

IM 308-C

Demo program for the  
standard function blocks

SIMATIC S5 <==> IM 308-C link

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1 General

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The demo program described below is on the floppy disk you received and can be loaded in its entirety into the memory of the programmable controller (PLC) for the purposes of testing the IM 308-C. It shows how the function block FB 192 (IM308C) can be used. Direct and indirect parameterization of the FB 192 are illustrated in the demo program. All the blocks required for an executable program are available. The floppy disk also places a fully featured programm framework at the disposal of the user.

Direct or indirect parameterization of function block FB 192 (IM308C) is selected at a digital input of the simulator. Other digital inputs provide the means of triggering specific functions. Errors, if any occur, are indicated at the digital outputs.

The demo program allows you to select the function of your choice for indirect parameterization of function block FB 192 (IM308C). The function default settings of direct parameterization are listed below:

FCT	Meaning	IM number, station number, global control
WO	Write Outputs	IMST = KY 0,1 (IM No. = 0, Station No. = 1)
RO	Read Outputs	IMST = KY 0,1 (IM No. = 0, Station No. = 1)
RI	Read Inputs	IMST = KY 0,1 (IM No. = 0, Station No. = 1)
MD	Read Master Diagnostics	IMST = KY 0,0 (IM No. = 0)
SD	Read Slave Diagnostics	IMST = KY 0,1 (IM No. = 0, Station No. = 1)
GC	Global Control Command FREEZE	IMST = KY 0,0 (IM No. = 0) GCGR = KM 0000 1000 0000 0001
GC	Global Control Command UNFREEZE	IMST = KY 0,0 (IM No. = 0) GCGR = KM 0000 0100 0000 0001
GC	Global Control Command SYNC	IMST = KY 0,0 (IM No. = 0) GCGR = KM 0010 0000 0000 0001
GC	Global Control Command UNSYNC	IMST = KY 0,0 (IM No. = 0) GCGR = KM 0001 0000 0000 0001

## 2 Device configuration

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The device you can use to run the demo program for the IM 308-C are as follows:

- \* AG S5-115U, AG S5-135U or AG S5-155U programmable controllers (PLC)
- \* 730/740/750/770 programming unit (PG)
- \* IM 308-C ET 200 master interface (address: F800)
- \* slave (station number = 1)
- \* digital input module (e.g. 6ES5 430-4UA12)
- \* digital output module (e.g. 6ES5 451-4UA12)
- \* digital input/output simulator (e.g. 6ES5 788-0LA12)

## Settings

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Enter 1 as the station number for the slave connected to the IM 308-C. The IM number of the IM 308-C is 0. The start address of the IM 308-C ist F800h.

## 3 Input/output assignments

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The program is set up in such a way that it can be easily customized to suit diverse input/output assignments. Note that the demo program works exclusively with markers. These markers are assignments to the inputs and outputs used in organizational block OB 1. In the demo program the I/Os are the word IW 4, the input byte IB6, the output word QW 8 and the output byte QB 10.

Input	Input image	Puls Marker	direct parameterization	indirect Parameterization
I 4.0	F 4.0	F 12.0	WO Write Output	-
I 4.1	F 4.1	F 12.1	RO Read Outputs	-
I 4.2	F 4.2	F 12.2	RI Read Inputs	-
I 4.3	F 4.3	F 12.3	MD Read Master Diagnostics	-
I 4.4	F 4.4	F 12.4	SD Read Slave Diagnostics	-
I 4.5	F 4.5	F 12.5	WS Write Slave Channel	-
I 4.6	F 4.6	F 12.6	RS Read Slace Channel	-
I 4.7	F 4.7	F 12.7	GC Global Control Command FREEZE (Group_Select = 1)	-
I 5.0	F 5.0	F 13.0	GC Global Control Command UNFREEZE (Group_Select = 1)	-
I 5.1	F 5.1	F 13.1	GC Global Control Command SYNC (Group_Select = 1)	-
I 5.2	F 5.2	F 13.2	GC Global Control Command UNSYNC (Group_Select = 1)	-
I 5.3	F 5.3	F 13.3	-	-
I 5.4	F 5.4	F 13.4	-	-
I 5.5	F 5.5	F 13.5	-	-
I 5.6	F 5.6	F 13.6	-	-
I 5.7	F 5.7	F 13.7	-	-
I 6.0	F 6.0	F 14.0	Acknowledge error	Acknowledge error
I 6.1	F 6.1	F 14.1	-	-
I 6.2	F 6.2	F 14.2	-	FB 192 call
I 6.3	F 6.3	F 14.3	=> "0" direct parameter	=> "1" indirect
I 6.4	F 6.4	F 14.4	-	-
I 6.5	F 6.5	F 14.5	-	-
I 6.6	F 6.6	F 14.6	-	-
I 6.7	F 6.7	F 14.7	-	-

