

Product Specification				
Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	1 / 19

Thin-Film-Transistor LCD Module
Model:XTPY43SN09-01

Acceptance

Approved and Checked by

Approved by	Checked by		Made by

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	3 / 19

1.General Description and Features

XTPY43SN09-01 is a TM (Transmissive) type color active matrix TFT (Thin Film Transistor) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT-LCD module, a driver circuit and a back-light unit . The resolution of a 3.5" contains 320RGBx240 dots and can display up to 16.7M colors. The following table described the features of XTPY43SN09-0

1

LCD Module

Item	Specification	Unit
Screen Size	4.3inches	Diagona
Display Resolution	480RGB(H)x272(V)	Dot
Active Area	95.04(H) x53.86 (V)	mm
Outline Dimension	105.5(W) x 67.2 (H) x 2.9 (D)	mm
Display Mode	Normally white/Transmissive	--
Pixel Arrangement	RGB-Vertical Stripe	--
Display Color	16.7M	--
Gray scale inversion Direction	12 o'clock	
Viewing Direction	6 o'clock	--
Drive IC	ST7282T	--

Product Specification				
Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	4 / 19

2.Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal (H)	--	105.5	--	mm	--
	Vertical (V)	--	67.2	--	mm	(1)
	Thickness (T)	--	2.9	--	mm	(2)
Weight		--	N/A	--	g	--

Note (1) Not include FPC.

Refer to the Outline Dimension for further information.

(2) Back-light unit are included.

3.Electrical Specifications

3.1 Absolute Max. Ratings

3.1.1 Absolute Ratings of Environment

If the operating condition exceeds the following absolute maximum ratings, the TFT LCD module may be damaged permanently.

(Ta=25±2°C, V_{SS}=GND=0)

Item	Symbol	Min.	Max.	Unit	Note
Storage temperature	T _{STG}	-30	80	°C	(1)
Operating temperature	T _{OPR}	-20	70	°C	(1,2,3)

Note (1) 95 % RH Max. (40 °C ≥ Ta). Maximum wet-bulb temperature at 39 °C or less. (Ta > 40 °C)
No condensation.

Note (2) In case of below 0°, the response time of liquid crystal (LC) becomes slower and the color of panel becomes darker than normal one. Level of retardation depends on temperature, because of LC's character

Note (3) Only operation is guaranteed at operating temperature. Contrast, response time, another display quality are evaluated at +25°C.

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	5 / 19

3.2 Electrical Absolute Rating

3.2.1 TFT-LCD Module

(Voltage Referenced to VSS)

Item	Symbol	Value		Unit	Condition
		Min.	Max.		
Digital Power Supply Voltage	VDD	VSS-0.3	5.0	V	--

3.2.2 Back-Light Unit

(Ta=25±2°C)

Item	Symbol	Value			Unit	Condition
		Min.	Typ.	Max.		
LED Voltage	VF	13.5	15.0	16.5	V	
LED Current	IF	-	40	-	mA	
Power Consumption	P _{BL}	-	600	-	mW	

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	6 / 19

4 Electrical Characteristics

4.1 TFT-LCD Module (DC Characteristics)

Item	Symbol	Specification			Unit
		Min	Typ.	Max	
TFT Gate On Voltage	VGH	-	15	-	V
TFT Gate Off Voltage	VGL	-	-10	-	V
TFT Common Electrode Voltage	VcomH	-	4	-	V
	VcomL	-	-1	-	

Note1: Vcom must be adjusted to optimize display quality: cross talk, contrast ratio and etc.

Note2: VGH is TFT gate on voltage

Note3: VGL is TFT gate off voltage

The storage capacitance structure of this product is Cst(Storage on Common).

The low voltage level of VGL signal must be fluctuated with same phase as Vcom, in case of Storage on Gate structure.

Note4: Environmental condition: 25°C

GND=0V, Ta = 25°C

Item	Symbol	Min	Typ.	Max	Unit	Remark	
Supply Voltage	VDD	3.0	3.3	3.6	V	-	
Input Signal Voltage	Low Level	V _{IL}	0	-	0.3 × VDD	V	R0~R5, G0~G5, B0~B5, DCLK, DISP, HSYNC, VSYNC, DE
	High Level	V _{IH}	0.7 × VDD	-	VDD	V	
Output Signal Voltage	Low Level	V _{OL}	-	-	0.2 × VDD	V	-
	High Level	V _{OH}	0.8 × VDD	-	VDD	V	

