

DATAMARS

TEXTILE ID

R-IN1300 MID

HF – multi read

USER MANUAL

Version 3.0



DATAMARS

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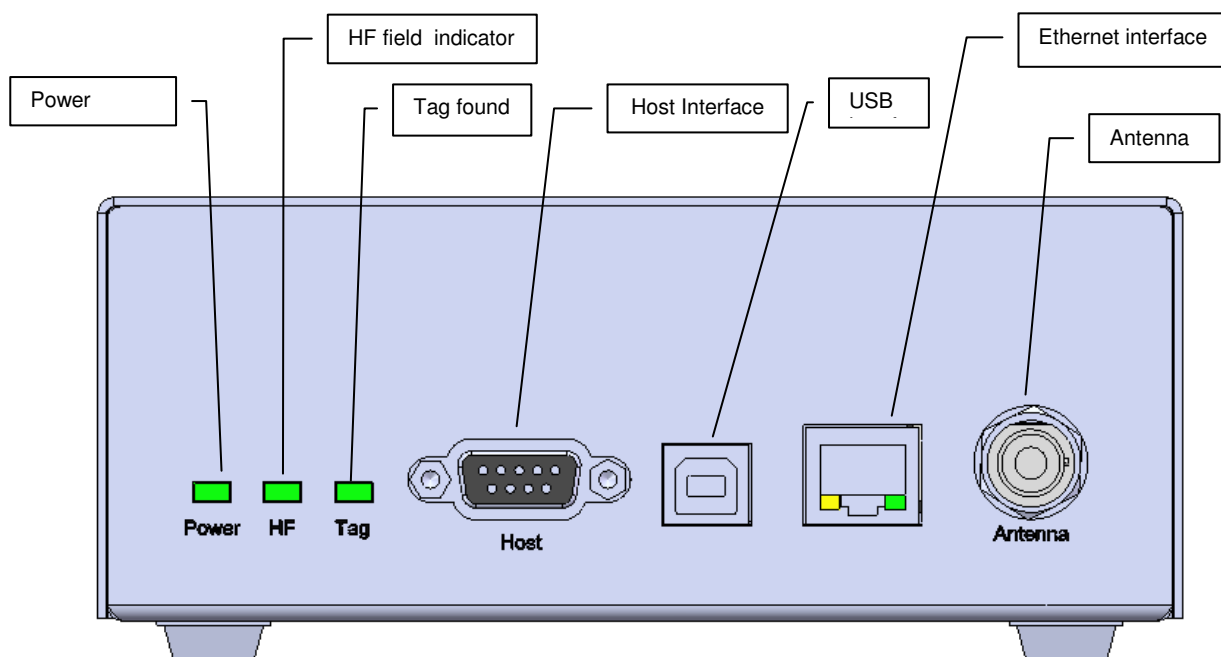
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1 INTRODUCTION

The Datamars R-IN1300 MID High Frequency (HF) RFID-reader, designed to work in industrial environments, is resistant to vibrations, electromagnetic interference and able to detect the following transponder technologies:

- T-BT 1320, T-BT1315, T-BT1311 (ISO 15693), HF

The reader is able to find simultaneously more than one High Frequency (HF - multi read) transponder¹.



LEDs

Power

Light on when the reader is switched on

Tag

Light on when one or more transponder are detected

HF

High Frequency reading is ON (Led blinks during software update)

Antenna

Antenna

TX/RX antenna: for example A-ST1330TT / TTL

Interfaces

Host

Connect to any serial port (COM) on your PC with RS-232 cable or to any other RS232 Terminal.

USB

USB device port

Ethernet (Web Server)

Connect to LAN with a standard Ethernet cable.

For more info in Ethernet communication please request the

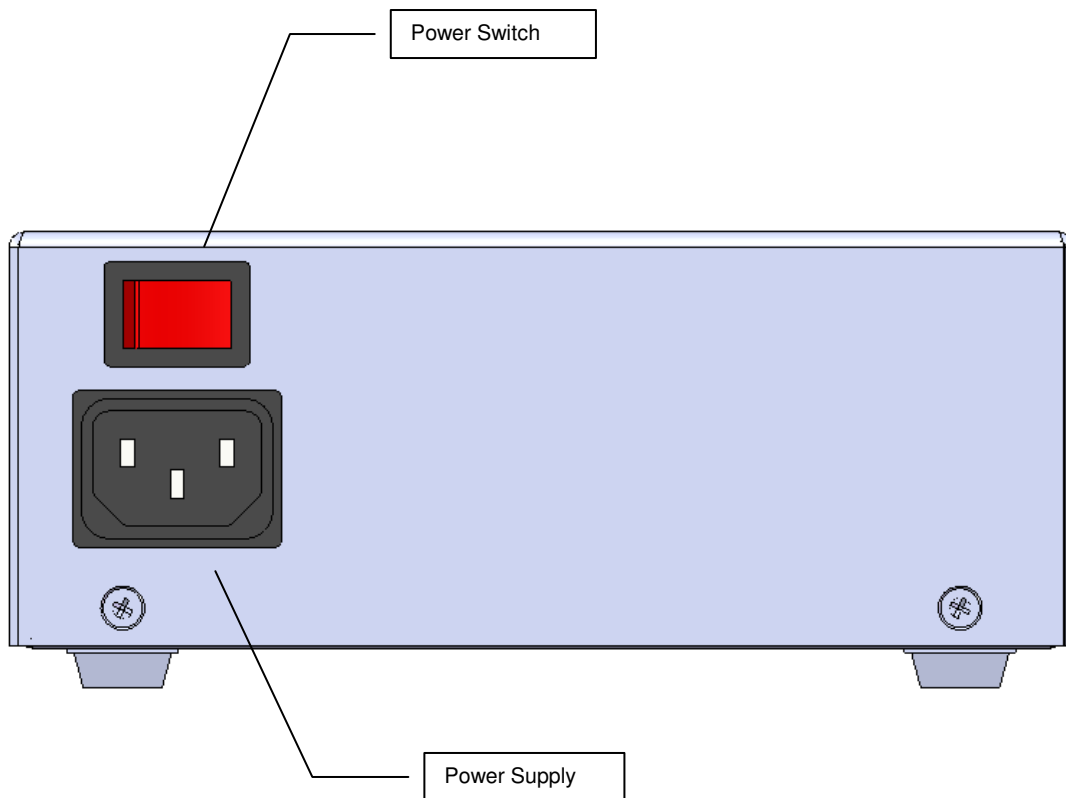
“R-IN1300 TCP/IP Dedicated Protocol” manual to

support@datamars.com

¹ the quantity of transponders detected and the accuracy can change depending on the used transponder, the environment, the size of the antenna, etc.

Power Switch
Power Supply

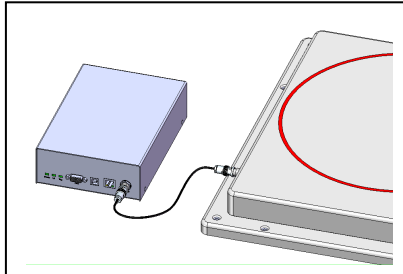
Turn ON and OFF the reader.
Connect the power supply cable (100-240VAC, 50-60 Hz).



2 HARDWARE CONNECTIONS

1. **Antenna:**

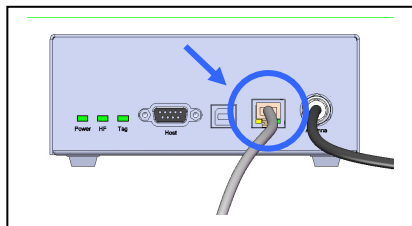
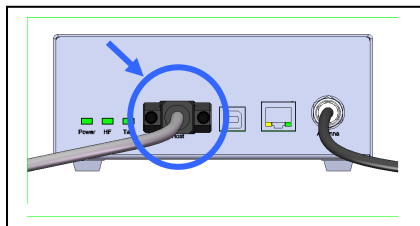
Connect the black coaxial cable from the antenna to the connector marked as “Antenna”.



You can not use cable other than the 3.5m coaxial 50Ω cable supplied by Datamars. Additional extension cables at disposal.

2. **PC/Terminal or Ethernet**

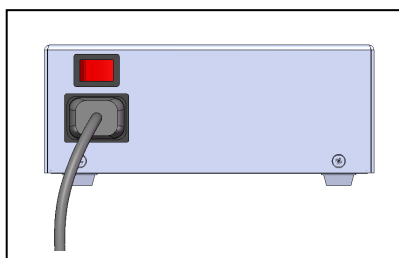
Connect the serial white cable from the connector marked “Host” to any serial port (COM) on your PC or the reader “R-IN 1300 MID” can be connected to the LAN just like a PC (Ethernet cable & RJ-45 connectors).



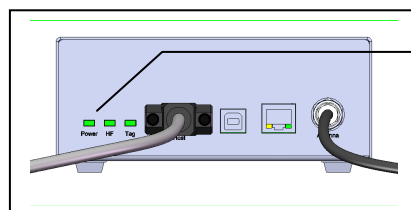
A direct Ethernet connection between a PC and “R-IN 1300 MID” reader is also possible, with an *Ethernet Cross Cable* (supplied together with the reader). Refer to Appendix A for more details on how to do this.

3. **Power**

Connect the power cable 110 – 240 V AC and be sure that it is well fixed.



4. Set the Power Switch to ON and check if the green LED (Power) is on.
5. Wait until light “Tag” stop flashing (~20 seconds).



Green light on

**IMPORTANT:**

- Please place the antenna as far as possible from metal surfaces to avoid possible reading interferences and avoid mounting it in places where regular ventilation is not granted.
- After the reader is turned on for some time the temperature might increase.



Do not plug/unplug any connectors while the reader is turned ON.



Although R-IN1300 MID is protected against ESD, to avoid reader malfunction make sure that no direct electrostatic discharge will happen into the reader case, antennas or even on metallic parts directly in contact with the reader enclosure or antennas structure.

