

# BKV Series Industrial Converters and USB Tools User Manual

## 1. About BKV Series Industrial Converters and USB Tools



REDZ BKV series are cable-connected communication tools for local applications. All devices has USB Type A or USB Type C connections for local devices such as PCs. It has several options:

- USB to RS232 Converter or USB to RS485 Converter with built-in isolated 5V Power Output to easily connect field devices such as KMK114
- USB 2.0 - 4 Port USB Type A Hub to extend USB connectivity for multiple USB devices like KMK116 series
- USB to 2 Port Ethernet switch to connect field devices easier such as STG-LKM-CKL... series
- USB to P1 Companion Protocol Meter Interface Converter to get Electricity meters data directly to local device.
- USB to 868MHZ Wireless MBus Converter to get WMBus messages from the local device directly
- USB to MBus Converter to get MBus messages from the local device directly
- RS232 and RS485 to MBus Converter to get MBus messages from the local or remote (via gateway like CKL series) device directly

## 2. Hardware Features

All BKV Series devices have either USB Type A or Type C connection to local device such as PC.

### 2.1 Features – USB to RS485 Converter With 5V Isolated Power Output

- Converts USB to RS485
- Terminal Connector for 2 wire RS485 connection and GND
- ESD Protection for RS485 I/O Pins
  - ±15kV—Human Body Model
  - ±15kV—IEC61000-4-2, Air-Gap Discharge
  - ±8kV—IEC61000-4-2, Contact Discharge
- Allows up to 256 Transceivers on the Bus
- With Thermal Shutdown Feature
- With Current-Limiting for Driver Overload Protection
- Allows up to 500kbps error-free data transmission
- USB Type A or Type C Cable, 3m Length
- 5V/200mA Isolated Power Output With Reverse Polarity Protection

## 2.2 Features – 4 Port USB 2.0 Hub

- 4 Port USB 2.0 Hub
  - All Ports are USB Type A Female
- Fully compliant with Universal Serial Bus Specification Revision 2.0 (USB 2.0)
- Compliant with Universal Charging Solution, and USB Battery Charging Specification 1.1/1.2
- USB Type A or Type C Cable, 3m Length

## 2.3 Features – USB 2.0 to 2 Port Ethernet Switch

- USB 2.0 to 2 Port Ethernet Switch
- Supports 2 x 10/100Base-T(X) ports
- Supports Full/Half-Duplex, auto MDI/MDI-X on each port
- Fully compliant with Hi-Speed Universal Serial Bus Specification Revision 2.0
- Supports HS (480 Mbps) and FS (12 Mbps) modes
- USB Type A or Type C Cable, 3m Length

## 2.4 Features – USB to P1 Companion Protocol Meter Interface Converter

- Converts USB to P1 Companion Meter Protocol
- Terminal Connector for 3 wire P1 connection ( Data, Data Request, GND) on Meter Side
- ESD Protection on P1 Interface
  - 2000 V Human-Body Model (A114-B, Class II)
  - 200 V Machine Model (A115-A)
  - 1000 V Charged-Device Model (C101)

- RJ12 cable connection to meter must be prepared for meter connection based on desired length.
- USB Type A or Type C Cable, 3m Length

## 2.5 Features – USB to 868MHz WMBus (Wireless MBus) Converter

- USB 2.0 to WMBus (Wireless MBus) Converter
- Listen WMBus Messages from PC (or send WMBus Messages from PC)
- 868MHz Wireless MBus (WMBus) Radio Frequency (RF) Communication
- Output Power Level: Configurable (-1 dBm to 13 dBm)
- Link Budget: Up to 130 dB
- Communication Distance: Up to 3km (Line of Sight)
- Typical Communication Distance Indoor/Urban: >100m
- Link Modes: Configurable (S - Mode, T - Mode, C - Mode, C/T - Mode together)
- Supported CI Values: 53h, 5Bh, 60h, 6Ch, 6Dh, 6Eh, 6Fh, 72h, 74h, 75h, 78h, 7Ah, 7Ch, 7Dh, 80h, 8Ah, 8Bh, 8Ch, 8Dh, 8Eh, 8Fh, C3h, C4h, C5h
- Decryption: AES Decryption of Received Frames for up to 128 Devices (Mode 5, Mode 7, Mode 128 and custom modes)
- Unlimited Numbers of Wmbus device data can be listened over air and WMBus frames can be sent to USB software
- USB Type A or Type C Cable, 3m Length

## 2.6 Features – USB to MBus Converter

- USB 2.0 to MBus Converter
- Enables data transmission between field MBus devices and control/monitoring software
- Max. Number of Slaves: Up to 20 Standard Unit Loads (1.5 mA each)
- M-Bus Voltage (Mark / Space): ~36V DC / ~24V DC
- Maximum Bus Current: 55.6 mA
- Baud Rate: 300 to 9600 bps
- Max. Capacitive Load: 1000  $\mu$ F (Excellent for long M-Bus cable runs)
- Galvanic Isolation: 1500V DC (High-reliability opto-isolation)
- Short Circuit Protection: Continuous short-circuit protection with auto-recovery
- Overvoltage Protection: TVS/Zener diode protected M-Bus inputs
- Plug and Play. USB bus-powered. No external power supply is required for the MBus line.
- Integrated High-Efficiency (88%) 2W Isolated DC-DC Converter.
- USB Type A or Type C Cable, 3m Length

## 2.7 Features – RS232 and RS485 to MBus Converter

- RS232 and RS485 to MBus Converter
- Enables data transmission between field MBus devices and control/monitoring software
- Max. Number of Slaves: Up to 20 Standard Unit Loads (1.5 mA each)
- M-Bus Voltage (Mark / Space): ~36V DC / ~24V DC
- Maximum Bus Current: 55.6 mA
- Baud Rate: 300 to 9600 bps
- Max. Capacitive Load: 1000  $\mu$ F (Excellent for long M-Bus cable runs)
- Galvanic Isolation: 1500V DC (High-reliability opto-isolation)
- Short Circuit Protection: Continuous short-circuit protection with auto-recovery
- Overvoltage Protection: TVS/Zener diode protected M-Bus inputs
- Externally Powered by 12V DC. Generates required MBus voltage internally (no extra MBus power supply needed).
- Integrated High-Efficiency (90%) 2W Isolated DC-DC Converter.
- RS232 Model: Terminal Connector for 3 wire RS232 connection, Tx, Rx and GND  
ESD Protection for RSR232 I/O Pins
- RS485 Model: Terminal Connector for 2 wire RS485 connection and GND  
ESD Protection for RS485 I/O Pins

## 3. Installation

BKV Series USB Communication Tools have very small form factor. Thus, it can be acted as just cable and there is no need for special mounting. Simply connect the USB Type A or Type C cable to PC and latest windows Systems will install driver automatically.

