

# EEG gel head cap

## User Manual



VERSION 1.0 - 2015

Thank you for using the TMSi EEG gel head cap (95-8480-20640XX-0).

This document contains the instructions for use, available sizes and layout of the “TMSi EEG gel head cap”.

## 1 INSTRUCTIONS FOR USE

**Intended use:** The TMSi EEG gel head cap (“head cap”) is intended to be used for recording brain activity on the surface of the human head by or under the supervision of a physician.

**Before using:** Disconnect the head cap from the TMSi amplifier system. Check if the head cap is clean and in good condition and if there are no soft rings missing on the inside of the head cap.

---

**Important** Do not use a head cap that is not well cleaned or in a bad technical condition.

---

**Preparing patient:** The hair should be washed with a normal shampoo (no conditioner!) and be dry. Comb the hair straight down as much as possible.

---

**Important** Place a head cap only on a head which has the skin intact. Consult a specialist if there is any doubt regarding the condition of the patient/skin.

---

**Placing the head cap:** Select the correct head cap size by measuring the head circumference of the patient. The size of the head cap is mentioned on the cable. Refer to chapter 2 of this document for the available head cap sizes.

Place the head cap gently over the head and use the Velcro straps to secure the head cap under the chin. The fit of the head cap can be adjusted with the elastic straps at the right side of the head cap. The head cap needs to be fitted as tight as possible, without becoming uncomfortable for the patient.

Check if all the electrodes are in the correct position. Electrodes that are tilted should be placed properly by lifting these.

---

**Important** Loose soft rings at the inside of the head cap can be a choking hazard for small children. Always check if the rings are firmly attached to the electrodes before placing the head cap.

---

**Injecting the conductive electrode gel:** The head cap will work with most of the available conductive electrode gels. Inject the gel with a blunt needle through the holes of the electrodes. Remove any spilled gel at the outside of the head cap. Make sure that you do not use excessive amounts of gel, as it can form bridges between different electrodes.

**Connecting head cap to EEG system:** Depending on the number of electrodes on a head cap, one or more electrode board adapters (EBA, Figure 1) are required to hook up the head cap to a TMSi amplifier system. Head caps with 2 or more cables have marked connectors (1, 2, 3, etc.). Refer to the EBA overview at the end of this document for corresponding plug numbers of EBA.



**Figure 1: EBA multi-connector (95-5005-0100-X)**

Although the head cap contains an electrode with the label “GND”, TMSi advises to use a standard snap electrode in combination with the TMSi wristband (Figure 2) as patient ground for optimal signal quality. Make sure to wet the wristband with water.



**Figure 2: Wristbands for patient ground (95-8540-0002-1)**

---

**Important**

Always switch off the TMSi amplifier system first before connecting plugs of the EBA to the system.

After applying electrode gel, check impedances if possible (refer to the manual of TMSi amplifier) and add extra gel to electrodes that have high impedances.

**Cleaning:** After use, remove the head cap gently and clean it immediately before the gel can dry up. Rinse the head cap with lukewarm tap water and if necessary use a mild detergent to clean the fabric and electrodes. A soft toothbrush can be used to remove any hard stains and residues. Dry the head cap with a soft towel and hang it out to dry completely.

---

**Important** Make sure the head cap is disconnected from the TMSi amplifier system and the patient. Avoid water entering the EBA connector(s), dry connector(s) immediately if they do come in contact with water. Do not use a hairdryer to dry the head cap; this can damage the fabric irreversibly. Never use sharp tools or aggressive chemicals for cleaning or disinfecting.

---

**Storage:** After the head cap is fully dried, store the head cap in a dry and clean place.

---

**Important** Avoid direct sunlight during storage.

Head cap must be 100% dry before storing in a bag.

---

**Repair:** If one or more of the electrodes are broken, fast-fix electrodes (figure 3) can be used to replace the broken electrodes.



Figure 3: Fast-fix electrode  
(95-8540-0002-1)

**Liability:** These instructions are drawn up with most care. In case of incompetent use and/or not following the above instructions, TMSi will not take any liability.

It may be possible that in some countries deviating/extra regulations and or guidelines apply. These regulations/guidelines always prevail over this user guide.

## 2 AVAILABLE HEAD CAP SIZES

TMSi code of head cap: 95-8480-20640XX-0

XX:		
25=Neo1	36=Infant1	46=X-Small
27=Neo2	40=Infant2	48=Small-X-Small
29=Neo3	44=Infant3	50=Small
31=Neo4		52=Medium-Small
33=Neo5		54=Medium
		56=Large-Medium
		58=Large

