



# EASYCAP

EEG Recording Caps and Related Products

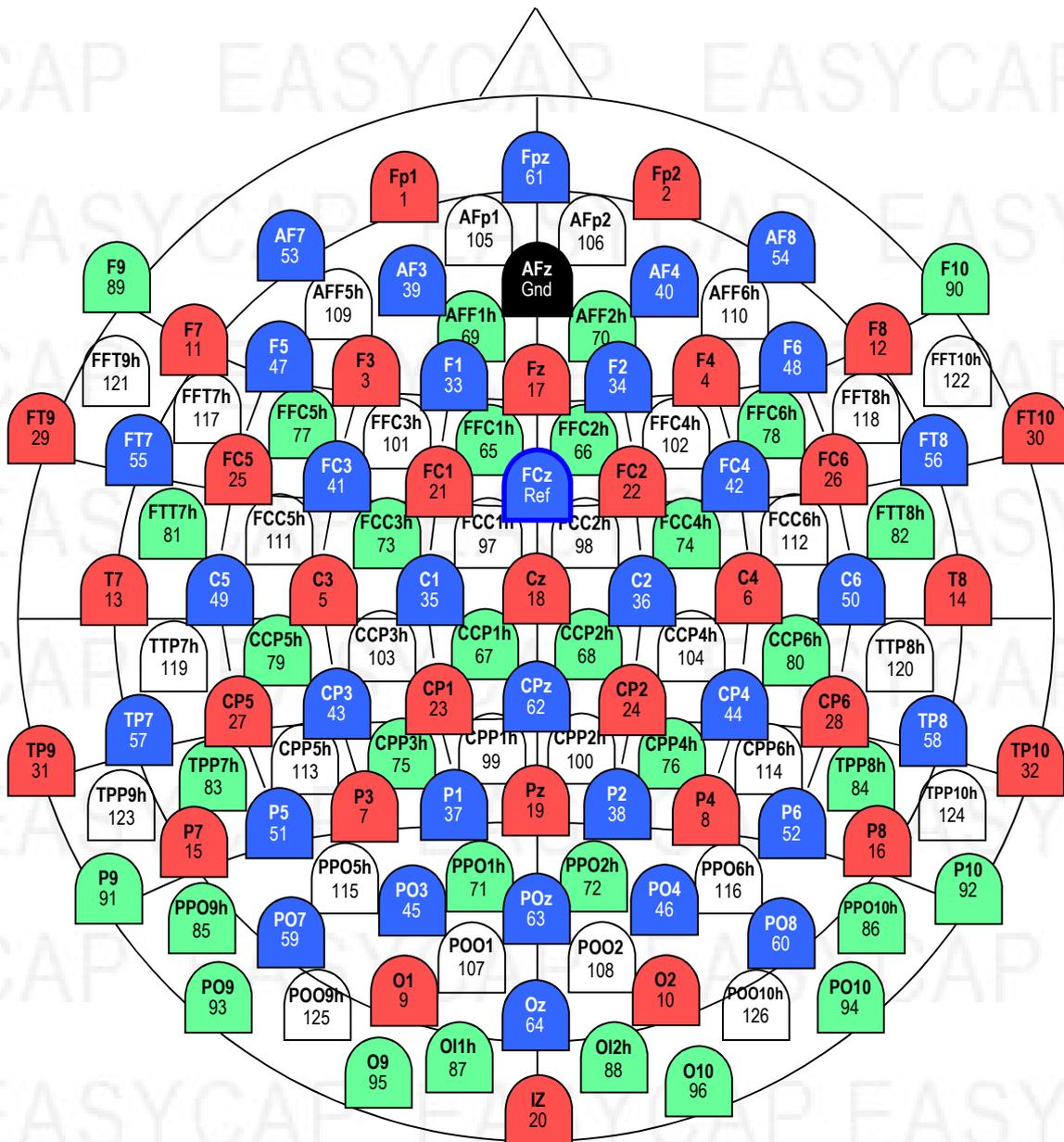
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## 128Ch Standard-BrainCap for TMS with Multitrodes

### Electrode Layout and Channel Assignment



Electrode Nomenclature according to:  
Oostenveld, R. & Praamstra, P. The five percent electrode system for high-resolution EEG and ERP measurements. *Clinical Neurophysiology* 2001; 112: 713-719

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## Details for Users

### Ordering Information

For ordering please give **Article Number, Cap Cut, and Size:**

(e.g. *BC-TMS-128, Caucasian, 56*)

- Article Number: **BC-TMS-128**
- Cap Cut: **Caucasian** or **Asian**
- Size (given in cm head circumference):
  - Adult caps: **54, 56, 58, 60, 62, 64** (average male: 58, average female: 56)
  - Children caps: **52** (5-10 years), **54** (11-14 years)

The catalogue-number comprises the cap as described, serial number, and this document; all packed in a labelled cardboard box. For further information on accessories or consumables please visit our website or contact our local distributor.

### Cap

Standard: Subtemporal Cap with integrated chin belt, white

Sizes 52 – 64 made from High Precision Fabric

Options: *Caucasian* or *Asian*, *Size*

### Electrodes

All electrodes are Multitrodes for TMS with sintered Ag/AgCl sensors. They are buttoned directly into the cap (total height approx. 3 mm) or can be attached to the skin with washers (= double-sided adhesive rings).

