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| Data S | heet | | |
| <u>MMI200-</u> | PC/104 | | |
| Encoder Inter | face Board | | |
| ÉnDat St | 51 | square wave incremental signals | |
| (Bi-directional interface for absolute (Unidirectiona encoders according to the absolute e specification of DR. J. HEIDENHAIN GmbH) | l interface for encoders) | (TTL-interface for incremental encoders with a 32 bit encoder counter) | |
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| Phone: +49 3641 2809-0 | | www. | DataS |
| ax 449 3641 2809-12 Checked: 2000-09-18 | | | 2010 0 1 4 1 5 S |

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| | | | | |
| General de | scription | | | |
| he MIP200-P0 | 104 board comprises two mea | surement (| channels for data a | caulisition. It is used as |
| n interface bo | ard for EnDat, SSI or incrementa | al encoders. | | |
| | · | | | |
| timer is avail | able in all operational modes (i.e | e. EnDat, S | SI, incremental). Th | ne timer can be used to |
| enerate a har | dware strobe for equidistant date | a sampling | by defining the bre | ak interval. The system |
| s clocked at 33 | 3.00 MHz, for EnDat mode prefer | rably at 24.0 | JU MHZ.) | |
| The power suc | olv for the encoders (5/12 V. G | round) is si | upplied on sockets | D-SUB9 / D-SUB15.** |
| The maximum | available current is 300 mA. | ,, | | , |
| | | | | |
| Figure 1 show | s the MIP200-PC/104 board's | block diad | ram connected to | an EnDat encoder or |
| shannol V1 and | to an incremental encoder on c | bannol V2 | | |
| channel X1 and | to an incremental encoder on o | channel X2. | | |
| channel X1 and | I to an incremental encoder on c | channel X2. | 114832 | |
| channel X1 and | | channel X2. | 114832 DATA_RC | |
| channel X1 and | to an incremental encoder on c | | II4832 DATA_RC DE DE DE DE DE DE DE | Entrat - |
| channel X1 and | b to an incremental encoder on c | channel X2. | IH4832 DATA_RC DATA_DV DE DE DE DE DE DE DE DE DE DE DE DE DE | Encoder X1 |
| channel X1 and | d to an incremental encoder on c | | I4832 DATA.RC DE DE TCLK | X1 CLK+ CLK+ CLK+ |
| channel X1 and | d to an incremental encoder on o | | II4832 DATA_RC DTA_DC DE DE TCLK +SV DE DE CLK- | X1 CLK+ CLK- |
| x 3, X4 | d to an incremental encoder on c | Channel X2. | IH4832 DATA, PC DATA, DV DE DE TCLK +5V CKC | X1 CLK+ CLK+ |
| x 3, x4 | d to an incremental encoder on c | Channel X2. | II4832 DATA_RC DATA_DO DE DE TOLK +5V CHA | X1 CHA |
| x 3, X4 | to an incremental encoder on c | CMD CMD CMD CMD CMD CMD CMD CMD CMD CMD | II4832 DATA_RC DTA_RC DE DE TCLK +5V CHA CHA CHA CHA CHA | X1 CHA CHA CHA |
| x 3, X4 | d to an incremental encoder on o | Channel X2. | IH4832 DATA, PC DATA, DV DE DE TCLK +5V CHA CHD CHD CHD CHD CHD CHD CHD | X1 CIK CIK CIK |
| channel X1 and | to an incremental encoder on c | | II4832 DATA_RC DATA_DO DE DE TCLK +5V CHA CHD CHD CHD CHD CHD CHD CHD CND | X1 CHA CHA CHB |



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2 ISA Interface

The board supports only 16 bit accesses (to even addresses).