3 OPERATION WITH TERMINAL

For operation with terminal use any kind of terminal, e.g. *Windows HyperTerminal* with the following settings:


- Bits per second 115200
- Data bits 8
- Parity None
- Stop bits 1
- Flow control None


3.1 LIST OF THE COMMANDS OF THE READER

All commands must be followed by a carriage return (ENTER).

General Commands	Explanation
*d	Detect: returns the UID-list of all the HF transponders in the field
*i	Interrupts any continuous mode operation (does not disable the continuous mode)
*x	List of the commands and settings
*v	Firmware Version
*se	Settings: Displays the current settings (Notice that the settings are maintained after power off)
*st	Store UIDs Usage: with the command “*st” switch from the state “Store UIDs off” to the state “Store UIDs on”. Then start reading with the command “*d”. The detected tags are not sent to the output devices but are cumulated internally. Using now the command “*dw” the reading process is stopped and the cumulated detected UIDs are sent to the output devices all at once.
*dw	Download UIDs (this command is coupled with *st – see above)

3.2 GENERIC SETTINGS

General settings	Explanation
*rd	Restore default settings  Any previously user defined settings will be deleted and replaced by factory defaults. Confirmation: “Default settings restored”
*co[]	Continuous mode: *co0 continuous mode off *co1 continuous mode on (default)
*in[]	Number of inventories (for non continuous mode only) *in[1 .. 9] (default 1 [inventory], example *in5)

*id[]	Delay (ms) between two inventories (for non continuous mode only) *id[0 .. 1000] (default 0 [ms], example *id530)
*rh[]	Remove headers: *rh0 does not remove the headers *rh1 removes the headers (default)
*ec[]	Echo: *ec0 echo disabled (default) *ec1 echo enabled "echo" makes it possible to view the characters sent to the reader.
*sa[]	Stand alone mode: *sa0 stand alone mode disabled (default) *sa1 stand alone mode enabled (detect) When stand alone mode is enabled, the device will start reading as soon as it is turned on.
*bu[]	Buzzer Box (beeper). *bu0: buzzer disabled *bu1: buzzer activated on tags-detection *bu2: buzzer activated on antenna-transmission
*nl[]	New Line character(s) selection: *nl0 line feed and carriage return (0x0D 0x0A) (default) *nl1 line feed (0x0A) *nl2 carriage return (0x0D) *nl3 carriage return and line feed(0x0A 0x0D)
*pw[]	Output power: *pw[0 .. 4000] range of power from 0 to 4000 mW (default 2000 mW) - Example *pw2000  The selected output power is an approximate value.
*dt[]	Time between UIIDs: This parameter inserts a time delay between the transmission of codes. *dt[0..200] range of time between UIIDs from 0 to 200 units (default 0), 1 unit = 10 ms (example: *dt10 >> 100ms)
*lc[]	Lock code: *lc0 lock code disabled (default) *lc1 lock code 1 enabled *lc2 lock code 2 enabled *lc3 lock code 3 enabled
<p>Details for *lc1: Any transponder is read just once. To read a transponder again, another one must be read first.</p> <p>The transponder is first detected only once without regard to the time spent in the field.</p> <p>Details for *lc2: A chip can be read again only if it was outside the reading area for more than *ti[] seconds.</p> <p>Details for *lc3: A chip can be read again only if it was outside the reading area for more than *cn[] chips.</p>	
*ti[]	Time out: *ti[0..180] time parameter for lock code 2 from 2 [s] to 180 [s] (default 10 [s], example *ti10)
*cn[]	Number of detections to loose a lock: *cn[1 .. 9] counter parameter for lock code 3 from 1 [chip] to 9 [chips] (default 2 [chips], example *cn7)

*sk[]	Skip time slot on no response: *sk0 skip on no response off *sk1 skip on no response on (default)
*ct[]	Collision threshold parameter: *ct[0 .. 100] parameter from 0 to 100 (default 33, example *ct33)
*et []	Communication selection : *et0 Ethernet *et1 RS232 *et2 RS232 and Ethernet (default)
*br[]	baud rate: *br0 baud rate 9600 *br1 baud rate 19200 *br2 baud rate 38400 *br3 baud rate 57600 *br4 baud rate 115200 (default)
*cl[]	Code length: See Appendix A for more details. *cl0 16 characters UIDs (standard, default) *cl1 15 characters UIDs (Partial code) *cl2 14 characters UIDs (Partial code) *cl3 13 characters UIDs (Partial code) *cl4 12 characters UIDs (Partial code) *cl5 12 characters UIDs (First character special) *cl6 11 characters UIDs (Partial code) *cl7 10 characters UIDs (Partial code) *cl8 9 characters UIDs (Partial code) *cl9 8 characters UIDs (Partial code) Attention: code maybe not unique with the selected code length
*tt[]	Tag technology: *tt1 tag technology ISO 15693(T-BT1320 T-BT1315) (default) *tt2 tag technology Philips I-Code I (not available). Example: *tt1: only ISO *tt2: only I-Code I *tt12: both ISO and I-Code I
*if	Plots the current (TCP/IP) network configuration of the reader including submask and default gateway
*ip[_ _ _ _]	Configure the IP (Internet Protocol) number of the reader. Example: *ip192-168-1-0 Sets the IP number 192.168.1.0 The default IP number of any new reader is 192.168.0.85
*ipsb[_ _ _ _]	Set the IP sub-mask associated to the local IP address: Example: *ipsb255-255-255-254 set the new sub mask for the eth0 IP interface
*ipgw[_ _ _ _]	Set the IP address of the local gateway: Example: *ipgw192-168-1-201 set the gateway address to 192.168.1.201 To remove the default gateway: *ipgw0-0-0-0
*rg[]	Receiver gain (in case of doubt, do not modify): Amplification of the received signal.

	*rg0, *rg1, *rg2, *rg3 (default): allowed amplification steps
*re[]	Reverse order *re0 Uid not reversed (default) *re1 Uid reversed
*lo[]	Location: The place where the reader has been put or the name of the reading point (e.g. Clean Scan 1) Valid values: sequences of characters (max. length = 40)

3.3 ISO 15693 SETTINGS

ISO 15693 settings	Explanation
*rm[]	Reader request rate: *rm0 Reader Request Rate: SLOW (1 out of 256) *rm1 Reader Request Rate: FAST (default) (1 out of 4)
*mt[]	Modulation type: *mt0 modulation type ASK *mt1 modulation type FSK (default)
*tm[]	Tag response rate: *tm0 Tag Response Rate: SLOW *tm1 Tag Response Rate: FAST (default)
*mi[]	Modulation index: *mi0 modulation index 20% (default) *mi1 modulation index 100%
*ts[]	Time slots ISO-15693: *ts0 single time slots *ts1 16 times slots (default)
*qm[]	Quiet mode: When this mode is enabled the transponder will answer just once while in the antenna field. *qm0 quiet mode off (default) *qm1 quiet mode on
*aw[]	Anti-collision window correction: Range: *aw[0..32] (default: 0) - Example *aw14 NB: Customers are not allowed to modify the value of this setting (DM-Customer-Support only)
*rw[]	Response window correction: Range: *rw[-64..64] (default: 0) - Examples: *rw-14 (for negative values use '-') *rw14 (for positive values do not use '+') NB: Customers are not allowed to modify the value of this setting (DM-Customer-Support only)
*pp[]	Positive pulse width correction: Range: *pp[-30..30] (default: 0) - Examples: *pp-25 (for negative values use '-') *pp25 (for positive values do not use '+') NB: Customers are not allowed to modify the value of this setting (Datamars Customer-Support only)
*pn[]	Negative pulse width correction: Range: *pn[-30..30] (default: 0) - Examples:

	<p>*pn-25 (for negative values: use '-') *pn25 (for positive values do not use '+')</p> <p>NB: Customers are not allowed to modify the value of this setting (Datamars-Customer-Support only)</p>
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3.4 I-CODE I SETTINGS

*nt[]	<p>Time slots I-Code I:</p> <p>0 single time slot 1 4 time slots 2 8 time slots 3 16 time slots (default) 4 32 time slots 5 64 time slots 6 128 time slots 7 256 time slots</p>
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3.5 USB SETTINGS

The USB-device can be used to emulate a serial-connection or a mass storage. Using the USB-device like a “mass storage emulator”, it is possible to write the detected UIDs into a formatted file (journal-file). The file-format per default is CSV so that the journal-file can be opened with “Microsoft Excel”.

The generic format of journal-file looks like this:

UID0	<line-separator>
UID1	<line-separator>
UID2	<line-separator>
UID3	<line-separator>
...	

The customer can configure the “line-separator” and the extension of the journal-file.

Note: Refer to chapter 5.2 to get information on how to retrieve and handle the journal-file.

*us[]	<p>USB usage:</p> <p>*us0 USB disabled *us1 USB serial emulation *us2 USB mass storage emulation (MID Plus only)</p>
*jf[]	<p>Journal-file format:</p> <p>*jf0 csv-format (default) *jf1 customized format</p>
*fs[]	<p>Field-separator:</p> <p>Valid values: sequences of characters (max. length = 10)</p> <p>To specify “Carriage-Return”, type “\r” To specify “New-Line”, type “\n” To specify “Horizontal-Tab”, type “\t”</p>
*ls[]	<p>Line-separator:</p> <p>Valid values: sequences of characters (max. length = 10)</p>

	To specify "Carriage-Return", type "\r" To specify "New-Line", type "\n" To specify "Horizontal-Tab", type "\t"
*fe[]	Journal-file extension: Valid values: sequences of characters (max. length = 5)

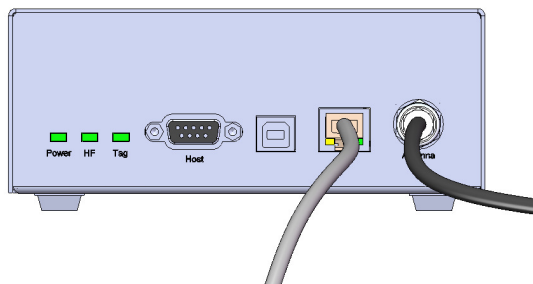
4 OPERATION WITH GRAPHICAL USER INTERFACE (GUI)

The R-IN1300 MID can be operated through 2 kinds of GUIs:

- The http GUI (Java applet) via the Ethernet port which can be used through a standard browser like MS Internet Explorer or Firefox.
- The Datamars Reader Configurator, a Java application which communicate to the reader through the RS-232 serial port based on the terminal interface protocol (see sections 3)

4.1 OPERATING WITH ETHERNET

The reader “R-IN 1300 MID” can be connected to the LAN just like a PC (Ethernet cable & RJ-45 connectors). No software installation required.



