Sending Timecode from Reaper to Titan on the same PC

This is an example of how to use Reaper - a much more powerful DAW (digital audio workstation) than Winamp - to send timecode to Titan, assuming both are installed on the same PC.

Prerequisites

- 1. Titan PC-Suite, from v12 on (AvoKey required)
- 2. loopMIDI (see Software List, to route the MIDI signal from one program to another
- 3. Reaper (see Software List)

Make it run

1. loopMIDI

This needs to be started (usually: automatically when Windows starts). By default it provides a virtual MIDI port named loopMIDI Port:

🖲 loopMIDI		—
Konfiguration Erweitert Über		
Meine Loopback MIDI-Ports		
Name	Gesamtdaten	Durchsatz / Sek.
loopMIDI Port	0	0 Byte
+ - Neuer Port-Name: loc	pMIDI Port 1	

2. Titan PC Suite

In order to initially watch the timecode open a timecode workspace window (e.g. Timecode 1) and select MIDI as timecode source.

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3. Reaper

Launch Reaper. Load a track if you want (not required for this to function). However here are the steps to configure Reaper correctly:

3.1 Enable MIDI Output

In the Options menu select Preferences - this opens the preferences window. Find MIDI devices in the Audio section. This should list loopMIDI Port as MIDI output:

REAPER Preferences	;			₽ ×
Keyboard/Multitouch Project	*	MIDI hardware settings MIDI inputs to make available (selectable as track	inputs and/or learnab	ole or action-bindable):
Track/Send Defaults		Device	Mode	ID
Media Item Defaults Audio		loopMIDI Port	Enabled+Control	0
Device MIDI Devices Buffering				
Mute/Solo Plavback	Ξ			
Seeking Recording		MIDI outputs to make available (selectable as trac	:k outputs):	Add joystick MIDI
Rendering		Device	Mode	ID
Appearance Media		loop MIDI Port	<disabled></disabled>	1
Peaks/Waveforms Fades/Crossfades Track Control Panels Editing Behavior Envelope Display		Microsoft GS Wavetable Synth [use cautiously]	<disabled></disabled>	U
Automation		Restrict MIDI hardware output to one thread		Reset all MIDI devices
Mouse Modifiers	-	Reset by: 📝 All-notes-off 📝 Pitch/sustain	Reset on: 📝 Play	Stop/stopped seek
Find			ОК	Cancel Apply

Right-click on loopMIDI Port output and either enable output and Send clock... from the menu...

REAPER Preferences	;				푸(×	
General Paths		MIDI h MIDI ir	ardware settings nputs to make available (selectable as track i	inputs and/or l	leamable or action-bindable):		
Keyboard/Multitouch		Devi	ce	Mode	ID		
Project		loop	MIDI Port	Enabled (Co	retrol 0	_	
Track/Send Defaults		loopi	MIDI FOR	Enabled+Col	uluoi u		
Media Item Defaults							
Audio							
Device	=						
MIDI Devices							
Buffering							
Mute/Solo						5	
Playback		MIDI o	utputs to make available (selectable as track	coutputs):	Add joystick MIDI.		
Seeking			*		ID		
Recording		Devi	ce	Mode	ID		
Loop Recording		loop	MIDI Port	Enabled+Clo	ock 1		
Kendering			Configure output		0		
Appearance			5 1				
Peaks Mayeforms			Output ID	+			
Fades (Crossfades			Forget device				
Track Control Panels							
Editing Behavior			Enable output				
Envelope Display		1	Send clock to output		Reset all MIDI device	s	
Automation	-	•			Play Stop/stopped see	k	
			Do not send SPP to output				
Find Find Find	le the l and s	MI el	Low latency output mode (low precisio	OK Cancel Apply			

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... or select Configure output... and make the settings there:

🕥 REAPER Pref	erences					푸 🛛
🕥 Configure N	/IDI Out	put	X			
Deuten eren i				selectable as track i	nputs and/or learnat	ble or action-bindable):
Device name:	юормир	Port			Mode	ID
Alias name:	loopMID	l Port			Enabled+Control	0
📝 Enable outpu	ut to this	devic	e			
Send clock t	to this de	vice	No SPP/continue			
Open device	e in low la	tency	//low precision mode			
Offset output to	this devi	ce by	: 0.00 ms			
			OK Cancel			
			Cancer	(selectable as track	coutputs):	Add joystick MIDI
Recording			Device		Mode	ID
Loop Recordin	ng		loopMIDI Port		Enabled+Clock	1
Rendering			Microsoft GS Wavetable S	ynth [use cautiously]	<disabled></disabled>	0
Appearance						
Peaks/Wavef	oms					
Fades/Crossfa	ades					
Track Control	Panels					
Editing Behavior	r		Restrict MIDI hardware	output to one thread		Reset all MIDI devices
Envelope Disp	olay		Reset by: 🔽 All-potes-off	Pitch/sustain	Reset on: V Play	Stop/stopped seek
Automation		Ψ.	Annotes of	- Fitterin adataint	ride of the filey	
Find	Enable name	e the I and s	MIDI Output devices you wish to electing Enable Output.	use by right-clicking on th	e Device OK	Cancel Apply

Confirm the settings with 0K to close the preferences window.

