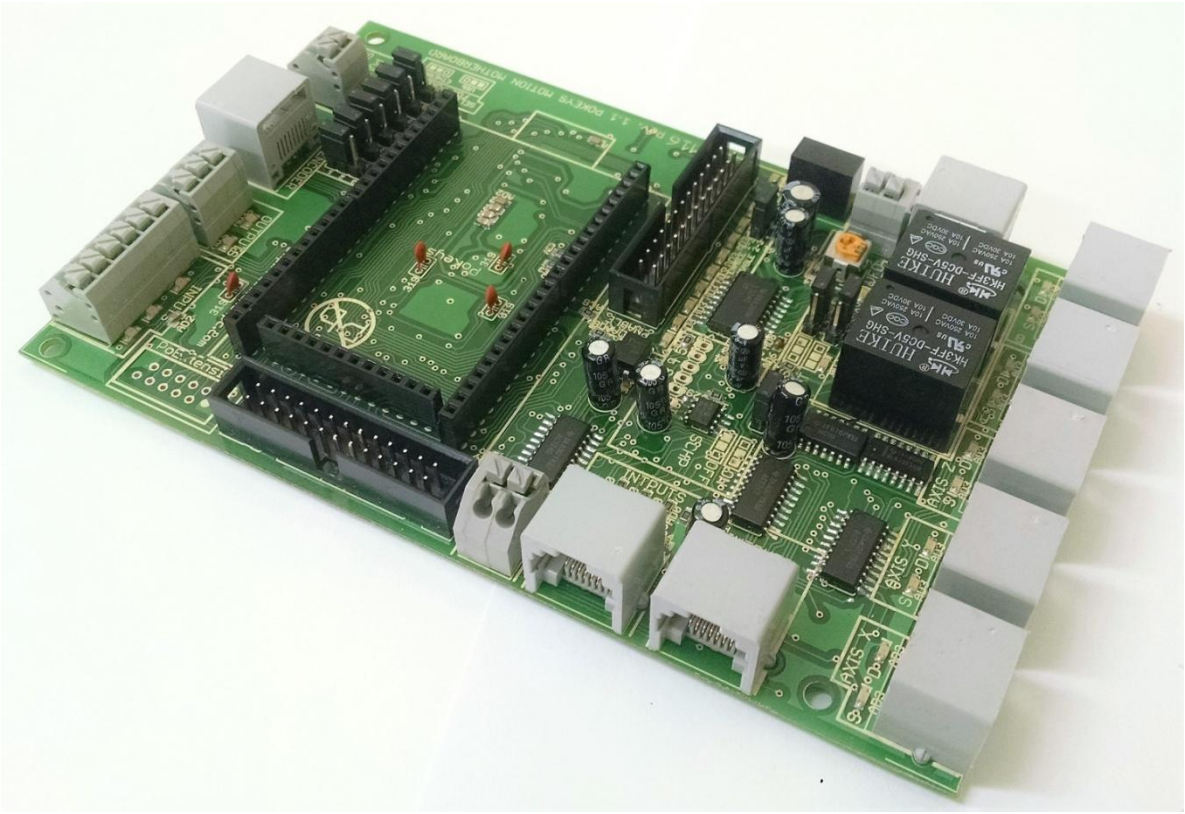
CNC4PC

Integration Solutions for CNC Projects

USER'S MANUAL

M16 – POKEYS MOTION MOTHERBOARD Rev. 1.1



JUNE 2016.

