YARILO PIXELGO

LED PIXEL CONTROLLER
USER MANUAL (VER 1.0)

OVERVIEW

Yarilo PixelGO is designed to control LED pixel tapes. The device is connected to the local network and receives data via ArtNet protocol. Different types of pixel tapes (1-Wire SPI, 2-Wire SPI) can be work simultaneously. Up to 2 independent outputs in 1-Wire SPI Mode. Total 2720 pixels. Built-in web interface allows you to easily set parameters of the device and update firmware of the controller. The LED indicates the current working mode.

SPECIFICATIONS

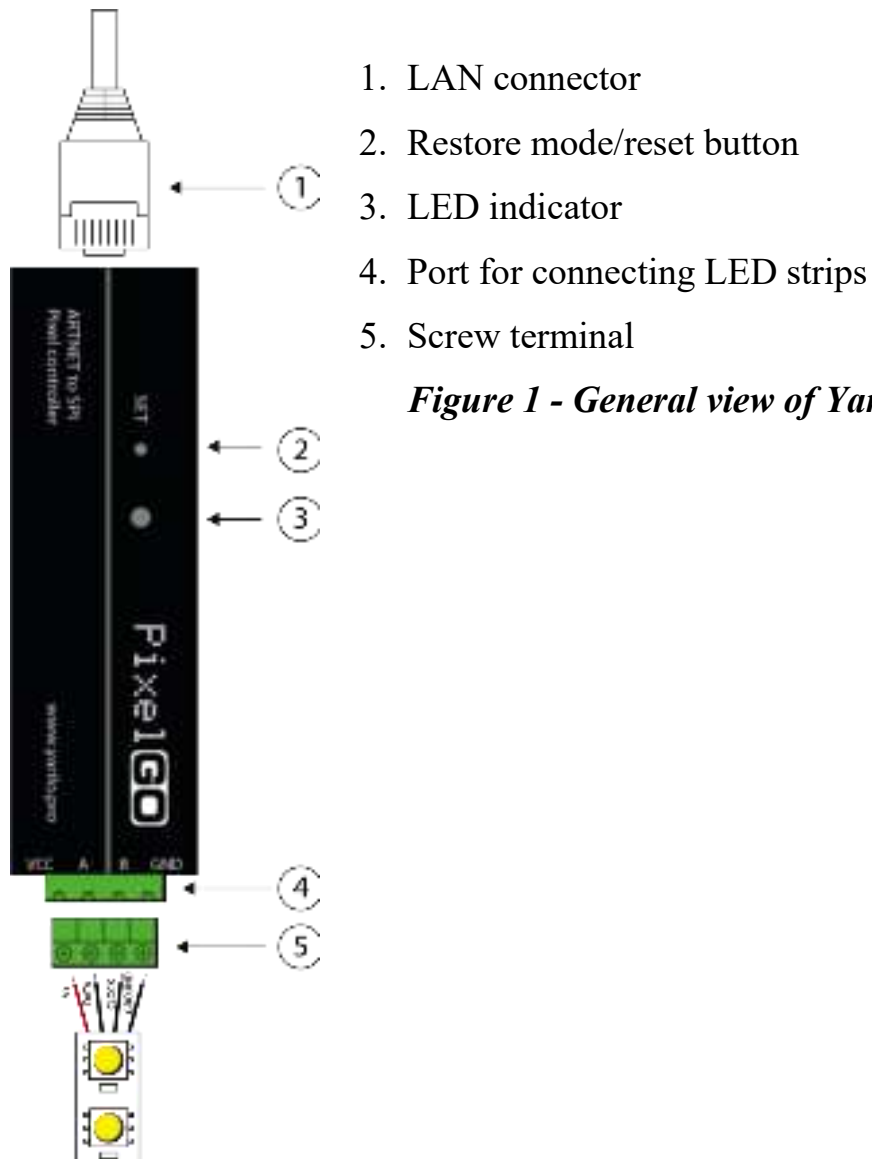|	
Power supply:	5-24V. Powering the device through the LED ports
Reverse polarity protection:	Yes
Power consumption:	3W
Network protocol:	Art-Net
Supported LEDs:	APA102, APA104, SK6822, TM1812, TM1814, TM1829, UCS1903, UCS9812S, WS2801, WS2811, WS2812, WS2812B, WS2813, WS2815*
Input port:	Ethernet RJ45
Output ports:	2 outputs via screw terminals. Maximum of 1360 RGB pixels per output. Total 2720 pixels
Case material:	Anodized aluminum
Dimensions:	84x25x25 mm
Weight:	75 g
Operation temperature	0-50°C
IP Rating	IP20
Certification	EAC
Warranty	12 months