A direct Ethernet connection between a PC and “R-IN 1300 MID” reader is also possible, with an *Ethernet Cross Cable* (supplied together with the reader). Refer to Appendix A for more details on how to do this.

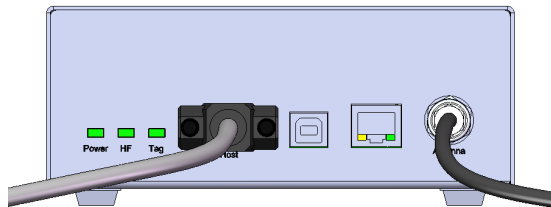
In both cases the reader “R-IN 1300 MID” must be provided with a correct IP-Address (**DHCP is not available. Thus the reader is not yet able to get its IP-address automatically**).

To provide the “R-IN 1300 MID” reader with an IP-address, it is recommended to configure it with the supplied cross cable (or RS-232 interface), at least for the first time, in order to avoid IP conflicts in your network. See appendix A for more details on how to connect your reader with a cross cable.

When the reader has its own IP-Address on the LAN (or with cross cable), you can go to login-page of the reader and have access to the configuration-, monitoring- and administrator- tools. To do this, open a web browser (Internet Explorer, Firefox, etc.) and type <http://192.168.0.85> (or the IP that you have configured) in the address bar.

4.2 OPERATING WITH THE SERIAL PORT (RS-232)

The reader “R-IN 1300 MID” can be connected to a PC with a serial connection and operated through the Datamars Reader Configuration



The Datamars Reader Configuration is a Java application which makes use of the command line interface through the RS-232 interface. The application need to be installed on the PC from the the CD-ROM supplied with the reader. The installation will start automatically when the disk is inserted in the PC, just follow the on screen instructions.

In case the installation does not start, open the CD and double click on “install”.

At the end of the installation procedure the necessary software will be found in the Start menu.

4.3 GENERAL CONSIDERATIONS

4.3.1 THIRD PARTY INTERFACE

The “R-IN 1300 MID Reader” always listens to incoming TCP/IP connections on port 1026 (TCP/IP socket).

Using this dedicated TCP/IP socket, third party applications can connect to, exchange data with, configure and monitor the “R-IN 1300 MID Reader”.

Refer to the “R-IN 1300 TCP/IP Dedicated Protocol” (UM001031) for a detailed description of the whole communication protocol and syntax.

4.3.2 HUMAN INTERFACE

The interface (graphical program running on the browser) shows the configuration of the reader “R-IN 1300 MID” as a tabbed panel. Each panel groups logically tied parameters.

The SAVE, DEFAULT and CANCEL buttons act locally on the parameters of the current active tab. The REFRESH button acts on the whole configuration (on all tabs).

To save the configured settings shown in the tab, press the SAVE button.

To restore the factory default settings of the current tab, press the DEFAULT button.

To undo changes done on the current tab, press the CANCEL button.

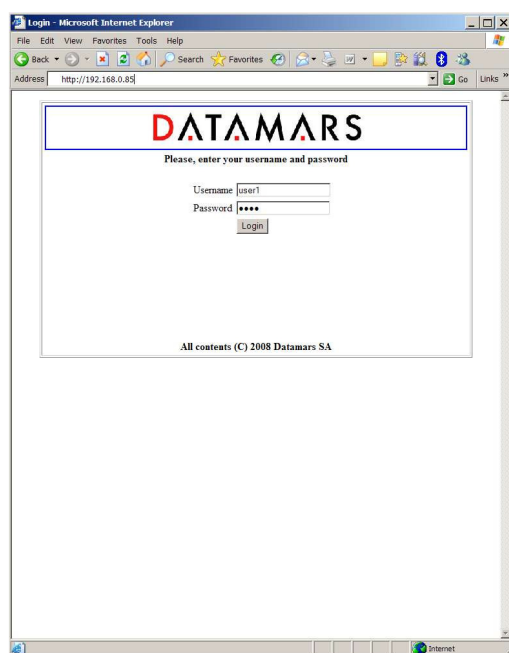
To view the actual parameters of the reader on all tabs, press the REFRESH button.

The parameters shown in the tabs may depend on each other. The selection of some options could make some parameters “meaningless” in this context. In such cases relevant parameters are shown normally while “meaningless” parameters are masked/disabled.

All parameters described in this manual refer to the “High Frequency Reader R-IN 1300 MID”.

The graphical application requires a Java2 or Java5 plug-in. If the requested plug-in is already installed on your PC, you are immediately able to run the application. Otherwise the system will try to connect to the WWW to download the plug-in. In this case, follow every installation step always accepting the defaults suggested by the system.

4.4 LOGIN



The interface running on the browser permits access to users only via login (user name & password): attempts to join the configuration- and monitoring tools directly via bookmarks are prevented from the system.

A user trying to connect while the system is already occupied (i.e. by another user having logged in before) gets access in read-only mode thus preventing the configuration from being modified at the same time by more users.

When the user closes the browser, the system becomes free, allowing other users to login and get read-write mode.

If the currently logged in user forgets to close the browser, she/he is automatically disconnected from the system. This is done on timeout-basis: if nobody presses any button for a time period longer than 10 minutes, the system makes the session available for other users.

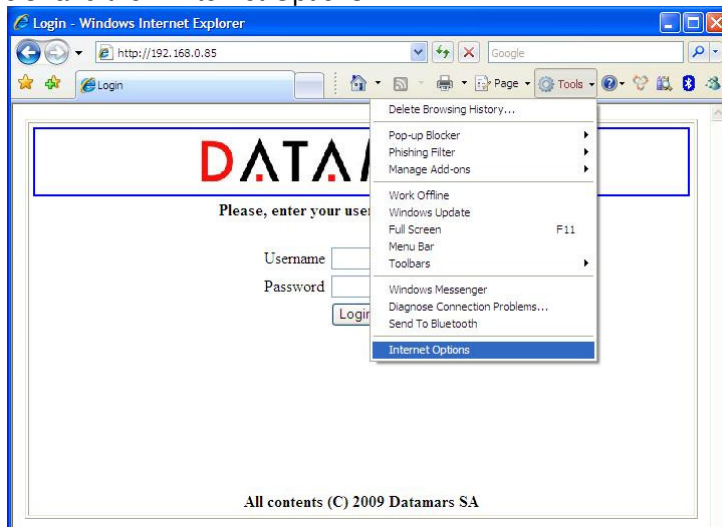
The administrator (only she/he) can force the system to disconnect users when the system is kept busy too long.

The default accounts are defined as follows, passwords can be changed.

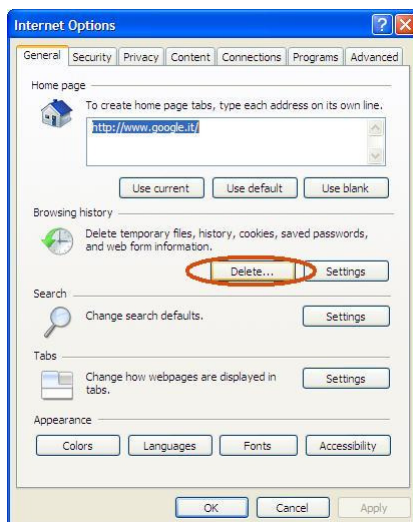
User Names	Default Passwords
admin	Admin (read, modify and administrative rights)
user1	1234 (read and modify rights)
user2	1234 (read-only rights)

Please note: in case of problems while connecting to the reader via browser, try to clear the cache of the browser.

1) First step: select “Tools” and then “Internet Options”



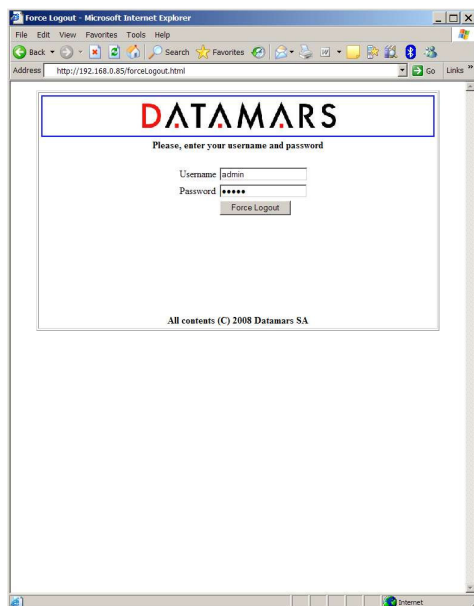
2) Second step: press the button *Delete...”



