



Sub7 Standard

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Purpose

This proposal will address flat panel displays smaller than seven inches in diagonal. Currently there are no common mechanical or electrical features that allow for interchangeability between suppliers and OEMs. Features that include cable location, connector type, mounting criteria or uniform pinout, pin definition, number of pins, are examples of the incompatibility between panels from different suppliers, and sometimes from the same supplier.

Summary

This standard will establish common criteria for the mechanical and electrical specifications that will enable the various sub 7-inch panel users to source and design in multiple panels with common features from multiple suppliers. Optics will not be part of the standard and will only be considered during the connector pinout configuration to ensure allowance for the existence of different technology needs.

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Preface

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Sept. 7, 2007 —Initial release of the standard

1. OVERVIEW

1.1 Summary

This document defines selected electrical interface requirements and mechanical dimensions for industry compatible panels sized 3.5-inch and 3.7-inch for PDA and similar applications.

1.2 Background

Due to the emergence of new applications using display sizes smaller than 7-inch in diagonal, the need to have standard parameters defined and agreed upon by panel suppliers and system integrators has become paramount in order to source and design-in multiple panels with common features from multiple suppliers.

1.3 Standard Objectives

The standard aims to establish common panels for the 3.5-inch and 3.7-inch display sizes, so that a standard panel can be mounted in any PDA or similar case designed to accept the maximum sizes defined.

The dimensioning allows panel suppliers some product differentiation while meeting the goal of transparent sage across different platforms.

2.0 Electrical

2.1 Interface Cable Pin Assignments

The signal cable shall be terminated into a JAE FB6S***JA1 or TYCO ELECTRONICS 2-1746237-5 or equivalent connector.

Table 2-1: Pin Assignments

Pin #	Standard Pin Out	Standard Signal Description	Comments
1	LED Anode	LED Anode	BL LED anode connection
2	NC	Reserved	To be defined
3	LED Cathode	LED Cathode	BL LED cathode connection
4	PWR (Vgate) note 1	For modules without internal power supply capability: Vgate (-5v to -12v typ.)	Power input
5	DGND	Ground	Ground
6	PCLK	Pixel Clock	Pixel Clock
7	DGND	Ground	Ground
8	UD	Data Direction Up/Down	Frame data direction
9	LR	Data Direction Left/Right	Frame data direction
10	NC	Reserved	To be defined
11	Feature	Feature (Resolution Select, Reverse Video, etc.)	Any special feature
12	DGND	Ground	Ground
13	Hsync	Horizontal Sync Pulse	Horizontal Sync Pulse
14	DGND	Ground	Ground
15	PWR (VDD) note 1	For modules without internal power supply capability: VDD (3v to 5v typ. Logic Power)	Power input
16	PWR (HVDD) note 1	For modules without internal power supply capability: HVDD (15v to 25v typ.)	Power input
17	AGND	Ground (split for AGND)	Analog ground
18	PWR (AVDD) note 1	For modules without internal power supply capability: AVDD (3v to 8v typ.)	Power input
19	AGND	Ground (split for AGND)	Analog ground
20	VSNC	Vertical Sync Pulse	Vertical Sync Pulse
21	DGND	Ground	Ground
22	VCOM	VCOM	VCOM
23	VCOM	VCOM	VCOM
24	NC	Reserved	To be defined
25	DGND	Ground	Ground
26	B5	MS Blue Data Bit 5	Most significant bit blue data
27	B4	Blue Data Bit 4	
28	B3	Blue Data Bit 3	
29	B2	Blue Data Bit 2	
30	B1	Blue Data Bit 1	
31	B0	Blue Data Bit 0	Least significant bit blue data
32	DGND	Ground	Ground
33	G5	Green Data Bit 5	Most significant bit

