

# applications & TOOLS

**ET200S FC**

**SIEMENS**

Application sample for diagnosis and set up of ET200S FC  
via Touchpanel TP170B.

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Description of the “ET200S FC Shell” software package

ET200S FC

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## Introduction

### Objective of the application

This application was generated to provide users with a user-friendly way to operate and visualize the control of an ET200S FC frequency converter using SIMATIC Manager.

A special program example was generated for this purpose.

This application shows how to use this example.

### Core contents of this application

The following core points will be discussed in this application:

- Hardware and software prerequisites to utilize the example
- Installation, integration and adaptation of the program example
- Controlling the ET200S FC from the variable tables of the S7 project

### Definition of the scope

This application does not include a description of the

- STARTER commissioning tools
- SIMATIC STEP 7 engineering tools
- der Projektierungssoftware ProTool/Pro CS

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## 1 Description

These instructions describe the “ET200S FC Shell” software package comprising the following components:

- Step 7 Program example
- 2-language HMI TP170B color configuring (German / English)
- Or optionally, a 2-language HMI TP170B monochrome configuring (German / English).

This program example is based on the partner function block of the FB100 frequency converter (ET200S\_FC\_DRIV) and provides the following features:

- Complete quick commissioning and optimization of one or several ET200S FC drives from a TP170B panel
- Operator interface to operate the ET200S FC drive independently from other parts of your program.
- Diagnostic screen to read-out and acknowledge ET200S FC fault messages.
- Screen to simply write to and read from the MMC parameter memory.

When an ICU24F (safety ICU) is used, it isn't possible to completely commission this via the TP170B screen. The reason for this is that it is not permissible to influence safety parameters using the Step 7 program. The safety parameters still have to be entered using the “Starter” commissioning tool.

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## 2 Prerequisites

### 2.1 Hardware

The following hardware components are required to operate the ET200S FC:

- SIMATIC S7-300 or SIMATIC S7-400 with integrated Profibus-DP interface. Alternatively, you can also use an ET200S IM151-7 CPU.
- ET200S system with IM151 interface module and PM-D power module when using the ICU24 (standard converter) or power module PM-D FX1 or PM-D F Profisafe when using the ICU24 F (fail-safe converter).
- One or several ET200S FC frequency converters comprising an ICU24 or ICU24 F control unit and IPM25 power unit with the appropriate terminal modules.
- TP170 B color panel or TP170B monochrome panel

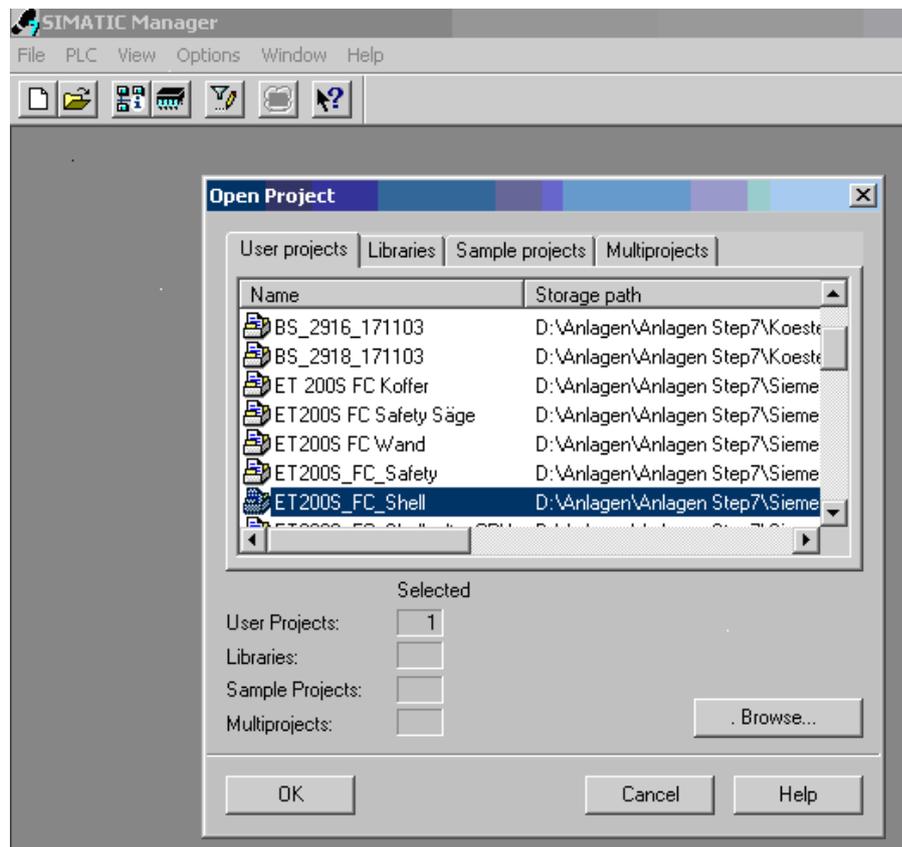
### 2.2 Software prerequisites

- STEP 7 from Version 5.2, Servicepack 1 or higher plus Hardware Support Package (HSP) for the ET200S FC frequency converter. The Hardware Support Package is directly downloaded into STEP 7 from HW Config. There, the correct link is already pre-set.
- Protocol/Pro CS from Version 6.0
- When using the “PM-D F PROFIsafe” power module, it is also necessary to additionally use the “S7 Distributed Safety V5.2” software package.

## 3 Installing the program example

### 3.1 Integrating the program example

- Start the SIMATIC Manager.
- Set-up a new project using SIMATIC Manager.
- Enter a hardware configuration corresponding to the hardware that you are using. For more detailed information, please refer to the ET200S FC Operating Instructions in Chapter *Connection to SIMATIC S7 > Creating the hardware configuration in SIMATIC Manager*.
- De-archive (extract) the **FC\_SHELL** S7 program using **File > Retrieve....**
- In the SIMATIC Manager open the project **ET200S\_FC\_Shell** using **File > Open > User projects**.



- Depending on which one you are using, copy the appropriate HMI panel - the TP170B monochrome or TP170B color configuring – into your project.

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Object name	Symbolic name	Type	Size	Author	Last modified
SIMATIC 300	---	SIMATIC 300 Station	---	---	06.06.2005 08:44:09
TP170B Color	---	SIMATIC OP	---	A&D SD	29.06.2005 11:36:22
TP170B Mono	---	SIMATIC OP	---	A&D SD	29.06.2005 11:21:33
MPI(1)	---	MPI	2984	---	31.05.2005 11:29:21
PROFIBUS(1)	---	PROFIBUS	7620	---	29.06.2005 11:07:26

- From the **Blocks** folder, copy all of the blocks into the **Blocks** folder of your project.