* more pixels in newer firmware

OVERALL VIEW

1. LAN connector

2. Restore mode/reset button

3. LED indicator

4. Port for connecting LED strips

5. Screw terminal

Figure 1 - General view of Yarilo PixelGO

CONNECTING PIXELS

1. Before attaching the LED strip, completely disconnect the power to Yarilo PixelGO!
2. LED strips are connected to a 4-pin screw terminal. Be sure to check the tightness of the wires.

   Note the maximum wire length between Yarilo PixelGO and LED strip. As a rule, for 1-Wire pixels (WS2811, WS2812, WS2815 and similar) this distance is no more than 5m.

   The controller outputs can be used and configured in any configuration, for different types of LED strips, number of pixels and speed.
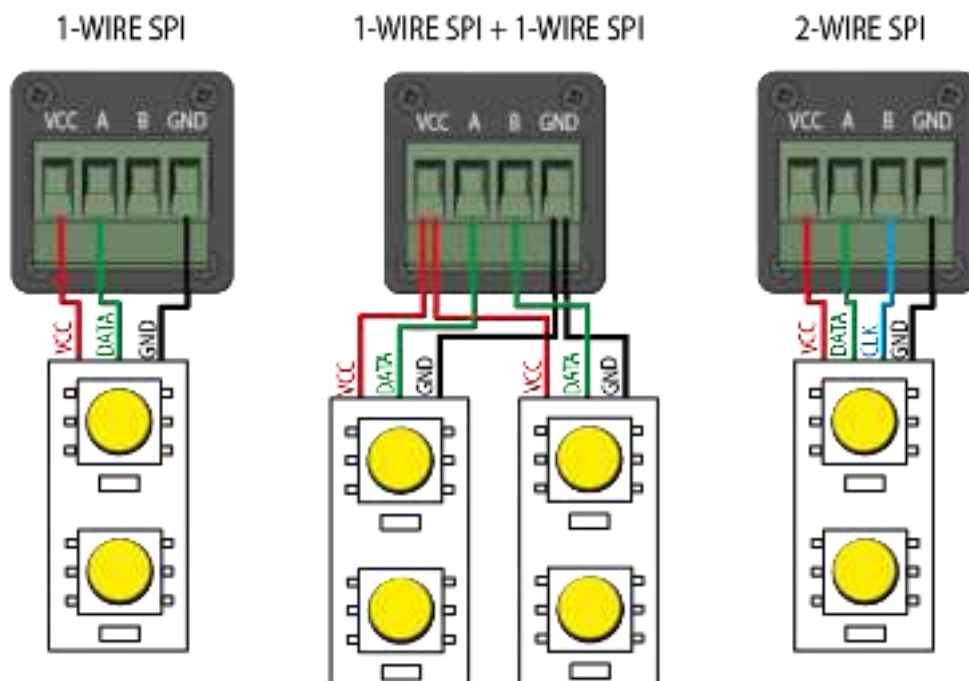
   Pay attention to the correct connection GND, VCC, A и B.

3. Insert the terminal into the Yarilo PixelGO and apply power.

CONNECTION OPTIONS FOR LED STRIPS

Yarilo PixelGO supports several options for connecting LED strips:

✓ Connecting a single 1-Wire SPI strip
✓ Connecting two 1-Wire SPI strips (1-Wire SPI + 1-Wire SPI)
✓ Connecting a single 2-Wire SPI strip

CONNECTING A SINGLE 1-WIRE SPI LED STRIP

1-Wire SPI LED strip is a LED strip that uses only one data line for connection, VCC and GND.

Yarilo PixelGO supports 1-Wire SPI LED strips based on chips: WS2811, WS2812, WS2812B, WS2813, WS2815, WS2851, APA104, SK6812.

