

C O D I C O [®]

Pixel& Colors

ACTIVE COMPONENTS | PASSIVE COMPONENTS | CONNECTORS

PORTFOLIO

We Develop Solutions To Enable Your Future Products!

Unter diesem Motto sehen wir jede neue Anfrage und jedes neue Projekt unserer Kunden. CODICOS Produktpalette umfasst aktive und passive Bauelemente sowie Produkte der Verbindungstechnik. Unser Ziel ist, die bestmögliche Lösung gemeinsam mit unsere Hersteller und unter Einbindung unserer Lieferanten zu erarbeiten.

Anlagen, Maschinen, Anzeigen im öffentlichen Raum, Heizungsregler, medizinische Geräte – alle müssen ihren eigenen speziellen Anforderungen genügen. Das in den Geräten eingebaute Display bildet da keine Ausnahme. Es ist daher notwendig, einige grundlegende Dinge zu kennen und diese mit den Vorstellungen des Kunden zu vereinen.

Der Begriff »Solution« ist nicht nur ein Schlagwort für uns. Wir versuchen das gesamte Projekt zu betrachten und richten nicht nur den Blick auf die jeweilige Einzelkomponente. Durch unsere Erfahrung können wir Tipps geben, neue Ideen einbringen oder gegebenenfalls Grenzen aufzeigen. Durch diese Vorgangsweise entsteht meist ein Preisvorteil für den Kunden.

Bei der Auswahl müssen Entwickler und Konstrukteure folgende Punkte beachten:

- Anwendung/Einsatzgebiet
- Modulgröße/Abmessungen
- Sichtfläche/Aktive Fläche
- Auflösung
- Interface
- Helligkeit
- Temperaturbereich
- Blickrichtung
- Technologie
- Touchpanel
- Touchpanel Interface

Das sind die wichtigsten Punkte, die gleichermaßen für Standard- wie auch für kundenspezifische Displays gelten. Alleine über die Applikation können bereits viele wesentliche Parameter abgeleitet werden.

Gemeinsam realisieren wir Ihr Projekt!

SCHRITT STEP	ZUSTÄNDIGKEIT RESPONSIBILITY
1 Anfrage mit Spezifikation der Parameter, idealerweise mit einer ersten Zeichnung <i>Inquiry including specification of parameters, ideally with a first drawing</i>	Kunde Customer
2 Technische Klärung & Wahl der Technologie <i>Finalize requirements & selection of technology</i>	Kunde > CODICO Customer > CODICO
3 Machbarkeitsstudie und erste Zeichnung zur Überprüfung & Anpassung <i>Feasibility study and first drawing for verification & adaption</i>	CODICO > Kunde CODICO > Customer
4 Angebotslegung <i>Quotation</i>	CODICO > Kunde CODICO > Customer
5 Endkontrolle & Freigabe der Zeichnung <i>Final check & approval of drawing</i>	Kunde > CODICO Customer > CODICO
6 Bestellung der Werkzeugkosten <i>Tooling order</i>	Kunde > CODICO Customer > CODICO




Design Steps

7 SCHRITT STEP	ZUSTÄNDIGKEIT RESPONSIBILITY
Produktion der Muster & Erstellung eines kompletten Datenblatts <i>Manufacturing of samples & preparation of full datasheet</i>	Lieferant <i>Supplier</i>
8 SCHRITT STEP	ZUSTÄNDIGKEIT RESPONSIBILITY
Lieferung der Freigabemuster <i>Delivery of samples</i>	CODICO > Kunde <i>CODICO > Customer</i>
9 SCHRITT STEP	ZUSTÄNDIGKEIT RESPONSIBILITY
Test & Freigabe der Muster & Fertigungsauftrag <i>Test & approval of samples & production order</i>	Kunde > CODICO <i>Customer > CODICO</i>
10 SCHRITT STEP	ZUSTÄNDIGKEIT RESPONSIBILITY
Produktion der Serie <i>Mass production</i>	Lieferant <i>Supplier</i>

11 SCHRITT
STEP

Your Unique Display!