Object name	Symbolic name	Created in language	Size in the work me...	Type	Version
OB1	Main Program Sweep	STL	74	Organization Block	0.1
OB82	I/O Point Fault	STL	38	Organization Block	0.1
OB86	Loss Of Rack Fault	STL	38	Organization Block	0.1
OB100	Complete Restart	STL	42	Organization Block	0.1
FB98	ET200S_FC_ORG	STL	188	Function Block	0.1
FB99	ET200S_FC_SHELL	STL	5490	Function Block	2.9
FB100	ET200S_FC_DRIV	STL	1942	Function Block	2.2
DB1	Axis_DB_ET200S_FC_1	DB	236	Data block derived fr...	0.1
DB2	Axis_DB_ET200S_FC_2	DB	236	Data block derived fr...	0.1
DB98	IDB_ET200S_FC	DB	288	Instance data block ...	0.0
UDT1	Axis_DB_ET200S_FC	STL	---	Data Type	2.8
ET200S FC Drive 1	ET200S FC Drive 1	---	---	Variable Table	0.1
ET200S FC Drive 2	ET200S FC Drive 2	---	---	Variable Table	0.1
SFC14	DPRD_DAT	STL	---	System function	1.0
SFC15	DPWR_DAT	STL	---	System function	1.0

### 3.2 Function of the individual blocks

- OB1 (cyclic program)
  - Calls the FB98.
  - Resets the start-up flag M100.0 in the last network.
- OB100 (start-up program)
  - Sets the start-up flag M100.0.
- FB98 (ET200S\_FC\_ORG)
  - Calls the FB99 for each ET200S FC.
  - After the CPU has restarted, in network 1 the first ET200S FC drive in the project is selected on the HMI screen.
- FB99 (ET200S\_FC\_SHELL)
  - Calls the ET200S FC partner block FB100. All of the functions, that are activated via the TP170B panel, are programmed in this block
- FB100 (ET200S\_FC\_DRIV)
  - ET200S FC partner block.
  - Standard FB to cyclically transfer the process data between the PLC and the ET200S FC
- UDT1 (Axis\_DB\_ET200S\_FC)
  - UDT to generate the Axis\_DBs.

- DB1 (Axis\_DB\_ET200S\_FC\_1)  
Axis\_DB for the first ET200S FC.
- DB2 (Axis\_DB\_ET200S\_FC\_2)  
Axis\_DB for the second ET200S FC.
- DB98 (IDB\_ET200S\_FC)  
Multi-instance DB to call the individual ET200S FC drive
- Variable Table – “ET200S FC Drive 1”  
The most important control and feedback signals of the first ET200S FC drive are listed in this variable table.
- Variable Table – “ET200S FC Drive 2”  
The most important control and feedback signals of the second ET200S FC drive are listed in this variable table.

### 3.3 Adapting the program example to your HW Config

- Open the **HW Config** of your program and read-out the starting address of the configured ICU24. In this example, it is 256 for the first drive and 264 for the second ET200S FC drive.

Slot	Module	Order Number	I Address	Q Address	Comment
1	PM-D DC24V	3BK1 903-0B&00			
2	ICU24	6SL3244-0SA00-1AA0	256...263	256...263	
3	ICU24	6SL3244-0SA00-1AA0	264...271	264...271	
4					

- Open the **FB98** and enter the address of the first ET200S FC drive into network 2 (refer below). Do exactly the same with the second ET200S FC by entering the address in network 3.

```

Network 2 : ET200S FC, 1st Drive
Comment:
//=====
L 256 // <- Moduleaddress (see HW-Config)
T "Axis_DB_ET200S_FC_1".Basic_data.Moduleaddress

U "M 100.0"
= "Axis_DB_ET200S_FC_1".Basic_data.Startup_flag
//=====
CALL #Ansteuerung_ET200S_FC_1
Nr_Axis_DB:=1 // <- Number of Axis-DB, 1st ET200S FC
//=====

Network 3 : ET200S FC, 2nd Drive
Comment:
//=====
L 264 // <- Moduleaddress (see HW-Config)
T "Axis_DB_ET200S_FC_2".Basic_data.Moduleaddress

U "M 100.0"
= "Axis_DB_ET200S_FC_2".Basic_data.Startup_flag
//=====
CALL #Ansteuerung_ET200S_FC_2
Nr_Axis_DB:=2 // <- Number of Axis-DB, 2nd ET200S FC
//=====

```

- For all of the other ET200S FC axes configured in your HW configuration, proceed from network 4 onwards in just the same fashion. Please note that multi-instances are used in this block. This means that a separate data block is not required to call the FB99, but a static variable is used (refer to "STAT", file type "ET200S\_FC\_SHELL"). If you have only configured one ET200S FC axis, then please delete network 3.
- Save the **FB98**.

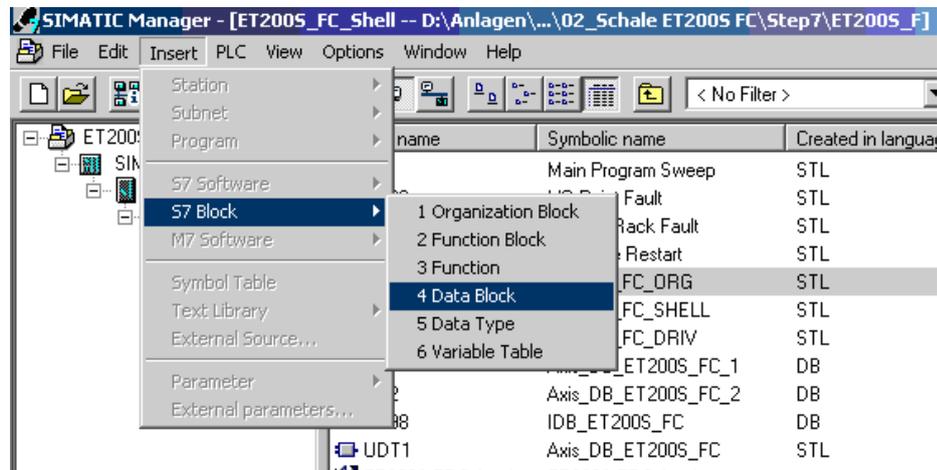
### 3.4 Generating the Axis\_DBs

You require one Axis\_DB for every configured ET200S FC. The complete ET200S FC drive is controlled using this Axis\_DB.