3.2 Insert Timecode Generator

Rewind the timeline to 0:00:00 (simply press <Pos 1>). From the Insert menu select SMPTE LTC/MTC Timecode Generator. This inserts this generator as new track.

oje	ct] - R	EAPER v5.	973/x64	- EVALUA	TION LICE	NSE	
w	Inse	rt Item	Track	Options	Actions	Help	[Insert timecode generator]
		Media file Virtual ins New MID New subp Empty ite SMPTE L1	e strumen I item project m TC/MTC	t on new t Timecod	rack e Generato	r	EINFG
		Click sou	rce				45
		Marker					M
		Marker (p	rompt f	or name)			Shift+M
		Region (f	rom tim	e selectior	1)		Shift+R
		Tempo/ti	me sign	ature cha	nge marke	r	Shift+C
		Measure Measure	from tin from tin	ne selectio ne selectio	n (detect t n (new tim	empo) ie signa	Alt+Shift+C ture)
		Track Multiple f Track from	racks m temp	late			Ctrl+T
		Empty sp	ace at ti	me selecti	on	_	

3.3 Adjust Timecode Generator

Right-click on the new timecode track, and from the context menu select Item properties. This opens the Media Item Properties window:

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Media Item Properties: Timecode Generator
Position: 0:00.000 © time Fade in: 0:00.000 Length: 0:10.000 © HMSF Fade out: 0:00.000
Snap offset: 0:00.000 Curve: 0.00
Item timebase: Track/project default timebase Vice Mute
Item mix behavior: Project default item mix behavior Lock No autofades
Active take: 1: Timecode Generator Play all takes
Take properties
Take name: Timecode Generator
Start in source: 0:00.000 Pitch adjust (semitones): 0.000000
Playback rate: 1.000000
Volume/pan: 0.00dB center Normalize
Channel mode: Normal Invert phase Take envelopes
Take pitch shift/time stretch mode
Project default
Stretch markers: fade size: 2.5 ms Mode: Project default
Take media source
1ch 24:00:00.000
Section: 0:00.000 Length: 0:10.000 Fade: 0.0 ms
Reverse Properties Choose new file Rename file
Nudge/Set Take FX OK Cancel Apply

If you want then you can change length, position and other details. In any case you need to make sure it is MTC (MIDI timecode): click on the Properties button (at the bottom). In the new little window set the properties to Send MIDI (MTC):

Media Ite	m Properties: Timecode Generator 🛛 🐺 🖾
Position: Length:	0:00.000 © time Fade in: 0:00.000 0:10.000 © HMSF Curve: 0.00 Fade out: 0:00.000 0
Snap offs	et: 0:00.000 Curve: 0.00
Item time	base: Track/project default timebase Loop source Mute
ltem mix b	ehavior: Project default item mix behavior
Active	SMPTE Generator Properties
Take	Send audio (LTC) Send MIDI (MTC)
Take	Frame rate: 30.00
Start i	Start time: 0:00:00:00 (hh:mm:ss.ff)
Playba	User value 1 (0-255): 0
Volum	User value 2 (0-255): 0 alize
Chanr	User value 3 (0-255): 0
- Take	
Proje	OK Cancel Apply
Stretch	markers: fade size: 2.5 ms Mode: Project default
- Take m	edia source
1ch 2	24:00:00.000
Se _	ection: 0:00.000 Length: 0:10.000 Fade: 0.0 ms
R	everse Properties Choose new file Rename file
Nudge/	/Set OK Cancel Apply

Confirm/close both windows by clicking 0K.

3.4 Route the MTC signal

Click on the routing button in the track controls (left to the timecode track):

0		M S FX ()	
🎯 📥 trim	N 🕤 🔁 🕅 Left 👋	Sends, Receives, an	d Har

This opens the routing window for this track:

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Routing for track 1 ""					
Master send	Parent ch	annels: 1-2	•	- MIDI Hardware Output -	
+0.00 dB	Track ch	iannels: 2	Ţ	<no output=""></no>	-
		Π	-	Send to original channels	-
Pan: center	Width: 100%	Ť		- Receives -	
	- Sends -			Add new receive	-
Add new send			•		
Routing for track 1 "" ✓ Master send Parent channels: +0.00 dB Track channels: 2 • Pan: center Width: Pan: center Width: 100% - Sends - • Add new send ▼ - Audio Hardware Outputs - Add new hardware output ▼					
Add new hardware output	ut		•		

Under MIDI Hardware Output (top-right) select loop MIDI Port:

Routing for track 1 ""			
Master send	Parent	channels: 1-2 🔻	- MIDI Hardware Output -
+0.00 dB	Track	channels: 2 💌	loopMIDI Port
		0	loop MIDI Port
Pan: center	Width: 100%		- Receives -
	- Sends -		Add new receive
Add new send		•	
- Audio	o Hardware Output	ts -	
Add new hardware output	ut	•]

Close the routing window.

