Advantech ULI Series
Serial / USB Communications

Connecting Your Legacy Serial Assets with the IoT World

╱ Serial to Serial Converters
╱ Serial to Fiber Converters
╱ Serial Repeaters/ Isolators
╱ Surge Suppressors
╱ Data Splitters/ Taps
╱ USB to Serial Converters
╱ Industrial USB Hubs
╱ Industrial USB Isolators

Industrial Grade

IEC 61850-3 | cULus Class I Division II
Hazardous Area Certification

Compact Size

RS-232 | RS-422 | RS-485 | CAN Bus | TTL | Fiber | USB

TTL I/O Device | Barcode Reader | Inverter | Power Meter | USB I/O

ADVANTECH

Enabling an Intelligent Planet

Connecting Your Legacy Serial Assets with the IoT World

CLOUD SER

Embedded Automation Computers

Industrial Computers

PLC

ULI-200 SERIES - SERIAL COMMUNICATIONS

Serial to Fiber Converters	Serial to Serial Converters	Serial Repeaters / Isolators	Surge Suppressors	Data Splitters / Taps
ULI-210 Series	ULI-220 Series	ULI-230 Series	ULI-240 Series	ULI-250/260 Series

RS-232/422/485	CAN bus	USB 3.0	US
RS-485 I/O	**Inverter**	**Power Meter**	**Barcode**

**Industrial
Computers**

**Modular
IPCs**

ULI-300/400 SERIES - USB COMMUNICATIONS

**USB to RS-232/422/485
Converters**

ULI-310/320 Series

**USB to RS-422/485
Converters**

ULI-340 Series

**USB to RS-485
Converters**

ULI-350/360 Series

**Industrial
USB Hubs**

ULI-410 Series

**Industrial
USB Isolators**

ULI-420 Series

B 2.0

TTL
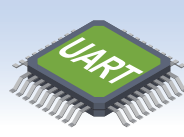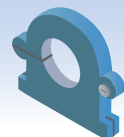
Current Loop

Fiber

e Reader

USB I/O

**TTL
I/O Device**

**Current
Loop Device**

ULI-200 Series
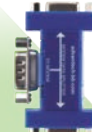
Serial to Fiber Converters	Serial to Serial Converters	Serial Repeaters / Isolators	Surge Suppressors	Data Splitters / Taps
ULI-210 Series	ULI-220 Series	ULI-230 Series	ULI-240 Series	ULI-250/260 Series

Application Sectors

Industrial Automation	Oil & Gas	Security	Factory Automation	Fuel & Point of Sale	ATM
HVAC	Healthcare	Inventory Management	Irrigation	Electric Power & Substations	Traffic Control

Industrial Protocols

Modbus   CAN   DH-485

Regulatory Certifications

cUL Class I Division II   IEC 61850-3   UL508   CE   KC
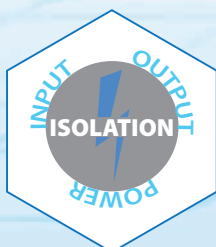
FC   cRUus   cULus LISTED   IEEE 1613

Special Product Features

3-way Isolation

- Isolation on 2 data ports and power circuit
- Optocouplers isolate input and output data signals
- Power line isolation adds a third degree of protection
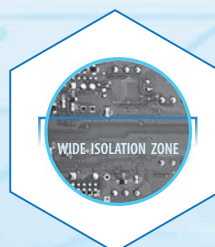
Wide Isolation Zones

- Wider spacing between circuit board traces
- Greater distance that transients cannot breach
- No bypassing around isolation components
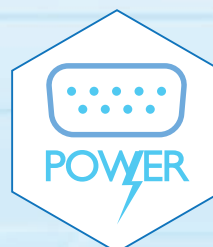
Port Powered

- RS-232 handshake lines supply enough power for most applications
- Eliminates external PSU cost, space and clutter
- Ideal for field service

Automatic Send Data Control (SDC)

- Hardware driver control
- SDC circuit monitors data to enable/disable driver
- No extra software or drivers to install

ULI-210 Series
Serial to Fiber Converters

- Convert serial to SM or MM fiber optic
- Extend serial signals up to 15 km
- Data rate: up to 115.2 kbps

ULI-224 Series
RS-232 to 422/485 Converters

- Convert RS-232 to RS-422/485
- Data rate: up to 115.2 kbps
- Automatic Send Data Control

ULI-227 Series
RS-232 to TTL & Current Loop Converters

- RS-232 to 5V TTL or 3.3V TTL
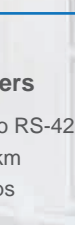- RS-232 to 20 mA current loop
- Data rate: up to 115.2 kbps

ULI-223 Series
RS-232 to 422 Converters

- Convert RS-232 signals to RS-422
- Extend signals up to 1.2 km
- Data rate: up to 115.2 kbps

ULI-226 Series
RS-232 to 485 Converter

- Convert RS-232 to RS-422
- Extend signals up to 1.2 km
- Data rate: up to 115.2 kbps

ULI-232 Series
RS-232 Isolated Repeaters & Isolators

- Isolation for data lines & devices
- Repeaters extend RS-232 15m
- Data rate: up to 230.4 kbps
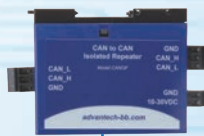
ULI-238 Series
CAN Isolated Repeater

- Increase CAN network signals & nodes
- Various CAN protocols, frame lengths
- Data rate: up to 250 kbps (bit-wise)

ULI-250 Series
RS-232 Data Tap

- Monitor & record serial data
- In-line, transparent connection
- No external power required

ULI-234 Series
RS-422/485 Isolated Repeaters

- Extend RS-422/485 an extra 1.2km
- Add up to 32 nodes to RS-485 network
- 2 kV optical isolation protection

ULI-240 Series
Serial Surge Suppressors

- Protection stages on each line
- Rugged terminal block connections
- Dedicated chassis ground lugs

ULI-260 Series
RS-232 Data Splitter

- Connect two PCs to one peripheral without switching
- Use with serial devices

4

USB to RS-232/422/485
Converters

USB to RS-422/485
Converters

USB to RS-485
Converters

Industrial
USB Hubs

Industrial
USB Isolators

ULI-310/320 Series

ULI-340 Series

ULI-350/360 Series

ULI-410 Series

ULI-420 Series

Application Sectors

Industrial
Automation

Oil & Gas

Security

Factory
Automation

Fuel &
Point of Sale

ATM

HVAC

Healthcare

Inventory
Management

Irrigation

Electric Power
& Substations

Traffic Control

Regulatory Certifications

c UL Class I Division II   UL UL508   FC   KC   CE

Driver Supported OS

Windows 10   Linux

Windows 11

Special Product Features

HIGH RETENTION

LOCKED SERIAL NUMBER

POWER

High Retention USB Ports

▪ 50% stronger than standard USB ports

▪ Grip standard USB cables in high-vibration applications

Locked Serial Number

▪ Same models use same serial number, COM port

▪ Plug-and-play with multiple PCs and laptops

▪ One installation

▪ Ideal for field service

Powerful USB Port

▪ USB hub supplies adequate power for most applications

▪ Each port delivers 500mA (USB 2.0) / 900mA (USB 3.0) current

Port-to-Port Isolation

▪ Full isolation protection on multi-port devices

▪ Upstream isolated from downstream devices

▪ Downstream devices isolated from each other

ULI-310/320 Series
USB to RS-232/422/485 Converters

▪ Converts USB to RS-232/422/485 (by model)
▪ RS-232/422/485 serial data rate: 921.6 kbps (by model)
▪ USB 2.0 Hi-Speed (480 Mbps) for ULI-310 Series
▪ USB 2.0 Full-Speed (12 Mbps) for ULI-320 Series
▪ In-line installation
▪ USB port-powered

ULI-340 Series
USB to RS-422/485 Converters

▪ Converts USB to RS-422/485
▪ Optical isolation protection
▪ USB 2.0 (backward compatible)
▪ 921.6 kbps serial data rate (by model)
▪ 480 Mbps USB data rate (by model)

ULI-350/360 Series
USB to 2/4-wire RS-485 Converters

▪ Connect RS-485 devices to USB port
▪ Up to 921.6 kbps serial data rate
▪ USB 2.0 (12 Mbps) data rate
▪ High retention USB port (by model#)
▪ Locked Serial Number (by model#)
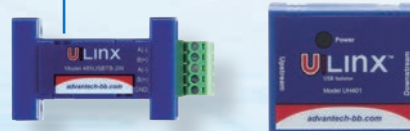
ULI-410 Series
Industrial USB 2.0 Hubs

▪ Expand 1 USB port to 4 or 7 ports
▪ 1.5, 12 or 480 Mbps (by model)
▪ Wide temperature: -40 to +80 °C
▪ Isolation & ESD protections
▪ OEM open bare-board (# ULI-414LIB)

ULI-410H Series
Industrial USB 3.0 Hubs

▪ Expand 1 USB port to 4 or 7 ports
▪ ESD & surge protections
▪ SuperSpeed USB 3.0, up to 5 Gbps
▪ 900mA downstream peripheral power
▪ Heavy-duty industrial enclosure

ULI-420 Series
Industrial USB 2.0 Isolators

▪ Data & device isolation & ESD protections
▪ 1 or 2 port models
▪ 12 Mbps full speed
▪ High retention USB connector ports
▪ USB bus or external power (by model)

ULI-200 Series

ULI-200 Serial to Fiber Optic Converters

The Challenge

A power plant in United States provides electrical power for the south-western area. Power is generated by a mix of nuclear, hydroelectric, oil, coal, and natural gas. Different substations on the grid use a variety of SCADA systems from multiple vendors, and each vendor implements its own serial communications circuits about how to wire, ground, bias and terminate their serial ports. The data communication between substations are long-distance and the operation environment of the transmission is prone to ground loops and noise. Communication glitches were a continual source of erroneous data errors and trouble.

The Solution

ULI series fiber to serial converters can extend and interconnect RS-232, RS-422, or RS-485 communications lines, creating a larger conglomerate serial network and at the same time provide isolation between substations. For example, ULI-211C serial to multimode fiber optic converter extends data communications up to 4 km (2.5 mi). It also provides the most versatile connection possible between any asynchronous full- or half-duplex serial equipment. In addition to direct point-to-point connectivity, it is capable operating in multi-drop mode. This allows one serial device to communicate with up to 31 other devices around a fiber optic ring. In addition, ULI-211C provides two-way optical isolation on the input and output lines.
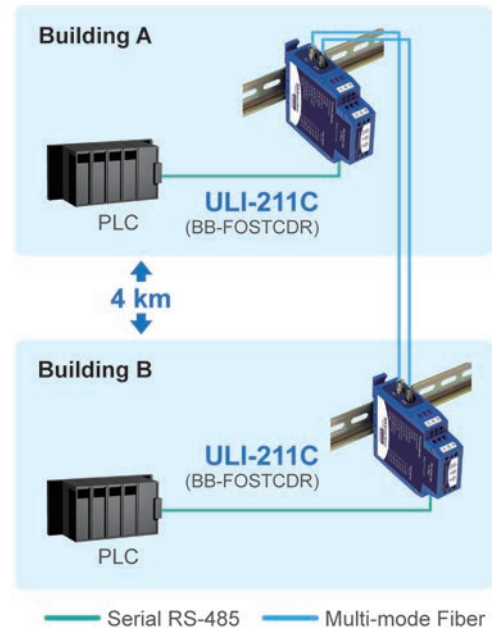
ULI-200 Serial to Serial Converters with Port Powered

The Challenge

A factory manager is seeking a cost-effective serial communication solution to reduce the working time in hardware set-ups. The present serial communication system contains to many wiring processes and too many kinds of interface types.

The Solution

ULI serial converters are easy to communicate across interfaces, simple to deploy, and do not require an external PSU. ULI serial-to serial converters can convert between RS-232, RS-422, RS-485 (2-wire/4-wire), and TTL with different types of connectors. This reduces compatibility issues when various types of serial interfaces communicate with each other. Moreover, ULI series provides port powered converters such as ULI-226D that can receive power without using an external PSU, which simplifies the wiring process.

