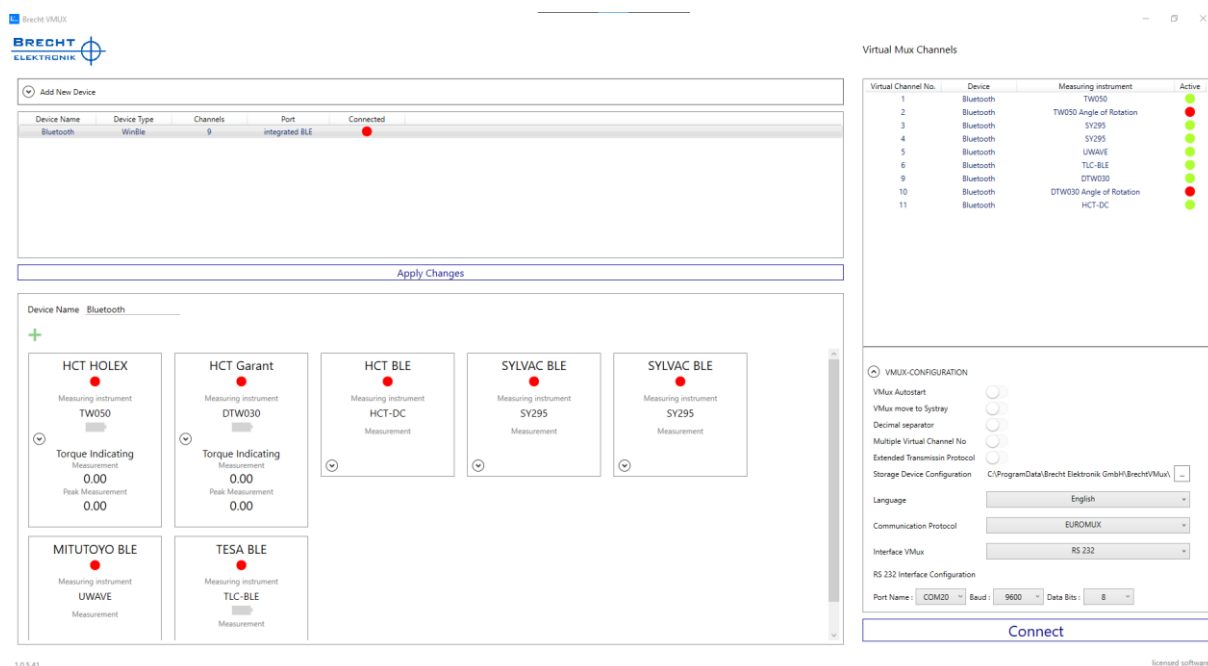


BRECHT V-MUX

The universal measuring device connection



Brecht V-MUX is a software that makes it possible to take measured values from different measuring devices and transmit them uniformly to SPC/QA/ERP solutions.

The Brecht V-MUX dongle is the licence carrier and provides 2 serial ports for communication between the V-MUX software and the application software.

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IDENTIFICATION DATA

Product: Brecht V-MUX with V-MUX dongle
Version: 00 original operating manual
Date of release: 07/2022

SYSTEM REQUIREMENTS

At least Windows 7 32-bit version.
.Net Framework 4.8
V-MUX dongle item no. 498989 DONGLE (Version 1.0.1)

SAFETY INSTRUCTIONS:

TARGET GROUP:

All activities described in these operating instructions may only be carried out by trained specialist personnel authorised by the system operator.

OPERATING INSTRUCTIONS:

Please read the operating instructions carefully before use, this will prevent errors in handling the appliance and ensure safe handling. The operating instructions must be kept in a safe place and must be readily available at all times.

PROPER USE:

The product may only be operated with a suitable USB-C cable. The connection is made to a (free) USB port of a Windows PC. After use, unplug the product again, do not leave it unattended under voltage. A built-in, visible LED lights up when voltage is applied.

The product may only be operated in dry rooms and must be protected from heat, cold and moisture.

The product is not suitable for children. The product must never be operated or left unattended.

The product may only be used for the purpose described in the operating instructions.

