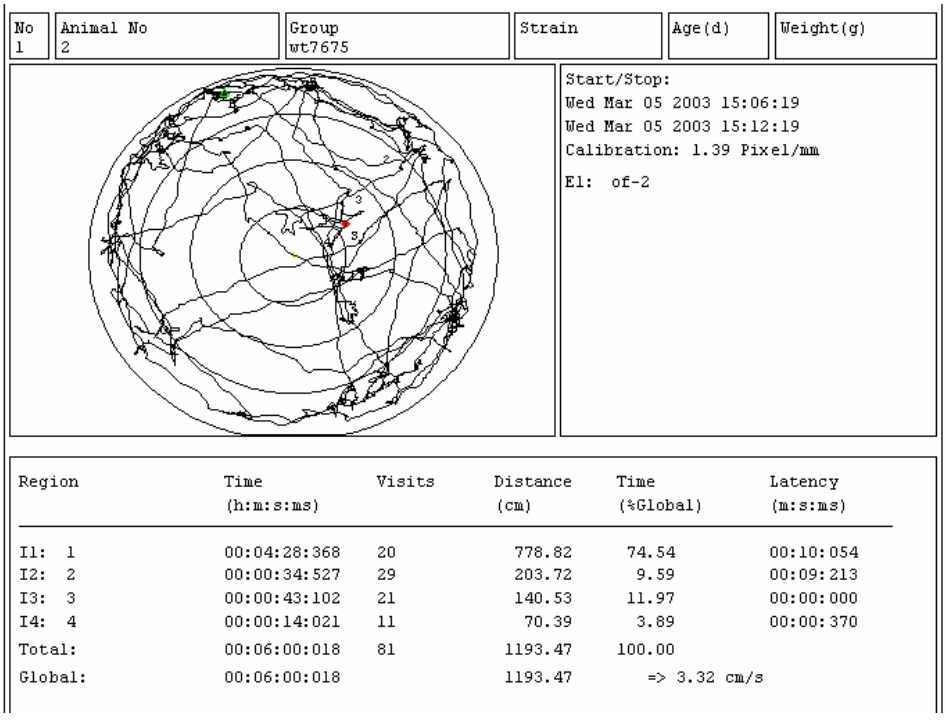
  - by dividing the total trial duration into a user-defined **number** of blocks or
  - into time intervals of fixed **duration** or
  - by analyzing just one single time window out of the whole experiment!

- Export files in ASCII format containing all relevant results parameters of the protocol can be easily imported to other programs like spreadsheets (e.g. EXCEL) for further statistical calculations.

1	1 A	7331	52595	434,88	8,268	59926
2	1 A	19326	40579	159,07	3,92	59913
3	1 A	11528	48389	356,67	7,371	59912
4	1 A	59790	144117	929,91	6,452	203902

Special analysis features

- Acquired data stored on the hard disk can be re-analyzed as often as is required to evaluate different aspects of animal movement thus saving valuable time lost in other systems by replaying the video tape.
- VideoMot2 gives complete access to the raw data allowing individual calculations to be performed! This is done via a detailed track file listing all coordinates of identified objects for each sample interval.
- Raw data can also be exported for further evaluation in the well-known Wintrack analysis package!



No	Animal No	Group	Strain	Age(d)	Weight(g)
1	2	wt7675			

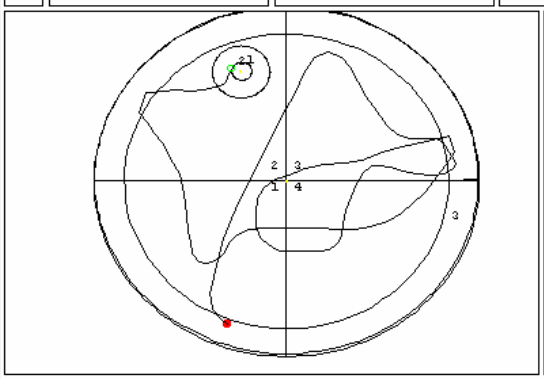
Start/Stop:
Wed Mar 05 2003 15:06:19
Wed Mar 05 2003 15:12:19
Calibration: 1.39 Pixel/mm

El: of-2

Region	Time (h:m:s:ms)	Visits	Distance (cm)	Time (%Global)	Latency (m:s:ms)
I1: 1	00:04:28:368	20	778.82	74.54	00:10:054
I2: 2	00:00:34:527	29	203.72	9.59	00:09:213
I3: 3	00:00:43:102	21	140.53	11.97	00:00:000
I4: 4	00:00:14:021	11	70.39	3.89	00:00:370
Total:	00:06:00:018	81	1193.47	100.00	
Global:	00:06:00:018		1193.47	=> 3.32 cm/s	

Example of an evaluation in a circular **open field**
Circular zones have been defined

No	Animal No	Group	Strain	Age(d)	Weight(g)
1	1060	1	B6		



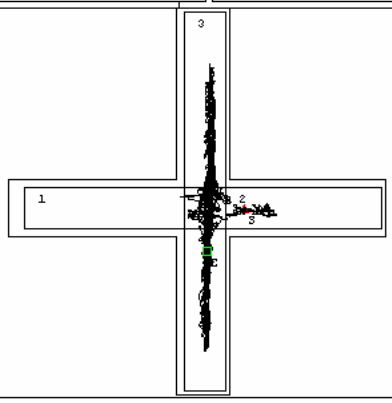
Start/Stop:
Sat Aug 26 2000 17:39:39
Sat Aug 26 2000 17:40:03
Calibration: 0.44 Pixel/mm

E1: V-Region 1
I1: Quadrant 1
I2: Quadrant 2
I3: Quadrant 3
I4: Quadrant 4
C1: Area
C2: Target -> Stop
C3: Wall

Region	Time (m:s:ms)	Visits	Distance (cm)	Time (%Total)	Latency (m:s:ms)	Speed (cm/s)
Quadrant 1	00:06:196	3	128.00	25.90	00:00:180	
Quadrant 2	00:04:842	3	86.39	20.24	00:01:979	
Quadrant 3	00:08:880	2	161.53	37.12	00:02:780	
Quadrant 4	00:04:002	2	83.00	16.73	00:08:540	
Total:	00:23:920	10	458.92			19.19
Area	00:00:797	1	6.12	3.33	00:23:303	
Target	00:00:000	1	0.00	0.00	00:24:100	
Wall	00:04:158	4	40.56	17.38	00:00:180	

Example of an evaluation in a **Water Maze**

No	Animal No	Group	Strain	Age(d)	Weight(g)
1	1	Test HH			



Start/Stop:
Tue Feb 09 1999 16:29:23
Tue Feb 09 1999 16:42:16
Calibration: 0.70 Pixel/mm

E1: V-Region 1
I1: Arm le (O)
I2: Arm ri (O)
I3: Arm top (C)
I4: Arm bot (C)
I5: Centre (N)

