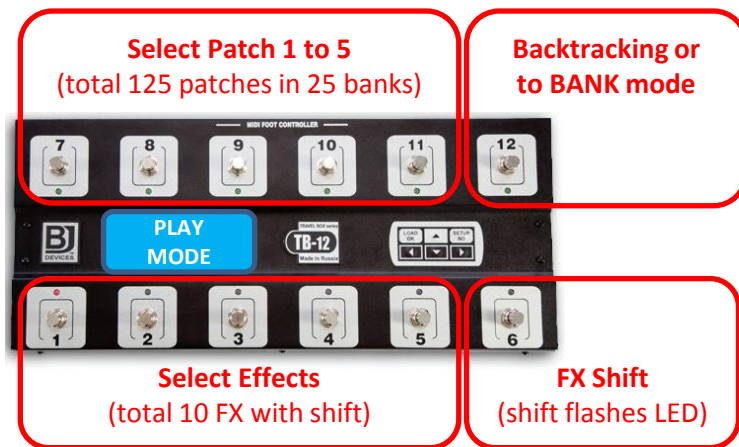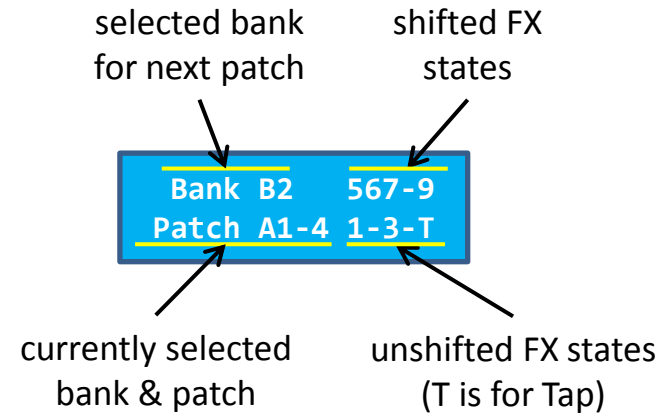# GM Arts MFC v1.03 for BJ Devices TB-12

This version is designed to be a simple and generic MIDI foot controller. Only MIDI OUT is supported - it sends patch and effect changes and doesn't need a MIDI IN connection. It features:

- Total of 125 patches (25 banks each of 5 patches)
  - Each patch can send any MIDI patch number
  - Patch selections in each bank can control the four TB-12 relays
  - Any MFC bank can be selected with a maximum of 2 presses in BANK mode

- 10 effects, including Tap (these are CC messages, often referred to as "IAs")
  - Effects can be toggles, momentary and can operate normally, in reverse, or on press or release only
  - Each effect can send up to two CC messages with any CC value for off and on states
  - One of the CC messages can be used to set the four relay states
  - Tap can send additional CC messages after a preset number of presses
  - Toggle effects can be persistent
  - Toggle effects can belong to up to 4 mutually exclusive groups
  - Effects can control the four TB-12 relays

- Patch backtracking, including the ability to backtrack effect states and patch bank

- 2 pedals are supported, each with an optional off/on effect at heel-down (for example, turn on a wah effect, or turn on a tuner at minimum volume)

- "Pedal panic" option to send configured pedal resets and disable pedals in case of pedal hardware failure

- One of 6 pairs of "custom" CC messages can be selected to be sent after each patch change (for example, set an ambient reverb level, or select a patch scene)

Most of the time you will use PLAY MODE

LCD Display:

Select Patch 1 to 5
(total 125 patches in 25 banks)

**Backtracking or
to BANK mode**

Select Effects
(total 10 FX with shift)

