

PSI-BRIDGE-DNET CAN

Transmitting DeviceNet data via Bluetooth



Application note
106132_en_00

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1 Description

This application note describes how you establish multipoint communication between a DeviceNet master and two slaves using Bluetooth wireless technology.

To do this, you need the following:

- 3 x DeviceNet bridge
(PSI-BRIDGE-DNET CAN, Order No. 2313533)
- 3 x Bluetooth converter
(PSI-WL-RS232-RS485/BT/2DO, Order No. 2313805)
- 1 x USB cable
(PSI-CA-USB A/MINI B/1METER, Order No. 2313575)



This application note does **not** replace the device-specific documents.
Please follow the safety notes in the associated package slips and data sheets.



Make sure you always use the latest documentation.
It can be downloaded at phoenixcontact.net/products.

This application note is valid for the following products:

- PSI-BRIDGE-DNET CAN, Order No. 2313533
- PSI-WL-RS232-RS485/BT/2DO, Order No. 2313805

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3 System configuration

A DeviceNet master communicates with two slaves using Bluetooth. The master and the two slaves are connected to the Bluetooth converter via DeviceNet bridges.

Multipoint technology is used for communication between the Bluetooth converters. One Bluetooth converter operates as the server, the other two Bluetooth converters as clients. A serial RS-422 connection is established between the DeviceNet-Bridge and the Bluetooth converters.

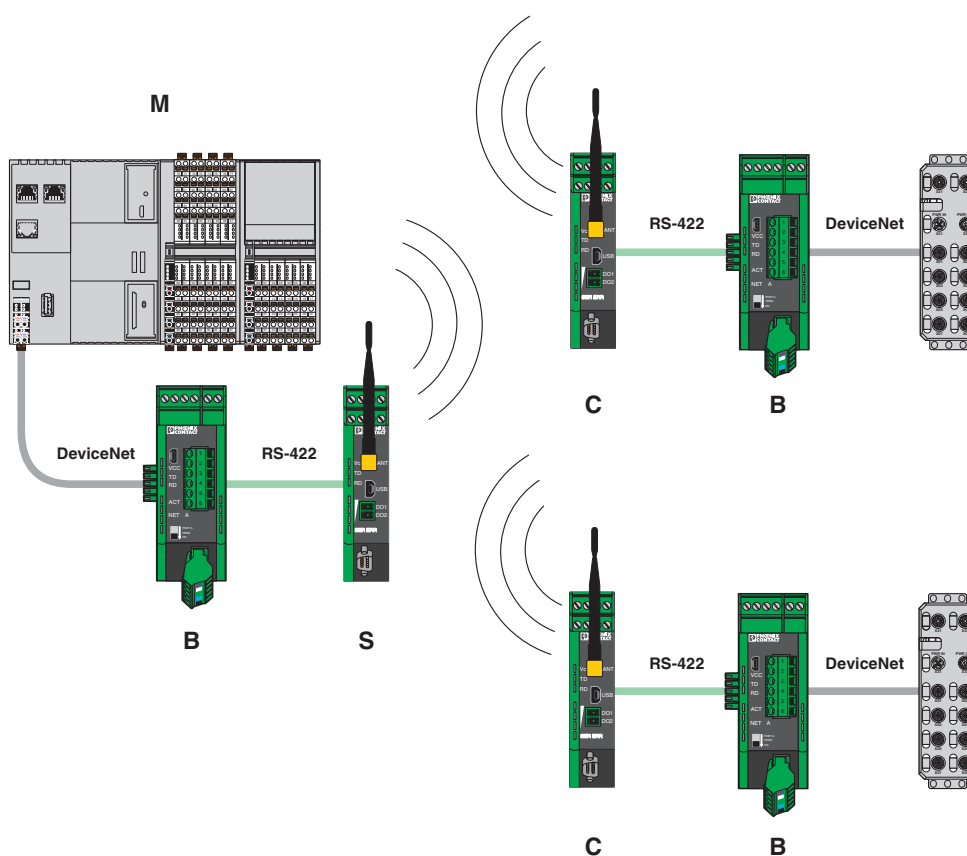


Figure 1 System configuration (M = master, B = DeviceNet bridge, S = Bluetooth server, C = Bluetooth client)

In order to configure the system, you need to adjust the RS-422 and DeviceNet interface parameters using the PSI-CONF configuration software.

