WILCOM®

EMBROIDERY e4.5 STUDIO

EmbroideryConnect

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EmbroideryConnect WiFi Machine Networking

The EmbroideryConnect capability allows you to wirelessly transfer embroidery designs from EmbroideryStudio to USB-enabled embroidery machines. Machine files are automatically generated and sent via a standard WiFi network to an EmbroideryConnect device plugged into a compatible machine. Design transfers are securely encrypted.
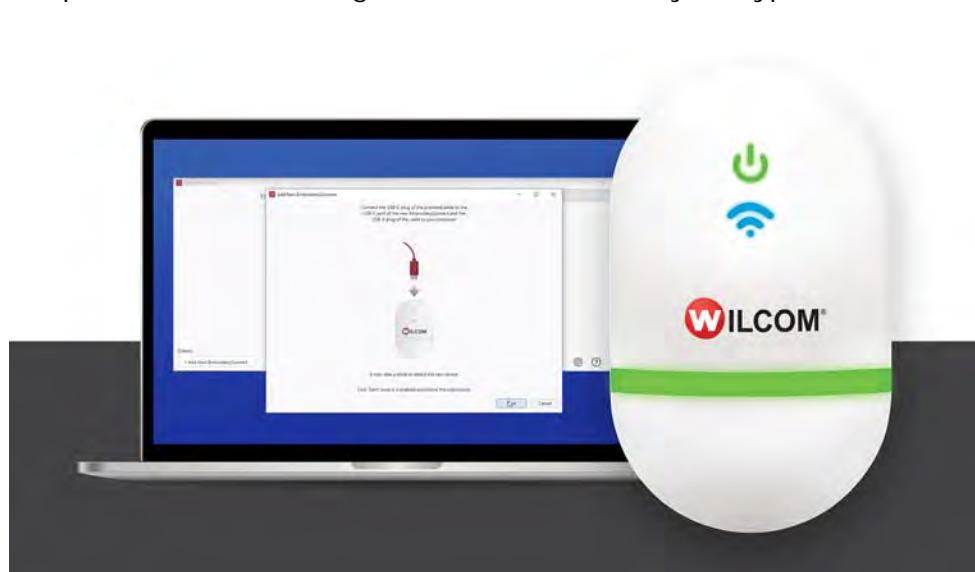
Most modern embroidery machines like Tajima, Barudan, Happy, ZSK, Ricoma and SWF, can read files from a standard USB memory stick. With EmbroideryConnect, there is no need for serial ports, different interface methods, or machine cabling.

The EC device is of great potential benefit to commercial embroiderers who want to network any brand of commercial or 'prosumer' embroidery machines and need a choice of 'push' or 'pull' wireless transfer methods. Benefits can also be found for retail kiosk operators.

This section presents an overview of the product concepts, installation, configuration, and basic usage for EmbroideryConnect.

Network overview

In a nutshell, EmbroideryConnect allows users to wirelessly transfer embroidery designs from EmbroideryStudio to multiple USB-enabled embroidery machines. It is an ideal solution for small to medium size embroidery manufacturers. EmbroideryConnect is designed to meet the following usage requirements:

◂ EmbroideryStudio user wants to be able to send a design from PC directly to a nominated machine.
◂ ES user wants to 'push' a design to a queue for eventual production.
◂ Machine operator wants to 'pull' a nominated design to embroidery machine from the design queue.

What is an EmbroideryConnect network?

The concept behind the EmbroideryConnect network is described by the following diagram...

WiFi Router

Operator 'pulls' barcoded design to embroidery machine from design queue

Embroidery machine 1

EmbroideryHub converts design to machine file for target machine

Embroidery machine 2

Ethernet LAN

Embroidery machine 'n'

Designer sends design to named embroidery machine OR to EmbroideryHub design queue

ES User 1   ES User 'n'
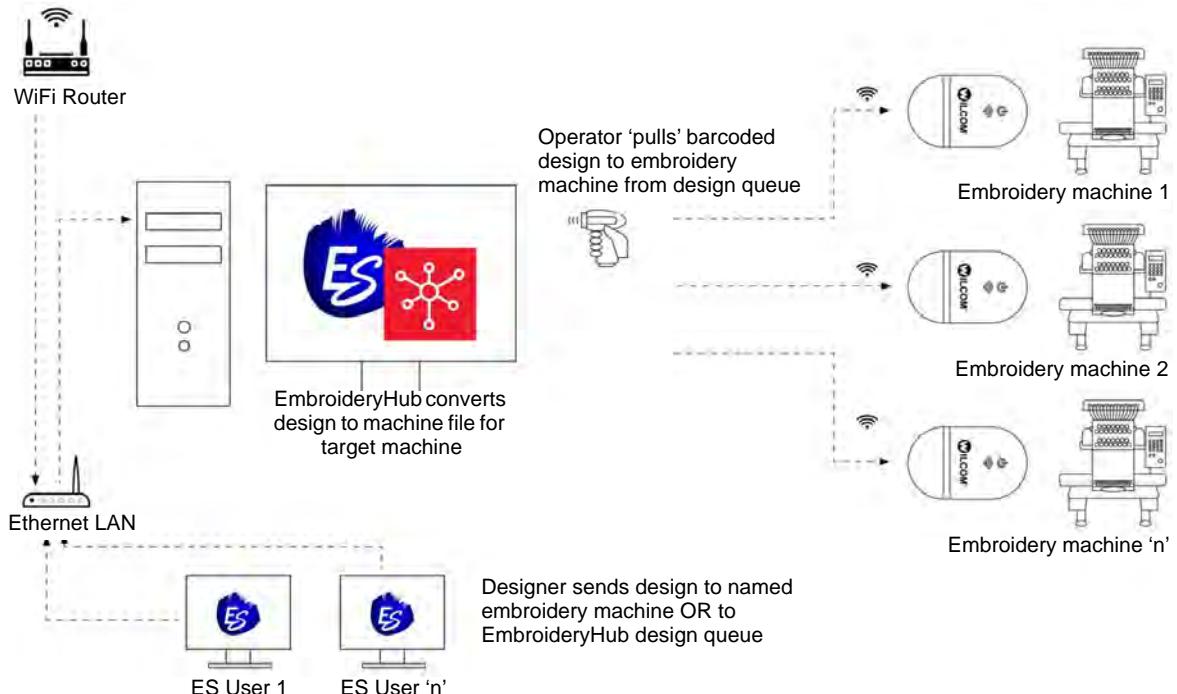
Note Anyone on the same EmbroideryConnect network who has EmbroideryStudio running can send a design to an EC device or design queue on an EmbroideryHub. However, there can only be **one** EmbroideryHub running on the same network.

End-user benefits

What are the benefits of the EmbroideryConnect capability?

Simple and easy to use...
- Easy to install and configure.
- Connect to existing WiFi and eliminate complicated network setup and configuration.
- Plug into any USB-enabled embroidery machine.
- Wireless design transfer – no need for network cables.
- Mix and match different brands of machine on the same network.

