

OtO Photonics

CB Series Datasheet

Description

CB series platform is constructed by a 32 bit RISC core, a 16 bit ADC, and low power circuits. In the normal operation, the SpectraSmart software can communicate with CB series through a high speed USB2.0 port on PC. The programmable CCD & ADC timing generator inside CB series can control the different CCD types and read the ADC data back in high data rate. CB series also provides several interfaces to communicate with external devices, like UART.

CB Series

CB-55H2

CB-56H2

CB-56M2

CB-1254M2

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■ Specification Overview

Model name		CB-55H2	CB-56H2	CB-56M2	CB-1254M2
CCD type		Sony ILX554B	Sony ILX563A		Toshiba 1254
CCD Port PIN		16 Pin		8 Pin	
Interface		USB2.0 @480 Mbps UART (115200bps) GPIO			
User Programmable Digital I/O		6		4	
Extension Port		8 Pin		6 Pin	
UART Port		4 Pin			
Compatible Spectro-module		MS1200 / MS2200	UM1200 / UM2200	UM 2 & AM Series	UM 3 series
CPU		32 bit RISC			
System Clock		200 MHz			
Memory	RA M	64 MByte DDR1			
	RO M	512 KByte		8 MByte	
ADC		16 bits, 6MSPS, Built-in Gain/Offset adjustment			
Power		300 mA at +5 VDC 4.75 – 5.25 V			

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■ Mainboard Structure

► 2.1 CB-55H2 / CB-56H2

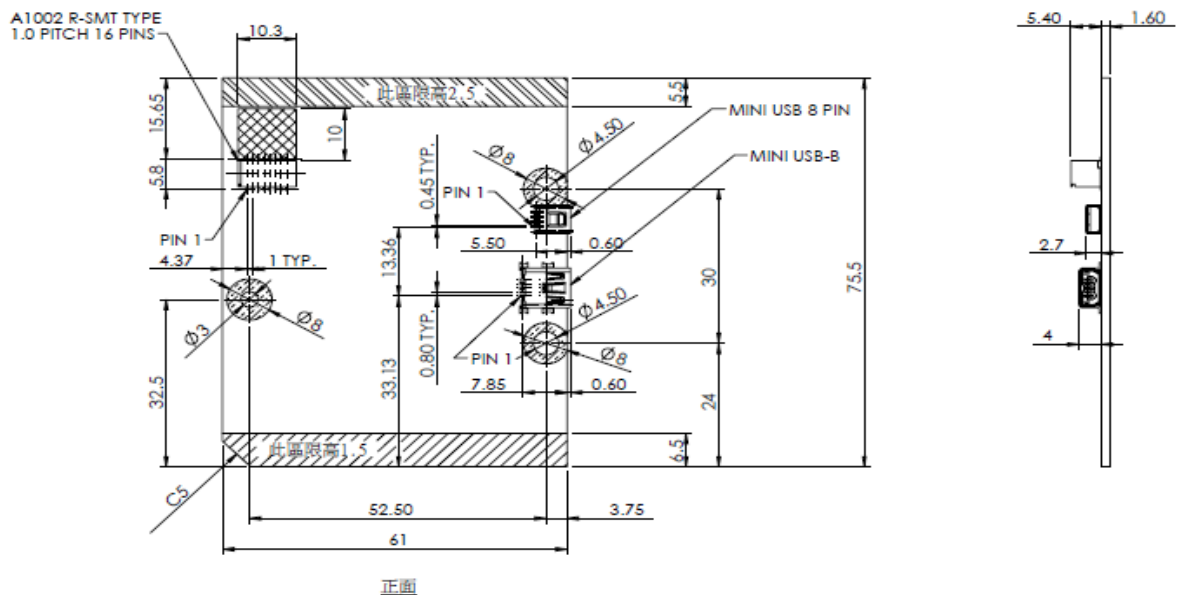
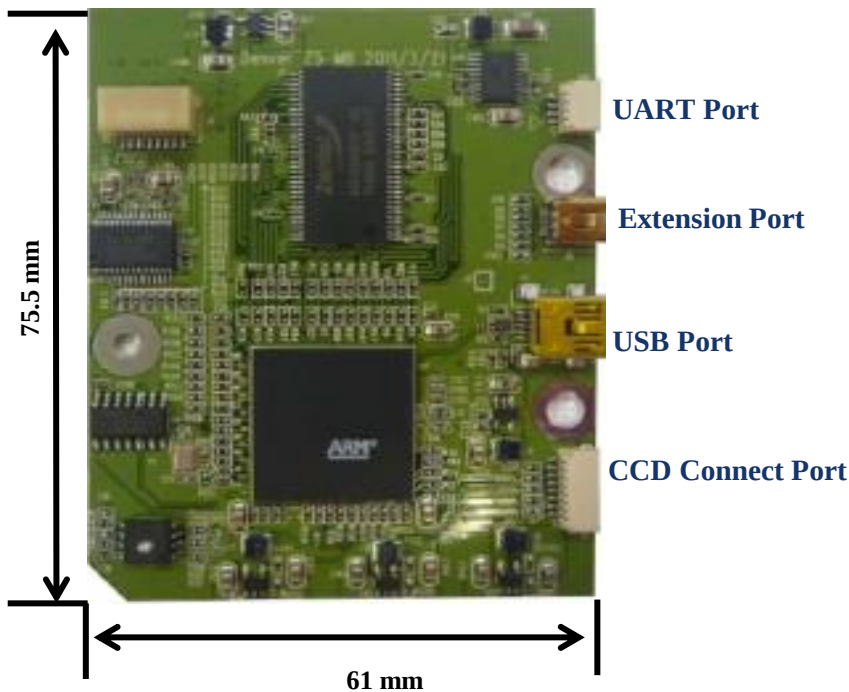


