

DATAMARS

TEXTILE ID

R-IN1300 MID

HF – multi read

USER MANUAL

Version 1.2



DATAMARS

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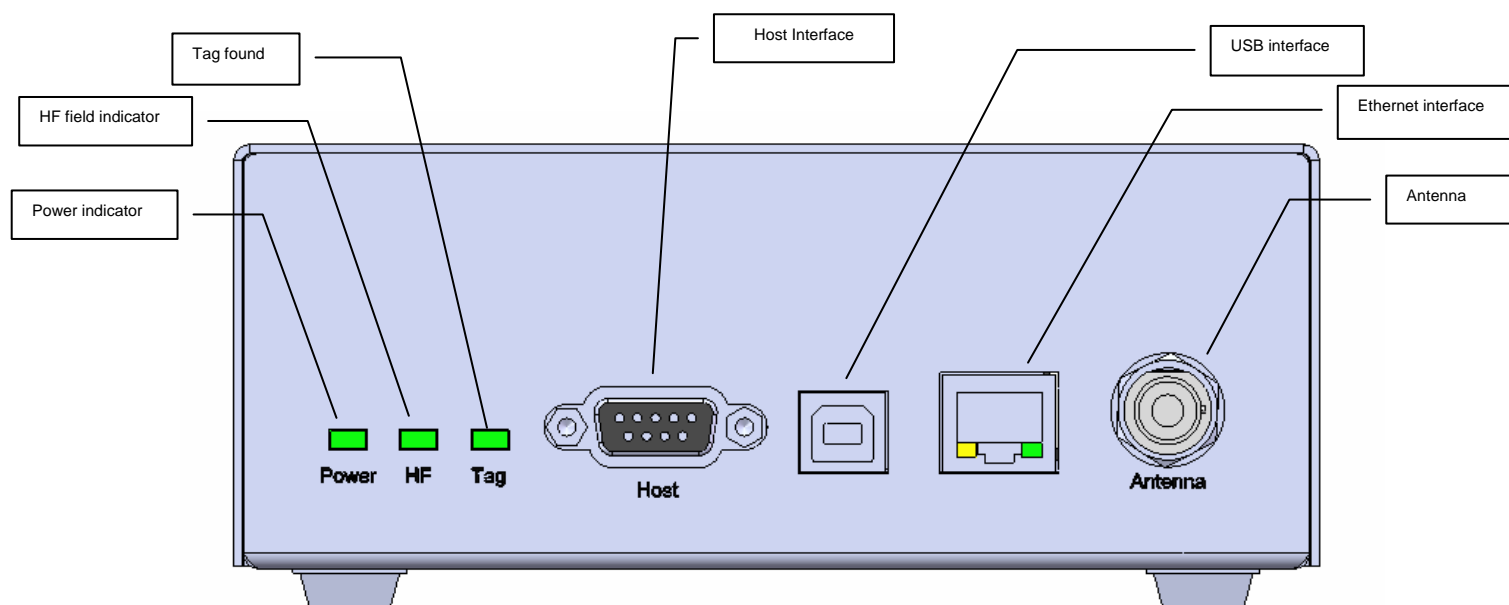
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1 INTRODUCTION

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 (ISO 15693), HF

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



LEDs

Power

Tag

HF

Light on when the reader is switched on

Light on when one or more transponder are detected

High Frequency reading is ON

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

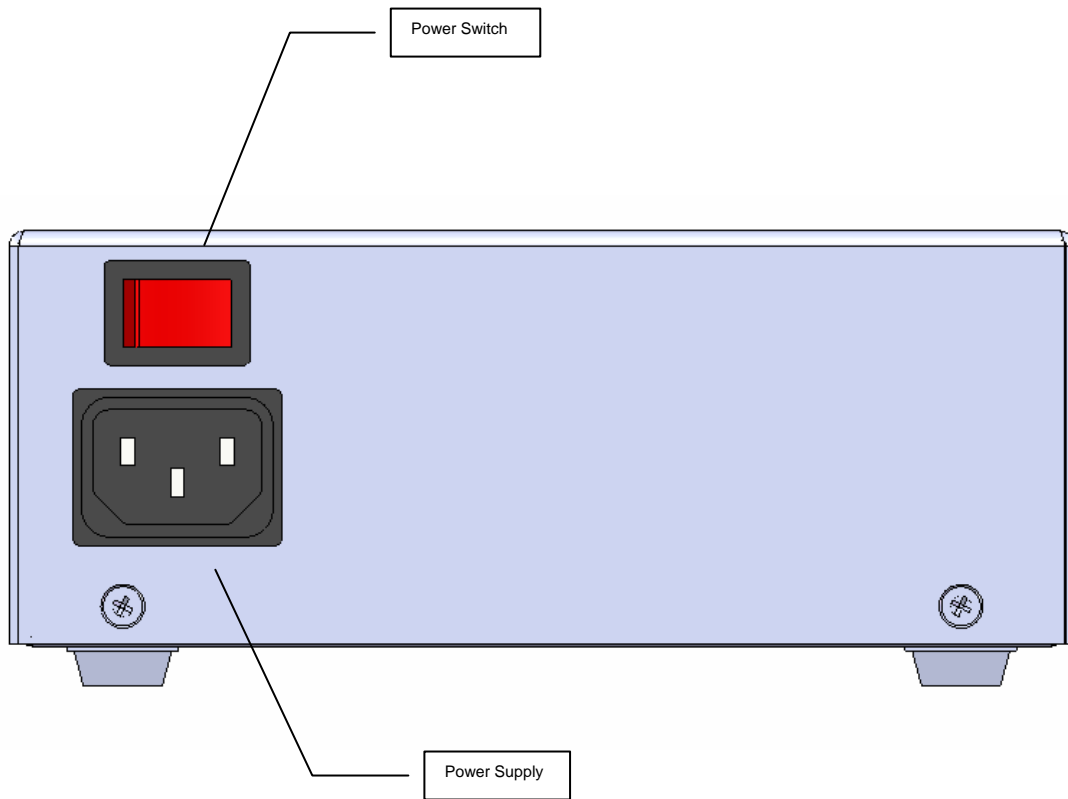
"R-IN1300 TCP/IP Dedicated Protocol" manual to

