

## INTRODUCTION

The 1983 translates MIDI information into analog CV and GATE signals. Because MIDI protocol defines notes of absolute pitch, translating MIDI into Volt per Octave standard is tricky because the base pitch of the oscillator under control would always offset the tone. The 1983 is capable of listening to simple waveforms of oscillators (triangle, pulse, sine or saw) to read their frequency and adjust the base pitch to make the oscillators play the correct note of the pitch defined by the MIDI note. It does that for all available 7 octaves to ensure precise tuning. Because several tuning systems might be used in music (equal temperament, just intonation, concert A = 432Hz, etc.), the 1983 offers a  $\mu$ Tune feature to adjust the pitch of every semitone as desired. This can have a huge impact on the sound in polyphonic and paraphonic patches because you can set mathematical ratios of tones so that they can interact with harmonics or other tones. The 1983 has 4 channels of CV and GATE and these Outputs can be configured into several different LAYOUTS:

- 4-VOICE POLYPHONY
- 3-VOICE POLYPHONY + 1-VOICE MONOPHONY
- 2 MONOPHONIC VOICES WITH VELOCITY
- 1 COMPLEX MONOPHONIC VOICE
- 4 MONOPHONIC VOICES
- 8 GATES
- 4 GATES WITH VELOCITY
- 8 CC CHANNELS
- 4-CHANNEL QUANTIZER

Each of these LAYOUTs has a LEARN mode to help set up MIDI Channel, MIDI Note or MIDI CC Control Change (continuous controller, such as a mod wheel) to respond to. All of this can also be set manually in the menu. In all Layouts, Channel D can be set to translate MIDI Clock to CLOCK and RESET. All layouts respond to MIDI Pitch Bend message (range can be set in the SETTINGS) and some respond to Velocity and Aftertouch. The 1983 has 4 CV Inputs which, when used, allow the module to be used as a creative tonal tool (arpeggiator/sequencer) rather than just a MIDI Interface. When these Inputs are unused, the 1983 is just a straight up converter. The WINDOW jack opens up creative voice allocations, the UPDATE jack can time-quantize the rendering of the Outputs to fit on a grid or a trigger pattern,

the TRANSPOSE jack can arpeggiate notes or just simply transpose, and the PORTAMENTO jack can slow down the transitions between notes. In QUANTIZER mode, these 4 CV Inputs (also marked as QA, QB, QC, QD) can be used as a quantizer CV Inputs instead: turning the 1983 into a 4 channel performance quantizer. The quantizer scales can be either defined by playing MIDI Notes in legato or edited in the LEARN mode. All the 1983 settings can be stored as a PRESET, and 10 different presets can be stored and loaded from the memory. The 1983's firmware can be updated by MIDI SysEx playback. **NOTE: MIDI standard was introduced in 1983 and it seemed like the future.**

## FEATURES

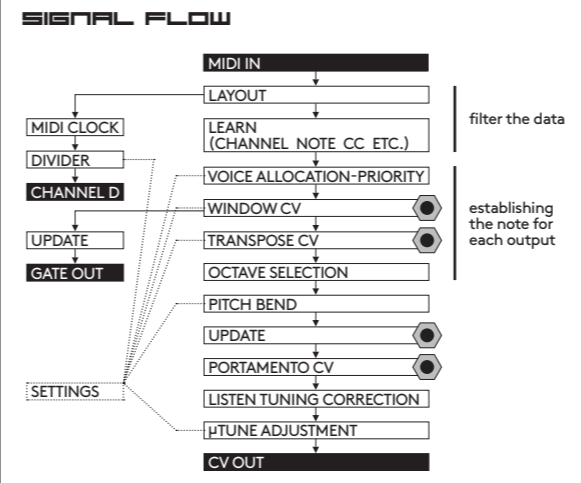
- 4 channels of CV and GATE
- LISTEN input per channel for automatic tuning
- automatic tuning by a single press of a button (offset & scaling correction)
- several tuning systems (equal temperament, just intonation, A = 440/432 Hz etc.)
- LAYOUT selection (4 voice, 3+1 voice, 2 velocity voice, 4x1 voice, 1 voice, 8 gates, 8 CCs, 4 triggers + velocity, quantizer)
- each layout can map outputs of Channel D to MIDI Clock (adjustable divider) and Reset
- LEARN mode to assign MIDI channel and other properties
- UPDATE jack to quantize outputs to clock or trigger sequences
- WINDOW jack to creatively allocate notes in the buffer to available voices
- TRANSPOSE CV to shift outputs by semitones, fifths or octaves
- PORTAMENTO CV to adjust glide time
- Responds to MIDI Note On & Off, CC (also Sustain), Velocity, Pitch Bend, Clock, Aftertouch
- $\mu$ Tune scale editing per each semitone in octave

## TECHNICAL DETAILS

- 7 HP
- PTC fuse and diode protected 10-pin power connector
- 24mm deep
- power consumption +12: < 60 mA, -12: < 20 mA

## MIDI TO CV CONVERTER

The 1983 translates MIDI data to analog signals. There are several ways in which this conversion can happen, and the 1983 can also modify the way Outputs behave based on the CV Inputs. Therefore, it is a good idea to take a look at the general signal flow first.



