KENTON

PRO SOLO _MK II_

Single channel MIDI-CV converter

```
IN —— MIDI —— THRU        AUX 1     GATE      CV        DC IN
       (SYNC 24)          (CLOCK)  (S-TRIG)  (Hz/V)      9V
       (AUX 2+3)

high specification single channel    GENERAL 01 MIDI RECEIVE CHANNEL    - -C- +
        midi to cv converter            NOTE 02 MULTIPLE TRIGGER
                                             03 NOTE PRIORITY LO/HI/NEW
   ┌ PARA      ┌ VAL  ┌ GATE             04 PITCHBEND RANGE
                                             05 PORTAMENTO CONTROLLER #    0
   ■           ■      ■                  06 PORTAMENTO TIME/RATE
                                             07 PORTAMENTO TYPE
                                             08 LFO TO CV CONTROLLER #
                                             09 LFO TO CV MINIMUM VALUE
                                             10 LFO TO CV MAXIMUM VALUE
                                             11 LFO TO CV RESET VALUE
                                             12 COARSE TUNE (SEMITONES)
                                             13 FINE TUNE                 1
                                             14 SCALE
   SELECT      DEC    INC                15 CV/HZ SELECT
                                             16 GATE TYPE SELECT
   PARAMETER / VALUE TOGGLE        AUX 1 20 AUX CONTROLLER #
   LONG HOLD TO STORE                    21 AUX MINIMUM VALUE
                                             22 AUX MAXIMUM VALUE
                                             23 AUX RESET VALUE
   PRO SOLO MkII                         24 KEY SCALE TO AUX
                                             25 LFO TO AUX CONTROLLER #
                                             26 LFO TO AUX MINIMUM VALUE
   KENTON                                27 LFO TO AUX MAXIMUM VALUE
                                             28 LFO TO AUX RESET VALUE
   www.kenton.co.uk                 LFO 30 LFO RATE
                                             31 LFO WAVESHAPE
                                             32 LFO MIDI SYNC
                                             33 LFO SYNC START POINT
                                             34 KEY-ON RESETS LFO WAVE
                                         OTHER 40 CONTINUE=START
                                             41 CLOCK DIVIDE
                                             42 THRU/SYNC 24/AUX2+3 SELECT
                                             43 AUX 2 CONTROLLER #
                                             44 AUX 3 CONTROLLER #      C E
                                             45 SYSEX DEVICE NUMBER
```

Operating manual

INTRODUCTION

Congratulations on your purchase. The *PRO SOLO mkII* is much more than just a MIDI to CV converter, incorporating a built in LFO as well as portamento functions. Please take some time out to read through all the manual to avoid any operational difficulties.

CONNECTIONS
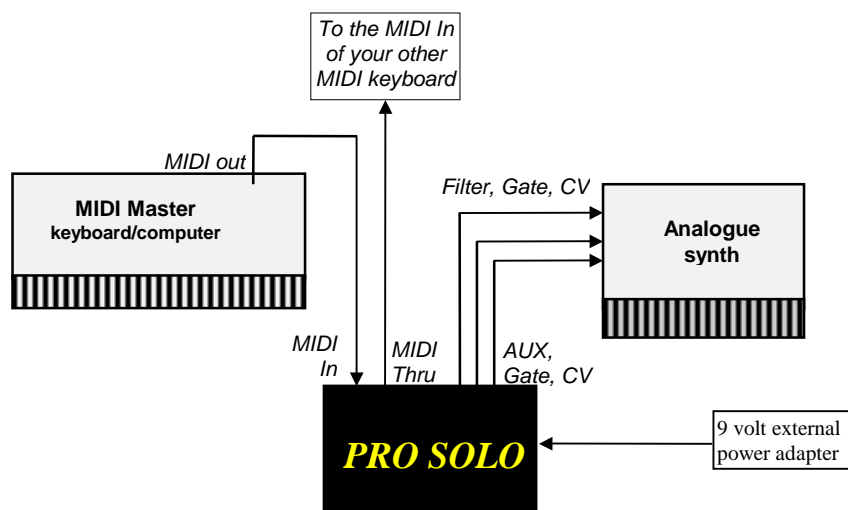
MIDI In
Plug your MIDI keyboard or sequencer`s MIDI Out into here.

MIDI Thru
Plug this into the MIDI In of another piece of your MIDI equipment should it be necessary.

CV
Plug this into your mono-synth`s input marked CV In, VCO In, KEY VOLT KYBD In, etc. This controls the pitch of your synth.

GATE
Plug this into your mono-synth`s input marked GATE, V-trig, Trig, S-Trig, etc. This turns the note on and off on your synth.

AUX
Plug this into your mono-synth`s input marked VCF, fcM, PWM, VCA, Filter, Volume, or any other external control voltage input. This enables you to control effects such as filter cut-off from MIDI controllers (Velocity, mod wheel, etc.).
Note; not all mono-synths have additional control inputs.

9V DC
Plug your power adapter into here. The converter will take an adapter with an output of 9 volts DC regulated or unregulated, centre +ve. We recommend a Kenton power supply which is made especially for the PRO-SOLO but any plug-top supply can be used as long as the output is 9 volts DC.

