

# UTC12 Controller – Instruction Manual

## 204CH/UTC12

### Key Features:

- Universal Power Supply enables operation at 24-265V AC, 50-60 Hz
- IP66-Rated waterproof, suitable for outdoor use
- Each channel can supply up to 5 amps of current
- Fade control can slow down transitions to make LED lighting look more incandescent
- 63 Selectable patterns including:
  - Chases – Forwards, Back/Forth, Progressive, Wipe, Spell
  - Candle Flame (Effect Per Channel) and Fire (Multi Channel Fire)
  - Random Pattern – Changes itself automatically
  - Manual Dimmer and Crossfade functions
  - 2 User Programmable Custom Patterns
- No reboot required unlike competing controllers – Switch changes take effect immediately
- Custom Pattern Support: 2 User-Programmable custom patterns of up to 200 steps
- Digital Timing Control from Mains: Multiple controllers that have the same speed setting and are powered on together will stay synchronized.
  - With custom patterns you can gang controllers together to control installations *of any size*.

### Applications:

- Chasing Belt Light
- Signs and Displays
- Amusement and Carnival
- Custom Channel Jobs and Fixtures
- Outdoor and Weatherproof installations

# Installation and Wiring Instructions

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## Installation Guidelines:

- To maintain weather resistance in outdoor installations, the ends of the cables exiting the controller must be protected from moisture. Otherwise, water can wick into the cables and damage the controller.
- The controllers' outputs will be damaged if overloaded or short circuited. A fast-acting fuse in series with each output is highly recommended. Choose the smallest fuse suitable for your application. The outputs are rated at 5 amps each.
- Test your lights for short circuits before connecting them to the controller. Shorted bulbs or sockets will damage the controller.
- The combined current for all outputs must not exceed 40 amps. The circuit powering the controller must be fused or breaker protected to no more than 40 amps.
- The controller will get hot under heavy and sustained loads. If the average combined current will exceed 25 amps, we recommend installing a fan to cool the controller. If the controller overheats, it will shut down until it cools off.

## Powering The Controller:

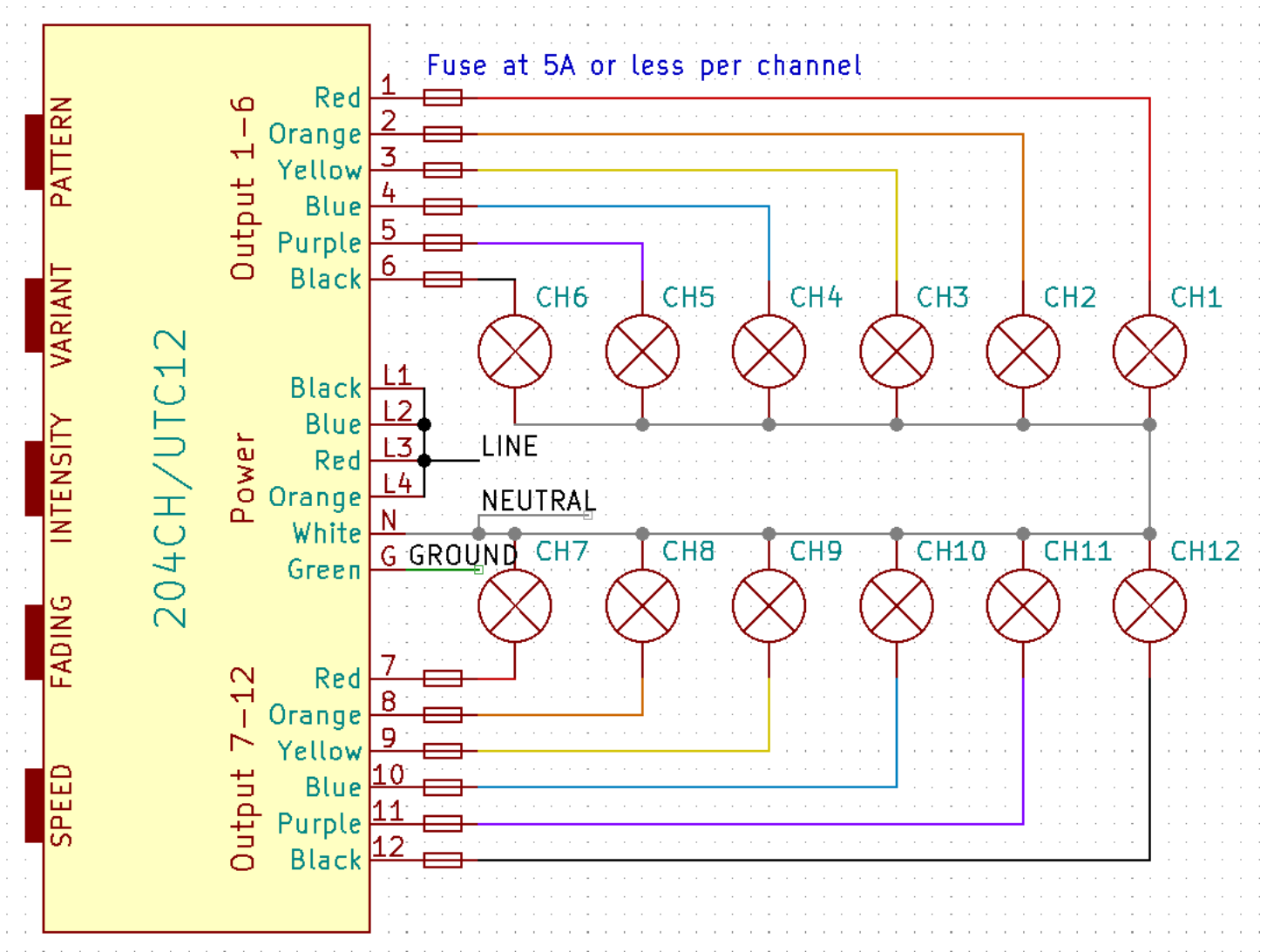
- The controller is powered through the cable labeled *Power* (on back)
- Connect these wires to an AC mains circuit to supply power.
- In the Power cable, the Green wire is Ground and the White wire is Neutral. All other wires (Black, Blue, Red, Orange) are Hot.
- To get the full 40A rating, you must connect all 4 Hot wires. Each wire is rated for 10A.

## Connecting The Outputs:

- The channels of your lighting should be connected to the 6-wire cables labeled *Output 1-6* and *Output 7-12*.
- *Red = CH1, Orange = CH2, Yellow = CH3, Blue = CH4, Purple = CH5, Black = CH6*
- Output wire -> Fuse -> Load (Lights) -> Neutral

# Wiring Diagram

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The controller must be installed in compliance with all applicable electrical codes.

# Pattern Table

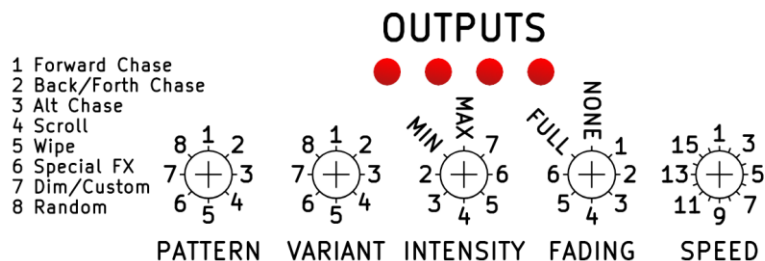
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| Switch Positions |         |                                                                                                                            |
|------------------|---------|----------------------------------------------------------------------------------------------------------------------------|
| Pattern          | Variant | Pattern Description                                                                                                        |
| Forward Chase    | 1-8     | Forwards Chase<br>Variant selects the number of channels lit simultaneously                                                |
| Back/<br>Forth   | 1-8     | Back-N-Forth Chase<br>Variant selects the number of channels lit simultaneously                                            |
| Alt Chase        | 1-3     | Forwards chase with 9-11 channels lit simultaneously                                                                       |
|                  | 4-6     | Back-N-Forth chase with 9-11 channels lit simultaneously                                                                   |
|                  | 7       | Progressive Forwards Chase<br>1 channel lit, then 2, then 3... until all channels lit, then resets                         |
|                  | 8       | Progressive Back-N-Forth Chase<br>1 channel lit, then 2, then 3... until all channels lit, then resets                     |
| Scroll           | 1       | Scrolling pattern with 1 on, 2 off                                                                                         |
|                  | 2       | Scrolling pattern with 2 on, 1 off                                                                                         |
|                  | 3       | Scrolling pattern with 1 on, 3 off                                                                                         |
|                  | 4       | Scrolling pattern with 2 on, 2 off                                                                                         |
|                  | 5       | Scrolling pattern with 3 on, 1 off                                                                                         |
|                  | 6       | Scrolling pattern with 1 on, 4 off                                                                                         |
|                  | 7       | Scrolling pattern with 2 on, 3 off                                                                                         |
|                  | 8       | Scintillating Pattern (Controllers purchased after Mar 20, 2025)<br>Scrolling pattern with 3 on, 2 off (older controllers) |
| Wipe             | 1       | Fill Up: Each channel turns on, then they all turn off                                                                     |
|                  | 2       | Fill Up, then flash 1x                                                                                                     |
|                  | 3       | Spell Up, then flash 1x (think "open" sign)                                                                                |
|                  | 4       | Spell Up, then flash 2x                                                                                                    |
|                  | 5       | Alternate odd and even                                                                                                     |
|                  | 6       | Alternate odd, off, even, off                                                                                              |
|                  | 7       | Wipe On, Wipe off:<br>Each channel turns on, then each channel turns off                                                   |
|                  | 8       | Wipe On, Reverse off:<br>Each channel turns on, then each turns off in reverse order                                       |

| Switch Positions |         | <i>Continued from Previous Page</i>                                                                                                                                                                       |
|------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pattern          | Variant | Pattern Description                                                                                                                                                                                       |
| Special FX       | 1       | Twinkle: Each channel turns on randomly, then fades out.                                                                                                                                                  |
|                  | 2       | Candle Flames: Each channel flickers with a realistic flame effect.                                                                                                                                       |
|                  | 3       | Sequential Fire: A fire effect across all channels. The base of the flame is channel 1                                                                                                                    |
|                  | 4       | Sequential Fire, Coarse: Flame pulses are larger but less frequent                                                                                                                                        |
|                  | 5       | Sequential Fire, Half and Half: Two independent sequential fire effects, each on half the channels                                                                                                        |
|                  | 6       | Sequential Fire, Half and Half, Coarse                                                                                                                                                                    |
|                  | 7       | Random Point Fill/Empty: One channel randomly turns on, followed by its neighbors, until all channels are on. Then one channel randomly turns off, followed by its neighbors, until all channels are off. |
|                  | 8       | Random Point Fill/Empty, Circular: Same as above but the first and last channel are considered neighbors.                                                                                                 |
| Dim/<br>Custom   | 1       | Single Channel Dimmer, All channels together                                                                                                                                                              |
|                  | 2       | Every Other Crossfade                                                                                                                                                                                     |
|                  | 3       | Every Two Crossfade                                                                                                                                                                                       |
|                  | 4       | Every Three Crossfade                                                                                                                                                                                     |
|                  | 5       | First Half / Second Half Crossfade                                                                                                                                                                        |
|                  | 6       | Strobe all channels                                                                                                                                                                                       |
|                  | 7       | User Programmable Custom Pattern #1                                                                                                                                                                       |
|                  | 8       | User Programmable Custom Pattern #2                                                                                                                                                                       |
| Random           | 1       | Repeat each pattern once                                                                                                                                                                                  |
|                  | 2       | Repeat each pattern twice                                                                                                                                                                                 |
|                  | 3       | Repeat each pattern three times                                                                                                                                                                           |
|                  | 4       | New pattern every 1 minute                                                                                                                                                                                |
|                  | 5       | New pattern every 2 minutes                                                                                                                                                                               |
|                  | 6       | New pattern every 5 minutes                                                                                                                                                                               |
|                  | 7       | New pattern every 10 minutes                                                                                                                                                                              |
|                  | 8       | Slave Mode for daisy chaining, requires installation of add-on package. Call for quote.                                                                                                                   |

# Pattern Selection

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The Output Indicators show the states of the controller's output channels.

The 5 switches (*Pattern*, *Variant*, *Intensity*, *Fading*, and *Speed*) are used to configure the controller for various modes of operation.

## ➤ *Pattern*

- *Forward Chase*: Forward pattern with 1-8 channels lit at once
- *Back/Forth Chase*: Chasing pattern that alternates forwards and backwards
- *Alt Chase*: Forwards/Alternating chasing patterns for 9-11 channels plus a forward and alternating progressive chase (1, then 2, then 3...)
- *Scroll*: Various scrolling patterns that scroll across the channels
- *Wipe*: Various fills and wipes
- *Special FX*: Special effects such as twinkle, candle flames, and chasing fire
- *Dim/Custom*: 5 dimmer effects and 2 user-programmable patterns
- *Random*: Changes the pattern randomly at a user-selectable interval

## ➤ *Variant*

- The *variant* switch is used to configure the selected pattern.
- For example, with the *Forward Chase* pattern, the *variant* switch selects the number of channels lit at once.

