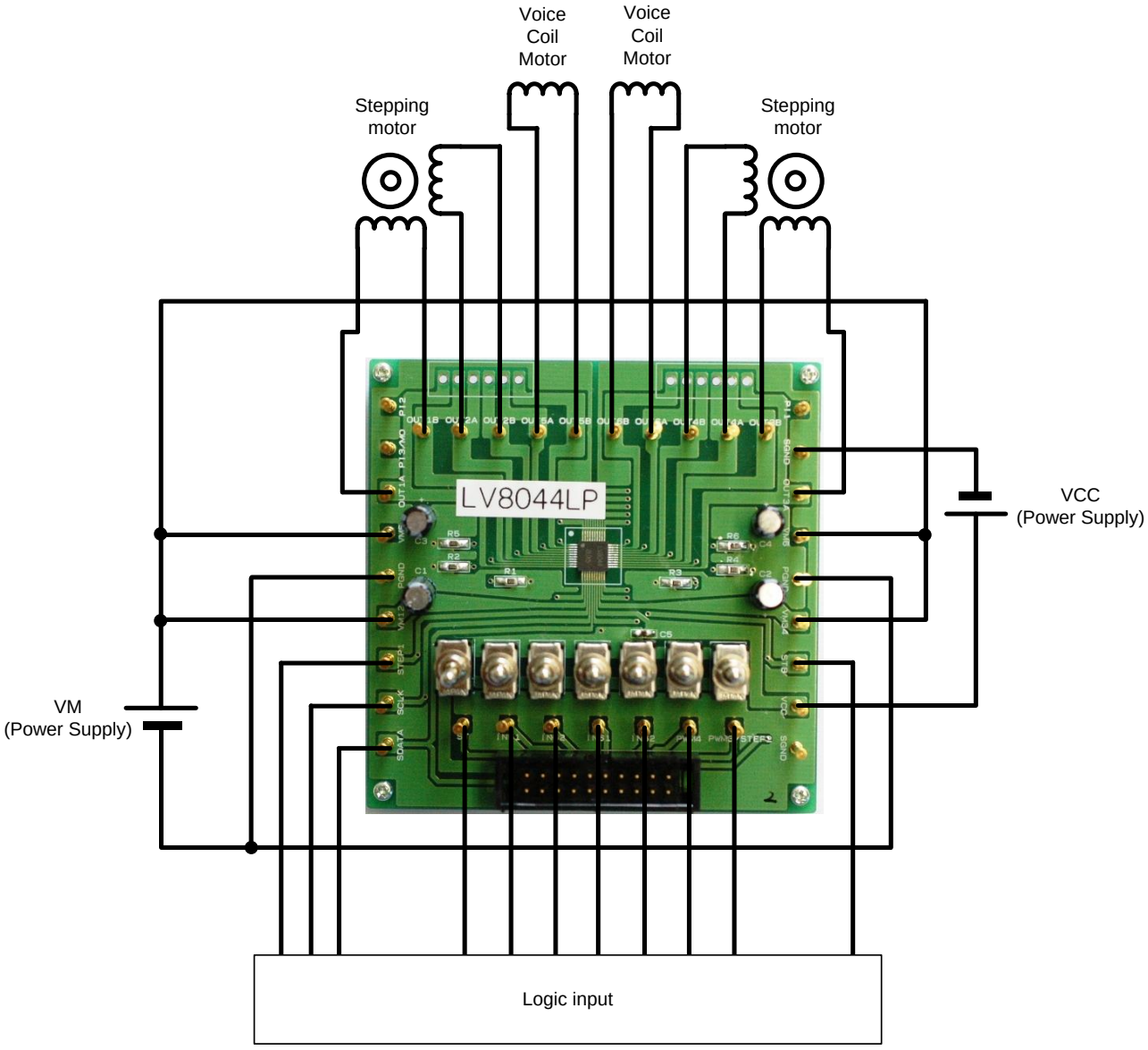
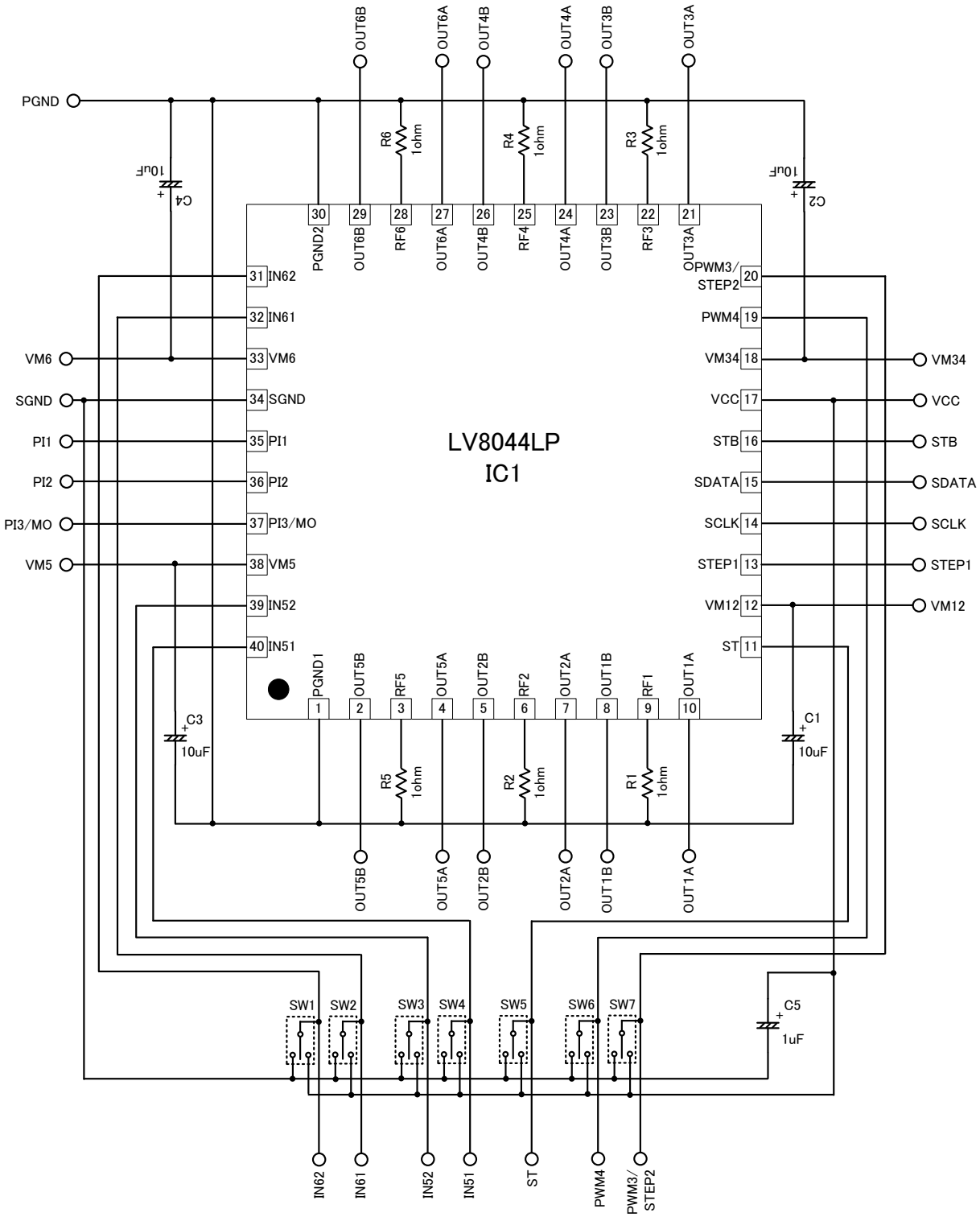
SANYO Semiconductors
An ON Semiconductor Company