Local Device  
with USB Type A or Type C  
Connection



— USB Connection: Type A or C

If driver installation fails, user may download driver from following link manually:

[BKV USB 2.0 to 2 Port Ethernet Switch Model Drivers](#)

Other Models Drivers can be found on this page:

<https://probeformeters.com/en/driver>

## 4. Panel Descriptions and Pin Mappings

### 4.1 Local Device Side: BKV111 & BKV114 & BKV214 & BKV312 & BKV416 & BKV511 & BKV512



USB Type A Cable connection, 3m cable

### 4.2 Local Device Side: BKV121 & BKV124 & BKV224 & BKV322 & BKV426 & BKV521 & BKV522



USB Type C Cable connection, 3m cable

### 4.3 RS232 Converter With 5V Isolated Power Output: BKV111 & BKV121



Terminal Connector for 3 wire RS232 Connection and 5V Isolated Power Output

Pin Number	Description
1	Tx
2	Rx
3	GND
4	Isolated Output Power -
5	Isolated Output Power + (5VDC)

Following LEDs are available to show the device status

LED	Description
PWR	Turns ON if the device is powered properly
Rx	Rx and Tx LEDs turn ON during data transfer according to data activity
Tx	Rx and Tx LEDs turn ON during data transfer according to data activity

### 4.4 Connector Side: BKV114 & BKV124



Terminal Connector for 3 wire RS485 Connection and 5V Isolated Power Output

Pin Number	Description
1	B
2	A
3	GND (Optional)
4	Isolated Output Power -
5	Isolated Output Power + (5VDC)

Following LEDs are available to show the device status

LED	Description
PWR	Turns ON if the device is powered properly
Rx	Rx and Tx LEDs turn ON during data transfer according to data activity
	Rx and Tx LEDs turn

Tx	ON during data transfer according to data activity
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### 4.5 4 Port USB 2.0 Hub: BKV214 & BKV224



4 port USB2.0 USB Type A Female Inputs

Port Number	Description
1	USB Hub - Port 1, USB Type A Female
2	USB Hub - Port 2, USB Type A Female
3	USB Hub - Port 3, USB Type A Female
4	USB Hub - Port 4, USB Type A Female

Following LEDs are available to show the device status

LED	Description
PWR	Turns ON if the device is powered properly
USB-1	Turns ON if port 1 is used
	Turns ON if port 2 is

USB-2	used
USB-3	Turns ON if port 3 is used
USB-4	Turns ON if port 4 is used

#### 4.6 USB 2.0 to 2 Port Ethernet Switch: BKV312 & BKV322



2 ports 10/100 Ethernet with Full-Duplex Support

Port Number	Description
1	Ethernet Switch Port 1
2	Ethernet Switch Port 2

Following LEDs are available to show the device status

LED	Description
PC	Turns ON when device is connected via USB cable and powered up
ETH-1	Turns ON if port 1 is used and there is data activity
ETH-2	Turns ON if port 2 is used and there is data

	activity
FDUPLEX	Ethernet link is Full Duplex when LED is ON and half duplex when LED is OFF
SPEED	Ethernet link 100Mbps when LED is ON and 10Mbps when LED is OFF

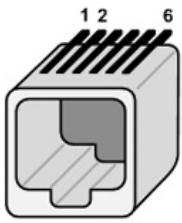
#### 4.7 USB to P1 Companion Protocol Meter Interface Converter: BKV416 & BKV426



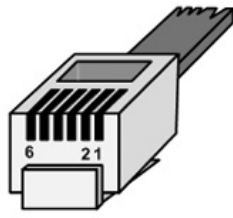
Terminal Connector for 3 wire P1 Companion Protocol Standard Interface

Pin Number	Description
1	CTRL (Data Request)
2	Rx (Data)
3	GND
4	NC: Not Connected
5	NC: Not Connected

User should arrange RJ12 cable needed to connect to meter in desired length.



Metering System  
RJ12 female socket



OSM  
RJ12 male connector

Pin Number	Description
1	+5V Power Supply: <b>NOT USED</b>
2	Data Request (CTRL)
3	Data GND
4	Not connected (NC)
5	Data (Rx)
6	Power GND: <b>NOT USED</b>

Following LEDs are available to show the device status

LED	Description
PWR	Turns ON if the device is powered properly
Rx	Rx and Tx LEDs turn ON during data transfer according to data activity
Tx	Rx and Tx LEDs turn ON during data transfer according to data activity

#### 4.8 USB 2.0 to 868MHz WMBus (Wireless MBus) Converter: BKV511 & BKV521



868MHz WMBus (Wireless MBus) Antenna Connector  
 1 Standard SMA female Antenna interface, 50 ohm

Following LEDs are available to show the device status

LED	Description
PC-Rx	Turns ON and OFF based on data transmission on USB connection side
PC-Tx	Turns ON and OFF based on data transmission on USB connection side
Status	Blinks during normal operation
RF-Rx	Turns ON and OFF based on data transmission on WMBus side
RF-Tx	Turns ON and OFF based on data transmission on WMBus side

#### 4.9 USB to MBus Converter: BKV512 & BKV522



#### MBus Connector

Max. Number of Slaves: Up to 20 Standard Unit Loads (1.5 mA each)

Maximum Bus Current: 55.6 mA

Max. Capacitive Load: 1000  $\mu$ F (Excellent for long M-Bus cable runs)

Galvanic Isolation: 1500V DC (High-reliability opto-isolation)

Short Circuit Protection: Continuous short-circuit protection with auto-recovery

Plug and Play. USB bus-powered. No external power supply is required for the M-Bus line.

Following LEDs are available to show the device status

LED	Description
PWR	Turns ON if the device is powered properly
Rx	Rx and Tx LEDs turn ON during data transfer according to data activity
Tx	Rx and Tx LEDs turn ON during data transfer according to data activity

#### 4.10 RS232 to M-Bus Converter: BKV532



Terminal Connector for 3 wire RS232 Connection and 12V DC Power Input

Pin Number	Description
1	Tx
2	Rx
3	GND
4	GND
5	12V DC Input

#### MBus Connector

Max. Number of Slaves: Up to 20 Standard Unit Loads (1.5 mA each)

Maximum Bus Current: 55.6 mA

Max. Capacitive Load: 1000  $\mu$ F (Excellent for long M-Bus cable runs)

Galvanic Isolation: 1500V DC (High-reliability opto-isolation)

Short Circuit Protection: Continuous short-circuit protection with auto-recovery

Plug and Play. USB bus-powered. No external power supply is required for the M-Bus line.

Following LEDs are available to show the device status

LED	Description
PWR	Turns ON if the device is powered properly
Rx	Rx and Tx LEDs turn ON during data transfer according to data activity
	Rx and Tx LEDs turn

Tx

ON during data transfer according to data activity

#### 4.10 RS485 to MBus Converter: BKV542



Terminal Connector for 3 wire RS485 Connection and and 12V DC Power Input

Pin Number	Description
1	B
2	A
3	GND (Optional)
4	GND
5	12V DC Input

##### MBus Connector

Max. Number of Slaves: Up to 20 Standard Unit Loads (1.5 mA each)

Maximum Bus Current: 55.6 mA

Max. Capacitive Load: 1000  $\mu$ F (Excellent for long M-Bus cable runs)

Galvanic Isolation: 1500V DC (High-reliability opto-isolation)

Short Circuit Protection: Continuous short-circuit protection with auto-recovery

Plug and Play. USB bus-powered. No external power supply is required for the MBus line.

