



**zenon**  
by COPA-DATA

# zenon tutorial

## Modem connection to a driver

v.8.10



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# 1 Welcome to COPA-DATA help

## ZENON VIDEO-TUTORIALS

You can find practical examples for project configuration with zenon in our YouTube channel ([https://www.copadata.com/tutorial\\_menu](https://www.copadata.com/tutorial_menu)). The tutorials are grouped according to topics and give an initial insight into working with different zenon modules. All tutorials are available in English.

## GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to [documentation@copadata.com](mailto:documentation@copadata.com).

## PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at [support@copadata.com](mailto:support@copadata.com).

## LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email [sales@copadata.com](mailto:sales@copadata.com).

# 2 Modem connection to a driver

This description explains the use and the configuration of the modem connection implemented in the driver kit as a standard. The aspects of programming are not explained in detail here, refer to the driver kit documentation for this information.

Driver specific settings and requirements can be found in the documentation of the according driver.

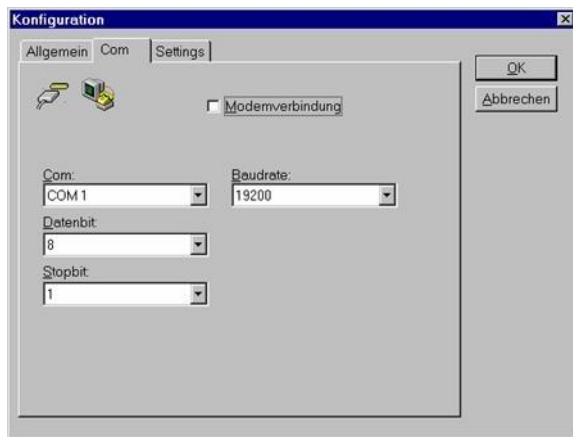
It is also assumed, that the reader is familiar with the control system.

The modem connection described here is not available under Windows CE 2.x.

## 3 General

The following requirements have to be fulfilled, so that the modem connection can be used with a driver.

The driver has to support the connection to the PLC via modem. Whether the driver supports a connection via modem, can be seen in the



configuration dialog Com. If the checkbox Modem connection is available, the driver can connect to the PLC via modem.

The connection to the modem is realized via the Windows interface TAPI (Telephony Application Program Interface). So a TAPI modem has to be configured.

On the opposite side a modem operation also has to exist.

## 4 Configuration

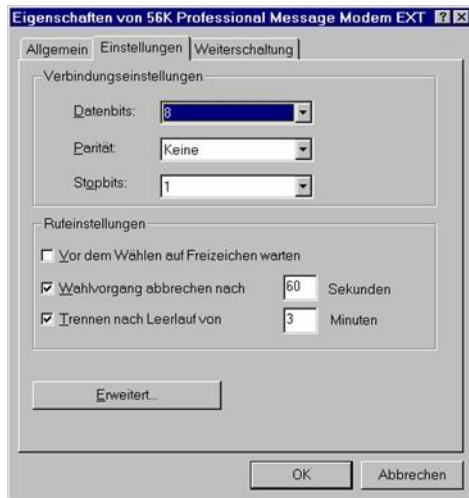
### 4.1 Modem

Modem is created at control panel / modems. You must do this before you configure the drivers. For the general configuration of your modem please refer to the documentation of your modem or your operating system.

Here you will only find the description of prerequisites for the modem connection.

## 4.2 Call settings

In the configuration properties of xxx



Attention should be given to two settings in particular.

### 4.2.1 Cancel dialing

This value has to be higher than the time for the connection establishment.

The setting has to be activated.

### 4.2.2 Disconnect after idle time

This value has to be higher than that configured for inactivity.

The setting has to be activated.

### 4.2.3 Log file

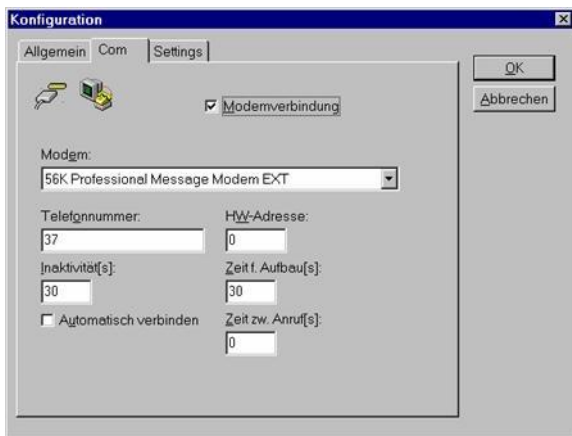
In the extended settings



there is a checkbox for recording a log file. If it is activated, all data exchanged with the modem are recorded in a log file. The file is in the Windows directory (e.g. C:\WINNT) and has the name of the modem, for which logging is activated. For example: *ModemLog\_Sportster 28800-33600 External.txt*. This file is useful to find errors. Because of the quickly growing size logging should only be activated for a short time.