MAINTENANCE, CARE, STORAGE, TRANSPORT

The product is maintenance-free. It must not be opened and, if defective, must not be repaired.

Contact the dealer or manufacturer if the product is defective.

Clean the product with a clean cloth, without detergent. When not in use for a long time, store the product in a dry, dust-free environment.

The product is transported in ESD-dischargeable packaging.

DISPOSAL OF THE PRODUCT

According to the European WEEE Directive, electrical and electronic devices must not be disposed of with household waste. To protect the environment, you as a consumer are obliged under the Electrical and Electronic Equipment Act (ElektroG) to return electrical and electronic equipment to the manufacturer, dealer or public collection point free of charge for disposal.

The symbol in these operating instructions indicates this disposal of the product.



EC DECLARATION OF CONFORMITY

With the CE mark in the operating instructions and on the product, Brecht Elektronik GmbH declares that the product complies with the basic requirements and directives of the European regulations.



GENERAL

DESCRIPTION

V-MUX is a software that makes it possible to take measured values from different measuring devices and transmit them uniformly to SPC/QA/ERP solutions. The measuring devices can be connected via different connections, e.g., USB, RS232 or radio solutions. Classic (Brecht) multiplexers can also be used as data sources.

The V-MUX software installs itself in the system tray similar to a scanner driver. The application software can be used without restrictions. With a mouse click, the V-MUX window can be opened to check or change settings

COMMUNICATION WITH APPLICATION SOFTWARE

The V-MUX software supports several established communication protocols that can be selected with a mouse click. Communication takes place classically via a COM port connection. This allows a variety of PC applications to be connected without any adaptation. If an application software does not support direct communication, the V-MUX software can also work as a keyboard emulation. This means that the measured values are entered as manual keyboard input on the numeric keypad.

COMMUNICATION PROTOCOLS

Language	English
Communication Protocol	EUROMUX
Interface VMux	EUROMUX
RS 232 Interface Configuration	MUX10
	MUX50
	DMX16

The DMX16 and EUROMUX communication protocols can address up to 99 channels.

The MUX10 and MUX50 protocols support a maximum of 9 channels.

DOWNLOAD

Current versions of software, driver and manual can be downloaded from this link:



ho7.eu/v-mux

INSTRUMENT CONNECTION

UNIVERSAL SERIAL BUS

- Brecht Elektronik all MUX-Devices
- Peter-Hirt USB-Probes DGHUSBCDC
- TESA USB-Probes

MAHR INTEGRATED WIRELESS

- All MAHR-Devices with Integrated Wireless

BLUETOOTH

- Hoffmann Group HCT
- Sylvac Bluetooth-Measuring Devices
- TESA Bluetooth- Measuring Devices
- ELIAS BlueDat-Adapter
- Mitutoyo UWAVE

