



Protocol Manual

CC-Link Slave

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Although this protocol implementation has been developed with great care and intensively tested, Hilscher Gesellschaft für Systemautomation mbH cannot guarantee the suitability of this program for any purpose not confirmed by us in writing.

Guarantee claims shall be limited to the right to require rectification. Liability for any damages which may have arisen from the use of this program or its documentation shall be limited to cases of intent.

We reserve the right to modify our products and their specifications at any time in as far as this contribute to technical progress. The version of the manual supplied with the program applies.

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1 Introduction

This description documents the implementation of the CC-Link Slave on our devices. It must be noted, however, that the range of functions described may be limited depending on the device or utilization case. This is especially the case in the protocol conversions where a lesser functions range is usually used!

2 Specification and Protocol Fundamentals

The implementation is based on CC-Link Specification Release 1.10.

3 Configuration and Start-Up

There are two strategies to start-up the device. The first and most common way is using a static database, which is described in this manual. The other way is to put the start-up parameter into the dual-port memory and then to perform a warm-start command, which is described in the protocol interface manual CC-Link Slave.

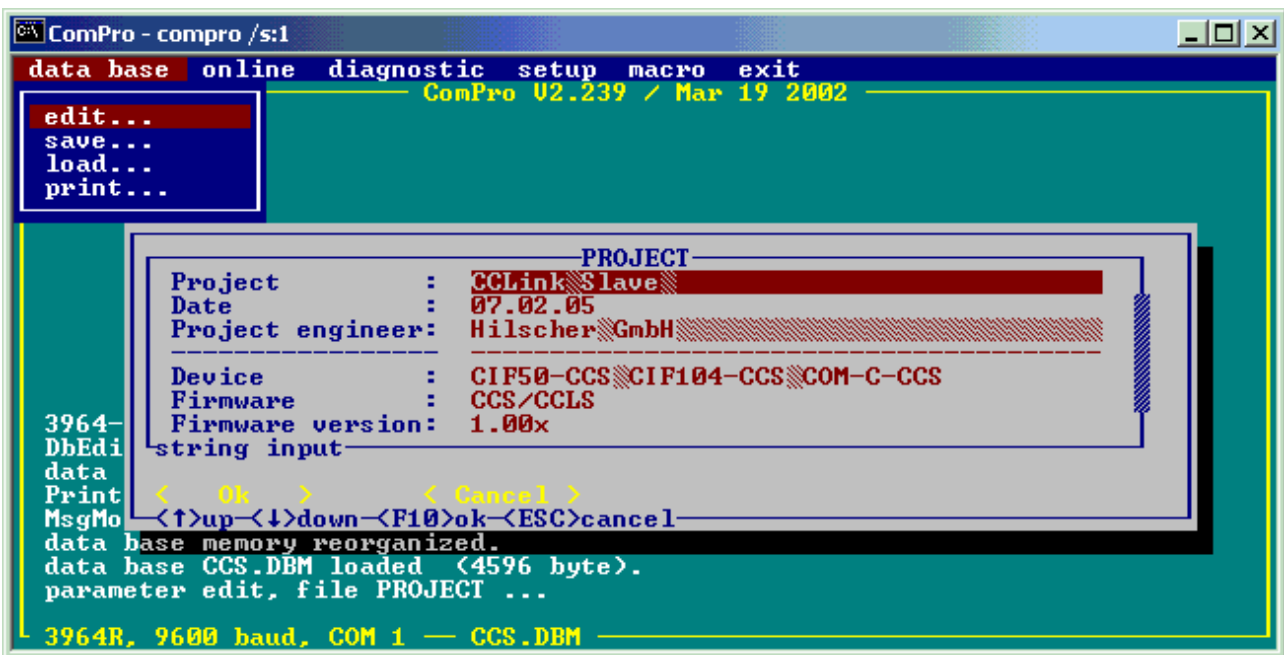
3.1 Start-Up with Database (Configuration)

Normally the device will be configured by a static database. This database comes from the DOS-based configuration program **ComPro**. The database file consists of 4 relevant tables as described below:

At writing time there is no SyCon System Configurator available.

