Short and Long Range Solutions
Wireless Technologies.
Wireless Technology portfolio

Rutronik has recently established its Wireless Competence Centre, based in Sweden, to consolidate Paneuropean support for wireless customers to include both commercial and technical support, application development and development tools. We can offer a wide range of both short and long distance wireless solutions from world leading suppliers.

Together with the wireless core products Rutronik can also offer a comprehensive range of accessories like antennas, SIM card holders, system connectors and adaptor cables.

Our main suppliers

<table>
<thead>
<tr>
<th>RFID</th>
<th>ISM/SRD</th>
<th>ZigBee</th>
<th>Bluetooth</th>
<th>WLAN</th>
<th>GSM</th>
<th>GPS</th>
<th>Accessories</th>
<th>Others</th>
</tr>
</thead>
</table>

Please note, there are limitations for franchised product lines in some European countries.
For more information, please contact our sales team.
RFID

Passive RFID Reader ICs
CR14/CRIX14 – Low Cost ISO14443 type-B Contactless Coupler Chip with Anti-Collision and CRC Management

- Single 5 V ±500 mV Supply Voltage
- SO16N package
- I2C Communication
  - Two Wire I2C Serial Interface
  - Supports 400 kHz Protocol
  - 3 Chip Enable Pins
  - Up to 8 CR14 Connected on the Same Bus

Contactless Communication
- ISO14443 type-B protocol
- 13.56 MHz Carrier Frequency using an External Oscillator
- 106 Kbit/s Data Rate
- 36 Byte Input/Output Frame Register
- Supports Frame Answer with/without SOF/EOF
- CRC Generation and Check
- Autom. ST Anti-Collision Exchange

Passive RFID Transponder ICs and Inlays

<table>
<thead>
<tr>
<th>Product</th>
<th>Working distance</th>
<th>Size</th>
<th>Package type</th>
<th>Codification</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR164</td>
<td>0 – 100 cm</td>
<td>45 x 75 mm</td>
<td>Copper antenna</td>
<td>A1</td>
</tr>
<tr>
<td>LR12K</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRIX4K</td>
<td>0 – 20 cm</td>
<td>38 x 38 mm</td>
<td>Copper antenna</td>
<td>A3</td>
</tr>
<tr>
<td>SRIX512</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRIX76</td>
<td>0 – 20 cm</td>
<td>15 x 15 mm</td>
<td>Copper antenna</td>
<td>A4</td>
</tr>
<tr>
<td>SRIX4k</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRIX512</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRIX76</td>
<td>0 – 20 cm</td>
<td>42 x 65 mm</td>
<td>Copper antenna</td>
<td>A5</td>
</tr>
<tr>
<td>SRIX4k</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRIX512</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRI512</td>
<td>0 – 100 cm</td>
<td>ø 35 mm</td>
<td>Copper antenna</td>
<td>A6</td>
</tr>
<tr>
<td>LRI64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRI12K</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRI64</td>
<td>0 – 100 cm</td>
<td>20 x 40 mm</td>
<td>Copper antenna</td>
<td>A7</td>
</tr>
<tr>
<td>LRI12K</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LRI64</td>
<td>0 – 100 cm</td>
<td>28 x 28 mm</td>
<td>Golden Copper Module</td>
<td>C40</td>
</tr>
<tr>
<td>XRA00</td>
<td>1 – 10 m</td>
<td>Wafer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRAG2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DEMOKITCRX14

This DEMOKIT is an easy to use hardware and software bundle to test different reader-chips and different tags. The kit contains all datasheets, application notes, two test boards with integrated antennas and a big choice of inlays with different mechanical-sizes and different memory-sizes. Use the contained software to program the inlays by your own and test the range of functionality.

13.56 MHz (HF, ISO 14443b, ISO 15693) and 900 MHz (UHF, EPCglobal) standard transponders
SR = Short Range (ISO 14443), LR = Long Range (ISO 15693), XR = eXtended Range (ePCglobal) 900 MHz band
**RFID**

**Active RFID**
- Operates in the 2.4 GHz ISM band
- Tag with controller, RF transceiver and battery
- Addresses up to 200 tags per second
- Unique ID for each tag + 20 characters editable
- Up to 50 m range, all directions, with standard antenna
- Tag battery life time up to several years
- Communicates via RS232, RS422, Bluetooth, LAN, WLAN
- Tag available with temperature sensor (optional)
- Customizing of tags possible
- Start kit available

**ISM/SRD**

**RFW3M / RFW8M**
- High Data rate – up to 3 Mbps / 8 Mbps
- Frequency agility – supports 7 / 5 different operating channels, each channel utilizes DSSS with a unique spreading code
- Operating frequency: 2.4 GHz – world-wide unlicensed band

**RFW3M-PA**
- Designed for extended range wireless communication in the 2.4 GHz – world-wide license free ISM band
- High Data rate – up to 3 Mbps
- Frequency agility – supports 5 different operating channels, each channel utilizes DSSS, with a unique spreading code

