

**APPLICATION GUIDE****MODEM CONFIGURATION FOR USE WITH P54X RELAYS**

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## 1. INTRODUCTION

This report shows how to configure Keymile modems for use with P54x relays and the equipment requirements.

## 2. REFERENCES

REF.	DOC. NUMBER	DOC. NAME / TITLE
A	P54x/EN AP	Application Notes
B	371 251 68	LineRunner SHDSL LCM/DTM Version 1.6 / 03.2007

### 3. EQUIPMENT REQUIREMENTS

P54x relays can be connected to modems if they permit a 64kbps or 56kbps operation speed compatible with P591/2/3 units.

The following configuration shows a V35 electrical interface using the following equipment:

- P54x relays with 850nm channels;
- P592 interfaces, to convert the fibre optic to V35 electrical interface;
- Modems Keymile, type LineRunner SHDSL DTM;
- V.35 straight-thru cables, male-male connector (to be used between the P592 interfaces and modems);
- Fibre optic cables to connect P54x relays and P592 interfaces.

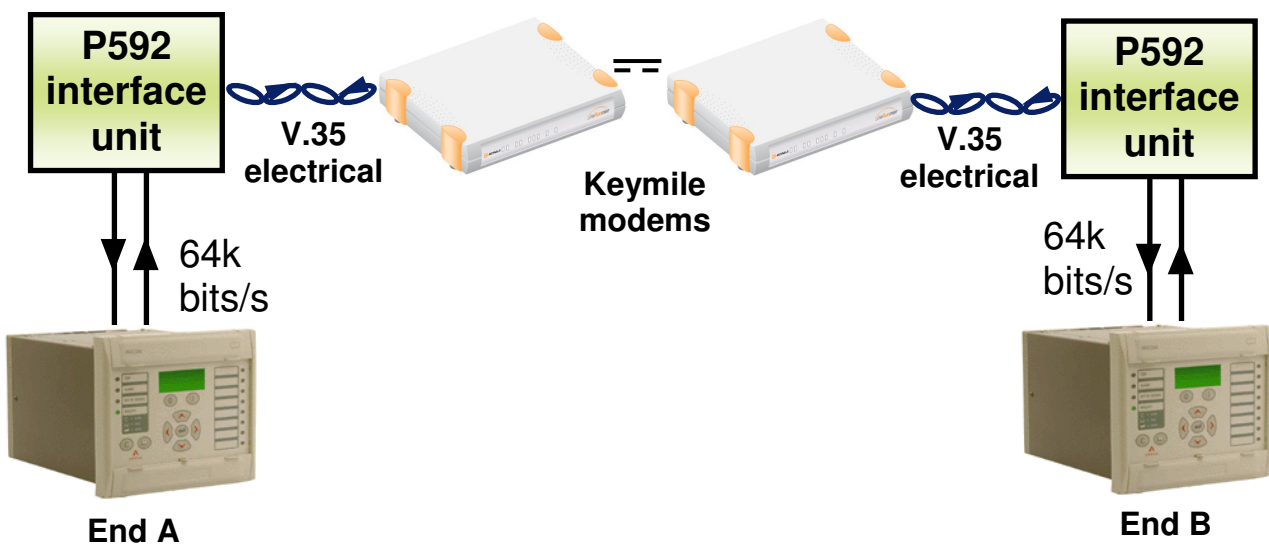


Figure (1): V35 electrical interface example

#### 4. RELAYS CONFIGURATION

The relays minimum configuration is shown next. For a 2 terminal configuration one relay should be set to 1A and the other one to 1B. The baud rate is set to 64kbps and the clock source is set to external.

<b>PROT COMMS/ IM64</b>		
Scheme Setup	2 Terminal	←
Address	1-A	←
Comms Mode	Standard	
Baud Rate Ch1	64kbits/s	←
Clock Source Ch1	External	←
Comm Delay Tol	350.0 us	
Comm Fail Timer	10.00 s	
GPS Sync	Disabled	
Char Mod Time	500.0 ms	

<b>PROT COMMS/ IM64</b>		
Scheme Setup	2 Terminal	←
Address	1-B	←
Comms Mode	Standard	
Baud Rate Ch1	64kbits/s	←
Clock Source Ch1	External	←
Comm Delay Tol	350.0 us	
Comm Fail Timer	10.00 s	
GPS Sync	Disabled	
Char Mod Time	500.0 ms	

Figure (2): Relays configuration

#### 5. MODEMS CONFIGURATION

The modems have a switch at the back to set the clock source. One modem has to be set to "LT", in this case the modem will be responsible for the clock, and the other one has to be configured to "NT", in this case the device will follow the other modem's clock.

