Technical Specification
LCD Pure
LCD Pure-X

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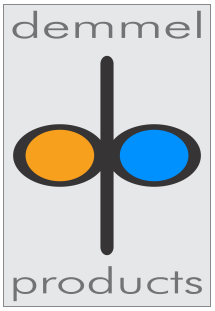


LCD Pure Specification

Version 1.0

Mar 18, 2024

Contents

Welcome to the LCD Pure specification. Here you will find information regarding our LCD Pure series. These are customizable, high quality displays in a great variety of sizes.

The series is subdivided into two categories:

- **LCD Pure:** Displays with custom coverglass (MOC: 500 pc.), no circuit board, just the LCD.
- **LCD Pure-X:** Displays with an interface board, which greatly simplifies communication with the controller.

Please visit our documentation page for more information regarding our software infrastructure.

Should any questions remain unanswered please don't hesitate to contact us via support@demmel.com or via +43-1-689470-0

Part 1

LCD Pure

The displays described here are part of the LCD Pure series by demmel products. Our goal is to provide our customers with high-end displays at competitive prices with quick delivery. All models can be purchased with or without touch screens. Both optically bonded capacitive (CTP) and resistive (RTP) variants are available. LCD Pure is the result of a strategic partnership with our trusted and reliable supplier Maxen Displays, which provides many of the TFTs used in our iLCD series.

Together we promise to provide long-term deliverability, custom solutions and rigid quality standards at an affordable price. This document provides the most essential specifications of each display and will be expanded as we add new models to the series. Please feel free to contact us via sales@demmel.com at any time if you have further inquiries.

1.1 DCD-MX35x

1.1.1 LCD Specification

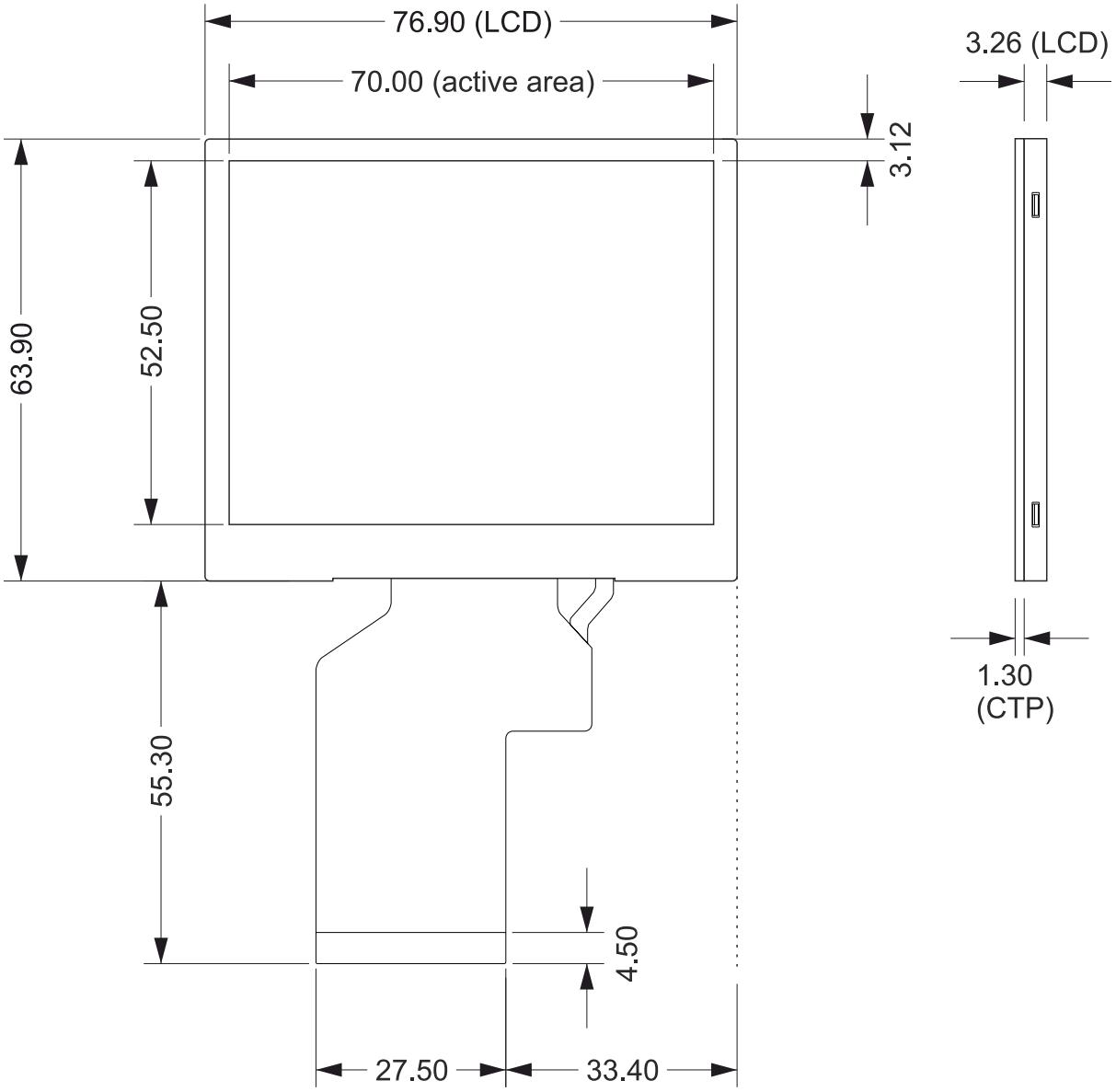
Item	DCD-MX35	DCD-MX35T	DCD-MX35C
Screen Size		3.5 inch	
Display Resolution		320 x RGB x 240 dots	
Active Area		70.08 (H) x 52.56 (V) mm	
Display Mode		Normally black / Transmissive	
Pixel Arrangement		RGB-Strip	
TFT Interface		RGB+SPI	
Display Color		16.7 M (Display) / 64k (Controller)	
Backlight 1)		White LED	
Brightness typ.		660 cd/m2	
Contrast ratio typ.		800	
Viewing Direction		ALL O'clock / IPS-Display	
Operating Temperature		-20°C~70°C	
Touch Screen	No	4-wire resistive	PCAP (OCA) 5 Fingers 2)

Note:

1) Brightness decreased to 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 20.000 hours

2) Optically bonded PCAP

1.1.2 Mechanical Specification



DCD-MX35x dimensions in mm

1.2 DCD-MX43x

1.2.1 LCD Specification

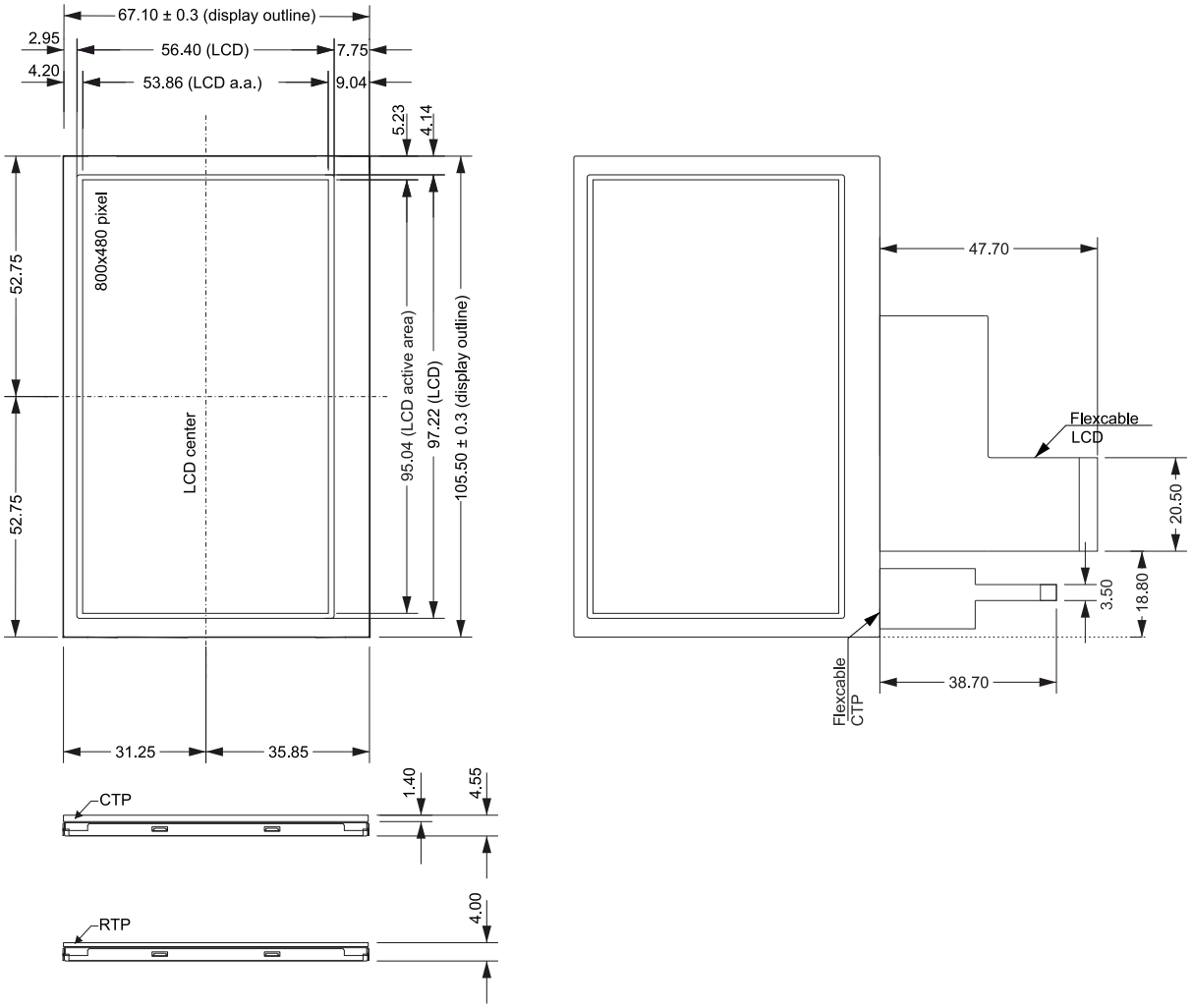
Item	DCD-MX43	DCD-MX43T	DCD-MX43C
Screen Size		4.3 inch	
Display Resolution		800 x RGB x 480 dots	
Active Area		95.04 (H) x 53.858 (V) mm	
Display Mode		Normally black / Transmissive	
Pixel Arrangement		RGB-Strip	
TFT Interface		RGB	
Display Color		16.7 M (Display) / 64k (Controller)	
Backlight 1)		White LED	
Brightness typ.		1000 cd/m2	
Contrast ratio typ.		1200	
Viewing Direction		ALL O'clock / IPS-Display	
Operating Temperature		-20°C~70°C	
Touch Screen	No	4-wire resistive	PCAP (OCA) 5 Fingers 2)

Note:

1) Brightness decreased to 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 20.000 hours

