**DREHMO**

# Matic C Operator V3

*Instruction manual*

INFORMATION

*This manual must be kept for future use.*

## History

| File version | Date | Changes |
|---|---|---|
| 0 | 2009-10-13 | Created (BARD) |
| 1 | 2009-11-02 | Change "MaticC" to "Matic C" (BARD) |
| 2 | 2010-01-11 | Adding new features of the software releases  3.8.0.29 and 3.8.030 (BARD) |
| 3 | 2010-04-12 | Adding new features of the software releases  3.8.0.33 (BARD) |
| 4 | 2010-11-02 | Adding new features of the software releases  3.8.0.37 (BARD) |

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# 1 Warnings and notes

## 1.1 Standards / directives

DREHMO products are designed and manufactured in compliance with recognized standards and directives. This is certified in a declaration of incorporation and a declaration of conformity.
The end user or the contractor must ensure that all requirements with respect to assembly, electrical connection, and commissioning at the place of installation are met.
They include among others:
- Applicable configuration directives for fieldbus applications.
- National regulations, laws, and prescriptions.

This manual only describes the installation and handling of the program. There are no deeper explanations about actuator or control specific functionalities.

## 1.2 Commissioning (Electrical connection)

During operation of electrical devices it is unavoidable that certain parts carry dangerous voltages. All personnel working with this device must be familiar with the safety and warning instructions in this manual and observe the instructions given. Safety instructions and warning signs on the device must be observed to avoid personal injury or property damage.

## 1.3 Maintenance

Maintenance directives have to be carefully attended. Otherwise a safe operation of the actuator or control unit can't be assured.

## 1.4 Warnings and notes

Read these instructions carefully before installation and commissioning. Failure to follow them may lead to personal injury or to material damage.

The following signs draw special attention to safety-relevant procedures in these operation instructions:

This symbol signifies „additional information".
Failure to observe may lead to damage occurring.

This symbol signifies „attention".
Failure to observe may result in damage and personal injury.

This symbol signifies „warning!"
Failure to observe may result in damage and severe personal injury.

# 2 Introduction

## 2.1 General information

These installation, operating and service instructions apply to electrical actuators of the Matic C series (multiturn, part-turn and linear actuators). The product name is DREHMO® Matic C (DMC).

**Attention:** Read these instructions carefully before commissioning, actuator setting and start-up. Failure to follow them may lead to personal injury or to material damage. If the actuators are used improperly, or used for other than the intended applications, no liability is assumed.

Also the corresponding installation, operating and service instructions and the *safety and application information for actuators* have to be carefully attended.

## 2.2 Computer system requirements

For the use of this software the following system requirements have to be full filled:

**Software:**
- Windows 2000
- Windows XP SP2 or higher
- Windows 7
- Microsoft .NET Framework 2.0 or higher

**Hardware:**
- Serial COM port or free USB-port

**Hardware (recommended):**
- Min. 1000Mhz CPU
- Min. 256MB Ram

# 3 Installation

## 3.1 Introduction

Before installation it has to be ensured, that Microsoft .NET Framework 2.0 or higher is installed on the computer system.

## 3.2 Setup Execution

Use the Setup-CD and insert it into the CD-Rom drive. Start the installation via Windows-Explorer by double clicking on the Setup-Program named **Matic_C_Operator_Setup_X_X_XXX.EXE**. The placeholder X stands for the actual version of the setup und varies. If the installation is obtained from another source please start it from the corresponding location.

Setup starts. In the displayed window choose the language and acknowledge your choice by pressing the *OK* button.
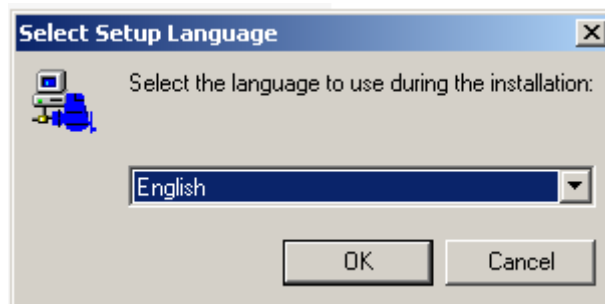
Acknowledge the following information window (setup-wizard – without figure) by pressing the button *Next >*. The license agreement has to be read and accepted:
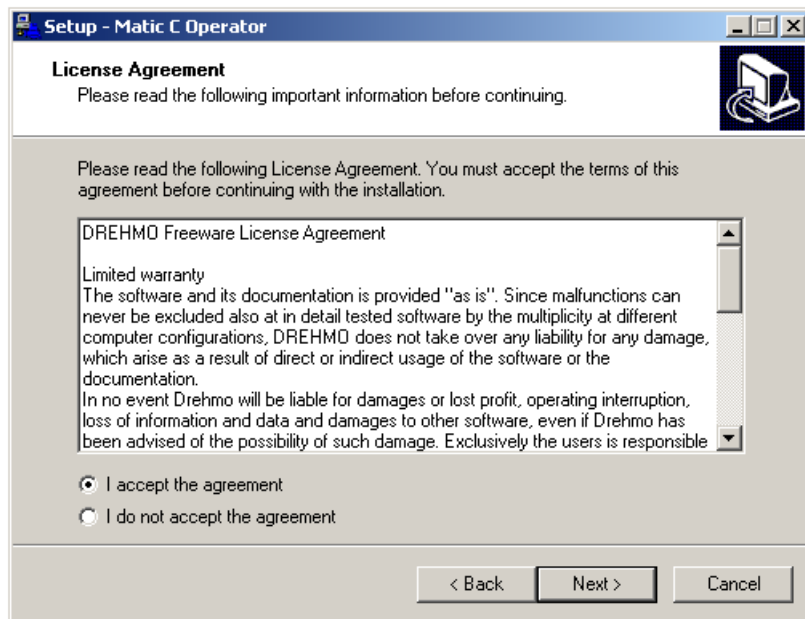


In the following window the setup requires the selection of the destination folder for the Matic C Operator:
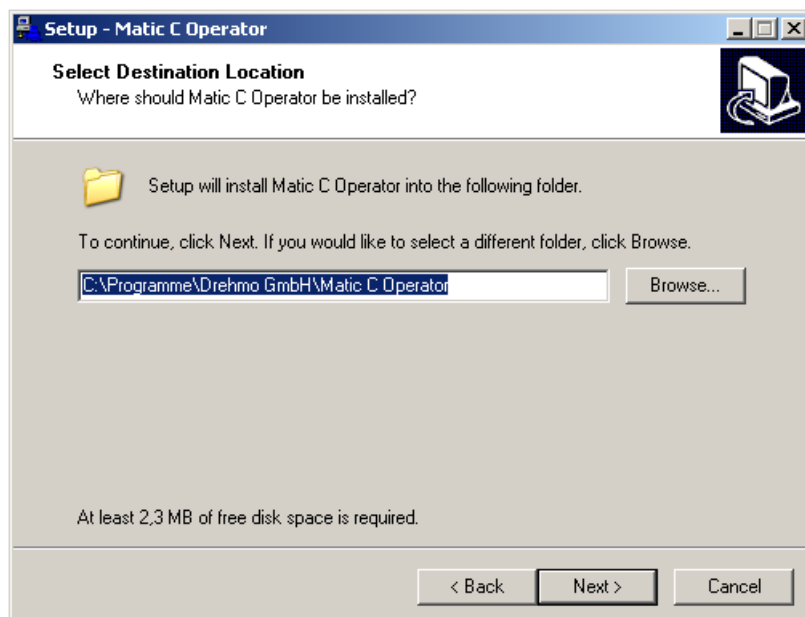


Select the destination folder and acknowledge your choice by pressing the button *Next >*.