USER INTERFACE

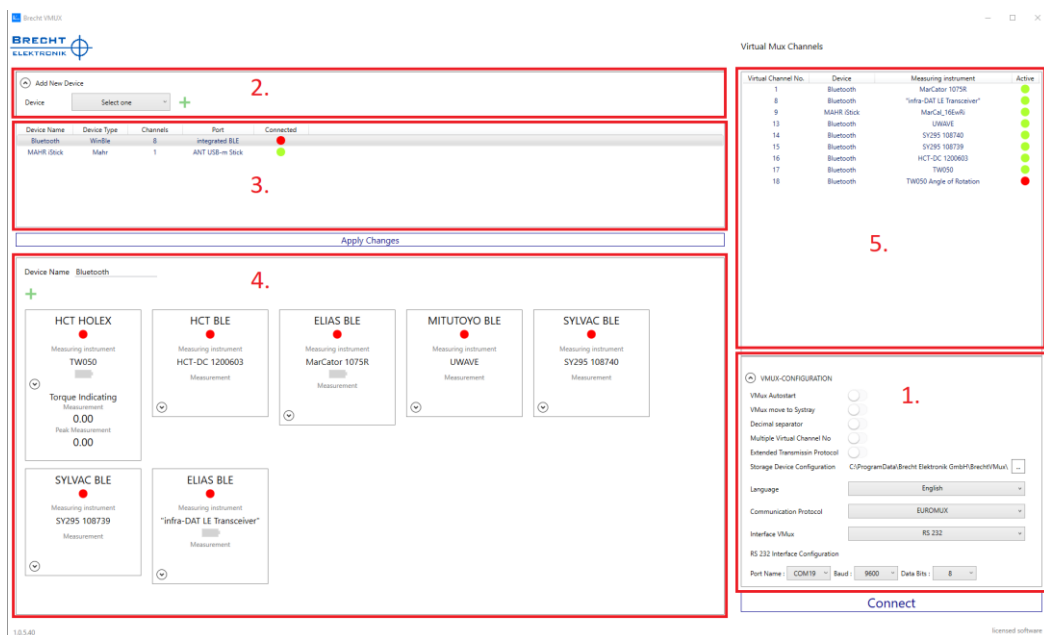


Image 1: Overview of the V-MUX software user interface

The numbers in Fig. 1 indicate the following ranges:

1. V-MUX configuration
2. menu to add new device
3. device view
4. channel view
5. overview of the virtual channels "Virtual MUX"

V-MUX-CONFIGURATION

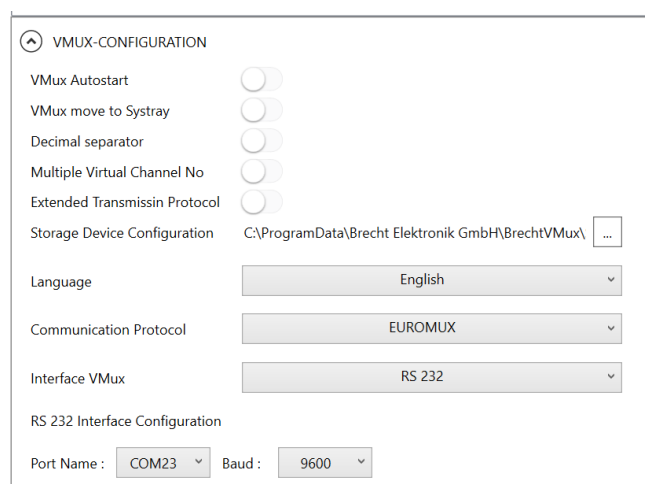


Image 2: V-MUX-Configuration

a. V-MUX Autostart

Brecht V-MUX starts automatically after booting the operating system.

b. Hide V-MUX

Brecht V-MUX is moved to the system tray of Microsoft Windows after start-up.

c. Decimal separator

When the slider is switched off, the comma (,) is used as decimal separator. When switched on, the dot (.) is used.

d. Channel no. multiple

When switched on, it is possible to assign the same virtual channel number to several units.

E.g.: You use two measuring probes on different measuring stations and have the requirement to store the measured values on one feature in the QA software. In this case, assign the same virtual channel number 02 to both probes. To distinguish from which probe the measured value is sent, it is recommended to activate the "extended transmission protocol".

e. Extended transmission protocol

In addition to the measured value, the serial number that was previously added to the channel is also transmitted.

E.g.: Measured value with serial number

01MW +0002,342 542638<CR><LF>

E.g.: Measured value without serial number

01MW +0002,342<CR><LF>

f. Storage location for device configuration.

Storage location for the device configuration when used by several users on one PC.

g. Language

The selected language will be active after V-MUX restart

h. Communication protocol

Selection of available output formats.

EUROMUX, MUX10, MUX50, DMX16

i. Interface V-MUX

The following interfaces are available for selection:

- RS232 interface for communication with the application software of your choice.
- Virtual Keyboard virtual keyboard interface.
- **After the demo period of 30 days, communication is only possible with the Brecht V-MUX dongle (art. no.: 498989 DONGLE)**

