Pinning ID-engine SD-Series

(Base: Board Version 0039PBA02, 0047PBA01)

AMP MicroMatch 4-Pole Pin # Counterpart: AMP # 0215083-4	*AMP MicroMatch 6-Pole Pin # Counterpart: AMP # 0215083-6*	*Molex Micro 5-Pole Pin # Counterpart Molex# 51021-0500*	*1,27mm single in line through-holes*	*Pin Name*	*Pin Description*	*Type*	*electrical type, detailed spec see following sheet*	*internal citquit description*
	1	4	1	IDE send to Host	Tx_UART1_232	o	RS232	Ferrite Bead, series resistor 330 Ohm
					TX_UART1_CMOS	o	CMOS	Ferrite Bead, series resistor 330 Ohm; Supression Diode 5,6V to GND
	2	3	2	IDE rec. from Host	Rx _UART1_232	i	RS232	Ferrite Bead
					Rx _UART1_CMOS	i	CMOS	Ferrite Bead, series resistor 330 Ohm; Supression Diode 5,6V to GND
	3	2	3	GND	GND	p	GND	Ferrite Bead
	4	1	4	Power	VCC	p	5V 5%	Ferrite Bead
	5		5	Multi 1	TX_UART2; WIE_D0; CD_C; MAG_C	o	CMOS	Ferrite Bead, series resistor 330 Ohm; Supression Diode 5,6V to GND
					TXSS	o	RS232	Ferrite Bead, series resistor 330 Ohm
					RS485-A	i/o	RS485	-
	6		6	Multi 2	RS485_DIR; WIE_D1; CD_D; MAG_D	o	CMOS	Ferrite Bead, series resistor 0 Ohm; Supression Diode 5,6V to GND
					RS485-B	i/o		-
			7	Multi 3	RXSS; MAG_CLS	i/o	CMOS	Ferrite Bead, series resistor 330 Ohm; Supression Diode 5,6V to GND
					RXSS	i	RS232	Ferrite Bead, series resistor 330 Ohm
			8	DIO_4	LED1_Gn_in__mo3	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			9	DIO_5	LED2_R_in__mo4	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			10	DIO_6	Beeper	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			11	DIO_7	\ Relais	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			12	DIO_8	LED1_Gn_out	i/o	CMOS	No Ferrite Bead, series resistor 330 Ohm
			13	DIO_9	LED2_R_out	i/o	CMOS	No Ferrite Bead, series resistor 560 Ohm
			14	DIO_10	mi1	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			15	DIO_11	mi2	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			16	DIO_12	mi3	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			17	DIO_13	mi4	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			18	DIO_14	mi5_SCLK	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			19	DIO_15	mo1	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
			20	DIO_16	mo2 (USB D+)	i/o	CMOS (USB)	No Ferrite Bead, series resistor 330 Ohm for non-USB-Versions
			21	DIO_17	TAMPER	i/o	CMOS	No Ferrite Bead, no protection, to be added externally if required
1				GND	GND (USB-Cable: black)	p	GND	IMPORTANT NOTICE: USB Hot-Plugging is not recommended for this connector due to the lack of GND and VDD lines connecting ahead of the data lines. Driver hang-ups in Windows can occur occasionally. Hot-plugging of the standard USB-connector is possible without restrictions.
2				USB D+	USB Data (Cable: green)	i/o	USB	
3				USB D-	USB Data (Cable: white)	i/o	USB	
4				Power USB	Vusb (Cable: red)	p	5V	

Note for USB-connection: Please keep USB cable away from the reader antenna. The RF field operation frequency is close to USB full speed data rates and interference can occur. Especially cable loops around the antenna can cause interference up to blocked USB or hang-up of the Windows USB sub-system.

Yellow background means standard hardware configuration (IDE-SD-xxx-USB-232-CMO-6-5-4. Multiple functions of a single pin changeable through the functional configuration (ConfigCard).

White / no background are hardware options from factory and have to be ordered specifically.

Special options, on request:

* Integrated Real Time Clock Calendar (RTCC)
* RS485-interface (A at MM 6-Pole pin 5, B at pin 6) optional on request
* SAM: Aditional stacked pcb with SAM-socket, providing an ISO7816 compatible interface (IDE-SD-M1415-... Only).

