

SIMOTION

Frequently asked Questions

Application example for the consistent creation of test and diagnostics pages in HTML on the basis of an I/O table

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IO2HTML

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e.g.:

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Reference regarding export codes

AL: N

ECCN: N

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IO2HTML

1 Goal

The present document describes the possibility of how to create consistently test and diagnostics pages in HTML for Simotion, based on a csv file with inputs/outputs that, for instance, has been created by means of EPlan.

The scope of supply includes a script (ImportIOsForHTML.txt) for Simotion Scout that, according to the I/O list in the csv file, creates adequate variables in Simotion and generates an HTML page for giving access to these I/O variables. As the process from the csv file to the HTML page is running automatically, this tool is also suitable for service technicians and start-up engineers without knowledge in programming, who want to check the I/O assignment of a machine.

A download to the SIMOTION device only makes sense by using an Ethernet coupling between SCOUT and device!

This application has been created by means of Simotion V4.1. The HTML page requires a screen resolution of at least 800x600. The application was tested with

- Windows XP SP2 with Internet Explorer 6.0 Sp2

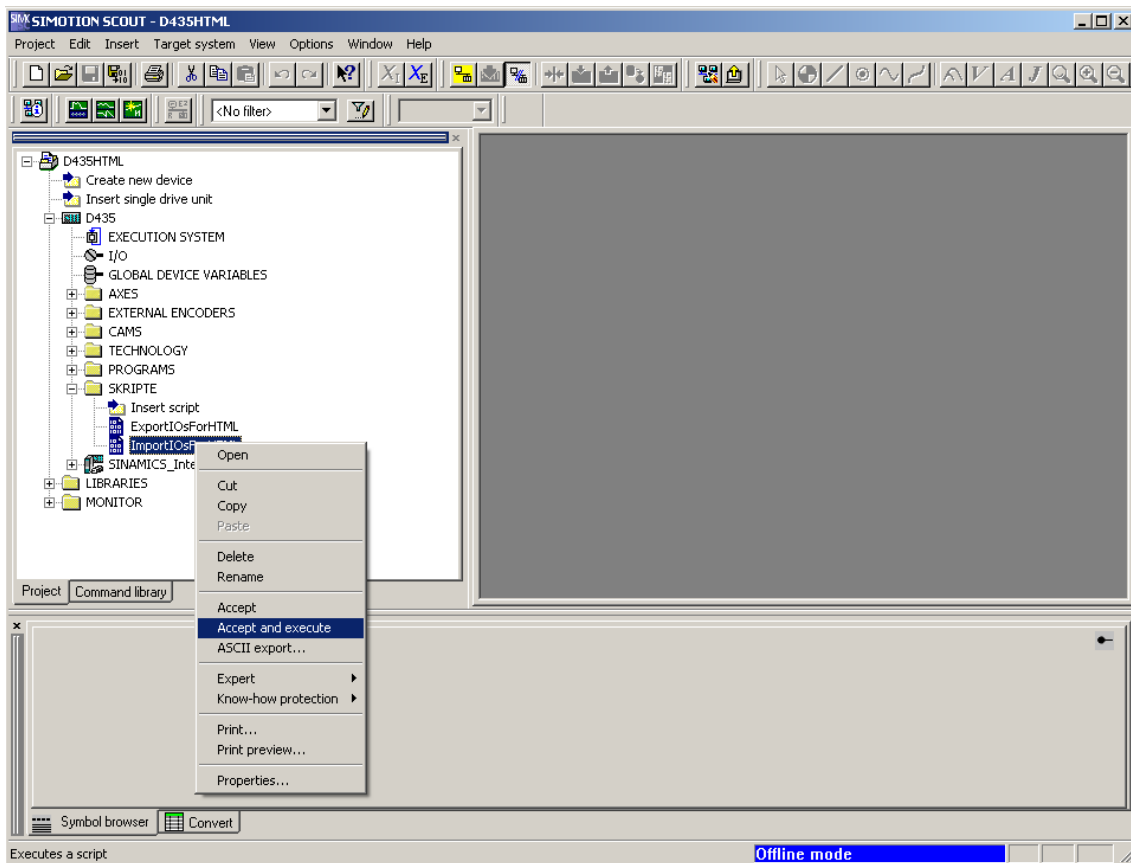
IO2HTML

2 Process of the automatic creation of a test and diagnostics page

2.1 Importation of the I/O files and insertion into the project

The present paths in Script ImportIOsForHTML indicate D:\XSL. This can always be changed in Script at the according places.

