

## Test Procedure for the LV8702VGEVB Evaluation Board

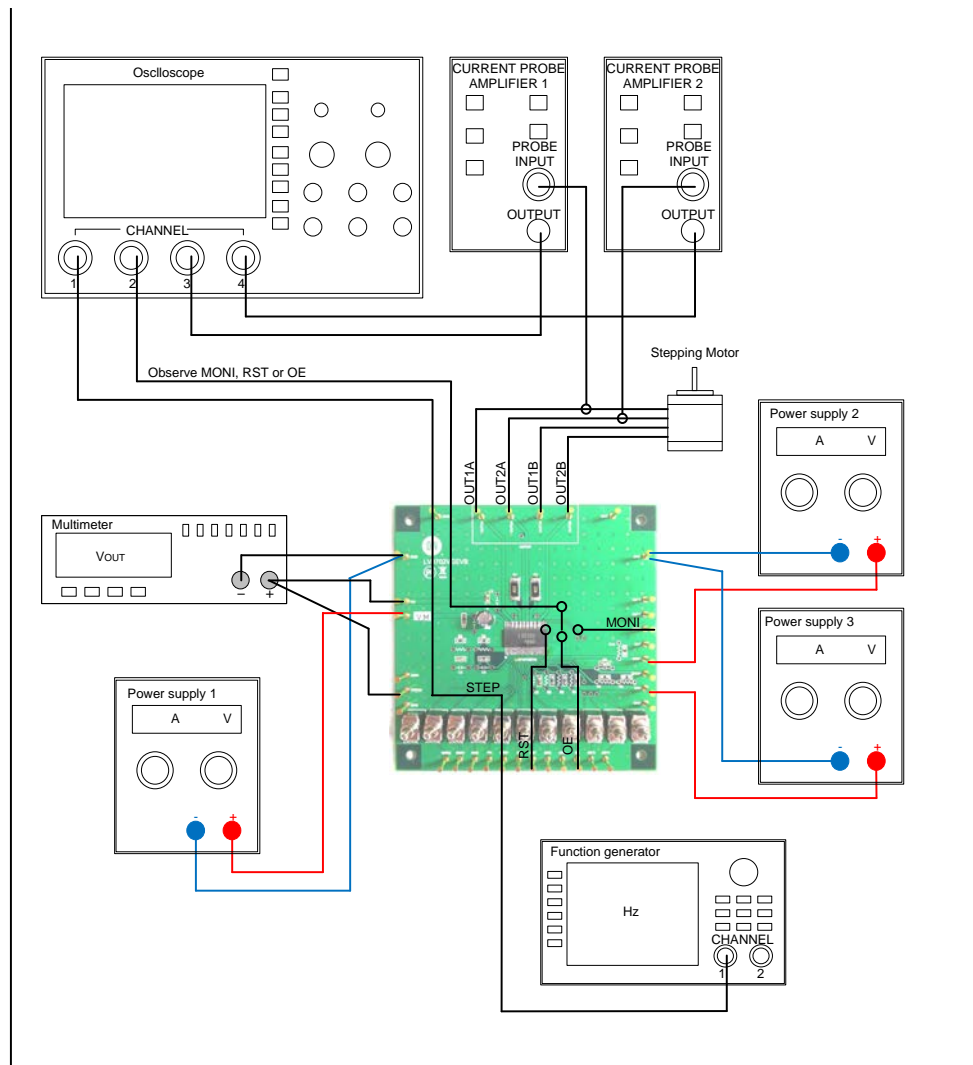


Figure 1. Setup for stepper motor control 1

**Table1: Required Equipment**

| Equipment                | Efficiency |
|--------------------------|------------|
| Power supply1(VM)        | 35V-5A     |
| Power supply2(VREF)      | 5V-0.5A    |
| Power supply3(VDD)       | 10V-1A     |
| Function generator       | 200kHz     |
| Multimeter               | -          |
| Oscilloscope             | 4 channel  |
| Current probe1           | -          |
| Current probe2           | -          |
| LV8702V Evaluation Board | -          |
| Stepper Motor            | 35V-3A     |

**Test Procedure:**

1. Connect the test setup as shown above.
2. Set it according to the following guide.

[Supply Voltage] VM (9 to 32V) : Power Supply for LSI  
 VREF (0 to 3V) : Const. Current Control for Reference Voltage  
 VDD (2 to 5V) : Logic "High" voltage for toggle switch

