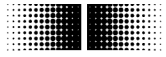


User Manual

Function Blocks for *FlexiDrive* MSIA with



For function block version 2.3
For MSIA firmware version 2.05 and higher



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1 Introduction

1.1 Product assignment

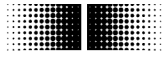
Table 1: Product assignment.

Product family	Product	Product Code	GSD file	Interface
<i>FlexiDrive</i>	MSIA 68 PBAX-N53 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 68 PBAX-N68 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 68 PBAX-N83 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 68 PBAX-N95 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP

Product family	Product	Product Code	GSD file	Interface
<i>FlexiDrive</i>	MSIA 53 PBAX-N53 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 68 PBAX-N68 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 83 PBAX-N83 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 95 PBAX-N95 xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP

Product family	Product	Product Code	GSD file	Interface
<i>FlexiDrive</i>	MSIA 42P2xxxx-C43xx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 53P2xxxx-N5xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 68P2xxxx-N6xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 83P2xxxx-N8xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP
<i>FlexiDrive</i>	MSIA 95P2xxxx-N9xxx xxxx	28	BEAG0793.GSD	PROFIBUS-DP

For instructions on drive operation and parameter details, see corresponding drive manual.



2 Safety and operating instructions

Intended purpose of software and manual

- This manual is intended as a supplement to already existing documentation (catalog, product information, assembly instructions and related product manual).
- Please read this manual carefully before initial appliance of software and related product.
- The described software function blocks are intended to be used in combination with the products listed in the product assignment. For further details, see corresponding product manual.

Supplementary information

- These software function blocks are available free of charge.
- These software function blocks require SIMATIC® S7 Manager version 4.02 and higher.
- Baumer Electric AG accepts no liability and no warranty that these block examples operate error-free.
- SIMATIC® is a registered trademark of Siemens AG.

Failure to comply with the safety remarks can result in malfunctions, personal injury or damage to property.

3 General requirements

For correct operation of the function blocks described in this manual, drive must be set to

- telegram PPO2 (parameter P922 = 2) and
- external target values (parameter P700 = 2 or 3).

This corresponds to the drive default settings. Parameter P700 is set automatically to 2 or 3 by FB100.

4 Function block for jogging, positioning and referencing

For easy access and movement control of the positioning motor *FlexiDrive* MSIA, the following function blocks are available for SIMATIC® S7 software environment:

- FB100: This function block can be used for data transfer between CPU and drive. It can be used several times in a SIMATIC® S7 software for an arbitrary number of drives. Instance data blocks are not necessary.
- DB10: Data block for function block FB100
- FC10: Example software program for call of FB100
- VAT1_POS: Variable table for testing. The drive can be directly controlled by this table.

By using the function block FB100, the following operation modes are possible

- Jogging
- Positioning
- Referencing
- Traversing blocks

These modes are controlled by input and output variables as described in the following sections.

Please note:

All target values (position, speed, maximum motor current) can be changed during an active positioning task and even while drive is moving. In this case, the drive responds according to target values. If an actual parameter value exceeds the actual parameter limit, a warning is activated.

The function block FB100 contains a limited internal parameter handling. This handling is restricted to the following functions: Parameter P45 (jogging velocity) is written automatically while IN_JOG_SPEED is changed (exception: if IN_JOG_SPEED = 0). Parameter P40 and P971 (actual position and save to EEPROM) are written during referencing while IN_SET_REFE is changed. Parameter P700 (operating mode) is automatically adjusted according to desired operating mode (IN_MODE = 2 or 3). For details on drive parameters and operational modes, see drive manual.

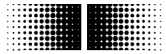
4.1 Jogging

Input variables

- IN_MODE = 0 (operational mode jogging in state machine)
- IN_ENABLE = true to enable movement (false for immediate emergency stop)
- IN_JOG_PLUS = true for jogging+
- IN_JOG_MINUS = true for jogging–
- IN_JOG_SPEED = value for target speed for jogging mode
- IN_RESET = true to acknowledge error

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_FAULT = true, if error is active
- OUT_WARNING = true, if warning is active
- OUT_DRIVE_READY = true, if drive is ready to start a positioning task (IN_ENABLE = true and no error is active)
- OUT_DRIVE_ACTIVE = true, if drive is active (4-quadrant controller)
- OUT_FAULT_BITS = value of last error number (see parameter P947)
- OUT_WARNING_BITS = value of last warning number (see parameter P953)



- OUT_ACTUAL_POSITION = value of actual position
- OUT_ACTUAL_SPEED = value of actual speed
- OUT_ACTUAL_CURRENT = value of actual current

If IN_JOG_PLUS or IN_JOG_MINUS is set from true to false the drive stops while the controller stays active and holds the actual position.