ADD A NEW DEVICE

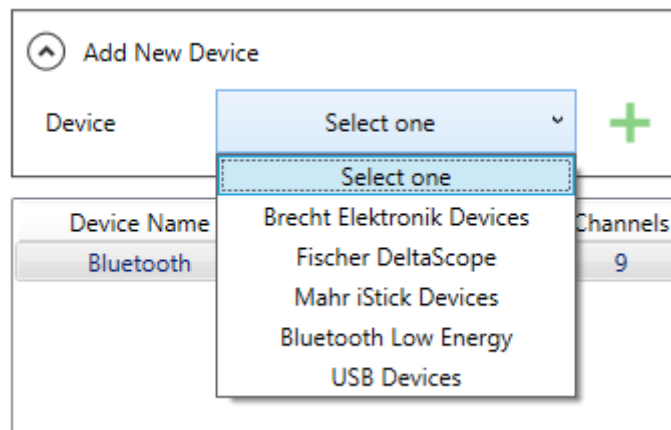


Image 3: Drop-down menu for adding a new device

Proceed as follows to add a new device:

Click on "Select one".

Select the desired device from the list and click on it.

Add the selected device by clicking on "+".

1. Device View

Device Name	Device Type	Channels	Port	Connected
Bluetooth	WinBle	9	integrated BLE	●
Mux 8E	Brecht	8	COM21	●
MAHR iStick	Mahr	3	ANT USB-m Stick	●

Image 4: Added devices in the device view

All added devices are visible in this field.

Proceed as follows to remove a device:

- Right-click on the device to be removed.
- Click on "Delete Device"

Device Name	Device Type	Channels	Port	Connected
Bluetooth	WinBle	9	integrated BLE	●
Mux 8E	Brecht	8	COM21	●
MAHR iStick	Mahr	3	ANT USB-m Stick	●

✖ Delete Device

This function is only possible when Brecht V-MUX is "disconnected".

The large button at the bottom right is green when connected and indicates "Disconnect". A click on the button disconnects the connection.

2. Channel View

Device Name: Bluetooth

+

HCT HOLEX

Measuring instrument

TW050

Torque Indicating

Measurement

0.00

Peak Measurement

0.00

HCT Garant

Measuring instrument

DTW030

Torque Indicating

Measurement

0.00

Peak Measurement

0.00

HCT BLE

Measuring instrument

HCT-DC

Measurement

SYLVAC BLE

Measuring instrument

SY295

Measurement

SYLVAC BLE

Measuring instrument

SY295

Measurement

MITUTOYO BLE

Measuring instrument

UWAVE

Measurement

TESA BLE

Measuring instrument

TLC-BLE

Measurement

Image 5: Channels of a selected unit in the channel view

All channels to the selected unit are visible in this field.

Proceed as follows to add a channel to the selected unit:

Click on "+".

Proceed as follows to remove a channel from the selected unit:

- Right-click on the channel to be removed.
- Click on "Delete Channel"

Device Name: Mux 8E

+

Measuring instrument

Kanal01

Virtual Channel No.

12

✖ Delete Channel

3. Virtual MUX

Virtual Mux Channels



















Virtual Channel No.	Device	Measuring instrument	Active
1	Bluetooth	TW050	
2	Bluetooth	TW050 Angle of Rotation	
3	Bluetooth	SY295	
4	Bluetooth	SY295	
5	Bluetooth	UWAVE	
6	Bluetooth	TLC-BLE	
9	Bluetooth	DTW030	
10	Bluetooth	DTW030 Angle of Rotation	
11	Bluetooth	HCT-DC	
12	Mux 8E	Kanal01	
13	Mux 8E	Kanal02	
14	Mux 8E	Kanal03	
15	Mux 8E	Kanal04	
16	Mux 8E	Kanal05	
17	Mux 8E	Kanal06	
18	Mux 8E	Kanal07	
19	Mux 8E	Kanal08	
20	MAHR iStick	MarCal_16EwRi	

Image 6: Overview of all channels including the virtual channel numbers

This view is only for visualisation, you can only make changes to the channels in the respective channel view of the units, see chapter "4. Channel view".