3) Third step: press the button “Delete”



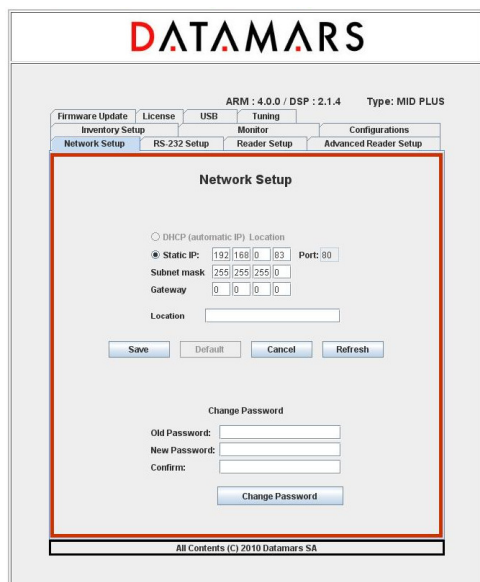
4.5 LOGOUT (WEB SERVER VERSION ONLY)



The “administrator” can disconnect every session to the reader in case of suspect use of the GUI (i.e. a user is logged in for too much time monopolizing the system).

The “administrator” must go to the URL: <http://ip-address-of-the-reader/forceLogout.html> and give her/his user password.

4.6 NETWORK SETUP

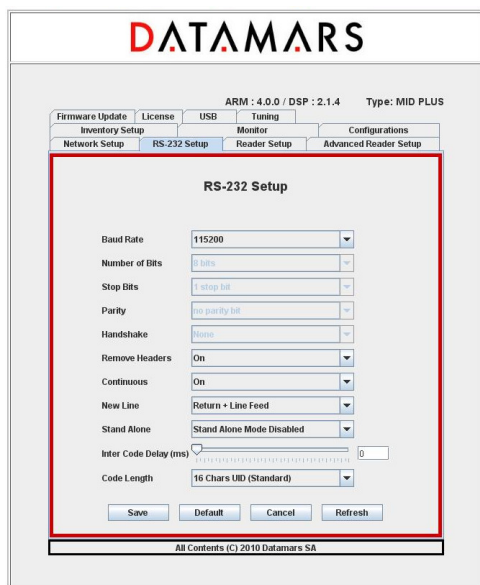


The “Network Setup” tab allows users to specify network parameters: IP address, sub-mask and default gateway. The IP address can be a fixed IP-Address (in this case the ip-address and port must be specified) or a dynamic one (DHCP) *[not yet available]*. After having changed any network parameters, the browser must be closed and a new login must be done using the new network setup of the reader.

The “Location” field specifies the place where the reader has been put.

From this tab it is also possible to change the password of the current user. The current password must be specified, the new password must be confirmed (specified twice). Pressing the CHANGE PASSWORD button, the request is submitted to the reader and the user is told about the success/failure of the sent command.

4.7 RS 232 SETUP



The “RS-232 Setup” allows users to specify the properties of the serial connection.

The “Baud Rate” and “New Line” fields are implemented on the interface (PC or browser) as well as on the reader.

The fields “Number of bits”, “Stop bits”, “Parity”, “Handshake” are implemented on the interface but not yet on the reader. Changes done on these fields do not yet affect the system behavior.

The “Remove Header” field informs the reader that expected responses must contain only essential information (explanations, warnings and miscellaneous information must be cut off).

The “Continuous” field enables/disables the continuous-reading mode. If this property is enabled, inventory-cycles are automatically repeated otherwise only one cycle is done.

The “Stand Alone” field has following meanings:

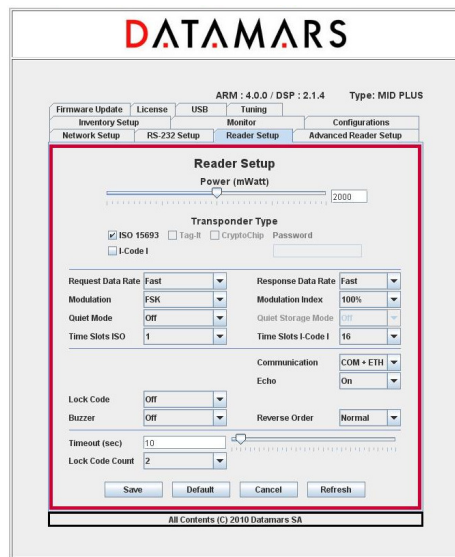
Stand Alone Mode Disabled: after the reader has been turned on, it waits for the start-reading command to come. Until this moment, it remains in a not-reading state.

Stand Alone Mode Enabled Detect: at power on the reader starts reading automatically and sends the found UIDs after each inventory cycle.

The “Inter Code Delay” field specifies how much time (in sec/100) must be awaited between the sending of two subsequent UIDs.

The “Code Length” field specifies the length and format of the sent UIDs.

4.8 READER SETUP



The “ReaderSetup” tab allows users to specify overall properties of the reader.

It is possible to specify:

the antenna power:

- 0 mW – 4 000 mW (1000 mW = 1 W; 2000 mW = 2 W; etc.)

the technologies of the transponders being used:

- ISO-15693
- I-Code I

the ISO-15693 properties (see corresponding ISO-specification)

- Request/Response Data Rate
- Modulation Type/ Modulation Index
- Quiet Mode /Quiet Storage
- Time Slots ISO / I-Code-1

The “Lock Code” field specifies a particular behaviour of the reader:

Details for **LockCode 0**: Disabled.

Details for **LockCode 1 (on detection)**: Any transponder is read just once. To read a transponder again, another one must be read first.

Details for **LockCode 2 (on timeout)**: The transponder is first visible when entering the magnetic field the first time and it is detected only once without regard to the time spent in the field. A chip having left the magnetic field can be read again only having spent an amount of time T outside of it. If the time spent outside the magnetic field is less than T, the chip cannot be detected.

Details for **LockCode 3 (on counter)**: The transponder is visible only once when entering the magnetic field for the first time. Afterward, to be visible again, it must leave the magnetic field and wait outside until at least N different transponders have been read (N is the number specified by the field “**Lock Code Count**”).

Note: **LockCode 1** (on detection) is the same as **LockCode 3 (on counter)** with **N = 1**.

The “Communication” field specifies on which output channels the reader must write the found UIDs.

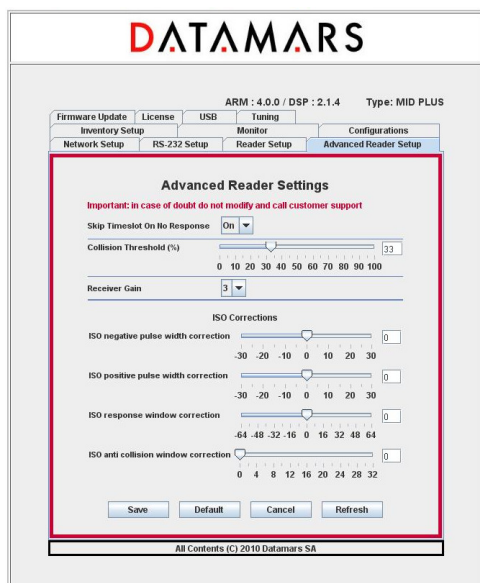
The “Echo” field specifies whether the **user-input** written onto the terminal (RS-232) must be shown on the screen or not.

The “Reverse Order” field specifies the representation of the UIDs:

Reverse Order Off : Uids are not reversed

Reverse Order On : Uids are reversed

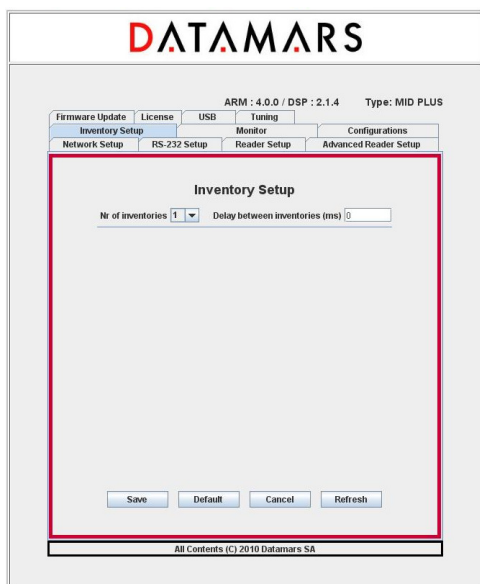
4.9 ADVANCED READER SETUP



This Tab contains fields affecting the performance of the reader depending on the architecture of the installation.

Those configuration-fields are reserved for technical purposes only and should **NEVER** be changed by customers. For more information please contact “Datamars – Support Team”

4.10 INVENTORY SETUP



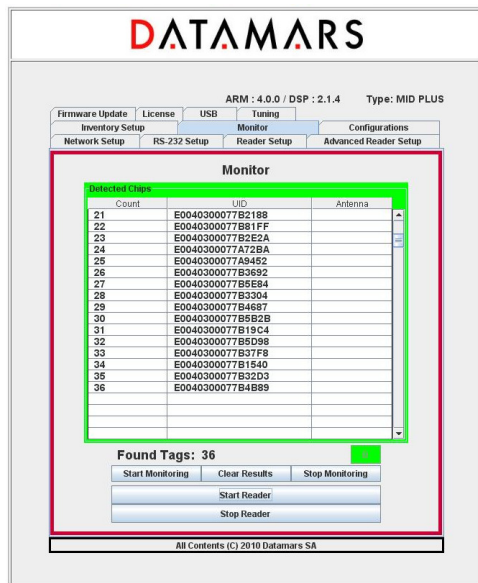
The “InventoryrSetup” tab allows users to specify into more details how the TableTop-Antenna works in a non-continuous mode set-up.

The “**Nr of inventories**” field specifies how many inventories must be done while the “**Delay between inventories**” is the time between two consecutive inventories (in ms).

At this point, after sending the read-command, the reader performs so many inventories as specified waiting in between for the specified number of ms to expire. After having completed the inventories, the system stops reading.

If the configured architecture is other than “Table-Top – non continuous”, those fields do not have any influence on the behaviour of the reader.

4.11 MONITOR



The monitor tab is used for verifying whether the reader is active or not.

The “Start Reader” button makes the reader start its inventory cycles.

The “Stop Reader” button makes the reader suspend its reading process.

The “Start Monitoring” button permits to display the UIDs of the chips found by the reader.

