

# MS-1-BK / MS-1-BU / MS-1-RD

Analog Synthesizer with 32 Full-Size Keys,  
3340 VCO with 4 Simultaneous Waveforms,  
VCF, NovaMod FM Sources, 32-Step Sequencer,  
Arpeggiator and Live Performance Kit



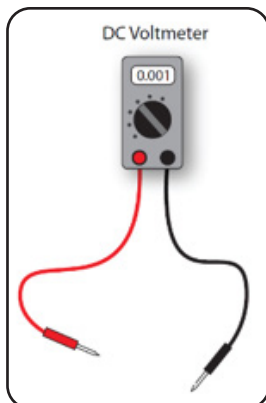
## User Support Bulletin

### Introduction

The unit is carefully calibrated at the factory. The performance may change over time or due to environmental changes, and the following recalibration procedures can be used to bring it back to its factory settings.

### Equipment required

1. A multimeter (with 1 mv resolution)



2. A 3.5 mm cable (mono or stereo should be fine)



MS-1-BK /  
MS-1-BU / MS-1-RD

Preparation

- STEP 1

Make sure your MS-1 has been powered on for at least 30 minutes, and that it is situated in a place where the temperature will not change drastically during calibration.
- STEP 2


Remove all unused cables from the MS-1.
- STEP 3

Set the controls 1 to 8 to the position shown in the right hand column of this table.  
Set all the other faders, knobs and switches shown in the photo.



No.	Control	Set to
1	LFO RATE	M
2	WAVE FORM	∩
3	TRANSPOSE	M
4	RANGE	2'
5		MAN
6	SUB OSC	2 OCT DOWN
7	VCA	GATE
8	ENVELOPE	GATE
9	MOD	MINIMUM

Calibration Procedure

 Follow all steps in the order in which they are presented.

No.	CV type	Description
1	Internal CV	Calibrates the internal CV
2	Output CV	Tunes the CV output
3	External CV	Compensate oscillator offset for external CV in

MS-1-BK /  
MS-1-BU / MS-1-RD

Internal CV Calibration

- STEP  
1

Press "KYBD + STEP" then power on device. All the sequencer LEDs will light up.
- STEP  
2

Press "Shift + STEP1" to start Internal CV calibration.
- STEP  
3

Wait for calibration to finish.
- STEP  
4

All of the sequencer LEDs will light up in sequence after this has finished.

Output CV Calibration

In this mode, these buttons have new functions:

There are four test modes A / B / C / D to be calibrated. Their target voltage is 0V / 1V / 3V / 5V respectively.

Button Name	Function
HOLD/REST	Select test mode A
RESET/ACCENT	Select test mode B
ARP/SETEND	Select test mode C
PATTERN/BANK	Select test mode D
SHIFT	—
PAGE	—
PLAY/STOP	—
REC	Save

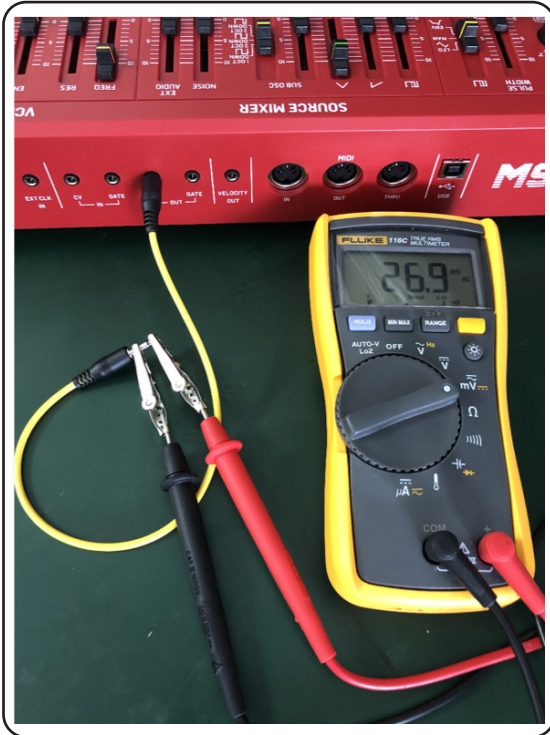
Button Name	Function
STEP1	Select X1 (about ±1 mV)
STEP2	Select X2 (about ±4.5 mV)
STEP4	Select X3 (about ±9 mV)
STEP4	Select X4 (about ±45 mV)
STEP5	—
STEP6	—
STEP7	—
STEP8	—
KYBD	Decrease
STEP	Increase