USER'S MANUAL

TABLE OF CONTENTS

Page #

Contents

1.0 OVERVIEW 1

2.0 FEATURES 1

3.0 BOARD DESCRIPTION 2

4.0 SPECIFICATIONS 2

4.1 Power Requirements 2

5.0 POWER TERMINALS AND CONFIGURATION JUMPERS 3

5.1 Power Terminal 3

5.2 Input terminals 3

5.3 Output terminals 4

6.0 SELECT JUMPER FOR POKEYS 4

7.0 TERMINAL E-STOP 5

8.0 CONNECTING A PENDANT 6

8.1 Pinout Pendant 7

9.0 PINOUT AXIS 8

10.0 SAFETY CHARGE PUMP "SCHP". 9

10.1 Selecting the SCHP operation mode 10

11.0 RJ45 FOR VFD CONNECTION 11

11.1 VFD Connection and configuration jumpers 12

12.0 PINOUT LPT 3 (EXPANSION) 14

12.1 Pin Numbering 14

13.0 PINOUT PoExtension 15

14.0 PINOUT FOR ENCODER 15

15.0 PINOUT limit 16

16.0 PINOUT FOR BOARD 17

17.0 DIMENSIONS 18

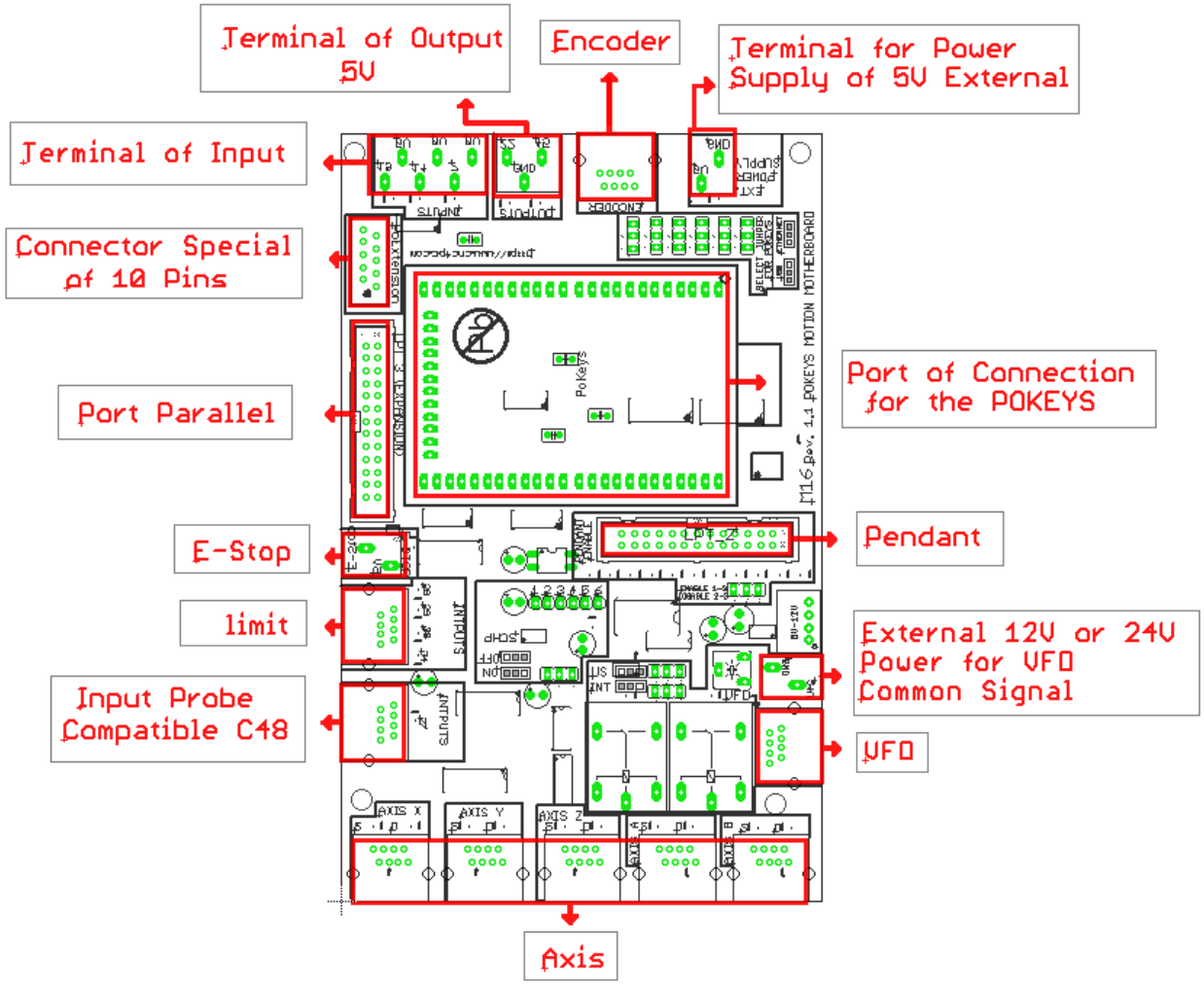
1.0 OVERVIEW

This card is a motherboard for the Pokeys57U and PoKeys57E Core Boards. It provides easy integration to breakout boards and with the new pin out of the Pokeys, will control 5 axes, has different types of I/Os and features.

2.0 FEATURES

- Expansion port (LPT 3)
- An port to connect Pendant
- Connector special of 10 pins (PoExtension OUTPUT)
- 3 Terminals of input
- 2 Terminals of output
- Built-in PWM-Based Speed Control.
- RJ45 Connector for Easy VFD Connection.
- Can enable and disable the drives.
- RJ45 connectors for the axis.
- Power terminal (5VDC).
- Status LEDs on all inputs and output connections.
- Microcontroller based SCHP.
- Outputs +5VDC at 24mA TTL.
- Two Built-in Electromechanical Relays with NO and NC positions for spindle Control.

3.0 BOARD DESCRIPTION



4.0 SPECIFICATIONS

4.1 Power Requirements

5VDC@1A is required to power this board.

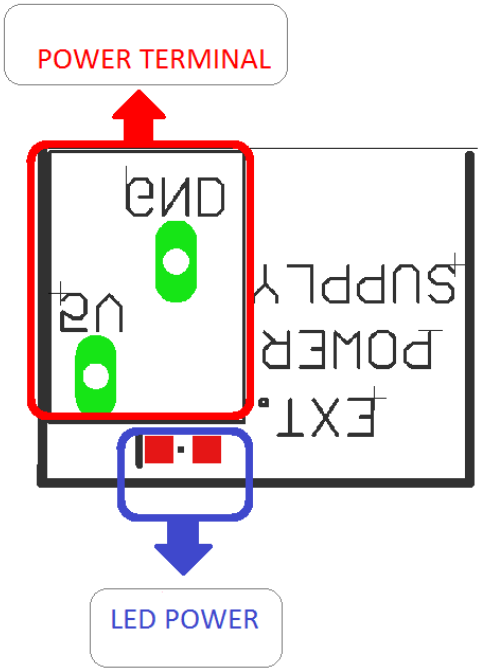
WARNING

Check the polarity and voltage of the external power source and connect the 5VDC and GND. Overvoltage or reverse-polarity power applied to these terminals can cause damage to the board, and/or the power source.

