KEY TERMINOLOGY IN AUTOMATIC IDENTIFICATION & DATA CAPTURE TECHNOLOGIES

Automatic Identification & Data Capture (AIDC), often called Auto-ID, refers to various technologies that without human intervention identify objects, collect data about the objects, and enter that data into computer systems. JADAK, an expert in AIDC technologies, is a market leader in detection and analysis solution technologies, which include barcode, Radio Frequency Identification (RFID), magnetic stripe readers, and machine vision. These technologies are used in a variety of applications and industries, including medical, industrial and point of sale.

Following is a list of key terms and acronyms often used when referring to AIDC technology:

1-Dimensional -- Linear barcode scanning across a single line

2-Dimensional -- Square/Rectangle symbologies used in barcode scanning. The most common 2-D barcode types are Aztec, Datamatrix, or QR Code.

Active Tag -- If a tag contains a battery, which provides all or a portion of the chip's power, the RFID tag is called an "active tag." Active tags have an onboard power source, which is typically a very small battery. Battery technology has progressed to the point where the battery hardly increases the size of the RFID tag. However, active tags cost considerably more than passive tags. JADAK's RFID technologies utilize Passive (battery-less) tags.

American National Standards Institute (ANSI) – A private nonprofit national standards setting organization that oversees the development of voluntary consensus standards

American Society for Testing & Materials (ASTM) – An international organization that develops and publishes voluntary consensus technical standards for a wide range of products and services around AIDC technology

Antenna – An RFID tag has two major components: a chip and an antenna. The antenna is necessary for the RFID chip to communicate with the outside world. The tag can have more than one antenna, each tuned for a specific frequency for different purposes.

Aztec – A 2 Dimensional barcode symbol that is square overall on a square grid with a square central bulls-eye finder. The smallest Aztec code symbol is 15 x 15 modules square, and the largest is 151 x151. No quiet zone is required outside the bounds of the symbol.

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Barcode – Machine-readable codes in the form of numbers and a pattern of lines to identify a product. Barcodes are meant to be read by an optical input device, such as a scanner. Applications include retail product pricing labels, identification of library documents, pharmaceutical tracking, and railroad boxcar identification

Bar length – The length of the bars in the barcode

Bluetooth – The wireless communication for exchanging data across short distances

Clinical and Laboratory Standards Institute (CLSI) – A member-supported nonprofit standards development organization for laboratory and healthcare guidelines

Data Matrix -- A two-dimensional code designed to pack a lot of information into a very small space. A data matrix symbol can store between one and 500 characters and is also scalable between a 1-mil square to a 14- inch square

Fixed Mount – A type of device that is mounted to an original equipment manufacturers (OEM) device to enables hands-free detection. For example, fixed mount barcode scanners are used in applications including price checkers, clinical analyzers and ticket counters, and Fixed Mount RFID readers are used in cabinets, lockers, portals, vehicles, and warehouses.

Graphical User Interface (GUI) – The display on software or hardware

High Frequency (HF) -- Type of Radio Frequency Identification in the 13.56MHz range

International Electrotechnical Commission (IEC) – international standards organization dealing with electrical, electronic and related technologies

Industry Canada (IC) -- Canadian government body that regulates and certifies radio and broadcasting equipment for that country

Low Frequency (LF) -- Type of Radio Frequency Identification (RFID) from 30-300 KHz. JADAK does not manufacture LF RFID products.

Machine Vision -- Using image processing to inspect for visible characteristics, analyze results and record findings. Smart cameras are used to obtain images, and then machine vision software, which uses algorithms, automatically identifies, inspects and analyzes the image for information/data about objects. Also, referred to as Image Analysis

Near Field Communication (NFC) -- Short range wireless connectivity standard that enables two-way communication between devices. NFC is used on contactless payment systems.

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Original Equipment Manufacturer (OEM) – company that produces parts and equipment that may be marketed by another manufacturer.

Passive Tag -- If all the power used for powering the chip is provided from an external source, the RFID tag is called a "passive tag." In a passive tag, the same antenna used for communications (or another antenna at a different frequency), is designed to capture power from the outside world. The RFID tag captures the power as it arrives in the form of electromagnetic energy contained in the radio waves. This energy is converted to direct current (DC) through inductive coupling. Passive tags are often referred to as battery-less.

Patient specimen – The discrete portion of a body fluid or tissue taken for examination, study, or analysis of one or more quantities or characteristics, to determine the character of the whole. The substance may include whole blood and serum or plasma; saliva; cerebrospinal fluid; feces; urine; fingernail clippings; hair clippings; tissue samples; etc.

