# ETC Reference Guide

## High End Systems Zeo DMX Channel Map

## Zeo DMX Channel Map

Software Versions 1.2.7 and Later

| Standard Protocol | | | | | |
|---|---|---|---|---|---|
| Channel | Function | Channel | Function | Channel | Function |
| 1 | Pan Coarse | 18 | Fan Speed | 35 | LED 2 Dimmer Fine |
| 2 | Pan Fine | 19 | Control | 36 | LED 3 Red |
| 3 | Tilt Coarse | 20 | LED 1 Red | 37 | LED 3 Green |
| 4 | Tilt Fine | 21 | LED 1 Green | 38 | LED 3 Blue |
| 5 | Color Mode | 22 | LED 1 Blue | 39 | LED 3 White |
| 6 | Zoom Coarse | 23 | LED 1 White | 40 | LED 3 CT |
| 7 | Zoom Fine | 24 | LED 1 CT | 41 | LED 3 Function |
| 8 | Shutter/LED Function | 25 | LED 1 Function | 42 | LED 3 Dimmer Coarse |
| 9 | Shutter | 26 | LED 1 Dimmer Coarse | 43 | LED 3 Dimmer Fine |
| 10 | Dimmer Coarse | 27 | LED 1 Dimmer Fine | 44 | LED 4 Red |
| 11 | Dimmer Fine | 28 | LED 2 Red | 45 | LED 4 Green |
| 12 | Background Color | 29 | LED 2 Green | 46 | LED 4 Blue |
| 13 | Inclusive Macros | 30 | LED 2 Blue | 47 | LED 4 White |
| 14 | Inclusive Macro Speed | 31 | LED 2 White | 48 | LED 4 CT |
| 15 | Inclusive Macro X fade | 32 | LED 2 CT | 49 | LED 4 Function |
| 16 | Inclusive Macro nShot | 33 | LED 2 Function | 50 | LED 4 Dimmer Coarse |
| 17 | mSpeed | 34 | LED 2 Dimmer Coarse | 51 | LED 4 Dimmer Fine |

| Reduced Protocol | | | |
|---|---|---|---|
| Channel | Function | Channel | Function |
| 1 | Pan Coarse | 13 | Shutter/LED Function |
| 2 | Pan Fine | 14 | Shutter |
| 3 | Tilt Coarse | 15 | Dimmer Coarse |
| 4 | Tilt Fine | 16 | Dimmer Fine |
| 5 | Color Mode | 17 | Background Color |
| 6 | Red | 18 | Inclusive Macros |
| 7 | Green | 19 | Inclusive Macro Speed |
| 8 | Blue | 20 | Inclusive Macro Xfade |
| 9 | White | 21 | Inclusive Macro nShot |
| 10 | CT | 22 | mSpeed |
| 11 | Zoom Coarse | 23 | Fan Speed |
| 12 | Zoom Fine | 24 | Control |

| Wash Protocol | |
|---|---|
| Channel | Function |
| 1 | Pan Coarse |
| 2 | Pan Fine |
| 3 | Tilt Coarse |
| 4 | Tilt Fine |
| 5 | Red |
| 6 | Green |
| 7 | Blue |
| 8 | White |
| 9 | CT |
| 10 | Zoom |
| 11 | Shutter/LED Function |
| 12 | Shutter |
| 13 | Dimmer Coarse |
| 14 | Dimmer Fine |
| 15 | Control |

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**2593M2400** Rev B Released 2025-03

