Buchla and Tiptop Audio — 248t

- Manual PDF

Manual PDF

Tiptop Audio / Buchla 248t MARF Cheat Sheet

What it is

The **248t MARF** is a **16-stage dual function generator / sequencer / arbitrary CV programmer**.
It has **two independent Function Generators (FG1 and FG2)** that read the same bank of 16 programmed stages in different ways.

Each stage can store: - **Voltage value** - **Time value** - **Pulse 1 on/off** - **Pulse 2 on/off** - **Voltage behavior**: quantized, sloped, range, source - **Timing behavior**: time range, external/internal source - **Stage behavior**: stop, sustain, enable, first, last

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Quick Start

Basic 16-stage CV sequence

1. Set a Function Generator to **internal** stage advance.
2. Set its **Mode** to run using **Start**.
3. Program stage voltages with the **top row sliders**.
4. Program stage times with the **bottom row sliders**.

5. Patch:
6. **Voltage Out** or **ART Out** → oscillator pitch
7. **Pulse Out 1** → envelope gate
8. Add pulses to desired stages with **Output Pulses 1/2**.
9. Use **Stage Number** to select a stage for editing.

Simple looping sequence

- Mark one stage as **First**
- Mark another as **Last**
- The FG will loop between them

Quantized melodic sequence

1. For desired stages, enable **Quantize**
2. Choose **Key**
3. Choose **Scale**:
4. **10 = Major**
5. **11 = Minor**
6. **12 = Chromatic**

Glide / portamento

- Enable **Sloped** on desired stages
- Slew amount follows the stage's **interval time**

Variable stage timing

- Use bottom sliders for stage times
- Set global **Time Multiplier** to scale all stage times
- Or use **Time Source = External** and feed CV into A/B/C/D

Core Concept

The module has 3 main areas:

1. Function Generators (left side, two identical sections)

Each FG reads the programmed stage data and outputs: - pitch/CV - time CV - programmed pulses - reference ramp - all-stage pulse stream

2. Programming Section (center)

This is where you edit what each stage does.

3. Sliders + stage LEDs (right side)

- **Top 16 sliders** = stage voltage / external source selection
- **Bottom 16 sliders** = stage interval time
- **16 LEDs between rows** = stage indicators

Programming Workflow

Select a stage

Use **Stage Number** switch: - left/right steps through stages - hold to scroll quickly - wraps around from 16→1 and 1→16

Edit selected stage

Use the programming controls to set: - pulses - voltage mode - operating mode - time range - internal/external sources

Apply to all stages

While holding **Stage Number** so stage LEDs scroll, press a programming function to apply it to all 16 stages.

Stage Programming Reference

Output Pulses

Each stage can independently output: - **Pulse 1** - **Pulse 2**

Switch behavior: - press **up** = add pulse - press **down** = remove pulse

Voltage programming

Per-stage options:

Quantize / Continuous

- **Quantize on** = 1V/oct quantized output
- **Continuous** = unquantized CV

Sloped / Stepped

- **Sloped** = glide between stages
- **Stepped** = hard step

Range

- **Full** = **0 to 10 V**
- **Half** = **0 to 5 V**
- **Limited + octave offsets** = 2 V span with offsets

Source

- **Internal** = use stage voltage slider
- **External** = use one of external CV inputs A/B/C/D selected by slider position

Operating mode

Per-stage options:

Stop

FG halts on this stage until a **Start pulse** is received.
The stage still observes its interval time.

Sustain

If a high gate is present at **Start**, the FG holds on the stage as long as gate stays high.

Enable

FG waits on the stage until **Start input > 5 V**.

First / Last

Defines loop start and loop end.

Time programming

Per-stage options:

Time Range

Four selectable timing ranges from: - **0.002 s minimum** - up to **2 minutes maximum**

Manual notes default panel range as: - about **2 to 30 seconds** on the sliders unless otherwise modified

Time Source

- **Internal** = use time slider + range setting
- **External** = use external CV input A/B/C/D

If set to **External** and no CV is patched, interval defaults to **fastest value** of selected range.

Function Generator Operation

Each FG has its own transport and addressing controls.

Mode controls

Advance

Manual step to next stage.

Start / Stop

Starts or stops internal clock, manually or by pulse input.

Status LEDs

- **Green** = running
- **Yellow** = hold/waiting
- **Red** = stopped

Red stop can happen because of: - stop command - programmed stop stage - stage address set to continuous

Stage Address controls

Reset

Returns FG to: - first programmed **First** stage, or - **Stage 1** if no First is set

Display

Shows current stage position without interrupting operation.

