



## Operation Manual – April 2012

If you are reading this then your **Sync-Shift Mk III** should be safe in your hands!

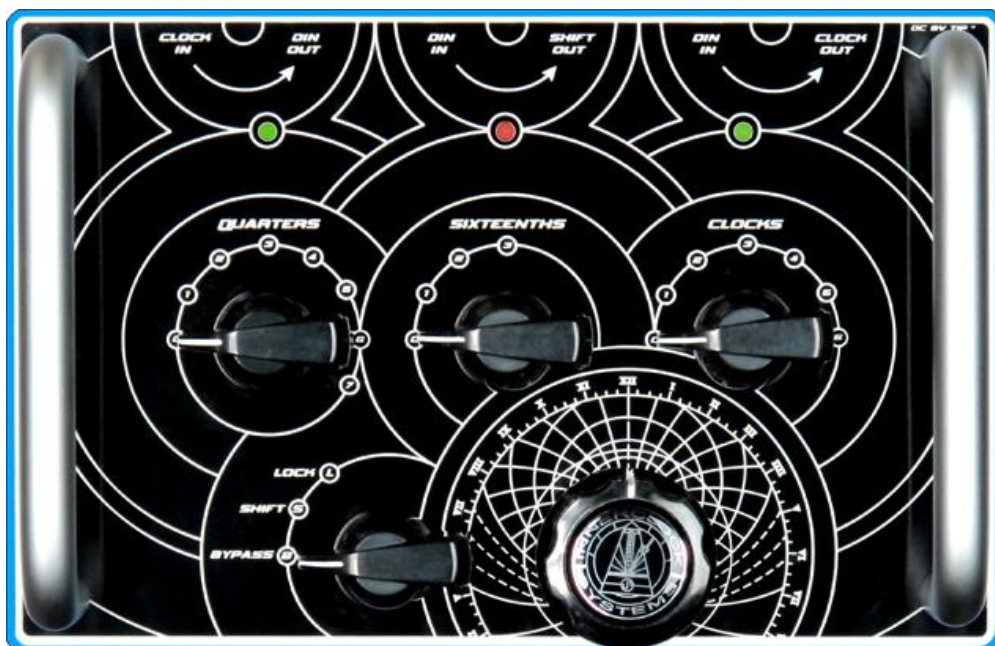
It will run off a standard 9 Volt DC Negative Tip Power Supply. 500mA is plenty.

Plug it in and the **Sync-Shift Mk III** is ready to go.

Think of the **Sync-Shift Mk III** as three totally separate units inside one box. They work independently of each other and you can connect them together depending on your setup as required.

***It is important to understand that with all Midi Clock/Din-Sync devices and using your Sync-Shift MKIII you should always STOP your Master Sync device (or software DAW application) before making physical connections otherwise the tempo-sync will be all over the place. It won't damage the unit but it will mess with your head!***

The only 'running state' real-time control on the **Sync-Shift Mk III** is the large free turning Rotary Shift Control. The other stepped rotary switches [Quarters, Sixteenths and Individual Clocks] have no effect while the unit is running. These must be set while the Tempo Master is stopped and then this combined rhythmic offset value is memorized when you start your Tempo Master device again.



## The Midi Clock to Din-Sync Converter

This feature is accessed by the Left Hand Side Pair of Connectors at the rear.

*Isolated Setup Example: TB-303 Slave-Synced to MPC-3000 Midi Clock*

Patched in this way the TB-303/Din-Sync Slave will Start/Stop and follow the Master Tempo of the MPC-3000/Midi Clock Master but with no Real-Time Shifting or Rhythmic Offset possibilities.