# ETC Reference Guide

## Zeo DMX Channel Map

### Standard Protocol

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 1/2 | Pan (Coarse/Fine) | See note *9 on page 33* | 0 | 65535 | 0% | 100% | 00h | FFFFh | 32767 |
| 3/4 | Tilt (Coarse/Fine) | See note *9 on page 33* | 0 | 65535 | 0% | 100% | 00h | FFFFh | 32767 |
| 5 | Color Mode | RGB | 0 | 15 | 0% | 6% | 00h | 0Fh | 0 |
| | | RBG | 16 | 30 | 6% | 12% | 10h | 1Eh | |
| | | BRG | 31 | 45 | 12% | 18% | 1Fh | 2Dh | |
| | | BGR | 46 | 60 | 18% | 24% | 2Eh | 3Ch | |
| | | GRB | 61 | 75 | 24% | 29% | 3Dh | 4Bh | |
| | | GBR | 76 | 90 | 30% | 35% | 4Ch | 5Ah | |
| | | CMY | 91 | 105 | 36% | 41% | 5Bh | 69h | |
| | | CYM | 106 | 120 | 42% | 47% | 6Ah | 78h | |
| | | YCM | 121 | 135 | 47% | 53% | 79h | 87h | |
| | | YMC | 136 | 150 | 53% | 59% | 88h | 96h | |
| | | MCY | 151 | 165 | 59% | 65% | 97h | A5h | |
| | | MYC | 166 | 180 | 65% | 71% | A6h | B4h | |
| | | Cycle | 181 | 195 | 71% | 76% | B5h | C3h | |
| | | Random | 196 | 210 | 77% | 82% | C4h | D2h | |
| | | Reserved (see note *4 on page 32*) | 211 | 255 | 83% | 100% | D3h | FFh | |
| 6/7 | Zoom (Coarse/Fine) | Narrow to Wide | 0 | 65535 | 0% | 100% | 00h | FFFFh | 65535 |
| 8 | Shutter/ LED Functions | Normal Strobe Functions | 0 | 31 | 0% | 12% | 00h | 1Fh | 0 |
| | | Random Strobe | 32 | 63 | 13% | 25% | 20h | 3Fh | |
| | | Synchronous Random Strobe | 64 | 95 | 25% | 37% | 40h | 5Fh | |
| | | Reserved (see note *4 on page 32*) | 96 | 255 | 38% | 100% | 60h | FFh | |
| 9 | Shutter | Close | 0 | 23 | 0% | 9% | 00h | 17h | 255 |
| | | Strobe Rate (Slow to Fast) | 24 | 229 | 9% | 90% | 18h | E5h | |
| | | Open | 230 | 255 | 90% | 100% | E6h | FFh | |
| 10/11 | Dimmer (Coarse/Fine) | Off to Full | 0 | 65535 | 0% | 100% | 00h | FFFFh | 65535 |
| 12 | Background Color (see note *5 on page 32*) | Off | 0 | 1 | 0% | 0% | 00h | 01h | 0 |
| | | **Background Dim Tracking Mode** (see note *6 on page 32*) | | | | | | | |
| | | **Red Background Color** | | | | | | | |
| | | Red Background 3% | 2 | 3 | 1% | 1% | 02h | 03h | |
| | | Red Background 5% | 4 | 5 | 2% | 2% | 04h | 05h | |
| | | Red Background 6% | 6 | 7 | 2% | 3% | 06h | 07h | |
| | | Red Background 8% | 8 | 9 | 3% | 4% | 08h | 09h | |
| | | Red Background 10% | 10 | 11 | 4% | 4% | 0Ah | 0Bh | |
| | | Red Background 12% | 12 | 13 | 5% | 5% | 0Ch | 0Dh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 12 (continued) | Background Color (see note *5 on page 32*) | **Green Background Color** | | | | | | | 0 |
| | | Green Background 3% | 14 | 15 | 5% | 6% | 0Eh | 0Fh | |
| | | Green Background 5% | 16 | 17 | 6% | 7% | 10h | 11h | |
| | | Green Background 6% | 18 | 19 | 7% | 7% | 12h | 13h | |
| | | Green Background 8% | 20 | 21 | 8% | 8% | 14h | 15h | |
| | | Green Background 10% | 22 | 23 | 9% | 9% | 16h | 17h | |
| | | Green Background 12% | 24 | 25 | 9% | 10% | 18h | 19h | |
| | | **Blue Background Color** | | | | | | | |
| | | Blue Background 3% | 26 | 27 | 10% | 11% | 1Ah | 1Bh | |
| | | Blue Background 5% | 28 | 29 | 11% | 11% | 1Ch | 1Dh | |
| | | Blue Background 6% | 30 | 31 | 12% | 12% | 1Eh | 1Fh | |
| | | Blue Background 8% | 32 | 33 | 13% | 13% | 20h | 21h | |
| | | Blue Background 10% | 34 | 35 | 13% | 14% | 22h | 23h | |
| | | Blue Background 12% | 36 | 37 | 14% | 15% | 24h | 25h | |
| | | **Cyan Background Color** | | | | | | | |
| | | Cyan Background 3% | 38 | 39 | 15% | 15% | 26h | 27h | |
| | | Cyan Background 5% | 40 | 41 | 16% | 16% | 28h | 29h | |
| | | Cyan Background 6% | 42 | 43 | 16% | 17% | 2Ah | 2Bh | |
| | | Cyan Background 8% | 44 | 45 | 17% | 18% | 2Ch | 2Dh | |
| | | Cyan Background 10% | 46 | 47 | 18% | 18% | 2Eh | 2Fh | |
| | | Cyan Background 12% | 48 | 49 | 19% | 19% | 30h | 31h | |
| | | **Magenta Background Color** | | | | | | | |
| | | Magenta Background 3% | 50 | 51 | 20% | 20% | 32h | 33h | |
| | | Magenta Background 5% | 52 | 53 | 20% | 21% | 34h | 35h | |
| | | Magenta Background 6% | 54 | 55 | 21% | 22% | 36h | 37h | |
| | | Magenta Background 8% | 56 | 57 | 22% | 22% | 38h | 39h | |
| | | Magenta Background 10% | 58 | 59 | 23% | 23% | 3Ah | 3Bh | |
| | | Magenta Background 12% | 60 | 61 | 24% | 24% | 3Ch | 3Dh | |
| | | **Yellow Background Color** | | | | | | | |
| | | Yellow Background 3% | 62 | 63 | 24% | 25% | 3Eh | 3Fh | |
| | | Yellow Background 5% | 64 | 65 | 25% | 25% | 40h | 41h | |
| | | Yellow Background 6% | 66 | 67 | 26% | 26% | 42h | 43h | |
| | | Yellow Background 8% | 68 | 69 | 27% | 27% | 44h | 45h | |
| | | Yellow Background 10% | 70 | 71 | 27% | 28% | 46h | 47h | |
| | | Yellow Background 12% | 72 | 73 | 28% | 29% | 48h | 49h | |
| | | **White Background Color** (see note *7 on page 32*) | | | | | | | |
| | | White Background 3% | 74 | 75 | 29% | 29% | 4Ah | 4Bh | |
| | | White Background 5% | 76 | 77 | 30% | 30% | 4Ch | 4Dh | |
| | | White Background 6% | 78 | 79 | 31% | 31% | 4Eh | 4Fh | |
| | | White Background 8% | 80 | 81 | 31% | 32% | 50h | 51h | |
| | | White Background 10% | 82 | 83 | 32% | 33% | 52h | 53h | |
| | | White Background 12% | 84 | 85 | 33% | 33% | 54h | 55h | |
| | | Reserved (see note *4 on page 32*) | 86 | 127 | 34% | 50% | 56h | 7Fh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 12 (continued) | Background Color (see note *5 on page 32*) | **Independent Dim Mode** (see note *8 on page 32*) | | | | | | | |
| | | **Red Background Color** | | | | | | | |
| | | Red Background 3% | 128 | 129 | 50% | 51% | 80h | 81h | |
| | | Red Background 5% | 130 | 131 | 51% | 51% | 82h | 83h | |
| | | Red Background 6% | 132 | 133 | 52% | 52% | 84h | 85h | |
| | | Red Background 8% | 134 | 135 | 53% | 53% | 86h | 87h | |
| | | Red Background 10% | 136 | 137 | 53% | 54% | 88h | 89h | |
| | | Red Background 12% | 138 | 139 | 54% | 55% | 8Ah | 8Bh | |
