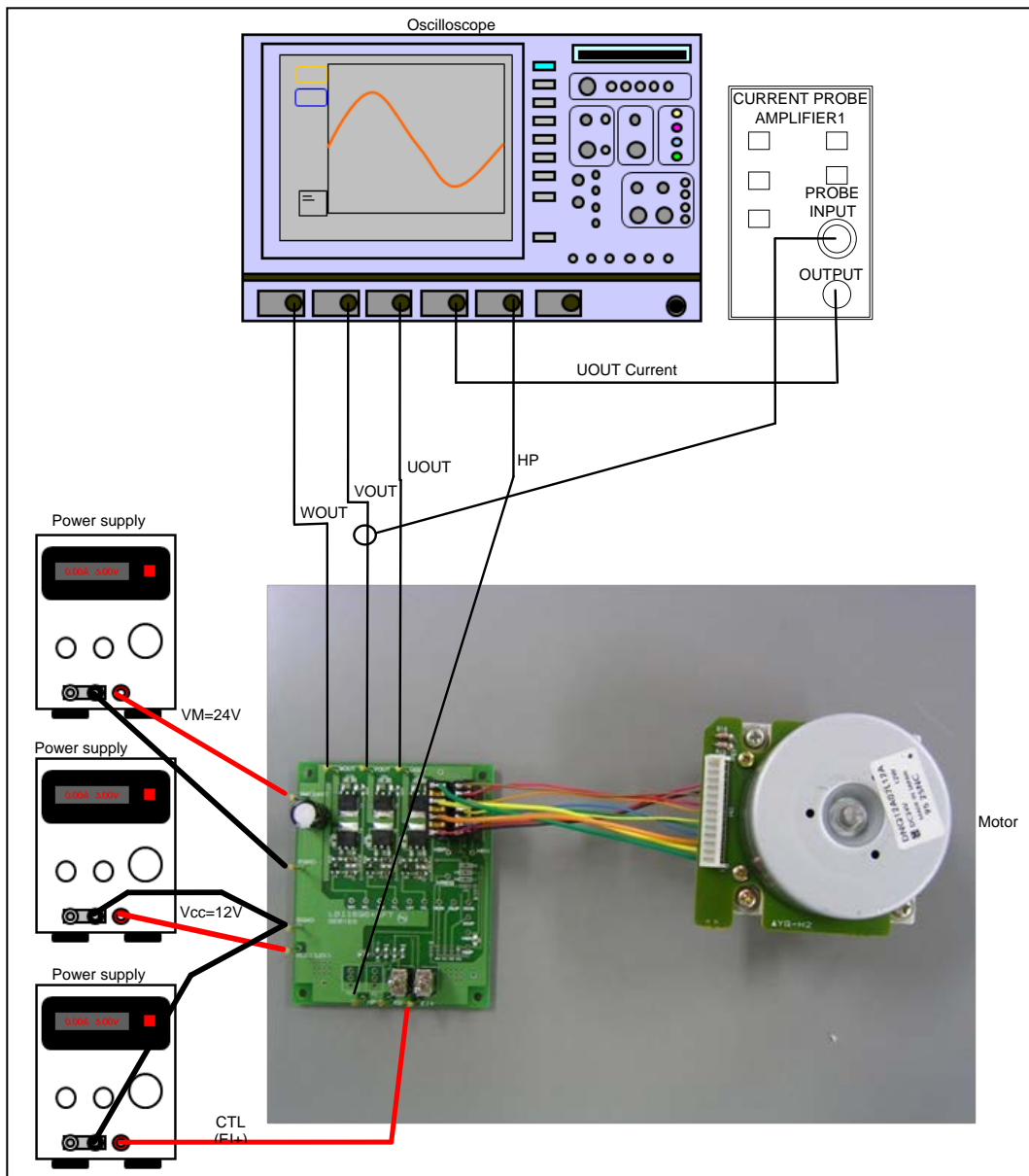
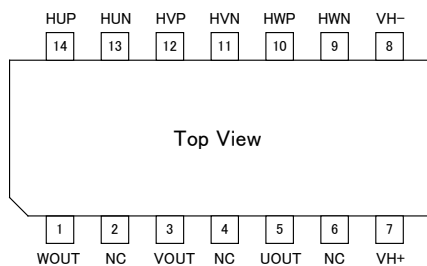


Test Procedure for the LB11696V Evaluation Boar



Socket pin assignment for motor connection



UOUT, VOUT, WOUT :Motor driver output

VH+, VH- :Hall element Bias

HUP, HVP, HWP :Hall element signal input +

HUN , HVN, HWN :Hall element signal input -



Table: Required Equipment

Equipment	Efficiency
Power supply	18V-3A
Power supply	18V-3A
Power supply	18V-3A
Oscilloscope	5 channel
Current probe	
LB11696V Evaluation Board	
Motor	

Test Procedure:

1. Connect the test setup as shown above.
2. Connect CTL power supply (0V to VREG) between EI+ and GND. First, set to 0V.
3. Connect IC power supply (8V to 17V) between VCC and GND. First, set to 12V.
4. Connect motor power supply between VM and GND. *Initially, please set a lower voltage than the rated voltage of the VM for safety. (*Maximum voltage of capacitor C17 is 100V. Please use the ones that are sufficient to withstand voltage VM.)
For example, in the case of VM=24Vtyp, please start from VM = 12V (approx.).
5. Please increase EI+ voltage to 3.0V.