2) Optically bonded PCAP

1.2.2 Mechanical Specification



DCD-MX43x dimensions in mm

1.3 DCD-MX50x

1.3.1 LCD Specification

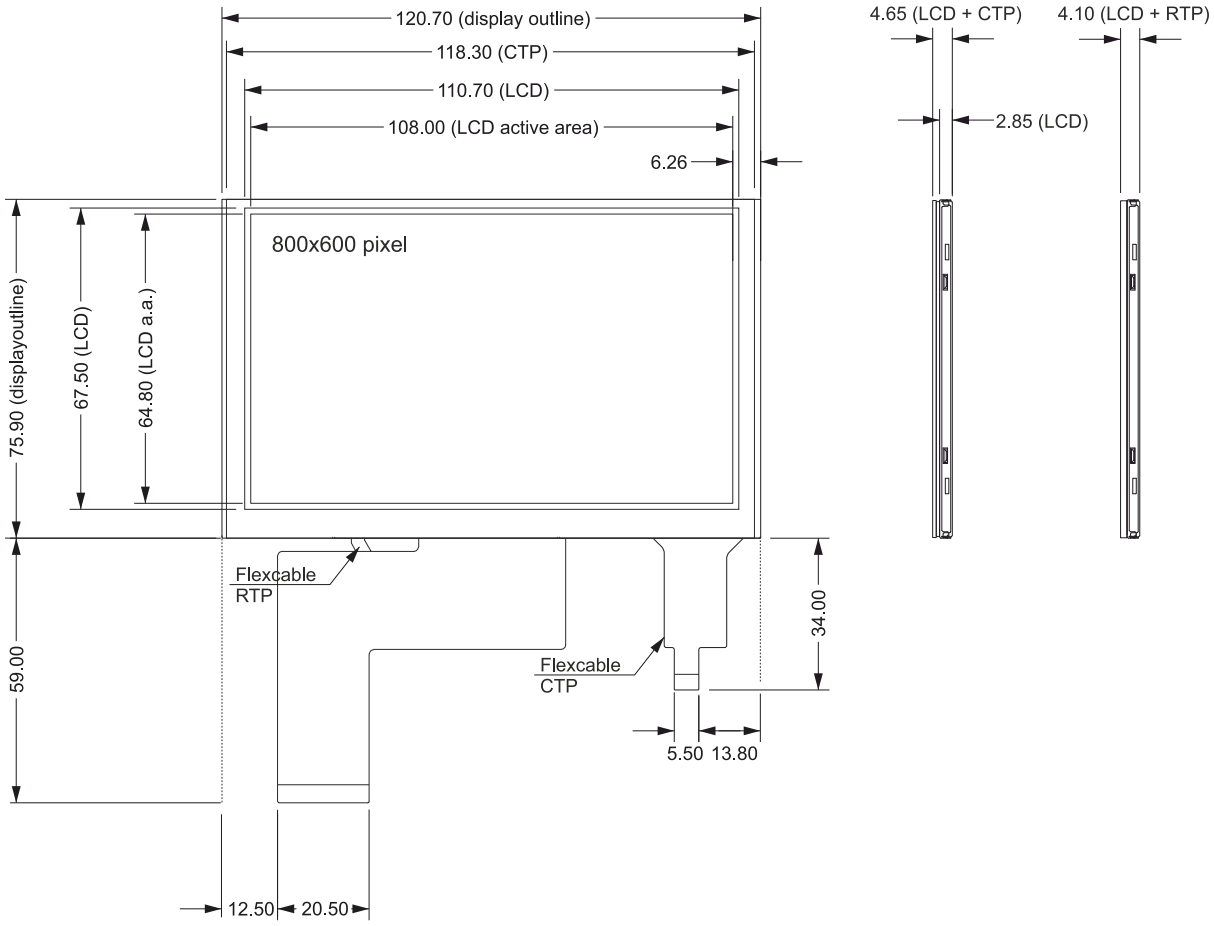
Item	DCD-MX50	DCD-MX50T	DCD-MX50C
Screen Size		5.0 inch	
Display Resolution		800 x RGB x 480 dots	
Active Area		108.00 (H) x 64.80 (V) mm	
Display Mode		Normally black / Transmissive	
Pixel Arrangement		RGB-Strip	
TFT Interface		RGB	
Display Color		16.7 M (Display) / 64k (Controller)	
Backlight 1)		White LED	
Brightness typ.		1000 cd/m2	
Contrast ratio typ.		800	
Viewing Direction		ALL O'clock	
Operating Temperature		-20°C~70°C	
Touch Screen	No	4-wire resistive	PCAP (OCA) 5 Fingers 2)

Note:

1) Brightness decreased to 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%): 20.000 hours

2) Optically bonded PCAP

1.3.2 Mechanical Specification



DCD-MX50x dimensions in mm

1.4 DCD-MX70x

1.4.1 LCD Specification

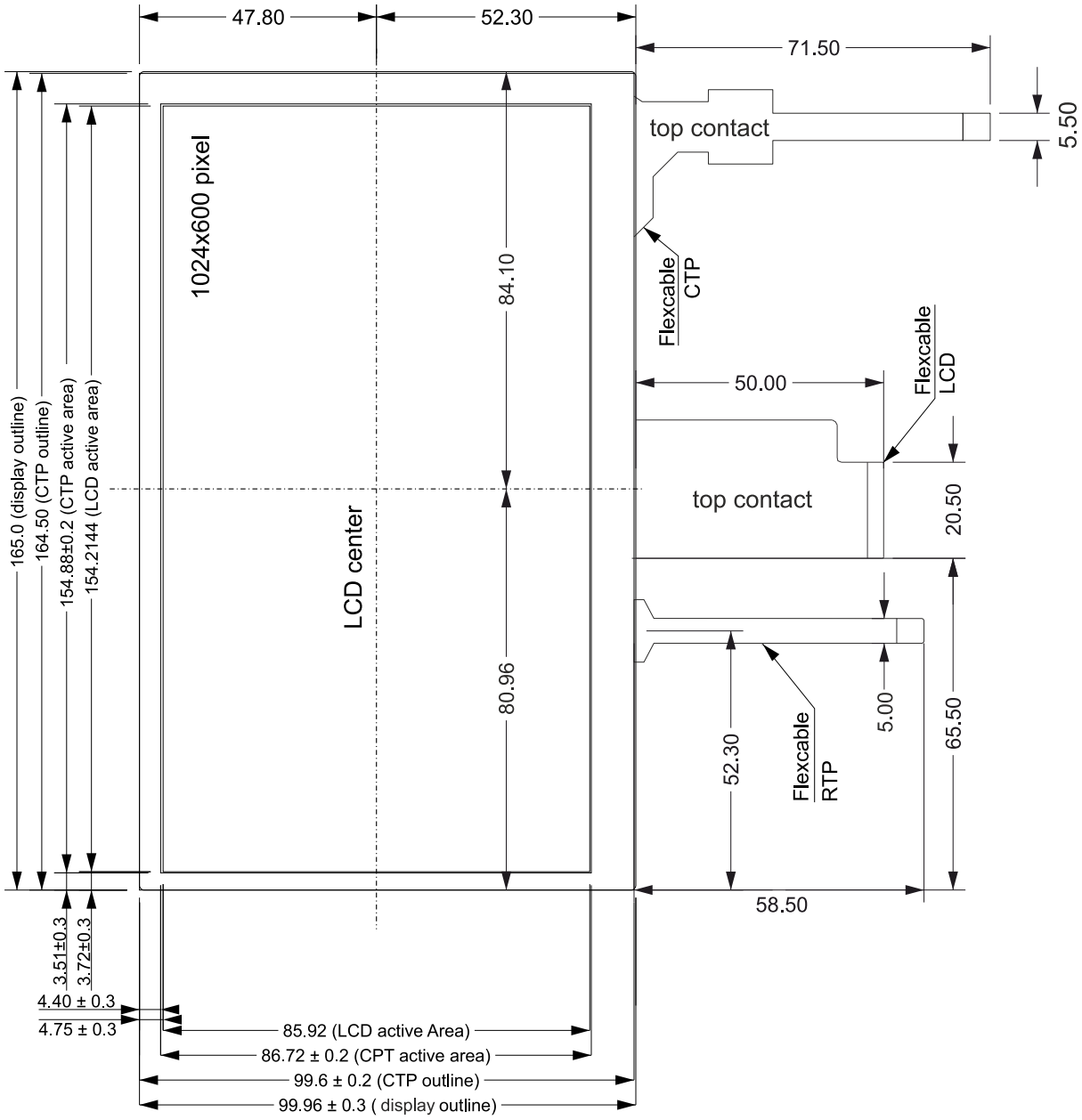
Item	DCD-MX70	DCD-MX70T	DCD-MX70C
Screen Size		7.0 inch	
Display Resolution		1024 x RGB x 600 dots	
Active Area		154.2144 (H) x 85.92 (V) mm	
Display Mode		Normally black / Transmissive	
Pixel Arrangement		RGB-Strip	
TFT Interface		LVDS (40 pin)	
Display Color		16.7 M (Display) / 64k (Controller)	
Backlight 1)		27 white LEDs	
Brightness typ.		1000 cd/m2	
Contrast ratio typ.		800	
Viewing Direction		ALL O'clock	
Operating Temperature		-20°C~70°C	
Touch Screen	No	4-wire resistive	PCAP (OCA) 5 Fingers 2)

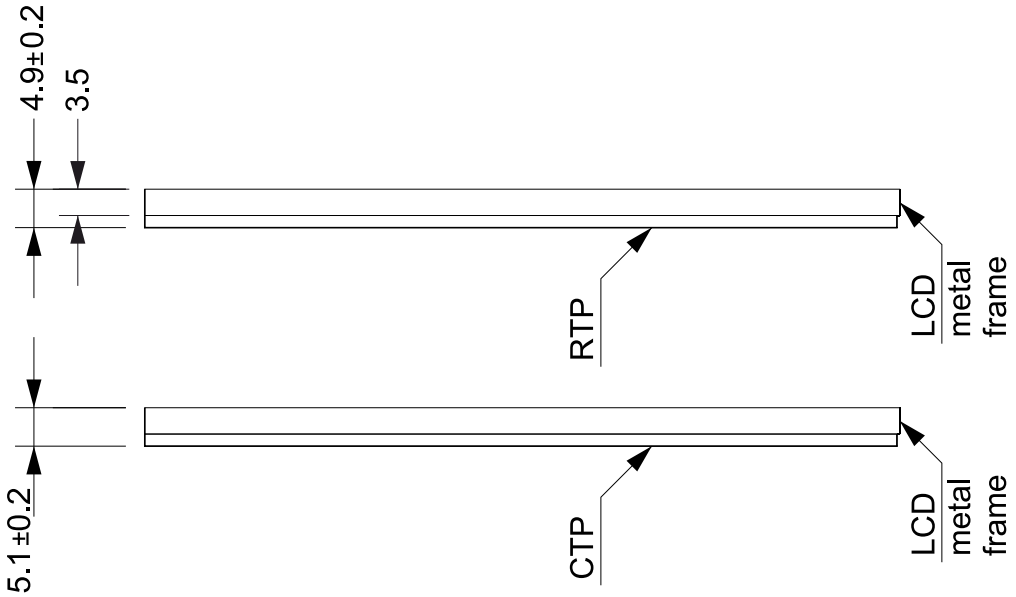
Note:

1) Brightness decreased to 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 50.000 hours

2) Optically bonded PCAP

1.4.2 Mechanical Specification





DCD-MX70x dimensions in mm

1.5 DCD-MX101x

1.5.1 LCD Specification

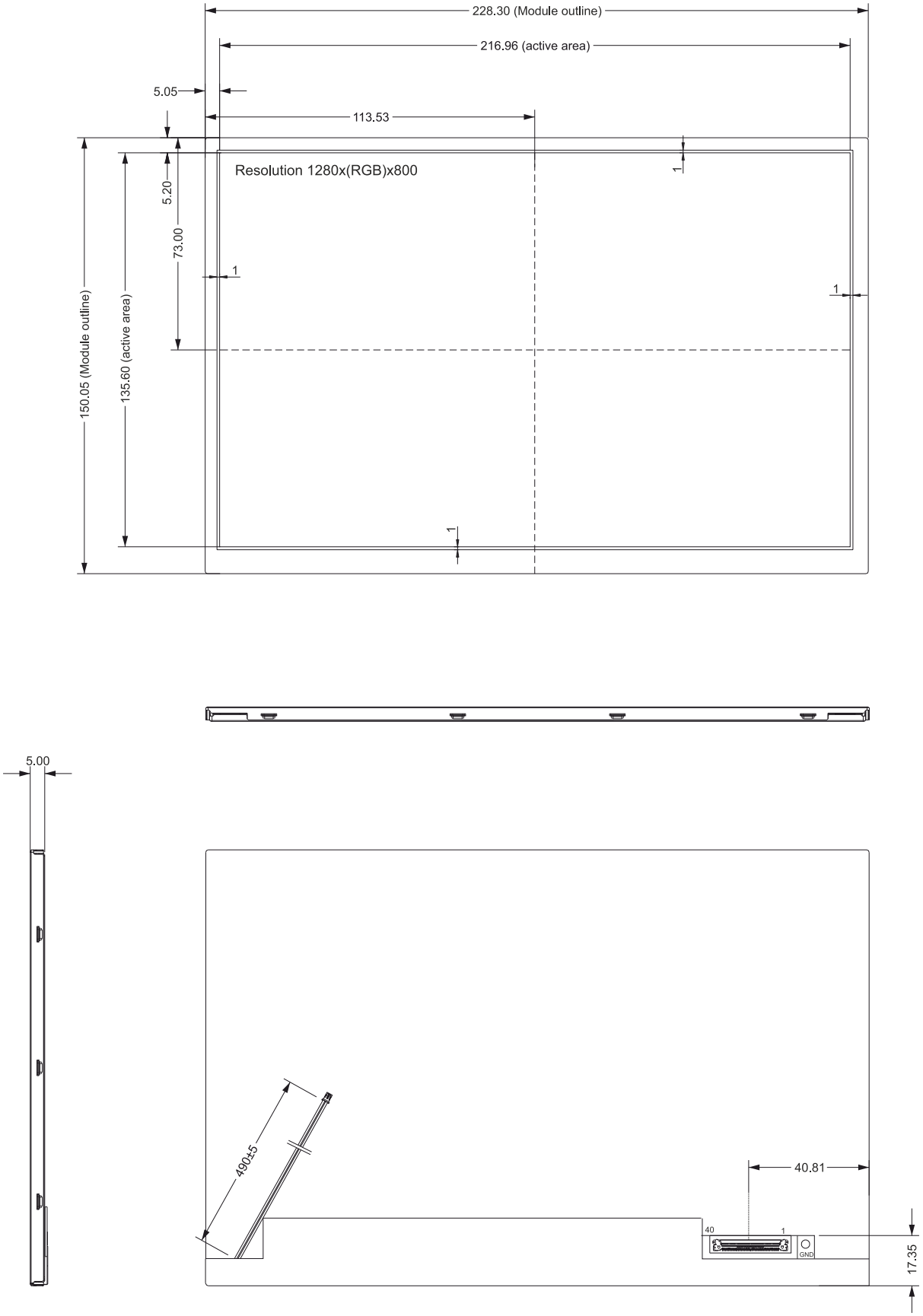
Item	DCD-MX101	DCD-MX101T	DCD-MX101C
Screen Size		10.1 inch	
Display Resolution		1280 x RGB x 800 dots	
Active Area		216.96 (H) x 135.6 (V) mm	
Display Mode		Normally black	
Pixel Arrangement		RGB-Strip	
TFT Interface		LVDS (40 pin)	
Display Color		16.7 M (Display) / 64k (Controller)	
Backlight 1)		36 white LEDs	
Brightness typ.		1000 cd/m2	
Contrast ratio typ.		1000	
Viewing Direction		ALL O'clock	
Operating Temperature		-20°C~70°C	
Touch Screen	No	4-wire resistive	PCAP (OCA) 5 Fingers 2)

Note:

1) Brightness decreased to 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 50.000 hours

2) Optically bonded PCAP

1.5.2 Mechanical Specification



DCD-MX101x dimensions in mm

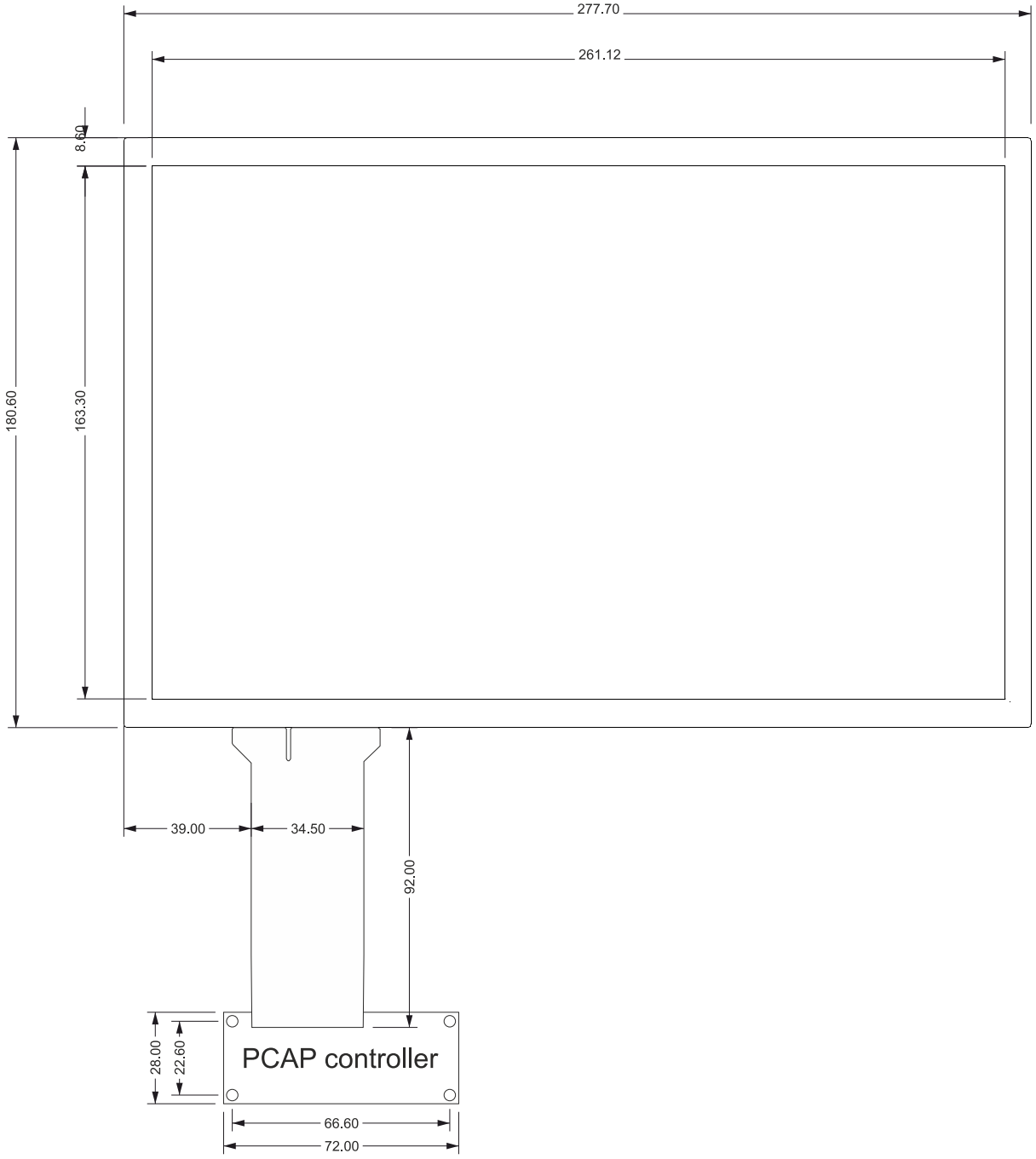
1.6 DCD-MX121x

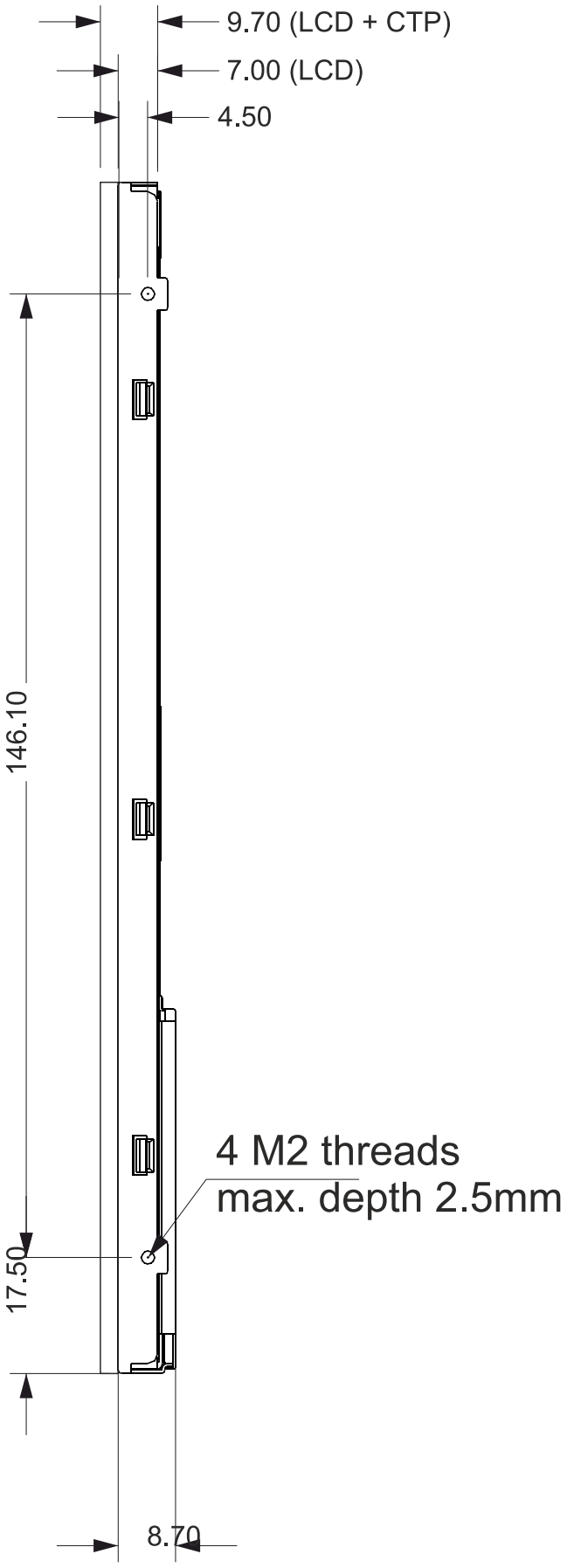
1.6.1 LCD

Item	DCD-MX121C
Screen Size	12.1 inch
Display Resolution	1280 x RGB x 800 dots
Active Area	261.12 (H) x 163.20 (V) mm
Display Mode	Normally black / Transmissive
Pixel Arrangement	1P2D
Display Color	16.7 M (Display) / 64k (Controller)
Backlight 1)	white LEDs, typical lifetime 50.000 hours
Brightness typ.	1000 cd/m2
Contrast ratio typ.	1200
Viewing Direction	ALL O'clock
Touch Screen	PCAP 5 Fingers 2)

