



HMI Components Division
Diamond Electronics Limited

ALGRA GROUP

DYNASENSE

ENGINEERED TO SUIT HARSH
OUTDOOR APPLICATIONS

connect tec



'DYNASENSE resistive input technology is incredibly robust and requires no complicated electronic interface.'

DYNASENSE is a discrete membrane keypad designed to create the 'feather touch' feel of capacitive touch switches at a fraction of the cost.

Using proprietary innovative nano particle conductive ink technology, DYNASENSE enables designers to create user interfaces with plastic overlay materials of thicknesses from 0.15 to 0.75 mm. DYNASENSE allows a very sleek and seamless construction and has almost no mechanical movement. The maximum deflection is between 30 and 50 μm . As a consequence the lifetime can exceed 5 million switch cycles depending on the overlay material chosen.

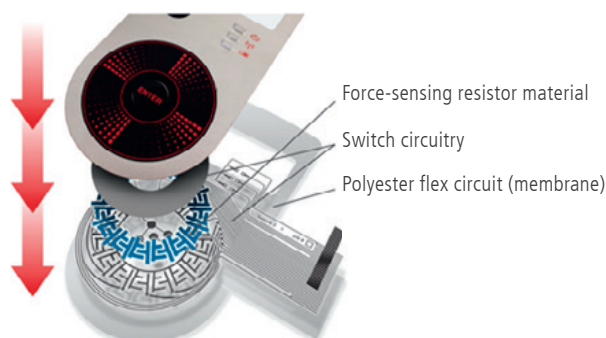
The switching concept is basically emulated through lowering the electrical resistance, as in a traditional membrane switch. It is therefore easy to integrate and can be used with existing membranes and DYNAPIC®/DYNASIM® hardware platforms; no special integrated circuits or controller chips are required.

Despite its simplicity, DYNASENSE is the only technology that offers a wide operational temperature range from -40°C to $+100^{\circ}\text{C}$ thanks to the special graphene-based nano-carbon ink formulation that exhibits stable switch resistance over thermal fluctuations. These keypads are fully functional when actuated with gloves or other non-metallic actuators. They are ideal for medical and industrial settings or even harsh outdoor environments, where safety demands that workers wear hand protection.

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How DYNASENSE technology works:

1. The force applied on the overlay is transmitted to the force-sensing resistor material through a very thin spacer.
2. This causes a drop in electrical resistance, which is detected by the electronics connected to the membrane circuitry, very similar to how traditional membrane switches are integrated into the controller.



Features	Advantages
Overlays up to 0.75 mm thickness	Vandal-proof
Can be actuated without contact with human skin/gloved actuation	Ease/safety of use
Continuous scrolling action requiring low actuation force	Readily accepted by user
No controller chips or firmware programming required	Seamless integration into existing platforms at lower costs than capacitive switches
Resistant to moisture and EMI	Reliable and durable for demanding environments

Actuation force*

Overlay thickness	Actuation force (gm force)
0.25 mm	43–71 gm
0.38 mm	85–170 gm
0.50 mm	200–300 gm
0.75 mm	250–400 gm

* Nominal values only for explanatory purpose, based on standard design conditions.

Technical data

No. of press cycles:	with 0.25 mm overlay foil > 5 million actuations with no stress cracks with 0.5 mm PC overlay > 10 million actuations
Operating temperature:	-40°C to +100°C
Storage temperature:	-40°C to +100°C
Resistance:	open > 1 MΩ / closed < 1 kΩ
Key distance (centre to centre):	minimum between 15 and 20 mm
IP protection:	possible, depending on design specifications
Switch type:	flat non-tactile switch type

Distributed in the UK by Diamond HMI

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2019/05