
Operating instructions parameter setting for M200D AS I standard starter

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1. Scope of delivery

1.1. Operating range

This function block is written to parameterize a M200D AS-i Standard starter. In this block the data set DS203 will be transferred to the starter. This block is important, if the data set DS203 is expected in the start-up mode.

It has to be used for SIEMENS AS-I Masters, which work with the AS-I Master function „ASi_3422“ (FC7).

The function block can only be used with the communication processors CP342/CP343 and PROFIBUS DP/ASi-Links of SIEMENS.

For the IE/AS-INTERFACE LINK PN IO this function block **cannot** be used. For further information see documentation of the ASi master.

1.1.1. CPUs

All CPUs of the SIEMENS series S7-300/400 can be used.

1.1.2. AS-i Master

This function block can be used for following SIEMENS ASI-Master:

communication processor	MLFB
CP 343-2	6GK7 343-2AH0x-0XA0
CP 343-2 P	6GK7 343-2AH1x-0XA0
DP/AS-i Master	
DP/AS-i LINK Advanced	6GK1 415-2BAxx
DP/AS-Interface Link 20E	6GK1 415-2AAxx

1.2. Overview of the S7-blocks

block-number	description	comment
FC7	ASi_3422	Integrated in FB 213
FB213	Parameter setting for motor starter M200D AS-I standard	Block-number can always be changed. FB can be used as a multi-instance.
UDT203	Data type for parameter	The parameter structure is indicated for the M200D AS-I Standard in this data type.

1.3. Necessary Software

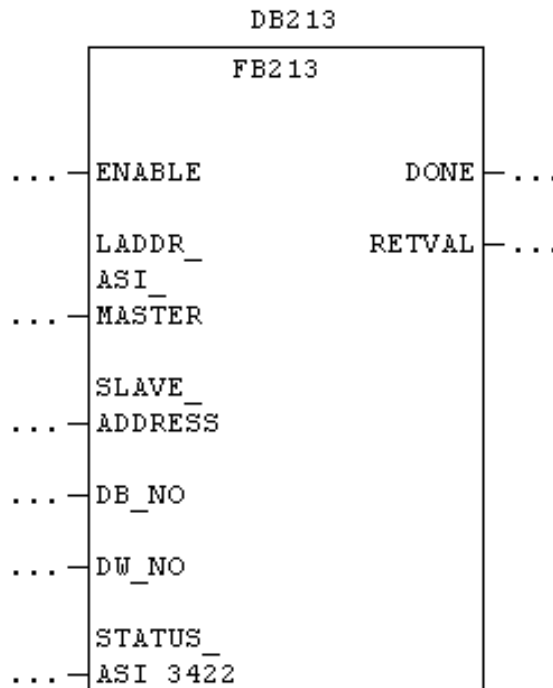
- Step 7 from V5.4+SP4

2. Implementation in S7 project

2.1. Step 7 blocks

The function block can be called from any block.

Attention	<p>The block can be contained several times in the user programme. Is this the case it must be ensured, that only one function block is active at the same time. This means, that only one „Enable“- Input may have the value „1“ at the same time.</p> <p>Parameter setting only can be executed if the motor starter is in "automatic" mode.</p> <p>See parameter description of function block „FC ASI_3422“ of ASi-Master manual.</p>
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The block number of FB213 can always be changed – the name DB213 is arbitrary as well here

2.1.1. Parameter description:

Name : M200D_ASI_WR_PARA

Name	Typ	Art	Memory area	comment
ENABLE	BOOL	I	I,O,M,D,L ,Constant	Trigger Parameter setting
LADDR_ASI_MASTER	WORD	I	I,O,M,D,L ,Constant	PII address of respective AS-i Master
SLAVE_ADDRESS	INT	I	I,O,M,D,L ,Constant	AS-i Slave Address of the respective Motor Starter
DB_NO	INT	I	I,O,M,D,L ,Constant	The parameters are deposited detail DB in this
DW_NO	INT	I	I,O,M,D,L ,Constant	The parameters are deposited detail the first bytes in this this
DONE	BOOL	O	I,O,M,D,L	Block has submitted parameters
RETVAL	WORD	O	I,O,M,D,L	Parameter setting successful or error.
STATUS_ASI_3422	DWORD	I/O	M,D	Status word of function block „ASi_3422“

2.1.1.1. ENABLE

With this parameter the parameter setting is started. The parameter can to be set with an impulse.

