



ECOTUNE AUTOMATION

BAS Probe

User Guide & Reference Manual

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What BAS Probe Does

Getting Started

BAS Probe is a portable diagnostic probe for BACnet MS/TP trunks. It connects directly to the trunk's two-wire RS-485 cabling and puts a complete network dashboard in your web browser — no software to install, no PC required, and nothing to configure ahead of time.

Point it at a trunk you have never seen before, and within a couple of minutes you have a live picture of every device on it, every point those devices report, and the health of the wiring itself.

Who it's for

BAS Probe is built for the moment you're standing in front of an unfamiliar panel with a trunk you didn't install and no documentation for it — the situation BAS service techs run into constantly. It's equally useful for commissioning a new installation, troubleshooting a fault, or simply getting an inventory of what's actually on a network before doing any work on it.

The core idea

Everything in BAS Probe falls into one of three categories:

- **Passive monitoring** — BAS Probe listens to trunk traffic and reports on the health of the wiring and the token ring, without ever transmitting anything. This is always safe and always on.
- **Active discovery** — when you choose to, BAS Probe can transmit on the trunk to find devices, read their properties, and read every point they expose.
- **Controlled writes** — BAS Probe can also write a test value to a single point, always under tight safety limits described in detail later in this guide.

Transmission is never automatic. BAS Probe arrives with its transmitter switched off, and stays off until you explicitly enable it.

What's in the Box

Getting Started

In the box

- BAS Probe probe, in its enclosure
- USB-C power cable
- A pair of pigtail leads for connecting to the trunk's RS-485 terminals

What you'll need

- A USB power source (a wall adapter, a powered USB hub, or a laptop USB port all work)
- Access to the trunk's RS-485 terminals (usually two or three screw terminals labeled with some combination of A/B, +/-, or Net/Com on the panel or controller you're connecting to)
- A phone, tablet, or laptop with Wi-Fi and a web browser

Connecting to the trunk

RS-485 is a two-wire differential connection. Match the probe's two trunk leads to the same polarity used by the rest of the devices already on the trunk — most panels label these A/B or +/- . If the polarity is reversed, BAS Probe simply will not see valid traffic; it will not damage anything on the trunk, and reversing the two leads corrects it immediately.

A trunk is a shared bus. BAS Probe connects in parallel alongside every other device already on the trunk — it does not sit "in line" with the wiring and does not need to interrupt the existing connection to anything.

Connecting Power and Wi-Fi

Getting Started

Step 1: Power on

Connect the USB-C cable to a 5V power source. BAS Probe boots in a few seconds. No action is needed on the trunk side to power it on — power comes entirely from USB.

Step 2: Join its Wi-Fi network

BAS Probe creates its own Wi-Fi network rather than joining your existing one. On your phone, tablet, or laptop, open Wi-Fi settings and connect to the network it broadcasts. The default network name and password are printed on the underside of the unit.

Step 3: Open the dashboard

Once connected, open a web browser and go to the probe's address (also printed on the unit). The dashboard loads directly — there is no app to download and no account to create.

Multiple people can connect at once. Everyone connected to the same BAS Probe sees the same live dashboard, which is useful when two techs are working the same panel together.

Renaming the Wi-Fi network

If you're likely to have more than one BAS Probe nearby — a second unit on another job, for example — you can give each one its own Wi-Fi name from the Settings page, covered later in this guide.

First-Time Setup

Getting Started

The first time you open the dashboard on a probe that has never been configured, a short setup walks you through two things before it hands the unit off for use:

1. **Setting a PIN.** This protects settings from being changed by anyone else who happens to join the same Wi-Fi network. You'll need this PIN to change settings later, so make a note of it.
2. **Naming the Wi-Fi network (optional).** Skip this if the default name is fine, or give it something recognizable if you're deploying more than one unit.

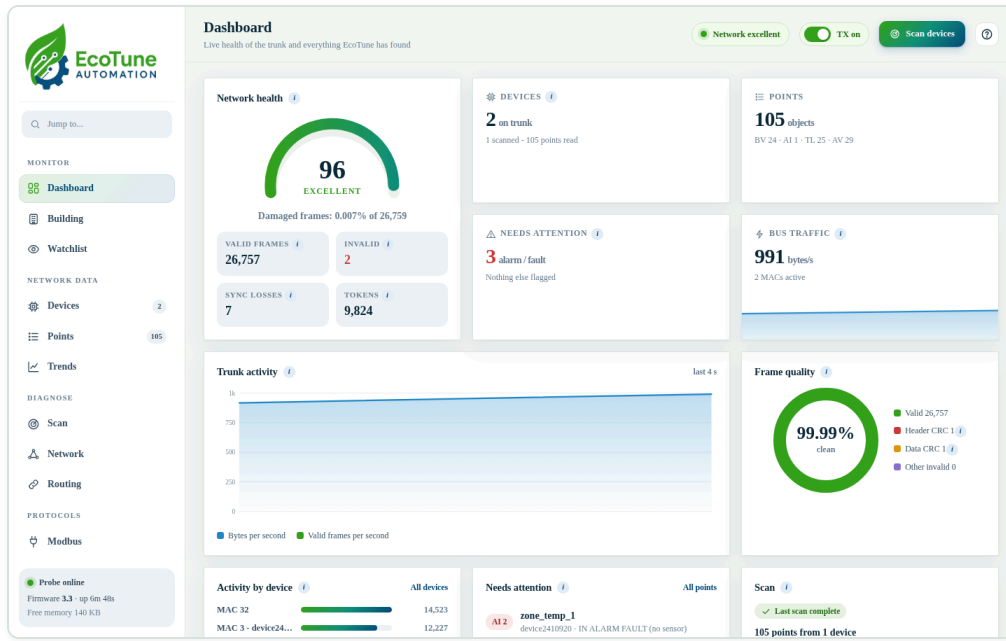
Both steps can be skipped and configured later from Settings. Setup takes under a minute either way.

Already configured? If you're handed a probe that someone else has already set up, this screen won't appear — you'll go straight to the dashboard.

A Tour of the Dashboard

Getting Started

The Dashboard is the home screen — a live summary of everything BAS Probe knows about the trunk right now.



The Dashboard page, showing a healthy trunk after a completed scan.

What's on it

- **Network health** — a single score summarizing the overall condition of the trunk, along with valid/invalid frame counts, sync losses, and token activity.
- **Devices and Points** — running counts of what's been found so far.
- **Needs attention** — any point currently in alarm, fault, or override, surfaced automatically without digging through a point list.
- **Bus traffic** — a live graph of trunk activity.
- **Activity by device** and **Frame quality** — a closer look at which devices are talking and how clean their traffic is.

The sidebar

Every other page in BAS Probe is reachable from the sidebar on the left, grouped into Monitor, Network Data, Diagnose, Protocols, and System. The **Jump to...** search box at the top finds any page by name.