ULI-300 USB to Serial Converters

The Challenge

A system integrator was looking for a cost-effective solution for transmitting data from industrial legacy devices to IT systems. The equipment in the factory were usually designed to connect through a serial port, which is uncommon in modern PCs. However, the technicians were frequently asked to acquire data from equipment and run tests on different laptops in field service. When using a serial-to-USB converter, if the converter was shared among several laptops, drivers needed to be re-installed and run set ups , which was time consuming.

The Solution

The Advantech ULI Serial-to-USB converter solutions allows serial equipped legacy devices such as PLCs, to communicate with a PC via a USB port for data visualization and management. Moreover, with the "locked serial number" function such as ULI-341TCK, when the converter is shared among several field service laptops, the driver will only need to be installed once on each PC, the locked serial number function will let you plug and play many times without having to worry about re-installing drivers when matching the two. This saves immense work time for technicians in field service and at the same time increases productivity.

PC with USB port
ULI-341TC
RS-485
ADAM-4017
RS-485 device
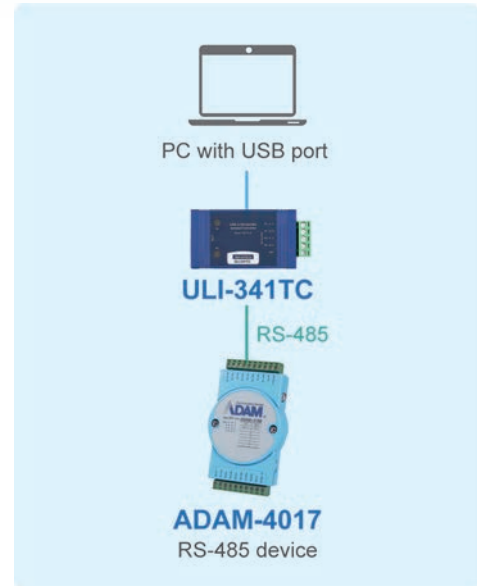
ULI-400 USB Hubs and Isolators

The Challenge

Most laptops are equipped with only two USB ports, when in practice, multiple USB ports are needed to connect various applications such as barcode scanner, printer, keypad or card reader. Some laptops for use in industrial applications operate in harsh environments that can easily be damaged, which increases costs on maintenance and management. Additionally, most standard USB port connectors used in hazardous environment come loose too easily, which affects data integrity and factory operations.

The Solution

The Advantech ULI-400 USB 2.0 and 3.0 hubs are more robust than commercial-grade hubs and can be easily expanded 4 or 7 extra USB ports. Moreover, ULI-400 series features isolation and ESD protection that is ideal for electrically harsh environments and wide operating temperature environments while its rugged design ensures reliability and reduced cost from equipment damage. Additionally, high retention USB connectors from ULI-400 series are used to prevent the cables from falling out. This is accomplished through a tight friction fit allowing a standard USB cable to be used to reduce overall installation cost.

PC with USB port
ULI-414CI Isolated 4-port USB HUB
USB
ULI-321D USB to RS-232 Converter
ULI-341TC USB to RS-422/485 Converter
ULI-361D USB to RS-485 Converter
RS-232 — Barcode Reader
RS-422/485 — Temperature Controller
RS-485 — PLC
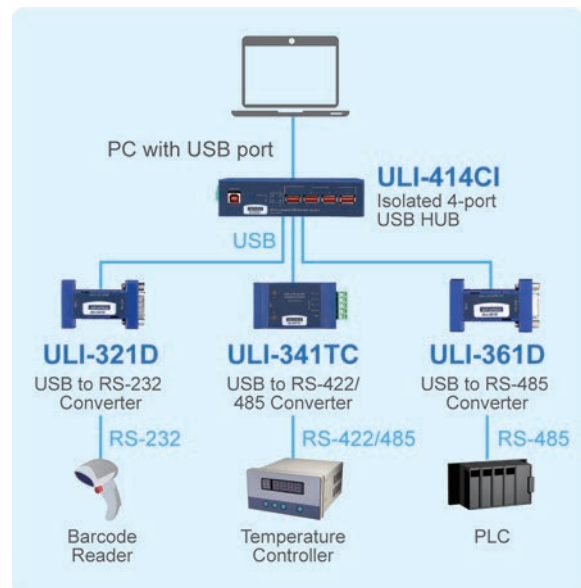
ULI-210 Series: Serial to Fiber Converter

ULI-21xy

x: Fiber Type ① MM ST

y: Feature Type Ⓒ Isolation ① Ind. grade Ⓔ IEC 61850-3

Model		ULI-211C	ULI-211CI	ULI-211E
P/N to Order		BB-FOSTCDR	BB-FOSTCDRI	BB-FOSTCDRI-PH-MT
INTERFACE 1	Interface	RS-232, RS-422/485	RS-232, RS-422/485	RS-232, RS-422/485
	Connector	Terminal block	Terminal block	Terminal block
	Port/s	1	1	1
INTERFACE 2	Interface	Fiber Optic	Fiber Optic	Fiber Optic
	Connector	Multi-mode ST	Multi-mode ST	Multi-mode ST
	Port/s	1	1	1
Operating Temperature		-40 to +80 °C	-40 to +80 °C	-40 to +85 °C
Protection	Isolation	2kV	2kV	2kV
	Surge Protection	–	600 W	600 W
Power Input		10-30 V_{DC}	10-48 V_{DC}	10-48 V_{DC}
Mounting		DIN Rail	DIN Rail	Panel
Certificates		FCC, CE, KCC	FCC, CE, UL 508, UL C1/D2	FCC, CE, UL C1/D2, IEC 61850-3