The “Clear Result” button clears the UIDs display.

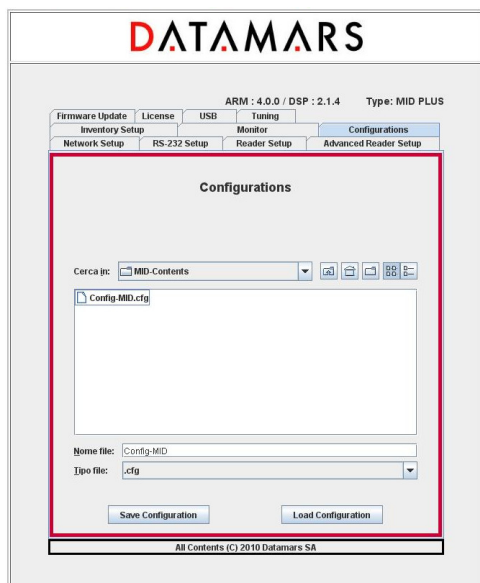
The “Stop Monitoring” button stops the display.

The led “D” (detection) is green if the reader sends UIDs, red otherwise

PLEASE NOTE:

UIDs are displayed only once: duplicated UIDs are not displayed again! This could give the impression that the reader does not work correctly but this is NOT true. Please, in this case press the “Clear Result” button. If you press the “Stop Reader” button, the reader stops its reading process. Please click this button only if you are sure that the suspension of the reader activities does not cause the loss of important data.

4.12 CONFIGURATIONS



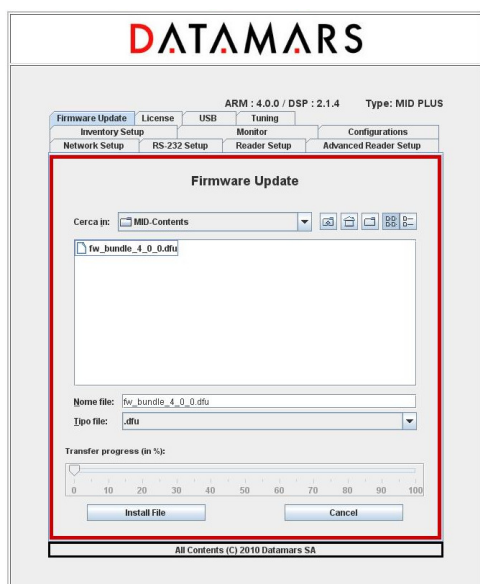
The "R-IN 1300 Reader" offers a tool giving the user the possibility to save and/or reload configuration files.

First of all select the tab named "Configurations".

To save the currently active configuration, select the destination folder using the navigator, write the destination file name in the related input field and then press the button "Save Configuration".

To load a previously saved configuration, select the folder and file using the navigator and then press the button "Load Configuration".

4.13 FIRMWARE UPDATE



The GUI-version running on the browser offers the user a tool to update the software of the "R-IN 1300 Reader".



Firmware version 4.0.0 and later ones ARE NOT COMPATIBLE with older ones: FW3.5.5 or previous one cannot be updated to FW4.0.0 through the automatic procedure “Firmware Update”. Likewise, FW4.0.0 or later cannot be downgraded to an older version. Trying to force incompatible firmware upgrade would prevent the reader to start and Datamars customer support would be needed to restore its functionality.

First of all select the tab named "Firmware Update" and select the file containing the new software (delivered by Datamars SA) using the navigator and then press the “Install File”-button.

The new software is now transferred (copied) from the PC to the reader. A slider tells about the transferring-process status.

If the transferring-process hangs or if the user notices that a wrong file has been transferred, the user can cancel the operation and remove the transferred file clicking the “Cancel”-button.

When the whole file has been completely transferred onto the reader, the user is prompted by a pop-up window if she/he really wants to install and activate it. The user can confirm or cancel the operation.

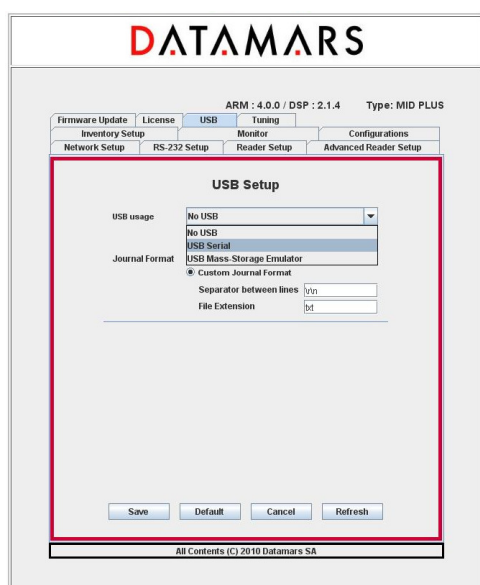
If the user decides to continue and to activate the new software, she/he MUST wait until the HF Led in the front panel stops to blink. This is the sign to indicate that the installation-process is terminated. At the end of the installation, the reader must be switched off and restarted to load the new firmware. Now the user can perform login again and verify the correct functionality of the new software.

Note: The installation of the new software can require a couple of minutes: during such period the reader MUST NOT BE TURNED OFF. Wait until the HF Led in the front panel is turned off.

Note: While performing the firmware-update, the reader closes the Ethernet-connection and the message “Connection lost” appears on the GUI. At this point, the user can try to perform login. If the login in attempt fails, the user can try again until login succeeds.

Note: To preserve custom parameters configuration, before starting the firmware update, save a configuration file as described in section 4.12. Once the firmware update has been completed, load the configuration in order to restore custom parameters.

4.14 USB SETUP

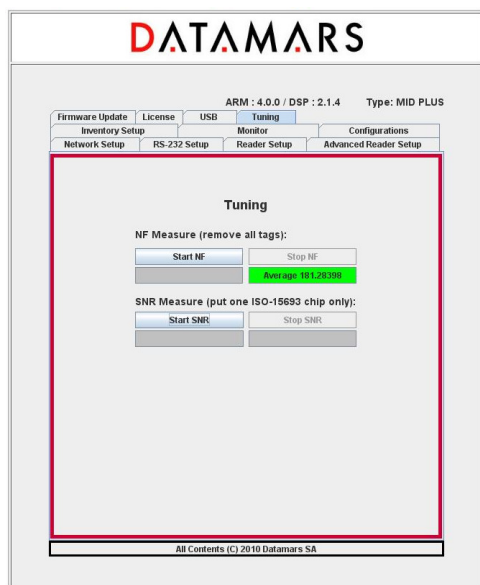


Select from the “USB usage” options the desired functionality (serial disabled, serial emulation, mass-storage emulation).

If “USB-Mass-storage Emulation” is chosen, the UIDs are written into a file (journal-file) whose format is configurable (CSV or custom).

Refer to chapter 5 for an exhaustive explanation about installing, using and manipulating the USB-serial and mass-storage emulation.

4.15 TUNING



This functionality is reserved for technical purposes and it should be needed by qualified technician only. For more information refer to chapter 0.

4.16 SYSTEM REQUIREMENTS

OS: MS Windows 98 or higher, MAC OS X, Linux

Software: Java 2 Runtime Environment v. 1.4 or higher.

Hardware: 32 MB of RAM, 50MB of free hard disk space.

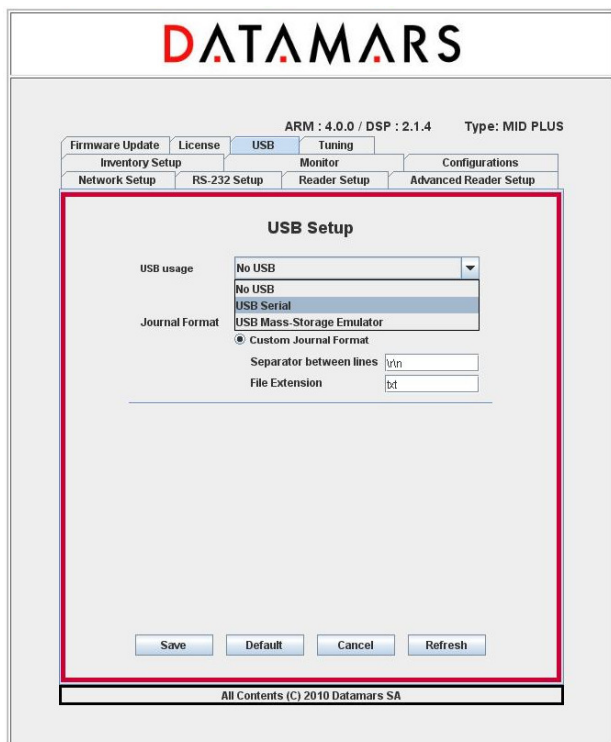
5 USB USAGE

This chapter describes how to correctly handle the USB-Device functionalities. Please read this chapter carefully and follow strictly the described manipulations.

