

## **DMX512 Universal Pixel Decoder**

Part number: DMX512-PX-SPI-200



The DMX512 Pixel Decoder is a universal pixel controller and DMX decoder compatible with over 20 different types of IC chips. The decoder is the key component for creating intelligent LED lighting, and this is the most universally compatible model available in the market. It is capable of creating pixel scenes from 35 preset modes when controlled by the remote control, or of converting DMX output into the data signal input required the pixel control lights. Most decoders are specific to a single type of IC chip, but the DMX512-PX-SPI-200 is compatible the most commonly used IC chips on the market.

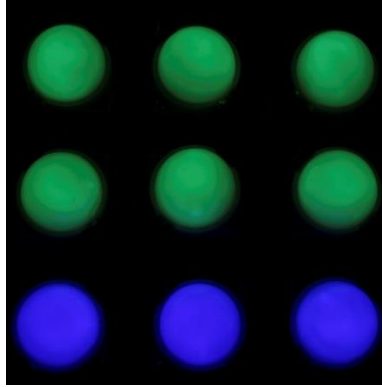
Use DMX LED PixelControl and PixelPro Lighting to create unique animated RGB color effects and pixel boards! The DMX512-PX-SPI-200 is a top of the line way to control many types of intelligent RGB LED lights. The compatible RGB PixelPro and RGB PixelControl lines come in an assortment of individually addressable RGB LED pixel strip, LED Neon, LED Super Flat Rope, and modules in various shapes and sizes, so you can be sure of finding the right fit for your project.

## Compatible PixelPro Lights

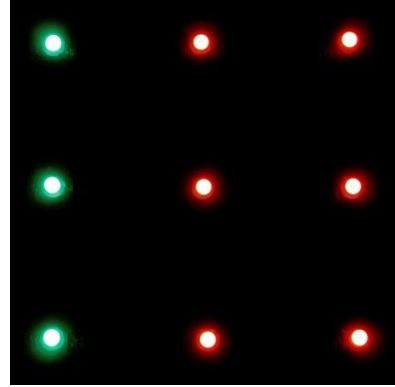
Below are examples of **RGB PixelPro LED lights** you can control with the DMX512 decoder.



RGB PixelPro LED  
Strip Light



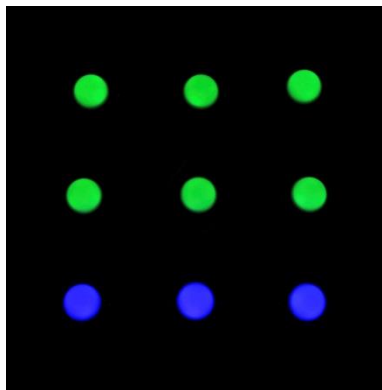
RGB PixelPro 50mm  
Waterproof Domes



RGB PixelPro bullets



Waterproof RGB PixelPro  
LED Rectangle Module

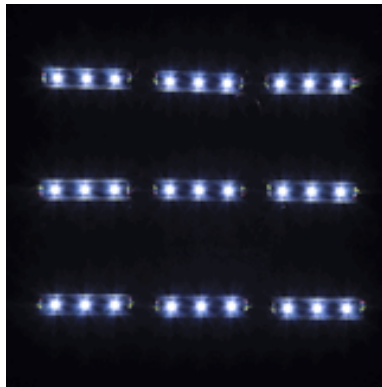


RGB PixelPro 30mm  
Mini Dome Module

Examples of **Monochrome PixelPro LED lights** you can control with the DMX512 decoder.



Warm White PixelPro  
LED Rectangle Modules



Daylight White PixelPro  
LED Rectangle Modules

## Compatible PixelControl Lights

Below are some examples of **RGB PixelControl LED lights** you can control with the DMX512-PX-SPI-200 decoder.