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	7 / 19

5. Input Terminal Pin Assignment

Pin No.	Symbol	I/O	Function	Remark
1	V_{LED-}	P	Power for LED backlight cathode	
2	V_{LED+}	P	Power for LED backlight anode	
3	GND	P	Power ground	
4	V_{DD}	P	Power voltage	
5	R0	I	Red data (LSB)	
6	R1	I	Red data	
7	R2	I	Red data	
8	R3	I	Red data	
9	R4	I	Red data	
10	R5	I	Red data	
11	R6	I	Red data	
12	R7	I	Red data (MSB)	
13	G0	I	Green data (LSB)	
14	G1	I	Green data	
15	G2	I	Green data	
16	G3	I	Green data	
17	G4	I	Green data	
18	G5	I	Green data	
19	G6	I	Green data	
20	G7	I	Green data (MSB)	

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	8 / 19

21	B0	I	Blue data (LSB)	
22	B1	I	Blue data	
23	B2	I	Blue data	
24	B3	I	Blue data	
25	B4	I	Blue data	
26	B5	I	Blue data	
27	B6	I	Blue data	
28	B7	I	Blue data (MSB)	
29	GND	P	Power ground	
30	CLK	I	Pixel clock	
31	DISP	I	Display on/off	
32	NC	-	No connection	
33	NC	-	No connection	
34	DE	I	Data Enable	
35	NC	-	No connection	
36	GND	P	Power ground	
37	NC	-	No connection	
38	NC	-	No connection	
39	NC	-	No connection	
40	NC	-	No connection	

I: input, O: output, P: Power

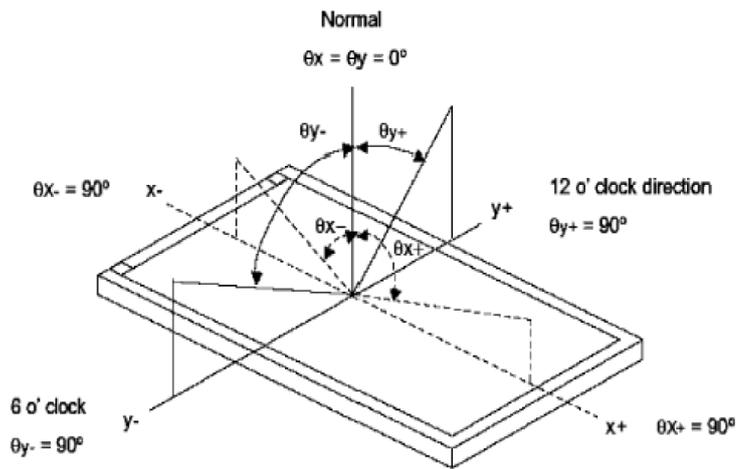
Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	9 / 19

5 Optical Characteristics

ITEM	SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
			MIN.	TYP.	MAX		
Brightness	B	Viewing normal angle		450	-	Cd/m ²	All left side data are based on TIANMA' s product reference only
Contrast Ratio	CR		400	500	--	--	
Response Time	Tr+Tf		--	25	30	ms	
Chromaticity Coordinate (Transmissive)	Red	X	0.551	0.591	0.631		
		Y	0.270	0.310	0.350		
	Green	X	0.302	0.342	0.382		
		Y	0.516	0.561	0.601		
	Blue	X	0.105	0.145	0.185		
		Y	0.047	0.087	0.127		
White	X	0.244	0.284	0.324			
	Y	0.249	0.289	0.339			
Viewing Angle	Hor.	θ_{x+}	60	70	--	Deg.	
		θ_{x-}	60	70	--		
	Ver.	θ_{y+}	40	50	--		
		θ_{y-}	60	70	--		
Uniformity	Un		75	80		%	

Note 1 : Definition of Viewing Angle θ_x and θ_y :