| | | **Green Background Color** | | | | | | | |
| | | Green Background 3% | 140 | 141 | 55% | 55% | 8Ch | 8Dh | |
| | | Green Background 5% | 142 | 143 | 56% | 56% | 8Eh | 8Fh | |
| | | Green Background 6% | 144 | 145 | 56% | 57% | 90h | 91h | |
| | | Green Background 8% | 146 | 147 | 57% | 58% | 92h | 93h | |
| | | Green Background 10% | 148 | 149 | 58% | 58% | 94h | 95h | |
| | | Green Background 12% | 150 | 151 | 59% | 59% | 96h | 97h | |
| | | **Blue Background Color** | | | | | | | |
| | | Blue Background 3% | 152 | 153 | 60% | 60% | 98h | 99h | |
| | | Blue Background 5% | 154 | 155 | 60% | 61% | 9Ah | 9Bh | |
| | | Blue Background 6% | 156 | 157 | 61% | 62% | 9Ch | 9Dh | |
| | | Blue Background 8% | 158 | 159 | 62% | 62% | 9Eh | 9Fh | |
| | | Blue Background 10% | 160 | 161 | 63% | 63% | A0h | A1h | |
| | | Blue Background 12% | 162 | 163 | 64% | 64% | A2h | A3h | 0 |
| | | **Cyan Background Color** | | | | | | | |
| | | Cyan Background 3% | 164 | 165 | 64% | 65% | A4h | A5h | |
| | | Cyan Background 5% | 166 | 167 | 65% | 65% | A6h | A7h | |
| | | Cyan Background 6% | 168 | 169 | 66% | 66% | A8h | A9h | |
| | | Cyan Background 8% | 170 | 171 | 67% | 67% | AAh | ABh | |
| | | Cyan Background 10% | 172 | 173 | 67% | 68% | ACh | ADh | |
| | | Cyan Background 12% | 174 | 175 | 68% | 69% | AEh | AFh | |
| | | **Magenta Background Color** | | | | | | | |
| | | Magenta Background 3% | 176 | 177 | 69% | 69% | B0h | B1h | |
| | | Magenta Background 5% | 178 | 179 | 70% | 70% | B2h | B3h | |
| | | Magenta Background 6% | 180 | 181 | 71% | 71% | B4h | B5h | |
| | | Magenta Background 8% | 182 | 183 | 71% | 72% | B6h | B7h | |
| | | Magenta Background 10% | 184 | 185 | 72% | 73% | B8h | B9h | |
| | | Magenta Background 12% | 186 | 187 | 73% | 73% | BAh | BBh | |
| | | **Yellow Background Color** | | | | | | | |
| | | Yellow Background 3% | 188 | 189 | 74% | 74% | BCh | BDh | |
| | | Yellow Background 5% | 190 | 191 | 75% | 75% | BEh | BFh | |
| | | Yellow Background 6% | 192 | 193 | 75% | 76% | C0h | C1h | |
| | | Yellow Background 8% | 194 | 195 | 76% | 76% | C2h | C3h | |
| | | Yellow Background 10% | 196 | 197 | 77% | 77% | C4h | C5h | |
| | | Yellow Background 12% | 198 | 199 | 78% | 78% | C6h | C7h | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 12 (continued) | Background Color (see note *5 on page 32*) | **White Background Color** (see note *7 on page 32*) | | | | | | | |
| | | White Background 3% | 200 | 201 | 78% | 79% | C8h | C9h | 0 |
| | | White Background 5% | 202 | 203 | 79% | 80% | CAh | CBh | |
| | | White Background 6% | 204 | 205 | 80% | 80% | CCh | CDh | |
| | | White Background 8% | 206 | 207 | 81% | 81% | CEh | CFh | |
| | | White Background 10% | 208 | 209 | 82% | 82% | D0h | D1h | |
| | | White Background 12% | 210 | 211 | 82% | 83% | D2h | D3h | |
| | | Reserved (see note *4 on page 32*) | 212 | 255 | 83% | 100% | D4h | FFh | |
| 13 | Inclusive Macros (see note *1 on page 32*) | Macro Off | 0 | – | 0% | – | 00h | – | 0 |
| | | Macro 1 | 1 | – | 0% | – | 01h | – | |
| | | Macro 2 | 2 | – | 1% | – | 02h | – | |
| | | … | … | … | … | … | … | … | |
| | | Macro 127 | 127 | – | 50% | – | 7Fh | – | |
| | | Reserved (see note *4 on page 32*) | 128 | 255 | 50% | 100% | 80h | FFh | |
| 14 | Inclusive Macro Speed | Reverse Play Speed Fast to x1 | 0 | 62 | 0% | 24% | 00h | 3Eh | 192 |
| | | Reverse Play Speed x1 | 63 | – | 25% | – | 3Fh | – | |
| | | Reverse Play Speed x 1 to Slow | 64 | 126 | 25% | 49% | 40h | 7Eh | |
| | | Stop | 127 | 128 | 50% | 50% | 7Fh | 80h | |
| | | Forward Play Speed Slow to x1 | 129 | 191 | 51% | 75% | 81h | BFh | |
| | | Forward Play Speed x 1 | 192 | – | 75% | – | C0h | – | |
| | | Forward Play Speed x 1 to Fast | 193 | 255 | 76% | 100% | C1h | FFh | |
| 15 | Inclusive Macro X Fade | Stop | 0 | 0 | 0% | 0% | 00h | 00h | 128 |
| | | Zero (s) to Longest (0–100% of Speed Time) | 1 | 255 | 0% | 100% | 01h | FFh | |
| 16 | Inclusive Macro nShot (see note *10 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 255 |
| | | 1 Shot | 1 | 9 | 0% | 4% | 01h | 09h | |
| | | 2 Shot | 10 | 19 | 4% | 7% | 0Ah | 13h | |
| | | 3 Shot | 20 | 29 | 8% | 11% | 14h | 1Dh | |
| | | 4 Shot | 30 | 39 | 12% | 15% | 1Eh | 27h | |
| | | 5 Shot | 40 | 49 | 16% | 19% | 28h | 31h | |
| | | Reserved (see note *4 on page 32*) | 50 | 254 | 20% | 100% | 32h | FEh | |
| | | Continuous Run | 255 | 255 | 100% | 100% | FFh | FFh | |
| 17 | mSpeed | Off | 0 | 3 | 0% | 1% | 00h | 03h | 0 |
| | | Slow to Fast | 4 | 255 | 2% | 100% | 04h | FFh | |
| 18 | Fan Speed Control (see note *2 on page 32*) | Idle | 0 | 9 | 0% | 4% | 00h | 09h | 0 |
| | | Slow to Fast | 10 | 215 | 4% | 84% | 0Ah | D7h | |
| | | Auto | 216 | 225 | 85% | 88% | D8h | E1h | |
| | | Studio | 226 | 235 | 89% | 92% | E2h | EBh | |
| | | Reserved (see note *4 on page 32*) | 236 | 255 | 93% | 100% | ECh | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 19 | Control | **The Control channel should not be crossfaded. No hold time requirement for the following:** | | | | | | | 0 |
| | | Safe (Normal Operation) | 0 | 9 | 0% | 4% | 00h | 09h | |
| | | Reserved (see note *4 on page 32*) | 10 | 19 | 4% | 7% | 0Ah | 13h | |
| | | **Hold Time requirement for the following functions:** | | | | | | | |
| | | Display Off (3 s) | 20 | 29 | 8% | 11% | 14h | 1Dh | |
| | | Display On (3 s) | 30 | 39 | 12% | 15% | 1Eh | 27h | |
| | | Reserved (see note *4 on page 32*) | 40 | 49 | 16% | 19% | 28h | 31h | |
| | | Home All (3 s) | 50 | 59 | 20% | 23% | 32h | 3Bh | |
| | | Shutdown (9 s) | 60 | 69 | 24% | 27% | 3Ch | 45h | |
| | | Red Shift Off (3 s) | 70 | 79 | 27% | 31% | 46h | 4Fh | |
| | | Red Shift On (3 s) | 80 | 89 | 31% | 35% | 50h | 59h | |
| | | LED PWM 2.4kHz (3 s) | 90 | 99 | 35% | 39% | 5Ah | 63h | |
