

Optimizing Thermal Printing for Kiosk Functionality

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A critical element in many kiosk applications is the printer. Kiosks typically feature a thermal printer, and choosing the right one can help ensure the success of a kiosk deployment.

When deployers work with vendors to spec their kiosk projects, the type of printer to be installed often gets little attention. But given the role of the printer in many key self-service applications where users expect a receipt and other documents — ATMs, gas pumps, airport kiosks, parking garages and more — few components deserve more attention.

This white paper examines several key thermal printer and paper qualities necessary for the component to contribute as much as possible to the success of the kiosk.

Reliability

An unreliable printer can obliterate the ROI of a kiosk project. Users will be frustrated, and repair trips and parts costs can mount quickly. Other than to replace paper rolls, the deployer should not have to worry about the functionality of the printer.

Paper jams are the biggest service call factor with kiosk printers. There are two critical areas where jamming can occur — inside the printer and at the paper exit point.

Since the act of printing involves moving paper, the printer mechanism must be designed to reliably transport different types of thermal paper under a variety of environmental conditions. It is important to choose a printer robust enough to handle the weight of the paper roll and the thickness of the paper. A 5-volt printer is fine for simple receipts, but heavy-duty applications, like a parking ticket kiosk,



Choosing a printer that won't jam and cause downtime is crucial to the success of a kiosk.

require a 24-volt printer. Some printers are available with adjustable power requirements to best meet the needs of the individual application. Paper thickness also can affect the reliability of a kiosk — some printers are not designed to handle thick paper (up to 10 mil) and will jam or fail to print.

Another critical reliability issue depends on how the paper is delivered to the end user. For the highest reliability, a mechanical presenter can be used to deliver the paper to the customer. A mechanical presenter essentially separates the paper from the printer mechanism before delivery to the end user to prevent jams from pulling or pushing.

Sensors, a lower-cost alternative to using a presenter, can be used to put the printer into sleep mode if the paper path is blocked and wake it up when obstruction is removed. This helps prevent additional damage to the kiosk by notifying the deployer of necessary maintenance. In those cases, the kiosk should feature easily accessible paper feed buttons to clear jams and easy loading to prevent additional problems.

A heavy-duty cutter also is recommended to guarantee that the paper is effectively released from the kiosk. In some cases, a built-in presenter and retractor can be used to provide added reliability and security by presenting and retracting uncollected receipts.

“Any time you’re working with paper, you’re basically asking for trouble,” said Terry Cooper, a sales manager for Telpar, a printer manufacturer. “You’re generating little bits of paper and particulate matter

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— Brian O’Malley, national sales manager, APS America

that fly off, and anything you can design to make that kiosk printer more reliable — like, by making sure it has a heavy-duty cutter — is a big plus.”

Size

When conceptualizing a kiosk application, deployers and manufacturers commonly integrate the printer module toward the end of the application design. This can be problematic given the size of kiosk printers and the sometimes very-large rolls needed for self-service applications. Because of this, it is important to have a mechanically compact and flexible printer solution.

“In the best of all situations, you would consider all your components when you start the design process — especially the printer, because it takes a fairly large space,” said Brian O’Malley, national sales manager at APS America, a producer of thermal printing solutions. “If this is not possible, it is critical to choose a kiosk printing solution that offers flexibility and simple integration.”

O’Malley recommends an ultra-compact printer module with an adjustable paper-roll arm to accommodate both differently sized paper products and the space available within the kiosk. An adjustable paper roll also guides the kiosk designer to provide proper alignment for smooth printing and fewer jams. The adjustable

arm generally allows for paper placement above, below or directly below the printer.

Additionally, kiosk printer modules are now available with features such as adjustable print speed and quality to provide a custom fit for almost any application. Depending on the kiosk or self-service application, customers may appreciate a fast receipt or a higher-quality print-out. These types of features give deployers and designers more flexibility to effectively meet customer expectations.

The paper roll

While printers themselves can be miniaturized, paper is still a formidable size factor.

“You could theoretically make the printer itself essentially ‘disappear,’ and you’d still have a big paper roll that you have to deal with,” said Charles Levinski, a HECON/Hengstler global marketing engineer who specializes in printers and cutters. “So the size of the printer itself is not the only factor — the size of the paper roll you need is also a major factor.”

A larger paper roll means fewer service calls to replace paper. However, in the cases when a large paper roll is not feasible, the kiosk module should feature an easy loading design with easy access to the paper feed button. Some kiosk printer modules allow the designer to mount the paper feed and other controls in different positions to best accommodate the application. Choosing a good-quality paper also is helpful in preventing unnecessary maintenance.

Questions to ask about the paper roll

- How many receipts or tickets are going to be printed daily?
- How often is the deployer willing to replace the paper roll?
- Will new rolls be installed by someone on-site, or will someone need to visit the kiosk?

Conclusion

Experts recommend these thermal printer features strongly be considered:

- 5- or 24-volt printer or adjustable voltage
- Ability to print on thicker ticket stock, perhaps up to 10 mil
- A robust cutter with a projected lifespan at least as long as that of the printer
- A mechanical presenter and/or optical sensors designed to prevent paper jams and hold down maintenance
- Adjustable paper-roll arm to accommodate the kiosk design and paper-roll size
- Adjustable print speed for various operations, matching up with specific kiosk needs

- Ability to work with a variety of drivers, including Linux
- Low-paper and weekend-low-paper sensors.

“Customers are looking for fast, automated and reliable service when visiting a kiosk or self-service venue; it is critical to build in a strong thermal printing module to guarantee that they walk away with a record of their experience,” O’Malley said. “The receipt, print-out or

ticket is often the longest lasting reminder of their kiosk/self-service experience — it should be a positive reinforcement of the transaction.”

***About the sponsor:** Founded in 1995, Advanced Printing Systems (APS) is a designer and manufacturer of embedded thermal printer mechanisms, controller boards and custom solutions. APS is one of the foremost global names in thermal printer solutions and advanced printer technology. APS is headquartered in Italy with manufacturing located throughout the world.*