			green data
34	G4	Green Data Bit 4	
35	G3	Green Data Bit 3	
36	G2	Green Data Bit 2	
37	G1	Green Data Bit 1	
38	G0	Green Data Bit 0	Least significant bit green data
39	DGND	Ground	Ground
40	R5	MS Red Data Bit 5	Most significant bit red data
41	R4	Red Data Bit 4	
42	R3	Red Data Bit 3	
43	R2	Red Data Bit 2	
44	R1	Red Data Bit 1	
45	R0	Red Data Bit 0	Least significant bit red data
46	DGND	Ground	Ground
47	PWR ON	Display Logic On Control	Display on/off control
48	Reset	Reset	Display logic reset
49	DGND	Ground	Ground
50	DEN	Data Enable	Valid data signal
51	ID1	ID Code Bit 1	Supplier ID code
52	ID2	ID Code Bit 2	Supplier ID code
53	ID3	ID Code Bit 3	Supplier ID code
54	NC	Reserved	To be defined
55	TP_R	TP buss bar right	Touch pad bus bar connection
56	TP_B	TP buss bar bottom	Touch pad bus bar connection
57	TP_L	TP buss bar left	Touch pad bus bar connection
58	TP_T	TP buss bar top	Touch pad bus bar connection
59	NC	Reserved	To be defined at a later time
Typical max. current levels			
	VDD	3.0mA	
	AVDD	10.0mA	
	HVDD	3.0mA	
	VGate	3.0mA	

Note 1: Some display modules may provide for internal generation of required voltages such as VDD, AVDD, HVDD and Vgate. In this case, all “PWR” inputs may be common. In modules where this is not the case, please follow signal definitions as listed in “Standard Signal Description” column.

2.2 Power Sequencing Requirements

To prevent a latch-up or DC operation of the LCD, the panel shall support the logic power and data control signal sequencing of Figures 2-1 and 2-2.

For display modules with internal power supply / voltage generation features. : (Single "PWR" input voltage only required.)

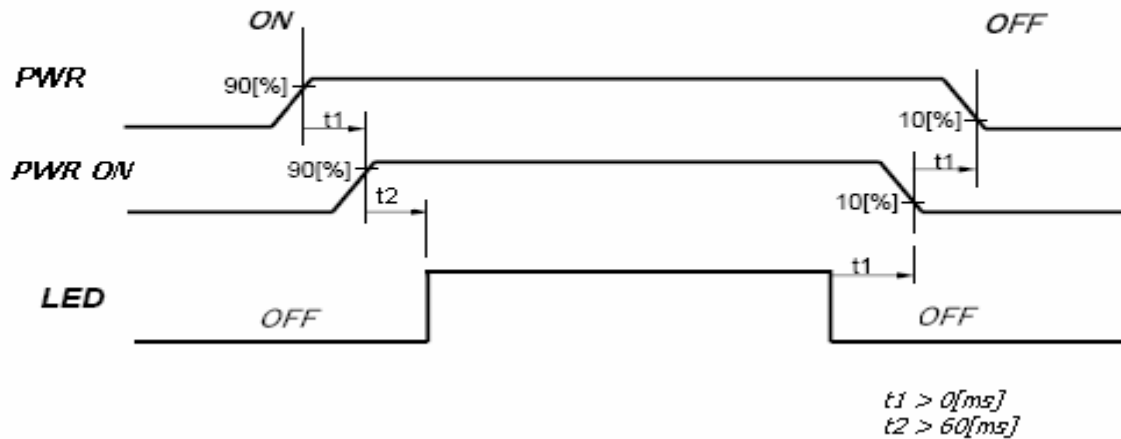


Figure 2-1: Power Sequence for Internal Supply

For display modules requiring externally generated, multiple supply voltages. :