TX on / off

The switch in the top right controls whether BAS Probe is allowed to transmit on the trunk at all. It's off by default. Turning it on doesn't automatically send anything by itself — it simply unlocks the features (scanning, Who-Is, writes) that need to transmit. Turn it back off when you're done to return the probe to purely passive listening.

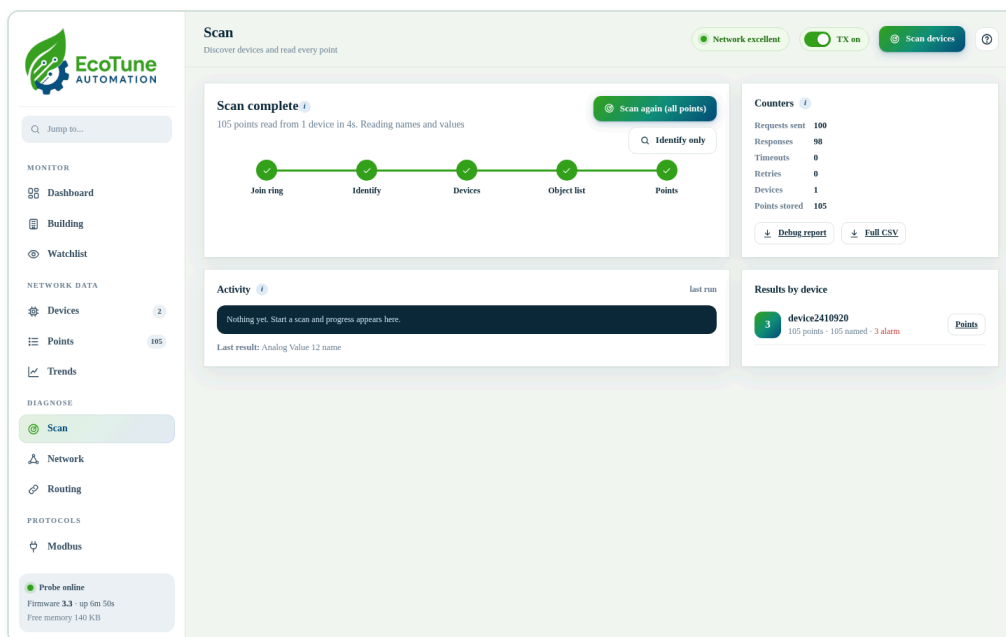
Running Your First Scan

Finding Your Network

A scan is how BAS Probe finds every device on the trunk and reads what they have to offer. It's the fastest way to go from "an unfamiliar trunk" to "a complete picture of the network."

Starting a scan

1. Make sure **TX** is switched on — scanning needs to transmit on the trunk.
2. From the Dashboard or the Scan page, press **Scan devices**.
3. BAS Probe joins the token ring, finds every device that answers, and begins reading their properties and points.



The Scan page, ready to start a scan.

What happens during a scan

BAS Probe works through the trunk one device at a time: it reads each device's identity (vendor, model, firmware, instance number), then reads every object that device exposes — names, current values, status, and descriptions. Progress is visible live; you don't need to wait for the whole scan to finish before looking at what's already been found.

Re-scanning

You can re-scan the whole trunk at any time, or just a single device from its own page — useful after a controller has been reconfigured, or if you only need to refresh one panel rather than the entire trunk.

Scanning is a normal, everyday operation. It only reads information from devices; nothing on the trunk is changed by scanning.

Identify-Only Mode

Finding Your Network

Sometimes you don't need every point from every device — you just need to know what's out there. Identify-only mode reads each device's identity (vendor, model, firmware revision, instance number) without reading its full point list, which is significantly faster on a trunk with many devices or devices with large point counts.

When to use it

- A quick inventory of an unfamiliar trunk before deciding where to focus
- Confirming which devices are actually present and responding, without the time cost of a full read
- A first pass on a very large trunk, followed by full scans of only the devices that matter

Switch it on from the Scan page before starting. A device identified this way shows its vendor and model normally, with its point list left unread until you choose to scan it fully.

Understanding Device Identity

Finding Your Network

Every device BAS Probe finds is identified the same way BACnet itself identifies it: by **device instance** — a number that uniquely identifies that device, independent of its physical address on the wire.

Why instance number, not MAC address

A device's MAC address is only meaningful on its own local trunk — two completely different devices on two different trunks can share the same MAC address. The device instance is meant to be unique across an entire BACnet installation, which makes it the more reliable way to identify a specific device, especially once routed networks are involved.

What gets read

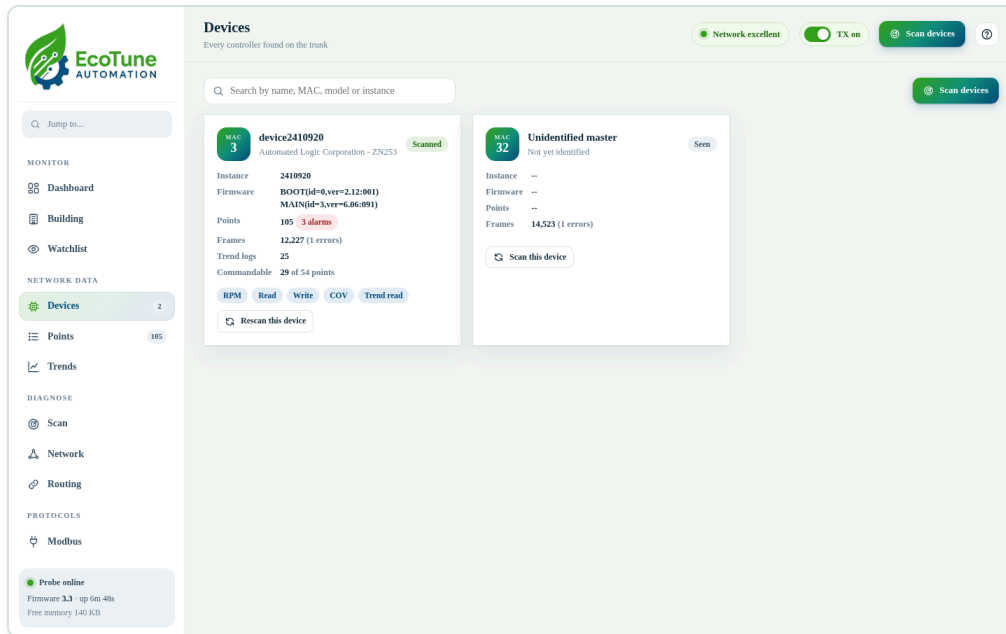
Device name	The name the device reports for itself
Vendor	The manufacturer, e.g. a major controls vendor
Model	The specific product/model identifier
Firmware revision	The version currently running on the device
Instance number	The device's unique BACnet identity

Once read, a device's identity is remembered even across a reboot of BAS Probe itself — you won't lose track of what's already been identified just because the probe was power-cycled.