Continue setup by specifying the program group in which the setup should create an icon for the start of Matic C Operator:
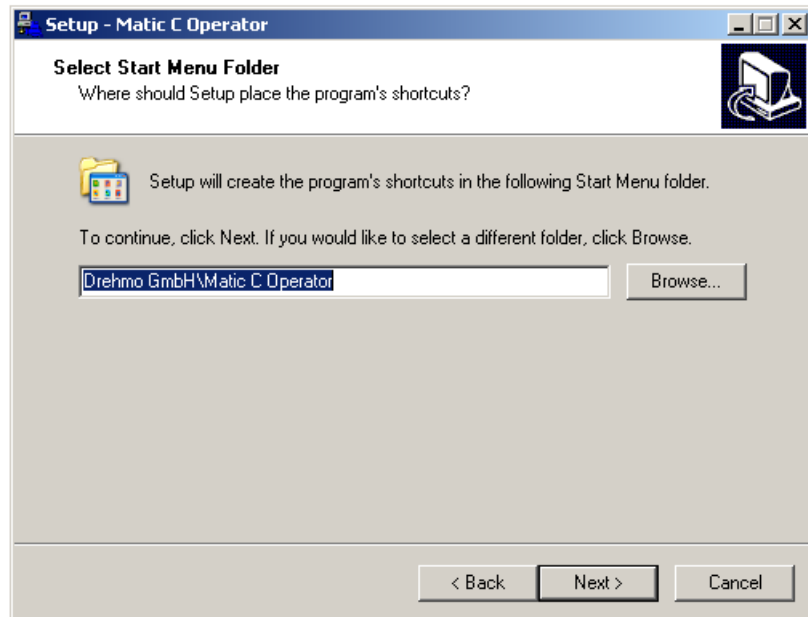


Acknowledge your choice by pressing the button *Next >*. In the following window you can select additional tasks, which should be performed while installing Matic C Operator:
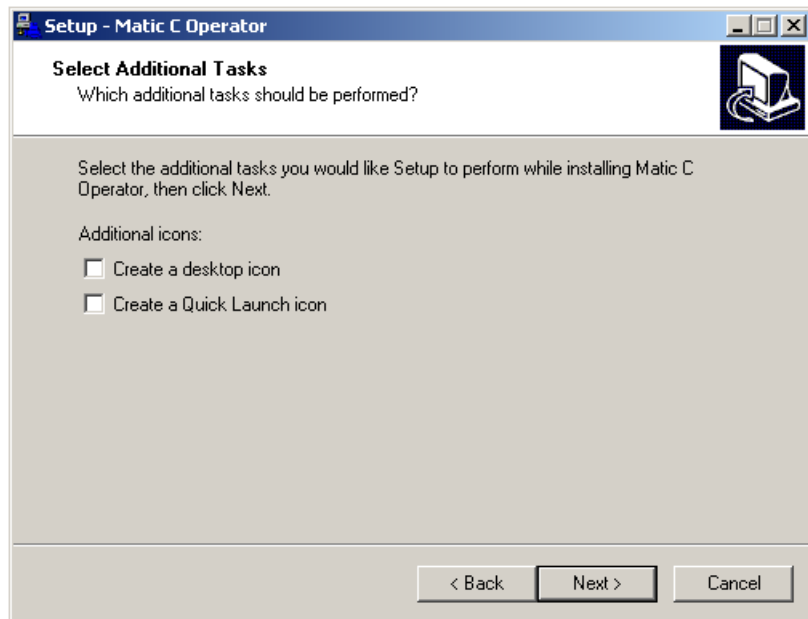


Confirm your choice again by pressing the *Next >* button.

Now setup has gathered enough information for proceeding with the installation of Matic C Operator. By pressing the button *Install >* the installation process will start:
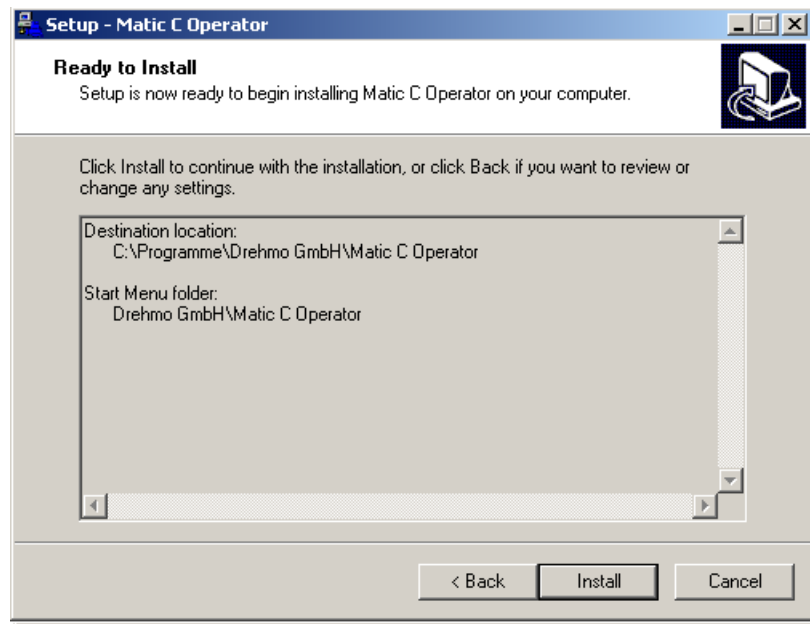


After the installation is successfully finished you will see the following window:
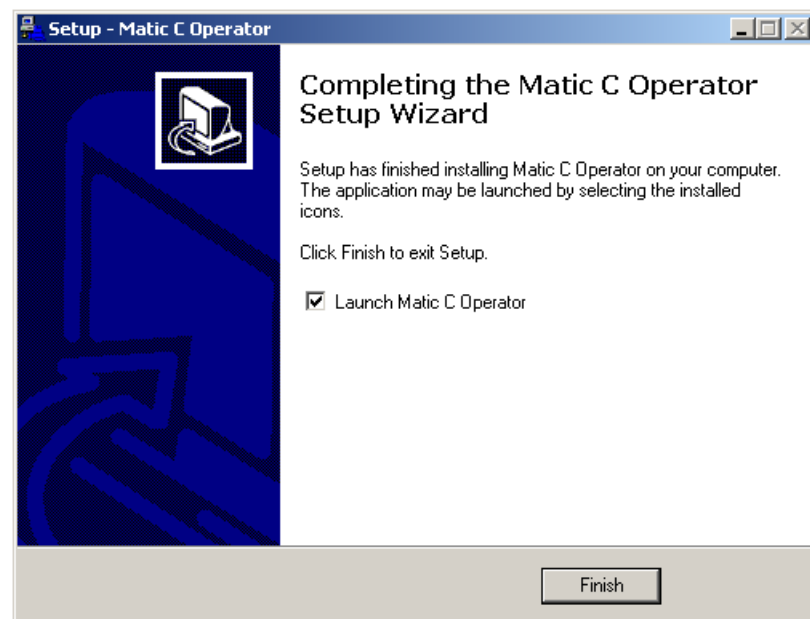


Confirm the setup by pressing the *Finish* button. Now the Matic C Operator is starting.

# 4 Set up a physical hardware connection

For using the most program functions there must be a physical hardware connection.

**Attention:** Power off the actuator to avoid serious damages to the electronic due to high signal differences during connection setup. Take care of the correct alignment of the connector.

A) The PC has to be connected with the supplied RS232 or USB to TTL interface converter to the DMC-02 base board as exemplary shown in the following picture:
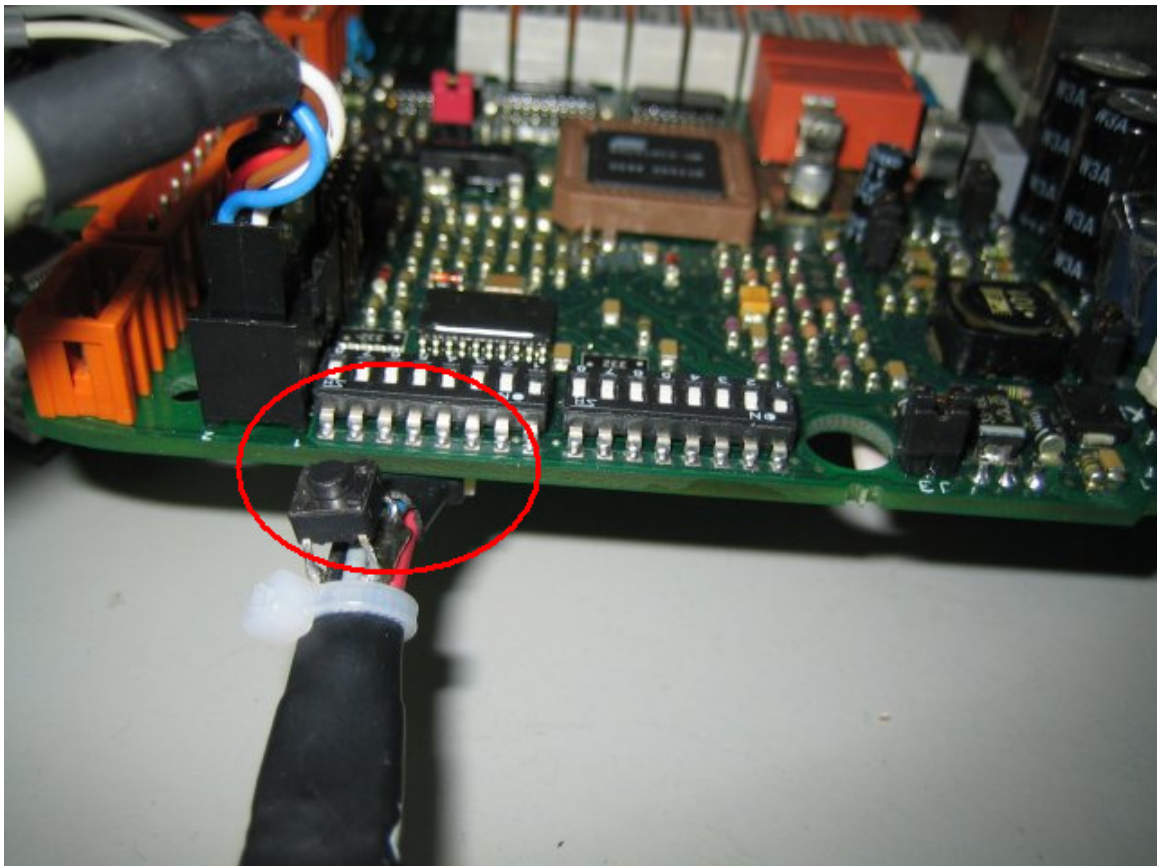


**Note:** This connection should only be used, if there is no DMC-14 board plugged.

Instead of this programming connection, older DMC-02 main boards do only have a non polarized serial interface connection on top of the main board (2x6 socket terminal strip X6). For this interface a special adapter is required. The correct insertion direction of this adapter has to be observed. The possible communication speed and the available functions will possibly differ from the described version.

B) If there is a DMC-14 Profibus board mounted on top of the main board, the PC has to be connected with the supplied RS232 or USB to TTL interface converter to the DMC-14 profibus interface board as exemplary shown in the following picture:



**Note:** A firmware update of the DMC-02 main board, while using this connection, is not possible. For updating the DMC-02 main board, it is necessary to dismount the DMC-14 board and establish a direct connection as described in case A).

# 5 Handling and menu structure

After starting, the program opens the main window of the Matic C Operator:
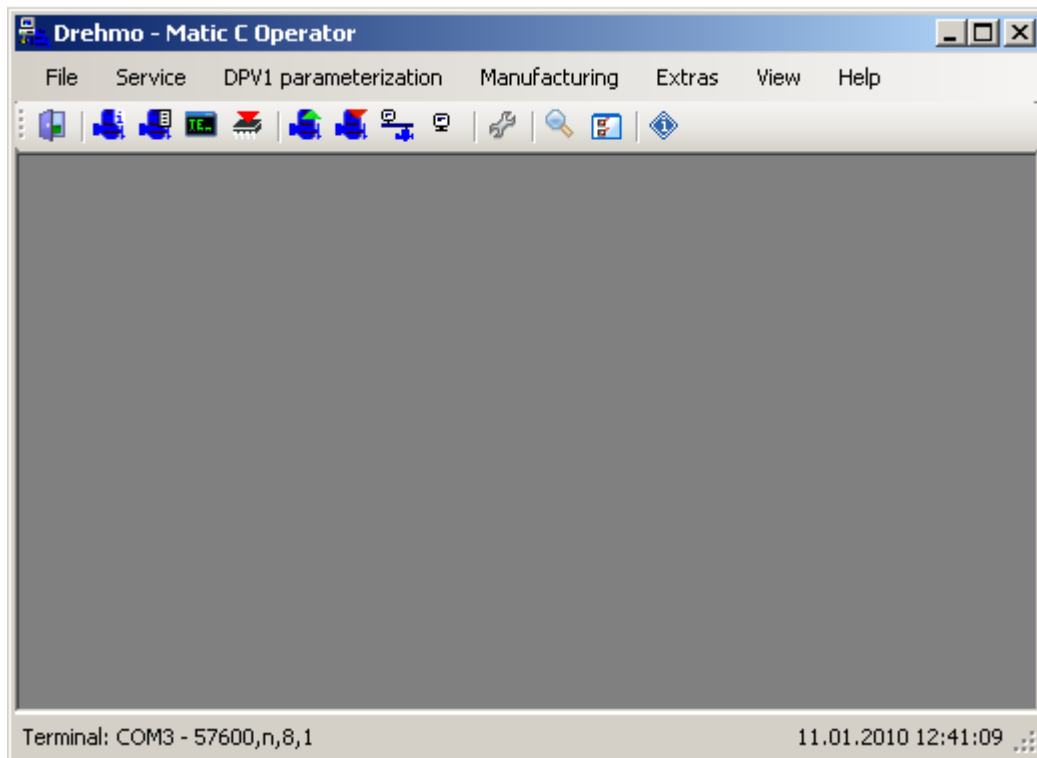


Here you can select the different program operations via the main menu or the toolbar.

## 5.1 Menu File

### 5.1.1 File/Exit

Use this menu entry to quit the execution of the Matic C Operator.

### 5.1.2 File/Save

Use this menu entry to save the currently opened parameter set.

**Note:** This option is only available if a parameter set is loaded.

### 5.1.3 File/Save as

Use this menu entry to save the currently opened parameter set as a new **\*.MC2**-file with a different file name.

**Note:** This option is only available if a parameter set is loaded.

At first you must choose a file name and a location in a standard dialog box:
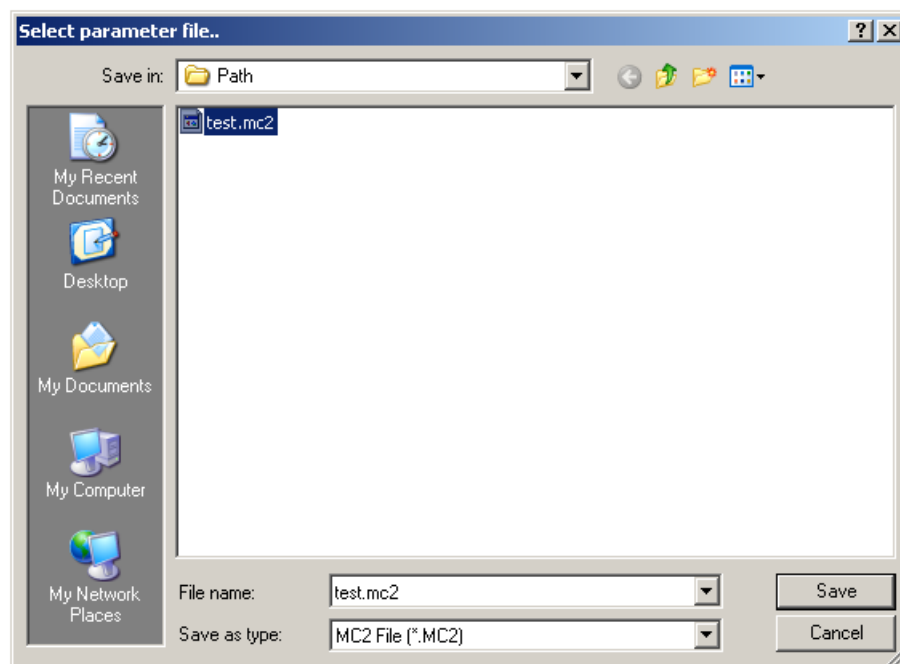


Confirm your selection by pressing the *Save* button.