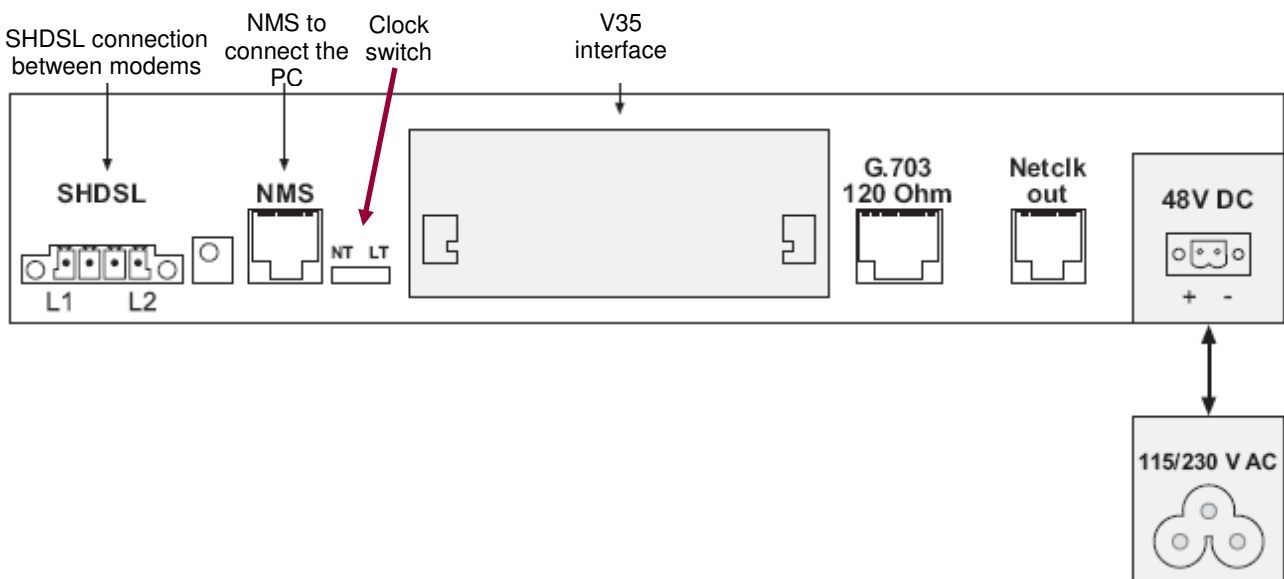


Figure (3): Modems clock configuration

To set the modems, it is necessary to use the software ASMOS Manager from Keymile and connect a serial interface cable (Keymile article number 37850652) from the computer to the “NMS” port (see figure 3) of the modem that is set to “LT”.

Before establishing a communication with the modems, it is necessary to create a serial link. Go in “Location/New” and select “Serial link”, as shown in figure (4) below.

