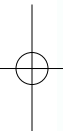


WASP

TOUCH SCREENS



WASP

Where switch technology is brought to life



Formed in 1974, WASP achieved early recognition as an innovator in the design and manufacture of rotary switches for the professional, military, instrument and telecommunications markets.

Although still a leading manufacturer of rotary switches, our expertise has grown with the demands of technology to include the specialist design and manufacture of sophisticated membrane switches and touchscreens.

Based on a policy of providing customers with a complete design through sampling to full manufacture all within WASP, we have two modern manufacturing facilities on the south coast where all of our products are made.

These facilities give our customers total control over the manufacture of their specific requirements which allows them to oversee production quality, make changes as required, control deliveries and upgrade or

alter without delay or being subject to any disruptions thousands of miles away.

Easy to reach from anywhere in the UK, WASP is a self-sufficient company which prides itself on the extremely high levels of service and quality afforded by all of its dedicated staff.

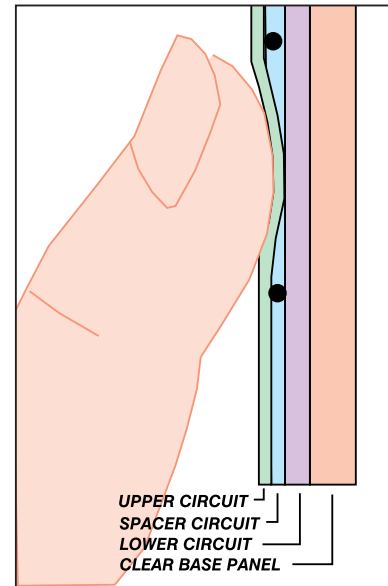
With UK manufacturing approvals to BS:EN ISO 9001: 2000 Registration Number FM01726.

Long time supporters of the Young Engineers Award, we are a company which still believes in local values and we are proud to provide products which are Made in England.

WASP TOUCH SCREENS

Touch sensitive screens combine advanced membrane switch technology with the versatility of computer graphics. This allows the system designer increased

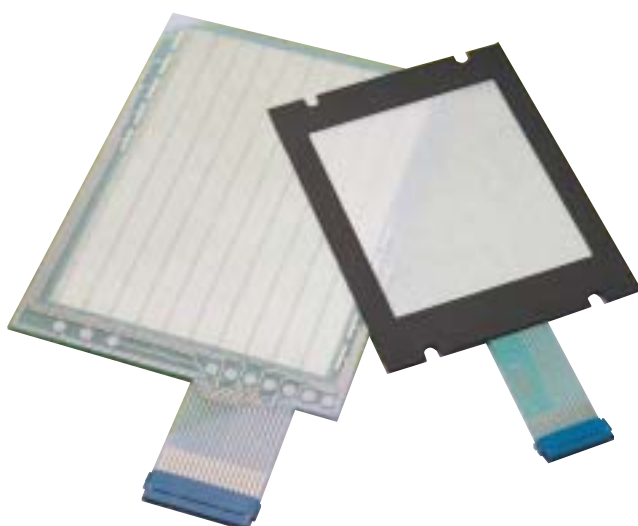
space and opportunity to communicate more information or instructions to the user and still maintain the basic functions of a conventional keyboard.



Offering an unlimited number of switch panel functions combined into one unit, touch screens are easily operated by an unskilled user because communication is directed to a visual image.

They operate through a transparent membrane construction comprising two stable polyester sheets coated on the inner surface with a thin, transparent coating of resistive oxide.

The switch contacts are spaced 30 microns apart within the active area and can be designed with various analogue configurations to suit individual graphic requirements.



FEATURES

- *User friendly direct interface*
- *Universal applications*
- *Hard, durable anti-glare or gloss display surface*
- *Customised boarder graphics*
- *Flexible membrane or mounted on toughened glass or polycarbonate*
- *A touch sensitive screen area can be incorporated within a conventional membrane panel.*
- *Matrix or analogue switching*
- *RS232 or USB interface*
- *Universal software drivers*

WASP TOUCH SCREENS

Excellent advantages
for existing products
Exciting possibilities
for new products

From the very beginning, we learn to point or touch the things we want. It is the most basic means of communication. And what makes it so successful, is that it works!



