

## USER MANUAL

**Trovan**<sup>®</sup> LID650/665 stationary decoder

**READ THIS MANUAL FIRST**



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# 1 About the Windows® PC program

The decoder is standard delivered with a Windows® 95/98/NT/XP/Vista/7 based PC program to configure the decoder so it fits the user's needs. The main screen of the PC program is divided into 7 tabsheets called Communication, Settings, Dbase, History, Trovan Flex, Passwords, and Upgrading. These 7 groups have the following functions:

**Communication:** Making settings regarding communication between decoder and PC. These settings include communication baudrate, transmit options and unit number settings.

**Settings:** Making general settings regarding the basic operation of the reader. These settings include transponder list, read options and decoder options.

**DBase:** When the decoder has to function as an access control system, this tabsheet allows you to manage the persons that have access to the controlled area.

**History:** This tabsheet allows you to select whether the transponder codes have to be saved in the readers' historical memory or not. The historical data can also be downloaded and printed or saved to a file.

**Trovan Flex:** This tabsheet contains all options to write Trovan Flex transponders.

**Passwords:** This tabsheet contains an option to ask for a password before starting the software.

**Upgrading:** This tabsheet allows you to upgrade the reader's firmware.

## 1.1 How to install the software?

The software is delivered on cd, or you can download the latest software from our website: [www.dorset.nu](http://www.dorset.nu)

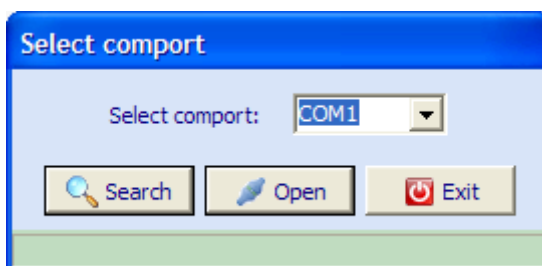
Software on CD:

Insert the CD in your CD-ROM device. The CD will start automatically. If not, run RunHTML.exe from the CD

- Select "Install LID650-665 PC software Windows 98/NT/2000/XP"
- At pop up screen select "Open"
- Follow the instructions on your screen.

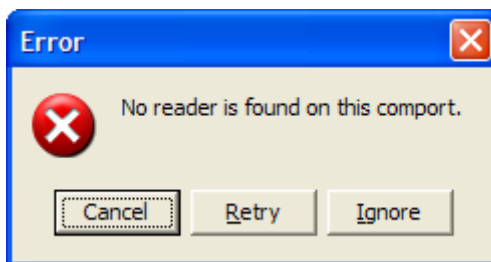
The software can also be found under directory LID650&LID665\SOFTWARE on the CD. This can be copied to disk or CD for further use.

## 1.2 Start the software



After the software has been installed an icon is created in the START menu. When the program is executed, the comport has to be selected where the program should search for the connected decoder(s). It is also possible to connect using the last used communication type and baudrate by depressing the open button. After depressing the search button the program will try to connect to the reader(s).

If no reader is found the following message box will appear:



Please take a look at our Frequently asked questions to solve communication issues.

### 1.2.1 Global functions of the software



At the right side of the screen, a column of buttons is shown. The functions of these buttons will be explained here:

**RS485 unitnumber (network protocol only):** All connected unit numbers will be available in this combo box. Here you can select a unit to change its settings. It is possible to check the amount of connected units by holding the mouse-arrow on *RS485 unitnumber* and wait until the hint appears.

**Get current settings:** Get the current settings of the connected decoder.

**Set new settings:** Depress this button to set the new settings to the selected decoder.

**Set settings to all (network protocol only):** If more units are connected, this button can be used to set settings to all connected units.

**Export settings:** With this button it is possible to make an export file (\*.xml) of the current settings. For example to create a backup of the current settings.

**Import settings:** With this button it is possible to import a settings file (\*.xml).

**Software trigger:** If the software trigger option is checked in the software, this button can be used to give a software trigger to start the readcycle.

**Select comport:** Disconnects the current used comport and opens the select comport screen again.

**Disable RS485 Rx (network protocol only):** By using this button, the RS485 receiver side of the units can be switched off. This can be used in large setups to prevent units from stopping the reading sequence to check communication. The receiver of the decoder can be turned on again by disconnecting the power from the units and power them up again.

**Reset reader:** Reset the unit to factory defaults.

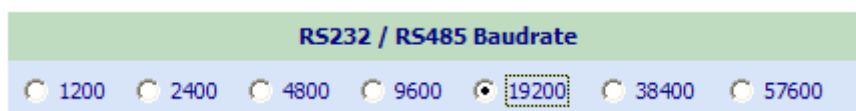
**WARNING!** All the current settings will be lost

**Exit:** Closes the software

## 1.2.2 Communication tabsheet

The communication settings tabsheet allows you to change the [communication baudrate](#), [transmit options](#) and the [RS485 unit number](#). A complete overview of the communication settings tabsheet can be found in Appendix A: The complete Communication tabsheet.

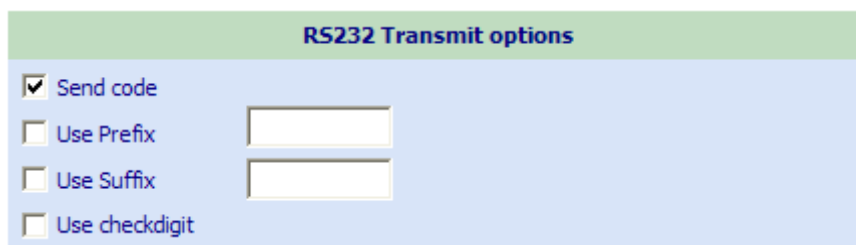
### RS232 / RS485 Baudrate



The RS232/RS485 communication speed can be adjusted here.

To apply the new settings the [Set new settings](#) button has to be pressed

The RS232 decoder defaults to 9600 baud after a reset. The RS485 decoder defaults to 19200 baud.



### RS232 Transmit options

This part of the settings tabsheet allows you to change some transmit options.

**Send code:** If a transponder code is read it can be transmitted via RS232/RS485 immediately by setting this checkbox. For RS232 the code can be transmitted together with a [prefix](#), [suffix](#) or [checkdigit](#). **(default on)**

**Send Prefix (RS232 only):** The prefix in the editbox is sent in front of the transponder code. This option is only selectable when [Send code](#) is selected. Additional control characters can be applied by using the codes listed in Appendix H: Characters that can be used as pre- or suffix (only RS232). **(default off)**

**Send Suffix (RS232 only):** The suffix in the editbox is sent behind the transponder code. This option is only selectable when [Send code](#) is selected. Additional control characters can be applied by using the codes listed in Appendix H: Characters that can be used as pre- or suffix (only RS232). **(default off)**

**Send checkdigit (RS232 only):** A checkdigit is sent between the transponder code and the suffix. This checkdigit can be added to check if the transponder code is sent correctly. This option is only selectable when [Send code](#) is selected. **(default off)**

**Change unit number (RS485 only)**

Every RS485 decoder must have its own unit number so communication to this specific decoder can be established. The factory default unit number is 00 and can be renumbered by entering a new unit number between 1 and 254. When pressing 'Set unit number' the new unit number will be assigned. After this the program will try to reconnect to all readers.

**1.2.3 The Settings tabsheet**

To configure the reader to your requirements, you can adjust the settings in this tabsheet. This tabsheet allows you to adjust *Transponder list*, *Read options* and the *Decoder options*. The full settings tabsheet is shown in Appendix B: The complete Settings tabsheet.

**Transponder list**

Different transponder types can be enabled or disabled in this list. If the reading of more than one transponder type is enabled, the readcycle-time will increase. This results in less reading speed.

**Read options**

**Use all ID codes:** Selected transponders will be read and used for saving, sending, access control etc (**default on**).

**Use only new ID:** When a transponder is read more than once in a row, it will only be used once for saving, sending, access control, etc. A different transponder code has to be read first before the first transponder will be used again (**default off**).

**Use readdelay:** A transponder code will be used only once for saving, sending, access control, etc. unless the specified time in the edit box has expired. After the readdelay has passed or when another transponder code has been read, the same transponder code can be used again (**default off**).

(This is not time in seconds, but it stands for the number of readcycles)

**Check in/Check out:** This is a combination of *Use only new ID* and *Use readdelay*. In this mode, a new transponder code is transmitted via RS232. As long as the transponder stays within range, nothing happens. If the transponder is no longer within range the 0000000000<CR> message is transmitted to the PC after readdelay time has passed. If the checkbox *Use relay* is activated the relay is activated during the time the tag is present. If *Use access control* is also active, then only those transponder code(s) present in the internal memory will activate the relay (**default off**).

**WARNING!** The waittime after read must be > 0

**Use sensor in/out:** This option is not available on older decoder boards. In case of an older board, this option is invisible. Use this mode if in/out sensors are connected to the decoder board (see Chapter 5 and 6 for more information on how to connect in/out sensors to the decoder board). When one of the sensor inputs become high (5V) the reader starts the readcycle. When the option *Save all movements* is not enabled, both sensor

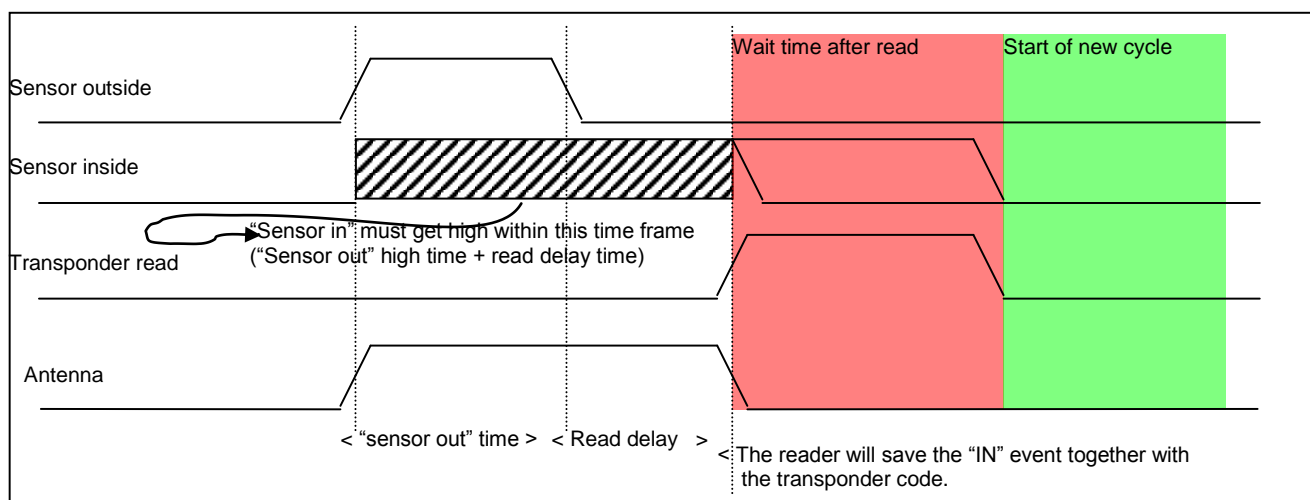
inputs must become high in order to store the data in the reader's memory. The diagrams on the next page shows an example. Use the option [Use IR sensors](#) in combination with IR LED's who are controlled by the LID65x hardware (special hardware) (**default all off**).

