RE3

Single Board Computer
User Guide

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Copyright

Limitations of Liability

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Regulatory Statements

CE
This product has been designed and assessed to meet the essential protection requirements of the European EMC Directive (2004/108/EC), the Low Voltage Directive (2006/95/EC), and the R&TTE Directive (1999/5/EC) when installed and used in conjunction with the guidelines provided within this document.

[Note that compliance with the R&TTE directive is only required for those versions of the product equipped with radio frequency interfaces].

FCC
NOTE:
FCC compliance of product versions equipped with radio frequency interfaces may require specific approval for the finished products.

WARNING:

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Safety Warning for North America

If the power lead (cord) is not supplied with the computer, select a power lead according to your local electrical regulations. In the USA use a 'UL listed' lead. In Canada use a CSA approved or 'cUL listed' lead.

Si le cordon secteur n'est pas livré avec l'ordinateur, utiliser un cordon secteur en accord avec votre code electrique nationale. En l'Etat Unis utiliser un cordon secteur 'UL listed'. En Canada utiliser un cordon secteur certifié CSA, ou 'cUL listed'.

Manual Organisation

This manual describes in detail the RE3 Product range.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard Technical References, unless it proved to be necessary to aid in the understanding of the product.

The manual is sectioned as follows:

Introduction;
Overviews, showing outline dimensions;
Layout, showing where the various connectors are located, and their pin-out details;
Firmware Setup
Maintenance details

We strongly recommend that you study this manual carefully before attempting to interface with the RE3 or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

IT IS PARTICULARLY IMPORTANT THAT YOU READ THE SECTION 'PRECAUTIONS' BEFORE HANDLING ANY COMPONENTS INSIDE THE UNIT.

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Technical Services department with the relevant details.

Introduction

The Blue Chip Technology RE3 (BCT-RE3) is the next step in the highly successful RE range of all in one compact computers.

The BCT-RE3 has multiple CPU options, 1GHz Dual Core and 1GHz Quad Core. Both options are available as extended temperature product. All RE3s are supplied with 1GB of DDR3 Memory and 1GB of NAND Flash. Further, additional NAND Flash can be added through an optional µSD Card.

The BCT-RE3 can operate from 7V DC input through to 36V DC input. Power requirements will vary depending on any LCD panel and other peripherals attached to the RE3.

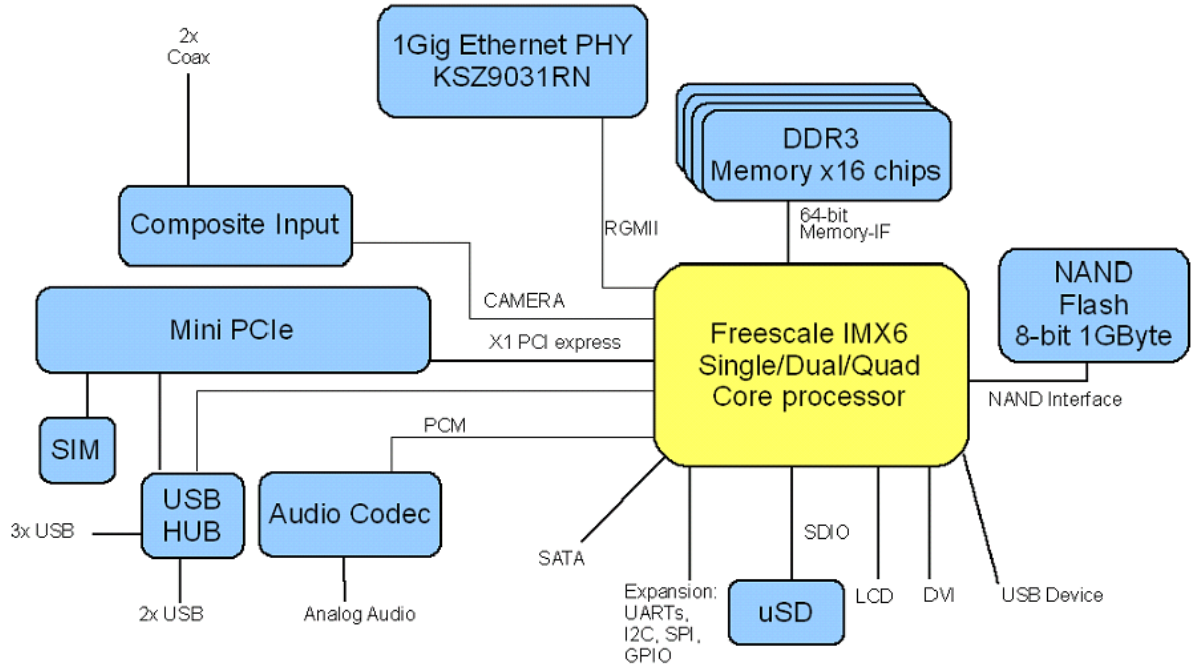
For example with the Dual 1GHz BCT-RE3 with the U.R.T. UMSH-8173MD-1T 5.7" Combined LCD and Touch Screen, the operational power requirements will vary between 5.6W for Linux Linaro, at the desktop, up to 13.5W with applications running CPU, GPU and VDU heavily. Attaching peripherals such as USB will increase this further.

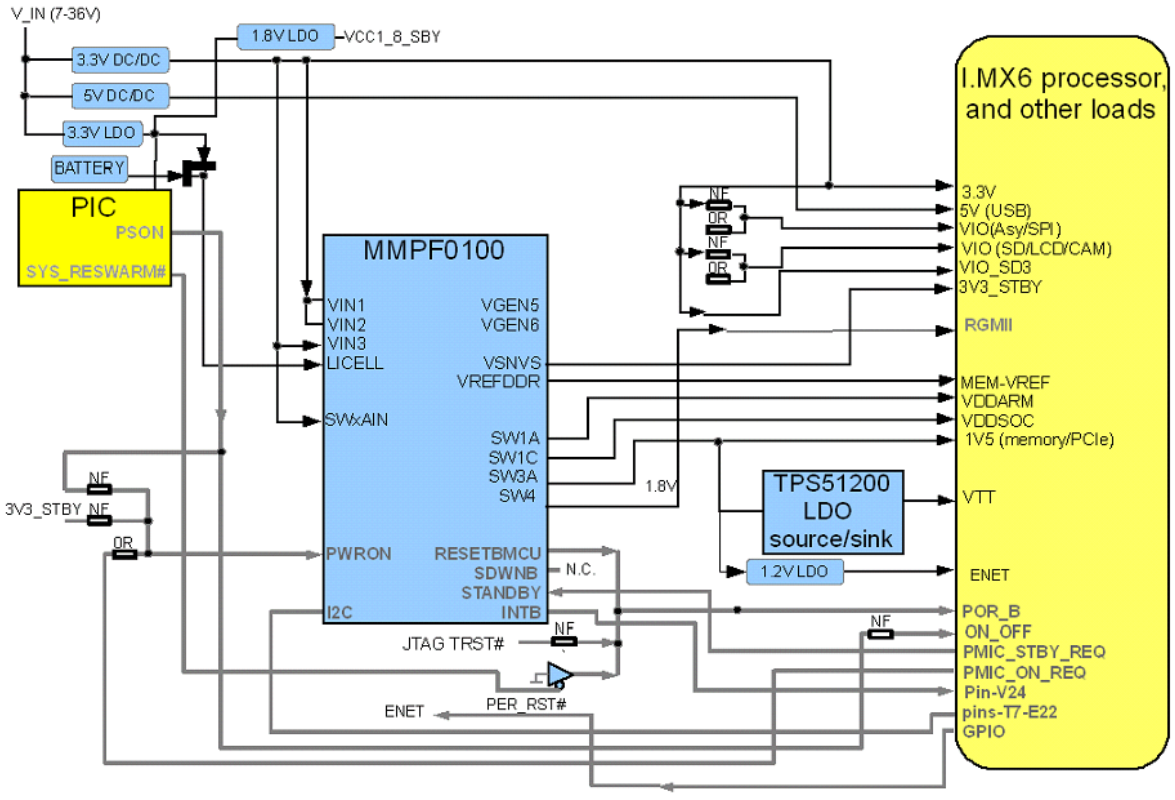
On its own, the RE3 operates at approximately 3.5/3.6W Dual/Quad CPU without power saving and without applications running.