**RFW122-M**
- Ultra low power RF transceiver
- Operating frequency: 2.4 GHz – world-wide unlicensed band
- Data rate – up to 1 Mb per second

**RFW122-M-PA**
- Enhanced range RF transceiver – up to 40 meters indoors communication range
- Operating frequency: 2.4 GHz – world-wide unlicensed band
- Data rate – up to 1 Mb per second

**RFW-D100**
- Simple to operate link manager
- Provides parallel interface to the MCU
- Input/output FIFO’s

**RFW-NC**
- Designed especially for low end applications – ultra low cost, easy & convenient integration into applications, small outline
- Data rate of up to 1 Mbps
- Frequency agility – supports 5 different operating channels
- Operating frequency: 2.4GHz - world wide unlicensed band

**Active RFID**
- Operates in the 2.4 GHz ISM band
- Tag with controller, RF transceiver and battery
- Addresses up to 200 tags per second
- Unique ID for each tag + 20 characters editable
- Up to 50 m range, all directions, with standard antenna

**ISM/SRD**

**RFW3M / RFW8M**
- High Data rate – up to 3 Mbps / 8 Mbps
- Frequency agility – supports 7 / 5 different operating channels, each channel utilizes DSSS with a unique spreading code
- Operating frequency: 2.4 GHz – world-wide unlicensed band

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- Designed for extended range wireless communication in the 2.4 GHz – world-wide license free ISM band
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**RFW122-M**
- Ultra low power RF transceiver
- Operating frequency: 2.4 GHz – world-wide unlicensed band
- Data rate – up to 1 Mb per second

**RFW122-M-PA**
- Enhanced range RF transceiver – up to 40 meters indoors communication range
- Operating frequency: 2.4 GHz – world-wide unlicensed band
- Data rate – up to 1 Mb per second

**RFW-D100**
- Simple to operate link manager
- Provides parallel interface to the MCU
- Input/output FIFO’s

**RFW-NC**
- Designed especially for low end applications – ultra low cost, easy & convenient integration into applications, small outline
- Data rate of up to 1 Mbps
- Frequency agility – supports 5 different operating channels
- Operating frequency: 2.4GHz - world wide unlicensed band
**ISM/SRD**

*Few external components gives low system cost and small size*

- Made for high volume production
- FSK or GFSK modulation for efficient and reliable communication
- Low voltage operation and extensive power down features

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
<th>Package</th>
<th>Physical peripherals</th>
</tr>
</thead>
<tbody>
<tr>
<td>nRF24L01</td>
<td>2.4GHz Transceiver</td>
<td>QFN20 (4x4mm)</td>
<td>Enhanced ShockBurst, MultiCeiver, Link Layer Protocol.</td>
</tr>
<tr>
<td>nRF24AP1</td>
<td>2.4GHz Transceiver with protocol</td>
<td>QFN24 (5x5mm)</td>
<td>Embedded ANT protocol for personal area networks (PAN), UART or Synch serial port</td>
</tr>
<tr>
<td>nRF24Z1</td>
<td>2.4GHz audio streaming Transceiver</td>
<td>QFN36 (6x6mm)</td>
<td>I2S, SPI, QoS, 4Mbit/s transceiver</td>
</tr>
<tr>
<td>nRF9E5</td>
<td>433/868/915MHz Transceiver</td>
<td>QFN32 (5x5mm)</td>
<td>8051 4 ch ADC, ShockBurst, voltage regulators</td>
</tr>
<tr>
<td>nRF905</td>
<td>433/868/915MHz Transceiver</td>
<td>QFN32 (5x5mm)</td>
<td>ShockBurst, voltage regulators</td>
</tr>
<tr>
<td>nRF24E1G</td>
<td>2.4 GHz Transceiver</td>
<td>QFN36 (6x6mm)</td>
<td>8051MCU, 9 ch ADC, PWM, ShockBurst, Duociever, voltage regulators</td>
</tr>
<tr>
<td>nRF24E2G</td>
<td>2.4 GHz Transmitter</td>
<td>QFN36 (6x6mm)</td>
<td>8051MCU, 9 ch ADC, PWM, ShockBurst, Duociever, voltage regulators</td>
</tr>
<tr>
<td>nRF24O2G</td>
<td>2.4GHz Transmitter</td>
<td>QFN16 (4x4mm)</td>
<td>ShockBurst</td>
</tr>
<tr>
<td>nRF24O1AG</td>
<td>2.4GHz Transceiver</td>
<td>QFN24 (5x5mm)</td>
<td>ShockBurst, Duociever</td>
</tr>
</tbody>
</table>

**Development Tools**

For each part are Evaluation Kit's available. In all Kit's is a full functional system included, so you are able to build at minimum a point to point wireless Link.