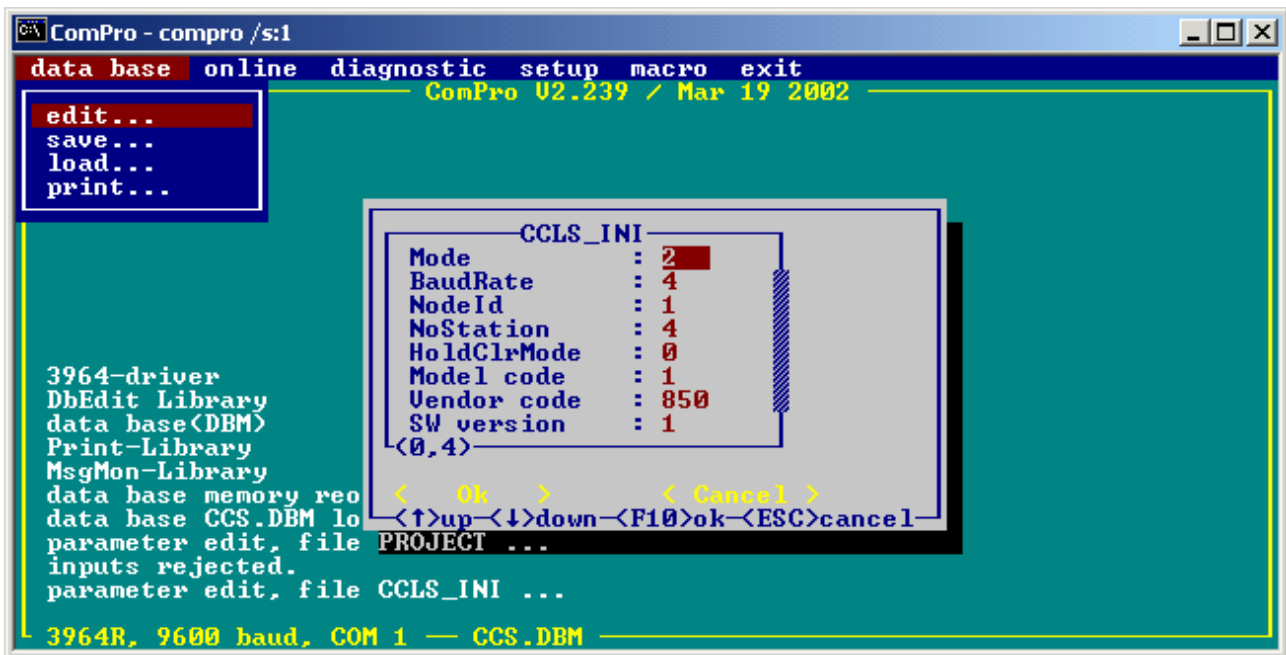
3.1.1 Table PROJECT

In the table PROJECT the parameter **Project**, **Date** and **Project engineer** can be set by the user. This is for documentation purposes only. The parameters **Device**, **Firmware** and **Firmware version** are read only and cannot be changed by the user.



3.1.2 Table CCLS_INI

This table represents all necessary data which are needed for the CC-Link device.



- bMode

The parameter bMode defines the handshake mode of the process data. Valid entries are 1, 2 and 3. See the chapter 'Handshake Mode of Process Data Delivery' in the toolkit manual 'General Definitions', for the explanation of the different modes.

- bBaudRate

The variable bBaudRate sets the baud rate to operate at the CC-Link network.

Valid baud rates are:

Identifier	Value	Baud Rate
CCLS_USR_BAUD_156K	0	156 kBit/s
CCLS_USR_BAUD_625K	1	625 kBit/s
CCLS_USR_BAUD_2500K	2	2.5 MBit/s
CCLS_USR_BAUD_5M	3	5 MBit/s
CCLS_USR_BAUD_10M	4	10 MBit/s

Baud rate Parameter

- bStationAddr

bStationAddr is used to set a station address for the CC-Link node on the network. It ranges from 1 .. 63.

- `bNoStation`

The variable `bNoStation` defines the number of occupied stations to operate at the CC-Link network.

- `bHoldClrMode`

The variable `bHoldClrMode` defines for the device in case a bus error occurs. A value of 1 will force the CC-Link device to hold the last transmitted output data; a value of 0 will clear all output data.

- `bModelCode`

`bModelCode` is the Type Code for remote device stations.

- `uVendorId`

The Vendor Code is assigned to each manufacturer. It is a part of the CC-Link membership number and assigned by the CC-Link user organisation.

- `bSWVersion`

This variable holds the version of the software.

3.2 Configuration Download

3.2.1 Via Serial interface

The configuration can be downloaded to the device via the serial diagnostic interface of the device.

ComPro communicates with the device via a serial connection. A COM port must be connected with the diagnostic interface of the device via a diagnostic cable.

Note: The pin assignment of the diagnostic cable is described in the hardware documentation of the device manufacturer.

Start ComPro with

```
compro /s:1
```

respectively

```
compro /s:2
```

to use it on COM 1 or COM 2.

This communication is used when ComPro has to access the device via the diagnostic interface of the device. The following two options cases are possible:

Option 1: ComPro is installed on remote PC (e.g. a notebook).

Option 2: ComPro is installed on the same PC on which the Hilscher device is situated. Then the application can use the dual-port memory to access the device

To download the configuration into the device select the menu **online > database > download** in ComPro and press the **Enter** key. Confirm the safety question by pressing the **Enter** key again to start the downloading the configuration.

3.2.2 Via Dual-port Memory

The CIF Device Driver communicates with the device via the dual-port memory.

Note: The CIF Device Driver has to be installed first and it must have recognized the device.

Start the **CIF Device Driver Test Program** with the menu **Start > Programs > CIF Device Driver > CIF Device Driver Test**.

Then select from the menu **Board Select > Board 0, 1, 2 or 3**.

Select **Driver Function > DevDownload > Configuration Download** and select the DBM file and press the button **Open**. This downloads the configuration file into the device into its FLASH memory.

4 Error Codes

4.1 Initialization Errors

Error Number	Description
0	No error
2	Idle. waiting for Master.
50	No user Task.
53	Unknown mode.

4.2 Runtime Errors

Error Number	Description
0	No error.
105	Connection timeout
110	Watchdog timer occurred
111	Task is not available
112	Received wrong size of data
113	Generic configuration fault
114	Generic communication error
115	PLC (master device) is in stop mode
116	PLC (master device) signals state 'abnormal'
117	Receive data with CRC error
152	Value for msg.b invalid
162	Value for msg.data_area invalid
163	Value for msg.data_adr invalid
165	Value for msg.data_cnt invalid
166	Value for msg.data_type invalid
167	Value for msg.function invalid

4.3 System Errors

Error Number	Description
0	No error
200	Task not initialized
210	No data base found / missing configuration
212	Error while reading the database
213	structure error reported
217	system error