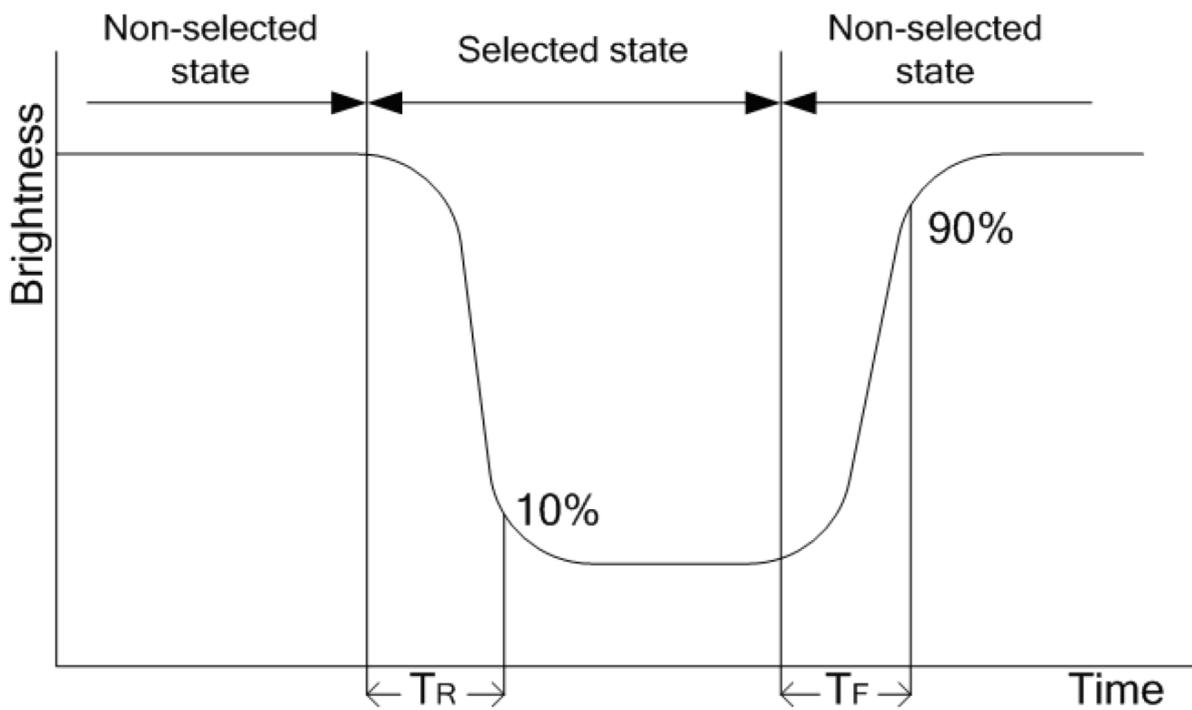
Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	10 / 19

Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Brightness of non-selected dots (white)}}{\text{Brightness of selected dots (black)}}$$

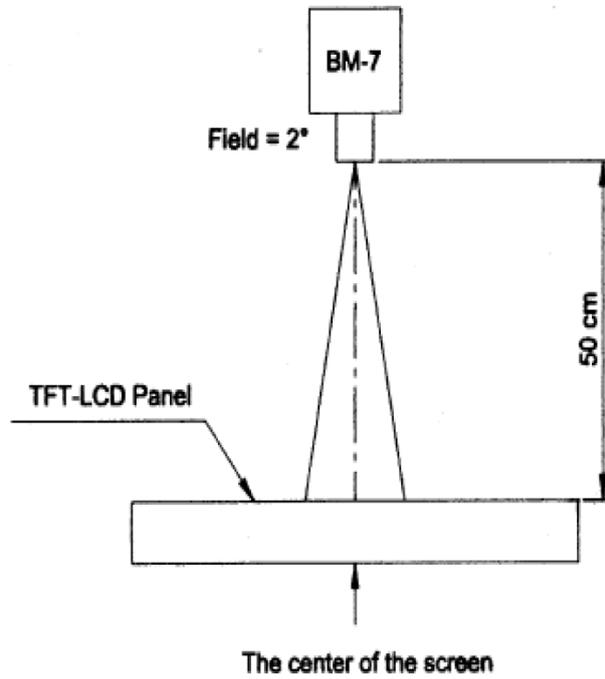
Note 3: Definition of response time (T_R , T_F)



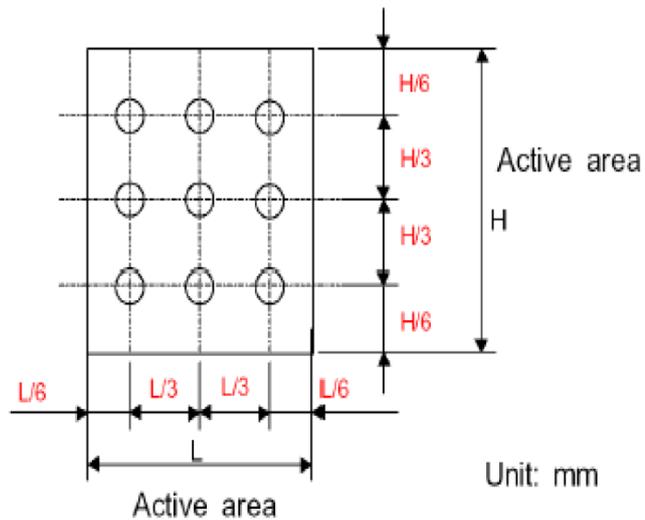
Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	11 / 19