## 5.1.4 File/Compare values

Use this menu entry to compare the currently opened parameter set with a different parameter set.

**Note:** This option is only available if a parameter set is loaded.

At first you must choose the different parameter set in a standard dialog box:
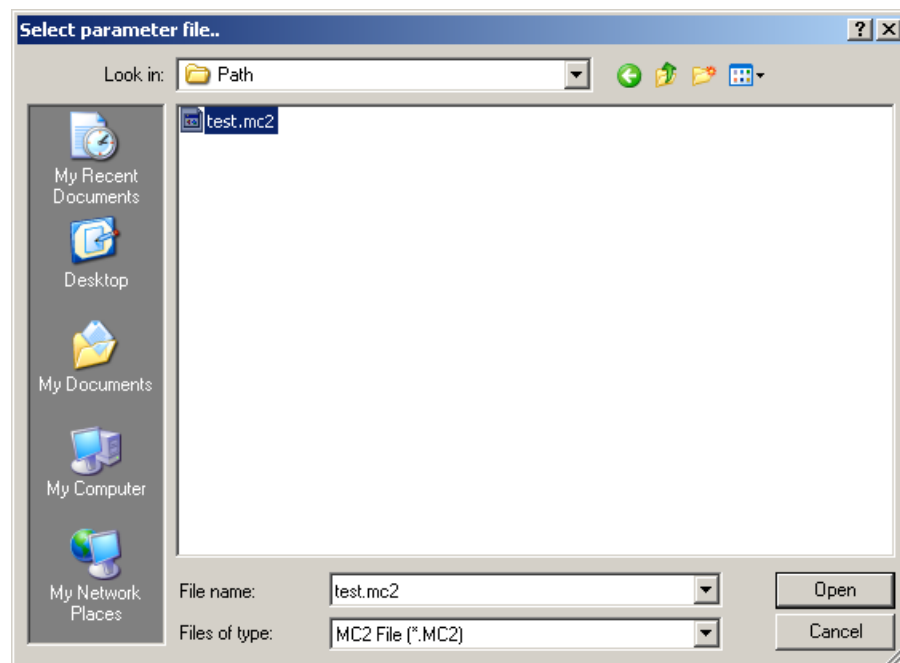


Confirm your selection by pressing the *Open* button.

## 5.1.5  File/Print parameters

Use this menu entry to print a parameter set.

**Note:**  This option is only available in parameter offline view.

Printing is only possible for offline files. To print the parameter set of an actuator perform an upload first and open the file offline. By selecting the menu entry File/Print a standard dialog for choosing the destination printer will be shown:
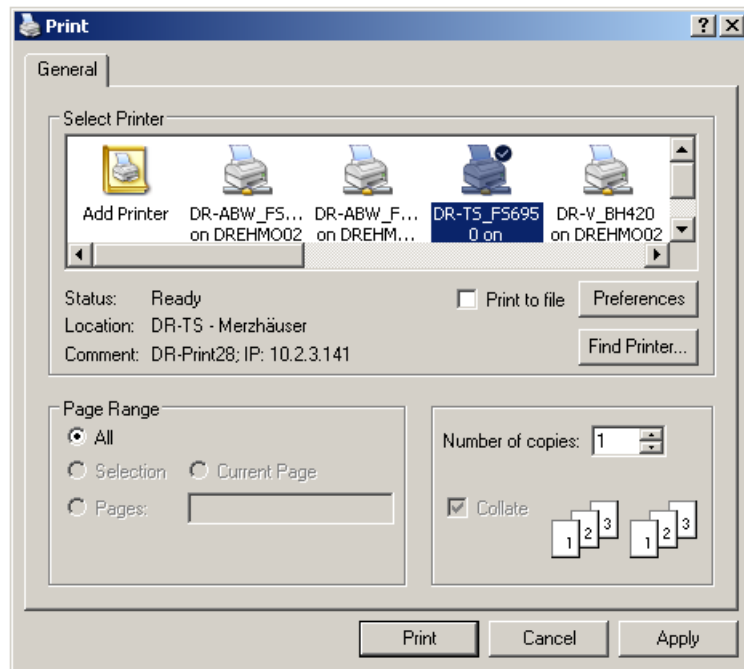


After pressing the *Print* button printing will start.

## 5.1.6  File/Close

Use this menu entry to close the currently opened parameter set.

**Note:**  This option is only available if a parameter set is loaded.

## 5.2 Menu Service

### 5.2.1 Service/Diagnosis (online)

Use this menu entry to show a diagnostic dialog with input parameters, output parameters, combined sensor information, counters and sensors of the connected actuator in different tabs.
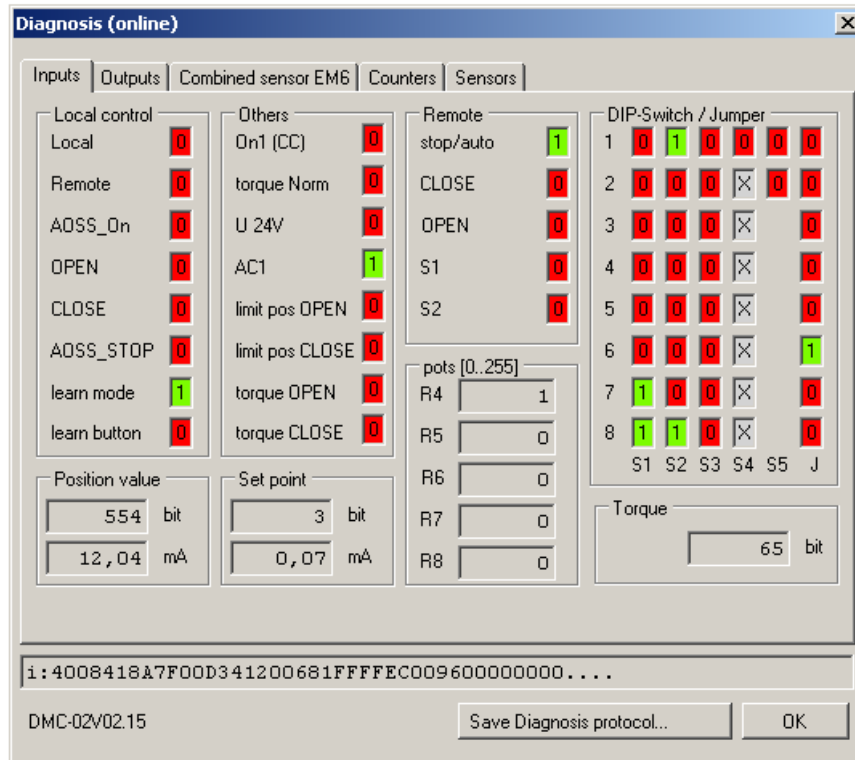


You can close this window by pressing the *OK* button.

Description of the different tabs:

- **Inputs**
  - Lists the input parameters of the DMC-02 board. This includes the local and remote controls, position value / set point, torque, potentiometer, DIP-switches/jumper and other input values.

- **Outputs**
  - Lists the output parameters of the DMC-02 board. This includes messages, intermediate position and position value / set point.
  - For newer firmware releases you will also see here additional information about phase sequence detection (Version 2.17) or startup bridging and output configuration (Version 2.20).

- **Combined Sensor EM6**
  - Lists the parameters of the combined sensor EM6. In addition to general information about the sensor position, torque value, error codes and the tripping torque can be found here.

- **Counter**
  - Here you can query the counters for CPU and combined sensor diagnostics.
  - By pressing the *Reset Counters* button you can reset all counters to their initial state.

- **Sensors**
  - Lists the parameterized final positions, the closing direction and the actual position and torque values of the combined sensor/limit-switch-unit.
  - With the *Start record/Stop record* buttons it is possible to generate a periodical record of the actual values and save it as a **\*.CSV**-file. The polling interval is 100ms by default and can be changed at *Extras/Options*.

