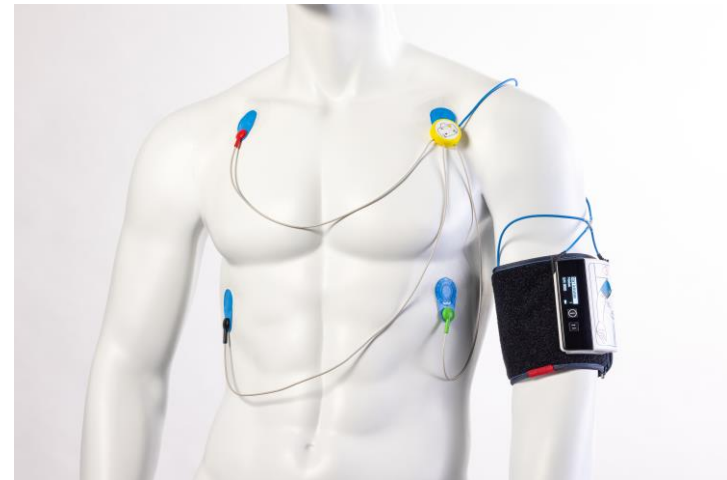


# ABPMpro

A multi-sensor approach to ambulatory BP

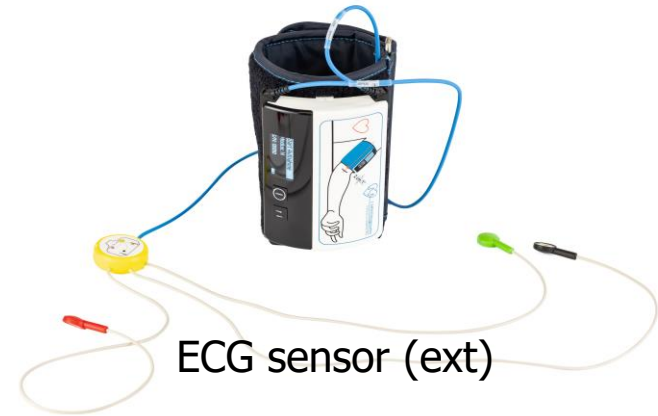





 Made in Germany

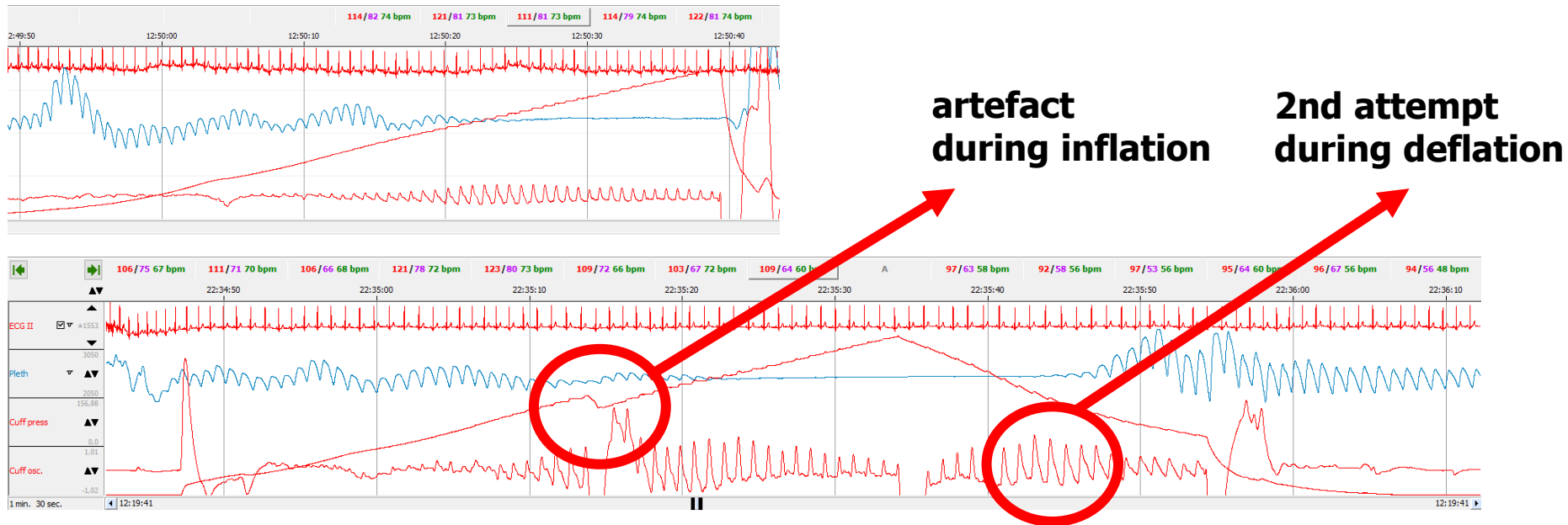
## Technical features (1): Sensors / hardware

