identpro®
Identifizieren. Lokalisieren. Authentifizieren.

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User Manual
identMX

Power-over-Ethernet
Easy to install

www.identpro.de

identMX – User Manual

Version
Version 1.1, June 2010

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When using the device always follow and obey relevant legislation regarding safety and electromagnetic radio frequency shielding.

This document is subject to change without prior notice.

Service
To learn more about this or other products of IdentPro please visit our website: http://www.identpro.de.

For technical support please email to: support@identpro.de

Content

1 Safety precautions

The following sections explain how to install and use identMX.

WARNING! *Always disconnect identMX from any power supply when working on it. Do not connect while the power is on. A sudden rush of power can damage sensitive electronic components. Only experienced electronics personnel should open the chassis.*

CAUTION! *Always ground yourself to remove any static electric charge before touching identMX. Although numerous precautions have been taken to protect the device from overvoltage and static electric discharge, damages to the device due to these influences can never be fully anticipated. It is recommended to use a grounding wrist strap at all times.*

2 Description

2.1 Performance characteristics

identMX is a robust and compact EPC Class 1 Generation 2 Radio Frequency Identification (RFID) reader system which operates in the 868 MHz UHF band. Due to the smart integration of a UHF reader and antenna in the same housing the device is perfectly suited to implement low cost gates e.g. in distribution or production lines. It also allows using RFID in places where limited space calls for small hardware footprints. With its robust and weather proof design identMX can even be used in outdoor applications and on industrial trucks or other vehicles. In addition identMX can be connected to sensor systems like ultrasonic or infrared proximity switch and actuators like signal lamps, bars, or turnouts for additional functionality.
The concept of reader and antenna integration significantly reduces cost of installation while increasing the secure and flawless operation at the same time. The reader is supported by IdentPro's unique RFID Control Unit idendIQ. identIQ enables easy connectivity of RFID projects to IT and PLC systems.

2.2 Available product designs

The following product versions are currently available:

- **identMX 511**
  - 10/100 MBit Ethernet (10BASE-T, IEEE 802.3i / 100BASE-TX, IEEE 802.3u) communication interface
  - Power over Ethernet (IEEE 802.3af) remote power supply
  - **Circular antenna** for installations where orientation of transponders is unknown or random

- **identMX 512**
  - Equivalent to identMX 511
    but with **linear antenna** for installations where orientation of transponders is well defined and does not change over time

- **identMX 521**
  - Equivalent to identMX 511
    but with **additional redundant 12V to 36V power supply**

- **identMX 522**
  - Equivalent to identMX 521 but with **linear antenna** for installations where orientation of transponders is well defined and does not change over time

- **identMX 541**
  - Selectable RS-232 and RS-422 serial interface, up to 115,2kBaud
  - 12V to 36V power supply
  - **circular antenna** for installations where orientation of transponders is well defined and does not change over time

- **identMX 542**
  - Equivalent to identMX 541 but with **linear antenna** for installations where orientation of transponders is well defined and does not change over time

2.3 Scope of delivery

Device	Package includes
ID-RRS 5x1	1 x UHF reader system with integrated circular antenna (868 MHz), Online documentation, Test and commissioning software identMX TI
ID-RRS 5x2	1 x UHF reader system with integrated linear antenna (868 MHz), Online documentation, Test and commissioning software identMX TI

Table 1: Scope of delivery

2.4 Accessories

Following accessories are available:

Device	Feature
ID-RRZ MK5	Universal Mounting Kit for walls, ceilings and poles *)
ID-RPS 501	Standalone Power over Ethernet power supply/injector compliant with IEEE802.3af, Single port, 16 Watt
ID-RRZ KS531	Assembled PoE cable for Ethernet data and power; jacks: RJ45/ Bulgin Buccaneer Series 400 PX0410/10S. Length: 3 meter
ID-RRZ KS571	Assembled PoE cable for Ethernet data and power; jacks: RJ45/ Bulgin Buccaneer Series 400 PX0410/10S. Length: 7 meter
ID-RRZ KSxx	Assembled PoE cable for Ethernet data and power; jacks: RJ45/ Bulgin Buccaneer Series 400 PX0410/10S. Length: individual
ID-RRZ SW 501	SDK Reader Interface Software as DLL for use with Microsoft Windows© XP

*) Please refer to appendix A for illustrations of the Universal Mounting Kit parts.

Table 2: Accessories

2.5 Maintenance

Clean with a soft cloth only. Do not use detergents.
Do not open the housing: there are no parts inside that need maintenance!

In case of damage please contact IdentPro at support@identpro.de or call +49(0) 22 41 / 866 39 20.

3 Installing and wiring

3.1 Interface panel

All enclosure breakouts are located on the bottom side of the device. The *Interface Port* provides the communication interface and power supply. The *Auxiliary Port* can be used to connect e.g. sensors, actuators and power supply. identMX is equipped with two multicolor LEDs located on the bottom side of the enclosure. The LEDs indicate the current status of the reader´s power supply, communication interface and RFID application.

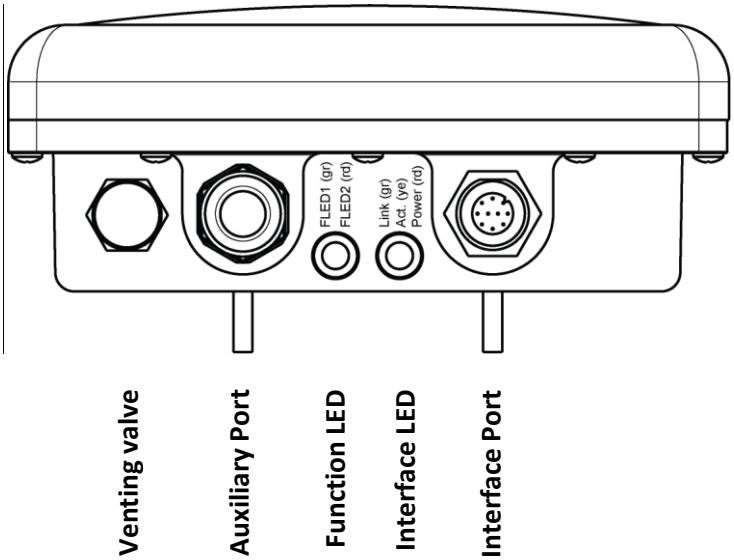


Illustration 1: Interface panel

LED	Color	Function	Description
Interface (Link, Act., Power)	Green	Link	Device has physical Ethernet connection to infrastructure (host system, switch, router, etc.)
	Orange	Activity	Device exchanges data with host
	Red	Power	Device is powered
Function (FLED1, FLED2	Green	Connected	A RFID host application is connected with the device
	Red	RFID Sense	A tag has been read within an inventory

Table 3: LED display

The venting valve assures the leak tightness of the device even under harsh environmental conditions (e.g. outdoor applications). Never try to loose or even dismantle this part!

3.2 Power supply

ATTENTION! Any supply voltage outside specification can destroy the unit.

3.2.1 PoE

The PoE models of identMX receive their power over the Ethernet cable from any Power over Ethernet (PoE) power supply compliant to IEEE 802.3af. Any components used (like PoE injectors or PoE switches) should support this standard. IdentPro offers respective accessories (see chapter 0).
The PoE supply path is electrically isolated to any other port of the device (Ethernet, GPIO, etc.) as well as to the housing. This isolation is rated to withstand at least $1500V_{eff}$. This power input is protected against electrical discharge, overvoltage and reverse-polarity.

3.2.2 12..36V Power

This power supply enables non-PoE identMX models or PoE identMX models with the redundant Power Supply option to receive power from a broad range of ordinary DC power sources. This 12..36V power supply path provides a perfect way to run identMX in environments where PoE is up to now usually not available (e.g. vehicles, industrial process and control systems, trucks) or in applications where a maximum of operational availability is required (redundancy).
This second power supply path can be used exclusively or redundant to the standard power supply over the data cable using Power over Ethernet. When being used as a redundant power supply path, the standard power supply (PoE) is dominant. This means that power from the second power supply path is only drawn when PoE drops or is not provided.

3.2.2.1 Specification

Nominal Input Voltage Range	**12..36V DC**
Power consumption	Max. 8 W (operating), 3,5 W (standby)

The 12..36V power supply path is electrically isolated to any other port of the device (Ethernet, PoE, etc.) as well as to the housing. This isolation is rated to withstand at least $1500V_{eff}$. This power input is protected against electrical discharge, overvoltage and reverse-polarity.

3.2.2.2 Installing and wiring

The electrical interface to the 12..36V power supply path is provided by a terminal block located inside the enclosure of the identMX. To connect a device, replace the plug screw sealing the auxiliary port of the device with the provided M20 cable gland. The gland accepts cables with diameters 7 to 13 mm.

NOTE: If you feed multiple cables through cable gland, assure proper sealing to preserve the specified ingress protection grade (IP65).

Dismantle the cover (antenna) by removing the 12 screws located on the flange of the enclosure. After removing the antenna you can see a 5-pole terminal block designated “J_MX-Pwr”. Connect the positive and negative conductor of the supply line to the clamps signed “PwrA” and “PwrB” as shown on the picture below. The polarity does not have to be taken into account. To connect a lead, simply hold down the button and insert the conductor in the appropriate hole.

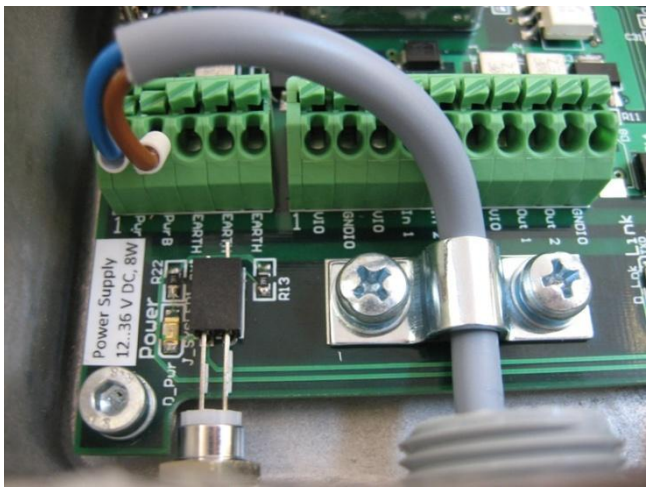


Illustration 2: Redundant power supply input clamps

NOTE: The clamps accept solid and stranded conductors with diameters from 0,5 - 1,5mm^2 (resp. AWG 20 .. AWG 16). When using stranded conductors, the appliance of wire end ferrules is recommended.

