# XC Hybrid Irrigation Controller Written Specifications

**Part 1 – General**

* 1. The controller shall be a full-featured residential/commercial product for the purpose of irrigation operation, management, and monitoring of control valves and sensors. The controller shall be of a fixed station design that is provided with a standard 6- or 12-station fixed output module. The controller shall be available in outdoor and indoor models for European and Australian applications.

**Part 2 – Controller Enclosures**

* 1. Controller shall be available in following the options:
1. Plastic wall-mount enclosure, 6-station fixed
2. The controller shall be Hunter Industries model XCH-600.
3. Pre-assembled controller shall have a height of 8⅝" (22 cm), width of 7" (18 cm), and depth of 3¾" (10 cm).
4. The controller shall be furnished in an outdoor, weather-resistant, wall-mount plastic enclosure, with a key lock.
5. The controller shall provide 6 stations.
6. All station outputs shall have MOV and copper induction coil surge suppression.
7. Outdoor cabinet is IP54 rated.
8. A 751CH key shall be mounted in the enclosure door for security.
	1. Two (2) keys shall be provided per each controller.
9. Plastic wall-mount enclosure, 12-station fixed
10. The controller shall be Hunter Industries model XCH-1200.
11. Pre-assembled controller shall have a height of 8⅝" (22 cm), width of 7" (18 cm), and depth of 3¾" (10 cm).
12. The controller shall be furnished in an outdoor, weather-resistant, wall-mount plastic enclosure, with a key lock.
13. The controller shall provide 12 stations.
14. All station outputs shall have MOV and copper induction coil surge suppression.
15. Outdoor cabinet is IP54 rated.
16. A 751CH key shall be mounted in the enclosure door for security.
	1. Two (2) keys shall be provided per each controller.
17. Stainless steel outdoor enclosure, 6-station fixed
18. The controller shall be Hunter Industries model XCH-600-SS.
19. Pre-assembled wall mount controller shall have a height of 9¾" (25 cm), width of 7⅜" (19 cm), and depth of 4¼" (11 cm).
20. The controller shall be furnished in an outdoor, weather-resistant, stainless steel enclosure, with a key lock.
21. The controller shall provide 6 stations.
22. All station outputs shall have MOV and copper induction coil surge suppression.
23. Outdoor cabinet is IP44 rated.
24. A 751CH key shall be mounted in the enclosure door for security.
	1. Two (2) keys shall be provided per each controller.
25. Stainless steel outdoor enclosure, 12-station fixed
26. The controller shall be Hunter Industries model XCH-1200-SS.
27. Pre-assembled wall mount controller shall have a height of 9¾" (25 cm), width of 7⅜" (19 cm), and depth of 4¼" (11 cm).
28. The controller shall be furnished in an outdoor, weather-resistant, stainless steel enclosure, with a key lock.
29. The controller shall provide 12 stations.
30. All station outputs shall have MOV and copper induction coil surge suppression.
31. Outdoor cabinet is IP44 rated.
32. A 751CH key shall be mounted in the enclosure door for security.
	1. Two (2) keys shall be provided per each controller.
33. Stainless steel outdoor enclosure, solar, 6-station fixed
34. The controller shall be Hunter Industries model XCH-600-SSP.
35. Pre-assembled wall mount controller shall have a height of 10¾" (27 cm), width of 7⅜" (19 cm), and depth of 4¼" (11 cm).
36. The controller shall be furnished in an outdoor, weather-resistant, stainless steel enclosure, with a key lock.
37. The controller shall provide 6 stations.
38. All station outputs shall have MOV and copper induction coil surge suppression.
39. Outdoor cabinet is IP44 rated.
40. A 751CH key shall be mounted in the enclosure door for security.
	1. Two (2) keys shall be provided per each controller.
41. Stainless steel outdoor enclosure, solar, 12-station fixed
42. The controller shall be Hunter Industries model XCH-1200-SSP.
43. Pre-assembled wall mount controller shall have a height of 10¾" (27 cm), width of 7⅜" (19 cm), and depth of 4¼" (11 cm).
44. The controller shall be furnished in an outdoor, weather-resistant, stainless steel enclosure, with a key lock.
45. The controller shall provide 12 stations.
46. All station outputs shall have MOV and copper induction coil surge suppression.
47. Outdoor cabinet is IP44 rated.
48. A 751CH key shall be mounted in the enclosure door for security.
	1. Two (2) keys shall be provided per each controller.
	2. Warranty
49. The controller shall be installed in accordance with the manufacturer’s published instructions. The controller shall carry a conditional 2-year exchange warranty. The automatic controller(s) shall be the XC Hybrid series controller as manufactured for Hunter Industries Incorporated, San Marcos, California.