Under this motto we see each new inquiry and each new project of our customers. CODICO's product range includes active and passive components as well as interconnect systems. Our goal is to develop the best possible solution together with our customers and with the involvement of our suppliers.

Systems, machinery, displays in public places, heating controllers, medical devices – all have to meet their own special requirements. The displays built into these devices are no exception. It is therefore necessary to know some basic things and also to consider the wishes and ideas of the customer.

The term »Total Solution« is not just a buzzword for us. We try to take a holistic approach, i.e. to look at the entire project and not just at the individual components. By doing so, although some displays may appear expensive when considered in detail, a price advantage may be seen over the entire project. Of course only under the condition that this is desired by our customers. We see our task not only in pure trade, but also as a consultant and supplier of ideas. Based on our experience we try to give tips, to introduce new thoughts, but also to point out limits.

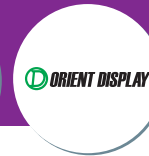
What are the points that developer & designer should think about?

- Application/Area of application
- Module size/Dimensions
- Viewing Area/Active Area
- Resolution
- Interface
- Brightness
- Temperature Range
- Viewing Angle
- Technology
- Touch panel
- Touch panel interface

These are the most important points that apply to both standard as well as customer-specific displays. Many essential parameters can be derived by knowing the application and what customer intends to achieve.

Together we realize your project!

KAPAZITIVE TPs



Capacitive Touch Panels

The consumer market continuously demands new solutions for capacitive touch panel applications, while the number of smartphones and tablet applications continues to rise. This forces even conservative markets to rethink. Only a few individual applications exclude the use of a capacitive solution.

The original single-touch or surface capacitive touch panel is now being gradually replaced by multi-touch or projected capacitive touch screens. The functioning of a projected capacitive multi-touch panel is based on two layers coated with conductive patterns. Both form the capacitive sensor which generates an electric field. When the capacitive touch panel is touched with the finger, a change in capacity occurs at the crossing points of the conductive patterns, leading to a signal change at the receiver. This structure allows the sensor to be placed directly under the cover glass of the capacitive touch panel.

Available in sizes ranging from 2.8" – 21.5" the driver IC is located on the touch (flexible printed circuit). The corresponding controller vendor can be chosen depending on display size and application requirements. The most common interfaces are I²C and USB.

Kapazitive Touch-Panels

Der Konsumermarkt zeigt ständig neue Möglichkeiten zur Verwendung kapazitiver Touchpanels auf, während parallel die Anzahl an Smartphones und Tablet-Anwendungen zunimmt. Deshalb schwenken auch konservative Märkte um. Nur vereinzelte Anwendungen erlauben keinen Gebrauch einer kapazitiven Lösung.

Der ursprüngliche Single- oder Surface Capacitive Touch ist mittlerweile vom Multi- oder Projective Capacitive-Touch abgelöst. Die Funktionsweise eines »Projected Capacitive Multi-Touchpanels« baut auf zwei Ebenen, beschichtet mit leitfähigen Mustern, auf. Beide bilden den kapazitiven Sensor, der ein elektrisches Feld erzeugt.

Wird der kapazitive Touchpanel nun mittels Finger bedient, entsteht an den Kreuzungspunkten der leitfähigen Muster eine Änderung der Kapazität, was zu einer Signaländerung am Empfänger führt. Diese Struktur ermöglicht das Anbringen der Sensorebene direkt unter dem Deckglas des kapazitiven Touchpanels.

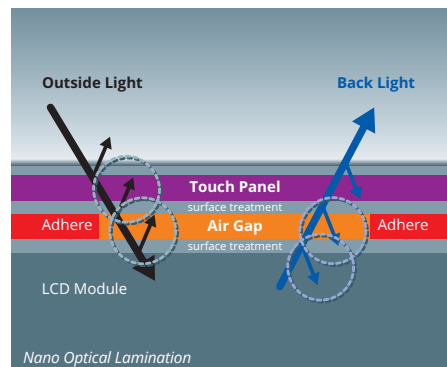
Verfügbar in den Größen 2,8" bis 21.5" ist der Treiber IC bereits am Touch-FPC (Flexible Printed Circuit) untergebracht. Je nach Displaygröße und Applikation wird der entsprechende Controller-Lieferant gewählt. Die gängigsten Interface-Modi sind I²C und USB.