The BCT-RE3 has the capability to support a Lithium Battery via connector P14 to retain time and date when the unit is powered off. Please refer to RTC Battery section for options on using this feature

Functional Overview

The following block diagrams show the I/O and Power Management for the RE3





Specification

- Dual or Quad Cortex A9 CPU
- 1GB DDR3 Memory soldered onboard
- 1GB NAND Flash soldered onboard
- Optional µSD Card NAND Flash Storage
- SATA 3Gbit Socket
- H.264 1080p60 decode, 1080p30 encode and 3-D video playback in HD
- Triple Graphics system with a Quad shader 3D unit capable of 200MT/s, separate OpenVG Vertex acceleration engine
- Two independent video outputs – HDMI and 24 bit LCD
- 10/1001000 Mbit Ethernet including magnetics
- Five USB 2.0 Hosts [four type A and one header]
- Single USB 2.0 Device
- Dual RS-232 (1 Full, 1 2-wire)
- Single RS422/485
- Stereo Audio Inputs & Stereo Outputs plus Microphone In
- Battery backed Real-Time Clock
- 12 GPIO lines
- One CAN 2.0 interface
- Utilities connector
- Wide Input Voltage – 7 to 36 volts
    - 5V Rail for USB etc limited to 2A draw
    - 3.3V for GPIO (if connected) is limited to 2.2A
- power consumption – typically 5.0/5.5 watts Dual/Quad (LCD not included) running application
- Two Camera inputs on UFL connectors
    - Supports NTSC M, NTSC J, NTSC 4.43, PAL B/G/H/I/D, PAL M, PAL N, PAL 60
    - 10-bit 4x Oversampling (54Msos) ADC with true 10-bit Digital Processing
- Mini PCIe socket supporting
    - 2G/3G Modem, GPS, Wi-Fi, Bluetooth

General Precautions

Your Single Board Computer is susceptible to damage by electrostatic discharges. In order to avoid damage, you should work at an anti-static bench and observe normal anti-static precautions. Wear an anti-static wrist strap connected to an earth point *before* opening any packaging.

Where a wrist strap is not available, discharge any static charge you may have built-up by touching an earth point. Avoid any further movement that could build up another static charge. Touch an earth point from time to time to avoid further build-up, and remove the items from their anti-static bags only when required

Electro-Static Discharges

It is important to realise that the components on the RE3 can be damaged by static electricity. Bear in mind that the damage caused by static electricity may vary from total destruction to partial damage, which may not be immediately obvious. This could have an effect on the product's reliability and warranty. Before handling the RE3, ensure that you take necessary static precautions. Ideally you should work at an anti-static bench and wear an approved wrist strap or if that is not possible, touch a suitable ground to discharge any static build up before touching the electronics. This should be repeated if the handling continues for any length of time.

If it is necessary to move the RE3 around, place it into an anti-static bag. This will prevent any static electricity build up damaging the board. Metallised bags are preferred. Do not use black anti-static bags for any item containing a battery because these tend to be conductive and will discharge the battery.

On-Board Battery

The processor board can be fitted with a Lithium battery. Great care should be taken with this type of battery. If the battery is mistreated in any way there is a very real possibility of fire, explosion, and personal harm. Under NO circumstances should it be short-circuited, exposed to temperatures in excess of 100°C or burnt, immersed in water, recharged or disassembled.

Expired batteries remain hazardous and must be disposed of in a safe manner, according to local regulations.

Le panneau de processeur est équipé d'une batterie de lithium. Le grand soin devrait être pris avec ce type de batterie. Si la batterie est mistreated il y a de dans de toute façon un possibility très vrai du feu, d'expolosion et de mal personnel. Dans au cunes circonstances il est sous peu circuité, exposé aux températures au dessus de 100 degrés de centrigrade ou brûlé, immergé dans l'eau, rechargée ou dissassambled.

Les batteries expirées restent dazaedous et doivent être reejetées d'une façon sûre, selon des règlements locaux.

Electromagnetic Compatibility

This product has been assessed operating in representative, standard configurations. As with any PC product, however, final installation & configuration can vary significantly, and so the following guidelines are offered to help ensure that compatibility is maintained.