Test Procedure for the LV8044LPGEVB Evaluation Board



(Circuit diagram of the evaluation board)



Evaluation Board Manual

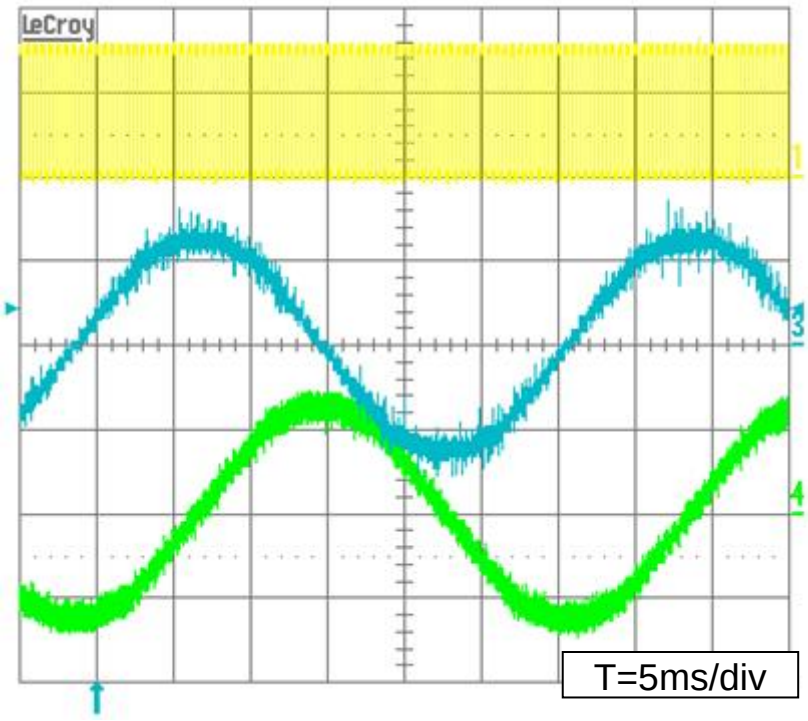
[Supply Voltage] VM (2.7 to 5.5V): Power Supply for LSI
VCC (2.7 to 5.5V): Power Supply for LSI