A edge evaluation of the input constituent internally is carried out.

2.1.1.2. LADDR_ASI_MASTER

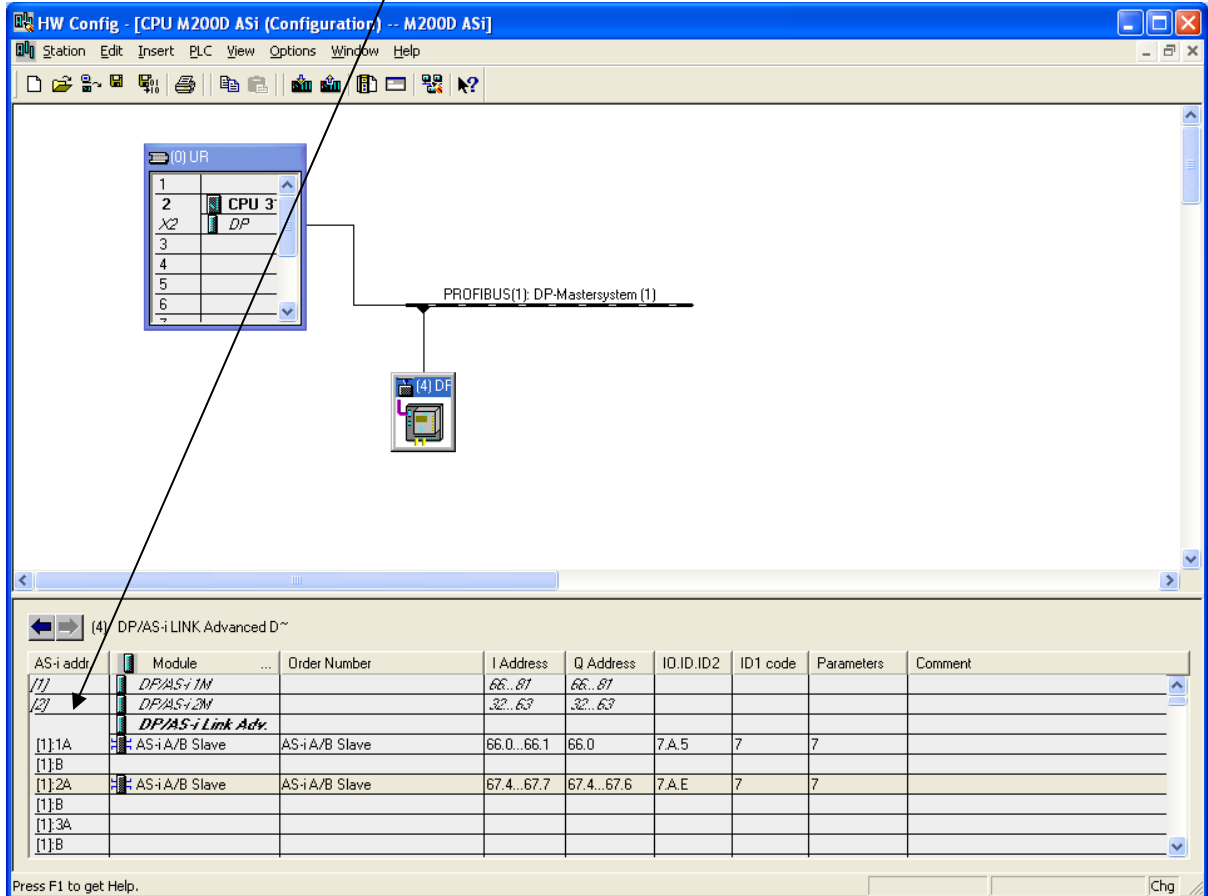
Here the start address of the process image input of the AS-i Master has to be set.