## ➤ *Intensity*

- This switch controls the brightness of the channels.
- For special effects patterns, this switch controls the intensity of the special effect.

## ➤ *Fading*

- This switch controls how much to fade between steps of the pattern.
- This switch is often used to make dimmable LED lighting turn on and off more slowly, giving it more of an incandescent vibe.
- When set to "None", the controller abruptly switches the channels on and off.

- When set to “Full”, the controller crossfades smoothly between different steps of the pattern.

➤ *Speed*

- This switch controls how fast the pattern runs.
- There are 16 different speeds, ranging from 4.25 seconds per step to 60 steps per second.
- The controller controls the timing of the pattern by counting pulses from the AC mains. It does not use an internal timer.
- If two controllers have the same speed setting and are powered on together, *they will stay in sync forever until powered off.*



# Programming the Channel Count

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The front panel switches can be used to set the number of channels and program custom patterns. To prevent accidentally entering programming mode, the switches must be set in the proper sequence.

- Set all 5 switches to the straight up position.
- Set the *intensity* switch to the value you want to program
  - *Max: Channel Count (Number of Outputs)*
  - 7: Custom Pattern 1
  - 6: Custom Pattern 2
- Set the *pattern* switch to *Random* (one click counterclockwise)
- Set the *variant* switch to 8 (one click counterclockwise)
- Set the *intensity* switch to *MIN*. The controller will flash all channels once and enter programming mode.

## Programming the Channel Count:

- Use the *Speed* switch to set the number of output channels. The UTC12 controller can control 2-12 circuits.
- The enabled output channels will turn on and the corresponding indicators will light.
- To save and exit, change the value of any other switch.

# Programming Custom Patterns

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To program a custom pattern:

- Instructions for entering the custom pattern programming mode are on the previous page.
- Use the *Speed* switch to navigate through the pattern. The pattern starts at the first step. Clockwise goes forwards, counterclockwise goes backwards.
- Each of the other four switches controls a group of 3 channels. Rotate the switch to cycle through the 8 possible states.
  - *Pattern* switch = Channels 1-3
  - *Variant* switch = Channels 4-6
  - *Intensity* switch = Channels 7-9
  - *Fading* switch = Channels 10-12
- You can use the *speed* switch to preview what the pattern will look like, going back and forth and fixing any mistakes.
- The custom pattern allows you to set up to 200 steps.
- Saving the custom pattern
  - Navigate to the last step of the custom pattern using the *speed* switch.
  - Move the *speed* switch *back one click, then forwards one click*. Repeat the back-forwards action two more times.
  - The controller will save the custom pattern to its internal memory, flash all channels twice, then exit programming mode.
- Exiting without saving
  - Navigate to the first step of the custom pattern using the *speed* switch.
  - Keep turning the speed switch counterclockwise. 16 steps backwards (1 full turn) will exit programming mode.
  - If the controller loses power or is unplugged during programming, the pattern will not be saved.

To use your newly programmed custom pattern, set the *Pattern* switch to *Dim/Custom* and the *Variant* switch to 7 or 8.

# Troubleshooting

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| Problem                                                      | Cause                                                   | Solution                                                                        |
|--------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------|
| Controller does not power on                                 | Controller wired incorrectly                            | Ensure the HOT and NEUTRAL wires are connected to an AC power source            |
|                                                              | Controller defective or damaged from power surge        | Contact Action Lighting                                                         |
| Indicator light illuminates, output channel stuck off        | Controller wired incorrectly                            | Ensure the output lighting is connected between the output and the NEUTRAL wire |
|                                                              | Output Triac failed due to a short circuit              | Contact Action Lighting                                                         |
| Output channel stuck on regardless of indicator light status | Output Triac failed due to an overload or short circuit | Contact Action Lighting                                                         |

Warranty Notice: These controllers come with a one-year warranty against manufacturing defects. If your controller is still under warranty, please note that damage to the controller due to user disassembly is not covered under warranty. To maintain your warranty, we recommend returning your controller to Action Lighting if it fails during the warranty period.