

NORTHERN APEX-RFID
Product Information

Northern Apex Corporation
14220 Plank Street
Fort Wayne IN 46818
Phone: 260-637-2739
Fax: 260-637-5370
www.northernapex-rfid.com



About Northern Apex-RFID

Northern Apex-RFID is a pioneer and a leader in cost effective, quick-turn, RFID integrated solutions. Since 1998 Northern Apex has deployed read only, read/write, active and passive RFID solutions based on smart chip technology. We consider ourselves the most diversified RFID solution provider in the country because of the range and complexity of the solutions we have delivered over the past nine years. These include pharmaceutical item and multi-pack verification, container data management, asset tracking, maintenance and calibration, product authenticity, critical process control, security, event timing and manufacturing process integration. Additional information about Northern Apex-RFID can be found at www.northernapex-rfid.com.

About Adaptek Systems

Adaptek Systems is the sister company to Northern Apex-RFID. Adaptek Systems is an innovative leader in standard and custom automated production equipment solutions for the electronics, electro-mechanical and related plastics industries. Adaptek's combined engineering expertise in cost effective production systems combined with a flexibility in design concepts, offers its customers many options that are needed today to remain competitive and profitable. With more than 15 years in the automation solutions business and hundreds of custom automated systems currently in production in various locations around the globe**,** Adaptek Systems is a consistent industry leader in cost effective production equipment. Additional information about Adaptek Systems can be found at www.adapteksystems.com

Key Contacts

Northern Apex Corporation

Mike Gigli – General Manager
(260) 637-2739 x123
mgigli@northernapex-rfid.com

Terry Coonan – Sales, Marketing, Business Development
(260) 637-2739 x111
tcoonan@northernapex-rfid.com

Larry Hughbanks – Sales and Applications Engineering
(260) 637-2739 x121
lhughbanks@northernapex-rfid.com

Jana Smock – Administrative Sales Assistant
(260) 637-2739 x104
smock@northernapex-rfid.com

Rick Raber – RFID Product Manager
(260) 637-2739 x133
rraber@northernapex-rfid.com

900 MHz

Stationary/Fixed Readers

Self Contained Manufacturing/Packaging

Hercules 2400



SCR 2400P



Supply Chain/ Industrial

Omega 2200



Orion 1600



Polaris 1400



Dorado 400



AR400



XR400



MLR 185



Gemini 200



Handhelds

TSR 222



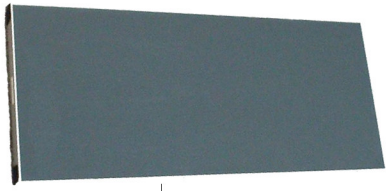


MC9000G-RFID



Antennas

General Purpose Antenna



Adjustable Antenna Stand



Conveyor Tunnel Stand



Shelf Antenna



Panel Antenna



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13.56 MHz

Handhelds

Portable

TSR 222



DP 175BT



XP 8100SM



XP 1885 SM



XP 600



Tethered

TSR 222



DP 150



AR 100



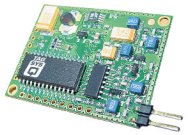
AR 250



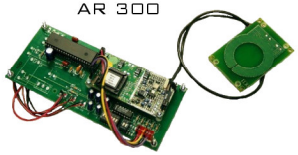
Stationary/Fixed Readers

Component

S002



AR 300



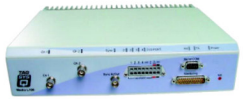
Desktop/Laptop POS

DP 120 USB



Industrial/ Distribution

L100



L200



Antennas

Aero LB



Aero LA



Aero MP



Aero LC



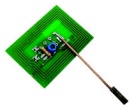
Aero SA



Aero SF



Aero VSA



Aero MA



Aero LF



Aero LI



Self Contained Manufacturing/ Packaging

Hercules 2400



SCR 2400P



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303/433 MHz

Stationary/Fixed Readers

Standard

NAOES 200



NAY-100



NEMA Enclosure

Monocerus 300



SCR 2400M



Handhelds

NALXE 5



Tags

NAT Beacon/
NAT Motion



AT303P



NART-110



NART-100



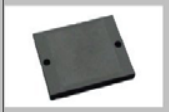
NATE-100



NORTHERN APEX RFID

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Northern Apex – RFID Tag Packaging

AR 91X Hanging / Key Chain	AR 92X Low profile / Metal mount	AR 93X Industrial / Metal mount	AR 94X Encapsulated / Garmet	AR 95X Label / CD / DVD	AR 96X Encapsulated / Industrial	AR 97X Wristband / Security Cards	AR 98X Industrial / Reusable
 AR 910	 AR 920	 AR 930	 AR 940	 AR 950	 AR 960	 AR 970	 AR 980
 AR 911	 AR 921	 AR 931	 AR 941	 AR 951	 AR 961	 AR 971	 AR 981
 AR 912	 NAETPT	 AR 932	 AR 942	 NAFXX-CD	 AR 962	 AR 972	 AR 982
 NAETKT		 AR 933	 AR 943	 NAF20-CV NAF20-SA	 AR 963	 AR 973	 AR 983
 NAETST		 AR 934	 NATI-HDT-DVBB		 AR 964 AR 965	 AR 974	 AR 984
 NATI-HDT-KMAB		 AR 935	 NAI1010			AR 975	AR 985 AR 986
		AR 936	NARXX-TL			NATI-TH1	
		AR 937				NAETCI	

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Northern Apex-RFID

303/433 MHz Active Technology

Northern Apex-RFID's product line includes an active RFID beacon system which reliably tracks, locates and identifies assets. The two-part system is comprised of battery-powered tags which are assigned to people or objects, and readers which are specifically designed to receive the signals generated by the Active tags.

Its modular tag design and moderate price point allow the Active solution to be employed in a wide variety of applications --- with a demonstrable return on investment. The patented, collision-resistant RF architecture allows for very high tag density and enables customers to deploy aggressive Auto-ID initiatives without concern for data loss.

Our Active RFID System:

- Demonstrates a modular design to allow for a broad range of configurations using a single hardware architecture.
- Employs a signal type that is uniquely collision resistant to allow for high tag densities.

Active Readers:

Active readers from Northern Apex-RFID detect and interpret the radio frequency beacon emitted by our tags in order to identify them and provide information to determine their location. The reader range is adjustable and can cover distances of up to 1,500 feet, depending on the operating environment and type of antenna used. Installation of the reader is easy and can be accomplished by anyone familiar with standard wired and wireless networking.

Northern Apex offers active readers in two forms, the fixed reader and the handheld reader, each of which is designed for different applications. Both versions contain advanced, patent protected, anti-collision algorithms that provide the ability to resolve large numbers of simultaneous tags and to adapt to RF noise in the environment.

- MonoCerus 300 Fixed Reader – Provides dual channels for diversity, a native Ethernet interface, flexible ranging capabilities via software (e.g. the sensitivity can be attenuated), high throughput, and a compact 6-inch by 6-inch form factor. It can be hooked to different sets of antennas to extend its range up to 1,500 feet.
- Handheld reader – Northern Apex-RFID uses a standard PDA enabled handheld computer that has the single channel, active RFID reader module embedded into it resulting in a durable, multi-function device.