**NB:** The Midi Clock Input only accepts Midi Clock **NOT** Din-Sync and the Din-Sync Output only generates Din-Sync and **NOT** Midi Clock



## The Sync-Shifting Engine

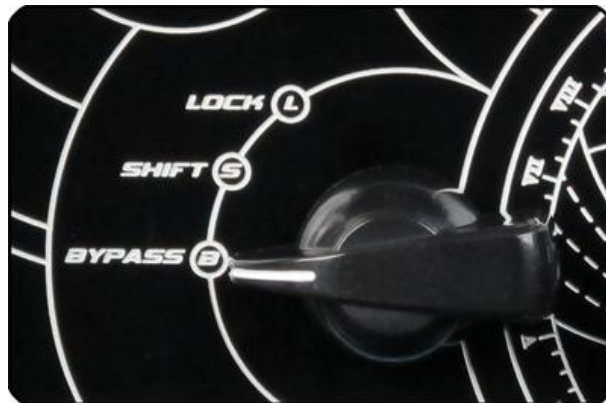
This feature is accessed by the Centre Pair of Connectors at the rear.

*Isolated Setup Example: TB-303/Din-Sync Device Slave-Synced to TR-808/Din-Sync Master*

Patched this way the TB-303/Din-Sync Slave will Start/Stop and follow the Master Tempo of the TR-808/Din-Sync Master as you would expect but with a few twists depending on the position of the rotary switches.



## The Mode Switch: [Bypass], [Shift] and [Lock] and [Rotary Offset Switches]



### Bypass Mode

Straight through synchronisation with no Slave-Start Offset or Real-Time Shift control. This is effectively like running a sync lead directly between your Tempo-Sync Master and Tempo-Sync Slave devices.

### Shift Mode

The three top rotary switches set the fundamental Slave-Start Offset value. Left switch is for **Quarter Notes**, centre switch is for **Sixteenths** and the right is for **Individual Clocks**. Midi Clock and Din-Sync runs at 24 PPQ (pulses – or clocks per quarter note) so a combination of switch settings allows just over two whole bars of Slave-Start delay. Try out the Quarter and Sixteenths first with the Clock switch left at zero to get a feel for it with the Rotary Shift Knob in the centre position. You'll notice the Slave might be pushed a little too early or late for you to get a nice sweet spot with the rotary shift knob. Stop the Master. Now add or take away a single Sixteenth and remove or take away five individual Clocks (there are six clocks in a perfect rhythmic sixteenth interval) and that allows you keep the same overall offset but nudge the sweet spot by a single clock pulse.



## Lock Mode

Once you are happy with your sync sweet spot, you can flip the **Mode Switch** to **[Lock]** and the Rotary Shift knob will be bypassed but the offset and shift amount is stored in memory no matter how many times you stop and restart the Master or change the controls on the **Sync-Shift MKIII**.

**NB:** The centre Din-Sync Input only accepts Din-Sync and **NOT** Midi Clock. The centre Shifted Output only generates Din-Sync and **NOT** Midi Clock.

## The Din-Sync to Midi Clock Converter

This is accessed by the Right Hand Side Pair of Connectors at the rear.

*Isolated Setup Example: MPC-3000/Midi Clock Device Slave Synced to a TR-808/Din-Sync Slave*



Patched in this way the MPC-3000/Midi Clock Slave will Start/Stop and follow the Master Tempo of the Roland TR-808/Din-Sync Master but with no Shifting or Rhythmic Offset possibilities.

**NB:** The Din-Sync Input only accepts Din-Sync and **NOT** Midi Clock. The Midi Clock Output only generates Midi Clock and **NOT** Din-Sync.

