SIEMENS

ICs for Consumer Electronics
MEGATEXT

Display Register Control Routines

Edition 10.94

MEGATEXT® Display Register Control Routines Revision History: Original Version 10.94	
Previous Releases:	
Page	Subjects (changes since last revision)

Data Classification

Maximum Ratings

Maximum ratings are absolute ratings; exceeding only one of these values may cause irreversible damage to the integrated circuit.

Characteristics

The listed characteristics are ensured over the operating range of the integrated circuit. Typical characteristics specify mean values expected over the production spread. If not otherwise specified, typical characteristics apply at T_A = 25 °C and the given supply voltage.

Operating Range

In the operating range the functions given in the circuit description are fulfilled.

For detailed technical information about **“Processing Guidelines”** and **“Quality Assurance”** for ICs, see our **“Short Form Catalog”**.

Edition 10.94

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Packing

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For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

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1 Introduction

SIESTA® MEGATEXT software is a Siemens software tool to provide the programmer of the SDA 5273 (MEGATEXT) an easy access to basic functions. The following introductory chapter gives an overview of the development environment and how to use this manual.

1.1 Environment

It is assumed that your MEGATEXT software is written in 8051 assembler language. This is the most effective way to write software with optimized program and data memory consumption.

1.1.1 Hardware

The software development for 8051 based controllers should be done on an IBM PCXT, AT or compatible. It is recommended to use at least 512 Kbytes of conventional memory. If more memory or a RAM disk are available, the assembly time may decrease. For testing the software, an in-circuit emulator (e.g. KONTRON KSC X51) provides an optimum of efficiency.

1.1.2 Software

The following software is needed to develop assembler software:

– INTEL AEDIT program editor (or any other program editor)
– INTEL ASM51 assembler
– INTEL RL51 linker

If an assembler or linker other than an Intel is used, the source files must be adapted (assembler and linker control commands might not work with other than Intel tools).

1.2 How to Use This Manual

The main part of this manual gives information about subroutines contained in a module named ‘MTXD’. The source code of this module is located in a file named ‘MTXDISPL.A51’.

The subroutines are described in functional groups. A table of subroutines in alphabetic order is given in Chapter 4.

Each subroutine is classified by its name and by a description of input and output parameters. Generally, the accumulator, registers R0 – R7 and the carry bit are used for parameter passing.

If it is necessary to describe the single bits of a byte, the following format is used:

b7	b6	b5	b4	b3	b2	b1	b0

b7 – b0 <significance>

The bit at the lefthand side of the figure (b7) is always regarded to be the most significant bit (MSB). The bit at the righthand side of the figure (b0) always represents the least significant bit (LSB).

Numbers may be shown in three different formats: decimal, hexadecimal or binary. Decimal numbers have no suffix, e.g. 1, 34, 255, 12345 are decimal numbers. Hexadecimal numbers always have an ‘H’ suffix. For example, 12_H, $0FF_H$, $12AA_H$ are hexadecimal numbers. Binary numbers use a ‘B’ as a suffix: 00101100_B, 11111111_B are binary numbers.

A list of abbreviations used is given in Chapter 5. Chapter 6 shows literature on Siemens MEGATEXT. Chapter 7 contains an alphabetic index and will help you to find information in this manual quickly.

1.3 MEGATEXT Memory Addresses

MEGATEXT is able to address 24 Kbytes of its internal RAM as well as up to 2 Mbytes of external DRAM. For each memory type, internal or external, a different address type is used. As these address formats use packed data to address the different logical units (block, byte position, chapter, row, column), two corresponding formats (user formats) are defined in the MTXD module which allow the programmer of MEGATEXT to use more convenient addressing. The following tables describe the MEGATEXT and the user address formats in detail.

The byte at the top of the list is always the most significant byte. This is the byte which is stored at the lowest address in controller memory. All bytes must be stored in sequential order.

User address format for internal MEGATEXT RAM:

0	**0**	**0**	**0**	**0**	**BP2**	**BP1**	**BP0**

0	**0**	**0**	**0**	**0**	**0**	**BL1**	**BL0**

0	**0**	**0**	**R4**	**R3**	**R2**	**R1**	**R0**

0	**0**	**C5**	**C4**	**C3**	**C2**	**C1**	**C0**

The bits have the following significance:

BPn	Byte position (binary number, 0 – 5)
BLn	Block number (binary number, 0 – 3)
Rn	Row number (binary number, 0 – 25)
Cn	Column number (binary number, 0 – 39)

MEGATEXT address format for internal MEGATEXT RAM:

0	**0**	**0**	**0**	**BY5**	**BY4**	**BY3**	**BY2**
BY1	**BY0**	**0**	**BL1**	**BL0**	**R4**	**R3**	**R2**
R1	**R0**	**C5**	**C4**	**C3**	**C2**	**C1**	**C0**

The bits have the following significance:

BYn Byte position (decimal number, 0 – 5), only one of the BYn bits must be set to ‘1’, the other ones must be set to ‘0’.

BLn Block number (binary number, 0 – 3)

Rn Row number (binary number, 0 – 25)

Cn Column number (binary number, 0 – 39)

User address format for external MEGATEXT RAM:

0	**0**	**0**	**0**	**0**	**B10**	**B9**	**B8**
B7	**B6**	**B5**	**B4**	**B3**	**B2**	**B1**	**B0**
0	**0**	**0**	**R4**	**R3**	**R2**	**R1**	**R0**
0	**0**	**C5**	**C4**	**C3**	**C2**	**C1**	**C0**

The bits have the following significance:

Bn Chapter number (binary number, 0 – 511)

Rn Row number (binary number, 0 – 25)

Cn Column number (binary number, 0 – 39)

MEGATEXT address format for external MEGATEXT RAM:

1	**0**	**B10**	**B9**	**B8**	**B7**	**B6**	**B5**
B4	**B3**	**B2**	**B1**	**B0**	**R4**	**R3**	**R2**
R1	**R0**	**C5**	**C4**	**C3**	**C2**	**C1**	**C0**

The bits have the following significance:

Bn Chapter number (binary number, 0 – 2048)

Rn Row number (binary number, 0 – 25)

Cn Column number (binary number, 0 – 39)

2 Module Description

The MTXDISPL.A51 file contains the source code of the MTXD module: subroutines to execute basic functions and procedures for the Siemens MEGATEXT display generator.