4 Configuration

4.1 Installing the software

The PSI-CONF software is used to configure the device. It is included on the enclosed CD or can be downloaded free of charge at phoenixcontact.net/products. A PC with a Windows operating system is required to use the software.

- Install the software on your PC.

4.2 Configuring the DeviceNet bridges

- Connect to the PC via the USB interface of the DeviceNet bridge. Use the PSI-CA-USB A/MINI B/ 1METER cable (Order No. 2313575) for that purpose.
- Start the PSI-CONF software and select “DeviceNet, PSI-BRIDGE-DNET CAN”.

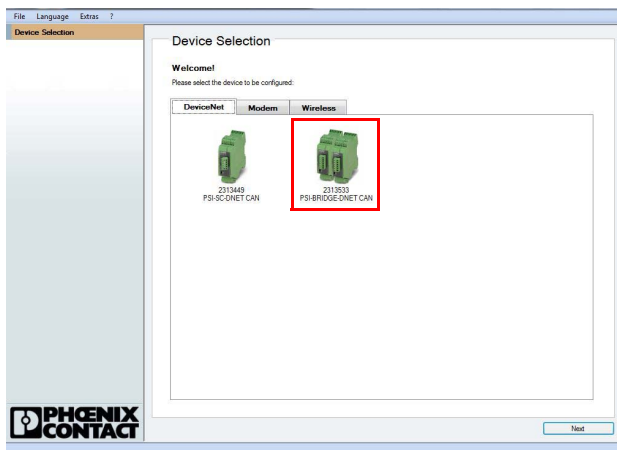


Figure 2 Device Selection: DeviceNet

- Select the “Online Configuration” connection mode.

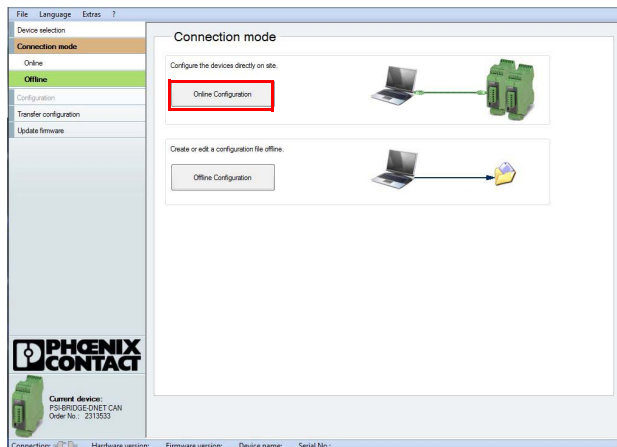


Figure 3 Connection mode

The PSI-CONF software connects to the DeviceNet bridge and requests the current configuration status. The configuration wizard will then be displayed.

The DeviceNet bridge transmits the signal via a serial RS-422 interface. Therefore, the configuration wizard only supports a point-to-point connection. You can only set the multipoint connection when configuring the Bluetooth converter.



You need the following:

- A DeviceNet bridge for the master segment
- Two DeviceNet bridges for the slave segment

- In the configuration window, set the parameters of the slave:
 - Names of the DeviceNet bridges A and B (freely selectable)
 - Data rate of the RS-422 interface: 187.5 kbps
- Make a routing preselection for your network:
 - Network: DeviceNet
 - Segment location of master (A/B, in this example: A)
 - Master address
 - No. of devices to route (in this example: 2)
 - Data rates for segments (Different data rates can be used for segments A and B. However, make sure that the master and the associated DeviceNet bridge will operate with the same data rate.)
- Confirm with “Next”.