| | | LED PWM 16kHz (3 s) | 100 | 109 | 39% | 43% | 64h | 6Dh | |
| | | Reserved (see note *4 on page 32*) | 110 | 255 | 43% | 100% | 6Eh | FFh | |
| 20 | LED 1 Red (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **Cycle & Random Modes Controlled by Red Channel** | | | | | | | |
| | | Slow to Fast Rate | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 21 | LED 1 Green (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 22 | LED 1 Blue (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 23 | LED 1 White (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| 24 | LED 1 CT (see note *11 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | Warm to Cool | 1 | 255 | 0% | 100% | 01h | FFh | |
| 25 | LED 1 Function | **LED 1 Dim Tracking Mode** | | | | | | | 0 |
| | | Continuous | 0 | 15 | 0% | 6% | 00h | 0Fh | |
| | | Periodic Strobe (Slow to Fast) | 16 | 41 | 6% | 16% | 10h | 29h | |
| | | Random Strobe (Slow to Fast) | 42 | 67 | 16% | 26% | 2Ah | 43h | |
| | | Reserved (see note *4 on page 32*) | 68 | 127 | 27% | 50% | 44h | 7Fh | |
| | | **LED 1 Independent Dim Mode** | | | | | | | |
| | | Continuous | 128 | 143 | 50% | 56% | 80h | 8Fh | |
| | | Periodic Strobe (Slow to Fast) | 144 | 169 | 56% | 66% | 90h | A9h | |
| | | Random Strobe (Slow to Fast) | 170 | 195 | 67% | 76% | AAh | C3h | |
| | | Reserved (see note *4 on page 32*) | 196 | 255 | 77% | 100% | C4h | FFh | |
| 26/27 | LED 1 Dimmer (Coarse/Fine) | Off to Full | 0 | 255 | 0% | 100% | 00h | FFh | 255 |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 28 | LED 2 Red (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **Cycle & Random Modes Controlled by Red Channel** | | | | | | | |
| | | Slow to Fast Rate | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 29 | LED 2 Green (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 30 | LED 2 Blue (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 31 | LED 2 White (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| 32 | LED 2 CT (see note *11 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | Warm to Cool | 1 | 255 | 0% | 100% | 01h | FFh | |
| 33 | LED 2 Function | **LED 2 Dim Tracking Mode** | | | | | | | 0 |
| | | Continuous | 0 | 15 | 0% | 6% | 00h | 0Fh | |
| | | Periodic Strobe (Slow to Fast) | 16 | 41 | 6% | 16% | 10h | 29h | |
| | | Random Strobe (Slow to Fast) | 42 | 67 | 16% | 26% | 2Ah | 43h | |
| | | Reserved (see note *4 on page 32*) | 68 | 127 | 27% | 50% | 44h | 7Fh | |
| | | **LED 2 Independent Dim Mode** | | | | | | | |
| | | Continuous | 128 | 143 | 50% | 56% | 80h | 8Fh | |
| | | Periodic Strobe (Slow to Fast) | 144 | 169 | 56% | 66% | 90h | A9h | |
| | | Random Strobe (Slow to Fast) | 170 | 195 | 67% | 76% | AAh | C3h | |
| | | Reserved (see note *4 on page 32*) | 196 | 255 | 77% | 100% | C4h | FFh | |
| 34/35 | LED 2 Dimmer (Coarse/Fine) | Off to Full | 0 | 255 | 0% | 100% | 00h | FFh | 255 |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 36 | LED 3 Red (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **Cycle & Random Modes Controlled by Red Channel** | | | | | | | |
| | | Slow to Fast Rate | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 37 | LED 3 Green (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 38 | LED 3 Blue (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 39 | LED 3 White (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| 40 | LED 3 CT (see note *11 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | Warm to Cool | 1 | 255 | 0% | 100% | 01h | FFh | |
| 41 | LED 3 Function | **LED 3 Dim Tracking Mode** | | | | | | | 0 |
| | | Continuous | 0 | 15 | 0% | 6% | 00h | 0Fh | |
| | | Periodic Strobe (Slow to Fast) | 16 | 41 | 6% | 16% | 10h | 29h | |
| | | Random Strobe (Slow to Fast) | 42 | 67 | 16% | 26% | 2Ah | 43h | |
| | | Reserved (see note *4 on page 32*) | 68 | 127 | 27% | 50% | 44h | 7Fh | |
| | | **LED 3 Independent Dim Mode** | | | | | | | |
| | | Continuous | 128 | 143 | 50% | 56% | 80h | 8Fh | |
| | | Periodic Strobe (Slow to Fast) | 144 | 169 | 56% | 66% | 90h | A9h | |
| | | Random Strobe (Slow to Fast) | 170 | 195 | 67% | 76% | AAh | C3h | |
| | | Reserved (see note *4 on page 32*) | 196 | 255 | 77% | 100% | C4h | FFh | |
| 42/43 | LED 3 Dimmer (Coarse/Fine) | Off to Full | 0 | 255 | 0% | 100% | 00h | FFh | 255 |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 44 | LED 4 Red (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **Cycle & Random Modes Controlled by Red Channel** | | | | | | | |
| | | Slow to Fast Rate | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 45 | LED 4 Green (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 46 | LED 4 Blue (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 47 | LED 4 White (see note *3 on page 32*) | **RGB Control** | | | | | | | 255 |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| 48 | LED 4 CT (see note *11 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | Warm to Cool | 1 | 255 | 0% | 100% | 01h | FFh | |
| 49 | LED 4 Function | **LED 4 Dim Tracking Mode** | | | | | | | 0 |
| | | Continuous | 0 | 15 | 0% | 6% | 00h | 0Fh | |
| | | Periodic Strobe (Slow to Fast) | 16 | 41 | 6% | 16% | 10h | 29h | |
| | | Random Strobe (Slow to Fast) | 42 | 67 | 16% | 26% | 2Ah | 43h | |
| | | Reserved (see note *4 on page 32*) | 68 | 127 | 27% | 50% | 44h | 7Fh | |
| | | **LED 4 Independent Dim Mode** | | | | | | | |
| | | Continuous | 128 | 143 | 50% | 56% | 80h | 8Fh | |
| | | Periodic Strobe (Slow to Fast) | 144 | 169 | 56% | 66% | 90h | A9h | |
| | | Random Strobe (Slow to Fast) | 170 | 195 | 67% | 76% | AAh | C3h | |
| | | Reserved (see note *4 on page 32*) | 196 | 255 | 77% | 100% | C4h | FFh | |
| 50/51 | LED 4 Dimmer (Coarse/Fine) | Off to Full | 0 | 255 | 0% | 100% | 00h | FFh | 255 |