Board addresses

The board address setting is done by switches S1.1 .. S1.3 according to Table 1.

| S1.3 | S1.2 | S1.1 | Base address |
|------|------|------|--------------|
| off | off | off | 30x |
| off | off | ON | 31x |
| off | ON | ON | 33x |
| ON | off | off | 34x |
| ON | off | ON | 35x |
| ON | ON | off | 36x |

Table 1: Board address

Register addresses

The available addressable registers are divided into on-board registers and measurement interface circuit MMI4832 registers. On-board registers are interrupt enable register, command register, optical coupler register. They are directly accessible by reading from or writing to the appropriate address. MMI4832 registers are hidden, meaning that they can be accessed by first writing the address and then reading or writing the actual data.

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| Offset address | Function |
|------------------|--|
| 0x0 (read/write) | Data access MMI4832 (measurement interface IC) channel 1 |
| 0x2 (write only) | Address selection MMI4832 (measurement interface IC) channel 1 |
| 0x4 (read/write) | Data access MMI4832 (measurement interface IC) channel 2 |
| 0x6 (write only) | On-board Interrupt enable register |
| 0x8 (write only) | Software reset |
| 0xA (write only) | Address selection MMI4832 (measurement interface IC) channel 1 |
| 0xC (write only) | On-board command register |
| | (analog interpolator, optical coupler outputs) |
| 0xC (read only) | Optical coupler input register |
| others | reserved |

Table 2: Offset addresses

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| | in order to improve design or performance characteristics. | DB-99-064e | |

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Register description 3

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3.1 **On-board command register**

This register holds the settings of the analog interpolation coefficient and the control of four optical coupler outputs.

| anal | og interpola | tion coefficie | nt | C | ptical coupl | er outputs | |
|------|--------------|----------------|------|-----------------|-----------------|-----------------|-----------------|
| D(7) | D(6) | D(5) | D(4) | D(3) 0 OPTO4 | D(2) 0 OPTO3 | D(1) 0 OPTO2 | D(0) 0 OPTO1 |

The (optional) MIP200's interpolation coefficient is set and modified by bits D(7) to D(4). According to Table 3 every channel has its own interpolation coefficient. Refer to chap. 4 for a detailed description of the optical coupler signals.

| analog | D(7) | D(6) | D(5) | D(4) |
|---------------|-----------|-----------|-----------|-----------|
| interpolation | | | | |
| coefficient | channel 2 | channel 2 | channel 1 | channel 1 |
| 5 | 0 | 0 | 0 | 0 |
| 10 | 0 | 1 | 0 | 1 |
| 25 | 1 | 0 | 1 | 0 |
| 50 | 1 | 1 | 1 | 1 |

Table 3: Selecting the interpolation coefficient of MIP200

Optical coupler input register 3.2

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This register holds the current status of the two coupler inputs I OPTO5 and I OPTO6. The other coupler inputs can be polled via the MMI4832 internal status register.

| D(3) | D(2) |
|-------------|---------|
| O_OPTO6 | O_OPTO5 |

On-board interrupt enable register 3.3

Two interrupt levels can be selected by writing this register (1=enable, 0=disable) as a board interrupt. Valid interrupts are IRQ10 and 11.

