Radio Frequency Identification (RFID) Solutions

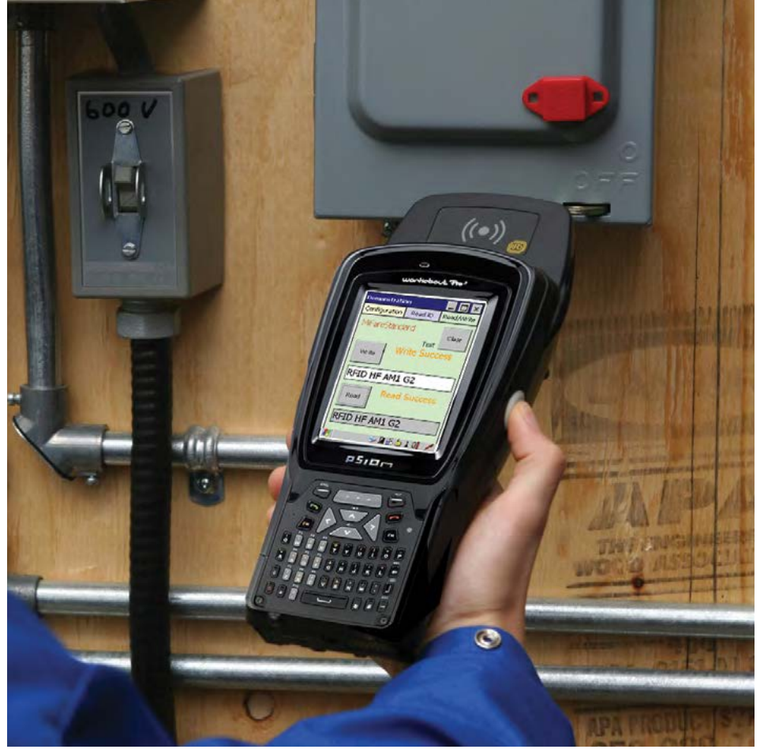
AN RFID OVERVIEW

Adding Flexibility to Your Operations

Radio frequency identification (RFID) solutions, where a reader accesses data stored on an RFID tag using radio waves, have become an increasingly popular alternative to improving efficiency and accuracy in a variety of applications including asset management, baggage handling and mobile access control. This is because RFID can significantly reduce direct labour requirements when it is combined with other data-capture technologies such as imaging or bar code scanning.

For over 10 years, Psion has continually improved its skills and expertise in RFID and has since become the industry leader for RFID-enabled mobile data collection devices. Our portfolio of RFID readers lets you harness the power of RFID and integrate it with other auto-identification technologies to achieve maximum flexibility for your operation.

Psion offers the widest range of integrated mobile RFID readers that cover multiple standards, frequencies and form factors, giving you the power to choose the right technology for your specific application.



THE PSION RFID PORTFOLIO

Applying Adaptive Ingenuity to RFID

It is Psion's goal to create and build products that perform better now and adapt as your business demands grow. We call this Adaptive Ingenuity. The combination of Adaptive Ingenuity and Psion's expertise in RFID offers global organizations a technological competitive advantage.

Psion's series of RFID-enabled handheld devices bring RFID capabilities to the applications that need it, inside and outside the four walls. Rugged handheld computers from Psion integrate RFID readers for low-frequency (LF), high-frequency (HF) and ultra-high-frequency (UHF) RFID, so customers can easily find a mobile device that has the required frequency for their particular application. Furthermore, Psion's RFID readers are designed for use in closed-loop and open-loop applications such as supply-chain management, e-ticketing, inspection and direct store delivery.

Our online community, IngenuityWorking.com, is bringing together customers, developers and partners to collaborate and ensure that our RFID offerings are positioned to address the real demands of the marketplace. Together, we're continually finding new ways to integrate RFID with other auto-ID technologies to improve your productivity and increase your revenues.

PRODUCTS

OMNII

Omnii™ is the most adaptable, rugged handheld platform on the market, and it represents the first in Psion's line of next-generation industrial computers that has been designed and delivered through IngenuityWorking.com. There are dozens of expansion modules, including the HF RFID module, available for devices built on the Omnii platform, allowing for unrivalled adaptability, extreme versatility and field flexibility.