- Oscillometric sensor
- 1-channel-ECG sensor (cuff)
- Actigraphy sensor (X/Y/Z)
- Body position sensor
- PPG (optical) sensor (ext)
- 3-channel-ECG sensor (ext)



## Technical features (2): Measurements

- Oscillometric measurement during continuous inflation and/or deflation (always both or intelligent: only when recording during inflation fails, monitor will try a second attempt during deflation phase)

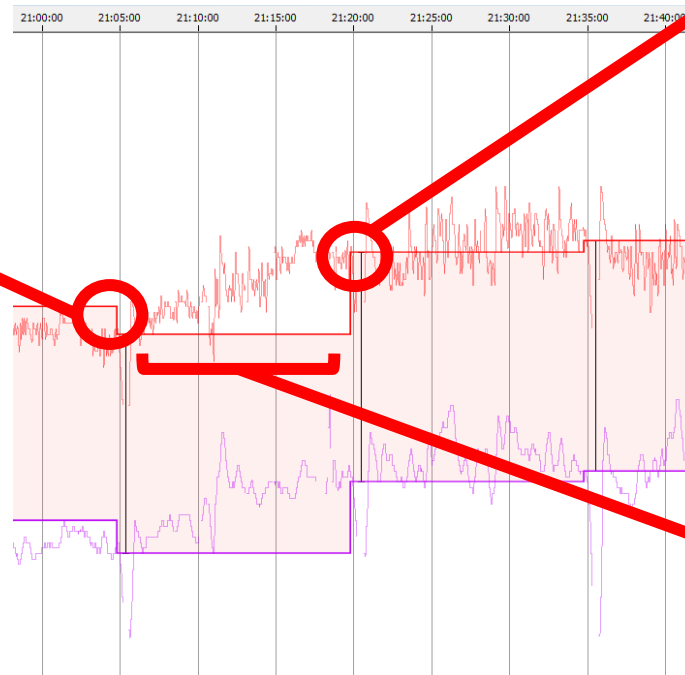


## Technical features (3): Measurements

- Continuous blood pressure (beat-to-beat) based on PTT/PAT (pulse transit time / pulse arrival time)