Region	Time (m:s:ms)	Visits	Distance (cm)	Time (%Total)	Time (%Global)	Visits (%Total o+c)
Arm le	00:01:201	1	2.29	0.16	0.16	2.13
Arm ri	00:58:964	5	91.15	7.63	7.63	10.64
Arm top	04:33:976	22	676.18	35.43	35.43	46.81
Arm bot	03:49:092	19	670.04	29.63	29.63	40.43
Centre	03:29:951	46	477.63	27.15	27.15	
Total(o)	01:00:165	6	93.44	7.78	7.78	12.77
Total(c)	08:23:068	41	1346.22	65.06	65.06	87.23
Total(o+c)	09:23:233	47	1439.66	72.85	72.85	100.00
Total:	12:53:184		1917.29			
Latency(o)	00:00:085					
Latency(o,c)	00:00:085					
Global:	12:53:184		1917.29			

Example of an evaluation in an **Elevated Plus Maze**

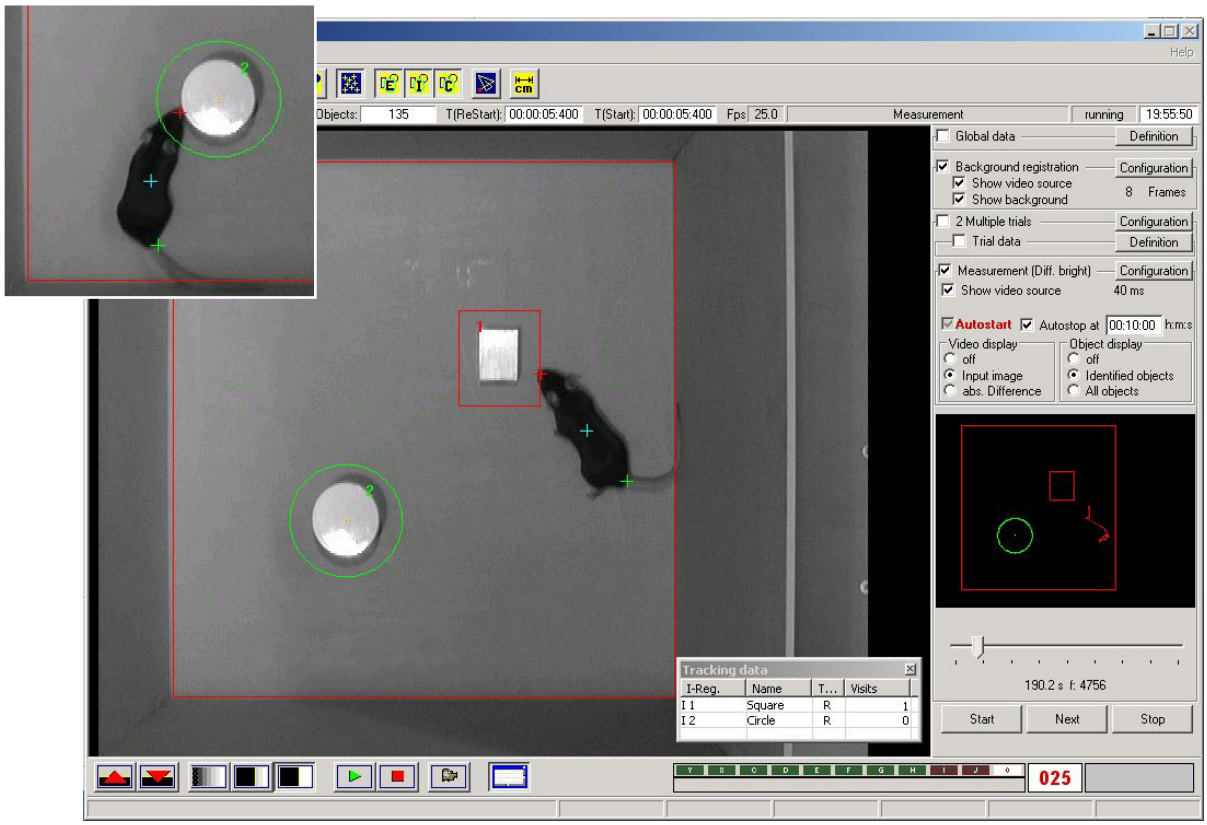
Region	Time (h:m:s.ms)	Visits	Distance (cm)	Time (%Global)	Latency (m:s.ms)
I1: Arm1	00:02:13.53	17	838.90	22.26	00:00.09*
I2: Arm2	00:02:47.38	22	1073.93	27.90	00:38.17
I3: Arm3	00:02:02.24	25	909.87	20.37	00:25.54
Total	00:07:03.16	64	2822.70	70.52	
Max. alternations	62				
Alternations	16	25.81%			
Same region	15	24.19%			
Previous region	19	30.65%			
New region	28	45.16%			
Global	00:10:00.01		3738.64	=> 6.23 cm/s	

Y-Maze Continuous Alternation

Region	Contact (m:s.ms)	no Contact (m:s.ms)	No.	Latency (m:s.ms)	average distance (cm)	(cm)
SC	01:15.76	02:44.28	34	00:00.08	28.73	2.20
I1: Periphery			25			
I2: Center			9			
Global	04:00.04					

Example of a **Social Contact** protocol

◆ 3-Point-Tracking with B&W VideoMot2



In the standard tracking mode the center of gravity of the animal is identified. This measuring method is sufficient for most applications.

The new **3-point tracking method** identifies the **head** and the **rear end** of the animal in addition to the center of gravity. The animal does not have to be marked – differentiation between head and rear end of the animal is possible whenever a tail is clearly visible in the camera image. All 3 track points are displayed during the trial.

This measuring method allows a far more detailed evaluation of behavior. A typical application is the object recognition/object exploration paradigm. If the animal approaches the object with its nose this can be clearly identified. The **Object Recognition analysis module** is specifically designed for this paradigm.

Further applications are in preparations (such as improved social contact evaluation, detection of stretched attends in the elevated plus maze and more…). Please contact us for more information.

Region	Visits	Time (h:m:s.ms)	Visits (%Total)	Time (%Total)	Time (%Global)	Latency (m:s.ms)	Mean dist. (cm)
I1: Square	6	00:00:02.84	20.00	16.59	0.47	01:43.04	30.55
I2: Circle	24	00:00:14.28	80.00	83.41	2.38	00:26.40	16.85
Total	30	00:00:17.12					
			Distance (cm)				
C1: Periphery	45	00:08:45.92	3792.10		87.65	00:00.00	2.80
C2: Center	44	00:01:14.08	1210.23		12.35	00:04.40	5.40
Global		00:10:00.00	5002.33cm	=> 8.34 cm/s			

Object recognition module

The first set of regions (I1/I2) is calculated by taking the head track point into account

Visits of center and periphery zones are calculated using the center of gravity

◆ Rearing Option for B&W VideoMot2

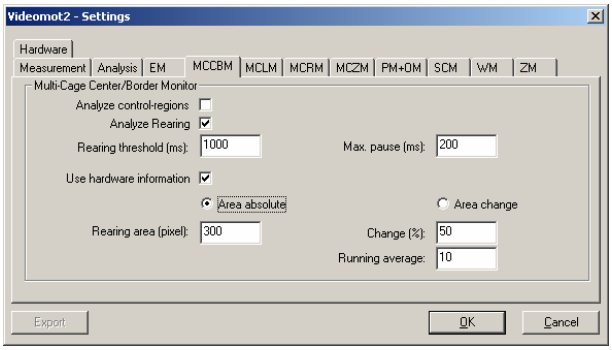
The VideoMot2 framegrabber interface features several input/output channels that can be used to feed in hardware signals from the experimental arena or to control external hardware.