Omnii has been designed for the ultra-rugged demands of the supply chain and logistics environments. By adding the HID Global™ multi-ISO reader via external module, Omnii becomes the perfect option for companies wanting HF RFID capabilities for industrial applications such as maintenance, utilities inspection, delivery rounds and warehouse management.

WORKABOUT PRO

Psion's flexible, expandable and rugged WORKABOUT PRO™ handheld computer is available with LF, HF and UHF module options. The WORKABOUT PRO RFID modules integrate the best-of-breed technology from a variety of OEMs, including CAEN and Impinj. The WORKABOUT PRO RFID UHF module is powered by the Impinj Indy R1000 chip to create a sleek and seamless mobile computer. This revolutionary design offers companies the flexibility to operate in the U.S., European and Canadian regulatory environments, creating a multiregional RFID mobile computer available for global companies. The WORKABOUT PRO RFID readers offer all of this, along with the flexibility, adaptability and reliability of all WORKABOUT PRO devices.

NEO

Integrated HF RFID-reading capabilities can be added to NEO, Psion's compact, intelligent and rugged handheld computer, using the HF RFID backpack. This HF multi-ISO reader module is based on the HID Global multi-ISO reader and supports many RFID protocols, has two SAM slots for data encryption, and is CE, FCC and IC certified. Due to NEO's compact size and striking ergonomics, it is the perfect tool for such applications as ticketing or asset tracking when combined with the HF RFID backpack.

IKÔN

Ikôn, the sleek, rugged PDA from Psion, can simply become a mobile RFID device with the addition of the HID Global multi-ISO reader that is connected via external module. With this reader, companies can add and subtract RFID capabilities for their mobile workforce as needed without tools or a trip to the depot.

IngenuityLive!

Psion's RFID portfolio is further enhanced by our growing partner community that consists of leading-edge companies focused on similar markets that can provide complementary RFID expertise and sales capabilities. Furthermore, our RFID SDK enables partners to customize their own software applications to take in RFID reads from a multitude of tag types at the same time.

Visit IngenuityLive! on IngenuityWorking.com to learn about the many problems our partners have solved using RFID technology.

THE RIGHT FREQUENCY FOR THE RIGHT APPLICATION

The following table provides a summary of the various RFID frequencies, their respective characteristics and the typical applications for which they are used. This table can help you determine the RFID frequency that is best suited for your company's particular needs and guide you toward the Psion handheld(s) that should be considered for your RFID solution.

	Frequency Range	Theoretical Read Range	Data Range	Ability to Read Near Wet or Metal	Surfaces Typical Applications
Low Frequency (LF)	125 kHz and 134 kHz	Short, <0.5 m (1.5 ft)	Slower	Better	Access control, animal tracking, vehicle immobilizers and POS applications
High Frequency (HF)	13.56 MHz	Short to medium, 1 to 3 m (3-10 ft)	Medium	Better	Access control, smart shelves, item-level tracking
Ultra-High Frequency (UHF) Passive	860 MHz – 960 MHz	Long, 3 to 9 m (10 - 30 ft)	High	Worse	Pallet tracking, electric toll collection, baggage handling
Ultra-High Frequency (UHF) Active	433 MHz, 860 MHz – 960 MHz	Very long, 3 to 450+ m (10 to 1500 ft)	High	Better	High-value asset tracking, construction, oil and gas
Microwave Frequency	2.45 GHz / 6.8 GHz	Medium, 3+ m (10+ ft)	Very high	Worse	RTLS-type applications, some supply-chain applications and electronic toll applications
Ultra-Wideband	3 GHz / 10.6 GHz	Low to Medium, < 10 m (< 30 ft)	Highest	Worse	Medical equipment tracking, room-level monitoring