**The antenna will always be turned off after the transponder is read, independent of the sensor states!**

The read delay has the following purpose: When using a tube with sensors on the both ends of the tube, it is possible that an outgoing animal does not trigger the outside sensor before leaving the inside sensor. Therefore the reader must continue reading for a small time. Depending on the length of the tube and the size of the animal this time must be shorter or longer. You can adjust this time in the box right next to the "Use sensor in/out" text.

**A valid "IN" sequence example:**

An animal enters the tube, triggering the sensor on the outside, then it travels through the tube where the transponder will be read. Eventually the animal will trigger the inside sensor and the event will be stored into the reader's memory.



Note: The transponder may be read prior to the inside sensor getting high. In that case, the antenna will be turned off and the reader will continue waiting for the outside sensor to get high.

The "Wait time after read" will start as soon as a transponder has been read and the sensors both have been high. After this time, both sensors must be low, if not the reader will turn the led on and off until these inputs are low.

If the reader failed to read a transponder then it will save a null code into memory

If the option "save all movements" is enabled then the reader also stores the events where only one sensor was triggered.

**Use Software trigger:** The decoder starts reading a specified number of read cycles when the software trigger command has been received by the decoder. The trigger command can be send by clicking the [Software Trigger](#) button. The number of read cycles is specified in the edit box (**default off**).

**Use Hardware trigger:** The decoder starts reading the specified number of read cycles after the hardware trigger has been occurred. For more information on the trigger input, please refer to the specifications regarding the decoder. The number of read cycles is specified in the edit box (**default off**).

**Decoder options**

The general settings of the decoder can be adjusted in this part of the screen.

**Use LED during read:** When the LED has to flash during the read cycle, this option should be activated (**default on**).

**sec. waittime after read:** After the decoder has read a transponder code, the reader waits x seconds before starting to read again. The waittime can be set between 0 and 25 seconds. During this time the LED can be lit and the relay output can be activated (**default 0,1**).

**Use LED during waittime:** The LED can be lit during the waittime after read (**default on**).

**Use relay during waittime:** The relay can be activated during the waittime after read (**default off**).

**Copy status relay 1 to output 2:** If the optional secondary relay is placed, this option will copy the status of relays 1 to the second relays. In combination with V8xx firmware, output 2 can be configured as PWM output in order to control a RC-servo (**default off**).

**Output 2 setup:** (only visible with V8xx firmware) Output 2 can be configured as Relays or PWM output, to control a RC-servo (for example to control a Rodent door) (**default Relays**).

**WARNING! Do not turn on the PWM mode if a relays is connected to OUTPUT 2!**

**PWM output settings:** (only visible if PWM mode was selected in the Output 2 setup) the angle of the RC-servo can be changed by changing the values in the editboxes. Swapping of these values can be done by depressing the button next to the editboxes (**default off**).

**Use buzzer during waittime:** By checking this checkbox, the buzzer will beep during waittime (**default on**).

**Read during waittime:** (only visible with V8xx firmware) Force the reader to continue reading during waittime (**default off**).

**Use LCD:** This checkbox should be set if the optional LC display has to display the transponder code (**default off**).

**Relay continuously on:** This checkbox should be set if the relay has to be activated continuously, independent of a transponder was read (**default off**).

**Antenna on:** The antenna can be turned on/off by selecting/deselecting this option. The decoder will not be able to read a tag if the antenna is turned off (**default on**).

**Fast mode (only for multicoil antennas such as the ANT610, ANT611 and ANT612):**

**WARNING! This option can only be used with certain antennas. Contact your distributor if you are not sure!** If the connected antenna can handle the fast mode, this checkbox can be set to put it into the fast reading mode. All single coil antennas are forced into fast mode automatically (**default off**).



### 1.2.4 The DBase tabsheet

When the reader will be used as an access control system, the configuration can be set in this tabsheet. The complete DBase tabsheet is shown in Appendix C: The complete DBase tabsheet.

The *Use access control* checkbox has to be set if the reader is going to be used as access control reader (**default off**).

The following information is shown in this tabsheet:

**Number of access codes:** This is the number of transponders present in the memory at the moment the settings were acquired from the decoder.

**Dbase filename:** Since you have the possibility to connect more than one reader to the PC, there are different databases that can be used for each decoder. Here you can see which database is currently used.

**Cardholder information:** This information is shown in two ways:

- *Individual information* in a number of edit boxes, see Individual card holder information
- Information in a *table* form: *Goldcard*, *Silvercard* and *records*, see Goldcard and Silvercard.

#### Search Topic:

If you are looking for a certain item in the table, you can use this item to easily retrieve the required information. Just select the topic where you want to search in, for example *Memo*, and enter the search criteria in the *Search on* field.

The following buttons are shown at the bottom of this tabsheet:

#### **Start new Dbase**

Creates a new empty table

#### **Get new codes**

Appends the ID cards which were entered via the Goldcard option in the current table.

#### **Print DBase**

Transfers data from the current table to a printer.

#### **Load DBase from file**

This allows the user to fill the table with information from a (\*.key) file, the file open dialog will be opened after depressing this button. A file can be selected in this dialog.

#### **Save DBase to file**

After modifications are made in the table, this button should be pressed to store the altered information in a (\*.key) file. The store file dialog will be opened to allow the user to enter a new file name if necessary.

**Clear Reader**

All information in the reader is erased. No cardholder can enter the controlled area.

**WARNING!** All access codes and history codes will be lost!

**Save DBase to reader**

The current contents (active cards only) of the table will be transferred to the reader that is currently selected.

**Individual card holder information**

The *Activated* checkbox should be set if the current record has to be stored in the readers memory as a valid access code, after the *Save Dbase* to reader button is pressed.

**Information in Table form**

Type	Code	Custom	Memo
Trovan Unique	0000000000	Goldcard	Goldcard
Trovan Unique	0000000001	Silvercard	Silvercard
Trovan Unique	0006EB187E	Roland Stump	Dorset Identi

In this part of the screen a list is shown of the records that are present in the selected database file. With the horizontal scroll bar the type, code etc. can be made visible. With the vertical scroll bar you can walk through the records. Special in this table are the first and second record. The first card in the table is defined as the Goldcard and the second as Silvercard.

**Goldcard**

The first card in the table is the Goldcard, a normal transponder with a special function.

After reading the Goldcard, the reader will automatically be set in the Save mode. All ID numbers that are read from now, are stored in the internal memory of the decoder as valid access cards.

After reading the Goldcard again, the reader will return to the normal operation mode.

**Silvercard**

The second card in the table is the Silvercard, a normal transponder with a special function.

After reading the Silvercard, the reader will erase all ID numbers from the internal memory, except for the Gold- and Silvercard.

**WARNING!** There will be no valid access card after this ID number has been read.

**1.2.5 The History tabsheet**

The reader is capable to save max. 12800 transponder codes without date/time or 6400 transponder codes with date/time (1024kB EEPROM are optional available, default a 512kB EEPROM is mounted). The maximum number of codes in the historical memory will decrease when the access control option is used. The full History tabsheet is shown in Appendix D: The complete History tabsheet.

Whether the ID codes should be stored can be set in this tabsheet. There are different ways of storing the information in the internal memory. This can be configured by the following checkboxes:

**Save codes in reader:** Select this option if the decoder has to save the ID codes in the historical memory (**default off**).

**With date/time:** If the reading date and time have to be saved together with the ID code this option has to be selected. This option is only enabled if the *Save codes in reader* option is selected (**default off**).

**Overwrite codes:** When the historical memory is full the reader can overwrite the oldest codes or it can stop saving codes. If this option is selected the oldest codes will be overwritten (**default on**).

Other information shown in this tabsheet is the number of saved codes present in the historical memory at the moment the settings were acquired from the decoder by depressing the *Get current settings* button. This number of overwritten codes is only displayed if the *Overwrite codes* box is selected. This number represents the number of codes that are overwritten in the historical memory after the memory went full. The number of overwritten codes will be determined at the moment all history codes are downloaded to the PC.

The historical data can be downloaded from the decoder to the table by clicking on the *Get codes from reader* button. Other functions of the History tabsheet are:

- Clear Reader
- Clear history database
- Save history database to file
- Print history database

**Clear Reader**

The readers memory will be erased after this button has been pressed. The information stored in the reader is lost and cannot be retrieved.

**Clearing history database**

Pressing this button clears the data in the table.

**Save history database to file**

The file save dialog is opened after this button is pressed. The information stored in the file is “;” separated and can be loaded by a spreadsheet program.

**Print history database**

The printer dialog is opened, and the information in the table will be transferred to the selected printer after this button has been pressed.

**Sorting**

Type	Code	Readingdate	Readingtime	Event
Trovan Unique	0006EB 187E	17-11-2010	14:55:33	
Trovan Unique	0006EB 187E	17-11-2010	14:55:33	
Trovan Unique	0006EB 187E	17-11-2010	14:55:33	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	

After the information is downloaded from the reader, the table can be sorted on a certain item like code, date or time.

To do this, just click on the column title on top of the table. If the table should be sorted in inverted manners press on the column title again.

**Filtering**

Filtering an item in the table can be done by selecting the desired topic and enter your filter criteria in the "search on" input field.

Search topic: <input type="text"/>	Search on: <input type="text"/>
------------------------------------	---------------------------------

The table will be updated immediately after each character entered in the input field.

If you press the [Print history database](#) or [Save history database to file](#) button after you have filtered information from the table, only the filtered information will be printed or saved.

**1.2.6 The Trovan Flex tabsheet**

In the Trovan Flex tabsheet, all the options are available to program Trovan Flex transponders. The full Trovan Flex tabsheet is shown in Appendix E: The complete Trovan Flex tabsheet.

Trovan flex transponders	
String to send: <input type="text"/>	1234 Write string to RW transponder
Number of blocks <input type="radio"/> 3 <input type="radio"/> 5 <input checked="" type="radio"/> 7	Set number of blocks

**String to send**

A string of maximal 15 characters can be sent to a read-write transponder. Only LID665 decoders with version L665V200 or later can write read-write transponders.