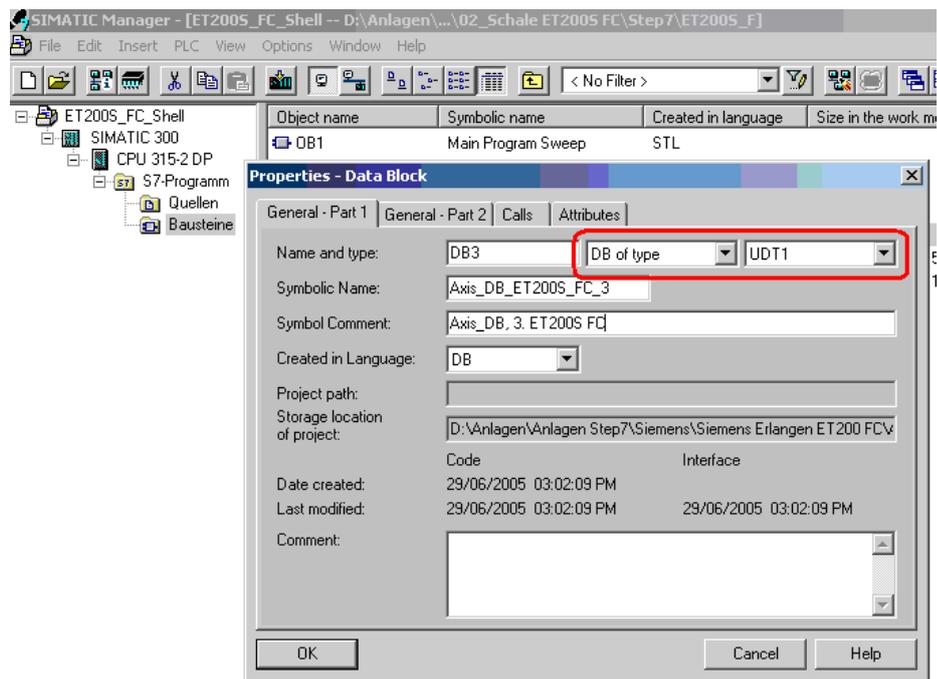
- Insert a data block in the **SIMATIC Manager** using the selected block folder using **Insert > S7 Block > Data Block**.

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- For the type, select **DB of type** and **UDT1**. Then assign a unique **Symbolic Name** and a **Symbol Comment**. You can freely select the data block number. However, in order to keep the program transparent, you should allocate the data block numbers in increasing order, in the same sequence as the ET200S FC drives are configured in your drive system.



- When configuring the additional Axis\_DBs for the ET200S FC drives, proceed in the same way.
- Re-open the **FB98**.

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- For **Nr\_Axis\_DB** enter the number of the Axis\_DB of the first ET200S FC drive into network 2 (refer below).



### Network 2 : ET200S FC, 1st Drive

```

Comment:
=====
L    256                // <- Moduleaddress (see HW-Config)
T    "Axis_DB_ET200S_FC_1".Basic_data.Moduleaddress

U    "M 100.0"
=    "Axis_DB_ET200S_FC_1".Basic_data.Startup_flag
=====
CALL #Ansteuerung_ET200S_FC_1
Nr_Axis_DB:=1           // <- Number of Axis-DB, 1st ET200S FC
=====

```

### Network 3 : ET200S FC, 2nd Drive

```

Comment:
=====
L    264                // <- Moduleaddress (see HW-Config)
T    "Axis_DB_ET200S_FC_2".Basic_data.Moduleaddress

U    "M 100.0"
=    "Axis_DB_ET200S_FC_2".Basic_data.Startup_flag
=====
CALL #Ansteuerung_ET200S_FC_2
Nr_Axis_DB:=2           // <- Number of Axis-DB, 2nd ET200S FC
=====

```

- Proceed in precisely the same fashion for the additional ET200S FC drives from network 3 onwards.
- Save the **FB98** and transfer all of the blocks into your control.

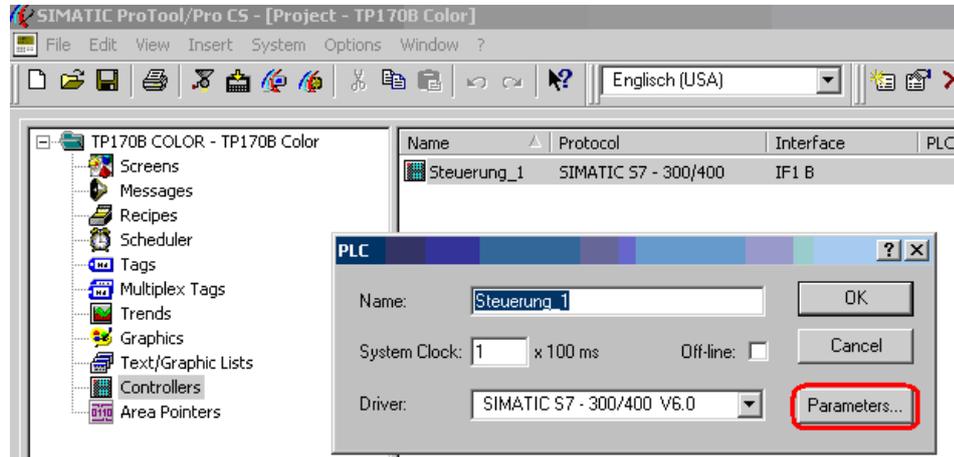
## 3.5 Adapting the HMI configuring

In order to control and visualize the ET200S FC, HMI configurations for a TP170B monochrome and for a TP170B color panel are also supplied with this program example.

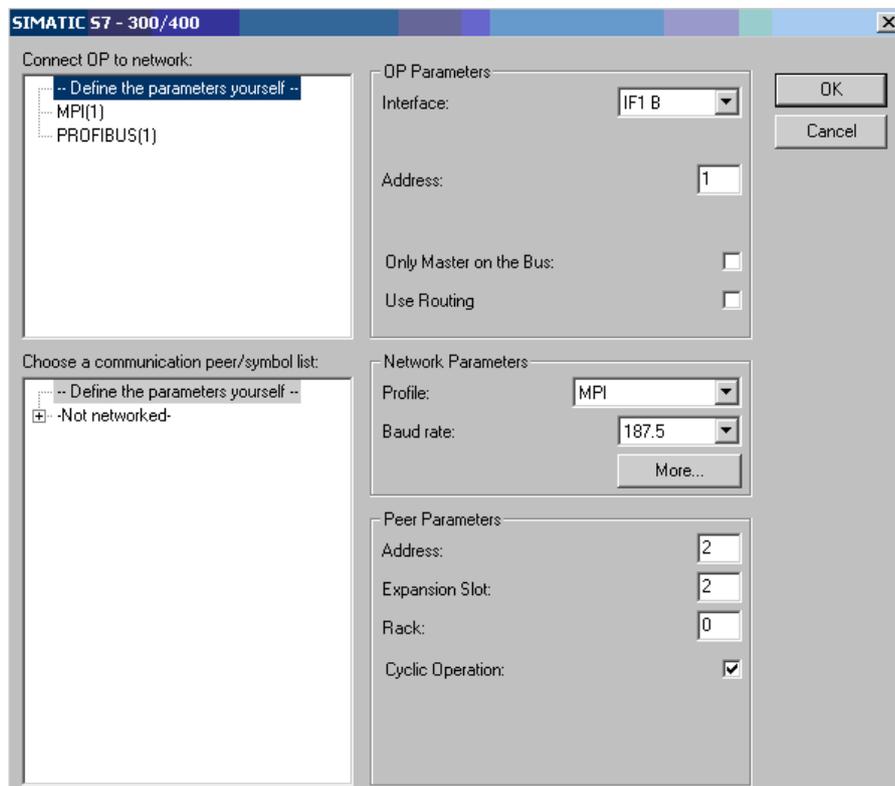
To adapt to your particular system, please proceed as follows.