## CV OUTPUTS

CV Outputs output voltages between -0.4V and 7.2V; therefore, they are capable of driving 7 octaves using the one Volt per Octave standard. The Outputs always automatically calibrate themselves at startup to output precise voltages and they have 12-bit resolution. Besides producing precise voltages, the Outputs can be adjusted to compensate tuning offset and exponential curve error for any oscillator by creating a tuning correction thanks to the frequency measurement of the LISTEN Inputs. The exact rendering of each output is dependant on the Layout and Learn settings and can also be affected by some of the CV Inputs. You can also use the UP and DOWN buttons to transpose octaves (more on that later).

## GATE OUTPUTS

GATE Outputs are capable of producing voltages of either 0V or 5V depending on whether the gate is High or Low. The exact functioning of each Output depends on the Layout and Learn settings, and can also be affected by some of the CV Inputs.

## GATE LEDs

GATE LEDs mostly indicate the current state of the GATE Output. In modes other than the home screen, these LEDs are also used, together with the display, to communicate more information.

## LISTEN & TUNE & CV

Each Channel has a LISTEN Input to measure the frequency of the oscillator under control, so the 1983 can perform its automatic tuning operations. Connect the output of a simple waveform (triangle, sine, pulse, saw) of an oscillator to the LISTEN Input. Then connect the CV OUT of the 1983 of the same Channel to the Volt per Octave input on that oscillator. Now the oscillator can be automatically tuned by hitting the TUNE button. **EASIEST WAY TO TUNE: MOMENTARILY DISCONNECT THE VOLT PER OCTAVE INPUT OF YOUR OSCILLATOR FROM THE CV OUTPUT OF THE 1983 AND SET IT TO PRODUCE FREQUENCIES IN THE LOWER AUDIO RANGE. IF THE OSCILLATOR HAS AN LED INDICATING THE OSCILLATION, SET IT AT THE BORDER BETWEEN THE LED EMITTING STEADY LIGHT AND STARTING TO FLICKER. CONNECT THE CV OUT TO THE V/OCT IN AGAIN AND PRESS TUNE.** **NOTE: The oscillator frequency can be set even under 20Hz but not too much lower. If the oscillator is set too low the calibration will take too long and the tuning procedure will time-out without completing.**



## TUNE

The TUNE button initiates the tuning algorithm. The 1983 only tunes the oscillators on a user request i.e. by pushing the TUNE button. There is NO automatic tuning happening in the background.

Initially, the tuning is done by measuring two tuning points per every octave and adjusting the CV, so that these points are as precise as possible. All other semitones are interpolated between these points. Scanning the frequency response of an oscillator might take between 1-5 seconds, mostly depending on how much in tune the oscillator is and how low its base pitch is set (measuring low frequencies takes more time). During the initial tuning procedure, "T." (with a dot) is displayed and when the oscillator is successfully calibrated, the corresponding GATE LED will light up.

The second time the tuning algorithm is initiated, it only tries to compensate for potential drift of the oscillators, so it will take far less time to complete. It does not change the current note being played unless the note is higher pitch. If the frequency is quite high it transposes it a few octaves down to do the measurement to ensure high precision of measurement. It only checks whether the frequency is correct, and eventually adjusts the tuning compensation according to the potential drift. This is very useful in live performance scenarios. During the re-tuning procedure, "T" (without a dot) is displayed and when an oscillator is successfully calibrated, the corresponding GATE LED will light up.

If full re-calibration is required, hold the TUNE button for more than 2 seconds. Then scanning of all octaves will take place.

## OCTAVE SELECTION

Press the UP or DOWN button to transpose the Outputs one or several octaves up or down. Press both the UP and DOWN buttons at the same time to reset the octave selection settings.

Note on tuning precision: This is a very interesting topic, since the default tuning system we use in western music –equal temperament –is "out of tune". It is a compromised tuning system that allows transposing music into all keys, but does not keep mathematically correct tuning intervals. Some acoustic instruments play only mathematical intervals by their physical definition.

However, most tuners are set to indicate tuning in equal temperament at 440Hz. Not all tuners respond in exactly the same way and some have problems telling the frequency of certain notes. The 1983 was calibrated by cross-referencing a KORG chromatic tuner, the iPhone app IntaTune and the tuner in Ableton Live and often the readout was different on the individual tuners by a cent or two. Two cents might actually be an acceptable error for a tuner itself. The 1983 has two cent precision. The minimal, barely noticeable, difference humans can hear is 5-6 cents for trained musicians and a lot more for untrained musicians (100 cents is one semitone).