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

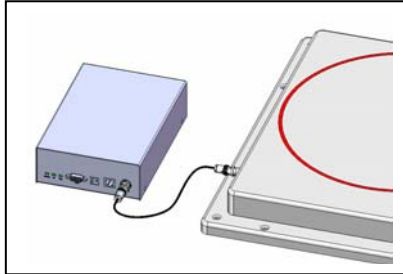
Turn ON and OFF the reader.
Connect the power supply cable (100-240VAC, 50-60 Hz).



2 HARDWARE CONNECTIONS

1. **Antenna:**

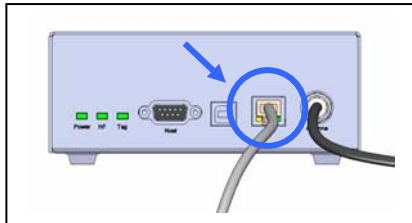
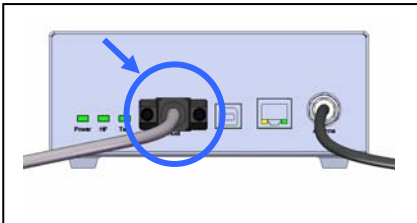
Connect the black coaxial cable from the antenna to the connector marked as “Antenna”.



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**

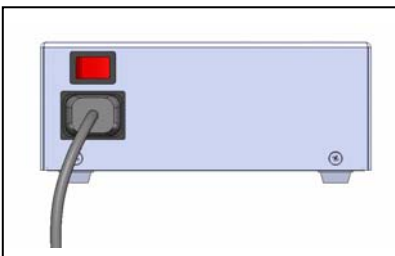
Connect the serial white cable from the connector marked “Host” to any serial port (COM) on your PC or the reader “R-IN 1300 MID” can be connected to the LAN just like a PC (Ethernet cable & RJ-45 connectors).



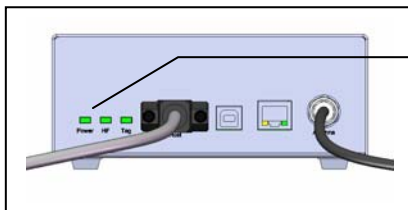
A direct Ethernet connection between a PC and “R-IN 1300 MID” reader is also possible, with an *Ethernet Cross Cable* (supplied together with the reader). Refer to Appendix A for more details on how to do this.

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.

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: *co1 continuous mode on (default) *co0 continuous mode off
*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.
*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 UIDs: This parameter inserts a time delay between the transmission of codes. *dt[0..200] range of time between UIDs 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
Details for *lc1: Any transponder is read just once. To read a transponder again, another one must be read first. The transponder is first detected only once without regard to the time spent in the field.	
*ti[_]	Time out: *ti[0 .. 180] time parameter for lock code 2 from 0 [s] to 180 [s] (default 10 [s], example *ti10)
*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.

	<ul style="list-style-type: none"> *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) <p>Attention: code maybe not unique with the selected code length</p>
*tt[_]	<p>Tag technology:</p> <ul style="list-style-type: none"> *tt1 tag technology ISO 15693(T-BT1320 T-BT1315) (default) *tt2 tag technology Philips I-Code I (not available). <p>Example:</p> <ul style="list-style-type: none"> *it1: only ISO *it2: only I-Code I *it12: both ISO and I-Code I
*ip[_-_-_-]	<p>Configure the IP (Internet Protocol) number of the reader.</p> <p>Example:</p> <ul style="list-style-type: none"> *ip192-168-1-0 <p>Sets the IP number 192.168.1.0</p> <p>The default IP number of any new reader is 192.168.0.85</p>
*if	Plots the current (TCP/IP) network configuration of the reader
*rg[_]	<p>Receiver gain (in case of doubt, do not modify):</p> <p>Amplification of the received signal.</p> <p>*rg0, *rg1, *rg2 (default), *rg3: allowed amplification steps</p>
*re[_]	<p>Reverse order</p> <ul style="list-style-type: none"> *re0 Uid not reversed (default) *re1 Uid recersed

