

BN-2-D

Isolated iCAN Network Bridge



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Introduction

The Network Bridge allows two iCAN networks to be connected together. The BN-2-D is used to extend the network where more than 500m of cabling is required or more than 100 devices are required, as well as filtering of network messages.

It allows for connection of multiple networks, up to a total of 65,000 devices on one system. The network bridge also improves reliability of large systems by isolating and localising any network cabling faults.

Operation indicators

The BN-2-D unit has a red and green indicator for both iCANnet A and iCANnet B sides to assist with configuration and troubleshooting.

At iCANnet A end

Red flashing:
Traffic being sent and/or received

Red on: iCAN network comms error

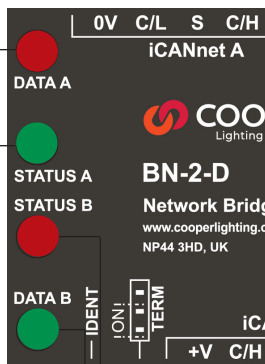
Green flashing:
Normal operation

At iCANnet B end

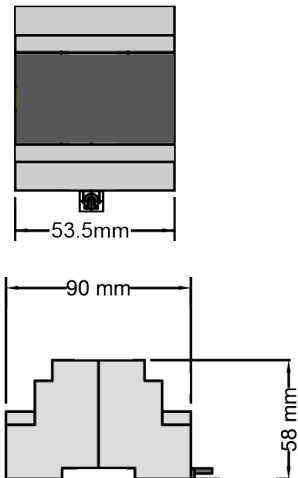
Red flashing:
Traffic being sent and/or received

Red on: iCAN network comms error

Green flashing:
Normal operation



Dimensions



Mounting: DINrail mount with key hole slots for wall mounting if required

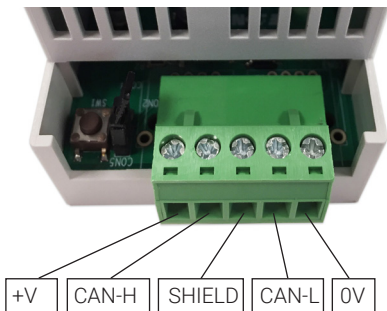
Environmental Data

Temperature: 0°C to 50°C
Humidity: 0 to 95% non-condensing
Rating: IP20

Connections

iCAN network wiring

Cable connections to the iCAN Network are made to a removable 5-way connector block located at each end of the BN-2-D unit:



Function	Network Cable Colour
0V	Black
CAN L	Blue
Shield	Silver
CAN H	White
+VDC	Red

Maximum segment distance: 500m (1640 ft)
Devices per segment: 100 (without bridge or repeater)
Additional power supplies may be required.
Consult iLight for information on alternative cable types.

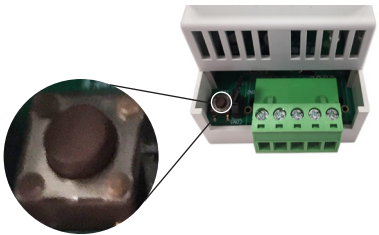
Network Power Requirements

Nominal operating voltage: 15V (12-18V)
Nominal operating current: 40mA (Per side)

IMPORTANT NOTE: Connecting a mains potential cable to the iCAN Network terminals is likley to damage the unit and other devices connected, and invalidate warranty.

iCAN Network IDENT button

The BN-2-D unit features a small button adjacent to the green connector which can be used to identify the BN-2-D on an iCANnet Network. When pressed, the BN-2-D will send a new device message across the iCAN network. Please see the section 'Adding the BN-2-D to Device Editor' for more details.

