

Taiwan, May, 2015

Welcome to read Winstar Newsletter issue no.80. In this issue, we will introduce all the Winstar TFT product lines as your selection guide of TFT displays. Customers could better understand all aspects of Winstar TFT display modules. Welcome to read the content thru the below QR code on your cell phone.

Winstar 2015 Product Seminar in Europe End off Good Result

Thanks to the customers for attending the Winstar 2015 Product Seminar in Poland on April 30th. We appreciated for all the participants attending this workshop since this was first time Winstar hold an overseas seminar and we could not succeed it without your participation. Furthermore, we would like to take this chance to express our thanks and appreciation to the staff of Unisystem Co, especially to Mr. Sławomir Szveda and Mr. Kamil Kozłowski. Without your assistance and support, we couldn't make it happened.

From the questionnaire, the customers gave us a very high score for all aspects of this seminar. The overall rating score for this seminar we got is 89 and over 95% participants stated that they are willing to attend the seminar again in future. We are glad that the customers agreed the seminar informative and worthwhile. Our primary goal was to improve the customers' awareness and understanding of Winstar products and we did reach this goal and be even more of a success.

There were many topics covered during the seminar and the presenters did outstanding jobs of sharing their expertise with you. If you still have questions about Winstar STN, TFT, OLED products, welcome to contact with our sales team or presenters. Or if you need the details or the contents of this seminar, please feel free to contact us. Once again, thank you for being part of Winstar 2015 product seminar in Europe and thanks for your comments and suggestions; we assure you that we will do better in the future.



Winstar TFT Product Series Introduction

Some customers were not available to attend our April seminar in Poland; therefore we will introduce the important excerpt from this seminar for TFT, STN and OLED presentations. In this issue, we will begin from Winstar TFT product overview introduction and the advantages of Winstar TFT.

Winstar offers a wide product range of TFT-LCD product line which is from small to medium sizes such as 3.5" to 12.1". Our TFT display is qualified under industrial standard which is our major application field, e.g. industrial control, coffee machine, medical equipment, POS system, automation, GPS navigator and etc.

Furthermore, we also provide option of controller board series such as Q Series / P Series and resistance & capacitive touch panel so that the customer can easy test and evaluate possible solution in early design stage. In order to response to the market demand, Winstar provides the solution of TFT easy access embedded M Series (Clever /System), Monochrome TFT, high brightness TFT, wide view O-Film TFT and so on.

Below chart is a overview Winstar TFT product series; we will introduce them in the following pages. Some details will not be mentioned in this published Winstar Newsletter, welcome to contact with our sales team for more information.

TFT Product Overview



Traditional TFT



High Brightness TFT



O - TFT



Mono TFT











Q - TFT



M - TFT

Winstar Traditional TFT and High Brightness TFT

Winstar Traditional TFT is referring to our main promotion models from 3.5 inches to 12.1 inches which typical brightness is around 300 ~ 500 nits with operating temperatures from -20°C to +70°C. Some customers would need sunlight readable solution for their applications, therefore Winstar offer high brightness TFT solutions as option. Winstar high brightness TFT is featured with brightness up from 800 nits to 1000 nits. Below are lists of our traditional TFT and High Brightness TFT as reference.

Traditional TFT List						
 <p>WF121ATIAML0# Resolution 1024x768 LVDS Interface Backlight LED Operating Temperature -30 ~ +80°C Display color 262k/16.2M WINSTAR</p>			<p>Resolution : 320*240 ~ 1024*768 Size : 3.5" ~ 12.1" I / F : Digital / LVDS</p>			
3.5" 320*240 93.5*66.44 Digital 	4.3" 480*272 105.5*67.2 Digital 	5.7" 320*240 141.1*101.5 Digital 	7" 800*480 165.0*104.4 Digital / LVDS 	8" 800*480 192.8*116.9 Digital 	10.2" 800*480 235.0*145.8 Digital / LVDS 	12.1" 1024*768 260.5*204.0 LVDS 
						Size

