



# Wireless Controls

IRRIGATION TECHNOLOGY FOR THE FUTURE

# twig

## frequently asked questions

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# twig

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## General Wireless Controls FAQ

### QUESTIONS

**IN WHICH COUNTRIES IS THE TWIG® WIRELESS CONTROL SYSTEM AVAILABLE?**

**WHAT IS THE PURPOSE OF THE NELSON WIRELESS TWIG SYSTEM?**

**IS COMMUNICATION BY CELL PHONE OR RADIO?**

**IS A RADIO LICENSE REQUIRED?**

**DO THE TWIG ANTENNAS HAVE TO BE LOCATED LINE-OF-SIGHT?**

**WHAT IS A NETWORK?**

**HOW IS THE NETWORK CREATED?**

**IS IT EASY TO SEE THE TWIGS THAT HAVE JOINED THE NETWORK?**

**WHY ARE PRESSURE RELIEF VALVES NECESSARY WITH AUTOMATED SYSTEMS?**

**CAN I MANAGE THE SYSTEM REMOTELY?**

### ANSWERS

The TWIG® system is currently available in USA, Canada, Australia and New Zealand.

The purpose of the Nelson wireless TWIG system is to provide a method of automatically cycling through a series of irrigation control valves in a programmed sequence.

The communication is through radio signals within the 900 MHz ISM band. Proprietary Nelson high powered 1 Watt radios are used.

No license is required in the United States. The radios have FCC approval in the USA and also Industry Canada approval for Canada. Other approvals are pending.

Radio communication has the highest reliability when the system is setup for direct line-of-sight.

The TD200 and the TWIGs that it controls are referred to as a “network”.

The Nelson wireless network is created when the TWIGs simply joins up to the TD200 controller. The joining process is done during setup or when new TWIGs are added to a system.

The Nelson TD200 controller shows all TWIGs in the network as soon as they join.

Pressure relief protects the pipes. They should always be used to reduce the potential for damage. In the event that something goes wrong and the pressure exceeds the limitation then the relief will discharge pressure to protect the pipe.

The TD200 can be connected to some third party controllers to achieve remote operation. A TWIG-enabled Baseline AG1000X controller available exclusively from Nelson Irrigation is one such controller. Contact factory for more information about remote operation and third party controllers.



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## TD200 Controller FAQ

### QUESTIONS

**HOW MANY TWIGS CAN A TD200 CONTROLLER RUN?**

**HOW MANY VALVES CAN THE TD200 CONTROL?**

**WHAT IS A PROGRAM?**

**HOW MANY PROGRAMS CAN THE TD200 HOLD?**

**HOW MANY PROGRAMS CAN RUN SIMULTANEOUSLY?**

**HOW MANY START TIMES ARE POSSIBLE?**

**CAN THE SAME VALVE BE USED MULTIPLE TIMES IN THE SAME PROGRAM?**

**WHAT IS A "GROUP" OF VALVES?**

**CAN THE SAME VALVE BE INCLUDED WITHIN SEVERAL GROUPS?**

**HOW MANY VALVES CAN BE IN A GROUP?**

**CAN THE TD200 CONTROL MORE THAN ONE CROP?**

**WHAT IS A MASTER VALVE?**

**IS THERE A QUICK WAY TO CREATE NEW PROGRAMS FROM EXISTING PROGRAMS?**

### ANSWERS

The controller can operate up to 100 TWIGs.

The controller is rated for up to 200 valves with the use of multi-valve TWIGs.

A program is an irrigation schedule to control a valve or groups of valves in sequence.

Over 50 programs.

50 programs

Unlimited.

Yes.

Valves that operate at the same time within a program are in a "group".

Yes.

The number of valves in a group can be as few as zero and as many as 200. (A group with zero valves can be used to block out a period of time when no irrigation is desired.)

Yes. Programs can run multiple crops.

The supply of water to a network can be controlled by a "master valve" which the TD200 automatically turns "on" when a group of valves is on and turns "off" when all groups are off.

Yes. Simply edit any program, change the name and then save it.



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**HOW DO I CHANGE THE WATERING TIME FOR ALL GROUPS PROPORTIONATELY?**

Turn the TD200 dial to the ADJUST mode, select the program and change LENGTH time (notice the % will change as the LENGTH is adjusted).

**WHAT IS THE PURPOSE OF THE "PAUSE" DIAL POSITION?**

When the dial is turned to PAUSE it pauses or suspends all programs. When the dial is returned to RUN the programs resume.

**WHAT DOES SUSPEND DO?**

Suspend is specific to each program, while pause affects all programs.

**HOW CAN I FAST FORWARD THROUGH ONE OR MORE GROUPS?**

In the adjust mode, when the program is running, select the group number and use the + and - buttons to change the position in the program. Press enter to execute.

**CAN I MANUALLY CONTROL VALVES FROM THE TD200?**

Yes.

**HOW DO I GET PROGRAMS TO REPEAT OR RUN MULTIPLE TIMES?**

Turn the dial to the ADJUST mode and select the program then set the number of cycles to any number from 1 to 50, or to continuous (+++).

**THE FOLLOWING PERTAINS TO TD200 POWER**

The following are answers about power loss to the TD200 controller.

**INTERRUPTION? WHAT HAPPENS TO VALVES WHEN THE POWER GOES OFF TO THE TD200 WHILE IRRIGATING?**

The valves stay in the same state (remain either open or closed). The TWIGs are awake for a while then gradually go to sleep.