5.0 POWER TERMINALS AND CONFIGURATION JUMPERS

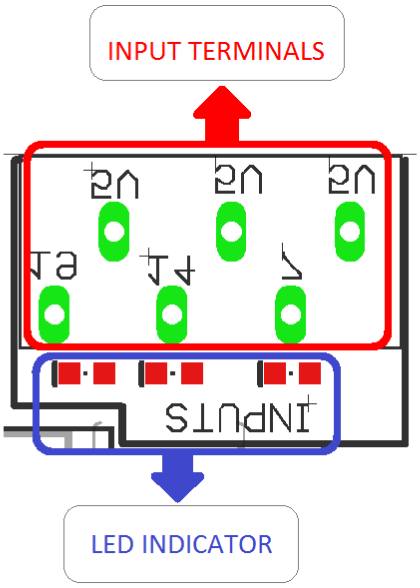
5.1 Power Terminal

This input requires an external power 5VDC@1000mA if not using the board to supply power to external devices.



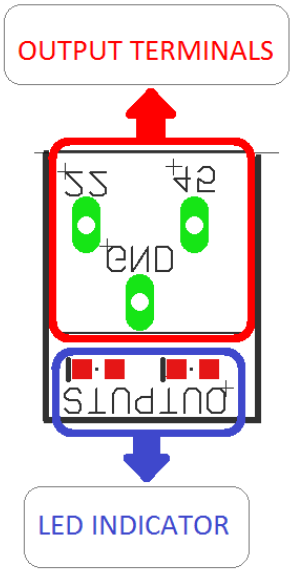
5.2 Input terminals

These terminals support signals 3.3VDC to 5VDC



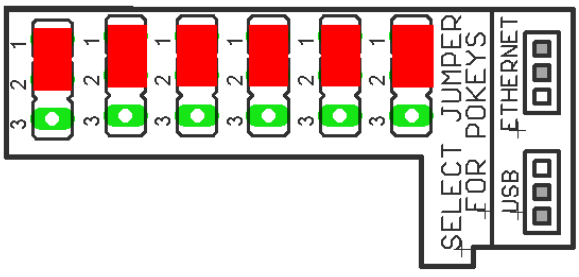
5.3 Output terminals

These terminals provide an output buffered 5VDC @ 24mA

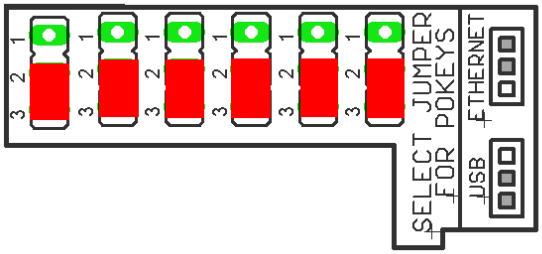


6.0 SELECT JUMPER FOR POKEYS

When connect the POKEYS ETHERNET, set jumper as show in the image.

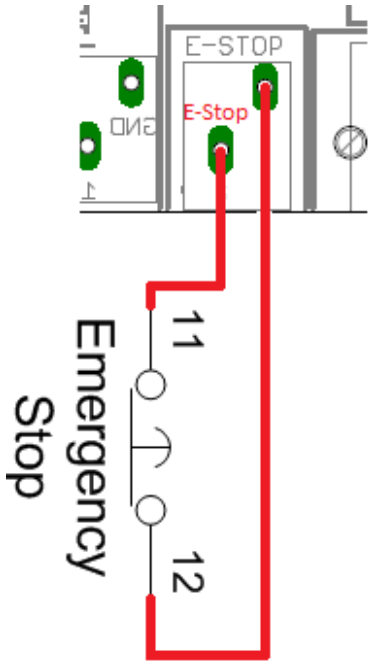


When connect the POKEYS USB, set jumper as show in the image.



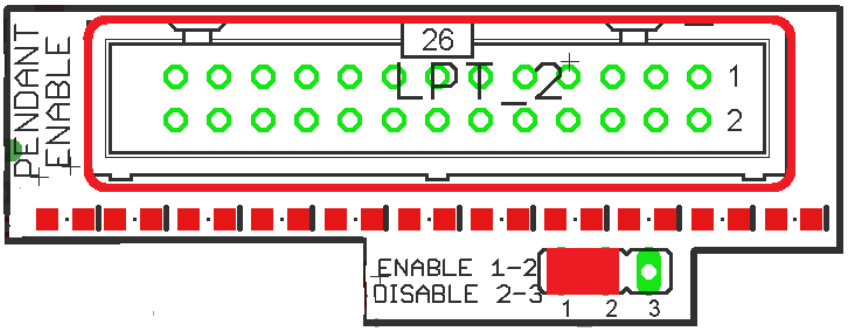
7.0 TERMINAL E-STOP

Connect an E-STOP push button as is shown in the below images.