[Toggle Switch State] Upper Side: High (VCC)
Middle: Open, enable to external logic input
Lower Side: Low (GND)

[Operation Guide]
For Stepping motor control

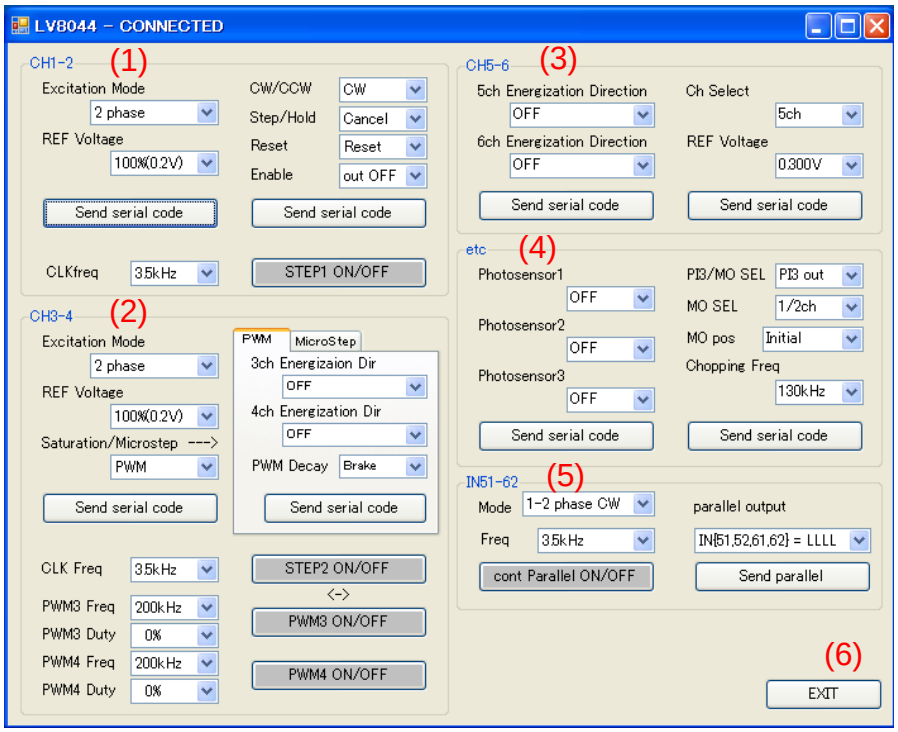
1. **Initial Condition Setting:** Set the toggle switchs Middle.
2. **Motor Connection:** Connect the stepping motor between OUT1, OUT2, OUT3 and OUT4.
3. **Power Supply:** Supply DC voltage to VM, VCC.
4. **Condition Setting:** Input the serial data signal to ST,SCLK,SDATA, and STB pins according to the purpose (See LV8044LP datasheet).
5. **Motor Operation:** Input the clock signal to STEP1 pin.

Stepping motor load VM=5V,VCC=3V
Motor current waveform example



Instruction Manual of Software of LV8044LP Evaluation

Explanations of Operation Screen



(1) “CH1-2” setting field : the serial signal to drive the stepping motor between CH1 and CH2 is set.
(2) “CH3-4” setting field : the serial signal to drive the stepping motor or the DC motor between CH3 and
CH4 is set.
(3) “CH5-6” setting field : the serial signal to set the energization direction and the reference voltage of
CH5 and CH6 is set.
(4) “etc” setting field : the serial signals to set the PI output, the MO output and the chopping frequency
is set.
(5) “IN51-62” setting field : the sequence signal for stepping motor and the parallel signal are set to the
pins IN51, IN52,IN61 and IN62 respectively.
(6) “EXIT” button : end the program.

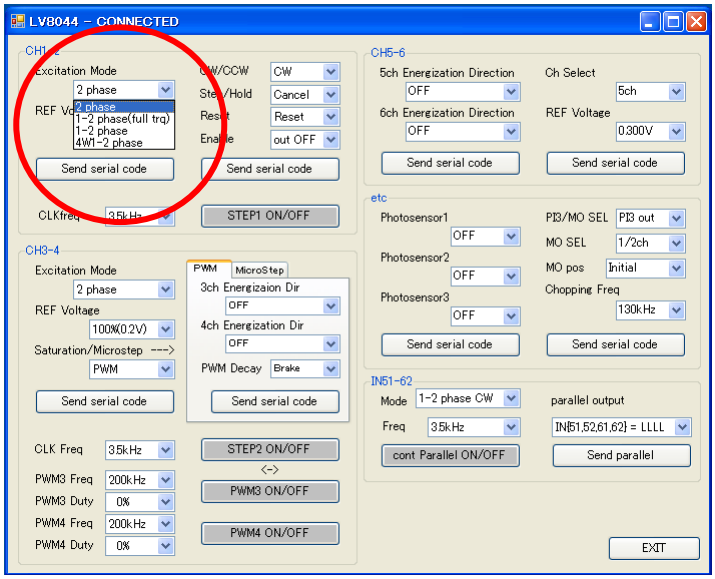
Explanations of Each Setting

(1) “CH1-2” setting

This is set when the stepping motor is driven between CH1 and CH2.