4.2 Positioning (Position control dynamic without ramp)

Input variables

- IN_MODE = 1 (operational mode positioning in state machine)
- IN_ENABLE = true to enable movement (false for immediate emergency stop)
- IN_SET_BLOCK_NO = 0 (the mode Traversing Block must not be active)
- IN_START = true to start positioning task (intermediate stop by subsequent false is possible)
- IN_RESET = true to acknowledge error
- IN_SETPOINT_POSITION = value of target position
- IN_SETPOINT_SPEED = value of target speed
- IN_MAX_CURRENT = value of maximum motor current

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_FAULT = true, if error is active
- OUT_WARNING = true, if warning is active
- OUT_DRIVE_READY = true, if drive is ready to start a positioning task (IN_ENABLE = true and no error is active)
- OUT_DRIVE_ACTIVE = true, if drive is active (4-quadrant controller)
- OUT_TARGET_POS_REACHED = true, if drive has reached target position
- OUT_FAULT_BITS = value of last error number (see parameter P947)
- OUT_WARNING_BITS = value of last warning number (see parameter P953)
- OUT_ACTUAL_POSITION = value of actual position
- OUT_ACTUAL_SPEED = value of actual speed
- OUT_ACTUAL_CURRENT = value of actual current

This mode does not allow to define acceleration and deceleration. The drive applies the maximum possible values and immediately reacts on changes of setpoint values. This mode is especially suitable for highly dynamic applications.

If it is necessary to define acceleration or deceleration the mode Traversing Block has to be chosen (see chapter 4.4).

4.3 Referencing

Input variables

- IN_MODE = 2 (operational mode referencing in state machine)
- IN_ENABLE = true to enable referencing
- IN_SET_REFE = true in order to set actual position as reference position
- IN_REFERENCE_POSITION = value of reference position

Output variable

- OUT_IN_REF_POS = true, if actual position is successfully set to reference position
- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_FAULT = true, if error is active
- OUT_WARNING = true, if warning is active
- OUT_FAULT_BITS = value of last error number (see parameter P947)
- OUT_WARNING_BITS = value of last warning number (see parameter P953)
- OUT_ACTUAL_POSITION = value of actual position

4.4 Traversing block (Position control with ramp)

Input variables

- IN_MODE = 3 (sub-mode of operational mode positioning in state machine)
- IN_ENABLE = true to enable movement (false for immediate emergency stop)
- IN_START = true to start positioning task (intermediate stop by subsequent false is possible)
- IN_RESET = true to acknowledge error
- IN_SET_BLOCK_NO = value of traversing block line number to be started (see parameter P20)

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_FAULT = true, if error is active
- OUT_WARNING = true, if warning is active
- OUT_DRIVE_READY = true, if drive is ready to start a positioning task (IN_ENABLE = true and no error is active)
- OUT_DRIVE_ACTIVE = true, if drive is active (4-quadrant controller)
- OUT_TARGET_REACHED = true, if drive has reached target position
- OUT_FAULT_BITS = value of last error number (see parameter P947)
- OUT_WARNING_BITS = value of last warning number (see parameter P953)
- OUT_ACTUAL_BLOCK_NO = value of active traversing block line number (see parameter P20)
- OUT_ACTUAL_POSITION = value of actual position
- OUT_ACTUAL_SPEED = value of actual speed
- OUT_ACTUAL_CURRENT = value of actual current

Use of the traversing block is intended for advanced drive movement control. The traversing block enables direct and efficient access to main movement parameters.

Active traversing block line number can be changed while start signal is active corresponding to an immediate drive response without stopping. Set IN_START to 0 and then to 1. The active traversing block line number is given by OUT_ACTUAL_BLOCK_NO.

