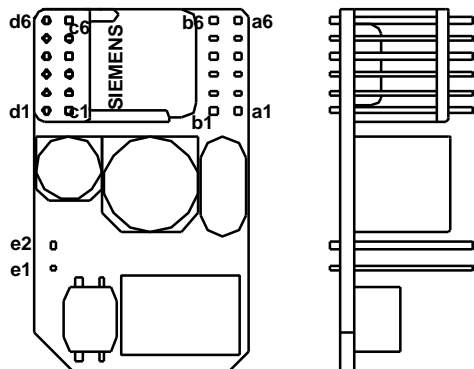


BUS INTERFACE MODUL BIM M113



Features

- EIB Bus Interface Module for piggyback-use on PCBs
 - MC68HC705BE12 with OTP (One Time Programmable) EPROM, contains the EIB BCU 2.0-System-Software
 - PEI ^{*)} and Port A, PLM A and PLM B for applications available
 - User EEPROM :858 Bytes
 - User RAM :up to 98Bytes
 - Smallest EIB Bus Access Unit
 - Pin-compatible with BIM M111 and M115
 - Operating Temperature Range: - 5 to + 45 °C
 - Registered by EIBA
- ^{*)} = *Peripheral External Interface*

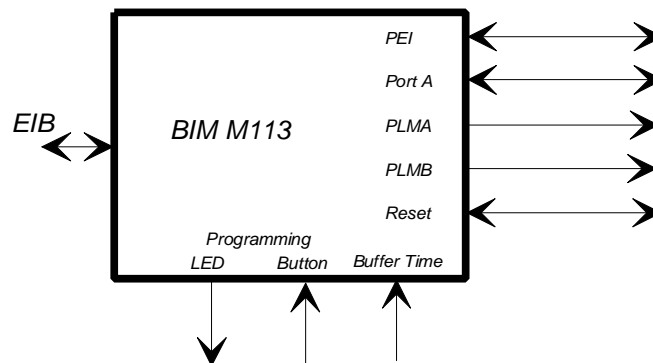
Ordering Information:

5WG1 113 8AA01

DESCRIPTION

The BIM M113 based on the BCU 2.0 – System – Software provides more performance, more EEPROM, more RAM and is fully pin-compatible to the BIM M111. It is a member of Siemens *instabus* EIB BCU – family, especially designed as a small module for piggyback use and can be fitted directly into PCBs. The module contains all functional parts of an EIB - BCU. The access to sort of microcontroller-ports as Reset, PLMA or Port A is possible. Additional pins to connect external programming button and LED are available. For applications with the need of longer 'Bus Buffer Time' the BIM allows the connection of an additional capacitance at bus voltage level.

Schematic Block Diagram



Absolute Maximum Electrical Ratings

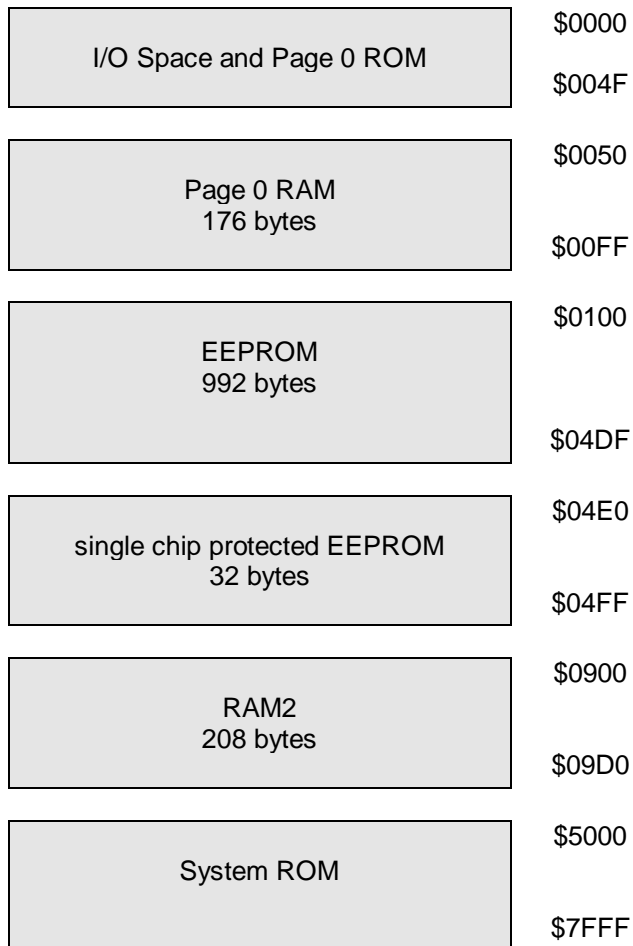
Rating	Symbol	Value	Units
Bus Voltage	V Bus	± 35	V
Microcontroller Input Voltage PEI, PLMA, PLMB, Reset, LED, Button	V..	GND - 0,5 to Vcc + 0,5	V
Microcontroller input or output current per Pin	I	see Motorola Technical Data MC68HC705BE12	