| D(2) | D(1) | D(0) |
|------|-------|-------|
| | IRQ11 | IRQ10 |

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| | | | /104 | | | | | REVISIO | VS | | 1 |
|--|--|--|--|---|--|---|--|---|---------------------------------|----------|----|
| ATA 3F | A SHEET MIMI200-PC/104 | | | | NO | VERSI | ON | | APPROVE | ED | 1 |
| | | | | | 1 | 1.0 | | | 2000-09-1 | 18 | 1 |
| MM nternal x2 (ch ne offs able 4 | MMI4832 re MMI4833 annel 1) et addres contains | egisters 2 registe or 0xA (c ss 0x0 (c s the bit r | s rs are acce channel 2). hannel 1) o napping of | essed by first After that on or 0x4 (chanr MMI4832's i | writing the ly the intern nel 2). nternal adc | registe nal regi Iress re | er addr ster ca egister. | ess to the o n be read c | ffset addres or written to v | s via | |
| D7 | | D6 | D5 | D4 | D3 | Г |)2 | D1 | D0 | 1 | |
| | 1 | V16 | AINC | address | address | add | ress | address | address | - | |
| | | | | A4 | A3 | A | 2 | A1 | AO | | |
| 116 = 1 INC = 1 | I | 16 bi Autoi acce | t accesses (t increment ad ss is repeate | Table 4: Intern his board only s dressing mode. d n times, where | nal address re upports 16 bit The base add a n is the num | egister t accesse dress of a ber of we | es) an intern ords. | al register is w | rritten to A(4:2) | . The | |
| A(4:2) | /WR-, /RD- access | Registe | r | Write 16 bit | i port | | Read | 16 bit port | | | |
| 0 | 1 2 | Transmi | t register | Write Transmit Write D(0:15) Write D(16:31 | t register) | 2 | Read I Read I Read I | <i>Fransmit regist</i> D(0:15) D(16:31) | er 2 | | |
| 1 | 1 2 3 | Receive | register | Latching the v Parallel conve into the Receiv Data S | alue of the Se rters ve register | <i>rial-</i> | Read I Strobe Read I Read I Read I | Receive registe -RG D(0:15) D(16:31) D(32:47) | er, <u>1 - 3 **</u> | | Di |
| 2 | | | | | | | | | | | |
| 3 | 1 2 | Referen register | ce / Offset | Write Ref./Offs Write D(0:15) Write D(16:31 | set register) | 2 | Read I Offset Read I Read I | Receive registe D(0:15) D(16:31) | ər + 2 | + | |
| 4 | 1 2 | Control | register | Write control r Write D(0:15) Write D(16:31 | egister) | 2 | Read of Read I Read I Read I | control register D(0:15) D(16:31) | 2 | | |
| 5 | 1 | Status r | egister | Software strob | De | 1 | Read S Read I | Status register D(0:7) | with reset 1 | 1 | |
| 6 | 1 | Interrup register | t mask | Write Interrupt Write D(0:7) | mask register | r 1 | Read I Read I | nterrupt mask D(0:7) | register 1 | | |
| 7 | 1 | Timer re | egister | Write Timer re Write D(0:15) | gister | | Read S | Status register D(0:7) | without reset | 1 | |

The number of necessary accesses is determined by the data width set in control register (bits 24:29)

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| 4.2 Optical coupler output The four outputs have a com 24). The GND3 has to be cor O_OPTOx with x=14 (pins maximum output rate is 5 kH Figure 3 shows the optical co | nmon ground GND3 (pin 25) nnected to 0V = ground, the 1922) deliver 24 V that can Iz. oupler output circuit. cal coupler outputs | and a common power Vcc3 to 24 V. The cor be used directly to co | r supply Vcc3 (pin upler outputs ntrol machines. The external signals |
| | | o 24 | + 24V |
| 4 x 12K | | | |
| | VN330SP | ———————————————— 0 19 | O_OPTO1 |
| | | o 20 | O_OPTO2 |
| | | o 21 | 0_ОРТОЗ |
| | | <u>9</u> 22 | O_OPTO4 |
| | DataSheet4U. | com | GND3 |
| | | 0 25 | <u>!</u> |
| | | | |
| | Figure 3: Optical coupler c | utput circuit | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
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5 Measurement system interface

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D-SUB9 or D-SUB15 sockets are alternatively available to interface to a measurement system. They are wired by a ribbon cable to the 16-pin connectors placed on the board. Signal assignments are described in Table 6.

| D-SUB15 | D-SUB9 | 16-pin connector X1/2 | signal name |
|---------|--------|-----------------------|---------------------------|
| socket | socket | | |
| 1 | 6 | 2 | A + (incremental signals) |
| 2 | 2 | 3 | GND |
| 3 | 8 | 6 | B + (incremental signals) |
| 4 | 7 | 4 | + 5 V |
| 5 | | 10 | Data + |
| 6 | | | inner shield |
| 7 | 5 | 9 | C – (Ref) |
| 8 | | 12 | Clock |
| 9 | 1 | 1 | A – (incremental signals) |
| 10 | | 15, 16 | GND |
| 11 | 3 | 5 | B – (incremental signals) |
| 12 | | 14 | + 5 V |
| 13 | | 11 | Data - |
| 14 | 9 | 8 | C + (Ref) |
| 15 | | 13 | /Clock |