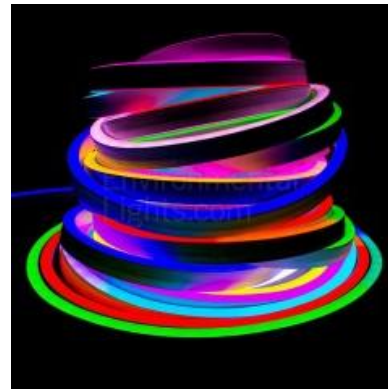
Waterproof RGB 5050 Pixel Control LED Super Flat Rope, 56/m, with White Finish

[PSFR-RGB-W-20](#)



Waterproof RGB 5050 Pixel Control LED Super Flat Rope 56/m, with Black Finish

[PSFR-RGB-B-20](#)



Waterproof RGB Pixel Control LED Neon

[PLN-RGB-20](#)



RGB PixelControl LED Strip Light by the 2.8-meter reel

[RGB-pixelcontrol-reel-60](#)



Waterproof RGB PixelControl LED Strip Light by the 2.8-meter reel

[RGB-pixelcontrol-wp-reel-60](#)



RGB PixelControl LED Strip Light by the 1.2-meter reel

[RGB-pixelcontrol-reel-144](#)



Waterproof RGB PixelControl LED Strip Light by the 1.2-meter reel

[RGB-pixelcontrol-wp-reel-144](#)

## Specifications

Dimensions: 6.89" x 2.05" x 1.30"  
175 mm x 52 mm x 33 mm

Outputs: V+, CLK, DATA

Operating Temperature: -22 to 150°F (-30 to 65°C)

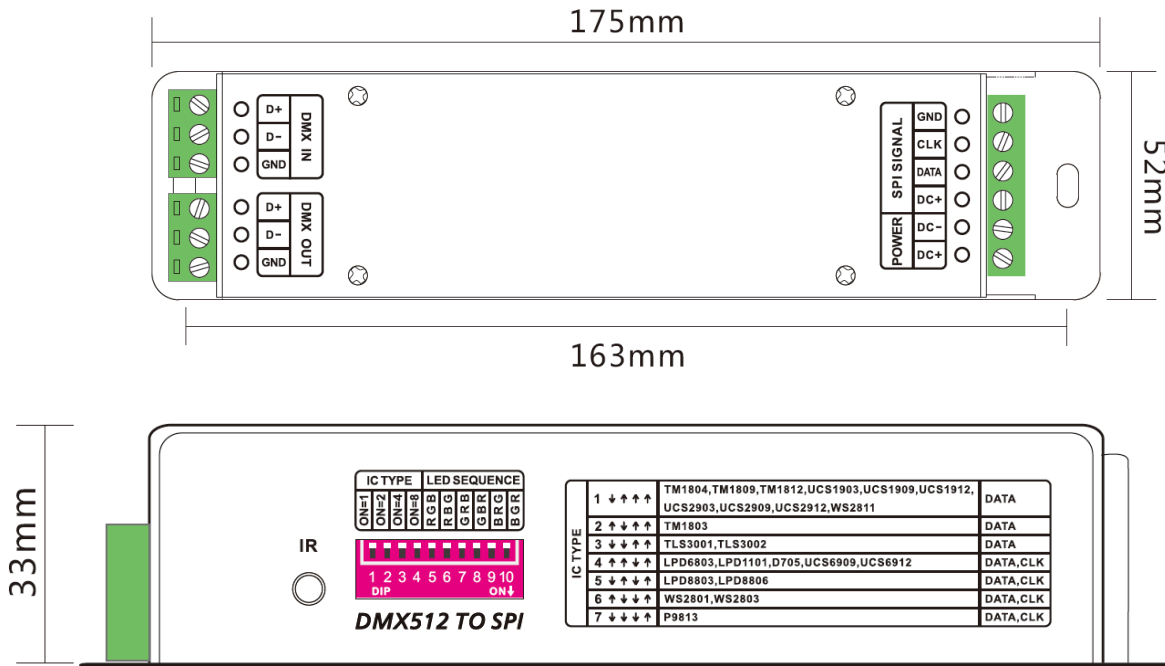
Voltage: 5 to 24 Volts DC

## Compatible IC Chips

- D705
- LPD1101
- LPD6803
- LPD8803
- LPD8806
- P9813
- TLS3001
- TLS3002
- TM1803
- TM1804
- TM1809
- TM1812
- UCS1903
- UCS1909
- UCS1912
- UCS2903
- UCS2909
- UCS2912
- UCS6909
- UCS6912
- WS2801
- WS2803
- WS2811