This feature is used in the **NEW** **rearing detection system** for VideoMot2.

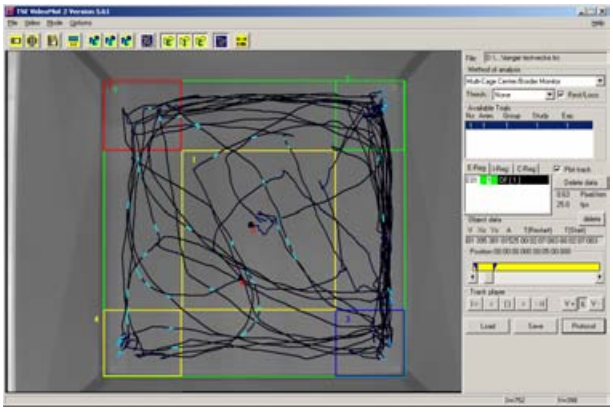
This new development overcomes the restriction of standard video tracking systems that calculate rearing events from the 2-dimensional tracking data – a very unreliable method because it is affected by illumination, camera viewing angle and other behaviors such as grooming. In this new system special rearing frames are used: **32 infra-red sensor pairs** are mounted into height-adjustable frames. Up to 2 frames can be combined per arena to monitor rearing in 2 planes.

Cage color has to be chosen to achieve maximum contrast (black or dark gray for white animals, gray or white for bright animals). The cages are permeable for IR beams where the sensors are mounted.

If the animal interrupts one or more rearing sensors a **TTL signal** is generated that is fed into the framegrabber interface and stored together with the tracking data.



Rearing events are displayed as part of the track. They are also output in the protocol.



The rearing frames can also be used to detect hole visits in Hole-Board tests.

TSE VideoMot 2 Analysis V5.47 2/2 Fri Sep 05 2003 15:49:42

Region	Time (h:m:s.ms)	Distance (cm)	Visits	Latency (m:s.ms)	Rear No.	Rear Time (m:s.ms)
E01: Border	00:00:56.98	471.46	10	00:00.00	3	00:14.18
Center	00:00:03.04	88.35	9	00:04.25	1	00:04.87
Global:	00:01:00.02	559.82			4	00:19.05
E02: Border	00:00:53.86	663.76	8	00:00.00	3	00:05.76
Center	00:00:06.15	168.63	7	00:10.41	0	00:00.00
Global:	00:01:00.02	832.39			3	00:05.76

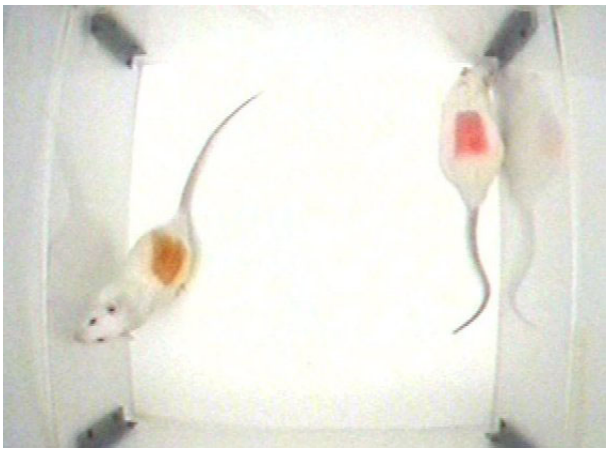
Rearing events output in the MCCB module

◆ Color VideoMot2

In the color configuration a **color video source** is used instead of a black & white camera.

Animals to be tracked are marked with color tags. This allows to reliably track animals that look alike – in contrast to the black & white system **separate locomotory tracks** can be obtained.

This is the ideal tool for evaluting social interaction in up to 16 cages each housing up to 16 animals.



Region	Time (h:m:s.ms)	Visits	Distance (cm)	Time (%Global)	Latency (m:s.ms)
OpenField					
1					
Periphery	00:01:49.70	14	779.81	91.5	00:00:00.11
Center	00:00:10.21	13	107.36	8.5	00:00:10.18
Total	00:01:59.92	27	887.17	100.0	
Global:	00:01:59.92		887.17	==> 9.24 cm/s	
2					
Periphery	00:01:59.79	2	944.30	99.9	00:00:00.11
Center	00:00:00.12	1	2.73	0.1	00:01:10.79
Total	00:01:59.92	3	947.03	100.0	
Global:	00:01:59.92		947.03	==> 9.70 cm/s	