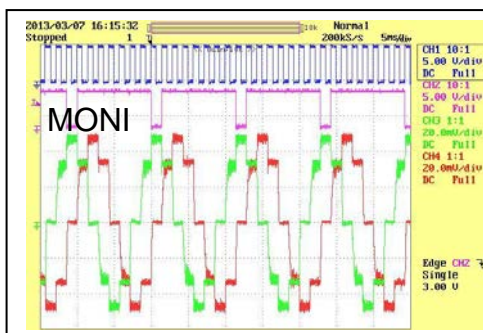
[Toggle Switch State] Upper Side: High (VDD)  
 Middle: Open, enable to external logic input  
 Lower Side: Low (GND)

**[Operation Guide]**

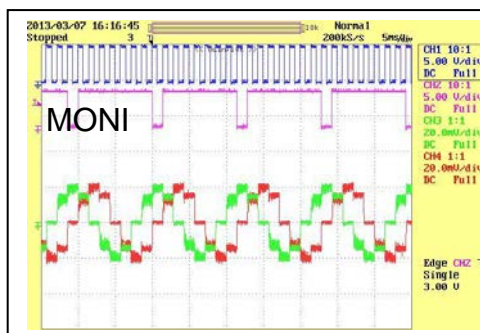
1. Initial Condition Setting: Set "Open" the toggle switch STEP and "Open or Low" the other switches.
  2. Power Supply: Supply DC voltage to VM, VREF and VDD.
  3. Ready for Operation from Standby State: Turn "High" the ST terminal toggle switch. Channel 1 and 2 are into 2-phase excitement initial position (100%, -100%) .
  4. Motor Operation: Input the clock signal into the terminal STEP.
  5. Other Setting
    - i. FR: Motor rotation direction (CW / CCW) setting.
    - ii. RST: Initial (Reset) state setting.
    - iii. MD1, MD2: Excitation mode setting.
    - iv. OE: Output Enable.
    - v. GMG1,GMG2: High-efficient drive margin adjuster
    - vi. GST1,GST2: Boost-up adjuster
    - vii. GAD: High-efficient drive mode setting (When motor drive does not become a high performance mode, please raise rotating speed. In the case of full step setting (MD1=L, MD2=L), high-efficient mode is turned off.)
3. Check VREG5 and VG terminal voltage at multimeter.
  4. Check the STEP and MONI terminal voltage at scope CH1 and CH2, and the output current waveform at scope CH3 and CH4.

**Table2: Desired Results**

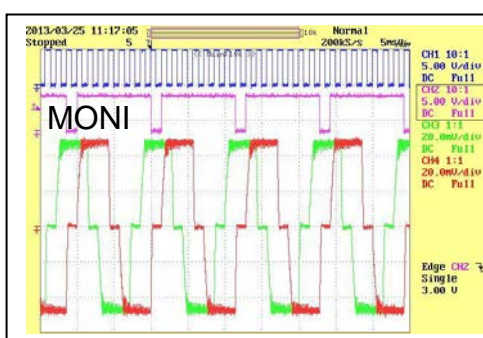
| INPUT   | OUTPUT  |
|---|---|
| VM=24V<br>VREF=0.55V<br>VDD=5V<br>ST=High<br>GMG1=H, GMG2=L<br>GST1=H, GST2=L,<br>RF=0.22Ω, CHOP=150pF<br>RST=Low, OE=Low<br>FR=Low<br>MD1=High MD2=Low (Half step)<br>STEP=700pps<br>motor condition is non-load | VG is the same as VM<br><br>VREG5=4.5V to 5.5V<br>and VG=28V to 29.8V |



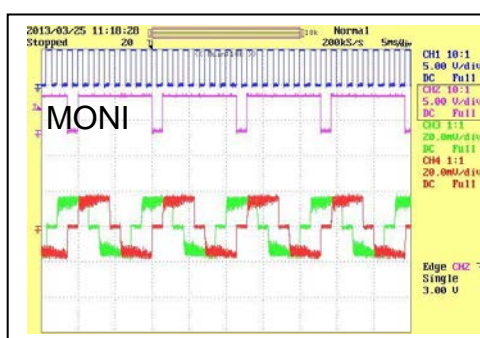
MD1=H, MD2=L (Half step)  
GAD=L, normal mode



