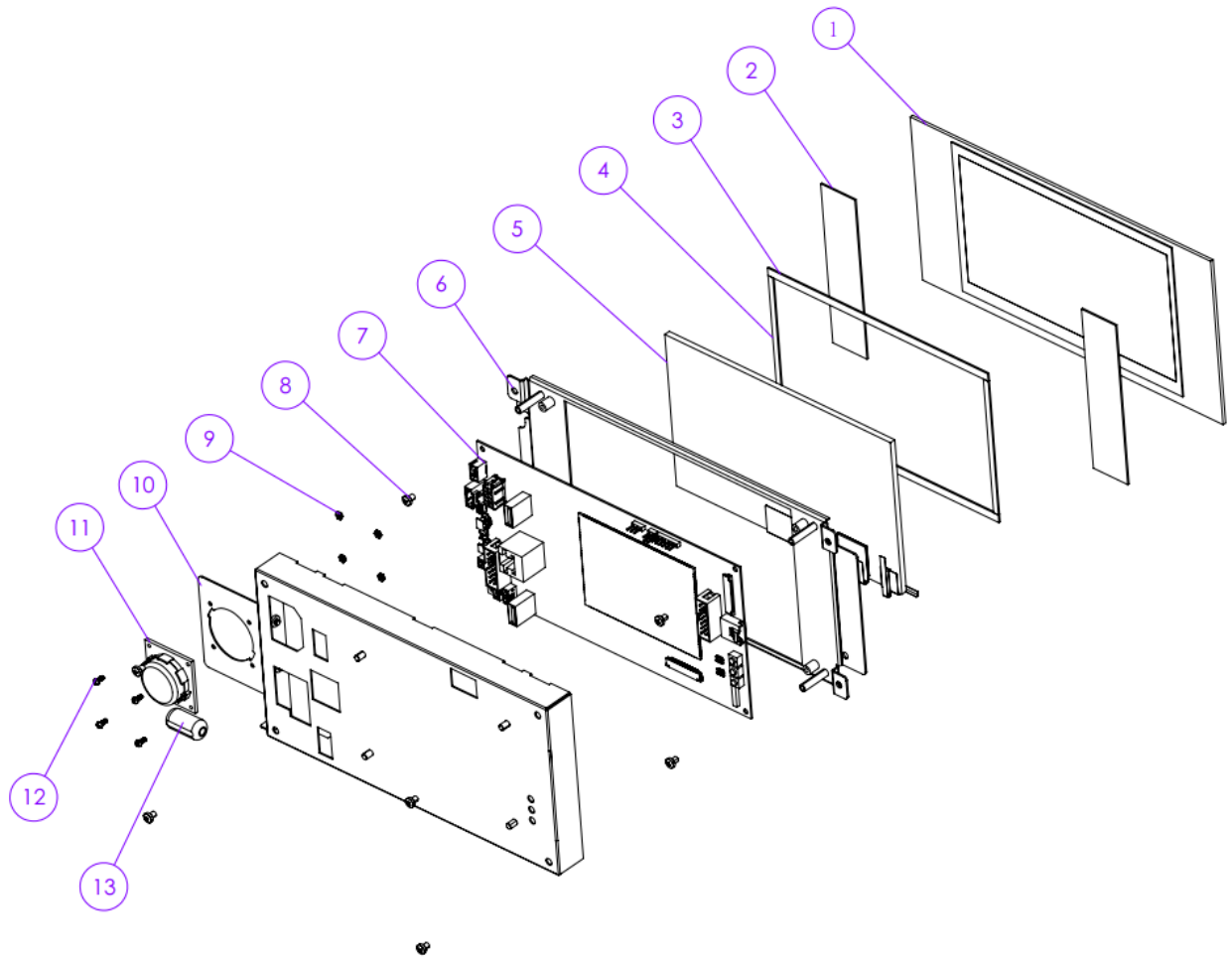


NTX Embedded Spada High Level UI 7” Capacitive Touch System

Platform	Processor	CPU: Renesas RZ/G2E Dual Core ARM Cortex-A53 1.2GHz GPU: PowerVR GE8300
	RAM	1GB 32bit DDR3L-1866
	eMMC	8GB embedded
	Real Time Clock	Coin Cell Battery Backup
IO Ports	Audio	3W Amplifier supporting 8ohm external speaker mono; Mic
	Communication	RS485 - Half Duplex, RS232, RS485-Full Duplex, I2C, CAN, 6 GPIO
	USB	USB-A (2 ports); USB-B (1 port); USB-Special locking connectors (2 ports)
	Ethernet	10/100 Ethernet RJ45 Connector
	Extra Memory	Micro SD port; External QSPI port
Display	LCD	1024x768 Resolution, 50k hours, IPS, Brightness 350 nits*
	Touch Screen	Projected Capacitive, 2mm glass cover lens. UL 197 ball drop
