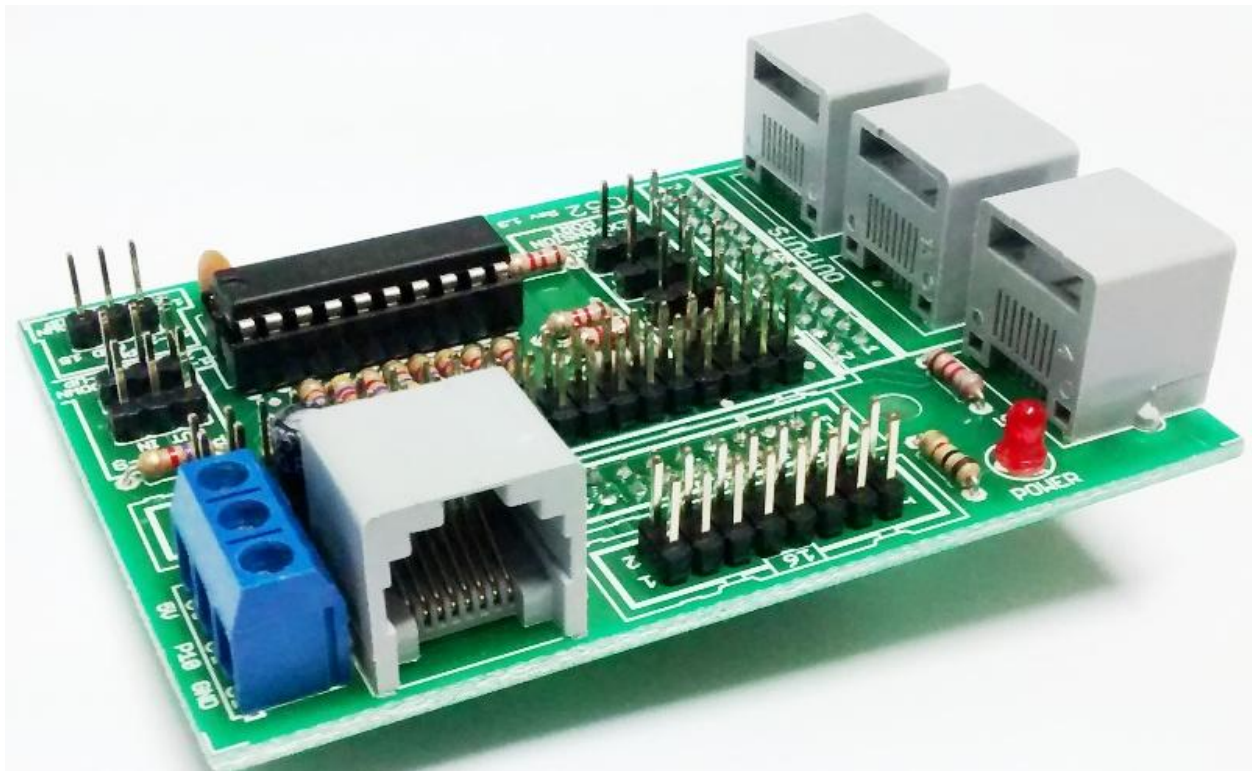


**C52- ESS THIRD PORT EXPANSION BOARD
Rev. 1.3**



FEBRUARY, 2015

USER'S MANUAL

TABLE OF CONTENTS

Page #

1. OVERVIEW.....	1
2. FEATURES.....	1
3. SPECIFICATIONS	2
4. BOARD DESCRIPTION.....	2
5. JUMPER SELECTION.....	3
5.1 Pins 2-9 direction	3
5.2 Pins 2-9 (PULL-UP or PULL-DOWN).....	3
5.3 Pins 10, 11, 12, 13 and 15 (PULL-UP or PULL-DOWN).....	4
5.4 Expansion port jumpers	4
6. PINOUT	5
6.1 Connectors RJ45.....	5
6.2 Port expansion MS Board connection	6
6.3 Using ESS expansion port.....	6
7. DIMENSIONS	7

1. OVERVIEW

This card provides an easy way of interfacing your inputs and outputs from your Ethernet Smooth Stepper third port. It provides terminals for the connections and conditions the signals for use in CNC applications. You can connect other boards using the standard RJ45 cables or the pin headers designed for the pokeys expansion boards.

