ULI-321D BB-232USB9M
ULI-321DK BB-232USB9M-LS
ULI-321DC BB-USO9ML2-A
ULI-321DCK BB-USO9ML2-LS-A

USB to RS-232 Converters

ULI-321DC
BB-USO9ML2-A

ULI-321D
BB-232USB9M

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
- 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	DB9 male	921.6 Kbps	–	–	–	
ULI-321DK					Yes	
ULI-321DC		460.8 kbps	2 kV	4kV contact, 8kV air	–	TD, RD
ULI-321DCK					Yes	

- ### FIFO Buffers

Model #:	FIFO TX	FIFO RX
ULI-321D	128 bytes	256 bytes
ULI-321DK	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.	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-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 3.4 lb (1.54 kg), 15N withdrawal force		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 #:	Drivers:	Windows O/S:	Linux:
ULI-321D	FTDI Virtual COM Port (VCP) Driver	Windows 8/10/11	Ubuntu 11.10, Kernel version 3.0.0
ULI-321DK			
ULI-321DC		Windows 7/8/8.1/10/11	
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	

Dimensions - ULI-321D, ULI-321DK

Unit = mm / in

32.0 mm
1.3 in

16.0 mm
0.6 in

58.0 mm
2.3 in
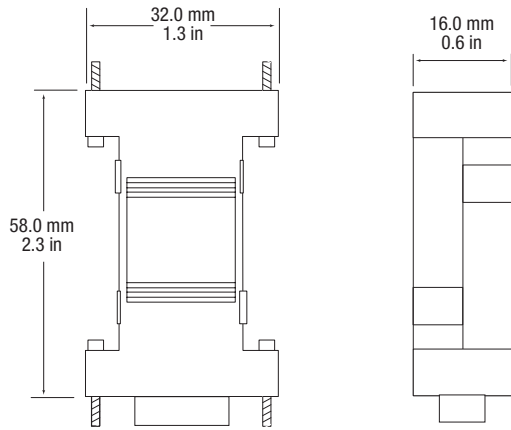
Dimensions - ULI-321DC, ULI-321DCK

Unit = mm

76.2

5.84

20.07

42.67

7.62
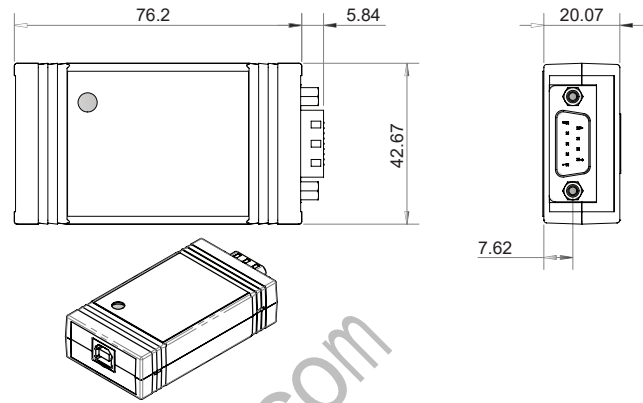
Ordering Information

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-USO9ML2-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-USO9ML2-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

ULI-321DC
BB-USO9ML2-A

ULI-321D
BB-232USB9M
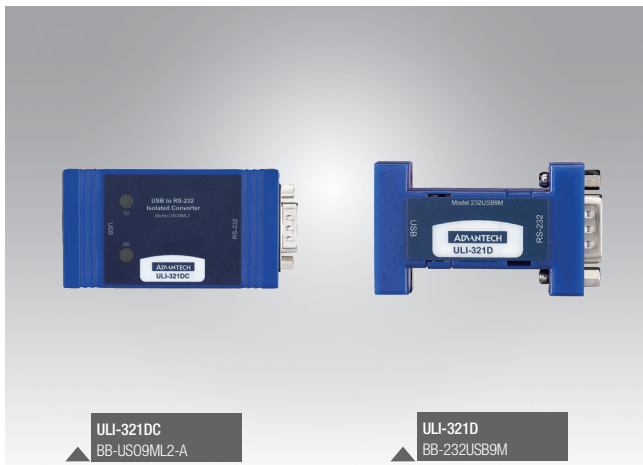
Common Features

- 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
- 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-USO9ML2-A	BB-USO9ML2-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 rentention	
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, RoHS, WEEE EMC: EN 55011:2016+A2:2021 Class A Group 1 BS EN 55011:2016+A2:2021 Class A Group 1 CISPR 11:2015+AMD1:2016+AMD2:2019 Ed 6.2 Class A Group 1 EN 55032:2015+A1:2020 Class A / BS EN 55032:2015+A1:2020 Class A CISPR 32:2015+AMD1:2019 Class A EN IEC 61000-6-4:2019 / BS EN IEC 61000-6-4:2019 EN 55035:2017+A11:2020 / BS EN 55035:2017+A11:2020 EN IEC 61000-6-2:2019 / BS EN IEC 61000-6-2:2019 EN 61000-4-2:2009 / EN IEC 61000-4-3:2020 / EN 61000-4-8:2010			

*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