

**ULI-421CL** BB-UH401  
**ULI-421C** BB-UHR401  
**ULI-422C** BB-UHR402

**Industrial USB 2.0 Isolators**



**Features**

- 4 kV isolation protection for equipment and data
- ESD protection – 15 kV air, 8 kV contact
- 12 Mbps full speed
- USB 1.1 or 2.0 (by model)
- High retention USB connector ports
- One or two port models
- USB cable included
- USB bus or external power (by model)
- Panel, DIN rail or in-line installation (by model)

Advantech one and two port ruggedized USB isolators meet heavy industrial EMC standards. 4 kV isolation between upstream and downstream ports protects equipment and data from ground loops, surges and spikes. The isolators operate in unfriendly electrical environments – near variable frequency drives, motor control centers, welding and other large electrical loads. Downstream port(s) provide 500 mA power to connected USB devices. “High retention” USB connectors hold standard USB cables tight requiring up to 1.45kg (3.2lb) force to disconnect them – perfect for high vibration applications.

**Specifications**

**USB Technology**

Model #:	Upstream Port:	Downstream Ports:	Data Rate:	Standards:
ULI-421CL*		(1) Type A female, high retention	12 Mbps	2.0, 1.1
ULI-421C†	(1) Type B female, high retention	(1) Type A female, high retention	1.5 Mbps, 12 Mbps	
ULI-422C†		(2) Type A female, high retention	1.5 Mbps, 12 Mbps	

\* Device is transparent to operating system, software drivers not required, and will not be enumerated in device manager.  
 † Speed: 12 Mbps multi-transaction translator, 1 per port.

**Isolation & ESD Protections**

Model #:	Optical Isolation:	ESD Protection:
ULI-417I	4 kV (upstream to downstream)	15 kV air, 8 kV contact
ULI-414CI		
ULI-417CI		

**Power**

• LED Indicators

Power, Port/s Beady

Model #:	Source:	Input Voltage:	Connector:	Consumption:	Downstream, per port:
ULI-421CL	USB Bus	5 Vdc	–	–	Up to 100mA (with full-power 500mA upstream connection)
ULI-421C	External PSU‡ (required)	10-30 Vdc	Threaded barrel jack, center+	4 W	500 mA
ULI-422C				7 W	

‡ Included PSU: 110–240 Vac input; 12 Vdc output; 50/60 Hz; US, EU, UK blades included.

**Environmental**

Model #:	Operating Temperature:	Storage Temperature:	Humidity:
ULI-421CL	-40 to +80 °C	-40 to +85 °C	0 to +95, non-condensing
ULI-421C*	0 to +50 °C		
ULI-422C*			

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

**Mechanical**

Model #:	Enclosure:	Mounting:	Dimensions, mm:	Weight, gm:	USB Cable:
ULI-421CL	IP30, plastic	In-line	43.2 x 50.8 x 20.3	22.7	Included, 0.9 m
ULI-421C		Panel, DIN rail	79 x 54 x 27	80	Included, 1.8 m
ULI-422C					

**Meantime Between Failures (MTBF)**

• Calculation Method

MIL217F Parts Count Reliability Prediction

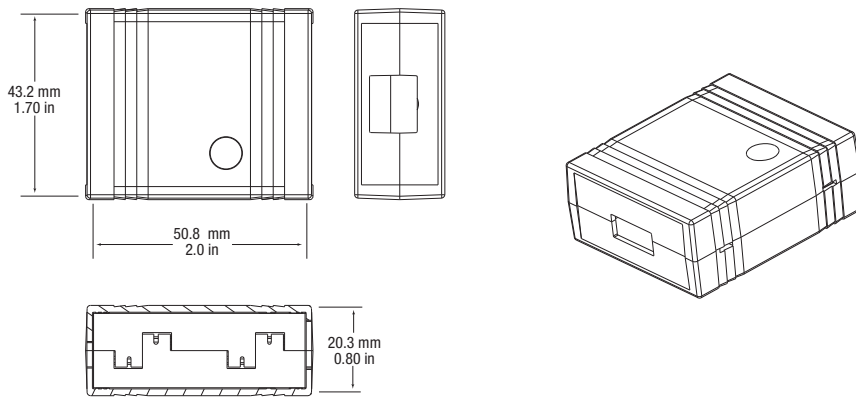
Model #:	Hours:
ULI-421CL	1049851
ULI-421C	375842
ULI-422C	353807

### Regulatory/Approvals/Certifications

Model #:	Approvals:	CE Directives:	CE Standards:	Standards - other:
ULI-421CL	FCC Class A, CISPR 32, CE, KCC MSIP ID#: MSIP-REI-AAD-BB-UH401	2014/30/EU – Electromagnetic Compatibility Directive  2011/65/EU amended by 2015/863/EU – Reduction of Hazardous Substances Directive (RoHS)	EMC: EN 55032 + AC, Class A – Information Technology Equipment EN 61000-6-4 – Generic Emissions Standard for (Heavy) Industrial Environments EN61000-6-2 Generic Immunity Standard for (Heavy) Industrial Environments	–
ULI-421C	FCC, CE, KCC R(MSIP) ID#: MSIP-REM-AKO-UHR401 (Models BB-UHR-401, BB-UHR402)	2012/19/EU – Waste Electrical and Electronic Equipment Directive (WEEE)	EMC: EN 55032 Class B – Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements EN 55024 – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement EN 61000-6-4 +A1 – Generic Emission Standard for Industrial Environments EN 61000-6-2 – Generic Immunity Standard for Industrial Environments	IEC60068-2-27 – (Shock) 50G Peak, 11 ms, 3 axes IEC60068-2-6 – (Vibration) 4G, 140-500 Hz, 3 axes IEC60068-2-32 – (Drop) 10 drops from sides, corner, edges