We recommend using Port A to connect these LED strips.

CONNECTING TWO 1-WIRE SPI LED STRIP (1-WIRE SPI + 1-WIRE SPI)
Yarilo PixelGO has two output ports (A and B) for connecting 1-wire SPI LED strips. It is possible to connect different types of LED strips to each port.

CONNECTING A SINGLE 2-WIRE SPI LED STRIP
2-Wire SPI LED strip is a LED strip that uses one data line, one clock line, VCC and GND.

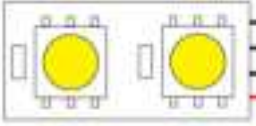Yarilo PixelGO supports 2-Wire SPI LED strips based on chips: P9813, APA102, SK9822.

When connecting these LED strips, Port A is used to connect the data line and Port B is used for the clock line.

In the web-interface when you click on the button "Show wiring", the current schemes of LED strip connection will be displayed.
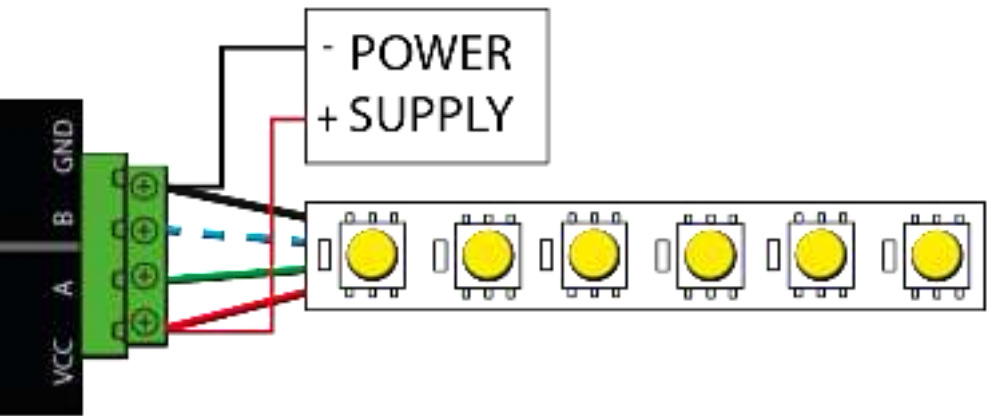
POWER SUPPLY CONNECTION

The controller is powered through a 4-pin screw connector for LED strip. Note the correct polarity! Yarilo PixelGO has built-in protection against reverse polarity power. However, the wrong polarity can take out the LED strip.

Legend

————	Compulsory connection of the common wire (GND)
————	Compulsory connection of the data wire (DATA)
– – – – –	Connection of the clock wire (CLK). Only for 2-Wire SPI LED strip
————	Compulsory connection of the VCC wire (VCC)
	The designation of the LED pixel strip or several connected in series
	The designation of the power source (or several).

LED pixel strips can be connected in series, thereby increasing their total length. In this case, it is important to choose the right power supply. Several connection options are possible:
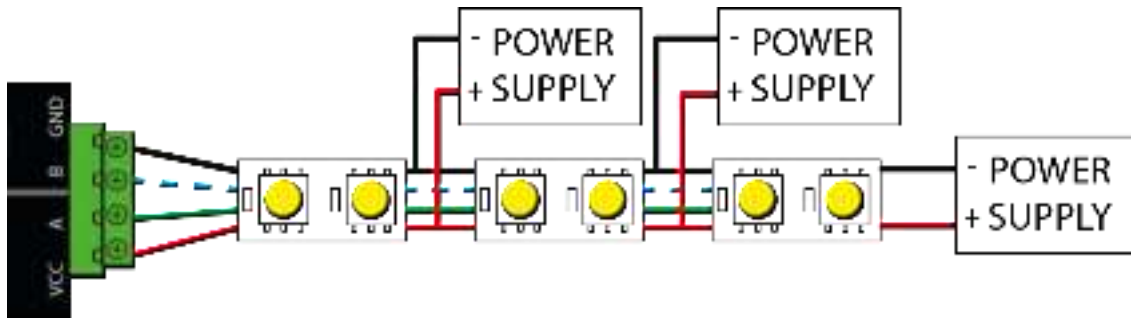
Option 1. The power supply is connected on the Yarilo PixelGO