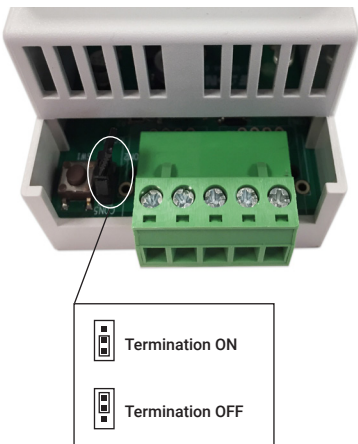


iCANnet termination

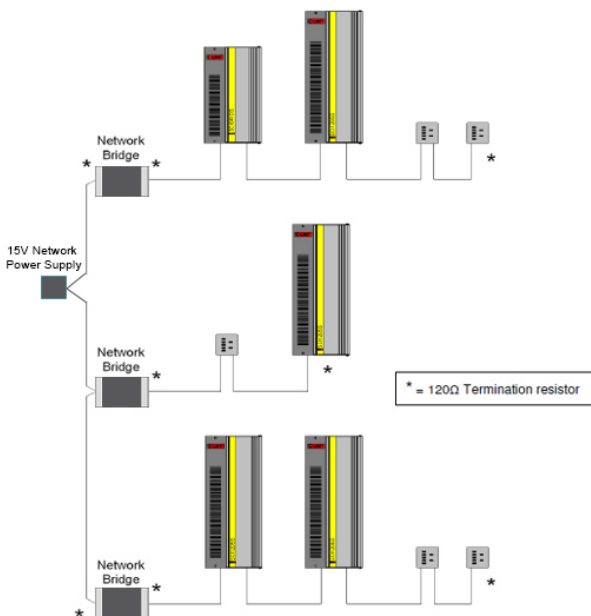
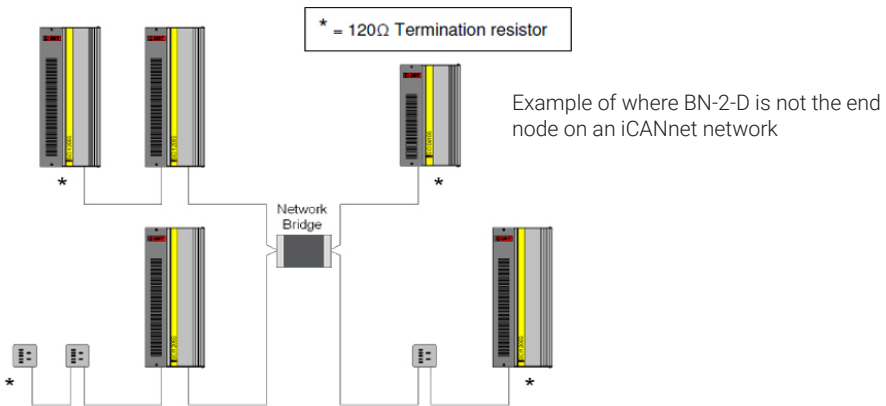
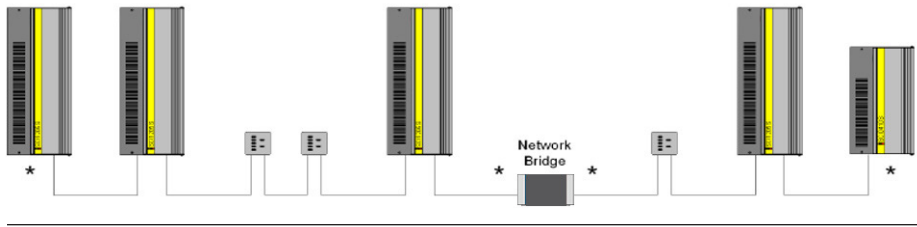
The iCAN network link is a 'Multi drop' linear network that requires termination on the devices located at either end of the iCAN network chain.

The BN-2-D unit is supplied with termination jumper enabled as standard on both network sides. If it is not connected as an end device in the iCAN network chain, the jumper link should be removed or placed in the Termination OFF position..

Both the primary (A) and the secondary (B) network sides are independently terminated. Move the link to the ON or OFF position as required as shown in the image below.



iCANnet termination examples



Spine Networks

Ideal for networks run up risers.

Spine is connected to the Primary Side of the BN-2-D

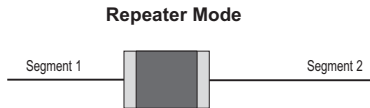
A power supply will be required for the Spine Side

Common items such as timeclock, Ethernet Gateways and permanently installed computers should be attached to the spine.