Following LEDs are available to show the device status

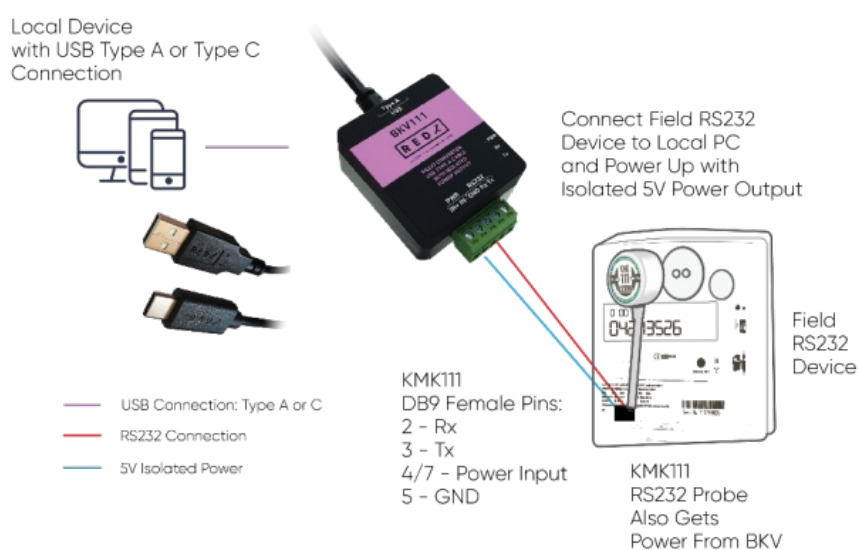
LED	Description
PWR	Turns ON if the device is powered properly
Rx	Rx and Tx LEDs turn ON during data transfer according to data activity
Tx	Rx and Tx LEDs turn ON during data transfer according to data activity

## 5. Usage Scenarios and Connection Diagrams

BKV Series USB Communication Tools can be used in different scenarios. Usages are not limited to that examples and user may create their own usage scenario.

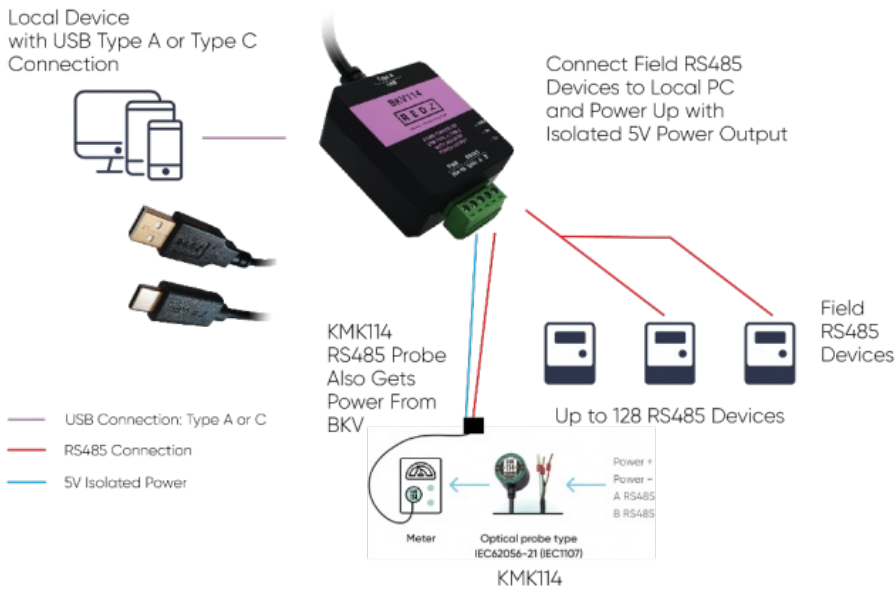
### 5.1 USB to RS232 Converter With Isolated Power Output

BKV Series USB to RS232 Converter with built-in isolated 5V Power Output helps users to easily connect field devices such as KMK111. It has USB Type A and Type C connection options on local field device side (such as PC).



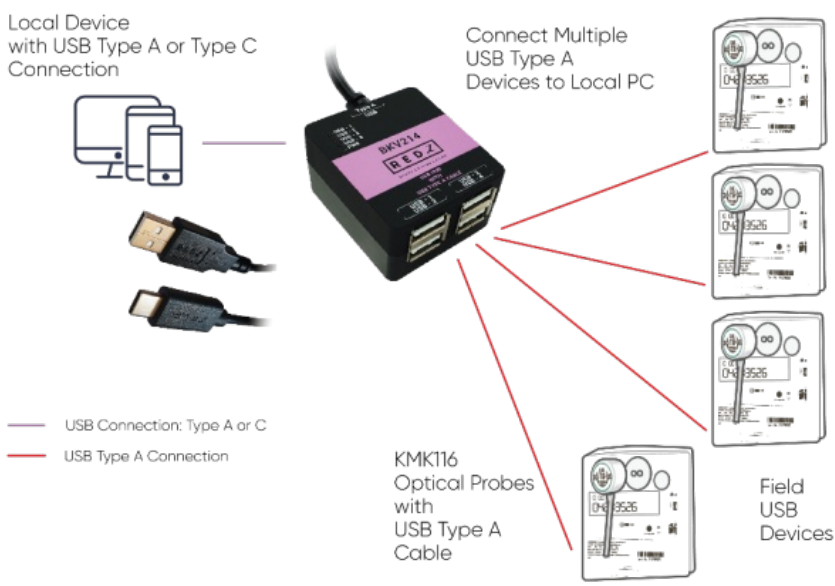
### 5.2 USB to RS485 Converter With Isolated Power Output

BKV Series USB to RS485 Converter with built-in isolated 5V Power Output helps users to easily connect field devices such as KMK114. It has USB Type A and Type C connection options on local field device side (such as PC).



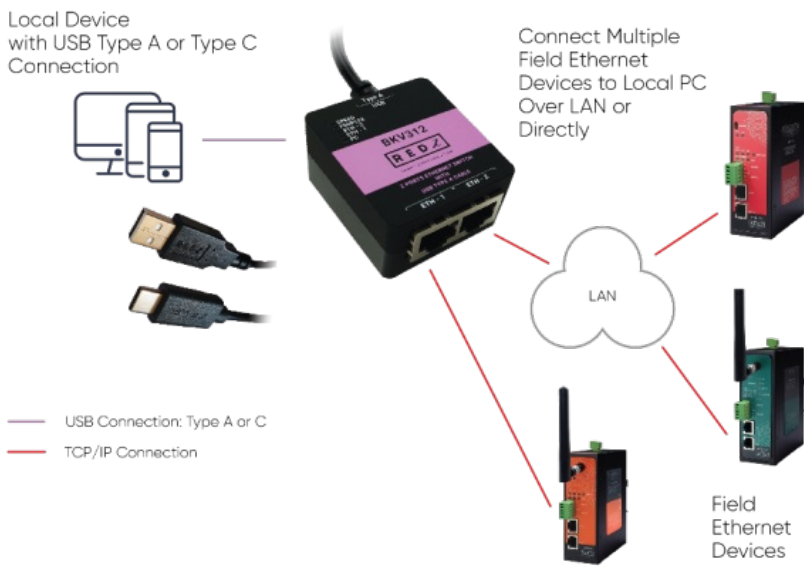
### 5.3 4 Port USB 2.0 Hub

BKV Series USB 2.0 - 4 Port USB Type A Hub helps users to easily extend USB connectivity for multiple USB devices like KMK116 series.