Output	Output image	Meaning
Q 8.0	F 16.0	Error in: WO Write Outputs
Q 8.1	F 16.1	Error in: RO Read Outputs
Q 8.2	F 16.2	Error in: RI Read Inputs
Q 8.3	F 16.3	Error in: MD Read Master Diagnostics
Q 8.4	F 16.4	Error in: SD Read Slave Diagnostics
Q 8.5	F 16.5	Error in: WS Write Slave Channel
Q 8.6	F 16.6	Error in: RS Read Slave Channel
Q 8.7	F 16.7	Error in: GC Global Command
Q 9.0	F 17.0	Bit 0 of the ERR parameter
Q 9.1	F 17.1	Bit 1 of the ERR parameter
Q 9.2	F 17.2	Bit 2 of the ERR parameter
Q 9.3	F 17.3	Bit 3 of the ERR parameter
Q 9.4	F 17.4	Bit 4 of the ERR parameter
Q 9.5	F 17.5	Bit 5 of the ERR parameter (error in configuration)

Q 9.6	F 17.6	Bit 6 of the ERR parameter (retry call)	
Q 9.7	F 17.7	Bit 7 of the ERR parameter (group error bit)	
+-----+			
Q 10.0	F 18.0	Error in: XX switchover to indirect parameterization	
Q 10.1	F 18.1	-	
Q 10.2	F 18.2	-	
Q 10.3	F 18.3	-	
Q 10.4	F 18.4	-	
Q 10.5	F 18.5	-	
Q 10.6	F 18.6	-	
Q 10.7	F 18.7	-	
+-----+			

#### 4 Marker area assignment

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FW 4      Marker for input word IW 4  
FY 6      Marker for input byte IB 6  
FW 8      Edge marker for input word IW 4  
FY 10     Edge marker for input byte IB 6  
FW 12     Pulse marker for input word IW 4  
FY 14     Pulse marker for input byte IB 6  
FW 16     Marker for output word QW 8  
FY 18     Marker for output byte QB 6  
  
FW 20     ERR parameter of the function block call

#### 5 Data area assignment

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DB 10     Output bytes                    (FCT = WO)  
DB 11     Output bytes                    (FCT = RO)  
DB 12     Input bytes                     (FCT = RI)  
DB 13     Master diagnostic data         (FCT = MD)  
DB 14     Slave diagnostic data          (FCT = SD)  
DB 15     Slave channel data             (FCT = WS)  
DB 16     Slave channel data             (FCT = RS)

DB 192    Parameter data block for indirect parameterization:

+-----+			
DW	Para-	Recommended	
	meter	data format	
+-----+			
DW 1	DPAD	KH	
DW 2	IMST	KY	
DW 3	FCT	KC	
DW 4	GCGR	KM	
DW 5	TYP	KY	
DW 6	STAD	KF	
DW 7	LENG	KF	
DW 8	ERR	KY	
+-----+			

## 6 Block allocation

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FB 92 Example for direct parameterization with FB 192 (IM308C)  
FB 93 Example for indirect parameterization with FB 192 (IM308C)  
FB 192 Standard function block IM308C

OB 1 Cyclic program

## 7 Switch-on and power -up

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After resetting the programmable controller, load the entire file into the application memory of the CPU and reboot. If all the simulator inputs are set to "0" when the programmable controller reboots, no outputs should be set when the programmable controller has powered up. If output Q 9.7 (group error bit) is set, an error has occurred during power-up. Read the ERR parameter (FW 20) of the FB 192 (IM308C) to ascertain the precise cause of the error. The low byte of the ERR parameter (error number) is output in QB 9.