The right design, every time...
- Machine file automatically generated on output.
- Convenient operation with the pull method. No risk of selecting wrong design for the order.

Safe and secure...
- Correct design loaded to the correct embroidery machine.
- Designs encrypted during transfer and, optionally, removed automatically from the design queue.
- Optionally, designs deleted from the EC device when disconnected.

Usage scenarios

There are two basic ways of setting up an EmbroideryConnect network using either a single PC or multiple PCs.

Scenario 1: Single PC

If you are using a single PC to create, edit, and manage your designs as well as serve machine files to your embroidery machine/s, you will need both EmbroideryStudio and EmbroideryHub running.

Scenario 2: Multiple PCs

If you are using two or more PCs to create your designs and a dedicated PC to serve your machine files, you will need:

◀ EmbroideryStudio with EmbroideryHub running on PC 1.
◀ EmbroideryStudio running on PC 2, PC 3, etc.

Design files may be saved anywhere on your network. These are sent to the EmbroideryHub where they are converted to machine files and sent to the EmbroideryConnect network.

Tip Visit the Wilcom Support Center at www.wilcom.com.au/support for a current list of compatible machines.

EmbroideryConnect components

The system employs the following components…

Component	Details
EmbroideryConnect WiFi device	A Wilcom-supplied WiFi device – one per machine.
EmbroideryHub PC	A nominated PC will act as the EmbroideryHub. This PC should remain on at all times. All designs are routed through it to embroidery machines connected to the EmbroideryConnect network.
EmbroideryHub	EmbroideryHub software is activated on the dedicated PC… • Designers can send (push) designs to connected machine(s) running the EC device. • Alternatively, designers can send designs to the EmbroideryHub queue. • Machine operators can request (pull) specific design from the queue via barcode reader connected to the EC device.
EmbroideryStudio users	Other ES users can send designs to machines via the EmbroideryHub. All EmbroideryConnect devices on the network will appear for selection in a machine list. There is no need for shared folders, etc.
ES dongle	EmbroideryHub will only run if there's an ES dongle plugged into the EmbroideryHub PC or there is an ES network dongle on the same network.

Note All EmbroideryConnect devices are locked to the dongle used during the setup process. These devices will only run with that particular dongle attached to the EmbroideryHub PC or network.

Third-party components

To set up an EmbroideryConnect network, some third-party hardware items are also required…

Component	Details
USB-capable embroidery machines	• Able to read designs from USB memory stick. • Preferably with the USB port built into the control panel. Add-on USB converters in old machines may not be compatible.
Compatible WiFi router	See below for details.
Barcode reader	Optional.

Component	Details
Windows Administrator privileges	Access must be configured by a user who has full administrator privileges and is part of a Windows 'Workgroup' or 'Domain' network.

WiFi router compatibility requirements

Note the following WiFi router requirements to be compatible with the EC device:

Requirement	Details
Standard security protocol	The WiFi router must use one of the standard security protocols: WEP or WPA/WPA2 Personal. Security type 'none' or 'unsecured' is not supported at present. A WiFi password is mandatory.
Support for WLAN Protocol 802.11 G	The WiFi router needs to support WLAN Protocol 802.11 G in the 2.4 Ghz band. The EC device will not connect to a WiFi router using the 5 Ghz band. If unsure, consult the documentation provided with your router.
WiFi network name	You must know the WiFi network name (SSID) and WiFi router password (key). We recommend using a SSID (network name) that contains only alphanumeric characters – letters and numbers.
WiFi coverage	WiFi coverage must be sufficient to serve the entire production area.

EmbroideryConnect device

A separate EmbroideryConnect device is needed for each embroidery machine on the network. Designs can be 'pushed' to a named device or 'pulled' via barcode reader at each machine.

Note All EmbroideryConnect devices are locked to the dongle used during the setup process. These devices will only run with that particular dongle attached to the EmbroideryHub PC or network.

Device features

Device features are summarized below:

Item	Description
EmbroideryConnect device	The device itself is small and compact. It can plug directly into an embroidery machine USB port or via USB extender cable.
USB-C connection	USB-C connection at top to connect device to PC or embroidery machine.
USB-A connection	Separate USB-A input port for USB barcode reader.
Device state indicator	The device displays basic status information. See below for details.
Power from USB	No separate power supply needed – power is drawn from USB port.

💡
Tip The EC device comes with 3M mounting strips to attach it to the target machine.

EC device states

The EC device indicates various devices states. The following table explains the color coding…

When…	Status light	Status
Attaching device to machine	Solid green	Device is running smoothly so machines can access designs.
Scanning barcode	Flashing orange	Barcode scan failed. Scanned file not found in design queue.
	Flashing purple	Device cannot connect to EmbroideryHub for design request.
Sending design to device	Flashing yellow	Device is unmounted.
	Flashing orange	Sent file already exists on device.
	Flashing red	Error occurred.

EmbroideryConnect setup

Setting up an EmbroideryConnect network is easy…

◀ A single device is required for each embroidery machine.
◀ A dedicated network PC acts as the 'hub' and runs the EmbroideryHub software.
◀ All devices are configured to the EmbroideryHub PC.

◀ All secondary PCs access the EmbroideryConnect network via the EmbroideryHub.

To configure an EmbroideryConnect device

1 Ensure the 'hub' PC has an active internet connection.

2 Start EmbroideryHub from the program group or desktop.

Open the EmbroideryHub

When first run, the device list in the EmbroideryHub main window is empty.

Add a new EmbroideryConnect device

3 Plug the EC device into the computer via the USB-C port located at the top.

Connect
EmbroideryConnect
device to PC

Power LED solid green and
WiFi LED flashing blue

4 Ensure all lights are in 'Setup' mode. When the power LED is solid green and the WiFi LED is flashing blue, the device has finished booting. This generally takes about 60 seconds.

WiFi LED flashing blue
indicates 'Setup' mode
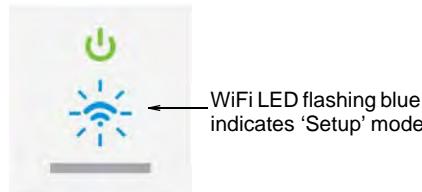
5 Click **Add New EmbroideryConnect** and follow the setup wizard prompts.

◀ If an unconfigured EC device is detected, the process will open the wizard directly and take you to the next step.