Our active readers detect and interpret the radio frequency emitted by our tags and can cover distances up to 1,500 feet depending on the antenna used. Our active readers are compatible with both wired and wireless networks, they can be rapidly and inexpensively integrated into an organization's existing infrastructure.





Active Tags:

Active RFID tags from Northern Apex-RFID are small, active transmitters that are attached to the objects being tracked and emit a signal with the ID of the object. The tags can be programmed to emit 2 beacon signals - one in stationary mode and (as an option) one that beacons at a faster rate when in motion. While the standard beacon continually transmits data related to the tagged

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Northern Apex-RFID

303/433 MHz Active Technology

objects, the motion-activated beacon rate provides immediate notification of objects that have been moved or tampered with, defining their identity and location. The tags are made of heat-reflective polycarbonate and are impact resistant, splash resistant and temperature stable. Custom tag designs allow tags to be produced for a variety of environments including waterproof, heat resistant, tamper resistant or integrated into electronic locks.

The main characteristics of the Active tag are:

- Long battery life – Its battery life averages up to seven years with a standard beacon of once every 12 seconds. This long battery life results from a sparse pulse methodology that allows the tags to have a very low pulse duty cycle (1%) even during a beacon transmission period.
- Small form factor – Only 2.4 inches long, 1.2 inches wide and 0.4 inches thick.
- Signal collision resistant – Due to the tags' proprietary sparse pulse methodology, a small quantity of readers can handle high asset density applications. By lowering the reader-to-tag ratio, our tags allow for lower infrastructure costs.
- Robust data payload transmission – For every beacon, the tag has the ability to transmit a data payload in addition to its ID. This allows active tags to be used both for RFID and certain wireless sensor applications.

Active tags are available in two classes:

- Basic model – Our basic model tag acts as a periodic beacon with a unique "license plate" that allows for identification of the tag and its assets. It is a low cost, stationary beacon tag that transmits its ID every pre-configured number of seconds providing continuous information about the current inventory of tagged assets.
- High-function model – Our high-function model tags have both ID and sensing capabilities. By attaching sensors or daughter cards to the tag's I/O interface, we have the ability to supplement existing functionality with additional features such as motion and tamper sensing. This approach of upgrading the standard tag functionality via its I/O port makes our product modular in cost and functionality, and allows specific configurations for different applications.



An active tag is a transmitter that offers long battery life, a small form factor and robust data payloads. Through the use of daughter cards, our tags can be customized to provide support for a broad range of integrated sensors including intrusion detection, tamper detection and radiation sensing.

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XP1885SM

Northern Apex Portable Read/Write Device

The Advantage Series was created to provide portable data collection capabilities in a variety of industrial and commercial applications. The Advantage XP1885SM series has been designed to connect with the SYMBOL SPT1800/2800 pen-notepad computer offering the most advanced Palm Powered™ or WIN CE Pocket PC based operating system scanner for your work force. The XP1885SM series allows the end user to have one dimensioned bar code data capture, Wireless local area network (WLAN), or wireless wide area network (WWAN) communications and 13.56 MHz RFID, ISO 15693 compliant, read/write capabilities. This portable data capture and transmit device was designed for durable end use in almost any environment. It is tough enough for use in manufacturing, industrial and field service environments, and is sealed to IP54 standards for protection against rain and dust.

The XP1885SM Series ADVANTAGE

- Configured for connection to a SYMBOL SPT1700 or SPT1800 Palm based portable computer, or the SPT2800 WIN CE based pocket PC computer
- Packaged in a durable, field service tested, protective plastic case sealed for added protection from rain and dust
- XP1885SM RFID sled includes portable capability for RFID reading and writing applications on the SYMBOL SPT1700 and 1800 and 2846 series units
- Unit runs on SYMBOL based rechargeable Lithium Ion battery plus a 1-hour Ni-MH backup battery
- 8MB RAM, 4MB ROM
- Touch screen push button application code with high-contrast liquid crystal display including enhanced backlight capability
- IR port for exchanging data
- Integrated miniature scan engine BAR CODE SCANNER
- When coupled with a portable printer, the unit can become a portable point of sale device
- Compatible with TAGSYS, TI TagIT™ and Philips I-Code™ RFID tags as well as most other ISO 15693 tags

XP1885SM

Reads 13.56MHz from the base of the unit with this easy snap connect sled.



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XP8100SM

Northern Apex Portable Read/Write Device

The Advantage Series was created to provide portable data collection capabilities in a variety of industrial and commercial applications. The Advantage XP8100SM series has been designed to connect with the SYMBOL SPT8100 pen-notepad computer offering the most advanced WIN CE Pocket PC based operating system scanner for your work force. The XP8100SM series allows the end user to have one dimensioned bar code data capture, Wireless local area network (WLAN), or wireless wide area network (WWAN) communications and 13.56 MHz RFID, ISO 15693 compliant, read/write capabilities. This portable data capture and transmit device was designed for durable end use in almost any environment. It is tough enough for use in manufacturing, industrial and field service environments, and is sealed to IP54 standards for protection against rain and dust.

The XP8100SM Series ADVANTAGE (XP8100SM as shown below)

- Configured for connection to a SYMBOL SPT8100 WIN CE based pocket PC computer
- Packaged in a durable, field service tested, protective plastic case sealed for added protection from rain and dust
- Comes in a Symbol belt strap carry case for convenient storage when not reading RFID
- XP8100SM RFID sled includes portable capability for RFID reading and writing applications on the SYMBOL SPT8100 series units
- Unit runs on SYMBOL based rechargeable Lithium Ion battery plus a 1-hour Ni-MH backup battery
- Color Display option
- Pen based **and** key-based input
- 64MB RAM, 32MB ROM
- User accessible compact flash slot
- IR port for exchanging data
- 28, 37 or 45 key options
- Integrated miniature scan engine BAR CODE SCANNER
- When coupled with a portable printer, the unit can become a portable point of sale device
- Compatible with TAGSYS, TI TagIT™ and Philips I-Code™ RFID tags as well as most other ISO 15693 tags

XP8100SM Advantage Series SYMBOL RFID Reader

XP8100SM

Reads 13.56MHz from the base of the unit with this easy snap connect sled.



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TSR222

Northern Apex Portable Read/Write Device for 13.56MHz or 900MHz Tags





The **TwoSENSE (TSR222)** RFID read/write device was created to provide portable data collection capabilities in a variety of industrial and commercial applications. The extreme flexibility of the device allows it to function with a multiple number of PDA and PC devices. Configured as either a 13.56MHz reader reading TagSys, TI, Phillips and all other ISO15693 tags or configured as 13.56MHz reader to read ISO14443 tags, the **TwoSENSE** reader is the one choice for low frequency short range portable needs.

The TwoSENSE reader can also be configured to read HF 900MHz and communicates with EPC compliant 64 & 96 Bit UHF 900 MHz labels from Matrics. This unit can also be configured as an agile reader to read multiple vendor UHF EPC compliant technologies.