- Open in the **SIMATIC Manager** the TP170B configuration by double clicking on it.

- Open the properties dialog box of the coupling to the PLC using “Control”, double clicking on **Control\_1** and the **Parameters...** button.



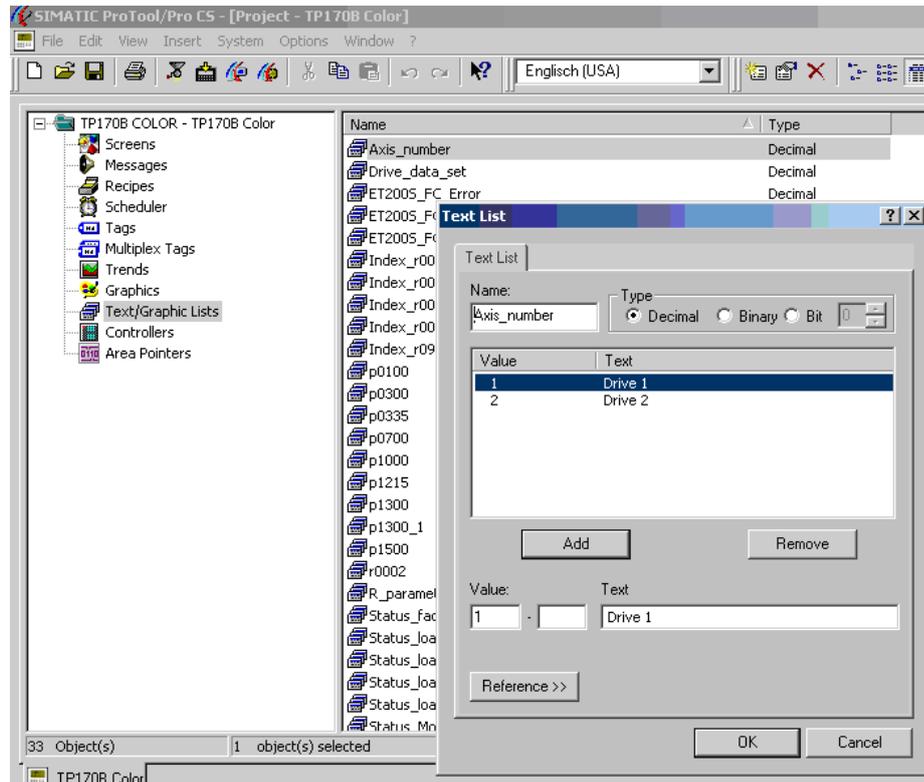
- Now parameterize the connection between the TP170B panel and the PLC corresponding to your configuration. An HMI panel should be connected to the PLC preferably via MPI bus. The communication load between PLC and HMI via Profibus might reduce the Profibus performance.



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- Accept the settings by pressing the **OK** button and then close the properties dialog box of the coupling to the PLC.
- Under **Text/Graphic Lists** select the **Axis\_number** text list.



- Now edit the symbol list corresponding to your system and the Axis\_DB data blocks you are using. This symbol list is subsequently used to select the ET200S FC drive to be operated from the TP170B.
- Example when editing the symbol list:
  - Your system comprises two ET200S FC drives. For the first ET200S FC, you have programmed DB1 as the Axis\_DB and you have programmed DB2 for the second.
  - Remove all entries of the symbol list by repeatedly pressing the **Remove** button.
  - Enter a 1 (DB1) for **Value**, and under **Text**, enter the designation of the first ET200S FC. Then press the **Add** button.
  - Next, enter a 2 (DB2) for **Value** and under **Text** enter the designation of the second ET200S FC. Then press the **Add** button.
  - The symbol list now has two entries – value 1 and value 2 – with the text symbols that you are assigned.

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- For information purposes, it is not absolutely necessary to start in the symbol list with the value 1. It is not necessary to consecutively continue with the symbol list – you can also leave gaps. However please note that you may only specify ET200S FC Axis\_DBs that are also available (programmed) in the PLC.
- Save your configured software (configuration) and download this into your TP170B panel.
  - In the **SIMATIC Manager**, call the **FB98**.
  - In order that when the control restarts, the axis selection of the TP170B panel is at the permissible Axis\_DB, in network 1, replace the 1 in **L 1** by the number of your first programmed Axis\_DBs.

```

LAD/STL/FBD - [FB98 -- "ET200S_FC_ORG" -- ET200S_FC_Shell\SIMATIC 300\CPU 315-2 DP\...\FB98]
File Edit Insert PLC Debug View Options Window Help
Contents Of: 'Environment\Interface'
Interface
  IN
  IN
FB98 : Organisation ET200S FC Drives
The individual ET200S FC drives are called in this block.
=====
In diesem Baustein werden die einzelnen ET200S FC Antriebe aufgerufen.
Network 1: HMI Display, select drive after PLC startup
Comment:
//=====
UN  "M 100.0"           // Startup PLC ?
SPB  k_An              // no -> End
//-----
L   "MB 101"
L   0
<>I                               // Drive selected ?
SPB  k_An              // yes -> End
//-----
L   1                   // no -> select the first drive
T   "MB 101"
k_An: NOP  0
//=====
    
```

- Save the **FB98** and transfer it into the control.

## 4 Controlling the ET200S FC using the Axis\_DB

You can take the control of the ET200S FC using the Axis\_DB from the variable table provided in the program example. The most important control and status signals are listed in this variable table.

### 4.1 Control using the variable table

The most important control and status signals are listed using the variables table supplied.