FX Shift
(shift flashes LED)

selected bank
for next patch

shifted FX
states

```
Bank B2    567-9
Patch A1-4 1-3-T
```

currently selected
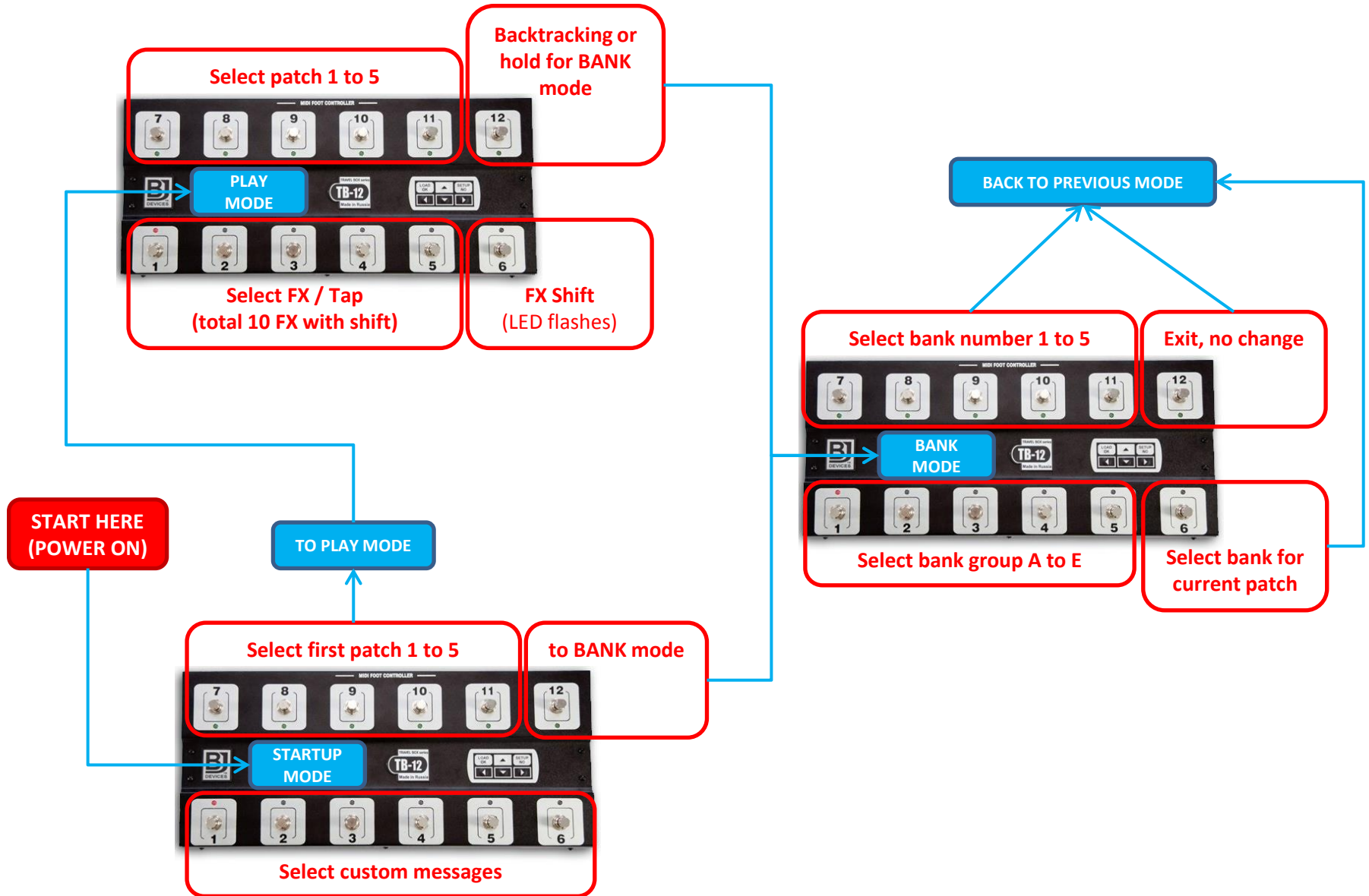bank & patch

unshifted FX states
(T is for Tap)

Footswitches 7 to 11 select one of 5 patches in the current bank

Footswitch 12 can be configured to backtrack to the previous patch. Holding it down for about one second goes to BANK mode.

Footswitches 1 to 5 select 10 effects (IAs) including Tap. These can be toggles or momentary and can operate normally, in reverse, on press or release only, and can send any value for off and on.

