



Addendum Sibelga

InduBox GSM M4

V1.0d

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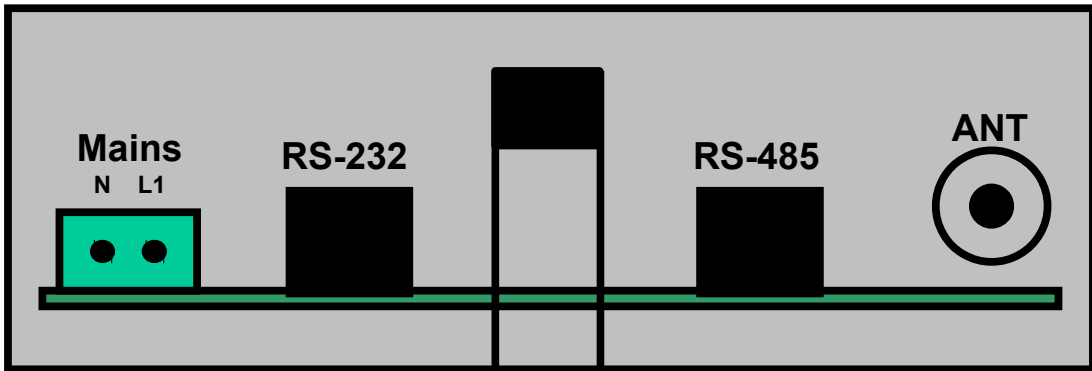
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1. Connection differences with the InduBox GSM IX

Different functions of the RJ45 connectors!

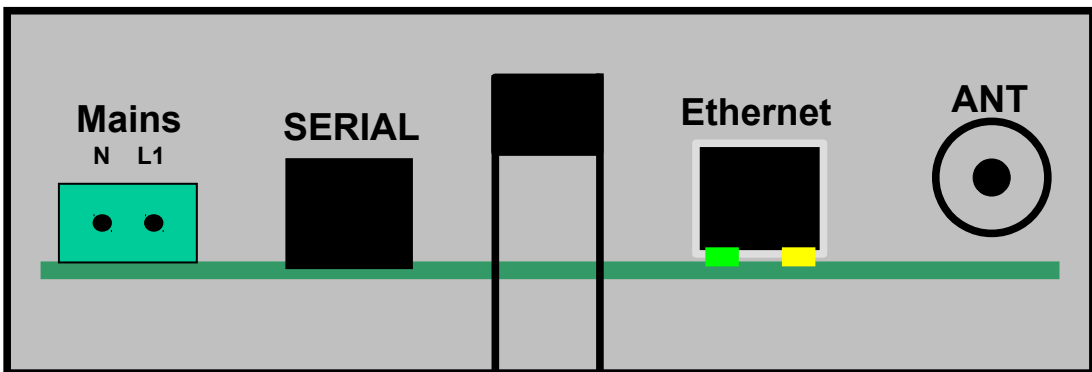
InduBox GSM IX

The serial interfaces RS232 and RS485 each have their own RJ45 connector.



InduBox GSM M4

Both serial interfaces share the same RJ45 connector. The RJ45 on the right the 'new' LAN Ethernet interface.



Selection of an interface is done with jumper 7 and 8:

Important: there is also a RS-232/RS-485 configuration setting needed, see the '**Configuration – Serial**' page in chapter 2 or how to use the **serial_interface_selector** script tool in chapter 3.3 below.



2. Configuration

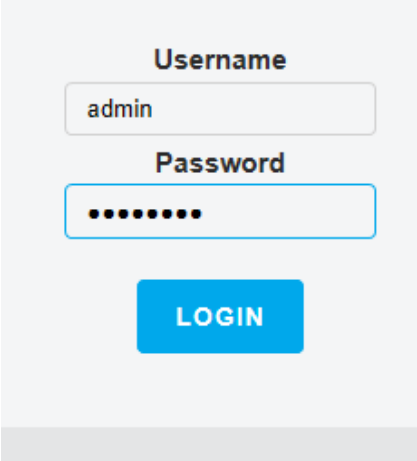
Configuration of the InduBox GSM M4 has to be done through a GUI via HTML or with serial commands (chapter 3.2).