Typical Network Design

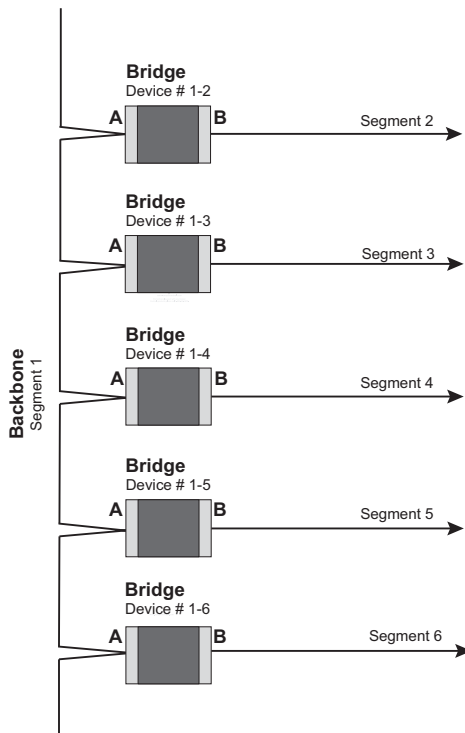
Repeater Mode

In Repeater Mode, the bridge passes all traffic in both directions. Filtering is not available in Repeater Mode. This mode is used primarily to split networks into 2 physical iCAN networks. This allows networks of >500m to be installed. Should the network extend above another 500m then additional BN-2-D devices can be installed although very long networks using multiple BN-2-D devices, whilst functional, should be designed with caution for integrity considerations.



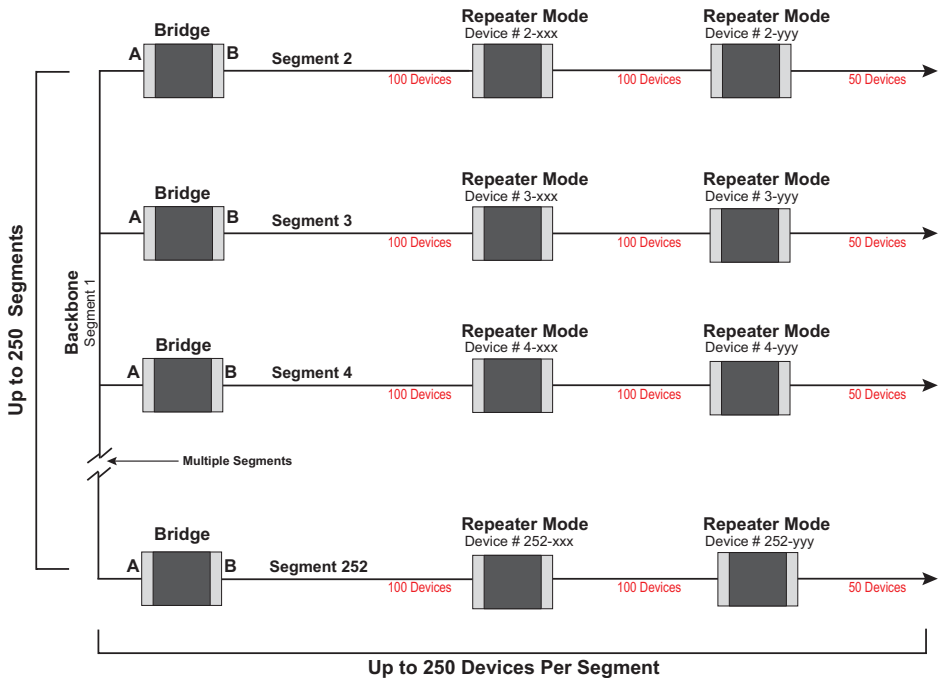
Bridge Mode

Bridge Mode allows Virtual and Device Segment ID filtering. This can be useful to reduce the number of messages on the local network. This is typically used on large networks, with 100's or 1000's of devices, connected across many segments.



Combination

BN-2-D devices operating in both Bridge and Repeater Mode can be combined to allow the creation of large or complex networks. This is to minimize traffic onto the network. This is typically used on large networks, with 100's or 1000's of devices, connected across many segments.



Large projects may require a combination of BN-2-D Network Bridges in bridge mode, as well as, repeater mode.