**Note:** Partially you can get additional hints by positioning the mouse cursor over the parameter values.

By pressing the button *Save diagnosis protocol* you can save a snapshot of the actual diagnosis values as a **\*.DIAG**-file. In the *manufacturing mode* you will be asked for the device number and the file will be saved at the specified diagnostic path:

In the next step a read out dialog of the combined sensor data is shown:



The thereby generated **\*.EM6** file will also be stored at the specified diagnostic path.

Otherwise (no manufacturing mode) you must choose a file name and a location in a standard dialog box:
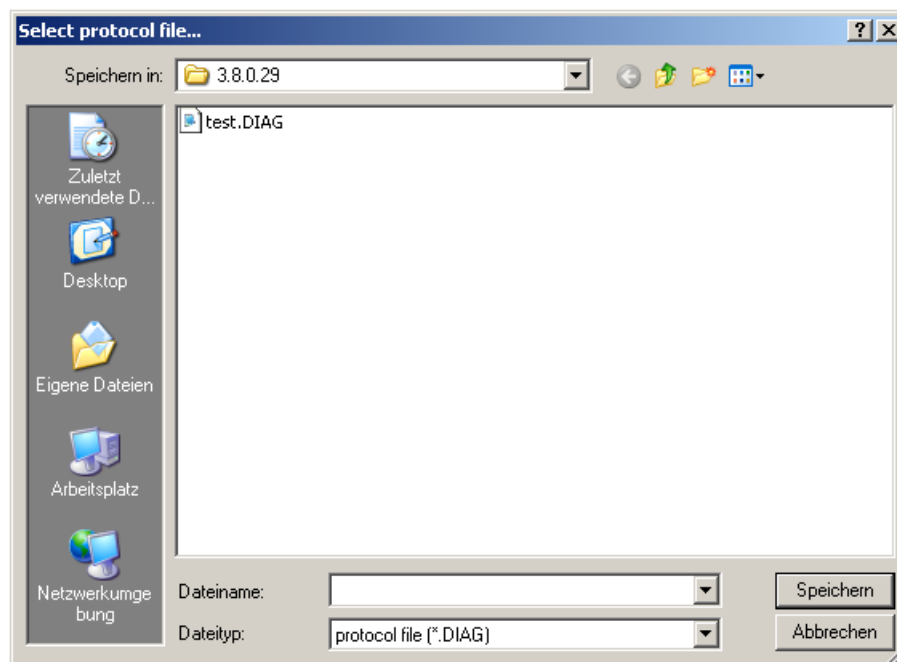


**Note:** For this operation, a physical connection to the actuator is required.
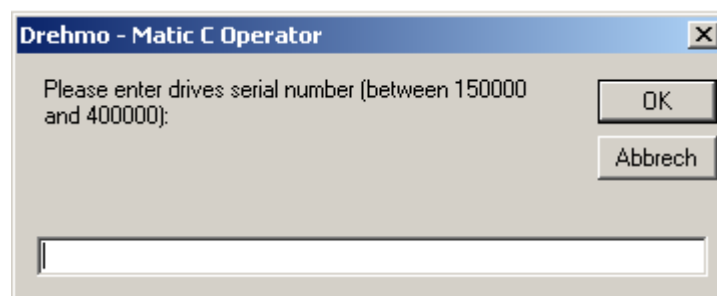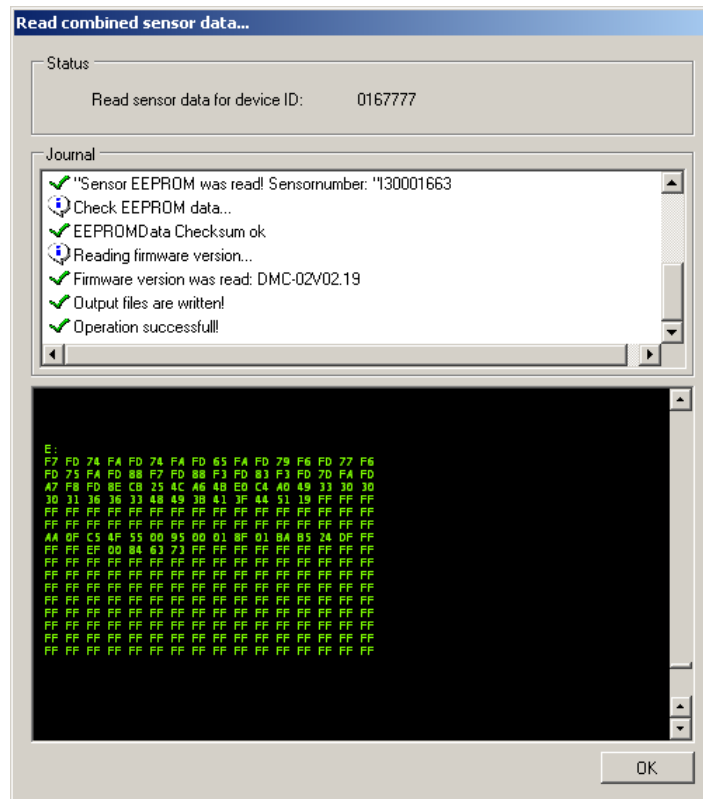
## 5.2.2 Service/Diagnosis (offline)

Use this menu entry to open and view a saved diagnostic protocol file.

The behavior is identical to **5.2.1 Service/Diagnosis (online)** at Page **16**, except the functions Save diagnosis protocol, Reset counters and Start recording / Stop recording, which are disabled in the offline mode.

## 5.2.3 Service/Terminal

Use this menu entry to open the corresponding communication terminal:
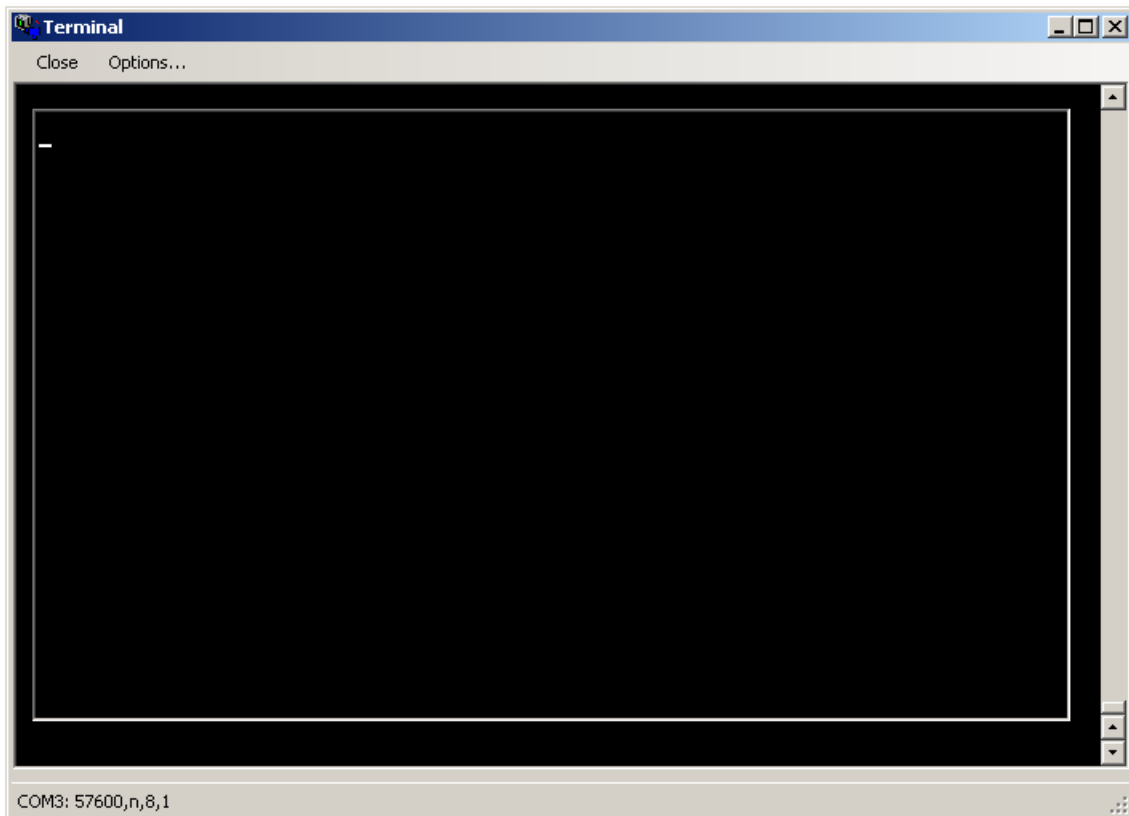


**Attention:** The usage of the terminal is only recommended for experienced users with knowledge about the operator instructions. An improperly usage of the terminal may damage the actuator.