## μTUNE

The  $\mu$ Tune mode allows you to adjust all 12 semitones in an octave UP or DOWN by fine increments. Custom tunings can be edited and stored as presets. **NOTE: This is especially useful for setting precise mathematical ratios between notes – just intonation or pythagorean tuning (equal temperament is "out of tune" in this sense). This is useful especially when working with polyphony and paraphony. Certain tones and their overtones (harmonics) can become other notes' overtones and they can create beating effects between the tones and the overtones.** **WARNING: Once you do this, it is really hard to go back to equal temperament :-))) There is a great tuner app for iPhone called IntaTune which was also used while developing this module.**

## μTUNE PRESET

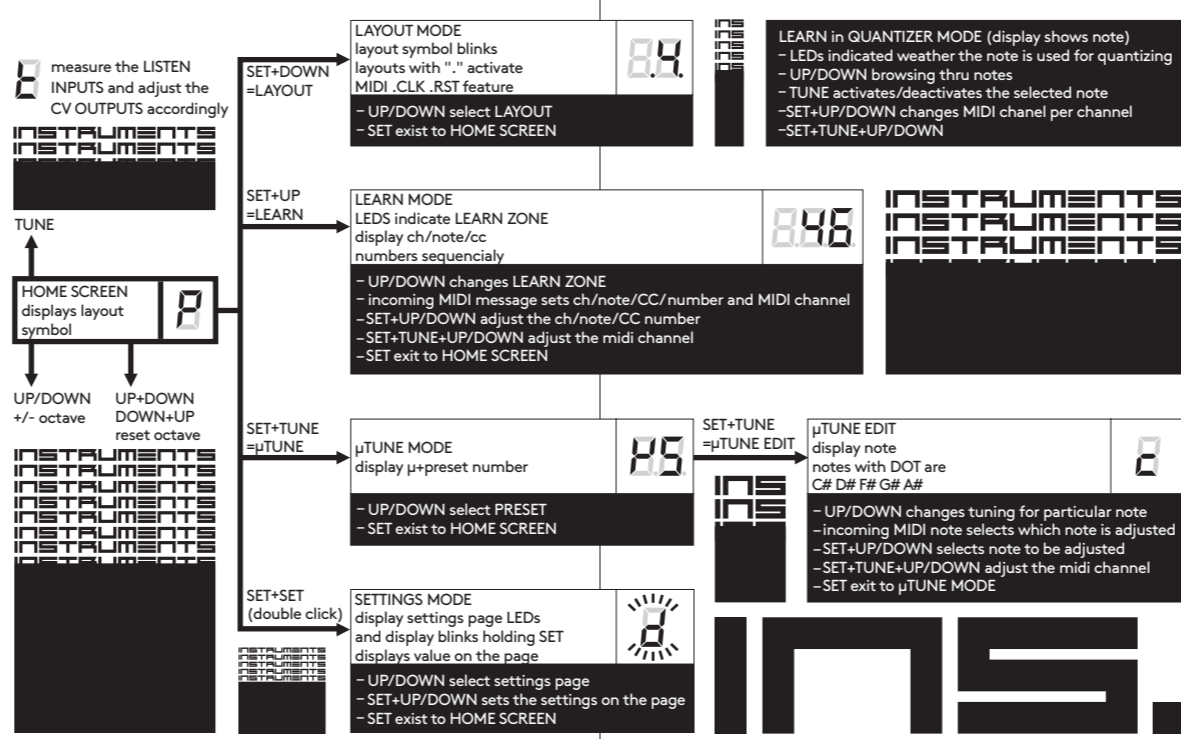
Hold SET and press TUNE to enter the  $\mu$ Tune PRESET mode. The sign " $\mu$ " and a number "0-9" will alternate. The number represents the  $\mu$ Tune PRESET number, and you can browse the presets using the UP/DOWN buttons. There are 10 different presets in the module, and by default a few different tuning systems are programmed, but they can all be adjusted.

- 0-5: the same equal temperament, tuned to A = 440Hz
- 6: equal temperament, tuned to A = 432Hz
- 7: just intonation in the key of C
- 8: just intonation in the key of Bb
- 9: just intonation in the key of D
- All presets can be adjusted and stored.

## μTUNE EDIT

To enter the  $\mu$ Tune EDIT mode, hold SET and press TUNE again (while in a  $\mu$ Tune PRESET mode). Now you are adjusting the current preset. The display shows a selected semitone that can be fine-adjusted by pressing the UP/DOWN buttons. ("C" means C, "C." means C# etc.)