ISO 15693 settings

ISO 15693 settings	Explanation
*rm[_]	<p>Reader request rate:</p> <ul style="list-style-type: none"> *rm0 Reader Request Rate: SLOW (1 out of 256) *rm1 Reader Request Rate: FAST (default) (1out of4)
*mt[_]	<p>Modulation type:</p> <ul style="list-style-type: none"> *mt0 modulation type ASK *mt1 modulation type FSK (default)
*tm[_]	<p>Tag response rate:</p> <ul style="list-style-type: none"> *tm0 Tag Response Rate: SLOW *tm1 Tag Response Rate: FAST (default)
*mi[_]	<p>Modulation index:</p> <ul style="list-style-type: none"> *mi0 modulation index 20% (default) *mi2 modulation index 100%
*ts[_]	<p>Time slots ISO-15693:</p> <ul style="list-style-type: none"> *ts0 single time slots *ts1 16 times slots (default)
*qm[_]	<p>Quiet mode:</p> <p>When this mode is enabled the transponder will answer just once</p>

	while in the antenna field. *qm0 quiet mode off (default) *qm1 quiet mode on
--	--


3.3 I-CODE I SETTINGS




*nt[]	Time slots I-Code I: *ts1 single time slot *ts4 4 time slots *ts8 8 time slots *ts16 16 time slots (default) *ts32 32 time slots *ts64 64 time slots *ts128 128 time slots *ts256 256 time slots
--------	--

3.4 CHIP READ AND WRITE OPERATIONS

General considerations for memory Read/Write:

- keep the tags in the field
- do not move them during the read/write operation
- do not read/write more than ca. 10 tags at a time

Chip Read and Write	Explanation
*ri[]	<p>Read the text contained in the memory of the specified chip:</p> <p>*riUID: UID (the unique identifier of the chip) is a 16-char long sequence.</p> <p>The result of *riUID is "UID Text" (separated by a space) where Text is the content of the memory of the specified chip.</p> <p>Example: Command:*riE004010007EFD128 Reply: E004010007EFD128 ThisIsText</p> <p> The specified chip must be and remain within the magnetic field!</p>

*wi[_][_]	<p>Write a new text into the memory of the specified chip:</p> <p>*wtUIDText: UID (the unique identifier of the chip) is a 16-char long sequence. Text a free sequence of char (max 255 bytes). The result of *wiUIDText is "UID status" where:</p> <p>status = 'OK' status = 'Out of memory' status = 'Error' status = 'Tag not in field'</p> <p>Example: Command:*wiE004010007EFD128 ThisIsMyNewText Reply: E004010007EFD128 OK</p> <p> The specified chip must be and remain within the magnetic field!</p>
*rt	<p>Read the text contained in the memory of any transponder in the magnetic field:</p> <p>The result of *rt is a list of "UID Text"-couples.</p> <p> The specified chip must be and remain within the magnetic field!</p>
*wr[_]	<p>Write a new text into the memory of the detected chips:</p> <p>The result of *wrText is a message showing the number of tags having been written and a list of "UID status"-couples where:</p> <p>status = 'OK': success status = 'Out of memory' status = 'Error' status = 'Tag not in field'</p> <p> The chips must be and remain within the magnetic field!</p>

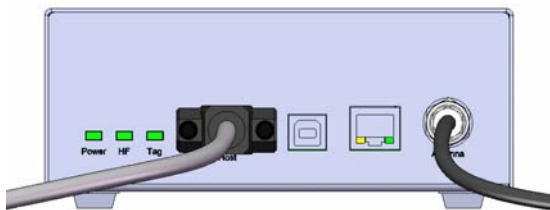
4 OPERATION WITH GRAPHICAL USER INTERFACE (GUI)

The new R-IN1300 MID has 2 modes of operation: one RS-232 ASCII interface based on a terminal (i.e. MS HyperTerminal) and another with a graphical user interface. For more details on the ASCII RS-232 interface refer to the specific chapter 4.6.

The R-IN1300 MID can connect to the Graphical User Interface (GUI) via 2 different interfaces: RS-232 or Ethernet TCP/IP:

4.1 CONNECTING WITH THE COM (RS-232)

The reader “R-IN 1300 MID” can be connected to a PC with a serial connection.

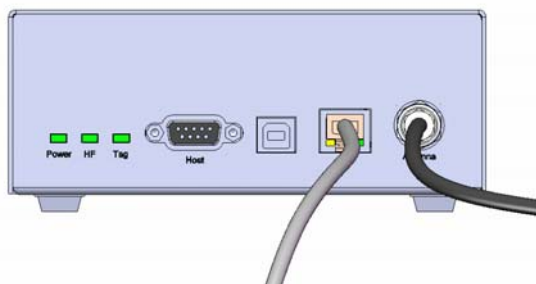


To use the RS-232 interface, a software installation is necessary. Insert the CD-ROM supplied with the reader, the installation will start automatically. Follow the instructions. In case the installation does not start, open the CD and double click on “install”.

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

4.2 CONNECTING WITH ETHERNET (RECOMMENDED)

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.

4.3 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” (**UM001030**) for a detailed description of the whole communication protocol and syntax.

4.3.2 HUMAN INTERFACE

(Valid both for RS-232 interface and Ethernet interface)

The interface (graphical program running on PC or 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.