All electrodes are name-labelled at the sensor end. The cable colours correspond to the above figure.

The cables are loosely attached to the cap with large double-T nylon threads. Four cable trees leave the cap plait-like in front of and behind the ears, pointing downwards. 20 cm before the connector-boxes there is a crossing-point. Lengths of cable trees are approx. 120 cm.

### Termination

Each cable tree is led into a Connector box. From here the caps are connected to BrainAmp with 30 cm-flat-ribbon-cables. These flat ribbon cables come with the BrainAmps. They can be re-ordered from BrainProducts (Cat.-No. BP-02400-NN) or from Easycap (Cat.-No. E80).

### Theta/Phi-Coordinates

Please find a table with Theta/Phi-Coordinates of all electrode sites at the end of this file.

### Hints

To minimize the TMS artefacts in the EEG signal, electrode cables should be led away from the TMS stimulation point. To achieve that, the electrodes can be rotated in their cap holes, and the routing of cables allows for a bit of flexibility.

Depending on the site of the TMS stimulation point it may be advisable to move the Ref-electrodes in its entirety to another position further away from the stimulation point.

Table of Coordinates for BC-TMS-128

Channel-number	Name	Theta	Phi
1	Fp1	-90	-72
2	Fp2	90	72
3	F3	-60	-51
4	F4	60	51
5	C3	-45	0
6	C4	45	0
7	P3	-60	51
8	P4	60	-51
9	O1	-90	72
10	O2	90	-72
11	F7	-90	-36
12	F8	90	36
13	T7	-90	0
14	T8	90	0
15	P7	-90	36
16	P8	90	-36
17	Fz	45	90
18	Cz	0	0
19	Pz	45	-90
20	Iz	112	-90
21	FC1	-31	-46
22	FC2	31	46
23	CP1	-31	46
24	CP2	31	-46
25	FC5	-69	-21
26	FC6	69	21
27	CP5	-69	21
28	CP6	69	-21
29	FT9	-113	-18
30	FT10	113	18
31	TP9	-113	18
32	TP10	113	-18
33	F1	-49	-68
34	F2	49	68
35	C1	-23	0
36	C2	23	0
37	P1	-49	68
38	P2	49	-68
39	AF3	-74	-68
40	AF4	74	68
41	FC3	-49	-29
42	FC4	49	29
43	CP3	-49	29
44	CP4	49	-29
45	PO3	-74	68
46	PO4	74	-68
47	F5	-74	-41
48	F6	74	41
49	C5	-68	0

Channel-number	Name	Theta	Phi
50	C6	68	0
51	P5	-74	41
52	P6	74	-41
53	AF7	-90	-54
54	AF8	90	54
55	FT7	-90	-18
56	FT8	90	18
57	TP7	-90	18
58	TP8	90	-18
59	PO7	-90	54
60	PO8	90	-54
61	Fpz	90	90
62	CPz	22	-90
63	POz	67	-90
64	Oz	90	-90
65	FFC1h	-35	-73
66	FFC2h	35	73
67	CCP1h	-16	45
68	CCP2h	16	-45
69	AFF1h	-57	-82
70	AFF2h	57	82
71	PPO1h	-57	82
72	PPO2h	57	-82
73	FCC3h	-35	-19
74	FCC4h	35	19
75	CPP3h	-46	48
76	CPP4h	46	-48
77	FFC5h	-62	-35
78	FFC6h	62	35
79	CCP5h	-57	12
80	CCP6h	57	-12
81	FTT7h	-79	-10
82	FTT8h	79	10
83	TPP7h	-81	29
84	TPP8h	81	-29
85	PPO9h	-101	45
86	PPO10h	101	-45
87	OI1h	-101	81
88	OI2h	101	-81
89	F9	-113	-36
90	F10	113	36
91	P9	-113	36
92	P10	113	-36
93	PO9	-113	54
94	PO10	113	-54
95	O9	-112	72
96	O10	112	-72
97	FCC1h	-16	-45
98	FCC2h	16	45

Channel-number	Name	Theta	Phi
99	CPP1h	-35	73
100	CPP2h	35	-73
101	FFC3h	-46	-48
102	FFC4h	46	48
103	CCP3h	-35	19
104	CCP4h	35	-19
105	AFp1	-79	-82
106	AFp2	79	82
107	POO1	-79	82
108	POO2	79	-82
109	AFF5h	-72	-55
110	AFF6h	72	55
111	FCC5h	-57	-12
112	FCC6h	57	12
113	CPP5h	-62	35
114	CPP6h	62	-35
115	PPO5h	-72	55
116	PPO6h	72	-55
117	FFT7h	-81	-29
118	FFT8h	81	29
119	TTP7h	-79	10
120	TTP8h	79	-10
121	FFT9h	-101	-27
122	FFT10h	101	27
123	TPP9h	-101	27
124	TPP10h	101	-27
125	POO9h	-101	63
126	POO10h	101	-63
<b>Gnd</b>	<b>Afz</b>	67	90
<b>Ref</b>	<b>FCz</b>	23	90

These values are standardized to a Theta of 90° for the plane through Fpz, T7, T8, Oz.

The signs follow this convention:

