Paige® irrigation WIRES & CABLES

INSTALLATION TIPS FOR WIRE & CABLE

Wire and cable burial depth is dictated by the National Electrical Code®. Temperature changes cause wires and cables to expand and contract as much as 1% of the length. And high voltage power lines create large electro-magnetic fields that cause interference and corrupt signals in communication lines. It is therefore necessary to take certain precautions when installing these products.

Wires and cables carrying up to 30 volts should be installed at a minimum burial depth of 6". If mechanical equipment, such as aerifiers and shovels, is expected to disturb the area, then the wires and cables should be installed at a minimum depth of 12". For wires and cables carrying more than 30 volts and less than 600 volts, the minimum burial should be 24".

For irrigation controller output cables carrying more than 30 volts, where the controller is listed as a "Power Limited Power Source" (Class 2 or Class 3), the burial depth is elective, although a minimum of 12" is recommended.

When installing wires and cables in a trench, they must be "snaked" so that some slack is created. At points along the trench where there are sharp bends, a loop of 12" to 24" shall be created to allow shrinkage. When communication cables are in the same trench as power wires, there shall be a minimum separation between them of 12".

POWER WIRES for 120 VAC or 240 VAC Single Phase power sources to irrigation controllers (choose one of the following):

SINGLE CONDUCTORS, TYPE UF – This type of wire is a general purpose, direct burial, product that is widely used on all kinds of irrigation systems. Available from 14 AWG up to 1/0 AWG. See specification number P7001D for available colors and stripes. Detailed color code requirements are available from the American Society of Irrigation Consultants, ASIC Guideline 102-2004 (www.asic.org, "Design Guides".)

All branch circuit wires shall be type UF and sized according to the irrigation system plans. They are to be UL® listed for direct burial, and rated at 600 volts. The copper conductors shall be insulated with PVC and colored as follows:

120-volt system	
Hot	Black
Neutral	White
Equipment ground	Green

240-volt system	
Hot (Line 1)	Black
Hot (Line 2)	Red
Equipment ground	Green

Paige Electric Co., LP specification number P7001D (http://www.paigewire.com/specs/P7001D.htm)

SINGLE CONDUCTORS, TYPE THWN – This type of wire is used in applications where the end user requires a high degree of safety and it must be installed in conduit. Available from 14 AWG up to 1000MCM AWG. See specification number P7316 for available colors. Detailed color code requirements are available form the American Society of Irrigation Consultants, ASIC Guideline 102-2004 (www.asic.org, "Design Guides".)

All branch circuit wires shall be type THWN and sized according to the irrigation system plans. These wires must be installed in conduit. The wires shall not occupy more than 40% of the cross-sectional area of the inner diameter of the conduit. They are to be UL® listed for in-conduit installations in wet applications, and rated at 600 volts. The copper conductors shall be insulated with PVC/Nylon and colored as follows:

120-volt system	
Hot	Black
Neutral	White
Equipment ground	Green

240-volt system	
Hot (Line 1)	Black
Hot (Line 2)	Red
Equipment ground	Green

Paige Electric Co., LP specification number P7316 (http://www.paigewire.com/specs/P7316.htm)

TYPE UF-B CABLE (120 VAC SYSTEMS ONLY) – This type of cable facilitates installation since the three conductors are installed within an outer jacket, which gives the cable more robust qualities. Available from 14 AWG/2c-with ground up to 6 AWG/ 2c-with ground.

All branch circuit power cables shall be type UF-B. They are to be UL® listed for direct burial, and rated at 600 volts. The cable shall include "three conductors". The inner copper conductors shall be insulated with high dielectric PVC and Nylon. The outer jacket will be gray PVC and is to be sunlight resistant. The inner conductors are colored black, white, and bare copper.

Paige Electric Co., LP specification number P7295D
(http://www.paigewire.com/specs/P7295D.htm)

CONTROL VALVE WIRES for 24 VAC (nominal) circuits (choose one of the following):

SINGLE CONDUCTORS, TYPE UF/TWU – This type of wire is a general purpose, direct burial, product that is widely used on all kinds of irrigation systems. Available from 14 AWG up to 1/0 AWG. See specification number P7001D for available colors and stripes.

Wires connecting the remote control valves to the irrigation controller shall be single conductors, type UF/TWU. Its construction incorporates a solid copper conductor and PVC insulation. The wires shall be listed for direct burial in irrigation systems and be rated at a minimum of 30 VAC. Wire sizes and colors are defined in the irrigation plans and other specifications.

Paige Electric Co., LP specification number P7001D (http://www.paigewire.com/specs/P7001D.htm)

Note: White wires (or white with different color stripes) should be used only as the "common". Green wire should not be used since this color is strictly reserved for the "equipment ground" of the power source. All other colors can be used as common or hot.