Fig. 1: CB-55H2/CB-56H 2Mainboard Structure

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► 2.2 CB-56M2 / CB-1254M2

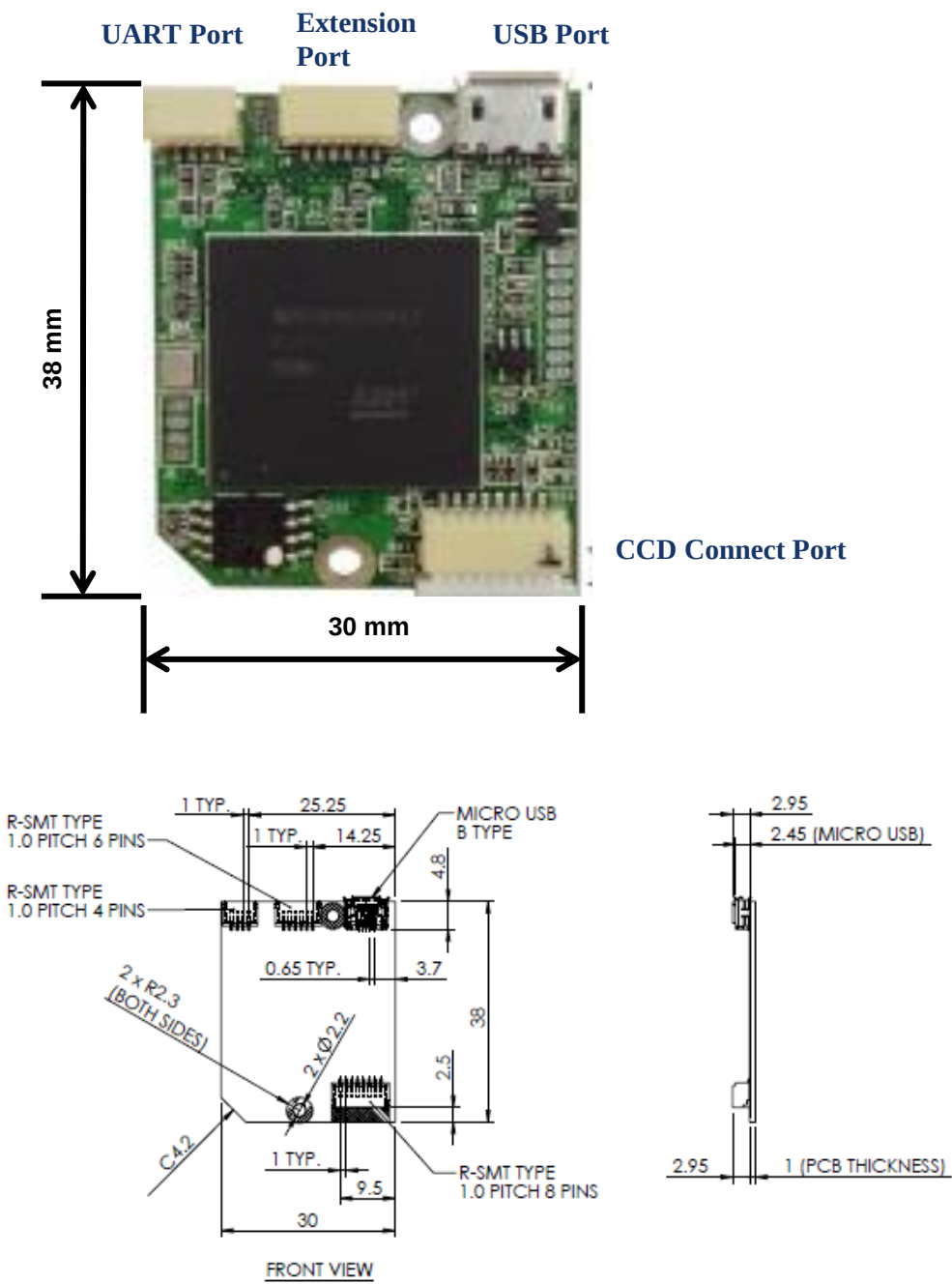


Fig. 2: CB-56M2 / CB-1254M2 Mainboard Structure

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■ Connect Port Overview

► 3.1 USB Port

Users can connect the SpectraSmart software on PC by PC USB port which is setup on CB Series.

❑ USB 2.0 @ 480Mbps (High-speed)

❑ Supply board power

► 3.2 CCD Connect Port

● CB-55H2 / CB-56H2

Users can connect a spectro-module by 16 PIN CCD connect port which is setup on CB-55H2/CB-56H2.

❑ Pin# description :

Pin No.	Direction	Pin Name	Function Description
1	Power	GND	Ground
2	Output	SPI_CLK	SPI CLK
3	Output	SPI_CS	SPI CS
4	Output	SPI_MOSI	SPI Master Out Slave In
5	Input	SPI_MISO	SPI Master In Slave out
6	Power	3V3	3.3V
7	Pwer	GND	Ground
8	Output	Gain	Reserved
9	Output	DRV_CLK	Spectro-module CLK
10	Power	GND	Ground

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Pin No.	Direction	Pin Name	Function Description
11	Input	Spectro_data	Spectro-module data
12	Power	GND	Ground
13	Output	DRV_SH	Reserved
14	Power	GND	Ground
15	Output	DRV_ROG	Readout gate pulse
16	Power	5V	5V

● CB-56M2 / CB-1254M2

Users can connect a spectro-module by 8 PIN CCD connect port which is setup on CB-56M2.

□ Pin# description :

Pin No.	Direction	Pin Name	Function Description
1	Output	DRV_SH	Reserved
2	Output	Spectro_GAIN	Reserved
3	Input	Spectro_data	Spectro-module data
4	Power	GND	Ground
5	Output	DRV_ROG	Readout gate pulse
6	Output	DRV_CLK	Spectro-module CLK
7	Power	Spectro_PWR	5V
8	Power	GND	Ground

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► 3.3 Extension Port

In the PC based operation, users can setup output with high or with low level by SpectraSmart software. The SpectraSmart software also can receive the I/O status through the USB communication. If users need the special timing generation (like single pulse or PWM), CB Series provides the flexibility to implement it.