<table>
<thead>
<tr>
<th>Partnumber</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>nRF24L01-EVKIT</td>
<td>2x carrierboards + 3 nRF24L01 (2 PCB + 1 SMA) modules + 2MCU modules w/USB+CD</td>
</tr>
<tr>
<td>nRF24L01-MODULE-PCB</td>
<td>1x nRF24L01 module with PCB antenna</td>
</tr>
<tr>
<td>nRF24L01-MODULE-SMA</td>
<td>1x nRF24L01 module with SMA connector</td>
</tr>
<tr>
<td>nRF24AP1-EVKIT</td>
<td>2x carrierboards +4x nRF24AP1 modules. + SW</td>
</tr>
<tr>
<td>nRF24E1-EVKIT</td>
<td>2x nRF24E1 boards + USB config boards + SW + antennas</td>
</tr>
<tr>
<td>nRF9E5-EVKIT-433</td>
<td>2x nRF9E5 boards + 2x USB config boards + SW + antenna for 433MHz operation</td>
</tr>
<tr>
<td>nRF9E5-EVKIT-868/915</td>
<td>2x nRF9E5 boards + 2x USB config boards + SW + 2 antennas for 868/915MHz operation</td>
</tr>
<tr>
<td>nRF905-EVKIT-433</td>
<td>2x nRF905 boards + 2 USB boards + 2 antennas + SW for 433MHz operation</td>
</tr>
<tr>
<td>nRF905-EVKIT-868/915</td>
<td>2x nRF905 boards + 2 USB boards + 2 antennas + SW for 868/915MHz operation</td>
</tr>
<tr>
<td>nRF24E1-EVKIT</td>
<td>2x nRF24E1 boards + 2 USB config boards + SW + 2 antennas</td>
</tr>
</tbody>
</table>
### ISM/SRD

<table>
<thead>
<tr>
<th>Function</th>
<th>Part number</th>
<th>Frequency (MHz)</th>
<th>P out (dBm)</th>
<th>Data rate (kbps)</th>
<th>Supply voltage (V)</th>
<th>Temperature (°C)</th>
<th>Other features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitter</td>
<td>TDK5100</td>
<td>433–435/868–870</td>
<td>5/2</td>
<td>20</td>
<td>2.1...4.0</td>
<td>–40...+125</td>
<td>Low power</td>
</tr>
<tr>
<td></td>
<td>TDK5100F</td>
<td>433–435</td>
<td>5</td>
<td>20</td>
<td>2.1...4.0</td>
<td>–40...+125</td>
<td>10 pin</td>
</tr>
<tr>
<td></td>
<td>TDK5110</td>
<td>433–435</td>
<td>10</td>
<td>20</td>
<td>2.1...4.0</td>
<td>–40...+125</td>
<td>Low power</td>
</tr>
<tr>
<td></td>
<td>TDK5110F</td>
<td>433–435</td>
<td>10</td>
<td>20</td>
<td>2.1...4.0</td>
<td>–40...+125</td>
<td>10 pin</td>
</tr>
<tr>
<td></td>
<td>TDK5116F</td>
<td>866-870 MHz</td>
<td>10</td>
<td>20</td>
<td>2.1...4.0</td>
<td>–40...+125</td>
<td>Low Power</td>
</tr>
<tr>
<td>Receiver</td>
<td>TDA5200</td>
<td>433–435/868–870</td>
<td>–</td>
<td>4</td>
<td>5</td>
<td>–40...+125</td>
<td>Low power</td>
</tr>
<tr>
<td></td>
<td>TDA5210</td>
<td>400–440/810–870</td>
<td>–</td>
<td>100</td>
<td>5</td>
<td>–40...+125</td>
<td>Low power</td>
</tr>
<tr>
<td></td>
<td>TDA5220</td>
<td>400–440/810–870</td>
<td>–</td>
<td>4</td>
<td>5</td>
<td>–40...+125</td>
<td>Low power</td>
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<tr>
<td></td>
<td>TDA5230</td>
<td>300-320/433-450/ 866-870</td>
<td>–</td>
<td>20</td>
<td>3...5.5</td>
<td>–40...+105</td>
<td>SmartLEWIS</td>
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<tr>
<td>Transceiver</td>
<td>TDA5255</td>
<td>433–435</td>
<td>13</td>
<td>100</td>
<td>2.1...5.0</td>
<td>–40...+125</td>
<td>Low power</td>
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<tr>
<td></td>
<td>TDA5250</td>
<td>868–870</td>
<td>13</td>
<td>64</td>
<td>2.1...5.0</td>
<td>–40...+125</td>
<td>Low power</td>
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</table>

