

PROGRAMMABLE CHASER

Version 1.0

PROGRAMMABLE 8 SEQUENCE OUTPUTS

TECHNICAL MANUAL

1. 24 pre programmed patterns to select.
2. User can select one or more patterns to run.
3. Running speed can be controlled.
4. Pattern loop count can be edited.
5. 50 slot pattern memory.

Part # EP-SB-M001

BUTTONS AND FUNCTIONS

<u>BUTTON</u>	<u>MODE</u>	<u>FUNCTION</u>
SELECT	RUN	Pause/Resume program.
NEXT	RUN	-
SELECT	PROG	Select patterns/Select loops.
NEXT	PROG	Show next pattern/Count up loops.

SWITCHING INTO PROGRAMMING MODE

1. Power off the board.
2. While pressing SELECT and NEXT buttons simultaneously, switch power on.
3. Power LED will start to blink.
4. Release two buttons.
5. First pattern will run continuously.
6. Board has switched into programming mode.

SWITCHING INTO RUN MODE

1. Power off the board.
2. Do not press any button, switch power on.
3. Power LED will blink one time and board starts to run stored patterns.
4. Patterns follow selected/stored order.

HOW TO SELECT PATTERNS

*(*Assumes you have switched into programming mode*)*

*(*Assumes you are selecting second pattern with 4 loops*)*

1. Keep pressing NEXT button until pattern stops.
2. Release NEXT button will go into second pattern.
3. Keep pressing SELECT button until pattern stops.
4. Release SELECT button. You have selected the pattern.
5. Single LED will light up showing loop count.
6. You can set 8 loops maximum.
7. Press-Release NEXT button to count up loops.
8. Press-Release SELECT button to select loop count.
9. Returns to pattern display again.
10. Proceed using NEXT button.

*(*switch power off-on to go back to RUN mode*)*

Absolute Maximum Ratings,

Supply Voltage	8V
Switch Input	20V
Output Source/Sink	20mA (Single channel)
Reverse Voltage	3V

Recommended Operating Conditions,

Supply Voltage	4V-6V
Switch Input	-1V-15V
Output Source/Sink	10mA (Single channel)
Reverse Voltage	1V

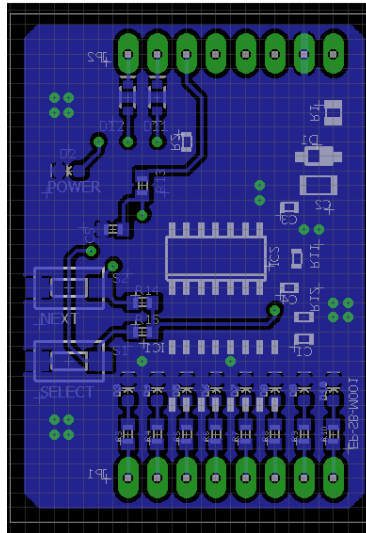
Run/Program mode Description,

RUN Mode	<u>Runs selected patterns one by one.</u> 1. Power LED blink one time. 2. Runs stored patterns continuously.
PROGRAM Mode	<u>User can select which patterns to run.</u> 1. Power LED blink until you release buttons. 2. Starts to run first pattern continuously.

Run/Program mode Switching,

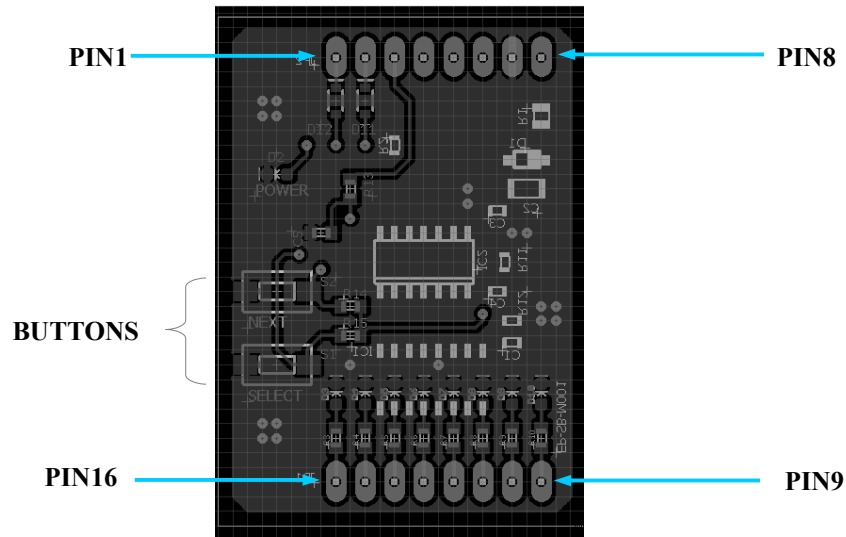
When powering up the board, it starts RUN mode immediately.