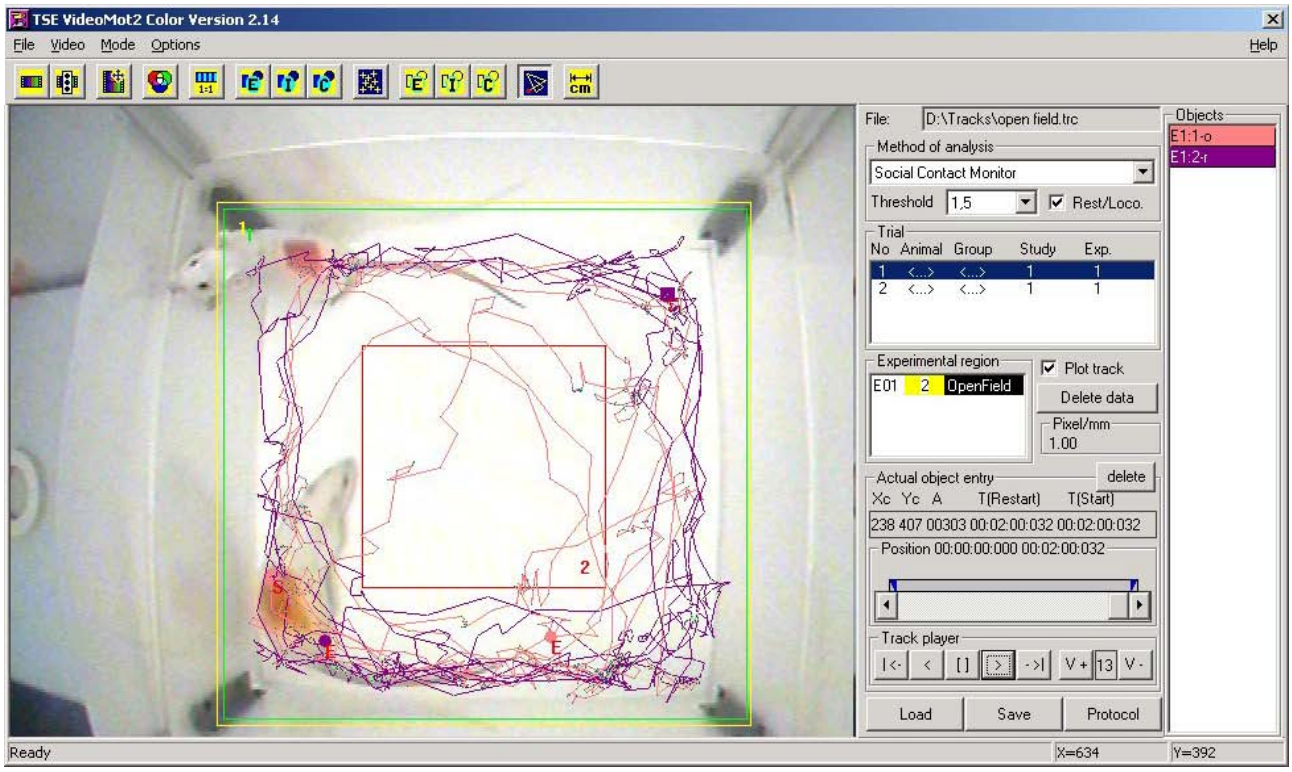
Multi-Cage Zone Monitor

Region	Contact (m:s.ms)	no Contact (m:s.ms)	No.	Latency (m:s.ms)	Distance (cm)
OpenField	00:13.37	01:46.65	9	00:11.64	22.50
01 02					
I1: Periphery	00:13.37		9	00:11.64	
I2: Center	00:00.00		0	00:00.00	
Total	00:13.37		9		
Global:	02:00.03				

Social Contact Monitor

Several types of analyses can be performed such as zone analyses, differentiation between resting and moving times, contact frequency and duration.

Please ask for detailed information!



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- Dr. Willmar Schwabe GmbH & Co., Karlsruhe, Germany
- elbion AG, Radebeul, Germany
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- Free University of Berlin, Germany
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- Humboldt University (Charité) Berlin, Germany
- Institute of Psychiatry and Neurology, Warsaw, Poland
- Karolinska Institute, Stockholm, Sweden
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Publications

for VideoMot

(59)

- Baier PC, Branisa P, Koch R, Schindehutte J, Paulus W, Trenkwalder C
  Circadian distribution of motor-activity in unilaterally 6-hydroxy-dopamine lesioned rats
  Experimental Brain Research 2006; 169: 283-8
  (Stereotaxic Instruments, Rotameter, VideoMot)

- Carola V, Frazzetto G, Gross C
  Identifying interactions between genes and early environment in the mouse
  Genes, Brain and Behavior 2006; 5(2): 189-99
  (VideoMot)

- Kuzmin A, Madjid N, Terenius L, Ogren SO, Bakalkin G
  Big dynorphin, a prodynorphin-derived peptide produces NMDA receptor-mediated effects on memory, anxiolytic-like and locomotor behavior in mice
  Neuropsychopharmacology 2006; 31: 1928-37
  (VideoMot)

- Madjid N, Tottie EE, Luttgen M, Meister B, Sandin J, Kuzmin A, Stiedl O, Ogren SO
  5-Hydroxytryptamine 1A receptor blockade facilitates aversive learning in mice: interactions with cholinergic and glutamatergic mechanisms
  The Journal of Pharmacology and Experimental Therapeutics 2006; 316: 581-91
  (VideoMot)

- Safiulina D, Peet N, Seppet E, Zharkovsky A, Kaasik A
  Dehydroepiandrosterone inhibits complex I of the mitochondrial respiratory chain and is neurotoxic in vitro and in vivo at high concentrations
  Toxicological Sciences 2006; 93(2): 348-56
  (VideoMot)

- Shimshek DR, Bus T, Grinevich V, Single FN, Mack V, Sprengel R, Spergel DJ, Seeburg PH
  Impaired reproductive behavior by lack of GluR-B containing aMPA receptors but not of NMDA receptors in hypothalamic and septal neurons
  Molecular Endocrinology 2006; 20(1): 219-231
  (VideoMot)

- Siren AL, Radyushkin K, Boretius S, Kammer D, Riechers CC, Natt O, Sargin D, Watanabe T, Sperling S, Michaelis T, Price J, Meyer B, Frahm J, Ehrenreich H
  Global brain atrophy after unilateral parietal lesion and its prevention by erythropoietin
  Brain 2006; 129: 480-9
  (VideoMot, Startle Response, Fear Conditioning System)

- Wislowska-Stanek A, Zienowicz M, Lehner M, Taracha E, Bidzinski A, Maciejak P, Skorzewska A, Szyndler J, Plaznik A
  Midazolam inhibits neophobia-induced Fos expression in the rat hippocampus
  Journal of Neural Transmission 2006; 113: 43-8
  (VideoMot)

- Beglopoulos V, Montag-Sallaz M, Rohlmann A, Piechotta K, Ahmad M, Montag D, Missler M
  Neurexophilin 3 is highly localized in cortical and cerebellar regions and is functionally important for sensorimotor gating and motor coordination
  Molecular and Cellular Biology 2005; 25(16): 7278-88
  (Active Avoidance, Grip Strength Meter, RotaRod, VideoMot, Startle Response)

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- Beraki S, Aronsson F, Karlsson H, Ogren SO, Kristensson K
  Influenza A virus infection causes alterations in expression of synaptic regulatory genes combined with changes in cognitive and emotional behaviors in mice
  Molecular Psychiatry 2005; 10(3): 299-308
  (VideoMot, Elevated Plus Maze)

- Bert B, Dere E, Wilhelmi N, Kusserow H, Theuring F, Huston JP, Fink H
  Transient overexpression of the 5-HT1A receptor impairs water-maze but not hole-board performance.
  Neurobiology of Learning and Memory 2005; 84(1): 57-68
  (VideoMot)

- Fischer A, Sananbenesi F, Pang PT, Tsai L
  Opposing roles of transient and prolonged expression of p25 in synaptic plasticity and hippocampus-dependent memory
  Neuron 2005; 48: 825-38
  (VideoMot, Fear Conditioning System)

- Langen B, Egerland U, Bernoster K, Dost R, Unverferth K, Rundfeldt C
  Characterization in rats of the anxiolytic potential of ELB139
  [1-(4-chlorophenyl)-4-piperidin-1-yl-1,5-dihydro-imidazol-2-on], a new agonist at the benzodiazepine binding site of the GABAA receptor
  The Journal of Pharmacology and Experimental Therapeutics 2005; 314(2): 717-24
  (VideoMot, ActiMot)