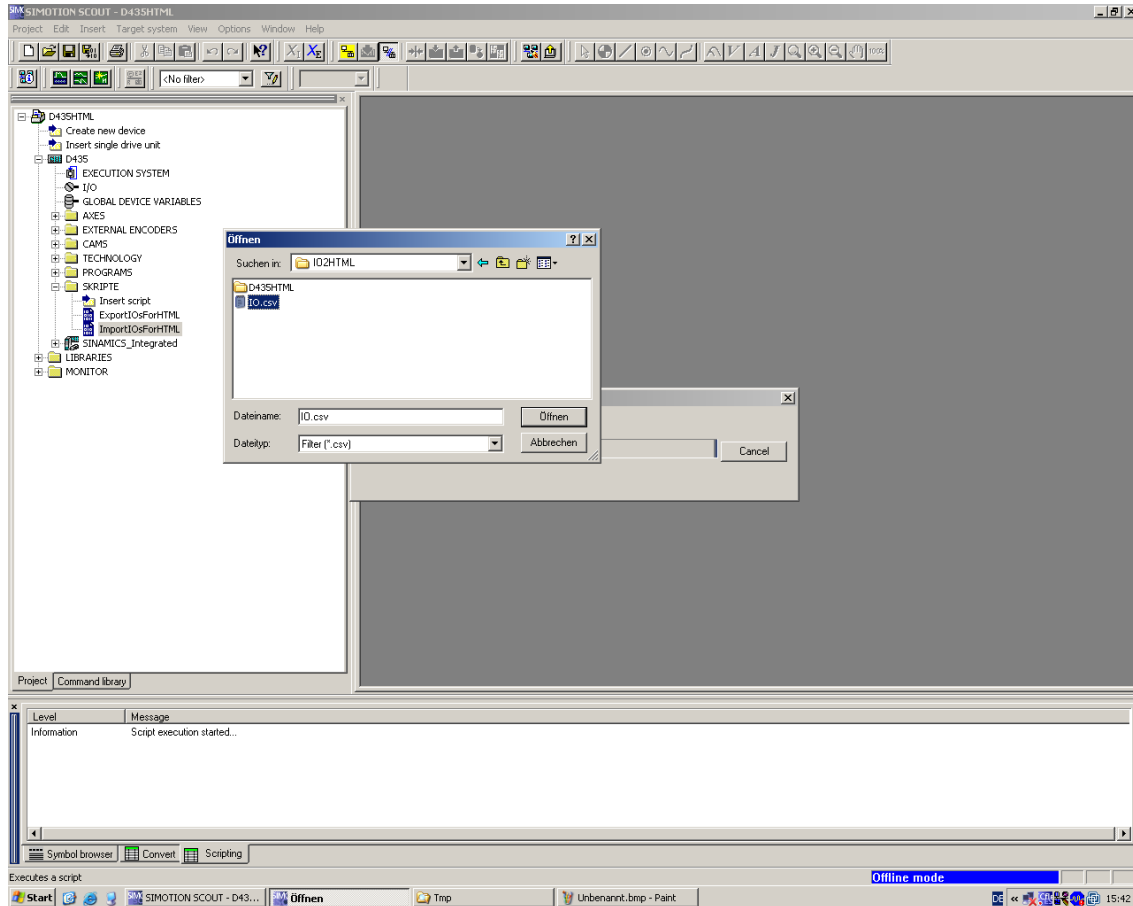
The Script has to be inserted into a Simotion project underneath a device and is only able to run there. The Script can be started by the function „Accept and execute“. Please, see the following screenshot:



Note: During the Script process, a program is created and the sequence system in Simotion is changed, so that in version 4.0, Script triggers automatically a separation from the target system (go offline).

