

ifm electronic



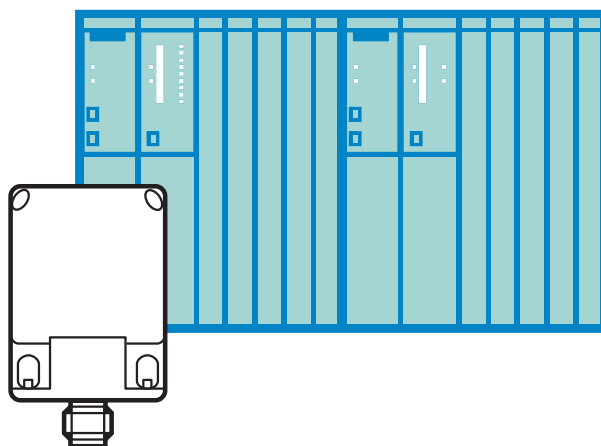
Installation instructions
Supplement

DE

efector190[®]

Description of the DTA200
function blocks
for the programming systems
CoDeSys and Step7

704706 / 00 05 / 2010



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1 Preliminary note

1.1 Symbols used

- Instructions
-  Important note
Non-compliance can result in malfunction or interference.
-  Information
Supplementary note

2 General

2.1 General functions of the blocks

The function blocks (in the following referred to as FB) support the extended functions of the RFID read/write head DTA200. They enable the use of the complete memory area of the ifm ID tags (transponder).

The data transmission between read/write head and ID tag is a coded data transmission. 15-bit user data can be written and read per page.

-  Reading of and writing to one or several pages is only possible in the static state (= ID tag not moving).

2.2 Source

The function blocks (library) incl. example program can be downloaded from our website at:

www.ifm.com → Service → Download → Software identification systems

3 Overview of function blocks

3.1 Programming system CoDeSys

- FB_DTA200

3.2 Programming system Step7

- FB_DTA200_ifm_Gateway
for ifm Smart Link, e.g. ifm art. no.: AC1375 (M4 master)
- FB_DTA200_BWGateway
for a Bihl and Wiedemann Gateway, e.g. BWU1569
- FB_DTA200_SiemensKomp
for Siemens components, e.g. DP/AS-i Link Advanced or CP343-2P

4 CoDeSys function block

The CoDeSys function block "FB_DTA200" is in the library "FB_DTA200_Vx.x.lib" (x.x = version number, e.g. V1.0).

- ▶ To use the block additionally integrate the following library into the project:
 - ifm_ASiUtils_010004.lib



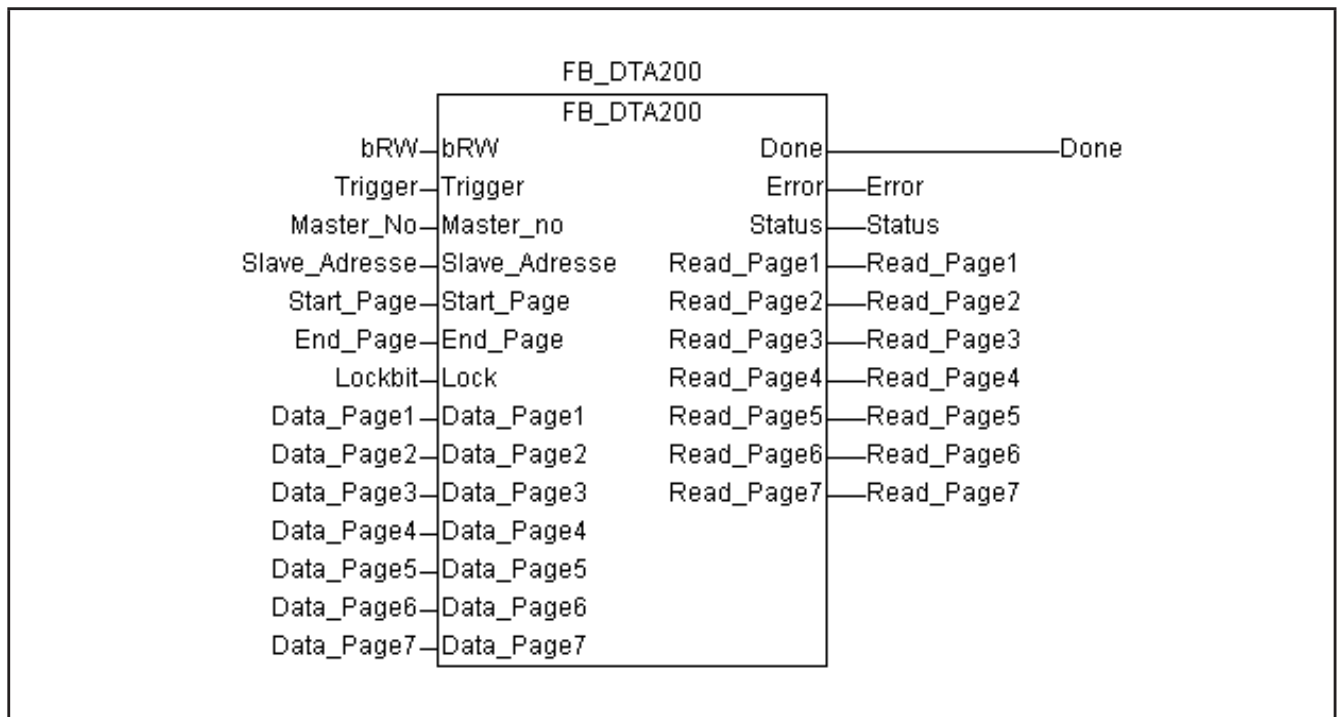
The AS-i controller E used must be fitted with an M4 master (e.g. ifm art. no.: AC1356).



An overview of the ifm AS-i controller E devices is on our website at:

www.ifm.com → Products → Bus system AS-Interface → Product search (selector)

4.1 Figure



Function block FB_DTA200

4.2 Description of the inputs

Input	Data type	Description	
bRW	Bool	False	Data is read from the ID tag
		True	Data is written to the ID tag
Trigger	Bool	False	Reset of the internal variables, status messages and read values
		True	For a rising edge (from false to true) the input parameters are checked for errors, transferred to the FB and processed.
Master_no	Byte	Indication to which AS-i master the RFID read/write head is connected.	
Slave_Adresse	Byte	Slave address of the RFID read/write head	
Start_Page	Byte	Indication of the Start_Page (1..7)	
End_Page	Byte	Indication of the End_Page (1..7)	
Lock	Bool	False	Lock bit is not set.
		True	Lock bit is set to the respective page during writing. A set lock bit is used as a write protection for the respective page(s) and can no longer be deleted.
Data_Page1	Word	User data to be written to Page1. Value range: 1...7FFFhex	
Data_Page2... Data_Page7		User data to be written to the respective page. Value range: 0...7FFFhex	

4.3 Description of the outputs

Output	Data type	Description	
Done	Bool	False	Errors during processing of the FB (→ 4.4 Error codes)
		True	Processing of the input parameters done without errors
Error	Bool	False	Processing of the input parameters done without errors
		True	Errors during processing of the FB (→ 4.4 Error codes)
Status	Word	Status or error message (→ 4.4 Error codes) The status message consists of a word (2 bytes). In the low byte the input causing the error is numerically indicated.	
Read_Page1... Read_Page7	Word	Output of the read ID tag data	