Footswitch 6 is for FX shift (LED flashes when shifted) so that footswitches 1 to 5 select an additional 5 effects.

Moving between 3 modes - STARTUP mode, PLAY mode and BANK mode

About STARTUP MODE

Select first patch 1 to 5 (LEDs chase)

to BANK mode

Bank A2 by GM Arts v1.xx

Select custom messages

STARTUP mode is identified by the 5 patch LEDs chasing.

Footswitches 7 to 11 select your first patch in the current bank, and goes to PLAY MODE.

Footswitches 12 goes to bank mode, where any one of 25 banks can be selected.

Footswitches 1 to 6 can optionally select a pre-configured pair of custom CC message to be sent after each patch change.   This can be used, for example, to set an ambient reverb level, or always select a patch variation such as a scene on the Axe-FX. The change is previewed, and can be de-selected if not required.

About BANK MODE

Bank mode is identified by the Bank footswitch 12 LED flashing.

There are 25 different banks, separated into groups A, B, C, D & E. Each of these groups has 5 banks numbered 1 to 5.
So banks are numbered A1, A2, A3, A4, A5, B1, B2, ..., D4, D5, E1, E2, E3, E4, E5.
Selecting a bank sets the bank for the next patch selection.
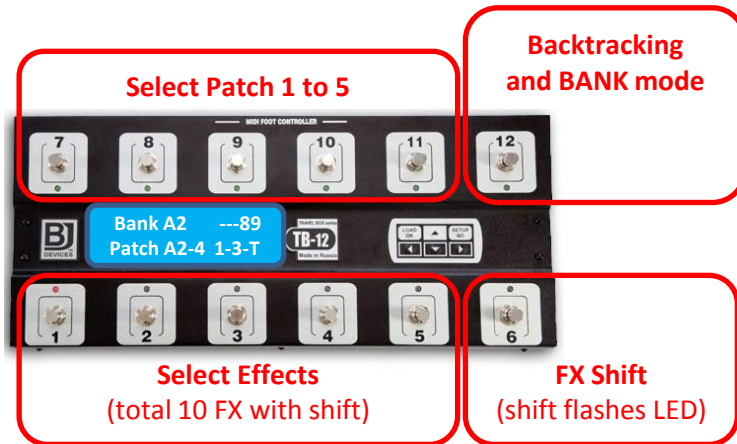
Any one of these banks can be selected with a maximum of two presses:
- Footswitches 1 to 5 select a group A to E. Select this first when changing banks.
- Footswitches 7 to 11 select a bank number 1 to 5, and take you back to the previous mode.
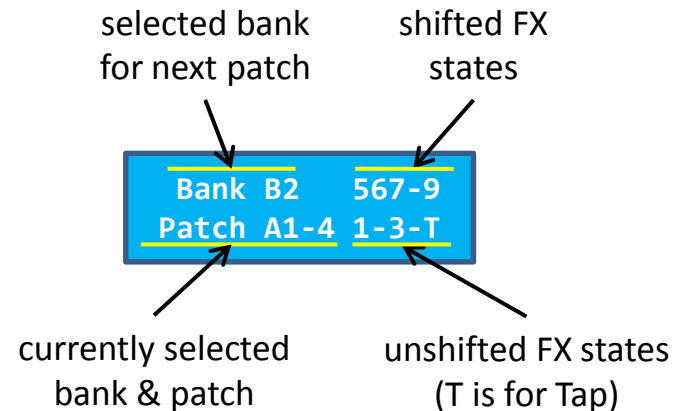
Footswitch 12 returns to the previous mode without changing bank .

Once a patch has been selected, footswitch 6 in BANK mode can be used to go to the bank containing the current patch.