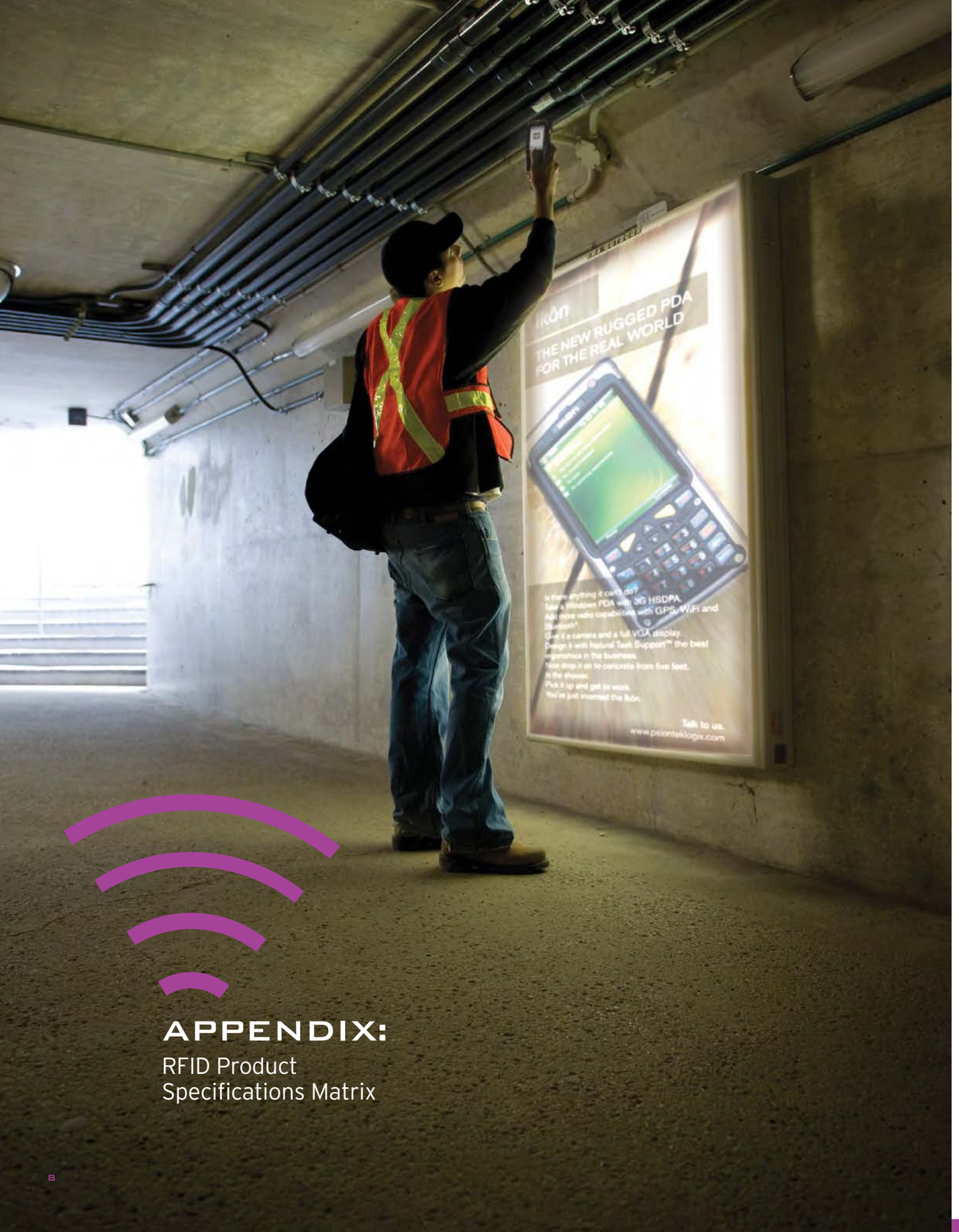
To view all RFID solutions that are currently available from Psion, please download the RFID product guides from the knowledge base of IngenuityWorking.com here: http://community.psion.com/knowledge/w/knowledgebase/710.aspx

PRODUCT SUPPORT

Visit Psion's online community, IngenuityWorking.com, for detailed discussions, knowledge, downloads or support related to all RFID products, technologies and solutions, or contact Psion directly.