WARNING - Do not use an adaptor with an output voltage higher than 9V. The SOLO must not share an adaptor with any other device. Failure to observe this will invalidate your warranty, and will probably damage the other device, the PRO-SOLO and/or the power supply.

EDITING THE *PRO-SOLO mkII*

Switching On

When the *PRO-SOLO* is switched on, the words **KENTON PRO-SOLO** scroll across the display.

The Display

The display has 3 digits each with a dot above. The 1st dot when lit indicates that **PARAMETER** mode is currently selected. The middle dot when lit indicates that **VALUE** mode is currently selected. The 3rd dot will light whenever the *PRO-SOLO*'s **GATE** is on (key pressed down).
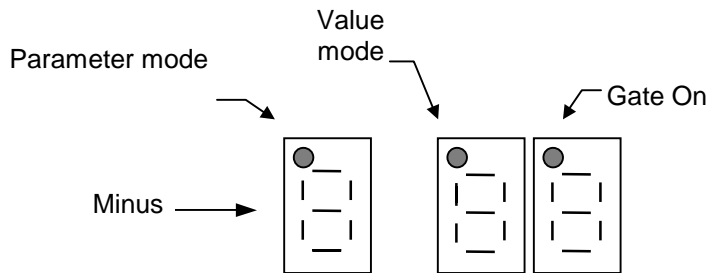
Stepping Through Parameters

Ensure that the **PARAMETER** dot is lit. If you need to, you can change between **PARAMETER** and **VALUE** modes by briefly pressing the **SELECT** button, you can then use the **INC** and **DEC** buttons to scroll through the available parameters. The available parameters are printed on the case of the Pro-SOLO for convenience. For additional confirmation, a "**P**" will appear in the left digit when parameter mode is selected.

Changing Values

Ensure that the **VALUE** dot is lit. You can change between **PARAMETER** and **VALUE** modes by briefly pressing the **SELECT** button. You can then use the **INC** and **DEC** buttons to scroll through the available values. The left digit is used for displaying the hundreds portion of the value if applicable. It will also have a horizontal dash if a minus value is to be displayed. Minus values up to –127, or positive values up to 255 are used.

Speeding up editing

If you press and hold the **INC** key, then also hold the **DEC** key, the value will increase faster. If you press and hold the **DEC** key then also hold the **INC** key, the value will decrease faster.

Storing Set-ups

The set-ups can be stored in non-volatile memory. To do this, press & hold the **SELECT** button (for approx. 6 seconds) till the display reads `st` (store).

PARAMETERS

Below is a list of parameters available to edit. The letters in square brackets show [where applicable] what will be shown in thevalue display.

Menu
number   Parameter (default)

01   MIDI receive channel (default :1)

Range   1 to 16
- Sets the MIDI receive channel.

02   Multiple trigger (default: on)

Range   on [on] / off [of]
- If set to on (multiple trigger mode), a new valid note will briefly turn off the gate to retrigger the envelope generators of the mono-synth. If turned off (normal trigger mode), the gate stays on when a new note is played.

03   Note priority (default: new)

The following can be selected;
Low note priority   [lo]
High note priority   [hi]
New note priority   [nn]

- Sets the note priority for the converter.
If set to "lo" then the lowest valid note played takes precedence.
If set to "hi" then the highest valid note played takes precedence.
If set to "nn" then the newest valid note played takes precedence.
The PRO-SOLO has a note buffer memory so that trill effects can be achieved.

04   Pitchbend range (default: 2)

Range   0 to 12 semitones.
- The pitch bend range can be changed in semitone steps.

05   Portamento controller number (default: 65)

- Sets which MIDI controller will turn on/off the portamento function.

The following can be selected;

Auto portamento	[AU]	normally off but legato playing turns portamento on
On	[on]	always on
Off	[of]	always off
Program change	[PC]	program 1=on program 2=off
MIDI controllers	#0 to 120	values above midway=on, below midway=off

The standard MIDI controller for portamento on/off is #65 which is the default, but with this command , the *PRO-SOLO* allows you to use another controller, a program change, direct control or Auto Portamento if you wish.

06   *Portamento time / rate (default :98)*

Range   0 to 127
- Sets the portamento (glide or slide) time. This can also be adjusted in real time over MIDI using controller #5 (portamento time). Please note that 0 does not mean portamento off - to turn portamento off (if it is on) set portamento controller (7) to off.

07   *Portamento type (default : fixed rate)*

The following can be selected:
Fixed rate   [Fr]
Fixed time   [Ft]

- Fixed rate causes the portamento to slide at the rate set in 06, so that the slide time is proportional to the interval between the start and finish notes.
- Fixed time will attempt to keep the time taken for the slide to be constant, regardless of the interval between the start and finish notes. (In extreme cases this is not always possible)

08   *LFO to CV controller number (default: 1)*

The following can be selected;
Off   [Of]
Pitch bend   [Pb]
Velocity   [VL]
Aftertouch   [Af]
MIDI controllers   0 to 120

09   *LFO to CV minimum value (default: 0)*

Range   0 to 127
- Sets the level for LFO to CV modulation when the MIDI controller source is at its minimum.

