



*NFX SERIES**

Managed-Memory™

OPTIMIZED FOR EMBEDDED OEM DESIGNS

- ✓ 128 MByte to 1 GByte
- ✓ SPI & USB Interfaces
- ✓ Internally-Managed File System
- ✓ Serialized & Uniquely Configurable
- ✓ Ultra-Rugged & Proven Reliable
- ✓ Guaranteed Long-Term Availability



*... SOLVES THE
SHORTCOMINGS OF
CONSUMER-STYLE
DEVICES*



Managed - Memory™

THE NFX FAMILY: A COMPLETE SYSTEM — OPTIMIZED FOR EMBEDDED OEM DESIGNS

The NFX family provides a complete solution for embedded OEM designers—memory Tokens, a variety of Receptacles, an economical PC interface, and development tools.

NFX TOKENS (128 MBYTE TO 1 GBYTE)

The NFX Managed-Memory Token is a portable data transport device optimized for use in OEM systems controlled by embedded microprocessors. The NFX Managed-Memory Token is used to transport data to and from non-networked electronics that are deployed in any environment. The Token provides both an SPI interface for simple direct connection to microprocessors and a USB electrical interface to facilitate connection to PCs.



Actual size

The NFX Managed-Memory Token features an efficient, high-level, command set and an on-board file management system designed to ease implementation by decreasing both hardware requirements and firmware complexity. Additionally, Datakey Electronics offers long-term availability by controlling the Token's mechanical, electrical, and software interface, virtually eliminating the need for costly re-qualifications and re-designs that are inherent with the ever changing consumer-style devices. As the designer/manufacturer of the entire data carrier/Receptacle system, Datakey Electronics "owns" the performance of the overall system, providing the OEM with a highly technical and proven single point of support throughout their program's lifetime.



NFX MATING RECEPTACLES

Datakey Electronics' SR4000 Series of Receptacles is an integral part of the fully-engineered NFX data carrier system. Integrating Datakey Electronics products is easy. Mechanical designers have a full range of Receptacle options including: panel- or board-mount, sealed or unsealed, thru-hole or surface-mount, and a variety of sizes.

NFX MEMORY INTERFACE

The NFX Memory Interface provides for easy connection of the NFX Token to a PC. It includes a "Token busy" LED. A reference design is also available—please contact the factory.



NFX DEVELOPMENT KIT

Datakey Electronics provides OEM designers everything needed to easily interface and implement the NFX Managed-Memory system. The NFX Development Kit includes: (2) NFX Memory Tokens, mating Receptacles, NFX Memory Interface, sample software application including source code and drivers, and a user manual with all interfacing details.



MANAGED RELIABILITY

Managed-Memory, featuring the NFX Token, is a fully-engineered system with solid, over-molded electronics, redundant contacts and 50,000 cycle mating Receptacles. The ultra-rugged NFX Token can be dropped in the mud, immersed in water or fuels, driven over with a truck—and it still works! The mating system has been field-proven for over 15 years. The fully-engineered Managed-Memory system helps product designers reduce technical risk, time-to-market and R&D costs.

MANAGED AVAILABILITY

As the *one* designer/manufacturer of the *entire* data carrier system, Datakey Electronics controls all of the Managed-Memory *system's* parameters: electrical, mechanical and programming interface. This provides guaranteed long-term availability (not available from mass-market manufacturers) and virtually eliminates the need for re-qualification or in-field firmware updates.

MANAGED EASE OF IMPLEMENTATION

The NFX Token features an **SPI** bus interface which provides direct connection to microprocessors while decreasing host hardware requirements. The **USB** interface facilitates electrical connection to controllers (PC or PLC). Datakey Electronics also offers OEMs easily accessible factory technical support during both implementation *and* over the OEM program's lifetime.

MANAGED FILE SYSTEM

File Organization, Error Correction Codes and Bad Blocks are managed by the Token itself. OEMs need only (16) simple commands to control the NFX Token and read/write its data. This efficient high-level command set substantially reduces both the load on the OEM's host microprocessor and the complexity of the OEM's firmware. The Token's command set is guaranteed to be stable over time ensuring long-term availability of compatible Tokens to the OEM.

MANAGED SECURITY

The NFX Token has security features that allow the OEM to secure their Intellectual Property. Each Token contains a factory-loaded serial number and has the option for a unique OEM code. The Token's user customization Write-Once Registers can be used for Encryption Seeds, Usage Flags, Write Protect, Enrollment Information, etc. By only selling directly to the OEM, Datakey Electronics deters hackers and eliminates any potential gray market.

MANAGED IDENTITY

The NFX Token can be physically or electronically "branded" for each OEM. The Token becomes part of the OEM product's identity, enhancing the OEM solution's ruggedness and reliability. In contrast to mass-market devices, adopting the NFX Token secures a revenue stream for the OEM through the resale of their unique NFX Tokens.

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www.datakey.com

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NFX MANAGED-MEMORY™

... IDEAL FOR NON-NETWORKED, HARSH ENVIRONMENTS



NFX SUMMARY SPECIFICATIONS

MECHANICAL

Token Contacts: 10,000 Insertion/Removal Cycles Minimum
Mating Receptacle: 50,000 Insertion/Removal Cycles Minimum
Mated Vibration: Operational Vibration per MIL 883F Method 2007.3 - Cond. A; 3 axes, 20Hz-20KHz, 0.06"/20g max. (Typ.)
Token Immersion: 1 Meter Depth, 30 minutes per MIL 810F Method 512.4

ELECTRICAL

Voltage: 3.3 Volt Operation & Programming
ESD Protection: 15kV (Per IEC 61000-4-2) applied directly to contacts

ENVIRONMENTAL

Storage Temp.: -40° C to + 100° C
Operating Temp.: -40° C to + 85° C
Relative Humidity: 5% to 95% (non-condensing)

MEMORY

Type: NAND Flash
Capacity: 1, 2, 4, or 8 Gbit
Read Cycles: Unlimited
Write/Erase Cycles: 100,000 Cycles Minimum / Block
Data Life (Storage): 10 Years Minimum
On-board: ECC and Wear Management

EXTERNAL INTERFACE

Interfaces: SPI and USB 2.0
SPI Clock Speed: 20 MHz Maximum
Programming: 16 High-level Commands

REGISTERS

Serial Number: 48 bit Factory-programmed
Unique OEM Code: 16 bit Factory-programmed
Write-Once: (64) 32-bit OEM Configurable



Datakey
ELECTRONICS

For 30 years our reliable and unique re-programmable Keys and Tokens have solved data transport, security and access control problems in extreme environments where conventional methods would not survive.



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