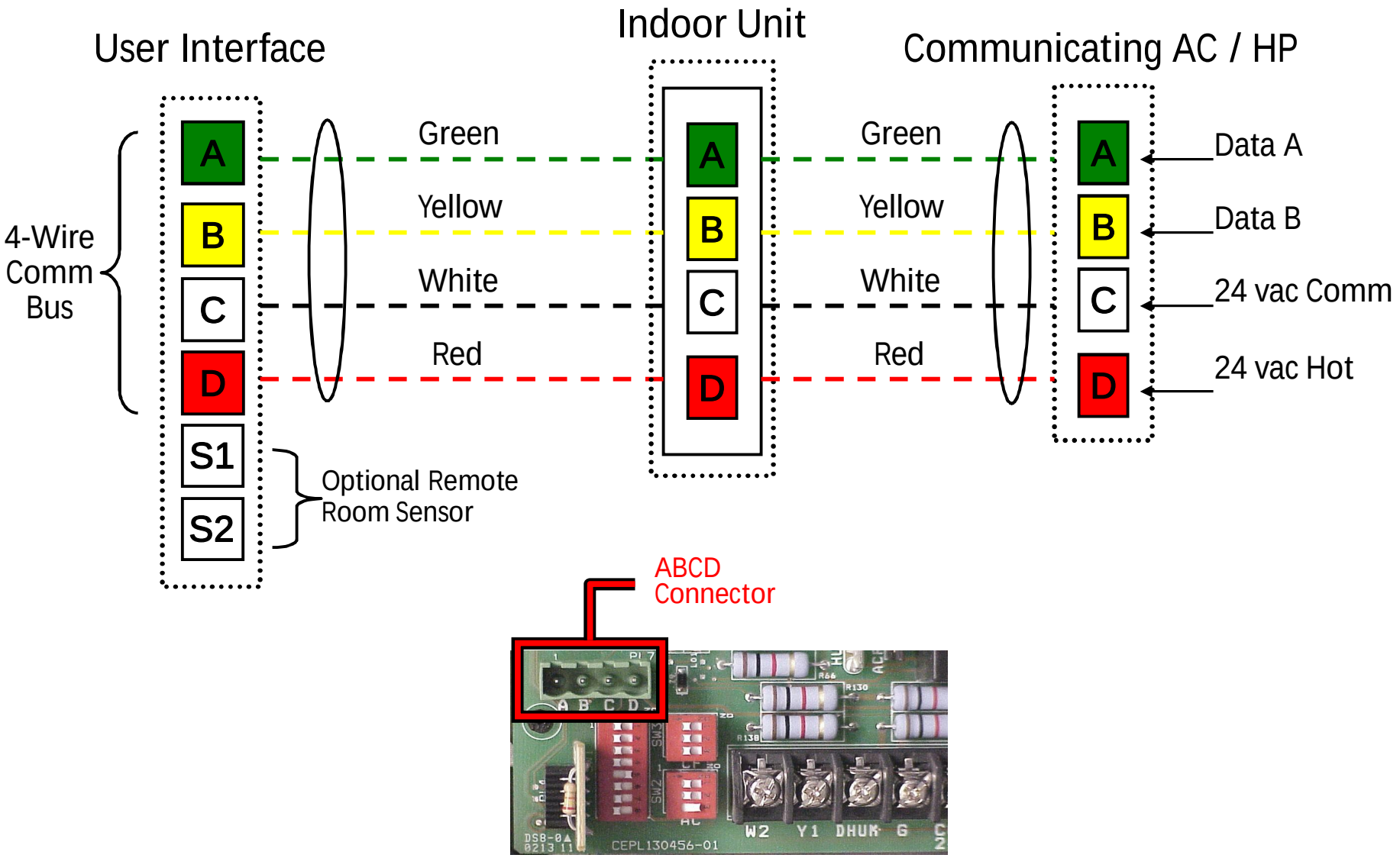
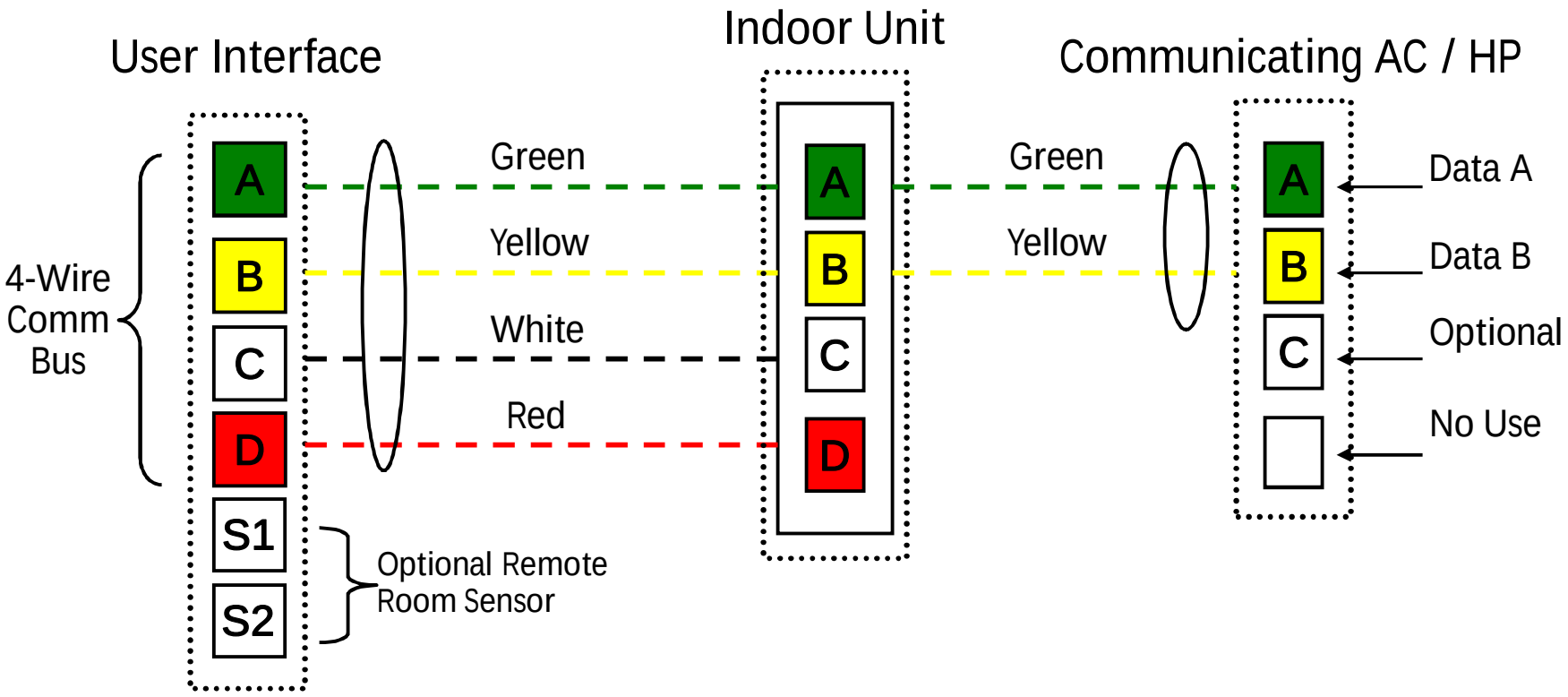
Troubleshooting Communications