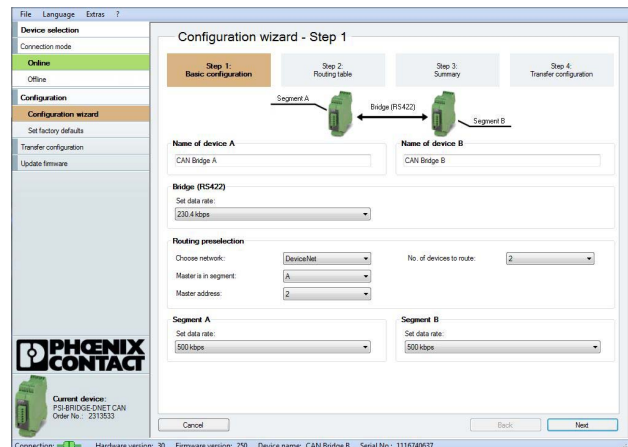


Figure 4 Configuration wizard - Step 1: Basic configuration

In the second step, the routing table regarding the current settings is displayed.

The multipoint communication planned here is based on:

- One bridge in master segment A
- Two bridges connected to different slaves in segment B

The configuration does not differentiate between which DeviceNet bridge is connected to which slave.

- In the table located on the right-hand side, enter the addresses of all existing slaves.
- You can also assign names to the master and the individual slaves.
- Confirm with "Next".

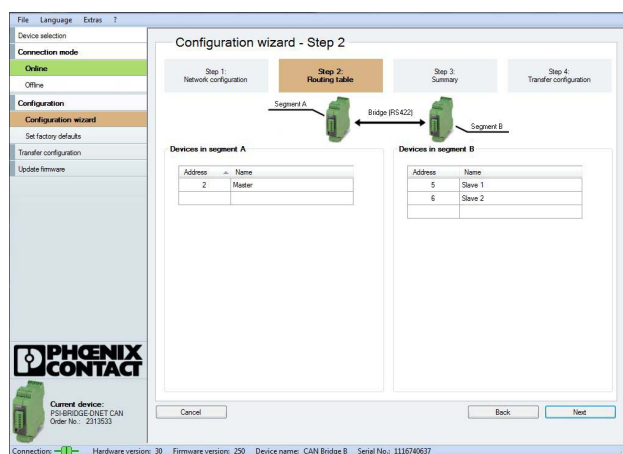


Figure 5 Configuration wizard - Step 2: Routing table

- Check all entries and confirm with "Next".

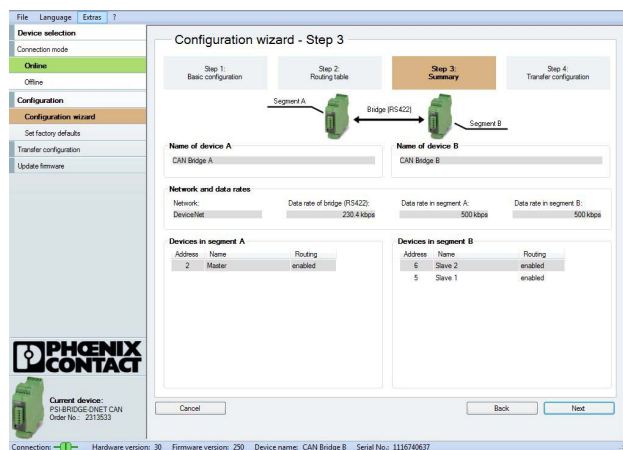


Figure 6 Configuration wizard - Step 3: Summary

Now transfer the configuration to the DeviceNet bridges:

- Select "Write to device A". The configuration is transferred to the connected device. You will receive confirmation that the transfer has been successfully carried out.
- Disconnect the USB cable from device A and connect the second device.
- Select "Write to device B". The configuration is transferred to the second device.
- Disconnect the USB cable from the second device and connect the third device.
- Select "Write to device B" once again. Owing to the fact that this data has already been transferred to the second device, a warning appears. Confirm with "OK".

