

Matrix Array™ Configuration Guide



Updated February 26, 2019

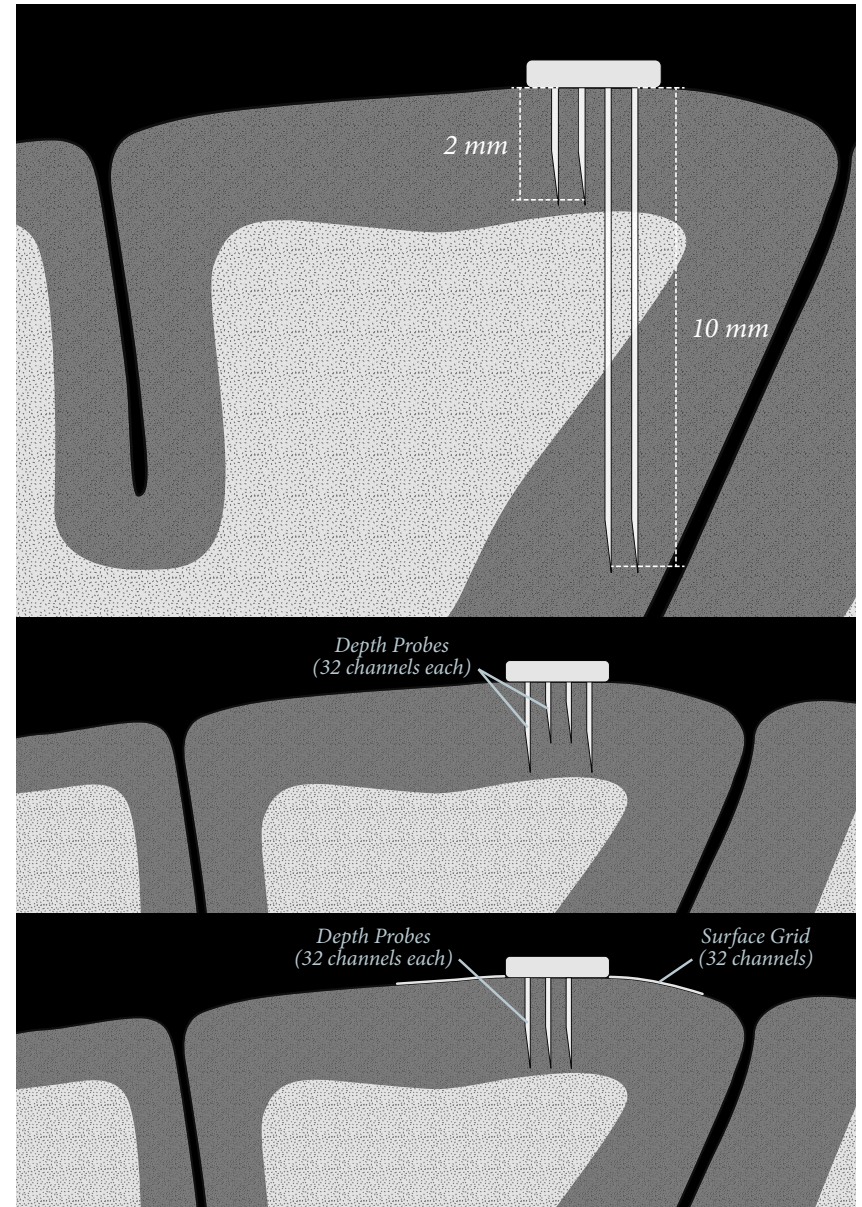
Thank you for your interest in the NeuroNexus Matrix Array!

Matrix Arrays offer unique potential to understand neuronal networks in novel ways. This guide will help you configure a Matrix Array for your application.

You will need to make a few decisions:

- 64 or 128 channels (2 or 4 arrays, respectively)
- A connector package suitable for your application
- A 2D array design (or combination of 2D array designs) suitable for your application
- The distance between your 2D arrays (referred to as “platform spacing”)

The following pages provide detailed information on packages as well as 2D array designs and their tissue coverage with the available platform spacing options.



Above: Illustrations of potential Matrix Array configurations. Top: Combine short and long array designs to target both the sulcus and gyrus. Middle: Combine array designs of different lengths to target adjacent cortical layers. Bottom: Combine depth probes with surface grids.

SPECIFICATIONS

Channel Count	64, 128 (see following pages)
X-Axis (2D Array) Dimension	Varies by array selection
Y-Axis (2D Array) Spacing Options	200 μ m, 300 μ m, 400 μ m, 600 μ m, 800 μ m, 1000 μ m (see following pages)
Z-Span (Depth)	Up to 5 mm (varies by array selection)
Cable Length (distance from implant to connector)	30 mm, customizable up to 50 mm
Electrode Site Material	Iridium (standard), Platinum (custom), Gold (custom)
Electrode Array Thickness	50 μ m

How to Configure a Matrix Array™

Step 1: Select an appropriate package for your experiment type and animal model. (See **Matrix Selection Guide, page 04.**)

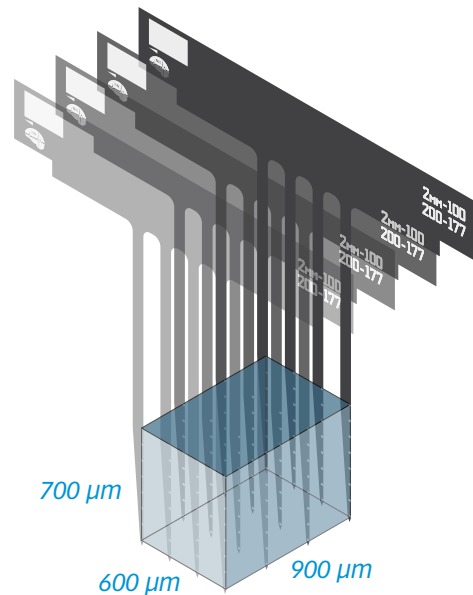
Step 2: Select 2D Arrays (beginning page 05). Each 2D array has 32 electrode sites.

- For a 64-channel Matrix Array™, select **two** 2D arrays.
- For a 128-channel Matrix Array™, select **four** arrays.
- You may combine different 2D Arrays in your selection, or include ECoG arrays for combined depth and surface recording.

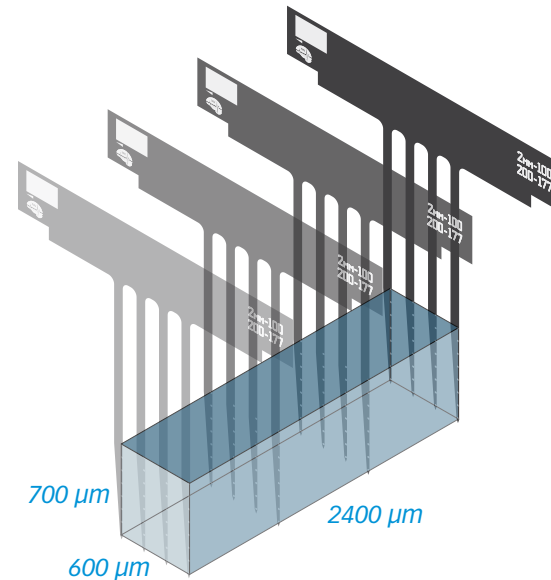
Step 3: Select a platform spacing (examples illustrated beginning page 06).

The illustrations below depict tissue coverage with two different platform spacings available. (M4x8-2mm-100-200-177 array, 128 channels shown). Tissue coverage will vary depending on your combination of 2D arrays, platform spacing, and channel count selection (64 or 128 channels).

Six platform spacings are available: 200 μm , 300 μm , 400 μm , 600 μm , 800 μm , and 1000 μm .



300 μm Spacing



800 μm Spacing

MATRIX SELECTION GUIDE

PACKAGE	ANIMAL MODEL	PACKAGE FEATURES	CHANNEL COUNT	APPLICATION	CABLE OPTIONS	32-CHANNEL 2D PROBE SPACING (PLATFORM)	CONNECTORS
MCM Matrix CM-Series	Small	Polymer	64 or 128	Acute / Chronic	N/A	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	Omnetics NSD36 (4 guideposts)
MH Matrix H-Series	Small	Polymer	64 or 128	Chronic	22 mm 25 mm 30 mm	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	Omnetics NSD36 (4 guideposts)
MHS Matrix H-Series, Strengthened	Medium	Polymer and metal supported	64 or 128	Chronic	22 mm 25 mm 30 mm	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	Omnetics NSD36 (4 guideposts)
MHD Matrix Pedestal	Large	Titanium with stand off	64 / 128 / 256	Chronic	35 - 40 mm	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	NN-HD
MHD_Dual Matrix Pedestal, Dual Platform	Large	Titanium with stand off	128 / 256	Chronic	Dual 35 - 40 mm	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	NN-HD
MHDLP Matrix Low Profile	Large	Titanium	64 / 128 / 256	Chronic	35 - 40 mm	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	NN-HD
MA Matrix Acute	Small/Medium	SS Y-Bracket	64 or 128	Acute	N/A	200 µm 600 µm 300 µm 800 µm 400 µm 1000 µm	Omnetics NSD36 (4 guideposts)

MATRIX PACKAGES

Small



MCM64 on Rat Skull



MH64

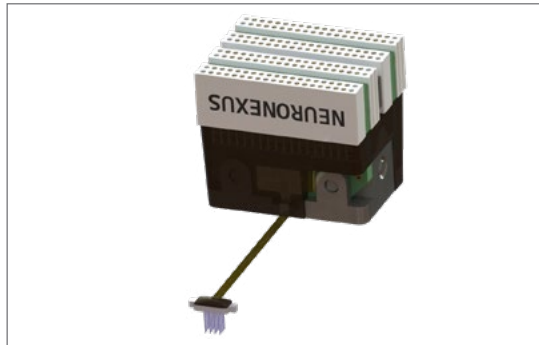
Small Matrix Array Packages

MCM64	MA64
MCM128	MA128
MH64	
MH128	

Medium



MA128 (Acute Matrix Array)



MHS128

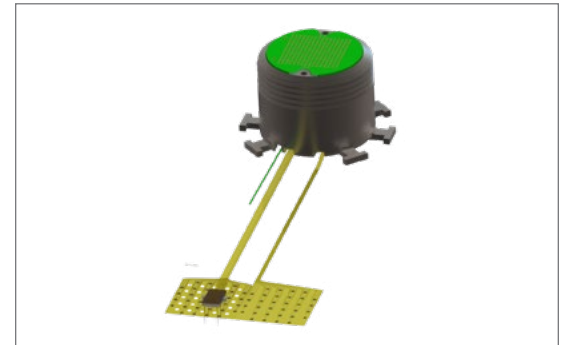
Medium Matrix Array Packages

MHS64	MA64
MHS128	MA128

Large



MHD_Dual256



MHDLP256 (Shown with surface arrays)

Large Matrix Array Packages

MHD64	MHDLP64
MHD128	MHDLP128
MHD256	MHDLP256
MHD_Dual128	MA64
MHD_Dual256	MA128

Matrix Package Naming Key:

CM = Cableless

H = Cable

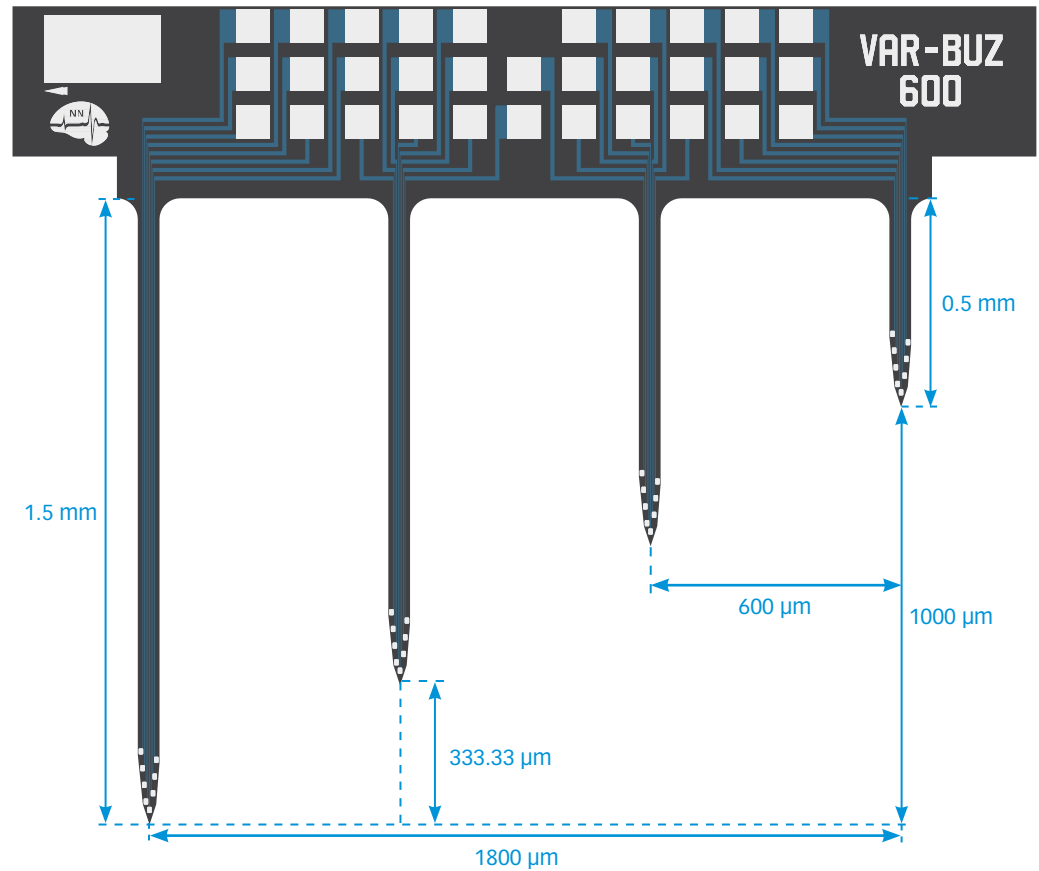
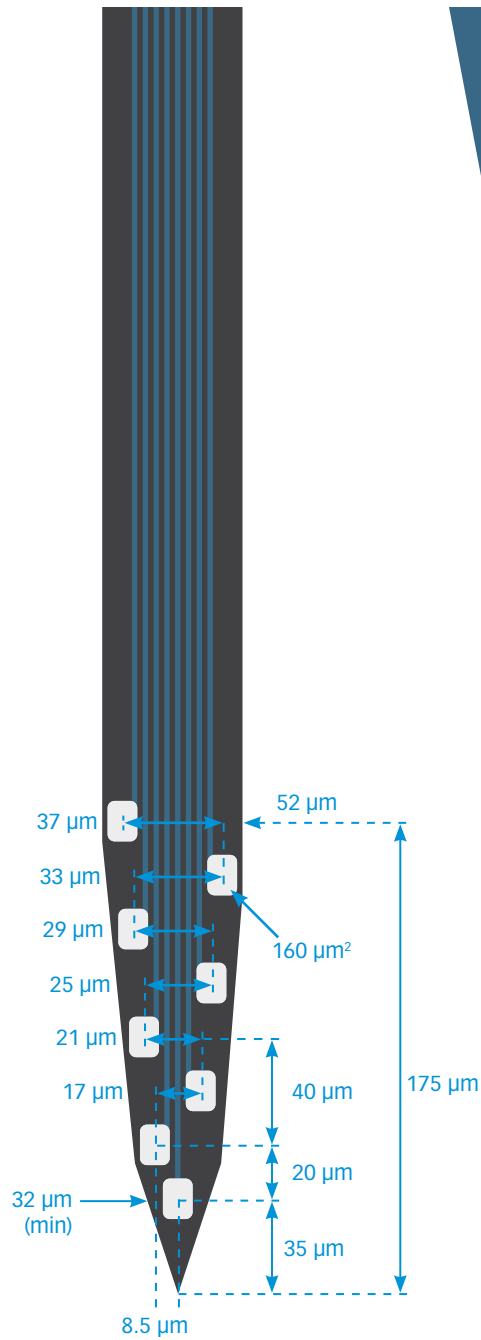
S = Strengthened

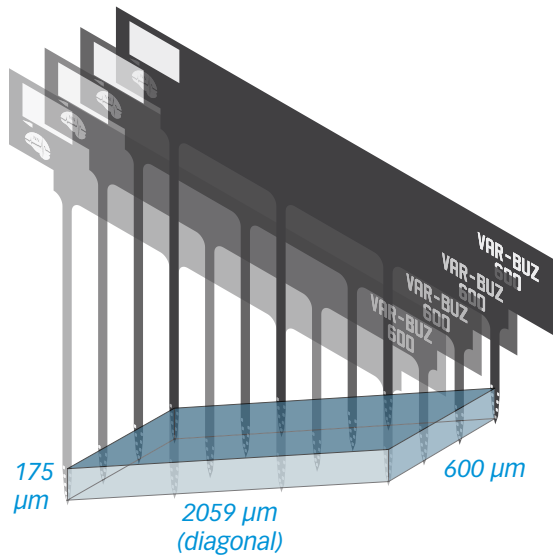
HD = Primate / Pedestal

LP = Low Profile / No feet

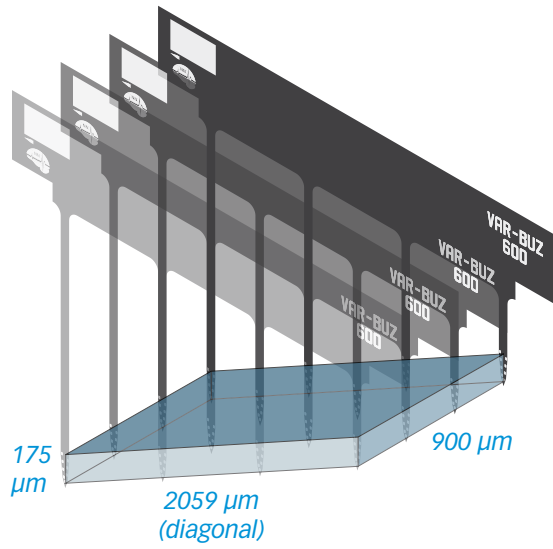
Dual = Dual Platform

M4x8-var-Buz

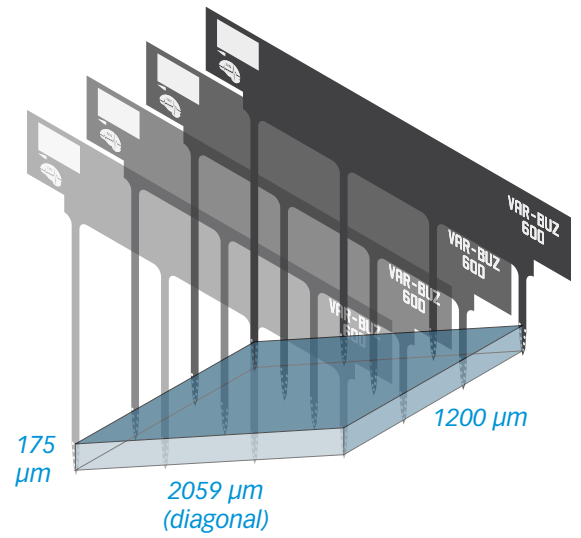




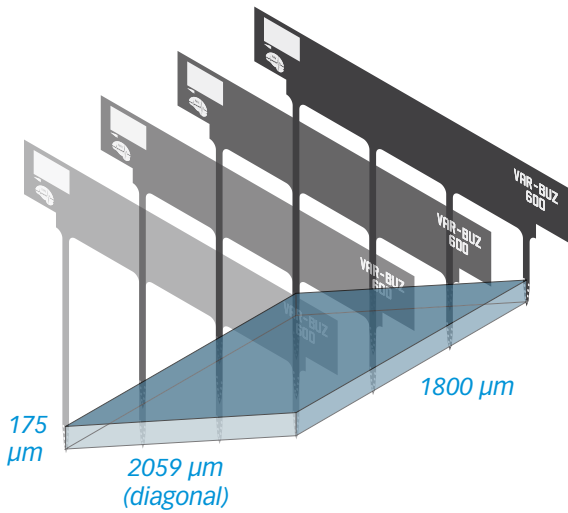
200 μm Spacing



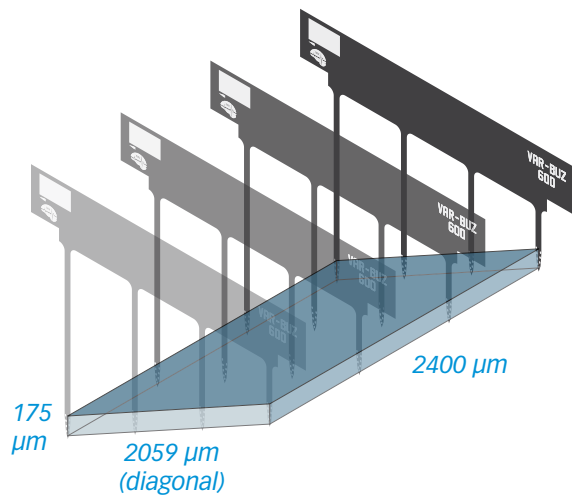
300 μm Spacing



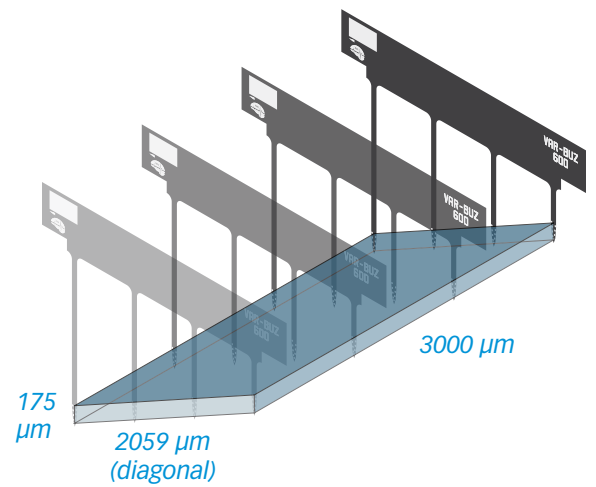
400 μm Spacing



600 μm Spacing

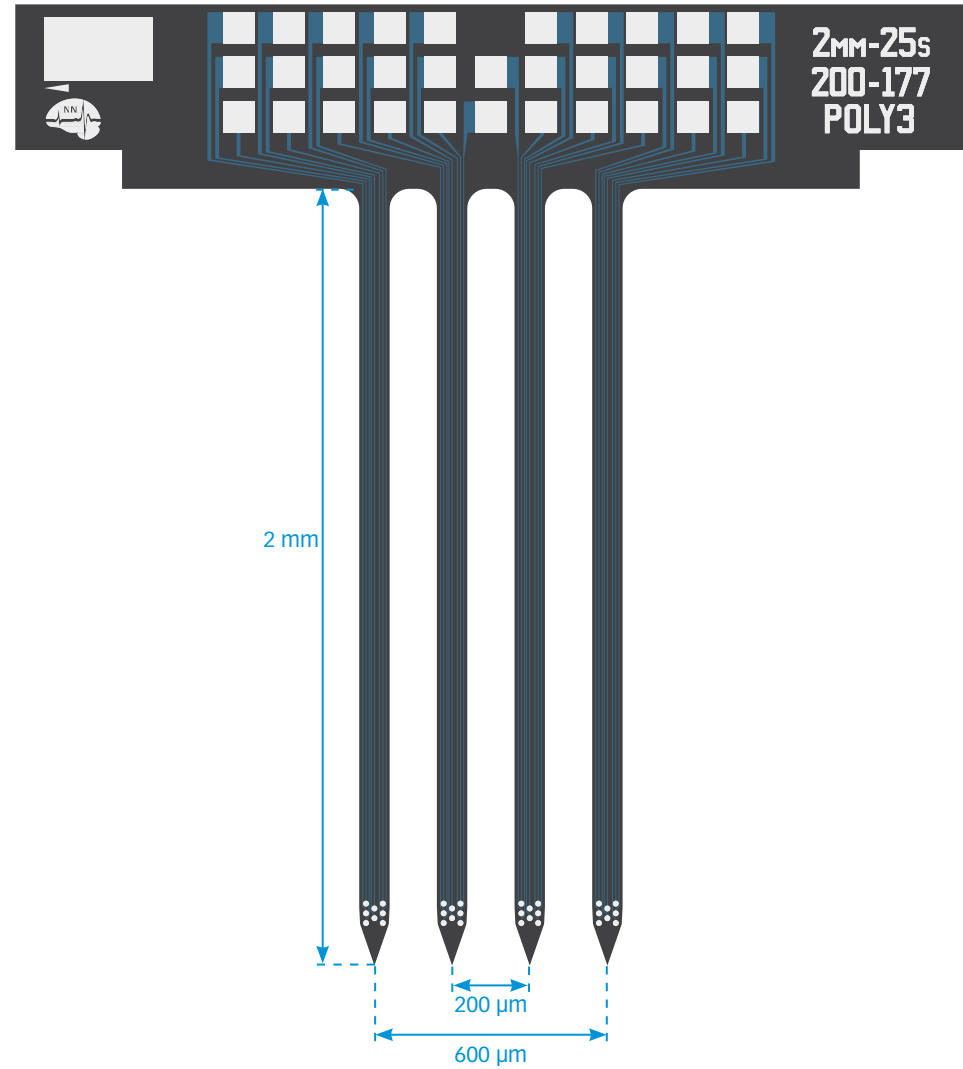
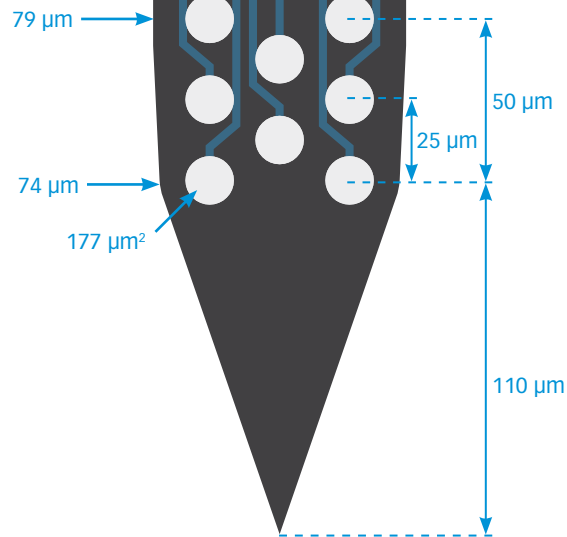