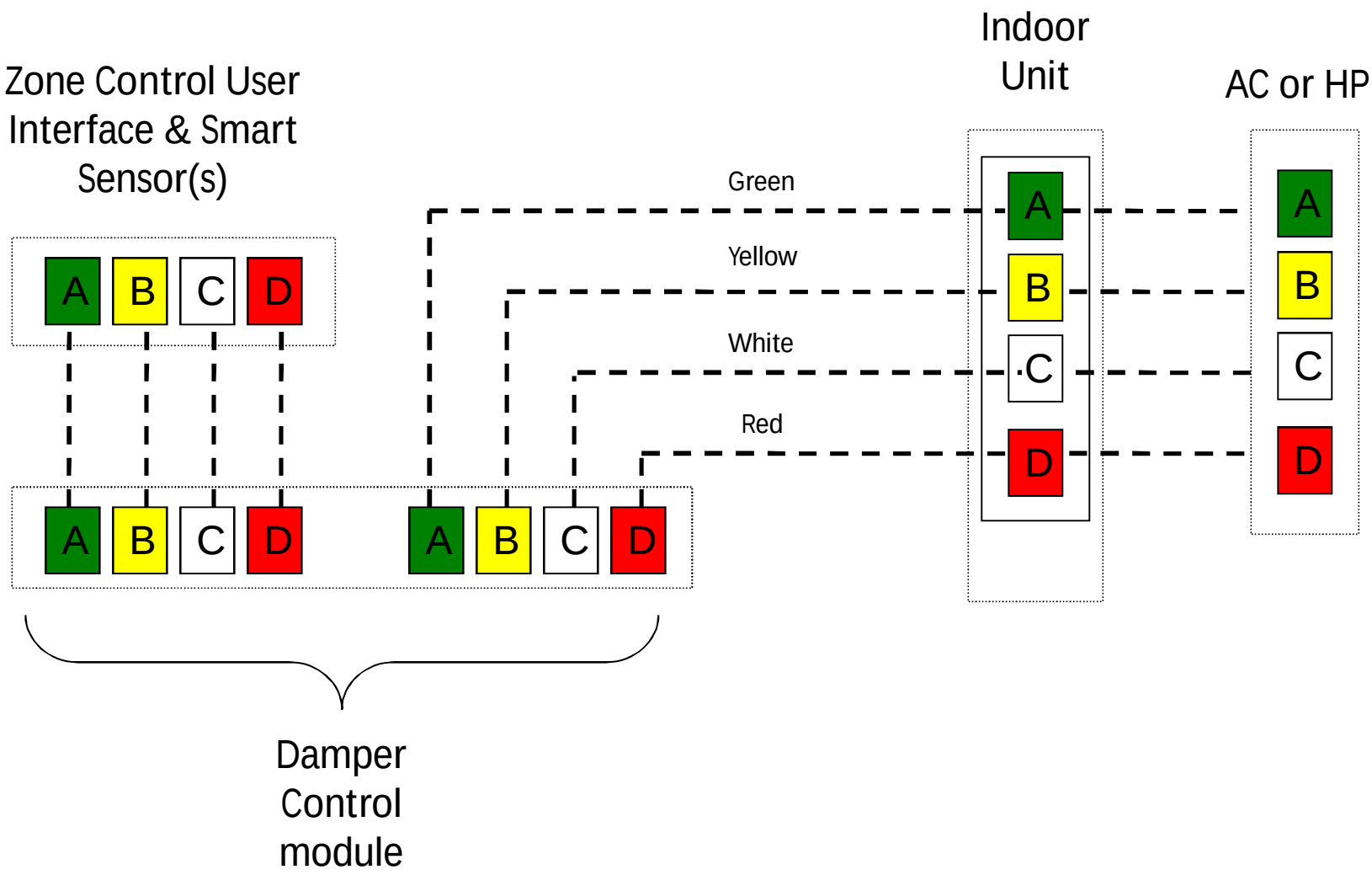
Communicating Controls



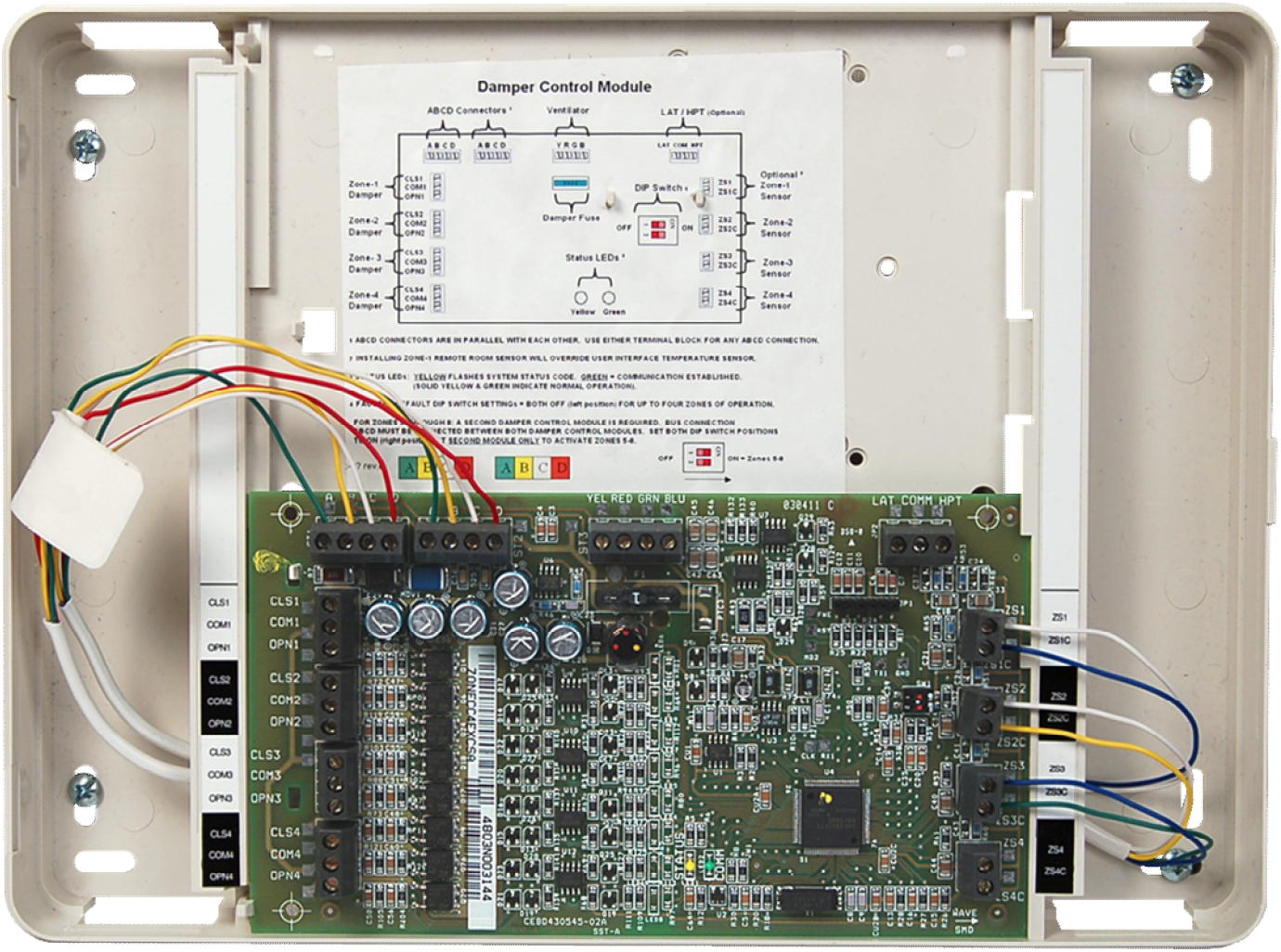
Communicating Controls



In 2013 a change was made to communicating outdoor units. Only 2 wires are required for communication and the board power was provided by the outdoor unit.


Zone Control User Interface & Smart Sensor(s)
Indoor Unit
AC or HP
Green
Yellow
White
Red
A
B
C
D
Damper Control module

Find common location to start.