The brightness test equipment setup
 20mA Field=2° (As measuring "black" image, field=2° is the best testing condition)



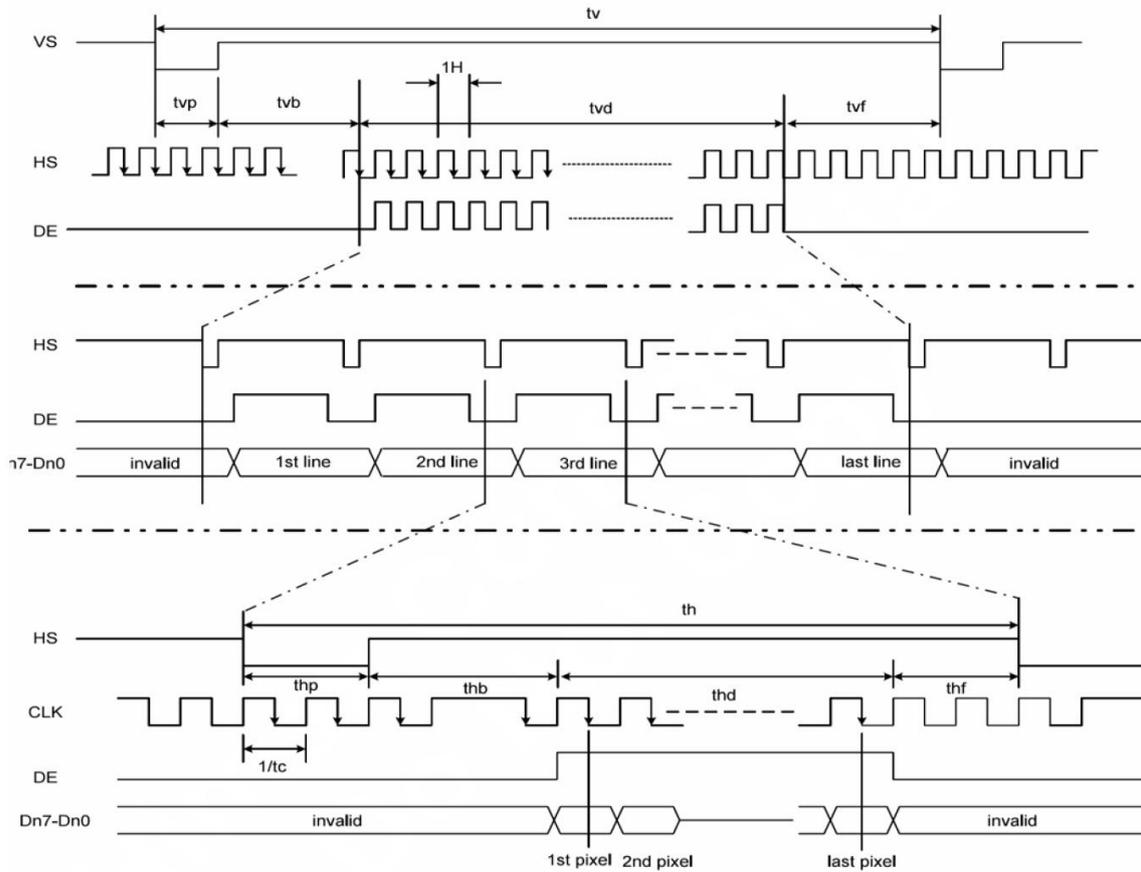
Note 4 :



Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	12 / 19

6 Interface Timing



9.2 Parallel RGB input timing table

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Clock cycle	$f_{CLK}^{(1)}$	-	9	15	MHz
Hsync cycle	$1/t_h$	-	17.14	-	KHz
Vsync cycle	$1/t_v$	-	59.94	-	Hz
Horizontal Signal					
Horizontal cycle	t_h	525	525	605	CLK
Horizontal display period	t_{hd}	480	480	480	CLK
Horizontal front porch	t_{hf}	2	2	82	CLK
Horizontal pulse width	$t_{hp}^{(2)}$	2	41	41	CLK
Horizontal back porch	$t_{hb}^{(2)}$	2	2	41	CLK
Vertical Signal					
Vertical cycle	t_v	285	286	399	$H^{(1)}$
Vertical display period	t_{vd}	272	272	272	$H^{(1)}$
Vertical front porch	t_{vf}	1	2	227	$H^{(1)}$
Vertical pulse width	$t_{vp}^{(2)}$	1	10	11	$H^{(1)}$
Vertical back porch	$t_{vb}^{(2)}$	1	2	11	$H^{(1)}$

Note: (1) Unit: $CLK=1/f_{CLK}$, $H=t_h$.