ULI-210 Series: Serial to Fiber Converter

ULI-21xy

x: Fiber Type ② SM ST ③ SM SC

y: Feature Type Ⓒ Isolation ① Ind. grade Ⓔ IEC 61850-3

Model		ULI-212CI	ULI-213CI	ULI-213E
P/N to Order		BB-FOSTCDRI-ST	BB-FOSTCDRI-SC	BB-FOSTCDRI-PH-SC
INTERFACE 1	Interface	RS-232, RS-422/485	RS-232, RS-422/485	RS-232, RS-422/485
	Connector	Terminal block	Terminal block	Terminal block
	Port/s	1	1	1
INTERFACE 2	Interface	Fiber Optic	Fiber Optic	Fiber Optic
	Connector	Single-mode ST	Single-mode SC	Single-mode SC
	Port/s	1	1	1
Operating Temperature		-40 to +80 °C	-40 to +80 °C	-40 to +85 °C
Protection	Isolation	2kV	2kV	2kV
	Surge Protection	600 W	600 W	600 W
Power Input		10-48 V_{DC}	10-48 V_{DC}	10-48 V_{DC}
Mounting		DIN Rail	DIN Rail	Panel
Certificates		FCC, CE	FCC, CE	FCC, CE, UL C1/D2, IEC 61850-3

ULI-220 Series: RS-232 to Serial Converter

ULI-22xy

x: Serial Type ❸ RS-422

y: Feature Type ⓓ DB9 ⓣ TB

Model		ULI-223D	ULI-223T
P/N to Order		BB-422PP9R	BB-422PP9TB
INTERFACE 1	Interface	RS-232	RS-232
	Connector	DB9 female	DB9 female
	Port/s	1	1
INTERFACE 2	Interface	RS-422	RS-422
	Connector	DB9 female	Terminal block
	Port/s	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C
Protection		–	–
Power Input		Port-powered from RS-232	Port-powered from RS-232
Mounting		Inline installation	Inline installation
Certificates		FCC, CE	FCC, CE

ULI-220 Series: RS-232 to Serial Converter

ULI-22xy

x: Serial Type ❹ RS-422/485

y: Feature Type ⓣ TB ⓒ Isolation ⓘ Ind. grade ⓛ Light

Model		ULI-224TC	ULI-224TCI	ULI-224TCL
P/N to Order		BB-485LDRC9	BB-485DRCI	BB-4WSD9OTB
INTERFACE 1	Interface	RS-232	RS-232	RS-232
	Connector	DB9 female & Terminal block	DB9 female	DB9 female
	Port/s	1	1	1
INTERFACE 2	Interface	RS-422/485	RS-422/485	RS-422/485
	Connector	Terminal blocks	Terminal block	Terminal block
	Port/s	1	1	1
Operating Temperature		-40 to +80 °C	-40 to +85 °C	0 to +70 °C (Light)
Protection		Isolation: 2kV / Surge: 500W	Isolation: 2kV / Surge: 600W	Isolation: 2kV
Power Input		10-30 V_{DC}	10-48 V_{DC}	10-48 V_{DC}
Mounting		DIN Rail	DIN Rail	Inline installation
Certificates		CE, FCC, cULus, UL508	CE, FCC, KCC, UL C1/D2, UL508	CE, FCC

ULI-220 Series: RS-232 to Serial Converter

ULI-22xy

x: Serial Type ④ RS-422/485

y: Feature Type ⓓ DB9 ⓣ TB ⓒ Isolation ⓗ High-speed

Model		ULI-224TH	ULI-224THC	ULI-224D
P/N to Order		BB-SCP211-DFTB3	BB-SCP311T-DFTB3	BB-4WSD9R
INTERFACE 1	Interface	RS-232	RS-232	RS-232
	Connector	DB9 female	DB9 female	DB9 female
	Port/s	1	1	1
INTERFACE 2	Interface	RS-422/485	RS-422/485	RS-422/485
	Connector	Terminal block	Terminal block	DB9 female
	Port/s	1	1	1
Operating Temperature		0 to +70 °C	-40 to +80 °C	0 to +70 °C
Protection		Surge: ± 0.5 k V_{DC} ports, ±1 kV signal ports	Isolation: 2kV Surge: ± 0.5 k V_{DC} ports, ±1 kV signal ports	–
Power Input		10-30 V_{DC}	10-30 V_{DC}	Port-powered from RS-232 (Optional external 12 V_{DC} power supply)
Mounting		Panel (DIN option)	Panel (DIN option)	Inline installation
Certificates		CE, FCC, UL	CE, FCC, UL	CE, FCC

ULI-220 Series: RS-232 to Serial Converter

ULI-22xy

x: Serial Type ④ RS-422/485

y: Feature Type ⓣ TB ⓑ Battery-Powered ⓔ IEC 61850-3

Model		ULI-224TB	ULI-224T	ULI-224TE
P/N to Order		BB-485BAT3	BB-4WSD9TB	BB-485DRCI-PH
INTERFACE 1	Interface	RS-232	RS-232	RS-232
	Connector	DB9 female	Terminal block	DB9 female
	Port/s	1	1	1
INTERFACE 2	Interface	RS-422/485	RS-422/485	RS-422/485
	Connector	Terminal block	Terminal block	Terminal block
	Port/s	1	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C	-40 to +85 °C
Protection		–	–	Isolation: 2kV
Power Input		Battery-Powered RS-232 (Optional external 12-16 V_{DC} power supply)	Port-powered from RS-232 (Optional external 12 V_{DC} power supply)	10-48 V_{DC}
Mounting		Inline installation	Inline installation	Panel (DIN option)
Certificates		FCC, CE	CE, FCC	CE, FCC, UL C1/D2, IEC 61850-3

ULI-220 Series: RS-232 to Serial Converter

ULI-22xy

x: Serial Type ⑥ RS-485(2W)

y: Feature Type Ⓓ DB9 Ⓣ TB Ⓙ RJ-11

	Model	ULI-226D	ULI-226J	ULI-226T
	P/N to Order	BB-485SD9R	BB-485SD9RJ	BB-485SD9TB
INTERFACE 1	Interface	RS-232	RS-232	RS-232
	Connector	DB9 female	DB9 female	DB9 female
	Port/s	1	1	1
INTERFACE 2	Interface	RS-485 (2W)	RS-485 (2W)	RS-485 (2W)
	Connector	DB9 female	RJ11	Terminal block
	Port/s	1	1	1
	Operating Temperature	0 to +70 °C	0 to +70 °C	0 to +70 °C
	Power Input	Port-powered from RS-232	Port-powered from RS-232	Port-powered from RS-232 (Optional external 12 V_{DC} power supply)
	Mounting	Inline installation	Inline installation	Inline installation
	Certificates	CE, FCC	CE, FCC	CE, FCC