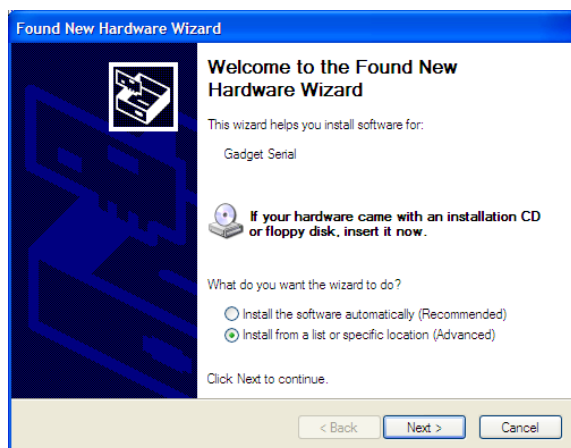
5.1 USB SERIAL EMULATION

5.1.1 FIRST USAGE

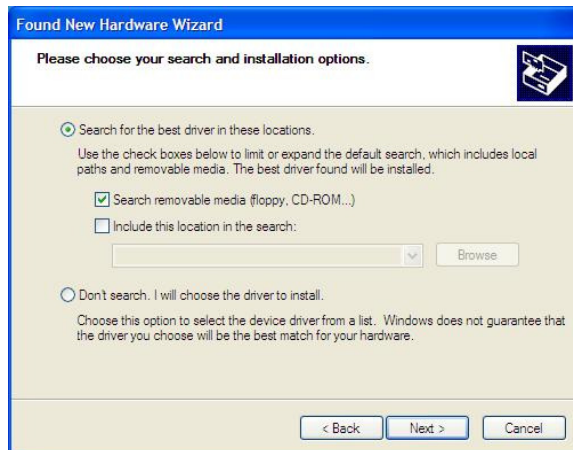
- Select the “**USB Serial**” functionality with *us1” (on terminal) or via GUI



- **Plug in** the USB-cable and connect your PC with the R-IN1300 (USB-cable AB)
- The “**Found New Hardware Wizard**”-window appears automatically. Insert the delivered CD-Rom into the PC and select “**Install from a list or specific location (Advanced)**” and click “**Next**”



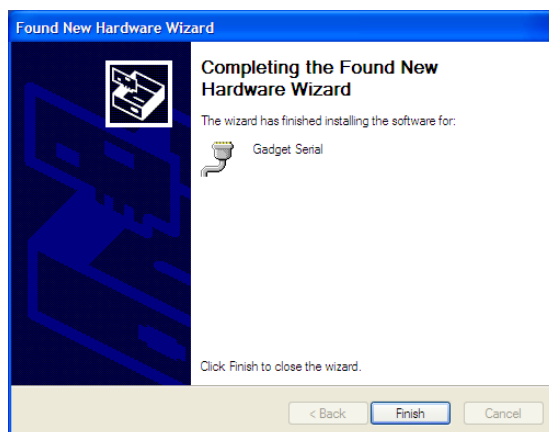
- Select “**Search the best driver in these locations**” and “**Search removable media(floppy, CD-ROM...)**” and then click **Next**



- Answer **“Continue Anyway”**



- Click **“Finish”**

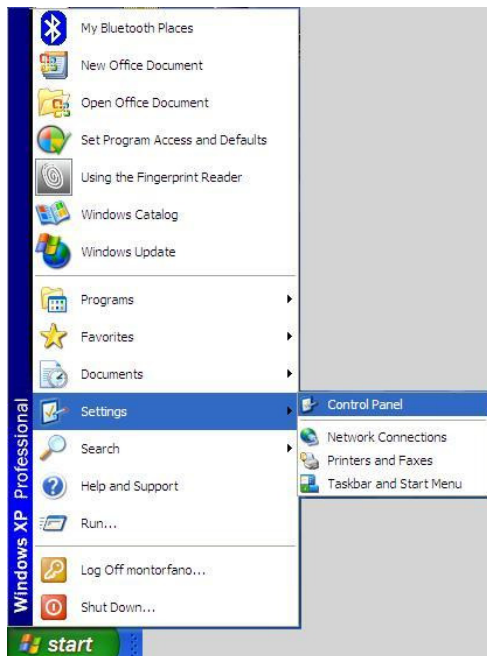


5.1.2 FURTHER USAGE

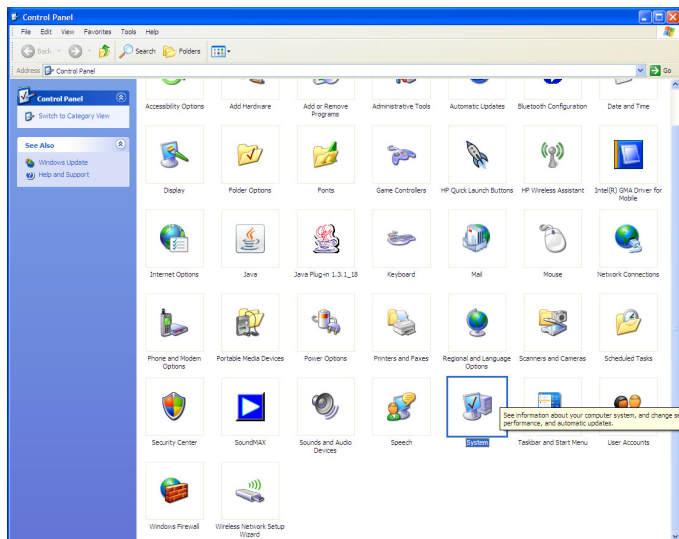
For further usage there is no need to install the USB Serial Drivers. Just specify that you intend to use the USB-Serial-Emulation and plug the USB-cable in.

5.1.3 HOW TO DISCOVER WHICH COM-PORT CORRESPONDS TO THE USB-SERIAL-EMULATION

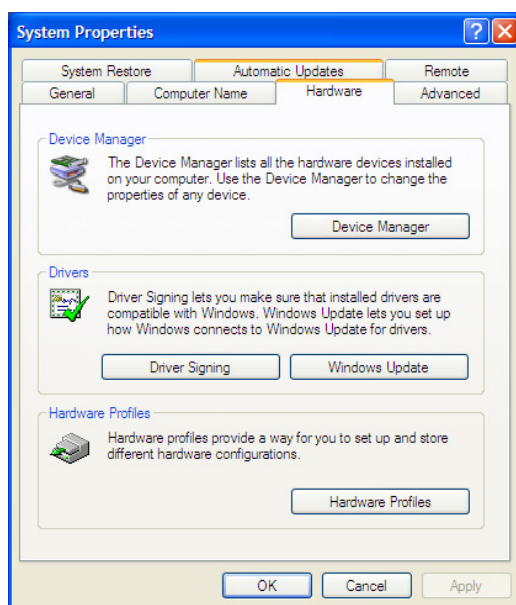
Open the “control panel”.



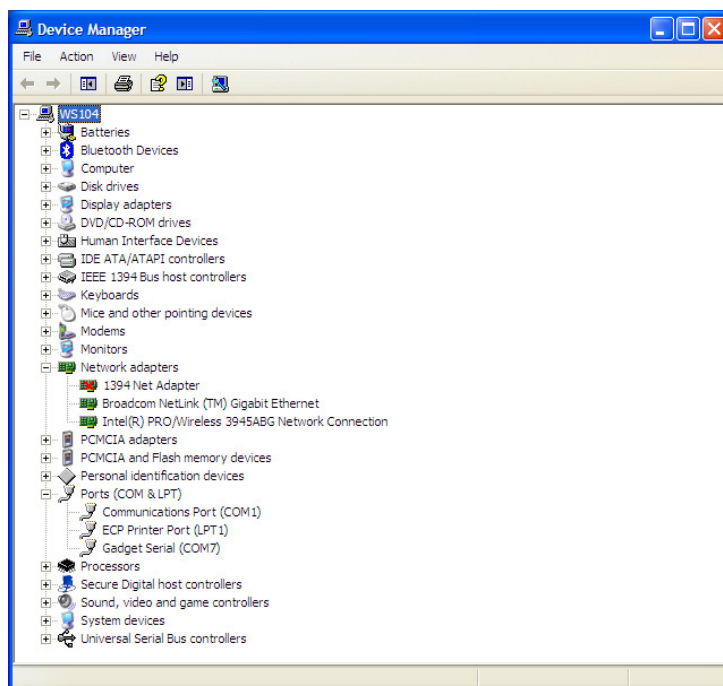
Select “System”



Select “Hardware” and “Device Manager”:



Select “Ports” to see which COM corresponds to the “USB-Gadget Serial”(ie: COM7). Now you can open a terminal on “Gadget Serial” (ie: COM 7) without need to specify baud rate, data-bits, parity-bit, stop-bit and flow-control.

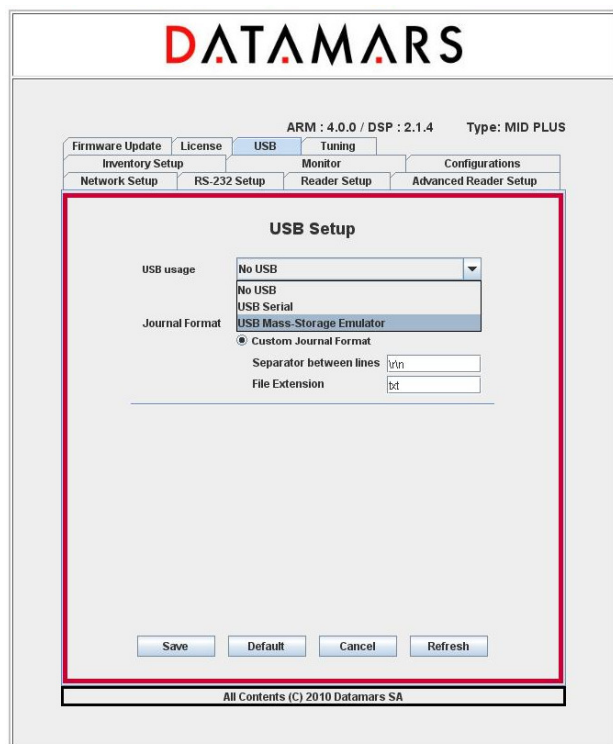


NB: If the USB-Cable is unplugged, the USB-Serial-Communication stops. If now you plug the USB-Cable in, the USB-Serial-Communication will NOT start! After unplugging, you have to close the terminal, plug the USB-Cable again and open a new terminal.