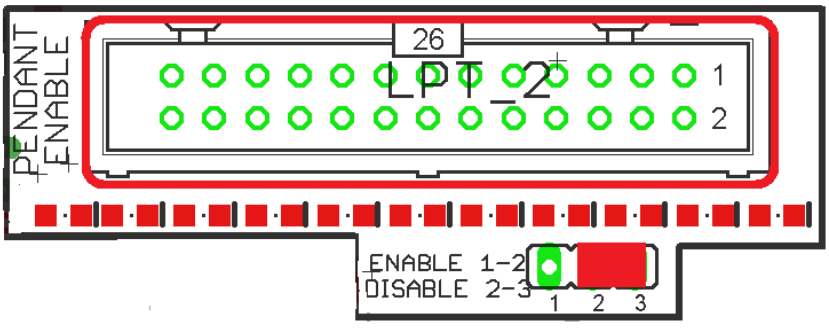


8.0 CONNECTING A PENDANT

Set the pendant enable jumper in ENABLE position if a pendant is connected to the PIN HEADER connector.

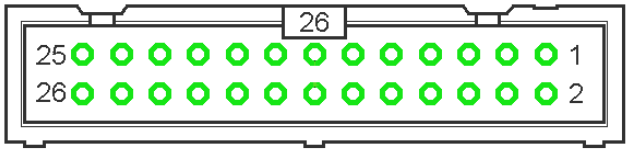


If not connects a pendant, set jumper on 2-3.



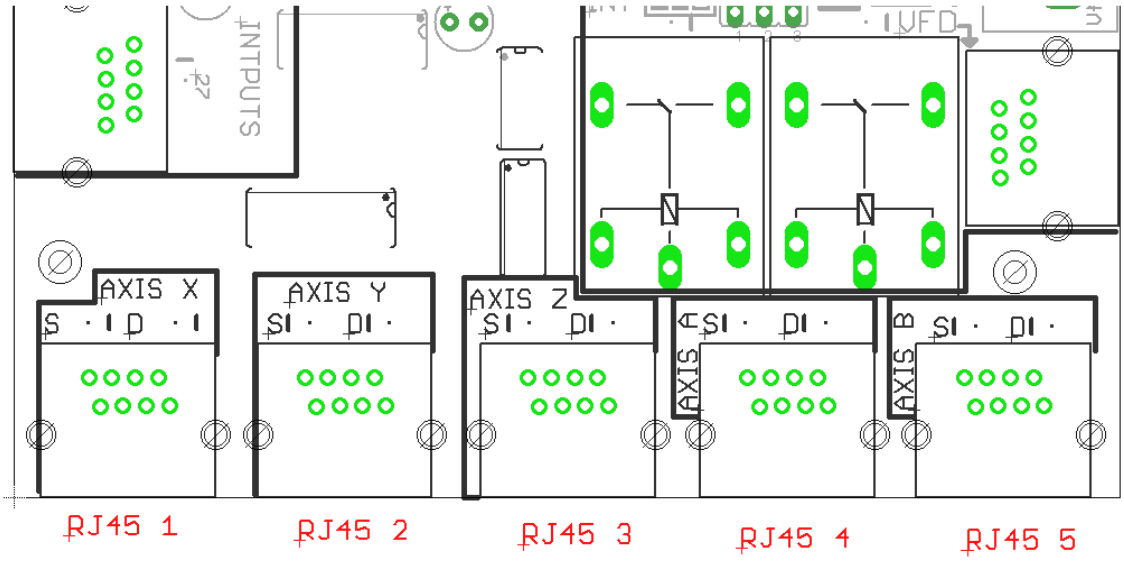
8.1 Pinout Pendant

IDC26



IDC26 PENDANT		
PIN	**IDC 26 Function**	**Pokeys Pin**
1	5V	-
2	5V	-
3	GND	-
4	E-STOP	-
5	Fast enc A1	PK1
6	5V	-
7	Fast enc B1	PK2
8	GND	-
9	LED	PK21
10	Axis B switch	PK3
11	GND	-
12	Axis C switch	PK4
13	Axis X switch	PK24
14	-	-
15	Axis Y switch	PK10
16	-	-
17	Axis Z switch	PK31
18	-	-
19	Axis A switch	PK5
20	-	-
21	X1 switch	PK6
22	-	-
23	X10 switch	PK15
24	-	-
25	X100 switch	PK16
26	-	-

