



Novo™ 2Wire Converter Bidding Specifications

Model Specifications

The Novo™ 2Wire Converter model no. W-NOV-U shall be capable of managing up to 32-stations as a base model or up to 63 stations* with additional 8-station Senders model no. TW-SEN-8. The number of 8-station Senders shall be adequate to meet or exceed the number of stations to be driven from the Novo. The Novo is compatible with all multi-wire controllers currently offered and simply extends all of a host controller's features down a 2Wire communication path to standard AC valve solenoids.

*It is assumed the host controller has adequate programming capability to manage the total number of stations installed.

The Novo base model shall be for indoor environments mounted to a vertical flat surface within 12-18" of a host controller. The Novo shall be constructed with a plastic-injected hinged case, allowing for access to a row of horizontally oriented terminal blocks outputs affixed to a printed circuit board. The Novo shall incorporate a backlight 128 x 64 black and white display that remains constantly illuminated.

The Novo user interface shall incorporate a thick polyvinyl overlay with dome-style buttons and corresponding LED's. When a menu or navigation button is selected a corresponding LED will illuminate providing visual confirmation of the task selected.

The Novo shall come standard with pre-wired, 4 (qty) color-coded, 9-conductor cable assemblies that are to be terminated in the host controller's station outputs. The cable assemblies shall have one set of tinned ends with a length of 36" long including a white "common" wire for each of the four cable assemblies. Each cable assembly shall be terminated in one of four terminal blocks with screw-less or push-type connections. Each of the four common wires shall be tied together and terminated in the host controller's common terminal input. The Novo shall be mounted directly adjacent to a host controller and in relatively close proximity to a 120-volt or 230-volt power source.

The Novo shall come standard with a 1.3 amp, 34 watt, 120 VAC 60 Hz or 230 VAC 50 Hz sealed, step-down transformer on the primary side to 24VAC on the secondary side. The transformer shall be able to supply a maximum output of 1.2 including a master valve or pump start. Depending on the age and model of remote control valves in use, this will typically allow for 2 (qty) valves to be operated at the same time. This external transformer shall have a built-in thermal fuse and shall be UL listed and CE recognized. The transformer shall come with a 3-prong plug that



can be connected to a GFI receptacle for outdoor or wet environments or at the user's discretion cut-off and "hardwired" with approved wire nuts within an approved and covered junction box.

For outdoor applications the Novo shall be installed in one of two methods; 1) within an existing NEMA 3R rated pedestal-type enclosure or 2) within a plastic, wall mount enclosure model no. TW3-PLC.

The Novo shall have software capabilities to isolate various "Fault" conditions found in the "Faults and Diagnostics" menu. The built-in software capabilities shall provide feedback information for:

- Isolation of a fault condition between a host controller and the Novo,
- Isolation of a fault condition down the 2Wire path,
- Isolation of a fault condition to a decoder or station solenoid.

The Novo shall be used to "manually" operate all stations on the 2Wire path separately from a host controller allowing for faster field troubleshooting and isolation of a system-related issue.

The Novo shall also have an "Off" menu that when selected turns off all AC current to the 2Wire path. This enables field repairs to be made without disconnection of the 2Wire path from the Novo Converter.

The Novo shall also have a "Run" menu that is the standard settings when operating scheduled and manual irrigation events from a host controller. When in this mode, the Novo shall provide 24 VAC to the 2Wire communication path only when receiving a manual command from the Novo or from a manual or scheduled start time from a host controller.

The Novo shall be used for either new or retrofit applications incorporating an existing or new irrigation controller.

For new installations, the Novo shall be paired with a user's preferred irrigation controller while utilizing the benefits of a faster and lower cost install common to 2Wire technology.

The Novo can also be utilized in retrofit applications, when additional stations need to be added to a multi-wire controller. An existing pilot and common wire from a valve closest to where additional valve(s) are to be added can be used as the 2Wire path and extended for additional stations. The existing station is then added and operated from the Novo by adding a decoder programmed with the corresponding station number.

The Novo shall incorporate "Pure AC" along the 2Wire path and through the decoder allowing it to utilize existing 12, 14, 16 or 18-gauge field wire without the need for



specific communication cable. This capability allows the software to display a solenoid's holding current generally not found in some 2Wire systems that incorporate DC as part of a decoder design to open and close a valve solenoid.

When incorporating existing field wire, the maximum length of the 2Wire path shall be determined by:

- The number of solenoids being operated at one time, (either individually or one decoder driving two valves),
- The solenoid holding current and,
- The wire gauge being used.

Underhill International provides a wire-sizing chart for design and installation purposes. Exceeding these recommended lengths may result in some stations not turning off or on at the outer most lengths of the 2Wire path.

The Novo shall only be compatible with Underhill's single station decoders. These decoders shall be programmed to the corresponding station number prior to placement in the field. Wire connections between a decoder and a valve solenoid shall be made with the supplied waterproof connectors and no other approved equal is acceptable.

Underhill Decoders p/n TW-TK-DEC-1 shall be programmed with an Underhill Portable Programmer p/n DEC-PROG-115. The programmer can also be ordered with a 12volt power inverter for programmer from a car adapter p/n DEC-PROG-12.

The Novo requires grounding to a ground rod or ground plate depending on local soil conditions. Grounding requirements shall conform to the American Society of Irrigation Consultants (ASIC) Grounding Specifications, see enclosed web link;

http://www.asic.org/Design_Guides.aspx

No additional grounding shall be required along or at the terminus of the 2Wire path.

The Novo shall be manufactured and distributed by Underhill International Corporation, Lake Forest, California.