EDWARDS
LEARNING CENTER

SIGNATURE MAPPING PRINCIPLES

Q&A

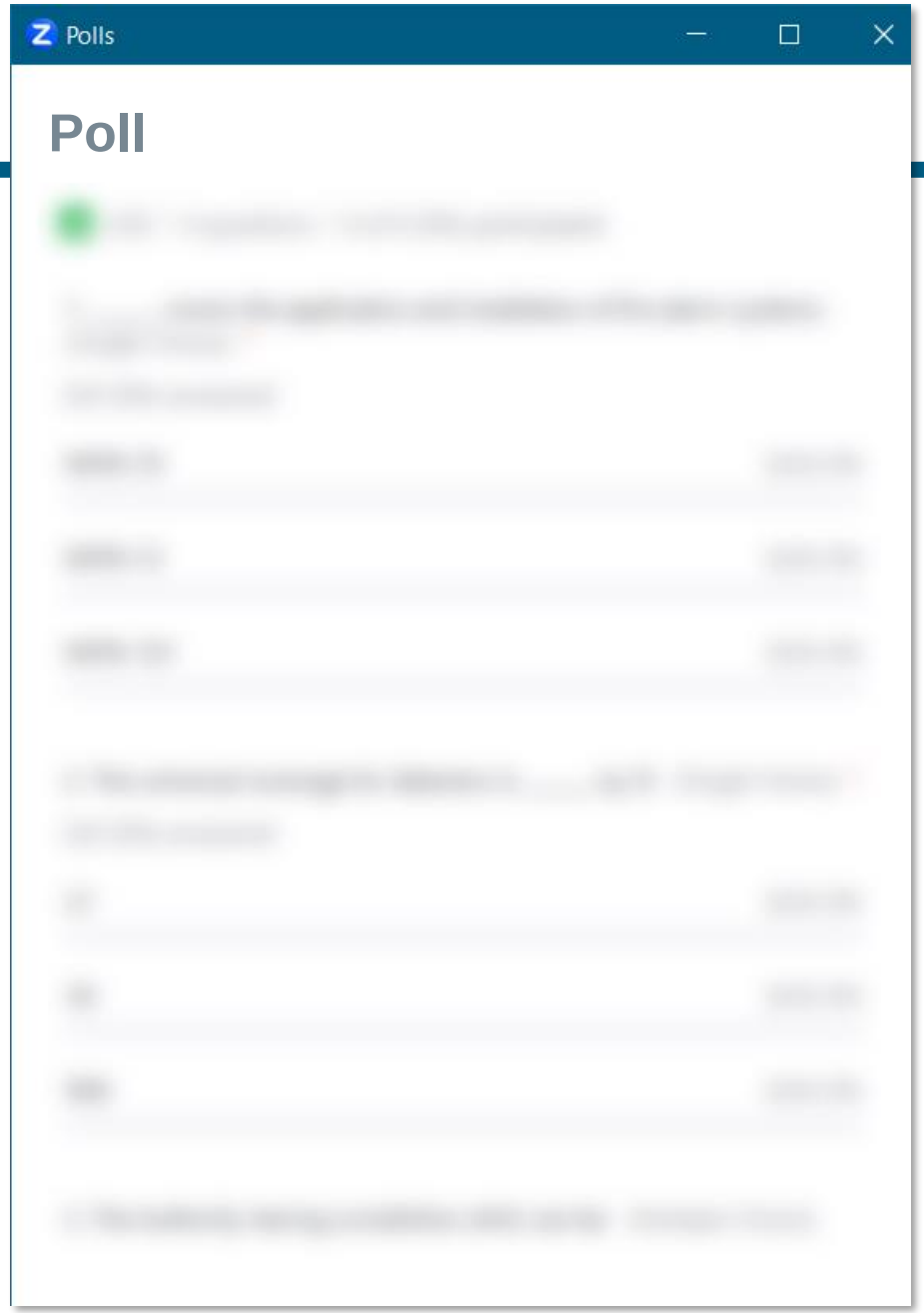
- Click **Q&A**
- Type your question into dialogue box and press **Enter**
- You will receive a typed response, or the question will be answered live
- A transcript is posted with the webinar recording

Leave the meeting

- Click Leave to exit the meeting

Poll Questions

Let’s take a minute to answer three poll questions



Discussion Topics

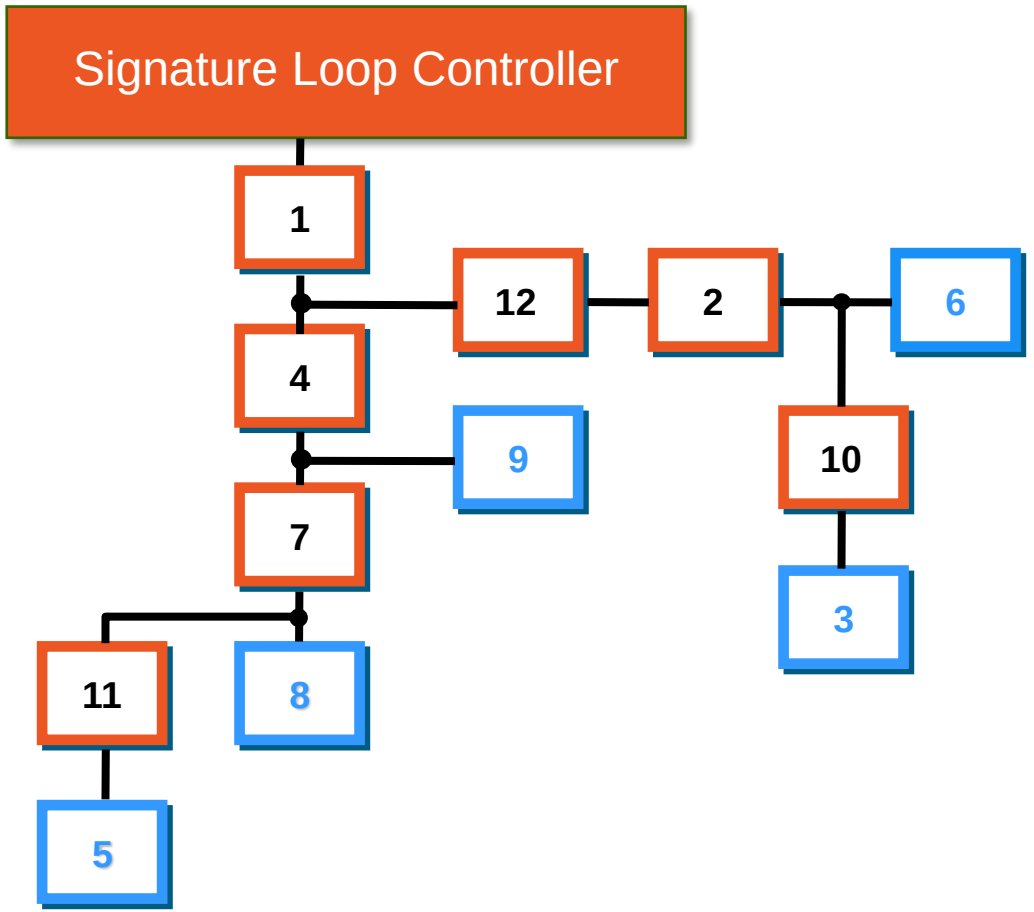
- What is a Signature Map used for?
- What are the five processes of mapping?
- How is a Signature Map created?
- How does the Loop Controller identify new devices or wiring?
- How are the field devices reconciled with our database?
- What causes a map fault?
- How to troubleshoot a map fault?