The default ip address of the modem is **192.168.1.44**.

Username : **admin**

Password : **password**

Click on “login” to enter the configuration pages of the modem.



The image shows a login form with a light gray background. At the top, the word "Username" is centered above a text input field containing the text "admin". Below this, the word "Password" is centered above another text input field containing seven black dots. At the bottom of the form is a blue rectangular button with the word "LOGIN" in white capital letters.

To make changes, always save the change at the bottom of the page and reboot the modem before the change is executed.

2.1 Going to default factory settings

Go to the '**Factory Reset**' page.
Click on 'Factory Reset – Are you sure?'

Wait 10 seconds to allow the device to reboot.

Type 192.168.1.44 as URL in the browser to restart configuring again.

2.2 Sibelga configuration

Go to the '**Configuration – Serial**' page.

Select the 'Isolated Interface' going to be used, and the used async parameters :

Isolated Interface (RS-232/RS-485)

Type	<input type="radio"/> RS-232 <input checked="" type="radio"/> RS-485 (2-wire)
Baudrate	<input type="radio"/> 2400 <input checked="" type="radio"/> 9600 <input type="radio"/> 19200 <input type="radio"/> 38400 <input type="radio"/> 57600 <input type="radio"/> 115200
Data Bits	<input type="radio"/> 7 <input checked="" type="radio"/> 8
Parity	<input checked="" type="radio"/> N <input type="radio"/> E <input type="radio"/> O
Stop Bits	<input checked="" type="radio"/> 1 <input type="radio"/> 2
Driver Enable Delay	<input type="text" value="100"/> (x10µs)

SAVE CHANGES

Click on '**Save Changes**'.

Go to the '**Configuration – WAN**' page.

Complete the APN, APNUN en APNPW fields :

PPP

PPP Authentication Type PAP CHAP PAP&CHAP

APN	<input type="text" value="amr4g.sibelga.prx.be"/>	Access Point Name
APNUN	<input type="text" value="84037293ITR"/>	APN Username. <i>Leave blank if not in use</i>
APNPW	<input type="text" value="12345678"/>	APN Password. <i>Leave blank if not in use</i>
MRU	<input type="text" value="1500"/>	(bytes) Maximum Receive Unit
MTU	<input type="text" value="1492"/>	(bytes) Maximum Transmission Unit

APNUN *meter number + ITR*
APNPW *generated with Sibelga password algorithm*

Make sure the '**Connection Timeout**' is 10 minutes
and the '**Periodical Reset**' 12 hours.

Watchdog

Connection Timeout	<input type="text" value="10"/>	(min) An active connection (CSD/TCP) will be closed after this time. <i>Leave blank if not in use</i>
Periodical Reset	<input type="text" value="12"/>	(hour) Reboot modem is unable to enter data mode after this time. <i>Leave blank if not in use</i>
Periodic Ping Host	<input type="text"/>	Reboot if 3 ICMPv4 ping requests to this host fail. <i>Leave blank if not in use</i>
Periodic Ping Interval	<input type="text" value="0"/>	(sec) Period of ping requests. <i>Leave blank if not in use</i>

Click on '**Save Changes**'.

Go to the 'Working Mode : Serial' page.

● TCP/IP - Socket Serial Communication

Isolated Interface RS-232/RS-48 ↔ TCP ↔ Server ↔ WAN Module

Segmentation

Segmentation Timeout	<input type="text" value="5"/>	Buffer will be se
Segmentation Length	<input type="text" value="64"/>	Segment will be

Client

Host IPv4 Address	<input type="text"/>
Host Port Number	<input type="text" value="0"/>
Connection Trigger	<input type="text" value="Always"/> <input type="text" value="61h"/>

Server

Port Number	<input type="text" value="10703"/>
-------------	------------------------------------

SAVE CHANGES

Select 'TCP/IP – Socket Serial Communication'.

Select the correct 'chain' : **Isolated Interface** → TCP → **Server** → WAN module

Fill in the correct **Port Number** → 10703

Click on 'Save Changes'.