800 μm Spacing

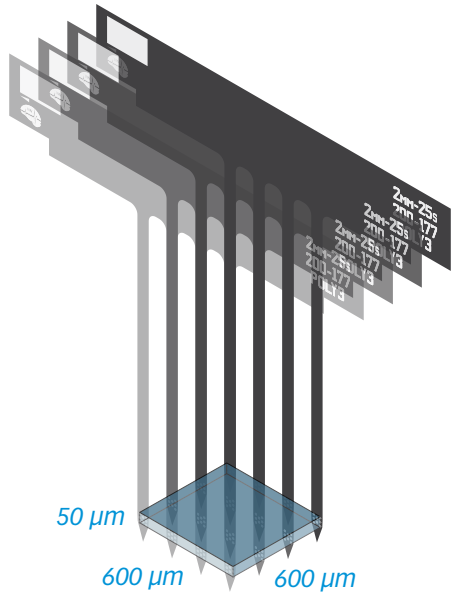


1000 μm Spacing

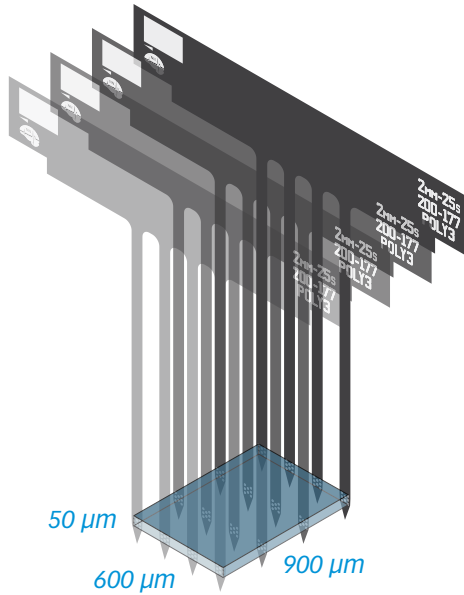
M4x8-2mm-25s-Poly3-200-177



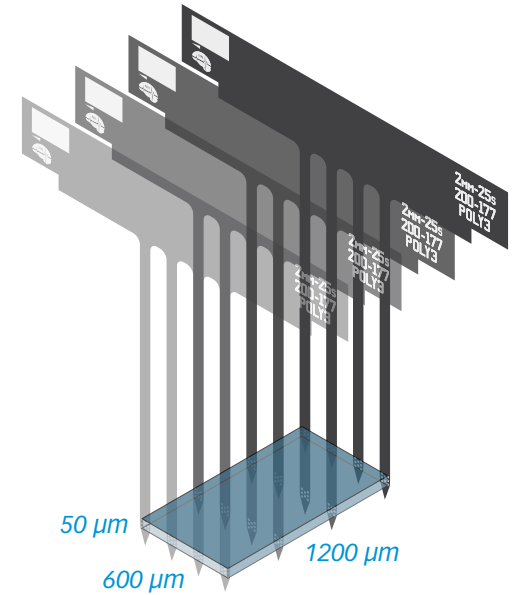
EXAMPLE CONFIGURATIONS



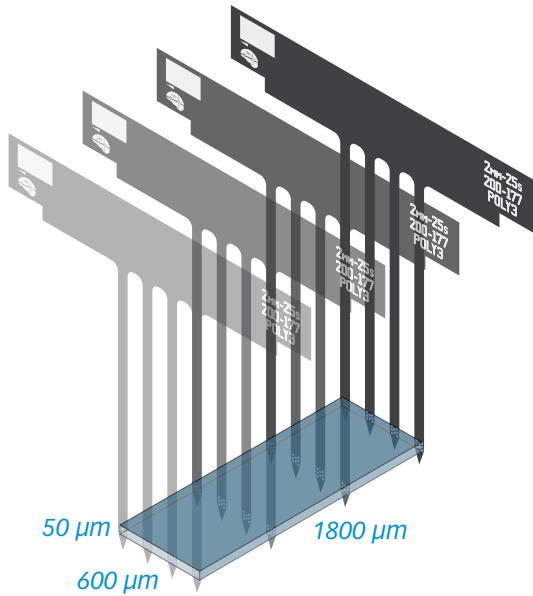
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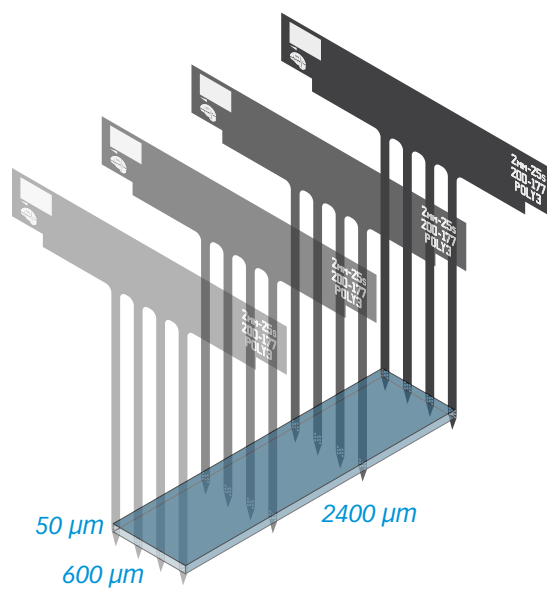
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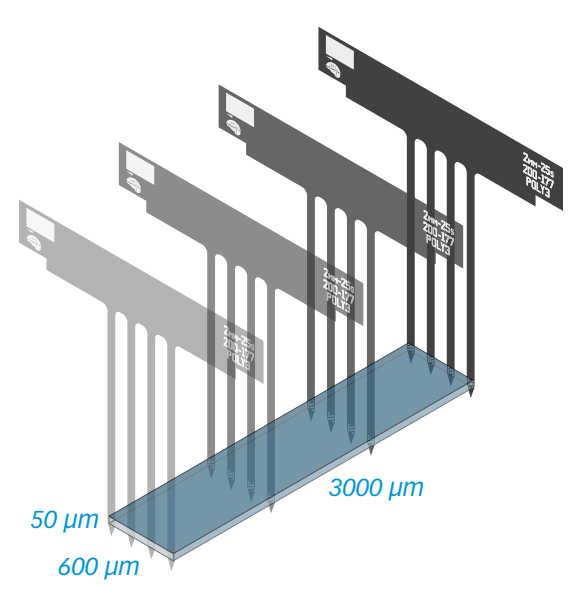
400 μm Spacing



600 μm Spacing

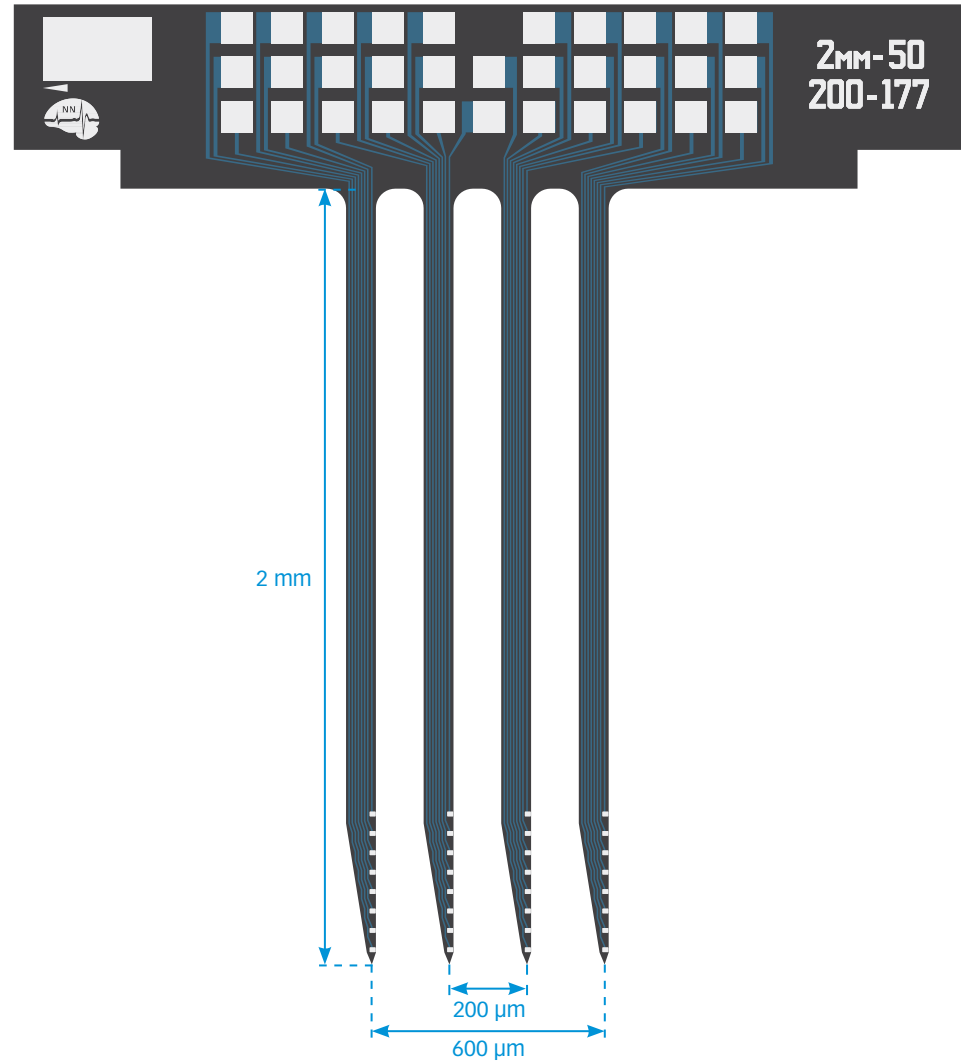
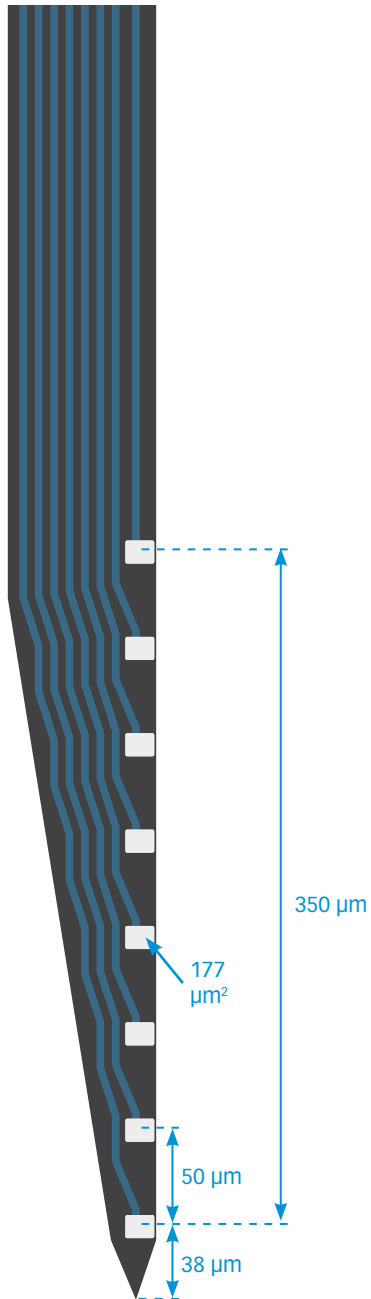