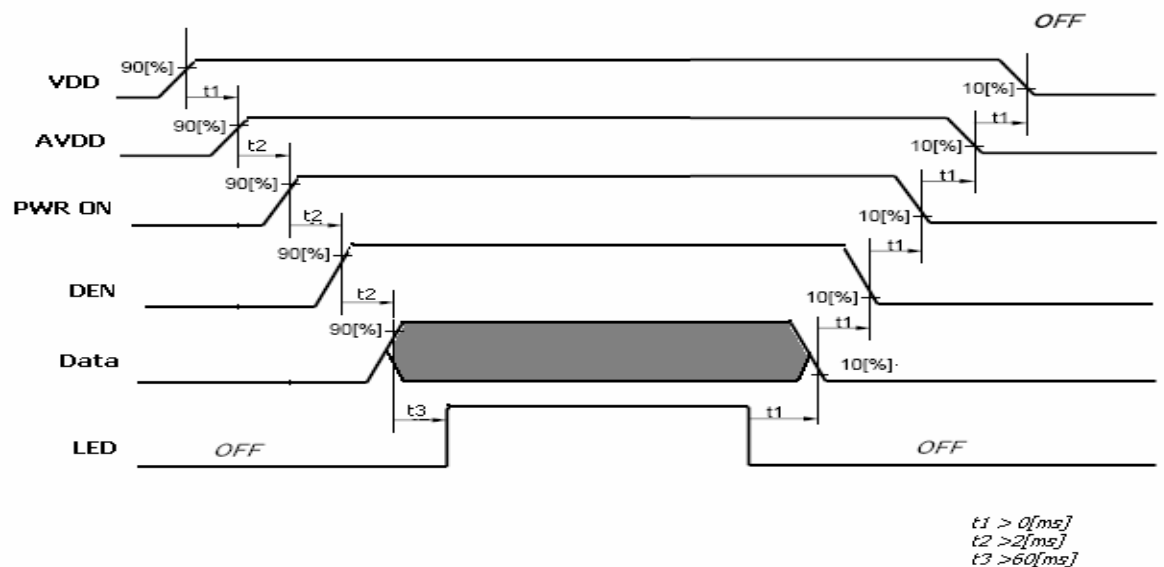


Figure 2-2: Power Sequence for External Supply

2.3 Electrical Performance

Display interface

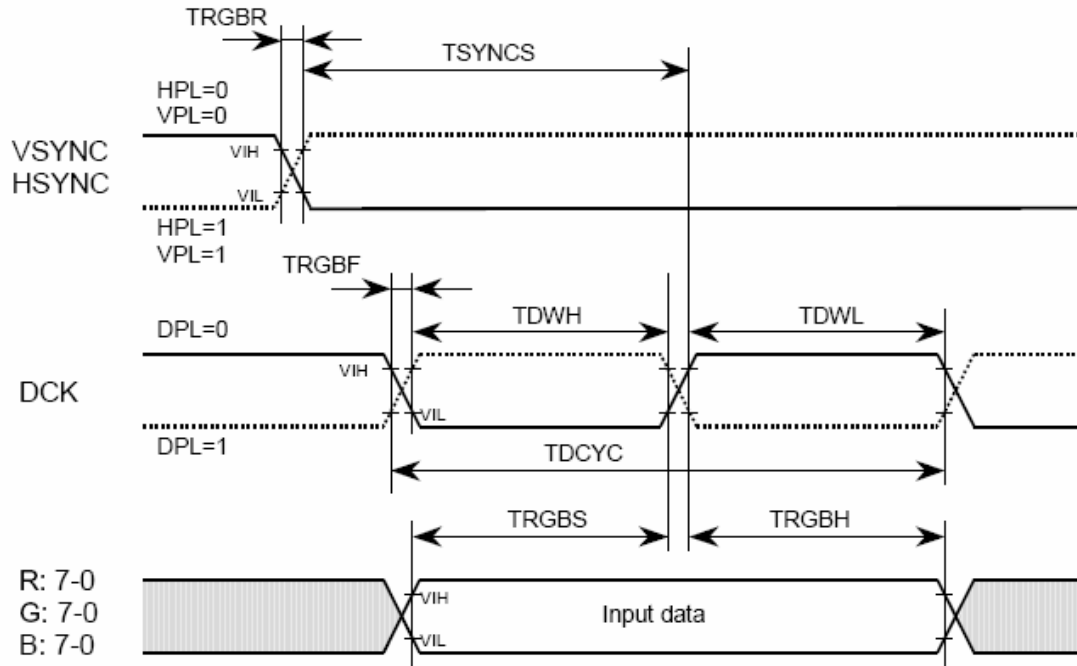


Figure 2-3: Display Interface Timing

Table 2-2: Timing Description

Parameter	Symbol	Min.	Max.	Unit
Timing pulse rise and fall time	TRGBR		8	nS
Timing pulse to valid data	TSYNCS		TBD	nS
Dot clock rise and fall time	TRGBF		5	nS
Dot clock width - low	TDWL	15		nS
Dot clock width - high	TDWH	15		nS
Dot clock cycle time	TDCYC	TBD		nS
Data set-up time	TRGBS	12		nS
Data hold time	TRGBH	12		nS