USING A SIGNATURE MAP

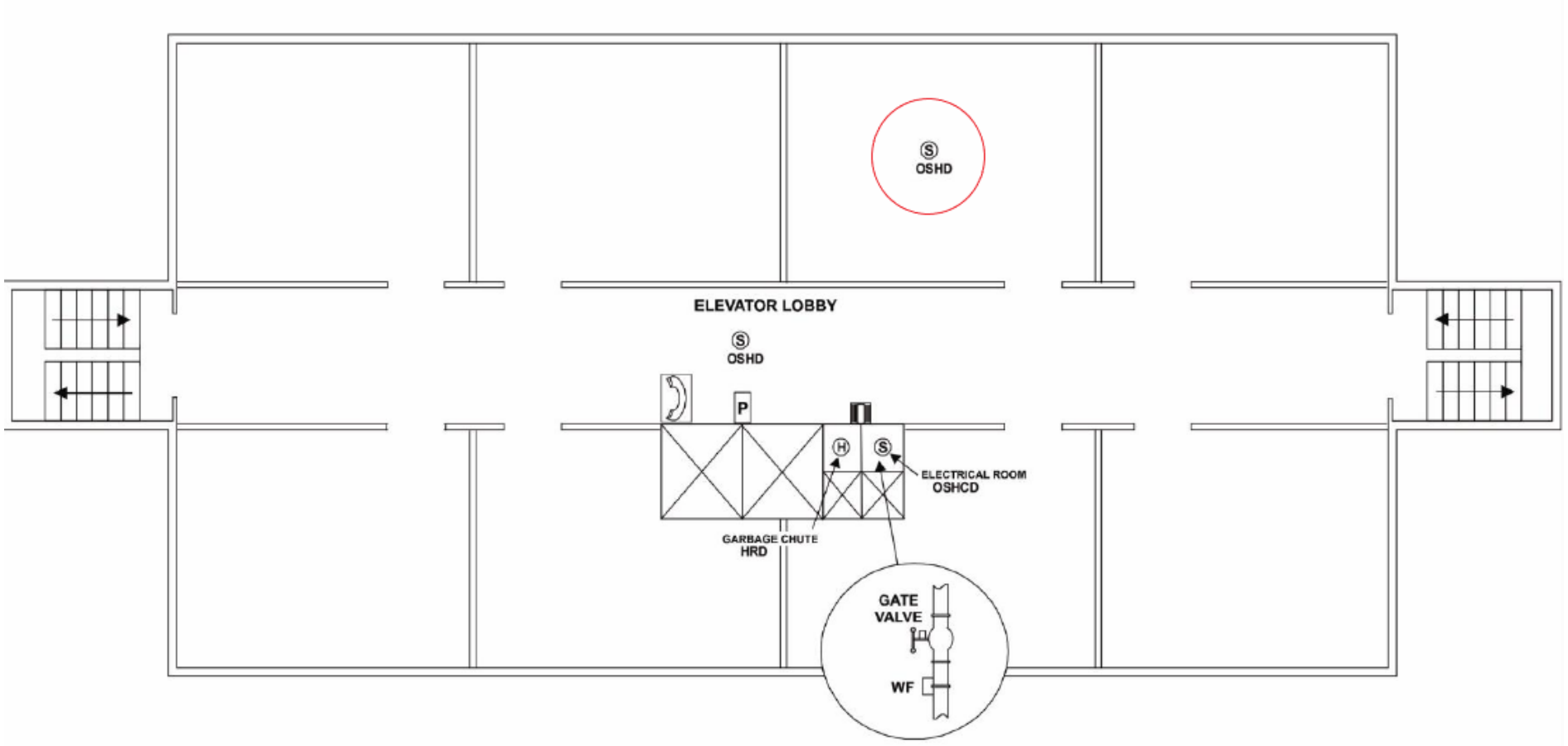
Uses of a Signature Map

Two key uses of a signature map

1. Troubleshooting a missing device
2. Replacing a dirty or bad device without the use of programming software.

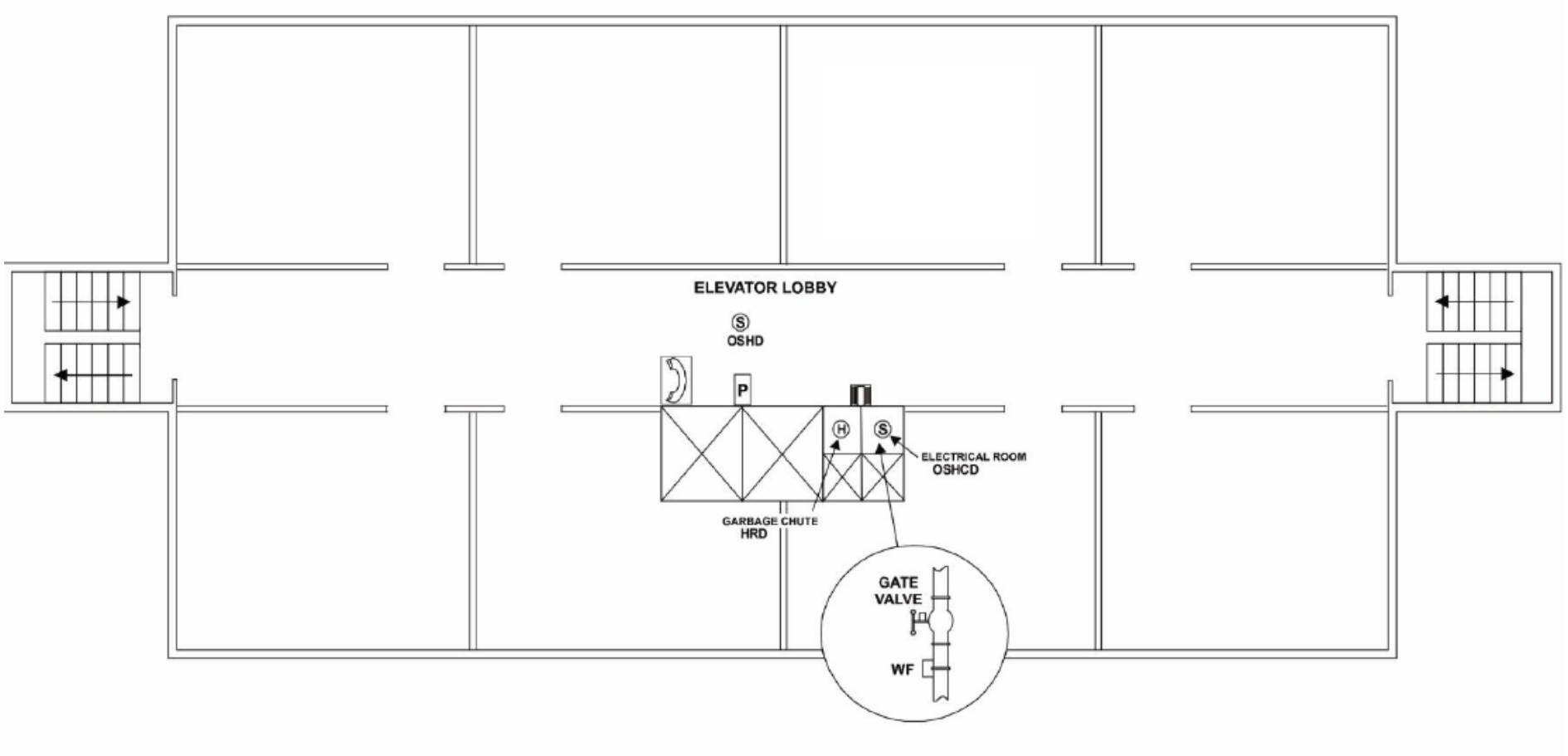


Troubleshooting with the Map



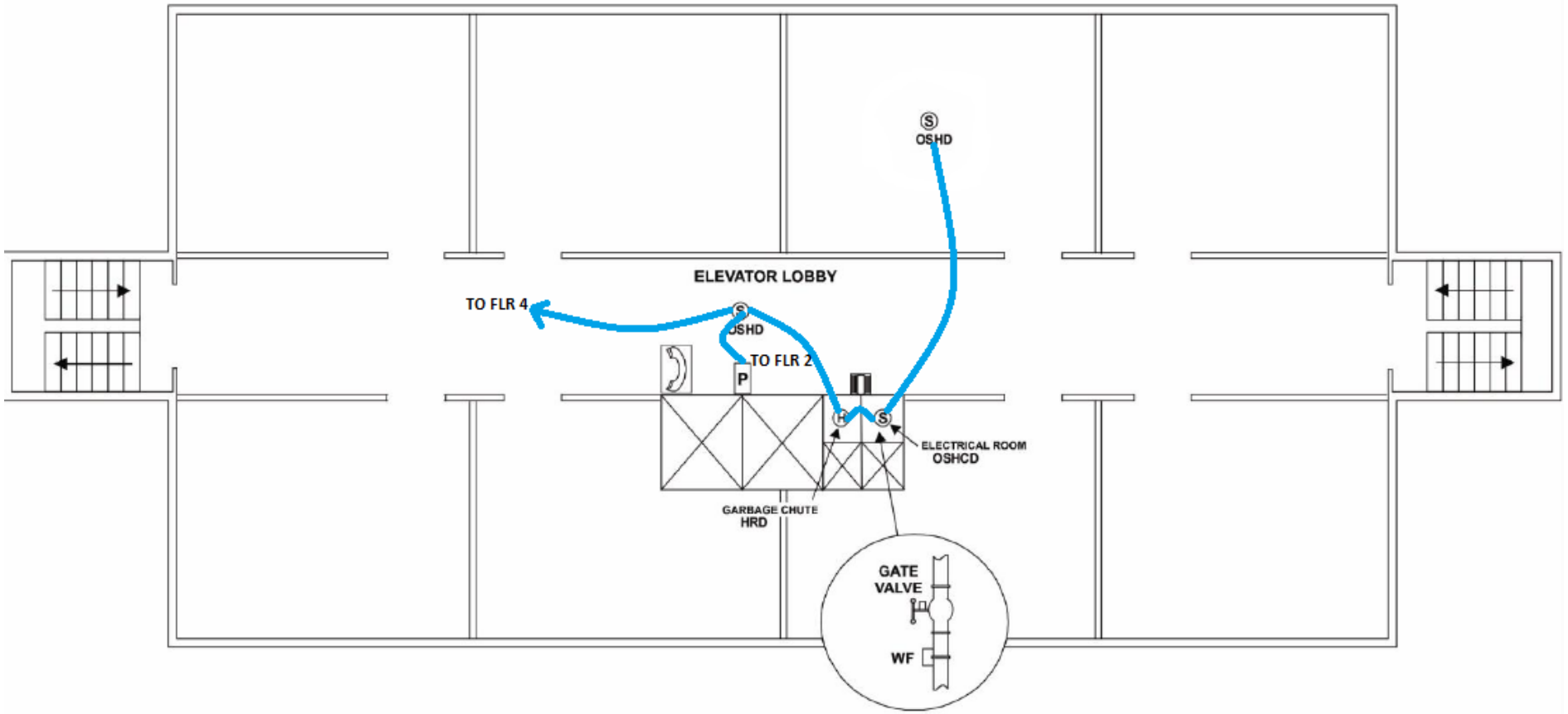
Comm fault: Floor 3 Office Smoke

Troubleshooting with the Map



Comm fault: Floor 3 Office Smoke

Troubleshooting with the Map



Comm fault: Floor 3 Office Smoke

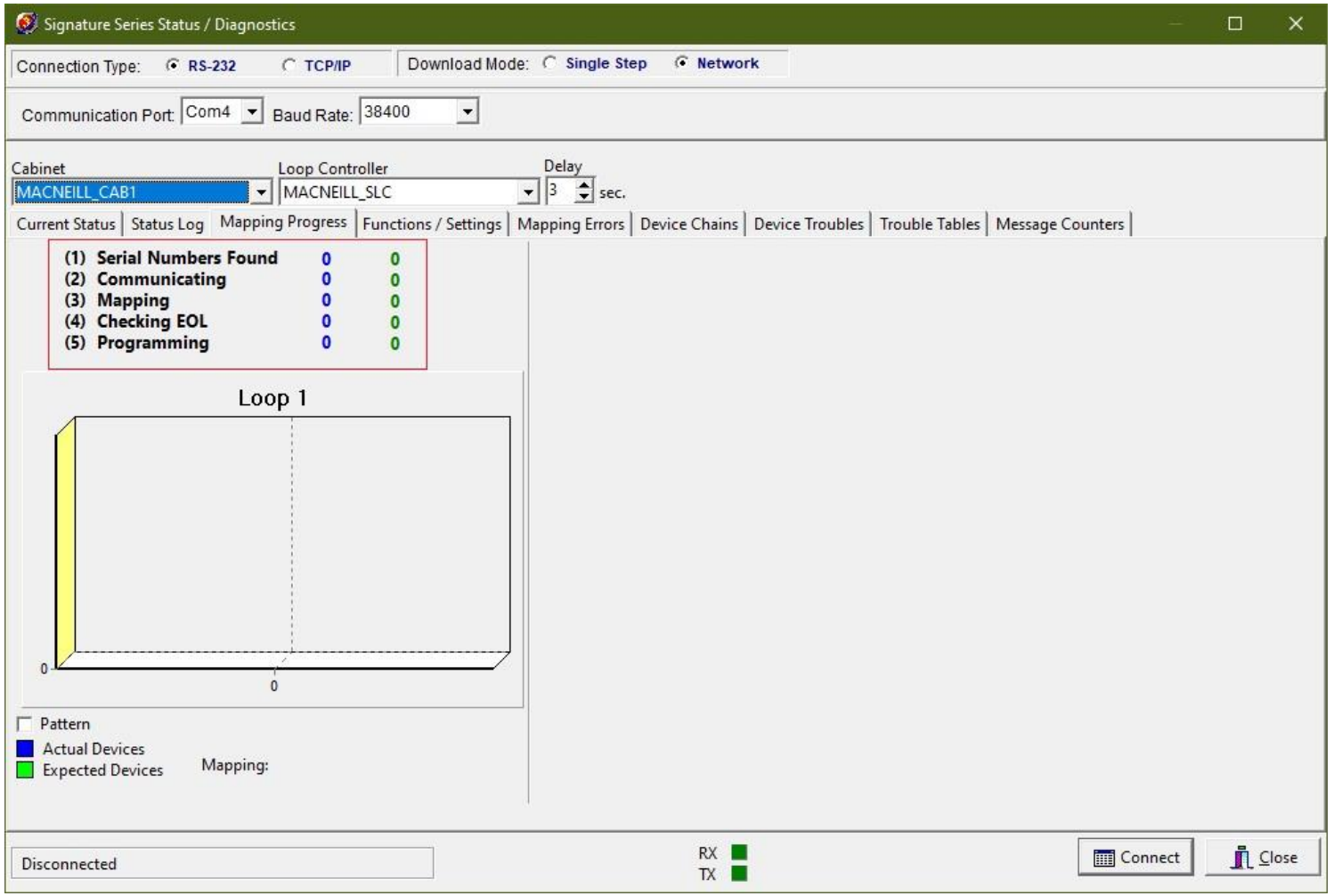
Replacing Devices of the Same Model

- When replacing devices with the same model, the programming software is not required.
- The loop controller will identify the new device, remap the circuit, and apply all the previous settings to the new device.

New Signature Optica						
	Device Type	**Optica**	**SIGA X**	SIGA2	SIGA 1st Gen	
		New	**Existing**	**Discontinued**	**Discontinued**	
SIGA-OSD (O)	Smoke	SIGA-OSD (O)	SIGA-PD (P)	SIGA2-PS	SIGA-PS	SIGA-HRD (H)
SIGA-OSHD (OH)	Smoke/Heat	SIGA-OSHD (OH)	SIGA-PHD (PH)	SIGA2-PHS	SIGA-PHS	SIGA-HFD (H)