SINGLE CONDUCTORS, TYPE PE – This type of wire, listed as Golf Course Sprinkler wire, was specifically designed for the harsh conditions of landscape projects where chemicals such as fertilizers, herbicides, pesticides, and fungicides are frequently applied. This product is excellent for these applications. See specification number P7079D for available colors and stripes.

Wires connecting the remote control valves to the irrigation controller shall be single conductors, type PE. Its construction incorporates a solid copper conductor and polyethylene (PE) insulation. The wires shall be listed for direct burial in irrigation systems and be rated at a minimum of 30 VAC. Wire sizes and colors are defined in the irrigation plans and other specifications.

Paige Electric Co., LP specification number P7079D (http://www.paigewire.com/specs/P7079D.htm)

Note: White wires (or white with different color stripes) should be used only as the "common". Green wire should not be used since this color is strictly reserved for the "equipment ground" of the power source. All other colors can be used as common or hot.

"18-MULTI" – This direct burial cable is available with varying numbers of 18 AWG conductors, ranging from 2 to 25. It is used primarily in residential and small commercial irrigation projects.

The irrigation cable shall incorporate enough wires to accommodate all the valves it is designed to control, plus some spares for future expansion. For example, if the cable will activate 6 valves, then the number of wires needed is: 6 hot + 1 common + 2 spares = 9 wires. This cable would be called out as 18 AWG/9c. The construction shall include insulated solid copper conductors and an overall PE jacket. The cable shall be listed as Undergound Low Energy Circuit Cable.

Paige Electric Co., LP specification number P7183D (http://www.paigewire.com/specs/P7183D.htm)

COMMUNICATION CABLES (choose one of the following):

Compatible with **Toro SYSTEMS** – Typically uses a 16 AWG/1-pair cable. It is available as shielded or shielded/armored. The latter is rodent and lightning resistant. (Chose one of the following):

SHIELDED – The communication cable shall be 16 AWG/1-pair. The construction shall include tin coated copper conductors, an aluminum shield to prevent cross-talk, a drain wire for grounding the cable, and an overall PE jacket. The cable shall be listed for direct burial.

Paige Electric Co., LP specification number P7162D (http://www.paigewire.com/specs/P7162D.htm)

SHIELDED AND ARMORED - The communication cable shall be 16 AWG/1-pair. The construction shall include tin coated copper conductors, an aluminum shield to prevent cross-talk, a drain wire for grounding the cable, a stainless steel tape (also to be grounded) helically wrapped around the pair of wires, and an overall PVC jacket. The cable shall be listed for direct burial.

Paige Electric Co., LP specification number P7162D-A (http://www.paigewire.com/specs/P7162D-A.htm)

Compatible with **RAIN BIRD SYSTEMS** – Typically uses a 14 AWG/2c or 12 AWG/2c "Maxi" cable, or 19 AWG/multi-pair cable for "Maxicom" systems. Rain Bird allows MAXICOM cable to be any of the following types: PE-39, PE-54, or PE-89. See specification number P7072D for available outer jacket colors of Maxi cable.

MAXI SYSTEMS - The communication cable shall be 14 AWG/2c or 12 AWG/2c, as shown on the irrigation plans and specifications. The cable shall include two type UF/TWU wires with a PE outer jacket. The colors of the outer jacket shall be as called-for in the irrigation plans and specifications.

Paige Electric Co., LP specification number P7072D (http://www.paigewire.com/specs/P7072D.htm)

MAXICOM SYSTEMS - The communication cable shall be 19 AWG with a minimum of 3-pairs (or 6-pairs or 12-pairs, etc.) The cable construction shall be type PE-39 or PE-54 or PE-89. Paige Electric Co., LP specification number P7315D (for PE-39, & PE-54, or PE-89).

(http://www.paigewire.com/specs/P7073D.htm and http://www.paigewire.com/specs/P7315D.htm)

Compatible with **HUNTER SYSTEMS, WEATHER STATIONS, SENSORS, TELEPHONE LINES, ETC** – Typically use an 18 AWG/2-pair cable. It is available as shielded or shielded/armored. The latter is rodent and lightning resistant. (Choose one of the following):

SHIELDED – The communication cable shall be 18 AWG/2-pair. The construction shall include tin coated copper conductors, an aluminum shield to prevent cross-talk, a drain wire for grounding the cable, and an overall PE jacket. The cable shall be listed for direct burial.

Paige Electric Co., LP specification number P7171D (http://www.paigewire.com/specs/P7171D.htm)

SHIELDED AND ARMORED - The communication cable shall be 18 AWG/2-pair. The construction shall include tin coated copper conductors, an aluminum shield to prevent cross-talk, a drain wire for grounding the cable, a stainless steel tape (also to be grounded) helically wrapped around the pairs of wires, and an overall PVC jacket. The cable shall be listed for direct burial.

Paige Electric Co., LP specification number P7171D-A (http://www.paigewire.com/specs/P7171D-A.htm