1) Brightness decreased to be 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 2) Optically bonded PCAP

1.6.2 Mechanical Specification





DCD-MX121x dimensions in mm

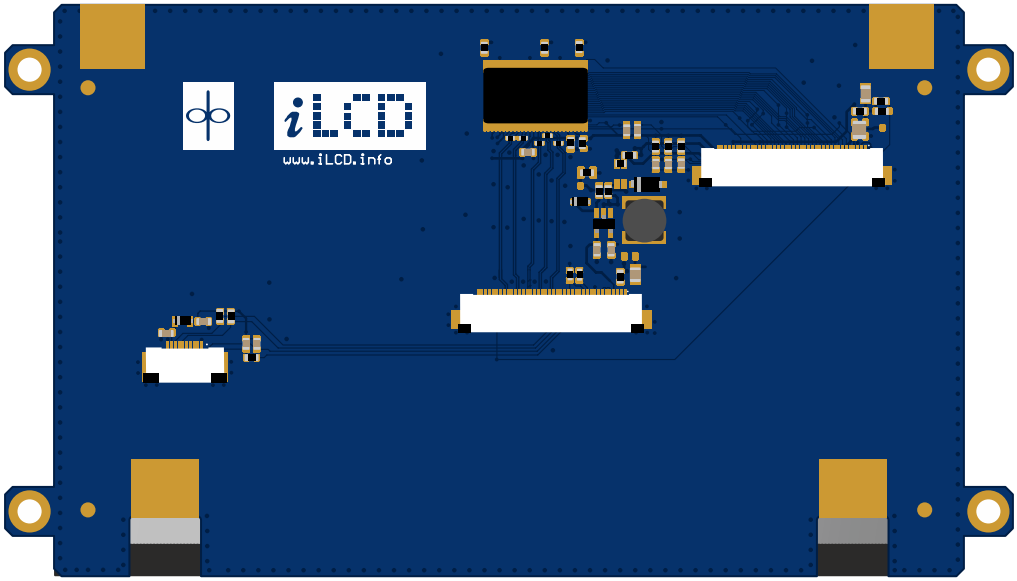
Part 2

LCD Pure-X

With demmel products' LCD Pure X series, you will no longer have to worry about development effort to set up your display connection. Our expansion boards offer an easy way to integrate our high-end displays into any LVDS capable platform. They were designed to seemlessly communicate with our iLCD Linux Mainboard, but can be used in wide variety of systems. The PCB of our LCD Pure X series comes with all the necessary components for the display control. The connection to your control board is made with a single, specially designed 40-pin flex pcb cable that covers the communcation with the display and the touchpanel and even the power supply.

Further, we offer *customized solutions* (page 28) starting from 500pcs. only. The modifications range from adaptions to the coverglass to adding adhesive solutions or include color or logo prints for more brand recognition value.

2.1 DPP-XHC50



2.1.1 LCD

Item	DPP-XHC50
Screen Size	5.0 inch
Display Resolution	800 x RGB x 480 dots
Active Area	108.00 (H) x 64.80 (V) mm
Display Mode	Normally black / Transmissive
Pixel Arrangement	RGB-Strip
TFT Interface	RGB
Display Color	16.7 M (Display) / 64k (Controller)
Backlight 1)	White LED, typical lifetime 20.000 hours
Brightness typ.	1000 cd/m2
Contrast ratio typ.	800
Viewing Direction	ALL O'clock
Operating Temperature	-20°C~70°C
Touch Screen	PCAP (OCA) 5 Fingers 2)

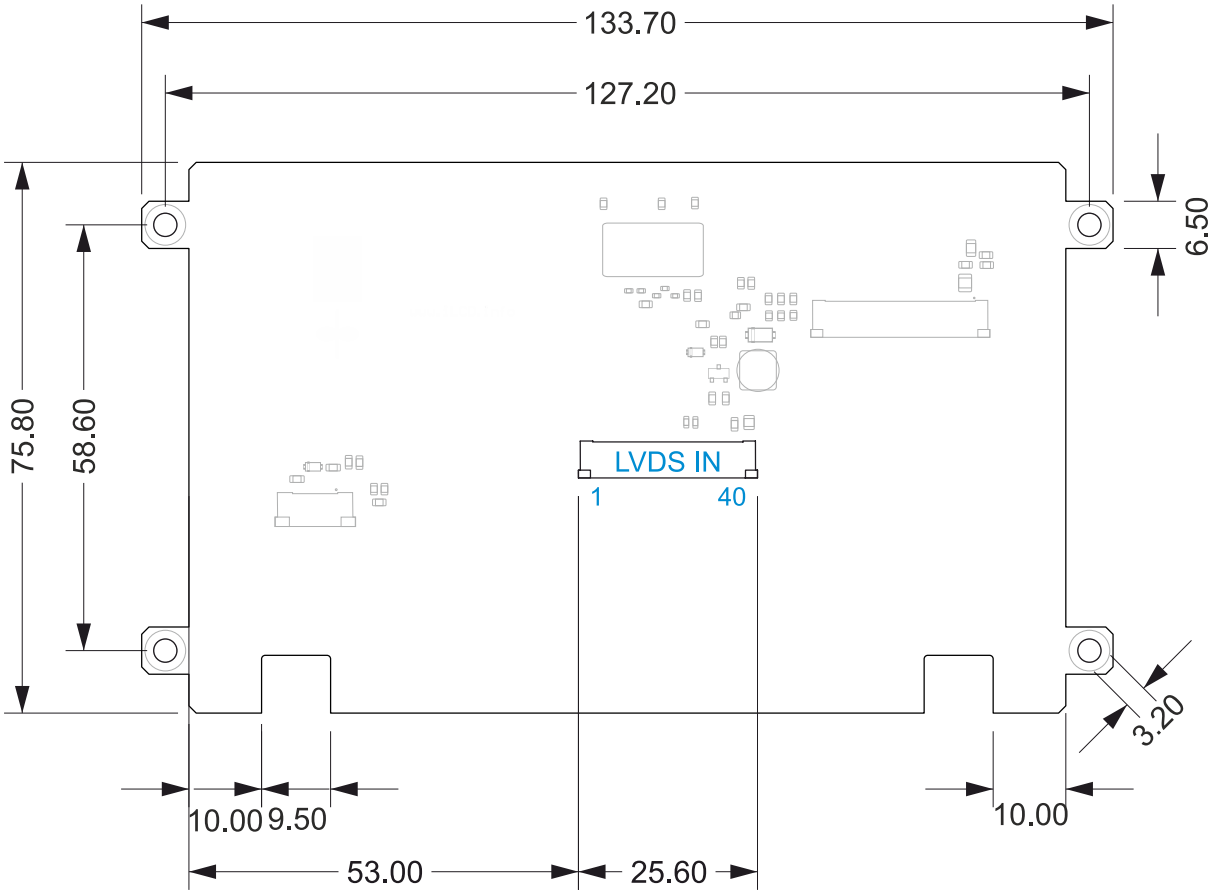
Notes:

1) Brightness decreased to be 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 2) Optically bonded PCAP

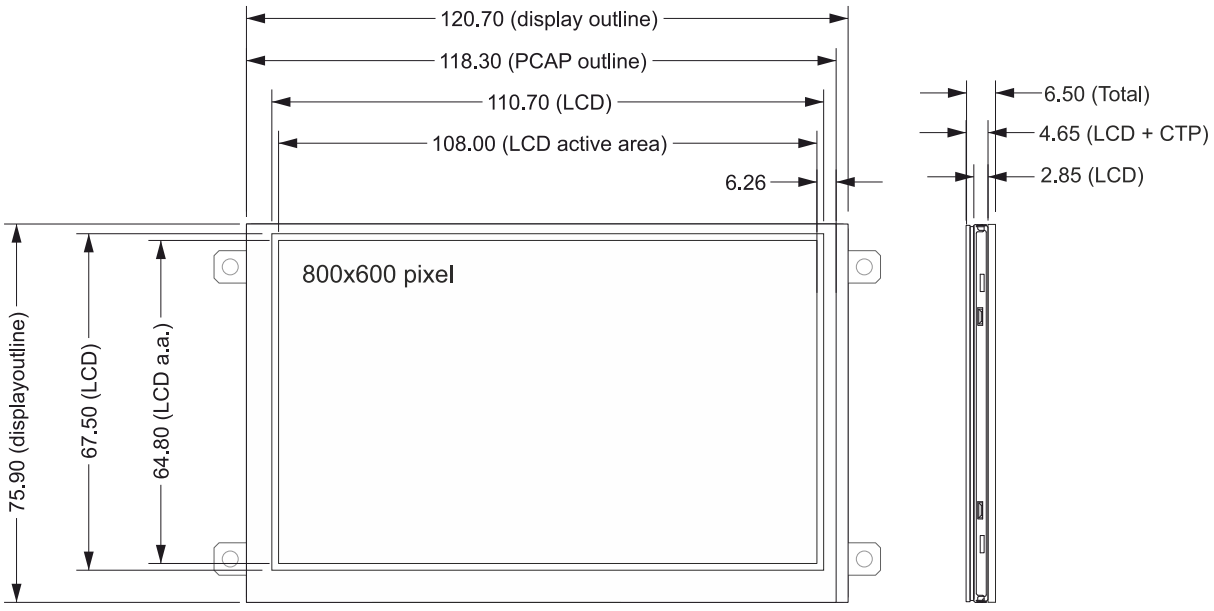
2.1.2 Electrical Characteristics

Item	Symbol	Typ.	Max.	Unit
Current consumption backlight off @ VCC = 5V	ICC	70	75	mA
Current consumption with full backlight @ VCC = 5V	ICC	280	300	mA
Current consumption backlight off @ VCC = 7V	ICC	50	60	mA
Current consumption with full backlight @ VCC = 7V	ICC	170	175	mA
Current consumption backlight off @ VCC = 30V	ICC	10	15	mA
Current consumption with full backlight @ VCC = 30V	ICC	40	50	mA