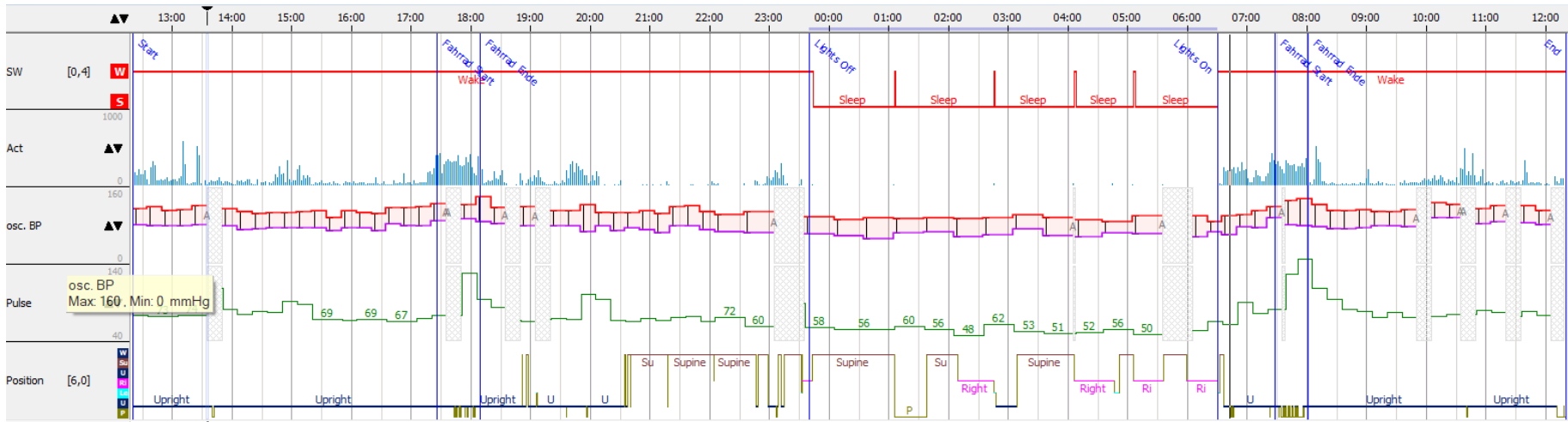
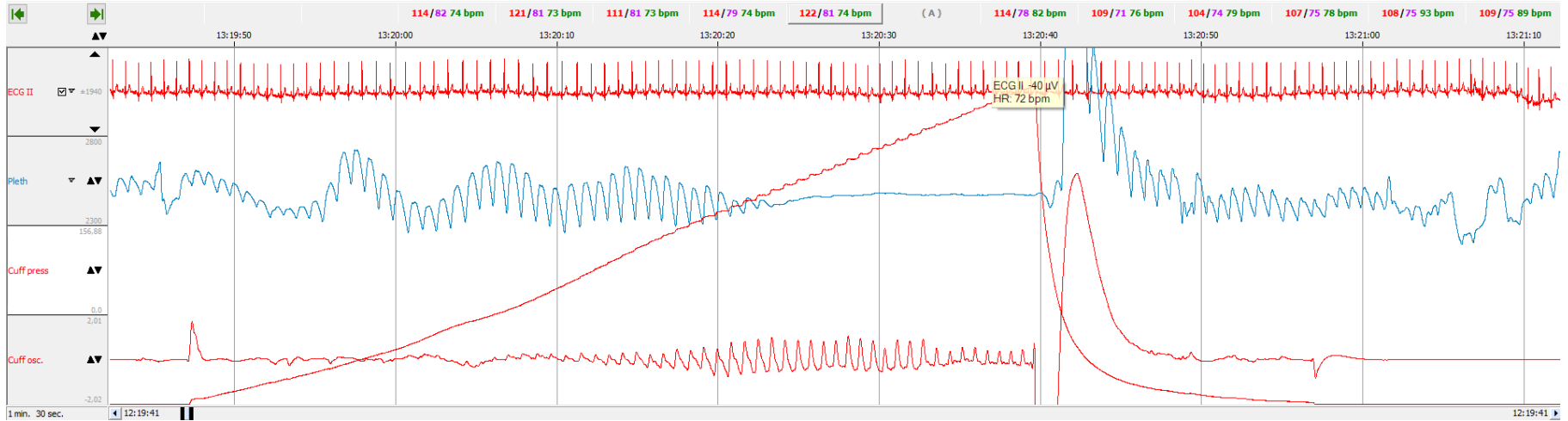
**Oscillometric recording at 9:20 pm  
121 / 78 mmHg**