- Excitation mode (2-phase excitation / 1-2phase excitation full torque / 1-2 phase excitation / 4W1-2phase excitation).
- Internal reference voltage (0.200V to 0.066V)

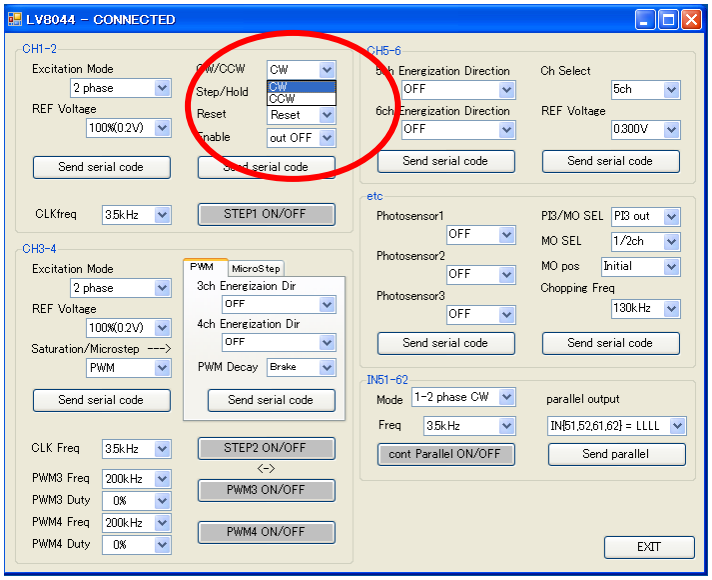
When above conditions are selected, the data transfer of each setting values are executed by clicking the “Send serial code” box.



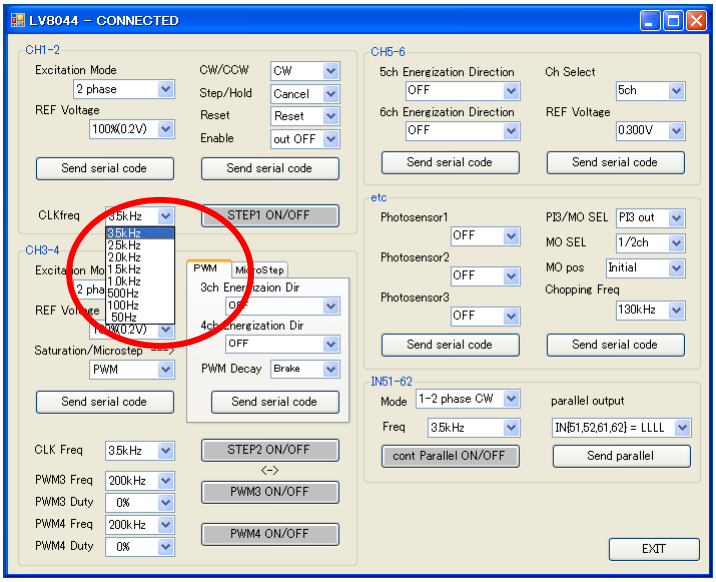
In the same way,

- Excitation direction (CW / CCW)
- Step hold (Cancel / Hold)
- Counter reset (Reset / Cancel)
- Output enable (OFF / ON)

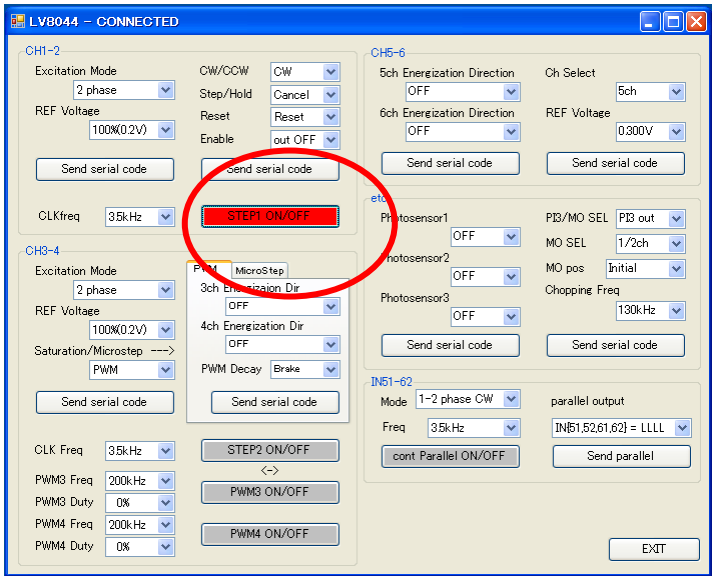
When above condition is selected, the data transfer is executed by clicking the “Send serial code” box.



Also, when the stepping motor is driven, the frequency of the reference clock signal “STEP1” is set.
And, it is turned on / off by using the “STEP1 ON/OFF” button.



→When the “STEP1” signal is output, the “STEP1 ON/OFF” button turns red in color.