The screenshot shows the HW Config interface for a CPU M200D ASi system. The rack configuration shows a CPU 3 and a DP module connected to a PROFIBUS DP-Mastersystem. The detailed view of the DP/AS-i LINK Advanced D module is shown below, with the following table of AS-i addresses and parameters:

AS-i addr.	Module	Order Number	I Address	Q Address	IO.ID.ID2	ID1 code	Parameters	Comment
/1/	DP/AS-i 1M		66...81	66...81				
/2/	DP/AS-i 2M		32...63	32...63				
	DP/AS-i Link Adv.							
[1]:1A	AS-i A/B Slave	AS-i A/B Slave	66.0...66.1	66.0	7.A.5	7	7	
[1]:B								
[1]:2A	AS-i A/B Slave	AS-i A/B Slave	67.4...67.7	67.4...67.6	7.A.E	7	7	
[1]:B								
[1]:3A								
[1]:B								

2.1.1.3. SLAVE_ADDRESS

The slave address of the respective M200D Motor Starter has to be set here, with the IO.ID.ID2 7.A.5.



If the slave address is in B range you have added 32 to the address, for example 2B the address is $2+32=34$.

2.1.1.4. DB_NO

The parameters for a motor starter have to be deposited in a global data block. For the data block the enclosed UDT (UDT203 "DS203_Parameter") can be used.

Attention A false detail of DB_NO can lead to a STOP of the CPU!

2.1.1.5. DW_NO

The initial address has to be indicated here for the parameters in the DB_NO.

Attention The length of the data block is not checked. A false detail of DW_NO can lead to a STOP of the CPU!

2.1.1.6. DONE

Is the motor starter parameters submitted are this parameter on TRUE or block ends faults. Fault information look at RETVAL. With this parameter the "ENABLE" also can be moved back.

2.1.1.7. RETVAL

In output parameter RETVAL either status information's or error information displayed, which are generated by the function block. Error numbers higher than 8005_{hex} are error messages from the AS-I Function block ASi_3422 (FC7).

Value _{hex}	Meaning
0	Inactive
1	Transmission active
2	Transmission finished without failure
8001	not supported CTT2 command
8002	CCT2 error (ex. slave not available)
8003	Data record error (fault in the sent DS203)
8004	Unknown error
8005	Fault at access to DB_NO

2.1.1.8. STATUS_ASI_3422

With this parameter entry the status of the function Block As-i Diagnosis is displayed in a double word. If the function Block „M200D_ASi-Diagnosis“ for one AS-i-Master is used several times in the program, or the block „FC_ASi_3422“ is used for this AS-i-Master as well for a different function ¹, the identical data area for the parameter „Status_ASi_3422“ (or „Status“ for FC „ASi_3422“), always must be used for storing the Status double word (e.g. MD54 or DB11.DBD2).

3. Input of the parameters

¹ For a different function independent of the Function block Diagnosis

The parameter data for the motor starter have to be deposited in a global data block. A data area of one's own has to be used for every motor starter with a different parameter setting. For the motor starters with the same Parametrising, the same data area can be used.