2.1.3 Mechanical Specification

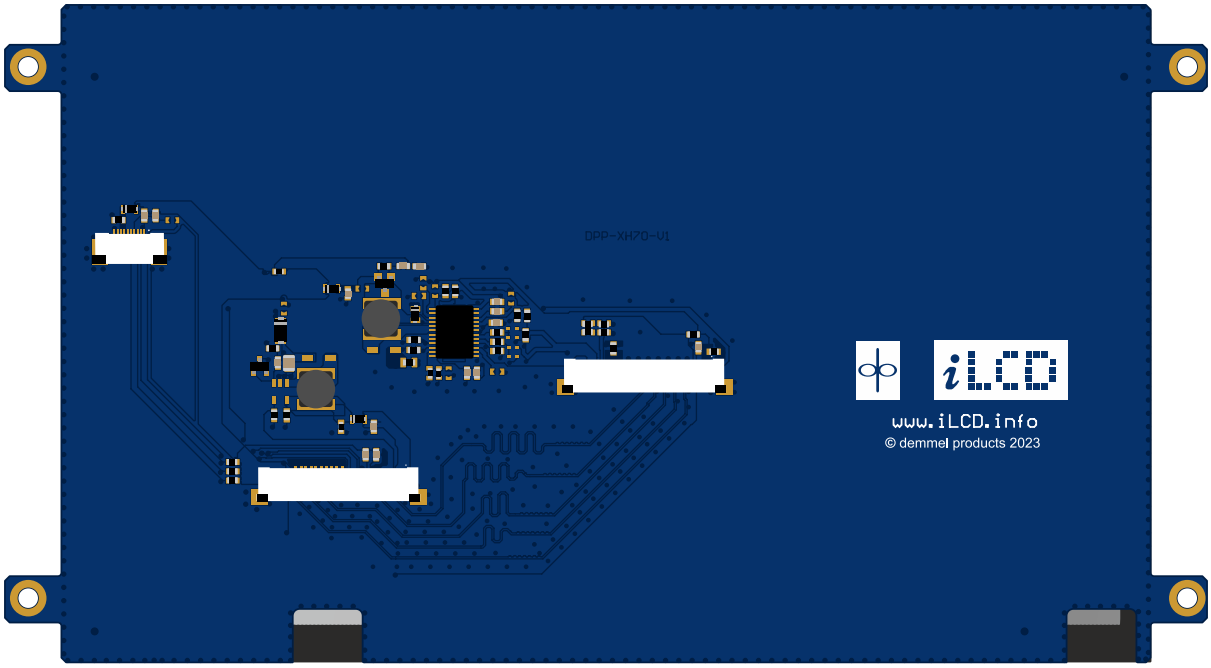


DPP-XHx50 Connectors, see *LVDS Port* (page 27) for more information



DPP-XHx50 Dimensions in mm

2.2 DPP-XHC70



2.2.1 LCD

Item	DPP-XHC70
Screen Size	7.0 inch
Display Resolution	1024 x RGB x 600 dots
Active Area	154.21 (H) x 85.92 (V) mm
Display Mode	Normally black / Transmissive
Pixel Arrangement	RGB-Strip
Display Color	16.7 M (Display) / 64k (Controller)
Backlight 1)	27 white LEDs, typical lifetime 50.000 hours
Brightness typ.	1000 cd/m2
Contrast ratio typ.	800
Viewing Direction	ALL O'clock
Touch Screen	PCAP 5 Fingers 2)

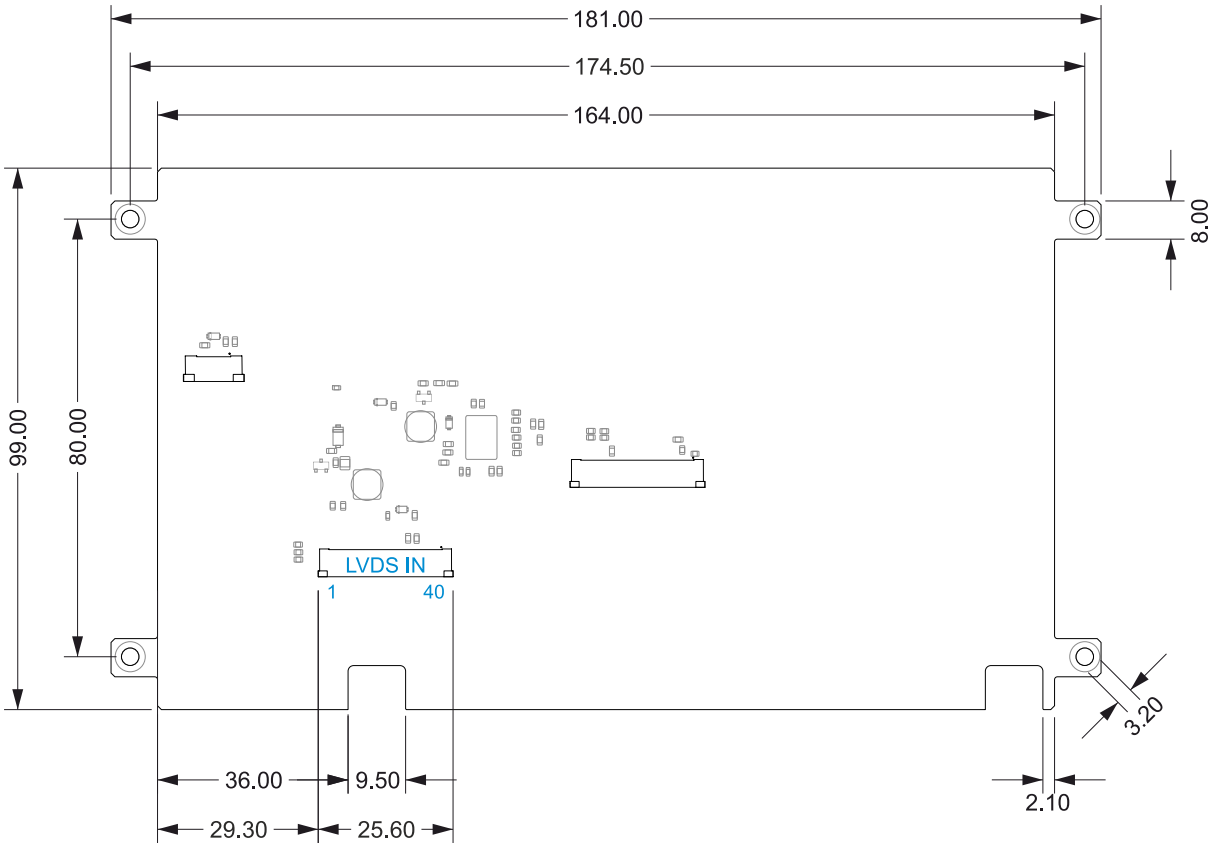
Notes:

1) Brightness decreased to be 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 2) Optically bonded PCAP

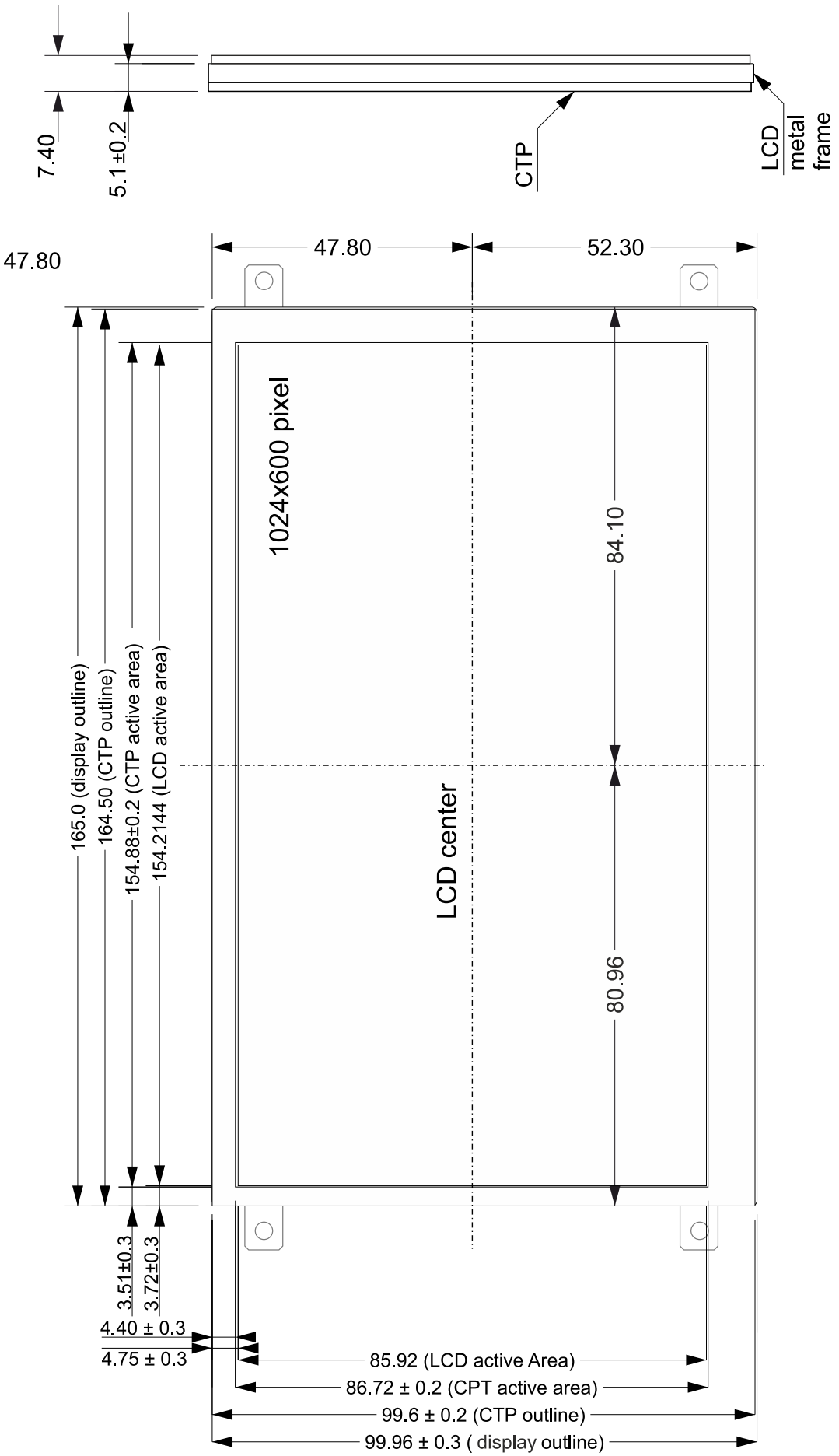
2.2.2 Electrical Characteristics

Item	Symbol	Typ.	Max.	Unit
Current consumption backlight off @ VCC = 5V	ICC	150	170	mA
Current consumption with full backlight @ VCC = 5V	ICC	820	850	mA
Current consumption backlight off @ VCC = 7V	ICC	30	50	mA
Current consumption with full backlight @ VCC = 7V	ICC	620	620	mA
Current consumption backlight off @ VCC = 30V	ICC	20	25	mA
Current consumption with full backlight @ VCC = 30V	ICC	130	140	mA