2.1 Module Links

The MTXD module is unable to operate as a standalone program. Because of system modularity and flexibility it must be linked with some modules which are also contained in SIESTA MEGATEXT software. The source codes for these modules are contained in the following files:

- M3LHBASE.A51 (basic routines for M3L-Bus transmission, using 3-wire bus protocol).
- MTXBASIC.A51 (MEGATEXT register control routines, see [6]).

Instead of the M3LH module a programmer could decide to use either the M3LS (M3L-Bus driver using a software interface) or the IICH or IICS module (I^2C Bus drivers using hardware or software interface). Contact Siemens HL UE AT if you are interested in using other than the M3LH module which is contained on your distribution disk.

2.2 Include Files

MTXDISPL.A51 uses include files to define constant values and external symbols. The following include files (included by ASM51) must be contained in the same directory as MTXDISPL.A51 when working with the Intel assembler:

- REGISTER.INC (defines the names and addresses of the microcontroller's special-function registers. It is recommended to use one of the files contained on the Siemens SIESTA Software Utilities diskette 'SFR Definitions'). Your distribution disk contains a REGISTER.INC file for an SDA 30C162 microcontroller.
- MEGATEXT.INC (defines constant values for Siemens MEGATEXT, e.g. register addresses and command numbers).

2.3 External Calls

SIESTA MEGATEXT software offers an include file called MTXDISPL.INC which declares all public symbols of the MTXD module. So the line $include (MTXDISPL.INC) in the user's module(s) provides easy use of MEGATEXT routines. No further declaration of external symbols is necessary. However, if the number of external symbols in the user's module exceeds the capability of the linker (error message 'TOO MANY SYMBOLS'), it is recommended not to use the MTXDISPL.INC file but to declare the external symbols especially for the user module. So only the symbols which are really used in the module can be declared and the number of external symbols decreases.

To call any one of the subroutines of MTXDISPL.A51 from another module, the user has only to load the subroutine input parameters into the appropriate registers and then insert the following command: CALL <subroutine name>.

Each subroutine may modify the contents of the accumulator, the registers R0 through R7, the data pointer (DPTR), the program status word (PSW) and the B register.

3 Subroutine Description

The following chapter describes all subroutines of the MTXD module. The subroutine descriptions are divided into groups concerning the different display registers of MEGATEXT. At the end of each description there is an overview of the display register bits which are influenced by the routine.

3.1 Character Display Word

This subchapter describes routines which influence the character display word of Siemens MEGATEXT.

3.1.1 GET_DISPLAY_WORD

Name	**GET_DISPLAY_WORD**
Function	Reads a complete display word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R5 – R7	Address of display word to read in user address format (block, row and column number). R5 contains the block number, R6 contains the row number and R7 contains the column number.
R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the display word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the destination address.

Input Parameters (cont'd)

DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the display word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to '1' if an error occured during transmission on the serial bus.

The GET_DISPLAY_WORD routine is intended to be used mainly to read a character display word from the basic display area. However, it can serve also to read other display words, e.g. from the outer screen display area or from the inner screen display/mask registers.

3.1.2 SET_DISPLAY_WORD

Name	**SET_DISPLAY_WORD**
Function	Writes a complete display word, consisting of 5 bytes (byte positions 0 – 4) to the internal MEGATEXT memory.

Input Parameters

R5 – R7	Address of display word to write in user address format (block, row and column number). R5 contains the block number, R6 contains the row number and R7 contains the column number.
R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the display word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT display word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to the first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the display word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT display word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occured during transmission on the serial bus.

The SET_DISPLAY_WORD routine is intended to be used mainly to write a character display word to the basic display area. However, it can serve also to write other display words, e.g. to the outer screen display area or to the inner screen display/mask registers.

3.2 Page Cursor Position Word

This subchapter describes routines which read or modify the page cursor position word of MEGATEXT.

3.2.1 GET_PAGE_CURSOR_POSITION

Name	**GET_PAGE_CURSOR_POSITION**
Function	Reads the actual position of the page cursor. The page cursor is always located in the ISDA.

Output Parameters

R6	Row number where page cursor is actually located.
R7	Column number where page cursor is actually located.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE CURSOR POSITION WORD

Display Register Bits

PCPWC
PCPWR

3.2.2 SET_PAGE_CURSOR_POSITION

Name	SET_PAGE_CURSOR_POSITION
Function	Sets the position of the page cursor in the ISDA.

Input Parameters

R6	Row number where the page cursor is set to. Allowed input range: 0 – 25.
R7	Column number where the page cursor is set to. Allowed input range: 0 – 39. If row number is set to 25, only columns 0 – 23 are allowed.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE CURSOR POSITION WORD

Display Register Bits

PCPWC
PCPWR

3.3 Sync Delay Word

This subchapter describes routines which affect the sync delay word of Siemens MEGATEXT.

3.3.1 GET_SDW_BYTE

Name	GET_SDW_BYTE
Function	Reads one byte of the sync delay word.

Input Parameters

R6	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the sync delay word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

SYNC DELAY WORD

3.3.2 SET_SDW_BYTE

Name	SET_SDW_BYTE
Function	Writes one byte of the sync delay word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the sync delay word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Registers

SYNC DELAY WORD

3.3.3 GET_SDW

Name	GET_SDW
Function	Reads the complete sync delay word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the sync delay word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to the first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the sync delay word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

SYNC DELAY WORD

Display Register Bits

SDWC
SDWL
SDWR
LLC
FLC

3.3.4 SET_SDW

Name	**SET_SDW**
Function	Writes the complete sync delay word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the sync delay word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT sync delay word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the sync delay word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT sync display word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

SYNC DELAY WORD

Display Register Bits

SDWC
SDWL
SDWR
LLC
FLC

3.4 Display Position Word

This subchapter describes routines which influence the display position word of Siemens MEGATEXT.

