

What is AIT?

Automated Identification Technology (AIT) is a suite of technologies that enable and facilitate the accurate capture and rapid transmission of machine-readable data to an automated information system (AIS), thereby enhancing the readiness of the deploying forces, with improved knowledge of their equipment, personnel, and capabilities in support of their respective mission.

What is Contact Memory?

Contact Memory Buttons (CMBs) are small, ruggedized buttons that are battery-free electronic data storage devices, which are similar to a PC data file that's designed to perform in extreme operating environments. Contact Memory enhances configuration management, asset tracking, inspections, and maintenance functions throughout the service life of the asset to which it is attached. A portable, programmable reader/writer handheld device (Button Reader) is used to retrieve and transmit data between the CMB and a standard information system by a momentary contact of the CMB. The CMB's are permanently affixed to objects by utilizing the installation guidelines in the AB-0359Z-IIN-000 manual, which can be downloaded from the NATEC website <http://www.natec.navy.mil/>.

Why use Contact Memory?

To prevent inaccurate data collection, erroneous reporting of identified material and loss of information that negatively impacts Naval Aviation databases. Contact Memory Buttons offer the potential to improve productivity and the reduction of man-hours by eliminating the manual input of information that is associated with tracking components in the Configuration Management scenario.

What is a Unique Identifier (UID)?

A unique identifier is a set of data for assets that is globally unique, unambiguous, ensures data integrity and data quality throughout the life of the component, and supports multi-faceted business applications and users. The UID component data elements, at a minimum, shall be contained in a Data Matrix symbol, as required by MIL STD 130L (or a later version). Data may be contained in other AIT media (e.g., contact memory buttons, linear bar codes, radio frequency identification, etc.) in addition to the Data Matrix. The physical marks that contain the UID-required elements shall remain legible until the item is destroyed. For further information on UID, log onto the UID website: <http://www.acq.osd.mil/uid/>

Why use UID?

- To achieve a lower cost of item management.
- To improve item availability and increase asset visibility.
- To capitalize on commercial practices in asset visibility/tractability.
- To improve long-term inventory management and strategic purchasing from more accurate available data.
- To achieve clean audit options on Property, Plant Equipment, and Operating Materials and Supplies portions of DoD financial Statements.

Test Information

Micro and Mini Buttons have been tested per MIL-STD-810E to the following criteria:

Thermal Shock: The cold zone of the chamber was maintained at -54°C (-65°F); hot zone was set for 160°C (320°F), 4 cycles were completed and all buttons passed their operational check. BMA, Model #TA-208CC Thermal Shock Chamber.

Temperature/Vibration: Temperature cycling from -65°C (-85°F) to 135°C (275°F). A random vibration profile taken from MIL-STD-810E representing vibration found in the fuselage area of a jet aircraft was applied for 15 minutes at the low and high temperatures each cycle (10 cycles). Post op checks showed no apparent discrepancies. Tenny Mfg. Combined Environmental Chamber Model #AG-64CAS and Lingo, model #V860 vibration shaker.

Salt Water: Submerged in saltwater for over a month.

High Temperature: Buttons were exposed to 177°C (350°F) and 204°C (400°F) for 15 minutes duration, cooled and operationally checked at each temperature increment. At 350° F and 400° F, all MiniButtons passed functionality. Grieve Corp. Model #520 Console Oven.

Electrical Magnetic Pulse (EMP): 5.8, 26.7 and 55.0 kV/m.

Electro Static Discharge (ESD): 15 kV, 20 pulses per second, human model.

Electro Magnetic Interference (EMI): No degradation when exposed to electric field strengths of 200 Volts/meter over the frequency ranges of 2.0 MHz to 4.0 GHz, as well as 18.5 to 19.5 GHz. Currently, Button Memories are classified as not susceptible to RF signals of 200 Volts/meter Continuous Wave (CW) over the frequency of 2.0 MHz to 4.0 MHz and 18.5 GHz to 19.5 GHz.

Gamma Radiation: Irradiated CMBs in the 60 Co Irradiator to the highest non-failure dose and tested for function. The maximum gamma radiation levels (in KRad) that each CMB category was able to withstand are as follows: Mini, 75.0 KRad; Micro, 205.0 KRad.

Shear/Impact: The objective of this test was to assess the integrity of the CMBs and the strength of the epoxy after these were exposed to shear and impact forces. When affixed with epoxies Hysol EA 9394 and Hysol EA 9359.3 the flanged CMBs were able to withstand several impacts with shear loads of up to 15lb.

Acid Bath: Buttons were subjected to a 30% phosphoric acid bath to etch prior to painting and passed.

Paint Removal: Contact Memory Buttons have been painted, chipped by a hammer, blasted with glass beads, and aluminum hydroxide at 80 psi, maintained their read/write capabilities and performed normally.

Micro and Mini Button Technical Specifications

	<u>Micro</u>	<u>Mini</u>
<u>Memory Sizes:</u>	4KB	128B, 256B, 2KB, 8KB, 32KB, 64KB (read/write and read only)
<u>Weight:</u>	0.0006 oz 0.17 gram	0.027 oz 0.77 gram
<u>Dimensions</u>		
<u>Height:</u>	2.11mm (0.083in.)	2.8 mm (0.11 in)
<u>Diameter:</u>	7.56 mm (0.298 in)	14.3 mm (0.56 in)
<u>Operating Temperature:</u>	-85 to 400° F (-65° to 204.4°C)	-85 to 400° F (-65° to 204.4°C)

Casing: Brass. Components are encapsulated to withstand water, oil, dust, grease, salt, radiation, weather extremes, electromagnetic fields and mechanical stress.

Electrically Erasable Programmable Read-Only Memory (EEPROM) Technology: Non-volatile memory.
(No Battery)

Read Time: 31KB/sec Universal Serial Bus (USB).

Audit Trail: Each read and write can be date and time stamped.

Life expectancy: Unlimited reads. Has more than one million write cycles.

Humidity: 100% Relative Humidity, Button Memory can be submerged.

SAMPLE

Mini Button

The ButtonReader is capable of reading Contact Memory Buttons only. The ButtonImager is a multi-function palm sized portable data collector. The unit includes an integrated contact memory reader, an imager for scanning 2D matrix and 2D bar codes, and a multi colored, full alphanumeric keypad for data entry. The functionality offered by the ButtonImager allows Contact Memory Buttons and 2D Matrix bar codes to be used interchangeably in the same application, giving users the flexibility to select the most appropriate identification technology for their needs. Designed for the most rugged environments, the units are housed in a machined aluminum case, which resists dust and moisture, and will survive a four-foot drop. Both the ButtonReader and the ButtonImager can be programmed with the easy-to-use Hierarchy TM Application Generator or developers and can utilize the Developer's Kit to build customized applications. Hierarchy software allows users to quickly and easily build sophisticated data collection applications in minutes.



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Automated Identification Technology

Manual

AB-0359Z-IIN-000

Available on the following Website:

<https://www.natec.navy.mil>

UID DATA MATRIX



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**Automatic
Identification
Technology
Serial Number
Tracking**

**Commercial Off the Shelf
Technology Supporting
Affordable Logistics
Readiness Today**