## MENU STRUCTURE



To select a semitone, send a MIDI Note or hold SET and press UP/DOWN. Press the UP/DOWN buttons (without SET) to make fine adjustments for each semitone (it will repeat for all octaves). Think of this as tuning a guitar –strum a string and adjust the tuning. Press SET to leave the  $\mu$ Tune EDIT mode; press it again to leave the  $\mu$ Tune PRESET selection mode.

## CV INPUTS

There are 4 CV Inputs (WINDOW – QA, UPDATE – QB, TRANSPOSE – QC and PORTAMENTO – QD) that turn the 1983 into something more than just a MIDI interface: a very creative tonal tool, sequencer or arpeggiator. In all modes except the QUANTIZER mode (when they are used as QUANTIZER Inputs QA, QB, QC, QD), these CV Inputs serve the following purposes:

### WINDOW

The WINDOW CV affects how MIDI Notes are allocated to the CV Outputs. Each voice allocation PRIORITY algorithm (LOW, HIGH, ORDER) assigns an order to the notes. If more polyphony is required than the selected layout might provide, all the other notes are stored on a "waiting list" until all notes are released (if played legato). The "Window" can redefine which of these notes on the list will appear at the Outputs and which will not. The "Window" can be moved around the buffer (waiting list) by two different methods:  
 1 positioning the "Window" by CV  
 2 triggering the "Window" to move to the next position  
 See the Settings chapter on how to set this up. **NOTE: Window does not apply for the following Layouts: T,G,C,Q**

### TRANSPOSE

The TRANSPOSE jack can be used to offset the the pitch of the CV Outputs. It can affect one or several Outputs, and it is always quantized. The affected Channels and the Transpose Mode can be selected in the SETTINGS menu. All transpositions are read as 1V/Oct and are added to the output as 1V/Oct or as respectively compensated voltages if the LISTEN Inputs are used.

### THE TRANSPOSE MODES ARE:

- Semitone Transpose offsets the Output by a number of semitones corresponding to the input voltage.
- Fifth Transpose offsets the Output by a fifth or an octave (or their multiples) corresponding to the input voltage.
- Octave Transpose offsets the Output by an octave (or multiple octaves) corresponding to the input voltage.

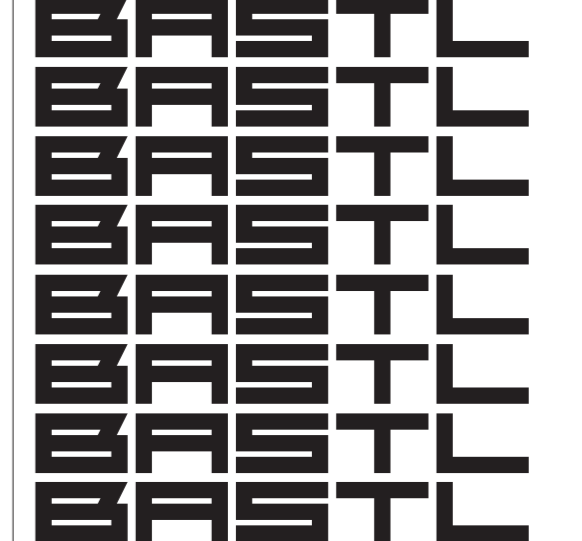
Each mode can affect Channel A, Channels A+B, Channels A+B+C or Channels A+B+C+D. See the Settings chapter on how to set this up. **NOTE: Transpose does not apply for the following Layouts: T,G,C,Q**

## UPDATE

If the UPDATE Input is used (a cable is plugged into it), the 1983 does not update the OUTPUTS unless the rising edge of a trigger or clock is detected at the Input. This could be used with a clock to time-quantize the updating of the channels, or more creatively with triggers (and with the WINDOW jack) to create interesting melodic variations. **NOTE: Update does not apply for the following Layouts: Q**

## PORTAMENTO

The PORTAMENTO CV adds portamento (slew) to the rendering of the Outputs. The transition between any two notes will be rendered as a slide with a time constant set by the CV. The range spans from a few milliseconds to 5 seconds. The Portamento can be applied to Channel A, channels A+B, Channels A+B+C or Channels A+B+C+D. See the Settings chapter on how to set this up. **NOTE: Portamento does not apply for the following Layouts: Q**



# LAYOUTS AND LEARN MODES

The 1983 has multiple Layouts for various musical applications and the Outputs are configured in different ways to translate MIDI information. Each Layout can have several "Learn Zones" which can have independent settings of MIDI Channel, Note or CC. This adjustment can be done in the Learn Mode, and that mode is slightly different for each Layout.

## TO ENTER THE LAYOUT MODE, HOLD SET AND PRESS DOWN.

Press UP/DOWN to change the Layout.