So what could be simpler than a modern, technological means of communication which relies entirely upon touch?

WASP Touch Screens have been developed as a result of their expertise in switching and membranes. The knowledge gained in these two areas have enabled WASP to extend their product range to include touch screens which are already in use in a wide range of applications.

WASP's ability to include more than one technology in their touch screens, for example a touch screen incorporating membrane switches, and their constant development of materials and components which enhance and improve the performance of their touch screens is the result of decades of experience and problem solving.



This dedication is extended to their clients who are encouraged to work with WASP's design team in order to make full use of the growing number of applications to which touch screens are perfectly suited.

WASP TOUCH SCREENS



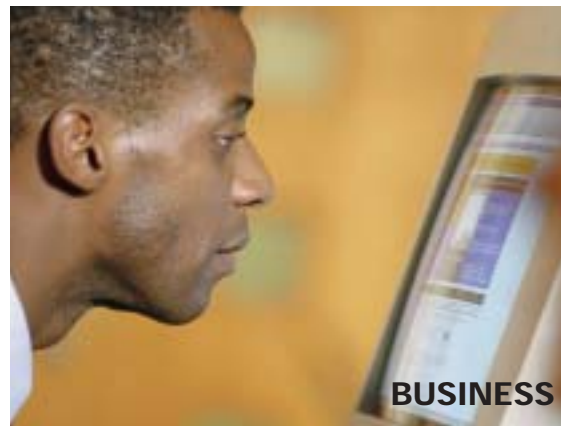
In fact, there is hardly a situation involving some form of interface where a WASP touch screen is invariably the answer to the problem.



Similarly, the WASP touch screen is equally at home in industrial, military, financial, medical and educational situations where a user friendly, direct interface is the simple answer.



This is becoming particularly relevant in situations involving the general public. By providing them with the opportunity to access information, purchase items or request services by using this simple operation, there are considerable savings to be made in manpower and materials.



Limited in application purely by the imagination, the WASP touch screen has already established itself in many installations where it is working with complete success.



If your next project requires a simple, responsive interface, let WASP point you in the right direction.

WASP TOUCH SCREENS

How WASP Touch Screen Technology can be tailored to your needs

At WASP, we are particularly proud of our design services. Using the very latest CAD equipment, we are able to turn your ideas into reality.



Our fully qualified engineers and technicians are able to advise you at every stage and will apply their considerable expertise to your design. Aware that the appearance of the finished product is just as important as its function, the WASP design team will assist you with the graphics, if required, with the same degree of dedication.

Early involvement of the design team is essential to ensure that your touch screen requirements are met on time and within budget.

Most WASP touch screens can be supplied with the following options:

- Single layer ITO on glass
- Two layer ITO on substrate
- Variable pressure choices
- Flexible two layer
- Connector choice
- Custom printing
- Tail output
- Hard coating
- Anti-glare
- Additional membrane switches
- Graphics
- ESD, EMI, RFI Shielding
- Selection of sizes
- Optical clear adhesive
- Standard or small spacer dots
- Standard sizes available
- Development kits
- Glass, acrylic or polycarbonate back panels

WASP TOUCH SCREENS

PRODUCTION

Trained and experienced personnel in our assembly plant use the latest techniques and equipment in order to meet the high standards which are acceptable to both us and our customers.

We take great pride in our clean room assembly facilities which were installed to meet the growing demands of our customers for products which are entirely contaminant free. We pride ourselves on our ability to produce exactly the type of touch screens required by our customers, regardless of the complexity.

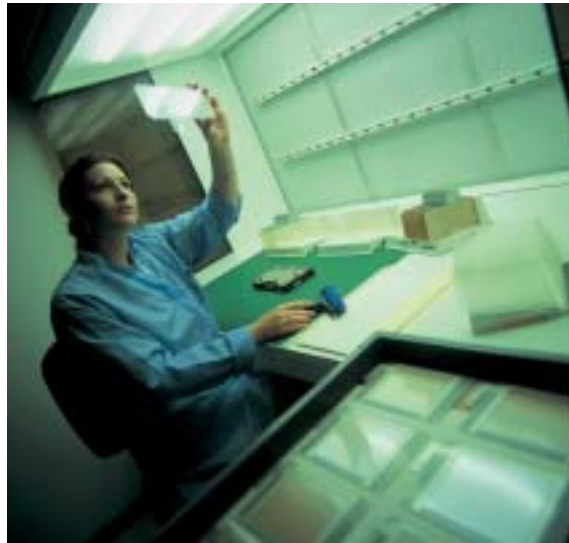


In situations where touch screens demand more than just a transparent interface, WASP can also design and produce the 'extras'. Namely the screen printing of surrounds, the addition of membrane switches or even the simple addition of a logo or trademark.