## 4.3 Drivers

After the checkbox Modem connection has been activated, the dialog changes its appearance and displays the fields for the modem configuration.



### 4.3.1 Modem

Select the desired TAPI modem here.



### 4.3.2 Telephone number

The telephone number for the connection. If no number is entered, there will not be an automatic connection establishment.

### 4.3.3 HW address

The hardware address for the telephone number. Only variables for the defined hardware address are polled. If -1 is entered here, all addresses are polled.

### 4.3.4 Inactive(s)

The connection is closed, if there is *no answer from the station* within this time [s].

Default: 30s

### 4.3.5 Time between calls

The modem waits this time [s] between two calls.

Default: 60s

### 4.3.6 Automatic connection

If this setting is activated and a telephone number is defined, the connection establishment is started immediately on starting the Runtime.

## 4.4 Variables

In the control system the assignment to a station is defined in the **Net address**.

A modem can only be in use once at any time and can always only have a connection to one station. Consequently, only the variables of the connected station are read. The other variables have the status of invalid (**INVALID** bit active). Only if the station has hardware address *-1* are the variables read with all net addresses of this station.

## 5 Runtime

The behavior of the modem connection during Runtime depends on the currently active configuration. On starting the Runtime the settings are taken from the driver configuration, they can however be changed during Runtime. These changes are realized with the according driver variables.

### 5.1 Driver variables

For the modem connection there are a number of driver variables, which are divided in two groups.

The name, the type and the offset of the driver variables are those from the variable import file *DRVVAR.DBF*.

Here only the driver variables concerning the modem connection are dealt with.

#### 5.1.1 Settings

This group contains driver variables, which display the current configuration or allow to change the configuration.

<b>ModemActive</b>	1, if the modem is active for the driver
<b>Device</b>	Name of the modem. In the Runtime another modem can be entered. However, in doing so, it should be ensured that a defined TAPI modem is given. An amended setting must be activated with <code>ApplyModem</code> .
<b>ReconnectInRead</b>	If 1, the modem is automatically reconnected for reading. Reading here means reading from the interface. If <code>Autoconnect</code> is active, this setting remains unimportant.
<b>PhoneNumber</b>	Current telephone number. If the current telephone number is empty, an outgoing connection is never established, regardless of the settings for <code>Autoconnect</code> or <code>ReconnectInRead</code> . The telephone number is deleted in the event of an incoming call that is taken.

<b>ModemActive</b>	1, if the modem is active for the driver
<b>ModemHwAdr</b>	Hardware address of current telephone number Only variables with the <b>Net address</b> set here are read. With an incoming call that is taken, the value is set to -2 until the calling station identifies itself. The <b>Net address</b> of the calling station is entered after identification. A value of -1 denotes that communication with all net addresses is to take place using this connection.
<b>Autoconnect</b>	1, if the modem connection should be established automatically for reading/writing Reading/writing here means the interface.  If the connection is interrupted, with a value of 1, the station with the number saved in Phone Number is called again. The <b>Net address</b> only goes to invalid if another dialing attempt fails. As long as Autoconnect is 1 and there is a number in <b>PhoneNumber</b> , repeated attempts to establish a connection are made.
<b>RxIdleTime</b>	Modem is disconnected, if no data are received for this time (in ms) The Control Panel/Modems has a similar setting, which however only checks, if any data are transferred via the modem.
<b>WriteTimeout</b>	How long writing can last for a modem connection.
<b>PhoneNumberSet</b>	Telephone number to which a connection is to be established with the next ApplyModem. If the telephone number is empty, no new connection is established.
<b>ModemHwAdrSet</b>	Hardware address belonging to PhoneNumberSet.
<b>ApplyModem</b>	If the value 1 is written, the current contents of the driver variables Device, Phonenumberset and ModemHWAdrSet is assigned. A connection that currently exists is ended in any case.
<b>RingCountSet</b>	Number of rings that are waited for before the call is taken. Whether incoming calls are taken always depends on the driver. Not all drivers support incoming calls. Refer to the driver documentation for details.
<b>ReCallIdleTime</b>	Waiting time between calls
<b>ConnectTimeout</b>	Time for establishing connection The connection has to be established within this time, otherwise the attempt is canceled as unsuccessful.