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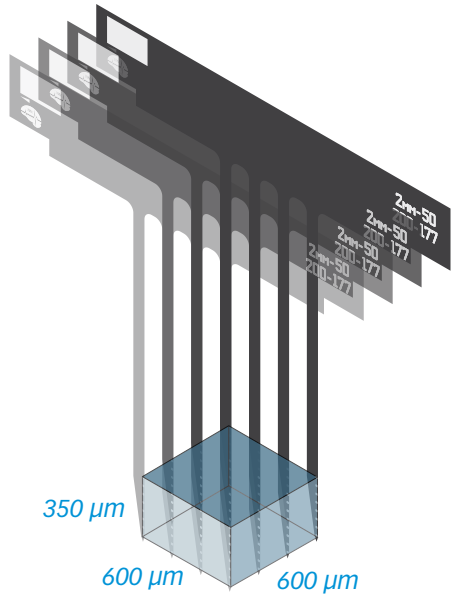


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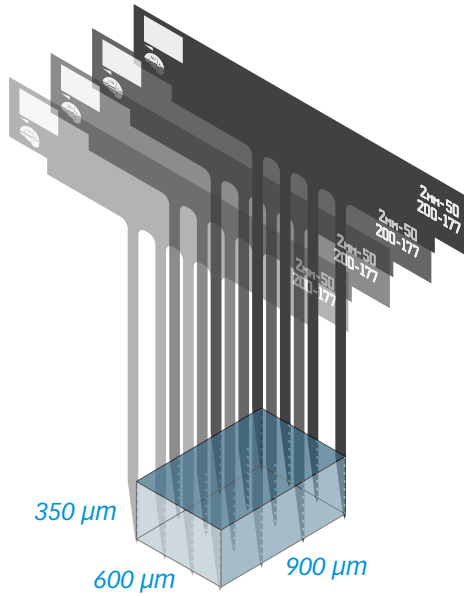
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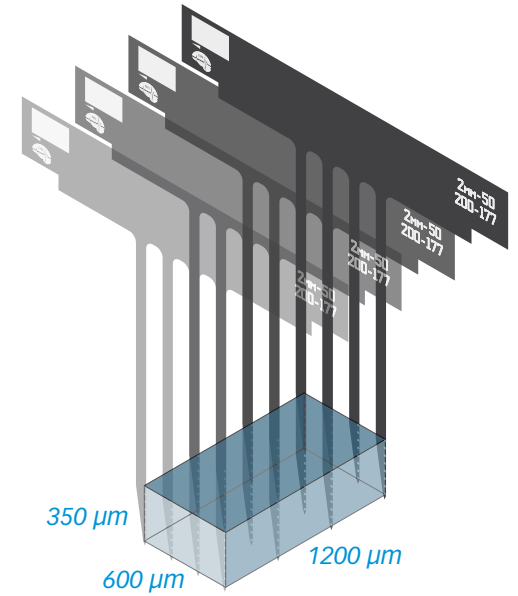
EXAMPLE CONFIGURATIONS



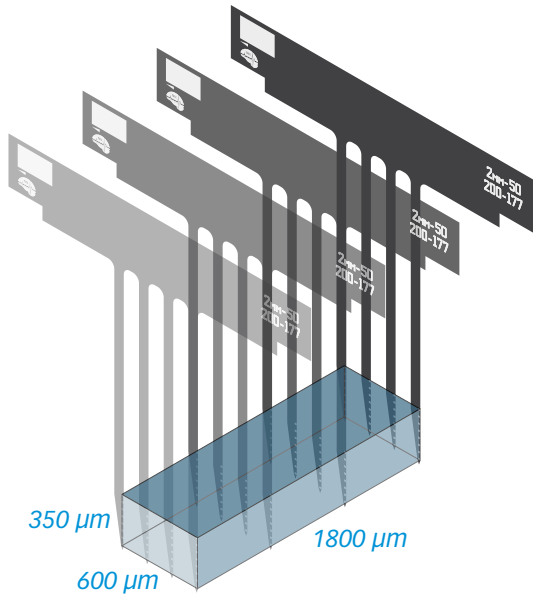
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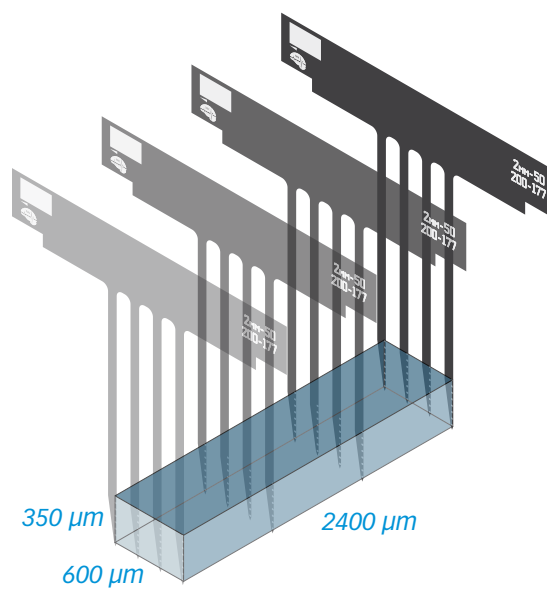
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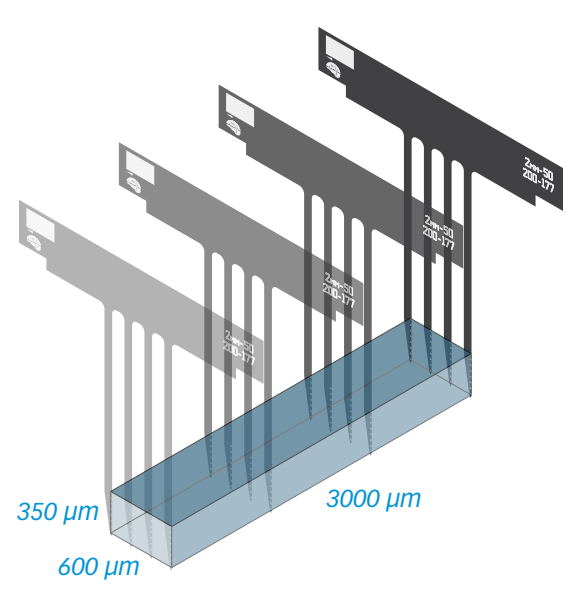
400 µm Spacing



600 µm Spacing

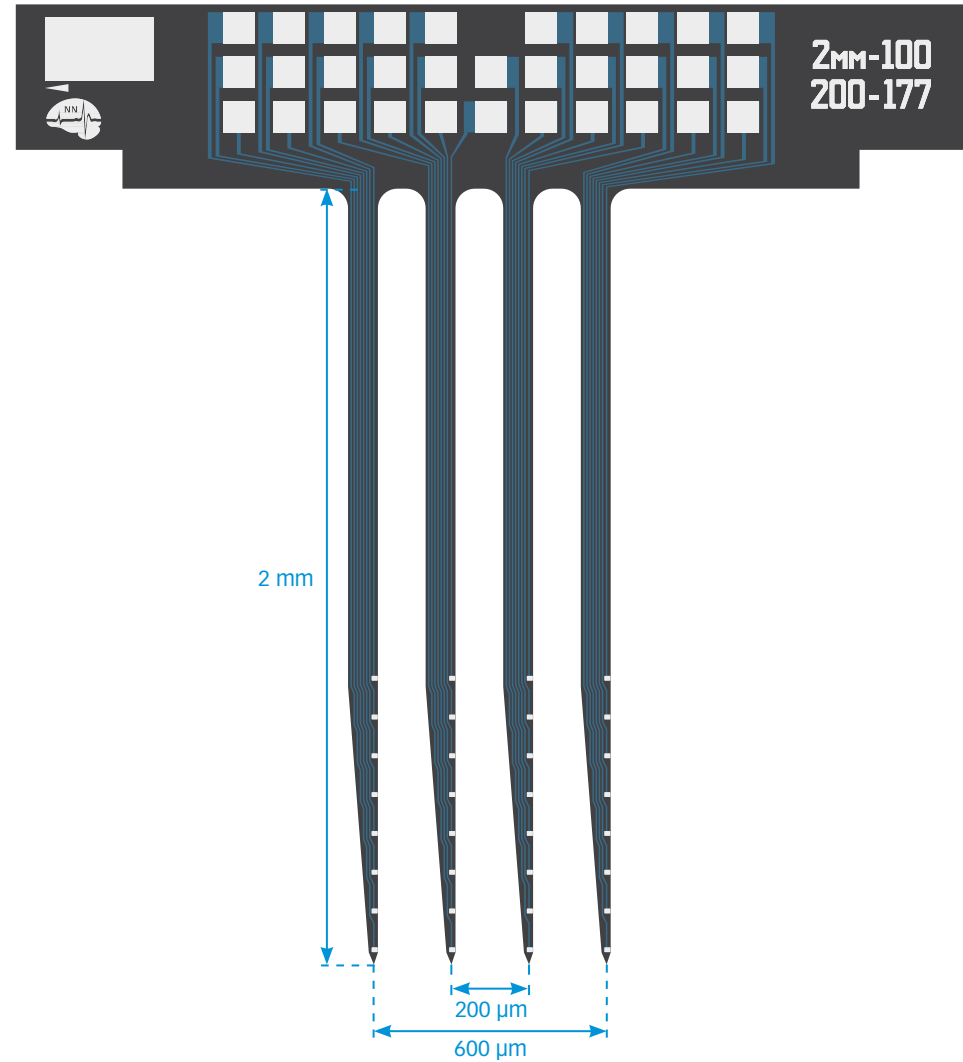
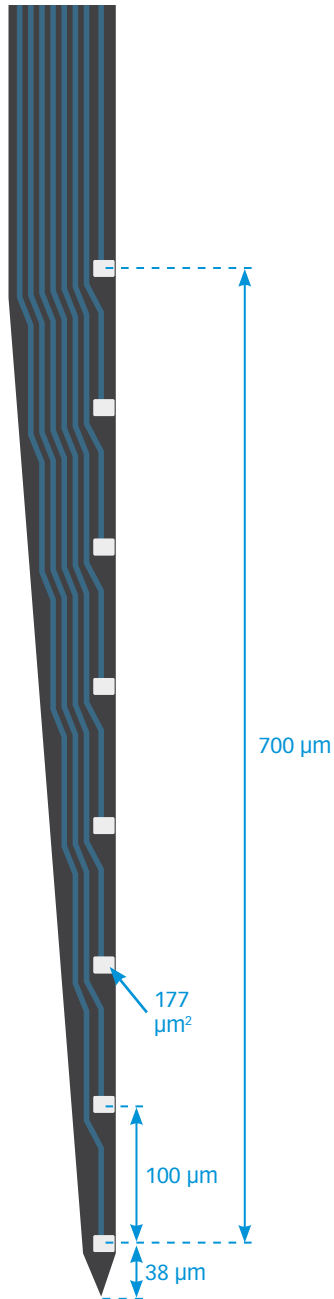