10   *LFO to CV maximum value (default: 127)*

Range   0 to 127
- Sets the level for LFO to CV modulation when the MIDI controller source is at its maximum. Note that minimum can be set above maximum so that the controller works backwards.

11   *LFO to CV reset value (default: 0)*

Range   0 to +127
- Sets the level the LFO to CV modulation will reset to when the *PRO-SOLO* is powered on or when it receives a controller reset MIDI command.

12   *Coarse Tune / Transpose (default: 0)*

Range   -24 to +24
- Changing this will change the tuning of the mono-synth in semi-tone steps. If your synth does not play C when you play a MIDI C (note#36), use this to make it as near as possible.

13   *Fine tune (default: 0)*

Range   -127 to +127 (approximately a semitone each way)
- Fine tunes the mono-synth.

14   Scale (default: 0)

Range   -127 to +127
- This is used to tune in the octave scaling of your analogue synth. Will only need adjusting if your synth sounds out of tune as you play further up the keyboard (see `Tuning in Your Analogue Synth`). - Check whether CV select has been set correctly (see `15` below).
nb: C (MIDI note#36) will not move (assuming transpose is not in operation) so get that in tune first then tune the octave above using this parameter.

15   CV – Hz/V – 1.2V/oct select (default: CV)

- this shoud be set to V/oct [CV] for connecting to most synths, such as Roland, SCI, Octave, Oberheim or Moog synths. Set it to Hz/V [Hz] if you are using either Yamaha or Korg mono-synths (except the Monopoly which is volt per octave). A very small number of synths use 1.2 volts per octave [12] (one tenth of a volt per semitone) – in which case select this option.

16   Gate type select (default: G-)

- you can select the following types for the GATE output;

Gate V-Trig low (+5v)   [g, middle LED bar]
Gate V-Trig high (+15v)   [g, upper LED bar]

Gate is the most common signal used for telling a synth when to play its note. The high level Gate is suitable for most synths, such as Roland, SCI, ARP, Oberheim. The low level gate may be needed for synths that require a lower gate voltage such as the SH-101.

S-trig no pull-up   [S, lower LED bar]

This would be used for most Moogs & Korgs, and some Yamaha synths instead of Gate.

S-trig low pull-up   [S, middle LED bar]
S-trig high pull-up   [S, upper LED bar]

These would be used on some of the Yamaha CS range of synths instead of Gate.
NB – The Pro-SOLO mkII has an internal charge pump and so can generate gate voltages up to +15 volts even though the power adaptor is only 9 volts!

20   AUX 1 controller number (default: 16)

- Sets which MIDI controller will control the auxiliary output. The following can be selected:

Clock   [CL]
Trig Pulse   [tr]
Off   [Of]
Pitch bend   [Pb]
Velocity   [VL]
Aftertouch   [Af]
MIDI controllers   0-120

If trig pulse is selected, the aux output will send a short trigger pulse whenever a valid new MIDI note is received – this can be used to drive the envelope generator on synths that require a separate trigger for this. (Only usually needed by the Arp 2600 and a few modulars)

If clock is selected, the clock divide ratio (para #41) controls the relationship with MIDI clock. Set Aux min value to 0 and max to 50, or to produce an inverted output set min value to 50 and max to 0

21   AUX 1 minimum value (default: 0)

Range   -27 to +100
- Sets the level for the Auxiliary output when the MIDI controller source is at its minimum.

22   AUX 1 maximum value (default: 100)

Range   -27 to +100
- Sets the level for the Auxiliary output when the MIDI controller source is at its maximum.

23   AUX 1 reset value (default: 0)

Range   -27 to +100
- Sets the level the Auxiliary output will reset to when the *PRO-SOLO* is powered on and when it receives a controller reset MIDI command.
Note that minimum can be set above maximum so that the controller works backwards.

24   Key scale to AUX 1(default: 0)

Range   0 to 127
- Sets the amount of key scaling which is applied to the Aux output (for opening the filter up as you play notes further up the keyboard.

25   LFO to AUX 1 controller (default: 17)

- Sets which Controller will control the LFO depth applied to the auxiliary.
The following can be selected;
Off   [Of]
Pitch bend   [Pb]
Velocity   [VL]
Aftertouch   [Af]
MIDI controllers   0 to 120

26   LFO to AUX 1 minimum value (default: 0)

Range   0 to 127
- Sets the level for LFO to AUX modulation when the MIDI controller source is at its minimum.

27   LFO to AUX 1 maximum value (default: 127)

Range   0 to 127
- Sets the level for LFO to AUX modulation when the MIDI controller source is at its maximum.
Note that minimum can be set above maximum so that the controller works backwards.

28   LFO to AUX 1 reset value (default: 0)

Range   0 to +127
- Sets the level the LFO to AUX modulation will reset to when the *PRO-SOLO* is powered on or when it receives a controller reset MIDI command.

### 30   LFO rate / speed (default :80)

Range   0 to 127
- Sets the speed of the LFO.