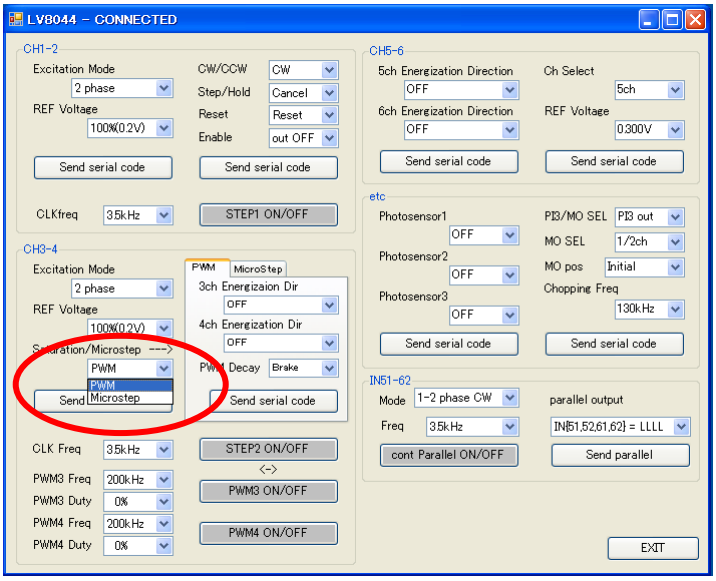


(2) ‘CH3-4’ setting

When the stepping motor is driven between CH3 and CH4, the “Microstep “ in the alternative of

“Saturation/Microstep” is selected, the data transfer is executed by clicking “Send serial code”.

The setting method that follow is basically the same as (1).



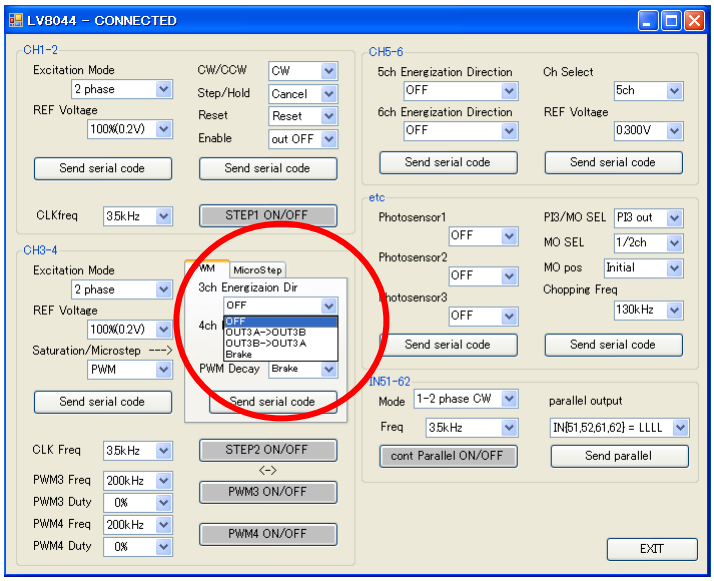
(3) ‘CH3-4’ setting

When the DC motor is driven between CH3 and CH4, the “PWM “ in the alternative of

"Saturation/Microstep" is selected, the data transfer is executed by clicking "Send serial code".

- Drive polarity (standby / forward / reverse / brake)
- PWM Decay type (brake / standby)

The serial signal to set in the above condition is set.



Also, "Frequency" and "PWMduty" of the PWM signal are set to the pins "PWM3 STEP2" and "PWM4".

Then, it is turned on/off by using the buttons "PWM3ON/OFF" and "PWM4 ON/OFF".

→When the "PWM" signal is output, the buttons "PWM3ON/OFF" and "PWM4 ON/OFF" of output turns red in color.

(4) "CH5-6" setting field :

The setting method here is nearly the same as (3).

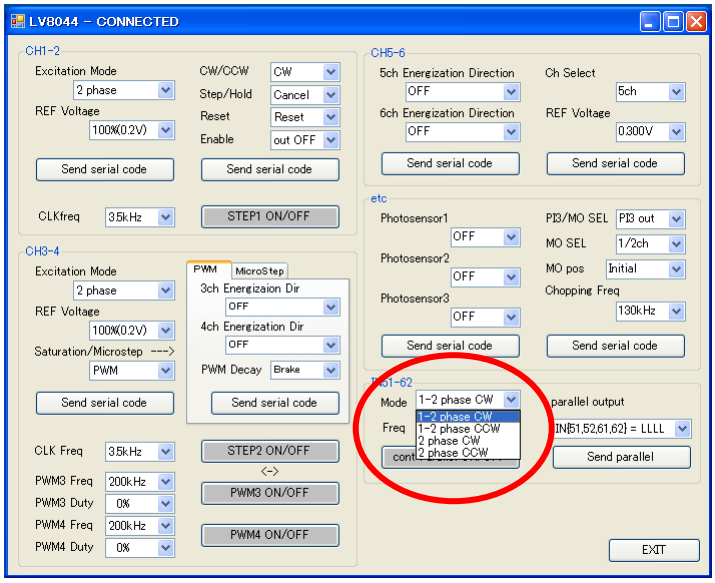
(5) "etc" setting field :

- PI output (OFF/ON)
- PI3 / MO output switching (PI3out / MO)
- MO output ch selection (1/2ch / 3/4ch)
- MO output position (Initial position / 1-2phase position)
- Chopping frequency (200KHz to 65KHz)

The setting is as below.

