ecom instruments
mobile experts

i.roc x20 (-Ex) Pocket PC

Technical Description

Light, Ergonomic And Robust – Optimised For High Productivity

The ***ecom i.roc*** x20 (-Ex) is a high performance industrial PDA based on Windows Mobile™, with compact external dimensions, an integrated WLAN, USB, Bluetooth™ and an IrDa port.

Picture: ***i.roc*** 620 -Ex

Trend-setting success

The success of our industrial PDA ***i.roc*** x20 is an excellent example of how the use of mobile solutions can help optimise profitability and efficiency of your company. Whatever the size and type of business, there exists opportunities to further optimise production flow and data transfer. Customised and wisely applied mobile information technology can detect and utilise these opportunities, thereby helping to make the company more profitable. For process controlling this means continual identification and diagnosing of faults in order to make the correct decision for production flow. At management level, intelligent information systems can prevent the occurrences of standstill and waste, improve production performance and therefore help guide the company to higher efficiencies.

Application of state-of-the-art technology

The XScale processor, the operator interface featuring different Windows mobile operating systems, the impact resistant TFT display with touchscreen function and the extensive range of equipment and accessories all got to make the ***i.roc*** the perfect tool. The ***i.roc*** product concept is truly impressive, with its innovative power and flexibility allowing the early adoption and application of new ways of working in hazardous areas. The long term product strategy with HP further guarantees investment security for our clients.

Versatility by flexibility

ecom instruments already provide customised and flexible solutions for mobile applications in a variety of industries in co-operation with partners such as HP, Deister electronics, microsensys and Barcodat.
If you have a requirement for a tailored solution - please contact us.

Non-incendive PDA ***i.roc*** 520 -Ex
while process visualising

Concept

Many PDAs provide the possibility to integrate barcode scanners or RFID reading devices via CF card slot.
The ***i.roc*** x20 features the considerably more flexible way of integrating modules by interface into an individually designed casing. The dustproof and water-proof casing, consisting of three parts, facilitates customised hardware.

Active and passive RFID Tags

Especially when using RFID the customer and his application finally decide which kind of frequency, tags and reading devices are used. In cooperation with solution partners ecom instruments has developed optimised RFID modules especially for mobile applications. These guarantee the highest level of flexibility and freedom of decision.

Possible applications

• Visualising of processes	• Logistics
• Water treatment	• Management Information System
• Maintenance	• Mobile internet access
• Quality assurance	• Commissioning
• Service sector	• BOS

i.roc *620 -Ex with DS x10*

2D barcode imager

All common linear bar codes as well as 2D codes with high amounts of data and integrated security features, such as Aztec or DataMatrix, can be read directly. Complete labels can easily and rapidly be scanned using the integrated CMOS camera. According to the needs and requirements of the client also other reading systems, like classic laser scanners, can be applied.

Interfaces

With the demand for efficiency of production and logistics, it is essential that high quality radio transmission solutions are available. The ***i.roc*** x20 provides adaptability, so that the latest technology can be applied. Depending on individual requirements, different ways of communication can be selected on the ***i.roc*** x20. Online access can allow direct access into the company. Both WLAN and Bluetooth interfaces are integrated as standard, allowing serial point to point connections or network access.

Highlights

- ruggedised, IP 65
- flexibly applicable
- extensive equipment
- individual solutions for customers (even for low quantity requirements)
- integrated WLAN and Bluetooth
- handwriting recognition
- one-hand operation
- open system platform for easy integration

Handwriting recognition for verification of data

Bluetooth connection for data transfer

Radio transmission techniques like WLAN allow wireless control as well as working from a distance

i.roc 420 in landscape mode with optional RFID module

Overview

Three model types, 420, non-incendive 520 -Ex and intrinsically safe 620 -Ex with Ex certifications available

Based on HP iPAQ technology

Available operating systems are Windows Mobile 2003 SE, compatible to WM 2003 PE or Microsoft Windows Mobile 5, using state-of-the-art Microsoft technology for future projects

Onboard WLAN (802.11b) chip with a range of up to 300m (985'), enable access to data wherever and whenever. IEEE 801.1x compliant, WEP, TKIP, PSK, Cisco Leap, WPA, WPA2 (Funk Odyseey Client), DSSS modulation type, country specific use of frequency bands between 2.400 GHz and 2.497 GHz, 100 mW TX power, WECA Wi-Fi, UL, CSA, ANATEL, CE specified