## 5.1.2 Status information

<b>LineStateIdle</b>	<b>1, if the modem connection is idle. This status becomes active, if before at least once a connection has existed.</b>
<b>LineStateOffering</b>	1, if a call comes in.
<b>LineStateAccepted</b>	1, if the call has been accepted.
<b>LineStateConnected</b>	1, if a connection has been established. If during an existing connection another station is dialed, the connect status stays active, although for the new dialing the current connection is closed.
<b>LineStateProceeding</b>	1, if dialing has been executed.
<b>LineStateDisconnected</b>	1, if the connection is closed. This status only is active, if no connection has been established.
<b>ModemStatus</b>	Current modem status Contains all information of LineStatexxxx as a whole.

## 5.2 Establishing a connection

The dialing can be triggered in several ways.

### 5.2.1 Auto connect at Runtime start

If the Runtime is started and Autoconnect is configured, the connection to the defined station is established immediately. If this is successful, all variables of the connected station are read without being disturbed.

This connection is established even, if no variables of the station have to be read. If this is not desired, it can be avoided with a little trick. Deactivate Autoconnect in the driver configuration. Telephone number and HW address however have to be configured. Set the driver variable Autoconnect to 1 in the AUTOSTART script. Now the connection is automatically established, when data are needed. The same is true for writing.

### 5.2.2 Auto connect at connection failure

For the automatic reconnect on a failure the following points have to be fulfilled.

**Driver variable Phonenumber is not empty.**

Driver variable ModemHWAdr is not -2.

Variables of the station should be read or written.

Driver variable Autoconnect is 1 or driver variable ReconnectInRead is 1.

### 5.2.3 Driver command Connect modem

With this driver command the connection establishment to a station can be triggered by hand. The according telephone number and HW address of the target station have to be entered.

If a connection to the target station already exists, no reconnect is executed. The HW address is always taken. So the HW address of the target station can be changed. The connection is established independently from necessary data exchange.

### 5.2.4 ApplyModem

With setting the driver variable ApplyModem to 1 the currently set values in Device, PhonenumberSet and ModemHWAdrSet are taken. A currently active connection is disconnected in any case. A new connection is only established, if the phone number (PhonenumberSet) is not empty.

## 5.3 Connection stopped

The connection is closed because of a number of reasons:

- ▶ On the connection establishment the connection could not be established within the configured time. See also Configuration time for establishment, driver variable ConnectTimeout.
- ▶ No response of the target station has been received within the configured time. See also Configuration Inactivity and driver variable RxIdleTime.
- ▶ Data have not been transferred for too long a time and TAPI closed the connection. See also Control Panel/Modems/Call settings.
- ▶ The driver command Modem connect has been executed with a phone number different from the current connection.
- ▶ The driver command Modem stopped has been executed. This closes the current connection and deletes the phone number of the station. So also no Autoconnect is executed.
- ▶ The Runtime is closed.

## 6 Error search

Because of the higher number of involved components with a connection via modem there is also a higher number of possible errors in engineering.

### 6.1 PC

On the PC side the modem settings are defined with the installation of the according TAPI driver. So the basic commands for the modem functions are known.

If the modem answers calls, but does not dial, it may be necessary to activate the setting Wait for dial tone. This is often necessary in interphone systems.

If with incoming calls the modem answers, synchronizes and immediately rings off, the identification probably failed.

#### 6.1.1 Modem log

In order to limit the cause of failure it is possible to activate the checkbox Record log in *Control Panel/Modems/Settings/Settings/Extended*. With activated logging a log file is generated in the Windows directory, e.g. *C:/WINNT*. The name of the file depends on the modem, e.g.: *ModemLog\_Sportster 28800-33600 External.txt*. In this file all data are logged, which are exchanged with the modem. Only activate this option for a short time, because the file quickly gets very big.

#### 6.1.2 Interface log

All drivers with modem connection offer the possibility to activate logging of the received and sent data in the driver. By adding the section

```
[RS232LOG]
```

```
LOGCOMx=1
```

in the project.ini this interface logging is activated. These data are saved in the file *LOGFILE.TXT* which is stored in the driver directory.

Only activate logging for a short time, because the file quickly gets very big.

## 6.2 SPS

Usually programs for the modem connection are needed in the PLC. Refer to the according manufacturer documentation for the programming and configuration of these function components.

The configuration of the modem has to be defined. Refer to the modem documentation for according register documentation.

If the PLC should call the Runtime, the identification necessary for the driver has to be implemented. Refer to the driver documentation for details.