

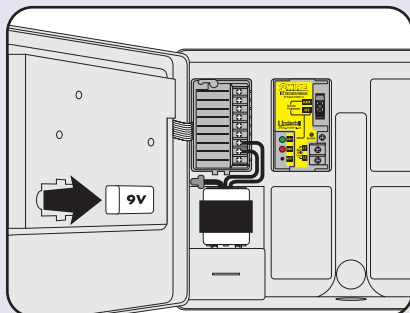
# Underhill 2WIRE

## Quick Start Checklist

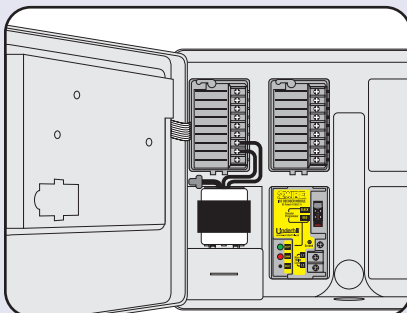


- ☐ **step 1** Disconnect Power  
Temporarily disconnect controller's AC power and remove the 9V battery.

- ☐ **step 2** Install ICC Decoder Module  
Snap the ICC Decoder Module into the first open controller module slot.



☐ If decoder-only systems.

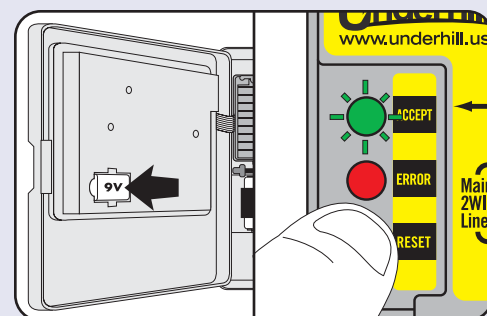


☐ If mixing multi-wire with decoders.

- ☐ **step 3**

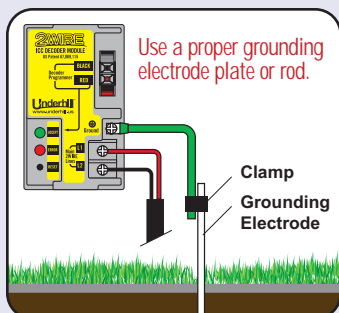
### Power Up ICC Decoder Module

Install 9V battery and reconnect 24V transformer. Press and hold ICC Decoder Module RESET button.

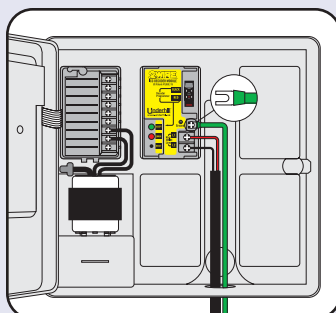


Green ACCEPT light will flash within 8 seconds if module is seated properly. Contact Underhill if green light fails to flash.

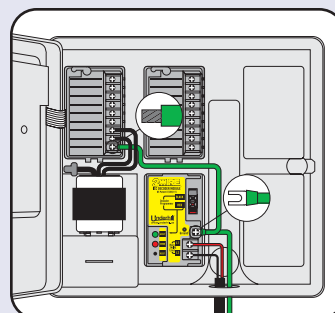
- ☐ **step 4** Grounding No grounding required for Underhill 2WIRE decoders along the main two-wire lines but grounding is required at the controller.



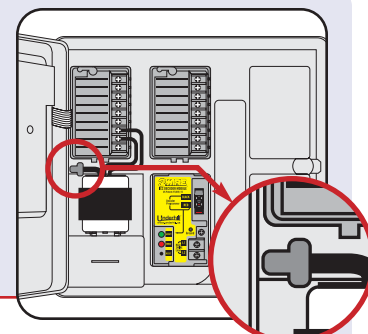
☐ Ground the Decoder Module



☐ If decoder-only systems.



☐ If mixed multi-wire and decode



### IMPORTANT

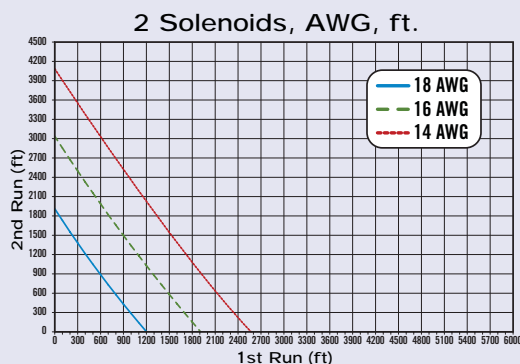
DO NOT connect the ground terminal on the ICC Decoder Module to the building ground or place the ICC grounding electrode(s) within the "sphere of influence" (generally within 25 ft.) of any building's grounding rod.

For the most effective lightning protection for the ICC controller, DO NOT connect the green/yellow wire exiting from the transformer with the 2 yellow wires. Instead insulate its wire end.

- ☐ **step 5**

### Wire Size & Distance

- Branch 2-Wire path as necessary
- Lay 2-Wire Path in Mainline Trenches
- Use standard irrigation wire (shielded wire is not required)
- Minimum wire size and maximum distance from controller to end of branches with 1 solenoid active at a time is:  
#18: (0.8mm sq) 1800 ft from controller to end of branches.  
#16: (1.3mm sq) 3000 ft  
#14: 4000 ft  
#13: (2.5mm sq) 5300 ft



For 2 solenoids active at a time see Page 23 and notes in Installation Manual. For longer wire runs, consult Underhill.

