

# Custom Datakey Feature Key Enhances Flexibility for Delta Computer Systems

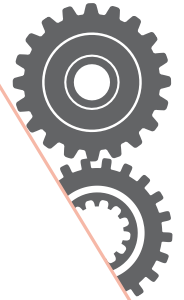
## Delta Computer Systems

For more than 35 years, Washington-based [Delta Computer Systems, Inc.](#) has been a supplier of motion controllers and other industrial products that enable OEMs and integrators to build better machines and get to market quickly.



**Applications:**  
Feature Enable/Update  
Configuration Transfer

**Market:**  
Industrial



### Challenge

A significant percentage of Delta's RMC motion controllers are sold with dual-loop position-pressure/force control capability—a valuable feature that carries a premium price tag. When Delta was developing its most advanced and most capable electro-hydraulic motion controller, the RMC200, they wanted to offer customers control of up to 32 axes, where Delta's previous controllers had an eight-axis limit. This means that the RMC200 can support as many as 64 control loops in advanced applications, such as complex test systems. But not every customer needs this many axes of control. Therefore, one design objective of the RMC200 was to make the controller configurable and scalable, so customers only pay for the number of control loops and features they need. But the real challenge was how to offer this flexibility once the controllers are already out in the field.

“The goal was to make the RMC200 more flexible than previous models by allowing our customers to update the controllers in the field without needing to physically exchange hardware,” said Reuben Bellika, software engineer, Delta Computer Systems. “We wanted our customers to be able to update the controllers using our RMCTools software, but we needed to securely store the feature selections on a separate hardware device, such as a removable memory key.”

### Solution

Delta Computer Systems needed a way to securely store the configuration data such that the data could not be altered or duplicated without permission. Delta looked to the Datakey product line from ATEK Access Technologies for a solution. Delta worked with the Datakey team to develop a customized memory token that became Delta's Feature Key (see right). The Feature Key contains a secure memory chip from Atmel's CryptoAuthentication™ line<sup>1</sup>.

The Feature Key is mounted in the CPU of the RMC200 and enables user-specified control features available to the motion controller. In addition to selecting the specific memory IC, Delta requested other customization features that included laser-marking a serial number and the Delta logo onto each Feature Key token.



“We knew that CryptoAuthentication™ devices provide strong security, and the Datakey team made it easy to integrate it into our product,” said Bellika. “They were extremely helpful during the development process, bringing things to our attention that we hadn’t even considered.”

The Feature Key memory token pairs with the Datakey SR4210SMT receptacle, a board-mount connector that is compatible with all memory tokens that use the Datakey SlimLine™ contact system. The robust contact system is designed for industrial applications with the receptacle rated for at least 50,000 insertion/removal cycles. The proprietary design of the SlimLine memory tokens and receptacles, along with the controlled availability of Datakey products (they are not available for purchase by the general public), provides an additional layer of protection for OEMs, like Delta Computer Systems, who have designed these removable memory solutions into their products.

“We like that the Feature Key enables different axis counts securely in software,” added Bellika. “In previous Delta products, the number of axes (single- or dual-loop) was tied to certain hardware module configurations, which made field upgrades difficult.”

## Results

The custom Feature Key token has allowed Delta Computer Systems to provide more flexibility to its customers by only charging for the exact functionality that is required. The Feature Key update process is done with the RMC200 using Delta’s RMCTools setup and configuration software. Delta provides a simple wizard-type interface that allows the user to update the Feature Key when the RMC200 is connected over USB or Ethernet.

Each RMC200 controller ships with a Feature Key that has the customer’s desired number of control loops installed. If the customer then wants to update the number of control loops on a controller in the field, the customer reaches out to Delta to request new features via email and Delta responds by attaching a file with the updates. These are then loaded to the Feature Key via the RMCTools software.

The Feature Key also helps Delta customers avoid unplanned downtime. In the event of a controller failure, RMC200 users can simply install an on-site spare RMC200 controller, transfer the Feature Key from the old controller to the new one and be running again. This process requires no intervention from Delta, and there is no need to have a spare controller configured in advance for the exact number of control loops required.

“Many of our customers have strict requirements for avoiding downtime on their machines,” added Bellika. “These customers often keep spare Delta controllers on the shelf to install in the case of hardware failures, so having a removable Feature Key is much more compatible with the needs of these customers.”

In summarizing the design experience, Bellika said, “We were impressed with the Datakey team’s engineering process. Allowing remote in-field updates entirely in software was one of the design objectives for the Feature Key, and using a custom Datakey token enabled us to make these updates more convenient, while keeping the whole process secure.”

<sup>1</sup> CryptoAuthentication is a trademark of Atmel Corporation in the U.S. and other countries.