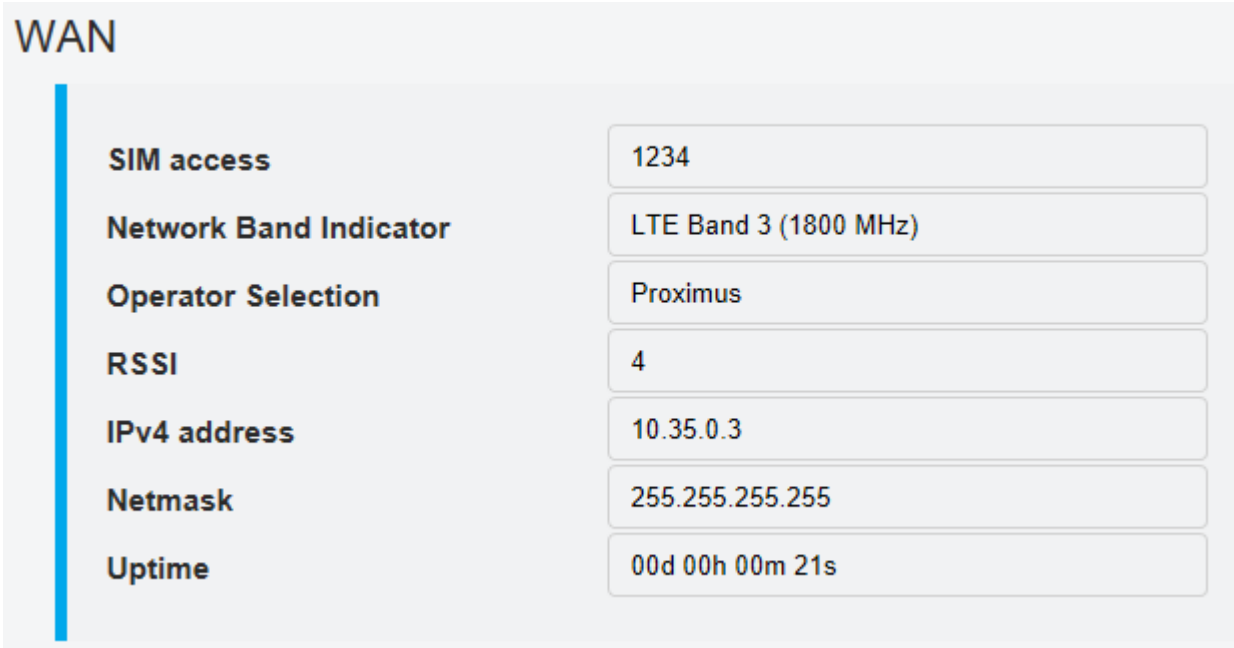
The saved configuration will become active after a **Reboot**.

Wait 10 seconds to allow the device to reboot.

Type 192.168.1.44 as URL in the browser to restart configuring again.

Login and go to the **General** page :

Check the WAN parameters :
(example below are parameters from within the Bausch test network)



The image shows a screenshot of a WAN configuration page. The page has a light gray background and a blue vertical bar on the left side. The title 'WAN' is displayed in the top left corner. Below the title, there are several rows of configuration parameters, each with a label on the left and a corresponding value in a rounded rectangular box on the right.

Parameter	Value
SIM access	1234
Network Band Indicator	LTE Band 3 (1800 MHz)
Operator Selection	Proximus
RSSI	4
IPv4 address	10.35.0.3
Netmask	255.255.255.255
Uptime	00d 00h 00m 21s

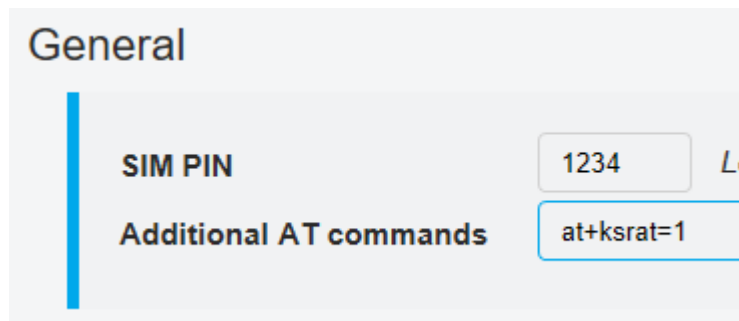
3. How to

3.1 Lock the modem onto 2G only

By default the modem is working preferably in LTE 4G mode with a GPRS 2G fall-back possibility. But it's possible to lock the modem in GPRS 2G only mode.