3.3 Cabling

When using your own cable parts and wiring shall be according the following definition:

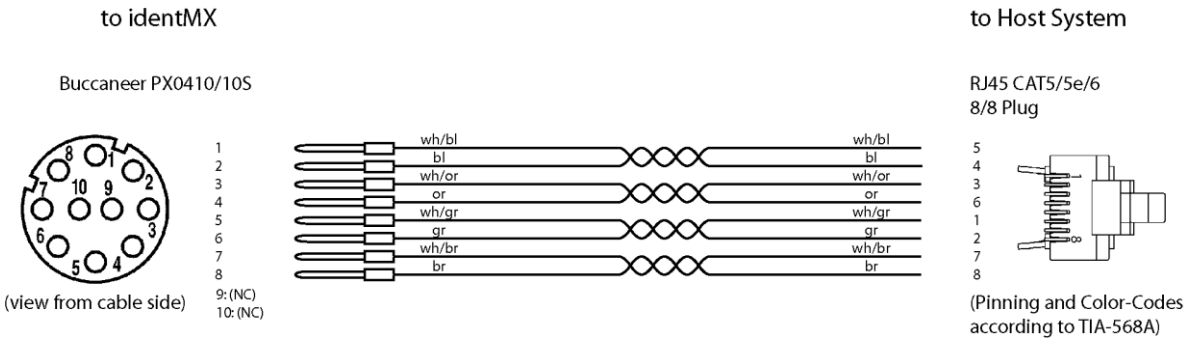


Illustration 3: Cable wiring

Manufacturer	Part.-No.	Description	Quantity needed per unit
Bulgin	PX0410/10S	Buccaneer Series 400, FLEX CABLE CONNECTOR Socket, 10 circuits	1
Bulgin	SA3179 or SA3179/1	Buccaneer, Crimp or Solder Socket, 1A, 24-28 AWG, Pack of 10	8
e.g. HRS	e.g. TM21CP-88P	RF45 Modular Plug Connector, Compliant to Category 5 Standards (or higher)	1
		Ethernet cable, Compliant to Category 5 Standards (or higher)	

Table 4: Cable parts

3.3.1 Connecting the Interface Port

Recommended maximum length of the Ethernet cable is 100 meters. When communicating with the reader across a Local Area Network (LAN), connect an Ethernet cable from your hub, router or switch to the identMX interface connector. See 3.1 Interface panel for location of the connector. identMX adapts to NICs as well as to switches or hubs etc.

NOTE: After connecting the reader system to power allow for up to 10 seconds for the reader to initialize.

3.3.2 Connecting digital IO

identMX provides an interface to connect equipment with digital inputs and outputs (GPIO). This interface can be controlled by the host application.

Inputs electrical characteristics:

- Sinking input
- Reverse voltage protected
- Switching hysteresis
- Supports all types of sourcing sensors (switches, PNP-outputs, etc.)

Parameter	Value		
Maximum input voltage	48V		
	Min.	Nom.	Max.
“High-Going” input voltage	7V	7,3V	9V
“Low-Going” input voltage	5V	6,7V	7V
max. input current	10mA		

Table 5: Inputs electrical characteristics

Outputs electrical characteristics:

- Sourcing output
- Short circuit protected
- Current limited
- Overload protected
- Overvoltage protected (including load dump)
- Supports all types of resistive, inductive and capacitive loads

Parameter	Value
Operating voltage	12V to 36V
Nominal load current	1,4A
Initial peak short circuit current limit	3,0A
Repetitive short circuit current limit	2,2A

Table 6: Outputs electrical characteristics

ATTENTION: Read chapter Safety precautions prior to making any connections to identMX.

The electrical interface is provided by a terminal block located inside the enclosure of the identMX. To connect a device, replace the plug screw sealing the auxiliary port of the device with the provided M20 cable gland. This part accepts cables with diameters from 7 to 13 mm.

Illustration 4: Auxiliary port cable gland

NOTE: If you feed multiple cables through the cable gland, assure proper sealing to preserve the specified ingress protection grade (IP65).

Dismantle the cover (antenna) by removing the 12 screws located on the flange of the enclosure. After removing the antenna you can see a 10-pole terminal block designated “J_MX-FieldIO”. To connect a lead, simply hold down the button and insert the conductor in the appropriate hole.

NOTE: The clamps accept solid and stranded conductors with diameters from 0,5 - 1,5mm^2 (resp. AWG 20 .. AWG 16). When using stranded conductors, the appliance of wire end ferrules is recommended.

Clamp		Function	Comment
1	VIO	GPIO power supply positive line	Connect the positive lead of the GPIO power supply to this clamp. All clamps designated “VIO” are internally connected.
2	GNDIO	GPIO power supply neutral line	Connect the neutral lead of the GPIO power supply to this clamp.
3	VIO	GPIO power supply positive line	In case of using 2-wire sensors (e.g. pushbutton switch or cam switch) connect the second wire of the sensor(s) to this clamp. In case of using 3-wire sensors (e.g. inductive proximity switches) the sensor´s supply line can be connected to this clamp. All clamps designated “VIO” are internally connected.
4	In 1	Input 1	Connect the output of a sensor to this clamp.
5	In 2	Input 2	Connect the output of a sensor to this clamp.
6	GNDIO	GPIO power supply neutral line	To ease wiring in case of using 3-wire sensors (e.g. inductive proximity switches) the sensors´ neutral line(s) can be connected to this clamp.
7	VIO	GPIO power supply positive line	To ease wiring in case of using 3-wire actuators (e.g. displays) the actuators´ supply line(s) can be connected to this clamp. All clamps designated “VIO” are internally connected.
8	Out 1	Output 1	Connect the input of a actuator to this clamp.

Clamp		Function	Comment
9	Out 2	Output 2	Connect the input of a actuator to this clamp.
10	GNDIO	GPIO power supply neutral line	In case of using 2-wire actuators (e.g. signal light) connect the second wire of the actuator(s) to this clamp. In case of using 3-wire actuators (e.g. displays) the actuator´s neutral line can be connected to this clamp.

Table 7: Field I/O terminal block (J_MX-FieldIO) pinning

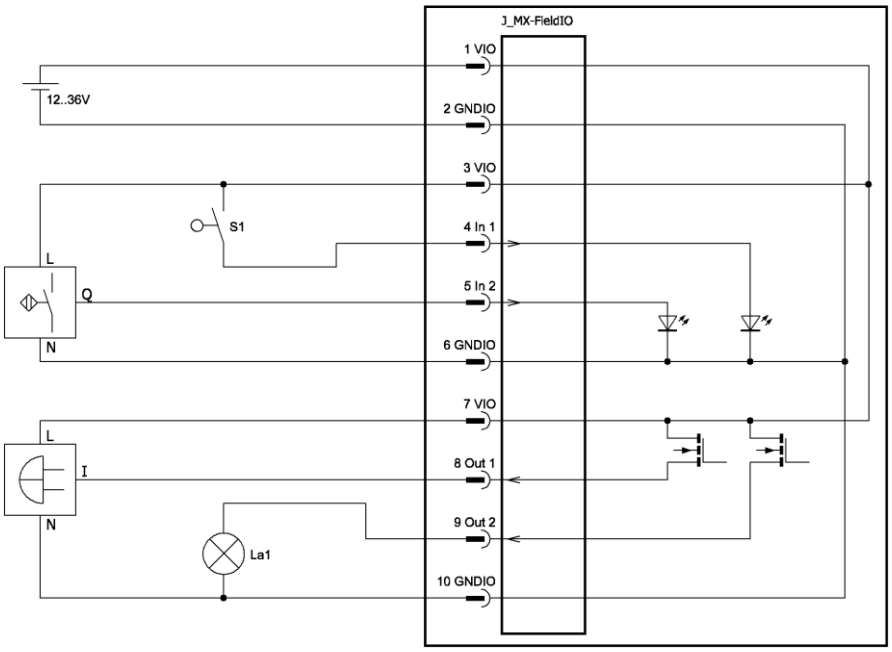


Illustration 5: Sensors and actuators sample schematic

3.4 Installation notes

For mounting purposes identMX provides four M5 threaded bolts located on the reverse side of the housing. See Appendix C for location and dimensions. To mount the reader to a flat surface (concrete, wood, metal) or pole, we recommend to use the mounting kit *ID-RRZ MK5*, which includes all necessary mounting items (except wall plugs and according screws). Please refer to Appendix A for illustrations. Furthermore, the mounting kit allows to adjust the alignment in order to obtain the best performance from the system.
Especially when placed in dusty or moist environments, we recommend mounting the device in a manner that the interface panel faces downwards. If you use a linear antenna type device (e.g. identMX 512) be aware that it´s plane of polarization should match with the tags ´orientation.

Illustration 6: Orientation of the plane of polarization of the linear antenna

ATTENTION!
Before mounting the device, make sure that the carrying structure (wall, pole, etc.) supports the total load of reader, cabling, and, if used, mounting kit. Especially in case of portable applications make sure all cable connections are properly protected by a pull relief.

ATTENTION!
The reader must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

3.4.1 Flat surface mounting

To mount the reader system on a flat surface, first assemble the antenna base bracket to the enclosure. Than attach the wall bracket to the surface. See Appendix D for drilling plan. Use the arm bracket to connect the wall bracket with the base bracket and adjust the azimuth and elevation axis. When using a reader with linear antenna make sure to match the correct orientation referred to the orientation of the transponders. (See appendix A for part illustrations.)

3.4.2 Pole mounting

To mount the reader system to a pole, first connect the base bracket to the enclosure. Than connect the pole bracket to the enclosure. Use the clamping bracket to install the reader system to the pole (recommended tightening torque 14N/m). Pay attention to suitable pole diameters (25mm – 44mm, 45mm – 76mm) and use the clamping bracket accordingly. Instead of the clamping bracket you can also use straps for bigger poles. Adjust the azimuth and elevation axis.