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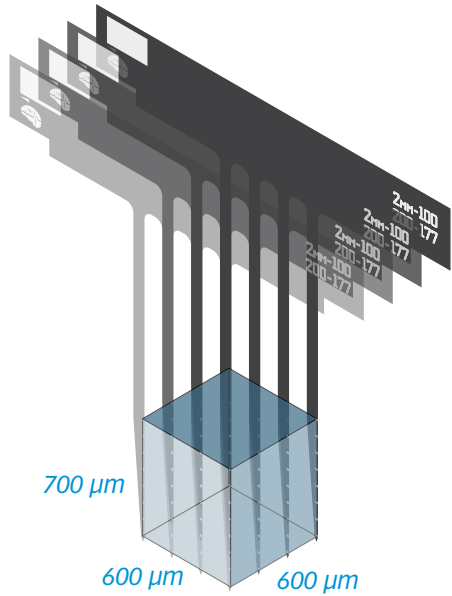


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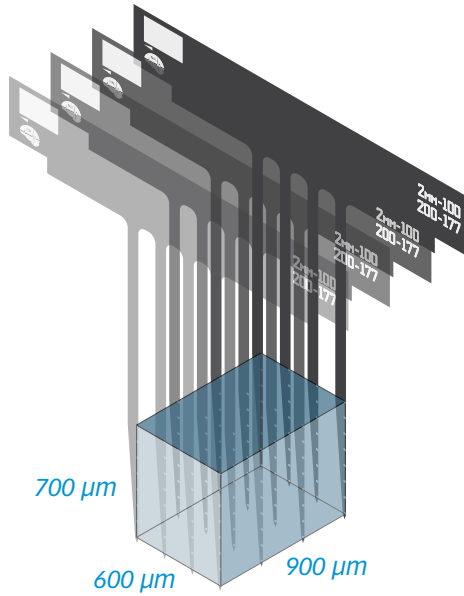
M4x8-2mm-100-200-177



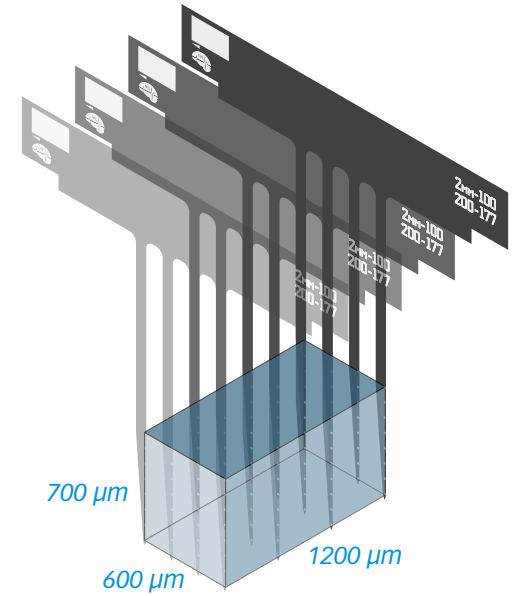
EXAMPLE CONFIGURATIONS



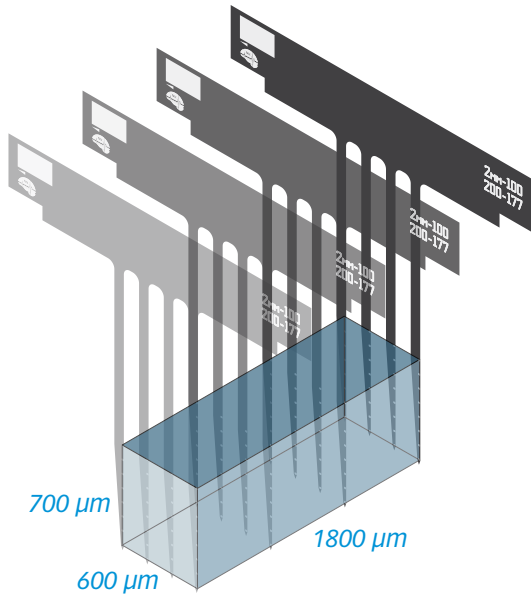
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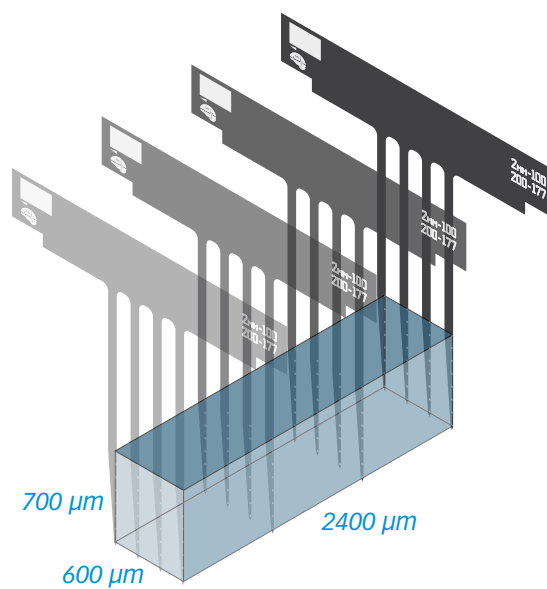
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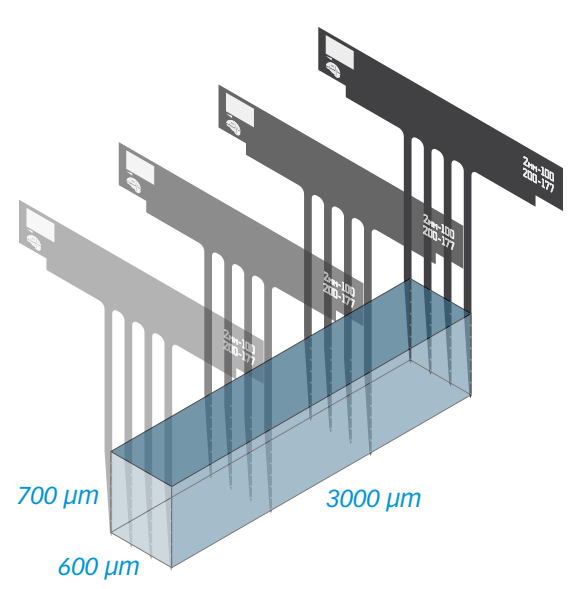
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600 μm Spacing

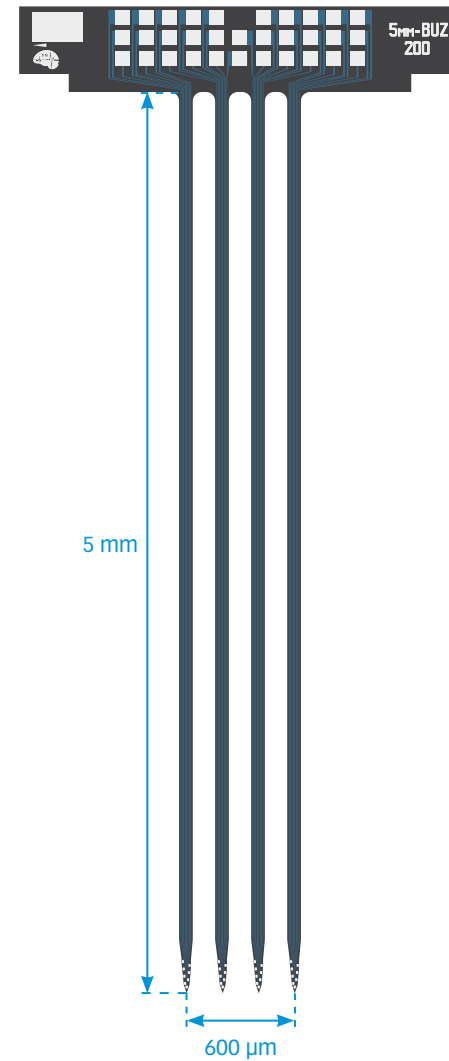
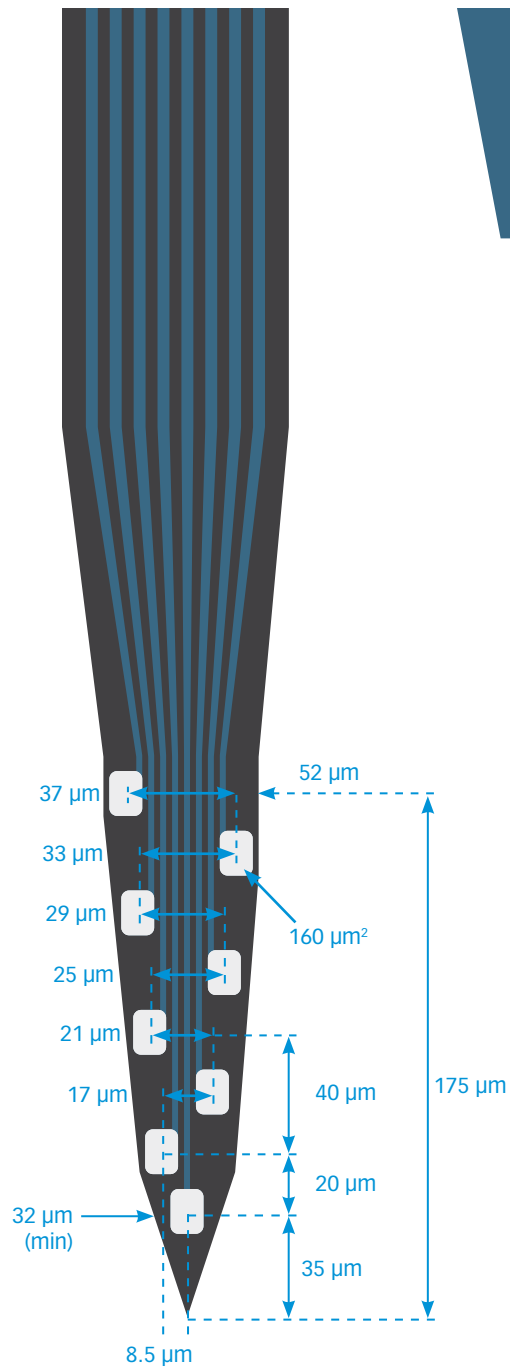


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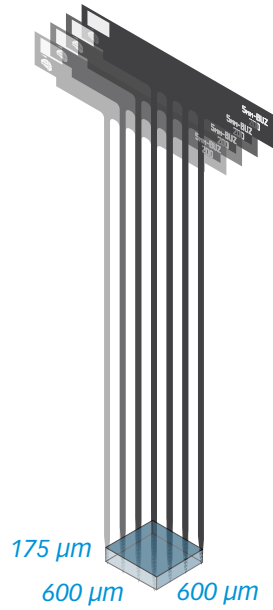


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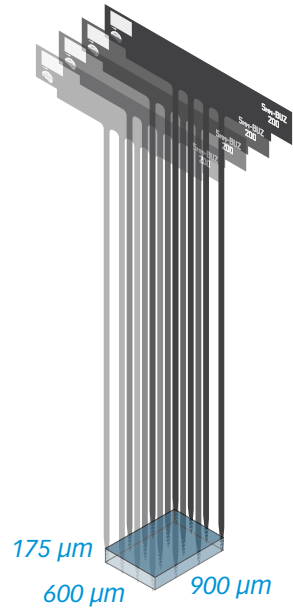
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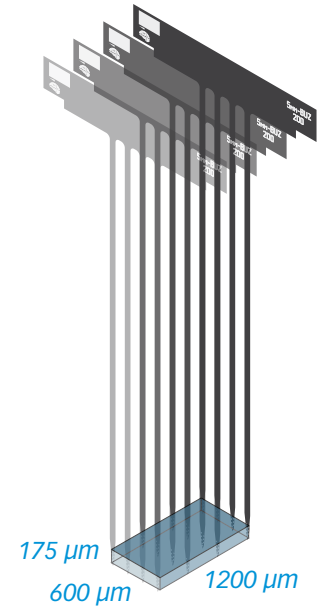
EXAMPLE CONFIGURATIONS



