Here's a detailed outline covering all pins on the Cyton board, their functions, and recommended electrode placements based on the 10-20 system for EEG setups:

Pin and Electrode Placement Guide

Electrode Wire Color	Cyton Board Pin	Function	Placement Location
black	SRB2 (bottom SRB)	Reference electrode	Earlobe (A1 or A2) or Vertex (Cz)
Black	BIAS (bottom)	Ground/Noise-cancelling	Forehead (Fpz) or Earlobe (opposite to SRB2)
Purple	N1P (bottom)	EEG Channel 1	Scalp (Fp1 or other location per montage)
Green	N2P (bottom)	EEG Channel 2	Scalp (Fp2 or other location per montage)
Blue	N3P (bottom)	EEG Channel 3	Scalp (C3 or other location per montage)
Red	N4P (bottom)	EEG Channel 4	Scalp (C4 or other location per montage)
Yellow	N5P (bottom)	EEG Channel 5	Scalp (P3 or other location per montage)
Orange	N6P (bottom)	EEG Channel 6	Scalp (P4 or other location per montage)
white	N7P (bottom)	EEG Channel 7	Scalp (O1 or other location per montage)
Gray	N8P (bottom)	EEG Channel 8	Scalp (O2 or other location per montage)
AGND	AGND Pin	Analog ground for active electrodes (not connected to subject)	Not applicable for most EEG setups

Detailed Explanation of Pins and Placement

1. Reference Electrode - SRB2

- **Pin:** SRB2 is the bottom reference pin.
- **Placement:** Place the reference electrode on one earlobe (A1 or A2). Alternatively, it can be placed at the vertex of the head (Cz).
- **Function:** Provides a common reference for all EEG channels.

2. Ground Electrode - BIAS

- **Pin:** BIAS is the bottom ground pin.
- **Placement:** Place the ground electrode on the forehead at Fpz or on the opposite earlobe to SRB2.
- **Function:** Acts as a noise-cancelling electrode to reduce interference.

3. EEG Channels - N1P to N8P

- **Pins:** Bottom pins labeled N1P through N8P correspond to channels 1 through 8.
- **Placement:** These electrodes are placed according to the international 10-20 system:
    - Fp1, Fp2 for frontal poles.
    - C3, C4 for central regions.
    - P3, P4 for parietal regions.
    - O1, O2 for occipital regions.

4. AGND Pin

- AGND is typically used for active electrode setups and should *not* be connected directly to the subject for standard EEG setups. Use BIAS instead for grounding purposes.

Key Notes

- The bottom row pins are used for EEG setups as they correspond to negative polarity inputs.
- The top row pins are generally used for EMG/ECG setups where bipolar configurations are required.
- Ensure proper skin preparation and use conductive gel/paste to improve signal quality.
- Secure electrodes with medical tape or an electrode cap to ensure stable connections.

Daisy Module Integration

If using a Daisy module:

- Connect additional electrodes to its bottom pins labeled N1P through N8P, corresponding to channels 9 through 16 in the OpenBCI GUI.
- Use a y-splitter cable to gang together SRB pins from Cyton and Daisy modules for a shared reference.

This setup ensures all pins are utilized correctly based on their function and placement requirements.

Citations:

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6. https://openbci.com/forum/index.php?p=%2Fdiscussion%2F170%2Fgetting-started-confused-about-srb-and-n1p-pins
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19. https://openbci.com/forum/index.php?p=%2Fdiscussion%2F3773%2Fquestion-on-using-both-top-and-bottom-pins-for-eeg
20. https://riull.ull.es/xmlui/bitstream/handle/915/19811/Montaje,%20prueba%20y%20calibracion%20de%20sistemas%20de%20encefalografia%20EEG%20OPEN-BCI.pdf?sequence=1&isAllowed=y

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