2.2.3 Mechanical Specification

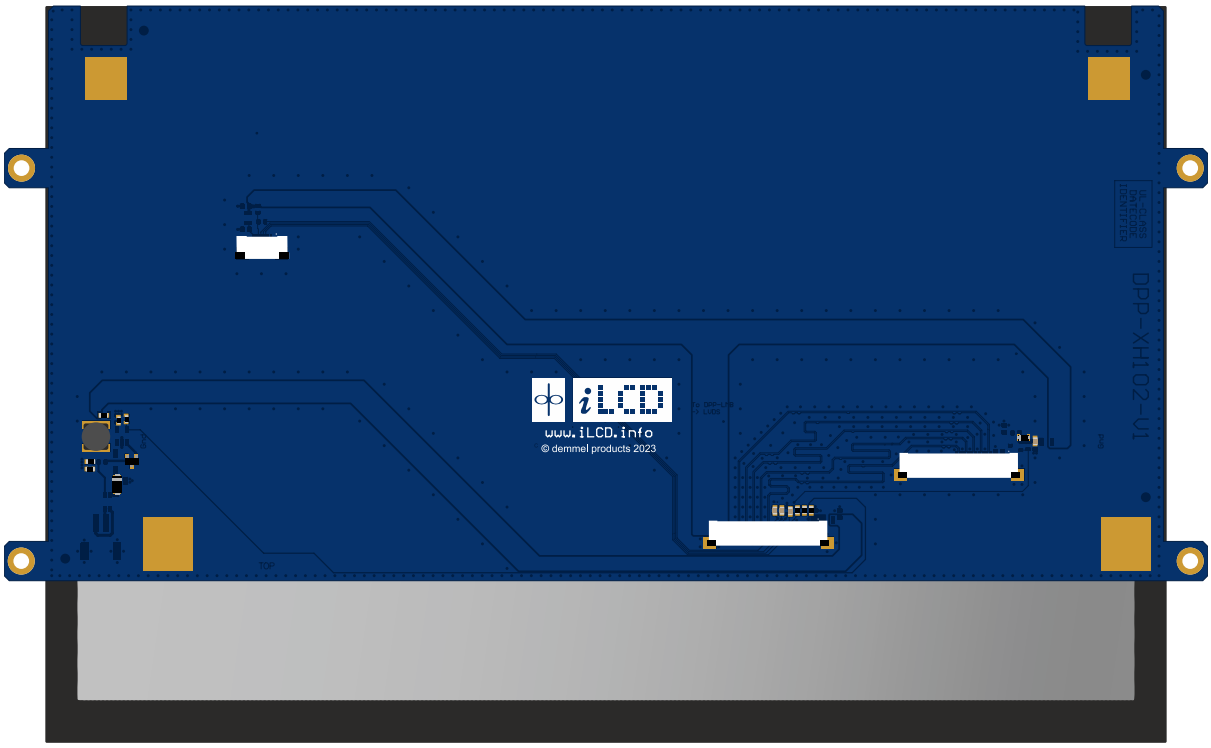


DPP-XHx70 Connectors, see *LVDS Port* (page 27) for more information


7.40
5.1±0.2
CTP
LCD
metal
frame
47.80
47.80
52.30
1024x600 pixel
84.10
LCD center
80.96
165.0 (display outline)
164.50 (CTP outline)
154.88±0.2 (CTP active area)
154.2144 (LCD active area)
3.51±0.3
3.72±0.3
4.40 ± 0.3
4.75 ± 0.3
85.92 (LCD active Area)
86.72 ± 0.2 (CPT active area)
99.6 ± 0.2 (CTP outline)
99.96 ± 0.3 (display outline)

DPP-XHx70 Dimensions in mm

2.3 DPP-XHC101



2.3.1 LCD

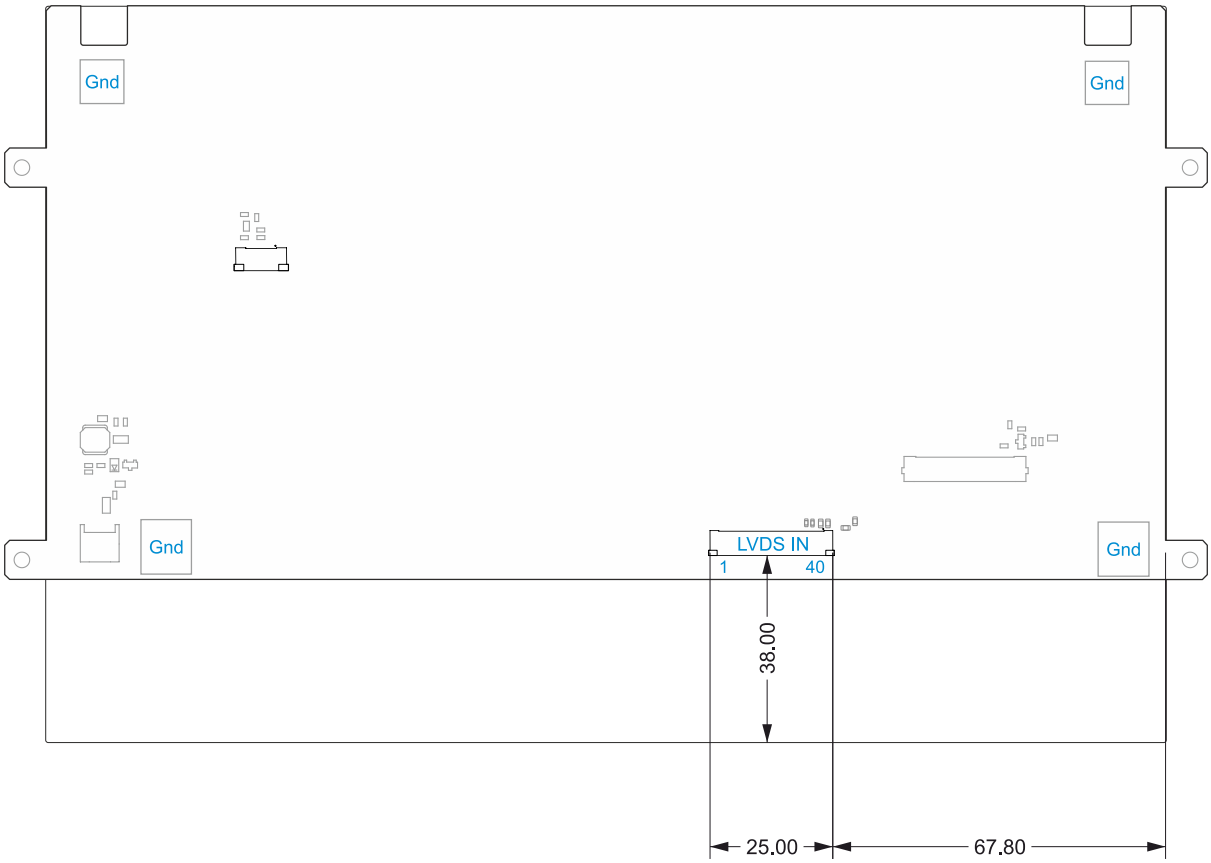
Item	DPP-XHC101
Screen Size	10.1 inch
Display Resolution	1280 x RGB x 800 dots
Active Area	216.96 (H) x 135.60 (V) mm
Display Mode	Normally black / Transmissive
Pixel Arrangement	RGB-Strip
Display Color	16.7 M (Display) / 64k (Controller)
Backlight 1)	42 white LEDs, typical lifetime 50.000 hours
Brightness typ.	1000 cd/m2
Contrast ratio typ.	1000
Viewing Direction	ALL O'clock
Touch Screen	PCAP 5 Fingers 2)

1) Brightness decreased to be 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 2) Optically bonded PCAP