Intermediate stop is possible during a positioning task by setting IN_START signal to 0. In this case, the drive stops immediately but the actual positioning task stays active. If the IN_START signal is set back to true, the drive finishes the active positioning task.

Traversing block lines 1-4 are pre-defined by default factory settings and should not be changed. For traversing block programming, line 5-20 are intended. For further details on traversing block array definition, please see drive manual.

4.5 Change of mode

The mode is changed after input variable IN_MODE is modified. The drive responds immediately while the controller is not active for a short moment.

5 Function block for read and write parameters

For setting parameters of the positioning motor *FlexiDrive* MSIA, the following function blocks are available for SIMATIC® S7 software environment:

- FB101: The function block FB101 can be used for all parameter and block transfer between CPU and drive. This functional block can be used several times in an SIMATIC® S7 software for an arbitrary number of drives. Instance data blocks are not necessary.
- DB11: Data block for function block FB101
- DB50: Data block for read/write all parameters excluding parameter 20
- DB51: Data block for read/write parameter 20 (traversing block lines)
- FC11: Example software program for call of FB101.
- VAT2_PARA: For testing read/write operations (no drive movement operations).

Different modes are possible where the drive is controlled by the following input and output variables:

- Parameter read
- Parameter write
- Traversing block read
- Traversing block write
- Save to EEPROM
- Load default parameters

Please note: Parameters in data blocks must be set up as actual active values which can be updated dynamically. Setting up parameters as starting values is not sufficient.

5.1 Parameter read

Input variables

- IN_PARA_NO = value of parameter number PNU (if 0, read all parameters)
- IN_PARA_SUBIND = value of parameter sub-index (or 0, if no parameter array)
- IN_READ_PARA = true, to start read procedure

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_READ_PARA_ACTIVE = true, if read procedure is active
- OUT_READ_PARA_DONE_OK = true, if read procedure is finished
- OUT_READ_PARA_DONE_ERR = true, if read error
- DB50 (contains read parameters)

ATTENTION: The function blocks version 2.1 do not support the parameters P28, P34, P206, P701, P964-8 and P964-9 which are implemented in MSIA firmware version 2.03 or higher. The function Parameter read will not find these parameters.

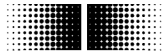
5.2 Parameter write

Input variables

- IN_PARA_NO = value of parameter number PNU (if 0, write all parameters)
- IN_PARA_SUBIND = value of parameter sub-index (or 0, if no parameter array)
- IN_WRITE_PARA = true, to start write procedure
- DB50 (contains write parameters)

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_WRITE_PARA_ACTIVE = true, if write procedure is active
- OUT_WRITE_PARA_DONE_OK = true, if write procedure is finished
- OUT_WRITE_PARA_DONE_ERR = true, if write error occurred



ATTENTION: The function blocks version 2.1 do not support the parameters P28, P34, P206, P701, P964-8 and P964-9 which are implemented in MSIA firmware version 2.03 or higher. The function Parameter write will not write the parameters P34, P206 and P701 to the drive.

5.3 Traversing block read

Input variables

- IN_BLOCK_NO = value of traversing block line number (if 0, read all traversing block lines)
- IN_READ_BLOCK = true, to start read procedure

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_READ_BLOCK_ACTIVE = true, if read procedure is active
- OUT_READ_BLOCK_DONE_OK = true, if read procedure is finished
- OUT_READ_BLOCK_DONE_ERR = true, if read error occurred
- DB51 (contains traversing block parameters to read)

5.4 Traversing block write

Input variables

- IN_BLOCK_NO = value of traversing block line number (if 0, write all traversing block lines)
- IN_WRITE_PARA = true, to start write procedure
- DB51 (contains traversing block parameters to write)

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_WRITE_BLOCK_ACTIVE = true, if write procedure is active
- OUT_WRITE_BLOCK_DONE_OK = true, if write procedure is finished
- OUT_WRITE_BLOCK_DONE_ERR = true, if write error occurred

5.5 Save to EEPROM

Input variables

- IN_SAVE_EEPR = true, to save actual parameters

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_SAVE_EEPR_ACTIVE = true, if save procedure is active
- OUT_SAVE_EEPR_DONE_OK = true, if save procedure is finished
- OUT_SAVE_EEPR_DONE_ERR = true, if save error occurred

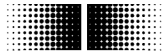
5.6 Load default parameters

Input variables

- IN_LOAD_DEF = true, to load default parameters

Output variables

- OUT_COMMUNICATION_OK = true, if communication to drive is active
- OUT_LOAD_DEF_ACTIVE = true, if load procedure is active
- OUT_LOAD_DEF_DONE_OK = true, if load procedure is finished
- OUT_LOAD_DEF_DONE_ERR = true, if load error occurred



6 Variable table and data block overview

Figure 1: Screen shot of variable table VAT1_POS for function block FB100 and data block DB10.