	Smoke/CO	SIGA-OSCD (OC)	SIGA-PCD (PC)	SIGA2-PCOS		
	Smoke/Heat/CO	SIGA-OSHCD (OHC)	SIGA-PHCD (PHC)	SIGA2-PHCOS		
SIGA-OSCD (DC)		**Detectors NOT Changing**				SIGA-COD (C)
	Heat		SIGA-HRD (H)	Intelligent Heat Detector		
	Heat		SIGA-HFD (H)	Intelligent Heat Detector, 135F		
SIGA-OSHCD (OHC)	CO		SIGA-COD (C)	Intelligent Carbon Monoxide		SIGA-HCD (HC)
	Heaty/CO		SIGA-HCD (HC)	Intelligent Heat and CO		
	Smoke Duct		SIGA-SD	Intelligent Duct Smoke Detector		

THE FIVE MAPPING PROCESSES

The Five Processes of Mapping



The Five Processes of Mapping

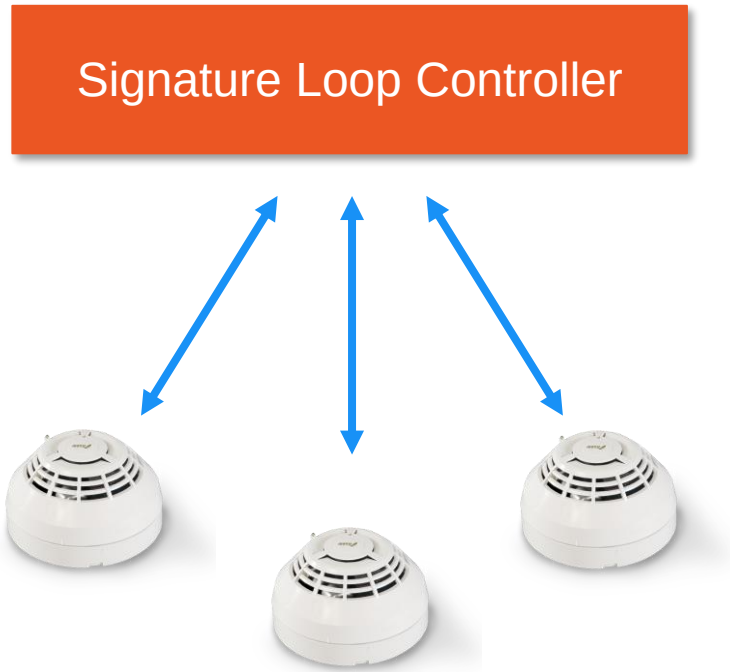
1. **Serial numbers found**: Creating database containing the s/n of each device on the loop
2. **Communicating**: Assigning unique short address (organizing devices in order of s/n)
3. **Mapping**: Creating as-built wiring diagram (devices annunciate and listen)
4. **Checking EOL**: Creating Signature Paths (Series and Branch Connections)
5. **Programming**: Device settings applied (personality, device type, base type, etc.)

*Each step must complete before the next can begin.

*When mapping is disabled steps 3 and 4 are skipped.

