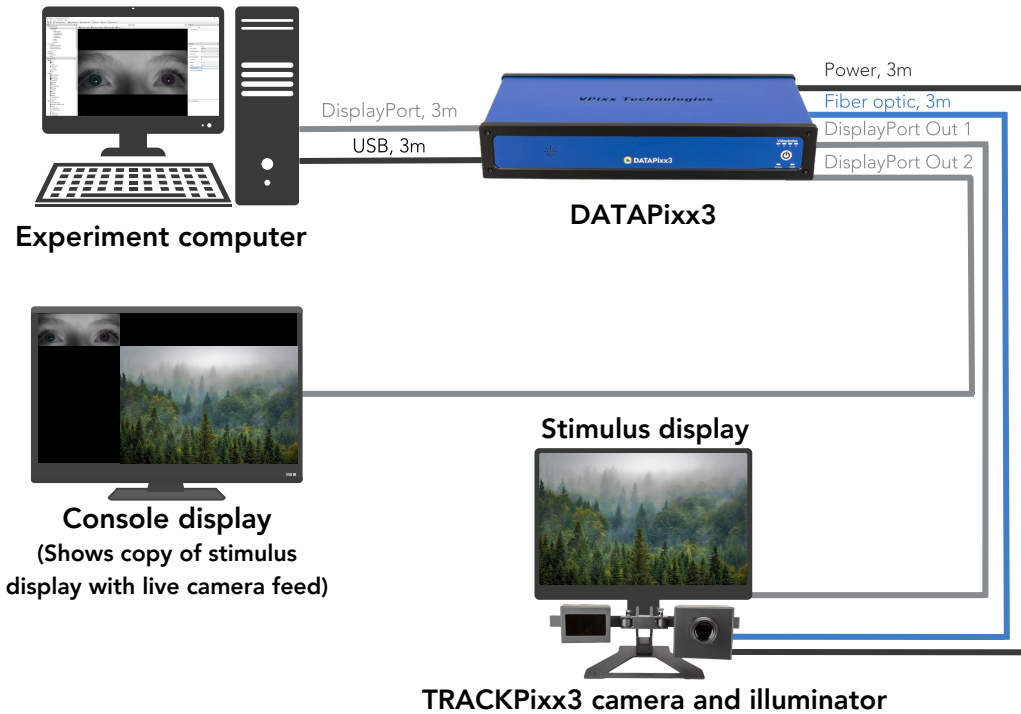


# TRACKPixx3

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## 2 kHz binocular eye tracking

The TRACKPixx3 is a 2 kHz eye/gaze-tracking solution. The TRACKPixx3 is versatile, supporting both monocular and binocular tracking with a single mechanical configuration. Interchangeable lenses support tracker distances from 60 cm to over 160 cm for fMRI applications.

The TRACKPixx3 does not require a dedicated PC to process eye images and generate gaze information. All image processing is performed within the TRACKPixx3 hardware. Gaze data can be logged within the TRACKPixx3 and retrieved by the testing PC with a simple low-latency USB interface.

### TRACKPixx3 eye tracker

- Eye tracking method : Pupil with corneal reflection
- 1 frame (0.5 ms) blink recovery time
- 1.7 ms latency
- VideoBahn fiber-optic interface
- 27 inch console monitor

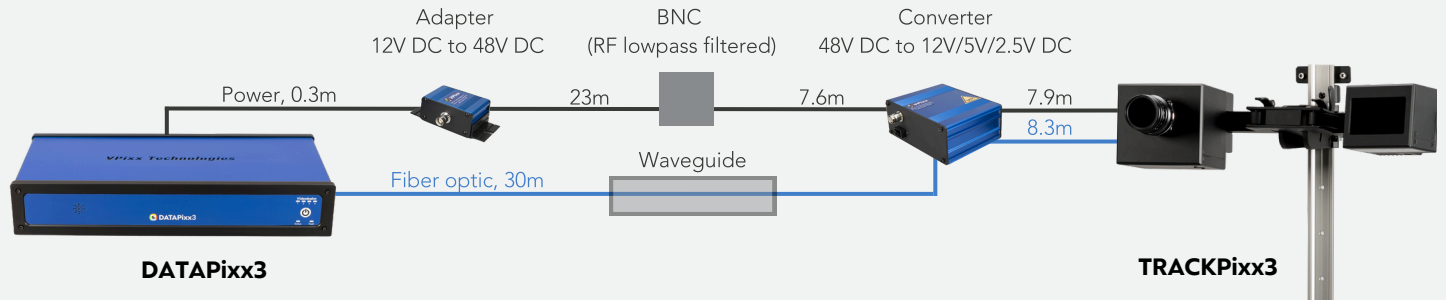
Data output : Raw and calibrated eye position, pupil size, digital inputs, custom messages, blink detection. All data is perfectly synchronized to your video stimuli.