◀ If no EC device is detected, the dialog below will appear. Check the device is correctly attached and has finished booting. Click **Next** when the button becomes available.
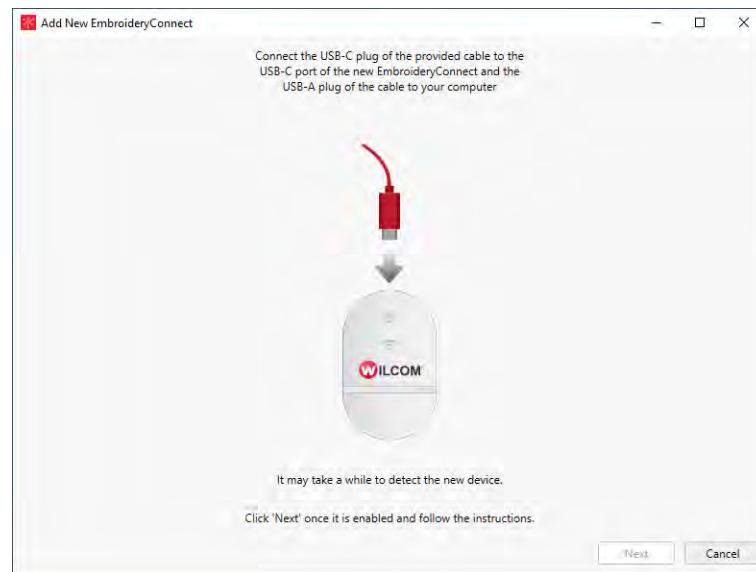
◀ If more than two unconfigured EC device are connected, the dialog below will appear. The code displayed corresponds to the tag number on back of the device. Select a device and click **Setup**.
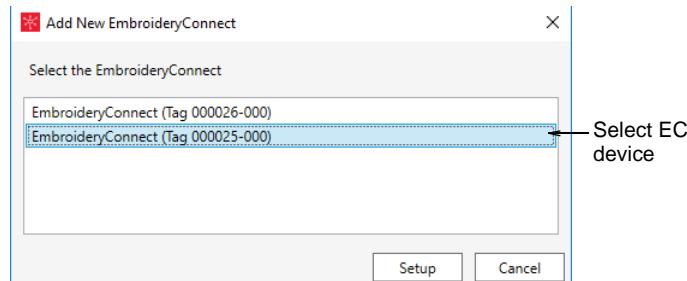
6 When prompted, select your WiFi network and click **Next**.

Select your WiFi network
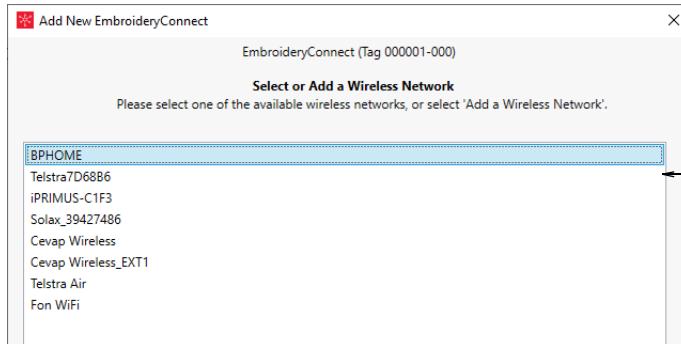
7 Enter the WiFi password and click **Next**.

Enter WiFi password
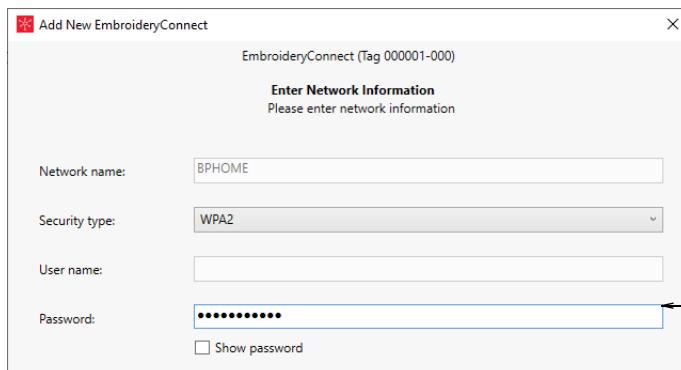
**8** Identify the EmbroideryConnect device and specify output options.

Name the EmbroideryConnect device

Specify the EmbroideryConnect folder
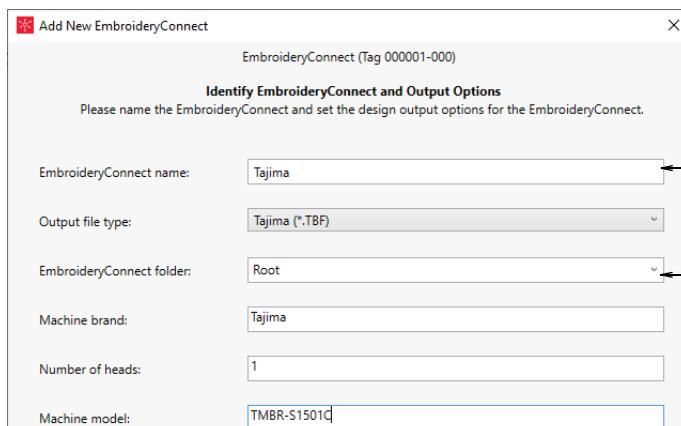
Options include:

| Option	Function
EmbroideryConnect name	Give the device a unique name associated with the connected machine – e.g. 'Tajima #2'.
Output file type	Specify the machine file type for the selected machine – e.g. *.TBF. Design files will be converted on-the-fly to this format.
EmbroideryConnect folder	Specify the folder on the device if different to the 'root' folder. Machine requirements are the same as those for sending a design via normal USB stick.
Machine brand	This field is simply descriptive to help identify the machine associated with the EC device.
Number of heads	This is a descriptive field.
Machine model	This is a descriptive field.

9 Click **Finish**.

EmbroideryConnect device connecting to EmbroideryHub

10 Wait for the EC device to connect to the network and EmbroideryHub. The blue WiFi LED will flash and then turn solid blue when it has successfully connected.

WiFi LED solid blue indicates 'Ready' mode
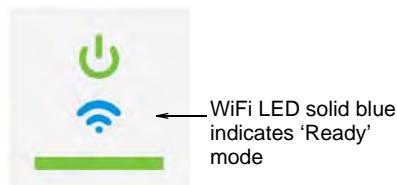
Connection takes about 60 seconds depending on network traffic.

EmbroideryConnect device now connected to EmbroideryHub
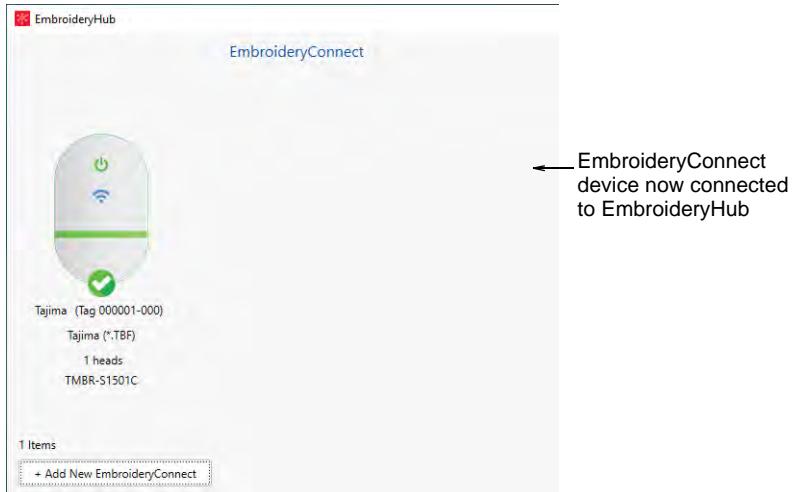
11 Once configured, remove the EC device from the EmbroideryHub PC and connect it to the target machine.