	Secondary Display	Second external display port for LVDS display
Electrical	Input Voltage	12-24VDC - Overvoltage, reverse current, and polarity protection
	Input Current	3 Amp
	Output Current	USB supports 1.5A 3.3V power out
Mechanical	Cover Lens Dimension	219mm x 107mm; Active area 153mm x 83mm
	Net Weight	0.54Kg
	Panel Assembly	Back Mount; screws to frame or bracket from back
	Construction	Glass, Aluminum, Stainless Steel metal frame and back cover
Environmental	Operating Temperature	0°C-70°C
	Storage Temperature	-20°C - 80°C
	Storage Humidity	5% to 90% RH - non-condensing

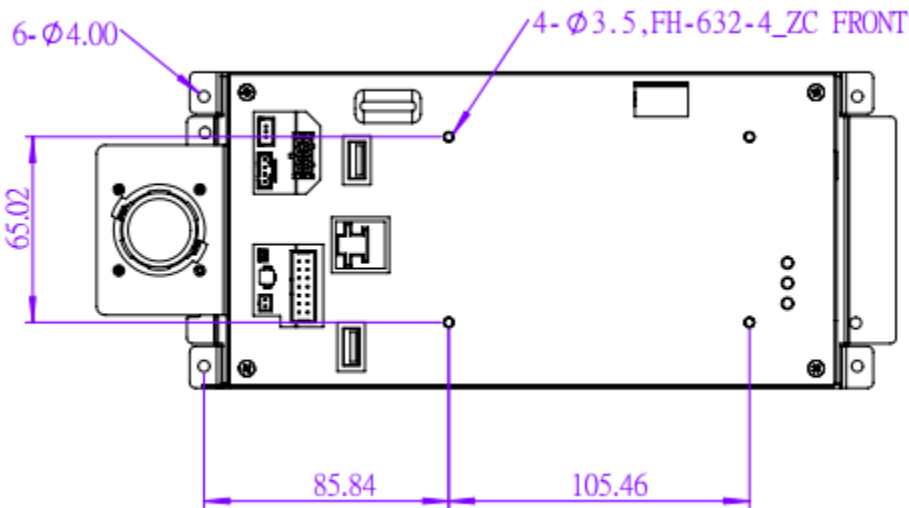
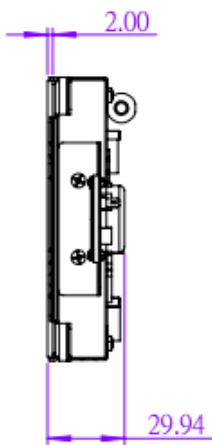
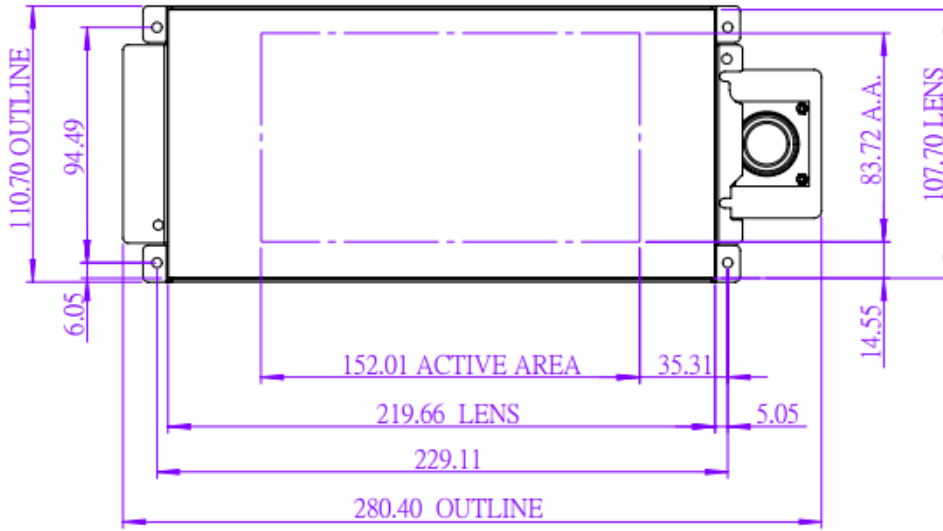
*Brightness measured directly on LCD.