Go to the '**Configuration – WAN**' page.

Add the **additional AT command** `at+ksrat=1`



The screenshot shows a web interface for configuration. The title is 'General'. There are two input fields: 'SIM PIN' with the value '1234' and 'Additional AT commands' with the value 'at+ksrat=1'. The 'Additional AT commands' field is highlighted with a blue border.

Click on '**Save Changes**'.

The saved configuration will become active after a '**Reboot**'.

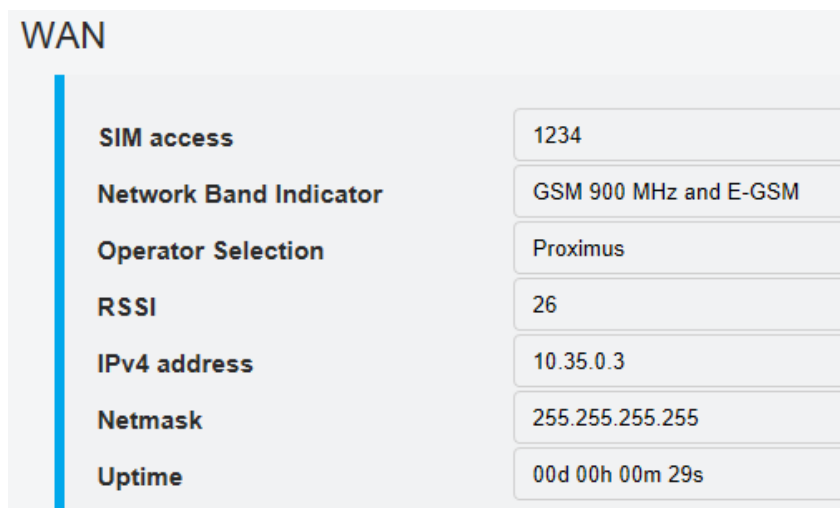
Wait 10 seconds to allow the device to reboot.

Type 192.168.1.44 as URL in the browser to restart configuring again.

Login and go to the '**General**' page :

Check the WAN parameters :

(example below are parameters from within the Bausch test network)



The screenshot shows a web interface for WAN configuration. The title is 'WAN'. There are several parameters listed in a table-like format:

SIM access	1234
Network Band Indicator	GSM 900 MHz and E-GSM
Operator Selection	Proximus
RSSI	26
IPv4 address	10.35.0.3
Netmask	255.255.255.255
Uptime	00d 00h 00m 29s

To go back to the default setting, enter `at+ksrat=9` as **additional AT command** and click on '**Save Changes**'. The saved configuration will become active after a '**Reboot**'. Wait 10 seconds to allow the device to reboot.

The InduBox GSM M4 is using a HL7692 module, UMTS 3G is not supported.