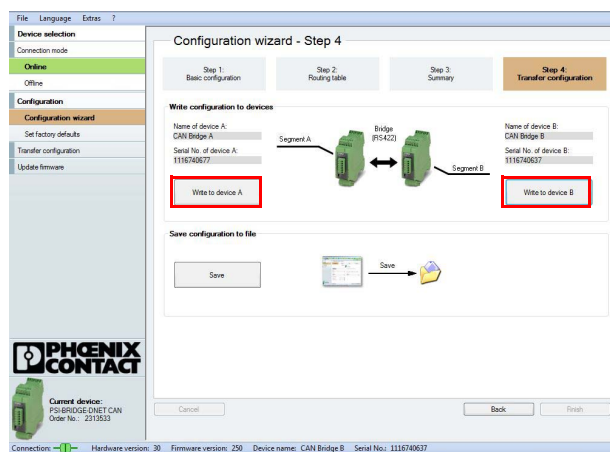


Figure 7 Configuration wizard - Step 4: Transfer configuration



Figure 8 Warning that appears when configuring the third device

- Select "Disconnect device".
 - Disconnect the device from the PC.
- The devices are now ready for operation.

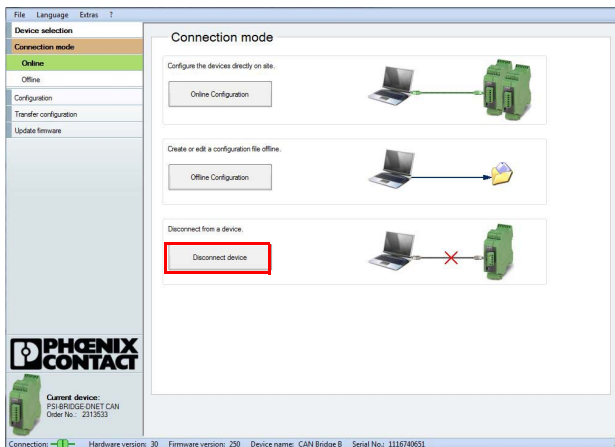


Figure 9 Connection mode: Disconnect device

4.3 Configuring the Bluetooth converter

- Connect to the PC via the USB interface of the Bluetooth converter. Use the PSI-CA-USB A/MINI B/ 1METER cable (Order No. 2313575) for that purpose.
- Start the PSI-CONF software and select "Wireless, PSI-WL-RS232-RS485/BT..."

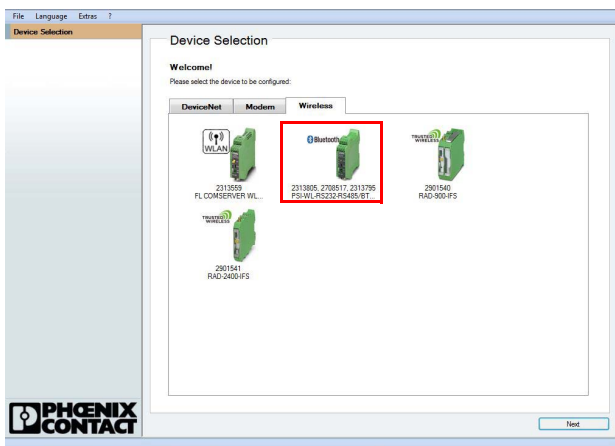


Figure 10 Device Selection: Wireless

- Select the "Local configuration" connection mode.

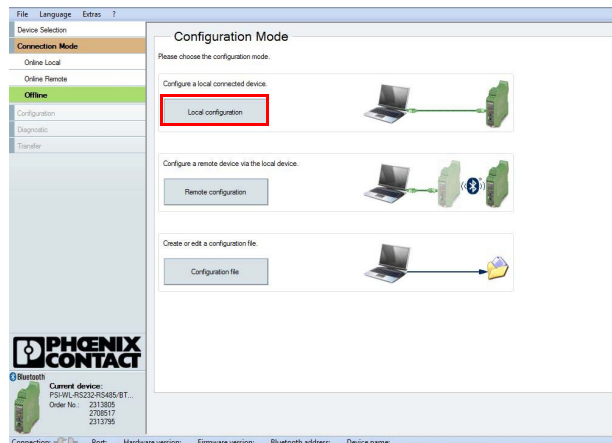


Figure 11 Configuration Mode

- Open the Bluetooth converter as described in the installation instruction.
- Move the CONF/RUN slide switch of the device to the CONF position (configuration mode).