ID-engine SD-Series Connection Pins Electrical Specification

Symbol	*Description / Parameter*	*Min*	*Typ*	*Max*	*Unit*	*Conditions*
Power						
	Power supply Voltage	**4,65**	**5**	**5,5**	**V**	**Vripple < 50mVpp for 0 < f < 30 MHz**
	Power Supply Current		**180**	**300 + DO's**	**mA**	**Steep current changes when RF field switched on /off**
CMOS						
	Push/Pull direct uC pin					
	V_OL (output low voltage)			**1**	**V**	**Isink = 10mA max (1)**
	V_OH (output high voltage)	**VCC-1**			**V**	**I source = 10 mA max (2)**
	V_IL (input low voltage)	**-0,3**		**0,5**	**V**	**internal 10...100k Pullup to 5V**
	V_IH (input high voltage)	**3,3**		**VCC+0,3**	**V**	**internal 10...100k Pullup to 5V**
RS232						
	ESD Specification			**+/- 5**	**kV**	
	Output Voltage Swing	**+/- 4**	**+/- 9**		**V**	**Load: 5 kOhm**
	Output Resistance		**800**		**Ohm**	
	Output short circuit current		**+/- 10**	**+/- 100**	**mA**	
	Input Voltage	**-15**		**15**	**V**	
	Input Voltage high		**1,7**		**V**	
	Input Voltage low		**1,2**		**V**	
	Input Resistance		**5**		**kOhm**	

Notes:

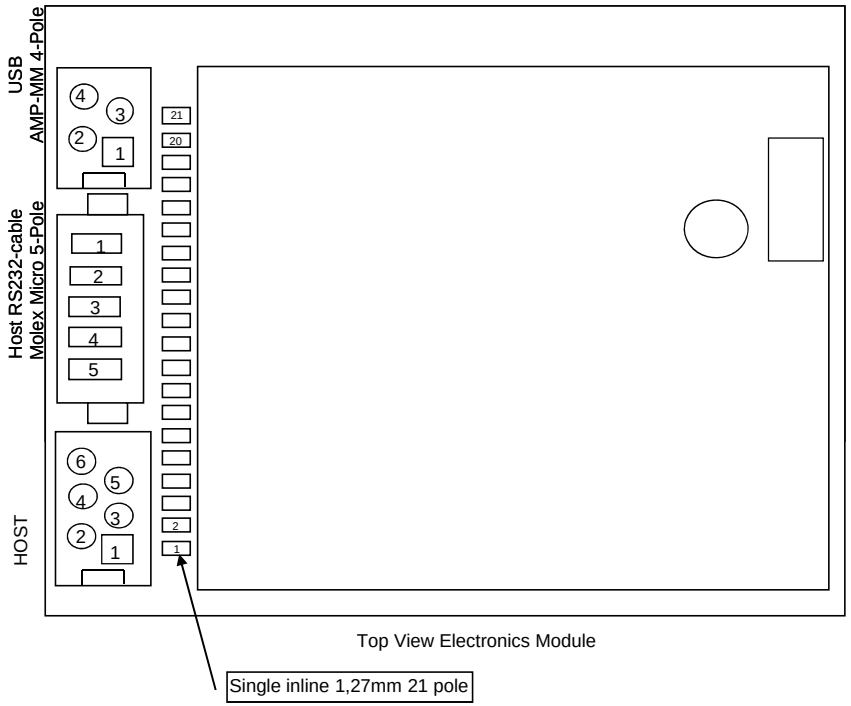
(1) **Pins with series resistor: voltage drop over resistor to be added to max-value of output voltage, dependent on sink current**

(2) **Pins with series resistor: voltage drop over resistor to be substraced from min-value of output voltage, dependent on sink current.**

CAUTION:
The Reader Modules are ESD sensitive electrical components with some protection as specified in the elecrical- and Pin Specification.
Over- and undervoltages as well as the presence of active circuits at I/O-Ports during power-up may result in latch-up and may cause permanent damage to the device. The devices have to be handled in the same way as bare ICs.
The serial interface Pins offer the ESD protection like specified for RS232 and through 330 Ohms series resistors some protection level in the CMOS-version.
All other pins are not protected or have a basic protection through a low-power supression diode to give some resistance to small spikes. There is no overcurrent protection to protect the low-power supression diodes themselves.
Due to the fact that overvoltage/misconnection defects cannot be analyzed, Baltech cannot accept any returns or liability for defects at these pins.

