

Data Sheet

LPC-Stick

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1 Scope

This data sheet is for the LPC-Stick debugger system. It contains architecture- and device-specific information and all technical data of the system.

The LPC-Stick is a specific debugger system and is provided in 3 variants:

- LPC2468-Stick
- LPC2478-Stick
- LPC3250-Stick

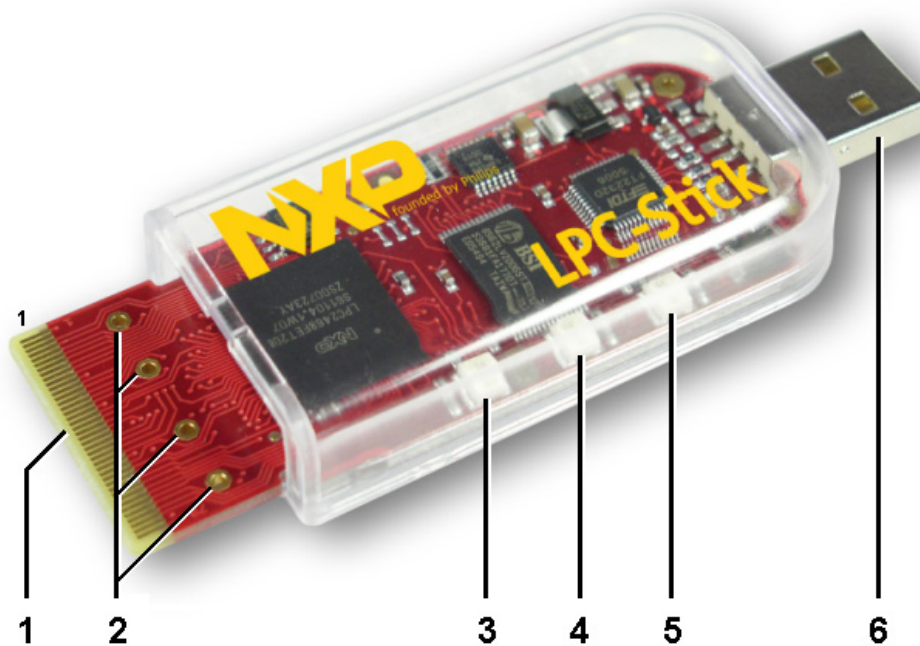
being able to emulate the integrated LPC microcontroller with on-chip debug support. It provides a USB communication port for connecting the LPC-Stick to a PC.

For operation, the overall system requires the LPC-Stick component only.

2 Connections and Controls

2.1 LPC2468-Stick

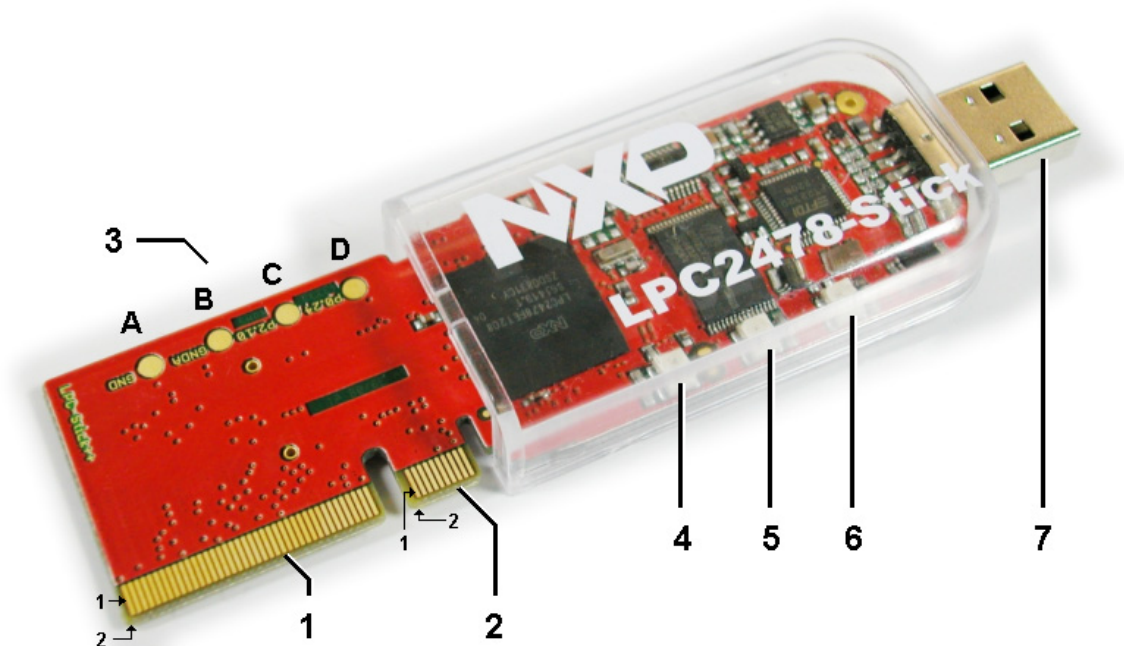
The LPC2468-Stick has the connectors and LEDs as shown in the following figure:



- 1 Extension Board Connector
For the pin assignment see [p. 8](#).
- 2 Digital Ground GND
Analog Ground GNDA
Port Pin Pxx (can be used as gate signal for counter)
Port pin Pxx (can be used for voltmeter and frequency scan / counter as input in the range 0 ... +3.3V)
- 3 USER LED (green) /Light Sensor connected to pins Pxx and Pxx
(Pxx must be set to output low !)
- 4 USER LED (red) connected to pin Pxx
- 5 USB LED (green)
- 6 USB PC Connector

Fig. 1 Extension Connector of the LPC2468-Stick

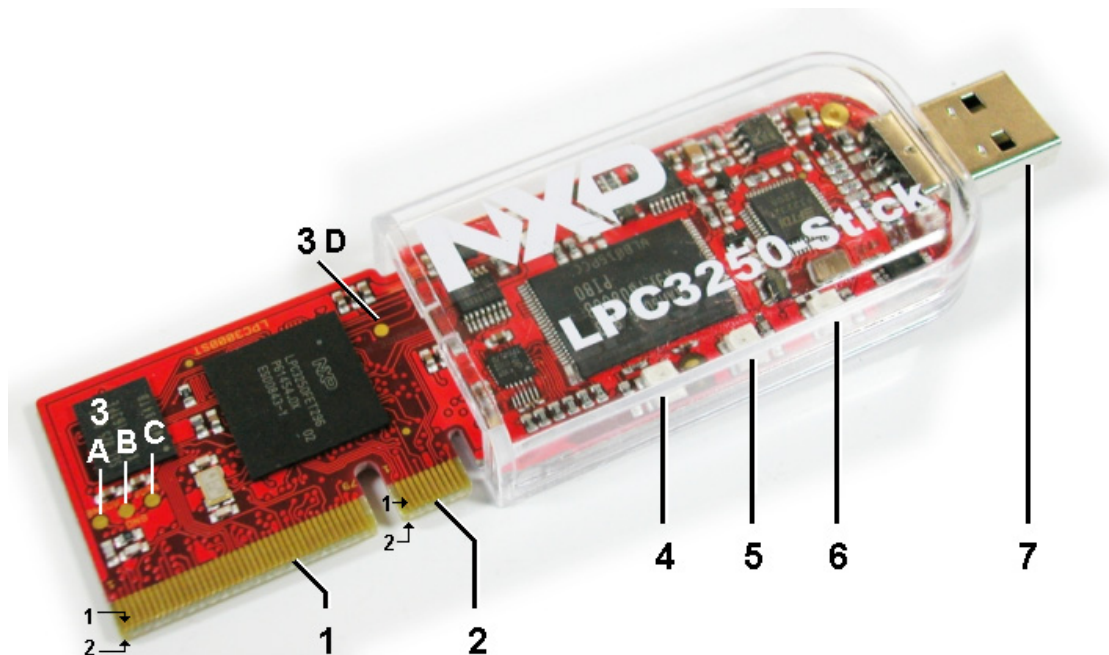
2.2 LPC2478-Stick



- 1 80-pin Extension Connector X400
For the pin assignment see [p. 9](#).
- 2 20-pin Extension Connector X405
For the pin assignment see [p. 11](#).
- 3 Four Pins allowing access to
A: GND
B: AGND
C: EINT0 pin (P2.10)
D: ADC pin (P0.24)
- 4 USER LED (green) /Light Sensor
For the functions see [p. 6](#).
- 5 USER LED (red)
For the functions see [p. 6](#).
- 6 USB LED (green)
For the functions see [p. 6](#).
- 7 USB Connector

