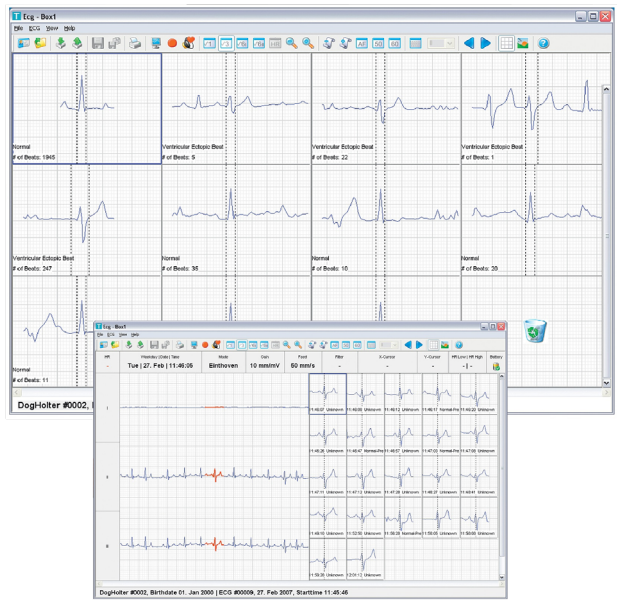
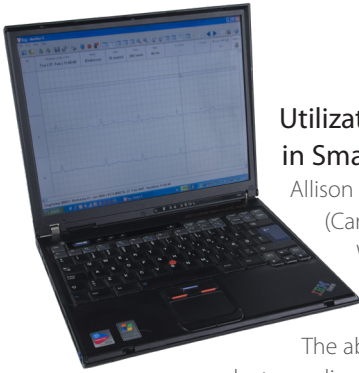


Televet II

The Telemetric ECG and Holter System





Utilization of the Televet 100 in Small Animal Patients

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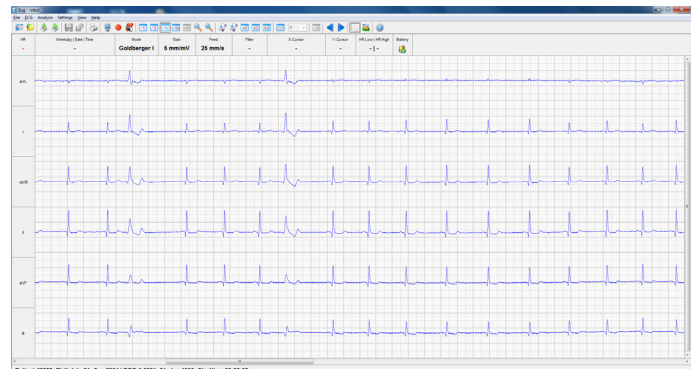
The ability to continuously monitor electrocardiograms (ECGs) in small animal patients can provide valuable diagnostic information to the clinician. This is important in the intensive care unit (ICU) for monitoring cardiac patients, surgical patients, trauma patients, and patients with artificial pacemakers as well as many others. The ideal ECG monitoring tool for small patients would be lightweight, be transmitted by telemetry, have filters specific for veterinary patients and have the capacity to store data internally when out of telemetry range. At Washington State University, College of Veterinary Medicine, we have found the KRUTECH Televet 100 (KRUUSE, Denmark) to meet these needs as well as provide other beneficial features.

We have used the system on numerous clinical cases but I have chosen to describe 2 cases in an attempt to highlight the systems features. The first case was a domestic shorthair cat that was seen at the teaching hospital for heart failure due to hypertrophic cardiomyopathy (the most common cardiomyopathy of the cat). While managing the patient for heart failure in the ICU, we considered it prudent to monitor his ECG for arrhythmias. Telemetry in the cat is a particularly challenging endeavor as they often object to the monitoring device due to painful clips or confinement due to wires. They also tend to have very small complexes with substantial artifact. We found the Televet 100 very useful in this particular patient because the ability to attach the leads via small patches alleviate the pain of ECG clips and the device could be rested beside the cat in the cage. The complex size and artifact filters could be adjusted to optimize his tracing to produce a high quality tracing as seen here on the left. This cat had many ventricular premature contractions (VPCs) during his time in the ICU and we were able to document them as well as quantify them over 24 hours so that a therapeutic decision regarding anti-arrhythmic medications could be made.