3.0 Mechanical

3.1 3.5-inch Mechanical Outline

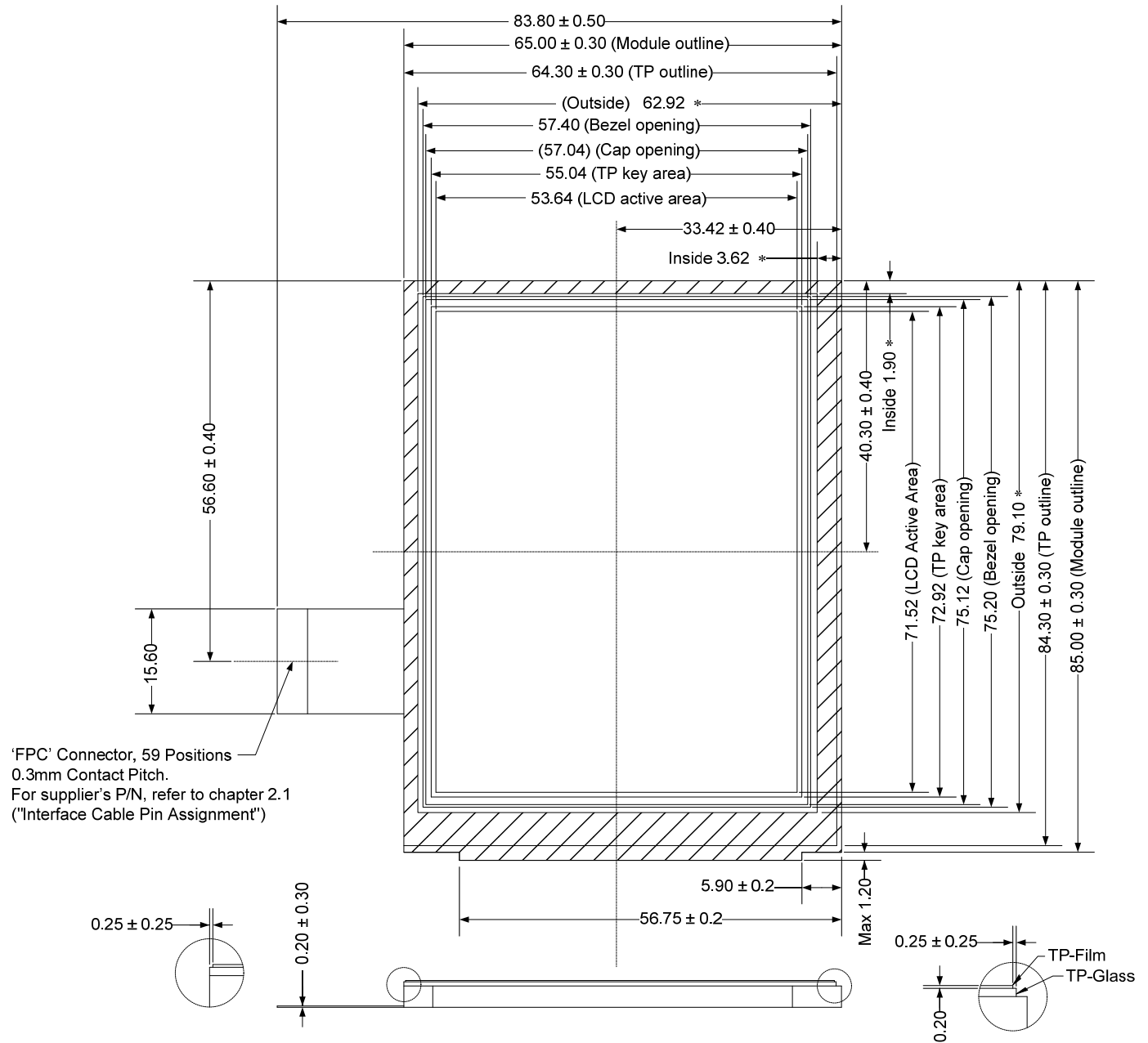


Figure 3-1: 3.5-inch Mechanical Outline (Front View)