High Brightness TFT List			
 <p>WINSTAR High Brightness</p>		<p>Resolution : 320*240 ~ 800*480 Size : 3.5" ~ 7" Brightness : 800 ~ 1000nits</p>	
3.5" 320*240 1000nits 	4.3" 480*272 1000nits 	5.7" 320*240 800nits 	7" 800*480 1000cd/m2 
			Size

Winstar Wide View Angle TFT –O Film TFT

In Winstar News issue No. 76 and No. 79, we introduced the Winstar O-Film TFT models and product features. There are many wider view angle technology for TFT displays in the market such as MVA and IPS technology. Comparing to the MVA or IPS technology, O Film TFT has the advantage of pricing. More importantly, the specifications and dimensions of MVA and IPS TFT in the market are more suitable for consumer products (like tablets and smartphones) not for industrial products. Winstar offers a O-Film TFT solution to enhance TN glass viewing angle and can overcome gray scale inversion. Please see the below comparison that the Winstar O-Film TFT has improved the gray scale inversion. Following chart is our O-Film TFT available items as reference, if you need other size featured with O Film solution, please let us know.

O - Film TFT



Normal TFT
(Viewing Angle = 60°)



O Film -TFT
(Viewing Angle = 75°)

O Film TFT Product List



Resolution : 320*240 ~ 800*480
Size : 3.5" ~ 7"
Viewing Angle : about 75 degree

2015 Q 3

3.5"
320 x 240



MP

4.3"
480X272



MP

5.7"
320 x 240



2015 Q 2

7"
800 x 480



Winstar Monochrome TFT Modules

We introduced in our previous Winstar Newsletter of Mono TFT models which featured with very high contrast while comparing with the monochrome STN displays. The DFSTN displays have the good black background with white character performance, but you might find the purplish background phenomenon.

The monochrome TFT display is a very good solution instead to replace the DFSTN. It has high contrast ratio, wide viewing angle, and built in controller with MCU interface; so the customer can use regular micro processor to drive it. Most importantly, the price for some modules are better than STN.

The monochrome TFT normally is with TN positive or black VA LCD, but applied in the active matrix TFT, which allows for high contrast (800:1 or 900:1) and short response time. In short, the mono TFT display performance is much better on contrast, brightness and response time than traditional monochrome LCD module. The Mono TFT displays usually do not need an extended controller board to drive MCU control. The displays can operate in mode 2, 4 or 16 shades of gray scale, depending on the settings. Because the display driver supports several communication modes : 3 - or 4-line serial interface and an 8 -bit parallel interface compatible with standard systems with 8080 or 6800 family, the desired mode is selected by user to choose appropriate interface to control the device system. Currently, we have below three models available. Welcome to contact with us for details.

Monochrome TFT module

Size



Item-WF35N	Dimension
Dot Matrix	240 x 320 Mono TFT
Module dimension	62.9 x 86.54 x 4.0 mm
Contrast	900 : 1



Item-WF57S	Dimension
Dot Matrix	320 x 240 Mono TFT
Module dimension	160.0 x 109.0 x 7.0 mm
Contrast	900 : 1



Item-WF62A	Dimension
Dot Matrix	640 x 320 Mono TFT
Module dimension	170.0 x 88.3 x 6.0 mm
Contrast	800 : 1

Resolution

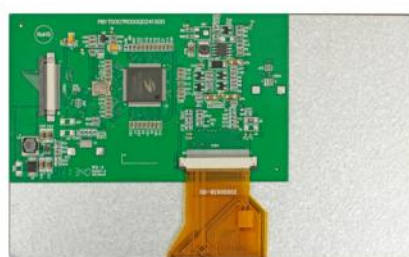
Winstar TFT Q Series Family

Winstar has introduced TFT Q Series Family which key feature is having integrated 36-pinout on the SSD1963 controller board. The Q Series has already become one of the most popular TFT products. The Q Series modules are derivative products from the Winstar existing standard TFT modules which uniform the pin assignment into 36 pins on board. The Q Series modules combined with SSD1963 controller board plus a 36 pin-out connector on it. The Q Series is featured with 8 bit or 16 bit options and already defined pin no. 33 ~ 36 as backlight supply; therefore, the customers no need to design extra backlight circuit. Winstar TFT Q Series display provides the following innovative advantages to offer outstanding image quality and easily to use a colorful TFT display.