31   LFO waveshape (default :TR)

- Sets the LFO waveshape. All waveshapes modulate CV and/or Aux any value between 0 to a positive value, except triangle, which modulates positive and negative. The following may be selected; (the downward arrow (↓) indicates the default trigger point when in MIDI sync mode). Note that this can be changed using parameter #33

Triangle	[TR]	∿	Sawtooth up	[SU]	⫽
Sawtooth down	[SD]		PulseWidth 10%	[10]	
PulseWidth 20%	[20]		PulseWidth 30%	[30]	
PulseWidth 40%	[40]		Square	[50]	
Sample + Hold	[SH]		(Pseudo random)		

(actually a new S/H level for each trigger)

32   LFO MIDI SYNC   (default: off)

Range, off [of], 1 to 96

- Allows the LFO waveform to be synchronised to MIDI clock, with a variable divide ratio. The LFO waveform will automatically adjust its length so that it will start at the beginning of a bar, and last for whatever musical time it is set for (see below for divide ratios).

A divide ratio can be set, so the LFO only re-triggers every so many MIDI clock messages;
If set to 1, there will be 1 cycle of the LFO for every 1 MIDI clock. (i.e. 24 cycles per quarter note). If set to 24, there will be 1 cycle of the LFO for every 24 MIDI clocks. (i.e. 1 cycle of the LFO per quarter note).
Note; MIDI sends 24 clocks per quarter note.

Below is a table of values you can set the divide ratio to obtain LFO cycles of various musical lengths:

Note type;	Divide ratio;
Semibreve	96
Minim	48
Crotchets	24
Crotchet triplets	16
Quavers	12
Quaver triplets	8
Semiquavers	6
Semiquaver triplets	4
Demisemiquavers	3
Demisemiquaver triplets	2

33   LFO Sync Start Point (default :0)

Range   0 to 255
- Sets where the waveform will start when MIDI sync is active or Key-On reset is on.

34   Key-On resets LFO Wave (default :0)

The following can be selected:
Off   [oF]
On   [on]
- The LFO waveform is reset to the selected start point whenever a new note is played.

40   Continue = start - (default: off)

The following can be selected:
Off   [oF]
On   [on]
- when set to on, all continue messages are treated as if they were MIDI start messages.
- when set to off, continue messages will only be treated as start if preceded by a song position pointer = zero message. Some sequencers use this instead of a start message.
Affects both the sync 24 output and aux output whenin clock mode.

41   Clock divide ratio - (default: 2)

available values d2, d4 & 2 to 24,
- sets the ratio of MIDI clocks to output pulses from the aux output when in clock mode
NB - Aux1 controller must be set to clock mode.
(if you want an inverted output, swap min and max values (ie - set min to 50 and max to 0)

d2 – special drum machine mode – outputs 24 cpqn – used for many drum machines
d4 – special drum machine mode – outputs 48 cpqn – for Linn & Oberheim drum machines
N.B. Some drum machines use other values e.g. the Roland CR78 uses 12 cpqn (div ratio 2)

If set to 2, there will 12 pulses from the aux output for every 24 MIDI clocks = 12 cpqn
If set to 24, there will be 1 pulse from the clock pulse output for every 24 MIDI clocks = 1 cpqn
(Note there are 24 MIDI clocks per quarter note)

Below is a table of values you can set the divide ratio to in order to obtain a clock pulse at various musical time intervals:-

Note type		Divide ratio	CPQN (clocks per quarter note)
Crotchets	(quarter notes)	24	1
Crotchet triplets		16	
Quavers	(eighth notes)	12	2
Quaver triplets		8	
Semiquavers	(sixteenths)	6	4
Semiquaver triplets		4	6
Demisemiquavers		3	8
Demisemiquaver triplets		2	12

42   Thru / Sync 24 / Aux 2+3 select (default :Thru)

The following can be selected:
Thru   [th]   The Thru socket functions as a (soft) thru
Sync 24   [sy]   The socket functions as a Sync 24 output
Aux 2+3   [Au]   Socket pin 1 becomes Aux 2 and Pin 3 becomes Aux 3 – pin 2 is ground

43   AUX 2 controller number (default: 18)

- Sets which MIDI controller will control pin 1 of the thru socket if Aux 2+3 mode is selected
The following controllers can be selected:

Off   [Of]
Pitch bend   [Pb]
Velocity   [VL]
Aftertouch   [Af]
MIDI controllers   0-120
Note that pin 1 will be 0 volts if the data value is less than 64 and 5 volts if 64 and above

44 AUX 2 controller number (default: 19)

- Sets which MIDI controller will control pin 3 of the thru socket if Aux 2+3 mode is selected
The following can be selected:

Off   [Of]
Pitch bend   [Pb]
Velocity   [VL]
Aftertouch   [Af]
MIDI controllers   0-120
Note that pin 3 will be 0 volts if the data value is less than 64 and 5 volts if 64 and above

45 Sysex Device Number (default :1)

Range   1 to 16
- Sets the sysex device number for this unit.

OTHER USEFUL INFO

The *PRO-SOLO* will always respond to controller #64 (sustain pedal) with no adjustment necessary.