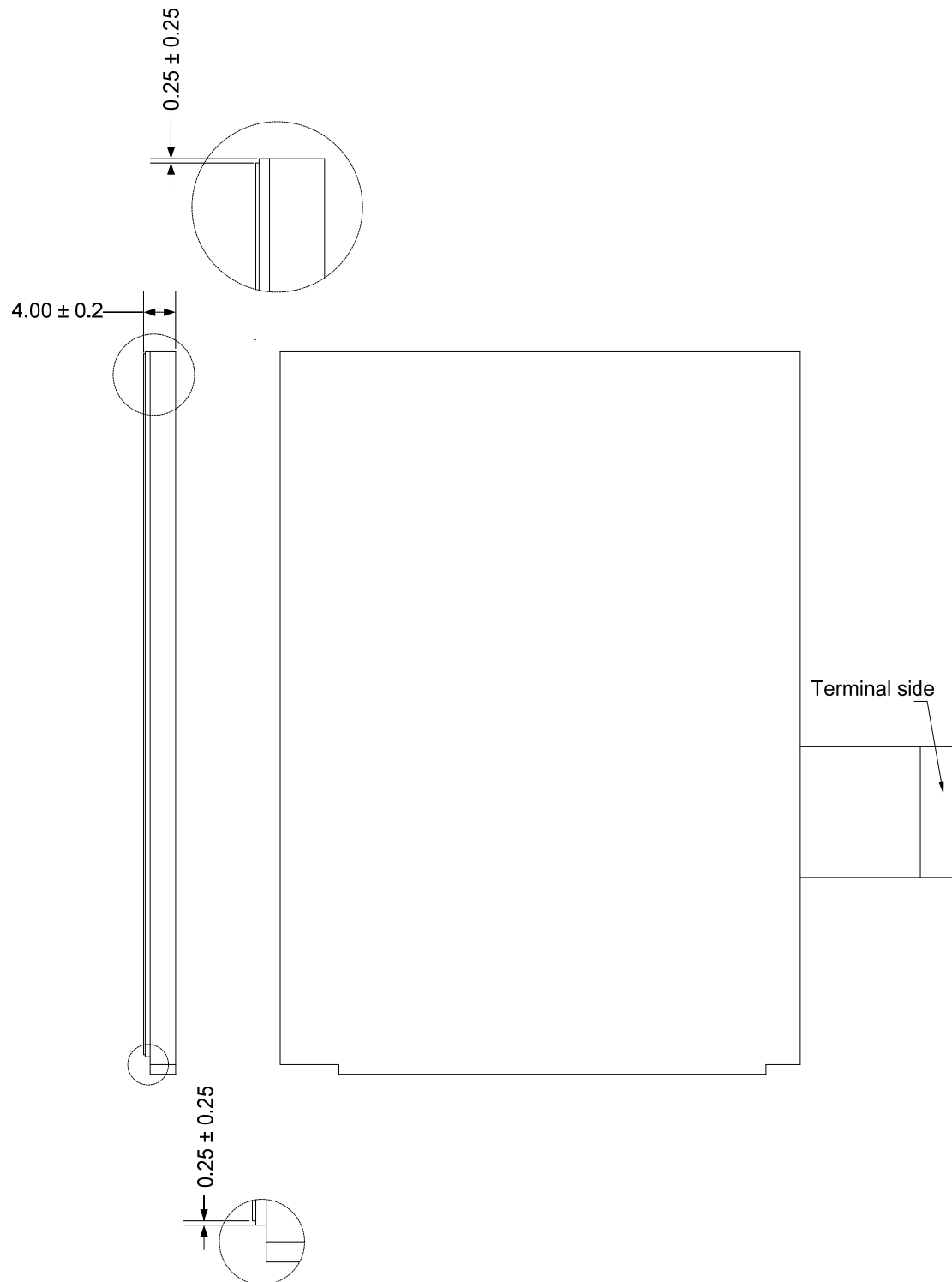


Figure 3-2: 3.5-inch Mechanical Outline (Back View)