**Write string to RW transponder**

Sends the string to a read-write transponder.

**Number of blocks**

Here the number of blocks for a read-write transponder can be set. A 3 blocks read-write transponder can store up to 5 characters, a 5 blocks 10 characters and a 7 blocks read-write transponder can store up to 15 characters.

**Set number of blocks**

This sets the number of blocks for a read-write transponder.

**1.2.7 The Passwords tabsheet**

In the passwords tabsheet, an optional startup password can be set. If no new password was entered, the software won't ask for a password at startup. The full window is shown in Appendix F: The complete Passwords tabsheet.

**Old password**

Field to enter the old password.

**New password**

Field to enter a new password.

**New password verification**

Extra field to enter the new password for verification.

**1.2.8 The Upgrading tabsheet**

With the upgrading tabsheet it is possible to upload a newer firmware version to the decoder. This is possible from firmware version 710 or higher. The complete Upgrading tabsheet is shown in Appendix G: The complete Upgrading tabsheet.

**Filename**

This field shows the current selected filename. This can be changed by pressing the browse button.

**Browse button**

Button to open a \*.EHX or a \*.AEH file, depending on the current firmware version.

**Upload firmware to unit**

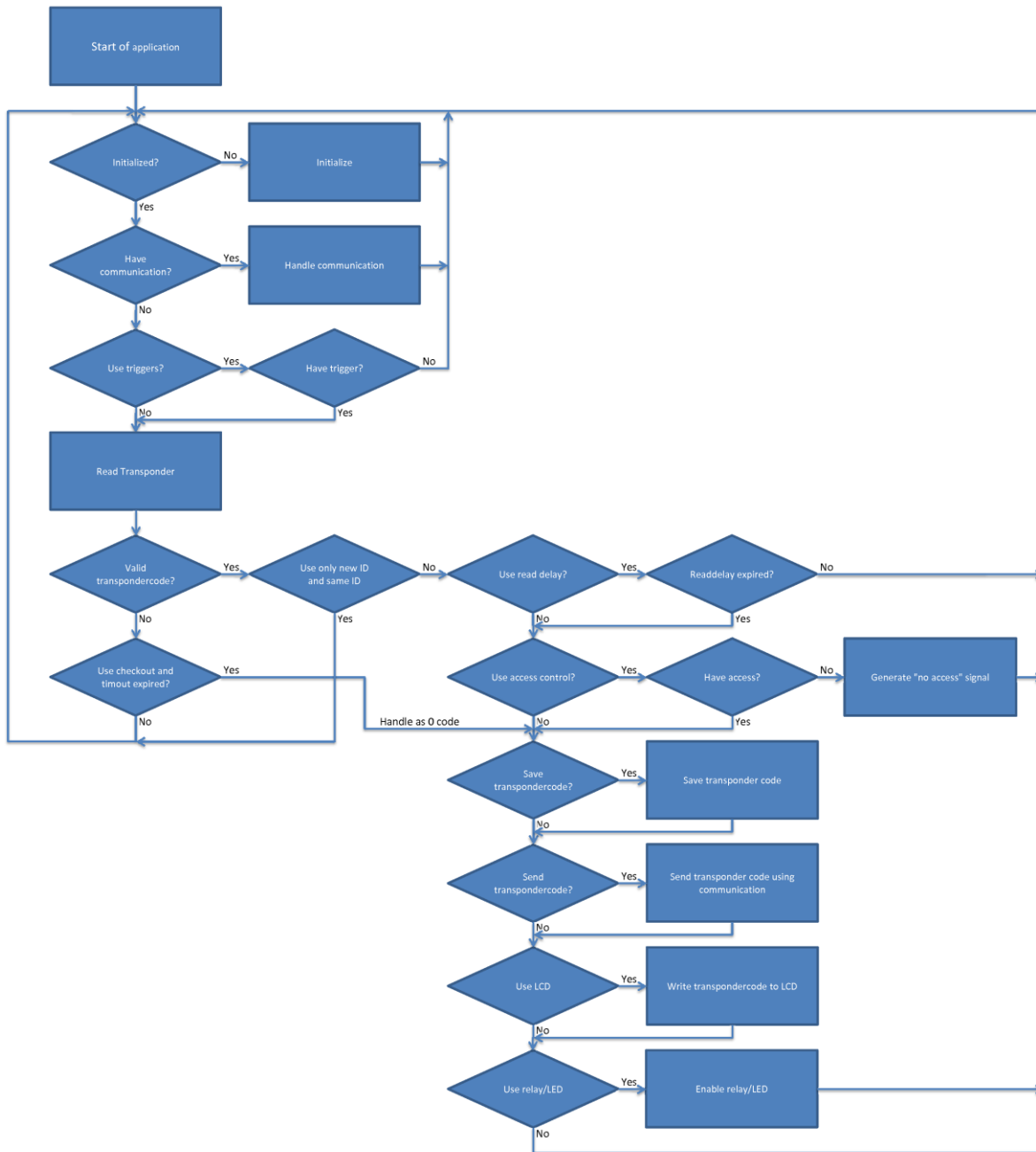
Upload the new firmware to the currently selected unit.

**Upload firmware to all units**

If the software is connected via a RS485 interface to more than one decoders, it is possible to upload new firmware to all current connected decoders.

## 2 Firmware application flow

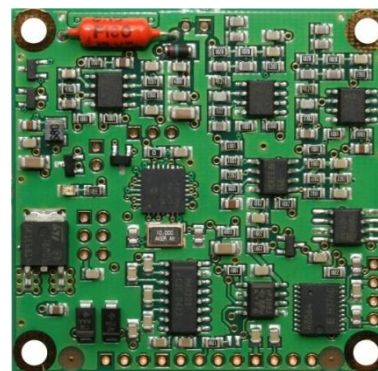
A concise version of the decoders application flow is shown here:



### 3 About the LID665V41 decoder

The LID665V41 decoder is designed for use with single coil antennas like the ANT613(S)/ANT614/614OEM or custom made antennas. The standard decoder together with an antenna can read all Trovan™ read-only and Flex read-write transponders.

Standard the LID665V41 decoder is delivered with Windows® XP/Vista/7 PC software to change the settings of the decoder, download the history data or assign access codes.



#### 3.1 Specifications LID665V41

Dimensions decoder	51 x 50 x 8 mm
Weight decoder	20 Gram
Supply voltage	+5VDC +/- 5% or +7,5VDC to 24VDC
Supply current	70mA (antenna activated) 26mA (antenna deactivated)
Reading rate	24 msec
Operating frequency	128 kHz
Number of ID codes with 32kB EEPROM	6400 ID codes only or 3200 with date and time
Interfaces and protocols	RS232 (8 data, no parity, 1 stop, 1200..57600 baud, default 9600) RS485 2-wire (8 data, no parity, 1 stop, 1200..57600 baud, default 19200)
LED and buzzer output	DC buzzer type (5VDC)
Options	Clock/Calendar with lithium battery to store date/time with ID-codes. Up to 1024kB memory for storing 25600 codes or 12800 with date and time. I2C connection for serial communication Custom serial communication. 2 TTL inputs or outputs.

#### 3.2 Connectable antennas

Reading distances chart (distance in cm)				Transponder types			
Antenna	Dimensions	Weight	Protection	ID100	ID200	ID300	ID400
ANT614W	124x76x23mm	200 gram	optional IP67 protection	2	5	3,5	11
ANT614S	120x45x23mm	140 gram	optional IP67 protection	2	5	3,5	11
ANT614OEM	85 x 55 x 2mm	10 gram	NA	2	5	3,5	11
ANT613	Ø18 x 165mm	60 gram	IP65	1	2,5	1,7	6
ANT613S	Ø20 x 60mm	50 gram	IP65	1	2,5	1,7	6

Several other complete and OEM customized antenna can be made on request. Please visit our website for more information. <http://www.dorset.nu>

**WARNING!** Metal objects near the antenna increase the current consumption and reduce the reading distance. The minimum distance towards a metal surface depends on the type of antenna. Also (SVGA) monitors or switched mode power-supplies can decrease the reading distance.

### 3.3 How to connect the LID665v41

#### 3.3.1 Description of connectors

##### J101 powersupply

1. 7-24VDC
2. +5VDC +/- 5%
3. GND, Ground

##### J104 Serial port

1. TXD RS232 (9600,n,8,1\*)
2. RXD RS232 (9600,n,8,1\*)
3. RS485 B (19200,n,8,1\*)
4. RS485 A (19200,n,8,1\*)
5. GND, Ground

#### Important note

Depending on firmware version Vx.xx or Nx.xx, RS232 or RS485 is available.

##### J103 Output LED/Buzzer

1. + led
2. - led
3. + buzzer (DC 20mA)
4. - buzzer

##### J102 I2C Output

1. SDA, serial DATA
2. VCC
3. GND
4. SCL, serial Clock

##### J105 Input/output

1. Output 1
2. Input 1, used for in/out sensors or hardware trigger

##### J108 Input/output

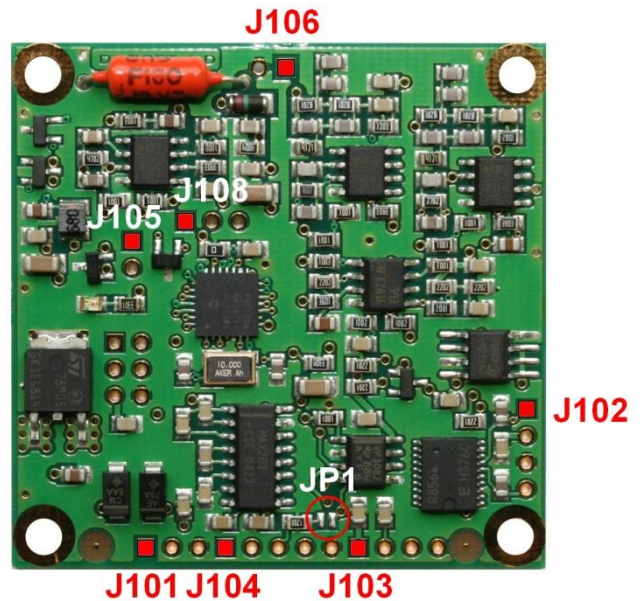
1. Output 3, for customized firmware only
2. Output 2, used with PWM controlled RC-servo
3. Input 2, used for in/out sensors

##### J106 Antenna connection:

1. + single coil antenna
2. - single coil antenna

##### JP1 Bus-end for RS485 bus must be closed if decoder is at the end of the bus.

Resistors of 680 ohm must be placed between J101.2 and J104.3 and between J104.4 and J104.5 at one of the bus-ends.