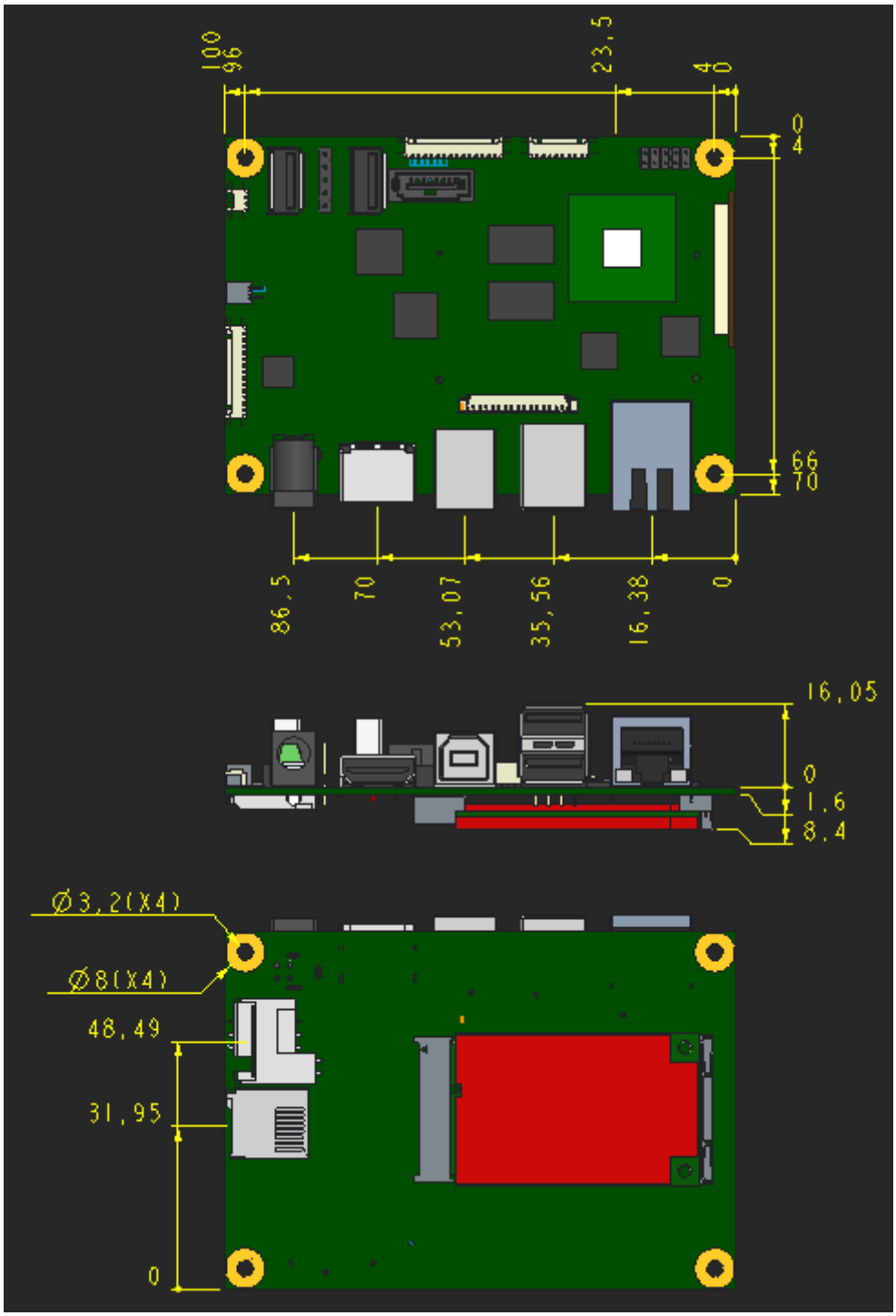
- All components added to a system should either carry appropriate equivalent levels of compliance, or be tested for compliance as part of the final system, and should be installed in accordance with supplier recommendations.
- The external enclosure should be securely fastened (with standard lids and covers in place) to ensure good metal-to-metal contact around the internal electronics

- Any metal back plate must be securely screwed to the chassis of the computer to ensure good metal-to-metal (i.e. earth) contact.
- Metal, screened, connector bodies should be securely connected to the enclosure.
- The external cabling to boards causes most EMC problems. It is recommended that any external cabling to the board be totally screened, and that the screen of the cable connects to the metal end bracket of the board or the enclosure and hence to earth. Round, screened cables with a braided wire screen are used in preference to those with a foil screen and drain wire. Wherever possible, use metal connector shells that connect around the full circumference of the cable screen: they are far superior to those that earth the screen by a simple "pig-tail".
- The keyboard and mouse will play an important part in the compatibility of the processor card since they are ports into the board. Similarly, they will affect the compatibility of the complete system. Fully compatible peripherals must be used otherwise the complete system could be degraded. They may radiate or behave as if keys/buttons are pressed when subject to interference. Under these circumstances it may be beneficial to add a ferrite clamp on the leads as close as possible to the connector. A suitable type is the Chomerics type H8FE-1004-AS.
- USB cables should be high quality screened types.
- Ensure that the screens of any external cables are bonded to a good RF earth at the remote end of the cable.

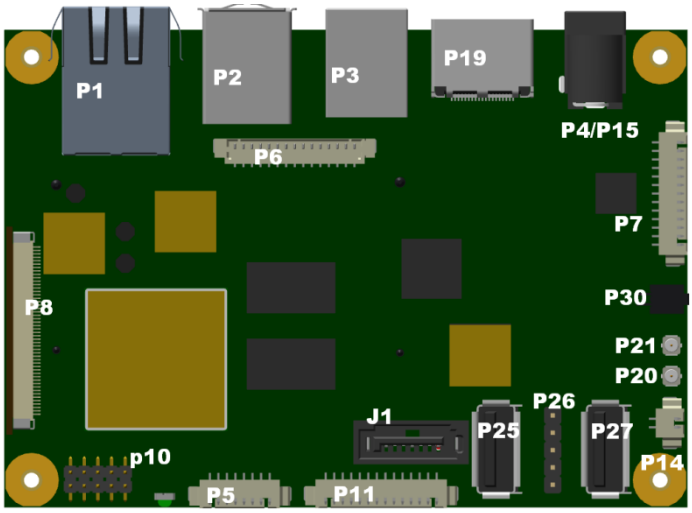
Failure to observe these recommendations may invalidate the EMC compliance

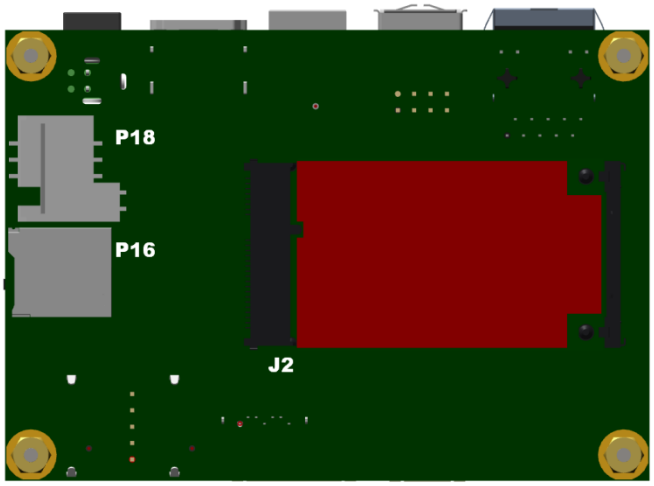
Mechanical Specifications

Outline Dimensions



Connector Locations





Connector	Description	Connector	Description
P1	RJ45 Ethernet	P2	USB-A x 2
P3	0USB-B	P4 / P15	Power Input
P5	Audio	P6	GPIO
P7	Utilities	P8	LCD Video
P10	RS232 (COM3)	P11	RS232 (COM2) and RS422/485(COM1)
P14	Battery	P16	uSD
P18	SIM Socket	P20	Camera Input #1
P21	Camera Input #2	P25	USB
P26	USB	P27	USB
P30	Fan Connector		
J1	SATA	J2	Mini PCI Express

Note: Not all connectors may be fitted
COM2 is a 2 wire device

Connector Details

P1 – Ethernet Connector

Pin	Signal	External Connections (RJ45)	Comments
1	TD+	1	Transit Data +ve
2	TD-	2	Transit Data –ve
3	CTT	-	Centre Tap Transmit
4	Ground	-	Electrical Ground
5	Ground	-	Electrical Ground
6	CTR	-	Centre Tap Receive
7	RD+	3	Receive Data +ve
8	RD-	6	Receive Data –ve
9	VCC3	-	Pull up to 3.3 volt VCC
10	LNK/#ACT	-	Link/Activity LED
11	SPD100#	-	Speed LED
12	VCC3	-	Pull up to 3.3 volt VCC
13	Ground	-	Electrical Ground
14	Ground	-	Electrical Ground