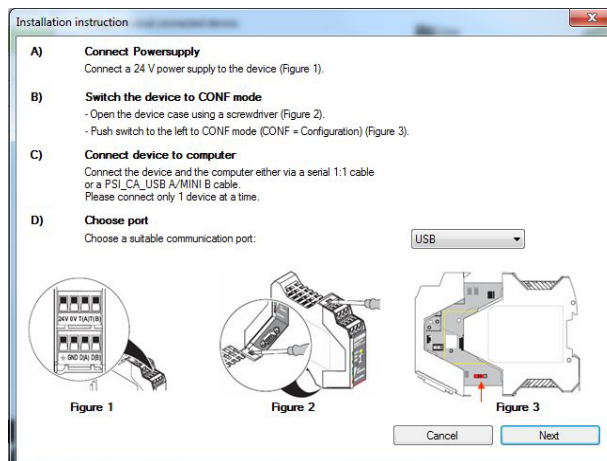


Figure 12 Installation instruction

- Confirm with "Next".

- Select the multipoint wizard in the “Configuration” window.

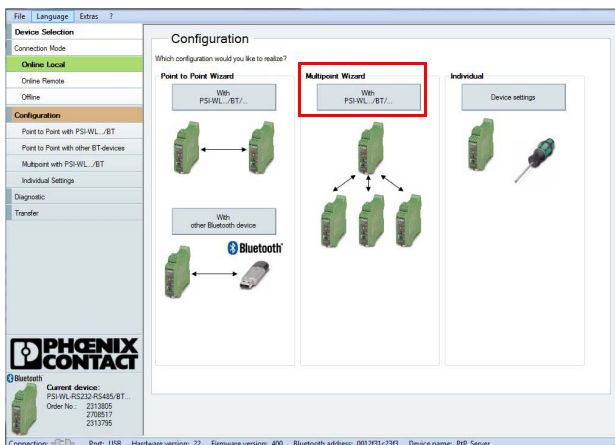


Figure 13 Configuration: Multipoint Wizard

- Enter the number of slaves (Bluetooth clients).
- Confirm with “Next”.

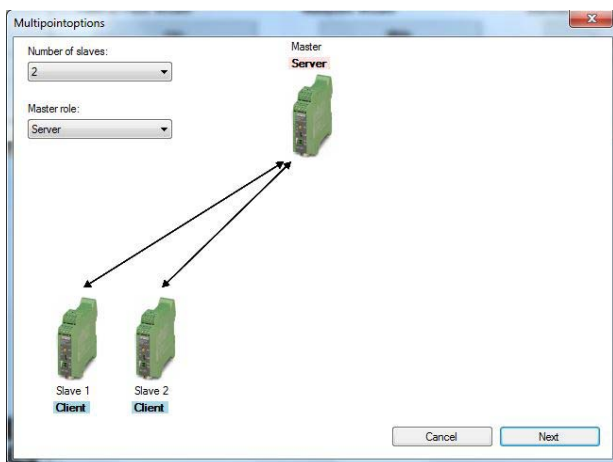


Figure 14 Multipoint options

In the first step of the master configuration, configure the Bluetooth network and the serial interface.

- Assign a password to the Bluetooth network under “General Settings”.
- Assign a name to the Bluetooth converter, if required.
- Configure the serial interface under “Serial Settings”:
 – Connection profile: User-defined
 – Interface type: RS-422
 – Baud rate: 187500
 – Data bits: 8
 – Parity: None
 – Stop bits: 1