	Address	Symbol	Symbol comment	Displa	Status value
1					
2	// Data/Signals to drive				
3	DB10.DBX 0.0	"DB_IF_POS_DRIVE_1".IN_ENABLE	Enable Drive	BOOL	
4	DB10.DBX 0.1	"DB_IF_POS_DRIVE_1".IN_START	Start Positioning	BOOL	
5	DB10.DBX 0.2	"DB_IF_POS_DRIVE_1".IN_JOG_PLUS	Jogging +	BOOL	
6	DB10.DBX 0.3	"DB_IF_POS_DRIVE_1".IN_JOG_MINUS	Jogging -	BOOL	
7	DB10.DBX 0.4	"DB_IF_POS_DRIVE_1".IN_SET_REFE	Set Reference point	BOOL	
8	DB10.DBX 0.5	"DB_IF_POS_DRIVE_1".IN_RESET	Reset Error Messages	BOOL	
9	DB10.DBB 1	"DB_IF_POS_DRIVE_1".IN_MODE	Mode (0=Jogging,1=Positioning,2=Set Reference,3=Traversing Block)	DEC	
10	DB10.DBD 2	"DB_IF_POS_DRIVE_1".IN_SETPOINT_POSITION	Setpoint Position	DEC	
11	DB10.DBW 6	"DB_IF_POS_DRIVE_1".IN_SETPOINT_SPEED	Setpoint Speed	DEC	
12	DB10.DBW 8	"DB_IF_POS_DRIVE_1".IN_MAX_CURRENT	Maximum Current	DEC	
13	DB10.DBD 10	"DB_IF_POS_DRIVE_1".IN_REFERENCE_POSITION	Reference Position	DEC	
14	DB10.DBW 14	"DB_IF_POS_DRIVE_1".IN_JOG_SPEED	Jog Speed	DEC	
15	DB10.DBW 16	"DB_IF_POS_DRIVE_1".IN_SET_BLOCK_NO	Set Traversing Block Line Number	DEC	
16					
17	// Data/Signals from drive				
18	DB10.DBX 20.0	"DB_IF_POS_DRIVE_1".OUT_COMMUNICATION_OK	Communication ok	BOOL	
19	DB10.DBX 20.1	"DB_IF_POS_DRIVE_1".OUT_FAULT	Error Flag	BOOL	
20	DB10.DBX 20.2	"DB_IF_POS_DRIVE_1".OUT_WARNING	Warning Flag	BOOL	
21	DB10.DBX 20.3	"DB_IF_POS_DRIVE_1".OUT_DRIVE_READY	Drive Ready	BOOL	
22	DB10.DBX 20.4	"DB_IF_POS_DRIVE_1".OUT_DRIVE_ACTIVE	Drive is active	BOOL	
23	DB10.DBX 20.5	"DB_IF_POS_DRIVE_1".OUT_TARGET_REACHED	Target reached	BOOL	
24	DB10.DBX 20.6	"DB_IF_POS_DRIVE_1".OUT_IN_REF_POS	In Reference Position	BOOL	
25	DB10.DBW 22	"DB_IF_POS_DRIVE_1".OUT_FAULT_BITS	Error Messages (see table 10)	HEX	
26	DB10.DBW 24	"DB_IF_POS_DRIVE_1".OUT_WARNING_BITS	Warning Messages (see table 11)	HEX	
27	DB10.DBD 26	"DB_IF_POS_DRIVE_1".OUT_ACTUAL_POSITION	Actual Position	DEC	
28	DB10.DBW 30	"DB_IF_POS_DRIVE_1".OUT_ACTUAL_SPEED	Actual Speed	DEC	
29	DB10.DBW 32	"DB_IF_POS_DRIVE_1".OUT_ACTUAL_CURRENT	Actual Current	DEC	
30	DB10.DBW 34	"DB_IF_POS_DRIVE_1".OUT_ACTUAL_BLOCK_NO	Actual Traversing Block Line Number	DEC	
31					
32	DB900.DBX 20.0	"DB_HMI".TP170_ACTIVE	Operator Panel TP170 Active	BOOL	
33					

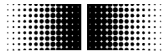


Figure 2: Screen shot of variable table VAT2_PARA for function block FB101 and data block DB11.