5.54. **+KSRAT** Command: Set Radio Access Technology

HL7618, HL7648, HL7650, HL7688, HL7690 and HL7692																						
<p><i>Test command</i></p> <p><u>Syntax</u> AT+KSRAT=?</p>	<p><u>Response</u> +KSRAT: (list of supported <mode>s) OK</p>																					
<p><i>Read command</i></p> <p><u>Syntax</u> AT+KSRAT?</p>	<p>Get current band</p> <p><u>Response</u> +KSRAT: <mode> OK</p>																					
<p><i>Write command</i></p> <p><u>Syntax</u> AT+KSRAT= <mode></p>	<p>Set current mode</p> <p><u>Response</u> OK</p> <p><u>Parameter</u></p> <table> <tr> <td><mode></td> <td>1</td> <td>GSM only</td> </tr> <tr> <td></td> <td>2</td> <td>UMTS only</td> </tr> <tr> <td></td> <td>5</td> <td>LTE only</td> </tr> <tr> <td></td> <td>6</td> <td>Search for UMTS first then LTE</td> </tr> <tr> <td></td> <td>7</td> <td>Search for LTE first then UMTS</td> </tr> <tr> <td></td> <td>8</td> <td>Search for GSM first then LTE</td> </tr> <tr> <td></td> <td>9</td> <td>Search for LTE first then GSM</td> </tr> </table>	<mode>	1	GSM only		2	UMTS only		5	LTE only		6	Search for UMTS first then LTE		7	Search for LTE first then UMTS		8	Search for GSM first then LTE		9	Search for LTE first then GSM
<mode>	1	GSM only																				
	2	UMTS only																				
	5	LTE only																				
	6	Search for UMTS first then LTE																				
	7	Search for LTE first then UMTS																				
	8	Search for GSM first then LTE																				
	9	Search for LTE first then GSM																				
<p><u>Reference</u> Sierra Wireless Proprietary</p>	<p><u>Notes</u></p> <ul style="list-style-type: none"> • This command can be used without a SIM. • <mode> is automatically stored in persistent memory. • Settings take effect immediately. • The HL7650 supports both UMTS and LTE; the HL7618, HL7648 and HL7690 only support LTE; and the HL7692 supports both GSM and LTE. 																					

3.2 How to configure via the serial port

It's possible to configure the InduBox GSM M4 over the serial port.

a. Connection

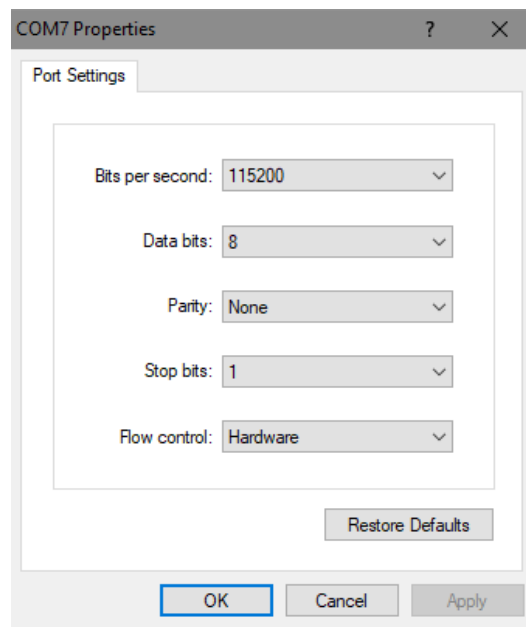
Disconnect mains power from the modem.

Use the 'white' RJ45 <> DB9 serial cable:

Connect the RJ45 into the RJ45 port located in the middle of the modem.
Connect the DB9 into the serial communication port of the PC or laptop.

b. Serial port parameters

By default the parameters are set to 115.200 bps 8N1, hardware flow control active.



c. Configuration

To have the necessary rights to change parameters an "admin" login is required.

`at#login`

Username : **admin**

Password : **password**

Doing this, the access will be on an "admin" level until 5 minutes after receiving a character.

If the modem is previously used, perform a factory reset with the following commands :

```
at#defaults  
at#rst
```

After the reset command, the modem will perform a reset.
After the reset, a new configuration can be entered :

<code>at#set#wm#1</code>	set working mode " TCPserver "
<code>at#set#socket#10#TCP_PORT</code>	TCP port to listen to 10703
<code>at#set#serial#5#x</code>	x = 1 ; isolated interface RS232 x = 3 ; isolated interface RS485
<code>at#set#wan#0#1234</code>	if PIN code is used
<code>at#set#wan#3#apn_name</code>	APN name : amr4g.sibelga.prx.be
<code>at#set#wan#4#apn_user</code>	APN username : meter number + ITR
<code>at#set#wan#5#apn_password</code>	APN password : <i>generated with Sibelga password algorithm</i>
<code>at#set#wan#8#10</code>	Connection Timeout of 10 min
<code>at#set#wan#9#12</code>	Periodical Reset period on 12 hour

All parameters will be automatically saved when entering.
To use the settings restart the modem.

```
at#rst
```

 Reset

To check / view the configuration of the modem :

```
at#login  
Username: admin  
Password: password
```

```
at#info
```

 To view general settings

d. User user

A user has the rights to view the settings and the working status of the modem.

```
at#login
```

```
Username: user
```

```
Password: password
```

Doing this, the access will be on an “user” level until 5 minutes after receiving a character.