4.4 Error codes and error messages

4.4.1 Error codes of the FB (input error)

Output			Description	
Done	Error	Status		
True	False	0000	Processing of the commands successfully finished	
False	True	FFFF	FB processes the commands	
False	True	0030	Invalid master number (input 3 - Master_no)	
False	True	0040	Invalid slave number (input 4 - slave address)	
False	True	0050	Indication of the start page is 0; input is possibly not connected. (Input 5 - Start_Page)	
False	True	0056	Indication of the end page is smaller than the start page. (Input 5 - Start_Page or input 6 - End_Page)	
False	True	0060	Indication of the end page is greater than 7 (input7 - End_Page)	
False	True	0080	Values are outside the value range	Input 8 - Data_Page1, value range: 1..7FFFhex
False	True	0090		Input 9 - Data_Page2, value range: 0..7FFFhex
False	True	00A0		Input 10 - Data_Page3, value range: 0..7FFFhex
False	True	00B0		Input 11 - Data_Page4, value range: 0..7FFFhex
False	True	00C0		Input 12 - Data_Page5, value range: 0..7FFFhex
False	True	00D0		Input 13 - Data_Page6, value range: 0..7FFFhex
False	True	00E0		Input 14 - Data_Page7, value range: 0..7FFFhex

4.4.2 Error codes of the RFID read/write head

Output			Description	
Done	Error	Status		
False	True	FFFC	The write operation was aborted after a valid write attempt. Possible errors: • ID tag protected by lock bit • Faulty or invalid ID tag (wrong identification; no ifm tag) • ID tag not formatted • No ID tag in the field (ID tag not in the detection zone)	
False	True	FFFB	The read operation was aborted after a valid read attempt. Possible errors: • Faulty or invalid ID tag (wrong identification; no ifm tag) • ID tag not formatted • No ID tag in the field (ID tag not in the detection zone)	

4.4.3 Error codes of the ASiCmd21 (internal FB error)

Output			Description (original)
Done	Error	Status	
True	False	6B12	7.3/7.4 sequence failure. (Slave generated invalid 7.3/7.4 sequence)
False	True	6B13	Host timeout on 7.4. (Host missed to finish a initiated 7.4 transmission)
False	True	6B14	Invalid address. (Exp. 0.B address tried to access)
False	True	6B15	Slave aborted 7.4. (7.4 slave terminated string)
False	True	6B16	Slave deleted while 7.4 runs. (7.4 Slave removed from LAS while 7.4 transmission was running)
False	True	6B17	7.4 transfer busy. (Host tried to initiate a 7.4 transmission while a 7.4 transmission is active running.)
False	True	6B18	7.4 Host sequence failure. (The host interrupted a 7.4 transmission using more than one sequence with another command.)
False	True	6B19	Invalid data length. (The data length hasn't a MOD 3 divisor or the host sets the sequence bit, but the data length doesn't match.)
False	True	6B20	Command invalid. (The 7.4 command is not accepted to the specified slave address)
False	True	6B22	Error timeout Master command (Command not executed within 2 seconds)
False	True	6B23	Preconditions to start command failed (No 7.4 slave -or- 7.4 Slave not in LAS -or- Master not in Normal Operation mode)
False	True	6Cxx	Timeout occurred during command execution
False	True	6Exx	Unknown command execution rejected

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5 Step7 function blocks

The Step7 function blocks are in the library "ifm RFID" (→ 3 Overview of function blocks).