The second case outlines the versatility of the system. Arrhythmogenic cardiomyopathy (ARVC) is a cardiomyopathy that affects many boxers. One particular boxer with ARVC presented to the teaching hospital recently. We were hoping to quantify and characterize her ventricular arrhythmias over 24 hours in the ICU setting.



She became very nervous in the ICU and it quickly became apparent that we were unlikely to get a representative ECG of a normal day for this particular dog. Our solution was to place a SD card into the Televet 100 unit and use it as a Holter device at home where this dog would be more comfortable and our tracing would be more representative of a normal day for her. The image below is a tracing from her SD card showing a high quality tracing and revealing her VPCs. This feature is also helpful for our hospitalized patients that are walked out of range from the Bluetooth device. In summary, we have enjoyed the high quality diagnostic tracings, flexibility of the system, the lightweight unit, and in general the ease of use of this piece of equipment in our small animal patients.



About the Televet software

The Televet II is supplied with a unique software package which provides the clinician with an easy to use Holter report. Once the 24hr recording has been completed the analysis software breaks down the trace to obtain an overview of the morphology of the heartbeats. This enables the clinical team to review the patients ECG reading in greater detail.

This compact unit is ideal for in-house post-operative and intensive care nursing enabling continuous monitoring while the patient regains its reflexes. Televet II is unique in that it allows you to carry the audible and visible trace with you to another room than that of the patient, this allows staff to maximise efficiencies within the clinic.

The Televet can be utilised in many areas and this also includes the Operating Theatre, offering the clinician the ability to monitor anaesthesia. With large data storage capacity and no paper this makes monitoring easy and hassle free. It is possible to transfer the trace onto a large screen in the theatre located at eye level so the surgeon and anaesthetist can monitor the patient safely and effectively.

Televet II Holter ECG software is not only ideal for cardiology work up but also for work up of neurological diseases, endocrine disorders and causes of episodic weakness and collapse.

Due to the ease of use, you don't have to be a cardiology specialist to take advantage of the system. The Holter analysis can be easily performed and the data sent to an online cardiology specialist. The only thing this software does not do is give you the diagnosis. It is also possible to store the collected data so that long term cardiac conditions can be monitored. New business opportunities within practice could include screening of dogs predisposed to dysrhythmias.



KRUUSE Televet

Patient Name:

OD Dog Holter

Birthdate:

01.01.2000

Gender:

Male

Patient owner:

OD

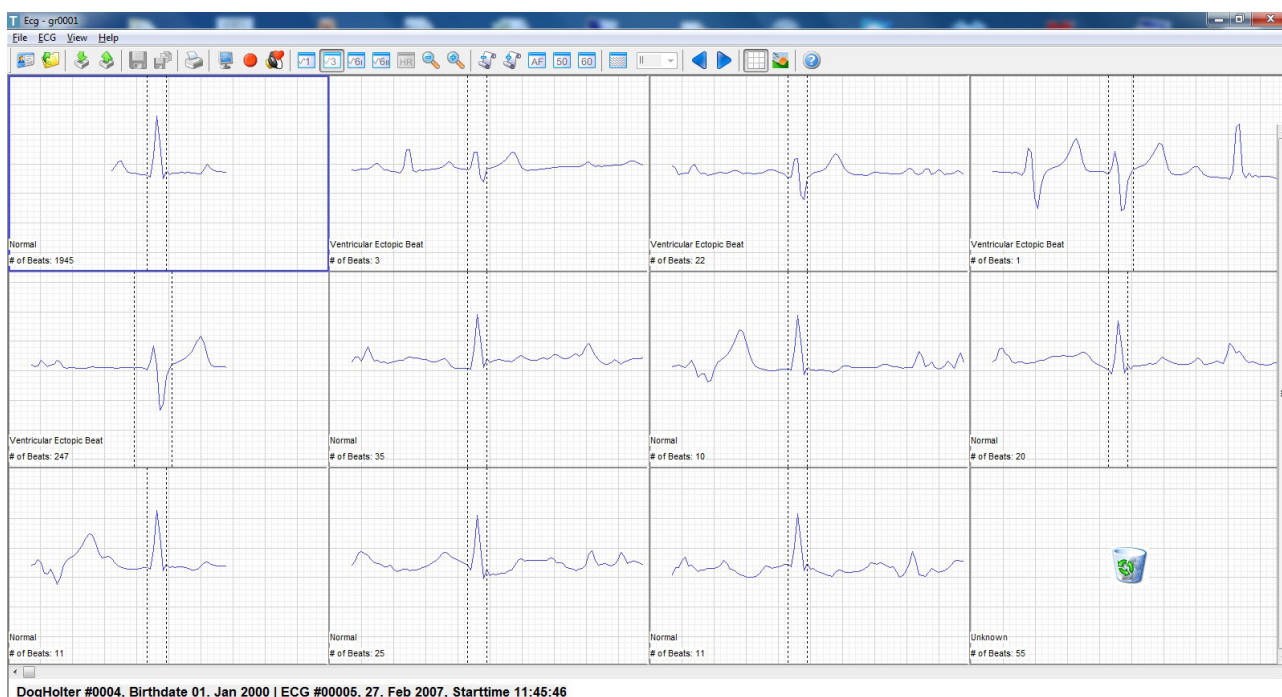
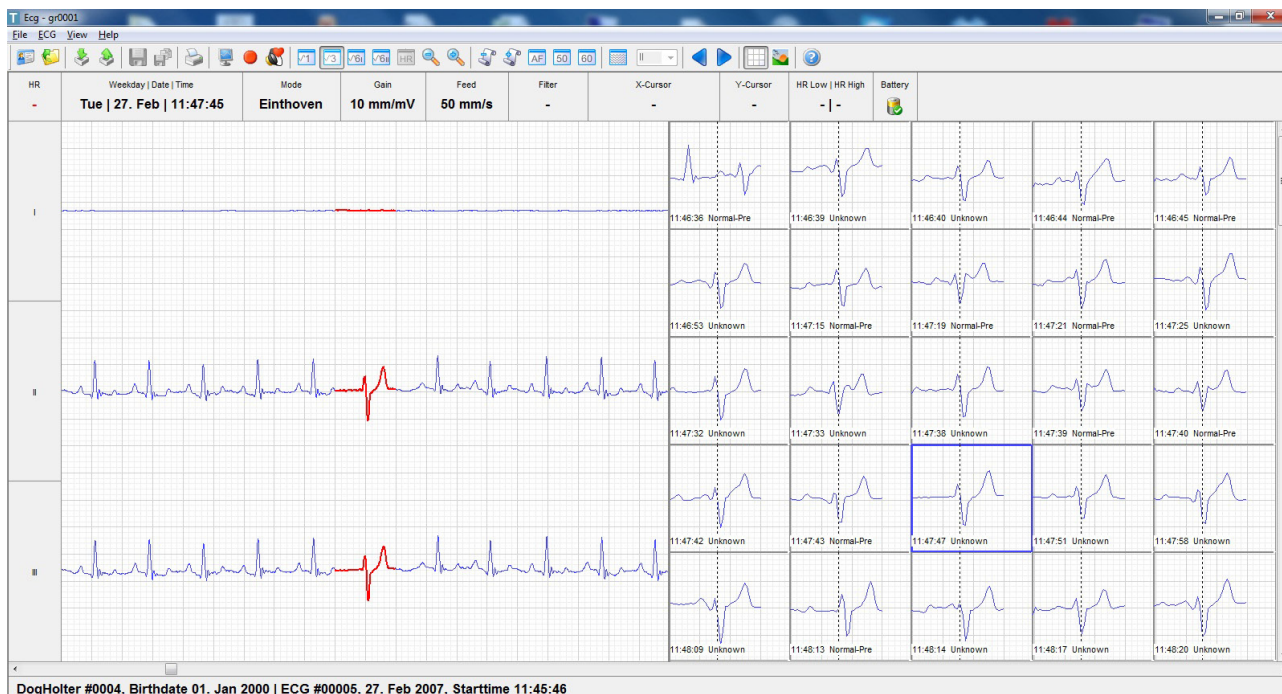
Statistical Data