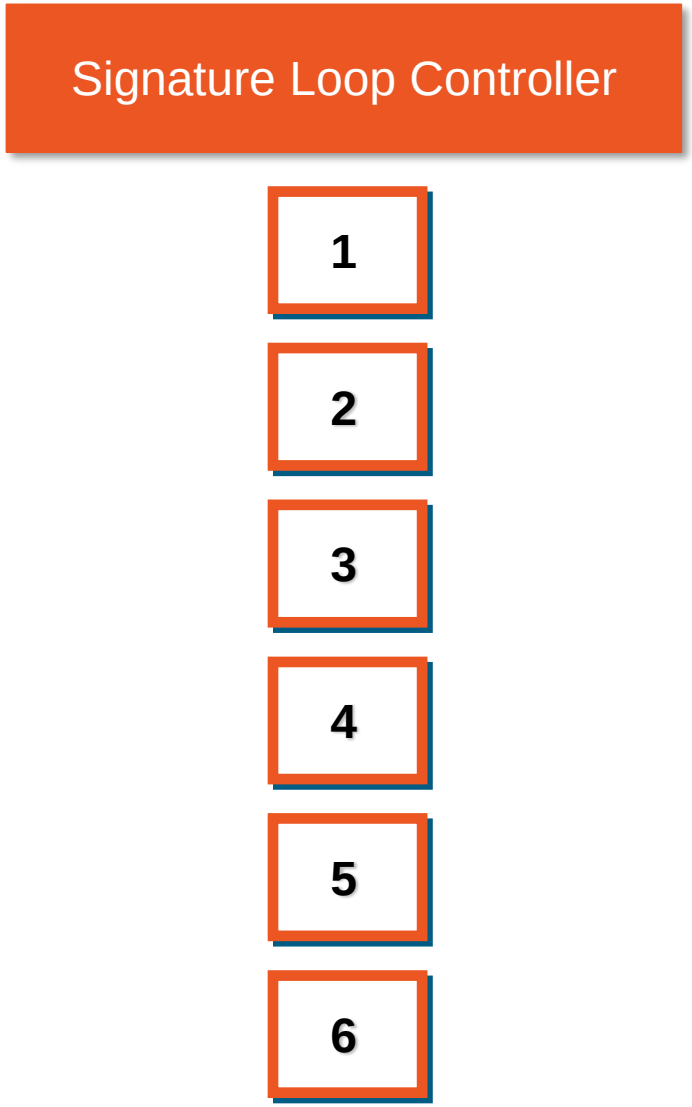
How is the Map Created?

- The Signature Loop Controller asks for the highest serial numbered device in a New Start condition
- All Signature devices are shipped with a New Start Bit Set
- The Loop Controller communicates with each device until the device in a New Start condition with the highest serial number is determined



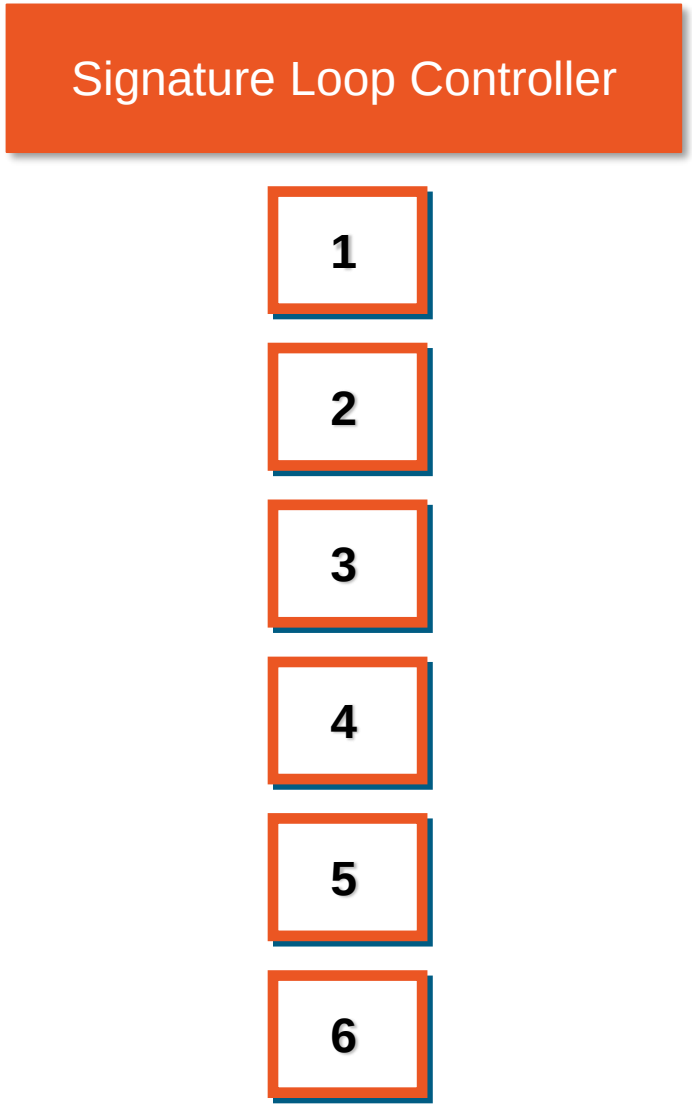
Signature Mapping

- When the device with the highest serial number is identified, the Loop Controller resets its New Start Bit and assigns the device a short address
- The Loop Controller repeats this process for the next highest serial numbered device in a New Start Condition
- The Loop Controller continues this process until there are no devices in a New Start condition
- The Loop Controller has identified all devices in its circuit



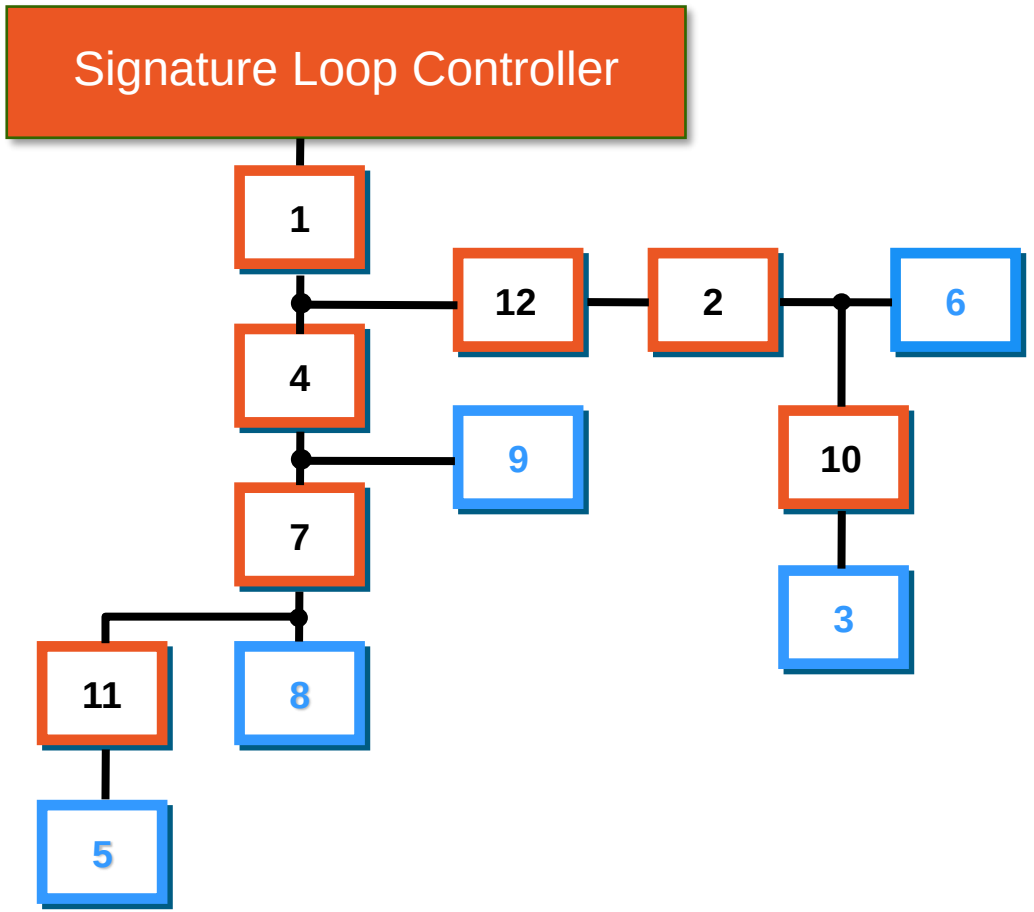
Signature Mapping

- A Path List is a list of all the devices located along the shortest electrical path between a selected device and the Loop Controller
- The Signature Series mapping command is a broadcast command sent to all devices. It instructs a single, specific device to draw current (annunciate) while all other devices in the SLC measure the current drawn (listen).