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Then, the following dialog box opens for the selection of a csv file:



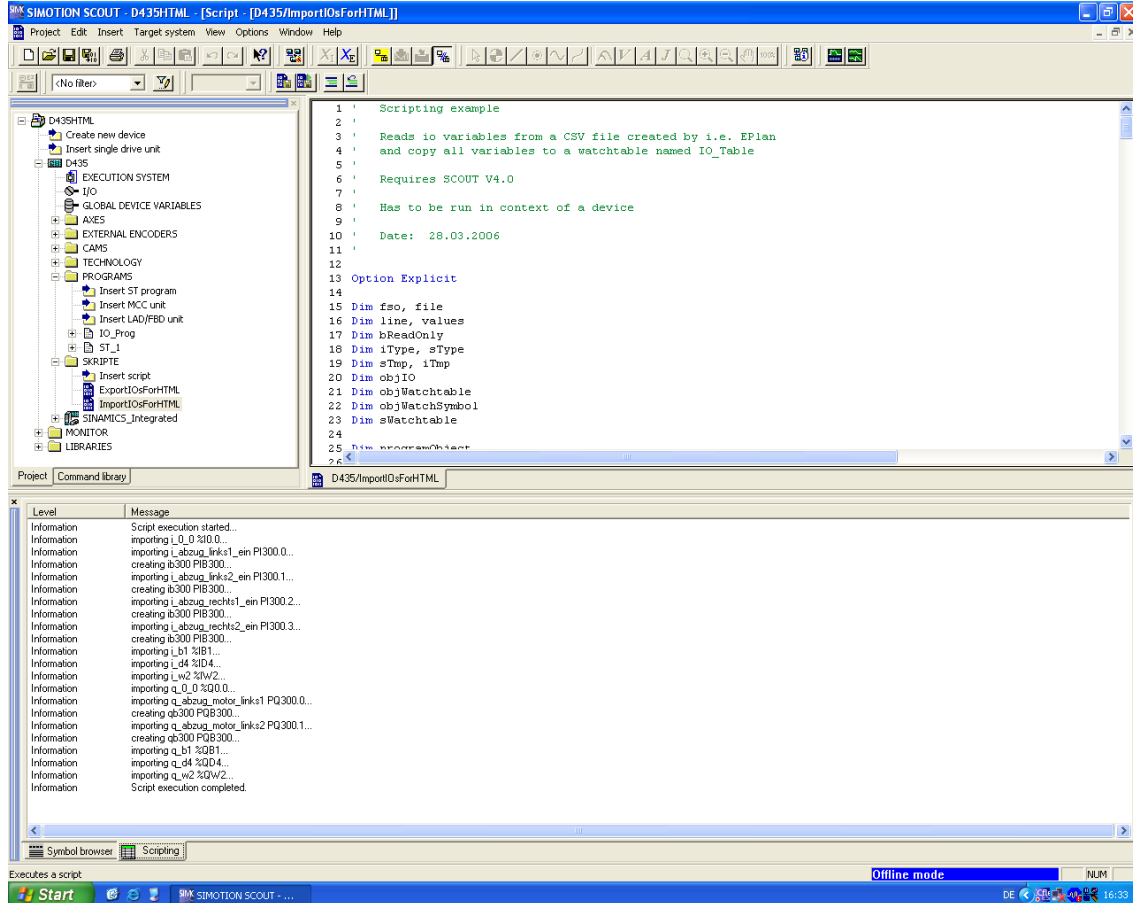
The format of the csv file must be of the following structure:
[Name of the input or output];[address] according to Simotion conventions

Example:

```
i_0_0;%I0.0
i_withdrawal_left1_ON;PI300.0
i_withdrawal_left2_ON;PI300.1
i_withdrawal_rechts1_ON;PI300.2
i_withdrawal_rechts2_ON;PI300.3
i_b1;%IB1
i_d4;%ID4
i_w2;%IW2
q_0_0;%Q0.0
q_withdrawal_motor_left1;PQ300.0
q_withdrawal_motor_left2;PQ300.1
q_b1;%QB1
q_d4;%QD4
q_w2;%QW2
```


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The successful execution of the Scripts is indicated as follows:



For each input/output in the csv file, a line with the prefix “importing” is indicated in the output window of the Scripting. Especially in case of bit variables beyond the Simotion process image (address > byte 64), an additional byte variable is created (prefix “creating”) to avoid an unintentional change of the operating status of the SIMOTION control from RUN to STOP when the system is trying in vain to access to such a variable as the according peripheral is not available.