## Advanced Use

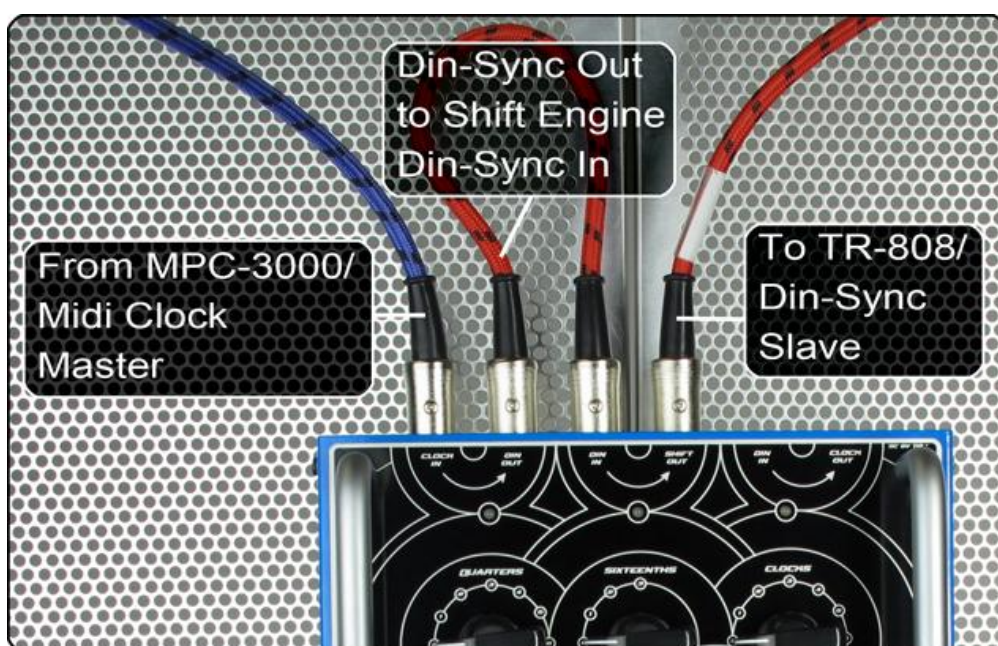
Now you have a clear picture of the three individual components that make up the **Sync-Shift MKIII**. They can each be used independently as outlined but connecting them together allows for more scope.

### MPC-3000 Master Midi Clock driving a time-corrected TR-808

You can use the Midi Clock to Din-Sync conversion engine by itself and the TR-808/Din-Sync Slave will start/stop and Tempo-Slave accordingly. One of the prime motivations behind the creation of the **Sync-Shift MKIII** was sync conversion lag. Check the Innerclock Systems website for details but in all conversions from Digital (Midi) to Analogue (Voltage) there is a processing delay. Without some form of compensation the TR-808/Din-Sync Slave will always run a little behind the Midi Clock Master. You can't delay the Master obviously but you can delay the Slave and line it back up again.

### Connecting it all up

- (A) MPC-3000/Midi Clock Master Midi Clock Out into Midi Clock Input of the **Sync-Shift Mk III**.
- (B) Converted Din-Sync Output of the **Sync-Shift Mk III** back into the Din-Sync Input of the **Shift Engine**.
- (C) Shifted Din-Sync Output of the **Sync-Shift Mk III** into the Din-Sync Input of the TR-808/Din-Sync Slave.