(2) It is necessary to keep $t_{vp}+t_{vb}=12$ and $t_{hp}+t_{hb}=43$ in sync mode. DE mode is unnecessary to keep it.

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	13 / 19

7 Reliability Condition for LCD

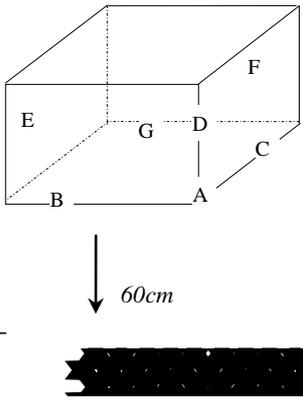
No change on display and in operation under the following test condition.

Condition: Unless otherwise specified, tests will be conducted under the following condition.

Temperature: 20±5°C Humidity: 65±5%RH

Tests will be not conducted under functioning state.

No.	Parameter	Condition	Notes
1	High Temperature Operating	50°C±2°C, 48hrs (Operation state)	--
2	Low Temperature Operating	-10°C±2°C, 48hrs (Operation state)	--
3	High Temperature Storage	80°C±2°C, 240hrs	--
4	Low Temperature Storage	-30°C±2°C, 240hrs	--
5	High Temperature and High Humidity Operation Test	60°C±2°C, 90%, 240hrs	--
6	Vibration Test	Total fixed amplitude: 1.5mm Vibration Frequency: 10~55Hz One cycle 60 seconds to 3 direction of X, Y, Z each 15 minutes.	--

7.	Drop Test	<p>To be measured after dropping from 60cm high on the concrete surface in packing state.</p> <div style="text-align: center;">  </div> <p style="text-align: right; margin-right: 20px;"> <i>Dropping method corner dropping</i> <i>A corner: once</i> <i>Edge dropping</i> <i>B, C, D edge: once</i> <i>Face dropping</i> <i>E, F, G face: once</i> </p>	--
----	-----------	--	----

- Notes:
1. No dew condensation to be observed.
 2. The function test shall be conducted after 4 hours storage at the normal temperature and humidity after removed from the test chamber.
 3. Vibration test will be conducted to the product itself without putting I in a container.

8 Dimensional outlines

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	14 / 19

CUSTOMER APPROVED: _____

NOTES:

1. GENERAL TOLERANCE: ±0.2
2. BACKLIGHT: 10 WHITE LED
3. Recommended Case Open Area Should Be Less Than LCD V.A.
4. Referenced Dimension: ()
5. UP POLARIZER SURFACE TREATMENT: CLEAR / THICKNESS

4.3 INCH MONO
480*272
VIEWING DIRECTION
TRANSMISSIVE

Non-glare (Anti-glare)

CONTACT SIDE
STIFFENER (P)

LED DRIVE DIAGRAM

PIN	SYMBOL	FUNCTION	DESCRIPTION
1	VLED1	Power for LED backlight	Power for LED backlight
2	VLED2	Power for LED backlight	Power for LED backlight
3	GND	Power Ground	Power Ground
4	VDD	Power Voltage	Power Voltage
5	R0	R0 (0V1(L13B))	R0 (0V1(L13B))
6	R1	R1 (0V1)	R1 (0V1)
7	R2	R2 (0V1)	R2 (0V1)
8	R3	R3 (0V1)	R3 (0V1)
9	R4	R4 (0V1)	R4 (0V1)
10	R5	R5 (0V1)	R5 (0V1)
11	R6	R6 (0V1)	R6 (0V1)
12	R7	R7 (0V1(L13B))	R7 (0V1(L13B))
13	G0	Green (0V1(L13B))	Green (0V1(L13B))
14	G1	Green (0V1)	Green (0V1)
15	G2	Green (0V1)	Green (0V1)
16	G3	Green (0V1)	Green (0V1)
17	G4	Green (0V1)	Green (0V1)
18	G5	Green (0V1)	Green (0V1)
19	G6	Green (0V1)	Green (0V1)
20	G7	Green (0V1(L13B))	Green (0V1(L13B))
21	B0	Blue (0V1(L13B))	Blue (0V1(L13B))
22	B1	Blue (0V1)	Blue (0V1)
23	B2	Blue (0V1)	Blue (0V1)
24	B3	Blue (0V1)	Blue (0V1)
25	B4	Blue (0V1)	Blue (0V1)
26	B5	Blue (0V1)	Blue (0V1)
27	B6	Blue (0V1)	Blue (0V1)
28	B7	Blue (0V1(L13B))	Blue (0V1(L13B))
29	GND	Power Ground	Power Ground
30	TOCK	Power Clock	Power Clock
31	DISP	Display control	Display control
32	VSYNC	Vertical Sync Signal	Vertical Sync Signal
33	HSYNC	Horizontal Sync Signal	Horizontal Sync Signal
34	DE	Data Enable	Data Enable
35	NC	No Connector	No Connector
36	GND	Power Ground	Power Ground
37	NC	No Connector	No Connector
38	NC	No Connector	No Connector
39	NC	No Connector	No Connector
40	NC(VDD)	No Connector	No Connector