P2 – Dual USB Connector (Edge of Board)

Pin	Signal	Comments
1	VBUS	+5 volts – Filtered & current limited
2	D1-	USB 1 Data Negative
3	D1+	USB 1 Data Positive
4	Ground	Filtered Electrical ground
5	VBUS	+5 volts – Filtered & current limited
6	D2-	USB 2 Data Negative
7	D2+	USB 2 Data Positive
8	Ground	Filtered Electrical ground

P25, P26, P27 – USB Device

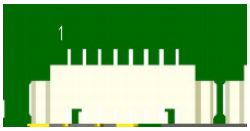
Pin	Signal	Comments
1	VBUS	+5 volts – Filtered & current limited
2	D-	USB 1 Data Negative
3	D+	USB 1 Data Positive
4	Ground	Filtered Electrical ground

P4/P15 – Power in Connector

The RE3 has the option to be powered from either a 2.5/5.5mm Power Jack (P4) or a 2 Pin Screw Terminal (P15)

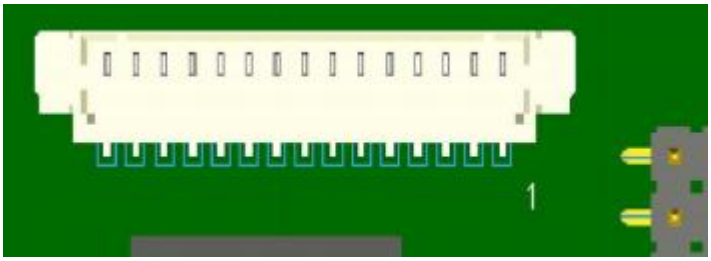
P15	
Pin 1	Ground
Pin 2	Vcc

P5 – Audio Connector



Pin	Signal	Comments
1	Line Out Right	Audio Output Right Channel
2	Line Out Left	Audio Output Left Channel
3	Audio Ground	Audio Ground
4	Line In Left	Audio In Left Channel
5	Line In Right	Audio In Right Channel
6	Audio Ground	Audio Ground
7	Audio Ground	Audio Ground
8	Microphone IN	Mono Audio Input

P6 – GPIO Connector



The GPIO interface is a flexible, logic-level port providing a mix of dynamically-configured hardware inputs and outputs. It is designed for use within a chassis with localised electronics. Interfacing to signals which may pick up noise transients will require buffering and/or conditioning circuits.

Pin	Signal	Comments
1	VCC_GPIO	Reference supply input
2	GPIO 1	Input/output
3	GPIO 2	Input/output
4	GPIO 3	Input/output
5	GPIO 4	Input/output
6	GPIO 5	Input/output
7	GPIO 6	Input/output
8	GPIO 7	Input/output
9	GPIO 8	Input/output
10	GPIO 9	Input/output
11	GPIO 10	Input/output
12	GPIO 11	Input/output
13	CANH	CAN High
14	CANL	CAN Low
15	0V_GPIO	Tied to RE3 circuit ground

The GPIO outputs are designed for flexibility, and will interface to electronics operating with signal levels between 2.3V & 5.5V DC. The function and direction of the GPIO signals is configured by RE3 software (see the software manuals for details of GPIO port mappings and configuration).

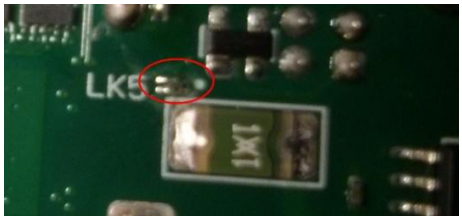
Basic electrical characteristics are as follows:-

Feature:	Pin(s):	Min:	Max:	Units:
V_{CC_GPIO} Supply Voltage	VCC_GPIO	2.3	5.5	V
V_{IH} Input High Voltage	GPIO 1 .. GPIO 11	$V_{CC\_GPIO} - 0.4$	V_{CC_GPIO}	V
V_{IL} Input Low Voltage	GPIO 1 .. GPIO 11	0	0.15	V
V_{OH} Output High Voltage	GPIO 1 .. GPIO 11	$V_{CC\_GPIO} * 0.67$	-	V
V_{OL} Output Low Voltage	GPIO 1 .. GPIO 11	-	0.4	V
ICC Supply Current	VCC_GPIO	-	12	µA

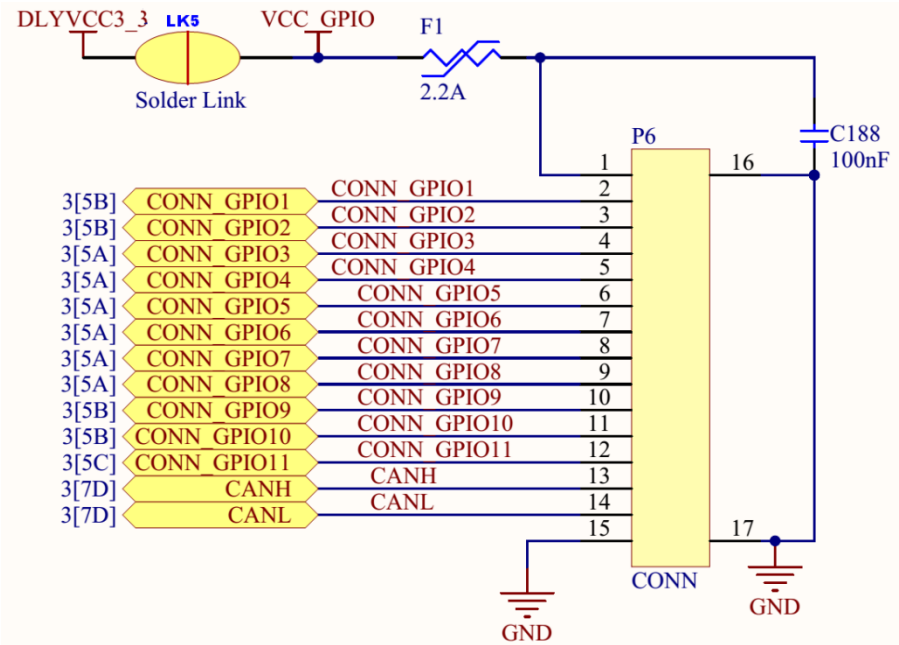
Quiescent output current in the high state appears equivalent to a 10K pull-up (short-duration current boosting is applied, however, during signal transitions to speed up rise/fall times). Optimum performance is achieved with short cable connections, and minimum capacitive loading on the signal lines.

GPIO VCC

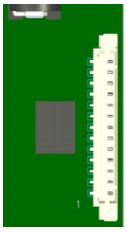
The RE3 provides for the option to provide VCC from the RE3 itself via a solder link LK5.