GPIO Recommended Operating Levels:

$V_{IL}(\max) = 0.8V$

$V_{IH}(\min) = 2V$

GPIO Absolute Maximum Ratings are as follows:

$V_{IN}(\min) = -0.3V$

$V_{IN}(\max) = 5.5V$

● CB-55H2 / CB-56H2 Extension Port

The following listed is pin description for CB-55H2/CB-56H2 Extension Port Connector.

The connector is a Takewing US25308-AA mini USB 8 pin connector

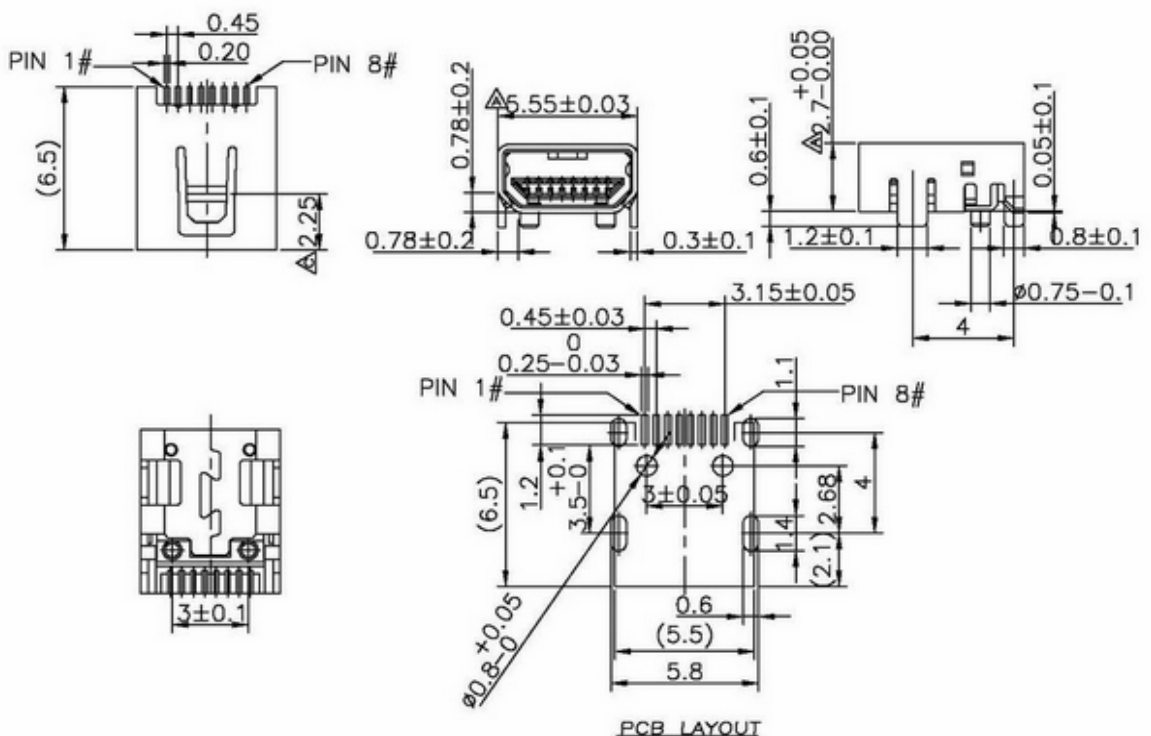


Fig. 3: Mini USB 8 pin drawing

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□ Pin# Description

Pin No.	Direction	Pin Name	Function Description
1	NC	NC/+5V	This pin provides the option to connect to CB-55H2/CB-56H2 system main power +5V. The default state is NC.
2	Input/Output	GPIO1	General purpose input /output pin. This provides the extension for external device control or synchronization.
3	Input/Output	GPIO2	General purpose input/output pin. This provides the extension for external device control or synchronization.
4	Input/Output	GPIO3	General purpose input/output pin. This provides the extension for external device control or synchronization.
5	Input/Output	GPIO4	General purpose input /output pin. This provides the extension for external device control or synchronization.