### Microchip

<table>
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<tr>
<th>Function</th>
<th>Part number</th>
<th>Frequency (MHz)</th>
<th>P out (dBm)</th>
<th>Data rate (kbps)</th>
<th>Supply voltage (V)</th>
<th>Temperature (°C)</th>
<th>Other features</th>
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<tbody>
<tr>
<td>Receiver</td>
<td>rfRXD0420</td>
<td>300–450</td>
<td>–</td>
<td>80</td>
<td>2.5...5.5</td>
<td>–40...+85</td>
<td></td>
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<tr>
<td></td>
<td>rfRXD0920</td>
<td>800–930</td>
<td>–</td>
<td>80</td>
<td>2.5...5.5</td>
<td>–40...+85</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Part number</th>
<th>Frequency (MHz)</th>
<th>P out (dBM)</th>
<th>Data rate (kbps)</th>
<th>Supply voltage (V)</th>
<th>Temperature (°C)</th>
<th>Program Memory bytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCU/Transmitter</td>
<td>rfPIC12F675F</td>
<td>380–450</td>
<td>10</td>
<td>40</td>
<td>2.0...5.5</td>
<td>–40...+125</td>
<td>1792</td>
</tr>
<tr>
<td></td>
<td>rfPIC12F675H</td>
<td>850–930</td>
<td>10</td>
<td>40</td>
<td>2.0...5.5</td>
<td>–40...+125</td>
<td>1792</td>
</tr>
</tbody>
</table>

Development/Evaluation kits are available for all products.

### ZigBee™

- **Star** networks support a single ZigBee™ coordinator with one or more ZigBee™ End Devices (up to 65,536 in theory)
- **Cluster tree** networks provide for a beaconing multi-hop network
  - Permits battery management of coordinator and routers
  - Must tolerate high latency due to beacon collision avoidance
- **Mesh** network routing permits path formation from any source device to any destination device
  - Radio receivers on coordinator and routers must be on at all times

- ZigBee™ Coordinator (Controller)
- ZigBee™ Full Function Device (Router)
- ZigBee™ Reduced Function Device (End Device)
ZigBee™

PICDEM Z
The PICDEM Z Demo Kit is designed to demonstrate the Microchip solution for the ZigBee™ protocol by using Microchip’s very own MRF24J40 transceiver. Included are two ZigBee nodes – each preprogrammed with demo Coordinator and Reduced Function Device (RFD) applications.

ZENA™
ZENA™ wireless network analyzer tool uses a simple graphical interface to configure the free Microchip ZigBee™ and MiWi™ protocol stacks. This enables customers to reduce the code size of the stacks by removing optional features; cuts development time by simplifying the interactions with the stacks; and allows customization of the stack to fit a particular need.

FREE Software Stack (no-cost license and royalty free)
Microchip offers the smallest and only free ZigBee™ Stack, enabling lower development and system costs.
- Zero-cost-license and royalty-free ZigBee™ protocol stack
- Efficient footprint for entire ZigBee™ protocol
- Source-code format, allowing designers to customize their products
- Utilize Microchip’s broad portfolio of compatible PIC® microcontrollers

MiWi™
Microchip also supports a free MiWi™ protocol stack for IEEE 802.15.4 wireless networking ideal for cost-sensitive applications with limited memory. MiWi™ protocol is a free, small footprint protocol developed by Microchip for customers who do not require ZigBee™ protocol interoperability but want to use IEEE 802.15.4 transceivers in simple low-cost peer-to-peer, star and mesh networks. No certification is required and the protocol stack is provided under a free license when using Microchip’s microcontrollers and MRF24J40 transceiver.

MRF24J40 2.4 GHz transceiver
Complete IEEE 802.15.4 (ZigBee™) solution
- Complete IEEE 802.15.4 radio
- Supports ZigBee™ and MiWi™ protocols
- Simple four-wire SPI interface
- Integrated 20 MHz and 32.768 kHz oscillator drive
- Low current consumption
- Hardware CSMA-CA Mechanism
- Automatic ACK response
- Hardware security engine (AES-128)
- Automatic packet retransmit capable
- Small 40-pin leadless QFN 6 x 6 mm² package
Bluetooth™

**F2M01C1**

**Bluetooth™ Serial Port Plug**
- Provides transparent RS 232 serial cable replacement
- No need for additional drivers
- Power supplied via D-SUB connector or via DC connector
- Implements the Bluetooth Serial Port Profile and Generic Access Profile
- Interoperability with PDA, laptops etc.
- Nominal range 100 m
- Configurable for use of different baud rates and serial settings
- Easy-to-use Windows configuration software
- Small form factor 48 x 34 x 19

**Bluetooth™ Modules – fully qualified (end-product)**

**F2M03AC2**

Class 2 Audio Module
- Bluetooth 1.1 compliant
- Nominal range 30 m
- 8 GPIOs, 2 8-bit ADCs, voice PCM up to 3 channels simultaneously
- Internal audio codec
- On-board antenna
- Easy-to-use host interface
- Bluetooth end-product qualified
- Small outline 24 x 13 mm

**F2M03GLA**

General Purpose Low Power
- Bluetooth 2.0 + EDR compliant
- Up to +7 dBm output
- Range 150 m
- Adaptive Frequency Hopping
- Enhanced Data Rate
- 10 GPIOs, 2 8-bit ADCs
- Easy-to-use host interface
- Bluetooth end-product qualified
- On-board antenna
- Small outline

**F2M03GX/GXA**

General Purpose Extended Range
- Bluetooth 2.0 + EDR compliant
- Up to +19 dBm output
- Range 350 m
- Adaptive Frequency Hopping
- Enhanced Data Rate
- 10 GPIOs, 2 8-bit ADCs
- Easy-to-use host interface
- Bluetooth end-product qualified
- On-board or external antenna
- Bluetooth end-product qualified