## Compatible LED Types

- RGB
- RBG
- GBR
- GRB
- BRG
- BGR



## Features

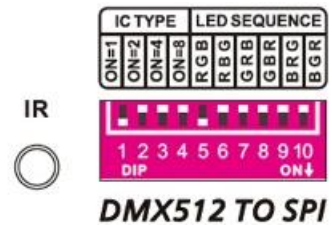
- Powered by 5-24 VDC.
- DC+ input power to decoder feeds into DC+ input power for connected PixelPro or PixelControl lights.
- Compatible with standard DMX512 output, enabling individual pixel control.
- Decode a maximum of 512 DMX addresses (one universe).
  - 170 pixels of PixelPro/PixelControl LED strip light *or* 170 modules of PixelPro LED bullets, domes, circles, squares, or rectangles.
- Translates standard DMX output to the data signal input required by the PixelPro or PixelControl LED Strip Light.
- 35 pre-set modes available that do not require DMX input.
- Controllable by IR remote.
- Compatible with the PixelPro and PixelControl line of individually digitally addressable RGB LED strip lights and modules, available in 5 VDC, 12 VDC, or 24 VDC
- Compatible with six types of RGB LED node configurations.
- Outputs are clock and data signals for the PixelPro line and clock only for the PixelControl line, defined independently under direction of the DMX input signal.

## Applications

- Create animated effects for studios, stage lighting, architectural, or decorative purposes.
- Use for any application requiring conversion of DMX to data (and/or clock) signal for any of 23 different types of IC chip.
- An economical and easy solution for full color intelligent LED lighting control systems.

## Getting Started

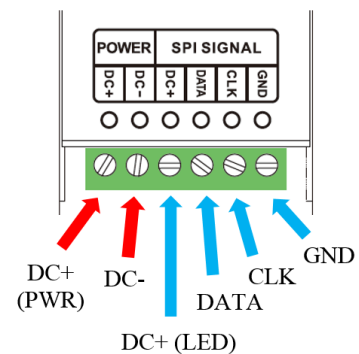
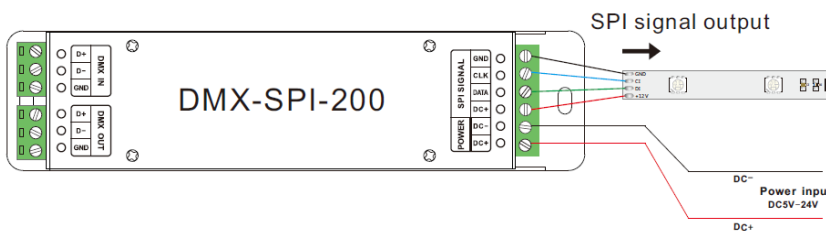
1. Arrange the dip switches like below when using any of the compatible lights on pages 2 or 3. Dip switch 1 and 5 should be down, leaving the rest of the dip switches up (off).
2. Confirm that your input voltage coming from the power supply match the required input voltage of your LEDs.



Supplying a higher than recommended voltage may permanently damage your LEDs.

| 5 VDC                                    | 12 VDC  |
|--|---|
| RGB PixelControl LED Strip Lights        | RGB PixelPro LED Dome Module                            |
| Waterproof PixelControl LED Strip Lights | RGB PixelPro LED Circle Module                          |
| RGB PixelPro LED Strip Light             | RGB PixelPro LED Square Module                          |
| Waterproof RGB PixelPro LED Strip Light  | RGB PixelPro LED Mini Dome Module                       |
| RGB PixelPro LED Bullet                  | Waterproof RGB PixelPro LED Rectangle Module            |
| RGB PixelPro LED Bullet (Square Base)    | Waterproof Warm White PixelPro LED Rectangle Module     |
|  | Waterproof Daylight White PixelPro LED Rectangle Module |

| 24 VDC   |
|--|
| Waterproof RGB 5050 PixelControl LED Super Flat Rope, 56/m, Black Finish |
| Waterproof RGB 5050 PixelControl LED Super Flat Rope, 56/m, White Finish |
| Waterproof RGB PixelControl LED Neon                                     |



3. Wire the appropriate power supply to the “POWER” screw terminals on the decoder but do not turn the power supply on yet. Be sure to connect the DC+ wire to the decoder’s DC+ terminal under “POWER”. Reversing polarity can permanently damage your decoder.
4. Connect your LEDs to the “SPI SIGNAL” terminals on the decoder: “DC+”, “DATA”, “CLK”, and “GND”. Clock (CLK) may or may not be used, depending on the type of Pixel product. CLK will be used when using PixelPro products but not when using PixelControl products.
5. Connect the Infrared Eye to the decoder’s IR port.
6. To use the decoder’s preset modes, follow the next steps. To use the decoder with DMX mode, skip to page 8 and follow the instructions for DMX Mode, which includes additional wiring.
7. Turn the power supply connected to the decoder ON. The only signals generated by the decoder are clock (if used) and data. **Never apply voltage to the decoder, except through the POWER terminals, as this will damage the decoder.**
8. Use the next page (7) to learn about how to use the remote to get to the desired preset mode.