#### Important note

- If you connect an inductive load like an electric strike or relay, there should be a free running diode (like 1N400x type) mounted at the inductive load.
- JP1 Bus-end for RS485 bus (close if decoder is at the bus-end).
- Resistors of 680 Ohm must be placed between J101.2 and J104.3 and between J104.4 and J104.5 at one of the bus-ends for RS485 communication.
- Grounding has to be connected between every unit for RS485
- If you use the in/out sensors use pull up or pull down resistors for the sensors (depending on the sensor type).

\* = Baudrate can be changed by software setting (1200, 2400, 4800, 9600, 19200, 38400 and 57600 baud)

#### IMPORTANT NOTE!

Use a 125mA fuse in line with the 5V power input  
Use a max. 500mA fuse in line with the wide range input. There are no fuses on the LID665 OEM decoder board



### 3.4 LID665v20 Backplane connections

The LID665 decoder can be combined with the LID665V20 backplane that contains connectors, two fuses, a buzzer and a potential free relay output to drive an electric lock.

#### J1 Powersupply

1. 7-24Vdc Power supply (Vin High)
2. 5Vdc +/-5% Power supply (Vin LOW)
3. GND

#### J2 Communication

1. Txd Transmit data RS232
2. Rxd Receive data RS232
3. B channel RS485
4. A channel RS485
5. B channel RS485
6. A channel RS485
7. GND

#### J19 Antenna connection

1. Antenna signal
2. Antenna GND

#### J18 External LED

1. + LED
2. - LED

#### J20 Relay output 1

1. voltage, 5V or wide range, jumper J12 selectable. If jumper removed relay1 can be used to switch up to 125VAC, max. 1 Amp.
2. NO Normally Open
3. NC Normally Closed
4. GND

#### J16 Input for hardware trigger

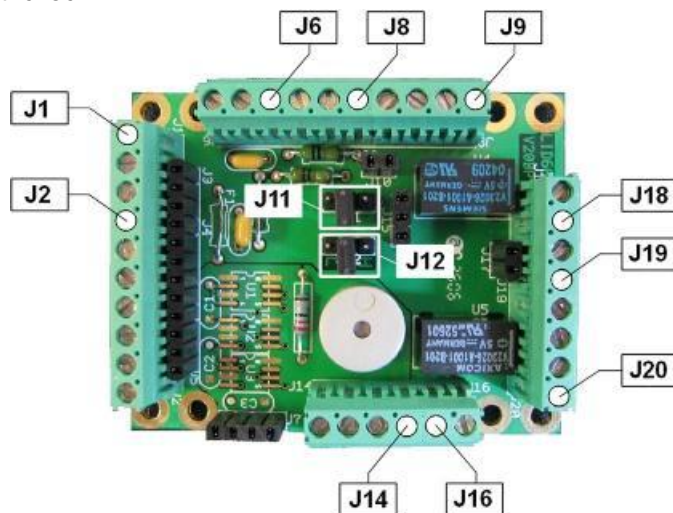
1. TTL signal for Input 3. Used in combination with customized firmware
2. GND

#### J14 I2C Serial Bus

1. SDA Serial Data
2. VCC
3. GND
4. SCL Serial Clock

#### J9 Relay output 2

1. voltage, 5V or wide range, jumper J11 selectable. If jumper removed relay2 can be used to switch up to 125VAC, max 1Amp.
2. NO Normally Open
3. NC Normally Closed
4. GND



○ = pin 1

#### J8 Input/Output direct from uP

1. TTL signal Output 2, used with PWM controlled RC-servo
2. TTL signal for Input 2, used with in/out sensors
3. GND

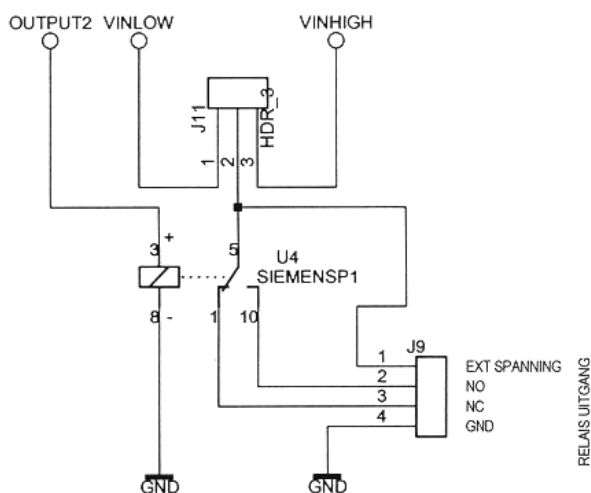
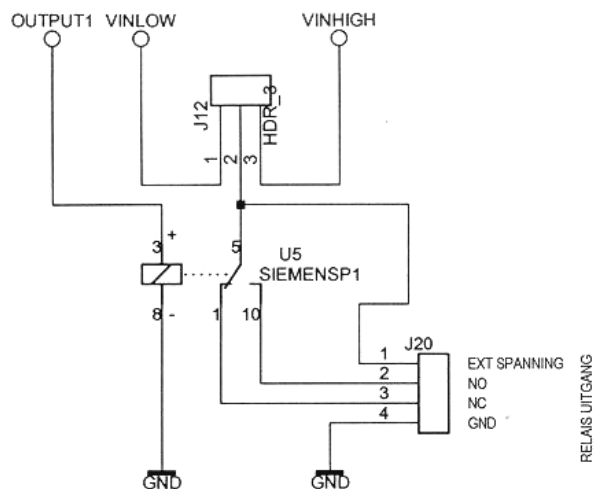
#### J6 Input/Output direct from uP

1. TTL signal Output 1
2. TTL signal for input 1, used with in/out sensors
3. GND

### Important note

- If you connect an inductive load like an electric strike or relay, there should be a free running diode (like 1N400x type) mounted at the inductive load.
- JP1(on decoder) Bus-end for RS485 bus (close if decoder is at the bus-end).
- Resistors of 680 Ohm must be placed between J1.2 and J2.3 and between J2.6 and J2.6 at one of the bus-end for RS485 communication.
- Grounding has to be connected between every unit for RS485
- If you use the in/out sensors use pull up or pull down resistors for the sensors (depending on the sensor type).

### Schematic overview of Relay outputs



### Use of jumper J11(optional) & J12

The two jumpers can be used in three different ways.

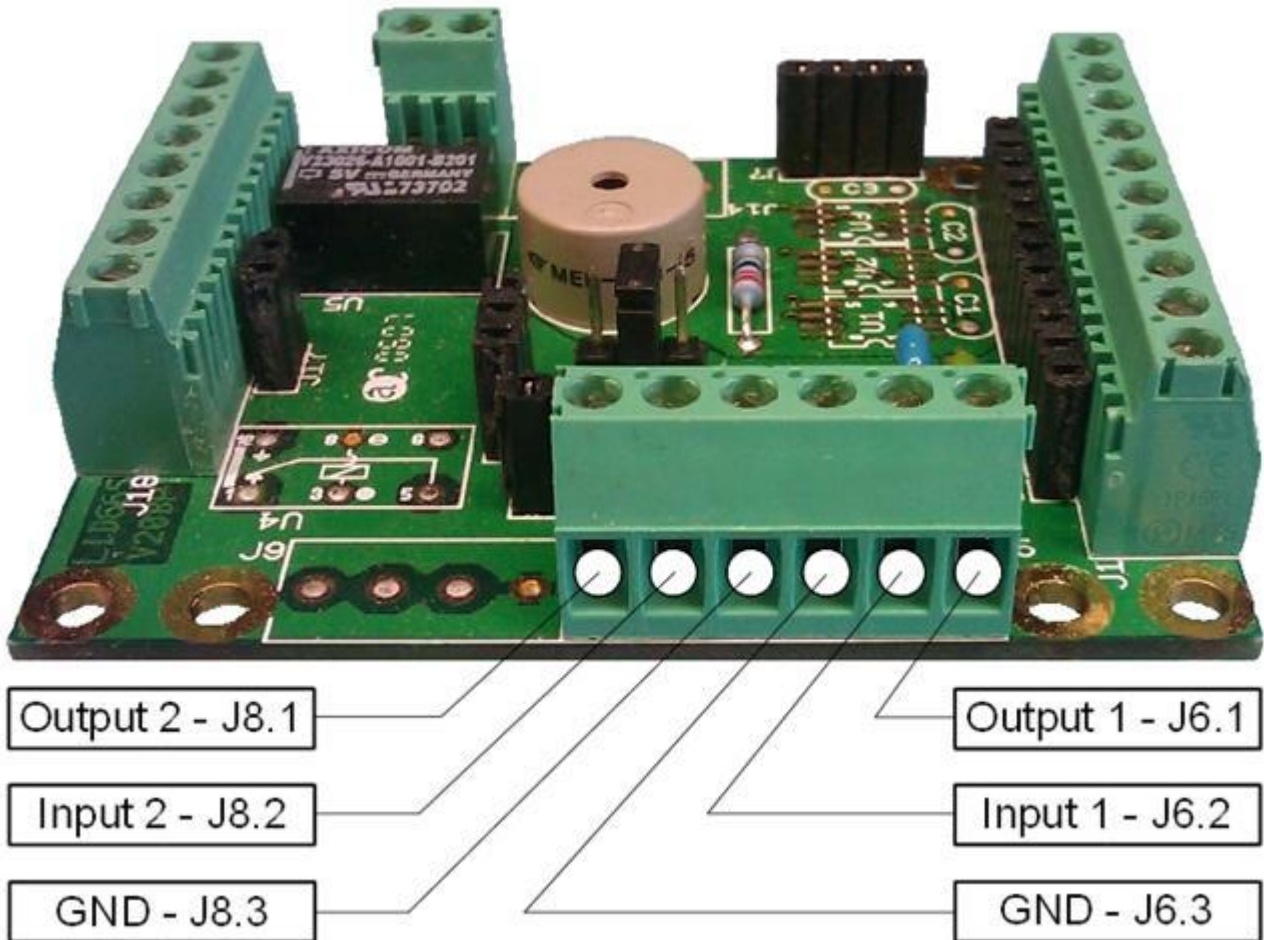
1. No jumper: External voltage can be applied to pin 1 of J20/J9 max 1A, max 150Vac (See table below)
2. Jumper on 1-2: Vin LOW is selected.
3. Jumper on 2-3: Vin HIGH is selected.

#### Switching current vs voltage

Switching voltage	Switching current
30 VDC	1 A
65 VDC	460 mA
150 VAC	460 mA

### ***In/out sensor connections***

Connect the sensors to input 1 and input 2.