- Park SK, Nguyen MD, Fischer A, Luke MP, Affar el B, Dieffenbach PB, Tseng HC, Shi Y, Tsai LH
  Par-4 links dopamine signaling and depression
  Cell 2005; 122: 275-87
  (VideoMot)

- Rex A, Voigt JP, Fink H
  Anxiety but not arousal increases 5-hydroxytryptamine release in the rat ventral hippocampus in vivo
  European Journal of Neuroscience 2005; 22(5): 1185-9
  (VideoMot)

- Rusu AS, Krackow S
  Agonistic onset marks emotional changes and dispersal propensity in wild house mouse males (Mus domesticus)
  Journal of Comparative Psychology 2005; 119(1): 58-66
  (VideoMot)

- Strekalova T, Spanagel R, Dolgov O, Bartsch D
  Stress-induced hyperlocomotion as a confounding factor in anxiety and depression models in mice
  Behavioural Pharmacology 2005; 16: 171-80
  (VideoMot)

- Winter B, Juckel G, Viktorov I, Katchanov J, Gietz A, Sohr R, Balkaya M, Hortnagl H, Endres M
  Anxious and hyperactive phenotype following brief ischemic episodes in mice
  Biological Psychiatry 2005; 57: 1166-75
  (VideoMot)

- Bilkei-Gorzo A, Racz I, Michel K, Zimmer A, Klingmuller D, Zimmer A
  Behavioral phenotype of pre-proenkephalin-deficient mice on diverse congenic backgrounds
  Psychopharmacology 2004; 176: 343-52
  (Startle Response,VideoMot, ActiMot)

- Ebner K, Rupniak NM, Saria A, Singewald N
  Substance P in the medial amygdala: emotional stress-sensitive release and modulation of anxiety-related behavior in rats
  Proceedings of the National Academy of Sciences 2004; 101: 4280-5
  (VideoMot)

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- Rex A, Voigt JP, Gustedt C, Beckett S, Fink H
  Anxiolytic-like profile in Wistar, but not Sprague-Dawley rats in the social interaction test
  Psychopharmacology 2004; 177: 23-34
  (VideoMot)

- Tezval H, Jahn O, Todorovic C, Sasse A, Eckart K, Spiess J
  Cortagine, a specific agonist of corticotropin-releasing factor receptor subtype 1, is anxiogenic and antidepressive in the mouse model
  Proceedings of the National Academy of Sciences 2004; 101(25): 9468-73
  (VideoMot)

- Werner C, Raivich G, Cowen M, Strekalova T, Sillaber I, Buters JT, Spanagel R, Hofmann F
  Importance of NO/cGMP signalling via cGMP-dependent protein kinase II for controlling emotionality and neurobehavioural effects of alcohol
  European Journal of Neuroscience 2004; 20: 3498-506
  (VideoMot)

- Winter B, Bert B, Fink H, Dirnagl U, Endres M
  Dysexecutive syndrome after mild cerebral ischemia? Mice learn normally but have deficits in strategy switching
  Stroke 2004; 35: 191-5
  (VideoMot)

- Franke H, Kittner H, Grosche J, Illes P
  Enhanced P2Y1 receptor expression in the brain after sensitisation with d-amphetamine
  Psychopharmacology 2003; 167: 187-94
  (VideoMot, Vibrotome, Syringe Pump)

- Kiefer F, Jahn H, Koester A, Montkowski A, Reinscheid RK, Wiedemann K
  Involvement of NMDA receptors in alcohol-mediated behavior: mice with reduced affinity of the NMDA R1 glycine binding site display an attenuated sensitivity to ethanol
  Biological Psychiatry 2003; 53: 345-51
  (VideoMot, RotaRod)

- Kuzmin A, Sandin J, Terenius L, Ogren SO
  Acquisition, expression, and reinstatement of ethanol-induced conditioned place preference in mice: effects of opioid receptor-like 1 receptor agonists and naloxone
  The Journal of Pharmacology and Experimental Therapeutics 2003; 304(1): 310-8
  (VideoMot)

- Montag-Sallaz M, Montag D
  Severe cognitive and motor coordination deficits in Tenascin-R-deficient mice
  Genes, Brain and Behavior 2003; 2: 20-31
  (Active Avoidance, Grip Strength Meter, RotaRod, VideoMot)

- Muller MB, Zimmermann S, Sillaber I, Hagemeyer TP, Deussing JM, Timpl P, Kormann MS, Droste SK, Kuhn R, Reul JM, Holsboer F, Wurst W
  Limbic corticotropin-releasing hormone receptor 1 mediates anxiety-related behavior and hormonal adaptation to stress
  Nature Neuroscience 2003; 6: 1100-7
  (VideoMot)

- Racz I, Bilkei-Gorzo A, Toth ZE, Michel K, Palkovits M, Zimmer A
  A critical role for the cannabinoid CB1 receptors in alcohol dependance and stress-stimulated ethanol drinking
  The Journal of Neuroscience 2003; 23(6): 2453-8
  (VideoMot)

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- Sienkiewicz-Jarosz H, Czlonkowska AI, Lehner M, Maciejak P, Siemiatkowski M, Szyndler J, Wislowska A, Zienowicz M, Bidzinski A, Kostowski W, Plaznik A
  Lack of changes in cortical [3H]-muscimol binding in rats sensitized to nicotine-induced enhancement of dopamine metabolism
  Polish Journal of Pharmacology 2003; 55(2): 165-70
  (VideoMot)

- Sienkiewicz-Jarosz H, Maciejak P, Bidzinski A, Szyndler J, Siemiatkowski M, Czlonkowska AI, Lehner M, Plaznik A
  Exploratory activity and a conditioned fear response: correlation with cortical and subcortical binding of the ?4?2 nicotinic receptor agonist [3H]-Epibatidine
  Polish Journal of Pharmacology 2003; 55: 17-23
  (VideoMot)

- Sienkiewicz-Jarosz H, Maciejak P, Krzascik P, Czlonkowska AI, Szyndler J, Bidzinski A, Kostowski W, Plaznik A
  The effects of central administration of physostigmine in two models of anxiety
  Pharmacology Biochemistry and Behavior 2003; 75: 491-496
  (VideoMot)

- Sienkiewicz-Jarosz H, Szyndler J, Czlonkowska AI, Siemiatkowski M, Maciejak P, Wislowska A, Zienowicz M, Lehner M, Turzynska D, Bidzinski A, Plaznik A
  Rat behavior in two models of anxiety and brain (3H)muscimol binding: pharmacological, correlation and multifactor analysis
  Behavioural Brain Research 2003; 145: 17-22
  (VideoMot)

- Bilkei-Gorzo A, Racz I, Michel K, Zimmer A
  Diminished anxiety- and depression-related behaviors in mice with selective deletion of the Tac1 gene
  The Journal of Neuroscience 2002; 22(22): 10046-52
  (ActiMot, VideoMot, RotaRod)

