

Technical & Touch Performance Specifications

Technical Specifications

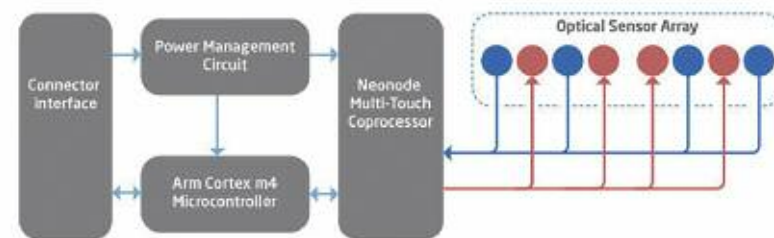
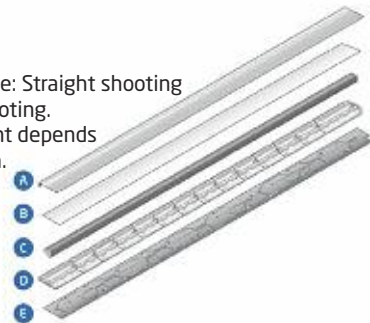
Item	Sensor Variant	Specifications
Module Size (L x H x W)	0° Type	L x 3.46 x 14.5 mm (L depending on product variant)
	90° Type	L x 3.46 x 15.45 mm (L depending on product variant)
Power Consumption I2C Interface Active mode (100 Hz)	72 mm Sensor	57 mW
	208.8 mm Sensor	80 mW
	345.6 mm Sensor	104 mW
Power Consumption I2C Interface Active mode (25 Hz)	72 mm Sensor	44 mW
	208.8 mm Sensor	45 mW
	345.6 mm Sensor	47 mW

Touch Performance Specifications

Item	Specifications
Input methods	Finger, hand or glove
Minimum object size (diameter)	5 mm
Number of touch objects	1,2, or more (depending on application)
Touch accuracy	<5 mm for sensors >180 mm <7.5 mm for sensors <180 mm
Touch Resolution	0.1 mm
Touch activation force	0 N (No activation force required)
Touch active area	Up to 345.6 x 327.7 mm. For details go to: https://support.neonode.com (introduction)
Response time	~ 50 ms 10 ms (continuous tracking at 100 Hz in active mode)
Scanning frequency	Configurable up to 900 Hz, depending on product variant