6	Input/Output	GPIO5	General purpose input/output pin. This provides the extension for external device control or synchronization. Like LED/Lamp control.
7	Input/Output	GPIO6	General purpose input/output pin. This provides the extension for external device control or synchronization. Like spectra capturing start/stop.
8	GND	GND	GND.

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● CB-56M2 / CB1254M2 Extension Port

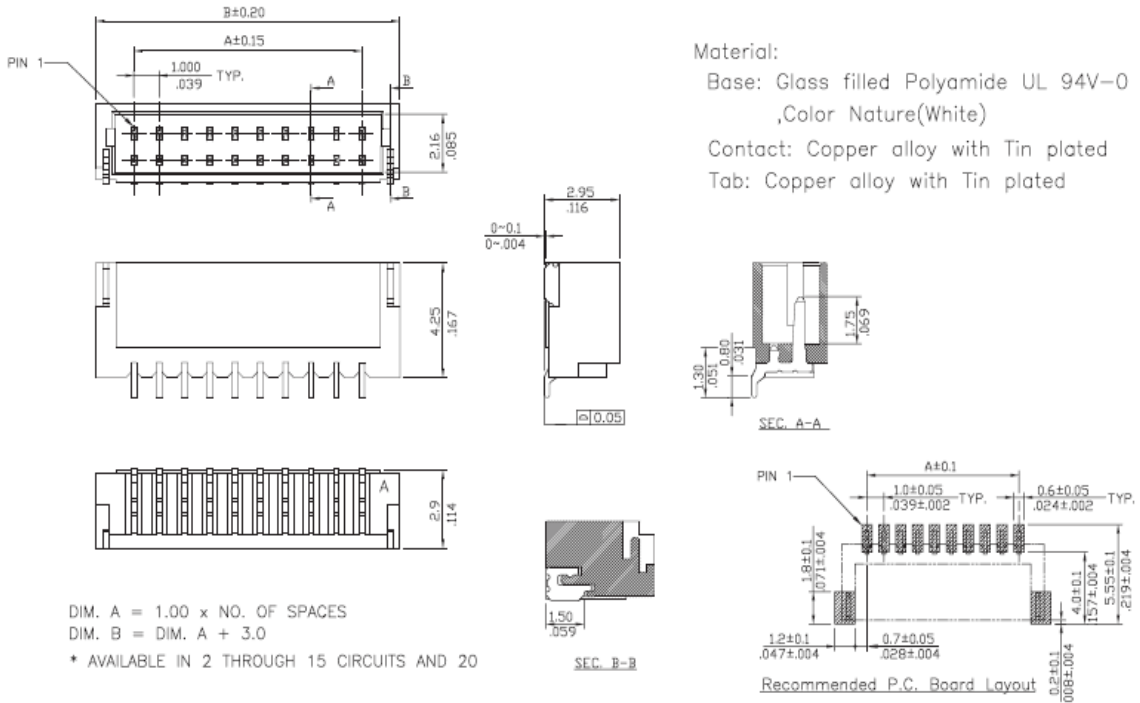


Fig. 4: Extension 6 pin drawing

□ Pin# Description

Pin No.	Direction	Pin Name	Function Description
1	Power	+5V	This pin provides the option to connect to CB-56M2 system main power +5V.
2	Input/Output	GPIO1	General purpose input output pin. This provides the extension for external device control or synchronization.
3	Input/Output	GPIO2	General purpose input output pin. This provides the extension for external device control or synchronization.
4	Input/Output	GPIO3	General purpose input output pin. This provides the extension for external device control or synchronization. Like LED/Lamp control.
5	Input/Output	GPIO4	General purpose input output pin. This provides the extension for external device control or synchronization. Like spectra capturing start/stop.
6	Ground	GND	GND.