Integrated Bluetooth class II chip (1 mW TX power) with a range up to 10m (33'). Supports the most common Bluetoothprofiles like ActiveSync, A2DP(Advanced Audio Distribution Profile), AVRCP(Audio Video Remote Control Profile), BIP (Basic Imaging Profile),BPP(Basic Printer Profile), DUN(Dial-Up Networking), FTP(File Transfer Protocol), GAP(Generic Access Profile), HFP(Hands Free Profile), HCRP(Hard Copy Replacement Profile), HSP(Headset Support Profile), HQA(High Quality Audio), HID(Human Interface Device Profile), LAP(LAN Access Profile), OBEX(Object Exchange Profile), OPP(Object Push Profile), PAN(Personal Area Network), SPP(Serial Port Profile), SDAP(Service Discovery Application Profile)

Software package included, AutoInstall, Pre-Config Tool, AutoBackup/Restore with System monitoring, Kiosk mode, virtual fullscreen keyboard

Program other infrared enabled devices using IrDA / SIR / FIR with up to 4Mbit/sec

Highspeed USB 2.0 connection to a standard desktop PC via Dockingstation DS x10

Internal serial RS232 interface for connecting optional read/write modules or communication modems

RFID read / write modules for different frequencies like 125 kHz / 134 kHz / 13.56 MHz

Modules for collecting barcodes using 1D Barcode Laser or 2D Barcode Imager

Development of customer specific modules

Barcode-modules

Two main types of barcode reading devices are available. There are laser scanners that record the barcode by means of a reading line. This is more than sufficient for one-dimensional codes, since one line contains all information. After the introduction of two-dimensional codes the laser scanners were improved in a way in which deflection mirrors create a second scan line that is generated at a certain angle.

This way it is possible to read stacked two-dimensional codes. The second type of device is called an „area imager". Integrated picture record modules record the barcode as if taking a photo. Then software algorithms are applied to find the barcode area within the picture, to recognise type and turning position and finally to identify the bar code. This makes it possible to read matrix codes as well.

The automatic recording and implementing of data to a wide range of concepts is of increasing importance. It is demanded to store as much data as possible in a space as small as possible. In addition it must be possible to read and process this data reliably.

Nowadays there are approximately 30 symbologies on the market. The optional integrable CMOS Barcode Imager BCx10-Ex fitted to the i.roc x10 can read all common barcodes, such as ID linear codes, 2D stacked /matrix codes, OCR fonts, postal codes. This module comprises an omni-directional (360°) scanning range and a double coloured „aimer" that marks the scanning area.

Example: check of goods issue

Application of the industrial PDA`s ***i.roc*** 420 in a shipping department.

Technical data BC x10 -Ex imager:

readable bar codes:	
2D:	PDF417, MicroPDF417, MaxiCode, Data Matrix,QR Code, Aztec, Aztec Mesas, Code 49, EANUCC Composite
Linear:	Code 39, Code 128, Codabar, UPC, EAN, Interleaved 2 of 5, Reduced Space Symbology, Code 93, Codablock F
Postal:	Postnet, Planet Code, British, Canadian, Japanese, KIX (Netherlands)
OCR Fonts:	OCR-A and OCR-B
Focus:	178 mm (7") from front panel (nominal)
Scan area:	360°
Viewing angle:	±40°
Surround light:	535 lux - 100.000 lux (49' cd - 9292' cd)

Technical data BC x10 -Ex laserscanner:

readable bar codes:	UPC/EAN, Code 128, Code 39, Code 93, I 2 of 5, Discrete 2 of 5, Codabar,MSI Plessey
Focus:	min. 30 mm (1.18"), max 760mm (29.92")
Light Source:	Visible Laser Diode 650 nm
Scan Angle:	53° (typical)
Scan Patterns:	Linear
Scan Rate:	39 (± 3) scans/sec (bi-directional)
Ambient Light:	4844 lux - 107640 lux (450' cd - 10000' cd)
Laser Classification:	CDRH/IEC Class 2

Read/Write Modules

Flexible in application and robust, RFID write/read systems provide for quick and reliable identification of objects at various distances.

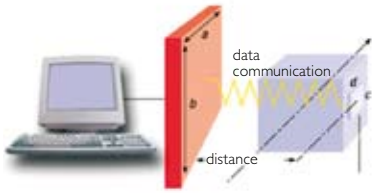
Primarily developed for application in production, commerce and logistics, the user memory has up to 2kb, depending on the type of transponder, which allows for the recording of information relating to the product to be stored without having to be connected to an external database.

