

Innovative Interface

TECHNOLOGY

Drives our

Comprehensive

HMI Solutions

Customer-Focused

APPROACH Leads to

Inspired Solutions

Pursuing Perfection

in MARKETS that

Demand Higher

Complexity Solutions

Valmark Interface Solutions™

161 S. Vasco Road, Suite L
Livermore, CA 94551

E sales@nidec-vis.com

O 925 960 9900

F 925 960 0900

W Nidec-VIS.com

Membrane Switches

General Specifications

All membrane assemblies and graphic overlays supplied by VIS are close-tolerance, micro-motion electrical switches and/or thin-gauge plastic graphic products. However, because each part we provide is custom, each of the characteristics below can be, to greater or lesser extent, customized to a particular application. The following is a set of typical membrane switch specifications that VIS can provide:

Mechanical

Characteristics	Typical Values	Test Methods
1. Life - Operations:	100k to 5 million	IAW ASTM F1578
2. Actuation Force:	2 oz. to 32 oz.	IAW ASTM F1597
3. Travel:	0.003" to 0.100"	IAW ASTM F1682
4. Bend:	1.0"R, 10-20 cycles	IAW ASTM F1683
5. Crease:	1.0"R, 10-20 cycles	IAW ASTM F1683

Electrical

Characteristics	Typical Values	Test Methods
1. Close Loop Resistance:	≤ 100Ω	IAW ASTM F1680
2. Open Loop Resistance:	>10MΩ	IAW ASTM F1680
3. Insulation Resistance:	>10MΩ	IAW ASTM F1689
4. Dielectric Resistance:	250VDC – 1k VDC	IAW ASTM F1662
5. Contact Bounce:	≤ 10ms	IAW ASTM F1661
6. Volume Resistivity:	>10 ¹⁵ Ω-m	IAW ASTM D257 (for PFC layer only)
7. Dielectric Constant:	2.9	IAW ASTM D150 (for PFC layer only)

Environmental

Characteristics	Typical Values	Test Methods
1. Temperature – Operational: Temperature – Storage:	-20 °C to +65 °C -40 °C to +85 °C"	IAW ASTM F1596 Level 4 IAW ASTM F1596 Level 1
2. Humidity:	0 – 95% RH (NC)	IAW ASTM F1596 Level 4
3. Travel:	50 (g for 11ms)	IAW MIL-STD 810E Method 516.4
4. Vibration:	10 (g 10 to 2 kHz)	IAW ASTM F2188
5. Altitude:	0 to 40,000 ft.	IAW ASTM F1762

VIS (Valmark Interface Solutions™) is the industry leader in engineering, manufacturing and testing of human machine interface (HMI) products. These products include membrane switches, touch screens/ sensors, key panel assemblies, graphic overlays, EL lamps, EMI/RFI shielding and printed compliance labeling. For over forty years, high-tech leaders like Apple Computer, Agilent Technologies, Fresenius, Sun Microsystems, and Abbott Laboratories have trusted VIS quality, on-time delivery, and technical innovation to support cutting-edge products in the most competitive markets. Electronic, medical, automotive, and office technology control panels depend on sophisticated membrane switch, touch screens/sensor, elastomer touch, and PCB assemblies. With multi-platform CAD/CAM systems, unique ink, dielectric, shielding, silver coating, and encapsulating technologies, VIS works with each customer to develop their optimal solution.

Note: Valmark Industries, Inc. has no control over the use to which others may put these materials and assemblies, and does not guarantee that the same results as those described herein will be obtained. Nor does Valmark Industries, Inc. guarantee the effectiveness or safety of any possible or suggested design for articles of manufacture as illustrated herein by any photos, technical drawings and the like. Products or design or both should make his own tests to determine the suitability of the materials, finished products, or any materials for the design, as well as the suitability of the materials, products and/or design for his own particular application.