

AB-FY012I8 Addressable Flexible Light Series

12V DC, addressable flexible light strip and rope light



Features:

- UL listed
- IP20, IP65, IP68 options
- Addressable, wide viewing angle 120°/90°
- Storage temperature -40°C~70°C
- Operating temperature -20°C~50°C
- Environment humidity 40-70%RH

Applications:

- Conference/meeting rooms
- Hospitals
- Commercial/ residential buildings
- Entertaining lighting
- Hotels



AB-FYVVIZ Addressable Flexible Light Series

Part number naming system:

Part numbers for AB-FYVVVIZ Addressable Flexible Light Series follow the convention below:

AB – FYVVVIZ – LLLWL – XA1

Y – Waterproof coating options (A- IP20 no coating, C-IP65 silicon coating, D-IP68 clear silicon tube, F-IP68 diffused silicon tube, H- 5mm IP68 diffused silicon tube)

VVV – Voltage (volt) of the light strip (005= 5V, 012=12V, 024=24V)

Z – Pin QTY of the IC LED (4- PLCC-4, 8- PLCC-8)

Voltage	LED Count/M	LED driver	PLCC PIN QTY & PACKAGE SIZE	Coating options
5V	90	P9411	4 / 3528	FH
	120	P9411	4 / 5050	FA, FC, FD, FF
12V	60	P943 ¹	8 / 5050	FA, FC, FD, FF
24V	60	P943	8 / 5050	FA, FC, FD, FF

LLL – Light strip length (unit: inch);

Voltage	LED Count/M	Length selection increment	Maximum available length	Coating options
5V	90	0.43 inch	118 inches	FH
	120	0.31 inch	96 inches	FA, FC, FD, FF
12V	60	1.97 inch	197 inches	FA, FC, FD, FF
24V	60	3.94 inch	394 inches	FA, FC, FD, FF

WL – Lead length (unit: inch); standard length is 12 inches.

X – CRI (8 – 80, 9 – 90, X – not applicable)

Ax – Version (Internal Code)

For example, the below part number of AB-FY012I8 Addressable Flexible Light Series stand for 12V, IP20, tape light 96 inches length, and lead 12 inches length, and addressable IC LED PLCC-8:

AB – FA012I8 – 09612 – XA1

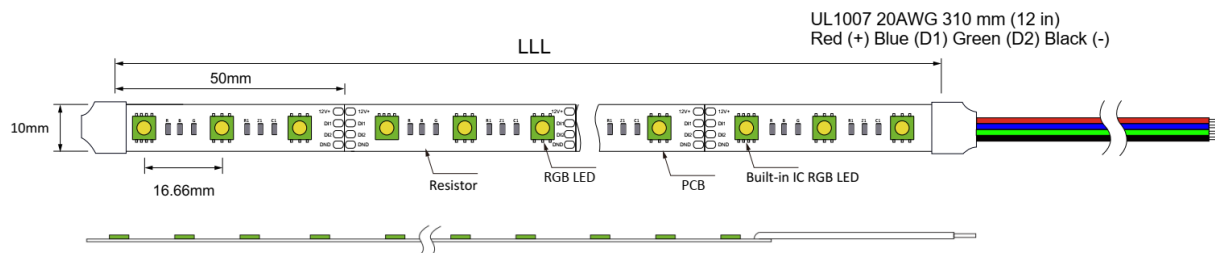
¹ Please refer to section: Technical Specs for the LED with built-in driver

Technical Specs for the strips:

Outline Dimension:

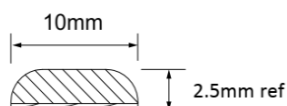
DC 12V – 60LED/M (available in AB-FA, FC, FD, FF coating)

AB-FA Coating:



2,3

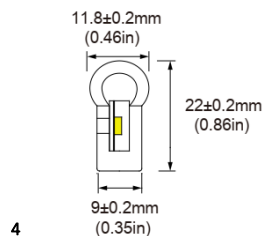
AB-FC Coating:



AB-FD Coating:



AB-FF Coating:



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² Picture refers to AB-FA type, for other types of coating, please refer to AB-FC, AB-FD, AB-FF and AB-FH.

³ Cuttable length:

Voltage	LED Count/M	Cuttable unit length
12V	60	1.97 inch

⁴ Silicon tube: durometer, shore A 60~65 or equivalent. Color: White/Clear

Technical Specs for the LED with built-in driver:

The P943 device is an easy-to-use, 3-channel LED driver. Each channel has an individually-adjustable, 8-bit (256-step), pulse-width modulation (PWM) grayscale (GS) brightness control. With dual channels data input, it continues data transmission even one of the input signals malfunctions.