Fig. 2 Extension Connector of the LPC2478-Stick

2.3 LPC3250-Stick






- 1 80-pin Extension Connector X700
For the pin assignment see [p. 12](#).
- 2 20-pin Extension Connector X701
For the pin assignment see [p. 14](#).
- 3 Four Pins allowing access to
 - A: ADC pin ADIN0
 - B: GND
 - C: AGND
 - D: SERVICE_N
- 4 USER LED (green)
For the functions see [p. 6](#).
- 5 USER LED (red)
For the functions see [p. 6](#).
- 6 USB LED (green)
For the functions see [p. 6](#).
- 7 USB Connector

Fig. 3 Extension Connector of the LPC3250-Stick

2.4 Status Indication LEDs

Three LEDs are provided to indicate the LPC-Stick's current state:

LED	Colour		Meaning
USER /sensor		Green	Can be used as ambient light sensor* or can be controlled by the user application.
USER		Red	Can be controlled by the user application.
USB		Green	USB enumeration and powering enabled.

*) Not available with the LPC3250-Stick.

3 Interfaces

3.1 Communication

The LPC-Stick's USB interface is implemented in accordance with the USB specification 2.0.

As far as the transmission rate is concerned, the LPC-Stick is a full-speed device.

Since the LPC-Stick is a USB-bus powered device, no external power supply is required. LPC-Stick consumes up to 300 mA (depending on the extension board used) and thus requires a powered hub connection.

Note

With some external USB 2.0 hubs, the LPC-Stick will not always be recognized the first time it is connected. Remedy: Try again.

3.2 External Signals and Interfaces

3.2.1 LPC2468-Stick

The extension connector of the LPC2468-Stick has the pin numbering scheme as shown in the figure and the table:

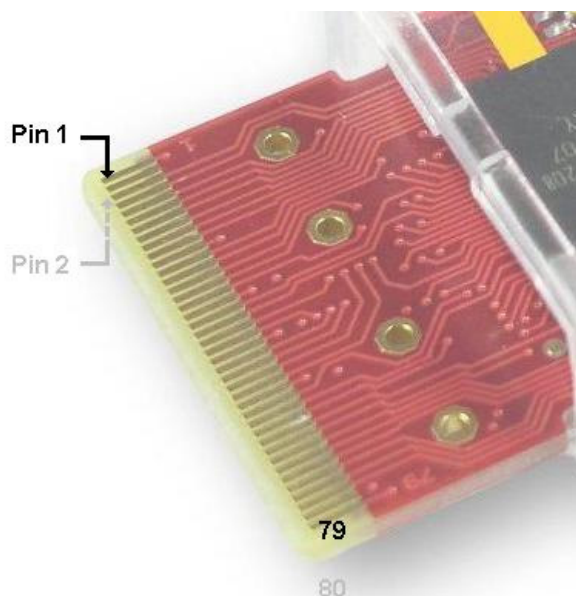


Fig. 4 Extension Connector of the LPC2468-Stick

Pin Assignment

Pin	Signal name	Pin	Signal name
1	+3.3V	2	+3.3V
3	Reset_N	4	Power_enable
5	USB_D-2	6	P0.0
7	P0.31	8	P0.1
9	P0.13	10	GND
11	P0.29	12	P1.20
13	P0.14	14	P1.21
15	P1.19	16	P2.13
17	P1.22	18	P2.12
19	P1.27	20	P2.11
21	GND	22	GND
23	P1.28	24	P0.10
25	P1.29	26	P0.11
27	P1.30	28	P0.20
29	P0.30	30	P0.19
31	P1.18	32	GND_A
33	GND	34	--
35	P0.22	36	P0.17
37	P0.21	38	P0.18
39	P1.2	40	P0.16
41	P1.3	42	P0.15
43	P1.7	44	GND
45	P1.11	46	P0.24
47	P1.12	48	P0.23
49	P1.8	50	P0.25
51	P1.10	52	P0.26
53	GND	54	GND
55	P1.16	56	P2.9
57	P1.13	58	P2.8
59	P1.6	60	P2.5
61	P1.5	62	P2.1
63	P1.17	64	P2.3
65	P1.15	66	P2.4
67	P1.14	68	P2.2
69	P1.9	70	P2.0

Pin	Signal name	Pin	Signal name
71	P1.1	72	P0.5
73	P1.4	74	P0.4
75	P1.0	76	GND
77	--	78	(P0.12)
79	+5V	80	+5V