Option 2. The power supply has enough power to power the entire chain of tapes and is connected at the end of the chain.
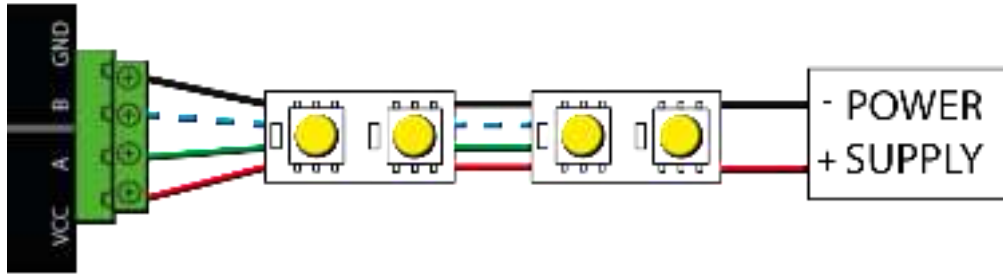
Option 3. Each LED pixel strip is powered from its own power source.

Power is supplied only once. The power supply is connected between the LED pixel strips and PixelGO. If a 9V or higher power supply is used, you can connect the PSU from the end of the LED pixel strip.

THE BEGINNING OF WORK

Connect the power and power cord.

Default network settings of the Yarilo PixelGO:

IP Address 192.168.1.170
Network Mask 255.255.255.0

Make sure that Yarilo PixelGO and your network card are on this subnet. Open your browser and enter 192.168.1.170 in the address bar. The built-in web interface opens.

In the Port A and Port B boxes, select the desired pixel type and number. Click "**Save Settings**".

Yarilo PixelGO takes 16 Art-Net universes. Each output occupies 8 universes and is capable of displaying up to 1360 RGB pixels and 1024 RGBW pixels. **Mapping Universes** field shows which universes belong to a particular output. It is possible

to set the same range for several outputs. The information will be duplicated on the outputs.

When Yarilo PixelGO is receiving data, LED blinks green.
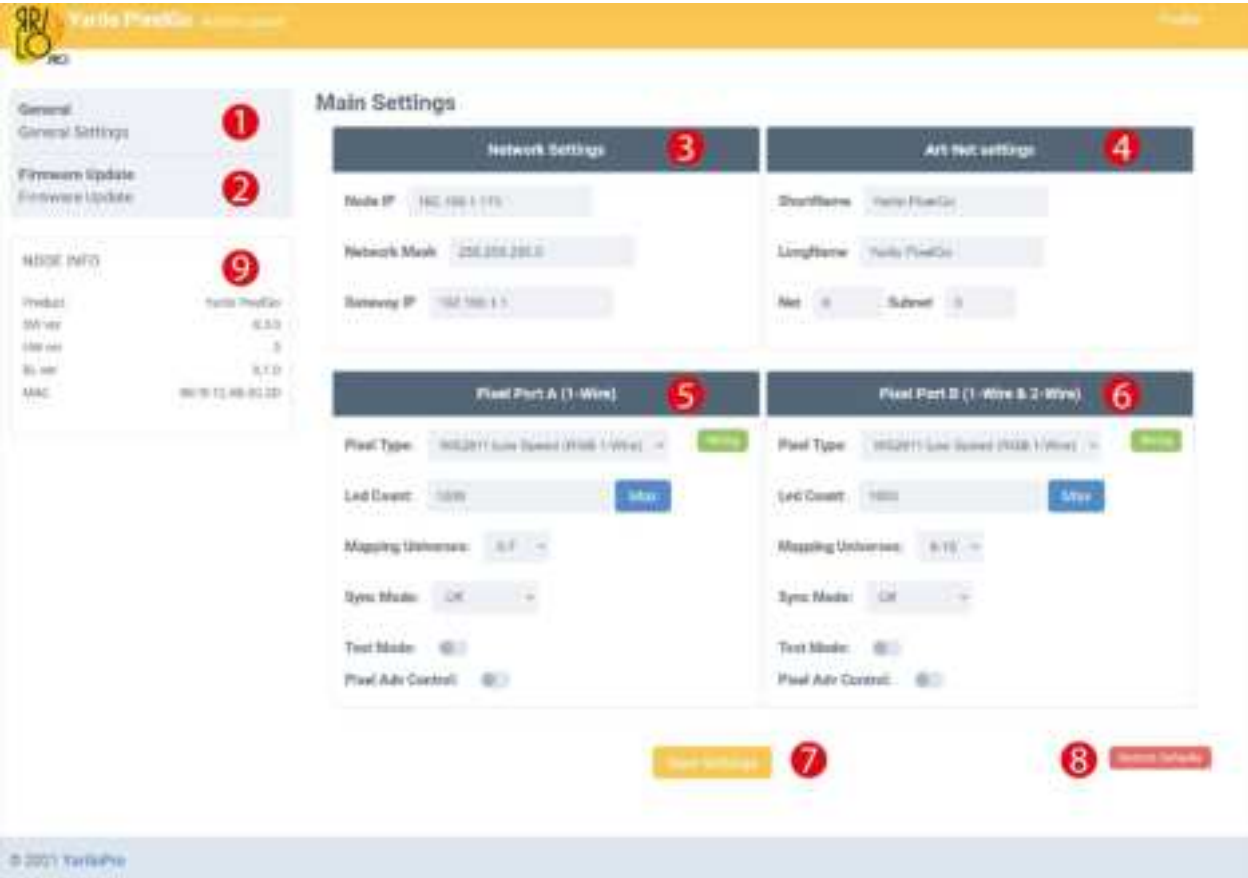
WEB INTERFACE OVERVIEW