2. FEATURES

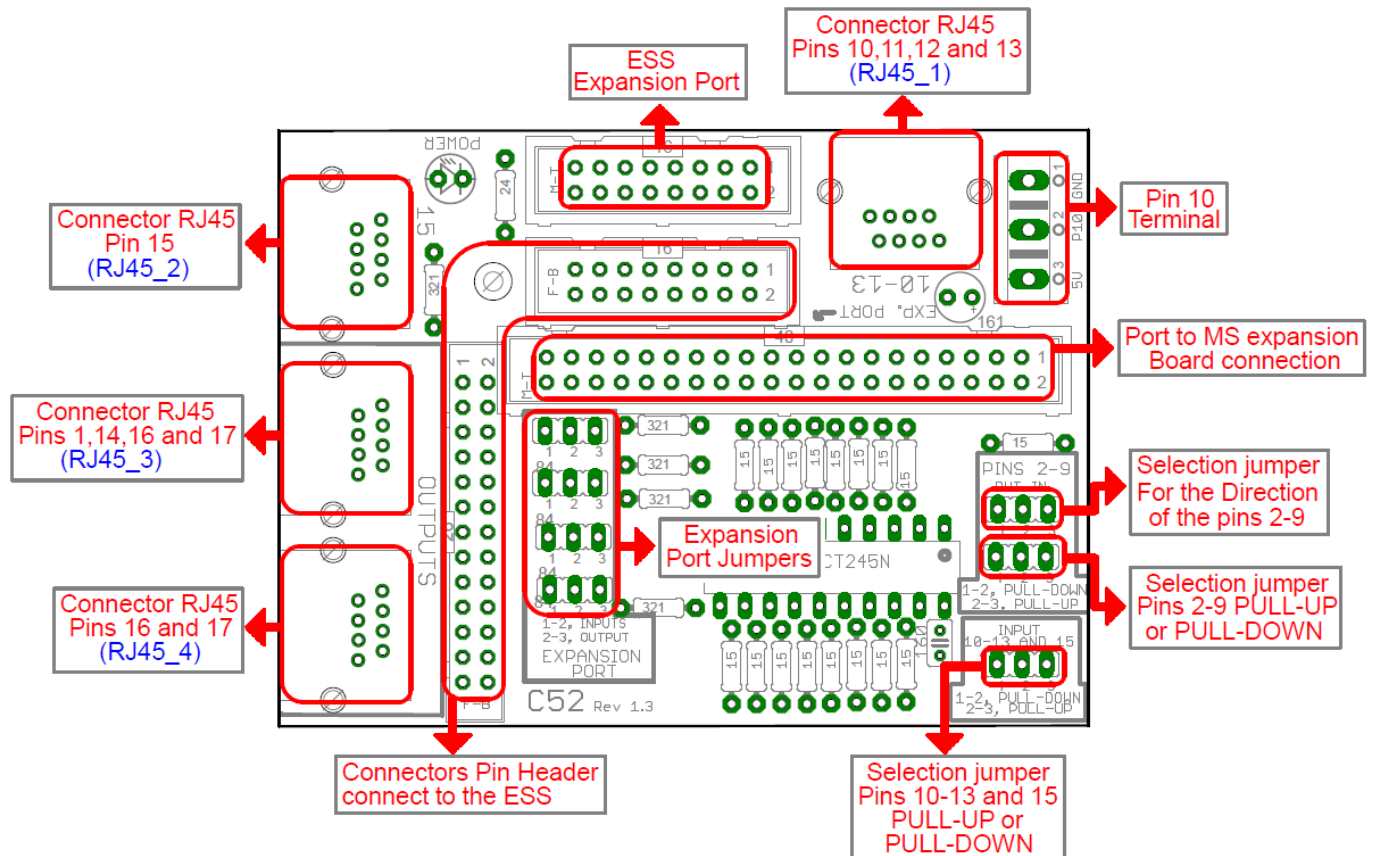
- **RJ45 connectors for all I/Os.** Only standard networks cable need to be used to make all the connections.
- **PULL-UP or PULL-DOWN selection for inputs.** Includes jumpers to select the best input configuration for your application.
- **Buffered inputs and outputs.** Outputs are buffered through the use of high speed and high current buffers allowing the card to output the signals without using the power from the parallel port. It can take the +3.3 or +5vdc signal from the parallel port and deliver solid +5vdc at 24 milliamps.
- **Bidirectional pins 2-9.** By selecting the appropriate jumper setting you can use these pins for input or output.
- **Expansion port for Ms Board.** Connect the M21, M22, M23, M24, M25, M26, M27, M28 and M30 expansion board.
- **Output pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 16, 17. Or 1, 14, 16, 17.**
- **Input pins 10, 11, 12, 13, 15. Or 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15.**
- **Input and output pins with close by ground or +5vdc connections**
- **Screw-On connections for all terminals.** You only have to screw-on the wires to make all your connections.