(6) “IN51-62” setting field :

When the stepping motor is driven between CH-5 and CH6, the signal is input to the pins IN51, IN52, IN61 and IN62 respectively.

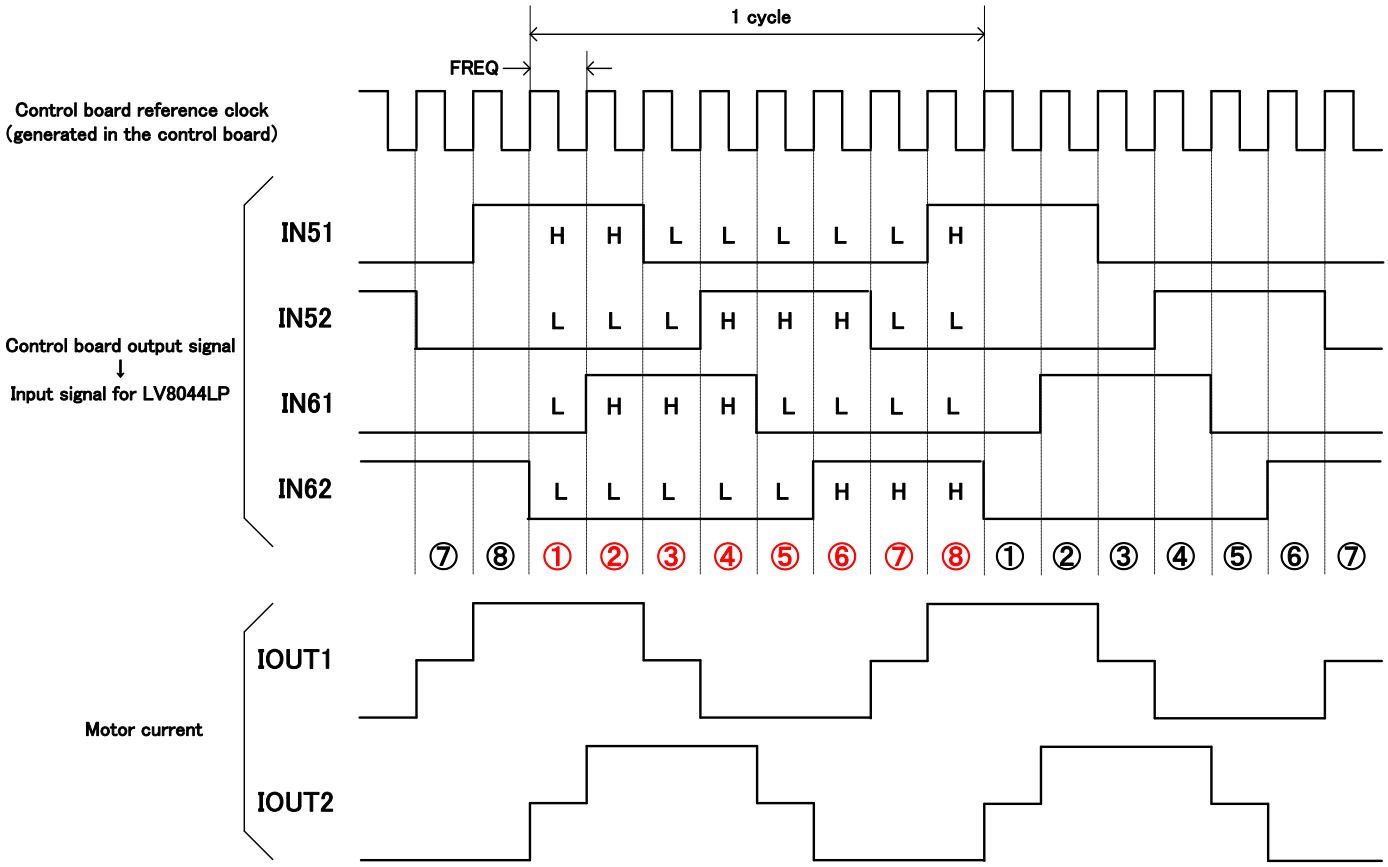


● “1-2 phase excitation Forward” and “1-2phase excitation Reverse”

The drive of Forward and Reverse (per cycle) of 1-2phase excitation is set.

→The drive signal of per cycle is as below.