	Phone/Email	Hours of Operation	Conditions
North and South Americas Help Desk	1-800 387.8898 (US/CA) 001 905 813.7998	Normal business hours 08:00 to 23:00 ET Mon-Fri 09:00 to 17:00 ET Sat	Live coverage
	1-800 387.8898 (US/CA) 001 905 813.7998	Outside of normal business hours	Requires an i-Serv 24/7 enabled customer site ID to access
	AHD.support@psion.com	08:00 to 23:00 ET Mon-Fri 09:00 to 17:00 ET Sat	Four-hour response
	hd24@psion.com	Outside of normal business hours	Next HD business day
Europe, Middle East and Africa Help Desk	0 703 000 19	09 - 18 CET Mon-Thu 09 - 17 CET Fri	Live coverage
	0 703 000 19	Outside of normal business hours	Requires an i-Serv 24/7 enabled customer site ID to access
	support.belgium@psion.com	09 - 18 CET Mon-Thu 09 - 17 CET Fri	Four-hour response
	hd24@psion.com	Outside of normal business hours	Next HD business day
Asia Pacific Help Desk	001 905 813.7998	Normal business hours 08:00 to 23:00 ET Mon-Fri 09:00 to 17:00 ET Sat	Live coverage
	001 905 813.7998	Outside of normal business hours	Requires an i-Serv 24/7 enabled customer site ID to access
	AHD.support@psion.com	08:00 to 23:00 ET Mon-Fri 09:00 to 17:00 ET Sat	Four-hour response
	hd24@psion.com	Outside of normal business hours	Next HD business day

Partner-based solutions – Please contact the specific partner who provided your RFID solution.



APPENDIX:
RFID Product Specifications Matrix

SPECIFICATIONS SHEET MATRIX

	OMNII	IKÔN	NEO
RFID Products	HF-AM1-OMNII	HF-AM1-IKÔN	HF-AM1-NEO
Description	HF RFID Pod HID Global® multi-ISO reader inside Model ST9210	HF RFID Snap on HID Global® multi-ISO reader inside Model CH1071A	HF RFID backpack HID Global® multi-ISO reader inside Model PX3070
Frequency	13.56 MHz	13.56 MHz	13.56 MHz
Output Power	200 mW	200 mW	200 mW
Power Supply	3.7V	3.7V	3.7V
Consumption	RF on - 230mA RF off - 90mA	RF on - 230mA RF off - 90mA	RF on - 230mA RF off - 90mA
Docking Port	USB serial link	USB serial link	USB serial link
Packaging	Pod	Snap on	Small-size clip-and-screw backpack
Antenna	Integrated, horizontal	Integrated, horizontal	Integrated, horizontal
Tag Protocol	ISO 15693, ISO14443A, ISO14443B and NFC enabled	ISO 15693, ISO14443A, ISO14443B and NFC enabled	ISO 15693, ISO14443A ISO14443B and NFC enabled
Tag Type	• Mifare® Standard, Mifare® 4k, Mifare® Pro, Mifare® Ultralight, Mifare® DESFIRE, Mifare® SmartMX • I-CODE SLI (SL2 ICS 20), I-CODE EPC (SL2 ICS 10), I-CODE UID (SL2 ICS 11), I-CODE, NFC (Reader To Tag Mode) • SLE 55Rxx, SRF55VxxP+S, SLE 66CL160S, SLE 66CLX320P, SR176, SRIX4K, LRI 64, MRI 512, EM4135, KSW Temp Sens® • Tag-it™ HF-I Standard, Tag-it™ HF-I Pro, Jewel Tag, Sharp B, ASK GTML, ASK GTML2ISO, TOSMART P032/P064 • ISO 15693 Tags, ISO14443A Tags, ISO14443B Tags	• Mifare® Standard, Mifare® 4k, Mifare® Pro, Mifare® Ultralight, Mifare® DESFIRE, Mifare® SmartMX • I-CODE SLI (SL2 ICS 20), I-CODE EPC (SL2 ICS 10), I-CODE UID (SL2 ICS 11), I-CODE, NFC (Reader To Tag Mode) • SLE 55Rxx, SRF55VxxP+S, SLE 66CL160S, SLE 66CLX320P, SR176, SRIX4K, LRI 64, MRI 512, EM4135, KSW Temp Sens® • Tag-it™ HF-I Standard, Tag-it™ HF-I Pro, Jewel Tag, Sharp B, ASK GTML, ASK GTML2ISO, TOSMART P032/P064 • ISO 15693 Tags, ISO14443A Tags, ISO14443B Tags	• Mifare® Standard, Mifare® 4k, Mifare® Pro, Mifare® Ultralight, Mifare® DESFIRE, Mifare® SmartMX • I-CODE SLI (SL2 ICS 20), CODE EPC (SL2 ICS 10), I-CODE UID (SL2 ICS 11), I-CODE, NFC (Reader To Tag Mode) • SLE 55Rxx, SRF55VxxP+S, SLE 66CL160S, SLE 66CLX320P, SR176, SRIX4K, LRI 64, MRI 512, EM4135, KSW Temp Sens® • Tag-it™ HF-I Standard, Tag-it™ HF-I Pro, Jewel Tag, Sharp B, ASK GTML, ASK GTML2ISO, TOSMART P032/P064 • ISO 15693 Tags, ISO14443A Tags, ISO14443B Tags
Data Encryption	2 SAM modules	2 SAM modules	2 SAM slots
Expansion Slots	Extended End Cap	N/A	N/A
Examples of Reading and Writing Performances	• ISO format (smart card) / ISO 15693: up to 70 mm • ISO format (smart card) / ISO 14443B: up to 35 mm • ISO format (smart card) / Mifare: up to 50 mm	• ISO format (smart card) / ISO 15693: up to 70 mm • ISO format (smart card) / ISO 14443B: up to 35 mm • ISO format (smart card) / Mifare: up to 50 mm	• ISO format (smart card) / ISO 15693: up to 70 mm • ISO format (smart card) / ISO 14443B: up to 35 mm • ISO format (smart card) / Mifare: up to 50 mm
Application Software	• RFID demo software to read and write tags • RFID Wedge mode: emulation of bar code scanner	• RFID demo software to read and write tags • RFID Wedge mode: emulation of bar code scanner	• RFID demo software to read and write tags • RFID Wedge mode: emulation of bar code scanner