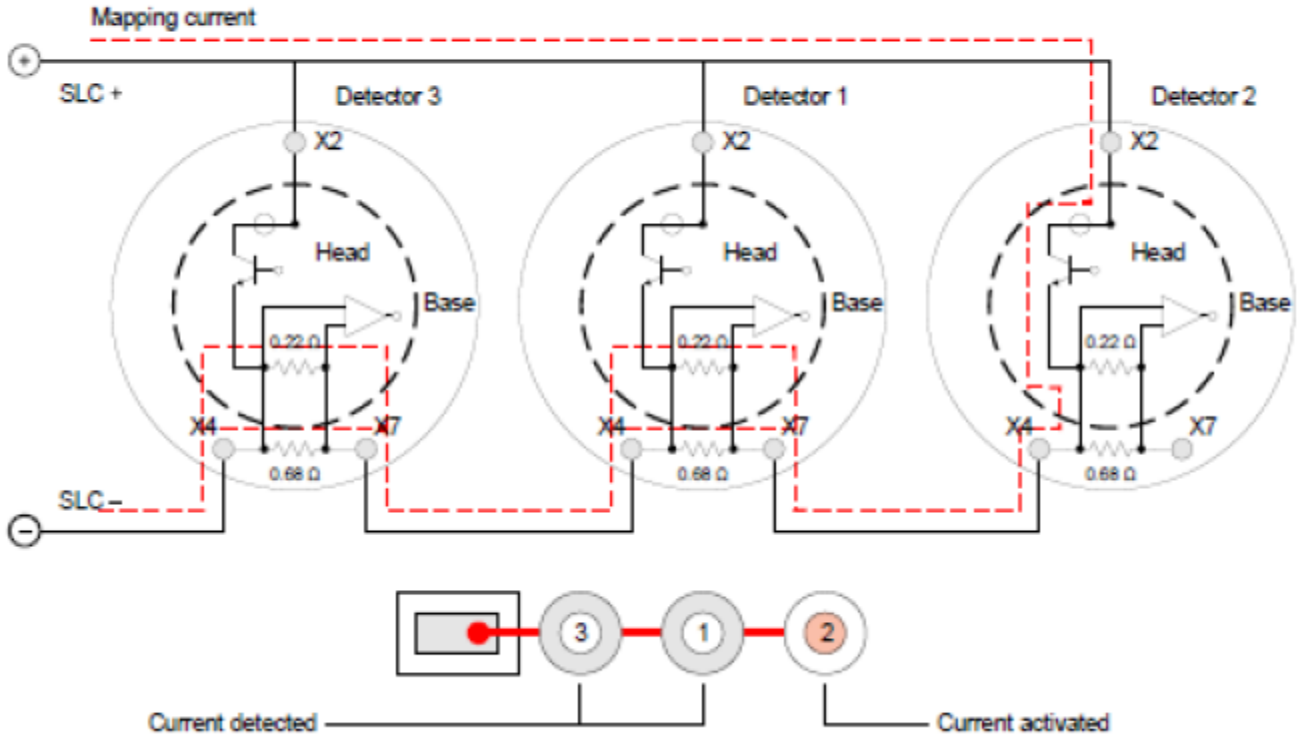
Signature Mapping

- The Loop Controller performs this task by making each device, in turn, draw current (annunciate)
- When a voltage drop is sensed at the (listening) device's mapping resistor, it responds to the Loop Controller in the electrical path
- With a completed Path List, the Loop Controller begins to see the relative locations of each device on the Loop



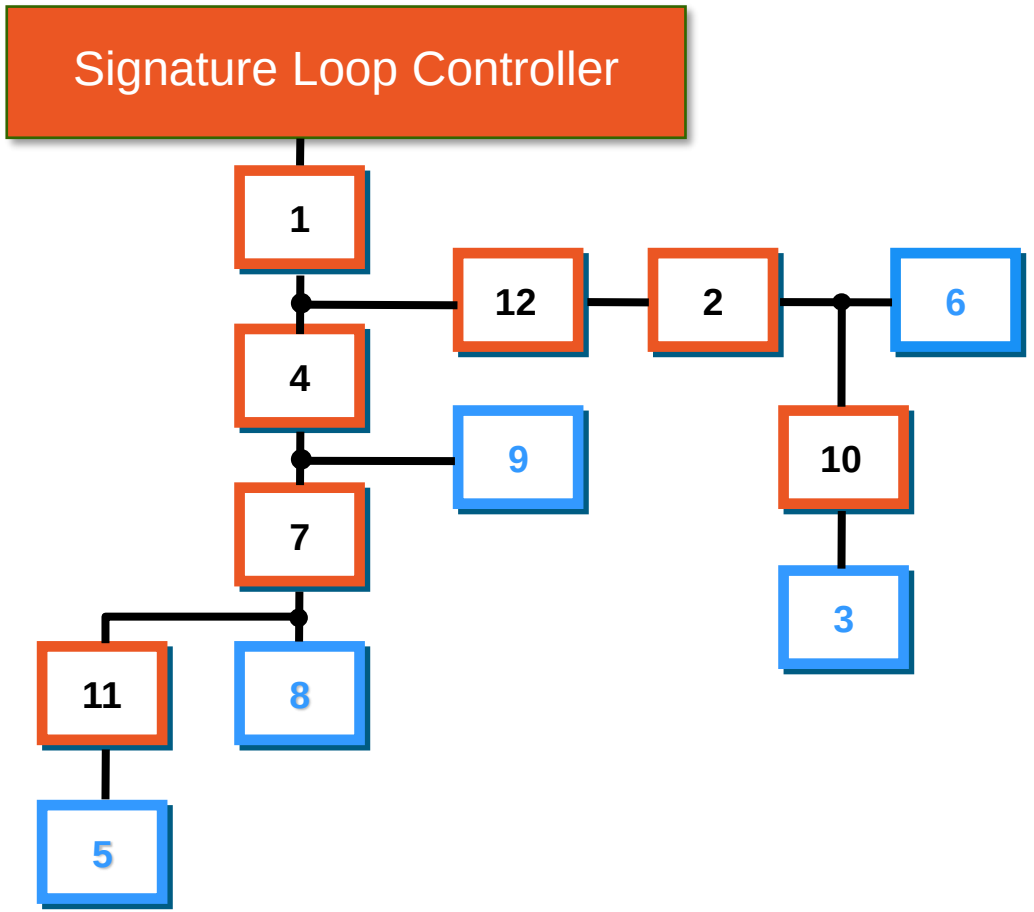
Signature Mapping

Mapping detector 2



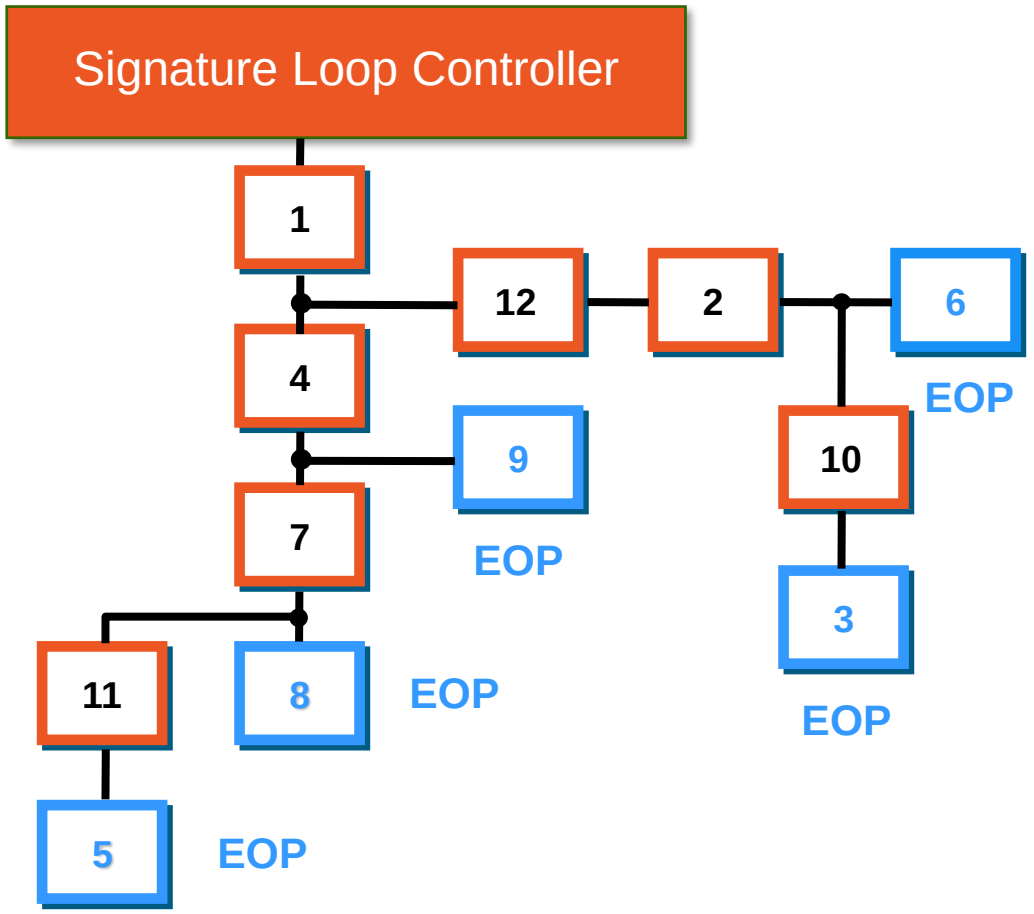
Mapping Exercise

- Live demo



Signature Path List

- The Loop Controller identifies the End-of-Path (EOP) Devices
- An EOP device is the last device on a branch
- Devices farthest from the Loop Controller on any given electrical path