The Devices Page

Devices and Points

The Devices page lists every device BAS Probe has found, each as its own card showing identity, point count, and traffic.



The Devices page after a scan, showing each device found on the trunk.

What each card shows

- **Identity** — name, vendor, model, and instance number, once read
- **Points** — how many objects were read from this device, and how many are currently in alarm
- **Frames** — valid and error frame counts specific to this device
- **Scanned / Seen** — whether this device has been fully read, or only observed on the wire so far

Working with a single device

Open a device's card to scan or re-scan just that device, without re-reading the entire trunk. This is the fastest way to refresh one panel after a change, without waiting on every other device.

The Points Page

Devices and Points

The Points page is a single table of every object read from every scanned device — the most direct way to find a specific point and see its current value.

MAC	TYPE	INST	NAME	VALUE	STATUS	ACCESS
3	AI	2	zone_temp_1	72 °F	IN ALARM FAULT (no sensor)	Read-only
3	AV	14	metric_conv_1	32	OK	Unverified
3	AV	11	ei_weight_1	1	OK	Commandable
3	AV	23	m346_1	72 °F	OK	Unverified
3	AV	1	occupied_cool_setpoint_1	72 °F	OK	Commandable
3	AV	2	occupied_heat_setpoint_1	68 °F	OK	Unverified
3	AV	3	unoccupied_cool_setpoint_1	80 °F	OK	Commandable
3	AV	4	unoccupied_heat_setpoint_1	55 °F	OK	Unverified
3	AV	5	cool_setpoint_adjust_1	0 °F	OK	Commandable
3	AV	6	heat_setpoint_adjust_1	0 °F	OK	Unverified
3	AV	7	effective_cool_setpoint_1	72 °F	OK	Commandable
3	AV	8	effective_heat_setpoint_1	68 °F	OK	Commandable
3	AV	17	m216_1	5	OK	Commandable

The Points page, filterable by device, type, and access level.

Finding a point

Use the search box to find a point by name, or narrow the list with the filters above the table: by device, by object type (Analog Value, Binary Input, and so on), or by access level. The **Alarms only** switch narrows the list to points currently flagged.

What each row shows

MAC / Net	Which device the point belongs to, and which network (local or routed)
Type / Inst	The BACnet object type and instance number
Name	The point's name, as reported by the device
Value	The current reading, with units where applicable
Status	Normal, or a flagged condition such as alarm, fault, or override
Access	Whether the point can be written to — see the next section

Exporting

The **Export CSV** button saves the currently filtered list as a spreadsheet file, useful for reporting or for keeping an offline record of a site's points.

Point Status and Access Levels

Devices and Points

Status

Every point's status falls into one of a few categories, shown as a colored pill in the table:

Normal	Reporting a normal, in-range condition
Alarm / Fault	The device itself is reporting a problem with this point
Overridden / Out of service	A human or another system has manually forced this point

Access level

Access level describes whether a point can accept a written value, based on what BAS Probe read from the device:

Commandable	The point has a priority array and is confirmed to accept writes
Unverified	A value-type object without a priority array — it may accept a write, which can only be confirmed by trying
Read-only	An input object; these are never writable, by design

A point currently held at a priority by anything on the network — BAS Probe included — shows which priority level is active. Writing to points is covered in full detail later in this guide.

The Watchlist

Devices and Points

The Watchlist is a shortlist of points you choose to keep an eye on, separate from the full Points table — useful when you're focused on a handful of specific values during a test or a troubleshooting session.

The screenshot shows the EcoTune Watchlist interface. On the left is a sidebar with navigation options: Monitor (Dashboard, Building, Watchlist), Network Data (Devices, Points, Trends), Diagnose (Scan, Network, Routing), and Protocols (Modbus). The main area is titled 'Watchlist' and shows a live table of points. At the top right, there are status indicators: 'Network excellent', 'TX on', and 'Scan devices'. Below the title, there are buttons for 'Refresh', 'Live', and 'Clear'. The table has the following data:

POINT	DEVICE	VALUE	STATUS	ACCESS	TREND (THIS SESSION)
zone_temp_1 AI 2	device2410920	72 °F	IN-ALARM FAULT (no sensor)	Read-only	collecting... ×
metric_conv_1 AV 14	device2410920	32	OK	Unverified	collecting... ×
el_weight_1 AV 11	device2410920	1	OK	Commandable	collecting... ×
m346_1 AV 23	device2410920	72 °F	OK	Unverified	collecting... ×

The Watchlist, live-updating the points added from the Points page.

Adding points

On the Points page, press the eye icon next to any point to add it to the Watchlist. Up to 100 points can be watched at once, and the list is saved with your project so it's still there next time.

Live mode

Press **Live** to have watched points refresh continuously, rather than only on a manual scan. This is the easiest way to confirm a change actually took effect — adjust a setpoint at the equipment, watch the value update on screen in real time.

Session trend

Each watched point keeps a small trend of its values for the current session, visible directly in the table — a quick way to see whether a value is climbing, falling, or holding steady without opening the full Trends page.

Reading Network Health

Diagnostics

The health score on the Dashboard condenses trunk condition into a single number, but the numbers behind it are what actually tell you what's going on. This page explains what each one means.

Valid frames	Frames received and decoded successfully
Invalid frames	Frames that failed a CRC check or were otherwise malformed
Sync losses	Times the receiver lost frame alignment and had to resynchronize — frequent sync losses often point to a wiring or termination problem
Tokens	How many times the network token has been passed between devices — the mechanism MS/TP uses to give each device its turn to talk

What "excellent," "good," and lower scores mean

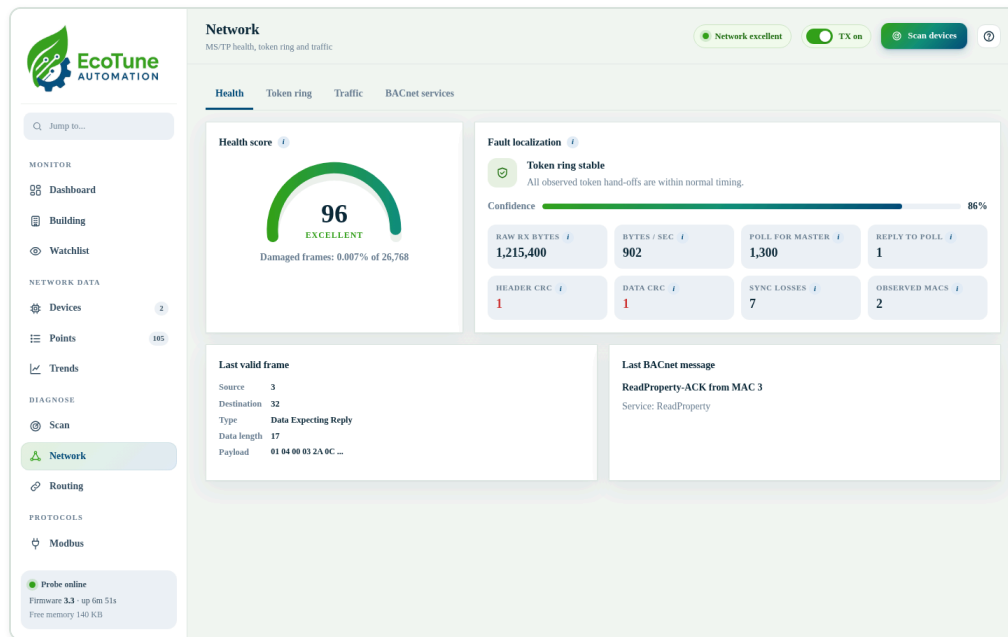
The health score weighs the ratio of invalid to valid frames along with sync loss frequency. A trunk in the high 90s with very few invalid frames is behaving as expected. A noticeably lower score, or one that's dropping over time, is worth investigating — often a termination, grounding, or cable length issue rather than a problem with any single device.