XIAMEN AMOIEC DISPLAY CO., LTD

DATE: 2017.01.10 REV: A

UNIT: mm SCALE: 1/1 SHEET: 1/1

Product: XTPY43SN09-01 Count Dwg.

DRAWN: CHECKED: PAGE: 1/1

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	15 / 19

11.1 VISUAL & FUNCTION INSPECTION STANDARD

11.1.1 Inspection conditions

Inspection performed under the following conditions is recommended.

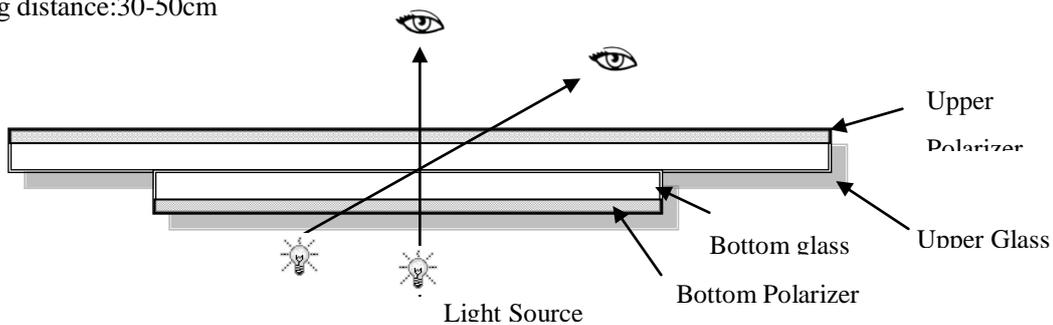
Temperature : $25 \pm 5^{\circ}\text{C}$

Humidity : $65\% \pm 10\% \text{RH}$

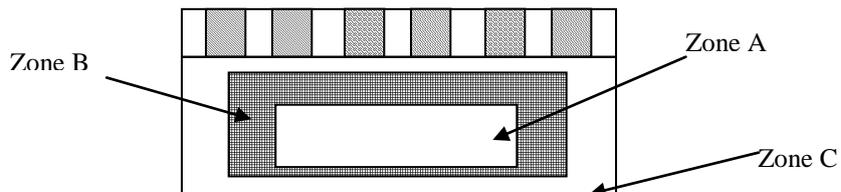
Viewing Angle : Normal viewing Angle.

Illumination: Single fluorescent lamp (300 to 700Lux)

Viewing distance:30-50cm



11.1.2 Definition



Zone A : Effective Viewing Area(Character or Digit can be seen)

Zone B : Viewing Area except Zone A

Zone C : Outside (Zone A+Zone B) which can not be seen after assembly by customer .)

Note:

As a general rule ,visual defects in Zone C can be ignored when it doesn't effect product function or appearance after assembly by customer.

11.1.3 Sampling Plan

According to GB/T 2828-2003 ; , normal inspection, Class II

AQL:

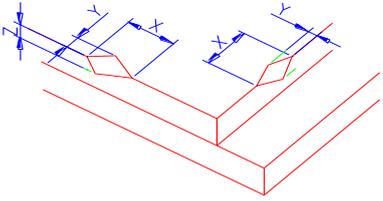
Product Specification				
Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	16 / 19

Major defect	Minor defect
0.65	1.5

LCD: Liquid Crystal Display , TP: Touch Panel , LCM: Liquid Crystal Module

No	Items to be inspected	Criteria	Classification of defects
1	Functional defects	1) No display, Open or miss line 2) Display abnormally, Short 3) Backlight no lighting, abnormal lighting. 4) TP no function	Major
2	Missing	Missing component	
3	Outline dimension	Overall outline dimension beyond the drawing is not allowed	
4	Color tone	Color unevenness, refer to limited sample	Minor
5	Soldering appearance	Good soldering , Peeling off is not allowed.	
6	LCD/Polarizer/TP	Black/White spot/line, scratch, crack, etc.	