9.0 PINOUT AXIS



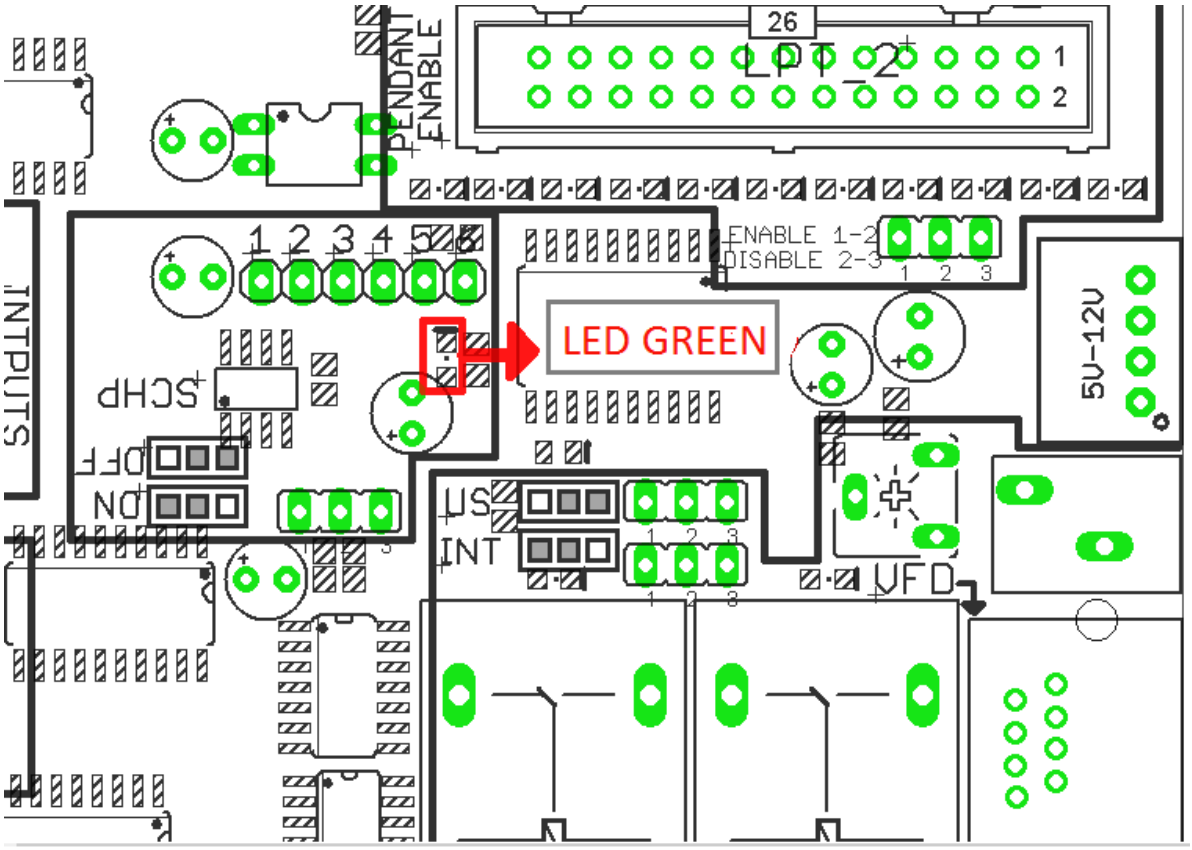
RJ45 Distribution

RJ45 (AXIS)	
PIN RJ45	**Pokeys Function**
1	NOT USED
2	STEP
3	NOT USED
4	GND
5	ERR
6	DIR
7	NOT USED
8	5V

10.0 SAFETY CHARGE PUMP "SCHP".

This card lets you use this signal to work as an On/Off switch for your system, enabling a powerful safety system for your equipment.

When **Status LED,** (Green LED) lights, it indicates that the system is enabled.

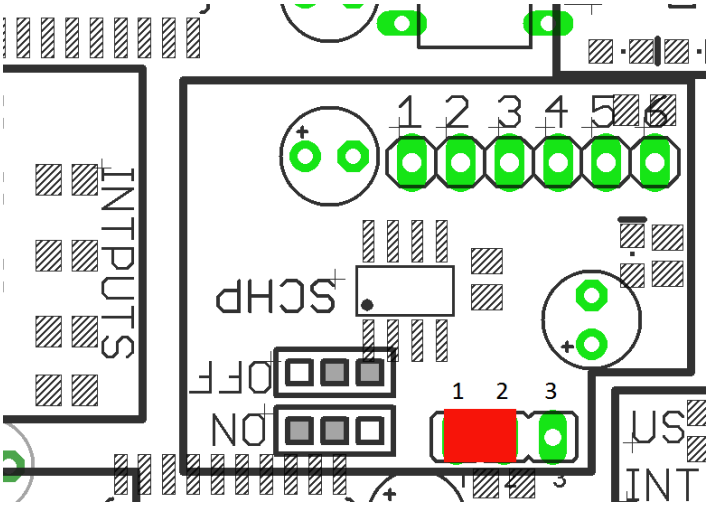


This function is assigned to the pin 53 of the Pokeys

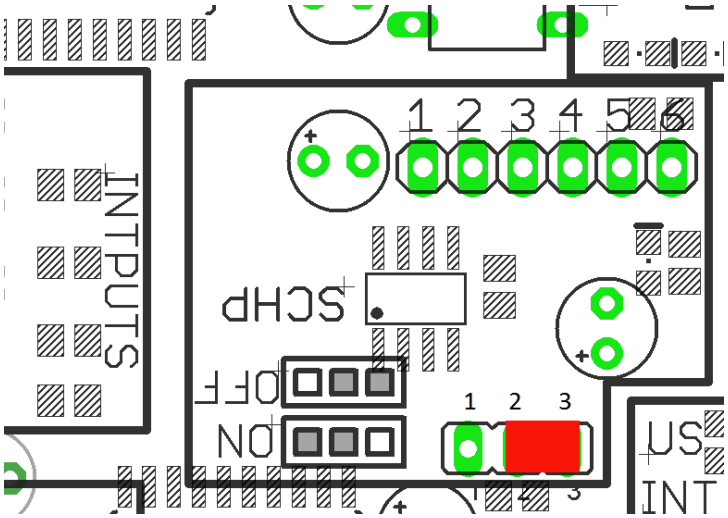
10.1 Selecting the SCHP operation mode

The Safety Charge Pump can be activated or deactivated depending on the jumper position.