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This is why the following example indicates 16 I/O variables although there are only 14 inputs/outputs in the csv file:

The screenshot shows the SIMOTION SCOUT interface. The top window displays a script for 'D435/ImportIOForHTML'. The script includes comments and variable declarations for 16 I/O variables. The bottom window shows a table of these variables with their respective addresses, data types, and process images.

```

1 ' Scripting example
2 '
3 ' Reads io variables from a CSV file created by i.e. EPlan
4 ' and copy all variables to a watchtable named IO_Table
5 '
6 ' Requires SCOUT V4.0
7 '
8 ' Has to be run in context of a device
9 '
10 ' Date: 28.03.2006
11 '
12
13 Option Explicit
14
15 Dim fso, file
16 Dim line, values
17 Dim bReadOnly
18 Dim iType, sType
19 Dim sTemp, iTemp
20 Dim objIO
21 Dim objWatchtable
22 Dim objWatchSymbol
23 Dim sWatchtable
24
25 Dim programObject
26

```

	Name	IO address	Read only	Data type	Field leng	Process image	Strategy	Substitute	Display format	Comment
1	I_0_0	%I 0.0		BOOL	1				BOOL	
2	i_abzug_links1_ein	PQ300.0		BOOL	1	BackgroundTask			BOOL	
3	i_abzug_links2_ein	PQ300.1		BOOL	1	BackgroundTask			BOOL	
4	i_abzug_rechts1_ein	PQ300.2		BOOL	1	BackgroundTask			BOOL	
5	q_300	PIB 300		BYTE	1	BackgroundT	Substitu	00	HEX	
6	i_abzug_rechts2_ein	PQ300.3		BOOL	1	BackgroundTask			BOOL	
7	i_b1	%IB 1		BYTE	1				HEX	
8	I_d4	%ID 4		DWORD	1				HEX	
9	I_w2	%IW 2		WORD	1				HEX	
10	q_0_0	%Q0.0		BOOL	1				BOOL	
11	q_abzug_motor_links1	PQ300.0	<input type="checkbox"/>	BOOL	1	BackgroundTask			BOOL	
12	q_300	PQB 300	<input type="checkbox"/>	BYTE	1	BackgroundT	Substitu	00	HEX	
13	q_abzug_motor_links2	PQ300.1	<input type="checkbox"/>	BOOL	1	BackgroundTask			BOOL	
14	q_b1	%QB 1		BYTE	1				HEX	
15	q_d4	%QD 4		DWORD	1				HEX	
16	q_w2	%QW 2		WORD	1				HEX	
17					1					

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All I/O variables are created with process image BackgroundTask and strategy default value 0.

Note: Only those types of data are supported that are typically provided by the I/O terminals such as bit sizes (DI, DO), words (AI, AO) or double words (counters). Byte arrays are NOT supported!

IO2HTML

A watch table (here: Offline mode) with the relevant I/O variable is created, too:

The screenshot displays the SIMOTION SCOUT interface. The top window shows a script titled 'D435/ImportIOsForHTML' with the following content:

```

1 ' Scripting example
2
3 ' Reads io variables from a CSV file created by i.e. EPlan
4 ' and copy all variables to a watchtable named IO_Table
5
6 ' Requires SCOUT V4.0
7
8 ' Has to be run in context of a device
9
10 ' Date: 28.03.2006
11
12
13 Option Explicit
14
15 Dim fso, file
16 Dim line, values
17 Dim bReadOnly
18 Dim iType, sType
19 Dim sTmp, iTmp
20 Dim objIO
21 Dim objWatchtable
22 Dim objWatchSymbol
23 Dim sWatchtable
24
25 Dim programObject
26 Dim perFaultProgFound
27 Dim fsoProg, fileProg, fileNameProg 'IO_Prog.st
28 Dim fileNameXML 'IO.xml
29

```

The bottom window shows the 'IO_Table' watch table with the following data:

	Name	Plain text	IO address	Data type	Unit
1	D435_i_0		%I 0	BOOL	
2	D435_i_abzug_links1_ein		P300.0	BOOL	
3	D435_i_abzug_links2_ein		P300.1	BOOL	
4	D435_i_abzug_rechts1_ein		P300.2	BOOL	
5	D435_i_abzug_rechts2_ein		P300.3	BOOL	
6	D435_i_b1		%IB 1	BYTE	
7	D435_i_d4		%ID 4	DWORD	
8	D435_i_w2		%IW 2	WORD	
9	D435_q_0		%Q 0	BOOL	
10	D435_q_abzug_motor_links1		PQ300.0	BOOL	
11	D435_q_abzug_motor_links2		PQ300.1	BOOL	
12	D435_q_b1		%QB 1	BYTE	
13	D435_q_d4		%QD 4	DWORD	
14	D435_q_w2		%QW 2	WORD	
15					

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The watch table I/O_table permits a compact view on the I/O variables and can also still be used in the project with the IBN.