ULI-220 Series: RS-232 to Serial Converter

ULI-22xy

x: Serial Type ⑦ TTL or Current Loop

y: Feature Type Ⓓ DB9 Ⓣ TB Ⓛ Current Loop

	Model	ULI-227D3	ULI-227D5	ULI-227TL
	P/N to Order	BB-232LPTTL33	BB-232LPTTL	BB-232CL9R
INTERFACE 1	Interface	RS-232	RS-232	RS-232
	Connector	DB9 female	DB9 female	DB9 female
	Port/s	1	1	1
INTERFACE 2	Interface	3.3 V_{DC} TTL	5 V_{DC} TTL	20 mA Current Loop
	Connector	DB9 male	DB9 male	Terminal block
	Port/s	1	1	1
	Operating Temperature	0 to +70 °C	0 to +70 °C	0 to +70 °C
	Power Input	Port-powered from RS-232	Port-powered from RS-232	Port-powered from RS-232 (Optional external 12 V_{DC} power supply)
	Mounting	Inline installation	Inline installation	Inline installation
	Certificates	CE, FCC	CE, FCC	CE, FCC

ULI-230 Series: Serial Repeater/Isolator

ULI-23xy

x: Serial Type ② RS-232

y: Feature Type ⓓ DB9 ⓢ Isolator ⓗ High-speed

Model	ULI-232DS	ULI-232DSH
P/N to Order	BB-9SPOP2	BB-9POP4
Interface / Max. Baud Rate	RS-232, 115.2 Kbps	RS-232, 230.4 Kbps
Connector	DB9 female(DTE) DB9 male(DCE)	DB9 female(DTE) DB9 male(DCE)
Operating Temperature	0 to +70 °C	0 to +70 °C
Protection	Isolation	2kV	2kV
	ESD	8 kV air	8 kV air
Power Input	Port powered	12 V_{DC}
Enclosure	Plastic	Plastic
Mounting	Inline installation	Inline installation
Certificates	FCC, CE, UL 508	FCC, CE, UL 508

ULI-230 Series: Serial Repeater/Isolator

ULI-23xy

x: Serial Type ② RS-232

y: Feature Type ⓓ DB9 ⓣ TB ⓒ Isolation ⓔ IEC 61850-3

Model	ULI-232TC	ULI-232DC	ULI-232DE
P/N to Order	BB-232OPDR	BB-232OPDRI	BB-232OPDRI-PH
Interface	RS-232	RS-232	RS-232
Connector	Terminal block	DB9 female(DCE) DB9 male(DTE)	DB9 female(DCE) DB9 male(DTE)
Operating Temperature	-40 to +80 °C	-40 to +80 °C	-40 to +85 °C
Protection	Isolation	2kV	2kV	2kV
	ESD	8 kV air	8 kV air	15 kV air
Power Input	10-30 V_{DC}	10-48 V_{DC}	10-48 V_{DC}
Enclosure	Plastic	Metal	Metal
Mounting	DIN rail, Panel mount option	DIN rail	Panel mount, DIN rail option
Certificates	FCC, CE, UL Recognized, KCC	FCC, CE, UL C1/D2, UL508	FCC, CE, UL C1/D2, IEC 61850-3

ULI-230 Series: Serial Repeater/Isolator

ULI-23xy	**x: Serial Type** ④ RS-422/485
	y: Feature Type ⓣ TB ⓒ Isolation ⓗ High-speed ⓛ Light

Model		ULI-234TCL	ULI-234TC	ULI-234TCH
P/N to Order		BB-485OP	BB-485OPDR	BB-485OPDR-HS
Interface / Max. Baud Rate		RS-422/485, 115.2 Kbps	RS-422/485, 115.2 Kbps	RS-422/485, 1.5 Mbps
Connector		Terminal block	Terminal block	Terminal block
Operating Temperature		0 to +40 °C (Light)	-40 to +80 °C	-40 to +80 °C
Protection	Isolation	2kV	2kV	2kV
	Surege	600 W, TVS	600 W, TVS	600 W, TVS
Power Input		10-40 V_{DC}	10-30 V_{DC}	10-30 V_{DC}
Enclosure		Plastic	Plastic	Plastic
Mounting		Inline installation	DIN rail	DIN rail, panel mount option
Certificates		FCC, CE	FCC, CE, KCC	FCC, CE

ULI-230 Series: Serial Repeater/Isolator

ULI-23xy	**x: Serial Type** ④ RS-422/485 ⑧ CAN bus
	y: Feature Type ⓣ TB ⓒ Isolation ⓔ IEC 61850-3 ⓘ Ind. grade ⓢ Isolator

Model		ULI-234TCI	ULI-234TE	ULI-238TS
P/N to Order		BB-485OPDRI	BB-485OPDRI-PH	BB-CANOP
Interface		RS-422/485	RS-422/485	CAN
Connector		Terminal block	Terminal block	Terminal blocks
Operating Temperature		-40 to +80 °C	-40 to +85 °C	0 to +70 °C
Protection	Isolation	2kV	2kV	CAN Optical Isolator 2kV
	ESD	600 W, TVS	600 W, TVS	–
Power Input		10-48 V_{DC}	10-48 V_{DC}	150 mA @ 12 V, fully loaded, 10-30 V_{DC}
Enclosure		Plastic	Metal	Plastic
Mounting		DIN rail	Panel mount	Inline installation
Certificates		FCC, CE, UL 508, UL C1/D2	FCC, CE, UL C1/D2, IEC 61850-3	CE, FCC

ULI-240 Series: Serial Surge Suppressor

ULI-24xy
x: Serial Type ❷ RS-232 ❹ RS-422/485 ❻ RS-485(2W)
y: Feature Type ❶ TB ❶ Ind. grade