- Brakebusch C, Seidenbecher C, Asztely F, Rauch U, Matthies H, Meyer H, Krug M, Bockers T, Zhou X, Kreutz M, Montag D, Gundelfinger E, Fassler R
  Brevican-deficient mice display impaired hippocampal CA1 long-term potentiation but show no obvious deficits in learning and memory
  Molecular and Cellular Biology 2002; 21: 7417-27
  (MOT - Motility Meter, Drinking / Feeding, Active Avoidance, Grip Strength Meter, RotaRod, VideoMot)

- Montag-Sallaz M, Schachner M, Montag D
  Misguided axonal projections, neural cell adhesion molecule 180 mRNA upregulation, and altered behavior in mice deficient for the close homolog of L1
  Molecular and Cellular Biology 2002; 22: 7967-81
  (Grip Strength Meter, RotaRod, VideoMot)

- Van Gaalen MM, Stenzel-Poore M, Holsboer F, Steckler T
  Effects of transgenic overproduction of CRH on anxiety-like behaviour
  European Journal of Neuroscience 2002; 15: 2007-15
  (VideoMot)

- Azad SC, Marsicano G, Eberlein I, Putzke J, Zieglgansberger W, Spanagel R, Lutz B
  Differential role of the nitric oxide pathway on delta-(9)-THC-induced central nervous system effects in the mouse
  European Journal of Neuroscience 2001; 13: 561-8
  (VideoMot)

- Eckart K, Jahn O, Radulovic J, Tezval H, Van Werven L, Spiess J
  A single amino acid serves as an affinity switch between the receptor and the binding protein of corticotropin-releasing factor: Implications for the design of agonists and antagonist
  Proceedings of the National Academy of Sciences 2001; 98(20): 11142-7
  (VideoMot)

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- Keck ME, Welt T, Wigger A, Renner U, Engelmann M, Holsboer F, Landgraf R
  The anxiolytic effect of the CRH(1) receptor antagonist R121919 depends on innate emotionality in rats
  European Journal of Neuroscience 2001; 13: 373-380
  (VideoMot)

- Kruegel U, Kittner H, Franke H, Illes P
  Stimulation of P2 receptors in the ventral tegmental area enhances dopaminergic mechanisms in vivo
  Neuropharmacology 2001; 40: 1084-93
  (Stereotaxic Instruments, VideoMot)

- Siemiatkowski M, Maciejak P, Sienkiewicz-Jarosz H, Czlonkowska AI, Szyndler J, Gryczynska A, Plaznik A
  Opposite effects of olanzapine and haloperidol in rat ultrasonic vocalization test
  Polish Journal of Pharmacology 2001; 53(6): 669-73
  (VideoMot)

- Stobrawa S, Breiderhoff T, Takamori S, Engel D, Schweizer M, Zdebik A, Boesl M, Ruether K, Jahn H, Draguhn A, Jahn R, Jentsch T
  Disruption of CIC-3, a chloride channel expressed on synaptic vesicles, leads to a loss of the hippocampus
  Neuron 2001; 29: 185-96
  (ActiMot, VideoMot, RotaRod)

- Keck ME, Hatzinger M, Wotjak CT, Landgraf R, Holsboer F, Neumann ID
  Ageing alters intrahypothalamic release patterns of vasopressin and oxytocin in rats
  European Journal of Neuroscience 2000; 12: 1487-94
  (VideoMot)

- Kew JNC, Koester A, Moreau JL, Jenck F, Ouagazzal AM, Mutel V, Richards JG, Trube G, Fischer G, Montkowski A, Hundt W, Reinscheid RK, Pauly-Evers M, Kemp JA, Bluethmann H
  Functional consequences of reduction in NMDA receptor glycine affinity in mice carrying targeted point mutations in the glycine binding site
  The Journal of Neuroscience 2000; 20(11): 4037-49
  (VideoMot)

- Kishimoto T, Radulovic J, Radulovic M, Lin C, Schrick C, Hooshmand F, Hermanson O, Rosenfeld M, Spiess J
  Deletion of Crhr2 reveals an anxiolytic role for corticotropin-releasing hormone receptor-2
  Nature Genetics 2000; 24: 415-9
  (Fear Conditioning System, VideoMot)

- Sauvage M, Brabet P, Holsboer F, Bockaert J, Steckler T
  Mild deficits in mice lacking pituitary adenylate cyclase-activating polypeptide receptor type 1 (PAC1) performing on memory tasks
  Molecular Brain Research 2000; 84: 79-89
  (VideoMot)

- Siemiatkowski M, Rokicki D, Czlonkowska AI, Sienkiewicz-Jarosz H, Bidzinski A, Plaznik A
  Locomotor activity and a conditioned fear response: correlation with cortical and subcortical binding of the dopamine D1 receptor antagonist
  Neuroreport 2000; 11(18): 3953-6
  (VideoMot)

- Wellmer A, Noeske C, Gerber J, Munzel U, Nau R
  Spatial memory and learning deficits after experimental pneumococcal meningitis in mice
  Neuroscience Letters 2000; 296: 137-40
  (VideoMot)

- Koester A, Montkowski A, Schulz S, Stuebe EM, Knaudt K, Jenck F, Moreau JL, Nothacker HP, Civelli O, Reinscheid RK
  Targeted disruption of the orphanin FQ/nociceptin gene increases stress susceptibility and impairs stress adaptation in mice
  Proceedings of the National Academy of Sciences 1999; 96: 10444-9
  (VideoMot)

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- Rupprecht R , Koch M, Montkowski A, Lancel M, Faulhaber J, Harting J, Spanagel R
  Assessment of neuroleptic-like properties of progesterone
  Psychopharmacology 1999; 143: 29-38
  (VideoMot)

- Radulovic J, Kammermeier J, Spiess J
  Generalization of fear responses in C57BL/6N mice subjected to one-trial foreground contextual Fear Conditioning System
  Behavioural Brain Research 1998; 95: 179-89
  (Fear Conditioning System, VideoMot)

- Sillaber I, Montkowski A, Landgraf R, Barden N, Holsboer F, Spanagel R
  Enhanced morphine-induced behavioural effects and dopamine release in the nucleus accumbens in a transgenic mouse model of impaired glucocorticoid (type II) receptor function: influence of long-term treatment with the antidepresssant Moclobemide
  Neuroscience 1998; 85(2): 415-25
  (VideoMot)

- Strohle A, Poettig M, Barden N, Holsboer F, Montkowski, A
  Age- and stimulus-dependent changes in anxiety-related behaviour of transgenic mice with GR dysfunction
  Neuroreport 1998; 9: 2099-102
  (VideoMot)

- Timpl P, Spanagel R, Sillaber I, Kresse A, Reul JMHM, Stalla GK, Blanquet V, Steckler T, Holsboer F, Wurst W
  Impaired stress response and reduced anxiety in mice lacking a functional corticotropin-releasing hormone receptor 1
  Nature Genetics 1998; 19: 162-6
  (VideoMot)

- Montkowski A, Poettig M, Mederer A, Holsboer F
  Behavioural performance in three substrains of mouse strain 129
  Brain Research 1997; 762: 12-8
  (VideoMot)