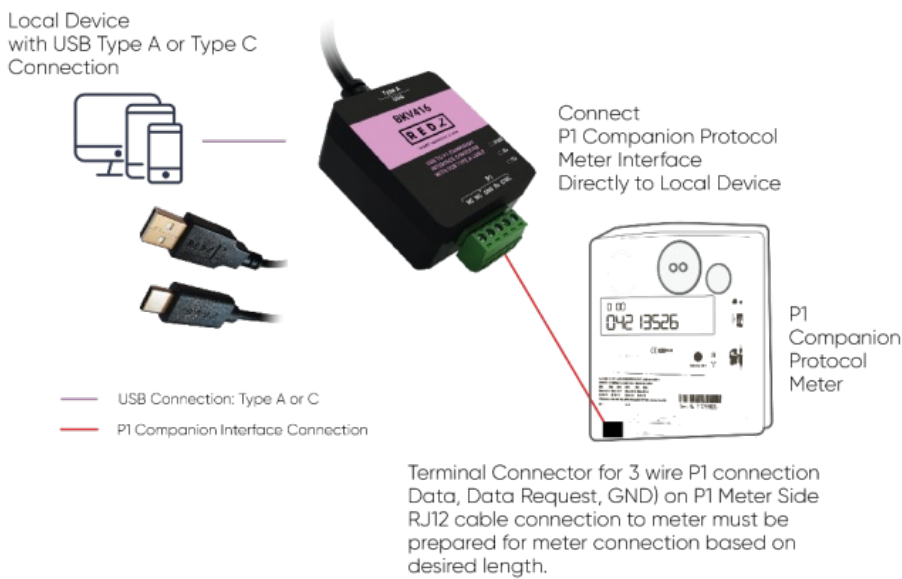
### 5.4 USB 2.0 to 2 Port Ethernet Switch

BKV Series USB to 2 Port Ethernet switch helps users to easily connect field devices such as STG-LKM-CKL... series.



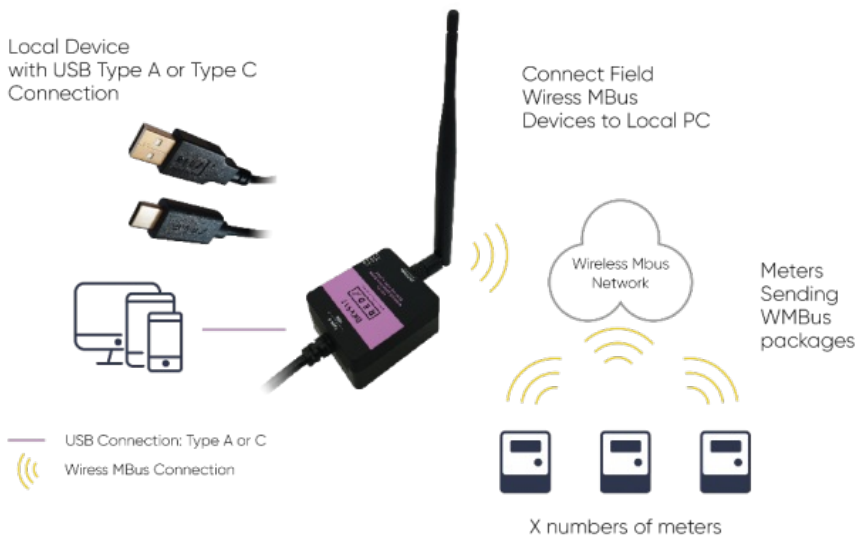
## 5.5 USB to P1 Companion Protocol Meter Interface Converter

BKV Series USB to P1 Companion Protocol Meter Interface Converter helps users to easily get P1 Electricity meters data directly to local device such as PC.



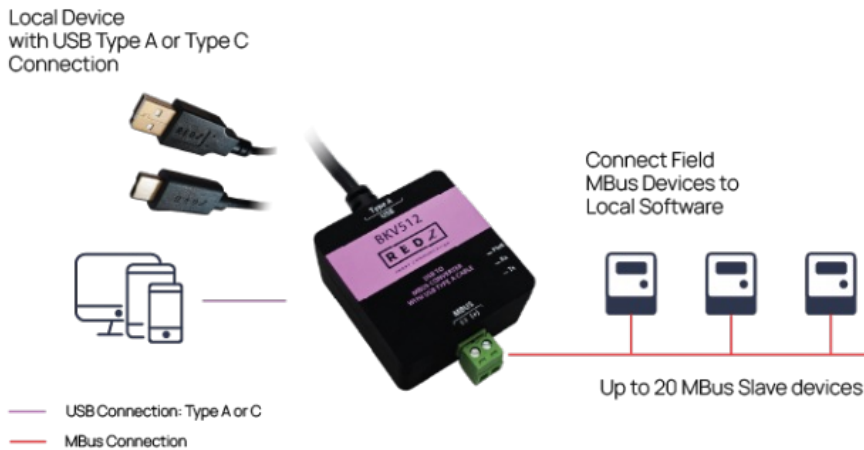
## 5.6 USB to 868MHz WMBus (Wireless MBus) Converter

BKV Series USB to 868MHz Wireless MBus Converter helps users to easily get WMBus messages from local WMBus devices directly to local PC.



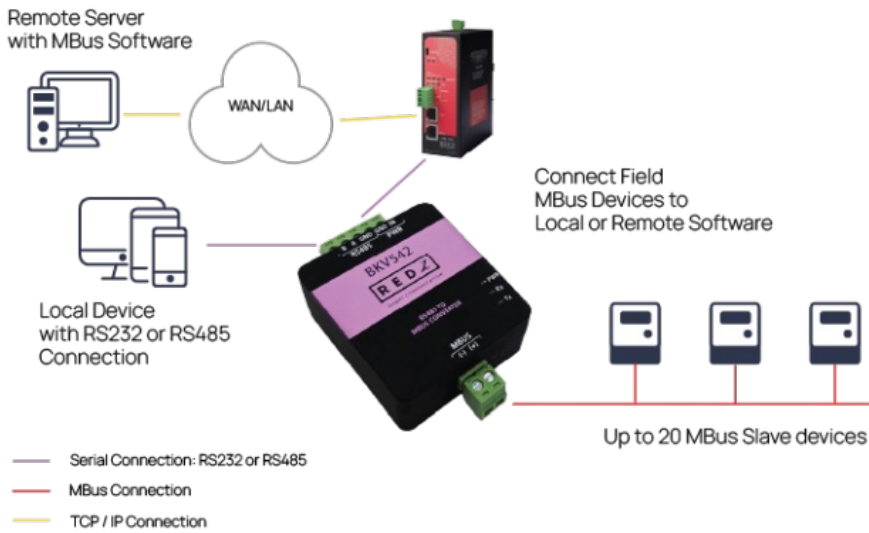
## 5.7 USB to MBus Converter

BKV Series USB to MBus Converters help users to easily connect up to 20 field MBus Slave devices locally and a TCP to Serial Gateway like CKL Series). It enables data transmission between field MBus devices and control/monitoring software.