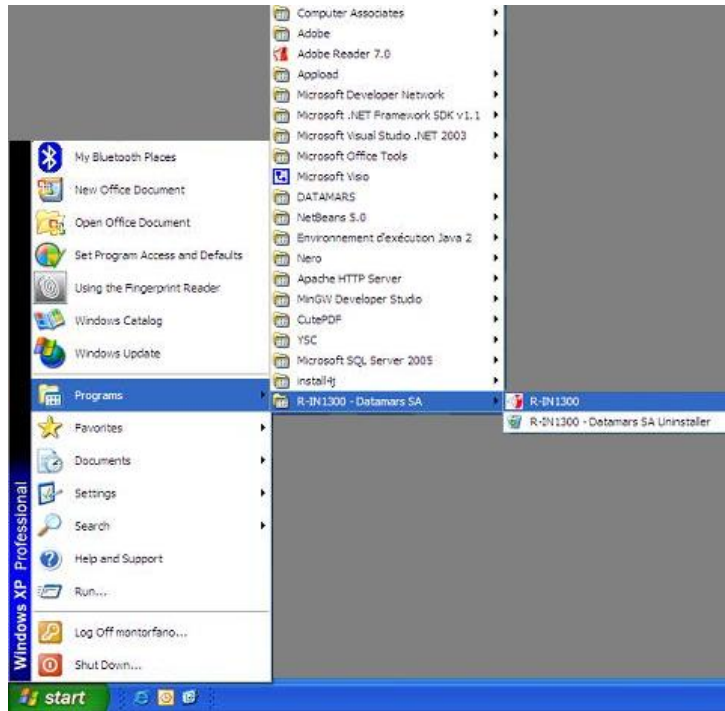
The parameters shown in the tabs may depend on each other. The selection of some options could make some parameters “meaningless” in this context. In such cases relevant parameters are shown normally while “meaningless” parameters are masked/disabled.

All parameters described in this manual refer to the “High Frequency Reader R-IN 1300 MID” with exception of the parameters contained in the “Combo Setup Panel” and “Advanced Setup Panel” which refer to the “Low Frequency Reader R-IN 7500”.

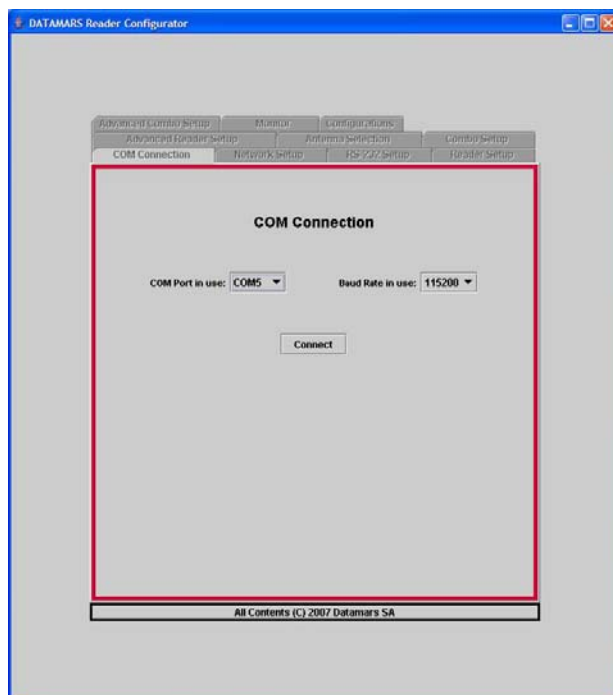
The graphical application requires a Java2 or Java5 plug-in. If the requested plug-in is already installed on your PC, you are immediately able to run the application.
Otherwise the system will try to connect to the WWW to download the plug-in. In this case, follow every installation step always accepting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

4.4 CONNECT (SERIAL VERSION ONLY)

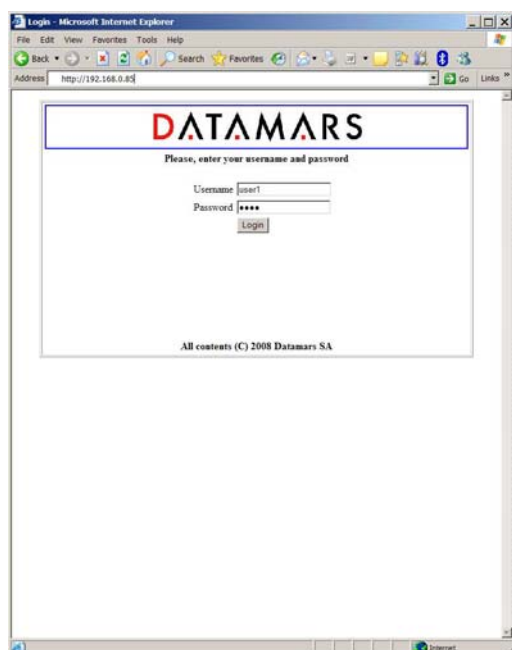
Start the RS-232 interface selecting the entry “R-IN 1300” as shown in the picture.
Before starting the RS-232 interface the very first time, you have to run the corresponding installer (see paragraph 4.17)



Then select the COM-Port and Baud-Rate of your terminal which must correspond to the Baud-Rate of the reader. In case of malfunction of the serial communication, try reducing the Baud-Rate of the reader and then reconnect.