### Reduced Protocol

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 1/2 | Pan (Coarse/Fine) | See note *9 on page 33* | 0 | 65535 | 0% | 100% | 00h | FFFFh | 32767 |
| 3/4 | Tilt (Coarse/Fine) | See note *9 on page 33* | 0 | 65535 | 0% | 100% | 00h | FFFFh | 32767 |
| 5 | Color Mode | RGB | 0 | 15 | 0% | 6% | 00h | 0Fh | 0 |
| | | RBG | 16 | 30 | 6% | 12% | 10h | 1Eh | |
| | | BRG | 31 | 45 | 12% | 18% | 1Fh | 2Dh | |
| | | BGR | 46 | 60 | 18% | 24% | 2Eh | 3Ch | |
| | | GRB | 61 | 75 | 24% | 29% | 3Dh | 4Bh | |
| | | GBR | 76 | 90 | 30% | 35% | 4Ch | 5Ah | |
| | | CMY | 91 | 105 | 36% | 41% | 5Bh | 69h | |
| | | CYM | 106 | 120 | 42% | 47% | 6Ah | 78h | |
| | | YCM | 121 | 135 | 47% | 53% | 79h | 87h | |
| | | YMC | 136 | 150 | 53% | 59% | 88h | 96h | |
| | | MCY | 151 | 165 | 59% | 65% | 97h | A5h | |
| | | MYC | 166 | 180 | 65% | 71% | A6h | B4h | |
| | | Cycle | 181 | 195 | 71% | 76% | B5h | C3h | |
| | | Random | 196 | 210 | 77% | 82% | C4h | D2h | |
| | | Reserved (see note *4 on page 32*) | 211 | 255 | 83% | 100% | D3h | FFh | |

# ETC Reference Guide
## Zeo DMX Channel Map

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Red | **RGB Control** | | | | | | | 255 |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **Cycle & Random Modes controlled by Red Channel** | | | | | | | |
| | | Slow to Fast Rate | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Green | **RGB Control** | | | | | | | 255 |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 8 | Blue | **RGB Control** | | | | | | | 255 |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | Green On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | Blue On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | Red On to Off | 0 | 255 | 0% | 100% | 00h | FFh | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 9 | White | **RGB Control** | | | | | | | 255 |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **RBG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BRG Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **BGR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GRB Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **GBR Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CMY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **CYM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YCM Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **YMC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MCY Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| | | **MYC Control** | | | | | | | |
| | | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | |
| 10 | CT (see note *11 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | Warm to Cool | 1 | 255 | 0% | 100% | 01h | FFh | |
| 11/12 | Zoom (Coarse/Fine) | Narrow to Wide | 0 | 65535 | 0% | 100% | 00h | FFFFh | 65535 |
| 13 | Shutter/ LED Functions | Normal Strobe Functions | 0 | 31 | 0% | 12% | 00h | 1Fh | 0 |
| | | Random Strobe | 32 | 63 | 13% | 25% | 20h | 3Fh | |
| | | Synchronous Random Strobe | 64 | 95 | 25% | 37% | 40h | 5Fh | |
| | | Reserved (see note *4 on page 32*) | 96 | 255 | 38% | 100% | 60h | FFh | |
| 14 | Shutter | Close | 0 | 23 | 0% | 9% | 00h | 17h | 255 |
| | | Strobe Rate (Slow to Fast) | 24 | 229 | 9% | 90% | 18h | E5h | |
| | | Open | 230 | 255 | 90% | 100% | E6h | FFh | |
| 15/16 | Dimmer (Coarse/Fine) | Off to Full | 0 | 65535 | 0% | 100% | 00h | FFFFh | 65535 |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 17 | Background Color (see note *5 on page 32*) | Off | 0 | 1 | 0% | 0% | 00h | 01h | 0 |
| | | **Background Dim Tracking Mode** (see note *6 on page 32*) | | | | | | | |
| | | **Red Background Color** | | | | | | | |
| | | Red Background 3% | 2 | 3 | 1% | 1% | 02h | 03h | |
| | | Red Background 5% | 4 | 5 | 2% | 2% | 04h | 05h | |
| | | Red Background 6% | 6 | 7 | 2% | 3% | 06h | 07h | |
| | | Red Background 8% | 8 | 9 | 3% | 4% | 08h | 09h | |
| | | Red Background 10% | 10 | 11 | 4% | 4% | 0Ah | 0Bh | |
| | | Red Background 12% | 12 | 13 | 5% | 5% | 0Ch | 0Dh | |
| | | **Green Background Color** | | | | | | | |
| | | Green Background 3% | 14 | 15 | 5% | 6% | 0Eh | 0Fh | |
| | | Green Background 5% | 16 | 17 | 6% | 7% | 10h | 11h | |
| | | Green Background 6% | 18 | 19 | 7% | 7% | 12h | 13h | |
| | | Green Background 8% | 20 | 21 | 8% | 8% | 14h | 15h | |
| | | Green Background 10% | 22 | 23 | 9% | 9% | 16h | 17h | |
| | | Green Background 12% | 24 | 25 | 9% | 10% | 18h | 19h | |
| | | **Blue Background Color** | | | | | | | |
| | | Blue Background 3% | 26 | 27 | 10% | 11% | 1Ah | 1Bh | |
| | | Blue Background 5% | 28 | 29 | 11% | 11% | 1Ch | 1Dh | |
| | | Blue Background 6% | 30 | 31 | 12% | 12% | 1Eh | 1Fh | |
| | | Blue Background 8% | 32 | 33 | 13% | 13% | 20h | 21h | |
| | | Blue Background 10% | 34 | 35 | 13% | 14% | 22h | 23h | |
| | | Blue Background 12% | 36 | 37 | 14% | 15% | 24h | 25h | |
| | | **Cyan Background Color** | | | | | | | |
| | | Cyan Background 3% | 38 | 39 | 15% | 15% | 26h | 27h | |
| | | Cyan Background 5% | 40 | 41 | 16% | 16% | 28h | 29h | |
| | | Cyan Background 6% | 42 | 43 | 16% | 17% | 2Ah | 2Bh | |
| | | Cyan Background 8% | 44 | 45 | 17% | 18% | 2Ch | 2Dh | |
| | | Cyan Background 10% | 46 | 47 | 18% | 18% | 2Eh | 2Fh | |
| | | Cyan Background 12% | 48 | 49 | 19% | 19% | 30h | 31h | |
| | | **Magenta Background Color** | | | | | | | |
| | | Magenta Background 3% | 50 | 51 | 20% | 20% | 32h | 33h | |
| | | Magenta Background 5% | 52 | 53 | 20% | 21% | 34h | 35h | |
| | | Magenta Background 6% | 54 | 55 | 21% | 22% | 36h | 37h | |
| | | Magenta Background 8% | 56 | 57 | 22% | 22% | 38h | 39h | |
| | | Magenta Background 10% | 58 | 59 | 23% | 23% | 3Ah | 3Bh | |
| | | Magenta Background 12% | 60 | 61 | 24% | 24% | 3Ch | 3Dh | |
| | | **Yellow Background Color** | | | | | | | |
| | | Yellow Background 3% | 62 | 63 | 24% | 25% | 3Eh | 3Fh | |
| | | Yellow Background 5% | 64 | 65 | 25% | 25% | 40h | 41h | |
| | | Yellow Background 6% | 66 | 67 | 26% | 26% | 42h | 43h | |
| | | Yellow Background 8% | 68 | 69 | 27% | 27% | 44h | 45h | |
| | | Yellow Background 10% | 70 | 71 | 27% | 28% | 46h | 47h | |
| | | Yellow Background 12% | 72 | 73 | 28% | 29% | 48h | 49h | |