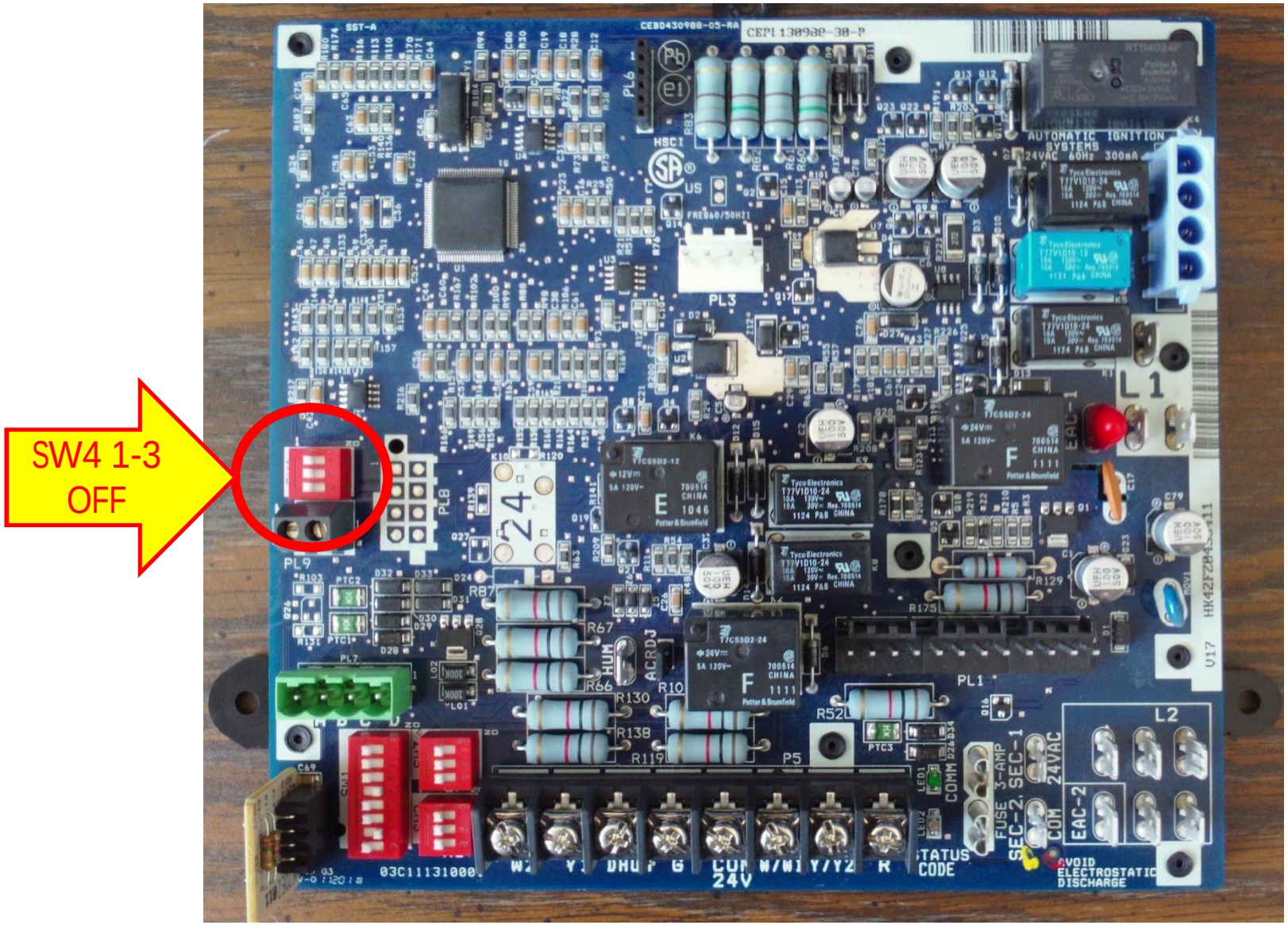
Need to know

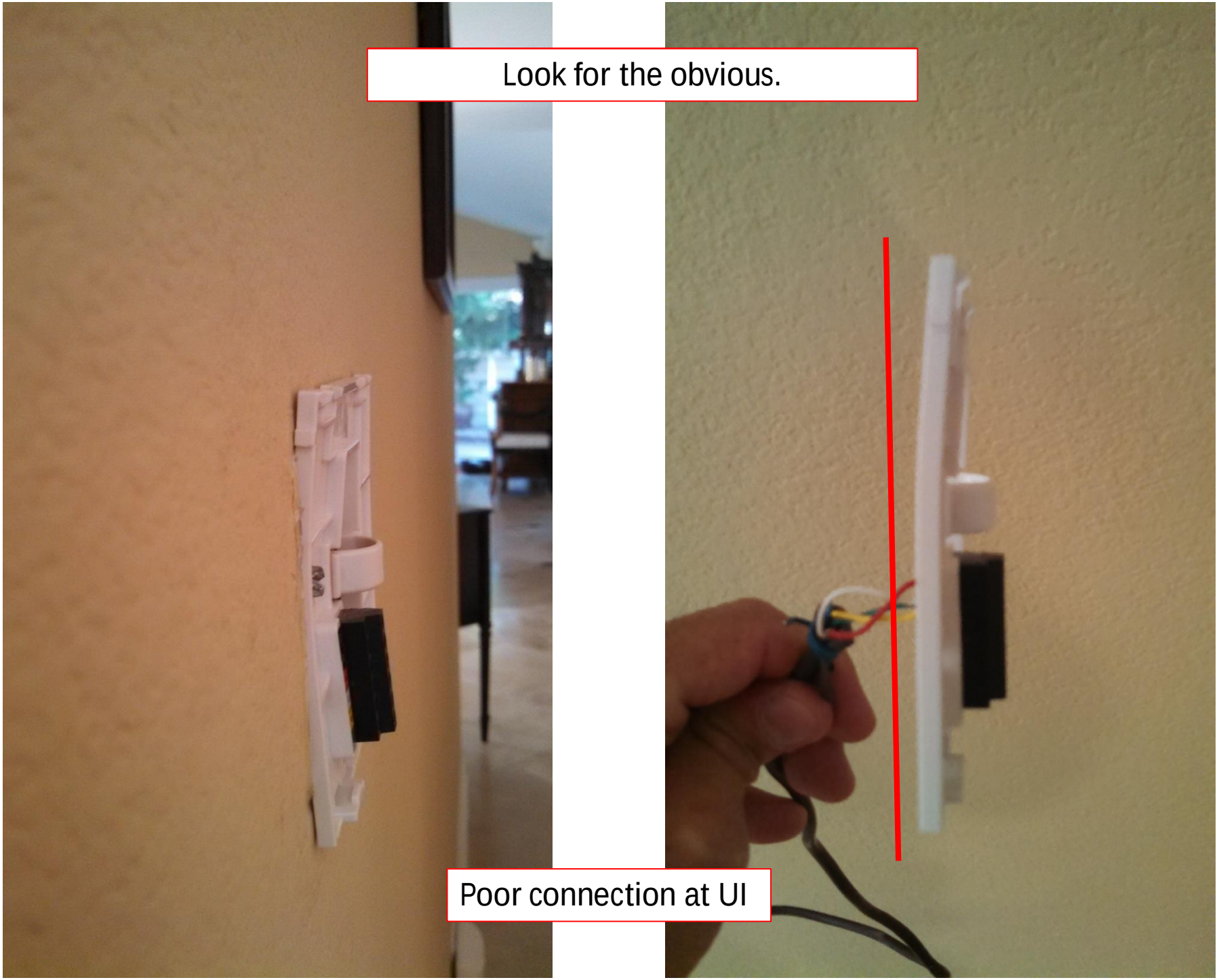
- What devices and where?
- Wire path or wire identification?
- Single component, or multiple component codes?

Need to have

- Voltmeter capable of reading VDC
- Ohmmeter capable of reading 100k ohms

On furnace boards verify SW4 1-3 are off.




Look for the obvious.
Poor connection at UI

Don’t assume the wire is “good”.

Nail or staple in wire.