3.1. Parameter setting

Byte-/Bit-Pos. UDT 203	Parameter	Range	Default
Data (=technology data)			
0...1	rated operational current I_e	[15 ... 200] 0,15 .. 2A [150 ... 1200] 1,5 .. 12A	[200] := 2A [1200] := 12A value * 0,01A
2 ^{0...3}	Tripping class	[0] CLASS 10 [1] CLASS 20 [3] CLASS 5 (10a) [4] CLASS 15 [15] CLASS OFF	[0] CLASS 10
2 ^{4...6}	Temperature sensor	[0] deactivated [1] Thermoclick [2] PTC Typ A	[0] deactivated
2 ⁷	Reserved		
3 ^{0...1}	Response to overload – thermal motor model	[0] Trip without restart [1] Trip with restart [2] Warning	[0] Trip without restart
3 ^{2...3}	Response to overload – temperature sensor	[0] Trip without restart [1] Trip with restart [2] Warning	[0] Trip without restart
3 ^{4...5}	Response to no contact block supply voltage	[0] Group fault [1] Group fault only with ON command [2] Group warning	[0] Group fault
3 ⁶	Response to limit violation	[0] Warning [1] Trip	[0] Warning
3 ⁷	Response to residual current detection	[0] Warning [1] Trip	[1] Trip
4 ^{0...1}	Response to circuit breaker OFF	[0] Group fault [1] Group fault only with ON command [2] Group warning	[0] Group fault
4 ²	Response to asymmetry	[0] Warning [1] Trip	[1] Trip
4 ³	Connector monitoring	[0]: deactivated [1]: line side	[0] deactivated
4 ^{4...7}	Reserved		
5 ^{0...3}	Response when connector is unplugged	[0] Group fault [1] Group fault only with ON command [2] Group warning	[0] Group fault
5 ⁴	Group diagnostics	[0] block [1]enable	[0] blocked
5 ⁵	Response to CPU/Master-STOP	[0] Switch substitute value [1] Retain last value	[0] Switch substitute value
5 ^{6...7}	reserved		
6	Lower current limit	[6 ... 32] 18,75 ... 100 % [0] deactivated	[6] := 18,75% Value * 3,125%
7	Upper current limit	[16 ... 128] 50 % ... 400 % [0] deactivated	[36] :=112,5% value * 3,125%
8 ⁰	Input 1 – Level	[0] NC [1] NO	[1] NO

Byte-/Bit-Pos. UDT 203	Parameter	Range	Default
8 ¹	Input 2 - Level	[0] NC [1] NO	[1] NO
8 ²	Input 3 - Level	[0] NC [1] NO	[1] NO
8 ³	Input 4 - Level	[0] NC [1] NO	[1] NO
8 ⁴	Input 1 - Signal	[0] non-retentive [1] retentive	[0] non-retentive
8 ⁵	Input 2 - Signal	[0] non-retentive [1] retentive	[0] non-retentive
8 ⁶	Input 3 - Signal	[0] non-retentive [1] retentive	[0] non-retentive
8 ⁷	Input 4 - Signal	[0] non-retentive [1] retentive	[0] non-retentive
9 ^{0...3}	Input 1 - Action	[0] No action	[0] No action
9 ^{4...7}	Input 2 - Action	[1] Trip without restart	[0] No action
10 ^{0...3}	Input 3 - Action	[2] Trip with restart	[0] No action
10 ^{4...7}	Input 4 - Action	[3] Trip end position CW [4] Trip end position CCW [5] Group warning [6] Manual operation local [7] Emergency start [8] Motor CW [9] Motor CCW [11] Quickstop [12] Trip-Reset [13] Cold run	[0] No action
11 ^{0...1}	Output 1 - Level	[0]: non-inverted [1]: inverted [2 ... 3]: reserved	[0] non-inverted
11 ^{2...5}	Output 1 - Signal	[0]: continuous [1]: flashing [6 ... 15]: reserved	[0] continuous
11 ^{6...7}	reserved		
12	Output 1 - Action	[0]: No action [01]: Control source PIO DO2 Slave 1 (Output 1) [06]: Control source Input 1 [07]: Control source Input 2 [08]: Control source Input 3 [09]: Control source Input 4 [10]: Run up [11]: Operating / Shunting [12]: Coasting down [13]: ON time motor (RUN) [14]: Control command motor (ON) [17]: Break output [18]: Device ON (PWR-AUX) [30]: Group prewarning [31]: Group warning [32]: Group fault [33]: Bus error [34]: Device error [38]: Ready for motor on	[1] PIO DO2 (X) Output
13	Starting time	[0 .. 120] 0 ... 30 s [0] minimum ramp (100 ms)	[20] := 5s Value * 0,25s
14	Run-down time	[0 .. 120] 0 ... 30 s [0] Function deactivated	[0] := 0s Value* 0,25s
15	Starting voltage	[4 ... 20] 20 ... 100 %	[8] := 40% Value* 5%
16	Stopping voltage	[4 ... 18] 20 ... 90 %	[8] := 40%