The portable device is designed to be connected to any PDA including the iPAQ, Symbol, Palm or other similar PDA that has a serial connection COM port and available interface. Whether your PDA is equipped with barcode, WiFi, Bluetooth, IR or other specific requirements, the **TwoSENSE** reader enables that device to read the RFID technology, as well. This portable data capture and transmit device was designed for durable end use in almost any environment. It is encapsulated for use in manufacturing, distribution, industrial and field service environments.

- Configured for connection to a SYMBOL SPT1800, 2800, SPT8100, 8800 and others
- Configured for connection to iPAQ3800 series or higher
- Configured for other serial port available PDA's
- Packaged in a durable, field service tested, protective plastic case sealed for added protection from moisture and dust
- **TwoSENSE** RFID unit includes portable capability for RFID reading and writing applications at the 13.56MHz ISO 15693 and the 900MHz EPC tag level
- Unit has internal rechargeable battery pack
- Bluetooth enabled option for long range remote scanning capability
- EPC- Compliant Class Zero (Read Only) and Class Zero Plus (Read/Write)

Northern Apex-RFID Integration Solutions…it just makes too much SENSE!

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DP120USB

Northern Apex Read/Write Device

The Desk Pro Series:

- USB enabled for easy connection
- **USB port powered eliminating need for separate power supply**
- Most popular unit due to its multi-functional size/usage
- Used as either a handheld or workstation read/write device
- Fits conveniently in a briefcase/carry case for portability
- Includes antenna and RFID coupler operating at 13.56MHz frequency reading all ISO15693 tags
- Typically used with portable data collection or PC / laptop / notebook devices
- Universal communication to Tagsys, TI, and Phillips tags as well as all ISO 15693 brands
- 7" X 3" X ¾"



Northern Apex produces a series of standard RFID communication devices specifically to meet the application requirements customers face when integrating RFID solutions. Each RFID communication device series was designed to offer the flexibility to meet the specific requirements of your application. Whether the RFID solution is industrial, portable, desktop or a combination of several needs, the Apex series was designed to provide off the shelf ready to go communication tools. If customization is required, our talented staff can tailor your hardware to the specifications required.

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DP150 Series

Northern Apex Handheld Read/Write Device

- Most functional portable unit due to its size and flexibility
- Self contained, battery powered read/write wand
- Includes antenna, RFID coupler, 5' coiled cord and 9 volt battery
- Will function with SYMBOL SPT 1800-2800, Palm M Series & iPAQ/CASIO Windows CE™ devices
- Connects via a standard serial port
- Communicates with 13.56 MHz transponders from TAGSYS, TI and Philips including all brands of ISO 15693 tags
- Optional connectors for the Compaq iPAQ™, Cassiopeia™ , Symbol™, Toshiba ™ , Sony™ and Palm™ or other devices with an available serial interface
- 6" X 3" X 1"



DP150 Highlights

- **Windows CE/Palm Os Ready**
- **Battery Powered**
- **Simple Integration**

Northern Apex provides a series of standard RFID communication devices specifically to meet the application requirements customers face when integrating RFID solutions. Each RFID device was designed to offer the flexibility to meet a variety of application requirements. Whether the final RFID solution is industrial, portable, desktop or a combination of environments, the Apex DP series is designed to provide off the shelf, easily implemented communication tools. If customization is required, our talented staff can tailor the hardware to your specific requirements.

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DP175BT

Northern Apex Portable BLUE TOOTH Handheld Read/Write Device

Blue Tooth Enabled with remote scanning capability of over 30' range back to computing device

- Most versatile portable unit due to its size and flexibility
- Self contained, battery powered read/write wand
- Includes antenna, RFID coupler, Blue Tooth engine and rechargeable battery pack
- Will function with iPAQ Blue Tooth enabled PDA or any other Blue Tooth enabled PDA/Computer
- Requires no cable or serial port connection
- Communicates with 13.56 MHz transponders from TAGSYS, TI and Philips including all brands of ISO 15693 tags
- 6" X 3" X 1"



DP175BT Highlights

- **Wireless**
- **Windows CE/Palm Os Ready**
- **Battery Powered**
- **Simple Integration**

Northern Apex provides a series of standard RFID communication devices specifically to meet the application requirements customers' face when integrating RFID solutions. Each RFID device was designed to offer the flexibility to meet a variety of application requirements. Whether the final RFID solution is industrial, portable, desktop or a combination of environments, the Apex DP series is designed to provide off the shelf, easily implemented communication tools. If customization is required, our talented staff can tailor the hardware to your specific requirements.

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DP190FM / DP195FM

Northern Apex Flange Mount Read/Write Series

13.56 MHz and ISO15693 compatible

The Flange Mount Series:

- Popular due to its size and external flush mounting capability
- All the standard features of the Apex RFID read/write series plus the added ability to mount to a door/wall/conveyor or elsewhere
- Used typically as a conveyor mount or door/wall read/write device
- Includes built-in I/O capability with optional LED feedback as to scanning status. Can also be factory configured to trigger I/O signals to interface with conveyor controls or motion sensors.
- Factory configurable for constant scanning as well as triggered event scanning
- Includes antenna and RFID coupler operating at 13.56MHz frequency reading all ISO15693 tags
- Requires external 5V power source input – other options available
- Optional wall mount transformer or battery powered source are available
- Typically interfaced with PC or PLC controllers (stand alone PIC microprocessor versions can be custom configured eliminating the need for direct PC or intelligent source interface for specific applications)
- Universal communication with Tagsys, TI, and Phillips tags as well as all ISO 15693 brands
- DP190FM: 5” X 2-3/4” X 1-1/2” (plus flange = 5-3/4” X 2-3/4” X 1-1/2”)
- DP195FM: 5” X 3-3/4” X 2-1/2” (plus flange = 5-3/4” X 3-3/4” X 2-1/2”)



Northern Apex produces a series of standard RFID communication devices specifically to meet the application requirements customers face when integrating RFID solutions. Each RFID communication device series was designed to offer the flexibility to meet the specific requirements of your application. Whether the RFID solution is industrial, portable, desktop or a combination of several needs, the Apex series was designed to provide off the shelf ready to go communication tools. If customization is required, our talented staff can tailor your hardware to the specifications required.

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AR100 Series

Northern Apex Extended Reach Antenna

- Industrial Wand Accessory
- Designed for Production/Warehousing applications
- Durable high density, glass filled polyamid plastic case
- Multiple length tube antenna
- Optional nose piece designs are available upon request (round, pointed, etc.)
- Reduces the reach distance required to stationary tags
- RFID coupler optional (Coupler may be assembled with portable PC device or in the wand)
- Light weight, portable
- Optional pushbutton read, LED and/or Vibrating feedback
- Communicates with TAGSYS, TI and Phillips tags as well as ISO 15693 tags
- Accessory reader typically linked to Desktop PC, Laptop PC, Windows CE portable devices and PALM type PDA's.
- Wall mount bracket optional (NA #29600100)
- 7.48" X 2.76" X 3.66" (plus antenna tube)



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The NAR400 and the NXR400 RFID READER

Optimize inventory and asset management with a flexible, enterprise-class RFID reader

The NAR400 and NXR400 is a multi-protocol RFID reader designed to function as part of a complete RFID system for accurately tracking the location and status of inventory and assets across your enterprise. Whether in a distribution center, on the manufacturing floor or in a store front, the NAR400 and the NXR400 gives you the ability to read, update and transfer RFID tag information in real time to your enterprise systems.