3.4.1 GET_DPW_BYTE

Name	**GET_DPW_BYTE**
Function	Reads one byte of the display position word.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the display position word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

3.4.2 SET_DPW_BYTE

Name	**SET_DPW_BYTE**
Function	Writes one byte into the display position word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the display position word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

3.4.3 GET_DPW

Name	GET_DPW
Function	Reads the complete display position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the display position word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the display position word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

Display Register Bits

DPWC
DPWL
DPWR
DWD
DSC
DHD
SAS
LNCL
LNSA

3.4.4 SET_DPW

Name	SET_DPW
Function	Writes the complete display position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the display position word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT display position word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the display position word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT display position word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

Display Register Bits

DPWC
DPWL
DPWR
DWD
DSC
DHD
SAS
LNCL
LNSA

3.4.5 GET_ISDA_POSITION

Name	GET_ISDA_POSITION
Function	Reads the actually adjusted ISDA position from the MEGATEXT display position word.

Output Parameters

R5	Row position. Gives the actually adjusted vertical position in rows.
R6	Line position. Gives the actually adjusted vertical position in TV lines. This position is used as an offset to the row position.
R7	Column position. Gives the actually adjusted horizontal position in columns.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

Display Register Bits

DPWC
DPWL
DPWR

3.4.6 SET_ISDA_POSITION

Name	SET_ISDA_POSITION
Function	Sets the ISDA-position parameters in the MEGATEXT display position word.

Input Parameters

R5	Row position. Allowed input range: 0 – 31. Defines the vertical position in rows.
R6	Line position. Allowed input range: 0 – 15. Defines the vertical position in TV lines. This position is used as an offset to the row position.
R7	Column position. Allowed input range: 0 – 63. Defines the horizontal position in columns.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Registers

DISPLAY POSITION WORD

Display Register Bits

DPWC
DPWL
DPWR

3.4.7 SET_SCREEN_ATTR_0

Name	**SET_SCREEN_ATTR_0**
Function	Selects the BOXMR0, BOXDW0, ISMR0 and ISDW0 registers for defining the screen attributes. BOXMR1, BOXDW1, ISMR1 and ISDW1 are ignored.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

Display Register Bits

SAS

3.4.8 SET_SCREEN_ATTR_1

Name	**SET_SCREEN_ATTR_1**
Function	Selects the BOXMR1, BOXDW1, ISMR1 and ISDW1 registers for defining the screen attributes. BOXMR0, BOXDW0, ISMR0 and ISDW0 are ignored.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

Display Register Bits

SAS

3.5 Page Position Word

This subchapter describes routines which control the page position word of Siemens MEGATEXT.

3.5.1 GET_PPW_BYTE

Name	**GET_PPW_BYTE**
Function	Reads one byte of the page position word.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the page position word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE POSITION WORD

3.5.2 SET_PPW_BYTE

Name	**SET_PPW_BYTE**
Function	Writes one byte into the page position word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the page position word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE POSITION WORD

3.5.3 GET_PPW

Name	GET_PPW
Function	Reads the complete page position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the page position word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to – 1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the page position word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE POSITION WORD

Display Register Bits

PPWC
PPWL
PPWR
SOH
SOV
SRM0 – SRM1
BES
HR0
HR1
HR23
HR24
DHP
PLCC0 – PLCC1
PCHC0 – PCHC1
DWP
PLSC0 – PLSC1

3.5.4 SET-PPW

Name	SET_PPW
Function	Writes the complete page position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the page position word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT page position word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to – 1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to -1, otherwise it is ignored. The 5 bytes of the page position word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT page position word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE POSITION WORD

Display Register Bits

PPWC
PPWL
PPWR
SOH
SOV
SRM0 – SRM1
BES
HR0
HR1
HR23
HR24
DHP
PLCC0 – PLCC1

PCHC0 – PCHC1
DWP
PLSC0 – PLSC1

3.5.5 SET_ISDA_BLOCK_2

Name	**SET_ISDA_BLOCK_2**
Function	Sets internal MEGATEXT memory block 2 to be displayed in the ISDA.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE POSITION WORD

Display Register Bits

BES

3.5.6 SET_ISDA_BLOCK_3

Name	**SET_ISDA_BLOCK_3**
Function	Sets internal MEGATEXT memory block 3 to be displayed in the ISDA.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

PAGE POSITION WORD

Display Register Bits

BES

3.6 Graphic Position Word

This subchapter describes routines to control the graphic position word of Siemens MEGATEXT.

3.6.1 GET_GPW_BYTE

Name	**GET_GPW_BYTE**
Function	Reads one byte of the graphic position word.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the graphic position word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

3.6.2 SET_GPW_BYTE

Name	**SET_GPW_BYTE**
Function	Writes one byte into the graphic position word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the graphic position word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

3.6.3 GET_GPW

Name	GET_GPW
Function	Reads the complete graphic position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the graphic position word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the graphic position word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

Display Register Bits

GPWC
GPWL
GPWR
GRZF0 – GRZF3
GRSX0 – GRSX1
GRSY0 – GRSY2
GRSZ0 – GRSZ1
GRM0 – GRM1
GRSP

3.6.4 SET_GPW

Name	SET_GPW
Function	Writes the complete graphic position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the graphic position word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT graphic position word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the graphic position word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT graphic position word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

Display Register Bits

GPWC
GPWL
GPWR
GRZF0 – GRZF3
GRSX0 – GRSX1
GRSY0 – GRSY2
GRSZ0 – GRSZ1
GRM0 – GRM1
GRSP

3.6.5 GET_GRAPHIC_POSITION

Name	GET_GRAPHIC_POSITION
Function	Reads the actually adjusted position of the graphic field from the MEGATEXT graphic position word.