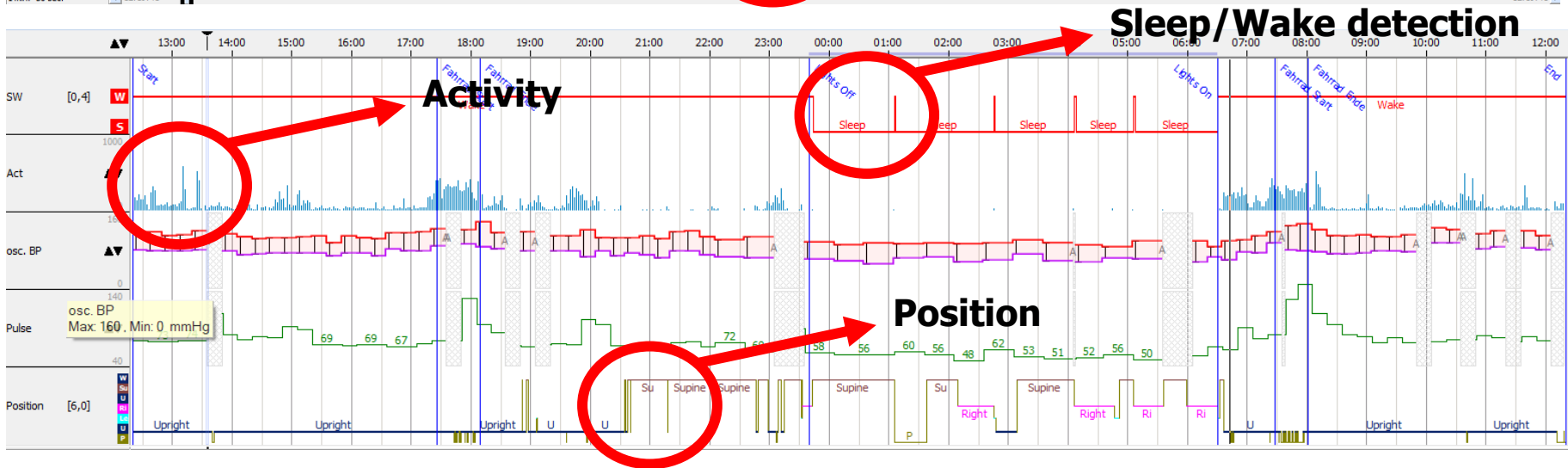
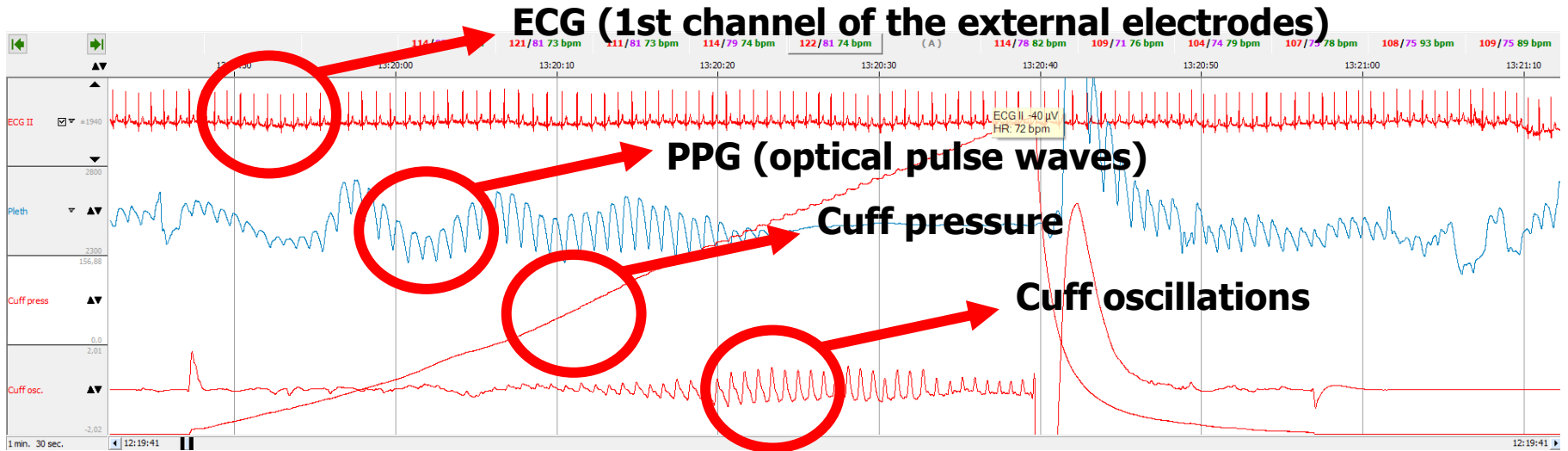
**Oscillometric recording at 9:05 pm  
106 / 66 mmHg**