If you want to use the Aux 2+3 outputs, you will need a special cable (which Kenton can supply) which has a din plug on one end and two 3.5mm jacks on the other. The intended use for aux 2+3 is to use to control the accent & slide our 5 socket kit for the TB-303.

RESETTING THE *PRO-SOLO* TO FACTORY DEFAULTS

If you wish to reset your *PRO-SOLO*, you can do so by turning the unit on whilst holding down all three push buttons. This will return the SOLO`s settings to default values. `Fd` (factory defaults) will momentarily be displayed when this has been done.

TUNING THE *PRO-SOLO* TO YOUR SYNTH

It may be that your synth is slightly out of tune, so it will be necessary to tune the *PRO-SOLO* to your synth.

1, Firstly, ensure that your analogue synth is in tune when playing from its own keyboard. Do this by adjusting the tuning or pitch knob on your analogue synth whilst playing middle C on both this and your master keyboard (or whatever you use for tuning reference). To do this, you may need to disconnect the analogue synth from the *PRO-SOLO*.

2, Connect the converter to your analogue synth and MIDI system. Check the *PRO-SOLO* is switched to the correct scaling system, Hz/V for Korg and Yamaha, or V/oct for anything else (see Editing Parameters section). Set transpose to zero. Now press bottom C (MIDI note #36) on your digital synth. Both synths should sound, don't worry at this stage if they are not in tune.

3, Using bottom C (MIDI note #36) as a reference (you must use this note for maximum accuracy) tune in the *PRO-SOLO* with your analogue synth by adjusting the parameter **FINE TUNE** and **TRANSPOSE** if necessary (see Editing Parameters section) until it is exactly in tune.

4, When your digital & analogue synths are in tune at the bottom , play middle C, two octaves up on your digital synth. (MIDI note #60). Now adjust the **SCALE** parameter (see Editing Parameters section) until both synths are in tune. The analogue synth should now play correctly across it's complete range from your master keyboard, if this is still not the case go back to step 3 and repeat the process for final tweaking.

CHECK LIST FOR SETTING UP THE *PRO-SOLO*

1- Make sure all cable connections have been made. √

2- Set MIDI receive channel you wish to use. √

3- Make sure you have set the GATE output correctly to either `Gate`
or `S-Trig` type triggers. √

4- Make sure you have set the CV output correctly to either `V/oct`
or `Hz/V.` √

5 - You may wish to adjust the AUX, or any other settings to those that
work best for your set-up. √

DISPLAYING THE SOFTWARE VERSION NUMBER

Power on the PRO-SOLO whilst holding the INC and DEC buttons pressed and the software revision & build number [5xxx] will be displayed. Releasing the buttons will revert to the normal operational mode.

MIDI ANALYSER MODE

The *PRO-SOLO* has a built-in MIDI analyser function. This feature allows you to see what types of MIDI messages are being transmitted by your master keyboard/sequencer making the *PRO-SOLO* a useful diagnostic tool.

To enter analyser mode, you must power on the *PRO-SOLO* whilst holding the **SELECT** button. The display will then show `nt`. `nt` means the display will show the MIDI note number of any notes it receives.
Using the **INC**, **DEC**, and **SELECT** buttons, different types of MIDI messages received may be displayed;

|		
SELECT	Short press	[rC] Receive channel
	Long press	[PC] Program change
DEC	Short press	[nt] Note number
	Long press	[nv] Velocity
INC	Short press	[Cn] Controller number
	Long press	[Cv] Controller value

For whichever of the above selected, the *PRO-SOLO* will display the value it receives for the message selected.
Although pitchbend and after-touch are not controllers, when Controller number is selected, `pb` will be displayed if pitchbend is received, & `af` will be displayed if after-touch is received.
If Controller values is selected, and pitchbend or after-touch are received, their values will be displayed.
For values over 99 the usual method is employed for displaying large numbers.
The MENU 7-segment LED in this mode operates as a received MIDI message indicator. LED's will flash when then following types of messages are received; Note on, Note off, Sysex, Timing clock (MIDI clock), Start, Stop, Continue.
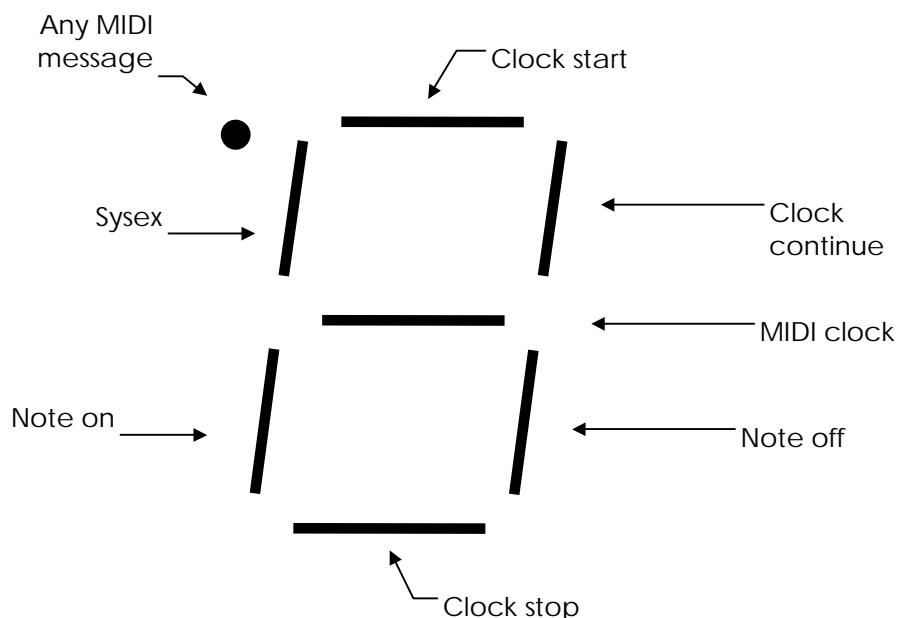
To exit MIDI monitor mode, the *PRO-SOLO* must be powered off then on again.