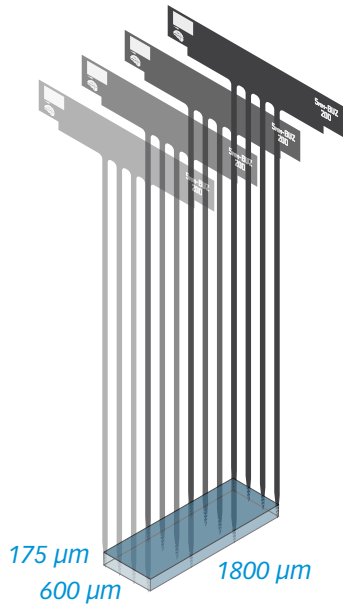
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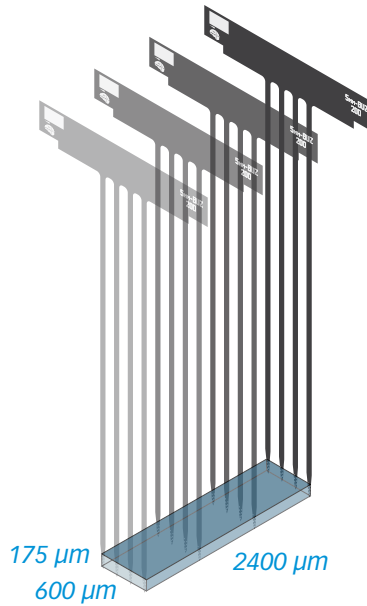
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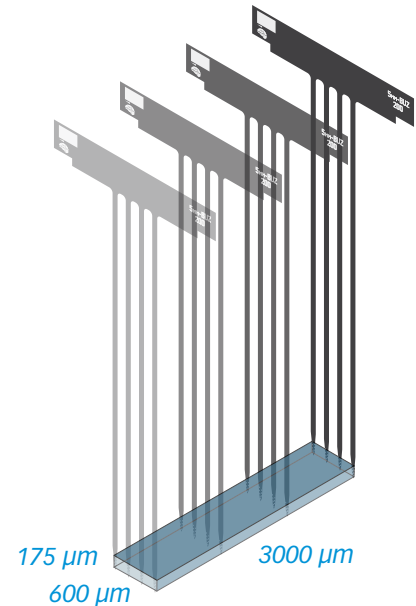
400 μm Spacing



600 μm Spacing

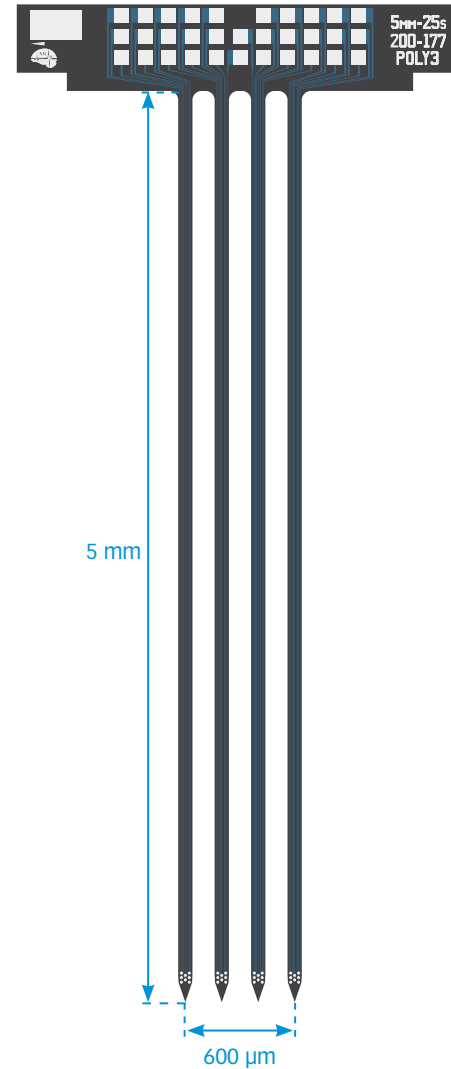
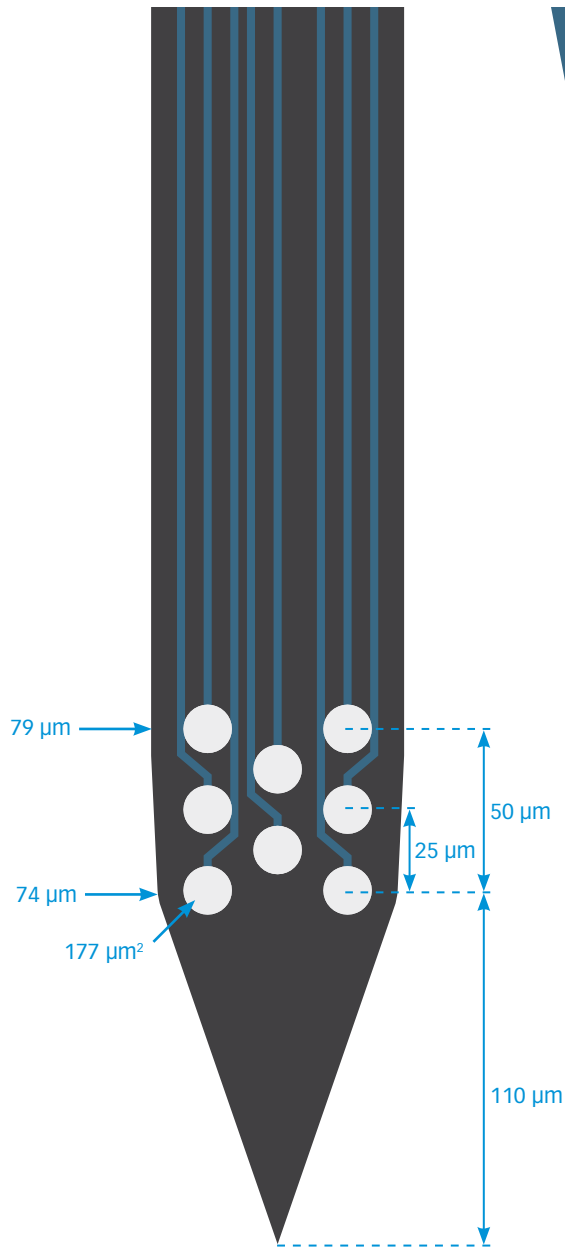


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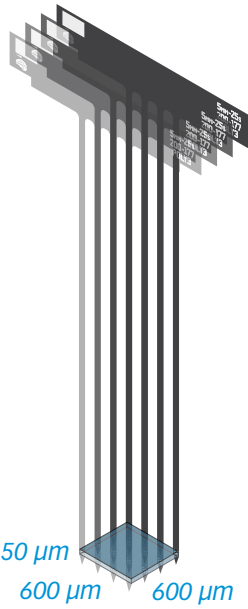


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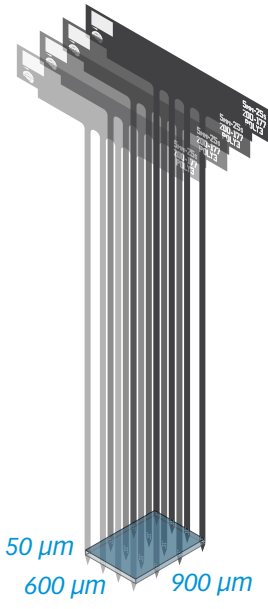
M4x8-5mm-25s-Poly3-200-177



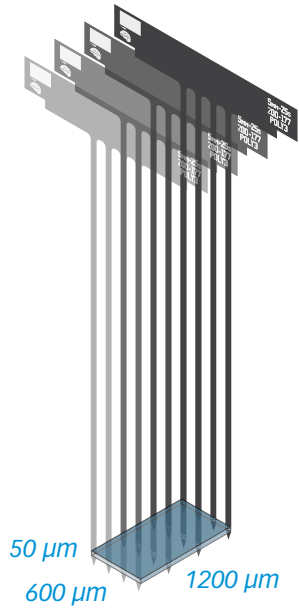
EXAMPLE CONFIGURATIONS



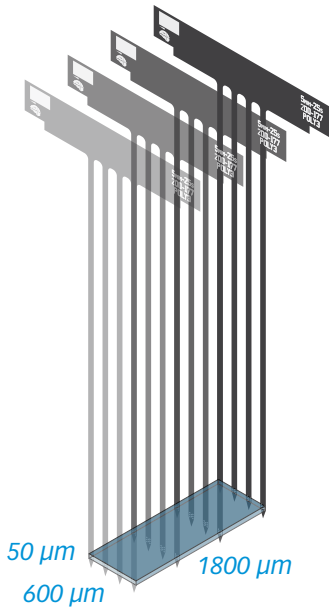
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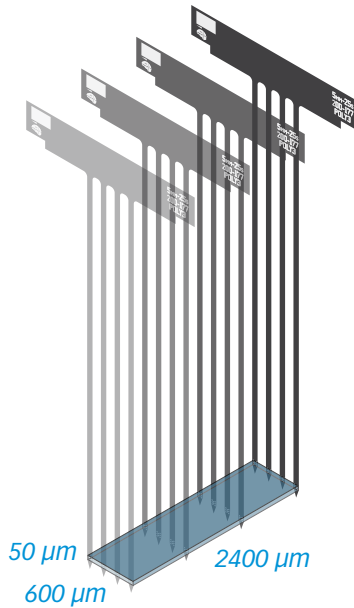
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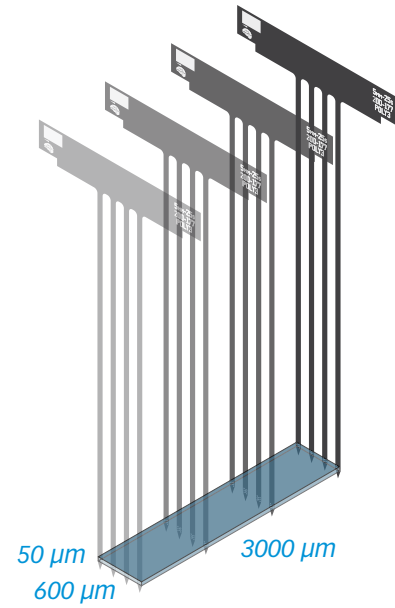
400 μm Spacing



600 μm Spacing

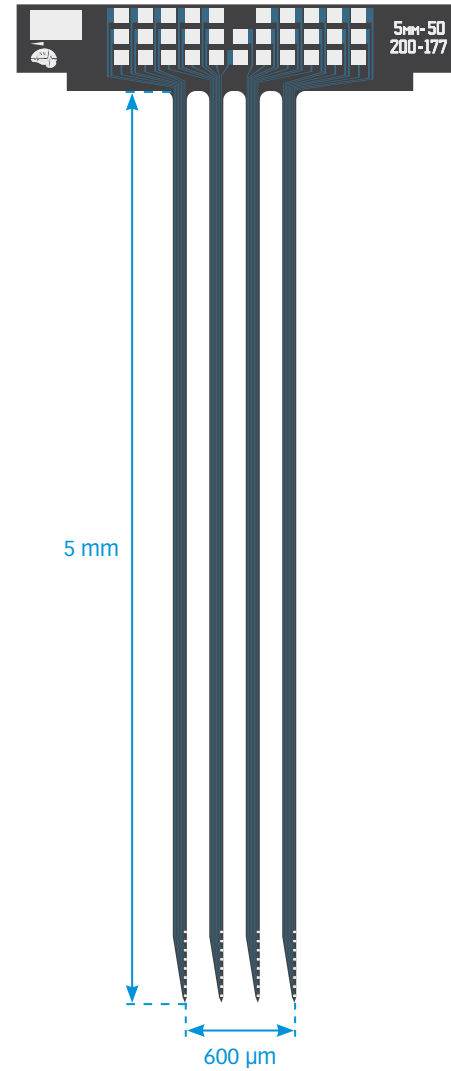
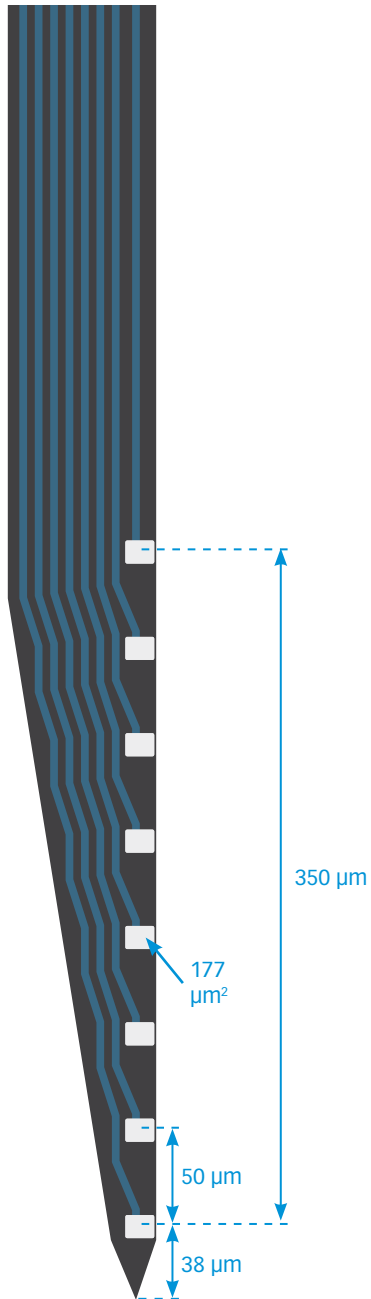