**NOTE:** Use pull-up or pull-down resistors for the sensors (depending on the sensor type)  
Never exceed VCC (5Volts) on the sensor input pins

## 4 About the LID650V40 decoder

The LID650V40 decoder is designed for use with multiple coil antennae like the ANT610, ANT610F, ANT611 and ANT612 antenna. Together with antenna driver TM613 it is possible to connect a single coil antenna. The standard decoder together with an antenna can read all Trovan™ read-only and Flex read-write transponders.

Standard the LID650V40 decoder is delivered with Windows® XP/Vista/7 PC software to change the settings of the decoder, download the historical data or assign access codes.



### 4.1 Specifications LID650V40

Dimensions decoder	100 x 58 x 16 mm
Weight decoder	45 Gram
Power supply	12VDC +/- 5%, average 200mA, peak 700mA (Depending on connected antenna)
Reading rate	24 msec.
Operating frequency	128 kHz
Number of ID codes	6400 codes only or 3200 with date and time
Interfaces and protocols	RS232 (8 data, no parity, 1 stop, 1200..57600 baud default 9600) RS485 2-wire (8 data, no parity, 1 stop, 1200..57600 baud (default 19200)
Standard delivered with	Buzzer Screw connectors to connect antenna, power i.e.
Options	Clock/Calendar with lithium battery to store date/time with ID-codes Up to 1024kB memory for storing 25600 codes or 12800 with date and time I2C connection for serial communication Custom serial communication 2 TTL inputs or outputs

### 4.2 Connectable antennas

Reading distances chart (distance in cm)				Transponder types			
Antenna	Dimensions	Antenna	Dimensions	ID100	ID200	ID300	ID400
ANT610F	215 x 185 x 25 mm	1,6 Kg	optional IP67	18	28	20	40
ANT611	Ø50 x 165mm	0,5 Kg	IP65, optional IP67	7	17	10	25
ANT612	405 x 405 x 35 mm	4,5 Kg	IP54, optional IP67	35	50	40	80

With the optional TM613 single coil antenna driver it is also possible to connect single coil antennas like the ANT613, ANT614 and custom made antennas. Please visit our website (<http://www.dorset.nu>) for more information.

**WARNING** Metal objects near the antenna increase the current consumption and reduce the reading distance. The minimum distance towards a metal surface depends on the type of antenna. Also (SVGA) monitors or switched mode power-supplies can decrease the reading distance.

## 4.3 How to connect the LID650v40

### 4.3.1 Description of connectors

#### J104 Multi coil antenna connector

1. Shield data signal
2. White, data signal
3. Brown, 12VDC antenna
4. Pink, GND antenna
5. Blue, synchronization signal
6. Yellow, Txon antenna on/off signal

#### J103 LED/Input connector

1. + Led, (green wire antenna ANT610)
2. -Led, (Grey wire antenna ANT610)
3. Input 1, TTL level used for in/out sensors and hardware trigger
4. Input 2, TTL level used for in/out sensors

#### J107 TM613 Single coil driver connector

Attach the optional TM613 single coil driver board to this connector

#### J101 I2C Output

1. SDA, serial data
2. VCC
3. GND
4. SCL, serial clock

#### J106 I2C Output

1. Output 4, for customized firmware only
2. Output 3, for customized firmware only

#### J403 Optional potential free relay output

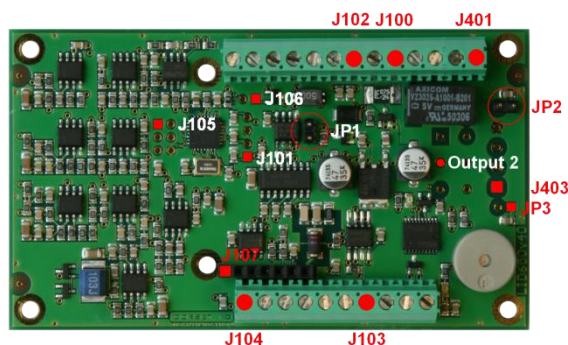
1. Potential free output (or 12VDC if JP2 closed)
2. NC, normally closed contact (12VDC if JP2 closed)
3. NO, normally open contact (12VDC if JP2 closed)
4. GND

#### J102 Communication port

1. TXD RS232 (9600,n,8,1\*)
2. RXD RS232 (9600,n,8,1\*)
3. RS485 B (19200,n,8,1\*)
4. RS485 A (19200,n,8,1\*)
5. RS485 B (19200,n,8,1\*)
6. RS485 A (19200,n,8,1\*)
7. GND, Ground

### Important note

Depending on firmware version Vx.xx or Nx.xx RS232 or RS485 is available.



#### J100 Power supply (VCC)

1. 12VDC +/- 5% regulated, 1 Amp.
2. GND

#### J401 Potential free relay output

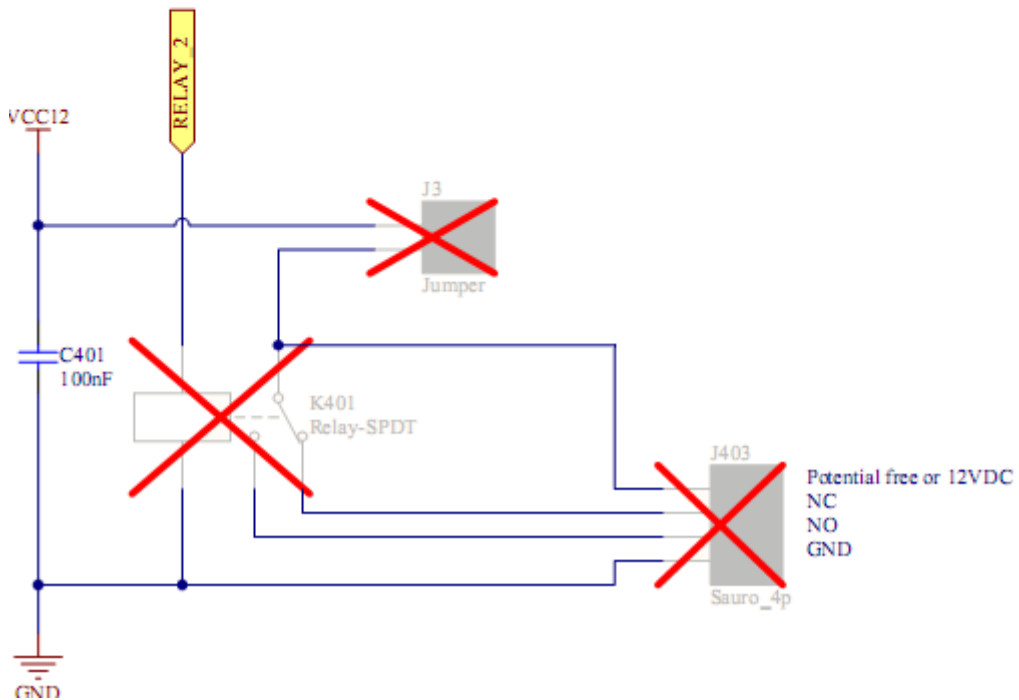
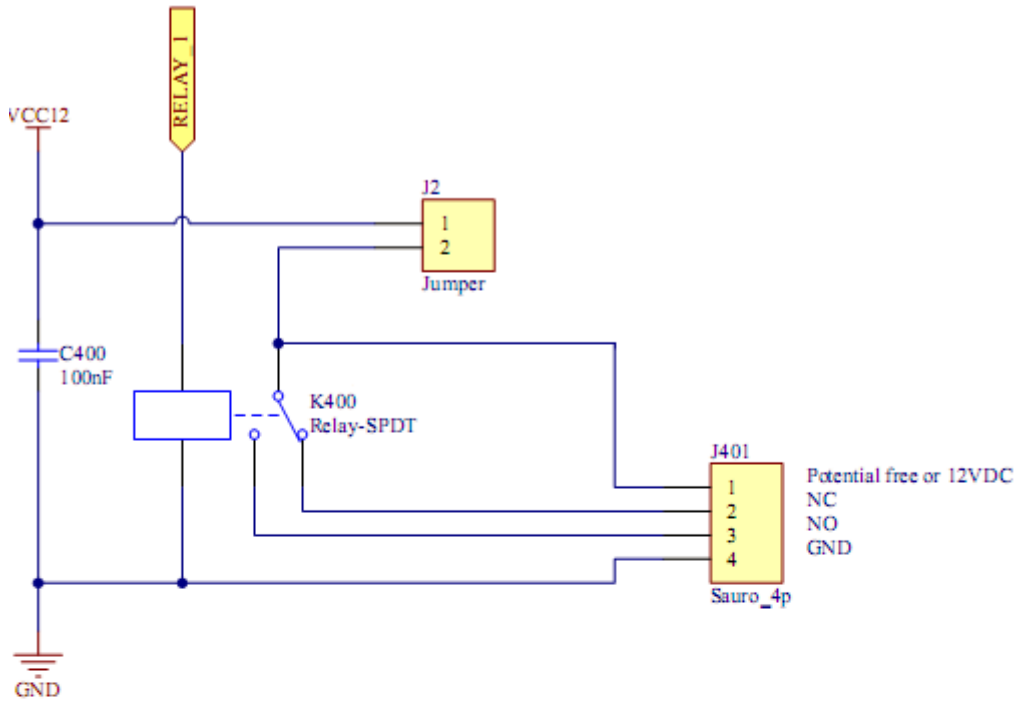
1. Potential free output (or 12VDC if JP3 closed)
2. NC, normally closed contact (12VDC if JP3 closed)
3. NO, normally open contact (12VDC if JP3 closed)
4. GND

### Important note

- If you connect an inductive load like an electric strike or relay, there should be a free running diode (like 1N400x type) mounted at the inductive load.
- JP1 Bus-end for RS485 bus (close if decoder is at the bus-end).
- Resistors of 2K7 Ohm must be placed between J100.1 and J102.3 and 680 Ohm between J102.6 and J102.7 at one of the bus-end for RS485 communication.
- Grounding has to be connected between every unit for RS485
- If you use the in/out sensors use pull up or pull down resistors for the sensors (depending on the sensor type).

\* = Baudrate can be changed by software setting (1200, 2400, 4800, 9600, 19200, 38400 and 57600 baud)

**Schematic overview of Relay outputs**



**Use of jumper J2 & J3 (optional)**

The two jumpers can be used in two different ways.