11.1.4 Criteria (Visual)

Number	Items	Criteria(mm)						
1.0 LCD Crack/Broken	(1) The edge of LCD broken	 <table border="1" data-bbox="847 1619 1393 1774"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>≤3.0mm</td> <td><Inner border line of the seal</td> <td>≤T</td> </tr> </tbody> </table>	X	Y	Z	≤3.0mm	<Inner border line of the seal	≤T
X	Y	Z						
≤3.0mm	<Inner border line of the seal	≤T						

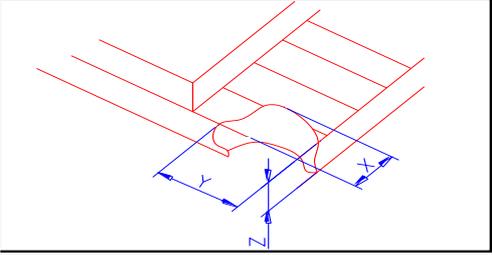
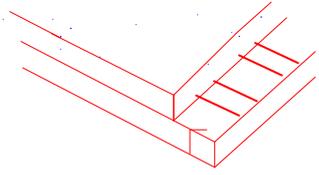
NOTE:

X: Length

Y: Width

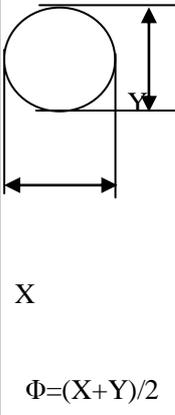
Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	17 / 19

<p>Z: Height L: Length of ITO, T: Height of LCD</p>	<p>(2) LCD corner broken</p>	 <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">Z</td> </tr> <tr> <td style="text-align: center;">$\leq 3.0\text{mm}$</td> <td style="text-align: center;">$\leq L$</td> <td style="text-align: center;">$\leq T$</td> </tr> </table>	X	Y	Z	$\leq 3.0\text{mm}$	$\leq L$	$\leq T$
	X	Y	Z					
$\leq 3.0\text{mm}$	$\leq L$	$\leq T$						
<p>(3) LCD crack</p>	 <p style="text-align: center;">Crack Not allowed</p>							

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	18 / 19

Number	Items	Criteria (mm)																																																																	
2.0	Spot defect  <p style="text-align: center;">$\Phi = (X+Y)/2$</p>	<p>① light dot (LCD/TP/Polarizer black/white spot , light dot, pinhole, dent, stain)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Zone Size (mm)</th> <th colspan="3" style="text-align: center;">Acceptable Qty</th> </tr> <tr> <th style="text-align: center;">A</th> <th style="text-align: center;">B</th> <th style="text-align: center;">C</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$\Phi \leq 0.10$</td> <td colspan="3" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;">$0.10 < \Phi \leq 0.15$</td> <td colspan="3" style="text-align: center;">3(distance $\geq 10\text{mm}$)</td> </tr> <tr> <td style="text-align: center;">$0.15 < \Phi \leq 0.2$</td> <td colspan="3" style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">$0.2 < \Phi$</td> <td colspan="3" style="text-align: center;">0</td> </tr> </tbody> </table> <p>② Dim spot (LCD/TP/Polarizer dim dot, light leakage、 dark spot)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Zone Size (mm)</th> <th colspan="3" style="text-align: center;">Acceptable Qty</th> </tr> <tr> <th style="text-align: center;">A</th> <th style="text-align: center;">B</th> <th style="text-align: center;">C</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$\Phi \leq 0.1$</td> <td colspan="3" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;">$0.1 < \Phi \leq 0.2$</td> <td colspan="3" style="text-align: center;">2(distance $\geq 10\text{mm}$)</td> </tr> <tr> <td style="text-align: center;">$0.2 < \Phi \leq 0.3$</td> <td colspan="3" style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">$\Phi > 0.3$</td> <td colspan="3" style="text-align: center;">0</td> </tr> </tbody> </table> <p>③ Polarizer accidented spot</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Zone Size (mm)</th> <th colspan="3" style="text-align: center;">Acceptable Qty</th> </tr> <tr> <th style="text-align: center;">A</th> <th style="text-align: center;">B</th> <th style="text-align: center;">C</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$\Phi \leq 0.2$</td> <td colspan="3" style="text-align: center;">Ignore</td> </tr> <tr> <td style="text-align: center;">$0.2 < \Phi \leq 0.5$</td> <td colspan="3" style="text-align: center;">2(distance $\geq 10\text{mm}$)</td> </tr> <tr> <td style="text-align: center;">$\Phi > 0.5$</td> <td colspan="3" style="text-align: center;">0</td> </tr> </tbody> </table>	Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi \leq 0.10$	Ignore			$0.10 < \Phi \leq 0.15$	3(distance $\geq 10\text{mm}$)			$0.15 < \Phi \leq 0.2$	1			$0.2 < \Phi$	0			Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi \leq 0.1$	Ignore			$0.1 < \Phi \leq 0.2$	2(distance $\geq 10\text{mm}$)			$0.2 < \Phi \leq 0.3$	1			$\Phi > 0.3$	0			Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi \leq 0.2$	Ignore			$0.2 < \Phi \leq 0.5$	2(distance $\geq 10\text{mm}$)			$\Phi > 0.5$	0		
Zone Size (mm)	Acceptable Qty																																																																		
	A	B	C																																																																
$\Phi \leq 0.10$	Ignore																																																																		
$0.10 < \Phi \leq 0.15$	3(distance $\geq 10\text{mm}$)																																																																		
$0.15 < \Phi \leq 0.2$	1																																																																		
$0.2 < \Phi$	0																																																																		
Zone Size (mm)	Acceptable Qty																																																																		
	A	B	C																																																																
$\Phi \leq 0.1$	Ignore																																																																		
$0.1 < \Phi \leq 0.2$	2(distance $\geq 10\text{mm}$)																																																																		
$0.2 < \Phi \leq 0.3$	1																																																																		
$\Phi > 0.3$	0																																																																		
Zone Size (mm)	Acceptable Qty																																																																		
	A	B	C																																																																
$\Phi \leq 0.2$	Ignore																																																																		
$0.2 < \Phi \leq 0.5$	2(distance $\geq 10\text{mm}$)																																																																		
$\Phi > 0.5$	0																																																																		