Spada HL-UI Assembly

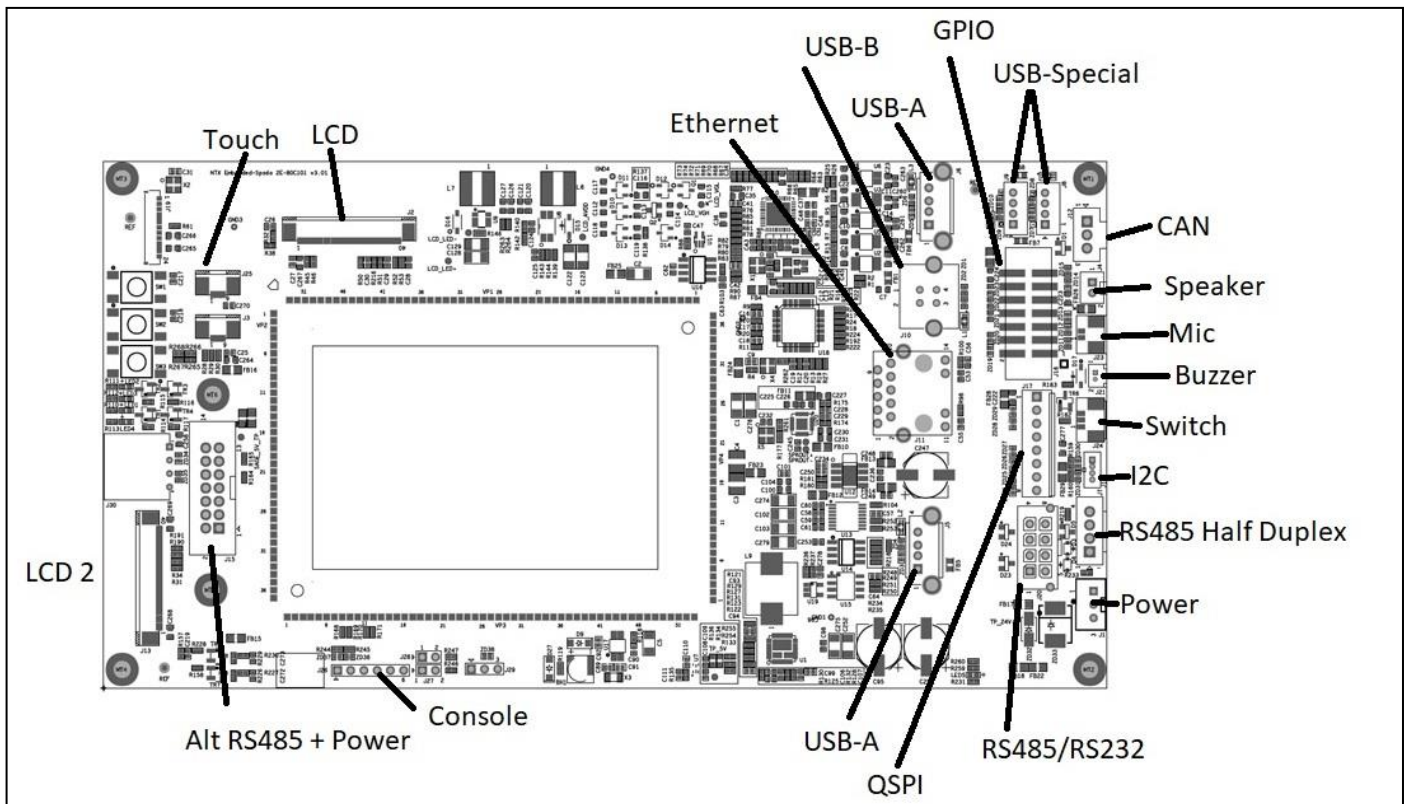
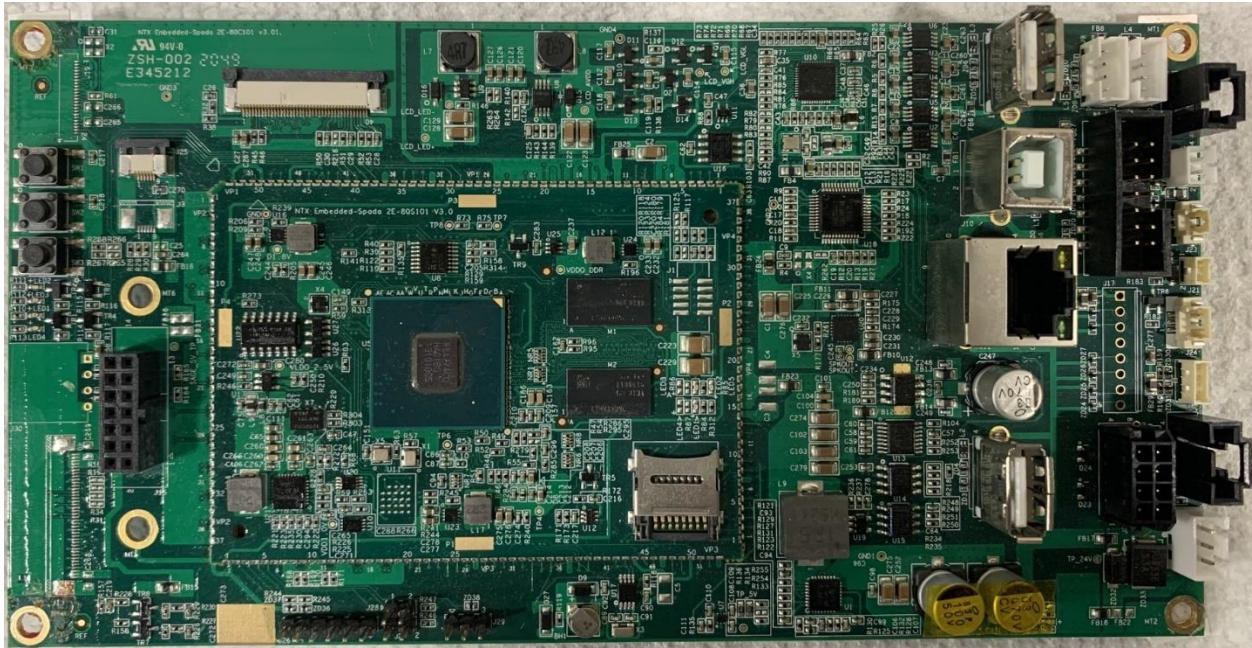


#	Description
1	2.0mm Cover Lens and Touch Screen
2-4	Double Sided Tape
5	7" LCD
6	Metal Frame
7	PCBA
8	M3 Screws
9	M2 Nut
10	Metal Back Cover
11	Speaker
12	M2 Screw
13	Magnetic Core