RUN Mode	1. Two buttons must be released. (if pressed) 2. Power up the board. 3. Power LED blink one time.
PROGRAM Mode	1. Keep pressing NEXT and SEL buttons. 2. Power up the board. 3. Power LED starts to blink. 4. Release two buttons. 5. Starts to run first pattern continuously.



PCB view of Module.

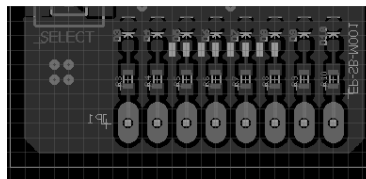
Pin diagram,



PIN	DESCRIPTION
1	SELECT button input.
2	NEXT button input.
3	Speed control input.
4	RUN/PROGRAM Mode indicator output.
5	GPIO2 not used. (used for programming the module)
6	Reset input.
7	Supply GND
8	Supply +V
9 to 16	Output 1 to 8

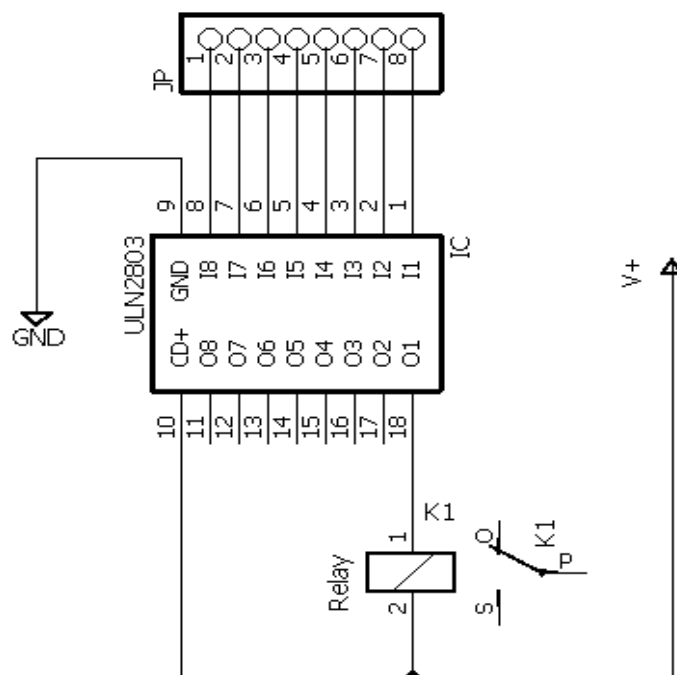
PIN		VOLTAGE LEVEL
1	D	Active low. 0V to 15V.
2	D	Active low. 0V to 15V.
3	A	0V to 5V.
4	D	PROGRAM-0V, RUN-5V output.
5	D	0V
6	D	Active low. 0V to 5V.
7	A	0V
8	A	+4V to +6V
9 to 16	D	0V to 5V. 10mA each.