In order to convert the RE3 to provide GPIO VCC, it is necessary to solder a link across two pads as shown



P7 – Utilities Connector



Power		Wake	
1	Power_Off#	8	Wake# / SLEEP_RQ#
2	Ground	9	Ground
Reset		**Battery**	
3	Reset#	10	VBAT
4	Ground	11	Ground
Serial Bus		**Setup**	
5	Serial Clock	12	Boot MODE#
6	Serial Data	13	Ground
7	Ground		

P10 – RS232 Full Connector

Pin	Signal	Comments
1	XDCD3#	COM 3 Data Carrier Detect
2	XRX3	COM 3 RX
3	XTX3	COM 3 TX
4	XDTR3#	COM 3 Data Terminal Ready
5	0 volts	Electrical ground
6	XDSR3#	COM 3 Data Send Ready
7	XRTS3#	COM 3 Ready To Send
8	XCTS3#	COM 3 Clear to Send
9	XRI#	COM 3 Ring indicator
10	+5 volts	Fused voltage rail

* Under Linux COM 3 is exposed as /dev/eser0

P11 – RS232 & RS422/485 Connector

Pin	Signal	Comments
1	0 volts	Electrical ground
2	RS232 RX	COM 2
3	RS232 TX	COM 2
4	+5 volts	Fused voltage rail
5	0 volts	Through 10K pull down
6	VCC	Through 10K pull up
7	Termination	120R + 100nF link to pin 10
8	CRX1N	
9	CRX1N	Same signal as pin 8
10	CRX1P	
11	CTX1N	
12	CTX1P	

* Under Linux COM2 is exposed as /dev/ttymxc0.
* Under Linux the RS422/485 port is exposed as /dev/ttymxc1, The RS422/485 transceiver transmit enable can be controlled using GPIO 45.

P8 – Video Connector

Mating Part FFC 0.5mm Pitch 50Way

Pin	Signal	Comments
1	0 volts	Electrical ground
2	XL	Touchscreen Data
3	YD	Touchscreen Data
4	XR	Touchscreen Data
5	YU	Touchscreen Data
6	0 volts	Electrical ground
7	LCD_PWM2	PWM Brightness Control 2
8	LCD_PWM1	PWM Brightness Control 1
9	0 volts	Electrical ground
10	SDA	I2C Data
11	SCL	I2C Clock
12	0 volts	Electrical ground
13	D0	Blue 0
14	D1	Blue 1
15	D2	Blue 2
16	D3	Blue 3
17	D4	Blue 4
18	D5	Blue 5
19	D6	Blue 6
20	D7	Blue 7
21	0 volts	Electrical ground
22	D8	Green 0
23	D9	Green 1
24	D10	Green 2
25	D11	Green 3
26	D12	Green 4
27	D13	Green 5
28	D14	Green 6
29	D15	Green 7
30	0 volts	Electrical ground
31	D16	Red 0
32	D17	Red 1
33	D18	Red 2
34	D19	Red 3
35	D20	Red 4
36	D21	Red 5
37	D22	Red 6
38	D23	Red 7
39	0 volts	Electrical ground
40	VSYNC	First line Marker
41	HSYNC	Line Pulse
42	ACBIAS	Display Enable
43	0 volts	Electrical ground
44	PCLK	Pixel clock
45	EN_PANL	Enable Panel
46	EN_LITE	Enable Backlight
47	0 volts	Electrical ground
48	NC	No Connection
49	VIN	Raw Power input
50	VIN	Raw Power input

P30 – Fan Connector

Mating part is Molex 87439-0200 1.5mm PICO-SPOX

P30	
Pin 1	Vcc_5V
Pin 2	Ground/ FanPWM

Pin 2 is switched ground with a flyback diode incorporated, to absorb the back EMF from a fan motor. The output can be operated as a digital output (high or low) or as a PWM signal. The fan is driven from the PIC microcontroller, by sending an I2C command from the i.MX6 to the PIC.

Command code 0x09 sets the fan speed with a single byte parameter. 0 = OFF, 255 = ON, 1-254 = PWM
Command code 0x0a returns the current fan speed.

Example - turn fan on
i2cset -y -f 2 0x56 9 0xFF

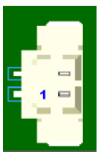
Example - turn fan off
i2cset -y -f 2 0x56 9 0

P20/P21 – Camera Input

Mating part is ufl

P20 / P21	
Pin 1	Antenna
Pin 2, 3	Ground

P14- CMOS Battery



Mating connector is Molex 0510210200

P14	
Pin 1	VBAT
Pin 2	Ground

RTC Battery

The RM3 provides a real-time clock (RTC) that can preserve the time when main power is off, by adding a backup battery.

This section describes the options for using this feature.

Battery specification

The battery supply is provided to the RM3 through the VBATT connection (J4, pin 56).
The battery voltage needs to be in the range 3.6V to 3.0V and therefore a Lithium - manganese dioxide "Li-Mn" battery like a CR2032 can be used.
The RM3 does not offer the ability to charge a battery or super-capacitor, so rechargeable lithium batteries are not suitable.

Current consumption

The RTC is part of the SNVS block on the i.MX6, which also includes other logic and non-volatile storage. As a result, the current consumption (max. 275uA) is considerably higher than might be expected for a RTC alone.
No current is drawn from the VBATT supply when the main RM3 power is on.

Applications

The relatively high battery current consumption may be important depending on the application.
When using a CR2032 battery, a simple calculation shows that the RTC may be able to hold up for around 34 days without the main power:
Based on CR2032 typical capacity of 225mAh
225mAh / 275uA = 818h
818/24 = 34.09 days

This might not be suitable for some applications, if main power is unavailable frequently or for long periods. In such cases, we recommend the use of a separate RTC on the host board, such as DS1339
http://www.maximintegrated.com/en/products/digital/real-time-clocks/DS1339U.html
This device has a typical backup current consumption of less than 1uA and should last for several years with a CR2032 battery (using the same calculation as above). It also has a built-in charging circuit, and can be used with a rechargeable battery or a super capacitor.
When using a separate RTC on the host board, the RM3 VBATT signal can be left unconnected.

Thermal Considerations

The RE3 is offered with two operating temperature variants: Standard (up to 70˚C) and Extended (up to 85˚C). Note: These temperatures are LOCAL to the PCB and NOT Room or Enclosure ambient which may be a lot lower.

It is important to understand the operating environment in which the RE3 will operate, in order to choose the most suitable variant.

To aid in determining whether a heatsink and forced airflow is required, under Linaro, the following command can be used to read the IMX6 temperature in degrees Celsius

- Cat /sys/class/thermal/thermal_zone0/temp

The extended temperature IMX6 has a maximum core temperature of 125˚, while with the standard version it is 105˚. At around 89˚C, the CPU will start to throttle back in order to protect itself.

For example, with the Dual Core Extended temperature unit, in open air, on the bench with no heatsink or cooling [with no peripherals attached and HDMI output only, the power will be around 3.5W], the temperature of the core will be around 32˚C above room ambient at the Linaro desktop. With airflow of around 5CFM, the core will drop to around 22˚C above ambient.