**Part 3 – Controller Hardware**

* 1. Control display
1. Display shall be 1.9" (4.9 cm) diagonal LCD.
2. All programming shall be accomplished by use of a programming dial and selection buttons with user feedback provided by an LCD display.
	1. Control panel
3. The controller shall be equipped with non-volatile memory that retains current time, date, and program data.
	1. Controller power
4. Each station output shall supply 11 VDC with a capacity of up to 1.5 mA.
5. Plastic models will use 6 AA (1.5 V) batteries.
6. Stainless steel models will use 6 C (1.5 V) batteries.
7. Stainless steel solar models will use 1800 mAh charging cell.
8. Optional wall plug-in adapter
	1. Depending on requirements, input shall be 120 VAC, 60 Hz, 35W or 240 VAC, 50 Hz.
	2. Output shall be 24 VAC, 1000 mA.
9. When using either power source, any valves attached to the controller shall have only DC-latching solenoids (P/N 458000).
	1. Controller surge protection
10. The controller shall have a metal oxide varistors (MOV) on the power input portion to help protect the micro-circuitry from power surges.
	1. Sensor inputs

A. The controller shall be compatible with an external weather sensor that can change seasonal adjustment automatically, based on local weather conditions, for maximum water savings. The external weather sensor shall include rain and freeze shutoff functions.

1. The external weather sensor shall be Hunter Industries model Mini-Clik®.
2. The sensor input shall also be compatible with standard normally closed rain or other sensors for shutdown purposes.
	1. P/MV outputs
3. The controller shall have one built-in P/MV (11 VDC) output with a capacity of up to 1.5 mA.
	1. Common wire
4. A common wire terminal is provided on the controller’s power module, and additional commons are provided on each station output module.

**Part 4 – Programming and Operational Software**

4.1 Programming

1. The controller shall have 3 independent programs with unique day schedules, start times, and station run times.
2. Each program shall offer up to 4 start times.
3. The controller programs shall have 4 weekly schedule options to choose from:
4. 7-day calendar
5. Up to 31-day interval calendar
6. Odd-day programming and even-day programming
7. It shall also have a 365-day calendar clock to accommodate true odd-even watering
8. Each station shall be programmable in minutes of run time, from 1 minute to 4 hours.
9. The controller shall be equipped with programmable Non-Water Days to prevent watering on selected days of the week.
10. Each program may be assigned a programmable delay between stations, to allow for slow-closing valves or pressure recharging.
11. Delays between stations shall be programmable in 20-second increments up to 4 hours.
12. A pump start/master valve circuit shall be included and shall be programmable by station.
13. The controller shall be equipped with a rain sensor bypass switch that allows the user to override a sensor that has suspended watering.
14. The controller shall allow the sensor input to be programmed by station, to exempt specified stations from sensor shutdowns.
15. Program backup shall be provided by a non-volatile memory circuit that will hold the program data indefinitely.

4.2 Software

1. The controller shall have manual Seasonal Adjust settings of 10% to 150%.
2. The controller shall be capable of determining and displaying the total run time input for each program.
	* + 1. It shall have the capability to store a program in backup memory for easy retrieval, and shall also have a test program for quick system checks.
3. The controller shall allow Easy Retrieve® backup of all programming and configuration to preserve the original configuration, which may be restored at any time.

**Part 5 – Optional Mounting**

* 1. The controller shall be capable of mounting to on a pole in lieu of walls or flat surfaces (P/N XCHSPOLE).

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