Output Parameters

R5	Row position. Gives the actually adjusted vertical position in rows.
R6	Line position. Gives the actually adjusted vertical position in TV lines. This position is used as an offset to the row position.
R7	Column position. Gives the actually adjusted horizontal position in columns.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

Display Register Bits

GPWC
GPWL
GPWR

3.6.6 SET_GRAPHIC_POSITION

Name	SET_GRAPHIC_POSITION
Function	Sets the graphic position parameters in the MEGATEXT graphic position word.

Input Parameters

R5	Row position. Allowed input range: 0 – 31. Defines the vertical position in rows.
R6	Line position. Allowed input range: 0 – 15. Defines the vertical position in TV lines. This position is used as an offset to the row position.
R7	Column position. Allowed input range: 0 – 63. Defines the horizontal position in columns.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

Display Register Bits

GPWC
GPWL
GPWR

3.6.7 SET_GRAPHIC_ZOOM_HORIZONTAL

Name	**SET_GRAPHIC_ZOOM_HORIZONTAL**
Function	Sets the zoom factor for horizontal stretching of the graphic field.

Input Parameters

ACC	Zoom factor code. Allowed input range: 0 – 2. The following zoom factors are used: ACC = 0: zoom factor is 1 (normal width). ACC = 1: zoom factor is 2 (double width). ACC = 2: zoom factor is 4 (quadruple width).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

Display Register Bits

GRZF0 – GRZF1

3.6.8 SET_GRAPHIC_ZOOM_VERTICAL

Name	**SET_GRAPHIC_ZOOM_VERTICAL**
Function	Sets the zoom factor for vertical stretching of the graphic field.

Input Parameters

ACC	Zoom factor code. Allowed input range: 0 – 2. The following zoom factors are used: ACC = 0: zoom factor is 1 (normal height). ACC = 1: zoom factor is 2 (double height). ACC = 2: zoom factor is 4 (quadruple height).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

GRAPHIC POSITION WORD

Display Register Bits

GRZF2 – GRZF3

3.7 Display Cursor Position Word

This subchapter describes routines which influence the display cursor position word of Siemens MEGATEXT.

3.7.1 GET_DCPW_BYTE

Name	**GET_DCPW_BYTE**
Function	Reads one byte of the display cursor position word.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the display cursor position word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

3.7.2 SET_DCPW_BYTE

Name	**SET_DCPW_BYTE**
Function	Writes one byte into the display cursor position word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the display cursor position word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

3.7.3 GET_DCPW

Name	**GET_DCPW**
Function	Reads the complete display cursor position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the display cursor position word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the display cursor position word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

DCPWP
DCPWC
DCPWL
DCPWR
CM0 – CM1
CF0 – CF1
CS
PCON
DCON
PCF0 – PCF3

3.7.4 SET_DCPW

Name	**SET_DCPW**
Function	Writes the complete display cursor position word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the display cursor position word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT display cursor position word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the display cursor position word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT display cursor position word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

DCPWP
DCPWC
DCPWL
DCPWR
CM0 – CM1
CF0 – CF1
CS
PCON
DCON
PCF0 – PCF3

3.7.5 GET_DISPLAY_CURSOR_POSITION

Name	**GET_DISPLAY_CURSOR_POSITION**
Function	Reads the actually adjusted position of the display cursor from the MEGATEXT display cursor position word.

Output Parameters

R4	Row position. Gives the actually adjusted vertical position in rows.
R5	Line position. Gives the actually adjusted vertical position in TV lines. This position is used as an offset to the row position.
R6	Column position. Gives the actually adjusted horizontal position in columns.
R7	Pixel position. Gives the actually adjusted horizontal position in pixels. This position is used as an offset to the column position.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

DCPWP
DCPWC
DCPWL
DCPWR

3.7.6 SET_DISPLAY_CURSOR_POSITION

Name	SET_DISPLAY_CURSOR_POSITION
Function	Sets the display cursor position parameters in the MEGATEXT display cursor position word.

Input Parameters

R4	Row position. Allowed input range: 0 – 31. Defines the vertical position in rows.
R5	Line position. Allowed input range: 0 – 15. Defines the vertical position in TV lines. This position is used as an offset to the row position.
R6	Column position. Allowed input range: 0 – 63. Defines the horizontal position in columns.
R7	Pixel position. Allowed input range: 0 – 15. Defines the horizontal position in pixels. This position is used as an offset to the column position.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

DCPWP
DCPWC
DCPWL
DCPWR

3.7.7 SET_CURSOR_MODE

Name	SET_CURSOR_MODE
Function	Sets the display cursor mode.

Input Parameters

ACC	Cursor mode. Allowed input range: 0 – 2. ACC = 0: change foreground to background. ACC = 1: change foreground to next CLUT. ACC = 2: exchange foreground and background.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

CM0 – CM1

3.7.8 SET_CURSOR_BLOCK

Name	**SET_CURSOR_BLOCK**
Function	Sets the character-related cursor to block format.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

CF0 – CF1

3.7.9 SET_CURSOR_UNDERLINE

Name	**SET_CURSOR_UNDERLINE**
Function	Sets the character-related cursor to underline format.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

CF0 – CF1

3.7.10 SET_CURSOR_STEADY

Name	SET_CURSOR_STEADY
Function	Sets the character-related cursor to steady format. Cursor flashing is switched off.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

CS

3.7.11 SET_CURSOR_FLASH

Name	SET_CURSOR_FLASH
Function	Sets the character-related cursor to flash format. Cursor flashing is switched on.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY POSITION WORD

Display Register Bits

CS

3.7.12 SET_PAGE_CURSOR_ON

Name	SET_PAGE_CURSOR_ON
Function	Sets the page cursor on (active).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

PCON

3.7.13 SET_PAGE_CURSOR_OFF

Name	**SET_PAGE_CURSOR_OFF**
Function	Sets the page cursor off (passive).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

PCON

3.7.14 SET_DISPLAY_CURSOR_ON

Name	**SET_DISPLAY_CURSOR_ON**
Function	Sets the display cursor on (active).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

DCON

3.7.15 SET_DISPLAY_CURSOR_OFF

Name	SET_DISPLAY_CURSOR_OFF
Function	Sets the display cursor off (passive).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

DCON

3.7.16 SET_PIXEL_CURSOR_FORMAT

Name	SET_PIXEL_CURSOR_FORMAT
Function	Sets the format of the pixel cursor or switches the pixel cursor off.