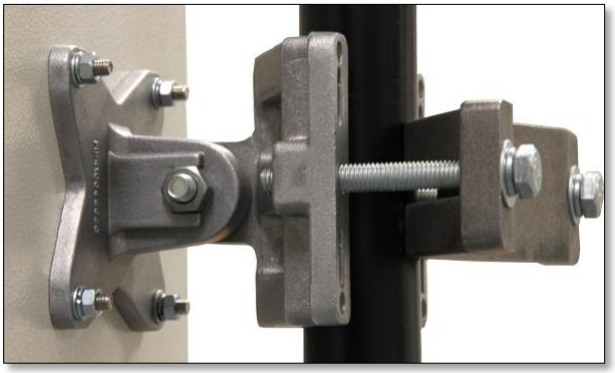


Illustration 7: Pole mounting

3.4.3 Metallic surroundings

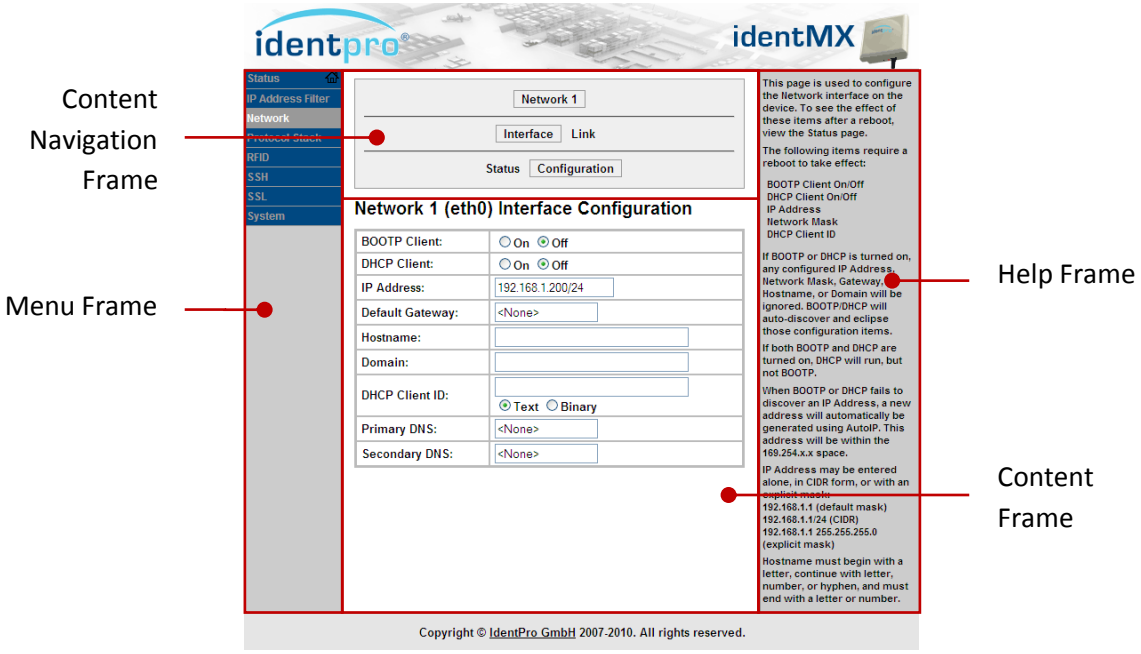
When installing the reader system into another device, be sure that there are no metal or metalized surfaces or objects in the direct vicinity of the antenna if possible. These can reduce the field of the integrated antenna or even detune the antenna ´s original specification. Both will result in worse overall performance of the reader i.e. reduced reading ranges and reliability.
If a metallic surrounding cannot be avoided, keep the distance from the antenna surface to the metallic parts as great as possible for a stable operation. Since changes in the metallic environment may result in malfunction, no moving metal parts, such as metallic fans, should be allowed in the vicinity of the reader antenna.

3.5 Onboard software

This chapter applies to models ID-RRS 521, ID-RRS 512, ID-RRS 521 and ID-RRS 522 only.

3.5.1 Web Interface

The reader´s configuration can be customized to match your installation via the reader's embedded web interface. You can access this interface from your Web browser. Simply enter the TCP/IP address of the reader in the address line of your browser. The default TCP/IP address is *192.168.1.200* and netmask *255.255.255.0*. This tool allows you to adjust e.g. the TCP/IP address to your specific network.



Screenshot 1: Web-Interface Network Configuration

Select a category from the Menu Frame. Where required use the Content Navigation Frame to navigate to a specific item. The Help Frame gives you information about meaning and effect of each item in the Content Frame.

Via the web interface various properties can be displayed as well as configured. The Web interface offers the following features:

- Show general device properties (version, ID, etc.)
- Show general device status information
- Show and configure the network configuration
  (address allocation methods, IP address, network mask, gateway address, etc.)
- Show and configure communication protocol
- Show and configure communication security protocols
- Show and configure "RFID tag read event" sonic indicator (buzzer)
- Perform a device reset
- Update device firmware

3.5.2 IP assignment

identMX offers various methods of IP assignment:

- Static IP address assignment
- Automatic address assignment using DHCP (requires a DHCP server on the local network)
- Automatic address assignment using BootP (requires a BootP server on the local network)
- IP self-assignment (also known as *APIPA* or *Zeroconf*)

The following chart illustrates how the device obtains an address:

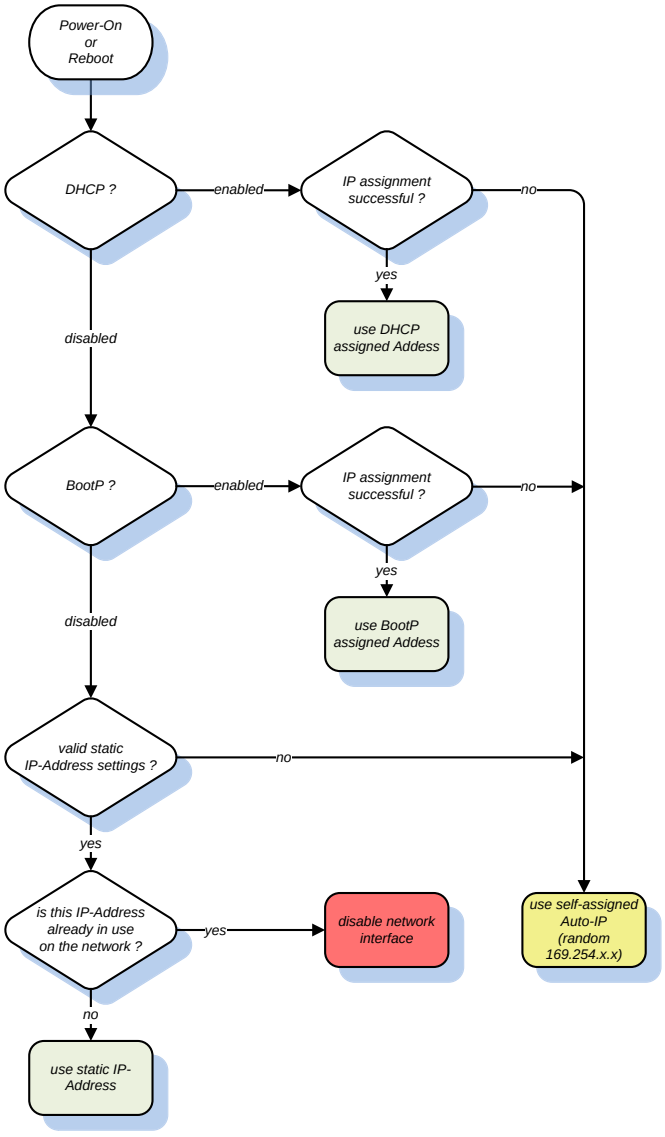


Illustration 8: IP assignment logic

Before using a static IP address the device checks if this address is already used by another node on the local network. If this is the case the device disables it´s network interface to avoid an IP address conflict and consequential network malfunctions. Restart the device after abolishing the IP address conflict.

4 Software tool

identMX TI is the test and commissioning application for Microsoft Windows platforms (XP, Windows 7). The tool is primarily intended for initial testing of a identMX reader prior to deployment. It can also be used for testing the reader with your application. *identMX TI* can be used with any identMX type.

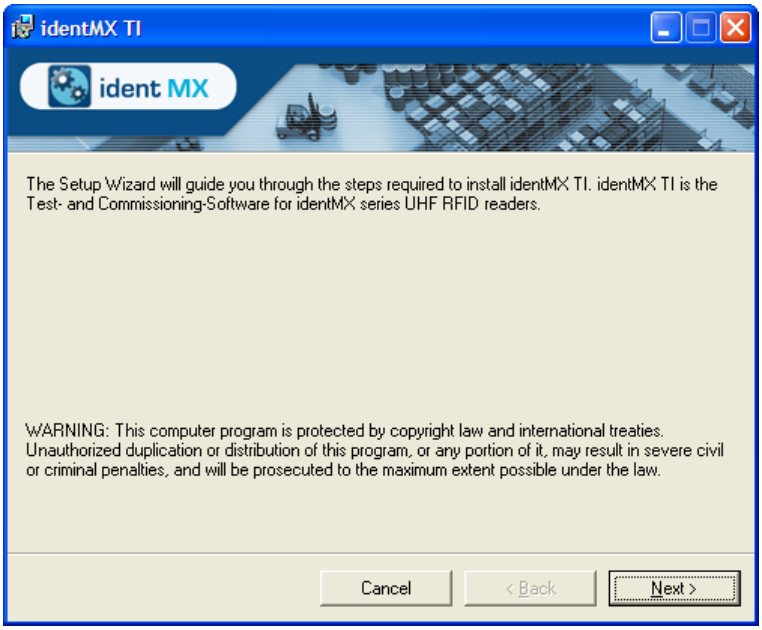
identMX TI allows to :

- discover and connect to any identMX on the current network
- configure the network setting (IP address, network mask)
- modify and adjust all RFID operational parameters
- inventory tags
- review tag data and perform diagnostics
- write EPCs
- control and monitor the GPIO
- display the current firmware version and perform firmware updates

This manual is based on *identMX TI* Version **1.0.5** .

4.1 Installation

To install the application simply run the Setup file “setup.exe” and follow the instructions. Setup will place a shortcut on the Desktop as well as in the Windows Programs folder.



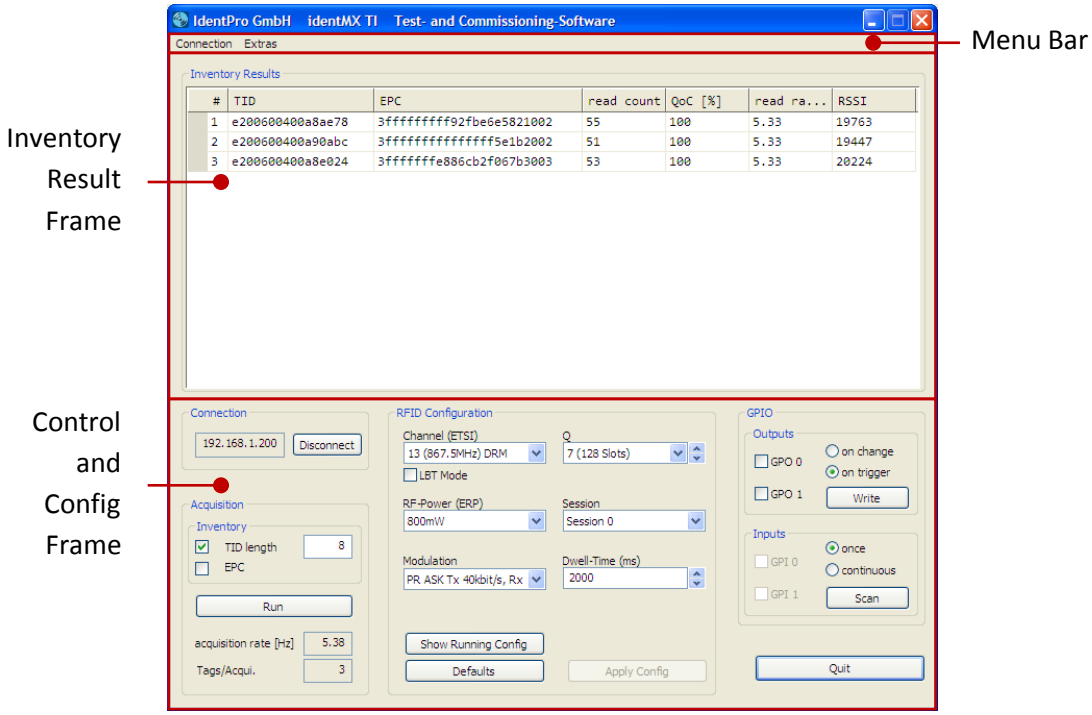
Screenshot 2: identMX TI Setup

4.2 Using identMX TI

ATTENTION: Read chapter Safety precautions prior to making any connections to identMX.