Because of that, this menu entry is invisible by default. Use the setting Advanced service functions to make it visible.

## 5.2.4 Service/Firmware download

Use this menu entry to show the firmware download wizard.

For detailed information about the firmware download please read the instruction manual of the specific interface or component.

**Attention:** The usage of the firmware download is only recommended for experienced users. An improperly usage of the firmware download may damage the actuator.

Because of that, this menu entry is invisible by default. Use the setting Advanced service functions to make it visible.

## 5.2.5 Service/Advanced parameterization

Use this menu entry to show a configuration dialog for the advanced parameterization.



Here you can modify the output and startup bridging configuration

**Attention:** The advanced parameterization is only recommended for experienced users. An improperly parameterization may damage the actuator.

Because of that, this menu entry is invisible by default. Use the setting Advanced service functions to make it visible.

## 5.3 Menu DPV1 parameterization

### 5.3.1 DPV1 parameterization/Parameter download

This menu entry is used for storing a former loaded or edited parameter set (as an **\*.MC2**-file) into the actuator. This function can be used to restore the actuators functionality by downloading backed up parameter sets into the actuator (e.g. in maintenance occurrences).
First choose the source file name and location in a standard dialog box:
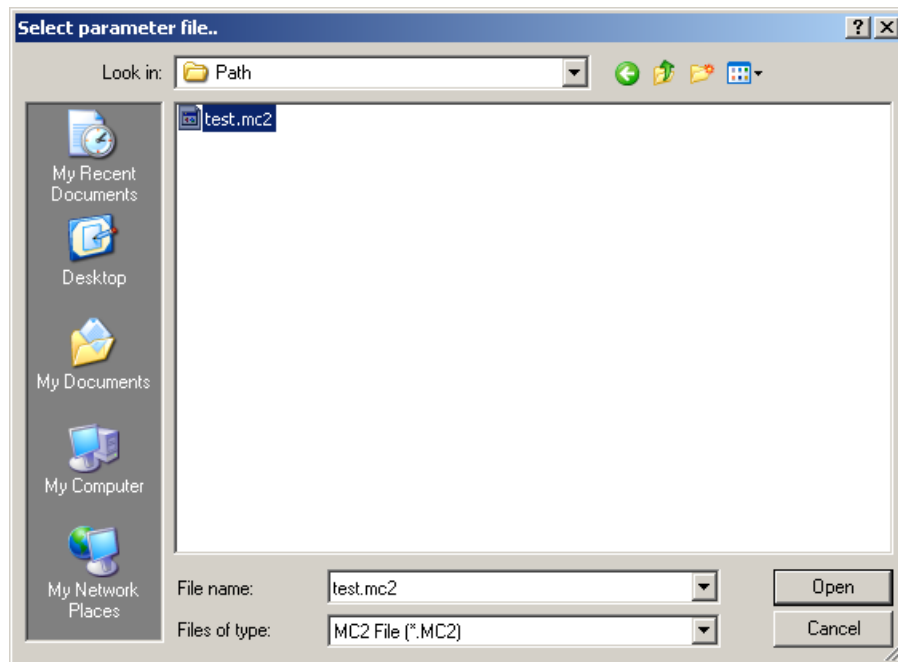


By pressing the *Open* button the connection establishment to the actuator will start and the parameter download will be performed:
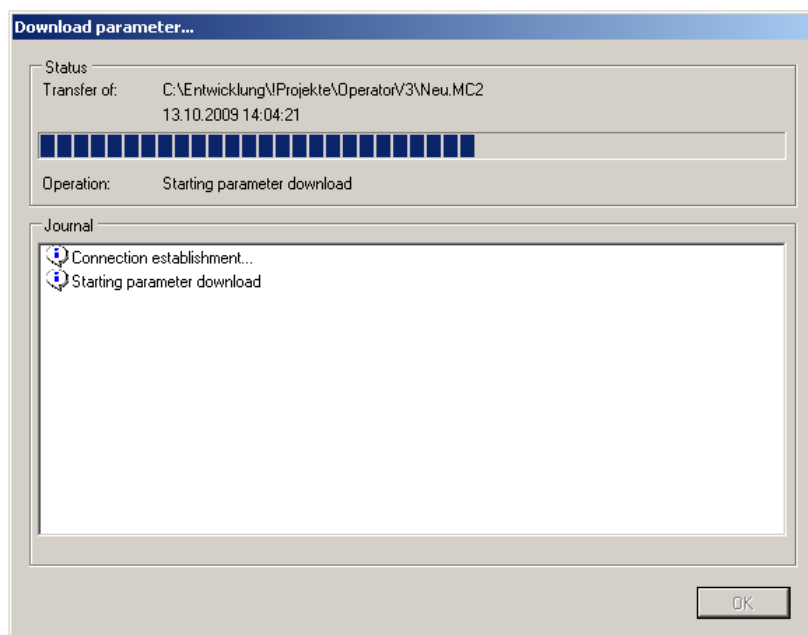


A status bar shows the progress and a protocol list shows occurring errors.

After that operation the window can be closed by pressing the *OK button*.

**Note:** For this operation, a physical connection to the DMC-14 main board of the actuator is required.

## 5.3.2 DPV1 parameterization/Parameter upload

The menu entry *Parameter upload* loads a complete actuator parameter set out of the actuator and stores it into a file. This file can be used to archive parameter sets and reload them in case of maintenance occurrence. Once loaded parameter files can also be edited offline by selecting the menu entry *Actuator/Offline*.

First choose the destination file name and location in a standard dialog box:

By pressing the *Save* button the connection establishment to the actuator will start and the parameter download will be performed:



A status bar shows the progress and a protocol list shows occurring errors.
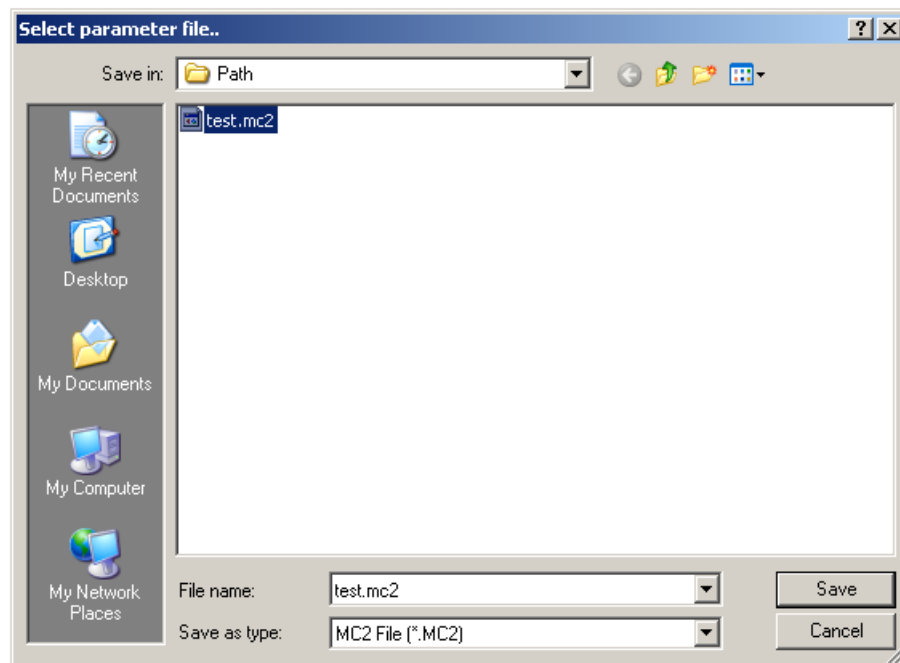After that operation the window can be closed by pressing the *OK button*.