All of this is passive. None of the health monitoring requires TX to be enabled — BAS Probe reports on trunk health just by listening, even with transmission switched off.

The Network Page

Diagnostics

Where the Dashboard gives a summary, the Network page goes deeper — a closer look at frame quality, token behavior, and traffic between specific devices.



The Network page, showing token transitions and traffic between devices.

Token transitions

MS/TP passes a token around the trunk in a ring, one device to the next. The Network page shows exactly which device is passing the token to which, and how consistent the timing is — a device that's slow or inconsistent in passing the token along is often the first sign of a problem with that specific device, rather than the trunk as a whole.

Frame quality breakdown

Beyond the simple valid/invalid count, this page breaks errors down by type — header CRC failures, data CRC failures, and other invalid frames — which helps narrow down whether an issue is likely electrical (noise, reflection) or something more specific to one device's implementation.

Trend Logs

Diagnostics

The screenshot shows the EcoTune Trends page. On the left is a sidebar with navigation options: MONITOR (Dashboard, Building, Watchlist), NETWORK DATA (Devices, Points, Trends), DIAGNOSE (Scan, Network, Routing), and PROTOCOLS (Modbus). The main content area is titled 'Trends' and shows 'Trend logs stored inside each controller and the points they record'. It includes status indicators for 'Network excellent', 'TX on', and 'Scan devices'. Below this, it shows '25 trend logs on 1 device' and '0 disabled'. A table lists the trend logs for device2410920 (Automated Logic Corporation - ZN253). The table has columns: TREND LOG, RECORDS, INTERVAL, SAMPLES, CURRENT VALUE, and STATE. The logs include zone_temp_trend_log_1, fan_sts_trend_log_1, pmp_slm_trend_log_1, dat_trend_log_1, run_time_tm_1, effective_cool_setpoint_trend_1, and effective_heat_setpoint_trend_1. All are in 'Logging' state. A note at the bottom says 'History charts are coming'.

TREND LOG	RECORDS	INTERVAL	SAMPLES	CURRENT VALUE	STATE
zone_temp_trend_log_1 TL 6	zone_temp_1	15 min	96	72 °F	Logging
fan_sts_trend_log_1 TL 7	fan_sts_1	15 min	96	--	Logging
pmp_slm_trend_log_1 TL 8	pmp_slm_1	15 min	96	--	Logging
dat_trend_log_1 TL 5	dat_1	15 min	96	--	Logging
run_time_tm_1 TL 20	run_time_tm_1	15 min	96	--	Logging
effective_cool_setpoint_trend_1 TL 1	effective_cool_setpoint_trend_1	15 min	96	--	Logging
effective_heat_setpoint_trend_1 TL 2	effective_heat_setpoint_trend_1	15 min	96	--	Logging

The Trends page, listing every Trend Log object found on the trunk.

Many BACnet devices keep their own internal history for specific points, stored as Trend Log objects. BAS Probe finds these automatically during a scan and lists them here — interval, sample count, and current logging status — without needing any separate logging software.

Viewing a trend

Trend Log objects appear in the Points page like any other object, and their configuration is visible directly on the Trends page. Full history charting is on the roadmap; for now, this page is the fastest way to see which points a device is already logging and how it's configured to do so.

Trend logs vs. the Watchlist

A Trend Log is history the *device itself* has already been recording, often over days or weeks. The Watchlist, by contrast, only tracks values for the current BAS Probe session. Use Trend Logs to see how a point behaved before you arrived; use the Watchlist to see how it behaves while you're actively testing something.

Writing to Points

Advanced Features

BAS Probe can write a test value to a commandable point — forcing a setpoint, an output, or another writable value to see how a device or a downstream system responds. This is the one feature in BAS Probe that changes something on the trunk rather than only reading from it, so it's worth understanding fully before using it.

The safety model

Every write BAS Probe makes follows the same rules, with no exceptions and no way to override them from the interface:

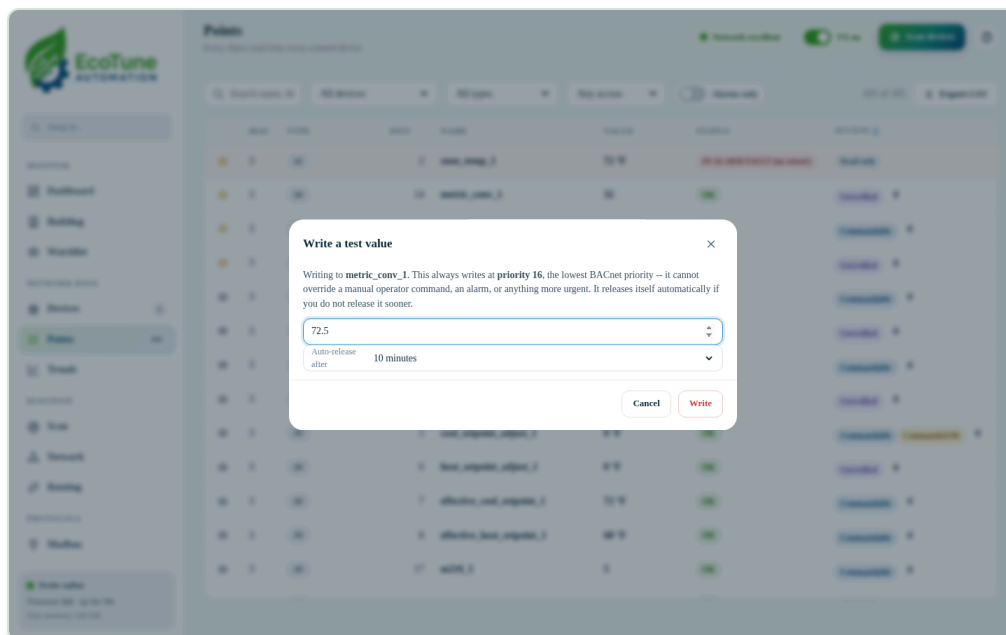
- **Lowest priority only.** BACnet's priority array has 16 levels; BAS Probe always writes at priority 16, the lowest. A manual operator command, a higher-priority control sequence, or an alarm response will always win over a BAS Probe test write.
- **Automatic release.** Every write releases itself on a timer — 10 minutes by default, with a hard maximum of 30 minutes no matter what's selected. A test write can never be accidentally left in place indefinitely.
- **Always visible.** Any point currently held by BAS Probe is shown clearly in the interface for as long as it's active — never a hidden or silent state.
- **Manual release, any time.** You don't have to wait for the timer; release a held point immediately whenever you're done with it.

Writing to Points, continued

Advanced Features

Making a write

1. Find the point on the Points page. Only Commandable and Unverified points can be written to.
2. Press the small lightning-bolt button next to the point's access pill.
3. Enter the value to write. Binary points offer a simple On/Off choice; other points take a number.
4. Choose how long before it releases itself — 5, 10, or 30 minutes.
5. Confirm.



The write confirmation dialog, shown before any value is sent.

Because a write has to wait its turn on the token ring like anything else BAS Probe transmits, it can take a few seconds to actually go out — longer on a busy trunk. The dialog explains this so it's never mistaken for the feature not working.

Writing to Points, continued

Advanced Features

While a write is active

Any point BAS Probe currently holds a value on is shown as a badge in the top bar, visible from every page — not just the Points page where you made the write.

The screenshot shows the 'Points' page in the EcoTune Automation interface. The top bar includes status indicators: 'Network excellent', '1 point overridden' (highlighted in orange), 'TX on', and 'Scan devices'. Below this is a search bar and filters for 'All devices', 'All types', 'Any access', and 'Alarms only'. The main table lists points with columns: MAC, TYPE, INST, NAME, VALUE, STATUS, and ACCESS. The first row, 'zone_temp_1', has a status of 'IN ALARM FAULT (no sensor)' and is marked as 'Read-only'. The second row, 'metric_conv_1', has a status of 'OK' and is marked as 'Unverified'. The third row, 'el_weight_1', has a status of 'OK' and is marked as 'Commandable'. The fourth row, 'm346_1', has a status of 'OK' and is marked as 'Unverified'. The fifth row, 'occupied_cool_setpoint_1', has a status of 'OK' and is marked as 'Commandable'. The sixth row, 'occupied_heat_setpoint_1', has a status of 'OK' and is marked as 'Unverified'. The seventh row, 'unoccupied_cool_setpoint_1', has a status of 'OK' and is marked as 'Commandable'. The eighth row, 'unoccupied_heat_setpoint_1', has a status of 'OK' and is marked as 'Unverified'. The ninth row, 'cool_setpoint_adjust_1', has a status of 'OK' and is marked as 'Commandable' with an orange 'Commanded P1' badge. The tenth row, 'heat_setpoint_adjust_1', has a status of 'OK' and is marked as 'Unverified'. The eleventh row, 'effective_cool_setpoint_1', has a status of 'OK' and is marked as 'Commandable'. The twelfth row, 'effective_heat_setpoint_1', has a status of 'OK' and is marked as 'Commandable'. The thirteenth row, 'm216_1', has a status of 'OK' and is marked as 'Commandable'. A green notification box at the bottom right says 'Write sent - this can take a few seconds on a busy trunk'.

MAC	TYPE	INST	NAME	VALUE	STATUS	ACCESS
3	AI	2	zone_temp_1	72 °F	IN ALARM FAULT (no sensor)	Read-only
3	AV	14	metric_conv_1	32	OK	Unverified
3	AV	11	el_weight_1	1	OK	Commandable
3	AV	23	m346_1	72 °F	OK	Unverified
3	AV	1	occupied_cool_setpoint_1	72 °F	OK	Commandable
3	AV	2	occupied_heat_setpoint_1	68 °F	OK	Unverified
3	AV	3	unoccupied_cool_setpoint_1	80 °F	OK	Commandable
3	AV	4	unoccupied_heat_setpoint_1	55 °F	OK	Unverified
3	AV	5	cool_setpoint_adjust_1	0 °F	OK	Commandable Commanded P1
3	AV	6	heat_setpoint_adjust_1	0 °F	OK	Unverified
3	AV	7	effective_cool_setpoint_1	72 °F	OK	Commandable
3	AV	8	effective_heat_setpoint_1	68 °F	OK	Commandable
3	AV	17	m216_1	5	OK	Commandable

The active-override indicator, visible from anywhere in the dashboard.

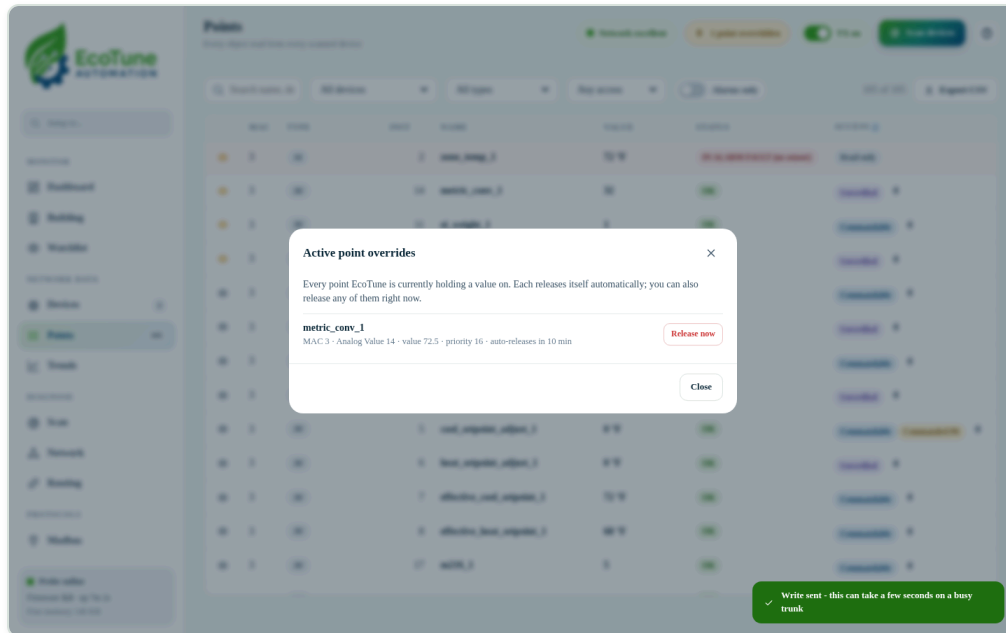
This badge stays visible for as long as any write is active, no matter which page you navigate to next — it's not possible to lose track of an active override by simply moving to a different screen.

Writing to Points, continued

Advanced Features

Managing active writes

Press the badge to see every point currently held, its value, and how long until it releases itself. Release any of them immediately from the same screen.



The active writes screen, listing every point currently held and offering an immediate release.

A write only affects the one point you choose. It does not change any other point, does not modify a schedule or a program, and does not persist through the device's own configuration — it is exactly what it sounds like: one value, at the lowest priority, for a limited time.

Writing to Points, continued

Advanced Features

A note on scope

In the current version, writes are supported for devices on the local trunk. Writing to a point on a routed (remote) network reached through a router is not yet supported, and BAS Probe will tell you plainly if you try, rather than attempting it silently.

Why priority 16

BACnet's priority array exists so multiple systems can request a value for the same point without conflict — the highest active priority always wins, and lower priorities sit quietly underneath, ready to take over the moment nothing higher is active. Priority 16 is the lowest level defined by the standard, reserved for exactly this kind of low-stakes, easily-overridden use. Writing here means a BAS Probe test can never compete with, block, or interfere with real control.

Good practice

- Use the shortest release window that gets the job done — there's rarely a reason to hold a point for the full 30 minutes.
- Release manually once you've confirmed what you needed to confirm, rather than waiting on the timer.
- Check the active-writes badge before you leave a site, out of habit, even though every write releases itself regardless.

Routed Networks

Advanced Features

Many BACnet installations aren't a single trunk — a router connects the local trunk to other networks, each with their own devices. BAS Probe can discover these routers and read points from devices on the networks behind them, without being physically connected to those other trunks at all.

Routing
Routers, network numbers and devices on other networks

Network excellent TX on Scan devices

Discover the network behind your trunk
EcoTune asks the routers on this trunk which networks they connect to, then asks each network for its devices, one at a time. It only reads; nothing is written or changed. Broadcast messages travel through routers, so on a large or slow-building network run it off-peak and stop it if anything looks strained. Learning also happens passively with TX off, from routers and traffic it hears.

Find networks and devices Routers only Save log Clear

One-broadcast mode (asks every network at once and can create a burst of replies): [run it](#)

Routers found: 1 routers

Networks: 2 known

Devices on other networks: 4 found

This trunk's network number: 1 reported by a router

Networks

NETWORK	VIA ROUTER (MAC)	LEARNED FROM	DEVICES FOUND	LAST HEARD
10	3	Announced by router	2	4 s ago
20	3	Announced by router	2	4 s ago

Devices on other networks

NETWORK	DEVICE INSTANCE	ADDRESS	VENDOR	MAX APDU	SEGMENTATION	VIA MAC	LAST HEARD
10	5001	05	Automated Logic	480	Both	3	3 s ago
10	5002	06	Automated Logic	480	Both	3	3 s ago
20	7001	01	Johnson Controls	1476	None	3	2 s ago

The Routing page, showing a discovered router and the network reachable through it.

Discovering routers

From the Routing page, run discovery to find any routers announcing themselves on the local trunk, along with the network numbers they connect to. Each discovered network can then be scanned on its own.

Scanning a routed network

Press **Scan this network** on any discovered network to read the devices and points on it, the same way a local scan works — the only difference is every request travels through the router to reach its target.

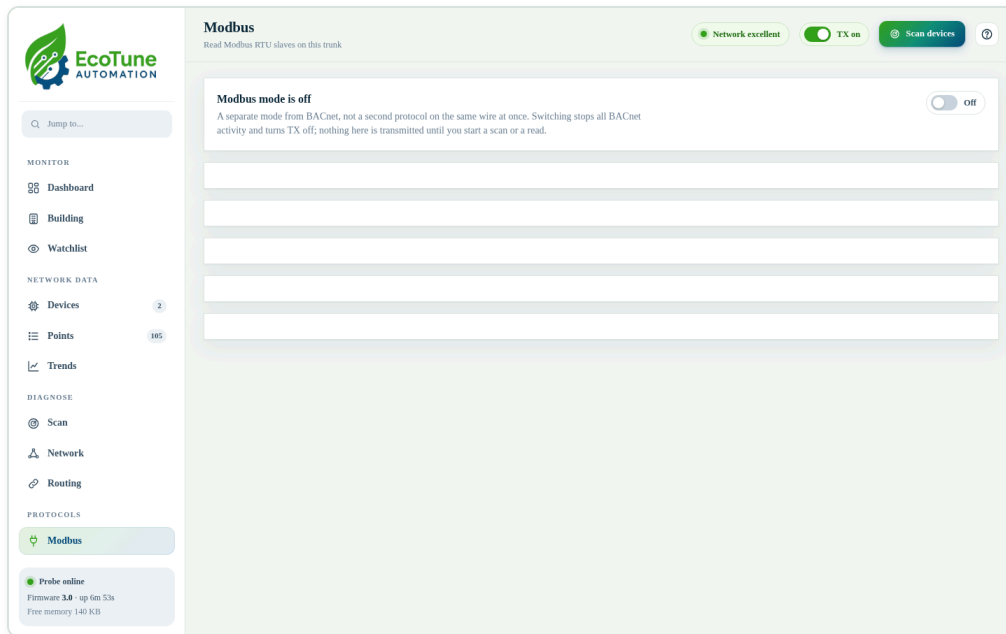
Addressing

BAS Probe supports both simple, single-byte addressed devices and the longer, BACnet/IP-style addresses used by some routed installations, so routed devices are identified the same reliable way local ones are — by device instance, not by a raw address that might not be unique.

Routed reads only, for now. Writing to a point on a routed network isn't supported yet — see the previous section on Writing to Points.

Modbus RTU Mode

Advanced Features



The Modbus page, for trunks that speak Modbus RTU instead of BACnet.

The same RS-485 connection BAS Probe uses for BACnet MS/TP also supports Modbus RTU — useful for equipment that speaks Modbus instead of, or alongside, BACnet.

Switching modes

Modbus mode is a separate mode from BACnet monitoring, switched on from the Modbus page. While active, BAS Probe listens for and can query Modbus slave devices instead of BACnet traffic.