MS-1-BK /

MS-1-BU / MS-1-RD

**STEP  
1**

Connect the Multimeter to CV Out as shown below.



**STEP  
2**

Carry out the Internal CV Calibration before starting this Output CV calibration.

**STEP  
3**

Press "Shift + STEP2" to enter user Output CV calibration mode.

**STEP  
4**

Press "HOLD/REST" to select test mode A. You will need to watch the multimeter to adjust the output voltage.  
Press "KYBD" or "STEP" to adjust the CV value until it is close to target level "0V".  
(Press "STEP1" "STEP2" "STEP3" or "STEP4" to select the incremental adjustment size "X1" "X2" "X3" or "X4")

**STEP  
5**

Press "RESET/ACCENT" to select test mode B.  
Press "KYBD" or "STEP" to adjust the CV value until it is close to target level "1V".

**STEP  
6**

Press "ARP/SETEND" to select test mode C.  
Press "KYBD" or "STEP" to adjust the CV value until it is close to target level "3V".

**STEP  
7**

Press "PATTERN/BANK" to select test mode D.  
Press "KYBD" or "STEP" to adjust the CV value until it is close to target level "5V".

**STEP  
8**

Press "REC" to save and finish Output CV calibration.

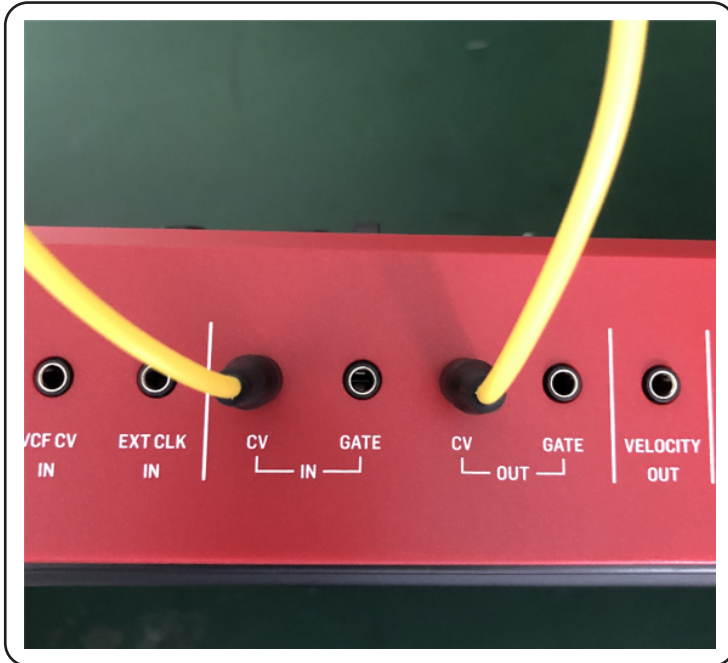
MS-1-BK /

MS-1-BU / MS-1-RD

## External CV Calibration

STEP  
1

Complete Output CV calibration, then connect the CV out jack to the CV in jack with a 3.5mm cable.



STEP  
2

Press "Shift + STEP3" to start External CV calibration.

STEP  
3

Wait for the calibration to finish, this is indicated by all of the sequencer LEDs will light up in sequence.

STEP  
4

Calibration is finished. Reboot the MS-1.

## End of Procedure