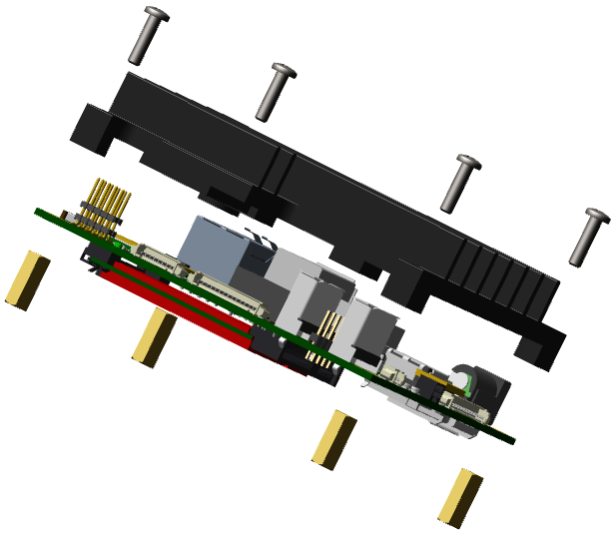
Fitting the heatsink designed by Blue Chip has the effect of giving a core temperature of 18˚C above ambient and with airflow of around 5CFM, this drops to around 12˚C above ambient

The IMX6 core temperature is only one factor when designing the RE3 into an enclosure. It is just as important to ensure that the local ambient around the PCB does not exceed the maximum rated for the particular variant. For instance, if the enclosure design is such that the maximum local ambient to the PCB is 20˚C above the room ambient, then for a Standard variant product, the complete enclosure would have a maximum room operating temperature of 40˚C [assuming that the RE3 is the limiting factor, which with some LCD's and other peripherals may not be the case].

For more information please refer to the RE3Thermal Design Considerations document.

RE3 Heatsink

A passive heatsink has been produced for use with the RE3 and it is attached to the RE3 as below.



System Software

Operating Systems Supported

Linux

Android

General Purpose I/O

There are 11 General Purpose I/O lines available.

SYSFS

The recommended way to access the GPIO is using the SYSFS interface. This can be done using the command line (or scripts), or can be done from inside an application.

The Linux GPIO documentation can be found here:
https://www.kernel.org/doc/Documentation/gpio/sysfs.txt

This web page also has some useful examples:
http://falsinsoft.blogspot.co.uk/2012/11/access-gpio-from-linux-user-space.htm

GPIO Mapping for RE3

The mapping between RE3 numbered GPIOs and the SYSFS names is shown below:

RE3 Signal	SYSFS name
CONN_GPIO1	gpio4
CONN_GPIO2	gpio106
CONN_GPIO3	gpio25
CONN_GPIO4	gpio28
CONN_GPIO5	gpio27
CONN_GPIO6	gpio26
CONN_GPIO7	gpio30
CONN_GPIO8	gpio29
CONN_GPIO9	gpio107
CONN_GPIO10	gpio6
CONN_GPIO11	gpio47

Bootloader Firmware

Refer to the relevant BCT RE3 Linux/Android User Guide for more details on configuring the RE3 bootloader. The following is a quick summary of how to setup the correct display output.

This is achieved via the debug port connected to a control PC running a terminal emulator such as PUTTY.

When the unit is powered on, press the space bar on the terminal emulator. This will provide a prompt.

For example, to setup dual output 7.1”LCD/1020p HDMI enter

>setenv video_args 'mxcfb0:dev=lcd,URT8173,if=RGB24 video=mxcfb1:dev=hdmi,1920x1080M@60,if=RGB24'

then save it by

>saveenv

Other common outputs would be

>setenv video_args 'mxcfb0:dev=hdmi,1920x1080M@60,if=RGB24'

(HDMI output only)

>setenv video_args 'mxcfb0:dev=lcd,URT8089,if=RGB24'

(5.7” LCD 640x480 only)

Maintenance

The RE3 Computer should not require any regular maintenance.

Amendment History

Issue Level	Issue Date	Author	Amendment Details
0.1	May 2014	Tmck	Prototype release
1.0			Added Thermal Management notes and cable details
1.1	June 2014		Updated Mating Connector info
1.2	June 2014		Updated outline drawing and added CMOS battery update
1.3	Feb 2015		Added control details on Fan connector P30
1.4	June 2015		Added P14 connector details
1.5	July 2017	DR	Documented UART to Linux file mapping.

Contact Details

Blue Chip Technology Ltd.
Chowley Oak
Tattenhall
Chester
CH3 9EX
U.K.
Telephone: +44 (0)1829 772000
Facsimile: +44 (0)1829 772001

www.bluechiptechnology.co.uk

Single Board Computer Sales	***singleboardcomputer@bluechiptechnology.co.uk***
Rack mount/ Industrial PC Sales	***rackmountpc@bluechiptechnology.co.uk***
Data and IO Sales	***DataIO@bluechiptechnology.co.uk***
Technical Support*	***Support@bluechiptechnology.co.uk***
Returns**	rma@bluechiptechnology.co.uk

* To use the Support email address requires the sender to be first registered on the Support Web site at

http://support.bluechiptechnology.co.uk/

**To request a Returns Authorisation number, use the RMA portal at

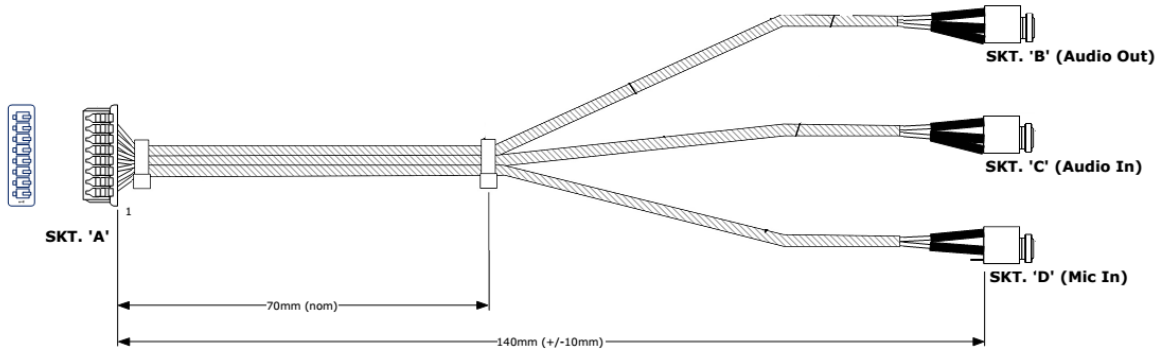
Http://rma.bluechiptechnology.co.uk

Cable Options

Cable assembly drawings for Blue Chip cable options can be provided on request by contacting Technical Support via the help desk at support.bluechiptechnology.co.uk