Portable Data File (PDF) -- Read-only file that can consist of both text and images

QR Code -- A 2-dimensional matrix symbol consisting of an array of square modules arranged in an overall square pattern, including a unique finder pattern located at three corners of the symbol and intended to assist in easy location of its position, size, and inclination.

Quiet zone – In automation, the white (blank) space on a bar code immediately preceding the first bar and immediately following the last bar.

RAIN -- Global alliance that promotes universal adoption of UHF RFID wireless technology using the GS1 Gen2 protocol standardized by ISO/IEC

Radio Frequency Identification (RFID) -- Small electronic devices that use radio waves to read and capture information and consist of a chip and antenna to automatically identify and track tags attached to objects. Unlike barcode, a tag can be read from up to several feet away and does not need to be within direct line-of-sight of the reader to be tracked. An RFID system is made up of two parts: a tag or label and a reader.

RFID Reader -- To read the information encoded on a tag, a two-way radio transmitter-receiver called an interrogator or reader emits a signal to the tag using an antenna. The tag responds with the information written in its memory bank. The interrogator will then transmit the read results to an RFID computer program.

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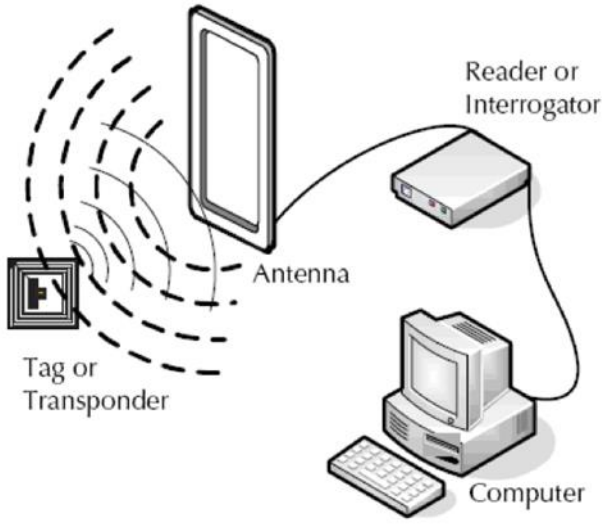

RFID Tag -- RFID tags or labels are embedded with a transmitter and a receiver. The RFID component on the tags have two parts: a microchip that stores and processes information, and an antenna to receive and transmit a signal. The tag contains the specific serial number for one specific object.

Sample – A portion or aliquot withdrawn from a specimen container for testing. In automation, samples are typically not placed in containers that will have to be uniquely identified, but may go directly into the instrument or specimen processing and handling device test stream or may be placed in sample cups unique to the instrument or specimen processing and handling device.

Smart Camera -- Machine vision camera that is able to capture and process an image for visible characteristics.

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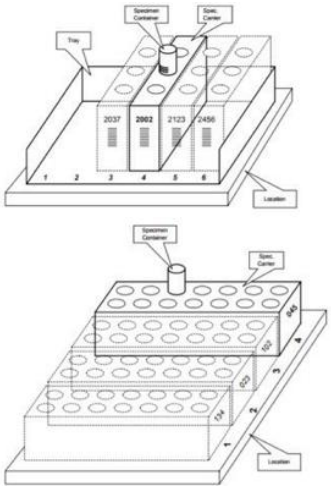
Specimen carrier – A device that holds the specimen container. The specimen carrier interfaces mechanically with the transportation system to move the specimen from location to location, and may carry one specimen container or many specimen containers.



Symbology -- 17 modules each containing four bars and spaces to allow between 1000 to 2000 characters per symbol. Each symbol has a start and stop bar group that extends the height of the symbol.

Transceiver -- An electronic device capable of sending and/or receiving information from an RFID tag. Transceivers can operate from a fixed location or be part of hand-held portable devices.

Ultra High Frequency (UHF) -- Type of Radio Frequency Identification in the 860-960 MHz range

ABOUT JADAK:

JADAK, a business unit of Novanta, is a market leader in machine vision, RFID, barcode, printing, and color and light measurement products and services for original equipment manufacturers. The company designs and manufactures embedded detection and analysis solutions that help customers solve unique inspection, tracking, scanning and documenting challenges. The company is ISO 9001 and ISO 13485 registered.

Novanta is a trusted technology partner to OEMs in the medical and advanced industrial technology markets, with deep proprietary expertise in photonics, vision and precision motion technologies.

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