

bORG v1.2.1 – Quick Reference (alpha)

Project: Korg Modwave MKI → Arduino Pro Micro (3.3 V) • MCP23017 (0x20) • ADS1115 (0x48) • Joystick • Octave LEDs • FN Shortcuts

Hardware Overview (files in borg_v1.2/docs/)

- `borg_v1.2_wiring_overview.png` – block diagram wiring overview
- `borg_v1.2_pinmap.png` – MCP23017/ADS1115 pin map
- `borg_v1.2_schematic_with_ADS1115.png` – detailed schematic-style wiring

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 (hex byte)	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	—

FN + Key Shortcuts (v1.2.1)

- Hold FN (GPA4). While held, keys trigger configuration instead of notes.
- MIDI channel: the lowest 16 keys from NOTE_BASE (default C3) → channels 1..16.
- Velocity curve: the next 8 keys → curves 0..7 (LINEAR, FLAT, STEEP, PIANO, SYNTH, ORGAN_FIXED, SOFT, HARD).
- Utility around C4: C4 → Calib START, D4 → Calib STOP, E4 → SAVE (EEPROM), F4 → FACTORY RESET, G4 → STATUS.

Joystick (ADS1115)

- VRx → Pitch Bend (−8191..+8191) with center deadzone.
- VRy → Mod Wheel (CC1 0..127).
- If ADS1115 not detected, firmware falls back to PB=0, CC1=0.

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