FIRST START

1. First configure the serial interface for the output of the measured values in the V-MUX configuration (see chapter User Interface, 1. V-MUX configuration).
Under Communication protocol, select the format suitable for your application software. The possible communication protocols can be found above in the chapter "Communication protocols".
2. Use the appropriate interface for the V-MUX software: RS232 or virtual keyboard. We recommend using the RS232 interface because there is direct communication between the application software and the V-MUX software.
The virtual keyboard behaves like a normal keyboard. The characters are "typed" into the currently active input window. Therefore, the operator must ensure that the correct application is opened and the input window is active each time a measured value is transferred.
3. Interface RS232

If the RS232 interface is selected for transmission, the following parameters must be set:

Interface VMux RS 232

RS 232 Interface Configuration

Port Name : COM19 Baud : 9600

Next to "PORT:" set the number of the first COM port of the V-MUX dongle. On this port the V-MUX software outputs the measured values.

In the application software, the 2nd COM port of the V-MUX dongle is selected for receiving the data.

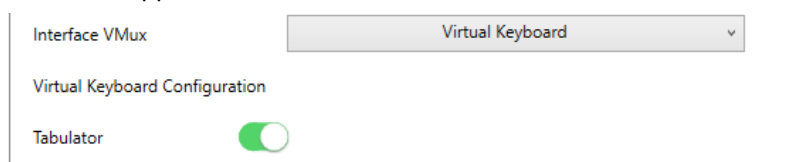
The transmission parameters must be set the same in the V-MUX software and the application software:

"BAUD:" Transmission speed (the baud rate). Usually 9600 baud.

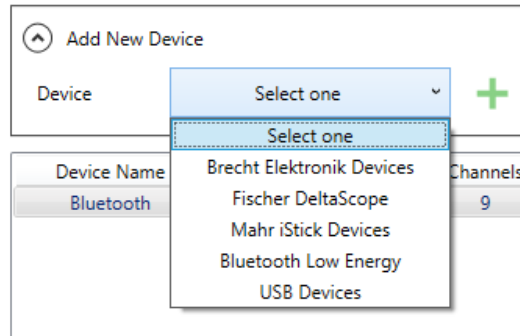
"DATABITS:" the number of data bits, usually 8 data bits.

4. Virtual Keyboard

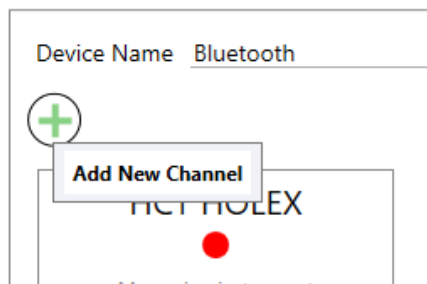
For transmission with the virtual keyboard, it can be set whether a tabulator is sent after each value. This function can be used to automatically jump from one input field to the next in the application software.



5. Under "ADD NEW DEVICE" click on "Select one".



6. Select the appropriate device from the list and click on it.
7. Add the selected device by clicking on "+" A new line with the device is displayed in the device view.
8. Depending on the added device, further settings must be made. To do this, click on the line in the table of the device view that shows the device to be set.
9. In the channel view below you will now see the settings to be made. For units that do not have pre-set channels, click on the "+" of the channel view:



10. Further down in the chapter "CONFIGURING MEASURING DEVICES" you will find detailed information on the settings of the individual devices.
11. The created virtual channels are displayed in the "Virtual MUX" view.
12. When you have added all the devices and made all the settings, click on "Connect" at the bottom right. The V-MUX software now establishes the connections to the measuring devices and the received measured values of the channels are output to the application software.

CONFIGURE MEASURING DEVICES

BRECHT ELEKTRONIK

The multiplexers from Brecht Elektronik are pre-configured in BRECHT V-MUX

Device Name: Mux 8E Load button: [] Port Name: COM21 Baud: 9600 Data Bits: 8

+

Measuring instrument	Virtual Channel No.
Kanal01	12
Kanal02	13
Kanal03	14
Kanal04	15
Kanal05	16
Kanal06	17
Kanal07	18
Kanal08	19

USB-PROBES

The assignment of the serial interface for the USB probes is done in the pre-configured channel configuration.

ADD CHANNEL:

Add device (User Interface 1.) → Select device (User Interface 2.) →

Channel View (User Interface 3.) → select + to add channel.