Spada HL-UI Dimensions



Spada HL-UI Connectors

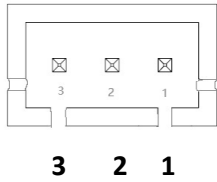


Connector Components

Connectors			
J1	Power and Ground	JST	B3B-XH-A(LF)(SN)(P)
J4	Speaker	JST	B2B-PH-K-S(LF)(SN)
J7	RS485 1/2	Molex	705430108
J8/J9	USB -Special	JST	B4B-PH-K-S(LF)(SN)
J11	Ethernet	LYCN	511Q486AC1A8D
J12	CAN	Molex	705430002
J14	I2C	Molex	530470410
J15	Alt RS485+Power	Sullins	SFH11-PBPC-D07-ST-BK
J16	GPIO + I2C	CNC Tech	3020-14-0300-00
J17	QSPI	TE	640456-8
J20	RS232/RS485	Molex	449140801
J21	Buzzer	JST	B2B-PH-KS(LF)(SN)
J23	MIC	Molex	53398-0267
J24	SWITCH(PCT button)	Molex	53398-0367
J26	Console	FCI	68000-406HLF

Connector Pinouts

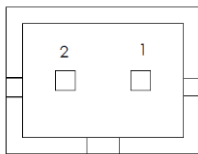
J1 Power



<i>Pin No.</i>	<i>Signal</i>
1	Earth Ground
2	Power IN +(12-24V)
3	Power IN -(Ground)

Earth Ground needs to be evaluated on a system level. Jumper pins one and three to bypass the ferrite bead between Earth Ground and Ground. This input should be power limited to 25W.

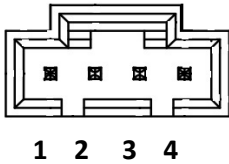
J4 Speaker



<i>Pin No.</i>	<i>Signal</i>
1	SPK+
2	SPK-

3W Class D Audio output (8 ohm).

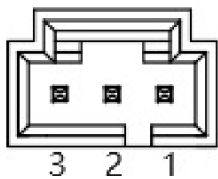
J7 RS485 Half Duplex



<i>Pin No.</i>	<i>Signal</i>
1	GND
2	RS485 -A
3	RS485 -B
4	*Termination

* For RS485 half-duplex communication, you can have more than two devices connected to the same two data lines to communicate. The two devices on the ends must be impedance matched, typically at 120 ohms. This is usually done by adding a 120ohm resistor between the A and B lines on each of the end boards. For very short distances impedance matching is not required but is a best practice. For the HL-UI to be an end point with 120 ohm impedance, pins 4 and 3 on the J7 connector must be connected to each other (shorted) as part of the wire harness. The 120ohm resistor is on the board and is enabled by this change to the wire harness.

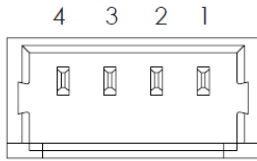
J12 CAN



<i>Pin No.</i>	<i>Signal</i>
1	CANH
2	CANL
3	Ground

Uses CAN0 device in Linux

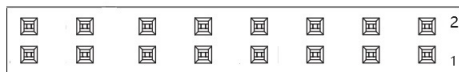
J14 I2C



<i>Pin No.</i>	<i>Signal</i>
1	3.3V power
2	SCL 3.3V
3	SDA 3.3V
4	Ground

Running the I2C over long distances at speeds greater than 100KHz is not recommended. Both SDA and SDC have 2.2K pull-up resistors and ESD diodes attached to the lines.

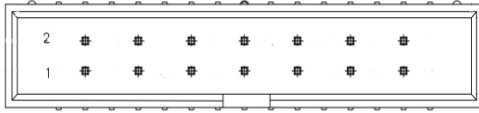
J15 Alt RS485 Half Duplex + Power



<i>Pin No.</i>	<i>Signal</i>	<i>Pin No.</i>	<i>Signal</i>
1	No Connect	2	No Connect
3	No Connect	4	No Connect
5	Ground	6	Ground
7	Ground	8	5V Input
9	TXD	10	No Connect
11	RXD	12	No Connect
13	Ground	14	No Connect

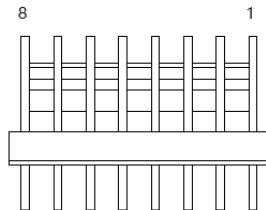
Do not connect the J1 power connector if a 5V power supply is being used on this J15 connector. The J1 Earth Ground pin can be used at the same time as this J15 if needed. Pins 9 and 11 are logic level I/O.”