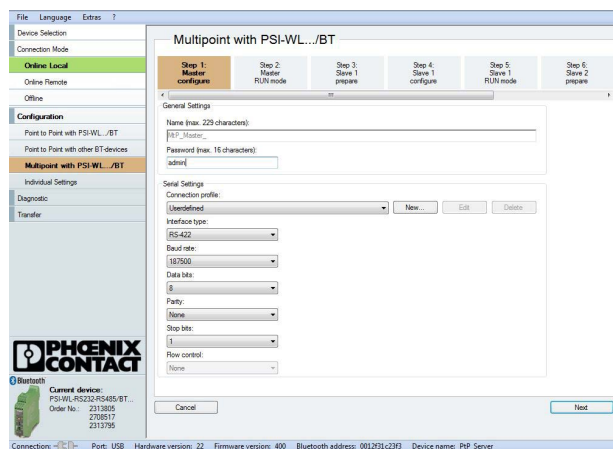


Figure 15 Multipoint wizard, Step 1

- Confirm with “Next”. The Bluetooth converter will now be programmed with the specified configuration.

- Once the programming process has been completed, move the CONF/RUN slide switch back to the “RUN” position.
- Confirm with “Next”.

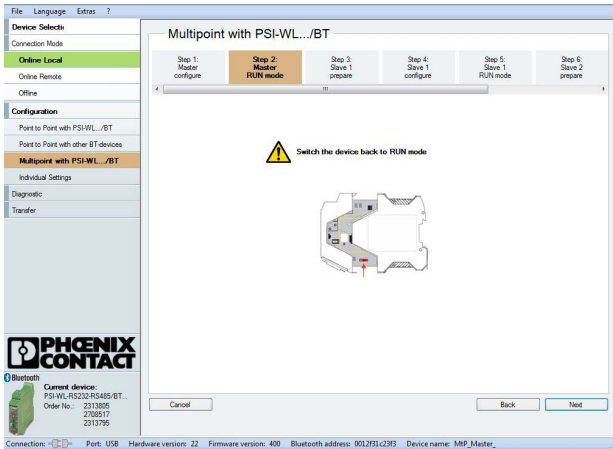


Figure 16 Multipoint wizard, Step 2

- Open the second Bluetooth converter as described in the installation instruction.
- Move the CONF/RUN slide switch of the device to the CONF position (configuration mode).
- Disconnect the USB cable from the first device and connect the second device.
- Confirm with “Next”.

The parameter settings are automatically adopted by the second Bluetooth converter.

- Enter a name for the second Bluetooth converter, if required. Confirm with “Next”.
- Once the programming process has been completed, move the CONF/RUN slide switch back to the “RUN” position.

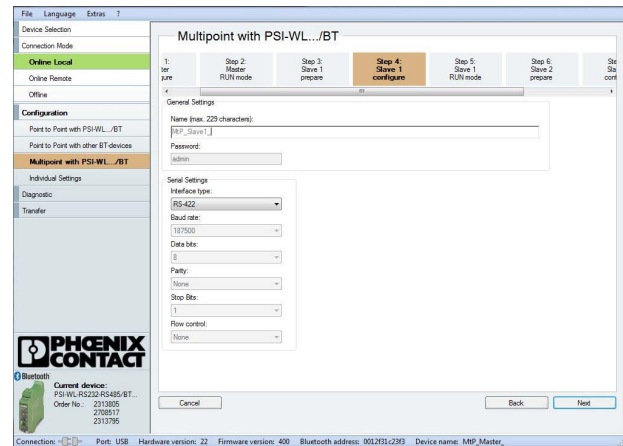


Figure 18 Multipoint wizard, Step 4

- Repeat the process for the third device. After programming the third device, the parameters are presented in summarized form.
- Confirm with “Next”.
- Disconnect the device from the PC.

The devices are now ready for operation.