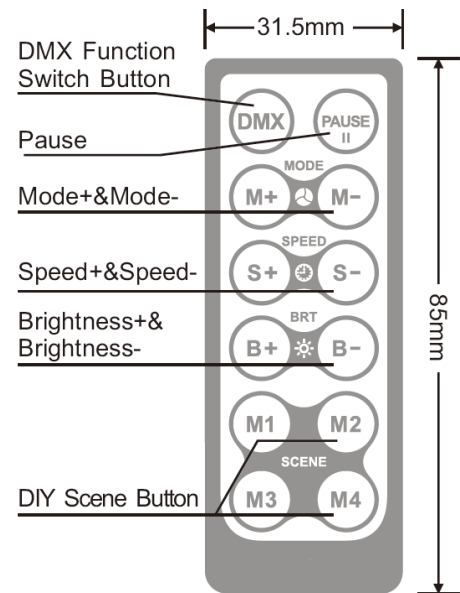
**IMPORTANT: Be sure to connect all common ground wires between power supplies, strip, modules, etc.**



## Using the Remote Control and Preset Modes

The DMX512-PX-SPI-200 decoder comes with an IR sensor and remote control. The IR sensor has a 36" cable, so that you can hide the decoder while still placing the IR sensor in view of the remote. **In order to use the remote, the IR sensor must be in line of sight.**

Using the M+ and M- buttons, you can cycle through the preset modes listed below. You do not need a DMX input to utilize these modes. Save your favorite modes to the scene buttons M1-M4 for easy access. To do so, set the lights to play your mode of choice. Hold down the scene button (M1-M4) for a minimum of five seconds and then release. Any time you press that scene button it will recall the mode you saved. The DMX button allows you to switch between DMX and preset control. Turn the lights off by holding down the DMX button for three or more seconds.



| Number | Mode                             | Number | Mode                                    |
|--------|----------------------------------|--------|---|
| 1      | Static red                       | 19     | 7 color chasing (8 pixels per color)    |
| 2      | Static green                     | 20     | White meteor (16 lit pixels, 16 dark)   |
| 3      | Static blue                      | 21     | RGB meteor (16 lit pixels, 16 dark)     |
| 4      | Static yellow                    | 22     | 7 color meteor (16 lit pixels, 16 dark) |
| 5      | Static magenta                   | 23     | Red and white chase (fade)              |
| 6      | Static cyan                      | 24     | Green and white chase (fade)            |
| 7      | Static white                     | 25     | Blue and white chase (fade)             |
| 8      | RGB step                         | 26     | Red and yellow chase (fade)             |
| 9      | 7 color step                     | 27     | Red and purple chase (fade)             |
| 10     | RGB strobe                       | 28     | Green and yellow chase (fade)           |
| 11     | 7 color strobe                   | 29     | Green and cyan chase (fade)             |
| 12     | RGB fade                         | 30     | Blue and purple chase (fade)            |
| 13     | 7 color fade                     | 31     | Blue and cyan chase (fade)              |
| 14     | RGB fade to dark                 | 32     | Red, yellow and green chase (fade)      |
| 15     | 7 color fade to dark             | 33     | Red, purple and blue chase (fade)       |
| 16     | RGB flow (1 color at a time)     | 34     | Green, cyan and blue chase (fade)       |
| 17     | 7 color flow (1 color at a time) | 35     | 7 color chase (fade)                    |
| 18     | RGB chasing (8 pixels per color) |        |   |

# DMX Mode

## Wiring

The universal decoder requires bare wire ends of a cable for the DMX input. This can be easily accomplished by following the directions below. Please note that the wire colors will be dependent on the cable you use, and may not match those shown in the images below.

1. Select a cable to use. It should be 3-Pin XLR on one end if you wish to connect to the [SLESA-U8](#), and 5-Pin XLR if you wish to connect to a [madrix-plexus](#) or [madrix-luna](#). For the examples below, from left to right, a 3-Pin XLR to RJ45, 5-Pin XLR to RJ45, and a [DMX512 XLR 3-pin male to 3-pin female](#) cable are shown.



OR



OR



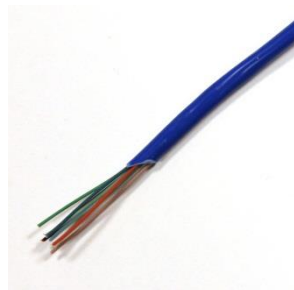
2. Cut the end you will not be using off of the cable, as indicated by the red line below. Cut off the RJ45 connector or if using the [DMX512 XLR 3-pin male to 3-pin female](#) cable, cut off the female connector.



OR



3. Remove an inch or two of the outer sheathing to expose the wires inside, being very careful to not cut through the wires. After cutting the outer sheathing, inspect the area of the cut to make sure none of the wires were cut. If a wire was even partially cut, then cut off the wires and remove an additional inch off of the cable, then repeat this step from the beginning. Your wires should look like the wires below.

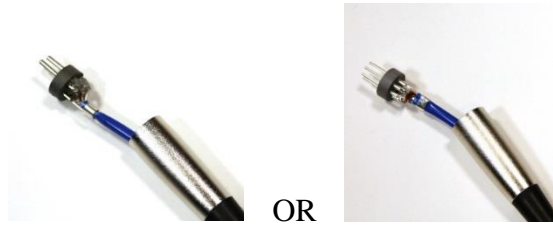


OR

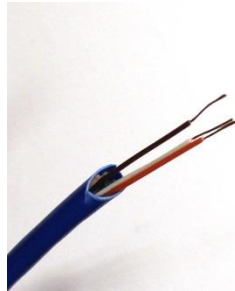




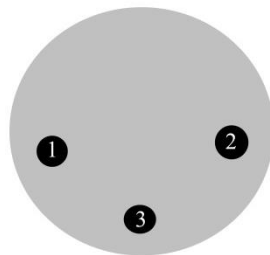
- Returning to the XLR connector end of the cable, remove the screw at the top of the XLR connector. Push the XLR connector out, so you can see which color wire is attached to each pin. Alternatively, you can use an ohm meter to check for resistance between each pin and wire tip.



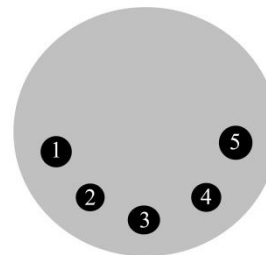
- At the bare wire end of the cable, strip the three wires that are connected to the pins by about 5mm so that the wires look like the wires below.



- Referring to the exposed pins from step 4, as well as the diagram below, determine which wire is Ground (Pin 1), Data- (Pin 2), and Data+ (Pin 3). Pins 4 and 5 may or may not have wires soldered on, but either way will not be used.



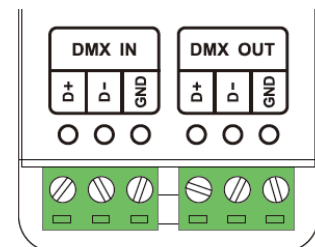
3-Pin XLR Pin Out (Front View)



5-Pin XLR Pin Out (Front View)