Input Parameters

ACC	Pixel cursor format. Allowed input range: 0 – 4. ACC = 0: arrow pointing to the right. ACC = 1: arrow pointing to the home position. ACC = 2: arrow pointing to the bottom. ACC = 3: frame around one character. ACC = 4: pixel cursor off.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

DISPLAY CURSOR POSITION WORD

Display Register Bits

PCF0 – PCF3

3.8 Termination Display Word

This subchapter describes routines which affect the termination display word of Siemens MEGATEXT.

3.8.1 GET_TDW_BYTE

Name	**GET_TDW_BYTE**
Function	Reads one byte of the termination display word.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the termination display word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

TERMINATION DISPLAY WORD

3.8.2 SET_TDW_BYTE

Name	**SET_TDW_BYTE**
Function	Writes one byte into the termination display word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the termination display word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

TERMINATION DISPLAY WORD

3.8.3 GET_TDW

Name	GET_TDW
Function	Reads the complete termination display word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the termination display word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to -1, otherwise it is ignored. The 5 bytes of the termination display word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

TERMINATION DISPLAY WORD

Display Register Bits

TB0 – TB8
TUS
TUH
TDW
TCO
TTRB
TTRF
TBX
TBC0 – TBC4
TFC0 – TFC4
TF0 – TF3
TIC
TDD0 – TDD4
TDM0 – TDM1
TUC

3.8.4 SET_TDW

Name	SET_TDW
Function	Writes the complete termination display word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the termination display word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT termination display word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the termination display word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT termination display word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

TERMINATION DISPLAY WORD

Display Register Bits

TB0 – TB8
TUS
TUH
TDW
TCO
TTRB
TTRF
TBX
TBC0 – TBC4
TFC0 – TFC4
TF0 – TF3
TIC

TDD0 – TDD4
TDM0 – TDM1
TUC

3.9 Box Mask Register

This subchapter describes routines to control the two box mask registers of Siemens MEGATEXT.

3.9.1 GET_BOXMR_0_BYTE

Name	**GET_BOXMR_0_BYTE**
Function	Reads one byte of the box mask register 0.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the box mask register 0.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 0

3.9.2 SET_BOXMR_0_BYTE

Name	**SET_BOXMR_0_BYTE**
Function	Writes one byte into the box mask register 0.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the box mask register 0.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 0

3.9.3 GET_BOXMR_0

Name	GET_BOXMR_0
Function	Reads the complete box mask register 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the box mask register 0 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box mask register 0 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 0

Display Register Bits

B0B0M – B0B8M
B0USM
B0UHM
B0DHM
B0DWM
B0COM
B0TRBM
B0TRFM
B0BXM
B0BC0M – B0BC4M
B0FC0M – B0FC4M
B0F0M – B0F3M
B0ICM
B0DD0M – B0DD4M
B0DM0M – B0DM1M
B0UCM

3.9.4 SET_BOXMR_0

Name	SET_BOXMR_0
Function	Writes the complete box mask register 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the box mask register 0 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT box mask register 0. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box mask register 0 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT box mask register 0. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 0

Display Register Bits

B0B0M – B0B8M
B0USM
B0UHM
B0DHM
B0DWM
B0COM
B0TRBM
B0TRFM
B0BXM
B0BC0M – B0BC4M
B0FC0M – B0FC4M
B0F0M – B0F3M
B0ICM

B0DD0M – B0DD4M
B0DM0M – B0DM1M
B0UCM

3.9.5 GET_BOXMR_1_BYTE

Name	**GET_BOXMR_1_BYTE**
Function	Reads one byte of the box mask register 1.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the box mask register 1.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 1

3.9.6 SET_BOXMR_1_BYTE

Name	**SET_BOXMR_1_BYTE**
Function	Writes one byte into the box mask register 1.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the box mask register 1.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 1

3.9.7 GET_BOXMR_1

Name	GET_BOXMR_1
Function	Reads the complete box mask register 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the box mask register 1 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box mask register 1 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 1

Display Register Bits

B1B0M – B1B8M
B1USM
B1UHM
B1DHM
B1DWM
B1COM
B1TRBM
B1TRFM
B1BXM
B1BC0M – B1BC4M
B1FC0M – B1FC4M
B1F0M – B1F3M
B1ICM
B1DD0M – B1DD4M
B1DM0M – B1DM1M
B1UCM

3.9.8 SET_BOXMR_1

Name	SET_BOXMR_1
Function	Writes the complete box mask register 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the box mask register 1 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT box mask register 1. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box mask register 1 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT box mask register 1. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX MASK REGISTER 1

Display Register Bits

B1B0M – B1B8M
B1USM
B1UHM
B1DHM
B1DWM
B1COM
B1TRBM
B1TRFM
B1BXM
B1BC0M – B1BC4M
B1FC0M – B1FC4M
B1F0M – B1F3M
B1ICM

B1DD0M – B1DD4M
B1DM0M – B1DM1M
B1UCM

3.10 Box Display Word

This subchapter describes routines which affect the two box display words of Siemens MEGATEXT.