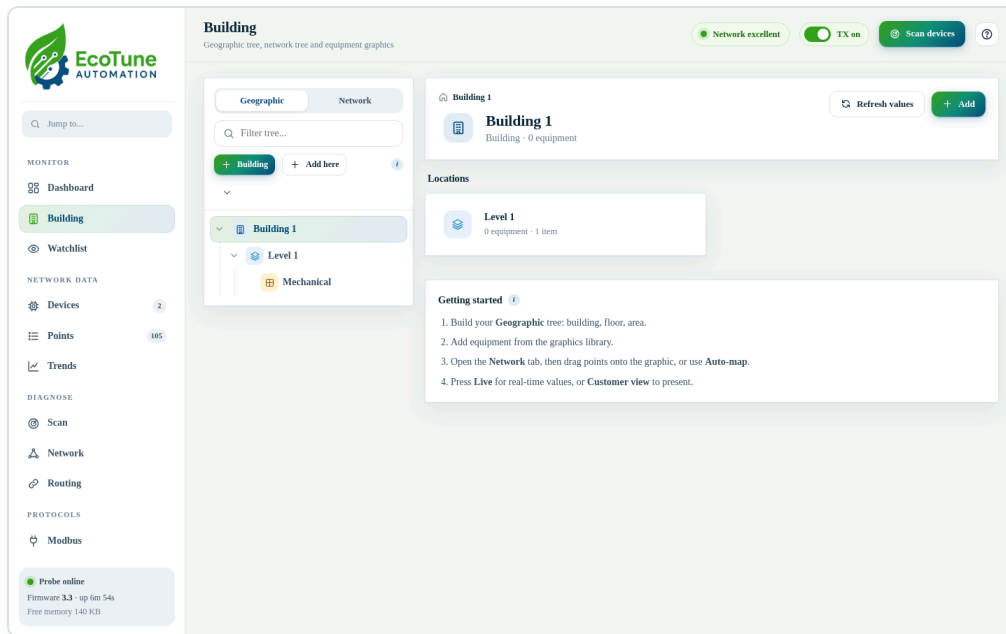
Reading registers

Specify a slave address, a register range, and a function code to read holding or input registers directly, with results shown immediately — useful for confirming a Modbus device is wired correctly and responding before integrating it into a larger system.

One mode at a time. A single BAS Probe unit monitors either BACnet MS/TP or Modbus RTU at a time, not both simultaneously, since the two protocols interpret the same wire traffic differently.

Equipment Graphics

Advanced Features



The Building page, for organizing a site and binding live points to equipment.

Beyond a flat list of points, BAS Probe can build a simple visual picture of a site — a geographic tree of buildings, floors, and areas, with equipment graphics that show live, bound point values.

Building the tree

Start with a building, add floors or areas beneath it, and place equipment from the built-in graphics library onto each one — an AHU, a fan coil, a VAV box, and similar common equipment types are ready to use.

Binding points

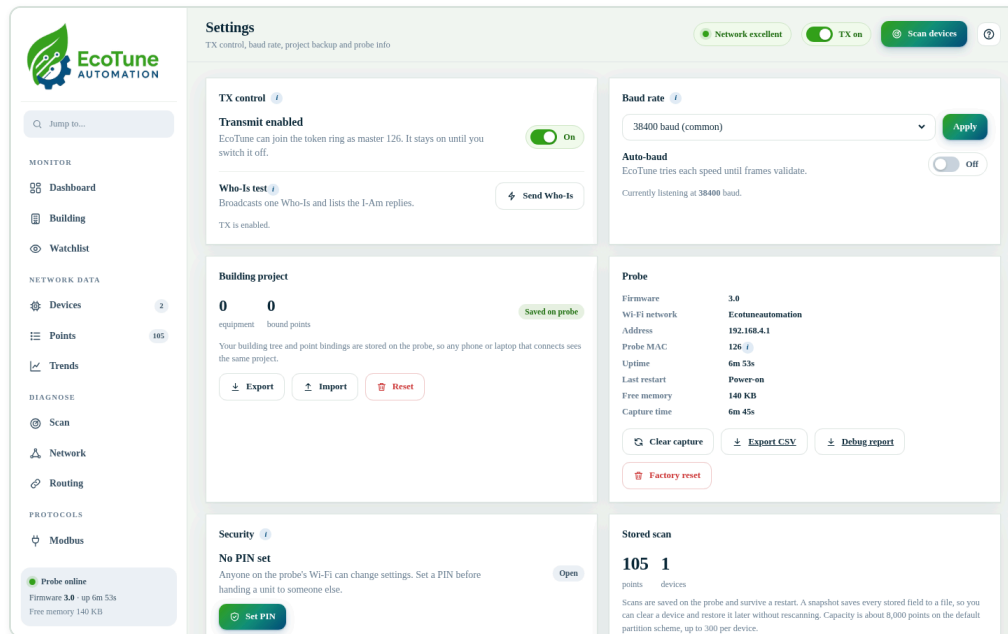
Open the Network tab on a piece of equipment and drag points from the scanned list onto the graphic, or use **Auto-map** to bind commonly-named points automatically. Once bound, the graphic shows live values without needing to look anything up on the Points page.

Presenting

Press **Live** for real-time values while you work, or switch to **Customer view** when walking someone through the system — a cleaner view without the editing controls, suited for showing a building owner or facility manager what's actually going on with their equipment.

Wi-Fi and Security Settings

Settings and Data



The Settings page, showing probe status, Wi-Fi, and PIN controls.

Probe status

Settings shows the current firmware version, uptime, and available memory at a glance — useful to confirm at the start of a visit that the unit is healthy before relying on it.

Changing the Wi-Fi name or password

Update either from Settings. Changing them briefly restarts the Wi-Fi radio, so anything connected will need to reconnect using the new details afterward.

The PIN

The PIN protects settings changes from anyone else who happens to be connected to the same Wi-Fi network. Viewing the dashboard never requires the PIN — it's only asked for when something is being changed. A PIN can be changed or removed from Settings, provided you know the current one.

Forgotten PIN? A factory reset clears the PIN along with all other settings and stored data, returning the unit to its out-of-box state.

Exporting and Backing Up Data

Settings and Data

CSV exports

The Points page can export the current (filtered) point list as a CSV file — a straightforward way to bring a site's data into a spreadsheet for reporting, or to keep an offline record of what was found during a visit.

Project snapshots

A full snapshot saves everything BAS Probe has learned about a site — devices, points, and any equipment graphics you've built — as a single file. Snapshots can be restored later, either back onto the same unit or onto a different one, which is useful for keeping a record of a site between visits without needing to re-scan it from scratch every time.

Clearing stored data

The stored scan can be cleared from Settings at any time, which is useful before moving on to a different site — it removes previously discovered devices and points without affecting any Wi-Fi or PIN settings.

Troubleshooting

Reference

No devices found after a scan

- Check that the two trunk leads are matched to the correct polarity (try swapping them — reversed polarity is harmless and simply prevents valid reception).
- Confirm TX is switched on. Scanning cannot proceed with the transmitter disabled.
- Check the baud rate matches the rest of the trunk. If unsure, auto-detect can determine it.
- Confirm you're connected to the correct trunk segment — a router separates local devices from those on other networks, which require a routed scan rather than a local one.

Can't connect to the Wi-Fi network

- Confirm the network name and password against the label on the unit, or whatever they were changed to in Settings.
- Move closer — like any Wi-Fi device, range is affected by distance and by metal enclosures or concrete walls typical of mechanical rooms.