Table 6: Measurement system pin assignment

The connector X9 supports additional signals as described in Table 7.

| Pin Number | 26 pir | n connector X9 | |
|---------------|---------|---|----------------|
| 1 | /NULL1 | External reset channel 1 | pull-up |
| 2 | /NULL2 | External reset channel 2 | pull-up |
| 3 | CHD1 | 2 nd Reference impulse channel 1 | pull-up |
| 4 | CHD2 | 2 nd Reference impulse channel 2 | pull-up |
| 5 | /IR61 | Free input for interrupt request channel 1 | pull-up |
| 6 | /IR62 | Free Input for interrupt request channel 2 | pull-up |
| 7 | Vcc0 | Vcc0 – Output voltage (for pin 1-6) | 5 V |
| 8 | GND | GND | GND (board) |
| 9 | STR1 | Optical coupler Input 1 (External Strobe channel 1) | |
| 10 | STR2 | Optical coupler Input 2 (External Strobe channel 2) | |
| 11 | GND1 | Ground1 - Input for Optical coupler Input(1-2) | |
| 12 | | | |
| 13 | IR71 | Optical coupler Input 3 for Interrupt request channel 1 | |
| 14 | IR72 | Optical coupler Input 4 for Interrupt request channel 2 | |
| 15 | I OPTO5 | Optical coupler Input 5 | |