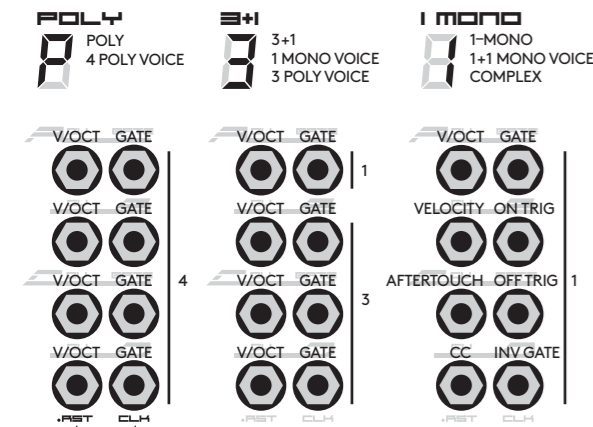
Press SET to save and leave.

## TO ENTER THE LEARN MODE, HOLD SET AND PRESS UP.

Press UP/DOWN to change the Learn Zone.

Further settings depend on the selected Layout. See below.

Press SET to save and leave.

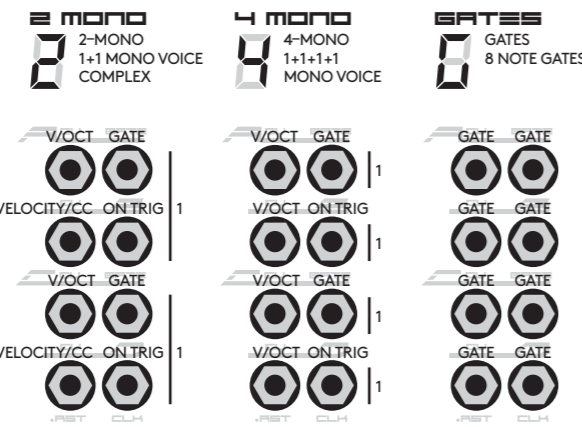


## MIDI CLOCK "DOT"

Each Layout has a version with and without a DOT ".," appearing on the display. The "dotted" layout always uses Channel D to output CLOCK and RESET information derived from the MIDI Clock and MIDI Start & Stop messages. The CLOCK is always a subdivision of the MIDI Clock, and the DIVIDER can be set in the SETTINGS. The RESET pulse is sent each time the module receives a MIDI Start or MIDI Stop command. The CLOCK Output will only start to render the pulses after receiving the MIDI Start command, and will stop with receiving the MIDI Stop command.

## "P" 4 POLY VOICE

This Layout is a four-voice polyphonic, which allocates voices based on the PRIORITY settings. In the HIGH and LOW priority, Channel A has the highest priority. In the ORDER mode, the voices are naturally allocated using the Robin Round algorithm. All GATE Outputs behave as expected.



## LEARN MODE:

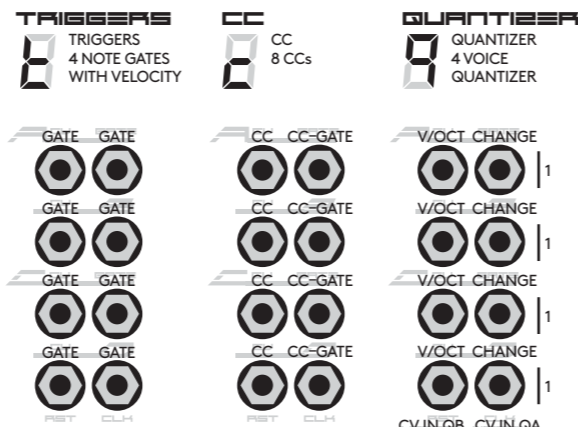
There is just one Learn Zone in which you specify a MIDI Channel to listen to. Send a MIDI Note on the desired channel to set the channel, or hold SET and press UP/DOWN to change the MIDI Channel. Setting "0" means it responds to all channels (known in MIDI as the "Omni" mode).

## "B" 1 MONO VOICE + 3 POLY VOICE

This Layout has one monophonic channel, and a three-voice polyphonic channel. This way you can play a bass line and chords on top of it. Each of these can have a different MIDI Channel specified. All GATE Outputs behave as expected.

**LEARN MODE:** There are two Learn Zones in which you specify a MIDI Channel to listen to.

Send a MIDI Note on the desired channel to set the channel, or hold SET and press UP/DOWN to change the MIDI Channel. Setting "0" means it responds to all channels (the Omni mode).



# 1983 LAYOUTS

## SETTINGS

Enter the SETTINGS mode by double-clicking the SET button.

Leave this mode by single-clicking the SET button.

Navigate by pressing the UP/DOWN buttons.

View/Change the current value on each SETTINGS page by holding SET and pressing the UP/DOWN button.