3.2.2 LPC2478-Stick

80-Pin Extension Connector

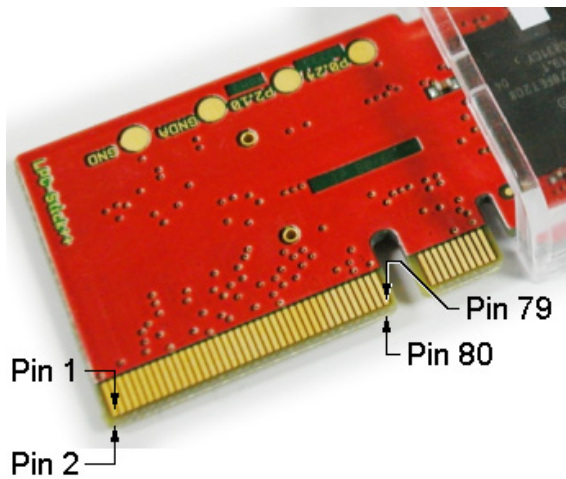


Fig. 5 80-pin Extension Connector of the LPC2478-Stick

Pin Assignment

Top Side:

Pin	Signal name	Alternate Function
1	+3.3V	+3.3V
3	Reset_N	---
5	USB_D-2	USB_D-2
7	P0.31	USB_D+2
9	P0.13	USB_UP_LED2
11	P0.29	USB_D+1
13	P0.14	USB_HSTEN2#

Bottom Side:

Pin	Signal name	Alternate Function
2	+3.3V	+3.3V
4	Power_enable	---
6	P0.0	CAN1 RX
8	P0.1	CAN1 TX
10	GND	GND
12	P1.20	LCD[10]
14	P1.21	LCD[11]

Pin	Signal name	Alternate Function
15	P1.19	USB_PPWR1#
17	P1.22	USB_PWRD1
19	P1.27	USB_INT1#
21	GND	GND
23	P1.28	USB_SCL1
25	P1.29	USB_SDA1
27	P1.30	Vbus
29	P0.30	USB_D-1
31	P1.18	USB_UP_LED1
33	GND	GND
35	P0.22	MCIDAT[0]
37	P0.21	MCIPWR
39	P1.2	MCICLK
41	P1.3	MCICMD
43	P1.7	MCIDAT[1]
45	P1.11	MCIDAT[2]
47	P1.12	MCIDAT[3]
49	P1.8	Enet_CRSDV
51	P1.10	Enet_RXD1
53	GND	GND
55	P1.16	Enet_MDC
57	P1.13	Enet_RXDV
59	P1.6	Enet_TX_CLK
61	P1.5	Enet_TX_ER
63	P1.17	Enet_MDIO
65	P1.15	Enet_REF_CLK
67	P1.14	Enet_RX_ER
69	P1.9	Enet_RXD0
71	P1.1	Enet_TXD1
73	P1.4	Enet_TX_EN
75	P1.0	Enet_TXD0
77	---	---
79	+5V	+5V

Pin	Signal name	Alternate Function
16	P2.13	LCD[19]
18	P2.12	LCD[18]
20	P2.11	LCDCLKIN
22	GND	GND
24	P0.10	TxD2
26	P0.11	RxD2
28	P0.20	SCL1
30	P0.19	SDA1
32	GND	GND
34	---	---
36	P0.17	MISO/MiSo0
38	P0.18	MOSI/MoSi0
40	P0.16	SSEL/SSEL0
42	P0.15	CLK/SCK0
44	---	---
46	P0.24	AD0[1]
48	P0.23	AD0[0]
50	P0.25	AD0[2]
52	P0.26	AD0[3]/AOUT
54	GND	GND
56	P2.9	LCD[3]
58	P2.8	LCD[2]
60	P2.5	LCDLP
62	P2.1	LCDLE
64	P2.3	LCDFP
66	P2.4	LCDAC
68	P2.2	LDCDP
70	P2.0	LCDPOWER
72	P0.5	LCD[1]
74	P0.4	LCD[0]
76	GND	GND
78	(P0.12)	Board ID1
80	+5V	+5V