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| No VERSION APPROVED 1 1.0 2000-09-18 Number 16 1_OPTO6 Optical coupler Input 6 17 GND2 Ground2 - Input for Optical coupler Input(3-6) 18 19 0_OPTO1 Optical coupler Output 1 20 0_OPTO2 Optical coupler Output 2 21 0_OPTO3 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 25 GND3 Ground3 for Optical coupler Output(1-4) 26 GND Ground (board) GND (board) | No VERSION APPROVED 1 1.0 2000-09-18 Pin 26 pin connector X9 16 I_OPTO6 Optical coupler Input 6 17 GND2 Ground2 - Input for Optical coupler Input(3-6) 18 19 O_OPTO1 Optical coupler Output 1 20 O_OPTO2 Optical coupler Output 2 21 O_OPTO3 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 26 GND Ground for Optical coupler Output(1-4) 26 GND Ground (board) GND (board) Input for Optical coupler Output(1-4) 24 26 GND Ground (board) GND 3 2 5 V 3 2 5 V Jumper 3 2 1 3 2 1 12 DataSheet4U.com | DATA SHEET MM | 1200-PC/104 | | | | REVISION | IS | |
|---|--|---|---|--|------------------------------|--------------------|----------------|---------------|---------|
| Image: line state of the setting for the power supply voltage is done by a jumper on X11.Image: line state of the setting for the power supply voltage is done by a jumper on X11. | Image 26 pin connector X9 Image 16 I_OPTO6 Optical coupler Input 6 17 GND2 Ground2 - Input for Optical coupler Input(3-6) 18 19 O_OPTO1 Optical coupler Output 1 20 O_OPTO2 Optical coupler Output 2 21 O_OPTO2 Optical coupler Output 3 22 O_OPTO4 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 26 GND3 Ground3 for Optical coupler Output(1-4) 26 GND Ground3 for Optical coupler Output(1-4) 26 GND Ground (board) GND (board) (board) (board) | DATA SHEET WIN | | | NO \ | /ERSION | 1 | APPROVE | 0 |
| Pin Number26 pin connector X9161_OPTO6Optical coupler Input 617GND2Ground2 - Input for Optical coupler Input(3-6)18190_OPTO1Optical coupler Output 1200_OPTO2Optical coupler Output 2210_OPTO3Optical coupler Output 3220_OPTO4Optical coupler Output 42324Vcc3Vcc3 - Input for Optical coupler Output(1-4)24Vcc3Vcc3 - Input for Optical coupler Output(1-4)26GNDGround3 for Optical coupler Output(1-4)26GNDGround (board)GND (board)27Table 7: Pin assignment of connector X9The setting for the power supply voltage is done by a jumper on X11. 3 2 5 3 2 1 3 2 1 3 1 2 3 1 2 DataSheet4U.com | Pin Number26 pin connector X916L_OPTO6Optical coupler Input 617GND2Ground2 - Input for Optical coupler Input(3-6)1819O_OPTO2Optical coupler Output 120O_OPTO2Optical coupler Output 221O_OPTO3Optical coupler Output 422O_OPTO4Optical coupler Output 42324Vcc3Vcc3 - Input for Optical coupler Output (1-4)26GNDGround (board)GND (board)26GNDGround (board)GND (board)26GNDGround (board)GND (board)26GNDGround (board)GND (board)26GNDGround (board)GND (board)2750SS3212VDataSheet4U.com | | | | 1 1 | 1.0 | | 2000-09-18 | 3 |
| 16I_OPTO6Optical coupler Input 617GND2Ground2 - Input for Optical coupler Input(3-6)1819O_OPTO1Optical coupler Output 120O_OPTO2Optical coupler Output 221O_OPTO3Optical coupler Output 322O_OPTO4Optical coupler Output 42324Vcc3Vcc3 - Input for Optical coupler Output (1-4)24V25GND3Ground3 for Optical coupler Output (1-4)GND (board)26GNDGround (board)GND (board)10Ground (board)GND (board)3215Jumper 3213112DataSheet4U.com | 16I_OPTO6Optical coupler Input 617GND2Ground2 - Input for Optical coupler Input(3-6)1819O_OPTO2Optical coupler Output 120O_OPTO2Optical coupler Output 221O_OPTO3Optical coupler Output 322O_OPTO4Optical coupler Output 42324Vcc3Vcc3 - Input for Optical coupler Output (1-4)26GNDGround3 for Optical coupler Output (1-4)26GNDGround (board)26GND27Phassignment of connector XPThe setting for the power supply voltage is done by a jumper on X11.Jumper 12^{11} 12^{11} DataSheet4U.com | Pin Number | 26 pin | connector X9 | | | | | |
| 17 GND2 Ground2 - Input for Optical coupler Input(3-6) 18 19 O_OPTO1 Optical coupler Output 1 20 O_OPTO2 Optical coupler Output 2 21 O_OPTO3 Optical coupler Output 3 22 O_OPTO4 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 26 GND3 Ground3 for Optical coupler Output(1-4) 26 GND Ground (board) GND (board) Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 2 1 12 V DataSheet4U.com | 17 GND2 Ground2 - Input for Optical coupler Input(3-6) 18 19 0_OPT01 Optical coupler Output 1 20 0_OPT02 Optical coupler Output 3 21 0_OPT03 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) GND (board) 26 GND Ground3 for Optical coupler Output(1-4) (board) 26 GND Ground3 for Optical coupler Output(1-4) (board) 26 GND Ground (board) GND (board) (board) 3 2 5 S S S 3 2 5 S S S 3 2 1 12 DataSheet4U.com X | 16 | I_OPTO6 | Optical coupler | Input 6 | | | | |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | 18 19 0_0PT01 Optical coupler Output 1 20 0_0PT02 