Winstar Q series is support with Solomon SSD1963 Which has the traditional inputs and drive TFT by VESA signal. Therefore, the customers don't need T-COM circuit on board. Besides, we have integrated all functions including TFT connection, backlight driver, and touch panel into only one connection. Below are the key advantages.

- ▶ Q Series integrated a 36 pin-out connector on SSD1963 controller board and all connectors are the same direction.
- ▶ All Winstar TFT Q Series are both fit for 8 bit and 16 bit parallel interface options.
- ▶ The pin no. 33 ~ 36 already be defined as backlight supply.
- ▶ Built in backlight driver IC, all Q series TFT displays can be drive by 5.0V (3.5" and 4.3" also support 3.3V). The customers do not have to change the backlight driver circuits while change the TFT module sizes.
- ▶ The 5.7", 7.0", 8.0" and 10.2" Q Series are allowed to design "Sleep Mode" to close BIAS(VGH, VGL, AVDD) low power consumption mode.
- ▶ Resistive Touch Screen options are available for all Q Series display, and 4-Line signal (X1, Y1, X2, Y2) can be input from 36pin connector.
- ▶ Capacitive Touch Screen options are available for all Q Series display, and the I2C read/write protocol can be input from 36pin connector.

Q-Series Control Board



Control /MCU IC	SSD1963
Support Resolution	864 x 480
Number of Color	16M-color
Support Interface	8/16/BITS 8080/6800

Winstar TFT P Series Family

The modules of Winstar TFT P Series are similar to Q series which are also featured with an integrated 36-pinout connector on board. The P Series modules are derivative products from the Winstar existing standard TFT modules which uniform the pin assignment into 36 pins on a RA8875 controller board.

The P Series is support with 8 bit or 16 bit options and already defined pin no. 33 ~ 36 as backlight supply; therefore, the customers no need to design extra backlight circuit. If you require different function controller for your applications, you can consider choosing Winstar TFT P Series. It supports many import function such as Chinese character display, backlight brightness adjustment, Flash Memory and touch panel driver. For more detail, please check our Winstar Newsletter Issue No. 75 or contact with our sales team.

P-Series Control Board



Control /MCU IC	RA8875
Support Resolution	800 x 480
Number of Color	65k-color
Support Interface	8/16/BITS 8080/6800
Extra Functions	Chinese character, Flash Memory BL adjustment , and T/P driver

Pin to Pin Compatible

► Q- Series

- Use the same interface from 3.5" to 10.2"



► P- Series

- Use the same interface from 3.5"/5.7"/8"



PIN	Aall function
1	GND
2	VDD (3V)
3	BL_E
4	RS
5	WR
6	RD
7 ~ 22	DB0 ~ DB15
23	NC / TE
24	NC/ For CTP
25	CS
26	RESET
27	NC(UD)
28	NC(LR)
29 ~ 32	For TP function CTP & RTP
33-34	B/L power (GND)
35-36	B/L power (5V)

Winstar TFT M Series (Clever System) - 1

Many Winstar TFT M Series which we called “Clever System” is a easy access system for users to begin exploring the colorful display on their applications. The M Series Modules are “all in one system” which has 2 user interfaces which are RS232 and SPI interfaces; it support backlight brightness adjust, PMW signal output and 4 switches button sensor. Winstar Display also designs a TFT editing program for end users to design their software more easily.

There are many benefits of Winstar TFT M Series for why customers should choose the M Series, below are the key advantages –

- 1.) All in One System: We build the micro controller behind the TFT panel, it can driver TFT, backlight and touch panel directly. The M Series modules also have microcontrollers (PIC24), SRAM (frame buffer) and flash storage (graphic files).
- 2.) More Convenient to Upgrade: The software can be upgraded on line to download the new version; therefore, the customers don't need to upgrade via burning machine.
- 3.) Less Coding Process: Programming and test of these modes can be done by our software “user interface” (UI). Our UI program can demo what you want; so users don't need to write any software.
- 4.) Reduce I/O Port: The customers can use RS232 or SPI-4 Line to driver TFT directly. A suitable USB adapter is also included in the scope of supply.

