



TWICE™ Layout & Wiring Specifications
Two-wire System for New Installations

TWICE™
Two Wire Integrated Communication Exchange

The Rain Master *Decoder* connected to a two-wire path activates valves over long distances. The *TWICE* systems simplify installations, reduce initial wiring expense and reduce ongoing wire maintenance. Expanding a two-wire system is simple and inexpensive. When Decoders are connected via the two-wire path to a Rain Master Controller the *TWICE* module continually monitors the two-wire path.

How it Works:

- Polyethylene double-jacketed or UF-B UL PVC double-jacketed two-conductor solid core designed for direct burial is installed between the Rain Master Controller and valve boxes. (#TW-CAB-14)
- A device called a Decoder is installed at each valve box to activate the valves. Each Decoder has a unique serial number and address which identifies it to the *TWICE* System. (#TW-D-1, #TW-D-2 or #TW-D-4)
- The *TWICE* Module broadcasts a signal with a specific address code and command. The appropriate Decoder "decodes" the signal and responds activating the appropriate valve.

Layout Alternatives:

Straight line, star, looped and combination configurations are supported.

It is suggested that a continuous loop be laid out around the site. This usually follows the main water lines. The loop will start at the Controller, continue around the site and then return to the controller. This provides the best communication and power path for the system. This loop provides a redundant path for the power and signal allowing the system to continue operation if the loop is cut.

Branches can come off the main loop and they do not need to be looped back to the main trunk line. These branches can be other loops, stars or single dead-end lines. The system will work with most wiring configurations if the wire length requirements are met. Loops give the added protection against interruption of service when lines are cut and also provide better communications.

** Always be sure to adhere to Rain Master's recommended installation specifications for wire and lightning protection as well as the proper use and installation of Lightning Arrestors (every 600 ft.) within any *TWICE* system installation. (#LA-1)

(See proper *TWICE* installation specifications at Rain Master's website: www.rainmaster.com .)

Wiring Type:

Polyethylene double-jacketed or UF-B UL PVC double-jacketed two-conductor solid core designed for direct burial with insulation 3/16 inch (.060") thick, high density, sunlight resistant incased in an outer jacket of Polyethylene or PVC conforming to ICEA S-GL-402 or NEMA WC5, having a minimum wall thickness of .045 inches. (#TW-CAB-14)

All wire insulation shall be intact and free of nicks and cuts. (Two-wire Polyethylene "twisted" cable does **NOT** conform to these specifications.)

NOTE: Single strand 14 Gauge PVC irrigation wire has **NOT** proven to be reliable. The PVC insulation isolation is soft and easily damaged. Any break or nick in the insulation, no matter how small, will eventually cause the wire to fail. All wire insulation shall be intact and free of nicks and cuts.

ALL wire connections need to be **ABSOLUTELY** water tight.

Wiring Sizes:

Standard wire lengths for straight line installation i.e. wire distance to the furthest device without any loop: (Wire size chart is provided for reference only, #14Ga wire or larger is always recommended as specified above.)

Wire Size (gauge)	#14	#12
Total Loop Wire Length (ft)	10,000	14,800
Distance to furthest valve	5,000	7,400

Attaching Rain Master Decoders:

- Twist wires to provide a solid mechanical connection before securing the attachment by adding the wire nut.
- TW-SPLICE-14 or equal (SureSplice™) gel filled connectors (or similar) shall be used on all connections.
- Grease filled wire nuts are **NOT** acceptable.
- It is also helpful to test all connections before immersing the wire nut in the gel-filled cap.
- Adhere to all local and national building and electrical codes.