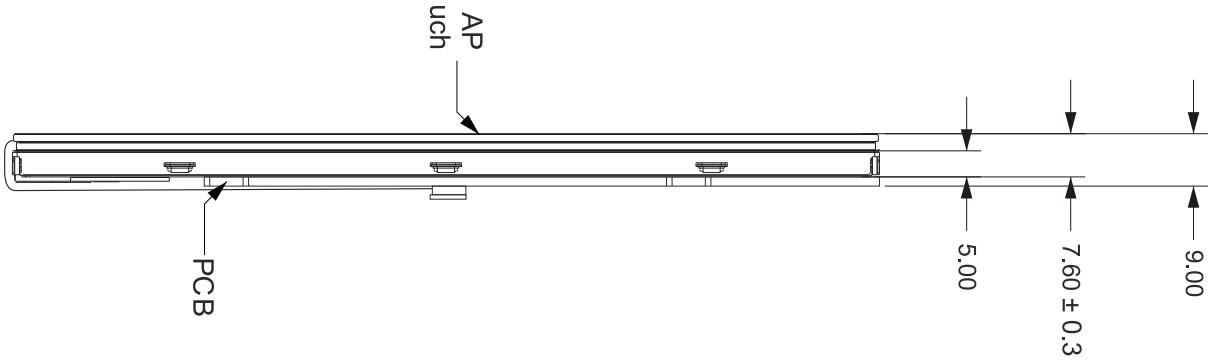
2.3.2 Electrical Characteristics

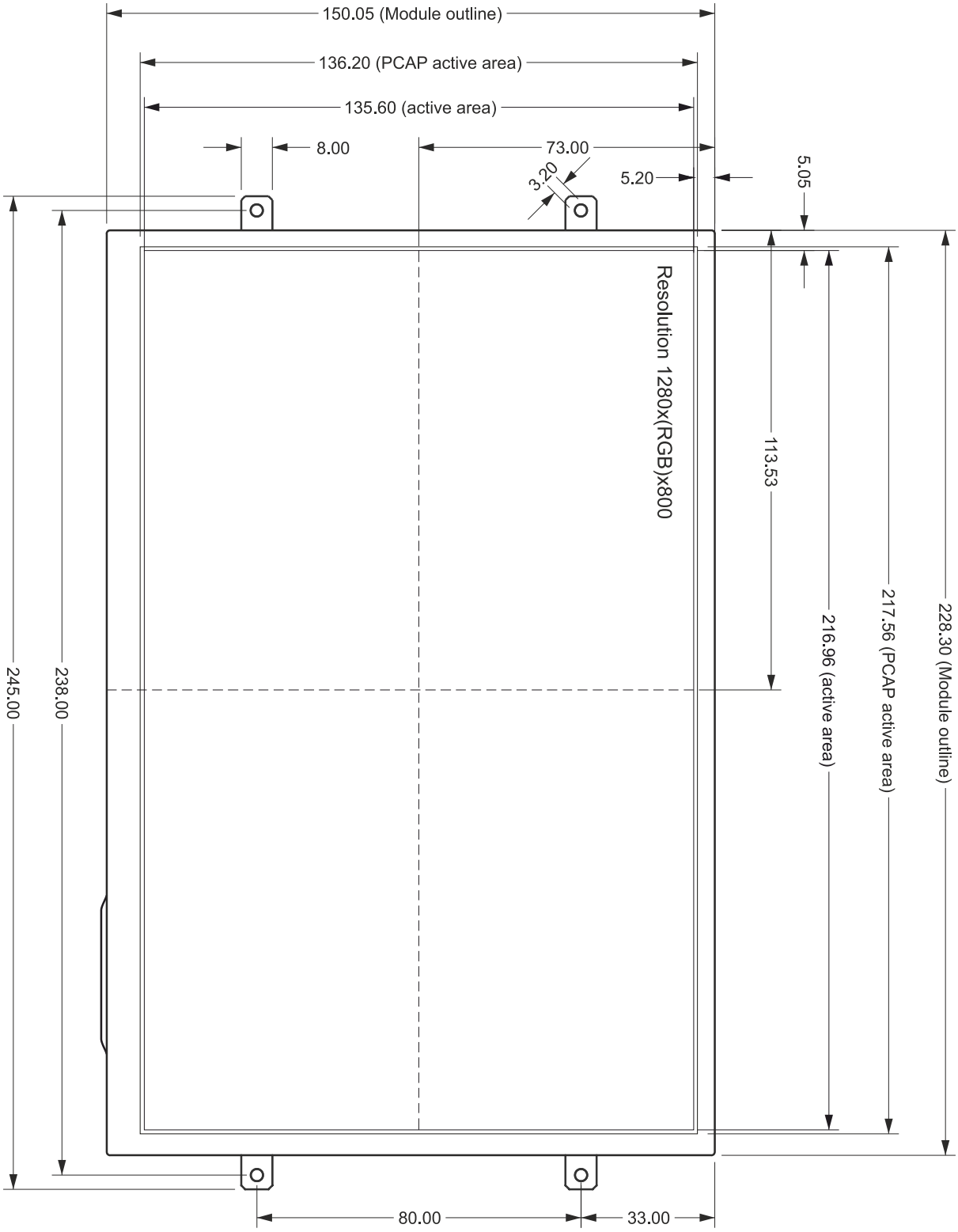
Item	Symbol	Typ.	Max.	Unit
Current consumption backlight off @ VCC = 5V	ICC	150	170	mA
Current consumption with full backlight @ VCC = 5V	ICC	2000	2100	mA
Current consumption backlight off @ VCC = 7V	ICC	30	50	mA
Current consumption with full backlight @ VCC = 7V	ICC	1470	1500	mA
Current consumption backlight off @ VCC = 30V	ICC	20	25	mA
Current consumption with full backlight @ VCC = 30V	ICC	330	340	mA

2.3.3 Mechanical Specification



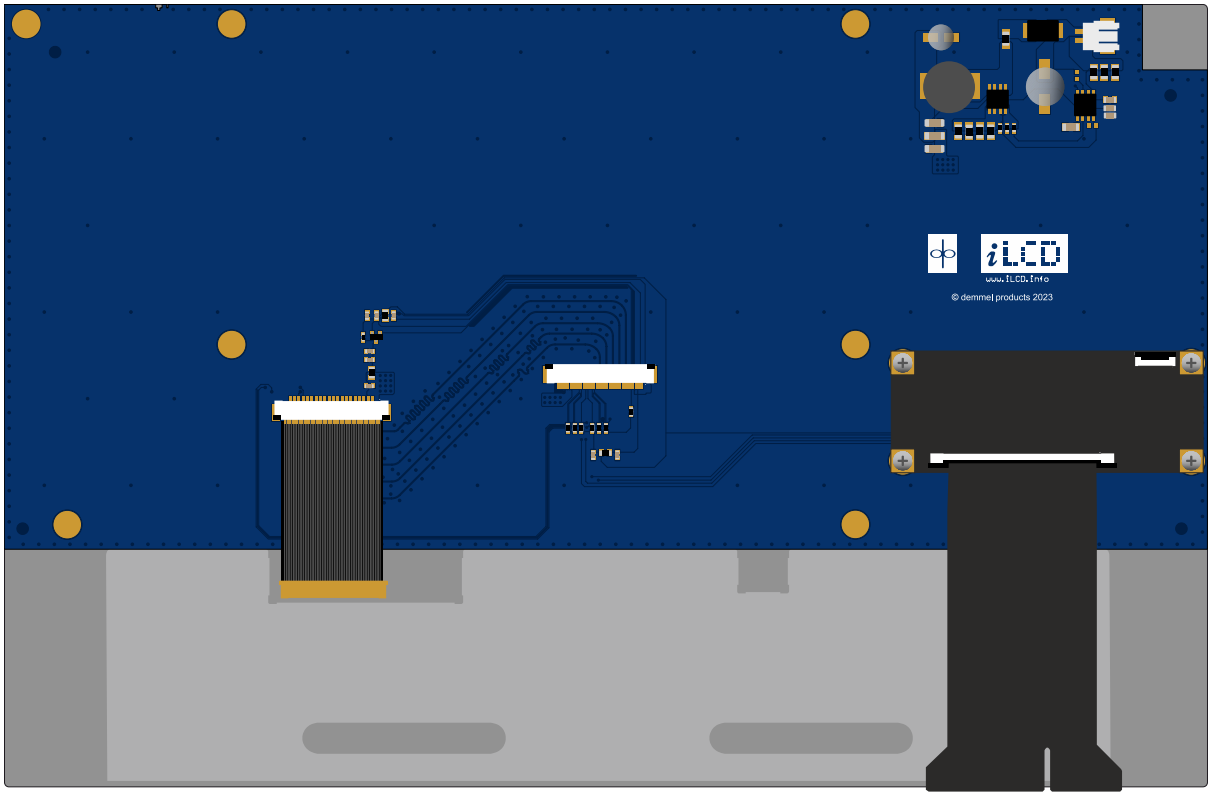
DPP-XHx101 Connectors, see *LVDS Port* (page 27) for more information





DPP-XHx101 Dimensions in mm

2.4 DPP-XHC121



2.4.1 LCD

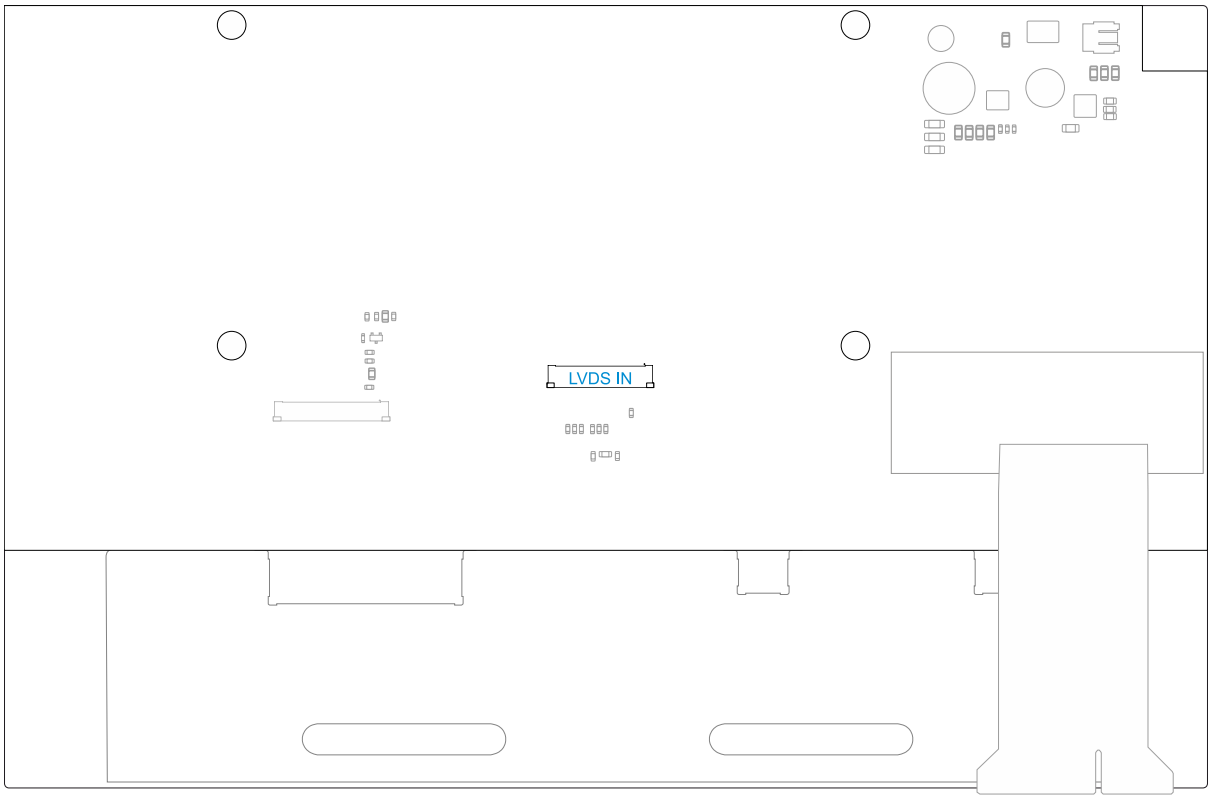
Item	DPP-XHC121
Screen Size	12.1 inch
Display Resolution	1280 x RGB x 800 dots
Active Area	261.12 (H) x 163.20 (V) mm
Display Mode	Normally black / Transmissive
Pixel Arrangement	1P2D
Display Color	16.7 M (Display) / 64k (Controller)
Backlight 1)	white LEDs, typical lifetime 50.000 hours
Brightness typ.	1000 cd/m2
Contrast ratio typ.	1200
Viewing Direction	ALL O'clock
Touch Screen	PCAP 5 Fingers 2)

1) Brightness decreased to be 50% of the initial value. Life time; mean time before failure at normal temperature (25°C) and normal humidity (60%) 2) Optically bonded PCAP