Model	ULI-242T	ULI-244T	ULI-244TI	ULI-246T
P/N to Order	BB-232HESP	BB-422HESP	BB-HESP4DR	BB-485HESP
Interface	RS-232	RS-422/485	RS-422/485	RS-485
Serial Line Connectors	Terminal blocks	Terminal blocks	Terminal blocks	Terminal blocks
Equipment Line Connectors	Terminal blocks	Terminal blocks	Terminal blocks	Terminal blocks
Lines Protected	5	5	5	3
Stage 1: Clamping Voltage	72 to 108 V_{DC} (min./max.)	72 to 108 V_{DC} (min./max.)	72 to 108 V_{DC} (min./max.)	72 to 108 V_{DC} (min./max.)
Stage 2: Series Resistance	2.7 Ohms	2.7 Ohms	2.7 Ohms	2.7 Ohms
Stage 3: Clamping Voltage	14.3 - 15.8 V_{DC} (min./max.)	6.45 - 7.14 V_{DC} (min./max.)	6.45 - 7.14 V_{DC} (min./max.)	6.45 - 7.14 V_{DC} (min./max.)
Operating Temperature	0 to +70 °C	0 to +70 °C	-40 to +80 °C	0 to +70 °C
Mounting	Panel Mount	Panel Mount	DIN Rail	Panel Mount
Certifications	FCC, CE	FCC, CE	FCC, CE	FCC, CE

ULI-250 Series: Serial Data Tap
ULI-260 Series: Serial Data Splitter

ULI-25xy
ULI-26xy
x: Serial Type ❷ RS-232
y: Feature Type ❶ DB9

Model	ULI-252D	ULI-262D
P/N to Order	BB-9PCDT	BB-9PMDS
Interface	RS-232	RS-232
Connector	DB9 male	DB9 male
Operating Temperature	0 to +70 °C	0 to +70 °C
Type	RS-232 Data Tap	RS-232 Data Splitter
Power Input	No power required	No power required
Enclosure	Plastic	Plastic
Mounting	Inline installation	Inline installation
Certificates	CE, FCC	CE, FCC

ULI-310 Series: USB to RS-232/422/485 Serial Converter

ULI-31xy
x: Port Number: 4
y: Feature Type Ⓓ DB9 Ⓒ Isolation

Model	ULI-314DC
P/N to Order	BB-USR604
INTERFACE 1 — Interface	USB
INTERFACE 1 — Connector	Type B female
INTERFACE 1 — Port/s	1
INTERFACE 1 — High Retention	Yes
INTERFACE 2 — Interface	RS-232/422/485
INTERFACE 2 — Connector	DB9 male
INTERFACE 2 — Port/s	4
Operating Temperature	-40 to +85 °C
Protection	Isolation: 2kV
Power Input	10-48 V_{DC}
Mounting	Panel or DIN rail
Certificates	CE, FCC, UL C1/D2

ULI-320 Series: USB to RS-232 Serial Converter

ULI-32xy
x: Port Number: 1
y: Feature Type Ⓓ DB9 Ⓒ Isolation Ⓚ Locked Serial

Model		ULI-321D	ULI-321DK	ULI-321DC	ULI-321DCK
P/N to Order		BB-232USB9M	BB-232USB9M-LS	BB-USO9ML2-A	BB-USO9ML2-LS-A
INTERFACE 1	Interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0
	Connector	Type B female	Type B female	Type B female	Type B female
	Port/s	1	1	1	1
	High Retention	–	–	Yes	Yes
INTERFACE 2	Interface	RS-232	RS-232	RS-232	RS-232
	Connector	DB9 male (DTE)	DB9 male (DTE)	DB9 male (DTE)	DB9 male (DTE)
	Port/s	1	1	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C	0 to +70 °C	0 to +70 °C
Protection		–	–	Isolation: 2kV	Isolation: 2kV
Locked Serial Number		–	Yes	–	Yes
Power Input		USB 5 V_{DC}	USB 5 V_{DC}	USB 5 V_{DC}	USB 5 V_{DC}
Mounting		Inline installation	Inline installation	Inline installation	Inline installation
Certificates		CE, FCC	CE, FCC	CE, FCC	CE, FCC

ULI-340 Series: USB to RS-422/485 Serial Converter

ULI-34xy

x: Port Number: 1

y: Feature Type Ⓓ DB9 Ⓣ TB Ⓒ Isolation Ⓚ Locked Serial

Model	ULI-341TC	ULI-341TCK	ULI-341DC
P/N to Order	BB-USOPTL4	BB-USOPTL4-LS	BB-USO9ML4
INTERFACE 1 Interface	USB 2.0	USB 2.0	USB 2.0
Connector	Type B female	Type B female	Type B female
Port/s	1	1	1
High Retention	Yes	Yes	Yes
INTERFACE 2 Interface	RS-422/485	RS-422/485	RS-422/485
Connector	Terminal block	Terminal block	DB9 male
Port/s	1	1	1
Operating Temperature	0 to +70 °C	0 to +70 °C	0 to +70 °C
Protection	Isolation: 2kV	Isolation: 2kV	Isolation: 2kV
Locked Serial Number	–	Yes	–
Power Input	USB 5 V$_{DC}$	USB 5 V$_{DC}$	USB 5 V$_{DC}$
Mounting	Inline installation	Inline installation	Inline installation
Certificates	CE, FCC, UL508	CE, FCC	CE, FCC

ULI-340 Series: USB to RS-422/485 Serial Converter

ULI-34xy

x: Port Number: 2 / 4

y: Feature Type Ⓓ DB9 Ⓣ TB Ⓒ Isolation

Model	ULI-342TC	ULI-344TC
P/N to Order	BB-USOPTL4DR-2	BB-USOPTL4-4P
INTERFACE 1 Interface	USB 2.0	USB 2.0
Connector	Type B female	Type B female
Port/s	1	1
High Retention	Yes	Yes
INTERFACE 2 Interface	RS-422/485	RS-422/485
Connector	Terminal blocks	Terminal blocks
Port/s	2	4
Operating Temperature	0 to +70 °C	0 to +70 °C
Protection	Isolation: 3kV	Isolation: 2kV
Locked serial Number	–	–
Power Input	USB 5 V$_{DC}$	USB 5 V$_{DC}$ or 10-30 V$_{DC}$ external PSU
Mounting	DIN Rail	Inline installation
Certificates	CE, FCC	CE, FCC