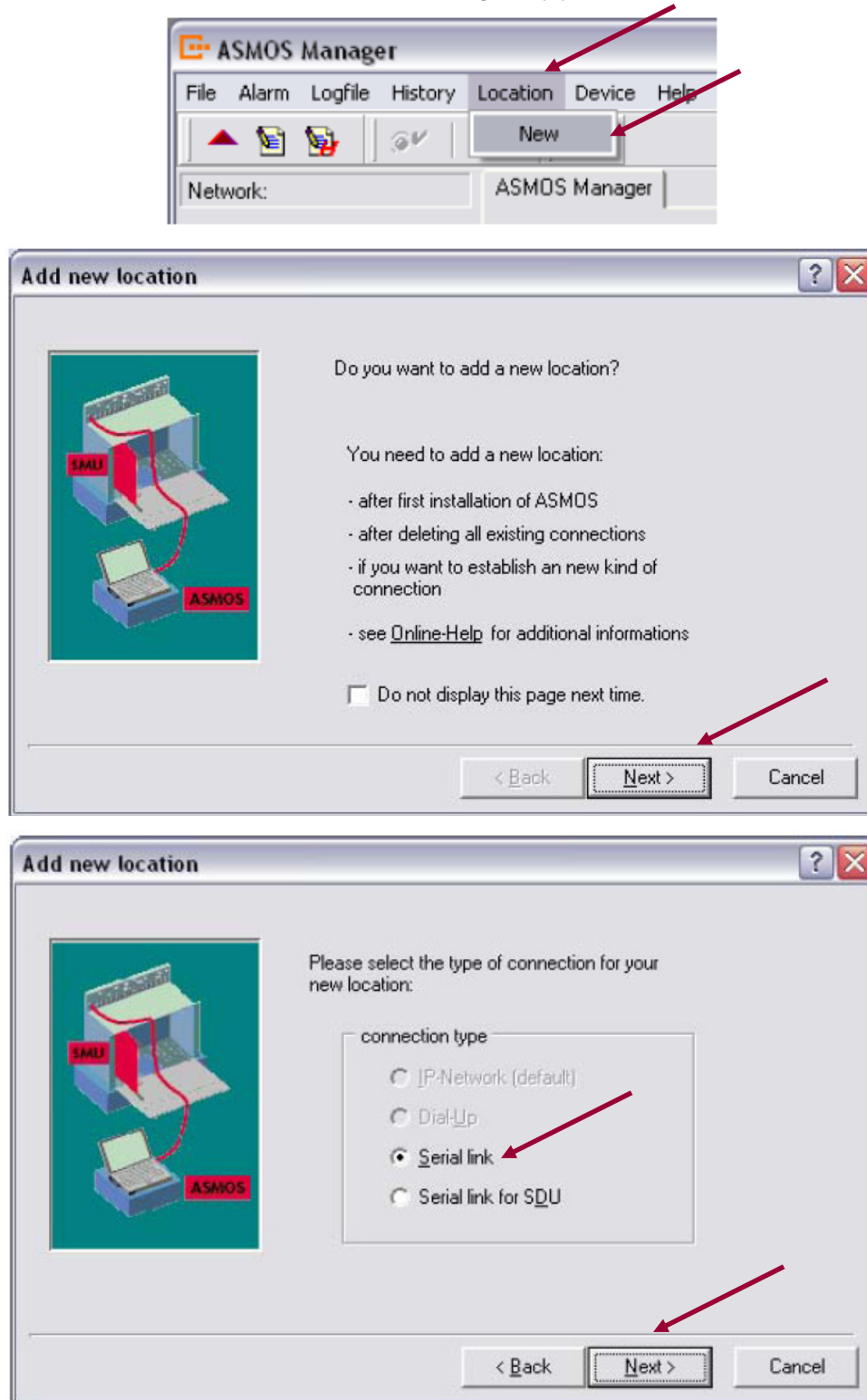


Figure (4): Creating a serial link

Figure (5) below shows a communication link already created.

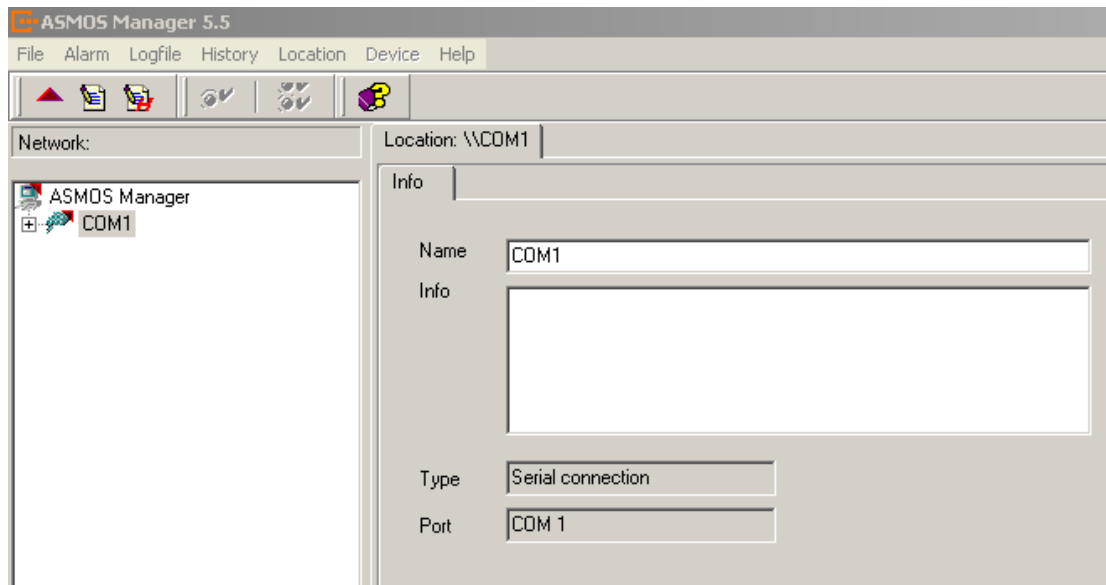


Figure (5): Serial connection

After setting the communication, go in “Location/Start discovery” to establish a connection with the modems. Note that it is possible to set both modems with only one modem connected to the computer.

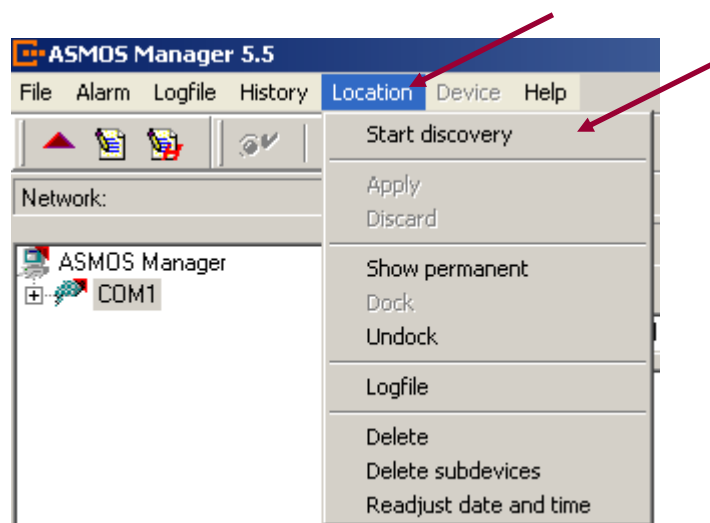


Figure (6): Establishing a communication with the modems



The first page will show the devices' characteristics, like type, serial number, etc. Note that one modem is the LT device (the clock source) and the other one is the NT device (the clock follower).