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 17 (continued) | Background Color (see note *5 on page 32*) | **White Background Color** (see note *7 on page 32*) | | | | | | | 0 |
| | | White Background 3% | 74 | 75 | 29% | 29% | 4Ah | 4Bh | |
| | | White Background 5% | 76 | 77 | 30% | 30% | 4Ch | 4Dh | |
| | | White Background 6% | 78 | 79 | 31% | 31% | 4Eh | 4Fh | |
| | | White Background 8% | 80 | 81 | 31% | 32% | 50h | 51h | |
| | | White Background 10% | 82 | 83 | 32% | 33% | 52h | 53h | |
| | | White Background 12% | 84 | 85 | 33% | 33% | 54h | 55h | |
| | | Reserved (see note *4 on page 32*) | 86 | 127 | 34% | 50% | 56h | 7Fh | |
| | | **Independent Dim Mode** (see note *8 on page 32*) | | | | | | | |
| | | **Red Background Color** | | | | | | | |
| | | Red Background 3% | 128 | 129 | 50% | 51% | 80h | 81h | |
| | | Red Background 5% | 130 | 131 | 51% | 51% | 82h | 83h | |
| | | Red Background 6% | 132 | 133 | 52% | 52% | 84h | 85h | |
| | | Red Background 8% | 134 | 135 | 53% | 53% | 86h | 87h | |
| | | Red Background 10% | 136 | 137 | 53% | 54% | 88h | 89h | |
| | | Red Background 12% | 138 | 139 | 54% | 55% | 8Ah | 8Bh | |
| | | **Green Background Color** | | | | | | | |
| | | Green Background 3% | 140 | 141 | 55% | 55% | 8Ch | 8Dh | |
| | | Green Background 5% | 142 | 143 | 56% | 56% | 8Eh | 8Fh | |
| | | Green Background 6% | 144 | 145 | 56% | 57% | 90h | 91h | |
| | | Green Background 8% | 146 | 147 | 57% | 58% | 92h | 93h | |
| | | Green Background 10% | 148 | 149 | 58% | 58% | 94h | 95h | |
| | | Green Background 12% | 150 | 151 | 59% | 59% | 96h | 97h | |
| | | **Blue Background Color** | | | | | | | |
| | | Blue Background 3% | 152 | 153 | 60% | 60% | 98h | 99h | |
| | | Blue Background 5% | 154 | 155 | 60% | 61% | 9Ah | 9Bh | |
| | | Blue Background 6% | 156 | 157 | 61% | 62% | 9Ch | 9Dh | |
| | | Blue Background 8% | 158 | 159 | 62% | 62% | 9Eh | 9Fh | |
| | | Blue Background 10% | 160 | 161 | 63% | 63% | A0h | A1h | |
| | | Blue Background 12% | 162 | 163 | 64% | 64% | A2h | A3h | |
| | | **Cyan Background Color** | | | | | | | |
| | | Cyan Background 3% | 164 | 165 | 64% | 65% | A4h | A5h | |
| | | Cyan Background 5% | 166 | 167 | 65% | 65% | A6h | A7h | |
| | | Cyan Background 6% | 168 | 169 | 66% | 66% | A8h | A9h | |
| | | Cyan Background 8% | 170 | 171 | 67% | 67% | AAh | ABh | |
| | | Cyan Background 10% | 172 | 173 | 67% | 68% | ACh | ADh | |
| | | Cyan Background 12% | 174 | 175 | 68% | 69% | AEh | AFh | |
| | | **Magenta Background Color** | | | | | | | |
| | | Magenta Background 3% | 176 | 177 | 69% | 69% | B0h | B1h | |
| | | Magenta Background 5% | 178 | 179 | 70% | 70% | B2h | B3h | |
| | | Magenta Background 6% | 180 | 181 | 71% | 71% | B4h | B5h | |
| | | Magenta Background 8% | 182 | 183 | 71% | 72% | B6h | B7h | |
| | | Magenta Background 10% | 184 | 185 | 72% | 73% | B8h | B9h | |
| | | Magenta Background 12% | 186 | 187 | 73% | 73% | BAh | BBh | |

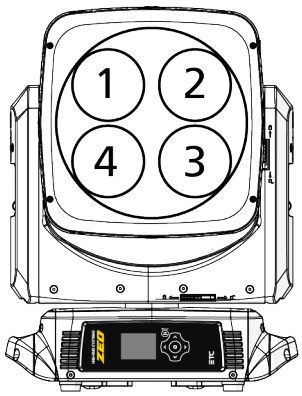
| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 17 (continued) | Background Color (see note *5 on page 32*) | **Yellow Background Color** | | | | | | | |
| | | Yellow Background 3% | 188 | 189 | 74% | 74% | BCh | BDh | |
| | | Yellow Background 5% | 190 | 191 | 75% | 75% | BEh | BFh | |
| | | Yellow Background 6% | 192 | 193 | 75% | 76% | C0h | C1h | |
| | | Yellow Background 8% | 194 | 195 | 76% | 76% | C2h | C3h | |
| | | Yellow Background 10% | 196 | 197 | 77% | 77% | C4h | C5h | |
| | | Yellow Background 12% | 198 | 199 | 78% | 78% | C6h | C7h | |
| | | **White Background Color** (see note *7 on page 32*) | | | | | | | 0 |
| | | White Background 3% | 200 | 201 | 78% | 79% | C8h | C9h | |
| | | White Background 5% | 202 | 203 | 79% | 80% | CAh | CBh | |
| | | White Background 6% | 204 | 205 | 80% | 80% | CCh | CDh | |
| | | White Background 8% | 206 | 207 | 81% | 81% | CEh | CFh | |
| | | White Background 10% | 208 | 209 | 82% | 82% | D0h | D1h | |
| | | White Background 12% | 210 | 211 | 82% | 83% | D2h | D3h | |
| | | Reserved (see note *4 on page 32*) | 212 | 255 | 83% | 100% | D4h | FFh | |
| 18 | Inclusive Macros (see note *1 on page 32*) | Macro Off | 0 | – | 0% | – | 00h | – | 0 |
| | | Macro 1 | 1 | – | 0% | – | 01h | – | |
| | | Macro 2 | 2 | – | 1% | – | 02h | – | |
| | | ... | ... | ... | ... | ... | ... | ... | |
| | | Macro 127 | 127 | – | 50% | – | 7Fh | – | |
| | | Reserved (see note *4 on page 32*) | 128 | 255 | 50% | 100% | 80h | FFh | |
| 19 | Inclusive Macro Speed | Reverse Play Speed Fast to x1 | 0 | 62 | 0% | 24% | 00h | 3Eh | 192 |
| | | Reverse Play Speed x1 | 63 | – | 25% | – | 3Fh | – | |
| | | Reverse Play Speed x 1 to Slow | 64 | 126 | 25% | 49% | 40h | 7Eh | |
| | | Stop | 127 | 128 | 50% | 50% | 7Fh | 80h | |
| | | Forward Play Speed Slow to x1 | 129 | 191 | 51% | 75% | 81h | BFh | |
| | | Forward Play Speed x 1 | 192 | – | 75% | – | C0h | – | |
| | | Forward Play Speed x 1 to Fast | 193 | 255 | 76% | 100% | C1h | FFh | |
| 20 | Inclusive Macro X fade | Stop | 0 | 0 | 0% | 0% | 00h | 00h | 128 |
| | | Zero (s) to Longest (0–100% of Speed Time) | 1 | 255 | 0% | 100% | 01h | FFh | |
| 21 | Inclusive Macro nShot (see note *10 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | 1 Shot | 1 | 9 | 0% | 4% | 01h | 09h | |
| | | 2 Shot | 10 | 19 | 4% | 7% | 0Ah | 13h | |
| | | 3 Shot | 20 | 29 | 8% | 11% | 14h | 1Dh | |
| | | 4 Shot | 30 | 39 | 12% | 15% | 1Eh | 27h | |
| | | 5 Shot | 40 | 49 | 16% | 19% | 28h | 31h | |
| | | Reserved (see note *4 on page 32*) | 50 | 254 | 20% | 100% | 32h | FEh | |
| | | Continuous Run | 255 | 255 | 100% | 100% | FFh | FFh | |
| 22 | mSpeed | Off | 0 | 3 | 0% | 1% | 00h | 03h | 0 |
| | | Slow to Fast | 4 | 255 | 2% | 100% | 04h | FFh | |
| 23 | Fan Speed Control (see note *2 on page 32*) | Idle | 0 | 9 | 0% | 4% | 00h | 09h | 0 |
| | | Slow to Fast | 10 | 215 | 4% | 84% | 0Ah | D7h | |
| | | Auto | 216 | 225 | 85% | 88% | D8h | E1h | |
| | | Studio | 226 | 235 | 89% | 92% | E2h | EBh | |
| | | Reserved (see note *4 on page 32*) | 236 | 255 | 93% | 100% | ECh | FFh | |