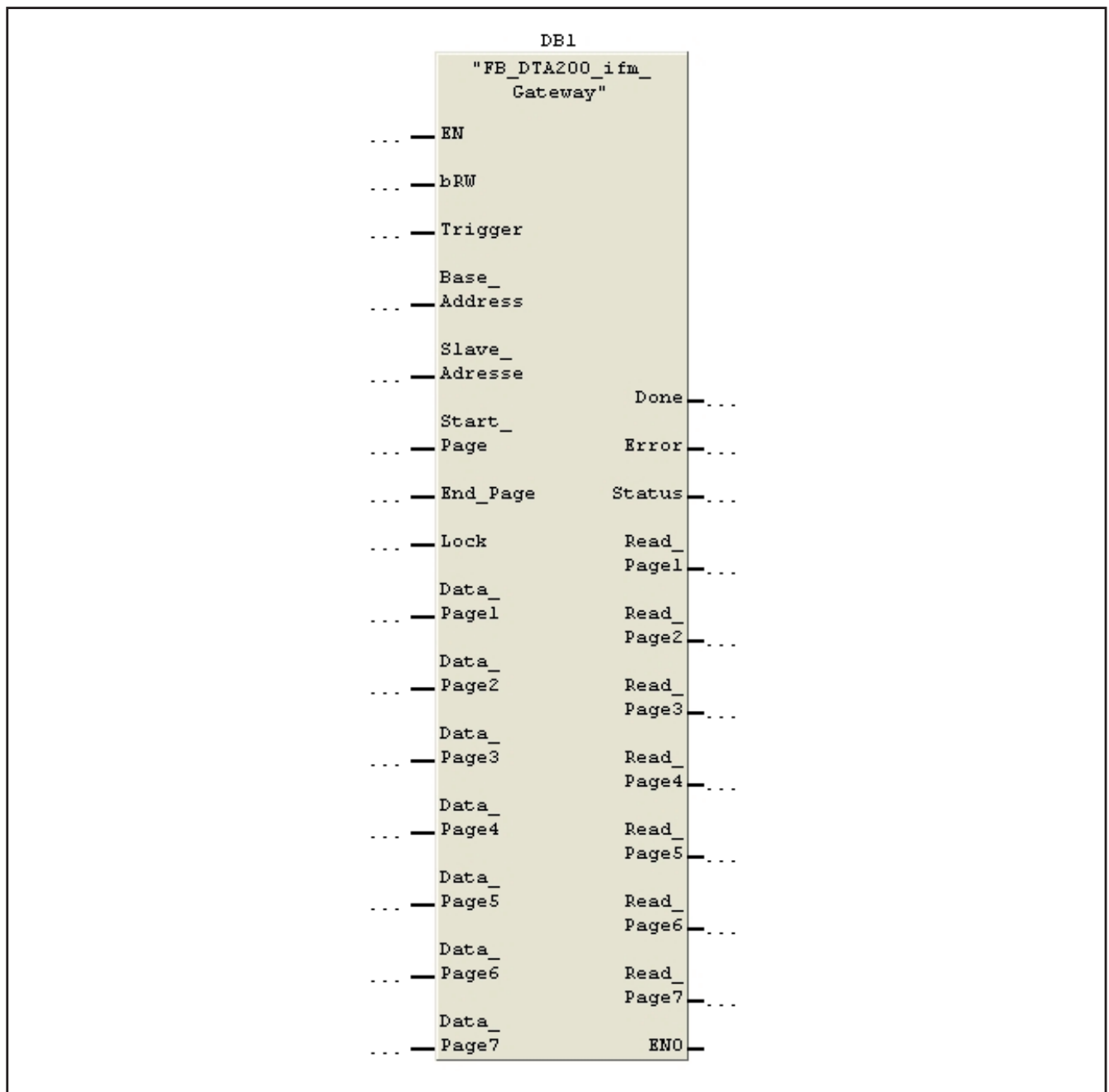
Handling and function of the Step7 function blocks are identical.

They only differ in the use of different fieldbus components.

For the hardware configuration of the gateways (GSD file) note the following:

- ifm Smart Link - module 12 corresponds to 15 word ext. channel.
- Bihl und Wiedemann - module 1 corresponds to 36 Byte Command Interface

5.1 Figure



Example function block FB_DTA200_ifm_Gateway



In the Step7 function blocks 2 timers are used (→ list of operands of the project).

- If more timers are integrated into the project, ensure that correct operand numbers are assigned.