Install identMX as described in chapter 3 Installing and wiring.

The main dialog of the application features three frames:



Screenshot 3: identMX main dialog

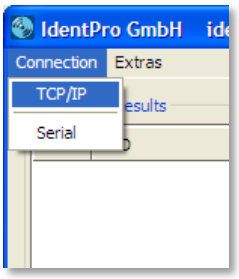
The version 1.0.5 of identMX TI requires a RFID Firmware of version 2.4.4 or higher running on the device. Prior to using the tool you should check if your device is compatible (select “Info” from the “Extras” section in the Menu bar, see “identMX RFID FW”) and if necessary perform a firmware update (see chapter 4.2.5 RFID Firmware Update).

4.2.1 Establishing a connection

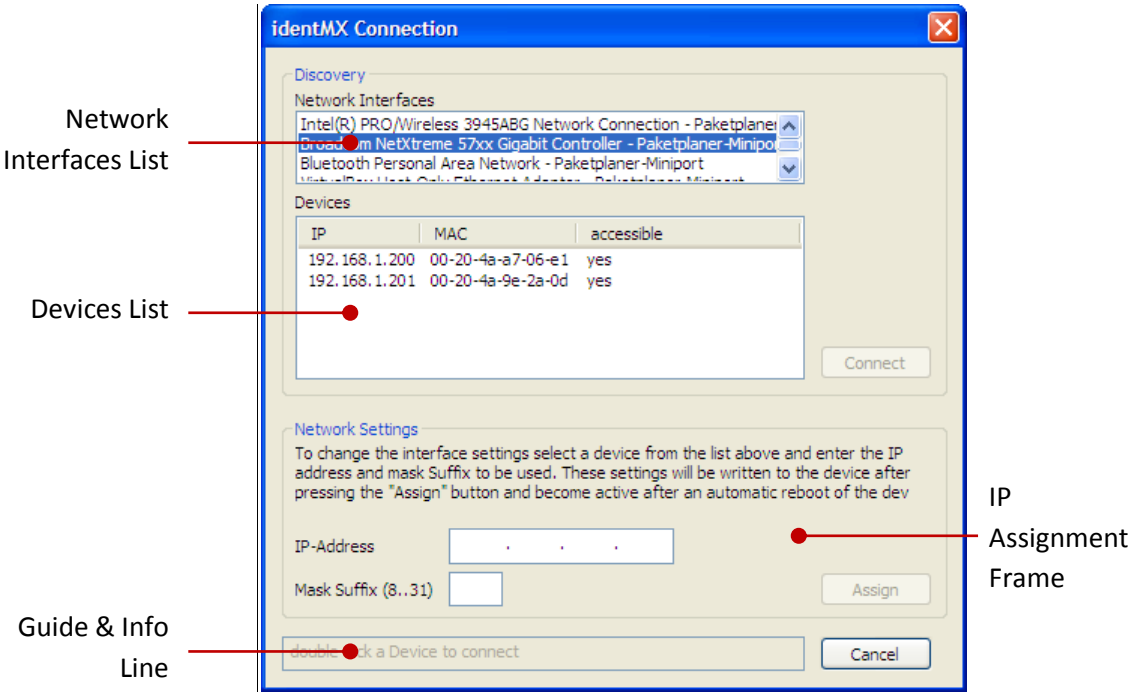
TCP

identMX TI comprises a feature called *Device Discovery* that allows you to discover any identMX running on your local network and to connect to a device of which e.g. the IP address settings are unknown. This even works if a device currently uses an address out of the scope of the subnet of your local computer.

Click on “Connection” in the Menu Bar and select “TCP/IP”



to open the Connection Dialog. The instructions in the "Guide & Info Line" will help you using the discovery feature. In that line you will also find information about errors and the current state of the *Device Discovery* process.



Screenshot 4: TCP/IP connection

As the dialog opens, the *Network Interfaces List* lists up all network interfaces available on the local computer. Double click on a entry to start scanning for devices.
When the scan is completed, the MAC and current IP address of each discovered device are shown in the *Devices List*.

NOTE: Depending on your local computer´s setup, devices may be discovered on multiple paths and therefore multiple entries representing the same device may occur in the *Devices List.*

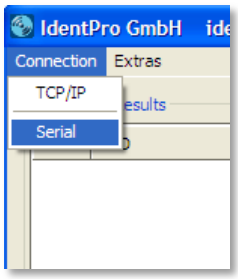
The property "accessible" indicates whether a device is accessible from the subnet(s) of your local computer. If it is not accessible you will have to change your local computers network settings accordingly or assign an IP address in your subnet to that device.

NOTE: The identMX factory default TCP/IP address is *192.168.1.200* with netmask *255.255.255.0*. To get an initial connection please make sure, that you can reach this address from your local computer´s subnet.

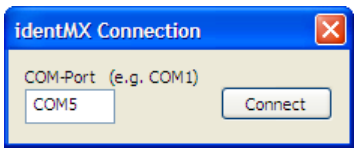
You can change the address of an identMX directly from the Connection Dialog. After performing a device discovery select a device from the device list. Enter the IP address and the mask Suffix (CIDR notation) and press assign. It takes a view seconds for the new settings to get active. Observe the information in the Guide & Info Line.

Serial

To establish a connection to an identMX with a serial communication interface (RS-232 or RS-422) click on “Connection” in the Menu Bar and select “Serial”

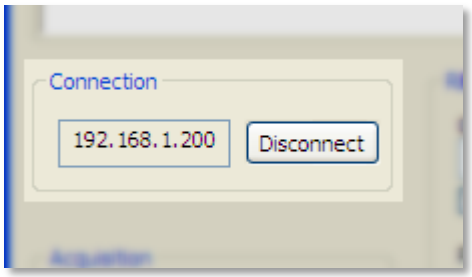


to open the Serial Connection Dialog.



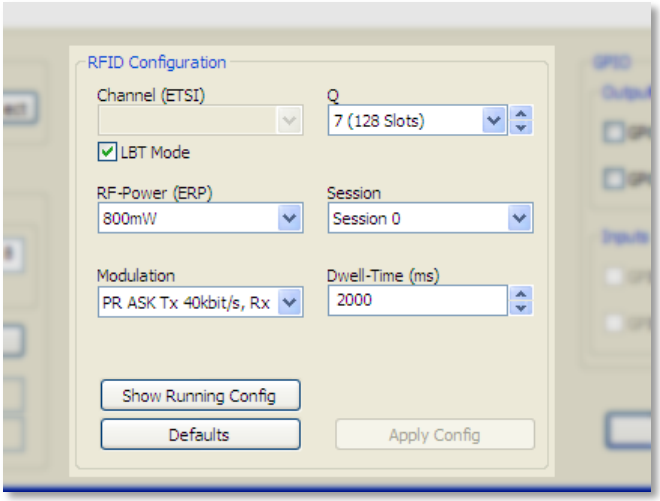
Enter the name of the serial communication port of your local computer that is connected to the device.

Once you are connected with a device, the *Connection Dialog* closes automatically and the device´s IP address or the local COM-Port respectively will be shown in the *Connection Section* of the *Control and Config Frame*. You can use the *Disconnect / Connect* button to disconnect from the device or re-establish the connection.



4.2.2 RFID configuration

With *identMX TI* you can change any RFID related parameter of the device. You find all these parameters in the RFID Configuration Section of the *Control and Config Frame*.



Screenshot 5: RFID configuration section

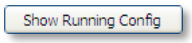
Once you are connected with a device, the current configuration running on it will be displayed. After changing any parameter you do not have to reboot or even restart the device to make the setting become active. Just press the *Apply Config* button. This allows you to shortly find out the ideal setting for your application.

Parameter	Comment
Channel	The index of a radio channel according to ETSI used to communicate with RFID tags. Entries marked "DRM" are specified by ETSI to be used in Dense Reader Mode.
LBT Mode	Selects between the two methods of accessing the RF field: • Listen Before Talk (checked) and • Dense Reader Mode (unchecked)
RF-Power	This is the real power of the radio field radiated by the antenna (ERP .. Effective Radiated Power) in mW. Not to mistake ERP for connected power!
Modulation	Selects between the data modulation (DSB .. double side band, PR .. phase reversal) and coding types (FM .. bi-phase space, M.. Miller). Each value is characterized by a specific Tag-to-Reader data bandwidth. Refer to *"Specification for RFID Air Interface"* Version 1.2.0, by *GS1 EPCglobal*, chapter 6.3.1 *Signaling* for further information.
Q	An integer value in the range of 0 to 15 used with tag query commands to calculate the number of slots (2^Q = 1 to 32768) in an inventory round. Larger values mean more slots but slower performance, smaller values mean fewer slots but faster performance. Choose a value resulting in at least twice the number of slots than number of tags expected in an inventory at a time. E.g. if you expect to read 10 tags, choose Q=5 (2^5 Slots = 32 Slots). Refer to *"Specification for RFID Air Interface"* Version 1.2.0, by *GS1 EPCglobal*, chapter 6.3.2.4 *Tag states and slot counter* for further

Parameter	Comment
	information.
Session	Choose one of four sessions (denoted S0 to S3) for tag inventory. With this parameter a reader can control the inventoried flag of tags for each session. Use session S0 if you aim to read each tag in a population within every inventory. Refer to *"Specification for RFID Air Interface"* Version 1.2.0, by *GS1 EPCglobal*, chapter 6.3.2.2 *Sessions and inventoried flags* for further information.
Dwell-Time	Maximum antenna dwell time in ms during inventory. The device will occupy each frequency for no longer than this time. Valid values are in the range of 0 to 3000. Practical values are in the range from 500 to 2000.

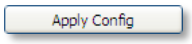
Table 8: RFDI Configuration Parameters

The buttons have the following functions:



Retrieves and displays the current configuration running on the device

Fills the *RFID Configuration* with default values



Transmits the configuration in the *RFID Configuration* to the device.
This button only gets active if the current setting in the dialog differs from the configuration actually running in the device!