Product Specification

Amotec	Model: XTPY43SN09-01	Rev. No.	Issued Date.	Page.
		02	2016,04,21	19 / 19

	Line defect (LCD/TP /Polarizer black/white line, scratch, stain)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Width(mm)</th> <th rowspan="2">Length(mm)</th> <th colspan="3">Acceptable Qty</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.03$</td> <td>Ignore</td> <td colspan="2">Ignore</td> <td rowspan="3">Ignore</td> </tr> <tr> <td>$0.03 < W \leq 0.05$</td> <td>$L \leq 3.0$</td> <td colspan="2">$N \leq 2$</td> </tr> <tr> <td>$0.05 < W \leq 0.08$</td> <td>$L \leq 2.0$</td> <td colspan="2">$N \leq 2$</td> </tr> <tr> <td>$0.08 < W$</td> <td colspan="4">Define as spot defect</td> </tr> </tbody> </table>	Width(mm)	Length(mm)	Acceptable Qty			A	B	C	$\Phi \leq 0.03$	Ignore	Ignore		Ignore	$0.03 < W \leq 0.05$	$L \leq 3.0$	$N \leq 2$		$0.05 < W \leq 0.08$	$L \leq 2.0$	$N \leq 2$		$0.08 < W$	Define as spot defect			
Width(mm)	Length(mm)	Acceptable Qty																										
		A	B	C																								
$\Phi \leq 0.03$	Ignore	Ignore		Ignore																								
$0.03 < W \leq 0.05$	$L \leq 3.0$	$N \leq 2$																										
$0.05 < W \leq 0.08$	$L \leq 2.0$	$N \leq 2$																										
$0.08 < W$	Define as spot defect																											
3.0	Polarizer Bubble	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Zone Size (mm)</th> <th colspan="3">Acceptable Qty</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.2$</td> <td colspan="2">Ignore</td> <td rowspan="4">Ignore</td> </tr> <tr> <td>$0.2 < \Phi < 0.4$</td> <td colspan="2">2(distance ≥ 10mm)</td> </tr> <tr> <td>$0.4 < \Phi \leq 0.6$</td> <td colspan="2">1</td> </tr> <tr> <td>$0.6 < \Phi$</td> <td colspan="2">0</td> </tr> </tbody> </table>	Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi \leq 0.2$	Ignore		Ignore	$0.2 < \Phi < 0.4$	2(distance ≥ 10 mm)		$0.4 < \Phi \leq 0.6$	1		$0.6 < \Phi$	0							
Zone Size (mm)	Acceptable Qty																											
	A	B	C																									
$\Phi \leq 0.2$	Ignore		Ignore																									
$0.2 < \Phi < 0.4$	2(distance ≥ 10 mm)																											
$0.4 < \Phi \leq 0.6$	1																											
$0.6 < \Phi$	0																											
4.0	SMT	According to IPC-A-610C class II standard . Function defect and missing part are major defect ,the others are minor defect.																										