PROBLEMS YOU MAY ENCOUNTER WHEN USING MIDI CLOCK

When using MIDI clock in conjunction with the *PRO-SOLO*, please note the following.

First, ensure that the *PRO-SOLO* is actually receiving MIDI clock. This is not as silly as it sounds - there are a number of reasons why it may not be receiving MIDI clock messages in the first place. If you are having problems, go into the MIDI analyser mode described on page 13 and see if the *PRO-SOLO* is actually receiving the MIDI clock messages. If the *PRO-SOLO* is not receiving clock messages, here are a few points to watch for:-

Some MIDI mergers & patch bays actually remove MIDI clock information from the data stream, or you may have to enable it for the port you are using.

Users of CUBASE note that the default for MIDI clock is for it NOT to be sent, you will have to go into the MIDI synchronisation page and select MIDI clock to transmit.

Users of UNITOR/EXPORT on an Atari note that the MIDI clock will only come out of port A, (that is the Atari's own MIDI port), unless you can re-assign it.

STANDARD MIDI CONTROLLER NUMBERS

Controller Number   **Control Function**

Decimal	Hex	
0	00H	Bank select MSB
1	01H	Modulation wheel/lever
2	02H	Breath controller
3	03H	Undefined
4	04H	Foot controller
5	05H	Portamento time
6	06H	Data entry MSB
7	07H	Main volume
8	08H	Balance
9	09H	Undefined
10	0AH	Pan
11	0BH	Expression controller
12-15	0C-0FH	Undefined
16-19	10-13H	General purpose controllers (1-4)
20-31	14-1FH	Undefined
32-63	20-3FH	LSB for controllers 0-31
64	40H	Damper pedal (sustain) (Hold 1)
65	41H	Portamento
66	42H	Sostenuto
67	43H	Soft pedal
68	44H	Undefined
69	45H	Hold 2
70-79	46-4FH	Undefined
80-83	50-53H	General purpose controllers (5-8)
84-90	54-5AH	Undefined
91	5BH	External effects depth
92	5CH	Tremolo depth
93	5DH	Chorus depth
94	5EH	Celeste (detune) depth
95	5FH	Phaser depth
96	60H	Data increment
97	61H	Data decrement
98	62H	Non-registered parameter number LSB
99	63H	Non-registered parameter number MSB
100	64H	Registered parameter number LSB
101	65H	Registered parameter number MSB
102-120	66-78H	Undefined
121-127	79-7FH	Reserved for channel mode messages

A BRIEF GUIDE TO MIDI TO CV CONVERSION FOR THE BEGINNER

MIDI-CV converters can have up to four different types of outputs used to control analogue synths, usually labelled CV, GATE, S-TRIG and AUX. Below is a description of what they do:

Pitch - CV outputs (V/oct, Hz/V)

The CV (control voltage) is a voltage that tells the synth what note to play. Most synths use the 1 Volt per Octave (V/oct) pitch scaling system to control the pitch. This means, that each octave is 1V (V=volts) apart (or 0.0833V per semitone).

For example, bottom C (MIDI note #36) corresponds to 0 Volts. The next C will be 1V, 2V, 3V etc.. Synths using this system include Roland SH101, Sequential Circuits Pro 1, ARP Odyssey, Oberheim OB 1.

Some other synths, most notably Korg and Yamaha, use a different pitch scaling system. This is an exponential method called Hertz per volt (Hz/V). This means that for the next octave up, the voltage is doubled. So bottom C (note#36) will be 0.25V, the next C will be 0.5V, 1V,2V, 4V etc.

If you are not sure which C is MIDI note #36, use MIDI analyser mode to check.

If you use a Hz/V synth with a V/oct pitch output (or vice-versa), the synth will play out of tune but will not cause any damage to the synth.

Note - The Korg Monopoly is an exception. Although other Korg synths use Hz/V scaling, this synth actually uses V/oct scaling.

Gate - (Or S-TRIG)

The GATE (sometimes called V-trig [voltage trigger]) signal is a voltage that tells the synth when to play the note. The GATE voltage will usually be a positive voltage when the note is on, and 0V when off.