Cont / Strobe

- **Continuous** = sweep through stages with address control, internal clock stopped
- **Strobe** = load stage corresponding to current stage address

Internal / External

Selects whether stage position is controlled by: - internal address control - external CV at Stage Address input

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Presets / Scales / ART

Presets

Load

Press **Load**, then stage button **1–12**

Save

Press **Save**, then button **1–12**

Saved: - all stage settings - slider values

Important: - after loading a preset, physical sliders are “caught” only when moved past stored values

Key / Scale

Key

Press **Key**, then select **1–12** for: - C, C#, D, D#, E, F, F#, G, G#, A, A#, B

Scale

Press **Scale**, then: - **10** = Major - **11** = Minor - **12** = Chromatic

ART + Auto Tune

- **ART Out** sends digital pitch data for compatible oscillators like the **259t**
- Press **Autotune** once = send tuning message
- Hold **Autotune** = send initial tune message

Tiptop recommends using **Half range (0–5 V)** or **Limited range** with 259t for practical pitch range.

Clear / Reset Behavior

Clear switch

Pressing **up** clears all 16 stages and resets programming: - Pulse 1 and 2 cleared - Voltage mode = **Continuous / Full Range / Internal** - Operating mode cleared - Time range = **2 to 3 seconds** - Slider values set to current physical positions

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External Input Calibration

If 0 V external input does not produce 0 V behavior: 1. Unplug A–D inputs 2. Set both FGs to **STOP** 3. Press **External** switch **4 times** 4. LED flashes about 2 seconds

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Inputs / Outputs Reference

> Voltage ranges below are included where stated in the manual. Some jack thresholds/scales are described functionally because the manual does not specify an exact full range.

Inputs

External Inputs A, B, C, D

- **Type:** CV inputs
- **Use:** per-stage selectable source for voltage or time
- **Range: not explicitly specified in manual**
- Notes:
- for voltage source selection, slider picks A/B/C/D
- for time control, if no CV present and source is external, time goes to fastest setting

FG1 Start input

- **Type:** gate/pulse/CV input
- **Use:** start, sustain hold, enable logic
- **Threshold: Enable requires > 5 V**
- Other exact acceptable range: **not specified**

FG2 Start input

- **Type:** gate/pulse/CV input

- **Use:** same as above
- **Threshold: Enable requires > 5 V**
- Other exact acceptable range: **not specified**

FG1 Stop input

- **Type:** gate/pulse input
- **Use:** stop transport
- **Range:** not specified

FG2 Stop input

- **Type:** gate/pulse input
- **Use:** stop transport
- **Range:** not specified

FG1 Advance input

- **Type:** pulse input
- **Use:** manual/remote stage advance
- **Range:** not specified

FG2 Advance input

- **Type:** pulse input
- **Use:** manual/remote stage advance
- **Range:** not specified

FG1 Stage Address input

- **Type:** CV input
- **Use:** externally control stage addressing when set to external
- **Range:** not specified

FG2 Stage Address input

- **Type:** CV input

- **Use:** externally control stage addressing when set to external
- **Range:** not specified

FG1 Time Multiplier CV input

- **Type:** CV input with attenuverter
- **Use:** scales stage durations globally for FG1
- **Range:** not specified

FG2 Time Multiplier CV input

- **Type:** CV input with attenuverter
- **Use:** scales stage durations globally for FG2
- **Range:** not specified

Outputs

FG1 ART Output

- **Type:** digital pitch/control output
- **Use:** ART oscillator control
- **Range:** digital ART signal, not standard analog voltage range

FG2 ART Output

- **Type:** digital pitch/control output
- **Use:** ART oscillator control
- **Range:** digital ART signal

FG1 Voltage Output

- **Type:** CV output
- **Use:** stage voltage output with modifiers applied
- **Range:**
- **Full: 0 to 10 V**
- **Half: 0 to 5 V**

- **Limited: 2 V span** with octave offsets
- **Quantized mode:** 1 V/oct pitch behavior

FG2 Voltage Output

- **Type:** CV output
- **Use:** same as FG1
- **Range:**
- **0 to 10 V** full
- **0 to 5 V** half
- **2 V span** limited modes

FG1 Time Output

- **Type:** CV output
- **Use:** outputs voltage proportional to interval time slider
- **Range:** not specified

FG2 Time Output

- **Type:** CV output
- **Use:** outputs voltage proportional to interval time slider
- **Range:** not specified

FG1 Pulse Output 1

- **Type:** gate/pulse output
- **Use:** stages programmed with Pulse 1
- **Range:** not specified

FG1 Pulse Output 2

- **Type:** gate/pulse output
- **Use:** stages programmed with Pulse 2
- **Range:** not specified