3. SPECIFICATIONS

DIGITAL INPUT SPECIFICATIONS	
On-state voltage range	2 to 5V DC
Maximum off-state voltage	0.8V
Maximum operation frequency	4 MHz
Typical signal delay	10nS

DIGITAL OUTPUT SPECIFICATIONS	
Maximum output voltage	(5V power supply voltage) + 0.5V
Typical output current	24mA
Maximum off-state voltage	0.44 V
Maximum operation frequency	4 MHz
Typical signal delay	10 nS

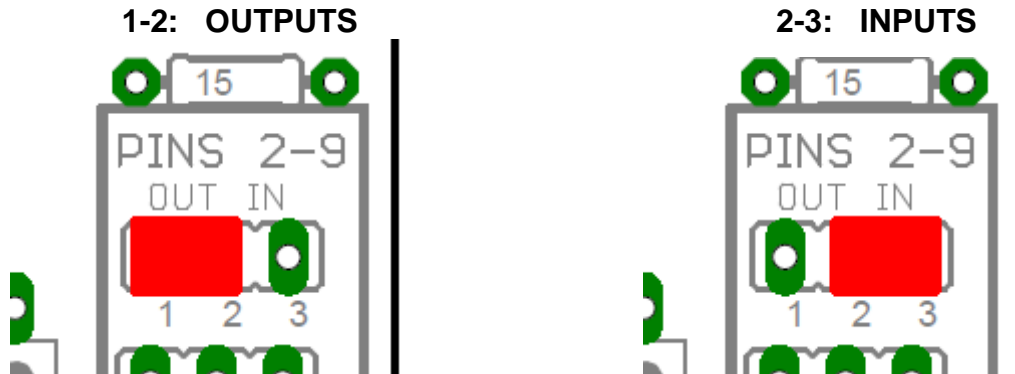
4. BOARD DESCRIPTION



5. JUMPER SELECTION

5.1 Pins 2-9 direction

Pins 2-9 can be used as inputs or outputs



5.2 Pins 2-9 (PULL-UP or PULL-DOWN)

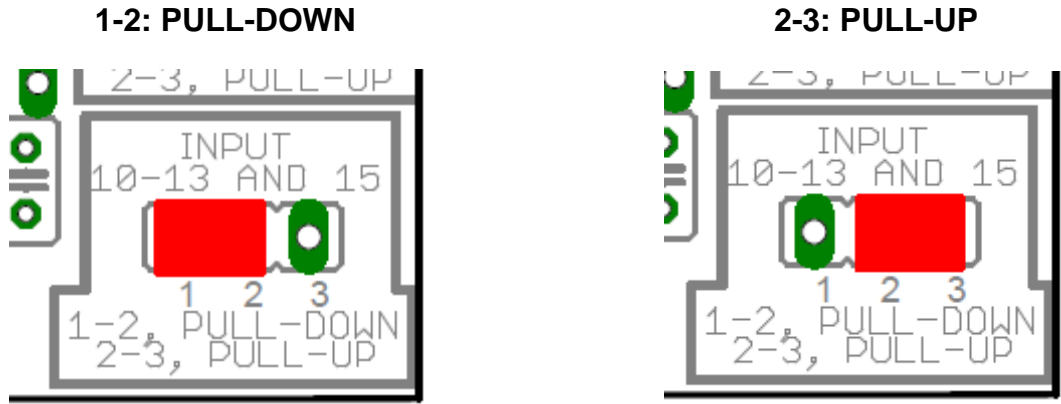
Input pin can be pulled up or down with an internal 4.7 Kohm resistor:



5.3 Pins 10, 11, 12, 13 and 15 (PULL-UP or PULL-DOWN)

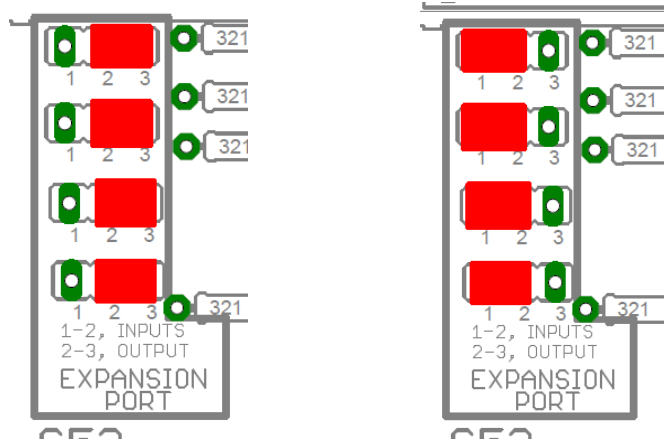
Input pin can be pulled up or down with an internal 4.7 Kohm resistor:

:



5.4 Expansion port jumpers

Set jumpers to use an input or output expansion board



6. PINOUT

6.1 Connectors RJ45

This board supports only TTL +5VDC signals. Table below shows the supported connections for each RJ45.