In fact, we can create the exact requirements to enhance the use or simply improve the appearance of your touch screen.

The WASP in-house manufacturing facilities include:

- **Static sensitive precautions**
- **Clean room assembly**
- **Machine shop including injection moulding**
- **Environmental test facility**
- **Mechanical and electrical test laboratory**
- **In line inspection**
- **Laser cut back panels**
- **Industrially tested complete screens**



QUALITY

Our quality control and complete commitment to quality is reflected in our approval to ISO 9001..2000. We take great pride in our test and inspection procedures which are carried out at every stage of manufacture or assembly whether we are producing the simplest or most complex of touch screens.

Every product is fully checked against the original design for appearance, dimensions, functions, electrical specifications and performance.



general technical specifications

Materials

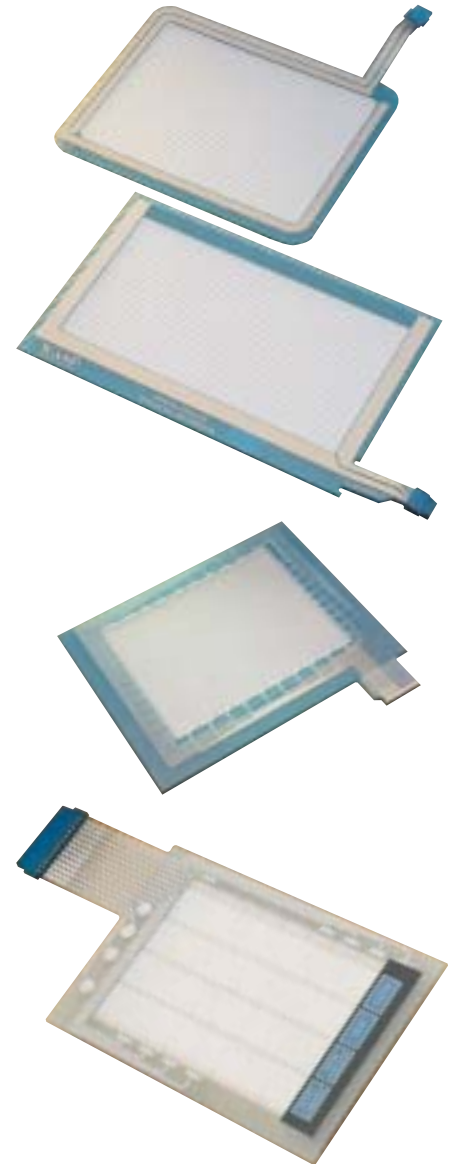
Substrate	Temperature stabilised Optically clear polyester.
Colour	Neutral tint.
Surface finish	Hard coat Gloss or Matt - Resistant to Coffee, Freon, IPA, Detergents, Solvents, Oils, etc.
Backing panel	Glass, Polycarbonate or Acrylic.

Mechanical

Operating force	0.6 - 0.8 Newtons
Operating life	10 ⁶ actuations (Test freq 2 Hz at 0.6 Newtons)
Operating Temp	-200c to +650c.
Storage Temp	-300c to +700c.
Light attenuation	31% at 550nm.
Mounting	Rear self adhesive border.
Termination	Female Berg Clincher.

Electrical

Working voltage	2.5Vdc to 10.0Vdc.
Open circuit	>100M Ω (100Vdc).
Contact bounce	5.0ms to 20.0ms.
Dissipation	0.3W/cm ² approx.