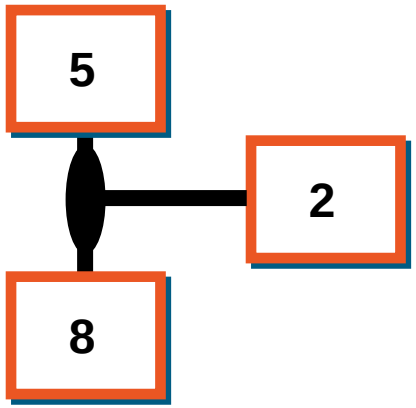


Signature Path List

A Signature Path List is a list of the series and branch connections along the shortest electrical path between each EOP device and the Loop Controller

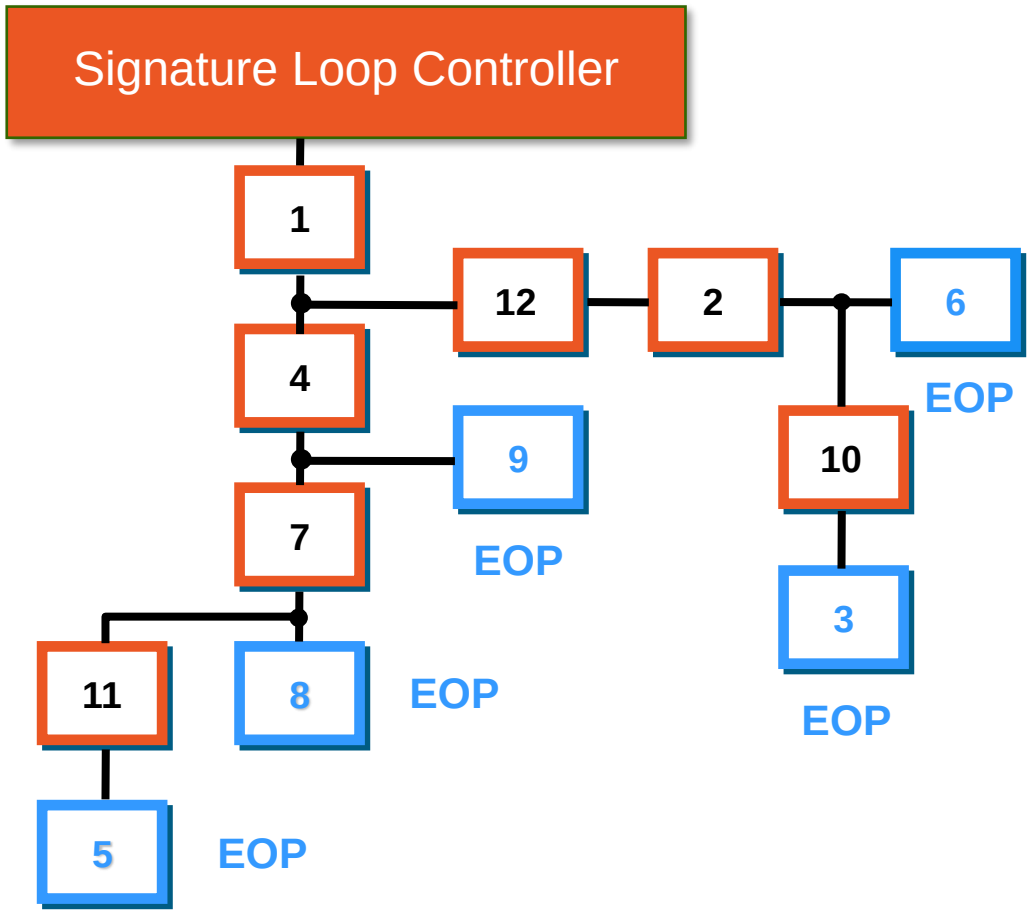
A series connection is a single, untapped wire between two devices

A branch connection is a simple T-tapped wire between three devices



Signature Path List

- With the Signature List complete, the mapping procedure is done
- Each EOP Signature must be unique
- A Signature List begins at the EOP device and ends at the Loop Controller
- The Signature for Device 9 is branch, branch, series



Knowledge Check

Q: What is the term used when we have identical signatures?

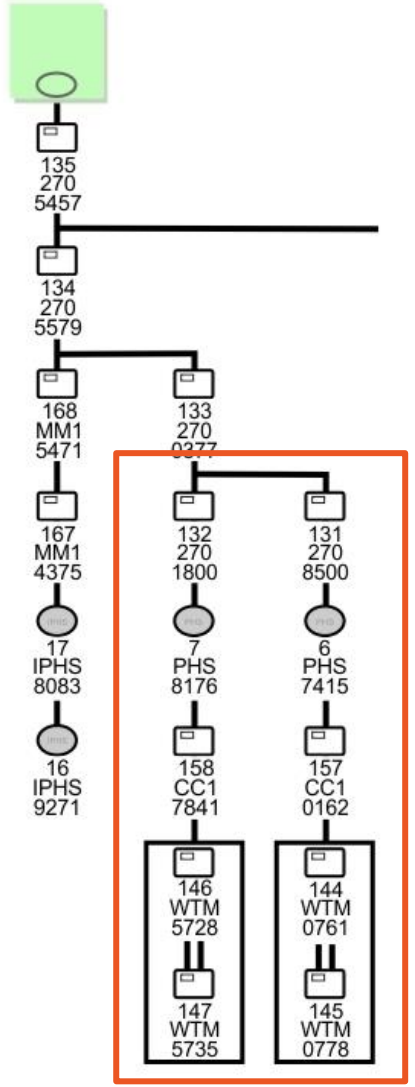
A: A balanced map

Q: Are you permitted to have a balanced map?