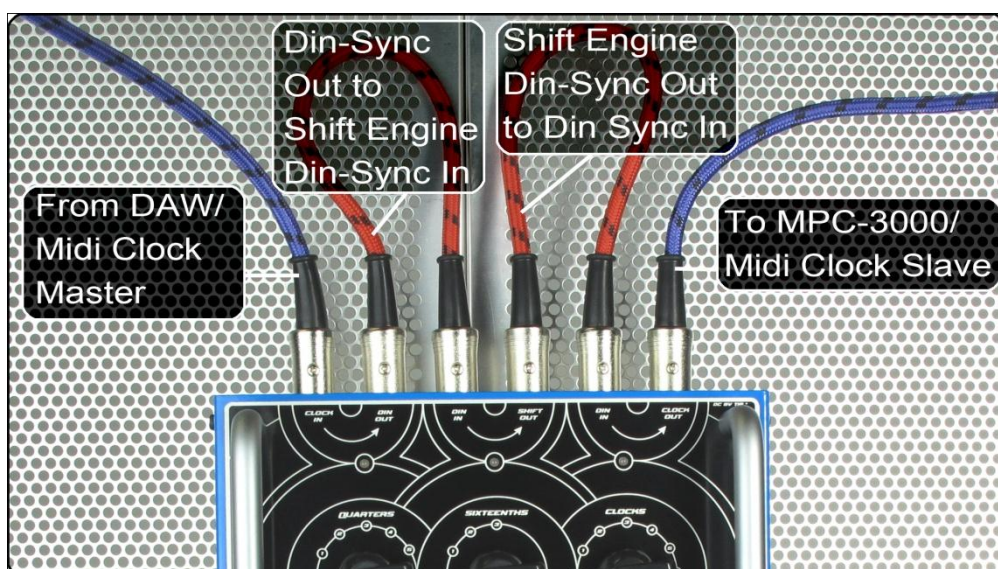
Now set the Offset Switches as **[Quarters =3]**, **[Sixteenths = 3]** and **[Clocks = 5]** If you do the rhythmic maths you'll work out that this is precisely one clock under a whole bar length. Next, start your Tempo-Sync Master. The MPC-3000/Midi Clock Master starts immediately and the TR-808/Din-Sync Slave waits close to a full bar. Now use the Rotary Shift control to 'push-pull' the Slave in Real-Time against the MPC-3000/ Midi Clock Master until they both lock tight.

## Ableton Master Midi Clock driving a time-corrected MPC-3000

A horror we all have to live with these days thanks to the wonderful world of digital audio is Audio Interface/CPU latency in our computer DAWs. Because the **Sync-Shift MKIII** has both dedicated Midi Clock to Din-Sync and Din-Sync to Midi-Clock converters internally you can use it to time-correct latency issues between your DAW Midi Clock software application and any other Midi Clock enabled Slave hardware (or software) sequencer.

### Connections

- (A) Ableton Live/Midi Clock Master Midi Clock Out into Midi Clock Input of the **Sync-Shift Mk III**.
- (B) Converted Din-Sync Output of **Sync-Shift Mk III** back into the Din-Sync Input of the Shift Engine.
- (C) Shifted Din-Sync Output of the **Sync-Shift Mk III** back into the Din-Sync Input of the **Sync-Shift Mk III**.
- (D) Converted and Shifted Midi Clock Output of the **Sync-Shift Mk III** into your MPC-3000/Midi Clock Slave.



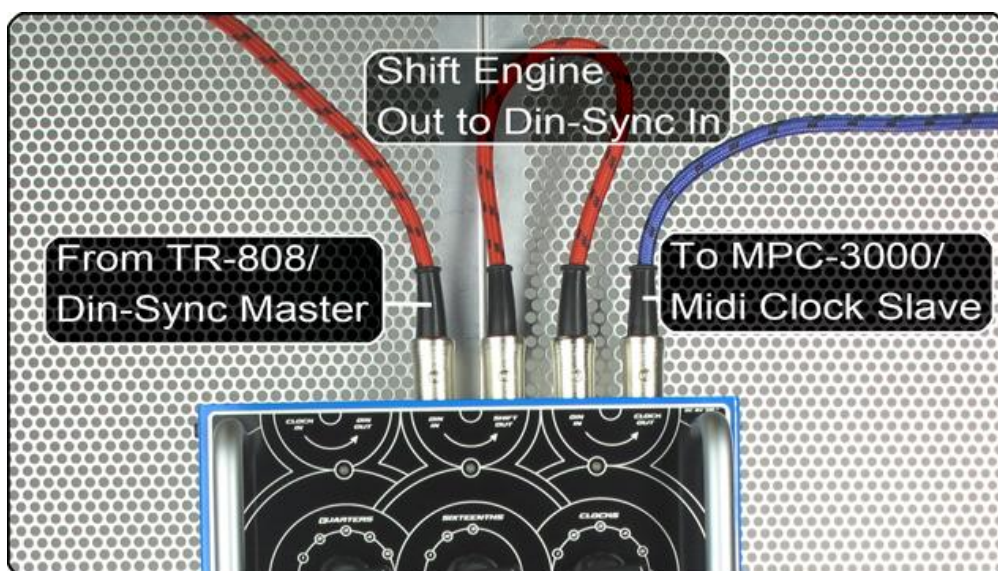
Set the Offset Switches as **[Quarters = 3]**, **[Sixteenths = 3]** and **[Clocks = 5]**. As before this is precisely one clock under a whole bar in length. Make sure your Ableton/DAW is set to transmit Midi Clock from the connected Midi Port/Interface and your MPC-3000 is set to Slave-Sync to Midi Clock. Now press start on the DAW/Ableton. The DAW starts immediately and the MPC-3000 waits close to a full bar. As before use the Rotary Shift control to 'push-pull' the MPC-3000 Slave in real-time against the DAW/Ableton until they lock tight.