Old wire shorted.

Old school...

- Isolate wires, ohm for shorts.

- Wire nut one end, ohm for continuity

Use the comm driver voltage to isolate potential issue.

- Each device has a comm driver.
- The output voltage will be steady when disconnected from the system.
- The output voltage will fluctuate when connected to the system and communicating.

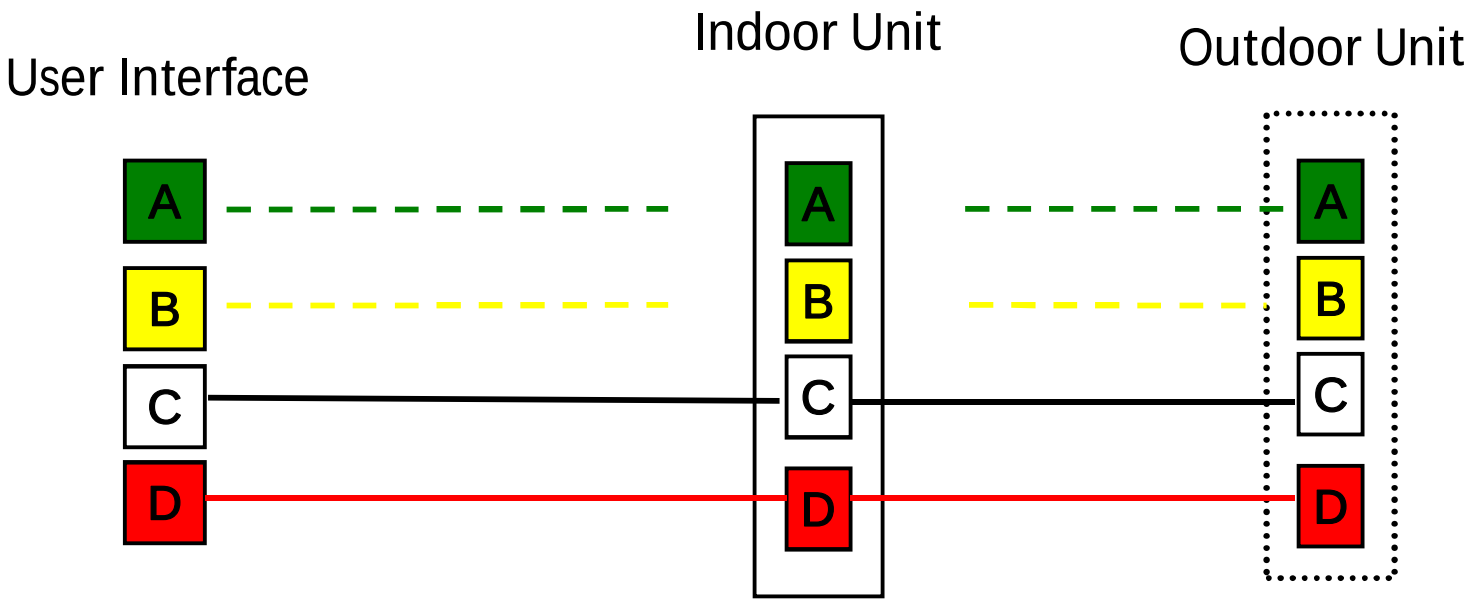
Typical output voltage when isolated.