**PTT/PAT recording  
15 minute beat-to-beat BP recording**

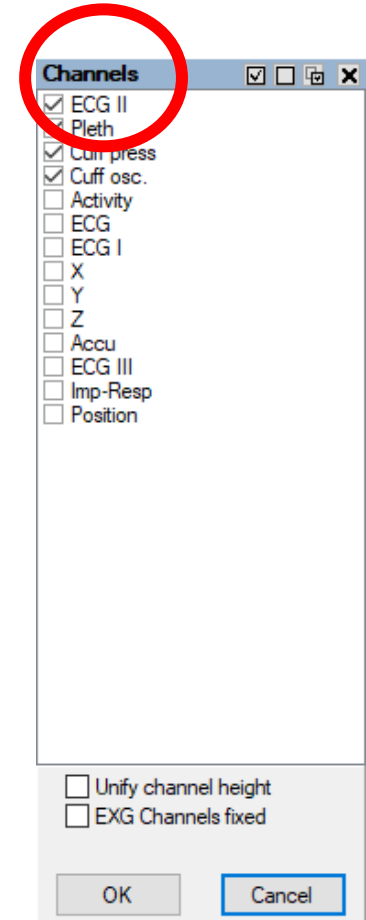
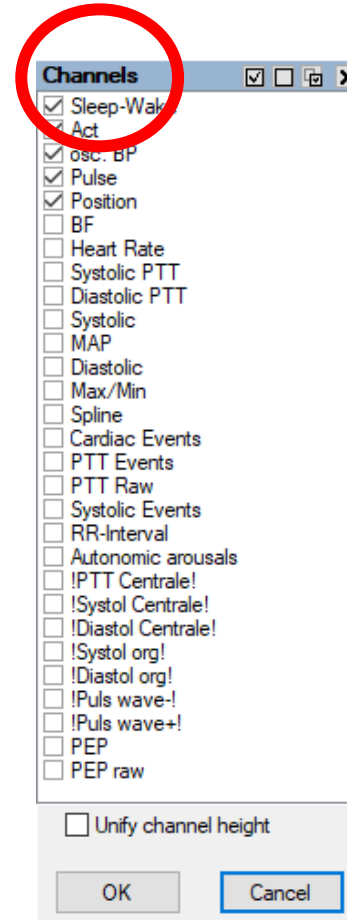
**Each cuff-BP (24h) used for re-calibration of PTT/PAT**





## Technical features (5): Measurements

- Time-stamped multi-sensor data
  - Many more channels to chose from for graphical display
- Oscillometric (cuff) blood pressure
  - PTT beat-to-beat blood pressure
  - 3-channel ECG recording
  - Actigraphy / accelerometry / gyroscopy
  - Body poistion (arm/thorax)
  - Sleep arousals
  - Respiration rate
  - Heart rate variability
  - Pre-ejection period



## Technical features (6): Measurements

- Time-stamped multi-sensor data  
(track what happens)

**Irrregularity in the ECG, ...**

**... will also show in the PPG**





## Technical features (7): Export all data

### High sampling rate, ...

Patient Information Data

Identification    Diagnosis    **Montage**    Logbook    Track

Device ID: 0049    Firmware Version: J1 from 220217    Cuff size: Medium cuff

Day: 6 h (15 min.), Night: 22 h (30 min.), Maximum: 180 mmHg, Autostop

Abort Recording: Normal end of record reached

Number	Description	Signal Type (Port)	Rec. Rate (Hz)
0	Accu	Accu	4
1	Pt. Marker	Patientenmarker	4
2	X	X	32
3	Y	Y	32
4	Z	Z	32
5	Cuff press	Cuff press.	128
6	ECG	ECG	256
7	ECG I	ECG I	256
8	ECG II	ECG II	256
9	ECG III	ECG III	256
11	Imp-Resp	Imp-Resp	256
12	Position	Pos. Ext	4
13	Pleth raw	Pleth Raw	256
14	Log	Log	256

OK    Cancel

## ... export of all raw data!

Export

Export to own subfolder

Export Path: C:\Users\Achim Schwarz\Desktop\

Filename: Channel name

RIFF Export     ASCII Export

Complete Recording     TIB area

Selection     User Areas

without Time Base

Channel name	Export rate
<input checked="" type="checkbox"/> ECG II	256 Hz
<input checked="" type="checkbox"/> Pleth	256 Hz
<input checked="" type="checkbox"/> Cuff press	128 Hz
<input checked="" type="checkbox"/> Cuff osc.	128 Hz
<input checked="" type="checkbox"/> Activity	32 Hz
<input checked="" type="checkbox"/> ECG	256 Hz
<input checked="" type="checkbox"/> ECG I	256 Hz
<input checked="" type="checkbox"/> X	32 Hz
<input checked="" type="checkbox"/> Y	32 Hz
<input checked="" type="checkbox"/> Z	32 Hz
<input checked="" type="checkbox"/> Accu	4 Hz
<input checked="" type="checkbox"/> ECG III	256 Hz
<input checked="" type="checkbox"/> Imp-Resp	256 Hz
<input checked="" type="checkbox"/> Position	4 Hz