3.10.1 GET_BOXDW_0_BYTE

Name	**GET_BOXDW_0_BYTE**
Function	Reads one byte of the box display word 0.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the box display word 0.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 0

3.10.2 SET_BOXDW_0_BYTE

Name	**SET_BOXDW_0_BYTE**
Function	Writes one byte into the box display word 0.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the box display word 0.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 0

3.10.3 GET_BOXDW_0

Name	GET_BOXDW_0
Function	Reads the complete box display word 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the box display word 0 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box display word 0 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 0

Display Register Bits

B0B0 – B0B8
B0US
B0UH
B0DH
B0DW
B0CO
B0TRB
B0TRF
B0BX
B0BC0 – B0BC4
B0FC0 – B0FC4
B0F0 – B0F3
B0IC
B0DD0 – B0DD4
B0DM0 – B0DM1
B0UC

3.10.4 SET_BOXDW_0

Name	SET_BOXDW_0
Function	Writes the complete box display word 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the box display word 0 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT box display word 0. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box display word 0 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT box display word 0. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 0

Display Register Bits

B0B0 – B0B8
B0US
B0UH
B0DH
B0DW
B0CO
B0TRB
B0TRF
B0BX
B0BC0 – B0BC4
B0FC0 – B0FC4
B0F0 – B0F3
B0IC

B0DD0 – B0DD4
B0DM0 – B0DM1
B0UC

3.10.5 GET_BOXDW_1_BYTE

Name	GET_BOXDW_1_BYTE
Function	Reads one byte of the box display word 1.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the box display word 1.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 1

3.10.6 SET_BOXDW_1_BYTE

Name	SET_BOXDW_1_BYTE
Function	Writes one byte into the box display word 1.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the box display word 1.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 1

3.10.7 GET_BOXDW_1

Name	GET_BOXDW_1
Function	Reads the complete box display word 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the box display word 1 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box display word 1 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 1

Display Register Bits

B1B0 – B1B8
B1US
B1UH
B1DH
B1DW
B1CO
B1TRB
B1TRF
B1BX
B1BC0 – B1BC4
B1FC0 – B1FC4
B1F0 – B1F3
B1IC
B1DD0 – B1DD4
B1DM0 – B1DM1
B1UC

3.10.8 SET_BOXDW_1

Name	SET_BOXDW_1
Function	Writes the complete box display word 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the box display word 1 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT box display word 1. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the box display word 1 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT box display word 1. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

BOX DISPLAY WORD 1

Display Register Bits

B1B0 – B1B8
B1US
B1UH
B1DH
B1DW
B1CO
B1TRB
B1TRF
B1BX
B1BC0 – B1BC4
B1FC0 – B1FC4
B1F0 – B1F3
B1IC

B1DD0 – B1DD4
B1DM0 – B1DM1
B1UC

3.11 Inner Screen Mask Register

This subchapter describes routines which affect the two inner screen mask registers of Siemens MEGATEXT.

3.11.1 GET_ISMR_0_BYTE

Name	**GET_ISMR_0_BYTE**
Function	Reads one byte of the inner screen mask register 0.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the inner screen mask register 0.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 0

3.11.2 SET_ISMR_0_BYTE

Name	**SET_ISMR_0_BYTE**
Function	Writes one byte into the inner screen mask register 0.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the inner screen mask register 0.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 0

3.11.3 GET_ISMR_0

Name	GET_ISMR_0
Function	Reads the complete inner screen mask register 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the inner screen mask register 0 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen mask register 0 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 0

Display Register Bits

I0B0M – I0B8M
I0USM
I0UHM
I0DHM
I0DWM
I0COM
I0TRBM
I0TRFM
I0BXM
I0BC0M – I0BC4M
I0FC0M – I0FC4M
I0F0M – I0F3M
I0ICM
I0DD0M – I0DD4M
I0DM0M – I0DM1M
I0UCM

3.11.4 SET_ISMR_0

Name	SET_ISMR_0
Function	Writes the complete inner screen mask register 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the inner screen mask register 0 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen mask register 0. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen mask register 0 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen mask register 0. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 0

Display Register Bits

I0B0M – I0B8M
I0USM
I0UHM
I0DHM
I0DWM
I0COM
I0TRBM
I0TRFM
I0BXM
I0BC0M – I0BC4M
I0FC0M – I0FC4M
I0F0M – I0F3M

I0ICM
I0DD0M – I0DD4M
I0DM0M – I0DM1M
I0UCM

3.11.5 GET_ISMR_1_BYTE

Name	GET_ISMR_1_BYTE
Function	Reads one byte of the inner screen mask register 1.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the inner screen mask register 1.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 1

3.11.6 SET_ISMR_1_BYTE

Name	SET_ISMR_1_BYTE
Function	Writes one byte into the inner screen mask register 1.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the inner screen mask register 1.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 1

3.11.7 GET_ISMR_1

Name	GET_ISMR_1
Function	Reads the complete inner screen mask register 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the inner screen mask register 1 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen mask register 1 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 1

Display Register Bits

I1B0M – I1B8M
I1USM
I1UHM
I1DHM
I1DWM
I1COM
I1TRBM
I1TRFM
I1BXM
I1BC0M – I1BC2M
I1FC0M – I1FC2M
I1F0M – I1F3M
I1ICM
I1DD0M – I1DD4M
I1DM0M – I1DM1M
I1UCM

3.11.8 SET_ISMR_1

Name	SET_ISMR_1
Function	Writes the complete inner screen mask register 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the inner screen mask register 1 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen mask register 1. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen mask register 1 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen mask register 1. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN MASK REGISTER 1

Display Register Bits

I1B0M – I1B8M
I1USM
I1UHM
I1DHM
I1DWM
I1COM
I1TRBM
I1TRFM
I1BXM
I1BC0M – I1BC2M
I1FC0M – I1FC2M
I1F0M – I1F3M

I1ICM
I1DD0M – I1DD4M
I1DM0M – I1DM1M
I1UCM

3.12 Inner Screen Display Word

This subchapter describes routines which affect the two inner screen display words of Siemens MEGATEXT.

