

**ULI-321D**  
**ULI-321DK**  
**ULI-321DC**  
**ULI-321DCK**

**BB-232USB9M**  
**BB-232USB9M-LS**  
**BB-US09ML2-A**  
**BB-US09ML2-LS-A**

**USB to RS-232 Converters**



**Features**

- Connect RS-232 devices to your USB port
- RS-232 data rates up to 921.6 kbps
- USB 2.0 full speed compatible (12 Mbps)
- In-line installation
- USB port-powered
- (1) USB cable included (all models)
- 2 kV isolation option (by model)
- High retention USB port options (by model)
- Locked serial number option (by model)



**Introduction**

Advantech USB converters add one RS-232 port to your PC's USB port with 12 Mbps full speed USB 2.0. Models with 2 kV optical isolation protect from voltage spikes and ground loops. "High retention USB port" option is 50% stronger than regular USB ports gripping standard USB cables in demanding applications. "Locked Serial Number" options use the same serial number with like models so, if a converter is shared by field service laptops, the locked serial number lets you plug-&-play without matching.

**Specifications**

**Serial & Isolation Technology**

Model #:	Connector:	Data Rate:	Optical Isolation:	ESD Protection:	Locked Serial #:	LEDs:
ULI-321D	(1) DB9 male	921.6 Kbps	2 kV	4kV contact, 8kV air	-	-
ULI-321DK					Yes	-
ULI-321DC		460.8 kbps			-	-
ULI-321DCK					Yes	TD, RD

**FIFO Buffers**

Model #:	FIFO TX	FIFO RX
ULI-321D	128 bytes Data from USB Data OUT endpoint is stored in FIFO TX buffer and removed from buffer to UART Transmit Register under control of UART FIFO controller.	256 bytes Data from UART Receive Register is stored in FIFO RX buffer prior to being removed by SIE on a USB data request from device Data IN end-point.
ULI-321DK		
ULI-321DC	-	-
ULI-321DCK		

**USB Technology**

Model #:	USB Port Connector:	Data Rate:	Standards:
ULI-321D	USB Type B female	12 Mbps	2.0 (backwards compatible)
ULI-321DK			
ULI-321DC	USB Type B female, high retention		1.1, 2.0 (at full speed)
ULI-321DCK			

**Environmental**

- Operating Temperature 0 to +70 °C
- Storage Temperature -40 to +85°C
- Humidity 95%, non-condensing

**Power**

Model #:	Source:	Input Voltage:	Consumption:
ULI-321D	USB port	5 Vdc	<0.5 W (low power, <100 mA)
ULI-321DK			
ULI-321DC			
ULI-321DCK			

**Mechanical**

Model #:	Enclosure, Mounting:	Dimensions, mm:	USB Cable, included, length:	Weight, gm with cable:
ULI-321D	Plastic miniature, In-line installation	58 x 32 x 16	0.9 m	104.3 gm
ULI-321DK				
ULI-321DC	IP30 plastic, In-line installation	76.2 x 42.7 x 20.1		180 gm
ULI-321DCK				

**Software**

Model #:	Windows O/S:	Drivers:
ULI-321D	98, ME, 2000, XP, Vista, 7 (32/64 bit)	CD
ULI-321DK		
ULI-321DC	2000, XP (32/64 bit), Vista (32/64 bit), 7 (32/64 bit), 8 (32/64 bit), 10 (32/64 bit), 2003 & 2008 Server (32/64 bit)	FTDI Virtual COM Port (VCP) Driver (via Windows updates or download online)
ULI-321DCK		

**Meantime Between Failures (MTBF)**

- Calculation Method MIL217F Parts Count Reliability Prediction

Model #:	Hours:
ULI-321D	1946086
ULI-321DK	
ULI-321DC	247713
ULI-321DCK	

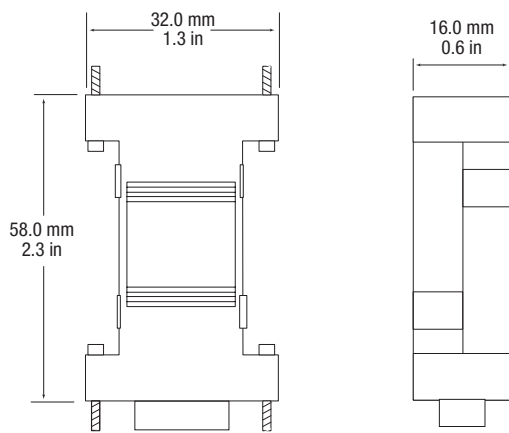
**ULI-321D** BB-232USB9M  
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**ULI-321DC** BB-US09ML2-A  
**ULI-321DCK** BB-US09ML2-LS-A

## Regulatory/Approvals/Certifications

Model #:	CE Directives:	CE Standards:	Standards - other:
ULI-321D	2014/30/EU – Electromagnetic Compatibility  2011/65/EU amended by (EU) 2015/863 – Reduction of Hazardous Substances (RoHS)  2012/19/EU – Waste Electrical and Electronic Equipment (WEEE)	EMC: EN 55032 Class B – Electromagnetic Compatibility of Multimedia Equipment – Emissions Requirements EN 55024 – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement	EN 61000-6-1 – Generic Immunity Standard for Residential, Commercial and Light-industrial Environments
ULI-321DK			EN 61000-6-1 – Generic Immunity Standard for Residential, Commercial and Light-industrial Environments
ULI-321DC			EN 61000-6-3 +A1 – Generic Emissions Standard for Residential, Commercial and Light-industrial Environments (Class B)
ULI-321DCK			