1-2: ON



2-3: OFF



11.0 RJ45 FOR VFD CONNECTION

This RJ45 port let you make an easy connection between this board and the VFD.

RJ45 for VFD	
RJ45 PIN	**Function**
1	Analog GND
2	Analog Output
3	NOT USED
4	REL 1 Normally Open Contact
5	GND VFD
6	REL 2 Normally Open Contact
7	Ext. 12VDC or 24VDC
8	Relay Common

Analog GND: Ground of the Analog output signal

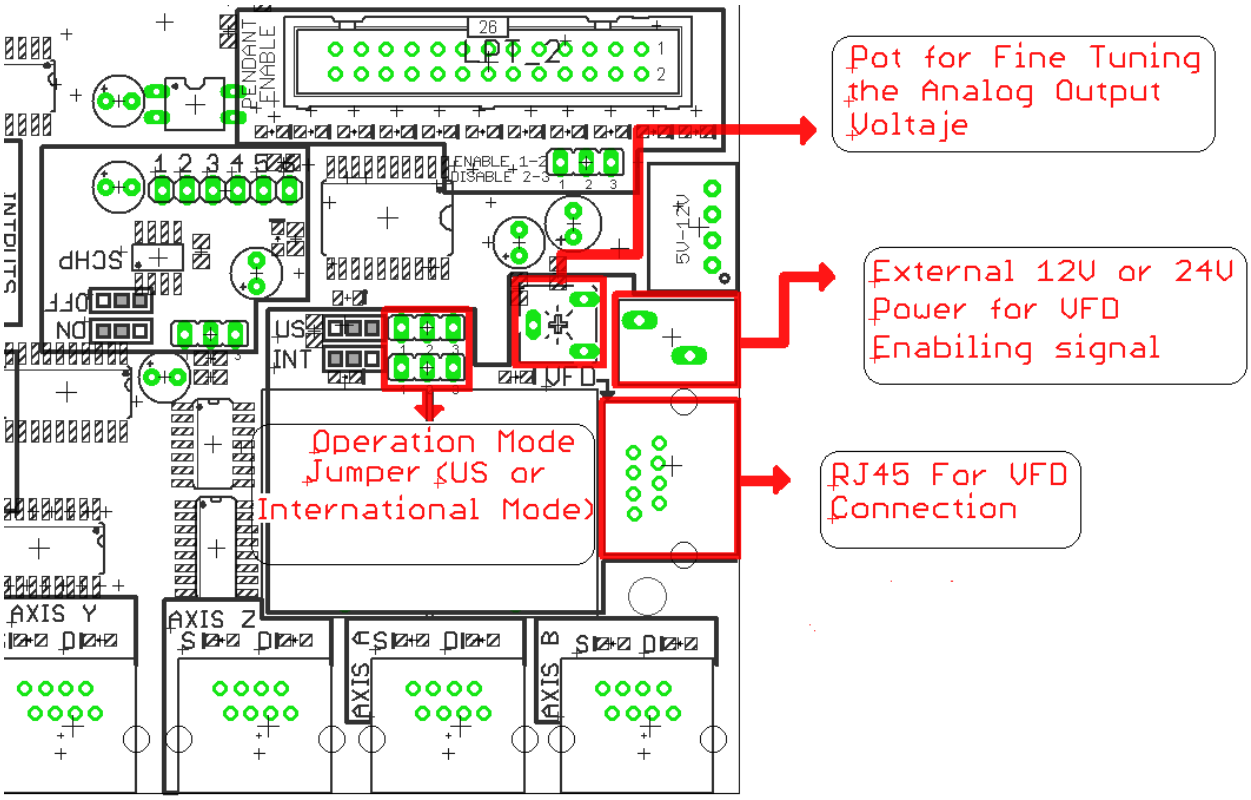
Analog Output: Isolated Analog Output Signal (0-10V)

GND VFD: Ground of VFD when it is powered with external source of 24V

Ext. 12VDC or 24VDC: External 12VDC or 24VDC power supply used to enable the VFD.

Relay Common: The signal or voltage wired to this terminal can be connected to the common terminals of the relay 1 and relay 2.

11.1 VFD Connection and configuration jumpers



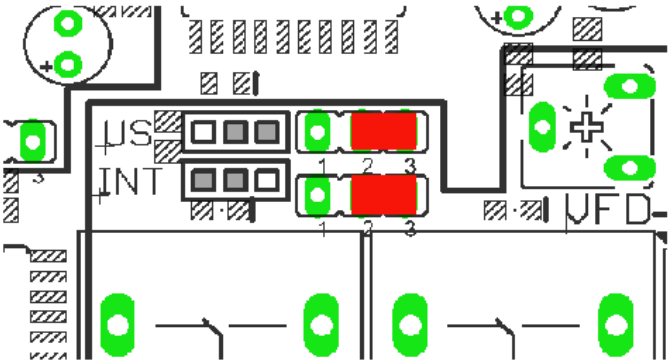
Operation Mode Selection Jumper

This jumper allows selecting the way how the relays are activated when a PWM signal and REV signal are present in the pins 18 and 43.