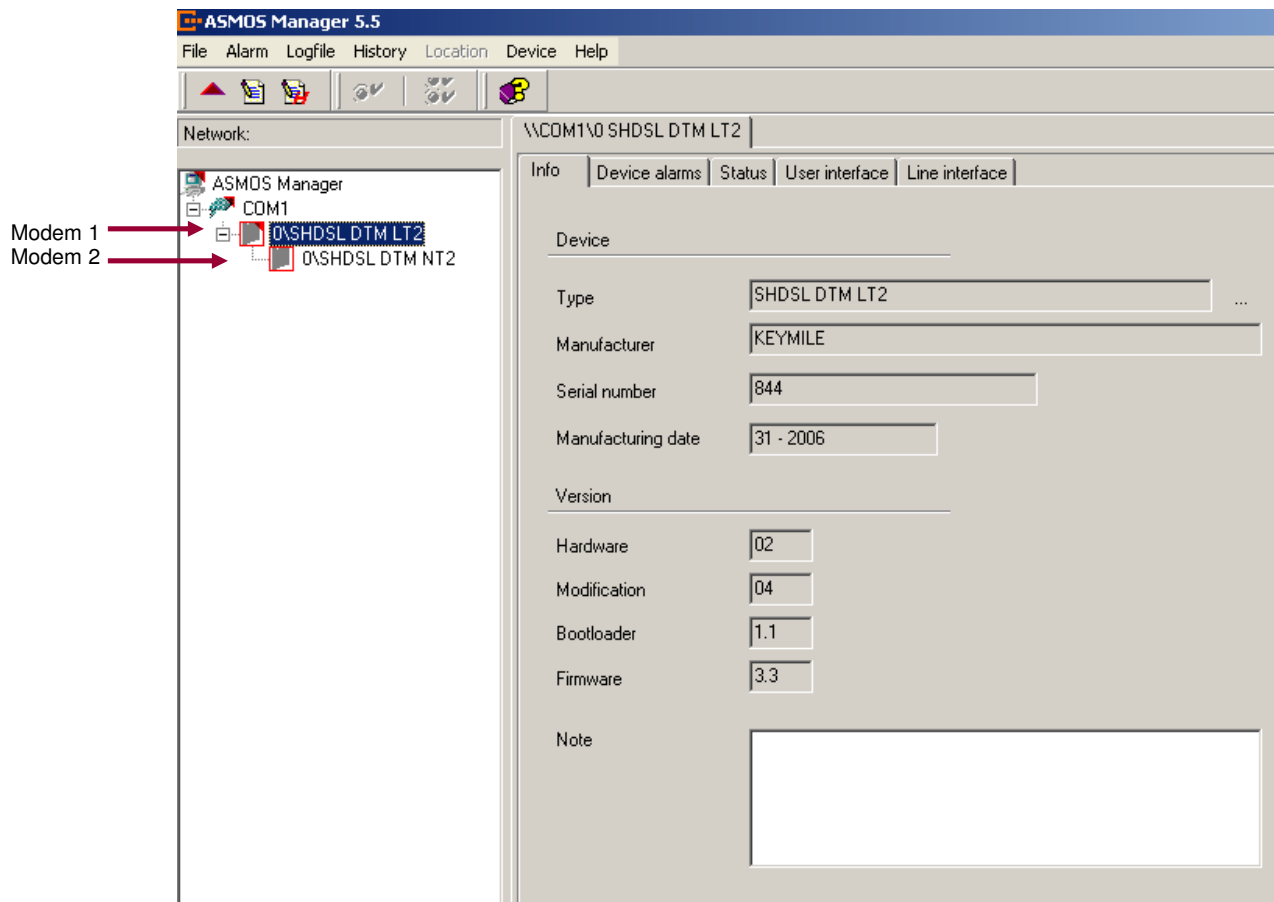


Figure (7): Device information

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The “Status” page will show the modems configuration, as it can be seen in figure (8). Note that this page only allows the user to view the configuration. To change it, the user has to use the “User interface” and “Line interface” pages of each modem.