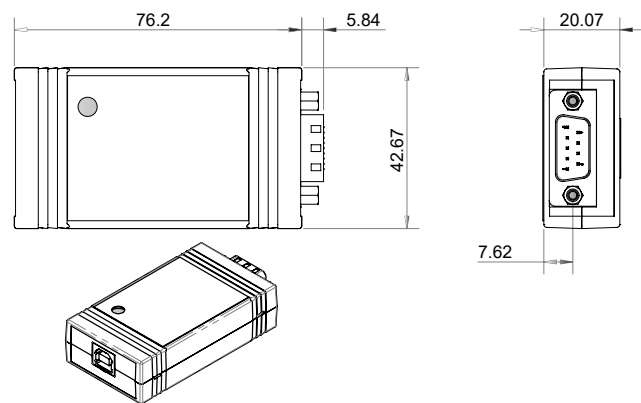
## Dimensions - ULI-321D, ULI-321DK

Unit = mm / in



## Dimensions - ULI-321DC, ULI-321DCK

Unit = mm



## Ordering Information

Model Number	Part Number to Order	Description
ULI-321D	BB-232USB9M	USB to RS-232 Converter – USB B-female to (1) Serial DB9m, 921.6 kbps / 12 Mbps
ULI-321DK	BB-232USB9M-LS	USB to RS-232 Converter – USB B-female to (1) Serial DB9m, 921.6 kbps / 12 Mbps, Locked Serial# (shared serial# & COM port)
ULI-321DC	BB-US09ML2-A	USB to RS-232 Converter – High-retention USB B-female to (1) Serial DB9m, 460.8 kbps / 12 Mbps, 2 kV Isolation
ULI-321DCK	BB-US09ML2-LS-A	USB to RS-232 Converter – High-retention USB B-female to (1) Serial DB9m, 2 kV Isolation, 460.8 kbps / 12 Mbps, Locked Serial# (shared serial# & COM port)

# ULI-320 Series Selection Guide

## USB to RS-232 Converters



### Common Features

- Connect an RS-232 device to your USB port
- RS-232 data rates up to 921.6 kbps
- USB 2.0 full speed compatible (12 Mbps)
- In-line installation
- USB port-powered
- (1) USB cable included (all models)
- 2 kV isolation option (by model)
- High retention USB port options (by model)
- Locked serial number option (by model)

### USB to RS-232 Converters Comparison Table

Model Number	ULI-321D	ULI-321DK	ULI-321DC	ULI-321DCK
Part Number to Order	BB-232USB9M	BB-232USB9M-LS	BB-US09ML2-A	BB-US09ML2-LS-A
Description	USB to Serial Converter, DB9M, Type B		USB to Serial Converter, DB9M, Isolated, High Retention Type B	
USB Port Count			1	
USB Connector	USB Type B female, standard		USB Type B female, high retention	
High Retention Connector	-		✓ 3.4 lb (1.54 kg), 15N withdrawal force	
USB Data Rate, max.			12 Mbps	
USB Standard	2.0 (backwards compatible)		1.1, 2.0 (at full speed)	
Serial Port Count			1	
Serial Connector			DB9 Male (DTE)	
Serial Interface			RS-232	
Serial Data Rate, max.	921.6 kbps		460.8 kbps	
Isolation, Optical	-		2 kV	
Locked Serial Number*	-	✓	-	✓
Operating Temperature			0 to +70 °C	
Power Source			USB port	
Power Input			5 Vdc	
Enclosure	Plastic, miniature form factor		IP30 plastic	
Mounting Installation			In-line installation	
Dimensions, mm	58 x 32 x 16 mm		76.2 x 42.7 x 20.1 mm	
MTBF (MIL217F), hours	1946086		247713	
Regulatory / Approvals / Certifications			FCC, CE, EN 55032 B, EN 55024, EN 61000-6-1	
			2014/30/EU – Electromagnetic Compatibility	
			2011/65/EU amended by (EU) 2015/863 – Reduction of Hazardous Substances (RoHS) 2012/19/EU – Waste Electrical and Electronic Equipment (WEEE)	
	-		EN 61000-6-3 +A1 (B)	

#### \*Locked Serial Numbers Explained

Advantech configures single-port USB to serial converters in two ways:

- 1. Standard Serialized format** – each product has a unique serial number. If your converter will always be used with the same computer, the standard serialized model is all you need.
- 2. Locked Serial Number format** uses the same serial number that is associated with a model type. If the converter is shared among several computers, like field service laptops, the locked serial number model lets you plug-and-play without having to worry about matching the two.

Description	Serialized	Locked Serial Number
Every unit is assigned a unique COM port	✓	-
Same type model numbers share same COM port	-	✓
Ideal Applications	Fixed locations	Field service