Features of the Controller

- CPU MC68HC705BE12
- Operation frequency 2,4576 MHz (crystal frequency of 4,9152 MHz)
- On-Chip RAM 176 Bytes ZeroPage RAM (18 / 24 Bytes available for user)
208 Bytes High RAM (24 / 74 Bytes available for user)
- On-Chip EEPROM 991 Bytes (858 Bytes available for user)
- On-Chip ROM 11904 Bytes
- 8-Bit A/D-converter
- 8-Bit pulse length modulator (PLM)
- Serial asynchronous communication interface
- Serial synchronous communication interface
- Input capture Interrupt available
- Output compare interrupt available
- Watch dog
- Core timer
- 16-bit timer
- Programmable I/O Controller (BitEngine)

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Memory Map



PEI (Physical External Interface)

PEI-Pin- Assignment:

	Pin Mnemonics	Power Supply	Port	Input Options (-)	Output Options(-)	Remarks
A1	RESET		_RESET			In-/Output
A2	C35V					Buffer Capacitor
A3	PA7		PA7			Digital Input / Output
A4	PA5		PA5			Digital Input / Output
A5	PA3		PA3			Digital Input / Output
A6	PA1		PA1			Digital Input / Output
B1	PLMA		PC0	•DataC0 •AN0 •BEI06	•DataC0 •PWMA •BEI06	Pulse-Length-Modulator
B2	PA6		PA6			Digital Input / Output
B3	PA4		PA4			Digital Input / Output
B4	PA2		PA2			Digital Input / Output
B5	PA0		PA0			Digital Input / Output
B6	PC7		PC7	•DataC7 •AN3	•DataC7 •PWMA •TCMB	Digital Output (Input / Output when PEI-Type17)
C1	GND	Ground				
C2	BUTTON		BEI05			Digital Input / Output
C3	CLK		PC4	•DataC4 •AN6 •SPI-CLK •TCAPB •BEI07	•DataC4 •SPI-CLK •BEI07	Clock •→
c4	CTS		PC6	•DataC6 •AN3 •TCAPA	•DataC6 •PWMA •BEI01	Clear to Send •←
c5	TYPE			•AN4		PEI-Type
c6	LED		BEI05			Digital Input / Output
d1	VDD	Vdd (20V)				
d2	VCC	Vcc (5V)				
d3	TxD		PC3	•DataC3 •AN5 •SPI-MOSI	•DataC3 •SCI-TDO •SPI-MOSI •TCMPA	Serial Data •→
d4	RxD		PC2	•DataC2 •AN7 •SCI-RDI •SPI-MISO	•DataC2 •SPI-MISO	Serial Data •←
d5	RTS		PC5	•DataC5 •AN2	•DataC5 •PWMB •TCMPB	Request to Send •→
d6	PLMB		PC1	•DataC1	•DataC1 •PWMB	Pulse-Length-Modulator
e1	+ Bus					Bus Line
e2	- Bus					Bus Line

