

5 Physical Layer

5.1 Electrical characteristics

5.1.1 Electrical characteristics overview

5.1.2 ADT compliance points

An ADT compliance point is a defined point in the ADT physical interconnection. At an ADT compliance point, a compliant device shall meet the ADT interoperability specifications. ADT compliance points always occur at separable connectors. Table n lists the ADT compliance points.

Table n. ADT Compliance points

Compliance point	Description
I _t	Initiator port connector; transmit serial port
I _r	Initiator port connector; receive serial port
T _t	Target port connector; transmit serial port
T _r	Target port connector; receive serial port

5.1.3 Sense connection

A Sense connection is a complete uni-directional signal path from one ADI device to a second ADI device. A Sense connection includes:

- a) A voltage generator connected to the output compliance point of one ADI device,
- b) A transmission medium from the output compliance point of one ADI device to the input compliance point of a second ADI device, and
- c) A voltage detector connected to the input compliance point of the second ADI device.

[Does a sense connection require termination?]

[Signalling needs definition.]

5.1.4 Signal connection

A Signal connection is a complete uni-directional signal path from one ADI device to a second ADI device. A Signal connection includes:

- a) A signal generator connected to the output compliance point of one ADI device,
- b) A transmission medium from the output compliance point of one ADI device to the input compliance point of a second ADI device, and
- c) A signal receiver connected to the input compliance point of the second ADI device.

A signal connection shall use single ended signalling. An ADI device shall include termination for Signal connection inputs.

Single ended signals always exist in one of two states: true (i.e., asserted) or false (i.e., negated). The device that asserts a signal shall actively drive the signal to the true state. A device that negates a signal shall refrain from driving the signal to either state. A non-driven signal goes to the false state because the bias of the terminator pulls the signal false.

[Table of voltages, currents, etc. needed here. Specify rise and fall times? Reference a standard?]

5.1.5 Transmit-receive connection

A Transmit-Receive (Tx-Rx) connection is a complete simplex signal path from one ADI device to a second ADI device. A Tx-Rx connection includes:

- A signal generator connected to the output compliance point of one ADI device,
- A pair of transmission media from the output compliance point of one ADI device to the input compliance point of a second ADI device, and
- A signal receiver connected to the input compliance point of the second ADI device.

A Tx-Rx connection shall conform to TIA/EIA-422-B as measured at the associated compliance points.

[Do we want a statement here limiting rise and fall times as a percentage of signal element duration? RS-422 doesn't limit them.]

A Tx-Rx connection shall support the Modulation Rates listed in Table n.

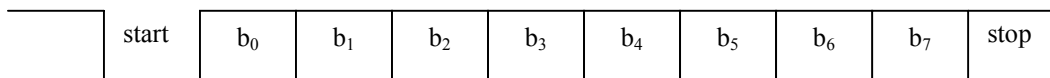
Table n. Supported Tx-Rx Modulation Rates

Modulation Rate (baud)	2 400	4 800	9 600	19 200	38 400	57 600	76 800	115 200	153 600
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A Tx-Rx connection shall use Non-return to Zero (NRZ) encoding of data bits to signaling elements. Hence, the data-signaling rate (in bps) equals the modulation rate (in baud).

A Tx-Rx connection shall transmit data bytes asynchronously adding one start bit, zero parity bits, and one stop bit to each data byte as depicted in Figure n.

Figure n. Asynchronous Transmission Format



5.2 Bus composition

5.2.1 Bus composition overview

5.2.2 Connection definition

Table n defines the connections that make up the ADT bus. With the exception of Sense_i and Sense_e, this standard defines the behaviour of these connections only when an initiator port asserts Sense_i and a target port asserts Sense_e.

Table n – ADT bus connections

Connection name	O/M	Connection type	Connection definition
Attention _i	O	Signal	A target port may use this connection to signal an attention request to the initiator port. [If included for legacy only, reduce description. If included for use by standard, describe in greater detail.]
Reset _t	O	Signal	An initiator port may use this connection to signal a reset request to the target port. [Need a description of the type and effects of reset here]
Sense _a	O	Sense	A Vendor Unique sense connection. This standard does not define the use of this connection.

Connection name	O/M	Connection type	Connection definition
Sense _i	M	Sense	A target port uses this connection to sense the presence or absence of an initiator port on the ADT bus. When present, the initiator port will source a persistent active signal on this connection.
Sense _t	M	Sense	An initiator port uses this connection to sense the presence or absence of a target port on the ADT bus. When present, the target port will source a persistent active signal on this connection.
Tx _i -Rx _t	M	Tx-Rx	An initiator port uses this connection to send serialized data. A target port receives serialized data on this connection.
Tx _t -Rx _i	M	Tx-Rx	A target port uses this connection to send serialized data. An initiator port receives serialized data on this connection.

5.2.3 Connection states