5.2 Description of the inputs

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Input	Data type	Description	
bRW	Bool	False	Data is read from the ID tag
		True	Data is written to the ID tag
Trigger	Bool	False	Reset of the internal variables, status messages and read values
		True	For a rising edge (from false to true) the input parameters are checked for errors, transferred to the FB and processed.
Base_Address	Word	Start address of the command channel ifm Smart Link (module 12) or Bihl and Wiedemann (module 1)	
Slave_Adresse	Byte	Slave address of the RFID read/write head	
Start_Page	Byte	Indication of the Start_Page (1..7)	
End_Page	Byte	Indication of the End_Page (1..7)	
Lock	Bool	False	Lock bit is not set.
		True	Lock bit is set to the respective page during writing. A set lock bit is used as a write protection for the respective page(s) and can no longer be deleted.
Data_Page1	Word	User data to be written to Page1. Value range: 1...7FFFhex	
Data_Page2... Data_Page7		User data to be written to the respective page. Value range: 0...7FFFhex	

5.3 Description of the outputs

Output	Data type	Description	
Done	Bool	False	Errors during processing of the FB (→ 5.4 Error codes)
		True	Processing of the input parameters done without errors
Error	Bool	False	Processing of the input parameters done without errors
		True	Errors during processing of the FB (→ 5.4 Error codes)
Status	Word	Status or error message (→ 5.4 Error codes) The status message consists of a word (2 bytes). In the low byte the input causing the error is numerically indicated.	
Read_Page1... Read_Page7	Word	Output of the read ID tag data	

5.4 Error codes and error messages

5.4.1 FB_DTA200_ifm_Gateway

Error codes of the FB (input error)				
Output			Description	
Done	Error	Status		
True	False	0000	Processing of the commands successfully finished	
False	True	8181	FB processes the commands (≤ 3 s)	
False	True	0030	Invalid master number (input 3 - Master_no)	
False	True	0040	Invalid slave number (input 4 - slave address)	
False	True	0050	Indication of the start page is 0; input possibly not connected. (Input 5 - Start_Page)	
False	True	0056	Indication of the end page is smaller than the start page. (Input 5 - Start_Page or input 6 - End_Page)	
False	True	0060	Indication of the end page is greater than 7 (input 7 - End_Page)	
False	True	0080	Values are outside the value range	Input 8 - Data_Page1, value range: 1..7FFFhex
False	True	0090		Input 9 - Data_Page2, value range: 0..7FFFhex
False	True	00A0		Input 10 - Data_Page3, value range: 0..7FFFhex
False	True	00B0		Input 11 - Data_Page4, value range: 0..7FFFhex
False	True	00C0		Input 12 - Data_Page5, value range: 0..7FFFhex
False	True	00D0		Input 13 - Data_Page6, value range: 0..7FFFhex
False	True	00E0		Input 14 - Data_Page7, value range: 0..7FFFhex

Error codes of the RFID read/write head				
Output			Description	
Done	Error	Status		
False	True	FFFC	The write operation was aborted after a valid write attempt. The value FFFC is available for approx. 2 - 3 seconds, the data of the 1st page is then cyclically transferred. Possible errors: • ID tag protected by lock bit • Faulty or invalid ID tag (wrong identification; no ifm tag) • ID tag not formatted • No ID tag in the field (ID tag not in the detection zone)	
False	True	FFFB	The read operation was aborted after a valid read attempt. The value FFFB is available for approx. 2 - 3 seconds, the data of the 1st page is then cyclically transferred. Possible errors: • Faulty or invalid ID tag (wrong identification; no ifm tag) • ID tag not formatted • No ID tag in the field (ID tag not in the detection zone)	