## 5.8 RS232 and RS485 to MBus Converter

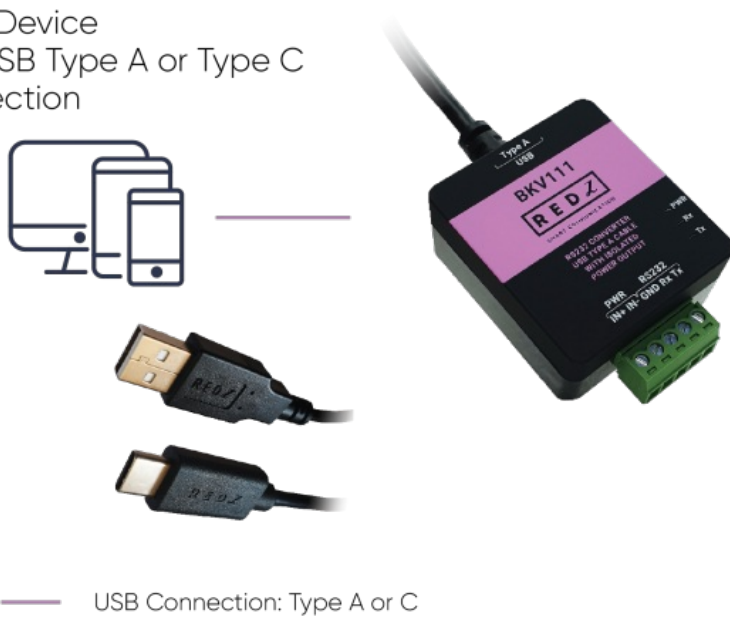
BKV Series RS232/RS485 to MBus Converters help users to easily connect up to 20 field MBus Slave devices locally or remotely (over RS232 or RS485 and a TCP to Serial Gateway like CKL Series). It enables data transmission between field MBus devices and control/monitoring software.



## 6. Operating Instructions

BKV Series Industrial Converters and USB Tools are easy to operate. Simply connect the USB Type A or Type C cable to PC and latest windows Systems will install driver automatically.

Local Device with USB Type A or Type C Connection



If driver installation fails, user may download driver from following link manually:

[BKV USB 2.0 to 2 Port Ethernet Switch Model Drivers](#)

Other Models Drivers can be found on this page:

<https://probeformeters.com/en/driver>

### 6.1 USB to RS232 Converter With Isolated Power Output

1. Connect Cable side to field USB device such as PC and complete installation of driver

2. Connect RS232 Side to field RS232 device such as KMK111 optical probe
3. If needed, connect the power output to field RS232 Device. In our example It is KMK111 and it gets power from Pin 4 ( and GND on pin 5)
4. Use application to interact with RS232 device such as ZR software for KMK111 optical probe

Here is a video example for reading energy meter with KMK111 RS232 optical probe via BKV Series USB to RS232 Converter:

## 6.2 USB to RS485 Converter With Isolated Power Output

1. Connect Cable side to field USB device such as PC and complete installation of driver
2. Connect RS485 Side to field RS485 device such as KMK114 optical probe
3. If needed, connect the power output to field RS485 Device. In our example It is KMK114 and it gets power from Power + cable ( and GND from Power - cable)
4. Use application to interact with RS485 device such as ZR software for KMK114 optical probe

Here is a video example for reading energy meter with KMK114 RS485 optical probe via BKV Series USB to RS485 Converter:

## 6.3 4 Port USB 2.0 Hub With

1. Connect Cable side to field USB device such as PC and complete installation of driver
2. Connect USB sides to field USB device such as KMK116 optical probe
3. Use application to interact with USB devices such as ZR software for KMK116 optical probe

Here is a video example for reading 4 energy meters with KMK116 USB optical probes via BKV Series 4 Port USB 2.0 Hub:

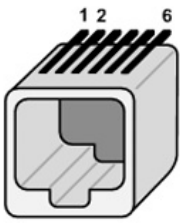
## 6.4 USB 2.0 to 2 Port Ethernet Switch

1. Connect Cable side to field USB device such as PC and complete installation of driver
2. Connect Ethernet sides to field Ethernet devices such as LAN Switch and CKL Series directly
3. Use web interface to access devices in field such as CKL directly and other REDZ models such as STG, LKM... over LAN.

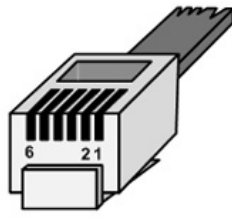
Here is a video example for connecting web interface of CKL series over LAN via BKV Series USB 2.0 to 2 Port Ethernet Switch:

## 6.5 USB to P1 Companion Protocol Meter Interface Converter

1. Connect Cable side to field USB device such as PC and complete installation of driver
2. Connect P1 Side to field P1 Electricity Meter via P1 Interface  
Arrange RJ12 cable needed to connect to meter in desired length for connection



Metering System  
RJ12 female socket



OSM  
RJ12 male connector

Pin Number	Description
1	+5V Power Supply: <b>NOT USED</b>
2	Data Request (CTRL)
3	Data GND
4	Not connected (NC)
5	Data (Rx)
6	Power GND: <b>NOT USED</b>

3. Use application to listen data from P1 Companion Standard Meter such as RealTerm terminal software.

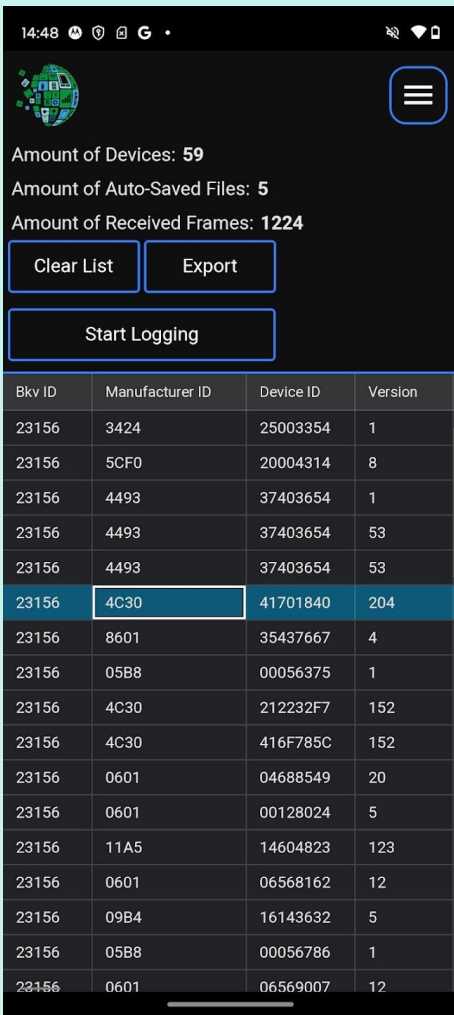
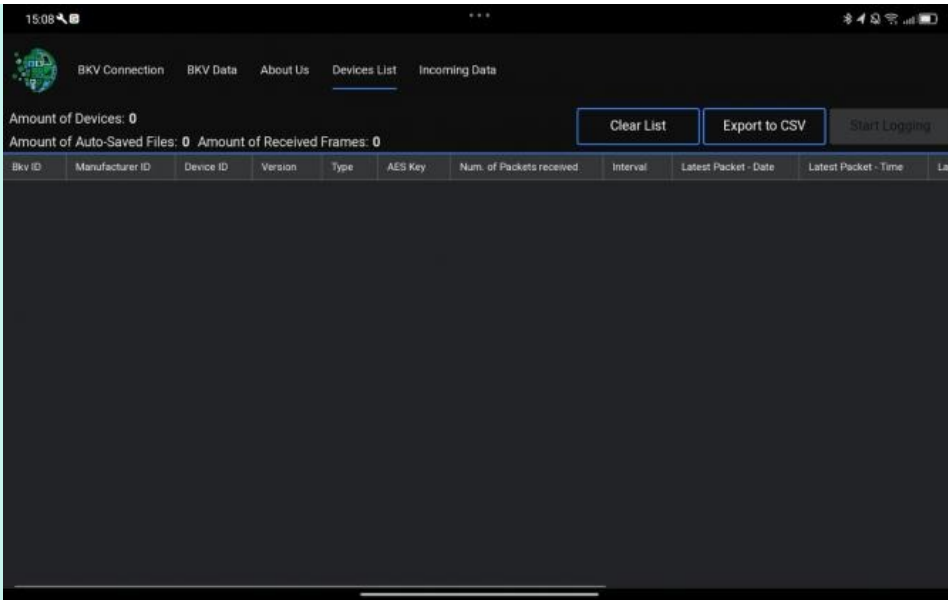
Here is a video example for reading an energy meter in P1 Companion Standard via BKV Series USB to P1 Companion Protocol Meter Interface Converter:

## 6.6 USB to 868MHz WMBus (Wireless MBus) Converter

1. Connect Cable side to field USB device such as PC and complete installation of driver
2. Use application to listen field 868MHZ WMBus devices or send WMBus packets over air.

Here is link for latest Z Terminal Software which can be used to configure and monitor this device: [WMBus Software](#)

👉 **NOTE:** There is also Android Software available for BKV Series USB to 868MHz WMBus (Wireless MBus) Converters. Contact our company to get more information:



Supported Link modes are:

	Frequency	Coding	Chiprate	Bitrate	Frame Format
<b>S - Mode</b>	868.30 MHz	Manchester	32786 cps	16384 bps	A
<b>T - Mode (Rx)</b> <b>(Meter to Other)</b>	868.95 MHz	3-Out-Of-6	10000 cps	66666 bps	A

<b>T - Mode (Tx)</b> <b>( Other to Meter)</b>	868.30 MHz	Manchester	32768 cps	16394 bps	A
<b>C - Mode (Rx)</b> <b>(Meter to Other)</b>	868.95 MHz	NRZ	100000 cps	100000 bps	A, B
<b>C - Mode (Tx)</b> <b>( Other to Meter)</b>	869.525 MHz	NRZ	50000 cps	50000 bps	A, B
<b>C/T - Mode (Rx)</b> <b>(Meter to Other)</b>	868.95 MHz	NRZ 3-Out-Of-6	10000 cps 10000 cps	10000 bps 66666 bps	A, B A

Supported CI Values are:

<b>CI-Field</b>	<b>Function / Layer</b>	<b>Up- or Down-link</b>	<b>TPL header - Type</b>	<b>Protocol / Service</b>
53h	Application Reset or Select	Down	Long	Application Reset or Select
5Bh	Command	Down	Long	M-Bus
60h	Command	Down	Long	DLMS
6Ch	Time Sync	Down	Long	Generic
6Dh	Time Sync	Down	Long	Generic
6Eh	Application Error	Up	Short	Generic
6Fh	Application Error	Up	Long	Generic
72h	Response	Up	Long	M-Bus
74h	Alarm	Up	Short	Generic
75h	Alarm	Up	Long	Generic
78h	Response	Up	None	M-Bus
7Ah	Response	Up	Short	M-Bus
7Ch	Response	Up	Long	DLMS
7Dh	Response	Up	Short	DLMS
80h	Pure Transport Layer	Down	Long	None
8Ah	Pure Transport Layer	Up	Short	None
8Bh	Pure Transport Layer	Up	Long	None
8Ch	Extended Link Layer	Up / Down	Short	Lower Layer Service ( 2 Byte )
8Dh	Extended Link Layer	Up / Down	Long	Lower Layer Service ( 8 Byte )
8Eh	Extended Link Layer	Up / Down	Long	Lower Layer Service ( 10 Byte )
8Fh	Extended Link Layer	Up / Down	Long	Lower Layer Service

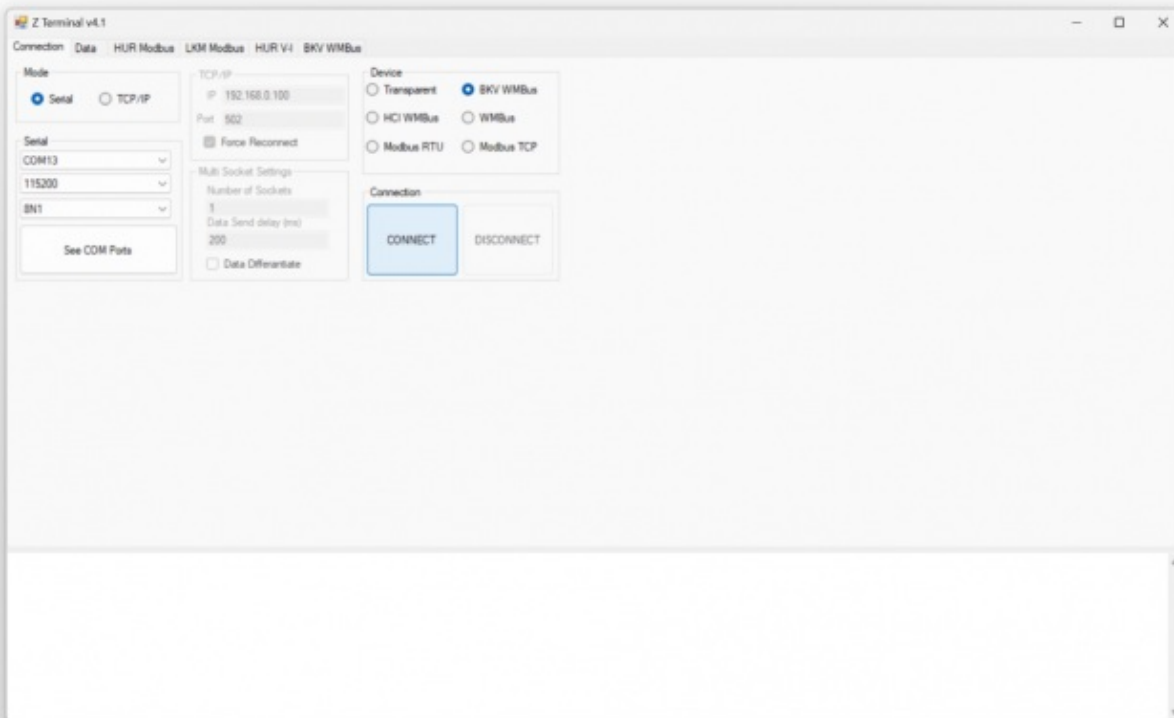
				( 16 Byte )
C3h	Command	Down	Long	Security Information Transport
C4h	Response	Up	Short	Security Information Transport
C5h	Response	Up	Long	Security Information Transport

Packet Decryption and Encryption Support List is:

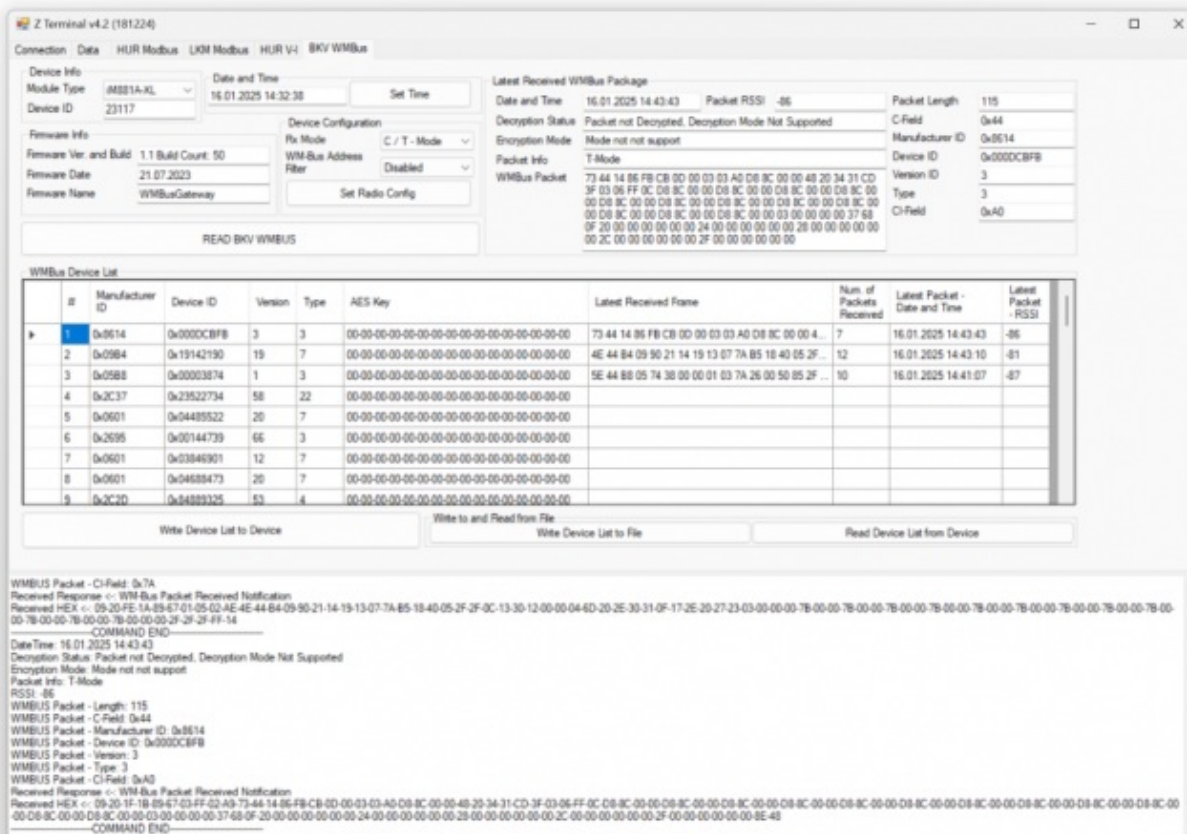
Mode	Encryption Type	Authentication	Supported
0	None	None	YES
2	DES CBC	None	NO
3	DES CBC	None	NO
5	AES-128 CBC	None, MIC	YES
7	AES-128 CBC, dynamic key	CMAC	YES
8	AES-128 CTR	CMAC	NO
9	AES-128 GCM	GCM/GMAC	NO
10	AES-128 CCM	CCM	NO
128	ELL AES-128 CTR	None, CRC	YES
129	Custom Modes	None	e.g. AT-WMBUS-NA-1

In order to operate Z Terminal software simply click its icon. Then please select COM Port of the device and select device type "BKV WMBus".

Device will communicate in 115200 baud and 8N1 data format.



Click connect when all settings are done and go to "BKV WMBus" tab.



Click "READ BKV WMBUS" button to read

1. Device Info: Device module model and serial number

**Device Info**

Module Type

Device ID

2. Date and Time: Device date and time

User can also click "Set Time" button to set device time based on PC time (automatic setting of device with PC time, no input of time is required)

**Date and Time**

3. Firmware Info: Device module firmware info

**Firmware Info**

Firmware Ver. and Build

Firmware Date

Firmware Name

4. Device Configuration: Selected WMBus packet reception mode and info regarding if filter is enabled

User can also set Reception mode for one of following options: OFF, S-Mode, T-Mode, C/T Mode

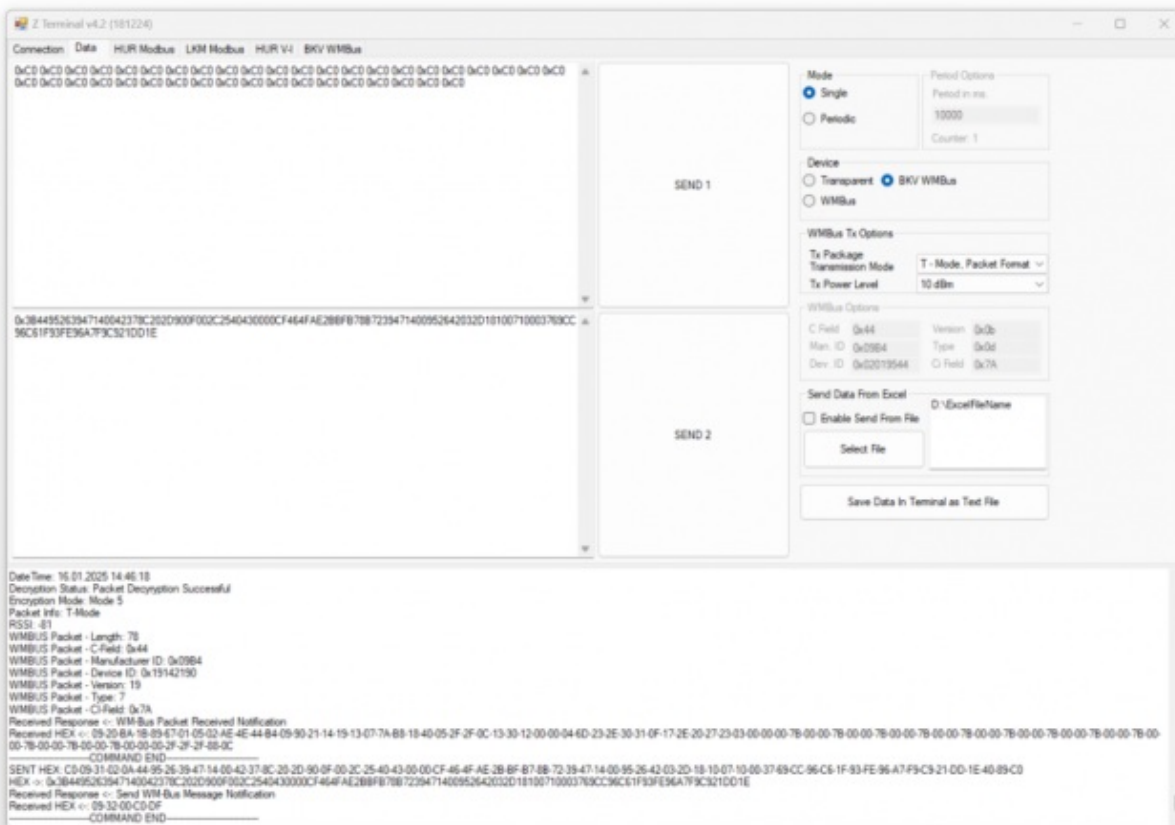
User can also activate Packet filter based on previously saved "WMBus Device List". User must save device list before enabling the filter.