Address	Symbol	Displa	Status valu	Modify va
1	// Overview of the most important control and status signals # Übersicht der wichtigsten Steuer- und Statussignale			
2	//=====			
3	// Enable TP170B Surface # Freigabesignal für die TP170B Oberfläche			
4	DB1.DBX 2.1 "Axis_DB_ET200S_FC_1".Basic_data.Enable_HMI_surface	BOOL		
5	//=====			
6	// Control signals # Steuersignale			
7	DB1.DBX 7.0 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.ON_OFF1	BOOL		
8	DB1.DBX 7.1 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.OFF2	BOOL		true
9	DB1.DBX 7.2 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.OFF3	BOOL		true
10	DB1.DBX 7.3 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.Pulse_enable	BOOL		true
11	DB1.DBX 7.4 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.RFG_enable	BOOL		true
12	DB1.DBX 7.5 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.RFG_start	BOOL		true
13	DB1.DBX 7.6 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.Setpoint_enable	BOOL		true
14	DB1.DBX 7.7 "Axis_DB_ET200S_FC_1".Control_signals.Control_word.Fault_acknowledge	BOOL		
15	// Frequency setpoint (-100,0 till +100,0%) # Frequenzsollwert (Vorgabe in -100,0 bis +100,0%)			
16	DB1.DBW 8 "Axis_DB_ET200S_FC_1".Control_signals.Frequency_set	DEC		500
17	//=====			
18	// Status signals # Statussignale			
19	DB1.DBX 13.0 "Axis_DB_ET200S_FC_1".Status_signals.Status_word.Drive_ready	BOOL		
20	DB1.DBX 13.2 "Axis_DB_ET200S_FC_1".Status_signals.Status_word.Drive_running	BOOL		
21	DB1.DBX 13.3 "Axis_DB_ET200S_FC_1".Status_signals.Status_word.Drive_fault_active	BOOL		
22	// Actual frequency (-100,0 till +100,0%) # Frequenztwert (Anzeige in -100,0 bis +100,0%)			
23	DB1.DBW 14 "Axis_DB_ET200S_FC_1".Status_signals.Actual_frequency	DEC		
24	//=====			
25	// Faults # Fehlermeldungen			
26	DB1.DBW 18 "Axis_DB_ET200S_FC_1".Faults.ET200S_FC_error_number	DEC		
27	DB1.DBW 20 "Axis_DB_ET200S_FC_1".Faults.Comm_error_read	DEC		
28	DB1.DBW 22 "Axis_DB_ET200S_FC_1".Faults.Comm_error_write	DEC		
29	DB1.DBB 24 "Axis_DB_ET200S_FC_1".Faults.Parameter_error_number	DEC		
30				
31				

#### Upper section (enable signal for the TP170B screen)

In order to control the ET200S FC drive from the TP170B screen, you must enable the screen using bit 2.1 in the Axis\_DB. After the screen has been enabled, then the drive can only be operated from the TP170B screen.

- DBX 2.1 (Enable\_HMI\_surface)
  - Signal 0, the ET200S FC is controlled via the PLC
  - Signal 1, the ET200S FC is controlled via the TP170B

## Center section (control signals)

The most important control signals to the ET200S FC drive are listed in this area. Please refer to the description of the Axis\_DB for all additional signals.

- DBX 7.1 to 7.6
  - Signal 1 for all control bits switches the drive into the "Drive ready" state (feedback signal via bit 13.0)
  
- DBX 7.0 (ON\_OFF1)
  - Signal 0 stops the drive
  - Signal 1 starts the drive
  
- DBX 7.7 (Fault\_acknowledge)
  - A signal edge change from 0 to 1 acknowledges drive faults that may be present
  
- DBW 8 (Frequency\_set)
  - Enters the frequency setpoint in the range from -100.0 to +100.0% (this input refers to the reference frequency entered in parameter p2000).

## Lower section (status signals)

The most important status signals to the ET200S FC drive are listed in this area. Please refer to the description of the Axis\_DB for all additional signals.

- DBX 13.0 (Drive\_ready)
  - Signal 0 = Control bits DBX 7.1 to 7.6 missing
  - Signal 1 = drive ready to be powered-up
  
- DBX 13.2 (Drive\_running)
  - Signal 0 = control bit DBX 7.0 is missing
  - Signal 1 = drive running
  
- DBX 13.3 (Fault active)
  - Signal 0 = no drive fault
  - Signal 1 = drive faulted
  
- DBW 14 (Actual\_frequency)
  - Displays the actual frequency in the range from -100.0 to +100.0% (the display refers to the reference frequency entered in parameter p2000).

**Lowest section (fault messages)**

These fault messages are also displayed on the TP170B operator screen.

- DBW 18 (Drive faults)
  - $\langle \rangle 0$  = there is a drive fault, refer to ET200S FC List Manual, Chapter *Faults and alarms*
- DBW 20 (Communications error when reading)
  - $\langle \rangle 0$  = there is a communications error when reading, refer to the ET200S FC Operating Instructions, Chapter *Connection to SIMATIC S7 > Error messages via the user program*.
- DBW 22 (Communications error when writing)
  - $\langle \rangle 0$  = there is a communications error when writing, refer to ET200S FC Operating Instructions, Chapter *Connection to SIMATIC S7 > Error messages via the user program*.
- DBB 24 (Parameter error r)
  - $\langle \rangle 0$  = there is a parameter error, refer to ET200S FC Operating Instructions, *Connection to SIMATIC S7 > Error messages via the user program*.
  - **Please note that you must subtract the value 1 from the displayed number so that the number corresponds to the table in the Manual.**

## 4.2 Control using the Axis\_DB

The Axis\_DB is sub-divided into 6 function blocks.

- 1<sup>st</sup> "Basic\_data" block.
  - The address of the ET200S FC, the start-up flag and the enable signal for the operator interface are entered into the block (refer to Chapter 4.2 *Adapting the program example to your HW Config* and 4.3 *Generating the Axis\_DB*).
- 2<sup>nd</sup> "Control\_signals" block.
  - Here, the control signals and the frequency setpoint are made available for the ET200S FC drive (refer to Chapter 5.1 *Control via the variable table*).
- 3<sup>rd</sup> "Status\_signals" block (these can only be accessed, reading).
  - Here, the status signals and the frequency actual value from the ET200S FC drive are made available (refer to Chapter 5.1 *Control via the variable table*).

- 4<sup>th</sup> "Faults" block (these can only be accessed, reading).
  - Active fault messages are output in this block. The fault messages are displayed on the operator interface (screen).
  - In addition, you are provided with a group fault signal (DBX16.3). This signal is activated if a drive fault, a communications error or a parameter error is signaled from the ET200S FC.
  
- 5<sup>th</sup> "HMI" block (these can only be accessed, reading).
  - This block is used for internal communications to the TP170B panel. All write access operations to this block must be made from FB99.
  
- 6<sup>th</sup> "Parameter" block (these can only be accessed, reading).
  - This block is used for internal communications when reading and writing parameters. All write access operations to this block must be made from FB99.

For additional information about the Axis\_DB, please refer to the appropriate documentation.

## 5 Description of the HMI operator screen

The operator screen for the ET200S FC is sub-divided into three function groups; you can select these from the basic screen.

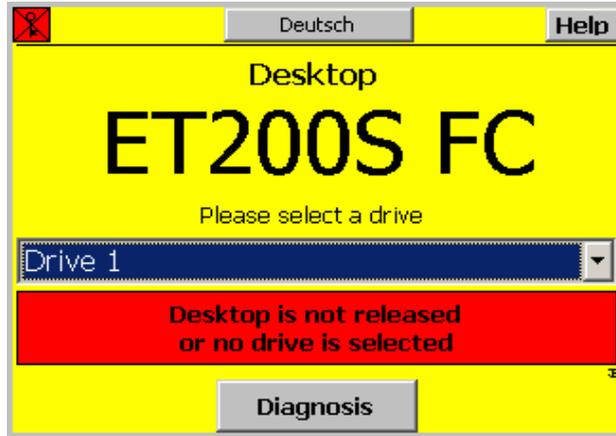
In order to protect against operator errors while the plant is operational, the screen is inhibited by bit DBX2.1 (Enable\_HMI\_surface). You only have full access to the operator screens if this bit has a 1 signal. When this bit has a 1 signal, then the drive can only be operated from the operator screen.