	Address	Symbol	Symbol comment	Displa	Status: value
1					
2	// Data/Signals to drive				
3	DB11.DBW 0	"DB_IF_PARA_DRIVE_1".IN_PARA_NO	Parameter Number (0=All Parameters)	DEC	
4	DB11.DBW 2	"DB_IF_PARA_DRIVE_1".IN_PARA_SUBIND	Parameter Sub-Index (0=no Sub-Index)	DEC	
5	DB11.DBX 4.0	"DB_IF_PARA_DRIVE_1".IN_READ_PARA	Read Parameter(s) from Drive	BOOL	
6	DB11.DBX 4.1	"DB_IF_PARA_DRIVE_1".IN_WRITE_PARA	Write Parameter(s) to Drive	BOOL	
7	DB11.DBX 4.2	"DB_IF_PARA_DRIVE_1".IN_LOAD_DEF	Load default Parameters (all Parameters)	BOOL	
8	DB11.DBX 4.3	"DB_IF_PARA_DRIVE_1".IN_SAVE_EEPR	Save Parameters to EEPROM (all Parameters)	BOOL	
9	DB11.DBW 6	"DB_IF_PARA_DRIVE_1".IN_BLOCK_NO	Traversing Block Line Number (0=All Line Numbers)	DEC	
10	DB11.DBX 8.0	"DB_IF_PARA_DRIVE_1".IN_READ_BLOCK	Read Traversing Block from Drive	BOOL	
11	DB11.DBX 8.1	"DB_IF_PARA_DRIVE_1".IN_WRITE_BLOCK	Write Traversing Block to Drive	BOOL	
12					
13	// Data/Signals from drive				
14	DB11.DBX 14.0	"DB_IF_PARA_DRIVE_1".OUT_COMMUNICATION_OK	Parameter Communication ok	BOOL	
15	DB11.DBX 14.1	"DB_IF_PARA_DRIVE_1".OUT_READ_PARA_ACTIVE	Read Parameter Active	BOOL	
16	DB11.DBX 14.2	"DB_IF_PARA_DRIVE_1".OUT_WRITE_PARA_ACTIVE	Write Parameter Active	BOOL	
17	DB11.DBX 14.3	"DB_IF_PARA_DRIVE_1".OUT_LOAD_DEF_ACTIVE	Load Defaults Active	BOOL	
18	DB11.DBX 14.4	"DB_IF_PARA_DRIVE_1".OUT_SAVE_EEPR_ACTIVE	Save to EEPROM Active	BOOL	
19	DB11.DBX 14.5	"DB_IF_PARA_DRIVE_1".OUT_READ_BLOCK_ACTIVE	Read Traversing Block Active	BOOL	
20	DB11.DBX 14.6	"DB_IF_PARA_DRIVE_1".OUT_WRITE_BLOCK_ACTIVE	Write Traversing Block Active	BOOL	
21	DB11.DBX 14.7	"DB_IF_PARA_DRIVE_1".OUT_READ_PARA_DONE_OK	Read Parameter Done ok	BOOL	
22	DB11.DBX 15.0	"DB_IF_PARA_DRIVE_1".OUT_READ_PARA_DONE_ERR	Read Parameter Done with Error	BOOL	
23	DB11.DBX 15.1	"DB_IF_PARA_DRIVE_1".OUT_WRITE_PARA_DONE_OK	Write Parameter Done ok	BOOL	
24	DB11.DBX 15.2	"DB_IF_PARA_DRIVE_1".OUT_WRITE_PARA_DONE_ERR	Write Parameter Done with Error	BOOL	
25	DB11.DBX 15.3	"DB_IF_PARA_DRIVE_1".OUT_LOAD_DEF_DONE_OK	Load Defaults Done ok	BOOL	
26	DB11.DBX 15.4	"DB_IF_PARA_DRIVE_1".OUT_LOAD_DEF_DONE_ERR	Load Defaults Done with Error	BOOL	
27	DB11.DBX 15.5	"DB_IF_PARA_DRIVE_1".OUT_SAVE_EEPR_DONE_OK	Save to EEPROM Done ok	BOOL	
28	DB11.DBX 15.6	"DB_IF_PARA_DRIVE_1".OUT_SAVE_EEPR_DONE_ERR	Save to EEPROM Done with Error	BOOL	
29	DB11.DBX 15.7	"DB_IF_PARA_DRIVE_1".OUT_READ_BLOCK_DONE_OK	Read Traversing Block Done ok	BOOL	
30	DB11.DBX 16.0	"DB_IF_PARA_DRIVE_1".OUT_READ_BLOCK_DONE_ERR	Read Traversing Block Done with Error	BOOL	
31	DB11.DBX 16.1	"DB_IF_PARA_DRIVE_1".OUT_WRITE_BLOCK_DONE_OK	Write Traversing Block Done ok	BOOL	
32	DB11.DBX 16.2	"DB_IF_PARA_DRIVE_1".OUT_WRITE_BLOCK_DONE_ERR	Write Traversing Block Done with Error	BOOL	
33					