**WHAT HAPPENS WHEN POWER GOES OFF TO THE TD200 BUT IS LATER RESTORED?**

The valves stay in the same state they were in as long as the power is off. When power is restored the program operation will resume at the same point that power was lost. Only programs running at the time the controller power went off will resume.

**IS IT ESSENTIAL THAT THE TD200 CONTROLLER HAVE POWER ON BEFORE TURNING ON THE TWIGS?**

No. However; it is helpful to turn the TD200 on first so that when the TWIGs are turned on they can find the network. The TWIGs search for any available networks. When the TD200 is turned on the network can be joined.

**DURING INITIAL SETUP, IF THE TD200 POWER IS OFF THEN WHAT DO THE TWIGS DO?**

The TWIGs search for available networks. This will drain the batteries.

**WHAT HAPPENS TO WATERING PROGRAMS WHEN POWER IS RESTORED TO THE TD200 CONTROLLER?**

The running programs are resumed keeping the same time remaining to finish the programs as was remaining before the power was lost.

**WHAT HAPPENS REGARDING SCHEDULED PROGRAMS IF THE POWER GOES OFF TO THE TD200 CONTROLLER?**

Power must be on at the actual time the scheduled program is to begin. If the time is past when power is restored then the scheduled program will miss any starts that were scheduled while the power was off.

**DOES THE TD200 NEED TO BE GROUNDED?**

Yes.



## (Valve Control) FAQ

### QUESTIONS

**WHAT IS THE PURPOSE OF THE NELSON WIRELESS TWIG?**

**HOW LONG WILL THE TWIG BATTERIES LAST?**

**WHAT KIND OF BATTERIES DOES THE TWIG USE?**

**WHAT IS THE FURTHEST DISTANCE BETWEEN THE TWIGS AND THE TD200?**

**WHAT KIND OF ANTENNA DOES THE TWIG USE?**

**WHY DOES NELSON OFFER AN OPTIONAL TWIG EXTERNAL ANTENNA?**

**WHAT IS THE RANGE DIFFERENCE BETWEEN THE LARGE AND THE SMALL EXTERNAL ANTENNAS?**

**WHEN THERE ARE SEVERAL TD200 CONTROLLERS IN THE AREA HOW DO I DECIDE WHICH TO JOIN?**

**HOW DO I KNOW IF A TWIG IS IN A NETWORK?**

**CAN I MANUALLY SWITCH A SOLENOID ON?**

### ANSWERS

The TWIG is the radio switch for solenoid operated valves in the field. TWIGs enable two-way communication from the valves to the TD200 controller.

The batteries will last one season. The TWIGs reads the actual battery strength. The batteries should be replaced when voltage drops below 2.4 VDC.

Off the shelf normal D-cell batteries. Rechargeable batteries are not recommended.

Communication range approaches about 1 mile. Field environment and obstructions will reduce the distance. Line-of-sight is generally required to have a reliable system. Refer to Section 7 in the User Guide for details.

Two internal diversity antennas in the TWIG box give better reception resulting in superior communication reliability.

The TWIG external antenna option is recommended for locations that require a high antenna to get good signal and where it is necessary to have easy access to the TWIG box.

The large antenna is for normal operation. The small Di-pole antenna is for very short range.

You choose the network to join by selecting the factory assigned TD200 "network ID" you want. The TWIG will find and scroll through all available TD200 numbers in the area. Make sure the controller you want the TWIG to join is turned on.

The small light on the front panel will blink every 20 seconds to show the TWIG is communicating. The TD200 will also show it.

Yes. The TWIG can switch the solenoid on and a few seconds later it goes off. The purpose is to test that it works.



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## QUESTIONS

**WHAT IS THE PURPOSE OF THE REPEATER?**

**WHEN SHOULD I CONSIDER USING A REPEATER?**

**WHAT POWER SOURCE IS NEEDED FOR REPEATERS?**

**WHY DO REPEATERS TAKE MORE BATTERY POWER THAN NORMAL TWIGS?**

**CAN A REPEATER BE ADDED AT ANYTIME, ANYWHERE AND HOW MANY CAN BE USED?**

**WHAT IF A REPEATER IS PUT INTO THE NETWORK AND IT WASN'T NEEDED? WILL IT HURT ANYTHING?**

## Repeater FAQ

### ANSWERS

The repeater greatly expands the network capability by increasing the distance potential and by bridging obstacles that might otherwise block communication.

If the TWIG signal shows two bars or less at the TWIG then use a repeater to get better reception. An actual signal number of 20 or lower could need a repeater.

You can choose 110 VAC electricity if it is available or use 12 VDC battery power including a solar charging system.

Repeaters work harder.

Yes. Repeaters are self organizing. A total of 9 repeaters can be used for each TD200. Long repeating radio hops or a chain of repeaters is not recommended. See User Guide Section 7 for details.

Repeaters assist moving the radio signals. If a repeater is not needed it will not play a part. It will not hurt anything to have it there.



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## QUESTIONS

### WHAT ARE TWIG CONTACTS?

### WHAT ARE THE TWIG CONTACTS USED FOR?

### WHAT IS REQUIRED FOR POWER AND BATTERIES FOR THE TWIG CONTACT?

### WHAT IS THE LIMIT OF CURRENT THROUGH THE CONTACTS?

## Contact FAQ

## ANSWERS

Radio controlled contacts. Four independent latch contacts are in the box.

The contacts can be set up to turn various devices on and off.

Two D-cell batteries are preferred. The 12 VDC will also work.

The contacts have a maximum current of 1 Amp



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