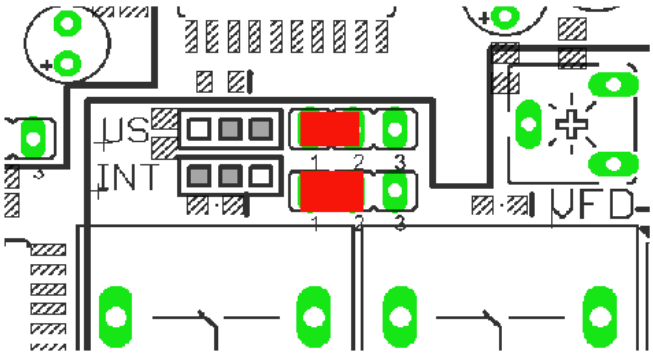
In US mode one relay is used to start on CW and the other one to start on CCW. In international mode one relay is used for on/off, and the other one to indicate the CW or CCW rotation of the spindle motor. This board uses the step and direction setting for the spindle motor under motor output in Mach4 to generate the required action on the relays. For both cases the presence of PWM will indicate spindle start.

See the tables and image below.

US MODE (US)				
PIN		**RELAYS**		
18	***43***	***REL 1***	***REL 2***	***OPERATION***
PWM	1	OFF	ON	Spindle ON CCW
PWM	0	ON	OFF	Spindle ON CW
0	1	OFF	OFF	Spindle Off
0	0	OFF	OFF	Spindle Off



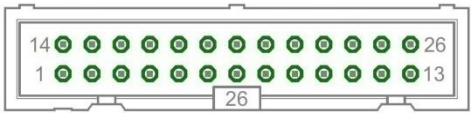
INTERNATIONAL MODE (INT)				
PIN		**RELAYS**		
18	***43***	***REL 1***	***REL 2***	***OPERATION***
PWM	1	ON	ON	Spindle ON CCW
PWM	0	ON	OFF	Spindle ON CW
0	1	OFF	OFF	Spindle Off
0	0	OFF	OFF	Spindle Off



12.0 PINOUT LPT 3 (EXPANSION)

12.1 Pin Numbering

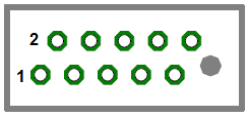
26 – Pin



LPT 3 (EXPANSION)	
PIN	**Pokeys Pin**
1	PK32
2	PK20
3	PK48
4	PK44
5	PK47
6	PK55
7	PK33
8	PK49
9	PK39
10	GND
11	PK50
12	GND
13	-
14	GND
15	PK40
16	GND
17	PK46
18	GND
19	PK54
20	GND
21	PK41
22	GND
23	PK42
24	GND
25	-
26	5V

13.0 PINOUT POEXTENSION

Connect special of 10 pins (PoExtension)



(PoExtension PINOUT)			
Equivalent Pin	**Pokeys Function**	**Pokeys Pin 56U**	**Pokeys Pin 57E**
1	5V	5V	5V
2	GND	GND	GND
3	PoExtension 3	17	17
4	PoExtension 4	38	38
5	PoExtension 5	37	37
6	PoExtension 6	36	36
7	PoExtension 7	35	35
8	PoExtension 8	23	9
9	PoExtension 9	25	11
10	PoExtension 10	26	51

14.0 PINOUT FOR ENCODER

Connector RJ45 for ENCODER

RJ45 (ENCODERS)		
PIN RJ45	**Pokeys Function**	**Pokeys Pin**
1	GND	GND
2	UF.enc.A	8
3	UF.enc.B	12
4	UF.enc.I	13
5	NOT USED	NOT USED
6	NOT USED	NOT USED
7	5V	5V
8	NOT USED	NOT USED

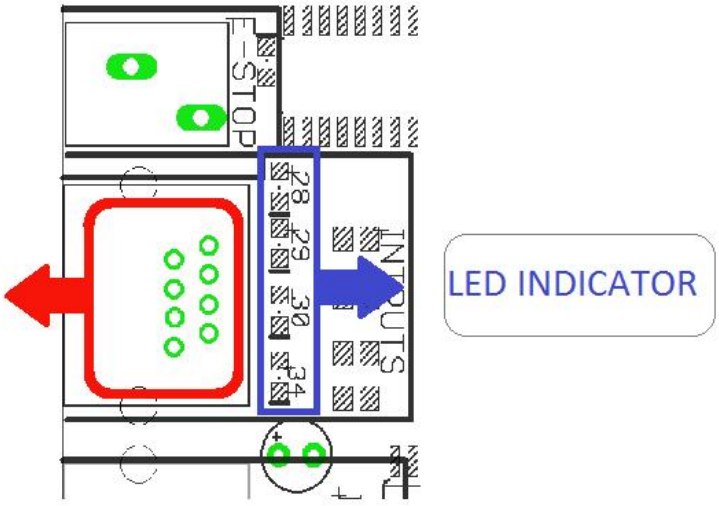
15.0 PINOUT LIMIT

Connector RJ45 for limit

LIMIT		
PIN RJ45	Pokeys Function	Pokeys Pin
1	GND	GND
2	Z_LIMIT	30
3	Y_LIMIT	29
4	X_LIMIT	28
5	A_LIMIT	34
6	NOT USED	NOT USED
7	5V	5V
8	NOT USED	NOT USED