**Note:**  For this operation, a physical connection to the DMC-14 main board of the actuator is required.
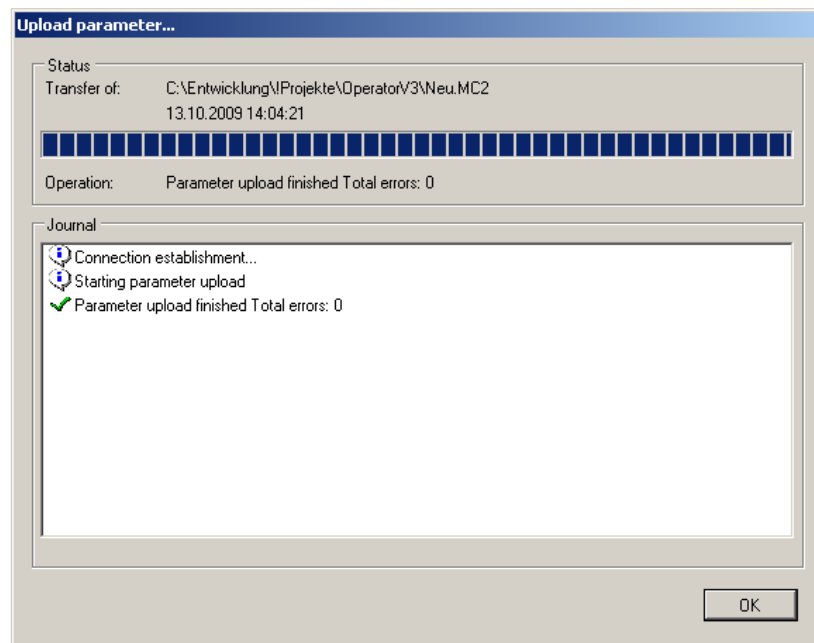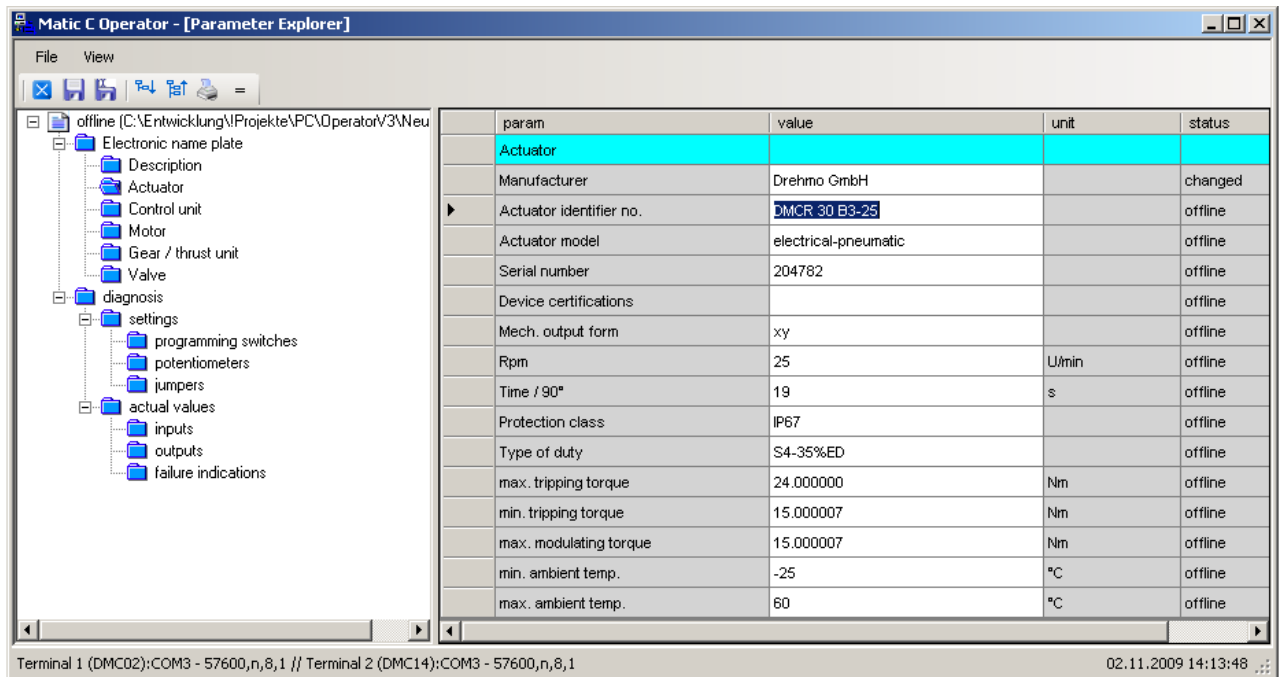
### 5.3.3  DPV1 parameterization/Offline

Use this menu entry to load, display and edit a parameter set from a **\*.MC2**-file.
First choose the source file name and location in a standard dialog box:
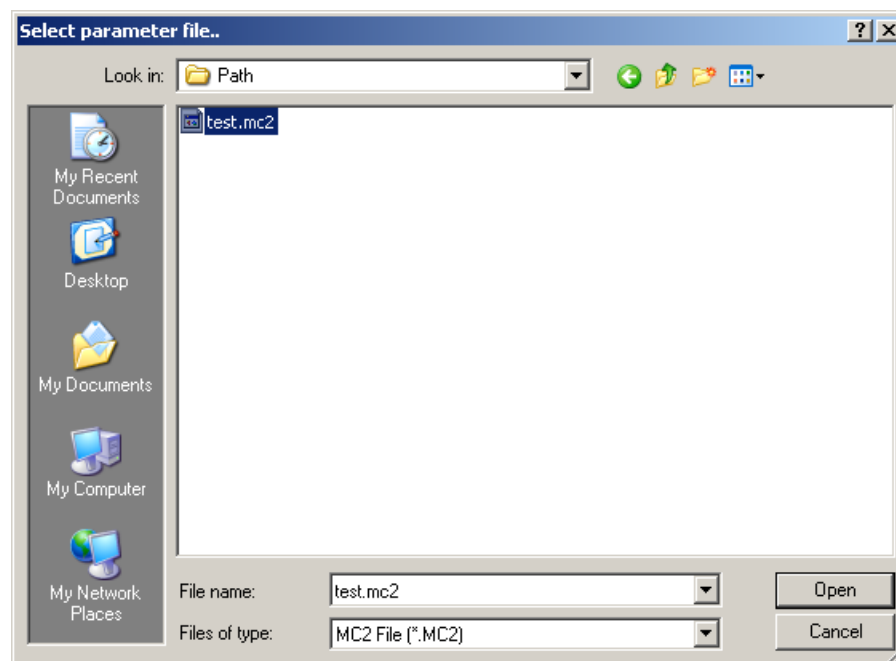
Confirm your selection by pressing the *Open* button. Now the selected parameter set will be shown:



**Note:** Besides the electronic nameplate various diagnosis information – dependent on the selected map in the tree view – are shown. This instruction only describes the handling of the Matic C Operator.

In the left part the menu tree with all parameter groups is displayed. To display the parameters located within a parameter group click on the parameter group entry within the menu tree. The contained parameters will be displayed in the right part of the window. The parameter tree entries can be expanded or collapsed by clicking with the mouse on the '+' and '–' sign in front of the entries.

Changeable parameters will be displayed with a white background. Read only parameters have a gray background.

To modify a parameters value click with the mouse onto the field in which the parameters value is displayed with a white background. Depending on the type of parameter an edit- or a list field will be displayed.