### 5.1 General information about the operator screen:

- A key indicator, located at the top left corner of all screens shows you the status of the enable signal of the operator interface (DBX2.1, Enable\_HMI\_surface in the Axis\_DB).
  - A red indicator, operator screen is not enabled. The drive can be operated via the PLC. All of the functions – with the exception of the diagnostics screen – are inhibited.
- A green indicator, operator screen released. The drive can be parameterized and operated from the operator screen. Control The currently selected drive is displayed in the upper area of the screens (exception, initial screen).
- You have a **Help** button at the upper right hand corner of most of the screens. You can use this button to call-up information about the active screen.
- In order to provide a better overview, the input fields are white, and the output fields are dark gray.
- You have help texts available for various input and output fields. These can be activated by clicking on the fields.
- Most of the screens have a **Diagnosis** button. If the drive has a fault, communications error or a parameter error, then this button starts to flash. The diagnostics screen is selected when the button is pressed. The actual fault is displayed in this diagnostics screen, and you are told where you can acknowledge the fault.

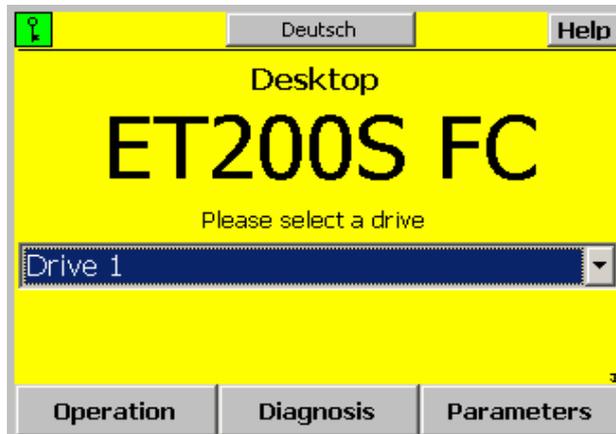
## 5.2 Initial screen

The following initial screen is displayed after selecting the ET200S FC operator screen.



The red key indicator at the upper lefthand corner and the text **Desktop is not released or no drive is selected** indicates that the DBX2.1 bit in the Axis\_DB has the signal 0. After this signal has been set and a drive selected, the individual functions of the operator screen are displayed.

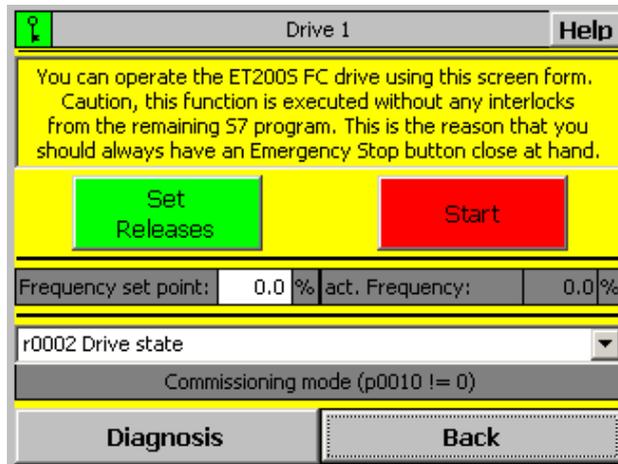
You can changeover the screen language to German using the **Deutsch** button.



The individual functions of the operator screen are called-up by pressing the following buttons – **Operation**, **Diagnosis** or **Parameters**.

### 5.3 Operator Control

This screen is displayed after pressing the **Operation** button.



Using this screen, you can operate the drive selected in the initial screen.

It is important that you note that this control is independent of any interlocks (permissive signals) implemented in your program. This is the reason that you must always ensure that an Emergency Stop button is always located close to you. In an emergency, you can press this button to stop the drive.

To operate the drive, proceed as follows.

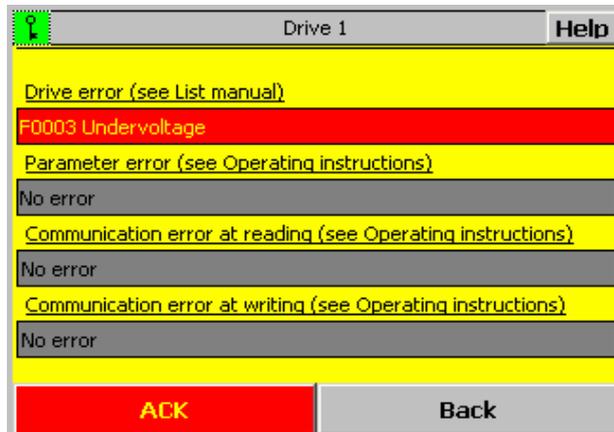
- For **Frequency set point** enter a value between  $-100.0$  and  $+100.0\%$ .
- Now press the **Set Releases** button. The text **Cancel Releases** then is displayed as feedback signals.
- Then press the **Start** button. The drive moves as long as you press the button.

In the lower area, you can select selected monitoring parameters using a pull down menu. These parameters are automatically read when calling the screen.

You can exit the screen by pressing the **Back** button.

## 5.4 Diagnosis

This screen is displayed after pressing the **Diagnosis** button.



Possible fault messages associated with the ET200S FC drive are displayed here.

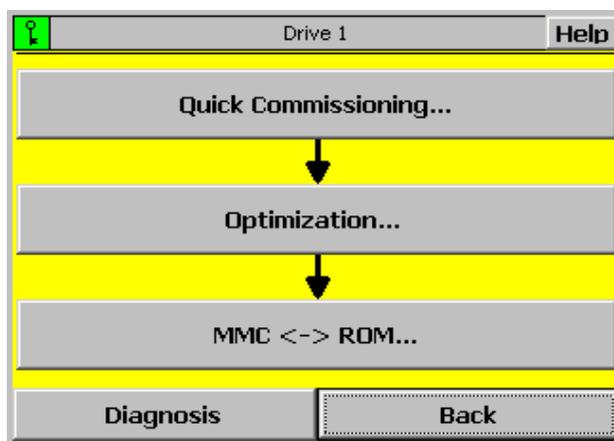
For more detailed information regarding the fault messages, please refer to the drive faults of the ET200S FC List Manual, Chapter *Faults and alarms*. For parameter and communication errors, please refer to the ET200S FC Operating Instructions, Chapter *Connection to SIMATIC S7 > Error messages via the user program*.

You can acknowledge possibly queued fault messages using the **ACK** button.