Start Time:	28. Jan 2016, 08:20:02
Number of Beats analyzed:	149904
Total analyzed time:	23 h, 43 min, 57 s
Number of Atrial Premature Contractions:	0
Number of Ventricular Ectopic Contractions:	2820
Number of Fusion Beats:	0
Ventricular Escape Beats:	0
Normal Beats:	142365
Unclassified Beats:	4724
Couplets:	3
Triplets:	0
Ventricular Runs:	0
Atrial Couplets:	0
Atrial Triplets:	0
Atrial Runs:	0
Longest Pause >= 2s:	3.24 Fri 29. Jan 04:18:57
Second Longest Pause >= 2s:	3.18 Fri 29. Jan 04:36:58
Third Longest Pause >= 2s:	3.05 Fri 29. Jan 04:33:14

Hour	Min	HR	Max	HR	Avg	HR	APC	VPC	Fusion	VEsc.	Normal	Unclass	Couplet	Triplet	V Runs
08:00	34	bpm	240	bpm	126	bpm	0	98	0	0	7053	400	0	0	0
09:00	26	bpm	221	bpm	104	bpm	0	72	0	0	6193	11	0	0	0
10:00	27	bpm	253	bpm	115	bpm	0	78	0	0	6074	750	0	0	0
11:00	29	bpm	269	bpm	114	bpm	0	84	0	0	6413	371	0	0	0
12:00	24	bpm	175	bpm	80	bpm	0	10	0	0	4795	1	0	0	0
13:00	24	bpm	229	bpm	95	bpm	0	46	0	0	5670	11	0	0	0
14:00	33	bpm	226	bpm	109	bpm	0	148	0	0	6292	96	0	0	0
15:00	36	bpm	260	bpm	150	bpm	0	280	0	0	6437	2312	0	0	0
16:00	38	bpm	234	bpm	144	bpm	0	273	0	0	8155	209	0	0	0
17:00	41	bpm	225	bpm	129	bpm	0	214	0	0	7519	11	0	0	0
18:00	27	bpm	231	bpm	108	bpm	0	175	0	0	6305	9	0	0	0
19:00	27	bpm	232	bpm	108	bpm	0	157	0	0	6269	54	0	0	0
20:00	38	bpm	157	bpm	98	bpm	0	193	0	0	5711	13	0	0	0
21:00	29	bpm	242	bpm	108	bpm	0	92	0	0	6275	158	0	0	0
22:00	29	bpm	233	bpm	106	bpm	0	79	0	0	6304	24	0	0	0
23:00	34	bpm	191	bpm	111	bpm	0	105	0	0	6568	16	0	0	0
00:00	23	bpm	169	bpm	84	bpm	0	91	0	0	4986	7	0	0	0
01:00	22	bpm	129	bpm	79	bpm	0	61	0	0	4723	0	0	0	0
02:00	21	bpm	129	bpm	78	bpm	0	68	0	0	4606	4	0	0	0
03:00	18	bpm	253	bpm	70	bpm	0	49	0	0	4185	16	0	0	0
04:00	18	bpm	231	bpm	83	bpm	0	108	0	0	4868	29	0	0	0
05:00	26	bpm	213	bpm	91	bpm	0	120	0	0	5381	9	0	0	0
06:00	29	bpm	230	bpm	117	bpm	0	96	0	0	6770	185	0	0	0
07:00	24	bpm	231	bpm	112	bpm	0	123	0	0	4813	28	3	0	0
Total:	677	bpm	5203		2519		0	2820	0	0	142365	4724	3	0	0

Televet 100

28. Jan 2016, 08:20:02





KRUUSE Televet II - Telemetric ECG and Holter

The new Televet II replaces the Televet 100 which so far has set a "Gold Standard" for veterinary ECG.

Before Televet 100 the veterinary surgeon was limited to a resting ECG using a traditional ECG system. Now with the development of Televet the veterinary surgeon is able to monitor the animal during its normal daily activities. This allows to diagnose cardiac rhythm abnormalities which may only occur during exercise or at rest. The Televet provides a telemetric two channel (3 / 6 vector) ECG system. It has been especially developed to be used for small and large animals. The Televet allows convenient ECG recordings at rest as well as during exercise with an excellent quality even during strenuous exercise. In telemetric mode the Televet transmits data in real-time. The ECG is displayed on a laptop or PC and it is stored on the hard disk. In addition Android or iOS phones and tablets can be used remote control the Televet II device or to display and record an ECG in real time. In Holter mode, data is stored on a standard micro SD-Card or micro SDHC card which is plugged into the ECG device for up to 3 days. A telemetric connection to host PC or laptop is not required during recording. Telemetric mode and Holter mode can be used in parallel, this ensures that an ECG is always recorded. The system includes software which enables ECG recordings to be reviewed at any time, printed or emailed for a second opinion. Televet II now supports the Televet Cloud Service for simple data exchange between mobile devices and desktop computers.

