Switch board datasheet
EB007-00-1
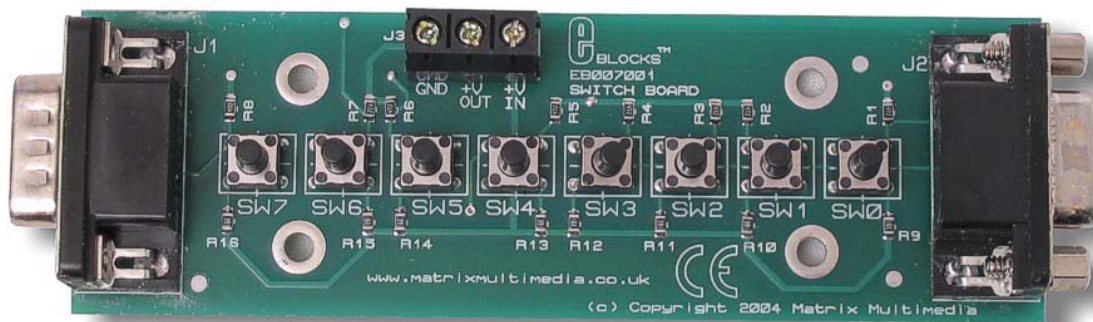
Contents

1. <u>About this document</u>

This document concerns the E-blocks Switch board code EB007 version 1.

The order code for this product is EB007.

1. *Trademarks and copyright*

PIC and PICmicro are registered trademarks of Arizona Microchip Inc.
E-blocks is a trademark of Matrix Multimedia Limited.

2. *Other sources of information*

There are various other documents and sources that you may find useful:

Getting started with E-Blocks.pdf

This describes the E-blocks system and how it can be used to develop complete systems for learning electronics and for PICmicro programming.

PPP Help file

This describes the PPP software and its functionality. PPP software is used for transferring hex code to a PICmicro microcontroller.

C and assembly strategies

This is available as a free download from our web site.

3. *Disclaimer*

The information in this document is correct at the time of going to press. Matrix Multimedia reserves the right to change specifications from time to time. This product is for development purposes only and should not be used for any life-critical application.

4. *Technical support*

If you have any problems operating this product then please refer to the troubleshooting section of this document first. You will find the latest software updates, FAQs and other information on our web site: www.matrixmultimedia.com . If you still have problems please email us at: support@matrixmultimedia.co.uk.

2. <u>General information</u>

Description

This Switch Board is part of the E-Blocks range. The board allows you to connect up to 8 switches to any of the I/O ports on the E-Block Multi / Lite programmer board. The standard 9-way D-type connector associated with E-Blocks makes the upstream and downstream connection. Further E-Blocks can be connected to this E-Block. The two D-type connectors provide a bus system that enables 'clean' access to all I/O lines. A +5 volt connection is required to enable the switching from logic level 0 (0V) to logic level 1 (+5V). Connecting a wire, using the screw terminal blocks provided on most E-Block boards, makes this easily achievable.

5. Features

- E-blocks compatible
- Compatible with most I/O ports in the E-Block range (up to 8 I/O lines via 9 way D-type connector)
- Upstream and downstream D-type connectors
- 3.3 Voltage compatible

6. Block schematic

Not supplied.

3. <u>Board layout</u>

EB007-74-1

1)   9 Way D-type Plug
2)   8 x Switches   SW0 – SW7
3)   Screw terminal
4)   9 Way D-type socket

4. <u>Testing this product</u>

1. *System Setup*

Multi-programmer board (EB006) with:

EB006 Options	Setting
Power supply	External, 14V
PICmicro device	16F88
SW1 (Fast/Slow)	Don't Care
SW2 (RC/Xtal)	XTAL
Xtal frequency	19.6608MHz
Port A	LED board EB004
Port B	Switch board EB007
Port C	
Port D	
Port E	
Test program	switches.hex

EB003 Options	Setting
Patch jumper setting	DEFAULT

EB005 Options	Setting
Patch jumper setting	DEFAULT

2. *Test Procedure*

1) Wire power to all boards.
2) Configure system and board options as above.
3) Download the test program to the Multiprogrammer
4) Check that when switches on port A are pressed the corresponding LED lights up on Port B.

Note. This only tests that the SW0 – SW4 work, this is due to the fact that Port A on the Mulitprogrammer only has five bits associated with this port (A0-A4). When switches.hex in running placing a LED Board in a bus configuration (J1 of LED board connected to J2 of Switches board. By pressing each switch, each corresponding LED will illuminate in turn, this will enable you to fully check the board.

5. <u>Circuit description</u>

The circuit board consists of 8 digital inputs on a 'downstream' 9-way D-type plug. This routes each bit of the bus to an identical switch circuit and to a 9 way D-type socket that can be used for adding further E-blocks in a bus configuration.

This switch circuit board assumes that to operate correctly each input on the upstream processor board will be configured as a high impedance input. With this in mind each circuit consists of a 4k7 'pull down' resistor which, when the switch is open circuit, ensures a logic level 0 at the output from the switch board and into the processor input pin. When a switch is pressed then the output from the switch board is effectively connected via a 390 ohm resistor to the positive rail (usually 5V), or to logic 1. When the switch is pressed the effect of the 4k7 pull down resistor in each circuit can be deemed to be negligible.