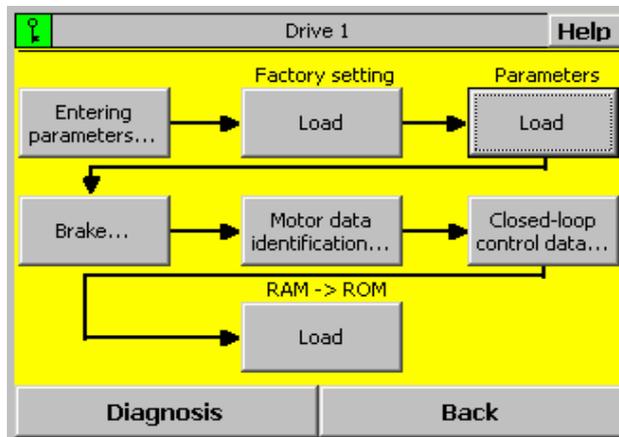
You can exit the screen by pressing the **Back** button.

## 5.5 Parameters, quick commissioning

This screen is displayed after pressing the **Parameter** button in the initial screen.



You can carry-out a quick commissioning for the drive, selected in the initial screen, by pressing the **Quick commissioning...** button.



The individual steps for the quick commissioning are listed in the quick commissioning screen. Please execute all of the steps in the specified sequence. The function of the individual buttons will now be explained.

### 5.5.1 “Entering parameter” button

The parameter values saved in the CPU are displayed after pressing the **Entering parameters...** button.

Drive 1		Help
Drive data set	1. Drive data set	▼
p0100 (Europe / North America)	Europe [kW], 50Hz	▼
p0300 (Motor type)	Asynchronous Motor	▼
p0304 (Rated motor voltage)	400	V
p0305 (Rated motor current)	1.90	A
p0307 (Rated motor power)	0.80	kW
p0308 (Rated motor cosPhi)	0.810	cos
p0310 (Rated motor frequency)	50	Hz
p0311 (Rated motor speed)	1395	U/min
p0335 (Motor cooling)	Self cooled	▼
<b>Read</b>		<b>Page 2</b>
		<b>Back</b>

In this screen, you can modify the parameters in the CPU. After the **Read** button has been pressed, the parameters are read-out of the selected ET200S FC and saved in the CPU. In this case, the old parameter values in the CPU are overwritten.

For more detailed information about the parameters, please refer to the ET200S FC List Manual, Chapter *Parameter description*.

The remaining parameters required for the quick commissioning are displayed after pressing the **Page 2** button.

Drive 1		Help
p0640 (Motor overload factor)	150	%
p0700 (Command source)	Fieldbus	▼
p1000 (Frequency setpoint)	Fieldbus	▼
p1080 (Min. frequency)	0.00	Hz
p1082 (Max. frequency)	50.00	Hz
p1120 (Ramp-up time)	2.00	s
p1121 (Ramp-down time)	2.00	s
p1135 (OFF3 ramp-down time)	1.00	s
p1300 (Control mode)	V/C (without sensor)	▼
p1500 (Torque setpoint)	No main setpoint	▼
<b>Read</b>		Page 1
		<b>Back</b>

After you have entered all of the parameters corresponding to the motor data and your particular application, then you can re-exit the screen using the **Back** button.

### 5.5.2 “Factory setting load” button

All of the parameters in the ET200S FC are reset to the factory setting after pressing the **Factory setting load** button.

### 5.5.3 “Parameters load” button

The parameters previously modified using “Entering parameters...” are transferred from the CPU into the ET200S FC after pressing the **Parameters load** button.

### 5.5.4 “Brake” button

Drive 1		Help
p1215 (Motor holding brake)	Brake disabled	▼
p1216 (Release delay)	0.0	s
p1217 (Time after ramp-down)	0.0	s
<b>Read</b>		<b>Write</b>
Diagnosis		<b>Back</b>

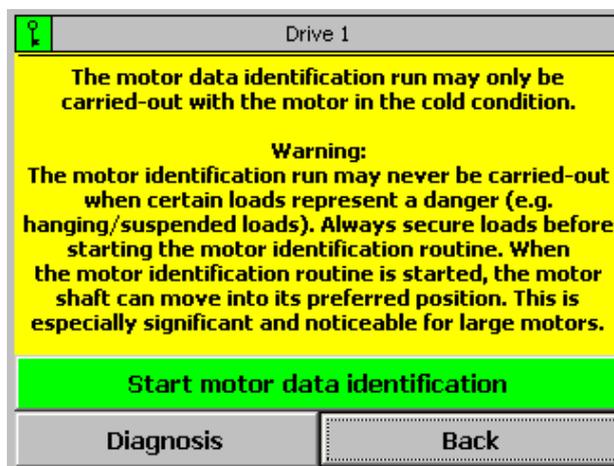
In this screen, you can activate and parameterize that the ET200S FC controls a motor holding brake. For this particular function, you require a brake control module. This module must be inserted to the right of the ET200S FC IPM25 power unit.

Initially, all of the parameter values, saved in the CPU, are displayed. Using the **Read** button, the appropriate parameters are read-out of the ET200S FC and saved in the CPU.

Using the **Write** button, you can transfer the displayed parameter values of the motor holding brake from the CPU to the ET200S FC.

You can exit this screen by pressing the **Back** button.

### 5.5.5 “Motor data identification” button



Before starting the motor identification routine, it is especially important that you carefully read and understand the text displayed in this screen.

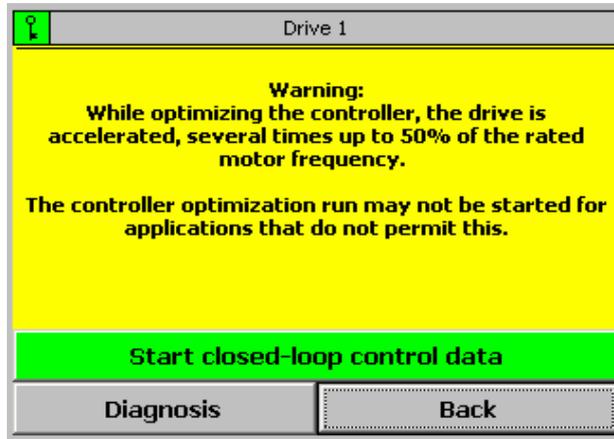
When the **Start motor data identification** button is pressed, then the motor parameters are automatically calculated in two stages. The equivalent circuit diagram data (p1910 = 1) is calculated in the first stage. In a second stage, the magnetizing characteristic (p1910 = 3) is calculated.

**Motor data identification active** indicates that the motor data identification routine is running. The display only changes back to **Start motor data identification** after the motor data identification routine has been completed.

The **Back** button to exit the mask is inhibited when the motor data identification routine is running.

### 5.5.6 “Closed-loop control data” button

This screen can only be selected if you activated, as control type *VC without encoder* or *VC with encoder* for **Entering parameters....**



Before starting the speed controller optimization runtime it is especially important that you carefully read and understand the text displayed in this screen.