Note: This watch table is used within the Script as the basis for creating the XML file and the HTML file.

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As in Simotion V4.0 the access to I/O variables via OPC-XML interface is not supported, a ST-source with global variable is created according to the I/O variables (with an additional prefix „g“) and in the source, a program is created that copies the inputs to the corresponding ST-input variables and the according ST-output variables to the outputs as well. (Picture: Offline mode)

The screenshot displays the SIMOTION SCOUT interface. The main window shows a script editor with the following content:

```

1 ' Scripting example
2 '
3 ' Reads io variables from a CSV file created by i.e. EPlan
4 ' and copy all variables to a watchtable named IO_Table
5 '
6 ' Requires SCOUT V4.0
7 '
8 ' Has to be run in context of a device
9 '
10 ' Date: 28.03.2006
11 '
12
13 Option Explicit
14
15 Dim fso, file
16 Dim line, values
17 Dim bReadOnly
18 Dim iType, sType
19 Dim sTemp, iTemp
20 Dim objIO
21 Dim objWatchtable
22 Dim objWatchSymbol
23 Dim sWatchtable
24
25 Dim programObject
26

```

Below the script editor, the 'D435.I0_Prog' watch table is visible, listing various global variables:

	Name	Data type	Initial value	Display format
1	gi_0_0	BOOL	FALSE	BOOL
2	gi_abzug_links1_ein	BOOL	FALSE	BOOL
3	gi_abzug_links2_ein	BOOL	FALSE	BOOL
4	gi_abzug_rechts1_ein	BOOL	FALSE	BOOL
5	gi_abzug_rechts2_ein	BOOL	FALSE	BOOL
6	gi_b1	BYTE	00	HEX
7	gi_d4	DWORD	00000000	HEX
8	gi_w2	WORD	0000	HEX
9	ga_0_0	BOOL	FALSE	BOOL
10	ga_abzug_motor_links1	BOOL	FALSE	BOOL
11	ga_abzug_motor_links2	BOOL	FALSE	BOOL
12	ga_b1	BYTE	00	HEX
13	ga_d4	DWORD	00000000	HEX
14	ga_w2	WORD	0000	HEX

The status bar at the bottom indicates 'Offline mode'.

