bORG v1.2 – Quick Reference (alpha)

Project: Korg Modwave MKI → Arduino Pro Micro (3.3 V) • CJMCU■2317 (MCP23017) • Joystick • Octave LEDs

Hardware Summary

• I²C expander: MCP23017 @ 0x20 (CJMCU■2317).

• Inputs (GPA0..4): Sustain CC64, Extra CC67, Oct UP, Oct DOWN, FN (reserved).

• Outputs (GPB0..5): Two RGB LEDs (DOWN/UP).

• Joystick: A4 = Pitch Bend; A5 = Mod Wheel (CC1).

• LEDs: common cathode to GND; each anode via 220–330 Ω; 3.3 V system.

Octave Shift & LED Colors

• Range: –3..+3 octaves relative to NOTE_BASE (default 48/C3).

• Only one LED is lit: DOWN for negative, UP for positive.

• Color map: ±1 → GREEN; ±2 → YELLOW (R+G); ±3 → RED; 0 → off.

SysEx Command Reference (0x7D non■commercial)

Version	Cmd / Data	Description	Example
v1.0	01 cc (0..7)	Select velocity curve	F0 7D 01 03 F7 → PIANO
	02	Calibration start (unlock)	F0 7D 02 F7
	03	Calibration lock (stop)	F0 7D 03 F7
	04	Save calibration + settings to EEPROM	F0 7D 04 F7
	05	Factory reset	F0 7D 05 F7
	06 vv (1..127)	Set fixed velocity (ORGAN_FIXED)	F0 7D 06 64 F7 → 100
	0A	Print STATUS to Serial Monitor	F0 7D 0A F7
v1.1	07 cc (1..16)	Set MIDI channel	F0 7D 07 0A F7 → ch.10
	08 pp (0..127)	Send Program Change	F0 7D 08 14 F7 → PC#20
v1.2	—	Octave shift via buttons (–3..+3), LED feedback	—

Testing Checklist

■ MCP23017 responds at 0x20; inputs are LOW when pressed.

■ Sustain CC64 and Extra CC67 toggle 0/127.

■ Octave LEDs match shift (–3..+3).

■ Pitch Bend center dead■zone works; Mod (CC1) spans 0..127.

■ SysEx 1.1: MIDI channel set and Program Change OK.

Notes & License

• Keep I²C runs short; twist SDA/SCL if possible. Add 4.7 kΩ pull■ups if the board lacks them.

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