Comparison Between Different Bonding Technologies

	OPTICAL BONDING	NANO OPTICAL LAMINATION
Reflectivity	4% -> 0.1%	4% -> 0.1%
Penetration Rate	90% -> 94%	90% -> 94%
Contrast Ratio	Up to 400%	Up to 400%
Rebound Bubble	Yes	No
Yellowish Spot	Yes	No
Cost	High	Reasonable



Optical Bonding vs. DST (Double Side Tape)

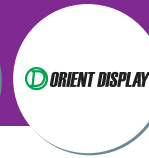


Nano Optical Lamination



Cover Glass

TFTs



Standard TFTs

SIZE [INCH]	RESOLUTION	INTERFACE	TOUCH PANEL			BRIGHTNESS [CD/M ²]	FEATURES AND OPTIONS		
			TECHNOLOGY	RTP TYPE	CTP INTERFACE		VIEWING ANGLE ENHANCEMENTS	EXTENDED LED LIFETIME [HRS]	EXTENDED TEMP. RANGE [°C]
1.3	360x360	MIPI	CTP		I ² C	900			
1.45	128x128	MCU, SPI	RTP	4-wire		200			
1.77	128x160	MCU, SPI	RTP	4-wire		200			
2.0	176x220	RGB, MCU	RTP	4-wire		270			
2.2	240x320	RGB, MCU, SPI	RTP	4-wire		220	EVA / MVA		
2.4	240x320	RGB, MCU, SPI	RTP	4-wire		220 - 950	EVA / IPS		
2.8	240x320	RGB, MCU, SPI	RTP	4-wire	I ² C	200 - 550	EVA / MVA / IPS		
3.2	240x320	RGB, MCU, SPI	RTP	4-wire		250			
3.5	320x240, 320x480, 640x480	RGB, MCU, SPI	RTP, CTP	4-wire	I ² C	220 - 1800	EVA / MVA	50k	-30 ~ +80
4.0	480x480	MIPI	CTP		I ² C	500	IPS	50k	-30 ~ +80
4.0	480x800	RGB, MIPI	RTP, CTP	4-wire	I ² C	220 - 500	MVA / IPS		
4.3	480x272, 480x800, 480x854	RGB, MCU, LVDS, MIPI	RTP, CTP	4-wire	I ² C	250 - 1300	EVA / MVA / IPS	50k	-30 ~ +80
5.0	800x480, 480x854, 720x1280	RGB, MCU, LVDS, MIPI	RTP, CTP	4-wire	I ² C, USB	250 - 850	EVA / IPS	50k	-30 ~ +80
5.7	320x240, 640x480	RGB, MCU, LVDS	RTP, CTP	4-wire	I ² C, USB	200 - 1000	EVA / IPS	70k	-30 ~ +80
6.5	800x480	LVDS	RTP	4-wire		350 - 800	EVA	50k	-30 ~ +85
7.0	800x480, 1024x600, 1280x800	RGB, LVDS, MCU, MIPI	RTP, CTP	4-/5-wire	I ² C, USB	250 - 1500	EVA / IPS	70k	-30 ~ +80
8.0	800x480, 800x600, 1024x600, 1280x720	RGB, LVDS	RTP, CTP	4-wire	I ² C, USB	250 - 1000	EVA / IPS	50k	-30 ~ +85
8.4	800x600	RGB, LVDS	RTP, CTP	4-/5-wire	I ² C, USB	250 - 1000	EVA	50k	-30 ~ +80
9.0	800x480, 1024x600	RGB, LVDS	RTP, CTP	4-wire	I ² C, USB	350 - 1200	EVA / IPS	50k	-30 ~ +80
9.7	1024x768	LVDS	RTP	4-wire		350 - 650	EVA / IPS	50k	-30 ~ +80
10.1	1024x600, 1280x800, 1920x1200	LVDS	RTP, CTP	4-/5-wire	I ² C, USB	300 - 1500	EVA / IPS	70k	-30 ~ +85
10.2	800x480	RGB, LVDS	RTP	4-wire		350			-30 ~ +85
10.4	640x480, 800x600, 1024x768	RGB, LVDS	RTP, CTP	4-/5-wire	I ² C, USB	300 - 1500	EVA / MVA	50k	-30 ~ +80
11.6	1920x1080	eDP	CTP		I ² C, USB	500 - 850	IPS		
12.1	800x600, 1024x768	LVDS	RTP, CTP	4-/5-wire	I ² C, USB	400 - 1000	EVA / MVA	50k	-30 ~ +80
12.1	1280x800	LVDS	CTP		I ² C, USB	450 - 1200	IPS	50k	-30 ~ +80
13.3	1920x1080	eDP	CTP		I ² C, USB	400	IPS		
15.0	1024x768	LVDS	RTP, CTP	4-/5-wire	I ² C, USB	400 - 1000	EVA / MVA	50k	-30 ~ +80
15.6	1920x1080	LVDS, eDP	CTP		IPS	400 - 1500	IPS	50k	-30 ~ +75
17.0	1280x1024	LVDS	RTP, CTP	4-/5-wire	I ² C, USB	450 - 1000	EVA	50k	-30 ~ +80
19.0	1280x1024	LVDS	RTP, CTP	4-/5-wire	I ² C, USB	450	IPS	50k	-30 ~ +80
21.5	1920x1080	LVDS	CTP		I ² C, USB	250 - 1000	IPS	50k	

CTP...projected capacitive touch panel / RTP...resistive touch panel

Bar Type TFTs

SIZE [INCH]	RESOLUTION [PIXEL]	MODULE SIZE [MM]	INTERFACE	BRIGHTNESS [CD/M ²]	GLASS TYPE	VIEWING ANGLES [°]
0,96	80x160	13,5x27,9x1,5	SPI	500	IPS	80/80/80/80
3.9	480x128	105,5x37,0x4,6	RGB	350/500/1000	TN	65/50/65/65
3.9	480x128	105,5x38,8x2,9	RGB	550	IPS	80/80/80/80
4,6	800x320	120,7x54,7x2,9	RGB	350	TN	65/65/50/60
5,2	480x128	140,4x49,9x3,0	RGB	350/500/850/1100	TN	65/55/65/65
6,3	800x256	165,0x67,0x6,8	LVDS	500	TN	70/60/70/70
6,5	800x320	164,9x72,46x3,7	RGB	330	TN	70/70/50/60
7,8	1280x400	205,8x67,8x4,8	LVDS, MIPI	850/950	IPS	85/85/85/85
8,8	480x1920	231,3x64,3x4,8	MIPI	600	IPS	85/85/85/85
10,2	1280x480	265,2x109,8x7,0	LVDS	800	IPS	85/85/85/85
12,3	1280x480	317,0x125,0x14,1	LVDS	1000	TN	70/60/70/70
12,3	1920x720	313,8x132,2x13,3	LVDS	700	IPS	85/85/85/85
19,0	1920x360	502,8x124,4x12,8	LVDS	700	IPS	89/89/89/89
28,0	1920x357	733,8x165,3x20,8	LVDS	700	IPS	89/89/89/89



Open Frame TFTs

SIZE [INCH]	RESOLUTION [PIXEL]	INTERFACE	BRIGHTNESS [CD/M ²]	INPUT VOLTAGE	FEATURES	OPTIONS
7.0"	800x480	-	420	12VDC	Embedded ARM Controller	4wire Resistive Touch (RS232/USB) Proj. Capacitive Touch (I ² C, USB) High Brightness Backlight
7.0"	1024x600	-	400	12VDC	Embedded ARM Controller	
10.1"	1280x800	VGA, DV, HDMI	800	12VDC	AD Board	
10.1"	1280x800	-	800	12VDC	Embedded ARM Controller	
12.1"	1024x768	VGA, DV, HDMI	1000	12VDC	AD Board	
15.6"	1920x1080	-	1000	12VDC	Embedded ARM Controller	

LCDs/LCMs



Monochrome Displays

CODICO deckt mit den Lieferanten AMPIRE, MULTI-INNO TECHNOLOGY, ORIENT DISPLAY und YEEBO DISPLAY alle gängigen monochromen Technologien ab.

Als Standard verfügbar:

- Charakter Displays: 8×1 bis 40×4
- Grafik Displays: Auflösungen von 96×64 bis 320×240

Diese Standards folgen meist einer gängigen Größe wie sie am Displaymarkt häufig vorkommt. Aufgrund der Vielfalt ist somit für fast jede Anfrage ein Standard verfügbar.

Monochrome Displays



CODICO with its suppliers AMPIRE, MULTI-INNO TECHNOLOGY, ORIENT DISPLAY and YEEBO DISPLAY, covers all common monochrome technologies available on the market.

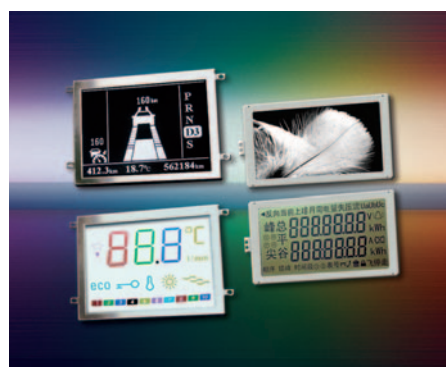
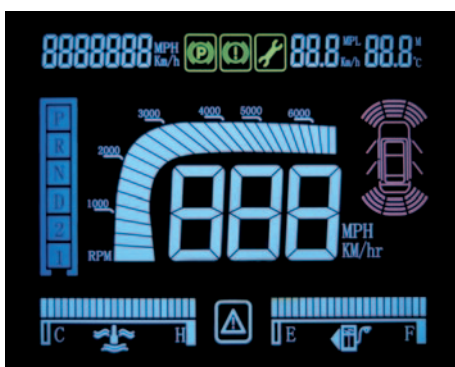
Available as a standard:

- Character displays: 8×1 to 40×4
- Graphic displays: Resolutions from 96×64 to 320×240

These standards usually follow a common size as it often can be found in the display market. Due to the variety of products, in most cases a close standard meeting most of your requirements will be available.

Technology Characteristics of LCD/LCM

LCD TYPE	TN Twisted Nematic		FSTN Film Super Twisted Nematic		ASTN Advanced Super Twisted Nematic	VA Vertical Alignment
	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	NEGATIVE
Polarizer Mode	Transmissive, Transflective, Reflective				Transmissive	Transmissive
Duty	1/1 - 1/16	1/1 - 1/8	1/1 - 1/240	1/1 - 1/240	1/1 - 1/480	1/1 - 1/64
Operating Temp. Range	-30°C ~ +85°C	-30°C ~ +85°C	-30°C ~ +85°C	-30°C ~ +85°C	-40°C ~ +85°C	-30°C ~ +85°C
Storage Temp. Range	-40°C ~ +90°C	-40°C ~ +90°C	-40°C ~ +90°C	-40°C ~ +90°C	-40°C ~ +90°C	-40°C ~ +90°C
Contrast	20	15	7	12	50	300 - 1000
Viewing Angle	60°	60°	70°	70°	90°	110°
Backlight	LED					
Backlight Color	Any Color					
Connection	Zebra, Pins, FPC					
Touch	Resistive, Capacitive, In-Cell					
Special Features	Silkscreen Printing, Hole Drilling, Milling of special Shapes					



