

TranzPort™ Native Mode Interface Description

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Introduction

The Frontier Design Group's **TranzPort** provides wireless remote control for PC and Mac based Digital Audio Workstation software. The TranzPort consists of a hand-held, battery operated, user-interface device called the **Remote** (Fig. 1), and a small transceiver unit called the **Bridge** that plugs into a USB port of either a Mac or Windows-based PC.

For certain DAW software packages, the TranzPort USB driver provides emulation of industry standard control surfaces, such as HUI and Mackie Control devices. For DAW software packages that allow for the creation of custom control surface plug-ins, the driver provides what we refer to as "Native" mode. The TranzPort driver applet allows the user to select which mode (emulation or Native) the driver operates in.

In Native mode, TranzPort presents itself as a MIDI input/output device, and the driver converts all inputs (buttons, footswitch and data wheel) and all outputs (LEDs and LCD) on the Remote to common MIDI messages. This document describes how to gain access to the TranzPort's controls and display elements using Native mode.



Fig. 1: TranzPort Remote Unit

The TranzPort Remote

The TranzPort Remote is shown in Fig 1 above. The unit has 21 momentary pushbuttons, one ¼” jack for a normally-open footswitch, a continuous-turn data wheel, 6 LEDs and one 2-line by 20-character backlit LCD display. It is powered from 4 AA batteries, accessed via a removable cover on the back of the unit. The footswitch jack is located on the right side of the Remote.

The I/O elements of the Remote can be grouped into 6 major categories. The following sections describe the MIDI implementation for each of the elements within these categories. Note that any LED that is associated with a button shares the MIDI note number with that button; the button activity is reported via the TranzPort MIDI IN device, and the LED is controlled via the TranzPort MIDI OUT device. The TranzPort makes no internal logical connection between a button and the corresponding LED – the application must control the LED directly.

Two special local buttons, by themselves and in combination with the Shift button, Stop button and Data Wheel, trigger built-in TranzPort actions. These are:

- 1) Battery Button – When pressed, the TranzPort displays the current state of the batteries on the LCD for several seconds, then requests an LCD update to restore the contents of the display.
- 2) Shift + Battery Button – Pressing the Battery button while the Shift button is held down causes the Transport Remote to attempt to bind to the Bridge.
- 3) Backlight Button – When pressed, toggles the state of the LCD backlight.
- 4) Backlight Button + Data Wheel – When Backlight is OFF, holding the Backlight button down while turning the Data Wheel adjusts the LCD contrast.
- 5) Backlight Button + Data Wheel – When Backlight is ON, holding the Backlight button down while turning the Data Wheel adjusts the Backlight Brightness.
- 6) Shift + Backlight + Data Wheel – Adjusts the sleep mode delay (1 to 60 minutes).
- 7) Battery + Backlight – Force remote into sleep mode.
- 8) Shift + Stop + Battery – Go into test mode

The local buttons do not produce MIDI messages and are therefore not detectable by the application.

Selecting Native Mode

The TranzPort control panel (manager application) allows the user to select the driver's mode of operation as either an emulation or native mode. Alternatively, the application may force the driver into native mode by sending the following system exclusive message. This ensures that TranzPort will be in the proper mode without requiring any user action other than running the application.

f0 00 01 40 10 01 00 f7 Force the TranzPort driver into native mode

Important: All the other messages defined in this document are only valid when the TranzPort driver is set to native mode.

Device Inquiry

When in native mode, the TranzPort will respond to a MIDI Device Inquiry message.






f0 7e 00 06 01 f7 Inquiry sent to TranzPort

The TranzPort then responds with the following message:





f0 7e 00 06 02 00 01 40 00 00 01 00 30 31 30 30 f7

In this response, "00 01 40" is the Frontier Design Group manufacturer's system exclusive ID code. The next bytes, "00 00 01 00," represent TranzPort. The final four bytes before the end of sysex give the software revision in ASCII (30 31 30 30 = "v01.00"). This value may change with software updates.

Transport Controls

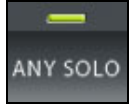
	REW (Rewind)	Button Down: 90 5b 7f	MIDI IN
		Button Up: 90 5b 00	MIDI IN
	FFWD (Fast Forward)	Button Down: 90 5c 7f	MIDI IN
		Button Up: 90 5c 00	MIDI IN
	STOP	Button Down: 90 5d 7f	MIDI IN
		Button Up: 90 5d 00	MIDI IN
	PLAY	Button Down: 90 5e 7f	MIDI IN
		Button Up: 90 5e 00	MIDI IN
	RECORD Button and LED	Button Down: 90 5f 7f	MIDI IN
		Button Up: 90 5f 00	MIDI IN
		LED On: 90 5f 7f	MIDI OUT
		LED Off: 90 5f 00	MIDI OUT

Track Controls

	<TRACK (Previous Track)	Button Down: 90 30 7f	MIDI IN
		Button Up: 90 30 00	MIDI IN
	TRACK> (Next Track)	Button Down: 90 31 7f	MIDI IN
		Button Up: 90 31 00	MIDI IN
	REC (Arm) Button and LED	Button Down: 90 00 7f	MIDI IN
		Button Up: 90 00 00	MIDI IN
		LED On: 90 00 7f	MIDI OUT
		LED Off: 90 00 00	MIDI OUT
	MUTE Button and LED	Button Down: 90 10 7f	MIDI IN
		Button Up: 90 10 00	MIDI IN
		LED On: 90 10 7f	MIDI OUT
		LED Off: 90 10 00	MIDI OUT