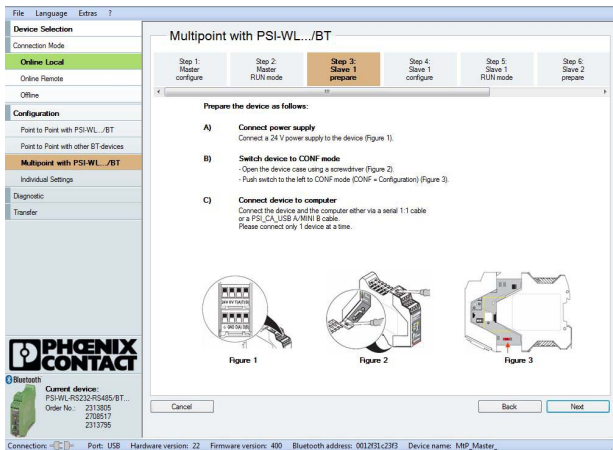


Figure 17 Multipoint wizard, Step 3

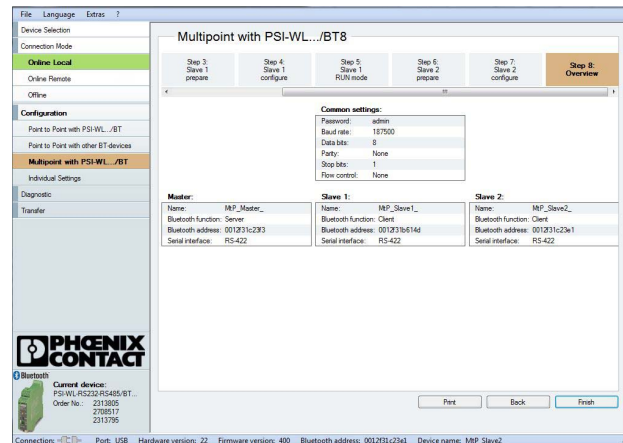


Figure 19 Multipoint wizard, Step 8

5 Cabling

The DeviceNet bridge is provided with two ports:

- Port A: DeviceNet
- Port B: RS-422

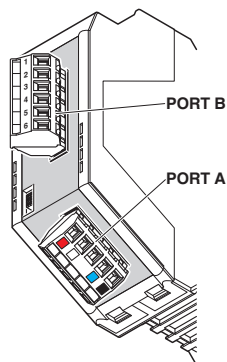


Figure 20 DeviceNet bridge ports

- Connect the DeviceNet devices to port A. Cabling notes can be found in data sheet at phoenixcontact.net/product/2313533.
- Connect the Bluetooth converters to port B. Use a common shielded twisted-pair bus line.

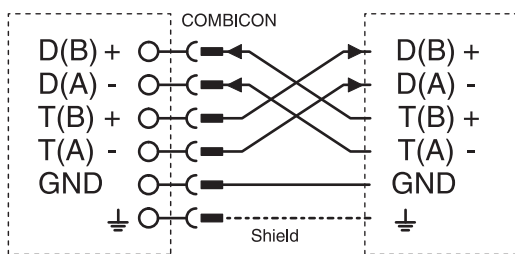


Figure 21 RS-422 connection for Bluetooth converters



Always connect the sender to the receiver and vice versa.

6 Terminating the bus line

Activate the termination resistors for the RS-422 interface on all devices.

6.1 DeviceNet bridge

- Set the slide switch on the front of the device to “ON”.

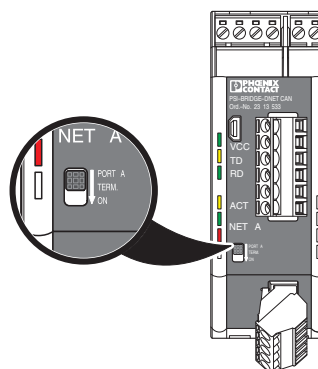


Figure 22 DeviceNet bridge: slide switch for termination resistor

6.2 Bluetooth converter

- Open the housing.
- Move the slide switch to the left in the “ON” position.

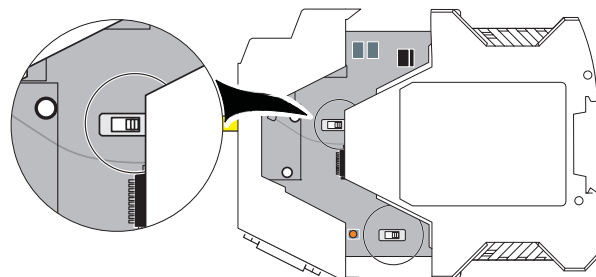


Figure 23 Bluetooth converter: slide switch for termination resistor



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