Connect EmbroideryConnect device to machine
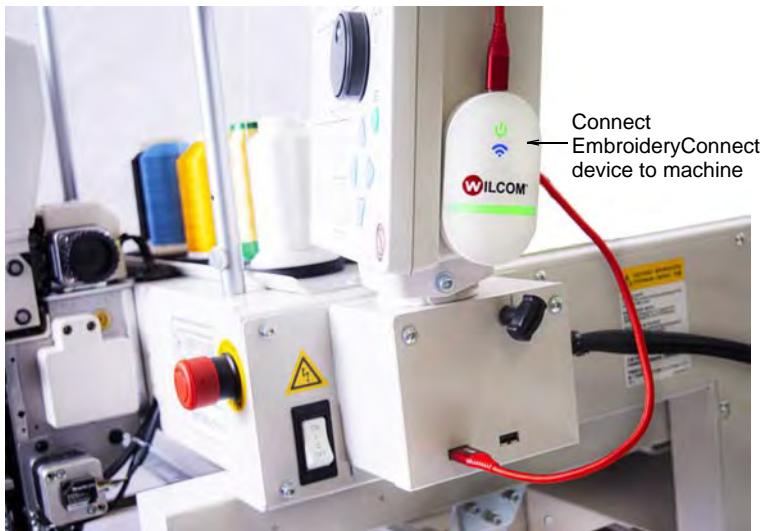
Tip The EC device comes with 3M mounting strips to attach it to the machine.

12 Again, ensure all lights return to 'Ready' mode. You can now send designs to this device from EmbroideryStudio.

13 Configure your other devices in the same way.

Click to toggle list view and icon view

Add a new EmbroideryConnect device
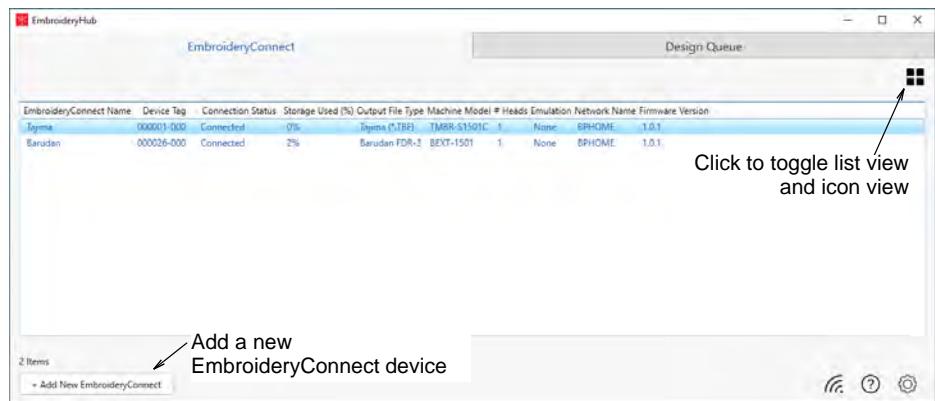
Note The EmbroideryHub needs to remain active at all times in order to manage the design flow to all connected EmbroideryConnect devices.

Basic device settings

Once your devices are set up and connected to the target machines, you can further configure or modify them at any time. There is no need to re-attach the EC device to the EmbroideryHub PC. Settings can be modified across the network. Double-click the device icon in the main window to access settings.

Double-click device icon to access settings
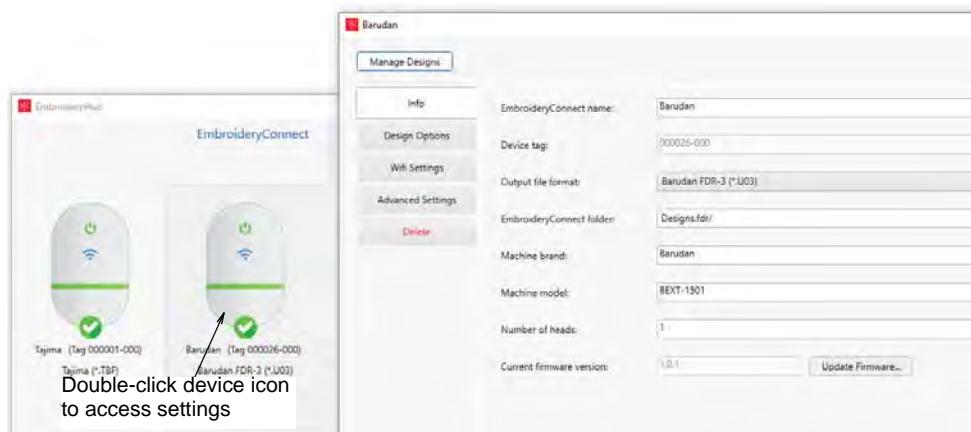
Device details

Access the **Info** tab to modify details provided during the setup procedure. Here you can change device name, output file type, and other details…

Edit device name, output format, and other details

Design options

Access the **Design Options** tab to manage design options. All design transfers are securely encrypted across the EmbroideryConnect network. Various options are available for handling design transfers…

Set design transfer options

Design options can be modified as preferred for this EC device…

Option	Function
Rotate design by 180° on output	The design is auto-rotated 180° when output to machine file on a connected EC device. If the machine is dedicated for cap designs, tick this option.
Keep designs when powered off	By default, designs stay on the device unless you remove them in the Manage Designs window. When unticked, designs are cleared from the device so they can't be copied.
Replace designs on barcode read request	When ticked, whenever the operator does a barcode scan to fetch a design, EmbroideryConnect will delete all existing designs on the device before transferring the scanned design. Some users only want one design on the device at any given time.

Option	Function
Apply to all	Click to apply the same settings to all EmbroideryConnect devices configured on the EmbroideryHub.

WiFi settings

The main reason for accessing the **WiFi Settings** tab is to update the network password...

Update password as necessary

Delete EC device

Access the **Delete** tab to remove a selected EC device from EmbroideryHub.