More About PLAY MODE:

Backtracking and BANK mode

Select Patch 1 to 5

Select Effects
(total 10 FX with shift)

FX Shift
(shift flashes LED)

LCD Display:

selected bank for next patch

shifted FX states

```
Bank  B2     567-9
Patch A1-4  1-3-T
```

currently selected bank & patch

unshifted FX states (T is for Tap)

Footswitches 7 to 11 select one of 5 patches in the current bank.
- Pressing the current patch again will reset the patch to its initial settings (there are options to set initial effect states and which of them must be reset with a patch change). This allows you to reset current effect changes, backtracked or persistent effects.

Footswitch 12 can be configured to backtrack to the previous patch. Holding it down for about one second goes to BANK mode. If backtracking is not required, this footswitch goes to BANK mode immediately.
- Backtracking can also apply the previous patch's effect states and optionally go to the bank containing that patch

Footswitches 1 to 5 select effects (IAs) including Tap.
- Effects can be toggles, momentary and can operate normally, in reverse, or on press or release only
- Each effect can send up to two x CC off/on messages with any CC value for off and on states, or each effect can send one CC off/on message and set relay states
- Tap can be set as a momentary footswitch (which might be all you need for tap), or can send additional CC messages after a preset number of presses after a patch change (and its LED turns on)
- Toggled effects can be set as persistent to retain their state when <u>changing</u> patches (selecting the current patch always resets effect selections)

Footswitch 6 is for FX shift (LED flashes when shifted) so that footswitches 1 to 5 select an additional 5 effects.

Pedal Panic

Up to two pedals can be connected. They are enabled by setting their CC number to something other than "NONE".

But pedals are subject to failure or temperamental behaviour due to scratchy pots, internal failures or even connecting lead problems.

The quick fix to disable all pedals is to press [LOAD OK] twice - you could even do this in the middle of a solo ☺

How it works

Pressing [LOAD OK] shows the LCD screen above, with a flashing cursor under "BOTH". You can press [UP] and [DOWN] to scroll through different choices of which pedals to disable (BOTH, NONE, PEDAL 1, or PEDAL 2).

Press [OK] again to send a configured value for the disabled pedal(s) - for example, send maximum volume for a faulty volume pedal, and to disable the pedal(s). If pedals are not disabled, they will be re-enabled.

This is a temporary change only – configured settings will be used next time the MFC is restarted.

Press [SETUP NO] to exit this screen without making changes.

Pedal Calibration

Pedal1 Calibrate
>start

Pedal1 Calibrate
< 011 107 248

This process must be performed to set your pedals to work properly with the MFC. Once set, you would not usually need to do it until you replace a pedal.

How it works

Press [SETUP] to show the start screen above, with a flashing cursor under the pedal number. You can press [UP] or [DOWN] to select the pedal you want to calibrate. The press [>] to start and show the screen with pedal values. This screen briefly shows the previous pedal minimum and maximum values, then shows current values.

Move the pedal throughout its range a few times, from heel down to toe down. You will see the minimum, current and maximum values change as you move the pedal. Press [<] when finished.

If you have another pedal, press [UP] to select it and calibrate that the same way.

When finished, press [OK] to permanently save your pedal calibration and restart the MFC, or press [NO] to exit without saving changes.

Development Ideas

I programmed this pedal to work the way I want. BJ Devices offer development tools to allow you to build a MFC the way you want. You can also use my code as a stating point for your own design. Here are some modifications you may wish to consider:

- The main thing this version needs is edit screens for settings. Currently you can set pedal calibration and also have a "pedal panic" option, but if you want to change MIDI CC numbers, patch numbers and so on, then you need to set them in code and recompile the file to load into your TB-12.

- MIDI MSB and LSB banks are currently global, however, you may want your MFC to be able to set these per MFC bank, or per patch.

- This version needs you to keep effect states aligned with your patches. Obviously it's better to have effect states automatically sent from your device so you don't need to manually keep them aligned.

- Relays are currently per bank, you may wish to set them per patch, or only allow relay control from effect switches.

- You may wish to use typical bank up and bank down foot-switches in PLAY mode. You could still use backtracking and FX-shift by holding down bank buttons.

- You could simplify my design if you don't need Custom CCs, Tap FX, mutually exclusive groups, etc. You may only need one mode!