To view all the possible commands :

```
at#?
```

```
Bausch M4 command set:
```

1. at#?
2. at#info
3. at#gcfg
4. at#gbank
5. at#gwanip
6. at#get#
7. at#login
8. at#logout
9. at#passwd

To view the configuration of the modem :

```
at#gcfg
```

```
- Working Mode -
```

```
Working Mode: TCPIP
```

```
- DEVICE INFO -
```

```
Copyright: 2017 Bausch Datacom NV
```

```
Version: v1.0.3-32-gf3bd71e6
```

```
Compiled: Mar 28 2019 08:34:03
```

```
Device: InduBox GSM M4
```

```
Target: STM32F437 : Bank 2
```

```
--- Device Config---
```

```
- device -
```

```
fw version: v1.0.3-32-gf3bd71e6
```

```
- lan -
```

```
lan mac addr: 8c:14:7d:b0:00:00
```

```
IPv4 Addr: 192.168.1.44
```

```
Netmask: 255.255.255.0
```

```
Gateway: 0.0.0.0
```

```
DNS 1: 0.0.0.0
```

```
DNS 2: 0.0.0.0
```

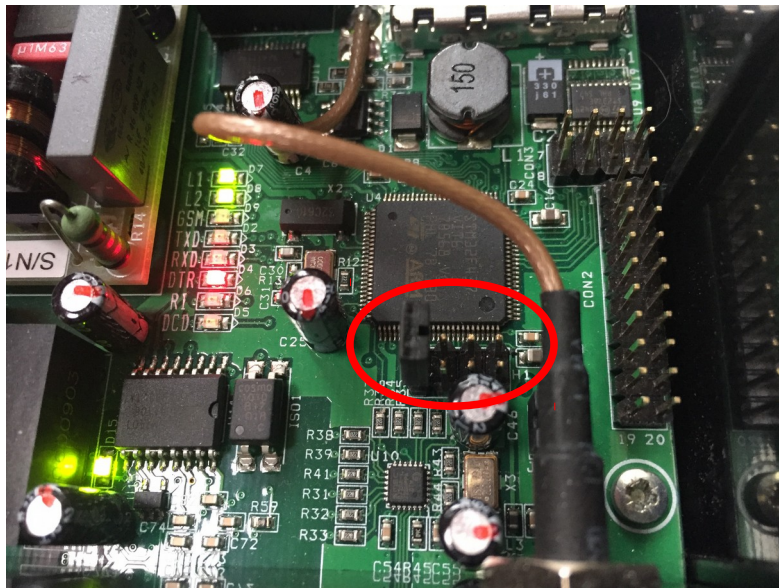
To view the working status of the modem :

```
at#info
Firmware Version: v1.0.3-32-gf3bd71e6_Mar 28 2019_08:34:02
Working mode: TCP Server
Serial Interface: Isolated 2-wire RS485
Network Band: LTE Band 3 (1800 MHz)
Operator: Proximus
RSSI: 9
WAN IP: 46.179.124.126
```

e. Going back to factory default settings

There is also a hardware possibility to force a factory reset after for example a lost or forgotten password.

Power off the modem, place a jumper onto position 4 of H1 (see picture below) and power on the modem.