System requirements for Televet Complete software on Windows

- Windows 7, 8 or 10
- PC or laptop with min.1,5 GHz clock frequency
- Minimum 2 GB RAM

System requirements for Televet Complete software on Mac/Apple

- MacOS 10.1 or newer

System requirements for Televet Light on Android

- Android Version 4.2 or newer
- Android Phone or Tablet

System requirements for Televet Light on Apple iOS device

Look into "App Store" to find a list of devices compatible with the Televet light app.

Also see <http://www.televet.de/iPadCompatibility> for Televet II compatible devices

Televet II Complete software includes:

- Holter recording on micro SD and micro SDHC cards
- License Key for Holter Analysis for small animal and Equine Feto-Maternal ECG/HR recording

Televet II Basic includes:

- Televet Light software which can display and record ECG, but does not includes the analysing software.

Three years of Televet Cloud Service included for both Televet II and Televet II Basic.



Technical Data

- Channels: Two; for simultaneous recording of Einthoven I, II, III and Goldberger aVR, aVL, aVF
- Range: 100m clear range with external Bluetooth adapter
- Batteries: 2 Mignon Alkaline (Type AA)
- ECG devices per PC: Up to 4
- PC Sampling rate: 500 Hz
- Frequency Range: 0.05 Hz – 125 Hz

Features

- Wireless telemetric transmission of ECG to PC or laptop, smartphone or tablet
- Two physical channel ECG for small and large animal
- Holter ECG (>3 days) on standard micro SD/SDHC-Card
- Clear range of about 100 m (Bluetooth Class 1) with external Bluetooth in PC
- Very small:
Size: 113 x 71 x 20 mm (4.44 x 2.79 x 0.78 inch)
Weight: 129 g incl. batteries

Televet II includes:

Transmitter, Bluetooth Class 1 receiver, Micro SDHC-Card, Televet Complete software, Televet Light software, protection bag and carrying case.

Cat. No 291308

Televet II Basic includes:

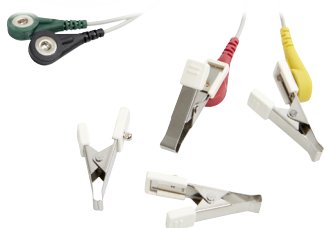
Transmitter, Bluetooth Class 1 receiver, Televet Light software, protection bag and carrying case.

Cat. No 291309



Patient cables and KRUUSE ECG Electrodes are not included, and need to be ordered separately.

Cat. No 291312 Televet II patient cable, Small Animal



Cat. No 291313 Televet Crocodile Clips 4/pk



Cat. No 291310 KRUUSE ECG Electrodes 40/pk

These Ag/AgCl electrodes are free of latex and with Aqua-Wet gel for fast pick-up of the ECG signal. The electrodes have great adhesive effect which often makes it possible to apply the electrodes without any removal of haircoat.



Televet Bluetooth Hub

The Televet Bluetooth Hub is ideal solution in an ICU settings. Televet Bluetooth Hub feeds the ECG signal into the clinics internal network.

- Real-time conversion of ECG real-time stream from Bluetooth to the clinic's internal network
- Support for up to four Televet II devices in parallel
- Automatic reconnect to Bluetooth for ECG stream in case the patient was out of reach
- Monitoring of up to 4 patients at a time per Monitoring Station
- No need for Bluetooth Support at the Monitoring Station
- Multiple Monitoring Stations supported on a single Bluetooth Hub

Streaming of the ECG data via the Bluetooth Hub is not limited to the clinic's internal network only. By additional use of the Televet Gateway (see Televet Mobile Option) the streams are accessible any time from any location, even at night from the veterinarian's home.

Cat. No 291304 Televet Bluetooth Hub

For more information visit www.televet.de