IO2HTML

Example: I/O_Prog.st

```
INTERFACE
  VAR_GLOBAL
    gi_0_0          : BOOL;
    gi_withdrawal_left1_ON  : BOOL;
    gi_withdrawal_left2_ON  : BOOL;
    gi_withdrawal_right1_ON : BOOL;
    gi_withdrawal_right2_ON : BOOL;
    gi_b1           : BYTE;
    gi_d4           : DWORD;
    gi_w2           : WORD;
    gq_0_0         : BOOL;
    gq_withdrawal_motor_left1  : BOOL;
    gq_withdrawal_motor_left2  : BOOL;
    gq_b1          : BYTE;
    gq_d4          : DWORD;
    gq_w2          : WORD;
  END_VAR

  PROGRAM PerFault;
  PROGRAM CopyInOut;
END_INTERFACE

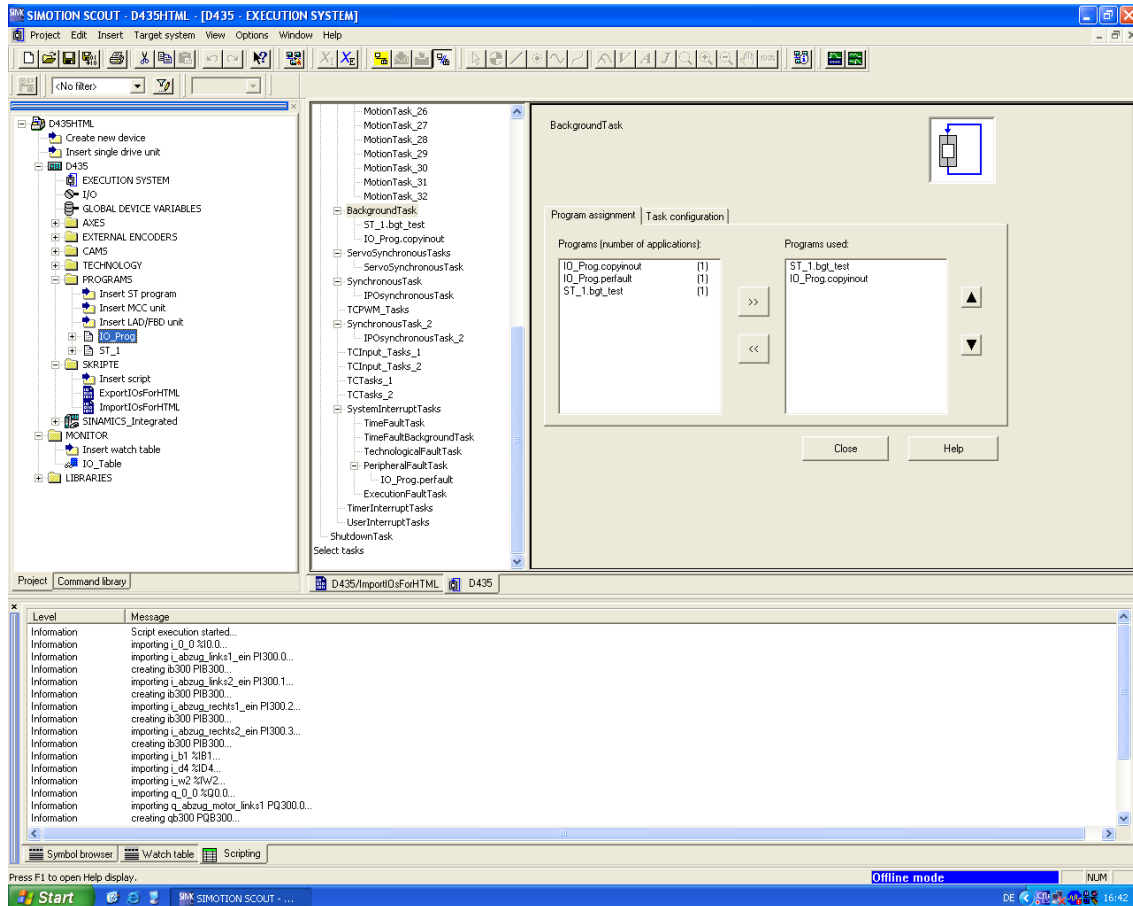
IMPLEMENTATION
  PROGRAM PerFault
  ;
  END_PROGRAM

  PROGRAM CopyInOut
    gi_0_0 := i_0_0;
    gi_withdrawal_left1_ON := i_withdrawal_left1_ON;
    gi_withdrawal_left2_ON := i_withdrawal_left2_ON;
    gi_withdrawal_right1_ON := i_withdrawal_right1_ON;
    gi_withdrawal_right2_ON := i_withdrawal_right2_ON;
    gi_b1 := i_b1;
    gi_d4 := i_d4;
    gi_w2 := i_w2;
    q_0_0 := gq_0_0;
    q_withdrawal_motor_left1 := gq_withdrawal_motor_left1;
    q_withdrawal_motor_left2 := gq_withdrawal_motor_left2;
    q_b1 := gq_b1;
    q_d4 := gq_d4;
    q_w2 := gq_w2;
  END_PROGRAM
END_IMPLEMENTATION
```

Note: The program PerFault only serves to avoid that the Simotion control changes into the operating status STOP in case of accessing to not existing peripherals.

IO2HTML

The sequence system is changed by the Script:



The program CopyInOut in the source I/O_Prog is assigned to the BackgroundTask. The program PerFault is assigned to the PeripheralFaultTask.