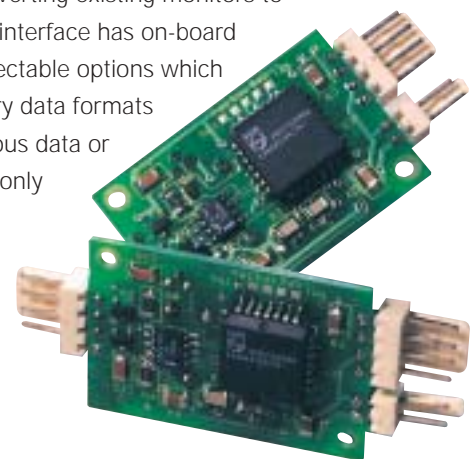
Mini Interface

Reduced in size to less than 25% of its predecessor this resistive touch screen interface is a cost effective solution to instant operation.

Measuring just 38x25x12mm, the surface mount assembly can be supplied with software drivers to suit Windows™ 3.11, '95, NT, DOS and OS2 requirements which will enable existing mouse driven applications to be run directly from any size of resistive screen.

The RS232 serial interface pcb supports analogue touch screens with up to 8 bit resolution and a baud rate of up to 9600. Operating from a 5Vdc supply at 40mA max.

Ideal for converting existing monitors to "touch", the interface has on-board software selectable options which include binary data formats and continuous data or TX on touch only data options.



product range

Membrane Switches & Keypads

The wide variety of WASP membrane switch panels and key pads include the following:

- Non-tactile flexible membrane
- Rim embossed
- Tactile platform embossed
- Tactile graphic layer
- Non-tactile rigid pcb membrane
- Tactile rigid pcb membrane



Each of these is available in a wide variety of options.

Electro-luminescent

Electro-Luminescent (EL) panels from WASP offer the user several options, one of which is the ability to achieve different levels of light intensity in a single unit. This process allows the illumination of signs to be brightly lit for instructions and lower lit areas can provide graphics.

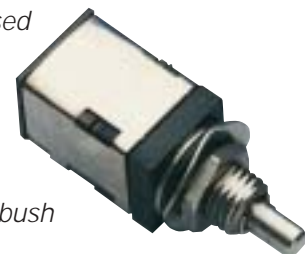
Easily cut to complex shapes, the panels are suited to applications such as illuminated front panels, backlighting for instruments and signs. WASP's EL panels provide light intensity up to 50 Cd/m² with a half life of up to 2500 hours.

Rotary Switches

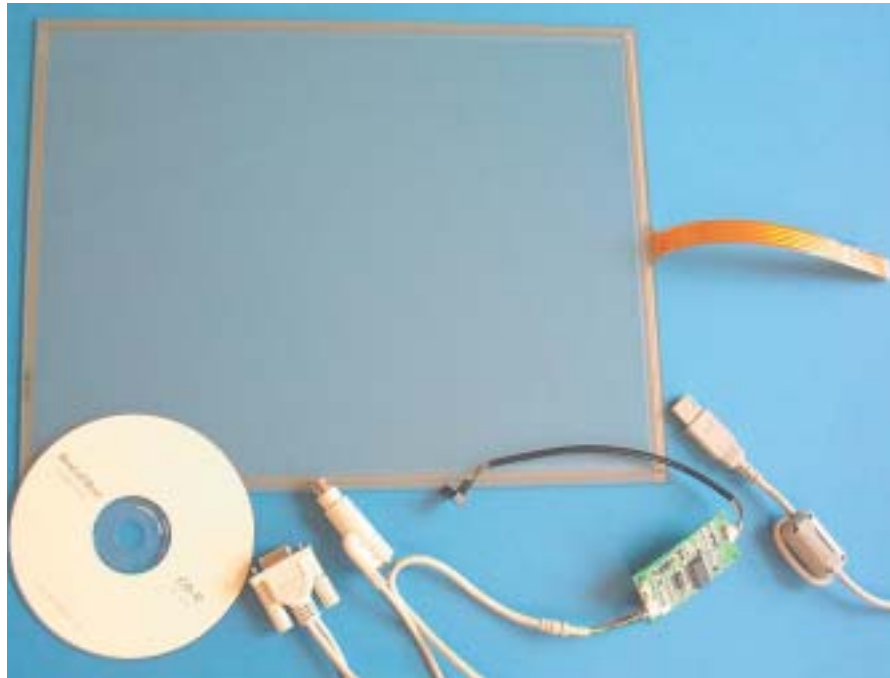
As one of the world's leading manufacturers of rotary switches, WASP produce custom built switches to include the following specifications:

- 10 or 12 position rotary wafer with in-line terminations
- 4, 6, 8, 10, 12 or 16 position binary rotary switches
- Panel area 10mm x 10mm
- 24 position rotary wafer switches
- 10 or 12 position clipped wafer rotary switches
- 10 or 16 position miniature rotary switches
- High quality open structure rotary wafer switches for pcb mounting
- dc rotary solenoids
- 12 position multi-wafer rotary switch with gold contacts

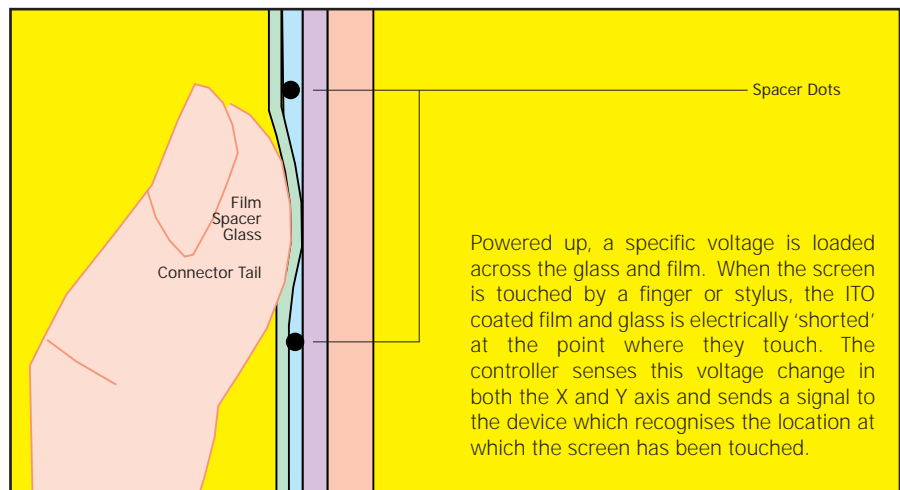
Each of these can be customised to suit applications and typically include panel and spindle sealing, medium or heavy torque and spindle and bush arrangements to suit.



analogue touchscreen module



Operation principles
4 wire analogue resistive touchscreen



The touch screen is one of the fastest growing interfaces available today. Fitted to everyday desktop appliances, portable, industrial and commercial equipment, medical and many other electronic devices where the finger or stylus simplifies the actions required for operation.

At WASP we have been making touchscreens at our south coast facility for more than a decade. As the UK's only touchscreen manufacturer, we have developed a level of design and manufacturing expertise highly suited to the UK and European markets. The quality of

touchscreen is not compromised by the quantity required, be it large or small.

Our standard range is designed to suit a wide variety of applications quickly, efficiently, reliably and cost effectively. Our location reduces both design and delivery times and our prices are competitive with manufacturers from all over the world.

In those situations where a standard screen requires a little engineering, our design team will assist and support you throughout the project to ensure that our product is every bit as good as you expect yours to be.

WASP TOUCH SCREENS

Analogue Touchscreen Specification

*R 0.8 polyacetal pen **R 0.8 HS 400 silicon rubber

Rating	1. Voltage	5V dc
	2. Operating Temperature	-20°C to 60°C (Humidity 20% to 90% RH)
	3. Storage Temperature	-30°C to 70°C (Humidity 20% to 90% RH)
Optical	1. Transmittance	80% or more
Electrical	1. Resistance between leads	200 - 900Ω
	2. Linearity	< ±1.5%
	3. Insulation Resistance	20MΩ or more at 25Vdc
	4. Chattering Time	10ms or less at 100MΩ Pull-up
Mechanical	1. Input Method	Finger or stylus
	2. Operating Force	Stylus: 80g or less* Finger: 80g or less**
	3. Surface Hardness	3H or more (according to JIS-K5400)
Reliability	1. High Temperature Test	240 hours at +80°C
	2. Low Temperature Test	240 hours at -40°C
	3. Humidity Test	240 hours at +60°C 90% RH
	4. Thermal Shock Test	One cycle is 30 min. at -40°C and then 30 min +80°C (10 cycles)
Durability	1. Writing Friction Resistance	Write 100,000 times in 30mm (force 250gf, speed: 60mm/sec.)
	2. Touch life	Touch 2 million times with R8.0 silicon rubber (force 250gf, speed: 2 cycles/sec.)
	3. Heat Seal Peeling Strength	400gf/cm or more (peeling upward by 90° in direction of X, speed: 50mm/min.)