2.4.2 Electrical Characteristics

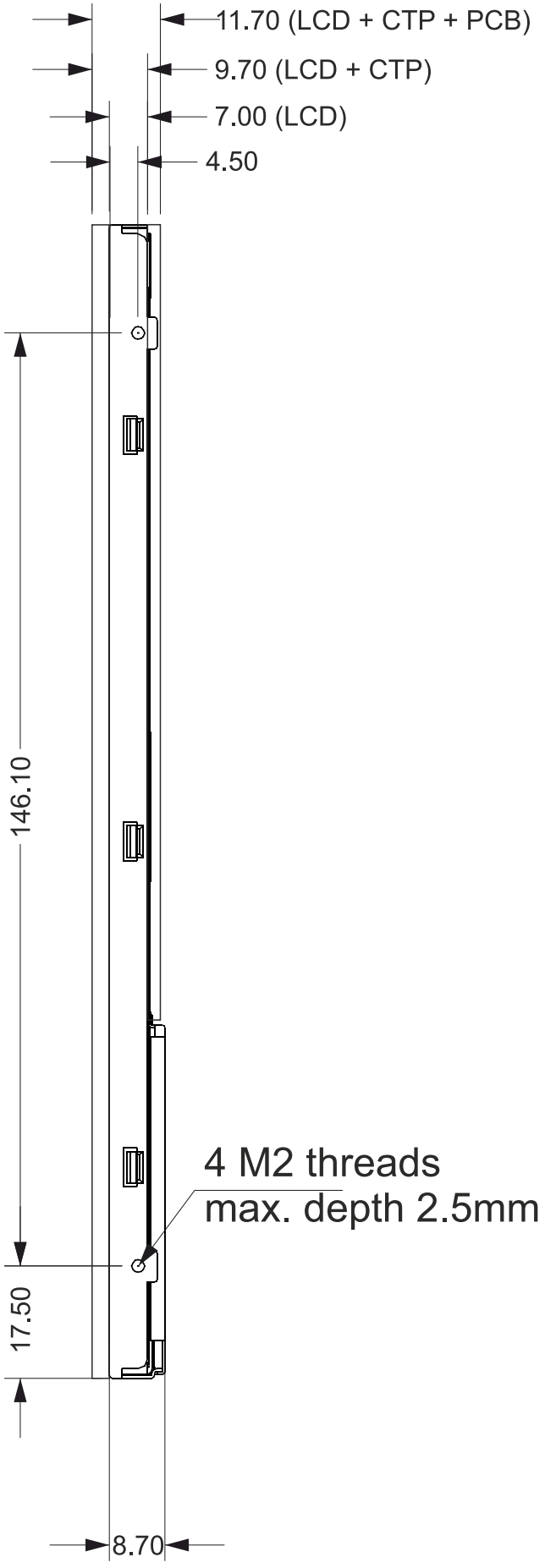
Item	Symbol	Typ.	Max.	Unit
Current consumption backlight off @ VCC = 5V	ICC		tbd	mA
Current consumption with full backlight @ VCC = 5V	ICC		tbd	mA
Current consumption backlight off @ VCC = 7V	ICC		tbd	mA
Current consumption with full backlight @ VCC = 7V	ICC		tbd	mA
Current consumption backlight off @ VCC = 30V	ICC		tbd	mA
Current consumption with full backlight @ VCC = 30V	ICC		tbd	mA

2.4.3 Mechanical Specification



DPP-XHx121 Connectors, see *LVDS Port* (page 27) for more information


277.70
261.12
8.60
180.60
163.30


11.70 (LCD + CTP + PCB)
9.70 (LCD + CTP)
7.00 (LCD)
4.50
146.10
4 M2 threads
max. depth 2.5mm
17.50
8.70

DPP-XHx121 Dimensions in mm

2.5 LVDS Port

This is the pinning of the LVDS port on the rear of the panel, which on the silkscreen is labeled as "To DPP-LMB -> LVDS" and as "LVDS IN" in our documentation.

LVDS uses differential signaling, which allows it to run on low voltages. Connection to the LVDS in port is made via a 40-pin FFC/FPC cable with 0.5 mm pitch. The FFC/FPC connector on the board is a top-contact model.

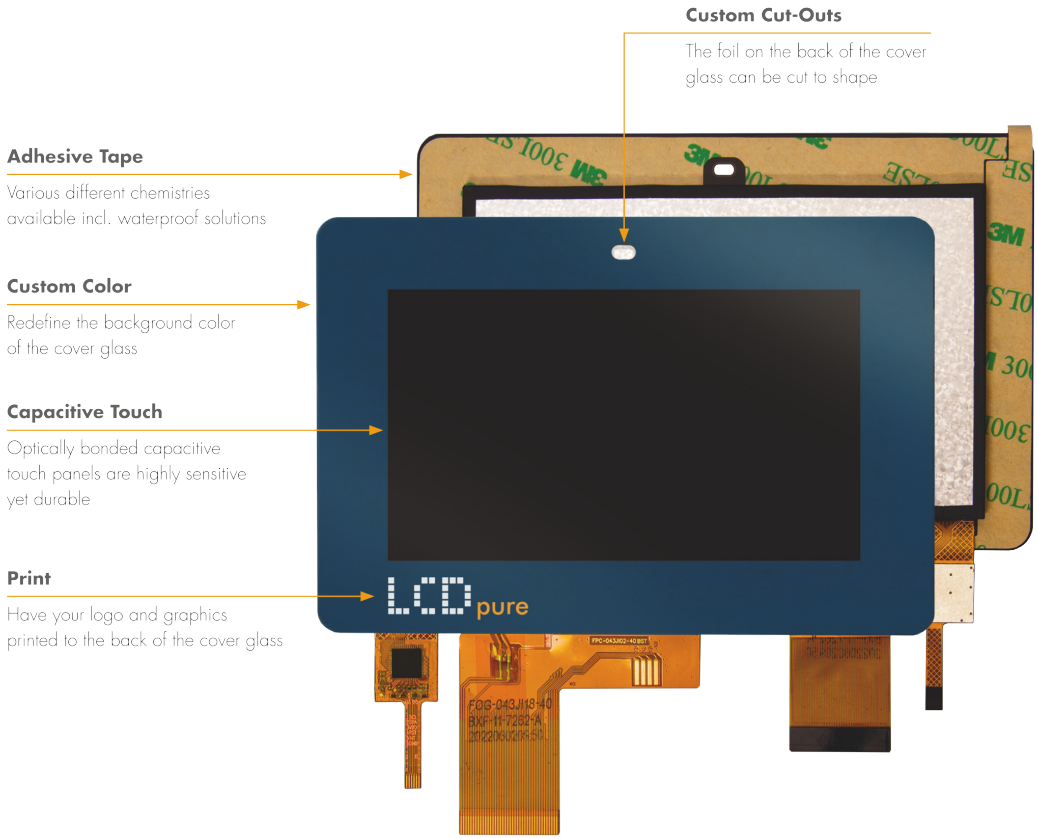
Pin#	PinName	Primary Function Description
1	LVDS SPARE	Spare line currently not connected
2-4	VCC	3.3V power supply
5	LVDS DISP Reset	Display reset 1)
6	LVDS DISP Disable	Display disable 2)
7	GND	
8	LVDS D0 N	Differential pair 0 for data transmission to the display
9	LVDS D0 P	Differential pair 0 for data transmission to the display
10	GND	
11	LVDS D1 N	Differential pair 1 for data transmission to the display
12	LVDS D1 P	Differential pair 1 for data transmission to the display
13	GND	
14	LVDS D2 N	Differential pair 2 for data transmission to the display
15	LVDS D2 P	Differential pair 2 for data transmission to the display
16	GND	
17	LVDS CLK N	Differential Pair for clock line transmission to the display
18	LVDS CLK P	Differential Pair for clock line transmission to the display
19	GND	
20	LVDS D3 N	Differential pair 3 for data transmission to the display
21	LVDS D3 P	Differential pair 3 for data transmission to the display
22	GND	
23	LCDS PCAP SCL	I^2C interface for PCAP – clock
24	LCDS PCAP SDA	I^2C interface for PCAP – data
25	GND	
26	LCDS PCAP INT	I^2C interface for PCAP – interrupt
27	LCDS PCAP RES	I^2C Interface for PCAP – reset 3)
28	GND	
29	SYS SCL	Backup I^2C interface – clock 4)
30	SYS SDA	Backup I^2C interface – data 4)
31-33	LVDS BL GND	GND pin for 5V supply of backlight, connected to GND.
34-36	LVDS BL HV VCC	High voltage power supply for backlight 5)
37	LVDS BL PWM	PWM line for setting the brightness of the display backlight. 6)
38-40	LVDS BL VCC	5V power supply for backlight 5)

1) Pull to GND to reset the display. Must be applied on or after power up of VCC for $>$ 50ms, but is not connected/used on all models. Can be left open during normal operation or tied to 3.3V. 2) Pull to GND to enable the display. When left open or tied to 3.3V the display is disabled. 3) Pull to GND to reset the PCAP. Must be applied on or after power up of VCC for $>$ 50ms. Can be left open during normal operation or tied to 3.3V. 4) This I^2C bus has no dedicated purpose and may be used for additional devices such as sensors. 5) Depending on the size of the display, it uses either the 5V pin or the high voltage pin for voltages between 7V and 30V in order to minimize current. 6) When left open or tied to GND, backlight is disabled. Can be tied to 3V3 for maximum brightness.

Part 3

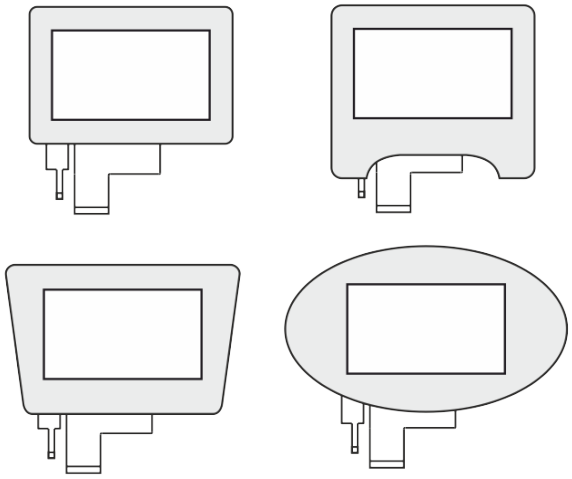
Custom Coverglass

Our *LCD Pure* (page 2) and *LCD Pure X* (page 14) series do not only impress because of their high-end quality but also allow customers to stand out because of our wide range of customization options. Save time, costs and effort by choosing us instead of relying on a variety of suppliers to purchase and bond your LCD, touchpanel and cover glass. We offer a one-stop solution for your specific needs. Our specialized supplier network, allows us to offer a variety of modifications to the LCD, starting from a MOQ of 500pcs. only. The options include changes to the cover glass for better protection and usability, adding adhesive solutions for easier integration and different color or logo print options to increase your brand recognition value.



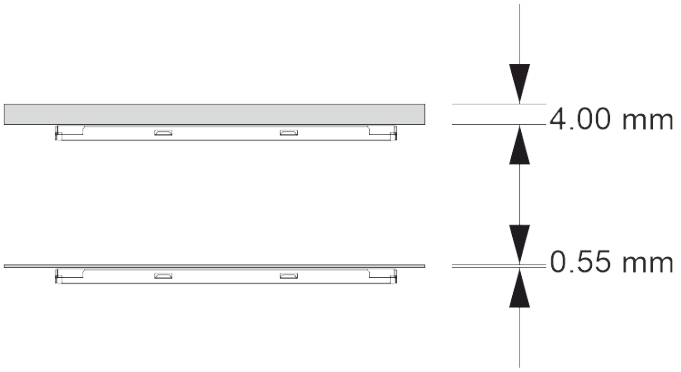
Custom Shapes

The shape of the cover glass can be cut to almost any shape



Custom Thickness

The thickness of the cover glass can range from 0.55 to 4mm



Of course, all these options are also available for our intelligent LCDs - iLCD JPro & iLCD Linux - if the MOQ is met.

Pricing and delivery times are highly competitive with average times from order to arrival ranging between 8 weeks for samples and 10 to 12 weeks for mass production.

Let these options inspire you to even bolder and more attractive designs for a more high-end appearance of your device. The following graphic illustrates the many possibilities.