Features:

- Control circuit and RGB chip in SMD 5050 packages
- Dual channels data input as data backup for line data transmission
- Grayscale (GS) Control With PWM: 8-Bit per channel (256 brightness steps)
- Data Transfer Maximum Rate: Bits per Second (bps): up to 800 kbps, when the refresh rate of 30 frames per second, a cascade of not less than 1024

Absolute maximum ratings:

Table 3. Absolute Max Ratings at Ta=25°C

Parameter	Symbol	Value	Unit
Power Supply Voltage	VDD	4.5 - 7.5	V
LED Voltage	VLED	5	V
PWM frequency	PWM	1.6	KHZ
Max output current	Iomax	18	mA
Power dissipation	Pd	<350	mW
Reverse voltage	Vr	5	V
Operating temperature range	Top	-25~80	°C
Storage temperature range	Tstg	-40~100	°C

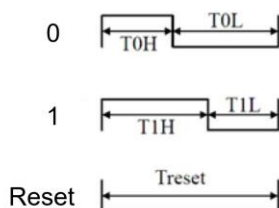
Electrical-optical characteristics:

Table 4. Electrical-optical characteristics at Ta = 25°C

Parameter	Test condition	Symbol	Value	Unit
Forward Voltage	If = 20mA	Vf	R	2 – 2.4
			G	3 – 3.4
			B	3 – 3.4
Luminous Intensity	If = 20mA	Vr	R	800 – 900
			G	1400 – 1600
			B	300 – 450
Wavelength	If = 20mA	Top	R	620 – 630
			G	520 – 530
			B	465 – 475

Communication Protocol and Sequence:

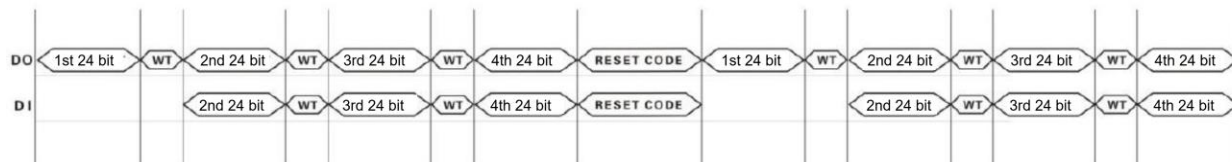
Input Code:



Data Transfer Time ($T_H + T_L = 1.71 \mu s \pm 600ns$):

Symbol	Description	Typ	Tolerance
T0H	0 code, high level time	0.35 μs	$\pm 150ns$
T1H	1 code, high level time	1.36 μs	$\pm 150ns$
T0L	0 code, low level time	1.36 μs	$\pm 150ns$
T1L	1 code, low level time	0.35 μs	$\pm 150ns$
WT	Wait for the processing time	12 μs	$\pm 150ns$
TRES	Reset code, low level time	50 μs	

Data Transmission Mode:



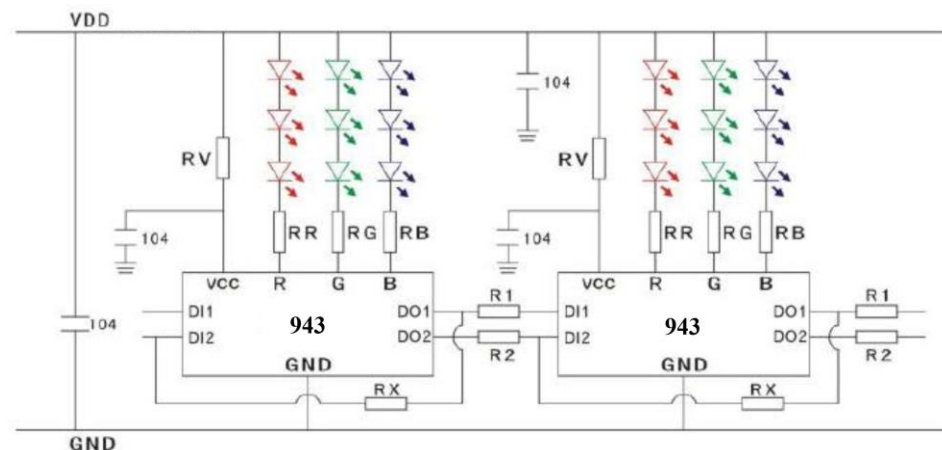
Note: the D0, D1 data are from MCU; if only D0 data is given, D1 chip will consider the input signal is abnormal, which doesn't affect the output data transmission.

24 bit Data Structure:

R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
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Note: Data transmission sequence RGB, higher bit is sent first.