The dashboard loads slowly or intermittently

- This is almost always a Wi-Fi signal issue rather than a probe issue — try moving closer.
- If several people are connected at once, performance for everyone improves by having only those who need it stay connected.

A device is found but its name, vendor, or model is missing

- Some devices only respond to specific request types. Try a full scan (not identify-only) of that device specifically.
- A very busy trunk can occasionally cause a device's response to be missed; re-scanning that device usually resolves it.

A write doesn't seem to take effect

- Confirm the point is actually Commandable, not Unverified — an Unverified point may simply not accept writes at all, which is exactly what "unverified" means.
- Check whether a higher priority is already active on that point — since BAS Probe always writes at the lowest priority, anything holding a higher priority will take precedence, which is expected, correct behavior.

Frequently Asked Questions

Reference

Does BAS Probe work with any BACnet MS/TP device?

BAS Probe speaks standard BACnet MS/TP and works with any device that implements it correctly, regardless of manufacturer.

Can it damage equipment on the trunk?

BAS Probe cannot write anything until you explicitly enable TX and, for writes specifically, explicitly confirm a value. Passive monitoring never transmits at all. Writes are limited to the lowest BACnet priority with automatic release, described in detail earlier in this guide.

Does it need an internet connection?

No. BAS Probe creates its own local Wi-Fi network and the dashboard runs entirely from the unit itself — nothing about normal use requires internet access.

How many devices can it handle?

BAS Probe is designed for the device and point counts typical of a real commercial trunk, comfortably handling dozens of devices and the hundreds of points they report between them.

Can more than one person use it at the same time?

Yes — anyone connected to the same Wi-Fi network sees the same live dashboard.

Does anything need to be installed on a laptop or phone?

No software or app is required. Any modern web browser is enough.

What happens to scanned data if the unit loses power?

Discovered devices, their identity, and their points are retained through a power cycle, so a brief interruption doesn't mean starting a scan over from nothing.

Specifications

Reference

Trunk interface	RS-485, isolated; supports BACnet MS/TP and Modbus RTU
Baud rates	9600 – 115200 bps, with auto-detect available
Dashboard access	Built-in Wi-Fi access point; any modern web browser
Software required	None — nothing to install on any connecting device
Concurrent users	Multiple devices can connect and view the dashboard at once
Power	USB-C, 5V
Enclosure	Compact portable case, approx. 100 × 86 × 32 mm
Display support	Phone, tablet, or laptop; light and dark mode
Data retention	Discovered devices and points persist through a power cycle
Write priority	Fixed at BACnet priority 16 (lowest); automatic release, 10 min default / 30 min maximum

Safety Information

Reference

Electrical

- Connect only to the RS-485 trunk terminals intended for this purpose. Do not connect BAS Probe to line voltage or any circuit other than a BACnet MS/TP or Modbus RTU RS-485 trunk.
- Use only the supplied USB-C cable and a standard 5V USB power source.
- Reversed trunk polarity does not damage BAS Probe or the trunk — it simply prevents communication until corrected.

Network behavior

- BAS Probe transmits nothing until TX is explicitly enabled, and every session starts with it switched off.
- Writes require an explicit, separate confirmation beyond enabling TX, are limited to the lowest BACnet priority, and always release automatically.
- As with any device added to a shared trunk, confirm with the site's controls contractor or facility engineer before making changes if you're at all uncertain about the installation.

BAS Probe is a diagnostic tool. It is not a replacement for a building's permanent control system, and test writes should be treated as exactly that — temporary, low-priority tests, not a way to make lasting changes to how equipment is controlled.

Glossary

Reference

BACnet — an open communication standard widely used in building automation.

MS/TP — Master-Slave/Token-Passing, the RS-485-based physical network BACnet runs over in most field-level installations.

Trunk — the shared two-wire RS-485 cable that a set of MS/TP devices are all connected to.

Token — the mechanism MS/TP uses to give each device its turn to transmit, passed around the trunk device to device.

Device instance — a number uniquely identifying a BACnet device, independent of its physical address.

Object — a single data point on a device — an Analog Value, a Binary Input, and so on.

Present Value — the current value of an object, the most commonly read (and written) property.

Priority array — the 16 priority levels a commandable point can be written to, with the highest active level always winning.

Router — a device connecting one BACnet network to another, allowing devices on separate trunks to communicate.

Trend Log — an object type that stores a history of another point's values over time, recorded by the device itself.

Modbus RTU — a separate, widely used protocol that can also run over RS-485, supported by BAS Probe as an alternate mode.

CRC — a checksum used to detect corrupted data in a received frame.

Common Workflows

Real-World Use

The previous sections cover each feature on its own. In practice, most site visits combine several of them in sequence. The next few pages walk through three situations exactly as they'd play out in the field.

Scenario: An Unfamiliar Trunk

Real-World Use

You've been called to a site you've never worked on before, with no documentation for the BAS network.

1. Connect to the trunk's RS-485 terminals and power on.
2. Join the Wi-Fi network and open the dashboard.
3. Turn TX on and run **Identify-only** first — a fast pass to see how many devices are actually out there before committing to a full read.
4. Review the Devices page. Note vendor and model for each device — this alone often answers "what system is this?"
5. Run a full scan to read every point from every device.
6. Check the Routing page for any routers — a site with a single visible trunk often turns out to have several networks behind a router that aren't obvious from the panel alone.
7. Export the point list as a CSV for your own records before leaving.

Total time for a site with a modest device count: usually well under half an hour, most of it unattended while the scan runs.

Scenario: Chasing a Fault Call

Real-World Use

A tenant reports a space is too warm, and you need to find out why without a lengthy investigation.

1. Connect and scan the trunk as usual.
2. On the Dashboard, check **Needs attention** first — any point already in alarm or fault is surfaced automatically, before you've looked at a single point manually.
3. If nothing is flagged, use the Points page search to find the zone's temperature and setpoint directly by name.
4. Add the relevant points to the Watchlist and switch on **Live** — watch the actual reported temperature while you check the space, confirming the sensor and the system agree with what you're feeling in the room.
5. If a setpoint looks wrong and you want to confirm the fix before touching the device itself, use a test write at BAS Probe's lowest priority to try a corrected value and watch the response live, then release it once you've confirmed the real fix.

Scenario: Commissioning a New Panel

Real-World Use

A new controller has just been installed and wired to the trunk, and you need to confirm it's talking correctly before moving on.

1. Scan the trunk, or just the new device by MAC if the rest of the trunk is already known-good.
2. Confirm the device's identity — vendor, model, and instance number — matches what was actually specified for this panel.
3. Check the Network page for this device's frame quality specifically. A newly-wired device with a poor connection often shows up here before it shows up as an obvious fault anywhere else.
4. Step through its point list and confirm names and values look reasonable against the submittal or point schedule.
5. Add its outputs to the equipment graphic for the space, if one exists, so the new panel shows up in the site's overall picture going forward.