- Strohle A, Jahn H, Montkowski A, Liebsch G, Boll E, Landgraf R, Holsboer F, Wiedemann K
  Central and peripheral administration of atriopeptin is anxiolytic in rats
  Neuroendocrinology 1997; 65: 210-5
  (VideoMot)

- Shoaib M, Spanagel R, Stohr T, Shippenberg TS
  Strain differences in the rewarding and dopamine-releasing effects of morphine in rats
  Psychopharmacology 1995; 117(2): 240-7
  (VideoMot)

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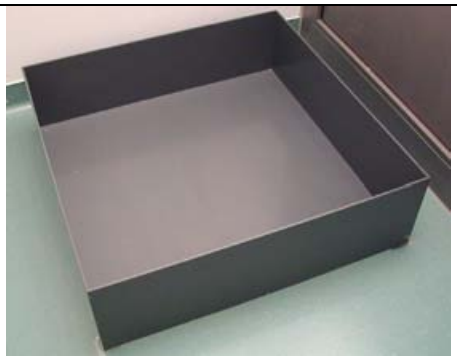
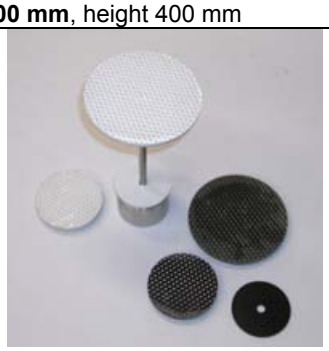
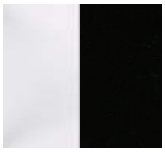
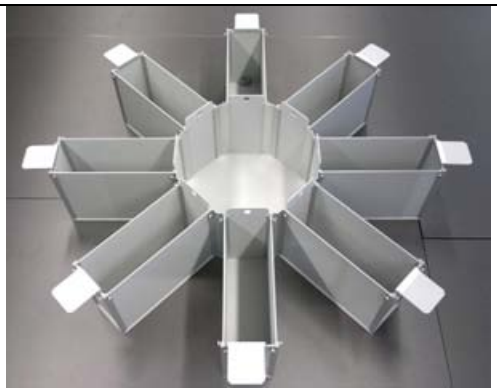
Ordering Information

Cat.No.	Description
Software	
1. Basic Packages	
302050-S-BW-S	**Software Package VideoMot2 BLACK & WHITE** **Single Subject Version** 1 animal, 1 arena.
302050-S-BW-M	**Software Package VideoMot2 BLACK & WHITE** **Multi Subject Version** Up to 2 animals per arena, unlimited number of arenas. Full version with all black & white analysis modules
302050-S-C	**Software Package VideoMot2 COLOR** **Multi Subject Version** Up to 16 animals per arena, max. 16 arenas Full version with all color analysis modules
302050-S-BWC	**Software Package VideoMot2 BLACK & WHITE PLUS COLOR** **Multi Subject Version** - Up to 2 animals per arena, unlimited arenas (black & white) - Up to 16 animals per arena, max. 16 arenas (color) Full version with all black & white + color analysis modules
2. Extension Packages	
302050-S-BW-EXT-C	**Extension Software Package "COLOR" for VideoMot2 BLACK & WHITE** Consisting of: Software Package VideoMot2 COLOR Multi Subject Version. Up to 16 animals per arena, max. 16 arenas. Full version with all color analysis modules. ***Requires:*** Software Package VideoMot2 BLACK & WHITE Multi Subject Version.
302050-S-C-EXT-BW	**Extension Software Package "BLACK & WHITE" for VideoMot2 COLOR** Consisting of: Software Package VideoMot2 BLACK & WHITE Multi Subject Version. Up to 2 animals per arena, unlimited arenas. Full version with all black & white analysis modules. ***Requires:*** Software Package VideoMot2 COLOR Multi Subject Version
Interfaces	
302050-INT	**PCI Interface** for VideoMot2 for use with IBM compatible PCs
302050-INT/NB	**PCMCIA Interface** for VideoMot2 for use with notebooks (CardBus slot)
Accessories	
302050-KR	 **Keyboard** with remote switch for connection to PC or Notebook Cable length 5m, other cables lengthes on request. Keyboard layout english or german, connection USB or PS2 (*please specify with your order*) **NOTE:** *The keyboard/remote control is already included if you order a PC together with the VideoMot2 system*
302050-INT-ADPT	**Interface Adapter** For connection of 2nd or more cameras to the interface
302050-IR	**Infrared unit for VideoMot2** This special IR illumination may be required if experiments are to be performed under very dim light conditions or even incomplete darkness. It is a customized unit that is configured acc. to the requirements of the individual setup.
Video Equipment	
302050-SW-KIT	**Black & White Kit** for VideoMot2 Complete with: - CCD-B&W-Camera with lens - Video-Recorder - Cable set
302050-SW-KIT-1	**Black & White Kit** for VideoMot2

	Complete with: - CCD-B&W-Camera with lens - **DVD-Recorder** - Cable set
302050-COL-KIT	**Color Kit** for VideoMot2 Complete with: - CCD-Color-Camera with lens - Video-Recorder - Cable set
302050-COL-KIT-1	**Color Kit** for VideoMot2 Complete with: - CCD-Color-Camera with lens - **DVD-Recorder** - Cable set
302050-SW-KIT/ADPT-K	**Camera Connecting Kit** Consisting of: - Universal clamp - Adapter - Ball and socket joint 
302050-SW-KIT/CABLE	**Cable set** for VideoMot2 for connecting camera & recorder to the interface. **NOTE:** This position is already included in the Black & White Kit 302050-SW-KIT/KIT-1 and the Color Kit 302050-COL-KIT.
Rearing System	 *A rearing box consists of the square-shaped rearing frame with integrated height-adjustable rearing indicator strips and a special Open Field cage that is placed inside the frame.*
302050-REAR/500-15	**Rearing Indicator Frame** for VideoMot2 **Length of rearings strips = 500 mm**. 32 infrared-light-barriers for detection of rearing movements. Distance between sensors 15 mm. Including base plate. ***Required:*** Rearing Extension-Package 1, 2, 4 or 8 
302050-OF4/R	**Rearing Indicator Cage** for VideoMot2 500x500mm, height 300 or 400mm (*please specify with your order**) Made from aluminium rails and insertable walls Colors: **Black** (for white animals), **white/light gray** (for dark animals)