OR

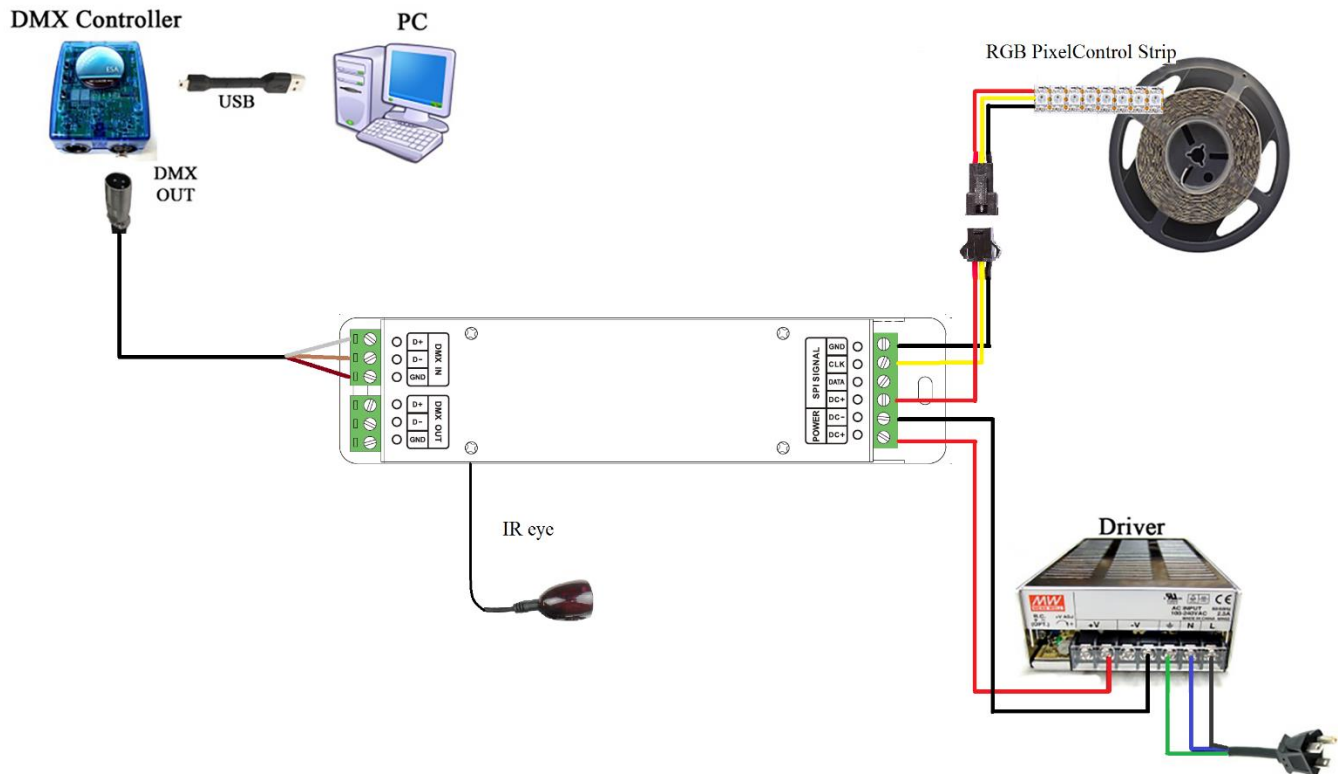
- Connect the bare wires into the DMX IN screw terminals of the Universal Decoder (image to the right). Make sure to insert the D+, D-, and GND wires in to the D+, D-, and GND terminals on the decoder.
- Confirm that the IR Eye is connected to the decoder's IR port.
- Turn the power supply connected to the decoder ON. The only signals generated by the decoder are clock (if used) and data.



**Never apply voltage to the decoder, except through the POWER terminals, as this will damage the decoder.**

- Point the remote control to the IR eye and press "DMX".
- Connect the DMX controller to a computer using the USB connector.
- Connect the DMX controller to the Universal Decoder using the male end of the 3-pin XLR to bare wire cable created in steps 1-7. Check the wiring to the diagram below, making sure all the wires are in the correct terminals.

## Wiring Diagram



You can now use the DMX Controller's software to control your LEDs.

## Controlling RGB Pixel Control LED Lights

Each RGB pixel requires 3 addresses to control red, green, and blue. A pixel is the smallest controllable element in a given light medium. One pixel can contain one or more LEDs. For example, when referring to RGB PixelPro strip light, one pixel is equivalent to 1 LED. On the other hand, when referring to a string of RGB PixelPro LED Square Modules, one pixel is equivalent to 4 LEDs or one module. Each decoder can individually control up to 170 RGB pixels.

## Controlling Monochrome Pixel Control LED Lights

We currently offer two monochrome options:

- Waterproof Warm White PixelPro LED Rectangle Module.
- Waterproof Daylight White PixelPro LED Rectangle Module.

Similar to RGB PixelPro lights, each module requires 3 addresses to control three separate channels of white. For example, one string of 20 Waterproof Warm White PixelPro LED Rectangle Modules requires  $(20 \times 3) = 60$  addresses to individually control the dimming of each pixel.