USB Probe

✗ ✓

Device	Port name	Data Baud	Data Bits	Message String	Serial No.	Connect
Peter Hirt DGHUSBCDC	-	9600	8	?		[Connect]
TESA GTL 21	-	9600	8	?		[Connect]
TESA GTL 22	-	9600	8	?		[Connect]
TESA GT 61	-	9600	8	?		[Connect]
TESA GT 62	-	9600	8	?		[Connect]

Activate the blue checkbox. Select serial interface in the dropdown menu. Optionally assign serial number and channel name. Click ✓ at the top right.

MAHR I-STICK

MEASURING DEVICES:

All Mahr measuring instruments with Integrated Wireless (i-Stick)

ADD CHANNEL:

Add device (User Interface 1.) → Select device (User Interface 2.) →

Channel View (User Interface 3.) → select + to add channel.

Select the meter type. **IMPORTANT: Assign any 5-digit UNIQUE pairing number.** This appears in the display of the meter when connecting or pressing the "Start" button. The meter must be within range of the i-Stick to establish a connection. Assign virtual channel number. Optionally assign the name of the measuring device and the serial number.

The coupling number, the channel (frequency) as well as the eco-mode can be changed, but the change is only effective after restarting the V-MUX software. In addition, the coupling number in the unit must also be reset in order to activate the new coupling number at the measuring unit. Delay time → is the time in milliseconds between two measured values. If measured values are sent within the delay time, they are discarded. Only after the delay time has elapsed will a measured value be forwarded again. Applies to the Micromar outside micrometer. The delay time can be set to 0 for the MarCal and MarCator meters.



Hoffmann Group


Connected Tools

Hoffmann Group HCT

PREPARING HCT-DEVICES:

Switch on the HCT measuring devices that you want to connect to the V-MUX software and check whether the Bluetooth radio modules of the devices are switched on. You can see this by the Bluetooth symbols,



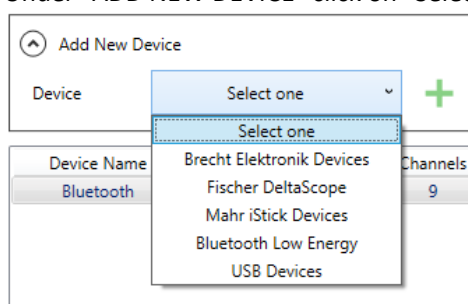
or  or similar,

in the displays of the measuring instruments. If necessary, switch on the radio modules according to the operating instructions.

ADD DEVICE:

If there is no "Bluetooth" device in the device view yet, proceed as follows to add it:




Under "ADD NEW DEVICE" click on "Select one"



Select "Bluetooth Low Energy" from the list and click on it.

Add the selected device by clicking on "+".

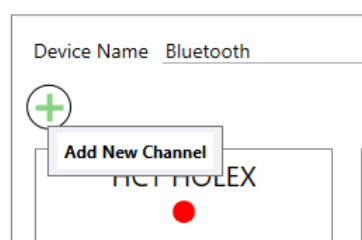
The line with "Bluetooth" displayed in the device view:

Device Name	Device Type	Channels	Port	Connected
Bluetooth	WinBLE	9	integrated BLE	
Mux 8E	Brecht	8	COM21	
MAHR iStick	Mahr	3	ANT USB-m Stick	

Click on this line and proceed to the next step.

ADD CHANNEL:


Click "+" in the channel view.



The V-MUX software now starts searching for corresponding measuring devices, you can see this in the "Messages" area below the channel view.
Found measuring devices are displayed in the table "Measuring devices" in the area "Bluetooth Low Energy CONFIGURATION" in the channel view:

Measuring instrument	Address	Virtual Channel No.
HCT HOLEX TW050	d4-03-38-fd-e8-5f	1
HCT Garant DTW030	cd-96-be-cb-e4-86	9
HCT BLE HCT-DC	ef-39-ab-0c-28-1f	11
SYLVAC BLE SY295	f6-bd-03-d9-85-11	3
SYLVAC BLE SY295	cc-1d-ac-24-bd-3a	4
MITUTOYO BLE UWAVE	a4-da-32-0f-82-db	0
TESA BLE TLC-BLE	f2-7b-8d-33-4d-3e	6

Messages
18:55:17.616 -> Start search for a new device ...