Wherever the mobile storage of data is required, e.g. for object identification, service or storage management, the RFID module is the ideal solution.

- Integration into already existing systems is possible.
- relatively wide reading-range
- anti-collision, logging by more than one transponder in the field
- software updates possible

Basics of RFID technology

RWU
(Read/Write/Unit)



Radio Frequency IDentification (RFID) comprises wireless data transfer on the physical basis of electro-magnetic alternating fields. A RFID system consists of a transponder and a mobile or stationary write/read unit with antenna.

Transponders feature a micro chip and a coil/antenna in different casings (plastics, glass, coins, key holders, smart label) and work within different frequency ranges. With regard to power supply transponders are distinguished as:

- active
  (with battery for own power supply)
- passive
  (power supply for data transfer inductive from write/read unit)

During field operation
while inspecting system parts.

Technical data: RF x10 -Ex (13.56 MHz)

Operation frequency:	13.56 MHz
Write/Read range:	up to 80 mm (3.14”), depending on transponder type and environment
Speed of data transmissioin:	about 26 kB/sec.
Writing transponder:	< 50 ms per block
Reading transponder:	< 50 ms per block
Transponder types:	ISO 15693, Tag-It, I-CODE, EM, SLI, HFI, LRI and Infineon

Technical data: RF x11 -Ex (125 KHz)

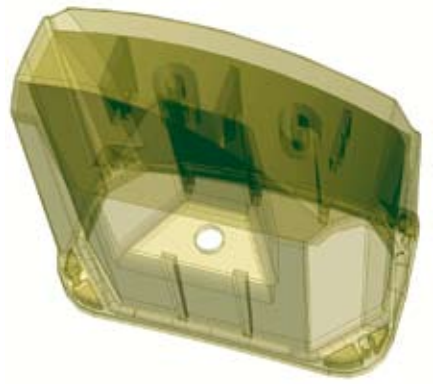
Operation frequency:	125 KHz (134 KHz on request)
Write/Read range:	up to 80 mm, (3.14”) depending on transponder
Transponder types:	UNIQUE, HITAG-1, HITAG-S, TIRIS, EM 4X25, EM 4X70, Q5 (other types on request)
Special features:	Software loader for firmware update provides highest flexibility for customer applications

Client specific solutions

Today it is more important than ever that there is a flexible approach to meeting client requirements.

ecom instruments offers this flexibility for clients projects - large or small. Not all projects require a high number of units and need only an individual and customised solution. Small challenging solutions in particular demand dedicated application. On this and the following pages we showcase the versatility of the ***i.roc's*** x20 by the way of client projects that have already been achieved. Many of these solutions are now part of our standard portfolio.

Contact us. We are more than willing to give you further information in a personal conversation.



868 MHz radio module
Here, one of the main problems was the installation of an omni- directional rod antenna. In addition, it was interesting that the radio module that was to be used, was bigger than a certain mechanical size, which made it impossible to fall back on the previous solution. Finally, the project was realised by the vertical installation of the blanks and the mechanical protection of the antenna. In addition, the radio module was of a size and dimensions that meant it was neccessary to re-design the casing.

CAD production drawing

Non-Ex: Class 1 Bluetooth Module
High scope if a radio contact is used, global use without national restrictions as with WLAN 802.11b, total robustness and interference resistance, combined with a PDA that is easy to use – that was the profile of demand when the project was started. All this was put into practicse by the way of installation of a Class 1 Bluetooth radio module. The Bluetooth interface still is one of the most secure radio contacts, it can be switched to „invisibility"-mode and cannot be „seen" by anyone anymore and changes the frequency 1600 times per second in the 2.4 GHz band, which is approved all over the world.

MCT202 - HART®/DE Modem
ecom instruments developed for Honeywell the intrinsically safe Configuration and Maintenance Tool for HART® or DE protocol enabled pressure or temperature transmitters. Comprising of the industrial PDA PC ***i.roc*** 627 complete with integrated HART®/DE Modem and software applications MC Toolkit and SDC 625.

Variety via flexibility
This is only a selection of options that have already been realised. Also for you and your application ***ecom instruments*** can be the flexible partner for the realisation of such a solution.