## "D" DIVIDER

The Divider Mode sets the clock divider applied to the MIDI Clock. MIDI Clock runs at 24 ppqn (pulses per quarter note), and such a clock is not very useful in modular synthesizers. Therefore, some divisions are required. The most common clock in modular systems is 4 ppqn: one clock per every 16th note.

### AVAILABLE DIVIDERS:

- 0: 24 ppqn
- 1: 8 ppqn
- 2: 4 ppqn
- 3: 2 ppqn
- 4: 1 ppqn
- 5: 0.5 ppqn (1 pulse per 2 quarter notes)

## "A" ALLOCATION P PRIORITY

When more notes than can be outputted are received by the 1983 (for example, two notes in the monophonic mode, five notes in the four-voice poly, etc.) some notes have to be given allocation priority. The default allocation settings is O, ordered note priority, but in some scenarios it might be useful to use high or low note priority.

### AVAILABLE ALLOCATION SETTINGS:

- H: High note priority
- L: Low note priority
- O: Ordered note priority (the most recent note has the highest priority—the Robin Round algorithm)

## "T" TRANSPOSE

Sets the behaviour of the TRANSPOSE CV Input. This Input can affect all Channels or just some, and it can transpose only by octaves, fifths, or semitones. While browsing through the options, the display will show which Transpose Mode will be used, while the GATE LEDs will indicate which Channels will be affected.

- O: Octave –A, A+B, A+B+C, A+B+C+D
- 5: Fifth –A, A+B, A+B+C, A+B+C+D
- S: Semitone –A, A+B, A+B+C, A+B+C+D

## "L" WINDOW

Sets the behaviour of the WINDOW CV Input. This Input can affect all Channels or just some. It can set the Window either by detecting a trigger (the rising edge), or by using a CV to set the absolute position of the Window. While browsing through the options, the display will show which Window Mode will be used while the GATE LEDs will indicate which Channels will be affected.

T: Trigger –D, D+C, D+C+B, D+C+B+A  
C: CV –D, D+C, D+C+B, D+C+B+A

## "P" PORTAMENTO

Sets which Channels are affected by the PORTAMENTO CV. Hold down the SET button, and the GATE LEDs will indicate the affected channels. Press UP/DOWN while holding down the SET button to make adjustments.

**AVAILABLE OPTIONS ARE:**  
A, A+B, A+B+C and A+B+C+D.

## "B" PITCH BEND RANGE

Sets the number of semitones covered by the pitch bend. Hold down the SET button, and the display will show the number of semitones. The DOT that appears on the display indicates that the number is greater than 10 (11,12, etc). Press UP/DOWN while holding down the SET button to make adjustments.

## "P" PRESET

All settings of the 1983 except the μTUNE tables can be stored in a Preset (the μTUNE tables remain the same across all presets). There are 10 presets you can recall. Presets are always saved automatically when the settings are adjusted. Press UP/DOWN while holding down the SET button to change the preset (0–9).

## "F" FIRMWARE

Displays the firmware version while holding down the SET button. Versions are labeled 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, A, B, C, D, etc.

## APPENDIX

### FIRMWARE UPDATE PROCEDURE

- 1 download the firmware updater app <https://github.com/bastl-instruments/sysex-playback/releases/tag/v1.0.0>
- 2 download the latest version of the ".mid" sys-ex file from the 1983 product page at [bastl-instruments.com](http://bastl-instruments.com)
- 3 connect the MIDI interface to your computer
- 4 start the firmware upload app, locate the "\*.mid" file, select your MIDI interface
- 5 connect the MIDI OUT from your MIDI interface to the 1983 MIDI IN
- 6 start the 1983 in boot mode (hold the SET button on startup – displayed "b" indicates boot mode)
- 7 press upload in the upload app
- 8 LEDs on the 1983 should indicate uploading in progress
- 9 after the upload is done, turn your system off and on to reboot
- 10 check the firmware version
  - double click SET to enter SETTINGS
  - press UP/DOWN until the "F" page (firmware) appears
  - hold SET to display the firmware version

### CONNECTING THE MODULE TO YOUR SYSTEM!

Before connecting the ribbon cable to this module, disconnect your system from power!



Double check the polarity of the ribbon cable and make sure it is not shifted in any direction. The red cable should match the -12V rail both on the module and on the bus board! **please make sure of the following**

- you have a standard pinout eurorack bus board
- you have +12V and -12V rails on that bus board
- the power rails are not overloaded by current

Although we put protection circuits in the device, we do not take any responsibility for damages caused by wrong power supply connection.

After you connected everything, double-checked it and closed your system, so no power lines can be touched by hand, turn on your system and test the module.

## "1" 1 MONO VOICE

This Layout is one complex monophonic voice with velocity, CC, mod wheel and aftertouch. CV A outputs V/Oct voltage. CV B outputs velocity voltage 0-7V. CV C outputs channel aftertouch voltage 0-7V. CV D outputs assigned MIDI CC 0-7V.

