



Underhill ICC2 2Wire Decoder Module

TW-ICC2-48

Bidding Specifications

Application

The following bidding specifications are for the Underhill ICC2 2Wire Decoder Module that is compatible with Hunter's ICC2 plastic or metal wall mount and pedestal mount irrigation controller series. When installed in any one of the open station-module "slots", the 2Wire Decoder Module can manage up to a maximum of 48 stations. Hunter's documentation publishes a maximum station count of 38 stations for the plastic and metal wall mount models and 53 stations for the pedestal models.

The 2Wire Decoder Module p/n TW-ICC2-48 allows a Hunter ICC2 controllers to operate all stations exclusively on 2Wire or a combination of both multi-wire and 2Wire depending on the customer needs sometimes referenced as a "hybrid" application.

All of the Hunter ICC2 controller's programming functions inclusive of hand-held remote operation, rain sensor operation and/or master valve/pump start functions are maintained.

Material

The ICC2 Decoder Module is a 2-part clamshell plastic molded case design of Cycolac® black plastic. The case is permanently sealed and is not field serviceable.

Inside of the molded case is a printed circuit board (PCB) containing circuitry, software and components to transmit the controller's programming functions down a 2Wire path. The PCB supports the following components:

- 9 (qty) vertically oriented, gold-plated pins located on the underside of the molded case.
- 1 (qty) black and red spring-loaded connector for the purpose of programming or testing a decoder.
- 2 (qty) colored LED's. One is green that will illuminate when the module is first powered "On" or when a programming a decoder. One red LED to indicate any one of several field fault conditions.
- 1 (qty) black "reset" button used to clear a fault condition.
- 1 (qty) 2Wire terminal output labeled L1/ L2
- 1 (qty) Earth Ground terminal to a ground rod or ground plate that is separate from the ICC2 controller.

Each module has a printed label with date code signifying the quarter of the year designated by A, B, C or D and a 2-digit value for the year of manufacture.

Mechanical Dimensions

The approximate outer dimensions of the molded plastic 2Wire Decoder Module is 4" l x 2-3/8" w x 1-1/2" d (101.6 l x 60.33 w x 38.1d mm)

Electrical

- Maximum AC input voltage 32V AC
- Maximum continuous 2Wire main cable current 1.0 Amp AC
- Maximum Number of Stations 48
- Maximum continuous solenoid current 0.6 Amp, (600mA)
- Maximum number of decoders operated at one time 2 (not exceeding 1.25 amp draw)

Two decoders can be programmed with the same station address to operate simultaneously or a single decoder can operate two solenoids as long as the accumulative holding current does not exceed 1.25 amps. This must also include a master valve pump start if applicable.

Reference Underhill 2Wire sizing chart;

<http://underhill.us/library/downloads/viewdownload/132-design-criteria/1059-wire-sizing-chart>

Installation

The ICC2 2Wire Decoder Module has the same mechanical dimensions as a Hunter ICM 4 or 8-station module and fits into any one of the molded slots of this series controller. When located in a slot other than stations 1-4 or 1-8, (upper left-hand corner), decoder station numbers must start with the lowest number designated by the slot position.

The installation of the ICC2 Decoder Module is to be performed with the 120-volt power **disconnected** and 9-volt back-up battery removed from the Hunter ICC controller. Failure to follow the installation instructions may result in permanent damage to the module and will not be covered under the manufacturer's warranty.

Installation instructions of how to field install the module are shipped with every ICC2 Decoder Module and it takes approximately 2-3 minutes excluding a connection to a ground wire and corresponding ground plate or rod.

The ICC2 Decoder Module is to be grounded to a ground rod, ground plate or cold-water ground depending on the installation. Connect a #14 gauge solid copper wire between the earth ground terminal on the ICC Decoder Module and an appropriate grounding device. This is only grounding requirement for this 2Wire product but must be completed to satisfy the manufacturer's warranty.

Two solid core conductors, commonly different colors are to be connected to the L1/L2 terminals labeled on the ICC2 2Wire Decoder. The size of the conductor is based on the number of valves operated at one time and overall length of the 2Wire path. This is a non-polarized connection so there are no requirements for matching a specific color to a specific terminal.

The 2Wire path is energized only when a station is operated from a scheduled start time, a manual operation or hand-held remote command. AC voltage cannot be measured across the L1/L2 terminals without either one of the program functions listed above.

When operating a station from as scheduled start time or manual operation, approximately 28.4 volts AC can be measured across terminals L1/L2. Confirm the AC voltage on the Hunter ICC2 "power module" AC terminals are the same across the L1/L2 terminals when operating a station on the 2Wire path.

Voltages less than 24 VAC will indicate an incorrectly seated Decoder Module or inadequate hardwire connection to the Hunter ICC2 controller and/or a defective internal transformer. Troubleshoot and repair as needed.

Each decoder must be pre-programmed with a corresponding station number. This is accomplished by inserting the red and black decoder wires into the corresponding colored, spring-loaded terminals above the ground lug on the 2Wire Decoder Module. The programming or addressing of a decoder is a two-step process and instructions are included with each module or found on the Underhill website.

A decoder may also be programmed from an Underhill Portable Programmer in one of three product offers:

- DEC-PROG-115 – w/ 115V power supply
- DEC-PROG-240 – w/ 240V power supply
- DEC-PROG-12 – w/ 12V power inverter

Operation

When an ICC 2Wire Decoder Module is installed, it will execute all programming functions of the Hunter ICC controller. The ICC Decoder Module is only compatible with Underhill single-station decoder p/n TW-TK-DEC-1.

When incorporated with a normally closed master valve, the installer has the following two options

- 1) Install a separate two conductor wire path between the controller and the master valve separate from the 2Wire module or,
- 2) Install a decoder with the master valve and program the decoder as the first or last station and assign to an un-used program with the same start time and watering days as scheduled irrigation.
- 3) The ICC2 controller automatically actuates the master valve each time a station is operated from a scheduled start or manual station operation.



Note: Wire sizing and distance between the controller and the master valve should be considered as part of option #2. See Underhill's web site for recommended wire sizes and maximum wire lengths.

The ICC2 2Wire Decoder Module will illuminate a red LED Error when a field fault occurs. This field fault can be one of several field conditions listed as:

- A valve solenoid that has reached end of life and drawing too much current,
- A faulty decoder,
- A faulty wire splice where the resistance exceeds the limits of the 2Wire module or,
- A broken wire(s) in the 2Wire path.

Methods to troubleshoot each one of the identified field faults can be found on the Underhill web site per the following web link;

<http://underhill.us/library/downloads/viewdownload/90-troubleshooting/1061-troubleshooting-2wire-systems>

The Underhill ICC2 2Wire Decoder Module is warranted for a period of 2-years from the date of purchase. Underhill warrants the product when properly grounded per the Installation-Instructions as it will vary depending on where the ICC2 Decoder Module is installed.

The Underhill ICC2 2Wire Decoder Module shall be distributed and supported by Underhill International Corporation, Mission Viejo, CA.