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ELECTRICAL SPECIFICATION

See also EIBA Handbook for Development, Release 3.0

Bus Interface Characteristics:

Characteristics	Symbol	Min	Max	Typical	Unit	Remarks
Operating Voltage	V _{Bus}	21	30		V	
Current consumption	I _{Bus}			4	mA	V _{bus} = 30 V
Reset conditions	V _{cc}	< 4,6			V	Reset generated by transceiver
BCU-Buffer-Time		TBD			ms	PEI-Load : 50 mW
Transmission Rate				9600	bit/s	

PEI DC-Characteristics:

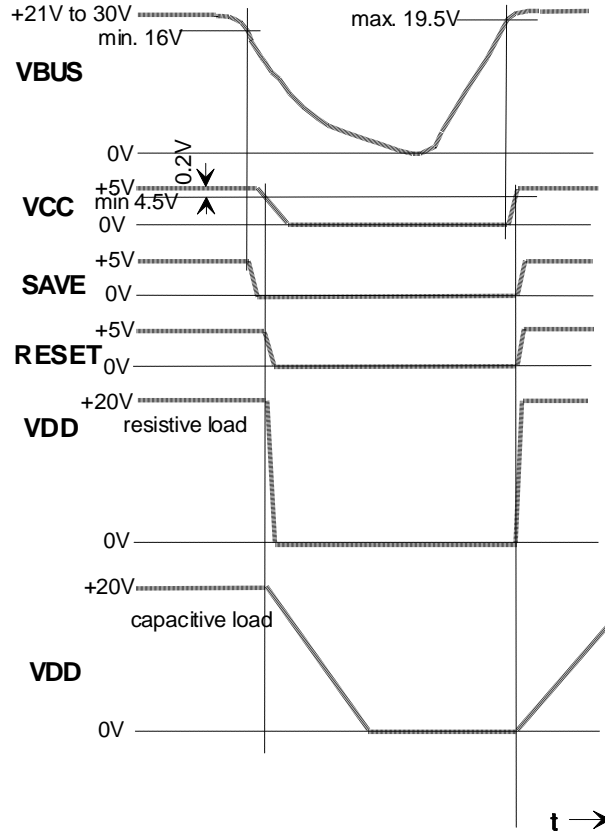
Characteristics	Symbol	Min	Max	Unit	Remarks
Supply Output Voltage +5V	VCC	4.7	5.3	V	max. 10mA
Supply Output Voltage +20V	VDD	18	22	V	Load < 5mA VBUS - VDD > 1,5V Vbus = 21V ... 30V
Current Limitation	IDD		5	mA	
Data Output Voltage Port A, Port B, Port C	VOL VOH	VCC-0,8	0.4	V	Iload = 1,6mA Iload = 0,8mA
Data Output Voltage TDO, SCLK, PLMB	VOL VOH	VCC-0,8	0.4	V	Iload = 1,6mA Iload = 1,6mA
Data Output Voltage Reset	VOL		1,0	V	Iload = 1,6mA
Data Input Voltage Port A, Port B, Port C Reset, RDI	VIL VIH	0 0.7 VCC	0.2 VCC VCC	V	
Analog Input Voltage Range	VAIL VAIH	0	VCC	V	
I/O Ports Three-State-Leakage	IOZ		±10	µA	
Input Capacitance	CIN		50	pF	

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Timing

The timing of Save, Reset, VCC and VDD which are depending on VBUS are shown in the following depiction:

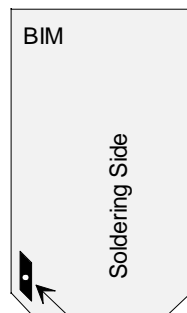


SOFTWARE SPECIFICATION

See also EIBA Handbook for Development, Release 3.0.

Application Hint

To avoid malfunctioning by EMI, it is recommended to shield the BIM. The connection for the electric screen is shown in the figure below.



Connection for electric screen (= Ground), for information about the exact position see "Maßbild"

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MECHANICAL SPECIFICATION:

