

## SBC-APL-350 Quickstart Guide



### 1 Safety Precautions

Thank you for purchasing a TechNexion SBC series device. This installation guide will be helpful in the installation, wiring and inspection of your TechNexion single board computer. Before using the product, please read this guide to ensure correct use. You should thoroughly understand all safety precautions before proceeding with the installation, wiring, and operation. Place this instruction sheet in a safe location for future reference. The following suggestions will help you.

#### 1.1 Storage and Installation

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.
- Do not use or store the device in dusty or dirty areas. Its parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not attempt to open the device. This product is designed for specific applications and needs to be installed by qualified personnel.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not paint the device. Paint can clog the parts and prevent proper operation.
- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

#### 1.2 Wiring

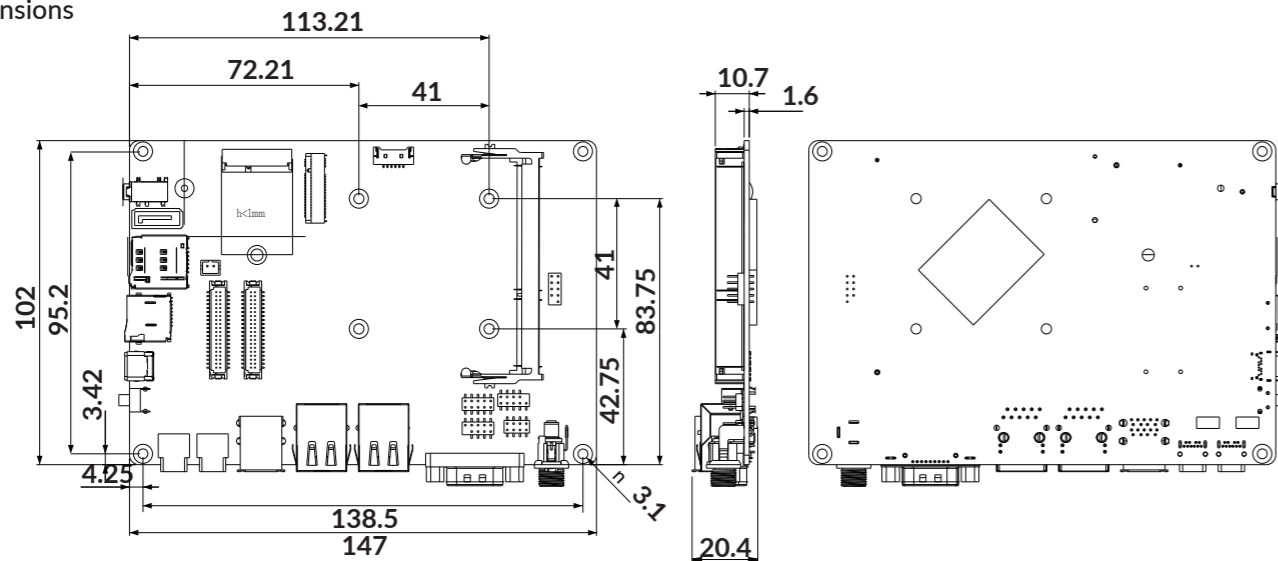
- Make sure that the available power source matches the required input power of the device. Failure to observe this caution may result in electric shock or fire.
- Do not power the unit by DC input when you apply power over the PoE (RJ45).

#### 1.3 Maintenance and Inspection

- Do not touch any internal or exposed parts of the device as electrical shock may result.
- Do not open the device while power is on. Otherwise electrical shock may result.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Be sure the ventilation holes are not obstructed during operation. Otherwise malfunction may result due to bad ventilation or overheating.

These suggestions apply equally to your device, battery, charger, or any enhancement. If any device is not working properly, take it to the nearest authorized service facility for service.

### 2 Dimensions



Unit : mm

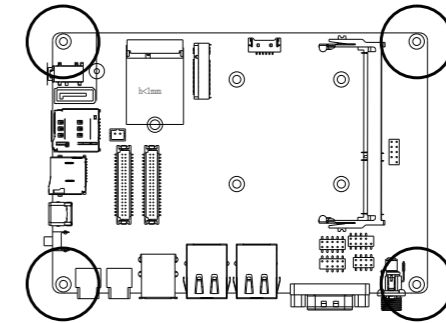
### 3 Installation Instructions

This section describes the mounting procedures for SBC series device. The material in the mounting area must provide sufficient strength for support of this single board computer.

#### 3.1 Surface Mounting

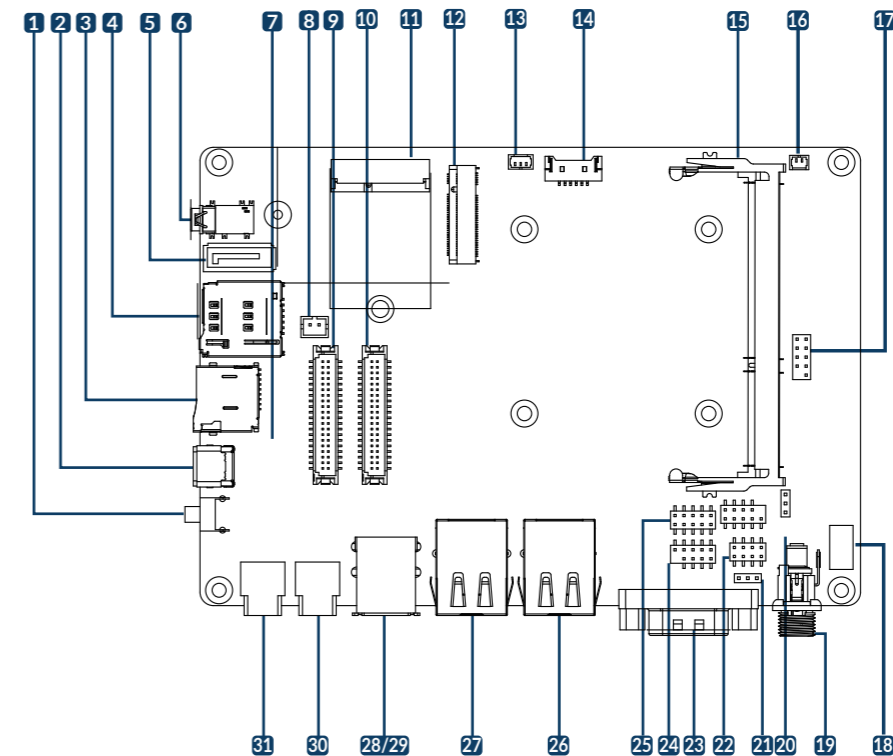
There are 4 mounting holes (M3) on the PCB required for surface mounting. Four M3 screws with at least 8mm head-to-tip length are required to secure this device to the surface. The distance from the PCB to the surface must be at least 1.6mm.

Front view:



### 4 External Connectors

Front view:

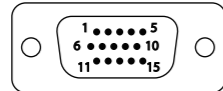


No.	Description	No.	Description
1	Power button	17	USB (2 ports) header
2	USB OTG (Type-C) connector	18	Power Fuse
3	microSD card slot	19	Power Input connector
4	Micro-SIM card slot	20	CMOS jumper
5	SATA 3.0 connector	21	COM-PWR1 jumper
6	3.5mm audio jack	22	FPANEL1 front panel switch
7	18/24-bit LVDS jumper	23	Serial Port (COM1) DB9 connector
8	SATA Power connector	24	Serial Port (COM2) header
9	LVDS1 connector	25	GPIO (DIO1)) header
10	LVDS2 connector	26	LAN1 RJ45 connector
11	M.2 KEY-E slot (PCIe + USB 2.0)	27	LAN2 RJ45 connector
12	M.2 KEY-B slot (SATA + USB 2.0)	28	USB Host connector
13	FAN1 header	29	USB Host connector
14	USB (1 port) header	30	miniDP1 connector
15	SO-DIMM DDR3L slot	31	miniDP2 connector
16	RTC Battery connector		

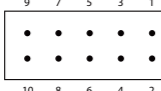
## 5 Pin Definition

### 5.1 Digital I/O Headers (GPIO/DIO1)

This product is available with two non-galvanic isolated GPIO headers: GPIO external connector and DIO1 internal header. The headers have the following pinout:

GPIO:	Port	Pin #	Signal	Description	Voltage
	1	VCC	Supply output	5V	
	2	GPIO1	DIG_IN1/OUT1	3.3V	
	3	GPIO3	DIG_IN3/OUT3	3.3V	
	4	GPIO5	DIG_IN5/OUT5	3.3V	
	5	GPIO7	DIG_IN7/OUT7	3.3V	
	6	GND	Common Ground		
	7	GND	Common Ground		
	8	GND	Common Ground		
	9	GND	Common Ground		
	10	GND	Common Ground		
	11	VCC	Supply output	5V	
	12	GPIO2	DIG_IN2/OUT2	3.3V	
	13	GPIO4	DIG_IN4/OUT4	3.3V	
	14	GPIO6	DIG_IN6/OUT6	3.3V	
	15	GPIO8	DIG_IN8/OUT8	3.3V	

Header on SBC-APL-350: DB15 (15-pin) high density D-Sub male connector.  
Cable receptacle: DB15 (15-pin) high density D-Sub female connector.

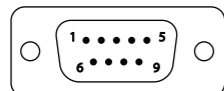
DIO1:	Header	Pin #	Signal	Description	Device
	1	VCC	Supply output	5V	
	2	GPIO1	DIG_IN1/OUT1	3.3V	
	3	GPIO2	DIG_IN2/OUT2	3.3V	
	4	GPIO3	DIG_IN3/OUT3	3.3V	
	5	GPIO4	DIG_IN4/OUT4	3.3V	
	6	GPIO5	DIG_IN5/OUT5	3.3V	
	7	GPIO6	DIG_IN6/OUT6	3.3V	
	8	GPIO7	DIG_IN7/OUT7	3.3V	
	9	GPIO8	DIG_IN8/OUT8	3.3V	
	10	GND	Common Ground		

Header on SBC-APL-350: 2x5-pin Header (2.00 Pitch Male Header).  
Cable receptacle: 2x5-pin Header (2.00 Pitch Female Header).

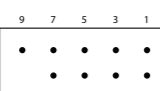
NOTE: DB15 GPIO cable is available for this header(optional). The DB15 connector pinout is the same as the GPIO connector (see above for details).

### 5.2 Serial Ports (COM1/COM2)

This product is available with two full function non-galvanic isolated RS-232 serial ports: COM1 external connector and COM2 internal header. The ports have the following pinout:

COM1:	Port	Pin #	Signal	Description	Device
	1	SERIAL1_DCD	Port#1 Data Carrier Detect (input)	COM1	
	2	SERIAL1_RXD	Port#1 Receive data (input)	COM1	
	3	SERIAL1_TXD	Port#1 Transmit data (output)	COM1	
	4	SERIAL1_DTR	Port#1 Data Terminal Ready (output)	COM1	
	5	GND	Ground		
	6	SERIAL1_DSR	Port#1 Data Set Ready (input)	COM1	
	7	SERIAL1_RTS	Port#1 Request-to-send (output)	COM1	
	8	SERIAL1_CTS	Port#1 Clear-to-send (input)	COM1	
	9	VCC*	5V supply output		

Header on SBC-APL-350: DB9 (9-pin) standard D-Sub male connector.  
Cable receptacle: DB9 (9-pin) standard D-Sub female connector.

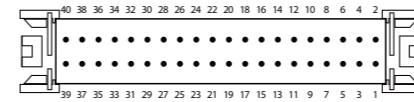
COM2:	Header	Pin #	Signal	Description	Device
	1	SERIAL2_DCD	Port#2 Data Carrier Detect (input)	COM2	
	2	SERIAL2_RXD	Port#2 Receive data (input)	COM2	
	3	SERIAL2_TXD	Port#2 Transmit data (output)	COM2	
	4	SERIAL2_DTR	Port#2 Data Terminal Ready (output)	COM2	
	5	GND	Ground		
	6	SERIAL2_DSR	Port#2 Data Set Ready (input)	COM2	
	7	SERIAL2_RTS	Port#2 Request-to-send (output)	COM2	
	8	SERIAL2_CTS	Port#2 Clear-to-send (input)	COM2	
	9	VCC*	5V supply output		
	10	NC	Key		

Header on SBC-APL-350: 2x5-pin Header (2.00 Pitch Male Header, Pin 10 = KEY).  
Cable receptacle: 2x5-pin Header (2.00 Pitch Female Header, Pin 10 = KEY).