Note:
Some of the solutions that have been presented on this site and solutions given have not been developed for hazardous locations. For application in hazardous locations only those modules with the designation „Ex" in the title (for example BC x10 -Ex) are allowed to be used.

Accessories

The extensive range of accessories (leather carry case, hand strap, USB data transfer set, car holder, additional batteries, charging cable, etc.) further enhances the application and use of the i.roc.

Here is just a selection of accessories currently available. If you have a specific requirement - please contact us.

Leather bag with belt loop and carrying strap

The leather bag combines carrying comfort and easy handling.

Handle

Ergonomically sound handling using the screw-on type handle broadens the possibilities of functions and applications.

Charging adapter for vehicles

The i.roc can also be recharged in cars using the charging adapter LGx10 car.

Hand strap

This hand strap reduces handling fatigue and helps prevent accidental dropping.

Dockingstation

The docking station DS x10 can be used to charge the devices internal battery pack as well as synchronise data with a desktop PC connected via USB. Depending on custom configuration, when inserting the ***i.roc*** x20, a synchronisation software, like Microsoft Active Sync, will run automatically.

Leather carry case with carrying strap and stylus

Especially made for use with the ***i.roc*** series, this leather carry case further expands and enhances the usage of the i.roc. While providing much higher impact protection as well as comfortable carrying, its flexible design means that it is also suitable for i.roc units that are fitted with either RFID or Barcode modules.

Display-protection

This special antistatic display protection film consists on a relativ soft material. The writing sense reminds like to pens on a paper. The soft material of the film protects the surface from scratches. They can easily be removed and cleaned and reused several times.

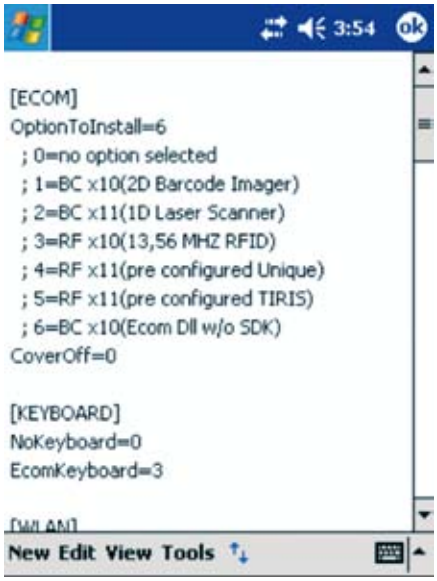
Software

ecom Tools

To set up the i.roc x20 series exactly to customers specifications, ecom instruments developed some smart software applications and tools. The functions described on these pages are principially available on every i.roc x20. Projects or customer specific programms can be realised easily and quickly.

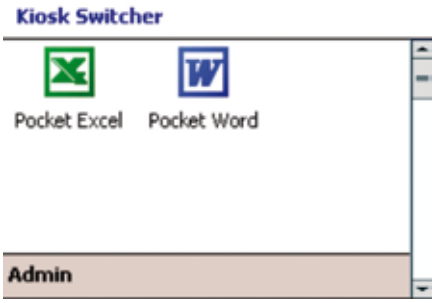
ecom Edit

With the help of this tool the end-user is able to configure the PDA. With "AutoInstall" and the "SystemBackup", the new configuration will be loaded after next hardreset.The parameters are devided into several chapters like WLAN, Bluetooth, Power, Storage, Keyboard and others. The configuration file can be also modified on the desktop computer before distributing to your mobile devices. This allows an easy way to configure a large amount of devices within a project.



KioskMode

One of the favorite applications for Pocket PC is to allow only the use of predefined programs - This functionality is called Kiosk Mode. The tool KioskSwitcher which can be used on every i.roc x20 allows it to set up nearly every custom application in such a Kiosk Mode.

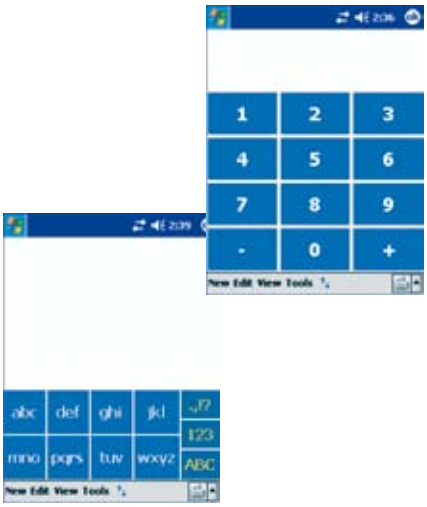


AutoInstall

One of the best ways to back up and restore all the information you wish to keep on your mobile device. It is safe, easy to install, simple to use and it's developed exactly for the i.roc x20 series efforts. System Super Visors can choose between using an AutoInstall or SystemBackup function , together these two applications fullfill every customers wish to preconfigure

Keyboards

Especially for PDAs for industrial use a reliable and easy method of recording data is required. Responding to these requirements **ecom instruments** decided to take a new road – with virtual full-screen keyboards.