4.5 LOGIN (WEB SERVER VERSION ONLY)



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.

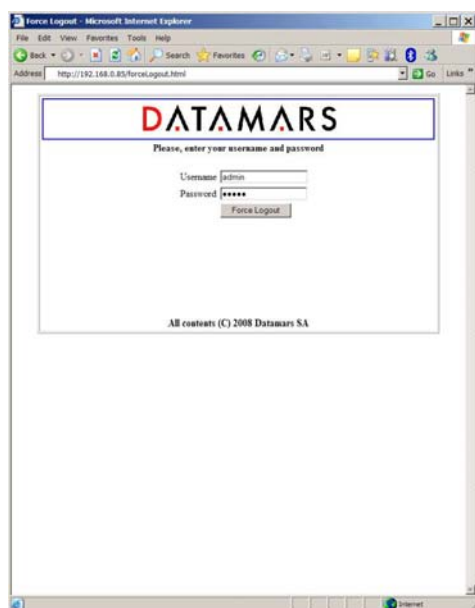
If the currently logged in user forgets to close the browser, she/he is automatically disconnected from the system. This is done on timeout-basis: if nobody presses any button for a time period longer than 10 minutes, the system makes the session available for other users.

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)

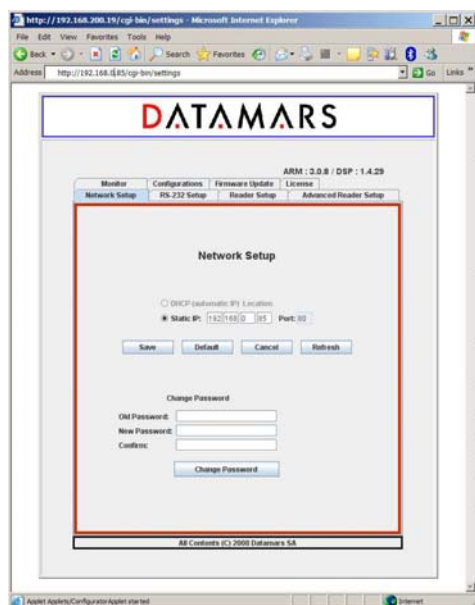
4.6 LOGOUT (WEB SERVER VERSION ONLY)



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.

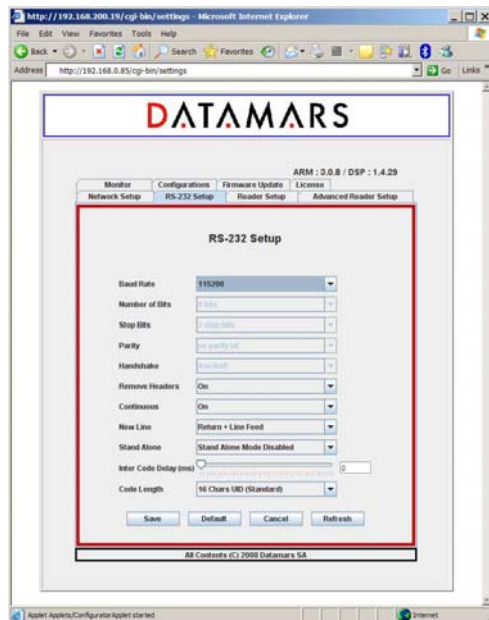
4.7 NETWORK SETUP



The “Network Setup” tab allows users to specify whether the reader has a fixed IP-Address (in this case the ip-address and port must be specified) or a dynamic one (DHCP) *not available yet*. After having changed the IP-Address, the browser must be closed and a new login must be done using the new IP-Address of the reader.

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.

4.8 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 behaviour.

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:

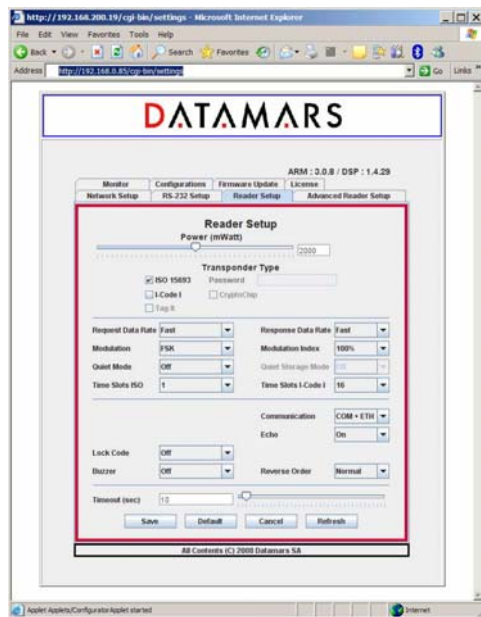
Stand Alone Mode Disabled: after the reader has been turned on, it waits for the start-reading command to come. Until this moment, it remains in a not-reading state.

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.