J16 GPIO+I2C



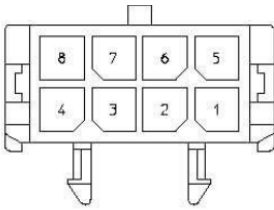
<i>Pin No.</i>	<i>Signal</i>	<i>Pin No.</i>	<i>Signal</i>
1	Ground	2	3.3V GPIO9/PWM6
3	3.3V GPIO0	4	3.3V GPIO8
5	3.3V GPIO1	6	Ground
7	3.3V GPIO2	8	3.3V GPIO7/SDA
9	3.3V Power out	10	3.3V GPIO6/SCL
11	3.3V GPIO3	12	3.3V GPIO5/PWM3
13	3.3V GPIO4	14	5V Power Output

J17 QSPI



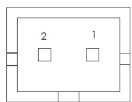
<i>Pin No.</i>	<i>Signal</i>	<i>Pin No.</i>	<i>Signal</i>
1	3.3V Power	2	SPCLK
3	SSL	4	Ground
5	MOSI	6	MISO
7	IO2	8	IO3

J20 RS485 RS232



<i>Pin No.</i>	<i>Signal</i>	<i>Pin No.</i>	<i>Signal</i>
1	RS485 A	2	RS485 B
3	RS485 Y	4	RS485 Z
5	RS232 RX	6	GND
7	RS232 TX	8	GND

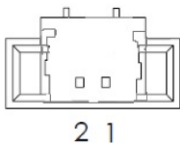
J21 Buzzer



<i>Pin No.</i>	<i>Signal</i>
1	Buzzer+
2	Buzzer -

Pin 1 attaches to Digital +5V, Pin 2 is an open drain (2.2 ohm) output to the buzzer (350mW Power Dissipation on the transistor - absolute max).

J23 Mic



<i>Pin No.</i>	<i>Signal</i>
1	Mic in -
2	Mic in +

J24 Switch

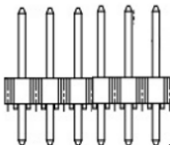


<i>Pin No.</i>	<i>Signal</i>
1	SW1_IN
2	Ground
3	No Connect

Shorting pin 1 and pin 2 causes GP5-07 to be low otherwise it is high. J24 is a user switch. Pin 1 has a 1K Ohm pull-up resistor to 3.3V.

J26 Debug Linux Console

1 6

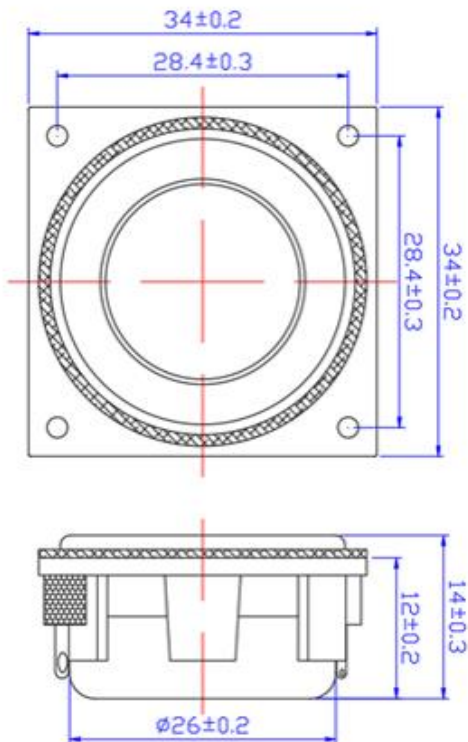


<i>Pin No.</i>	<i>Signal</i>
1	GND
2	No Connect
3	No Connect
4	FTDI TXD
5	FTDI RXD
6	No Connect

For development use only. Not a production communication port.

Speaker Specifications

No.	Item	Specification
1	Rated Imp	8Ω±15%
2	Resonance Freq	260Hz±20%
3	Output S.P.L.	85±3dB
4	Rated Power	at 2.0W
5	Max Power	at 3.0W
6	Frequency Range	FO 20kHz
7	Magnet	NdFeB
8	Operating Temp	-20°C to +80°C
9	Storage Temp	-30°C to +80°C



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Document Version NTX-HD-240208b