5.4.2 FB_DTA200_BWGateway

Error codes of the FB (input error)				
Output			Description	
Done	Error	Status		
True	False	0000	Processing of the commands successfully finished	
False	True	8181	FB processes the commands (≤ 3 s)	
False	True	0030	Invalid master number (input 3 - Master_no)	
False	True	0040	Invalid slave number (input 4 - slave address)	
False	True	0050	Indication of the start page is 0; input possibly not connected. (Input 5 - Start_Page)	
False	True	0056	Indication of the end page is smaller than the start page. (Input 5 - Start_Page or input 6 - End_Page)	
False	True	0060	Indication of the end page is greater than 7 (input 7 - End_Page)	
False	True	0080	Values are outside the value range	Input 8 - Data_Page1, value range: 1..7FFFhex
False	True	0090		Input 9 - Data_Page2, value range: 0..7FFFhex
False	True	00A0		Input 10 - Data_Page3, value range: 0..7FFFhex
False	True	00B0		Input 11 - Data_Page4, value range: 0..7FFFhex
False	True	00C0		Input 12 - Data_Page5, value range: 0..7FFFhex
False	True	00D0		Input 13 - Data_Page6, value range: 0..7FFFhex
False	True	00E0		Input 14 - Data_Page7, value range: 0..7FFFhex

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Error codes of the RFID read/write head			
Output			Description
Done	Error	Status	
False	True	FFFC	The write operation was aborted after a valid write attempt. The value FFFC is available for approx. 2 - 3 seconds, the data of the 1st page is then cyclically transferred. Possible errors: • ID tag protected by lock bit • Faulty or invalid ID tag (wrong identification; no ifm tag) • ID tag not formatted • No ID tag in the field (ID tag not in the detection zone)
False	True	FFFB	The read operation was aborted after a valid read attempt. The value FFFB is available for approx. 2 - 3 seconds, the data of the 1st page is then cyclically transferred. Possible errors: • Faulty or invalid ID tag (wrong identification; no ifm tag) • ID tag not formatted • No ID tag in the field (ID tag not in the detection zone)

5.4.3 FB_DTA200_SiemensKomp

Error codes of the FB (input error)				
Output			Description	
Done	Error	Status		
True	False	0000	Processing of the commands successfully finished	
False	True	8181	FB processes the commands (≤ 3 s). Processing cannot be finished; signal is applied for more than 3 seconds. Possible error: False Base_Address (comparison with hardware configuration)	
False	True	0030	Invalid master number (input 3 - Master_no)	
False	True	0040	Invalid slave number (input 4 - slave address)	
False	True	0050	Indication of the start page is 0; input possibly not connected. (Input 5 - Start_Page)	
False	True	0056	Indication of the end page is smaller than the start page. (Input 5 - Start_Page or input 6 - End_Page)	
False	True	0060	Indication of the end page is greater than 7 (input 7 - End_Page)	
False	True	0080	Values are outside the value range	Input 8 - Data_Page1, value range: 1..7FFFhex
False	True	0090		Input 9 - Data_Page2, value range: 0..7FFFhex
False	True	00A0		Input 10 - Data_Page3, value range: 0..7FFFhex
False	True	00B0		Input 11 - Data_Page4, value range: 0..7FFFhex
False	True	00C0		Input 12 - Data_Page5, value range: 0..7FFFhex
False	True	00D0		Input 13 - Data_Page6, value range: 0..7FFFhex
False	True	00E0		Input 14 - Data_Page7, value range: 0..7FFFhex

Error codes of the RFID read/write head			
Output			Description
Done	Error	Status	
False	True	FFFC	The write operation was aborted after a valid write attempt. Possible errors: - ID tag protected by lock bit - Faulty or invalid ID tag (wrong identification; no ifm tag) - ID tag not formatted - No ID tag in the field (ID tag not in the detection zone)
False	True	FFFB	The read operation was aborted after a valid read attempt. Possible errors: - Faulty or invalid ID tag (wrong identification; no ifm tag) - ID tag not formatted - No ID tag in the field (ID tag not in the detection zone)



For the error codes of the internal communication interface FC "ASI_3422" please refer to the Siemens documentation.

6 Technical data

The technical data of the ifm ID tags and the read/write head DTA200 can be found on our website at:

www.ifm.com → data sheet search → e.g. E80318