

NEUROPIXELS

PXle Control System

Key Features

- User-friendly plug & play system
- Ultra-thin, 5 m-long cable for bidirectional data communication and power supply
- Modular PXle data acquisition card for up to 4 * 1.0 probes or 8 * 2.0 probes per card
- Various hardware/software trigger modes
- System/probe debugging and diagnostic features (incl. headstage test dongle)
- API for custom software development
- Detailed data sheet to enable third party hardware interoperability
- Compatible with SpikeGLX and Open Ephys software

Important Information

The Neuropixels probes are intended for RESEARCH USE ONLY ("RUO") in non-human subjects such as small animals*. These Neuropixels probes should not be used in humans and are not manufactured or approved for human use. They have no proven human efficacy and are not indicated for human use or any form of clinical use. The Neuropixels probes are provided and delivered for use only under the imec general terms and conditions of sale of Neuropixels 1.0 probes ("GTC"). [The GTC is available for download on www.neuropixels.org]

Description

The Neuropixels PXle control system is a plug & play interface system developed for the Neuropixels neural probes. It can be used in combination with the Neuropixels 1.0 probes, but also with the Neuropixels 2.0 and Neuropixels 1.0 NHP probes. It connects to the probe and headstage through a custom 5 m-long, flexible twisted-pair cable. Up to four cables can connect to a dedicated, modular PXle data acquisition card, and multiple modules can be synchronized to enable recording from more than 4 headstages simultaneously.

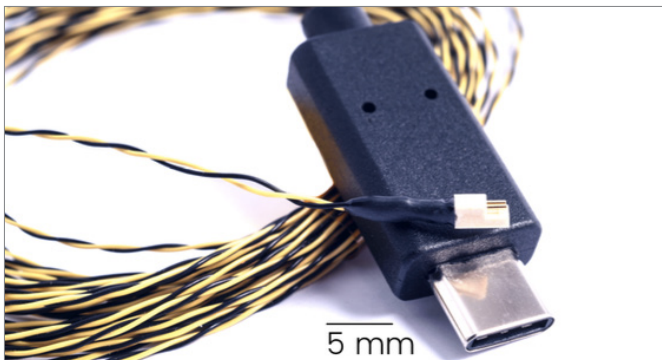
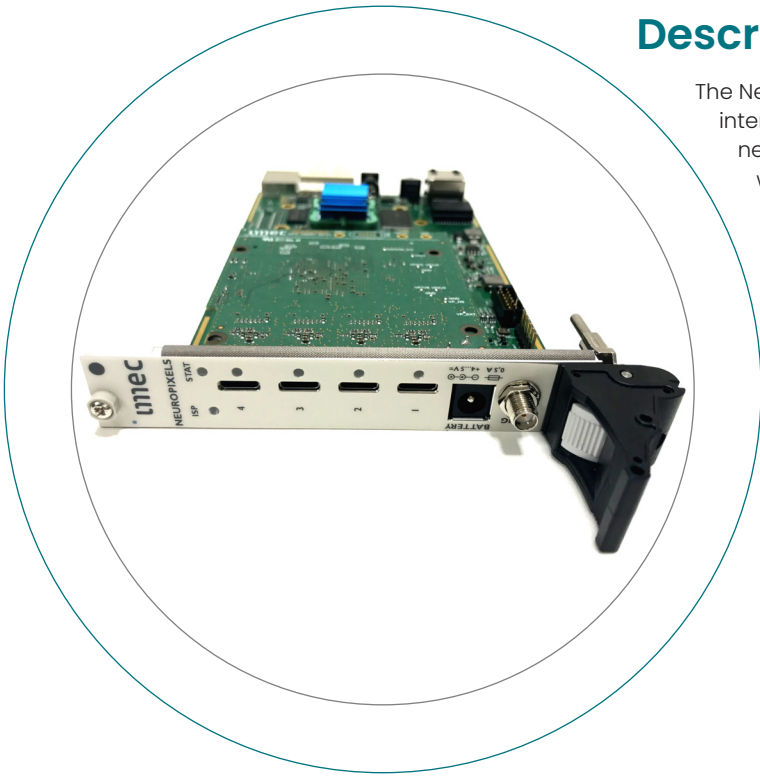


Figure 1: Interface data/power cable¹

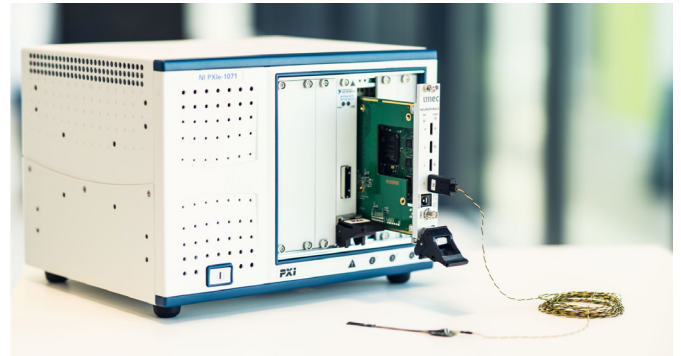


Figure 2: Neuropixels PXle card connected to one probe and fitted into a PXle chassis² slot.



Figure 3: Neuropixels headstage test dongle connects to the headstage for system diagnostics.

¹ Custom cable assembly.

² The PXle chassis and PCIe-PXle interface must be purchased separately from other third party suppliers.

Ordering information



ORDER CODE	DESCRIPTION
CBL_1000	Cable
PXIE_1000	PXie acquisition module
HST_1000	Neuropixels 1.0 headstage test dongle

Key specifications

TWISTED-PAIR DATA POWER CABLE¹

LENGTH	5 m
WEIGHT	5 g (excl. USB-C connector)
DIAMETER	2 x 0.41 mm
HEADSTAGE CONNECTOR	4-pin (Omnetics)
PXIE CARD CONNECTOR	USB-C
WIRE STRANDS	1 twisted pair

PXIE ACQUISITION MODULE²

CABLE INTERFACE	Front-panel with 4 USB-C input ports for up to 4 probes
4-PROBE DATA ACQUISITION MODULE	Custom-made PCB module containing a.o. a deserializer chip and two FPGAs for probe configuration, data acquisition and transmission to PC via PCIe interface
POWER SUPPLY	Via PXie chassis or battery ²
SYNC/TRIGGER	Trigger line switch matrix and configurable sync clock. Configuration of various trigger signals: SMA connector, 8 trigger lines on the PXI bus, user defined data or software trigger. Common trigger for multiple modules and/or external instruments
DEBUGGING & DIAGNOSTICS	Built-in self-tests to verify correct functionality of system components and data links
LED INDICATORS	5 RGB LEDs on front panel: 1 for global system status and 4 for probe status

DEBUGGING AND DIAGNOSTIC FEATURES

HEADSTAGE TEST DONGLE	Board that enables functional testing of the head stage from the API
BUILT-IN-SELF-TESTS	Set of functional system/probe tests enabled from the API

About Neuropixels

The Neuropixels 1.0 neural probe is an advanced silicon CMOS digital integrated microsystem and a tool for neuroscience research. It was developed through a collaboration funded by Howard Hughes Medical Institute (HHMI), Wellcome Trust, Gatsby Charitable Foundation and Allen Institute for Brain Science. Probes were designed, developed and fabricated at imec, Leuven, Belgium in collaboration with HHMI Janelia Research Campus, Allen Institute for Brain Science and University College London.

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* Small animals like rodents and non-human primates