Table 1: Available head cap sizes

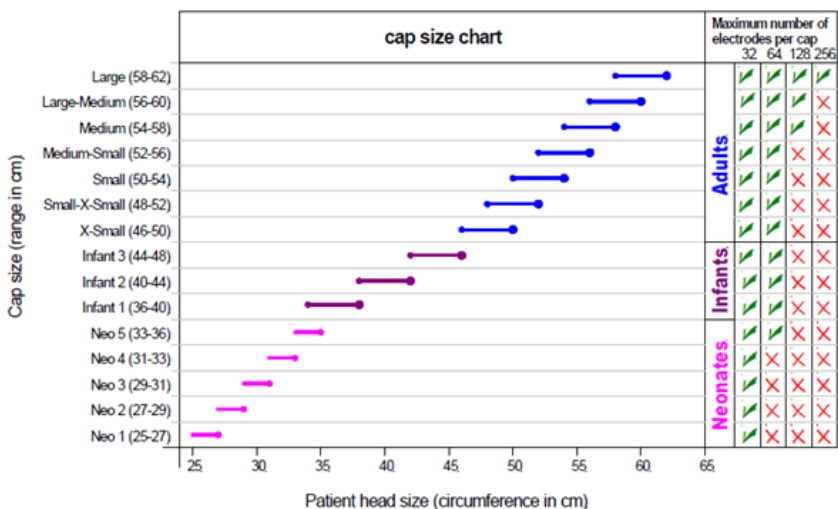


Figure 4: Head cap sizes and amount of electrodes per head cap

### 3 HEAD CAP LAYOUT

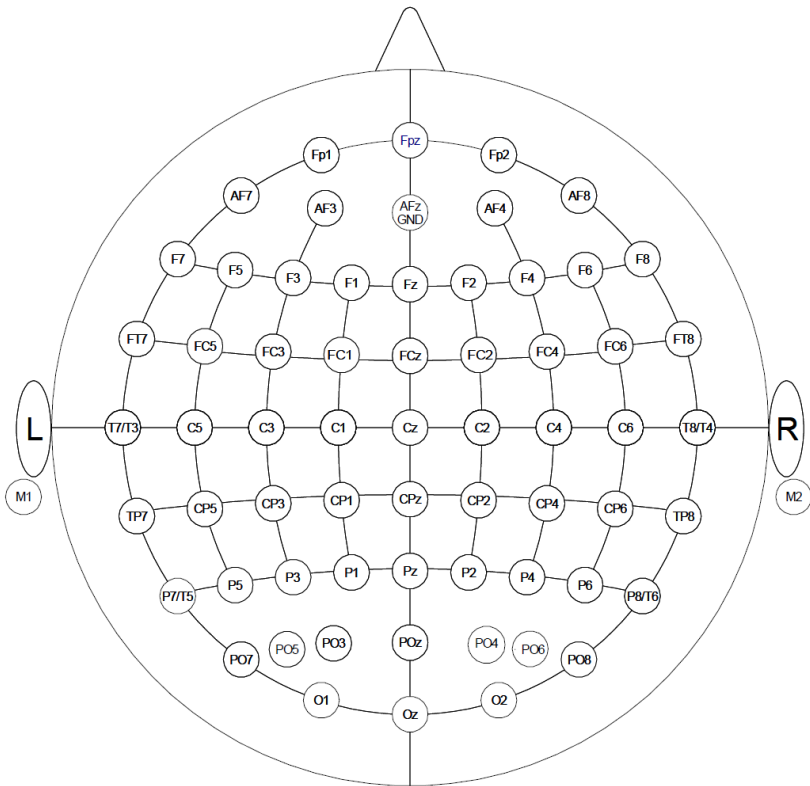


Figure 5: Head cap layout

## Electrode board adapter (EBA) overview:

Head cap connector #1		Head cap connector #2	
EBA Pin #/ Channel #	Cap electrode position	EBA Pin #/ Channel #	Cap electrode position
1/1	Fp1	1/33	AF7
2/2	Fpz	2/34	AF3
3/3	Fp2	3/35	AF4
4/4	F7	4/36	AF8
5/5	F3	5/37	F5
6/6	Fz	6/38	F1
7/7	F4	7/39	F2
8/8	F8	8/40	F6
9/9	FC5	9/41	FC3
10/10	FC1	10/42	FCz
11/11	FC2	11/43	FC4
12/12	FC6	12/44	C5
13/13	M1/A1	13/45	C1
14/14	T7/T3	14/46	C2
15/15	C3	15/47	C6
16/16	Cz	16/48	CP3
17/17	C4	17/49	CPz
18/18	T8/T4	18/50	CP4
19/19	M2/A2	19/51	P5
20/20	CP5	20/52	P1
21/21	CP1	21/53	P2
22/22	CP2	22/54	P6
23/23	CP6	23/55	PO5
24/24	P7/T5	24/56	PO3
25/25	P3	25/57	PO4
26/26	Pz	26/58	PO6
27/27	P4	27/59	FT7
28/28	P8/T6	28/60	FT8
29/29	POz	29/61	TP7
30/30	O1	30/62	TP8
31/31	Oz	31/63	PO7
32/32	O2	32/64	PO8
33/GND	AFz/GND	33/Spare2	NC
34/Spare1	NC	34/Spare3	NC

NC = Not Connected

Table 2: Electrode position and connector number in EBA multi-connector.

If anything remains unclear, please feel free to contact us:


TMSi ([www.tmsi.com](http://www.tmsi.com))

Zutphenstraat 57

7575 EJ Oldenzaal

The Netherlands

@ [support@tmsi.com](mailto:support@tmsi.com)

 +31-541-534603