This input is compatible with sensors (A32 or A62)

WIRING SAMPLE

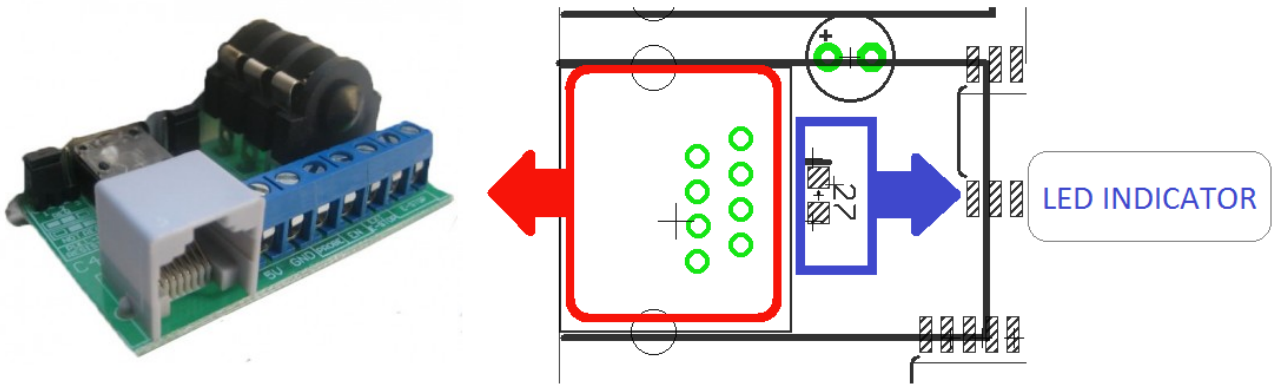


16.0 PINOUT FOR BOARD

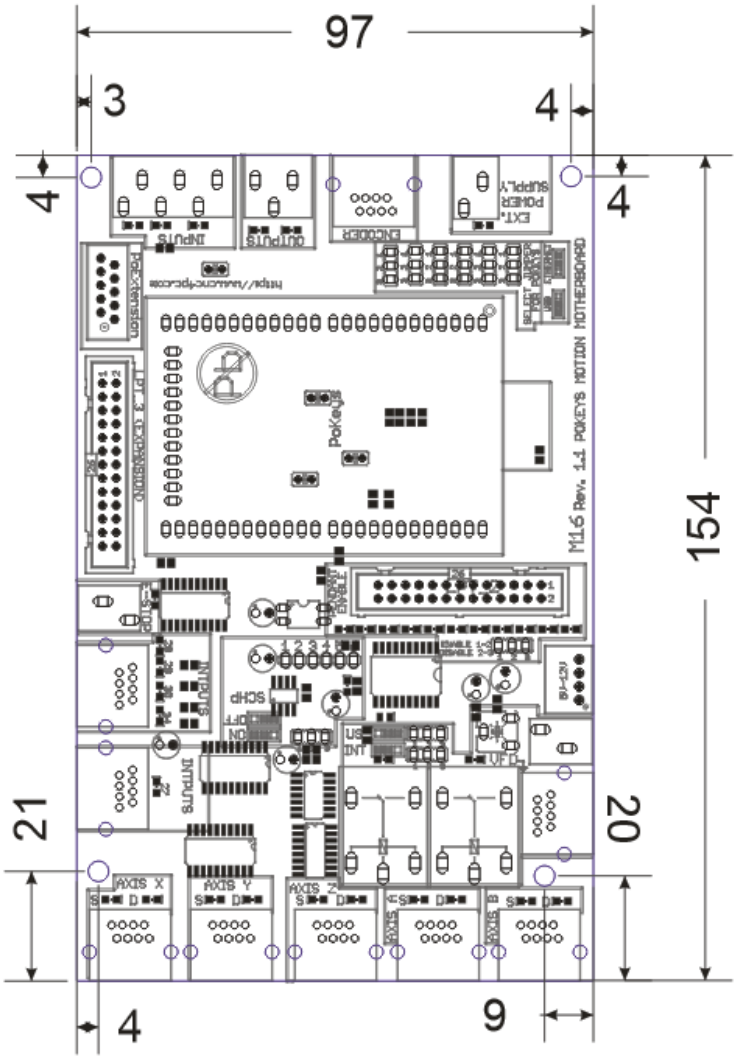
This connector is compatible with the board (C3 or C48)

PIN RJ45	Pokeys Function	Pokeys Pin
1	GND	
2	NOT USED	
3	ERR	
4	NOT USED	
5	IN LIMIT 15	27
6	ERR	
7	5V	
8	NOT USED	

WIRING SAMPLE



17.0 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 board 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.