**Device Configuration**

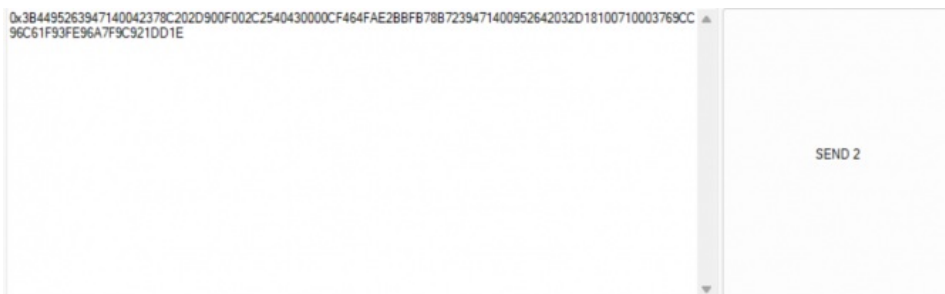
Rx Mode

WM-Bus Address

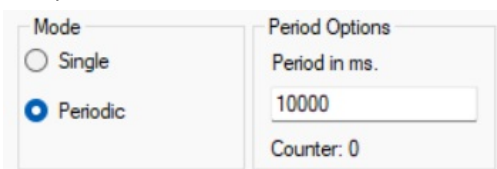




1. Enter Data as full WMBus frame in one of data windows. Data must be in Hex format and must contain at least 1 "0x" sign

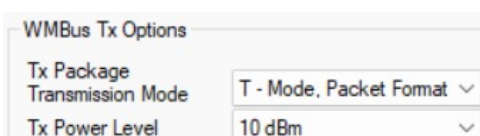


2. Select "Mode". Z Terminal can send a single packet or can send packet periodic, if periodic selected, select the period in ms.



3. Select "WMBus Tx Options"

Tx Mode can be one of following: S - Mode, Packet Format, T - Mode, Packet Format A, C - Mode, 50.000 bps, Format A, C - Mode, 100.000 bps, Format A, C - Mode, 50.000 bps, Format B, C - Mode, 100.000 bps, Format B  
Tx Power Level can be between - 1 dBm to +13 dBm.

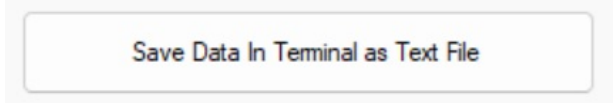


4. Click "Send" button once all settings are done. Device will send data and show status in terminal

Button name will change to "STOP" if "Periodic" is selected, in this case user can stop data by clicking the button again.

```
SENT HEX: C0-09-31-02-0A-44-95-26-39-47-14-00-42-37-8C-20-2D-90-0F-00-2C-25-40-43-00-00-CF-46-4F-AE-2B-BF-87-8B-72-39-47-14-00-95-26-42-03-2D-1B-10-07-10-00-37-69-CC-96-C6-1F-93-FE-96-A7-F9-C9-21-DD-1E-40-89-C0
HEX -> 0c3b4495263947140042378c202d900f002c2540430000cf464fae2bbfb78b7239471400952642032d1b100710003769cc96c61f93fe96a7f9c921dd1e
Received Response <-: Send WM-Bus Message Notification
Received HEX <-: 05-32-00-C0-DF
COMMAND END
```

5. "Save Data In Terminal as Text File" can be used to save terminal data to a txt file.



Here is a video example for listening Wireless MBus frames over air with ZTerminal application via BKV Series USB to 868MHz WMBus (Wireless MBus) Converter:

Here is the video for physical connections of same application:

## 6.7 USB to MBus Converter

1. Connect Cable side to field USB device such as PC and complete installation of driver
2. Connect MBus Side to field MBus device (Up to 20 field MBus slave devices are supported)  
Plug and Play. USB bus-powered. No external power supply is required for the MBus line.  
Integrated High-Efficiency (88%) 2W Isolated DC-DC Converter.
3. Use field device Mbus application to interact with MBus slave device

Here is a video example for reading MBus device via BKV Series USB to MBus Converter:

## 6.8 RS232 and RS485 to RS485 Converter

1. Connect RS232 or RS485 side to PC for local reading. BKV Series USB to RS232 or USB to RS485 Converter can also be used to interface the device.  
CKL Series ethernet gateway can be used to connect BKV Series RS232 and RS485 to RS485 Converter and access field MBus devices over LAN or WAN remotely.
2. Connect MBus Side to field MBus device (Up to 20 field MBus slave devices are supported)
3. Power Up device by applying external power adapter 12V DC.  
This also generates required MBus voltage internally (no extra MBus power supply needed).  
Integrated High-Efficiency (90%) 2W Isolated DC-DC Converter.
4. Use field device Mbus application to interact with MBus slave device

Here is a video example for reading MBus device via BKV Series RS485 to MBus Converter:

## 7. Ordering Information

**BKV111:** USB to RS232 Converter With USB Type A Cable and 5V Isolated Power Output

**BKV114:** USB to RS485 Converter With USB Type A Cable and 5V Isolated Power Output

**BKV121:** USB to RS232 Converter With USB Type C Cable and 5V Isolated Power Output

**BKV124:** USB to RS485 Converter With USB Type C Cable and 5V Isolated Power Output

**BKV214:** 4 Port USB 2.0 Type A Hub With USB Type A Cable

**BKV224:** 4 Port USB 2.0 Type A Hub With USB Type C Cable

**BKV312:** USB to 2 Port Ethernet Switch With USB Type A Cable

**BKV322:** USB to 2 Port Ethernet Switch With USB Type C Cable

**BKV416:** USB to P1 Companion Protocol Meter Interface Converter With USB Type A Cable

**BKV426:** USB to P1 Companion Protocol Meter Interface Converter With USB Type C Cable

**BKV511:** USB to 868MHz WMBus (Wireless MBus) Converter With USB Type A Cable

**BKV521:** USB to 868MHz WMBus (Wireless MBus) Converter With USB Type C Cable

**BKV512:** USB to MBus Converter With USB Type A Cable

**BKV522:** USB to MBus Converter With USB Type C Cable

**BKV532:** RS232 to MBus Converter

**BKV542:** RS485 to MBus Converter

## 8. Product Selection

Model	USB Type A Cable for PC Connection	USB Type C Cable for PC Connection	RS485 Connection	RS232 Connection	5V Isolated Power Output	4 Port USB 2.0 Type A Hub	2 x T(x) ETH ports	P1 Companion Meter Interface	868MHz Wireless MBus (WMBus)	MBus Interface
BKV111	X			X	X					
BKV114	X		X		X					
BKV121		X		X	X					
BKV124		X	X		X					
BKV214	X					X				
BKV224		X				X				
BKV312	X						X			
BKV322		X					X			
BKV416	X							X		
BKV426		X						X		
BKV511	X								X	
BKV521		X							X	
BKV512	X									X
BKV522		X								X
BKV532				X						X
BKV542			X							X