SOLO Button and LEDButton Down: 90 08 7f MIDI IN
 Button Up: 90 08 00 MIDI IN
 LED On: 90 08 7f MIDI OUT
 LED Off: 90 08 00 MIDI OUT

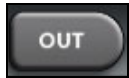


ANY (Any Solo) LED.....LED On: 90 73 7f MIDI OUT
 LED Off: 90 73 00 MIDI OUT

Punch / Loop Controls



IN.....Button Down: 90 57 7f MIDI IN
 Button Up: 90 57 00 MIDI IN



OUT.....Button Down: 90 58 7f MIDI IN
 Button Up: 90 58 00 MIDI IN



PUNCH Button and LEDButton Down: 90 78 7f MIDI IN
 Button Up: 90 78 00 MIDI IN
 LED On: 90 78 7f MIDI OUT
 LED Off: 90 78 00 MIDI OUT



LOOP Button and LEDButton Down: 90 56 7f MIDI IN
 Button Up: 90 56 00 MIDI IN
 LED On: 90 56 7f MIDI OUT
 LED Off: 90 56 00 MIDI OUT

LCD Display



The TranzPort Remote has a 2-line by 20-character backlit LCD display. In addition to the standard ASCII character set, the display has a number of custom characters to support typical DAW functions. The ASCII character implementation is shown in Table 1 below:

		MSB (hex)							
		0	1	2	3	4	5	6	7
L S B	0	▣	-	0	@	P	\	P	
	1	"	I	!	1	A	Q	a	q
	2	.	†	"	2	B	R	b	r
	3	!	□	#	3	C	S	c	s
	4	!"	□	\$	4	D	T	d	t
	5	..	†	%	5	E	U	e	u
	6	..	□	&	6	F	V	f	v
	7	..	▣	'	7	G	W	g	w
	8	▣	*	<	8	H	X	h	x
	9	▣	φ	>	9	I	Y	i	y
	A	┌	ö	*	:	J	Z	j	z
	B	└	ø	+	;	K	[k	<
	C	\	∞	,	<	L	¥	l	!
	D	.	⌘	-	=	M]	m	>
	E	⌘	÷	.	>	N	^	n	→
	F	⌘	■	/	?	0	_	o	←

Table 1: TranzPort Remote LCD Character Set

The display may be written to by using the following MIDI SysEx message format:

```
f0 00 01 40 10 00 yy c1 c2 c3 c4.... cn f7
```

Where: yy is the starting character position, 0 – 0x27
 c1, c2, c3 are the ASCII codes to display
 n can range from 1 to (0x28 – yy)

```
Example: f0 00 01 40 10 00 14 48 65 6c 6c 6f 20 57 6f 72 6c 64 f7
```

Writes “Hello World” to the beginning of the lower line of the LCD display.

The TranzPort driver ensures that the LCD is refreshed with current data whenever necessary, such as when the TranzPort Remote comes out of sleep mode, or after the Remote temporarily uses the LCD for some local function. The application does not need to refresh the LCD display except when data changes.

Because of this behavior, however, the LCD should be cleared, or blanked (filled with character 0x20), when the DAW application is closed. Otherwise, the remote will be refreshed upon awakening with data from an application which is no longer running.

The TranzPort driver also takes care of “throttling” the outgoing LCD display data to what the wireless communications channel can reasonably accommodate. As a result, the application may use the LCD to update the current DAW time marker, or to provide meters, in real time without regard to any actual bandwidth limitations.

Suggested Practices

In Native Mode, the TranzPort is a basic MIDI I/O device, consisting of a number of inputs (Buttons, data wheel and footswitch) and outputs (LEDs and LCD Display), and places no restrictions on how these I/O devices are used by the application. While the TranzPort Remote's buttons and LEDs are labeled with specific DAW functions, the programmer is free to map the TranzPort's I/O to the functions that best suit users of each DAW.

To present a consistent TranzPort user experience across all DAW software, however, we suggest standardizing these mappings whenever possible. This table shows the common usage for some of the buttons, as well as some suggested "shifted" functions.

Button	Function	Shifted Function
REW	Decrement "now" time	Set "now" time to start of project
FFWD	Increment "now" time	Set "now" time to end of project
STOP	Stop	
PLAY	Play	
RECORD	Record	
<TRACK	Go to previous Track/Bus	
TRACK>	Go to next Track/Bus	
REC	Arm current Track for recording	
MUTE	Mute current Track/Bus	
SOLO	Solo current Track/Bus	
IN		
OUT		
PUNCH	Toggle Punch-In mode	
LOOP	Toggle Loop mode	
PREV	Go to previous marker	
ADD	Add marker at "now" time	
NEXT	Go to next marker	
UNDO	Undo	Redo
DATAWHL	Move "now" time	Adjust gain/pan level of Track/Bus
FOOTSW	Punch In	

Similarly, the LCD Display may be utilized in any way the programmer pleases. The sample LCD display at the beginning of this section shows some suggested fields:

- 1) Currently selected Track/Bus Name
- 2) Currently selected Track/Bus Gain setting
- 3) Currently selected Track/Bus Pan setting
- 4) Current "now" time in appropriate time format

The ASCII character set provides special characters for different time formats. A stereo pair of horizontal meters using a single row of the display can also be implemented using the characters 0x00 through 0x07 (plus 0x20, space, for empty areas).

In cases where multiple fields can be modified by the Data Wheel, the arrow characters (0x7e and 0x7f) may be used to indicate the value to be modified.