3.12.1 GET_ISDW_0_BYTE

Name	**GET_ISDW_0_BYTE**
Function	Reads one byte of the inner screen display word 0.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the inner screen display word 0.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 0

3.12.2 SET_ISDW_0_BYTE

Name	**SET_ISDW_0_BYTE**
Function	Writes one byte into the inner screen display word 0.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the inner screen display word 0.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 0

3.12.3 GET_ISDW_0

Name	GET_ISDW_0
Function	Reads the complete inner screen display word 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the inner screen display word 0 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen display word 0 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 0

Display Register Bits

I0B0 – I0B8
I0US
I0UH
I0DH
I0DW
I0CO
I0TRB
I0TRF
I0BX
I0BC0 – I0BC4
I0FC0 – I0FC4
I0F0 – I0F3
I0IC
I0DD0 – I0DD4
I0DM0 – I0DM1
I0UC

3.12.4 SET_ISDW_0

Name	SET_ISDW_0
Function	Writes the complete inner screen display word 0, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the inner screen display word 0 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen display word 0. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen display word 0 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen display word 0. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 0

Display Register Bits

I0B0 – I0B8
I0US
I0UH
I0DH
I0DW
I0CO
I0TRB
I0TRF
I0BX
I0BC0 – I0BC4
I0FC0 – I0FC4
I0F0 – I0F3

I0IC
I0DD0 – I0DD4
I0DM0 – I0DM1
I0UC

3.12.5 GET_ISDW_1_BYTE

Name	GET_ISDW_1_BYTE
Function	Reads one byte of the inner screen display word 1.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the inner screen display word 1.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 1

3.12.6 SET_ISDW_1_BYTE

Name	SET_ISDW_1_BYTE
Function	Writes one byte into the inner screen display word 1.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the inner screen display word 1.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 1

3.12.7 GET_ISDW_1

Name	GET_ISDW_1
Function	Reads the complete inner screen display word 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the inner screen display word 1 are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen display word 1 are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 1

Display Register Bits

I1B0 – I1B8
I1US
I1UH
I1DH
I1DW
I1CO
I1TRB
I1TRF
I1BX
I1BC0 – I1BC4
I1FC0 – I1FC4
I1F0 – I1F3
I1IC
I1DD0 – I1DD4
I1DM0 – I1DM1
I1UC

3.12.8 SET_ISDW_1

Name	SET_ISDW_1
Function	Writes the complete inner screen display word 1, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the inner screen display word 1 are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen display word 1. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the inner screen display word 1 are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT inner screen display word 1. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

INNER SCREEN DISPLAY WORD 1

Display Register Bits

I1B0 – I1B8
I1US
I1UH
I1DH
I1DW
I1CO
I1TRB
I1TRF
I1BX
I1BC0 – I1BC4
I1FC0 – I1FC4
I1F0 – I1F3

I1IC
I1DD0 – I1DD4
I1DM0 – I1DM1
I1UC

3.13 Outer Screen Mask Register

This subchapter describes routines which affect the outer screen mask register of Siemens MEGATEXT.

3.13.1 GET_OSMR_BYTE

Name	**GET_OSMR_BYTE**
Function	Reads one byte of the outer screen mask register.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the outer screen mask register.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN MASK REGISTER

3.13.2 SET_OSMR_BYTE

Name	**SET_OSMR_BYTE**
Function	Writes one byte into the outer screen mask register.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the outer screen mask register.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN MASK REGISTER

3.13.3 GET_OSMR

Name	GET_OSMR
Function	Reads the complete outer screen mask register, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the outer screen mask register are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the outer screen mask register are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN MASK REGISTER

Display Register Bits

OB0M – OB8M
OUSM
OUHM
ODHM
ODWM
OCOM
OTRBM
OTRFM
OBXM
OBC0M – OBC4M
OFC0M – OFC4M
OF0M – OF3M
OICM
ODD0M – ODD4M
ODM0M – ODM1M
OUCM

3.13.4 SET_OSMR

Name	SET_OSMR
Function	Writes the complete outer screen mask register, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the outer screen mask register are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT outer screen mask register. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the outer screen mask register are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT outer screen mask register. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN MASK REGISTER

Display Register Bits

OB0M – OB8M
OUSM
OUHM
ODHM
ODWM
OCOM
OTRBM
OTRFM
OBXM
OBC0M – OBC4M
OFC0M – OFC4M
OF0M – OF3M

OICM
ODD0M – ODD4M
ODM0M – ODM1M
OUCM

3.14 Outer Screen Display Word

This subchapter describes routines which affect the outer screen display word of Siemens MEGATEXT.

3.14.1 GET_OSDW_BYTE

Name	**GET_OSDW_BYTE**
Function	Reads one byte of the outer screen display word.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.

Output Parameters

ACC	Byte of the outer screen display word.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN DISPLAY WORD

3.14.2 SET_OSDW_BYTE

Name	**SET_OSDW_BYTE**
Function	Writes one byte into the outer screen display word.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
ACC	New byte contents of the outer screen display word.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN DISPLAY WORD

3.14.3 GET_OSDW

Name	GET_OSDW
Function	Reads the complete outer screen display word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 5 bytes of the outer screen display word are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the outer screen display word are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN DISPLAY WORD

Display Register Bits

OB0 – OB8
OUS
OUH
ODH
ODW
OCO
OTRB
OTRF
OBX
OBC0 – OBC4
OFC0 – OFC4
OF0 – OF3
OIC
ODD0 – ODD4
ODM0 – ODM1
OUC

3.14.4 SET_OSDW

Name	SET_OSDW
Function	Writes the complete outer screen display word, consisting of 5 bytes (byte positions 0 – 4).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 5 bytes of the outer screen display word are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT outer screen display word. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 5 bytes of the outer screen display word are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT outer screen display word. Byte position 0 must be stored at the lowest XDATA address.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

OUTER SCREEN DISPLAY WORD

Display Register Bits

OB0 – OB8
OUS
OUH
ODH
ODW
OCO
OTRB
OTRF
OBX
OBC0 – OBC4
OFC0 – OFC4
OF0 – OF3

OIC
ODD0 – ODD4
ODM0 – ODM1
OUC

3.15 Color Lookup Tables

This subchapter describes routines which control the color lookup tables (CLUTs) in Siemens MEGATEXT.

3.15.1 SET_CLUT_COLOR

Name	**SET_CLUT_COLOR**
Function	Writes a new color to a CLUT.