### DATAPixx3 video I/O hub

- Button box interface
- 24 TTL trigger inputs and outputs
- Stereo audio input and output
- Analog inputs and outputs
- DisplayPort output for console monitor

All digital, analog, and audio inputs and outputs feature microsecond synchronization to video refresh

MRI/MEG configuration (Display/console not shown)



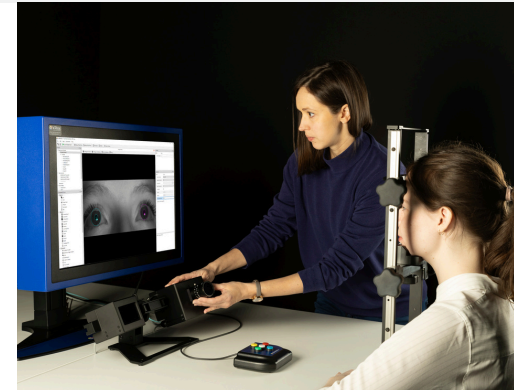
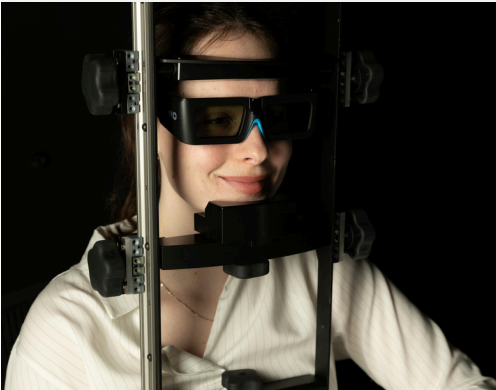
## Performance specifications

Installation Type	Short-Range (Tabletop, MEG)	Long-Range (MRI)
Sampling Rate	2 kHz binocular[1]	
Eye Tracking Method	Pupil with corneal reflection	
Accuracy[2]	0.20° - 0.60°	
Spatial Resolution[3]	0.01°	
Tracking Precision with Subject Fixations[2]	0.04°	
Blink Recovery Time	1 frame (0.5 ms)	
Real Time Data Access	Deterministic 1.70 ms via Analog Outputs, 1.95 ms via USB	
Pupil Size Accuracy	±0.1 mm	
Allowable Head Movement	Head restricted	
Optimal Range of Use	40 cm - 90 cm	100 - 180 cm
Glasses Compatibility	Yes	
Data Output	Raw and calibrated eye position, pupil size (major axis), digital inputs and outputs, blink and saccade detection. All the data are perfectly synchronized to your compatible stimulus monitor	
Infrared Wavelength	850 nm (940 nm for primates)	
Console Monitor	Console monitor shows participant view with optional camera live feed	
Button Box Interface	RESPONSEPixx series compatible vis DB25 input on DATAPixx3	
Analog Output	4 configurable channels for streaming eye data (16 options for data output)	
Tracker Computer	Not required	
Suggested Lens	50 mm (75 mm for primate)	75 mm

[1] Binocular is available depending on the head coil used. Both eyes need to be in clear view of the TRACKPixx3 camera for binocular recording.

[2] Measured with human eyes.

[3] Measured with artificial eye.



## Technical specifications

### AUDIO CODEC

- Audio line in, microphone in, speaker out, on 3.5 mm jacks
- Stereo microphone input amplifier resistance: 20 k $\Omega$
- Microphone sampling rate: 96 kHz
- Programmable microphone bias voltage range: 2.0 V to 3.1 V
- Stereo DAC sampling rate 96 kHz

### DIGITAL INPUT

- Number of digital inputs: 24 on db-25 connector
- Input termination: > 20 k $\Omega$  pullup to 3.3 V
- Input tolerance: 5 V

### DIGITAL OUTPUT

- Number of digital outputs: 24 on db-25 connector
- Output drive stage: 5 V through 25 k $\Omega$  series resistor
- Maximum output current:
- Source: 15 mA

### ANALOG TO DIGITAL CONVERTER

- Number of channels: 16 (or 8 differential), on DB-25 connector
- Converter resolution: 16 bits
- Maximum sampling rate: 200 kSPS per channel
- Frequency programming modes:
  - Samples per second
  - Samples per video frame
  - Nanoseconds per sample
- Simultaneous sampling across all channels
- Input range:  $\pm 10$  V
- Input impedance:  $1.6 \cdot 10^8 \Omega // 3$  pF
- Absolute maximum input tolerance:  $\pm 12$  V

### DIGITAL TO ANALOG CONVERTER

- Number of channels: 4 on DB-25 connector
- Converter resolution: 16 bits
- Maximum sampling rate: 1 MSPS per channel
- Frequency programming modes:
  - Samples per second
  - Samples per video frame
  - Nanoseconds per sample
- Simultaneous output updates
- Output range:  $\pm 10$  V
- Drive capability:  $\pm 25$  mA, 250 mW per channel

### SOFTWARE

- Supports Windows, Ubuntu/Linux and macOS
- High level LabMeastro software utility for calibration and visualization
- MATLAB and Python libraries
- Editable demo scripts for calibration in MATLAB/Python
- Demos and tutorials available

### POWER

- Power consumption: 160 W
- Input voltage: 12 VDC - 13.3 A
- International AC adaptor input: 90 VAC – 264 VAC (47 Hz – 63 Hz)

### MECHANICAL MOUNTING

- Tabletop mount
- Full integration with MRI/MEG-safe projection screen
- Standalone MRI/MEG-safe adjustable stand