OLEDs



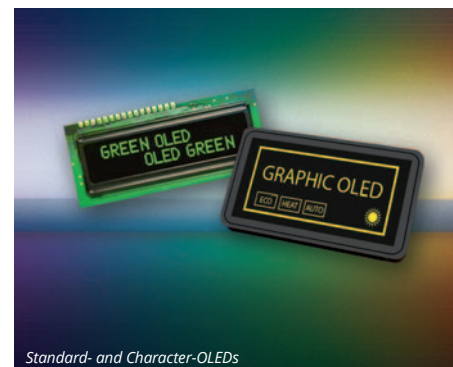
OLED Displays Overview

TYPE	SIZE [INCH]	RESOLUTION	COLOR							BONDING	ORIENTATION STRONG POINT	MODULE SIZE (MM)	ACTIVE AREA (MM)	INTERFACE			ASSEMBLY
			white	blue	yellow	green	orange	red	PARALLEL					SERIAL	RGB		
Graphic	0.33	48x48	•							COG+FPC	Square	10.00x24.10x1.40	5.98x5.98		I ² C		Soldering
	0.48	72x32	•							COG+FPC	Landscape	14.90x22.09x1.21	11.212x4.972		I ² C		Soldering
	0.49	64x32	•	•						COG+FPC	Landscape	14.50x21.60x1.20	11.18x5.58		I ² C		Soldering
	0.66	64x48	•	•						COG+FPC	Landscape	18.46x27.90x1.45	13.42x10.06	8bit 68XX/80XX	4-wire SPI, I ² C		Soldering
		112x88	•							COG+FPC	Landscape	16.00x17.00x1.12	13.42x10.012		4-wire SPI, I ² C		Soldering
	0.69	96x16	•	•						COG+FPC	Portrait	36.80x9.00x1.30	17.26x3.18		I ² C		Soldering
	0.75	96x96	•							COG+FPC	Square	18.00x42.70x1.20	13.516x13.516		4-wire SPI		Soldering
	0.82	96x39	•	•						COG+FPC	Landscape	23.80x26.00x1.30	19.372x7.858	8bit 68XX/80XX	4-wire SPI, I ² C		Soldering
	0.84	96x16	•	•		•				COG+FPC	Portrait	38.10x9.20x1.30	21.104x3.504		I ² C		Connector
	0.87	128x32	•							COG+FPC	Portrait	45.30x8.70x1.20	21.356x5.324		4-wire SPI		Soldering
	0.91	128x32	•							COG+FPC	Portrait	46.30x8.90x1.40	22.38x5.58		4-wire SPI		Soldering
	0.95	96x64	•	•						COG+FPC	Landscape	24.90x32.75x1.40	19.953x13.424	8bit 68XX/80XX	4-wire SPI, I ² C		Soldering
	0.96	64x128	•							COG+FPC	Portrait	14.00x39.30x1.20	10.86x21.74	8bit 68XX/80XX	4-wire SPI, I ² C		Soldering
		64x128	•							COG+FPC	In-Cell Touch	14.00x39.30x1.20	10.86x21.74		4-wire SPI, I ² C		Soldering
	1.04	128x64	•	•	•					COG+FPC	Landscape	26.70x31.26x1.45	21.744x10.864	8bit 68XX/80XX	3-/4-wire SPI, I ² C		Soldering
		128x32	•	•						COG+FPC	Landscape	29.80x26.50x1.30	25.58x6.38	8bit 68XX/80XX	3-/4-wire SPI, I ² C		Soldering
	1.07	160x136	•							COG+FPC	Circular	32.70x54.85x1.20	27.18x23.10		4-wire SPI		Soldering
	1.12	128x128	•							COG+FPC	Square	25.90x41.20x1.20	20.076x20.076	8bit 68XX/80XX	4-wire SPI, I ² C		Soldering
	1.30	128x64	•	•						COG+FPC	Landscape	34.50x35.00x1.45	29.42x14.70	8bit 68XX/80XX	3-/4-wire SPI, I ² C		Soldering
	1.36	128x16	•							COG+FPC	Bendable	58.40x8.66x0.30	34.408x3.448		3-wire SPI		Connector
	1.51	128x56	•	•						COG+FPC	Transparent	42.04x27.22x1.25	35.05x15.32		4-wire SPI, I ² C		Soldering
	1.54	128x64	•	•	•					COG+FPC	Landscape	42.04x63.22x1.45	35.052x17.516	8bit 68XX/80XX	4-wire SPI, I ² C		Connector
	1.71	128x32	•					•		COG+FPC	Portrait	15.75x50.50x2.00	10.54x42.22		3-/4-wire SPI, I ² C		Connector
		32x128	•							COG+FPC	In-Cell Touch	15.75x51.10x2.00	10.54x42.22		4-wire SPI, I ² C		Connector
1.81	160x32	•							COG+FPC	Bendable	115.30x14.94x0.30	45.096x9.00		3-/4-wire SPI, I ² C		Connector	