Input Parameters

ACC	CLUT number. Allowed input range: 2 – 7. CLUTs 0 and 1are hardwired and cannot be redefined by user software. CLUTs 0 to 3 are standard CLUTs, CLUTs 4 to 7 are user CLUTs.
R4	Color vector number. Allowed input range: 0 – 7. Each CLUT consists of 8 colors, numbered from 0 to 7.
R5	Red level (0 – 15).
R6	Green level (0 – 15).
R7	Blue level (0 – 15).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

CLUT

3.16 Row Attribute Register

This subchapter describes routines which affect the row attribute register of Siemens MEGATEXT. The row attribute register is divided into the row format register (bits 0 – 7), the row data register (bits 8 – 23), the row mask register (bits 24 – 39) and the bits for screen background color (bits 40 – 44) and the cursor color (bits 45 – 47).

3.16.1 GET_RATT_BYTE

Name	**GET_RATT_BYTE**
Function	Reads one byte of the row attribute register.

Input Parameters

R4	Byte position from which the byte is read. Allowed input range: 0 – 4.
R7	Row number. Allowed input range: 0 – 25 (for ISDA), 31 (for OSDA and held rows).

Output Parameters

ACC	Byte of the row attribute register.
CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

ROW ATTRIBUTE REGISTER

3.16.2 SET_RATT_BYTE

Name	**SET_RATT_BYTE**
Function	Writes one byte into the row attribute register.

Input Parameters

R4	Byte position to which the byte is written. Allowed input range: 0 – 4.
R7	Row number. Allowed input range: 0 – 25 (for ISDA), 31 (for OSDA and held rows).
ACC	New byte contents of the row attribute register.

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

ROW ATTRIBUTE REGISTER

3.16.3 GET_RATT

Name	GET_RATT
Function	Reads the complete row attribute register, consisting of 6 bytes (byte positions 0 – 5).

Input Parameters

R0	Pointer to first byte of the destination address (type: IDATA). The 6 bytes of the row attribute register are copied in sequential order (byte position 0 is copied first) to an IDATA-memory block, beginning at the address given by R0. If R0 is set to –1, the destination address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the destination address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 6 bytes of the addressed row attribute register are copied in sequential order (byte position 0 is copied first) to an XDATA-memory block, beginning at the address given by DPTR.
R7	Row number. Allowed input range: 0 – 25 (for ISDA), 31 (for OSDA and held rows).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

ROW ATTRIBUTE REGISTER

Display Register Bits

RLSC0 – RLSC1
RLCC0 – RLCC1
RCHC0 – RCHC1
USF
RUS
RCO
RTRB
RTRF
RBX
RIC
RFL0 – RFL3
RBC0 – RBC4
RCOR

RCHM
RUSM
RUHM
RDHM
RDWM
RCOM
RTRBM
RTRFM
RBXM
RICM
RFLM
RBCM
RBCCM
RFCM
RFCCM
RPMM
SBC0 – SBC4
CC0 – CC2

3.16.4 SET_RATT

Name	**SET_RATT**
Function	Writes the complete row attribute register, consisting of 6 bytes (byte positions 0 – 5).

Input Parameters

R0	Pointer to first byte of the source address (type: IDATA). The 6 bytes of the row attribute register are copied in sequential order (byte position 0 is copied first) from an IDATA-memory block, beginning at the address given by R0, to the MEGATEXT row attribute register. Byte position 0 must be stored at the lowest IDATA address. If R0 is set to –1, the source address is assumed to be in the XDATA memory. In this case, the DPTR instead of R0 points to the first byte of the source address.
DPTR	Pointer to first byte of the source address (type: XDATA). This input parameter is only valid if R0 is set to –1, otherwise it is ignored. The 6 bytes of the row attribute register are copied in sequential order (byte position 0 is copied first) from an XDATA-memory block, beginning at the address given by R0, to the MEGATEXT row attribute register. Byte position 0 must be stored at the lowest XDATA address.
R7	Row number. Allowed input range: 0 – 25 (for ISDA), 31 (for OSDA and held rows).

Output Parameters

CY	Error flag. Is set to ‘1’ if an error occurred during transmission on the serial bus.

Display Register

ROW ATTRIBUTE REGISTER

Display Register Bits

RLSC0 – RLSC1
RLCC0 – RLCC1
RCHC0 – RCHC1
USF
RUS
RCO
RTRB
RTRF
RBX
RIC
RFL0 – RFL3
RBC0 – RBC4
RCOR
RCHM
RUSM
RUHM
RDHM
RDWM
RCOM
RTRBM
RTRFM
RBXM
RICM
RFLM
RBCM
RBCCM
RFCM
RFCCM
RPMM
SBC0 – SBC4
CC0 – CC2

4 Subroutines Overview

The following table gives an overview of all available subroutines of the MTXD module in alphabetic order.

5 Abbreviations

The following table gives an overview of all abbreviations used.

A/D	Analog-to-digital
ACC	Accumulator (8051)
addr	Address
BOXDW	Box display word
BOXMR	Box mask register
CDW	Character display word
CRC	Cyclic redundancy check
CVBS	Color video blanking sync
CY	Carry (8051)
D/A	Digital-to-analog
DC	Direct current
DCPW	Display cursor position word
DPTR	Data pointer (8051)
DPW	Display position word
ext	External
GPW	Graphic position word
HSYNC	Horizontal sync
int	Internal
ISDW	Inner screen display word
ISMR	Inner screen mask register
LSB	Least significant bit
MSB	Most significant bit
MTX	MEGATEXT
NPRD	Non-page-related data
OSDW	Outer screen display word
OSMR	Outer screen mask register
PCPW	Page cursor position word
PDC	Program delivery control
PLL	Phase-locked loop
PPW	Page position word
PRQ	Page request
PSW	Program status word (8051)
PU	Processing unit
RATT	Row attribute register
RGB	Red green blue
RIT	Request information table
S/P-C	Serial/parallel conversion
SDW	Sync delay word
seg	Segment
TCS	Text composite sync
TDW	Termination display word
TTX	Teletext
TV	Television

V-Delay	Vertical delay
VPS	Video programming system
VSYNC	Vertical sync

6 Literature

The following list gives an overview of literature available on Siemens MEGATEXT and on teletext.

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