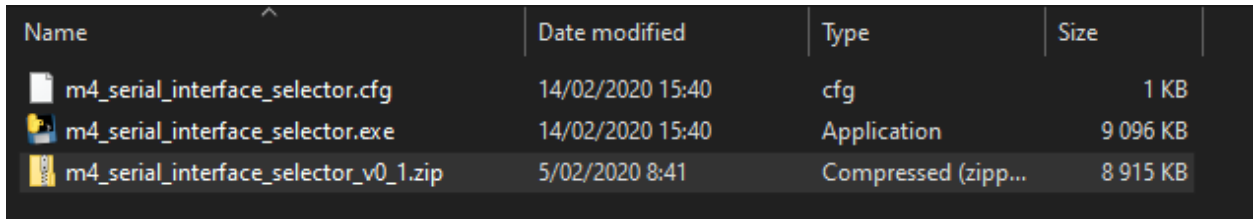
```
00:00:00 (INFO) JUMPER4 is closed -> clearing config and resetting modem to
factory default...
00:00:01 (INFO) Resetting finished; open JUMPER4 and restart modem to resume
normal operation
```

Power off the modem, remove the jumper and power on the modem to enter the new configuration.

3.3 How to use the *serial_interface_selector* script tool

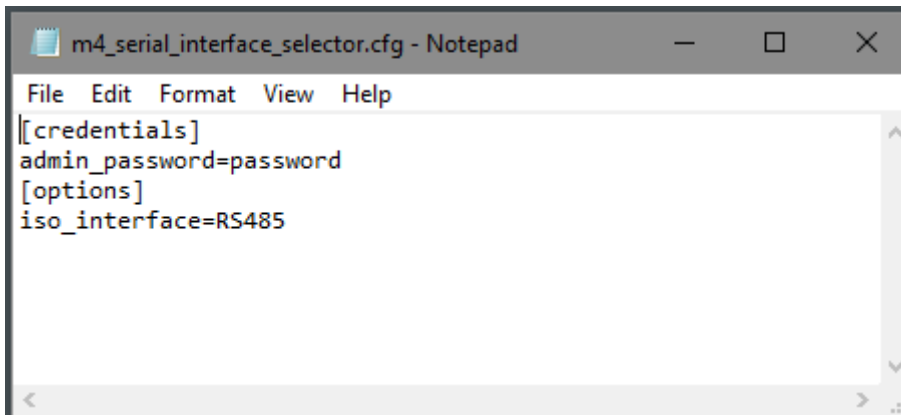
The 'serial_interface_selector' tool is created to select easily the isolated RS-232 or RS-485 port.

Unzip and copy both files into the same Windows map:



Name	Date modified	Type	Size
m4_serial_interface_selector.cfg	14/02/2020 15:40	cfg	1 KB
m4_serial_interface_selector.exe	14/02/2020 15:40	Application	9 096 KB
m4_serial_interface_selector_v0_1.zip	5/02/2020 8:41	Compressed (zipp...	8 915 KB

Edit with Notepad the *m4_serial_interface_selector.cfg* file for the desired interface:



```
File Edit Format View Help
[[credentials]
admin_password=password
[options]
iso_interface=RS485
```

iso_interface=**RS232** → for RS-232
or
iso_interface=**RS485** → for RS-485

Don't forget to save after editing the text.

Connect, with the white Bausch Datacom RJ45-DB9 configuration cable, the DinBox GSM M4 to a working and know serial port of a PC, for example COM3. Connect the modem to the mains to start up.

Double click onto the *m4_serial_interface_selector.exe* file to start the configuration script.

The script will start in an old fashioned command box.

```
C:\Orcadwin\design\IB_M4\SW\Config tool\serial interface selector\1\m4_serial_interface_selector.e
M4 ISO SERIAL INTERFACE SELECTOR
#####
Copyright Bausch Datacom NV 2020

Please select the correct config serial port:
0 . COM5
1 . COM6
2 . COM9
3 . COM10
4 . COM3
5 . COM4
6 . COM7
7 . COM8
Enter number:
4
Opening COM3
Serial port successfully opened
Authenticating...
Configuring ISO interface to RS485
Conversion successfull
DO NOT FORGET TO SET THE CORRECT JUMPERS FOR THE CHOSEN INTERFACE
You can exit the tool...
```

The script will ask for the COM port where the modem is connected to. After selecting the correct COM port the interface configuration selection will be done.

Press <ctrl>-c to exit the script and close the command box.

Important: do not forget to change JP7 and JP8 to the correct interface setting.