Future-proof your RFID system

The multi-protocol NAR400 and the NXR400 is designed to meet your needs, both now and in the future, providing built-in support for all types of Electronic Product Code (EPC) passive tags. You're able to deploy it now to work with existing RFID technology, including EPC-compliant Generation (Gen) 1, Class 0 (read-only and read/write) and Class 1 tags. Then, when you're ready, you simply upgrade the NAR400 and the NXR400 through firmware when available to accommodate new tag protocols such as Gen 2. Because the NAR400 and the NXR400 will continue to meet your needs over time, you don't have to wait to begin realizing the benefits of RFID.

Ensure high performance in multi-reader environments

The most accurate RFID data capture device available on the market, the NAR400 and the NXR400 decreases the chances of reader errors, providing you with real time data you're able to rely on throughout your operations. It offers enterprise-class features including a proven dense reader mode and interference-reducing listen before talk functionality to ensure accurate data capture and long read ranges in installations where multiple antennas and readers are deployed in close proximity.

Features	Benefits
Cost-effective foundation for enterprise-class RFID impliments	Delivers high performance RFID data capture and communication as a stand-alone reader or as a system component
Host applications directly on the reader	Enables the real-time enterprise by allowing you to host applications best suited to your business and customize them to your data and network management requirements
Enterprise connectivity	Integrates general-purpose input/output ports to allow sensor and actuator peripherals (i.e. lights, PLCs) on forklifts, conveyors, and portals to be intelligently initialized, directed and controlled
Multi-protocol functionality	Supports Gen 1 RFID tag constructs, and is Gen 2 ready
Open standards-based Architecture	Allows rapid development of custom software specifically tailored to meet data filtering and management requirements and lets you embed third-party applications for higher performance
Durable construction	Maximizes uptime and reduces maintenance and repair costs

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900MHz ANT – 100 ANTENNA

Northern Apex-RFID is proud to offer UHF 900MHz RFID integration solutions. The 900MHz solution is ideal for long range read only applications such as warehouse/logistics management, building asset security, and other key business operations. Some of the UHF 900 MHz Hardware, Software, and Tag products we have available for your long-range read needs include: **Readers: Portable and Stationary, Software:** M-Swift - Middleware for Simplified Item Tracking and M-RAD - SDK for Rapid Application Development and the **Antenna:** ANT–100 General Purpose Antenna.



General Purpose Antenna:

The most popular antenna, (28.25" x 12.5" x 1.5") is ideal for several mounting locations including: doorways, overhead, dock doors, shelves, tunnels, and wall mount. The general-purpose antenna is intended for long range and large area RFID tag reading. They are optimized to perform in a variety of industrial and retail environments. They can easily be mounted indoors to create "read zones". The general-purpose antennas are solid state devices that contain no moving parts or mechanical switches. After installation, there is no configuration needed to become operational.

Optional Packaging

The Antennas can be packaged in a NEMA rated enclosure to protect the device from environmental/outdoor conditions.

The 900 MHz system employs a unique, patented reader-driven interrogation protocol that allows tags to be read at a rate of two hundred (200) tags per second. This powerful read rate supplies the muscle to overcome interference in noisy environments, and to guarantee acceptable read rates at each read point when large numbers of antennas are multiplexed together.

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13.56MHz Fixed RFID READER



L200

The L100 and L200 are multi-protocol long-range RFID readers featuring innovative technologies and designed for applications where 3D and volume detection is required. They are used in industrial applications where high numbers of items need to be identified simultaneously.

The L100 has 2 RF channels and the L200 has 4 RF channels. Both enable to multiplex antennas and deliver high performance rotating fields. Their multi-protocol firmware ensures full compatibility with RFID chips, I-Code and all ISO15693 RFID chips currently on the market. Their firmware is upgradeable to comply with future ISO18000 RFID chips.

The L100 and L200 readers have 4 configurable I/O ports to enable end-users to connect a wide choice of sensors. Their high-speed Digital Processing Unit (DSP) enables achievement of a near 100% read rate in noisy environments (i.e. metal, engines).

The L100 and L200 readers come with a software suite that includes:
. the L200 Explorer, with a user-friendly interface for onsite testing and firmware upgrade.
. Medio™ STX E Windows® DLLs for custom application development under Windows® 98, NT®, 2000, XP operating systems.

- Multi-protocol, the L100 and L200 readers read and write all ISO 15693 RFID chips on the market(including I-Code).
- They integrate a high-speed Digital Signal Processing unit.
- The L100 has 2 RF channels and the L200 has 4 RF channels, both with the capability to multiplex antennas.
- Their high RF power (up to 4 W on L100 and 7 W on L200) is adjustable thanks to the integrated software suite.
- Their firmware is upgradeable to future ISO 18000 RFID chips.
- They feature a synchronization port for close proximity multi-reader operation.
- The L100 and L200 readers offer an open platform reading station for a broader range of applications.
- They ensure efficient signal treatment even in industrial noisy environments.
- They allow various configurations to optimize RFID tag detection (multiplexing).
- They comply with industry standards and offer an easy network configuration installation.
- Their user-friendly interface (Windows® platforms) enables fast and easy onsite test debug.

ELECTRICAL FEATURES		
	L100	**L200**
Frequency	13.56 MHz	
Chip Compatibility	Read only anti-collision, read/write, I-Code as well as all ISO 15693 chips	
RF Outputs and Power	2 RF outputs	4 RF outputs

Power Supply	85 to 265 VAC / 50-60 Hz	
Power Consumption	Up to 40 W	Up to 50 W
Communication Speed	Serial : up to 38.4 Kbits Parallel : up to 200 Kbits/s (test and debug)	
Upgradeable Firmware	Yes	
Application Software	512 Kb Flash memory	
MECHANICAL FEATURES		
Size (in mm)	310 x 260 x 80	
Weight	5 kg (11 lb.)	
Communication Interface	Serial : RS232 / RS485 / RS422 Parallel : bi-directional and enhanced	
Input/Output	4 I/O ports independently configurable	
Mechanical Interface	Rubber feet (desktop), mounting plate (with screws)	
ENVIRONMENT FEATURES		
Operating Temperature	0 to 55 °C (32 to 131 °F)	
Storage Temperature	-20 to 70 °C (-4 to 158 °F)	
Certification	CE, FCC part 1, EN300-330, ETS300-683 European Radio	

CONSTELLATION SERIES RFID

BUSINESS SYSTEMS

INDUSTRIAL CONTROL INTERFACE

The Constellation Series

A family of unique automation products which allow for easy modular integration of RFID tracking technology. Each of the six unique Constellation series devices are "drop-in – ready to integrate" RFID products. The series is adaptable to 900MHz, 13.56MHz or 2.4Ghz. With built in capabilites, certain devices will also drive print and apply equipment, printers, labelers, conveyors, diverters and other typical peripheral equipment.