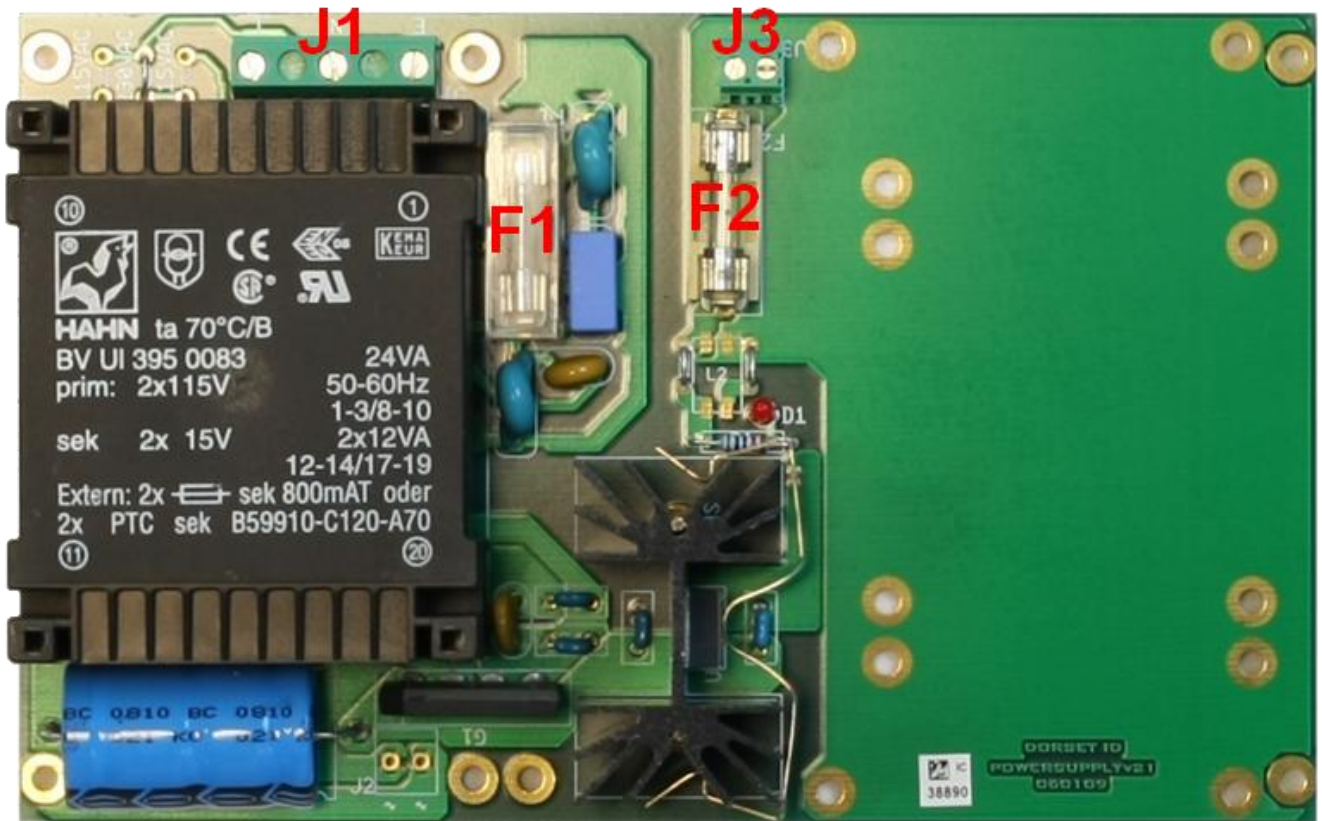
1. No jumper: External voltage can be applied to pin 1 of J20/J9 max 1A, max 150Vac (See table below)
2. Jumper on 1-2: VCC12 is selected.

Switching current vs voltage

Switching voltage	Switching current
30 VDC	1 A
65 VDC	460 mA
150 VAC	460 mA

## 5 Powersupply LID650 & LID665:

The powersupply can be used for 240Vac or 120Vac. When using 240Vac R1 has to be placed and fuse F1 is T125mA (slow type). When using 120Vac R2 and R3 have to be placed and fuse F1 is T250mA (slow type).



### **J1: 240Vac/130Vac Power input**

1. Protective earth ground
2. Neutral
3. 120/240Vac

### **J3: Output 12V**

1. 12V
2. GND

### **F1: Input fuse (slow type)**

T125mA fuse for 240Vac  
T250mA fuse for 120Vac.

### **F2: Output fuse (fast type)**

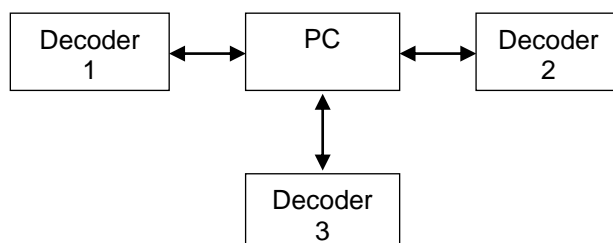
F800mA fuse

## 6 Communications

The decoders can be connected to a PC or other devices directly via RS232 or via a network using a 2-wire RS485 connection. The type of communication to be used depends on the firmware inside the decoder.

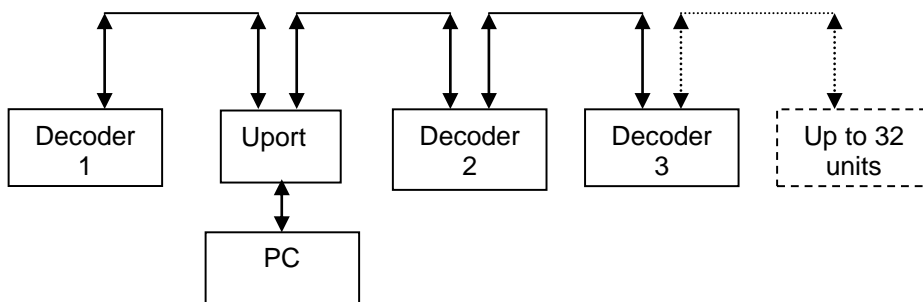
### 6.1 RS232 serial communication

The direct RS232 connection is the easiest way to connect a decoder to the PC. It is especially used for applications with a low number of readers (1..4). The RS232 communication can only be used if a decoder is situated close to the PC (up to 14 meters / 46ft).



### 6.2 RS485 network communication

A 2-wire RS485 network connection is necessary when larger numbers of decoders have to be connected via the same communication port on the PC, or when the distance between decoder and PC is too far for a direct RS232 connection.



The LID665N decoders and the LID650N decoders can be used together in the same RS485 network.

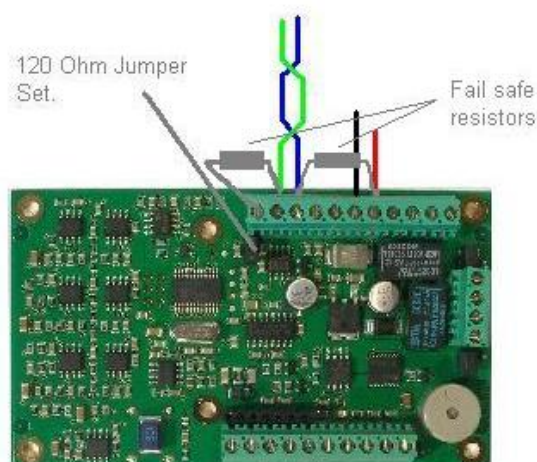
#### 6.2.1 RS485 bus general:

- The total bus length may not exceed 1200 meters (4000ft).
- All decoders in the RS485 bus are connected by a RS485 compatible shielded twisted pair cable.
- The voltage over the A and B lines has to be between 0,2 to 0,4 Volts.
- The ground of all the decoder have to be connected.

#### **Decoder: 1, first in the bus**

The first unit in the bus has fail safe resistors and the 120 Ohm Jumper set.

- The resistors of 2K7 Ohm must be placed between VCC12 (or 680 Ohm between the VCC5) and the B line and 680 Ohm between GND and the A line.
- **The first decoder on the bus needs a termination resistor.** This resistor is already available on the decoder and can be used by placing the jumper JP3 on the decoder board.




#### **Conversion from RS485 to USB by Uport (Moxa Uport 1130)**

The Uport is used to convert the RS485 data to USB. This device should be placed somewhere between the first and last decoder in the bus.



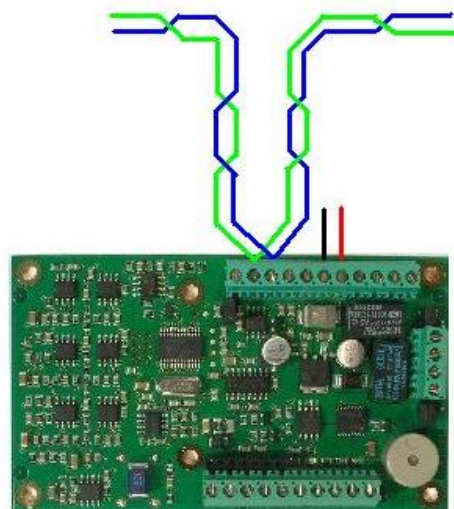
The UPort 1130 comes with a DB9 to terminal block converter, with pin assignments as shown below:

Terminal Block	Pin	2-wire RS-485
	1	-
	2	-
	3	Data+(B)
	4	Data-(A)
	5	GND

Follow the U-port instructions to install the Uport!

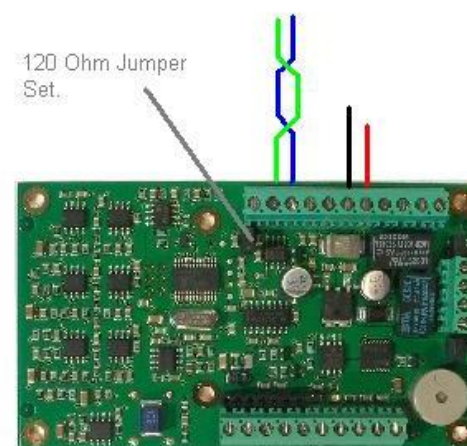
#### Decoder: 2,3...n-1

- The bus has to go from decoder to decoder. **Do not use branches from the bus to a decoder but make the connection on the decoder itself.**
- The maximum number of decoders on each bus is 32. Multiple RS485 busses can be used with only one PC. By using more RS485 adaptors like the Uport 1130.
- The 120 Ohm jumper JP3 is **NOT** set in these decoders.



#### Decoder: n, last in the bus

- The decoder on the end of the bus needs a **termination resistor**. This resistor is already available on the decoder and can be used by placing the 120 Ohm termination jumper on the decoder board.