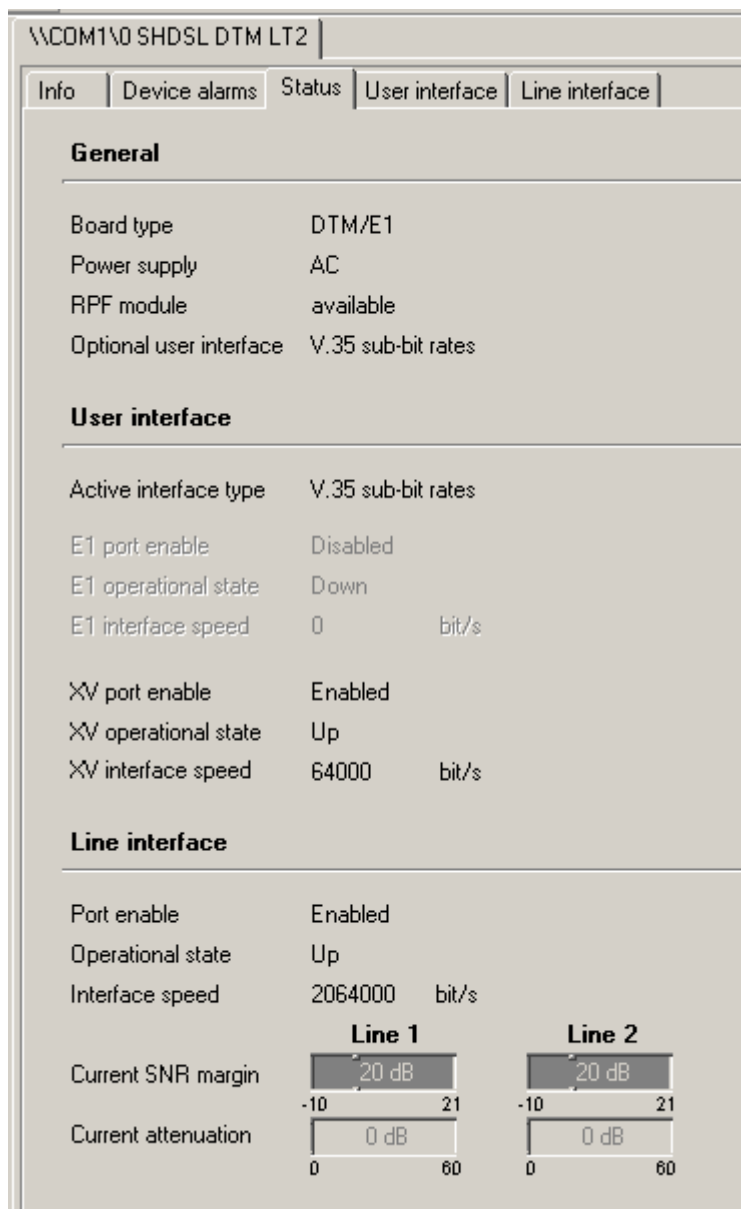


Figure (8): Status

The first setting under the “User interface” page is the modems mode, where the user has to set “V35 sub-bit rates”, as shown in figure (9).

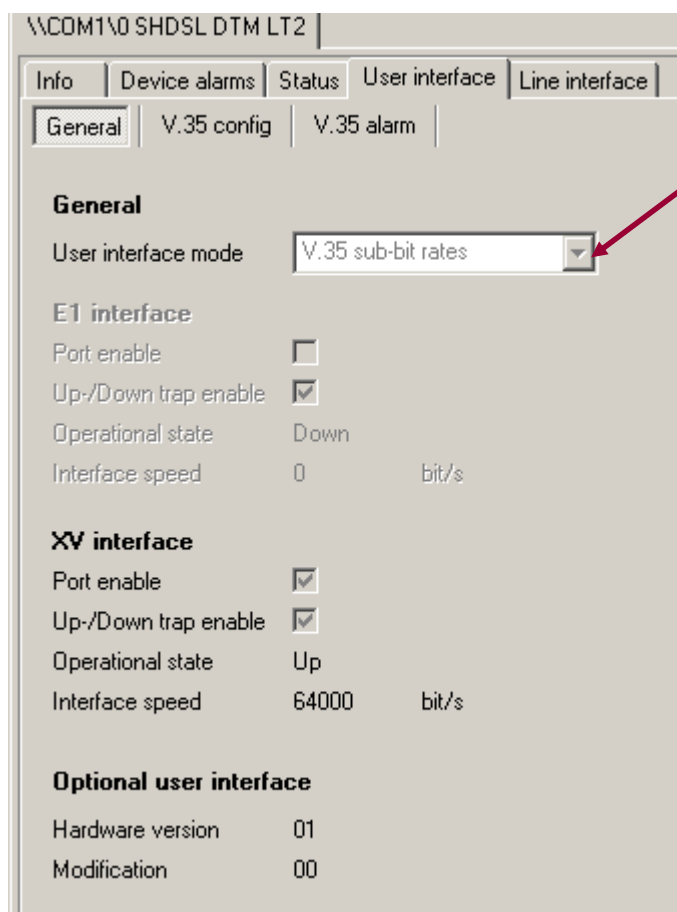


Figure (9): V35 mode

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The next part, still under the “User interface”, is the “V.35 config”. It is necessary to set the baud rate to 64kbits/s.

The LT modem will have the clock set to internal and both modems will have the “edge select” to rising.

All Flow controls have to be set to “Forced to 1” and loop control “Enabled”.