4.9 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 1

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

Request/Response Data Rate

Modulation Type/ Modulation Index

Quiet Mode /Quiet Storage

Time Slots

The “Lock Code” field specifies a particular behaviour of the reader: Details for **LockCode 0**: Disabled.

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

Details for **LockCode 2**: 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.

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

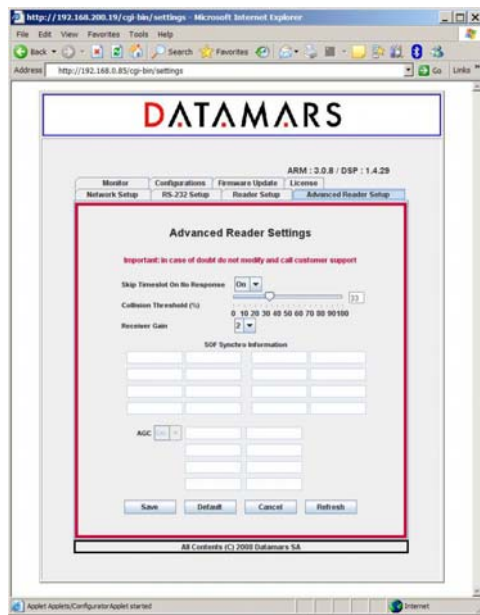
The “Echo” field specifies whether the **user-input** written onto the terminal (RS-232) must be shown on the screen or not.

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

Reverse Order Off : Uids are not reversed

Reverse Order On : Uids are reversed

4.10 ADVANCED READER SETUP



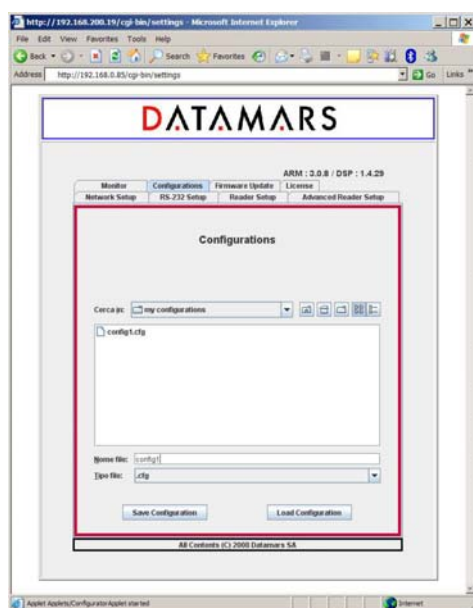
The “Advanced Reader Setup” tab allows users to specify advanced properties of the reader.

The “Skip Timeslot On No Response” field specifies whether or not empty timeslots must be skipped (that’s to say “wait no longer if it seems that no tag is here”). It is recommended to enable this feature.

The “Collision Threshold” field is a highly complex parameter. It is recommended to set it to 33.

The “Receiver Gain” field specifies the sensitivity of the reader’s input (0: less sensitive 3: most sensitive).

4.11 CONFIGURATIONS



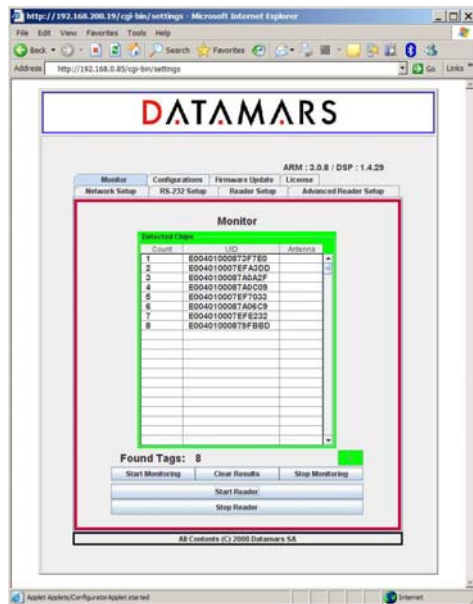
The "R-IN 1300 Reader" offers a tool giving the user the possibility to save and/or reload configuration files.

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".

4.12 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.