Export    Cancel



## Technical features (8a):

Export all data – data format in ASCII / RIFF / EDF

### Activity

Signal Type: Mag\_Type  
 Start Time: 28.02.2022 12:19:41  
 Sample Rate: 32  
 Length: 2764800  
 Unit: mg

Data:  
 508  
 118  
 121  
 131  
 129  
 133  
 132  
 132  
 128  
 131  
 140  
 141  
 138  
 135  
 133  
 ...  
 ...  
 ...

### Cuff osc.

Signal Type: BD\_AC\_Type  
 Start Time: 28.02.2022 12:19:41  
 Sample Rate: 128  
 Length: 11059200  
 Unit: mmHg

Data:  
 0,0  
 0,0  
 0,0  
 0,0  
 0,0  
 0,0  
 ...  
 ...  
 ...  
 0,01  
 0,07  
 0,13  
 0,2  
 0,27  
 0,34  
 ...  
 ...  
 ...  
 0,42  
 0,49  
 0,55

### Cuff press.

Signal Type: BD\_Type  
 Start Time: 28.02.2022 12:19:41  
 Sample Rate: 128  
 Length: 11059200  
 Unit: mmHg

Data:  
 0,0  
 0,0  
 0,0  
 0,0  
 0,0  
 0,0  
 0,0  
 0,0  
 ...  
 ...  
 ...  
 127,45  
 127,38  
 127,37  
 127,37  
 127,33  
 127,3  
 127,32

### ECG channel #1

Signal Type: ECG1\_Type  
 Start Time: 28.02.2022 12:19:41  
 Sample Rate: 256  
 Length: 22118400  
 Unit: µV

Data:  
 986  
 958  
 997  
 1009  
 1074  
 1143  
 1021  
 927  
 856  
 886  
 ...  
 ...  
 ...  
 25  
 25  
 22  
 20  
 14



## Technical features (8b):

Export all data – data format in ASCII / RIFF / EDF

### Imp-Resp

Signal Type: ECG\_Imp\_Resp\_Type  
Start Time: 28.02.2022 12:19:41  
Sample Rate: 256  
Length: 22118400  
Unit: Ohm

Data:

1132,4  
1132,5  
1132,4  
1132,4  
1132,4  
1132,4  
1132,5  
1132,5  
...  
...  
...  
1115,1  
1115,1  
1115,1  
1115,1  
1115,1  
1115,0  
1115,1  
1115,1  
1115,1

### Pleth

Signal Type: Pleth\_Type  
Start Time: 28.02.2022 12:19:41  
Sample Rate: 256  
Length: 22118400  
Unit:

Data:

...  
...  
...  
2796  
2802  
2808  
2814  
2820  
2826  
2831  
2836  
2841  
2846  
2851  
2855  
2859  
2863  
2866  
2869  
2872

### Position

Signal Type: Pos\_XYZ\_Type  
Start Time: 28.02.2022 12:19:41  
Sample Rate: 4  
Length: 345600  
Unit:

Data:

Upright  
Upright  
Upright  
Upright  
...  
...  
...  
Prone  
Upright  
Upright  
Upright  
Upright  
Prone  
Prone  
Prone  
Prone  
...  
...  
...  
Supine  
Supine

### X-axis

Signal Type: KLX\_Type  
Start Time: 28.02.2022 12:19:41  
Sample Rate: 32  
Length: 2764800  
Unit: mg

Data:

-868  
-867  
-866  
-866  
-866  
-866  
-865  
...  
...  
...  
154  
155  
155  
154  
154  
...  
...  
-708  
-778  
-916  
-1000

**In addition (not shown): ECG channels #2 and #3, battery voltage, Y- and Z-axis**

## Technical features (9)

Clinical output for diagnostics  
Reporting according to guideline recommendation

- Graphical display
- # successful recordings (BP/PTT)
- Averages (day/night/total)
- Dipping status
- BP/Hypertension classification
- ...





Be part of the future of ABPM

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