**F2M03MLA**

Multimedia Low Power
- Bluetooth 2.0 compliant
- Up to +7 dBm output
- Range 150 m
- Adaptive Frequency Hopping
- Integrated High quality stereo codec
- Integrated DSP for support of enhanced audio applications
- On-board antenna
- 12 GPIOs, 3 ADCs
- Bluetooth end-product qualified
Wireless LAN

Wireless LAN module supporting 802.11b/g

This module is an 802.11b/g device; surface mountable in an automatic mounting line or manually for prototyping. The module supports data rates of up to 56 Mbps (802.11g). The host processor is connected via an SDIO or SPI interface. The module radio characteristics make it suitable in applications where long range is important. The module form factor and antenna connector gives freedom in antenna placement for enhanced performance.

A development kit is made available to customers including a set of modules and support for porting the drivers to a number of platforms.

Features
- Dual-mode IEEE 802.11b/g module
- SDIO and SPI host interface
- Low power operation

Support for IEEE 802.11e EDCA QoS
- Full support for WEP40/64 and WEP104/128; WPA/WPA2 (802.11i) enhanced encryption modes
- Bluetooth Wi-Fi cellular coexistence support via priority and channel signaling schemes
- Support data rates up to 56 Mbps
- Antenna connected via UFL connector on the module
- Receiver Sensitivity -80dBm (estimated)
- Output power 20 dBm (estimated)
- Low power modes
- Surface mountable
- RoHS compliant
**GSM/GPS**

**GM862 Modem**
- GSM Quad Band
- RoHS Compliant
- On Board SIM Holder
- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity

**GM862-GPS Modem**
- SiRF Powered
- 20-Channel High Sensitivity GPS Receiver
- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity

**GE863 Embedded**
- BGA Package
- GSM Quad Band
- RoHS Compliant
- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity

**GE863-GPS Embedded**
- SiRF Powered
- BGA Package
- 20-Channel GPS Receiver
- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity

**GE864 Embedded**
- Ultra Compact
- BGA Package
- GSM Quad Band
- RoHS Compliant
- GPRS Class 10
- Embedded TCP/IP Stack
- Embedded FTP and SMTP Client
- PYTHON™ Script Interpreter
- Extended Temperature Range
- Extended RF Sensitivity
- SIM Access Profile
- Serial Port Multiplexer (GSM 07.10)

**GC864 Compact**
- Ultra Compact
- GSM Quad Band
- RoHS Compliant
- GPRS Class 10
- Embedded TCP/IP Stack
- Embedded FTP and SMTP Client
- PYTHON™ Script Interpreter
- Extended Temperature Range
- Extended RF Sensitivity
- 80 Pin Board to Board Connector
- Support for SIM Card Holder

**GE863-GPS Embedded**
- SiRF Powered
- BGA Package
- 20-Channel GPS Receiver
- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity

**GM862-GPS Modem**
- SiRF Powered
- 20-Channel High Sensitivity GPS Receiver
- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity
- SIM Access Profile
- Serial Port Multiplexer (GSM 07.10)
The Telit Evaluation Kit EVK2 provides a ready, future-proof and flexible environment for a quick and easy development of applications with Telit’s GSM/GPRS Modules families, dramatically reducing the time-to-market.

The kit is formed by a motherboard, on top of which an adapter board with the related module is plugged. This concept allows using it across the boundaries of various form factors and product generations, also in future.
GSM/GPRS

Terminal devices
The terminal products are self contained unit's featuring the latest GSM/GPRS technology. The terminal products are excellent for system integrators who focus on application development by using a ready to start modem with standard connectors.

Common Features
- Quad Band
- RS232 serial port
- GPRS Class 10
- TCP/IP stack
- Multiple sockets with listening / server capability
- SMS and CSD
- I/O ports
- 3 status LEDs
- Integrated SIM card holder
- 5-36 V DC supply
- 30°C to +75°C
- CC approval
- CE approval
- E-marking
- RoHS compliant

GS64 Terminal
- Wavecom GS64 based
- Audio support
- (see Common features)

GT64 Terminal
- Wavecom GS64 based
- Embedded applications using M2m Power tools
- 5 inputs / 1 output
- (see Common features)

GT864-QUAD Terminal
- Telit GC864-QUAD based
- FTP support
- Email support
- SMTP
- Audio – Microphone / Loudspeaker (USB mini connector)
- Jamming detection and report
- SIM access profile
- (see Common features)

GT864-PY Terminal
- Embedded applications using Python script language
- Telit GC864-PY based
- FTP support
- Email support
- SMTP
- Jamming detection and report
- 4 digital inputs, 1 analogue input and 1 digital output
- SIM access profile
- (see Common features)