20-Pin Extension Connector

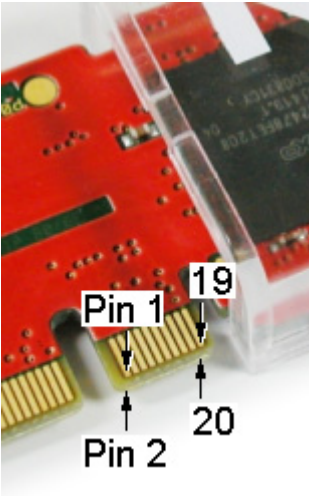


Fig. 6 20-pin Extension Connector of the LPC2478-Stick

Pin Assignment

Top Side:

Pin	Signal name	Alternate Function
1	P2.6	LCD[4]
3	P4.28	LCD[6]
5	P0.6	LCD[8]
7	P1.23	LCD[13]
9	P1.25	LCD[15]
11	P0.9	LCD[17]
13	GND	GND
15	P4.20	SCKL
17	P4.21	SSEL
19	GND	GND

Bottom Side:

Pin	Signal name	Alternate Function
2	P2.7	LCD[5]
4	P4.29	LCD[7]
6	P0.7	LCD[9]
8	P1.24	LCD[14]
10	P0.8	LCD[16]
12	P1.26	LCD[20]
14	GND	GND
16	P4.22	MISO1
18	P4.23	MOSI1
20	GND	GND

3.2.3 LPC3250-Stick

80-Pin Extension Connector

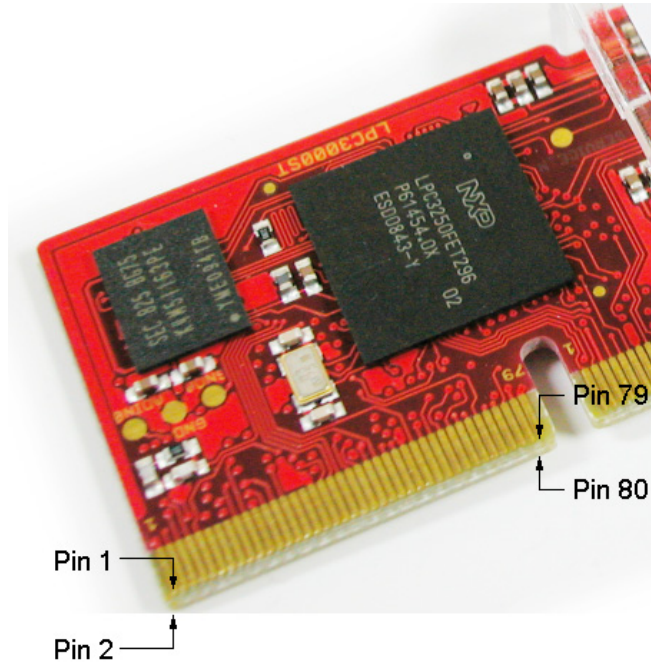


Fig. 7 80-pin Extension Connector of the LPC3250-Stick

Pin Assignment

Top Side:

Pin	GPIO Function	Specific Function
1	+3.3V	+3.3V
3	Reset_N	---
5	---	USB_D-
7	---	USB_D+
9	GPO_17	USB_LED
11	---	---
13	---	---
15	---	---
17	P0.6	LCDVD[12]
19		LCDVD[21]
21	GND	GND
23	GPIO_04	LCDVD[22]
25	---	LCDVD[23]

Bottom Side:

Pin	GPIO Function	Specific Function
2	+3.3V	+3.3V
4	---	PWREN2_N
6	GPIO_00	---
8	GPIO_01	---
10	GND	GND
12	GPI_23	LCDVD[10]
14	---	LCDVD[11]
16	---	LCDVD[19]
18	GPO_06	LCDVD[18]
20	GPI_22	LCDCLKIN
22	GND	GND
24	---	UART1_TX
26	GPI_15	UART1_RX