FG2 Pulse Output 1

- **Type:** gate/pulse output
- **Use:** stages programmed with Pulse 1
- **Range:** not specified

FG2 Pulse Output 2

- **Type:** gate/pulse output
- **Use:** stages programmed with Pulse 2
- **Range:** not specified

FG1 Reference Output

- **Type:** CV/ramp output
- **Use:** downward ramp over stage duration
- **Range:** not specified

FG2 Reference Output

- **Type:** CV/ramp output
- **Use:** downward ramp over stage duration
- **Range:** not specified

FG1 All Pulses Output

- **Type:** pulse output
- **Use:** emits pulse on every stage address change
- **Range:** not specified

FG2 All Pulses Output

- **Type:** pulse output
- **Use:** emits pulse on every stage address change
- **Range:** not specified

Controls Reference

Sliders

16 Output Voltage sliders

- Set per-stage voltage
- In external voltage-source mode, select **A/B/C/D** source instead
- Output range depends on stage range mode:
- **0–10 V full**
- **0–5 V half**
- **2 V span limited**

16 Interval Time sliders

- Set per-stage interval time
- Also generate corresponding **Time Output** CV
- Default panel behavior roughly **2 to 30 seconds**, modified by time range and multiplier

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Programming Section switches/buttons

Output Pulses 1, 2

- 3-position momentary
- up = add pulse
- down = remove pulse

Clear

- momentary
- up = clear/reset programming

Stage Number

- 3-position momentary
- scroll/select stages for editing

Quantize / Continuous

- 3-position momentary
- up = quantize
- down = continuous

Sloped / Stepped

- 3-position momentary
- up = sloped
- down = stepped

Range selector

- momentary options:
- full
- half
- limited ranges with offsets

Voltage Source: Internal / External

- 3-position momentary
- selects internal slider or external A/B/C/D source

Stop

- 3-position momentary
- up = add stop stage
- down = remove

Sustain

- 3-position momentary

- up = add sustain
- down = remove

Enable

- 3-position momentary
- up = add enable
- down = remove

Cycle First / Last

- 3-position momentary
- define loop start/end points

Time Range switches

- 4 momentary switches
- select timing range from **0.002 s** to **2 min**

Time Source: Internal / External

- 3-position momentary
- selects internal timing or external A/B/C/D timing CV

Preset / scale buttons

Load

Recall preset

Save

Store preset

Buttons 1–12

- preset slots
- key selection
- scale selection:
- 10 major
- 11 minor
- 12 chromatic

Key

Select root note

Scale

Select scale type

Hold / Initial Tune / Autotune

- press = autotune message
- hold = initial tune message

Function Generator controls per side

Advance button/input

Manual stage step

Start button/input

Start/hold/enable interaction

Stop button/input

Stop transport

Reset

Return to first programmed stage or stage 1

Display

Show current FG stage

Cont / Strobe switch

- continuous address sweep
- stage strobe load

Internal / External switch

Select internal or external stage address source

Stage Address knob

Sets stage address in internal addressing mode / continuous sweep context

Time Multiplier knob

Global time scaling: - **0.5x to 4x**

Time Multiplier CV attenuverter

Amount/polarity of time multiplier CV

ART gate source switch

Selects ART gate source: - **Pulse 1** - **Pulse 2** - **All**

Useful Patch Ideas

1. Dual related melodies

- FG1 Voltage Out → Oscillator 1 pitch
- FG2 Voltage Out → Oscillator 2 pitch
- Same programmed stages, different loop boundaries via First/Last

2. Sequencer + envelope source

- Voltage Out → oscillator pitch
- Reference Out → LPG CV
- Pulse 1 → gate/trigger for articulation

3. Addressed wavetable-ish CV scanner

- Set Stage Address to **External**
- Feed slow CV into stage address input
- Use Voltage Out as a scanned arbitrary function

4. Rhythmic modulation source

- Use **Time Out** as a second CV lane
- Set time source to **External** if you want time sliders as pure CV without affecting stage timing

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Practical Tips

- **Half range** is easiest for tonal pitch work.
- **Sloped** stages create pitch glide tied to stage time.

- Use **First/Last** creatively to make different loop windows for FG1 and FG2.
- **All Pulses Out** is useful as a derived clock.
- **Reference Out** is excellent for LPG plucks and decays.
- In **External voltage source** mode, the top slider selects **which external input** is active for that stage.
- After loading presets, sliders use a **pickup/catch** behavior.

Specs

- **Width:** 72 HP
- **Depth:** 45 mm
- **Power:** +12 V **340 mA**, -12 V **30 mA**