Telemetry device STD32
- Stand alone telemetry device
- 2 digital control outputs (6 A at max 250 V)
- 2 digital inputs (optocoupled 12 V)
- Bidirectional communication possible to control the outputs and retrieve status information from the inputs
- Power supply voltage 5-32 V
- Status-LEDs for inputs and outputs as well as for GSM network
- Ready to use due to standard configuration (only one phone call with a mobile needed)
- Expert configuration allows setting of individual parameters
- CE approval
- E-Marking

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## GPS

### iTrax MP Family Key Features

- **iTrax300, iTrax130 and iTrax03-S**
- **Tiny form factor:**
  - 16.2 mm x 18.8 mm x 2.3 mm
- **High sensitivity**
- **Low power**
- **Common connectivity**
- **NMEA & binary protocols**

- **iTrax310**
  - **Ultra small form factor:**
  - 13.1 x 15.9 x 2.5 mm
  - **SiRF Star III low power based (GSC3f/LP)**
  - **20 channels (12 in tracking)**
  - **Very high sensitivity:**
    - -142 dBm (Acquisition)
    - -158 dBm (Navigation)

### Comparison Table

<table>
<thead>
<tr>
<th></th>
<th>iTrax300</th>
<th>iTrax130</th>
<th>iTrax03-S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>L1, C/A Code, SPS</td>
<td>20 channels</td>
<td>12 channels</td>
</tr>
<tr>
<td><strong>Update rate</strong></td>
<td>1 fx/s (User config.)</td>
<td>1 fx/s (User config.)</td>
<td>1 fx/s (User config.)</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position:</td>
<td>1.5 m (CEP50)</td>
<td>1.8 m (CEP95)</td>
<td>1.5 m (CEP50)</td>
</tr>
<tr>
<td>Velocity:</td>
<td>0.1 m/s</td>
<td>±1 μs</td>
<td>0.1 m/s</td>
</tr>
<tr>
<td>Time:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TFF:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Start:</td>
<td>40s typ.</td>
<td>39x typ.</td>
<td>40s typ.</td>
</tr>
<tr>
<td>Hot Start:</td>
<td>2s typ.</td>
<td>4s typ.</td>
<td>4s typ.</td>
</tr>
<tr>
<td><strong>Sensitivity:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition (cold):</td>
<td>–143 dBm</td>
<td>–139 dBm</td>
<td>–141 dBm</td>
</tr>
<tr>
<td>Navigation:</td>
<td>–158 dBm</td>
<td>–151 dBm</td>
<td>–155 dBm</td>
</tr>
<tr>
<td>Tracking:</td>
<td>–158 dBm</td>
<td>–154 dBm</td>
<td>–156 dBm</td>
</tr>
<tr>
<td><strong>Power Drain:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navigating 1 fx/s:</td>
<td>110 mW typ.</td>
<td>100 mW typ.</td>
<td>100 mW typ.</td>
</tr>
<tr>
<td>Stand-by state:</td>
<td>45 μW</td>
<td>150 mW batt. backup</td>
<td>95 mW typ.</td>
</tr>
<tr>
<td>Hibernate/Sleep state:</td>
<td>+3.0 V...+3.3 V</td>
<td>+3.0 V...+3.3 V</td>
<td>+3.0 V...+3.3 V</td>
</tr>
<tr>
<td><strong>Operating voltage:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Supply:</td>
<td>+3.0 V...+3.3 V</td>
<td>+3.0 V...+3.3 V</td>
<td>+2.7 V...+3.3 V</td>
</tr>
<tr>
<td>Back up Supply:</td>
<td>+2.5 V...+3.3 V</td>
<td>+2.5 V...+3.3 V</td>
<td>+2.7 V...+3.3 V</td>
</tr>
<tr>
<td>RF Supply:</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>–40 °C...+85 °C</td>
<td>–40 °C...+85 °C</td>
<td>–40 °C...+85 °C</td>
</tr>
<tr>
<td>Serial ports:</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>GPIO, number of:</td>
<td>7 free, 1 dedicated</td>
<td>12 (shared functionality)</td>
<td>17 (shared functionality)</td>
</tr>
<tr>
<td>Peripherals:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chip set:</td>
<td>SiRF Star III GSC3f/LP</td>
<td>Sony CXD2985</td>
<td>Sony CXD2985</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- **NMEA or SiRF binary protocol**
- **NMEA default output:**
  - GGA, RMC, GSV, GSA (9600 baud)
- **110mW@3.0V**
  - (45μW@3.0V in back up state)
- **Support for passive and active antennas**
- **1 PPS output**

---

**Notes:**

- PRE-LIMINARY
- NMEA or SiRF binary protocol
- NMEA default output:
  - GGA, RMC, GSV, GSA (9600 baud)
  - 110mW@3.0V
  - (45μW@3.0V in back up state)
- Support for passive and active antennas
- 1 PPS output

---

**Additional Information:**

- Two serial ports
- 1 PPS output
- GPIO available for custom purposes
- Other peripherals include SPI bus, MMC bus, Capture Timer input, Pulse Measurement input, A/D converter depending on the module
GPS