RJ45_1		RJ45_2		RJ45_3		RJ45_4	
RJ45 PIN	P.P. PIN	RJ45 PIN	P.P. PIN	RJ45 PIN	P.P. PIN	RJ45 PIN	P.P. PIN
1	GND	1	GND	1	GND	1	GND
2	13	2	Not Used	2	2_17	2	Not Used
3	12	3	Not Used	3	2_16	3	Not Used
4	11	4	Not Used	4	2_1	4	2_16
5	10	5	1_15	5	2_14	5	2_17
6	Not Used	6	Not Used	6	Not Used	6	Not Used
7	5V	7	5V	7	5V	7	5V
8	16	8	Not Used	8	Not Used	8	Not Used
Supported connection		Supported connection		Supported connection		Supported connection	
C16, A32, C45 or A61		C3 or C48		C47, C41, C6, C16, C36, C37, C15, C5, C8 or C9		C15, C8 or C9	

6.2 Port expansion MS Board connection

This pin header allows connect the M21, M22, M23, M24, M25, M26, M27, M28 and M30 expansion board. Set the expansion port jumpers in the required position.

**Note: RJ45 for inputs cannot be used when a M input expansion board is used.
RJ45 for outputs cannot be used when a M output expansion board is used.**

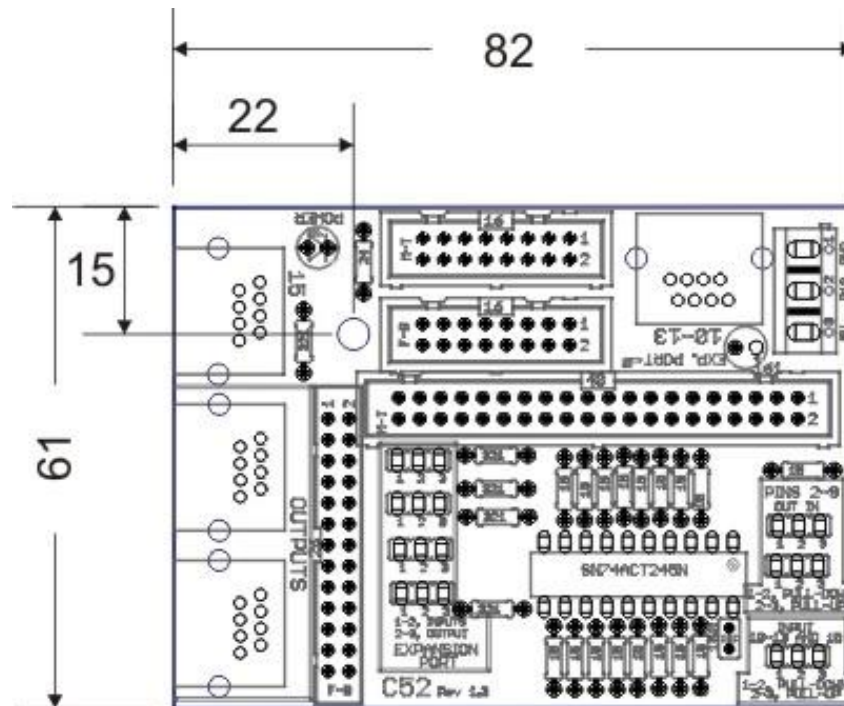
EXPANSION HEADER PIN	ESS THIRD PORT PIN
1	GND
2	GND
3	GND
4	GND
5	2
6	3
7	4
8	5
9	6
10	7
11	8
12	9
13	1/10
14	14/11
15	16/12
16	17/13
17	5V
18	5V
19	5V
20	5V

Expansion port Pins 21-40 are not used

6.3 Using ESS expansion port.

This pin header is directly wired to the ESS Expansion Port Header for future expansion.

7. DIMENSIONS



All dimensions are in Millimeters.

DISCLAIMER:

Use caution. CNC machines can be dangerous machines. Neither DUNCAN USA, LLC nor Arturo Duncan are liable for any accidents resulting from the improper use of these devices. This product is not a fail-safe device and it should not be used in life support systems or in other devices where its failure or possible erratic operation could cause property damage, bodily injury or loss of life.