Analogue Touchscreen

Model Name	Display Size	Outside Dimension	View Area	Active Area	Terminal Length	Terminal Width	Terminal Pitch
WSP-0402-AAA	4.0"	96.0 x 72.5	83.6 x 63.5	81.6 x 61.5	58.0	5.0	1.00
WSP-0411-AAA	4.1"	95.0 x 70.7	88.0 x 62.2	86.0 x 60.2	18.0	7.0	1.00
WSP-0472-AAA	4.7"	118.8 x 89.3	104.0 x 79.3	96.0 x 72.0	70.0	5.0	1.00
WSP-0572-AAA	5.7"	129.1 x 101.7	120.2 x 91.4	115.2 x 86.4	43.0	5.0	1.00
WSP-0652-AAA	6.5"	148.0 x 114.0	136.0 x 103.0	132.0 x 99.0	58.0	5.0	1.00
WSP-0752-AAA	7.5"	175.5 x 138.0	159.0 x 120.0	153.0 x 116.0	150.0	13.0	2.54
WSP-0842-AAA	8.4"	184.1 x 139.5	173.4 x 130.8	170.4 x 127.8	40.0	5.0	1.00
WSP-1042-AAA	10.4"	228.0 x 178.0	213.0 x 160.5	211.0 x 158.5	150.0	13.0	2.54
WSP-1212-AAA	12.1"	263.0 x 205.4	249.0 x 187.4	248.0 x 186.4	150.0	13.0	2.54
WSP-1332-AAA	13.3"	292.5 x 220.0	277.0 x 207.0	270.5 x 204.0	150.0	13.0	2.54
WSP-1502-AAA	15.0"	323.1 x 250.0	308.1 x 232.1	304.1 x 228.1	150.0	13.0	2.54
WSP-1512-AAA	15.1"	334.0 x 253.0	309.0 x 232.4	307.0 x 230.4	150.0	13.0	2.54
WSP-1702-AAA	17.0"	361.7 x 300.0	341.9 x 274.3	337.9 x 270.3	150.0	13.0	2.54

Controllers for Analogue Touchscreen

Model Name	Interface	Operating Voltage	Resolution	Communication Speed	PNP	Dimension (W x L x H)	Operating Temperature	Storage Temperature
WSP-BS10-1	RS232C	5.0V±10%	10bit (1024 x 1024)	4800, 9600, 19200 bps	-	35.4 x 58.9 x 5.15mm	0 - 50°C	-25 - 85°C
WSP-BP10-1	PS/2	5.0V±10%	12bit (4096 x 4096)	10KHz	-	37.0 x 49.0 x 5.20mm	0 - 50°C	-25 - 85°C
WSP-BU10-1	USB	5.0V±10%	10bit (1024 x 1024)	1.5Mbps	•	35.4 x 58.9 x 5.15mm	0 - 50°C	-25 - 85°C

Chips for Analogue Touchscreen

Model Name	Interface	Operating Voltage	Resolution	Communication Speed	Dimension (W x L x H)	Operating Temperature	Storage Temperature
WSP-CS10-1	RS232C	5.0V±10%	10bit (1024 x 1024)	4800, 9600, 19200 bps	7.51 x 17.93 x 2.50mm	0 - 50°C	-25 - 85°C
WSP-CP10-1	PS/2	5.0V±10%	12bit (4096 x 4096)	10KHz	7.20 x 7.90 x 1.90mm	0 - 50°C	-65 - 150°C
WSP-CU10-1	USB	5.0V±10%	10bit (1024 x 1024)	1.5Mbps	Micon: 10.34 x 17.87 x 2.31mm Ad: 5.38 x 5.38 x 2.03mm	0 - 50°C	-25 - 85°C

OS Drivers (Touchside)

OS	Win 95	Win 98	Win 2000	Win NT	Win XP	Win CE	Linux
RS232	•	•	•	•	•	•	•
PS/2	•	•	•	•	•	•	•
USB	-	•	•	-	•	•	•