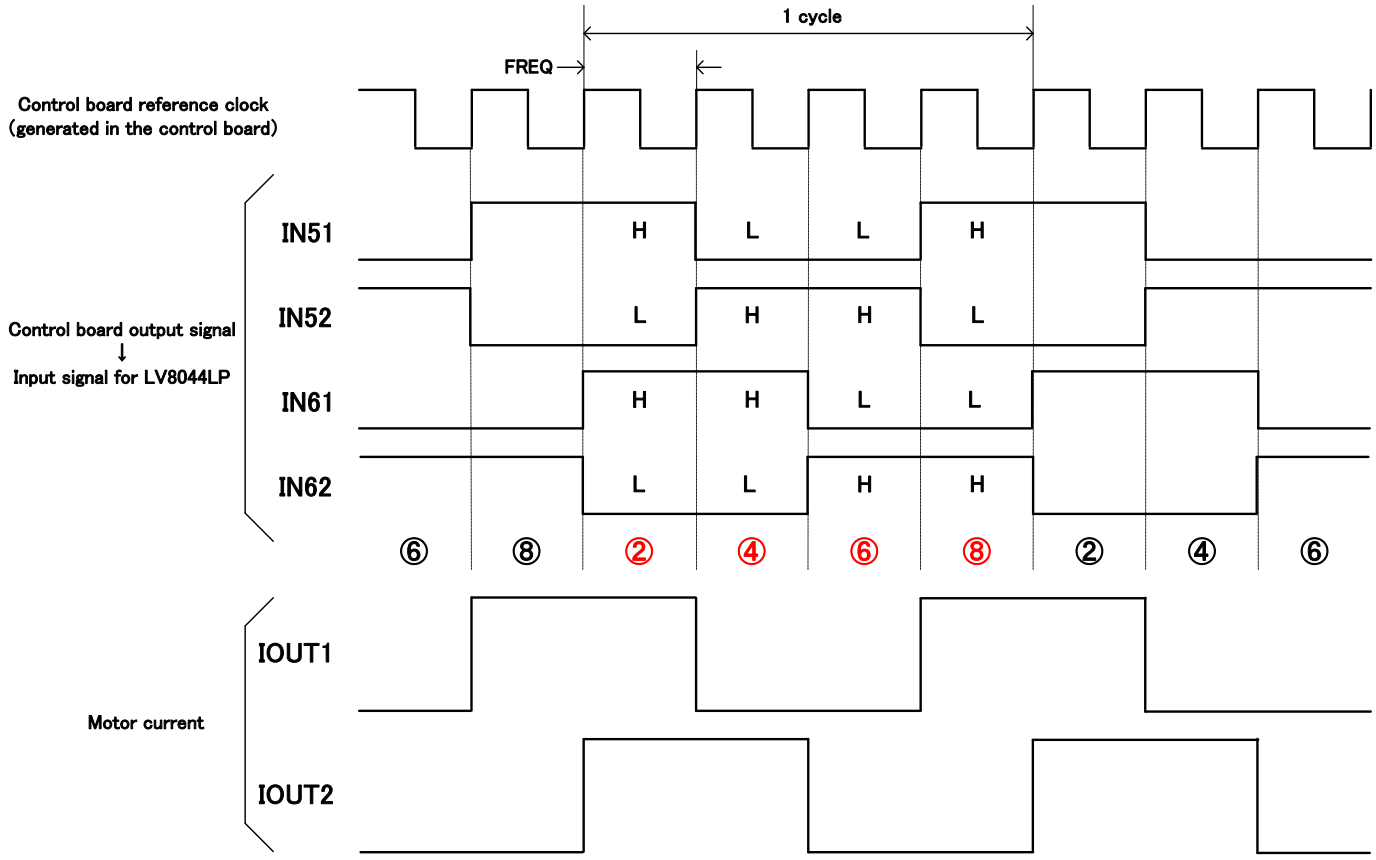
【In case of 1−2phase excitation】



→ The relation of IOUT1 and IOUT2 inverts at reversal.

- "2 phase excitation Forward" and "2phase excitation Reverse"
  The drive of Forward and Reverse (per cycle) of 2phase excitation is set.
  →The drive signal of per cycle is as below.

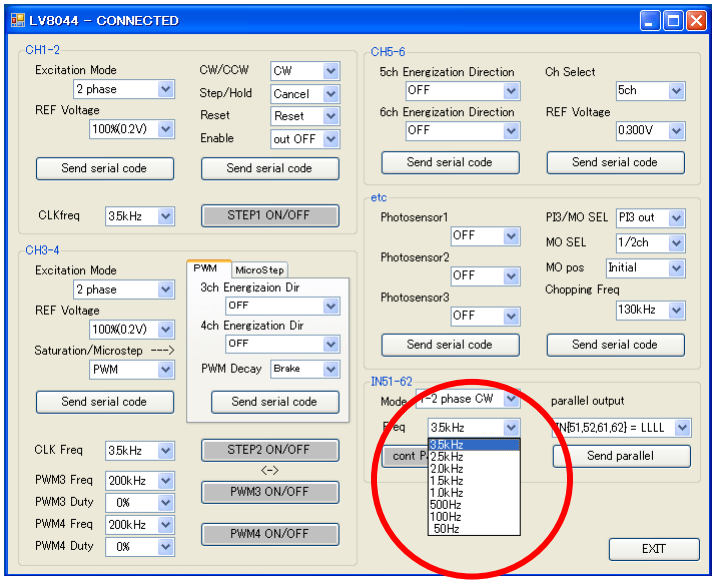
【In case of 2phase excitation】



→ The relation of IOUT1 and IOUT2 inverts at reversal.