An automatic speed controller optimization routine (p1960 = 1) is started by pressing the **Start closed-loop control data** button.

**closed-loop control data active** indicates that the speed controller optimization routine is running. The display only changes back to **Start closed-loop control data** after the optimization routine has been completed.

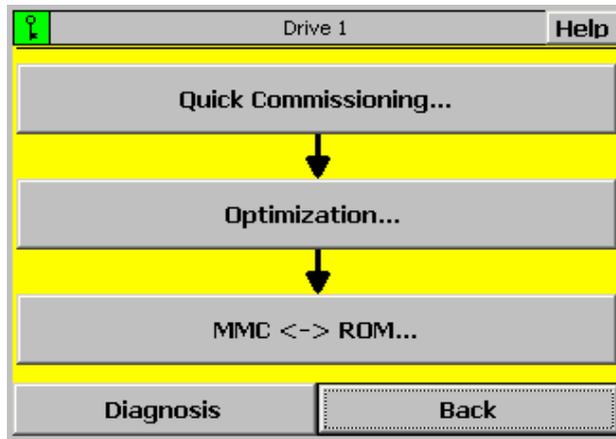
The **Back** button to exit the mask is inhibited when the motor data identification routine is running.

### 5.5.7 “RAM -> ROM Load” button

To complete the quick commissioning, please press the **RAM -> ROM Load** button so that the parameters in the ET200S FC are saved in a non-volatile fashion. This procedure takes approx. 1 min.

## 5.6 Parameters, optimization

This screen is displayed after pressing the **Parameters** button in the initial screen.

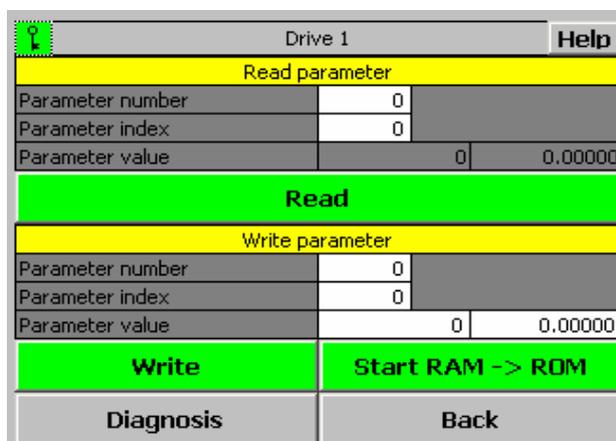


You can individually read and write parameters by pressing the **Optimization...** button.

### Caution!

Only the quick commissioning parameters are saved in the CPU. The parameters that you change using the **Optimization...** screen are, in this application example, only saved in the frequency converter and when a device is replaced, have to be manually aligned or via an MMC.

## 5.7 Reading individual parameters



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## Description of the "ET200S FC Shell" software package

ET200S FC

In the upper area, you can read parameter values from the ET200S FC.

When the **Read** button is pressed, the parameters, selected using **Parameter number** and **Parameter index** are read and displayed for **Parameter value**.

The parameter values are saved in various numerical formats (REAL or INT) in the ET200S FC depending on the particular parameter. This is the reason that there are two output fields for the parameter value (left = INT / right = REAL). More detailed information is provided in the parameter description in the ET200S FC List Manual.

### Writing to individual parameters

In the lower area, you can change parameter values in the ET200S FC. However, safety parameters cannot be changed. These can only be changed using the *Starter* commissioning tool via the serial interface of the ET200S FC.

When the **Write** button is pressed, the parameters, selected using **Parameter number** and **Parameter index** are overwritten with the value specified under **Parameter value**.

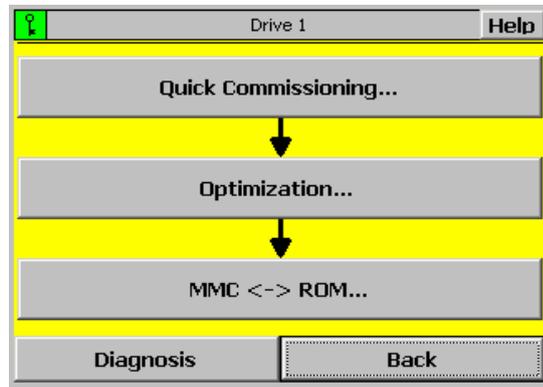
The parameter values are saved in various numerical formats (REAL or INT) in the ET200S FC depending on the particular parameter. This is the reason that there are two output fields for the parameter value (left = INT / right = REAL). More detailed information is provided in the parameter description in the ET200S FC List Manual.

In order to permanently save the changes made to the parameters please press the **Start RAM -> ROM** button. This procedure takes approx. 1 min.

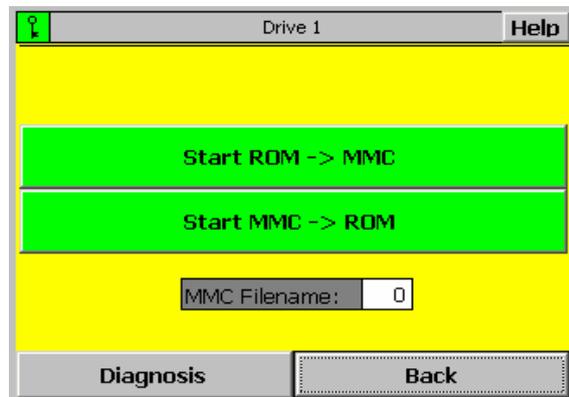
You can exit the screen by pressing the **Back** button.

## 5.8 Parameters, MMC <-> ROM

This screen is displayed after pressing the **Parameter** button in the initial screen.



When you press the **MMC <-> ROM...** button, you can overwrite the MMC inserted in the ICU24 with the ET200S FC data or you can transfer the data in an MMC into the ET200S FC.



When you press the **Start ROM -> MMC** button, data in the ET200S FC with the number specified under **MMC Filename** is saved in the MMC. Subsequently, the function **Start MMC -> ROM** is started automatically for data verification.

When you press the **Start MMC -> ROM** button, data in the MMC with the number specified under **MMC Filename** is saved in the ROM memory of the ET200S FC. After this download the control unit ICU24/ICU24F needs a power cycle for initialization of its internal data.

You can exit the screen by pressing the **Back** button.

## 6 Appendix

### 6.1 Internet link data

This list is in no way complete and only reflects a selection of suitable references.

Table 6-1

	Subject area	Title
\1\		<a href="#">Siemens A&amp;D Customer Support</a>
\2\	Application note	<a href="#">Application sample for diagnosis and set up of ET200S FC using the function block FB100</a>

### 6.2 History

Table 6-2 History

Version	Date	Change
V1.0	February 2005	First edition
V1.1	January 2006	Document reviewed
V1.2	February 2006	HTML-page added, document reviewed
V1.3	August 2006	Document reviewed
V1.4	October 2006	Program added
V1.42	Januar 2010	Design up date