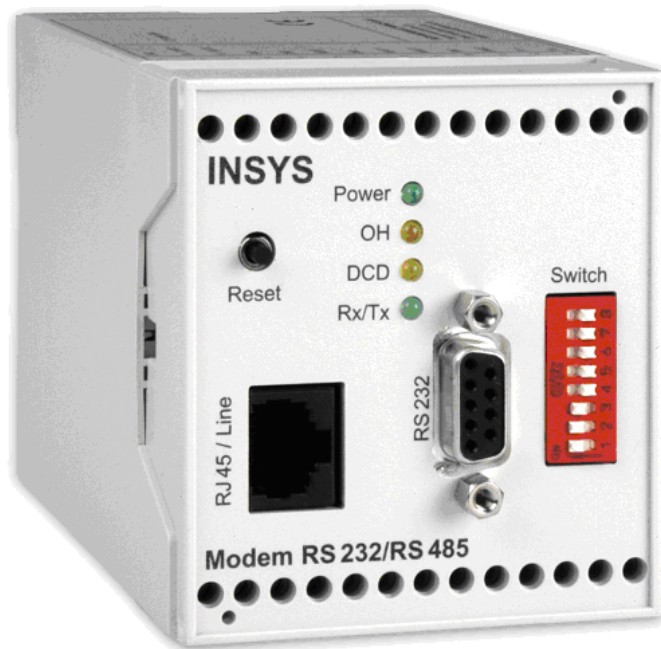


# Additional Manual



## INSYS Modem 56k With RS 485/422 Interface

Version 1.01 / 03.04

**INSYS**  
MICROELECTRONICS



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## 0 General

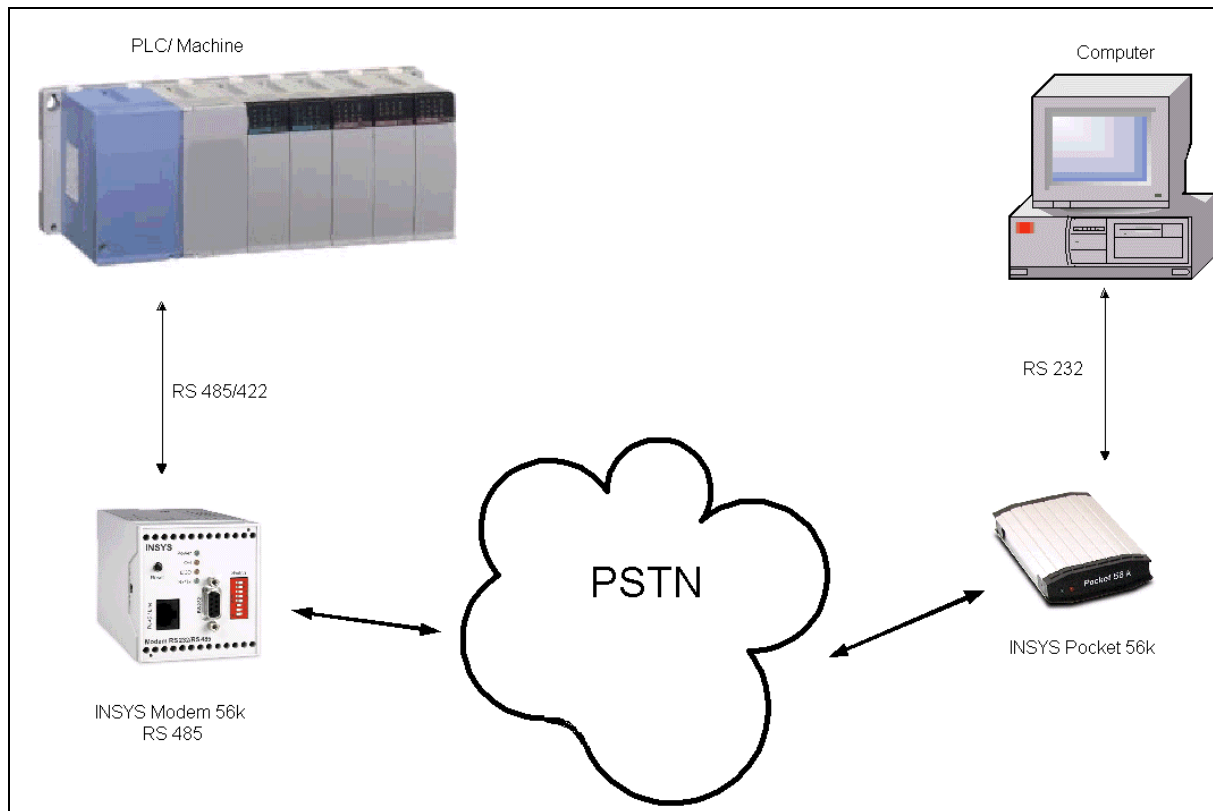
The INSYS Rail Modem 56K RS 485 possesses an additional RS 485/422 interface. It offers the possibility to perform the communication either via an RS 232 or a 485/422 interface.