SPECIFICATION SHEET MATRIX

	WORKABOUT PRO RFID MODULE LF 125 and 134.2KHz	WORKABOUT PRO RFID MODULE HF ISO 14443 / Mifare
RFID Products	LF-AH1-G2	HF-AM1-G2
Description	RFID Module LF-AH1-G2 HID Global® Multi tag reader inside P/N: 1051330	RFID Module HF-AM1-G2 HID Global® Multi tag reader inside P/N: 1051270
Frequency	125 and 134.2 KHz	13.56 MHz
Output Power		200 mW
Power Supply	5v	5v
Consumption	RF on 140mA, RF off 30mA	RF on 140mA, RF off 50mA
Docking Port	USB serial link	USB serial link
Packaging	Multipurpose end cap with GSM shroud	Multipurpose end cap with GSM shroud
Antenna	Integrated, horizontal	Integrated, horizontal
Tag Protocol	ISO 11784, ISO 11785, ISO 18000-2	ISO14443A, ISO14443B and NFC enabled
Tag Type	• Hitag 1, Hitag 2, Hitag S, Q5, • EM4X02, EM4X05 (ISO FDX B), EM4X50, • TI-RFID Systems 134.2 kHz 64Bit R/O,TIRFID Systems 134.2 kHz • 64Bit R/W,TI-RFID Systems 134.2 kHz 1088Bit Multipage	• Mifare® Standard, Mifare® 4k, Mifare® Pro, Mifare® Ultralight, Mifare® DESFire, Mifare® SmartMX, NFC (Reader To Tag Mode) • SLE 55Rxx, SRF55VxxP+S, SLE 66CL160S, SLE 66CLX320P, SR176, SRIX4K, KSWTemp Sens® • Tag-it™ HF-I , Standard, Jewel Tag, Sharp B,ASK GTML,ASK GTML2ISO,TOSMART P032/P064, • ISO14443ATags, ISO14443B Tags
Data Encryption		
Expansion Slots	• Xmod 100 pin expansion connector • Scanner connector • One Type II CF card slot	• Xmod 100 pin expansion connector • Scanner connector • One Type II CF card slot
Examples of Reading and Writing Performances	• Token 20 mm: up to 60 mm • Token 30 mm: up to 90 mm • Token 50 mm: up to 120 mm • Glass Tag 4 x 34 mm: up to 70 mm • Glass Tag 2.12 x 12 mm: up to 40 mm	• ISO format / ISO 14443 B: up to 35 mm • ISO format / Mifare®: up to 50 mm
Application Software	• RFID demo software to read and write tags • RFID Wedge to emulate a bar code scanner	• RFID demo software to read and write tags • RFIDWedge to emulate a bar code scanner

*Specifications are subject to change without notice.

