

4.11. Digital Audio Interface (PCM)

The Digital Audio Interface (PCM) interface allows connectivity with standard audio peripherals. It can be used, for example, to connect an external audio codec.

The programmability of this interface allows addressing a large range of audio peripherals.

The signals used by the Digital Audio Interface are as follows:

- **PCM-SYNC (output):** The frame synchronization signal delivers an 8kHz frequency pulse that synchronizes the frame data in and the frame data out.
- **PCM-CLK (output):** The frame bit clock signal controls data transfer with the audio peripheral.
- **PCM-OUT (output):** The frame "data out" relies on the selected configuration mode.
- **PCM-IN (input):** The frame "data in" relies on the selected configuration mode.

The Digital Audio Interface also features the following:

- IOM-2 compatible device on physical level
- Master mode only with 6 slots by frame, user only on slot 0
- Bit rate single clock mode at 768kHz only
- 16 bits data word MSB first only
- Linear Law only (no compression law)
- Long Frame Synchronization only
- Push-pull configuration on PCM-OUT and PCM-IN

Note that the digital audio interface configuration cannot differ from those specified above.

4.11.1. PCM Waveforms

The following figures describe the PCM Frame and Sampling waveforms.

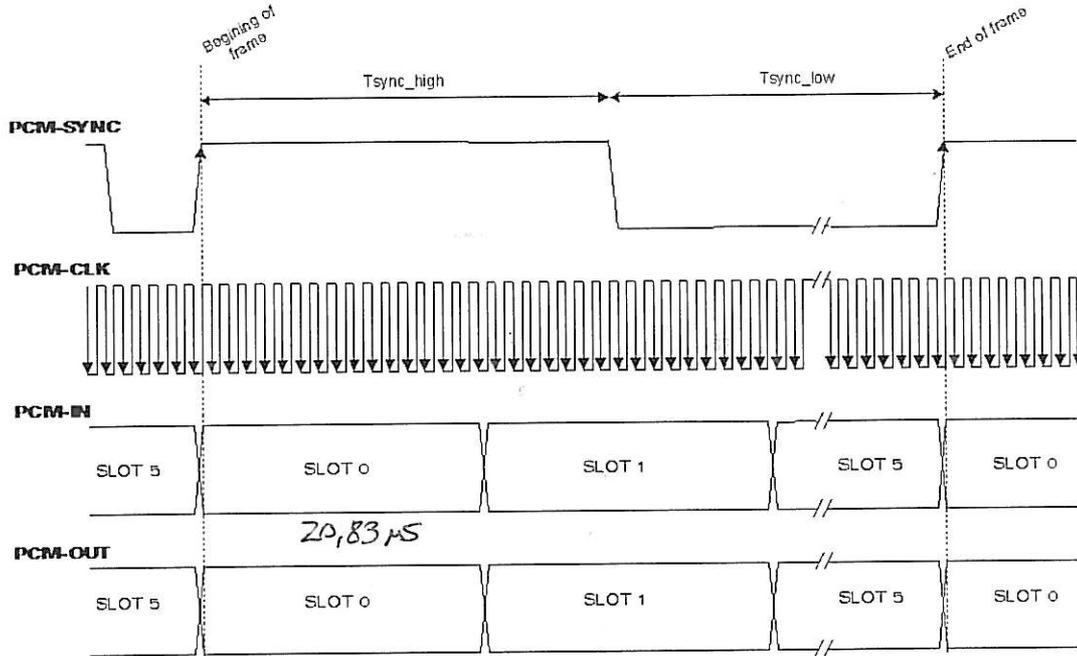


Figure 29. PCM Frame Waveform

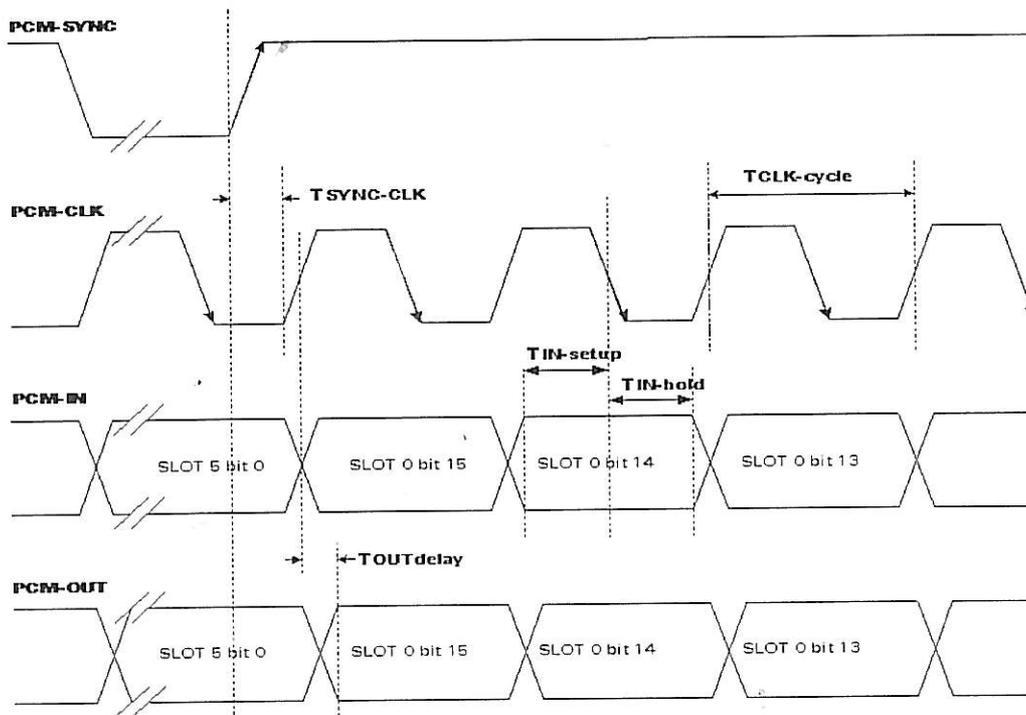


Figure 30. PCM Sampling Waveform

Refer to the following table for the AC characteristics of the digital audio interface.

Table 32: AC Characteristics of the Digital Audio Interface

Signal	Description	Minimum	Typical	Maximum	Unit
Tsync_low + Tsync_high	PCM-SYNC period		125		µs
Tsync_low	PCM-SYNC low time		93		µs
Tsync_high	PCM-SYNC high time		32		µs
TSYNC-CLK	PCM-SYNC to PCM-CLK time		-154		ns
TCLK-cycle	PCM-CLK period		1302		ns
TIN-setup	PCM-IN setup time	50			ns
TIN-hold	PCM-IN hold time	50			ns
TOUT-delay	PCM-OUT delay time			20	ns

4.11.2. Pin Description

Refer to the following table for the pin description of the digital audio (PCM) interface.

Table 33: PCM Interface Pin Description

Pin Number	Signal	I/O	I/O Type*	Reset State	Description
64	PCM-SYNC	O	1V8	Pull-down	Frame synchronization 8kHz
66	PCM-IN*	I	1V8	Pull-up	Data input
67	PCM-CLK	O	1V8	Pull-down	Data clock
65	PCM-OUT	O	1V8	Pull-up	Data output

* When using analog audio interface, the PCM_In signal should be in HZ.

Refer to section 4.2 Electrical Information for Digital I/O for open drain, 2V8 and 1V8 voltage characteristics and reset state definitions.