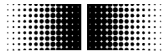


Figure 3: Screen shot of data block DB10.

Address	Name	Type	Initial val	Comment
0.0		STRUCT		
+0.0	IN_ENABLE	BOOL	FALSE	Enable Drive
+0.1	IN_START	BOOL	FALSE	Start Positioning
+0.2	IN_JOG_PLUS	BOOL	FALSE	Jogging +
+0.3	IN_JOG_MINUS	BOOL	FALSE	Jogging -
+0.4	IN_SET_REFE	BOOL	FALSE	Set Reference point
+0.5	IN_RESET	BOOL	FALSE	Reset Error Messages
+0.6	IN_6	BOOL	FALSE	
+0.7	IN_7	BOOL	FALSE	
+1.0	IN_MODE	BYTE	B#16#0	Mode (0=Jogging,1=Positioning,2=Set Reference,3=Traversing Block)
+2.0	IN_SETPOINT_POSITION	DINT	L#0	Setpoint Position
+6.0	IN_SETPOINT_SPEED	INT	0	Setpoint Speed
+8.0	IN_MAX_CURRENT	INT	0	Maximum Current
+10.0	IN_REFERENCE_POSITION	DINT	L#0	Reference Position
+14.0	IN_JOG_SPEED	INT	0	Jog Speed
+16.0	IN_SET_BLOCK_NO	INT	0	Set Traversing Block Line Number
+18.0	_18	INT	0	
+20.0	OUT_COMMUNICATION_OK	BOOL	FALSE	Communication ok
+20.1	OUT_FAULT	BOOL	FALSE	Error Flag
+20.2	OUT_WARNING	BOOL	FALSE	Warning Flag
+20.3	OUT_DRIVE_READY	BOOL	FALSE	Drive Ready
+20.4	OUT_DRIVE_ACTIVE	BOOL	FALSE	Drive is active
+20.5	OUT_TARGET_REACHED	BOOL	FALSE	Target reached
+20.6	OUT_IN_REF_POS	BOOL	FALSE	In Reference Position
+20.7	OUT_7	BOOL	FALSE	
+22.0	OUT_FAULT_BITS	INT	0	Error Messages (see table 10)
+24.0	OUT_WARNING_BITS	INT	0	Warning Messages (see table 11)
+26.0	OUT_ACTUAL_POSITION	DINT	L#0	Actual Position
+30.0	OUT_ACTUAL_SPEED	INT	0	Actual Speed
+32.0	OUT_ACTUAL_CURRENT	INT	0	Actual Current
+34.0	OUT_ACTUAL_BLOCK_NO	INT	0	Actual Traversing Block Line Number
+36.0	_36	INT	0	
+38.0	_38	INT	0	
+40.0	_40	INT	0	
+42.0	_42	INT	0	
+44.0	_44	INT	0	
+46.0	_46	INT	0	
+48.0	_48	INT	0	
=50.0		END_STRUCT		

Table 2: OUT_STATE: State of the drive within the state machine (see also drive manual)

OUT_STATE	State of drive
1	NOT READY
2	READY
3	TASK ACTIVE
4	INTERMEDIATE STOP
5	JOGGING
6	REFERENCING
7	OFF 1 ACTIVE
8	OFF 2 ACTIVE
9	OFF 3 ACTIVE
10	ERROR
11	POWER-ON INHIBIT

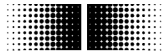


Figure 4: Screen shot of data block DB11.