ULI-350 Series: USB to RS-485(4W) Serial Converter

ULI-35xy

x: Port Number: 1

y: Feature Type Ⓓ DB9 Ⓣ TB Ⓒ Isolation Ⓚ Locked Serial

Model		ULI-351D	ULI-351DK	ULI-351T	ULI-351TK
P/N to Order		BB-485USB9F-4W	BB-485USB9F-4W-LS	BB-485USBTB-4W-A	BB-485USBTB4WLS-A
INTERFACE 1	Interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0
	Connector	Type B female	Type B female	Type B female	Type B female
	Port/s	1	1	1	1
	High Retention	–	–	Yes	Yes
INTERFACE 2	Interface	RS-485(4W)	RS-485(4W)	RS-485(4W)	RS-485(4W)
	Connector	DB9 Female	DB9 Female	Terminal block	Terminal block
	Port/s	1	1	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C	0 to +70 °C	0 to +70 °C
Locked serial Number		–	Yes	–	Yes
Power Input		USB 5 V_{DC}	USB 5 V_{DC}	USB 5 V_{DC}	USB 5 V_{DC}
Mounting		Inline installation	Inline installation	Inline installation	Inline installation
Certificates		CE, FCC	CE, FCC	CE, FCC	CE, FCC

ULI-360 Series: USB to RS-485(2W) Serial Converter

ULI-36xy

x: Port Number: 1

y: Feature Type Ⓓ DB9 Ⓣ TB Ⓚ Locked Serial

Model		ULI-361D	ULI-361DK	ULI-361T	ULI-361TK
P/N to Order		BB-485USB9F-2W	BB-485USB9F-2W-LS	BB-485USBTB-2W-A	BB-485USBTB2WLS-A
INTERFACE 1	Interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0
	Connector	Type B female	Type B female	Type B female	Type B female
	Port/s	1	1	1	1
	High Retention	–	–	Yes	Yes
INTERFACE 2	Interface	RS-485(2W)	RS-485(2W)	RS-485 (2W)	RS-485 (2W)
	Connector	DB9 Female	DB9 Female	Terminal block	Terminal block
	Port/s	1	1	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C	0 to +70 °C	0 to +70 °C
Locked serial Number		–	Yes	–	Yes
Power Input		USB 5 V_{DC}	USB 5 V_{DC}	USB 5 V_{DC}	USB 5 V_{DC}
Mounting		Inline installation	Inline installation	Inline installation	Inline installation
Certificates		CE, FCC	CE, FCC	CE, FCC	CE, FCC

ULI-410 Series: USB 2.0 Hub

ULI-41xy

x: Port Number: 4

y: Feature Type Ⓑ Board type Ⓘ Ind. grade Ⓛ Low Amps

Model		ULI-414LIB	ULI-414LI
P/N to Order		BB-USBHUB4OEM	BB-UH104
INTERFACE 1	Interface	USB 2.0	USB 2.0
	Connector	Type B female	Type B female
	Port/s	1	1
	High Retention	Yes	Yes
INTERFACE 2	Interface	USB 2.0	USB 2.0
	Connector	Type A female	Type A female
	Port/s	4, 100mA / port	4, 100mA / port
	High Retention	Yes	Yes
Operating Temperature		-40 to +80 °C	-40 to +80 °C
Protection		ESD: 15 kV air, 8kV contact	ESD: 15 kV air, 8kV contact
Power Input		USB 5V	USB 5V
Enclosure		Open board	IP30, plastic
Mounting		OEM	Panel
Certificates		CE, FCC	CE, FCC

ULI-410 Series: USB 2.0 Hub

ULI-41xy

x: Port Number: 4 / 7

y: Feature Type Ⓘ Ind. grade

Model		ULI-414I	ULI-417I
P/N to Order		BB-UHR204	BB-UHR207
INTERFACE 1	Interface	USB 2.0	USB 2.0
	Connector	Type B female	Type B female
	Port/s	1	1
	High Retention	Yes	Yes
INTERFACE 2	Interface	USB 2.0	USB 2.0
	Connector	Type A female	Type A female
	Port/s	4, 500mA / port	7, 500mA / port
	High Retention	Yes	Yes
Operating Temperature		-40 to +80 °C	-40 to +80 °C
Protection		ESD: 15 kV air, 8kV contact	ESD: 15 kV air, 8kV contact
Power Input		10-30 V$_{DC}$	10-30 V$_{DC}$
Enclosure		IP30, metal	IP30, metal
Mounting		DIN Rail, Desk, Panel	DIN Rail, Desk, Panel
Certificates		CE, FCC, KCC, UL C1/D2	CE, FCC, KCC, UL C1/D2

ULI-410 Series: USB 2.0 Hub

ULI-41xy

x: Port Number: 4 / 7

y: Feature Type Ⓒ Isolation Ⓘ Ind. grade

Model		ULI-414CI	ULI-417CI
P/N to Order		BB-UHR304	BB-UHR307
INTERFACE 1	Interface	USB 2.0	USB 2.0
	Connector	Type B female	Type B female
	Port/s	1	1
	High Retention	Yes	Yes
INTERFACE 2	Interface	USB 2.0	USB 2.0
	Connector	Type A female	Type A female
	Port/s	4, 500mA / port	7, 500mA / port
	High Retention	Yes	Yes
Operating Temperature		-40 to +80 °C	-40 to +80 °C
Protection		Isolation: 4kV ESD: 15 kV air, 8kV contact	Isolation: 4kV ESD: 15 kV air, 8kV contact
Power Input		10-30 V$_{DC}$	10-30 V$_{DC}$
Enclosure		IP30, metal	IP30, metal
Mounting		DIN Rail, Desk, Panel	DIN Rail, Desk, Panel
Certificates		CE, FCC, KCC, UL C1/D2	CE, FCC, KCC, UL C1/D2