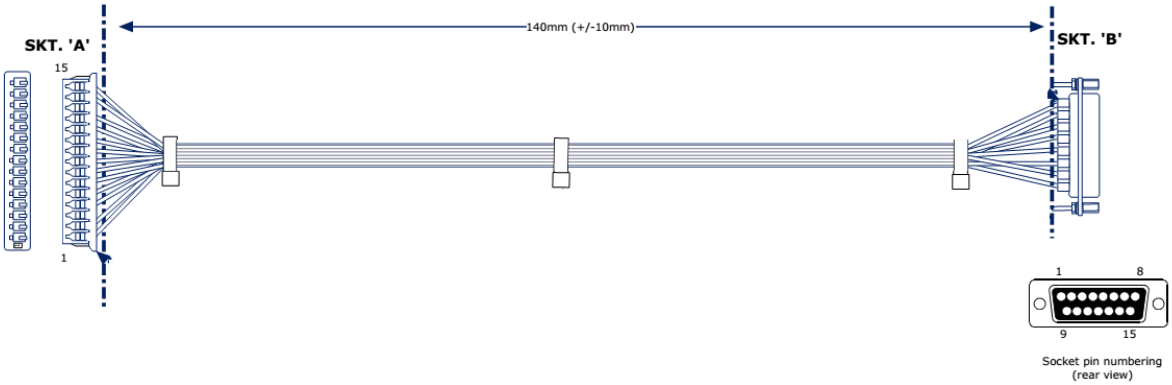
Audio P7 – BCT p/n 1371-1421

Mating part is Molex 51021-0800



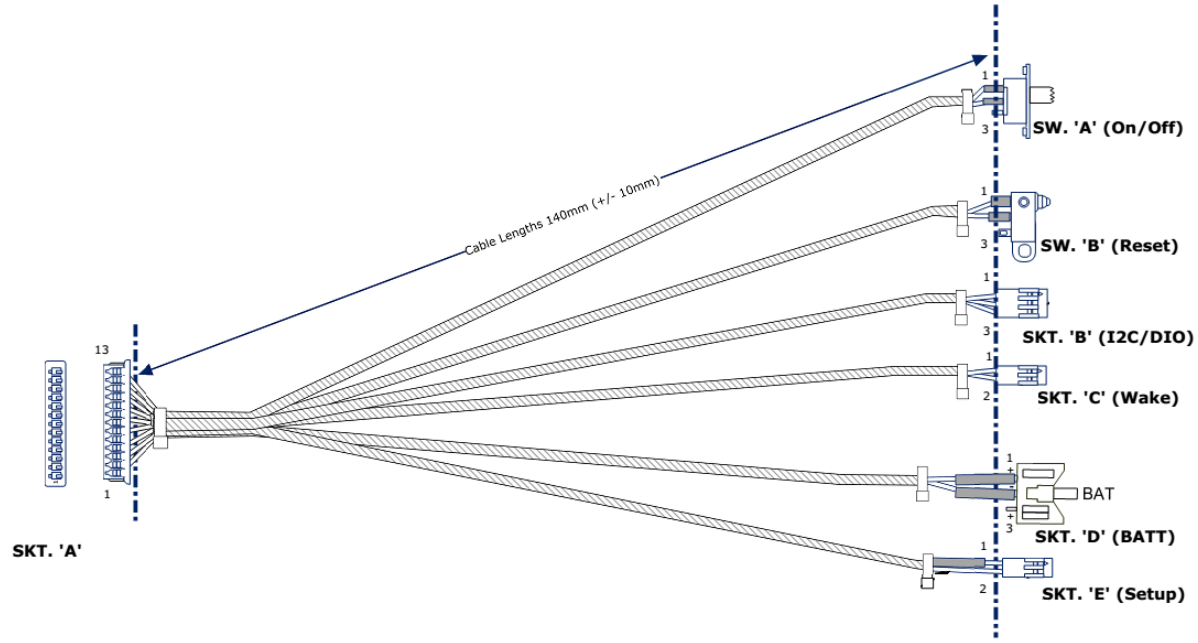
GPIO P6 – BCT p/n 1371-1422

Mating part is Molex 51021-1500



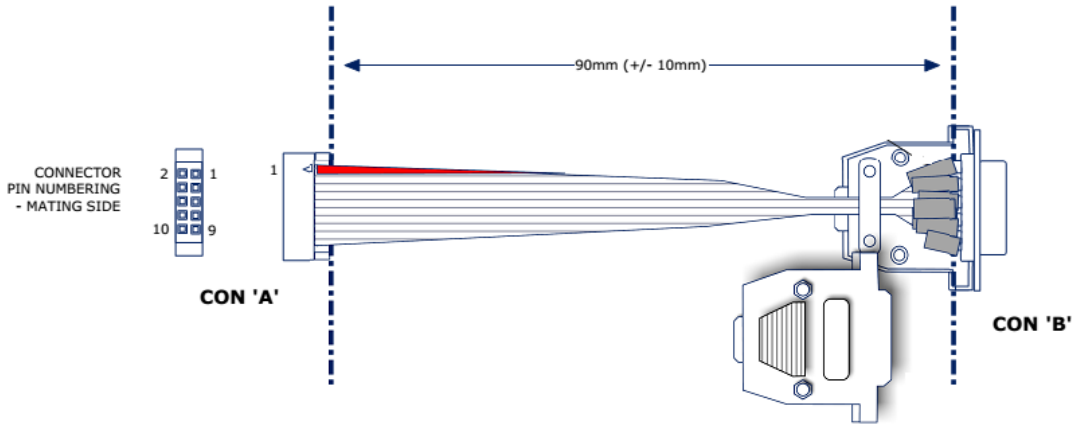
Utility P7 – BCT p/n 1371-1423

Mating part is Molex 51021-1300



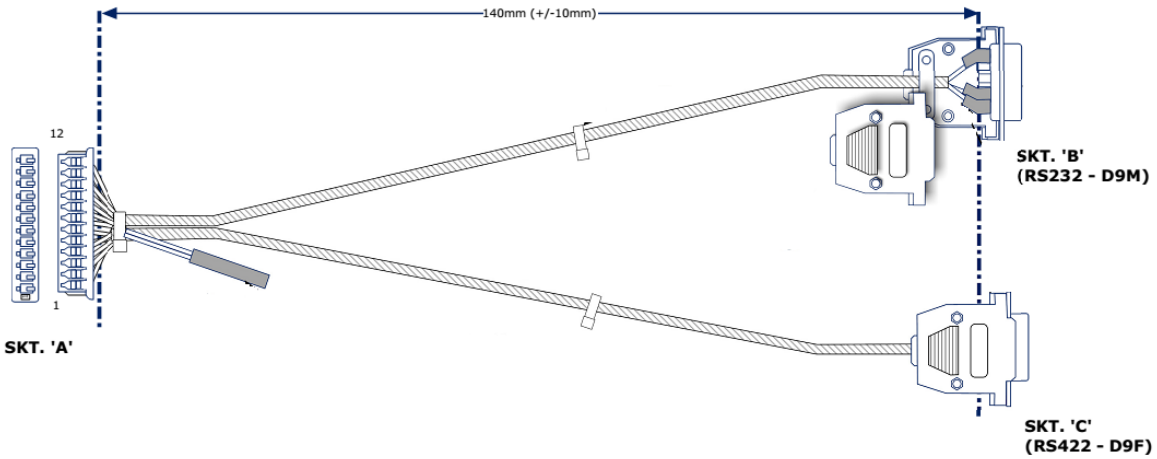
RS232 P10 – BCT p/n 1371-1425

Mating part is 3M 152210-0100-GB



RS232/422/485 P11 – BCT p/n 1371-1426

Mating part is Molex 51021-1200



Camera In

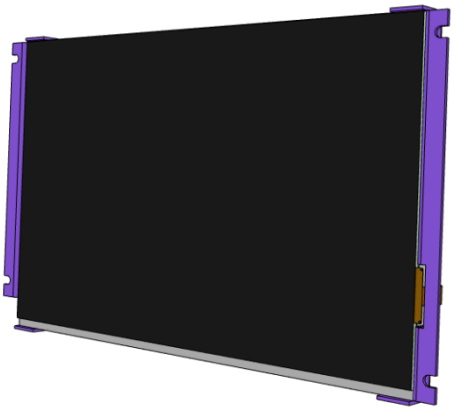
To connect to the UFL connection on the RE3, the following cable and adapter are available