Application circuit for 12V and 24V:



Resistor Rx value is 70~100 (Ω)

Resistor and capacitor value setting for shunt regulator:

Voltage	Rv (Ω)	Capacitor
12V	2700	0.1 μF
24V	6800	0.1 μF

The current limit resistor on each channel can be calculated by

$$R = \frac{VDD - VLED - VDS}{18mA}$$

Where typical VDS value is 1V with a 18mA output current.



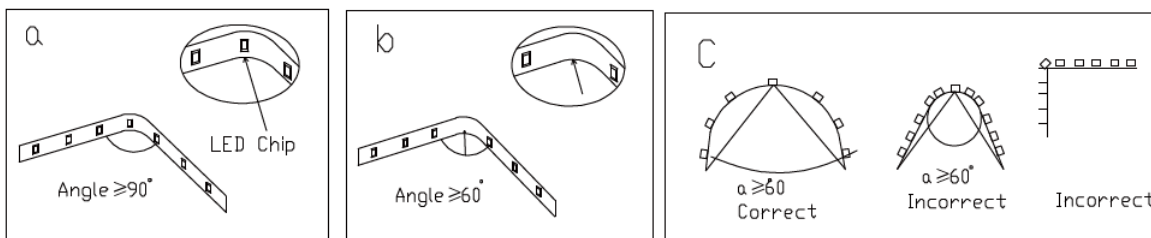
For short distance data transmission, suggest add resistors at each data output (Do1, Do2) to avoid signal reflection. Typical resistor value is 39 (Ω) when operating voltage is 4.5~12V.

When operating voltage is 24V, suggest add Zener diode at each data output (Do1, Do2) for ESD protection.

Optional Mounting Accessories:

Please refer to spec "[Accessories For Flexible Light.](#)"

Installation Instructions:

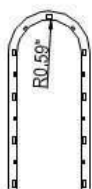


a: use an angle greater or equal to 90 degrees when there is an LED chip on the corner while placing, the strip in a concave position ($\text{Angle} \geq 90^\circ$)

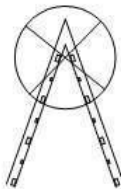
b: use an angle greater or equal to 60 degrees when there is an LED chip on the corner while placing, the strip in a concave position ($\text{Angle} \geq 60^\circ$)

c: use an angle greater or equal to 60 degrees when there is an LED chip on the corner while placing the strip in a concave position ($\text{Angle} \geq 60^\circ$) In the convex position the angle should not reach, 90 degrees. See above diagram.

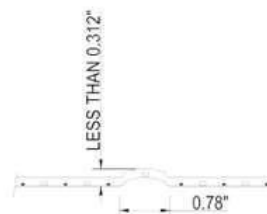
Maximum flexibility precaution:



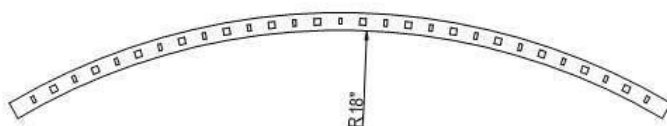
NOTE: DO NOT BEND TO A RADIUS OF LESS THAN 0.59 INCH



NOTE: SHARP BENDING ISN'T ALLOWABLE



NOTE: DO NOT AXIAL BEND TO THE HEIGHT OF MORE THAN 0.312" WITHIN 0.78 INCH SEGMENT



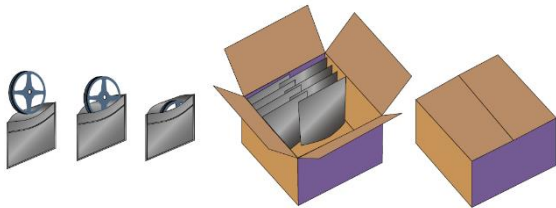
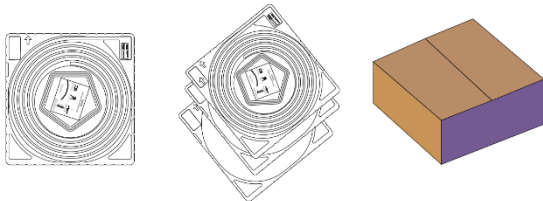
NOTE: DO NOT HORIZONTAL BEND TO A RADIUS OF LESS THAN 18.0 INCH



NOTE: DO NOT TWIST MORE THAN 90° OVER THE LENGTH OF ONE 24v SEGMENT/ TWO 12V SEGMENTS (4" TOTAL LENGTH)

Packaging:

Table 5. Packaging information

Model	QTY ⁶	Image
AB-FA series AB-FC series AB-FD series	1 roll/per ESD bag 10 bags/carton	
AB-FB series AB-FF series AB-FH series	1 roll/per tray 10 trays/carton	

⁶ Standard unit length: 5m or 10m/roll, 1 roll/bag. QTY/bag varies per different unit lengths.