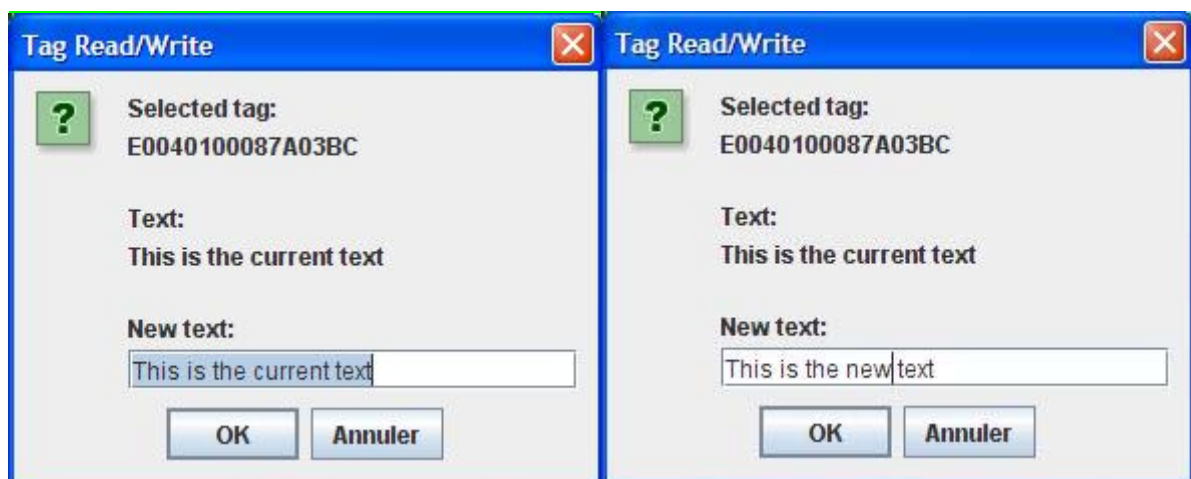
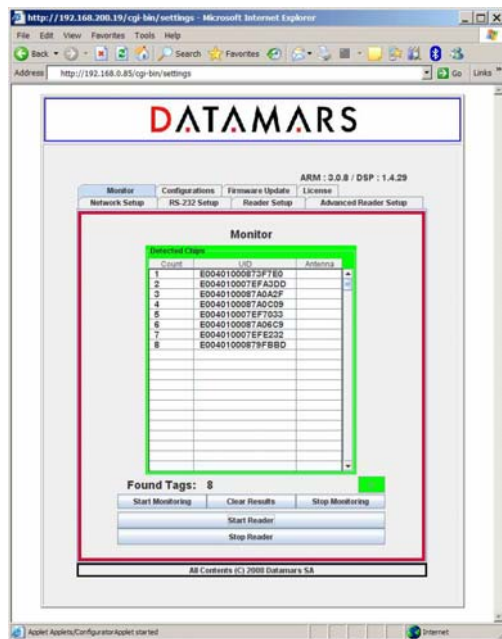
TAG READ/WRITE OPERATIONS

If Tag-Read/Write operations must be performed, the monitoring-process must be started (press the "Start Reader"- and the "Start Monitoring"- buttons).

The desired tag (only one) must now be selected from the list of the found chips just by clicking on its corresponding UID with the left button of the mouse.

Once the UID has been selected, the user starts the Tag-Read/Write operations by clicking the right button of the mouse.

At this point a small pop-up window opens automatically. It shows the UID of the selected chip, its related current text and an input field where a new text can be defined (see picture below).



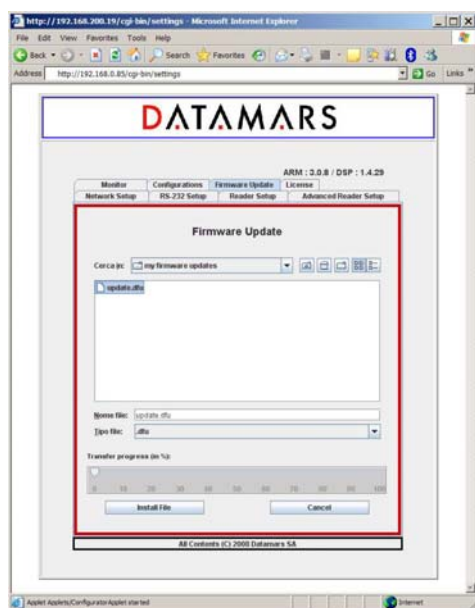
The user can now specify the new text using the input field and then confirm with the OK-button in order write the new text into the tag-memory.
Of course Tag-Read/Write operations can be cancelled with the “cancel-button” or by closing the “Tag Read/Write” pop-up window.

The user is told about the result of the Chip-Read/Write operation by another pop-up window.

Please note that these reading/writing operations are only possible if the chip remains within the magnetic field.

These reading/writing operations are allowed with both the RS232 and Ethernet GUIs. Because of technical reasons when using the RS232 GUI, it is first necessary to stop the reading process by clicking the stop-monitoring button. Afterwards proceed according to the description above.

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”.

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.

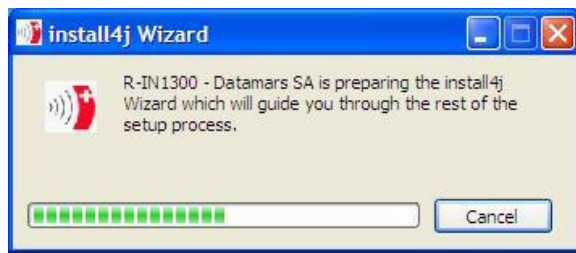
If the user decides to continue and to activate the new software, she/he MUST wait until the whole installation-process is terminated. At the end of the installation, the reader performs a reboot and the browser connection of the user is consequently closed (the warning “Connection closed” appears on the browser). Now the user can perform login again and verify the correct working of the new software.

NB: The installation of the new software can require a couple of minutes: during this period it is ABSOLUTELY FORBIDDEN to turn off the reader.