SPECIFICATION SHEET MATRIX

	WORKABOUT PRO RFID MODULE HF ISO 15693	WORKABOUT PRO RFID MODULE UHF EPC C1G2 LINEAR POLARIZED ANTENNA	WORKABOUT PRO RFID MODULE UHF 500mW EPC C1G2 CIRCULAR POLARIZED ANTENNA
RFID Products	HF-T2-G2	UHF-CA3-A1-G2 (Europe) • P/N: 1051555 UHF-CA3-A5-G2 (America) • P/N: 1051585 UHF-CA4-A6-G2 (Japan) • P/N: 1051615	UHF-CA3-AC1-GPRS (Europe, GPRS compatible) • P/N: 1100615 UHF-CA3-AC1-XMOD (Europe, no GPRS) • P/N: 1100635 UHF-CA3-AC5-GPRS (America, GPRS compatible) • P/N: 1100625 UHF-CA3-AC5-XMOD (America, no GPRS) • P/N: 1100645
Description	RFID module HF-T2-G2 P/N: 1051310 Tagsys RFID Module	UHF integrated RFID Module with linear polarization antenna (read horizontal dipole tags), PDA form factor, CAEN RFID Module inside, with Indy R100 technology®	UHF integrated RFID Module with linear polarization antenna (read horizontal dipole tags), PDA form factor, CAEN RFID Module inside, with Indy R100 technology®
Frequency	13.56 MHz	Multi-regional programmable UHF Frequency	Multi-regional programmable UHF Frequency
Output Power	250 mW	0 to 500mW (27dBm) Power step control: 10mW, 25mW, 50mW, 100mW, 200mW, 300mW, 400mW, 500mW	0 to 500mW (27dBm) Power step control: 10mW, 25mW, 50mW, 100mW, 200mW, 300mW, 400mW, 500mW
Power Supply	5v	5v	5v
Consumption	RF on 200mA, RF off 40mA	Max 1000mA	Max 1000mA
Docking Port	USB serial link	Serial link on the 100 pins expansion interface	GPRS version: top USB connector Xmod version: Serial link on the 100 pins expansion interface
Packaging	Multipurpose end cap with GSM shroud	Multipurpose end cap	Extended back plate
Antenna	Integrated, horizontal	Integrated, linear polarization	Integrated, circular polarization
Tag Protocol	TAGSYS®, ISO 15693, ISO 18000-3	ISO 18000-6C, EPC Class1 Gen 2	ISO 18000-6C, EPC Class1 Gen 2
Tag Type	C210, C240, C270, C320, Tag-it™, I-Code®, ISO 15693 tags	EPC C1G2 compliant tags	EPC C1G2 compliant tags
Data Encryption		Support of Fujitsu and Hitachi security commands	Support of Fujitsu and Hitachi security commands
Expansion Slots	Xmod 100 pin expansion connector Scanner connector One Type II CF card slot	• One SD/MMC memory card slot – user accessible • Flex cable interface with robust connector: supports POD scanner (serial) and POD imager (USB) modules (except for the end cap scanner and imager) • One Type II CF card slot	• One SD/MMC memory card slot – user accessible • No POD options • GPRS version: 1D end cap scanner • Xmod version: No end cap scanner • One Type II CF card slot
Examples of Reading and Writing Performances	• ISO format / ISO 15693: up to 103 mm • ISO format / ISO 15693: up to 84 mm • 30 mm token / ISO 15693: up to 50 mm • 50 mm token / ISO 15693: up to 72 mm	• Dogbone Monza® 4 93 x 23 mm: up to 250 cm • Squiggle Alien®: up to 275 cm	• Dogbone Monza® 4 93 x 23 mm: up to 250 cm • Squiggle Alien®: up to 300 cm
Application Software	• RFID demo software to read and write tags • RFID Wedge to emulate a bar code scanner	• RFID demo software to read and write tags • RFID Wedge to emulate a bar code scanner	• RFID demo software to read and write tags • RFID Wedge to emulate a bar code scanner