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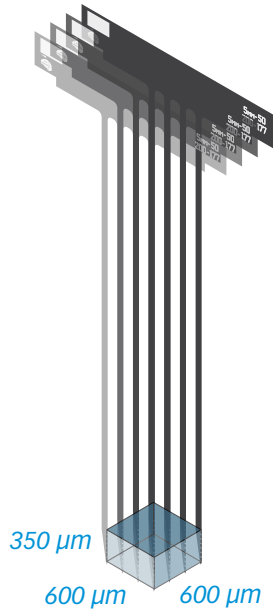


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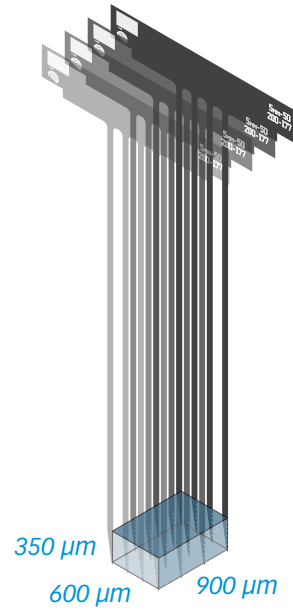
M4x8-5mm-50-200-177



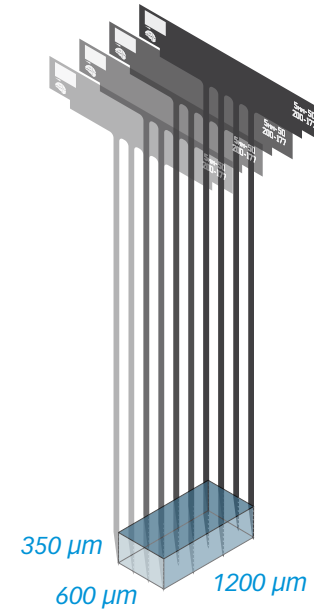
EXAMPLE CONFIGURATIONS



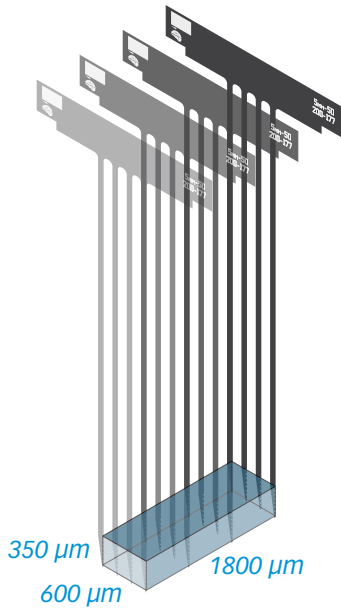
200 μm Spacing



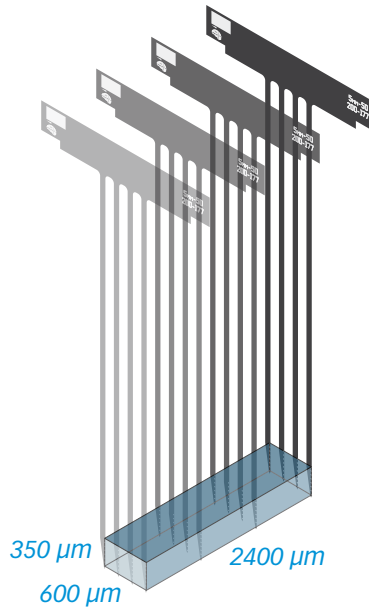
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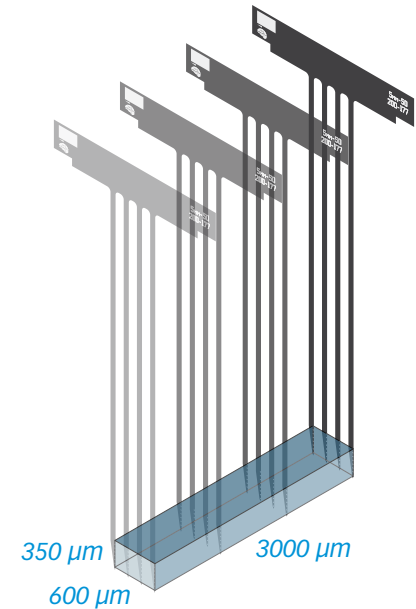
400 μm Spacing



600 μm Spacing

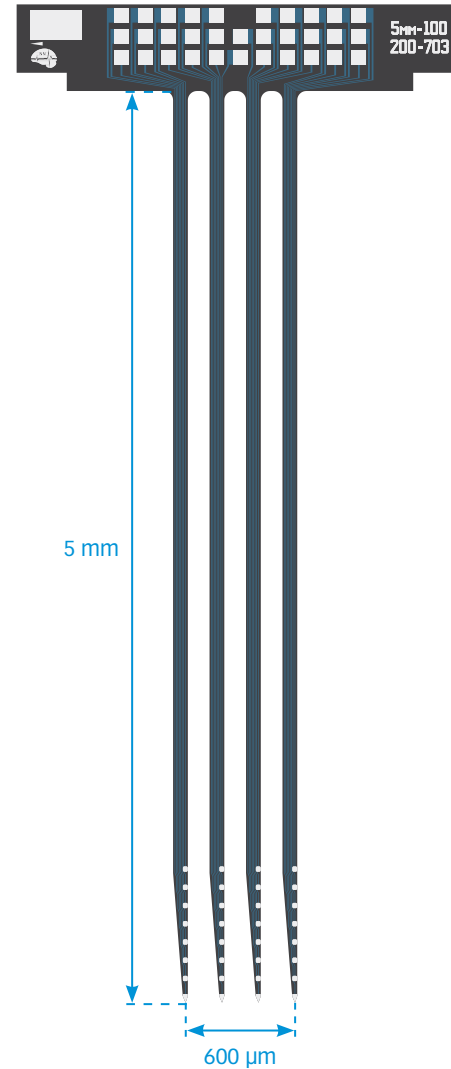
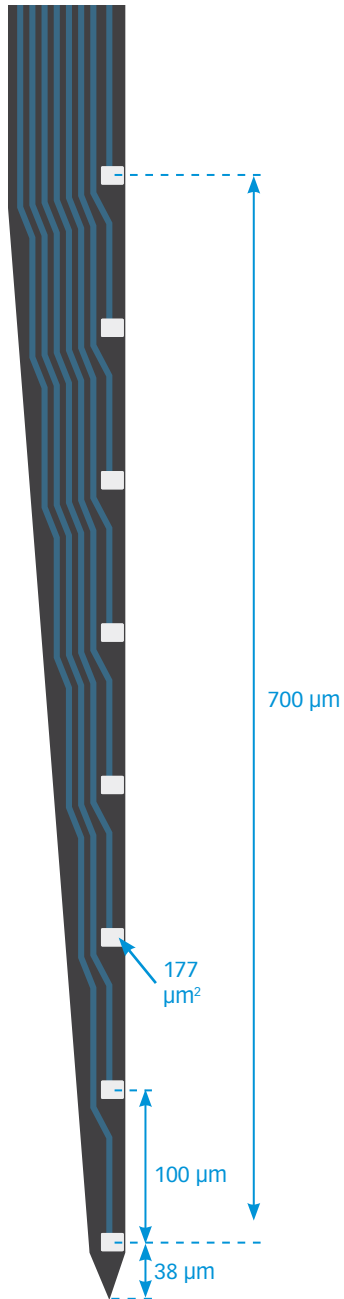


800 μm Spacing

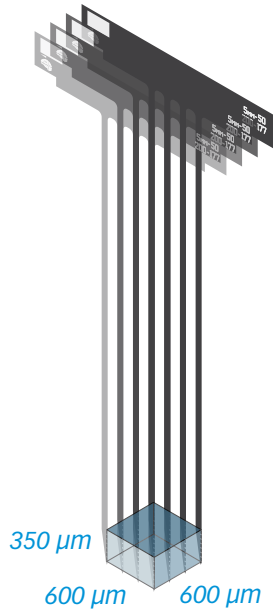


1000 μm Spacing

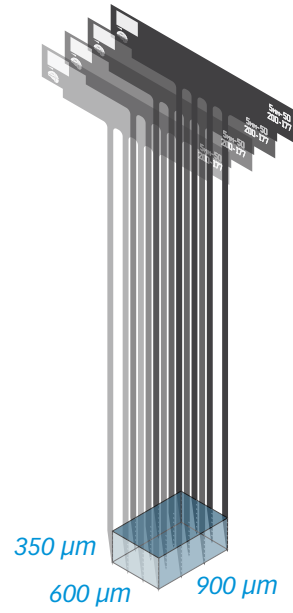
M4x8-5mm-100-200-177



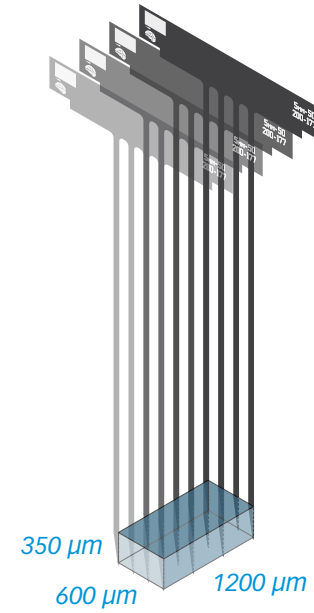
EXAMPLE CONFIGURATIONS



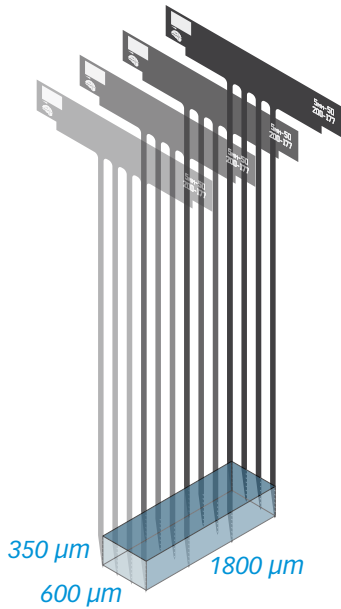
200 µm Spacing



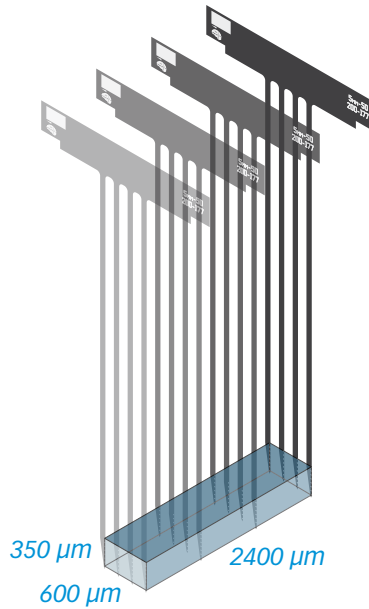
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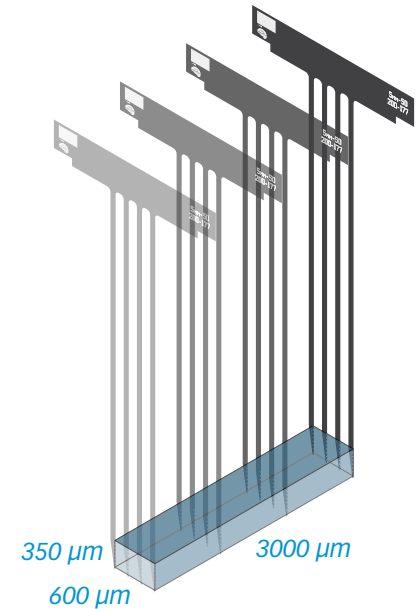
400 µm Spacing