## TR-808 Din-Sync Master driving a time-corrected MPC-3000

There are some instances where you might like to make a Midi Clock device Slave to a vintage Din-Sync unit but also move things around a bit for syncopation or timing precision. You might have an all analogue/Din-Sync rig that runs super tight and rather than Slave your system to a loose Midi Clock from a rough DAW Midi Clock Port or a jittery modern hardware device you would rather keep your Din-Sync hardware device as Master and force the Midi Clock hardware or software to Slave to Din-Sync.

### Connecting it up

- TR-808/Din-Sync Master Din-Sync Out into Din-Sync Shift Engine Input of the **Sync-Shift Mk III**.
- Shifted Din-Sync Output of the **Sync-Shift Mk III** back into the Din-Sync Input of the **Sync-Shift Mk III**.
- Converted Midi Clock Output of the **Sync-Shift Mk III** into your MPC-3000/Midi Clock Slave



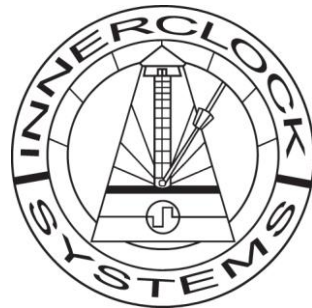
Offset Switches as **[Quarters = 3]**, **[Sixteenths = 3]** and **[Clocks = 5]**. Pressing start on the TR-808/Din-Sync Master starts it running immediately and the MPC-3000/Midi Clock Slave waits close to a full bar. Again, use the Rotary Shift control to 'push-pull' the MPC-3000/Midi Clock Slave in real-time against the TR-808/Din-Sync Slave until they lock tight.

## Syncopation

All the examples so far have used the start-offset switches to delay the Slave devices by a full bar so you can synchronize things properly but retain the original rhythmic placement of two or more devices or software applications. If you've got this far you will have gathered that the **Sync-Shift MKIII** also provides you with the ability to mess with the Slave-Start timing in rhythmically useful and creative ways.

If you program a pattern in Sixteenths try any combination of **[Quarter]** and **[Sixteenth]** switch settings for some interesting polyrhythmic results. Try having Tempo Sync Master and Slave devices programmed in 8th note patterns and offset them by odd numbered Sixteenths with the **Sync-Shift MKIII** and use the Rotary Shift control to add 'Hardware Bounce' to the groove.

Enjoy!



**Design:** David Lackey and Warren McAlister for **Innerclock Systems Pty Ltd**

**Conceived, Manufactured and Tested in Australia.**

All text and images copyright **Innerclock Systems Pty Ltd** 2012.

No text or image in this document may be reproduced in part or in full without prior written consent.

Respect to the original Friend-Chip GmbH Berlin team, Garfield Electronics USA and Roger Nichols (RIP) for blazing the sync-trail back in the day.

**[www.innerclocksystems.com](http://www.innerclocksystems.com)**