For applications in a Manufacturing, Health Science/Pharmaceutical, Supply Chain, etc. environment, the Constellation Series addresses three primary business needs:

- **Seamless Integration of RFID**
- **Interface with existing or required Business Systems (i.e SAP, Manhattan Associates, WMS, MRP, etc.)**
- **Ability to communicate and control industrial or manufacturing devices. (i.e. conveyors, diverters and sensors)**

Within each Constellation Series model, required technologies are combined to meet each specific application need. Each unit varies in capability to promote efficient and rapid RFID integration. Depending on model, this may include, RFID reader and antenna, industrial PC running business software interface, PLC/Industrial Control interface, internal 24V DC power supply, and wireless/ethernet connectivity ports.

Constellation Series Products provide the most cost effective solutions suited to your specific needs, products include:

HERCULES 2400: MAIN HOST: Highly versatile, "self-contained reader station." The combined industrial PC, Touch-screen and RFID reader is designed to accept up to 4 antennas, provide a flexible user interface and integrated control I/O for lights, conveyors, etc., all in one NEMA enclosure.

OMEGA 2200: HOST with REMOTE ACCESS: Remotely managed- no operator interaction. Capabilities identical to the Hercules 2400, except User Control via RealVNC or other remote access applications like pcAnywhere™ or Remotely Anywhere.



ORION 1600: 1st in the Client Series: Remotely hosted- no operator interaction. In addition to the on-board RFID reader (up to 4 antennas), it also provides integrated control I/O for diverters, alarms, etc.

POLARIS 1400: 2nd in Client Series: Remotely hosted- no operator interaction. Similar to ORION 1600, but has no integrated I/O control. Onboard RFID reader (up to 4 antennas).

DORADO 400: 3rd in Client Series
Similar in function to ORION 1600, but can only accommodate 1 RFID antenna. Remotely hosted and provides integrated control I/O for print & apply label systems, sensors, etc.

GEMINI 200: Item level RFID reader (Single Channel) designed for individual antenna read and desktop tag initialization.

NORTHERN APEX RFID

CHOOSING YOUR DEVICE

CONSTELLATION SERIES	HERCULES 2400	OMEGA 2200	ORION 1600	POLARIS 1400	DORADO 400	GEMINI 200
Operating Frequency (900MHz standard) Options Include 13.56 MHz AND 2.45 GHz	✶	✶	✶	✶	✶	✶
PC (Mini "Brick")	✶	✶				
LCD Touchscreen Display	✶					
RealVNC or other remote access		✶				
Host/Client Configuration Interface GALAXY'S VorteXML™ protocol	✶	✶				
Integrated Digital I/O	✶	✶	✶		✶	
Power Supply	24 Vdc @ 10Amp			24Vdc-5A	24Vdc-5A	external
Size (inches)	24x24x8	24x24x8	24x16x8	20x16x6	12x12x6	6x8x2
Weight (lbs)	85	75	40	35	25	5
Onboard Communications:						
RS232	✶	✶			✶	✶
RS485/422	✶	✶				
USB	✶	✶				
10/100baseT	✶	✶	✶	✶		
Antenna Connections:						
Maximum up to 4	✶	✶	✶	✶		
Single Channel					✶	✶
Enclosure:						
NEMA Rated Painted Steel (standard)	✶	✶	✶	✶	✶	
ABS Plastic (standard)						✶
(Options: NEMA Stainless Steel, Fiberglass, rugged wheel pull behind)						



Northern Apex - RFID ---- 14220 Plank Street, Fort Wayne IN 46818 ---- 260.637.2739 ---- www.northernapex-rfid.com

Approved Interface

VINtell™ Vehicle Tracking



VINtell™ MonoCerus 300

RFID Dealership Solutions Tagging and Tracking

VINtell™ is a suite of products that incorporates the basic principles of ADP's VehicleScan® while adding the core elements required to support an RFID based infrastructure. Created by Northern Apex, **VINtell™** provides the ability to utilize multiple RFID frequency components and products to track vehicles and assets at various points throughout a dealership. Each module is fully integrated into the ADP DMS.

VINtell™ offers a variety of modules which allow for seamless integration with a dealership's existing ADP installation. Most modules are available in either Long Range (LR) or Medium Range (MR) formats:

VINtell VSI™ Vehicle Scannning and Inventory Modules

I. **Portable Handheld Scan:** Using an RFID enabled PDA, vehicle tags are read from 2'-10', depending on the operational frequency of the products chosen. (Medium or Long Range)

II. **Mobile Scan:** A "golf cart" or other vehicle is equipped with the means to swiftly scan vehicles as they are passed in each aisle or row. This provides an ability to efficiently perform vehicle inventory row by row with increased accuracy and less labor thus allowing completion in more regular intervals. (Typically Long Range)

III. **Lot Zone Scan:** Monitoring vehicle position with pole mounted long range readers located strategically throughout the lot areas. The number of read points establishes a grid/zone for recording the last scanned and approximate position of a vehicle. (Long Range Only)

IV. **Lot Location ID Scan:** Specific scanning from long range readers, with accuracy, to a specific parking space location. (Long Range Only)

VINtell CAP™ - Controlled Access Point Entry/Exit Tracking Module

- Ideal for Controlled Access Point(s) in and out of a facility
- Track movement of Inventory between locations
- Reference by Stock Number/Date and Time for movements
- Distinguish between employees, customers, suppliers, dealership delivery vehicles and untagged vehicles.
- Enhance efficiency and effectiveness of services related activity such as assets entering/leaving premises, tow trucks, service vehicles and courtesy shuttles
- Available in Medium or Long Range

VINtell ATD™ - Authorized Test Drive Module

VINtell ATD™ combines the use of a stock vehicle tag with an additional "authorized test drive (ATD) tag" issued to or by the sales staff. ATD gives the ability to identify a stock vehicle's movement through specific entry/exit points by detecting the attached stock RFID tag coupled with the ATD sales staff tag.

VINtell ATD™ details related information including number of test drives, length of test drives, etc by vehicle or salesperson. The gated control option can be added to ensure that a stock vehicle doesn't leave a specific zone of the lot without proper approval. The ATD module typically operates when deployed with Long Range format.