Clever System (M-Series)



Clever System

Link via Uart / SPI



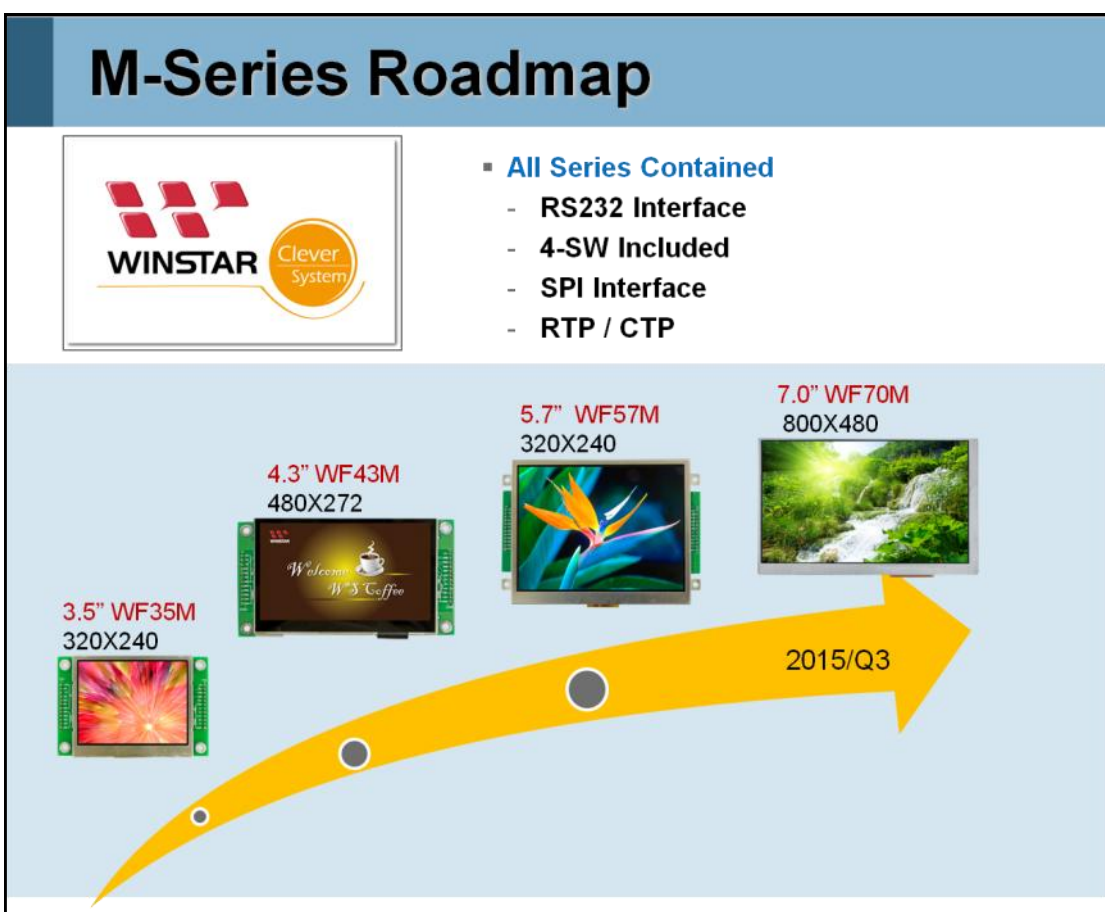
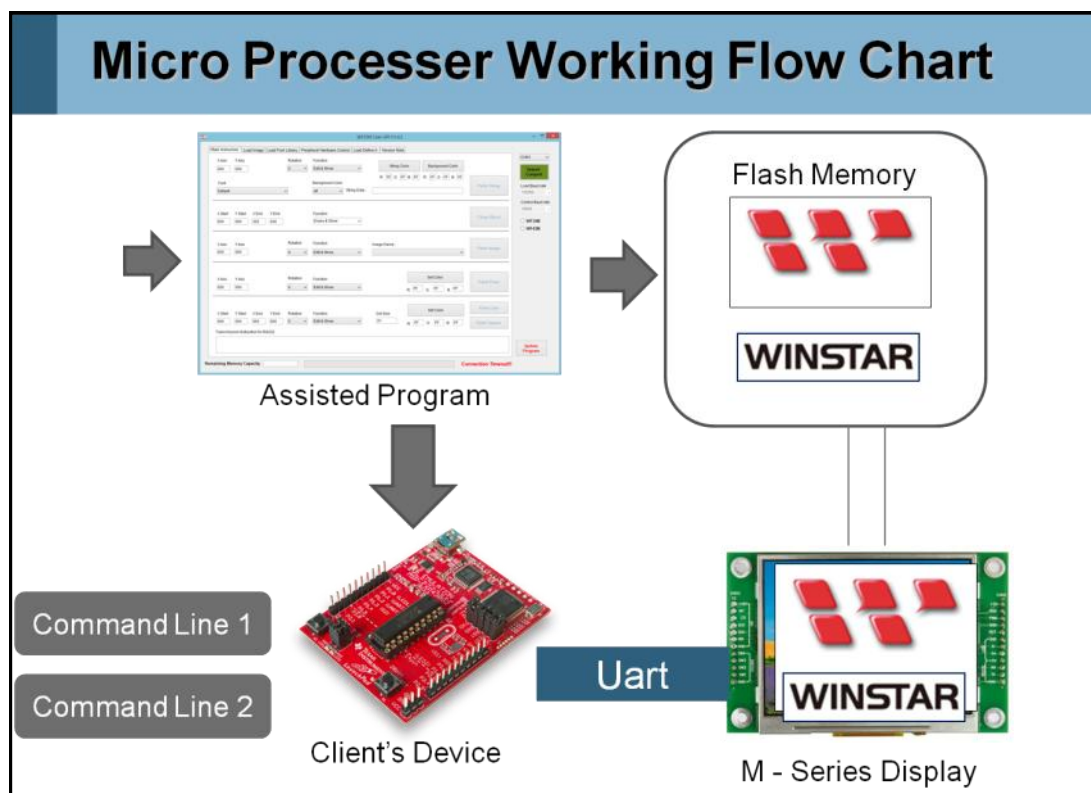
Client's MCU