OEM GPS receivers with integrated patch antenna

uPatch100-S

- Small form factor – 22 x 22 x 8 mm
- OEM module with built-in antenna
- 18 x 18 x 4 mm patch antenna
- Power supply 3.0…3.6 V
- Battery backup supply 2.5 V…3.6 V
- Low power consumption:
  - 44 mA @ 3.3 V (normal mode)
  - 10 uA @ 3.3 V (battery backup)
- Very high sensitivity:
  - 139 dBm (Unaided Acquisition)
  - 150 dBm (Navigation)
  - 152 dBm (Tracking)
- NMEA0183 and Sony ASCII protocols
  TXDO: NMEA OUTPUT
  RXDO: SONY ASCII INPUT
- Accurate 1PPS timing output
- WAAS/EGNOS compatible
- Cold Start TTFF: 45 s
- Based on SONY receiver architecture CXD2951-GL4 Single Chip
uPatch102
- Small form factor – 28 x 28 x 7.4 mm
- Low power consumption:
  - 44 mA @ 3.3 V (normal mode)
  - 150 uA @ 3.3 V (battery backup)
- Very high sensitivity:
  - -139 dBm (Unaided Acquisition)
  - -150 dBm (Navigation)
- Very high sensitivity:
  - -152 dBm (Tracking)
- NMEA0183 and Sony ASCII protocols
- Integr. 25 x 25 x 4 mm patch antenna
- Accurate 1PPS timing output
- Cold Start TTFF: 38 s
- Battery backup for low power modes
- Based on Sony receiver architecture
- CXD2951-GL4 single chip LSI

uPatch130
- uPatch MP form factor, 19 x 27 x 7 mm
- Single chip LSI based (CXD2985GL)
- Very high sensitivity:
  - -141 dBm (Acquisition)
  - -154 dBm (Navigation)
- NMEA or iTalk Binary protocol
- 12 channels
- 145mW@3,0V
  (45uW@ 3,0V in back up state)
- Internal or external antenna (autoswitch)

Patch300
- uPatch MP form factor, 19x27x7 mm
- SiRFStarIII low power based (GSC3/LP)
- Very high sensitivity:
  - -142 dBm (Acquisition)
  - -158 dBm (Navigation)
- 20 channels
  (12 in tracking)
- NMEA protocol
- 20mW@3,0V
  (45uW@ 3,0V in back up state)
- Internal or external antenna (autoswitch)

Developers Kit
iTrax03 family · iTrax100 family · iSuite/SDK
GPS

Positioning Receiver Portfolio

With the mission to support our customer to implement GPS functionality into their systems, Tyco Electronics is offering a large product portfolio to cover almost all integration possibilities in an easy way. All GPS products are manufactured in our ISO 9001 and TSI 6949 certified factory inside the EU.

Beyond that our modules follow RoHS standard and are 100% electrically and functionally tested prior packaging. This way we constantly guarantee high quality products.

- Standard firmware: revision 1xx
- Standard firmware: revision 2xx
- With custom firmware support

Evaluation Kits

USB
EVA
DKS
DR

A1037-A (Low cost)
- Highly sensitive: –153 dBm tracking
- Accurate positioning: 3 m CEP
- Cold start TTFF (Time To First Fix): < 60 s
- Very small footprint: 19 x 16 mm
- Ultra-low power consumption: 55 mA during acquisition (typical)
- SBAS support
- A-GPS support

A1080-A (High performance)
- Bench marking sensitivity: –159 dBm tracking
- Cold start TTFF (Time To First Fix): < 35 s
- Very small footprint: 19 x 16 mm
- Ultra-low power consumption: Max. 50 mA during acquisition
- A-GPS support
- SBAS support
Accessories

Mobile Communication- & Telematics-Antennas from Hirschmann

- GPS
- GSM/Cellular
- Wi-Fi & BLUETOOTH
- TETRA

GPS 7 M

GPS
- Magnetic surface mount antenna
- Dimensions: 39 x 39 x 14 mm
- Voltage Supply: 3 - 5.5 VDC
- Gain: 2 dBi

GPS 1890

GPS, AMPS GSM 900/1800/1900
- For navigation, traffic telematics or fleet management
- Easy mounting by adhesive or magnetic pad
- Mounting on various surfaces (glass, plastic, metal, etc.)
- Dimensions: 100 x 66 x 19 mm

AMPS
- Voltage Supply: 3 - 5.5 VDC
- Gain: 2 dBi
- Amplifications: 27 dB ± 2 dB

UMTS
- Gain: 0 dBi

MCA 18 90 MH

AMPS, GSM 900/1800/1900, UMTS
- Easy interior windscreen mounting, self-adhesive
- Doesn't interfere the car design
- Dimensions: x 57 mm

ORBCOMM
- Cables
- Adapters

Cable: RG 174, L=3000 mm
Connector:
- 001: MCX male
- 002: SMB female
- 003: SMA male
- 004: FAKRA female Code C

This is only a short extract from the HIRSCHMANN portfolio. Rutronik offers the complete range of antennas & accessories.
## Further Accessories