VINtell SDI™ Service Drive Identification

- Identifies the vehicle's arrival/presence. Retrieves and displays customer information to the service writer as they enter the Service Drive area prior to the customer getting out of the car.
- Serviced Vehicle Retrieval option updates vehicle location after service for expedited retrieval of the vehicle upon customer pick-up.
- Available in Medium or Long Range

14220 Plank Street, Fort Wayne, Indiana 46818
Phone: (260) 637-2739 • Fax: (260) 637-5370
sales@northernapex-rfid.com

Automotive Dealership RFID Solutions

Approved Interface

VINtell™ Vehicle Tracking



VINtell VSI™ Features / Benefits:

ADP Interface to existing Vehicle Scan Product

Additional ADP API interface options

Hand Held or Fixed Mount Reading

Customizable Database to record Key Vehicle inventory information

Can withstand typical dealership environments

Embedded tag for windshield (Medium range) or other vehicle mounts including visor, glove box or “under hood”(Long range)

14220 Plank Street, Fort Wayne, Indiana 46818
Phone: (260) 637-2739 • Fax: (260) 637-5370
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RFID Dealership Solutions
Tagging and Tracking

VINtell™ MR Products

Medium Range Readers: Polaris 1400
- Wired Weatherproof Passive Reader Station
- NEMA Rated Outdoor Enclosure Accepts up to 4 Antennas
- 12VDC Remote Power Support System
- Solar Recharge Support

Medium Range Antennas: NAGP-100
- General Purpose Antenna

Medium Range Tags: WS-900
- Approximately 1” X 6” tag
- Windshield adhesive

Portable RFID Read/Write PDA’s: NAMC 900
- Med Range Portable RFID/Barcode Scanner



VINtell™ LR Products

Long Range Readers: MonoCerus 300
- Wireless Weatherproof Active Reader Station
- 802.11B Industrial WLAN Interface
- NEMA Rated Outdoor Enclosure
- 12VDC Remote Power Support System
- Solar Recharge Support

Long Range Tags: NAT-Beacon
- Approximately 1” x 2” x 1/4” Tag - Constant Beacon

Long Range Tags: NAT-Motion
- 2, 5, 12.5 second option
- 12.5 second beacon when at rest -- 1 second with ID when in motion
- Approximately 1” x 2” x 1/4” Tag - Motion Detection

Portable RFID Read/Write PDA’s: NALXE5
- Long Range Portable RFID/Barcode Scanner

Automotive Dealership RFID Solutions

Manufacturing

CabineTRACK™

Wood Component Production Tracking

The CabineTRACK™ application provides fixed and portable data collection capabilities for a variety of cabinet manufacturing processes including WIP, Inventory and order fulfillment. Several configurations of RFID tags can be embedded or attached to almost any type of manufactured wood component. Based on the desired mode of operation, information can be stored both in a database as well on the "embedded" product tag itself. Configurations are available for the tag to become a portable and permanent "floppy disk" registering pertinent information regarding the order number, style, finish, hardware required, destination or specific handling, etc. Standard Tags are encapsulated to withstand typical manufacturing processes and can be recycled for reuse. CabineTRACK™ is a flexible program that allows multiple reader-antenna and tag style choices that optimize the solution to meet your specific application needs. The following describes the advantages to using this "cafeteria plan" product approach. The end user can choose the most desired RFID component including the proper packaged tag, portable and fixed reader and key software field interface.

CabineTRACK™ Readers

- **DP120 Workstation Readers**

Desktop stationary reader/tag initalizer. The DP120 is typically tethered through a USB or terminal serial port and sends the tag id once each time a tag is introduced into the antenna field.

- **L100/L200 Process Station Interface**

Excellent tools for networking the high output power industrial, fixed reader systems. The L100 reader connects to two Antennas and L200 is capable of supporting four antennas reading tags in multiple locations at one time. Both readers have adjustable power settings for a maximum of 7-Watt output and will increase read distances of tags anywhere from 3"-20" depending on the environment.

- **Constellation Reader Stations**

CabineTRACK™ Antennas

Selected Antennas: (for fixed "industrial" reader applications)
Aero CA7: approximately 39" x 16"-popular conveyor antenna made of plastic ABS UL 94-V0 housing. Wide and narrow conveyor adaptable antennas are available as standard including: LA, LB and LC models.

CabineTRACK™ Tags

RFID embedded or "encapsulated pucks" are typically packaged in a urethane encapsulation with a specifically designed retainer O-ring used to capture the disk into the cabinet door hinge hole. Other CabineTRACK™ tag packaging includes peel and stick label tags or fully encapsulated.

Wood Components WIP Tracking

RFID Tagging & Product Identification

Re-usable "embedded" RFID TAG





14220 Plank St Fort Wayne IN 46818, Phone: 260-637-2739, Fax 260-637-5370,
sales@northernapex-rfid.com

Manufacturing

CabineTRACK™

Wood Component Production Tracking







CabineTRACK™ FEATURES/BENEFITS

- Internally track key cabinet components (i.e. doors) through the production process
- Ability to identify key component locations in a defined warehouse/storage area.
- Reduce production duplicates and overruns.
- Data can be stored locally on the cabinet component, assuring data accuracy while improving identification/eliminating confusion.
- Excellent tool for use in harsh environments due to its RF/non line-of sight operation.
- Based on environment, could potentially be integrated into many different warehouse, distribution or production environments, with multiple packaging options.
- Can be customized to quickly solve your specific asset tracking needs.
- Short Range read/write tag configuration allows for "offline" component identification without originating database connectivity at all times. (The tag identifies itself and all internally stored tag information is accessible from an Apex RFID enabled portable device or fixed reader/antenna)
- Permanently attach or removable for reuse.
- Smart Tag Read/Write interface devices are available for Windows® based PC's; Pocket PC® and Palm® based operating systems. Typically has wireless connectivity for both Bluetooth and 802.11B.
- Compatible with all SQL compliant databases.
- Compatible with Read Only, Read/Write and Multi-Read/Anti-Collision smart tags.
- Multiple frequency options including 13.56 MHz, 900 MHz Passive and 303 MHz Active.
- Able to pick and choose the key components that best fit the solution with options for the data carrying smart tags, interface read/write devices and key software fields.

14220 Plank St Fort Wayne IN 46818, Phone: 260-637-2739, Fax 260-637-5370,
sales@northernapex-rfid.com

Wholesale and Distribution

CONTAINER DATA MANAGEMENT-Long Range

RFID Based - Container Tracking System

"A Revolution in container identification, contents and traceability"

CDM-LR: 303MHz Long Range RFID Container Tracking
Ideally suited for metallic products and metal containers or simply to read any container up to 300-1000' away…

The **CONTAINER Data Management (CDM)** application provides portable data collection capabilities for a variety of container needs. Several configurations of RFID tags can be embedded or attached to almost any type of container including plastic, metal, wire basket and wood. Based on the desired mode of operation, information can be stored in a database as related to the tag ID. Certain configurations (Short Range -13.56MHz) allow the tag to become a portable and permanent "floppy disk" registering pertinent information regarding the contents, hazards, origination, destination or specific handling of the container and it's contents. LR Tags can be read through a variety of materials. The following describes the advantages to using a phased approach and "cafeteria plan" pricing to build a solution to track your specific container. The end user can choose the most desired tool for each key item including the proper packaged tag, portable/fixed reader and key software fields.