5.2 USB MASS STORAGE EMULATION (MID PLUS ONLY)

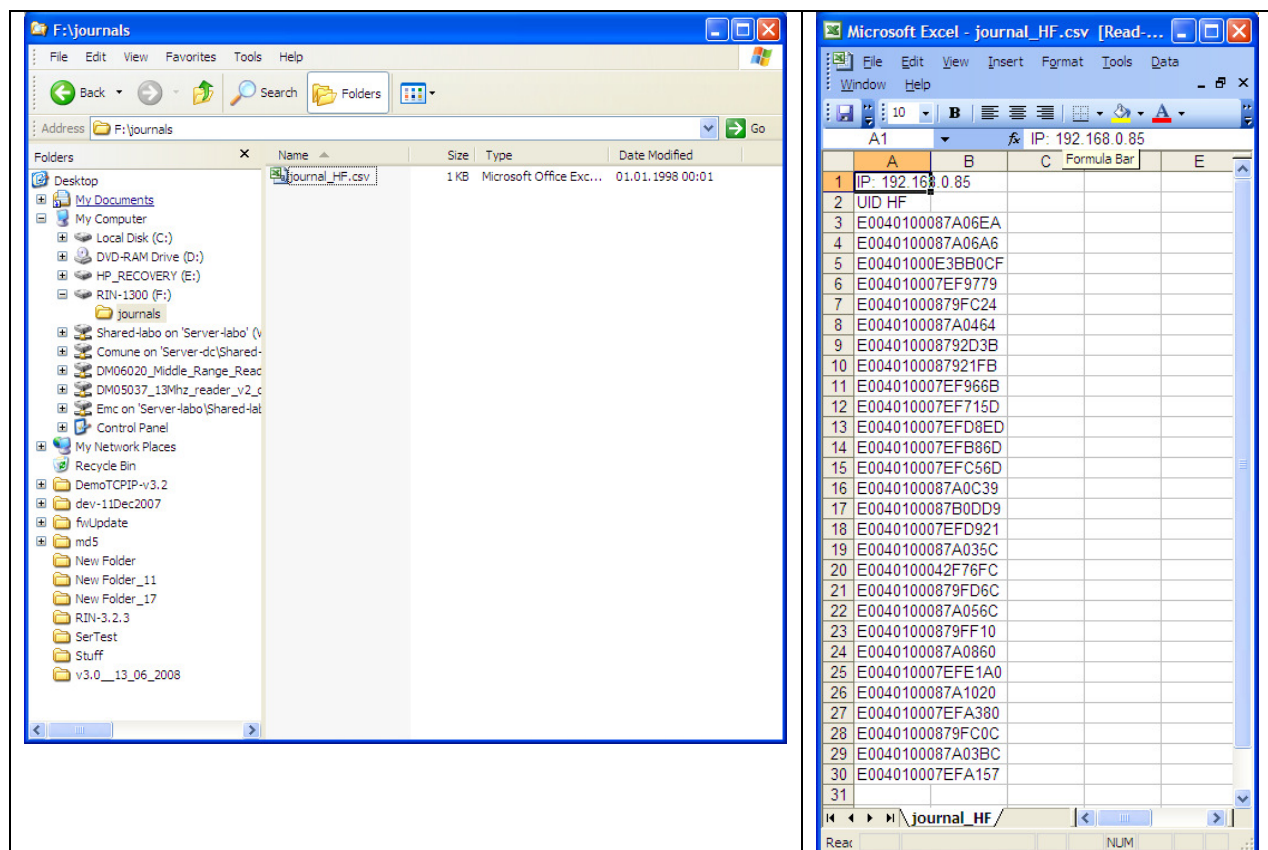
To use the mass storage emulation please follow carefully the following instructions.
At the beginning of the manipulation, the reader is assumed to be turned off.

- Make sure that your PC and the R-IN1300 are **NOT** connected via USB-cable.
- Turn the reader on.
- If not yet selected, activate the “**USB Mass Storage Emulator**” functionality with *us2” (on terminal) or via GUI.



- Start reading: the detected UIDs are written into the journal-file (duplicated UIDs are filtered – each UID is written only once)
- Stop reading
- Plug in the USB-cable and connect your PC with the R-IN1300 (USB-cable AB)
- For technical reason wait 4-5 seconds so that the system can prepare the journal-file.
- Find the journal-file: use Explorer (ie: Drive “F:\R-IN1300\journals\journal_HF.cvs”
Now **copy** the journal-file on your LocalDisk and open the copy.

NB: If you do not find the journal-file, unplug the USB-Cable and plug it in again until the system detects the presence of the file.



- Unplug the USB-Cable and turn the reader off (data will be deleted)
- Repeat the whole procedure from the beginning

Please note:

The USB-Cable can be plugged in ONLY when the reader is not reading.

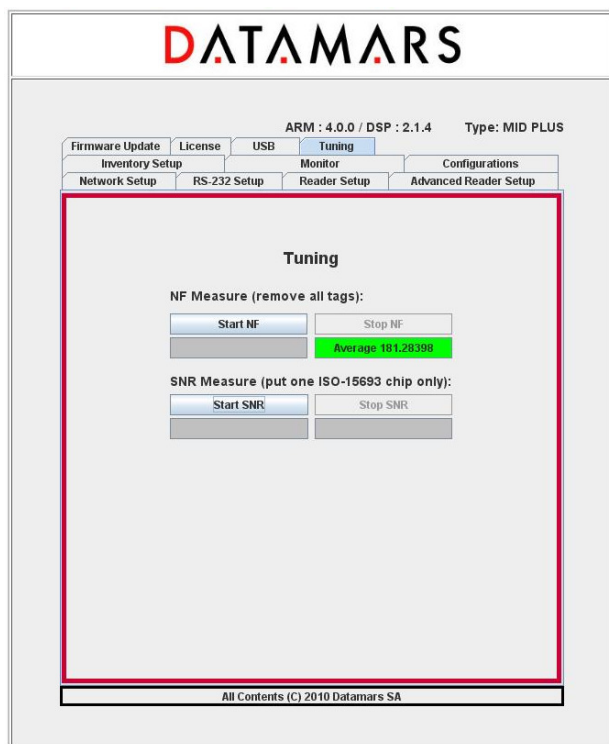
The journal file in the emulated USB-Mass-Storage should only be copied to the PC. The saved data will be automatically deleted when the reader is turned off. The reader must be reset each time at the end of the procedure.

6 TUNING

The noise-meter function only works in TableTop-Mode with ISO-15693 technology.

It is therefore possible that your current configuration needs to be modified. It is recommended to save your current configuration into a file on your PC, to restore the default configuration on the reader, perform the needed measurements and in case reload your specific configuration.

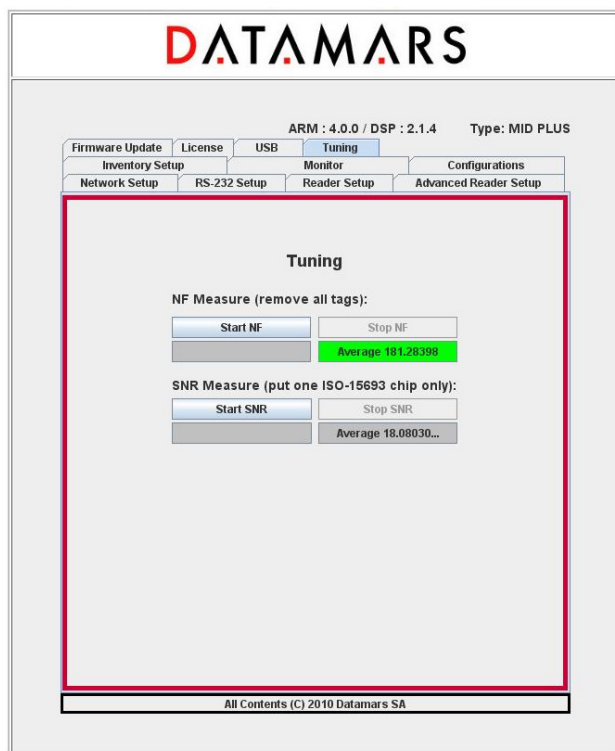
To start the noise floor (NF) estimation press the Start NF button. The value in the gray box starts to be updated in real time and the coloured box changes its colour in real time (green, yellow or red) according to the estimated noise. Please note that during this phase no tag must be in the magnetic field of the antenna.



To stop the NF measurement, press the STOP NF button. The average value is computed and depicted in the coloured box.

Once the noise floor is available, it is possible to compute the signal to noise ratio (SNR).

To start the SNR measure, press the Start SNR button and place only one ISO-15693 tag in the magnetic field of the antenna. In the gray box appears the estimated real time value. To stop, press the Stop SNR button.



The average value is computed and shown in the box below the Stop SNR button.

7 TECHNICAL SPECIFICATIONS FOR R-IN1300 MID

7.1 OPERATIONAL CHARACTERISTICS

The DATAMARS SA RFID reader R-IN1300 MID is an integrated analog system for RFID-Applications (RFID=radio frequency identification) which works at 13.56MHz. It allows reading data stored into ISO-RFID transponders or ISO-Labels at 13.56 MHz. Single- and Multi-read operation are supported. The communication between the reader and the transponder is based on the ISO 15693 (Part 1-3) protocol.

All transponders (contact less memories) are powered by a transmitted carrier radio wave at 13.56MHz and are compliant with the ISO 14443-B recommendation for the transfer of power and signals via radio transmission. For this purpose the reader R-IN1300 MID amplitude, modulates the data on the carrier using amplitude shift keying (ASK) and the tag replies by load modulating the data on the carrier.

Once the reader is connected to an appropriate client-network (via dedicated computer) it works based on the installed software like a server providing the received data from the transponders to the final client-application.

The service software helps to control and update the reader in user-friendly way.

R-IN1300 MID supports different antennas as well as multiple configurations.