4.2.3 Tag Acquisition and Inventory

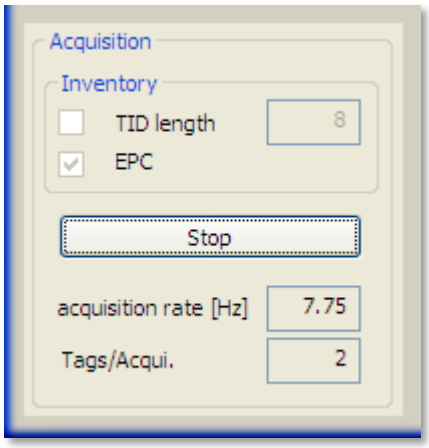
The essential feature of *identMX TI* is the Tag Acquisition and Inventory function. This allows you to automatically read a tag population in the device´s reading range and to consecutively inventory the collected tags regarding to certain individual data. The result of the inventory will be displayed in the *Inventory Result Frame* simultaneously.

You can start and stop the tag acquisition process any time using the *Start / Stop* Button. While the acquisition process is running the current rate as well as the number of tags of the last acquisition will be displayed.

Prior to start the tag acquisition, configure the tag inventory criteria to ensure that each tag in the field will be clearly identified and allocated in the *Inventory Result List.*
An acquired tag matching in terms of all inventory criterias to a previously inventoried tag will be allocated to the according entry in the inventory result list.

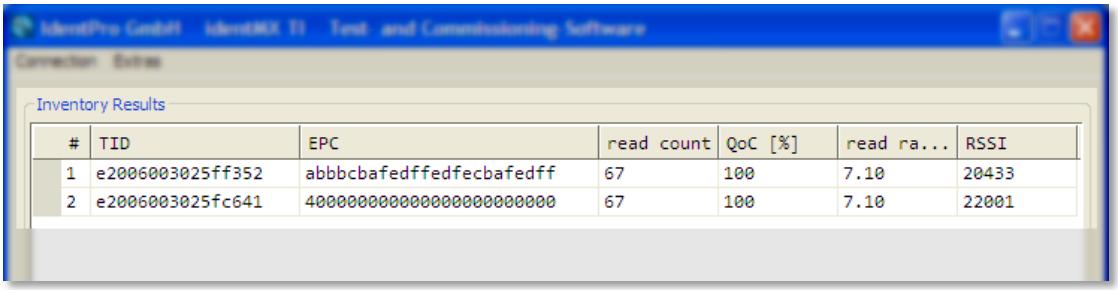
NOTE: Multiple inventory criteria will be AND-related to determine a match to existing *Inventory Result List* entries.

NOTE: Some tags don´t have neither a unique TID (serial number) nor individual EPCs programmed by the chip/tag manufacturer. This results in a read result of "1" even if physically several of those tags are in the field.



Criteria	Comment
TID length	Select whether the Tag ID (TID) should be used as an inventory criterion. Specify the maximum TID length (in Bytes). If this criterion is not selected, the TID will not be taken into account to identify a tag for inventory.
EPC	Select whether the EPC should be used as an inventory criterion. Make sure each tag is programmed with an individual EPC. If this criterion is not selected, the EPC will not be taken into account to identify a tag for inventory.

Each tag inventoried will be listed in the *Inventory Result List* . For each entry, several properties will be displayed.



Column	Comment
#	This is the consecutive index of the *Inventory results List* entry.
TID	This is the TID identifying the tag in hexadecimal representation.
EPC	This is the EPC identifying the tag in hexadecimal representation.
Read count	This is the count of reads for this tag since the beginning of the inventory process.
QoC	Quality of capture is the ratio of the count of reads of this tag to the tag acquisition count.
Read rate	The rate in Hz with which this tag is read.
RSSI	The RSSI (Radio Signal Strength Indicator) is a characteristic for the strength of the received signal of this tag. An RSSI typically has no unit and hence is not comparable with values obtained by readers.

Table 9: Inventory Result List Columns

The *Inventory Result List* will be cleared each time the acquisition process is started.

4.2.4 Export Inventory Data

The result of an inventory process can be exported to a file. This allows you to e.g. archive the data collected during a trail or to use this data for post-processing.
The export function of identMX TI will write an the data currently displayed in the *Inventory Result List* to a file in the CSV (character separated values) format. This widespread format is compatible to any spreadsheet program and can even be viewed and edited this any text editor.

The inventory export function is only available while tag acquisition is in the “Stop” state. To export inventory data select “Export Inventory” from the “Extras” section in the Menu bar. A file selection dialog will appear asking you for the name and location of the export file.

4.2.5 RFID Firmware Update

Firmware version 2.4.4 or higher is required on the identMX units that you want to control with the identMX TI software. To check the current firmware version of a identMX reader select “Info” from the “Extras” section in the Menu bar and see “identMX RFID FW”.

Executing a firmware update depends on the communication interface that the identMX unit you want to update provides. Make sure the identMX is correctly installed as described in chapter *3 Installing and wiring*. You will always find a firmware suitable to run identMX TI in the folder “Firmware” within the application folder of this tool.

NOTE: *Make sure to keep up power and connection to the identMX until the firmware update is fully completed! Interrupting the update process or breaking the power supply or the data stream can result in the device becoming inaccessible!*

TCP

Devices providing a TCP/IP interface (ID-RRS 521, ID-RRS 512, ID-RRS 521 and ID-RRS 522) can be updated by FTP. Any FTP-Client application (e.g. Total Commander) can be used.
Establish a connection to the device using your FTP-Client application. By default, identMX is shipped with the following FTP user credentials:

- User: admin
- Password: g93ncls0

Now you have access to the identMX´s file system. Copy the identMX RFID firmware image file (e.g. “idMX_RFID_FW_2.4.4.bin”) from your local drive to the root directory of the identMX. Rename the file to “idMX_RFID_FW.bin”. The firmware update process should start automatically. You can monitor the update progress by the pulse width of the green function LED (FLED 1) on the user panel. The update process should take about 20 seconds. When the LED constantly glows the update process has been terminated.

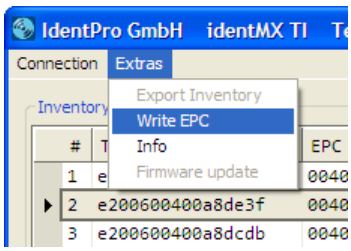
Serial

Devices providing a serial interface (ID-RRS 541 and ID-RRS 542) can be updated using identMX TI. Establish a connection to the device as described in chapter *4.2.1 Establishing a connection*. To open the update dialog, select “Firmware update” from the “Extras” section in the Menu bar. Click the open button to select the identMX RFID firmware image file (e.g. “idMX_RFID_FW_2.4.4.bin”) from your local drive. To start the update process click *Download*. The update process should take about 2 minutes. The progress of the update process is shown by the progress bar.

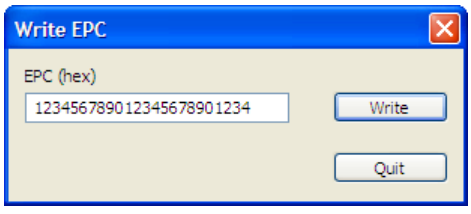
4.2.6 Write EPC

identMX TI provides a simple function to write the EPC of a tag.

NOTE: *In practice, reliable writing operations can be complex. The Write EPC feature as implemented in identMX TI does not exploit the capabilities of the system. This functionality has been implemented just for testing purposes and is limited to provide a simple user interface.*



To write an EPC, start by performing an inventory of the tags in the reader´s field. As a unique identifier for the write operation is needed, the inventory criteria “TID length” with at least 8 Byte (TID containing a Serial Number) is needed. Select the entry of the tag you wish to program in the Inventory Result List by clicking on the appropriate row. The item should be highlighted after clicking. To open the EPC Write dialog, select “Write EPC” from the “Extras” section in the Menu bar.



When the Write EPC dialog appears, enter up to 12 bytes (96 bits) of data in hex format to be programmed as EPC in the EPC field. To write the data to the tag, click “Write”.

Under some conditions, attempting to write data may fail (tag is not sufficiently powered, tag´s EPC is locked, the RF channel selected is occupied, etc.). Particularly if the tag is not sufficiently powered to process write operations, try to place the tag closer to the antenna. As a rule of thumb, half of the maximum reading distance is needed for writing.

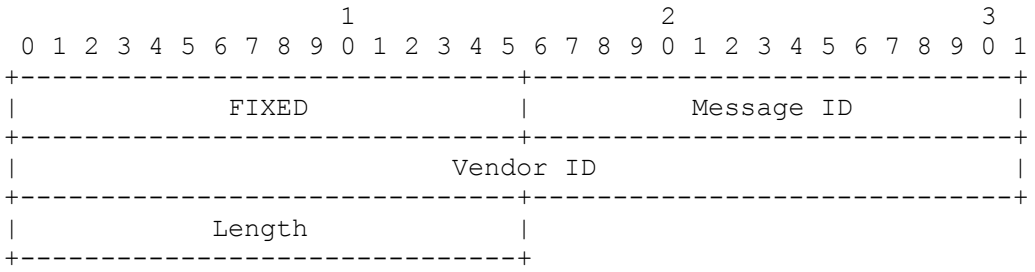
5 Protocol reference guide

This Protocol Reference Guide is designed for users and developers who need to program applications to communicate with identMX readers. This chapter describes the message format of the communication protocol used by the host and the reader in order to issuing commands and reply with responses. The protocol is based on the Attribute Value Pair (AVP) schema and foresees a message header in order to identify the message scope.

The command set and the firmware architecture are similar to the Reader Protocol 1.0 specification draft from EPCGlobal. Message fields are described left to right, with the most significant byte on the left and the least on the right.

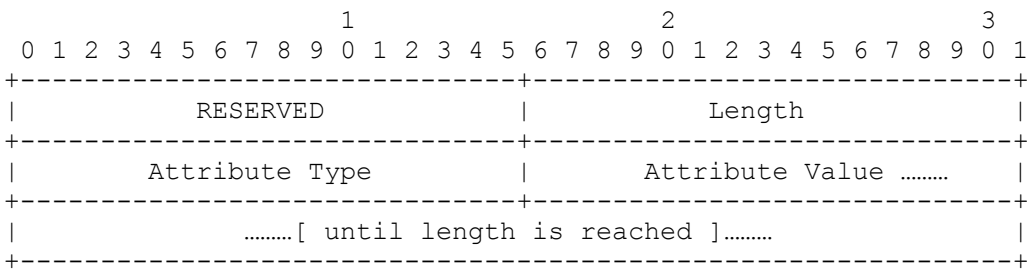
The identMX reader system protocol uses a synchronous command channel which is implemented on top of a TCP/IP socket and optional on a serial communication line.
All messages (commands, responses and notifications) are composed by a header and a body. In all cases the body of the message is a list of attribute-value pairs. Responses always echo the Command AVP sent by the host.