3.2 3.7-inch Mechanical Outline

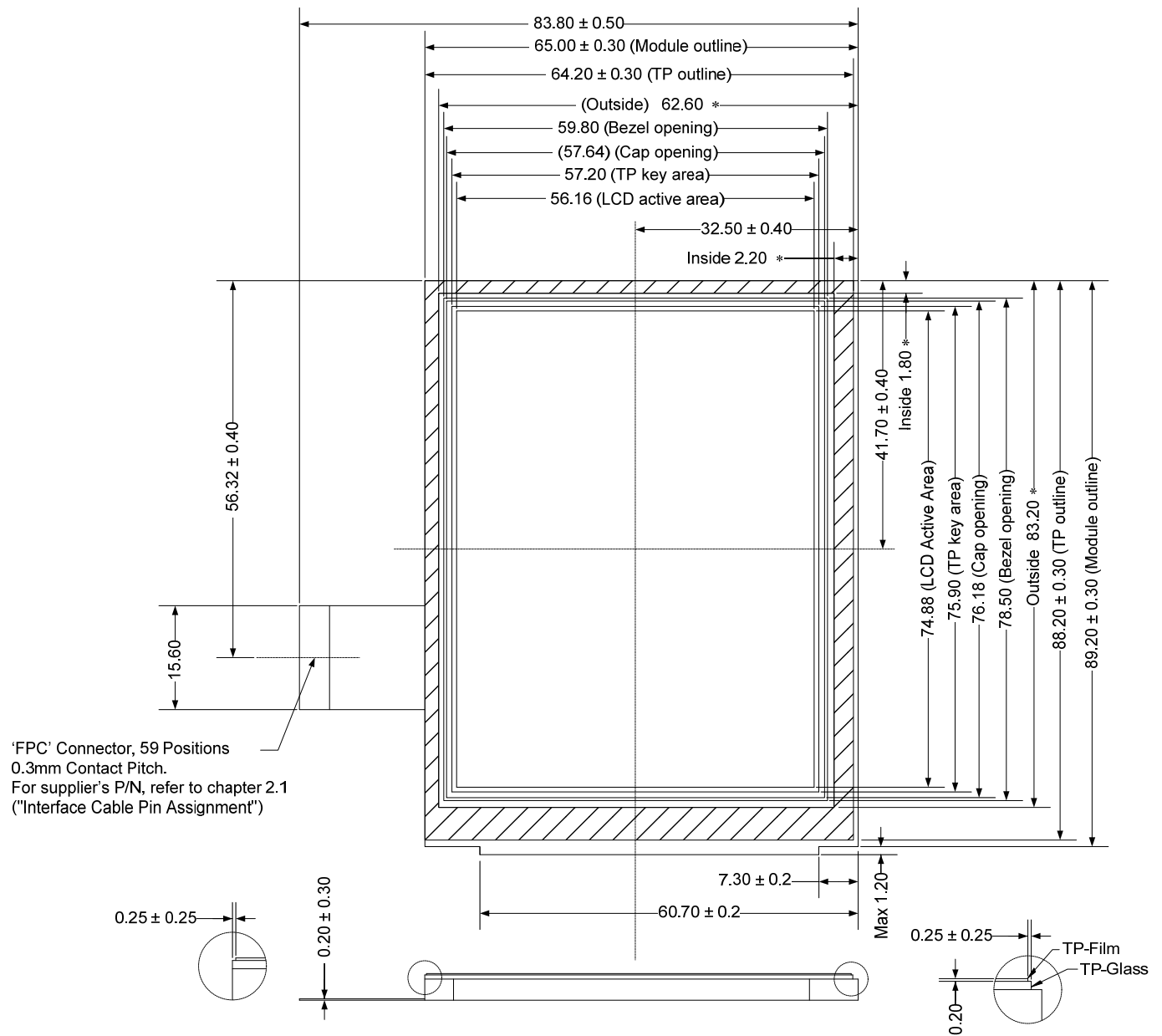


Figure 3-3: 3.7-inch Mechanical Outline (Front View)