Pin Numbering Specification

Drawing Connector Pinnings

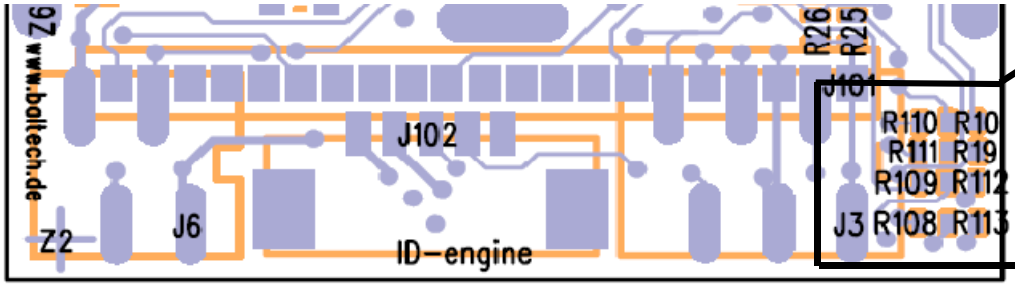


Wiring IDE-SD RS232-interface to D-Sub 9-Pole connector

Name	DSUB 9 Female Pin#	AMP MM 6-Pole Pin#	Molex 5-Pole Pin#
	1		
TX_IDE	2	1	4
RX_IDE	3	2	3
	4		
GND	5	3	2
	6		
	7		5
	8		
	9		
POWER CONNECTION			
+5V		4	1
GND		3	

Interface Jumpers UART1, 2

In case the interface type should be changed between RS232 and CMOS, the following jumper settings apply:
(only valid for versions incorporationg the RS232-option in the order code, e.g. the standard version IDE-SD-M1415-USB-**232**-CMO...)



Numbering:

R110 R111	R10 R19	UART1
R109 R108	R112 R113	UART2

Function:

CMOS CMOS	232 232	UART1
232 232	CMOS CMOS	UART2

Example:

- -	330R 330R	UART1 = RS232
- -	330R 330R	UART2 = CMOS

Revision History

	Date	***REV***	***Comment***					
	17. Jan 02	0.1	Initial revision					
	26. Apr 02	0.2	correction: MicroMatch 6-pole is the standard version, 20-Pole on request.					
	24.05.2002	0.3	minor changes in pin names: SS_TX to TXSS.....					
	28.05.2002	0.4	Additional electrical and ESD-specs and remarks					
	28.06.2002	0.5	BSM1-compatible I/O-Port numbering added to Pin Spec					
	10.07.2002	0.6	Name canged: BUF to HC for High Current; Ordering scheme added; Bugfix: Pin 7 option DIO available, Pin 6 not. Connector Pinning drawing changed to hole location in PCB instead of connector pin location of the AMP MicroMatch Connector. LEG+-Option added to ordering information					
	28.11.2002	0.7	Functional Spec: Series resistors changed from 560 to 330 Ohms. Electrical Spec: CMOS-Vil-max changed from 0,8V to 0,5V in electrical spec. Ordering Info: Ordering names for BSM2 with ISO14443-Support changed slightly					
	10.03.2003	1.0	Module name changed: IDE instead of BSM2. Ordering information changed.					
	01.04.2003	1.1	Minor Changes in text parts; Ordering information formatted.					
	08.10.2003	1.2	Supply Voltage min-Value reduced to 4,65 VDC					
	24.11.2003	1.3	Supply-Voltage max-range increased to 5,5VDC					
	11.08.2005	2.0	New Hardware Design, new architecture. Basis 0039PBA02 and 0047PBA01					
	23.09.2005	2.1	CMOS/RS232 external Jumper settings added					
	07.03.2006	2.2	pinning table wiring tD-Sub 9-Pole connector correction at molex-Pin#5					
	27.03.2006	2.3	Hotplug-remark for USB-connector AMP MM 4-Pole added					