All the packets for the control channel share a common header format:



FIXED	Must be 0x8001 for commands and 0x0001 for responses.
Message ID	ID of the message. It is a sequence number used to map requests to its responses: a request and its corresponding response have the same message ID.
Vendor ID	Must be 0x5358.
Length	Encodes the length of the message in bytes including the header.

The header is directly followed by a list of AVPs. The number of AVPs depends on the command. Each AVP has the following format:



RESERVED	The first 16 bits are reserved for future extensions. All reserved bits must be set to 0 on outgoing messages and ignored on incoming messages.
Length	Encodes the length of the AVP packet including the length and the reserved fields.
Attribute type	A 2 byte code identifying the attribute type.
Attribute value	The actual attribute value according to the type. It follows immediately after the Attribute Type field and runs for the remaining bytes indicated in the Length (i.e. Length minus 6 bytes of header)

5.1 Attribute types

This chapter provides a brief overview of the attribute types used by the identMX reader. In addition, the data types and length are described.

Code	Description	Value Length [Bytes]
0x01	**CommandCode**: the command to be executed. All command codes are specified in the relevant table.	2
0x02	**ResultCode**: a code representing an indication on the result of the command. All result codes are specified in the relevant table.	2
0x0F	**TagIDLen**: the length of the tag ID.	2
0x10	**TimeStamp**: an indication of the time. Attribute must be interpreted as follow: - the 4 least significant bytes are the seconds elapsed from the 1 January 1970. - the 4 most significant bytes are the micro-seconds.	8
0x11	**TagID**: represents the ID of the transponder read. Attribute value has a maximum length of 12 bytes.	≤12
0x12	**TagType**: the tag's type. Attribute value can take on the following value: 0x03 = EPCC1G2	2
0x22	**ReadPointName**: a string representing the name of the read point. Attribute value has a maximum length of 5 bytes and can take on the following value: "Ant0"	≤5
0x4D	**TagValue**: data read from the tag memory (when applicable). Attribute value has a maximum length of 128 bytes.	≤128
0x4E	**TagAddress**: the memory location address of the tag where read or write data operation takes place.	2
0x50	**Length**: a value representing the length of a parameter.	2
0x51	**BitRate**: a value representing the air interface BitRate. Attribute value can take on the following values: 0x2 – Transmit : DSB ASK 40kbit, Receive : FM0 40kbit 0x5 – Transmit : DSB ASK 40kbit, Receive : Miller M=2 160kbit 0x6 – Transmit : PR ASK 40kbit, Receive : Miller M=4 250kbit 0x7 – Transmit : PR ASK 40kbit, Receive : Miller M=4 300kbit	2
0x52	**PowerGet**: a value representing the current radio power.	4
0x54	**Protocol**: a value representing the air protocol. Attribute value can take on the following value: 0x03 = EPCC1G2	4

Code	Description	Value Length [Bytes]
0x57	**Boolean**: a value representing a boolean data. Attribute value can take on the following values: 0x00 = FALSE. Not 0x00 = TRUE.	2
0x60	**BaudRate**: a value representing the baudrate setting of a serial port.	4
0x61	**DataBits**: a value representing the databits setting of a serial port.	4
0x62	**StopBits**: a value representing the stopbits setting of a serial port.	4
0x63	**Parity**: a value representing the parity setting of a serial port. Attribute value can take on the following values: 0x00 = No parity 0x01 = Odd parity 0x02 = Even parity	4
0x64	**FlowCtrl**: a value representing the flow control setting of a serial port. Attribute value can take on the following values: 0x00 = No flow control 0x01 = Hardware flow control 0x02 = Software flow control (not yet implemented)	4
0x67	**Bitmask**: Inventory Flags. When set to 1, RSSI value for each tag detected is returned. Default value is 0.	2
0x69	**IORegister**: a value representing the status of the I/O lines of the reader. Where input lines are separated from output ones, input lines are mapped on the less significant bits while outputs are mapped on the most significant bits.	4
0x6A	**ConfigParameter**: a value representing a configuration parameter. Attribute value can take on the following values: 0x00 = ReadCycle configuration 0x01 = Observed Threshold configuration 0x02 = Lost Threshold configuration 0x03 = Starting Q value (Valid values: 0 ÷ 15). 0x04 = Session (Valid values: 0 ÷ 3).. 0x05 = Target (Valid values: 0 ÷ 1). 0x06 = Selected (Valid values: 0 ÷ 1). 0x08 = Antenna dwell time during inventory (msec). 0x09 = Inventory type (Valid values: 0 ÷ 3).	4
0x6B	**ConfigValue**: a value for the configuration parameter.	4
0x71	**MemoryBank**: a value representing the memory bank of EPC Class 1 Generation 2 tags. Attribute value can take on the following values: 0x00 = Reserved Memory Bank 0x01 = EPC Memory Bank 0x02 = TID Memory Bank 0x03 = User Memory Bank	2
0x72	**Payload**: a value representing the payload parameter for the EPC Class 1 Gen 2 lock command (see the EPC Gen2 specification for details).	4

Code	Description	Value Length [Bytes]
0x73	**G2Password**: a value representing the Acess / Kill password parameter for the EPC Class 1 Gen 2 commands (see the EPC Gen2 specification for details).	4
0x75	**QParameter**: a value representing the initial value for the Q parameter defined in the EPC Class 1 Gen 2 anticollision algorithm (see the EPC Gen2 specification for details).	2
0x76	**ReaderInfo**: a ASCII byte character string indicating the model and the serial number of the reader. Attribute value has a maximum length of 30 bytes.	≤30
0x77	**RFRegulation**: a value representing the RFID regulation to use. Attribute value can assume the following values: 0x00 = ETSI EN 302 208 0x01 = ETSI EN 300 220	2
0x78	**RFChannel**: a value representing the RF channel to use. Attribute value can take on values in the range of 0 … 9. Channels refer to the ETSI EN 302 208 regulation.	2
0x7A	**RSSI**: a value representing the backscattered RF field strength.	2
0x96	**PowerSet**: a value representing the RF power emitted during the communication with tags.	4
0xFB	**SourceName**: a ASCII byte character string representing the name of the data source. Attribute value has a maximum length of 30 bytes and can take on the following value: “Source_0”	≤30

Table 10: Attributes

5.2 Command codes

This chapter provides a brief overview of the commands used by the identMX reader communication protocol (AVP 0x01, **CommandCode)**. In addition, the data types used with each command are described.
NOTE: Parameters marked with [in] must be set accordingly when sending the command. Parameters marked with [out] are returned by the system.

Code	Description
0x13	**NewRawReadIDs**: permits to get all IDs of transponders within the RF field of the selected source. Parameters: *SourceNameIn*: [in] the name of the source to use (optional). *Length*: [in] Filter Mask Lenght (optional). *TagID*: [in] Filter Mask Value (optional). *TagAddress*: [in] Filter Mask Start Address (optional). *Bitmask*: [in] Inventory Flags. When set to 1, RSSI value for each tag detected is returned. Default value is 0. For each tag detected the parameters returned by the command are: *SourceNameOut*: [out] the name of the source used. *ReadPointName*: [out] the name of the read-point. *TimeStamp*: [out] the time at which a tag is detected. *TagType*: [out] the type of a tag. *TagIDLen*: [out] the ID length of a tag detected. *TagID*: [out] the ID of a tag. *RSSI*: [out] the backscattered field strength of a tag *ResultCode*: [out] the result code.
0x64	**SetPower**: permits to set RF power level. Parameters: *PowerSet*: [in] the power level to set. *ResultCode*: [out] the result code.
0x72	**SetBitRate**: permits to set BitRate to use. Parameters: *BitRate*: [in] the BitRate to set. *ResultCode*: [out] the result code.
0x73	**GetPower**: permits to obtain the current RF power level. Parameters: *PowerGet*: [out] the current power level. *ResultCode*: [out] the result code.
0x81	**GetBitRate**: permits to obtain the BitRate in use. Parameters: *BitRate*: [out] the BitRate in. *ResultCode*: [out] the result code.

Code	Description
0x83	**SetRS232**: permits to modify settings of the serial port. Parameters: *Baudrate*: [in] the baud rate value. *Databits*: [in] the data bits setting. *Stopbits*: [in] the stop bits setting. *Parity*: [in] the parity setting. *Flowctrl*: [in] the flow control setting. *ResultCode*: [out] the result code.
0x86	**GetIO**: permits to read the current status of the I/O lines. Parameters: *IORegister*: [out] the status of the I/O lines. *ResultCode*: [out] the result code.
0x87	**SetIO**: permits to set the level of the output lines. Parameters: *IORegister*: [in] the value to set to the output lines. *ResultCode*: [out] the result code.
0x88	**SetIODirection**: permits to define the direction of the I/O lines. (0 = input; 1 = output) Parameters: *IORegister*: [in] the direction to set to the I/O lines. *ResultCode*: [out] the result code.
0x89	**GetIODirection**: permits to read current status of the I/O lines. (0 = input; 1 = output) Parameters: *IORegister*: [out] the direction of the I/O lines. *ResultCode*: [out] the result code.
0x8A	**SetSourceConfig**: permits to set a configuration parameter for a logical source. Parameters: *SourceName*: [in] the name of the source to configure. *ConfigParameter*: [in] the code of the parameter. *ConfigValue*: [in] the value for the parameter. *ResultCode*: [out] the result code.
0x8B	**GetSourceConfig**: permits to read a configuration parameter for a logical source. Parameters: *SourceName*: [in] the name of the source to configure. *ConfigParameter*: [in] the code of the parameter. *ConfigValue*: [out] the value for the parameter. *ResultCode*: [out] the result code.

Code	Description
0x96	**G2Read**: permits to read data from any of the Gen2 tag memory banks. Parameters: *SourceName*: [in, optional] the name of the source to use. *TagIDLen*: [in] the ID length of the tag. *TagID*: [in] the ID of the tag. *MemoryBank*: [in] the memory bank. *TagAddress*: [in] the address where to read the data. *Length*: [in] the number of bytes to read (must be an even number). *TagValue*: [out] the data read from the tag memory. *G2Password*: [in] the EPC Access password (optional). *ResultCode*: [out] the result code.
0x97	**G2Write**: permits to write data into the Gen2 tag memory banks. Parameters: *SourceName*: [in] the name of the source to use. *TagIDLen*: [in] the ID length of the tag. *TagID*: [in] the ID of the tag. *MemoryBank*: [in] the memory bank. *TagAddress*: [in] the address where to write the data. *Length*: [in] the number of bytes to write (must be an even number). *TagValue*: [in] the data to write to the tag memory. *G2Password*: [in] the EPC Access password (optional). *ResultCode*: [out] the result code.
0x98	**G2Lock**: permits to execute the tag lock command defined by the EPC Class 1 Gen 2 protocol. Parameters: *SourceName*: [in] the name of the source to use. *TagIDLen*: [in] the ID length of the tag. *TagID*: [in] the ID of the tag. *G2Payload*: [in] the lock payload. *G2Password*: [in] the EPC Access password (optional). *ResultCode*: [out] the result code.
0x99	**G2Kill**: permits to execute the tag kill command defined by the EPC Class 1 Gen 2 protocol. Parameters: *SourceName*: [in] the name of the source to use. *TagIDLen*: [in] the ID length of the tag. *TagID*: [in] the ID of the tag. *G2Password*: [in] the kill password. *ResultCode*: [out] the result code.
0x9E	**GetReaderInfo**: permits to read information about the reader itself. Parameters: *ReaderInfo*: [out] a string with information about the reader. *ResultCode*: [out] the result code.

Code	Description
0xA1	**SetRFRegulation**: permits to change the RF regulation used by the reader. Parameters: *RFRegulation*: [in] the desired RF regulation (see attribute type 0x77). *ResultCode*: [out] the result code.
0xA2	**GetRFRegulation**: permits to read the RF regulation used by the reader. Parameters: *RFRegulation*: [out] the desired RF regulation. *ResultCode*: [out] the result code.
0xA3	**SetRFChannel**: permits to set the RF channel which will be used by the reader Parameters: *RFChannel*: [in] the RF channel. *ResultCode*: [out] the result code.
0xA4	**GetRFChannel**: permits to read the RF channel currently in use. Parameters: *RFChannel*: [out] the RF channel. *ResultCode*: [out] the result code.

Table 11: Command Codes

5.3 Protocol sample

The following sample illustrates how requests are sent to and response is received from the reader system. Shown is a NewRawReadIDs command with additionally obtaining RSSI values.

Request sent:

Header:	0x8001	(FIXED)
	0x00BF	(Message ID)
	0x00005358	(Vendor ID)
	0x0029	(Message Length)
AVP 1:	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x0001	(AVP Type = CommandCode)
	0x0013	(AVP Value = NewRawReadIDs)
AVP 2:	0x0000	(Reserved)
	0x000F	(AVP Length)
	0x00FB	(AVP Type = SourceName)
	0x536F757263655F3000	(AVP Value = "Source_0")
AVP 3:	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x0067	(AVP Type = Bitmask)
	0x0001	(AVP Value = 1)

Response received:

Header:	0x1000	(FIXED)
	0x00BF	(Message ID)
	0x00005358	(Vendor ID)
	0x006C	(Message Length)
AVP 1:	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x0001	(AVP Type = CommandCode)
	0x0013	(AVP Value = NewRawReadIDs)
AVP 2:*)	0x0000	(Reserved)
	0x000F	(AVP Length)
	0x00FB	(AVP Type = SourceName)
	0x536F757263655F3000	(AVP Value = "Source_0")
AVP 3:*)	0x0000	(Reserved)
	0x000B	(AVP Length)
	0x0022	(AVP Type = ReadPointName)
	0x416E743000	(AVP Value = "Ant0")
AVP 4:*)	0x0000	(Reserved)
	0x000E	(AVP Length)
	0x0010	(AVP Type = TimeStamp)
	0x0000000000000000	(AVP Value)
AVP 5:*)	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x0012	(AVP Type = TagType)
	0x0003	(AVP Value = EPCC1G2)
AVP 6:*)	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x000F	(AVP Type = TagIDLen)
	0x000C	(AVP Value = 12Byte)
AVP 7:*)	0x0000	(Reserved)
	0x0012	(AVP Length)
	0x0011	(AVP Type = TagID)
	0x05629FFFA0120001C0113001	(AVP Value)
AVP 8:*)	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x007A	(AVP Type = RSSI)
	0x4A9E	(AVP Value = 19102)
AVP 9:	0x0000	(Reserved)
	0x0008	(AVP Length)
	0x0002	(AVP Type = ResultCode)
	0x0000	(AVP Value = Success)

*) The AVPs 2-8 will be repeated for every tag received

6 Technical data

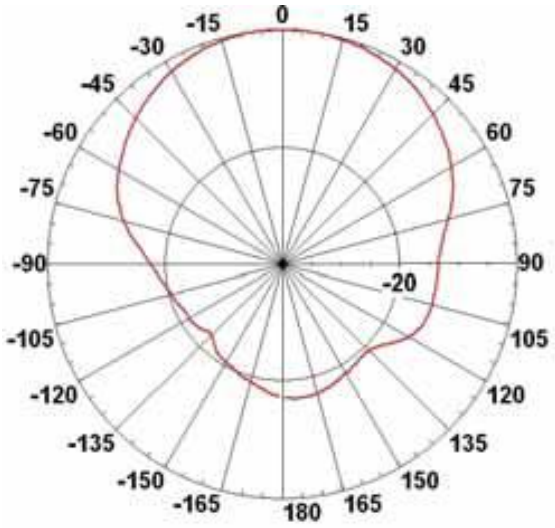
6.1 Specifications identMX

Attribute	Value
Frequency	865 MHz … 868 MHz
Air interface protocol	EPC Class1 Gen 2, ISO 18000-6C
Write/Read range	Up to 6 m, depending on transponder, application and ambient conditions
Transmitting power	1.8 W ERP (ETSI EN 302 208), configurable in 8 steps
Antenna, Gain	Circular, 7 dBic; Linear, 8 dBi
Interface	10/100MBit/s Ethernet TCP/IP according to IEEE 802.3 i/u
External In-/Output	2 x Digital In, 2 x Digital Out
Firmware Update	Yes
Indicators	2 x bi-colour LED, internal buzzer
Operating temperature	-20°C … +60°C
Storing temperature	-40°C … +85°C
Relative humidity	5% … 95% non condensing
Housing; Weight	Aluminum / PP; less than 1.500 gram
Protection rating	IP 65
Size (L x W x H)	190 x 190 x 76 mm
Power supply	Power over Ethernet (PoE) according to IEEE 802.3af
Power consumption	Max. 8 W (operating), 3,5 W (standby)

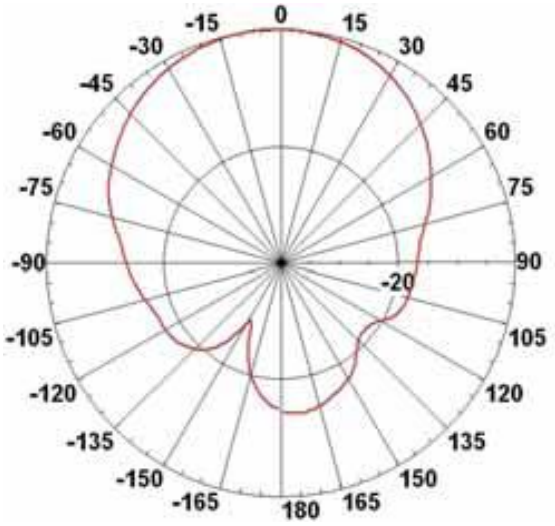
6.2 Antenna characteristics

Circular antenna (ID-RRS 511, 521, 541)

Attribute	Value
GAIN	7.5 dBic (min)
VSWR	1.3:1 (typical) 1.5 : 1(max)
3 dB BEAMWIDTH	AZ: 75° (typical), EL: 73° (typical)
POLARIZATION	RHCP
AXIAL RATIO AT BORESIGHT	2 dB (typical) 2.5 dB (max)
AXIAL RATIO @ ±30º	3 dB (max)
F / B RATIO	-18 dB (max)



Azimuth Radiation Pattern



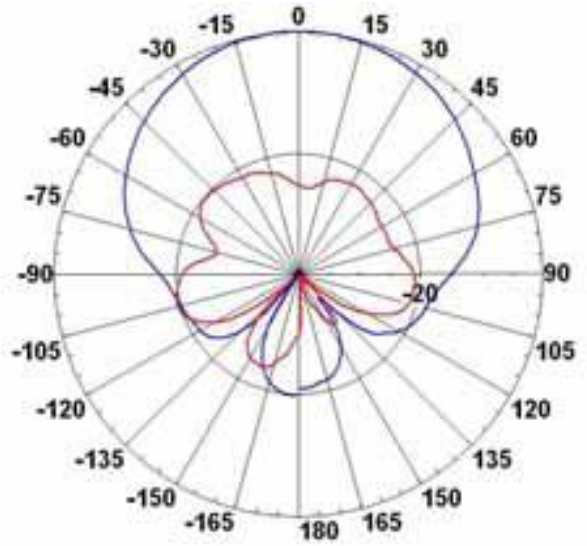
Elevation Radiation Pattern

Illustration 9: Antenna radiation pattern, circular

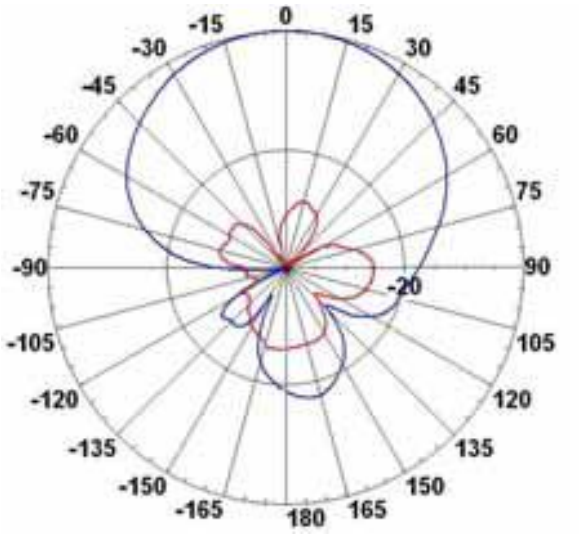
Linear antenna (ID-RRS 512, 522, 542)

Attribute	Value
GAIN	8 dBi (min)
VSWR	1.3 : 1 (max)
3 dB BEAMWIDTH	AZ: 80°(typical) EL: 71°(typical)
POLARIZATION	Linear Vertical
SIDE LOBES LEVEL AZIMUTH	-20dB @ ±130 to±180
SIDE LOBES LEVEL ELEVATION	-16dB @ ±130 to±180
CROSS POLARIZATION	-20dB (max)
F / B RATIO	-20dB (max)

— cross polarization



Azimuth Radiation Pattern



Elevation Radiation Pattern

Illustration 10: Antenna radiation pattern, linear

7 Manufacturer´s Declaration of Conformity

IdentPro GmbH
Südstraße 31
53757 Sankt Augustin, Germany

declares in sole responsibility, that the product
erklärt in alleiniger Verantwortung, dass das Produkt

IP65 UHF-RFID Schreib/Lesegerät
(Product description, Bezeichnung)

identMX 511, identMX 512, identMX 521, identMX 522, identMX 541, identMX 542
(Type, reference number / Typ, Erzeugnisnummer)

has been designed and manufactured in accordance with the following standards
mit den folgenden Normen oder normative Dokumenten übereinstimmt

EN 55022:2006 + A1:2007, EN 55024:1998 + A1:2001 + A2:2003
EN 302 208-2-2:2004, EN 50364:2002, EN 60950-21:2003, EN 301 489-1:2003
(Title, number of issue of standards / Titel und/oder Nummer der Normen oder normativen Dokumente)

following the provisions of the directives of the European Communities
gemäß den Bestimmungen der Richtlinien

R&TTE Guideline 1999/5/EC

Michael Wack
Managing Director
Geschäftsführer

Sankt Augustin, den 20.02.2009
(Issue place and date, Ort und Datum)

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Appendix A

The mounting kit ID-RRZ MK5 for identMX comprises:

Pos	Qty	Description	Illustration
1	1	Antenna base bracket	
2	1	Arm bracket	
3	1	Wall/Pole bracket	
4	1	Clamping bracket	
5	2	Bolt M8 x 70 mm	
6	4	Bolt M8 x 40 mm	
7	4	Bold M5 x 16 mm	
8	2	Nut M8	
9	4	Nut M5	
10	4	Washer spring M8	
11	4	Washer flat M8	
12	4	Washer spring M5	
13	4	Washer flat M5	

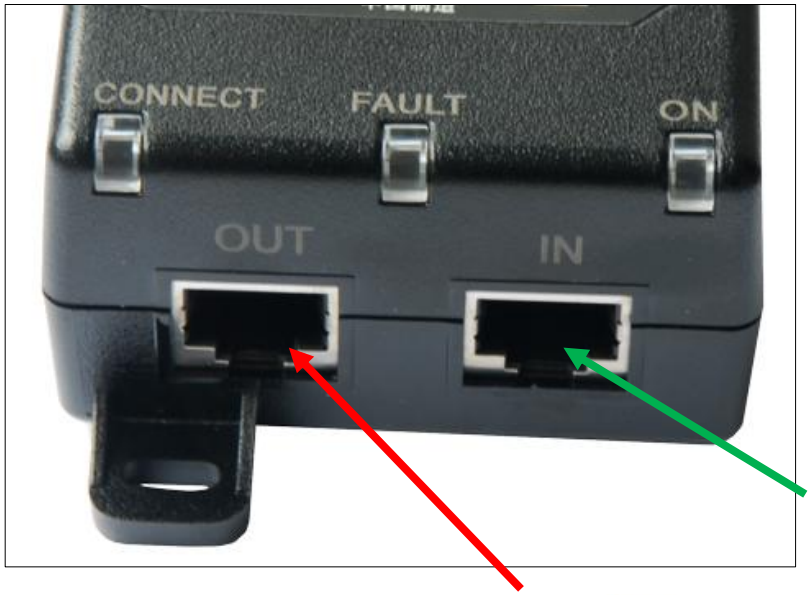
Illustrations not to scale

Appendix B

The power injector:

ID-RPS 501 (product supplied may look different from the one shown below)

Insert cable from identMX (RJ45 jack) into socket "out" (Power Out).
Insert cable from network or computer into socket "in".



Connect network/computer with „In"

Connect identMX with „out"

RJ45 jack coming from identMX reader

Assembled PoE cable:

ID-RRZ KS531
ID-RRZ KS571

Bulgin Buccaneer Serie 400 PX0410/10S

Appendix C

The following illustrations show the dimensions of the identMX system (values in mm).

Rear view:

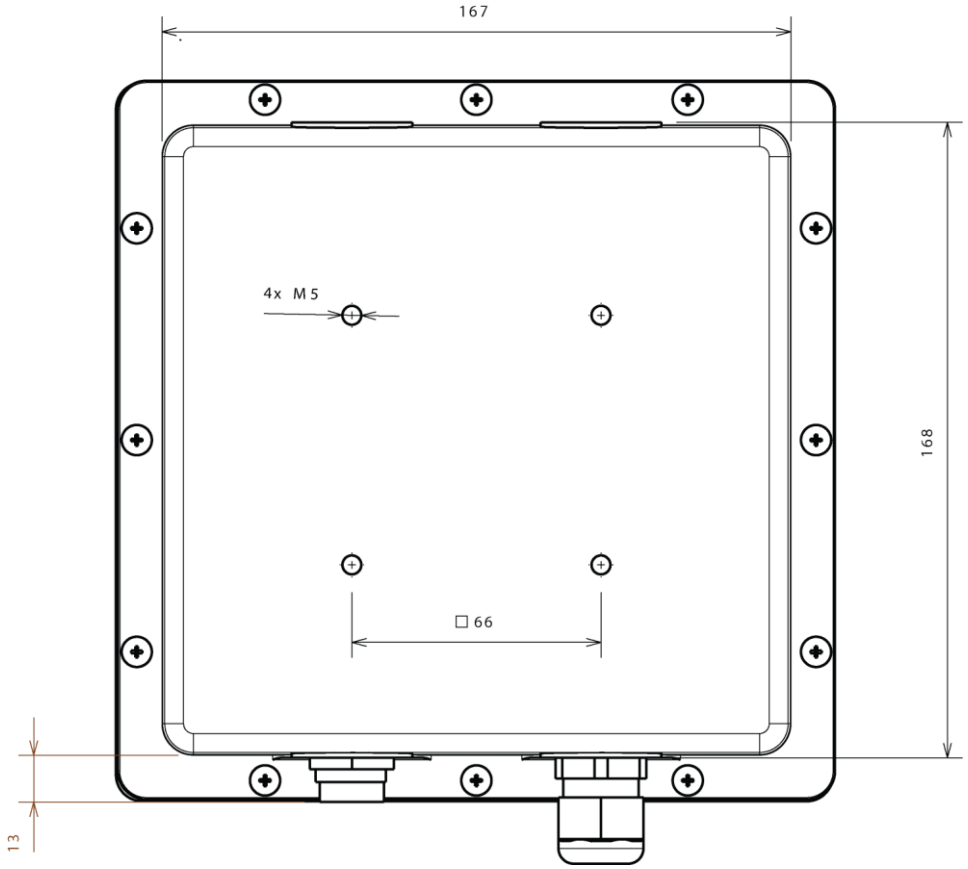


Illustration 11: Dimensions identMX, back view

Bottom view:

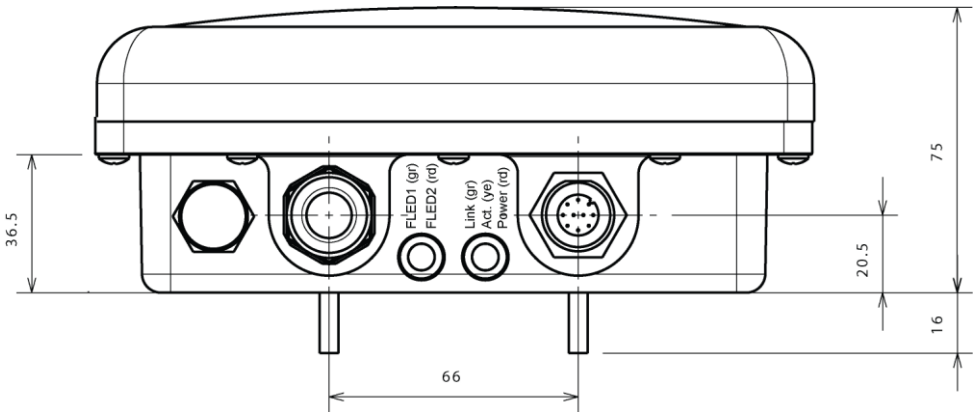


Illustration 12: Dimensions identMX, bottom view

Appendix D

The following illustration shows the footprint of the wall mount bracket (values in mm).

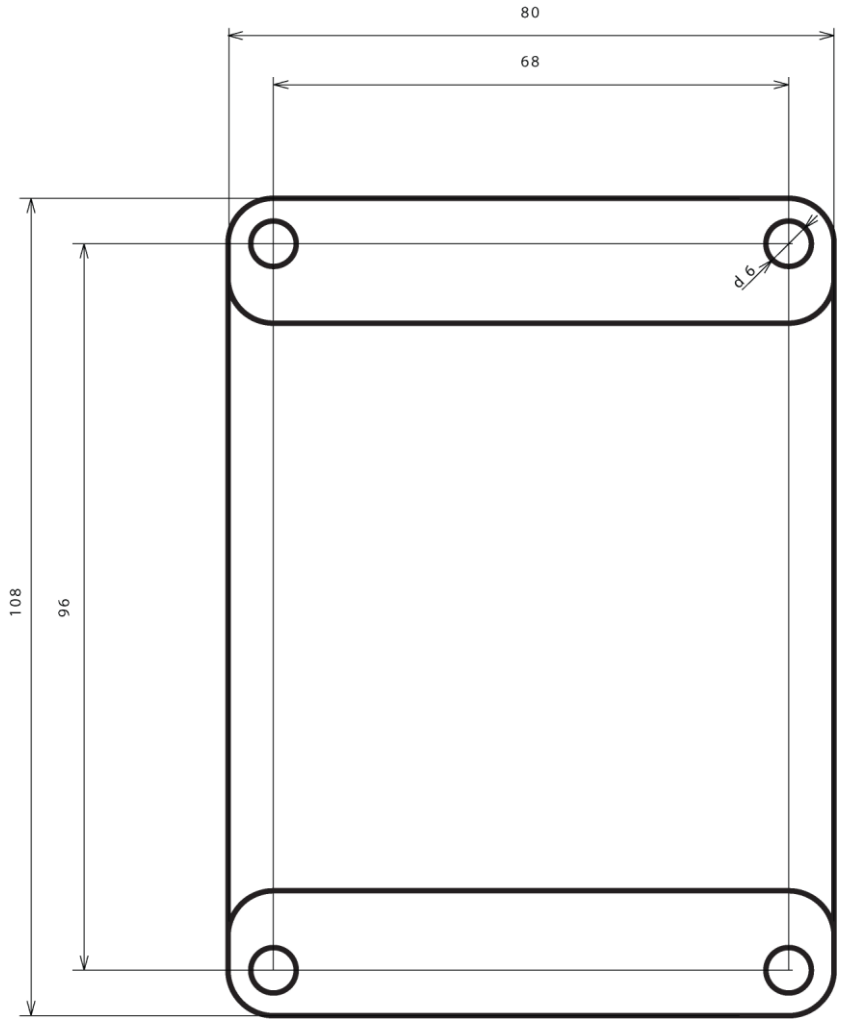


Illustration 13: Dimensions identMX accessory, wall mount bracket

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