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► 3.3 UART Port

For the board space consideration, CB Series uses the 4 pin 1.0 mm pitch connector for the UART communication. The following listed is the pin description for the CB-56M2 UART Port Connector. The connector is a Takewing HTHR-04WR 4 pin connector.

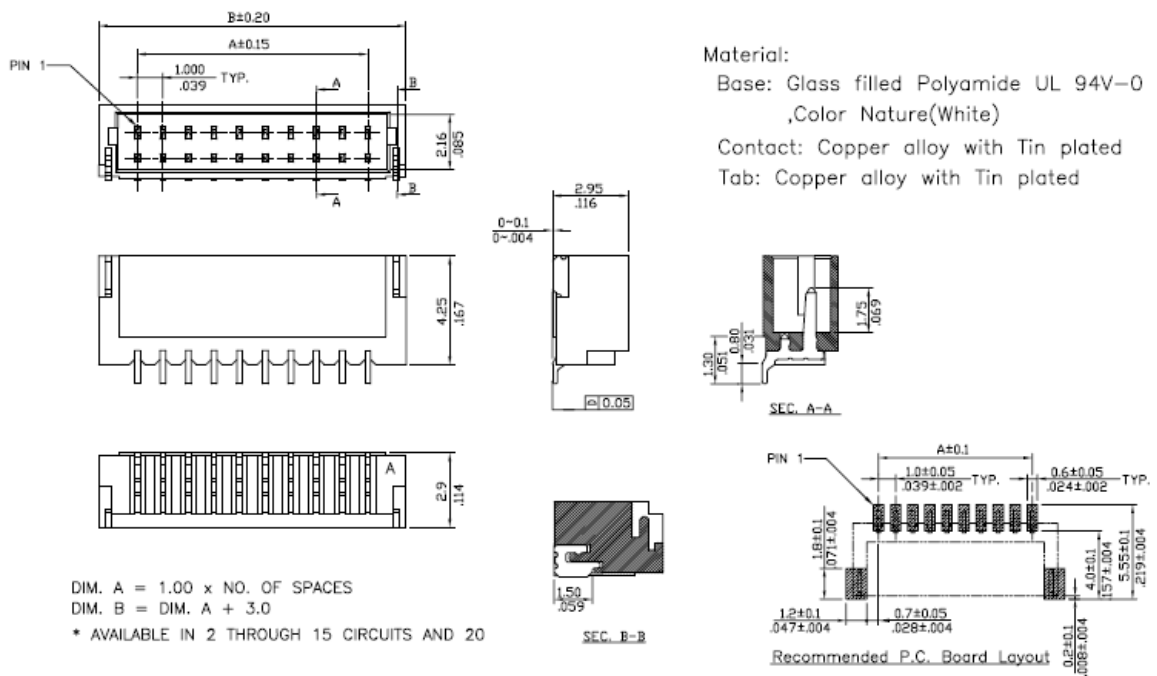


Fig. 5: UART 1.0 mm 4 pin drawing

□ Pin# Description

Pin No.	Direction	Pin Name
1	+5V	+5V
2	Output	TX (UART)
3	Input	RX (UART)
4	GND	GND

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Fig. 6: UART Port Extension Cable Picture

The user can buy the corresponding cable to connect to CB Series UART port. The above picture is an example to use the cable with 1.0 mm pitch header to 2.0 mm pitch header. (like JST PH connector) If the USB port and UART port are used at the same time, the UART +5V connection needs to consider the connection or disconnection.

UART Recommended Operating Levels:

$V_{IL(max)} = 0.8V$

$V_{IH(min)} = 2V$

UART Absolute Maximum Ratings are as follows:

$V_{IN(min)} = -0.3V$

$V_{IN(max)} = 5.5V$