Place a check mark (blue checkbox) to each measuring device you want to connect.
Confirm your settings by clicking  at the top right in the "Bluetooth Low Energy CONFIGURATION" area in the channel view:

19	Mux 8E
20	MAHR iStick
21	MAHR iStick

Apply configuration
Only selected measuring instruments are taken over
VMUX-CONFIGURATION

The V-MUX software takes over the devices and displays them in the "Virtual MUX" area:

Virtual Mux Channels


Virtual Channel No.	Device	Measuring instrument	Active
1	Bluetooth	TW050	
2	Bluetooth	TW050 Angle of Rotation	
3	Bluetooth	SY295	
4	Bluetooth	SY295	
5	Bluetooth	UWAVE	
6	Bluetooth	TLC-BLE	
9	Bluetooth	DTW030	
10	Bluetooth	DTW030 Angle of Rotation	
11	Bluetooth	HCT-DC	

In addition, the units are now shown in the channel view, but not yet as connected:

Device Name Bluetooth


+

HCT HOLEX



Measuring instrument

TW050



⌵

Torque Indicating


Measurement

0.00

Peak Measurement


0.00

HCT Garant



Measuring instrument

DTW030



⌵

Torque Indicating

Measurement

0.00

Peak Measurement

0.00

Click on "Connect" at the bottom right. The V-MUX software establishes the connection to the measuring devices and to the output interface and is then ready to perform measurements and transmit the measured values.


REMOVE CHANNEL:

Proceed as follows to remove a channel from the selected unit:

- Right-click on the channel to be removed.
- Click on "Delete channel"


Channels can only be removed in the disconnected state of the V-MUX software. The large button at the bottom right is green in the connected state and indicates "Disconnect". A click on the button disconnects the connection.

HCT HOLEX



Measuring instrument

TW050



⌵

Torque Indicating

Measurement

0.00

Peak Measurement

0.00

✖

Delete Channel


SYLVAC BLUETOOTH-DEVICES

ADD DEVICE AND CHANNEL:

Add Device (User Interface 1.) ➡ Select Device (User Interface 2.) ➡

Channel View (User Interface 3.) click **+** to add Channel.

SYLVAC BLE
Measuring instrument
SY295
Address
f6-bd-03-d9-85-11
Virtual Channel No.
3
☒

The measuring device appears in the "Measuring devices" view. Accept the measuring device by activating the checkbox and click  at the top right. The configuration view of the Bluetooth devices changes back to the channel view.

Device Name Bluetooth

+

Device Name	Measuring instrument	Measurement
HCT HOLEX	TW050	0.00
HCT BLE	HCT-DC 1200603	0.00
ELIAS BLE	MarCator 1075R	0.00
MITUTOYO BLE	UWAVE	0.00
SYLVAC BLE	SY295 108740	0.00

REMOVE CHANNEL:

Proceed as follows to remove a channel from the selected unit:

- Right-click on the channel to be removed.
- Click on "Delete channel"

Channels can only be removed in the disconnected state of the V-MUX software. The large button at the bottom right is green in the connected state and indicates "Disconnect". A click on the button disconnects the connection.

TESA BLUETOOTH-CAP

ADD DEVICE AND CHANNEL:

Add Device (User Interface 1.) → Select Device (User Interface 2.) →

Channel View (User Interface 3.) click + to add Channel.

TESA BLE	
Measuring instrument	
TLC-BLE	
Address	
f2-7b-8d-33-4d-3e	
Virtual Channel No.	
6	
<input checked="" type="checkbox"/>	

The measuring device appears in the "Measuring devices" view. Accept the measuring device by activating the checkbox and click ✓ at the top right. The configuration view of the Bluetooth devices changes back to the channel view.

REMOVE CHANNEL

Proceed as follows to remove a channel from the selected unit:

- Right-click on the channel to be removed.
- Click on "Delete channel"

Channels can only be removed in the disconnected state of the V-MUX software. The large button at the bottom right is green in the connected state and indicates "Disconnect". A click on the button disconnects the connection.