## GATE A is a normal gate.

GATE B is ON TRIG –triggers each time the note has changed.

The trigger is 2 milliseconds long.

GATE C is OFF TRIG –triggers each time the note has been released.

GATE D is an inverted gate.

## LEARN MODE:

There is just one Learn Zone in which you specify a MIDI Channel to listen to.

Send a MIDI Note on the desired channel to set the channel, or hold SET and press UP/DOWN to change the MIDI Channel.

Send a MIDI CC to assign its values to appear at the Channel D Output.

## "2" 2 MONO VOICES

This Layout supports two monophonic voices with velocity. CV A –pitch and CV B –velocity are one voice and CV C –pitch and CV D –velocity are the second voice.

GATE A and C are normal gates.

GATE B and D are ON TRIG –they trigger each time the note has changed.

**LEARN MODE:** There are two Learn Zones in which you specify a MIDI Channel to listen to.

Send a MIDI Note on the desired channel to set the channel, or hold SET and press UP/DOWN to change MIDI Channel. Setting "0" means it responds to all channels.

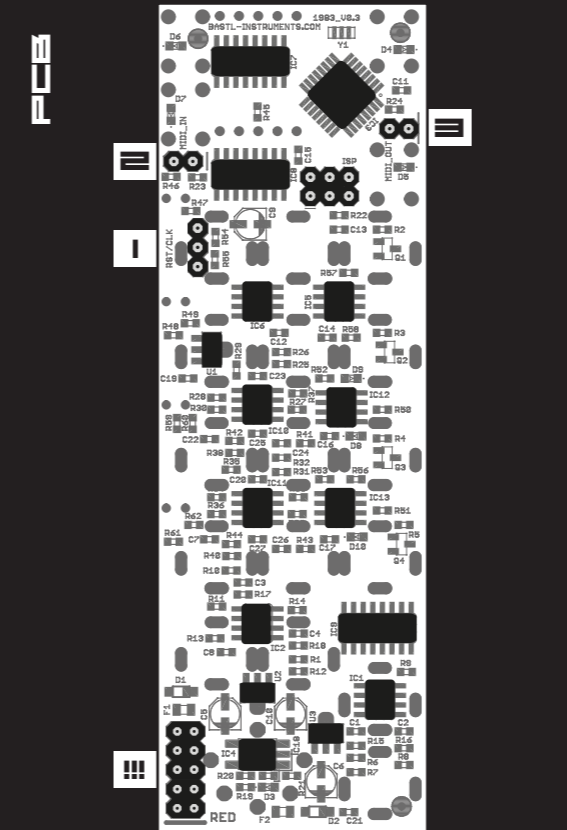
## "4" 4 MONO VOICES

This Layout consists of four simple monophonic voices. All GATE Outputs behave as expected.

**LEARN MODE:** There are four Learn Zones in which you specify a MIDI Channel to listen to.

Send a MIDI Note on the desired channel to set the channel, or hold SET and press UP/DOWN to change the MIDI Channel. Setting "0" means it responds to all channels.

## BACKSIDE HEADERS



## TAKE IT CAREFULLY

## "6" 8 GATES

This Layout outputs eight gates for the specified MIDI Notes. Both CV and GATE Outputs output 5V gates. GATE LEDs are dimmed by default, and they light up with full intensity if the GATE Output on the Channel is HIGH. On the contrary, they turn off if the CV Output on the Channel is HIGH.

**TIP: Use the four gates coming out of the CV Outputs with PORTAMENTO to achieve voltage controlled envelopes.**

## LEARN MODE:

There are eight Learn Zones to specify a MIDI Note number and a MIDI Channel for each GATE Output. Browsing the Learn Zones, the LED lights up with full intensity when a GATE Output is selected, and all LEDs are dimmed and one turns off when a CV Output is selected.

Send the requested MIDI Note on the desired Channel to set the Channel. Alternatively, you can hold SET and press UP/DOWN to change the MIDI Note, and hold SET and TUNE and press UP/DOWN to change the MIDI Channel. Setting "0" means it responds to all channels.

## "T" 4 GATES WITH VELOCITY

This Layout outputs four gates with the velocity of the specified MIDI Notes.

CV Outputs are used as velocity outputs, and all GATE Outputs behave as expected.

**LEARN MODE:** There are four Learn Zones to specify the desired MIDI Note and Channel for each Channel.

Send the requested MIDI Note on the desired Channel to set the Channel. Alternatively, hold SET and press UP/DOWN to change the MIDI Note, and hold SET and TUNE and press UP/DOWN to change the MIDI Channel. Setting "0" means it responds to all channels.