Figure 2 - Web interface Yarilo PixelGO

The picture shows the appearance of the Web-interface of Yarilo PixelGO.

1. Menu item. Home page link

2. Menu item. Link to the firmware upgrade page (see Firmware Upgrade)

3. Block of network settings:

Node IP	Yarilo PixelGO network IP address
Network Mask	Subnet mask
Gateway IP	Gateway IP address (not necessarily)

4. Art-Net settings

ShortName	Short name Art-Net
LongName	Long name

Net	Art-Net address
Subnet	Art-Net subnet The device occupies two Subnet in the ArtNet interface. The shaded Net/Subnet field shows the numbering of the second occupied subnet (for reference)

5. Port 1. Setting the first pixel output (Port A). The port operates in 1-Wire SPI mode

Pixel Type	Selecting the connected LED pixel strip
Led Count	The number of pixels in the LED strip. Pressing the MAX button sets the maximum number of pixels available
Mapping Universes	Range Universes from which the output data is taken. Each exit reserves eight universes for itself.
Sync Mode	Art-Net stream and pixel output synchronization mode Off – disabled AutoSync – output occurs after receiving data from 8 universes ArtNetSync – packet synchronization mode ArtSync/Madrix Post Sync
Test Mode	LED pixel strip test mode. Running snake
Pixel Advance Control (1-Wire)	Advanced LED pixel strip settings Data Clock (kHz): LED pixel strip frequency in kHz T0H (ns): time T0H in nanoseconds T0L (ns): time T0L in nanoseconds (estimated) T1H (ns): time T1H in nanoseconds T1L (ns): time T1L in nanoseconds (estimated) RST (µs): reset time in microseconds
Show Wiring	Information about connecting LED pixel strip to the selected output

Advanced settings for LED pixel strip in 1-Wire SPI mode.

Pixel Adv Control:

Data Clock (kHz): 800   Period 1250 ns

T0H (ns): 400   T0L (ns): 850

T1H (ns): 800   T1L (ns): 450

RST (µs): 50

6. Port 2. Setting the second pixel port (Port B). The port operates in 1-Wire SPI or 1-Wire SPI mode. If the 2-Wire SPI option is selected, port A automatically goes in the inactive state.

Setting is similar to item 5. In 2-Wire SPI mode, the menu item "Pixel Advance Control (2-Wire)" sets the tape frequency
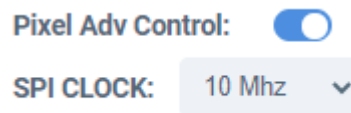
7. Save Settings. Button to save the settings.