- A to B = 2 - 4 VDC
- A to C = 2 - 4 VDC (can show slightly higher than A to B reading)
- B to C = less than 1 VDC

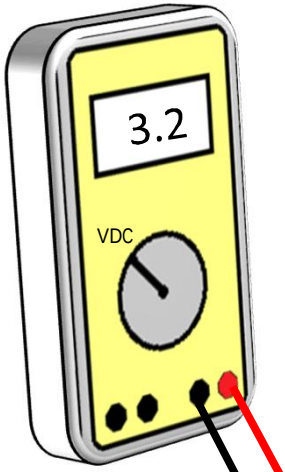
The values should be steady. Voltage values may vary with meter used.
A reading slightly below 2 VDC or above 4 VDC is ok as long as it is steady.

Isolate devices

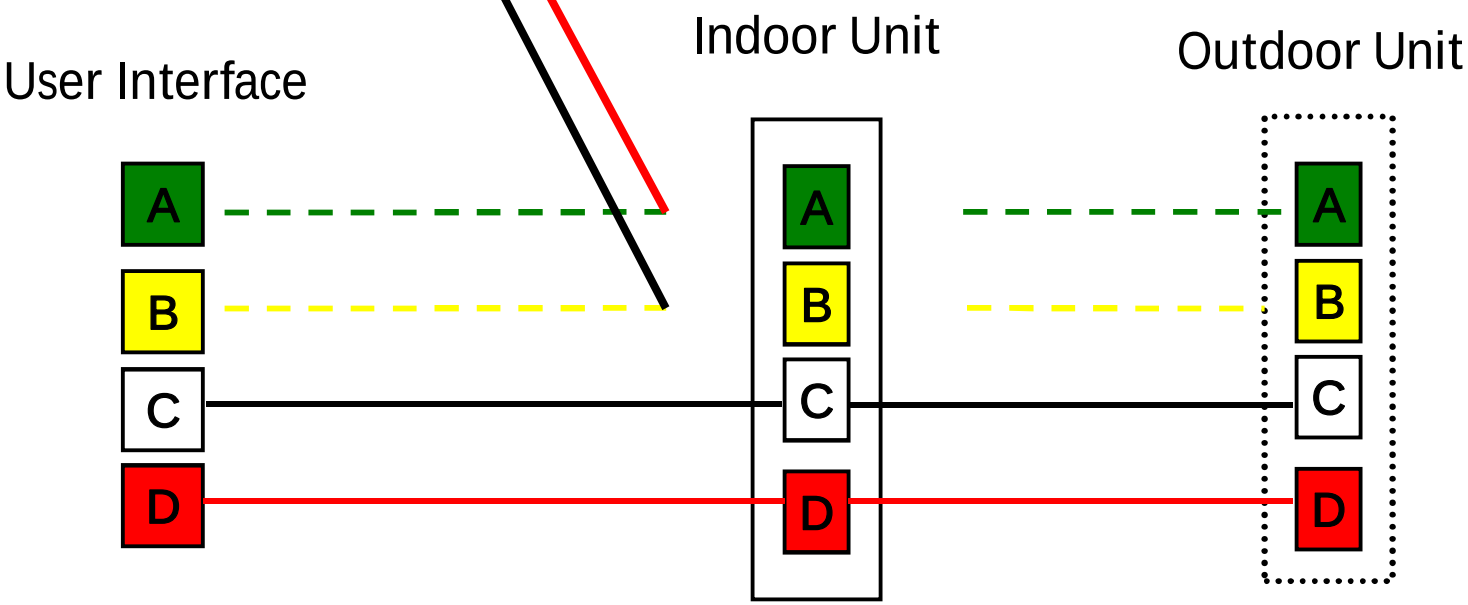
- Leave C and D connected
- Remove A and B wires at common location
- Check A and B wires with voltmeter