## 8 Cyclic operation

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Input I 6.3 enables you to toggle between direct and indirect parameterization of FB 192 (IM308C). If the signal state of input I 6.3 is "0", FB 92 is invoked for direct parameterization. If the signal of input I 6.3 is "1", the FB 93 is processed for indirect parameterization. Select direct parameterization (I 6.3 = "0") for the first test, because in this mode the commands can be issued by means of the switches on the simulator.

### Direct parameterization

In direct parameterization of the FB 192 function block, the target function is specified in the KC format in the FCT parameter. A slave station is selected in the IMST parameter. A global command (GC) is specified in the GCGR parameter. The functions programmed in function block FB 92 can be triggered by means of the switches of the simulator.

### Indirect parameterization

In the case of indirect parameterization, the target function, the slave station and a global command are all defined as entries in the parameter data block. These entries must be written into DB 192 with the STEU VAR function of the programming unit. The rising edge of input I 6.2 triggers execution of the function entered in this way in the parameter data block.

### Error messages

If an error occurs when standard function block FB 192 is called, group error output Q 9.7 is set. Read output byte QB 9 (error number) to ascertain the cause of the error. Clear the error and reset the error indicator by means of input I 6.0. No further functions can be triggered until group error output Q 9.7 has been reset.

### 8.1 Direct parameterization

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#### WO Write Outputs (I 4.0)

This function transfers outputs from DB 10 data blocks to slave station No. 1. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, then standard function block enters the number of bytes transferred in marker byte FY 20.

#### RO Read Outputs (I 4.1)

This function reads outputs from slave station No. 1 and writes the information to data block DB 11. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, the standard function block enters the number of bytes transferred in marker byte FY 20.

#### RI Read Inputs (I 4.2)

This function reads inputs from slave station No. 1 and writes the information to data block DB 12. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, standard function block enters the number of bytes transferred in marker byte FY 20.

#### MD Read Master Diagnostics (I 4.3)

This function reads the master diagnostics of IM 0 (IMST = KY 0,1) and writes the information to data block DB 13. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, standard function block enters the number of bytes transferred in marker byte FY 20.

#### SD Read Slave Diagnostics (I 4.4)

This function reads the slave diagnostics of slave station 1 and writes the information to data block DB 14. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, standard function block enters the number of bytes transferred in marker byte FY 20.

#### WS Write Slave Channel (I 4.5)

This function transfers the data of the slave channel from data block DB 15 to slave station 1. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, the standard function block enters the number of bytes transferred in marker byte FY 20.

#### RS Read Slave Channel (I 4.6)

The function reads the slave channel of slave station 1. Standard function block FB 192 is called with LENG = -1 (joker length). Following the call, the standard function block enters the number of bytes transferred in marker byte FY 20.

#### GC Global Commands (I 4.7, I 5.0, I 5.1, I 5.2)

These functions execute certain global commands. The command executed depends on the input: FREEZE (I 4.7), UNFREEZE (I 5.0), SYNC (I 5.1) and UNSYNC (I 5.2). In each case, the global command is executed for Group\_Select = KM 0000 0001.

## 8.2 Indirect parameterization

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To select indirect parameterization for the FB 192 function block, set input I 6.3 to signal state "1". In the demo program, the function block itself is invoked

by the rising edge at input I 6.2. If parameterization is indirect (FCT = XX), the FB 192 standard function block takes the module parameters from the parameter data block. Note that the parameter data block must be opened with the A DB command before the function block is called. In the demo program the DB 192 is the parameter data block. Use the STEU VAR function of the programming unit to make the appropriate entries in the parameter data block for the purposes of the demo program.

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