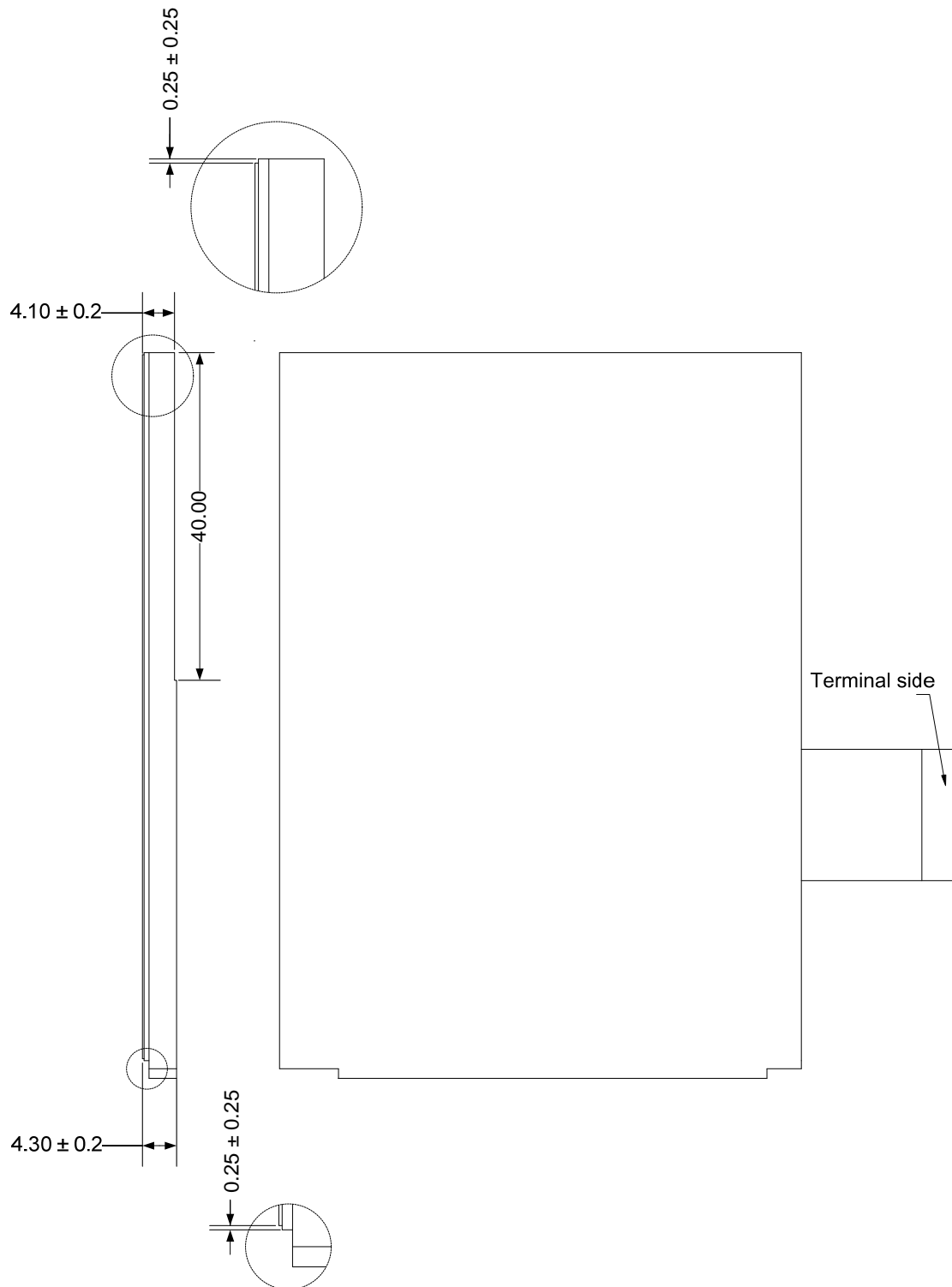


Figure 3-4: 3.7- inch Mechanical Outline (Back View)