

1. Introduction

Gelfree-S3 EEG cap is a novel semi-dry EEG cap, developed by Greentek. Gelfree-S3 EEG cap does not require a conductive gel for obtaining a high quality EEG signal. The cap montage is quicker than the classical (wet) EEG caps and the impedance values can easily be set below 10k Ω , thus meeting the requirements of both clinical and scientific researchers.

2. Advantages

- Quick setup and ease of use;
- No need for conductive gel;
- Use saline solution instead;
- No need to wash hair after usage;
- Easy to clean;
- Comfortable;
- Replaceable hydro-links;
- High hygiene standards;
- Possible to perform multiple recordings with one cap;

3. Product package content

3-1. Standard parts

Gelfree-S3 EEG cap (24 channels, for example) has a standard (10/20) configuration. The model specifications are: BM-JAS3-X024. The '024' represents the number of channels. X is the size of the cap: L (head circumference 58-62cm); M (54-58cm); S (50-54cm).

Item	Name	Number	Description
	The cap	1 PCS	The cap contains the following elements: Elastic soft cloth, for comfortable fit to the scalp. Electrode bases wires are fixed on the cap in accordance with international 10-20 montage.
	Hydro-link holder	24 / box	The hydro-links should be inserted in the holders and then fixed to the electrode bases on the cap.
	Hydro-link	60 / package	Hydro-links act as conductive surfaces. They are to be placed in the hydro-link holders, having previously been soaked in the saline solution.

	Solution bottle	1 PCS	250ml bottle for storing saline solution.
	Wetting container	1 PCS	250ml container for soaking the hydro-links.
	Cotton swab	10 / package	Used to prepare and moist the scalp.
	Tea spoon	1 PCS	The teaspoon serves for measuring the right amount of Sodium chloride, for creation of properly saline solution.
	Adaptor cable (optional)	1 PCS	*24 channels EEG caps compatible; 1.5mm pin connector; *Wire length: 400mm;
* Lead wires and the connector can be customized for different EEG amplifiers/equipment types.			

3-2. Customized service

- 1) The number of channels and their position can be customized, with the highest being 64 leads.
- 2) The standard sizes of the cap are: large, medium, small. However, a custom sizes can be made if needed.
- 3) Connectors can be made to match various EEG amplifiers.

4. Gelfree-S3 cap performance

- 1) The electrode resistance: <5 Ω
- 2) DC offset voltage: <30mV
- 3) Potential drift: ± 5 mV/10min
- 4) Electrode-scalp electrode impedance: <20k Ω (at 10 Hz)

5. User instructions

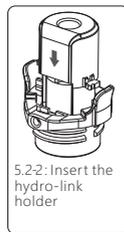
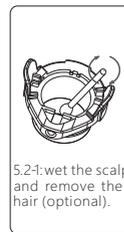
5-1. Electrode preparation

- 1) **Make a saline solution:** Fully dissolve a 8.5g (1.5 teaspoons) of sodium chloride in 250ml of water in the solution bottle.
- 2) **Wet hydro-links:** The hydro-links should be soaked with saline solution in the wetting container. It takes at least 2 hours to soak the hydro-links (if hydro-links are completely dry) in order to prepare them for proper use. Make sure the hydro-links are completely wetted before application.
- 3) **Electrode assembly:** Remove the hydro-link from the wetting container and gently squeeze out extra saline solution. Place the hydro-link into the hydro-link holder then user can also

dip the hydro-link into saline solution and squeeze out extra saline a few times to ensure the hydro-link is full of saline solution. After ensuring that the hydro-link is sufficiently filled with the saline solution, screw the hydro-link holder into the electrode base.

5-2. Measurement

- 1) **EEG cap montage:** Select an appropriate size of an EEG cap and mount the electrode cap on the subject's head.
- 2) **Connect the EEG amplifier:** Connect the EEG amplifier through a connecting cable.
- 3) **Moisturize the scalp:** Wet a cotton swab, (using saline solution), split the hair on the electrode location sites (optional) and wet the scalp using the cotton swab on the electrodes sites.
- 4) **Insert the hydro-link holder into the electrode base:** Lift the electrode base with one hand and insert the hydro-link head into the electrode base with the other hand, screw the hydro-link holder clockwise; a click sound indicates that the hydro-link holder has been properly placed in the electrode base.
- 5) **Lowering the impedance values:** To adjust the impedance values, you can press, move or shake the electrode base with hands, to ensure that the hydro-link is in good contact with the scalp. Repeat the process with all the electrodes until the impedance values on all electrode sites reach the experiment requirements.
- 6) **Start recording the EEG signal.**



5-3. Cleaning and storage

- 1) After the measurement, remove the hydro-link holders and then S3 cap. This prevents the hydro-link falling off.
- 2) The hydro-links should be then removed from the hydro-link holders and washed in the clean water, at least three

times, while squeezing out the water each time. Finally, the hydro-links should be completely soaked in the solution and stored in the wetting container so that they can be ready use for a next recording.

- 3) The hydro-link holders should be rinsed with water, and then dried out and placed into a flat box.
- 4) The electrode cap should be washed with clean water and dried out completely.
- 5) If necessary, clean the cap with a dilute household surfactant, while clean the hydro-links and its holders with 0.2% of a household disinfectant solution for about 10 minutes. The disinfectant solution can be made with 2ml of a household disinfectant into 1 liter of clear water.

6. Troubleshooting

No	Problem description	Possible reasons	Action suggested
1	High impedance values on some of the electrode sites.	The hydro-links may not be in good contact with the scalp, or there is a small amount of the saline solution inside the hydro-link(s).	Remove the hydro-link holder from the cap, wet the scalp and dispel the hair using a wet swab. Additionally try re-wetting the hydro-link.
2	During the measurement, the impedance of some electrodes become higher.	Usually after more than two hours, the saline in the hydro-link will evaporate.	Inject a small amount of saline into the hydro-link from the hole the hydro-link holder with a flat syringe. Alternatively, try the troubleshoot 1.

Warranty Card

Thank you very much for using our products !

Product Model Number :

Product Name :

Factory Serial Number :

Warranty Elucidation

The period for warranty of our EEG Caps is one year (Based on invoice date).

Outside the warranty period we will provide lifetime product maintenance and repair service.

If the following situations come into being, warranty services cannot be entitled within the warranty period.

Damage and malfunction caused by improper use and storage.

Damage and malfunction caused by Non-authorized Company or users to disassemble, repair by themselves.



EN ISO 13485 CE

EEG Cap User Manual

Brand : Greentek

Model: Gelfree-S3

Release:V4-20181128

Company: Wuhan Greentek Pty. Ltd

Address: Room 303, dingye hall B, phase III, international enterprise center , guanggu avenue, East Lake High-tech Development Zone, P.R. China.

Tel: +86-88185488

Support Tel:+86-18627764693

After-sale service: greentek@gtsensor.com

www.greenteksensor.com