A: Yes, but it is not recommended

Balanced Map

T-Tap with 2 identical signatures

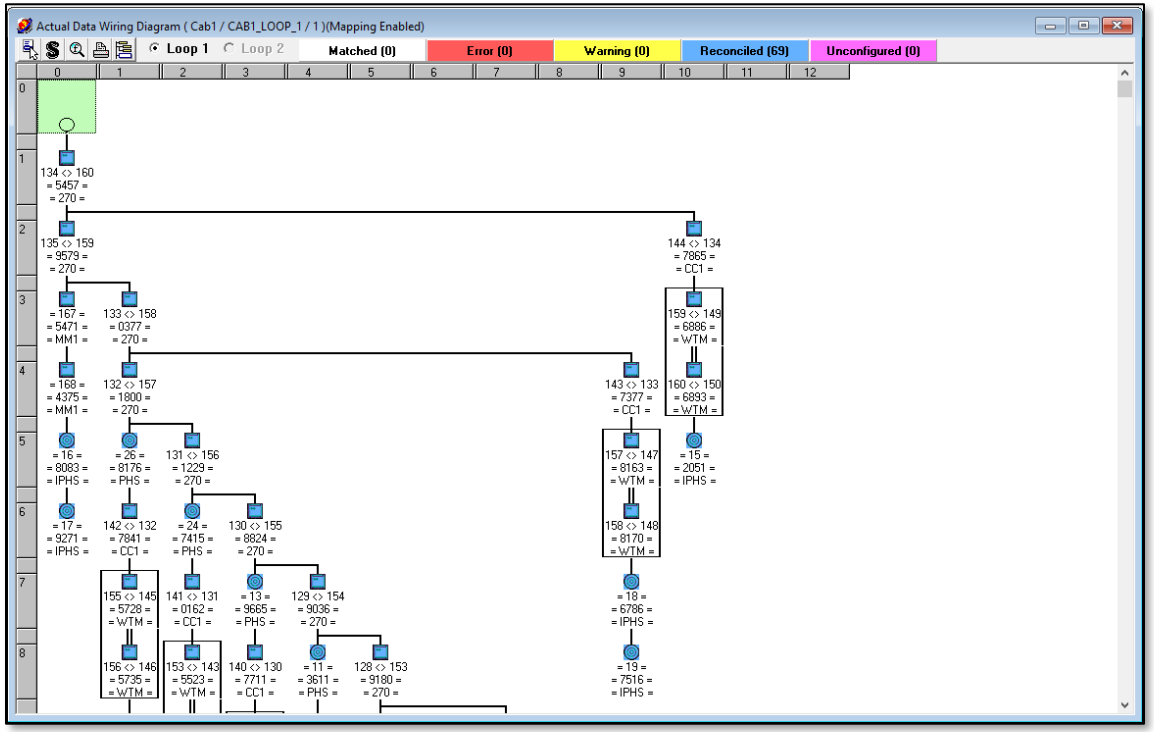


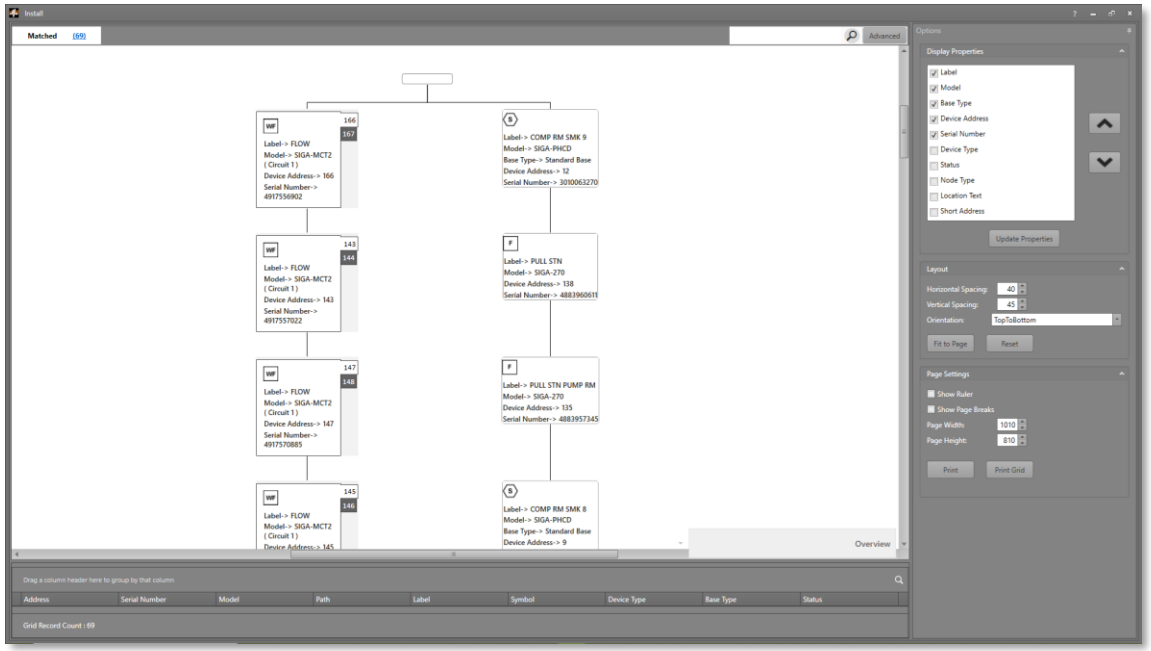
Unbalance the map

- Unbalance the map by moving the T-tap or adding a device to one of the balanced legs
- If you simply assign addressing or reverse the device inputs and outputs you may achieve a green panel, but:
  - The system may not perform to manufacturer's specifications
  - And the loop may not reprogram the new device
- A Star Tap is NEVER allowed

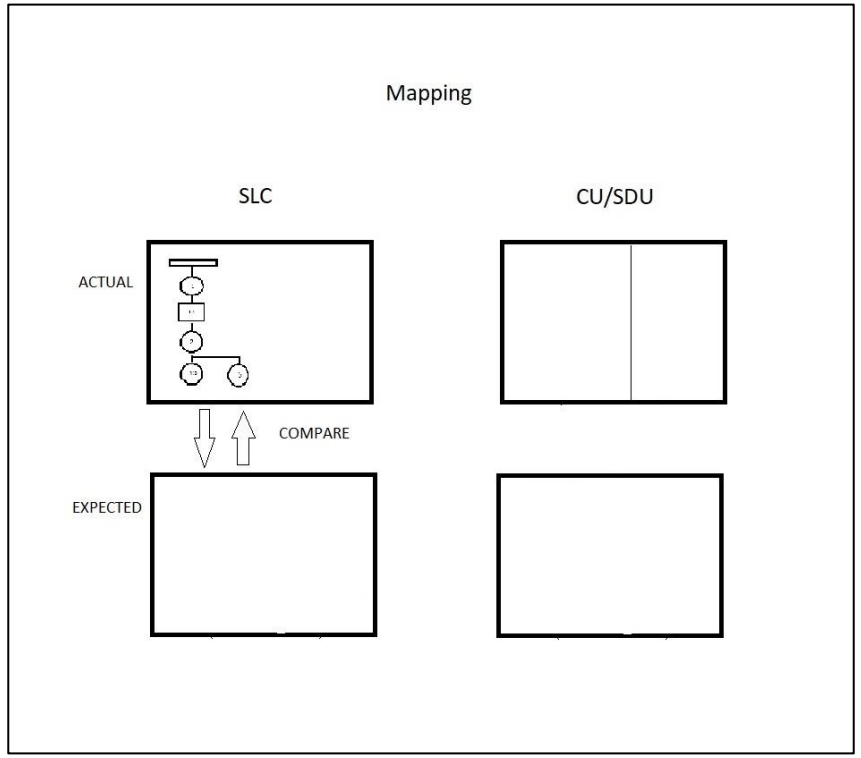
RECONCILING THE MAP

Reconciling Field Devices with Database





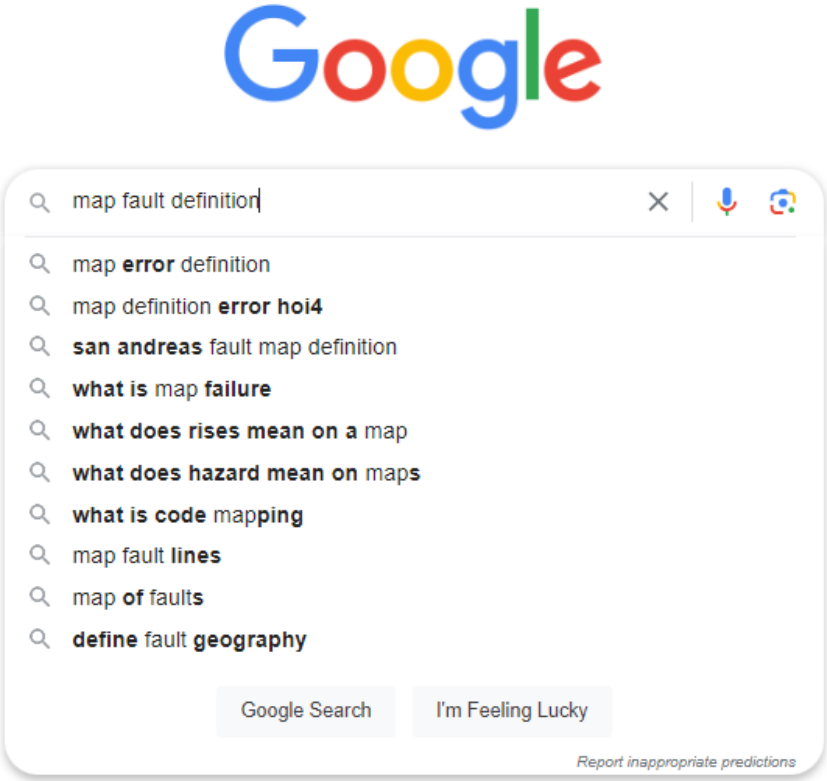
Database Reconcile Process



MAP FAULT CAUSES AND TROUBLESHOOTING

What is a Map Fault?

- Map fault /map/ fôlt/ *noun*
  1. A difference between the actual and expected map.



Possible Causes of Map Faults

1. Loose wire connections on detector bases, module terminals, at the SLC card, or at a T-tap.
2. Over-tightening a detector base onto the back box, causing it to warp, resulting in bad or intermittent connections with the detector head.
3. Replacing like devices in a SLC that has been left balanced.
4. Replacing devices with models that differ from the ones removed.
5. Adding new devices onto an existing SLC.
6. Rewiring an existing SLC.
7. Defective devices.
8. More T-Taps in the SLC than the maximum allowed for the system. (124 per loop)
9. Resistance or capacitance in the field wiring more than that supported by the system.
10. Reversed polarity. Connecting the SLC+ wire to the device SLC− terminal.

Troubleshooting Map Faults with SIGA-HDT

- Handheld standalone diagnostic tool used to:
  - Locate and resolve Signature Map issues
  - Initialize a Signature loop before connecting to a control panel
  - Troubleshoot an existing loop
- Signature Diagnostic Tool Software (P/N 7350894) runs on Windows 7 and 10 Operating systems

Signature Diagnostic Tool

- Initialize or restore loop
- Perform Map Analysis on detectors and modules
- Perform Dirty Level analysis
- Program new device addresses
- Perform maintenance on a single device
- Reinitialize device addresses to zeros
- Diagnose single device
- Perform Loop history

Signature Troubleshooting

- Devices failing contact analysis or map consistency are possible causes for map fault or map mismatch
- Reversed IN/OUT wiring
- Loops within loops
- Short circuit in the SLC
- False EOL devices or T-taps
- Ground fault detection (must have Isolators and HDT must have same ground ref.)