<table>
<thead>
<tr>
<th>Rutronik number</th>
<th>Product type</th>
<th>Suitable for</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIREA1013</td>
<td>System connector</td>
<td>GC864-QUAD-C2</td>
<td>60P Female Header SMT 1.27 mm</td>
</tr>
<tr>
<td>WIREA1014</td>
<td>System connector</td>
<td>GC864-QUAD-C2</td>
<td>60P Female Header hole m. 1.27 mm</td>
</tr>
<tr>
<td>COREC19998</td>
<td>System connector</td>
<td>GSM (GM862)</td>
<td>50P Female Header SMT</td>
</tr>
<tr>
<td>COREC21477</td>
<td>System connector</td>
<td>GSM (GC864)</td>
<td>80P Female Header SMT</td>
</tr>
</tbody>
</table>

### System Connectors

<table>
<thead>
<tr>
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<th>Product type</th>
<th>Suitable for</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIREA1033</td>
<td>Adapter cable</td>
<td>GSM</td>
<td>MMCX male R/A to SMA/f bulkhead, 100 mm</td>
</tr>
<tr>
<td>WIREA1036</td>
<td>Adapter cable</td>
<td>GSM</td>
<td>MMCX male R/A to SMA/f bulkhead, 150 mm</td>
</tr>
<tr>
<td>WIREA1079</td>
<td>Adapter cable</td>
<td>GC864-QUAD</td>
<td>GSC to SMA/f bulkhead, 100 mm</td>
</tr>
</tbody>
</table>

### Adapter Cables

<table>
<thead>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIREA1009</td>
<td>Simcard holder</td>
<td>GSM</td>
<td>6P spring-ejection mechanism with lock and sim card detection</td>
</tr>
<tr>
<td>WIREA1015</td>
<td>Simcard holder</td>
<td>GSM</td>
<td>6P spring-ejection mechanism and sim card detection</td>
</tr>
<tr>
<td>WIREA1039</td>
<td>Simcard holder</td>
<td>GSM</td>
<td>6P with cover and sim card detection</td>
</tr>
<tr>
<td>WIREA1040</td>
<td>Simcard holder</td>
<td>GSM</td>
<td>6P with cover and sim card detection (side connected)</td>
</tr>
<tr>
<td>WIREA1078</td>
<td>Simcard holder</td>
<td>GSM</td>
<td>6P spring-ejection mechanism and simcard detection</td>
</tr>
</tbody>
</table>

### Antennas

<table>
<thead>
<tr>
<th>Rutronik number</th>
<th>Product type</th>
<th>Suitable for</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIREA1025</td>
<td>Antenna</td>
<td>GPS</td>
<td>Magnetic antenna, 5 m cable, SMA male</td>
</tr>
<tr>
<td>WIREA1027</td>
<td>Antenna</td>
<td>GSM</td>
<td>Glass antenna, T-shape, 3 m cable, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1028</td>
<td>Antenna</td>
<td>GSM</td>
<td>Glass antenna, l-shape, 3 m cable, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1026</td>
<td>Antenna</td>
<td>GSM</td>
<td>Hole mounted antenna, 3 m cable, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1029</td>
<td>Antenna</td>
<td>GSM</td>
<td>Magnetic antenna, 3 m cable, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1031</td>
<td>Antenna</td>
<td>GSM</td>
<td>Stub antenna, straight, 56 mm, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1032</td>
<td>Antenna</td>
<td>GSM</td>
<td>Stub antenna, angled, 54 mm, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1035</td>
<td>Antenna</td>
<td>GSM</td>
<td>Swivel antenna, 104 mm, SMA male, 900/1800 MHz</td>
</tr>
<tr>
<td>WIREA1004</td>
<td>Antenna</td>
<td>GSM</td>
<td>PCB antenna, MMCX male R/A, 900/1800/1900MHz</td>
</tr>
</tbody>
</table>

Antennas and adapter cables are also available with other types of connectors
Intelligent Distribution

Seminconductor
- Discrete Semiconductors
- Analog ICs
- Digital ICs
- Optoelectronic Components

Passive Components
- Capacitors
- Resistors
- Inductors, Ferrites & Piezoelectronic Components

Electromechanical Components
- Batteries
- Thermo Management
- Relays
- Connectors & Cable Systems
- Fuses
- Switches

Storage Components
- Memory Modules
- Memory Cards
- Flash Drives
- Hard Disc Drives
- Floppy Drives
- CD Drives
- DVD Drives
- Motherboards

Technological Solutions
Development Center (FAEs)
Product Center

Displays & Embedded Boards
- Digital TFT Panels
- Smart Panels incl. Controller
- Special TFT Applications
- Character/Graphic Controller
- Embedded Computers
- Industrial Motherboards
- Touch-Screen Panels & Controller
- Display Accessories
- Passive LC Displays
- OLEDs

Wireless Components
- Bluetooth
- GSM
- GPS
- ISM / SRD radio
- RFID
- ZigBee™
- WLAN
- Accessories

Logistical Solutions
Logistics Center
- Solutions
- Modules