Extending current capacity of outputs,



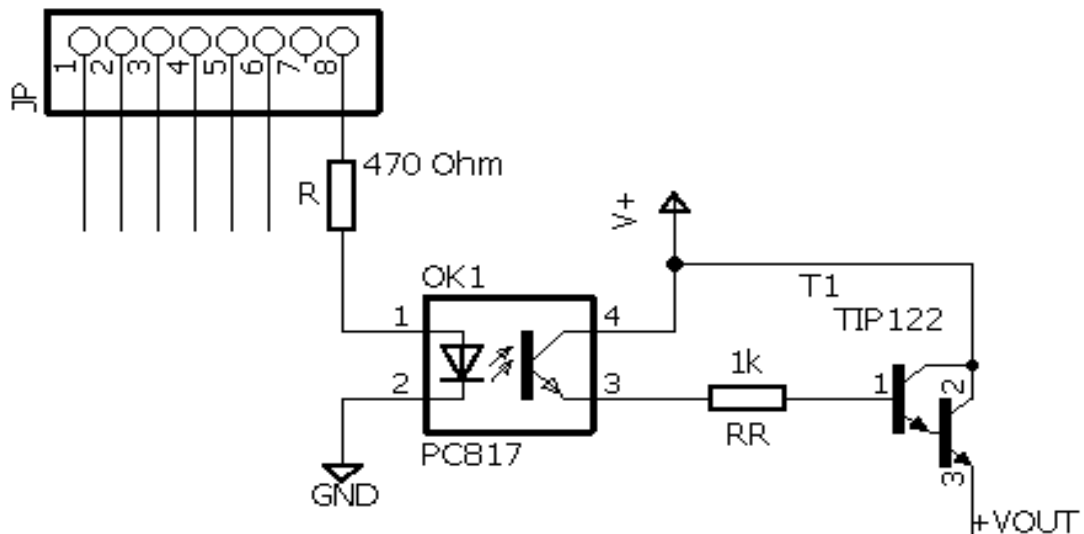
Output port.

The typical single channel output current is 10mA source or sink. But you can extend this value by adding some external circuit.

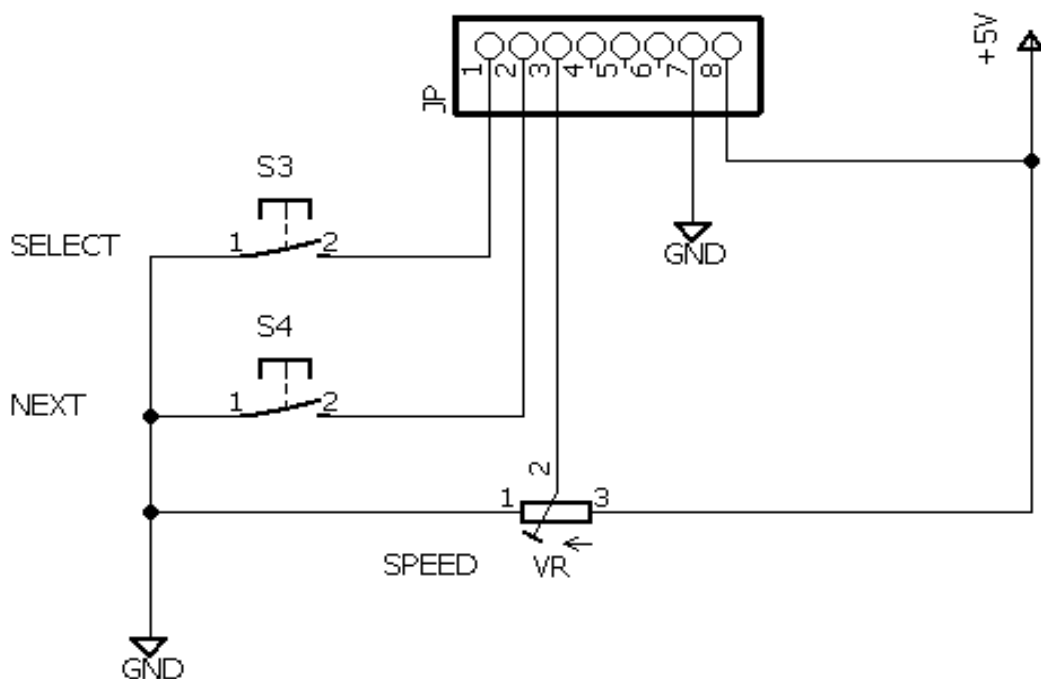


Single output of ULN2803 can handle 200mA sink current.
GND must be common between module and any driver circuit.