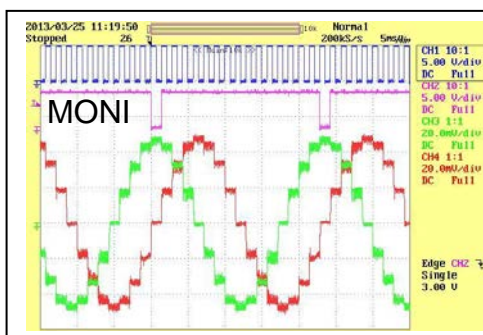
MD1=H, MD2=L (Half step)  
GAD=H, High efficient-mode



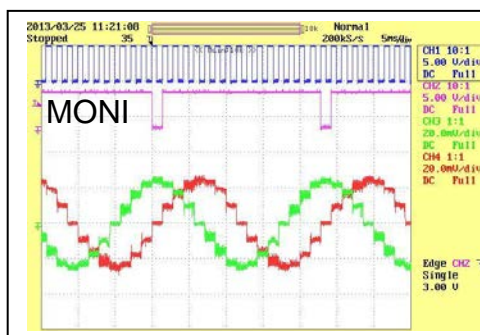
MD1=H, MD2=H (Half step full-torque)  
GAD=L, normal mode



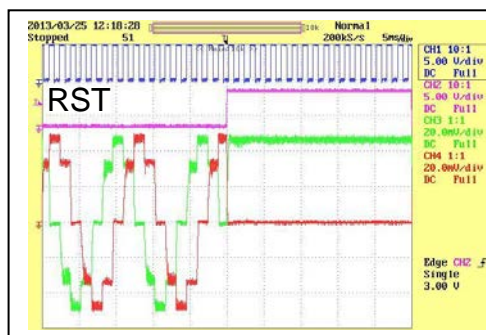
MD1=H, MD2=H (Half step full-torque)  
GAD=H, High efficient-mode



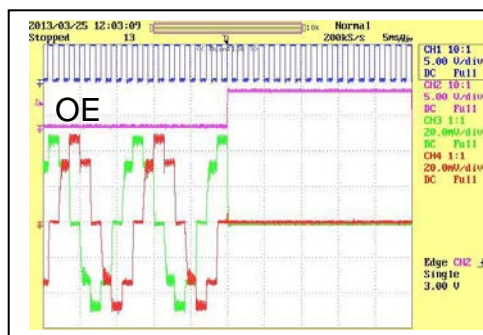
MD1=L, MD2=H (Quarter step)  
GAD=L, normal mode



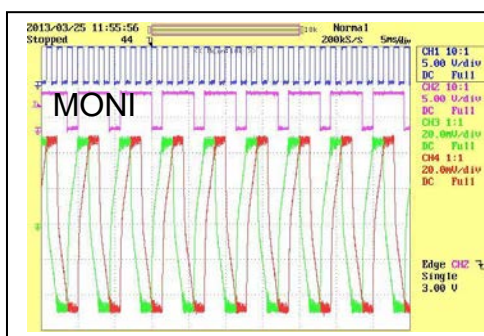
MD1=L, MD2=H (Quarter step)  
GAD=H, High efficient-mode



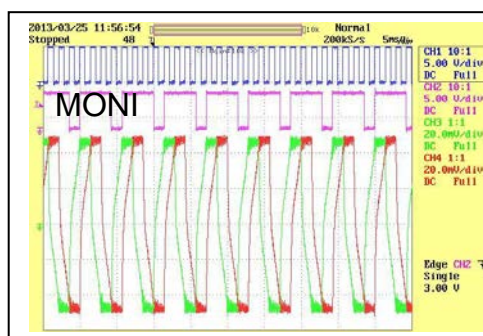
MD1=H, MD2=L (Half step)  
GAD=L, normal mode  
RST=L --> H



MD1=H, MD2=L (Half step)  
GAD=L, normal mode  
OE=L --> H



MD1=L, MD2=L (Full step)  
GAD=L, normal mode



MD1=L, MD2=L (Full step)  
GAD=H, In the case of full step (MD1=L,  
MD2=L), high-efficient mode is turned off.