Optical coupler Output 2 21 0_0PT03 Optical coupler Output 3 22 0_0PT04 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground (board) GND (board) GND (board) 26 GND Ground (board) GND (board) GND (board) 26 GND Ground (board) GND (board) GND (board) 3 2 1 5 V 3 2 1 5 V 3 2 1 12 V 20 1 12 V DataSheet4U.com | 17 | GND2 | Ground2 - Inpu | t for Optic | cal coup | ler Input(3-6) | | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | 19 O_OPTO1 Optical coupler Output 1 20 O_OPTO2 Optical coupler Output 2 21 O_OPTO3 Optical coupler Output 3 22 O_OPTO4 Optical coupler Output 4 23 | 18 | | | | | | | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | 20 0_OPT02 Optical coupler Output 2 21 0_OPT03 Optical coupler Output 3 22 0_OPT04 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) GND 26 GND Ground (board) GND (board) 27 Table 7: Pin assignment of connector X9 Table 7: Dir assignment of connector X9 Totage Totage 29 1 12 DataSheet4U.com | 19 | O_OPTO1 | Optical coupler | Output 1 | | | | |
| 21 0_OPTO3 Optical coupler Output 3 22 0_OPTO4 Optical coupler Output 4 23 24 Vcc3Vcc3 - Input for Optical coupler Output(1-4) $24V$ 25 GND3Ground3 for Optical coupler Output(1-4) $26V$ 26 GNDGround (board)GND (board) 26 GNDGround (board) CND (board) 26 GNDGround (board) CND (board) 26 GNDGround (board) CND | 21 0_OPT03 Optical coupler Output 3 22 0_OPT04 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) 24V 26 GND Ground3 for Optical coupler Output(1-4) (board) 26 GND Ground (board) GND (board) 27 Table 7: Pin assignment of connector X8 Jumper 3 2 1 2 V Jumper 3 2 1 12 V DataSheet4U.com | 20 | O_OPTO2 | Optical coupler | Output 2 | | | | |
| 22 0_OPTO4 Optical coupler Output 4 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 25 GND3 Ground3 for Optical coupler Output(1-4) 26 GND Ground (board) GND (board) 27 Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 5 V Jumper 5 V Jumper 1 2 V DataSheet4U.com | 22 0_0PT04 Optical coupler Output 4 23 24 Vcc3 Vcc3-Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) 26V 26 GND Ground (board) GND (board) GND (board) 3 2 1 5 V DataSheet4U.com 3 2 1 12 V DataSheet4U.com | 21 | O_OPTO3 | Optical coupler | Output 3 | | | | |
| 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) GND 26 GND Ground (board) GND (board) Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 2 1 5 V Jumper 3 2 1 12 V DataSheet4U.com | 23 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) 26V 26 GND Ground (board) GND 26 GND Ground (board) GND 26 GND Ground (board) GND 27 Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 5 Jumper 3 1 2 3 1 2 DataSheet4U.com | 22 | O_OPTO4 | Optical coupler | Output 4 | | | | |
| 24 Vcc3 Vcc3 - Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) GND 26 GND Ground (board) GND Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 2 1 5 V Jumper 3 2 1 12 V DataSheet4U.com | 24 Vcc3 Vcc3 Input for Optical coupler Output(1-4) 24V 25 GND3 Ground3 for Optical coupler Output(1-4) GND 26 GND Ground (board) GND 26 GND Ground (board) GND Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 5 V Jumper 3 1 12 V DataSheet4U.com | 23 | | | | | | | |
| 25 GND3 Ground3 for Optical coupler Output(1-4) 26 GND Ground (board) GND (board) Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 2 1 5 V Jumper 3 2 1 12 V DataSheet4U.com | 25 GND3 Ground3 for Optical coupler Output(1-4) 26 GND Ground (board) GND GND3 Ground (board) GND Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 2 1 5 V Jumper 3 2 1 12 V DataSheet4U.com | 24 | Vcc3 | Vcc3 – Input for | r Optical o | coupler | Output(1-4) | 24V | |
| 26GNDGround (board)GND (board)Table 7: Pin assignment of connector X9The setting for the power supply voltage is done by a jumper on X11. $Jumper$ $3 2 1 5 V$ $Jumper$ $5 V$ $Jumper$ $12 V$ DataSheet4U.com | 26 GND Ground (board) GND (board) Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 2 1 5 V Jumper 3 2 1 12 V DataSheet4U.com | 25 | GND3 | Ground3 for O | ptical cou | ıpler Ou | tput(1-4) | | |
| Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. $\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$ | Table 7: Pin assignment of connector X9 The setting for the power supply voltage is done by a jumper on X11. Jumper 3 3 1 1 2 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 2 1 2 2 2 3 2 3 2 3 2 3 2 3 2 3 2 3 | 26 | GND | Ground (board) |) | | | GND (board |) |
| | | Jumper 3 2 1 | 12 V | DataShee | et4U.com | | | | |
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| | Detection of the second s | e information in this publication, MAZeT re | ublication is believed serves the right to ma | to be accurate in all res ake changes in its prod | spects at the ucts withou | e time t notice | DOC. NO: | Page 9 | 9 of 11 |