Pin	GPIO Function	Specific Function	Pin	GPIO Function	Specific Function
27	---	Vbus	28	---	I2C1_SCL
29	---	---	30	---	I2C1_SDA
31	---	---	32	GNDA	GNDA
33	GND	GND	34	---	USB_ID
35	---	MSDIO0	36	GPI_25	MISO0
37	GPO_11	MS_PWREN_N	38	---	MOSI0
39	---	MS_SCLK	40	GPIO_05	SSEL0
41	---	MS_BS	42	---	SCK0
43	---	MSDIO1	44	GND	GND
45	---	MSDIO2	46	ADIN1	ADIN1
47	---	MSDIO3	48	GPI_16	USB_FLAGB
49	---	Enet_CRS	50	---	UART2_TX
51	---	Enet_RXD1	52	GPI_17	UART2_RX
53	GND	GND	54	GND	GND
55	GPIO_02	Enet_MDC	56	GPO_21	LCDVD[3]
57	GPI_08	Enet_RX_DV	58	GPO_07	LCDVD[2]
59	---	Enet_TX_CLK	60	GPO_18	LCDLP
61	---	Enet_TX_ER	62	GPO_12	LCDLE
63	GPIO_03	Enet_MDIO	64	GPO_15	LCDFP
65	---	Enet_REF_CLK	66	GPO_16	LCDENAB
67	---	Enet_RX_ER	68	GPO_13	LCDDCLK
69	---	Enet_RXD0	70	GPO_10	LCDPWR
71	---	Enet_TXD1	72	GPO_03	LCDVD[1]
73	---	Enet_TX_EN	74	GPO_02	LCDVD[0]
75	---	Enet_TXD0	76	GND	GND
77	---	USB_PWR_ENB_N	78	ADIN2	Board ID1
79	+5V	+5V	80	+5V	+5V

20-Pin Extension Connector

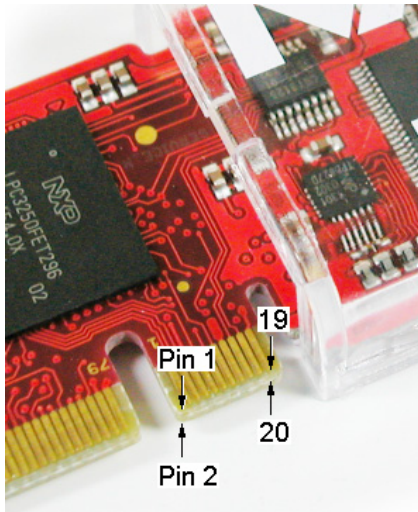


Fig. 8 20-pin Extension Connector of the LPC3250-Stick

Pin Assignment

Top Side:

Pin	Signal name	Alternate Function
1	P0.2	LCDVD[4]
3	P0.4	LCDVD[6]
5	GPO_08	LCDVD[8]
7	P0.7	LCDVD[13]
9	---	LCDVD[15]
11	---	LCDVD[17]
13	GND	GND
15	*)	LCD_SCK1
17	*)	LCD_SSEL1
19	GND	GND

Bottom Side:

Pin	Signal name	Alternate Function
2	P0.3	LCDVD[5]
4	P0.5	LCDVD[7]
6	GPO_09	LCDVD[9]
8	GPO_22	LCDVD[14]
10	---	LCDVD[16]
12	---	LCDVD[20]
14	GND	GND
16	*)	LCD_MISO1
18	*)	LCD_MOSI1
20	GND	GND

*) LCD SPI is multiplexed with LCDVD[xx] signals.
 To use LCD SPI, the low-active signal LCD_SPIEN_N (GPO_20) has to be set to logical 0.

Pin	Alternate Function	Specific Function
GPO_20	---	LCD_SPIEN_N
MOSI1	LCDVD[20]	LCD_MOSI1
MISO1	LCDVD[21]	LCD_MISO1
SSEL1	LCDVD[22]	LCD_SSEL1
SCK1	LCDVD[23]	LCD_SCK1

4 Technical Data

Power Supply		
Mains connection	not present, USB bus powered (4.2V to 5.0V) *)	
Power consumption	max. 1.5 W	
Current consumption	max. 300 mA	
Dimensions		
LPC2468-Stick	W x H x D	appr. 92 x 13 x 33 mm
LPC2478-Stick	W x H x D	appr. 99 x 13 x 33 mm
LPC3250-Stick	W x H x D	appr. 99 x 13 x 33 mm
Environmental Conditions		
Operation	5 to 40°C ambient temperature	
Storage	-20°C to +65°C, less than 90% relative humidity, non-condensing	
External Connections		
Interface to host	1 USB interface, Virtual COM Port	
Interface to target	LPC-Stick-dependent connector	
Transfer Rates		
LPC-Stick ↔ Host	USB	12 Mbit/s
Supported Target Voltage		
IO level	DIO: 3.3V (± 10%)	
	PIN: 0V to 3.3V	

*) If the LPC-Stick is connected to a USB hub that can not deliver the current needed the operating system will deny the enumeration of the LPC-Stick. Bus-powered hubs and USB keyboards with downstream ports often source only 100mA.