## 7 Frequently asked questions

q: The LED in the antenna flashes very fast

a: The reader is probably in save mode, read the Goldcard once more or use the PC software

q: A card is not recognized as a valid keycard.

a: Make sure the checkbox [use access control](#) is set, the reader is not in the save mode and the [active](#) checkbox is set.

q: The reader is not recognized at start up time

a: Make sure the RS232/RS485 connection is made properly and that the reader is powered.

q: The activation time of the relay is too short or too long

a: Check the value of the wait time after read, perhaps you'll have to reconfigure this value.

q: An ID number is only transmitted once, I need it more often

a: Check in the Read options if the [Use all ID codes](#) or [Use readdelay](#) checkbox is checked.

q: I choose a new Transmit option but the reader doesn't seem to apply the new settings

a: After the settings have been changed, you should depress the [Set new settings](#) button on the right side of the screen otherwise the new settings are not being used. Make sure the reader isn't in the Disable RX mode by repower it.

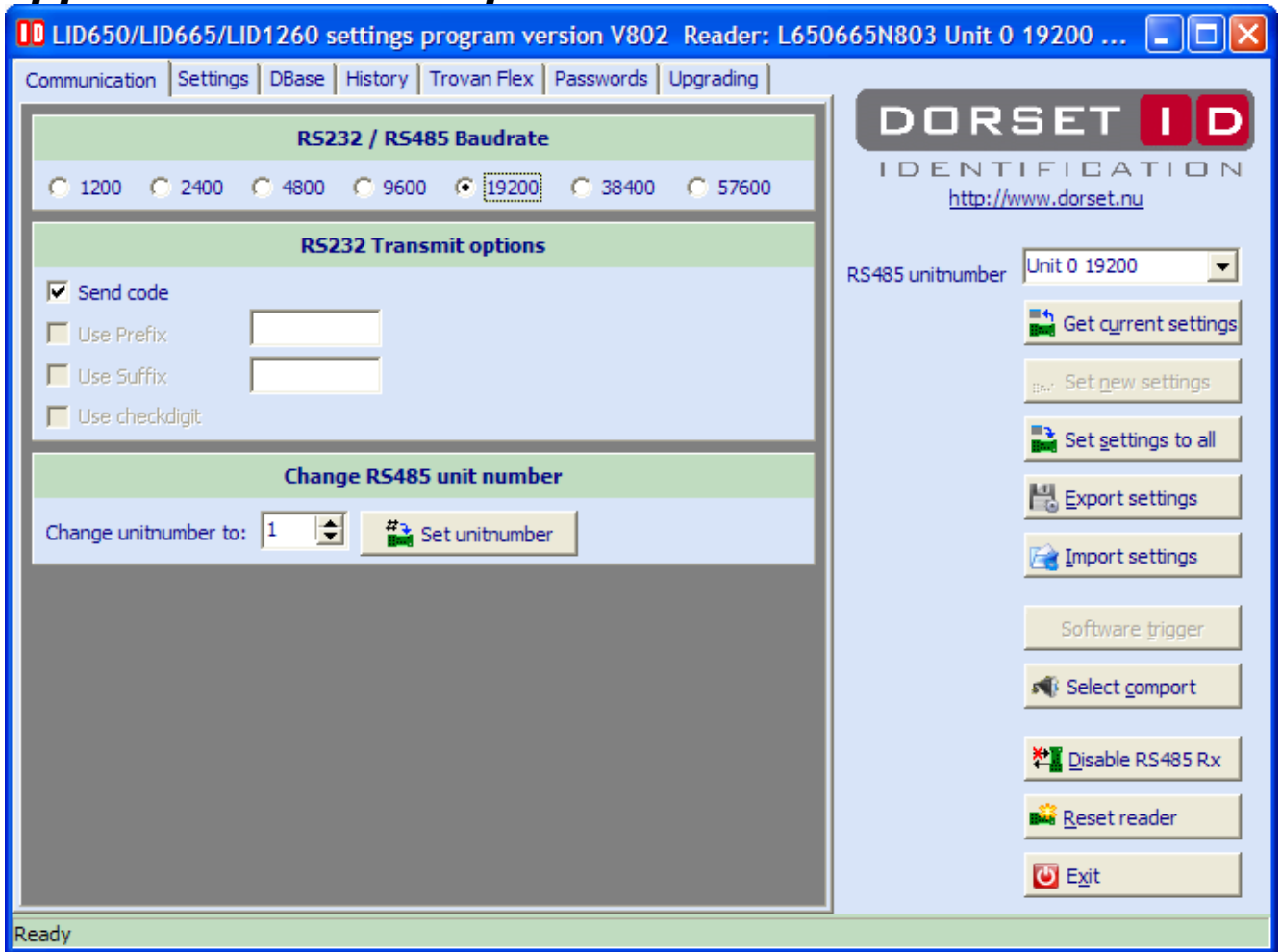
q: Although the reader scans the tag, the LED does not show the readcycle.

a: The checkbox [Use LED during read](#) is not set.

q: The LID665 reader doesn't write a read-write transponder:

a: Probably the transponder is too far away from the antenna or distance to another reader is too small.

## Appendix A: The complete Communication tabsheet



## Appendix B: The complete Settings tabsheet

**LID650/LID665/LID1260 settings program version V802 Reader: L650665N803 Unit 0 19200 ...**

Communication Settings DBase History Trovan Flex Passwords Upgrading

**Transponder list**

- Trovan Unique
- Trovan Flex
  - Read all flex
  - Read 3 blocks
  - Read 5 blocks
  - Read 7 blocks

**Read options**

- Use all ID codes
- Use only new ID
- Use readdelay
- Use check in/check out
- Use sensor in/out
  - Save all movements
  - Use IR sensors
- Use software trigger
- Use hardware trigger

**Decoder options**

- Use LED during read
- Use LCD
- 0,1 sec. waittime after read
- Use LED during waittime
- Relay continuously on
- Use relay during waittime
- Antenna on
- Fast reading mode
- Copy status relay 1 to output 2
- Output 2 setup:  Relays  PWM
- PWM output settings: Idle: 2, During waittime: 100
- Use buzzer during waittime
- Read during waittime

**DORSET ID IDENTIFICATION**  
<http://www.dorset.nu>

RS485 unitnumber: Unit 0 19200

Buttons: Get current settings, Set new settings, Set settings to all, Export settings, Import settings, Software trigger, Select comport, Disable RS485 Rx, Reset reader, Exit

Ready

## Appendix C: The complete DBase tabsheet

LID650/LID665/LID1260 settings program version V802 Reader: L650665N803 Unit 0 19200 ...

Communication Settings **DBase** History Trovan Flex Passwords Upgrading

Use access control Number of Access codes: 0

DBase filename:

Type	Code	Custom	Memo
Trovan Unique	0000000000	Goldcard	Goldcard
Trovan Unique	0000000001	Silvercard	Silvercard
Trovan Unique	0006EB187E	Roland Stump	Dorset Identif

Search topic:  Search on:

Start new DBase Load DBase from file Clear reader

Get new codes Save DBase to file Save DBase to reader

Print DBase

**DORSET ID**  
IDENTIFICATION  
<http://www.dorset.nu>

RS485 unitnumber: Unit 0 19200

Get current settings

Set new settings

Set settings to all

Export settings

Import settings

Software trigger

Select comport

Disable RS485 Rx

Reset reader

Exit

Ready

## Appendix D: The complete History tabsheet

LID650/LID665/LID1260 settings program version V802 Reader: L650665N803 Unit 0 19200 ...

Communication Settings DBase History Trovan Flex Passwords Upgrading

Save codes in reader  with date/time  Overwrite codes

Number of saved codes 0 Number of overwritten codes ?

Type	Code	Readingdate	Readingtime	Event
Trovan Unique	0006EB 187E	17-11-2010	14:55:33	
Trovan Unique	0006EB 187E	17-11-2010	14:55:33	
Trovan Unique	0006EB 187E	17-11-2010	14:55:33	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	
Trovan Unique	0006EB 187E	17-11-2010	14:55:34	

Search topic: Search on:

Get codes from reader Clear history database

Clear reader Save history database to file

Print history database

DORSET ID IDENTIFICATION <http://www.dorset.nu>

RS485 unitnumber Unit 0 19200

Get current settings

Set new settings

Set settings to all

Export settings

Import settings

Software trigger

Select comport

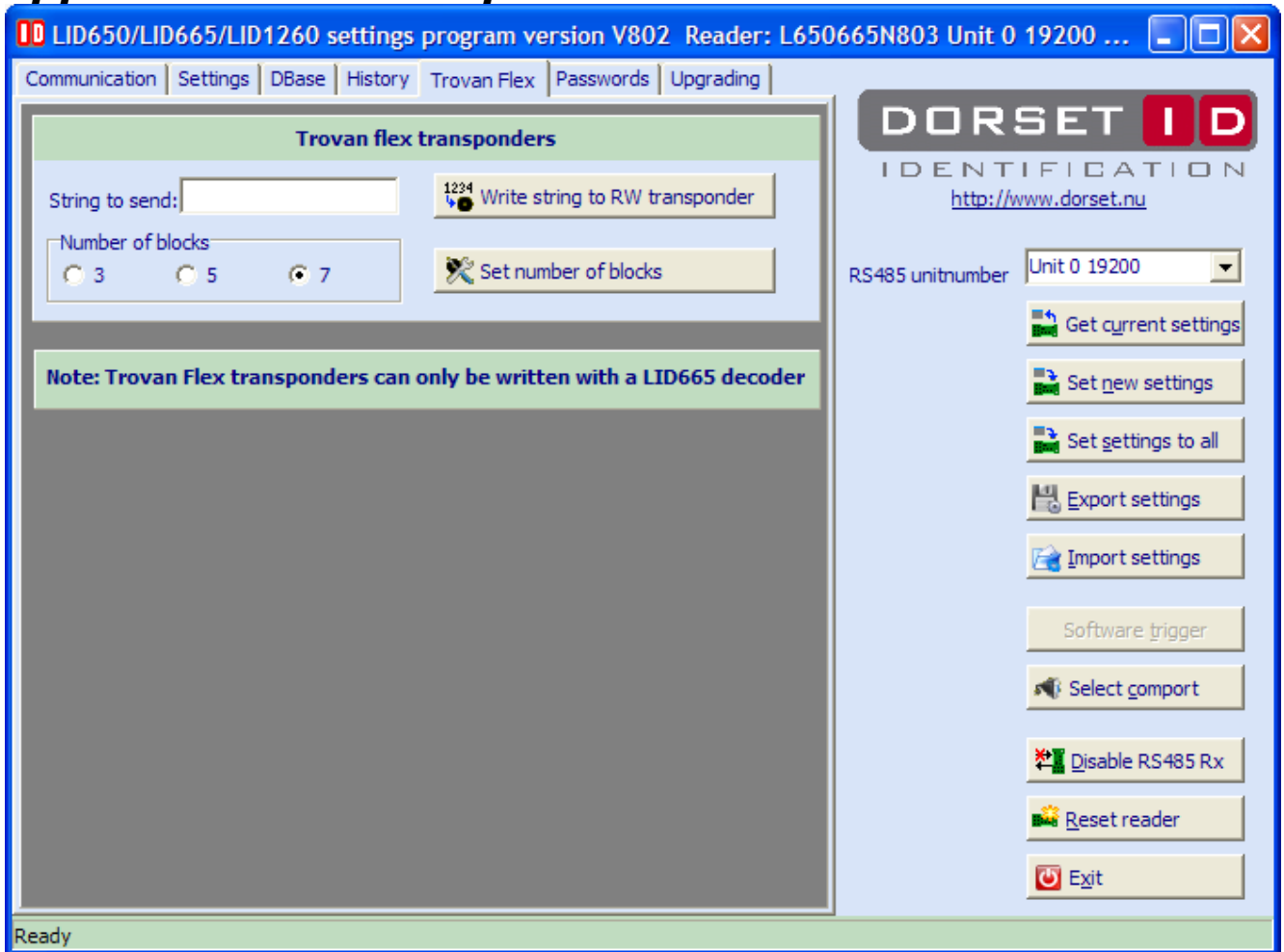
Disable RS485 Rx

Reset reader

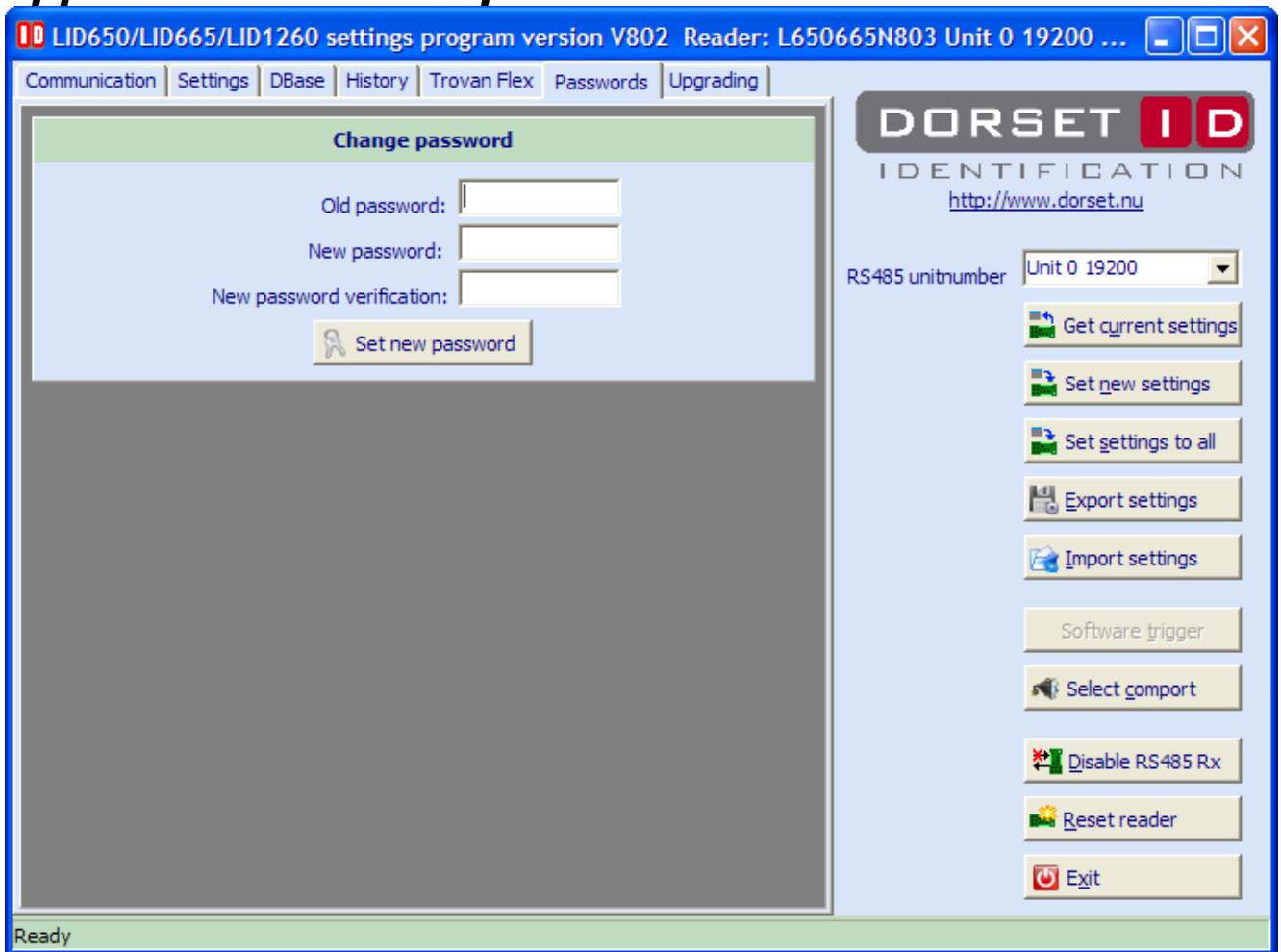
Exit

Ready

## Appendix E: The complete Trovan Flex tabsheet

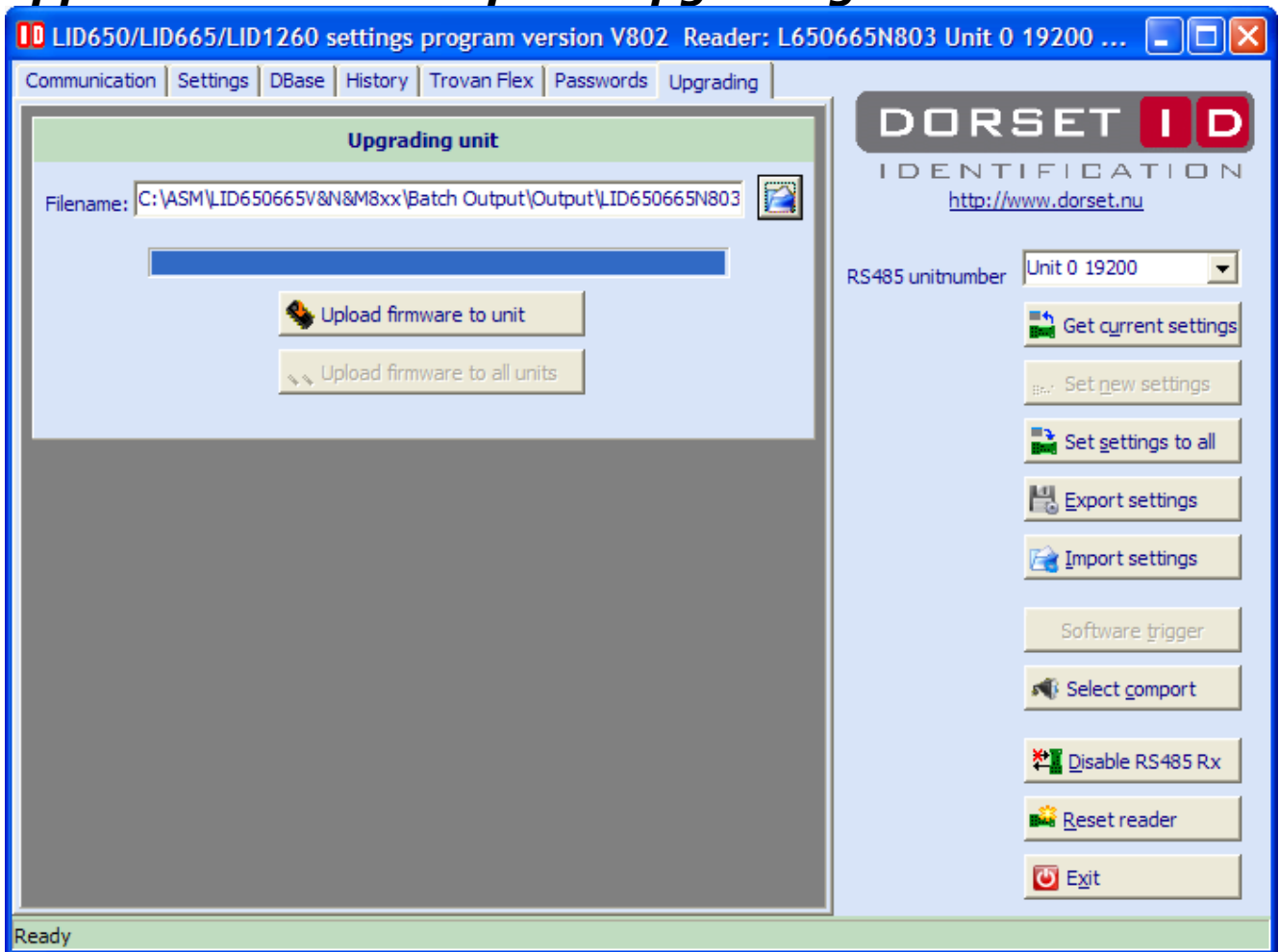


## Appendix F: The complete Passwords tabsheet





## Appendix G: The complete Upgrading tabsheet



## **Appendix H: Characters that can be used as pre- or suffix (only RS232).**

The prefix and suffix string can each be 4 characters long. All ASCII characters can be used except for the hexadecimal values 0Dh and 00h.

The control characters, the hexadecimal values and the way to enter them in the prefix or suffixbox are shown below.

<b>CHARACTER</b>	<b>HEX</b>	<b>HOW TO ENTER</b>
NUL	00h	NOT ALLOWED
SOH	01h	<SOH>
STX	02h	<STX>
ETX	03h	<ETX>
EOT	04h	<EOT>
ENQ	05h	<ENQ>
ACK	06h	<ACK>
BEL	07h	<BEL>
BS	08h	<BS>
TAB	09h	<TAB>
LF	0Ah	<LF>
VT	0Bh	<VT>
FF	0Ch	<FF>
CR	0Dh	NOT ALLOWED
SO	0Eh	<SO>
SI	0Fh	<SI>
DLE	10h	<DLE>
DC1	11h	<DC1>
DC2	12h	<DC2>
DC3	13h	<DC3>
DC4	14h	<DC4>
NAK	15h	<NAK>
SYN	16h	<SYN>
ETB	17h	<ETB>
CAN	18h	<CAN>
EM	19h	<EM>
SUB	1Ah	<SUB>
ESC	1Bh	<ESC>
FS	1Ch	<FS>
GS	1Dh	<GS>
RS	1Eh	<RS>
US	1Fh	<US>