4. Try it out

Essentially this should work straight away: as soon as you hit Play in Reaper, the timecode value in Titan starts to run. It is advisable to change the time units in Reaper: right-click on the timeline or the displayed time, and from the context menu select Hours:Minutes:Seconds:Frames.

This also works together with Reaper being controlled by Titan via MMC, like described in Controlling Reaper from Titan on the same PC

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You can now use this as timecode source to sync cuelists to music coming from Reaper.

MMC Goto

Start

19

MMC Stop

MMC Pause

I noticed a gap between the timestamps in Reaper and in Titan. This seems to be due to both, Reaper, as well as Titan/USB Expert, and needs to be investigated further.

](#][⊠](×

Playbacks

5. How to debug

Macros

MMC Play

Effect Editor

DMX Settings

Synergy

If things do not work as expected then there are some tools which help finding the fault:

5.1 loopMIDI

loopMIDI shows the number of transmitted data. This number increases with every command, note or message. With timecode, this number increases continuously and rather fast.

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loopMIDI	tart Übar		— X—
Meine Loopback M	IDI-Ports		
Name		C.ournal ste	n Durchsatz / Sek.
loopMIDI Port		1874	0 Byte
			•
+••	Neuer Port-Name:	IOODMIDI Port 1	

5.2 USB Expert Console

Open the USB Expert Console. This must show loopMIDI Port 1 as connected panel (top-left). Select the MIDI tab top-right, click Watch MIDI, in the MIDI watcher window select MIDI Input and Raw MIDI. Now, as you send a command, it is shown in the MIDI watcher, with continuously incoming data like this:

USB Exp	ert Console (5.7.71.	5																							8
File To	ols Remo	te	Help																							
🕴 🥐 Reset	💥 Suspend							1	Item	Event	s						Ir	fo	Se	rvice	Te	est	t Bench MIDI Timecode			
Connected	Panels								- Filte	er ede			Sho	ow / Vecto	Hide			oop	MI	DI P	ort	1				
🛛 😨 🚱 loop l	MIDI Port 1									aders				Time	Stam	p		Midi	Wato	her						
										Mbool	<u> </u>			Rope	00			Allow	/S VOL	u to vi	ew t	the	e raw MIDI data on the		Watch MID	
		MID	Wat	tcher	- loc	opMl	IDI P	vt 1													X					_
		÷ M	IDI In	nput			• R	aw N	٨IDI			-											Command	Data 1	Data 2	
		F8	00	00	F1	40	00	F1	50	00	F8	00	00	F1	60	00	F1	76	00	F1	*		Empty -	0	0	
		02	00 F1	F8	00	00	F1	11	00 F1	F1	24	00 F1	F8	00	00	F1	30	00 F1	F1	40			Linpty •	0		
		F1	11	00	F1	24	00	F8	00	00	F1	30	00	F1	40	00	F8	00	00	F1			Send			
		50	00	F1	60	00	F1	76	00	F8	00	00	F1	06	00	F1	11	00	F8	00						
		00 F1	F1 76	24	00 F8	F1 00	30	00 F1	F1 08	40	00 F1	F8	00	00 F8	F1	50	00 F1	F1 24	60	00 F1						
Chathan Mana		30	00	F8	00	00	F1	40	00	F1	50	00	F1	60	00	F8	00	00	F1	76						
- Status Mess	sages	00	F1	AO	00	F1	11	00	F8	00	00	F1	24	00	F1	30	00	F8	00	00						
T IILET.		00	40	00 F1	11	00	00 F1	24	00	00 F1	30	00	00 F8	00	00	00 F1	40	00	00 F1	18 50						
		00	F8	00	00	F1	60	00	F1	76	00	F8	00	00	F1	00	00	F1	10	00						
		F1	25	00	F8	00	00	F1	30	00	F1	40	00	F1	50	00	F8	00	00	F1						
		00	F1	30	00	F1	40	00	F8	00	02	F1	50	00	F1	60	20	F1	76	00						
		F8	00	00	F1	04	00	F1	10	00	F8	00	00	F1	25	00	F1	30	00	F8						
		00	00	F1	40	00	F1	50	00	F1	60	00	F8	00	00	F1	76	00	F1	06						
		F1	50	00	F8	00	00	F1	60	25	F1	76	00	F1	08	00	F8	00	00	50 F1						
		10	00	F1	25	00	F8	00	00	F1	30	00	F1	40	00	F1	50	00	F8	00	Ξ					
		00	F1	60	00	F1	76	00	F8	00	00	F1	0A	00	F1	10					Ŧ					
		Clear	_					ז ר				Cle	ar													
	CD i	- Crodi									_	CIE														
ACW 0:	SB service co	nnect	ea																							:

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Additionally, on the Timecode tab (top-right), you should see the real timecode values running:

n 5 2 2 2 5 5 7 7		6.1.00 0.10.000	¥1.00	7.1.00 7 6-11.000 0	3.00	8.1.00 0:14.000
	01	de Generator				
						i i i
						0:00:00:00
0:00:11:01 [P	aused] 120	4/4 Rate:	1.0		0.00100100	0.00100100
USB Expert Console 6.7.71.5 File Tools Remote Help						088
Creweted Panels	Rem Events Fiber	Show / Hide	Info Service Te IcoopMIDI Port	at Bench MIDI Te 1	necode	
	Viheels Keys Nove Fader	Pleason Linit 500	Out Timecode	00:00:	11:04	30
			Timecode Control	00:00:	00:00	-
			Start	Stop	,	Reset
Status Hennegen			Out Timecode Trgg X Delete 🕨 Go	83		
-raz. (A			Legend	Stat Time	Stop Time	Loop

5.3 MIDI-OX

Install and launch MIDI-OX (see Software List. From the Options menu select MIDI Devices. Make sure loopMIDI Port is listed as MIDI Input but isn't mapped to any output (yes, you can create a feedback loop, and yes, you do not want to do this...)

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MIDI-OX - [Monitor - Input]	
File View Actions Options Window	Help _ & ×
🎽 🎽 🛃 🎽 🎬 🗰 🔍 🎟 🐨 🖙 🖌 🖢	🏽 📖 🏴 🔤 🎆 💚 🔩 🛞 🚳 🛢 🗙
TIMESTAMP IN PORT STATUS DATA1 DATA2	CHAN NOTE EVENT
MIDI Devices	83
Presets:	Cancel
MIDI Inputs:	Port Mapping:
1) IoopMIDI Port	
MIDI Uutputs:	Port Map Ubjects:
2) loopMIDI Port	Sustem
3) MIDI Mapper	IoopMIDI Port
	MIDI-0X Events
	deg _MOXSYSMAP1.oxm
🖉 és deur a Varalle, a Marala Jura de La Orden de La deir	
Automatically attach inputs to Uutputs durin	ig selection.

From the View menu select Input Monitor.... In this window, all incoming MIDI data are shown. You will see the continuous stream of MTC Quarter Freame messages:

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🖗 MID	I-OX -	[Mo	onitor	- Input]					
Eil	e <u>V</u> ie	ew	Actio	ns <u>O</u> pti	ions <u>W</u>	indow	<u>H</u> elp		_ 8 ×
🞽 🖥	\$ 🔁	Ĩ	í 📷	• 🎟	· 🙃	•		MB (🔤 🎹 🤎 44 😵 🚳 🧔 🗙
TIMES	TAMP	IN	PORT	STATUS	DATA1	DATA2	2 CHAN	NOTE	E EVENT
00007	6D7	1		F8					Timing Clock
00007	6DB	1		F1	30				MTC Quarter Frame
00007	6E4	1		F1	40				MTC Quarter Frame
00007	6EA	1		F8					Timing Clock
00007	6EA	1		F1	50				MTC Quarter Frame
00007	6F3	1		F1	60				MTC Quarter Frame
00007	6FB	1		F1	76				MTC Quarter Frame
00007	6FC	1		F8					Timing Clock
00007	701	1		F1	02				MTC Quarter Frame
00007	709	1		F1	10				MTC Quarter Frame
00007	711	1		F8					Timing Clock
00007	711	1		F1	25				MTC Quarter Frame
00007	71C	1		F1	30				MTC Quarter Frame
00007	724	1		F1	40				MTC Quarter Frame
00007	728	1		F8					Timing Clock
00007	72C	1		F1	50				MTC Quarter Frame
00007	734	1		F1	60				MTC Quarter Frame
00007	73D	1		F8					Timing Clock
00007	73D	1		F1	76				MTC Quarter Frame
00007	744	1		F1	04				MTC Ouarter Frame
00007	74C	1		F1	10				MTC Quarter Frame
00007	750	1		F8					Timing Clock
00007	754	1		F1	25				MTC Quarter Frame
00007	75F	1		F1	30				MTC Quarter Frame
									vite and the second sec
No Out	put De	vice					1	Input	t Device REC SYX MAP KYB LOG

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