ELIAS BLUEDAT-ADAPTER

ADD DEVICE AND CHANNEL:

Add Device (User Interface 1.) → Select Device (User Interface 2.) →

Channel View (User Interface 3.) click + to add Channel.

ELIAS BLE
Measuring instrument
MarCator 1075R
Address
00-07-80-7e-a9-22
Virtual Channel No.
1
<input checked="" type="checkbox"/>

The measuring device appears in the "Measuring devices" view. Accept the measuring device by activating the checkbox and click ✓ at the top right. The configuration view of the Bluetooth devices changes back to the channel view.

REMOVE CHANNEL:

Proceed as follows to remove a channel from the selected unit:

- Right-click on the channel to be removed.
- Click on "Delete channel"

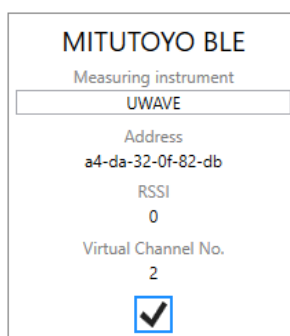
Channels can only be removed in the disconnected state of the V-MUX software. The large button at the bottom right is green in the connected state and indicates "Disconnect". A click on the button disconnects the connection.

MITUTOYO UWAVE

ADD DEVICE AND CHANNEL:

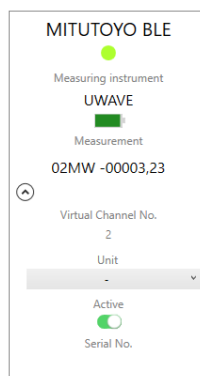
Add Device (User Interface 1.) → Select Device (User Interface 2.) →

Channel View (User Interface 3.) click + to add Channel.



A screenshot of the MITUTOYO BLE configuration window. It displays the following information: 'Measuring instrument' is 'UWAVE'; 'Address' is 'a4-da-32-0f-82-db'; 'RSSI' is '0'; 'Virtual Channel No.' is '2'. At the bottom, there is a checkbox with a checkmark inside it.

The measuring device appears in the "Measuring devices" view. Accept the measuring device by activating the checkbox and click ✓ at the top right. The configuration view of the Bluetooth devices changes back to the channel view.



A screenshot of the MITUTOYO BLE channel view. It displays the following information: 'Measuring instrument' is 'UWAVE'; 'Measurement' is '02MW -00003,23'; 'Virtual Channel No.' is '2'; 'Unit' is '-'; 'Active' is a green toggle switch; 'Serial No.' is visible at the bottom.

REMOVE CHANNEL:

Proceed as follows to remove a channel from the selected unit:

- Right-click on the channel to be removed.
- Click on "Delete channel"

Channels can only be removed in the disconnected state of the V-MUX software. The large button at the bottom right is green in the connected state and indicates "Disconnect". A click on the button disconnects the connection.

COMMANDS TO BRECHT V-MUX

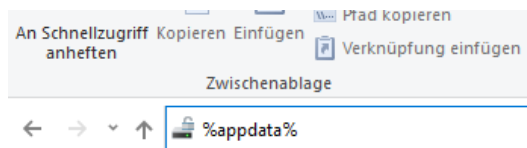
The control commands and measured value transmissions vary depending on the communication protocol set.

We will provide you with detailed documentation on request.

LOG-FILE

The log file of the V-MUX software is stored in the directory AppData.

1. open the Windows Explorer
2. Enter %AppData% in the address bar

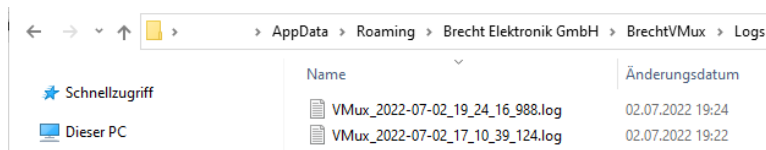


3. change to subdirectory:
... → AppData → Roaming → Brecht-Elektronik GmbH → BrechtVMUX → Logs

4. This folder contains the log files of the Brecht V-MUX software.

Please send these to us for diagnosis in case of malfunction of the application with a description including date and time.

It is sufficient to send the log data from the corresponding time period (with some lead time).



CONTACT US

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