- ☐ **step 6**

### Master Valves and Pump Start Relays

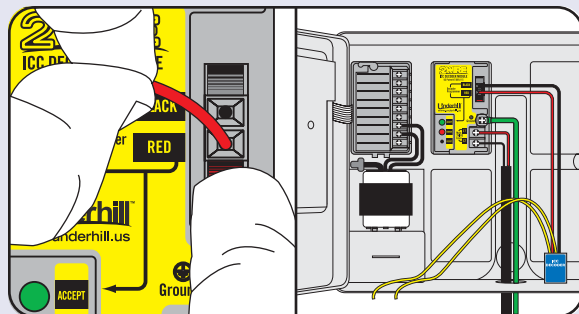
Connect directly to ICC controller's circuit P/MV & COM per controller's instruction manual.

Checklist continues on reverse.

### ☐ **step 7** Set Decoder Addresses (Stations 1 to 48)

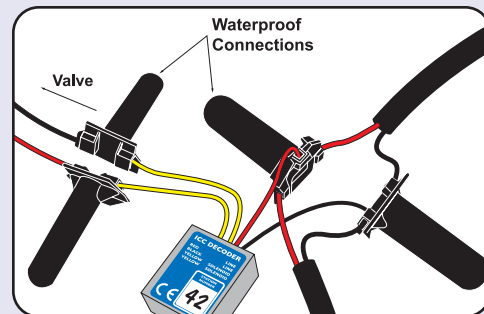


Using portable programmer.  
(fast and easy)  
Page 12, Fig. 07



Using module's built-in programmer (Page 13).  
Be sure zero time is set on all unused stations  
(up to 48 stations are available in each program A, B, C, and D).

### ☐ **step 8** Use Waterproof Wire Connectors



Connect decoders and valves securely.  
Polarity (+ or -) (red/black) is not important.

### ☐ **step 9** Checking the System Check for shorts and opens as solenoids are added during installation.

☐ **Check Voltage** Voltage is applied to the 2Wire path only when a station is running. To check voltage, use a multimeter or connect a solenoid across the 2Wire path (without a decoder). If solenoid clicks there is voltage. If solenoid buzzes, voltage is low.

☐ **Run a "One Touch Manual Start and Advance,"** (Page 29 of Hunter's "ICC Owner's Manual and Installation Instructions"). If ICC Decoder Module red ERROR light flashes or is steady refer to chart below. Press and hold black button on ICC Decoder Module to clear flashing light.

### ☐ **step 10** Locating Faults Most faults are caused by poorly secured wire nuts, cut or shorted wires. If retrofitting after a lightning strike, be prepared for shorted solenoids. Refer to the table below for tips to locate faults.

#### Diagnosing 2Wire Path Faults with the Underhill 2Wire ICC Decoder Module

Red LED	Power to Line	Extent of Fault	Likely Cause	Further Investigation
Steady	No voltage to 2Wire path	One Station	Short circuit solenoid	Note 1
Steady	No voltage to 2Wire path	All Stations	Short circuit on main 2 wire path	Note 2
Steady	Normal 2Wire path voltage	One Station	Open circuit to decoder/dead decoder/open circuit to or in solenoid	Note 3
Steady	Normal 2Wire path voltage	Many/All Stations	Open circuit on main 2 wire path	Note 4
Flashing	No voltage to 2Wire path		Watering is finished, but there has been a fault	Note 5
Flashing	Normal 2Wire path voltage		Watering continues, but a previous station has been faulty	Note 5

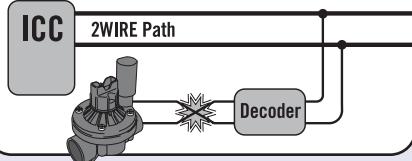
**General Notes** The Module will not try to put voltage onto the 2Wire path unless the ICC is running a station. If you do not have a multimeter with you, use a spare solenoid across the 2Wire path to test for voltage. If the solenoid 'clicks' there is voltage. If it buzzes, the voltage is too low.

#### Troubleshooting the ICC Controller's "Err" Message:

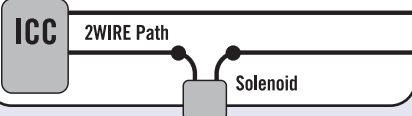
ICC briefly flashes "Err" with remote control but controller works OK.  
**FIX:** Contact Underhill for a small capacitor.

ICC Controller shows "Err" on every station:  
**FIX:** Reverse the connections on L1 and L2 of the module to the main 2Wire cable.

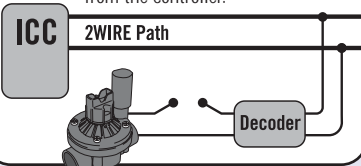
**Note 1** Disconnect solenoid and try with another. Check old solenoid resistance, normally 25-45 Ohms.



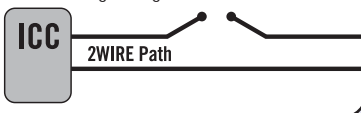
**Note 2** Remove path wires from module. Check the resistance, should be much greater than 1000 Ohms.



**Note 3** Remove decoder. Place onto 2Wire path terminals on module, removing main path wires. Temporarily wire a good solenoid to the decoder under test. Try and operate it from the controller.



**Note 4** Check voltage at various places down the 2Wire path. Set the controller to run a station during testing.



**Note 5** Press and hold down the button on the decoder module to clear the flashing LED.

#### UNDERHILL 2WIRE BENEFITS SUMMARY:

**COST:** Systems with over 300 feet of mainlines cost less than multi-wire and are easily expandable.

**SIMPLICITY:** Underhill 2WIRE is the simplest to install.

**EXPANDABLE:** Adding valves at any time and any place along the two wire path is easy. Adding valves to multi-wire systems often requires retrenching. Projects that may be expanded at a later date are ideal for 2WIRE.

**MULTI-WIRE / 2WIRE CONVERSIONS & HYBRID SYSTEMS**