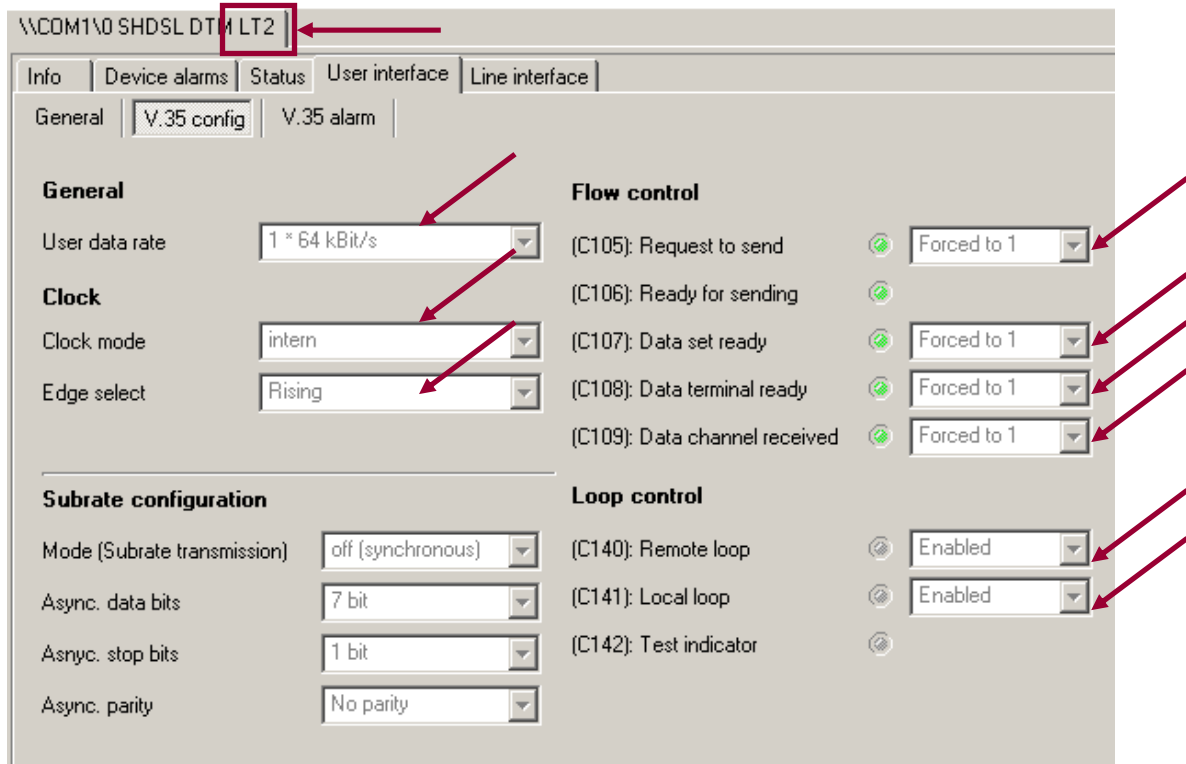


Figure (10): LT modem configuration

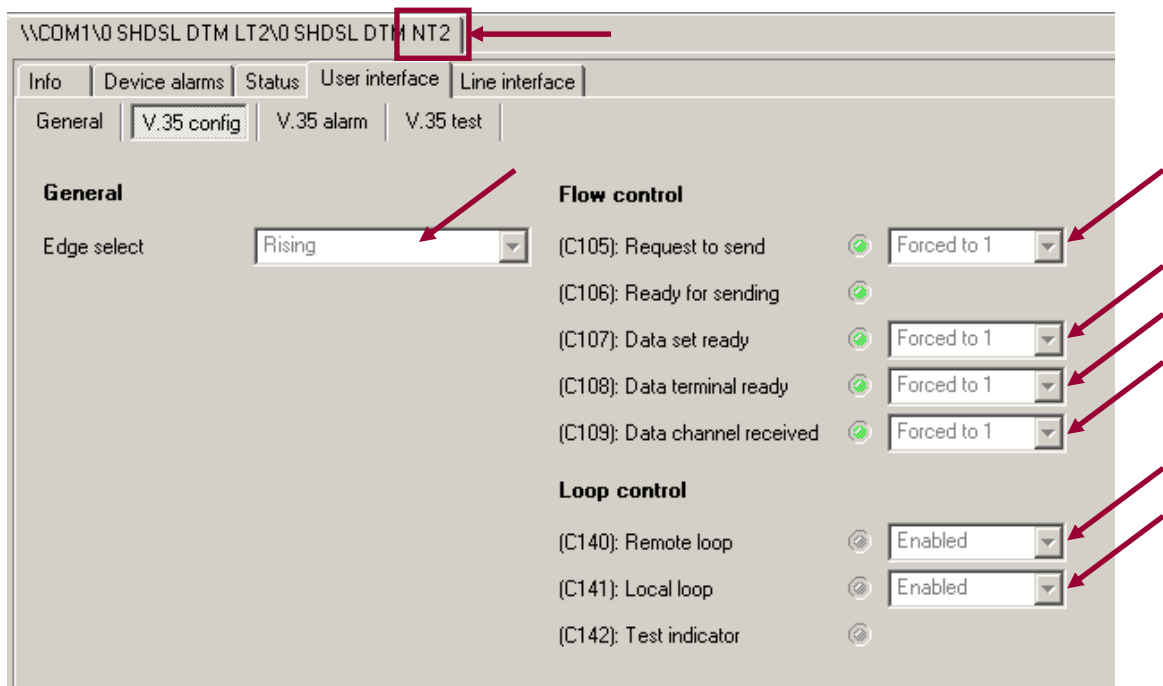


Figure (11): NT modem configuration

The Alarms are set as shown in figure 12.

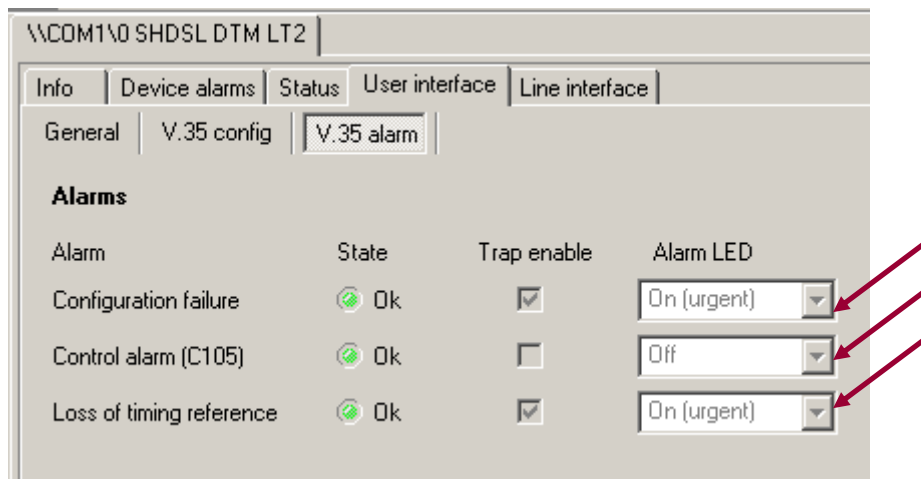


Figure (12): V35 alarms

The line interface has to be set to 2 pair, under the "General" page, as below.

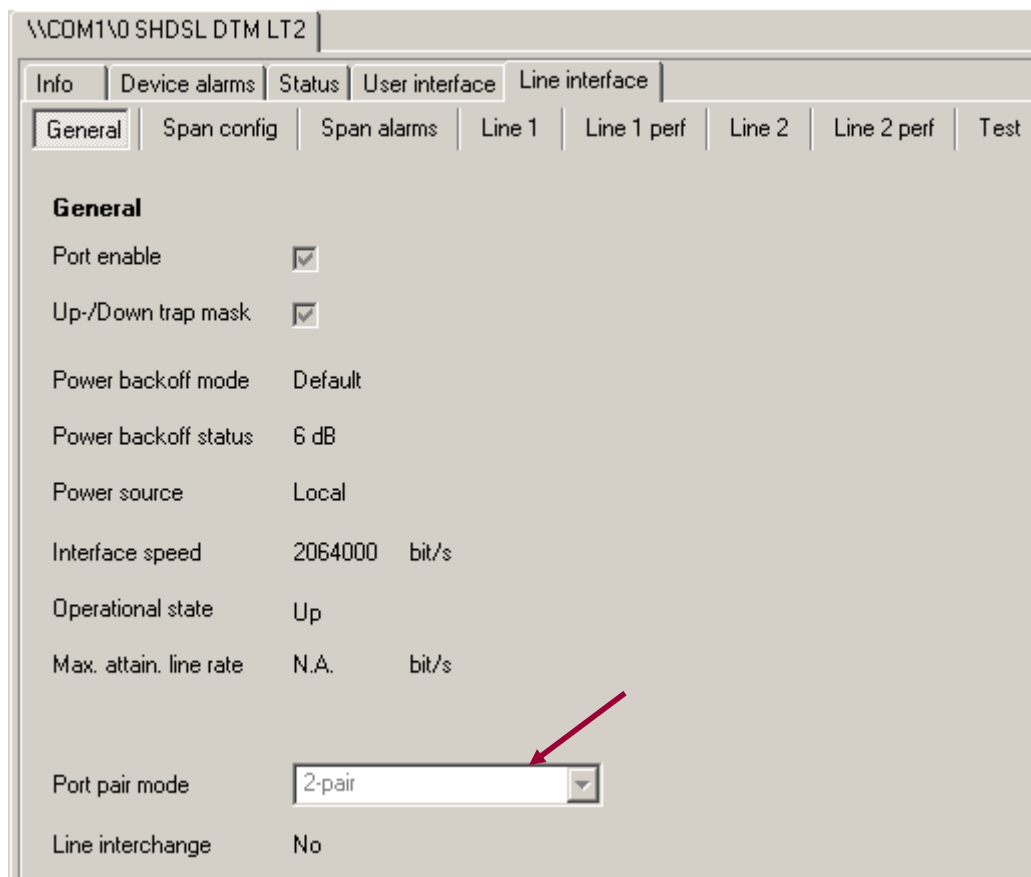


Figure (13): Line configuration

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Under the “span configuration” page, the minimum and maximum line rates have to be set to 2064000 bits/s [ $2 \times (16 \times 64k + 8k)$ ], and also the clock reference has to be set, as shown below. Note that this page is only available for the LT modem (the clock source).