7 Electrical specifications

7.1 Absolute Maximum ratings

| Characteristics | Symbol | min. | max. | Unit | Remarks |
|-----------------------|--------|------|-----------------|------|---------|
| DC supply voltage | | | 7 ¹ | V | |
| | | | | | |
| Operating temperature | Ta | 0 | 70 ² | °C | |
| Storage temperature | Tstg | -55 | 125 | °C | |

Table 8: Absolute maximum ratings

1 The maximum supply voltage is not allowed for continuous operation

2 Guaranteed value, tolerances to higher values possible

7.2 Recommended operating conditions

| Characteristics (Nominal value: Ucc=5V) | Symbol | min. | max. | Unit | Remarks |
|--|--------|------|------|------|---------|
| | | | | | |
| DC supply voltage | Vdd | 4,75 | 5,25 | V | |
| Operating temperature | Tamb | 0 | 70 | °C | |

Table 9: Recommended operating conditions

DataSheet

| Sheet4U The information in this publication is believed to be accurate in all respects at the time of publication. MAZeT reserves the right to make changes in its products without notice in order to improve design or performance characteristics. | DOC. NO: DB-99-064e | www.DataSheet Page 10 of 11 | IU.com |
|---|------------------------|--------------------------------|--------|
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| | REVISIONS | | | | |
|--------------------------|-----------|---------|------------|--|--|
| DATA SHEET MMI200-PC/104 | NO | VERSION | APPROVED | | |
| | 1 | 1.0 | 2000-09-18 | | |

Electrical characteristics 7.3

| Characteristics (Nominal value: Ucc=5V) | Symbol | min. | typ | max. | Unit | Bemerkung |
|--|------------------|------|-----|------|------|---------------------------------------|
| System clock frequency | fclk | | 33 | | MHz | preferable for incremental systems |
| | fclk | | 24 | | MHz | preferable for EnDat |
| Supply current | | | | 400 | mA | |
| Input voltage Optical coupler inputs | V I_OPTO | 10 | 24 | 30 | V | i(typ)= 7 mA |
| Input current Optical coupler inputs | | 4 | 7 | | mA | V I_OPTO = 24V |
| Rising time (STR1, STR2) | ta I_ОРТО | | | 300 | ns | V I_OPTO = 24V, i(typ) = 10 mA |
| Rising time (IR71,IR72,I_OPTO5,I_OPTO 6) | ta і_орто | | | 30 | μs | V I_OPTO = 24V, i(typ)= 10 mA |
| Output voltage Optical coupler outputs | V o_optox | 10 | 24 | 30 | V | i(typ)= 30 mA |
| Output current Optical coupler outputs | O_OPTOX | | 30 | 100 | mA | V 0_0PT0 = 24V |
| Rising time | ta о_ортох | | | 100 | μs | V I_OPTO = 24V |

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Table 10: Electrical characteristics

Absolute ratings:

It will lead to irreversible damage of the board when exceeded.

Recommended operating conditions:

Under these conditions the functions described in this manual are fulfilled.

Characteristics:

The described features are guaranteed on operating conditions of the board.

- Data sheet MMI4832 (DB-99-031, V1.3) Reference:

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