7.2 ELECTRICAL CHARACTERISTICS

Electrical characteristics (without antenna)

POWER SUPPLY	AC 100-240V 1A 50-60 Hz
POWER CONSUMPTION	35 W
ANTENNA OUTPUT POWER	4 W

Technical characteristics

OPERATING FREQUENCY	13.56 MHz
OPERATING TEMPERATURE	0°C - 40°C / 32°F - 104°F
DIMENSIONS	222 x 152 x 59 (mm) / 8.7 x 6.0 x 2.3 (inches)
WEIGHT	1.5 kg
TRANSPONDER TYPE	ISO15693 (T-BT 1320, T-BT1315 or T-BT1311)
ANTI COLLISION	Yes
COMMUNICATION PROTOCOL	RS-232, USB (upon request), TCP/IP (Ethernet)
AUTO TUNING	No
READING SPEED	Depend on number of transponder and technology (up to 40/s)

READ/WRITE	Read / Write
EMC	High attenuation characteristics (~30÷60 dB)
IP PROTECTION DEGREE	IP30
MAX. READABLE TRANSPONDERS	1000 pieces

**Hot**

With high power transmission the housing might become hot!

7.3 REGULATIONS

7.3.1 EQUIPMENT MODIFICATION

Equipment modifications not expressly approved by Datamars SA, CH-6930 Bedano, the party responsible for FCC compliance, are forbidden. Such modifications could void the user's warranty and authority to operate the equipment and cause hazardous conditions.

7.3.2 EN 300330-1/-2 (EUROPE)

The R-IN1300 MID system is a sending and receiving equipment and is in accordance with the R & TTE directive **EN 300 330-1/-2**.

The R-IN1300 MID system fulfils the requirements of this regulation.

7.3.3 FCC (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

7.3.4 IC (CANADA)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

The device has been designed to operate with the antennas listed below, and having a maximum gain of 2 dB. Antennas not included in this list or having a gain greater than 2 dB are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

List of antennas: Datamars antenna A-ST1330 TT
Please ask for more antennas which are not listed above.

In order to reduce potential radio interferences to other users, select the antenna type and gain as follows:

equivalent isotropically radiated power (e.i.r.p.) not higher than the permitted one for a successful communication.

Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

7.3.5 CE CERTIFICATION

The system R-IN1300 MID is in accordance with the requirements of protection, which are defined in the regulation concerning the electromagnetic tolerability EN301 489-1, -3, emitted by the council for the harmonisation of regulations in the member countries. The European Community regulation for Low Frequency, EN 60950, is respected.

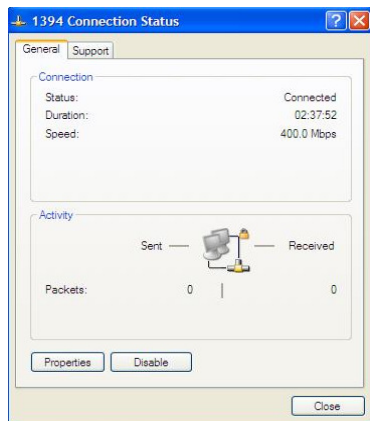
The R-IN1300 MID system fulfils the requirements of this regulation.

7.3.6 WARRANTY

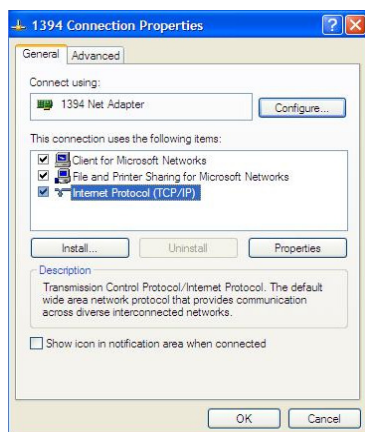
If the reader is opened by not certified personnel by mistake the warranty is voided and we cannot guarantee the fulfillments of the above-mentioned regulations.

APPENDIX A — CONNECTING THE R-IN1300 MID TO A PC WITH A CROSS CABLE

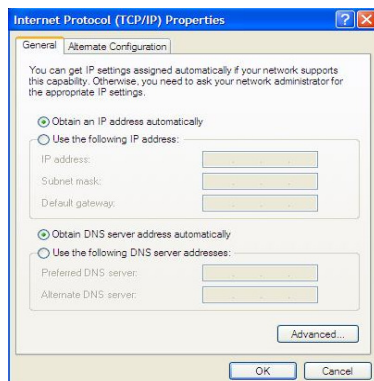
If the reader “R-IN 1300 MID” is directly connected to a PC, you must still do following steps:
Open the “**Network Connections**” frame of Windows (Hint: Start -> Settings -> Network Connections) and double-click the entry corresponding to the connection you intend to use to communicate with the reader. You will see a similar frame:



Click the button “Properties” of the tab “General” to get access to the “**Connection Properties**” frame. You will see a similar frame:



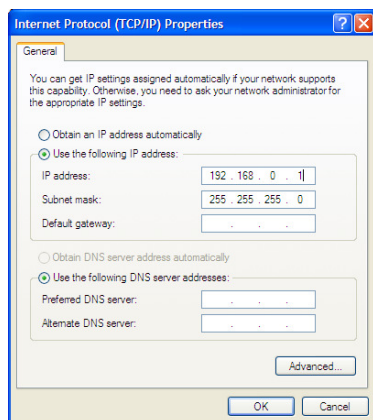
Highlight the “Internet Protocol (TCP/IP)” and click the “Properties” button to get access to the “**Internet Protocol (TCP/IP) Properties**” frame. You will see a similar Frame:



Note exactly the current configuration of the tab “General” in order to be able to restore it.

Click the “Use the following IP address” radio-button and specify an IP in the same range of the readers IP (i.e. 192.168.1.1), the subnet-mask (255.255.255.0). You can ignore the “Default Gateway”.

Leave the configuration tool confirming by clicking the OK button.



APPENDIX B - CODE LENGTH

In terminal mode you can configure the reader to return the UID code in 4 different formats:

1. ***cl0:**

Standard 16 characters UID

2. ***cl1 to *cl9:**

The reader returns only the right most digits of the original 16 digit UID.



With this format it is not possible to guaranty the uniqueness of the codes !

3. ***cl5:**

The reader returns 12 digits code in the fashion of “cl2”, but in this case the first (left) chapter ranges from “G” to “Z” instead of from “0” to “F”.



With this format it is not possible to guaranty the uniqueness of the codes !

APPENDIX C - TROUBLESHOOTING

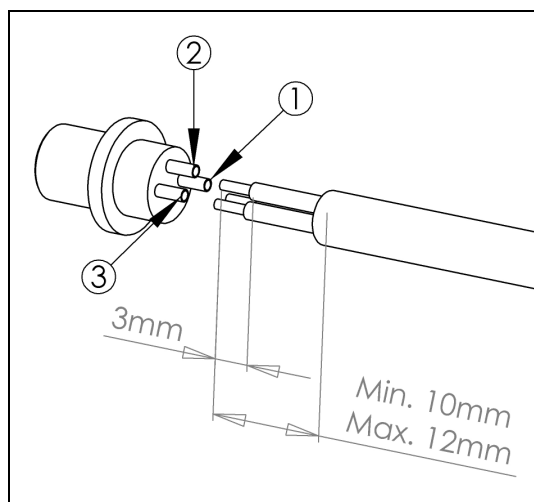
If you run into any problem using your reader, use the following table to troubleshoot the problem. If the problem persists, contact support at support@datamars.com or +41 91 935 73 80.

SYMPTOM	CAUSE AND/OR CORRECTIVE ACTIONS
There are transponders on the antenna but the software displays no UID.	<ul style="list-style-type: none"> • Is the antenna cable connected to the reader? • Are the transponders you want to read specified in the options? • Is the HF led on? <p>➔ If the three previous points didn't solve the problem turn the reader off, wait 10 seconds before turning the reader on again</p>
Bad reading or low reading distance	<ul style="list-style-type: none"> • Is the antenna near metallic objects or noise source like electric motors? <p>➔ Try to move the antenna and the reader away from these objects.</p>
The reader reads transponder (Tag LED lights on) but the software displays no UID	<ul style="list-style-type: none"> • Is the RS-232 cable well connected to the Host Interface? • Is the software set 115200 bps – 8 – N – 1 – N? <p>➔ Verify the connection</p>

ADDENDUM – 24V DC VERSION OF MID-RANGE READER

1. DC INPUT CONNECTOR

1.1. DC PLUG PINOUT AND WIRE PREPARATION

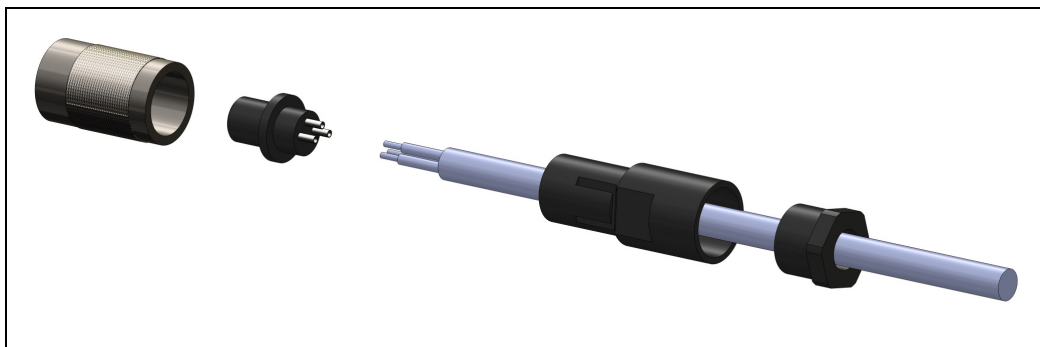


Pin number	Description
1	DC Positive terminal
2	Earth (must be connected)
3	DC Negative terminal (GND)

Wire section	Cable Outer diameter
0.25-0.34 mm ²	3.5-5 mm

1.2 DC PLUG TO WIRE CONNECTION

The following picture shows how to assemble the connector on the 3 wire cable.



The 3 wire terminals must be soldered on the connector terminals as described in chapter 1.1.

2. INSTALLATION INSTRUCTION

The following figure shows how to connect the RIN1300MID to a 24VDC power supply.

Note: for optimum performance the earth must be connected.

