Difference between Synchronous and Asynchronous bus

Sr. No.	Topic	Synchronous Bus	Asynchronous Bus
1.	**Clock Rate**	A synchronous bus works at a fixed clock rate.	An asynchronous bus is not dependent on a fixed clock rate.
2.	**Clock Synchronization**	Transmitter and receivers both are synchronized with the clock.	Transmitters and receivers are not synchronized with the clock.
3.	**Clock Skew**	Synchronous Bus affected by clock skew.	Asynchronous Bus not affected by clock skew.
4.	**Bus Length**	The length of a synchronous bus could be limited to avoid clock-skewing problems.	The length of the asynchronous bus could not be limited.
5.	**Bus Protocol**	Bus protocol is predetermined in Synchronous Bus.	Bus protocol is not predetermined in Asynchronous Bus.
6.	**Physical Distance**	Synchronous buses cannot handle longer physical distances.	Asynchronous buses can handle longer physical distances.

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7.	**Number of Devices**	Synchronous buses cannot handle a higher number of devices.	Asynchronous buses can handle a higher number of devices.
8.	**Data Transfer**	Data transfer takes place in the block.	Data transfer is character-oriented.
9.	**Data Bits Transmission**	Bits of data are transmitted with the synchronization of the clock.	Bits of data are transmitted at a constant rate.
10.	**Character Rate**	Character is received at a constant Rate.	Character may arrive at any rate at the receiver.
11.	**Speed of Buses**	Synchronous Buses are faster.	Asynchronous Buses comparatively slower.
12.	**Speed of Data Transmission**	Used for high-speed data transmission.	Used for low-speed data transmission.
13.	**Overhead**	No overhead is present to establish a time reference for each transaction.	Overhead is present to establish a time reference for each transaction.
14.	**Finite State**	Require very less logic to	Require more logic to implement Finite State

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	machine	implement Finite State machine.	machine.
15.	**Type of Buses**	Processor-memory buses are typically synchronous because the devices connected to the bus are fast, are small in number, and are located in close proximity.	I/O buses are typically asynchronous because many peripherals need only slow data rates and are physically situated far away.