	 ** If 4 cages are to be combined below one camera we recommend to use the 300mm cages only*
302050-REAR-1	**Rearing Extension-Package 1** for VideoMot2 ***for connection of 1 Rearing Frame*** Comprises: - Control unit 1-channel - Interface adapter for max. 4 channels - CU-Interface connecting cable - Rearing frame connecting cable
302050-REAR-2	**Rearing Extension-Package 2** for VideoMot2 ***for connection of 2 Rearing Frames*** Comprises: - Control unit 2-channel - Interface adapter for max. 4 channels - CU-Interface connecting cable - Rearing frame connecting cables
302050-REAR-4	 **Rearing Extension-Package 4** for VideoMot2 ***for connection of up to 4 Rearing Frames*** Comprises: - Control unit 4-channel - Interface adapter for max. 4 channels - CU-Interface connecting cable - Rearing frame connecting cables
302050-REAR-8	**Rearing Extension-Package 8** for VideoMot2 ***for connection of up to 8 Rearing Frames*** Comprises: - Control unit 8-channel - Interface adapter for max. 8 channels - CU-Interface connecting cable - Rearing frame connecting cables
Test cages	

1. Open Field cages	  **Available colors for Open Field cages:** White (-W) and Light Gray (-LG) for dark animals Dark Gray (-DG) and Black (-B) for white animals *Please specify with your order*
302050-OF1-05	**Open Field "Small"** Made from PVC Dimensions: approx. **500 x 500 mm**, height 400 mm.
302050-OF1	**Open Field "Large"** Made from PVC Dimensions: approx. **1.000 x 1.000 mm**, height 400 mm
2. Water Maze	   **Available colors for Water Mazes:** White (-W) for dark unmarked animals in clear water, Black (-B) for white unmarked animals in clear water. If white water is to be used, both colors are suitable, although we recommend a white pool (white animals have to be marked with a black spot). **Available platform shapes, sizes & colors:** Round 10cm or 14cm diam., square-shaped 10x10cm or 14x14cm, black or white or acrylic *Please specify with your order*
302050-WM/1200	**Water Pool for Morris-Water-Maze test** Diameter **1200 mm**, height 600 mm, water height max. 300 mm, cap for water outlet, 1 platform.
302050-WM/1600	**Water Pool for Morris-Water-Maze test** Diameter **1600 mm**, height 600 mm, water height max. 300 mm, cap for water outlet, 1 platform.
302050-WM/1800	**Water Pool for Morris-Water-Maze test** Diameter **1800 mm**, height 600 mm, water height max. 300 mm, cap for water outlet, 1 platform.
302050-WM/ATLPF	 **Atlantis Platform for Rats** Diameter 140 mm, height 300 mm (released), 190 mm (submerged) (i.e. rise distance 110 mm),

	load approx. 1000 g. Complete with control unit, TTL adapter to VideoMot2 interface and cable set. The top of the platform can either be black or white (please specify with your order) and is easily exchangeable. When the animal is detected above the platform for a user-defined time period (delay) the platform rises automatically to the surface.
3. Barnes Mazes Mouse	
302050-BM/M	  **Available colors for Barnes Maze:** White (-W) and Light Gray (-LG) for dark animals Dark Gray (-DG) and Black (-B) for white animals *Please specify with your order* The Barnes maze consists of a round plate with a diameter of 1220 mm, 10 mm thickness, made from PVC with 40 circular holes (50 mm diameter, the distance from the hole center from the outer rim is 75 mm). Other hole numbers and diameters on request. An escape tunnel made from PVC can be mounted below each hole (50 mm inner diameter, 80 mm depth, length variable between 120 and 160 mm). The animal can be easily removed from the tunnel after the experiment is finished. A start tube made from gray PVC is included in the scope of supply. The maze is mounted on an aluminium base raising it 800 mm above the floor. Other heights on requests. Optional: Integrated or stand-alone mounting units for extra-maze cues.   ***Rat systems are available on request.***
4. Radial Mazes	  The radial maze consists of 8 arms and an octagonal center compartment that can be easily assembled. The maze is constructed from PVC and aluminium. Each arm can be closed with a door made from PVC. A food bowl is mounted to the rear wall of each arm. Incl. marker plates made from white PVC that can be used to mark the individual arms with numbers. Dimensions can be also custom-built.  **Available colors for Radial Maze:**

	White (-W) and Light Gray (-LG) for dark animals Dark Gray (-DG) and Black (-B) for white animals *Please specify with your order*
341020-M	**Radial Maze Mouse** Dimensions: arm length 300 mm, arm width 50 mm, wall height 150 mm.
341020-R	**Radial Maze Rat** Dimensions: arm length 425 mm, arm width 145 mm, wall height 300 mm.
5. Y-Maze ***"Continuous Alternation"***	  This Y-maze consists of 3 identical arms mounted at 120 degrees to one another. It is manufactured in one piece for easy cleaning. The maze is constructed from PVC. Base frame optional. The maze can also be custom-built. **Available colors for Y-Maze:** White (-W) and Light Gray (-LG) for dark animals Dark Gray (-DG) and Black (-B) for white animals *Please specify with your order*
341021-M/SA	**Y-Maze Mouse** Dimensions: arm length 325 mm, arm width 85 mm, wall height 150 mm
341021-R/SA	**Y-Maze Rat** Dimensions: arm length 425 mm, arm width 145 mm, wall height 225 mm
6. Elevated Plus Mazes	  The plus maze consists of 2 open and 2 closed arms mounted at 90 degree to one another and separated by a central square-shaped platform. The maze is constructed from PVC and mounted on an aluminium base raising it above the floor. Dimensions and height can be also custom-built. **Available colors for Elevated Plus Mazes:** White (-W) and Light Gray (-LG) for dark animals Dark Gray (-DG) and Black (-B) for white animals *Please specify with your order*
341011-M	**Elevated-Plus-Maze Mouse** Dimensions: arm length 300 mm, arm width 50 mm, wall height 150 mm, ledges 5mm, base height 500 mm.
341011-R	**Elevated-Plus-Maze Rat** Dimensions: arm length 425 mm, arm width 145 mm, wall height 225 mm, ledges 10 mm, base height 700 mm.

7. Zero Mazes	  The zero maze consists of 2 open and 2 closed equally-sized quadrants. The maze is constructed from PVC and mounted on an aluminium base raising it above the floor. Dimensions and height can be also custom-built. **Available colors for Zero Mazes:** White (-W) and Light Gray (-LG) for dark animals Dark Gray (-DG) and Black (-B) for white animals Infra-red translucent black material and clear acrylic are available on request. *Please specify with your order*
341012-M	**Zero Maze Mouse** Dimensions: outer diameter 460 mm, arm width 55 mm, wall height 110 mm, ledges 5 mm, base height 400 mm.
341012-R	**Zero Maze Rat** Dimensions: outer diameter 940 mm, arm width 55 mm, wall height 190 mm, ledges 10 mm, base height 700 mm.

The VideoMot2 system is in continuous development in cooperation with our end-users and new functions and analysis modules are added continuously. If your setup requires new features or parameters please contact us and we will discuss your specific needs!

Sophisticated Life Science Research Instrumentation

TSE Systems is a leading supplier of sophisticated research instrumentation in the global life science market. Our focus is on providing the total customer solution, with modular designs of integrated hardware and software platforms for neuroscience, metabolic and behavioral phenotyping, drug screening and toxicology.

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