Hewlett Packard Corporation
Filton Road, Stoke Gifford
Stoke Gifford
Bristol BS34 8QZ
United Kingdom

Phone +44 117 979 9910
Web www.hp.com

ADT Proposal

Minimum Voltages

Revision History

Revision 1 – expanded Sense connection current limit to -150 µA.

Introduction

An internal review of the ADT draft standard by HP has revealed that some electrical characteristic definitions do not include a complete specification. Specifically the V_{OL} definition for Sense connections and the V_{OL} and V_{IL} definitions for Signal connections do not include a minimum voltage specification. In order to prohibit ports from using excessive negative voltages, this proposal adds minimum voltage specification in these instances.

Current Text

5.1.3 Sense connection

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

a) A current generator connected to the output compliance point of one ADT port,
b) A transmission medium from the output compliance point of one ADT port to the input compliance point of a second ADT port, and
c) A current detector connected to the input compliance point of the second ADT port.

Table 4 describes the electrical characteristics of a Sense connection at the output compliance point.

Table 4 — Sense connection output characteristics

Current	Voltage
I_{OH} < 100 µA	0,7 V_{dd}[a] < V_{OH} < 3,6 V
-100 µA < I_{OL}	V_{OL} < 0,4 V; V_{OL} < 0,2 V_{dd}[a]
[a] V_{dd} is the positive supply voltage at the receiving end.	

5.1.4 Signal connection

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

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

A signal connection shall use single ended signalling. An ADT port 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 5 describes the electrical characteristics of a Signal connection at the output compliance point.

Table 5 — Signal connection output characteristics

Signal State	Current	Voltage
Asserted	-12 mA < I_{OL}	V_{OL} < 0,4 V; V_{OL} < 0,2 V_{dd}[a]
Negated		V_{OH} <= 3,6 V
[a] V_{dd} is the positive supply voltage at the receiving end.		

Table 6 describes the electrical characteristics of a Signal connection at the input compliance point.

Table 6 — Signal connection input characteristics

Signal State	Current	Voltage
Asserted	-12 mA < I_{IL} at 0 V	V_{IL} < 0,3 V_{dd}[a]
Negated		0,7 V_{dd}[a] < V_{IH} <= 3,6 V; 400 mV < $V_{hysteresis}$
[a] V_{dd} is the positive supply voltage at the receiving end.		

Detailed Changes to Draft Technical Standard

5.1.3 Sense connection

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

d) A current generator connected to the output compliance point of one ADT port,
e) A transmission medium from the output compliance point of one ADT port to the input compliance point of a second ADT port, and
f) A current detector connected to the input compliance point of the second ADT port.

Table 4 describes the electrical characteristics of a Sense connection at the output compliance point.

Table 4 — Sense connection output characteristics

Current	Voltage
I_{OH} < 100 µA	0,7 V_{dd}[a] < V_{OH} < 3,6 V
-150 µA < I_{OL}	-0,2 V < V_{OL} < 0,4 V; V_{OL} < 0,2 V_{dd}[a]
[a] V_{dd} is the positive supply voltage at the receiving end.	

5.1.4 Signal connection

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

d) A signal generator connected to the output compliance point of one ADT port,
e) A transmission medium from the output compliance point of one ADT port to the input compliance point of a second ADT port, and
f) A signal receiver connected to the input compliance point of the second ADT port.

A signal connection shall use single ended signalling. An ADT port 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 5 describes the electrical characteristics of a Signal connection at the output compliance point.

Table 5 — Signal connection output characteristics

Signal State	Current	Voltage
Asserted	-12 mA < I_{OL}	-0,2 V < V_{OL} < 0,4 V; V_{OL} < 0,2 V_{dd} [a]
Negated		V_{OH} <= 3,6 V
[a] V_{dd} is the positive supply voltage at the receiving end.		

Table 6 describes the electrical characteristics of a Signal connection at the input compliance point.

Table 6 — Signal connection input characteristics

Signal State	Current	Voltage
Asserted	-12 mA < I_{IL} at 0 V	-0,2 V < V_{IL} < 0,3 V_{dd} [a]
Negated		0,7 V_{dd} [a] < V_{IH} <= 3,6 V; 400 mV < $V_{hysteresis}$
[a] V_{dd} is the positive supply voltage at the receiving end.		