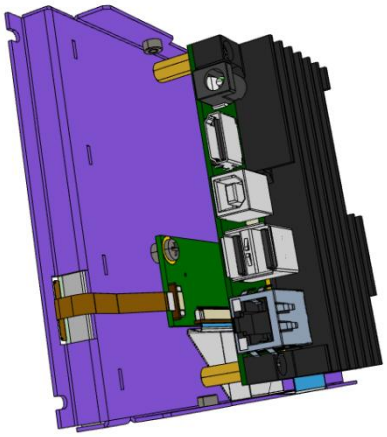
Ufl-BNC – BCT p/n 1371-1603 BNC-Phono – BCT p/n 1475-1013

LCD Options

The RE3 can be supplied with a LCD as an assembly to aid integration into the customers design. Please check with Blue Chip Technology Sales for details of which panels and assemblies are offered.

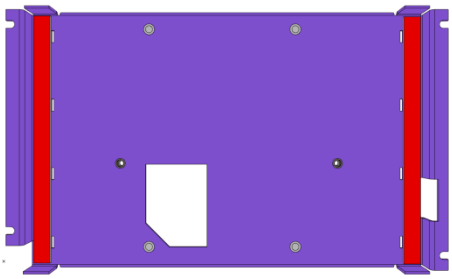
The following shows details for an assembly including the URT UMSH-8173MD-1T 7.1” display with touch screen.

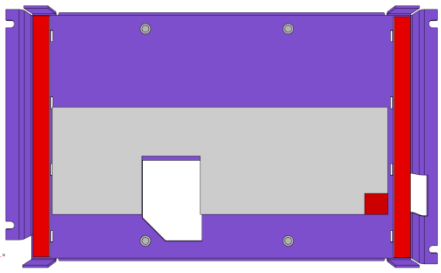




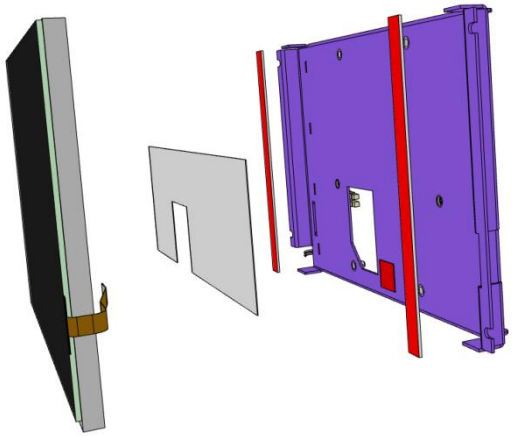
The parts can be provided already assembled or as a kit of parts for integration into a final design. The following gives a brief outline on how the kit is assembled

Step 1: attach display to the metal frame



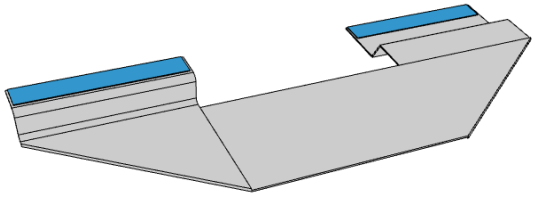


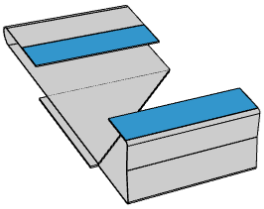
First add the strips of VHB adhesive as shown on the left. The picture on the right shows the addition of a insulator which will prevent the electronics on the back of the display from shorting to the metalwork.



The display is then carefully pushed onto the metal frame, with the touch screen cable and inverter cable placed into the openings provided in the frame

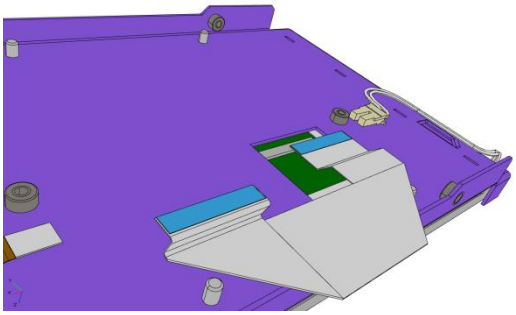
Step 2 connect the Personality Module

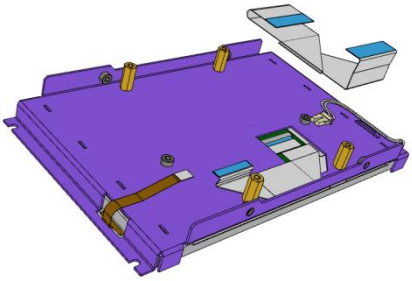




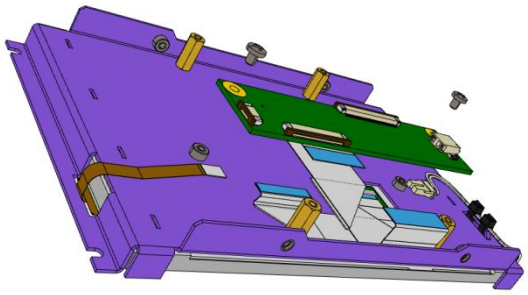
There are two FFC cables required. The one on the left connects the display to the Personality Module, while the one on the right connects the Personality Module to the RE3.

Before assembly they should be carefully folded to aid integration. Badly routed cables can affect EMC



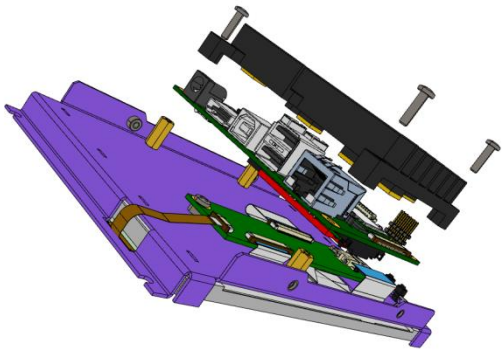


Attach the display FFC first then position the RE3 cable next as this will be routed under the Personality Module.



Attach the Personality Module and connect the cables as appropriate.

Step 3 attach the RE3 and heatsink



Before fitting the RE3 check that the mounting pillars provided are of a suitable height as they are intended for instances where no mini PCI Express cards are fitted. If such a card is fitted to the RE3 then higher pillars may be required to avoid shorting of components between the Personality Module and the Card.

Models of the assembly can be provided to aid design of enclosures. Please contact Blue chip Sales for more information.

Outline Dimensions for RE3 + 8173 Assembly