Address	Name	Type	Initial val.	Comment
0.0		STRUCT		
+0.0	IN_PARA_NO	INT	0	Parameter Number (0=All Parameters)
+2.0	IN_PARA_SUBIND	INT	0	Parameter Sub-Index (0=no Sub-Index)
+4.0	IN_READ_PARA	BOOL	FALSE	Read Parameter(s) from Drive
+4.1	IN_WRITE_PARA	BOOL	FALSE	Write Parameter(s) to Drive
+4.2	IN_LOAD_DEF	BOOL	FALSE	Load default Parameters (all Parameters)
+4.3	IN_SAVE_EEPR	BOOL	FALSE	Save Parameters to EEPROM (all Parameters)
+6.0	IN_BLOCK_NO	INT	0	Traversing Block Line Number (0=All Line Numbers)
+8.0	IN_READ_BLOCK	BOOL	FALSE	Read Traversing Block from Drive
+8.1	IN_WRITE_BLOCK	BOOL	FALSE	Write Traversing Block to Drive
+8.2	IN_9	BOOL	FALSE	
+8.3	IN_10	BOOL	FALSE	
+10.0	_10	INT	0	
+12.0	_12	INT	0	
+14.0	OUT_COMMUNICATION_OK	BOOL	FALSE	Parameter Communication ok
+14.1	OUT_READ_PARA_ACTIVE	BOOL	FALSE	Read Parameter Active
+14.2	OUT_WRITE_PARA_ACTIVE	BOOL	FALSE	Write Parameter Active
+14.3	OUT_LOAD_DEF_ACTIVE	BOOL	FALSE	Load Defaults Active
+14.4	OUT_SAVE_EEPR_ACTIVE	BOOL	FALSE	Save to EEPROM Active
+14.5	OUT_READ_BLOCK_ACTIVE	BOOL	FALSE	Read Traversing Block Active
+14.6	OUT_WRITE_BLOCK_ACTIVE	BOOL	FALSE	Write Traversing Block Active
+14.7	OUT_READ_PARA_DONE_OK	BOOL	FALSE	Read Parameter Done ok
+15.0	OUT_READ_PARA_DONE_ERR	BOOL	FALSE	Read Parameter Done with Error
+15.1	OUT_WRITE_PARA_DONE_OK	BOOL	FALSE	Write Parameter Done ok
+15.2	OUT_WRITE_PARA_DONE_ERR	BOOL	FALSE	Write Parameter Done with Error
+15.3	OUT_LOAD_DEF_DONE_OK	BOOL	FALSE	Load Defaults Done ok
+15.4	OUT_LOAD_DEF_DONE_ERR	BOOL	FALSE	Load Defaults Done with Error
+15.5	OUT_SAVE_EEPR_DONE_OK	BOOL	FALSE	Save to EEPROM Done ok
+15.6	OUT_SAVE_EEPR_DONE_ERR	BOOL	FALSE	Save to EEPROM Done with Error
+15.7	OUT_READ_BLOCK_DONE_OK	BOOL	FALSE	Read Traversing Block Done ok
+16.0	OUT_READ_BLOCK_DONE_ERR	BOOL	FALSE	Read Traversing Block Done with Error
+16.1	OUT_WRITE_BLOCK_DONE_OK	BOOL	FALSE	Write Traversing Block Done ok
+16.2	OUT_WRITE_BLOCK_DONE_ERR	BOOL	FALSE	Write Traversing Block Done with Error
+16.3	OUT_20	BOOL	FALSE	
+16.4	_15	BOOL	FALSE	
+16.5	_16	BOOL	FALSE	
+16.6	_17	BOOL	FALSE	
=18.0		END_STRUCT		