

# Capacitive Sensors

*Printed capacitive touch controls*

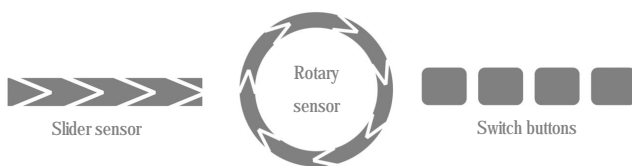


# Capacitive sensing

## Description

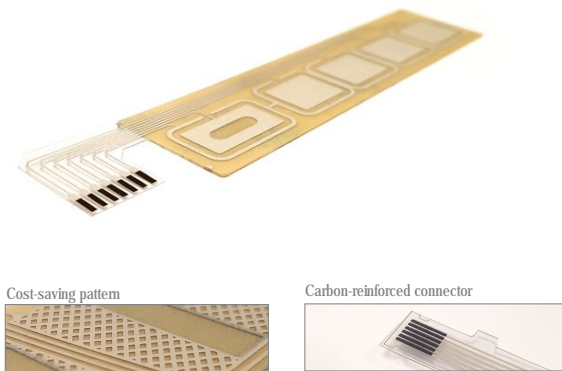
The automotive and home appliances sectors are moving towards the replacement of electro-mechanical switches and buttons by touch-sensitive buttons thanks to its advantages in terms of cost, ease of assembly and freedom of shaping tactile controls to intuitive user interaction.

Designers have the opportunity to eliminate components count and design highly styled thin, light-weight HMI control surfaces.



Piher can provide printed touch controls where the presence of a conductive object or finger creates a capacitance change which is converted into a switch activation in the customer application.

We can print this technology with several materials or substrates such as AG nanoparticle conductive inks, conductive polymer PEDOT, carbon (reinforcing connector contact parts) and dielectric layers that allows flexibility, bendability and other mechanical properties to be included in a wide range of flat or 3D surfaces.



By using a translucent substrate, our films and touch sensors allow low cost, low power, low weight and low profile backlit designs (i.e. led light goes through the substrate).

## Markets

- Home & building automation.
- Appliance (whitegoods).
- Automotive.
- Wearable electronics.
- Flexible Hybrid Electronics.
- Medical.
- Telecommunication.



## Features and benefits

- Form, fit, and function can be adapted to customer's needs.
- Touch and proximity sensing capable.
- Cost effective (reduction of component count, no wires, easier assembly).
- Energy-efficient (capacitive sensing wakes up the electronics and then it is ready for operation).
- Low weight (traditional PCB, buttons and wiring not needed anymore).
- Low power.
- Low profile.
- Long life.
- High sensitivity.
- Translucent ready for back-lit and icons.
- Stable and robust (no moving parts to wear, circuitry can be encapsulated).
- Printing in FR4, CEM, CERAMIC and flexible substrates, PET, Polycarbonate, glass.
- Shape design freedom and curved surfaces sensors.
- High volume manufacturing capability and flexibility.

## Examples of applications

- PEDOT sensor with rotary switch and discrete buttons for capacitive user HMI interface.
- Thermostat, home & building automation.
- Cooktops, refrigerator, coffee-machine and general appliance control products.
- IOT (internet of things) devices.
- Flexible wearable electronics sensors.
- Capacitive rugged touchpad switches.
- Lighting controls.
- Scrolling and menu navigation for consumer electronic devices.
- Cap-touch buttons.
- Flexible Hybrid Electronics.
- 3D Transparent Touch Sensors and transparent heating films or EMI shielding.
- Virtual & augmented reality and game controllers.
- Capacitive keyboards.
- Gaming devices.
- Automotive touch keys, sliders, wheels, HVAC, audio bezels and track pads.
- Smart automotive surfaces and innovative interiors technologies (lighting, door trim, floor console, navigation, infotainment, instrument panel, etc.).

# Capacitive sensing

## Piher Sensing Systems - Amphenol Sensors BENEFITS:

- ✓ Value added proposition:
  - o Engineering design-in support
  - o Cable harness and connector assembly
  - o Output customization
  - o Manufacturing capabilities for high and low volume programs
- ✓ One-stop solution provider for different position sensing technologies (hall-effect, inductive, capacitive and contacting)
- ✓ One-stop sensor provider not limited to Position sensors (Temperature, Gas & Moisture, Pressure etc) with diverse product portfolio of standard and customized products.
- ✓ Piher Sensing Systems has a global footprint through Amphenol Sensors providing local customer support

**PIHER** Ever closer  
**SERVICE** Collaborative solutions  
that really fit your  
purpose

Disclaimer: The product information in this catalogue is for reference purposes. Please consult for the most up to date and accurate design information.

Piher Sensors & Controls S.A., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Piher"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product described herein.

Piher disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Piher's terms and conditions of sale, including but not limited to the warranty expressed therein, which apply to these products.

No licence, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Piher.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Piher products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Piher for any damages arising or resulting from such use or sale. Please contact authorised Piher personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Information contained in and/or attached to this catalogue may be subject to export control regulations of the European Community, USA, or other countries. Each recipient of this document is responsible to ensure that usage and/or transfer of any information contained in this document complies with all relevant export control regulations. If you are in any doubt about the export control restrictions that apply to this information, please contact the sender immediately. For any Piher Exports, Note: All products / technologies are EAR99 Classified commodities. Exports from the United States are in accordance with the Export Administration Regulations. Diversion contrary to US law is prohibited.

Piher is an Amphenol™ company.



All Piher products can be adapted to meet customer's requirements. Due to continuous process improvement, specifications are subject to change without notice. Please always use the datasheets published at our website [www.piher.net](http://www.piher.net) for the most up-to-date information.

v160719

## Contact

Piher Sensors & Controls SA  
Poligono Industrial Municipal  
Vial T2 N°22  
31500 Tudela - Spain  
Tel: +34-948-820450

[sales@piher.net](mailto:sales@piher.net)

[www.piher.net](http://www.piher.net)

[www.amphenolsensors.com](http://www.amphenolsensors.com)