WASP TOUCH SCREENS

Matrix Touchscreen

*R 0.8 polyacetal pen **R 0.8 HS 400 silicon rubber

Model Name	Display Size	Outside Dimension	View Area	Active Area	Terminal Length	Terminal Width	Terminal Pitch	Input Method
WSP-1042DAE-0	10.4"	246.8 x 194.9	220.0 x 166.0	210.7 x 157.9	70.0	33.8 x 2	1.25	Pen & finger
WSP-0562DAE	5.6"	121.0 x 89.9	121.0 x 89.9	113.0 x 84.6	89.0	36.25	1.25	Pen & finger

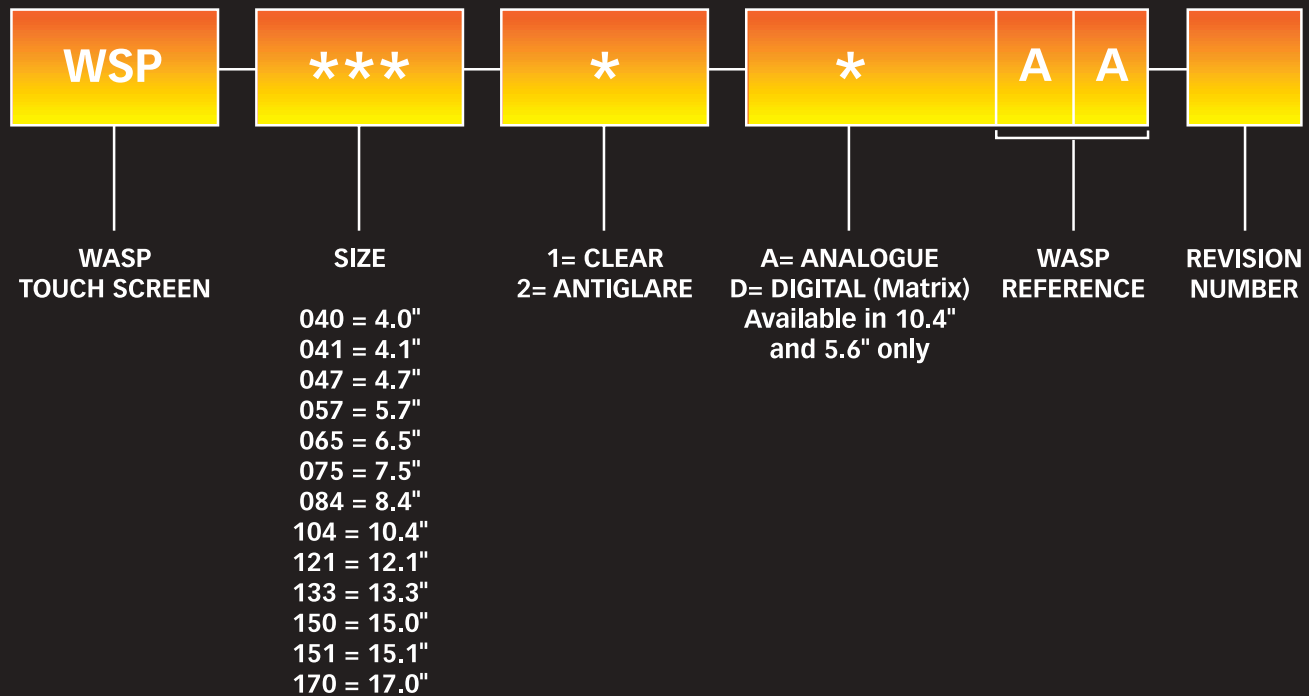
Matrix Touchscreen Specification

*R 0.8 polyacetal pen **R 0.8 HS 400 silicon rubber

Optical	1. Transmittance	75% or more
Mechanical	1. Input Method	Finger or stylus
	2. Operating Force	Stylus: 80g or less* Finger: 80g or less**
	3. Surface Hardness	3H or more (according to JIS-K5400)
Environmental	1. High Temperature Test	240 hours at +80°C
	2. Low Temperature Test	240 hours at -40°C
	3. Humidity Test	240 hours at +60°C 90% RH
Durability	1. Touch Life	Touch 2 million times with R8.0 silicon rubber (force 250gf, speed: 2 cycles/sec.)

In keeping with our policy of constant improvement, these specifications are intended only as a guide and are subject to change without notice. For up to date information, please contact our sales desk.

Codes



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