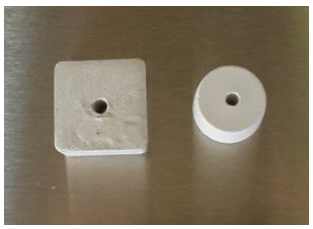
1. The Smart Tag:

RFID Tag Sizes and Data Options

900MHz "long range"



Environmental Resistant



Magnetic Mount



Liquid Tote



Attachable



Liquid Tote Valve



2. The Portable Reader:



Wholesale and Distribution

Portable Reader Options

DP 175 BT



TSR 222

Symbol SPT8100 Based Reader



XP1885 SM Symbol Based Reader



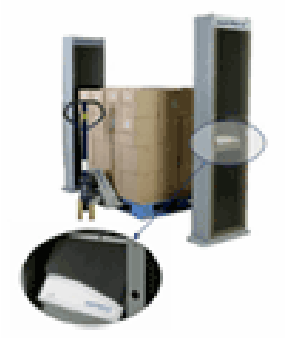
3. The Fixed Reader:

Fixed PC Reader Options:

13.56 MHz DP120 USB
for Workstations



900 MHz Stationary Reader/Antenna
for entry, exit, passage and dock door locations





The CDM ADVANTAGE:

- **Data can be read at up 300' omni-directional and 1000' directional in some environments allowing "real time" monitoring or product location.**
- **Excellent tool for use in harsh environments due to its RF/non line-of sight operation.**
- **Easliy integrated into many different warehouse, distribution or production environments, with multiple packaging options.**
- **Motion and Beacon Tag options which either constantly identify themselves or only upon movement depending on the intended use.**
- **Several configurations can be customized to quickly solve your specific container/asset tracking needs. Other available CDM module products include:**
    - **CDM- SR: Which is a short read/write range (0-12") RFID solution that allows container or content singulation (no confusion as to which tag is being communicated to) and onboard data storage. Also allows for read/write data storage directly to the tag giving the container a portable data base stored directly on the container. Short read/write tag configuration allows**

Wholesale and Distribution

for “offsite” container identification without originating database connectivity at all times. (The tag identifies itself and all internally stored tag information is accessible from an Apex RFID enabled portable device)

- CDM-MR: Which is a medium read range (0-20’) read only and or write minimal is ideal for quick identification of the container’s “license plate” to determine product movement and database reference needs. Similar technology as mandated by DOD and other supply chain merchandisers.

- Permanently attach or removable for reuse.
- Smart Tag Read/Write interface devices are available for Windows® based PC’s; Pocket PC® and Palm® based operating systems. Typically has wireless connectivity for both Bluetooth and 802.11B.
- Compatible with all SQL compliant databases.

ARTiFACT TRAC ™

A Museum /Art Center Solution

ARTiFACT ***TRAC*** ™ is a packaged solution created to assist in the origination, registration, inventory and ongoing monitoring of artwork, artifacts and other museum/gallery items. *ARTiFACT* ***TRAC*** ™ is a complete system solution that enables the facility's staff to place a "benign" RFID tag and/or barcode label on the item, enter it into the *ARTiFACT* ***TRAC*** ™ software package and update its current location upon movement.

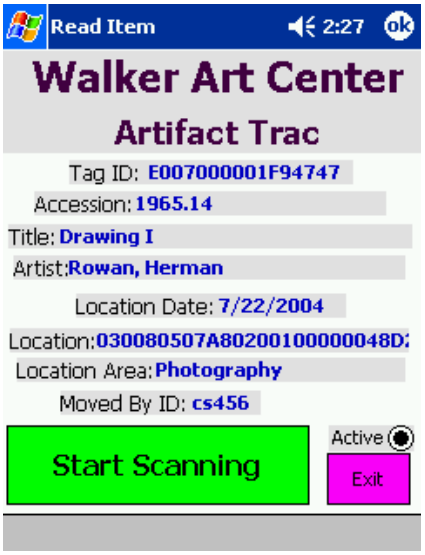
ARTiFACT ***TRAC*** ™ System Highlights

- Solution includes the dual use of barcode and RFID technology. Storage shelves/drawers are labeled with barcode labels and all artwork are tagged with RFID inlays utilizing rice paper/wheat paste attachment. All artifacts are tagged with the standard plastic encapsulated asset tag.
- *ARTiFACT* ***TRAC*** ™ Software Application powered by Northern Apex-RFID, an industry pioneer. The application pulls information from the Museum/Art Center's existing database and allows further data manipulation, storage location movement, and "last handled by" operator information and pushes it back for immediate recognition. Optional software field and database customization is available upon request.
- Storage location transition is expedited with the use of storage location bar code labels. The *ARTiFACT* ***TRAC*** ™ application links the RFID unique item tag ID to the storage or location area scanned, eliminating keyed data entry.
- System level integration includes the use of a Windows based main PC operating system for the *ARTiFACT* ***TRAC*** ™ application with a network wide tie-in to the Macintosh deployed workstations for typical ODBC enabled queries.
- The main station with desktop reader is used to initialize tag information as well as to provide a cradle station for portable handheld data transfer.

The Handheld Portable Solution

- A Symbol 8100 Pocket PC with barcode reader and expansion RFID reader
- Reads/Writes directly to RFID Tag
- Tracks Movement
- Performs Inventory





ARTiFACT TRAC ™

A Museum /Art Center Solution

Flat File Storage System



Artwork Storage



The RFID tag





ARTiFACT TRAC ™ Objectives

- Track Locations
- Conduct Inventories in a safer more efficient manner
- The application makes inventory process more efficient, increases storage location awareness and helps identify items as placed on display or loaned out for other exhibits.
- Automatically capture the drawer location and artwork inventory using a handheld PDA reader
- Download inventory data to a system level database



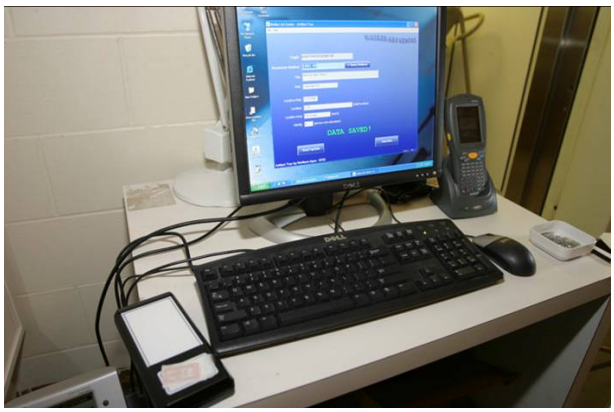


Key Application Fields Include:

- RFID TAG ID
- Item/Accession Number
- Title
- Artist
- Location Date
- Location (Shelf Number)
- Location Area (Room)
- Identity (Person who relocated)