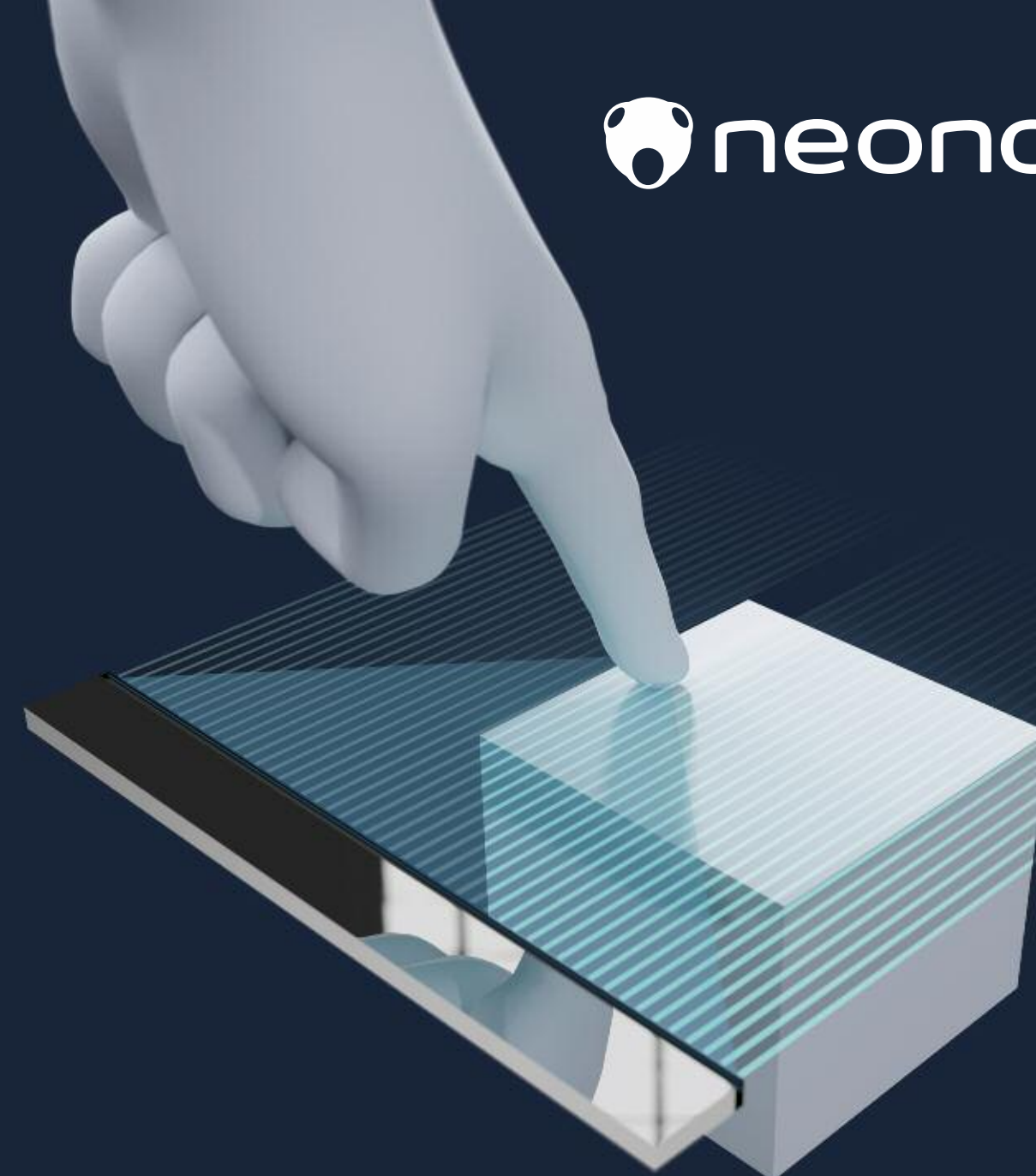
Parts of the zForce Sensor Module

- A. Cover
- B. Adhesive
- C. Front Light Pipe: Straight shooting or 90 degree shooting.
- D. Lenses: amount depends on Module length.
- E. PCBA



Electrical Block Diagram

The PCBA is equipped with both active and passive components including: MCU, Co-processor (a Neonode proprietary scanning IC), Polycarbonate Optical Lenses, VCSELs, and Photo Diodes.



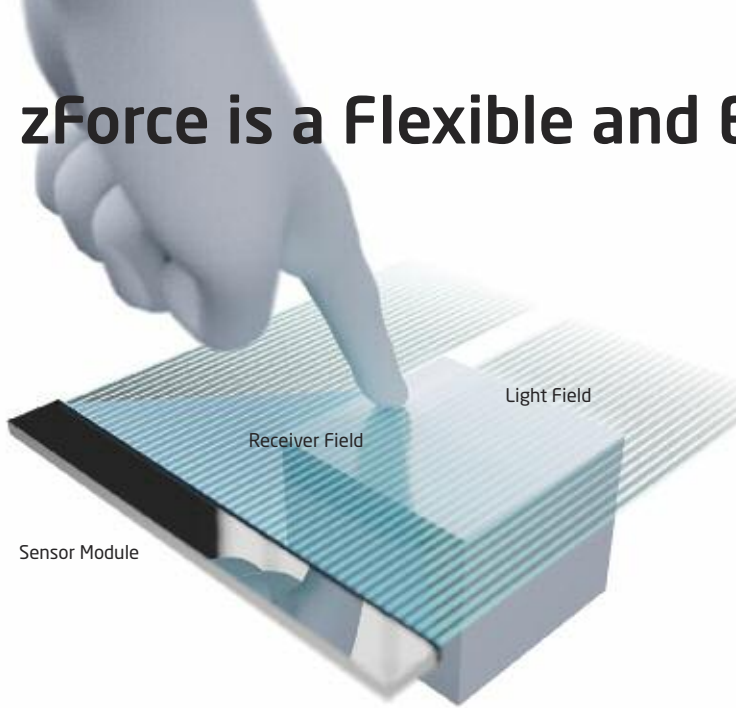
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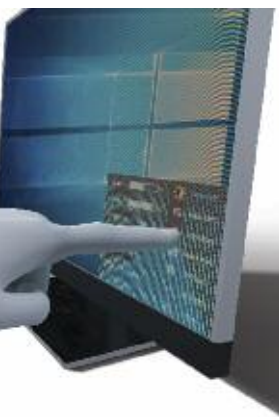
Neonode zForce Sensors Modules