ULI-410 Series: USB 3.0 Hub

ULI-41xy

x: Port Number: 4 / 7

y: Feature Type Ⓗ High Speed

Model		ULI-414H	ULI-417H
P/N to Order		BB-USH204	BB-USH207
INTERFACE 1	Interface	USB 3.0 / USB 3.1 Gen 1 (5Gbps)	USB 3.0 / USB 3.1 Gen 1 (5Gbps)
	Connector	Type B female	Type B female
	Port/s	1	1
	High Retention	–	–
INTERFACE 2	Interface	USB 3.0 / USB 3.1 Gen 1	USB 3.0 / USB 3.1 Gen 1
	Connector	Type A female	Type A female
	Port/s	4, 900mA / port	7, 900mA / port
	High Retention	–	–
Operating Temperature		0 to +40 °C	0 to +40 °C
Protection		ESD: 8kV air, Surge: 600W	ESD: 8kV air, Surge: 600W
Power Input		9-24 V$_{DC}$	9-24 V$_{DC}$
Enclosure		Industrial-grade metal	Industrial-grade metal
Mounting		DIN rail	DIN rail
Certificates		CE, FCC, KCC	CE, FCC, KCC

ULI-420 Series: USB 2.0 Isolator

ULI-42xy	x: Port Number: 1 / 2
	y: Feature Type Ⓒ Isolation Ⓛ Low Amps

Model		ULI-421CL	ULI-421C	ULI-422C
P/N to Order		BB-UH401	BB-UHR401	BB-UHR402
INTERFACE 1	Interface	USB 2.0	USB 2.0	USB 2.0
	Connector	Type B female	Type B female	Type B female
	Port/s	1	1	1
	High Retention	Yes	Yes	Yes
INTERFACE 2	Interface	USB 2.0, 12 Mbps *UH401 has a fixed data rate of 12 Mbps	USB 2.0, 1.5/12 Mbps	USB 2.0, 1.5/12 Mbps
	Connector	Type A female	Type A female	Type A female
	Port/s	1, 100mA / port	1, 500mA / port	2, 500mA / port
	High Retention	Yes	Yes	Yes
Operating Temperature		-40 to +80 °C	0 to +50 °C*	0 to +50 °C*
Protection		Isolation: 4kV	Isolation: 4kV	Isolation: 4kV
		ESD: 15 kV air, 8kV contact	ESD: 15 kV air, 8kV contact	ESD: 15 kV air, 8kV contact
Power Input		USB 5V	10-30 V$_{DC}$	10-30 V$_{DC}$
Enclosure		Plastic	Plastic	Plastic
Mounting		Inline installation	DIN Rail, Panel	DIN Rail, Panel
Certificates		CE, FCC, KCC	CE, FCC, KCC	CE, FCC, KCC

*Temperature rating limited due to included Power Supply Unit. Without PSU, rating is -40 to 85 °C

MEMO

Regional Service & Customization Centers

| China | Kunshan 86-512-5777-5666 | Taiwan | Taipei 886-2-7732-3399 | Netherlands | Eindhoven 31-40-267-7000 | Poland | Warsaw 00800-2426-8080 | USA | Milpitas, CA 1-408-519-3898 |

Worldwide Offices

Asia Pacific

Taiwan
Toll Free	0800-777-111
Taipei & IoT Campus	886-2-7732-3399
Taichung	886-4-2372-5058
Kaohsiung	886-7-392-3600

China
Toll Free	800-810-0345
Beijing	86-10-6298-4346
Shanghai	86-21-3632-1616
Shenzhen	86-755-8212-4222
Chengdu	86-28-8545-0198
Hong Kong	852-2720-5118

Asia Pacific

Japan
Toll Free	0800-500-1055
Tokyo	81-3-6802-1021
Osaka	81-6-6267-1887
Nagoya	81-0800-500-1055
Nogata	81-949-22-2890

Korea
Toll Free	080-363-9494/5
Seoul	82-2-3660-9255

Singapore
Singapore	65-6442-1000

Malaysia
Kuala Lumpur	60-3-7725-4188
Penang	60-4-537-9188

Thailand
Bangkok	66-02-2488306-9

Vietnam
Hanoi	84-24-3399-1155
Hochiminh	84-28-3836-5856

Indonesia
Jakarta	62-21-751-1939

Australia
Toll Free	1300-308-531
Melbourne	61-3-9797-0100

India
Bangalore	91-94-4839-7300
Pune	91-94-2260-2349

Europe

Netherlands
Eindhoven	31-40-267-7000
Breda	31-76-523-3100

Germany
Toll Free	00800-2426-8080/81
Munich	49-89-12599-0
Düsseldorf	49-2103-97-855-0

France
Paris	33-1-4119-4666

Italy
Milan	39-02-9544-961

UK
Newcastle	44-0-191-262-4844
London	44-0-870-493-1433

Spain
Madrid	34-91-668-86-76

Sweden
Stockholm	46-0-864-60-500

Poland
Warsaw	48-22-31-51-100

Russia
Moscow	8-800-555-01-50
St. Petersburg	8-812-332-57-27
	8-921-575-13-59

Czech Republic
Ústí nad Orlicí	420-465-524-421

Ireland
Galway	353-91-792444

Americas

North America
Toll Free	1-888-576-9668
Cincinnati	1-513-742-8895
Milpitas	1-408-519-3898
Irvine	1-949-420-2500
Ottawa	1-815-433-5100
Chicago	1-888-576-9668
Boston	1-800-866-6008

Brazil
Toll Free	0800-770-5355
São Paulo	55-11-5592-5367

Mexico
Toll Free	1-800-467-2415
Mexico City	52-55-6275-2777
Guadalajara	52-33-3169-7670

Middle East and Africa
Israel	072-2410527
Turkey	90-212-222-0422
Turkey-Bursa	90-224-413-3134

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

8600000591