NOTE: DB9 RS-232 cable is available for this header(optional). The DB9 connector pinout is the same as the COM1 port.

### 5.3 LVDS Connectors (LVDS1/LVDS2)


This product features two (dual channel) LVDS connectors) for connecting to a (single or dual channel) LVDS panel: LVDS1 / LVDS2.

LVDS1 / LVDS2:	Header	Pin #	Signal	Pin #	Signal
	1	12V	21	LVDS_D1+	
	2	5V	22	SCL	
	3	12V	23	GND	
	4	5V	24	SDA	
	5	LCD_ENB	25	LVDS_D2-	
	6	PWM_5V	26	LED_enable	
	7	LCD_ENBK	27	LVDS_D2+	
	8	PWM_3V	28	LED+	
	9	GND	29	GND	
	10	GND	30	LED+	
	11	SEL18/24bit	31	LVDS_CLK-	
	12	3.3V	32	LED+	
	13	LVDS_D0-	33	LVDS_CLK+	
	14	3.3V	34	LVDS_enable	
	15	LVDS_D0+	35	GND	
	16	LVDS_REV	36	LED-	
	17	GND	37	LVDS_D3-	
	18	LVDS_R/L	38	LED-	
	19	LVDS_D1-	39	LVDS_D3+	
	20	LVDS_U/D	40	LED-	

Header on SBC-APL-350: Hirose DF13-40DP-1.25V (1.25mm Pitch Double Row Straight Pin Header).  
Cable receptacle: Hirose DF13-40DS-1.25C (1.25mm Pitch Double Row Socket, Crimping Socket).

### 5.4 USB Touch Header (USB1)


This product features one USB Touch Header: USB1.

USB1:	Port	Pin #	Signal	Description
	1	NC		
	2	NC		
	3	USB_D+		USB differential pair signal
	4	USB_D-		USB differential pair signal
	5	VBUS		5V Universal Serial Bus Power
	6	GND		Ground

Header on SBC-APL-350: Molex 53780-0670 (1.25mm Pitch PanelMate Header, Surface Mount, Right-Angle, 1.90mm Height, 6 Circuits).  
Cable receptacle: Molex 51146-0600 (1.25mm Pitch PanelMate Wire-to-Board Receptacle Housing, Ultra Low Profile, 6 Circuits, Natural).

### 5.5 SATA Power Header (SATA\_PWR1)

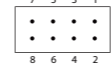
This product features one SATA Power header: SATA\_PWR1.

SATA_PWR1:	Header	Pin #	Signal	Description
	1	+5V	5V Universal Serial Bus Power	
	2	GND	Ground	

Header on SBC-APL-350: Molex 89400-0220 (2.00mm Pitch Wire-to-Board Header, Vertical, 2 Circuits, with Kinked PC Tail).  
Cable receptacle: Molex 87369-0200 (2.00mm Pitch Crimp Housing, Single Row, 2 Circuits, Natural).

### 5.6 Front Panel Switch (FPANEL1)

This product features FPANEL1 front panel switch.

Header	Pin #	Signal	Description	Pin #	Signal	Description
	1	GND	Ground	5	GND	Ground
	2	ON-OFF	Power button	6	RESET	Reset button
	3	GND	Ground	7	GND	Ground
	4	PWR-LED	Power LED	8	SATA-LED	SATA LED

NOTE: for description of other jumpers / headers not covered in this document - please refer to the SBC-APL-350 HARDWARE MANUAL.

## 6 Software and Driver Installation

The unit is by default preloaded with software that can download and install a selection of Linux OS images over hardwired network. Simply connect a display to the unit through the miniDP connector and a network through the Ethernet LAN RJ45 connector and power it up, then follow the steps on the screen to load the software. Local proxies will interfere with this process. For more information, go to our Knowledge Base at: <https://www.technexion.com/support/knowledge-base/>

To download drivers for the Windows operating systems, go to our Download Center at:

<https://www.technexion.com/support/download-center/>

For more information about installing and configuring the Windows operating systems, see: <https://msdn.microsoft.com/en-us/>

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