The screenshot shows the 'Span config' tab for the 'Line interface'. The 'General' section contains the following settings:

- Min line rate:  $2 \times (16 \times 64 k + 8 k)$  bit/s (range 0 to 2064000)
- Max line rate:  $2 \times (16 \times 64 k + 8 k)$  bit/s (range 0 to 2064000)
- PSD: Symmetric
- Transmission mode: G.991.2 Annex B
- Remote management: Disabled
- Power feeding: No power
- Reference clock: Local clock, plesio
- Line probe: ☐

The 'Alarm thresholds (15 min)' section contains the following settings:

- Loop attenuation: 0 dB (range 0 to 60)
- Margin: 0 dB (range 0 to 15)
- ES: 0 sec (range 0 to 900)
- SES: 0 sec (range 0 to 900)
- CRC errors: 0 errors (range 0 to 150000)
- LOSwS: 0 sec (range 0 to 900)
- US: 0 sec (range 0 to 900)

Red arrows in the image point to the 'Min line rate', 'Max line rate', 'Reference clock', and 'Power feeding' settings.

Figure (14): Line configuration for the LT modem

Figure (15) below shows the line alarms list. Note that all alarms are set to “On urgent”, except for “RPS open circuit” and “RPS overload”, that are “off”.

The screenshot shows the 'Line interface' tab with the 'Span alarms' sub-tab selected. The 'Alarms' section contains a table with the following columns: Alarm, Line 1 State, Line 2 State, Trap enable, and Alarm LED. The 'Alarm LED' column has dropdown menus for each alarm type. Two red arrows point to the 'RPS open circuit' and 'RPS overload' rows, highlighting that their 'Alarm LED' is set to 'Off'.

Alarm	Line 1 State	Line 2 State	Trap enable	Alarm LED
Device fault	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
DC continuity fault	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
LDSW failure	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
Configuration init failure	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
Protocol init failure	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
No neighbour present	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
SHDSL loopback failure	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
Local power loss	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)
RPS open circuit	Ok	Ok	<input checked="" type="checkbox"/>	Off
RPS overload	Ok	Ok	<input checked="" type="checkbox"/>	Off
RPS overvoltage	Ok	Ok	<input checked="" type="checkbox"/>	On (urgent)

Figure (15): Alarms list

For a normal operation, the loopback mode should be disabled, as shown in figure (16).

The screenshot shows the 'Line interface' tab with the 'Test' sub-tab selected. The 'Loopback mode' dropdown is set to 'No loopback', indicated by a red arrow. The 'Loopback timeout' is set to 0 minutes. The 'Transceiver test' is set to 'Off'. The 'LED test enable' checkbox is unchecked. To the right, the 'Block diagram LT' shows a 'User interface' box connected to a 'Line interface' box. The 'Line interface' box contains an 'SHDSL framer' and an 'SHDSL front end'. The 'SHDSL framer' has a 'Normal loop' and the 'SHDSL front end' has a 'Loop 1'.

Figure (16): Loopback mode

After setting both modems it is necessary to apply the settings and update the configuration. These options are available under the “Location” tab when the modems are connected.

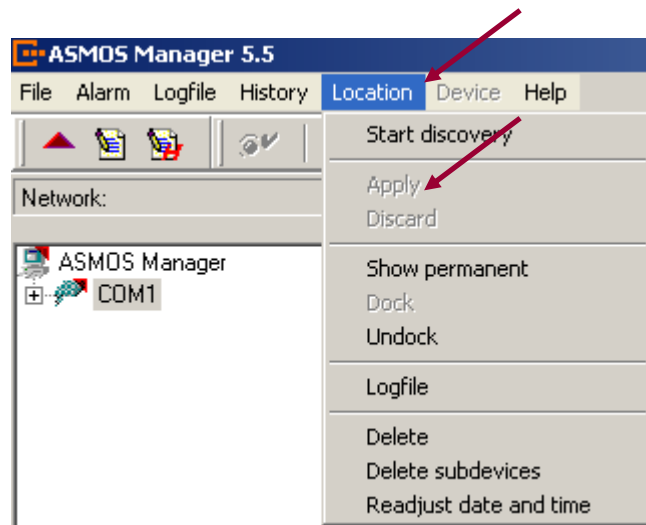


Figure (17): Apply settings



VERSION	DATE	AUTHOR	COMMENTS
A	20 <sup>th</sup> May 2009	D Stearn	Original
B	15 <sup>th</sup> June 2012	D Stearn	Conversion to Alstom Format