For Bridge Mode to operate correctly it is important that the BN-2-D is orientated correctly with the A side on the Spine network.


The BN-2-D will only be fully read into Device Editor or iCANSOFT if both sides are powered AND on functional networks.

Programming - within Device Editor

This section provides details about programming items specific to the BN-2-D network bridge within the Device Editor application. For details about the general use of Device Editor, please refer to the System manual.

Adding the BN-2-D to Device Editor

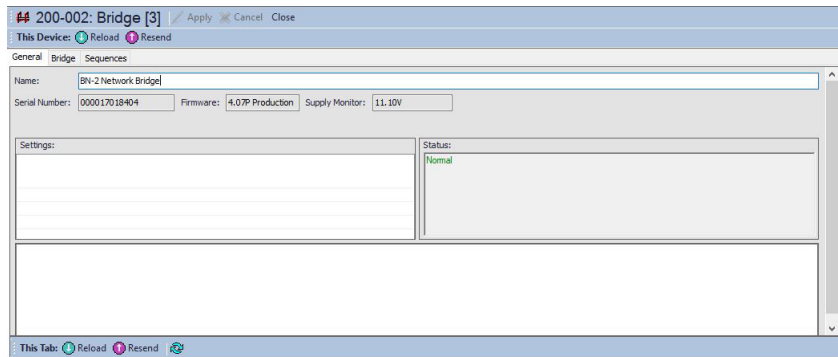
Once the BN-2-D network bridge has been connected to the iCAN network, you can add it to the Device Editor application in any of the following three ways:

- Within the Device Editor main window, click the  icon,
- Within the Device Editor main window, select 'Tools' > 'Advanced Network Search', or
- Open the Search window and press either of the 'IDENT' buttons on the device. The device will then appear in the search window.

Note: Where there are multiple BN-2 units installed on a network, you can use the IDENT buttons to identify the device within Device Editor. When this is done the identified device will appear bolded in the Devices list.

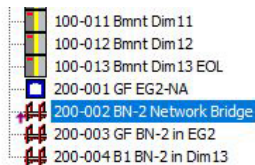
The BN-2-D configuration window

This tabbed window provides all of the options necessary to program the BN-2-D unit.

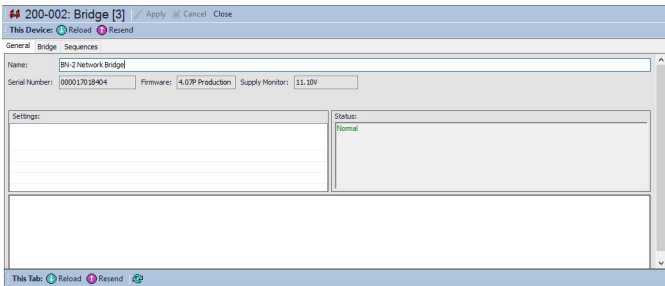


Viewing BN-2-D details in Device Editor Once the BN-2-D unit has been added to Device Editor, it will appear in the Devices list within the workspace window:

To view the configuration window for the BN-2-D network bridge, double click its entry within the list. To renumber the device, right click and Renumber.



Programming - General settings



Options

There are 3 modes of operation for the Network Bridge

- Repeater
- Bridge
- Locked

Repeater Mode

Repeater Mode is the default mode from the factory and useable for most small to medium sized applications. If this is the case other than naming and renumbering the BN-2-D no further configuration is required.

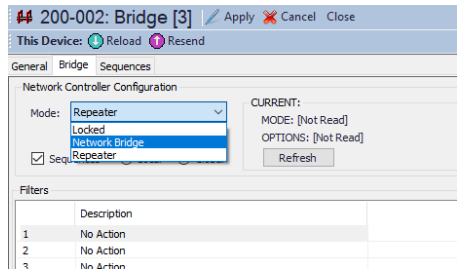
Naming and Renumbering the device from the factory default is advised. The name can be 32 characters in length and include the location. Renumbering will allow the device to appear at the appropriate position in the Devices list of the Device Editor application.

Bridge Mode

Bridge mode is used for large networks, typically when there is a backbone or spine network that covers several levels of a building. Sometimes it is required or desired to filter the messages that pass over the Bridge to the B side. Bridge Mode allows both Virtual and Device ID filtering.

Virtual filtering allows Area messages to be filtered so only those specified in the Filter to pass bi-directionally across the BN-2-D. See the later section on Virtual Filters.

For example, the filter could be set to only allow virtual messages for Area 1-34, 56, 89 and 12000 to pass bi-directionally across.



Device filtering restricts the Device level messages to a specific Segment ID. For Device level filtering the operate the BN-2-D should be renumbered to be in Segment 1 and the Node number to be the Segment number of all the devices connected to the B side.

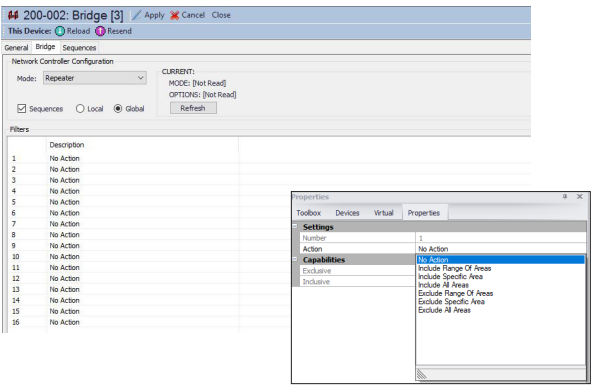
For example, if the BN-2-D was renumbered at 1-6, all the devices connected on the B side would have Device numbers of 6-n. Where n is their unique Node number. If the Network Bridge is device number 1 – 6, it will manage all devices on segment 6. All devices on the local (right) network will need to be renumbered to 6 – xxx, so that Device Editor can configure them from the backbone (master) network.

Locked Mode

Locked mode is used for testing and diagnostic purposes, and will prevent all messages from being sent across the bridge.

Virtual Filters

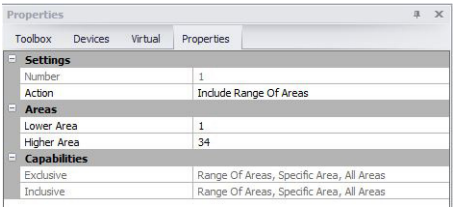
Each Network Bridge can have up to 16 filters for virtual messages. Double-click the filter line to open properties to show the available options



The default is to have none of the filters configured. This means that no virtual messages will be transmitted onto the local network (across the bridge).

Ranges of Virtual Areas can be added, or just a single area. Areas can also be excluded. This allows flexibility so that only the relevant messages are passed onto the local network. It's good design practice to plan area numbers before commissioning a project. The numbers aren't important, but use a range of numbers for each segment. That way you only need to use a few filters, perhaps even one.

Example: segment 5 will use areas 500 – 599,
segment 6 will use 600 – 699



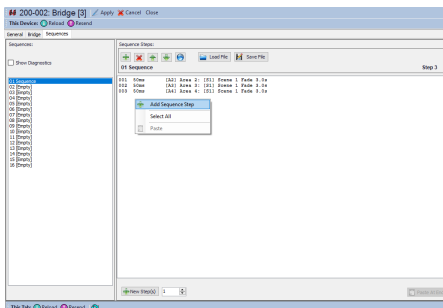
Sequences

The sequence engine can be disabled. It can also be configured to send messages just to the local network, or across onto the backbone as well (global).

Sequences allow you to link a number of individual actions together, with or without a time delay between each, in order to cause multiple operations from a single trigger action. The BN-2-D can store up to sixteen sequences of its own (each with up to 128 steps) that can be triggered by an action via the iCAN network.

To define a sequence

1. Click on the 'Sequences' tab to display the page.
2. Right click within the main panel area to display a popup menu. Select the 'Add' option to add a step to the sequence.
3. Optionally alter the delay option (introduces a time delay before the current action is launched).
4. Click the 'Action Type' down arrow and select the required action form the list. Depending upon the chosen action, one or more of the 'Param' columns to the right will show their own selection options. You can use these to further define the selected action.
5. Repeat steps 2 to 4 for each required step within the sequence. When all have been configured, either click the Apply button to save without closing the window or click the OK button to save and close.



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