## "C" 8 CCS

This Layout converts eight different MIDI CC numbers into voltages or gates. It outputs four continuous voltages representing CC value on the CV OUTPUTS (0-7V), and 4 GATE Outputs that can be assigned to other CC values but can only set gate HIGH or LOW based on if the value is higher than 63 (5V) or lower (0V).

**LEARN MODE:** There are eight Learn Zones to specify the desired MIDI CC and its MIDI Channel for each Output. Browsing the Learn Zones, the LED lights up with full intensity when a GATE Output is selected, and all LEDs are dimmed and one turns off when a CV Output is selected.

## BACKSIDE HEADERS

This header is meant for DIYers who are wishing to have MIDI Clock and Reset outputs at all times without sacrificing the Channel D for the job. These pins can be soldered directly to mono plugs. The top pin is Clock, middle pin is Ground (sleeve) and the bottom pin is Reset.



These headers can be used to chain multiple 1983s in a modular system without the need of a MIDI Thru Box. On Header 3, there is a MIDI Thru signal from the Input which can be connected to Header 2 on another 1983 without a MIDI Cable plugged in.

### HW (HARDWARE) TEST MODE

Hold the TUNE button at startup to enter the HW TEST MODE. In this mode all I/O except MIDI can be tested.

### First, connect the following four patch cables:

- CV A OUT to WINDOW (QA)
- CV B OUT to UPDATE (QB)
- CV C OUT to TRANSPOSE (QC)
- CV D OUT to PORTAMENTO (QD)

### Then connect four more patch cables:

- GATE A to LISTEN A
- GATE B to LISTEN B
- GATE C to LISTEN C
- GATE D to LISTEN D

All jacks should now have a cable inserted into them.

Now the GATE LEDs show the current state of the LISTEN Inputs. These are driven by the GATE Outputs, and a sequence A > B >C > D > A > B ... etc. should be visible. This visual feedback tests both the GATE Outputs and the LISTEN Inputs. One of the GATE LEDs will be dimmed to indicate selected CV Input (QA–QD). Pressing UP/DOWN will change the selected channel (check that both UP and DOWN buttons work).

The display shows values from 0 to 9 that represent positive voltage between 0–5V at each selected CV Input in 1-volt increments. CV OUTPUTS will output a full voltage sweep from

Send the requested MIDI CC on the desired Channel to set the CC and MIDI Channel. Alternatively, hold SET and press UP/DOWN to change the MIDI CC, and hold SET and TUNE and press UP/DOWN to change the MIDI Channel. Setting "0" means it responds to all MIDI Channels.

## "Q" QUANTIZER

This Layout is different from all the other Layouts. None of the CV Inputs have their original functionality, and the QA, QB, QC and QD labels apply.

This Layout reads the CV Inputs, and rounds them to the nearest (enabled) semitones. It then uses the corresponding CV Outputs and LISTEN Inputs to tune the oscillators to the specified semitones (automatic tuning still works here). Not all semitones have to be used, and custom scales can be defined. The scales can be defined by the MIDI Input by receiving a set of notes in Legato (until all notes are released), and these notes then will be applied in the quantizing. The selected notes will repeat in all octaves.

**NOTE: Playing Legato means that it will record all the notes played until you release all the notes. Once you release all the notes, it will be ready to receive a new set of notes.**

The GATE Outputs will send a trigger each time a quantized note changes value.

Note: If a dedicated CV INPUT is not used, the channel will act as a simple monophonic voice for the MIDI Input until it sees a changing CV value at that Input. This could be utilised for splitting the Quantizer Mode into monophonic MIDI to CV converters and quantizer channels.

**LEARN MODE:** The Quantizer scales can be edited in the Learn Mode, and different MIDI Channels can be assigned to different Output Channels.

The display indicates a selected semitone by flashing, and the GATE LEDs signal weather this semitone is enabled or not. Pressing the TUNE button will enable/disable the selected semitone. Holding SET and pressing UP/DOWN will set the MIDI Channel for the selected Channels.

Holding the SET and TUNE buttons and pressing UP/DOWN will select individual Channels (indicated by GATE LEDs), or will select all Channels (default).

While holding down the SET button, the selected MIDI Channel is shown on the display.

–0.4 to 7.2V, so at some point the display reading CV INPUT will stop at number 9 (because it reads only from 0-5V).

The DOT on the display indicates cable detection in the UPDATE jack. Plug and unplug a cable to the UPDATE jack, and see if the 1983 detects it by checking the status of the DOT.

The CV Inputs might need a recalibration to provide precise operation in the QUANTIZER or TRANSPOSE modes. To do this, press and hold the SET button for a few seconds until "OK" is displayed. This will initiate the CV Input calibration. For this calibration, it is required to have all the CV OUTPUTS connected to their corresponding CV INPUTS. Note: All four Inputs are calibrated automatically with this procedure.

To exit the HW TEST MODE without calibrating CV Inputs, give the SET button only a short press.