Care must be taken when connecting another E-block to the switch board. In this case users must make sure that the impedance placed on each line of the bus is such that the fundamental operation of the switch circuit is not impeded.
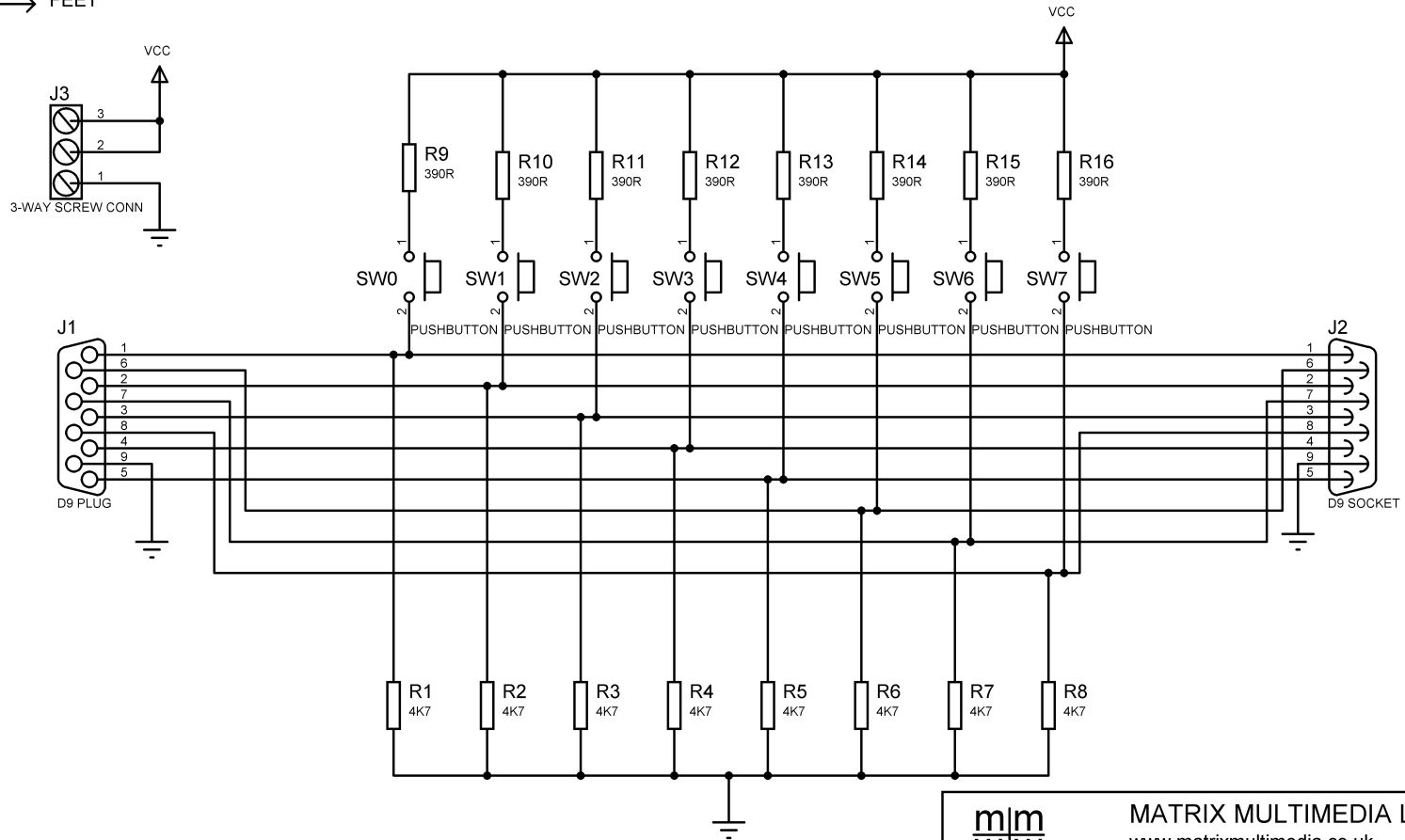
3. *3.3V operation*

This board is compatible with 3.3V systems.

THIS SYSTEM INCLUDES:-

→ FEET

VCC

J3
3
2
1
3-WAY SCREW CONN

VCC

| R9 390R | R10 390R | R11 390R | R12 390R | R13 390R | R14 390R | R15 390R | R16 390R |

SW0 SW1 SW2 SW3 SW4 SW5 SW6 SW7

PUSHBUTTON PUSHBUTTON PUSHBUTTON PUSHBUTTON PUSHBUTTON PUSHBUTTON PUSHBUTTON PUSHBUTTON

J1
1
6
2
7
3
8
4
9
5
D9 PLUG

J2
1
6
2
7
3
8
4
9
5
D9 SOCKET

| R1 4K7 | R2 4K7 | R3 4K7 | R4 4K7 | R5 4K7 | R6 4K7 | R7 4K7 | R8 4K7 |

m|m
w|w

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TITLE:

SWITCH BOARD

EB-007-00-1

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PAGE:

1/1

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