This results in an even larger spectrum of applicabilities.

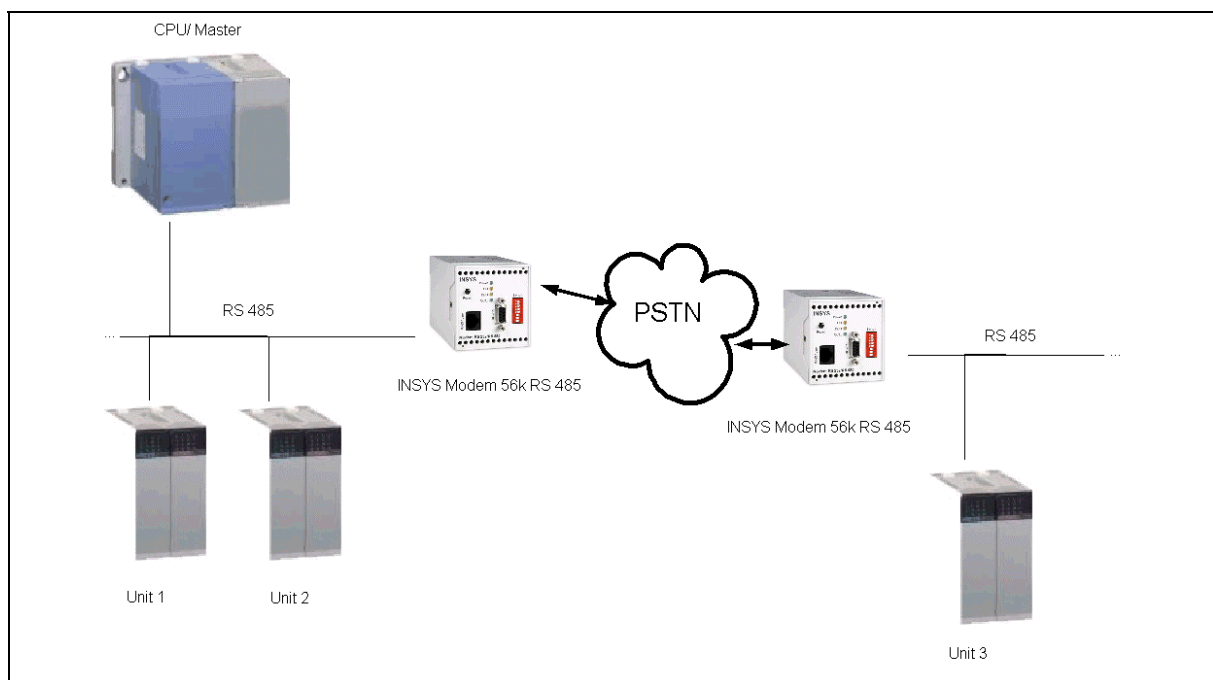
The configuration of the modem takes place via the RS 232 interface. The device has a priority circuit which automatically switches to the RS 232 interface, as soon as it is connected and the DTR signal is activated. This signal is set at the start of most PC terminal programs. The automatic switching allows for convenient configuration of the device without needing to detach the RS 422/485 connection.

# 1 Examples of Use

## Remote Maintenance



## Remote Transmission





## 2 Technical Data

### 2.1 Power supply

Power supply: 10..260 V DC

Power input: approx. 3.5 W (during connection)

Current consumption:

Input voltage	Current (closed/circuit)	Current (connection)	Maximum startup current
10V DC	300 mA	340 mA	400 mA
24V DC	150 mA	170 mA	200 mA

#### DC- Decoupling:

The insulation voltage between the telephone and the power supply is 1.5kV; between the power supply and the RS 422/485 it is a maximum of 300V at most.

### 2.2 RS 422/485 Interface

The input resistance of the RS 422/485 receive path is approximately 68k $\Omega$ , but at least 50k $\Omega$ .