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SIGA-HDT

Quantity [ ] + Add

Signature handheld diagnostic tool for Edwards/EST branded Signature detectors. Package contains handheld unit, charger, cable, USB flash drive with PC application and user guide.

▿ **Media**

Catalog Sheets

E85001-0655 -- Signature Series Diagnostic Tool

Field Notes

SIGA Detectors - Inhibiting the Green LED on Optica Detectors

Installation Sheets

SIGA-HDT Signature Handheld Diagnostic Tool

Manuals

SIGA-HDT User Guide
SIGA-HDT Map Fault Diagnostics Application Guide

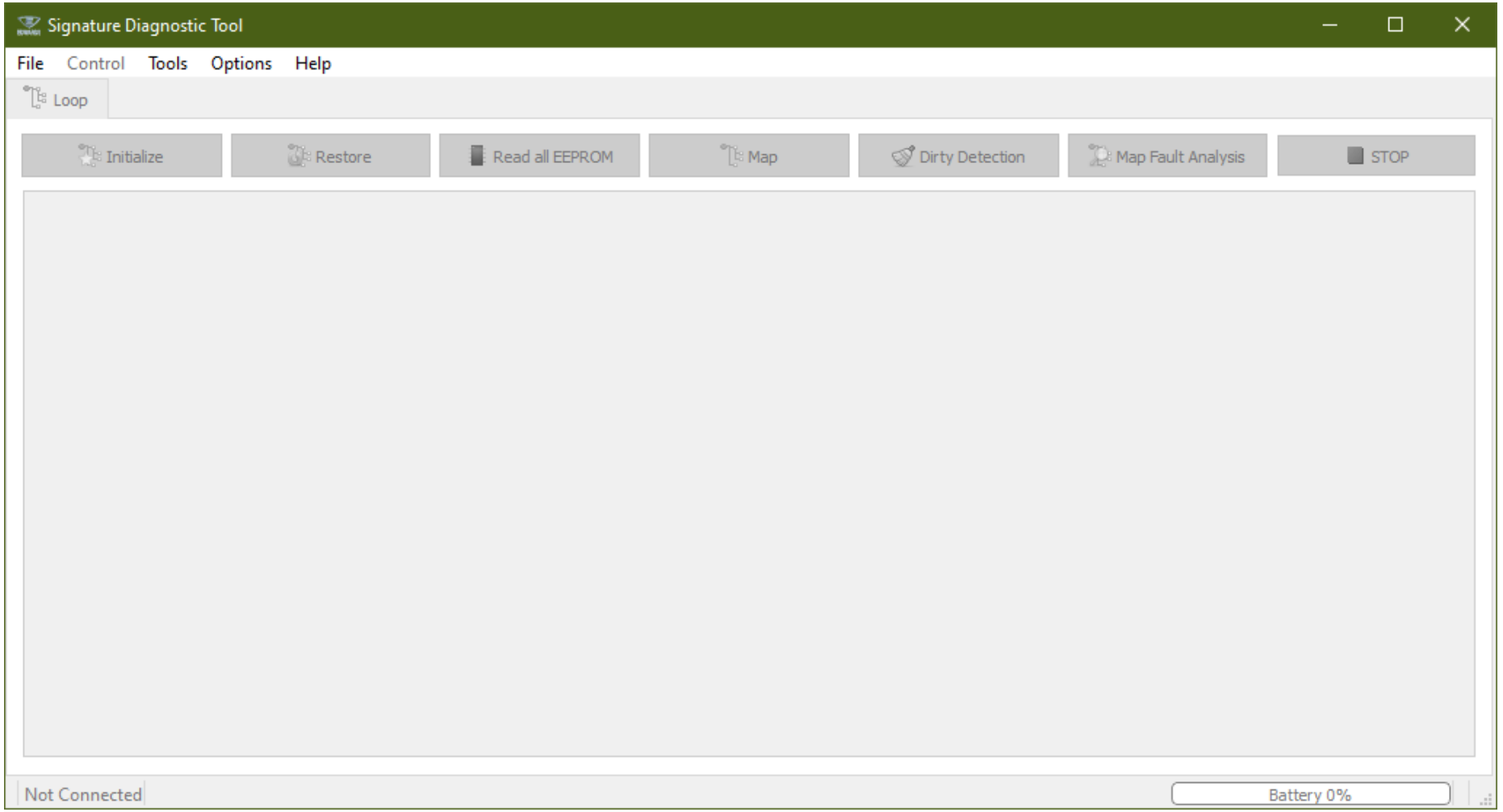
Software

HDT Firmware, Display
HDT Firmware, Display
SIGA-HDT Firmware, Interface
SIGA-HDT Software, Computer

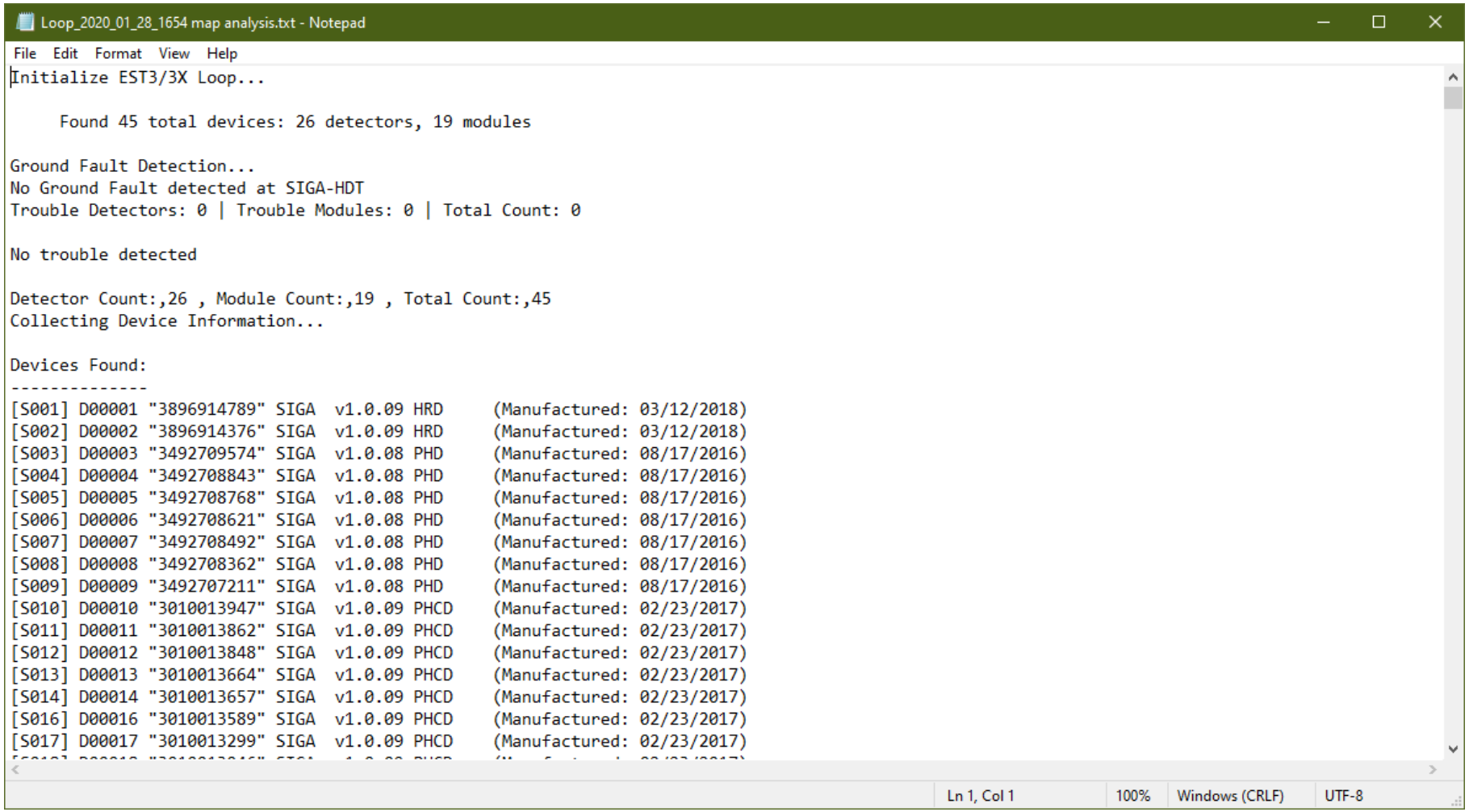
Software Release Notes

SIGA-HDT V2.10 Release Notes - EN

Siga-HDT Software



Siga-HDT Logs



MAPPING BEST PRACTICES

Best Practices and Live Examples

- Striping wires
- Terminating a detector
- False T-Taps

Thank you!

- This concludes our webinar
- Anyone interested in staying on for our open Q&A session is welcome

Q&A