The new value will be updated by pressing the return key. The ESC key leaves the parameter unchanged. If the value has been changed the column state will be updated to *Changed*. The new value is not updated within the device. It must be send to the device by selecting the menu entry *Actuator/Download parameter*.

Before using other menu items of the Matic C Operator the online window has to be closed by selecting the menu item *File/Close*.

### 5.3.4 DPV1 parameterization/Online

Use this menu entry to display and edit the active parameter set of the currently connected actuator.

The usage is identically to **5.3.3 DPV1 parameterization/Offline** on Page **23**.

The functions to save, print and compare are disabled.

**Note:**  For this operation, a physical connection to the DMC-14 main board of the actuator is required.

## 5.4  Menu Manufacturing

**Note:**  This menu entry is only visible if the Matic C Operator is in manufacturing mode.

### 5.4.1 Manufacturing/Clear final positions

Use this menu entry to clear the final positions of the actuator. This afford that the selector is set in learn mode and learn mode is not already active.



**Attention:**  Deletion of the limit positions may affect a dangerous unintended switch-off behavior or an unintended actuator movement.

In case of a closed jumper setting of the MD-Norm jumper located on the local control station board DMC-09, a special torque calibration mode is activated. This mode is only allowed for the manufacturer calibration procedure. The required handling is in detailed described in the manufactures final calibration instruction.

## 5.5  Menu Extras

### 5.5.1  Extras/Automatic communication speed detection

Use this menu entry to auto detect the communication speed of the connected actuator.

In case of a connected DMC-02 (with a firmware release 13 or higher) also the communication speed will be increased.

The communication speed setting can be viewed and changed at Extras/Options. In addition the detection can be set there to fully automatic, so this will be done before every established connection to an actuator.

### 5.5.2  Extras/Options

By selecting the menu entry *Extras/Options* an option dialog will be displayed in which several options can be changed:
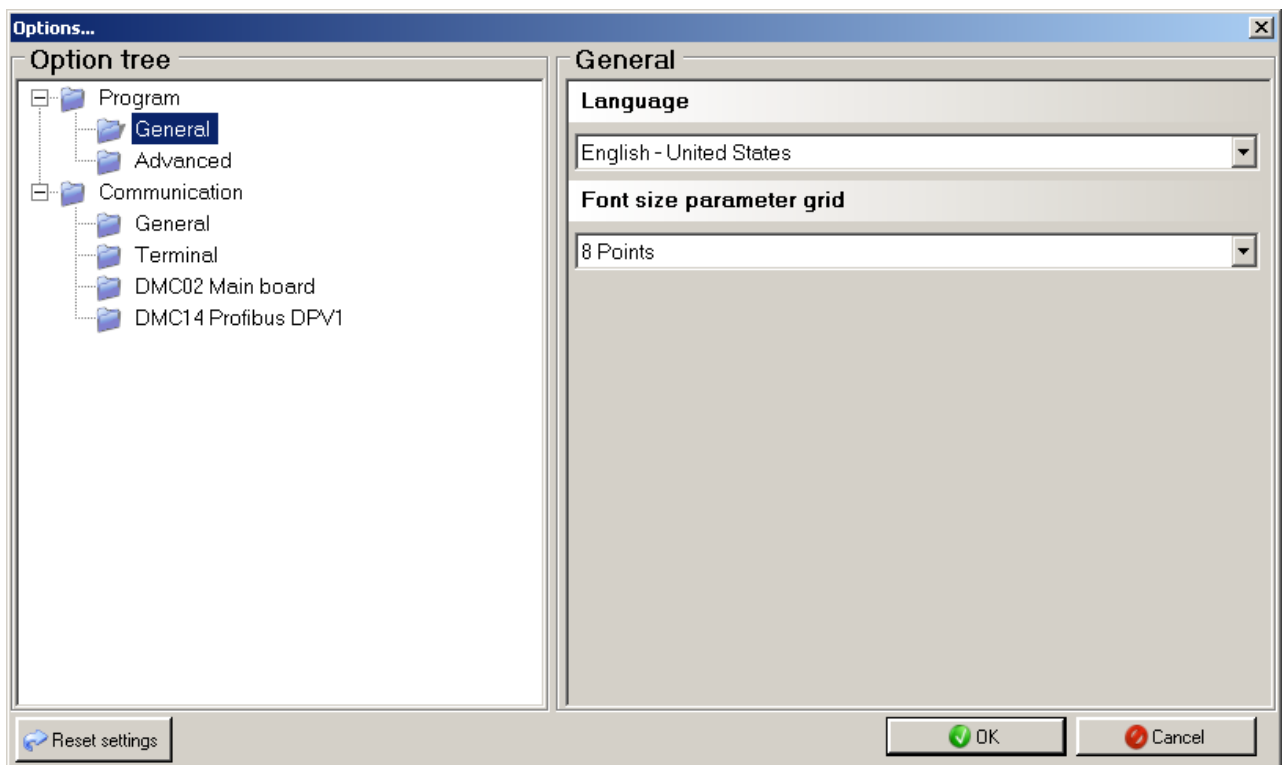
### **Program**

Used for modification of program specific parameters.

### **Program/General**

#### Language

Select the language used by Matic C Operator for the graphical user interface.

**Note:** After the selection of another language the Matic C Operator has to be restarted so that all translations will be applied.

#### Font size parameter grid

Select the font size for the parameter table in the online/offline-display.

### **Program/Advanced**

#### Show advanced service functions

Specifies if the advanced service functions (Terminal, firmware download and advanced parameterization) should be displayed in main menu and toolbar.

**Note:** These functions are only recommended for qualified personnel!

#### Advanced diagnostic protocol

If this option is enabled an additional memory dump is appended to the diagnostic protocol.

**Note:** Depending on this option, the save procedure lasts several times longer.

#### Diagnostic record speed

Specifies the polling interval used by the diagnostic record function.

**Note:** This option only affects the record function and not the display update rate.

#### Combined sensor diagnostic path

Specifies the save path for combined sensor diagnostic data.

**Note:** This parameter is only required for manufacturing mode.

### Old firmware download

Use this option, if the old download function (instead the new wizard) should be used for firmware downloads.

**Note:** This option is only recommended if problems occur while using the new wizard.

## Communication

Modification of the communication specific settings for the computer interface the actuator is connected to.

## Communication/General

### Port

Select the computers com-port which is used for communication with the actuator.

### Timeout

Specifies how much time (in 1/1000 seconds) the program should wait for a response from the actuator.

### Retries

Specifies how many tries the program should have if an error occurs.

### Communication speed detection

Specifies if the communication speed detection must be done manually or will be performed every time before a connection to an actuator will be established.

## Communication/Terminal

### Speed terminal

Select the connection speed which is used for the serial communication with the terminal.

**Note:** The selected connection speed and the device speed must be the same.

## Communication/DMC02 Main board

### Maximum speed

Select the maximal connection speed which is used for the serial communication to the DMC-02 board. The automatic communication speed increase of the DMC-02 (see **5.5.1 Extras/Automatic communication speed detection** on page **26**) will scale up to the maximum amount specified here. (*Default value: 57600*)

**Note:** The selected connection speed and the device speed must be the same.

**Communication/DMC14 Profibus DPV1**

DPV1 parameterization

Specifies if the advanced DPV1 parameterization functions should be visible or not.

DMC14 Firmwareversion

Shows all available XML description file versions including necessary information about the DMC-14 online/offline-display.

Speed

Select the connection speed which is used for the serial communication to the DMC-14 board. *(Default value: 115200)*

**Note:** The selected connection speed and the device speed must be the same.

Oscillator frequency DMC14 (kHz)

Oscillator frequency of the controller target to determine the correct timing values. (*Default value: 14746*)

## 5.6  Menu View

### 5.6.1  View/Toolbar

Toggles the toolbar visibility on/off.

### 5.6.2  View/Statusbar

Toggles the statusbar visibility on/off.

# 6 Glossar

| Expression | Definition |
|---|---|
| *DMC-02* | Matic C main board |
| *DMC-14* | Matic C profibus board |
| *DPV1 parameterization* | Profibus DPV1 parameterization |