The RS 485 transit time between sending and receiving is 0...1,5ms, measured after the last sent stop bit of a message.

The RX/TX LED at the front of the device blinks or lights up only for received data.














**Attention:** For the RS 485 interface, no bit direct mode is possible.

### 3 Terminal Layout

Terminal row on the top of the cover:

	Terminal	Meaning
	1	GND
	2	50..80VDC
	3	10..60VDC
	4	GND
	5	GND
	6	Reset
	7	GND
	8	Input 1
	9	Input 2
	10	GND
	11	Shield
	12	Tx+
	13	Tx-

Terminal row on the bottom of the cover:

	Terminal	Meaning
	14	Rx-
	15	Rx+
	16	SHIELD
	17	OUT1NC
	18	OUT1COM
	19	OUT1NO
	20	OUT2NC
	21	OUT2COM
	22	OUT2NO
	23	LB1
	24	LB
	25	LA
	26	LA1

## 4 Installation and Initial Operation

### Installation Steps

1. *Mounting on DIN rail:*  
Simple snap-on
2. *Connection of Power Supply:*
  - a) Connection of the ground wire GND
  - b) Connection of the power supply 10..60 V DC or 50..80 V DC

**Attention: The values given on the top of the cover (terminals 2 and 3) are maximum values.**

  - c) Switching on the power supply

After successful installation, the power LED will light up.
3. *Connection to the telephone network*
  - a) Plug the supplied TAE cable into the center of the RJ45 jack on the cover front.  
*Alternative:*  
Tighten with the screw terminals on the bottom of the cover according to the descriptions LB1, LB, LA, LA1
  - b) Plug the TAE connector into the telephone outlet

If the INSYS Modem 56K RS 485 acts faulty or abnormal, e.g. if the LED OFF Hook immediately lights up, please disconnect the connection to the telephone line instantly. For those cases, please refer to your service partner. To protect your guarantee claims, please **do not intervene** with the modem.

4. *Connection PC Terminal and RS 422/485*

Plug the enclosed RS232 interface cable into the cover front and connect it with the PC. Connect the RS 422/485 lines to the according screw terminals and configure the switch on the front of the cover (see Chap. 5.2)

The device has a priority circuit which automatically switches to the RS 232 interface, as soon as it is connected and the DTR signal is activated. This signal is set at the start of most PC terminal programs. The automatic switching allows for convenient configuration of the device without needing to detach the RS 422/485 connection.
5. *Check if the installation was successful:*

Perform a short test of the RS 232 using your terminal program (e.g. terminal window of the configuration software HSComm or the hyper terminal, TeraTermPro, ProcommPlus). Enter the command "**AT**" and push the "Enter" key. The reply "**OK**" indicates that the INSYS Modem has been successfully installed.

## 6. *Connection Test:*

Perform a manual connection from the terminal program (only for RS232):

- Dial the number 0101901929 (**ATDT01010901929**)  
Attention: For PBXs, which require a "0" for connection, please enter the following: **ATX3DT0,0101901929**
- The LED Off Hook lights up
- The modem dials
- After a little while (1 minute max.) the message CONNECT is displayed and the DCD LED lights up

In general this simple connection test is successful – all fine tuning is described in the following chapter.

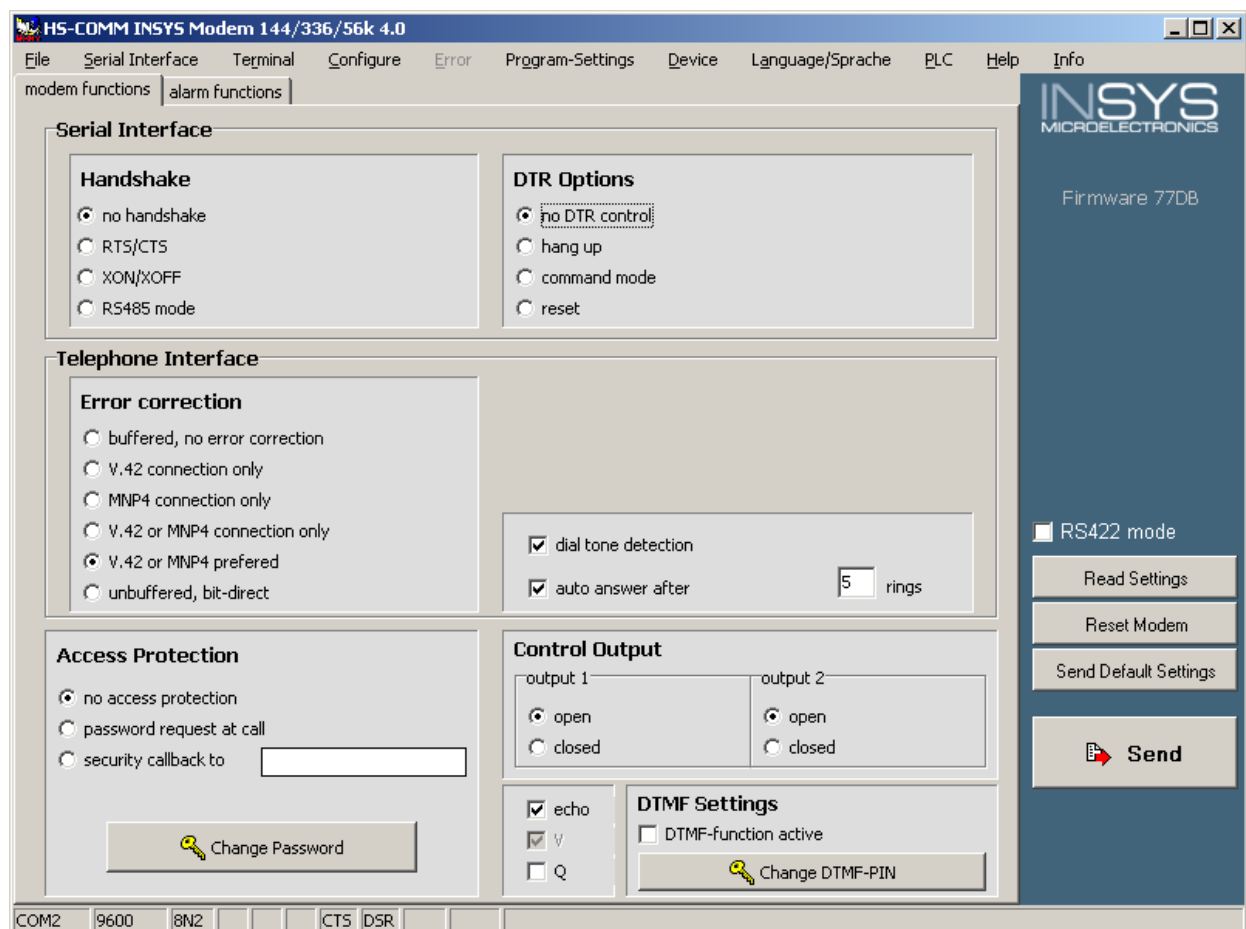
A connection test with the RS 422/485 can only be performed using the connected application. The connection is set up either from the remote terminal or via a message with the characters needed for the dial-up (see Connection Test RS 232).

## 5 Configuration

### 5.1 Configuration of the INSYS Modem 56k RS 485

#### RS 422:

For the RS 422 operation, the DTR signal as well as the hardware handshake must be switched off, as the RS 422 interface will not support these signals. The signals are shut off via the terminal using the command AT&D0&K0. If the configuration software “HSComm” is used, the checkbox “RS 422 Operation” must be activated.



HSComm Setting for RS 422 Operation

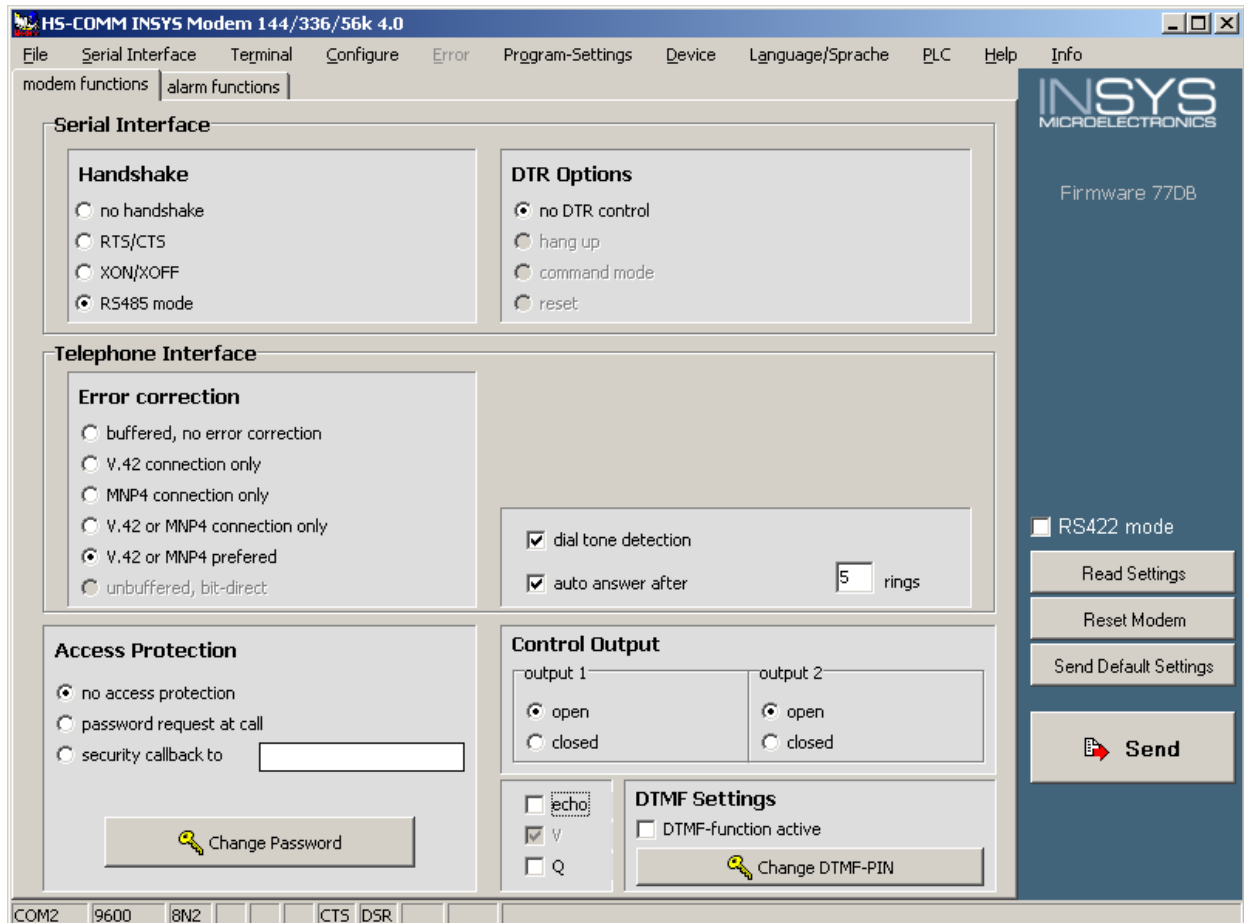
#### RS 485:

For the RS 422 operation, the DTR signal must be switched off, as the RS 485 interface does not support this signal. Furthermore, the modem must be switched into controlled half duplex mode. This mode only activates the sender when sending data; otherwise the device is in receive mode.

Shutting off the DTR signal and switching into half-duplex mode are performed via the terminal using the command AT&D0&K8.

In addition, the echo and the modem responses should be switched off, as they act disturbing in most cases. This takes place via the terminal with the command ATE0Q1.

If the modem is configured using HSComm, the setting “RS 485 Operation must be activated. The echo or the modem responses respectively must be activated in the according checkboxes.



HSComm Setting for RS 485 Operation

## 5.2 RS 422/485 Switch



### 5.2.1 Setting the DIP Switches

Switch	Meaning	Description	RS 485	RS 422
SW1	Termination Rx	If SW1 is switched on, the receive path is terminated with a termination resistance of 120 $\Omega$ .	OFF	OFF
SW2	Pull-up Rx	If SW2 is switched on, the receive path is biased with 2 resistors, to enable a safe idle status on the line for an open input highway.	OFF	OFF
SW3	Termination Tx	If SW3 is switched on, the send line is terminated with a termination resistance of 120 $\Omega$ .	ON	OFF
SW4	Pull-up Tx	If SW4 is switched on, the send line is biased with 2 resistors, to enable a safe idle status on the line for a closed sender.	ON	OFF
SW5 SW6 SW7 SW8	RS 422/485 Selection	If SW5 – SW8 are switched on, the device is operated in RS 485 mode. If SW5 – SW8 are switched off, the RS 422 mode is active.	ON	OFF

In RS 485 mode, the RS 485 line is connected to the terminals TX+ and TX-; the RX terminals are not assigned.

In RS 422 mode, the device receives data at the terminals RX+/RX- and send the data at the terminals TX+ and TX-.

## 5.2.2 Schematic Circuit Diagram Bus Connection