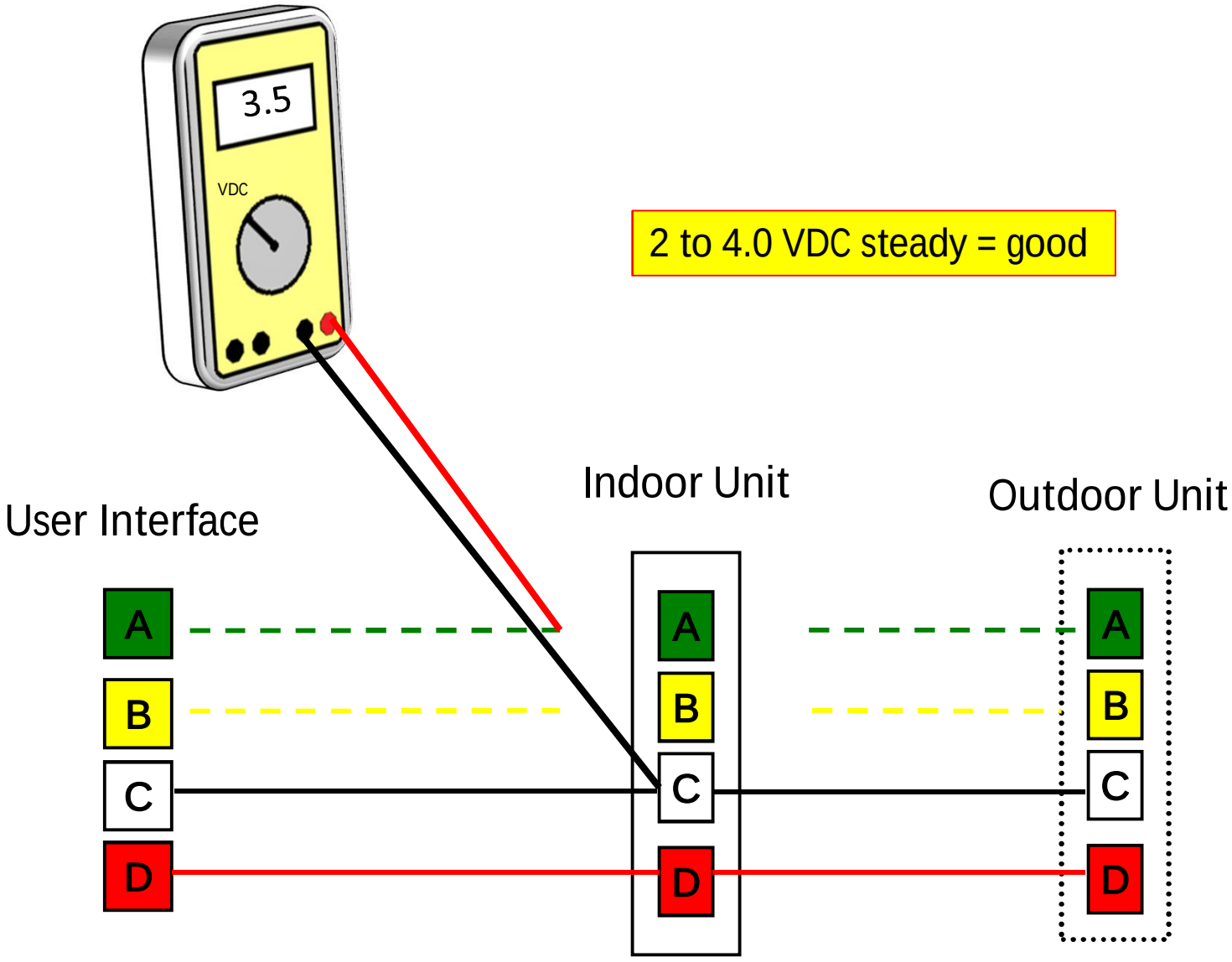


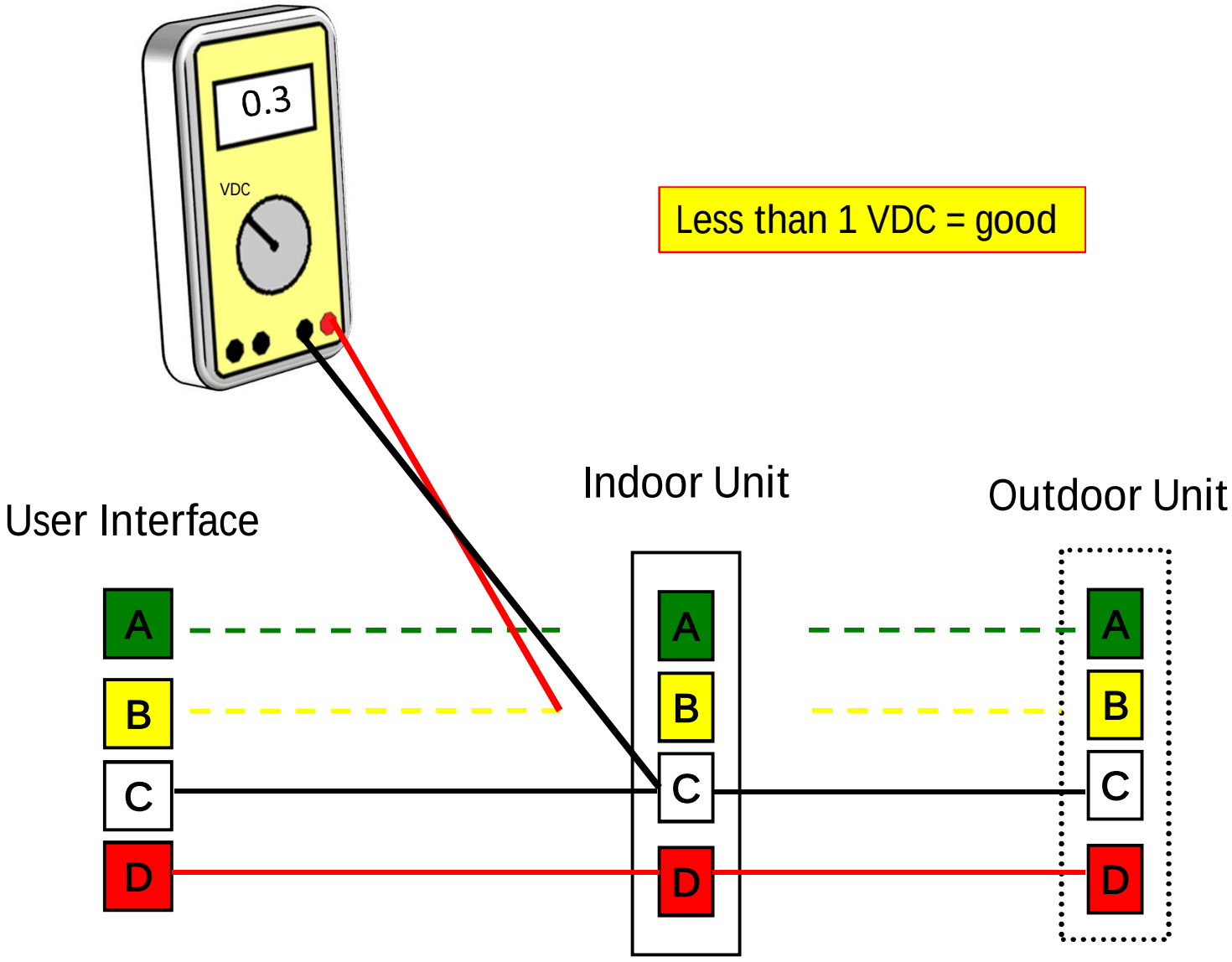
With the devices powered, but the communications isolated, this allows you to test each device comm driver and wiring.