8. Restore Defaults. Restoring settings to factory defaults.

9. Node Info. Block of information about the device, MAC address, firmware version and hardware.

FIRMWARE UPDATE

The device supports a convenient software update mechanism through the web-interface.

Tap the Firmware Update menu item, select the firmware file and tap Upload.

The entire procedure will automatically.

Yarilo PixelGO controller is able to keep working in cases when during firmware update the power is turned off or the network connection is lost. When loading, the integrity of the firmware is checked. If an error occurs, the device starts in recovery mode. See *Restore Mode*

RECOVERY MODE

Restore mode is used to correct errors that occurred during an update or other software corruption.

To enter the mode, turn off the power of the device. Press button (2) see Fig. 1 and apply power.

The device will boot into recovery mode. The LED indicator light will be red. IP address 192.168.1.170.

If the software update process fails, the device will automatically boot into recovery mode (red indicator).

To flash the device in this mode, you must use the tftp.exe utility.

By default, the tftp.exe utility is disabled. To enable it, do the following steps.

1. Press the key combination ⊞ + R, In the Execute window that opens, type (copy and paste) OptionalFeatures and press Enter.

2. In the "Windows Components" window that opens, check the TFTP Client component and click OK.

3. After a short time, Windows will apply the required changes and the TFTP Client component will be enabled.
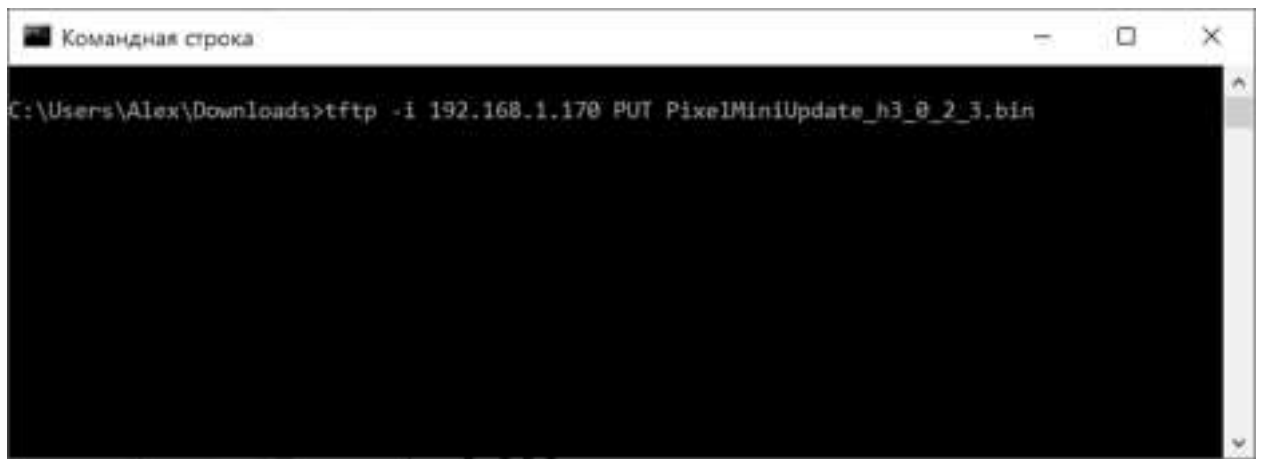
Download the latest official firmware from the official Yarilo.Pro website
https://yarilo.pro/en/controllers/pixel-controllers/yarilo-pixelgo

Run cmd.exe (⊞ + R enter cmd.exe). Go to the firmware directory. Next, type a command:

tftp -i 192.168.1.170 PUT PixelMiniUpdate_h3_0_2_3.bin

where PixelMiniUpdate_h3_0_2_3.bin is the name of the file you downloaded.

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Командная строка                                         —  □  ×

C:\Users\Alex\Downloads>tftp -i 192.168.1.170 PUT PixelMiniUpdate_h3_0_2_3.bin
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During the update process, the LED indicator will start blinking. After a while the device will reboot in operation mode.

FACTORY RESET

To reset the device to factory settings press and hold the button (2) (see Fig. 1). After 5 seconds the LED will blink red rapidly for two seconds and then the device will reset to factory settings.