Working with isolated outputs,



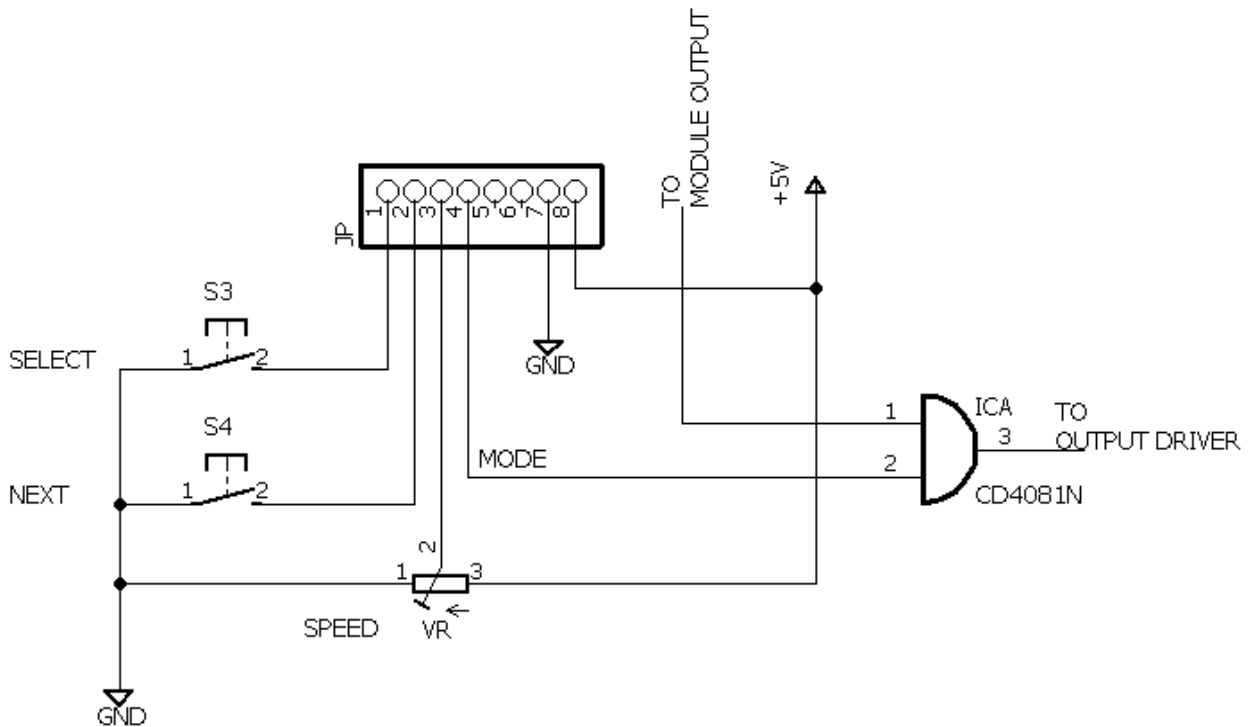
Typical input/power wiring diagram of module,



- two button inputs are both internally pulled up. Therefore no need external resistors. Speed control must be any value between 1k and 50k.
- Two buttons are optional. Connected parallel with onboard buttons.

Using MODE out to control output.

MODE out activates only on RUN mode. User can switch outputs on using MODE out.



Using MODE is optional. User can use MODE to switch output only on RUN mode.

Common Problems,

Q. Power LED continuous blink.

- A1. One of two switches may have short circuit.
- A2. Check external switches if have.
- A3. Check switch output lines. Must have more than 4V.
- A4. Supply voltage must be between 4V and 6V.

Q. R1 is heating.

- A1. Check supply voltage. Must be between 4V and 6V.
- A2. One or more outputs draw high current.
- A3. IC1 or IC2 has internal fault.
- A4. One or more decoupling capacitors defective.

Q. R1 burned.

- A1. Over voltage. Correct supply voltage.
- A2. Wrong polarity. Check + and -.

Q. Board does not switch into PROG mode.
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A1. Check switches.

A2. Switch input lines must be lower than 2V.

Q. Circuit doesnot run regardless of button states.

A1. Check RESET line. Must be same voltage as supply +V.
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