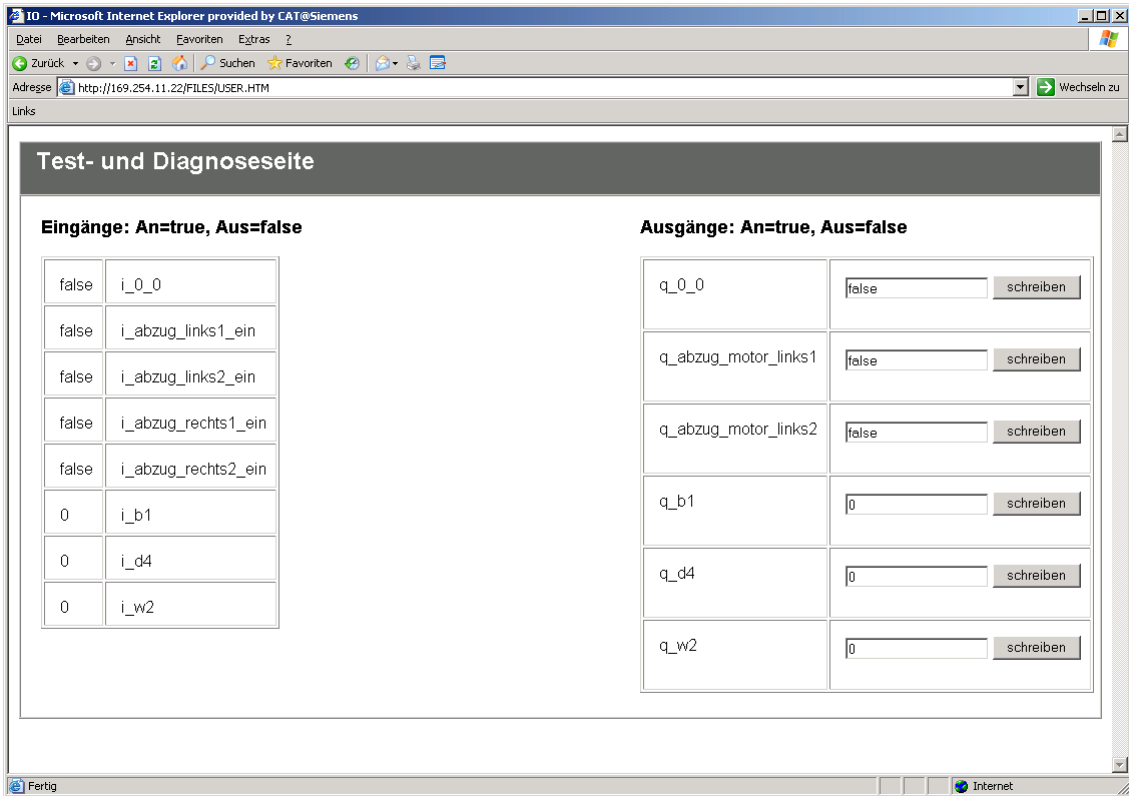
2.2 Exportation of the I/O tables into an XML file

An HTML file is created according to the variables in the watch table. In addition, the XML file requires a dictionary (io.dtd) and a formatting instruction (io.xsl) in the same directory.

The created HTML document (io.htm) is renamed as user.htm by means of a batch file (user.bat) and is transferred via file transfer protocol (ftp) to the directory \user\simotion\hmi\files on the Simotion memory card in the Simotion control. For this, it is necessary that the PC is connected to the control via Ethernet cabling. The example uses the Simotion standard IP address: 169.254.11.22.

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3 Description of the test and diagnostics page



The address of the test and diagnostics page is as follows:

<http://169.254.11.22/FILES/USER.HTM>

or the IP address has to be adapted to the real control.

On the left side, you can find a list of the inputs and their current value.

In addition, there is the possibility for the outputs on the right side to change the value and to write into the control.

Note: True means that the input/output is ON;
False means that the input/output is OFF.

Note: The content of the surface is updated every 15 seconds.
However, this can be adapted in the Script.

Appendix

4 Project data / Scope of supply

- Simotion Script: ImportIOsForHTML.txt
- Simotion Script :ExportIOsForHTML.txt
- Example csv-file including some inputs/outputs: I/O.csv
- Dictionary and xls file for the indication via XML: io.dtd, io.xsl
- Archive of a project for Simotion D435: D435html.zip
- List file for remote control ftp in a batch file: ftp.lst
- USER.BAT for the transmission of the HTML page to SIMOTION

5 Revision

Table 5-1: Revision / Authors

Version	Date/Revision
1.1	12/06/2006 based on new template

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6 Contact partners

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