Delete EC device from EmbroideryHub

Advanced device settings

Access the **Advanced Settings** tab to update USB memory size settings and machine compatibility settings as needed...
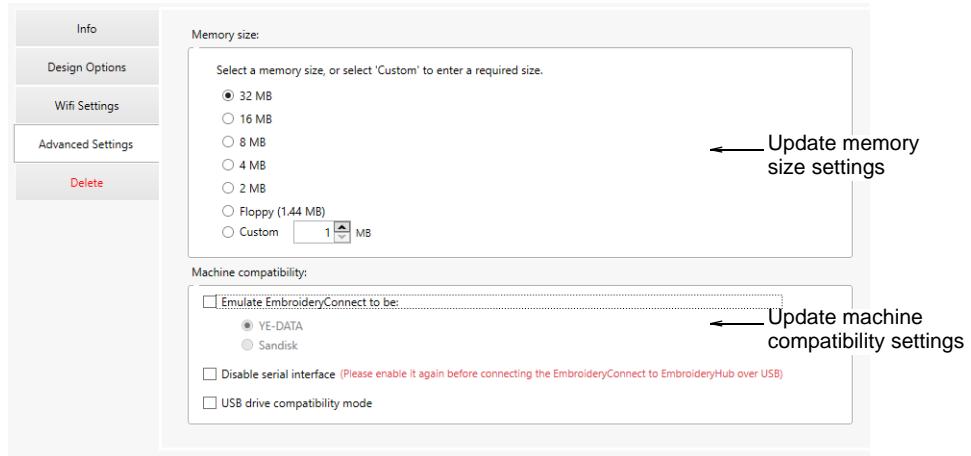
Configuring EC device memory size

The default capacity of the EC device is 8MB. Most machines accept this size of USB memory stick. Some older machines require smaller sizes such as 4MB or Floppy disk size (1.44 Mb). It can take up to 30 seconds for changes to be made.
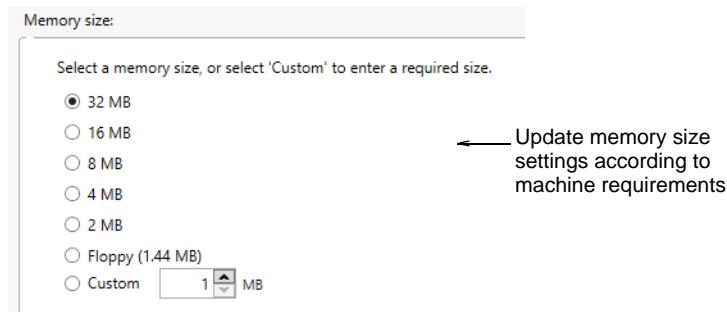
⚠ **Warning** If you choose floppy memory mode (1.44 Mb), it may not work on newer machines.

You can confirm the change in memory size when the EC device is connected to the PC.

Default RAM disk size
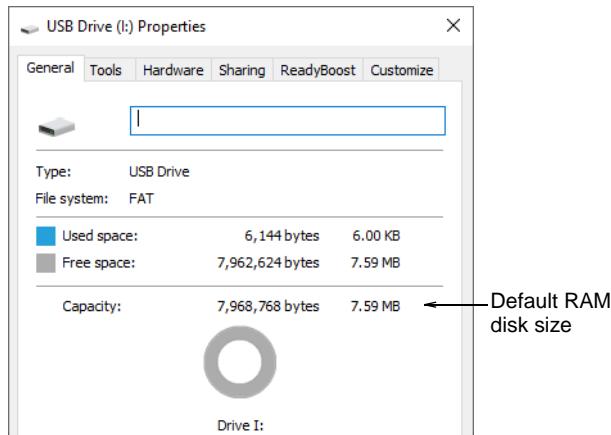
Tweaking machine compatibility

A number of machine compatibility options are available under **Advanced Settings**. It may be necessary to enable one or other of these to ensure compatibility between your machine controller and the EC device. If for any reason you lose WiFi connection to the EC device, the only way to reconfigure it is to perform a 'hard reset'. See Troubleshooting EmbroideryConnect for details.

Emulating other devices

EmbroideryConnect can emulate other types of device. Some machines can only read designs from YE-DATA or Sandisk. For example, Tajima TEJT-II-C embroidery machines require these types of device. EmbroideryConnect can be set to emulate them.

Emulate other devices according to machine compatibility requirements
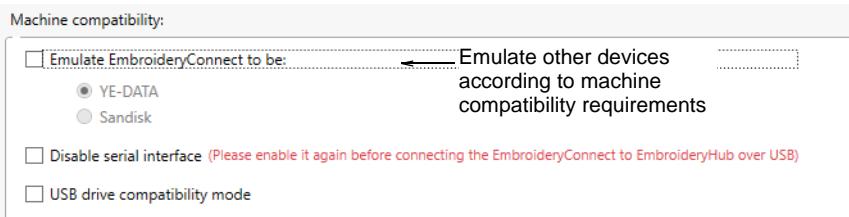
Disabling serial interface

By default, EmbroideryConnect devices have the USB serial interface enabled in order to configure them on EmbroideryHub. It is best to leave the setting activated in case you need to reconfigure the device. However, if the embroidery machine has a problem with WiFi and serial

interface, you may need to disable it. With the EC device connected, the machine may lock up and display a unexpected message.

Disable serial interface if there are problems after setup

Tick the **Disable serial interface** function and click **OK**. You will receive the following warning…
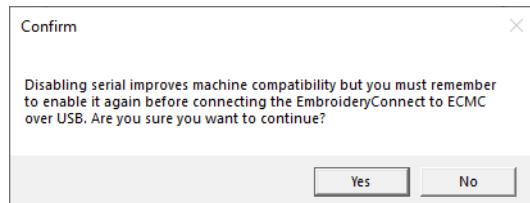
Note If you turn off the serial interface and subsequently lose WiFi connection to the EC device, the only way to reconfigure it is to perform a 'hard reset'. See Troubleshooting EmbroideryConnect for details.

USB drive compatibility mode

There's an option to run the EC device in 'USB drive compatibility mode'. This may improve machine compatibility in some cases. For instance, if you are using Tajima X16 controllers or machines like Janome MB-4 and Janome MC12000:

◀ Tick both 'USB drive compatibility' and 'disable serial interface'. In other words, USB drive compatibility should be enabled and serial interface disabled.

◀ Only do this after the device has been set up and is working.

◀ If you reset the device for any reason, make sure 'disable serial interface' is unticked.

Note The option is grayed out if the device does not have firmware version 1.0.1 or greater.

Configuring sub-folders for Barudan machines

Sometimes you may need to specify a folder on the device which is different to the 'root'. Different machines have different requirements. For example, 'MyDesign.fdr/'. These are the same as requirements for

sending a design via a USB stick. Make sure you include a 'slash' (/) at the end.

Specify the EC folder on device
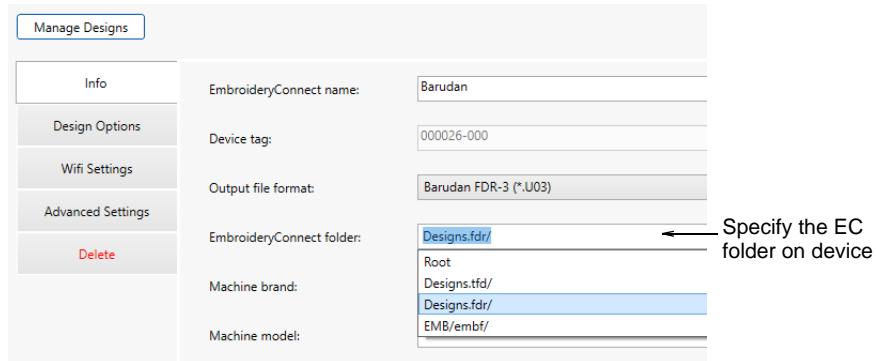
If the EC device will be used with a Barudan machine, a special sub-folder must be configured. Barudan machines will not read designs from the root folder of any USB stick. You can edit the folder structure on the EC device whenever necessary.