Some other synths, like Moog, Korg, and Yamaha, use S-TRIG (Short Trigger) instead of GATE. This signal still tells the note when to play, but it is a different type of signal (electrically). To tell the note to play, the converter will provide a short circuit at it's S-TRIG output (0V), and to turn off the note the output will be open circuit (literally like opening and closing a switch).

A point to watch for; unless you know the synth, it will not always be clear what type of CV and GATE signals are required to play the synth.

For instance, the Korg MS20 requires an S-TRIG signal, but the input is labelled TRIG. Another example is the Yamaha CS5. The pitch input is marked CV, but requires a Hz/V signal. The best way to check is either ask someone who knows, or just try all types of output till the synth works correctly. If you do plug your synth to the wrong outputs, it shouldn't do any harm, although always start out with minimum voltages.

Here's a general guide to the most common synths and how to hook them up to your converter

SYNTH MODEL	CV OR HZ/V?	S-TRIG OR GATE	AUXILIARY CONNECTIONS	NOTES
MINIMOOG	CV	S-TRIG (5V)	FILTER OR LOUDNESS	CINCH-JONES CONNECTOR NEEDED
MOOG PRODIGY	CV	S-TRIG (5V)	FILTER	KIT AVAILABLE FOR FILTER IF NOT FITTED
MOOG ROGUE	CV	GATE (5V)		KIT AVAILABLE FOR FILTER
MOOG SOURCE	CV	S-TRIG (5V)		KIT AVAILABLE FOR FITLER
ROLAND SH-101	CV	GATE (5V)	CLOCK IN (SYNC)	KIT AVAILABLE FOR FILTER/MODULATION
ROLAND MC-202	CV	GATE (5V)		KIT AVAILABLE FOR CV/GATE/FILTER/SLIDE
ROLAND TB-303	CV	GATE (5V)	FILTER (SEE RIGHT)	KIT AVAILABLE FOR CV/GATE/FILTER/SLIDE/ACCENT
SEQUENTIAL PRO-1	CV	GATE (15V)	FILTER	
KORG MS-10/20	HZ/V	S-TRIG (5V)	ANY OTHER	THERE ARE MANY EXTRA INPUTS ON THE MS10/20
KORG 700S/770	HZ/V	S-TRIG (5V)	FILTER	KIT AVAILABLE FOR CV/GATE AND FILTER
KORG MONOPOLY	CV	GATE (15V)	VCF/PORTAMENTO	ARPEGGIO CAN ALSO BE CONTROLLED
YAMAHA CS-10/20/30	HZ/V	S-TRIG (5V)		FILTER AVAILABLE FOR CS-5
ARP ODYSSEY (&AXXE)	CV	GATE (15V)		KIT AVAILABLE FOR FILTER
ARP 2600	CV	GATE (15V)	FILTER	
OCTAVE CAT/KITTEN	CV	GATE (15V)	FILTER	

This is a general guide only, further socket kits are available, and many other synths can be controlled. There simply is not the space to detail all connections to all synths. However if you visit our website you will find more information there.

A further point to watch for. Some synths use stereo jacks for the CV and GATE connections. Moog, for instance, use a stereo jack for CV In/Out, and a stereo jack for S-TRIG In/Out on some synths. Whether the tip or the ring is in or out is hard to say as Moogs are very non-standard. It seems to vary from synth to synth!

Octave who made the Cat and Kitten synths also use stereo jacks. CV and GATE outputs are on one stereo jack, and the inputs are on another stereo jack.

Auxiliary output - More control

The AUX output can be used to control functions such as filter cut-off or volume control. This depends on what control inputs your synth has. Most mono-synths have at least a Filter input, e.g. the Pro 1. Some synths, such as the Minimoog, also have VCA inputs (volume). Synths such as the Korg MS20 and ARP 2600 have even more inputs to control effects such as Pulse Width. The *PRO-SOLO* has an output called AUX. By plugging the AUX output into the external control input of the synth, e.g. Filter input, the cut-off frequency can be controlled over MIDI.

The AUX output is not controlled by MIDI note numbers. The converter allows you to set which MIDI controller, e.g. Modulation Wheel, (or even velocity, after-touch, or pitch bend), will control the level of the AUX voltage to control the synth`s extra input.

Only synths that have the appropriate inputs can be controlled from a MIDI-CV converter.

The synth needs some sort of CV and GATE inputs.

CV`s may be labelled CV In, OSC In, Keyboard In, VCO In, Key Volt, etc.

GATEs (and S-TRIG) may be labelled GATE In, S-TRIG, V-TRIG (voltage trigger, same as gate), Trig In, etc.

Any additional inputs may be utilised, like Filter, VCF fcM, VCF, PORTA (portamento), Loudness, VCO, PWM, etc. by using the converter's AUX output.