1. Initial check

Confirm that the motor rotates smoothly and in the correct direction.

Check the some waveforms.

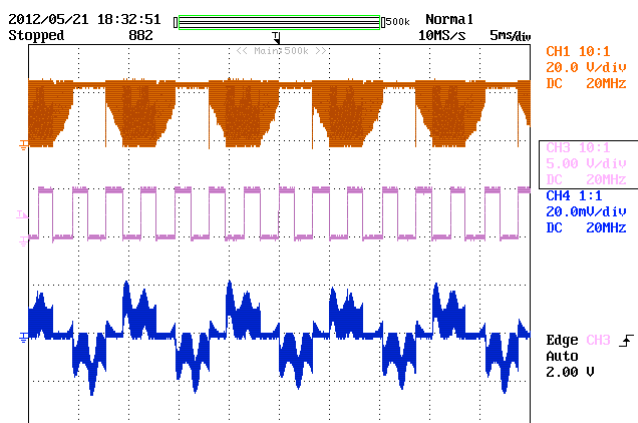
Check the UOUT, VOUT, WOUT, RD and HP voltage waveform, and the output current waveform of UOUT by the oscilloscope.

ex) Waveforms can vary depend on usage motors.

VCC=12V, VM=24V, F/R=L

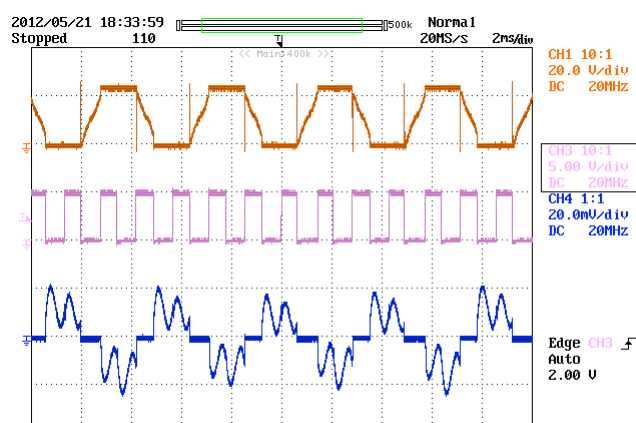
CH1:V-OUT, CH3=HP, CH4=V-OUT current
CH4=V-OUT current

EI+=2.0V



CH1:V-OUT, CH3=HP,

EI+=3.0V





The case of Hall Element Input:

Evaluation Board Circuit Diagram (Hall Element Input) (Page27)

Please change the connection of Hall Sensor from VH+ and VH-.

The case of Hall IC Input:

Please refer to Evaluation Board Circuit Diagram (Hall IC Input) (Page32)

2. Speed control check

You can control rotation of the motor by changing the voltage of "EI+"(16PIN).

EI+ input voltage ranges from 0 to VREG. Depends on voltage, a mode is switched into 2 types of modes: , Stop Mode and Drive Mode.

(Drive Mode: $1.0V \leq V_{CTL} \leq 3.0V$ (TYP))

Please refer to development specification for the details of each mode.

• **Stop Mode** ($0V < CTL < 1.0$) Motor rotation stop.

• **Drive Mode** ($1.0V < CTL < 3.0V$) Output PWM DUTY is controllable from 0% to 100%.

3. Forward/Reverse rotation check

"F/R" (24PIN) includes switch (SW) to select between VREG/GND.

You can switch between forward/reverse.

*Please do not use the switch while the motor is in rotation.

4. Lock detection check (Motor-Lock-mode)

Check the Lock detection behavior. (Lock)

At each VCC, stop the Motor manually by force.

After about 6.7 seconds, the motor will start rotation automatically.

5. Start/Stop check

"S/S" (22PIN) includes switch (SW) to select between VREG/GND.

You can switch between Start/Stop mode.

"H": **Stop Mode** ($2.0V < S/S$)

"L": **Start Mode** ($S/S < 1.0V$)

6. Check result

Check table is as shown below.

VCC	Each waveforms	Speed control check	Forward/Reverse rotation check	Lock detection check	Start/Stop check	
8.0V	UOUT, UOUT current, HP, RD OK?	the motor rotates smoothly at speed up/down	OK?	OK?	OK?	
17V						

A sample of checking result is shown below.

VCC	Each waveforms	Speed control check	Forward/Reverse rotation check	Lock detection check	Start/Stop check	
8.0V	UOUT, UOUT current, 3FG, RD OK?	the motor rotates smoothly at speed up/down	OK?	OK?	OK?	
17V						