Adjusting proxy & network adapter settings

Normally you will not need to touch proxy and network adapter settings. However, the **Advanced Settings** dialog exists to resolve any issues. For instance, proxy settings of the EmbroideryHub PC may not match those of the local network. Or, if the PC has multiple network adapter connections – e.g. both a wired Ethernet connection and a WiFi connection – conflicts may arise. To access settings, click the 'cog' button in the lower right corner of the main screen.

Access proxy server settings
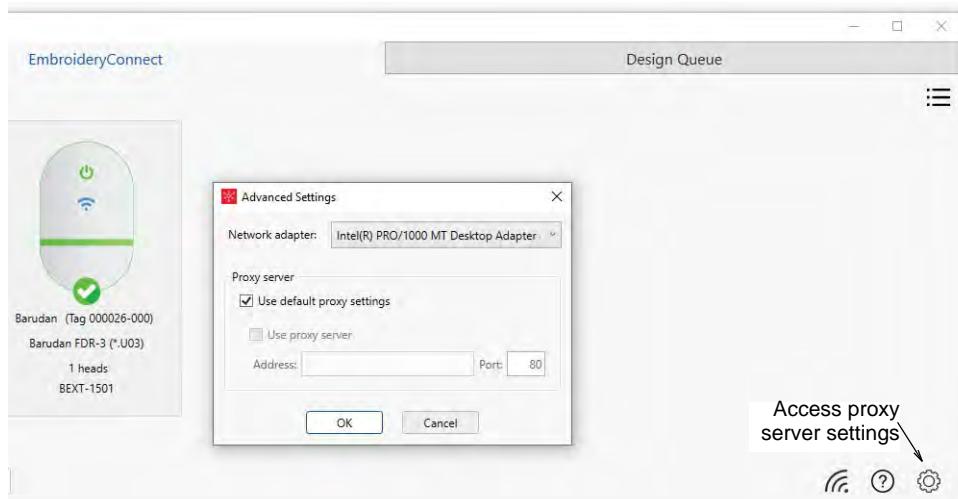
Proxy settings

Default proxy settings are set in the Windows **Internet Options** dialog. Keep ticked for most situations. If you are using two networks with different proxy requirements, this may cause '504 errors' to occur with the devices. You will need to untick default settings and use the other controls to specify the proxy configuration for your EmbroideryConnect network.

Network adapter settings

The network adapter should be left on default most of the time. It's only needed when there are multiple adapters connected to two different networks **and** there are device connectivity issues. If you have two adapters and find that the devices consistently switch from 'Connected' to 'Disconnected', select the adapter connected to the EmbroideryConnect network. EmbroideryHub should also be restarted.

Sending designs to EmbroideryConnect

Once you have configured one or more devices on your EmbroideryConnect network, you have the choice of sending designs to a named device or 'pushing' them to a queue where they can be 'pulled' from the machine itself. You can use any PC running EmbroideryStudio on your local WiFi network to send designs.
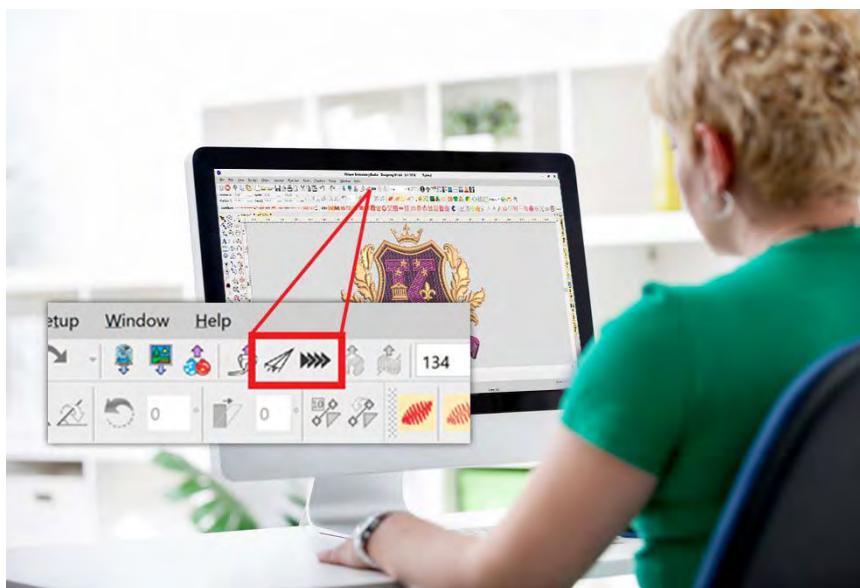
Send designs to EmbroideryConnect device

> ✎ Use Standard > Send to EmbroideryConnect to send the current design to a named EmbroideryConnect device.

Open EmbroideryStudio and load the design or designs you want to send to EmbroideryConnect.

To send a design to an EmbroideryConnect device

◀ Select a design tab and click the **Send to EmbroideryConnect** icon. The dialog will show a list of named devices connected to the network.

Choose preferred machine / device
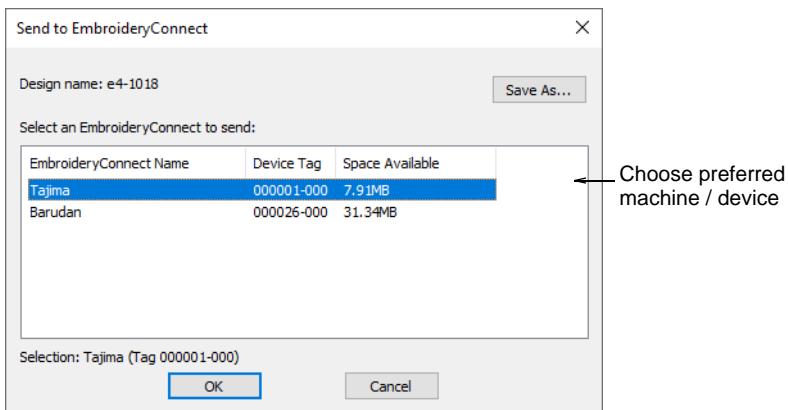
◀ Choose your preferred device and click **OK**. The design will be automatically converted to the corresponding machine file format and sent to the EC device. Here it can be loaded into machine memory for stitching.
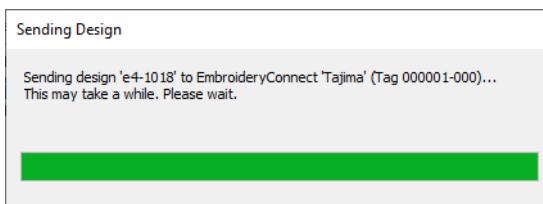
◀ Repeat for all designs you want to send to named devices connected to the network.

Push designs to EmbroideryConnect design queue

> ⋙ Use Standard > Queue Design to send the current design to the EmbroideryConnect design queue where they can be 'pulled' from the machine.

Open EmbroideryStudio and load the design or designs you want to send to EmbroideryHub. When you 'push' a design to a queue, you don't know (or care) which machine it gets stitched on. Different production environments have different methods. The bigger and busier the concern, the more likely you are to use the 'push' method.

Attach **barcode reader** to EC USB port

To push a design to the EmbroideryConnect design queue

◀ Click a design tab and click the **Queue Design** icon. A confirmation message will appear indicating that the design is in the queue.

◀ An error check prevents you from sending multiples of the same design to the queue.
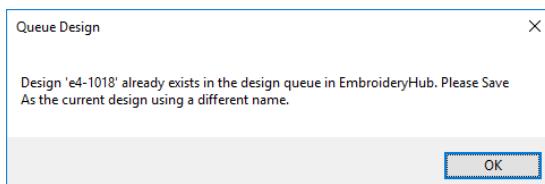
◀ Repeat for all designs you want to queue up in preparation for production.

◀ On the machine itself, the operator can 'pull' designs to the EC device by means of a barcode reader attached to the USB port. Scan the barcode printed on the production worksheet. The design will be pulled from the queue to the EC device. Here it can be loaded into machine memory for production.

View & manage designs on EmbroideryHub

On the EmbroideryHub, you can view and manage designs sent both to particular machines as well as to the design queue.

To view and manage designs on EmbroideryHub

◄ Open EmbroideryHub on the EmbroideryHub PC.

Manage designs for the chosen EC device

Manage designs in the EmbroideryHub design queue
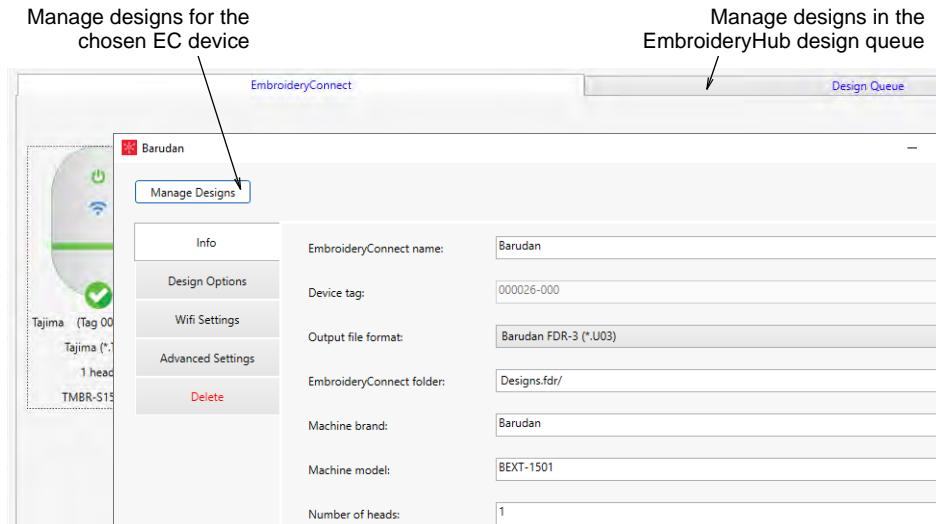
◄ Click the **Design Queue** tab to view queued designs in EmbroideryHub. Here you can delete designs as necessary.

Delete designs from the queue as necessary

◄ If you want to view designs sent to the chosen EC device, click the **Manage Designs** button on the device settings dialog.

Manage designs currently sent to the device
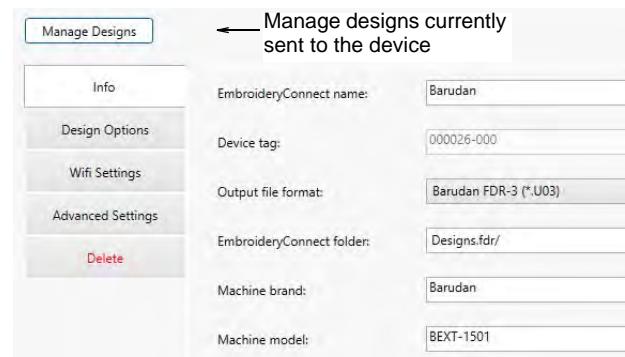
◀ A list of designs pending production on the target machine is displayed. Here you create new folders, and rename or delete designs as preferred.

Manage designs currently sent to the device

Troubleshooting EmbroideryConnect

If experiencing problems using the EmbroideryConnect device, double check that it connects to the WiFi and EmbroideryHub correctly.

◀ The Power and WiFi LEDs on the EC device will be both on and solid if connected.

◀ If they flash briefly and then fade out, the EC device is not connected.

If a mistake lies in the configuration settings, simply start again and double-check the settings.

Reset the device

If you turn off the serial interface and subsequently lose WiFi connection to the EC device, the only way to reconfigure it is to perform a 'hard reset'. Power up the device and insert a hairpin into the **Reset** aperture on the side. Hold it for 10 seconds. This restores the device to whatever firmware it was initially programmed with. The EC device must then be reconfigured using EmbroideryHub.

Reset EmbroideryConnect device to factory defaults

Tip If this doesn't solve the problem, go to the Help & Support site and check for updates.

Update the firmware

The Help & Support site will periodically publish firmware updates for the EC device. These may fix known compatibility problems for certain machines or support new features and fixes to the device. Any updates should not compromise your existing setup.

To update the firmware

1 Open EmbroideryHub, access the device settings, and ensure 'Disable serial interface' is turned off.

Tick to disable serial interface
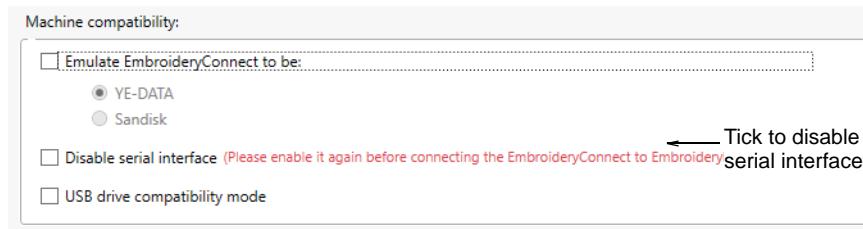
2 Remove the EC device from EmbroideryHub.

3 Download and install the latest version of EmbroideryStudio from the Wilcom Help & Support site, if not already installed.

4 Save a copy of the firmware update file to the EmbroideryHub PC. This will have been sent to you or downloaded from the Help & Support site. Firmware files have a '.WIL' extension which is an encrypted format.

5 Plug the EC device into the computer via the USB-C port located at the top.

Connect EmbroideryConnect device to PC

Power LED solid green and WiFi LED flashing blue

Note Devices configured to '1.0.0' must be re-attached to the EmbroideryHub PC for the update to work properly. For all other updates, there is no need. Settings can be modified across the network.

6 Add the device back into EmbroideryHub.

7 Double-click the device icon in the EmbroideryHub main window to access device settings.

Manage settings for the chosen EC device

Update the firmware for the chosen device
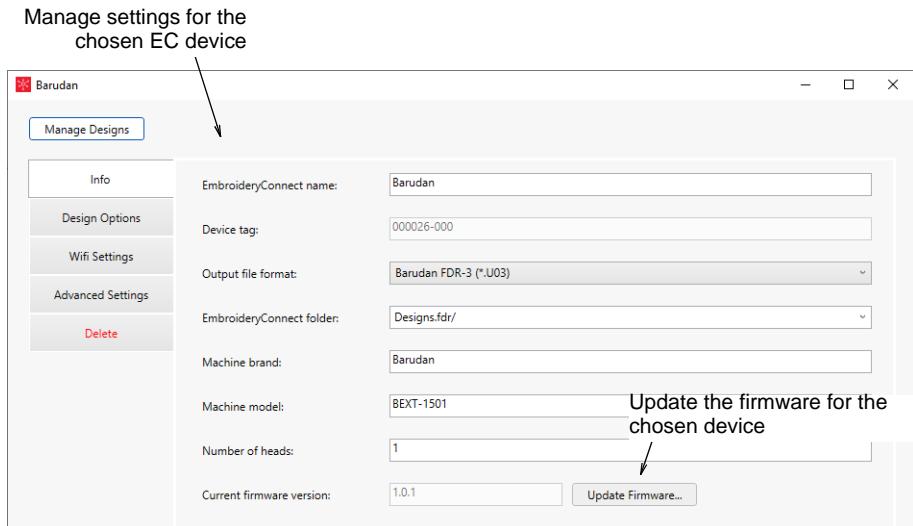
8 On the **Info** tab, click the **Update** button to access the **Update Firmware** dialog.
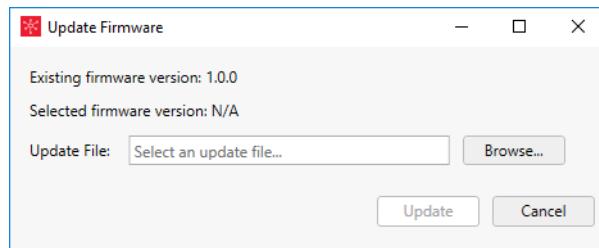
9 Click the **Browse** button and locate the firmware update file in the save location.

10 Click **Update** to proceed. A confirmation message warns you that all design files will be cleared from the device.
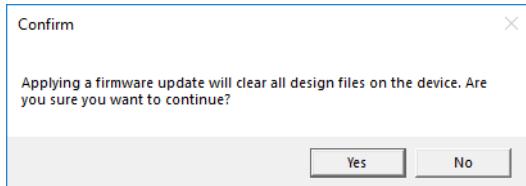
11 Click **Yes** to proceed. Progress messages will tell you the current status of the firmware update.
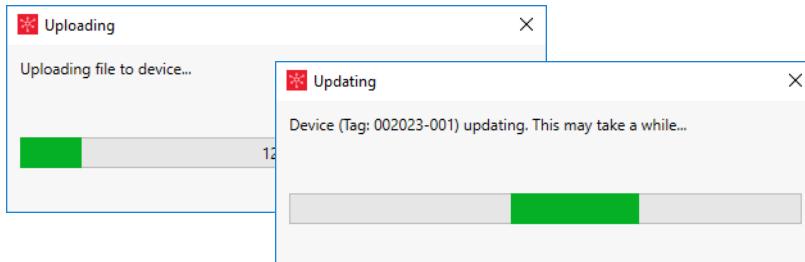
12 Once you have confirmation that the EC device is updating, you can close the device settings dialog and move to the next device. No need to wait until the current one has finished updating. Each device must be individually updated.

Glossary

Connection Manager: A software feature to allow the sending of files to shared folders.

Control panel: The panel on an embroidery machine by which the operator sets up the machine for embroidery production.

Design file: Design files, also known as 'outline' or 'condensed' files, are high-level formats which contain object outlines, object properties and stitch data. Examples include CND, GNC, INP and PCH. When you open an outline file in EmbroideryStudio, corresponding stitch types, input methods and effects are applied. Outline files can be scaled, transformed and reshaped without affecting stitch density or quality.

EmbroideryConnect WiFi device: Wilcom-supplied device to enable connection of USB-enabled embroidery machines to an EmbroideryConnect machine network via a WiFi router.

LAN: Local Area Network – a wired network of interconnected PCs and other network enabled devices such as printers.

Machine file: Machine or 'stitch' files are low-level formats for direct use by embroidery machines. They contain only stitch coordinates and machine functions. Machine files are generally not suited to scaling because stitches are not regenerated during rescaling. See also Design file.

Machine format: Different embroidery machines understand different languages. They have their own control

commands for the various machine functions. Before you can stitch a design, it must be in a format which can be understood by the target machine. Common formats include Barudan, Brother, Fortran, Happy, Marco, Meistergram, Melco, Pfaff, Stellar, Tajima, Toyota, Ultramatic and ZSK.

Network file server: A PC on a network which is used to serve files up for use by other PCs on the network.

Network folder location: The logical location of a folder on a network. Contains the PC name together with the folder name – e.g. \\My PC\EmbroideryMachine1.

USB-capable embroidery machine: An embroidery machine which has a standard USB port built into the machine or machine control panel.

USB converter: A device which converts a standard serial connection port to a USB type A connection.

USB memory stick: Standard USB memory stick or simply 'USB stick' used for storing and transporting files.

USB port: Universal Serial Bus Connector – a connection on a computer where you plug in the dongle.

WiFi device: Device capable of connecting to a WiFi Router or wireless access point.

WiFi network name (SSID): Service Set Identifier (SSID) – the unique identifier attached to the information which is sent over a wireless local area network.

WiFi password (key): Password, passphrase or key (depending on the WiFi security type) that allows connection to the WiFi router or access point.

WiFi router: Device that provides basic network infrastructure for a home or small office network. Provides a wireless access point for many wireless devices to connect to each other for access to the Internet as well as for file sharing and printing. Sometimes referred to simply as a Wireless Router.

WiFi USB machine network: A network of wirelessly connected, USB enabled embroidery machines and PCs.

Windows domain: a network of Windows PCs, also known as 'network domain', in which computers rely on a centralized authentication database. Users log into the domain and the access privileges are served from the central database which is controlled by a network administrator.

Windows workgroup: 'Workgroup' is Microsoft's term for a peer-to-peer local area network. Computers running Microsoft operating systems in the same workgroup may share files, printers, or Internet connection.

Wireless Access Point (WAP): A wireless access point or 'WAP' is a hardware device on a local area network (LAN) that allows wireless capable devices and wired networks to connect.

WLAN: Wireless Local Area Network or WiFi network.