Some synths that cannot be connected to a MIDI-CV converter via CV, GATE, AUX Outputs (as they do not have them);

OSCAR	Kenton can do an internal MIDI retrofit
EDP WASP	Possible with a PRO 2000 (with WASP port)/ PRO-4/PRO-KADI
100P	Applies to most other preset synths/mono. string machines

SYSEX CONTROL

The Pro-SOLO mkII can be controlled by Sysex messages in the following format:

The first five bytes of sysex for the Pro-SOLO mkII are always the same for all data types

[1]   0F0h   - Sysex command
[2]   00h   - Company ident first byte
[3]   20h   - Company ident second byte
[4]   13h   - Company ident third byte
[5]   03h   - Product code – Pro-SOLO

[6]   0dddnnnn   - where ddd is the data type and nnnn is the device number
          where ddd = 010 = data change (so for device #1, this byte = 20h)

[7]   0000uuuu   - where uuuu = low 4 bits of parameter address
[8]   0000hhhh   - where hhhh = high 4 bits of parameter address
[9]   0000uuuu   - where uuuu = low 4 bits of data
[10]   0000hhhh   - where hhhh = high 4 bits of data
[11]   0F7h   - end of exclusive

The Pro-SOLO responds by changing the specified data and updating the
display if necessary. Parameter data are accessed at the addresses shown on the following page.

Address	Function	Range	Notes (see end)
01h	Receive chan	0 - 15	{ 1 }
02h	trig / retrig	0 - 1	
03h	note priority	0 - 2	
04h	pitchbend range	0 - 24	
05h	portamento cont #	253 - 0 - 119	{ 3 }
06h	portamento time / rate	0 - 127	
07h	portamento type	0 – 1	0=fixed rate / 1= fixed time
08h	LFO to CV depth controller #	252 - 0 - 119	{ 4 }
09h	LFO to CV min val	0 - 127	
0Ah	LFO to CV max val	0 - 127	
0Bh	LFO to CV reset val	0 - 127	
0Ch	coarse tune / transpose	232 > 0 > 24	{ 2 }
0Dh	fine tune val	129 > 0 > 127	129>0 = -ve
0Eh	scale val	129 > 0 > 127	129>0 = -ve
0Fh	v/o or hzv or 1.2v select	0 - 2	
10h	gate select	0 - 7	5 modes used
14h	Aux1 Cont #	239 > 0 > 119	{ 6 }
15h	Aux1 min val	0 - 127	
16h	Aux1 max val	0 - 127	
17h	Aux1 reset val	0 - 127	
18h	Key scale to Aux	0 - 127	
19h	LFO to Aux1 cont #	252 - 0 - 119	{ 4 }
1Ah	LFO to Aux1 min val	0 - 127	
1Bh	LFO to Aux1 max val	0 - 127	
1Ch	LFO to Aux1 reset value	0 - 127	
1Eh	Lfo speed	0 - 127	
1Fh	Lfo waveshape	0 - 8	{ 7 }
20h	Lfo MIDI sync	0 - 96	{ 8 }
21h	Lfo sync start point	0 - 255	
22h	Key-on resets LFO wave	0 - 1	{ 10 }
28h	cont = start	0 - 1	{ 11 }
29h	clock divide	0 - 24	{ 9 }
2Ah	thru / sync 24 / aux 2+3	0 - 2	0=thru / 1= sy24 / 2= aux 2+3
2Bh	Aux 2 controller #	251 > 0 > 119	{ 6 }
2Ch	Aux 2 controller #	251 > 0 > 119	{ 6 }
2Dh	Sysex Device Number	0 - 15	{ 1 } & { 12 }

{ NOTES }

{ 1 } Data 0 - 15 corresponds to MIDI channels or device numbers 1 - 16
{ 2 } 232 = -24 semitones 0 = no transpose 24 = + 24 semitones - 25 to 231 are invalid
{ 3 } 253=pmt off 254=pmt on 255=prg chng & 0 - 119
{ 4 } 252=ignore 253=pitchbend 254=velocity 255=aftertouch & 0 - 119
{ 5 } 0= -64 64=0 127=+63
{ 6 } 251=trig 252=ignore 253=p.bend 254=vel   255=aft & 0 - 119
{ 7 } 0= triangle 1= saw up 2= saw down 3= 10% pulse etc. as display
{ 8 } 1 - 96 corresponds to sync divide 1 to 96 and 0 = off
{ 9 } 0 - 23 corresponds to arpeggio divide 1 to 24
{ 10 } 0=off 1=on
{ 11 } 0 = continue ignored   1 = continue=start
{ 12 } WARNING – any messages after this will need to use the new device number

All sysex addresses and data are range checked and out-of-range values
will either be ignored or adjusted to give a valid response.

SPECIFICATIONS

Power Input	9V DC (regulated or unregulated) – never apply more than 12V (never use an **un**regulated supply greater than 9V as unregulated supplies typically give a higher output than shown)
Power	150mA, 2.1mm plug (centre positive)
MIDI	In, Thru (selectable)
Analogue outputs	CV (V/oct or Hz/V) Gate (Gate or S-trig) Aux
Digital outputs	Pins 1 & 3 of Thru socket (if selected) off=0 volts on=5 volts
Weight	450g
Dimensions	130 x 97 x 40 mm
D to A conversion	2 x 16 bit high quality / low drift DAC

Non-volatile memory EEPROM (no back-up battery required)

WARRANTY

The *PRO-SOLO mkII* comes with a 12 month (from purchase date) back to base warranty, (i.e. customer must arrange and pay for carriage to and from Kenton Electronics).

KENTON

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