2.08	256x64	*							COG+FPC	Portrait	82.50x19.00x1.60	51.18x12.78	8bit 68XX/80XX	3-/4-wire SPI, I ² C		Soldering	
2.23	128x32	•	•	•					COG+FPC	Landscape	62.00x60.00x2.00	55.02x13.10	8bit	4-wire SPI, I ² C		Connector	
2.42	128x64	•	•	•	•				COG+FPC	Landscape	60.50x73.00x2.00	55.01x27.49	8bit	4-wire SPI, I ² C		Connector	
2.70	128x64	•		*	*				COG+FPC	Landscape	73.00x71.86x2.00	61.41x30.69	8bit	3-/4-wire SPI		Connector	
3.12	256x64	*	*	*	*				COF	Landscape	88.00x47.80x2.00	76.78x19.18	8bit	3-/4-wire SPI		Connector	
5.50	256x64			*	*				COF	Landscape	146.00x65.00x2.00	135.65x33.89	8bit 68XX/80XX	3-/4-wire SPI		Connector	
Color	0.96	128x64		•	•				COG+FPC	Landscape	26.70x31.26x1.45	21.744x11.204	8bit 68XX/80XX	3-/4-wire SPI, I ² C		Soldering	
Full Color	0.95	96x64	65,536 Colors							COG+FPC	Landscape	25.70x32.98x1.40	20.14x13.42	8bit	4-wire SPI		Soldering
	1.10	96x96	65,536 Colors							COG+FPC	Square	25.90x39.50x1.30	19.852x19.852	8/9bit 68XX/80XX	4-wire SPI		Soldering
	1.27	128x96	262,144 Colors							COF	Landscape	33.70x41.25x1.60	25.708x19.28	8bit	3-/4-wire SPI		Connector
	1.45	160x128	262,144 Colors							COF	Landscape	35.80x45.30x1.60	28.78x23.024	8/9bit 68XX/80XX	4-wire SPI	6bit	Connector
	1.50	128x128	262,144 Colors							COF	Square	33.80x48.35x1.60	26.855x26.864	8bit	3-/4-wire SPI		Connector
	1.69	160x128	262,144 Colors							COF	Landscape	39.90x48.50x1.60	33.575x26.864	8/9bit 68XX/80XX	4-wire SPI	6bit	Connector
Character	1.20	8x2	•	•	•	•			COB	Landscape	69.75x16.40x2.00	27.81x11.50	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	2.36	16x1	•	•	•				COG+FPC	Landscape	68.11x14.44x2.00	59.62x6.56	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	1.37	16x2	•	•	•				COG+FPC	Landscape	75.39x12.20x2.00	34.10x7.40	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	2.26	16x2	•	•	•				COG+FPC	Landscape	98.64x17.10x2.00	56.22x11.52	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	3.67	16x2	•	•	•	•		•	COG+FPC	Landscape	141.80x26.50x2.00	91.14x18.98	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	2.36	16x4	•	•	•				COG+FPC	Landscape	99.54x26.00x2.00	56.20x20.80	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	2.92	20x2	•	•	•				COG+FPC	Landscape	115.04x17.03x2.00	73.52x11.52	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
	2.89	20x4	•	•	•				COG+FPC	Landscape	113.54x25.60x2.00	70.42x20.82	4/8bit 68XX/80XX	SPI, I ² C		Soldering	
5.80	40x2	•	•	•				COG+FPC	Landscape	235.20x18.30x2.00	147.50x11.50	4/8bit 68XX/80XX	SPI, I ² C		Soldering		

*...16 grey scales

OLED Lifetime 50% Checkerboard Image @25°C

COLOR	HOURS	BRIGHTNESS (cd/m ²)
White	50.000	100
Red	25.000	35
Green	40.000	120
Blue	25.000	60
Yellow	80.000	120
Full Color	20.000	45





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