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When choosing the right system for an application the designer combines what they are most comfortable with and what best fits the application's requirements. Datakey Electronics has over 30 years of experience helping customers find the best technical and most economical solution for their specific application. Please call us today if we can be of further assistance. Below are some general guidelines to consider.

MEMORY SELECTION

Datakey Electronics offers memory Keys and Tokens utilizing industry standard technologies and interfaces. Considerations in selecting the optimal memory should include the type of built-in interface the microcontroller uses, memory capacity needed, transfer rate (clock speed) required, and what the designer prefers. *Please note that embedded designs tend to have very small memory requirements in comparison to PC applications.*

- Serial EEPROM** — Available with Microwire, I²C, and SPI Interfaces with memory capacities ranging from 1Kbit to 1Mbit (see **Product Availability Chart**). EEPROMs are ideally suited for low to medium access control, data logging, parameter/configuration uploads, and data storage applications.
- Serial Flash (SPI)** — Available with memory capacities ranging from 1Mbit to 64Mbit (see **Product Availability Chart**), our line of SPI Flash Keys and Tokens compliment our Microwire and SPI EEPROM lines. These devices are page writable and are used primarily for high-volume data logging and firmware update applications.
- Managed-Memory™** — The industry's first high capacity memory Token designed and optimized specifically for embedded OEM designs. This device utilizes NAND Flash technology (128MByte – 1GByte) and has both an SPI (for embedded controllers) and USB interface.
- Secure Memory** — Datakey Electronics offers both Unique Identifier and CryptoMemory®* Keys & Tokens (see **Product Availability Chart**) for increased security options. The Unique Identifier Series offers a guaranteed unique, unchangeable serial security number and additional OEM options. CryptoMemory utilizes Atmel's highly secure symmetric dynamic mutual authentication protocol. Contact factory for more details.
- Parallel EEPROM** — Parallel devices offer a faster transfer rate than Serial but require a more complex hardware interface. Please consult the factory.

NOTE: More information is available upon request. Please consult the factory or our web site at: www.datakey.com.

MECHANICAL REQUIREMENTS

Datakey Electronics offers (4) standard form factors (Key, Token, Extended Token, Plug) to meet the mechanical and environmental requirements of almost any system. Features such as physical size, retention, durability, ESD performance, convenience, and other preferences should be reviewed. Both Key and Token Receptacles are available in PCB-mount or Panel-mount versions. A few general features are given below:

Keys

- Familiar form factor (intuitive)
- 15,000 cycle rating, 10kV ESD rating
- 200,000 cycle Keyceptacle® rating

Tokens

- Smaller form factor and Receptacle options
- 10,000 cycle rating, 15kV ESD rating
- 50,000 cycle Receptacle rating
- Board mount Receptacle very economical
- SMT Receptacle versions also available

Plugs

- Ideal for extreme environmental requirements
- 10,000 minimum cycle rating, 12kV ESD rating

NOTE: More information is available upon request. Please consult the factory or our web site at: www.datakey.com

*CryptoMemory is a registered trademark of Atmel Corporation and is used by permission.

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CONSIDERATIONS

During the initial selection, the designer should also consider what the system might need in the future. The following factors should influence initial device selection:

- Serial EEPROMS offer the simplest interface and integration
- SPI Keys offer the widest memory capacities and fastest clock rates of the standard serial interfaces
- The Extended Token offers the most versatility to add custom electronics

The designer should also consider the possible growth path requirements of their project:

- Will larger memory capacities become a requirement?
- Will a faster transfer rate become a requirement?
- Are integrated memory management features important?
- Could adding additional features (i.e.: firmware update capability) benefit the design?

Many of our customers who use lower capacity Keys/Tokens for access control or data transfers add a boot loader that utilizes their same receptacle with higher capacity Keys/Tokens to provide firmware update capability. This allows a significant increase in product capability without increasing the final products BOM cost.

NOTE: See our Product Availability Chart (www.datakey.com) for a complete listing of our standard catalog memories and form factors.

DEVELOPMENT

- Datakey Electronics offers support peripherals and development tools for all of our catalog products. These are designed to reduce time-to-market, development costs, and technical risks for our customers.
- Datakey Electronics uses industry-standard interfaces. The designer's familiarity with the chosen memory technology can also help reduce development investments.
- Datakey Electronics posts complete interface specifications on our web site.
IMPORTANT: We strongly advise our customers to follow our interface specifications as that is the best way to help protect the longevity of their design.
- Datakey Electronics offers an 800 number with excellent technical assistance.

NOTE: See our Serial Development Kit Info Sheet (www.datakey.com) for further details on our Development Tools.

OTHER OPTIONS

Datakey Electronics also has extensive experience modifying and designing custom systems for specific applications including prototyping tools—call **1-800-328-8828** for more information.