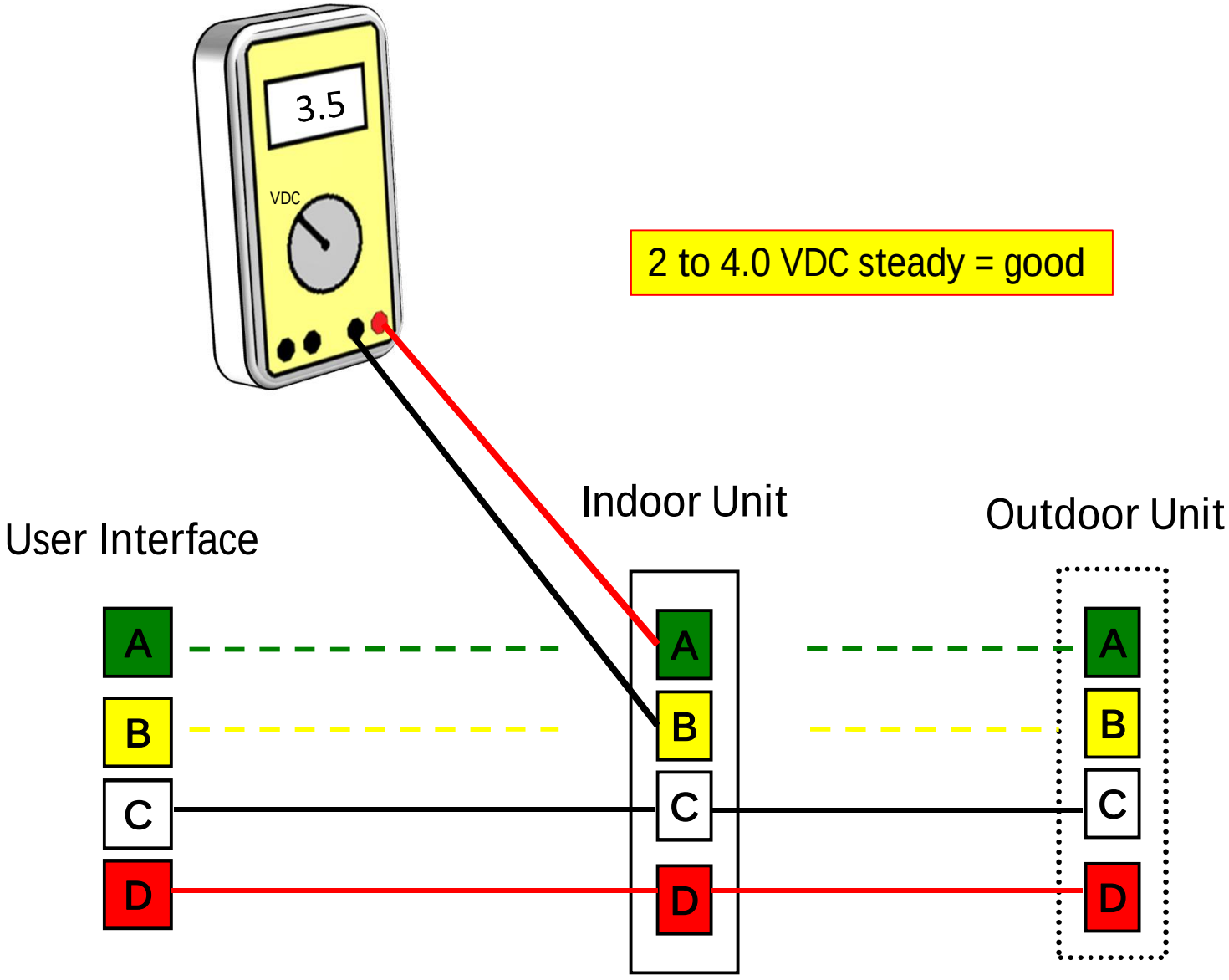


2 to 4.0 VDC steady = good

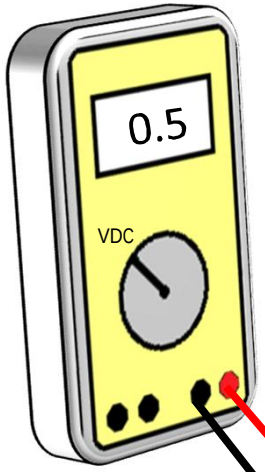



3.5
VDC
2 to 4.0 VDC steady = good
User Interface
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D


0.3
VDC
Less than 1 VDC = good
User Interface
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D


3.5
VDC
2 to 4.0 VDC steady = good
User Interface
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D

Incorrect voltage is an indication of wire or component issue for that device.