Byte-/Bit-Pos. UDT 203	Parameter	Range	Default
17	Current limit value	[40 ... 192] 125 ... 600 % for $I_e \geq 9 \text{ A} \rightarrow 125 \% \dots 550\%$	Value* 5% [192] 600% value* 3, 125%
18 ^{0...3}	Startup mode	[0] direct [1] Voltage ramp [4] Current limit [5] Voltage ramp + Current limit	[0] Direct
18 ^{4...7}	Run-down type	[0] Run-down without load [1] Voltage ramp	[0] Run-down without load
19	Prewarning limit motor heading	[0 .. 19] 0 ... 95 %; [0] = deactivated	[0] deactivated Value * 5%
20..21	Release delay time of brake on startup	[-250 ... 250] - 2,5 ... 2,5 s	[0] := 0s Value * 0,01s
22..23	Brake holding time on stopping	[0 ... 2500] 0 ... 25 s	[0] := 0s Value * 0,01s

NOTE The default values are deposited in the UDT 203!

3.1.1. Examples of parameter setting

Since several parameters are summarized in some bytes, these bytes are declared in the UDT as BOOL.

Tripping class

	CLASS 10 (default)	CLASS 20	CLASS 5 (10a)	CLASS 15	CLASS OFF
Bit 2 ⁰	0	1	1	0	1
Bit 2 ¹	0	0	1	0	1
Bit 2 ²	0	0	0	1	1
Bit 2 ³	0	0	0	0	1

Temperature sensor

	Deactivated (default)	Thermoclick	PTC Typ A
Bit 2 ⁴	0	1	0
Bit 2 ⁵	0	0	1
Bit 2 ⁶	0	0	0

Response to overload – thermal motor model

	Trip without	Trip with restart	Warning
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	restart (default)		
Bit 3 ⁰	0	1	0
Bit 3 ¹	0	0	1

Response to overload – temperature sensor

	Trip without restart (default)	Trip with restart	Warning
Bit 3 ²	0	1	0
Bit 3 ³	0	0	1

Response to no contact block supply voltage

	Group fault (default)	Group fault only with ON command	Group warning
Bit 3 ⁴	0	1	0
Bit 3 ⁵	0	0	1

Response to circuit breaker OFF

	Group fault (default)	Group fault only with ON command	Group warning
Bit 4 ⁰	0	1	0
Bit 4 ¹	0	0	1

Response when connector is unplugged

	Group fault (default)	Group fault only with ON command	Group warning
Bit 5 ⁰	0	1	0
Bit 5 ¹	0	0	1

Input Action (all inputs)

The parameter setting of the initial actions has to be carried out in the bytes 9 and 10. The detail is carried out as hexadecimal value.

	[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[11]	[12]	[13]
Byte 9 IN1	00	01	02	03	04	05	06	07	08	09	0B	0C	0D
Byte 9 IN2	00	01	02	03	04	05	06	07	08	09	0B	0C	0D
Byte 10 IN3	00	10	10	30	40	50	60	70	80	90	B0	C0	D0
Byte 10 IN4	00	10	10	30	40	50	60	70	80	90	B0	C0	D0

- [0] No action (0_{hex}) **(default)**
- [1] Trip without restart (1_{hex})
- [2] Trip with restart (2_{hex})
- [3] Trip end position CW (3_{hex})
- [4] Trip end position CCW (4_{hex})
- [5] Group warning (5_{hex})
- [6] Manual operation local (6_{hex})
- [7] Emergency start (7_{hex})
- [8] Motor CW (8_{hex})
- [9] Motor CCW (9_{hex})
- [11] Quickstop (B_{hex})
- [12] Trip-Reset (C_{hex})
- [13] Cold run (D_{hex})

Startup mode

The parameter setting of the startup mode has to be carried out in byte 18. The detail is carried out as hexadecimal value.

	Direct (default)	Voltage ramp	Current limit	Voltage ramp + Current limit
Byte 18	00	01	02	05

Run-down type

The parameter setting of the run-down type has to be carried out in byte 18. The detail is carried out as hexadecimal value.

	Run-down without load (default)	Voltage ramp
Byte 18	00	10