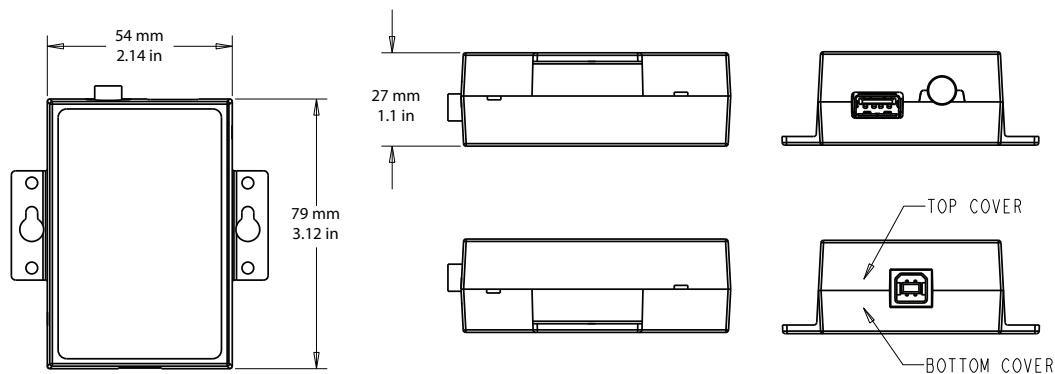
### Dimensions - ULI-421CL

Unit = mm / in



### Dimensions - ULI-421C, ULI-422C

Unit = mm / in



### Ordering Information

Model Number	Part Number to Order	Description
ULI-421CL	BB-UH401	Industrial USB 2.0 Isolator, 1-port, USB port power. (0.9 m USB cable included.)
ULI-421C	BB-UHR401	Industrial USB 2.0 Isolator, 1-port, External power. (1.8 m USB cable included; 12 Vdc wall plug-in PSU included)
ULI-422C	BB-UHR402	Industrial USB 2.0 Isolator, 2-port, External power. (1.8 m USB cable included; 12 Vdc wall plug-in PSU included)

# ULI-421 Series Selection Guide

## Industrial USB 2.0 Isolators



### Common Features

- 4 kV isolation protection for equipment and data
- ESD protection – 15 kV air, 8 kV contact
- 12 Mbps full speed
- USB 1.1 or 2.0 (by model)
- High retention USB connector ports
- One or two port models
- USB cable included
- USB bus or external power (by model)
- Panel, DIN rail or in-line installation (by model)

### Industrial USB 2.0 Isolators Comparison Table

Model Number	ULI-421CL	ULI-421C	ULI-422C	
Part Number to Order	BB-UH401	BB-UHR401	BB-UHR402	
Description	USB 2.0 Industrial Isolators			
Upstream Port	1			
Upstream Connector	USB Type B (Female), high retention			
Downstream Port/s	1		2	
Downstream Connector	USB Type A (Female), high retention			
Data Rate, max.	12 Mbps *UH401 has a fixed data rate of 12 Mbps		1.5 Mbps, 12 Mbps	
USB Standards	2.0, 1.1			
LED Indicators	Power		Power Port/s Ready	
ESD Protection	15 kV air, 8 kV contact			
Optical Isolation	4 kV (upstream to downstream)			
Operating Temperature	-40 to +80 °C	0 to +50 °C * Temperature rating limited due to included Power Supply Unit. Without PSU, rating is -40 to 85 °C		
Power Source	USB port	External PSU (required, included)		
Power Input	5 Vdc	10-30 Vdc		
Power Connector	–	Locking barrel jack, threaded, center positive		
Power Consumption	–	4 W (external PSU)	7 W (external PSU)	
Downstream Power	100 mA (with full-power 500mA upstream connection)	500 mA		
Enclosure	IP30, plastic			
Mounting Installation	In-line	DIN rail, panel		
Dimensions, mm	43.2 x 50.8 x 20.3	79 x 54 x 27		
MTBF (MIL217F), hours	1049851	375842	353807	
Regulatory / Approvals / Certifications	FCC Class A, CISPR32, CE, KCC MSIP ID#: MSIP-REI-AAD-BB-UH401 2014/30/EU – Electromagnetic Compatibility Directive 2011/65/EU amended by 2015/863/ EU – Reduction of Hazardous Substances Directive (RoHS) 2012/19/EU – Waste Electrical and Electronic Equipment Directive (WEEE) EMC: EN 55032 + AC, Class A – Information Technology Equipment EN 61000-6-4 – Generic Emissions Standard for (Heavy) Industrial Environments EN61000-6-2 – Generic Immunity Standard for (Heavy) Industrial Environments	FCC, CE, KCC R(MSIP) ID#:MSIP-REM-AKO- UHR401 (Models BBUHR-401, BB-UHR402) EMC: EN 55032 Class B – Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements EN 55024 – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement EN 61000-6-4 +A1 – Generic Emission Standard for Industrial Environments EN 61000-6-2 – Generic Immunity Standard for Industrial Environments	IEC60068-2-27 – (Shock) 50G Peak, 11 ms, 3 axes IEC60068-2-6 – (Vibration) 4G, 140-500 Hz, 3 axes IEC60068-2-32 – (Drop) 10 drops from sides, corner, edges	