Worn and dirty keypads, ingress of dust and contaminants and a lack of keypad illumination are now no longer a problem.

- three different layouts (numeric, alpha, special) available
- fast-switch key

Perfectly designed for data input while wearing gloves.

Technical Data

Processor
Intel XScale® PXA 270 Processor (520 MHz)

RAM
64 MB SDRAM

ROM
Flash ROM 128 MB (depending on operating system language up to 80 MB user accessable iPAQ File Store) , built-in SD card slot, (fitted with standard 1 GB SD card), build in CF card slot

Display
3.5" transreflective TFT color display, 64k, QVGA, 240 x 320 pixel, portrait and landscape mode, protected by a Makrolon panel

Audio
Integrated microphone and loudspeaker,
internal 3.5mm Stereo audio jacket

Power supply
Rechargeable lithium-ion battery, different capacities depending on model type (i.roc 420: 2880 mAh; i.roc 520 -Ex: 2880 mAh; i.roc 620 -Ex: 3600 mAh)
Note: The battery's service life depends on the user's operating habits and the PDA's configuration. The use of radio modules and background lighting significantly reduces operating time (larger batteries available on request).

Charger
LG x10 (Input: 100~240 VAC, 50/60 Hz, 0.3 A,
Output: 5VDC (typical), 2A (typical)
different country plugs available

Keyboard
On/off – switch, reset keys, 5 programmable function keys, 5-way navigation field (customised design on request)

Housing
Protection class IP 65 (immersion for brief periods), antistatic non-corroding housing, shock resistance 1m (3.28') onto concrete

Dimensions

L x W x D:	
420	178 x 85 (89) x 39 (49) mm 7" x 3.3" (3.5") x 1.5" (1.9")
520 -Ex	178 x 85 (89) x 39 (49) mm 7" x 3.3" (3.5") x 1.5" (1.9")
620 -Ex	178 x 85 (89) x 39 (49) mm 7" x 3.3" (3.5") x 1.5" (1.9")

Weight

420:	approx. 550 grams (19.4 oz)
520 -Ex:	approx. 550 grams (19.4 oz)
620 -Ex:	approx. 700 grams (24.6 oz)

Temperature ranges

Storage temp.:	-10°C ..... +60°C (14°F ..... 140°F)
Charging temp.:	0°C ..... +45°C (32°F ..... 113°F)
Working temp. 42x:	-10°C ..... +60°C (14°F ..... 140°F)
Working temp. 52x -Ex:	-10°C ..... +50°C (14°F ..... 122°F)
Working temp. 62x -Ex:	-10°C ..... +50°C (14°F ..... 122°F)

Relative humidity
Storage up to 90% r.h.
Operation up to 90% r.h.

Maximum altitude
Storage up to 12,192 m (40,000 ft)
Operation up to 4,572 m (15,000 ft)

Ex-data device types

***i.roc* 620 -Ex**
ATEX Zone 1 / 21
Ⓔx II 2 G EEx ia IIC T4
Ⓔx II 2 D T99°C IP 65

***i.roc* 520 -Ex**
ATEX Zone 2 / 22
Ⓔx II 3 G EEx nL IIC T4
Ⓔx II 3 D T99°C IP 65

***i.roc* 623 -Ex**
ATEX Mining
Ⓔx I M1 EEx ia I
$-10°C \leq T_a \leq +50°C$

***i.roc* 627 -Ex**
FM Class I, Division 1, Group A-D
FM APPROVED
(Certification 620 -Ex included)

***i.roc* 527 -Ex**
FM Class I, Division 2, Group A-D
FM APPROVED
(Certification 520 -Ex included)

***i.roc* 420**
Ruggedized Industrial PDA

ecom instruments

mobile experts

Mobile solutions for Ex-treme tasks

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