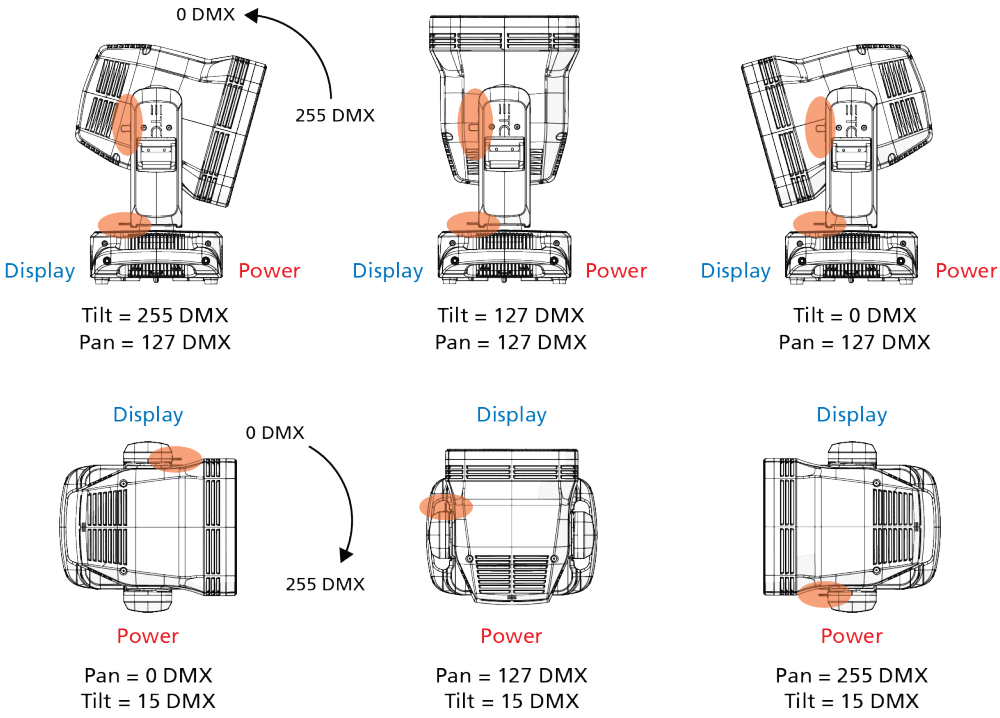
| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Default |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Control | **The Control channel should not be crossfaded. No hold time requirement for the following:** | | | | | | | 0 |
| | | Safe (Normal Operation ) | 0 | 9 | 0% | 4% | 00h | 09h | |
| | | Reserved (see note *4 on page 32*) | 10 | 19 | 4% | 7% | 0Ah | 13h | |
| | | **Hold time requirement for the following functions:** | | | | | | | |
| | | Display Off (3 s) | 20 | 29 | 8% | 11% | 14h | 1Dh | |
| | | Display On (3 s) | 30 | 39 | 12% | 15% | 1Eh | 27h | |
| | | Reserved (see note *4 on page 32*) | 40 | 49 | 16% | 19% | 28h | 31h | |
| | | Home All (3 s) | 50 | 59 | 20% | 23% | 32h | 3Bh | |
| | | Shutdown (9 s) | 60 | 69 | 24% | 27% | 3Ch | 45h | |
| | | Red Shift Off (3 s) | 70 | 79 | 27% | 31% | 46h | 4Fh | |
| | | Red Shift On (3 s) | 80 | 89 | 31% | 35% | 50h | 59h | |
| | | LED PWM 2.4kHz (3 s) | 90 | 99 | 35% | 39% | 5Ah | 63h | |
| | | LED PWM 16kHz (3 s) | 100 | 109 | 39% | 43% | 64h | 6Dh | |
| | | Reserved (see note *4 on page 32*) | 110 | 255 | 43% | 100% | 6Eh | FFh | |