Initialization Station

- *ARTiFACT TRAC* ™ Software
- PDA docking Station
- Desktop tag Reader and PC



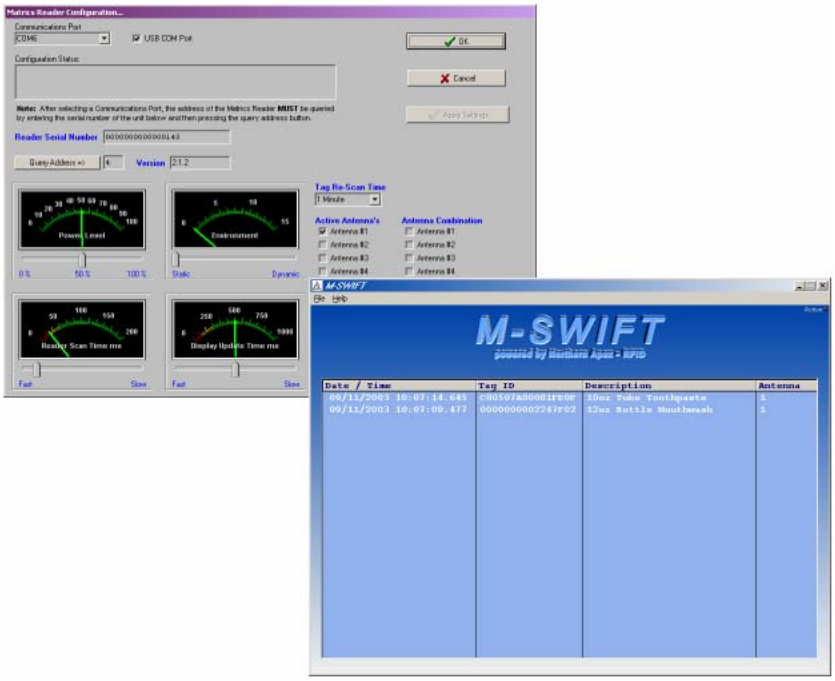
UHF 900MHz RFID Software

M-SWIFT

UHF Middleware for Simplified Item Tracking

Software developed for those applications where the following applies:

- Flexible Software Interface simplifying initial set-up
- User Friendly Reader Configuration accommodating environment variables
- Set-and-Forget Data Interface Needs
- Suitable For Integration with SQL, ORACLE, MySQL, DB2, and DATABASE platforms



M-RAD

SDK for Force Matrics Rapid Application Development

This SDK was developed for programmers who need to interface the Matrics UHF 900MHz stationary reader in their own software code applications

Highlights include:

- Complete Control of Matrics Stationary Reader
- Demo/example applications to expedite your programming process
- Immediate Integration into Microsoft Visual C++, Visual C, Visual Basic, and Borland C Builder
- Single Station License and Site license agreements available
- Complete with Documentation

14220 Plank St Fort Wayne IN 46818, Phone: 260-637-2739, Fax 260-637-5370, sales@northernapex-rfid.com

13.56MHz DLL / SDK Developers Kit

Description:
Northern Apex offers software support to develop your application using our available program templates or already developed application solutions. We also have the ability to customize a software solution targeted to specifically meet your needs. Integrated solutions include Palm OS, WIN CE and many database support platforms. Using our NACTRAC software platform, we will develop a read/write software program to track specific information for your asset. This custom application will pull the required fields into a standard database of the customer's choice. Additional options could include pulling the needed information to and from an existing database, as well.

Ready to integrate software drivers and library call-ups are available for purchase from Northern Apex to assist the customer's own program development, as well. We offer a WinCE / Pocket PC SDK for embedded Visual Basic as well as a DLL for Visual C++ v3.0. These **DLL's** will reduce the development time for PC based or handheld RFID applications. Each **DLL** performs all of the necessary serial communications to the Northern Apex readers via a serial STX protocol. We also offer an SDK for Metrowerks Code Warrior. The **LIB** will ease the development of read only, read/write and anti-collision RFID Smart applications. This **LIB** performs all of the necessary serial communications to the Northern Apex readers via an STX serial protocol.

SOFTWARE:
We offer a WinCE / Pocket PC SDK for embedded Visual Basic and Visual C++ v3.0. This **DLL** will reduce the development time for handheld RFID applications. The **DLL** performs all of the necessary serial communications to the Northern Apex readers via a serial STX protocol.
We also offer an SDK for Metrowerks Code Warrior. The **LIB** will ease the development of read only, read/write and anti-collision RFID Smart applications. This **LIB** performs all of the necessary serial communications to the Northern Apex readers via an STX serial protocol.

Either of these is available for $395 each for use with our readers.



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RFID Evaluation Kits

These products were developed to allow customers and integrators a quick introduction into RFID technology providing the ability to test the tag configuration and understand the PDA use. The evaluation packages allow users to read and write to an RFID tag. In-house RFID education and training is greatly enhanced with the use of this Evaluation tool.

1. The **EVAL 1000** includes our DP120 USB desktop read/write device, demonstration PC software and sample tags. Optional Serial and Ethernet connectors available.

2. The **EVAL 2000** includes a DP 190 conveyor read/write device with serial connector, demonstration PC software and sample tags. Optional USB and Ethernet connectors available.

3. The **EVAL 3000** includes a DP150 read/write device, demonstration PDA software and sample tags. (PDA optional)

4. The **EVAL 3500** includes the DP150, cable and connector for iPAQ PDA, demonstration software and sample tags. (PDA not included)

5. The **EVAL 4000** includes an AR100/250 RFID tethered device with serial connector for attachment to PDA, PC or other serial connector devices with demonstration software and sample tags. (Optional intelligent devices available)

6. The **EVAL 4075** includes a custom RFID sled for attachment to a Symbol SPT 1800 or 2800 series device (PDA not included standard, but available if needed), demonstration software and sample tags.

7. The **EVAL 5000** includes a XP1885SM or XP8100SM custom RFID sleds for attachment to a Symbol SPT 1800 or PPT 8100 series devices with demonstration software and sample tags. (PDA's are available if needed)

8. The **EVAL 6000** includes the DP175 Bluetooth RFID scanner with Pocket PC or desktop PC software and sample tags. (Blue tooth enabled PDA or PC devices sold separately).

9. The **EVAL 7000** includes the **TSR 222** portable RFID reader with demonstration software application reporting unique tag ID and sample tags. EPC Gen2 option available. (Pocket PC or Palm OS PDA's sold separately).

10. The **EVAL 8000** includes the **LSR 134** portable RFID reader with demonstration software application reporting unique tag ID and sample tags. (Pocket PC or Palm OS PDA's sold separately).

11. The **EVAL 9000** includes the **MC906R-G** portable RFID reader with demonstration software application reporting unique tag ID and sample tags compliant with EPC Gen2.

12. The **OEM EVAL** includes a coupler packaged in an enclosure with a BNC style connector that allows the OEM to test several antennas and tag configurations quickly for eventual use in production equipment, kiosks and other applications. Demonstration software and sample tags are also included.

13. The **EVAL175BT** Our DP175 Bluetooth RFID scanner with Pocket PC or desktop PC software and sample tags. Blue tooth enabled iPAQ PDA sold separately.

14. The **EVAL 222** includes the TSR 222 RFID reader, demonstration software and sample tags. Pocket PC or Palm OS PDA's sold separately. Ask for the TSR Bluetooth option.