Enable touch interaction on any display or surface

zForce is a Flexible and Economical Display Technology already proven in 70 Million Products World-wide



Neonode zForce (Zero-Force) optical reflective platform is based on light reflection technology, integrating optics and electronics in a thin strip along one side of an intended interactive area, creating a 2-dimensional interactive plane.



zForce interacts with the position and movement of any reflective object within range enabling reliable touch interaction on any display or surface without any overlay/protective front cover.

With Neonode zForce technology it's possible to make a small area on a big screen a "Selective Area Touch" (SAT). SAT makes it possible for device manufacturers with large

screens to incorporate touch to one or several smaller parts of the screen – creating a robust and cost-competitive touch screen solution to their applications.

zForce is economical, dependable, and performs even in the most rugged or hostile environments:

- Works with any input including gloves or dirty hands
- Light Resistant: Neonode Technology works in environments with intense or glaring light without aging effect
- Electromagnetic Interference (EMI): reliable interaction without EMI issues in sensitive environments
- Robust: add interaction to any surface in hot or cold temperatures without degradation.
- Climatized: outfit your display for foul weather, dirty or in-hospital environments with easily-adjustable detection distance including touchless interaction
- Simple Software Implementation using Neonode's on-line Software Developers Kit (SDK).

zForce Touch Solutions meet military and aerospace SWaP requirements – without sacrificing reliability or performance:

- Compact: Small module size and mounting options eliminates bulky touch frames/black-off areas on touch glass for maximum display area usage Weight
- Lightweight: 6 gram (72mm length) touch system weight, works with plastic display protection film to eliminate the need for heavy touch glass.
- Low-Power: zForce enables lower system power consumption because there is no need to compensate for display light loss caused by touch glass.

Neonode works closely with many of the world's best-known Fortune 500 companies and our customers are some of the largest consumer and automotive brands.

To date, Neonode's technology is deployed in approximately 70 million applications, including:

- 4 million cars and
- 66 million consumer devices

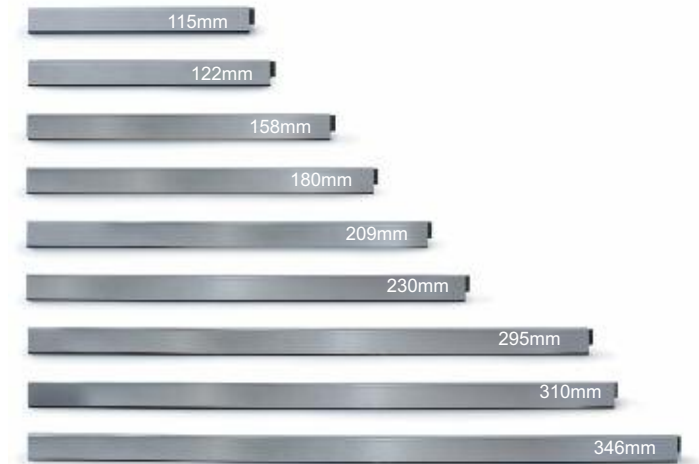
Neonode has 170+ Patents worldwide, and their products are used in:

- 2 of the world's top 3 printer manufacturers
- 30+ car models



Neonode's products and solutions are ideal for integration in a wide range of applications within markets such as: Industrial, Agricultural, Military, Automotive, Consumer, Aerospace, Medical, Off-Highway, etc.

Neonode Sensor Modules can be purchased in a variety of lengths and configurations to fit most applications:



In addition to the standard lengths shown above, they can also be ordered in 0 or 90 degree configurations in 100 different lengths, (in 7mm increments from 43mm to 346mm). Custom sizes can be ordered on request.

To help kick-start your next design, Neonode offers an inexpensive and easy-to-use Evaluation Kit in standard lengths from Digi-Key. The kits include an Interface board (with USB and I2C interfaces) and FPC-cable. Or, order the Explorer Kit, containing all the standard length modules.



Don't settle for ordinary touch controls or display panels when you can design an economical and versatile zForce Interactive Touch Solution into your product today.

zForce Optical Sensors enable Touch or Touchless Interaction on any Surface and in any Environment