### Wash Protocol

| Channel | Function | Description | Decimal Low | Decimal High | Percent Low | Percent High | Hex Low | Hex High | Controller Defaults |
|---|---|---|---|---|---|---|---|---|---|
| 1/2 | Pan (Coarse/Fine) | See note *9 on page 33* | 0 | 65535 | 0% | 100% | 00h | FFFFh | 32767 |
| 3/4 | Tilt (Coarse/Fine) | See note *9 on page 33* | 0 | 65535 | 0% | 100% | 00h | FFFFh | 32767 |
| 5 | Red | Red Off to On | 0 | 255 | 0% | 100% | 00h | FFh | 255 |
| 6 | Green | Green Off to On | 0 | 255 | 0% | 100% | 00h | FFh | 255 |
| 7 | Blue | Blue Off to On | 0 | 255 | 0% | 100% | 00h | FFh | 255 |
| 8 | White | White Off to On | 0 | 255 | 0% | 100% | 00h | FFh | 255 |
| 9 | CT (see note *11 on page 33*) | Off | 0 | 0 | 0% | 0% | 00h | 00h | 0 |
| | | Warm to Cool | 1 | 255 | 0% | 100% | 01h | FFh | |
| 10 | Zoom | Narrow to Wide | 0 | 65535 | 0% | 100% | 00h | FFFFh | 65535 |
| 11 | Shutter/ LED Functions | Normal Strobe Functions | 0 | 31 | 0% | 12% | 00h | 1Fh | 0 |
| | | Random Strobe | 32 | 63 | 13% | 25% | 20h | 3Fh | |
| | | Synchronous Random Strobe | 64 | 95 | 25% | 37% | 40h | 5Fh | |
| | | Reserved (see note *4 on page 32*) | 96 | 255 | 38% | 100% | 60h | FFh | |
| 12 | Shutter | Close | 0 | 23 | 0% | 9% | 00h | 17h | 255 |
| | | Strobe Rate (Slow to Fast) | 24 | 229 | 9% | 90% | 18h | E5h | |
| | | Open | 230 | 255 | 90% | 100% | E6h | FFh | |
| 13/14 | Dimmer (Coarse/Fine) | Off to Full | 0 | 65535 | 0% | 100% | 00h | FFFFh | 65535 |
| 15 | Control | **The Control channel should not be crossfaded. No hold time requirement for the following:** | | | | | | | 0 |
| | | Safe (Normal Operation ) | 0 | 9 | 0% | 4% | 00h | 09h | |
| | | Reserved (see note *4 on page 32*) | 10 | 19 | 4% | 7% | 0Ah | 13h | |
| | | **Hold Time requirement for the following functions:** | | | | | | | |
| | | Display Off (3 s) | 20 | 29 | 8% | 11% | 14h | 1Dh | |
| | | Display On (3 s) | 30 | 39 | 12% | 15% | 1Eh | 27h | |
| | | Reserved (see note *4 on page 32*) | 40 | 49 | 16% | 19% | 28h | 31h | |
| | | Home All (3 s) | 50 | 59 | 20% | 23% | 32h | 3Bh | |
| | | Shutdown (9 s) | 60 | 69 | 24% | 27% | 3Ch | 45h | |
| | | Red Shift Off (3 s) | 70 | 79 | 27% | 31% | 46h | 4Fh | |
| | | Red Shift On (3 s) | 80 | 89 | 31% | 35% | 50h | 59h | |
| | | LED PWM 2.4 kHz (3 s) | 90 | 99 | 35% | 39% | 5Ah | 63h | |
| | | LED PWM 16 kHz (3 s) | 100 | 109 | 39% | 43% | 64h | 6Dh | |
| | | Auto Fan Mode (3 s) (see note *2 on page 32*) | 110 | 119 | 43% | 47% | 6Eh | 77h | |
| | | Studio Fan Mode (3 s) (see note *2 on page 32*) | 120 | 129 | 47% | 51% | 78h | 81h | |
| | | Reserved (see note *4 on page 32*) | 130 | 255 | 51% | 100% | 82h | FFh | |

## Protocol Notes

<table>
<tr><td>1</td><td>The Standard protocol includes 255 predefined Inclusive Macros; the Reduced protocol includes 142 predefined Inclusive Macros. These macros include color, background, strobe, and timing data. They do not include pan, tilt, mix color function, zoom, or fan control data.<br>The macros require the Inclusive Macro Speed and Inclusive Macro Xfade channels.<br><br>Playback Speed Operation<br><table><tr><th>Channel</th><th>Description</th></tr><tr><td>0–126</td><td>Reverse playback fast to slow</td></tr><tr><td>127–128</td><td>Stop playback</td></tr><tr><td>129–255</td><td>Forward playback slow to fast</td></tr></table><br>Crossfade Operation<br>Crossfade time controls the speed at which a macro fades from one step of the effect to the next step. Lower speeds mean a slower transition; higher speeds approach a zero-second transition.</td></tr>
<tr><td>2</td><td>Fan Speed Control<br><br>• Standard and Reduced Protocols<br>- "Idle" and "Slow to Fast" modes may be crossfaded, or values may be directly entered with immediate effect.<br>- "Auto" or "Studio" modes are entered by starting at "Idle" and directly entering the range you want to use. After a short pause, the mode is activated.<br>- "Auto" and "Studio" modes are retained upon loss of power.<br>- "Slow to Fast" mode is not retained upon loss of power and is only active while the fixture is receiving a DMX value in this range.<br><br>• Wash Protocol<br>- "Auto" and "Studio" modes are retained upon loss of power.</td></tr>
<tr><td>3</td><td>LED modules are arranged according to the graphic below.<br><br> 
</td></tr>
<tr><td>4</td><td>Reserved ranges should function according to the controller default value.</td></tr>
<tr><td>5</td><td>Background color is always on when enabled. The minimum intensity remains during macros and channel operation. The DMX number describes the intensity of the specified color.</td></tr>
<tr><td>6</td><td>Background Dim Tracking Mode tracks the Dimmer channel. When the Dimmer channel is at 0, the background color will turn off.</td></tr>
<tr><td>7</td><td>White background color uses only the white LEDs, not RGB.</td></tr>
<tr><td>8</td><td>Independent Dim Mode does not track with the Dimmer channel. When the Dimmer channel is at 0, the selected color remains on.</td></tr>
</table>

| | |
|---|---|
| 9 | **DMX Fixture Orientation**<br>(Tilt Movement Range: 205°; Pan Movement Range: 540°)<br>(Pan and tilt lock locations are highlighted in orange.)<br>  <br> |
| 10 | Macro nShot causes macros to fire 'n' number of times. The macro runs 'n' number of times through all programmed steps. Zero turns macros off. 255 runs macros continuously. The nShot value must change to re-trigger. If the change in nShot value is to zero, nShot will reset and the selected macro will not run until the nShot value changes to a trigger value. If the change in nShot value is to 255, the selected macro will then run continuously. |
| 11 | The color temperature range is approximately 2,400 K–9,000 K. This range is provided for reference only. |
| 12 | RDM Manufacturer ID:0x4c52 |
| 13 | RDM Device ID: 0x2F0A |

## Revision History

| Revision | Change | Release Date |
|---|---|---|
| B | Added three macros to the Inclusive Macros channel in the Standard and Reduced protocols. Renamed the CTO channels to "CT" and added the Warm to Cool information to those channels. Added note 11. | March 2025 |
| A | Initial release | December 2024 |