Key Advantages

- Shorten Development Time
- More Convenient to Upgrade from STN
- Support Low Level MCU
- Easy to Use
- Less I/O Port

Winstar TFT M Series (Clever System) - 2

Below is Winstar M Series micro processor working flow chart as reference. The image gets input to the flash memory via the User Interface, and creates a command. And then, users can input some texts to the UI and create another command. Welcome to contact with our sales team if you need the coding program, datasheet or any further details of how it works. Following is the roadmap of M Series for your reference.

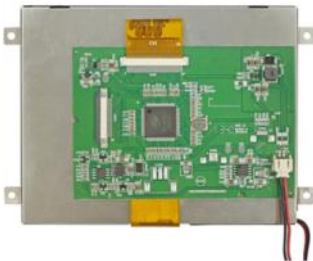




Comparison of Winstar TFT Q / P / M Series

In the previous pages of this issue, we introduced the key features of Winstar TFT Q Series, P Series and M Series. You can see that Winstar launched a series of system TFT product lines which can cover all your need for TFT displays. Below is the comparison for your reference while choosing a suitable TFT modules.

QPM Control Board

Pin to Pin Compatible Q / P / M

Q-Series	P-Series	M-Series (Clever System)
Interface Protocols 6800 – series Parallel 8080 - series Parallel	Interface Protocols 6800 – series Parallel 8080 - series Parallel	Interface Protocols SPI Interface RS232 Interface
<div style="background-color: #0070c0; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> Q Series </div> 	<div style="background-color: #009980; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> P Series </div> 	<div style="background-color: #ff9900; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> C System </div> 








Control Board Summary

Serial Type	Q Series	P Series	M Series
Control /MCU IC	SSD1963	RA8875	MCU
Support Resolution	864 x 480	800 x 480	480 x 272
Number of Color	16M-color	65k-color	256k-color
Support Interface	8/16BITS 8080/6800	8/16/BITS 8080/6800	1.RS232 2.4-LineSPI
Backlight PWM	1	2	2
Number of Pin	36 Pin	36 Pin	24pin
Display Mode	Graphic	Text/Graphic	Text/Graphic
Application	1. Medical 2. shipboard	ALL Industrial	ALL Industrial

Winstar TFT Application Categories

Winstar offers a comprehensive range of industrial TFT displays in sizes ranging from 3.5 inches to 12.1 inches to meet the customers requirement. Except our Traditional Standard TFT modules, we introduced many TFT product lines in a row, such as Mono TFT, Q Series, P Series, M Series and high brightness / wide temperature TFT displays. Sometimes price is the most concerned issue for an applications or a project, therefore, we launched economic version for the popular sizes 3.5", 4.3" and 7.0".

The following chart is the key features of Winstar TFT product categories for your reference. For more detailed available sizes for each series, please refer to our next page in this issue.

TFT Application Categories				
Economic	Mono	Winstar Family Seris	Clever System	Special Spec. Request
		 		 
Feature : ★ Low cost P.S.: Not recommend to be used on some applications which request strict quality or long life time .	Feature : ★ Extreme High Contrast ★ Wider view angle, improved gray scale inversion ★ Cost advantage ★ Easy transfer from STN to TFT	Feature : ★ Uniform interface From 3.5"~10.2" ★ Integrated pin assignment with common 36 pin-out connector ★ Built in backlight driver IC ★ RTP / CTP option available	Feature : ★ All in one system ★ More convenience to upgrade ★ Less coding Process ★ Reduce I/O port	Feature : ★ Wide temp. ★ Wide View Angle ★ High Brightness P.S. Not all features are on the same display module, it's depends on request s

Winstar TFT Mass Production Items

From the previous pages, we hope the customers could have a full concept of Winstar TFT product lines. Below is our TFT mass production items list as a quick selection guide. Customers can choose the suitable type to fit your applications. However, you might be confused why some models were listed in different columns. Take the WF35L as an example, it means that WF35L has Traditional version, Economic version, Nichia LED version and High brightness version.

Customers can choose the suitable TFT displays depends on what you most concerned. For example, you can choose O-Film TFT if you need displays with wider viewing angle. If you need a easier access type for TFT display, you can go for M-series. Welcome to contact with our sales team for more details such as data sheet or pricing.

Quick Selection Guide

TFT Mass Production				
Type	Mass Production			
Main promotion	3.5" / WF35L	4.3" / WF43H	5.7" / WF57B/D/E	7.0" / WF70G
		8.0" / WF80B	10." / WF102A	12.1" / WF121A
Economic version	3.5" / WF35L	4.3" / WF43G		7.0" / WF70G
Nichia LED	3.5" / WF35L	4.3" / WF43G		
High Brightness	3.5" / WF35L	4.3" / WF43H	5.7" / WF57D/E	7.0" / WF70G
O-TFT		4.3" / WF43H	5.7" / WF57E	
Q series	3.5" / WF35Q	4.3" / WF43Q	5.7" / WF57Q	7.0" / WF70Q
	8.0" / WF80Q	10.2" / WF102Q		
P series	3.5" / WF35P	4.3" / WF43P	5.7" / WF57P	7.0" / WF70P
	8.0" / WF80P	10.2" / WF102P		
M series	3.5" / WF35M	4.3" / WF43M	5.7" / WF57M	
Mono TFT	3.5" / WF35N		5.7" / WF57S	6.2" / WF62A
LVDS	7.0" / WF70			12.1" / WF121A
Wide Temp.	7.0" / WF70R	8.0" / WF80A	10.2" / WF102A	12.1" / WF121A