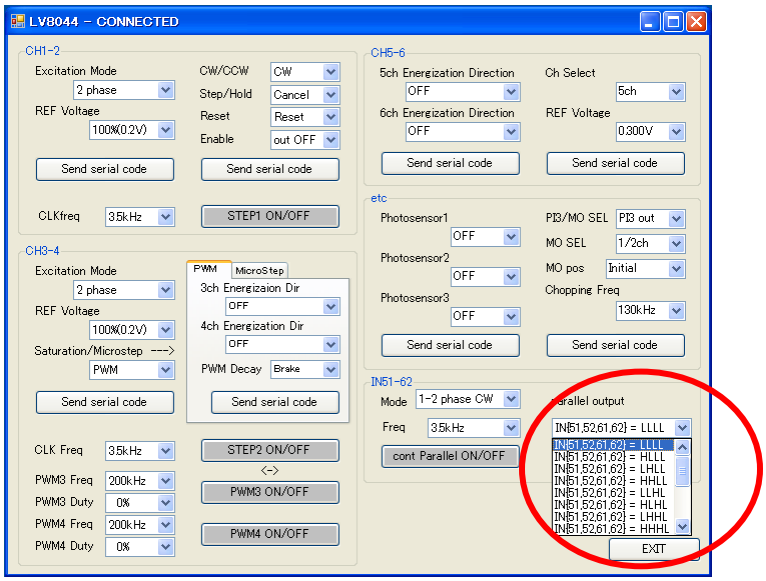
●Drive Frequency

The Pulse rate of the stepping motor is set. (“FREQ” of above timing chart is set.)



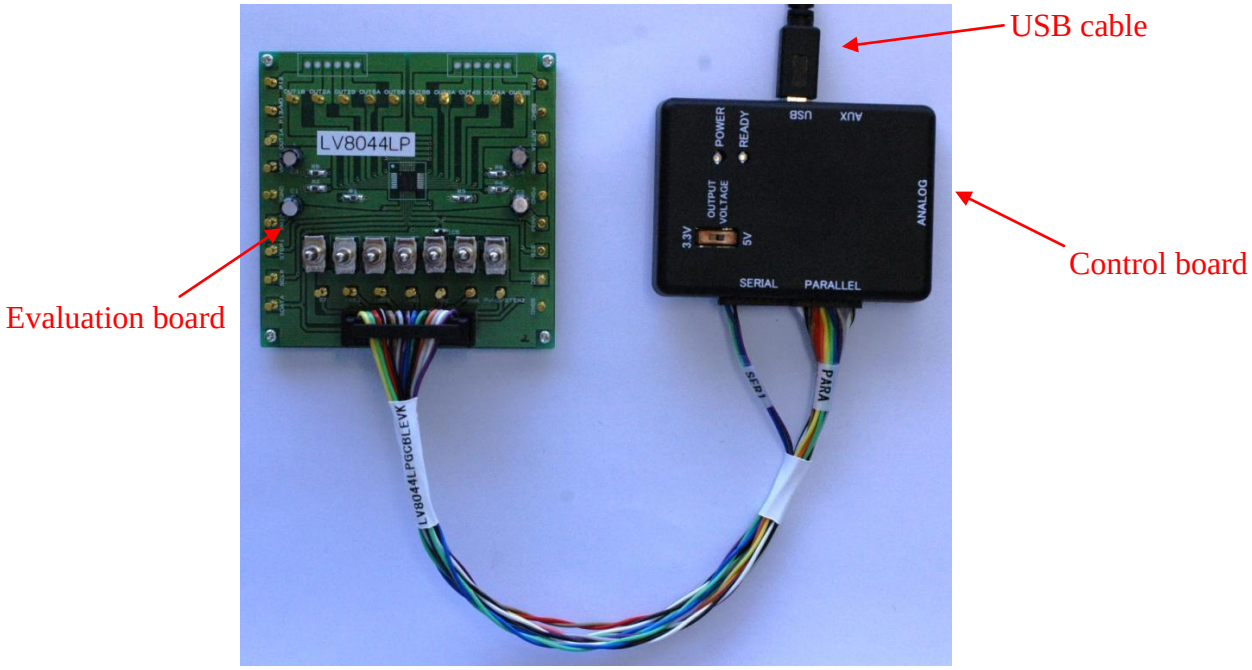
●Parallel Signal Setting

The input parallel signal to the pins IN51, IN52, IN61 and IN62 respectively can be set.



That's the end of the excitation relating to the setting of "Main Screen".

3) Connection with LV8044 evaluation board & control board



*)Please supply voltage for actuator from external power source to VM12,VM34,VM5 and VM6 pins.