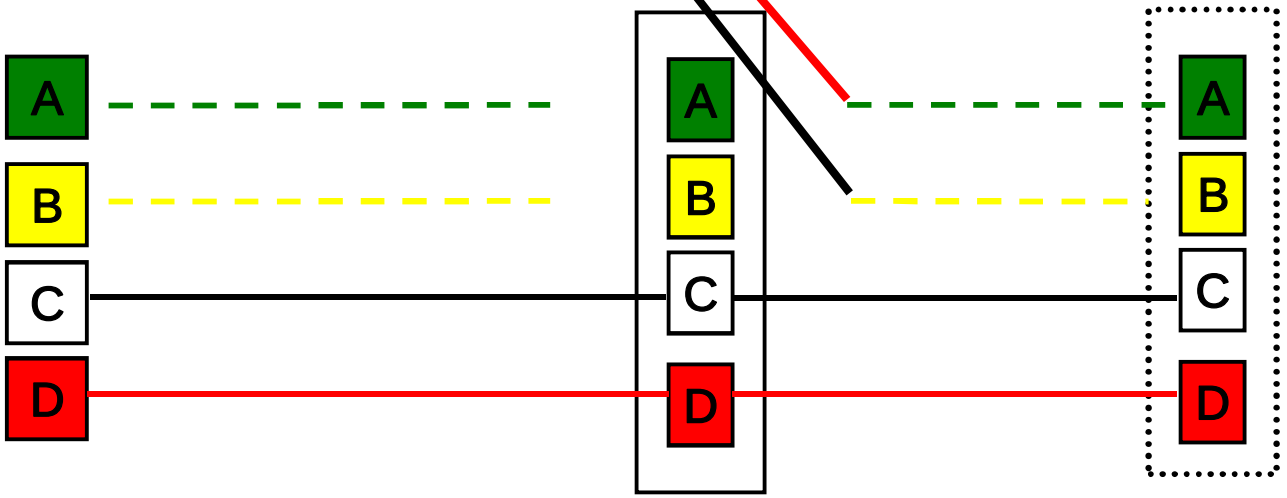


0.5 VDC = not good

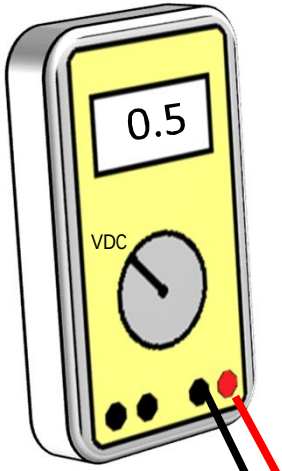
User Interface

Indoor Unit

Outdoor Unit

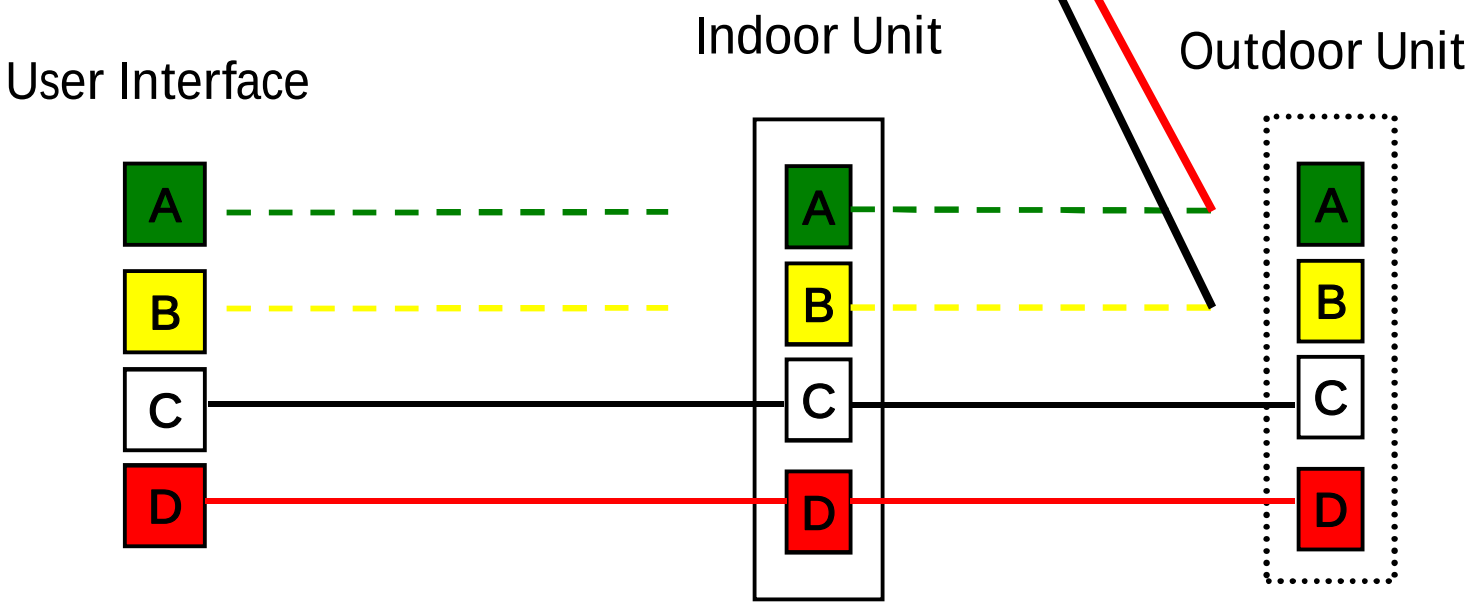


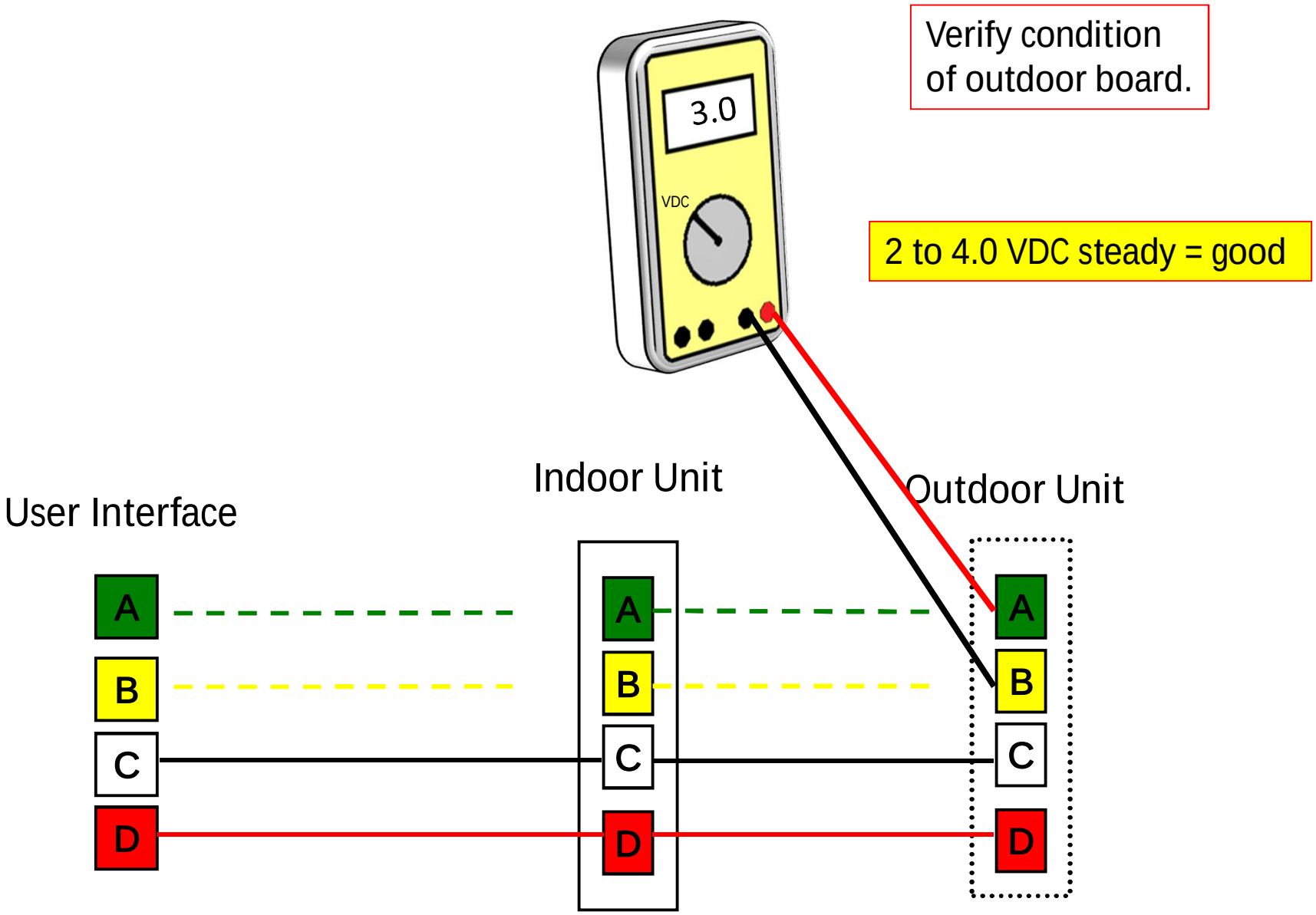
Since the previous test indicated the indoor section was good, reconnect the A and B wires at the indoor, disconnect at outdoor and re-check.



Wire problem from indoor to outdoor.

0.5 VDC = not good




Verify condition
of outdoor board.
3.0
VDC
2 to 4.0 VDC steady = good
User Interface
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D