600 µm Spacing

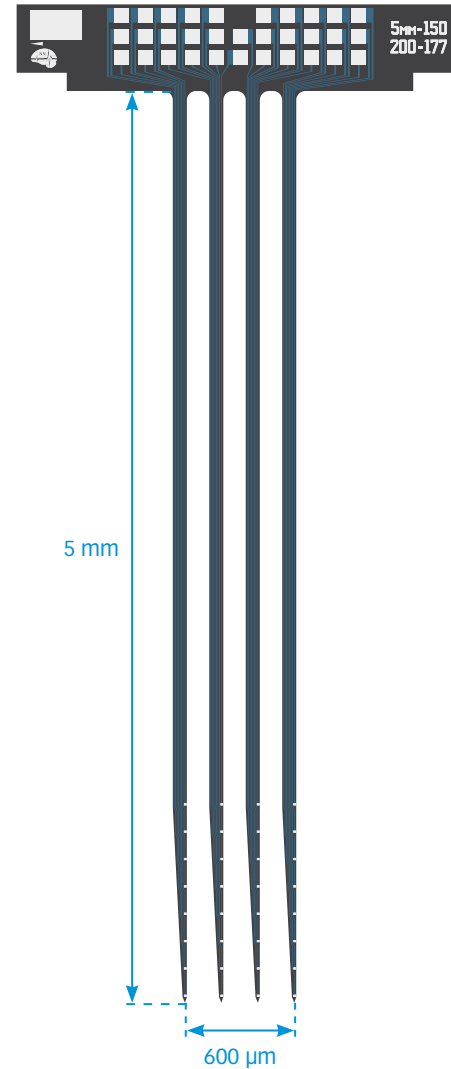
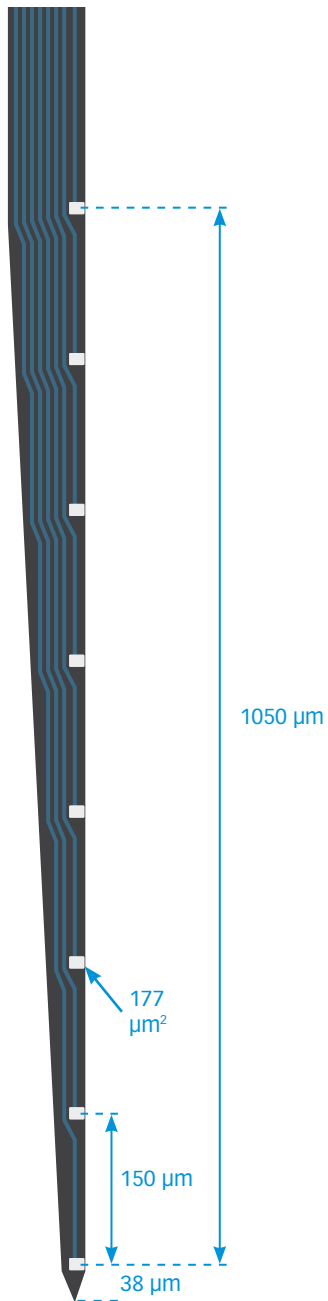


800 µm Spacing

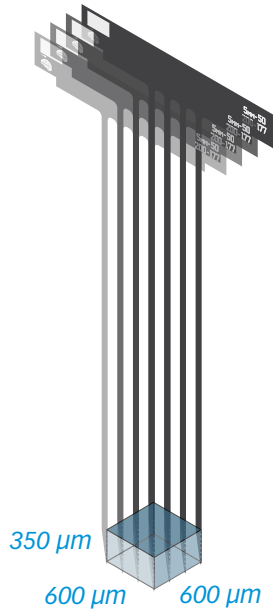


1000 µm Spacing

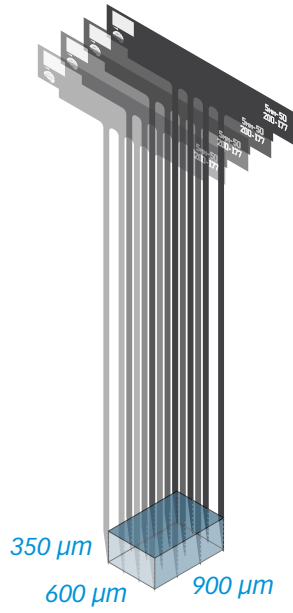
M4x8-5mm-150-200-177



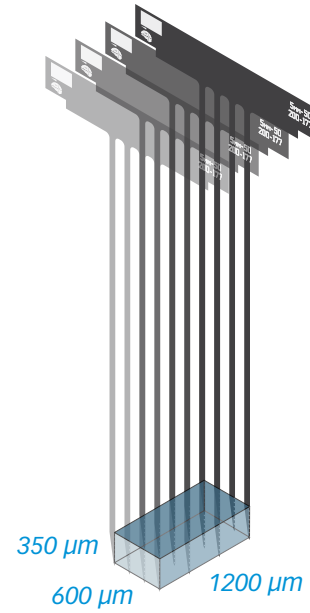
EXAMPLE CONFIGURATIONS



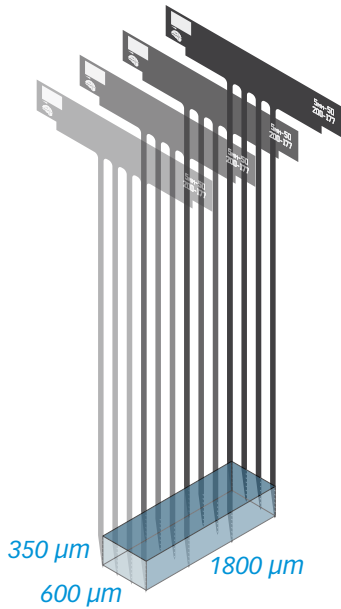
200 µm Spacing



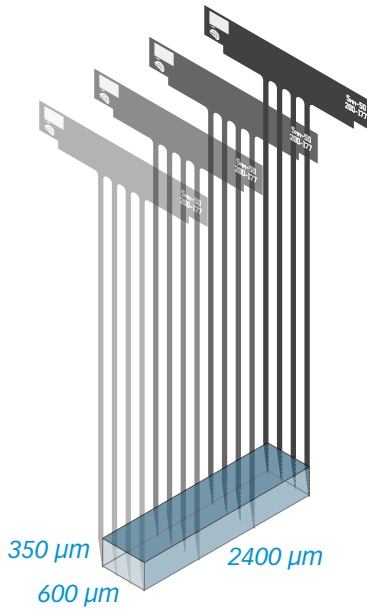
300 µm Spacing



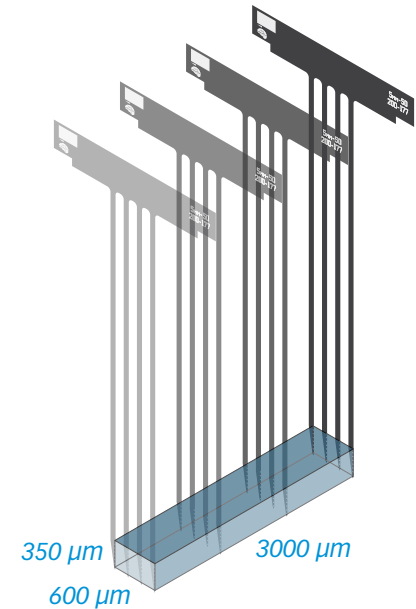
400 µm Spacing



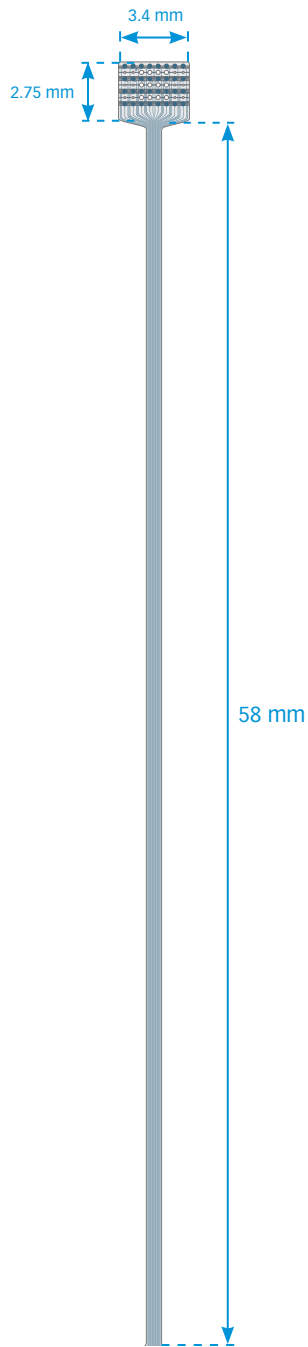
600 µm Spacing



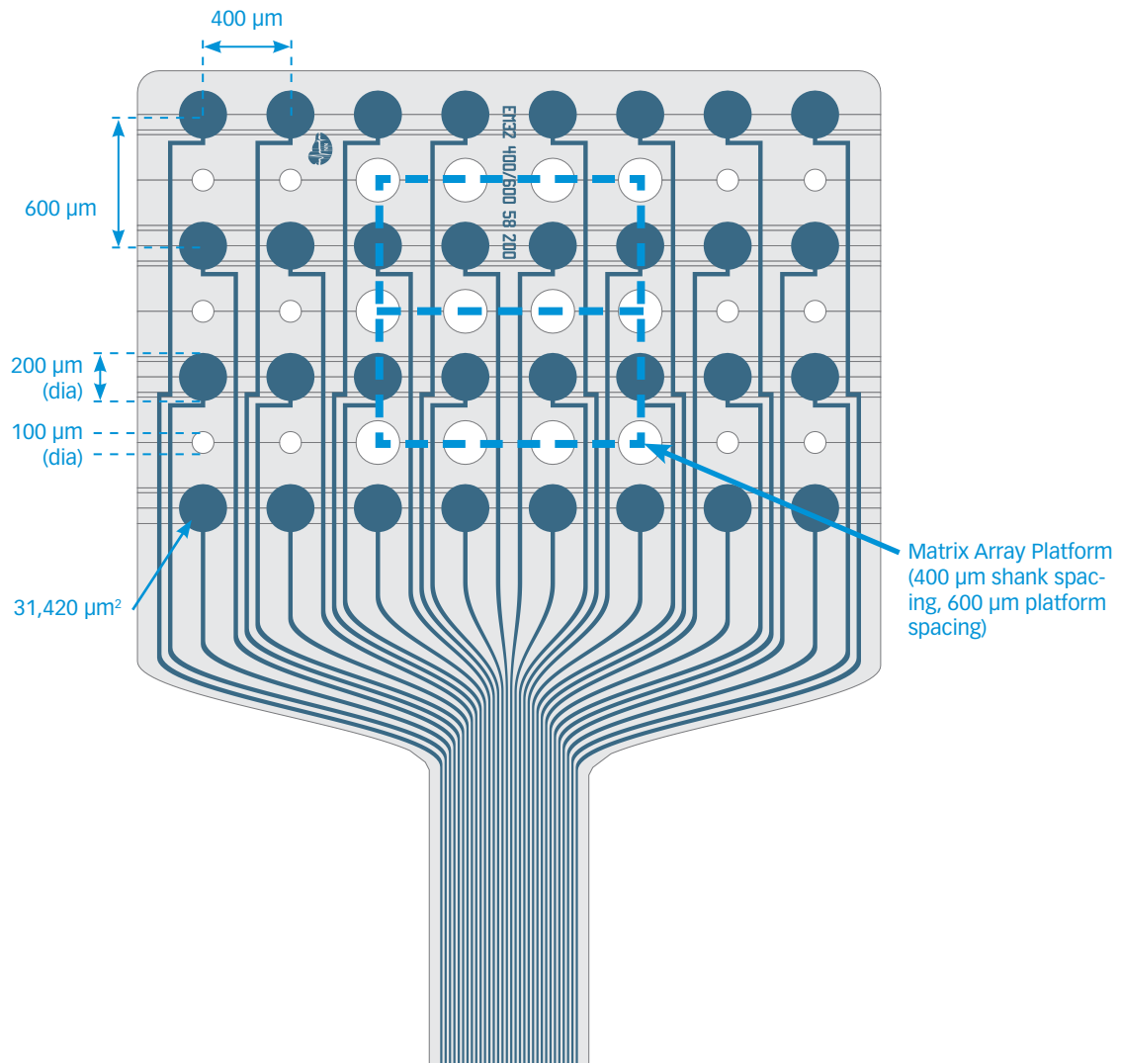
800 µm Spacing



1000 µm Spacing



EM32-400-600-58-200



EM32-2000-55-200