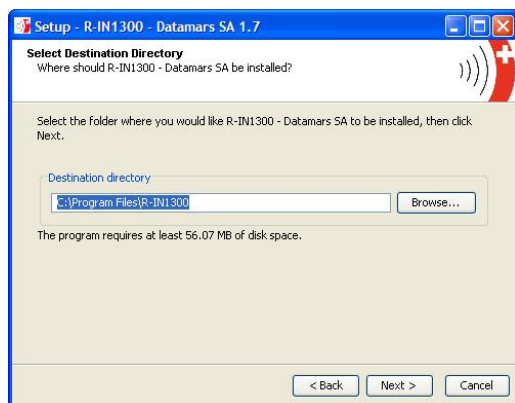
4.14 HOW TO INSTALL THE RS-232 INTERFACE

Insert the “Product CD R-IN 1300 MID” into the CD-Drive of the host-PC and double click the icon representing the program “R-IN1300-MID_windows_3_0.exe” and follow every installation step. Always accept the default options will install every component correctly. You can even customize your installation specifying other options than the default ones.

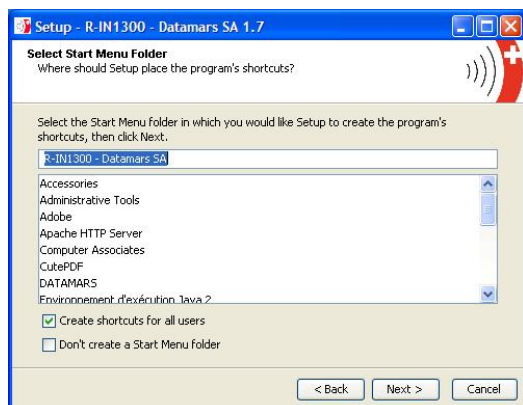
After double-click on the “R-IN1300-MID_windows_3_0.exe”-icon: following picture will appear.



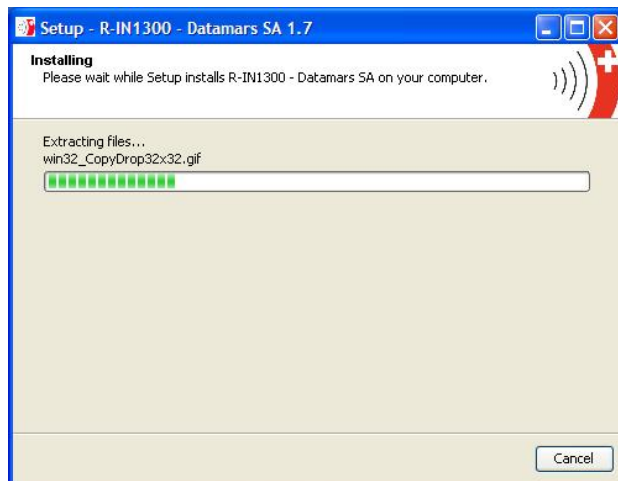
After this preparation step, you will see this input mask. Click “Next”.



You can now specify the destination folder. You can simply accept the default folder by clicking “Next”.



Wait now till the installer terminates its task.



Now you have successfully installed the RS-232 Serial Interface: Click "Finish"



4.15 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 TECHNICAL SPECIFICATIONS FOR R-IN1300 MID

5.1 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 Multiread 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 antennae as well as multiple configurations.

5.2 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 or T-BT1315)
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

The housing might become hot!

5.3 REGULATIONS

5.3.1 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.

5.3.2 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.

5.3.3 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.

5.3.4 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.

5.3.5 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.

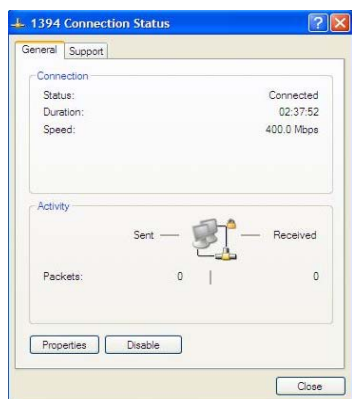
The R-IN1300 MID system fulfils the requirements of this regulation.

5.3.6 WARRANTY

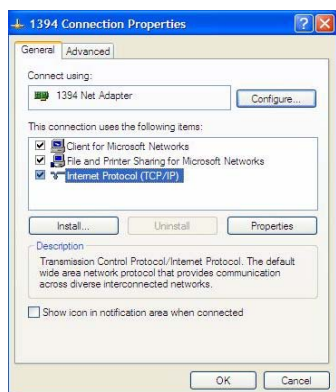
If the reader is opened by not certified personnel by mistake the warranty is voided and we cannot guarantee the fulfillments of the above-mentioned regulations.

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

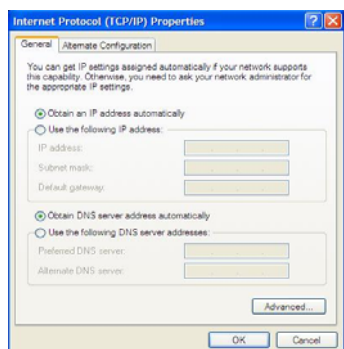
If the reader “R-IN 1300 MID” is directly connected to a PC, you must still do following steps:
Open the “**Network Connections**” frame of Windows (Hint: Start -> Settings -> Network Connections) and double-click the entry corresponding to the connection you intend to use to communicate with the reader. 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?• Is the antenna connected to the connector named "1"?• Are the transponders you want to read specified in the options?• Is the HF led on? <p>➔ If the four 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">• The antenna is 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>

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